



USGS NSF Internship Opportunity

Point of Contact Name:	Daniel J. Goode, Ph.D.
Point of Contact Email:	djgoode@usgs.gov
USGS Center:	International Program; NJ Water Science Center
Project Title:	Groundwater Storage - Middle East / North Africa
Summary:	<p>Aquifers are an important source of water in the MENA region, especially during droughts and dry seasons. However, aquifers across the arid MENA region are under stress from high rates of pumping and low rates of recharge. Aquifer yields can be sustained by using various methods collectively referred to as Aquifer Storage & Recovery (ASR), which capture storm water runoff and treated wastewater, then recharge it to underlying aquifers. ASR is a practical and cost-effective solution to capture millions of cubic meters of water that would otherwise be lost.</p> <p>ASR is currently underutilized in the MENA region due to the high cost of site identification and difficulty matching ASR technology to site conditions. The goal of this activity is to improve water security in the MENA region by accelerating ASR. This activity will accelerate adoption of ASR by applying and disseminating new methods for mapping and identifying high potential ASR locations using remote sensing, geospatial data, and hydrologic analysis.</p>
Project Hypothesis or Objectives:	<p>USGS is partnering with USAID to improve access to drinking water in the Middle East / North Africa (MENA) region through artificial aquifer recharge and storage recovery. Implementation of new technologies that store currently-unused water resources in aquifers will be accelerated through suitability mapping using remote sensing data and local pilot studies. Academic partners and government water managers from the three current partners, Jordan, Lebanon, and West Bank, work with USGS and other international scientists to develop and apply models characterizing the availability of unused water resources, and suitable aquifer storage locations.</p>
Duration:	Up to 12 months
Internship Location:	Lawrenceville (near Princeton), NJ

● Field(s) of Study:	Engineering, Geoscience
● Applicable NSF Division:	AGS Atmospheric and Geospace Sciences, EAR Earth Sciences, CBET Chemical, Bioengineering, Environmental, and Transport Systems, CMMI Civil, Mechanical & Manufacturing Innovation, ENG Engineering
● Intern Type Preference:	Any Type of Intern
● Keywords:	Managed aquifer recharge, infiltration, precipitation, hydrogeology, water resources, hydrology, evapotranspiration, water quality, water treatment, water supply, wastewater treatment, MODIS, Landsat, geographic information systems, GIS
● Expected Outcome:	This internship will leverage ongoing USGS and cooperator research and allow the intern to contribute independent research that improves the methods being developed for aquifer storage and recovery in the MENA region. The intern will have the opportunity for guided, independent research on a topic that furthers their educational development and career goals. The USGS will benefit from contributions from the intern's recent advanced study to improve the outcomes of the USGS research program on artificial recharge and use of remote sensing data in water resources assessments.
● Special skills/training Required:	GIS, remote sensing data analysis
● Duties/Responsibilities:	Collaborate with project scientists including EROS remote-sensing researchers and hydrologists to develop and apply suitability mapping spatial analysis and hydrologic models for assessment of available unused water resources and suitable locations for storage in and recovery from aquifers in arid regions.

Internal Information - Not to be posted:

Center Director Name: Richard Kropp

USGS Responsibilities: Equipment, Facilities, Mentoring, On-boarding, Background Check, Volunteer Agreement Management

Preliminary Approval: This opportunity has my Center's approval

I already have a student in mind:

Comments:
