

ESIP Federation



Guide to Summer Conference 2011

July 12-15, 2011
Hotel LaFonda
Santa Fe, NM

The Foundation for Earth Science gratefully acknowledges the support it receives from NASA, NOAA and EPA in making the ESIP Federation community and its meetings possible. Further, we also acknowledge the tremendous volunteer support we receive from you, members of our community, whose contributions and expertise make the ESIP Federation the dynamic organization it has become.

Included in this Packet:

SPECIAL ACTIVITIES

MAP OF HOTEL LAFONDA

AGENDA BY DAY

SESSION DETAILS

POSTER AND DEMO ABSTRACTS

PLENARY SPEAKER BIOGRAPHIES

Special Activities

Emergent Meetings. One of the key goals for many participants is the opportunity to network at ESIP meetings. During the entire meeting schedule, the Mezzanine and terrace are available for impromptu meetings. If you'd like to publicize your meeting time, we will have space at the registration desk to advertise.

CLEAN Pathway. The Climate Literacy and Energy Awareness Network (CLEAN) Pathway project invites you to contribute your scientific expertise to educators by providing the final expert review of climate change and energy resources before they are accepted into the NSDL collection. You can provide your review right at the meeting using our online review station. The review station will be on the Mezzanine, near the meeting registration desk. CLEAN's primary goal is to steward a broad collection of educational resources and foster a supporting community to help facilitate students, teachers, and citizens becoming climate literate and informed about "the climate's influence on you and society and your influence on climate." The current collection can be explored at <http://cleanet.org>.

Network Map Poster. Throughout the meeting you will see a set of posters that show all of the ESIP Federation's members and current activities. We encourage you to add yourself and make the connections to other partners that you work with as well as to ESIP collaborations that you participate in. Thanks in advance for taking time to do this!

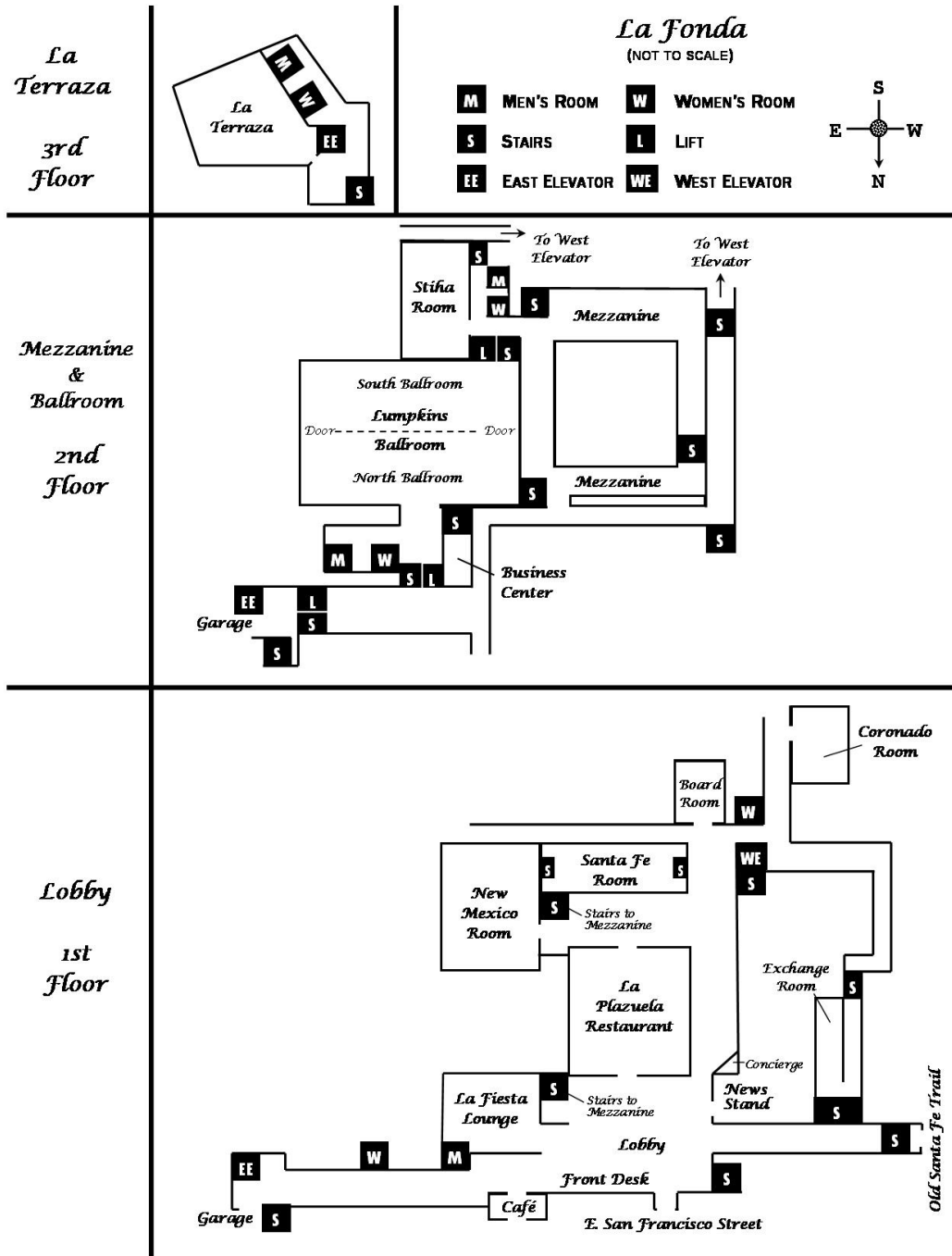
Ignite ESIP. Ignite is an O'Reilly concept where presenters give five minute talks on a topic of their choosing. The catch is that their PowerPoint slides auto advance every 15 seconds, so there are 20 slides total. We are excited to have great group of brave ESIP members kick it off during Thursday's afternoon break.

FUNDing Friday. FUNDing Friday is the ESIP way of providing mini-grants for small efforts, often enhancements to existing activities, that would not be realized without a little extra funding. Two categories are open – ESIP Member (\$5,000 mini-grant); Student (\$3,000 mini-grant), plus support to attend the Winter 2012 ESIP Federation meeting in Washington, DC. For more information, visit http://wiki.esipfed.org/index.php/FUNDing_Friday.

Meeting At A Glance

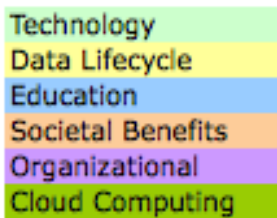
	DAY 1: Tuesday, July 12	DAY 2: Wednesday, July 13	DAY 3: Thursday, July 14	DAY 4: Friday, July 15
		7:30 Registration Open <i>Continental breakfast available</i>	7:30 Registration Open <i>Continental breakfast available</i>	7:30 Registration Open <i>Continental breakfast available</i>
		7:45 ESIP 101		
8:00	Registration Open <i>Continental breakfast available</i>			
8:30	Pre-Meeting Sessions	8:30 Session 3	8:30 Session 5	8:30 Session 9
		10:00 Break	10:00 Break	10:00 Break
		10:30 Session 4	10:30 Session 6	10:30 FUNding Friday
		12:00 Lunch	12:00 Lunch	12:00 Lunch
1:00	ESIP Meeting Starts			1:00 Session 10
1:30	Session 1	1:30 Plenary Session	1:30 Session 7	2:30 Meeting Adjourns
3:00	Break	3:15 Break	3:00 Break - Ignite Talks	
3:30	Session 2	3:45 Plenary Session	3:30 Session 8	
5:00		5:30 Reception and Poster Session	5:00	
7:30	No-Host Pub Crawl	7:00		

Map of Hotel LaFonda



Agenda By Day

The program is organized and color-coded into several categories of activities.



Technology sessions (light green) include topics such as Open Source software development, Drupal coordination and work being done by two new clusters – Discovery and the Earth Science Collaboratory.

Data Lifecycle sessions (yellow) are focused on all aspects of the data lifecycle chain. This track also includes the information and data quality sessions such as, ISO Data Quality and the Information Quality Cluster breakout session Thursday afternoon. The Semantic Web cluster has partnered with both the Data Preservation and Information Quality clusters and will be leading ontology tutorial and development sessions within this track as well.

The Education sessions (blue) are primarily the Teacher Workshops Tuesday and Wednesday. Also, be sure to stop by and check out the CLEAN table near the registration desk. They are looking for scientists to review climate change and energy curriculum materials.

Societal Benefits (orange) are the domain specific groups such as Air Quality and Energy. The Air Quality Work Group will be using most of their sessions to talk about interoperability best practices, however Thursday from 10:30-12, they will host a panel on the quality needs in the AQ Community. Energy and Climate cluster also has a full agenda, Lionel Menard from Mines de Paris will present virtually on the GEOS Architecture Implementation Pilot work that the GEO Energy Community of Practice has worked on. Energy also will have a session that occurs during the break Wednesday morning with Taber Allison from American Wind and Wildlife Institute and Allison LaBonte from Office of Science and Technology Policy. Energy and Climate will wrap up Friday discussing a potential cluster project.

Organizational sessions are about coordination within ESIP, business meetings for various clusters, working groups and committees as well as strengthening ties between ESIP and partner organizations, US GIN Townhall, Thursday afternoon. ESIP 101 provides an introduction to ESIP for new (or returning) members will be held as a breakfast session on Wednesday from 7:45-8:25. Also of note Friday morning there is a session on Building and Leveraging Capacities for ESIP Community, which will provide a forum to discuss ESIP goals and next steps in the coming year.

Cloud computing coordinated a day-long workshop on Thursday. Starting with an introductory tutorial on cloud computing. Lunch on Thursday will feature a talk by Juan Vargas from Microsoft Research on Microsoft's cloud computing capabilities and the afternoon will wrap up with discussion on cloud computing.

Many of the week's sessions will allow for remote participation. Look for Webex information to send to colleagues who might be interested in participating from afar.

Call-in details:

1-877-669-3239

Attendee Access code: [Access Code]#

* To link voice and web in WebEx start the web portion first and then call-in second.

To Join the web portion of the meeting:

<https://esipfed.webex.com/mw0306ld/mywebex/default.do?siteurl=esipfed&service=1>

1. Click join next to the Information Quality Cluster meeting name.

(Note: If the meeting has not yet started, join will not be visible, and it will say 'Display Info'. Wait a minute and refresh screen)

2. Enter your name and email address

3. If you are asked for a password, enter the access code: [Access Code] with no spaces or #.

DAY 1: Tuesday, July 12		
8:00	Registration Open <i>Continental breakfast available</i>	Mezzanine
8:30	Pre-Meeting Sessions	0.1 - Teacher Workshops 0.2 - SPG Technical Session Data Quality, Standards and Frameworks for NASA Earth Science Data Systems 0.3 - Data Management Short Course Working Meeting (9-noon)
12:00	Lunch	Inn and Spa at Loretto, Garden
1:00	ESIP Meeting Starts	
1:30	Session 1	1.1 - Teacher Workshops 1.2 - SPG Technical Session Data Quality, Standards and Frameworks for NASA Earth Science Data Systems 1.3 - ISO Data Quality 1.4 - Preservation and Stewardship Use Case Workshop 1.5 - Intro Drupal
3:00	Break	Mezzanine
3:30	Session 2	2.1 - Teacher Workshops 2.2 - SPG Technical Session Data Quality, Standards and Frameworks for NASA Earth Science Data Systems 2.3 - ISO Data Quality 2.4 - Preservation and Stewardship Use Case Workshop 2.5 - Science on Drupal
5:00		
7:30	No-Host Pub Crawl	Meet in LaFonda Lobby

DAY 2: Wednesday, July 13		
7:30	Registration Open <i>Continental breakfast available</i>	Mezzanine
7:45	ESIP 101	Ballroom South
8:30	Session 3	3.1 - Teacher Workshops
		3.2 - Limitations in the exposure of earth science metadata via THREDDS and OPeNDAP servers
		3.3 - ISO Data Quality
		3.4 - ESIP Discovery Show and Tell
		3.5 - Energy and Climate
		3.6 - Air Quality
10:00	Break	Mezzanine
10:30	Session 4	4.1 - Teacher Workshops
		4.2 - ISO Data Quality
		4.3 - ESIP Earth Science Collaboratory
		4.4 - Energy and Climate
		4.5 - Air Quality
12:00	Lunch	Inn and Spa at Lorretto, Garden
1:30	Plenary Session	Welcome and Opening Remarks, Chris Lenhardt, ESIP President
		Greg Stensaas, USGS and Chair, CEOS Working Group on Calibration & Validation, <i>The Importance of Data and Information Quality in Earth Observation</i>
		Bill Michener, University of New Mexico, LTER and DataONE, <i>Enhancing the quality of ecological and environmental data: Lessons learned from LTER and DataONE</i>
3:15	Break w/Poster Set-up	Mezzanine/La Terazza
3:45	Plenary Session	Panel: Perspectives on Data Quality - Sean Fox, Science Education Resource Center, Carleton College Kerstin Lehnert, Lamont-Doherty Earth Observatory, Columbia University Nick Mangus, EPA Glenn Rutledge, NOAA/NCDC Kevin Ward, NASA Earth Observations Moderated by Frank Lindsay, NASA-Goddard
5:30	Reception and Poster Session	La Terazza

DAY 3: Thursday, July 14		
7:30	Registration Open <i>Continental breakfast available</i>	Mezzanine
8:30	<div> <div>Session 5</div> <div> 5.1 - Cloud Computing Workshop: Intro to Cloud Computing 5.2 - Visualization Practices 5.3 - Products and Services Testbed Activities 5.4 - Technology Infusion for the Decadal Survey Era: Data Quality Capability Needs 5.5 - Air Quality </div> </div>	Ballroom North Santa Fe New Mexico Ballroom South Coronado
10:00	Break	Mezzanine
10:30	<div> <div>Session 6</div> <div> 6.1 - Cloud Computing Workshop: Hands On 6.2 - Open Source Software in the Sciences 6.3 - Proposed Bylaw Changes: ESIP Community Discussion (repeated Friday) 6.4 - Provenance and Context Content Standard 6.5 - Air Quality </div> </div>	Ballroom North Santa Fe Stiha Ballroom South Coronado
12:00	Lunch Speaker: Juan Vargas, Microsoft, <i>Microsoft's Azure Academic Engagement Program</i>	La Terazza
1:30	<div> <div>Session 7</div> <div> 7.1 - Cloud Computing Workshop: Applications and Studies 7.2 - CF Standards Extensions for Remote Sensing Data 7.3 - Service Casting 7.4 - Citation Breakout 7.5 - Info Quality </div> </div>	Ballroom North Santa Fe New Mexico Ballroom South Stiha
3:00	Break - Ignite Talks	Mezzanine
3:30	<div> <div>Session 8</div> <div> 8.1 - Cloud Computing Workshop: Discussion 8.2 - Global Change Master Directory (GCMD) Metadata Authoring Workshop 8.3 - US GIN Townhall 8.4 - Preservation Ontology Breakout 8.5 - Info Quality </div> </div>	Ballroom North Santa Fe Coronado Ballroom South Stiha
5:00		

DAY 4: Friday, July 15			
7:30	Registration Open <i>Continental breakfast available</i>		Mezzanine
8:30	Session 9	9.1 - Proposed Bylaw Changes (repeat of Thurs session)	Coronado
		9.2 - Building and Leveraging Capacities for the ESIP Community	Stiha
		9.3 - Semantic Web	Ballrom North
		9.4 - Energy and Climate	Santa Fe
10:00	Break		Mezzanine
10:30	Funding Friday		New Mexico
12:00	Boxed Lunch		Mezzanine
1:00	Session 10	10.1 - Education Committee Meeting	Coronado
		10.2 - IT&I Business Meeting	Stiha
		10.3 - Data Preservation Committee Business	Ballroom North
		10.4 - Info Quality Business Meeting	Santa Fe
2:30	Meeting Adjourns		

Session Details

Abstracts are organized by category and session number. Colors correspond to the day-by-day agenda.

Education	Teacher Workshop	
	Session Lead	Margaret Mooney
	Breakout Sessions	0.1, 1.1, 2.1, 3.1, 4.1
	Details	Participating G6-12 educators will attend a 1.5 day workshop that starts Tuesday morning and wraps up Wednesday at noon. The teacher workshop will have an overall theme of Earth Science Education with an integral strand dedicated to Climate Change Education where educators will learn about climate change science, climate resources, and ways to effectively communicate climate change topics. Educators will also be able to choose from several breakout sessions demonstrating ways that Earth science tools and data can be used in science classrooms. Workshop sessions will be led by ESIP members from NOAA, NASA, EPA, DOE, and several Universities from around the country. Educators will also have a chance to brainstorm lesson plan development based on grade levels. After lunch, everyone is invited to stay for the ESIP conference plenary sessions followed by a fun and informational poster session Wednesday evening. For more details: visit http://cimss.ssec.wisc.edu/teacherworkshop/esip/
	WebEx	N/A

Education	Broader Impact: Expert Science Review of Educational Materials	
	Session Leads	Tamara Ledley and others from the CLEAN Pathway project, possibly also Margaret Mooney and Becky Reid and others from CCEWG
	Breakout Sessions	Mezzanine
	Details	The Climate Literacy and Energy Awareness Network (CLEAN) Pathway project invites you to contribute your scientific expertise to educators by providing the final expert review of climate change and energy resources before they are accepted into the NSDL collection. You can provide your review right at the meeting using our online review station. The review station will be on the Mezzanine, near the meeting registration desk. CLEAN's primary goal is to steward a broad collection of educational resources and foster a supporting community to help facilitate students, teachers, and citizens becoming climate literate and informed about "the climate's influence on you and society and your influence on climate." The current collection can be explored at http://cleanet.org .
	WebEx	N/A

Data Science/Life Cycle	SPG Technical Session: Data Quality, Standards and Frameworks for NASA Earth Science Data Systems	
	Session Lead	Allan Doyle
	Breakout Sessions	0.2,1.2, 2.2
	Details	<p>We'll be inviting speakers to talk about success stories of implementing/using standards in their data systems. The standards can either be SPG endorsed standards, OGC standards, ISO standards, or de facto standards that might be candidates for the SPG standards process.</p> <ul style="list-style-type: none"> • 9:00 Greg Stensaas "QA4EO" – Data Quality Framework • 9:30 Chris Lynnes, NASA GSFC Ambiguity of Data Quality for Remote Sensing Data • 10:00 Barry Weiss, Hook Hua Development of Tools to Incorporate ISO 19115 Metadata into Science Data Systems • 10:30 Ken Keiser, UAH Integrated Multi-Project Visualization using Data Casting • 11:00 Joseph Glassy, NASA/Lupine Logic Identifier RFC's • 11:30 Matthew Cechini, NASA GSFC Coherent Web12:00 Wenli Yang, GMU The OGC Web Coverage Service Specification and its application in the NASA Data environment • 12:30-1:30 Lunch • 1:30 Helen Conover NetCDF4 RFC progress/review • 2:00 Michael Burnett, et. al. Reference Architecture (see below) • 3:00-3:30 Break • 3:30 Michael Burnett, et. al. Reference Architecture, cont. (see below)
	WebEx	N/A

Data Science/Life Cycle	ISO Data Quality	
	Session Lead	Ted Habermann
	Breakout Sessions	1.3, 2.3, 3.3, 4.2
	Details	<p>Standardizing the myriad of ways in which data quality can be measured is a very difficult and maybe even impossible task. Rather than taking this on, the ISO Metadata Standards provide the capability for describing data quality measures, how those measures are applied to a resource and what the results are. These approaches will be demonstrated along with connections between ISO and other dialects.</p>
	WebEx	N/A

Data Science/Life Cycle	Preservation and Stewardship Use Case Workshop	
	Session Lead	Curt Tilmes
	Breakout Sessions	1.4
	Details	<p>In this session, we will refine and elaborate various scenarios in the life cycle of earth science data. We are taking two approaches -- First, trying to categorize and explore the breadth of scenarios, from individual scientists working and publishing themselves, to networks of citizen scientists, to industrial processing in large scale satellite missions. Second, we will select one or two and explore them in great detail throughout the life cycle.</p> <p>From these scenarios, we will extract the requirements for the other requirements: identifiers, citations, provenance and context content standard, ontology, etc.</p>
	WebEx	http://bit.ly/kzHEKH

Data Science/Life Cycle	Provenance and Context Content Standard Breakout	
	Session Lead	Rama Ramapriyan
	Breakout Sessions	6.4
	Details	<p>The purpose of the session is to discuss progress made in developing the Provenance and Context Content Standard proposed during the Winter meeting. Following a brief status presentation, the content items developed so far will be discussed in detail. Inputs will be solicited from the group regarding content items, their representation, and their appropriateness/adequacy to satisfy the needs of future users. Also, next steps in the standard development process will be identified.</p>
	WebEx	http://bit.ly/kzHEKH

Data Science/Life Cycle	CF Standards Extensions for Remote Sensing Data	
	Session Lead	Rob Raskin
	Breakout Sessions	7.2
	Details	The CF metadata conventions were developed originally to meet the needs of the modeling community. We will discuss extensions needed to serve the needs of the remote sensing community, including: spectral band descriptions, swath geometry representation, and data quality representations. If there is sufficient interest, we will form a new Cluster to address these topics.
	WebEx	http://bit.ly/kzHEKH

Data Science/Life Cycle	Citations Breakout	
	Session Lead	Mark Parsons
	Breakout Sessions	7.4
	Details	<p>We will review recent advancements and the state of the art in citations, including a review of the GeoData 2011 meeting and GEOSS Science and Tech Committee citations standards.</p> <p>We will also have a "citation writing workshop" -- bring your data set and we'll help you figure out how to cite it. This may also contribute to our understanding of more difficult citation needs that we will need to explore.</p>
	WebEx	http://bit.ly/kzHEKH

Data Science/Life Cycle	Information Quality Cluster	
	Session Lead	Greg Leptoukh
	Breakout Sessions	7.5, 8.5
	Details	<p>The IQ Cluster will begin its work to understand different quality needs as presented by different science domain communities. These presentations will inform the development of a quality framework that might be broadly applied to the Earth science data and information community. In addition, these presentations will assist in the ESIP Federation's contributions to the GEO Quality Assurance for Earth Observations (QA4EO) task, as led by CEOS' Working Group on Calibration and Validation. The IQ Cluster also will hear from the Semantic Web Cluster to develop a quality ontology.</p> <p>7.5 session</p> <ul style="list-style-type: none"> • Intro and welcome – Greg Leptoukh (15 minutes) • QA4EO Overview – Greg Stensaas (15 minutes) • NASA Perspective on Data Quality – Frank Lindsay (15 minutes) • Semantic Technologies for Data Quality – Chris Lynnes or Peter Fox (45 minutes) <p>8.5 session</p> <ul style="list-style-type: none"> • Data Quality Needs and Approaches from Different Communities (60 minutes) • George Huffman (precipitation) • Kerstin Lehnert (geochemistry) • Ed Armstrong (sea surface temperature) • Ross Bagwell? (air quality) • Data Quality Standards • Ted Habermann (ISO) (15 minutes) • Barry Weiss (15 minutes)
	WebEx	http://bit.ly/kzHEKH

Data Science/Life Cycle	Global Change Master Directory (GCMD) Metadata Authoring Workshop	
	Session Lead	Tyler Stevens
	Breakout Sessions	8.2
	Details	NASA's Global Change Master Directory (GCMD) enables users to discover and access data, services, and climate visualizations relevant to global change and Earth science research. In this session, participants will learn about the value of the GCMD for discovering Earth science data, services, and visualizations. In addition, data and services from ESIP members will be highlighted in the updated ESIP portal. A "hands-on" demonstration of our metadata authoring tool will be given and participants will have the opportunity to use the tool for describing their data, services, and visualizations. Please bring your laptop to the workshop.
	WebEx	http://bit.ly/kzHEKH

Data Science/Life Cycle	Preservation Ontology Breakout	
	Session Lead	Hook Hua
	Breakout Sessions	8.4
	Details	A joint session across the Semantic Web and Preservation and Stewardship Clusters aimed at applying the semantic web technologies to the interoperability needs of preservation and stewardship. We will start with a brief presentation on the high-level steps of ontology engineering, which typically begins with forming use cases and "concept mapping". We will also briefly cover some popular provenance models (e.g. Open Provenance Model) and ISO metadata standards. The session will then focus on the initial steps of "concept mapping" some of the use cases from the Provenance and Context Content Standard. Come see some "sausage making" as we do some concept maps.
	WebEx	http://bit.ly/kzHEKH

Technology	Intro to Drupal	
	Session Leads	Bruce Caron, Rahul Ramachandran
	Breakout Sessions	1.5
	Details	Introduction to Drupal on various levels
	WebEx	http://bit.ly/kzHEKH

Technology	Science on Drupal	
	Session Leads	Bruce Caron, Rahul Ramachandran
	Breakout Sessions	2.5
	Details	The Science on Drupal session seeks to bring together researchers from across the globe developing scientific collaborative portals using the Drupal content management system. This session will allow these researchers to share their work and expertise. The session will include an open forum for discussion of Drupal scientific module development efforts. Drupal already accounts for more than 293,000 installations on the web. It requires a minimal software stack and can be customized and extended with well-documented API's. This allows the Earth Science informatics community to leverage Drupal as a framework, build custom modules for science and utilize all the other out of the box Web 2.0 features.
	WebEx	http://bit.ly/kzHEKH

Technology	Limitations in the exposure of earth science metadata via THREDDS and OPeNDAP servers	
	Session Lead	Ed Armstrong
	Breakout Sessions	3.2
	Details	<p>Earth data records are increasingly being made accessible via OPeNDAP and/or THREDDS data servers allowing client software to transparently access huge quantities of data. However, the organization, and quality and quantity of metadata that accompany a data collection or individual granules exposed via THREDDS and OPeNDAP can vary dramatically. For a user a priori familiar with the contents and structure of existing data products including variable names, descriptions, scaling factors, units etc this is not a problem since the fields available are enough to convey meaning. In contrast, to an application that crawls a THREDDS/OPeNDAP repository for meaningful metadata or even a data mining application, the quality of metadata available is supremely critical. For example, if variable names do not follow conventions like CF, it is difficult to automatically crawl a repository and understand the geophysical nature of data available. In this session we will explore these issues and review some practical examples as well as explore some best practices that could be implemented.</p>
	WebEx	http://bit.ly/kzHEKH

Technology	ESIP Discovery Show and Tell	
	Session Leads	Hook Hua, Chris Lynnes
	Breakout Sessions	3.4
	Details	<p>We will begin with a brief overview of the technologies in the ESIP Discovery Cluster. Then we will demo several actual implementations with a little discussion of what it takes to put an implementation together.</p> <p>8:30-8:45 Overview of the Discovery Cluster (C. Lynnes)</p> <p>8:45-9:00 NSIDC (Ruth Duerr) I will be demonstrating our live service, collection, and data cast feeds, the ability to aggregate feeds from multiple sources and serve them out again, as well as a portal that is totally service driven - in other words it uses OpenSearch to find the data sets that it advertises, OpenSearch to find granules of those data sets, etc. With luck you'll be able to subscribe to the results of a spatial/temporal/keyword query against the aggregator; but I am not counting on that (the iteration that functionality should be completed in starts next week!).</p> <p>9:00-9:15 JPL (Andy Bingham)</p> <p>9:15-9:30 EOS Clearinghouse (Matt Cechini) The Earth Observing System Clearinghouse (ECHO) has historically provided a SOAP-based programmatic interface to its metadata holdings. The SOAP interface provided a full-featured set of capabilities, but the nature of SOAP/WSDL communication required a moderate level of programming experience and effort when building an ECHO client application. The ECHO team, in cooperation with the ESIP Discovery cluster, developed the lighter weight OpenSearch API, layering it on top of its SOAP API as a simplified means of access. The new API immediately opened ECHO up to numerous new client partners and provided a simpler response format for internal use. These opportunities and the additional uses of the OpenSearch response format will be discussed.</p> <p>9:30 - 9:45 Eric Rozell - I will talk about integrating semantics with OpenSearch. I'll show a demo of a faceted browser that we've developed for BCO-DMO based on the OpenSearch interface and an OWL vocabulary that describes some of the URIs that can be embedded in OpenSearch. In particular, I'll talk about the "rel" attribute and how it can be used for coupling services with UIs and applications, and also how it can be used to add more service execution details (outputs, preconditions, effects). I'll also talk a little about parameter extensions. Lastly, I'll talk about how we hope to use the OWL vocabulary as a web service abstraction that can integrate/federate across standards beyond OpenSearch.</p> <p>9:45-10:00 Chris Lynnes or Ken Keiser (TBD)</p>
	WebEx	http://bit.ly/kzHEKH

Technology	Earth Science Collaboratory	
	Session Leads	Christopher Lynnes, Kevin Murphy
	Breakout Sessions	4.3
	Details	This session will convene the Earth Science Collaboratory. The main topic will be how to move forward with ESC, generate and maintain momentum, and actually put something together. The session will be a mix of brief presentations and brainstorming, covering topics such as a brief review of ESC, funding and/or implementation strategies, and leveraging other efforts (e.g., EOSDIS Coherent Web, NASA Earth Exchange, Canadian Space Science Data Portal, blogmydata.org, Plug-and-play Macroscopic, et al.)
	WebEx	http://bit.ly/kzHEKH

Technology	Products and Services Committee Testbed Activities	
	Session Lead	Ken Keiser
	Breakout Sessions	5.3
	Details	Session will include an overview of the status and activities of the Products and Services Committee's Testbed. Individual Testbed developers will be asked to present overviews of their activities.
	WebEx	http://bit.ly/kzHEKH

Technology	Visualization Practices	
	Session Lead	Kevin Ward
	Breakout Sessions	5.2
	Details	We all use visualization to show the results of our data -- graphs, maps, interactive applications, etc. How do we decide what gets visualized and how do we go about that process to meet the needs of our target audiences? This breakout will feature case studies illustrating these practices from a variety of data providers and visualizers.
	WebEx	http://bit.ly/kzHEKH

Technology	Technology Infusion for the Decadal Survey Era	
	Session Leads	Karen Moe, Steve Olding
	Breakout Sessions	5.4
	Details	<p>Based on information derived from the NASA Technology Infusion Working Group's decadal survey mission use cases, this session will explore candidate technologies and infusion strategies that could be applied to meet the technology needs of data systems for the decadal survey era missions.</p> <p>The focus at ESIP will be three key challenges arising from the use cases that relate to Data Quality:</p> <ol style="list-style-type: none"> 1. How to communicate a clear, consistent, coherent model / terminology for Data Quality to the user community 2. How to develop a community consensus on the quality of datasets 3. Assessing the quality of custom data products
	WebEx	http://bit.ly/kzHEKH

Technology	Open Source Software in the Sciences	
	Session Lead	Chris Mattmann
	Breakout Sessions	6.2
	Details	<p>This session will involve talks and a panel discussion on leveraging open source software in the sciences. Important issues to cover:</p> <ul style="list-style-type: none"> * What are the emerging and important open source technologies being used in the sciences? * What are the licensing issues with using open source software? * What open source software communities should ESIP be targetting? * How can we set up successful open source software communities? * What are the concerns in the areas of redistribution, attribution and commercialization that we should care about when dealing with open source software? * How does the use of open source affect your system's architecture? * What are the successful open source models? <p>We will invite members from the ESIP community to come and weigh in on the above topics, as well as have a focused panel with some directed questions that help to flush out some of the ideas and topics.</p>
	WebEx	http://bit.ly/kzHEKH

Technology	Service Casting	
	Session Lead	Brian Wilson
	Breakout Sessions	7.3
	Details	
	WebEx	http://bit.ly/kzHEKH

Societal Benefit	Energy and Climate Cluster	
	Session Lead	Shailendra Kumar
	Breakout Sessions	3.5, 4.4
	Details	<p>8:15 – 9:45 AM</p> <ul style="list-style-type: none"> ▪ GEOSS Architecture Implementation Pilot (AIP-3) Energy Scenario: Use case of the environmental impact assessment of the production, transportation and use of energy for the photovoltaic (PV) sector – Lionel Menard, École des Mines de Paris (via WebEx) ▪ Wind Energy Resource Assessment – Daran Rife, NCAR ▪ Application of Statistical Correlations of Sub-Hourly Irradiance Measurements and Hourly SUNY Data to Photovoltaic Array Performance – Marissa R. Hummon, National Renewable Energy Laboratory <p>9:45 – 10:00 AM Break</p> <p>10:00 AM – 12:00 PM Track 5 Energy-Climate Breakout</p> <ul style="list-style-type: none"> ▪ Partnerships for Wind Energy Siting Decision Tools – Alison LaBonte, OSTP, and Taber Allison, AWWI (via WebEx) ▪ NREL Data Sources and Quality – Debbie Brodt-Giles, National Renewable Energy Laboratory (via WebEx) ▪ The New Peer-To-Peer Architecture of the Earth System Grid Federation – Luca Cinquini, NASA/JPL ▪ Impact of Climate Change on Energy Demand and the Optimal Site Selection of Wind and Solar Farms - Glenn Higgins et al, Northrop Grumman
	WebEx	http://bit.ly/kzHEKH

Societal Benefit	Air Quality Working Group	
	Session Leads	Ross Bagwell, Tim Dye, Glynis Lough
	Breakout Sessions	3.6, 4.5, 5.5, 6.5
	Details	3.6 – Air Quality Interoperability – defining best practices (Introduction & Web Services) 4.5 - Air Quality Interoperability – defining best practices (Data Formats & Ontology) 5.5 - Air Quality Interoperability – defining best practices (Metadata standards & Implementing interoperability) 6.5 – Air Quality Panel on Data Quality (4 guest panelists followed by Q&A)
	WebEx	http://bit.ly/kzHEKH

Cloud Computing	Intro to Cloud Computing	
	Session Lead	Rick Martin
	Breakout Sessions	5.1
	Details	<p>As a complement to the proposed Cloud Computing workshop, this session will be aimed at those new to the concept, principles, and Federal mandate. CC will be defined and explained in basic technical terms. Roles will be discussed, such as that of the system owner, the system integrator, and the hosting provider. A list of pros and cons--with examples--will be offered along with the identification of some of the key players in the marketplace.</p> <p>Beyond this management and technical overview, a brief review of the Office of Management and Budget's 'Cloud First' policy will be presented along with some analysis as to how that fits with data center consolidation.</p>
	WebEx	http://bit.ly/kzHEKH

Cloud Computing	Cloud Computing Workshop: Hands-On	
	Session Lead	Phil Yang
	Breakout Sessions	6.1
	Details	<p>This session is a hands-on workshop to help Earth scientists experience the process of deploying applications on a commercial cloud platform. We will use the Microsoft Azure Cloud as an example. Microsoft has agreed to make free Azure accounts available for the participants of this session. The participants will be able to register for a free cloud account before the workshop. The presenters will first show how to deploy two geospatial Web applications on the Azure cloud platform. These applications are: (i) Digital Elevation Model (DEM) interpolation and (ii) an instance of the open layer geospatial viewer. In the second part, the presenters will (optionally) help the participants deploy their own application(s) using their free Azure account. The presenters will assume moderate technical background, and the tutorial is designed for a large audience with various backgrounds. Please list your name/email address below for the provision of Azure accounts before the workshop.</p>
	WebEx	http://bit.ly/kzHEKH

Cloud Computing	Cloud Computing Applications and Studies	
	Session Lead	Thomas Huang
	Breakout Sessions	7.1
	Details	This session focuses on the applications and studies of cloud computing. In recent years, there has been a lot of interest on understating and apply cloud computing in Earth Science, in areas such as science data processing, user supports, decision support, just to name a few. Representatives from several NASA-funded projects have been invited to share their experience. Evaluating Cloud Computing in the NASA DESDynI Ground Data System - John Tran - NASA/JPL; The Airborne Cloud Computing Environment (ACCE) Project - Sean Hardman - NASA/JPL; Oceanographic Cloud Study - Michael Gangl - NASA/ESDIS/PO.DAAC; The Lunar Mapping and Modeling Project (LMMP) - Emily Law - NASA/JPL; Geospatial Platform Demo: A cloud study using EC2 and Azure - Phil Yang - GMU
	WebEx	http://bit.ly/kzHEKH

Cloud Computing	Cloud Computing – Discussion	
	Session Lead	Phil Yang, Martin Rick, Thomas Huang
	Breakout Sessions	8.1
	Details	
	WebEx	http://bit.ly/kzHEKH

Organizational	ESIP 101	
	Session Leads	Chris Lenhardt, Carol Meyer
	Breakout Sessions	3
	Details	As the ESIP Federation has grown in size and scope of activities, many new faces have been drawn into our community. For those new to the ESIP Federation or anyone interested in learning more about its activities, join us for an overview presentation that will highlight the history, current activities, opportunities for involvement and how to become a partner. Bring your morning joe and breakfast to this informal session.
	WebEx	http://bit.ly/kzHEKH

Organizational	Proposed Bylaw Changes: ESIP Community Discussion	
	Session Lead	Rob Raskin
	Breakout Sessions	6.3, 9.1
	Details	See Document included in Meeting Packet http://wiki.esipfed.org/index.php/Constitution_and_Bylaws#Proposed_Bylaw_Changes
	WebEx	http://bit.ly/kzHEKH

Organizational	US GIN Townhall	
	Session Leads	Steve Richard, Viv Hutchinson
	Breakout Sessions	8.3
	Details	The US Geoscience Information Network (USGIN) is developing protocols and interchange formats for online data discovery and access for the Association of American State Geologists (AASG) and U. S. Geological Survey. This town hall will be a discussion of the role played by USGIN in the national and international data system that is rapidly developing on many fronts. This discussion is part of a strategic planning project by the USGIN management to define what parts of the larger community information architecture need to be developed and under the stewardship of USGIN, and what parts of the architecture can be used from existing resources or developed and maintained in collaboration with other organizations and projects.
	WebEx	http://bit.ly/kzHEKH

Organizational	Building and Leveraging Capacities for the ESIP Community	
	Session Leads	Carol Meyer, Chris Lenhardt
	Breakout Sessions	9.2
	Details	<p>As an organization, ESIP optimizes collaboration and fostering connections through in-person meetings and virtually through collaboration space on the Web. The networked, community-driven approach largely is aimed at fostering Earth science interoperability – for data, systems, people and organizations. This synergy between collaboration and broad expertise allows the ESIP Federation to play an important coordination role for the Earth science data and technology community. The ESIP Federation is fostering the development of a research community that cuts across traditional discipline and related boundaries, enabling communities to share tools, data and technology. Ultimately, this coordination across sectors and communities will address problems central to access and use of Earth science data and information, allow Earth science research to be of higher quality and done more quickly, and leverage the work of the many communities contributing to Earth science knowledge. The ESIP Federation is at a strategic crossroads with the development of these important opportunities.</p> <p>This breakout session will focus on discussion about how the Federation can build and leverage collaboration capabilities in order to move forward successfully. There will also be time to discuss how to leverage ESIP's on-going contributions to the current community while providing an open and welcoming space for external organizations to join forces. Please come and share your ideas and vision about how ESIP should move forward and work with others.</p>
	WebEx	http://bit.ly/kzHEKH

Organizational	Semantic Web Planning Meeting	
	Session Lead	Peter Fox
	Breakout Sessions	9.3
	Details	<p>Summarize activities of previous 6 months Plan for January meeting (likely topic: collaboration) Plan for activities in the meantime Consider Erin's Use Case for the Projects ontology</p>
	WebEx	http://bit.ly/kzHEKH

Organizational	Energy and Climate Planning Meeting	
	Session Lead	Kumar, Shailendra
	Breakout Sessions	9.4
	Details	Project Proposal - "Wind Energy Siting Data Coordination"
	WebEx	http://bit.ly/kzHEKH

Organizational	Education Business Meeting	
	Session Lead	Bruce Caron
	Breakout Sessions	10.1
	Details	
	WebEx	http://bit.ly/kzHEKH

Organizational	IT&I Business Meeting	
	Session Lead	Rahul Ramachandran
	Breakout Sessions	10.2
	Details	
	WebEx	http://bit.ly/kzHEKH

Organizational	Preservation and Stewardship Cluster Planning Breakout	
	Session Leads	Curt Tilmes, Ruth Duerr
	Breakout Sessions	10.3
	Details	We will review a brief status of the various active activities in the cluster and discuss future plans and milestones for the cluster. Those activities include: Data Stewardship Principles, Identifiers, Citations, Provenance and Context Content Standard, and Preservation Ontology.
	WebEx	http://bit.ly/kzHEKH

Organizational	Information Quality Cluster Planning Breakout	
	Session Lead	Greg Leptoukh
	Breakout Sessions	10.4
	Details	Business Meeting <ul style="list-style-type: none"> • Selection of co-chair • Discussion of next steps
	WebEx	http://bit.ly/kzHEKH

Organized in alpha order by submitting author last name
* Next to the titles indicate a demo

Wordle of all abstracts submitted.

Human Sensor Networks: Improving Oil Spill Model Predictions Using Social Media Data

Oleg Aulov and Milton Halem

Timely responses to natural and manmade disasters and in particular oil spills -- such as the recent BP oil spill of April 2010--can save lives, prevent property damage and help minimize environmental impact. We show how we can model more accurately the spread of an oil spill by using social media data from flickr as a human sensor network. Human sensor networks can serve as low-cost alternatives to traditional deployable sensor platforms. In our research, we view flickr users as “sensors” that are “deployed” in the field to make “observations” and the photos they post as a “report” that we can harvest by accessing and mining their data. In this scenario, the sensors’ reports consist of user generated and posted images of events related to the oil spill, such as oil tar balls washing up on the shore, oil sheen observed on the surface of the ocean, or birds, fish and other wildlife suffering from exposure to oil. Since some flickr photos are taken with cameras that support GPS geotagging, which provide latitude and longitude information, we can infer that oil was present at a certain location at least at the time the image was taken. In many cases, location information can be found in the title or description of a photo. Using Named Entity Recognizers and geolocation algorithms allows us to geotag the photos. Since all images have a timestamp that represents with certainty when the image was taken, we can add the time of observation to our data. Having time and location of the observed oil reaching shorelines enables the use of inverse methods to adjust certain parameters in the model to better fit these human sensor observations.

To test our ideas, we employ the general operational modeling environment (GNOME) software of NOAA’s Emergency Response Division of Office of Response and Restoration, which forecasts the movement of the sheen of oil on the ocean surface given surface winds, ocean currents, and type of oil pollutant. We combine the social media data mined from flickr with other geophysical data. We report on the results of GNOME model integrations which show the efficacy of these data to impact the forecast. By mining flickr data and applying geolocation algorithms, our oil spill model can produce more accurate forecasts that will in the future help emergency responders work more efficiently and effectively having better estimates of when the spills will reach various sites along the shores.

Submitted by: *Oleg Aulov, University of Maryland Baltimore County,*
aulov.oleg@gmail.com

Gstore - A Scalable Platform for Discovery and Access of Earth Science Data*

Karl Benedict, Renzo Sanchez-Silva

In order to support scalable access to geo-temporal Earth Science and related data, the Earth Data Analysis Center (with support provided by the NSF EPSCoR Program) has developed a platform that enables flexible discovery and use of these data. Called Gstore, the developed system provides a unified data model within which heterogeneous vector data products (i.e. attributes associated with points, linear feature or polygonal areas) may be stored, allowing rapid retrieval of values from thousands of separately generated datasets, representing tens of millions of individual features (currently we have over 45 million features stored in the system). The data stored within Gstore are accessible through a variety of standards-compliant interfaces, including REST-based query and meta/data access services and OGC (WcS) services. End products generated by these services include data in a variety of formats including: zip archives containing the original source data for specific datasets, GML and KML files containing features across multiple datasets, ESRI shapefiles for individual datasets, and tabular representations both as CSV files and Excel spreadsheets. The system has been designed for maximum flexibility in forward evolution as all client interactions with the system are through web service interfaces that are extensible through the addition of new interaction models, data generation capabilities, and eventually analytic tools.

Submitted by: *Karl Benedict, Earth Data Analysis Center, UNM, kbene@edac.unm.edu*

Climate Change at the Arctic's Edge

Gary Bodman

Earth Watch has been conducting research fellowships for teachers, my poster will visually illustrate what I learned as well as the methods and materials used to determine climate change in this transitional and vulnerable area.

Submitted by: *Gary Bodman, Albuquerque Public Schools, bodman@aps.edu*

The New Face of Fluxnet

Reid Meredith Boehm, Harold Shanafield III, Stephanie H. Shamblin, Robert Cook

This poster will discuss the current changes taking place within the FluxNet website and the redesigning of data organization to maximize data seeking and the user experience. The new website, created using Drupal, includes the citations of hundreds of publications who use data from FluxNet affiliated eddy covariance sites around the globe. The poster will address the process of organizing the bibliographic material and specific features that provide enhanced usability for both the data center and the data seeker.

Submitted by: *Meredith (Reid) Boehm, ORNL DAAC, mboehm@utk.edu*

ScienceBase: a data and information management framework for scientists

Bristol, R. Sky, Kern, Tim, Latysh, Natalie

The U.S. Geological Survey (USGS) is working to enhance and expand information sharing and preservation by developing ScienceBase, a collaborative scientific data and information management platform used directly by scientists and data practitioners. ScienceBase provides access to aggregated information derived from many data and information domains, including feeds from existing data systems, metadata catalogs, and scientists contributing new and original content. The ScienceBase architecture is designed to aid science teams and data practitioners in pursuing and acquiring information.

Submitted by: *Sky Bristol, U.S. Geological Survey, sbristol@usgs.gov*

Posters as Digital Objects: Creating the Poster Commons

Bruce Caron

Each year in the USA (and elsewhere), professional academic societies, government agencies, private foundations, and funded research projects host academic meetings where they provide for a poster session. Individually, these meetings might support from 25 (e.g., NSF funded project) to 10,000 (e.g., American Geophysical Union) posters. Collectively, it is not difficult to imagine upwards of a quarter-million posters created, displayed, and discarded in a single year. This represents a (ballpark estimate) effort of more than four-thousand person-years, mainly spent by graduate students. The posters are created to showcase the latest research, and to highlight methods, data, goals, and impacts. Individually and collectively, the posters are a snapshot of the state-of-the-science. They offer a concentrated load of timely information. After a few hours of exposure in a hotel ballroom, the poster is commonly discarded (having served its purpose also as a warrant for travel funds from the home university department). The idea of a poster commons is to digitally capture posters and make these available for searching, browsing, commenting and rating. This represents a gain in value for this activity for the proposer, the meeting, and the academy. Some details of a recently funded (Sloan Foundation) effort will be included.

Submitted by: *Bruce Caron, New Media Research Institute, bruce@tnms.org*

EOSDIS Coherent Web

Kevin Murphy, Matthew Cechini, Greg Baerg, Ross Bagwell

The Earth Observation System Data and Information System (EOSDIS) provides valuable data and services to a global Earth Sciences community. The twelve EOSDIS data centers allow for focused attention on the various unique science disciplines. While each data center has an independent identity, each is also a part of the broader EOSDIS community. In addition to data centers, the EOSDIS community includes a broad array of metadata clearinghouses, data services, user working groups, standards organizations, collected metrics, and system interfaces. Individually, each system component serves an important function and role, however, it is the aggregation of components that brings enhanced value to the Earth Science community.

The EOSDIS Project, which has management responsibility for EOSDIS, is undertaking an effort to create a consistent presence for EOSDIS, dubbed the "Coherent Web" Project. The first phase (Phase I) Coherent Web activities, scheduled for completion in late 2011, has the following goals in mind:

- Create a consolidated website pulling together existing content into a single location;
- Create a top-hat navigation bar for inclusion in all EOSDIS data center websites, improving the community association;
- Create a programmatic structure and workflows for managing and approving content;
- Create a methodology and platform where additional content and services can be incorporated or hosted for end-user access; and
- Identify Phase II activities to provide continual improvements to EOSDIS information and data discovery.

The overall approach, goals, and achievements of the Phase I Coherent Web activities will be presented in poster form as a consolidation of the ESIP presentation materials.

Submitted by: *Matthew Cechini, NASA - ECHO, Matthew.F.Cechini@nasa.gov*

Provenance Collection at AMSR-E SIPS*

Helen Conover, Beth Plale

The Instant Karma project brings together a team of NASA and university researchers with expertise in NASA Earth science data systems, science algorithm development, and provenance collection/dissemination to apply a proven provenance tool to the generation of NASA's AMSR-E standard products, with an initial focus on sea ice products. The project integrates Karma, a provenance collection and representation tool developed at Indiana University, into the AMSR-E Science Investigator-led Processing System (SIPS) production environment. The AMSR-E SIPS generates Level 2 and Level 3 data products from AMSR-E observations. Now entering its second year, the project has begun by engaging the Sea Ice science team and user community in customizing Karma for NASA science data. This poster will provide an update on the Instant Karma project, with a focus on how users will interact with the system. User scenarios involving provenance information will be presented, along with a demonstration of the AMSR-E Provenance Browser.

Submitted by: *Helen Conover, University of Alabama in Huntsville,*
hconover@itsc.uah.edu

FIRMS - the Fire Information for Resource Management System: Easily Accessible Fire Data from NASA LANCE

Diane Davies, Shriram Ilavajhala, Minnie Wong, Chris Justice, Mike Teague and Kevin Murphy

The synergy of remote sensing, GIS, internet and mobile technologies has revolutionized the way in which near-real-time satellite-derived fire information is delivered to users around the world. The NASA funded Fire Information for Resource Management System (FIRMS) delivers MODIS active fire data in a range of easily accessible formats (including an interactive web mapping service, email alerts and downloadable kml, shape and text files). FIRMS has recently been enhanced by the addition of MODIS burned-area maps which can be viewed as part of the web-based mapping service. In August 2010 the FIRMS prototype, developed at University of Maryland, was transitioned to an operational system at the United Nations Food and Agriculture Organization (FAO) in Rome. The system at FAO is called the Global Fire Information Management System (GFIMS) . While GFIMS is being established at FAO, FIRMS will become part of NASA Land Atmosphere Near-real-time Capability for EOS (LANCE), continuing to meet NASA data-user needs. This paper describes the delivery of fire data through FIRMS, LANCE and examples of how these data are being used to support end user needs.

Submitted by: *Diane Davies, Sigma Space, ddavies@hermes.geog.umd.edu*

ORNL DAAC Mercury - ECHO Client for Searching and Retrieving LP DAAC Granules

Ranjeet Devarakonda, Tammy Beaty, Giri Palanisamy, Jim Green, Bob Cook, Chris Lenhardt

Mercury is being used in 14 different projects across 4 federal agencies. Recently as part of the NASA's Technology Infusion project, we developed a Mercury ECHO client to access LP DAAC granule level metadata via OpenSearch.

Mercury is a federated metadata harvesting, search and retrieval tool based on both open source and ORNL DAAC developed software. Mercury provides a single portal to information contained in disparate data management systems. Mercury allows the user to perform various types of metadata searches. Users can do a simple (full text) search or they can use an advanced search interface with spatial, temporal and parameter search capabilities. The search summary page provides an integrated summary of the results from the various data sources. Search summary can be e-mailed or bookmarked and summaries results can be sorted or filtered.

Submitted by: *Ranjeet Devarakonda, Oak Ridge National Laboratory, devarakondar@ornl.gov*

User-Centered Design of a Resource Center about Geospatial Data Preservation

Robert R. Downs, Robert S. Chen

Geospatial data are valuable assets for science, education, business, government, and society. The data may not be replaceable if representing characteristics of a location at a particular time. Preserving geospatial data and related information products can improve their longevity and enable their use in the future. The Geospatial Data Preservation Resource Center has been developed to improve awareness and understanding of geospatial data preservation. The user-centered approach that informed the first release of the online resource center will be described.

Submitted by: *Robert Downs, CIESIN, Columbia University, rdowns@ciesin.columbia.edu*

Brazilian Initiatives on Ecological Data Integration and Management

Drucker D.P., Pezzini F.F., Estrada T.E.M.D., Salim J.A., Oliveira D.S., Amorim R.X., Costa F.V., Joly C.A., Costa F.R.C., Magnusson W.E., Manzi, A.O.

Several institutions and researchers generate information about Brazilian Ecosystems, but such valuable datasets are often dispersed, poorly documented and inaccessible. Protocols on how store, document, curate and make accessible are not new in the world. We present efforts from three governmental/public pioneer research programs (one at State level, two at Federal level) on biodiversity and ecology to enhance the long-term value of existing data by making it available for further research. Both BIOTA/FAPESP Program - The Biodiversity Virtual Institute (São Paulo State initiative), PPBio – Research Program in Biodiversity and LTER – Brazil (National initiatives) adopted tools developed by researchers from the Knowledge Network for Biocomplexity (KNB) to share ecological data. All information is documented in Ecological Metadata Language (EML), a worldwide adopted metadata specification used to describe ecological field surveys datasets in a structured format. Furthermore, data from biological collections was shared online due to initiatives from BIOTA and PPBio Programs. Further challenges include linking customized databases generated by particular features from different projects to the metadata catalog. Our effort is a contribution to advance on biodiversity information integration and to foster synthetic studies. These initiatives have stimulated other institutions in past decade, and are now building up partnership in order to create a National Standard for Biodiversity Information Management and Curation. Making sense of the existent huge amount of biodiversity data can improve our capacity to understand future consequences of present choices and strengthen communication with policy-makers.

Submitted by: *Debora Drucker, UNICAMP, deboradrucker@gmail.com*

Libre: Collection casting, services, and applications*

R. Duerr, J. Lacy, I. Truslove, S. Reed, S. Lewis, M. McNulty, H. Wu, L. Lopez

This poster and demo will describe and demonstrate the tools and technologies in development by the Libre project at NSIDC. This NSF and NASA supported project is developing a variety of casting and aggregation tools that allow scientists to advertise their data and services and make them discoverable by the whole world.

Submitted by: *Ruth Duerr, National Snow & Ice Data Center, rduerr@nsidc.org*

The CEOS Atmospheric Composition Portal (ACP)*

Stefan Falke, Northrop Grumman; Chris Lynnes, NASA GSFC; Greg Leptoukh, NASA GSFC; Peisheng Zhao, NASA GSFC; Wenli Yang, NASA GSFC; James Johnson, NASA GSFC; Frank Lindsay, NASA GSFC; Karen Moe, NASA GSFC; Richard Eckman, NASA; Oleg Goussev, DLR; Séverine Bernonville, DLR; Erin Robinson, ESIP; Rudolf Husar, Washington University in St. Louis

The Atmospheric Composition Constellation (ACC) and the Workgroup for Information Systems and Services (WGISS) within the Committee on Earth Observation Satellites (CEOS) is developing a portal-based framework to support interoperability among the atmospheric composition research and applications communities. It aims to provide access, tools, and contextual guidance to scientists and value-adding organizations in using remotely sensed atmospheric composition data, information, and services. The ACP helps foster interoperability among atmospheric composition groups and is collaboratively defining shared conventions for implementing standards for data access, visualization and analysis. The initial ACP work has resulted in a beta prototype of a framework that is standards-based to provide access to remotely sensed atmospheric composition data, metadata and visualization and analysis tools. We are seeking partners and collaborators interested in connecting data products, data analytical tools or other capabilities. Please stop by the poster and demo and visit <http://wdc.dlr.de/acp/> for more information.

Submitted by: *Stefan Falke, Northrop Grumman, stefan.falke@ngc.com*

My 2011 Summer Teaching Fellowship at the New Mexico Museum of Natural History

Tanya Flores

In this poster, I present a series of photographs taken during my Museum Fellowship. Included are descriptions of the New Mexico Museum of Natural History and descriptions of what the fellows were treated to. There is also contact information for those interested in speaking with the program coordinators.

Submitted by: *Tanya Flores, Albuquerque Public Schools, florestanya36@gmail.com*

The Community Initiative for Emissions Research and Applications

Gregory J Frost, Stefan Falke, Claire Granier, Terry Keating, Jean-François Lamarque, Megan Melamed, Paulette Middleton, Gabrielle Pétron, Steven Smith

Emissions inventories at a variety of spatial and temporal scales are critical inputs to the understanding and prediction of air quality and climate. Systematic inventory evaluations, comparisons of different emission estimation methodologies, and quantification of emission uncertainties and their impacts are crucial to establish confidence in these datasets.

We present the Community Initiative for Emissions Research and Applications (CIERA). CIERA is building an international community to catalyze emissions research by facilitating 1) the consistent, timely, and transparent development of emissions inventories at all scales; 2) evaluations and analyses of emissions datasets; and 3) the exchange and communication of emissions information. We discuss the motivation and vision for CIERA and illustrate its connections with the Global Emissions Inventory Activity (GEIA). We describe the developing CIERA distributed data system and demonstrate some examples of its applications. We encourage the emissions inventory development, research, and user communities at the local, national, and international levels to join the CIERA effort.

Submitted by: *Gregory Frost, NOAA/ESRL, University of Colorado/CIRES,*
gregory.j.frost@noaa.go

Exploring and Disseminating U.S. Croplands to Support Decision Making

Weiguo Han, Zhengwei Yang, Liping Di, Richard Mueller

National Agricultural Statistics Service (NASS) provides timely, accurate and useful statistical information of U.S. agriculture in a variety of formats. The Spatial Analysis Research Section (SARS) within Research and Development Division of NASS has produced a yearly Cropland Data Layer (CDL) product based on mid-resolution satellite data and high quality ground truth annually since 1997. This agricultural geospatial data is a crop-specific land cover classification encompassing the entire contiguous United States, and is extensively used by policy and decision makers, scientists, educators, and farm producers for land cover monitoring, agricultural sustainability, crop acreage and yield estimation, disaster assessment, food security, and researches which are of vital importance to American agriculture and economy. Previously, this valuable product was disseminated to users via paper thematic maps, copies of CD/DVDs, or zipped files from SARS website or U.S. Department of Agriculture (USDA) Geospatial Data Gateway (NASS, 2011). Obviously, these inefficient and costly data dissemination channels could not meet the demanding needs of the agricultural community and general public any more. A fast, open and interoperable data accessing and dissemination channel with online data navigation, visualization, and analytics capabilities is badly needed to distribute historical and current CDL data easily and efficiently. Therefore, a Web service-based and Open Geospatial Consortium (OGC) standard-compliant rich internet application, named CropScape (<http://nassgeodata.gmu.edu/CropScape/>), is developed to distribute, visualize and exploit CDL data at any geographic level in an open geospatial context. CropScape not only offers online functionalities of interactive map operations, data customization and downloading, crop acreage statistics, charting and graphing, and changes analysis as well in an interoperable manner, but also provides Web geoprocessing services such as automatic data delivery and on-demand crop statistics for uses in other applications. This system significantly improves user experiences with its comprehensive capabilities in an open geospatial context, and facilitates open geospatial cropland information delivery and analysis for decision support and various research endeavors.

Submitted by: *Weiguo Han, Center for Spatial Information Science and Systems, George Mason University, whan@gmu.edu*

Coastal Research at the Information Technology and Systems Center

Sara Graves, Helen Conover, Ken Keiser, Sandra Harper, Danny Hardin

The Information Technology and Systems Center (ITSC) at The University of Alabama in Huntsville is working with Federal, State and Local agencies and organizations to address coastal environmental issues in the Gulf of Mexico and Atlantic regions of the United States. By drawing from a background of successful cyberinfrastructure research projects and experience with remote sensing data and applications, the ITSC and its partners are developing new architectures for

distributed modeling; applications that bring results to mobile devices and new decision support products that help users respond to changes in coastal ecosystems. Five of those efforts are presented on this poster.

Submitted by: *Danny Hardin, University of Alabama Huntsville, dhardin@itsc.uah.edu*

An International Collaboration of Scientists and Middle School Students: Adopting Polar Professionals

Haste, T. (Albuquerque Public Schools)

A four year, long-distance project of mentorship between polar professionals and middle school students enhances both student understanding of polar research and climate science. Researchers worked with students on a long-term project investigating solar angle, energy and seasonality. Middle school students in Albuquerque, New Mexico collaborated with Amundsen-Scott South Pole, McMurdo and Palmer stations and the US Geological Survey staff comparing the length of a sun shadow measured at different global locations. Addressing the statement, “a location will experience longer shadows and less solar radiation in winter and a shorter shadow with increased solar radiation in summer” students produced an international collection of seasonal solar angle latitudinal variation data. Weekly measurements of the shadow length cast from a one-meter stick placed at 90-degrees from a flat surface were taken at local solar noon and shared through ANDRILL’s Project Circle Website. To fully understand the changes in solar energy as a result of the changing elevation, students learned about and practiced use of a mariner’s astrolabe and sextant. Winter solstice measurements ranged from 158 to 231cm between the latitudes of 35 and 42°N with southern latitudes reporting a range of 87 to 202cm between 64 and 90°S. On the 2008 vernal equinox, measurements ranged from 29.8cm near the Equator (American Samoa 14°S) to 0cm at the South Pole (90°S). Northern measurements were taken in Egypt (30°N) of 64.7cm, Norway (59°N) 164cm and Russia (59°N) of 158cm. With each successive year, new partners were added, enhancing data by including locations in seven countries in both hemispheres. Discussions between students and mentors involved data, observations, experimental problems, researcher professional motivations, opinions on Climate Change and polar experiences. Students’ work has been celebrated in AGI’s 2009 Earth Science Week, the Antarctic Sun, and posters at the 2008 annual AGU, 2010 IPY and NMSTE meetings.

Submitted by: *Turtle Haste, JHUCTY/ Albuquerque, thehastes@msn.com*

Provenance-enabled Automatic Data Publication

James Frew, Greg Janée, Peter Slaughter

The ES3 system automatically captures the provenance of unstructured computations and makes it available so that the results of such computations can be evaluated in the overall context of their inputs, implementation, and assumptions. We have discovered that such provenance can also serve as an automatic "checklist" whereby the suitability of data (or other computational artifacts) for publication can be evaluated. We depict a system that, given the request to publish a particular computational artifact, traverses that artifact's provenance and applies rule-based tests to each of the artifact's computational antecedents to determine whether the artifact's provenance is robust enough to justify its publication. Such tests check for proper curation of the artifacts, which specifically means such things as: source code checked into a source control system; data accessible from a well-known repository; etc. The system also provides a means of automating the annotation of computational antecedents.

Submitted by: *Greg Janee, UC Santa Barbara, gjanee@eri.ucsb.edu*

Semantic discovery and integration tools for environmental data

Matthew B. Jones, Ben Leinfelder, Shawn Bowers, Mark Schildhauer, Margaret O'Brien, Christopher Jones

Rich semantic information describing the content, structure, and relationships of environmental data can be used to build effective tools for data discovery and integration. We have developed such tools within the Semtools project by using formal annotations on environmental data to link domain-specific ontology terms from the Extensible Observation Ontology (OBOE) to particular facets of environmental data sets. This annotation approach allows us to maintain data in traditional scientific formats (e.g., CSV text, NetCDF) while still establishing formal semantics for the data. The annotations can then be used to materialize a full knowledge model of the data (e.g., an RDF graph compatible with Linked Open Data conventions), which in turn drives discovery and integration tools. We demonstrate this through extensions to the Metacat data repository system that can be used for semantic search and semantic data subsetting for heterogeneous environmental data.

Submitted by: *Matthew Jones, NCEAS, jones@nceas.ucsb.edu*

Utilization of near real-time satellite data in atmospheric transport and dispersion modeling applications

U. S. Nair, S. A. Christopher, Y. Wu, E.-S. Yang, K. Keiser

Prior studies show that satellite derived land and aerosols products may be utilized to improve numerical model predictions of atmospheric transport and dispersion. Satellite derived smoke emissions can be effectively utilized in numerical modeling of smoke transport. Satellite derived aerosol optical thickness (AOT) provide an effective constraint for the column loading in aerosol transport models. Land surface heterogeneity has substantial impact on mesoscale and small scale atmospheric dispersion. Satellite derived land products such as albedo and leaf area index provide an effective constraint for land surface heterogeneity. Utilization of NASA MODIS land and aerosol products in multiple applications related to atmospheric dispersion, nutrient deposition and air quality modeling will be discussed. These applications are developed for near-real time use in a decision support related to emergency and environmental management in the State of Alabama. Experiences and lessons learned from the development of these applications will also be discussed.

Submitted by: *Ken Keiser, University of Alabama in Huntsville, keiserk@uah.edu*

The Many Dimensions of Sea Ice - A Beginning Ontology

Parsons, Khalsa, Pulsifer, Duerr, Fox, McGuinness, McCusker

SSIII, The Semantic Sea Ice Interoperability Initiative, is an NSF-funded effort to increase the interdisciplinary understanding and usability of sea ice data by establishing a network of practitioners working to enhance semantic interoperability of all Arctic data. This poster presents an initial sea ice ontology that was the outcome of a workshop in which sea ice modelers, field researchers, remote sensing scientists and operational forecasters described the dimensions of sea ice from the perspective of their respective disciplines. We will highlight some of the challenges we encountered in building the ontology and solicit feedback on how it could be linked to relevant marine, polar, atmospheric, and global ontologies and semantic services.

Submitted by: *Siri Jodha Khalsa, Univ. of Colorado, sjsk@nsidc.org*

Lunar Data Products Quality

Emily Law, Shan Malhotra, Bach Bui, Richard Kim, Cameron Goodale, Paul Ramirez

NASA's long-term exploration goals include a return to manned missions to the Moon that will culminate in a permanent manned station on the Moon. Prior to embarking on such a mission, architectural trades and system designs will be facilitated by well-characterized and geo-registered maps and models of the Moon. The Lunar Mapping and Modeling Project (LMMP) led by the Marshall Space Flight center (MSFC) is responsible for guiding the development of an information system to provide these maps and models.

Our team at Jet Propulsion Laboratory (JPL) has taken on the key role in the development the LMMP interoperable geo information system's underlying infrastructure, including aggregation of lunar data, from the Apollo era to the latest instruments on the LRO spacecraft, into a central repository, management of lunar data, as well as a single portal creating one of the most comprehensive lunar research websites to date for access to the lunar maps and products by scientists and the general public. Needless to say, the quality of these data products and information is utmost important to the users.

To ensure the highest quality of our data products and information, two stages of data product validation occur within LMMP. First, the project has established a Verification and Validation methodology in which verification provides objective evidence to show that the data products requirements are achieved and validation confirms that the products meet their intended purpose. Secondly, all products and their metadata must be examined thoroughly at the vetting stage after being ingested into the system, where the vetting components look at and accesses each product within the infrastructure through its curation/vetting services to ensure that upon release the product is indeed a quality product.

Submitted by: *Emily Law, JPL, emily.law@jpl.nasa.gov*

Climate Literacy and Energy Awareness Network (CLEAN) Pathway

Tamara Shapiro Ledley, Mark McCaffrey, Susan Buhr, Cathy Manduca, Sean Fox, Frank Niepold, Cynthia Howell, Marian Grogan, Anne Gold

The CLEAN Pathway (<http://cleanet.org>) is a National Science Digital library (<http://www.nsdlib.org>) project that is stewarding a collection of annotated climate and energy science education resources for educators and students in grades 6-16. These resources are reviewed for scientific accuracy, pedagogical effectiveness, and technical quality, and are aligned with the Climate Literacy Essential Principles for Climate Science, the AAAS Project 2061 Benchmarks for Science Literacy, and the National Science Education Standards. The CLEAN Website hosts 100+ resources, that represent the leading edge of climate and energy science resources for the classroom. In addition, there are "Teaching About" pages for each of the Climate Literacy Essential Principles that explain why the particular Essential Principle is important, why it is difficult to teach, information on how to effectively teach it, and points to resources in the collection that can be used to teach it at the middle-school, high-school, and undergraduate levels.

The collection is continuing to grow to include additional classroom activities, interactives, visualizations, videos, and laboratory demonstrations. About 60 of these resources have passed our rigorous review process up to the final step – having passed our basic science review we now need to obtain expert science reviews. During the poster session and throughout the meeting we will demonstrate the web site, describe the professional development activities, and would like to engage you to provide a science review of those resources for which you have scientific expertise.

Submitted by: *Tamara Ledley, TERC / Climate Literacy Network,*
Tamara_Ledley@terc.edu

The Data Quality Screening Service*

Christopher Lynnes, Richard Strub, Thomas Hearty, Robert Wolfe, Suraiya Ahmad, Cid Praderas, Karen Horrocks, Ivan Tcheridnitchenko, Stephan Zednik, Peter Fox

Working with quality control information in remote sensing data can be exceedingly complex and difficult. Users must understand and create code to handle complicated conditions, bitfields, endianness, etc. The Data Quality Screening System (DQSS) implements this quality control on behalf of the user, producing an output file of the same structure as the input, but with bad data values masked out (set as fill). DQSS uses an ontology at its core. This allows one codebase to handle similar (but not identical) quality control schemes across instruments and missions. DQSS has been operational for AIRS Level 2 Standard Retrievals as a Web Service at the Goddard Earth Sciences Data and Information Services Center. We have recently added support for MODIS Level 2 Water Vapor as a post-processing option in the MODIS L1 and Atmospheres Archive and Distribution System (LAADS) , with MODIS Level 2 Aerosols and MLS Level 2 products to follow.

Submitted by: *Christopher Lynnes, NASA/GSFC, Christopher.S.Lynnes@nasa.gov*

Highlights from CIRES Education & Outreach

McCaffrey, M., S. Buhr, A. Gold, S. Lynds, E. Kellagher

The Education and Outreach group for CIRES, the Cooperative Institute for Research in Environmental Sciences at the University of Colorado at Boulder, is active across the spectrum of geosciences education, including teacher and scientist professional development, digital learning resources and courses, graduate student fellowships, exhibits, student events and after-school clubs and project evaluation. Our climate education projects are bearing fruit; for example, the NSF-funded Climate Literacy and Energy Awareness Network (CLEAN) digital resource collection went live November 1, 2010. CIRES scientists are engaged in our work through broader impacts components on research projects, as stars of the video screen, presenters, reviewers, and learning resource providers. We support young scientists through fellowships, conduct climate communication training, and provide educational expertise to research projects. CIRES Education and Outreach also offer a series of workshops scheduled for the spring and summer, including a workshop series on Oceans and Climate, as well as review camps for the CLEAN pathway project. The ICEE-- Inspiring Climate Education Excellence funded by NASA GCCE-- is developing self-directed online modules for teachers through NASA and NSF Broader Impacts funding. A traveling exhibit about the changing Earth is under development and will tour rural libraries nationally. Kits and curriculum to be used after school are available or under development focused on space weather, geomagnetism, weather and water.

Submitted by: *Mark McCaffrey, CIRES- University of Colorado at Boulder,*
mark.mccaffrey@colorado.edu

ESIP Federation Network: Priorities and Opportunities for Partner Engagement

Carol B. Meyer, Erin M. Robinson, Foundation for Earth Science

As an organization, ESIP optimizes collaboration and fostering connections through in-person meetings and virtually through collaboration space on the Web. The networked, community-driven approach largely is aimed at fostering Earth science interoperability – for data, systems, people and organizations. This synergy between collaboration and broad expertise allows the ESIP Federation to play an important coordination role for the Earth science data and technology community. The ESIP Federation is fostering the development of a research community that cuts across traditional discipline and related boundaries, enabling communities to share tools, data and technology. Ultimately, this coordination across sectors and communities will address problems central to access and use of Earth science data and information, allow Earth science research to be of higher quality and done more quickly, and leverage the work of the many communities contributing to Earth science knowledge. The ESIP Federation is at a strategic crossroads with the development of these important opportunities.

This set of posters will display (1) the strategic goals and activities the Federation is involved in. (2) and (3) will be interactive network maps that members will add their own connections to other ESIP member organizations and ESIP collaboration activities. (4) will invite members to sign up and get involved in current ESIP activities.

Submitted by: *Carol Meyer, Foundation for Earth Science, carolbmeyer@esipfed.org*

DataONE: A Virtual Data Center for the Biological, Ecological and Environmental Sciences

William Michener, Amber Budden, Rebecca Koskela, Dave Viegla, and the DataONE Team

Addressing the Earth's environmental problems requires that we change the ways that we do science; harness the enormity of existing data; develop new methods to combine, analyze, and visualize diverse data resources; create new, long-lasting cyberinfrastructure; and re-envision many of our longstanding institutions.

DataONE (Observation Network for Earth) represents a new virtual organization whose goal is to enable new science and knowledge creation through universal access to data about life on earth and the environment that sustains it. DataONE is designed to be the foundation for new innovative environmental science through a distributed framework and sustainable cyberinfrastructure that meets the needs of science and society for open, persistent, robust, and secure access to well-described and easily discovered Earth observational data.

Supported by the U.S. National Science Foundation, DataONE will ensure the preservation and access to multi-scale, multi-discipline, and multi-national science data. DataONE is transdisciplinary, making biological data available from the genome to the ecosystem; making environmental data available from atmospheric, ecological, hydrological, and oceanographic sources; providing secure and long-term preservation and access; and engaging scientists, land-managers, policy makers, students, educators, and the public through logical access and intuitive visualizations. Most importantly, DataONE will serve a broader range of science domains both directly and through the interoperability with the DataONE distributed network.

Submitted by: *William Michener, University of New Mexico,*
william.michener@gmail.com

NASA's ECHO Reverb - The Next Generation Earth Science Discovery Tool

Matthew Cechini, Dan Pilone, Andrew Mitchell

The EOS ClearingHouse (ECHO) is a metadata catalog of NASA's EOS data and a registry for related data services. Earth scientists can access the data and services by using general or community-tailored clients that access ECHO's data and service holdings. WIST, the Warehouse Inventory Search Tool, has been the primary web-based client for discovering and ordering cross-discipline data from all of ECHO's metadata holdings for many years and has served the Earth Science community well. Working closely with this community, the ECHO team identified a need to develop the next generation EOS data and service discovery tool.

The ECHO Team set out to achieve the following goals:

- Enhanced User Experience – Users should be presented with enhanced user experience whereby they are more easily directed to their data or services of interest. Users should be able to download their data in no more than 3 page transitions.
- Enhanced Data Discovery – Users should be able to discover additional datasets that may enhance their research.
- Integrated Data & Service Discovery and Invocation – Users should be able to discover and invoke services associated with their data of interest.
- Modern Technology Platform – Client application development and testing should take advantage of modern technologies to improve the quality and testability of the underlying code, along with allowing for a more modern user interface.

After a year long design, development, and testing process, the ECHO team is proud to announce the successful Operational release of Reverb – The Next Generation Earth Science Discovery Tool.

Reverb was developed in a fast-paced agile development process requiring constant interaction between the developers, product owners, customers, and end-users. Targeted and open beta testing phases were utilized to gather feedback from Reverb users. This feedback led to significant improvements in the Reverb interface that greatly enhance the user's experience. Reverb provides a success story of close community involvement to produce an enhanced earth science discovery platform.

Submitted by: *Andrew Mitchell, NASA GSFC (ESDIS), andrew.e.mitchell@nasa.gov*

To Observe the Earth and Visualize the Future

John D. Moore

The advantage of using remotely sensed data and imagery is that much can be learned about geographic locations, many which cannot be easily accessed, if at all. For the first time in human history, the entire surface of Planet Earth can be viewed, analyzed and interpreted. Scientists, educators, and students have therefore, the capability of looking at the planet as a total global system, a sum of integrated systems, physically interacting in a constantly changing fluid and dynamic state. Students can begin to observe Planet Earth from both outside and inside the classroom, and from the earth (ground) and from a space perspective. An educational model can therefore be used, i.e. SPACE to EARTH: EARTH to SPACE (SEES Model). Science education programs such as the GLOBE Program an international environmental/science education project, allows students to conduct ground based observations and measurements that are used by the scientific community. Cutting edge applications of CubeSats in the K-12 community will be introduced as part of the "BLUECUBE Project".

Submitted by: *John Moore, NSF Geosciences, mr.moore.john@gmail.com*

New Approaches to Semantic Web Service Discovery: Provenance, Annotations, and ESIP

Tom Narock and Victoria Yoon

Semantic web services utilize semantic markup to enable machine-readable service descriptions and automated discovery. Despite the many advances in this research area there are still several open questions, especially in regards to e-Science applications. This poster highlights some of these challenges and discusses the author's work in this area. In particular, ideas for real-world applications and evaluations within ESIP will be discussed.

Submitted by: *Tom Narock, NASA/Goddard, Thomas.W.Narock@nasa.gov*

Earth Science Data In Digital Object Repository Framework Architecture: The ESDORA Project

Jerry Pan, Christopher Lenhardt, Biva Shrestha, Robert Cook, Giri Palanisamy

There is an array of challenges associated with preserving, managing, and using contemporary scientific data. Large volume, multiple formats and data services, and the lack of a coherent mechanism for metadata/data management are some of the common issues across data centers. It is often difficult to preserve the data history and lineage information, along with other descriptive metadata, hindering the true science value for the archived data products. In this on-going project, we use a digital object abstraction architecture as the information/knowledge framework to address these challenges. The system we are building are based on these open-source frameworks: Fedora-Commons Repository, Drupal Content Management System, Islandora Drupal Modules, and Apache Solr Search Engine. A sophisticated RDF store within the Fedora-Commons Repository is used for storing knowledge on data lineage, dissemination services, and text-based metadata. Each digital object is encoded in XML for long-term preservation of the content and relations among the digital items. The software architecture provides a flexible, modularized framework for adding pluggable user-oriented functionality, and the RDF semantic store provides a foundation for many possible further utilizations, including provide full-fledged Earth Science ontology for data interpretation or lineage tracking. We are continue to build the system to be a complete active archive system for Earth Science data resources, to include ingestion, archiving, distribution, and discovery functionalities.

Submitted by: *Jerry Pan, ORNL, pany@ornl.gov*

XML Form Builder: A Generic Metadata Editor System in Drupal*

Jerry Yun Pan, Nigel Banks

We are developing a set of Drupal modules to facilitate a generic software system to enter and manage XML-based structural metadata. In a nutshell, the software facilitates a metadata editor by two functions. First, an administrator can design a form based on an XML schema and its instances. The form definition is named and stored in the Drupal database as an XML blob content. Second, users in an editor role would use the persisted XML definition to render an actual metadata entry GUI, for creating or editing a metadata record. Behind the scene, the form definition XML is transformed into PHP arrays for rendering via Drupal Form API. The form submission is then handled on the backend and left open to options through a set of hooks (APIs). It will be trivial to store the metadata contents as actual XML files or storage/archive systems. Although still under active development, many features are planned, such as auto completion, prepopulation of forms, partial saving, as well as automatic schema validation.

We will demonstrate a sample editor using the FGDC metadata standard. We will choose a few elements to design the form, save to the database, and invoke the form for actual data entry and editing. We will also demonstrate the use of definition templates in the form definition phase, by using export and import function of an existing form definition. Form pre-population and input validation will also be covered.

Submitted by: *Jerry Pan, ORNL, pany@ornl.gov*

Mine Your Data: GLIDER brings data mining to the masses

Rahul Ramachandran, Sara Graves, Todd Berendes, Manil Maskey

Satellite imagery can be mined to extract thematic information, which has increasingly been used as a source of information for making policy decisions. The uses of the 'mined' information can vary from military applications such as detecting assets of interest to science applications such as characterizing land-use/land cover change at local, regional and global scales. Mining and extracting thematic information using satellite imagery is a non-trivial task that requires a user to perform complex sequence of steps.

UAHuntsville has developed GLIDER, a freely available tool that simplifies mining of satellite imagery. GLIDER provides a suite of image processing algorithms for imagery enhancement along with pattern recognition and data mining algorithms for both parametric and non-parametric information extraction. This poster will showcase some of GLIDER's many features using four case studies. The first case study will focus on the use of false color composites to highlight and distinguish features of interest within satellite imagery such as smoke. The ability to apply any mathematical formulae on different spectral bands and visualize the result will be covered in the second use case. The third use case will employ unsupervised classification algorithms to segment the image into meaningful classes. The final use case will focus on supervised classification covering sample selection, creating workflows for training, testing and the final application to create a thematic map.

Submitted by: *Rahul Ramachandran, Information Technology and Systems Center
University of Alabama in Huntsville, rahul.ramachandran@uah.edu*

Can you build an iphone app without needing a developer?*

Rahul Ramachandran

At the last summer meeting, a study was proposed to investigate whether one can create an iphone app without needing the help of a developer. This study was driven by emergence of new tools targeting non-developers allowing them to build a mobile app. The proposed study comprised of two components. First, systematically evaluate different tools to create mobile apps along the dimensions of mobile app features and costs. Second, create an ESIP iPhone app prototype using some of these tools. The content for ESIP mobile app prototype is extracted from the ESIP website.

The initial assessment classified the currently available tools to create mobile app tools into two classes. The tools that fall under the first class require no programming and the content for the mobile apps are feed either via a web site RSS feed or manually entered. These tools follow the analogy of website hosting services where these services provide a set of templates for minor customizations and allow users to enter content (text, pictures) to create their own website. This class of tools creates the mobile apps using a set of templates while pulling the content either from an external site or from their own server storing the user generated content. The second class of tools requires programming but the code can be written in more popular languages such as Javascript rather than Objective C. The other advantage of the second class of tools is that they allow a developer to create and use a single code base that can then be mapped to different mobile platforms such as iOS, Android etc.

Two simple ESIP prototypes were created as part of the second component of this study. The first prototype used AppMakr tool and required no programming. The second iPhone prototype was custom written in Objective C. The two prototypes will be demonstrated during the poster session.

The study concludes that question posed for investigation does not have a simple yes or no answer. The existing tools make it relatively easy to quickly create a mobile app if one already have a website, and the associated costs are reasonable. However, if the mobile app has requirements that need customization then one needs to work with a mobile app developer. Furthermore, with the emergence and eventual acceptance of HTML5, the need to create native mobile apps might be moot.

Submitted by: *Rahul Ramachandran, Information Technology and Systems Center
University of Alabama in Huntsville, rahul.ramachandran@uah.edu*

S2S: Search Service Ontology and Web Application

Eric Rozell, Peter Fox, Stace Beaulieu, Andrew Maffei

We present S2S, a novel framework for deploying customizable user interfaces to support the search and analysis of data from multiple repositories across heterogeneous standards. Designed within the context of oceanography, S2S was created to support diverse data products and services. The framework leverages semantic-annotation capabilities of web service descriptions to connect service functionality with constructs in the S2S ontology. Our research methods follow the Semantic Web methodology and technology development process from Fox et al., which focuses on scientific use cases and close interactions with science domain experts throughout the project lifecycle. The significance of this work is the provision of a search service ontology, which provides abstract constructs for describing web services, along with a vocabulary that couples those constructs with abstract user interface definitions. To date, we have applied S2S in the development of a faceted browsing platform, which has been used to create search interfaces for the Biological and Chemical Oceanographic Data Management Office at Woods Hole Oceanographic Institution and for the International Dataset Catalog Search from the Linked Open Government Data group at the Tetherless World Constellation.

Submitted by: *Eric Rozell, Rensselaer Polytechnic Institute, rozele@rpi.edu*

Digital Earth Watch and Picture Post*

Annette Schloss, Jeffrey Beaudry, Fabio Carrera

Digital Earth Watch and the Picture Post network are programs for citizens, educators and students to learn to monitor their environment using simple tools and digital photographs and to analyze change over time. Picture Post is a permanent 8-sided platform for taking repeat photographs of the landscape and sharing them over the Internet on the Picture Post website. This poster will show demonstration Picture Post projects that monitor phenology (and connect with the National Phenology Network and Project Budburst), storm damage on an island off the coast of Maine, and others. We will also demonstrate our new android application for submitting picture post pictures and for setting up "virtual" picture posts in areas where installing a permanent structure is not practical or possible.

Submitted by: *Annette Schloss, University of New Hampshire, annette.schloss@unh.edu*

A Quality Assurance framework for Earth Observation

Stensaas, Chander, Fox, and Greening

This poster provides a description of the Quality Assurance framework for Earth Observation (QA4EO) and the intent of establishing common process for quality across earth datasets.

The Quality Assurance Framework for Earth Observation (QA4EO) has been established as a Committee on Earth Observation Satellites (CEOS)'s Working Group on Calibration and Validation (WGCV) initiative, in response to the Group on Earth Observation (GEO)'s vision for a Global Earth Observation System of Systems (GEOSS). The aim is to produce an operational framework to facilitate interoperability and harmonization of GEO systems. This strategy is based upon a set of operational guidelines derived from "best practices" for implementation by the community. Three dedicated QA4EO workshops have been held since its inception to bring together experts from around the world. Discussions held at and around the workshops led to the drafting of the QA4EO principles and a set of associated guidelines. This poster will discuss this information.

Submitted by: *Gregory Stensaas, USGS Earth Resources Observation and Science (EROS) Center, stensaas@usgs.gov*

Importance of Data Quality Information at the Discovery Level: Assisting Users in Determining Potential Value and Reliability of Data

Stevens, Tyler. Olsen, Lola. Ritz, Scott. Morahan, Michael.

Providing quality information for data sets at the data discovery/collection level provides value for users in determining known limitations for the data sets offered. Subsequently, users can make more informed decisions regarding the value and confidence in their data sets of choice.

Currently, GCMD staff members are working with the Goddard Earth Sciences Data and Information Services Center (GES DISC) to determine the quality attributes needed for describing MEaSUREs products. Holding open dialogues with the community and gauging users' needs for evaluating data quality are critical aspects of providing significant and useful information for the user. Feedback from our user community is critical in integrating useful modifications to the Directory Interchange Format's (DIF) metadata. This poster will illustrate data quality information represented in NASA's Global Change Master Directory's metadata records (the DIFs), collaborative methods used to communicate with the science community, along with future plans and user feedback on how to offer guidance for data set providers in documenting complete and useful quality information.

Submitted by: *Tyler Stevens, NASA, Tyler.B.Stevens@nasa.gov*

NSIDC's Green Data Center

Ronald L. S. Weaver, David Gallaher

We will present an update on the design, build, and testing of the energy conservation measures we have put in place in our computer room.

Submitted by: *Ronald Weaver, NSIDC/CIRES - Univ of Colorado, ronald.weaver@colorado.edu*

Data Visualization in WorldWide Telescope*

Yan Xu

The WorldWide Telescope is a software-visualization environment that enables your computer to function as a virtual telescope to zoom out to the sky or zoom in to the earth. It offers unique 4-D visualization, 3-D space + time, of data and information about the universe and our planet. It allows scientists to easily aggregate data from various sources and therefore provides a one-stop platform for extended experience of research and education.

Submitted by: *Yan Xu, Ph.D., Microsoft Research, yanxu@microsoft.com*

Plenary Speaker Bios



Sean Fox

Technical Director

Science Education Resource Center (SERC) at
Carleton College



Sean Fox is the Technical Director of the Science Education Resource Center (SERC) at Carleton College. He leads the technical efforts that support SERC's suite of science education collaborations: <http://serc.carleton.edu>

Trained as a physicist, Fox has been running web sites that support science education since 1994. In 2002 he helped establish SERC where he provides technical vision and development expertise to projects ranging from K12 geoscience curriculum development (the Earth Exploration Toolbook) to national-scale faculty professional development (On the Cutting Edge) as well as organizations such the National Association of Geoscience Teachers. He has been part of a number of community efforts, such as the DLESE Data Access Working Group, to articulate the challenges of effectively using real data in the classroom.

A central element in his work has been the development of an online publishing system, the SERC CMS, explicitly designed to support the needs of projects sharing information among educators. This system now supports websites that draw millions of visitors each year including use by over one third of all geoscience faculty in the U.S.

Through these projects he has had the opportunity to work closely with a diverse group of educators, curriculum developers and science education leaders; helping them find ways to support their project goals through innovative uses of technology.

Kerstin Lehnert, PhD

Senior Research Scientist

Lamont-Doherty Earth Observatory, Columbia University

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

Kerstin Lehnert is a Senior Research Scientist at the Lamont-Doherty Earth Observatory at Columbia University, a research institution for the Earth Sciences and a key component of Columbia University's [Earth Institute](#). At the Observatory, Kerstin is Director of the Integrated Earth Data Applications (IEDA) Research Group (www.iedadata.org), an NSF-funded data facility that develops and operates digital data collections for observational field and analytical data from the Earth, Ocean, and Polar Sciences. IEDA includes, among other systems, the Marine Geoscience Data System, the PetDB and SedDB databases, the EarthChem Data Network, and the System for Earth Sample Registration.

Kerstin has a background in the Earth Sciences and holds a PhD in igneous petrology from the University of Freiburg in Breisgau, Germany, for a dissertation on the genesis of exotic magmatic rocks called carbonatites. Before coming to the US, Kerstin worked for 11 years at the Max-Planck-Institute for Chemistry in Mainz, Germany. She joined the Lamont-Doherty Earth Observatory of Columbia University in 1996, where she has held positions as Senior Research Staff Associate in the Geochemistry Division, overseeing analytical labs and database development, and as Administrative Director for Research in the LDEO Directorate, serving as the primary advisor to the Director of the Observatory.

Kerstin's interests in Geoinformatics focus on the preservation, access, and synthesis of sample-based observational data, with specific focus on geochemical and petrological data. Kerstin has led the development of data models for sample-based observations and the design of interactive web-based tools for data search, retrieval, and synthesis. Kerstin has worked closely with the science community, developing standards for data documentation and reporting. A central effort has been the implementation of registration and identification services for Earth samples, developing the International Geo Sample Number IGSN as a unique identifier for samples and the System for Earth Sample Registration. Kerstin has presented extensively about sample-based data requirements and systems, as well as social and cultural aspects of developing cyberinfrastructure for the Geosciences at more than 50 conferences, workshops, short-courses, and seminars.

Kerstin is an officer in the Geoinformatics Division of the Geological Society of America, member of the Executive Committee of the AGU Earth and Space Science Informatics Focus Group, and member of the scientific program committee of the European Geoscience Union. Kerstin is a member of the Unidata Policy Committee and the Board of the NASA SEDAC Long-Term Archive.

Kerstin is married to Steven Goldstein, Professor in the Department of Earth & Environmental Sciences at Columbia University. Kerstin has three children, age 13, 23, and 28.

Nick Mangus

Physical Scientist

Office of Air Quality Planning and Standards, U.S. EPA



Nick Mangus is a Physical Scientist with the U.S. Environmental Protection Agency. He works in the Office of Air Quality Planning and Standards in Research Triangle Park, NC. He is involved in most aspects of data collection, management and dissemination for the office. He spends most of his time on the Air Quality System (AQS) team and is the system manager for the AQS Data Mart, the public-facing database with all of the EPA's air quality data.

Nick is originally from Huntsville, Alabama. He received a Bachelor of Mechanical Engineering degree from Auburn University in 1990 and an MS in Atmospheric Sciences from the University of Illinois in 1993. He has been with the EPA since 1994, starting in the Acid Rain program and moving to his current organization in 1998.

William Michener, PhD

Professor and Director of e-Science Initiatives for
University Libraries

University of New Mexico



William Michener is Professor and Director of e-Science Initiatives for University Libraries at the University of New Mexico. He has a PhD in Biological Oceanography from the University of South Carolina and has published extensively in marine science, as well as the ecological and information sciences. During the past decade he has directed several large interdisciplinary research programs and cyberinfrastructure projects including the NSF Biocomplexity Program, the Development Program for the NSF-funded Long-Term Ecological Research Network, the New Mexico DoE and NSF EPSCoR Programs, and numerous cyberinfrastructure projects that focus on developing information technologies for the biological, ecological, and environmental sciences. He is Project Director for the Data Observation Network for Earth (DataONE)—a large DataNet project supported by the NSF and is involved in research related to sustainability of cyberinfrastructure, development of federated data systems, and community engagement and education. He serves as Associate Editor for *Ecological Informatics* and Editor of the Ecological Society of America's *Ecological Archives*.

Glenn K. Rutledge

Physical Scientist/Meteorologist

NOMADS Team Leader

Data Access and Application Branch of NOAA's National Climatic Data Center



Glenn K. Rutledge is a Meteorologist and a Physical Scientist and Team Leader within the Data Access and Applications Branch at NOAA's National Climatic Data Center (NCDC) in Asheville NC. Glenn's 34-year career spans the US Navy, and NOAA's National Ocean Service (NOS), the National Weather Service (NWS), and the National Satellite, Data, and Information Service (NESDIS).

From 2004-2006, Mr. Rutledge served as co-Chair of the White House Office of Science and Technology Policy (OSTP), Committee on Environment & Natural Resources (CENR), Interagency Working Group for the Integrated Earth Observations System (IEOS) data management sub-group. Glenn was lead climate writer on NOAA's Environmental Data Management Report to Congress in 2005 and 2007. Glenn also served as the US-GEO representative to the Open Geospatial Consortium (OGC).

In his many years within the NWS, Glenn rose to serve as the Senior Science and Operations Officer (acting); and the NOAAPort Data Manager under the Advanced Weather Information Processing System (AWIPS). Glenn was also on-air meteorologist for the NOAA-Public Broadcasting System (PBS) television program "AM Weather". Glenn spent many years using and advancing numerical weather prediction models as an operational meteorologist for the National Centers for Environmental Prediction (NCEP), and Hurricane Meteorologist for the National Hurricane Center; and Team Lead at the US Navy-NOAA Joint Ice Center.

Glenn initiated and is currently Project Manager for the NOAA Operational Model Archive and Distribution System (NOMADS), as well as the new NOAA National Climate Model Portal (NCMP). NCMP will be advancing the national and international collaboration for distributed format independent access to weather and climate models. NCDC hosts the archive component of NOMADS (<http://nomads.ncdc.noaa.gov/>) the first digital archive of numerical weather prediction models in the U.S., while the NWS hosts the operational component of NOMADS across the US.

Glenn has numerous papers and publications including most recently co-author of the Bulletin of the American Meteorological Society's *Global State of the Climate Report* (2011); and *The NCEP Climate Forecast System Reanalysis* (Saha, 2010); and *The Twentieth Century Reanalysis Project*; Quart. J. Roy. Meteor. Soc., (Compo, 2009).

Gregory Stensaas

Remote Sensing Technologies Project Manager

CEOSS CVWG Chair

U.S. Geologic Survey



Gregory L. Stensaas graduated from South Dakota State University with a Bachelor of Science degree in Mechanical Engineering, and has taken post-graduate classes in Engineering and Information Technology at the University of Nebraska–Lincoln and South Dakota State University. Greg has electro-optical and infrared systems exploitation, development, simulation, and test experience as an electronics engineer and operations research analyst for the U.S. Department of Defense.

Greg's experience also includes being principal engineer for the NASA Earth Observing System Distributed Active Archive Center and systems engineer for the U.S. Geological Survey (USGS) Landsat Data Continuity Mission at the Earth Resources Observation and Science (EROS) Center.

Greg continues to work at USGS EROS in Sioux Falls, South Dakota and is currently serving as the USGS Remote Sensing Technologies Project Manager, where he is responsible for film and digital sensor calibration, satellite calibration, and system/product characterization and evaluation. Greg was the USGS point of contact for the Landsat Data Gap Study Team and continues to work many cross-calibration efforts.

Greg is a co-chair of the Joint Agency Commercial Imagery Evaluation (JACIE) program and the chair of the Inter-Agency Digital Imagery Working Group. He is was the Primary Data Acquisition Division (PDAD) Director for the American Society of Photogrammetry and Remote Sensing (ASPRS) and is currently the chair of the Committee on Earth Observation (CEOS) Working Group on Calibration and Validation (WGCV). Greg is a major contributor to and is currently leading Global Earth Observation System of Systems Quality Assurance Strategy task for the Group on Earth Observation (GEO).

Greg has strong interest in the areas of sensor design and systems application, laboratory and *in situ* calibration and characterization processes, information storage and access, and system and data quality assurance. Greg has written many publications and presentations in these areas.

Juan E. Vargas, PhD

Principal Research Manager

Microsoft Research's Extreme Computing Group (MSR/XCG)



Juan serves as Principal Research Manager for the Microsoft Research's Extreme Computing Group (MSR/XCG) since 2009. He was the University Relations Manager at Google from 2007 to 2009. From 1988 to 2007 Juan was a Professor of the Computer Science and Engineering Department at the University of South Carolina, where he taught and conducted research on data mining, Bayesian networks, embedded and distributed systems, sensor networks, and biomedical engineering. His research is published in more than 60 articles, several book chapters, and many conferences. He earned a PhD in Biomedical Engineering from Vanderbilt University, a master's degree from the Center for Advanced Studies of the National Polytechnic Institute, Mexico, CINVESTAV-IPN (that included the basic sciences of the medical program), and a bachelor's degree in Electrical Engineering from the University of Texas at El Paso (UTEP). Juan received the 2008 Gold Nugget Award from UTEP, given each year to exceptional graduates from the College of Engineering.

Kevin Ward

Co-Founder and Team Leader

NASA Earth Observatory



Mr. Ward is one of the founders and team leader of NASA's award-winning Earth Observatory web site, as well as the co-founder of NASA's Visible Earth web site and founder and architect of the NASA Earth Observations (NEO) system. In these roles he has worked to develop platforms for the creation, storage, and delivery of web-accessible resources including articles, visualizations, and Earth science data-derived imagery. With a master's degree in library and information science and 16 years of experience, he has worked to create system architectures that leverage input from distributed teams -- the Earth Observatory team collaborates from multiple locations and NEO collaborates with many data providers who create imagery for the collection -- as well as provide output using a variety of standardized methods. His work and projects have been recognized many times by NASA, Scientific American, Popular Science, The International Academy of Digital Arts and Sciences, and others.