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Associate Professor
Department of Environmental Sciences
University of Toledo
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Education:

- Ph.D. 2008, Western Michigan University, Geosciences
Dissertation: Remote Sensing Studies for the Assessment of Geohazards: Toxic Algal Blooms in the Lower Great Lakes, and Land Subsidence in the Nile Delta.
Primary Advisor: Dr. Mohamed Sultan
- A.M. 1994, Washington University in St. Louis, Earth and Planetary Sciences
Thesis: Construction of regional scale digital Landsat Thematic Mapper mosaics, and applications for regional mapping and plate reconstructions in the Red Sea area.
Primary Advisor: Dr. Raymond Arvidson
- A.B. 1991, Washington University in St. Louis, Germanic Languages and Literature

Appointments:

- 2014 – Associate Professor – University of Toledo, Department of Environmental Sciences
- 2008 – 2014 Assistant Professor – University of Toledo, Department of Environmental Sciences
- 2014 – Adjunct Assistant Professor – Michigan State University, Department of Geological Sciences
- 2004 – 2008 Principal Research Associate – Western Michigan University, Earth Sciences Remote Sensing (ESRS) Facility, Geosciences Department
- 2002 – 2004 Senior Research Scientist – University at Buffalo, ESRS Facility
- 2003 Adjunct Instructor – University at Buffalo, Geology Department
- 1996 – 2002 Scientific Associate - Geologic Data Visualization, Computer Support and Risk Assessment, Argonne National Lab
- 1995 – 1996 Research Scientist/Computer Specialist - Washington University, Department of Earth and Planetary Sciences (EPSc)
- 1990 – 1994 Research Assistant - Washington University, EPSc, Remote Sensing Lab
- 1992 – 1994 Teaching Assistant - Washington University, EPSc

Research Support (External):

- 10/1/2017 – 9/30/2019, Lekki, J., Ortiz, J., Schuchman, R., Liu, H., **Becker, R.**, Sayers, M., Beck, R., Shiller, S., Vander Woude, A., Remote Sensing Research for Harmful Algal Blooms in Inland Waters, NASA
- 7/1/2017 – 6/30/2018 Qian, S. Gottgens, H, **Becker, R.**, Establishing Ecological Criteria and Thresholds for Monitoring Hydrologic Impacts on Old Woman Creek Wetland Functions, ODNR

- 7/1/2017 – 6/30/2018 Mayer, C., Qian, S., **Becker, R.**, Bossenbroek, J., Building Resilient Shorelines, Phase III, ODNR
- 3/2016 – 2/2018 Bridgeman, T. (PI), CoIs: **Becker, R.**, Bullerjahn, G. (BGSU), McKay, R.M.(BGSU), Shepherd, A. (Sinclair State), HAB Avoidance: Vertical movement of HABs in Lake Erie, ODHE.
- 3/2016 – 2/2018 Martin, Jay (PI, OSU), CoIs: **Becker, R.**, Confesor, R. (Heidelberg), Nedunuri, K. (Central State), Redder, T. (Limnotech), Robertson, D. (USGS), Scavia, D. (UM), How quickly can target phosphorus reductions be met? Robust predictions from multiple watershed and lake models, ODHE.
- 1/2015 – 12/2016 Bridgeman, T., **Becker, R.**, HAB Early Warning System for Ohio Water Utilities, OBOR
- 7/2015 – 12/2018 **Becker, R.**, Atmospheric Modeling for GRC HSI Imager, NASA GRC
- 7/1/14 – 12/1/15 **Becker, R.**, (PI), Co-I: Bridgeman, T., HICO Mapping of Harmful Algal Blooms, Center for Advancement of Science in Space/NASA
- 12/2013 – 1/2016 Hesse, G. (Lake Erie Commission, PI), Co-Is: **Becker, R.**, Bridgeman, T., Qian, S., Mayer, C., Seo, Y. (UT), Chaffin, J., Reutter, J., (OSU), Kriger, K., Confesor, R., Richards, P., Johnson, L. (Heidelberg U.), Matisoff (CWRU), Assessment of Nutrient/Eutrophication Dynamics in Western Lake Erie, EPA
- 4/2012 – 7/2015 **Becker, R.**, (PI), Early season satellite monitoring of incipient HAB blooms in Lake Erie, NOAA/CILER
- 8/2011 – 12/2012 **Becker, R.**, (PI), Mapping Buckthorn Distribution in the Oak Openings. Lake Erie Protection Fund
- 8/2011 – 8/2014 Sultan, M, (PI, WMU), Sherif (NARS, Egyptian PI), **Becker, R.**, (Co-PI), Evaluating Subsidence in the Nile Delta Using Radar Interferometry, NSF
- 8/2011 – 8/2014 Sultan (PI), **Becker, R.**, (Co-PI), Detailed Studies on Landslides in Jazan Area, Saudi Arabia: Remote Sensing and GIS Applications, Saudi Geological Survey
- 9/2010 – 8/2013 Lis, J (PI, Cayahoga County BOH), Co-Is: **Becker, R.**, Sigler (UT), Holistic Watershed Approach to Health at Huntington Beach, USEPA
- 8/2010 – 8/2013 Stepien, PI, Co-Is: **Becker, R.**, Chen, Czajkowski, Bridgeman, - Environmental Sensor System for the Lake Erie Center – NSF7/2010 – 7/2013 Chen (PI), Co-Is **Becker, R.**, Gottgens, Czajkowski, Lake Erie Hydrological and Climate Modeling, NOAA
- 11/2010-11/2013 Czajkowski, K., PI, Co-Is: **Becker, R.**, Bjorkman, Khare, Megeath, Weintraub, Egan, Lawrence, Nemeth, Apul, Hedley, Mentzer, Climate Change Education: Engaging Teachers and Students and Correcting Misconceptions Using NASA Data, NASA
- 8/2010 – 8/2014 Stepien, PI, Co-Is: Gruden, Bridgeman, Fisher, **Becker, R.**, Teaching Fellows in STEM High School Education: An Environmental Science Learning Community at the Land-Lake Ecosystem Interface
- 7/2008 – 7/2010 **Becker, R.**, (PI), Remote Sensing of Environmental Hazards: Nile Delta Subsidence, US-Egypt Science and Technology Program, USAID
- 6/2007-10/2007 Sultan, M. (PI, WMU), **Becker, R.**, (Co-PI), Environmental Remote Sensing Applications in Kuwait, Kuwait Institute for Scientific Research

1/2005 – 8/2005 **Becker, R.**, (PI) Assessment, Monitoring, and Modeling of Changes in Land Use and Land Cover and Their Impacts on the Nubian Aquifer, Saharan Africa, subcontract from NASA through UB

External Support (In kind contributions):

* Indicates Graduate Student Author

- 5/2015 – **Becker, R.**, HAB image processing, Ohio Supercomputer Center (storage and computation time)
- 7/2012 – 8/2014 Siemer, K.*, (PI) **Becker, R.**, (Co-I), Using persistent scatterer radar interferometry to assess mine subsidence in Eastern and Southeastern Ohio, European Space Agency, In-Kind Contribution
- 3/2011 – 2/2014 **Becker, R.**, (PI), Landslide Studies in the Red Sea Hills of Saudi Arabia European Space Agency, In-Kind Contribution
- 10/2007 – 10/2013 **Becker, R.**, (PI), Assessment of Subsidence in the Nile Delta Using Radar Interferometry, European Space Agency, In-Kind Contribution
- 6/2004 – 6/2005 Sultan, M, (PI, University at Buffalo), **Becker, R.**, (Co-PI), Integrated Hydrology of the Nubian Aquifer: Evidence from Radar and SRTM Data, European Space Agency, In-Kind Contribution

Research Support (Internal):

- 1/2015 – 12/2015 Czajkowski, K., **Becker, R.**, Gottgens, J., Qian, S., Stepien, C., Dwyer, D., Ames, A., Assessment of Source Regions and Solutions to Nutrient Runoff in the Maumee River Watershed, University of Toledo
- 8/2011– 12/2011 **Becker, R.**, (PI), Algorithm Development for Satellite Remote Sensing of Cyanobacteria, Chlorophyll-a and Phosphorous, SBIR Phase 0 funding
- 7/2009 – 6/2010 **Becker, R.**, (PI), Effects of Indian Ocean Temperature on Nile River Flow Volumes, University of Toledo, URAF
- 8/2007 - 12/2007 **Becker, R.**, (PI) Satellite Assessment of Toxic Algal Blooms in the Lower Great Lakes, March 2007, WMU Graduate Research Student Fund
- 8/ 2006 – 7/2007 **Becker, R.**, (PI) Assessment of Subsidence in the Nile Delta Using Radar Interferometric Techniques, November 2006, WMU Graduate Research Student Fund

Awards and Scholarships:

- 2013 AAPG Best Poster Award
- 2008 UT Faculty Development Travel Grant
- 2008 WMU Research Day Research and Creative Activities Award
- 2007 – 2008 Gwen Frostic Doctoral Fellow
- 2007 Geosciences Department Kuenzi Award
- 2006 Western Michigan University All-University Research and Creative Scholar Award
- 2006 Geosciences Department Research and Creative Scholar Award
- 2005 American Geophysical Union (AGU) Outstanding Student Paper Award
- 1990 – 1991 Saint Michael and Saint George Scholarship
- 1988 – 1990 Washington University: Caldwell Brothers Engineering Scholarship

Student Advising:

Graduate Students Advised (UT):

- 2018 – Alex Sodeman; M.S. Geology (Co-advised with Dr. Fisher)
2017 – Dustin Dehm; M.S. Geology
2016 – Tiffany Gentner, M.S. Geology
2015 Luke Cousino, M.S. Geology
2014 – 2016 Michael Cline, M.S. Geology, Summer 2016
2013 – 2016 Xinwei Zhang, M.S. Geology, Summer 2016
2012 – 2014 Joseph Fugate, M.S. Geology, Fall 2014
Thesis: Measurements of land subsidence rates on the northwestern portion of the Nile Delta using radar interferometry techniques
2011 – 2013 Kyle Siemer, M.S. Geology, Summer 2013
Thesis: You've got that sinking feeling: Measuring subsidence above abandoned underground mines in Ohio, USA
Currently: Staff Geologist at Wavelet Investment, LLC
2011 – 2013 Kirk Zmijewski, M.S. Geology, Spring 2013
Thesis: Connecting the dots: Using remote sensing to identify Glossy and Common Buckthorn (*Frangula alnus* and *Rhamnus cathartica*) in the Oak Openings Region of NW Ohio
Currently: Knowledge Analyst at The Boston Consulting Group (BCG)
2010 – 2012 Janet Traub, M.S. Geology, Fall 2012
Thesis: Patterns in the variation of CDOM spectral slopes in the Western Lake Erie Basin
2009 James Fisher (Co-Advised with J. Marten-Hayden); MS Geology, Fall 2009
Thesis: Evaluating the Effectiveness of an Evapotranspirative Cover Using an Integrated Hydrologic Model at the King Road Landfill
Currently: Project Manager at Vadose Environmental Consultants, Akron, Ohio

Committee Member (UT):

- 2017 – Adam Schroeder, Ph.D. Mechanical Engineering
2017 – Bernard Bahaya, Ph.D., Civil Engineering
2017 – J.P. Finnegan, M.S. Geology
2016 – Jonathon Phillips; M.A. Geography and Planning
2015 – Kristen Hebebrand; M.S. Biology
2015 Anthony Dietrich; M.S. Civil Engineering
2015 – Ryan Jackwood; Ph.D. Biology
2015 Vincent Ng, M.S, Civil Engineering
2014 – 2016 Brian Schmidt ; M.S. Biology
2014 – Michaela Margida; PhD Biology
2013 – 2015 Jennifer Horton; M.S. Geology
2013 – 2014 Christopher Maike; M.S. Geology
2012 – 2014 Elaine Reynolds; M.A. Geography and Planning
2012 – 2013 Biniam Estifanos; M.S. Geology
2011 – 2014 Hou-Sen Chu; PhD Biology (Ecology)

2011 – 2013 Kira Baca; M.S. Geology
 2011 – 2012 Marc Morandi; M.S. Biology (Ecology)
 2010 – 2012 Sarah Panek; M.S. Biology (Ecology)
 2010 – 2012 Jie Rin; M.A. Geography and Planning
 2010 – 2011 Brad Anderson; M.S. Geology
 2010 – 2011 Joel Banaszak; M.S. Geology
 2009 – 2013 Justin Selden; M.S. Biology (Ecology)
 2008 – 2010 Barb Hanes; M.S. Geology

Committee Member (external):

2017 – Sita Karki, PhD Geosciences, Western Michigan
 2017 – Abigail Knapp, M.S. Geology, University of Georgia
 2015 – Esayas Gebremichael, PhD Geosciences, Western Michigan
 2013 – 2017 Abdullah Othman, PhD. Geosciences, Western Michigan
 2013 – 2014 Cameron Manche, M.S. Geosciences, Western Michigan
 2012 – 2013 Hachemi Y Bouali; M.S. Geosciences, Western Michigan
 2012 – 2015 Lamees Mohamed; PhD Geosciences, Western Michigan
 2012 – 2016 Ali Asiri; PhD Geology, Michigan State

Undergraduate Student Advising:

2010 – Undergraduate Academic Advisor for Geology Students in Department of Environmental Sciences

Undergraduate Honors Thesis advising:

2016 – 2017 Dustin Dehm; B.S. Honors Thesis, Spring 2017
 2016 Alyssa Corbeil; B.S. Honors Thesis, Fall, 2016
 2013 – 2014 Michael Cline; B.S. Honors Thesis, Spring 2014
 2013 – 2014 Luke Cousino; B.S. Honors Thesis, Fall 2014
 2010 – 2011 Brendan Poffenbaugh; B.S. Honors Thesis, Spring 2011

Other Undergraduate Research Projects:

Summer 2017 Kaydian Quintero (REU Student)
 Summer 2016 Davit Ortiz (REU Student)
 Summer 2015 Sofia Chelpon (REU Student)
 2013 – 2014 Jacqueline Page (USRCAP Project)
 2012 – 2014 Luke Cousino (USRCAP Project)
 2012 – 2014 Kyle Winfield
 2011 – 2013 Jonathon Sanders
 2010 – 2012 Coleen Nagel (URM Student)
 2010 – 2011 Wade Shaver (USRCAP Project)
 2009 – 2011 Kirk Zmijewski (USRCAP Project)

Courses Taught:

University of Toledo:

EEES4490/5490/ GEPL4490/5490	Remote Sensing of the Environment	F10, F12, F14, F16
EEES 1050	Geological Hazards and the Environment	Sp10, Sp11, Sp12, Sp13
EEES 4480/6480	Environmental Applications of GIS	F09, F11, F13, Sp16, F17
EEES 4480/6480	Geology Spring Field Trip	Sp13, Sp14, Sp15, Sp16, Sp17
EEES2100	Fundamentals of Geology	Sp09, F09, F10, F11, F12, F13, F14, F16, F17
Supervisor for EEES 1020	Physical Geology Lab	Su09-Su12
Co-instructor for EEES 6650/8650	Statistical Modeling for Environmental Sciences	Sp09, Sp10, Sp11
Co-instructor for EEES 2150	Advanced Computer Applications	Sp13, Sp14, Sp15, Sp16, Sp17

University at Buffalo:

Geology 560	GIS for Geoscientists	F03
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Multi-day Field Trips Led:

- 3/4-3/11, 2018: EEES 4980/5980: Geology of the Grand Canyon (11 Participants)
3/4-3/11, 2017: EEES 4980/5980: Geology of West Texas (6 Participants)
3/5-3/12, 2016: EEES 4980/5980: Geology of Death Valley and the Mojave (10
Participants)
3/7-3/14, 2015: EEES 4980/5980: Geology of the Grand Canyon (10 Participants)
10/3-10/5, 2014: EEES 2100: Hocking Hills, Ohio Caverns, OH (32 Participants)
3/1-3/10, 2014: EEES 4980/5980: Geology of the Smokey Mountains (10 Participants)
10/4-10/6, 2013: EEES 2100: Hocking Hills, OH, Carter Caves, KY (30 Participants)
3/1-3/10, 2013: EEES 4980/5980: Geology of Southern Utah (9 Participants)
10/5-10/7, 2012: EEES 2100: Hocking Hills, OH, Carter Caves, KY (24 Participants)
3/3-3/8, 2012: OH/KY: Hocking Hills, Carter Caves, Red River Gorge (6 Participants)

Short Courses Taught:

- 2004 GIS for Geologists: Cairo University, Egypt, Oct
2004 Using ENVI and PCI for Geological Remote Sensing: Cairo University, Egypt, Oct
2004 Using ENVI for Geological Remote Sensing: Cairo University, Egypt, May
1994 Remote Sensing Using PCI: Cairo University, Fall
1994 Using ERDAS for Remote Sensing: Egyptian Geological Survey, Fall

Teaching Assistant for Courses:

- 1992 – 1994 Washington University: Environmental Geology, Biostratigraphy and
Sedimentation, Hydrology, Earth System Sciences

Software Copyright:

- 2002 Automated cross section generation program for Quick Site program, incorporating
multiple styles of electronic and lithologic logs

Software Patent:

2007 Remote Sensing Data Extraction Model (RESDEM) (Provisional)

Publications:**Citation Data from Google Scholar (as of 1/30/18):**

1069 Citations, h-index:19, i10-index: 26

Scientific Papers:

* Indicates Graduate Student Author

** Indicates Undergraduate Student Author

In Review Process (5):

Gebremichael, E. *, Sultan, M., **Becker, R.**, El Bastawesy, M., Cherif, O., Emil, M., Assessing Land Deformation and Sea Encroachment in Deltas: A Radar Interferometric and Modelling Approach (In Review, JGR)

Assiri, A., Rooney, T., and **Becker, R.**, A Comparison of Mapping Methods and Spectral Analysis to Improve Carbonatite Mapping Using VNIR And SWIR Bands Of ASTER Data at Al-Uyaynah Area, UAE (In Review, Remote Sensing)

Assiri, A., Rooney, T., Qi, J. and **Becker, R.**, Carbonatite Identification using Landsat 8 VNIR-SWIR bands at Al-Uyaynah, UAE

Qian, S., Cuffney, T., **Becker, R.H.**, Jackson, S., Cousino, L.**, A Hierarchical Modeling Approach for Screening Stream Biological Conditions (Submitted, Ecological Indicators)

Ouyang, Z. *, Qian, S., **Becker, R.H.**, Chen, J., The effects of nutrients on stream invertebrates: A regional estimation by generalized propensity score (Submitted, Ecological Processes)

Accepted/In Press (0):**Published (37):**

Othman A., Sultan, M., **Becker, R.**, Alsefry, S., Alharbi, T., Alharbi, H., Gebremichael, E., Fathy, K., 2018, Depletion of Fossil Aquifers and Land Deformation, Surveys in Geophysics, doi:10.1007/s10712-017-9458-7

Ortiz, J.D., Avouris, D., Schiller, S., Luvall, J., Lekki, J., Tokars, R., Anderson, R., Shuchman, R., Sayers, M., **Becker, R.**, 2017, Intercomparison of Empirical Line Method Vicarious Hyperspectral Reflectance Calibration Methods Front. Mar. Sci. 4:296. doi: 10.3389/fmars.2017.00296

Lekki, J, Anderson, R., Avouris, D., **Becker, R.H.**, Cline, M.T., Leshkevich, G., Liou, L., Luvall, J.C., Ortiz, J.D., Ruberg, S.A., Sawtell, R., Sayers, M., Schiller, S., Shuchman, R.A., Simic, A., Stuart, D.G., Tokars, R., and Vander Woude, A.J., Airborne Hyperspectral Sensing of Harmful Algal Blooms in Great Lakes Region: System Calibration and Validation From Photons to Algal Information: The Processes In-Between, NASA Technical Memorandum

- Ouyang*, Z., Shao, C., Chu, H., **Becker, R.**, Bridgeman, T., Stepien, C., John, R., Chen, J., The Effect of Algal Blooms on Carbon Emissions in Western Lake Erie: An Integration of Remote Sensing and Eddy Covariance Measurements, 2017, *Remote Sensing*, 9(1), 44; doi:10.3390/rs9010044
- Shao, C., Chen, J., Stepien, C.A., Chu, H.*, Bridgeman, T., Czajkowski, K., **Becker, R.H.**, Ouyang, Z.*, John, R., 2015, Diurnal to annual carbon, latent and sensible heat fluxes in a Laurentian Great Lake: A case study in western Lake Erie, *JGR Biogeosciences*, doi:10.1002/2015JG003025
- Cousino, L.K.** , **Becker, R.H.**, Zmijewski, K.A.* , Modeling the Effects of Climate Change on Water, Sediment, and Nutrient Yields from the Maumee River Watershed, 2015, *Journal of Hydrology Regional Studies*, doi:10.1016/j.ejrh.2015.06.017
- Hanes, B.* , Fisher, T.G., **Becker, R.H.**, Martin Hayden, J., 2014, Elucidating paleo dune activity and timing from wetlands in the lee of coastal sand dunes, Grand Mere Lakes, Michigan USA, *Geological Society of America Special Papers* 508, SPE508-08), doi:10.1130/2014.2508(08)
- Ouyang, Z.* , Chen, J., **Becker, R.H.**, Chu, H.* , Chao, C., 2014, Disentangling the confounding effects of PAR and air temperature on net ecosystem exchange in time and scale, *Ecological Complexity*, v19, pp 46-58, doi:10.1016/j.ecocom.2014.04.005
- Chu, H.* , Chen, J., Gottgens, J.F., Ouyang Z.* , 2014, John, R., Czajkowski, K., **Becker, R.H.**, Net ecosystem exchanges of CH₄ and CO₂ at a temperate freshwater marsh and a cropland, *Journal of Geophysical Research-Biogeosciences*, doi:10.1002/2013JG002520
- Becker, R.H.**, 2014, The Stalled Recovery of the Iraqi Marshes, *Remote Sensing*, v6, no2, pp1260-1274, doi:10.3390/rs6021260
- Zmijewski, K.* , **Becker, R.H.**, Estimating the effects of anthropogenic and climate change on water balance in the Aral Sea watershed using GRACE: 2003-2012, *Earth Interactions*, v18, no3, doi:10.1175/2013EI000537.1
- Ouyang Z.* , **Becker, R.H.**, Shaver, W.** , Chen, J., 2014, Evaluating the Sensitivity of Wetlands to Climate Change with Remote Sensing Techniques, *Hydrological Processes*, v28, no4, 1703-1712, doi:10.1002/hyp.9685
- John, R., Chen, J., Ouyang, Z.* , Xiao, J., **Becker, R.H.**, Samanta, A., Ganguly, S., Yuan, W., Batkhisig, O., 2013, Vegetation response to extreme climate events on the Mongolian plateau from 2000-2010, *Environmental Research Letters*, 8 035033 doi:10.1088/1748-9326/8/3/035033
- Becker, D.B.* , Sultan, M.I., Milewski, A.M., **Becker, R.H.**, Sauck, W., Soliman, F., Yan, E., Chouinard, K., Welton, B., 2012, A Web-based GIS Solution for the Assessment of Groundwater Potential in Arid Lands: A Case Study from the Egyptian Deserts, *Geosphere*, doi:10.1130/GES00777.1
- Becker, R.H.**, Zmijewski, K. A.** , Crail, T., 2013, Seeing the Forest for the Invasives: Mapping Buckthorn in the Oak Openings, *Biological Invasions*, 10.1007/s10530-012-0288-8
- Sultan, M., Metwally, S., Milewski, A., Becker, D*, Ahmed, M., Sauck, W., Soliman, F., Sturchio, N., Yan, E., Rashed, M., Wagdy, A., **Becker, R.**, Welton, B., 2011, Modern Recharge to Fossil Aquifers: Geochemical, Geophysical, and Modeling Constraints, *Journal of Hydrology*, doi:10.1016/j.jhydrol.2011.03.036
- Ahmed, M., Sultan, M., Wahr, J., Yan, E., Milewski, A., Sauck, W., **Becker, R.**, Welton, B., Integration of GRACE data with traditional datasets for a better understanding of the time

- dependent water partitioning in African watersheds, 2011, *Geology*, v39, no5, pp479-482, doi:10.1130/G31812.1
- Sultan, M., Yousef, A.F., Metwally, S., **Becker, R. H.**, Milewski, A., Sauck, W., Sturchio, N.C., Mohamed, A.M.M., Wagdy, A., El Alfy, Z., Becker, D.B.*, Sagintayev, Z., El Sayed, M., and Welton, B., 2011, Red Sea Rifting Controls on Aquifer Distribution: Constraints from Geochemical, Geophysical, and Remote Sensing Data, *GSA Bulletin*, doi:10.1130/B30146.1
- Becker, R. H.**, Sultan, M.I., Boyer, G.L., Twiss, M.R., and Konopko, E., 2009, Mapping Cyanobacterial Blooms in the Great Lakes Using MODIS, *Journal of Great Lakes Research*, doi:10.1016/j.jglr.2009.05.007
- Becker, R.**, Sultan, M., 2009, Land Subsidence in the Nile Delta: Inferences from Radar Interferometry, *The Holocene* v. 19(6), doi:10.1177/0959683609336558
- Milewski, A., Sultan, M., Markondiah Jayaprakash, S., Balekei, R., and **Becker, R.**, 2009 RESDEM, a tool for integrating temporal remote sensing data for use in hydrogeologic investigations, *Computers in Geosciences*, v35(10), doi:10.1016/j.cageo.2009.02.010
- Milewski A., Sultan, M., Yan, Y.E., **Becker, R.**, Abdeldayem, A., Abdel Gelil, K., 2009, A remote sensing solution for estimating runoff and recharge in arid environments. *J. Hydrol.* doi:10.1016/j.jhydrol.2009.04.002
- Forman, S., Sagintayev, Z., Sultan, M., Smith, S., **Becker, R.**, Kendall, M., and Marin, L., 2008, The 20th century migration of parabolic dunes and wetland formation at Cape Cod National Sea Shore, MA: Landscape response to a legacy of environmental disturbance, *The Holocene*, v. 18(5), pp765-774. doi:10.1177/0959683608091796
- Sultan, M., Sturchio, N., El Sefry, S., Milewski, A., **Becker, R.**, Nasr, I., Sagintayev, Z., 2008, Constraints on the Origin and Potential of the Rub Al Khali Groundwater Aquifer System, Arabian Peninsula, *Journal of Hydrology*, v.356(1-2), pp70-83. doi:10.1016/j.jhydrol.2008.04.001
- Jones, C., Sultan, M., Yan, E., Milewski, A., Hussein, M., Al-Dousari, A., Al-Kaisy, S., **Becker, R.**, 2008, Hydrologic Impacts of Engineering Projects on the Tigris-Euphrates System and its Marshlands, *Journal of Hydrology*, v. 353(1-2), pp 59-75. doi:10.1016/j.jhydrol.2008.01.029
- Sultan, M., Wagdy, A., Manocha, N., Sauck, W., Abdel Gelil, K., Youssef, A.F., **Becker, R.**, Milewski, A., 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*, v. 349(3-4), pp 475-488. doi:10.1016/j.jhydrol.2007.11.029
- Sultan, M. Yan, E., Sturchio, N., Wagdy, A., Abdel Gelil, K., Manocha, M., **Becker, R.**, Milewski, A., 2007, Natural Discharge: A Key to Sustainable Utilization of Fossil Groundwater, *Journal of Hydrology*, v.335(1). doi:10.1016/j.jhydrol.2006.10.034
- Becker, R.**, Sultan, M., Boyer, G., Konopko, E., 2006, Mapping Variations of Algal Blooms in the Lower Great Lakes, *Great Lakes Research Review*, v.7, pp.14-17.
- Sturchio, N. C., Du, X., Purtschert, R., Lehmann, B. E., Sultan, M., Patterson, L. J., Lu, Z.-T., Müller, P., Bigler, T., Bailey, K., O'Connor, T. P., Young, L., Lorenzo, R., **Becker, R.**, El Alfy, Z., El Kaliouby, B., Dawood, Y., and Abdallah, A. M. A., 2004, One million year old groundwater in the Sahara revealed by krypton-81 and chlorine-36, *Geophysical Research Letters*, v. 31(5)
- Sultan, M., **Becker, R.**, Al-Dousari, A., Al-Ghadban, A.N., Bufano, E., 2003, Water, Agriculture and Land Cover: Lessons for the Postwar Era. *Geotimes*, v.48(10), pp. 22-24.

- Sultan, M., Fiske, M., Stein, T., Gamal, M., Abdel Hady, Y., El Araby, H., El Araby, T., Madani, A., Mehanee, S., and **Becker, R.**, 1999, Satellite-based monitoring of urbanization in the Nile Delta, Egypt, *Ambio*, v. 28, pp. 628-631
- Luo, W., Arvidson, R.E., Sultan, M., **Becker, R.**, Crombie, M., Sturchio, N., El Alfy, Z., 1997, Groundwater Sapping Processes, Western Desert, Egypt, *Geological Society of America Bulletin*, v.109(1), pp. 43-62
- Arvidson, R.E., **Becker, R.**, Shanabrook, A., Luo, W., Sturchio, N., Sultan, M., Lofty, Z., Mahmood, A.M., El Alfy, Z., 1994, Climatic, Eustatic, and Tectonic Controls on Quaternary Deposits and Landforms, Red Sea Coast, Egypt, *Journal of Geophysical Research*, v.99, pp 12175-12190
- Sultan, M., **Becker, R.**, Arvidson, R.E., Shore, P., Stern, R.J., El Alfy, Z., Attia, R.I., 1993, New constraints on Red Sea Rifting from correlations of Arabian and Nubian Neoproterozoic outcrops, *Tectonics* v.12, pp. 1303 – 1319
- Schandelmeier, H., Wipfler, E., Kuster, D., Sultan, M., **Becker, R.**, Stern, R.J., Abdelsalam, M.G., 1994, The Atmur-Delgo suture: A Neoproterozoic oceanic basin extending into the interior of North Africa, *Geology*, v. 22, pp.563-566
- Sultan, M., Stern, R.J., Arvidson, R.E., Shore, P., **Becker, R.**, 1993, Reply to comment by W. Bosworth on Nature of the Red Sea crust: A controversy revisited. *Geology*, v. 21, pp. 575-576
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2005 (8):

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- Jones, C.K., Sultan, M., Al-Dousari, A., Salih, S.A., **Becker, R.**, And Milewski, A., 2005, Who Did What To The Mesopotamian Marshes? Inferences From Temporal Satellite Data, Geological Society of America Annual Meeting Abstracts With Programs, v.37(7), P. 510.
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2004 and Prior (20):

- Yan, Y.E., **Becker, R.**, Wagdy, A., Sultan, M., 2004, Assessment of Renewable Groundwater Resources in the Assiuty Hydrologic System of the Eastern Desert, Egypt, Geological Society Of America Abstracts With Programs, Vol. 37.
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- Database for the Tethyan Mountain Belt, Mid-America GIS Consortium (MAGIC) symposium, Kansas City.
- Sultan, M., Manocha, N., **Becker, R.**, Sturchio, N., 2004, Paleodrainage Networks Recharging the Nubian Aquifer Dakhla and Kufra Sub-Basins Revealed From SIR-C and SRTM Data, *Eos Trans. AGU*, 85(17), Jt. Assem. Suppl., H31C-03.
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- Yan, Y.E., **Becker, R.**, Sultan, M., and Ballerstein, E., 2003, Development of the Tushka Lakes in the southwestern desert of Egypt. *Geological Society of America Abstracts with Programs*, vol. 35, no. 6, p. 315.
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- Sultan, M., **Becker, R.**, and Danishwar, S., 2002, Mapping suture zones from space, IGCP 430 2ND annual workshop: Mantle responses to Tethyan closure abstracts with programs, p. 57, April 1-5, 2002, Halong Bay City, Vietnam
- Sultan, M., Stein, T., **Becker, R.**, and Madany, A., 1996, Monitoring thirty years of urban encroachment onto agricultural Lands, the Nile Delta, Egypt, using Landsat data, *Geological Society America Annual Meeting, Abstracts with Programs*, v. 28, p. A95.
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- Arvidson, R.E., **Becker, R.**, Shanabrook, A., Sultan, M., Luo, W., Sturchio, N., 1992, Controls on Late Quaternary Landscape Evolution - Red Sea Coast, Egypt, Spring 1992 AGU Abstracts.
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- Sultan, M., **Becker, R.**, Shore, P., Arvidson, R.E., Dixon, T.H., Stern, R.J., Guinness, E.A., 1991, New Findings on the Tectonic Evolution of the Red Sea and Nature of its Underlying Crust: Inferences from Field and Landsat Thematic Mapper Data - GSA Abstracts with Programs, v. 22, p.A264.
- Sultan, M., **Becker, R.**, Guinness, E.A., Arvidson, R.E., Stern, R.J., 1990, On the continuity of the mobile belts of the Arabian and Nubian Shields and the nature of the crust underlying the Red Sea (RS): Observations from Landsat Thematic Mapper (TM) data, GSA Abstracts with programs, v. 21, p. A264.

Invited Talks:

- 2016 Pittsburgh Geological Society, Oct 2016
- 2014 University of Georgia, Nov 2014
- 2014 University of Akron, Oct 2014
- 2014 Hydrology from Space with Gravity: The Sudd, The Iraqi Marshes and the Aral Sea, Northern Illinois University, Sept 20 2014
- 2014 Hydrology from Space with Gravity: The Iraqi Marshes and the Aral Sea, Michigan State University, Geology Seminar, January 24, 2014
- 2013 Evaluating Aquifer Resources in Desert Regions, Environmental Agency of Abu Dhabi, Workshop Presentation, Jan, 2013
- 2010 Estimating Sediment Loadings with Remote Sensing, Great Lakes Tributary Modeling Sediment Reduction: Correlating BMP Installation with Ecological Improvement in the Great Lakes, Great Lakes Commission Webinar
- 2010 Lake Erie from space: environmental parameters and harmful algal blooms, Lake Erie Center Public Lecture Series, Thursday, February 18, 2010
- 2009 Land Subsidence in the Nile Delta, American Society for Photogrammetry and Remote Sensing, Eastern Great Lakes Regional Meeting, Feb 27, 2009, Toledo OH
- 2007 Mapping Harmful Algal Blooms in the Great Lakes Using Satellite Data, Physics Department Colloquium, Marquette University, Mar 1, 2007, Milwaukee, Wisconsin
- 2005 Remote Sensing of the Lower Great Lakes, Lake Ontario Lower Food Web Assessment (LOLA) program workshop, November 16th – 17th, 2005, Cornell University Biological Field Station

Reports:

- Contributing author to 36 Quicksite Expedited Site Characterization Environmental Site Characterization Work Plans and Reports for site characterization and remediation activities in the U.S. Midwest and West from 1997-2002.

Professional Memberships:

2002 – Present American Geophysical Union
2003 – Present Geological Society of America
2004 – 2010 IEEE - Geophysics and Remote Sensing Society
2007 – Present American Society for Photogrammetry and Remote Sensing
2007 – 2009 American Society of Limnology and Oceanography
2007 – 2008 American Association of Geographers
2012 – Present American Association of Petroleum Geologists (AAPG)

Service:**Departmental:**

2014 – 2015 UT DES Faculty Search Committee
2011 – 2012 UT DES Ad Hoc Core Course Committee
2011 – 2012 UT DES Faculty Search Committee
2010 – UT DES Ad Hoc New Faculty Committee
2009 – UT DES Undergraduate Advisor
2009 – UT DES Computer Committee
2008 – 2009 UT DES Graduate Recruitment Committee
2008 – UT DES Undergraduate Recruitment Committee
2008 – 2009 UT DES Environmental Sciences PhD Committee
2007 – 2008 WMU Geosciences Advisory Council Graduate Student Representative
2004 – 2008 WMU Geosciences Department Computer Committee
2004 – 2008 WMU Geosciences Department Space Utilization Committee
2004 – 2006 WMU Geosciences Department Website

University:

2016 – Steering Committee for the Interprofessional Immersive Simulation Center
2015 – University of Toledo faculty advisor for UT Fencing Club
2012 – University of Toledo faculty sponsor for AAPG Chapter
2010 – University of Toledo campus representative for GSA
2009 – UT Lake Erie Center Internal Science Advisory Board Member
2008, 2009 Sigma Xi Research Presentation Faculty Moderator

Community:

2016 – Village of Ottawa Hills Environmental Task Force
2012 – Boy Scout Merit Badge Councilor (Geology, Env. Sciences, Oceanography, Sustainability)
2011– 2012 Lucas County Hazard Mitigation Planning Committee member
2009 – 2011 Ohio Regional Science Fair Judge
2002 – 2004 Science Olympiad Remote Sensing Examiner Western New York
1993 – 1994 University City Elementary School Science Fair Judge

Professional:

- 2014 - 2018 Session Co-Chair and Organizer, Geologic Society of America Annual National Meeting, Satellite Remote Sensing Applications in Hydrology & Geology
- 2016 – 2017 Technical Session co-Chair, GSA 2017 Joint North Central - Northeastern Regional Meeting 2017
- 2017 Session Chair and Organizer Joint GSA North Central - Northeastern Regional Meeting, Remote Sensing Applications in Geology
- 2015 – WMU Geosciences Advisory Council
- 2015 Session co-Chair, Modeling of Natural Hazards: Advances and Applications Posters, AGU Annual Meeting, San Francisco, CA
- 2015 Session co-Chair, 2015 Session co-Chair, Natural Hazards and Climate Change: Relation, Vulnerability, Risk, and Adaptability, AGU Annual Meeting, San Francisco, CA, AGU Annual Meeting, San Francisco, CA
- 2013 Session Chair and Organizer: North Central Section of Geologic Society of America 2013, 47th annual meeting, Remote Sensing Applications in Environmental Sciences
- 2008 – 2009 IAGLR 2009 Meeting Publication Committee, Design Committee, AV Committee

Journal Reviews for:

Hydrogeology Journal (1), Remote Sensing of the Environment (2), International Journal of Remote Sensing (3), Applied Geography (1), Earth Interactions (2), Marine and Petroleum Geology (3), Journal of Plant Ecology(1), Wetlands Ecology and Management (1), Water Research (1), Journal of Great Lakes Research (4), Aquatic Ecosystem Health and Management (1), Journal of Integrative Plant Biology (1), Geocarto International (1), Remote Sensing Letters (1), Environmental Earth Sciences (4), Land (1), Hydrological Processes (1), Landscape Ecology (1), Journal of the American Water Resources Association (1)

Proposal Reviews for:

Ohio Water Resources Center, NASA ad hoc and panel (20),US DOE (15)