

ESS-DIVE Standards: Hydrologic Monitoring and Geochemical Concentration Data and Metadata

Amy Goldman,^{1*} Kristin Boye,^{2*} Huiying Ren,¹ Josh Torgeson,¹ Huifen Zhou¹

¹Pacific Northwest National Laboratory, Richland, WA

²SLAC National Accelerator Laboratory, Menlo Park, CA

Contacts: (Amy.Goldman@pnnl.gov) (kboye@slac.stanford.edu) **Project Lead Principle Investigator (PI):**

Deborah A. Agarwal **BER Program:** CESD Data Management

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Project Abstract: The value of archiving research data in virtual repositories in such a way that data are findable, accessible, interoperable, and reusable (FAIR) is increasingly recognized. In an effort to use the expertise of the scientific community to optimize the value of archived data within the U.S. Department of Energy's (DOE) Environmental Systems Science Data Infrastructure for a Virtual Ecosystem (ESS-DIVE) data repository, several data and metadata standardization projects were initiated as community funded projects. Here we present the standardization efforts for future data submitted to ESS-DIVE that include (1) hydrologic monitoring data and (2) water/soil/sediment concentrations of elements and/or specific chemical species.

The broad approach is similar between the two efforts: 1) review existing standards and best practices for major U.S. and global data generating projects within relevant fields, 2) discuss with DOE-ESS funded data producing scientists regarding their current best practices and willingness to adopt changes in data publication formatting, 3) examine ontologies and vocabularies for relevant parameters, 4) draft a standard and develop templates, instructions, and other documentation to support the implementation of the standard, and 5) communicate the finalized standard to the DOE-ESS community.

Our investigations have revealed broad disparity between existing vocabularies, best practices/standards, and even definitions of basic terminology (e.g., water level). Thus, there is a critical need for common agreement/acceptance among the various projects that utilize ESS-DIVE for data archiving and/or mining as to what level of constraints and requirements is acceptable/needed.

Currently we are asking for feedback on our drafted standards. We encourage all DOE-ESS community members to discuss with us so that we can ensure the standards are products that the community agrees are possible to implement and add value for both the data producers and future data users.