

Joint Center for  
Intelligent Spatial Computing

# Portal Customization and Adoption

Products & Services Committee Task Report

Chaowei Phil Yang

Center of Intelligent Spatial Computing for Water/Energy Sciences

George Mason Univ., Fairfax, VA, 22030-4444



Federation of Earth Science  
Information Partners

**MAKING DATA MATTER**

1

ESIP 2011 Summer Meeting, July 12-15, Santa Fe

# Agenda

Joint Center for  
Intelligent Spatial Computing

## ■ History

- Earth Information Exchange R&D
- Interoperability
- Portal Management

## ■ Adoption

- GEOSS Clearinghouse
- Geospatial Platform
- Climate @ Home
- SilvaCarbon
- NASA NEWS Program

## ■ Conclusion



Federation of Earth Science  
Information Partners

**MAKING DATA MATTER**

ESIP 2011 Summer Meeting, July 12-15, Santa Fe

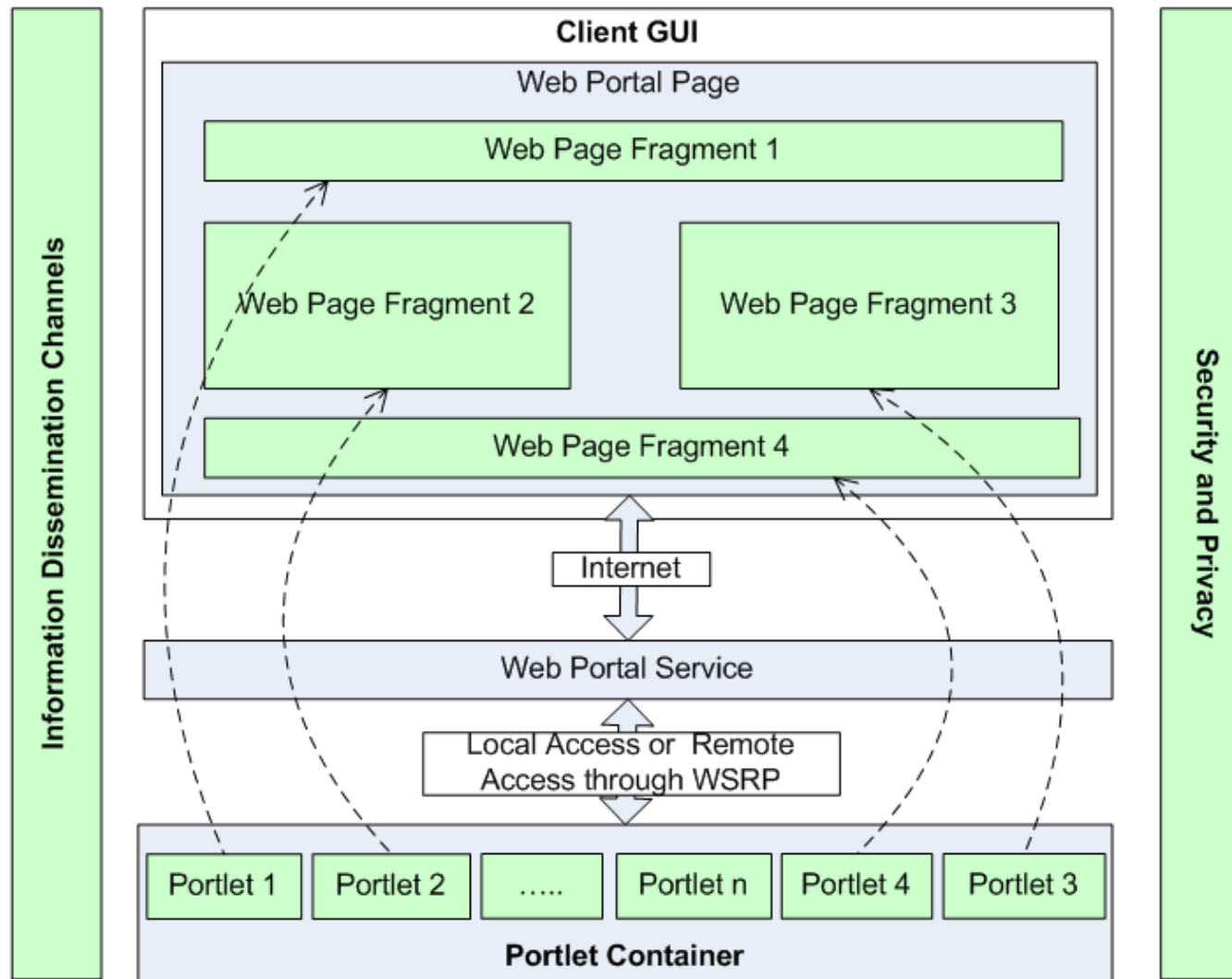


Figure 2. Web Portal Architecture

# Agenda

Joint Center for  
Intelligent Spatial Computing

## ■ History

- Earth Information Exchange R&D
- Interoperability
- Portal Management

## ■ Adoption

- GEOSS Clearinghouse
- Geospatial Platform
- Climate @ Home
- SilvaCarbon
- NASA NEWS Program

## ■ Conclusion



Federation of Earth Science  
Information Partners

**MAKING DATA MATTER**

ESIP 2011 Summer Meeting, July 12-15, Santa Fe



# GEOS Clearinghouse

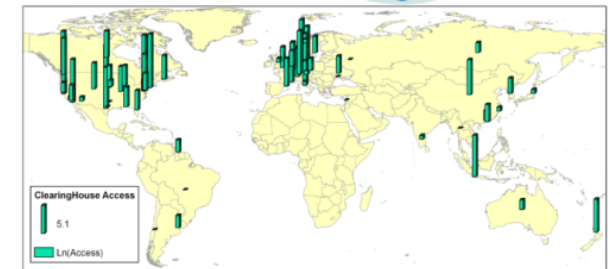
Intelligent Spatial Computing

## ❑ Objectives

- Share Global Earth Observation Data Among 140+ Countries to Address Global Challenges of Natural Hazards and Emergency Responses
- Support Global End Users to Discover, Access, and Utilize EO Data
- Provide Responses to End Users in Seconds

## ❑ Advanced Computing Technologies

- Cloud Computing (EC2 & Azure) Responds to Spike Massive Concurrent End Users
- Cloud DB (SQLAzure) Manages Millions to Billions of Metadata Records
- WebGIS & 5D Vis Tools to Visualizes EO Data



**MAKING DATA MATTER**

ESIP 2011 Summer Meeting, July 12-15, Santa Fe

GeoNetwork - The portal to spatial data and information - Windows Internet Explorer

http://clearinghouse.cisc.gmu.edu/geonetwork/srv/en/main.home

File Edit View Favorites Tools Help

DAEMON Tools DAEMON Tools Lite Astroburn Lite Weather Radio player Translate

Favorites New Tab (2) 相近的是什么意思\_翻译... New Tab Suggested Sites Web Slice Gallery GeoNetwork - The portal t...

GeoNetwork - The portal to spatial data and infor...

**GEO GROUP ON EARTH OBSERVATIONS** **GEOSS Clearinghouse**

Home | Contact us | Links | About | Help | Username Password

**WHAT?**

**WHERE?**



- Any -

**Search** Reset Advanced Options

▶ Air Quality  
 ▶ Applications  
 ▶ Audio/Video  
 ▶ CSR Branch  
 ▶ CSR Component  
 ▶ CSR Service  
 ▶ Case studies, best practices  
 ▶ Conference proceedings

**Show map**

**FIND INTERACTIVE MAPS, GIS DATASETS, SATELLITE IMAGERY AND RELATED APPLICATIONS**

**GEONETWORK'S PURPOSE IS:**

- To improve access to and integrated use of spatial data and information
- To support decision making
- To promote multidisciplinary approaches to sustainable development
- To enhance understanding of the benefits of geographic information

GeoNetwork opensource allows to easily share geographically referenced thematic information between different organizations. For more information please contact

**Featured map**

▶ **SCHEIDEKRUG, 32588\_5976, DTK5**

Bei diesem Kartenblatt handelt es sich um die Karte "Scheidekrug" mit der Blattnummer 32588\_5976. Herausgegeben wird dieses Kartenblatt durch: Bundesland Schleswig-Holstein. Die Kartenblätter (Raster

▶ ...more...



Done Internet | Protected Mode: Off 95%



Federation of Earth Science  
Information Partners

**MAKING DATA MATTER**

ESIP 2011 Summer Meeting, July 12-15, Santa Fe



# Geospatial Platform Demo

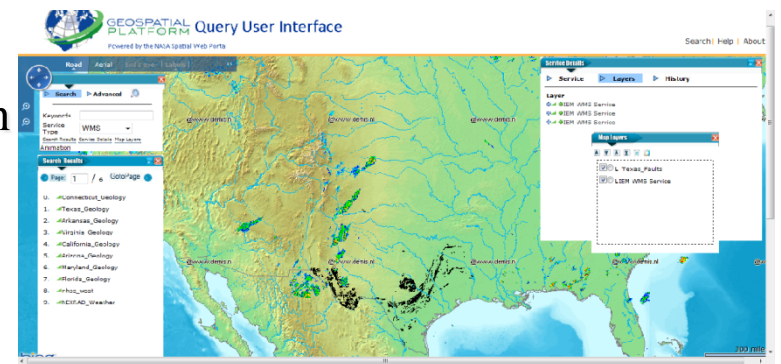
Intelligent Spatial Computing

## ❑ Objective

1. Interagency initiative to build the next generation NSDI
2. Demo is to test the possibility and potential functions
3. Compose a platform to enable geospatial needs, such as emergency response
4. Manage, share, and build on-the-fly GIS for scientific discoveries & applications

## ❑ Enabling Technologies

1. Cloud computing (EC2) provides elastic and on demand computing
2. WebGIS & 5D Visualization tools provide visualization capability
3. Cloud DB manages large amounts of data and metadata



Geospatial Platform - Windows Internet Explorer


http://wms.gmu.edu/geoplatform/

File Edit View Favorites Tools Help

DAEMON Tools Lite Astroburn Lite Weather Radio player Translate Facebook Calendar Map

Favorites New Tab (2) 相近的是什么意思\_翻译... New Tab Suggested Sites Web Slice Gallery GeoNetwork - The portal t... (0 unread) Yahoo! Mail, ra...

Geospatial Platform

 **GEOSPATIAL PLATFORM**

*GeoPlatform Web Presence* Phase I Phase II

Geospatial Query UI Geospatial Viewer

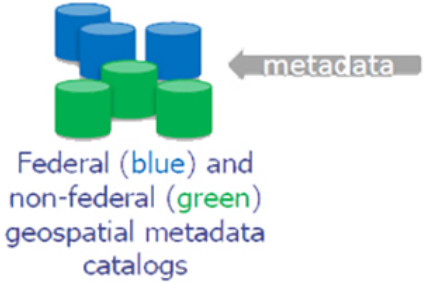
Geospatial Catalog Web Metadata Editor

Geospatial DSS Workbench

Geoprocessing Services

Geocoder Service

Geo-Enabler Tool

  
Federal (blue) and non-federal (green) geospatial metadata catalogs

*Geospatial Assets*

Data, Services, and Apps

Planned Geospatial Data Activities

Agency Geospatial Investment Information

Internet | Protected Mode: Off 110% 6:56 PM 6/16/2011



# Climate@Home

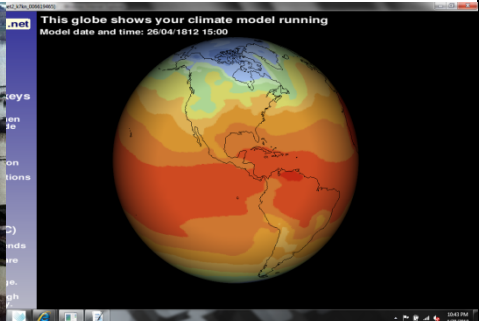
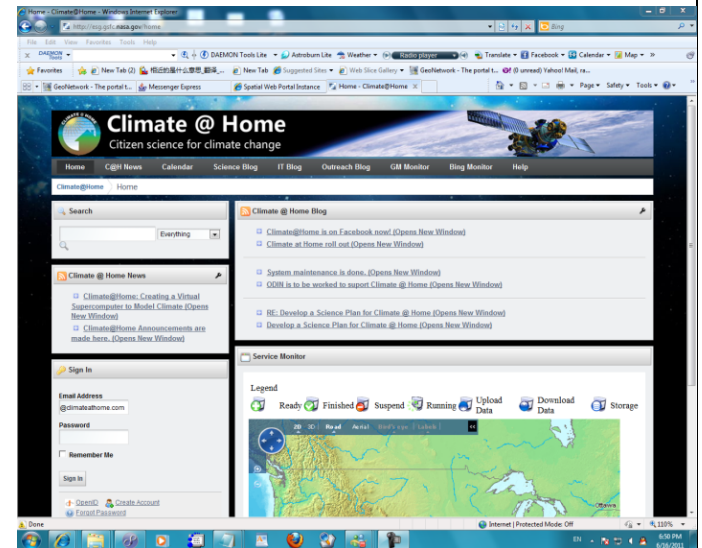
Intelligent Spatial Computing

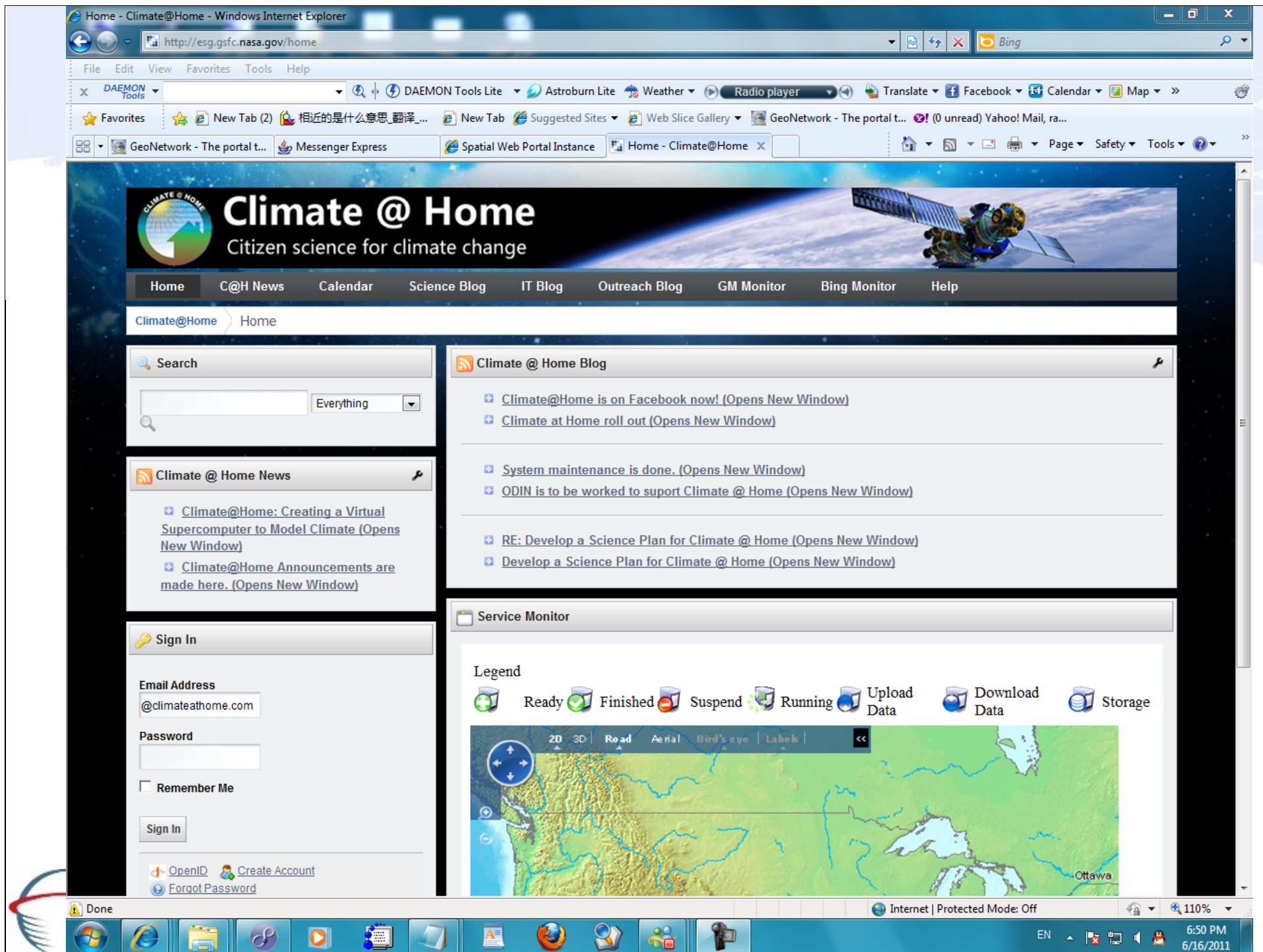
## Objective

1. Recruit citizens to help perform research vital to forecasting climate change
2. Determine the accuracy of a computer model for predicting climate change
3. Create a virtual supercomputing network across thousands of computers
4. Distribute climate change knowledge through social networking

## Enabling Technologies

1. Online portal for broad access and collaboration
2. Bing Maps, Google Maps providing visualization capability
3. Cloud computing (Azure) for dispatching models, managing data, and visualizing data.







# SilvaCarbon

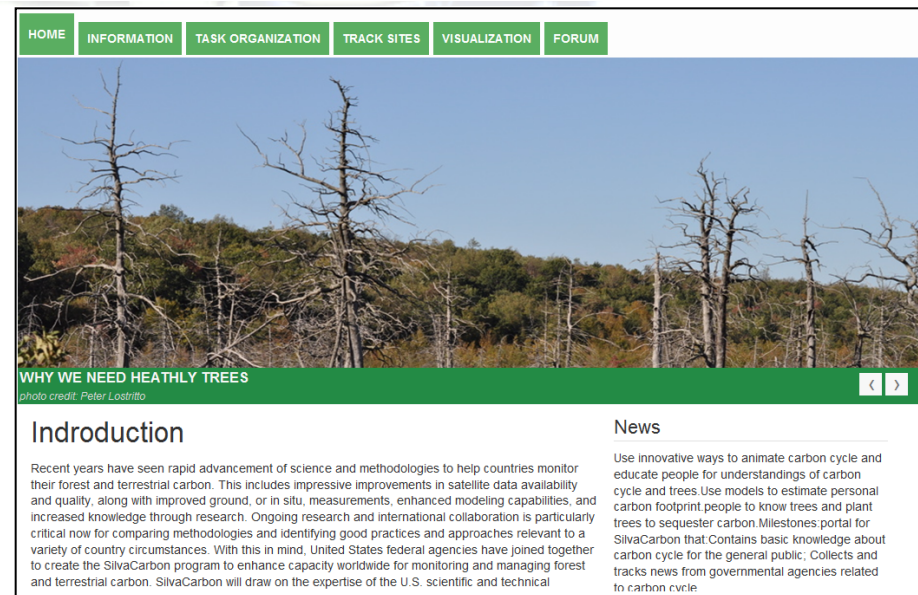
## Joint Center for Intelligent Spatial Computing

### Objectives

1. Demonstrate and compare forest and terrestrial carbon management based on scientifically sounding measurement and monitoring methodologies
2. Build capacity for selected developing countries to use forest and terrestrial carbon management

### Enabling Computing Technologies

1. Cloud computing platforms to support the deployment of the system (e.g. Azure)
2. Cloud databases as central management tool (e.g. SQL Azure)
3. Online visualization tools as interactive visual interfaces



forest carbon tracking

## TAKING STOCK OF OUR FORESTS



Federation of Earth Science  
Information Partners

**MAKING DATA MATTER**

ESIP 2011 Summer Meeting, July 12-15, Santa Fe





# http://news.cisc.gmu.edu/

Home

About

Resources

Projects

Archive

Calendar

CEWIS

Integration

Meetings of Interest

NASA ES Focus Areas

## The Global Water Cycle and NEWS

The cycling of energy and water has obvious and significant implications for the health and prosperity of society. The availability and quantity of water is vital to life on earth and helps to tie together the Earth's lands, oceans and atmosphere into an integrated physical system. The global water cycle is driven by a multiplicity of complex processes and interactions at all time and space scales, many of which are inadequately understood and poorly represented in model predictions.

NASA is capable of and uniquely positioned to investigate the global climatic processes that govern precipitation and the replenishment of water resources. In 2003 NASA established the NASA Energy and Water cycle Study (NEWS), whose ultimate goal is a breakthrough improvement in the nation's energy and water cycle prediction capability. NEWS is expected to demonstrate advanced global observation, data assimilation, and improved representation of physical processes in climate models, better prediction systems that can be used to quantify the hydrologic consequences of climate change and produce useful seasonal and longer-range hydrologic predictions based on observed initial values and changing boundary conditions.

NEWS is therefore envisioned to be part of the broader NASA end-to-end Earth science program and thus includes the transition of research findings and new capabilities to academic/public education and to practical applications, through partnerships with the academic community-at-large, federal agencies.

## Implementation Plan

Consistent with the ambitious NEWS challenge and ESE objectives, the timetable for the implementation of NEWS extends over a 15 year period. During this period, NEWS participants are expected to collect, analyze and interpret observational data from archived records and on-going observing systems, contribute to the preparation of new space-flight missions, advance predictive models of the global energy and water cycle, and lay the foundation for future developments (including potential new observing techniques). NEWS participants are also expected to examine and test new application practices in partnership with relevant operational agencies and industry.

## NEWS Implementation Plan

January 18, 2007

\* It is recognized that this document will be modified to reflect the new NASA organizational structure.

[Click here to view\(3.7 MB - PDF document - opens in a new window\)](#)

Latest News

NEWS Highlights [Click here for download](#)

[view NEWS Roadmap \(pdf\)](#)

# Conclusion

Joint Center for  
Intelligent Spatial Computing



- Portlets Sharing
- Interoperability
- Service Oriented Architecture
- Geospatial Visualization
- User Management and Categorization
- DaaS (Marry with Cloud Computing)



Federation of Earth Science  
Information Partners

**MAKING DATA MATTER**

ESIP 2011 Summer Meeting, July 12-15, Santa Fe