



NASA Report to Unidata Strategic Advisory Council

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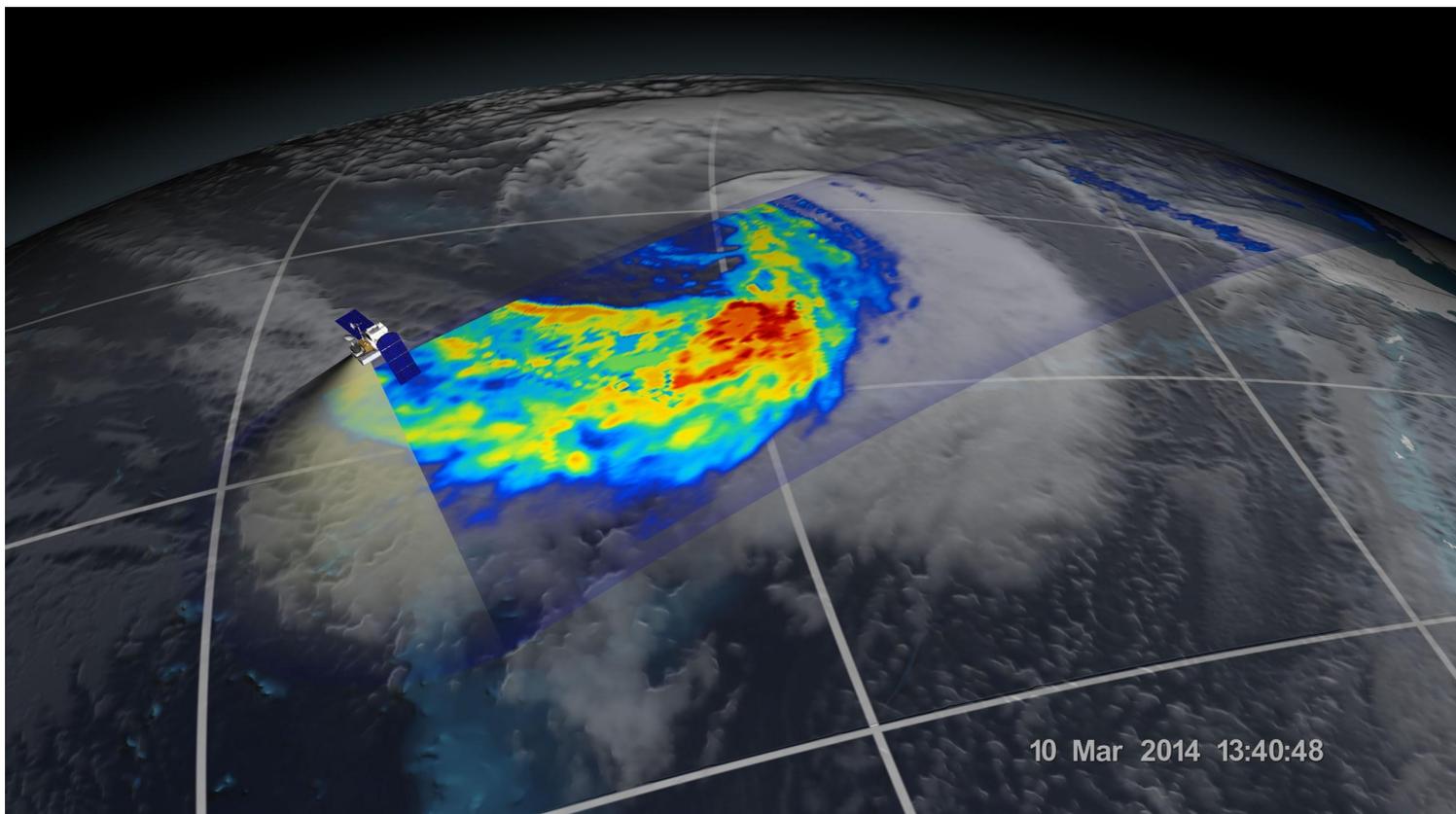
Disclosures

- Information Systems Architect at a NASA EOSDIS data center (GES DISC)
- Co-I with Charlie Zender (UCI) on an NCO project
- Co-I with Rahul Ramachandran (NASA/MSFC) on Collaborative Workbench
- Co-I with Chris Mattmann on an ESG-related project
- PI with 4 other EOSDIS data centers on a Federated Giovanni project
- Using: netCDF (classic), C API, CF, OPeNDAP, nco, TDS, OpenSearch, Panoply, GrADS, GDS



GPM Launch

- Recent Launch of Global Precipitation Measurement Satellite
 - First data to be released soon
 - Format: HDF-5





Upcoming Launches

- Orbiting Carbon Observatory: measure CO₂
- Soil Moisture Active Passive (SMAP)
- International Space Station
 - RapidScat: ocean winds
 - Cloud-Aerosol Transport System (CATS)



Earth Science Budget

Outyears are notional

(\$M)	2015	2016	2017	2018	2019
Earth Science	\$1,770	\$1,815	\$1,838	\$1,862	\$1,886

- Launches the Soil Moisture Active and Passive mission (SMAP), and the Stratospheric Aerosol and Gas Experiment III (SAGE III) to be mounted on the ISS.
- Formulates and develops ICESat-2, GRACE-Follow On, SWOT, CYGNSS, TEMPO, and a sustained Land Imaging capability.
- Develops and implements plans for measurements of solar irradiance, ozone profiles, and Earth radiation budget.
- Maintains weather and climate change modeling capabilities to enhance forecast accuracy.
- Operates over 21 Earth-observing spacecraft.
- Maintains robust R&A, airborne science (including IceBridge), technology development, and funds the Global Learning and Observations to Benefit the Environment (GLOBE) program.





NASA Earth Science Data Systems

- Single starting point for Earth science data:
 - <http://earthdata.nasa.gov>
 - Pointers to all EOSDIS-related assets

EARTHDATA Data Discovery Data Centers Community Science Disciplines

Web Clients	References	OGC Services	Near Real-Time	Data/Service Costs
GDEx (LP DAAC)	Data Format Standards	ASF Services	LANCE	Libre (NSIDC)
GCMD	Metadata Standards and Conventions	NSIDC Map Services	PO.DAAC	
GES DISC	Discovery and Access Technologies	ORNL DAAC Services	Worldview	
GloVIS (LPDAAC)	Processing Levels	SEDAC Services	GIBS	
HyDRO (GHRC)	Remote Sensors			
Mercury (ORNL)	Acronym List			
Mirador (GES DISC)	Julian Day Calendar			
Polaris (NSIDC)				
Reverb				
SEDAC				
Simple Subset Wizard (SSW)				
URSA (ASF)				
Vertex (ASF)				

Search & Order Tools

EOSDIS Data Service Directory

Webinar - Discover NASA's Archive for Space Geodesy Data: CDDIS
Join us on Wednesday, May 28, 2-3pm EDT where we will provide an overview of the Crustal Dynamics Data Information System (CDDIS) with background on space geodesy techniques and both scientific research as well as applications enabled by the archive.

ATMOSPHERE CALIBRATED RADIANCE AND SOLAR RADIANCE CRYOSPHERE HUMAN DIMENSIONS LAND OCEAN

Earthdata News Feeds EOSDIS News Sensing Our Planet



NASA Earth Science Data Strategy Influencers

- HQ
- Earth Science Data Information Systems (ESDIS) at GSFC
- Grassroots
 - DAAC Managers and DAAC Engineers
 - Earth Science Data Systems Working Groups (ESDSWG)
 - Earth Science Information Partners (ESIP)



Earth Science Data System Working Groups

- Airborne Data
- ASCII for Science Data
- Cloud Computing
- Data-Intensive Architecture
- Data Preservation Practices
- Data Quality
- Data Recipes
- Dataset Interoperability
- DOI
- Geospatial
- Innovations Lab
- Open Source
- Provenance for Earth Science
- Technology Infusion
- Vision 2020
- Visualization



NASA Data Challenge: Big Data

- Volume
 - Performance of servers, protocols, formats, ...
- Variety
 - Data descriptions
 - Data conventions
 - Libraries to abstract heterogeneity
- Velocity (onboard, real-time)
 - Streaming
- Veracity
 - Data Quality
- Serving Data Scientists (i.e., non-domain scientists)
- Big Earth Data Initiative (BEDI)



NASA Data Challenge: GIS Support

- Key GIS User Segments
 - Applications
 - Data Scientists (specializing in geospatial)
 - Early Career Scientists
 - Machine-to-machine
- ArcGIS Usage of HDF, netCDF, ...
 - Grid data
 - Swath data
 - Profile data