SMAP Science Product Validation in the U.S. Cornbelt (Iowa)

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USDA ars United States Department Of Agriculture
Agricultural Research Service

NASA

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Site Description

Current: single point (up to 15 sites w/in 1 km^2)
corn/soybean rotation

Future: desired expansion to core validation,
partnership with Iowa Flood Center ($)

Measurements:

soil moisture @ 1.5, 4.5, 15, 30, 60 cm
root-zone soil moisture (neutron probe)
COSMOS
fluxes (sensible, latent, carbon)
stream gauges
met: `http://mesonet.agron.iastate.edu`

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Research Focus

Extensive history in region (SMEX02, SMEX05).

NASA project (2005-2011),
validation of hydrological remote sensing.

Space/time variation of soil moisture,
scaling from point to field-scale
using topography, vegetation, soil characteristics.

Effect of changing VWC on T_B (PALS 2008),
space/time variation of VWC.

Effect of VWC on COSMOS.

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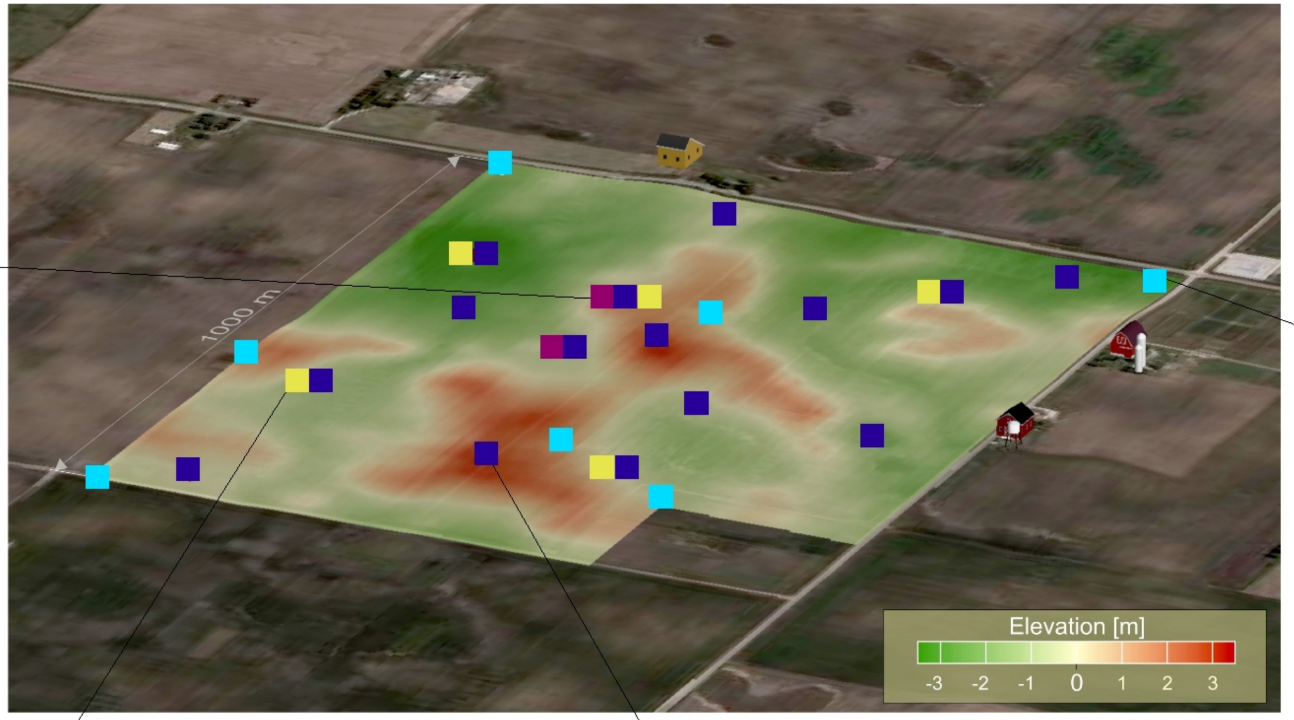
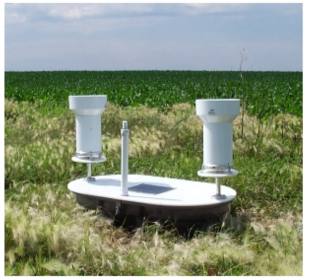
Site Overview

flux towers (2)

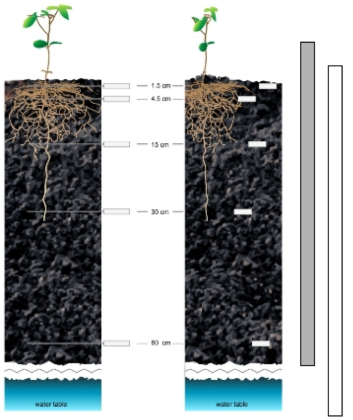




precipitation (7)

radiation (5)

soil moisture and temperature (15)



1.5, 4.5, 15, 30, and 60 cm.
0-1 m, depth to water table.

latitude/longitude: 41.98 N 93.68 W

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Issues

Existing instruments and infrastructure,
desired spatial expansion to watershed scale
through Iowa Flood Center (state $),
pending Iowa Space Grant Base Program.

Data latency: no issues (USDA ARS).

Yes, a plan for 0-5 cm GSM validation for SM.

Spatial scaling: new theory for field-scale SM.

We would like SMAP moral support (to encourage state $) and NASA THP proposal opportunities ($).