

# 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>



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# ESS-DIVE Introduction



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CESD Data Management Program



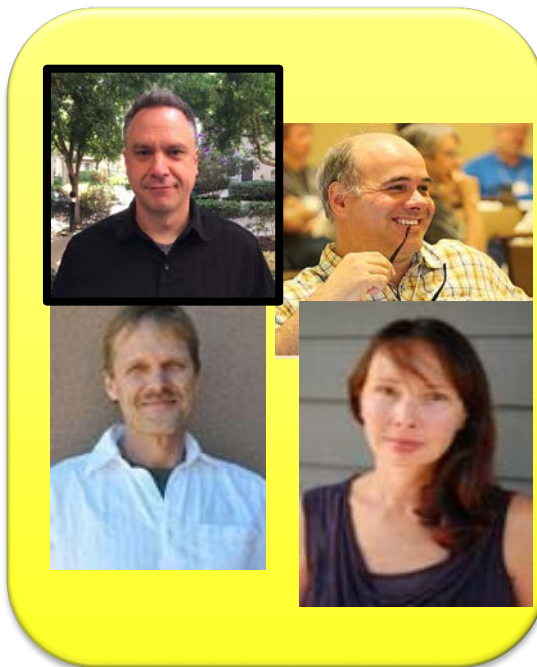
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# The ESS-DIVE Team



**Data Scientists**



**Digital Librarians**



**Environmental  
Scientists**



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# ESS-DIVE Mission



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.

# ESS CyberInfrastructure Working Groups



- Community group of representatives from ESS projects
- Started in 2014 and formalized in 2015
- Meets at the ESS PI meeting yearly
- Identify synergies across projects for joint development
  - Joint projects
  - Cross-project priorities
- Data archive was identified as a priority and led to ESS-DIVE

# Three-Pronged Approach to Developing ESS-DIVE



**User Services**



*Access*



**Data Archiving**



*Preserve*

**Community Engagement**



*Usability*



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# 2017: ESS Projects Store Their Own Data



## ESS PROJECT DATA



Google Drive



Dropbox

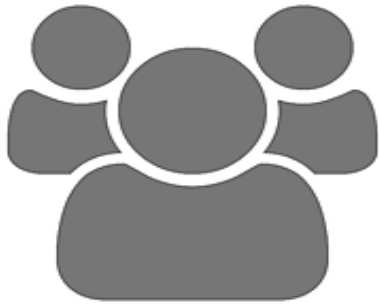


- DOE Data Management Requirements
  - Most data not standardized

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

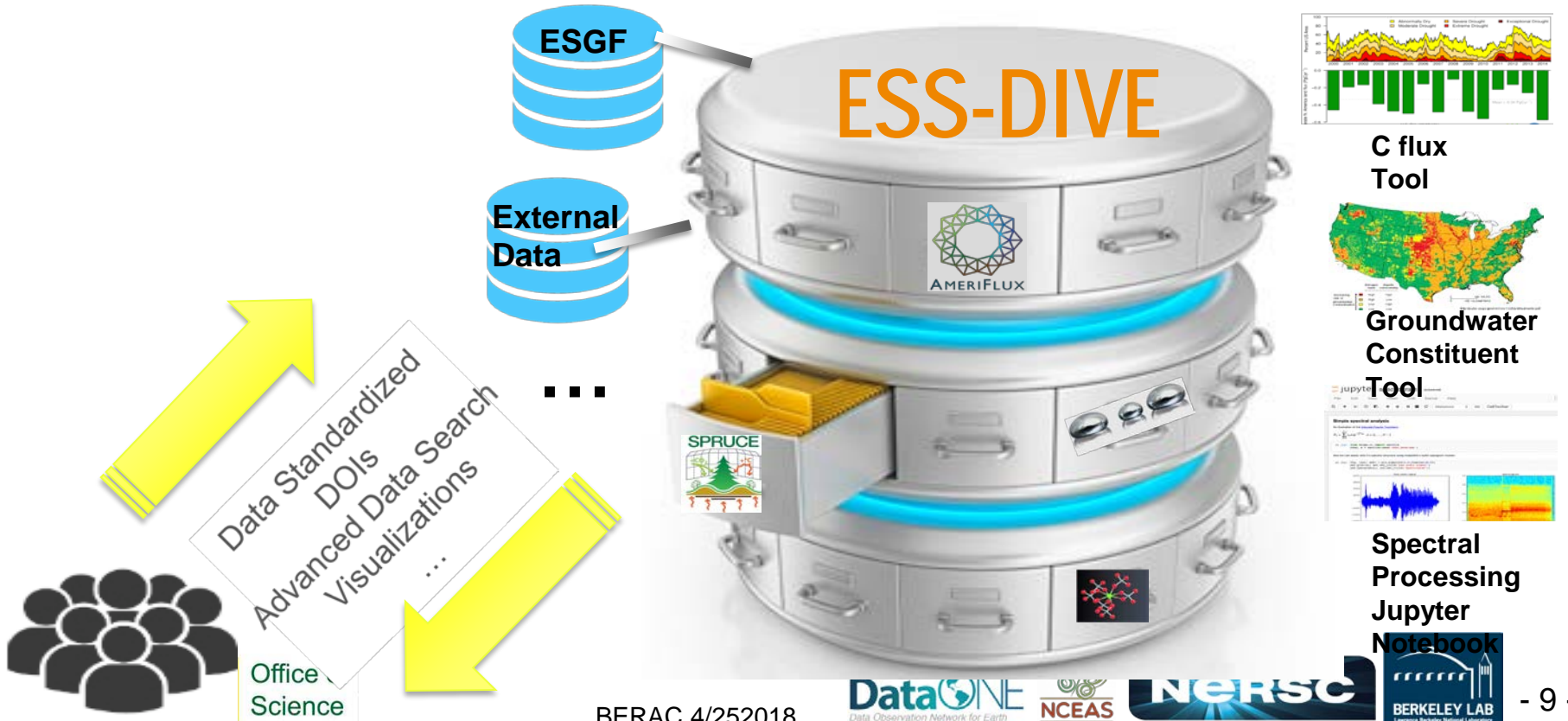


## ESS-DIVE





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



# ESS-DIVE Initial Search Interface



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)
- ✧ Public search and download
- ✧ Tracking of downloads
- ✧ User licensing CC0 and CCby4

A screenshot of the ESS-DIVE web application. The header includes the ESS-DIVE logo, navigation links for DATA, SUPPORT, and ABOUT, a green 'Submit Data' button, and a 'Sign in with Orcid' button. The main content area is divided into three columns: a search bar with a 'Search phrase' input field, a 'Filter by' sidebar with options for Identifier, Location, Creator, and Year, and a list of datasets. The dataset list shows three entries with titles in green, authors, institutions, and DOIs. To the right of the dataset list is a map of North and South America with a 'Hide Map' button and zoom controls. The footer contains logos for Berkeley Lab, NERSC, NCEAS, and the U.S. Department of Energy Office of Science.

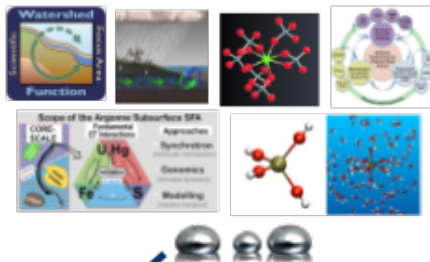
# ESS-DIVE Is a Partnership With the ESS Community



## TES major projects and SFAs



## SBR SFAs and IDEAS



ESS-funded University/  
Other Agency Projects



DataONE



Key partners



Other CESD/DOE Programs and User Facilities



# Enhancing Value of Public Archive to ESS Community



- Understand **user needs** with User Experience Research
- Issue data **DOIs** for citation and identifying provenance
- 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**

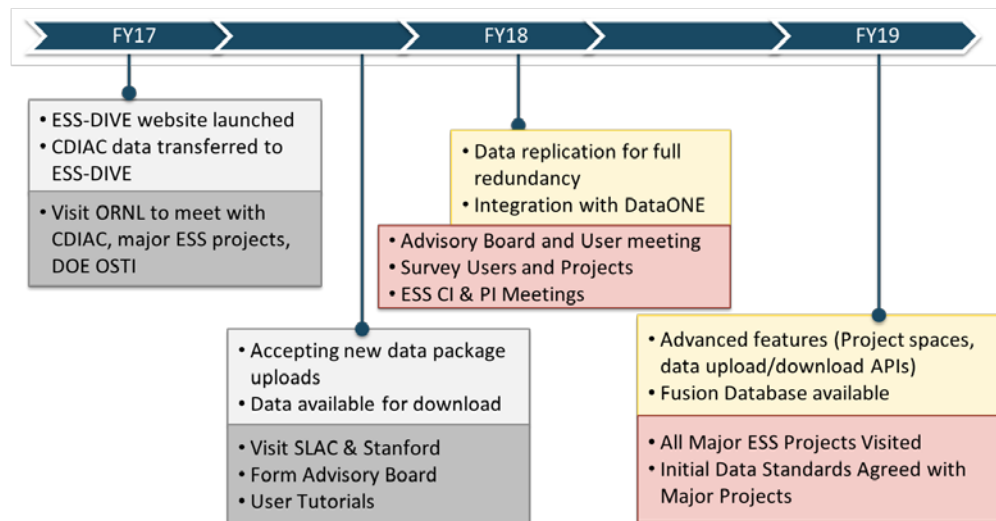
# Project Accomplishments Timeline

## 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 and SLAC
- ✧ 2018 March – Advisory Board Mtg
- ✧ 2018 May – ESS PI Mtg





# 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)