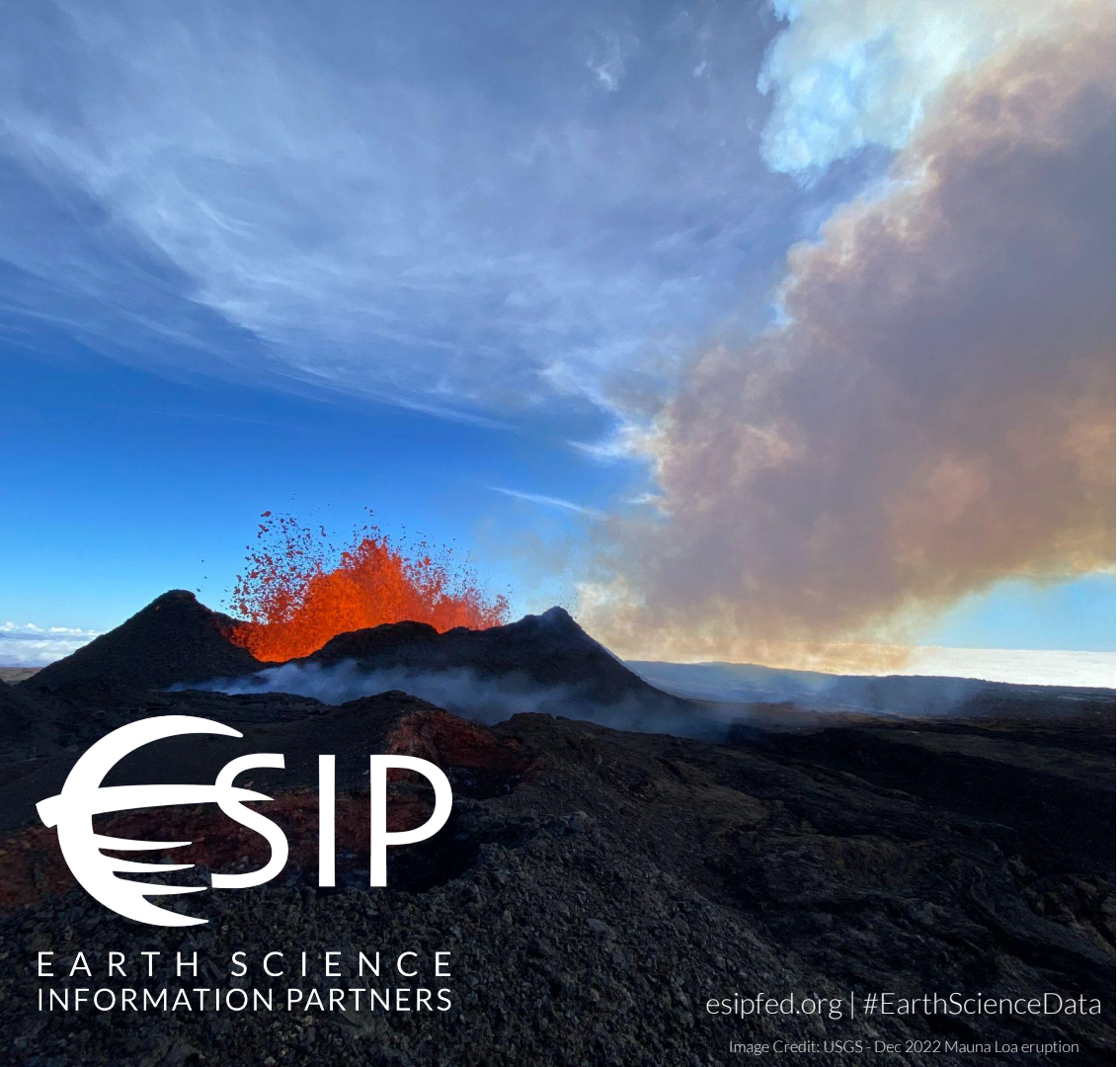


Image Credit: USGS - Dec 2022 Mauna Loa eruption

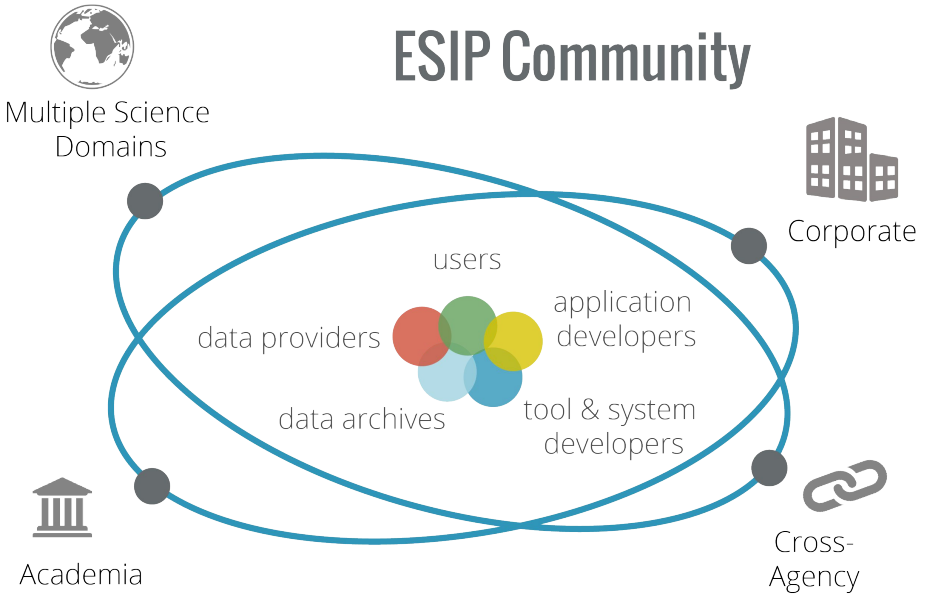
Meeting Highlights

2023 January ESIP Meeting

January 23–27, 2023

Supported by:

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



ESIP Meeting
January 2023
Opening Doors to Open Science

#ESIP2023
Group Photo

MEETING BY THE NUMBERS

3
Plenary Sessions

33
Research Showcase Presentations

27
Breakout Sessions

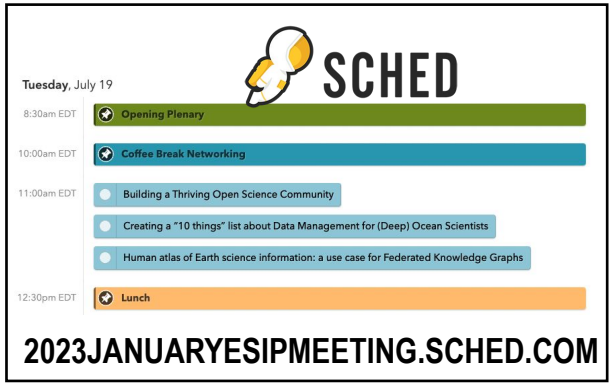
101
First-time Attendees

312
Attendees

100+
Organizers & Speakers

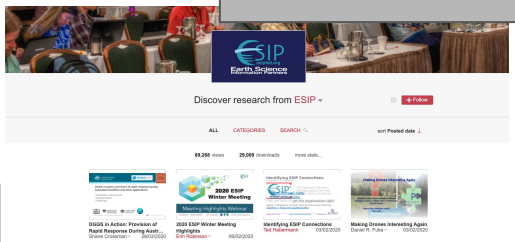
MEETING TECHNOLOGY

zoom

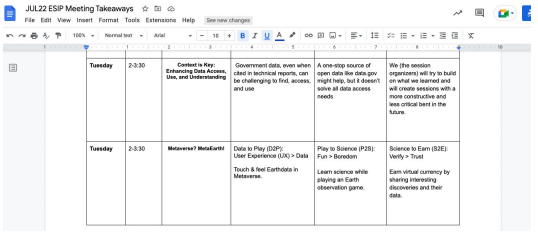


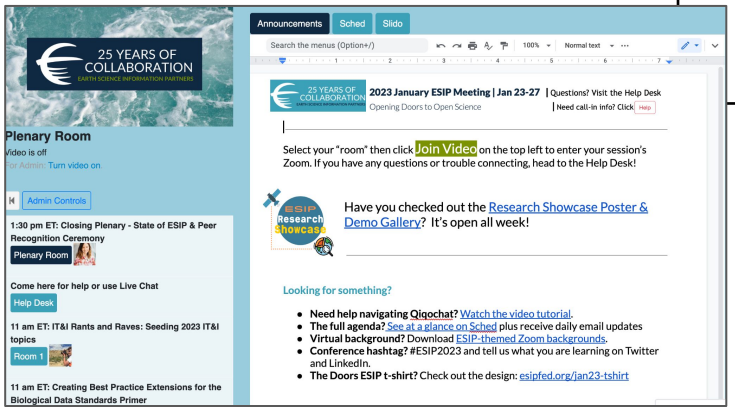
figshare

2022 ESIP July
2243 Views
343 Downloads



G Suite





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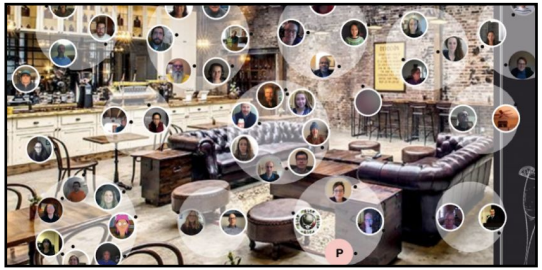

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https://2023januaryesipmeeting.qiqochat.com/

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SCHED

Building a Thriving Open Science Community

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https://sched.co/12e: Tweet Share

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Zoom Recording
Notes Doc

Open science is rapidly gaining momentum in part due to its potential to amplify discoveries, ramp up
challenges. But what are the key characteristics of successful open science initiatives and projects? Do
experienced as open science communities develop? And how can successes be scaled to achieve a tr
community that thrives on trust and transparency, ensuring readily accessible, scientific data for all pe
from a broad community including academia, non-profits, and public and private sectors will share the
data accessibility, software, tools and results, reproducibility of the scientific workflow, and inclusivity s
Opportunities for leveraging community resources to develop capabilities and improve the creation c
to inform ways in which beginners and experts can contribute to open science projects and results. Ch
described in terms of the critical factors that enable or prevent success. Examples of the benefits of pa
in terms of professional development, community involvement, and the results produced.

figshare

Which Levels of Data Processing Should We Persist and Mak…
Poster posted on 2023-01-23
Lesley Wyborn

NASA Airborne Facility Instruments at the ORNL DAAC: …
Poster posted on 2023-01-23
Michele Thornton

Enabling Scalable Insitu Geophysical Data Analysis on the…
Poster posted on 2023-01-19
Nigel Rees

NASA GES-DISC Knowledge Base: Connecting Science…
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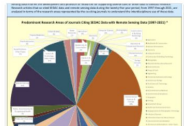
Armin Mehrabian

Celebrating Four Years of Collaboration
Poster posted on 2023-01-19
Mingfang Wu

Animals on the Move: Using Technology to Track Marine Life an…
Poster posted on 2023-01-18
Chris Simoniello

HMC: Towards a FAIR Data Space for Helmholtz Earth and…
Poster posted on 2023-01-18
Emanuel Soeding

Cheverly Community Air Quality Monitoring Dashboard
Poster posted on 2023-01-13
Qian Huang



By Session:
https://2023januaryesipmeeting.sched.com/

Browse Presentations:
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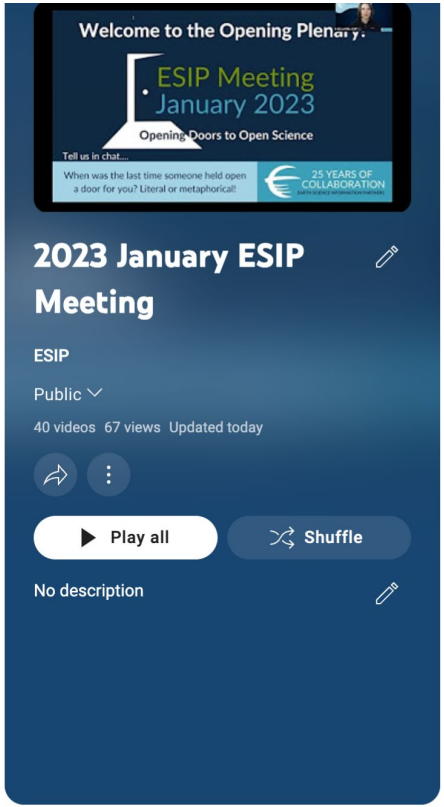

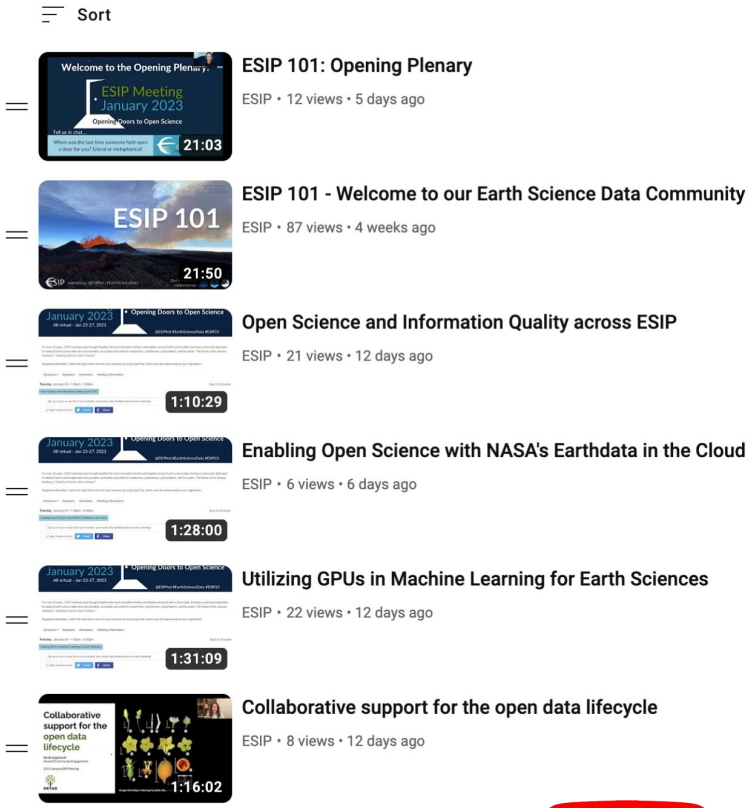

Find Recordings on the ESIP YouTube Channel: youtube.com/c/ESIPFed

YouTube

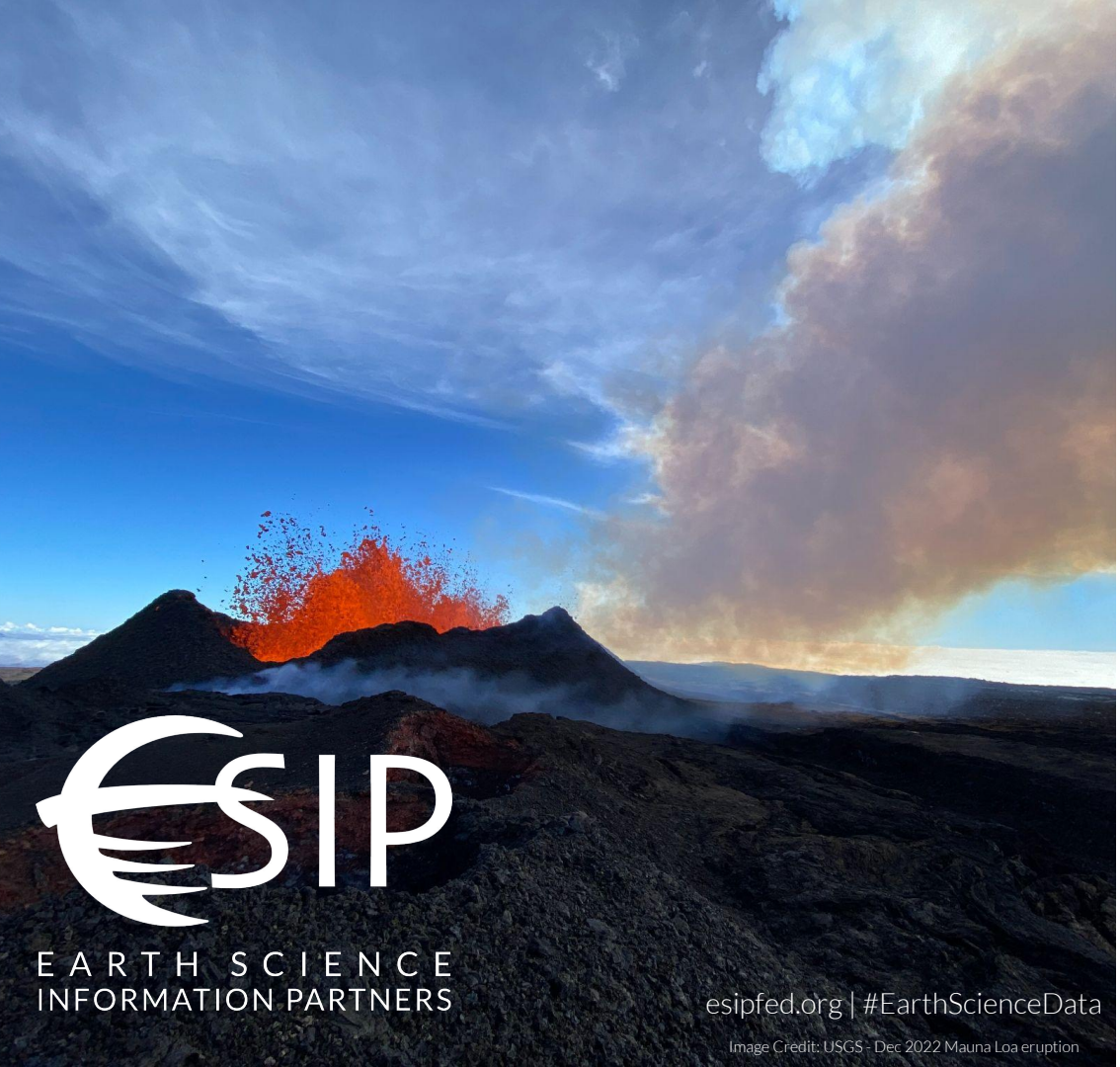

Image Credit: USGS - Dec 2022 Mauna Loa eruption

Plenary Highlights

2023 January ESIP Meeting

January 23–27, 2023

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Opening Plenary

Dr. Rebecca Heiss shared with us ways to develop a Fearless Mindset to open the doors to change in our world and our work.

Takeaways:

- Exercising discomfort, or stress inoculation, helps to condition your mind that stress isn't always bad - enduring uncomfortable things together.
- Under stress our brain can go to ANT- Automatic Negative Thoughts - Be curious Fear and Curiosity can not co-exist. Start asking questions!
- Fail to Dare or Dare to Fail - failure is only guaranteed in one of these!

Contact: Susan Shingledecker

Tags: change mindset, is it a tiger, dare to fail, activate your adventure alternative

Plenary: Digital Twins for Earth Systems - Past, Present and Future

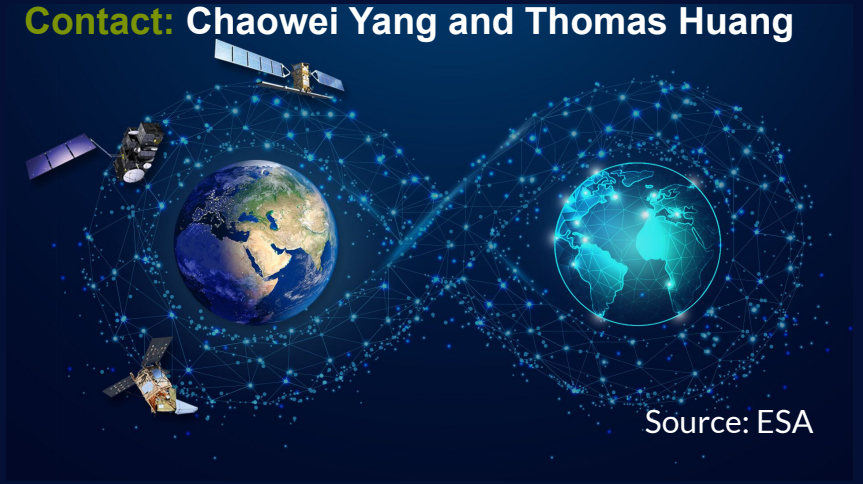
A PANEL OF THOUGHT LEADERS ON THE PAST, PRESENT, AND FUTURE OF DIGITAL TWINS

Speakers: **Benjamin D. Smith, Jean-Marc Delvit, Peter Bauer, Michael Goodchild**

Takeaways:

- Digital twins have data from many sources, running inter-connected models at many physical and temporal scales (B. Smith, NASA AIST).
- Federation of data, models, and computing is complicated but necessary to make progress in the field of digital twins (J.M. Delvit, French National Space Agency)
- Digital twins should take into account our physical environment and everything that matters to society, e.g. food, water, livlihoods. (P. Bauer, ECMWF)
- There is abundant and rapidly growing interest in Digital Twins, but there is no real standard about what can be claimed as a digital twin. (M. Goodchild, UCSB - emeritus)

Contact: **Chaowei Yang and Thomas Huang**



Source: ESA

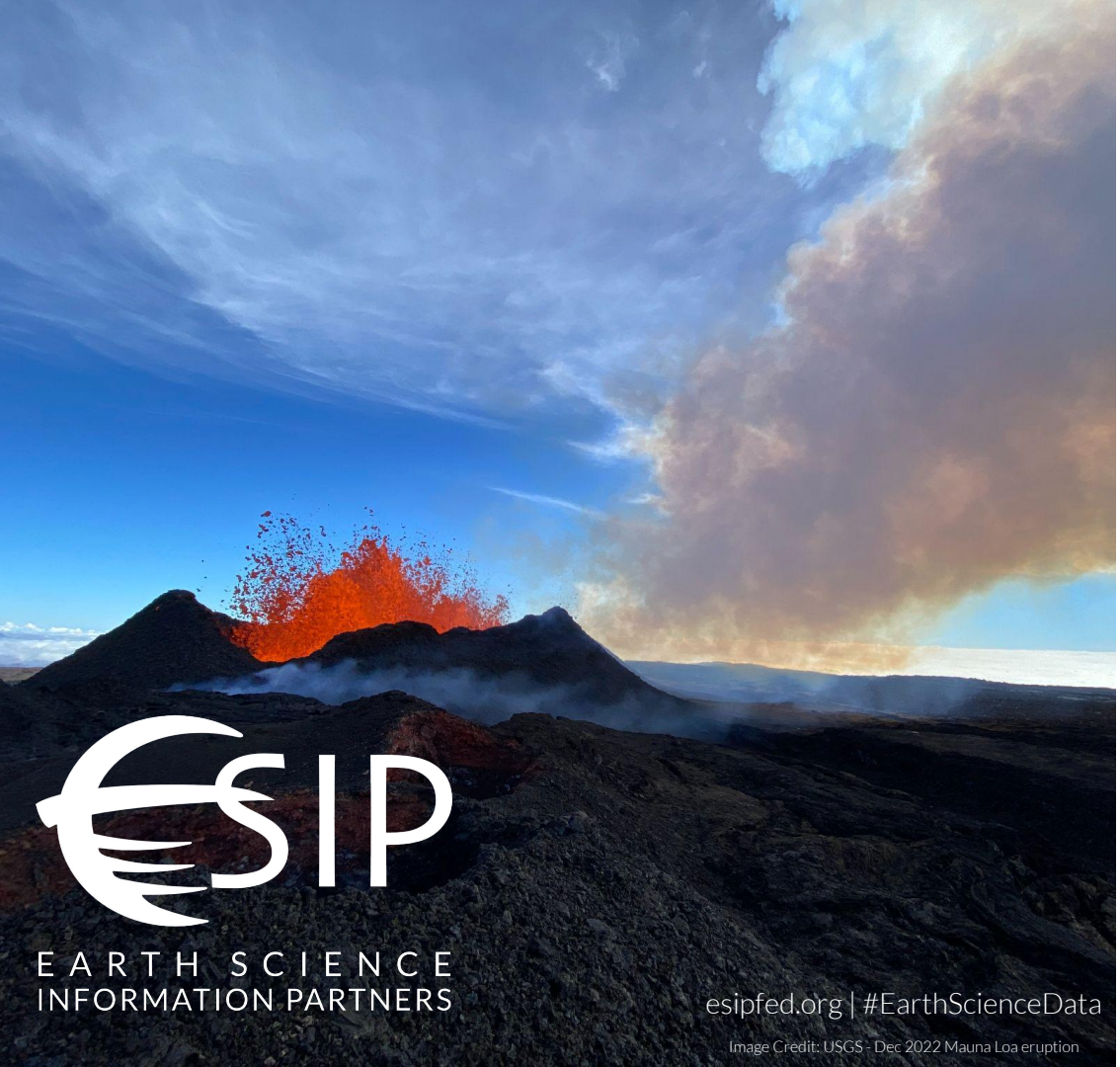


Image Credit: USGS - Dec 2022 Mauna Loa eruption

Session Highlights

2023 January ESIP Meeting

January 23–27, 2023

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Coordinating Environmental Justice Initiatives Across Organizations

Panelists from EDGI, NASA, DoI, EPA, and Until Justice on data for EJ

Takeaways:

- Might be useful to **create a space within ESIP** to have conversations about environmental (data) justice: **join here!**
- There are **many public resources** available from different agencies that are meant to support EJ — maybe an **overwhelming number**, not very interlinked across agencies

Takeaways (cont):

- There was interesting tension in the language and logics between EJ community presenters and agency presenters working in EJ offices, e.g. "with" vs "for", "solidarity" vs "empathy"—pointing to **framing challenges that could inhibit collaboration**

Contact: Kelsey Breseman, @kelsey on Slack, @ifoundtheme, ifoundthemeaningoflife@gmail.com

ESIP Meeting January 2023

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Tags: environmental data justice, environmental justice, data, information, data tool

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Exploring ESIP's International Connections at both the organisational and at the cluster/individual levels

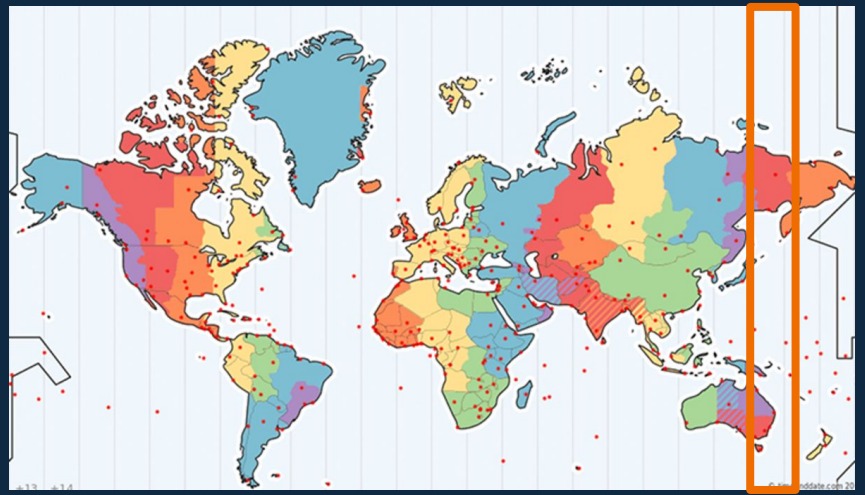
ESIP EARTH SCIENCE INFORMATION PARTNERS

Ascertain **current** international participation by ESIP at both an organisational level and at level of individuals/clusters in ESIP activities and determine whether these should be enhanced, left as is or dropped.

Takeaways: International Connections Exist (China, India)

- At the organisational ESIP has a place on GEO Program Board and there is the ESIP/RDA ESES-IG - but few know.
- At the cluster/individual level there are many international connections, but no one knows about these. Can each ESIP cluster list on its web page known international/national connections? Time zones are a killer for virtual participation.
- Our focus was on current connections, but social justice and colonialism issues were raised that will need to be considered were ESIP to expand to the Global South.

Contact: Lesley Wyborn, Susan Shingledecker



Source of Graphic: https://www.timeanddate.com/time/time-zones.html

ESIP Meeting January 2023

Opening Doors to Open Science

Tags: International, collaboration, ESIP

Session notes are here

Collaborative support for the data lifecycle

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Exploring how each element of the data lifecycle contributes to open science, and the roles played by diverse stakeholders.

Takeaways:

- Data archiving isn't the same as making data accessible/reusable (both are important!)
- Limited capacity and knowledge within research teams is a pervasive challenge
- Collaboration is essential to achieving FAIR data

Contact: Sarah Lippincott sarah@datadryad.org

Tags: data management, open science, open data, FAIR data

Using Open Data to Fight Air Inequality: Introduction to the OpenAQ Platform and Use Cases

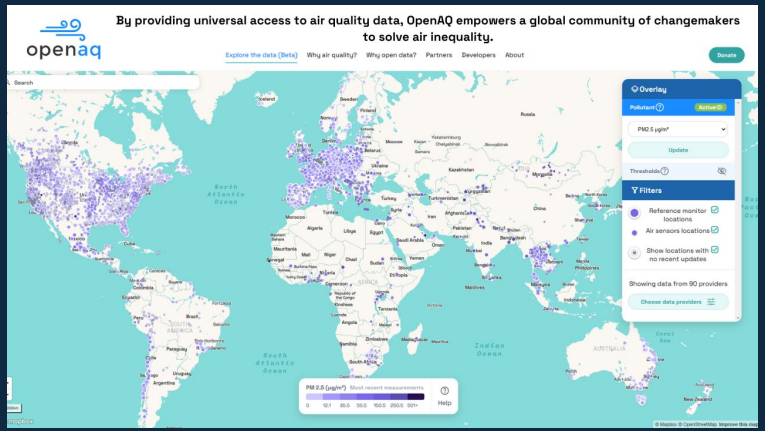
ESIP EARTH SCIENCE INFORMATION PARTNERS

A session where open air quality data champions held conversations about different stakeholders playing their part in open air quality data

Takeaways:

- Data openness for air quality allows development of sophisticated models for global air quality predictions
- Community members and participatory science are important in expanding AQ data in areas where there's little - e.g. Africa
- With OpenAQ's shared tools, the cost and time intensive nature of data aggregation is taken out of the hands of clean air researchers & advocates

Contact: Colleen Rosales, colleen@openaq.org
@OpenAQ // explore.openaq.org // ESIP AQ Cluster



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Tags: air quality, open data, universal access, community, data aggregation, data harmonization

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Harnessing Air Quality Data to Protect Health and Save Lives

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Developing use cases and resources for actionable information.

Takeaways:

- Enormous amounts of AQ data are available and the rate and scope of generation continue to rapidly increase
- Communities need open, actionable, "real" data and information, including reliable guidance about what they can do
- Communities, especially vulnerable and underserved, must be active participants in co-creating solutions and progress

Tags: AirQuality, AirPollution, EnvironmentalJustice

Contact: Steve Young, Co-Chair,Frazmo@gmail; AQ Cluster
Calls: 4th Thursdays, see:
https://www.esipfed.org/get-involved/community-calendar

AIR QUALITY
Open to Action

IT&I Rants and Raves: Seeding 2023 IT&I topics

ESIP EARTH SCIENCE INFORMATION PARTNERS

Focus on interoperability basics while building a record for future reference.

Contact: David Blodgett, dblodgett@usgs.gov

Takeaways:

- We should all know more about those fundamentals.
- Many diverse use cases should be satisfied few shared components.
- We need to capture enthusiasm and grow a shared knowledge base.

foundational aspects of interoperability

explore how a given solution fits into multiple domain's information systems

discuss the tension between diversity use cases is accommodated by an IT solution targeted at interoperability

Tags: **interoperability, knowledge sharing, community**

Utilizing GPUs in Machine Learning for Earth Sciences

EARTH SCIENCE INFORMATION PARTNERS

The session explores GPU computing facilities, enabling earth sciences application to run on GPU, and discussed a potential hackathorn.

Contact: Daniel Q. Duffy, NASA Goddard CISTO, daniel.q.duffy@nasa.gov; Phil Yang, GMU, cyang3@gmu.edu

Takeaways:

- Earth science AI/ML application needs intensive computing
- GPU provides potential solutions such as the NVIDIA Earth-2 and NASA NCCS DGX
- Open source and guide are available to help migrate earth science applications to run on GPU nodes

Tags: AI/ML, GPU, Earth Science, Open Source

Extending science-on-schema.org for international compatibility

Identify and prioritize community needs for expressing scientific metadata

ESIP EARTH SCIENCE INFORMATION PARTNERS

Takeaways:

- Interest exists for extensions
- Areas include:
  - (Monitoring) Sites,
  - Projects,
  - Sensors,
  - Samples,
  - DCAT, and
  - Related Identifiers
- A dozen+ people indicated interest in contributing

Contact: Adam Shepherd, **Slack:** #sci-schemaorg

Science On Schema.Org (SOSO) Guidance Documents

This repository provides guidance for repository operators and others to follow consistent conventions to provide schema.org markup in Dataset landing pages to improve data discovery through search engines. The main guides help describe Datasets and Data Repositories.

Name		Guideline	Examples	Issues
Dataset	guidelines for schema.org for a scientific Dataset			
Data Repository	guidelines for schema.org for a research data repository			

science-on-schema.org

Semantics Adoption in the Earth and Environmental Sciences: Successes and Roadblocks

EARTH SCIENCE INFORMATION PARTNERS

Goals:

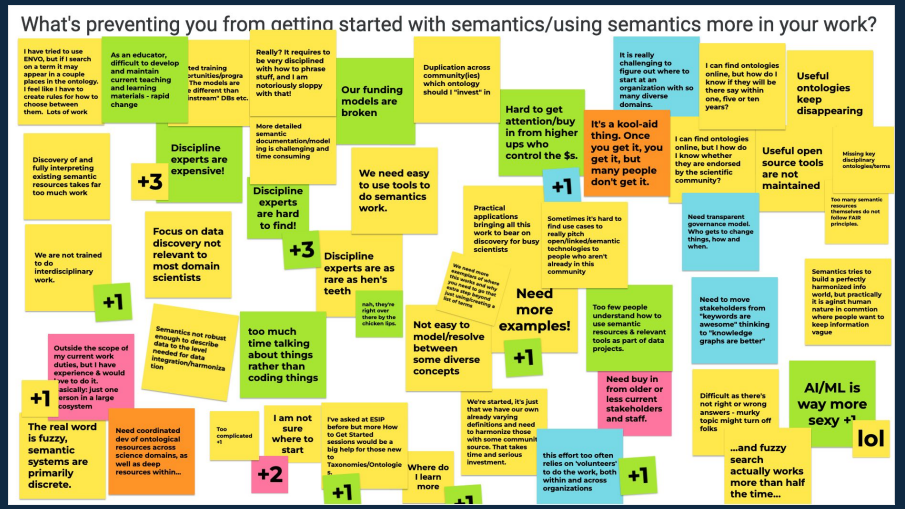
- To acquaint the ESIP community with some of the existing and budding semantics success stories in the Earth and Environmental sciences
- To learn from the ESIP community about roadblocks that are holding up semantics adoption

Takeaways:

- Training will be important
- There should be a virtuous cycle with semantics, NLP and ML working together
- Culture and community are important

Tags: metadata, semantics, data stewardship

Contact: Ruth Duerr, Gary Berg-Cross
esip-semanticharmonization@lists.esipfed.org



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Creating Best Practice Extensions for the Biological Data Standards Primer

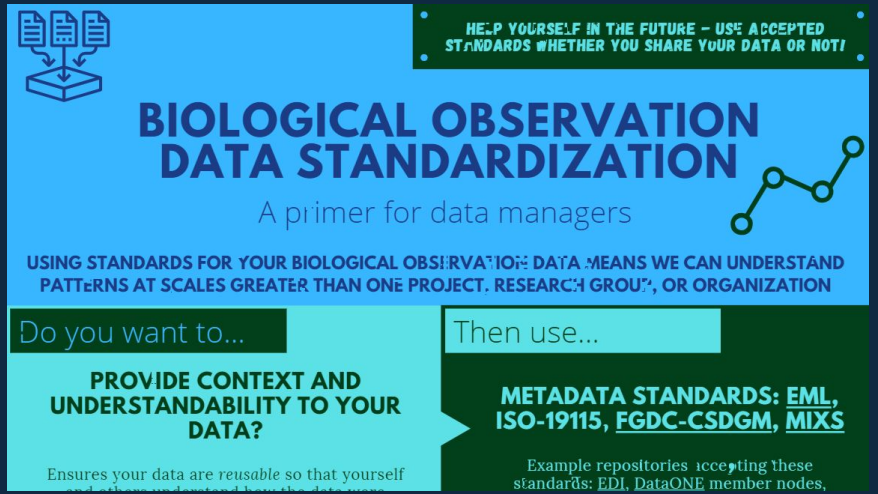
Working session to develop template and material to augment the BDS primer.

Takeaways:

- Provide context for reference links
- For brevity, clarify the audience, but balance with more detail in some cases.
- Have a back-up plan in case your session attendance is lower than anticipated.

Tags: **Biological, Best Practices, Education**

Contact: **Steve Formel, sformel@usgs.gov, #bio-data**



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Introducing Wildfire Cluster

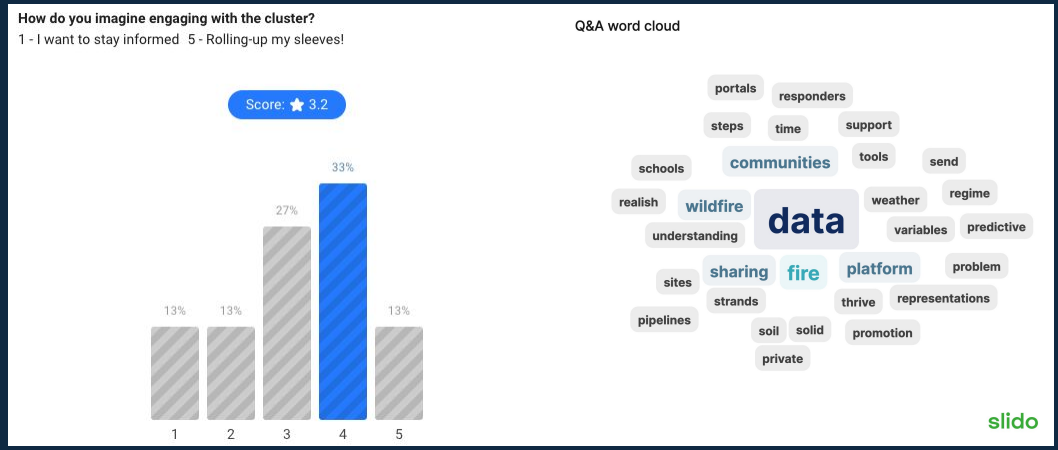
Collecting community inputs on topics the ESIP community can collaborate to advance the use of Earth science information for proactive wildfire management.

Takeaways:

- Broad and diverse community interests in wildfire application
- Highlight the need of accessible and user-friendly data and information for wildfire management
- Need close collaborations across sectors and engagement with communities

Tags: wildfire; community; collaboration

Contact: #wildfire, next telecon at March 8, 4pm ET
Dave Jones (dave@stormcenter.com), Douglas Rao (douglas.rao@noaa.gov)



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Post-Wildfire Trusted Data & Future of DLC

Finished up 2.5 year roadmap for identifying trusted datasets for post wildfire threats and risk & Discussed Future of DLC

Takeaways:

- Imagine the Disaster Response landscape has been forever changed by Earth Science Data Capabilities…
- What Geospatial tools, data sets and/or stakeholder capabilities do you imagine have been created?
- Come to next meeting to hear the results

Tags: #trusteddata, #disasters, #datadrivendecisions, #non-technicaldecisionmakers

Contact: Dave Jones (dave@stormcenter.com), Maggi Glasscoe (mtglasscoe@gmail.com) , #disasters (Slack)

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On the Horizon: Evolving Standards at NASA's ESCO

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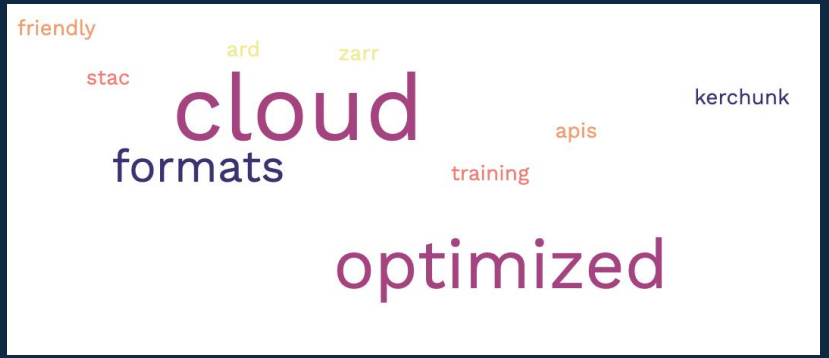
Presenting trends, initiatives and updates in Earth science data formats, services and optimizations for cloud computing, ARD, and discovery and interoperability

Takeaways:

- Containers for cloud optimizations is an evolving area with many choices, options and approaches. The many roads…..
- Containers of choice and how to optimize them often depend on the data type and size
- Heterogeneous data location and type require harmonized discovery services

Tags: #standards, , #cloud-optimized, #HDF, #ARD, #Zarr, #STAC, #kerchunk, #point-cloud, #ESCO, #API

Future topics (and for ESCO too!)



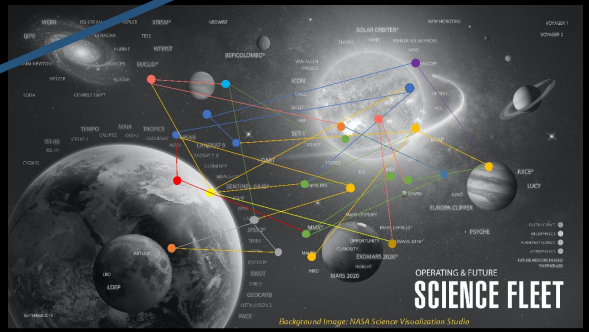
ESIP Meeting
January 2023

(2020) Visioning an Operational-Grade Digital Knowledge Commons For Earth and Environmental Science

(2021) Linking Knowledge in the Earth and Space Sciences: Knowledge Graphs/Networks connecting data and individuals

(2022) Towards an Earth and Space Sciences Knowledge Commons

(2023) Earth and Space Science Knowledge Commons From vision to implementation



Pier Luigi Buttigieg (Helmholtz Metadata Collaboration)
Caroline Coward (NASA Jet Propulsion Laboratory)
Gary Berg Cross (Ontolog)
Ruth Duerr (Ronin)
Ryan McGranaghan (NASA Jet Propulsion Laboratory)
Brandon Whitehead (Manaaki Whenua -- Landcare Research)
Lesley Wyborn (ARDC)
Ellie Young (Common Action)

Takeaways

1. Articulated and created a shared understanding of the dimensions of a knowledge commons
2. Need to develop the 'social infrastructure' for communities to contribute to and use knowledge infrastructure, requiring connection to science communities. We identified several use cases to work on *now*
3. We must get more concrete about the "infrastructure" for building a knowledge commons

Some powerful emergent questions: What do we need to learn from ESIP researchers and how can we discover their needs? How do we help ESIP researchers make creating knowledge commons a part of their research workflow? What are the literacies needed to be a knowledge

Get involved!

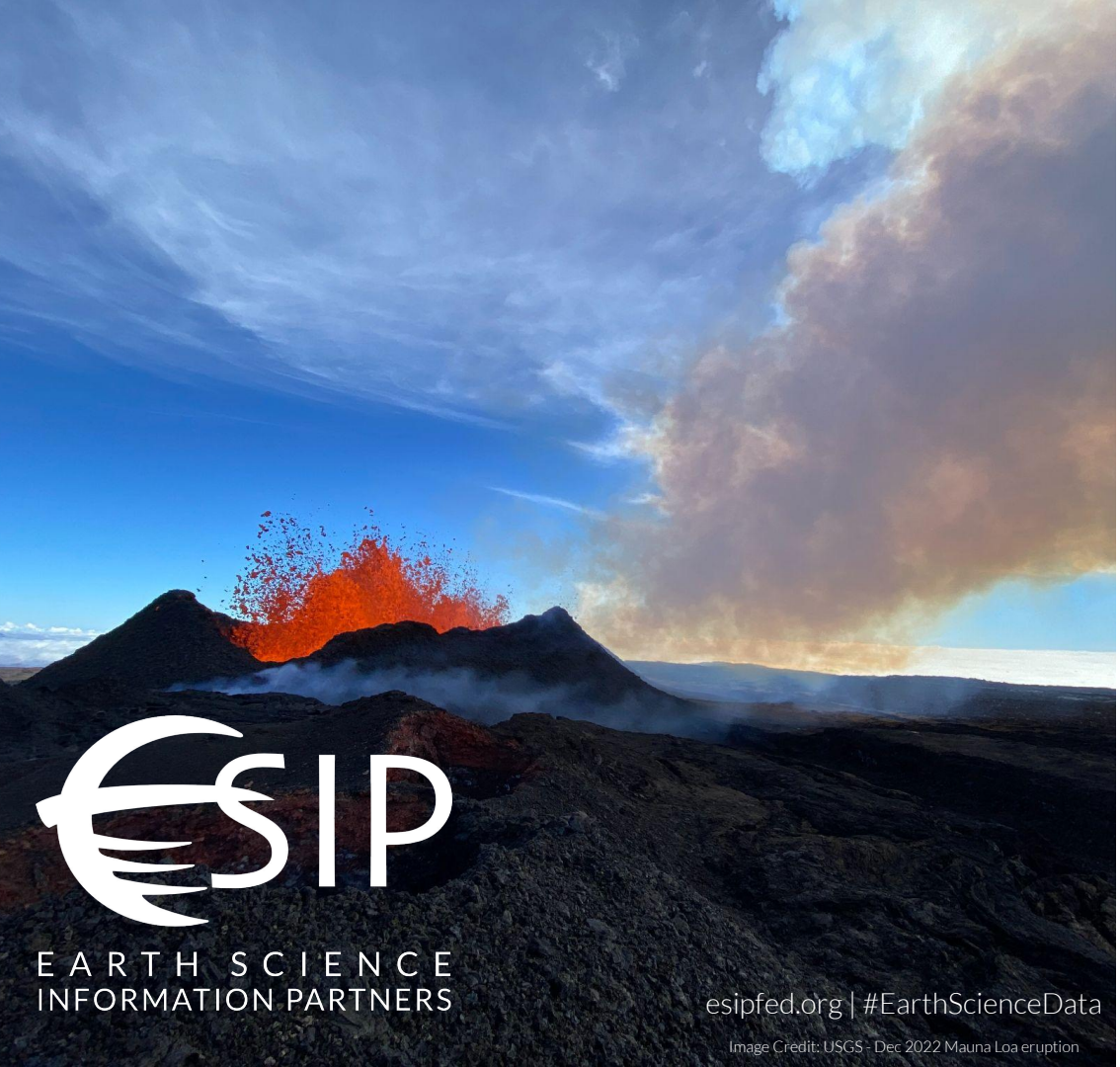


Image Credit: USGS - Dec 2022 Mauna Loa eruption

Community Fellow Highlights

2023 January ESIP Meeting

January 23–27, 2023

Supported by:

IT&I Rants and Raves Session

Session with 'lightning' presentations highlighting complaints/challenges (rants) and offered praise/support (raves) in IT

Takeaways:

- Wide variety of presentations with a good mix of rants and raves; spawned a lot of discussion!
- Discussion after presentations included challenges in convincing and/or the long time-frame gov. orgs. can have in adopting new methods/tech (once implemented it's already obsolete issues)
- Data Stewardship Committee very interested in gov org agility and learning more about how 'agile' orgs make it happen

Contact: *Daniel Segessenman, dsegesse@gmu.edu, Data Stewardship Committee (ESIP Community Fellow)*

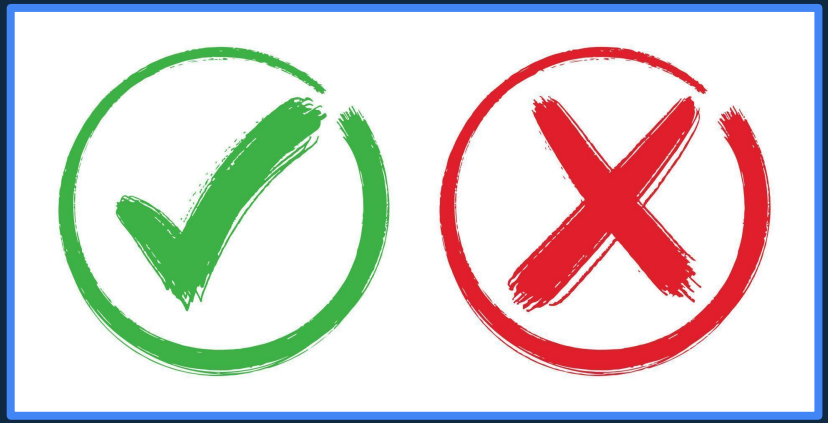


Image Credit: Vecteezy

Tags: IT, Rants, Raves, Discussion, Interoperability

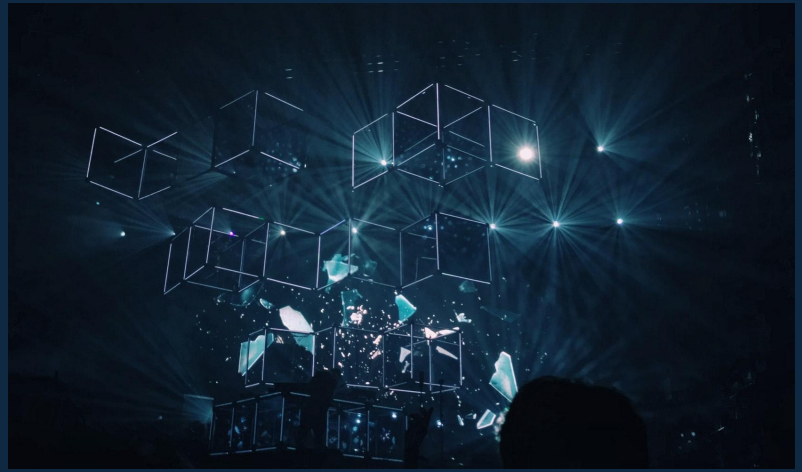
Coordinating Environmental Justice Initiatives Across Organizations + Exploring ESIP's International Connections

Explored existing collaborations and potential for ESIP's work to go beyond its borders

Takeaways:

- Hard conversations but panelists & participants engaged and open to learning
- Examine how to **work with** new communities to facilitate an equal exchange
- Both very relevant to Community Resilience Cluster to test and model possible ways forward

Contact: **Sruti Modekurty, sruti.modekurty@gmail.com, Community Resilience Cluster (ESIP Community Fellow)**



Tags: **environmental justice, international, collaboration**

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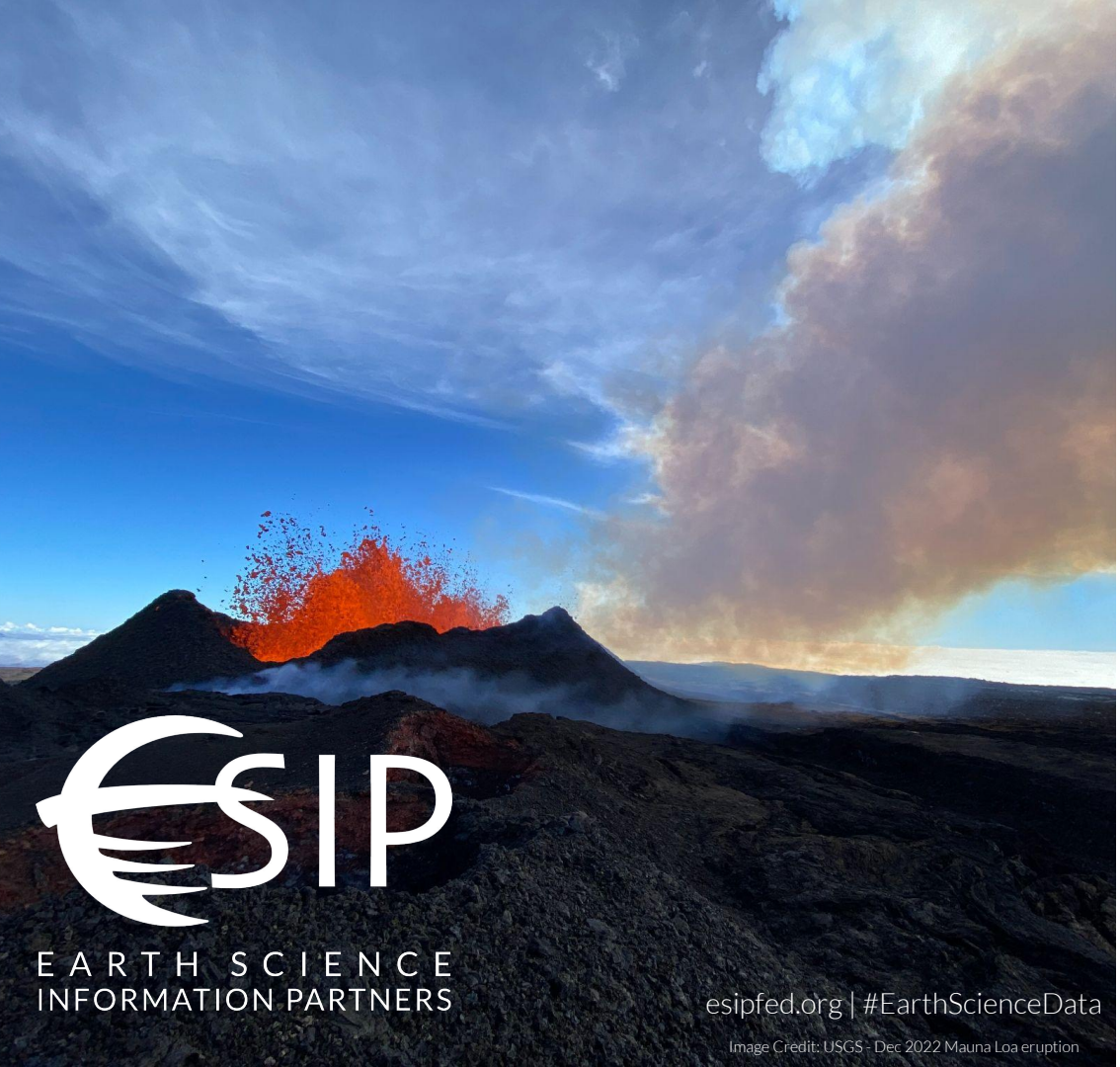


Image Credit: USGS - Dec 2022 Mauna Loa eruption

Closing Remarks

2023 January ESIP Meeting

January 23–27, 2023

Supported by:

25 YEARS OF
COLLABORATION
EARTH SCIENCE INFORMATION PARTNERS

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.

Consider serving in a leadership position!

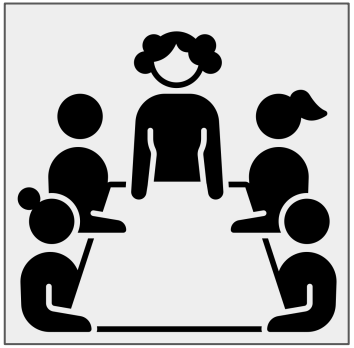
Why serve?

- Contribute to decision making within ESIP
- Share your skills/talents with the community (incl. mentorship)
- Develop soft skills (esp. early/mid career)

Volunteer or nominate someone today!

Want to provide support but don't want to lead?
Consider serving on the Nominations Committee!

Elected members serve 1 year with the opportunity to run for a 2nd year



Positions:

- President
- Vice President
- Governance Committee Chair
- Finance Cmte. Chair
- Partnership Cmte. Chair
- Data Stewardship Cmte. Chair
- Education Cmte. Chair
- Information Technology & Interoperability Cmte. Chair
- Semantic Technologies Cmte. Chair
- At Large Board Member (2 positions)

Want to learn more?
Positions descriptions: https://bit.ly/3SugxeT
Contact: sarah.ramdeen@gmail.com

Tags: Leadership, Service

MAKING DATA MATTER

esipfed.org | #EarthScienceData

Thank you for attending!

Keep up on all things ESIP:
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ESIP Meetings
ESIPFED.ORG/MEETINGS

ESIP Collaboration Areas
ESIPFED.ORG/COLLABORATE

ESIP Lab
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