

## Faculty

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## Adam Milewski

Assistant Professor  
Room 134  
Phone 706 542 4263

B.S., Geology, University at Buffalo (SUNY), 2004  
Ph.D., Hydrogeology, Western Michigan University, 2008  
Post-doc, Remote Sensing/GIS, Western Michigan University, 2008-2011

### Scientific Interests

- Development of Surface and Groundwater Flow Models
- Use of Soil Temperature Probes in Groundwater Investigations
- Integration of Satellite Remote Sensing in Geologic Applications
- Use of Geophysical and Isotopic Techniques for Assessment of Groundwater Potential
- Geographic Information Systems and Hydroinformatics

### Research Interests

My research interests focus on utilizing a wide range of tools spanning multiple disciplines (e.g. hydrogeology/hydrology, surface runoff and groundwater flow modeling, remote sensing, GIS, geophysics, field geology, stable isotopes, etc.) to address complex and often interrelated geological and environmental problems. I am particularly interested in research in the general areas of hydrogeology, hydrology, remote sensing, hydroinformatics, and watershed modeling. Using hydrologic models, remote sensing based observations, and field excursions for ground validation, I address issues pertaining to the sources, sinks, and fluxes to hydrologic systems on regional and local scales, particularly in the Middle East. For example, I use satellite-based precipitation, topography, land use, soil types, and soil conditions coupled with field observations (soil moisture, soil temperature probes, rain gauges, streamflow gauges, chloride-mass balance techniques, etc.) as inputs into hydrologic models to quantify runoff and recharge over large domains. Using these integrated methodologies, I locate groundwater reservoirs of interest to assess their surface runoff and ground water potential. In addition to assessing groundwater potential, my newly-developed methodologies for surface runoff and recharge modeling are now being successfully applied to assessing the impacts of large engineering projects on the temporal and spatial variations in the Mesopotamian Marshlands under varying land cover and land use change (LCLUC) scenarios. I continue to do work in the general field of Geoinformatics for enhanced data sharing and dissemination.

### Selected Publications:

- Sultan, M., Metwally, S., Milewski, A., Becker, D., Ahmed, M., Sauck., W., Soliman, F., Sturchio, N., Wagdy, A., Becker., R., Welton, B., 2009, Modern Contributions to the Nubian Aquifer, Sinai Peninsula: Geochemical,

- Geophysical, and Modeling Constraints, *Journal of Hydrology*
- Ahmed, M., Sultan, M., Wahr, J., Yan, E., Milewski, A., Sauck, W., Becker, R., and Welton, B., 2010, Integration of GRACE data with Traditional Datasets for a Better Understanding of the Time-dependent Water Partitioning in African Watersheds, *Geology*
  - Sagintayev, Z., Sultan, M., Khan, S.D., Khan, S.A. Mahmood, E., Yan, E., Milewski, A., and Marsala, P., 2010, Remote Sensing Contributions to Hydrologic Modeling, *Hydrologic Processes*
  - Al-Dousari, A., Milewski, A., Ud Din, S., and Ahmed, M., 2010, Remote Sensing Inputs to SWAT Model for Groundwater Recharge Estimates in Kuwait, *Advances in Natural and Applied Sciences*, 4(1), 71-77.
  - Sultan, M., Fawzy, A., Metwally, S., Becker, R., Milewski, A., Sauck, W., Sturchio, N. C., Mohamed, A.M.M., Wagdy, A., El Alfy, Z., Becker, D., Sagintayev, Z., El Sayed, M., and Welton, B., 2009, Red Sea rifting controls on aquifer distribution: constraints from geophysical, isotopic, and remote sensing data, *Geological Society America Bulletin*, In Press
  - Milewski, A., Sultan, M., Yan, E., Becker, R., Abdeldayem, A.W., and Gelil, K.A., 2009, Remote Sensing Solutions for Estimating Runoff and Recharge in Arid Environments, *Journal of Hydrology*, 373, 1-14.
  - Milewski, A., Sultan, M., Markondiah Jayaprakash, S., Balekai, R., and Becker, R., 2009, RESDEM, a Tool for Integrating Temporal Remote Sensing Data for use in Hydrogeologic Investigations, *Journal of Computers and Geosciences*, 35, 2001-2010.
  - Kehew, A., Milewski, A., and Soliman, F., 2008, Reconstructing an Extreme Flood from Boulder Transport and Rainfall-Runoff Modeling: Wadi Isla, South Sinai, Egypt, *Global and Planetary Change - Special Issue*, 70 (1-4), 64-75.
  - Jones, C., Sultan, M., Yan, E., Milewski, A., Hussein, M., Al-Dousari, A., Al-Kaisy, S., and Becker, R., 2008, Hydrologic Impacts of Engineering Projects on the Tigris-Euphrates System and its Marshlands, *Journal of Hydrology*, 353, 59-75.
  - Sultan, M., Sturchio, N., El Sefry, S., Milewski, A., Becker, R., and Nasr, I., 2008, Geochemical, Isotopic, and Remote Sensing Constraints on the Origin and Evolution of the Rub Al Khali Aquifer System, *Arabian Peninsula, Journal of Hydrology*, 356, 70-83.
  - Sultan, M., Wagdy, A., Manocha, N., Sauck, W., Abdel Gelil, K., Youssef A.F., Becker, R., Milewski, A., El Alfy, Z., and Jones, C., 2008, An Integrated Approach for Identifying Aquifers in Transcurrent Fault Systems: The Najd Shear System of the Arabian Nubian Shield, *Journal of Hydrology*, 349, 475-488.