SWx TREC: An Emerging Community Resource for Integrative Space Weather Data Access and Model/Algorithm R2O Promotion

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The Space Weather Technology, Research and Education Center (SWx TREC) is an emerging national center of excellence in cross-disciplinary research, technology, innovation, and education, intended to facilitate evolving space weather research and forecasting needs. SWx TREC is positioned to facilitate breakthrough research advances and innovative mission technologies that are directly tied to the needs of the operational forecasting enterprise to ensure closure of the Research to Operations (R2O) and Operations to Research (O$_2$R) loop. Improving our understanding and prediction of space weather requires coupled Research and Operations. SWx-TREC will provide new research models, applications and data for use in operational environments, improving the Research to Operations pipeline. Advancement in the fundamental scientific understanding of space weather processes is also vital, requiring that researchers have convenient and effective access to a wide variety of data sets and models from multiple sources. The space weather research community, as with many scientific communities, must access data from dispersed and often uncoordinated data repositories to acquire the data necessary for the analysis and modeling efforts that advance our understanding of solar influences and space physics on the Earth's environment. The University of Colorado (CU) is a leading institution in both producing data products and advancing the state of scientific understanding of space weather processes, is well positioned to address many of these issues. SWx TREC will serve many of these needs, including 1) implementation of an interoperable data portal intended to more effectively serve the needs of the Space Weather research community and 2) facilitating the advancement of new models and algorithms into production/operational use through a community-accessible testbed environment. In this presentation, we will outline the motivating factors for effective space weather data access and modeling support, present a testbed environment for supporting model and algorithm testing/incubation needs, and introduce a new data portal to meet the data management and access needs of the disparate communities who require space weather data and information.