Judy Ruttenberg described how libraries and data organizations are partnering to transform scholarly communication and make data publicly accessible in “From Transactional to Transformational: Research Libraries and Data Partnerships.” The Earth Science Information Partners (ESIP) is one example of a data organization that has been supporting this work. ESIP is the community steward for global Earth and environmental science data professionals. For more than twenty years, ESIP has driven its mission to support the networking and data dissemination needs of its members and the global Earth science data community, by linking the functional sectors of observation, research, application, education, and use of Earth science.

While ESIP is focused on Earth and environmental science data, it is also an early adopter and advocate of data management and stewardship best practices including the implementation of data-management plans and the creation of data-citation guidelines. Recently, ESIP turned its attention to the gap that Earth and environmental science researchers are facing around data-stewardship skills. ESIP has worked with general data communities and academic societies like the American Geophysical Union (AGU) to provide additional domain-tailored training at society meetings. As a first step, ESIP and the American Geoscience Institute (a federation of societies and related organizations) developed Career Compass for Data Sciences—outlining skills that students need for geoscience careers. ESIP is also supporting the skills gap in three additional ways.

1. **Data Management Training Clearinghouse.** The Data Management Training (DMT) Clearinghouse (http://dmtclearinghouse.esipfed.org/) is a registry for online learning resources for research data management. It was created as a collaboration between the US Geological Survey’s Community for Data Integration, ESIP, and DataONE. The Clearinghouse was established to help researchers overcome the challenge of finding disparate training material. While originally developed for the Earth and environmental science communities, the Clearinghouse is being expanded to support additional domains through an Institute of Museum and Library Services (IMLS) national leadership grant to the University of New Mexico.

2. **Data FAIRs at Society Meetings.** Over the last five years ESIP, AGU, and more recently the National Science Foundation’s EarthCube Office, in addition to the broader data professional community, have partnered at society meetings such as the AGU Fall Meeting to support the Data FAIR (https://copdess.org/data-fairs/). The Data FAIR provides researchers with opportunities to engage with data professionals and informatics experts familiar with their scientific domain and to learn about the skills and techniques that will help further their research and make their data and software open and FAIR. Data FAIR
activities include town halls, workshops, demos, and a data help desk staffed with experts from the Earth and ocean science informatics community. The help desk is a way to explain disparate concepts around data-citation and data-management plans that aim to narrow the gap between making data FAIR and scientists’ ability to execute good data management practices in their own workflows. The ESIP community will continue to push data citation forward and is currently exploring other types of research objects, in addition to data and software, that can further extend the value of research if cited properly.

3. **Force 11 Scholarly Communication Institute New Emphasis on Geosciences.** The Force11 Scholarly Communication Institute (https://www.force11.org/fsci/2020) is a UCLA summer program that helps people learn how to navigate this new world of scholarly communication. FSCI instructors include leading practitioners from the world of libraries, publishing, and research and research administration. ESIP’s newest approach to reaching scientific researchers is in partnering with FSCI to create a virtual short course that applies hands-on Earth and environmental science examples. On the first day, participants will focus on an analysis example to create a data product, and on the second day, they will develop a mock paper to practice managing and citing their data.

Each of these examples is generalizable to research domains outside of Earth and environmental science. Ultimately, as the scholarly community accelerates public access to data, partnerships with researchers will allow us to truly put the data to work and see the transformational scientific discovery and innovation that can be made through robust data-sharing practices. ■

**Note**

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