Welcome to the 3rd Annual NOAA Environmental Data Management Conference

Ensuring NOAA's data are documented, discoverable, accessible and preserved

Tuesday, May 15 to **Thursday, May 17**

Marriott Inn and Conference Center at UMD

3501 University Blvd, East
Hyattsville, Maryland

PURPOSE This conference will advance environmental data management at NOAA by:

- Highlighting progress in specific elements of the data life cycle
- Fostering discussions and networking to address key environmental data management issues facing NOAA today

GOALS & OUTCOMES Inform the implementation of Procedural Directives for specific life-cycle components per NOAA Administrative Order 212-15

- Promote cross-NOAA collaboration in environmental data management
- Provide an opportunity for broader community interactions by fostering Communities of Practice
- Identify and document best practices in environmental data management
- Identify current capabilities that can be leveraged across NOAA
- Assess how well NOAA is doing in its key environmental data management functions
- Promote and socialize the concept of data management as a core NOAA business practice

NOAA 2012 EDM Conference Acknowledgements

The NOAA EDM Conference is proud to go green this year by providing your convention materials entirely online in an interface designed to be used with your laptop and other mobile devices.

The NOAA Environmental Data Management Committee (EDMC) would like to acknowledge the 2012 EDM Conference Program Development Team (PDT) for their extensive work to develop this year's conference program and content:

Krisa Arzayus
Cecile Daniels
Jeff de La Beaujardière
Ruth Duerr
Hernan Garcia
Heather Gilbert
Scott Hausman
Ted Habermann
Kim Jenkins
Dan Kowal
Lewis McCulloch
Tony LaVoi
Carol Lenhardt
Carmel Ortiz
Nancy Ritchey
Erin Robinson
Jim Sargent
Derrick Snowden
Adam Steckel
Harry Tabak

NOAA would like to thank the Federation of Earth Science Partners (ESIP) and The Bridge Group (TBG) for their support in organizing this conference.

Need help? If you require further information or assistance, please visit the registration station or contact one of the following conference organizer:

Lewis McCulloch	(617) 767-6582
Adam Steckel	(202) 957-5715
Carol Lenhardt	(919) 345-5864
Erin Robinson	(314) 369-9954

NOAA 2012 EDM Conference Schedule-at-a-Glance

DAY 1 ✦ Tuesday, May 15

8:30	**Registration Open** *Gallery outside Chesapeake Ballroom*	
9:00	**Welcome Plenary** *Chair: Jeff de La Beaujardière*	
9:45	**Joe Klimavicz** *NOAA Chief Information Officer*	
10:15	*Announcements / Breakout Logistics*	
10:30	Break	
10:45	**Keynote: Mike Daconta, InCadence** *Information Management and Semantics in the Cloud*	
12:00	**Lunch** (on your own)	
1:15	**Day 1 Breakout**	**Data Centers, Future of CLASS** *Chair: Nancy Ritchey* *Chesapeake Ballroom*
		Data Citation *Chair: Dan Kowal* *Room 2103 (Second Floor)*
2:45	Break	
3:00	**Keynote: Dave Jones, StormCenter** *Real-Time Cross-Agency Collaboration and Data Sharing for Decision Support - Serving Society with NOAA Data*	
4:00	**Lightning Talks** *Chair: Jeff de La Beaujardière*	
5:00	**Networking Session** *Room 2103 (Second Floor)*	
7:00	*End of Day 1*	

DAY 2 ✦ Wednesday, May 16

8:30	**Registration Open** *Gallery outside Chesapeake Ballroom*	
9:00	**Day 2 Morning Breakout**	**Data Access and Discovery, Part 1** *Chair: Ted Habermann* *Room 1105 (Concourse Level)*
		Data Preservation *Chair: Nancy Ritchey* *Room 0109 (Lower Level)*
Break		**Data Integration Projects** *Chair: Carmel Ortiz* *Room 0105 (Lower Level)*
		Ocean Biological & Chemical Data *Chairs: Hernan Garcia, Krisa Arzayus* *Chasen Family Room (Concourse Level)*
12:00	**Lunch** (on your own)	
1:30	**Day 2 Afternoon Breakout**	**Data Access and Discovery, Part 2** *Chair: Derrick Snowden* *Room 1105 (Concourse Level)*
		Cloud Computing *Chair: Scott Hausman* *Room 0105 (Lower Level)*
Break		**Data Management Planning** *Chair: Ruth Duerr* *Chasen Family Room (Concourse Level)*
		Data Documentation *Chair: Ted Habermann* *Room 0109 (Lower Level)*
4:30	*End of Day 2*	

DAY 3 ✦ Thursday, May 17

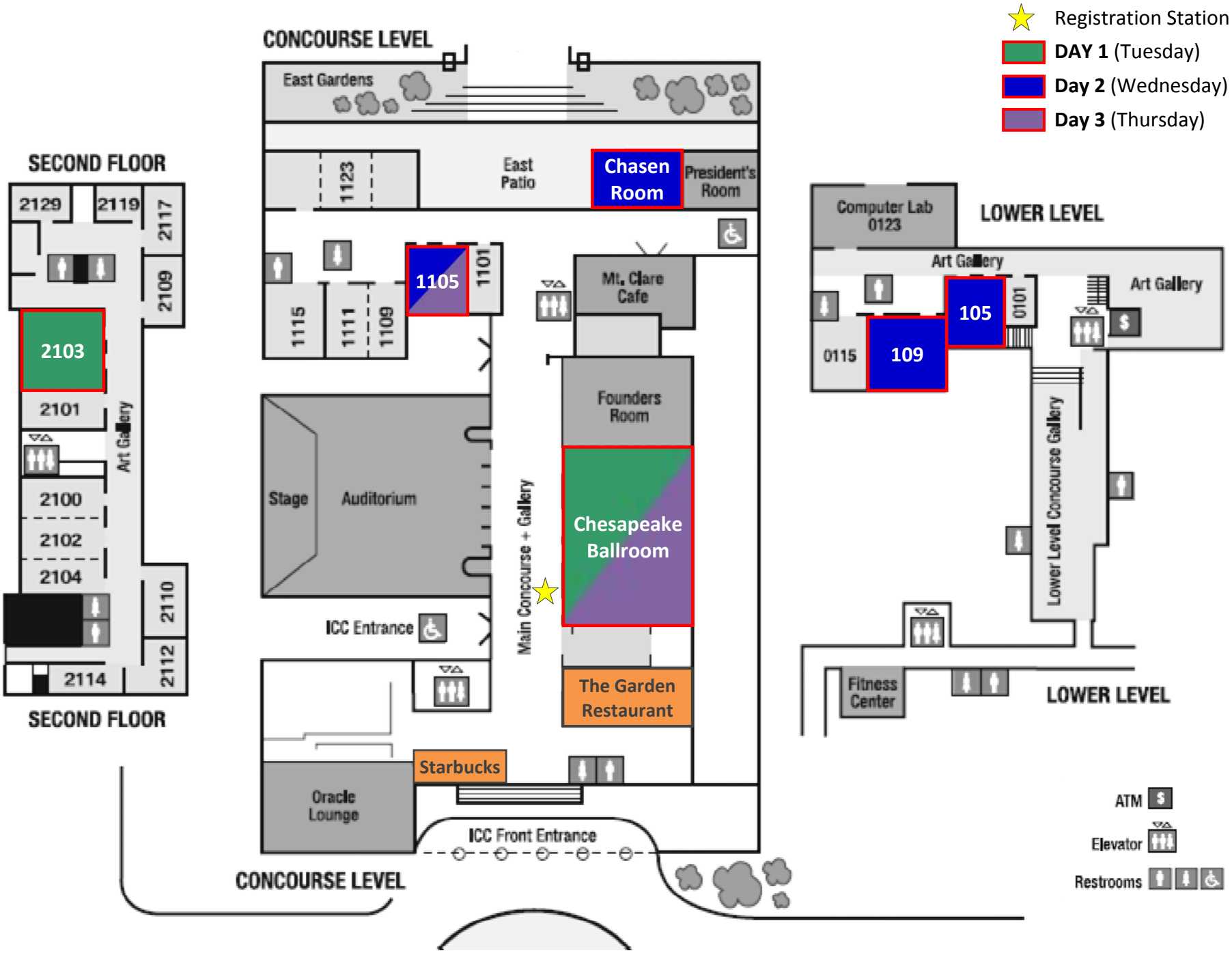
8:30	**Registration Open** *Gallery outside Chesapeake Ballroom*	
9:00	**Intro to Geoportals & GeoPlatforms** *Chairs: Kim Jenkins, Tony Lavoi*	
9:25	*Discuss Data Portal & Catalog Relationships*	
9:45	**Day 3 Breakout**	Geoportals Servers, Catalogs
		NOAA GeoPlatform/Technical *Room 1105 (Concourse Level)*
10:30	Break	
10:45	**Keynote: Peter Fox, RPI** *Interagency GeoData 2012 opportunities: Broadening the Community and the Discussion*	
11:30	**Closing Plenary** *Chair: Jeff de La Beaujardière* *Awards, wrap-up, and next steps*	
12:30	*End of Conference*	

Where to go...

All plenary sessions are located in the Chesapeake Ballroom on the Concourse Level

Refer to schedule for locations of breakouts and open sessions

MAP of the Marriott Inn and Conference Center (also referred to as the "Marriott ICC")



Where To Go listing… all conference sessions and where they are located

DAY 1 ✦ Tuesday, May 15		
Morning Sessions	**Room**	**Level**
Registration Station, Morning coffee	Gallery outside Chesapeake	Concourse
Plenary: Welcome, Joe Klimavicz	Chesapeake Ballroom	Concourse
Keynote by Mike Daconta	Chesapeake Ballroom	Concourse
Afternoon Sessions	**Room**	**Level**
Breakout: Data Centers and the Future of CLASS	Chesapeake Ballroom	Concourse
Breakout: Data Citation	Room 2103	Second Floor
Plenary: Keynote by Dave Jones, Lightning Talks	Chesapeake Ballroom	Concourse
Networking Session	Room 2103	Second Floor

DAY 2 ✦ Wednesday, May 15		
Morning Sessions	**Room**	**Level**
Registration Station	Gallery outside Chesapeake	Concourse
Morning coffee (two service stations)	Outside breakout rooms	Concourse/Lower
Breakout: Data Access and Discovery, Part 1	Room 1105	Concourse
Breakout: Data Preservation	Room 109	Lower Level
Breakout: Data Integration Projects	Room 105	Lower Level
Breakout: Ocean Biological & Chemical Data	Chasen Family Room	Concourse
Afternoon Sessions	**Room**	**Level**
Breakout: Data Access and Discovery, Part 2	Room 1105	Concourse
Breakout: Cloud Computing	Room 105	Lower
Breakout: Data Management Planning	Chasen Family Room	Concourse
Breakout: Data Documentation	Room 109	Lower

DAY 3 ✦ Thursday, May 17		
Morning Sessions	**Room**	**Level**
Registration Station, Morning coffee	Gallery outside Chesapeake	Concourse
Plenary: Data Portals and Catalogs	Chesapeake Ballroom	Concourse
Breakout: Geoportal Servers and Catalogs	Chesapeake Ballroom	Concourse
Breakout: NOAA GeoPlatform (Technical Training)	Room 1105	Concourse
Plenary: Keynote by Peter Fox, Closing	Chesapeake Ballroom	Concourse

NOAA 2012 Environmental Data Management Conference

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Conference Chair

Jeff de La Beaujardière

Data Management Architect and EDMC Chair

National Oceanic & Atmospheric Administration

Dr. Jeff de La Beaujardière has been NOAA's Data Management Architect since May 2011 and was recently named Chair of the Environmental Data Management Committee (EDMC). Jeff also chairs the NOAA-wide Data Management Integration Team and represents NOAA in the Open Geospatial Consortium (OGC) and the International Committee on Information Technology Standards/Geographic Information Systems (INCITS/L1), and participates in various NOAA, interagency and international groups aimed at enhancing data sharing and interoperability. In these roles he works toward the vision that NOAA's rich and unique data holdings shall be discoverable, accessible, well-documented, compatible, and preserved for future use.

Previously, Jeff was Senior Systems Architect for the U.S. Integrated Ocean Observing System (IOOS) Program Office at NOAA, where he guided the implementation of interoperability standards by IOOS partners for data access and discovery. Prior to joining NOAA, Jeff spent 13 years at NASA Goddard Space Flight Center in such roles as Geospatial One-Stop Portal Manager; web services developer for the Modeling, Analysis and Prediction (MAP'05) project, the GLOBE Program, and the Public Use of Remote Sensing Data Program; and NASA's representative to OGC and to the Unidata Policy Committee. He participated in the first OGC Web Mapping Testbed in 1998, implemented the first Web Map Server (WMS) at NASA, and was Editor of the WMS specification for OGC and the International Organization for Standardization (ISO).

Dr. de La Beaujardière holds a BA in Physics (1985) from the University of California at Berkeley and a PhD in Astrophysics (1990) from the University of Colorado at Boulder.

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NOAA Leadership Speaker

Joe Klimavicz

Chief Information Officer & Director, High Performance Computing & Communications

National Oceanic & Atmospheric Administration

Mr. Joseph F. Klimavicz was named National Oceanic and Atmospheric Administration (NOAA) Chief Information Officer (CIO) and Director, High Performance Computing and Communications in January 2007. In this position, he is responsible for implementing the Clinger-Cohen Act, Federal Information Security Management Act, and other statutory requirements regarding the acquisition, management, and use of NOAA's information and information technology resources, to include NOAA's high performance computing and communications infrastructure. Mr. Klimavicz is also responsible for NOAA's Homeland Security Program to ensure business continuity in event of a terrorist attack, major disaster, or other emergency, and he serves as the Department of Commerce Senior Agency Official for Geospatial Information (SAOGI). He previously served in the Department of Defense (DOD) as the National Geospatial-Intelligence Agency Deputy CIO, and as the DOD SAOGI.

Mr. Klimavicz has served over 20 years in the federal government. He began his career with the Central Intelligence Agency (CIA) as an imagery scientist, developing photogrammetric math models in the National Photographic Interpretation Center, and subsequently, served in line management positions within the CIA and the DOD, leading the development of information technology investment plans, and managing information technology acquisitions and operations.

In March 2010, Mr. Klimavicz was elected President of the Government Information Technology Executive Council (GITEC), a non-profit organization of Government Executives formed in 1996 to support Government delivery of high quality and cost-effective services.

Mr. Klimavicz received a Bachelor of Science degree from Virginia Polytechnic Institute and State University in 1983 and a Master of Engineering degree from Virginia Polytechnic Institute and State University in 1988. Major areas of study included geodesy, photogrammetry and imaging systems.

Mr. Klimavicz lives in Vienna, VA., with his wife, Brenda and their three daughters.

NOAA 2012 Environmental Data Management Conference

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Keynote Speaker (Tuesday morning)

Information Management and Semantics in the Cloud

Michael C. Daconta

Vice President
Advanced Technology for InCadence Strategic Solutions

Mr. Daconta is the Vice President of Advanced Technology for InCadence Strategic Solutions (http://www.incadencecorp.com) where he currently guides multiple advanced technology projects for government and commercial customers. Mr. Daconta is a well-known author, lecturer and columnist having authored or co-authored 11 technical books, numerous magazine articles and online columns. He also writes the monthly "Reality Check" column for Government Computer News. Previously, Mr. Daconta was the Metadata Program Manager for the Department of Homeland Security where he spearheaded data standardization, stewardship, and metadata registration. He was selected by the Office of Management and Budget and the Federal CIO Council to lead the Federal Enterprise Architecture (FEA) Data Reference Model (DRM) Working group which successfully delivered DRM V2.0 in December 2005.

In conjunction with the Department of Justice he launched the National Information Exchange Model (NIEM) to provide a reusable set of core XML components for building exchange packages. For his work at DHS, Mr. Daconta was selected to the prestigious "Fed 100" by Federal Computer Week magazine.

Other past assignments include the Chief Architect of the Defense Intelligence Agency's Virtual Knowledge Base Project and designer of the electronic mortgage XML standard for Fannie Mae. Mr. Daconta recently was awarded patent #7299408 by the USPTO for his electronic validator he invented for Fannie Mae. His most recent book is entitled, "Information As Product: How to deliver the right information to the right person at the right time" His other books cover the Semantic Web, XML, XUL, Java, C++ and C.

He earned his Masters degree in Computer Science from Nova Southeastern University and his bachelor's degree in Computer Science from New York University.

Abstract: ***Information Management and Semantics in the Cloud***

In this presentation, Mr. Daconta will examine the emergence of cloud computing on federal IT, semantics and information management. Mr. Daconta will clearly explain the various types of clouds as described by NIST, a brief history of cloud computing and the state of standards for the cloud. Furthermore, Mr. Daconta will explain what Big Data is, how you can leverage it and the emerging

standards, semantics and security required for it. Additionally, Mr. Daconta will discuss the key considerations agencies should address in developing a cloud strategy. The audience will take away an understanding of cloud computing, how standards, semantics and information management can be implemented in the cloud, the state of cloud interoperability and the key elements of a cloud adoption and migration strategy. The cloud is coming and every IT, RM and IM professional needs to be ready for it.

Data Centers and the Future of CLASS

Session Time
Tuesday, May 15
1:15 to 2:45 PM

Session Chair
Nancy Ritchey, NOAA NESDIS, NCDC

Other Speakers
David Kendig, CLASS
Dean Carter, NOAA NESDIS, NCDC
Brennan Hay, NOAA NESDIS, CID

Rapporteur
Carol Lenhardt, ESIP

Session Objectives

- Understand the operational impacts of high volume satellite missions on CLASS Operations
- Discover the proposed evolution of CLASS to support future archival needs
- Consider other records requiring storage
- Discuss the archival needs of NOAA and its implications for the future

Summary Agenda

Lessons Learned from NPP

David Kendig, CLASS

CLASS Present and Future

Dean Carter, NOAA NESDIS, NCDC

A Tale of 3 Storage Requirements

Brennan Hay, NOAA NIESDIS, CID

Open Discussion

Data Citation

Session Time
Tuesday, May 15
1:15 to 2:45 PM

Session Chair
Dan Kowal, NOAA NESDIS, NGDC

Other Speakers
Ruth Duerr, NSIDC and the Data Conservancy
John Moses, NASA
Jeff de La Beaujardière, NOAA

Rapporteur
Erin Robinson, ESIP

Session Objectives

- Introduce topic of data citation and unique identifiers for datasets
- Discuss development of a NOAA policy on dataset identifiers and citation

Summary Agenda

Introduction to Data Citation and ESIP Guidelines

Ruth Duerr, NSIDC and the Data Conservancy

NASA's Approach to Earth Science Data Citation

John Moses, NASA

Plans for NOAA Data Citation Policy

Jeff de La Beaujardière, NOAA

Open Discussion

NOAA 2012 Environmental Data Management Conference

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Keynote Speaker (Tuesday afternoon)

Real-Time Cross-Agency Collaboration and Data Sharing for Decision Support through a Common Operating Platform (COP) - Serving Society with NOAA Data

Dave Jones

Founder, President and CEO
StormCenter Communications, Inc.

Principal Investigator
NASA Applied Sciences Program

Dubbed an "Applications Futurist" by NASA, Dave Jones combines years of experience in meteorology, broadcasting and Earth observation with a vision to enable real-time scientific data visualization and collaboration to enhance decision making. Dave worked at NASA's Goddard Space Flight Center (GSFC) as a research support meteorologist then went on to develop television weather graphics systems (which became WSI's Weather Producer) and traveled the nation training TV meteorologists and weathercasters on how to use these systems to forecast and produce weathercasts.

In 1992, Dave made his television debut on NBC4 in Washington, DC and worked there until the end of 2000. There Dave was the primary meteorologist for the weekend evening newscasts and also substituted for Chief Meteorologist Bob Ryan during the weekly newscasts when needed. Dave appeared on NBC's Today Show as well as NBC Asia and NBC Europe in the mid 1990's. While at NBC, Dave conceived of and won funding from NASA to create the nation's first television news weather website, WeatherNet4 which paved the way for use of the Internet throughout television news and weather.

Since forming StormCenter Communications in 2001, the company has performed in some very high profile events. StormCenter technology and communications skills were put to work by the U.S. State Department during the UNFCCC COP16 Climate Conference in Cancun, MX in 2010. As an official U.S. Delegation member, StormCenter delivered 7-10 presentations per day on climate science, adaptation, remote sensing applications and international collaboration for enhanced decision making to more than 150 delegations representing most nations in attendance.

In 2006, Dave was the AGU & ESIP Federation Charles Falkenberg Awardee – The award is given to a scientist under the age of 45 who has contributed to the quality of life, economic opportunities and stewardship of the planet through the use of earth science information and to the public awareness of

the importance of understanding our planet. (Charles Falkenberg was an exceptional Earth scientist who was killed, along with his family, on the flight that struck the Pentagon on September 11, 2001)

Today, StormCenter is working with federal, state, regional and local agencies to improve real-time sharing of data for improved decision making. The company has been selected to provide a key technology to assist the NWS in implementing its new mission of providing Impact-based decision support services (IDSS) to other government partners for improved situational awareness and communications. Government agencies from FEMA to NWS to DHS as well as state agencies have all expressed interest in improving situational awareness through a Common Operating Platform (COP) that can access multiple data sources and model outputs. Currently StormCenter's technology is being used within FEMA, NWS, States of Texas, Alaska, Arizona and Florida.

Dave has addressed several National Academy of Science (NAS), National Research Council (NRC) and NASA and NOAA boards convened to investigate the transition from research to operations and advised the Secretary of Interior to address the future of Land Remote Sensing. Dave recently served on a NOAA Science Advisory Board Task Force focusing on Climate Services and the private sector and is one of the main organizers for the annual Glen Gerberg Weather and Climate Summit that brings together TV meteorologists and scientists for improved understanding of weather technologies and climate science. Dave is also on the AMS2013 planning committee and is helping to introducing the ***1st Symposium on Building a Weather Ready Nation: Enhancing Our Nation's Readiness, Responsiveness and Resilience to High Impact Weather Events*** (1WXFOREWARN) in January 2013 in Austin, TX. StormCenter was also recently invited as a partner and key speaker at the NWS Integrated Warning Team (IWT) Workshop in April 2012 for Emergency Managers in Collier County, Broward and Dade Counties in South Florida and was also invited to address the WMO Hurricane Committee Meeting (HC-3) in Jacksonville, FL (April 2012) on ***Real-Time data sharing and collaboration between NHC and RA-IV throughout the Caribbean***.

Dave is also a Past President of the Foundation for Earth Science, a US 501(c)3 Non-Profit Corporation, as well as a Past President of the Federation of Earth Science Information Partners (ESIP Federation).

Dave received his BS degree in Physical Sciences with a major in Meteorology and minors in math and computer science from the University of Maryland in 1987 and lives in Severna Park, Maryland with his wife and two daughters.

Abstract: ***Real-Time Cross-Agency Collaboration and Data Sharing for Decision Support through a Common Operating Platform (COP) - Serving Society with NOAA Data***

"We are drowning in information, while starving for wisdom. The world will henceforth be run by synthesizers, people able to put together the right information at the right time, think critically about it and make important choices wisely." – E.O. Wilson, Top Biologist in the U.S.

The quote above by Dr. Wilson has never been more true than today. NOAA gathers information every day from under the oceans, -over the oceans, through the atmosphere and out into space. This is necessary so we can better understand the Earth and its dynamics. While research is critical to move us forward with technology innovations that better prepare us for the future, it is the development and utilization of today's technologies that are being required to protect and serve.

NOAA data is invaluable to the entire process of understanding and predicting our weather and climate. Over the past few years we, as a nation, have experienced an increase in extreme weather events that have threatened and in some cases decimated cities and towns. These extreme events are likely to continue. As populations increase more and more people are placed in harm's way. Hazards and populations are intersecting at a rapid pace. Access to NOAA data leads to more informed citizens and thus saves lives. As Sy Sims says, "An educated consumer is our best customer."

Now is the time to put more of NOAA's data to work. The advances in geospatial data encoding and data collection, improvements in metadata, ontologies and formats can be harnessed to directly serve people when they want it and when the NEED it. NOAA's Environmental data will be more visible, accessible and independently understandable to users, but is most valuable when used in the right context and at the right time.

Access to the right data at the right time from the trusted authoritative source has always been the challenge to enhance decision making. Dave will show examples of NOAA data access and fusion for improved impact-based decision making which promotes cross-NOAA collaboration (and cross federal agency collaboration) through the use of a Common Operating Platform (COP). Innovation is the key to NOAA's future and data sharing benefits NOAA and the entire federal family by creating better opportunities for sharing and decision making for ALL hazards across ALL agencies both federal and state.

Federal government agencies have made and continue to make progress in sharing their data. Dave will show you how to collaborate with that data. As the National Weather Service works to make the nation "Weather Ready", it is great to see that NOAA is making their "Data Ready"!

NOAA 2012 EDM Conference

Lightning Talks

4:00 PM on Tuesday, May 15 in the Chesapeake Ballroom
MC Jeff de La Beaujardière, EDMC Chair

Speaker	Affiliation	Title of Talk
Becky Baltes	NOAA, US IOOS	Establishing a Standards-based approach to Glider Data
Margarita Gregg	NOAA NESDIS, NODC	NODC: Implementing a progressive model for environmental data stewardship
Ted Habermann	NOAA NESDIS, NGDC	New Documentation Conventions for netCDF and HDF
Scott Hausman	NOAA NESDIS, NCDC	The Future of CLASS
Chris MacDermaid	CIRA (Colorado State U) and NOAA OAR, ESRL	EarthCube Layered Architecture Concept Group: Exploring interoperability mechanisms between the multiple protocols used by geoscience community technologies
David E. McClure, Jr.	Data.gov and NOAA OCIO	Open Government Data - A Service for the Government and Public
Kevin O'Brien	NOAA UW, JISAO	The Unified Access Framework (UAF)
Bob Simons	NOAA NMFS, SWFSC ERD	Guidelines for Data Distribution Systems
Jebb Stewart	NOAA OAR, ESRL/CIRA	NOAA Earth Information System (NEIS)
Karen Stocks	OOI Cyberinfrastructure	Data Management in the Ocean Observatories Cyberinfrastructure

Data Access and Discovery, Part 1

Session Time
Wednesday, May 16
9:00 AM to 12:00 PM

Session Chair
Ted Habermann, NOAA NESDIS, NGDC

Other Presenters
George Percivall, OGC
Kevin O'Brien, NOAA / UW / JISAO
Eoin Howlett, RPS-ASA

Rapporteur
Matt Austin, NOAA TPIO

Session Abstract
The purpose of this session is to provide background on standard data services primarily for gridded data (the following session will deal with in-situ data). We will do this from three points of view: OGC, THREDDS, and real-world.

Summary Agenda

9:00 to 9:45 — **Overview of OGC Services Architecture**
George Percivall, OGC

9:45 to 10:30 — **THREDDS: Clean Catalogs and OGC Services**
Kevin O'Brien, NOAA / UW / JISAO

10:30 to 11:00 — **Break**

11:00 to 11:30 — **THREDDS Metadata Conventions and Services**
Ted Habermann, NOAA NESDIS, NGDC

11:30 to 12:00 — **Lessons learned in implementation of open standards and technologies - IOOS Coastal and Ocean Modeling Testbed (COMT)**
Eoin Howlett, RPS-ASA

Data Preservation

Session Time

Wednesday, May 16
9:00 AM to 12:00 PM

Session Chair

Nancy Ritchey, NOAA NESDIS, NCDC

Other Speakers

Dan Kowal, NOAA NESDIS, NGDC
Brennan Hay, NOAA NESDIS, CID
Cecile Daniels, NOAA OMAO
Philip Jones, STG NCDC

Rapporteur

Carol Lenhardt, ESIP

Objectives

- Understand the nuances of data preservation
- Approaches for preserving data
- Discuss needed improvement to NOAA's data preservation approach. How can NOAA meet the challenges of Data Preservation in an environment of declining budget?

Summary Agenda

Trusted Digital Repositories

Dan Kowal, NOAA NESDIS, NGDC

Lessons Learned from Litigation Holds

Brennan Hay, NOAA NESDIS, CID

Rolling Deck to Repository

Cecile Daniels, NOAA OMAO

Tools for Facilitating Data Set Documentation

Philip Jones, STG NCDC

Ongoing Challenges of Data Preservation

Nancy Ritchey, NOAA NESDIS, NCDC

Open Discussion

Data Integration Projects

Session Time
Wednesday, May 16
9:00 AM to 12:00 PM

Session Chair
Carmel Ortiz, NOAA NWS (contractor)

Other Presenters
Derrick Snowden, NOAA IOOS
Mark Miller, NOAA NWS
Jebb Stewart, NOAA, ESRL/GSD (CIRA)
Jim Calkins, NOAA NWS
La'Tanya Burton, NOAA NWS
Jordan Alpert, NOAA NWS, NCEP

Rapporteur
Lewis McCulloch, NOAA

Session Abstract
The purpose of this session is to give participants a better understanding of a) several data integration projects across NOAA, b) key enabling technologies, c) tools/outcomes that can be leveraged across NOAA and d) challenges. Short presentations will be given about each of the projects listed below followed by a facilitated question and answer session to explore how these projects are dealing with various data integration challenges.

Summary Agenda

9:00 to 9:15 **Overview of the session**
Carmel Ortiz, NOAA NWS (contractor)

9:15 to 9:30 **Integrated Ocean Observing System (IOOS)**
Derrick Snowden, NOAA IOOS

9:30 to 9:45 **NextGen 4D Weather Data Cube**
Mark Miller, NOAA NWS

9:45 to 10:00 **NOAA Earth Information Services (NEIS)**
Jebb Stewart, NOAA, ESRL/GSD (CIRA)

10:00 to 10:15 **AWIPS-II Data Delivery**
Jim Calkins, NOAA NWS

10:15 to 10:30 **WMO Information System (WIS)**
La'Tanya Burton, NOAA NWS

10:30 to 10:45 **NOMADS: NOAA Operational Model Archive and Distribution System**
Jordan Alpert, NOAA NWS, NCEP

10:45 to 11:00 **Break**

11:15 to 11:45	**Facilitated Discussion** *Carmel Ortiz, NOAA/NWS (contractor), Presenters*
11:45 to 12:00	**Session wrap-up**

Ocean Biological & Chemical Data

Session Time

Wednesday, May 16
9:00 AM to 12:00 PM

Session Co-chairs

Hernan Garcia, NOAA NESDIS, NODC
Krisa Arzayus, NOAA NESDIS, NODC

Other Presenters

Troy Kanemura, NOAA NMFS
Hassan Moustahfid, US IOOS
Cyndy Chandler, BCO-DMO, WHOI
Todd O'Brien, NOAA NMFS
Dave Whitall, NOAA NOS
Jim Sargent, NOAA NMFS
Isaac Kaplan, NOAA NMFS

Rapporteur

Erin Robinson, ESIP

Session Abstract

Managing access, discovery, value-added, and scientific stewardship of scientific biological and chemical data at NOAA requires a multi-disciplinary integrated approach. This approach requires scientists and data managers to work closely to integrate data and information across multiple observing systems and temporal and spatial scales about ecosystems. We hope to utilize this session to develop a data management framework to improve sharing and integrating biological and chemical information across NOAA in ways useful for decision making.

Summary Agenda

9:00 to 9:05 **Welcome to Ocean Biological & Chemical Data**

Hernan Garcia, NOAA NESDIS

9:05 to 9:20 **Data Download Tool for the NOAA Coral Reef Ecosystem Division's (CRED) biological data**

Troy Kanemura, NOAA NMFS

9:20 to 9:35 **U.S. Integrated Ocean Observing System (U.S. IOOS): Improving Biological Observing Data Integration and Dissemination**

Hassan Moustahfid, US IOOS

9:35 to 9:50 **Integrating data: A case study from the US GLOBEC and US JGOFS programs**

Cyndy Chandler, BCO-DMO, WHOI

9:50 to 10:05 **The COPEPOD Project**

Todd O'Brien, NOAA NMFS

10:05 to 10:20 **Consideration/lessons learned from the National Status and Trends Program as it relates to integrating biological and chemical data**

Dave Whitall, NOAA NOS

10:20 to 10:35 **Scientific Stewardship and Integration of Ocean Acidification Data**

Krisa Arzayus et al, NOAA NESDIS

10:35 to 10:50 **Enterprise Data Management (EDM): NOAA Fisheries' enterprise-wide approach for managing data**

Jim Sargent, NOAA NMFS

10:50 to 11:05 **Data needs for Integrated Ecosystem Assessments: an end-to-end modeling perspective**

Isaac Kaplan, NOAA NMFS

11:05 to 11:15 **Break**

11:15 to 12:00 **Open Discussion Portion**

The audience and presenters are cordially invited to participate in a open discussion to exchange ideas and lessons learned about the role of NOAA in scientific stewardship of the Biological and Chemical data. What can we do to improve transparent and timely data access, discovery, and data integration? By data integration we mean providing a data service that combines data (and metadata) across NOAA. Would a Biological and Chemical Data steering committee be useful to help coordinate across NOAA?

Topic Abstracts

U.S. Integrated Ocean Observing System (U.S. IOOS): Improving Biological Observing Data Integration and Dissemination

Hassan Moustahfid, US IOOS

This is a multi-agency, multi-partners effort to bring Federal, States agencies, Academic and Industry together to share/integrate their biological observing data (e.g. Fisheries Independent Surveys, Acoustic Surveys and Animal Telemetry data) using U.S. IOOS Data Management and Communication (DMAC) conventions and guidelines for standardized data access services, data formats, metadata, controlled vocabularies and other conventions and enable end users models and applications.

The COPEPOD Project

Todd O'Brien, NOAA NMFS

A successful "integrating data resource" must preserve in itself the identity and acknowledgement of the original data and investigators, it must serve its data in an understandable and immediately usable format to the data user, and it must maintain data integrity and quality throughout this entire process. The COPEPOD Project is an integrated plankton and ecosystems data suite designed to serve equally the original data provider, the data user, and the data itself. While COPEPOD only focuses on a narrow niche of the NOAA data and users market, its fifteen years of experiences and challenges are applicable to all chemical and biological data endeavors.

Enterprise Data Management (EDM): NOAA Fisheries' enterprise-wide approach for managing data

Jim Sargent, NOAA NMFS

In 2008 the NOAA Fisheries Leadership Council established the EDM program to create a culture in which a "NMFS customers can confidently find, access, and use our data," and, "To effect a cultural change in which all NMFS data are recognized and managed as a core agency resource, on par with financial and human resources." Jim will present an overview of the EDM program and its accomplishments and challenges over the past 3 years.

Scientific Stewardship and Integration of Ocean Acidification Data

Krisa Arzayus, Hernan Garcia, and Liqing Jiang, NOAA NESDIS

To support NOAA's Ocean Acidification Program and the scientific community, the National Oceanographic Data Center (NODC) will serve as the NOAA Ocean Acidification (OA) data management focal point by providing dedicated online data discovery, access, and long-term archival for a diverse range of OA data. This effort seeks to build a collaborative relationship with shared responsibilities among scientists, data managers, and NODC staff towards the implementation of an OA data stewardship system (OADS). This presentation will define scientific stewardship, provide examples of how that will be applied to ocean acidification data, and outline some of the early challenges we face building a comprehensive list of ocean acidification metadata (For information please contact NODC.Ocean.Acidification@noaa.gov).

Data Access and Discovery, Part 2

Session Time
Wednesday, May 16
1:30 to 4:30 PM

Session Chair
Derrick Snowden, NOAA, US IOOS Program

Other Presenters
Yonsook Ensloe, CT&S/NASA
Upendra Dadi, NOAA NESDIS, NODC
Bob Simons, NOAA NMFS
Karen Stocks, Ocean Observatories Initiative Cyberinfrastructure
Jeff de La Beaujardière, NOAA

Rapporteur
Martin Yapur, NOAA TPIO

Session Objectives

- Present CWIC catalog of satellite data
- Present and discuss solutions for providing standardized access to *in situ* data
- Begin development of a future (2013) NOAA policy on in situ and remotely-sensed data access and discovery

Summary Agenda

CEOS/WGISS Integrated Catalog (CWIC)

Yonsook Ensloe, CT&S/NASA

NODC templates for in situ data in CF/NetCDF

Upendra Dadi, NOAA NESDIS, NODC

ERDDAP and managing access to in situ data

Bob Simons, NOAA NMFS

SOS as a data access service within IOOS

Derrick Snowden, NOAA, US IOOS Program

OOI: Data management in near-real-time

Karen Stocks, Ocean Observatories Initiative Cyberinfrastructure

Open Discussion

Defining NOAA's Data Access & Discovery policy

Jeff de La Beaujardière, NOAA

Open Discussion

Cloud Computing

Session Time

Wednesday, May 16
1:30 to 4:30 PM

Session Chair

Scott Hausman, NOAA NESDIS, NCDC

Other Presenters

David Layton, NOAA OCIO
Ken Casey, NOAA NESDIS, NODC
Randy Warren, NOAA NOS, CSC
Matt Austin, NOAA TPIO
Micah Wengren, NOAA NOS
Chi Kang, NOAA WOC

Rapporteur

Kim Jenkins, NOAA NOS, MBO

Session Objectives

- Provide a corporate awareness of current cloud computing priorities and initiatives within the NOAA environmental data management community
- Discuss the current status and future direction of efforts to consolidate environmental data management functions to cloud resources
- Discuss opportunities for additional collaboration on cloud-related projects

Summary Agenda

NOAA Vision for Consolidation to the Cloud

David Layton, NOAA OCIO

Archive Access through Cloud Storage Prototype

Ken Casey, NOAA NESDIS, NODC

Sharing Geospatial Data in the Cloud, Part 1: GeoPlatform

Randy Warren, NOAA NOS, CSC

Sharing Geospatial Data in the Cloud, Part 2: GeoCloud and Open Source GIS Shared Hosting

Matt Austin, NOAA TPIO
Micah Wengren, NOAA NOS

Cloud Web Hosting at the Web Ops Center (WOC)

Chi Kang, NOAA WOC

Open Discussion

Data Management Planning

Session Time
Wednesday, May 16
1:30 to 4:30 PM

Session Chair
Ruth Duerr, NSIDC and the Data Conservancy

Other Presenters
Ingrid Guch, NOAA NESDIS, STAR
Jim Sargent, NOAA NMFS, SEFSC
Susan Gottfried, NOAA NESDIS, NODC NCDDC (GDIT contractor)

Rapporteur
Carol Lenhardt, ESIP

Session Abstract
The ESIP Federation, in cooperation with NOAA, seeks to share the community's knowledge on data management with scientists who increasingly need to be better data managers, as well as to support workforce development for new data management professionals. In this three hour session we will discuss the rationale for data management planning and the context of NOAA Directives; how to write and then implement your data management plan including such topics as dealing with data during the course of your research; working with a long term archive; as well as properly giving credit to other data producers.

Session Agenda

1:30 to 1:40 **Overview of the current DMP landscape at NOAA**

1:40 to 2:00 **Data Sharing for NOAA Grants Procedural Directive**

Ingrid Guch, NOAA NESDIS, STAR

The Data Sharing Procedural Directive for NOAA Grants was developed and approved this past year. Ingrid will give a brief overview of the new policy.

2:00 to 2:30 **Implementation of Data Management Planning Procedural Directive**

Jim Sargent, NOAA NMFS, SEFSC

The Data Management Planning procedural directive was developed and approved this past year. This year's focus will be on learning how to implement it and working together to making DMP a meaningful exercise that benefits all aspects of the data lifecycle. Jim will present the basic requirements laid out in the PD, and discuss the nascent workflow concepts for getting plans approved and submitted to the repository. He'll also talk about a collaborative approach to designing the wiki as a resource for those writing plans, with links to existing guidance, tools, examples, as well as a system for tracking issues.

Agenda continued on next page…

2:30 to 3:30	**Workshop on Data Management Planning** *Ruth Duerr, NSIDC and the Data Conservancy* Once you have a DMP, it is time to implement it! Ruth will walk through each of the sections of the DMP Template describing what you should think about when writing your plan as well as how to implement the plan during the course of your research. This includes such topics as working with a long-term archive; as well responsibly using data produced by others.
3:30 to 3:45	**Data Management Planning at the Office of Ocean Exploration** *Susan Gottfried, NOAA NESDIS, NODC NCDDC (GDIT contractor)* A brief talk about Data Management Planning at the Office of Ocean Exploration will serve as a jump off point for an open discussion of existing practices and experiences.
3:45 to 4:30	**Open discussion: Real-life examples, experiences, Q&A**

Data Documentation

Session Time
Wednesday, May 16
1:30 to 4:30 PM

Session Chair
Ted Habermann, NOAA NESDIS, NGDC

Other Presenters
Jaci Mize, NOAA NESDIS, NCDDC

Rapporteur
Erin Robinson, ESIP

Session Abstract

The purpose of this session is to increase awareness and understanding of the NOAA Documentation Directive across NOAA and to facilitate the transition of NOAA metadata from FGDC to ISO.

We will start with an overview of the directive and outline steps towards the goal of high-quality metadata and documentation for all NOAA observations, data, model results, and products. Jaci will then demonstrate critical techniques and tools that simplify editing ISO metadata using state-of-the-art XML editors (Oxygen, XML Spy). Finally, Ted will demonstrate how rubrics and the NOAA Data Management Wiki can be used for understanding the ISO Standards and improving collections of related metadata records.

Summary Agenda

1:30 to 2:00 — **An Overview of The NOAA Documentation Directive**

Ted Habermann, NOAA NESDIS, NGDC

2:00 to 3:00 — **Using schema, stylesheets, and transforms to help write ISO metadata**

Jaci Mize, NOAA NESDIS, NCDDC

3:00 to 3:30 — **Break**

3:30 to 4:30 — **Migrating from FGDC to ISO (web-accessible folders, spirals, rubrics, wiki)**

Ted Habermann, NOAA NESDIS, NGDC

Data Portals and Catalogs

Session Time

Thursday, May 17
9:00 to 10:30 AM

Session Co-chairs

Kim Jenkins, NOAA, OCIO
Tony LaVoi, NOAA OCIO

Other Presenters

Jeff de La Beaujardière, NOAA TPIO
Chris Musialek, GSA
Randy Warren, NOAA NOS, CSC

Rapporteurs

Matt Austin, NOAA TPIO
Erin Robinson, ESIP

Objectives

- Introduce geospatial data portals and catalogs that are either in use or emerging at the NOAA and National levels.
- Describe the current and future landscapes of these emerging technologies as they align with agency and National efforts for geospatial data access and discovery.
- Provide a forum for technical discussion of Geoportal Server implementations in NOAA and a technical training session on the NOAA GeoPlatform.

Session Agenda

9:00 to 9:05

Overview of Agenda & Objectives

Kim Jenkins, NOAA, OCIO

- Agenda Overview and Speakers Intro
- Objectives and Session Scope

9:05 to 9:25

Geoportals & GeoPlatforms – An Introduction

Kim Jenkins, NOAA, OCIO
Tony LaVoi, NOAA, OCIO

- Underlying Technologies
- NOAA Coordination and Management Approach
- Implementations and Examples in NOAA

9:25 to 9:55

Open Discussion on Data Portal and Catalog Relationships

Chris Musialek, GSA
Tony LaVoi, NOAA, OCIO
Jeff de La Beaujardière, NOAA TPIO

Discuss relationships of the two technologies: Geoportal Server & Geospatial Platform:

- National Landscape: current state of portals & catalogs (to include Data.gov, Geo.data.gov, ocean.data.gov, National GeoPlatform, etc.) and how these efforts relate to NOAA efforts (Musialek)
- Current state and future plans within NOAA (LaVoi)

	◆ Vision for NOAA Data Cataloging (de La Beaujardière) ◆ Question & Answer sessions
9:55 to 10:00	*Move into two technical breakout sessions*
10:00 to 10:30	**Technical Breakout Sessions**
Chesapeake Room	**Breakout option 1: Geoportals Servers and Data Catalogs** *Kim Jenkins, NOAA, OCIO* ◆ Snapshot of NOAA Geoportal sites ◆ Highlight custom code & collaborative resources ◆ Analysis of NOAA data catalogs
Room 1105	**Breakout option 2: NOAA GeoPlatform – Technical Training** *Randy Warren, NOAA NOS, CSC* ◆ Provide technical training for NOAA staff that would like to contribute to and collaborate within the NOAA GeoPlatform
10:30 to 10:45	**Break**

NOAA 2012 Environmental Data Management Conference

May 15 to 17 ✦ Marriott Inn and Conference Center at UMD College Park

Keynote Speaker (Thursday morning)

Interagency GeoData 2012 opportunities: Broadening the Community and the Discussion

Peter Fox

Chair, Tetherless World Constellation

Professor of Earth and Environmental Science and Computer Science at Rensselaer Polytechnic Institute

Peter Fox is a Tetherless World Constellation Chair and Professor of Earth and Environmental Science and Computer Science at Rensselaer Polytechnic Institute. He is also an adjunct scientist in Applied Ocean Physics and Engineering at the Woods Hole Oceanographic Institution. Previously, he was Chief Computational Scientist at the High Altitude Observatory of the National Center for Atmospheric Research. Fox has a B.Sc. (hons) and Ph.D. in Applied Mathematics (including physics and computer science) from Monash University. His research covers the fields of solar and solar-terrestrial physics, ocean and environmental informatics, computational and computer science, digital humanities, and distributed semantic data frameworks. The results are applied to large-scale distributed scientific repositories addressing the full life-cycle of data and information within specific science and engineering disciplines as well as among disciplines.

Fox is chair of the International Union of Geodesy and Geophysics Union Commission on Data and Information and past chair of the AGU Special Focus Group on Earth and Space Science Informatics, is an associate editor for the Earth Science Informatics journal, and is a member of the editorial board for Computers in Geosciences. Fox served on the International Council for Science's Strategic Coordinating Committee for Information and Data.

Fox was awarded the 2012 Martha Maiden Lifetime Achievement Award for service to the Earth Science Information community, and will receive the 2012 European Geosciences Union Ian McHarg Medal for significant contributions to Earth and Space Science Informatics.

Abstract: ***Interagency GeoData 2012 opportunities: Broadening the Community and the Discussion***

The obstacles EarthCube is trying to overcome in creating a community-driven interoperable geoscience- wide geoinformatics infrastructure are not new; but they have proven to be recalcitrant. In 2011, to open communication channels between major data providers, federal agencies, and cyberinfrastructure developers, a workshop (GeoData 2011) was convened by a joint NSF-USGS

identification of the need to hear from the broader 'Geo' community on a variety of data related matters as a lead up to Earthcube. While increasing attention needed to be paid to full life cycle of data, in the process of preparing and scoping the workshop two other hot issues were identified: integration and citation (both central to EarthCube), giving the workshop three subject areas to delve into as well as to explore connections among them. Invited participants were drawn from all 'Geo' disciplines, and beyond, from information, computer and library science, from academia, agency and commercial organizations, and from student to senior faculty/ administrators. The workshop diversity provided a rich exchange of ideas, experiences and challenges for GeoData. Many key findings and recommendations have been extracted from the detail breakout discussions and syntheses during and after the workshop. Topical categories included: metadata, standards, standards-based tools, culture, collaboration and workforce.

While technology gaps are still evident across the three topic areas, there is recognition that human factors dominate, and often limit progress and effectiveness. Organizational and resource factors that would lead to a solid understanding of the business case behind, for example, making data preservable and integratable, come at a cost that is not well documented or supported when resource decisions are made. GeoData 2012 plans to substantially advanced these discussions with continued focus on lifecycle issues and interagency and community conversations, in the context of the EarthCube.

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