

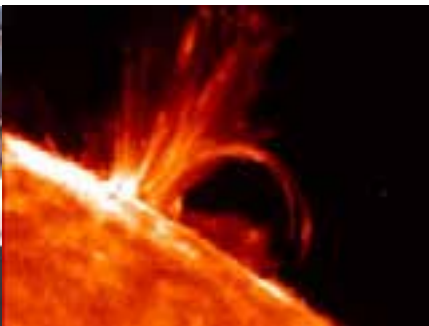


# Scientific Data Application in NOAA Climate Prediction Center

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*February 11, 2014*

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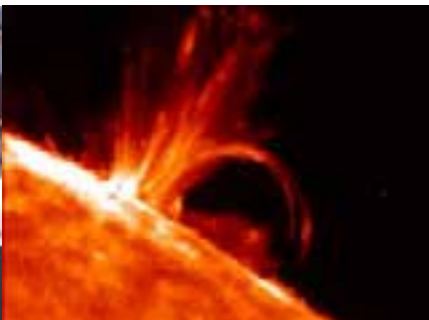


# Outline

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- Drought Monitoring/Forecasting and Geospatial Activities
- Working with Scientific Data Formats and Challenges
- Data Interoperability





# Drought Monitoring/Forecasting

- **The U.S. Drought Monitor Team Relies on Field Observation Feedback from the Local Experts for Impacts Information & “Ground Truth”**  
*Listserver (350+ Participants: 2/3 Federal, 1/3 State/Univ.)*
- Quantitative Data formats
  - ASCII (CSV, Delimited), XLS, Shape, Gridded Binary (primary), GeoTIFF
- Qualitative Data formats
  - Newstories
  - Impacts ([droughtreporter.unl.edu](http://droughtreporter.unl.edu))
- Post-processing
  - Python/esri stack on Windows, C/Perl/SQL on RHEL.

# Drought Monitoring

## Integrate Drought Indicators

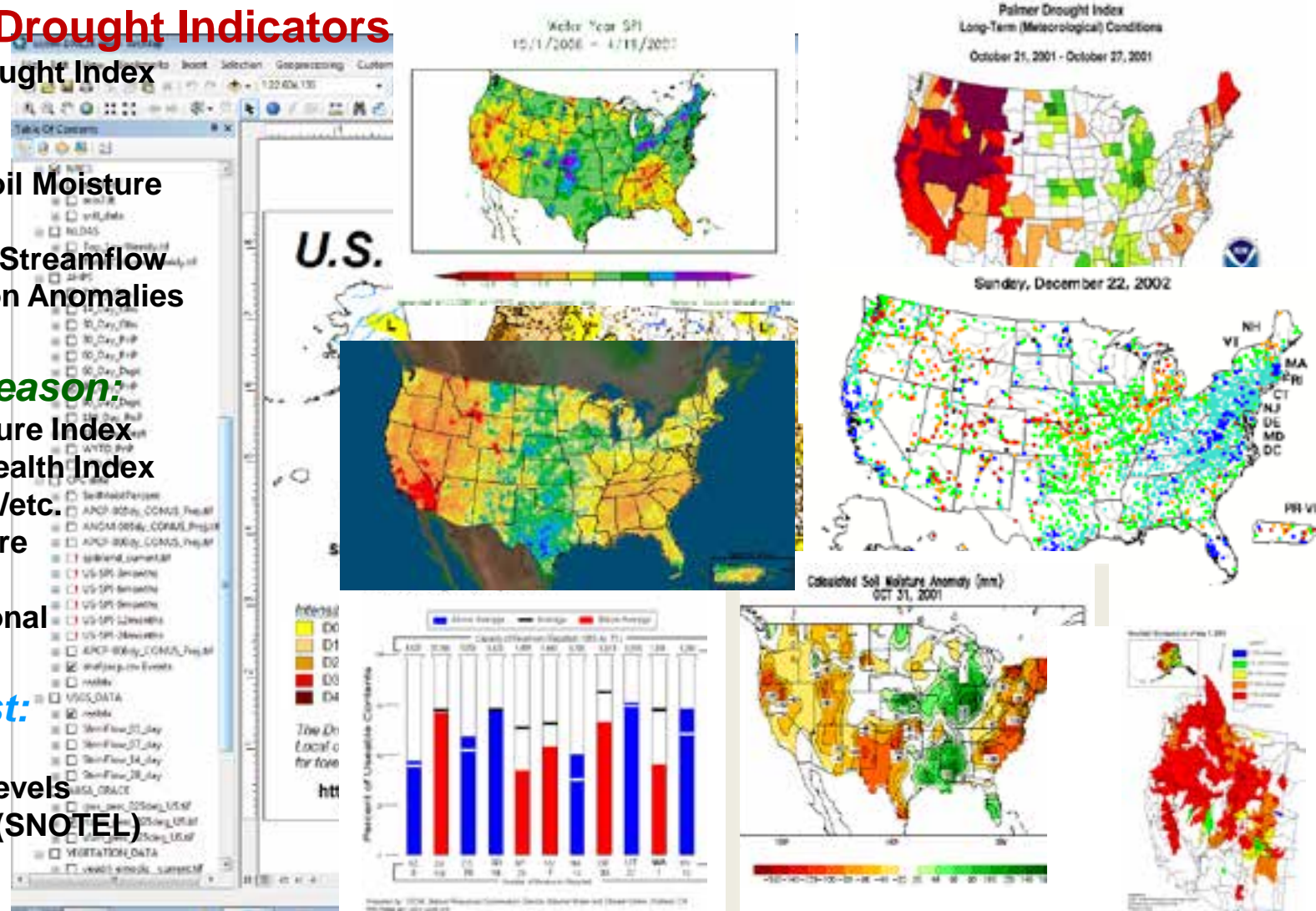
- Palmer Drought Index
- SPI
- KBDI
- Modeled Soil Moisture
- NLDAS
- 7-Day Avg. Streamflow
- Precipitation Anomalies

## Growing Season:

- Crop Moisture Index
- Sat. Veg. Health Index
- VegDRI/ESI/etc.
- Soil Moisture
- Mesonets
- State/Regional

## In The West:

- SWSI
- Reservoir levels
- Snowpack (SNOTEL)
- SWE
- Streamflow

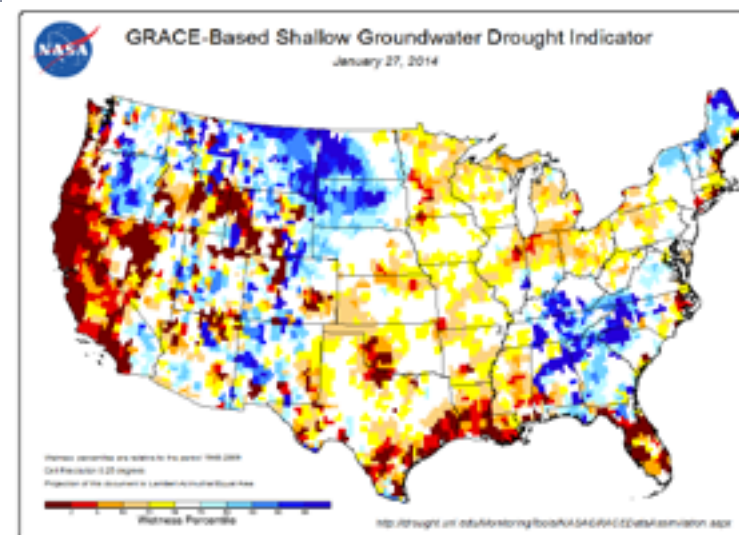
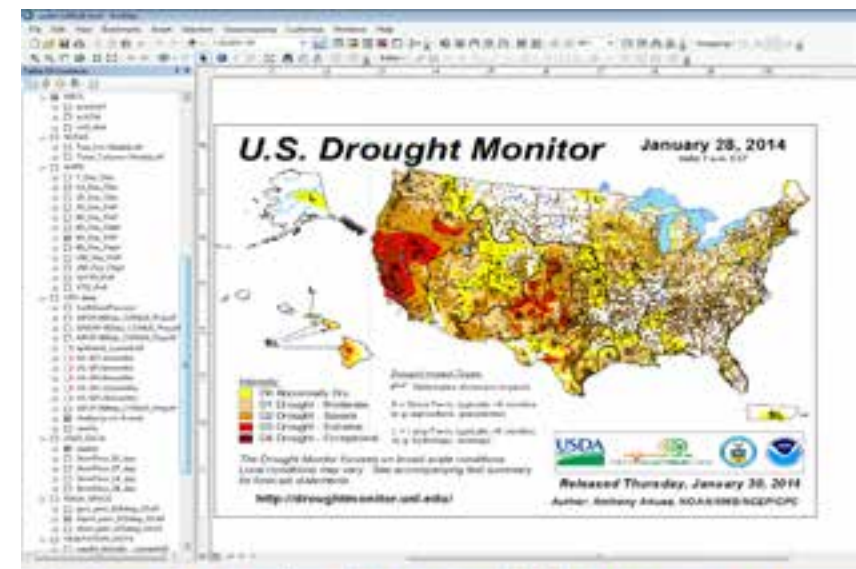






# Drought Monitoring

- Soil Moisture Data from NASA
- Gridded binary (float) (convert required)
- NDMC converts to GeoTIFF and makes a PNG for those that don't have access to the code/coders.
- Same data – taking up more space
- Vegetation Health Index, Standardized Precipitation Index, and AHPS.







# Leveraging ArcGIS for Scientific Data use



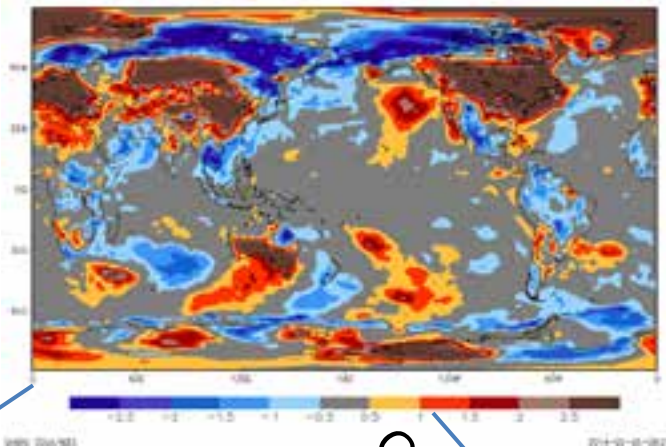
- Multiple data formats to follow the standards
- Specific data formats request from the stakeholders (government, public, private).
- Format compatibility and work around to use ArcGIS in the work flow
- Gridded Binary data (eg. Grib, Grib2, netCDF)
- Who is asking for the Data ?



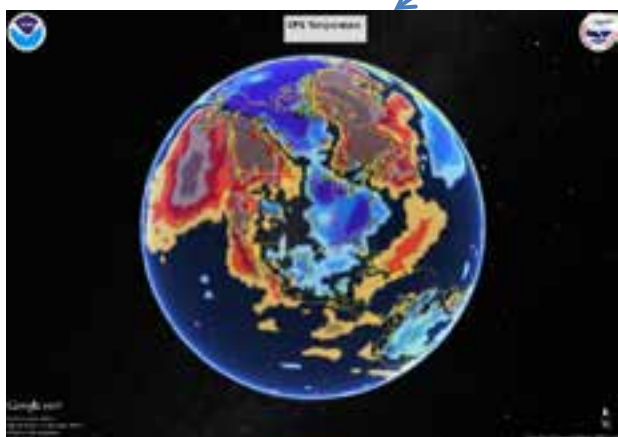
# Challenges: Binary to Arc raster, GeoTiff and Kml

CFS: 41 days of ensemble data

CPC preferred software for the data manipulation: GrADS v2.0.1, ArcGIS

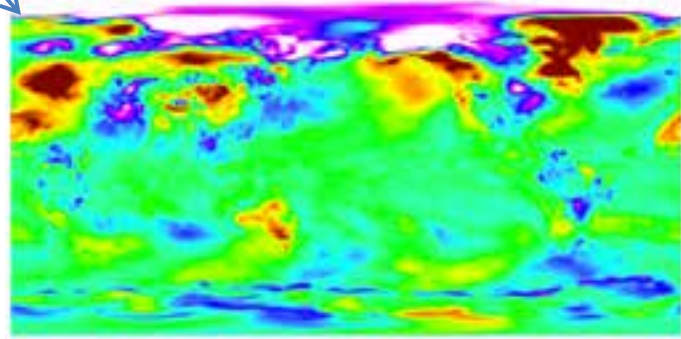


- ArcGIS workflow:
- create the hdr file
  - each ensemble each day
  - convert float to raster
  - flip the image



Kml

GeoTIFF  
Arc Raster







# Data Access and Interoperability



- Driving factors
  - Whitehouse Open Data Initiatives to Enhance Government Efficiency and Fuel Economic Growth
  - NOAA Science Advisory Board (SAB) Environmental Information Services Working Group (EISWG) 'Executive Summary'



# Data Access and Interoperability

## Why do we want it ?

- Expansion of data use and efficiency and reach out to larger user groups
- Increase/improve accessibility of NOAA data and cross the bridge of data formats
- Encourage Standards that increases the larger pools of the users' with same investment in data / Encourage more expansive format interpreters
- Standards will limit the diversity of data providing scheme and it will create less complexity in the data management with improved implementation.



# Data Access and Interoperability

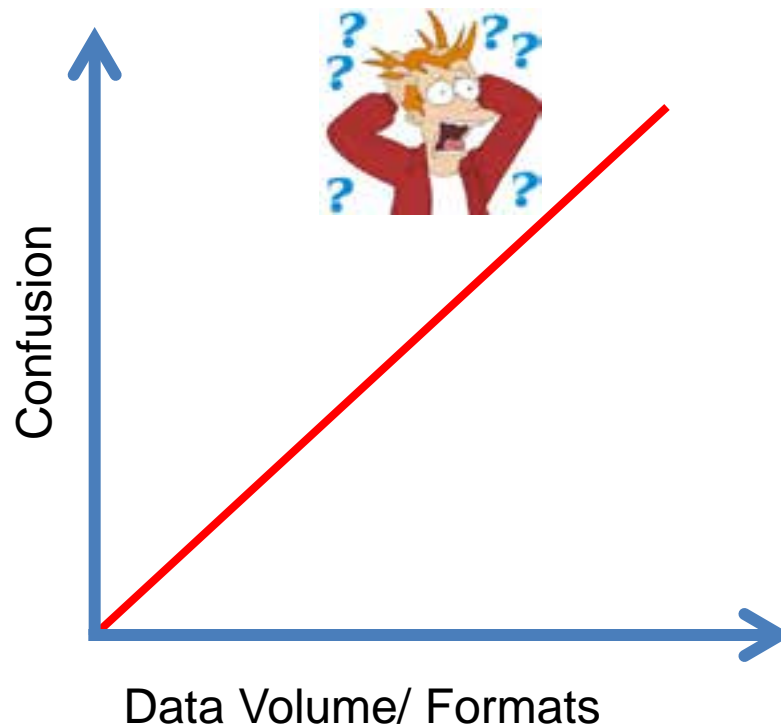
## Challenges and Possibilities:

- Not a perfect one stop solution available for the data discovery and ingest for the multiple formats
  - In the perfect world: we wont have to use several software for the data ingest and manipulation and ArcGIS will be one stop solution
- Moving towards the Web Services
- Best practices and recommendations for interoperable environment





# The End



Thanks ! Any Questions ?

