

Environmental System Science - Data Infrastructure for a Virtual Ecosystem

Deb Agarwal,

Charuleka Varadharajan, Shreyas Cholia, Cory Snaveley, Valerie Hendrix, Fianna O'Brien, William Riley, Chris Jones, Matt Jones, and Karen Whitenack



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

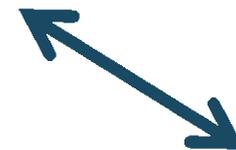


Preserve

Community Engagement



Usability



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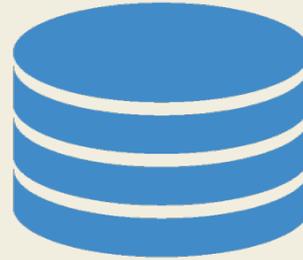
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2017: ESS Projects Store Their Own Data



ESS PROJECT DATA



Google Drive



Dropbox

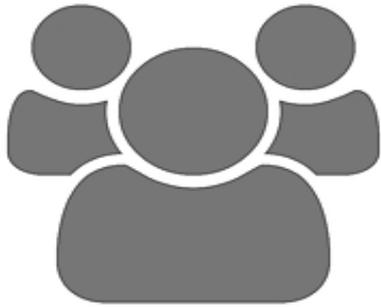


- DOE Data Management Requirements
 - Most data not standardized

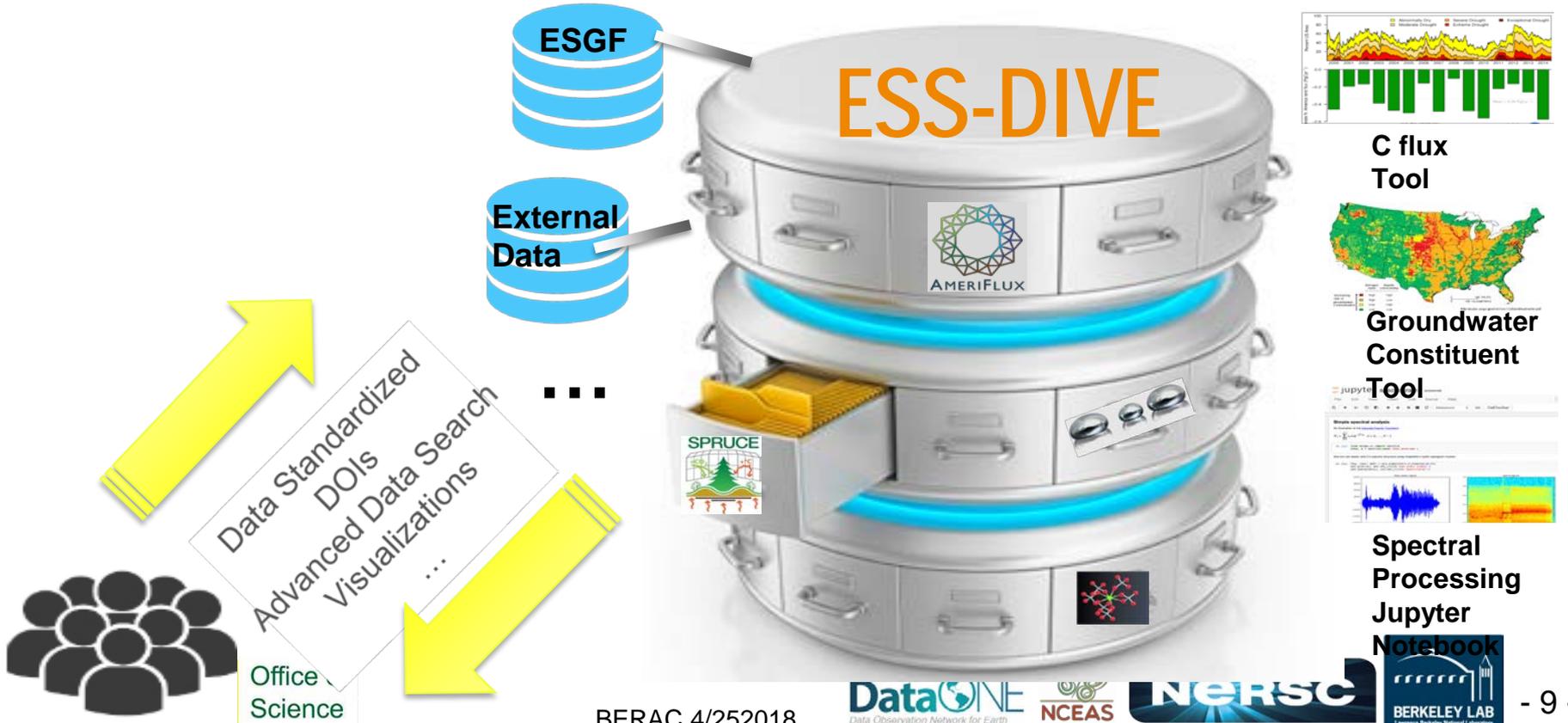
2018: A Data Archive that Stores All ESS Data and Provides Easy Access to That Data



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 search interface. At the top, there is a search bar with the text "Search phrase" and a magnifying glass icon. To the right of the search bar are navigation links for "DATA", "SUPPORT", and "ABOUT", along with a green "Submit Data" button and a "Sign in with Orcid" button. Below the search bar, there is a "Filter by:" section with expandable categories: "Identifier", "Location", "Creator", and "Year". The main content area displays a list of datasets, with the first one being "Angell J; Korshover K; Planet W (1991): Annual and Seasonal Global Variation in Total Ozone and Layer-Mean Ozone, 1958-1987 (1991)". Each dataset entry includes a title, author information, and a DOI. To the right of the dataset list is a map of the United States and surrounding regions, with a "Hide Map" button and zoom controls. The footer of the interface includes logos for "BERKELEY LAB", "NERSC", "NCEAS", and "U.S. DEPARTMENT OF ENERGY Office of Science".

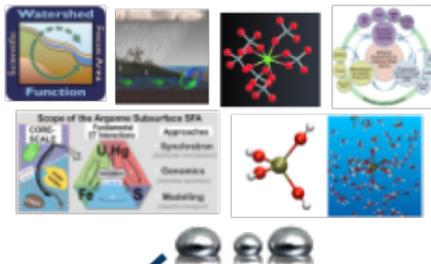
ESS-DIVE Is a Partnership With the ESS Community



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**

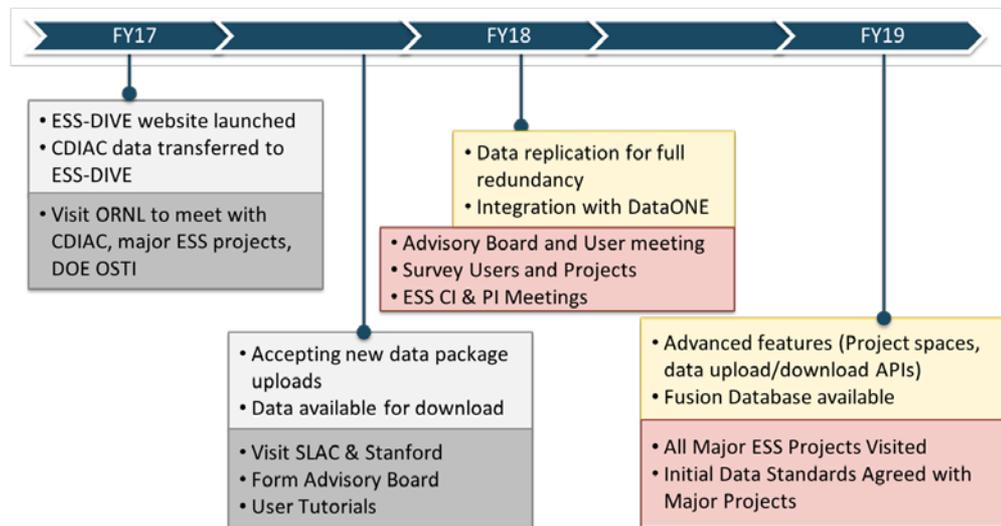
Project Accomplishments Timeline

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)