Viernes 29 de Enero de 2010 a las 12.00

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

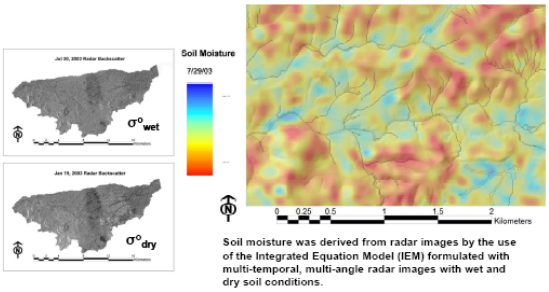
Susan Moran

Education:
Ph.D., Soil and Water Science, 1990, Univ. of Arizona, Tucson, Az.
M.A., Geography, 1982, U.C.S.B., Santa Barbara, Ca.
B.A., Geography, 1976, S.D.S.U., San Diego, Ca.

Employment:
2006-present: Hydrologist, USDA Southwest Watershed Research Center, Tucson, AZ
2000-2005: Research Leader, USDA Southwest Watershed Research Center, Tucson, Az.
1991-present: Adjunct Professor, U.A. Dept. of Soil, Water and Env. Sci., Tucson, Az.
1984-1999: Physical Scientist, USDA U.S. Water Conservation Lab., Phoenix, Az.

Research Interest: Research is concentrated on critical arid and semiarid regions with a broad focus on the impact of global change on natural resources management and a specialized focus on the application of remote sensing to difficult problems. Research is conducted in cooperation with scientists from Europe, Asia and the Americas, including large scale experiments in France, Niger, Argentina and the US/Mexico border.

A radar backscatter model was used with image-based calibration to retrieve surface soil moisture from radar imagery.



Soil moisture was derived from radar images by the use of the Integrated Equation Model (IEM) formulated with multi-temporal, multi-angle radar images with wet and dry soil conditions.

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 1) a short discussion of the research conducted in 2004 with IAS/CIFA to use radar remote sensing to map surface roughness to estimate erosion in the Torvizcon Cuenca and 2) plans for research based on the AgriSAR 2009 experiment at Barrax Spain to derive crop parameters from multi-temporal radar and optical images.