

Machine Learning for Earth Science

Humankind is working hard to understand our Earth, which is a very complex system, to improve human lives by enabling such activities as predicting extreme weather events and reducing water usage while still improving crop yields. Much of this work is in the form of observing systems, consisting of sensors that are ground-based, airborne, or remote (space-borne), and other components and subsystems that transmit the data to appropriate storage systems and transform the data into forms that are closer to what scientists and decision makers can work with. These data are ultimately derived from the way Earth works, and the hope is that we can use these data to understand how the Earth works much as one may reverse engineer an engineered system.

Earth science data are difficult to analyze, due to their high volume, heterogeneity, and the complexity of the Earth itself. In this session, we examine efforts to understand these data and the insights derived from them. We will also discuss how machine learning's toolbox needs to grow to further improve our understanding of the Earth, and the roles of academia, government, industry, and individuals in this effort.