

Post-doc position for Hydrologist, Soil Scientist, or Agricultural Engineer

This post-doc position is located at the Southwest Watershed Research Center in Tucson, Arizona. The general research assignment is to support and conduct research to develop principles, practices, procedures, and related soil/water criteria for the evaluation of the impact of climate and rangeland management systems on the sustainable use of natural resources. The project involves planning, design, development and testing of databases of rainfall and related information, and other tools, based on the objectives identified by the supervisor in support of ARS National Program objectives related to soil and water management in arid and semi-arid rangeland environments. Develops specific research approaches, helps define objectives in cooperation with the supervisor, develops or modifies appropriate computer code, analyzes results of the models using sound statistical techniques, documents methods in detail, and writes initial drafts of manuscripts, or portions thereof, as assigned.

The goal is to Develop and improve weather and climate databases for the Rangeland Hydrology and Erosion Model and other related computer simulation tools in support of the research unit's effort to develop decision support tools for natural resource management. The scientist will work with a team of ARS and NRCS scientists with expertise in simulating soil erosion on rangelands. The overarching goals are to develop databases of statistical summaries of rainfall that can be used as hydrologic model input for 1) the continental United States on a 4km gridded basis, and 2) international locations as necessary and possible to meet project goals. Part of this process may be to develop a strategy for classifying storm types based on generalized climate conditions to estimate monthly average, maximum 30-minute rainfall intensities. This will allow the use of daily data for developing rainfall input data sets for the sub-daily model. Strategies will be tested on NRCS Natural Resources Inventory (NRI) sample points to determine optimal strategies for improving model parameters for assessing runoff, soil erosion, and soil quality/rangeland health.

Other duties include:

Keeps exact and detailed records of modeling experiments and results, including documentation of code and models as requested. Maintains the models and addresses limitations in design or application as the models are used by the scientists and customers.

Prepares and organizes the results of the models and modeling experiments, creates visual representations of the data for publication and documentation, and performs appropriate and sound statistical analysis for testing experimental hypotheses. Documents methods carefully in the form necessary for peer-reviewed publication, makes interpretations of the results, and writes initial drafts of manuscripts for publication as directed.

Reviews current scientific literature and selects or recommends methods and procedures most appropriate for meeting project objectives.

Runs models of rainfall, infiltration, runoff, erosion, and sediment yields using data collected from the experiments, interprets model results, and documents the results in support of the

modeling research program as directed. Links field and laboratory experimental results with model results to aid in making decisions on models and model parameter estimation procedures.

Collaborate as the scientific expert with IT specialists to co-create web-based interfaces for the databases and models developed.

Starting date: Immediate – Must be filled prior to Sept. 30, 2019

Candidate must be a **US Citizen or Permanent Resident**

Contact:

Dr. Mark Nearing

Mark.nearing@ars.usda.gov

<https://www.ars.usda.gov/pacific-west-area/tucson-az/southwest-watershed-research-center/people/mark-nearing/>

520 909 9465 (leave message for call back)

USDA-ARS Southwest Watershed Research Center
2000 E Allen Rd.
Tucson, AZ 85719