

Toward Open and Beyond! Sharing Data in the Earth Sciences

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The paradigm of Open Science is recognized as a powerful and essential catalyst for the advancement of science in the 21st century, and as a necessary and guiding principle for the integrity and validity of research to ensure trust in the scientific process and its results. One of the primary requirements of Open Science is the open sharing of data, code, and other research materials on a global scale. This is especially relevant in the Earth Sciences, where urgent societal problems such as climate variability, effective prediction of natural hazards, and sustainable management of the natural resources cannot be answered with locally constrained datasets and where society must have confidence in the basis for impacts and decisions that can have large economic and societal effects. Over the past few years, publishers, repositories, and funders have developed a number of best practices around presenting, linking, and curating these related research products. Our presentation will focus on these best practices for sharing data, code, and samples and on developing the broader infrastructure that can support such data sharing in a sustainable manner. We will report on progress made in the Earth Sciences over recent years towards the open sharing of data in the Earth Sciences, reporting on US-based and international initiatives such as EarthCube and COPDESS. We argue that the concept of ‘open’ is not a sufficient and adequate goal; instead open data must be FAIR –findable, accessible, interoperable, and re-usable. This requires additional support by the community so that data can be explored and interpreted with confidence and in new multi-disciplinary perspectives.

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