Benefits to Iowa from New NASA Satellite

A new satellite. The National Aeronautics and Space Administration (NASA) maintains a fleet of Earth-orbiting satellites that observe and record land, ocean and atmospheric conditions. On Jan. 31, 2015, NASA launched a new satellite to take measurements of soil moisture over the entire globe. Data from the Soil Moisture Active Passive (SMAP) satellite are freely available on the Internet.

How SMAP Can Help Iowans. About every other day, SMAP measures soil moisture in each of Iowa’s 99 counties. The data are valuable in improving prediction capabilities to address issues of importance to Iowans, including:

- weather and future climate;
- drought and extremely wet conditions;
- agricultural productivity; and
- the extent and severity of flooding.

Sensors in the Soil. To assess the accuracy of soil moisture data received by SMAP, researchers have buried soil moisture sensors at 20 permanent sites throughout the watershed of the South Fork Iowa River in Hardin, Hamilton and Franklin counties.

Are Sensors and Satellite in Synch? This summer, scientists are conducting a field experiment in the South Fork to determine why SMAP data shows Iowa soil moisture as “too dry” when compared to the sensors’ ground measurements. The experiment started in May and ends mid-August. Results will be used to modify the model that converts raw satellite measurements into correct soil moisture information.

Research Partners and Collaborators. The researchers represent the USDA-ARS National Laboratory for Agriculture and the Environment, the USDA-ARS Hydrology and Remote Sensing Laboratory, Iowa State University, University of Iowa, University of Florida, Delft University in the Netherlands, and NASA. The team is collaborating with approximately 30 Iowa farmers and landowners on the measurements made by the buried sensors.

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