How GES DISC is Opening Doors to Open Science

AGU Fall 2023

NASA/Goddard EARTH SCIENCES DATA and INFORMATION SERVICES CENTER (GES DISC)

Learn about how the Goddard Earth Sciences Data Information and Services Center (GES DISC) enables open science through the creation of user resources, collaboration with other NASA data centers, scientific organizations, and the public.

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Introduction

The NASA Goddard Earth Sciences Data and Information Services Center (GES DISC) is one of 12 NASA Earth Observing System data centers that document, process, archive, and distribute data from Earth science missions and related projects. GES DISC hosts numerous Earth Science products through various data formats and supports their access with several programming and website tools. The User Needs team at GES DISC is responsible for producing tutorials and resources to teach these tools, collecting and engaging with user feedback, and collaborating with other NASA data centers to enable science creation for everyone. This poster presentation outlines how GES DISC, and the User Needs team, are committed to enabling open science.

Our Commitment to the Open-Source Science Continuum

How have we changed since the Open-Source Science Initiative?

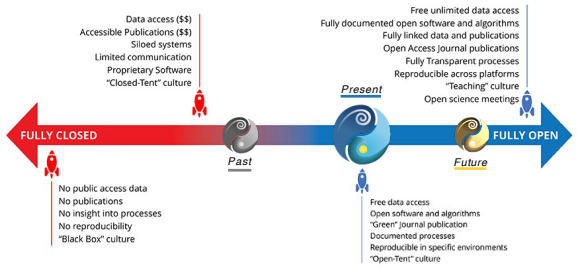


Figure 1: A diagram illustrating the path of an agency towards becoming an open system of science

Past…
- No public code repositories
- No cross-DAAC educational materials, collaboration

Present…
- Coding tutorials on GitHub
- Collaboration with other DAACs to create education materials

Future…
- Cloud Computing Playground
- Public engagement with GitHub and feature suggestions

References

- Figure 1: NASA Earth Science Data Systems. (n.d.). [A diagram illustrating the path of an agency towards becoming an open system of science]. [Infographic]. Retrieved June 29, 2023. https://www.earthdata.nasa.gov/s3fs-public/2022-04/OSScontinuum.jpg?VersionId=euDxoUIAFWDX13wlo6359tSNm1HwjTeq
- Figure 2: [A screenshot of the "gesdisc-tutorials" main repository page]. (n.d.). [Screenshot]. Retrieved June 29, 2023.
- Figure 3: NASA Science. (n.d.). [Icons and descriptions of different open science types]. [Infographic]. Retrieved June 29, 2023. https://science.nasa.gov/files/science-red/s3fs-public/styles/background_image_file_size/public/thumbnails/image/open-source-initiative.png?itok=okpMZKb4
- Figure 4: [A screenshot of the Openscapes NASA Earthdata Cloud Cookbook home page]. (n.d.). [Screenshot]. Retrieved June 29, 2023.
- Figure 5: [A screenshot of the GES DISC How-tos section]. (n.d.). [Screenshot]. Retrieved June 29, 2023. https://disc.gsfc.nasa.gov.
- Figure 6: [A screenshot of the How-tos listed in the "Migrating to the Cloud" document]. (n.d.). [Screenshot]. Retrieved June 29, 2023. https://disc.gsfc.nasa.gov/information/documents?title=Migrating%20to%20the%20Cloud.
- Figure 7: [A screenshot of the GIOVANNI map plotting feature]. (n.d.). [Screenshot]. Retrieved July 5, 2023. https://giovanni.gsfc.nasa.gov/giovanni/.
- Figure 8: [A screenshot of the Hydrology Data Rods service sample plot for NLDAS data]. (n.d.). Retrieved July 5, 2023. https://disc.gsfc.nasa.gov/information/tools?title=Hydrology%20Data%20Rods.
- Figure 9: [A screenshot of the GES DISC Subsetter menu]. (n.d.). [Screenshot]. Retrieved July 5, 2023. https://disc.gsfc.nasa.gov/information/howto?keywords=MERRA-2&title=How%20to%20use%20the%20Level%203%20and%204%20Subsetter%20and%20Regridder.

Science-Enabling Avenues

Public Code Repository

Our "gesdisc-tutorials" GitHub repository allows our staff to publish coding how-tos, document steps of their development, and to directly engage with the public for feedback and suggestions.

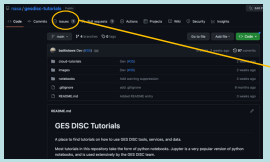
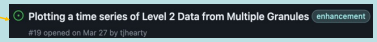


Figure 2: A screenshot of the "gesdisc-tutorials" main repository page

Found a bug or have a suggestion? Use the "Issues" tab:



Scan the QR Code to Visit:

Contains 20+ Jupyter Notebook tutorials!

Data Visualization and Creation Tools

GIOVANNI

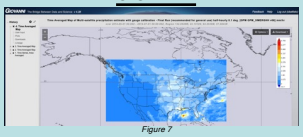


Figure 7

Hydrology Data Rods

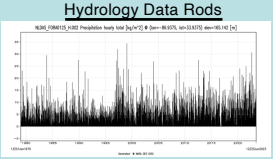


Figure 8

GES DISC Subsetter

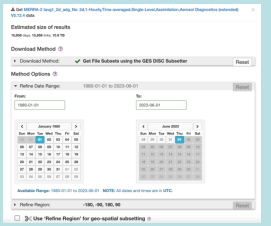


Figure 9

How do we enable…



Open (**Transparent**) Science

Open (**Inclusive**) Science

Figure 3

Open (**Accessible**) Science

Open (**Reproducible**) Science

Figure 3

Nationwide Scientific Collaboration

Openscapes Champions Cohort

- Collaborating with developers from scientific institutions across the United States
  - 125 Research teams
  - 40 Mentors onboarded

NASA Earthdata Cloud Cookbook

- Creating how-tos, tutorials, "cheat sheets" and more about the AWS Cloud (Figure 3)
  - 22 Contributors
- Workshops & Hackathons



Figure 4: A screenshot of the Openscapes NASA Earthdata Cloud Cookbook home page

Finding Data and Data Recipes

Website User Resources

- Dozens of how-tos, tutorials, and data recipes (Figure 4)
- Detailed landing pages for each dataset
- Resources about the GES DISC Cloud Migration (Figure 5)



Figure 5: A screenshot of the GES DISC How-tos section

Scan the QR Code to Visit:

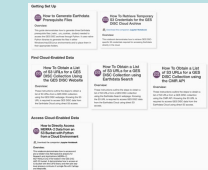


Figure 6: A screenshot of the How-tos listed in the "Migrating to the Cloud" document