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Engaging the user community in developing Earth observing remote sensing data products

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Satellite remote sensing technology has contributed to the transformation of multiple earth science domains, putting space observations at the forefront of innovation in Earth science. With new satellite missions being launched every year, new types of Earth science data are being incorporated into science models and decision-making systems in a broad array of organizations. These applications help hazard mitigation and decision-making in government, private, and civic institutions working to reduce its impact on human wellbeing. Policy guidance and knowledge of product maturity can influence mission design as well as development of product applications in user organizations. Ensuring that satellite missions serve both the scientific and user communities without becoming unfocused and overly expensive is a critical outcome from engagement of user communities. Tracking the applications and product maturity help improve the use of data. NASA's Applications Readiness Levels (ARLs) reduce cost and increase the confidence in applications. ARLs help identify areas where NASA products are most useful while allowing the user to leverage products in early development as well as those ready for operational uses. By considering the needs of the user community early in the mission-design process, agencies can use ARLs to ensure that satellites meet the needs of multiple constituencies and the development of products is integrated into user organizations organically. ARLs and user integration provide a perspective on the maturity and readiness of a products ability to influence policy and decision-making. This paper describes the mission application development process at NASA and within the Earth Science Directorate. We present the successes and challenges faced by NASA data users and explain how ARLs helps link NASA science to the appropriate policies and decision frameworks. The methods presented here can be adapted to other programs and institutions seeking to rapidly move scientific research to applications that have societal impact.

Biography

Vanessa M Escobar is NASA's Deputy Applications Coordinator for the recently launched SMAP (Soil Moisture Active Passive) mission and for the ICESat-2 mission. She leads the science and stakeholder applications for NASA's Carbon Monitoring Systems Initiative at Goddard Space Flight Center. She facilitates and translates discussions across scientific and political boundaries related to water resource management, risk, and hydrology, remote sensing, public policy, carbon science and decision support frameworks. Her research is geared towards analyzing the sensitivity of earth science data in operational modeling systems, evaluating the value of information in decision support structures and applying that knowledge to areas of societal benefit. She works closely with the emergency response community, the reinsurance community and the wine/viticulture industry to help scale and improve the use of remote sensing observations for efficient use of resources and business management practices.

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