Earth Data Analysis Center
at
The University of New Mexico

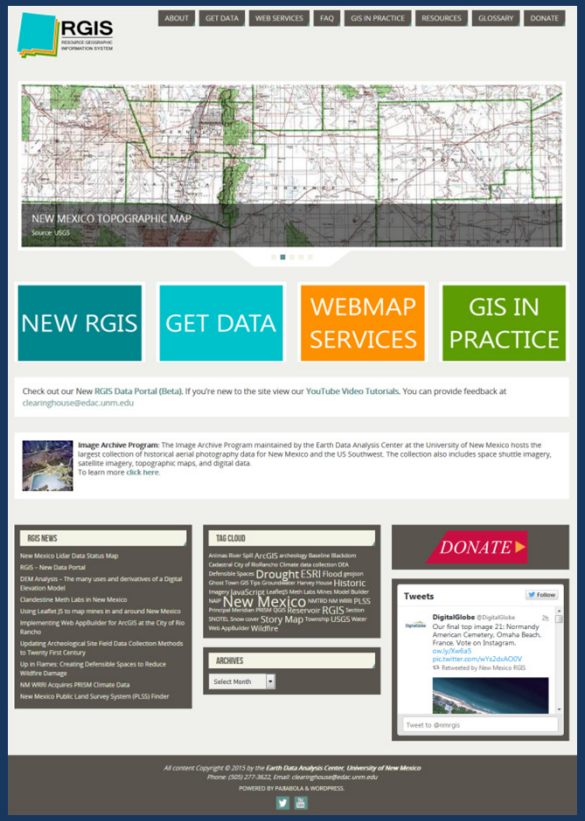
EDAC

EPSCoR/RGIS Metadata: FGDC to ISO Transformation

FGDC ISO Implementation Forum
April 13, 2016

Earth Data Analysis Center

Earth Data Analysis Center (EDAC) was established at the University of New Mexico (UNM) in 1964 to transfer NASA space-based technology to the private and public sectors. As geospatial technology has progressed EDAC has developed skills to meet those changing requirements. In 1968 EDAC expanded to include a library clearinghouse and in 1992 became a digital data clearinghouse. As remote sensing technology evolved EDAC began processing remote sensing data in 1973 and started image processing in 1979. EDAC acquired GIS software in 1983 and became one of the first ESRI users in New Mexico. In 1990, EDAC began collecting and processing GPS data and in 1999 created an information technologies program within the organization.



http://rgis.unm.edu

Data & Tools

- Geospatial Data
- Web Services
- Browse Data
- Spatial Search
- Metadata

New Mexico Resource Geographic Information System (RGIS) Program

- RGIS serves as a repository for New Mexico geospatial data. These data are publicly available for download from the RGIS Web site.
- Support public service programs, policy development and implementation, resource and assets management, and strategic planning within the state.

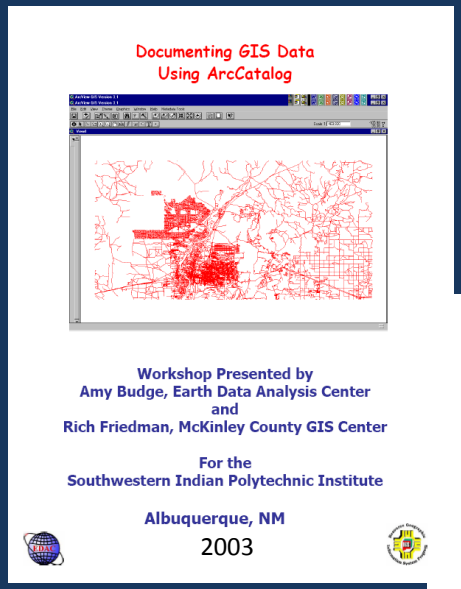
RGIS History

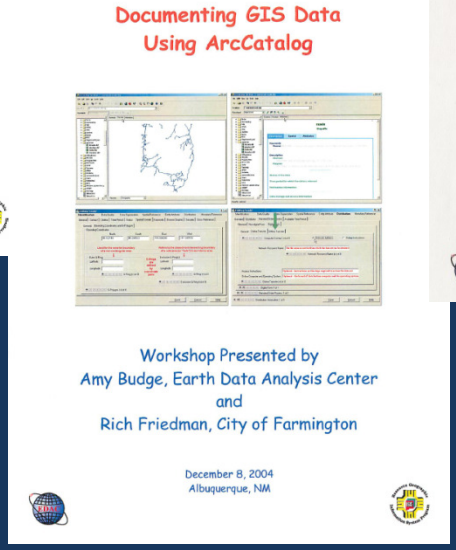
- 1988 – New Mexico State agencies surveyed by four UNM units to assess the feasibility for developing a statewide computer mapping and geographic information system. (RGIS)
- 1989 – House Bill 218 requested funds for establishing a GIS clearinghouse
- 1990 – RGIS became a member of the New Mexico Geographic Information Systems Advisory Committee (GISAC
- 1992 – RGIS clearinghouse opened and provided digital data via 4mm and 8 mm tapes
- 1993 – Catalog of digital geographic data in New Mexico published. (cost $40.00)
- 1994 – EDAC received FGDC Cooperative Agreement Program award to develop FGDC compliant metadata
- 1996 – RGIS website inaugurated. Provided information on the program and metadata. Data not available yet via the website. CD-ROM set of clearinghouse data released. Cost per CD was $150.00.

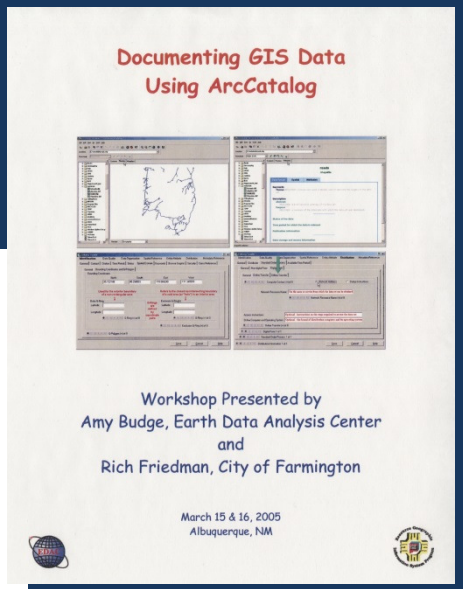
RGIS History

- 1997 – RGIS Clearinghouse upgraded to a National Spatial Data Infrastructure (NSDI) compliant node. Metadata could be searched by keywords and/or geographic coordinates
- 1998 – Version 2 of the Resource Data CD released. First metadata training workshops supported by FGDC and RGIS were held.
- 2001 – RGIS website redesigned to provide online access to digital data. Data available at no cost!
- 2002 – Road centerline data collected by New Mexico Counties were made available
- 2008 – RGIS website redesigned
- 2013 - The RGIS website was redesigned to accommodate more sophisticated capabilities such as data discovery, access, and web mapping services.
- 2013 - RGIS designated State Digital Geospatial Data Clearinghouse by the NM Legislature and Governor (2013, HB493)

Metadata Training





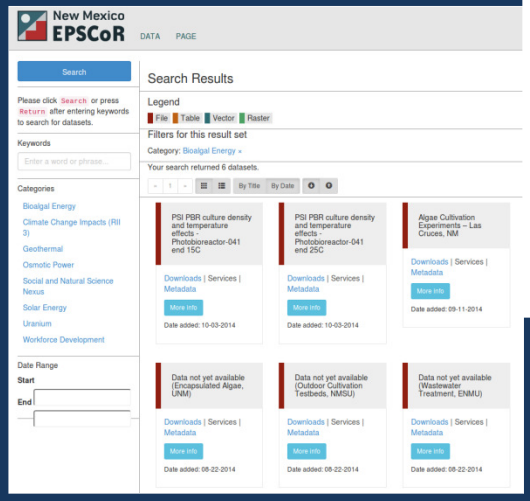


EPHT
NMGIC
State Offices
County Offices
BLM
Students

NM EPSCoR

Experimental Program to Stimulate Competitive Research

Data Management
Data Access and Discovery
Data Visualization
Collaborative Tools
Virtual Models
Web Services



http://nmepscor.org

NM EPSCoR & WC WAVE - Virtual Watershed Platform

The Virtual Watershed will allow researchers from around the world to upload watershed data, run models and export results within one integrated platform.

EDAC EARTH DATA ANALYSIS CENTER

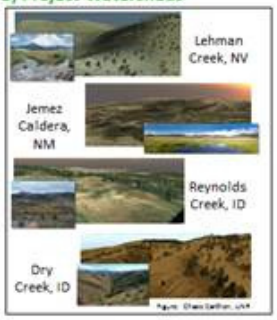
1) Project Goals

This NSF EPSCoR Track 2 project is advancing watershed science, workforce development and education with cyber-infrastructure (CI)-enabled discovery and innovation.

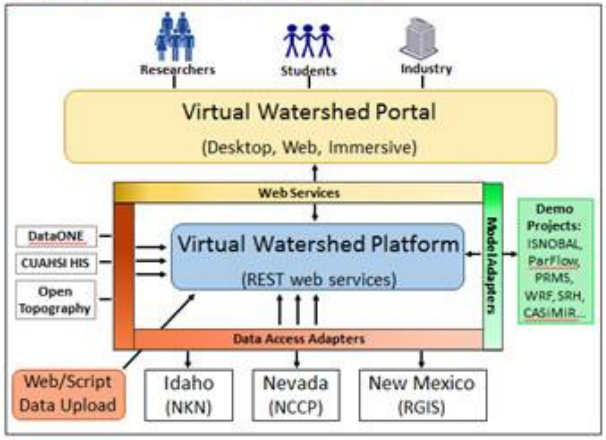
- Improve understanding of hydrologic interactions and impact on ecosystem services
- Accelerate interdisciplinary watershed research through innovative visualization and streamlined data management
- Engage faculty and broaden student participation in STEM through modeling and visualization

2) Tri-State Collaboration

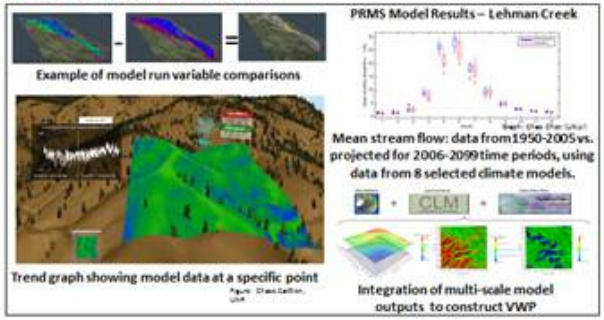
3) Project Watersheds



4) Project Research Components and Linkages

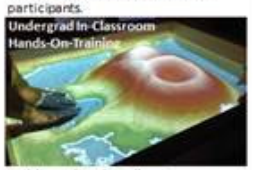


5) Data Analysis and Visualization



6) Workforce Development Efforts

Snow Camp organizer Jim McNamara (Boise State University) demonstrates collection equipment operation to participants.



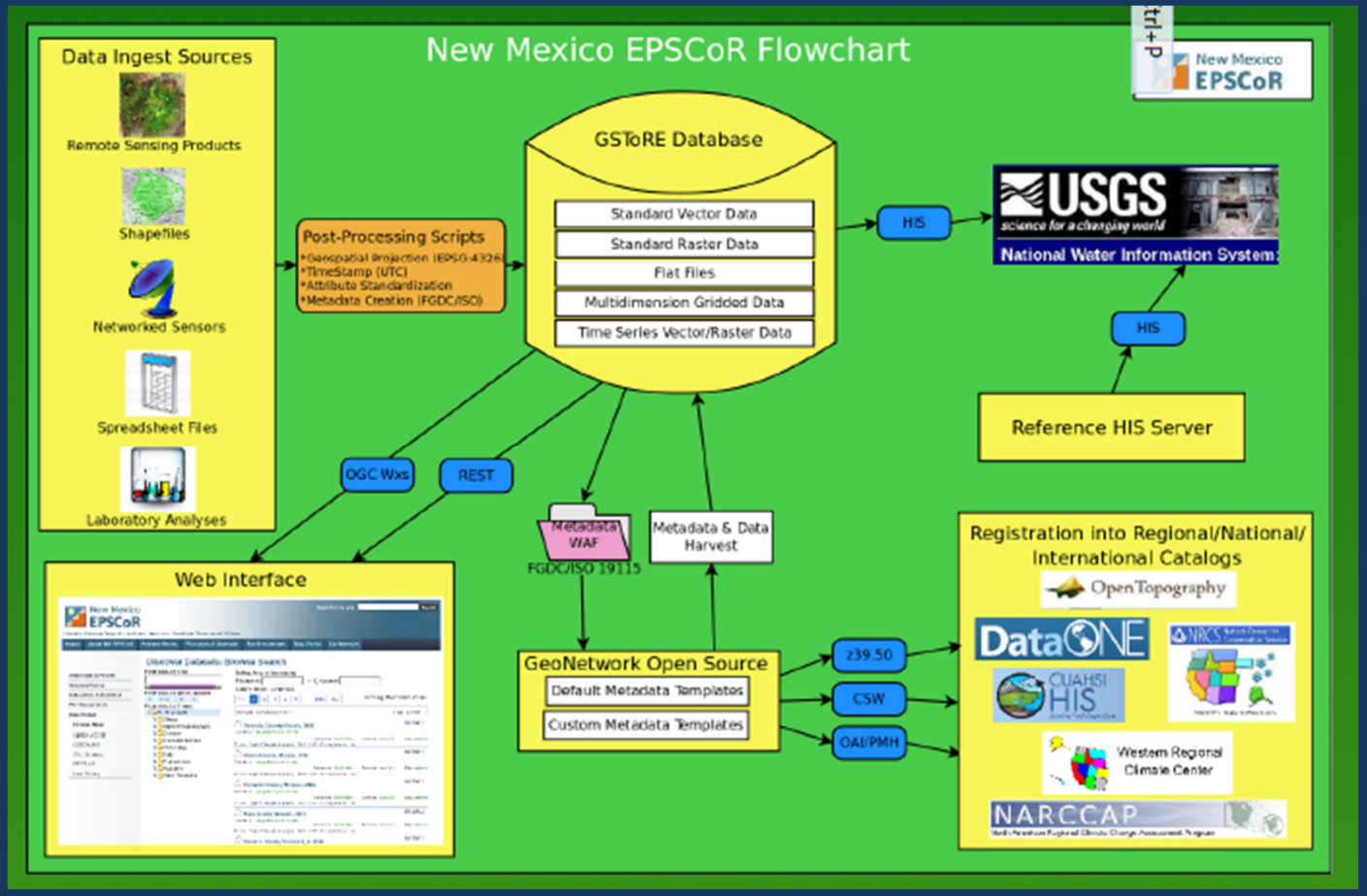
Building a digital sandbox to demonstrate hydrological flow.

Curriculum Development

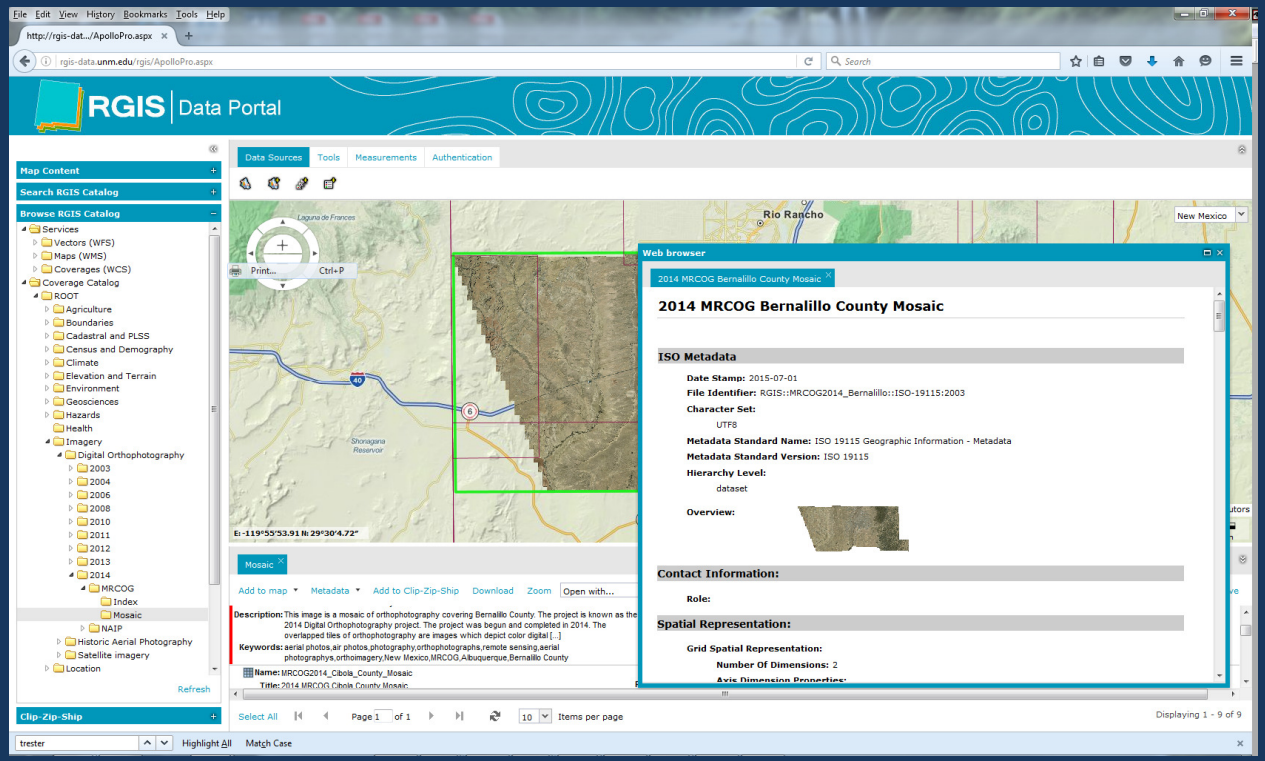
Interdisciplinary modeling course for graduate students

7) Acknowledgements

This project is funded by NSF EPSCoR grant #s: IIA-1329469, IIA-1329470 and IIA-1329513. All material presented are the result of efforts by faculty and students in ID, NV and NM.

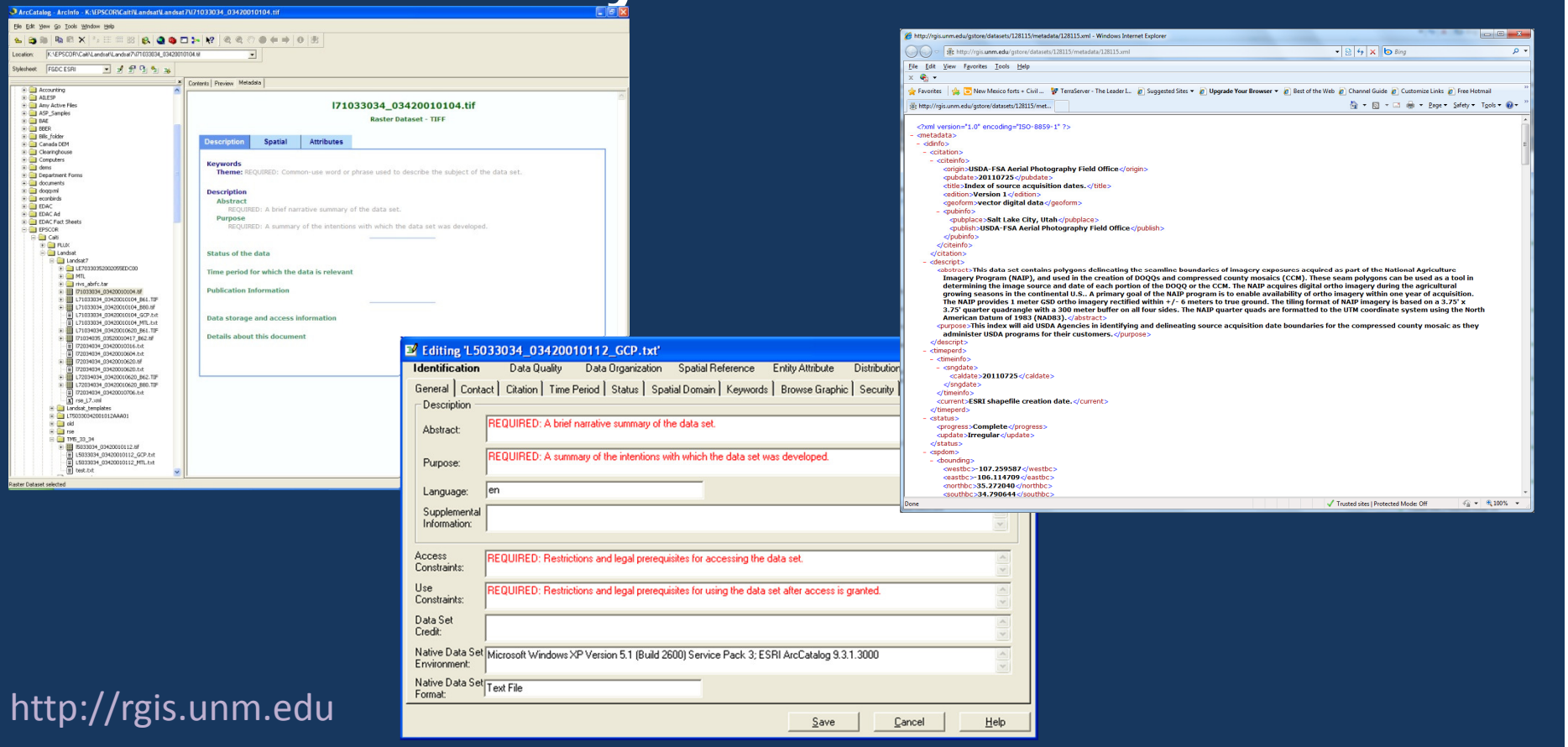

New Mexico EPSCoR Flowchart
Data Ingest Sources
Remote Sensing Products
Shapefiles
Networked Sensors
Spreadsheet Files
Laboratory Analyses
Post-Processing Scripts
*Geospatial Projection (EPSG:4326)
*TimeStamp (UTC)
*Attributa Standardization
*Metadata Creation (FGDC/ISO)
GSToRE Database
Standard Vector Data
Standard Raster Data
Flat Files
Multidimension Gridded Data
Time Series Vector/Raster Data
HIS
USGS
science for a changing world
National Water Information System
HIS
Reference HIS Server
OGC Wxs
REST
Web Interface
Metadata VIAF
FGDC/ISO 19115
Metadata & Data Harvest
GeoNetwork Open Source
Default Metadata Templates
Custom Metadata Templates
z39.50
CSW
OAI/PMH
Registration into Regional/National/ International Catalogs
OpenTopography
DataONE
CUAHSI HIS
Western Regional Climate Center
NARCCAP

RGIS/APOLLO



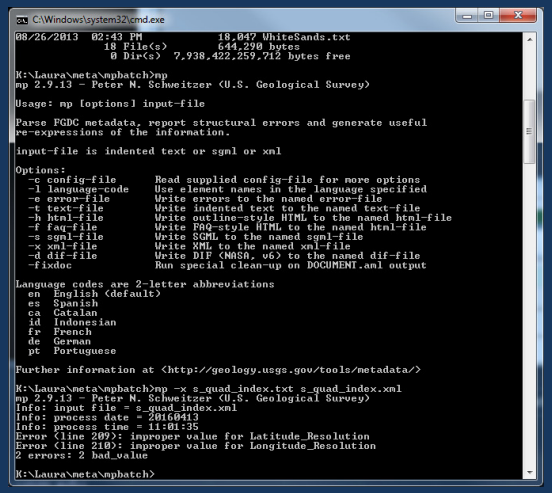
http://rgis-data.unm.edu

Early Metadata

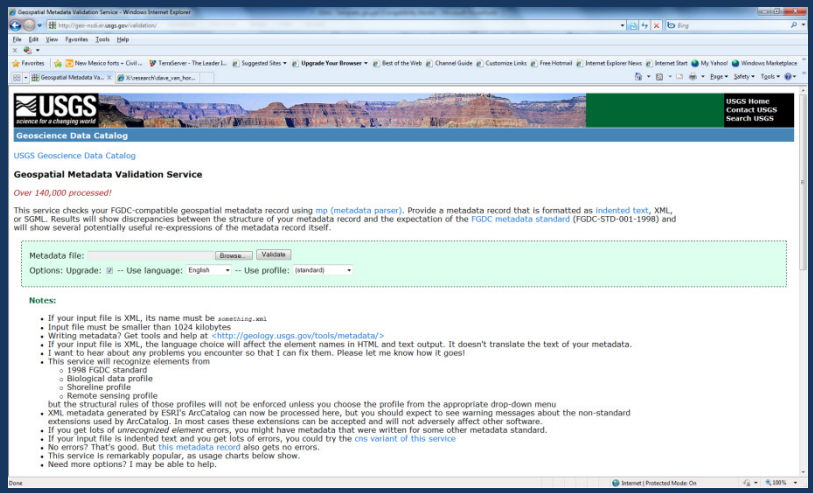


http://rgis.unm.edu

FGDC Metadata Validation



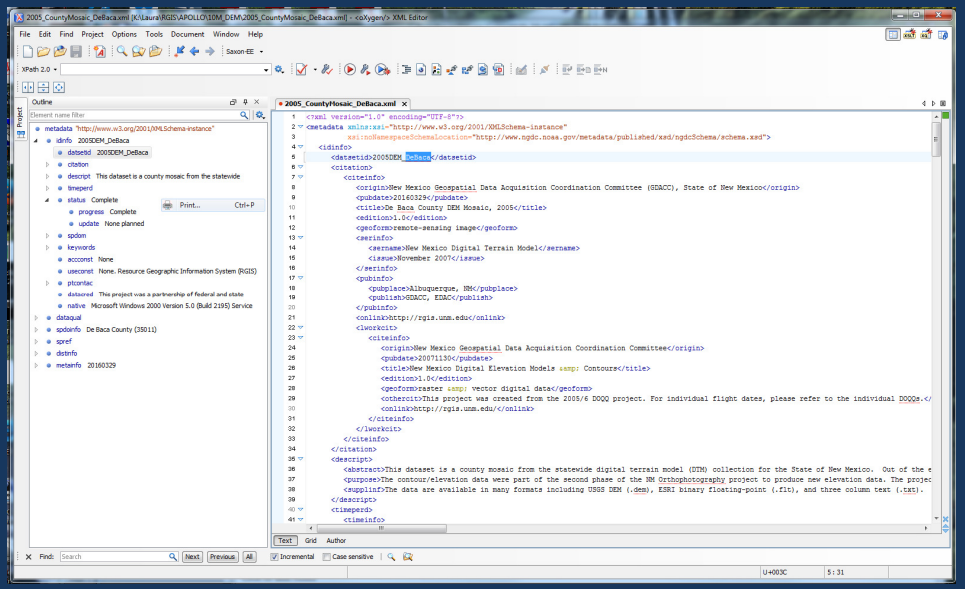
MP / CNS – DOS Command Line

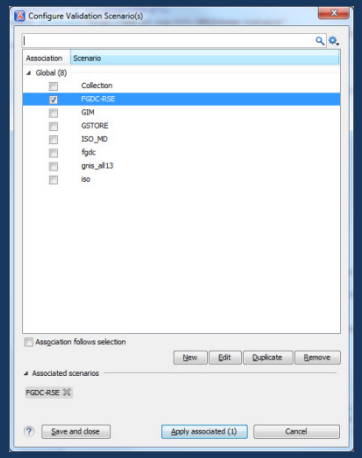


http://geo-nsdi.er.usgs.gov/validation/

http://rgis.unm.edu

Oxygen Metadata Validation



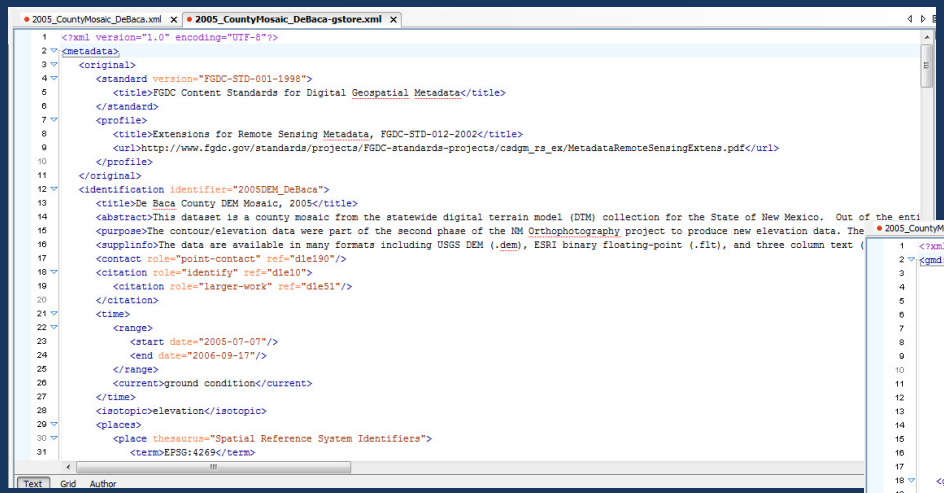


http://www.ngdc.noaa.gov/metadata/published/xsd/ngdcSchema/schema.xsd

http://rgis.unm.edu

http://www.oxygenxml.com/

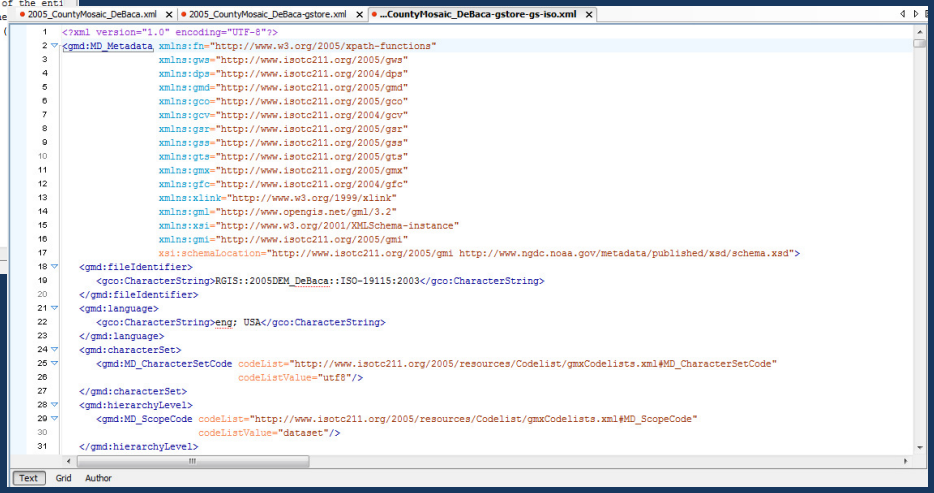
Oxygen Metadata Transformation



FGDC to GSTORE

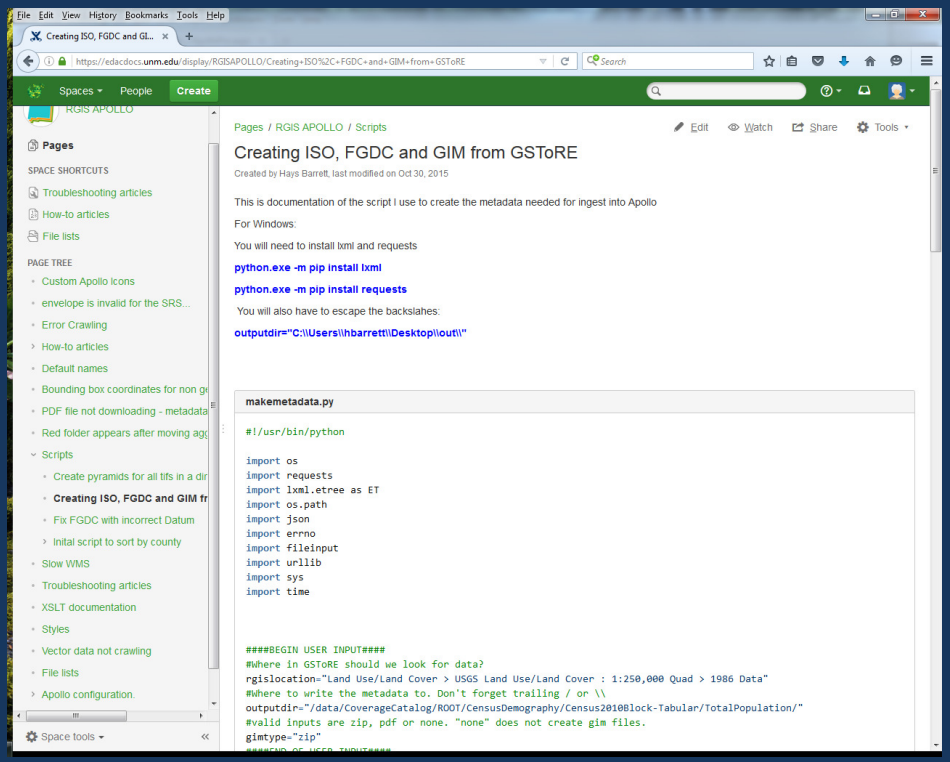
Online schemas to validate against:
ISO
http://www.ngdc.noaa.gov/metadata/published/xsd/schema.xsd

FGDC
https://www.fgdc.gov/schemas/metadata/fgdc-std-001-1998.xsd



GSTORE to ISO

http://rgis.unm.edu

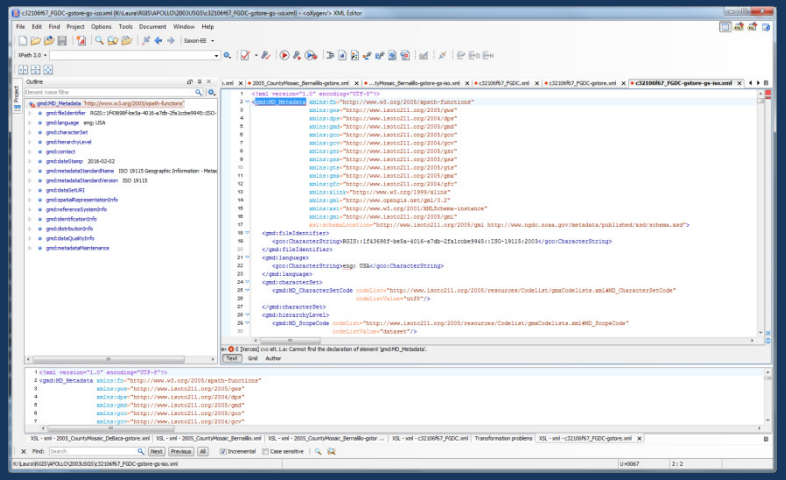


Script Transformation

To get Apollo ready metadata from GSToRE replace "UUID" in the URLs below with the UUID of the dataset you are working on:

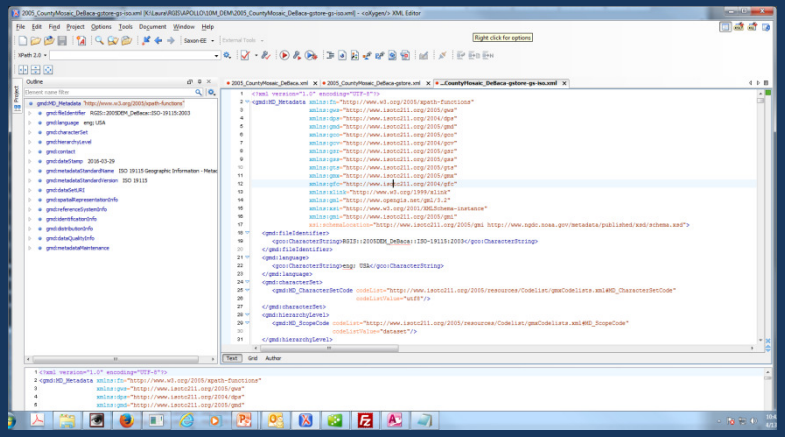
ISO
http://129.24.63.99/gstore_v3/apps/rgis/datasets/UUID/metadata/apollo.xml

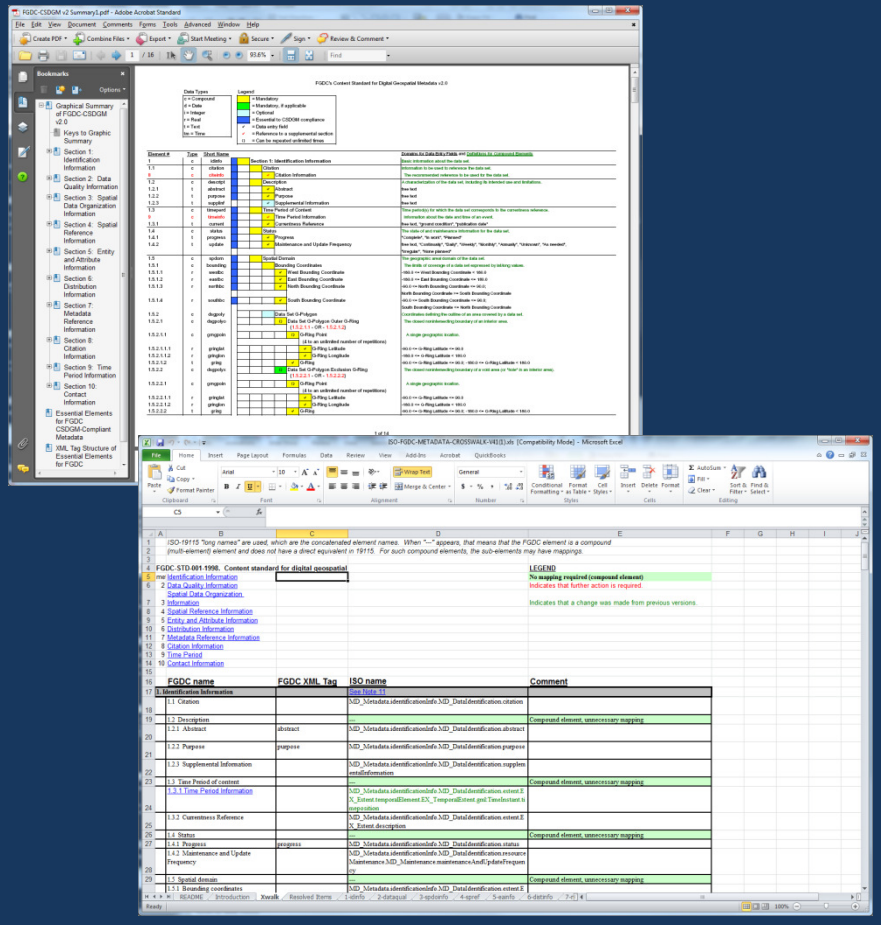
FGDC
http://129.24.63.99/gstore_v3/apps/rgis/datasets/UUID/metadata/apollo_FGDC.xml



Solving Errors

Dates
Validation URL
Case
Unknown





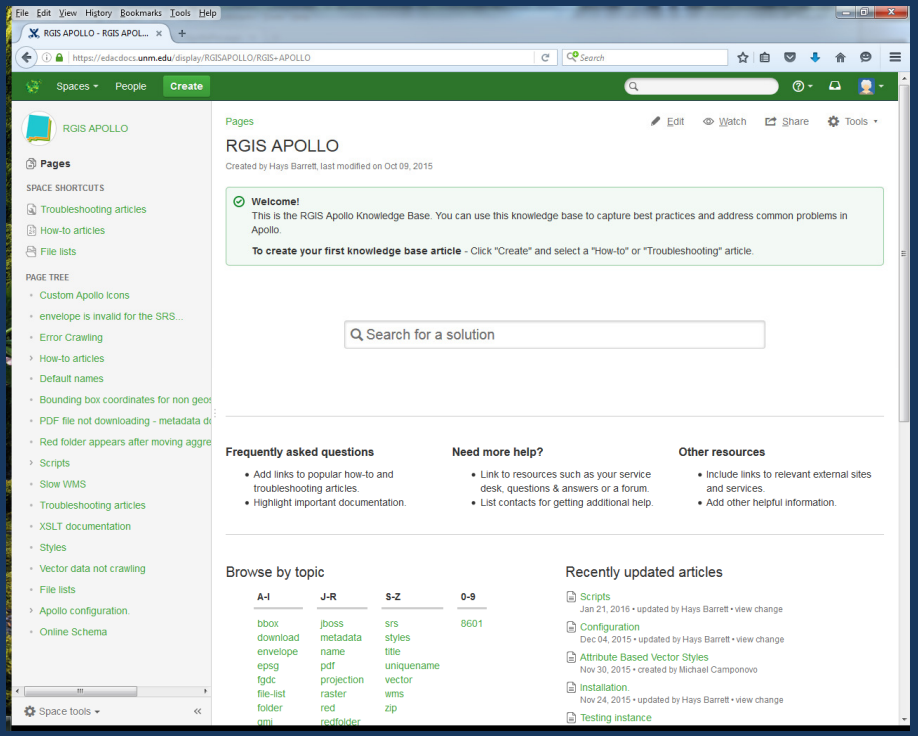
Useful Tools

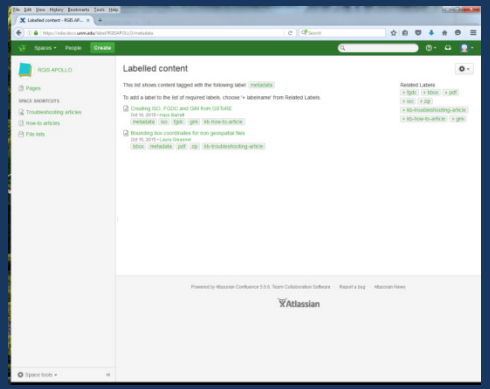
NOAA ISO Training Classes
FGDC-CSDGM v2 Summary
ISO-FGDC Metadata Crosswalk
Early FGDC training workbooks
Templates

Lessons Learned

- Patience!!
- Validation processes are not created equal
- ISO metadata does not contain attribute information
  - Serving both FGDC and ISO metadata
- APOLLO doesn't like folders with more than 500 items
- APOLLO uses International ISO standard
- Use scripts whenever possible

RGIS/APOLLO Knowledge Base





http://rgis-data.unm.edu

https://github.com/edac

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Geographic Storage, Transformation and Retrieval Engine Version 3: A data framework for data discovery, delivery and documentation (GSToRE)
http://gstore.unm.edu/