ESS-DIVE Update: New Features, Standards and Community Activities

Charuleka Varadharajan

LBNL/ESS-DIVE Team: Deb Agarwal, Shreyas Cholia, Cory Snavely, Valerie Hendrix, Joan Damerow, Josh Boverhof, Madison Burrus, Hesham Elbashandy, Anna Giannakou, Zarine Kakalia, Mario Melara, Fianna O'Brien, Emily Robles, Bill Riley, Makayla Shepherd, Maegen Simmonds, and Karen Whitenack

NCEAS/DataONE: Matt Jones, Chris Jones, Peter Slaughter

CF Partners: Terri Velliquette, Ranjeet Devarakonda, Sue Heinz, Alistair Rogers, Kim Ely, Ben Bond-Lamberty, Stephanie Pennington, Amy Goldman, Kristin Boye, Pamela Weisenhorn

ESS-DIVE
Deep Insight for Earth Science Data

ESS PI Meeting
May 19, 2020

U.S. DEPARTMENT OF ENERGY | Office of Science

BERKELEY LAB

NERSC

NCEAS

What is ESS-DIVE?

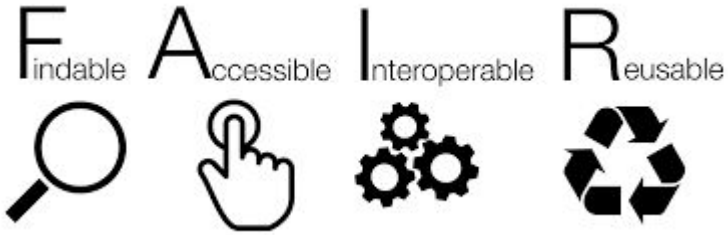
Data Repository to

preserve

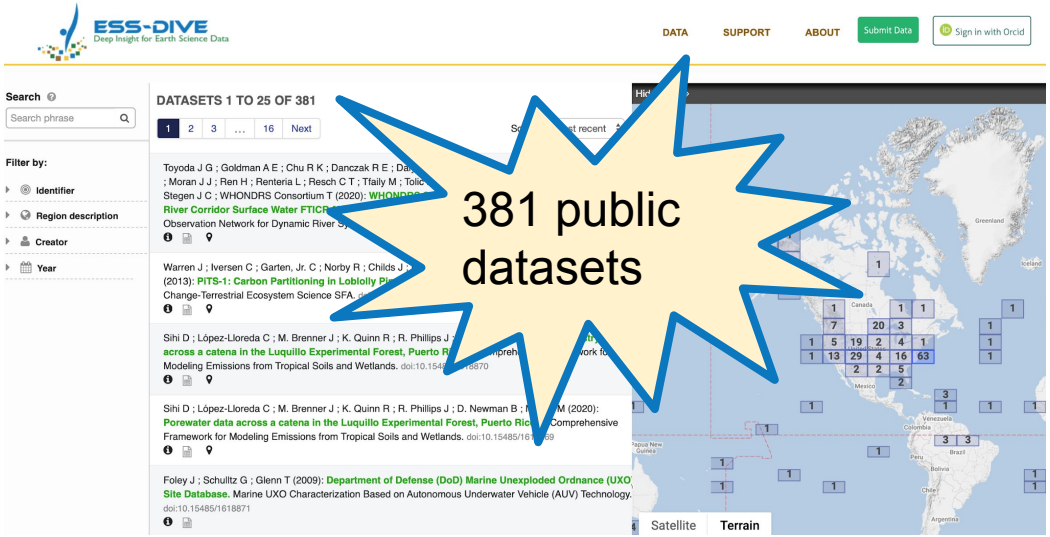
expand **access** to

and improve **usability** of

ESS data



data.ess-dive.lbl.gov



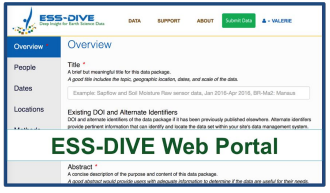
How to upload and publish data on ESS-DIVE

Register w/ ORCID.

Organize **data packages**.

Revision

Revise/Create

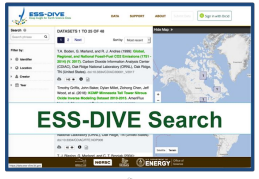


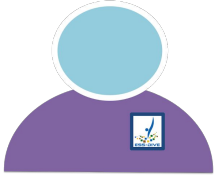
Define **metadata** for data package.

Upload

Review

Available for **public search/download**.





ESS-DIVE Project User

Revise

Data Package Metadata

Upload **files** for data package.

Submit

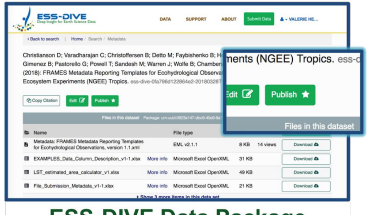
Catalog

ESS-DIVE **review**.

DOI assigned.

Citation Information

Publish

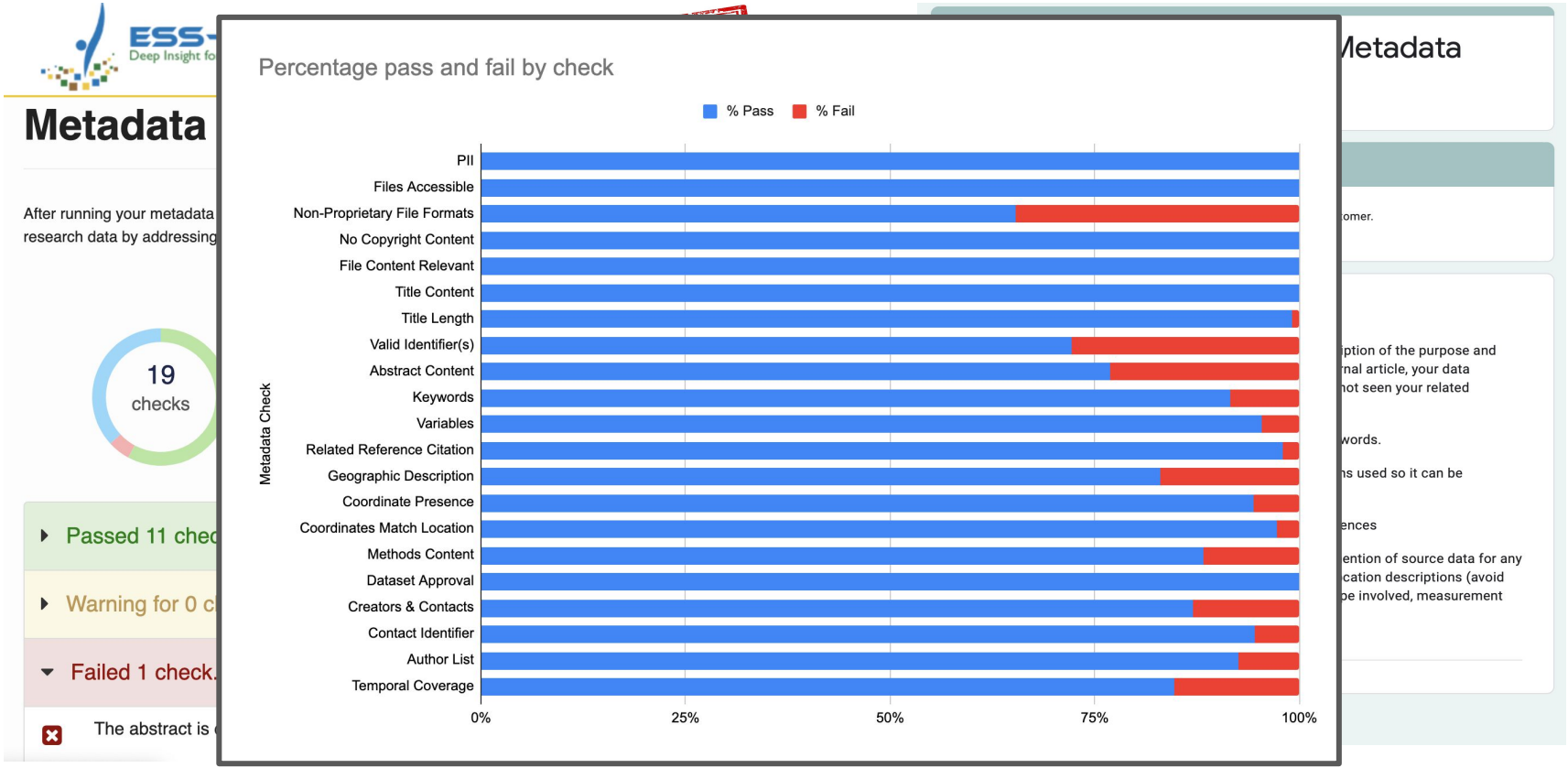


Submit to save privately.

When ready click **Publish**.

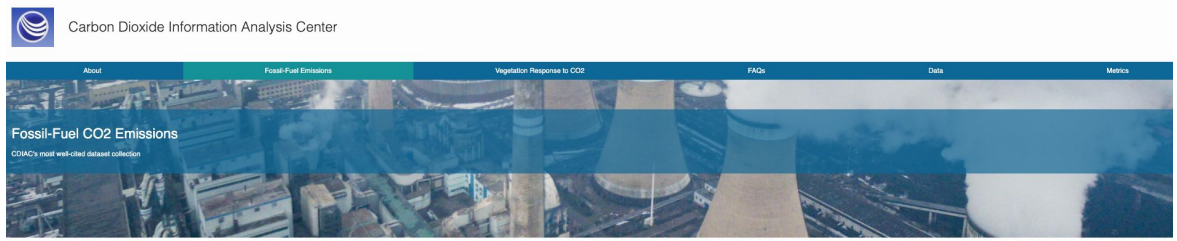
ess-dive.lbl.gov/archive/

New ESS-DIVE Metadata Review Process Combines Automated and Manual Checks

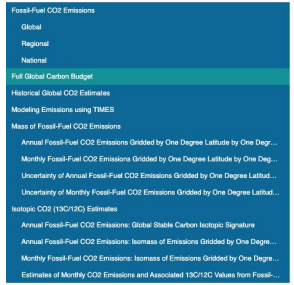


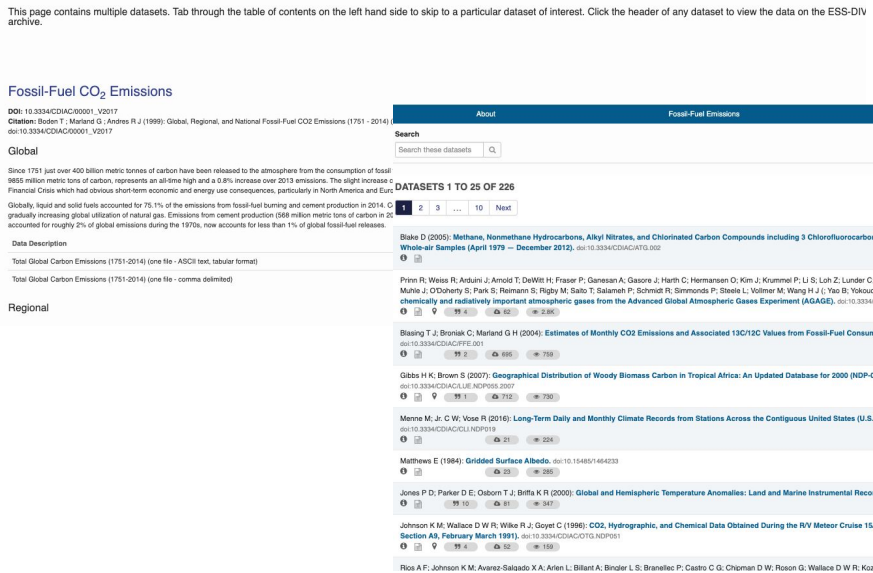
Portals Enable Project or Thematic Collections and Long-term Archival of Project Information

ESS-DIVE



https://data.ess-dive.lbl.gov/portals/CDIAC/





NEW FEATURE

Easy Upload Capabilities & Broad Data Availability

ESS-DIVE

Prototype Fusion Database: csv files

Fusion Database

Advanced search

Integration

Visualizations

API: Repeat/Big Uploads (100 GB)

NEW FEATURE

Standards

Data Preservation

LBNL IT

NCEAS

Data Contributor

Data Package Upload

Rest API

ESS-DIVE Data Package Archive

NERSC

DataONE

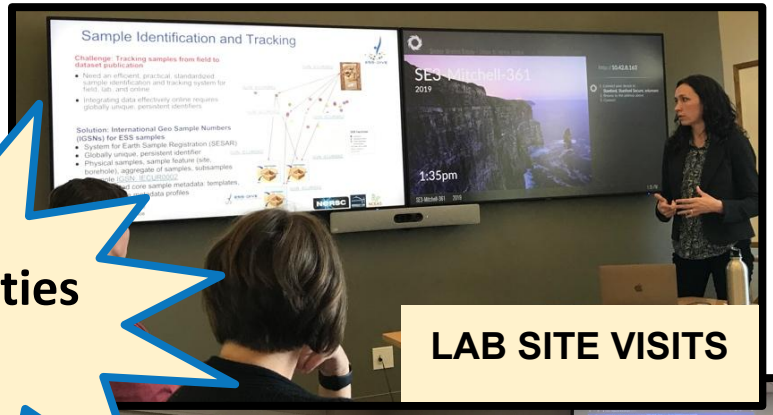
- Replication, auditing and redundancy
- Cross-catalog search

Extensive Community Engagement Activities

Join ess-dive-community@lbl.gov

MONTHLY WEBINARS

60+ Activities in 3 years

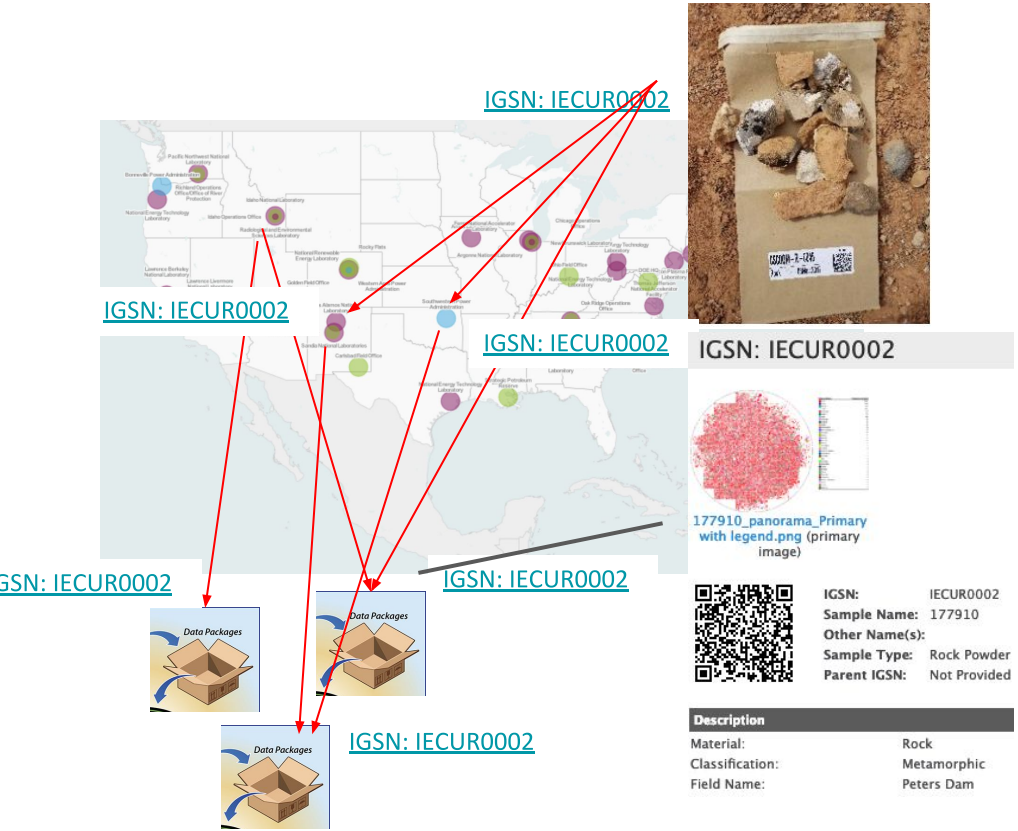


LAB SITE VISITS

AGU DATA FAIR

ESS PI/CI MEETING TUTORIAL

Standards: Sample IDs and Metadata



2019 ESS-DIVE Sample PID/Metadata Field Pilot Test

SLAC SBR SFA: Kristin Boye, Zach Perzan

LLNL SBR SFA: Mavrik Z[illegible]arin, Nancy Merino

PNNL [illegible] SFA: [illegible]ny Goldman

ANL SBR [illegible]

LBNL [illegible]nd TES

Below [illegible] SFA:

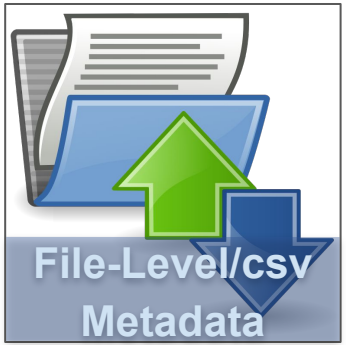
Eoin Brodie[illegible] [illegible]Ricardo Eloy Alves, Dana Cha[illegible]wick

BNL TES SFA, NGEE Tropics and NGEE Arctic: Kim Ely and Alistair Rogers

2476 Registered ESS IGSNs

YOUR FEEDBACK MATTERS

Standards Developed by Community Fund Partners

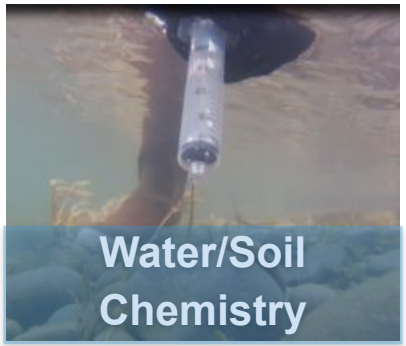


Velliquette, Devarakonda, Heinz (ORNL)

Bond-Lamberty, Pennington (PNNL)

Rogers, Ely (BNL)

Goldman (PNNL)



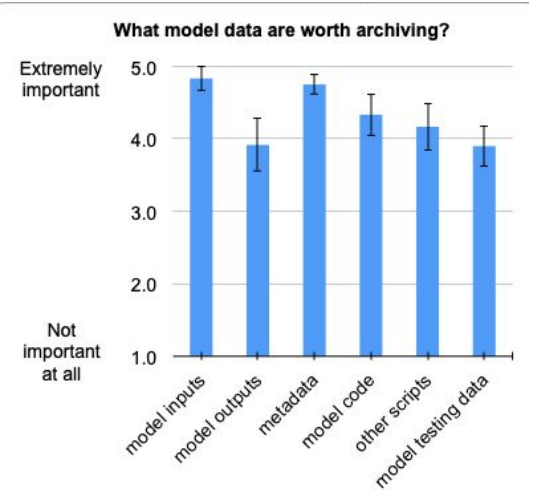
Boye (SLAC)

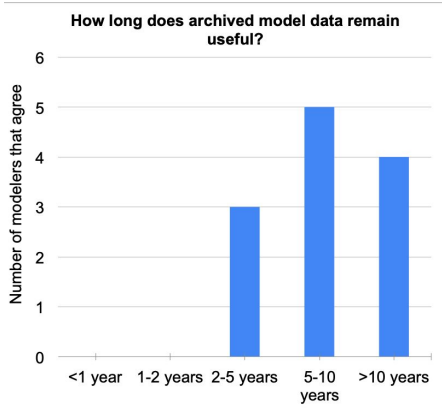
Weisenhorn (ANL)

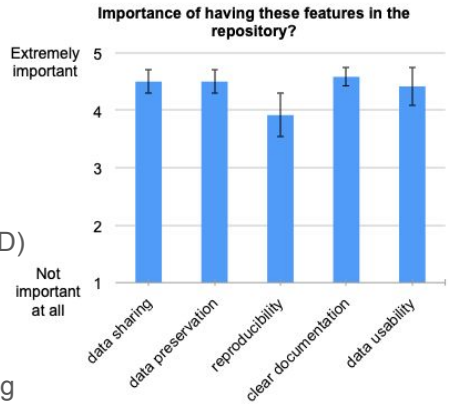
YOUR FEEDBACK MATTERS

ess-dive.lbl.gov/community-projects/

Model Data Archiving Survey and Whitepaper

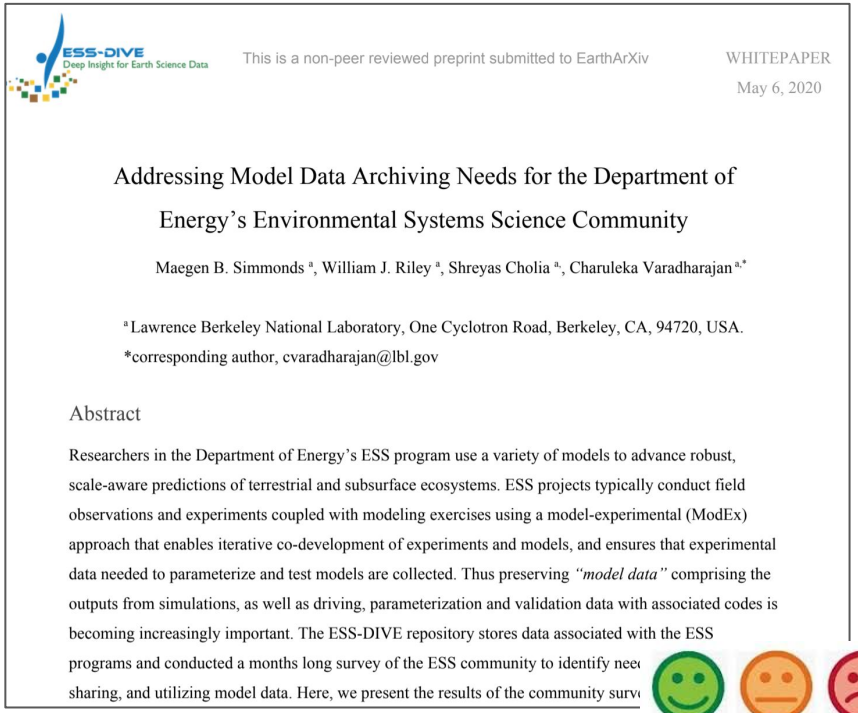






Models used

- ELM
- ELM-FATES
- ELM-BeTR
- CLM
- PFLOTRAN
- CABLE
- SDVGM
- GDAY
- ED2
- LPJ-GUESS
- ATF
- ATS
- OpenFOAM (CFD)
- Crunch
- Crunch-Flow
- SWAT
- Machine Learning



ESS-DIVE Deep Insight for Earth Science Data

This is a non-peer reviewed preprint submitted to EarthArXiv

WHITEPAPER

May 6, 2020

Addressing Model Data Archiving Needs for the Department of Energy's Environmental Systems Science Community

Maegen B. Simmonds [a], William J. Riley [a], Shreyas Cholia [a], Charuleka Varadharajan [a,*]

[a] Lawrence Berkeley National Laboratory, One Cyclotron Road, Berkeley, CA, 94720, USA.

*corresponding author, cvaradharajan@lbl.gov

Abstract

Researchers in the Department of Energy's ESS program use a variety of models to advance robust, scale-aware predictions of terrestrial and subsurface ecosystems. ESS projects typically conduct field observations and experiments coupled with modeling exercises using a model-experimental (ModEx) approach that enables iterative co-development of experiments and models, and ensures that experimental data needed to parameterize and test models are collected. Thus preserving *"model data"* comprising the outputs from simulations, as well as driving, parameterization and validation data with associated codes is becoming increasingly important. The ESS-DIVE repository stores data associated with the ESS programs and conducted a months long survey of the ESS community to identify nee sharing, and utilizing model data. Here, we present the results of the community surv

doi: 10.31223/osf.io/acdk4

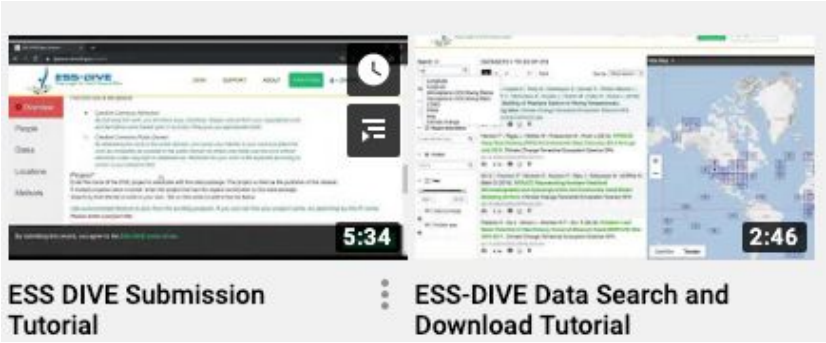
YOUR FEEDBACK MATTERS

Connect With Our Team!

ESS-DIVE

ess-dive.lbl.gov
ess-dive-support@lbl.gov

To stay updated:
ess-dive-community@lbl.gov
#essdive



ESS DIVE Submission Tutorial

ESS-DIVE Data Search and Download Tutorial

Acknowledgements
Funding: EESSD Data Management
Advisory Groups: ESS-DIVE Archive Partnership Board, ESS Cyberinfrastructure Working Groups