



Integrating thematic web portal capabilities into the NASA Earthdata web infrastructure

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The National Aeronautics and Space Administration (NASA) Earth Observing System Data and Information System (EOSDIS) acquires and distributes an abundance of Earth science data on a daily basis to a diverse user community worldwide.

To assist the scientific community and general public in achieving a greater understanding of the interdisciplinary nature of Earth science and of key environmental and climate change topics, the NASA Earthdata web infrastructure is integrating new methods of presenting and accessing Earth science information, data, research and results via web portals.

Overview

The Earth Science Data and Information System (ESDIS) manages the science system components and capabilities of the Earth Observing System Data and Information System (EOSDIS). EOSDIS manages NASA's Earth science data from various sources - satellites, aircraft, field measurements, and various other programs. NASA Earth Science data are held at 12 U.S. based Distributed Active Archive Centers (DAACs) and Science Computing Facilities (SCFs). The Earthdata web infrastructure facilitates data discovery and access to these Earth Science data holdings across various Earth science disciplines.

EOSDIS is integrating new methods of presenting and accessing Earth science information, data, research and results via web portals integrated into the NASA Earthdata web infrastructure and utilizing central reusable EOSDIS capabilities.

Central Reusable Capabilities

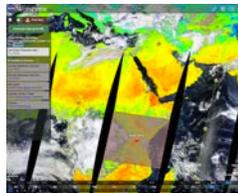


High Performance Data Search and Discovery

- **Common Metadata Repository (CMR):** Provides sub-second search and discovery services across EOSDIS data holdings.
- **Earthdata Search:** Data discovery, search, visualization and retrieval client.

Imagery and Data Visualization

- **Global Imagery Browse Services (GIBS):** Full resolution imagery in a community standards-based set of imagery services.
- **Worldview:** Highly responsive interface to explore GIBS imagery and download the underlying data granules.



Collaboration

- **Earthdata Code Collaborative (ECC):** Platform that allows users to host and collaborate on the development of tools, services, or service endpoints. ECC incorporates continuous integration, code repository and issue tracking/feature enhancement tools.
- **Earthdata Wiki:** Allow users and projects to communicate and collaborate within a host of common workspaces.



User Management and Support

- **Earthdata Login:** Centralized mechanism for user registration, authentication and account management for all EOSDIS via single sign-on (SSO).
- **User Support Tool:** Centralized user query tool for managing and answering user questions or comments throughout EOSDIS.

Metrics

EOSDIS Metrics System (EMS): Collects and reports on data ingest, archive, and distribution metrics across all EOSDIS data centers and GIBS imagery distribution.

Example: Sea Level Change Portal

The Sea Level Change Web Portal (<https://sealevel.nasa.gov>) will serve as a central hub, hosting NASA Sea Level Change interdisciplinary research, and communicating the research and results to the scientific community and the general public. It has been developed using central, reusable EOSDIS capabilities.

Why Sea Level Change?

Interdisciplinary in nature, sea level change research must incorporate analysis from many different Earth Science disciplines to produce accurate, updated estimates of sea level change and its potential impacts.

- Rising sea levels are impacting coastal communities through erosion, storm surge, and saltwater intrusion among other effects.
- Even relatively small sea level rise projections could potentially displace millions of people.
- Sources of sea level change are generally known, but specific details on thermal expansion, salinity variations and regional variability are not well understood.
- Processes controlling sea level are difficult to observe; they are dynamic and nonlinear with lengthy lags in forcing and response.
- Satellite observations can provide insight to many components of the Earth system. For example:
 - ✧ Radar altimetry is used to measure rise and characterize spatial variability.
 - ✧ Gravitational measurements can be used to measure mass change in ice sheets and oceans.
 - ✧ Lidar and radar used to characterize ice loss.

Portal Purpose and Features

The Sea Level Change Portal (<https://sealevel.nasa.gov>) launched in November 2015. The portal will initially present NASA Sea Level Science Team research results, data sets and model outputs. These data will improve the accuracy and spatial resolution of sea level change estimates and will be made available through the web portal. The portal was developed by the Sea Level Change Portal Team at the Jet Propulsion Laboratory (JPL) utilizing EOSDIS capabilities and will continue to feature improvements to the site and data search capabilities.

Interactive online tools

- Dataset discovery and data search, browse and download tool for science users - using CMR and Earthdata Search and other data sources.
- Sea Level Dashboard: "Quick look" on current sea level, ice sheet and land ice and global temperature.
- Data Analysis Tool: View imagery and perform analysis on data dealing with sea level rise.

Data

- New sea level change related data products will be linked from the portal and hosted at relevant DAACs.

Content

- Science Highlights: Latest science progress, results.
- Scientist Interviews: Monthly interview/profile of Sea Level Change researchers' work and significance of that research.
- Core Knowledge Articles: "Understanding Sea Level" current background articles on sea level change.
- Sea Level Update monthly digest/newsletter.
- Resource Center and Visualization Gallery: Curated collection of graphics, fact sheets and animations.
- Sea Level Publications: References to all peer reviewed sea level change articles.



Sea Level Change Portal home page featuring the "Quick Look" Sea Level Dashboard



Data Analysis Tool, displaying Analyzed Sea Surface Temperature from 11/27/2007- 11/27/2011



Learn more about NASA EOSDIS on Earthdata: <https://earthdata.nasa.gov>

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