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Facilitating Advancements in Space Weather Data Availability Through a Space Weather Testbed and Data Portal

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Society's growing reliance on complex and highly interconnected technological systems makes us increasingly vulnerable to the effects of space weather events - maybe more than for any other natural hazard. An extreme space weather event today could conceivably impact the systems we rely on in numerous areas, including disrupting operating earth-orbiting satellites, potential collapse of the electrical grid on continental scales, and impairing navigation, communication, and remote sensing capabilities. Thus, it is imperative that the scientific community address the question of just how severe events might become and to ensure stakeholders have access to the essential data needed for research and decision making. Stakeholders include policy makers and public safety officials who need to be informed by the facts on what might happen during extreme conditions. This requires essentially extremely timely up-to-the-minute alerts, warnings, and also forecasts of severe space weather events, which in turn demands measurements, models, and associated data products to be available via the most effective data discovery and access methods possible. Similarly, 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. CU is inaugurating a dedicated Space Weather Technology, Research, and Education Center (SWx TREC) that will serve many of these needs, including facilitating the advancement of models into production/operational use. In this presentation, we will outline the motivating factors for effective space weather data access, summarize the various data and models that are available, and present plans and methods for meeting model testing/incubation needs, as well as the data management and access needs of the disparate communities who require low-latency space weather data and information.