

The Global Change Master Directory

<http://globalchange.nasa.gov>

Roadmap

- GCMD – Goals, Holdings, Users & Collaborations
- Data Discovery Technologies
- The Directory Interchange Format (DIF)
- Existing Crosswalks

Global Change Master Directory (GCMD)

- The goal of the GCMD is "to enable users to locate and obtain access to Earth science data sets and services relevant to the global change and Earth science research"
- "The GCMD database holds more than 15,000 descriptions of Earth science data sets and services covering all aspects of Earth and environmental sciences." - <http://globalchange.nasa.gov>
- The GCMD has been online since 1987 (initially as the NASA Master Directory)

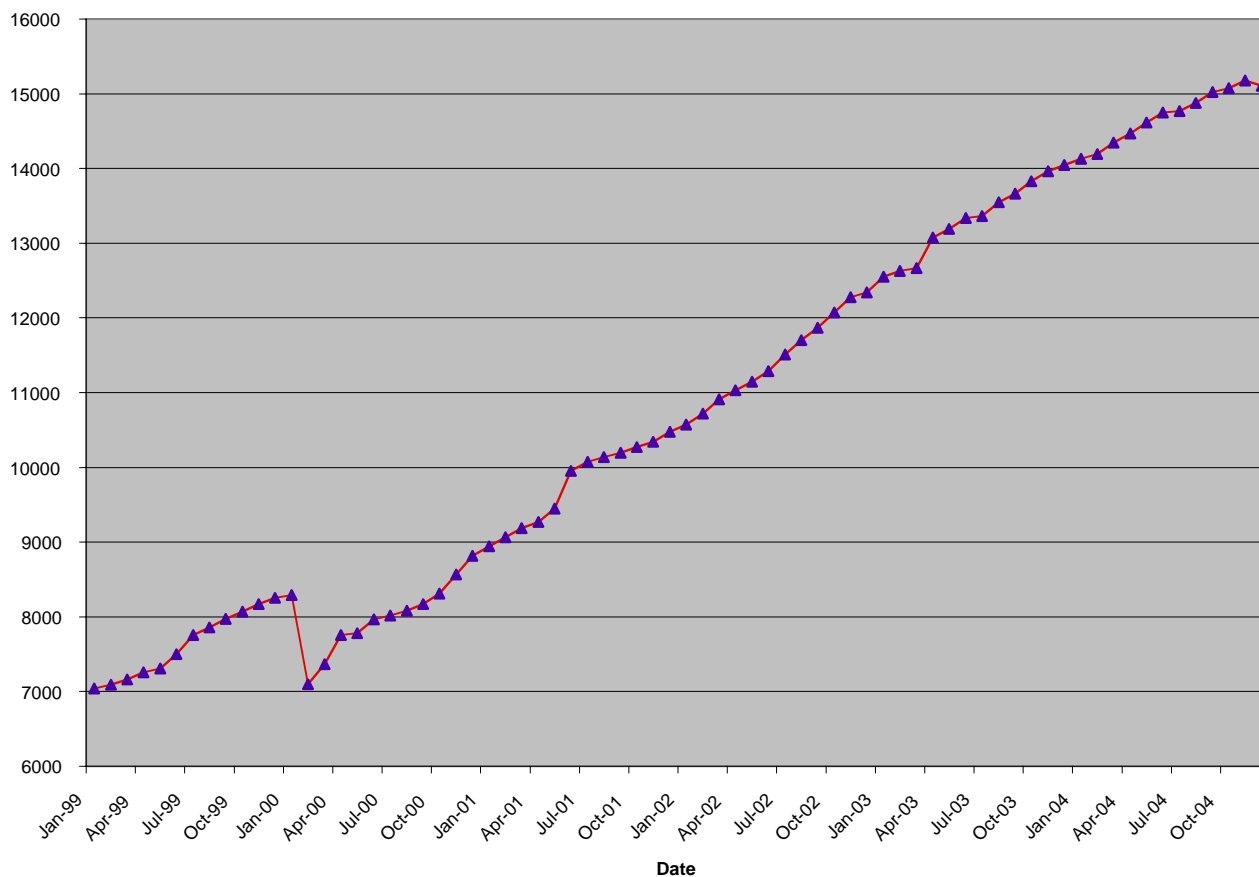
GCMD Focus

- The focus of the GCMD is on Data and Service Discovery
 - It provides discovery-level metadata for datasets and services from a variety of federal and non-federal sources
 - Data relevant to global change research is broadly defined to include most ecological data
 - GCMD does not house or maintain the actual datasets themselves
- GCMD has staff specifically devoted to entry and curation of data set descriptions

Services

- Services - “descriptive information about commercial and non-commercial data services that assists its user community in analyzing, processing, and evaluating Earth science data sets”
 - “must be specific and directly related to the processing, viewing, analysis, archival, retrieval, production, interpretation, acquisition, formatting, or indexing of Earth science data” (<http://globalchange.nasa.gov>)
- Uses Service Entry Resource Format (SERF)
 - Similar to DIF

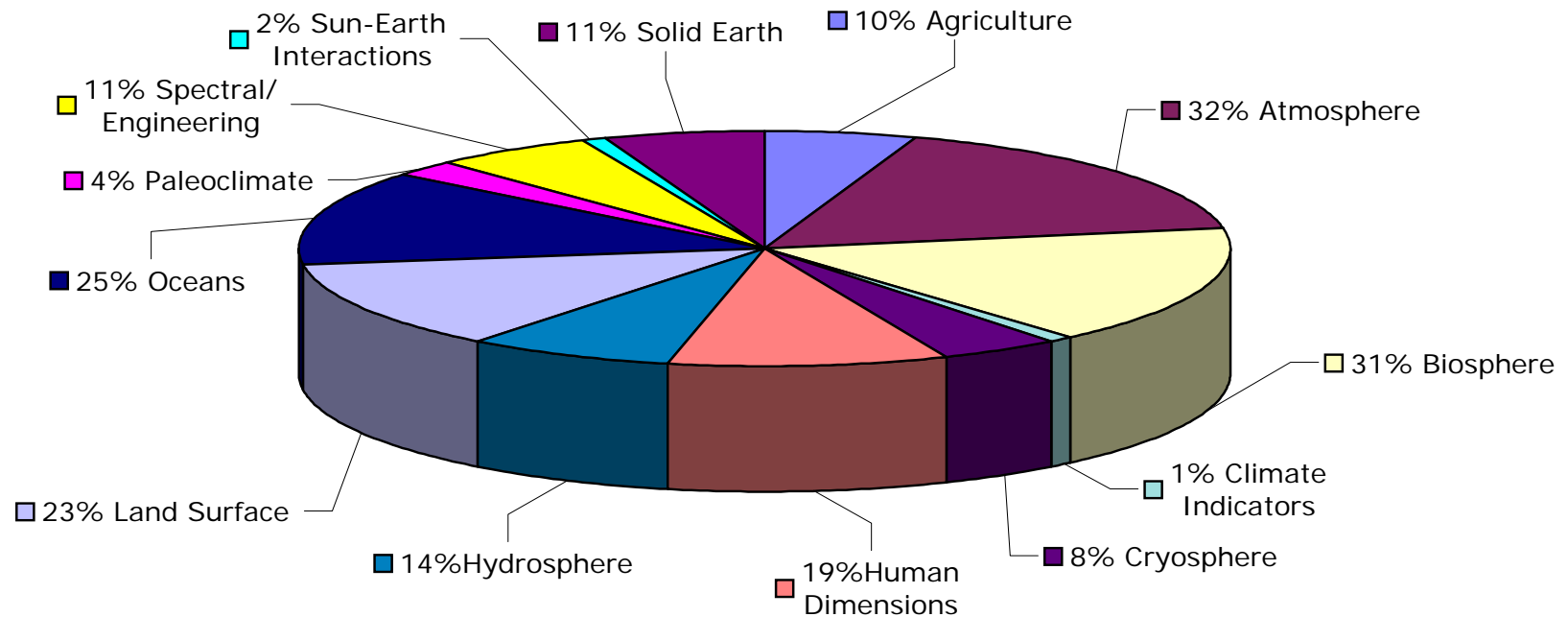
Metadata Holdings



Over 15,000
datasets and
collections
documented.

Over 1,000
Earth Science
Services
documented.

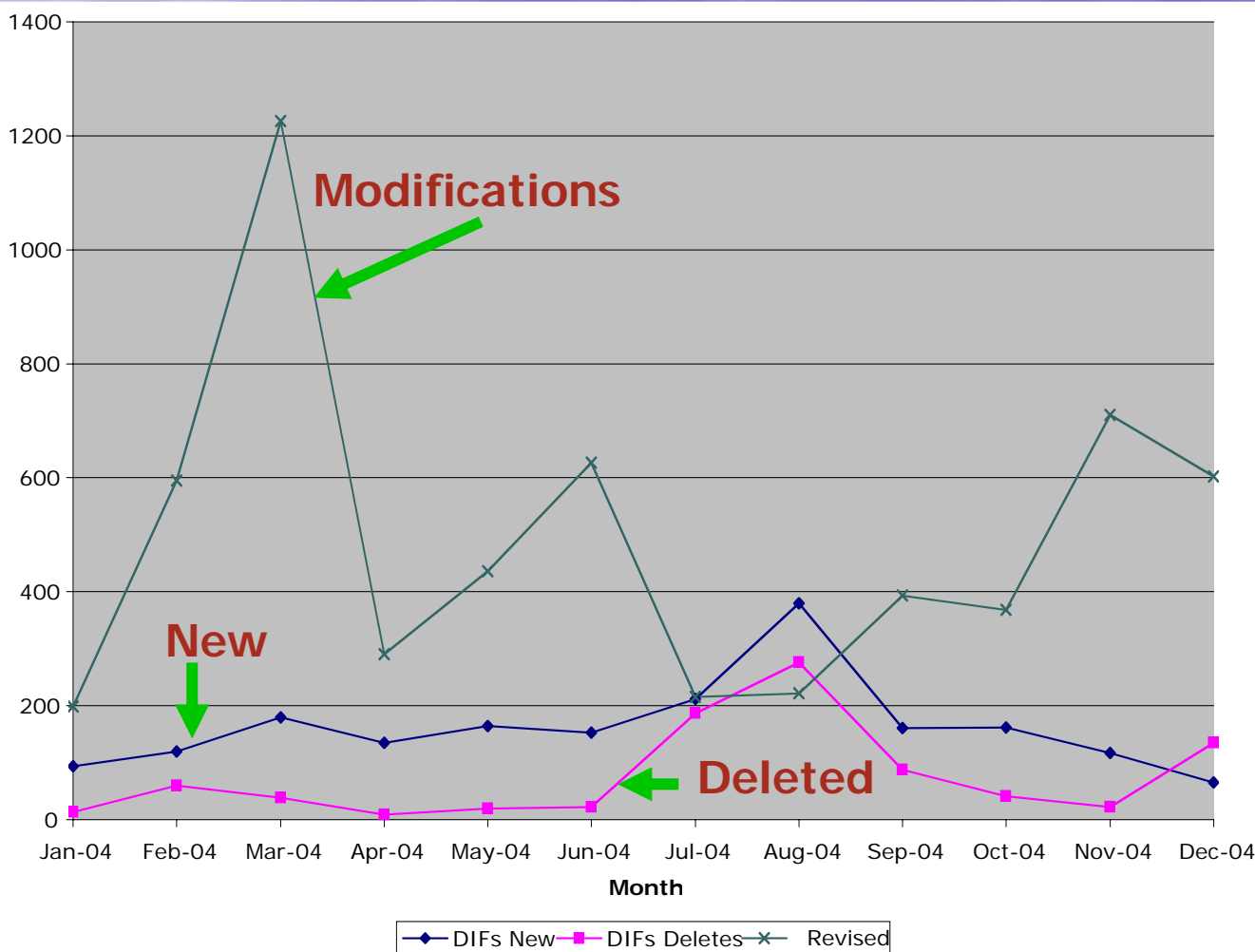
Types of Data Represented



Major Topics: Atmosphere, Biosphere, Land Surface, Human Dimensions

AGRICULTURE	ATMOSPHERE	BIOSPHERE	CLIMATE INDICATORS
CRYOSPHERE	HUMAN DIMENSIONS	HYDROSPHERE	LAND SURFACE
OCEANS	PALEOCLIMATE	SPECTRAL/ENGINEERING	SUN-EARTH INTERACTIONS
SOLID EARTH			

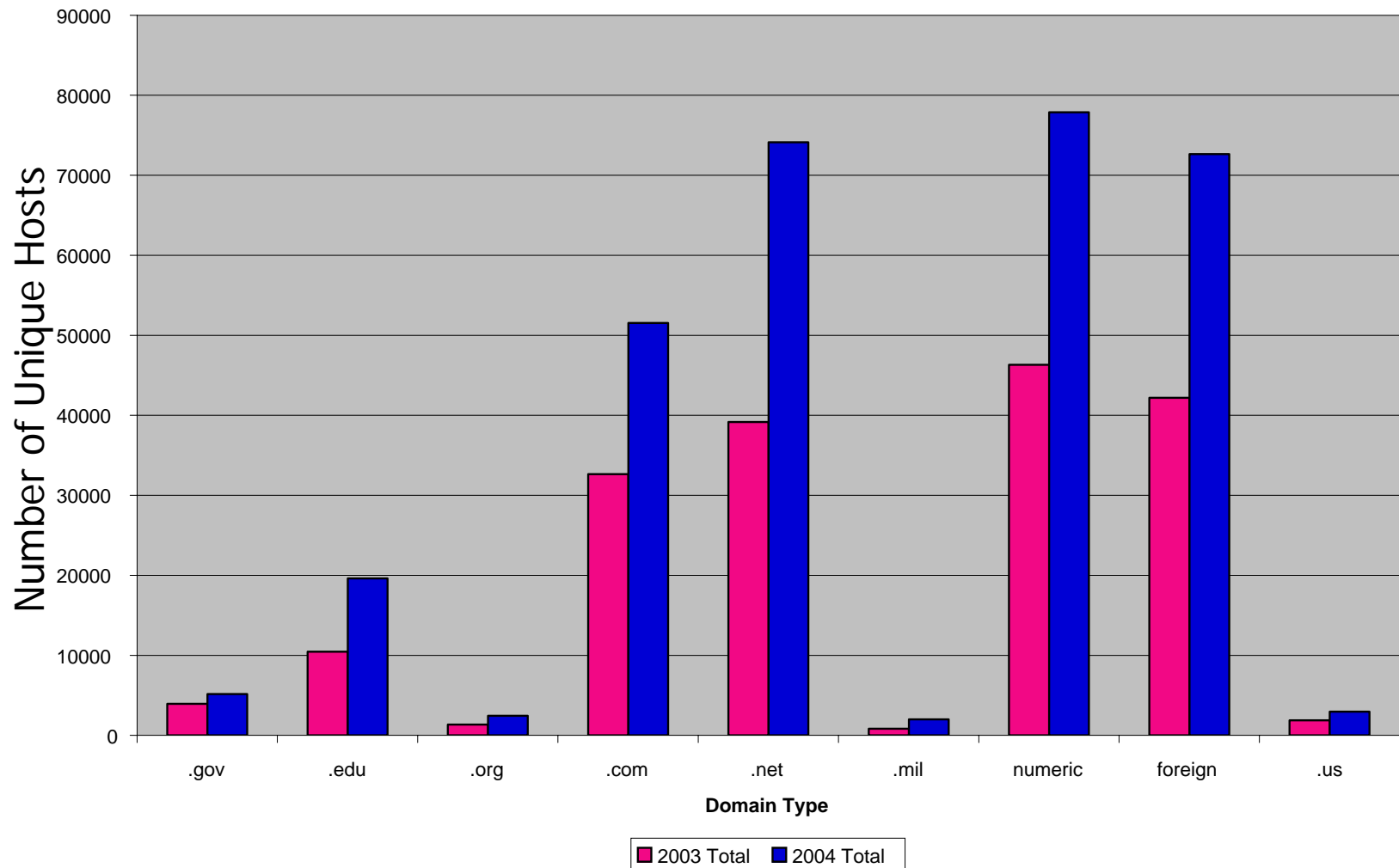
Active management of Metadata



Metadata is not simply accumulated. Metadata is modified and even deleted on a on-going basis to assure that it is current and accurate.

Users – over 3M hits in 2004

2003-2004 Web Usage by Domain



Collaborations

- NASA collaborations
 - NASA Earth Observing System Data Information System (EOSDIS)
 - Federation of Earth Science Information Partners (ESIP)
 - NASA's Geospatial One-Stop

- U.S. Government Federal Agency Collaborations
 - Biological Resources Division, US Geological Survey/NBII
 - National Oceanic and Atmospheric Administration (NOAA)
- Intergovernmental Collaborations
 - National Spatial Data Infrastructure/Federal Geographic Data Committee (NSDI/FGDC)
 - Data Management and Communications (DMAC)


International Collaborations

- Committee on Earth Observation Satellites International Directory Network (CEOS IDN)
- Antarctic Master Directory
- United Nations Environmental Programme (UNEP)
- The Global Observing Systems Information Center (GOSIC)
- The International Oceanographic Data and Information Exchange (IODE)
- Global Ecosystems Dynamics Program (GLOBEC)

Earth Science data and services directory: Global Change Master Directory We

File Edit View Go Bookmarks Tools Window Help

New Tab Earth Science data and services directory: ...

 **GODDARD SPACE FLIGHT CENTER** + Visit NASA.gov

 **Global Change Master Directory**
a directory to Earth science data and services

About Us | FAQ | Contact Us | Site Map

Home Data Sets Data Services Collaborations Add to GCMD What's New Participate Calendar Links

Find Data Sets by Topic:

User Community

- Provide Feedback
- Subscribe
- Download
- Add to the GCMD
- Keywords
- Discussion List
- Learning Center

What's New

- New Data Sets Added
- Featured News Story


[More >](#)


CEOS

GCMD is the North American Coordinating Node of the CEOS International Directory Network

 **Agriculture**
forest science, soils ...

 **Land Surface**
erosion, topography ...


 **Atmosphere**
precipitation, air quality ...

 **Oceans**
marine biology, salinity ...

 **Biosphere**
vegetation, zoology ...


 **Paleoclimate**
ice cores, land records ...

 **Climate Indicators**
air temperature, drought ...


 **Solid Earth**
geochemistry, seismology ...

 **Cryosphere**
frozen ground, sea ice ...

 **Spectral / Engineering**
radar, visible imagery ...

 **Human Dimensions**
land use, population ...

 **Sun-Earth Interactions**
auroras, solar activity ...

 **Hydrosphere**
rivers/streams, water quality ...

Data Centers - Locations - Instruments - Projects - Platforms/Sources

Data Set Text Search

Go

[More Search Options](#)

[Search tips](#)

Find Data Services

- Data Analysis and Visualization
- Data Management / Data Handling
- Education / Outreach
- Environmental Advisories
- Hazards Management
- Metadata Handling
- Models
- Reference and Information Services

Services Text Search

Go

[More Search Options](#)

[Search tips](#)

http://gcmd2.gsfc.nasa.gov/KeywordSearch/Keywo...wordPath=Parameters|BIOSPHERE&MetadataType=0

Topic-based
browsing of
datasets

Free text
search of
datasets

Keyword,
Spatial and
Temporal
searches

Browse
services

Free text
search of
services

Additional
searches

Portals

Portals provide customized access to project-specific or topic-specific metadata

Atmosphere
[CLIVAR](#)
[GCOS](#)

Biosphere
[GOFC](#)

Cryosphere
[AMD](#)
[AMD-AR](#)
[AMD-BE](#)
[AMD-CA](#)
[AMD-CH](#)
[AMD-EE](#)
[AMD-FI](#)
[AMD-JP](#)
[AMD-USA](#)

Hydrosphere
[WWF](#)

Land Surface
[GISD](#)
[GTOS](#)

Models
[Earth Science Models](#)
[Model Output Data](#)
[NOMADS](#)

Oceans
[GLOBEC](#)
[GOOS](#)
[OPeNDAP](#)
[RSMAS](#)

Research Programs and Organizations
[CEOP](#)
[CEOS](#)
[ESIP](#)
[ESIP Services](#)
[GOSIC](#)
[IAI-DIS](#)
[JAXA](#)
[NASA Geospatial Framework](#)
[NASA GSFC DAAC](#)
[NASA ESE DAACS](#)
[NASA GIS](#)
[NCAR](#)
[NOAA](#)
[Remote Sensing for Conservation](#)
[UN](#)
[WDC](#)

ESIP Federation GCMD Portal - Netscape

File Edit View Go Bookmarks Tools Window Help

New Tab ESIP Federation GCMD Portal

ESIP FEDERATION
A Global Change Master Directory Portal for the
Federation of Earth Science Information Partners

Find ESIP Federation Data Sets by Topic:

Agriculture
forestry, soils ...

Oceans
circulation, salinity ...

Atmosphere
precipitation, temperature ...

Paleoclimate
tree rings, land records ...

Biosphere
vegetation, zoology ...

Snow and Ice
frost, snow cover ...

Climate Indicators
air temperature, drought ...

Solid Earth
natural resources, biogeochemistry ...

Human Dimensions
environmental impacts, land use ...

Spectral / Engineering
radar, visible imagery ...

Hydrosphere
snow & ice, water quality ...

Sun-Earth Interactions
auroras, solar activity ...

Land Surface
land cover, erosion ...

Data Centers - Location - Instruments - Platforms - Projects

Metadata entry - docBuilder

docBUILDER - test1 (DIF)

Metadata Submission

Options

Click for options



- | | | | |
|--|--|---|---|
| <input checked="" type="checkbox"/> Entry ID ⓘ | <input type="checkbox"/> Data Set Citation ⓘ | <input type="checkbox"/> Project ⓘ | <input type="checkbox"/> Reference ⓘ |
| <input type="checkbox"/> Entry Title ⓘ | <input type="checkbox"/> Instrument ⓘ | <input type="checkbox"/> Keyword ⓘ | <input type="checkbox"/> Related URL ⓘ |
| <input type="checkbox"/> Science Keywords ⓘ | <input type="checkbox"/> Platform ⓘ | <input type="checkbox"/> Quality ⓘ | <input type="checkbox"/> Parent DIF ⓘ |
| <input type="checkbox"/> ISO Topic Category ⓘ | <input type="checkbox"/> Temporal Coverage ⓘ | <input type="checkbox"/> Access Constraints ⓘ | <input type="checkbox"/> IDN Node ⓘ |
| <input type="checkbox"/> Data Center ⓘ | <input type="checkbox"/> Paleo-Temporal Coverage ⓘ | <input type="checkbox"/> Use Constraints ⓘ | <input checked="" type="checkbox"/> DIF Creation Date ⓘ |
| <input type="checkbox"/> Summary ⓘ | <input type="checkbox"/> Data Set Progress ⓘ | <input type="checkbox"/> Data Set Language ⓘ | <input type="checkbox"/> Last DIF Revision Date ⓘ |
| <input checked="" type="checkbox"/> Metadata Name ⓘ | <input type="checkbox"/> Spatial Coverage ⓘ | <input type="checkbox"/> Originating Center ⓘ | <input type="checkbox"/> DIF Revision History ⓘ |
| <input checked="" type="checkbox"/> Metadata Version ⓘ | <input type="checkbox"/> Location ⓘ | <input type="checkbox"/> Distribution ⓘ | <input type="checkbox"/> Future DIF Review Date ⓘ |
| <input type="checkbox"/> Personnel ⓘ | <input type="checkbox"/> Data Resolution ⓘ | <input type="checkbox"/> Multimedia Sample ⓘ | |

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DIF SYSTEM "http://gcmd.gsfc.nasa.gov/Aboutus/xml/dif/dif_v9.dtd">
<DIF>
  <Entry_ID>test1</Entry_ID>
  <Metadata_Name>CEOS IDN DIF</Metadata_Name>
  <Metadata_Version>9.0</Metadata_Version>
  <DIF_Creation_Date>2005-02-02</DIF_Creation_Date>
</DIF>
```


docBuilder – Metadata Entry

Use an existing
Data Center
or
Add a new one!

Data Center ⓘ

Organization that provides the data set.

Usage: + indicates you may click to add another (new) field - indicates you may click to remove this field

Use this widget to select from existing **Data Center Names**.

Click on a button below to display data center names with short names starting with that letter.

A-C D-F G-I J-L M-O P-R S-U V-Z

Search the list:

AAG > Association of American Geographers
ABDN/GEORG/CMCZM > Centre for Marine and Coastal Zone Management, Department of Geology
ACB > Alliance for the Chesapeake Bay
ACCU-WEATHER
ACME > ACME Laboratories
AECT > African Elephant Conservation Trust
AFI > Aquarius Flight Inc.
AGI > American Geological Institute
AGHUK/GIG > Gigateway, Association for Geographic Information, UK
AGI/ESWORLD > Earth Science World, American Geological Institute

Global Change Master Directory Web Site - Netscape

http://gcmd2.gsfc.nasa.gov/docBuilder/servlets/docbuilder.py?action=renderField&field=DIF.Data

Reminder: To add another Data Center or Personnel group, click on the + below.

+ Data Center #1

Data Center Name

Data Center URL

Data Set ID

Directory Interchange Format -DIF

- Entry ID
 - **Entry Title**
 - **Parameters (Science Keywords)***
 - **ISO Topic Category**
 - **Data Center***
 - **Summary**
 - Metadata_Name
 - Metadata_Version
 - Personnel
 - Data Set Citation
 - Instrument*
 - Platform
 - Temporal Coverage
 - Paleo-Temporal Coverage
 - Data Set Progress
 - Spatial Coverage
 - Location*
 - Data Resolution
 - Project
 - Keyword
 - Quality
 - Access Constraints
 - Use Constraints
 - Data Set Language
 - Originating Center*
 - Distribution
 - Multimedia Sample
 - Reference
 - Discipline
 - Related URL
 - Parent DIF*
 - IDN Node*
 - DIF Creation Date
 - Last DIF Revision Date
 - DIF Revision History
 - Future DIF Review Date
- * controlled vocabulary

DIF characteristics

- Although DIFs pre-date XML, an XML schema is available (<http://globalchange.nasa.gov/Aboutus/xml/dif/dif-schema.xml>)
- “Parameters” have a four-level hierarchy with controlled terms that make up a *de facto* ontology for organizing data (multiple lists of controlled terms are supported)
 - Parameter
 - Topic
 - Term
 - ❖ Keyword
- For collections of data, DIFs support parent-child relationships
 - Allowing users to query at both the collection and the individual dataset levels

Existing Crosswalks from/to DIF

- The ISO 19115/TC 211 Geographic Information/Geomatics Metadata Standard
 - DIF to ISO 19115 Mapping
 - FGDC/ISO Metadata Standard Harmonization
- Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata
 - Directory Interchange Format fields mapped to FGDC fields
- The GeoConnections Discovery Portal (formerly CEONet)
 - Directory Interchange Format fields mapped to FGDC fields

Existing Crosswalks from DIF

- The Z39.50 Search and Retrieval Protocol
 - GCMD MD-Isite implementation of Z39.50
- The Catalogue Interoperability Protocol (CIP)
- The National Biological Information Infrastructure (NBII)
- The Dublin Core Metadata Initiative
 - Directory Interchange Format fields mapped to the Dublin Core Element Set
- The Australia New Zealand Land Information Council (ANZLIC)
 - Directory Interchange Format fields mapped to the ANZLIC fields

GCMD and EML

- GCMD has done test imports of EML documents using the GCE LTER site
 - Manual element: Assignment of Parameters (Science Keywords) from GCMD valids list

Thanks!

- Lola Olsen
- Gene Major
- Cheryl Solomon