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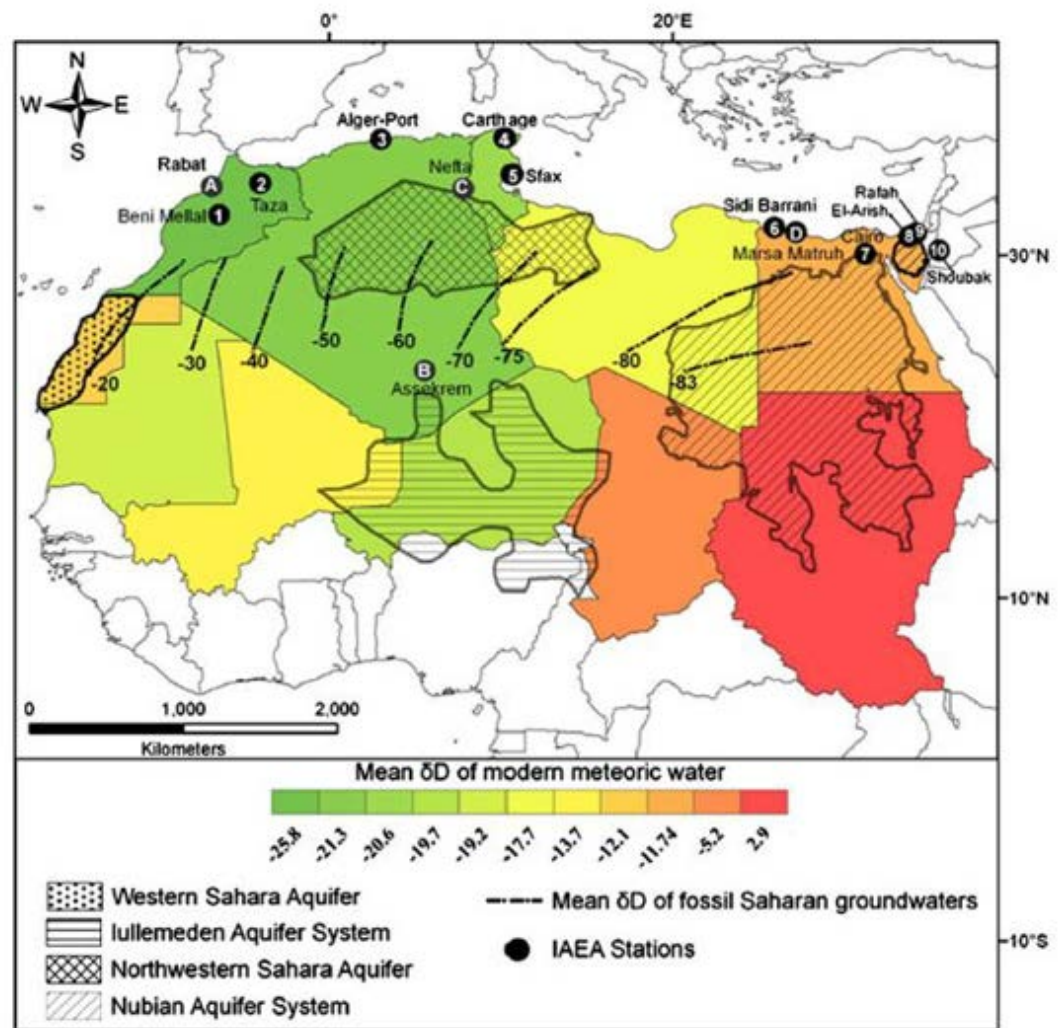
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Research Spotlight

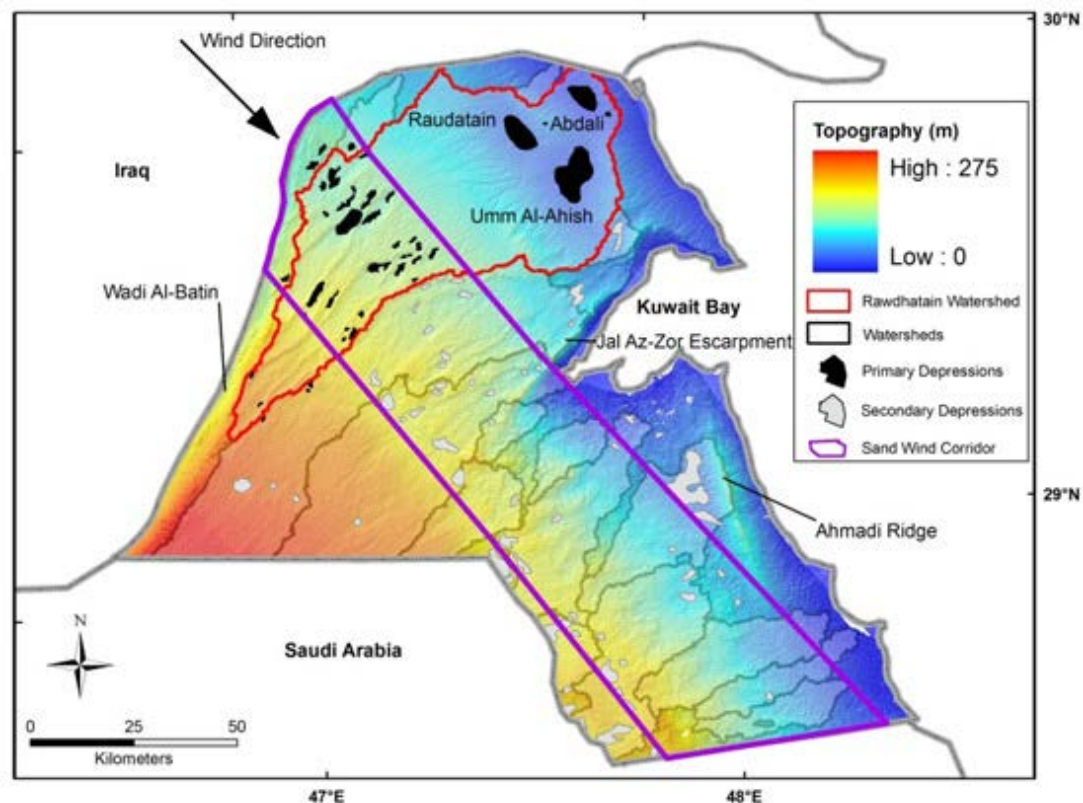
ADAM MILEWSKI

Exciting things have been happening in the Water Resources and Remote Sensing Laboratory. We submitted a number of manuscripts on varying water resource applications in arid environments. For example, using geophysics (magnetic, VLF, and VES), stable isotope geochemistry, hydrology, and remote sensing, we evaluated the role of faults as conduits to groundwater flow in the Mojave Desert, California. The results demonstrate that not all faults are barriers to flow and artificial recharge is not required.



Large aquifers across the arid Middle East and North Africa region are thought to have been recharged in previous wet climatic periods, but their precipitation patterns and subsequent recharge are poorly understood. Working with researchers at Western Michigan University we used isotopic and remote sensing data to infer a paleowesterly pattern, a progressive depletion in the δD value (opposite of today—see figure) during glacial periods that migrated southward. This is contradictory to the previous explanation of a northward migration of the ITCZ pattern increasing monsoonal precipitation.

Keeping with the theme of finding water in the desert, we identified potential locations of freshwater lenses that float above saline aquifers in Kuwait and the Arabian Peninsula. Locations were identified through a series of remote sensing techniques and field measurements. Modeled recharges to the primary depressions offer a significant source of untapped freshwater in Kuwait and elsewhere.



Lastly, we hosted a workshop on hydrologic modeling, remote sensing, and GIS as part of our Department of State funded BOOST project which aims to build research and capacity in the Middle East and North Africa Region. A total of twelve Egyptian and Moroccan students came to the workshop and will present their research findings at this year's Annual Geological Society of America Meeting.



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