

Michael C. Durham

Principal Research Associate – Water Resources and Remote Sensing Laboratory

Ph.D. Candidate, Department of Geology, University of Georgia

(269) 760-7295 (cell) or (706) 542-8692 (office)

durham@uga.edu

EDUCATION

- 2012-current **Doctor of Philosophy (Ph.D.) candidate in Hydrogeology** - University of Georgia, Athens, Georgia. Dissertation: Physically Ungauged Basins (PUBs): Development and evaluation of enhanced hydrologic measurements for construction and calibration of hydrological models in arid and semi-arid environments.
- 2011 **Master of Art (M.A.), Hydrogeology and Glacial Geomorphology** - Western Michigan University, Kalamazoo, Michigan. Research: Glacial Mapping and Subsurface Exploration of the Glenn, Lacota, and South Haven U.S.G.S 7.5 Minute Quadrangles of Allegan County, Michigan.
- 2001 **Bachelor of Science (B.Sc.) in Geology** - Grand Valley State University, Allendale, Michigan. Research: Sedimentary Analysis of Glacial Sediments from Ottawa County, Michigan.

APPOINTMENTS

University of Georgia, Athens, GA

2013, 2017-18 **Lecture Instructor** – Department of Geology

2012-17, 2019 **Teaching Assistant / Lab Instructor** – Department of Geology and WRRSL

2011-current **Principle Research Associate** – Water Resources and Remote Sensing Laboratory

Western Michigan University, Kalamazoo, MI

2005-2011 **Assistant Instructor** – Hydrogeology Field Course

2004 **Research Assistant** – Inquiries into the glacial depositions of Allegan County, MI

2002-2004 **Laboratory & TA Coordinator** – Department of Geosciences

2001-2004 **Teaching Assistant / Lab Instructor** – Department of Geosciences

Grand Valley State University, Allendale, Michigan

1999-2001 **Teaching Assistant** – Department of Geology

TRAINING/ CERTIFICATION

2014 CUAHSI - CZO Short course: Wireless Sensing Bootcamp

2001 Hydrogeology Field Course (WMU): Applied Hydrogeology Field Methods

2001-2012 OSHA HAZWOPER: OSHA 40-hour Certification (Re-Certification: 2002-2012)

TEACHING EXPERIENCE

University of Georgia, Athens, GA

Lecture Instructor – Department of Geology (2013, 2017-18)

- GEOL 1121: Earth Processes and Environments

Lab Instructor / Teaching Assistant – Department of Geology (2012-2019)

- GEOL 1121L: Earth Processes and Environments
- GEOL 1250L: Physical Geology
- GEOL 3020: Surficial and Near-Surficial Processes
- GEOL 4020: Internal Earth Processes

Water Resources and Remote Sensing Laboratory at UGA

Assistant Instructor – ARCHES (Advancing Research & Capacity in Hydrologic Education and Science)

- 2014 - WRRS-ARCHES: GIS and Remote Sensing for Water Resource Application (*IAH*)
- 2013 - WRRS-ARCHES: Introduction to ArcGIS Workshop (*UGA*)
- 2013 - BOOST-H2O Hydrogeological Workshop (*Turkey and Indonesia*)
- 2012 - BOOST-MENA: Hydrogeology Workshop (*Egypt and Morocco*)

Western Michigan University, Kalamazoo, MI

Assistant Instructor – Hydrogeology Field Course (2005-2011)

- GEOS 5260: Principles and Practices of Aquifer Testing
- GEOS 5270: Principles of Well Drilling and Installation
- GEOS 5280: Principles and Practices of Ground-Water Sampling and Monitoring

Teaching Assistant – Hydrogeology Field Course (2001-2004)

- GEOS 5240: Remediation Design and Implementation
- GEOS 5250: Environmental Surface Geophysics
- GEOS 5260: Principles and Practices of Aquifer Testing
- GEOS 5270: Principles of Well Drilling and Installation
- GEOS 5280: Principles and Practices of Ground-water Sampling and Monitoring

Laboratory Instructor / Coordinator – Department of Geoscience (2001-2004)

- GEOS 1000: Introduction to Physical Geology/ Earth Studies

Grand Valley State University, Allendale, Michigan

Teaching Assistant – Department of Geology (1999-2001)

- GEO 320: Geomorphology
- GEO 420: Glacial and Quaternary Geology

AWARDS

Teaching - University of Georgia: Outstanding Graduate Teaching Assistant Award 2015

Service - Western Michigan University: Department of Geoscience Service Award 2011

PROFESSIONAL / TECHNICAL EXPERIENCE

Water Resources and Remote Sensing Laboratory (WRRSL) at UGA, Athens, GA

Principal Research Associate (2011-current)

- Assistant Administrator of the WRRSL
- Oversee and conduct research objectives for the WRRSL
- Maintain computing equipment: Network Server (windows-based server), Research workstation and field systems (PC and Mac), and Imaging and Printing Devices.
- Maintain computing software: Processing (ArcGIS, ENVI, and IDL), Modeling (Visual Modflow and MIKE-SHE), and Productivity (Microsoft Office, Adobe Acrobat) software.
- Maintain hydrogeological laboratory and field equipment: Water Chemistry (CHEMetrics photometer, YSI 556 multi-parameter system), Water flow (Soil Moisture Equipment Guelph Permeameter and Double Ring Infiltrometer), and soil sampling and field survey equipment
- Proposal and Grant preparation (research, education, and equipment-based)
- WRRSL budget management (internal and grant budgets)
- Provide IT service and technical support for the WRRSL facility

Western Michigan University, Kalamazoo, Michigan

Staff Geologist - Department of Geosciences (2005-2011)

- Provide technical support for the Department of Geosciences and Michigan Geological Repository for Research and Education (MGRRE) facility
- Provide IT service and technical support for faculty, staff, and student (research and grants)
- Maintain departmental laboratory and field equipment (various/multi-discipline equipment: XRD, Geochemistry, Hydrological and Geophysical Equipment)
- Sustain and develop department's computer facilities and web page
- Construct and maintain geological and educational models/equipment used in course curriculum
- Maintain and develop the department's Lloyd J. Schmaltz Geology Museum
- Advance public relations (departmental publications and informational displays)
- Student Recruiter at geological conferences for graduate programs (GSA, AGU, AAPG etc.)

Western Michigan University, Kalamazoo, Michigan

Hydrogeology Field Course Coordinator - Department of Geosciences (2005-2011)

- Administrator/Coordinator for the Hydrogeology Field Course
- Student admissions and supervision/training of field course teaching assistant's
- Scheduling of vendors, suppliers, and field site visits for each HFC module
- Assistant instructor of various HFC modules
- Maintain and development of various HFC field sites
- Acquisition and maintenance of HFC field equipment (hydrological, geophysical, geochemical, and sediment analysis/sampling equipment used in the HFC modules)
- Development and deployment of field-based educational models
- Maintain and develop HFC web page and public relations (publications and inquiries)

FIELD EXPERIENCE

CUAHSI - CZO Short course - *Wireless Sensing Bootcamp II: From theory to practice*

- WSNs Theory: low-power radio tech, synchronization & freq. channel hopping architectures
- Substantial hands-on experiences with embedded sensing applications with the NeoMote
- NeoMote deployments - deployment strategies and real-world expectations

Hydrogeology Field Course - *Western Michigan University, Kalamazoo, Michigan*

- Hazardous Waste Operations and Emergency Response (HAZWOPER) training
- Field experience working with multiple operational drill rigs and water well installation sites
- Field experience with direct/indirect methods for well and surface water sampling and monitoring
- Field setup, operation, and evaluation of test site aquifer “pump” test
- Hands-on operation of multiple near-surface geophysical techniques at field test and brown sites
- Brown site evaluation and inspection of operational remediation techniques

Geophysical Consulting Services - *Geophysical Services International, LLC (GSI), Kalamazoo, MI*

- Borehole geophysical logging and analysis (Gamma logging)
- Ground Penetrating Radar (GPR) site surveys
- Electromagnetic site surveys (EM-31 and EM-61)

Geological Consultant - *Geological Consulting- Independent Contractor*

- Aquifer analysis and hydrogeological assessments
- Sediment core collection and characterization (field and laboratory)

GRANTS / FUNDING (*Recent*)

Funded – Travel

Durham, Michael C. - UGA OVPR Internal Grants and Awards, for participation in International Conference on Geospatial Techniques in Geosciences in Taza, Morocco (2015; Total \$1,500)

Durham, Michael C. - UGA Department of Geology Watts Wheeler Travel and Research Grant, for participation in the International Conference on Geospatial Techniques in Geosciences in Taza, Morocco (2015; Total \$700)

Durham, Michael C. - UGA Graduate School Student Travel Fund, for participation in the 2015 GSA Annual Meeting in Baltimore, Maryland (2015; Total \$450)

Durham, Michael C. - UGA Department of Geology Watts Wheeler Travel and Research Grant, for participation in 2014 GSA Annual Meeting in Vancouver, British Columbia (2014; Total \$500)

Durham, Michael C. - UGA OVPR Internal Grants and Awards, for participation in the 2014 GSA Annual Meeting in Vancouver, British Columbia (2014; Total \$633)

Durham, Michael C. - UGA OVPR Internal Grants and Awards, for participation in 2014 IAH International Congress “Groundwater: Challenges and Strategies” in Marrakech Morocco (2014; Total \$1,500)

Funded – Research

Durham, M.C.; “Assessment of water resources through the development and evaluation of enhanced hydrologic measurements in arid and semi-arid environments” CUAHSI 2016 Pathfinder Fellowship (2017; Total \$4,787)

Durham, M.C., P.I.; University of Georgia Department of Geology Watts Wheeler Travel and Research Grant: “*Construction of a Physical Model to Evaluate Infiltration Processes using Temperature Probes*” (2015; Total: \$500)

Durham, M.C.; CUASHI Funding – 2014 Short course “*Wireless Sensing Bootcamp II: From theory to practice*” Sponsored by CUASHI and CZO, Berkeley, California (2014; Total \$500)

Milewski, A., P.I.; **Durham, M.C., Co-P.I.;** “*Assessment and Characterization of TRMM Satellite Precipitation Products in Varying Environments*”, University of Georgia Provost Summer Fund (2014; Total \$5,000)

Milewski, A., P.I.; **Durham, M.C., Co-P.I.;** El Kadiri, R., Co-P.I. – “*Using Radar Interferometry to Evaluate Land Subsidence Caused by Excessive Groundwater Withdrawal in Morocco*”, European Space Agency (ESA) Cat-1, ID: 13118 (2013; Total In-Kind: \$25,000)

Milewski, A., P.I.; **Durham, M.C., Co-P.I.;** “*Using Radar Interferometry (InSAR) to Evaluate Land Subsidence Caused by Excessive Groundwater Withdrawal in Morocco*”, University of Georgia Provost Summer Fund (2012; Total \$5,000)

Grant/Scholarships/Assistantships

- 2012-2017: University of Georgia: Teaching Assistantship
- 2011: University of Georgia: Research Assistantship
- 2007: Western Michigan University: Graduate Student Research Grant
- 2001-2004: Western Michigan University: Teaching Assistantship
- 2000: Grand Valley State University: Edward L. Tremba Geology Scholarship

PUBLICATIONS

Journals

Durham, Michael C., and Milewski, A., 201x, *Using Temperature Probe Arrays (TPA's) as a tool for understanding hydrology in ephemeral channels*, journal pending, *In Preparation*.

Durham, Michael C., and Milewski, A., 201x, *Assessing the Effect of Transmission Loss Variability on Hydrologic Model Performance*, journal pending, *In Preparation*.

Milewski, A., Seyoum, W., El Kadiri, R., and **Durham, M.,** 2018, *Multi-Scale Hydrologic Sensitivity to Climatic and Anthropogenic Changes in Morocco*, Hydrogeology, *Re-Submit*.

Milewski, A., El Kadiri, R., and **Durham, M.,** 2015, *Assessment and Intercomparison of TMPA Satellite Precipitation Products in Varying Climatic and Topographic Regimes in Morocco*, Remote Sensing, v. 7, 5697-5717.

Seyoum, W., Milewski, A., and **Durham, M.,** 2015, *Understanding the Relative Impact of Natural Processes and Human Activities on the Hydrology of the Central Rift Valley Lakes, Ethiopia*, Hydrologic Processes, DOI: 10.1002/hyp.10490.

Abstracts

Milewski, A., Elkadiri, R., Seyoum, W., and **Durham, M.,** 2016, *Watershed-Scale Hydrologic Sensitivity to Climatic and Anthropogenic Changes*, *International Association of Hydrogeologists*, 43rd International Congress, Montpellier, France.

- Durham, Michael C.**, and Milewski, A., 2015, *Effects of infiltration variability on modeled transmission losses in ephemeral channels: GSA Annual Meeting Abstracts with Programs*. (*Presented*)
- Milewski, A., El Kadiri, R., Seyoum, W., **Durham, M.**, Fay, V., Lezzaik, K., Rotz, R., Fisher, A., and Cahalan, M., 2015, *An Analysis of GPM IMERG and TRMM TMPA Precipitation Estimates in Varying Environments*, GSA Annual Meeting Abstracts with Program.
- Durham, Michael C.**, Milewski, A., and Sultan, M., 2014, *The Characterization of Transmission Losses in Ephemeral Channels: GSA Society of America Annual Meeting Abstracts with Programs*. (*Presented*)
- Milewski, A., El Kadiri, R., **Durham, M.**, Seyoum, W., Lezzaik, K., Cahalan, M., and Rotz, R., 2014, *Remote Sensing Approaches for Assessing Groundwater Resources and Anthropogenic Impacts in Souss Basin, Morocco*, GSA Annual Meeting Abstracts with Program.
- Durham, Michael C.**, Milewski, A., Sultan, M., and Seyoum, W., 2014, *Enhancement of Existing Satellite-based Hydrologic Models in Egypt using Soil Temperature Probes*, IAH - International Congress "Groundwater: Challenges and Strategies", Marrakech Morocco. (*Presented*)
- Milewski, A., El Kadiri, R., **Durham, M.**, Seyoum, W., Lezzaik, K., Cahalan, M., and Rotz, R., 2014, *Evaluation of Groundwater Resources and Anthropogenic Impacts in Morocco using Satellite-based Observations, Hydrologic Models, and Radar Interferometry*, IAH - International Congress "Groundwater: Challenges and Strategies", Marrakech Morocco.
- Durham, Michael C.**, Milewski, A., and El Kadiri, R., 2013, *Using Radar Interferometry (DinSAR) to Evaluate Land Subsidence Caused by Excessive Groundwater Withdrawal in Morocco*, AGU Annual Meeting Abstracts with Programs. (*Presented*)
- Milewski, A., El Kadiri, R., and **Durham, M.**, 2013, *Assessment of TRMM Products and Their Influence on Hydrologic Models within the Middle East and North Africa (MENA) Region Using the Soil and Water Assessment Tool (SWAT)*, AGU Annual Meeting Abstracts with Programs
- Milewski, A., Fryar, A., **Durham, M.**, Schroeder, P., Agouridis, C., Hanley, C., and Rotz, R., 2013, *ARCHES: Advancing Research & Capacity in Hydrologic Education and Science*, AGU Annual Meeting Abstracts with Programs.
- Milewski, A., Sultan, M., Yan, E., Becker, R., **Durham, M.**, El Kadiri, R., Seyoum, W., and Soliman, F., 2013, *Assessment of Current and Projected Water Resources in Egypt and the MENA Region Using Satellite-based Hydrologic Models*, GSA Annual Meeting Abstracts with Programs, Vol. 45, No. 7, p. 162.
- Milewski, A., El Kadiri, R., and **Durham, M.**, 2012, *Analysis of TRMM Satellite Data in Varying Climates and Elevation in Morocco*, AGU Annual Meeting Abstracts with Programs
- El Kadiri, R., Milewski, A., **Durham, M.**, 2012, *Assessment of Satellite-based Precipitation Products (TRMM) in Hydrologic Modeling: Case Studies from Northern Morocco*, AGU Annual Meeting Abstracts with Programs.
- Durham, Michael C.**, Milewski, A., Sultan, M., and El Kadiri, R., 2012, *Insight into wadi properties, dynamics, and interconnectedness during flash-flood events using TRMM satellite data and soil temperature probes in Sinai Peninsula, Egypt*, GSA Annual Meeting Abstracts with Programs, Vol. 44, No. 7, p. 117. (*Presented*)
- El Kadiri, R., Milewski, A., **Durham, M.**, 2012, *Rainfall-runoff modeling for the assessment of renewable water resources over Moroccan watersheds: Sebou, Melouya, Souss, Bouregrag, Tensift, and Oum Er Rbia*, GSA Annual Meeting Abstracts with Programs, Vol. 44, No. 7, p. 116.

- Milewski, A., El Kadiri, R., **Durham, M.**, and Fryar, A., 2012, *Hydrologic Capacity Building in the Middle East and North Africa: Examples from Distance Learning Course and Applied Workshops*, GSA Annual Meeting Abstracts with Programs, Vol. 44, No. 7, p. 115.
- Milewski, A., Sultan, M., Fryar, A., **Durham, M.**, and El Kadiri, R., 2012, *Research to Education: Harnessing the Power of Remote Sensing Across the Middle East*, IAH - International Association of Hydrogeologists, Niagara Falls, Canada.
- El Kadiri, R., Milewski, A., Sultan, M., Larabi, A., Ahmed, M., and **Durham, M.**, 2012, *SWAT Modeling and Remote Sensing Applications for the Assessment of Hydrologic Responses to Climatic Changes in a Mediterranean Atlantic System*, IAH - International Association of Hydrogeologists, Niagara Falls, Canada.
- Milewski A., M. Sultan, D. Becker, Farouk Soliman, E. Yan, R. Becker, K. Chouinard, and **M. Durham**, 2011, *Potential Impacts of Climate Change on Modern Recharge in the Eastern Desert and Sinai Peninsula of Egypt*, GSA Abstracts with Programs.
- Milewski, A., Sultan, M., Yan, E., Becker, R., Soliman, F., and **Durham, M.**, 2011, *The Role of Remote Sensing and GIS in Hydrologic Models: Case Studies from Arid Environments*, IAH - International Conference for Water Resources & Environment, Morocco.
- Durham, Michael C.**, Kehew, Alan E., and Bird, Brian C., 2004, *Glacial Mapping and Subsurface Exploration of the Glenn, Lacota, and South Haven U.S.G.S 7.5 Minute Quadrangles of Allegan County, Michigan*, GSA Abstracts with Programs, Vol. 36, No. 5. (*Presented*)
- Durham, Michael C.**, 2000, *Analysis of Glacial Sediments from Ottawa County, Michigan*, Grand Valley State University Students Scholars Abstracts with Program. (*Presented*)

Maps

- Durham, Michael C.**, Kehew, Alan E., 2004, *Glacial Terrain Map of Glen 7.5 Minute Quadrangle, Allegan County, Michigan*: produced by the Department of Geosciences, Western Michigan University for the U.S.G.S National Geologic Mapping Program, scale 1: 24,000.
- Durham, Michael C.**, Kehew, Alan E., 2004, *Glacial Terrain Map of Lacota and South Haven 7.5 Minute Quadrangle, Allegan County, Michigan*: produced by the Department of Geosciences, Western Michigan University for the U.S.G.S National Geologic Mapping Program, scale 1: 24,000.

PROFESSIONAL AFFILIATIONS

- Geological Society of America (GSA)
- American Geophysical Union (AGU)
- Association of Environmental & Engineering Geologists (AEG)
- National Ground Water Association (NGWA)
- International Associate of Hydrogeologists (IAH)
- Early Career Hydrogeology Network of IAH (ECHN-IAH)