WELCOME!

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Workshop Agenda

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Overview

- **Day 1 (Tuesday, January 29th)**
  - Registration 8:00am – 8:30am
  - Morning Session 8:30am – 11:45am
  - Afternoon Session 1:00pm – 5:00pm
- **Day 2 (Wednesday, January 30th)**
  - Morning Session 8:30am – 11:45am
  - Afternoon Session 1:00pm – 5:30pm
- **Day 3 (Thursday, January 31st)**
  - Morning Session 8:30am – 12:00pm

Day One - Morning

- 8:00 – 8:30 Registration
- 8:30 – 8:35 Welcome
- 8:35 – 8:45 Workshop Overview
- 8:45 – 9:30 ECHO 10.0 "At a Glance"
- 9:30 – 9:50 WIST 10.0 "At a Glance"
- 9:50 – 10:00 ECHO Website
- 10:00 – 10:15 Break
- 10:15 – 10:45 Evolution
- 10:45 – 10:55 ECHO Operations Overview
- 10:55 – 11:10 ECHO Systems Overview
- 11:10 – 11:45 ECHO 10.0 End-To-End Testing & Release
- 11:45 - 1:00 Lunch

Day One - Afternoon

- 1:00 – 1:30 AQUA - Automated Query & Access Services
- 1:30 – 2:00 WECHO Presentation
- 2:00 – 2:45 ECHO 10.0 API Usage
- 2:45 – 3:00 Break
- 3:00 – 3:30 ECHO Extended Services
- 3:30 – 4:00 UAH Web Services and ECHO
- 4:00 – 5:00 Open Discussion

- 6:00 Group Dinner

Day Two - Morning

(Client, Data, & Service Partners)

- 9:00 – 10:00 AQL Overview & Query Optimization
- 10:00 – 11:00 Creating ECHO Forms
- 11:00 – 11:15 Break
- 11:15 – 11:45 PUMP Basic Overview
- 11:45 - 1:00 Lunch

- OR -

(User Services)

- 9:00 – 10:20 PUMP Detailed Overview
- 10:20 – 11:00 WIST vs. EDG Comparison
- 11:00 – 11:15 Break
- 11:15 – 11:45 User Services & ECHO OPS Support Plan
- 11:45 - 1:00 Lunch

Day Two - Afternoon

(All Workshop Participants)

- 1:00 – 1:45 Data Access and Order Management
- 1:45 – 2:30 ECHO 10.0 Data Model
- 2:30 - 2:45 Break
- 2:45 – 3:30 Interacting with ECHO 10.0 Ingest
- 3:30 – 3:45 EIAT Overview
- 3:45 – 4:00 Break
- 4:00 – 4:30 LPDAAC ECHO Forms
- 4:30 – 4:45 LARC_ASDC Presentation
- 4:45 – 5:30 Discussion of "Parking Lot" Issues

Day Three - Morning

- 9:00 – 10:00 Panel Discussion – Future of ECHO

- 10:00 – 12:00 Hands On - Creating Google KML from ECHO

  - OR -

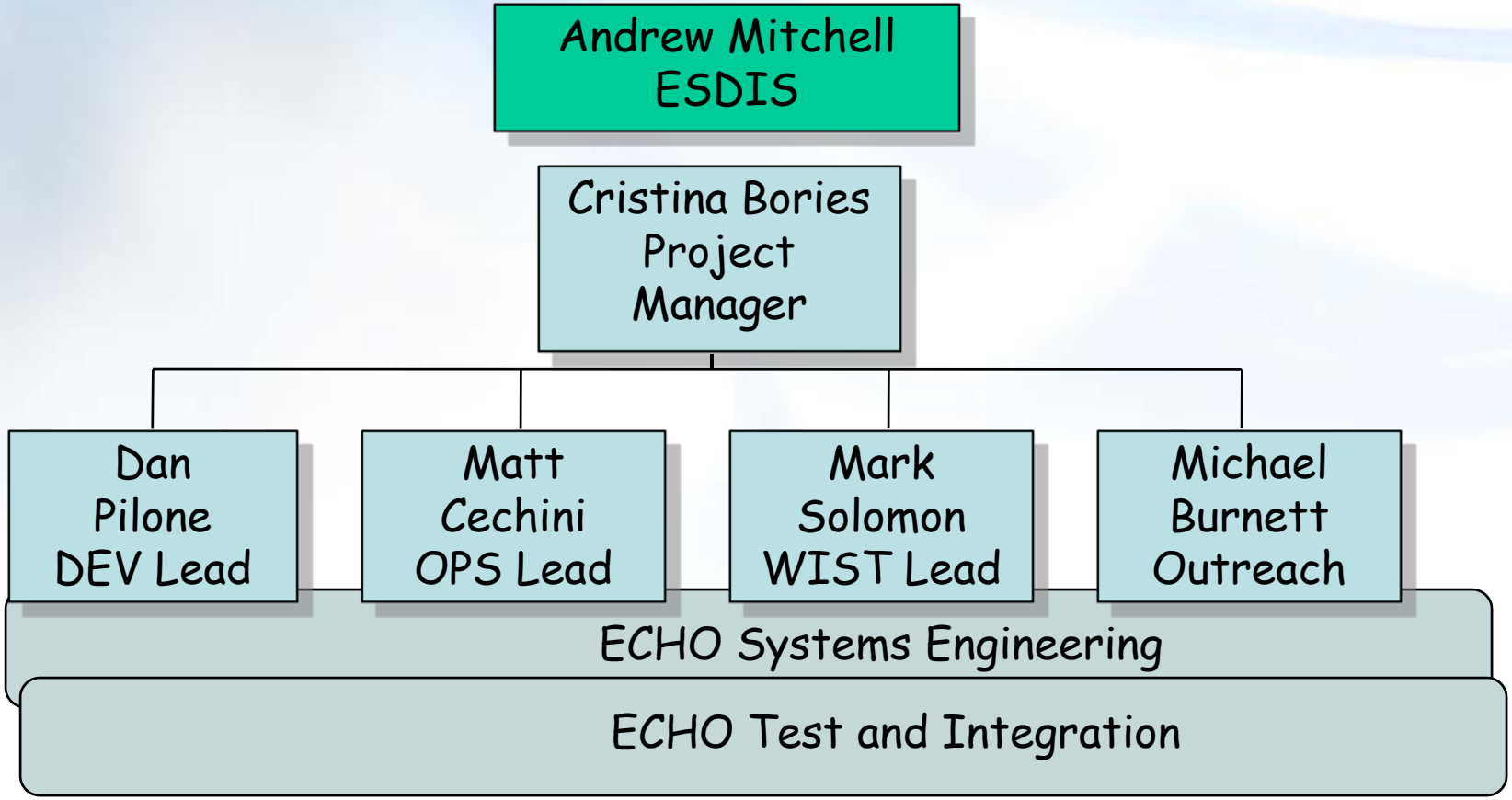
- 10:00 – 11:00 Hands On – Using ECHO PUMP
- 11:00 – 12:00 Hands On – Creating ECHO Forms

Workshop Objectives

- Provide a forum in which to share your knowledge and experiences with other ECHO partners and the ECHO team
- Inform you about what ECHO and WIST 10.0 will bring in 2008
- Enable you to
  - Develop forms
  - Develop clients in general
  - Create linked services
  - Execute efficient queries
- Show you our draft new website
- Inform you of current End To End testing plans and schedule
- Help you understand ECHO's role (as well as yours) within the EMD Evolution plan
- Provide information regarding the EDG to WIST transition

One ECHO

- Since July 1, 2007, ECHO Operations and Development have merged into one project



ECHO 10.0 Highlights

- ECHO 10.0 Operational March 2008

- ECHO becomes the entry point for search and orders over NASA Earth Science Data (and other non NASA providers)
- ECHO 10.0 main focus is the re write of ingest under a new architecture that will allow horizontal and vertical scalability to accept increased provider volume
- ECHO 10.0 completes all functionality required to assume responsibility for user access validation

ECHO Workshop Overview

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Topics

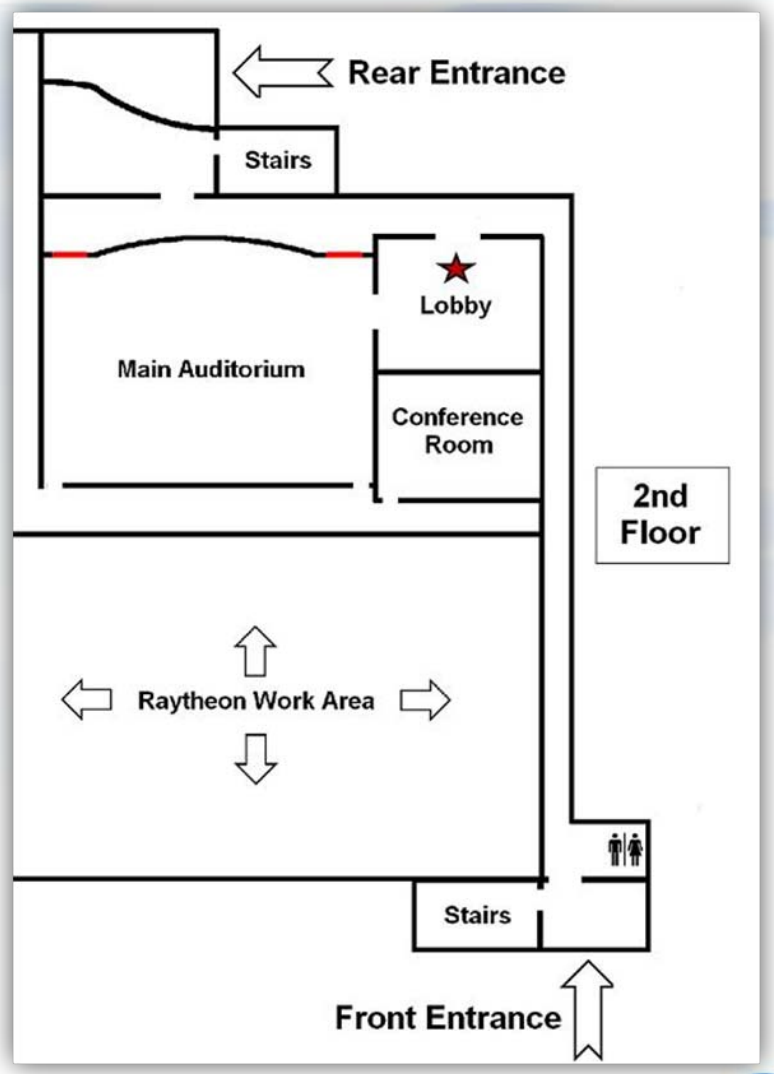
- Facility Overview
- Workshop Overview
- Agenda Overview

Facility Overview

- **Security Issues**
  - Badging will occur each morning in the auditorium lobby
  - Workshop badges must be warn at all times within the facility
  - You may leave your badge at the registration desk when you leave
    - This is only so that you and we don't have to worry about hand writing badges
  - Entrance into a Raytheon work area will require a Raytheon escort
    - Raytheon employees: Matt Cechini, Alex Lai, Frank Corprew, or Cristina Bories
- **Parking**
  - Please park in unmarked spots to avoid being towed
  - No visitor parking registration is needed

Facility Overview

- **Entering & Exiting**
  - Rear entrance is closest to the auditorium
  - Perimeter doors are not secure
  - Do not exit through the auditorium rear emergency doors
- **Restrooms**
  - Located near the 2nd floor front entrance, left of the double doors
- **In Case of Emergency**
  - Please exit through the rear doors of the auditorium and proceed down the rear stairwell



Workshop Overview

- **Food & Drink**
  - Hot and cold drinks and snack foods are available in the auditorium lobby
- **Breaks & Lunches**
  - Periodic breaks will be given during the workshop
  - Lunch will not be provided at the workshop
    - A list of nearby restaurants is included in the workshop materials.
    - Ad hoc carpooling with local attendees is encouraged
  - A map and sign-up sheet will be given for tonight's group dinner.
- **Wireless Access**
  - Access to the wireless network will require Raytheon RSA fob or Visitor Access Gateway (VAG) account.
    - No 3rd Party Application required
    - VAG accounts will be given out during the first break

Workshop Overview

- **Teleconferencing**
  - The main ECHO teleconference number will be used for individuals joining remotely.
  - A separate teleconference number will be used for the User Services breakout session on the morning of Day 2.
- **Discussions**
  - Issues will be recorded for the open discussion forum
  - Breakout groups are encouraged during the workshop.
    - Adjacent rooms or lobby may be used
    - Please be sure to not distract those listening to the main presentation
  - ECHO Team members will be available before and after the workshop

Agenda Overview

- **Day 1**
  - Morning - General ECHO Topics
  - Afternoon - 2006 Access Clients, API Overview, and Extended Services
- **Day 2**
  - Doors open at 8:00
  - Morning – Users Services or AQL and ECHO Forms Specification
  - Afternoon –10.0 Data Model, Ingest, and Data Partner Presentations
- **Day 3**
  - Doors open at 8:00
  - Panel Discussion
  - Hands On Workshops (Choose one)
    1. Creating Google KML from ECHO
    2. Using ECHO PUMP and Creating ECHO Forms

Questions?

ECHO 10.0 Overview

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Agenda

- Overview
- Ingest
- User Profile Changes
- Catalog and Query Changes

ECHO 10.0 Overview

- **ECHO 10.0 is largely focused on Ingest**
  - Ingest was rewritten to address scalability and maintenance goals
- **User Profile extended to support additional ECS fields**
  - With the EDG to WIST transition ECHO 10.0 User Profiles were expanded to support key ECS fields
  - PUMP was updated to handle the additional fields
- **Query was expanded to support multiorbit and partial orbit data searching**
- **Collection Version ID was changed to be an alphanumeric string**
- **Security was increased system-wide**

ECHO 10.0 Overview (cont.)

- **ECHO 10.0 is fully backward compatible with the ECHO 9.0 Web Service API**
  - User Profile changes are defaulted or remove appropriately (see User Profile slide for more information)
- **The new Ingest 10.0 is significantly stricter in terms of validation and new data constraints have been applied to the DB tables**
  - Expect better rejection of invalid data
  - Legacy provider data has been tested extensively but there are still opportunities to reject data previously accepted

Ingest

Introducing Ingest 10.0

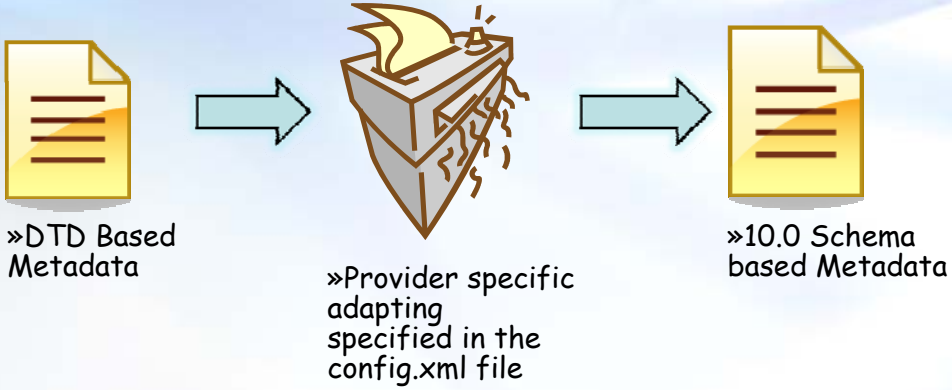
- **Ingest has been redesigned:**
  - Runs as a daemon
  - Separated from the DB
  - One instance for all providers

- **The basic concept of Ingest is unchanged:**
  - Provider configurations are specified in an XML file
  - The configurations indicate input directories to watch for incoming
  - Ingest validates, converts, and inserts the data into the DB
  - Ingest generates and distributes results in an XML report.

Ingest Data Formats

- **Ingest 10.0 supports a number of different data formats**
  - ECHO 10.0 Schema based XML format (this is the preferred format)
  - ECHO 8.0/9.0 DTD Based XML format
  - 7.20 and 7.21 BMGT DTD format
- **Ingest <u>does not</u> support the ECHO 7.0 or prior DTD formats**
- **Ingest is backwards compatible with Ingest 9.0 and will adapt previous legacy data to the 10.0 format on a per provider basis (more on this in a minute)**
- **Data files can be sent to Ingest individually as with previous versions or zipped into Ingest Packages.**

Provider Adapting



- **Ingest supports several different provider adapters**
  - Configure the appropriate adapter for legacy data in the config.xml file (BMGT, ECHO8, NSIDC, ECHO10)
  - Some adapters require specific values such as Dataset IDs to be configured properly – see the Ingest manual
  - It is possible for a file to pass provider DTD validation but fail 10.0 Schema validation – the schema is a stricter check.

File Processing

- **Delivery mechanism is specified on a per provider basis**
- **Ingest supports two delivery mechanisms**
  - Single file delivery
    - Legacy delivery mechanism where individual Metadata (XML) or image files are placed into the monitored directory
  - Package delivery
    - New in Ingest 10.0 and supports automated sequencing, compression, and atomic execution
    - BMGT has explicitly requested that an entire package be rejected if a single file in the package fails validation. This only applies to BMGT configured providers.

Single File Delivery

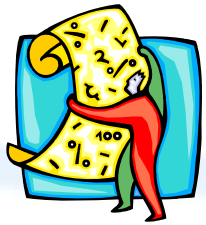
- **Individual Metadata (XML) files are automatically grouped into Jobs**
  - Files are monitored for modifications to determine when the file is complete*
  - All completed files are grouped together to form a Job and Ingest will begin processing
  - Jobs will automatically be assigned a sequence number to ensure they execute in the order the files were detected
  - Images (Browse) are delivered as individual images as before
  - Files must be delivered sequentially by the provider for Ingest to process them in the correct order.

Package Delivery

- **A single zipped archive of Metadata (XML) files and their manifest are treated as a Job**

  - Metadata (XML) files may be zipped along with an XML manifest file and delivered as a group to Ingest
  - Each package can have a sequence number in the manifest to ensure sequential execution regardless of delivery order
  - Images (Browse) are still delivered as separate files
  - Missing packages (sequence numbers) will cause subsequent jobs to queue up. An empty package with the appropriate sequence number can be used to skip a sequence number
  - See the Manifest Schema HTML documentation for structure and content information

Reporting



- Ingest generates an XML report for every job, regardless of how the job completed (success, failure, deletion, etc)
- Reports are generated into a job specific directory named with the unique ID of the job
- Ingest can copy the report XML into any number of configurable directories. Once copied, Ingest will forget about the copied file.
- Reports can be large and are intended to be machine readable.
  - They will <u>not</u> be emailed with job status messages
- See the Report Schema documentation for structure and content information

Browse Changes

- **The browse lifecycle has changed with Ingest 10.0**
  - Browse have an independent lifecycle
  - Browse images have a unique ID
    - The browse filename will be used for providers sending data in a legacy format.
  - Browse are associated with collections and granules through a *browse link*
  - Browse links are specified with the collection or granule metadata
  - Deleting a browse will cascade to delete any links to that browse
  - Deleting a collection or granule will cascade to delete any links to browse – *it will not delete the actual browse*.

Partial Updates

- **Legacy providers can continue to send partial updates as before.**
- **ECHO 10.0 formatted partial updates require updating a block of data at a time**
  - For example, all attributes of a measured parameter must be specified for a partial update.

User Profile Changes

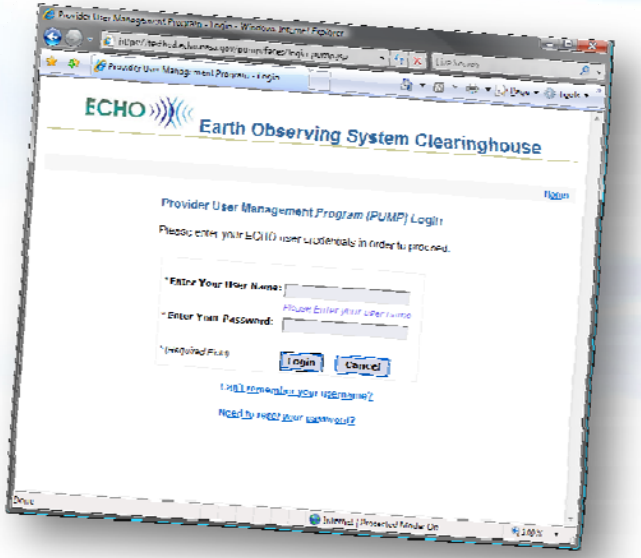
User Profile Changes

- **ECHO 10.0's User Profile capabilities have been expanded to include some key ECS User Profile fields**
  - Creation Date
  - Title
  - Middle Initial
  - Billing/Shipping Title and Middle Initial
  - Affiliation
  - Primary Area of Study
  - User Type (EMS specified list)

- **ECHO 10.0 supports the ECHO 9.0 UserService and will default required fields**
- **The three digit country code restriction has been removed and full country names are supported**

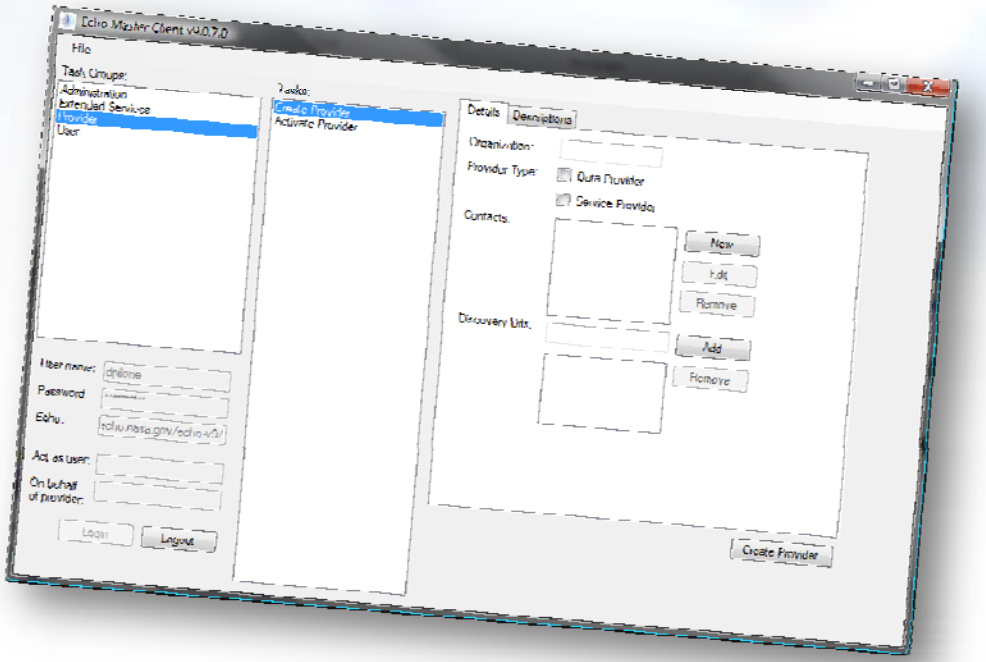
PUMP User Profile Support

- **PUMP has been updated to support the additional User Profile fields**
- **PUMP has full user creation and maintenance capabilities**
  - ECHO Administrators can create, view, delete, and update all accounts
  - Users can view and update their own accounts
  - Providers cannot manipulate user accounts
- **PUMP supports user Preferences**



Extended Services Registration Tool (ESRT)

- The ESRT uses the ECHO 9.0 API and is unaffected by the User Profile changes
- No additional capabilities were added to the ESRT.



ECHO

NASA

Catalog Query Changes

Multi and Partial Orbit Support

- **ECHO AQL now supports Multi and Partial Orbit querying of granule data**
  - Only NSIDC data contains orbit number information at this time
  - Partial orbits will be rounded up to the next largest integer orbit
  - Multi/Partial Orbit search is slower than normal orbital queries
  - All granules in a collection must have the same number of orbits
  - Currently all Operational and Test data only have single orbit granules

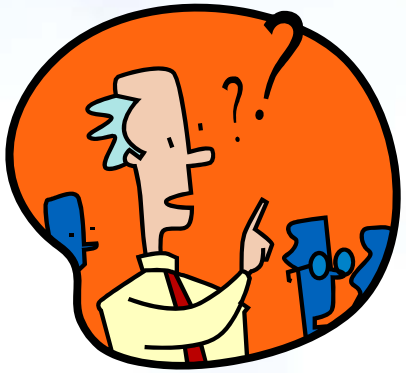
Ingest Driven Changes

- The query execution engine was updated to accommodate the underlying table changes required by Ingest 10.0
- Several specific AQL queries have been optimized to provide better performance. The specific queries and how to structure your AQL to take advantage of these improvements will be discussed in another presentation.

Alphanumeric Version IDs

- Prior to ECHO 10.0 Version IDs were integer fields
- To accommodate requests for “2.1”, 3a”, “v6.0” style versioning, VersionID was changed to be an alphanumeric value
- It was defined as PCDATA in ECHO DTDs so there is no syntactic API change, however you should now expect alphanumeric values in results

Questions?



WIST 9.1/10.0 Overview

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Agenda

- WIST 10.0 Software Architecture Changes
- WIST 10.0 Dynamic Forms Efforts
- WIST 9.0 vs. 10.0 Order Options
- WIST 10.0 User Profile Changes
- WIST 10.0 User Preferences Changes
- WIST 10.x Specialized Components
- Questions?

WIST 10.0 Software Architecture Changes

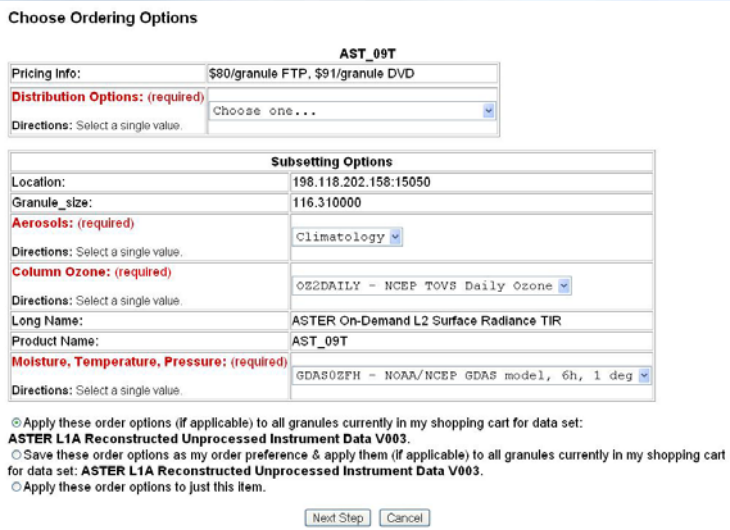
- **When the user clicks on Choose Options they now go to a java script page**
  - This allows the user to dynamically manipulate items on the page
- **Full support of ECHO Forms Specification**
  - Dynamic forms allows options to be displayed based upon user selections
  - Multiple order options can now be combined into a single ECHO form
  - When the user submits the form the order option selection is populated and sent to ECHO as before

WIST 10.0 Dynamic Forms Efforts

- **WIST Dynamic Forms and EWOC**
  - Facilitates the creation of ECHO forms to submit orders to the ECS Ordering Component (EWOC) in support of ECS 7.2x
  - Supports UAH Subsetting and ASTER On-Demand Processing
  - Received very useful feedback from ECS DAACs forms developers
- **Changes to the specification**
  - Remove repeat functionality
  - Force one-to-one mapping between UI and model elements
  - Require qualified namespaces
  - Clarify documentation for forms developers

WIST 9.0 vs 10.0 Order Options

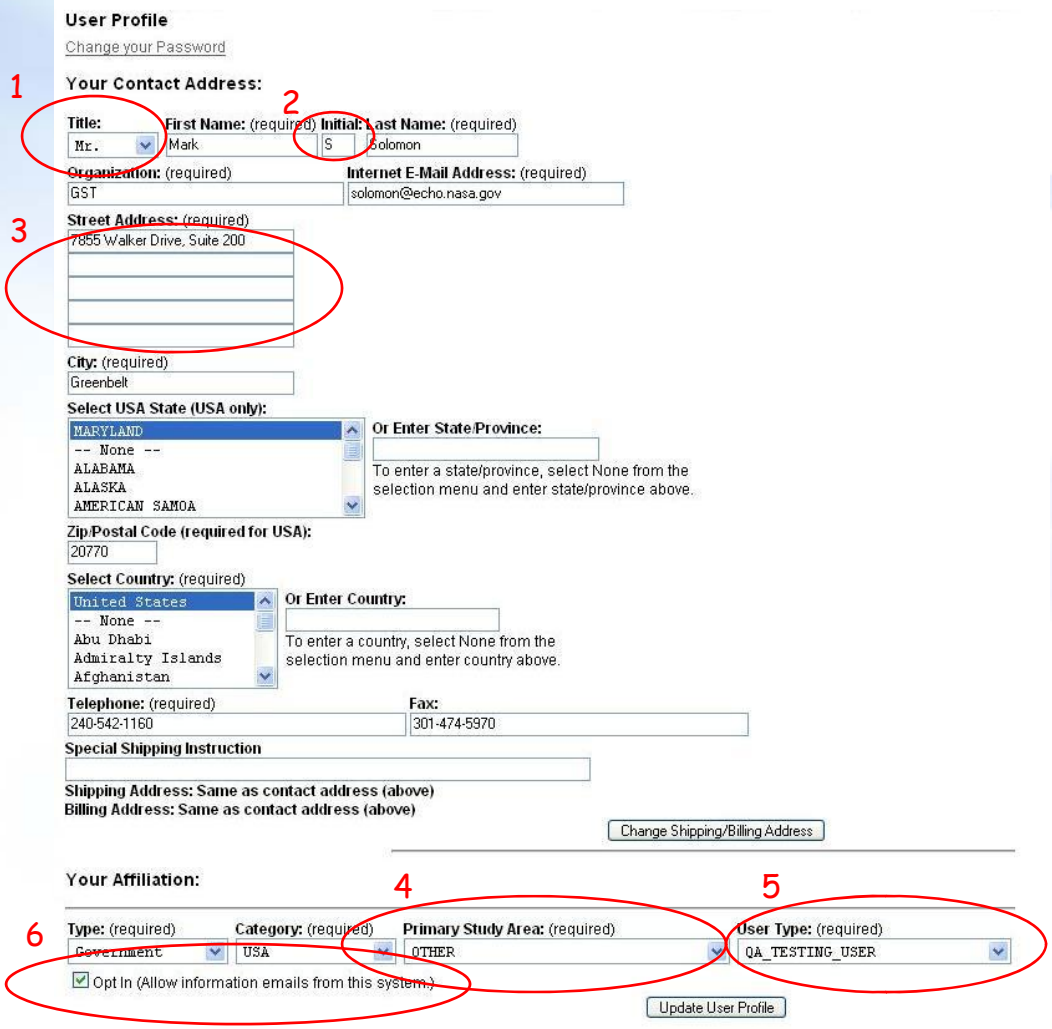
WIST 9.0



WIST 10.0

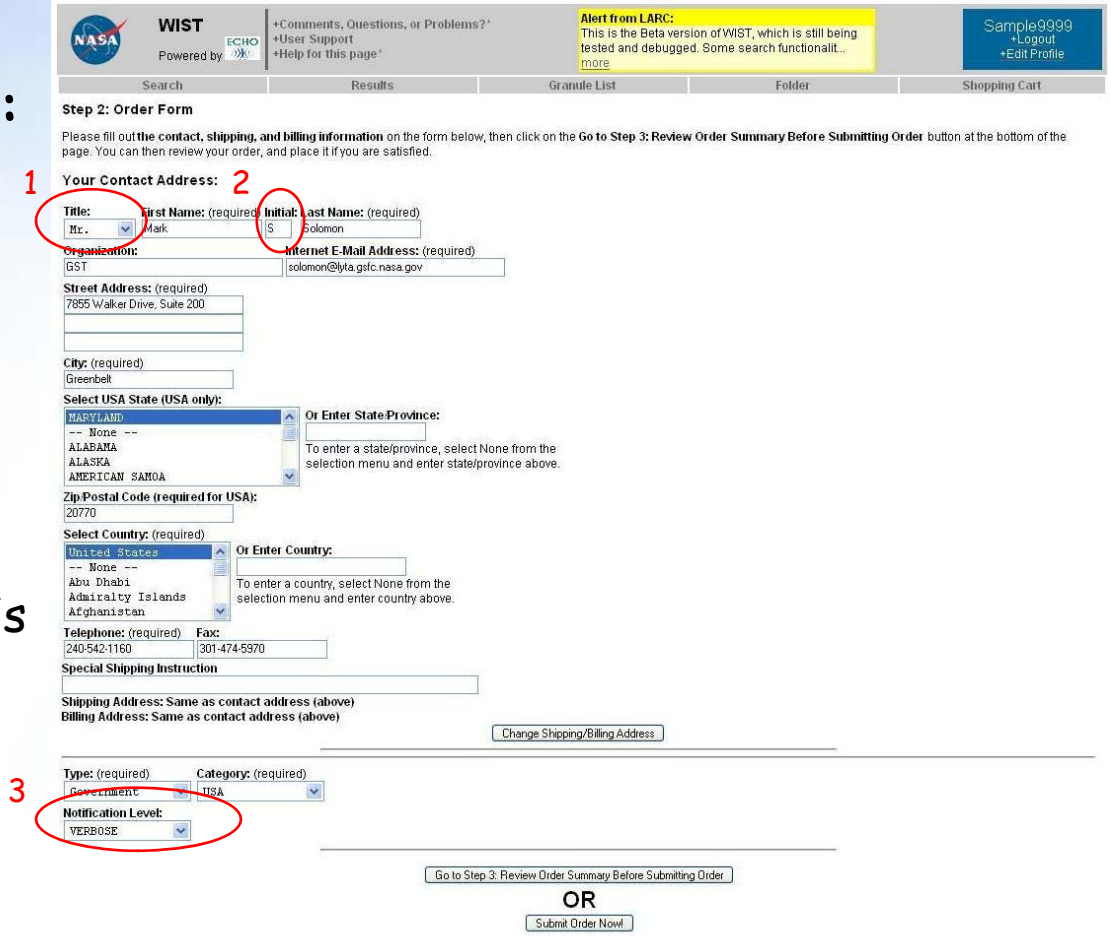
WIST 10.0 User Profile Changes

- **Things that were added:**
  - User Profile is retrieved from ECHO
  - New fields:
    1. Title
    2. Middle Initial
    3. 5 Streets
    4. Primary Study Area
    5. EMS User Type
    6. Opt-In Check Box
  - User Profile is updated in ECHO when the form is submitted.



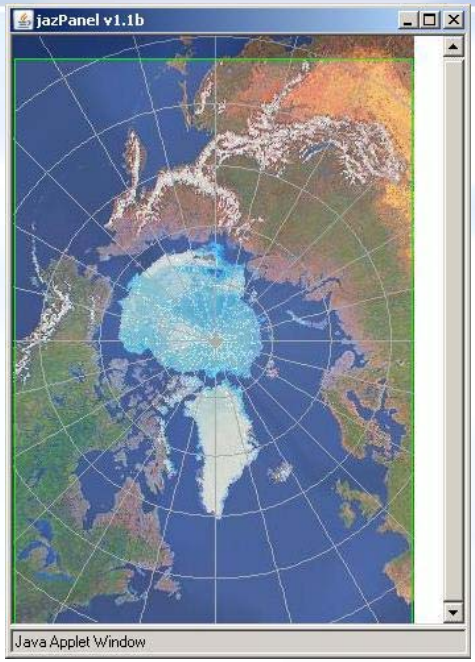
WIST 10.0 User Preferences Changes

- **Things that were added:**
  - Order form is populated from ECHO
  - New fields:
    1. Title
    2. Middle Initial
    3. Notification Level
  - User Preferences are updated when the form is submitted

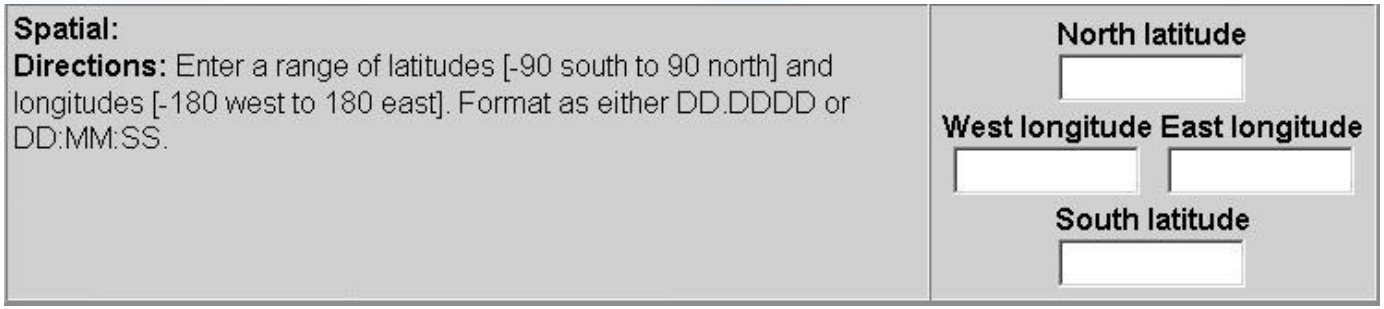


WIST 10.x Specialized Components

- We are adding support for JazPanel that works with the new ECHO Forms implementation



- We are adding support for Latitude/Longitude bounding box that works with the new ECHO Forms implementation



- If additional specialized components are needed an enhancement NCR can be opened.

Questions?

ECHO Website Overhaul

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Agenda

- **Out with the old … and in with the new**
- **Main Page**
- **Content Overview**
  - General Info
  - Data Partners
  - Client Partners
  - Service Partners
  - ECHO Systems
- **Still Under Construction**
- **Comments and Reviews**
- **Questions?**

And with the latest new

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

+ Visit NASA.gov
+ Contact ECHO
+ FAQ / Acronyms

search... go...

echo

- Home
- + About ECHO
- + Data Partners
- + Client Partners
- + Service Partners
- + ECHO Systems

External Links

+ WIST

Welcome to the ECHO Community

The EOS ClearingHOuse (ECHO) supports efficient discovery and access to Earth Science data. It is a metadata clearinghouse and order broker being built by NASA's Earth Science Data and Information System (ESDIS).

New Users

In the ECHO community, Data Partners provide metadata to represent Earth Science data holdings. Client Partners develop software applications to access the Earth Science metadata. To search metadata in ECHO, please refer to one of the current ECHO Clients.

News & Events

8/22/2007

- ECHO ETC telecons are held **Tuesdays @ 3:00PM EST**
- The next ECHO telecon will be held on **Tuesday, October 23rd @ 3:00PM EST.**
- Need to dial-in for this event? Contact ECHO Ops at echo@echo.nasa.gov

04/25/07

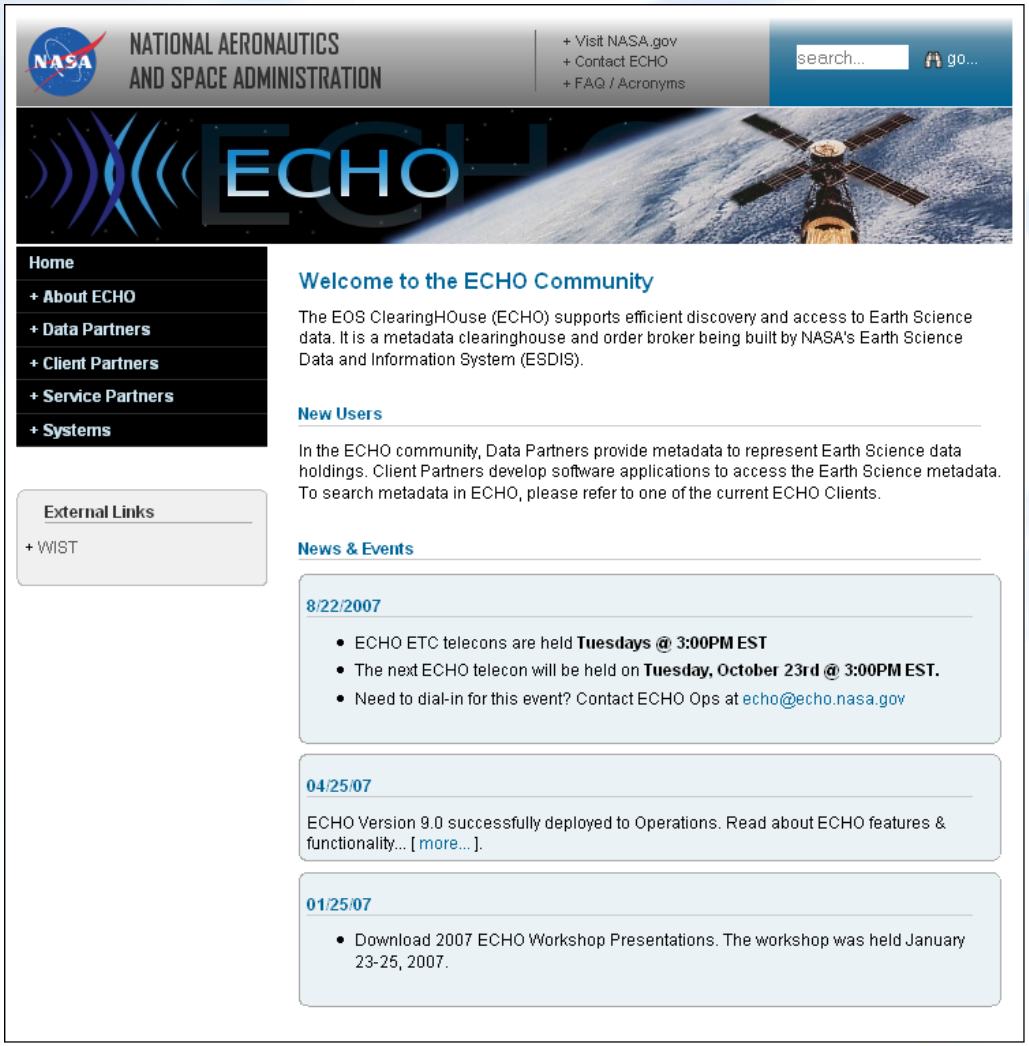
ECHO Version 9.0 successfully deployed to Operations. Read about ECHO features & functionality... [more...].

01/25/07

- Download 2007 ECHO Workshop Presentations. The workshop was held January 23-25, 2007.

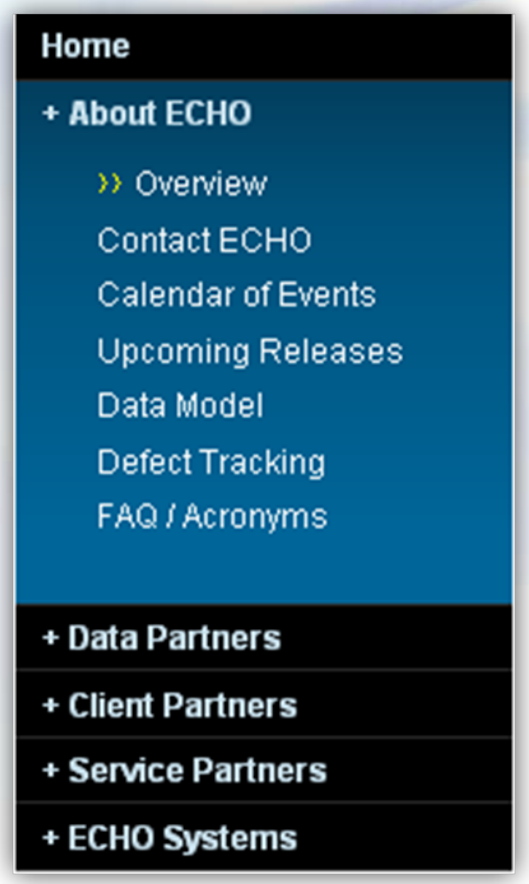
Main Page

- **Reorganized content**
  - Grouped by provider type
- **Quick links**
  - NASA Home Page
  - Contacting ECHO
  - FAQ/Acronyms
- **External Links**
  - WIST



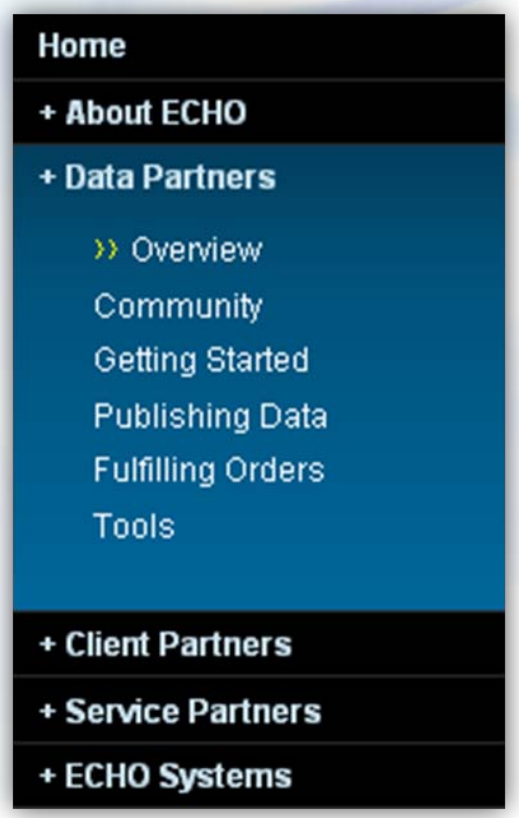
Content Overview

- **General Information**
  - Overview
  - Contact ECHO
  - Calendar of Events
  - Upcoming Releases
  - Data Model
  - Defect Tracking
  - FAQ/Acronyms



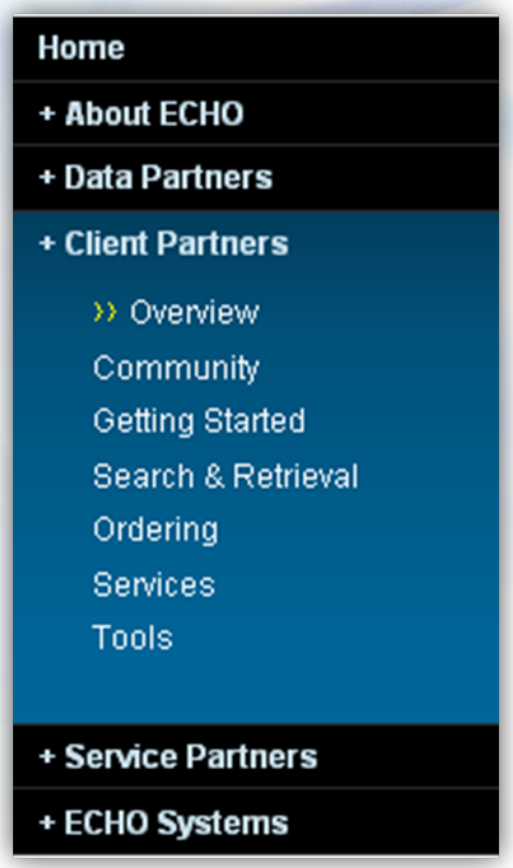
Content Overview

- **Data Partners**
  - Overview
  - Community
  - Getting Started
  - Publishing Data
  - Fulfilling Orders
  - Tools



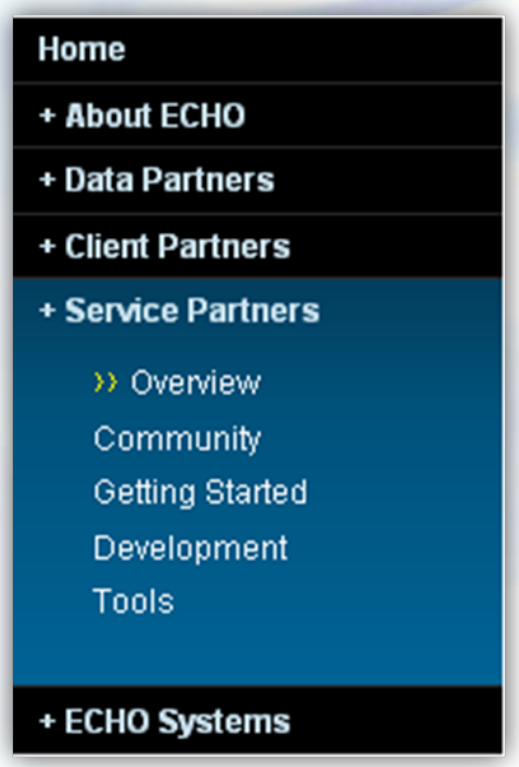
Content Overview

- **Client Partners**
  - Overview
  - Community
  - Getting Started
  - Search & Retrieval
  - Ordering
  - Services
  - Tools



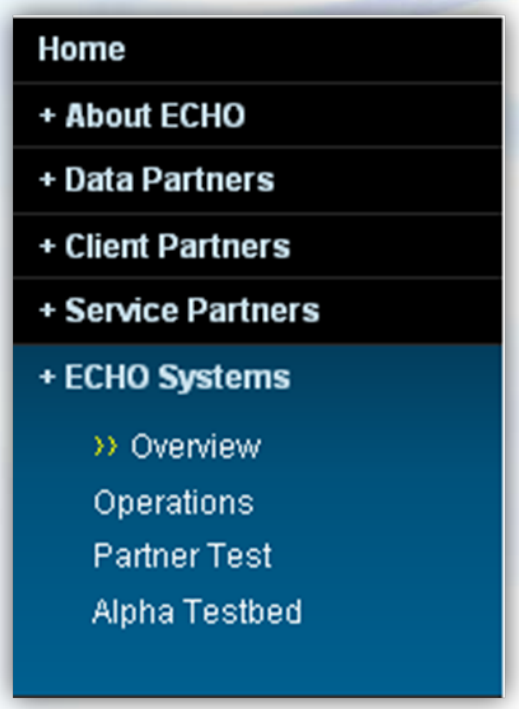
Content Overview

- **Service Partners**
  - Overview
  - Community
  - Getting Started
  - Development
  - Tools



Content Overview

- **ECHO Systems**
  - Overview
  - Operations
  - Partner Test
  - Alpha Testbed



Still Under Construction

- **Content**
  - Mostly taken from current website
  - Creating and updating content for new topic areas
  - Focusing on new and current data providers to better meet needs
- **Structure**
  - Searching and/or keywords may be removed
  - Calendar of events may be reworked
  - WIST link to be made more prominent

Reviews & Comments

- Available for your comments and suggestions!

http://www.echo.nasa.gov/echo-beta/index.htm

Questions?

Evolution for ECS DAACS

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Evolution for ECS DAACs

- **Search and order support moves from ECS to ECHO**
  - ECS Release 7.21 will remove V0 Gateway
  - ECS Release 7.21 will remove SDSRV code and database support for granule searches
  - EDG client cannot be used with Release 7.21
- **User registration support moves from ECS to ECHO**
  - ECS Release 7.21 will remove MSS User Profile Server and use of MSS database user profile tables
  - SMC User Profile database will be phased out

Evolution for VO Data Providers

- EDG / VO search and order moves to WIST / ECHO
- EDG usage is phased out
- EDG Valids server support ends
- SMC User Registration support ends

Data Centers in relation to EDG and ECHO

Data Center	Data System	EDG Provider	ECHO Data Partner
NSIDC	**ECS**	**yes**	**yes**
	V0	**yes**	
LPDAAC	**ECS**	**yes**	**yes**
	Landsat		**In progress**
	V0	**No longer**	
LaRC	**ECS**	**yes**	**yes**
	LaTIS (incl. V0)	**yes**	**In progress**
	ANGe		**In progress**
GDAAC	**S4PA**		**yes**
ASF	**V0**	**yes**	**yes**
ORNL	**V0**	**yes**	**yes**
GHRC	**V0**	**yes**	**In progress**
IRE RAS - CPSSI	**V0**	**yes**	**In progress**
JPL	**V0**	**yes**	
	P.O. DAAC		**yes**
LAADS			**yes**
SEDAC			**Yes**
ISA-MEIDA	**V0**	**yes**	**In progress**

Moving from EDG / VO to WIST / ECHO

- All Data Center data holdings must be maintained in ECHO and must be reconciled
- ECHO Client (WIST 10) and ECHO 10 must be fully operational
- Interface between ECHO and Data Center ordering system must be operational
  - EWOC for ECS Data Centers
- EMS must be able to capture search and order metrics from WIST/ ECHO
- End users must be migrated from EDG to WIST

Phased approach for user migration from EDG to WIST - overview

- **Advertise upcoming migration to user community**
- **Begin migration after ECHO 10 / WIST 10**
  - Better user experience (performance, features)
  - Avoids ECHO 9 / ECHO 10 user account transition (user type, study group)
- **Begin Data Center user migration after Data Center "certification" of its data holdings in ECHO**
- **Migrate users in phases**
- **Provide two grace periods for each migration phase**
- **Measure and tune ECHO and WIST performance after each phase**
- **Respond to usability feedback after each phase**

Phased approach for user migration from EDG to WIST – by Data Center

- **User Notification**
  - Notify all users at all EDG instances (including guest users); advertise dates for removal of valids by Data Center
- **Migration period (4-8 weeks)**
  - Self-service WIST account creation available via link from all EDG instances
- **Grace Period 1 (2-4 weeks):**
  - 7.20 in OPS (for ECS data centers)
  - Data Center valids available in all EDG instances
- **Grace Period 2 (2-4 weeks):**
  - 7.20 in OPS (for ECS data centers)
  - Data Center valids removed from all EDG instances
  - Restore Data Center valids at all EDG instances if WIST/ECHO problems are found
- **Install 7.21 in OPS after second grace period (ECS data centers)**
  - Fallback to EDG is not possible at this point

Phased approach for user migration from EDG to WIST - Disabling EDG instances

- **All EDG instances are disabled some time (TBD) after user migration activities have ended for all EDG data and all valids are removed**
  - Support for Valids Server ends at this time
  - Support for EDG user accounts at SMC ends at this time

User Profile and Accounts

- **Self-service tool to create WIST account**
  - Available via link from EDG home page
  - Automatically fills in EDG account information
  - User verifies/corrects existing account information and adds ECHO-specific information
  - User chooses password, using WIST/ECHO password rules
  - Tool will be available to end user community via link from all EDG instances, when migration period begins
- **Parallel user profiles at ECHO and at SMC**
  - After user creates WIST account
  - User is responsible for updating both accounts – no automatic synchronization
- **Permissions (ACLs) for SMC users must be translated for ECHO users**
  - Data Center works with ECHO Operations to define ACLs for WIST/ECHO users

Questions?

ECHO Operations Overview

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- General Information
- Mailing Lists
- Defect Tracking

General Information

- **ECHO Operations**
  - Email – echo@echo.nasa.gov
    - Seen by ECHO operations, development, and management
    - Preferred over phone
  - Phone – 240-542-1114
    - Weekdays - 08:00–19:00 EST

- **ECHO Technical Committee (ETC) Meetings**
  - All ECHO Partners (Data, Client, Service, & USWG) are invited to attend
  - Agenda and minutes are sent to the echo-all@ mailing list
  - When & Where?
    - Tuesdays @ 3:00pm ET
    - 1-877-973-2179, Passcode: 770291

Mailing Lists

- **ECHO Mailing Lists (…@echo.nasa.gov)**
  - Decommissioning …@killians.gsfc.nasa.gov domain
  - Distribution Lists
    - All ECHO Partners should be members
    - ECHO-All – Used by ECHO Team to send general ECHO announcements
    - ECHO-Status – Used by the ECHO Team to send system availability messages
  - Collaboration Lists
    - Membership based upon partner type
    - ECHO-Client – Used as a forum for client partners
    - ECHO-Data – Used as forum for data providers
    - ECHO-Service – Used as a forum for service providers
    - ECHO-Testbed – Used as a forum for Alpha Testbed participants
  - Notification Lists
    - ECHO-Ingest: Used for automated Ingest notifications from Data Partners

Defect Tracking (1/2)

- **TestTrack Pro**
  - Used to track potential issues and known bugs
  - Terminology
    - Trouble Ticket – An identified issue that requires further analysis
    - NCR – An issue which has been investigated and found to be a 'bug'
  - Two "Projects" are used to track issues
    - ECHO_TTs – Partners submitted Trouble Tickets
    - ECHO_Ops_NCRs – Known issues affecting the ECHO system
  - Membership
    - Email Name and Phone Number to ECHO Operations
  - Web Client
    - https://links.ecs.nasa.gov:20072/ttweb/login.htm
  - Additional Information
    - http://www.echo.nasa.gov/reference/reference_TTPro.shtml

Defect Tracking (1/2)

TT (Open)

- A Trouble Ticket is submitted by a user.

TT (Closed)

- ECHO Operations reviews and escalates TTs to NCRs weekly.
- The TT is marked as closed after escalation.

NCR (Open)

- ECHO team reviews current NCRs and assigns a priority weekly.
- If necessary, further investigation is done prior to making a decision.
- Top priority issues are assigned to a team member for fixing.
- Lower priority issues are deferred until a later date.

NCR (Fixed)

- After the NCR has been fixed by an ECHO team member, the NCR is marked as fixed.

NCR (Closed)

- The submitter is notified that the NCR has been fixed.
- The submitter closes the NCR if they are able to verify that the problem has been resolved.

Questions?

ECHO Systems Overview

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- Operational System
- Partner Test System
- Alpha Testbed System

Operational System (1/2)

- **Overview**
  - Managed by the ECHO Operations Team
  - Contains metadata for providers sending Operational data
    - One ECHO provider for each Operational data partner
    - Ongoing reconciliation is encouraged to ensure accurate holdings
  - System Availability
    - Monitored 24x7 / Supported 24x7
    - Not including Preventative Maintenance & Scheduled Release Updates
  - Questions & Comments – echo@echo.nasa.gov
- **Access**
  - API Docs – http://api.echo.nasa.gov/echo
  - WSDL – http://api.echo.nasa.gov/echo-wsdl/v10/<ServiceEndpoint>.wsdl
  - FTP – ingest.echo.nasa.gov
    - Username and password coordinate with ECHO Operations
  - WIST - http://wist.echo.nasa.gov/

Operational System (2/2)

- **Current Holdings (Friday 1/25/2008)**

Current as of: Fri Jan 25 13:15:14 EST 2008

Total Number Of Collections: 2941
Total Number Of Granules: 75004065
Total Number Of Browse Granules: 29717497

Provider Summary - To view Provider details, click on a Provider ID

Provider ID	Collections	Granules	Browse	Online
ASF	14	2701163	0	0
GSFCECS	0	0	0	0
GSFCS4PA	210	6018316	2116106	6069300
JPL	36	165968	0	165968
LAADS	38	16186207	6223308	11888490
LARC	647	13856385	3814139	653525
LARC_ASDC	762	3000935	0	0
LPDAAC_ECS	176	23966831	10195180	1324333
NSIDC_ECS	150	8870523	7248124	3520875
ORNL_DAAC	755	115835	0	115835
SEDAC	120	0	0	0
SSC_SDP	27	87439	86189	87437
USGS_EROS	6	34463	34451	34463

Partner Test (1/2)

- **Overview**
  - Managed by the ECHO Operations Team
  - Contains metadata from providers used for testing
    - Multiple ECHO providers may exist for a single data partner
    - Limited ingest capabilities due to storage and hardware
  - System Availability
    - Monitored 24x7 / Supported during normal business working hours
    - Not including Preventative Maintenance & Scheduled Release Updates
  - Questions & Comments – echo@echo.nasa.gov
- **Access**
  - API Docs – http://api-test.echo.nasa.gov/echo
  - WSDL – http://api-test.echo.nasa.gov/echo-wsdl/v10/<ServiceEndpoint>.wsdl
  - FTP – ingest-test.echo.nasa.gov
    - Username and password coordinate with ECHO Operations
  - WIST - http://wist.echo.nasa.gov/wist-bin/api-test/nph-ims.cgi/

Partner Test (2/2)

- **Current Holdings (Friday 1/25/2008)**

Current as of: Fri Jan 25 10:21:54 EST 2008

Total Number Of Collections: 1833
Total Number Of Granules: 559586
Total Number Of Browse Granules: 25976

Provider Summary - To view Provider details, click on a Provider ID

Provider ID	Collections	Granules	Browse	Online
EMD_TS2	2	210	124	0
GSFCS4PA	171	122679	7237	122804
LAADS	50	4994	421	3632
LANDSAT	6	2574	2572	2574
LARC_ASDC	28	40599	415	0
LARC_TS1	534	255081	7312	3133
LPDAAC_TS1	122	5053	2247	19
LPDAAC_TS2	4	651	607	0
NSIDC_TS1	162	11910	5041	0
ORNL_TS1	754	115835	0	115835

Alpha Testbed (1/2)

- **Overview**
  - Managed by the ECHO Development Team
  - Release Version
    - Contains current development release of next major ECHO Version
    - Subject to change with limited notice
  - Contains metadata from providers used for testing
    - Multiple ECHO providers may exist for a single data partner
    - Limited ingest capabilities due to storage and hardware
    - Holdings may be dropped when a new version is released
  - Access requires signed Memorandum of Understanding
  - System Availability
    - Coordinated by ECHO Development Team
  - Questions & Comments – testbedops@echo.nasa.gov

Alpha Testbed (2/2)

- **Access**
  - More Information - http://www.echo.nasa.gov/development/devel_testbed.shtml
  - API Docs – http://testbed.echo.nasa.gov/echo
  - WSDL – http://testbed.echo.nasa.gov/echo-wsdl/v10/<ServiceEndpoint>.wsdl
  - FTP – Coordinate with ECHO Development
  - WIST - http://wist.echo.nasa.gov/wist-bin/testbed/nph-ims.cgi/

Questions ?

ECHO 10.0 Release

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- ECHO 10.0 Release Timeline
- End-To-End Test Components
- End-To-End Testing
- ECHO 10.0 Switchover
- Questions

ECHO 10.0 Release Timeline (1/2)

Performance Testing

- ECHO Workload Specification Testing

End-To-End Testing

- 02/21/2008 - 03/07/2008
- Partner verification of ECHO 10.0 system

10.0 Migration

- 03/10/2008 - 03/26/2008
- Parallel ingest during migration period

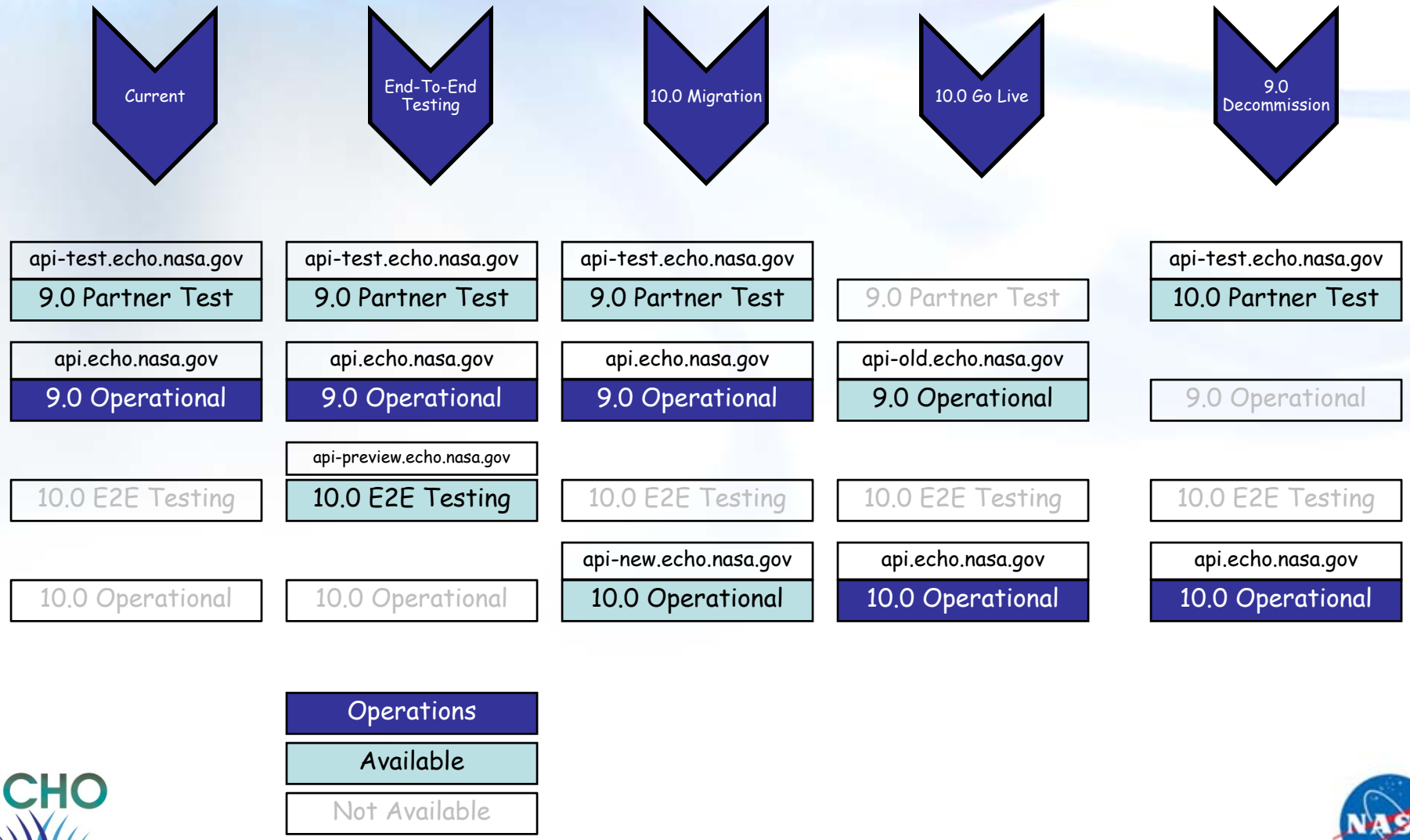
10.0 Go Live

- 03/26/2008
- ECHO 9.0 Ingest Shutdown
- ECHO 9.0 API renamed to api-old.echo.nasa.gov
- ECHO 10.0 API renamed to api.echo.nasa.gov

9.0 Decommission

- 04/2008
- ECHO 9.0 API Shutdown
- Migrate Partner Test to ECHO 10.0

ECHO 10.0 Release Timeline (2/2)



End-To-End Test Components

- **Codebase**
  - ECHO 10.0 API
    - https://api-preview.echo.nasa.gov
    - Backwards compatible to 9.0 API
  - WIST 10.0
    - Including support for Dynamic Forms
- **Data Holdings**
  - Migrated copy of the Operational system database
    - ~1 week old when testing begins
  - Browse holdings not copied from Operational system
  - Ingested browse available through http access (sirius.echo.nasa.gov/…)
- **Test Tools**
  - EIAT available to monitor Ingest
  - SOAPScope available for API testing

End-To-End Testing (1/2)

- **Test Coverage**
  - Ingest
    - Test all metadata actions (e.g. insert) for all metadata types (e.g. collection)
  - Query
    - Verify searches through migrated data are successful
    - Verify newly ingested data is searchable
  - Ordering
    - Verify order fulfillment works with provider implementation
    - Verify Online URLs are valid for providers not supporting ordering
- **Test Dependencies**
  - Available testing resources (human & mode utilization) at provider
  - Test data (ingest, ordering, queries) plan & exit criteria
  - Firewall configurations (connecting to new system)

End-To-End Testing (2/2)

- **Test Scheduling**
  - ECHO Operations will work with each provider to determine schedule
  - All testing activities should be coordinated through ECHO OPS
    - Reduce complications in sharing the system between providers
  - The sooner, the better!
- **Test Completion**
  - ECHO acceptance testing has been folded into performance & functional testing
  - ECHO will incorporate feedback from providers to make the determination regarding going live
  - All remaining issues will be logged as NCRs in TestTrack Pro

ECHO 10.0 Switchover

- **Final Migration**
  - ECHO 10.0 System created (api-new)
  - Verify firewall configurations
  - Provider DB holdings migrated from 9.0 to 10.0 system
    - One provider at a time
    - Parallel ingest will be performed after provider's migration
    - Ingest metadata should be sent to the current 9.0 endpoint
- **"Go Live"**
  - ECHO 9.0 API renamed to 'api-old.echo.nasa.gov'
  - ECHO 10.0 API renamed to 'api.echo.nasa.gov'
  - ECHO 9.0 Ingest shutdown
- **ECHO 9.0 Shutdown**
  - ECHO 9.0 System (api-old) shutdown, archived, and decommissioned

Questions?

The AQUA ECHO Client: Automated Query & Access Services

AQUA Personnel:
Brian Wilson and Zhangfan Xing
Jet Propulsion Laboratory

Enabling decade-scale, repeatable, multi-instrument Climate Science using ECHO query & order entry.

Two Simple Goals

- Machine-callable, simple SOAP/REST service layer for data query, order, and access
  - Hide complexity of ECHO SOAP services and provider constraints behind simple services that just work
  - Automatically sequence the query & order of years of data, with no human in the loop
  - Asynchronous event notification when data orders are fulfilled
- Dynamic Client GUI in the browser (AJAX-style)
  - Strictly layered on top of AQUA's SOAP/REST services
  - Free-text metadata search to discover ECHO collections
  - Pick one or more collections
  - Query for granules that match a time/space region, or other metadata constraints
  - Get URL's or order the data

Use Cases

- Automate the query & order of one year of MISR MIL2ASAE_L2 granules, ftp pull the data (for borgs)
  - Time/space query for granule ID's (single query works)
  - Auto-divide large order into smaller orders
  - Auto-process fulfillment emails from the providers to extract URL's (email also forwarded to user)
  - Notify "user" (machine client) when a new batch of granule URL's are available via an event callback
- Exploring the ECHO data collections (for humans)
  - Free-text search of metadata to discover a list of collections
  - Select a collection and read more about it
  - Specify a time/space region using time slider and Google map
  - Query for matching granules
  - Examine metadata for first 100 granules (might include URL's)
  - Retrieve metadata for next 100 granules if desired
  - Grab URL's for all granules, or order all granules

AQUA Service Layers (I)

- Java-based Layer-1 Services (wrap ECHO Services)
  - Login(username, password), Logout(sessionToken)
  - ListProviders, ListCollections
  - **GeoRegionQuery**(token, dataCenterId, dataSetId, startTime, endTime, latLonRectangle, iteratorSize, cursor)
  - **RetrieveQueryResults**(token, queryGuid, iteratorSize, cursor)
  - MetadataQuery (add more constraints), RawQuery (raw IIMSAQL)
  - GetOrderInformation, **OrderItems**, OrderStatus
- Layer-2 Query & Order Services
  - Similar to Layer-1 but only simple string & integer inputs for interoperability (no complex types)
  - Implemented in python
  - Callable via REST or SOAP or python

AQUA Service Layers (II)

- Layer-2 “Generics” Services
  - Text search of metadata to discover collections
  - Extracted metadata from ECHO, will add GCMD
  - Tried to do lookup using generic names for physical variables, but taxonomies lacking (coarse granularity, incomplete)
- Layer-3 “Async Sequencing” for Query/Order Services
  - Huge Query: Divide into time segments (not usually needed)
  - Huge Order: Divide into batches
  - Retry on failure (ECHO, provider, or user are “down”)
  - Same exact call interfaces as Layer-2
  - Complexity hidden behind the scenes
  - Event Notification when results returned
  - Freeze & resume workflows (using SciFlo)
  - Also polling services: GetStatus(requestID), GetResults

Software Architecture (mixed)

- Layer-1 SOAP Services (wrapping ECHO)
  - Java Tomcat server
  - Apache Axis2 SOAP support
  - For move to ECHO v10, only have to change this layer
  - User information in mysql database
- Layer-2 Query & Order Services
  - Python, SOAPpy module
  - Apache web server exposes SOAP & REST services
- Layer-2 “Generic Search” Services
  - Solr/lucene free-text search engine (open source)
  - Entire interface is REST-based (populate metadata, search)
  - Apache web server
- Layer-3 “Async Sequencing” Services
  - Python, SOAP/REST, Apache web server
  - Pending events/actions kept in persistent dictionary, Sleepycat DBM file-based store (could be relational db)

Software Architecture (more)

- Automated provider email processor
  - Can process many email formats using regular expressions
  - Python (of course!)
  - Listener is twisted smtp server (open source)
  - Currently aqua@sciflo.jpl.nasa.gov (please, no spam)
  - Extracts URL's, and forwards email to user

Performance Testing

- Time/Space Queries in ECHO
  - Queries for various global and tropical regions. Average speed is in the range from 1 to 10 records/sec.
  - Queries segmented in time (weeks or months) generally show better robustness, but not necessarily better performance.
  - Year-long and mission-long queries work, but time required to retrieve all of granule metadata adds up.
  - Queries near polar region may not work for rectangular box (Oracle geodetic index issue).
- Large Order Entries
  - Some providers seem to respond better than others.
  - Large (unreasonable?) orders can trigger human inquiry.
  - Possibly need machine-to-machine “warning” mechanism; e.g., I’m about to order year 2003 one week at a time..

Performance Testing (II)

- Solr/lucene metadata search
  - Solr/lucene free-text search is fast!
  - Even looked at doing space/time search in lucene
  - Need to optimize indices and hit ranking more

- Populate solar/lucene metadata (harvest text corpi)
  - Harvesting collection (& some granule) metadata from ECHO
  - Issue: Repeating harvest takes some time and loads ECHO, so it won't be done often.
  - Plan to add text corpus from GCMD DIF documents

Sequencing Engine

- Email auto-processor
  - Python twisted smtp server receives emails with aqua address
  - Parse emails for status and URL's
  - Parsed emails generate "events" to wake up workflows
  - Non-parseable emails forwarded to human operator for action
- "Bulletproof" Event & Task Store on disk
  - Contains eventIds we are waiting for, callback actions, & frozen workflow documents.
  - Persistent BSD DBM database (pluggable, could be relational db)
  - Database snapshots and replication
  - Auto-recovery if computer dies
- Declarative time segmentation (SciFlo iterators)

```
<timeRangeIterator>
   <start type="sf:ISODateTime">2003-01-03 00:00:00</start>
   <end>2004-01-01 00:00:00</end>
   <delta>1 week</delta>
</timeRangeIterator>
```

Asynchronous Event Notification

- Internal to AQUA and SciFlo
  - Throw SOAP Faults to transition from sync. to asynchronous
  - Fault contains unique event ID for later callback
  - Using long HTTP timeouts for queries, but orders are async.
  - OrderItems returns orderIDs, use to poll OrderStatus
- External Users
  - Can run simple (python) client to listen for event callbacks
  - For SciFlo users, callback resumes execution of workflow doc.
  - Other users can poll web page or SOAP service to check status and pull returned URL's
- Simple XML event format (container for "any" payload)

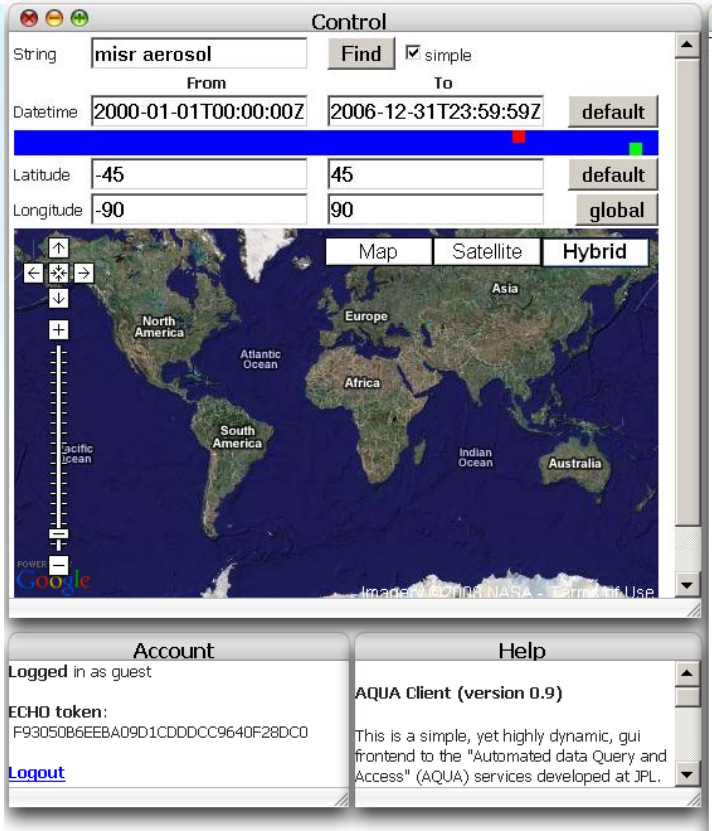
```
<event id="UniqueId" type="urls" action="resumeWorkflow">
   <urls>
      <url>http:// …<url>
      <url>http:// …<url>
   </urls>
</event>
```

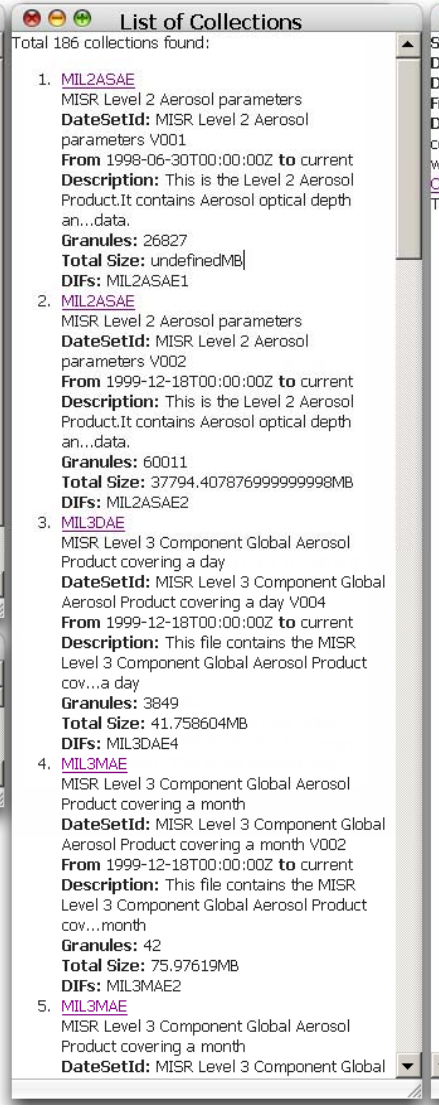
Generic Variable Names

- Translate "generic" physical variable names to dataset-specific variable names (names inside HDF files)
  - Wanted: "atmospheric temperature" → TAirStd for AIRS
  - User-specified variable bundles: parameter subset TAirStd with related variables & appropriate quality flags
- Hard Problem
  - Whose generic names? -- GCMD, CF-1.0, etc.
  - Instrument experts must populate translation table
  - Such a table would be a very useful small "expert system"
- Taxonomies Lacking (too early, need ontologies)
  - GCMD taxonomy doesn't contain fine-grained variable names
  - ECHO dataset ObservedParameters field very coarse info.
  - Physical variable names in CF-1.0 standard are a flat list, not a hierarchy by science domain or part of a science ontology
  - Need ontologies for: science domains, physical variables, dataset classification, service/geo-transformation classification

AQUA Client GUI (examples)

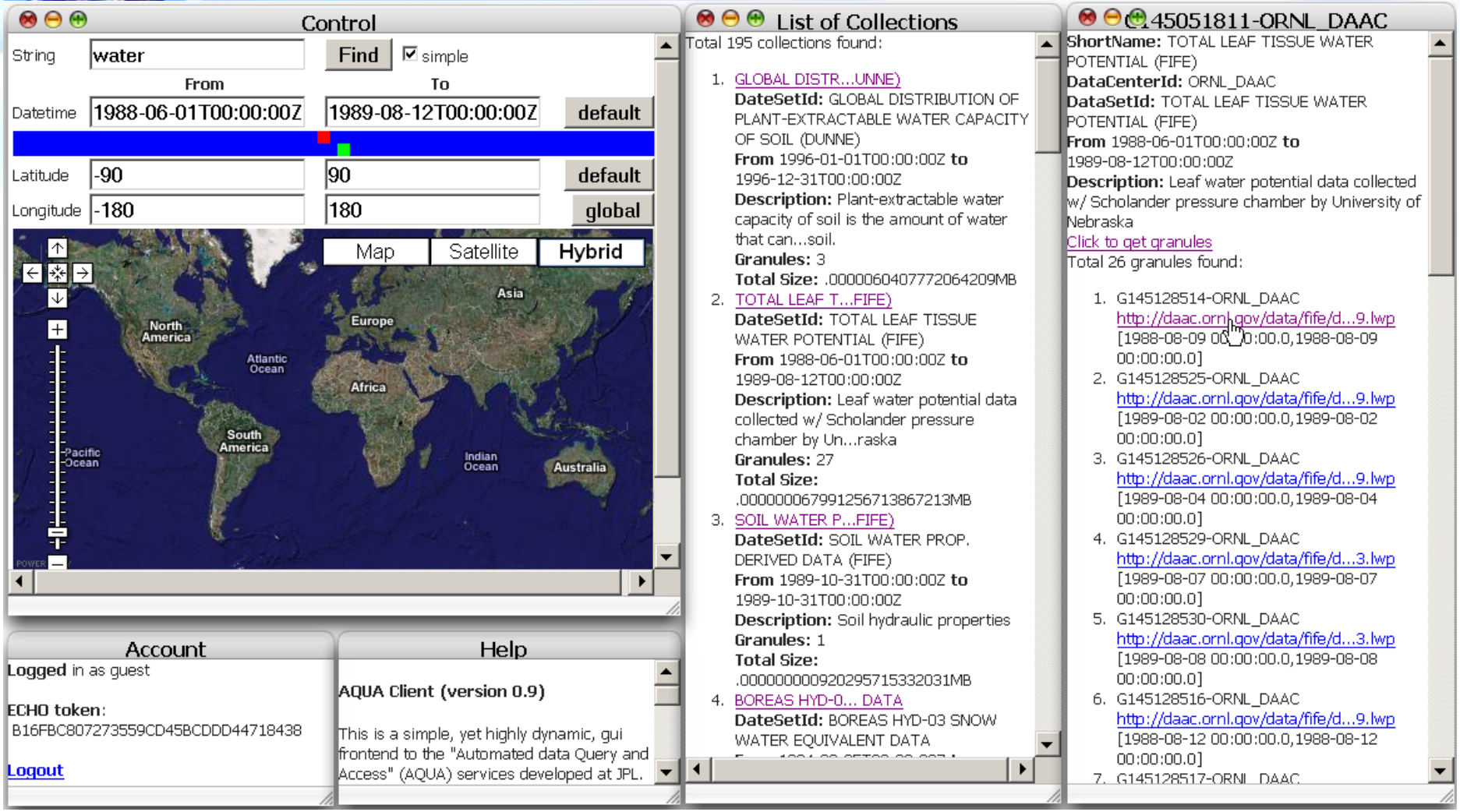
Live AJAX GUI: Time Slider, Google Maps for space selection & bbox display, Query & Order, Live-Updating Collection & Granule Metadata





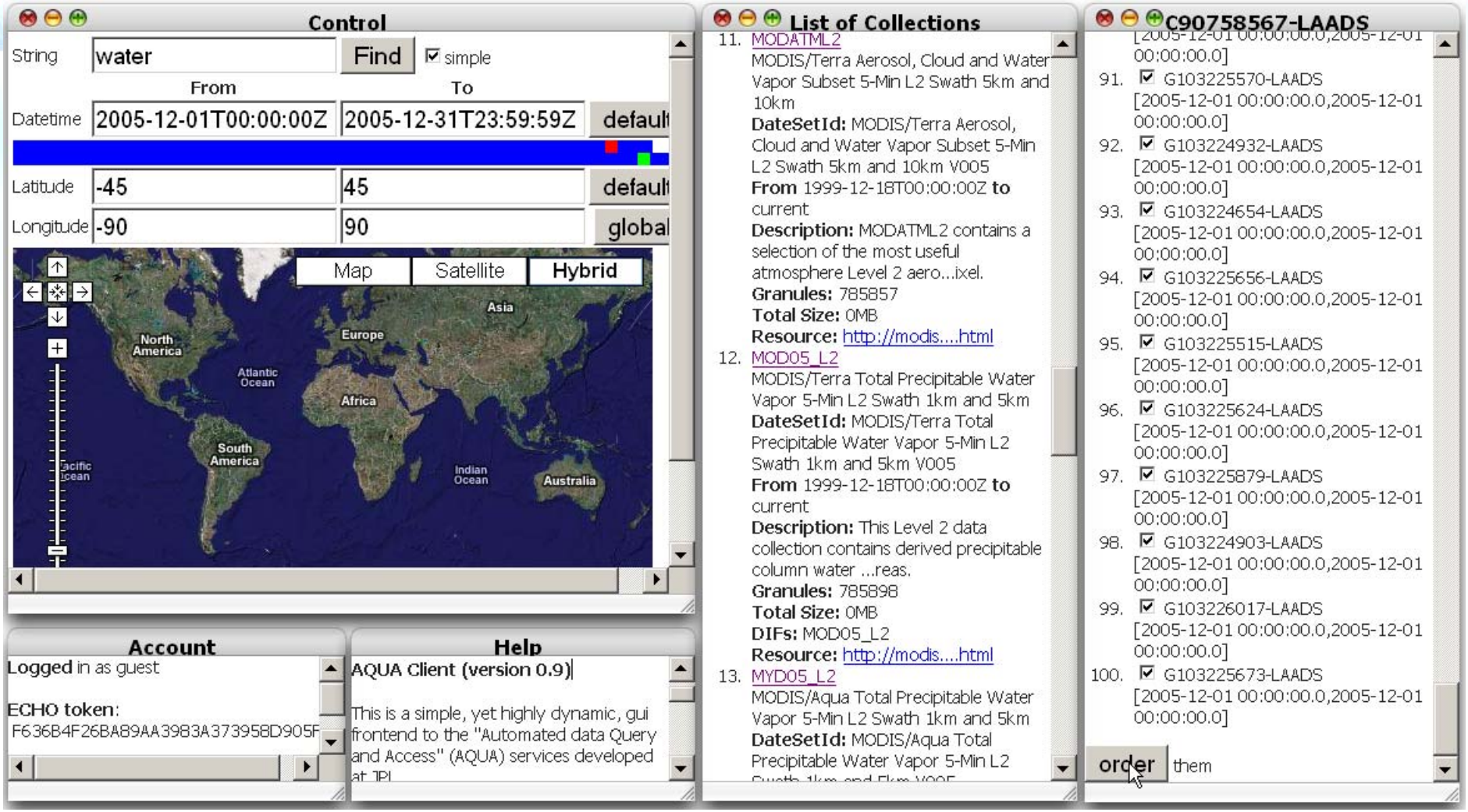
Sequence: Keyword search for "misr aerosol", Select MIL2ASAE Collection (#2) from list, Granule search yields 58,000 granules, Can access first 100 granules using URL's, Fetch metadata for next 100 granules, etc.

AQUA Client GUI (examples)



Sequence: Keyword search on "water", Select FIFE Collection (#2) from list, Time slider updated with data span, Granule search yields 26 hits with URL's.

AQUA Client GUI (examples)



Sequence: Keyword search on "water",
Select MODIS/Terra L2 dataset MOD05_L2 (#12) from list of 195 Collections,
Granule search for half-globe & 12/2005 yields 8,929 hits, Order granules.

Tantalizing Client Demo here:

- *GUI Client*
- *Automated query/order script*

Extensions / Issues (I)

- Performance of Regional Queries
  - Small lat/lon rectangles near poles are slow (or fail)
  - Should we disallow such queries?
  - Otherwise, performance of time-range queries good
- Metadata for Collection Discovery
  - Will populate GCMD text corpus
  - Must relate ECHO dataset classification to GCMD taxonomy
  - Q: What other text corpuses should be added?
- Population of URL's by providers into ECHO
  - Percentage of datasets with non-stale URL's should be higher
  - Not optimal to "order" data that is already on-line in DataPool
  - Otherwise have to support granuleId to URL translation by crawling Provider's FTP sites (SciFlo capability that could be added)

Extensions / Issues (II)

- Effect of Automated Orders on Provider Ops.
  - AQUA machine client works night & day, 24/7
  - Many orders can be submitted in parallel, or next order submitted as soon as previous order is fulfilled
  - Providers used to human behaviors
  - Machine ordering changes resource allocation problem!
  - Poll providers: What behavior do they want?
- Transitioning Client to Full Operations
  - Will be operated at JPL
  - Should also be operated at additional sites, like ECHO and ??
  - “Blob of state” is intentionally small (user database, pending events/actions)
  - Software bundle is not trivial (Java codes, tomcat, solr/lucene, python codes, twisted, Sleepycat DBM)

Status and Testing

- AQUA Client is currently beta, v0.8
- Automated SOAP Services
  - Testing using ECHO's "fake" provider capability, but populated with only small number of datasets
  - Issue: How to scale up machine testing without surprising ECHO and providers
  - Need beta testers or scenarios: Submit a known large order to a cooperating provider by using AQUA
- AJAX GUI Client
  - Still finishing "My Orders" capability
  - Need feedback from usability testers
  - GUI layout & behavior can be changed to respond to feedback
- Operational AQUA Client v1.0 should be publicly available in March 2008
  - Finalize GUI, requests?, robustness, documentation

Summary

- Two Clients: One for Machines and one for Humans
  - Automated, machine-callable REST/SOAP Services for collection discovery, data query, and data order
  - Dynamic, exploration GUI in the browser for humans
- Highlights
  - Automated orders make graduate student's lives better
  - GUI Client provides an immediate, responsive view of all of ECHO's holdings
  - Large ECHO queries usually just work
- Challenges
  - Query performance: GUI wait times sometimes irritating
  - Automation behavior: Machines are demanding
  - Name translation: Dataset & variable-level metadata lacking
- Let's start banging on those providers!

WECHO: A Water and Energy Cycle EOS Clearing House Client

NASA-ROSES 2006 A.19: Advancing Collaborative Connections for Earth System Science

P. Houser and C. Larko

Center for Research on Environment and Water

CREW Center for Research on Environment and Water

GEORGE MASON UNIVERSITY

Water Cycle Research Making a Difference

http://crew.iges.org

The Water and Energy Cycle

Water in the climate system functions on all time scales: From hours to centuries

The Energy and Water Cycles are *tightly intertwined* – Solar radiation drives and feedbacks with the water cycle, and energy is transferred through water movement and phase change.

Importance of global water and energy cycling

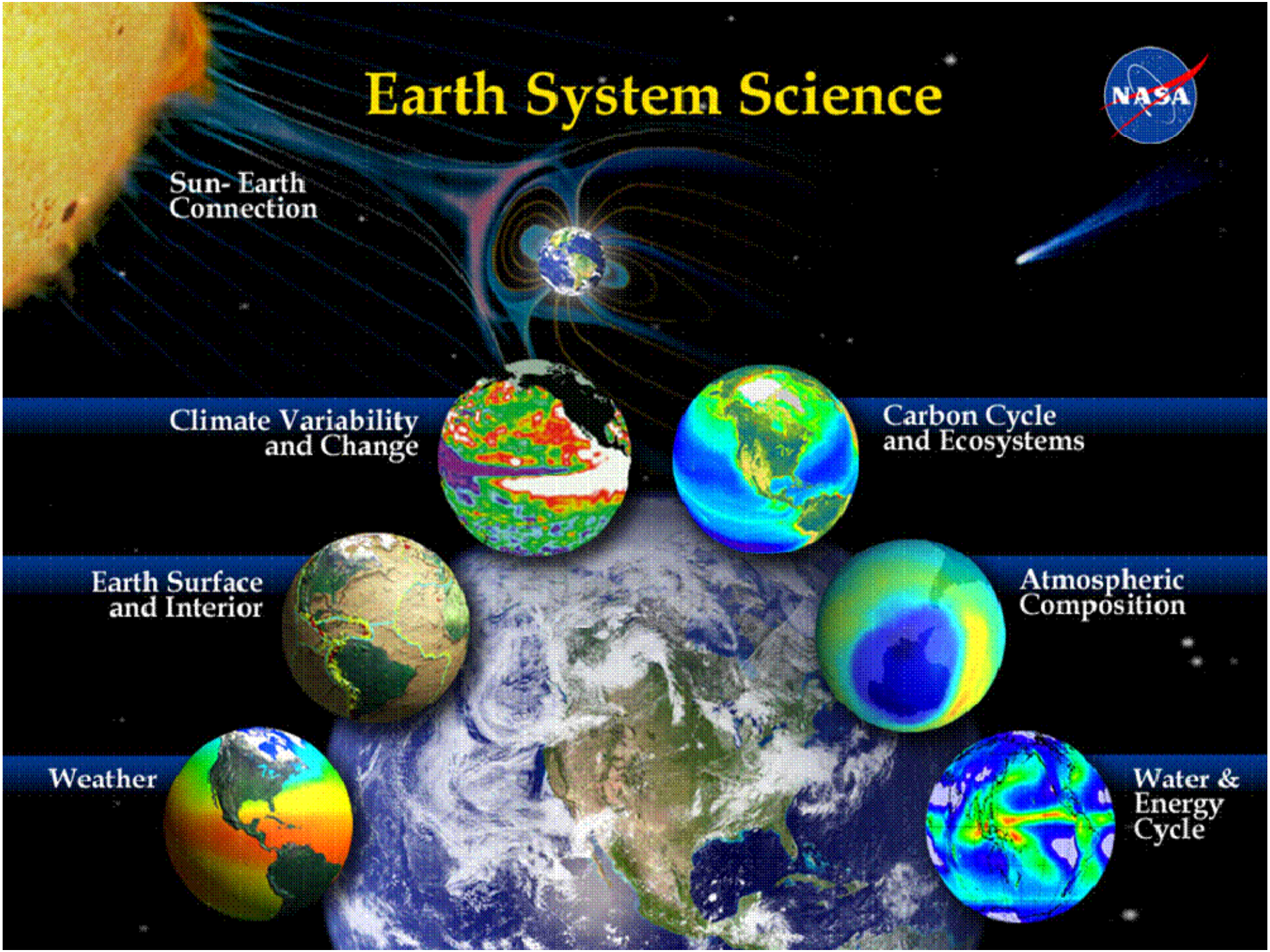
1. *Water exists in all three phases in the climate system and the phase transitions are a significant factor in the regulation of the global and regional energy balances*

2. *Water vapor in the atmosphere is the principal greenhouse gas and clouds at various levels and composition in the atmosphere represent both positive and negative feedback in climate system response*

3. *Water is the ultimate solvent and global biogeochemical and element cycles are mediated by the dynamics of the water cycle*

4. *Water is the element of the Earth system that most directly impacts and constraint human society and its well-being.*

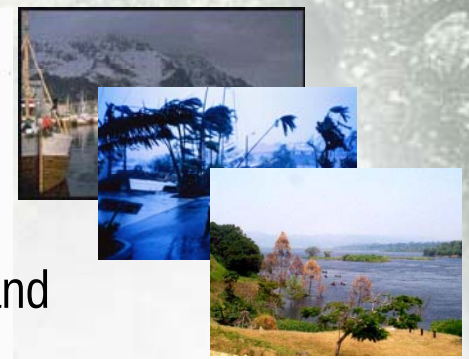
CREW Center for Research on Environment and Water


Earth System Science
NASA
Sun- Earth Connection
Climate Variability and Change
Carbon Cycle and Ecosystems
Earth Surface and Interior
Atmospheric Composition
Weather
Water & Energy Cycle

Why study the water and energy cycle?...

Variations in greenhouse gases, aerosols, and solar activity force changes in climate…

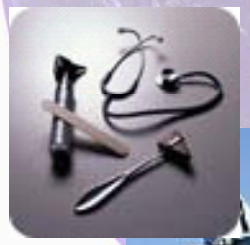
…but, consequences of climate change are realized through the water cycle.



Thus, we must *characterize*, *understand*, and *predict* *variations in the global water cycle.*

Water and Energy is linked to all 12 Science Application Themes.

Carbon Management



Public Health

Energy Forecasting

Aviation Safety

Water Management

Agricultural Competitiveness

Homeland Security

Invasive Species

Coastal Management

Ecological Forecasting

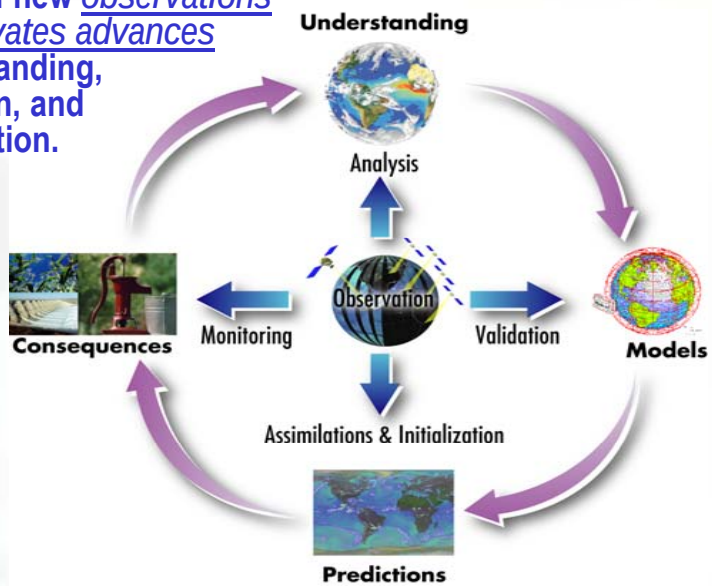
Disaster Preparedness

Air Quality

CREW Center for Research on Environment and Water

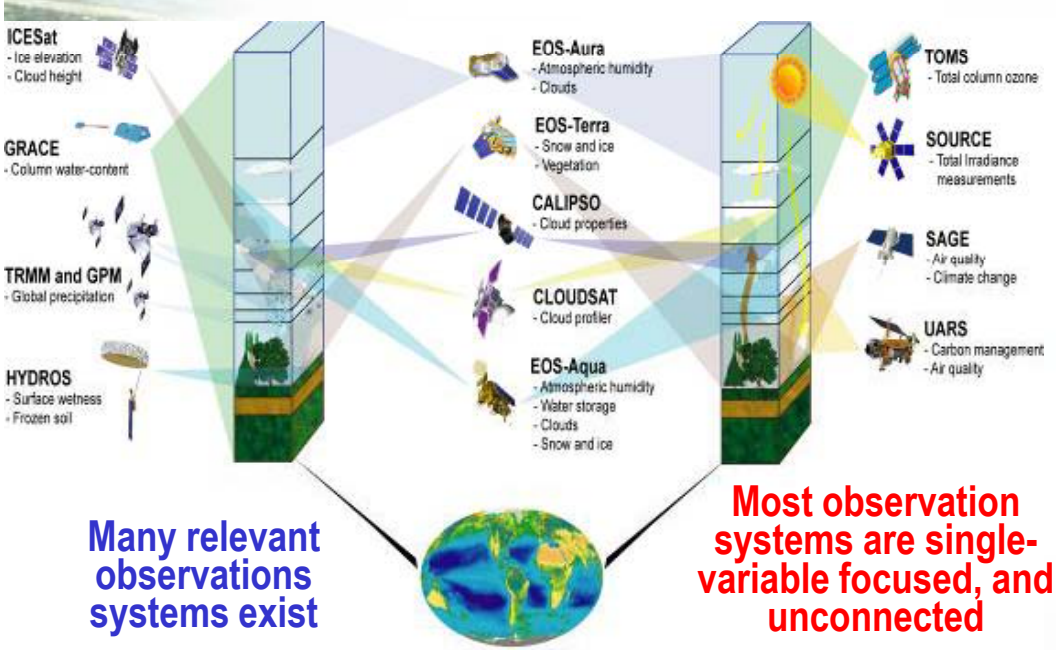
NASA WEC Observation Capabilities

The availability of new *observations strongly motivates advances* in understanding, prediction, and application.



Input - Output = Storage Change

Transport + Evaporation - Precipitation – Runoff - P = ΔLand Storage + ΔWater Vapor



Many relevant observations systems exist

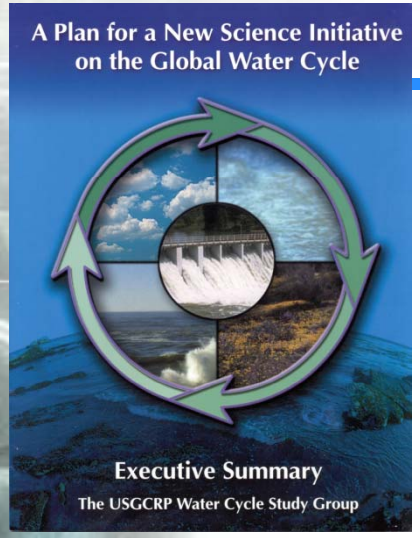
Most observation systems are single-variable focused, and unconnected

We must define and develop an integrated user-focused water observation system that can not only detect climate trends but also local variation of extremes

We must preserve critical *in-situ* benchmark observations that enable us to detect trends & extremes.

Variable ↓ Sphere →	Ocean	Land	Atmosphere
Internal or State Variable	sea level/surface topography (I/S) surface salinity (I/S) subsurface salinity structure (I) upper ocean currents (I/S) mid- and deep-ocean currents (I) sea ice (I/S) wave characteristics (I/S) sea surface temperature (I/S) subsurface thermal structure (I)	topography/elevation (I/S) land cover characteristics (I/S) permafrost (I) water runoff (I/S) snow/ice cover (I/S) glacier ice (I/S) subsurface moisture (I/S) surface temperature (I/S) subsurface temperature (I/S)	Wind profile (I/S) pressure profile (I) water vapor profile (I/S) precipitation (I/S) clouds (I/S) liquid water content (I/S) air temperature profile (I/S)
Forcing or Feedback Variable	ocean surface wind & stress (I/S) surface air humidity (I/S) precipitation (I/S) fresh water flux (I/S) sublimation & evaporation (I/S) geothermal heat flux (I) incoming SW radiation (I/S) incoming LW radiation (I/S) surface air temperature (I/S)	albedo (I/S) land use (I/S) surface winds (I) surface humidity (I/S) precipitation (I/S) sublimation & evapotranspiration (I/S) incoming SW radiation (I/S) incoming LW radiation (I/S) sensible heat flux (I/S)	surface topography (I/S) land surface vegetation (I/S) snow/ice cover (I/S) surface soil moisture (I/S) evapotranspiration (I/S) sea surface temperature (I/S) surface soil temperature (I/S) surface radiation budget (I/S) solar irradiance (S)

BLUE=Water Cycle Variable; RED=Energy Cycle Variable; BLACK=Boundary condition



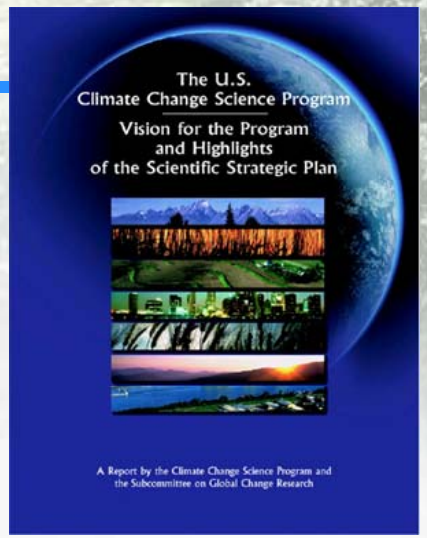
NASA ENERGY AND WATER CYCLE STUDY

NEWS

What are the causes of water cycle variations?

Are variations in the global and regional water cycle predictable?

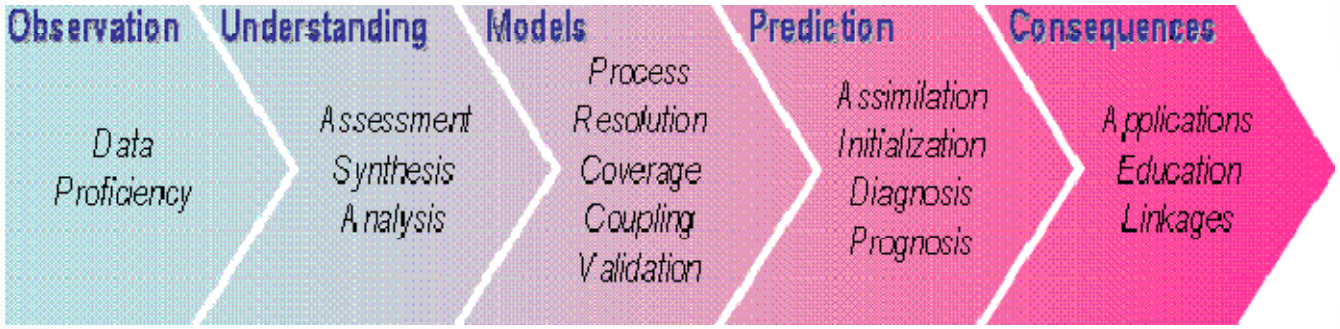
How are water and nutrient cycles linked?



NEWS Integrated Water and Energy Cycle Research Challenge:

Document and enable improved, observationally-based, predictions of water and energy cycle consequences of Earth system variability and change.

The NEWS challenge is **global** in scale and requires the integration of NASA **system components** to **make decisive progress toward the NEWS challenge** in an **end-to-end program**



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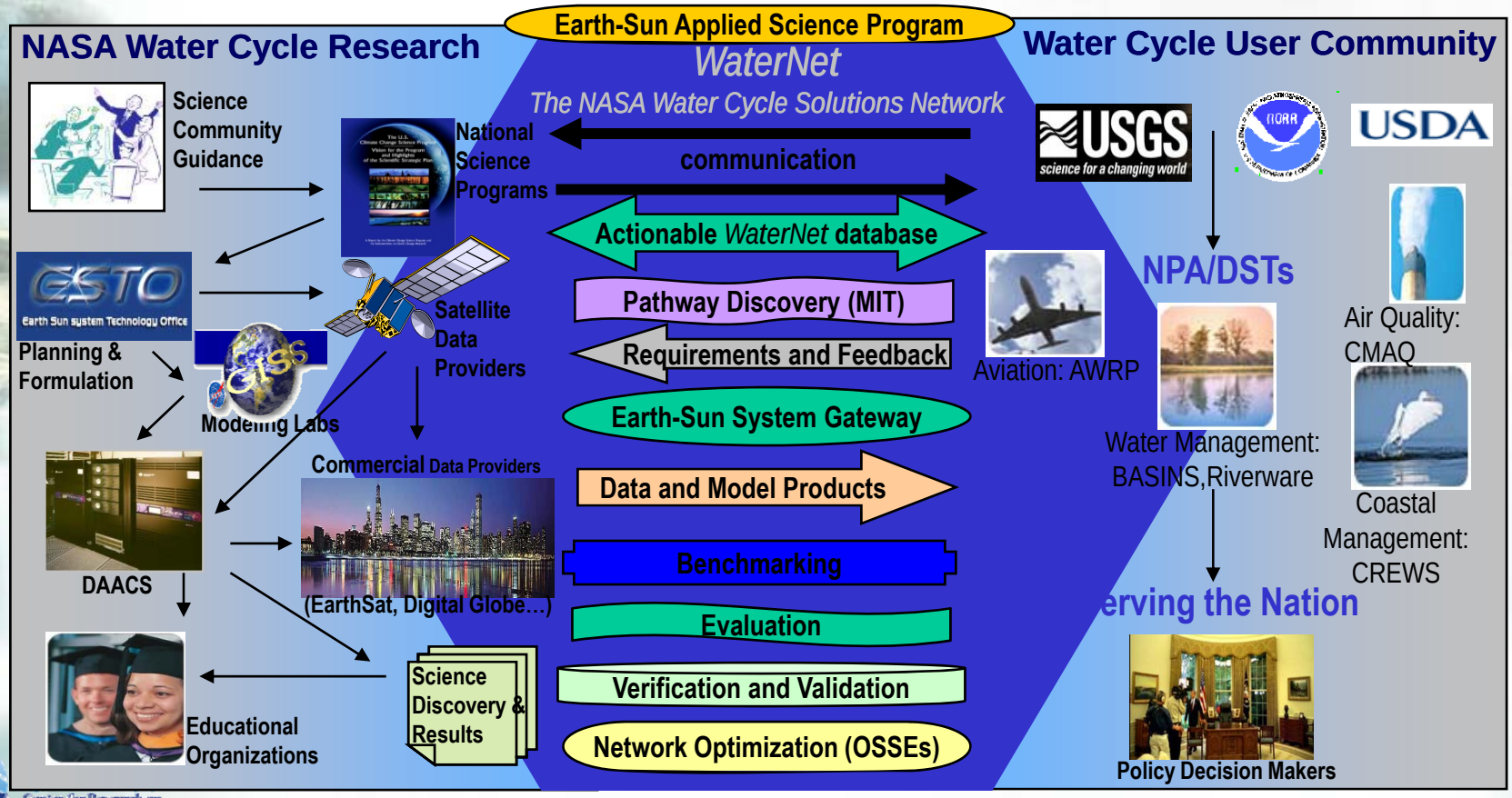
WaterNet: Concept

Improve and optimize the sustained ability of water cycle researchers, stakeholders, organizations and networks to interact, identify, harness, and extend NASA research results to augment decision support tools.

1. *Evolve a network of partners:* identify and analyze partner organizations to define collaboration pathways.
2. *Routinely identify, prioritize, mine and communicate relevant research products and results.*
3. *Optimize water cycle partner access* to research results and products to create a self-sustaining network.
4. *Analyze and document* the network effectiveness through metrics, resource estimates and documentation.
5. *Education and outreach* is important to help society understand and use the research in every-day application.



CREW/NEWS Data Resources

CREW Data Services:

OpenDAP/GDS Server: http://crew.iges.org:9090

FTP Server: ftp://crew.iges.org

Real-Time WaterCycle Data Viewer:http://crew.iges.org/climatedata

Future services: interactive WECHO viewer, WMS, etc.

Data being served: ~18tb → ~50tb soon → 200tb future

1AFWA_3hr_0.5, AGRMET, CLIMATE.DATA, CMAP, CMORPH, CPC4kmIR, CloudSat, EDAS3, ETA3, ETA6, GDAS, GEOS5, GLDAS, GPCP.v2, GPI, GSSTF2, HDISC, HOAPS2, HYDROS, ISCCP_D2, LIS.GSFC, LIS4.0.2, MODIS_1km, MODIS_NPP, MODIS_SNOW, NAM, NCEPprecip, NCEPstageIIgag, NCEPstageIV, NDAS, NEWS, NLDAS, NLDAS.tempest, NRL, NVAP, PERSIANN, PINKER.PAR, PINKER.STP, PINKER.SW, PINKER.reprocess, PugetSound, RUC, Saprecip, SCRIPTS, SFCMAP, SGP_ARM, TRMM, Usprecip,, ldas_precip_valid, mid_atlantic

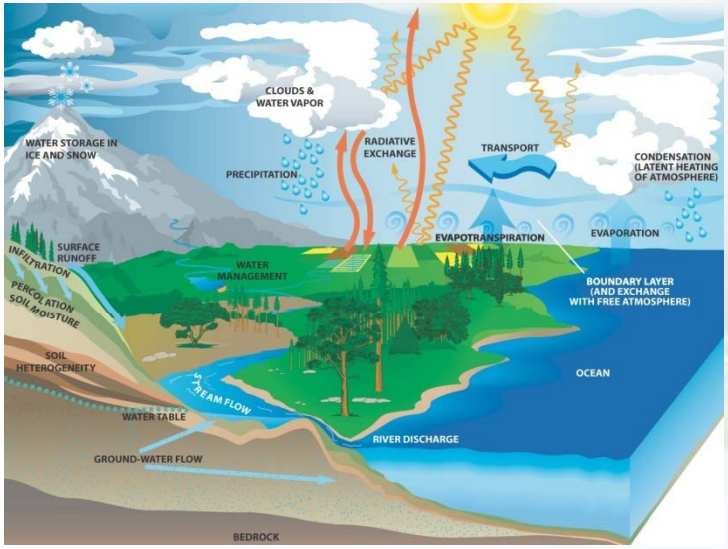
COLA Data Services: *weather/climate focus*

Project Motivation and Goal

Project Goal: develop a new Water and Energy Cycle (WEC) EOS Clearing House (ECHO) client (WECHO) that will use ECHO middleware technology to provide access to and discovery of data resources related to the NASA Global Water and Energy Cycle Focus Area (WECFA).

Objectives:

- provide a web portal customized to the needs of NASA's WECFA user community.
- maximize NASA investments by facilitating the integration of WECFA research results;
- optimize the use of research satellites and revolutions in modeling capability;
- provide physical linkages to NASA data (WEC balances)
- allow users to integrate disparate WEC information;
- promote an improved understanding of WEC processes;
- allow evaluation of WEC predictions;
- facilitate portal usability by researchers, stakeholders, educators and the general public.



WECHO Flow Chart

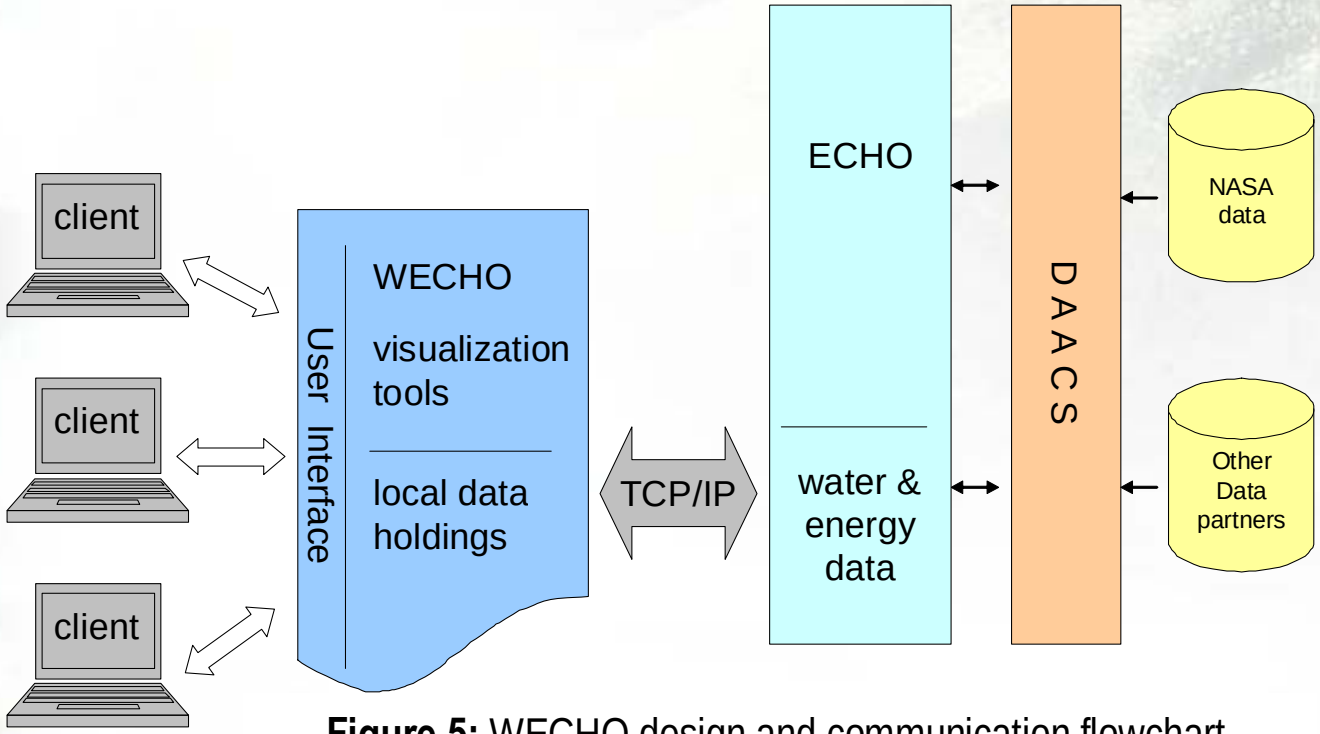


Figure 5: WECHO design and communication flowchart.

Work Plan Steps

- **Establish the WECHO portal design and functionality.**
- **Implement the portal design, including the required software engineering and visualization extensions.**
- **Enable some education and outreach components in WECHO, making it useful to a broader audience.**
- **Document and disseminate the WECHO for easy user access and future adaptation.**

WECHO Data Browsing

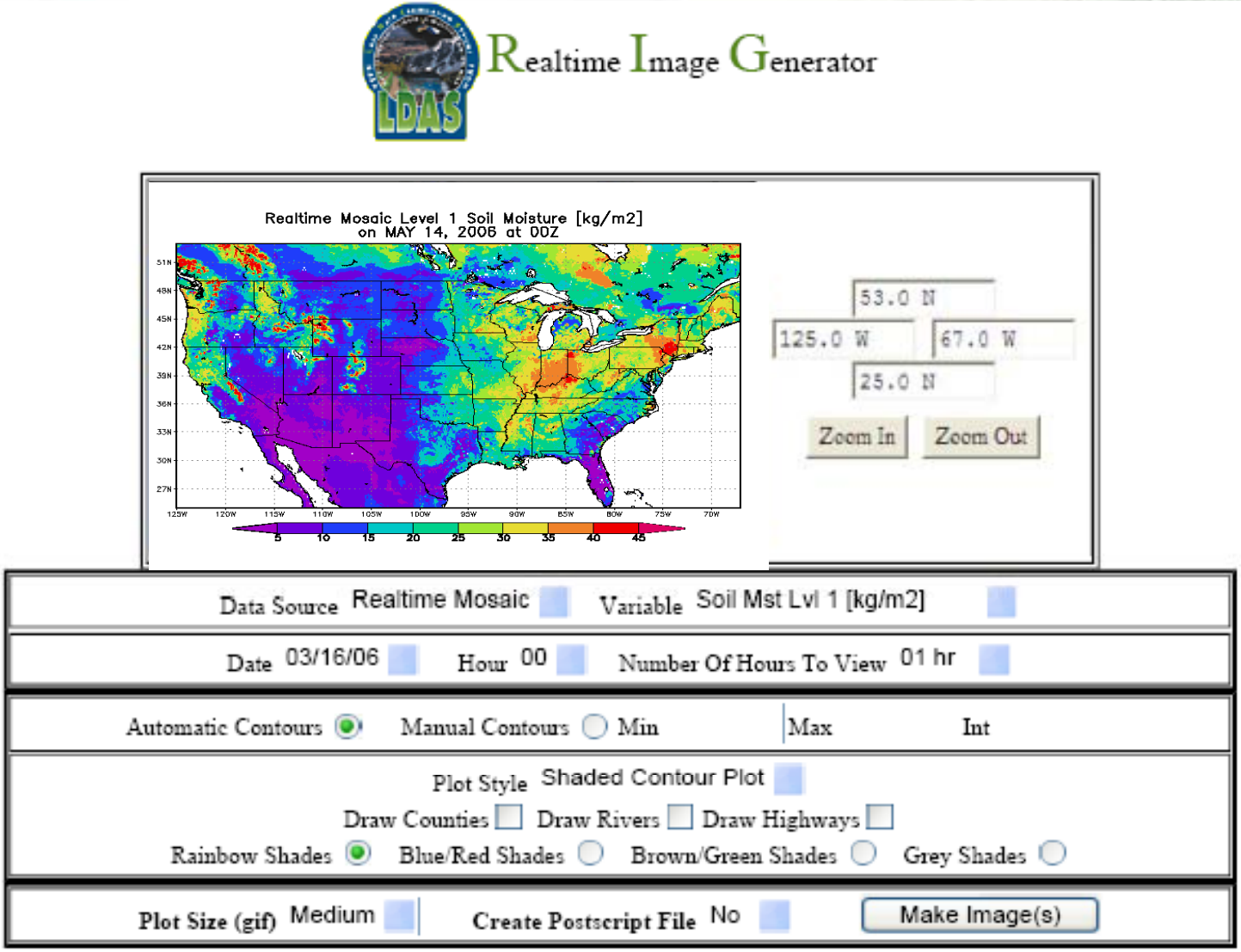


Figure 6: Example of the NLDAS Real-Time Image Generator.

WECHO Work Plan

July 1, 2007 ↓ Now ↓

WECHO: Water & Energy Cycle EOS Clearing House	*1 year: January - December 2007*		
Task	**Jan Feb Mar Apr**	**May Jun Jul Aug**	**Sep Oct Nov Dec**
Portal design formulation			
-design backend software interface			
-design user interface and functionality			
Portal implementation			
- backend software implementation			
- user interface implementation			
Portal extensions			
- develop water and energy cycle data alias and lookup functions			
- develop a local ECHO metadata cache & WEC data holdings			
- develop a visualization capability			
Portal documentation & dissemination			
- develop on-line user guide			
- develop links to/from other web water & energy cycle resources			
- web registration & negotiation links			
- interact with users to optimize WECHO functionality			
Education and outreach			
- Links to GMU students			
- Worked examples and scenarios			
Portal sustainability			
- maintenance plan			
- extension plan			
Note that degree of shading indicates effort level, with darker shading indicating more intensive effort.			

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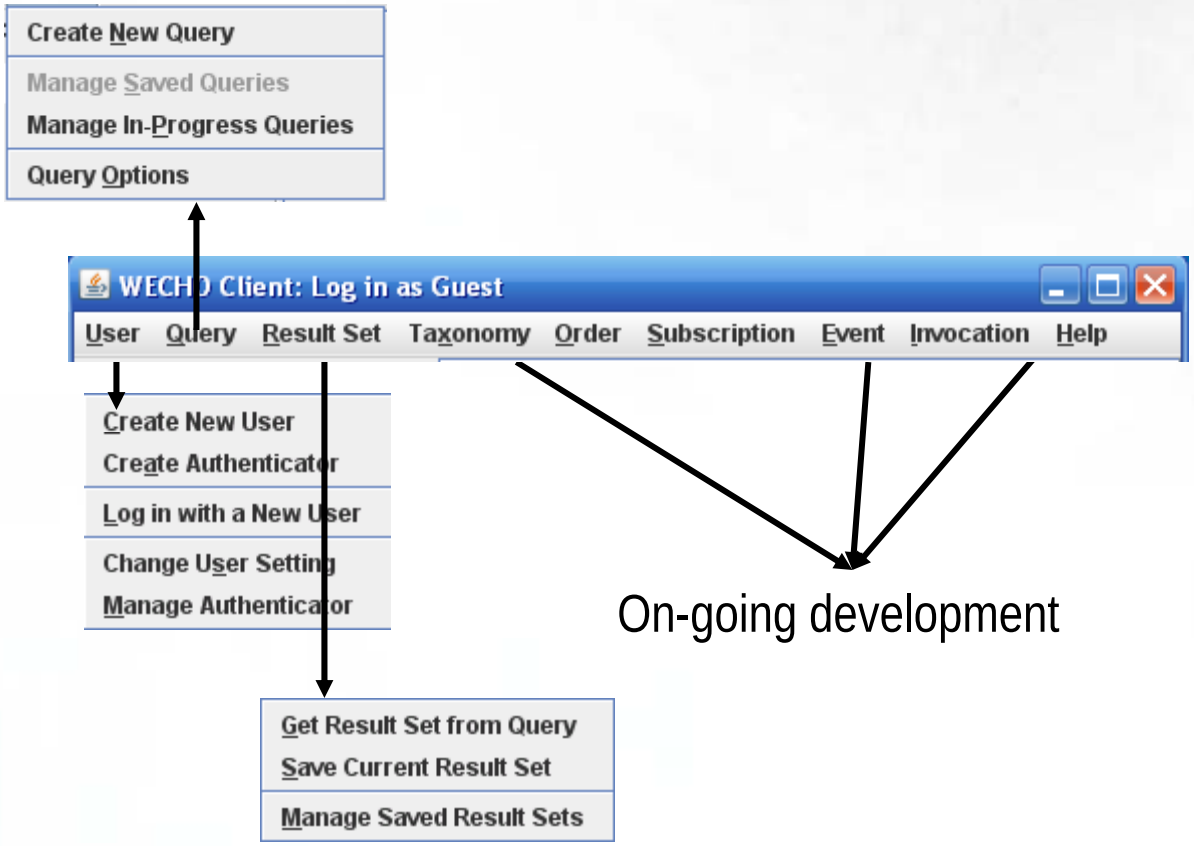
Approach

- Analyze the ECHO services
- Standalone Client
- Water ontology supported by ECHO
- Integrate with semantic search
- Integrate with web services
- Support Water Portal

Services Analyzed and Desktop Client Design

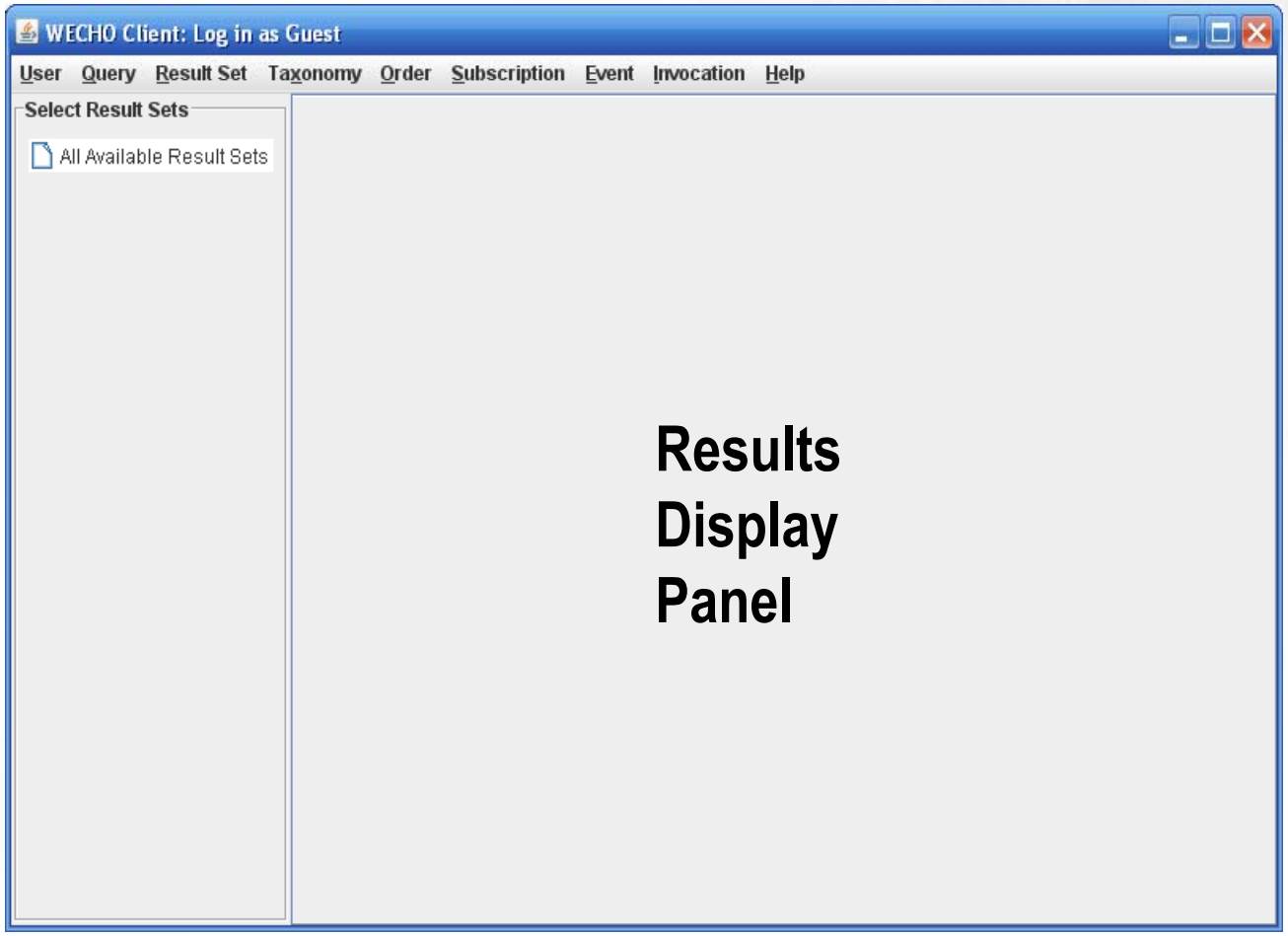
- All services will be available on the WECHO client as follows:



Standalone Client

(an example with Query)

Main Interface



Query Menu Item

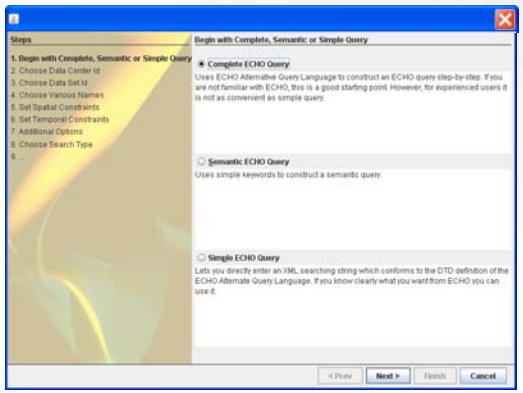
Create New Query

Manage Saved Queries

Manage In-Progress Queries

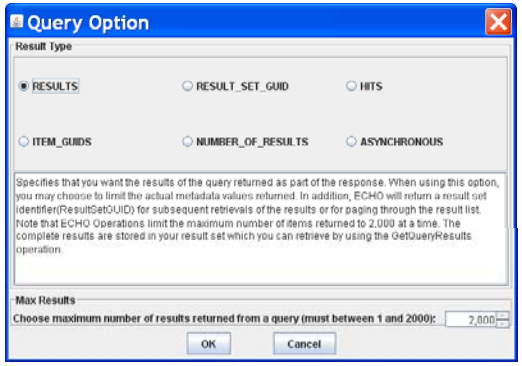
Query Options

To create a new query. Under development.

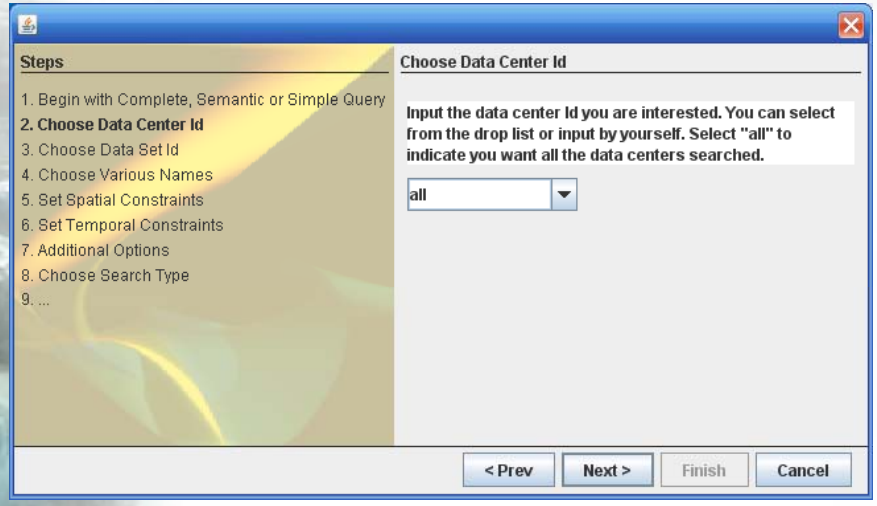


For managing saved and in-progress queries. On-going development.

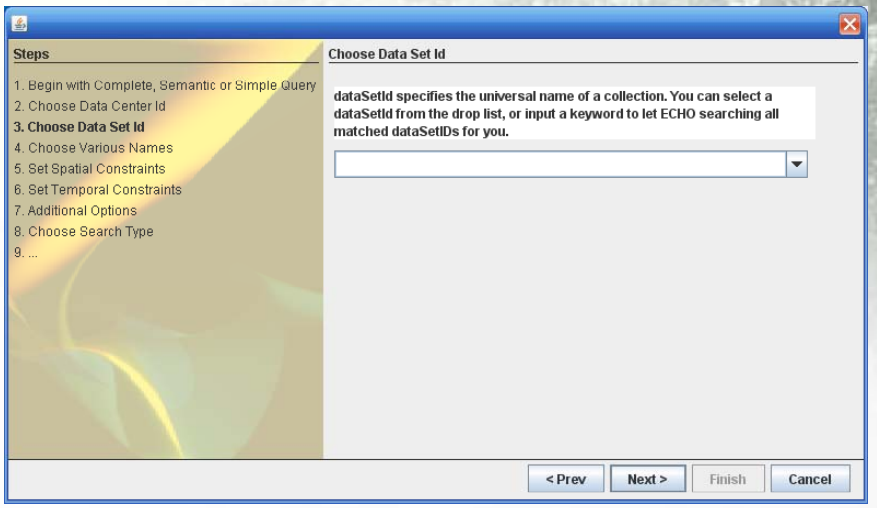
For setting query options. Under development.



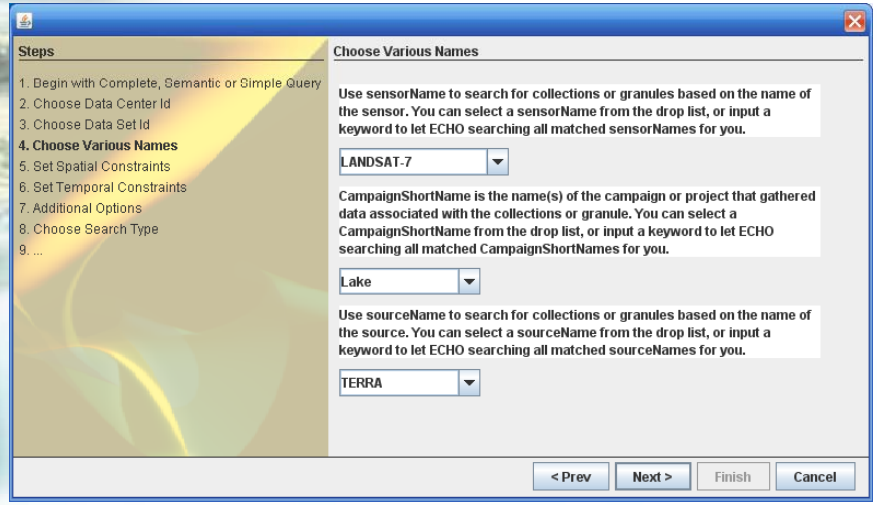
Query Example



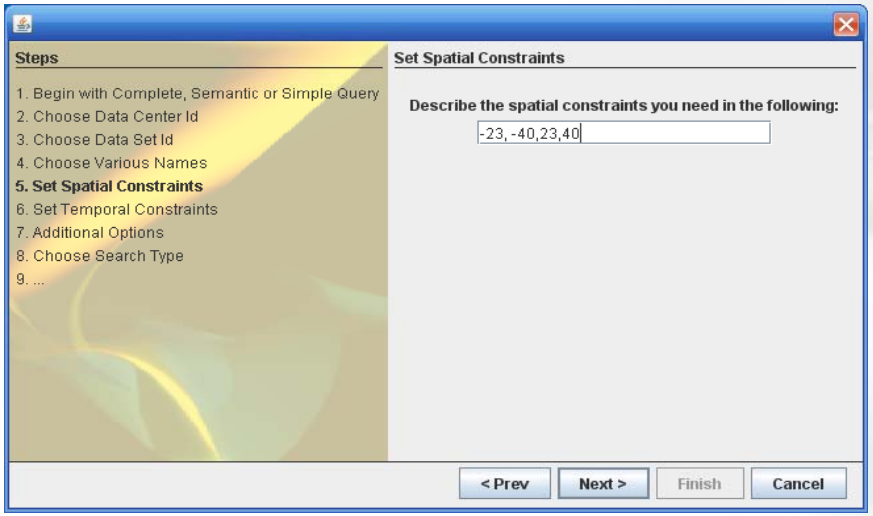
1. Specify Data Center



2. Specify Dataset ID

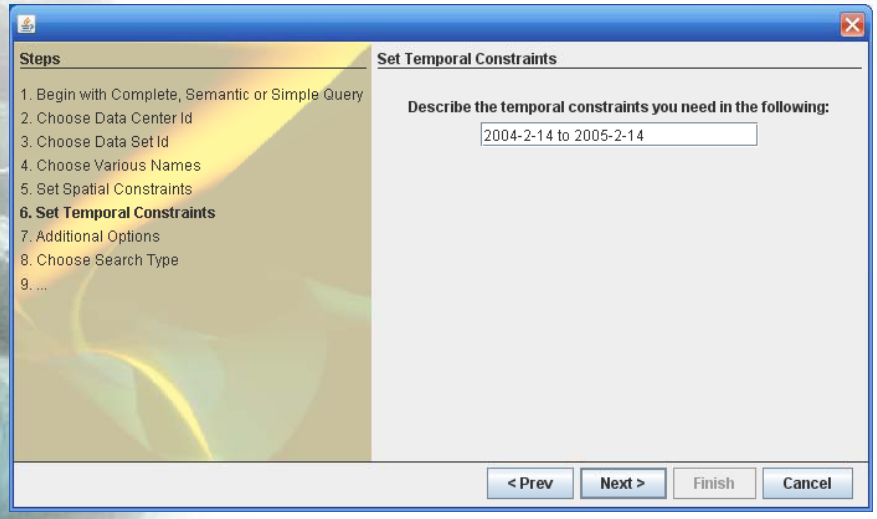


3. Specify Data Source

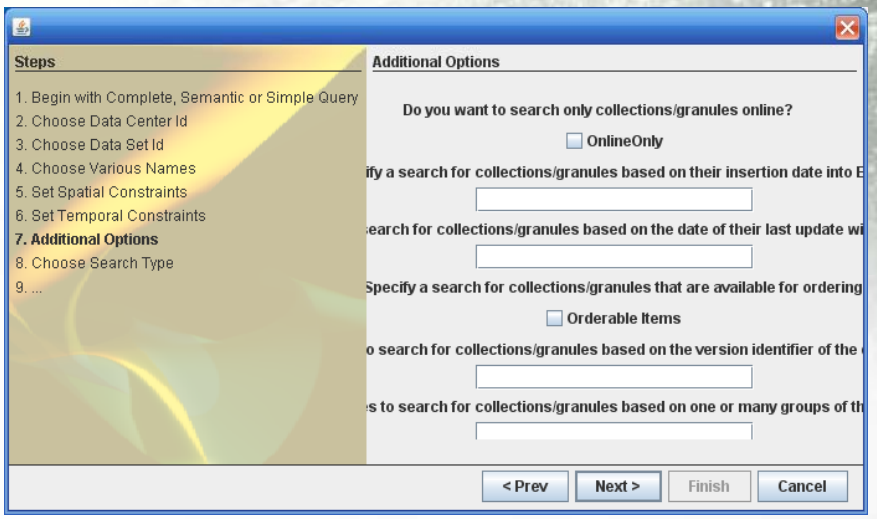


4. Specify Spatial Constraints

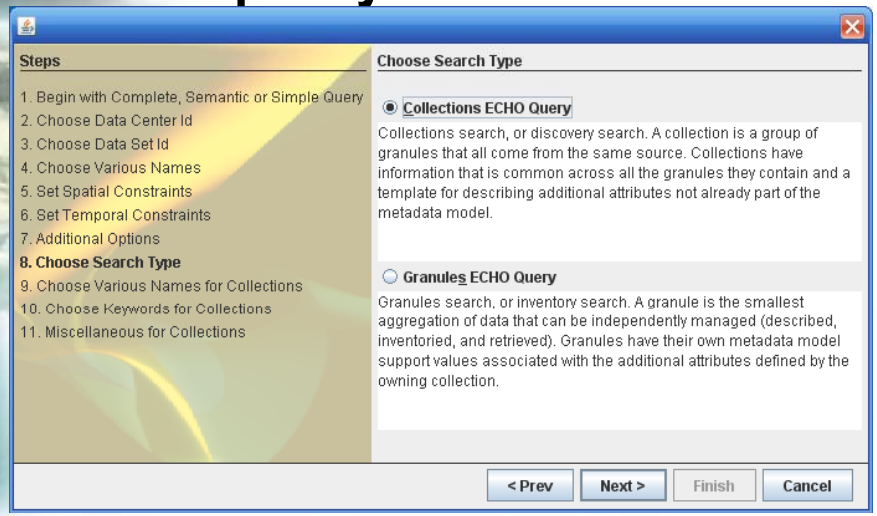
Query Example



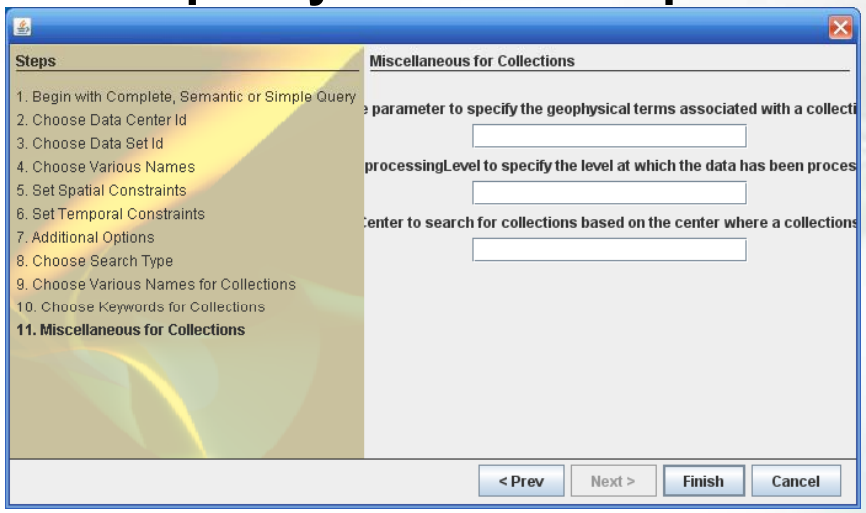
5. Specify Time Constraints



6. Specify Additional Options

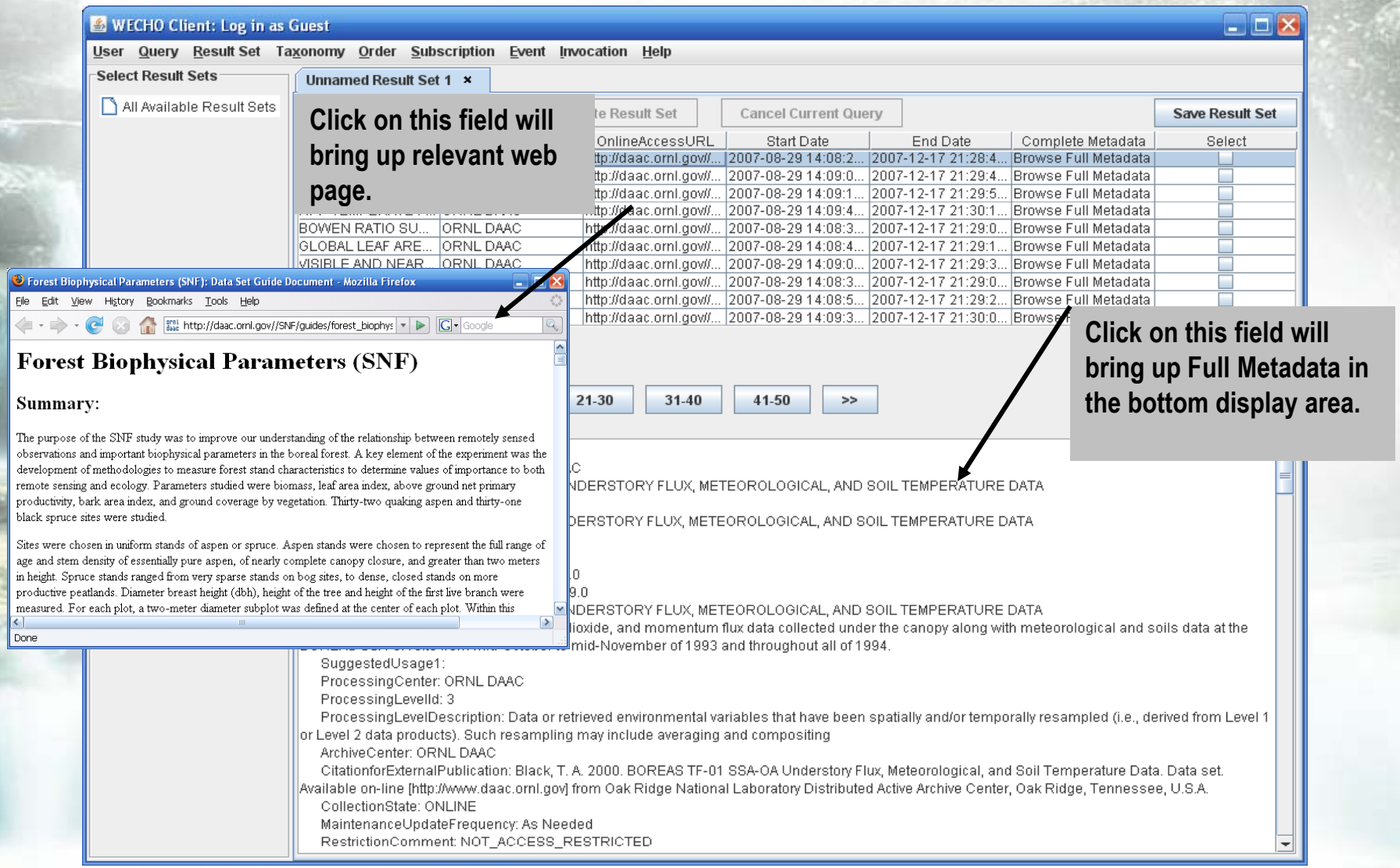


7. Specify Collection or Granules



8. Specify Collections Constraints

Query Example



9. The Query Results

Web WECHO Client (Preliminary)

- - WECHO Client - Mozilla Firefox

File Edit View History Bookmarks Tools Help

WECHO Client

Query Results

You query has finished. Update Result Set Cancel Current Query

DatasetID	Provider	OnlineAccess	StartDate	StopDate	Select
BOREAS TF-01 SSA-OA UNDERSTORY FLUX, METEOROLOGICAL	ORNL_DAAC	http://daac.ornl.gov//BOREAS/guides/TF01_UnderCanopy_Flux.html	2007-08-29 13:47:00.0	2007-12-17 21:11:19.0	☐
BOREAS TE-11 SAP FLOW DATA	ORNL_DAAC	http://daac.ornl.gov//BOREAS/guides/TE11_Sapflow.html	2007-08-29 13:47:11.0	2007-12-17 21:11:32.0	☐
RLC VEGETATIVE COVER OF THE FORMER SOVIET UNION, 1990	ORNL_DAAC	http://daac.ornl.gov//RLC/guides/RLC_veg_cover_1990.html	2007-08-29 13:47:20.0	2007-12-17 21:11:44.0	☐
SAFARI 2000 LEAF MEASUREMENTS OF DOMINANT TREES, KALAHARI SITES, WET SEASON 2000	ORNL_DAAC	http://daac.ornl.gov//S2K/guides/kt_leaf_meas.html	2007-08-29 13:47:52.0	2007-12-17 21:12:22.0	☐
BOREAS LANDSAT MSS IMAGERY: DIGITAL COUNTS	ORNL_DAAC	http://daac.ornl.gov//BOREAS/guides/LANDSAT_MSS.html	2007-08-29 13:47:38.0	2007-12-17 21:12:06.0	☐

Done

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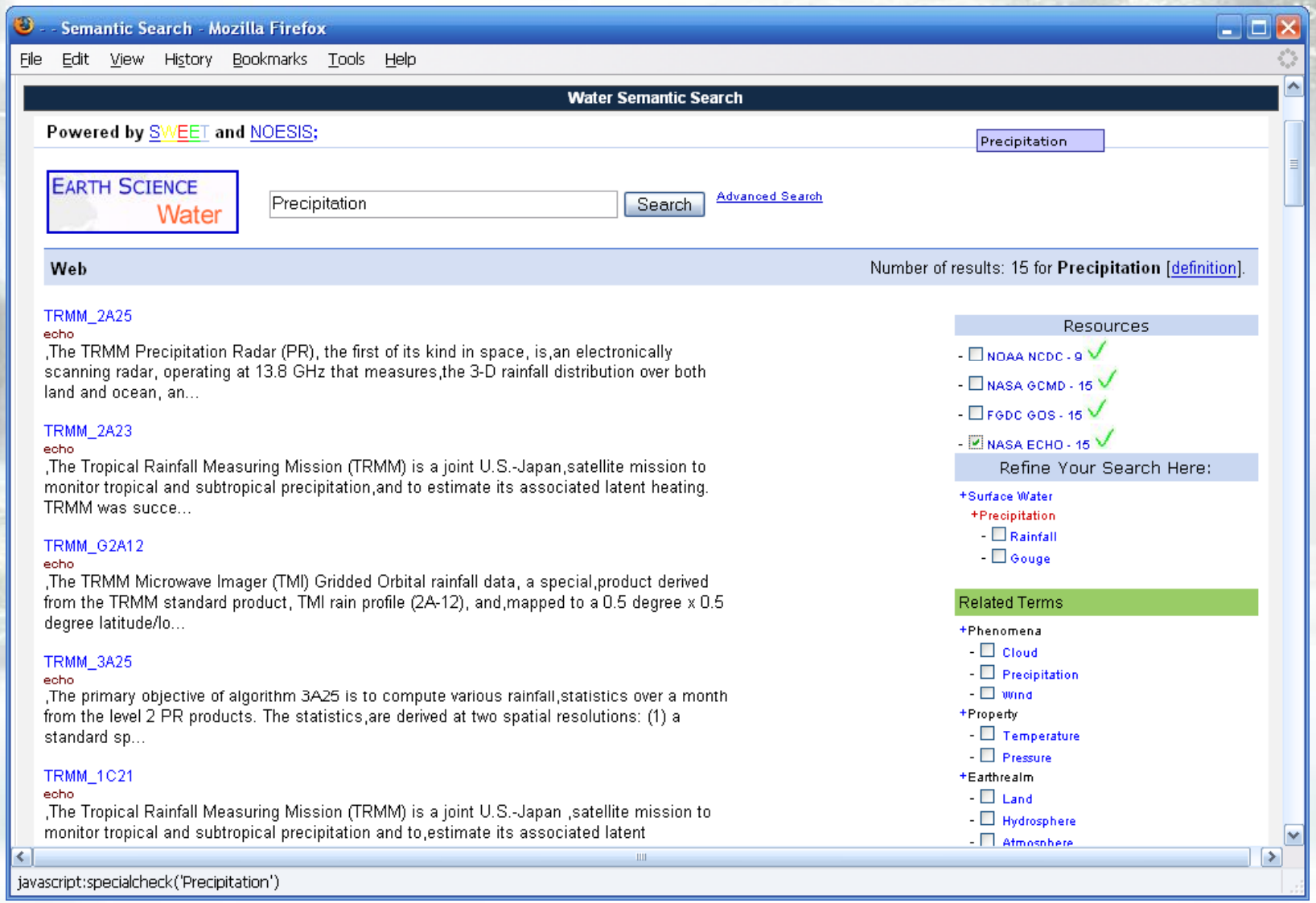
Water Ontology (Preliminary)

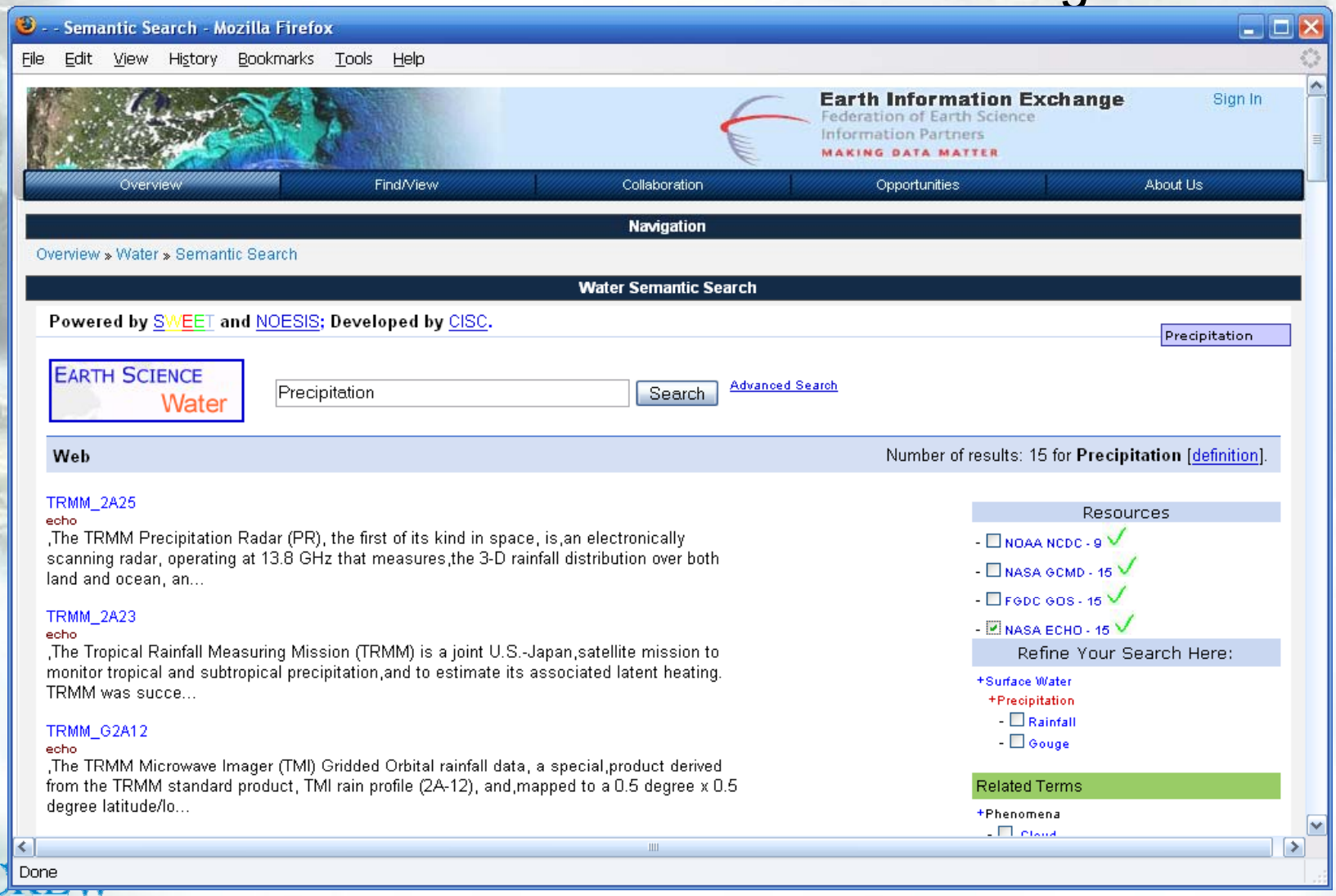
Microsoft Excel - water.xls

	A	B	C	D	E	
1					key word	datasetID
2	water	liquid water	surface water	precipitation	rain rate/type	AMSR-E L2B Global Swath Rain Rate/Type
3					rain rate/type	AMSR-E L2B Global Swath Rain Rate/Type
4					rain rate/type	TRMM Precipitation Radar(PR) Level 2 Rainf
5					rain gauge	BOREAS 1994 HYD-09 BELFORT RAIN GA
6					rain gauge	BOREAS FOLLOW-ON HMET-01 MERGED
7					rainfall	AMSR-E/Aqua Monthly L3 5×5 deg Rainfall A
8					rainfall	30 MINUTE RAINFALL DATA(FIFE)
9					rainfall	TRMM Combined Precipitation Radar(PR) ar
10					rainfall	TRMM Combined Precipitation Radar(PR) ar
11					rainfall	TRMM Precipitation Radar(PR) Gridded Rair
12					rainfall	SAFARI 2000 DAILY RAINFALL TOTALS FO
13					rainfall	SAFARI 2000 DAILY RAINFALL ESTIMATES
14					precipitation	AMAZON RIVER BASIN PRECIPITATION,19
15					precipitation	SAFARI 2000 GPCP DAILY PRECIPITATION
16					precipitation	GLOBAL MONTHLY PRECIPITATION, 1900-
17				water flow/discharge	flow	STREAM FLOW DAILY DATA:(USGS FIFE)
18					discharge	LBA REGIONAL RIVER DISCHARGE DATA
19				soil moisture	soil moisture	AMSR-E/Aqua Daily L3 Surface Soil Moisture
20					soil moisture	BOREAS HYD-01 VOLUMETRIC SOIL MOIS
21					soil moisture	AMSR-E/Aqua L2B Surface Soil Moisture, Ar
22				freshwater	freshwater	SAFARI 2000 FRESHWATER WETLANDS,
23			ground water			
24		soild water	surface water	sea ice	sea ice	AMSR-E/Aqua Daily L3 12.5km Tb, Sea Ice
25				precipation	snow	AMSR-E/Aqua 5-Day L3 Global Snow Water
26					snow	BOREAS HYD-03 SNOW DEPTH DATA:19
27					precipation	GLOBAL MONTHLY PRECIPITATION, 1900-
28			ground water			
29		water vapor		preciptable	preciptable	MODIS/Terra Total Precipitable Water Vapor
30					preciptable	MODIS/Aqua Total Precipitable Water Vapor
31				cloud water vapor	cloud water vapor	MODIS/Terra Aerosol Cloud Water Vapor Oz
32					cloud water vapor	MODIS/Aqua Aerosol Cloud Water Vapor Oz
33			ground water			

Integrate with NOESIS Semantic Search



WECHO will be utilized to support the ESIP Earth Information Exchange



Conclusion

- **Started 6 months late (funding delay)**
- **Established the WECHO portal design and functionality.**
- **Implementation of the portal design, including the required software engineering is progressing well.**
- **Established education and outreach components, inc. links to ESIP.**
- To do:
  - Implement ontology search tools
  - Implement visualization connector

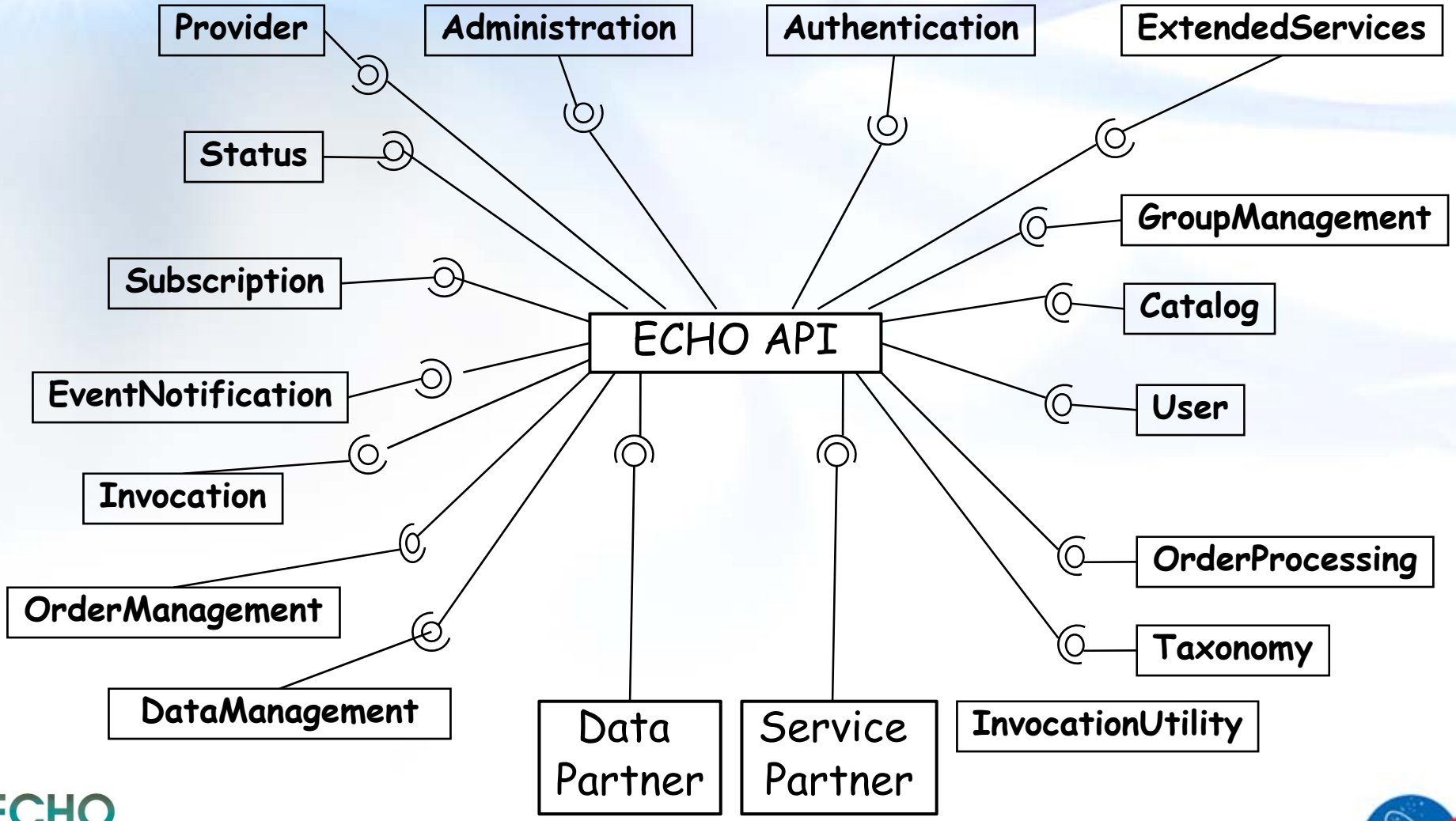
ECHO API Usage

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

ECHO 10.0 API Usage

- ECHO API Services
- Location of the ECHO Web Services
- Backwards Compatibility
- User Privileges
- User Profile vs User Preferences
- User Groups
- Login/Logout ECHO
- Searching for Data
- Ordering Data
- Questions

ECHO API Services (1/4)



ECHO API Services (2/4)

- Administration – ECHO Operations housekeeping functions
- Authentication – Provides session management token services
- Catalog – Data searching and exploration
- Data Management – Data Partner service to support ECHO cataloged data
- Event Notification – User service to manage subscriptions to receive notifications of events from ECHO
- Extended Services – Registration, classification and maintenance of Earth Science services, interfaces, GUIs, and advertisements

ECHO API Services (3/4)

- Group Management – Data Partner service to organize users into groups for data access control and notification
- Invocation – Simple service brokering capabilities that allow ECHO to execute external service requests asynchronously on behalf of users
- Invocation Utility – Wrapper service to allow external Earth Science services to post status, execute asynchronously and return results to users
- Order Management – Service to create and submit orders for users
- Order Processing – Data Partner-oriented service to fulfill and apply a status to user orders

ECHO API Services (4/4)

- Provider – Data Partner account creation and maintenance
- Status – General status information of asynchronous user requests. Currently only supported by Invocation Service and Invocation Utility Service.
- Subscription – User service for creating data subscriptions so as to be notified when data is updated or modified.
- Taxonomy – Management interface from data and service classification schemes used by ECHO, Data Partner and Client Partners.
- User – User account creation and maintenance

Location of the ECHO Web Services (1/5)

- **ECHO Operation 10.0**
  - The reference page of the ECHO website
    http://api.echo.nasa.gov/echo/apis.html
  - The Web Service Description Language (WSDL) document
    https://api.echo.nasa.gov/echo-wsdl/v10/<Service-Endpoint>.wsdl
- **ECHO Partner-test 10.0**
  - The reference page of the ECHO website
    http://api-test.echo.nasa.gov/echo/apis.html
  - The Web Service Description Language (WSDL) document
    https://api-test.echo.nasa.gov/echo-wsdl/v10/<Service-Endpoint>.wsdl
- **ECHO Testbed 10.0**
  - The reference page of the ECHO website
    http://testbed.echo.nasa.gov/echo/apis.html
  - The Web Service Description Language (WSDL) document
    https://testbed.echo.nasa.gov/echo-wsdl/v10/<Service-Endpoint>.wsdl

Location of the ECHO Web Services (2/5)

ECHO References

Earth Observing System (EOS) Clearing House (ECHO)

ECHO

Introduction

The following WSDLs and XML Schemas are used to define the ECHO API. The WSDLs and schemas can be used with industry standard tools to generate clients that can interaoperate with ECHO.

ECHO Services

ECHO Services are the core services that clients use to communicate with ECHO. These services are implemented by ECHO to allow access to the business information (such as users and providers), catalog information (collections and granules), and service information (web service GUIs, advertisements, and implementations).

View Web Service API Documentation
View Error Code Documentation

WSDLs

- Administration Service
- Authentication Service
- Catalog Service
- Data Management Service
- Event Notification Service
- Extended Services Service
- Group Management Service
- Invocation Service
- Invocation Utility Service

XML Schemas

- Echo Exceptions
- Echo Types

XML DTDs

- ECHO Collection Results
- ECHO Granule Results
- IIMS AQL Query Language
- Geometry Collection

ECHO

NASA

Location of the ECHO Web Services (3/5)

ECHO References

PUMP

PUMP is a Java Web Start client application that can be used to interact with the ECHO API. PUMP can be launched directly from the web as long as a Java Runtime Environment is installed.

Start PUMP Now

Event Notification

Event Notification defines the events that ECHO will broadcast to clients interested in events that occur in ECHO. The events supported currently include provider, service, and catalog modifications.

WSDLs

- Event Sink Service

XML Schemas

- Event Schema

Location of the ECHO Web Services (4/5)

ECHO References

Dataset Information

Dataset Information schema defines the format of the dataset information delivered as a result of the GetDatasetInformation operation. This data is normally used by data providers to perform data reconciliation.

WSDLs

- None available

XML Schemas

- Dataset Info Schema

Location of the ECHO Web Services (5/5)

ECHO References

ECHO Forms

ECHO Forms are used to specify provider specific catalog item order options. The schemas include the definition of the basic ECHO Form and all form controls as well as the autopopulate extension which can be used by providers to embed catalog item information in the option definition.

WSDLs

- None available

XML Schemas

- ECHO Forms Schema
- Autopopulate Schema

Order Fulfillment

The order fulfillment service must be implemented by any data provider who wishes to support receiving orders from ECHO. ECHO acts as a client to this service as it transmits order submissions, quotations, and cancellations to the provider.

View Order Fulfillment API Documentation

WSDLs

- Order Fulfillment Service

XML Schemas

- Order Fulfillment Types
- Order Fulfillment Messages
- Order Fulfillment Faults

Backwards Compatibility

- All API remains the same as 9.0 except UserServices
- Four fields have been added to User Type for UserServices including
  - PrimaryStudyArea
  - UserType
  - Title
  - MiddleInitial
- All Web Services' URL will change from ../v9/.. to ../v10/..
- The "/v9/" will be available for backwards compatibility in 10.x.
- User Authenticator support will be removed from PUMP and API in 10.x.

User Privileges (1/2)

- **The most basic entity in the ECHO system is a user.**
  - Each user is identified by a unique user name.
  - There are two types of users: registered users and guests.
  - Group members must be a registered user.

- **For Registered users <u>may</u> be assigned an additional ECHO role:**
  - **Provider** – allowed to access and update information about the providers to which the user is assigned and perform a user lookup.
  - **Admin** - Can perform all **Provider Role** functionality and manage user profiles.

- The **Provider Role** provides a limited view of user information and does not allow for a user's profile information to be changed.
  - User ID
  - First & Last Name
  - Organization
  - Email

User Privileges (2/2)

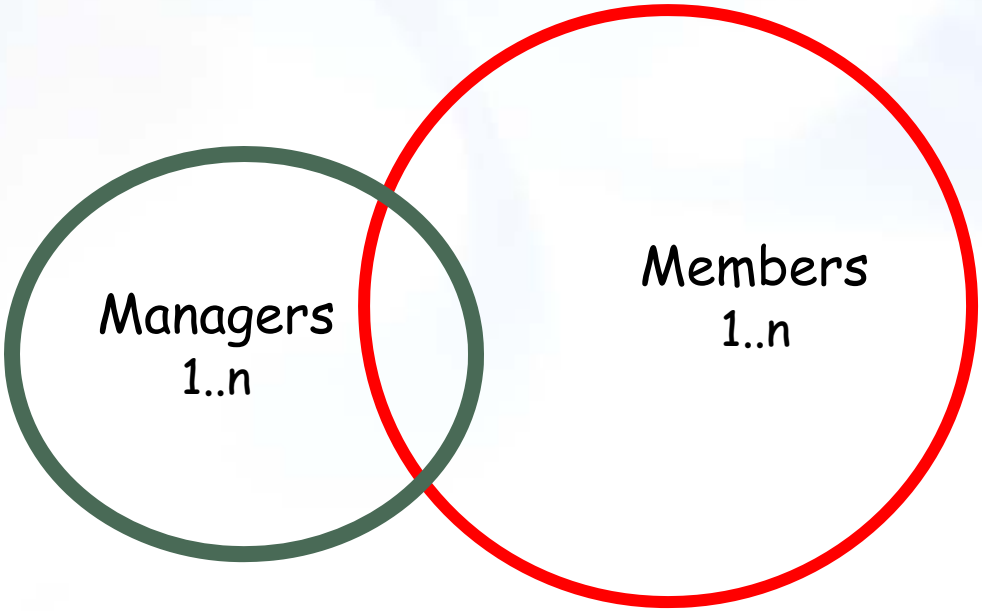
Roles	Privileges / Access	Users
Guest	Query for metadata Submit orders for metadata	All Users
Registered User	All Guest privileges User Profile Management Reset Password Group Management	All Users
Provider Role	All Registered User privileges User Lookup Data Management (ACLs for Data Access) Provider Order Management Provider Policies (SSL, End Points, …) Provider Contact Information	Data Providers (e.g., Data Managers, User Services)
Admin Role	All Provider Role privileges User Profile Management (All Users)	ECHO Operations

User Profile vs User Preferences

- **User Profile**
  - Contains general information regarding the user
    - Contact Information
      - ECHO UserName
      - Name
      - Organization
      - Address(es)
      - Phone Number(s)
      - User Doman & Region
    - ECHO Assigned Roles
- **User Preferences**
  - Additional information for a user used during ordering
    - Contact Information (General, Shipping, & Billing)
      - Name & Role
      - Address
      - Phone Number(s)
      - Email Address
      - Organization
    - Order Notification Level

User Groups (1/3)

- Group is the main entity for data access control and notification.
- A group must have at least one manager and one member.
- A manager takes full control of the group
- A member can be a manager as well



User Groups (2/3)

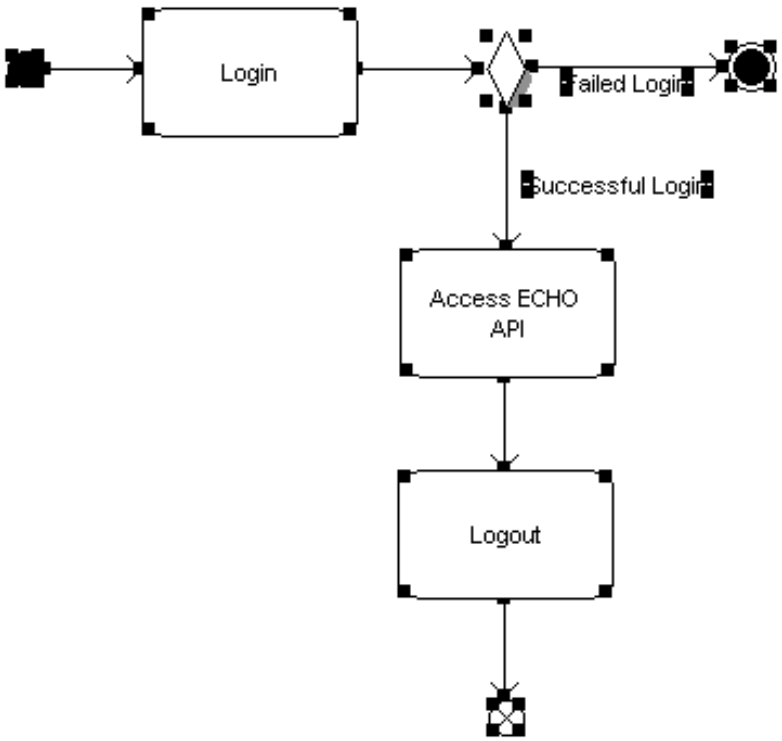
- **Manager of a Group**
  - Must be a registered user
  - Must have provider role
  - Allow to delete their groups
- **Member of a Group**
  - Must be a registered user

User Groups (3/3)

- **To create a group**
  - Must assign one or more managers
  - Must assign one of more members
- **To delete a group**
  - Any manager can delete its own group
  - Must remove all data rules before delete the group
- **To manage a group**
  - Any manager in the group can add and remove members
  - Any manager in the group can add and remove manager
  - A group always has at least one manager and one member

Login/Logout ECHO (1/2)

- Login/Logout ECHO in Authentication service

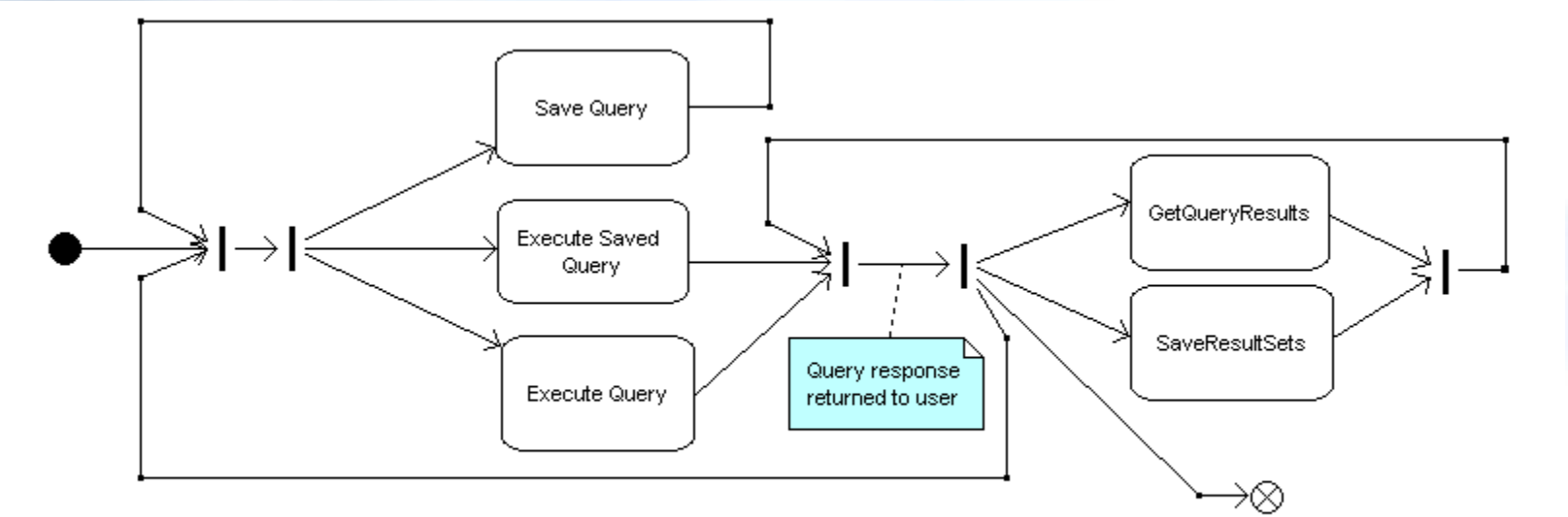


Login/Logout ECHO (2/2)

- **Client developers should include a Client ID that is agreed upon with ECHO operations.**
- **Gust users need to login to obtain a token before using ECHO**
  - User name : guest
  - Password: guest
- **Logout after done with ECHO services**

Searching for Data (1/4)

- Search for data through CatalogService



Searching for Data (2/4)

Query Result Type	Usage
ASYNCHRONOUS	Allows to check the result later
HITS*	Returns number of results and saved result set Guid
ITEM_GUIDS	Returns granule or collection Guids without saving result set
NUMBER_OF_RESULTS	Returns number of results only without saving result set
RESULTS	Returns detail of each item within its iterator and size
RESULT_SET_GUID	Returns saved result set Guid only

*Hits requires a full catalog search through all holdings.
Do not use it to query large data sets.

Searching for Data (3/4)

Other optional parameters for Execute Query service	Usage
Iterator Size	When using "Results" in the result type, iterator size can be set in order to retrieve a smaller size of data in one time. Set the iterator size smaller can have better performance. ECHO has a limit set to 2000 results. For example, the application will display one page as a time to the user. Each page size has 25 results. The iterator size should set to 25.
Cursor	When retrieve each set of results, we can navigate back and forward of the results.

Searching for Data (4/4)

Other optional parameters for Execute Query service	Usage
Max Results*	When using "Hits" or "Result_Set_Guid" in the result type, we can set the maximum results to be saves in order to improve better performance.

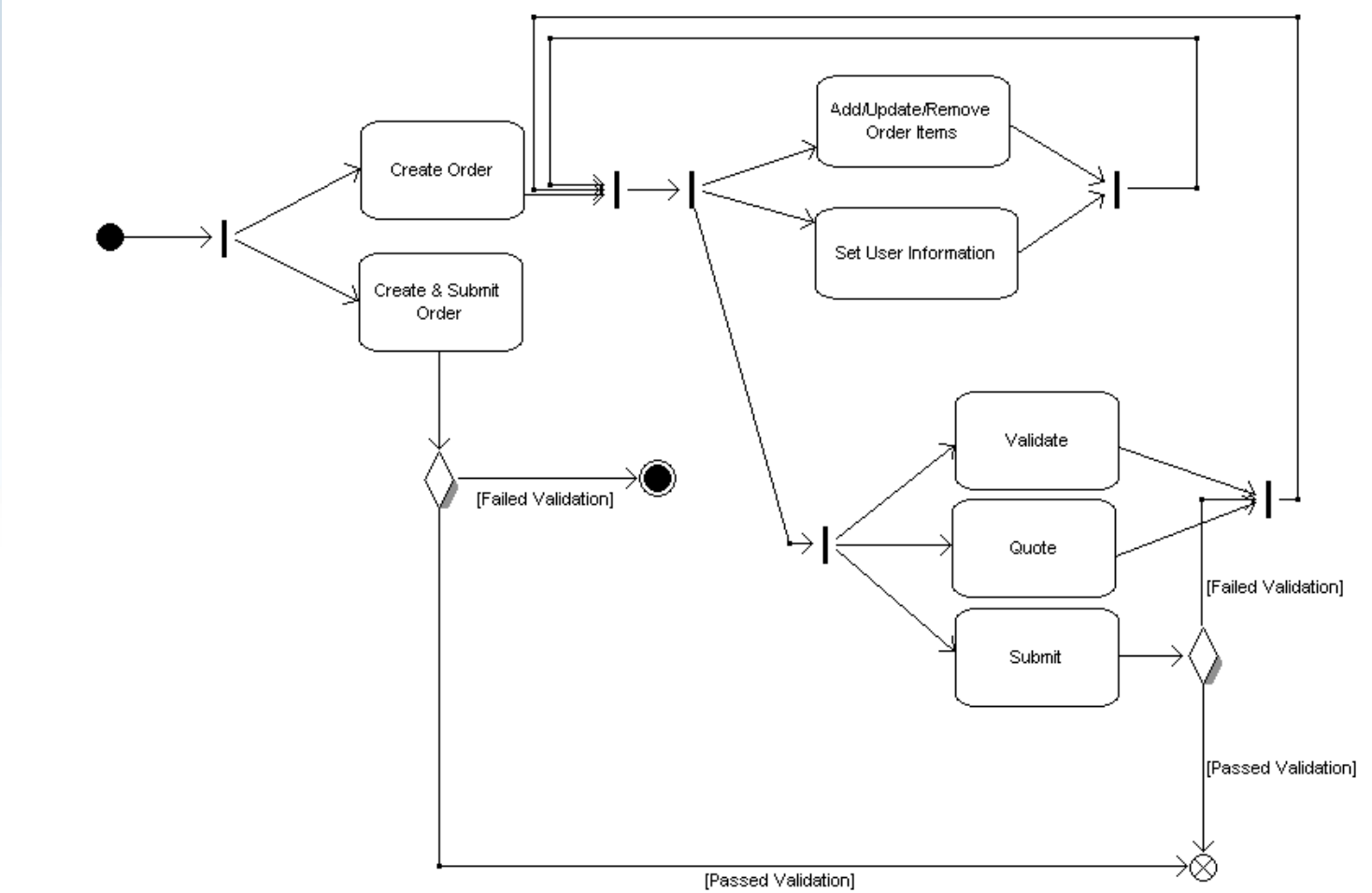
*Strongly encouraged

Ordering Data (1/2)

- **Order IDs**
  - ECHO generates an Order GUID to uniquely identified an order in ECHO
    - GUIDs are assigned at creation, not submission
  - Providers create their own tracking id to uniquely identify an order in their ordering system
    - Provider must notify ECHO with tracking ID
- **Creating and Submitting (Client Partners)**
  - The OrderManagementService is used to create and submit orders through ECHO
  - Orders may be built and submitted simultaneously or step-by-step
  - Quoting, Submit, and Cancel actions require asynchronous communication with the provider
    - Users must monitor the order's status to determine the provider's response
- **Fulfilling (Data Partners)**
  - The OrderProcessingService is used to communicate order fulfillment responses to ECHO
    - (Covered in detail in the Data Access & Order Management Presentation)

Ordering Data (2/2)

- **Order Management – Creating and Submitting an Order**



Questions ?

ECHO Extended Services

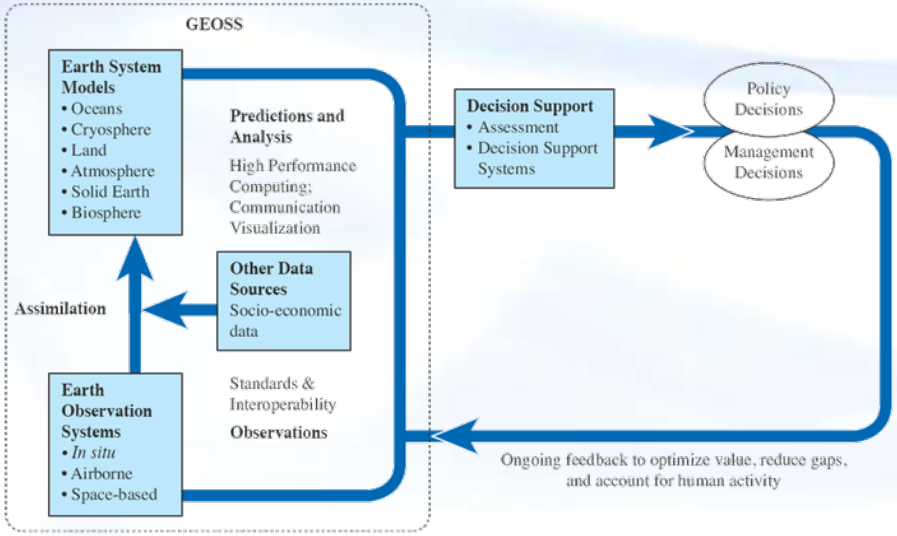
2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Overview of Extended Services

- **ECHO's role in the enterprise**
  - Providing Access to EO Data and Services
  - As a marketplace
  - Enabling infrastructure for leveraging these resources in new and innovative ways
  - A way to standardize the exchange of these resources
  - Enabling Interoperability
- **What are services**
  - Functional view of things that can be offered to the community
- **What does ECHO do with them**
  - Analogous to the metadata
  - Allows partners to represent their offerings
  - Provides management mechanisms for partners
  - Provides discovery mechanisms for users

Kinds of services

- **Capabilities offered to the community**
  - Expertise
  - Discovery
  - Assessment
  - Transformation
  - Access
  - Models
  - Decision Support Systems

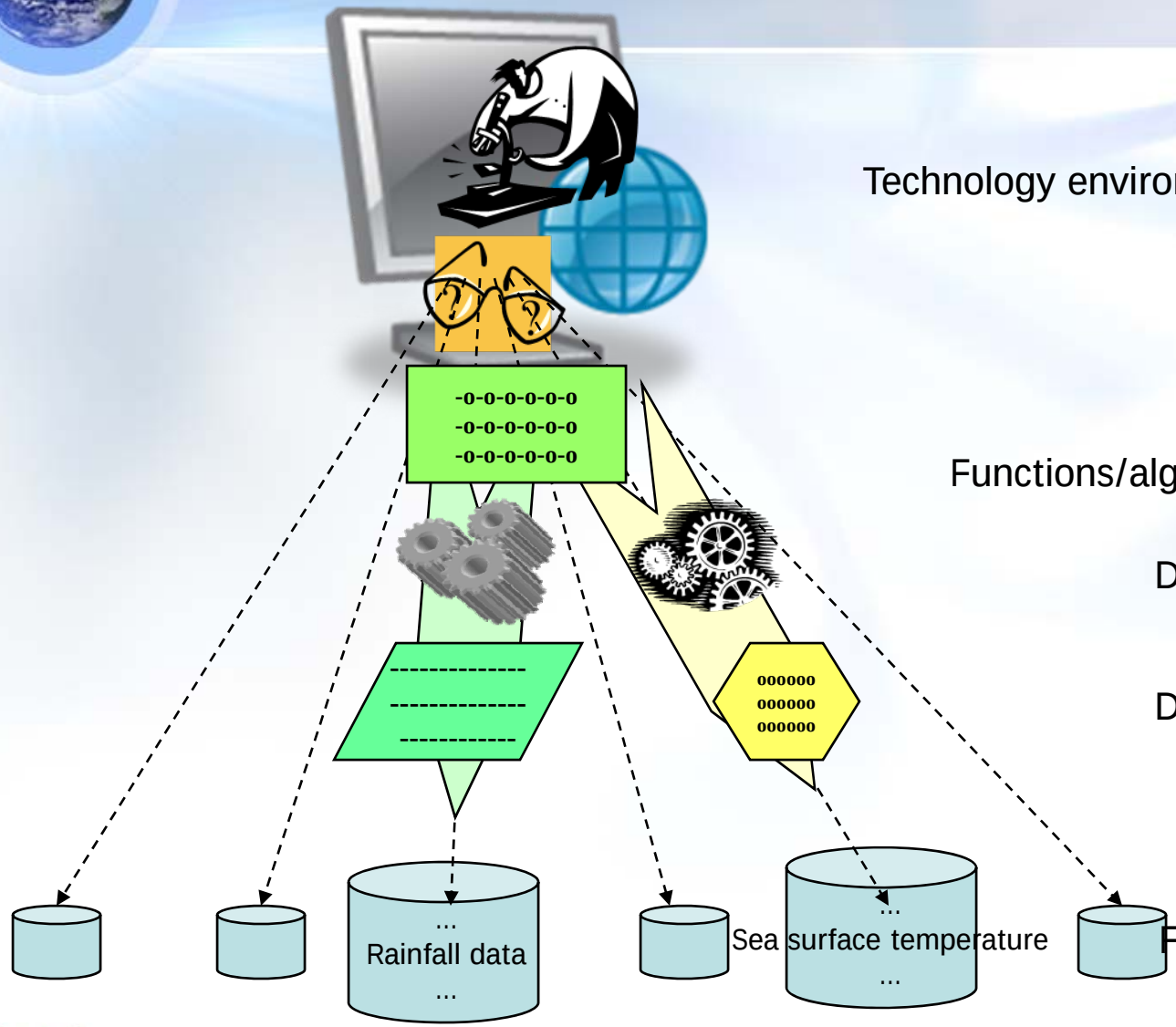


- **In ECHO**
  - Web Services – software-based capabilities, consumed by other software systems
  - GUIs – Components that humans interact with, which result in the use of other computing resources
  - Advertisements – Other capabilities that might be offered the community

Services in the enterprise: Basic Concepts

- **How someone finds your service**
  - Extended Services Viewer
  - Leveraging ECHOs Service Discovery API in their software
  - Interoperability API
- **How they can use your service**
  - Call it within their software application
  - Indirectly, by using predefined service chain
  - Via a GUI application which calls your service
- **What does that mean to you**
  - Documentation should be available on-line
    - Caveat, Service Level expectations should be addressed
  - Should be up and running
  - Updated, as necessary

Application of Services - before



Technology environment

Functions/algorithms to transform

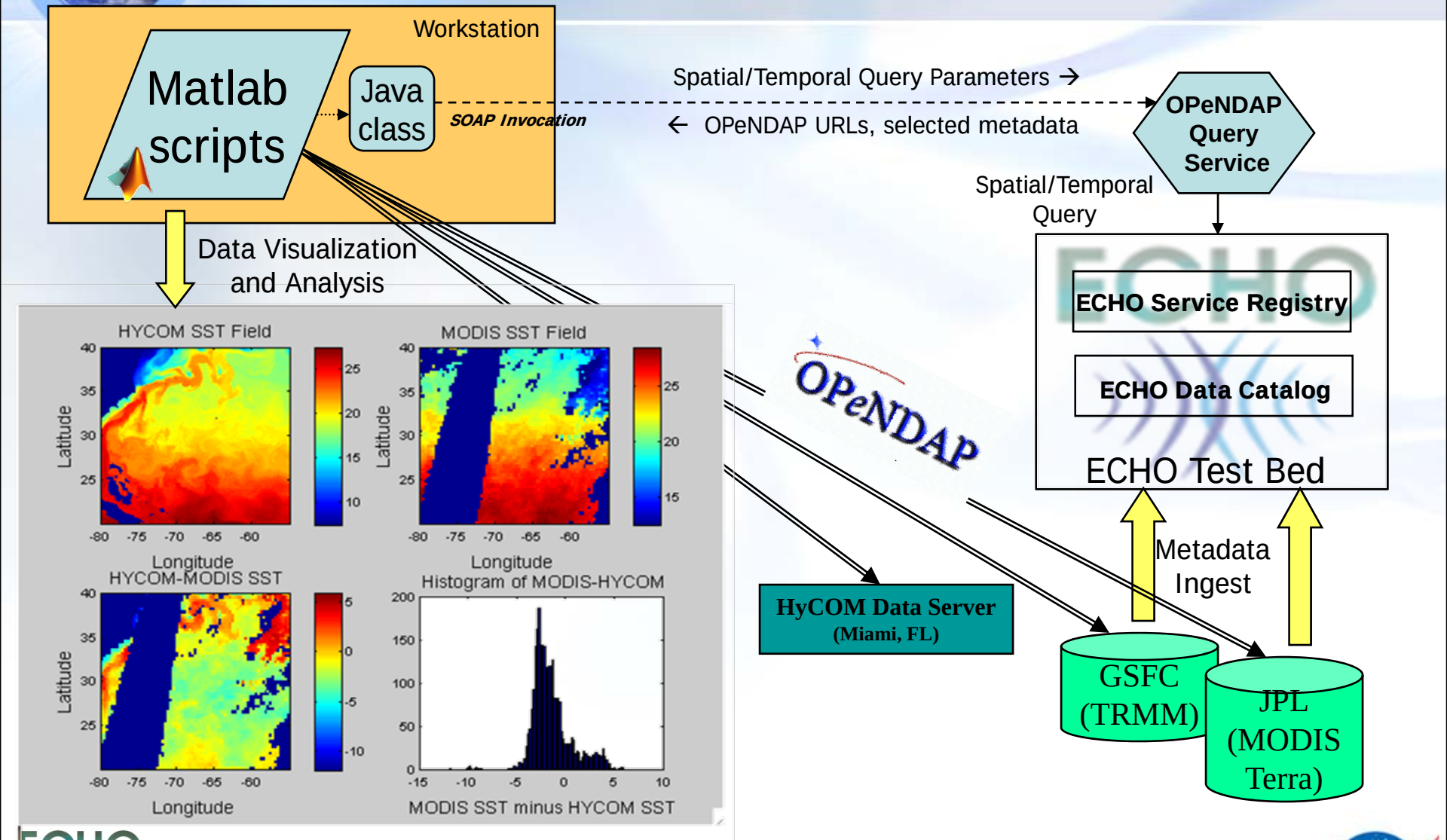
Different formats

Different access methods

Different sources

Finding the right kind of data

Application of services - example



Future Application of Services – Sensor Webs

- **Autonomous Application**
  - Sensing, predicting, adjusting
- **Leveraging existing resources**
  - Intelligent sensors
  - Command and control
  - Data synthesis
- **Targeting a Societal Benefit area**
- **SOA-based**
  - Leveraging shared infrastructure
  - Interoperability

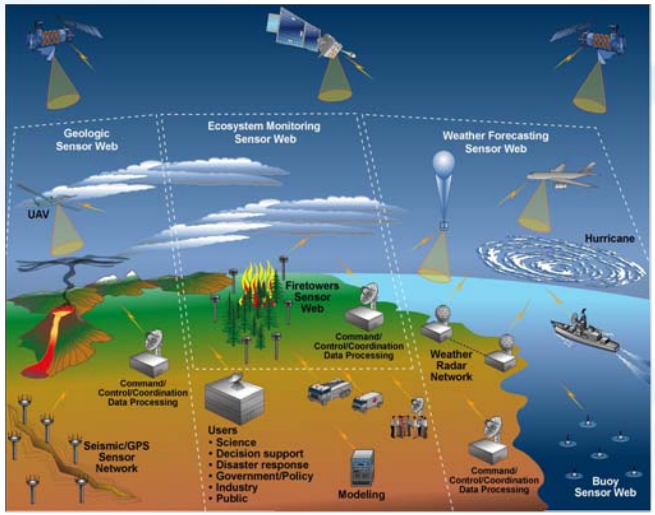
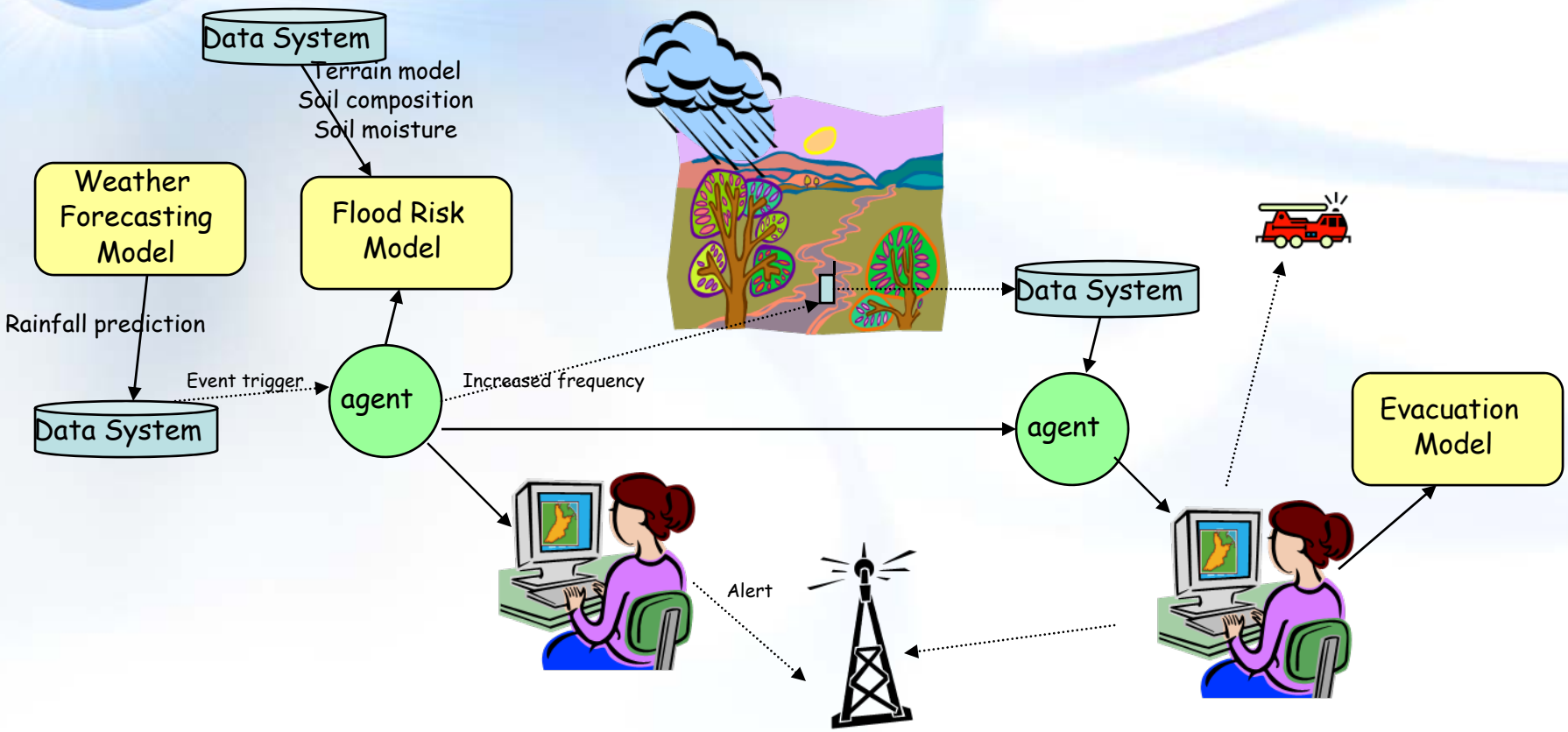


Diagram from **Report from the Earth Science Technology Office (ESTO) Advanced Information Systems Technology (AIST) Sensor Web Technology Meeting, February 13-14, 2007**

Sensor web example



- **Supported by**
  - Legacy Data Systems
  - Event Systems
  - Models
  - Transformation and assimilation services
  - Decision Support Systems
  - Web Mapping Servers

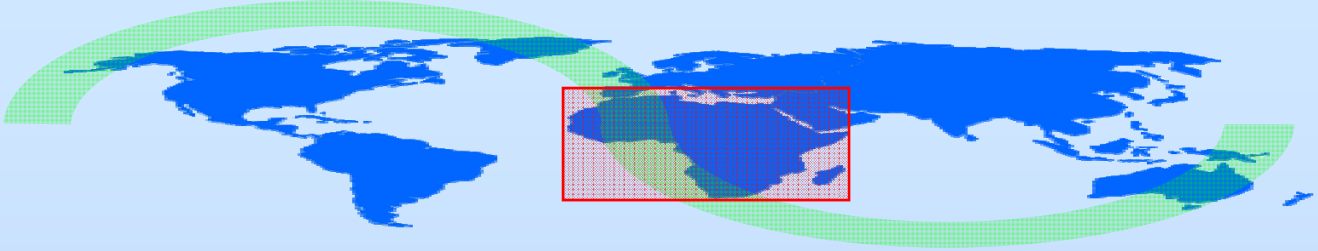
- **Emerging needs**
  - Standard Sensor interfaces
    - OGC SWE
  - "Communication Fabric"
  - Web Construction environments

Now what

- **Identify your services**
  - We can help
- **How do you register**
  - Requirements
    - Be a registered provider
    - Web page, for user reference
  - Classification
- **Open for business!**

Topics for Open Discussion

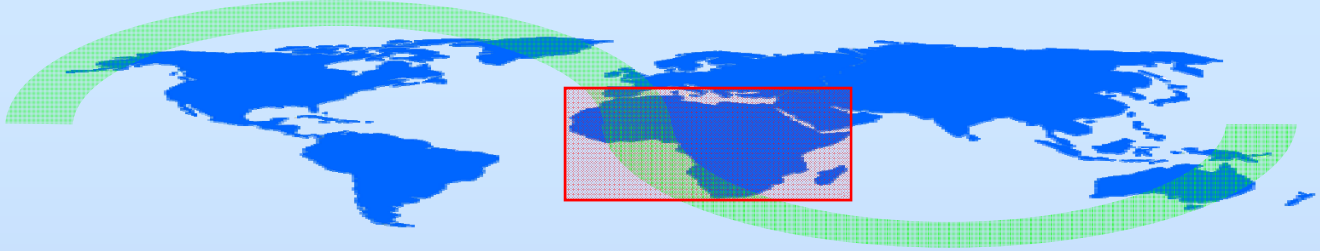
Questions?



UAH Web Services and ECHO: Subset and Mining Web Services

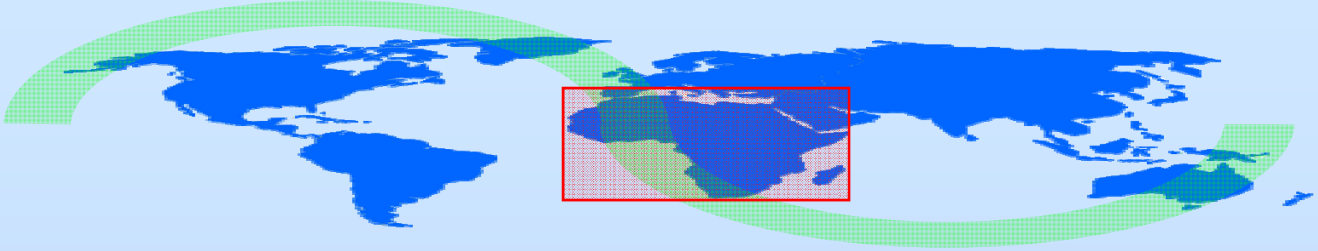
ECHO Workshop
January 29-31, 2008
Raytheon – Riverdale, MD

Helen Conover, Sara Graves, Bruce Beaumont, Ken Keiser, Rahul Ramachandran
University of Alabama in Huntsville
Information Technology and Systems Center
http://itsc.uah.edu



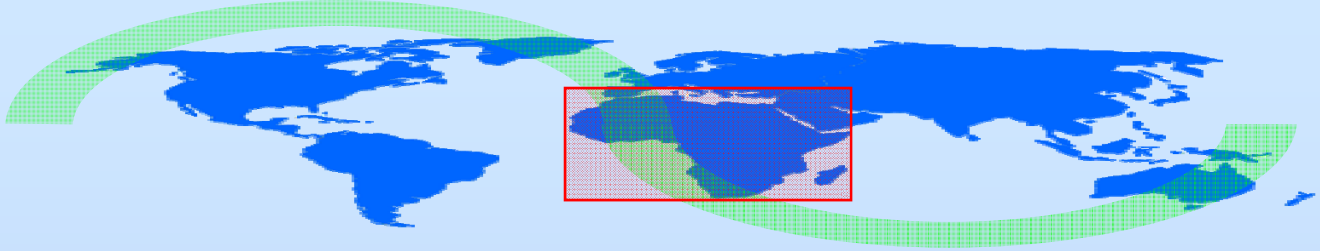
Types of Web Services at UAH

- REST OGC services
  - WMS, WFS
  - SOS
- ***SOAP data processing services***
  - HDF-EOS subsetters
  - Data mining suite
- New research in web services semantics (mining services ontology)



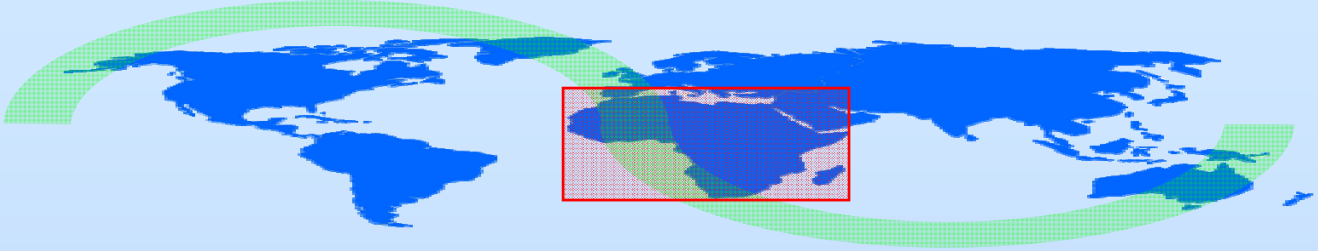
UAH Web Services: Deployment and Operation Strategies

- Services integrated into larger processing system
  - e.g., *subsetting service for ECS*
- Services accessed and deployed via specialized workflow orchestration and management system
  - e.g., *Mining Web Services prototype*
- Stand-alone services available on the web for dynamic plug-n-play in a service-oriented architecture – “the network is the computer”
  - e.g., *UAH subset web service*



Web Services – some major issues

- Service discovery
- Workflow orchestration
- Resource management
- Security



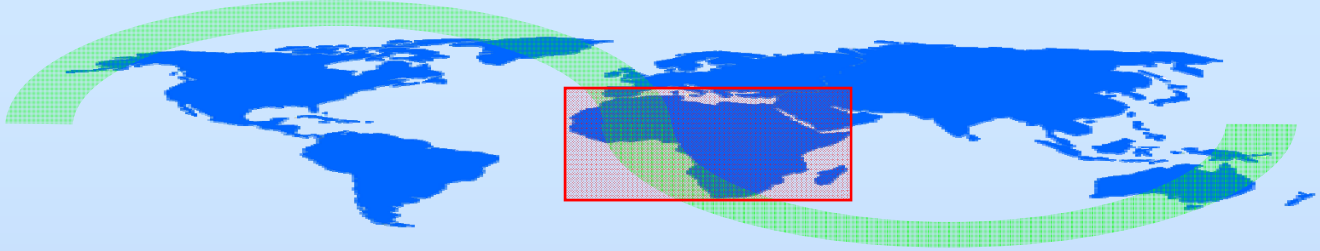
UAH Subsetting Services – Background

HEW: HDF-EOS Web-based* Subsetter

**originally had web front end*

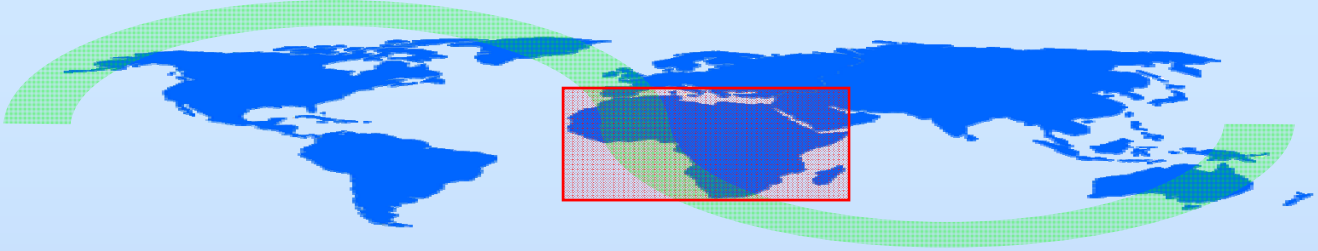
- Dataset-independent subsetting for HDF-EOS data files
- Built on HDF-EOS and HDF libraries
- Support for HDF-EOS 2 (HDF 4) and HDF-EOS 5 (HDF 5)
- Available for Irix, SunOS, and Linux 32-bit and 64-bit operating systems

http://subset.org



HEW-related tools

- **HEW Subsetting Engine (HSE)** – callable function for subsetting
- ***HEW Subsetting Appliance (HSA)*** – subsetting integrated with ECS order delivery system; includes communications and resource management infrastructure in addition to subsetting engine (HSE)
- ***Web service*** version of HSE with Simple Object Access Protocol (SOAP) interfaces
- **hewbe** – a simplified stand-alone subsetting tool
- **SPOT** – checks HDF-EOS files for subsettability



HEW Subsettable datasets

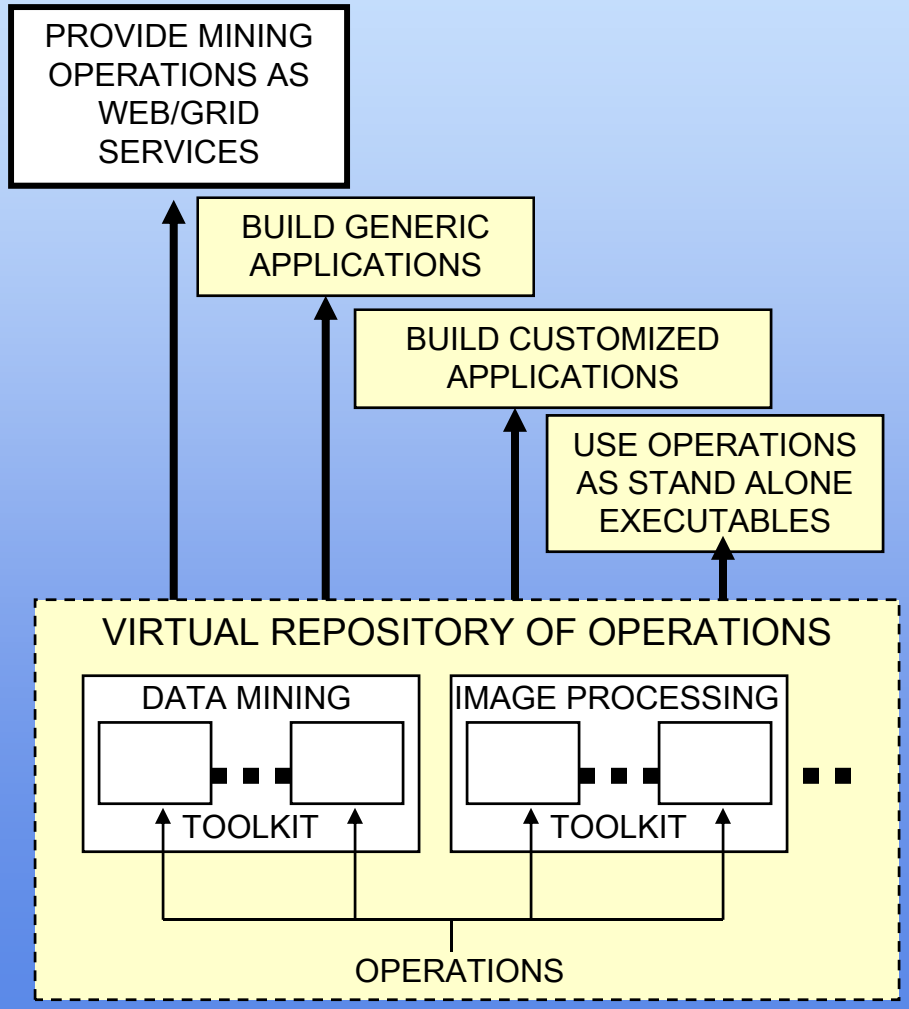
EOS DATASETS

- Terra
  - MODIS
  - MOPITT
  - ASTER
- Aqua
  - AMSR-E
  - AIRS
- Aura
  - HIRDLS
  - OMI, TES, MLS

OTHERS

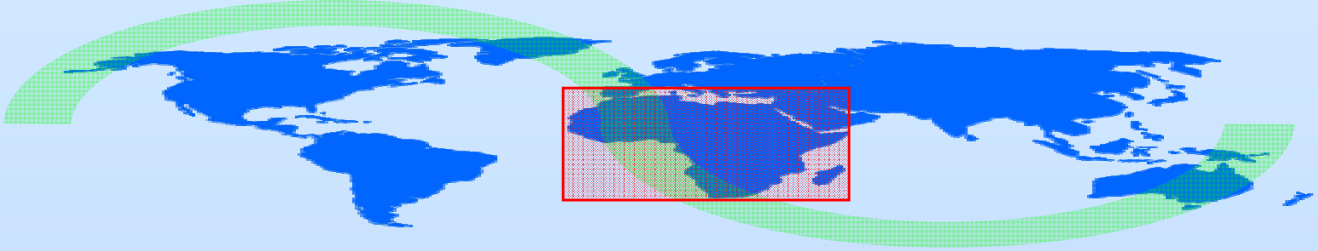
- TRMM
  - TMI Ocean Products
- NOAA-15, 16, 17
  - AMSU-A
- CloudSat
- Any other HDF-EOS datasets written with HDF-EOS calls in mind

Algorithm Development and Mining Toolkit



- Over 100 interoperable mining and image processing components
- Component based, where each component is provided with a C++ application programming interface (API), and as an executable in support of scripting tools (e.g. Perl, Python, Tcl, Shell)
- ADaM components are lightweight and autonomous, and have been used successfully in ***web/grid environments***
- ADaM has several translation components that provide data level interoperability with other mining systems (such as WEKA and Orange), and point tools (such as libSVM and svmLight)

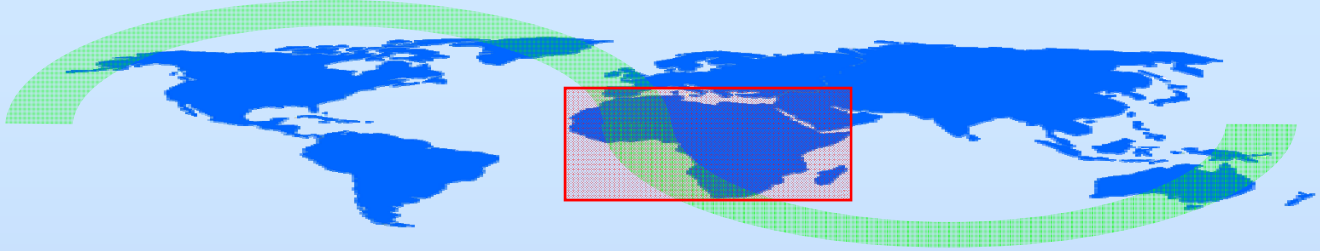
http://datamining.itsc.uah.edu



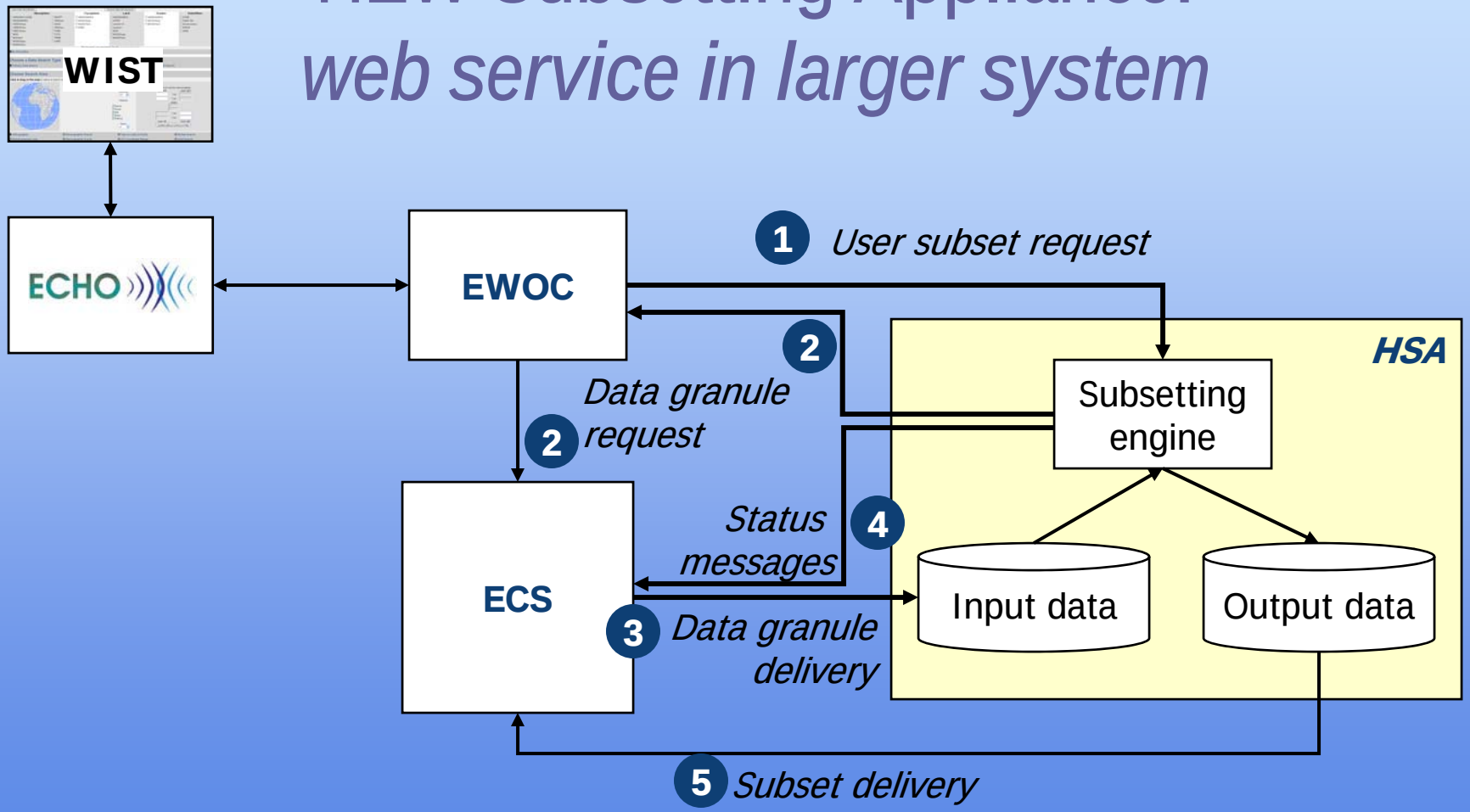
UAH Web Services Examples

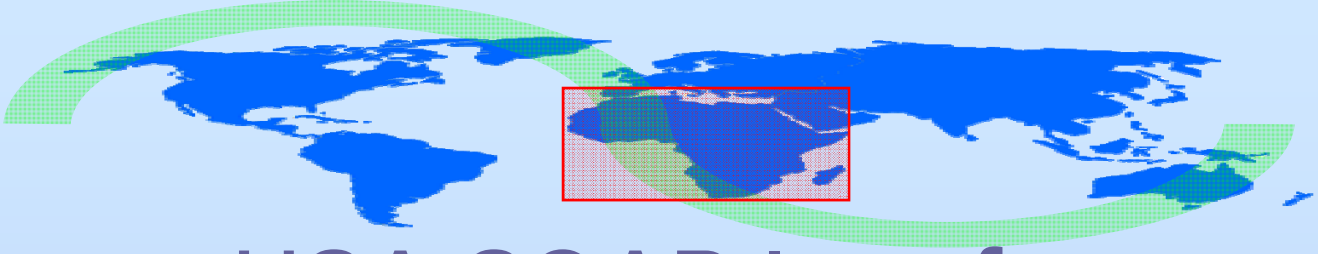
How the major issues are handled in the various web service deployment and operation strategies

UAH
The University of Alabama in Huntsville

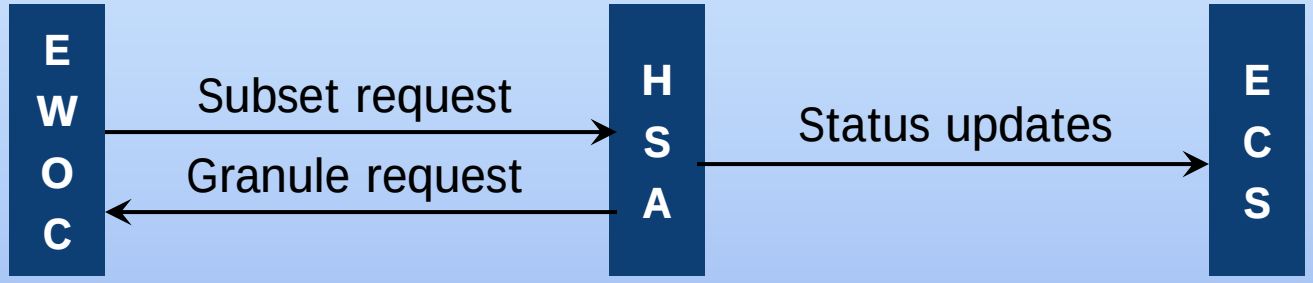


HEW Subsetting Appliance: *web service in larger system*

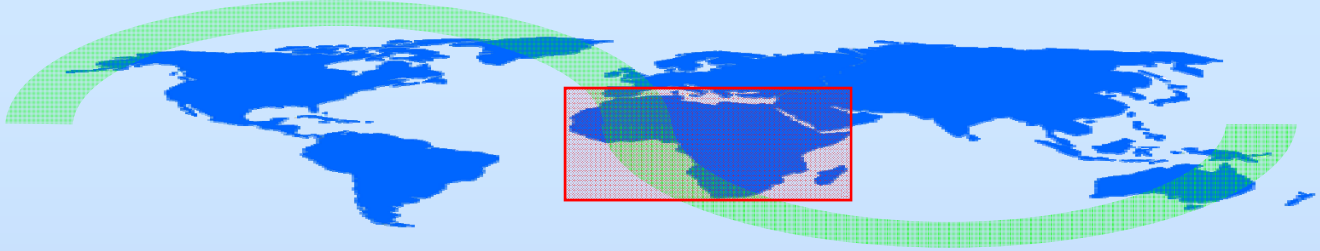




HSA SOAP Interfaces

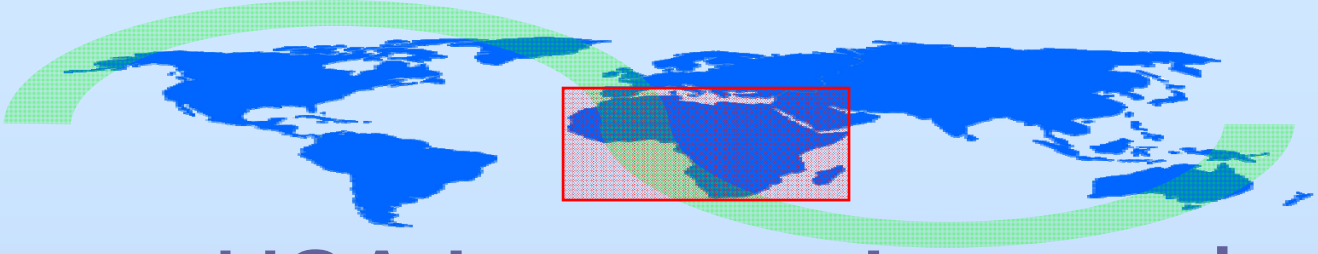


- Subset request (EWOC to HSA)
  - ECHO OrderFulfillment API with subset spec from ECHO Forms
- Granule request (HSA to EWOC)
  - ECHO OrderFulfillment API
- Status updates (HSA to ECS)
  - ECS OrderStatusUpdate API



How HSA handles those major issues

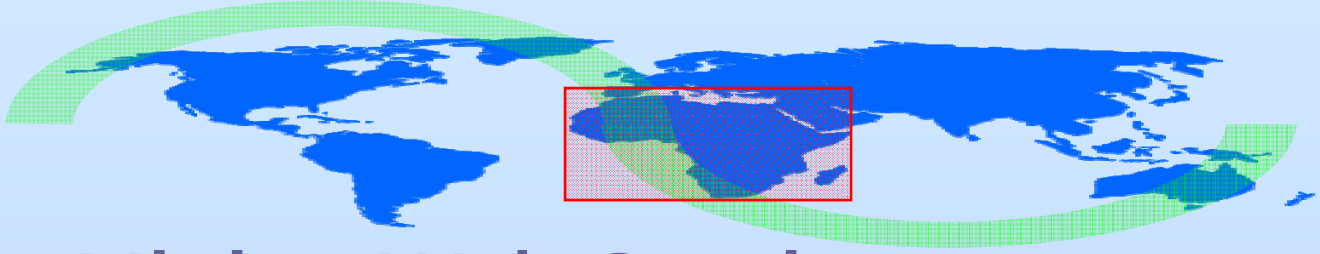
- ***Service discovery*** – subsetting offered in data order process via ECHO Forms
- ***Workflow orchestration*** – pre-defined branch of ECS order processing
- ***Resource management*** – HSA on dedicated hardware, manages own disk space
- ***Security*** – HSA is a trusted application, developed and tested with ECS and ECHO teams



HSA Lessons Learned

- By far the most time-consuming part of the HSA effort has been interface definition
  - ECHO Forms definition for subsetting is complex and requires consensus among several teams – EWOC, HSA, NSIDC, ECS

    Could not have done this without Doug Newman
- WSDLs and schemas really should be accessible by all developers – *even if not finalized for publication* – so all parties are coding to the same spec



Mining Web Services prototype

with workflow orchestration and management

- ADaM mining web services package developed at UAH, deployed at GES DISC
- MWS Composer (adapted from XBaya) used to create BPEL workflows with WSDLs
- GES DISC using S4PM to acquire and stage data, invoke workflow

MWS - high level concept

1 Suite of data mining web services packaged at UAH

Algorithm Development and Mining (ADaM) Toolkit
http://datamining.itsc.uah.edu

2 Mining services package is deployed at data provider sites

4 Mining services process large data stores to deliver results

3 Use scenarios within a service oriented architecture include:

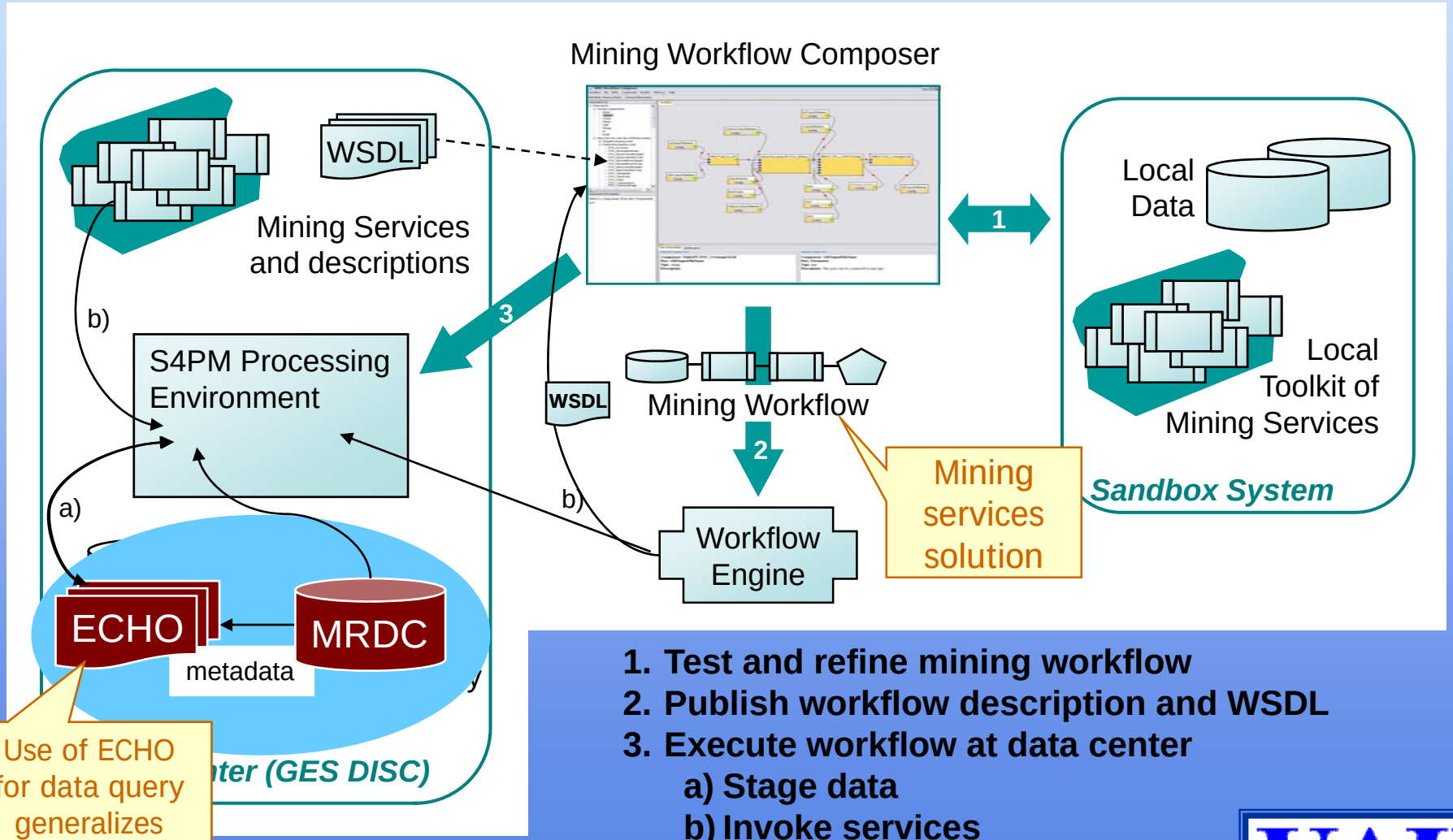
a ***End user*** interactively sets up mining process at data provider site

b ***Data provider*** incorporates mining services into processing flows

Services Solutions

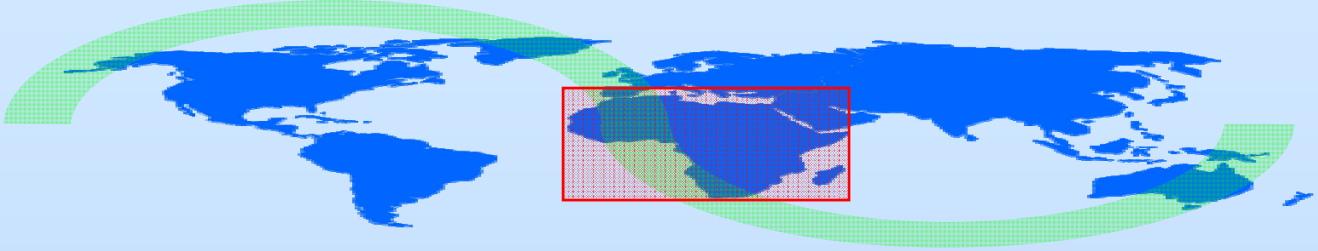
c ***Web service broker*** chains mining and other services

MWS - implementation details



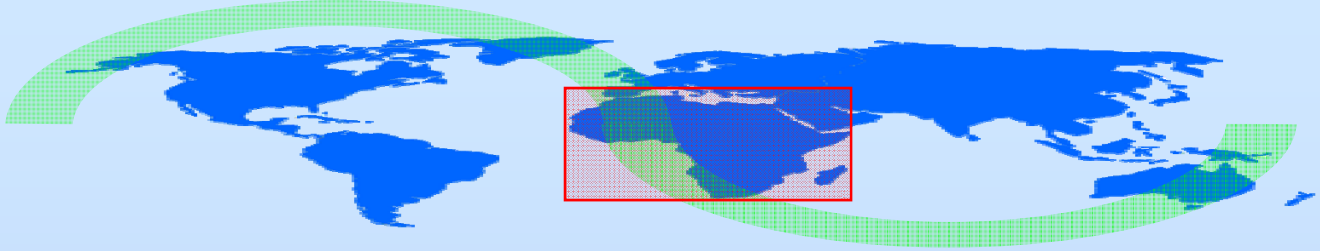
Use of ECHO for data query generalizes solution

1. **Test and refine mining workflow**
2. **Publish workflow description and WSDL**
3. **Execute workflow at data center**
   a) **Stage data**
   b) **Invoke services**



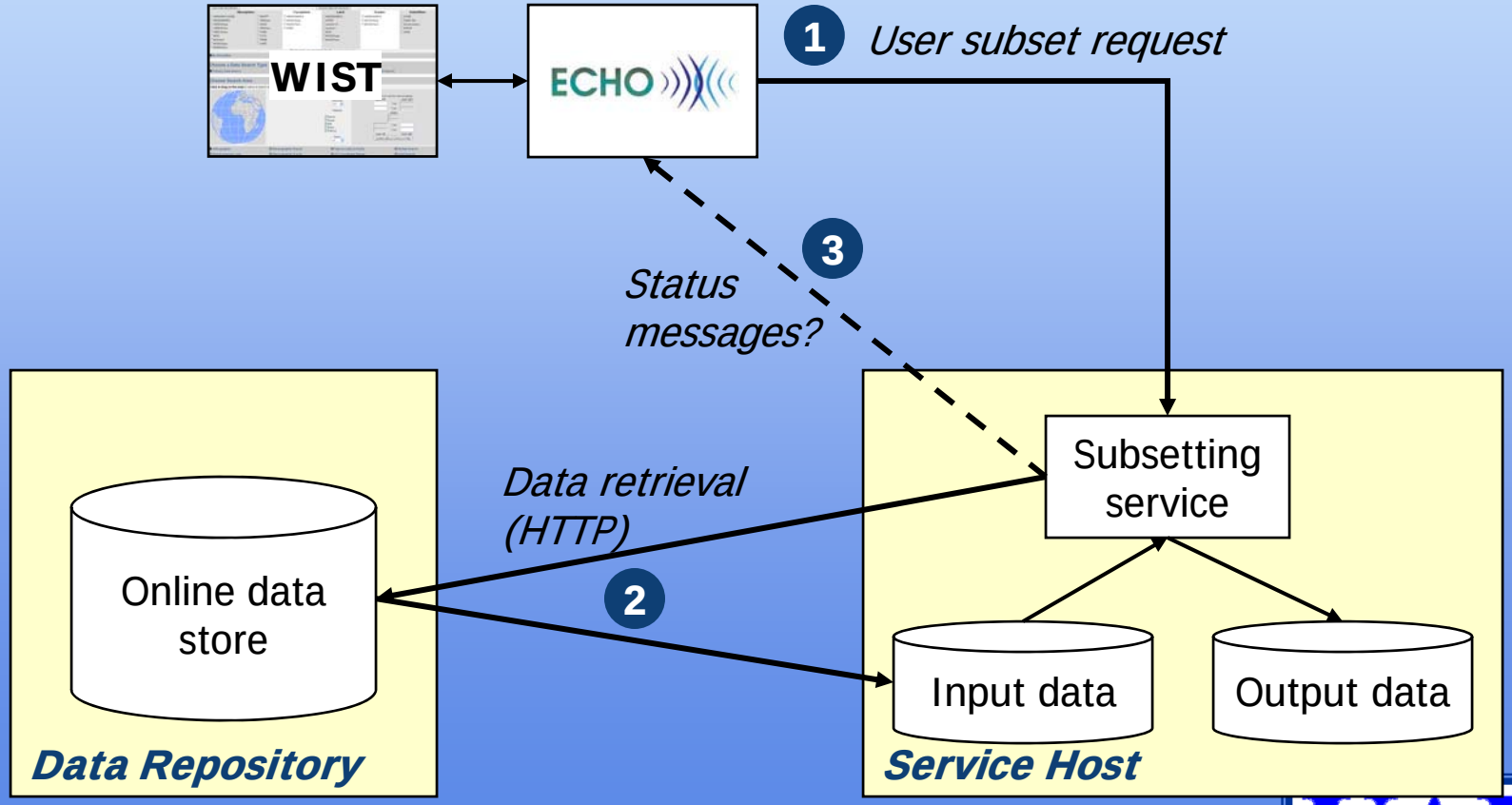
How MWS handles those major issues

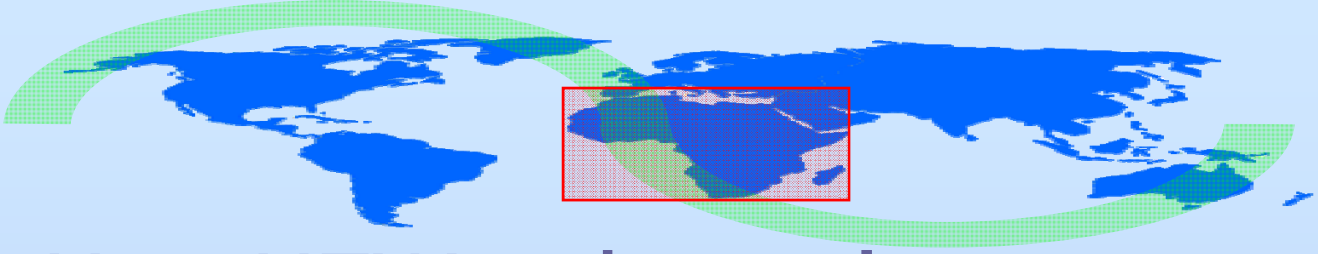
- ***Service discovery*** – some options:
  - Individual services registered in ECHO
  - MWS Composer advertised in ECHO
  - "Service Solutions" registered in ECHO
- ***Workflow orchestration*** – MWS Composer and Sandbox specialized for data mining workflows
- ***Resource management*** – handled by S4PM at GES-DISC
- ***Security*** –trusted services deployed in restricted environment at DAAC



HEW Web Service prototype

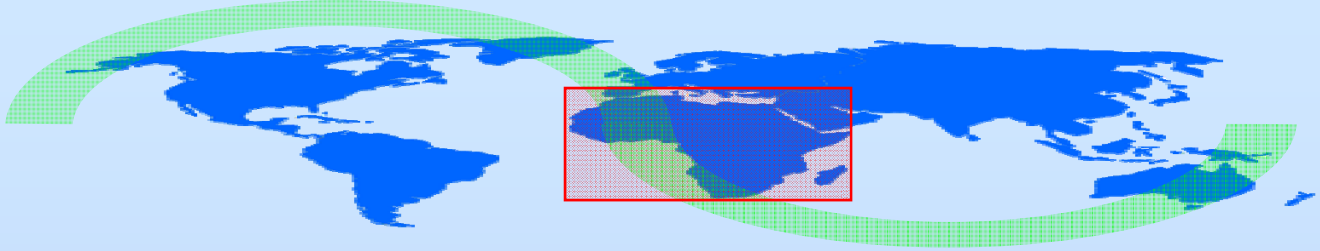
stand-alone service





How HEW web service prototype handles those major issues

- ***Service discovery*** – registered in ECHO testbed
- ***Workflow orchestration*** – ECHO?
- ***Resource management*** – not addressed
- ***Security*** – not addressed



Issues for web services and ECHO

- SOAP schema to use?
  - Are services expected to conform to ECHO OrderFulfillment API, or will ECHO accommodate the different services' existing APIs?
- Data to service? (acknowledging bandwidth issues)
  - URL to file included in subset request?
  - Data staging service as part of service chain?
- Service to data? (acknowledging security issues)
  - Pre-deployment, or on-the-fly?
  - Local customization and configuration may be required
- How will ECHO Forms for loosely-coupled data and services be generated and configuration controlled?
- How to expand service taxonomy to include new service types (e.g., data mining)?

Alternative Query Language (AQL) Overview

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Introduction

- **Overview**
  - ECHO uses the ECHO Alternative Query Language (AQL) for its metadata querying capabilities.
  - ECHO AQL defines the format for searches on collections (discovery) and granules (inventory).
  - ECHO AQL is XML-based and must be validated by its own DTD, IIMSAQLQueryLanguage.dtd.
- **Support Materials**
  - IIMSAQLQueryLanguage.dtd available on ECHO web site:
    - http://api.echo.nasa.gov/echo/dtd/IIMSAQLQueryLanguage.dtd
  - ECHO User's Guide has a chapter for AQL describing each of the searchable attributes currently supported:
    - http://www.echo.nasa.gov/documents/ECHO9ClientPartnersUserGuide.pdf

AQL Support Search Attributes

Collection Search Attributes

» Search Criteria	» XML Element
» Campaign Short Name	» <CampaignShortName>...</CampaignShortName>
» Dataset ID	» <dataSetId>...</dataSetId>
» ECHO Insert Date	» <ECHOInsertDate>...</ECHOInsertDate>
» ECHO Last Update	» <ECHOLastUpdate>...</ECHOLastUpdate>
» Online Collections Only	» <onlineOnly/>
» Parameter	» <parameter>...</parameter>
» Processing Level	» <processingLevel>...</processingLevel>
» Sensor Name	» <sensorName>...</sensorName>
» Short Name	» <shortName>...</shortName>
» Source Name	» <sourceName>...</sourceName>
» Spatial	» <spatial>...</spatial>
» Spatial Keywords	» <spatialKeywords>...</spatialKeywords>
» Temporal	» <temporal>...</temporal>
» Temporal Keywords	» <temporalKeywords>...</temporalKeywords>
» Additional Attribute Names	» <additionalAttributeNames>...</additionalAttributeNames>
» Orderable Items	» <orderable/>
» Version ID	» <versionId>...</versionId>
» Archive Center	» <archiveCenter>...</archiveCenter>
» Additional Attributes	» <additionalAttributes>… </additionalAttributes>
» GCMD DIF Entry ID	» <difEntryId>… </difEntryId>

AQL Support Search Attributes

Granule Search Attributes

» Search Criteria	» XML Element
» Only Granules with Browse Data	» <browseOnly/>
» Campaign Short Name	» <CampaignShortName>...</CampaignShortName>
» Percentage of cloud Cover	» <cloudCover>...</cloudCover>
» Dataset ID	» <dataSetId>...</dataSetId>
» ECHO Insert Date	» <ECHOInsertDate>...</ECHOInsertDate>
» ECHO Last Update	» <ECHOLastUpdate>...</ECHOLastUpdate>
» Either Day or Night Granules Only	» <dayNightFlag/>
» Only Global Granules	» <globalGranulesOnly/>
» Search on ECHO granule IDs (formerly granuleId)	» <ECHOGranuleID>...</ECHOGranuleID>
» Search on Granule UR (provider specific)	» <GranuleUR>...</GranuleUR>
» Online Granules Only	» <onlineOnly/>
» Two-D Coordinate System	» <TwoDCoordinateSystem>...</TwoDCoordinateSystem>
» Producer Granule ID	» <ProducerGranuleID>...</ ProducerGranuleID>
» Additional Attributes	» <additionalAttributes>...</additionalAttributes>
» Sensor Name	» <sensorName>...<sensorName>
» Source Name	» <sourceName>...</sourceName>
» Spatial	» <spatial>...</spatial>
» Temporal	» <temporal>...</temporal>
» Orderable Items	» <orderable/>
» Version ID	» <versionId>...</versionId>
» PGE Name	» <PGEName>...</PGEName>
» PGE Version	» <PGEVersion>...</PGEVersion>
» Measured Parameters	» <measuredParameters>...</measuredParameters>
» Provider Production Date	» <providerProductionDate>…</providerProductionDate>
» Provider Insert Date	» <providerInsertDate>…</providerInsertDate>
» Orbit Number	» <orbitNumber>…</orbitNumber>
» Equatorial Crossing Longitude	» <equatorCrossingLongitude>…</ equatorCrossingLongitude >
» Equatorial Crossing Date	» <equatorCrossingDate>…</equatorCrossingDate>

AQL Structure

- **Sample Collection Query**

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE query SYSTEM http://api.echo.nasa.gov/echo/dtd/IIMSAQLQueryLanguage.dtd>
<query>

    <for value= “collections"/>

    <dataCenterId>
        <all/>
    </dataCenterId>

    <where>  <!-- AND relationship between conditions -->
        <collectionCondition>
            <dataSetId>…</dataSetId>
        </collectionCondition>
        <collectionCondition>
            <temporal>…</temporal>
        </collectionCondition>
    </where>

</query>
```

AQL Structure

- **Sample Granule Query**

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE query SYSTEM http://api.echo.nasa.gov/echo/dtd/IIMSAQLQueryLanguage.dtd>
<query>

    <for value= “granules"/>

    <dataCenterId>
        <list>
            <value>ORNL_DAAC</value>
            <value>GSFCS4PA</value>
        </list>
    </dataCenterId>

    <where>  <!-- AND relationship between conditions -->
        <granuleCondition negated=“Y”>
            <dataSetId>…</dataSetId>
        </granuleCondition>
        < granuleCondition >
            < spatial >…</spatial>
        </ granuleCondition >
    </where>

</query>
```

Text-based Search

- **Text pattern**
  - Supports SQL LIKE condition
    - Wildcard "%" to match any string of any length
    - Wildcard "_" to match a single character
  - Requires single quotes around text (e.g. 'LAADS')
  - Use caseInsensitive attribute for case sensitivity
    - The default is case sensitive.

Example - Search for any text including '1A' or '1a':

```
<dataSetId>
    <textPattern caseInsensitive="Y">'%1A%'</textPattern>
</dataSetId>
```

Example - Search for any text ending with '1' and an additional character:

```
<dataSetId>
    <textPattern >'%1_'</textPattern>
</dataSetId>
```

Text-based Search (Cont'd)

- **List/value (exact match)**
  - Requires single quote to wrap up text
  - Use caseInsensitive for case sensitivity
  - OR relationship between values

Example - Search for a match from a list of values:

```
<dataSetId>
    <list>
      <value>'LEAF CHEMISTRY, 1992-1993 (ACCP)'</value>
      <value>'ASTER DEM Product V002'</value>
    </list>
  </dataSetId>
```

Example - Search for a case insensitive match from of a single value:

```
 <spatialKeywords>
     <value caseInsensitive=”Y”>'Africa'</value>
</spatialKeywords>
```

Text-based Search (Cont'd)

- **Force AND relationship between values for certain attributes such as sensorName and SourceName**

Example - Results must match every value specified:

```
<sensorName operator="AND">
    <list>
      <value>'human observer'</value>
      <value>'rain gauge'</value>
    </list>
</sensorName>
```

Spatial Search

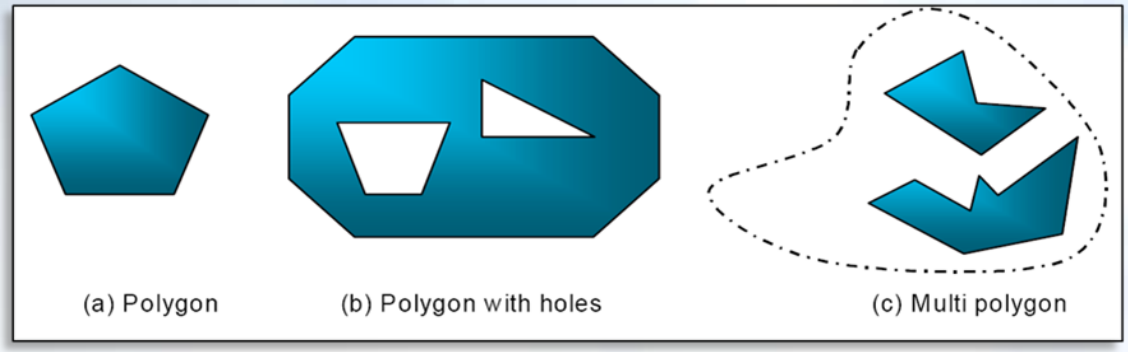
- **Spatial Type of metadata**
  - NORMAL
    - Metadata is represented by Cartesian or Geodetic coordinate systems in term of geometries
  - GLOBAL (granule only)
    - Metadata's spatial coverage is entire earth
  - ORBIT (granule only)
    - Metadata is represented by orbit-based parameters, such as equatorial crossing longitude, start circular latitude, end circular latitude.

Spatial Search (Cont'd)

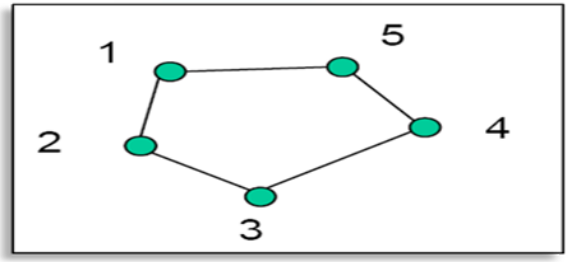
- **Search Window**
  - GML-based Geometries
    - Polygon, MultiPolygon, LString
    - Coordinates for the point must be specified with longitude first: (longitude, latitude)
  - ECHO defined Geometries
    - IIMSPolygon, IIMSMultiPolygon, IIMSLine, IIMSPoint
    - Coordinates for the point are latitude first: (latitude, longitude)

Spatial Search (Cont'd)

- **Polygon and Multiple Polygons**



- **Order of Points in a Polygonal Ring**
  - Counter-clockwise
  - First point must be the same as last point



Spatial Search (Cont'd)

- **Relationship Between Data and Search Geometries (The default relationship is RELATE)**

»	Spatial Operator	»	Description
»	EQUAL	»	They have the same boundary and interior.
»	TOUCH	»	The boundaries intersect but the interiors do not.
»	WITHIN	»	Interior and boundary of the first object are completely contained in the interior of the second.
»	CONTAINS	»	The interior and boundary of the second object are completely contained in the interior of the first.
»	RELATE	»	The objects are non-disjoint, that is, their bodies and/or boundaries intersect.

(a) Search region B, A is within; Search region A, area B contains A

(b) C and D touch; C and E do not touch

Spatial Search (Cont'd)

- **Search with Polygon Example**

Example:

```
<spatial operator="RELATE">
  <Polygon>
    <LRing>
      <CList>
        -120, -30, -100, -60, 5, -90,
        -120, -60, 160, 5, 160, 60, 120, 85,
        5, 85, -120, 30, -120, -30
      </CList>
    </LRing>
  </Polygon>
  <SpatialType>
    <list>
      <value>NORMAL</value>
    </list>
  </SpatialType>
</spatial>
```

Two-D Coordinates Search

- **Two dimensional Coordinates (X/Y Coordinates, Path/Row)**
  - Search data that supports two dimensional coordinate system

Example:

```
<TwoDCoordinateSystem>
    <TwoDCoordinateSystemName>
        <value>'WRS2'</value>
    </TwoDCoordinateSystemName>
    <Coordinate1><range lower='15' upper='20'/></Coordinate1>
    <Coordinate2><range lower='33' upper='42'/></Coordinate2>
</ TwoDCoordinateSystem>
```

Two-D Coordinates Search (Cont'd)

- **Search data that supports two dimensional coordinate system and spatial**

Example:

```
<spatial>
  <Polygon>
   <LRing>
     <CList>
      -120, -30, -100, -60, 5, -90, 5, 85, -120, 30, -120, -30
     </CList>
  </LRing>
</Polygon>
<SpatialType><value>NORMAL</value></SpatialType>
  <TwoDCoordinateSystem>
    <TwoDCoordinateSystemName>
      <value>'WRS2'</value>
    </TwoDCoordinateSystemName>
    <Coordinate1><range lower='15' upper='20'/></Coordinate1>
    <Coordinate2><range lower='33' upper='42'/></Coordinate2>
  </ TwoDCoordinateSystem>
<spatial>
```

Orbit Search

- **Orbit Spatial Search**
  - Search data whose orbit data matches spatial condition

Example:

```
<spatial>
     <Polygon>
       <LRing>
         <CList>
        -120, -30, -100, -60, 5, -90,
        -120, -60, 160, 5, 160, 60, 120, 85,
        5, 85, -120, 30, -120, -30
         </CList>
       </LRing>
  </Polygon>
  <SpatialType>
    <list>
      <value>ORBIT</value>
    </list>
  </SpatialType>
</spatial>
```

Orbit Search (Cont'd)

- **Orbit Attribute Search**
  - Search data that matches orbit attribute conditions

Example:

```
 <granuleCondition>
    <orbitNumber>
        <range lower = '5' upper ='20'/>
    </orbitNumber>
</granuleCondition>
<granuleCondition>
    <equatorCrossingLongitude>
        <range lower='-150' upper='100'/>
    </equatorCrossingLongitude >
</granuleCondition>
    <equatorCrossingDate>
        <dateRange>
            <startDate><Date YYYY="2006" MM="5" DD="12"/></startDate>
            <stopDate><Date YYYY="2007" MM="2" DD="10"/></stopDate>
        </dateRange>
    </equatorCrossingDate>
</granuleCondition>
```

Temporal Search

- **Search data with a temporal extent date range**

  Example:

```
<temporal>
    <startDate><Date YYYY="1990" MM="5" DD="12"/></startDate>
    <stopDate><Date YYYY="1992" MM="6" DD="13"/></stopDate>
</temporal>
```

- **Search data whose temporal extent falls between specified data range and specified period in the year**

  Example:

```
<temporal>
  <startDate><Date YYYY="1990" MM="5" DD="12"/></startDate>
  <stopDate><Date YYYY="1992" MM="2" DD="10"/></stopDate>
  <startDay value="5"/>
  <endDay value="60"/>
</temporal>
```

Search By Additional Attributes

- **Search based one or many group of additional attributes by name/value pair**
  - Allow "AND" or "OR" relationship between groups

Example:

```
<additionalAttributes operator='AND'>
    <additionalAttribute>
      <additionalAttributeName>
        'AveragedFocalPlane1Temperature'
      </additionalAttributeName>
      <additionalAttributeValue>
        <range lower='169' upper='170'/>
      </additionalAttributeValue>
    </additionalAttribute>
    <additionalAttribute>
      <additionalAttributeName>
        'FocalPlaneSensorName'
      </additionalAttributeName>
      <additionalAttributeValue>
        <textPattern>'%Laser%'</textPattern>
      </additionalAttributeValue>
    </additionalAttribute>
</additionalAttributes>
```

Search By Measured Parameters

- **Search based one or many group of measured paramters by name/value pair**
  - Allow "AND" or "OR" relationship between groups

Example:

```
<measuredParameters operator="AND">
    <measuredParameter>
        <measuredParameterName>'EV_1KM_RefSB'</measuredParameterName>
        <operationalQualityFlag>
            <value>'Passed'</value>
        </operationalQualityFlag>
        <QAPercentOutOfBoundsData>
            <range lower='30' upper='40'/>
        </QAPercentOutOfBoundsData>
    </measuredParameter>
    <measuredParameter>
        <measuredParameterName>'EV_1KM_RefSc'</measuredParameterName>
        <QAPercentOutOfBoundsData>
            <range lower='39' upper='50'/>
        </QAPercentOutOfBoundsData>
    </measuredParameter>
</measuredParameters>
```

Questions?

ECHO Query Optimization

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- Overview
- Query benchmarks
- Query conditions and query response time
- ECHO 10 improvement
- Future improvement

Overview

- **What is query response time composed of ?**
  - Application server lead time
  - Database search time
  - Result present time

Overview

- **What are the factors which contribute to query response time ?**
  - Query conditions
    - Scope of the query and number of query parameters
  - Result presentations
    - Number of attributes and ACL
  - System Conditions
    - Cache, ingest, and concurrent users.

Overview

- **What is the ECHO limit for query response time ?**
  - ECHO JDBC timeout 3400 seconds
  - ECHO Weblogic server timeout 3600 seconds
  - ECHO Apache session timeout 3800 seconds

  - WIST session timeout 3600 seconds

Query Benchmarks

- **Benchmark Query Specifications:**
  - Six benchmark queries are submitted to ECHO OPS every 6 hours (2:00, 8:00, 14:00, 20:00)
  - Granule queries against a collection with more than 400K granules
  - Each query returns 'HITS' first and then present first 25 records
    - Each records contains five granule attributes
  - ECHO query performance web page
    - http://www.echo.nasa.gov/status/performance/status_perfWeb.shtml

Query Benchmarks

- **Q11ST**
  - Granule query on one LAADS collection with spatial (10X10) and temporal (1 month) conditions.
- **Summary of Statistics:**

Number of Queries Run	123
Number of Successful Queries Run	121
Percentage of Successful Queries	98%
Number of Hits Currently Returned	157
Minimum Queries Duration in Seconds	7
Maximum Queries Duration in Seconds	539
Mean Queries Duration in Seconds	34

Query Benchmarks

- **Q11TA**
  - Granule query on one LPDAAC_ECS collection with temporal (1 year) and specified additional attributes conditions
- **Summary of Statistics:**

Number of Queries Run	122
Number of Successful Queries Run	120
Percentage of Successful Queries	98
Number of Hits Currently Returned	42
Minimum Queries Duration in Seconds	5
Maximum Queries Duration in Seconds	310
Mean Queries Duration in Seconds	80

Query Conditions and Query Response Time

- **Data center and dataset ID conditions**
  - Every data center is treated as a separate query
  - Queries with dataset id specified run faster
    - Queries with single collection → response time is between 30 to 90 seconds
    - Queries with multiple collections (>5) → response time is between 90 seconds and 300 seconds

Query Conditions and Query Response Time

- **Spatial Conditions:**
  - Large region query → Slower response time
    - Limitations for geodetic data:
      - No polygon element can have an area larger than one-half the surface of the Earth
      - No line element can have a length longer than half the perimeter (a great circle) of the Earth
  - Response time does not change with number of coordinates describing the spatial extent

Query Conditions and Query Response Time

- **Other Spatial Conditions:**
  - GlobalGranulesOnly
  - TwoDCoordinateSystem (WIST X/Y coordinate)
  - Orbit search conditions (WIST orbit search)

  - The database search time is factor of 3 faster than conventional spatial region queries

Query Conditions and Query Response Time

- **MaxResults:**
  - For most of the non-spatial queries, the query response time is directly proportional to the maximum number of results to be returned
  - Limiting number of the result returned from a non-spatial query, the query response time can be improved proportionally and 10-100 times for queries which would return >100K hits!
  - In ECHO 10, the MaxResults tag is also enabled for spatial queries

Query Conditions and Query Response Time

Query Result Presentation

- The result presentation time varies by the number of attributes included in the results
  - The response time for presenting first 25 records with 5 attributes 2-3 seconds
  - The response time for presenting first 25 records with all attributes usually last 10- 20 seconds
  - The response time also varies with data filtering and ACL (Improved in ECHO 10)

ECHO 10 Improvement

- **Query result paging**
  - Replaced query result table with query cursor
- **Pre-bind collection level ACL and data filter conditions**
  - Reduced post query result processing time
- **New ECHO ingest**
  - Eliminated temporary ingest tables
    - Less buffer cache memory usage.
  - Could be run on other platforms
    - Less system I/O and memory contention.
- **Data Model**
  - Removed redundant table columns and enforced data integrity
    - Reduction of data volume and speed up the data search

Future Improvement

- **System resource tuning**
  - Adjust Cache memory, parallel server and I/O parameters, balance load between query and ingest
- **SQL optimization**
  - Review execution plans and restructure inefficient SQLs
- **Index adjustment and table partitioning**
  - Adjust index type for optimal query executions
  - Add table partitions to enable fast data access
- **Create collection level summary tables or views**
  - Dynamically reflect collection temporal and spatial coverage
  - Dynamically present collection level information such as number of granules, number of browses, number of online granules and etc.

Questions?

Creating ECHO Forms

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- The problem domain
- The solution : ECHO Forms
- Technologies used
- Structure of ECHO Forms
- UI elements
- UI rules

The Problem Domain

- **WHY??**
  - ECHO needed a way for providers to describe various ordering options that differed by product, provider, and possibly even the user placing the order.

- **Specifically ECHO Forms tries to address:**
  - The definition, population and transport of order options
  - A generic means of defining order options
  - A mechanism controlled by the providers
  - A standards-based solution
  - Decoupling the data from its representation
  - Dynamic representation of order options
  - A platform neutral solution

Solution : ECHO Forms

- **The MVC pattern**
  - User interface rendered by clients
  - Rules enforced by ECHO
  - Selection format defined by providers

- **Reusable components**
  - Import
  - Controlref
  - Selectref

```
<form>
  <import name="SystemForm"/>
  <model>
    <instance>
      <!-- your options go here -->
    </instance>
    <extension>
      <auto:expressions>
        <auto:expression />
      </auto:expressions>
    </extension>
  </model>
  <ui>
    <!-- user interface and rules -->
  </ui>
</form>
```

- **Rules**
  - Ref
  - Relevant
  - Required
  - Read Only
  - Constraint

- **Building blocks**
  - Input
  - Output
  - Select
  - Range
  - Secret
  - TextArea
  - Group

Technologies Used

- **XML**

  ECHO Forms are written in XML.

```
<form>
  <import name="SystemForm"/>
  ...
</form>
```

- **XPath**

  ECHO Forms bind the model and user interface (UI) portions of an ECHO Forms document using XPath.

```
/results/provider/result/GranuleURMetaData/Data
Granule/SizeMBDataGranule/text()
```

- **XML Schema**

  ECHO Forms provides support for some of the built-in types from the XML Schema definition.

```
<xs:schema targetNamespace="http://echo.nasa.gov/v9/echoforms"
           xmlns="http://echo.nasa.gov/v9/echoforms">
  <xs:complexType name="Form">
  ...
</xs:schema>
```

Solution : ECHO Forms

- Import – to include other forms..
- Instance – the actual structure of the resulting selections
- Extensions – autopopulation of data…
- UI – like HTML for forms

```
<form>
  <import name="SystemForm"/>
  <model>
    <instance>
      <!-- your options go here -->
    </instance>
    <extension>
      <auto:expressions>
        <auto:expression />
      </auto:expressions>
    </extension>
  </model>
  <ui>
    <!-- user interface and rules -->
  </ui>
</form>
```

Structure - import

- *'ECHO Forms Documents can import other ECHO Forms documents registered in ECHO'*
- **Entry point for component reuse.**
- **Example:**

```
<form>
<import name="JazPanel-v1.xml" scope="SYSTEM"/>
  <model>
    <instance>
      <!-- your options go here -->
    </instance>
    <extension>
      <auto:expressions>
        <auto:expression />
      </auto:expressions>
    </extension>
  </model>
  <ui>
    <!-- user interface and rules -->
  </ui>
</form>
```

Structure - instance

- The actual data structure of an order option
- Structure defined by order fulfillment entity
- May be populated with default values
- Example:

```
<form>
  <import name="SystemForm"/>
  <model>
    <instance>
      <options>
        <mediatype>FTPPULL</mediatype>
        <mediaformat/>
      </options>
    </instance>
  </model>
  <model>
  <ui>
    <!-- user interface and rules -->
  </ui>
</form>
```

Structure – Auto-populate

- A means to populate order options with metadata from ECHO.

```
<form>
  <import name="SystemForm"/>
  <model>
```

```
<extension name="auto:autopopulate"
xmlns:auto="http://echo.nasa.gov/v9/echoforms/autopopulate">
<auto:expressions>
  <auto:expression ref="prov:options/prov:granulesize"
        metadata="/results/provider/result/GranuleURMetaData/
        DataGranule/SizeMBDataGranule/text()" />
</auto:expressions>
</extension>
```

```
  </model>
  <ui>
    <!-- user interface and rules -->
  </ui>
</form>
```

Structure - UI

- Guidelines for client rendering of user interface
- Provision for restrictions on data content
- Provision for dynamic representation of options
- Example:

```
<form>
  <import name="SystemForm"/>
  <model>
    <instance>
      <!-- your options go here -->
    </instance>
    <extension>
      <auto:expressions>
        <auto:expression />
      </auto:expressions>
```

```
<ui>
    <input id="mediaTypeSelect" type="xsd:string"
           ref="mediatype" label="Media Type"
           required="true()"/>
</ui>
```

```
</form>
```

Structure - Selection

- The first child of the instance of a populated form
- Presented to the provider as part of order
- Example:

```
<model>
  <instance>
    <options>
      <mediatype>FTPPULL</mediatype>
      <mediaformat/>
    </options>
```

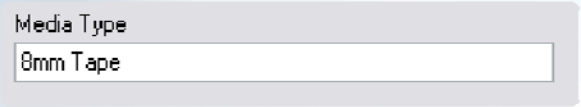
```
<options>
        <mediatype>FTPPULL</mediatype>
        <mediaformat/>
</options>
```

UI Elements - input

- *'The input control allows free-form input from the user'*
- UI example:

```
<input id="mediaTypeSelect" type="xsd:string" ref="mediatype" label="Media Type"/>
```

- Rendered example:



UI Elements - output

- *'This form control renders a value from the instance data, but provides no means for entering or changing data'*
- UI example:

```
<output id="NoItems" type="xsd:string"
value="concat(string('Your order contains '), 5, string(' items.'))"
label="Order Summary"/>
```

- Rendered example:

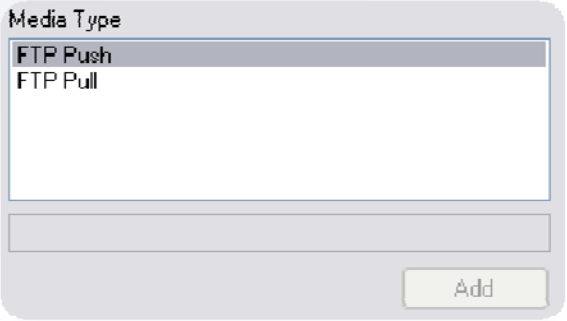
Order Summary
Your order contains 5 items.

UI Elements - select

- *'This form control allows the user to make one or multiple selections from a set of choices'*
- UI example:

```
<select id="mediaType" ref="mediatype" valueElementName="value"
label="Media Type">
   <item name="FTP Push" value="FTPPUSH"/>
   <item name="FTP Pull" value="FTPPULL"/>
</select>
```

- Rendered example:



UI Elements - range

- *'This form control allows selection from a sequential range of values'*
- UI example:

```
<range id="temporalRange" type="xsd:integer" ref="temporal range" start="0" end="10"
   step="2"
label="Temporal range/>
```

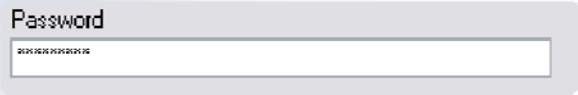
- Rendered example:

UI Elements - secret

- *'The secret control allows free-form input from the user'* – but input is obscured
- UI example:

```
<secret id="mediaTypeSelect" type="xsd:string" ref="password" label="Password"/>
```

- Rendered example:

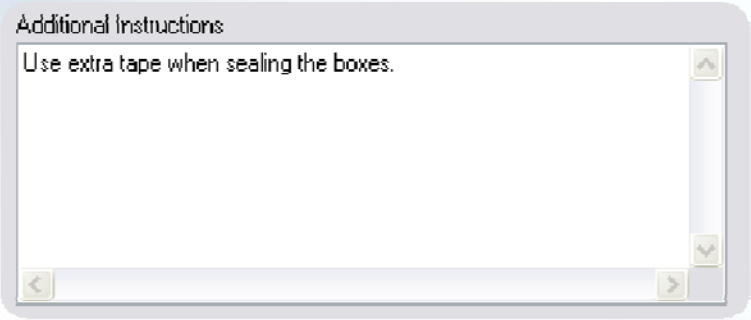


UI Elements - textarea

- *'The textarea control allows free-form input from the user'* – suitable for multi-line input.
- UI example:

```
<textarea id="addInstr" type="xsd:string" ref="addInstr" label="Additional
   Instructions"/>
```

- Rendered example:

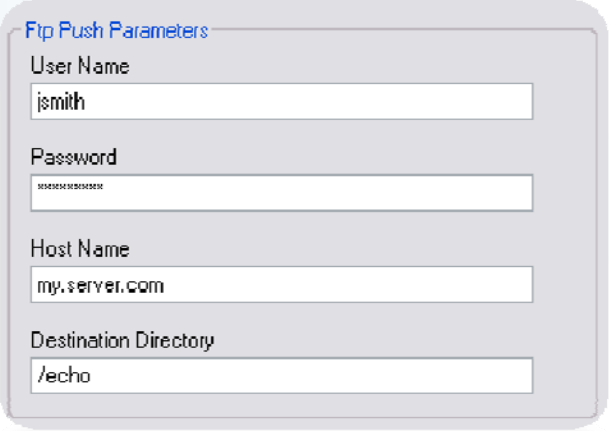


UI Elements - group

- *'A group combines together other controls to show they belong together'*
- UI example:

```
<group id="ftpPushGroup" ref="ftppush" label="Ftp Push Parameters">
    <input id="user" type="xsd:string" ref="user" label="User Name"/>
    <secret id="password" type="xsd:string" ref="password" label="Password"/>
    <input id="hostname" type="xsd:string" ref="host" label="Host Name"/>
    <input id="destination" type="xsd:string" ref="dest" label="Destination Directory"/>
</group>
```

- Rendered example:



UI Reuse Elements - selectref

- *'The selectref reference control indicates that the control referenced should replace this reference control in the form'*
- Example:

```
<selectref ref="po:medias" idref="system:mediaTypeSelect">
   <item label="8MM Tape 5GB" value="TAPE8MM_5GB"/>
   <item label="FTP Push" value="FTPPUSH"/>

</selectref>
```

UI Reuse Elements - controlref

- *'The controlref reference control indicates that the control referenced should replace this reference control in the form'*
- Example:

```
<controlref ref="ftppush" idref="echo:ftpPushGroup" required="true()">
    <constraints>
        <constraint>
                    <xpath>string-length(password) &gt; 4</xpath>
                    <alert>Your password must be longer than 4 characters</alert>
        </constraint>
    </constraints>

</controlref>
```

UI Rules – ref

- *'The ref attribute is used to bind a control to a node in the instance document'*
- Example:

```
<model>
    <instance>
      <options>
      <mediatype>FTPPULL</mediatype>
      <mediaformat/>
      </options>
    </instance>
</model>
<ui>
    <input id="mediaTypeSelect" type="xsd:string"
              ref="mediatype" label="Media Type"
              required="true()"/>
</ui>
```

UI Rules – relevant

- *'The relevant attribute is used to indicate the relevance of a given control'*
- Example:

```
<form>
  <model>
    <instance>
      <options>
        <a>false</a>
        <b/>
      </options>
    </instance>
  </model>
  <ui>
    <input type="xsd:boolean" ref="a" label="check me"/>
    <input type="xsd:string" ref="b" relevant="a = 'true'" label="a is checked"/>
  </ui>
</form>
```

UI Rules - required

- *'The required attribute indicates that the instance document must contain a value for the control before the form may be submitted'*
- Example:

```
<form>
  <model>
    <instance>
      <options>
        <a>false</a>
        <b/>
      </options>
    </instance>
  </model>
  <ui>
    <input type="xsd:boolean" ref="a" label="a"/>
    <input type="xsd:string" ref="b" required="a = 'false'" label="b"/>
  </ui>
</form>
```

UI Rules - readonly

- *'The readonly attribute indicates if the instance data is read only or mutable'*
- Example:

```
<form>
  <model>
    <instance>
      <options>
        <a>false</a>
        <b/>
      </options>
    </instance>
  </model>
  <ui>
    <input type="xsd:boolean" ref="a" label="a"/>
    <input type="xsd:string" ref="b" readonly="a = 'false'" label="b"/>
  </ui>
</form>
```

UI Rules - constraint

- *'A constraint child element specifies a predicate that needs to be satisfied for the associated instance data node to be considered valid'*
- Example:

```
<form>
  <model>
    <instance>
      <options>
        <a/>
      </options>
    </instance>
  </model>
  <ui>
    <input type="xsd:string" ref="a" label="a">
      <constraints>
        <constraint>
          <xpath>string-length(a) &gt; 4</xpath>
          <alert>Value for a must be greater than 4 chars</alert>
        </constraint>
      </constraints>
  </ui>
</form>
```

References

- **ECHO Forms Specification**

  http://www.echo.nasa.gov/documents/ECHO_Forms_Specification.pdf
- **XML**

  http://www.w3.org/XML/
- **XML Schema**

  http://www.w3.org/TR/xmlschema-2/
- **XPath**

  http://www.w3.org/TR/xpath

Questions?

PUMP Basic Overview

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

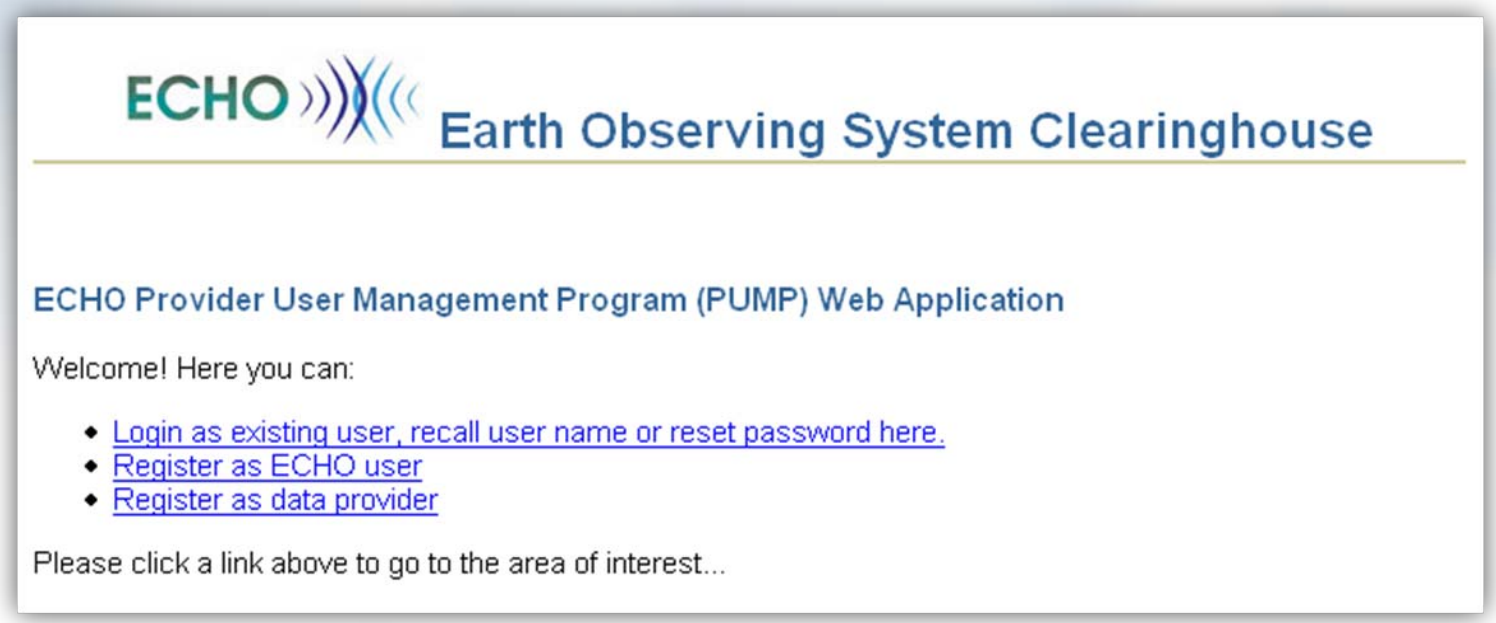
- Overview
- PUMP Main Page
- New User Registration
- New Provider Registration
- Login Page
- User Profile
- User Preferences
- Group Management
- Provider Context

Overview

- **What is PUMP?**
  - Provider User Management Program
  - Web application enabling usage of the ECHO API management services
- **Accessing PUMP**
  - Operations
    - https://api.echo.nasa.gov/pump
  - Partner-Test
    - https://api-test.echo.nasa.gov/pump
  - Testbed
    - https://testbed.echo.nasa.gov/pump
  - Downtime
    - Unavailable during Preventative Maintenance
    - Unavailable during ECHO installations

PUMP Main Page

- **Available Actions**
  - Navigate to login page
  - Register New User
  - Register New Data or Service Provider



New User Registration

- **User Information**
  - Populates ECHO "User Profile"
  - New Fields
    - Primary Study Area
    - User Type
  - Additional Phone #s and Addresses may be added later

Account Information

*User Name:
*Password:
*Confirm Password:

User Information

Title:
*First Name:
Middle Initial:
*Last Name:
Receive Periodic Informational Email from ECHO:
*Email Address:
*Organization:
*User Domain: GOVERNMENT
*User Region: USA
*Primary Study Area: Air-Sea Interaction
*User Type: Production User

Phone Number

*Phone Type: BUSINESS
*Phone Number:

Mailing Address

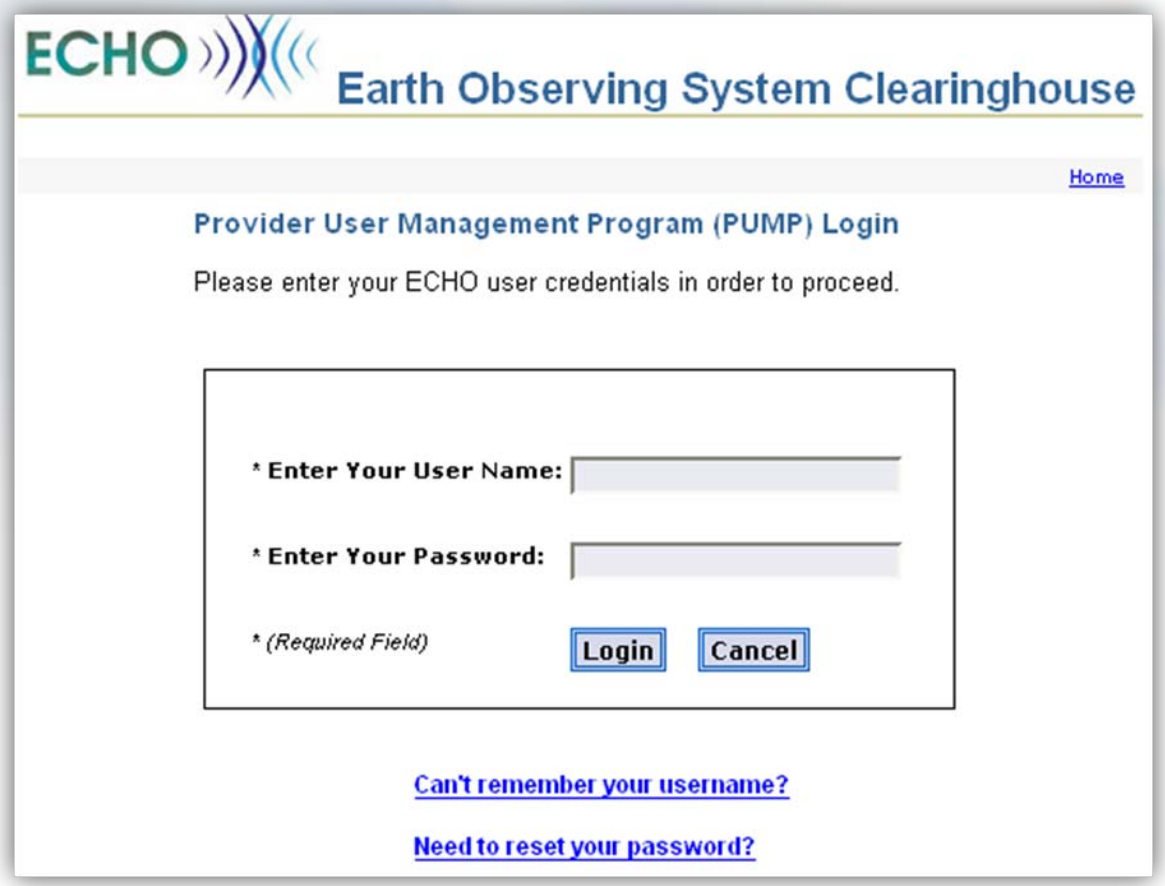
*Address Name: (work, home, etc.)
US Format:
*Street1:
Street2:
Street3:
Street4:
Street5:
*City:
State:
Zip/Postal code:
*Country: Abu Dhabi
Special Instructions

New Provider Registration

- **Requires registered user login**
- **Allows creation of Data & Service Providers**
- **A single contact is created initially**
  - More can be added later through PUMP
  - A 'user services' contact should be added for display in WIST
- **User submitting provider application will be given Provider Role**
- **ECHO Operations will approve review and activate provider**
  - Submitter will receive an email from the ECHO system
  - Submitter should be in contact with ECHO Operations to coordinate Ingest and other configuration information

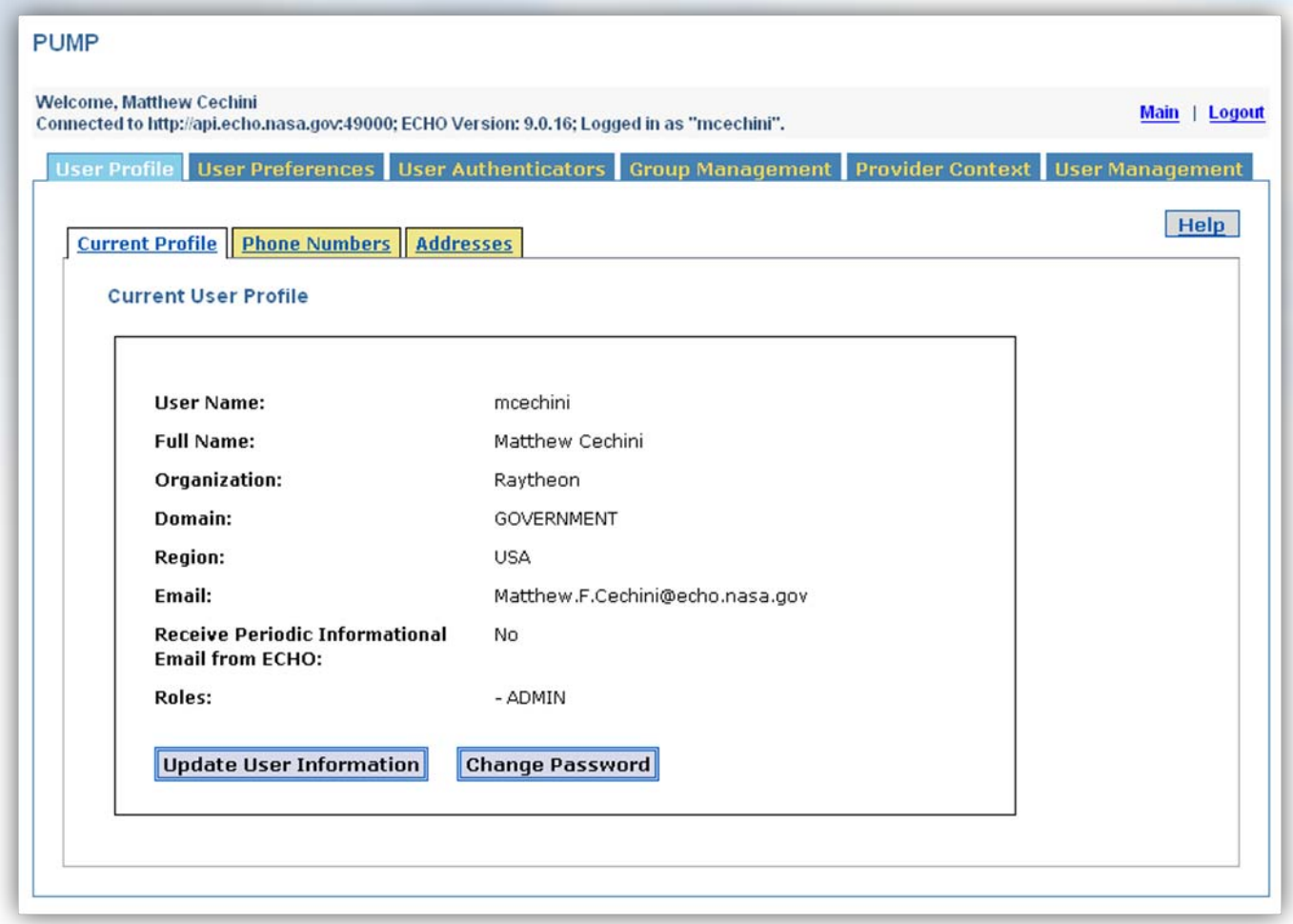
Login Page

- Use 'home' link to return to main PUMP page
- New accounts are active immediately



Main Page

- 'Main' link returns to this page from all other PUMP pages
- 'Logout' link logs user out of PUMP from all PUMP pages



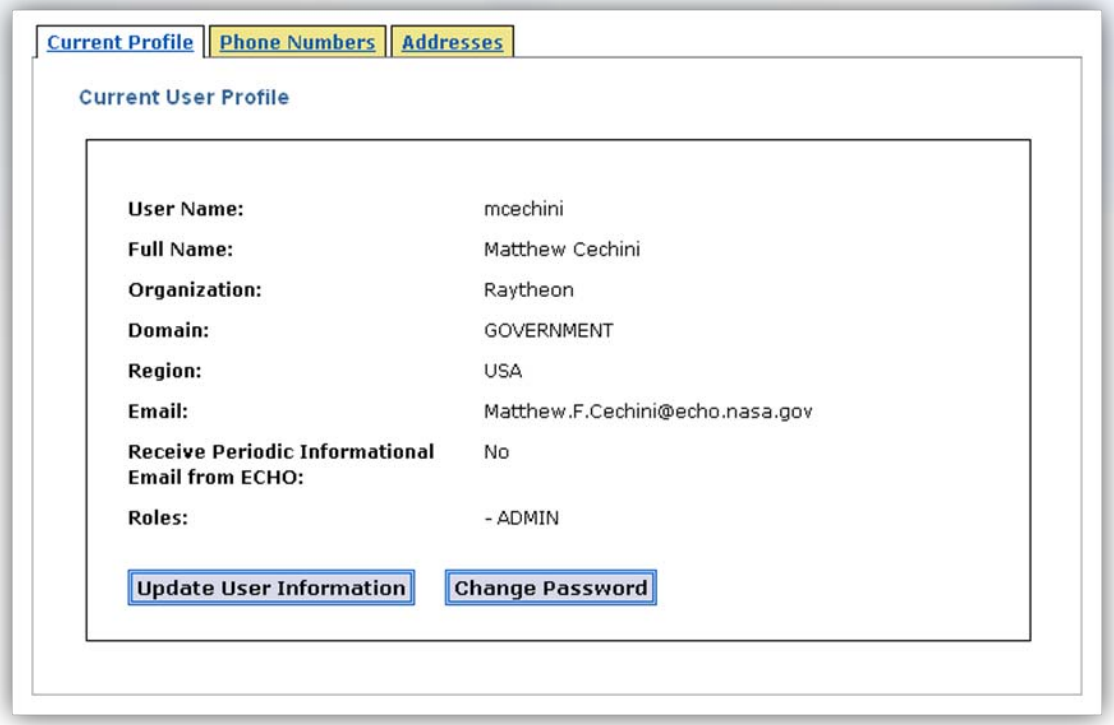
PUMP Tabs

- **Main Page Tabs**
  - User Profile – Manage user profile
    - Main landing page
  - User Preferences – Manage user preferences
  - User Authenticators – Not used
    - Will be removed from PUMP in 10.0.x
  - Group Management – Manage user groups
    - Requires provider role
  - Provider Context – Manage provider information and configuration
    - Requires provider role to view
    - User lookup
    - Order tracking

User Profile

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Current Profile**
  - Update User Information
  - Change Password
  - Add/Update/Remove phone numbers
  - Add/Update/Remove addresses



User Preferences

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Update or delete user preference information

User Preferences

Order Notification Level: INFO

Custom Properties XML: <ExampleProperty> <BackgroundColor>Chartreuse</BackgroundColor> <DefaultLocation>Sacramento, CA</DefaultLocation> </ExampleProperty>

Update

General Contact

First Name: Matthew
Last Name: Cechini
Role: ECHO Operations Lead
Email: Matthew.F.Cechini@echo.nasa.gov
Organization: Raytheon
Phone Type: BUSINESS
Phone Number: 240.542.1114

Work
Greenbelt Rd
Greenbelt, MD 21077
US

Update General Contact | Delete General Contact

Shipping Contact

Add Shipping Contact

Billing Contact

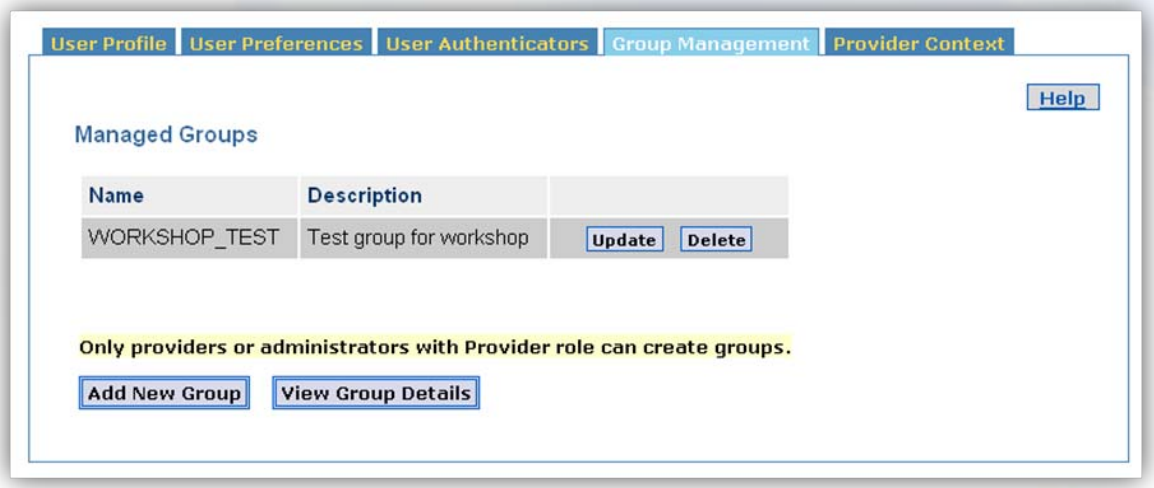
Add Billing Contact

Clear Preferences

Group Management

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

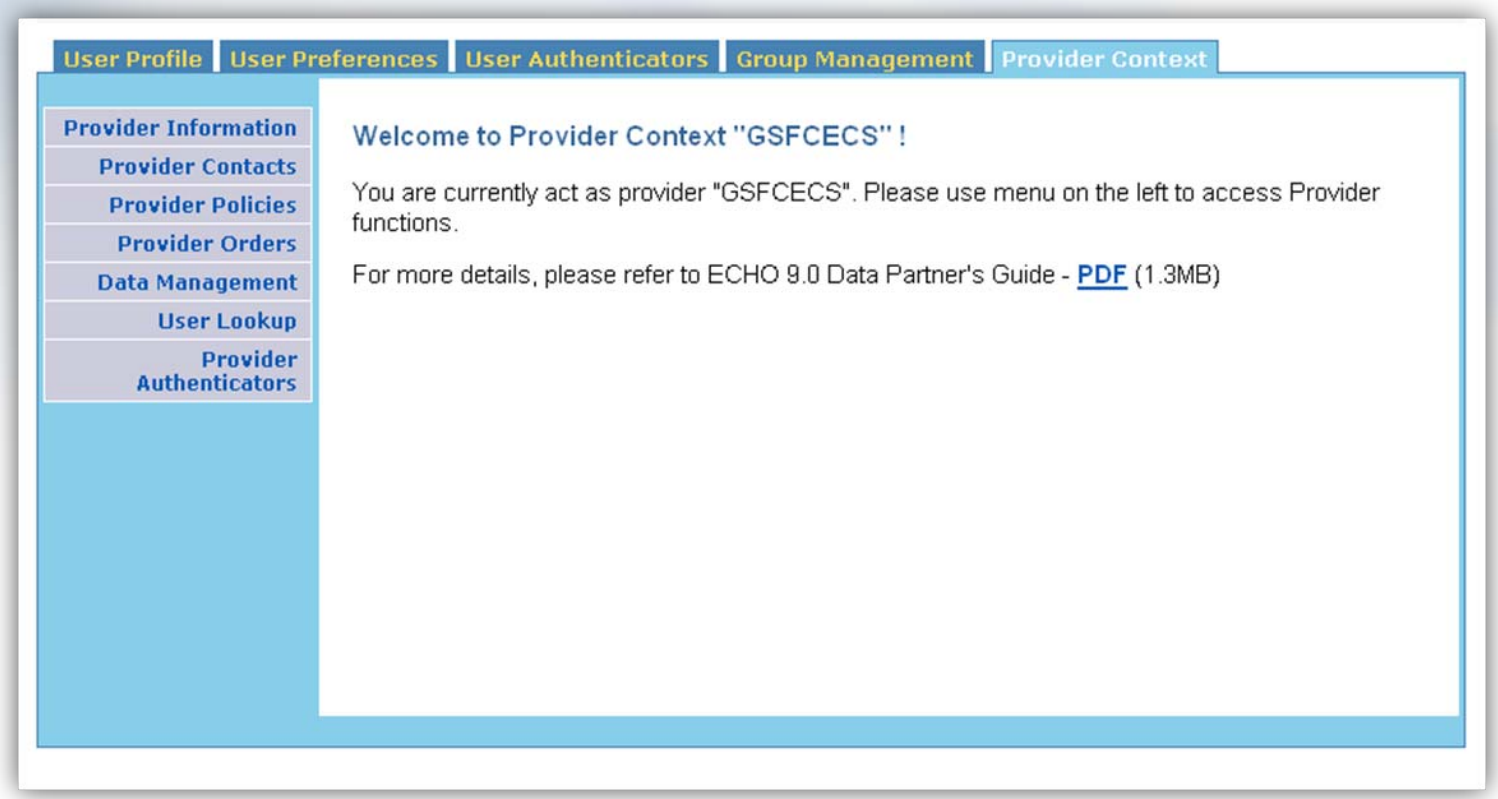
- **Managing Groups**
  - Provider Role required
  - Add new groups
  - View details for existing groups
  - Update existing groups
  - Delete existing groups



Provider Context (1/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Provider Context Main Page**
  - Only visible to uses with Provider Role
  - Drop-Down list if multiple provider roles are assigned



Provider Context (2/12)

- **Provider Context Sub Tabs**
  - Provider Information – General information
  - Provider Contacts – Configured contacts
  - Provider Policies – Policies used for ordering
  - Provider Orders – Order tracking
  - Data Management – Access rules (ACLs), visibility, and order option assignments
  - User Lookup – Find user information
  - Provider Authenticators – Not used

Provider Context (3/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Provider Information

- Edit organization description
- Manage users with provider role
  - Removing current user takes effect at next login

Provider Information

Provider ID: GSFCECS

Organization: Goddard's Earth Sciences DAAC [Update]

Users with provider role: GSFC_ECS_user, ops_hold, mattcechini

Grant provider role for a user.

User: [ ] [Grant]

Revoke provider role for a user.

User: GSFC_ECS_user [Revoke]

Provider Context (4/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Provider Contacts

- Add/Edit/Delete contacts
  - Please include a 'user services' contact (not shown below)

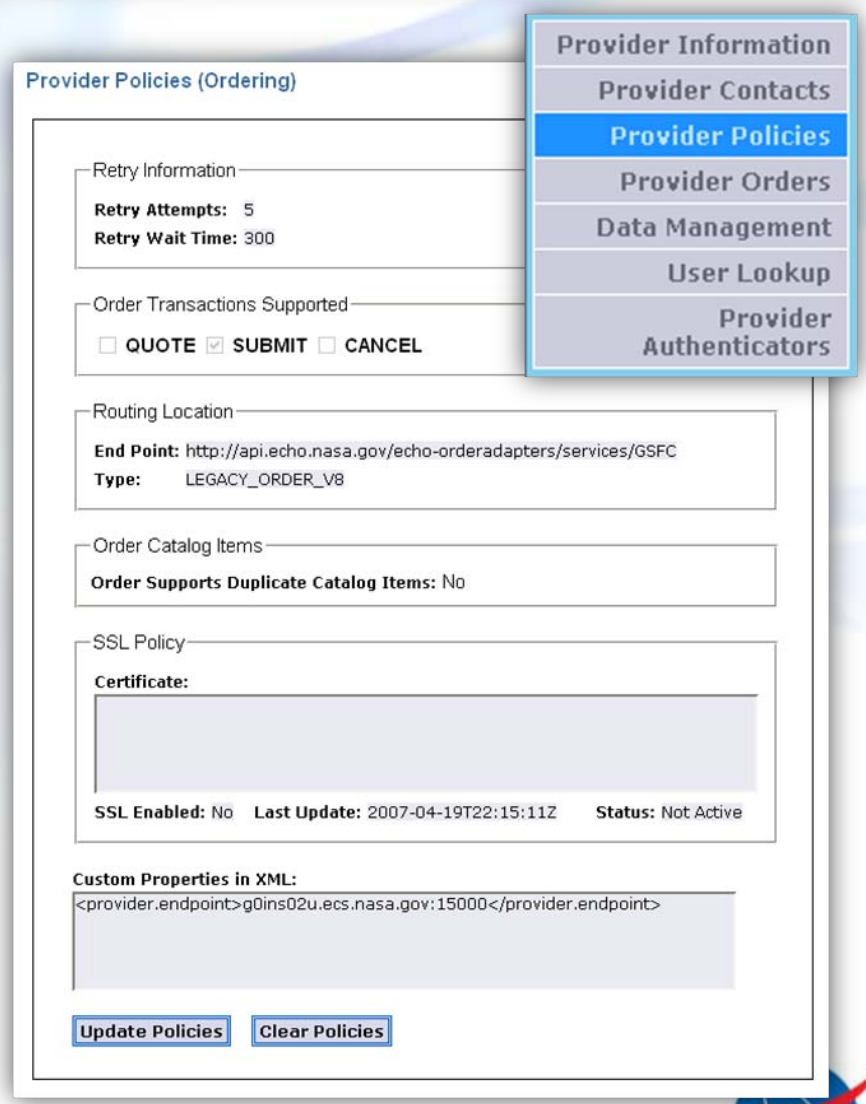
Provider Contacts

Role	Name	Organization	Address	Phone Number(s)	Email Address	
order manager	GES DAAC ECHO Group		- default (US Format) - NASA GSFC Code 610.2 Greenbelt MD 20771 USA	TBD (CUSTOM/default)	echo-disc@listserv.gsfc.nasa.gov	Edit Delete
data manager	GES DAAC ECHO Group		- default (US Format) - NASA GSFC Code 610.2 Greenbelt MD 20771 USA	TBD (CUSTOM/default)	echo-disc@listserv.gsfc.nasa.gov	Edit Delete

Add New Contact

Provider Context (5/12)

- **Provider Policies (Ordering)**
  - Retry Limits
  - Supported Order Transactions
  - Routing Location
  - Order Catalog Items
  - SSL Policy
  - Custom Properties (Optional)



Provider Context (6/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Provider Order Tracking

- Search Criteria
  - Order GUID (If provided, only criteria needed)
  - Order State(s)
  - User ID
  - Date/Time Range
    - Creation
    - Submission
    - Last Update

Provider Order Search

Order GUID:

Or, specify one or more filters...

Filter by Order States: validated, not_validated, quoting, quote_rejected, quote_failed — Selecting no states implies all states.

Filter by User ID:

Filter by Date/Time of: Creation

	(YYYY - MM - DD	hh : mm : ss)
From	2000 - 01 - 21	00 : 00 : 00
To	2000 - 01 - 21	00 : 00 : 00

Display Orders

Provider Context (7/12)

- **Data Management**
  - Rules – Access Control Lists
  - Visibility – Collection visibility configuration
  - Reports – View subset of rules
  - Option Definitions – Manage order option forms
  - Option Assignments – Manager order option assignments

Provider Context (8/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Rules

- View/Delete existing rules

Rules

Name	Description	Summary		
HIRDLS Public Access Restrictions	Keep public from accessing HIRDLS data until ready for public release	Rule Type:	RESTRICTION	View Delete
		Action Type:	VIEW	
		Group Names:	(none)	
		Catalog Item Type:	COLLECTION	
		Catalog Items:	(all)	
		Condition Type:	BOOLEAN	
		Comparator:	EQUALS	
		Value:	TRUE	

Add a new rule.

Condition Type: boolean [Add]

Provider Context (9/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management – Visibility**
  - View/Change collection visibility

Provider Information
Provider Contacts
Provider Policies
Provider Orders
Data Management
- Rules
- Visibility
- Reports
- Option Definitions
- Option Assignments
User Lookup
Provider Authenticators

Visibility

Collection	Visibility Flag
ASTER L1A Reconstructed Unprocessed Instrument Data V003	OPEN
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003	OPEN
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004	OPEN

Modify Cancel

Provider Context (10/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Reports

- View subset of rules
  - Rules applying to all collections/granules
  - Rules applying to specific collections/granules

Rules Report

Name	Description	Details	
HIRDLS Public Access Restrictions	Keep public from accessing HIRDLS data until ready for public release	Rule Type:	RESTRICTION
		Action Type:	VIEW
		Group Names:	(none)
		Catalog Item Type:	COLLECTION
		Catalog Items:	(all)
		Condition Type:	BOOLEAN
		Comparator:	EQUALS
		Value:	TRUE

Cancel

Provider Context (11/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Option Definitions

- View existing forms
- Deprecate/Delete existing forms
  - Only "Provider" forms
  - Forms cannot be 'un-deprecated'

Option Definitions

Name	Scope	Deprecated	
ECHO_SYSTEM_OPTIONS_V1	SYSTEM	false	View
ECHO_SYSTEM_OPTIONS_V2	SYSTEM	false	View
FtpPull	PROVIDER	false	View Deprecate Delete
FtpPush	PROVIDER	false	View Deprecate Delete

Add New Option Definition

Provider Context (12/12)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management – Option Assignments**
  - View/Delete assignments

Provider Information
Provider Contacts
Provider Policies
Provider Orders
Data Management
- Rules
- Visibility
- Reports
- Option Definitions
- Option Assignments
User Lookup
Provider Authenticators

Option Assignments

Collection	Option Definition Name	
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST13POL	View Delete
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST140TH	View Delete
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST14DEM	View Delete
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST14DMO	View Delete
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003	Media/FtpPull	View Delete
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004	Media/FtpPull	View Delete

Add New Option Assignment | Cancel

Questions?

PUMP Detailed Overview

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- Overview
- PUMP Main Page
- New User Registration
- New Provider Registration
- Login Page
- User Profile
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- Group Management
- Provider Context

Overview

- **What is PUMP?**
  - Provider User Management Program
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- **Accessing PUMP**
  - Operations
    - https://api.echo.nasa.gov/pump
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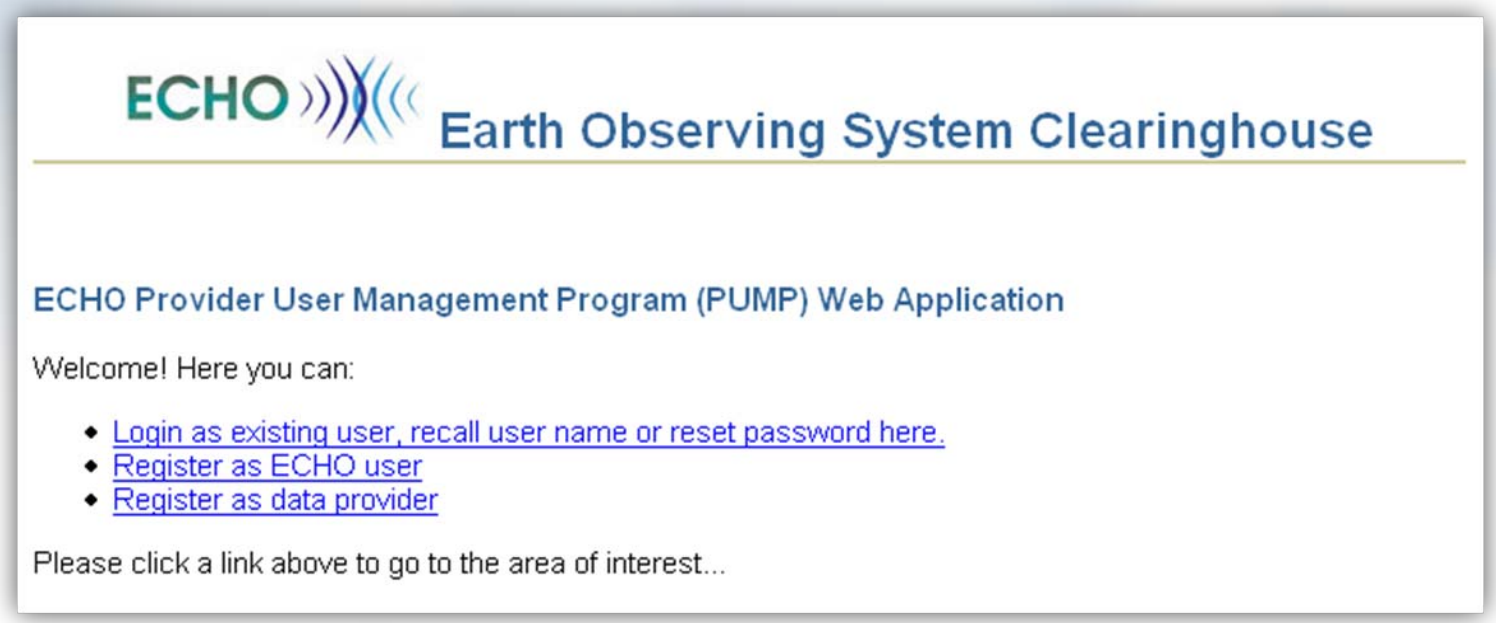
    - https://testbed.echo.nasa.gov/pump
  - Downtime
    - Unavailable during Preventative Maintenance
    - Unavailable during ECHO installations

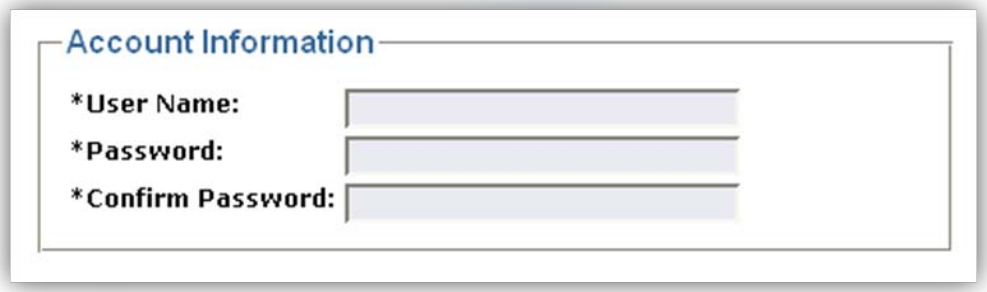
PUMP Main Page

- **Available Actions**
  - Navigate to login page
  - Register New User
  - Register New Data or Service Provider



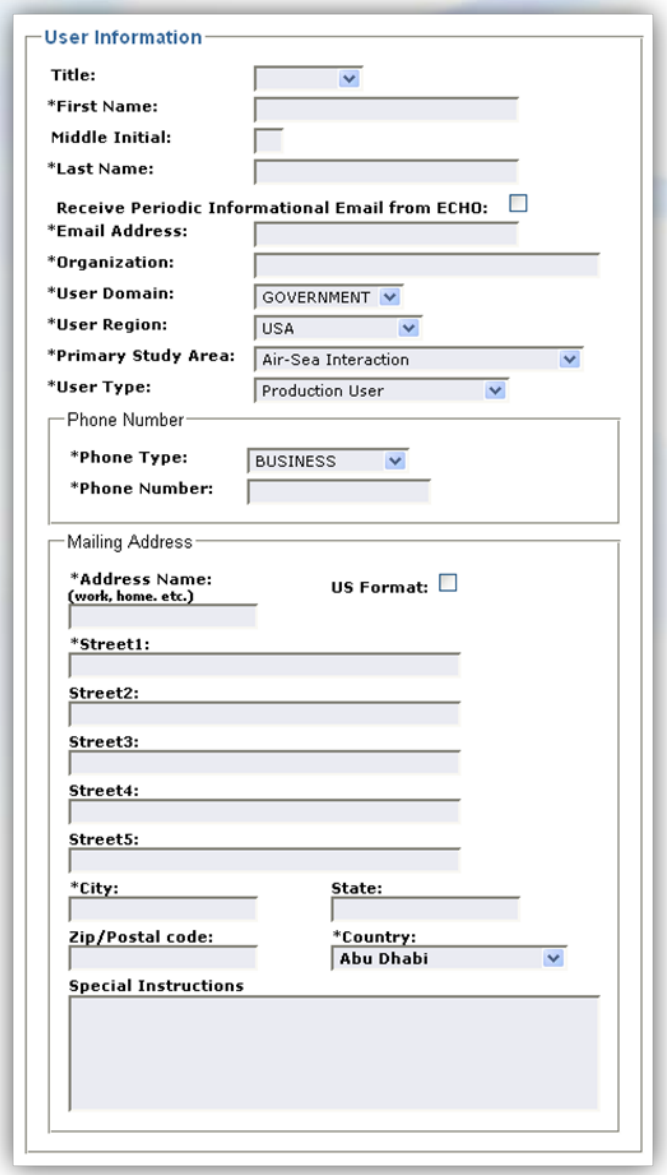
New User Registration (1/2)

- **Account Information**
  - User Name Restrictions
    - Maximum Length – 30 characters
    - Unique
  - Password Restrictions
    - Minimum Length - 10 Characters
    - Maximum Length - 40 Characters
    - Must contain at least 3 different character types:
      - uppercase, lowercase, digits, or special characters.



New User Registration (2/2)

- **User Information**
  - Populates ECHO "User Profile"
  - New Fields
    - Primary Study Area
    - User Type
  - Additional Phone #s and Addresses may be added later

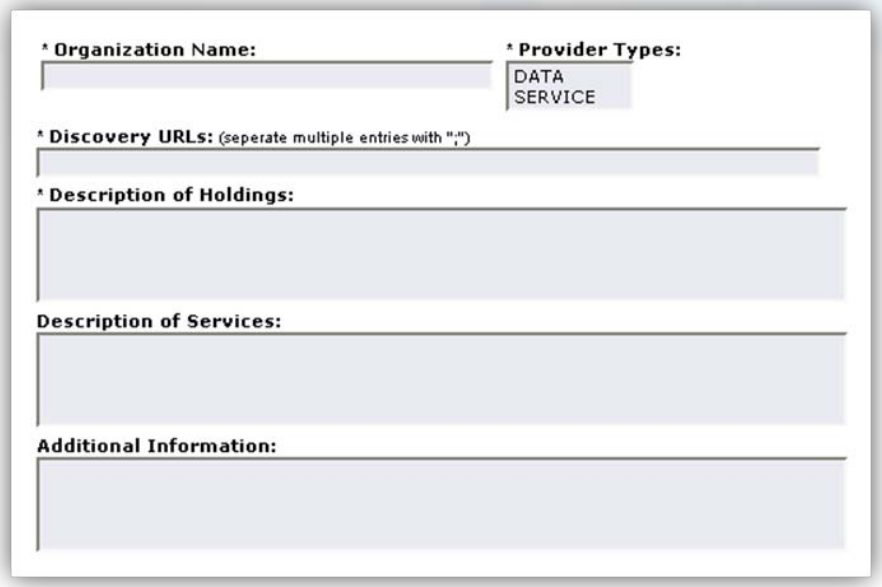


New Provider Registration (1/2)

- **Requires registered user login**
- **Allows creation of Data & Service Providers**
- **A single contact is created initially**
  - More can be added later through PUMP
  - A 'user services' contact should be added for display in WIST
- **User submitting provider application will be given Provider Role**
- **ECHO Operations will approve review and activate provider**
  - Submitter will receive an email from the ECHO system
  - Submitter should be in contact with ECHO Operations to coordinate Ingest and other configuration information

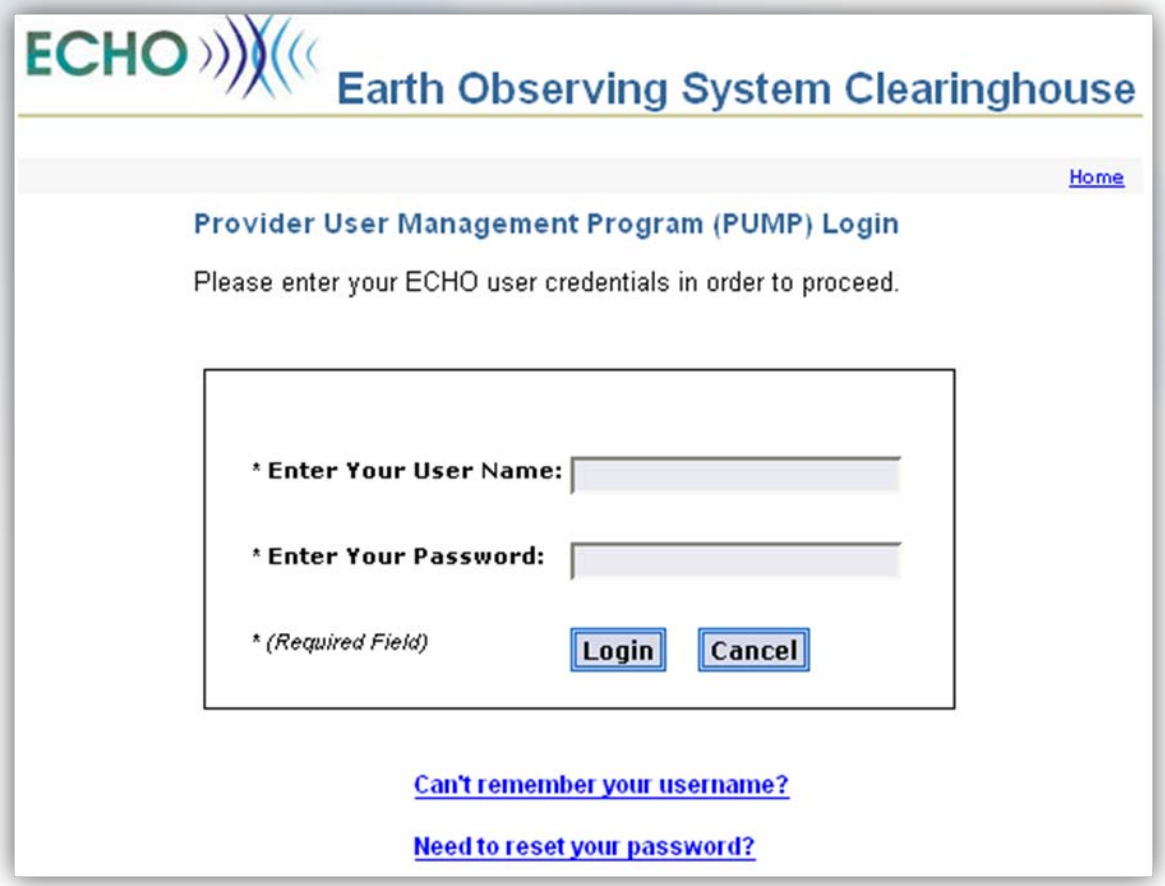
New Provider Registration (2/2)

- **Registration form**
  - Input Fields
    - Organization Name – Full name of organization
    - Provider Type – Data and/or Service
    - Discovery URLs – URLs referencing additional provider information
    - Description of Holdings – Description of holdings the provider maintains.
    - Description of Services – Description of services the provider maintains.
    - Additional Information – Any additional information.



Login Page (1/2)

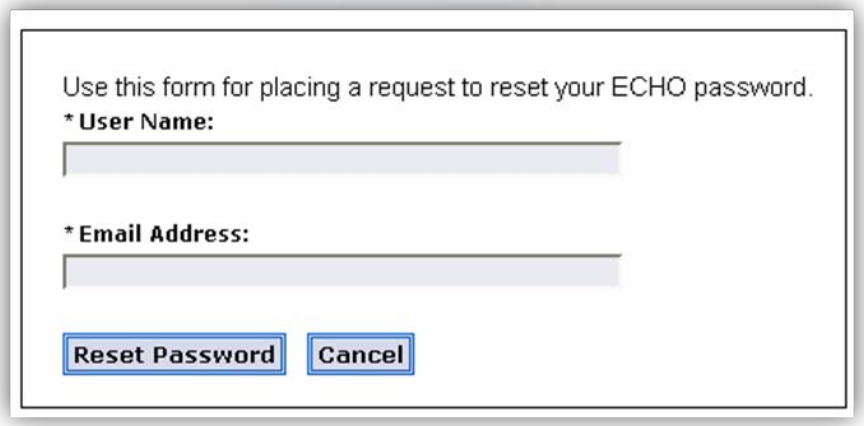
- Use 'home' link to return to main PUMP page
- New accounts are active immediately



Login Page (2/2)

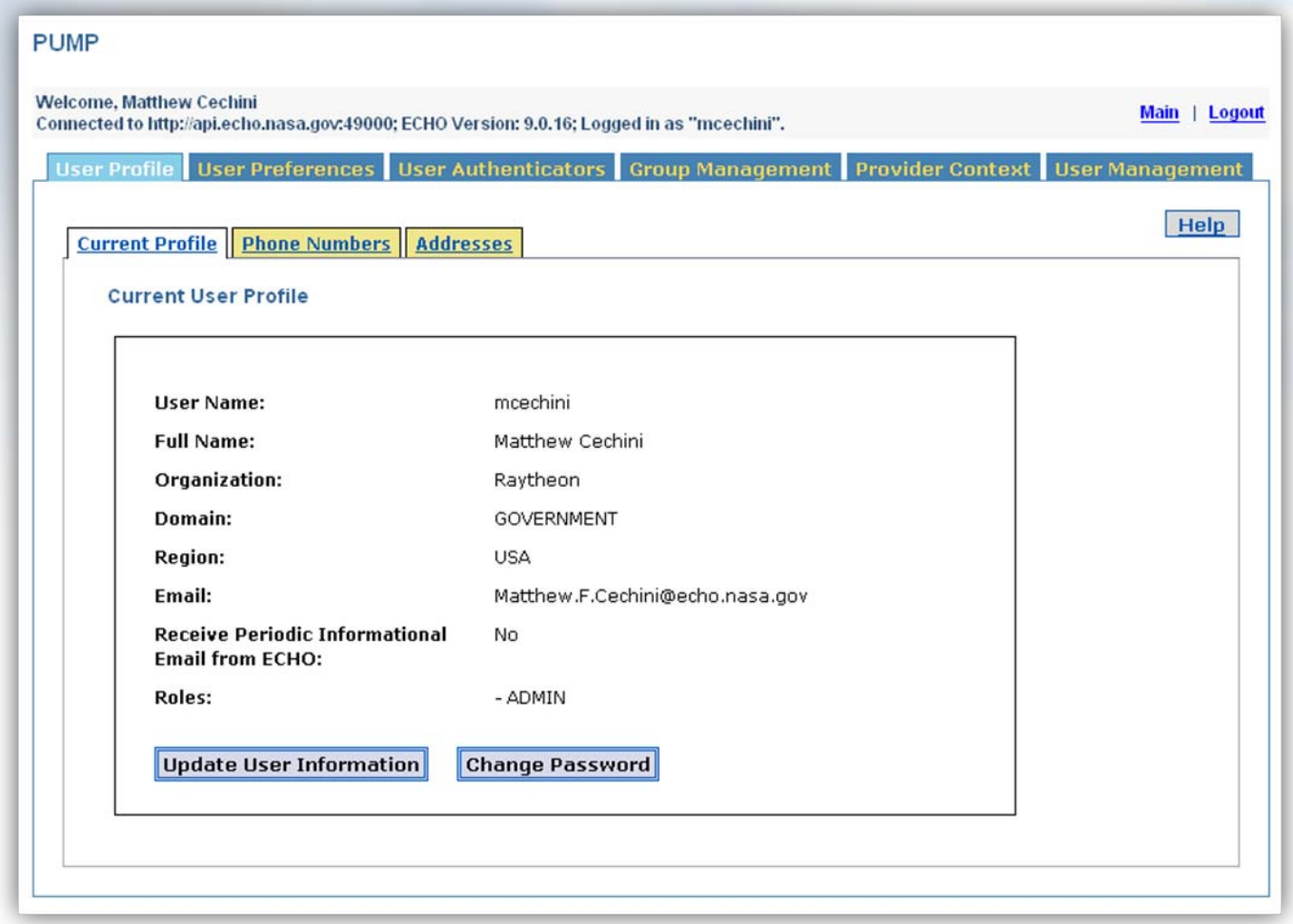
- **Recall Username**
  - Requires case-sensitive email address
  - Email will be sent with associated user ids

- **Reset Password**
  - Requires case-sensitive username and email address
  - Email will be sent to email address with new password



Main Page

- 'Main' link returns to this page from all other PUMP pages
- 'Logout' link logs user out of PUMP from all PUMP pages



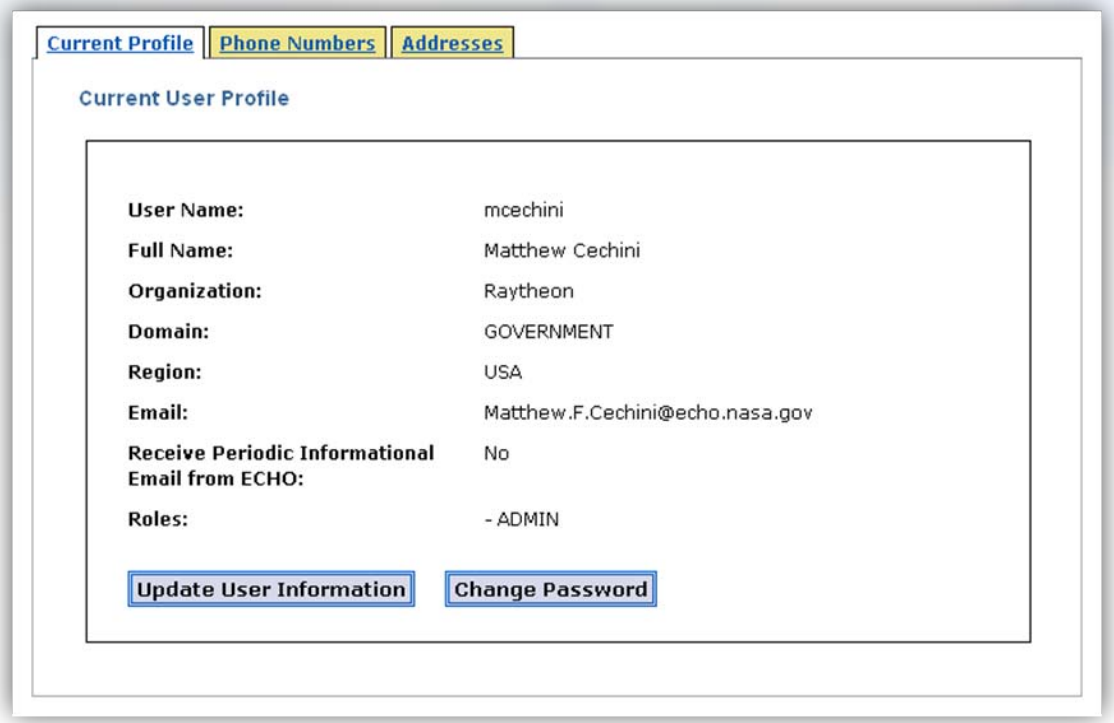
PUMP Tabs

- **Main Page Tabs**
  - User Profile – Manage user profile
    - Main landing page
  - User Preferences – Manage user preferences
  - User Authenticators – Not used
    - Will be removed from PUMP in 10.0.x
  - Group Management – Manage user groups
    - Requires provider role
  - Provider Context – Manage provider information and configuration
    - Requires provider role to view
    - User lookup
    - Order tracking

User Profile (1/2)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

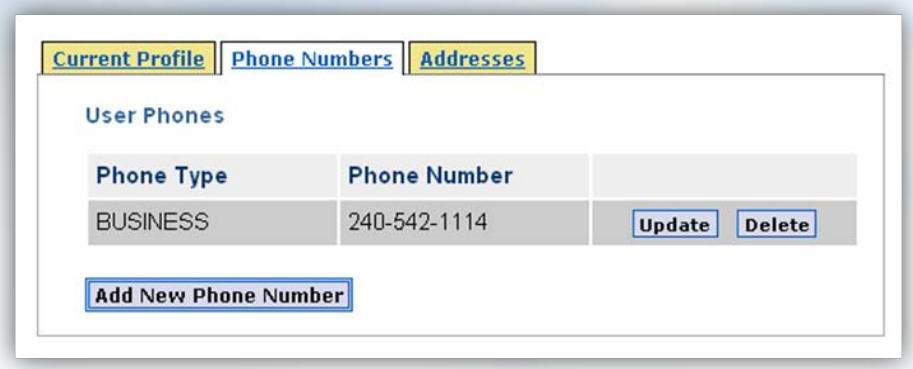
- **Current Profile**
  - Update User Information
    - Allows all displayed fields (including user id) to be updated
    - Users are encouraged to not change their user id.
  - Change Password
    - Allows user to change password to new value



User Profile (2/2)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Profile may have multiple phone numbers



- Profile may have multiple addresses

User Preferences

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Update or delete user preference information

User Preferences

Order Notification Level: INFO

Custom Properties XML: <ExampleProperty> <BackgroundColor>Chartreuse</BackgroundColor> <DefaultLocation>Sacramento, CA</DefaultLocation> </ExampleProperty>

Update

General Contact

First Name: Matthew
Last Name: Cechini
Role: ECHO Operations Lead
Email: Matthew.F.Cechini@echo.nasa.gov
Organization: Raytheon
Phone Type: BUSINESS
Phone Number: 240.542.1114

Work
Greenbelt Rd
Greenbelt, MD 21077
US

Update General Contact | Delete General Contact

Shipping Contact

Add Shipping Contact

Billing Contact

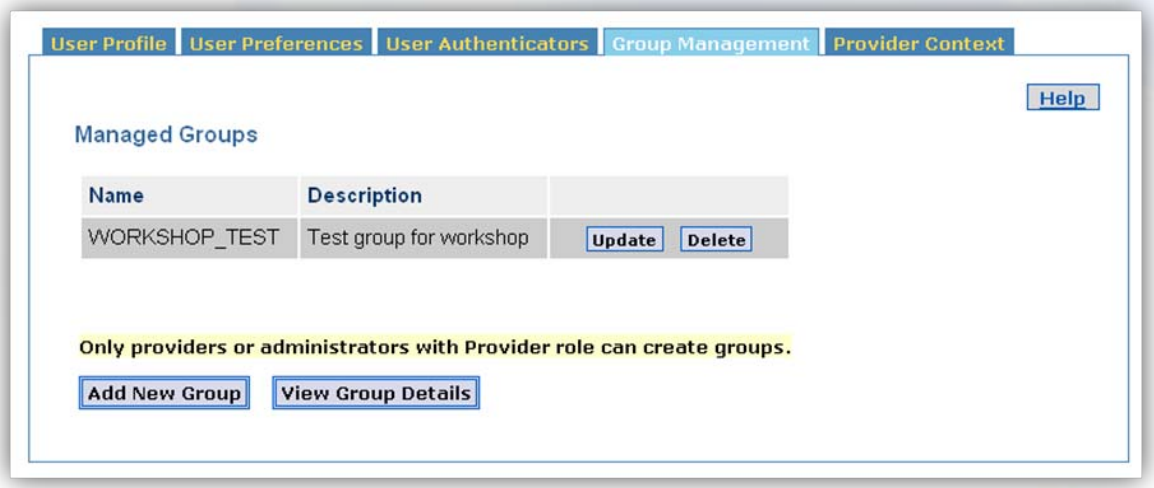
Add Billing Contact

Clear Preferences

Group Management (1/5)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

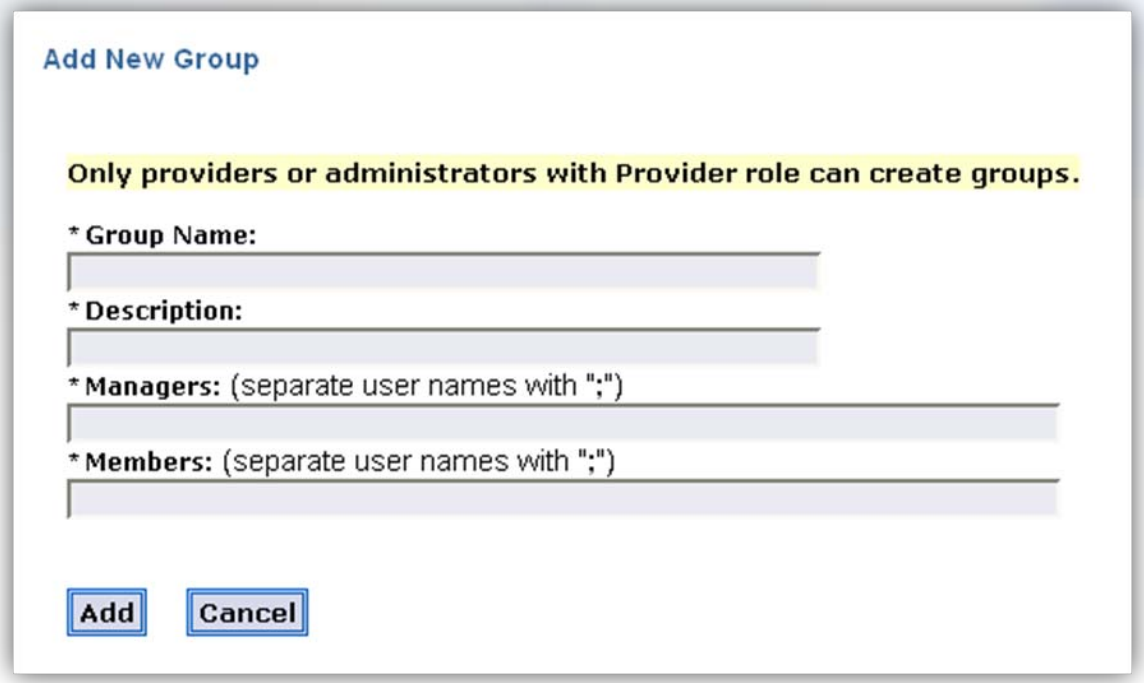
- **Managing Groups**
  - Provider Role required
  - Add new groups
  - View details for existing groups
  - Update existing groups
  - Delete existing groups



Group Management (2/5)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Adding a group**
  - Group names unique within ECHO, not provider
    - Encouraged to include provider name in group name: LPDAAC_All_Users
  - Description should give a clear explanation of group's purpose
  - User creating the group is not automatically added as a manager



Group Management (3/5)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **View Group Details**

View Managed Group Details

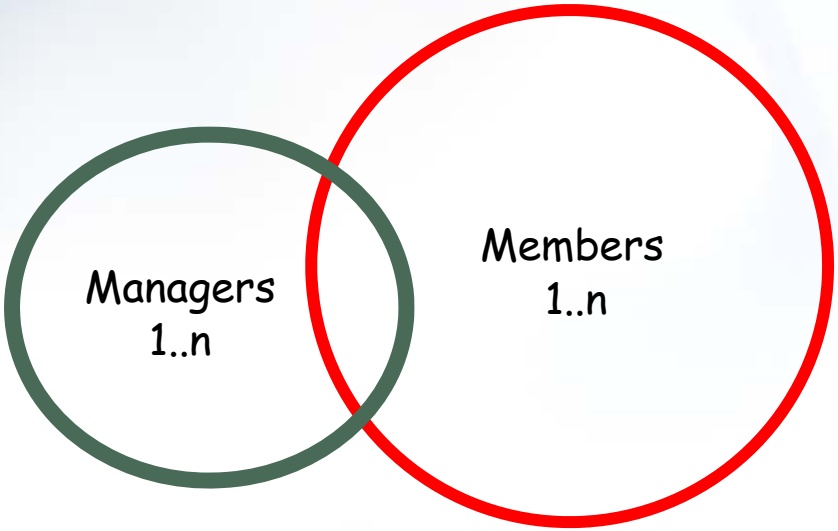
Name	Description	Managers	Members
WORKSHOP_TEST	Test group for workshop	mattcechini (Matthew Cechini)	alai (Alex Lai)

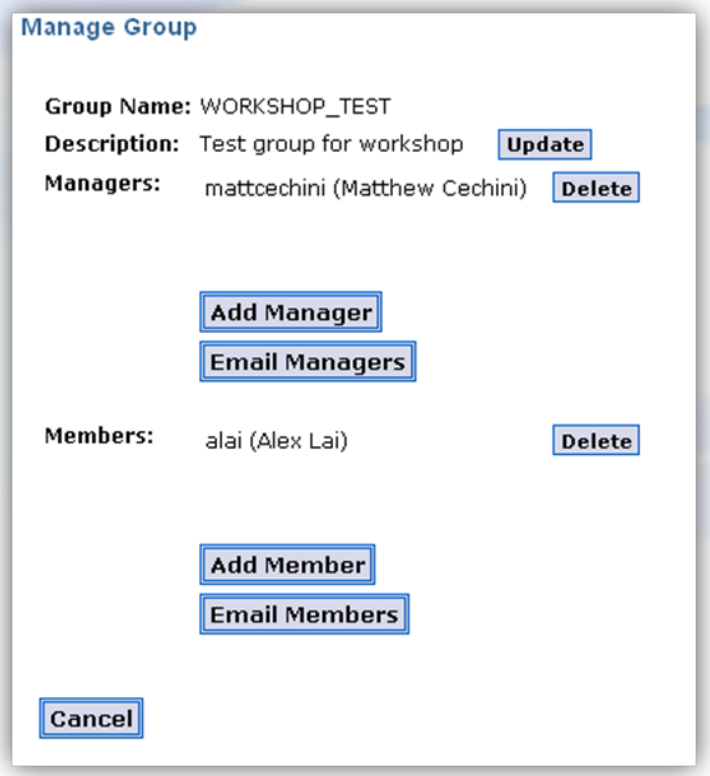
Cancel

Group Management (4/5)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Update group details**
  - Add/Remove/Email Managers
    - Group must have at least one manager
  - Add/Remove/Email Members
    - Group must have at least one member





Group Management (5/5)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Update/Delete Group Screens**

Add Manager

Please enter the user name to add as manager of Group "WORKSHOP_TEST".

*User Name:

☐ Notify

* (Required Field)

Add Manager Cancel

Send Email to Group Managers

Enter Message for Managers of Group "WORKSHOP_TEST".

*Message:

Send Cancel

Delete Manager

Remove Manager "mattcechini" from Group "WORKSHOP_TEST"?

☐ Notify

Delete Cancel

Delete Group

Delete group "WORKSHOP_TEST"?

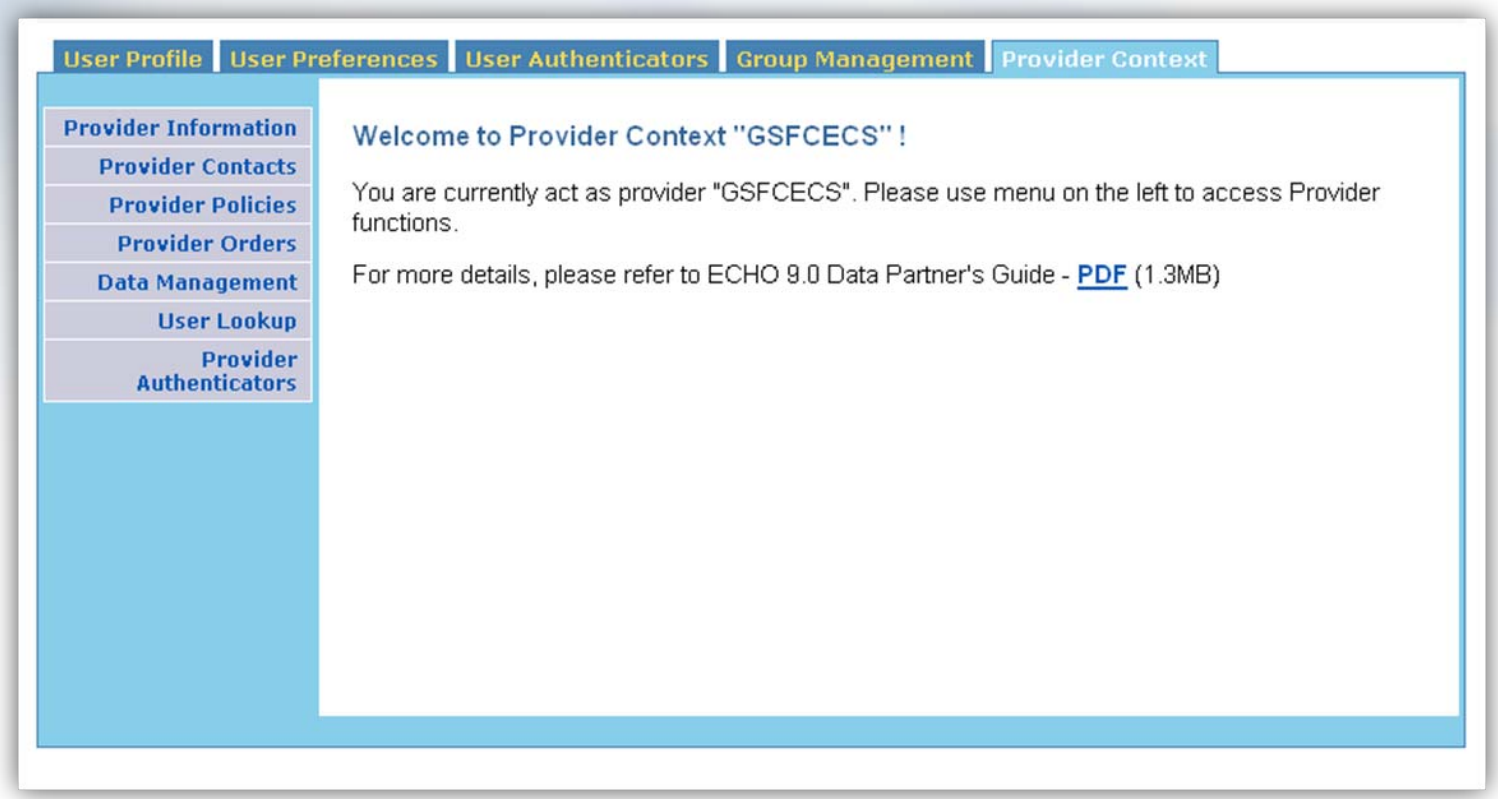
☐ Notify Managers and Members

Delete Cancel

Provider Context (1/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Provider Context Main Page**
  - Only visible to uses with Provider Role
  - Drop-Down list if multiple provider roles are assigned



Provider Context (2/19)

- **Provider Context Sub Tabs**
  - Provider Information – General information
  - Provider Contacts – Configured contacts
  - Provider Policies – Policies used for ordering
  - Provider Orders – Order tracking
  - Data Management – Access rules (ACLs), visibility, and order option assignments
  - User Lookup – Find user information
  - Provider Authenticators – Not used

Provider Context (3/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Provider Information

- Edit organization description
- Manage users with provider role
  - Removing current user takes effect at next login

Provider Information

Provider ID: GSFCECS

Organization: Goddard's Earth Sciences DAAC [Update]

Users with provider role: GSFC_ECS_user, ops_hold, mattcechini

Grant provider role for a user.

User: [ ] [Grant]

Revoke provider role for a user.

User: GSFC_ECS_user [Revoke]

Provider Context (4/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Provider Contacts

- Add/Edit/Delete contacts
  - Please include a 'user services' contact (not shown below)

Provider Contacts

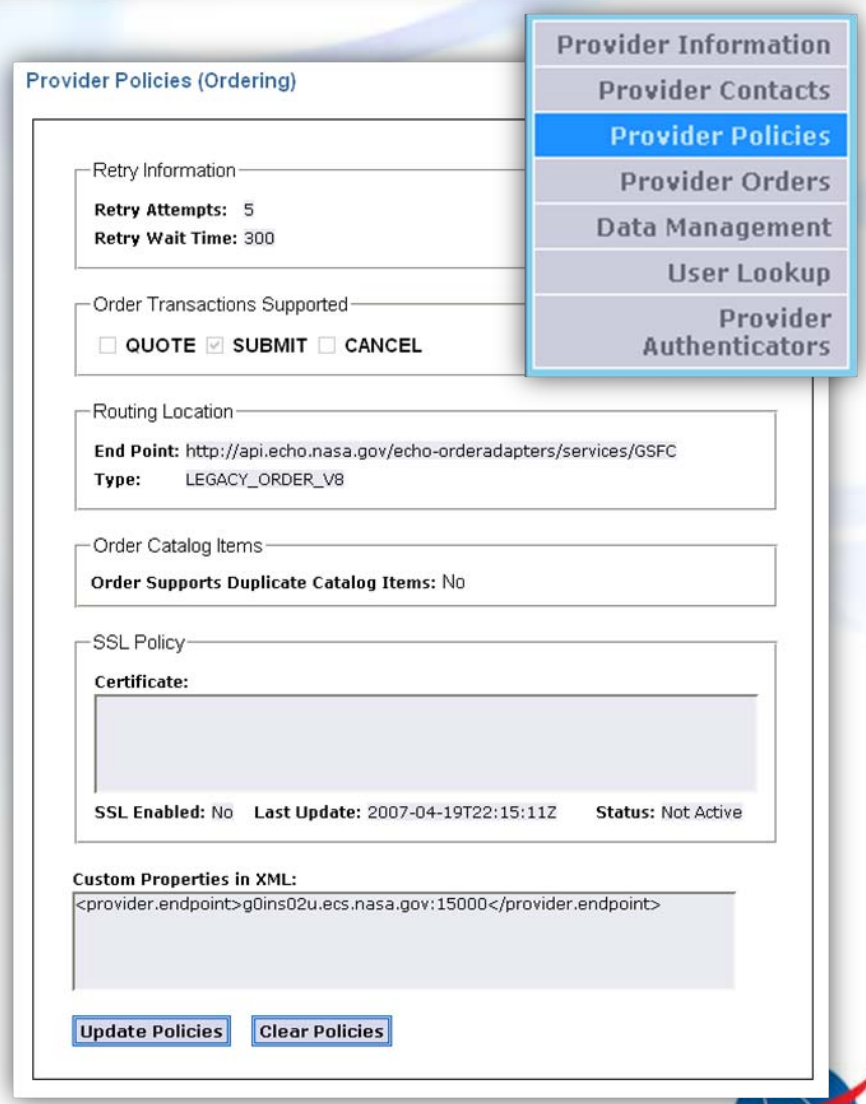
Role	Name	Organization	Address	Phone Number(s)	Email Address	
order manager	GES DAAC ECHO Group		- default (US Format) - NASA GSFC Code 610.2 Greenbelt MD 20771 USA	TBD (CUSTOM/default)	echo-disc@listserv.gsfc.nasa.gov	Edit Delete
data manager	GES DAAC ECHO Group		- default (US Format) - NASA GSFC Code 610.2 Greenbelt MD 20771 USA	TBD (CUSTOM/default)	echo-disc@listserv.gsfc.nasa.gov	Edit Delete

Add New Contact

Provider Context (5/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Provider Policies (Ordering)**
  - Retry Limits
    - Should be long enough to account for provider schedule maintenance
  - Supported Order Transactions
    - Relates to methods found in the Order Fulfillment API
  - Routing Location
    - End point for provider order support
  - Order Catalog Items
  - SSL Policy
    - SSL certificate for machine hosting order end point
    - Requires ECHO activation
  - Custom Properties (Optional)
    - Specific parameters needed by order end point



Provider Context (6/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Provider Order Tracking

- Search Criteria
  - Order GUID (If provided, only criteria needed)
  - Order State(s)
  - User ID
  - Date/Time Range
    - Creation
    - Submission
    - Last Update

Provider Order Search

Order GUID:

Or, specify one or more filters...

Filter by Order States: validated, not_validated, quoting, quote_rejected, quote_failed — Selecting no states implies all states.

Filter by User ID:

Filter by Date/Time of: Creation

	(YYYY - MM - DD	hh : mm : ss)
From	2000 - 01 - 21	00 : 00 : 00
To	2000 - 01 - 21	00 : 00 : 00

Display Orders

Provider Context (7/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Provider Order Results**
  - Sortable by all columns
  - View ECHO Order Information
  - View Provider Order Information

Orders

State	Created	Submitted	Updated	User ID	Contact Name		
NOT_VALIDATED	2007-04-23 10:02:43		2007-04-23 10:25:10	(guest)		View	View Provider Order
SUBMITTED_WITH_EXCEPTIONS	2007-04-24 09:28:18	2007-04-24 09:31:36	2007-04-24 09:51:40	(guest)	Suehail Issa	View	View Provider Order
CLOSED	2007-04-24 10:42:17	2007-04-24 10:43:14	2007-04-24 10:43:19	(guest)	Suehail Issa	View	View Provider Order

Cancel

Provider Context (8/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **ECHO Order**
  - Order Information
    - Order GUID – Unique identifier
    - State – Current order state in ECHO
    - Price – Quoted price, if available
    - Created Date – Order creation date
    - Submitted Date – Order submission date
    - Updated Date – Order last update date
  - User Information
    - Owner – ECHO User ID of order submitter
    - Notification Level – User's notification level
    - User Doman/Region – From User's profile
    - Client Identity – Client used to submit order
    - Contact Info – As entered by submitter
    - Shipping Info – As entered by submitter
    - Billing Info – As entered by submitter

Order Information

Order GUID:	517C3950-1F5B-B2A1-3CA7-16835B4FF81D
State:	SUBMITTED_WITH_EXCEPTIONS
Price:	0.0
Created:	2007-04-24 09:28:18
Submitted:	2007-04-24 09:31:36
Updated:	2007-04-24 09:51:40
Owner:	(guest)
Notification Level:	INFO
User Domain:	OTHER
User Region:	USA
Client Identity:	WIST-1.0

Contact Information

Role:	Contact
Name:	Suehail Issa
Organization:	
Address:	- Contact (US Format) - 7515 Mission DR Suite A1C1 Lanham MD 20706 USA
Phone:	301-3 2-466 (BUSINESS)
Email:	

Shipping Information

<Removed from screenshot>

Billing Information

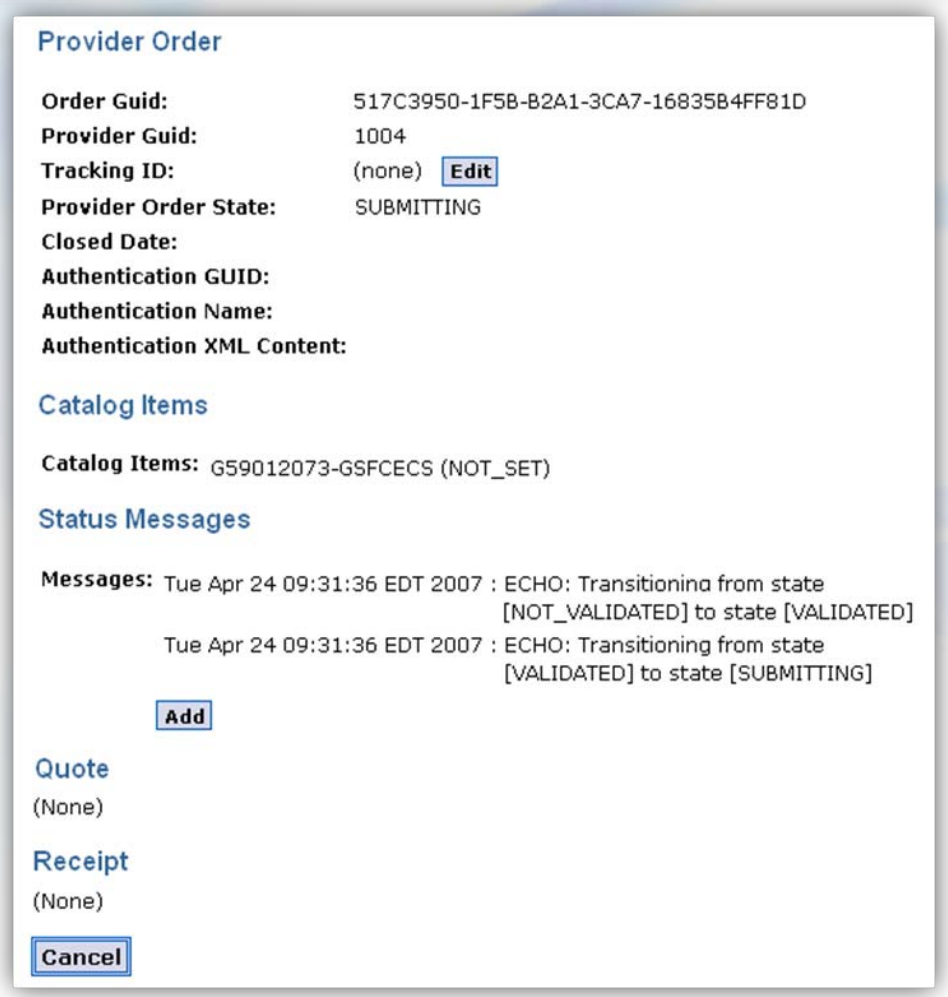
<Removed from screenshot>

View Provider Order | Cancel

Provider Context (9/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Provider Order**
  - Order Information
    - Order GUID – Unique identifier
    - Provider GUID – Provider ID
    - Tracking ID – Provider assigned ID
      - Editable by user
    - Order Status – Current status
    - Closed Date – Order closed date
  - Catalog Items
    - List of provider item IDs
  - Status Messages
    - History of updates to order
    - Messages can be added by user
  - Quote
    - Quote information, if relevant
  - Receipt
    - Receipt information



Provider Context (10/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management**
  - Rules – Access Control Lists
  - Visibility – Collection visibility configuration
  - Reports – View subset of rules
  - Option Definitions – Manage order option forms
  - Option Assignments – Manager order option assignments

Provider Context (11/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Rules

- View/Delete existing rules

Rules

Name	Description	Summary		
HIRDLS Public Access Restrictions	Keep public from accessing HIRDLS data until ready for public release	Rule Type:	RESTRICTION	View Delete
		Action Type:	VIEW	
		Group Names:	(none)	
		Catalog Item Type:	COLLECTION	
		Catalog Items:	(all)	
		Condition Type:	BOOLEAN	
		Comparator:	EQUALS	
		Value:	TRUE	

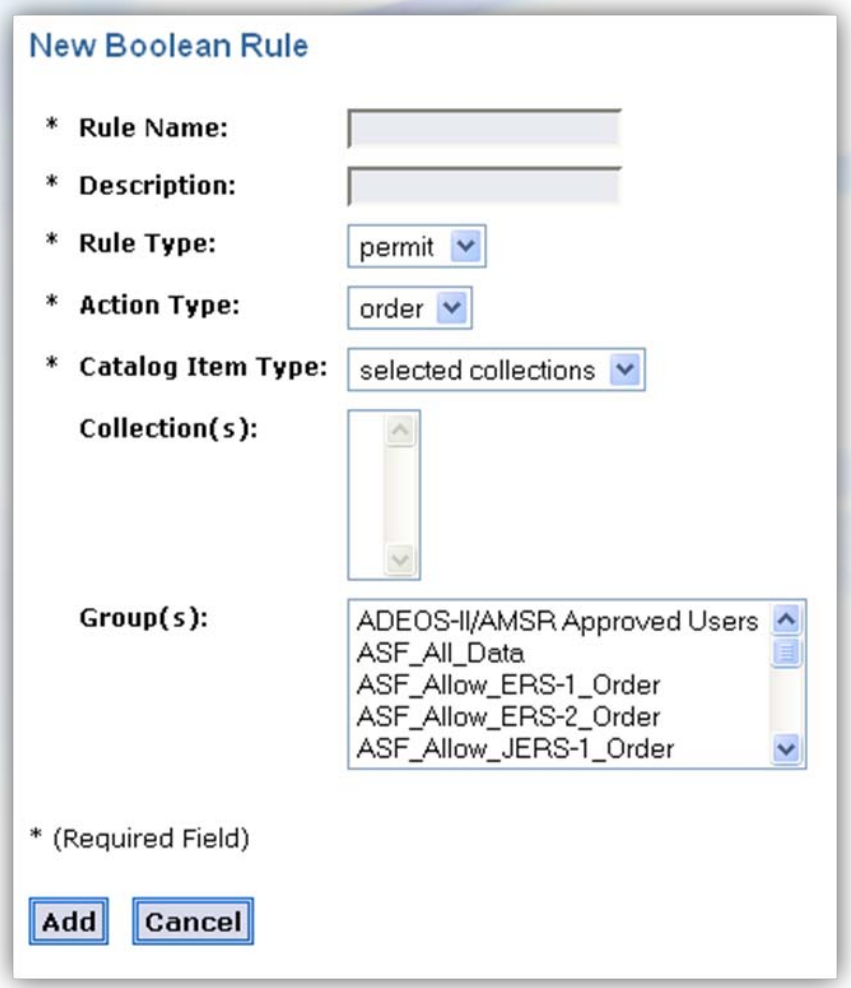
Add a new rule.

Condition Type: boolean **Add**

Provider Context (12/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management – Rules (cont)**
  - Add new rules
    - Rule Name – Unique rule name
      - Encouraged to include provider name
    - Description – Clear explanation of rule's purpose
    - Rule Type – "Permit" or "Restrict"
    - Action Type – "View" or "Order"
    - Catalog Item Type – "All Collections", "Selected Collections", "All Granules", or "Selected Granules"
    - Collections/Granules – Selectable list of catalog items for rule
    - Group(s) – ECHO user groups assigned to rule



Provider Context (13/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management – Visibility**
  - View/Change collection visibility

Provider Information
Provider Contacts
Provider Policies
Provider Orders
Data Management
- Rules
- Visibility
- Reports
- Option Definitions
- Option Assignments
User Lookup
Provider Authenticators

Display Visibility

Collections:
ASTER L1A Reconstructed Unprocessed Instrument Data V003
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004
MODIS/Aqua Gross Primary Productivity 8-Day L4 Global 1km SIN Grid V005
MODIS/Aqua Land Surface Temperature/Emissivity 5-Min L2 Swath 1km V003

Selecting no collections implies all collections.

Display

Visibility

Collection	Visibility Flag
ASTER L1A Reconstructed Unprocessed Instrument Data V003	OPEN
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003	OPEN
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004	OPEN

Modify Cancel

Set Visibility

Open Collections

ASTER L1A Reconstructed Unprocessed Instrument Data V003
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004

Select one or more collections to restrict. Restrict

Cancel

Provider Context (14/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Reports

- View subset of rules
  - Rules applying to all collections/granules
  - Rules applying to specific collections/granules

Rules Report

Name	Description	Details	
HIRDLS Public Access Restrictions	Keep public from accessing HIRDLS data until ready for public release	Rule Type:	RESTRICTION
		Action Type:	VIEW
		Group Names:	(none)
		Catalog Item Type:	COLLECTION
		Catalog Items:	(all)
		Condition Type:	BOOLEAN
		Comparator:	EQUALS
		Value:	TRUE

Cancel

Provider Context (15/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Option Definitions

- View existing forms
- Deprecate/Delete existing forms
  - Only "Provider" forms
  - Forms cannot be 'un-deprecated'

Option Definitions

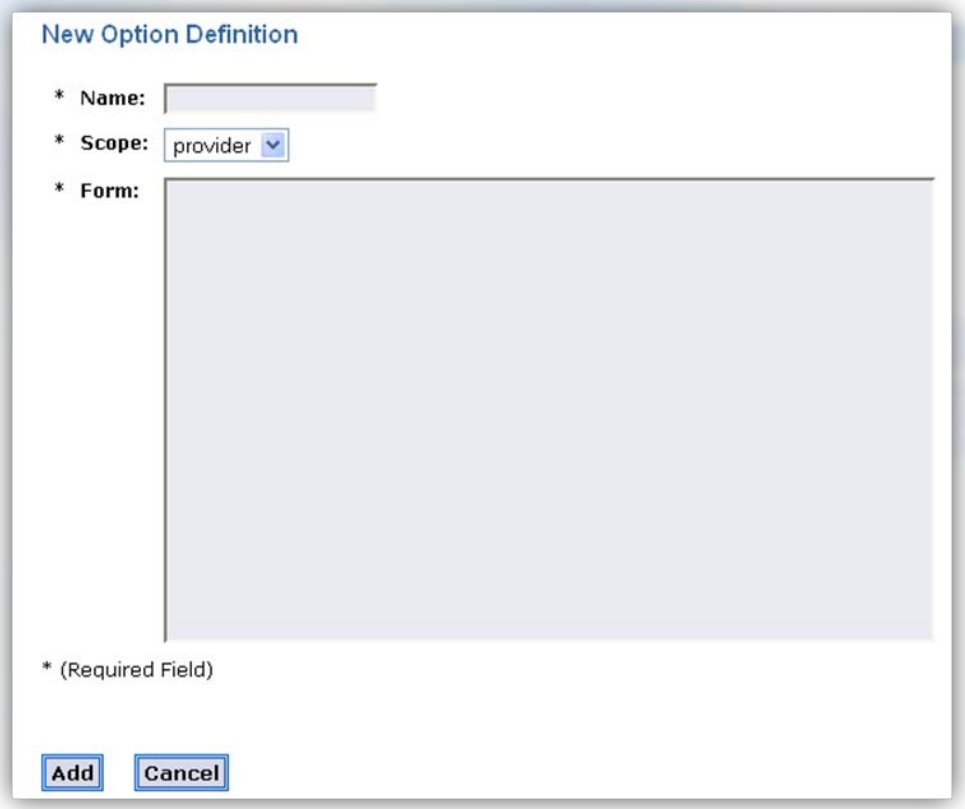
Name	Scope	Deprecated	
ECHO_SYSTEM_OPTIONS_V1	SYSTEM	false	View
ECHO_SYSTEM_OPTIONS_V2	SYSTEM	false	View
FtpPull	PROVIDER	false	View Deprecate Delete
FtpPush	PROVIDER	false	View Deprecate Delete

Add New Option Definition

Provider Context (16/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management – Option Definitions (cont)**
  - Add new order forms
    - Option name must be unique
    - Only provider scope is allowed
    - Form will be validated



Provider Context (17/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
  - Rules
  - Visibility
  - Reports
  - Option Definitions
  - Option Assignments
- User Lookup
- Provider Authenticators

Data Management – Option Assignments

- View/Delete assignments

Option Assignment Search

*Collections:

ASTER L1A Reconstructed Unprocessed Instrument Data V003
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004
MODIS/Aqua Gross Primary Productivity 8-Day L4 Global 1km SIN Grid V005
MODIS/Aqua Land Surface Temperature/Emissivity 5-Min L2 Swath 1km V003

Select one or more collections

*(Required Field)

Display Option Assignments

Option Assignments

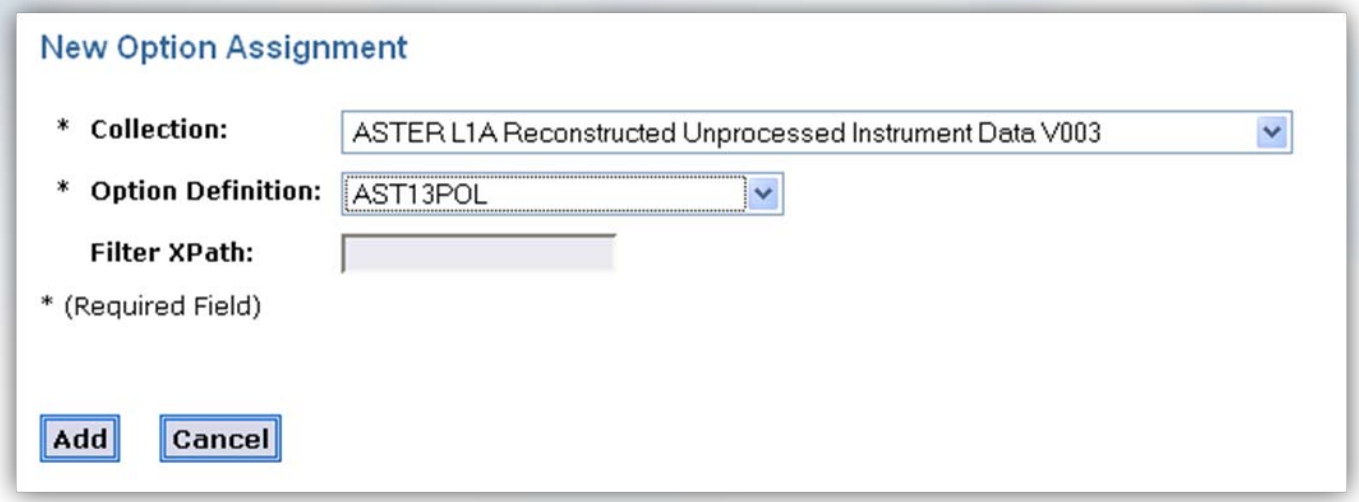
Collection	Option Definition Name	
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST13POL	View Delete
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST140TH	View Delete
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST14DEM	View Delete
ASTER L1A Reconstructed Unprocessed Instrument Data V003	AST14DMO	View Delete
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V003	Media/FtpPull	View Delete
MODIS/Aqua Geolocation Angles Daily L2G Global 1km SIN Grid Day V004	Media/FtpPull	View Delete

Add New Option Assignment | Cancel

Provider Context (18/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- **Data Management – Option Assignments (cont)**
  - Add assignments
    - Filter XPath – Xpath expression filtering out AQL query results



Provider Context (19/19)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

User Lookup

- Lookup User Name

Lookup User Name

*First Name:

*Last Name:

Organization:

*(Required Field)

Lookup User Name

Match(es) Found!

User ID	Last Name	First Name	Organization	Email Address
mcechini	Cechini	Matthew	Raytheon	Matthew.F.Cechini
mattcechini	Cechini	Matthew	ECHO	mcechini@echo.nasa.gov
mattcechini_user	Cechini	Matthew	ECHO	mcechini@echo.nasa.gov

Cancel

- Lookup User Information

Lookup User Information

*User Name:

*(Required Field)

Lookup User Information

User ID:	mcechini
Last Name:	Cechini
First Name:	Matthew
Organization:	Raytheon
Receive Periodic Informational Email from ECHO:	false
Email Address:	Matthew.F.Cechini@echo.nasa.gov

Questions?

EDG vs WIST

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

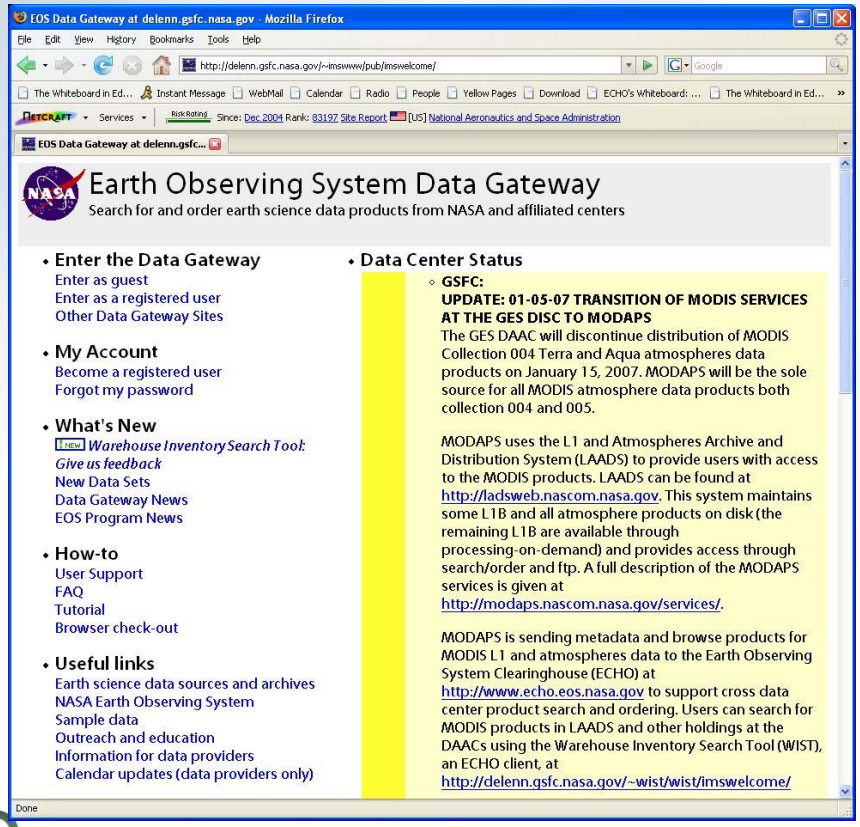
Agenda

- First page that you land on in EDG vs. WIST
- Navigator layout change
- Comment Form
- Search types supported by WIST
- Search types not supported by WIST
- Account Management (ECHO vs. EDG)
- Results Viewing
- Ordering
  - Choosing Order Options
  - After options are selected
  - Fill out the Order Form
  - Review Order Summary
  - Submit Order
  - Order Submitted
  - Review status of previous orders
  - Emails

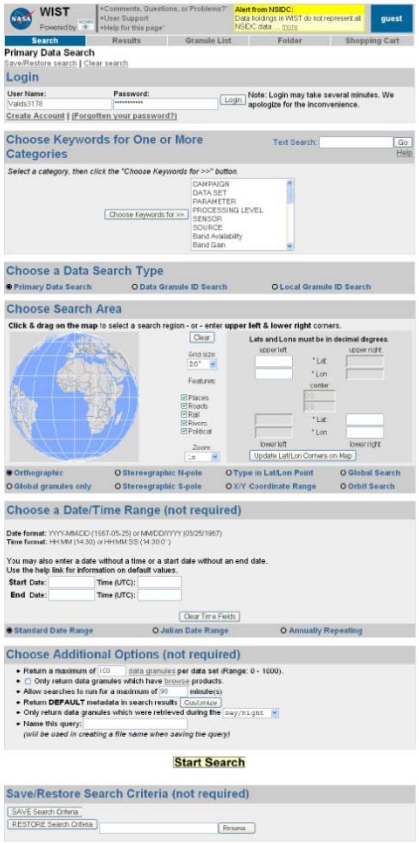
First page that you land on in EDG vs. WIST

- **Land on the search form in WIST instead of landing on a welcome page in EDG.**

EDG



WIST



Navigator layout change

EDG

User Name
guest

Search and Order
User Preferences
>Search Creation
Search Status
Results: Data Set
Results: Granule
My Folder
Shopping Cart
Exit to Home

Search types
>Data Search
Detailed Document
Summary Document
AIRS Browse

Help
Tutorial
FAQ
User Manual
User Support Contacts*
Check Order Status
Other EDG Sites
HDF Viewing Tools

Ask a Question
Report a problem
Comment form*

WIST

WIST
Powered by ECHO
+Comments, Questions, or Problems?*
+User Support
+Help for this page*
Alert from NSIDC:
Data holdings in WIST do not represent all NSIDC data. ... more
Valids3178
+Logout
+Edit Profile
Search | Results | Granule List | Folder | Shopping Cart

- Tutorial, FAQ, User Manual, User Support Contacts have all been moved to the User Support Link. Tutorial will be developed for WIST 10
- Other Sites link has been dropped because there will only be a single WIST
- HDF Viewing Tools link has been dropped because it is not being supported
- Search types have been dropped because these 3 search types have been dropped from WIST

Comment Form

- **WIST Comment Form:**

Ask a Question/Report a Problem

Use this form to email us your questions, comments, complaints or reports of problems. A user service representative will respond as soon as possible. You may close this browser window if you decide not to send comments.

1. User Information:

Title: Mr.
First Name: (required) Mark
Initial: S
Last Name: (required) Solomon
Organization: GST
Internet E-Mail Address: (required) solomon@echo.nasa.gov
Telephone: (required) 240-542-1160
Fax: 301-474-5970

2. Your question or comment:

Synopsis:
Detail:

Submit your comments

Search types supported by WIST

- **Primary Data Search**
  - This is the standard search for granules in both EDG and WIST.
- **Data Granule ID Search**
  - This is a search for granules using the known granule ID.
- **Local Granule ID Search**
  - This is a search for granules using the provider granule id.

Search types not supported by WIST

- **Detailed Document Search (Guide Search)**
  - This was a search for Guide documents.

- **Summary Document Search (GCMD Directory Search)**
  - This was a search for directory information from the Global Change Master Directory (GCMD).

- **AIRS Summary Browse Search**
  - This was the ability to search on AIRS Summary Browse and then choose the search area for granules based on the browse image.

Account Management (EDG vs. WIST)

- **EDG Account management uses local EDG for account and password information and accesses SMC for password changes and user preferences retrievals and updates.**

- **WIST Account management against ECHO**
  - Login, account and password management are directly to ECHO
  - User profile from ECHO
  - User preferences from ECHO on the Order Form
  - PUMP or other ECHO client can access this user information

Results Viewing

EDG

WIST

- For the most part the functionality and look is the same between EDG and WIST
- EDG "Image" link is called "Browse" in WIST
- EDG Request Sample "FTP Browse" does not exist in WIST/ECHO
- EDG Pricing is removed because pricing information is not available in WIST until the order is Quoted in ECHO

Ordering: Choose Order Options

Choose Order Options in EDG

Shopping Cart:

Choose Ordering Options

Have a question, a problem, or a comment?* | Help for this page

ASTER L1A RECONSTRUCTED UNPROCESSED INSTRUMENT DATA V003
Data Granule ID: **SC:AST_L1A.003:2006227720**
Geographic Center: - 77.62° Lat, 171.80° Lon
Geographic Coordinates:
- 77.21° Lat, 171.67° Lon
- 77.59° Lat, 173.70° Lon
- 78.02° Lat, 171.95° Lon
- 77.62° Lat, 169.91° Lon

Ordering Option 3:
AST_09T (ASTER On-Demand L2 Surface Radiance TIR) V003. Media Types : FtpPull, DLT, DVD

(Contains just this data granule.)

Additional Info:

Select One	Data Format	Media type	Media format	Package Size	Cost (US$)
○	Native Granule	FtpPull	FILEFORMAT	Unknown	$80.00
○	Native Granule	DLT	TARFORMAT	Unknown	$80.00
○	Native Granule	DVD	RockRidge	Unknown	$80.00

◉ *I want no items from this option.*

Mandatory: If you selected any of the items in ordering options 3 (above), you must give values for any required Options below. You can also give values for the other options, if you desire.

Apply the following processing options to the data: (for Ordering Options 3)

Location: 198.118.202.158:15050	
Granule_size: 5.888900	
Aerosols: (required) **Directions:** Select a single value.	Climatology
Column Ozone: (required) **Directions:** Select a single value.	OZ2DAILY - NCEP TOVS Daily Ozone
Long Name: ASTER On-Demand L2 Surface Radiance TIR	
Moisture, Temperature, Pressure: (required) **Directions:** Select a single value.	GDASOZFH - NOAA/NCEP GDAS model, 6h, 1 deg
Product Name: AST_09T	

◉ I want these ordering options for *every* data granule that applies in data set **ASTER L1A RECONSTRUCTED UNPROCESSED INSTRUMENT DATA V003** in the shopping cart.
○ I want these ordering options *only* for data granule **SC:AST_L1A.003:2006227720**.

Ok! Accept my choice & return to the shopping cart!

Choose Order Options with Dynamic Forms in WIST

Choose Ordering Options

SC:AST_L1A.003:651194
AST_09T

Distribution Specification

Media Type FtpPull
Media Format FILEFORMAT
Processing Options Native Granule

Distribution Options: FtpPull FILEFORMAT Native Granule; DVD RockRidge Native Granule (Required)

subset

Location 198.118.202.158:15050
Granule_size 116.310000
Aerosols : Climatology ☐ (Required)
Column Ozone: OZ2DAILY - NCEP TOVS Daily Ozone Climatology (Required)
Long Name ASTER On-Demand L2 Surface Radiance TIR
Moisture, Temperature, Pressure: GDASOZFH - NOAA/NCEP GDAS model, 6h, 1 deg Climatology (Required)
Product Name AST_09T

◉ Apply these order options (if applicable) to all granules currently in my shopping cart for data set **ASTER L1A Reconstructed Unprocessed Instrument Data V003**.
○ Save these order options as my order preference & apply them (if applicable) to all granules currently in my shopping cart for data set **ASTER L1A Reconstructed Unprocessed Instrument Data V003**.
○ Apply these order options to just this item.

Next Step | Cancel

- **Dynamic Forms allows for select lists instead of radio buttons for media selections**

Ordering: After options are selected

- **After the order options are selected in WIST:**

Step 1: Choose Ordering Options

1 item in your shopping cart, 1 item is ready to be ordered.

Go to Step 2: Order Form

Empty Entire Shopping Cart

Order Options	Data Granule ID (Local Granule ID)	Size (MB)	Start Date	Stop Date	Delete
AST_09T Change	**SC:AST_L1A.003:104701** (AST_L1A#00301072002190949_01202005181102.hdf)	36.79975	07 Jan 2002, 19:09:49.5600000	07 Jan 2002, 19:09:49.5600000	☐

Ordering: Fill out the Order Form

- **Step 2: Fill out the Order Form in WIST:**

Step 2: Order Form

Please fill out **the contact, shipping, and billing information** on the form below, then click on the **Go to Step 3: Review Order Summary Before Submitting Order** button at the bottom of the page. You can then review your order, and place it if you are satisfied.

Your Contact Address:

Title: Mr.
First Name: (required) Mark
Initial: S
Last Name: (required) Solomon
Organization: GST
Internet E-Mail Address: (required) solomon@echo.nasa.gov
Street Address: (required) 7855 Walker Drive, Suite 200
City: (required) Greenbelt
Select USA State (USA only): MARYLAND
-- None --
ALABAMA
ALASKA
AMERICAN SAMOA
Or Enter State/Province:
To enter a state/province, select None from the selection menu and enter state/province above.
Zip/Postal Code (required for USA): 20770
Select Country: (required) United States
-- None --
Abu Dhabi
Admiralty Islands
Afghanistan
Or Enter Country:
To enter a country, select None from the selection menu and enter country above.
Telephone: (required) 240-542-1160
Fax: 301-474-5970
Special Shipping Instruction
Shipping Address: Same as contact address (above)
Billing Address: Same as contact address (above)
Change Shipping/Billing Address

Type: (required) Government
Category: (required) USA
Notification Level: VERBOSE

Developers Only:

Debugging for this session should be in the ON setting.

Go to Step 3: Review Order Summary Before Submitting Order

OR

Submit Order Now!

Ordering: Review Order Summary

- **Step 3: Review Order Summary in WIST:**

Step 3: Order Summary
To continue, click on the **"Submit Order"** button below. If you want to change your order before submitting, click on the **"Shopping Cart"** button on the upper right.

Submit Order

CONTACT ADDRESS

Name: Mark Solomon
Organization: GST
Email: solomon@echo.nasa.gov
Address:
7855 Walker Drive, Suite 200
Greenbelt, MD 20770 USA
Phone: 240-542-1180
Fax: 301-474-5970
Special Shipping Instruction:

SHIPPING ADDRESS

Name: Mark Solomon
Organization: GST
Email: solomon@echo.nasa.gov
Address:
7855 Walker Drive, Suite 200
Greenbelt, MD 20770 USA
Phone: 240-542-1180
Fax: 301-474-5970
Special Shipping Instruction:

BILLING ADDRESS

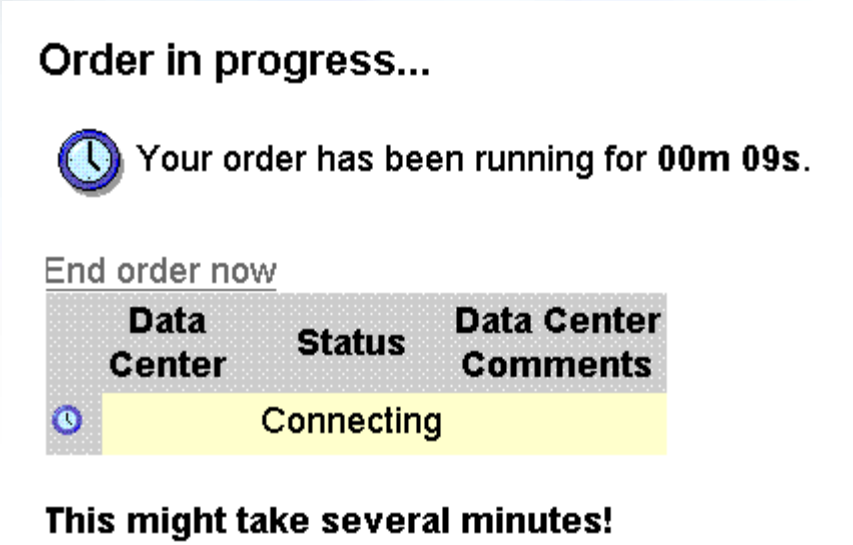
Name: Mark Solomon
Organization: GST
Email: solomon@echo.nasa.gov
Address:
7855 Walker Drive, Suite 200
Greenbelt, MD 20770 USA
Phone: 240-542-1180
Fax: 301-474-5970
Special Shipping Instruction:
User Domain: GOVERNMENT
User Region: USA

Provider ID: LPDAAC_TS2
Order ID: 0998D445-67D4-E985-0512-2D0358986F1D
Provider Order State: QUOTED
Provider Order Status Message: Fri Jan 18 17:23:10 EST 2008 : ECHO: Transitioning from state [NOT_VALIDATED] to state [VALIDATED]Fri Jan 18 17:23:11 EST 2008 : ECHO: Transitioning from state [VALIDATED] to state [QUOTING]Fri Jan 18 17:23:18 EST 2008 : successFri Jan 18 17:23:18 EST 2008 : ECHO: Transitioning from state [QUOTING] to state [QUOTED]Fri Jan 18 17:31:46 EST 2008 : ECHO: Transitioning from state [QUOTED] to state [VALIDATED]Fri Jan 18 17:31:47 EST 2008 : ECHO: Transitioning from state [VALIDATED] to state [QUOTING]Fri Jan 18 17:31:50 EST 2008 : successFri Jan 18 17:31:50 EST 2008 : ECHO: Transitioning from state [QUOTING] to state [QUOTED]
Total Order Price: $85.00

Provider ID: LPDAAC_TS2
Data Granule ID: SC:AST_L1A.003:104701
Order Option: AST_09T
Quantity: 1

Ordering: Submit Order

- **Step 4: Submit Order in WIST:**



Ordering: Order Submitted

- **Order Submitted in WIST:**

Order Submitted

Your order has been submitted, and a copy of the summary has been emailed to the account solomon@echo.nasa.gov

The following is a summary of the order you just submitted:

Your order is currently being sent to the appropriate data providers(s) for processing.

Provider ID: LPDAAC_TS2
Order ID: 059ED445-57D4-E5E5-0512-2DD358B85F1D

Total Order Price: $85.00

Provider ID: LPDAAC_TS2
Data Granule ID:SC:AST_L1A.003:104701
Quantity: 1

PROVIDER CONTACT INFORMATION:

Provider ID: LPDAAC_TS2
Provider Name: LPDAAC_TS2

Ordering: Review status of previous orders

- Check status of previously submitted order in WIST:

Ordering: Emails

- **In WIST, based on the Notification Level in ECHO you may see additional emails from the ECHO system in addition the emails from WIST and the providers. The default notification level is INFO. Here are the notification levels: NONE, CRITICAL, INFO, DETAIL, and VERBOSE.**
  - The order states that trigger an email are: PROCESSING,QUOTED, CLOSED,QUOTE_FAILED, QUOTE_REJECTED, SUBMIT_FAILED, SUBMIT_REJECTED, CANCELLED

	VERBOSE	DETAIL	INFO	CRITICAL	NONE
Failure Provider Order State Change (3)	X	X	X	X	
Success Provider Order States (2)	X	X	X		
Intermediate Provider Order States (1)	X	X			
Provider Order Status Update	X				

- **In EDG you see a single email from EDG and one email from the provider.**

Questions?

ECHO OPS & USWG WIST Support Plan

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- Roles
- Response Time
- Messages to Users
- Referrals to Data Centers
- Customer Service Reminders
- NASA Privacy Rules
- ECHO & USWG Response Plan
- Questions?

Roles

- **User Services**
  - Associated with a Data Provider and user community
- **ECHO Operations**
  - ECHO Team first responders to ECHO and WIST support
- **WIST Development**
  - Support to ECHO Operations and USWG

Response Time

- **Initial Acknowledgement**
  - < 1 Business Day
- **Further Investigation**
  - Give user a response indicating that additional time is needed

Messages to Users

- **Standards**
  - Courteous
    - Automated responses should not sound like they were written by a computer
  - Informative
    - Remind users of the initial request
    - Provide an answer or statement that the request is being investigated
    - Follow up on a regularly with individuals performing investigation until resolved
    - Concise as possible given other constraints
  - Message Contents
    - Should contain "NASA DAAC" or "NASA Data Center"

Referrals to other data centers

- **Shared Knowledge**
  - User services will maintain knowledge of data sets in each data center and focus of each center
- **Transferring Users**
  - Data center receiving the referral should be included on the email to the potential user containing the contact information.
  - If the referral is done over the phone, then an email notifying the second data center of the referral needs to be sent out.
  - The data center that receives the referral should include the originating data center on their response to the user.
    - This permits the original center to know the user has been assisted.

Customer Service Reminders

- **Always be "service ready" and "user friendly"**
- **Ask customers open, not closed, questions**
  - "How can I help…" not "Do you need help…"
- **Customer is never told they are wrong**
- **Provider Expertise**
  - Know products and services
    - Characterstics
    - Uses
    - Availability
    - Location
    - Policies & rationale
    - Procedures & timeframes

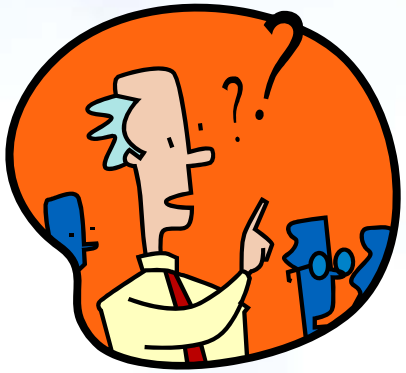
NASA Privacy Policies

- **USO members must identify themselves as being part of the NASA agency they work with when answering phones &/or emails/letters (i.e. LP DAAC, NSIDC, ASDC, etc..).**
- **USO/DAAC may collect user information for the purposes of**
  - Assissting users with their specific questions.
  - Providing information on data updates, changes, system problems.
  - Users must be informed of the information the data centers are collecting.
  - Sending information unrelated to a user's interst is not permitted.
- **USO/DAAC are not permitted to survey users.**
- **USO/DAAC are not permitted to solicit more than 9 users asking the same question(s). This will be considered a survey.**
  - Data centers interested in conducting a user survey should contact OMB.

ECHO & USWG Response Plan

- **Where do WIST originated questions go?**
  - Email?
  - Phone?
- **Who is responsible for WIST usability questions?**
- **How does ECHO OPS and USWG coordinate responses?**
  - Should ECHO OPS be treated as a separate DAAC, where support is passed off when needed?
- **Are USWG members aware of data restrictions in ECHO (ACLs)?**
- **Should all USWG members have access to the ECHO Defect Tracking system (TestTrack Pro)?**
- **And more…**

Questions?



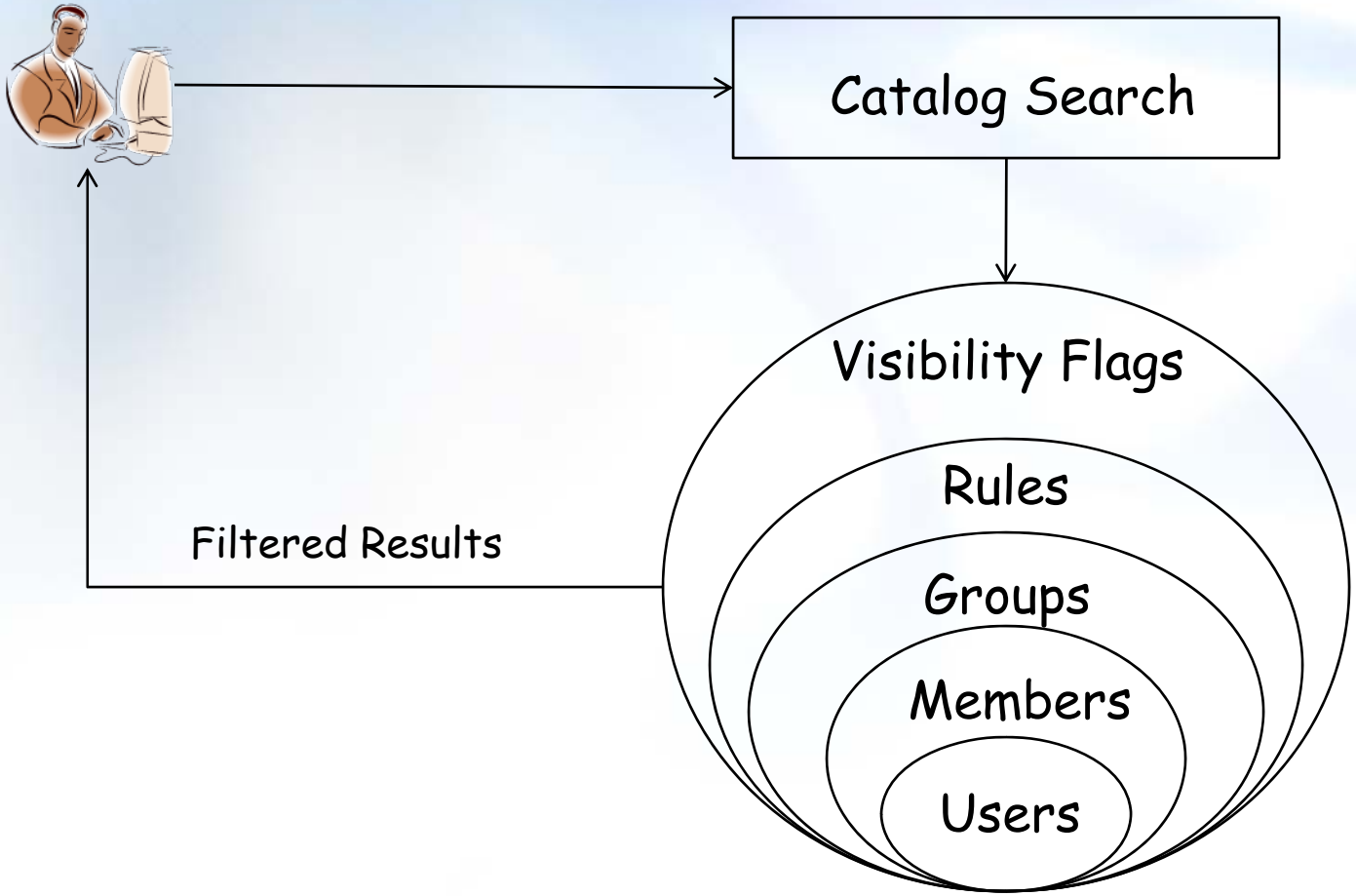
Data Access & Order Management

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- Data Access Management
- Visiblity & Restriction Flags
- Access Control List
- Data Management in PUMP
- Provider Policies
- Order Processing
- Questions

Data Access Management



Visibility & Restriction Flags (1/3)

- **Visibility Flag**
  - Basic access control mechanism bypassing all other access rules.
  - Useful as staging area for newly ingested collections
  - Visibility is useful to "hide" a new dataset while ACL rules and order options are developed.
  - Access Control List (ACL) rules are encouraged for access management
  - Non-Visible (Restricted) datasets are only visible to users with provider role.
    - Also, not searchable through WIST
    - Granules inherit collection visibility
- **ECHO 10.0 Ingest metadata contains visibility element**
- **PUMP can be used to configure visibility flog**

Visibility & Restriction Flags (2/3)

- **Restriction Flag**
  - Decimal value specified in Collection and Granule metadata
  - Used to specify restriction levels in data
  - Requires Ingest to set, update, or remove flag
  - Data partner can create a rule compare the restriction flag's value on collection and granule level.

- **PUMP cannot set restriction flag value in metadata**

Visibility & Restriction Flags (3/3)

- **Ingest Metadata Snippet**
  - Found in Collection Insert, Partial Update, and Partial Delete

```
<Collection>
    …

    <Visible>true</Visible>

    …

    <RestrictionFlag>0</RestrictionFlag>
    <RestrictionComment>
        Restriction Flag comment goes here
    </RestrictionComment>

    …

</Collection>
```

Access Control List (1/4)

- **Access Control List (ACL)**
  - List of conditioned rules used to filter access to a provider's data
  - Rules are applied immediately upon creation
  - Rules can be created, viewed, and deleted, but not edited.
  - Max rule name length is 55 characters long.
  - Configurable by users with the "provider" role
- **Data Access Rules**
  - All rule types share a common set of components (see next slide)
  - A rule may contain one of the following conditions:
    - Boolean – Based on condition that is true or false
    - Restriction Flag – Based on restriction flag in metadata
    - Temporal - Based on a start and end time
    - Rolling Temporal – Based on a time duration

ECHO

NASA

Access Control List (2/4)

- **Rule Basic Access Components**
  - Type
    - Restriction - Hides data from all users in the system if the rule is matched
    - Permission - Grants access to data if the rule is matched.
      - Permission rules overrides restriction rules for access validation
  - Action
    - View – Restrict/Allow access to viewing metadata
    - Order – Restrict/Allow access to ordering metadata
  - Groups
    - List of groups the rule applies to
  - Data Type
    - All Collections
    - Selected Collections
    - All Granules
    - Selected Granules

Access Control List (3/4)

Rule – Condition Types

	Boolean	Restrict Flag	Temporal	Rolling Temporal
Rule Type	Permit or View			
Action Type	Order or View			
Catalog Item	All and selected collections or granules			
Comparator Type		=, not =, <, >, <=, >=		
Flag Value		Decimal number		
Temporal Type			Acquisition, insert, last update, production	
Duration Value			Weeks, Days, Hours	
From/To			YYYY-MM-DD hh:mm:ss	

ECHO

NASA

Access Control List (4/4)

- **Special Rules**
  - All permit rules must include the user "Valids3178" as the member of the group in order to allow their collections and granules to be accessible from WIST.
  - All permit rules must include the user "GCMD" as the member of the group in order to allow the collection DIF Entry_ID to be synchronized with GCMD.
  - All permit rules must include the user "ECHO_SYS" as the member of the group in order to allow autopopulation in ECHO order forms to access ordered metadata.

Data Management in PUMP (1/6)

User Profile | User Preferences | User Authenticators | Group Management | Provider Context

Leave Provider Context

- Provider Information
- Provider Contacts
- Provider Policies
- Provider Orders
- Data Management
- User Lookup
- Provider Authenticators

Welcome to Provider Context "ORNL_DAAC" !

You are currently act as provider "ORNL_DAAC". Please use menu on the left to access Provider functions.

For more details, please refer to ECHO 9.0 Data Partner's Guide - PDF (1.3MB)

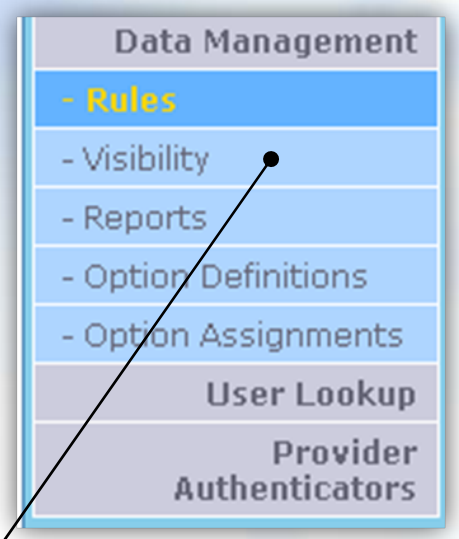
Data Management

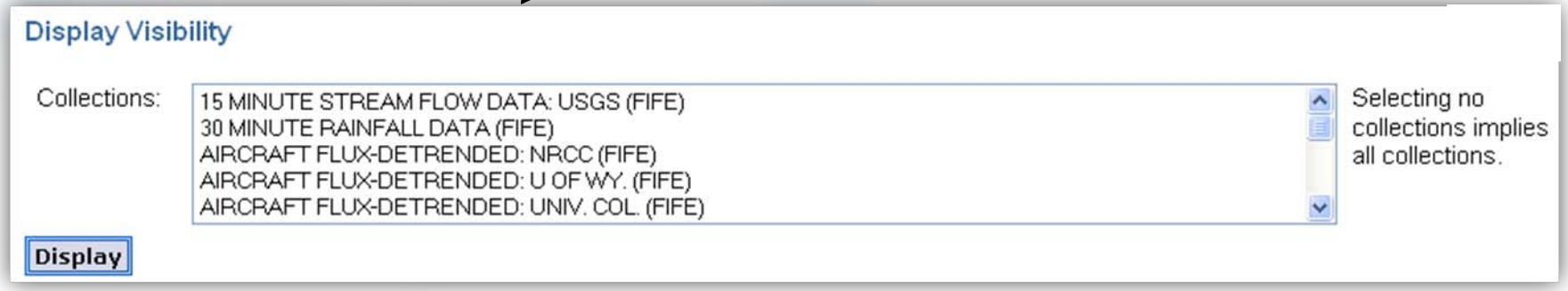
- Rules
- Visibility
- Reports
- Option Definitions
- Option Assignments

User Lookup

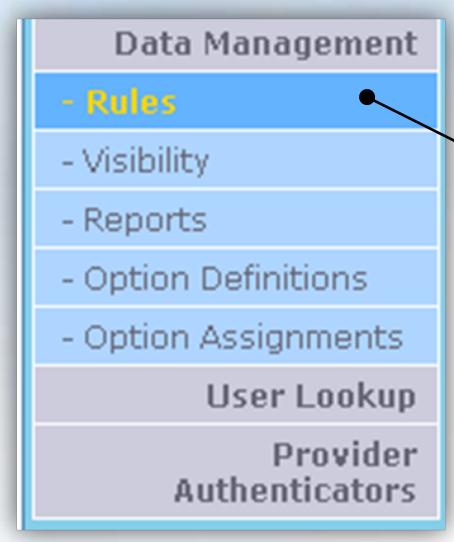
Provider Authenticators

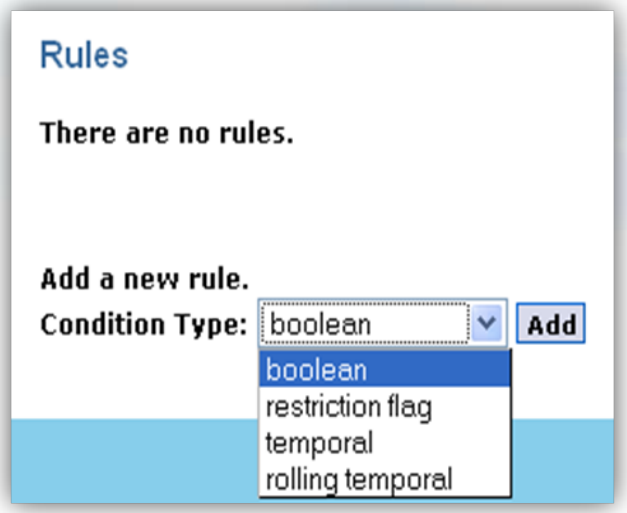
Data Management in PUMP (3/7)



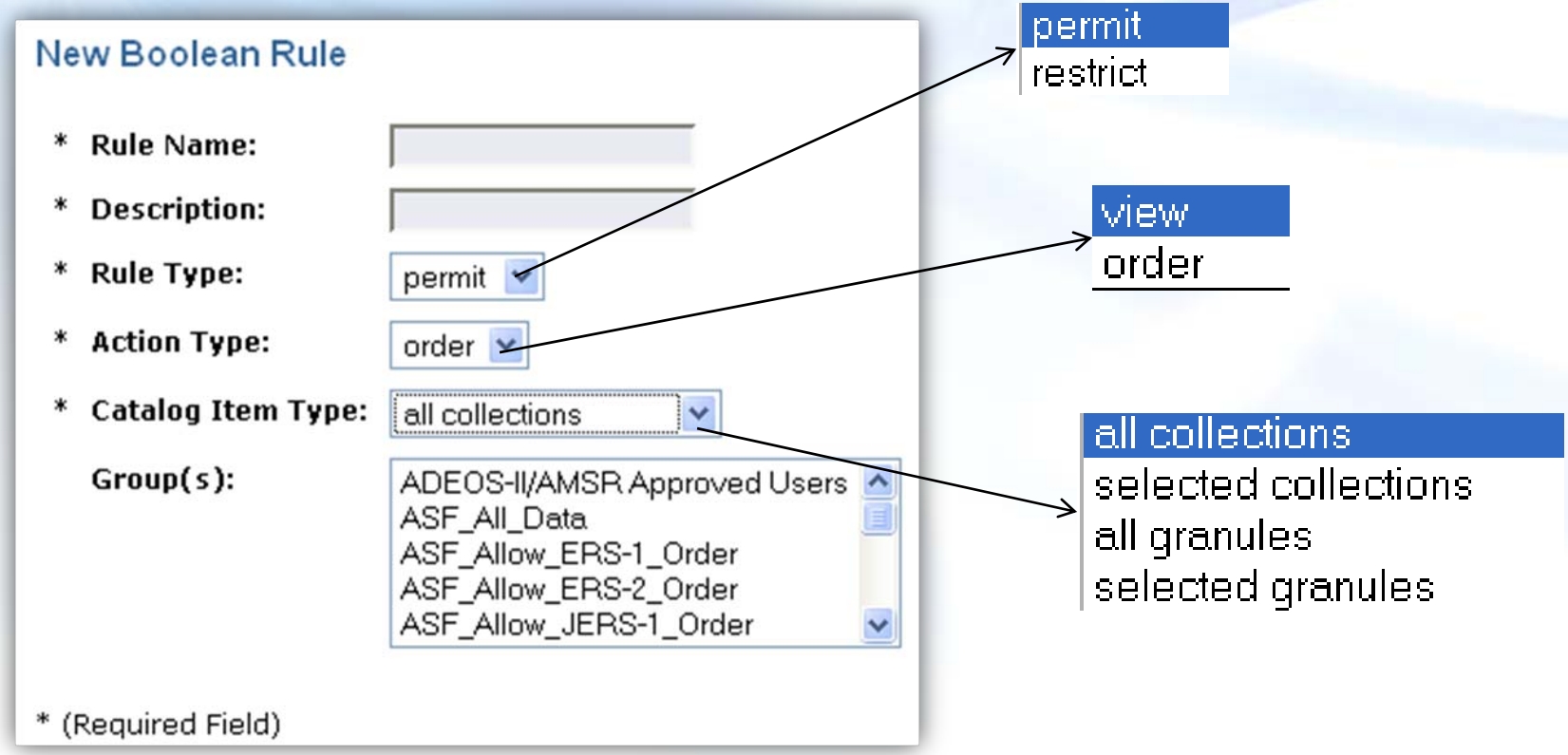


Data Management in PUMP (2/7)



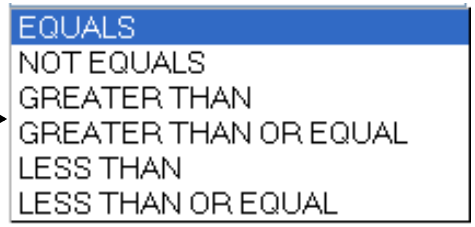


Data Management in PUMP (4/7)



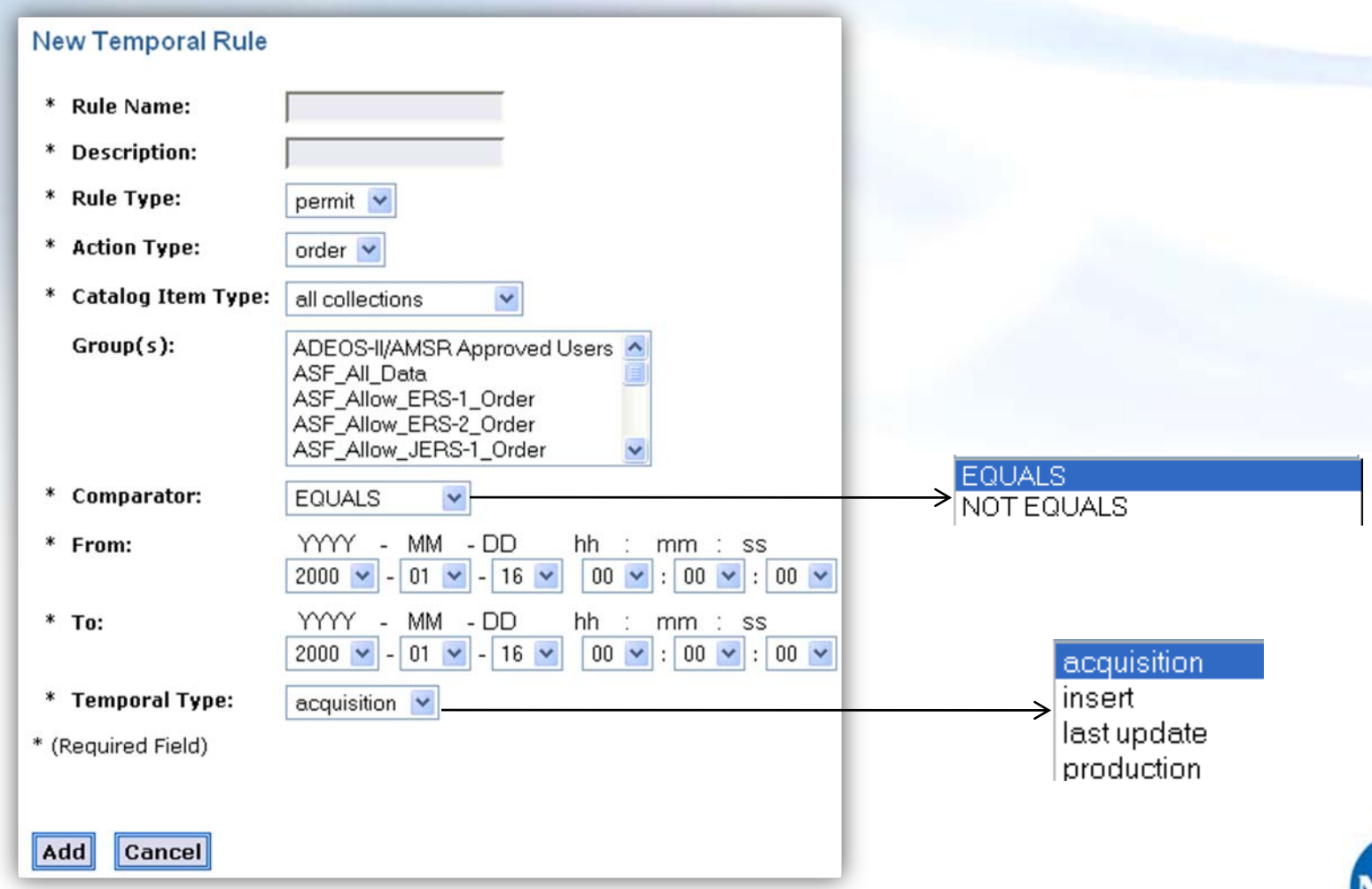
Data Management in PUMP (5/7)

- **Restriction Data Access Rule**



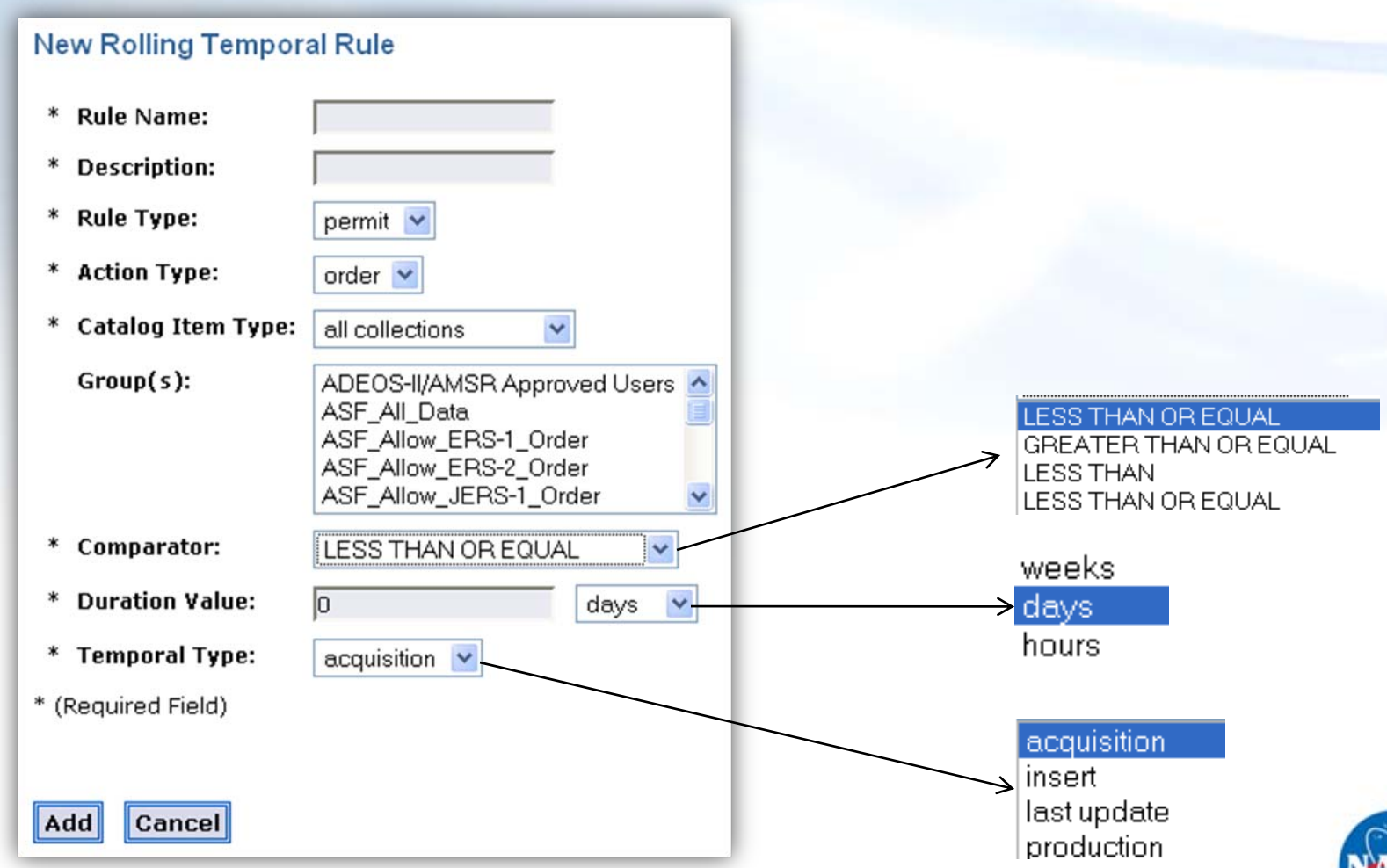
Data Management in PUMP (6/7)

- **Temporal Data Access Rule**



Provider Management in PUMP (7/7)

- **Rolling Temporal Data Access Rule**

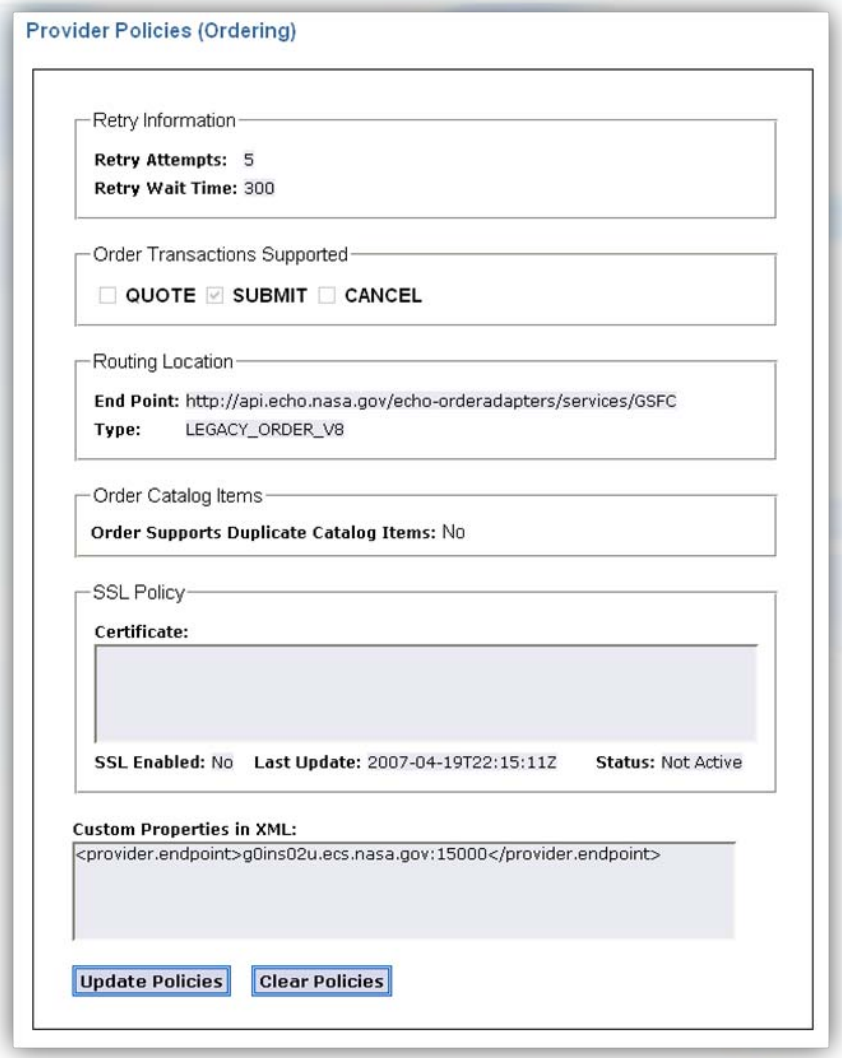


Provider Policies (1/2)

- **Provider Policies**
  - Store the communication settings for ordering
  - Requires provider role to access policies
  - PUMP allows data partners to manage their own provider policy settings

Provider Policies (2/2)

- **Provider Policies (Ordering)**
  - Retry Limits
    - Should be long enough to account for provider schedule maintenance
  - Supported Order Transactions
    - Relates to methods found in the Order Fulfillment API
  - Routing Location
    - End point for provider order support
  - Order Catalog Items
  - SSL Policy
    - SSL certificate for machine hosting order end point
    - Requires ECHO activation
  - Custom Properties
    - Specific parameters needed by order end point

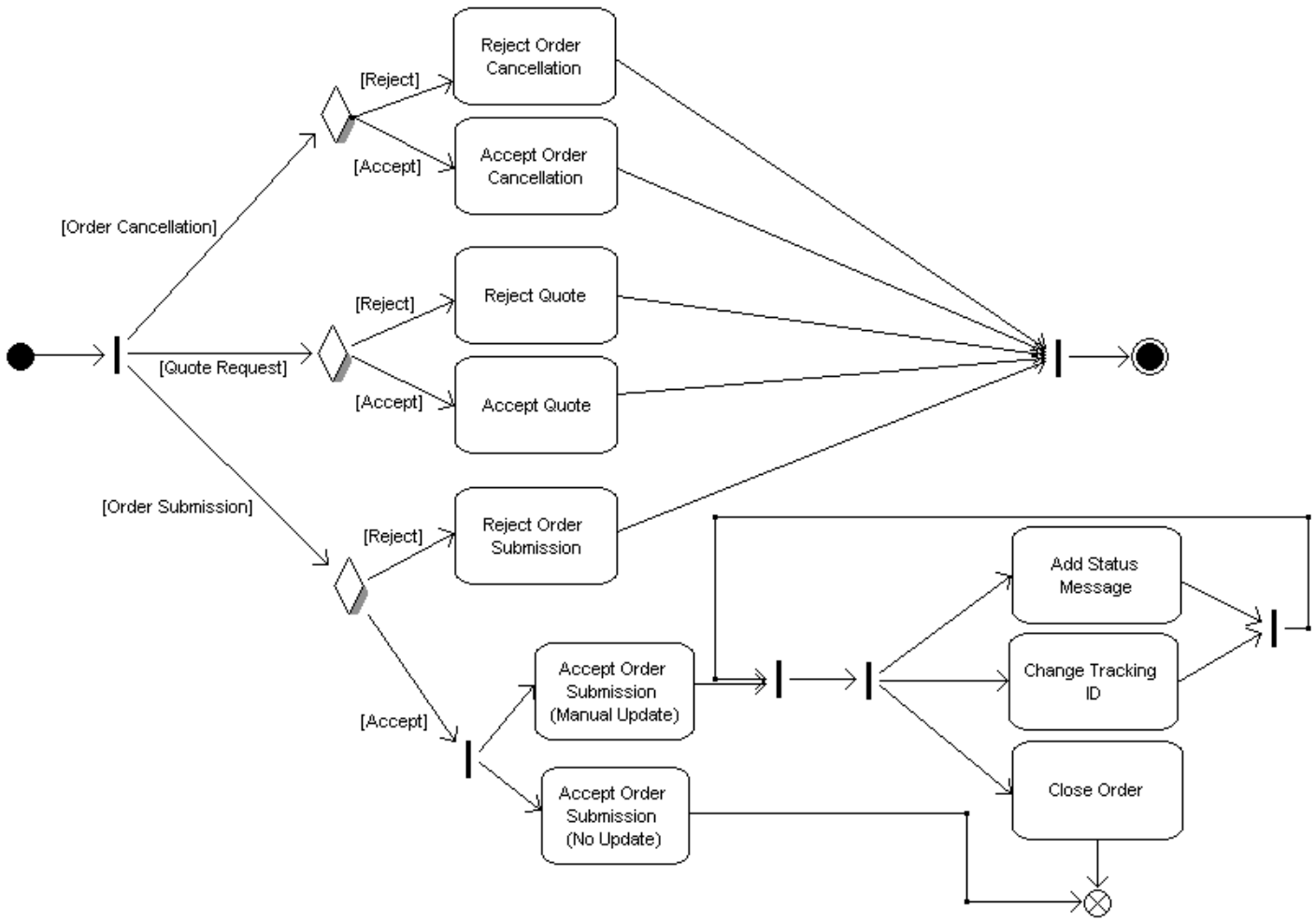


Ordering Processing (1/4)

- **Fulfilling Orders (Data Partners)**
  - The OrderProcessingService is used to communicate order fulfillment responses to ECHO
  - The "provider tracking ID" is crucial for user services order tracking
  - Providers must correctly implement the order transaction configured in the provider policies (Quoting, Submit, Cancel)
  - Orders can be accepted with two "update mechanisms"
    - AUTOMATIC – ECHO will manage the order's state
    - MANUAL – Provider will notify ECHO with changes in order state

Ordering Processing (2/4)

- **Order Processing – Fulfilling Order Requests**



Ordering Processing (3/4)

- **Order States**
  - Validated – Order has been validated and all information is correct
  - Not_Validated – Order has not been validated
  - Quoting – Order has been sent to provider for quoting
  - Quote_Rejected – Provider does not support quoting
  - Quote_Failed - Order failed quoting
  - Quoted – Provider has responded with quote
  - Submitting – Order has not yet reach provider
  - Submit_Rejected – Order rejected by provider
  - Submit_Failed – Order failed to send to provider
  - Processing - Provider received order and process
  - Cancelling – In the process of Cancelling
  - Cancelled – Order has been cancelled (no change from Closed status)
  - Closed – Order has been completed

Ordering Processing (4/4)

- **Order Notification Levels**
  - Default notification level is INFO
    - The order states that trigger an email are:
    - PROCESSING
    - QUOTED, CLOSED
    - QUOTE_FAILED, QUOTE_REJECTED, SUBMIT_FAILED, SUBMIT_REJECTED, CANCELLED

	VERBOSE	DETAIL	INFO	CRITICAL	NONE
Failure Provider Order State Change (3)	X	X	X	X	
Success Provider Order States (2)	X	X	X		
Intermediate Provider Order States (1)	X	X			
Provider Order Status Update	X				

Questions ?

ECHO 10.0 Data Model

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

What is "Ingest"?

ECHOpedia

in◆gest (in'jest)

noun

An ECHO Service that loads Earth Science metadata from data providers into ECHO's database.

See also XML Metadata, collections, granules, and browse.

Ingest's Legacy DTD Format

- Ingest has to handle different versions of XML described using multiple DTDs for each entity type (collection, granule, etc).
- Providers send different format strings for time, enumeration, and boolean values.

Provider A DTD != Provider B DTD

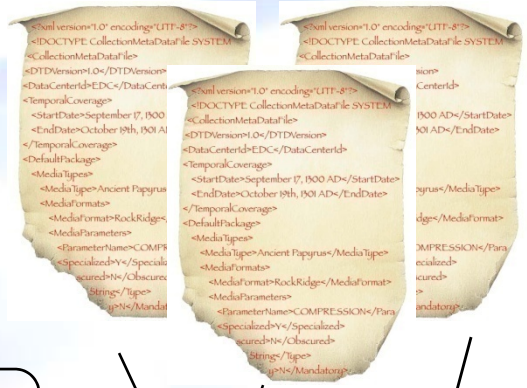
`true, T, yes, 1, Y,…`

It is hard for new providers to understand how to conform to this legacy syntax.

Ingest 10.0 Direction

Solution: Use a single XML Schema.

- One schema for each metadata item type. (Collection, granule, and browse)
- XML Schema was derived from legacy formats.
- XML in legacy formats will still be accepted by ingest in 10.0



One common schema!

XML Schema Vs. DTD

DTD

- ✓ Element Structure
- Type checking
- Pattern Matching
- Restrictions (ie. lat <= 90)
- Easily Documented

XML Schema

- ✓ Element Structure
- ✓ Type checking
- ✓ Pattern Matching
- ✓ Restrictions (ie. lat <= 90)
- ✓ Easily Documented

XML Format Changes

Example Generated HTML Documentation

ECHO Ingest API

Jump To: Complex Types Simple Types

Complex Types

- AdditionalAttributeRef
- CampaignRef
- CharacteristicRef
- DataGranule
- Geometry
- Granule
- GranuleAddField
- GranuleDelete
- GranuleDeleteField
- GranuleMetaDataFile
- GranulePartialAdd
- GranulePartialDelete
- GranuleUpdateTarget
- HorizontalSpatialDomain
- InstrumentRef
- ListOfAdditionalAttributeRefs
- ListOfAdditionalAttributeValues
- ListOfCampaignRefs
- ListOfCharacteristicRefs
- ListOfGranuleAddFields
- ListOfGranuleDeleteFields
- ListOfGranuleDeletes
- ListOfGranulePartialAdds
- ListOfGranulePartialDeletes
- ListOfGranules
- ListOfGranuleUpdateTargetFields
- ListOfGranuleUpdateTargets

HorizontalSpatialDomain

This is a pseudo entity to hold granule horizontal spatial domain information.

Elements

string	**ZoneIdentifier** Multiplicity: 0 to 1 The appropriate numeric or alpha code used to identify the various zones in this grid coordinate system.
choice	**Choice** Multiplicity: 1 to 1
Geometry	**Geometry** Multiplicity: 1 to 1
Orbit	**Orbit** Multiplicity: 1 to 1 This entity stores orbital coverage information of the granule. This coverage is an alternative way of express granule spatial coverage. This information supports orbital backtrack search apply on granule.
EmptyType	**Global** Multiplicity: 1 to 1

*Tools that generate code from XML schema can benefit from the documentation as well.

XML Format Changes

Legacy DTD Time formats

- ‘2008-01-01 12:00:00’
- ‘Jan 01 2008’
- ‘2008-01-01 12:00:00.000’
  - Sometimes .000 represents fractional seconds and sometimes represents milliseconds

XML Schema Time Formats

- ‘2008-01-01T12:00:00.000Z’
  - XML Schema Type `dateTime`
  - An ISO standard
  - Well defined date time type that is handled by many programming languages.

XML Format Changes

General Cleanup

- ListOf wrapper elements
- Enumerations (ie. Day night flag, Coordinate System)
- Made more consistent with ECHO Kernel web service API.

- Odd cApitalizatioN
- Unused Elements
- Duplicated Elements
- Inconsistencies
- Unnecessarily Long Element Names (ie. ElectronicMailAddress)

Metadata Items: Collection, Granules and Browse

A Granule is a single unit of data. ECHO doesn't receive the actual granule data. The provider sends metadata about the granule to ECHO such as spatial boundaries, temporal coverage, and quality level.

Granule Data at Provider.

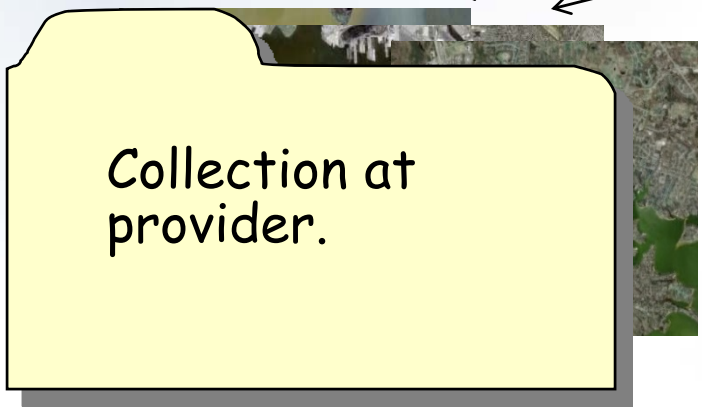
What Echo Receives


```
<GranuleMetaDataFile>
 <Granules>
  <Granule>
   <GranuleUR>SC:Gran5</GranuleU
   <InsertTime>2007-01-05T05:30
   <Collection>
    <ShortName>Modis COLL-2515</
    <VersionId>1.0</VersionId>
   </Collection>
   <DataGranule>
    <SizeMBDataGranule>500.0</Si
    <ReprocessingPlanned>None as
    <ReprocessingActual>Every sa
    <ProducerGranuleId>A93jJJd.0
    <DayNightFlag>DAY</DayNightF
    <ProductionDateTime>2007-01-
    <LocalVersionId>LocalVersion
   </DataGranule>
```

Metadata Items: Collection, Granules and Browse

A Collection is a container and a template for granules. It groups them together and defines common attributes for all the granules.

Contains granules.



What ECHO Receives.

```
<CollectionMetaDataFile>
 <Collections>
  <Collection>
    <ShortName>NEW</ShortName>
    <VersionId>1.0</VersionId>
    <InsertTime>2007-01-05</Ins
    <LastUpdate>2007-01-05</Las
    <DeleteTime>2008-01-05</Del
    <LongName>Collection 1 Long
    <DataSetId>Collection-2515<
    <Description>This is a coll
    <Orderable>true</Orderable>
    <Visible>true</Visible>
    <RevisionDate>2007-01-05T05
    <SuggestedUsage>This is the
    <ProcessingCenter>Goddard S
    <ProcessingLevelId>Level 4<
```

Deleting a collection will also delete its granules.

Changes to Granules and Collections

- Visible Flag
- Number of Orbits
- SpatialInfo was modeled after the BMGT DTD.
- Partial Metadata Updates are defined in same schema as inserts and deletes.

TRASH

- ✘Polygon Geometry
- ✘Circle Geometry
- ✘Granule Spatial Inheritance

These weren't being used. GPolygon fulfills most of the capabilities of Polygon.

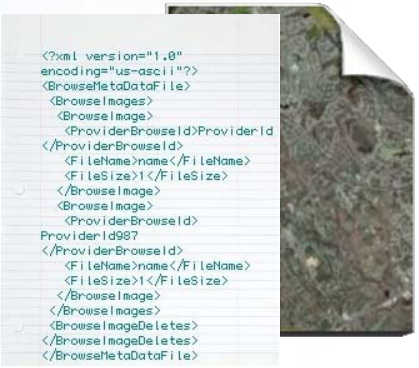
Metadata Items: Collection, Granules and Browse

Browse in ECHO 9.0 referred to two concepts, a browse image and browse links. In the ECHO 10.0 the concepts have been separated.

A <u>browse image</u> is a preview of granules or browse data.

A <u>browse link</u> is the link between a granule or collection and a browse image.

Both the browse image file and the browse metadata are sent to ECHO.

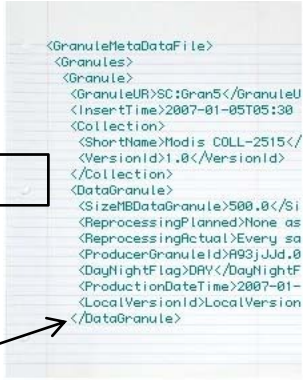


Deleting either of these…

Browse link

…will delete this.

A granule



The granule xml lists the browse images it is linked to.

Deleting Cascades

Deleting metadata items in ECHO will cascade to other items. Here's how it works.

Collection

```
<CollectionMetaDataFile>
 <Collections>
  <Collection>
    <ShortName>NEW</ShortName>
    <VersionId>1.0</VersionId>
    <InsertTime>2007-01-05</Ins
    <LastUpdate>2007-01-05</Las
    <DeleteTime>2008-01-05</Del
    <LongName>Collection 1 Long
    <DataSetId>Collection-2515<
    <Description>This is a coll
    <Orderable>true</Orderable>
    <Visible>true</Visible>
    <RevisionDate>2007-01-05T05
    <SuggestedUsage>This is the
    <ProcessingCenter>Goddard S
    <ProcessingLevelId>Level 4<
```


Granule

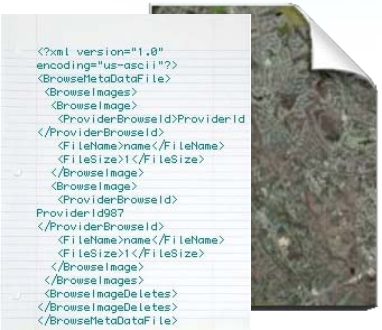
```
<GranuleMetaDataFile>
 <Granules>
  <Granule>
   <GranuleUR>SC:Gran5</GranuleU
   <InsertTime>2007-01-05T05:30
   <Collection>
    <ShortName>Modis COLL-2515</
    <VersionId>1.0</VersionId>
   </Collection>
   <DataGranule>
    <SizeMBDataGranule>500.0</Si
    <ReprocessingPlanned>None as
    <ReprocessingActual>Every sa
    <ProducerGranuleId>A93jJJd.0
    <DayNightFlag>DAY</DayNightF
    <ProductionDateTime>2007-01-
    <LocalVersionId>LocalVersion
   </DataGranule>
```


These lines show the direction that deletes cascade.

Link

Link

Browse Image



```
<?xml version="1.0"
encoding="us-ascii"?>
<BrowseMetaDataFile>
 <BrowseImages>
  <BrowseImage>
   <ProviderBrowseId>ProviderId
</ProviderBrowseId>
    <FileName>name</FileName>
    <FileSize>1</FileSize>
  </BrowseImage>
  <BrowseImage>
   <ProviderBrowseId>
ProviderId987
</ProviderBrowseId>
    <FileName>name</FileName>
    <FileSize>1</FileSize>
  </BrowseImage>
 </BrowseImages>
 <BrowseImageDeletes>
</BrowseImageDeletes>
</BrowseMetaDataFile>
```


Notice that nothing will cascade delete a browse image.

Deleting Metadata Items

In previous versions of ECHO items were only marked as removed. They hung around until they were manually cleaned up.

In the new Ingest they are deleted immediately.

Scheduling a delete at some future date is still supported. This should be specified in the item metadata or through a partial metadata update.

```
<GranuleDelete>
    <GranuleUR>TestGran1</GranuleUR>
    <DeleteTime></DeleteTime>
</GranuleDelete>
```

Not in schema anymore → ~~<DeleteTime></DeleteTime>~~

Partial Metadata Updates

Partial Metadata Update allows a set of changes to be applied across many collections and granules.

The old Ingest API specified where to make changes using an XPath string.

```
AdditionalAttributes/AdditionalAttribute
[AdditionalAttributeName="CloudCover"]/
AdditionalAttributeValue
```

Downsides:

- Easy to get XPath wrong.
  - Misspelling not found by DTD
  - Use /'s in wrong place
- Not every XPath supported.
- Full XPath specification not supported.
- XPaths were ambiguous.

Partial Metadata Updates

The new Ingest Schema drops XPath for a simpler approach. The field to update is identified in XML.

```
<GranulePartialAdd>
 <Targets>
  <Target>
   <LastUpdate>2009-01-0 … </LastUpdate>
   <GranuleUR>TestGran1</GranuleUR>
  </Target>
 </Targets>
 <Fields>
  <Field>
   <AdditionalAttribute>
    <Name>CloudCover</Name>
    <Values><Value>7.5<Value></Values>
   </AdditionalAttribute>
  </Field>
 </Fields>
</GranulePartialAdd>
```

Granules to modify.

The granules identified here will get the following changes.

Field to update.

Partial Metadata Updates

Benefits:

- Unambiguous
- Schema clearly lists which fields can be modified.
    - Fields are easily documented.
    - Easy validation.
- Same XML Types are used for inserting collections and granules.
    - Also means that client code from insert can be reused.

Questions

ECHO 10.0 Ingest Overview

2008 ECHO Workshop
January 29 - 31, 2008
Riverdale, MD

Agenda

- ECHO 10.0 Ingest Changes
- Collection Partial Adds/Updates/Deletes
- Granule Partial Adds/Updates/Deletes
- Ingest Job Activities/States
- Ingest Job Creation
- Notifications
- Ingest Policies
- Ingest File Delivery
- Factors Affecting Ingest Rates in ECHO
- Factors Affecting Time Between Metadata Submission and Visibility
- Ingest Support

ECHO 10.0 Ingest Changes

- **10.0 Ingest Schema**
  - Improve Data Validation
  - Browse Lifecycle Change
  - Partial Adds/Updates/Deletes simplified

- **Ingest Workflow**
  - Increased automation
  - Updated notification events
  - Updated Ingest reporting
  - Packaged metadata delivery supported
  - Additional configuration items

Collection Partial Adds/Updates/Deletes (1/2)

- Changed From Xpath matching to explicit metadata tags
- Supported elements:

Field	Add	Update	Delete
Browse Image	X	X	X
Visibility		X	
Temporal	X	X	X
Spatial	X	X	X
Restriction Flag	X	X	X
DeleteTime	X	X	X

Collection Partial Adds/Updates/Deletes (2/2)

- **ECHO 9.0 Example:**

```
<Collection>
  <Target>
    <ID>Collection-ID</ID>
  <Target>
  <Add>
    <QualifiedTag>RestrictionFlag</QualifiedTag>
    <MetadataValue>5</MetadataValue>
  </Add>
</Collection>
```

- **ECHO 10.0 Example:**

```
<CollectionMetaDataFile>
  <CollectionPartialAdds>
    <CollectionPartialAdd>
      <Targets>
        <Target>
          <Collection>TEST-Collection-123</Collection>
          <LastUpdate>12-13-2005T10:00:00.000Z</LastUpdate>
        </Target>
      </Targets>
      <Fields>
        <Field>
          <RestrictionFlag>5</RestrictionFlag>
        </Field>
      </Fields>    </CollectionPartialAdd>
  </CollectionPartialAdds>
</CollectionMetaDataFile>
```

Granule Partial Adds/Updates/Deletes (1/2)

- **Changed From Xpath matching to explicit metadata tags**
  - Legacy Xpath updates are supported for BMGT
    - OnlineAccessURL & OnlineResource
    - MeasuredParameter
- **10.0 Supported elements:**

Field	Add	Update	Delete
Browse Image	X	X	X
Visibility		X	
Temporal	X	X	X
Spatial	X	X	X
Restriction Flag	X	X	X
DeleteTime	X	X	X
OnlineResource	X	X	X
OnlineAccessURL	X	X	X
MeasuredParameter	X	X	X
Additional Attribute	X	X	X
DayNight Flag	X	X	X
Cloud Cover	X	X	X
AllOnlineAccessURLs			X
AllAdditionalAttributes			X

Granule Partial Adds/Updates/Deletes (2/2)

- **ECHO 9.0 Example:**

```
<Granule>
  <Target>
    <ID>Granule-ID</ID>
  </Target>
  <Add>
    <QualifiedTag>
      MeasuredParameter/MeasuredParameterContainer[ParameterName="MOD09G"]/QAFlags/ScienceQualityFlag
    </QualifiedTag>
    <MetadataValue>Suspect</MetadataValue>
  </Add>
</Granule >
```

- **ECHO 10.0 Example:**

```
<GranulePartialAdds>
  <GranulePartialAdd>
    <Targets>
      <Target>
        <GranuleUR>GranuleUR</GranuleUR>
      </Target>
    </Targets>
    <Fields>
      <Field>
        <MeasuredParameter>
          <ParameterName>MOD09G</ParameterName>
          <QAFlags>
            <ScienceQualityFlag>Suspect</ScienceQualityFlag>
          </QAFlags>
        </MeasuredParameter>
      </Field>
    </Fields>
  </GranulePartialAdd>
</GranulePartialAdds>
```

Ingest Job Activities/States

- **ECHO 10.0 Ingest Activities/Stages**
  - Input Adapting - Translation from 8.0/9.0 or BMGT to ECHO 10.0 format
    - DTD Validation
    - Provider Defaults applied
  - Sorting - Metadata organized by metadata type and action
    - 10.0 Schema Validation
  - Resource Waiting - Wait for browse images (if necessary)
  - Sequence Waiting - Wait for next package file in sequence (if necessary)
  - Loading – Apply business rules and load metadata into database
    - Browse images copied to the public browse file system
  - Load Waiting – Wait for previous jobs to complete loading
  - Reporting – Generate XML Ingest report
    - Placed in provider accessible FTP directory
  - Cleanup – Remove temporary files
    - Original metadata files copied to backup

Ingest Job Creation

- **Single File Delivery**
  - Quiesced metadata files are added to a new job
  - One or more jobs are created depending on max files per job
    - ECHO Operations configurable
- **Package Delivery**
  - Job created as soon as package file has arrived and is quiesced

Ingest Notifications

- **Recipients**
  - ECHO Operations will receive notifications
  - One or more individuals for each provider may be configured
- **Messages**
  - Start of Ingest job
  - Pause/Resumption of Ingest job
  - Deletion of Ingest job
  - Timeout waiting for browse image
  - Timeout waiting for sequenced package
  - Completion of Ingest job

Ingest Policies

- **Provider Specific Ingest Configuration Items**
  - Browse Wait Time – Number of seconds to wait for browse resources to arrive before continuing to process the job.
  - Sequence Wait Time – Number of seconds that a job can be out of sequence before an alert is raised.
  - Notification Emails – One or more provider email addresses

- **Operations Cleanup (ETC Review Pending)**
  - Browse Image Backup – 7 days
  - Provider Ingest Reports – 60 days
  - Original Metadata & Job Logs – 60 days
  - Reconciliation output files – 60 days

Ingest File Delivery

- **FTP Information**
  - Operational System - ftp://ingest.echo.nasa.gov
  - Partner Test - ingest-test.echo.nasa.gov
  - Username & Password coordinated with ECHO Operations
  - FTP login will place user in root provider directory
  - Only ftp transfer accepted currently
    - NCR has been written to investigate scp delivery
  - Ingest will recursively search all subdirectories in 'data' directory
- **File Delivery**
  - Single File OR Package Delivery Supported
  - Browse image files not placed in ZIP package file, only metadata
  - Package delivery encouraged for all providers

	BMGT	ECHO 8.0/9.0	ECHO 10.0
Single File Delivery	Y (7.20)	Y	Y
Package Delivery	Y (7.20+)	N	Y

Ingest File Delivery

- **ECHO 8.0/9.0/BMGT Single File Delivery**
  - Structure Changes
    - 'valids' directory will be removed from 'data' directory
    - 'ingestlog' directory will be removed from 'output' directory
    - 'reports' directory added to 'output' directory for Ingest report files
  - Proposed Structure:
    - data
      - browse
      - collection
      - granule
      - update
    - output
      - inspect
      - reports

Ingest File Delivery

- **ECHO 10.0/BMGT 7.20+ Single or Package File Delivery**
  - Structure Changes
    - All subdirectories of 'data' directory removed
    - 'ingestlog' directory will be removed from 'output' directory
    - 'reports' directory added to 'output' directory for Ingest report files
  - Proposed Structure:
    - data
    - output
      - inspect
      - reports

Ingest Support

- **Contacting ECHO Operations**
  - General inquiries - echo@echo.nasa.gov
  - Automated notifications - echo-ingest@echo.nasa.gov
    - Coordinate source email address to ensure messages are not moderated
- **Availability**
  - Mon – Fri. 8 a.m. – 7 p.m., 24-7 monitoring for emergencies
- **Documentation (Available on ECHO Website)**
  - ECHO 10.0 Data Partner User's Guide
  - ECHO 10.0 Metadata Requirements and Recommendations
  - ECHO 10.0 Schemas (HTML & XSD)
    - Collection, Granule, & Browse metadata
    - Ingest Report

Factors Affecting Ingest Rates

- **Metadata**
  - Metadata organization (many v. few records per metadata file)
  - Metadata type being ingested (collection, granule, update or browse)
  - Type of metadata action being taken (insert, delete, replacement)
  - Proportion of metadata types in an ingest job
  - Amount of information in a metadata record (sparse vs. dense)
- **System and provider schema**
  - Number of records in a provider schema
  - Amount of time required for preprocessing
  - Amount of competition for database and system resources

Factors Affecting Time Between Metadata Submission and Visibility in ECHO.

- Polling interval of input detection
- Resource wait for browse
- Sequence wait for package delivery
- Configuration of job size

Questions ?

EIAT Overview

2008 ECHO Workshop
January 29 - 31, 2008
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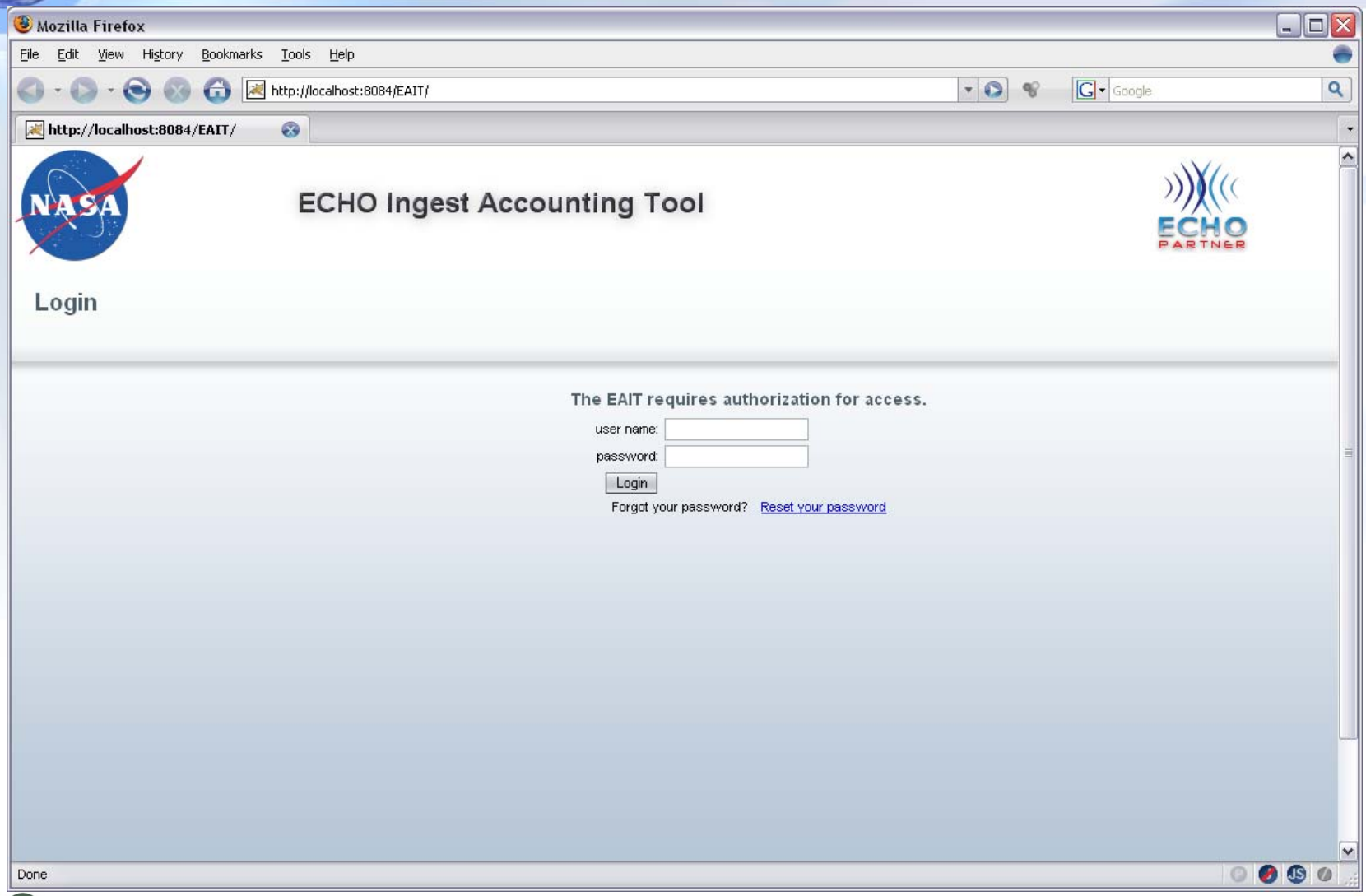
Introduction to the EIAT GUI

- Web Application written in JSF and Java
- Currently in Integration Testing
- Test Version Located at: http://kryten.echo.nasa.gov:8082/eiat
- Uses SOA Web Services to communicate with ECHO Remote Ingest API and ECHO Authentication API
- After authentication, roles are obtained based on Providers associated with that user

Users and Roles

- **EIAT uses ECHO User ID & Roles**
  - Users with provider role(s) will be able to view Ingest statuses for each provider to which they are assigned
  - Users with admin role can view Ingest statuses for all providers
  - PUMP or WIST may be used to create account
  - PUMP (or API) must be used to assign roles
- **EIAT Ingest Job State Mappings**
  - Waiting
    - Resource Waiting
    - Sequence Waiting
  - Processing
    - Input Adapting
    - Sorting
    - Load Waiting
    - Loading
  - Completing
    - Reporting
    - Cleanup

Login Page (default page when starting GUI)



Home Page (Provider Role)

Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:8084/EAIT/faces/login.jsp

http://localhost:.../faces/login.jsp

ECHO Ingest Accounting Tool

You are logged in as **jpino** acting as admin log out

Home | Completed Jobs | Rejection Report | Summary Report | Help & About

Provider Home

Real Time Ingest Status

Search for a Job ID or File Name

ok

Live Ingest Status

Provider	Total Jobs	Waiting	Processing	Completing
GSFCECS	5	1	N/A	3
LPDAAC_ECS	2	0	N/A	1
LAADS	0	0	5	0

Live Ingest Jobs

Job ID	Provider	Creation Date/Time (GMT)	Seq. #	Job Name	State	State Entry
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCECS	10/01/07 10:00 AM	1	N/A	Completing	10/01/07 10:10 AM
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E3	GSFCECS	10/01/07 11:33 AM	2	N/A	Processing	10/01/07 11:50 AM
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E4	GSFCECS	10/01/07 14:12 PM	1	N/A	Waiting	10/01/07 15:01 PM

Recently Completed Ingest Jobs

Job ID	Start Time (GMT)	Stop Time (GMT)	Provider ID	Total Ingested	Replaced	Updated	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0

Done

Navigation Toolbar

User name and role.

Tab-based navigation.

Logout button: this releases the current authentication from the initial ECHO Authentication and redirects back to login page.

General GUI Flow

Login → Provider or Admin?

Provider Home Page:

- Live Ingest Summary for assigned providers
- Live Ingest Job List for assigned providers
- Recently Completed Job List

Admin Home Page:

- Live Ingest Summary for all Providers
- Recently Completed Job List for all providers

- Drill-down into details of a job and further into a file
- Free-text search for a Job or file

Continued…

Provider Home Page (contents)

Search for a Job ID or File Name

ok

Live Ingest Status

Provider	Total Jobs	Waiting	Processing	Completing
GSFCECS	5	1	N/A	3
LPDAAC_ECS	2	0	N/A	1
LAADS	0	0	5	0

Live Ingest Jobs

Job ID	Provider	Creation Date/Time (GMT)	Seq. #	Job Name	State	State Entry
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCECS	10/01/07 10:00 AM	1	N/A	Completing	10/01/07 10:10 AM
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E3	GSFCECS	10/01/07 11:33 AM	2	N/A	Processing	10/01/07 11:50 AM
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E4	GSFCECS	10/01/07 14:12 PM	1	N/A	Waiting	10/01/07 15:01 PM

Recently Completed Ingest Jobs

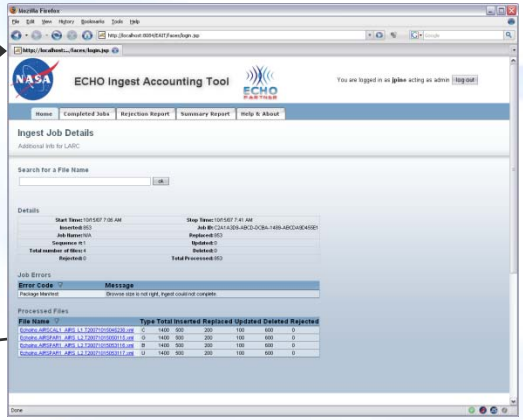
Job ID	Start Time (GMT)	Stop Time (GMT)	Provider ID	Total Ingested	Replaced	Updated	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0

Drill-down into Job and File Details

Click on Job ID on any Job List

Job ID
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2

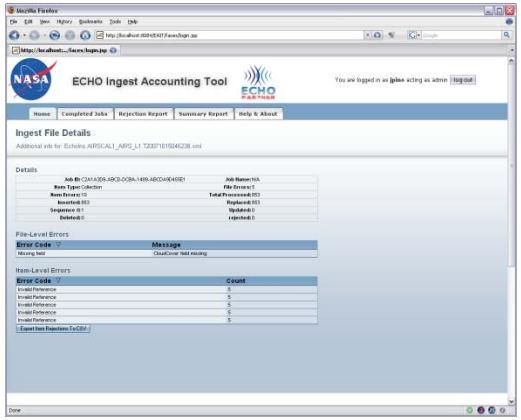
Job Detail Page



Click on File Name on File List

File Name	Type	Tota
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400

File Detail Page



Job Detail Example

Details

Start Time:	10/15/07 7:06 AM	**Stop Time:**	10/15/07 7:41 AM
Inserted:	853	**Job ID:**	C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E1
Job Name:	N/A	**Replaced:**	853
Sequence #:	1	**Updated:**	0
Total number of files:	4	**Deleted:**	0
Rejected:	0	**Total Processed:**	853

Job Errors

Error Code	Message
Package Manifest	Browse size is not right, Ingest could not complete.

Processed Files

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

File Detail Example

Details

Creation Date/Time: 10/15/07 7:06 AM	**Sequence #:** 5
Job ID: C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E1	**State:** Completing
Job Name: N/A	**Number of Files:** 5

Files

File Name	File Date	File Size (MB)
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	10/21/2007 11:00 AM	56.3
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	10/21/2007 11:02 AM	456.0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	10/21/2007 11:20 AM	1023.5

Free Text Search

Search for a Job ID or File Name

Echlons.AIRSCAL1_L1 [ok]

Search will return results based on pattern entered, either a file names or job ID. Partial file can be entered. Job IDs must be entered fully.

Search Results (Files)

File Name	File Date	File Size (MB)
Echolns.AIRSCAL1_AIRS_L1.T20071015045238.xml	10/21/2007 11:00 AM	56.3
Echolns.AIRSPAR1_AIRS_L2.T20071015050115.xml	10/21/2007 11:02 AM	456.0
Echolns.AIRSPAR1_AIRS_L2.T20071015053116.xml	10/21/2007 11:20 AM	1023.5

Job Completion Report Page

Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:8084/EAIT/faces/login.jsp

http://localhost:.../faces/login.jsp

ECHO Ingest Accounting Tool

You are logged in as **jpino** acting as admin log out

Home | Completed Jobs | Rejection Report | Summary Report | Help & About

Job Completion Report

Enter the search criteria below and click "Generate Report"

Filter

Report Start Date: 12/01/2007 (mm/dd/yyyy) Report End Date: 12/02/2007 (mm/dd/yyyy) Provider: GSFCS4PA

Generate Report

Report Info

Report Start Date: 12/01/2007 **Report End Date:** 12/02/2007

Provider: GSFCS4PA **Job Count:** 6

Recently Completed Ingest Jobs

Job ID	Start Time (GMT)	Stop Time (GMT)	Provider ID	Total Ingested	Replaced	Updated	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454	853	0	0	0

Done

Flow for Job Completion Report Page

Completed Jobs Tab

Enter Date Range and/or Provider

Report Output

Recently Completed Ingest Jobs

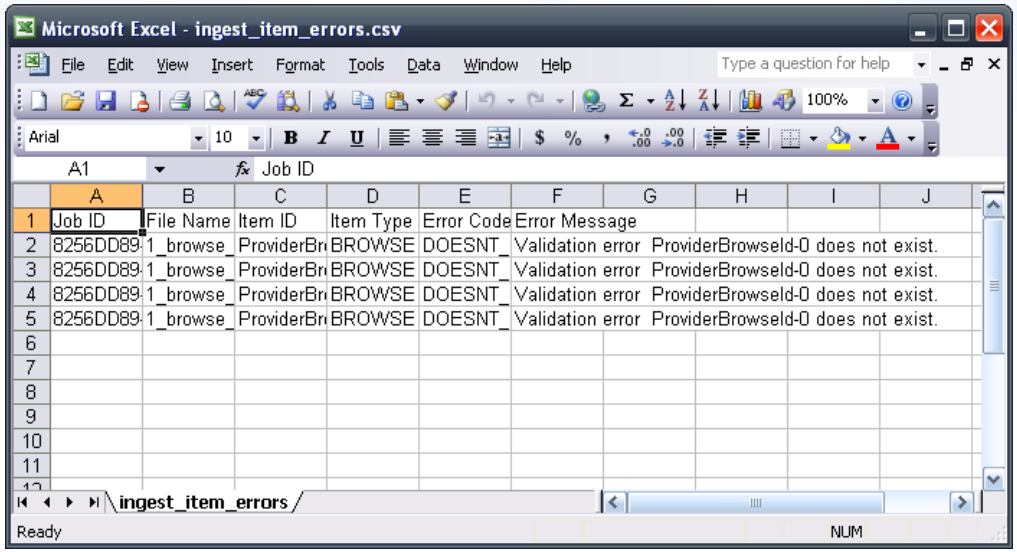
Job ID	Start Time (GMT)	Stop Time (GMT)	Provider ID	Total
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454

CSV Output

- CSV File can be used as plain text for use in scripts

```
Job ID,File Name,Item ID,Item Type,Error Code,Error Message
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-0,BROWSE,DOESNT_EXIST,Validation error  ProviderBrowseId-0 does not exist.
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-0,BROWSE,DOESNT_EXIST,Validation error  ProviderBrowseId-0 does not exist.
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-2,BROWSE,DOESNT_EXIST2,Validation error  ProviderBrowseId-0 does not exist.
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-2,BROWSE,DOESNT_EXIST2,Validation error  ProviderBrowseId-0 does not exist.
```

- CSV File can be opened in Excel



Rejection Report Page

Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:8084/EAIT/faces/login.jsp

http://localhost:.../faces/login.jsp

ECHO Ingest Accounting Tool

You are logged in as **jpino** acting as admin log out

Home | Completed Jobs | Rejection Report | Summary Report | Help & About

Rejection Report

This report contains a list of all rejected Ingest items.

Filter

Report Start Date: 12/01/2007 mm/dd/yyyy

Report End Date: 12/02/2007 mm/dd/yyyy

Provider: GSFCS4PA

Generate Report

Report Info

Report Start Date: 12/01/2007 **Report End Date:** 12/02/2007

Provider: GSFCS4PA **Job Count:** 6

Rejection Summary

Job ID	Start Date	End Date	Provider ID	Total	Collections	Granules	Browse
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1706	853	853	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1706	853	853	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1706	853	853	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1706	853	853	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1706	853	853	0

Export to CSV Export the checked items to a CSV (Comma-Separated Values) file.

Done

Flow for Rejection Report Page

Rejection Report Tab

Enter Date Range and/or Provider

Report Output

Recently Completed Ingest Jobs

Job ID	Start Time (GMT)	Stop Time (GMT)	Provider ID	Total
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454

Export to CSV

CSV Output

```
Job ID,File Name,Item ID,Item Type,Error Code,Error Message
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-0,BROWSE,DOE
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-0,BROWSE,DOE
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-2,BROWSE,DOE
8256DD89-CCCD-2E7B-B37E-EE9D45320C3C,1_browse_deletes.xml,ProviderBrowseId-2,BROWSE,DOE
```

Summary Report Page

Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:8084/EAIT/faces/login.jsp

http://localhost:.../faces/login.jsp

ECHO Ingest Accounting Tool

You are logged in as **jpino** acting as admin log out

Home | Completed Jobs | Rejection Report | Summary Report | Help & About

Summary Report

Filter

Report Start Date: mm/dd/yyyy Report End Date: mm/dd/yyyy Provider: GSFCS4PA

Generate Report Printable Version

Details

Start Time: 10/15/07 7:06 AM	**Stop Time:** 10/15/07 7:06 AM
Provider ID: LARC	**Inserts:** 853
Rejections: 713	**Updates:** 0
Deletes: 4711	**Replacements:** 4631
Total: 148703	

Job Summaries - click on a Job ID to see the details for a job below

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0

http://localhost:8084/EAIT/faces/faces/summaryReport2.jsp

Flow for Summary Report Page

Summary Report Tab → Enter Date Range and Provider

Generate Report | Printable Version

Normal Report Output

Recently Completed Ingest Jobs

Job ID	Start Time (GMT)	Stop Time (GMT)	Provider ID	Total
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	09/30/07 7:06 AM	09/30/07 7:41 AM	GSFCS4PA	1454

Printable Report Output

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM		0	853	0	0

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM		0	853	0	0

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Summary Report: Normal Output

1) User clicks on job ID

C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM	1454	0	853	0	0

Job C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2 - GSFCS4PA - 09/30/07 7:06 AM

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

2) File listing is loaded in the bottom panel here.

Summary Report: Printable Output

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM		0	853	0	0

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM		0	853	0	0

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Summary Report: Printable Output (cont.)

Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:8084/EAIT/faces/SummaryPrintableReport.jsp

http://localhost...ntableReport.jsp

Printable Summary Report

Details

Start Time: 10/15/07 7:06 AM	**Stop Time:** 10/15/07 7:06 AM
Provider ID: LARC	**Inserts:** 853
Rejections: 713	**Updates:** 0
Deletes: 4711	**Replacements:** 4631
Total: 148703	

Job Summaries

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM		0	853	0	0

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
EchoIns.AIRSCAL1_AIRS_L1.T20071015045238.xml	C	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
C2A1A3D9-ABCD-DCBA-1489-ABCDA9D455E2	GSFCS4PA	09/30/07 7:06 AM	09/30/07 7:41 AM		0	853	0	0

File Name	Type	Total	Inserted	Replaced	Updated	Deleted	Rejected
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EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected
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EchoIns.AIRSPAR1_AIRS_L2.T20071015050115.xml	G	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053116.xml	B	1400	500	200	100	600	0
EchoIns.AIRSPAR1_AIRS_L2.T20071015053117.xml	U	1400	500	200	100	600	0

Job ID	Provider ID	Start Time (GMT)	Stop Time (GMT)	Total Ingested	Updated	Replaced	Deleted	Rejected

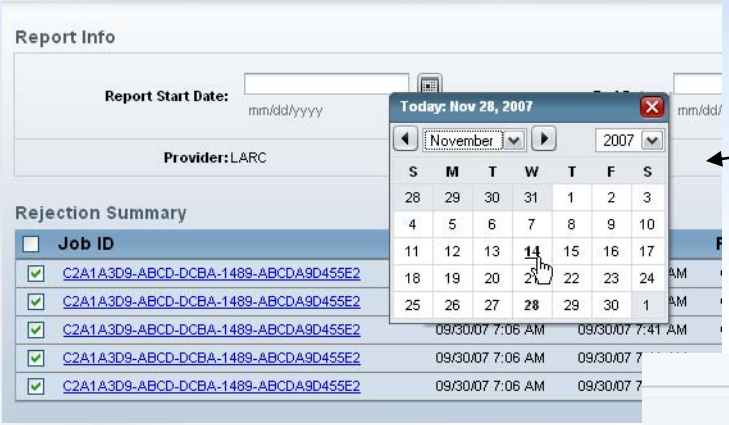
Done

Each job and associated details are listed in a row.

The file list is expanded below it for each job.

The jobs continue to list down the page and are not contained in a scrolling table.

Date Selectors Example



Calendar widgets for selecting dates ranges.

Questions?

ECHO Workshop 2008
LP DAAC ECHO Forms

January 29-31, 2008

Julie Luebke, SAIC
Contractor to the USGS

U.S. Department of the Interior
U.S. Geological Survey

Objective

- To provide an overview of the work that the LP DAAC is doing in conjunction with ECHO

Agenda

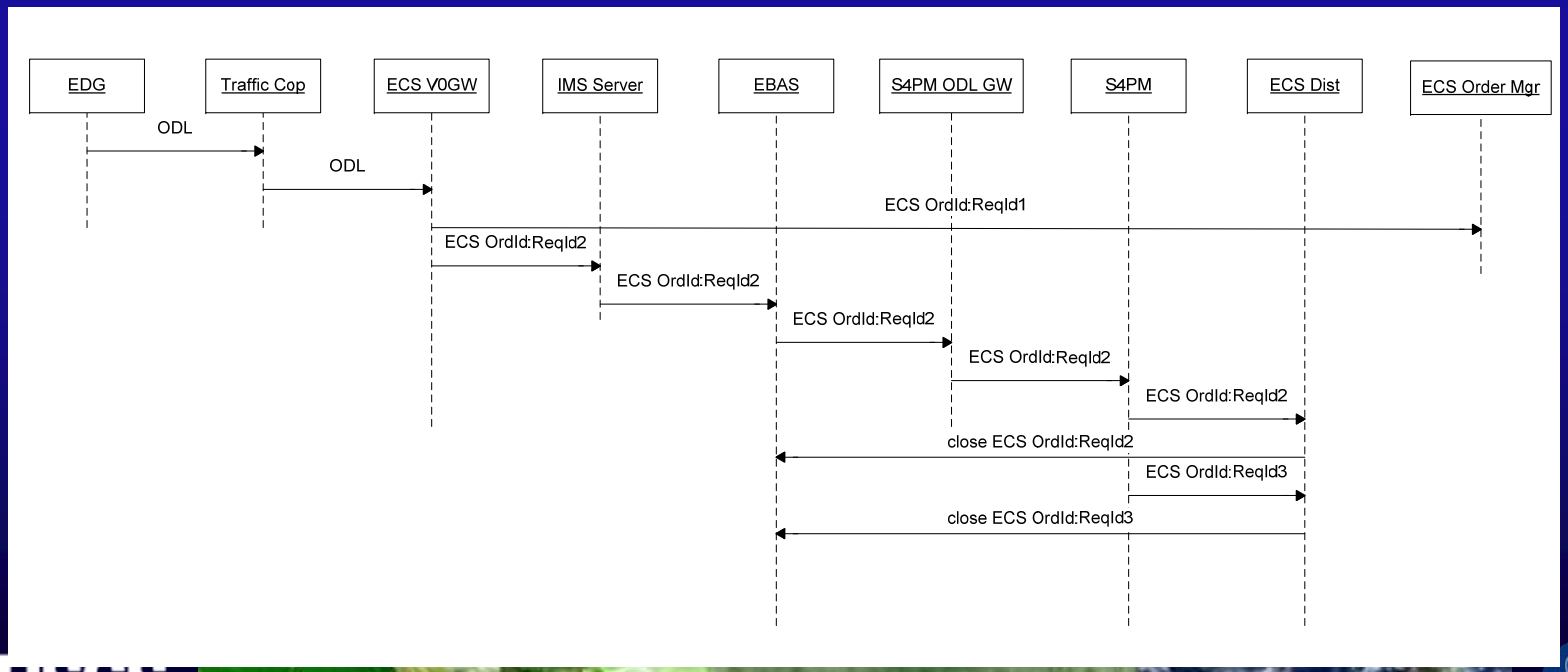
- Introduction
- Existing Order Flow
- LP DAAC Custom Implementation
- New Order Flow
- Custom Adapters
- ECHO Forms

Introduction

- At the LP DAAC, we have both ASTER and MODIS products in our archive
- Currently the EDG is our primary ordering client
  - Approximately 4500 active accounts

Existing Order Flow

- Workflow changes were required for our existing order flow
  - Replacing functionality that currently is provided by the Traffic Cop, IMS Server, V0Gateway, and ECS Machine-to-Machine Gateway



What is driving these changes?

- EDG and the V0Gateway will be going away
- EWOC is being implemented
  - Switching from ODL to XML
- ECHO Forms are being implemented
- ECS no longer supports Machine-to-Machine Gateway

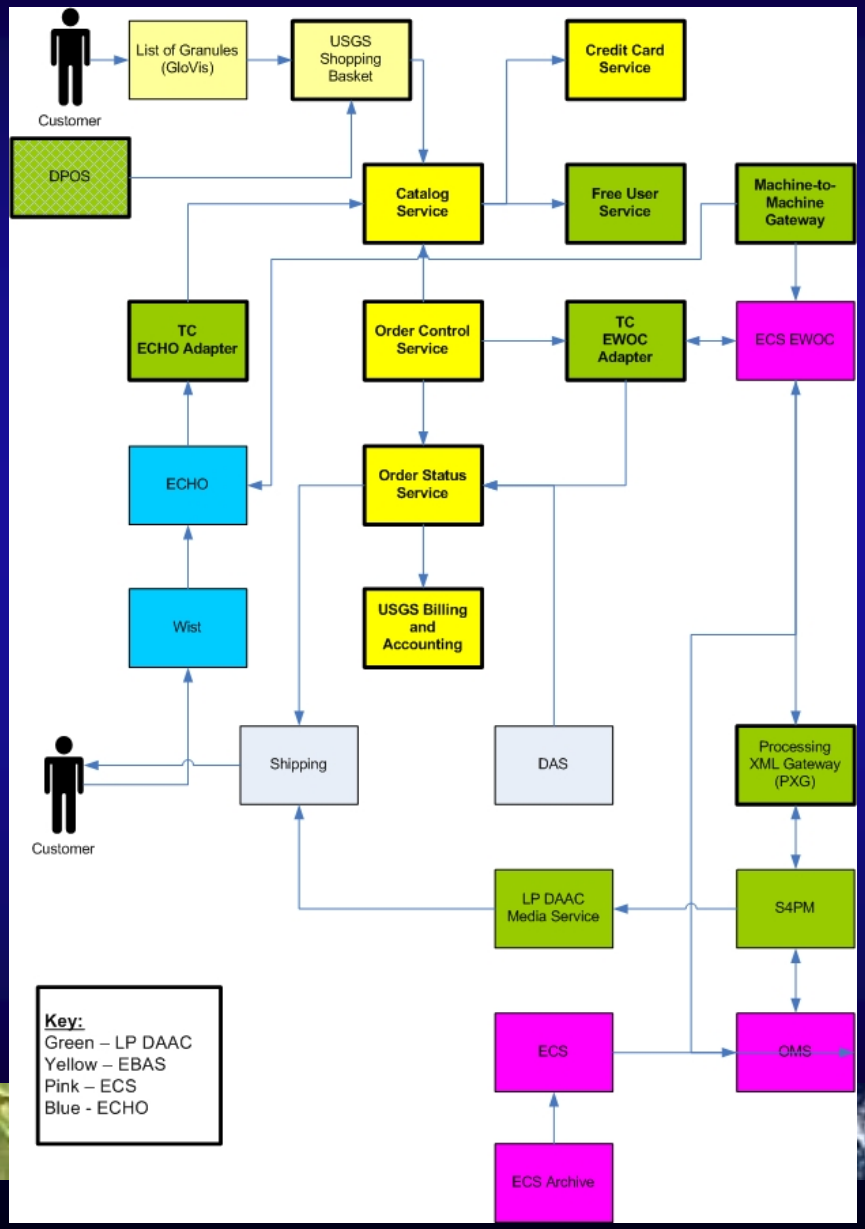
Standard ECS DAAC Method

- Other DAACs are able to communicate directly from ECHO to EWOC
- ECHO to EWOC communication is based on the Order Fulfillment API

LP DAAC Custom Implementation

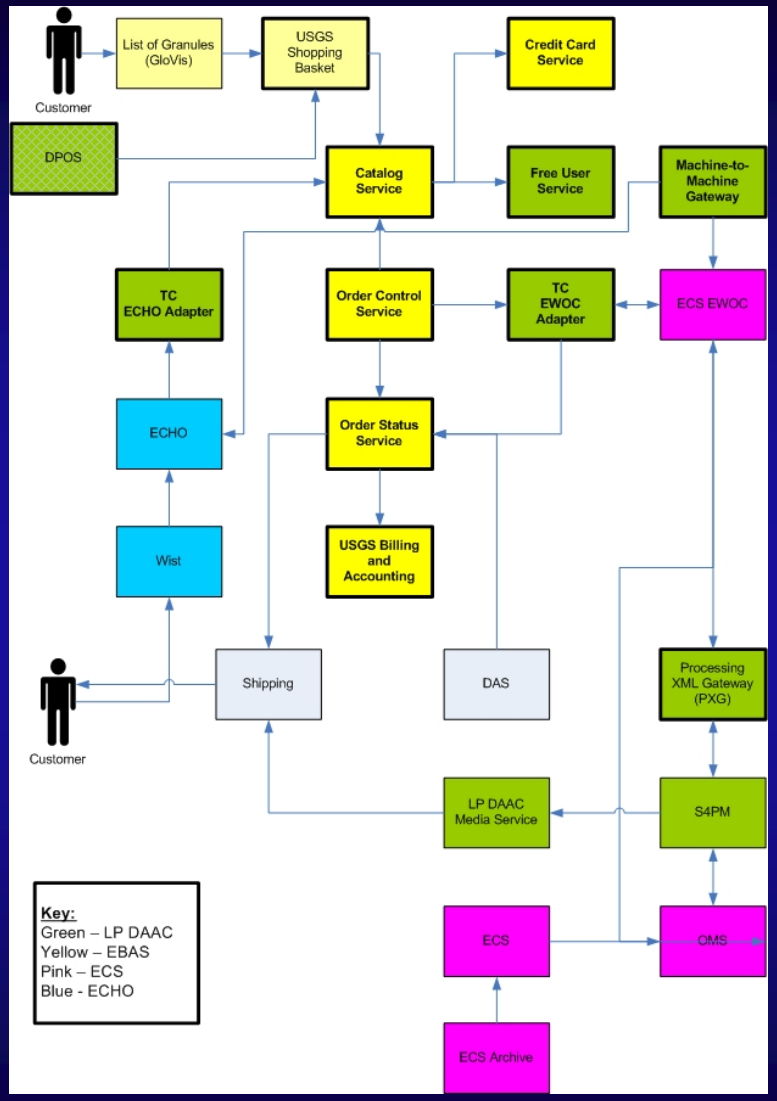
- We have billable products (ASTER products)
  - We are required to interface with EROS Billing and Accounting System (EBAS)
  - Due to this, we are unable to communicate directly from ECHO to EWOC
- We are using the Order Fulfillment API to communicate with ECHO and EWOC
  - We are bridging the gap between ECHO and EBAS and between EBAS and EWOC

New Order Flow



Custom Adapters

- Traffic Cop Order Controller ECHO Adapter
  - Translates order requests from the ECHO format into a request understandable to EBAS, conforming to the Order Fulfillment API
- Traffic Cop Order Controller EWOC Adapter
  - Translates order requests from the EBAS format into a request understandable to EWOC, conforming to the Order Fulfillment API
- Processing XML Gateway (PXG)
  - Converts XML coming from the EWOC to ODL to talk to the S4PM Order Gateway



ECHO Forms

- Allows definition of order options for simple and complex products to various ordering clients
  - Distribution Options
    - Media Types
    - Media Formats
  - Processing Options
    - Band Selections
  - Product Name
  - Statistics

ECHO Forms

- For ASTER, the forms provide both on-demand processing and media options
- For MODIS, the forms provide what media options are available
- 1 MODIS Form
  - MODIS.xml
- 17 ASTER Forms
  - AST04
  - AST05
  - AST06SD
  - AST06TD
  - AST_06VD.xml
  - AST07
  - AST07XT
  - AST08
  - AST09
  - AST09T
  - AST09XT
  - ASTL1A
  - ASTL1B
  - AST13POL
  - AST14DEM
  - AST14DMO
  - AST14OTH

Choose Ordering Options

SC:AST_L1A.003:228345

AST_06VD

Distribution Options

Media Type: FTP Pull, DVD

FTP Pull Media Format : File ☑ (Required)

Processing Options

Product Name AST_06VD

Long Name ASTER On-Demand L2 Decorrelation Stretch VNIR

Granule Size 116.310000

Band Selection

Blue: 1, 2, 3N (Required)

Green: 1, 2, 3N (Required)

Red: 1, 2, 3N (Required)

Matrix Type: Correlation, Covariance (Required)

Statistics

Statistics

Output Mean	127.500000	Minimum : 1.0 Maximum : 254.0 Step : 0.000001 (Required)
Output Standard Deviation	50.000000	Minimum : 1.0 Maximum : 127.0 Step : 0.000001 (Required)
Sampling Frequency	3	Minimum : 1 Maximum : 50 Step : 1 (Required)
Line Minimum	1	Minimum : 1 Maximum : 4200 Step : 1 (Required)
Line Maximum	4200	Minimum : 1 Maximum : 4200 Step : 1 (Required)
Sample Minimum	1	Minimum : 1 Maximum : 4980 Step : 1 (Required)
criteriaMax	4980	Minimum : 1 Maximum : 4980 Step : 1 (Required)

Granule Price 80

ECHO Form Challenges

- With having 18 different forms to make changes to, trying to develop the forms against a changing spec proved to be challenging at times
- While useful during development, using the form viewer was not quite like developing against the released version
- Payment Options
  - Request to put at provider order level, not granule level

PUMP

- Developed an application based on the ECHO web services (FormPumper) to assist with loading Forms into PUMP
  - Deletes the existing ECHO Form(s) and their relationships to the dataset(s)
  - Puts the new form into PUMP and relates it to it's proper dataset(s)

Summary

- We have worked with ECHO to use ECHO Forms and the Order Fulfillment API to support changes required for our existing order flow so that we can communicate between ECHO and EWOC

Questions?

ECHO and the New Data Provider (2007)

Observations from the NASA LaRC ASDC

ANGe – ECHO Interface Development Project

Jackie Kendall (SSAI)

About ANGe

- During 2007–2009, NASA LaRC's Atmospheric Sciences Data Center (ASDC) is implementing the Archive–Next Generation System (ANGe) to consolidate its two legacy archive systems:
  - Langley Tropical Rainfall Measuring Mission (TRMM) Information Systems (LATIS)
    - CALIPSO, CERES, FLASHFlux, SRB, ISCCP, etc.
  - EOSDIS Core System (ECS)
    - MISR, MOPITT, SAGE III, TES
- ANGe Objectives
  - Minimize the number of systems to manage
  - Reduce duplication of operations
  - Reduce operations costs by 25-35%
  - Meet broader science community needs
- Key Aspects of the Approach
  - Leverage commodity hardware
  - Build upon open source software
  - Increase automation of CERES and MISR processing

ANGe's ECHO Metadata Export Tool

- Synopsis
  - Stand-alone, command-line Java program that (currently) accesses metadata records directly from the ANGe database
  - Creates and exports metadata to ECHO in response to user requests (i.e. new Collections, historical load export, larger reprocessing activities)
  - Configurable for automated export of inventory updates (i.e. generation of insert, update, and delete records in response to changes in ANGe)
- Current Status
  - Core functionality implemented
  - Used to populate ECHO with LATIS historical load (Dec '07)
  - 762 Collections and 3,000,935 Granules are currently registered in the new "LARC_ASDC" provider
  - Periodic updates will begin soon to keep ECHO in sync with LATIS datasets
- Next Milestones
  - Configure and test ECS metadata export
  - Populate ECHO (LARC_ASDC) with ECS historical load (March '08)
  - Complete updates needed for automated reconciliation (March '08)
  - Configure for real-time CALIPSO and CERES operations (June '08)

ANGe's ECHO Order Adapter

- Synopsis
  - Java web application that communicates with ANGe components but is not part of the ANGe core system
  - Brokers the submission of orders from ECHO to ANGe
  - Monitors order status in ANGe and reports information to ECHO as appropriate (e.g. initial order status, status changes, information on order fulfillment)
  - (Currently) does not communicate directly with end users
  - Does <u>not</u> manage order policies, order option definitions or order option assignments. *ASDC will continue to use PUMP for these activities.*
- Current Status
  - Implementation of core functionality will be completed soon (Feb '08)
- Next Milestones
  - Add capability to transfer end user information from order to ANGe
  - Add support for CERES subsetting
  - Add capability for User Services to verify the status of the ANGe – ECHO order interface, and (if needed) retrieve information that cannot be easily accessed from PUMP or an alternate ANGe service.
  - Configure for real-time CALIPSO and CERES operations (June '08)

Observations to Date

- ECHO staff are very responsive to requests for help.
- The ECHO 9.0 Data Partner's Guide is well organized, easy to read, and highlights important constraints and "tips".
- The web version of PUMP is a significantly improved tool for Data Provider configuration and management.
- The new approach to Order Options (ECHO Forms), though still a little technically challenging, is a significant improvement over the legacy option framework.
- ECHO systems seem to be running very well in 2007:
  - Very little unanticipated downtime; when downtime is needed for maintenance, it is managed well.
  - Performance for both ingest and provider web service transactions appears to be good.
- There still are some challenges for the new Data Provider – both in developing their interface and managing operations with ECHO.

Challenges - Data Provider Development

- Understanding the data model is not as easy as you might think
  - Difficult to find information for specific parameters using the web site *ECHO Metadata Model* pages
  - Definitions found for some required parameters are not very helpful, e.g. PlatformType: "The most relevant platform type."
  - Not very easy to determine parameter data type limitations
    - *Resolved with introduction of XML schema in ECHO 10.0*
- Difficulty in deciding what to do about parameters required by ECHO that are not available in the existing Provider database
  - In addition to better definitions, it would be useful to have examples or suggested valids for required parameters that are used to categorize (e.g. PlatformType, AdditionalAttributeDataType).
- Spatial data – issues with representing polygons
  - Data Partner's Guide discusses representing multi-polygons using Polygon/ MultiPolygon, but this doesn't work.
    - *Resolved with deprecation of Polygon in ECHO 10.0*
    - Developers need easy access to information on the important "known issues"; other than searching in TestTrackPro, is this available anywhere now?
  - Had to remove the closing end pointd from PostGIS spatial object polygons to get them to ingest in ECHO. From where does this requirement come?

Challenges - Data Provider Operations

- Reliance on email for distributing ingest summary reports
  - *Resolved with ECHO 10.0?*
- Lack of automated reports for ingest error details
  - *Resolved with ECHO 10.0?*
- Use of FTP for transferring metadata to ECHO and picking up provider reports
  - Increased importance of IT security and new institutional mandates make this increasingly problematic
- Using PUMP to manage order option assignments
  - Multi-select not available in making order option assignments
  - To change an assignment, you have to delete the record and create a new one (two steps)
  - For providers with lots of collections (i.e. LARC_ASDC has 762) these issues are important
- Lack of a tool for improving Collection records over time as information not stored in provider's archive database becomes available to operations staff
  - e.g. GCMD's model for DIFF development and maintenance