

# Environmental System Science - Data Infrastructure for a Virtual Ecosystem

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**ESS-DIVE**

Deep Insight for Earth Science Data

<http://ess-dive.lbl.gov>



# ESS-DIVE is live!

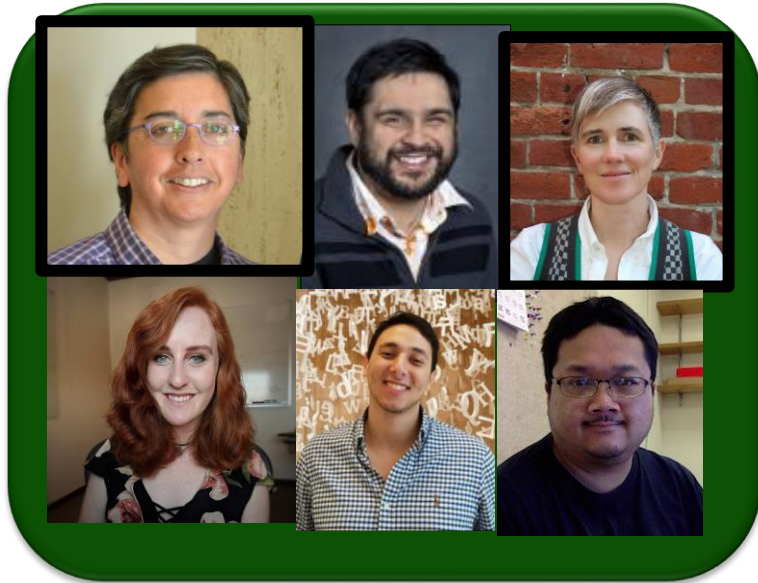
LAUNCHED APR 1, 2018

[data.ess-dive.lbl.gov](https://data.ess-dive.lbl.gov)

[data-sandbox.ess-dive.lbl.gov](https://data-sandbox.ess-dive.lbl.gov)



# The ESS-DIVE Team



**Data Scientists and  
Software engineers**



**Digital Librarians**

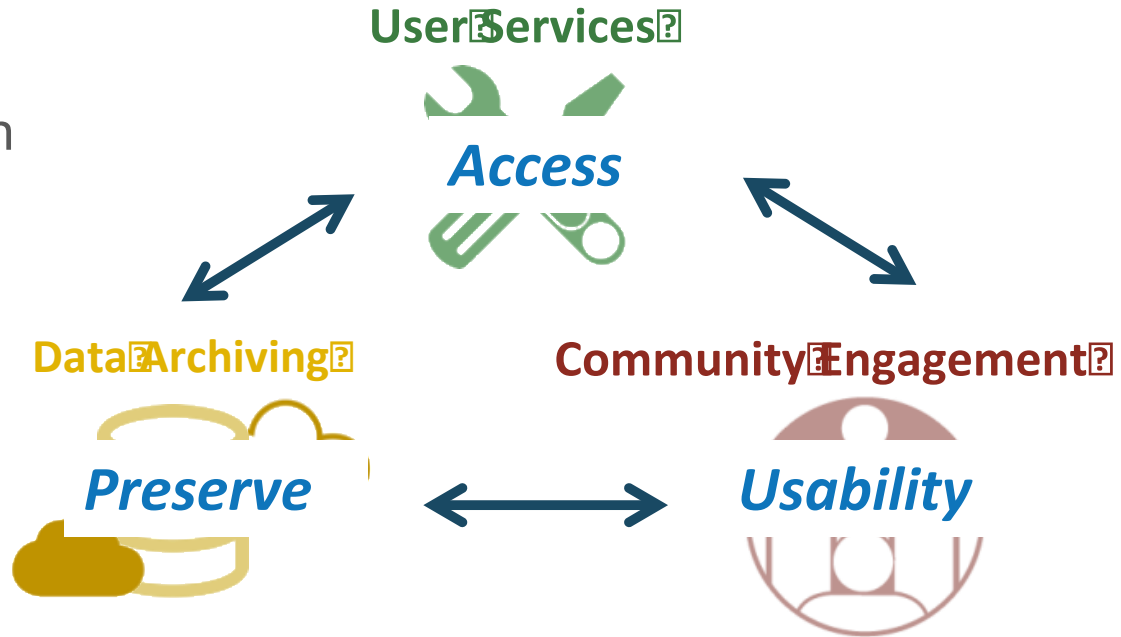


**Environmental  
Scientists**

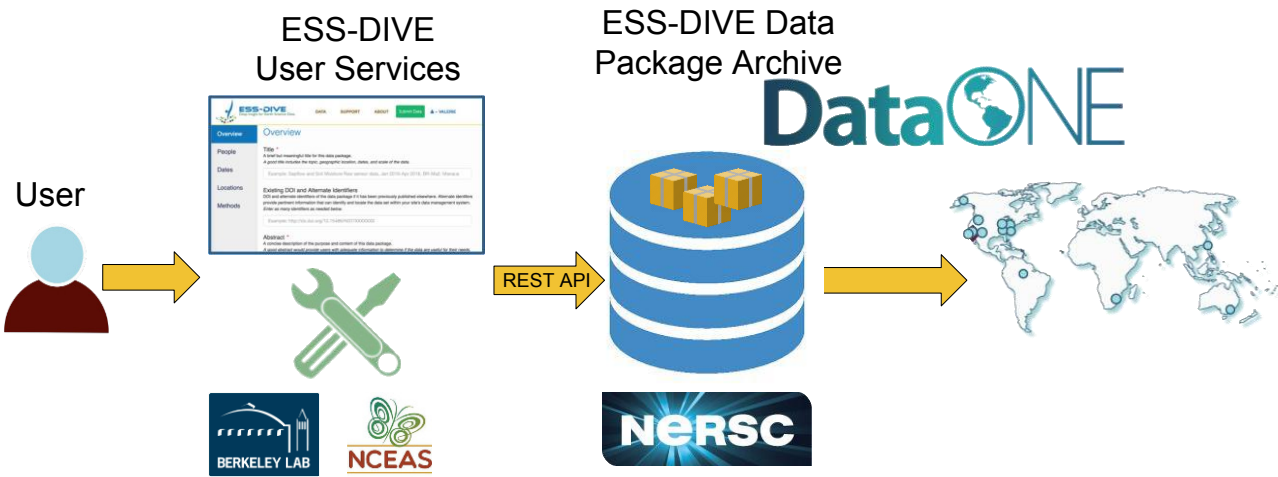
# ESS-DIVE Mission and Approach



To **preserve**, expand **access** to, and improve **usability** of critical **data** generated through DOE-sponsored research of **terrestrial and subsurface ecosystems** in support of the DOE's efforts to address some of society's most pressing energy and environmental challenges.



# 2018: A Data Archive that Stores and Provides Easy Access to ESS Data



# Creating a Data Package



ESS-DIVE Data Archive initially supports most common use cases.

- 🔗 **Upload** data and metadata bundled together as a **data package**
- 🔗 Release data packages publicly with a digital object identifier (**DOI**)
- 🔗 Package metadata includes **brief description of data**: title, abstract, authors, keywords, project etc.
- 🔗 Data usage licensing **CCby4** and **CC0**

A screenshot of the ESS-DIVE web interface for creating a new data package. The page has a white background with a blue header. The header includes the ESS-DIVE logo and navigation links for DATA, SUPPORT, ABOUT, and a green "Submit Data" button. A user profile for "DEBORAH" is visible in the top right. The main content area shows a form for a new dataset titled "Untitled dataset". It includes instructions on how to submit a new package or make revisions, followed by a table with columns for Files, Size, Type, and Status. The table currently contains one entry, "Untitled dataset", with a green "Add Files" button to its right. Below the table, a large text prompt says "Add files to start your dataset" with another "Add Files" button. A sidebar on the left contains a navigation menu with "Overview" selected. The main content area below the sidebar shows the "Overview" section, which includes fields for "Title", "Dates", "Existing DOI and Alternate Identifiers", and "Abstract", each with a brief description and an example text input field.

# ESS-DIVE Initial Search Interface



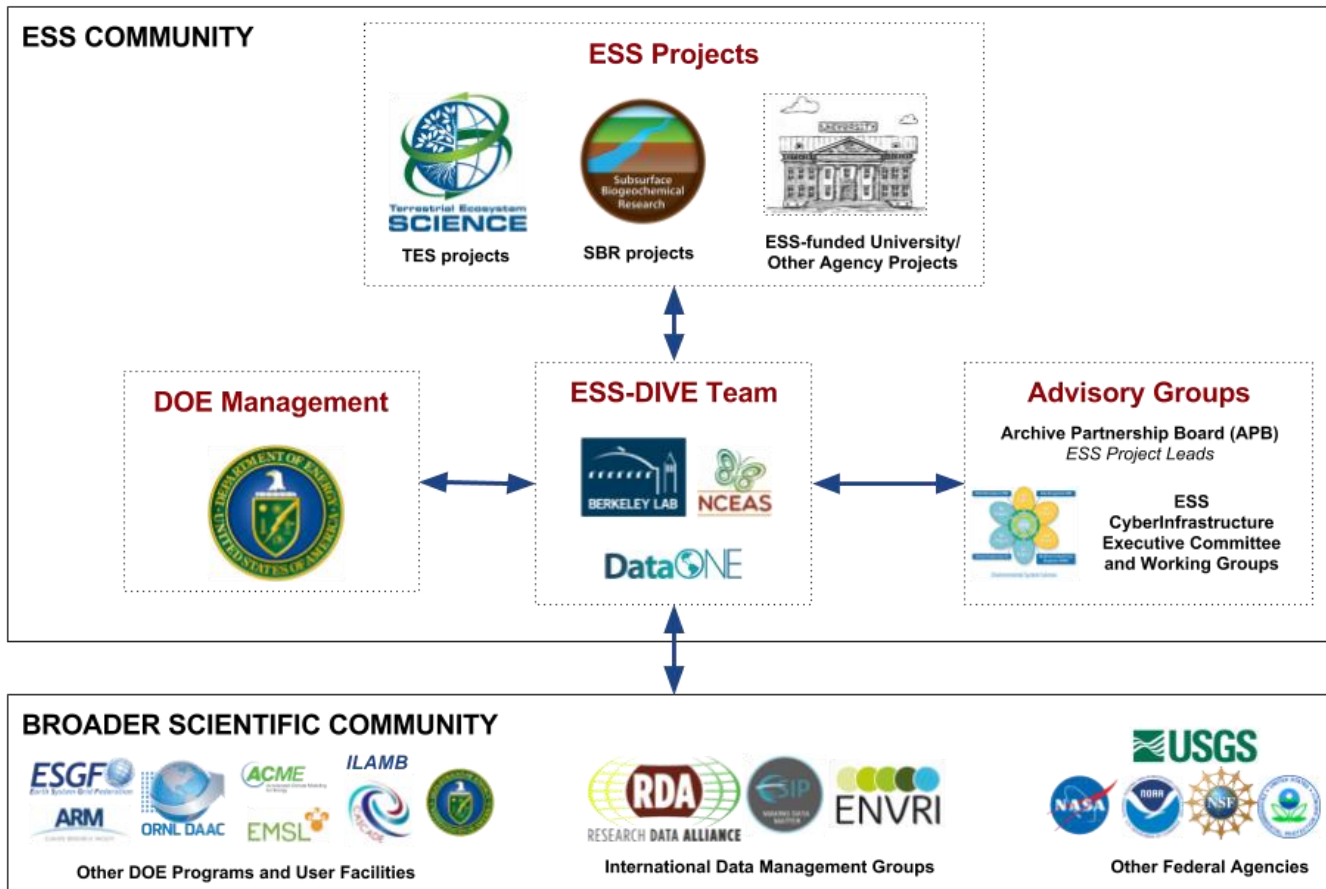
ESS-DIVE Data Archive initially supports most common use cases.

- Multiple ways to **find data** through keyword search and filters
- Public download** of data and metadata
- Tracking of downloads** for data contributors
- ORCID logins** provide federated access

A screenshot of the ESS-DIVE search interface. The top navigation bar includes 'DATA', 'SUPPORT', 'ABOUT', 'Submit Data' (a green button), and 'Sign in with Orcid'. The main content area is divided into a search sidebar on the left and a results list on the right. The search sidebar has a search box and filter options for Identifier, Location, Creator, and Year. The results list shows three entries, each with a title, author, and DOI. A map on the right side of the interface shows the location of the data sources, with a blue box highlighting the United States. The footer contains logos for the University of Tennessee, NERSC, NCEAS, and the U.S. Department of Energy Office of Science.



# ESS-DIVE is a Partnership with the ESS Community





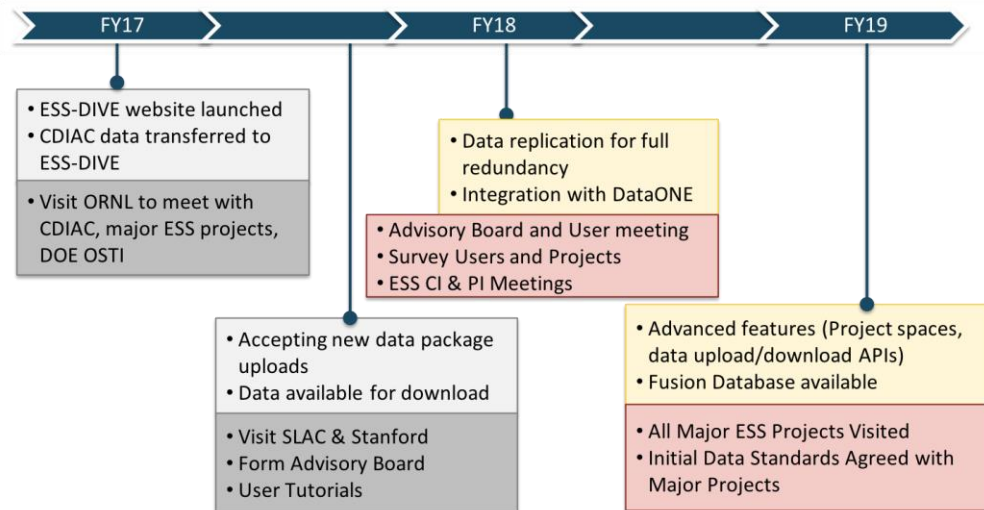
# Project Accomplishments Timeline

## Implementation

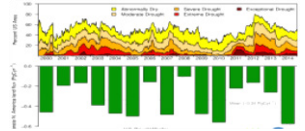
- ✧ 2017 July – Project start
- ✧ 2017 Sept. – Old archive transferred
- ✧ 2018 April – ESS-DIVE live

## Community engagement

- ✧ 2017 May – ESS CI and PI Mtg
- ✧ 2017 July - Visit to ORNL and OSTI
- ✧ 2017 Dec – Visit to Stanford/SLAC
- ✧ 2018 March – Advisory Board Mtg
- ✧ 2018 May – ESS PI Mtg



# 2023: A Data Archive that Enables ESS Science Through Community Engagement



C flux Tool



Groundwater Constituent Tool



Spectral Processing Jupyter Notebook

# Enhancing Value of Public Archive to ESS Community



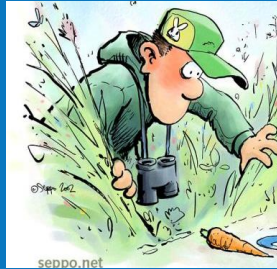
- **Publish** data with **DOIs** for citation and identifying provenance
- Understand **user needs** with User Experience Research
- Adopting **community standards** for data and metadata
- Provide archiving of **private/project** data packages to support cradle-to-grave data archiving
- Build **fusion database** to enable integrated data search, download, and visualization
- Enable new data tools and capabilities through **community development**

# What can ESS-DIVE do for ESS researchers now?



## DATA CONTRIBUTORS:

ARCHIVE and PUBLISH diverse data in many formats. OBTAIN DOIs to cite and track data usage.



## DATA USERS:

FIND AND OBTAIN ESS data that is organized for easier use.



## PROJECT PIs:

MANAGE your project data and metadata. Get LETTERS OF SUPPORT for your proposal.



## A SUPPORTED COMMUNITY:

FOSTER collaboration by listening to your needs!





# Questions

[Contact us - ess-dive-support@lbl.gov](mailto:ess-dive-support@lbl.gov)

[Project web site - http://ess-dive.lbl.gov](http://ess-dive.lbl.gov)

Meet our team at the PI meeting!