Introduction

NASA’s Soil Moisture Active Passive (SMAP) mission is planned for launch in October 2014 and will provide global measurements of surface (0-5 cm) soil moisture and near-surface temperature (Zhao et al. 2011). After launch, the mission will provide high-quality, daily, 9-kilometer resolution global soil moisture data, which is expected to help both science and application needs. These measurements will be used to enhance the understanding of processes that link the water, energy, and surface cycles, and to extend the capabilities of weather and climate prediction models (Zhao et al. 2011). As part of its development, SMAP has funded an active applications program that seeks to engage the science data user community and to build a set of applications that will be useful before, during, and after launch. Providing actionable and user-friendly data to decision makers has become a priority as world leaders try to understand and communicate about earth system, specifically issues that surround climate and climate change. Applications have already become an integral part of converting satellite data into knowledge that can be used to inform policy and enhance decision-making processes. Thus clarification to how data applications is important when communicating efforts for improving the applications of data for societal benefits.

The SMAP applications program (Brown et al. 2011c) uses the mission’s predicted science and operational abilities and decision-making systems ranging from natural and food guidance to disaster risk assessment and national security during the mission development phases for SMAP four years prior to launch. These efforts are designed to increase the impact of SMAP data into critical processes and research, improving its impact on society once the satellite has been launched and is functioning. Understanding how users intend to apply SMAP soil moisture data, prior to the satellite’s launch is an important component of the SMAP Applied Sciences activity and has become part of the way NASA will measure the mission’s success. This paper focuses on the review of data needs of end users, both national and international, and on the use of satellite mission data before launch.

The objective of this study was to solicit data requirements, accuracy needs and a current understanding of the SMAP mission from the user community and help shape the mission’s design. We present an analysis of an on-line professional review of experts end-users and earth science researchers associated with the SMAP applications program. The review was focused on how pre-launch activities and research are being conducted in organization identifying the location communities who have participated in pre-launch activities readings and the questions users are looking for improving the field of scientific and operational applications.

SMAP Launches

October 31, 2014

Soil Moisture Active Passive (SMAP) Applications: A Professional Review of Prelaunch Data and the SMAP Mission User Community

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Defined Terms

Applications are defined as innovative uses of emission data products in decision-making activities for societal benefit.

Applications research will provide fundamental information on how mission data products can be integrated into larger policy, business and management activities to improve decision-making efforts.

User Community includes - individuals or groups - public or private sectors - national or international organizations - local to global scales of decision making.

Questioner Responses

- 98% self-identified as “Science Data Users” but were divided between science and operational applications.
- Major gaps in communities represented:
  - 50% of the population reported that their involvement was mainly research driven, 50% of the respondents conducting research claimed they were NOT involved in policy making efforts. These involved with research feel they are not involved or connected to policy bodies.
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Questioner Responses can’t

- Perceived Value of Soil Moisture
  - 30% of respondents have a high level of interest in soil moisture, and 30% agreed with high moisture ranked the highest, along with high resolution soil moisture retrieval.
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