



# GHRC Overview and Highlights

Manil Maskey, DAAC Manager (MSFC ST11)

Dr. Geoffrey Stano, DAAC Scientist



# Overall Organization



**HQ Earth Science Data Systems (ESDS) Program** • About the ESDS Program

**HQ ESDS Program**

HQ Earth Science Data Systems (ESDS) Program

About the ESDS Program

ESDS Policies

Data and Information Policy

Data Processing Levels

Data Rights & Related Issues

Open Source Policy

New Missions

Data Management Plan Guidance

New Missions Requirements

Program Components

Continuous Evolution

Program Review Findings and Recommendations

**More Resources**

**About the ESDS Program**

The Earth Science Data Systems (ESDS) Program is responsible for:

- Actively managing NASA's Earth science data as a national asset
- Developing data system capabilities optimized to support rigorous science investigations and unique needs of multiple science disciplines
- Processing instrument data to create Earth System Data Records (ESDRs)
- Upholding NASA's policy of free, full, and open sharing of all data, tools, and ancillary information for all users
- Engaging members of the Earth science community in the evolution of data systems

Alignment with NASA Strategic Plan	↗
Mission Statement	↗
Program Charter	↗
Continuous Evolution	↗
Collaborations	↗

HQ: <https://earthdata.nasa.gov/earth-science-data-systems-program/about-the-esds-program>

**About EODIS** • ESDIS Project

**ESDIS Project**

The Earth Science Data and Information System (ESDIS) Project is a part of the Earth Science Projects Division under the Flight Projects Directorate at the Goddard Space Flight Center (GSFC).

The ESDIS Project manages the science systems of the Earth Observing System Data and Information System (EOSDIS). EOSDIS provides science data to a wide community of users for NASA's Science Mission Directorate.

The ESDIS Project is responsible for:

- Processing, archiving, and distributing Earth science satellite data (land, ocean, atmosphere, cryosphere, human dimensions, and calibrated radiance and solar radiance data products)
- Providing tools to facilitate the processing, archiving, and distribution of Earth science data
- Collecting metrics and user satisfaction data to learn how to continue improving services provided to users
- Ensuring scientists and the public have access to data to enable the study of Earth from space to advance Earth system science to meet the challenges of climate and environmental change.
- Promoting the interdisciplinary use of EOSDIS data, including data products, data services, and data handling tools to a broad range of existing and potential user communities.

For information on various components within EOSDIS, visit the Science System Description page.

The ESDIS Project Supports		
Science System Elements	Distributed Active Archive Centers (DAACs)	12
	Science Investigator-led Processing Systems (SIPS)	15

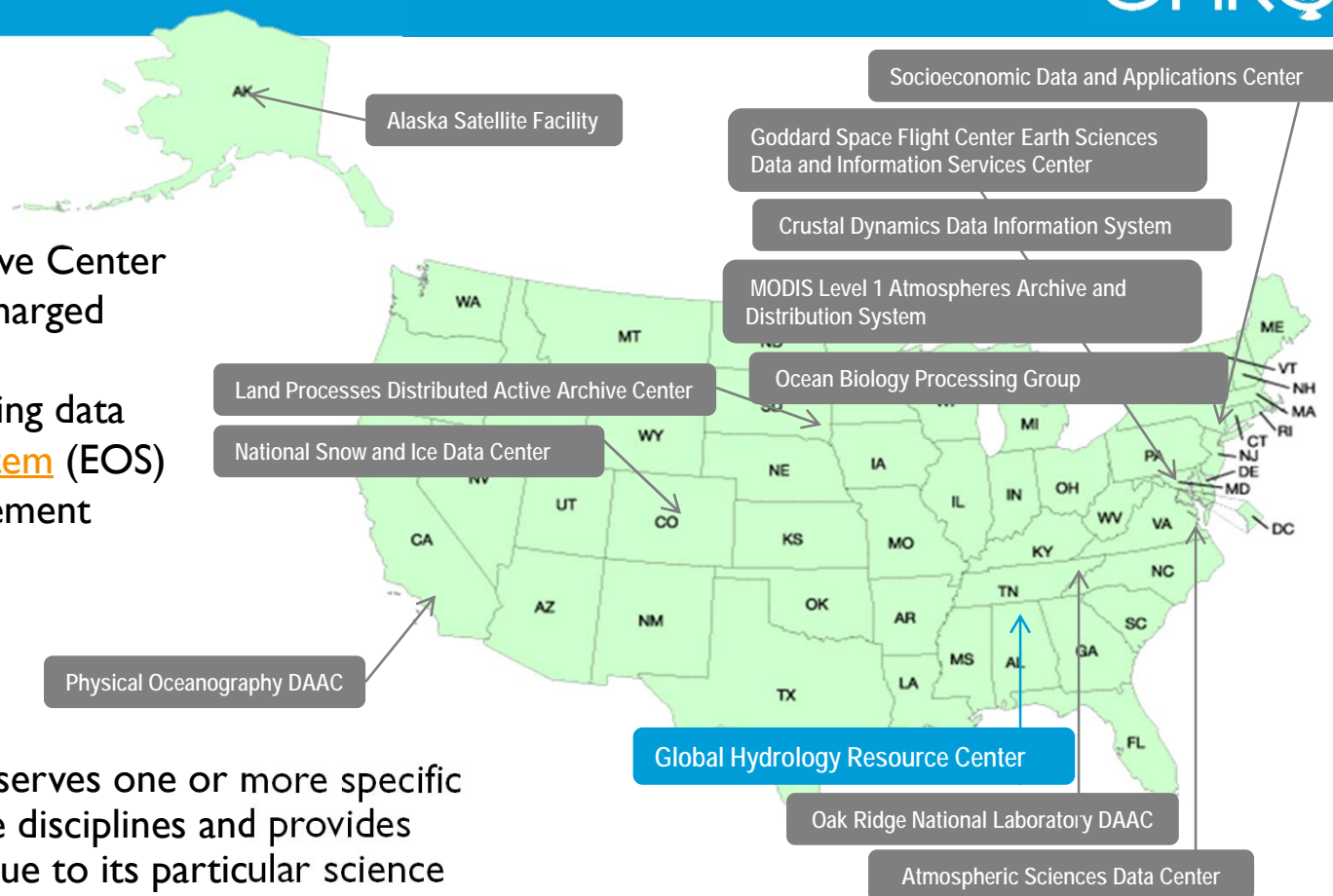
GSFC: <https://earthdata.nasa.gov/about/esdis-project>

# NASA's Earth Science DAACs



A Distributed Active Archive Center is a NASA-funded entity charged with processing, archiving, documenting and distributing data from Earth Observing System (EOS) satellites and field measurement programs

Each DAAC serves one or more specific Earth science disciplines and provides services unique to its particular science



A circular icon with a thick blue outer ring and a white inner circle containing the text "ESDS VISION" in black, bold, sans-serif font.

## ESDS VISION

Make NASA's *free* and *open* Earth science data *interactive*, *interoperable* and *accessible* for research and societal benefit today and tomorrow.

A circular icon with a thick green outer ring and a white inner circle containing the text "GHRC MISSION" in black, bold, sans-serif font.

## GHRC MISSION

To provide a comprehensive active archive of data and knowledge augmentation services with a focus on *hazardous weather, its governing dynamical and physical processes, and associated applications.*

Focus on *lightning, tropical cyclones, and storm-induced hazards* through integrated collections of satellite, airborne, and in-situ data sets.

# DAAC Role in supporting science

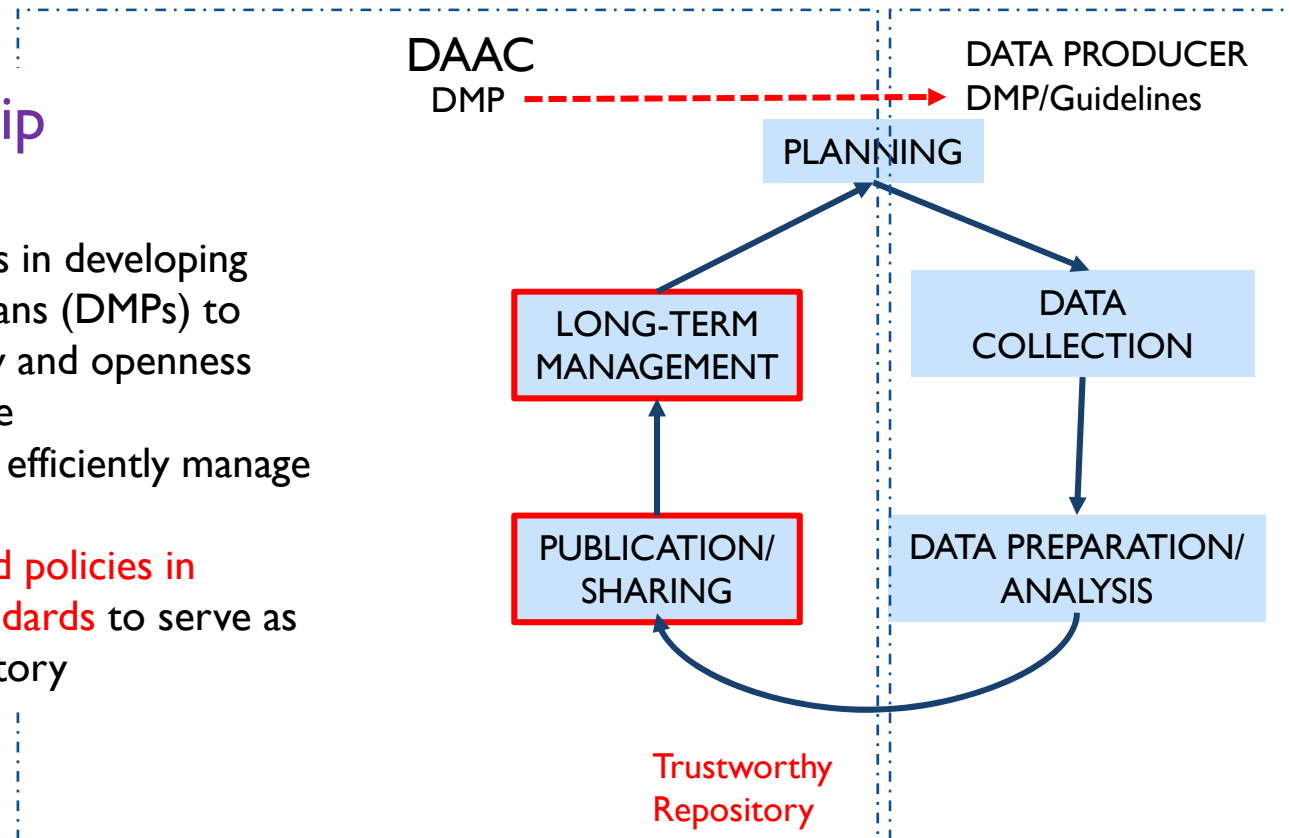


# DAAC Role in Supporting Science

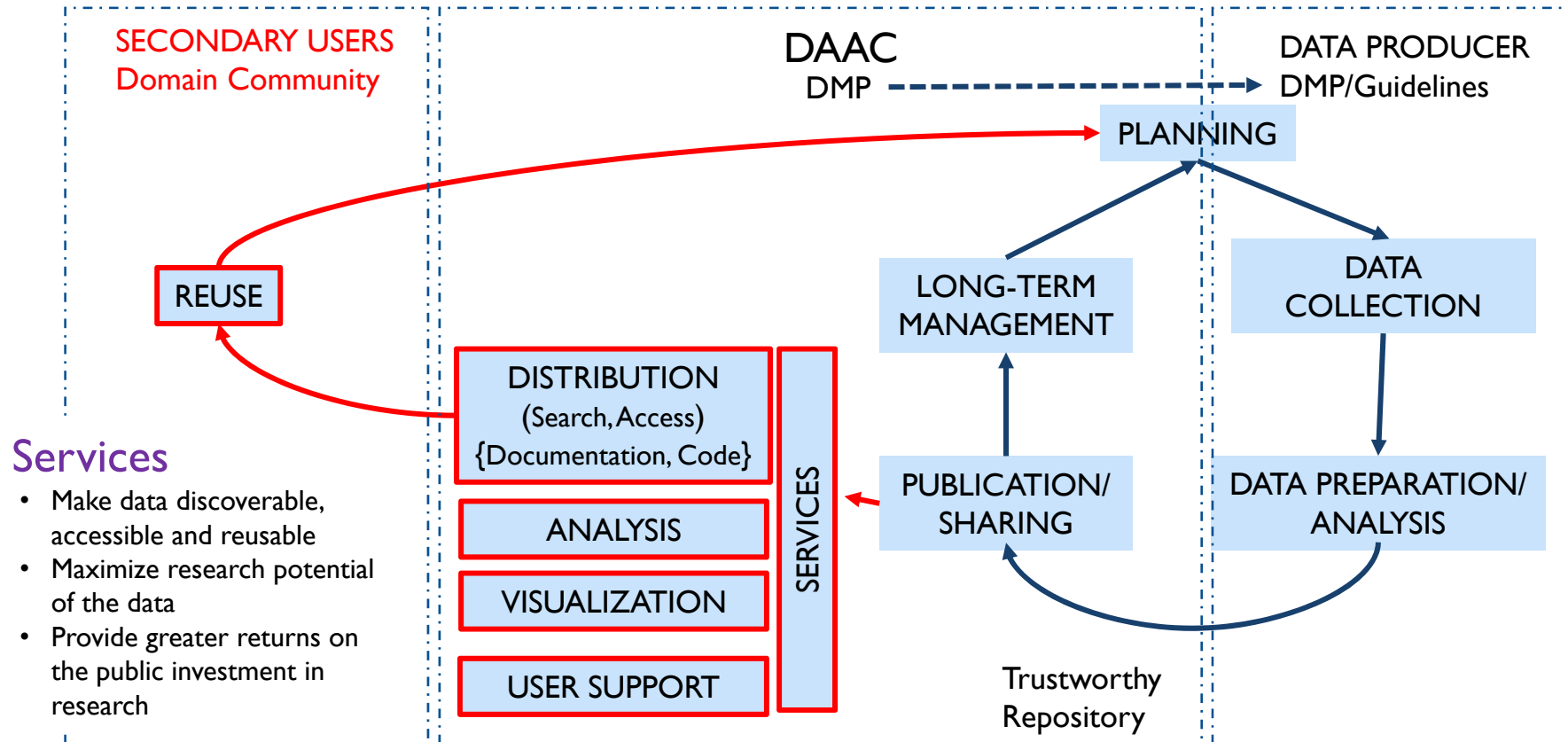


## Data Stewardship Responsibility

- Assist data producers in developing Data Management Plans (DMPs) to support transparency and openness during research phase
- Use DAAC DMPs to efficiently manage data
- Utilize **workflows and policies in accordance with standards** to serve as a trustworthy repository

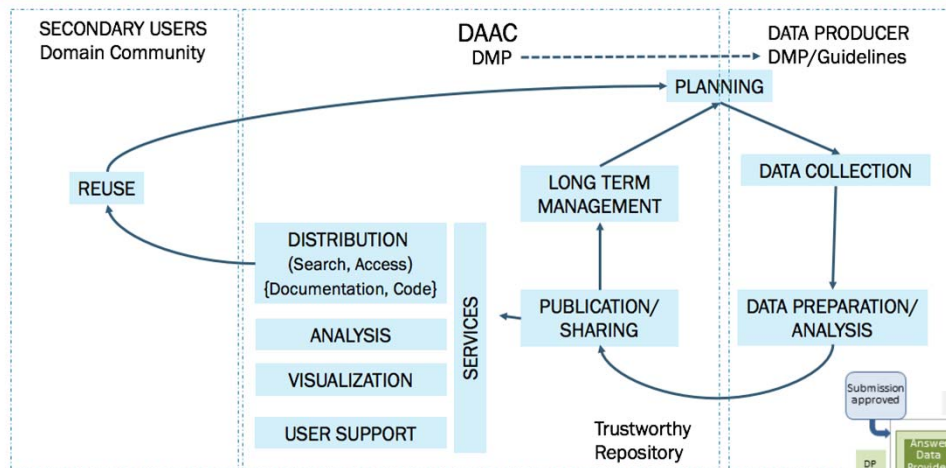


# DAAC Role in Supporting Science





# Creating a Common Process for Different Data Sources

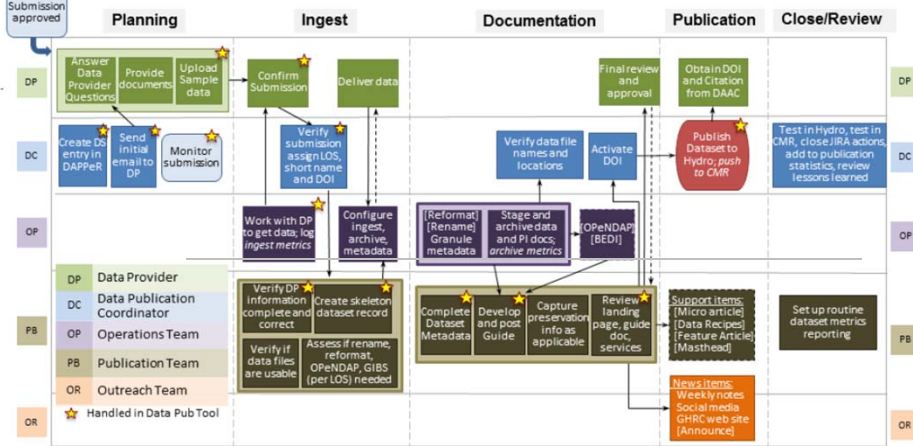


Assigned Satellite Mission (LIS)

Assigned Field Campaign (GPM-GV)

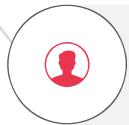
SIPS/MEaSURES Program

Recommendation from the User Community  
UWG/ESDIS/HQ Approval

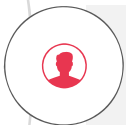


\* adapted from ORNL DAAC's Swimlanes

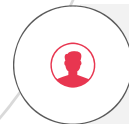




**Geoffrey Stano** Data Management, Outreach, and User Services

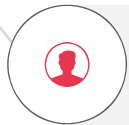


**Will Ellett** IT Infrastructure and Operations

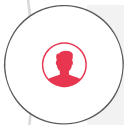


**Ajinkya Kulkarni** System Architecture and Development

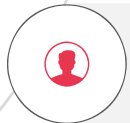
# New Personnel



**DAAC Scientist** Dr. Geoffrey Stano



**Software Developers** Brian Ellingson and John Simmons



**Students** Slesa Adhikari, Bibek Dahal, Essence Raphael, and Khomsun Singhirunnusorn

# GHRC UWG Board Members



<i>Discipline</i>	<i>Name</i>	<i>Affiliation</i>	<i>Term end</i>
Lightning	<b>Steve Goodman</b>	Private company (ret'd NOAA)	2019
	<b>Michael Peterson</b>	Los Alamos National	2019
	Weixin Xu	Laboratory Colorado State University	2021
Passive Microwave	Joe Munchak*	NASA GSFC	2021
	Joe Turk	NASA JPL	2021
Hurricane Science	<b>Haiyan Jiang</b>	FIU	2020
	<b>Jonathan Zawislak</b>	FIU, Univ. Miami/CIMAS,HRD	2019
	<b>Jason Dunion</b>	Univ. Miami/CIMAS,HRD	2020
Global Precipitation Mission	<b>Dan Cecil</b>	NASA MSFC	2019
	<b>Ana Barros</b>	Duke University	2020
	<b>Pierre Kirstetter**</b>	Univ. of Oklahoma	2020
Severe Weather	<b>Emily Berndt</b>	NASA SPoRT	2020
Applications	<b>Eric Anderson</b>	NASA MSFC (SERVIR)	2020
	<b>Dave Jones</b>	StormCenter Communications	2020
	Albert Kettner	University of CO Boulder	2021
HQ (ex officio)	Gail Skofronick-Jackson Kevin Murphy	NASA HQ NASA HQ	
ESDIS (ex officio)	Jeanne Behnke Drew Kittel Steve Berrick Andy Mitchell	NASA GSFC NASA GSFC NASA GSFC ESDIS Project Manager	

\*\*2019 Chair, \*2019 Co-Chair      **Red:** 2019 is final year on UWG      **Orange:** 2020 is final year on UWG

# State of GHRC (FY19)



## Operational Improvements

- ✓ Agile development and management
- ✓ Internal process documents

## Metadata Improvements

- ✓ Analysis and Review of CMR
- ✓ Collection – 100%
- ✓ Granule – 96%

## Web Improvements

- ✓ Lightning primer
- ✓ Website cleanup

## Tool Improvements

- ✓ Data Publication - DAPPeR
- ✓ Bulk Data Downloader
- ✓ Field Campaign Explorer

## Cloud Migration

- ✓ All Data Published
- ✓ Ongoing Datasets Published
- ✓ Training Operations

# State of GHRC (FY19)



## Data Publication

- ✓ 46 total datasets
- ✓ Key datasets
  - GPM-GV
  - Lightning – ISS LIS Validation
  - GOES-R Post Launch Test
  - ICE-POP Field Campaign

## Community Engagement

- ✓ Science Teams
- ✓ Micro Articles
- ✓ Data Recipes
- ✓ Virtual Collections
- ✓ Mastheads
- ✓ Webinar
- ✓ Conferences/Meetings
- ✓ IMPACTS mission data support

# Looking to FY20 and Beyond



## Cloud

- Improve cloud operations
- Prepare for cloud-only operations

## Cross DAAC Collaborations

- Earthdata Pub  
ORNL, GHRC, NSIDC, GES-DISC
- ESDIS activities  
Service Architecture, User Needs, Cloud Primer, Cumulus\*

## Tools

- Field Campaign Explorer
- Bulk Download Manager



**Strategic acquisition of data based on portfolio gaps**



# GHRC User Working Group Mandate



Primary objectives include but are not limited to:

- Suggesting **improvements to enhance overall user experience** including discovery, access, and usability of data
- Suggesting new **research and development ideas** relevant to GHRC to support product/tool prototyping and generation
- Facilitating **communications with the general user community** and interested members of other communities
- Assisting GHRC in **prioritization and pursuit of new data holdings** within the bounds of budget and ESDIS mission constraints



- Primary recommendation
  - Development of a 5 and 10 year plan
  - Improve links in GHRC mission and holdings with Earth Sciences
  - Include more coordination between UWG and GHRC
- GHRC response
  - GHRC has begun drafting the 5 and 10 year plan
  - Additional work to occur, including more communication with Dr. Skofronic-Jackson and coordinating with the UWG
  - First step is the 6 month webinar in early 2020 and iterate with UWG on the strategic plan

# UWG 2018 Recommendations



- Secondary recommendation
  - UWG to work with GHRC to identify critical missing elements to help with validation of NASA-sponsored precipitation products
- GHRC response
  - Emphasis has been completing the dataset backlog
  - Coordination with Walt Petersen and later Patrick Gatlin
    - Will continue to update GPM GV Validation Network data
    - Identifying GPM GV datasets to publish, but GHRC does not have yet
  - ITSC earned an AIST proposal building off the Validation Network using GHRC GPM GV data

# UWG 2018 Recommendations



- Secondary recommendation
  - Become an event driven repository
- GHRC response
  - FCX is a step towards this
    - Data model behind FCX is event based model

- Secondary recommendation
  - Search ISS LIS and Lightning Mapping Arrays (LMA) together
- GHRC response:
  - Currently waiting on LMAs to be ready to start publishing
  - Will investigate methods to do a joint search
  - Can then be applied to TRMM LIS data as well



THANK YOU!  
QUESTIONS?

