

Fissure 3 on Mauna Loa's
Northeast Rift Zone on
Dec. 1, 2022. Credit: USGS

Earth Science Information Partners: Empowering Collaborations that Make Data More FAIR

Megan Carter, ESIP
Karl Benedict, UNM Libraries



esipfed.org | [@ESIPfed](https://twitter.com/ESIPfed) | [#EarthScienceData](https://twitter.com/ESIPfed)

Our nonprofit is
supported by:





Archaeologist by Training, Earth Science Data Geek by Force of Gravity, Librarian by Inclination

- 15-years working in and then directing an applied geospatial research center
- 12-years in UNM's libraries - 9 as Director of Research Data Services program
- Three years as ESIP President in addition to other roles

Why ESIP?

- Amazing community of engaged Earth Science data providers, technologists, users, and supporters

WHO IS ESIP?

Earth Science Information Partners (ESIP)

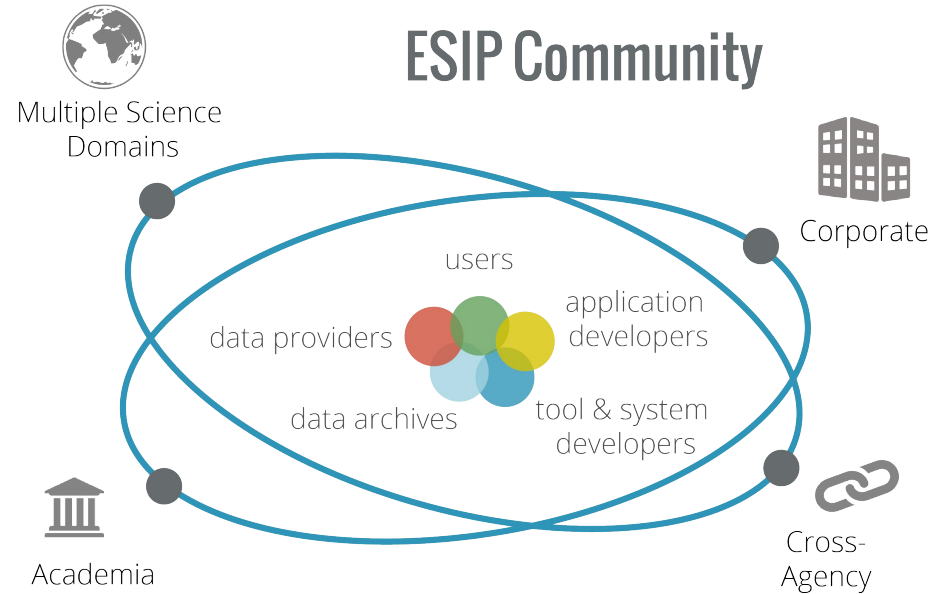
We believe society's quality of life, economic opportunities, and stewardship of the planet are enhanced by regular use of scientifically sound Earth science data and information provided in a timely manner by a community that is collaborating to improve our collective services.

Supported by:





ESIP is a brain trust of Earth science data & computing professionals



TYPES OF ESIP PARTNERS

TYPE I

DATA AND
INFORMATION
DISTRIBUTORS,
REPOSITORIES, &
ARCHIVE CENTERS



TYPE II

PRODUCT &
SERVICE PROVIDERS



TYPE III

EARTH SCIENCE
APPLIED SERVICE
PROVIDERS



TYPE IV

ESIP SPONSORS



TYPE V

COLLABORATIVE
DATA NETWORKS



Plus 170 more...

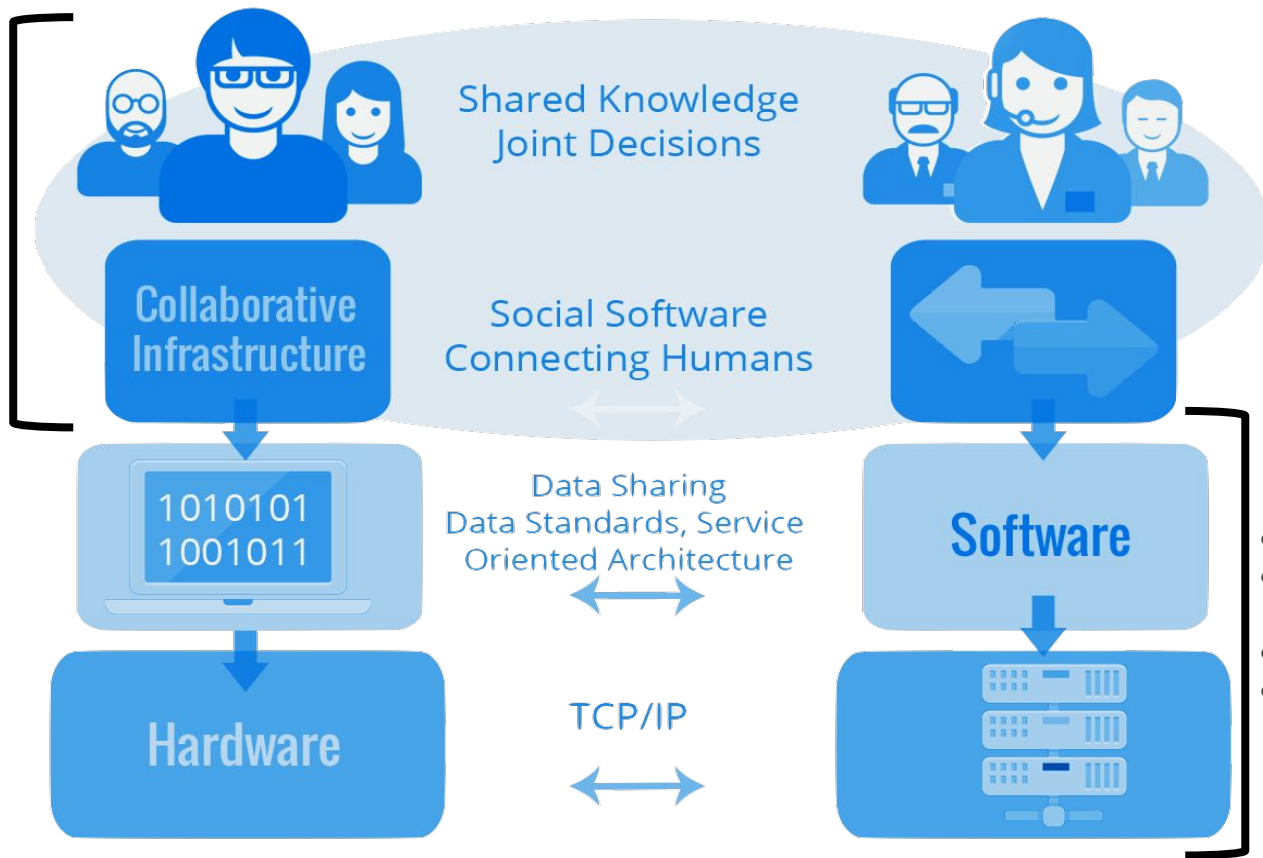
esipfed.org/join

ESIP IS AT THE LEVEL OF HUMAN CONNECTION



Generate recommendations and work products.

Have a lasting impact in the recommendation of standards.



ESIP does not:

- Provide data
- Sustain cyberinfrastructure
- Develop standards
- Compete with our partners

ESIP STAFF



Susan Shingledecker
Executive Director



Annie Burgess
ESIP Lab Director



Patty Allen
Operations Director

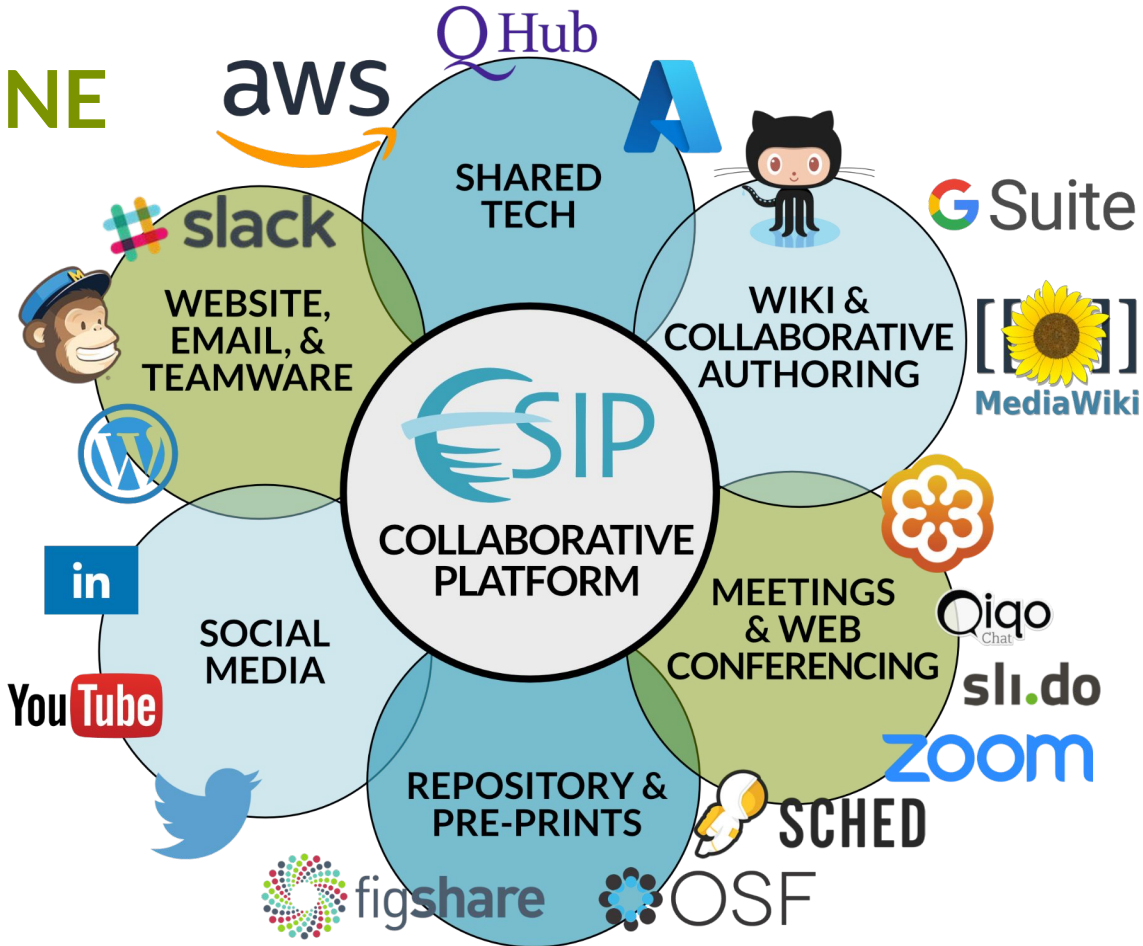


Megan Carter
Community Director



Allison Mills
Communications Director

ESIP BACKBONE



THREE APPROACHES

VIRTUAL
COLLABORATION

- ▶ Facilitate professional development, outreach, and collaboration opportunities.

MEETINGS

- ▶ Seed innovation and community-generated best practices.

ESIP LAB

- ▶ Provide funding for prototyping, experimentation, and skill development.

COLLABORATION AREAS

COMMITTEES

- Data Stewardship
- Education
- Information Technology and Interoperability (IT&I)
- Semantic Technologies

CLUSTERS

- Air Quality
- Biological Data Standards
- Cloud Computing
- Community Resilience
- COPDESS
- Community Ontology Repository (COR)
- Council of Data Facilities
- Data Readiness
- Disaster Lifecycle
- Discovery
- Drones
- E2SIP (Australia/New Zealand)
- EnviroSensing
- Information Quality
- Machine Learning
- Marine Data
- Open Science
- Operational Data Ethics
- Physical Sample Curation
- Research Object Citation
- Schema.org
- Semantic Harmonization
- Soil Ontology & Informatics
- Sustainable Data Mgmt
- Wildfires

esipfed.org/collaborate



WHAT COLLABORATION AREAS DO

WORK TOGETHER ON COMMON DATA CHALLENGES WHERE DO THEY MEET?

- Virtual telecons
- At ESIP and other meetings

WHAT ARE THEIR GOALS?

- Host webinars, develop outputs, maintain resources, lead open discussion
- Plan ESIP meeting sessions

esipfed.org/telecons



ACTIVE COLLABORATIONS



Merge
ESIP News & Stories

The Merge blog brings together ESIP news, guest posts, and #EarthGenData stories.

ESIP stands for Earth Science Informative Partners, a nonprofit of data professionals and partner organizations working together to take care of our planet with sound, accessible Earth science data.

Stories of Earth Science Data

Opening Doors: Why ESIP Gathers Virtually

[Blog: \[esipfed.org/merge\]\(https://www.esipfed.org/merge\)](https://www.esipfed.org/merge)

30+ Collaboration Areas

300+ hours/yr on Committee & Cluster calls

> 1,800 hours/yr of collaborative community engagement

BIOLOGICAL OBSERVATION DATA STANDARDIZATION

A primer for data managers

USING STANDARDS FOR YOUR BIOLOGICAL OBSERVATION DATA MEANS WE CAN UNDERSTAND PATTERNS AT SCALES GREATER THAN ONE PROJECT, RESEARCH GROUP, OR ORGANIZATION

Do you want to...	Then use...
PROVIDE CONTEXT AND UNDERSTANDABILITY TO YOUR DATA? Ensures your data are reusable so that yourself and others understand how the data were collected and who to contact for more information.	METADATA STANDARDS: EML, ISO-19115, FGDC-CSDGM, MIX3 Example repositories accepting these standards: EML, DataONE member nodes, NCBI, Data.gov, iDigBio, NASA DAACs, Planet Microbe
INTEGRATE YOUR DATA WITH OTHER DATA? Ensures your data can be combined with data from other organizations and researchers and makes the data easier to reuse. Also, you will benefit from community developed tools.	DATA STANDARDS: DARWIN CORE, CLIMATE AND FORECAST Example repositories accepting data using these standards: GBIF, GBIF, GBIF
MAKE YOUR DATA INTEROPERABLE? Ensures your data can be used and understood in the context of other data and makes the data easier to reuse, especially for machine-to-machine operations.	CONTROLLED VOCABULARIES: NERC, ENVO TAXONOMIC AUTHORITIES: WORMS, ITIS HABITAT CLASSIFICATION: CMECS, NVCS, NWCS
SHARE YOUR DATA ON THE WEB? Ensures your data are findable and accessible to the public. Your data are also programmatically accessible.	WEB-ENABLED STANDARDS: DUBLIN CORE, DATACITE, SCHEMA.ORG Example places accepting these standards: Zenodo, Pangaea, Figshare, Dryad, University of Organization system EXAMPLE WEB SERVICES: ERDDAP, THREDDS, MAP SERVICES
MAKE YOUR DATA SOFTWARE READY? Ensures your data are easily imported to computing software and analyzed.	<ul style="list-style-type: none">Use non-proprietary formatsStructure data in long formatFollow ISO 8401 for datesMatch scientific names to a taxonomic authorityRecord latitude and longitude in decimal degrees in WGS84Use globally unique identifiers
MIX AND MATCH BUT WATCH OUT FOR REQUIREMENTS! You can use metadata standards, data standards, and controlled vocabularies in any combination with each other. Some places may require certain combinations for your data to be included in their repository. Using standards will result in data that are more closely aligned to the FAIR principles.	REQUIRED STANDARDS FOR SOME EXAMPLE REPOSITORIES EML: EML ORIG: Darwin Core, EML, and WORMS, NERC recommended ORP: Darwin Core and EML NCBI: DIO Planet Microbe: MIX3 and ENVO

Visit https://wiki.esipfed.org/biological_data_standards_cluster to get involved
<https://fairsharing.org/standards/?q=biological>

ESIP COMMUNITY FELLOWS



Left to Right:

- Sruti Modekurty | Erasmus Mundus Joint Masters in Urban Climate and Sustainability | Community Resilience Cluster
- Chad Lanctot | University of Tennessee | Physical Samples Cluster
- Morgan Wofford | Univ. of Michigan | Community Resilience Cluster
- Daniel Segessenman | George Mason University | Data Stewardship Committee
- Kyla Richards | Hawaii Pacific University | Biological Data Standards Cluster
- Michael Mahoney | State Univ. of NY | Information Technology & Interoperability Committee
- Jake Gearon | Indiana University | Envirosensing Cluster

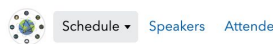
TRADITIONAL MEETINGS



ESIP MEETINGS



- ❑ Plenaries
- ❑ Breakouts
- ❑ Networking Time
- ❑ Unconference Time
- ❑ Co-located Events
- ❑ FUNding Friday



Monday, January 23

12:00pm EST

ESIP 101

3:00pm EST

Effective Communication for Your Projects

Tuesday, January 24

11:00am EST

Opening Plenary

12:30pm EST

Break

1:30pm EST

Collaborative support for the open data lifecycle

Enabling Open Science with NASA's Earthdata in the Cloud

Open Science and Information Quality across ESIP

Utilizing GPUs in Machine Learning for Earth Sciences

3:15pm EST

Coffee Break Networking

4:00pm EST

Earth and Space Science Knowledge Commons: From vision to reality


OGC Open Standards for Science Solutions

Opening doors for open samples: Developing templates for sample and specimen citation, linking, and credit




esipfed.org/meetings


WHAT THE ESIP COMMUNITY SAYS ABOUT OUR MEETINGS



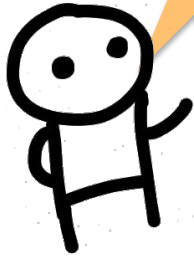
A serious meeting that actually performs a function- the data are slightly more interoperable at end of the meetings.




I found my [Earth science data] people.



Highly skilled people who are a good sounding board for ideas.



ESIP is a gathering place for other groups to convene and co-locate their meetings. Co-located meetings are coveted slots!



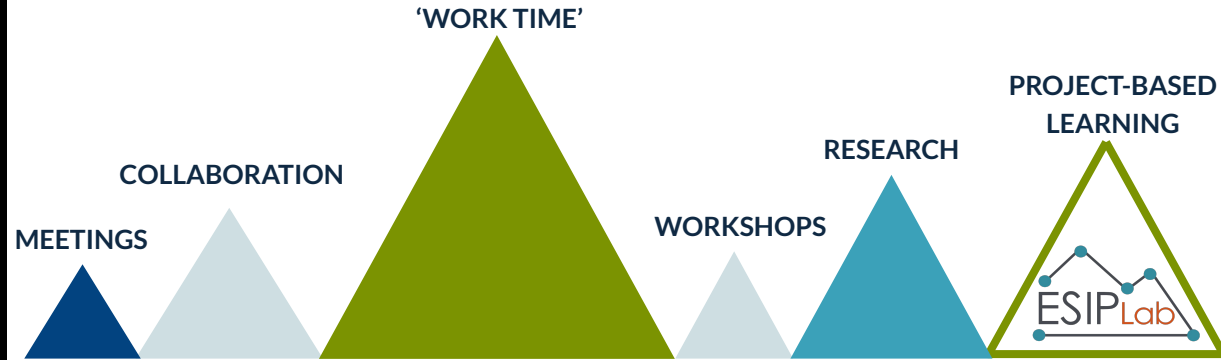
Hardest questions I ever got were at ESIP.



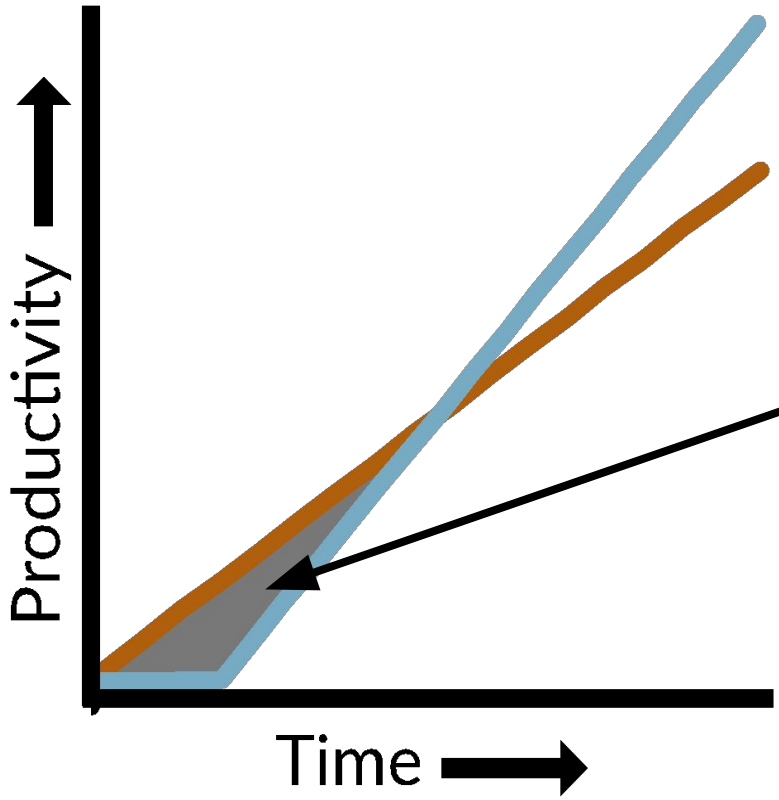
Clear professional 'home' for Earth science data people.

ESIP LAB

We facilitate project-based learning opportunities for Earth scientists to increase their individual technical savvy, while expanding our collective knowledge of Earth system science.



OUR EXPERIENCE IN PROJECT BASED LEARNING



Increasing skills through project-based learning avoids the perception of lost productivity while developing new skills.

Wildfire & Water Request for Proposals

The ESIP Lab facilitates opportunities for the science community to increase their technical savvy while increasing our collective knowledge of Earth system science.

Details

Budget:

\$20,000

Project Duration:

6 months

Full Proposal Deadline:

March 3, 2023

Questions?

lab@esipfed.org

Background

The Earth Science Information Partners (ESIP) is a non-profit dedicated to lowering barriers to scientific inquiry and understanding in the Earth sciences. By facilitating connections across common boundaries—organizations, sectors, disciplines, systems and data—ESIP has built a community of technical professionals able to leverage their collective expertise around Earth science data and computing challenges, resulting in more participatory, equitable and efficient approaches to science.

ESIP's Lab program provides small grant funding to enhance community efforts around topics broadly identified as 'priority areas' by the Earth science community. All ESIP Lab funding opportunities require investigators to include both technical and learning objectives in their proposals. By promoting learning within project solicitations, the ESIP Lab seeks to increase the collective technical savvy of the Earth science community and promote transparency about the skills required to understand our changing planet.



Quick Story



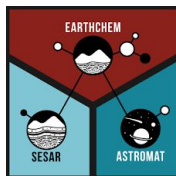
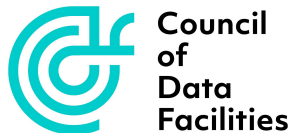
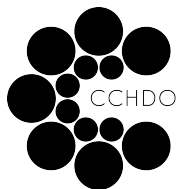
Hosted at: AGU Fall, AMS Annual, GSA Annual, EGU General Assembly, ESA Annual, and the Ocean Sciences Meetings.

Data Help Desk

Provides researchers with opportunities to engage with informatics experts familiar with their scientific domain and learn about skills and techniques that help further research and make data and software open and FAIR.



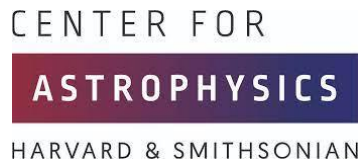
Data Help Desk Partners



Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE



SDSC SAN DIEGO SUPERCOMPUTER CENTER



COMMON QUESTIONS

Where can I find a certain type of data?

What is a good repository for a certain type of data?

How can I write a good data management plan (DMP)?

How can I cite my dataset?

What is FAIR?

What's your question?

Today's DATA HELP DESK Schedule (12/12)

Don't forget to check out the other Data Fair events at <http://bit.ly/2019DataFAIRatAGU>

Start	End	Data Reference Desk Topic	Data Reference Desk Lead	Data Reference Desk Lead Institution	Data Help Desk Workshop or Resource Demo	Data Help Desk Presenter	Data Help Desk Presenter Institution
10:00	11:30	General Data Management, Information Management, Metadata, Data Repositories (especially BCO-DMO), Schema.org	Adam Shepherd	BCO-DMO / WHOI	WORKSHOP (10:00-10:30 am): Data and Software Citation - The Latest Developments	Mark Parsons (RPI), James Gallagher (Opendap)	Various
		General Research Data Management; DMPs, data publishing, intro to FAIR	Melissa Cragin	San Diego Supercomputer Center	WORKSHOP: How to Find an Appropriate Data Repository (11:00-11:45 am)	Corinna Gries (EDI)/Amber Budden (ADC)/Kerstin Lehnert (EarthChem Library & SESAR), Vicki Ferrini (Marine Geoscience Data System), Julia Masterman (CUAHSI), Adam Shepherd (BCO-DMO)	Various
11:30	13:00	General Data-Oriented Teaching Tools	Shelley Olds	UNAVCO	Data Discovery Studio, SuAVE, EarthCube Resource Registry (Starting at 11:45 am)	Ilya Zaslavsky	San Diego Supercomputer Center
13:00	14:30	CODING HELP DESK: Drop-in for Coding Help, Open to All Programming Languages	Sheila Saia	North Carolina State University	WORKSHOP: Intro to the Data Lifecycle & Data Management Best Practices 101 (2:00-2:30 pm)	Nancy Hoebelheinrich	Knowledge Motifs LLC
14:30	16:00	General Data Management, Data Curation, and Data Archiving	Colin Smith	Environmental Data Initiative	GES DISC Level 2 Subsetting Tool & GES DISC Level 3/4 Regridding Tool	Paul Huwe	NASA
16:00	17:30	General Data Management, Data Publication	Corinna Gries	Environmental Data Initiative	THREDDS and Python with Siphon	Ryan May	UCAR/Unidata



ESIP ENGAGEMENT OPPORTUNITIES



Discover

Find people and tools to make your data findable, accessible, interoperable, and reusable (FAIR).



Collaborate

Join-in or create a new collaboration area around your Earth science data challenges.



Innovate

Use small-grant funding to build or expand Earth data technologies.



Network

Build connections across federal agencies, the private sector, and academia.

Questions/Potential Discussion

- What synergies do you see between the work of GSIS and ESIP?
- What types of challenges or opportunities do you see in your daily work?
- What suggestions do you have with respect to the Data Help Desk?





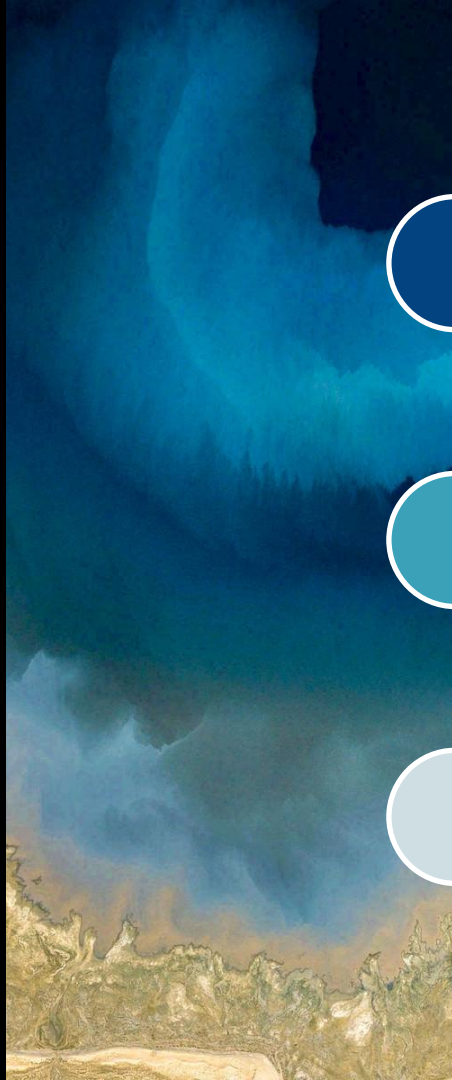
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Reach Out:

megancarter@esipfed.org

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ESIP Meetings

esipfed.org/meetings



ESIP Collaboration Areas

esipfed.org/collaborate



ESIP Lab

esipfed.org/lab

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