

The Potential Role of the World Data Centers in the Global Earth Observing System of Systems and the International Polar Year: CIESIN Experience to Date

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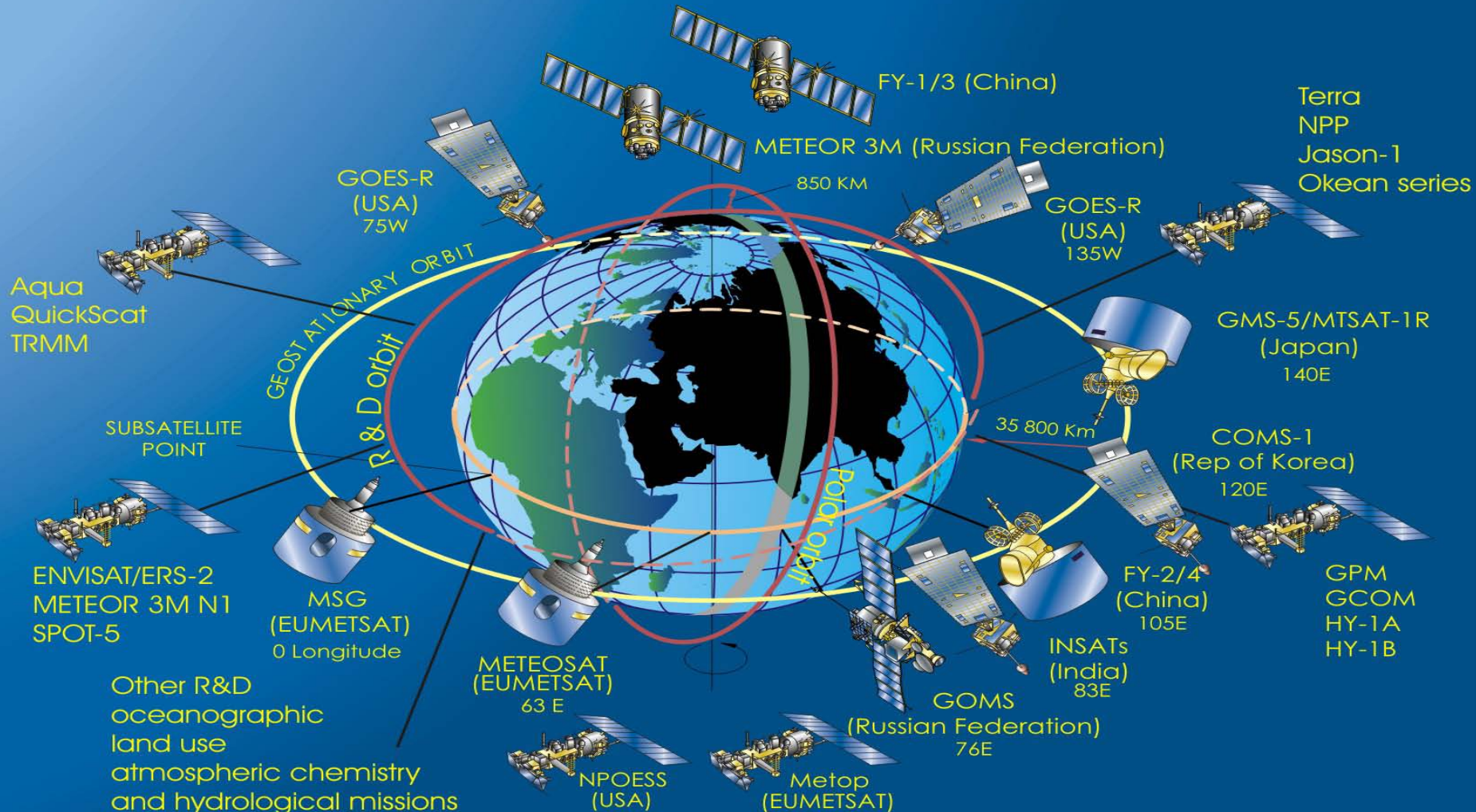
Secretary-General, CODATA

Dr. Robert R. Downs, Senior Digital Archivist, CIESIN

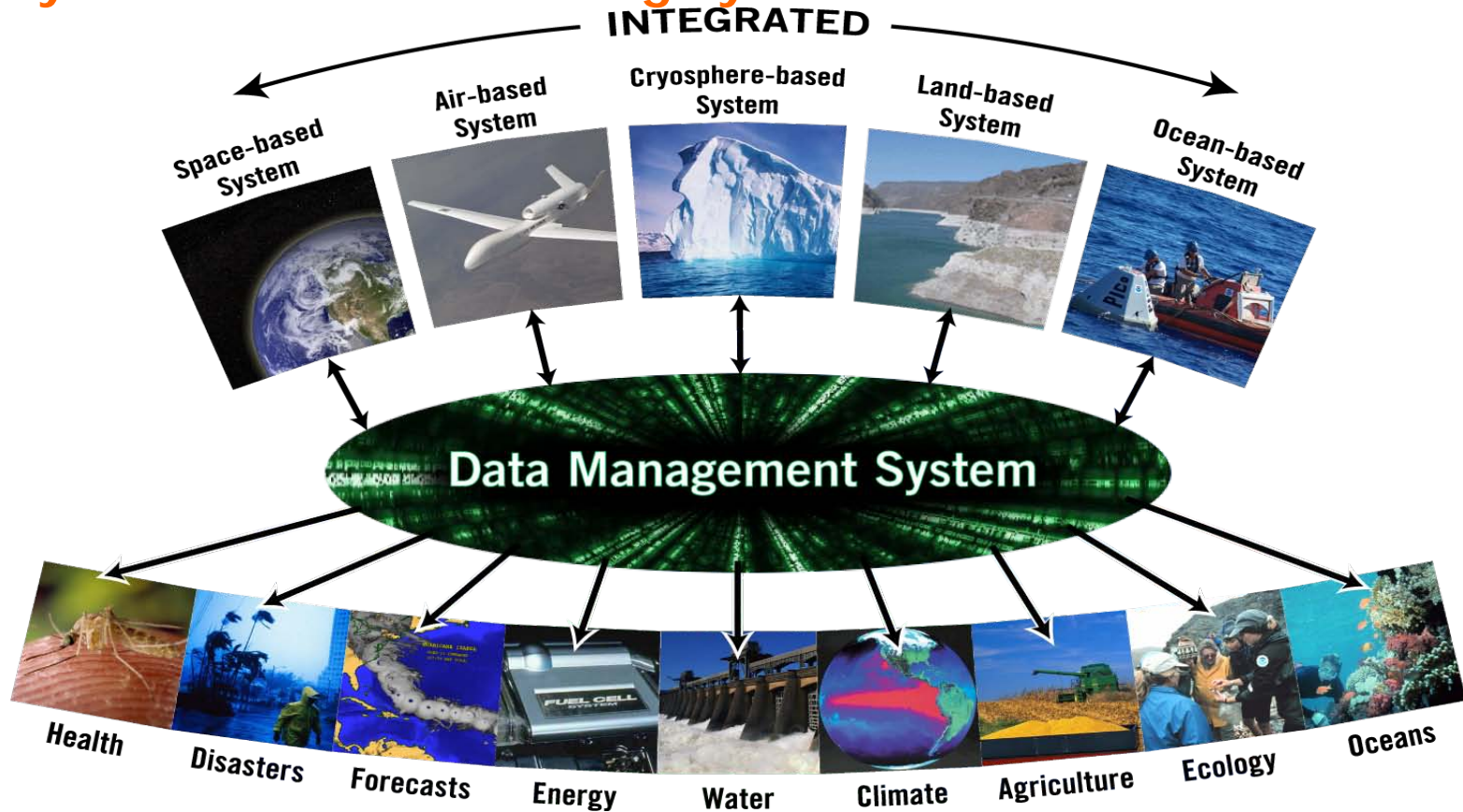
Mr. Gregory Yetman, Senior Staff Associate, CIESIN

Dr. Susana Adamo, Associate Research Scientist, CIESIN





A Global, Coordinated, Comprehensive and Sustained System of Earth Observing Systems



Address the need for timely, quality, long-term, global information as a basis for sound decision making.

The Tower of Babel Problem!



**There is a Need for a System
which Provides Access to all
Earth Observation Data in
Standard Interoperable
Formats**

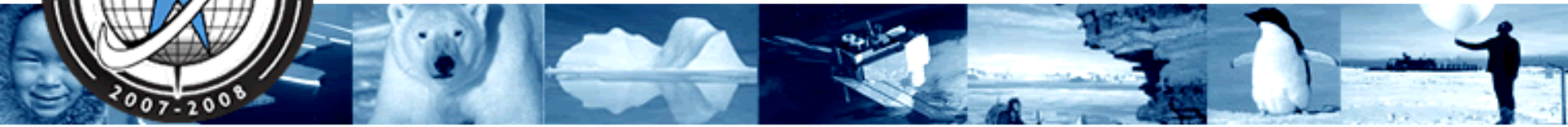
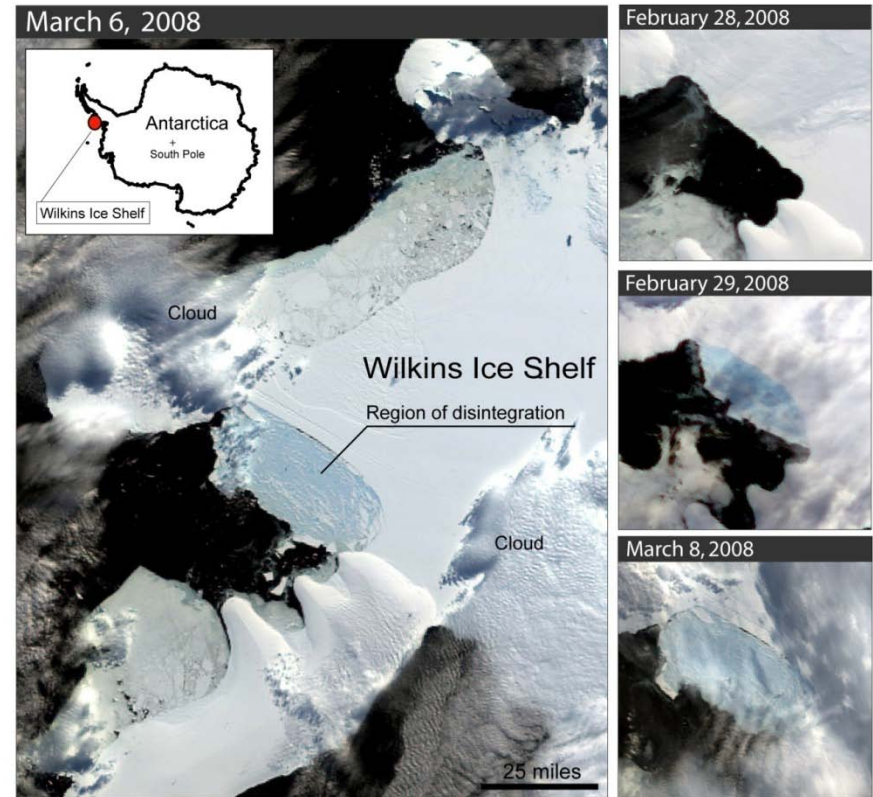
Need for a Portal and Clearinghouse

- **For Access to all Earth Observation Data**
- **Based on Existing Portals, Systems and Networks**
- **Designed to Increase Quality and Accessibility of Information**
- **Providing Tools**



**What's the foundation??
Past data!**

- An intensive burst of internationally coordinated, interdisciplinary, scientific research and observations focused on the Earth's polar regions
- Aimed at making major advances in polar knowledge and understanding, while leaving a legacy of new or enhanced observational systems, facilities and infrastructure
- History:
 - First IPY: 1882-1883
 - Second IPY: 1932-1933
 - IGY: 1957-1958



CIESIN World Data Center on Human Interactions in the Environment



- Established 1995
- Premised on the need to complement and integrate environmental and Earth science data with social science data
- Current focus is on access to *global* environmental and socioeconomic data, especially related to:
 - Climate
 - Conservation
 - Governance
 - Hazards
 - Health
 - Population
 - Poverty
 - Sustainability



The screenshot shows the CIESIN World Data Center website. The header includes the CIESIN Columbia University logo, a search bar, and a dropdown menu set to 'Web Site'. The main title is 'World Data Center for Human Interactions in the Environment'. Below this is a navigation bar with links: home, find data, visualize data, data guides, resources, thematic portals, tools, and partners. The 'thematic portals' dropdown is open, showing a list of topics: Climate, Conservation, Governance, Hazards, Health, Population, Poverty, and Sustainability. The main content area features a large blue graphic of a globe with a network of lines. Below this is the text 'The SEDAC Portal to Global Environmental and Socioeconomic Data'. The page is divided into three columns. The left column, 'The CIESIN World Data Center', describes the portal's purpose and lists recent data set releases: 'Human Appropriation of Net Primary Productivity (HANPP)' and 'Compendium of Environmental Sustainability Indicators Collections'. The middle column, 'News', contains two articles: 'Earth's Plant Productivity, Measured and Mapped' and 'New Data Reveal Links between Urbanization and Coastal Risks'. The right column, 'Hot Links', lists various resources including a list of WDC data sets, SEDAC map client, map gallery, related resources, SEDAC home page, CIESIN home page, and ICSU World Data Centers. The footer includes the NASA SEDAC CIESIN logo, copyright information (© 1997-2007), and a list of links for help and information.

CIESIN Columbia University

Search for In **Web Site**

World Data Center for Human Interactions in the Environment

home | find data | visualize data | data guides | resources | thematic portals | tools | partners

Climate
Conservation
Governance
Hazards
Health
Population
Poverty
Sustainability

The SEDAC Portal to Global Environmental and Socioeconomic Data

The CIESIN World Data Center
This portal, hosted by NASA's Socioeconomic Data and Applications Center (SEDAC), provides access to a wide range of global data, associated documentation, and visualization and analysis tools, and to the community of experts on global data.

Recent Data Set Release

Human Appropriation of Net Primary Productivity (HANPP)
Web site | Profile

Compendium of Environmental Sustainability Indicators Collections
Web site | Profiles

News

Earth's Plant Productivity, Measured and Mapped
Web site | Article

New Data Reveal Links between Urbanization and Coastal Risks
Web site | Article

Failure to Replace Aging Satellites Threatens Climate Studies, National Academy Report Warns
Report

Read more...

Hot Links

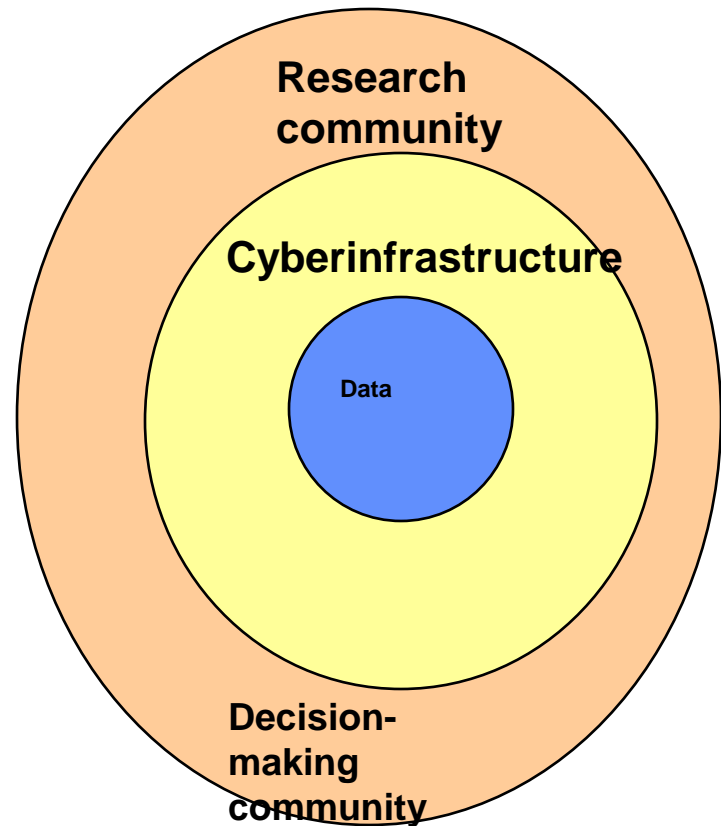
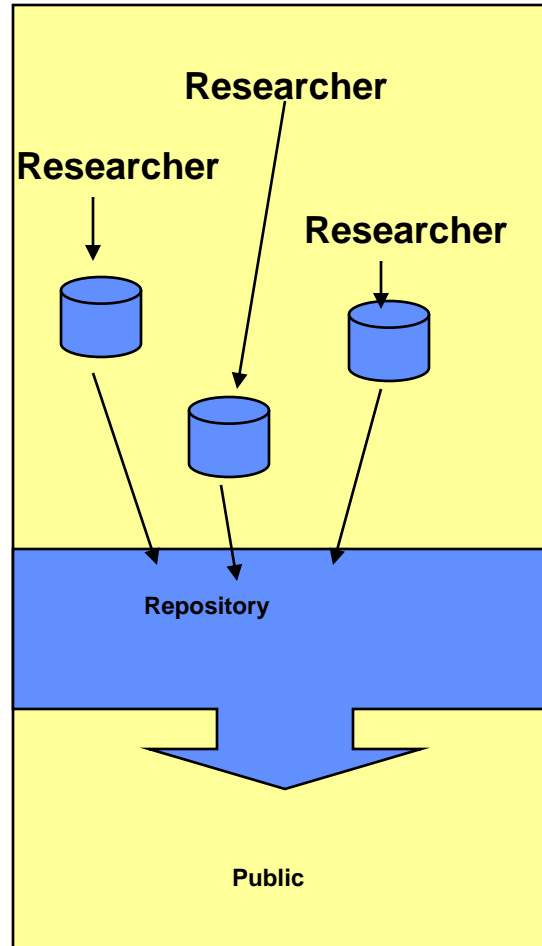
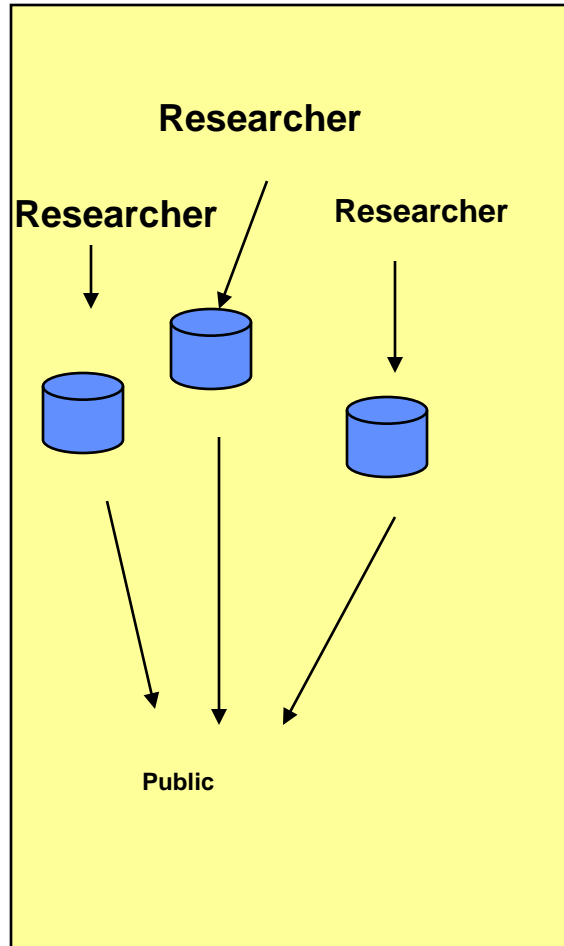
- A-Z List of WDC Data sets
- SEDAC Map Client
- Map Gallery
- Related Resources
- SEDAC home page
- CIESIN home page
- ICSU World Data Centers

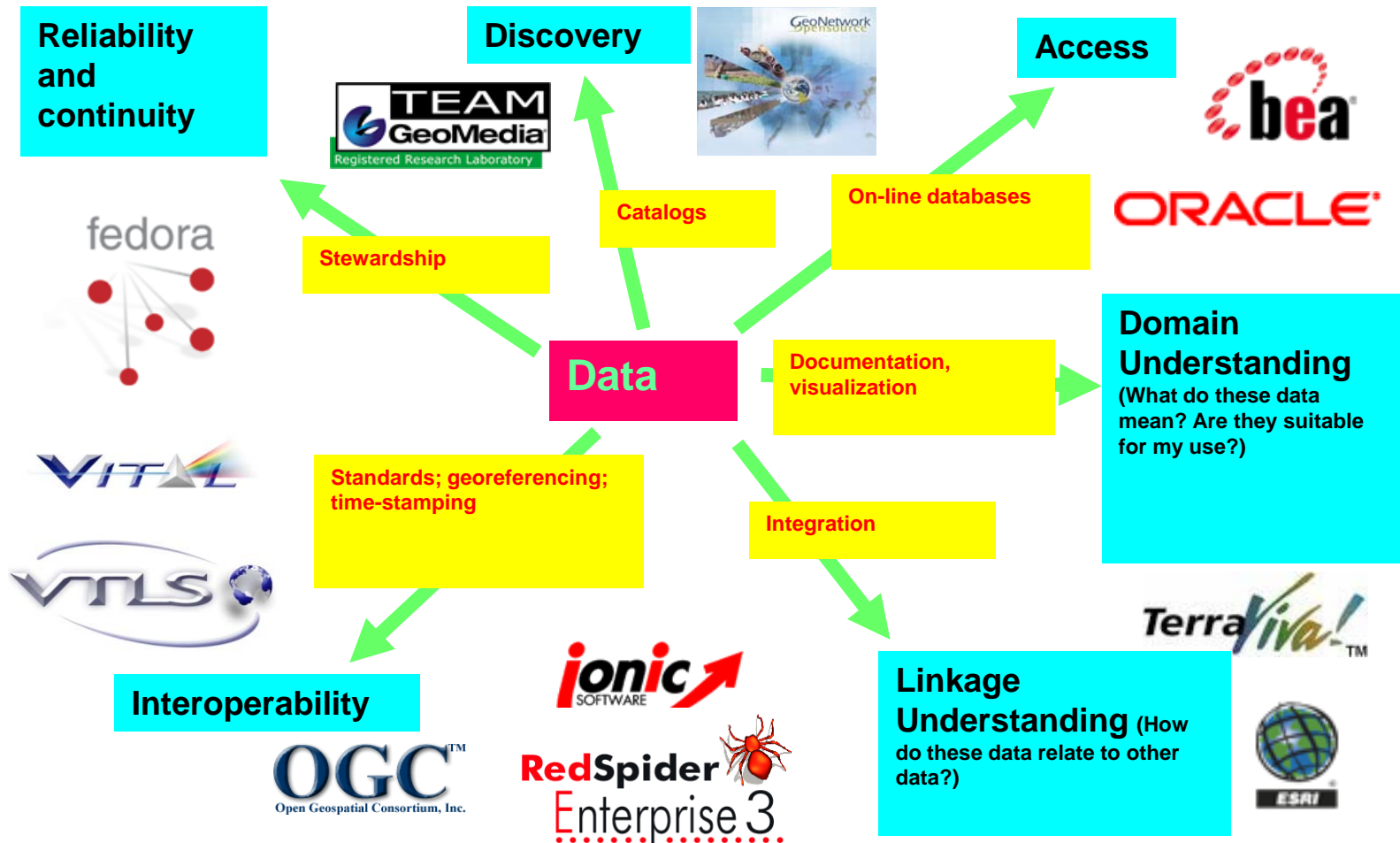
NASA SEDAC CIESIN Copyright © 1997-2007. The Trustees of Columbia University in the City of New York.

Need HELP or information? Contact SEDAC User Services • About SEDAC • Acknowledgments • Privacy, Security, Notices
NASA Science Data User Survey

WDC

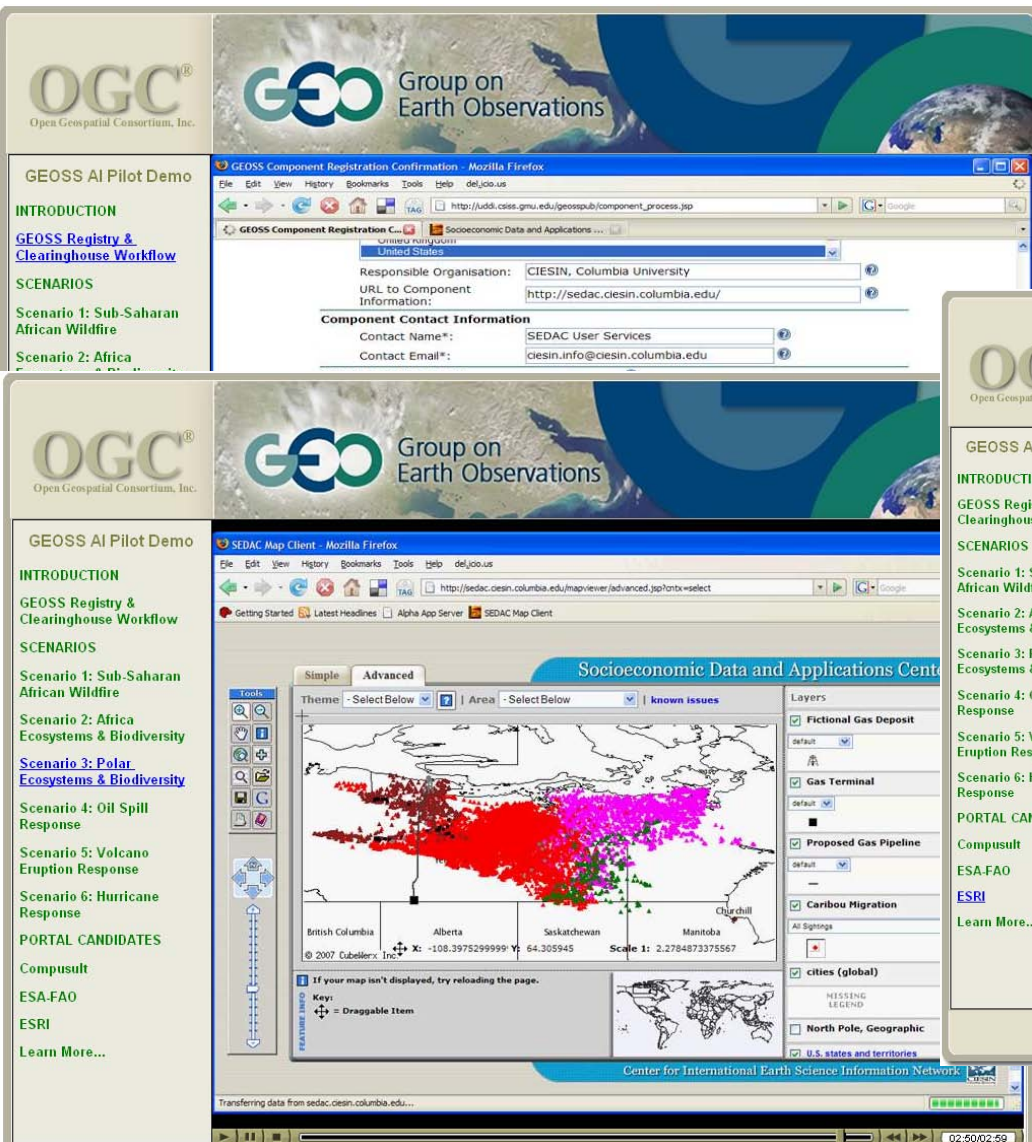
Evolution of the Data Provider Model





GEO Architecture Implementation Pilot – Phase 1

- Set of videos prepared by OGC in support of the GEOSS Architecture Implementation Pilot (AIP)
- SEDAC features prominently in 5 of the 10 videos



OGC® Open Geospatial Consortium, Inc.

GEO Group on Earth Observations

GEOSS AI Pilot Demo

INTRODUCTION
GEOSS Registry & Clearinghouse Workflow

SCENARIOS
Scenario 1: Sub-Saharan African Wildfire
Scenario 2: Africa

GEOSS Component Registration Confirmation - Mozilla Firefox

File Edit View History Bookmarks Tools Help delco.us
http://uddi.ciesin.gmu.edu/geosspub/component_process.jsp

GEOSS Component Registration Confirmation

Country: United States

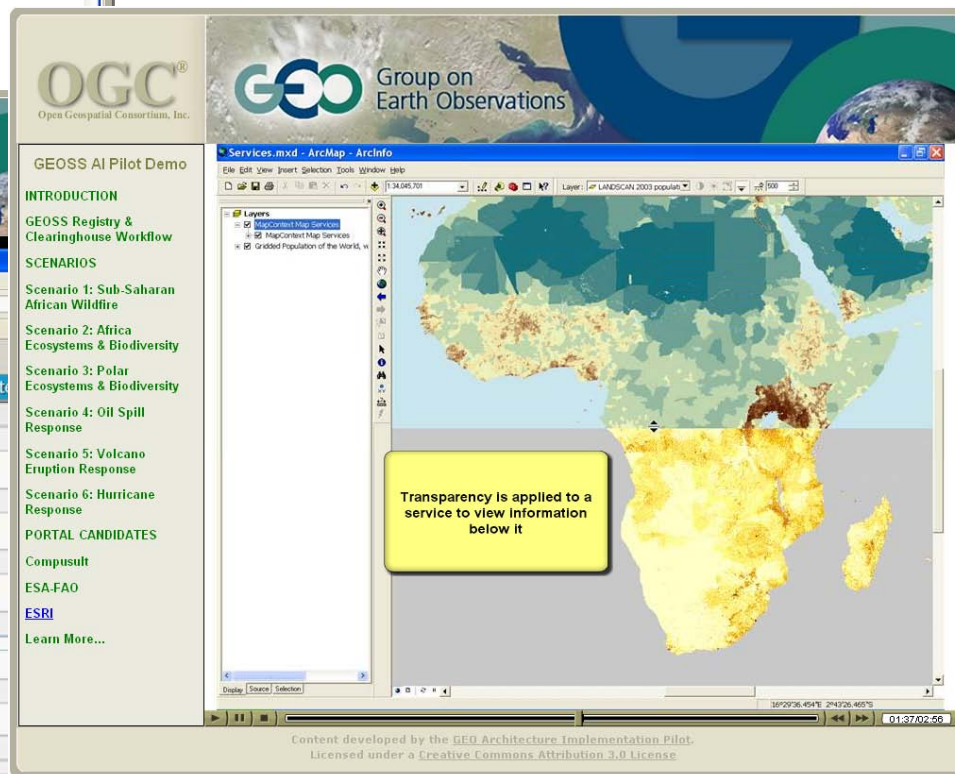
Responsible Organisation: CIESIN, Columbia University

URL to Component Information: http://sedac.ciesin.columbia.edu/

Component Contact Information

Contact Name*: SEDAC User Services

Contact Email*: ciesin.info@ciesin.columbia.edu



OGC® Open Geospatial Consortium, Inc.

GEO Group on Earth Observations

GEOSS AI Pilot Demo

INTRODUCTION
GEOSS Registry & Clearinghouse Workflow

SCENARIOS
Scenario 1: Sub-Saharan African Wildfire
Scenario 2: Africa Ecosystems & Biodiversity
Scenario 3: Polar Ecosystems & Biodiversity
Scenario 4: Oil Spill Response
Scenario 5: Volcano Eruption Response
Scenario 6: Hurricane Response

PORTAL CANDIDATES
Compusult
ESA-FAO
ESRI
Learn More...

Services.mxd - ArcMap - ArcInfo

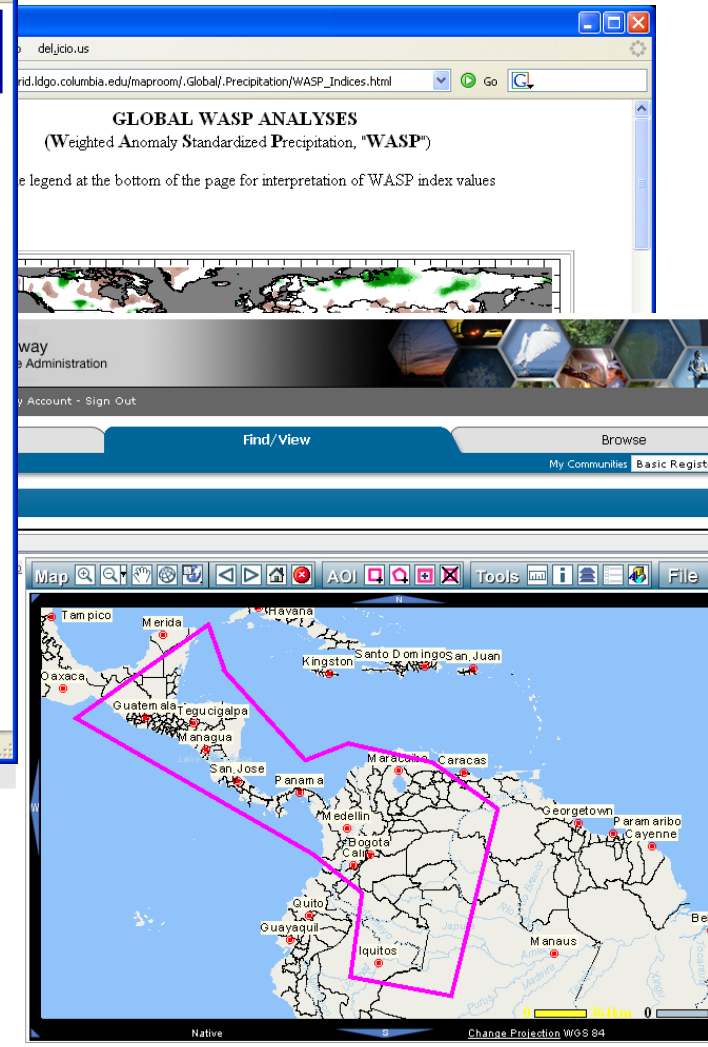
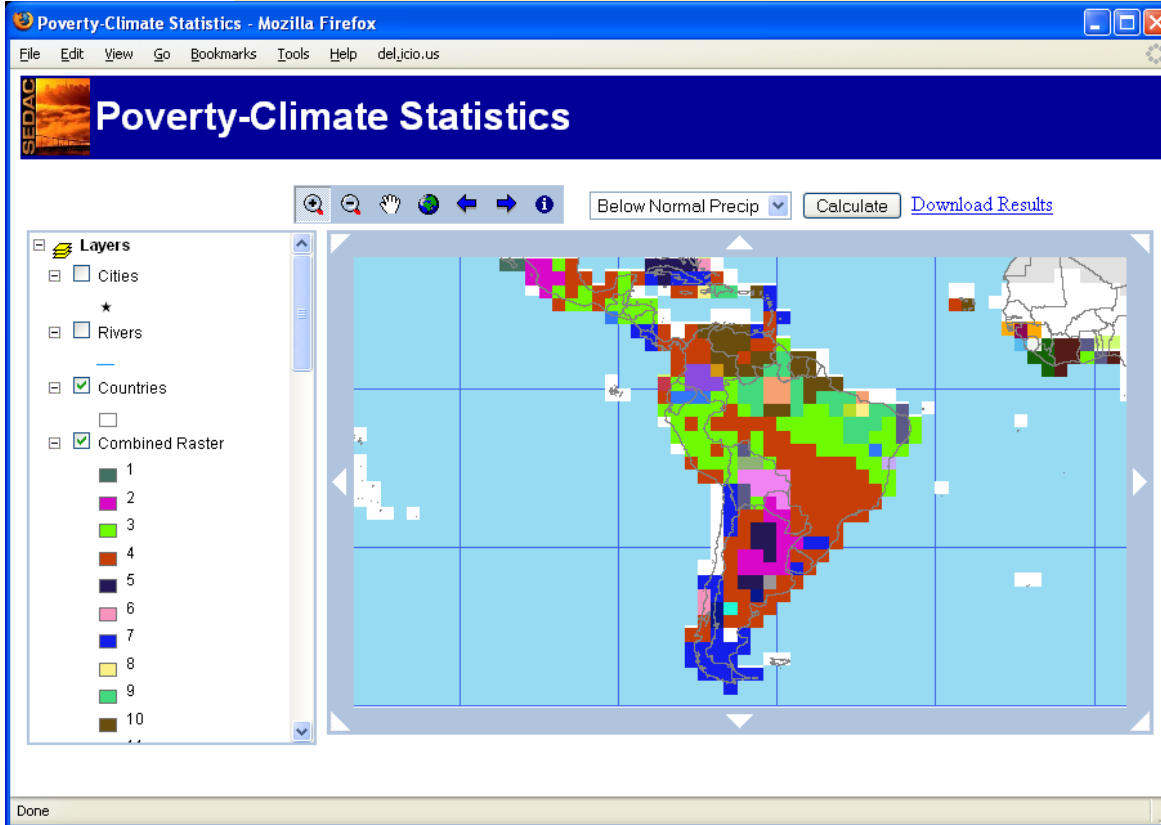
File Edit View Insert Selection Tools Window Help

Layers: MapContent Map Services, MapContent Map Services, Gridded Population of the World, W

Transparency Is applied to a service to view information below it

Content developed by the GEO Architecture Implementation Pilot.
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GEOSS AIP Phase 2: Focus on Web Processing Services and Workflow



**Data/policy analyst
monitoring populations that
may be at risk from drought**

Developed by Greg Yetman, CIESIN, Columbia University

Collaboration with NSIDC and ORNL DAAC on Polar Data Search & Access



DADDI

a working prototype focused on arctic coastal data








Metadata Search System

Simple Search

Advanced Search

Search entire document for

land use arctic

Hint: boolean operators, wildcards and phrases are allowed. ex: precipita

- Query being built: Entire Document : land use arctic and

Not Editable

Results/Page
10

SEARCH

CLEAR QU

Your search found: 24 documents.
You searched: fullText:land use arctic AND datasource:(ccin ciesin nsidcm daac gcmd)

Viewing Documents 1 - 10 out of 24

Prev 1 2 3 Next

Return to Search

Sort By:

Relevance

Period of record

Data source

Filter by data providers

- National Snow and Ice Data Center (20)
- Center for International Earth Science Information Network (2)
- Canadian Cryospheric Information Network (1)
- Global Change Master Directory (1)

Filter by resource type

- copy (3)
- digital (3)
- paper (3)
- data (2)
- tabular (2)
- ascii (1)

Filter by keywords

- terrain elevation (9)
- alpine/tundra (7)
- active layer (6)
- contours (6)

ICE COVERAGE FOR THE QE1, HIGH ARCTIC

The University of Alberta is the Regional Center responsible for the Canadian High Arctic, so we frequently deal with the task of subdividing large ice caps into meaningful glacier-size units for input to the GLIMS database. Our base imagery is provided by orthorectified Landsat 7 imagery f (expand)

Data provider: CANADIAN CRYOSPHERIC INFORMATION NETWORK
★★★★★★★★★

Keywords:
Not Available

01/01/1999 - 12/31/2002

Spatial Coordinates:
North:84.0
West:-141.0
East:-52.0
South:41.5

Get data

View full metadata

IPY-132-CANADA #186-POLAR BIOREM-BIORESTORATION OF CONTAMINATED SOILS AND SEDIMENTS NEAR SCIENTIFIC STATIONS IN POLAR REGIONS

PROJECT CANADA #186 FOR IPY: WITH THE COLLABORATION OF FRANCE AND ARGENTINE SCIENTIST Arctic: June 2007 to August 2008 Antarctic: December 2006 to April 2008 Scientific and military stations in polar and sub-polar regions have been and are still dependent on fossil fuels for their unique so (expand)

Data provider: GLOBAL CHANGE MASTER DIRECTORY
★★★★★★★☆☆

Keywords:
sediment chemistry
permafrost
reclamation/r (expand)

06/01/2007 - 08/30/2008

Spatial Coordinates:
North:90.0
West:-180.0
East:180.0
South:-90.0

View full metadata

COMPENDIUM OF ENVIRONMENTAL SUSTAINABILITY INDICATOR COLLECTIONS: COMPLETE COLLECTION, VERSION 1

The Compendium of Environmental Sustainability Indicator Collections contains 411 variables for 238 countries from four major environmental sustainability indicator efforts: the 2006 Environmental Performance Index (EPI), 2005 Environmental Sustainability Index (ESI), 2004 Environmental Vul (expand)

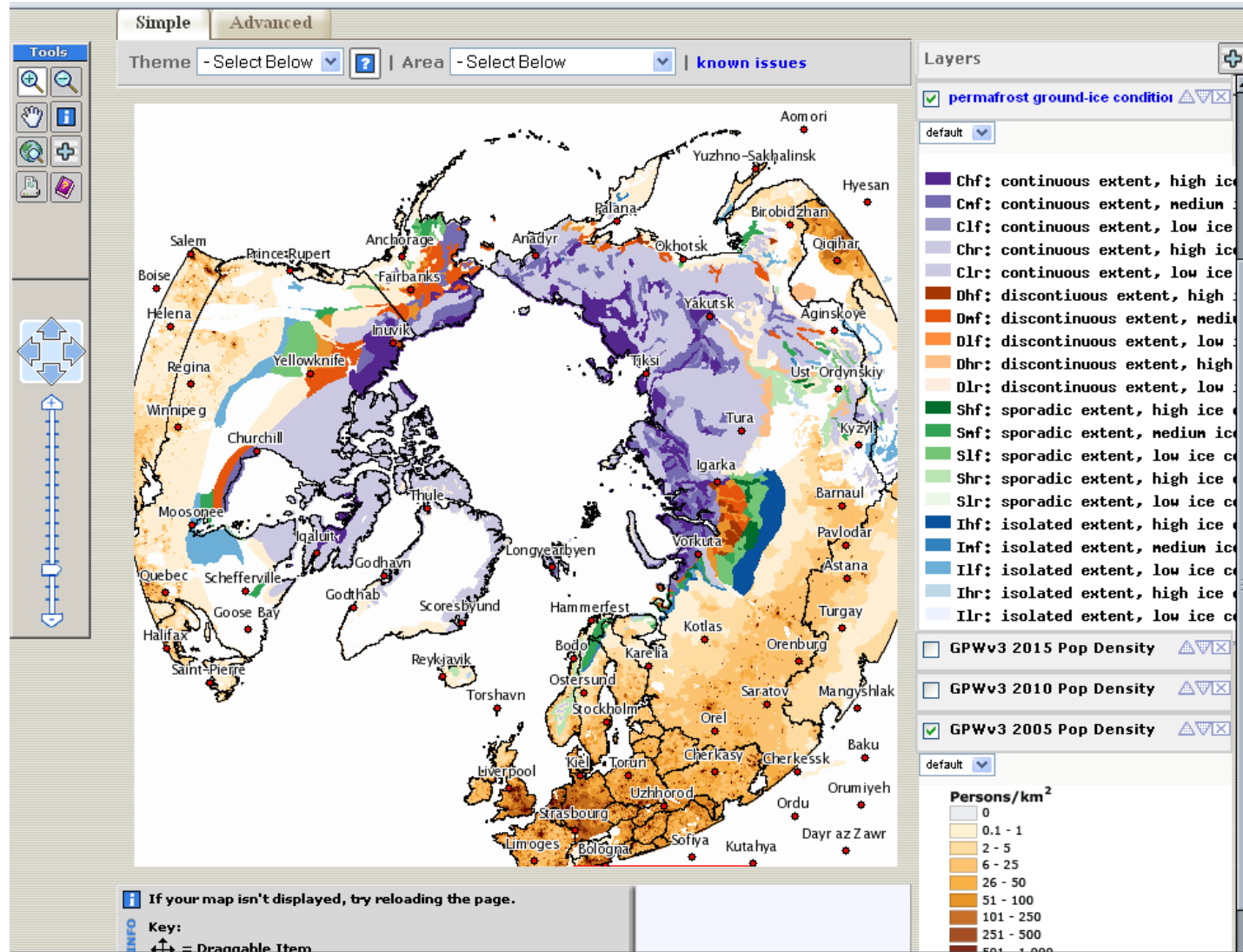
Data provider: CENTER FOR INTERNATIONAL EARTH SCIENCE INFORMATION NETWORK
★★★★★★★★★

Keywords:
Not Available

Spatial Coordinates:
North:90.0
West:-180.0
East:180.0
South:-55.0

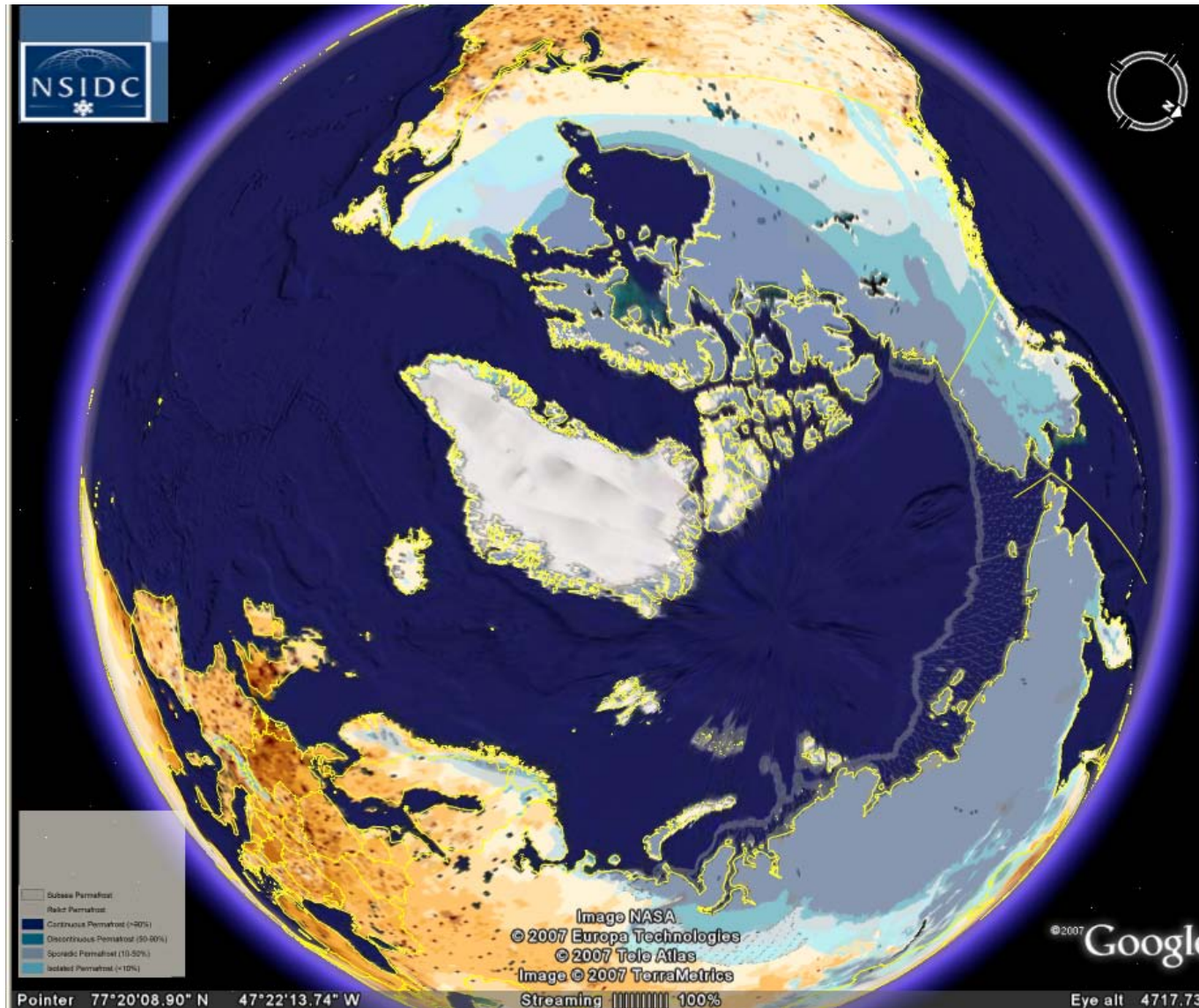
Get data

View full metadata




- Supports WMS, WFS
- Supports Web Map Context (WMC)

Permafrost and Population Data via Google Earth



- SEDAC and NSIDC data served via WMS
- Simple KML file to provide access to data


International Polar Year
Data and Information Service

[Community](#) | [Data](#) | [Support](#) | [About](#)

[Home](#) > [Community](#) > IPYDIS Directory

[Participate](#)

[Presentation](#)
[Archive](#)

[Events](#)

IPYDIS Directory

This table shows all the substantially funded IPY projects and their data archives. This will be replaced by an interactive, searchable directory soon.

Please send additions and corrections to ipydis@ipydis.org

Project number	Title	Project Point of Contact	Archive Organization	Archive contact	Archive email address
6	Dynamic Social Strategies in Arctic Environments: Long-term Perspectives on Movement and Communication	Hans Christian Gulløv	Danish Polar Center	Danish Polar Center	
8	Synoptic Antarctic Shelf-Slope Interactions Study	Karen Heywood			
10	Large Scale Historical Industrial Exploitation of Polar Areas	Prof. Dr. Louwrens Hacquebord			
11	Arctic Wildlife Observatories Linking Vulnerable	Gilles Gauthier		Luc Cournoyer	luc.cournoyer@cen.ulaval.ca

- IPY data access organized by IPY-DIS
 - Co-chairs, Mark Parsons & Taco de Bruin
 - Also a CODATA Working Group
- Requested CIESIN to reach out to 4 IPY projects
- Offered support on data archiving, integration, dissemination, stewardship, etc.

IPYDIS Directory: <http://ipydis.org/community/directory.html>

CAVIAR: Community Adaptation & Vulnerability in Arctic Regions



- Eight countries involved
- Set of case studies focused on people & livelihoods in community context
 - Current and future exposure and sensitivity
 - Current and future adaptive capacities
- Data from interviews, focus groups, participant observations, selected “informants”, archival records, secondary sources

- GEOSS

- Open architecture under development – requires rapid technological development and response
- Difficulties of merging past, near real time, real-time, and model data
- Coping with potentially large amounts of new data and metadata
- Reconciling GEOSS focus on societal benefits with traditional research focus of WDCs
- Keeping up with a large and diverse set of GEO tasks & activities

- IPY

- Scattered participants, activities
- Complex, varied data, including many field studies, multi-institutional efforts
- Potential loss of key data and metadata after data collection and analysis period
- Resource and time limitations that limit response, cooperation
- Unwillingness of researchers to contribute, especially before publication of results or before data analysis and clean-up

- WDCs have the expertise and experience to deal with these challenges
- GEOSS and IPY data would complement and extend existing WDC holdings, increasing the utility of the WDCs for both research and applications and expanding their user base
- GEOSS represents a major effort to open up data systems and implement the vision of seamless data access and use
- The IPY constitutes a unique opportunity to demonstrate that cross-disciplinary data access and integration can benefit both science and sustainable development

➤ **BOTTOM LINE: If the WDCs don't participate, who will?!?**

THANKS!