The Soil Moisture Active Passive (SMAP) Mission
for Agricultural Applications

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The Soil Moisture Active and Passive (SMAP) Mission is being developed by NASA for launch in 2014 in response to the National Research Council's Decadal Survey. The SMAP mission will utilize an L-band radar and radiometer to provide global maps of soil moisture and freeze/thaw state at moderate resolutions every two to three days. A goal of this seminar is to describe the SMAP mission measurements specifications, to discuss agricultural applications of SMAP products, and to outline the SMAP Applications Plan.

The priority agricultural applications of SMAP products include seasonal precipitation prediction, regional drought monitoring, famine early warning, and crop outlook. Preliminary research results have shown that assimilation of accurate soil moisture initial conditions in land surface models has led to improved numerical weather prediction systems. Further, assimilation of simulated SMAP soil moisture information improved characterization of root-zone soil moisture variations and agricultural drought. The operational systems currently providing famine early warning and crop outlook based on soil moisture estimates will benefit from accurate SMAP measurements.

This seminar will finish with a short discussion of current research with University of Valencia based on the AgriSAR 2009 experiment at Barrax Spain to derive crop parameters from multi-temporal radar and optical images.