#### **ARS Mission Statement**

As the principal in-house research arm of the U.S. Department of Agriculture, the Agricultural Research Service has a mission to:

Conduct research to develop and transfer solutions to agricultural problems of high national priority and provide information access and dissemination to: ensure high-quality, safe food, and other agricultural products, assess the nutritional needs of Americans, sustain a competitive agricultural economy, enhance the natural resource base and the environment, and provide economic opportunities for rural citizens, communities, and society as a whole.

### Hydrology and Remote Sensing Laboratory

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## Visit us on the web at www.ars.usda.gov/hrsl



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## USDA United States Department of Agriculture

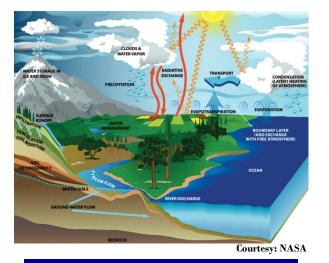
**Agricultural Research Service** 

# Hydrology and Remote Sensing Laboratory



#### **HRSL Mission**

The mission of the Hydrology and Remote Sensing Laboratory is to conduct nationally orientated basic and applied research on water resources and remote sensing concerns related to the production of food and fiber and the conservation of natural resources.



#### **Research Projects & Objectives**

The Hydrology and Remote Sensing Lab consists of 12 permanent research scientists and 10 research associates/post docs and visiting scientists whose research is related to the following CRIS (Current Research Information System) projects:

The research conducted by the scientific staff address one or more of the following major research objectives developed for the two CRIS Projects:.

Develop and verify new observational tools (both remote sensing- and ground observation-based) and scaling techniques for characterizing water balance components, from plot (~10 m) to regional scales (~100 km).

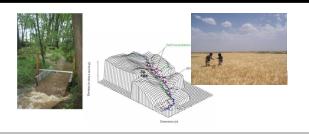
- Develop measurement and remote sensing technologies for monitoring soil carbon and carbon exchange from field to regional scales to improve assessments of agricultural-management impacts on the carbon balance.
- Develop remote sensing and modeling approaches for monitoring the magnitude of agricultural drought and its subsequent impact on agricultural crop condition and yield.
- Evaluate the impact of nutrient dynamics on the environment and agricultural production at field and watershed scales.
- Develop measurement techniques and models for quantifying field-scale herbicide volatilization.
- Develop remote sensing and modeling approaches for characterizing the multiscale impacts of conservation practices on water quality variables.
- Evaluate the utility of remote sensing methods to detect invasive species and test models of invasive weed potential distribution using remotely-sensed data.

#### **Lower Chesapeake Bay LTAR**

The Hydrology and Remote Sensing Laboratory leads the collaborative effort on the Lower Chesapeake Bay Long Term Agro-ecosystem Research (LTAR) Site. This project is a part of the LTAR program, which focuses on the agrourban interface with the largest estuary in the U.S., the Chesapeake Bay.









#### Administration

#### **Beltsville Area**

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#### **Beltsville Agricultural Research Center**

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#### **Hydrology and Remote Sensing Lab**

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#### Joe Alfieri Physical Scientist

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#### Martha Anderson Physical Scientist

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#### Michael Cosh Hydrologist

Research interests: Soil moisture networks, remote sensing, satellite validation, spatial geostatistics, and scaling (301) 504-6461
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#### Wade Crow Physical Scientist

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**Scientists** 

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#### **Greg McCarty** Soil Scientist

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#### Glenn Moglen Hydrologist

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#### **Xuesong Zhang** Physical Scientist

Research interests: : carbon and nutrient cycling, geographic information systems and remote sensing, terrestrial and aquatic sciences convergence, and watershed modelling .

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Scientists are interested in developing collaborations to advance the science of hydrology and remote sensing at local, national, and global scales.