

ELIOT A. ATEKWANA

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ACADEMIC PREPARATION

A. EDUCATION

	Degree	Institution	Year
PhD	Hydrogeology	Western Michigan University	1996
MS	Geology	Howard University	1987
BS	Geology	University of Maryland	1984

Western Michigan University: PhD in Hydrogeology

Dissertation: Hydrogeology and stable isotope investigations of a landfill impacted site in southwest Michigan.

Advisor: Dr. Krishnamurthy, R.V.

Howard University: MS in Geology

Thesis: $^{40}\text{Ar}/^{39}\text{Ar}$ dating of the Liberty Hill pluton and sediments from the Wadesboro Basin, North and South Carolina.

Advisor: Dr. Schwartzman, D.W.

University of Maryland: BS in Geology

Senior Thesis: Leachate retention properties of the saprolite beneath the Oaks Landfill near Laytonsville, Maryland.

Advisor: Dr. Nielsen.

B. CONTINUING EDUCATION/WORKSHOPS

1. Preparing Online Instructors - Spring 2016. The Institute for Teaching and Learning Excellence (ITLE). A six-week hybrid course for instructors at Oklahoma State University which focuses on practical strategies for presenting lessons in an online setting. Topics explored included effective course design, use of technology, management of an online learning environment, copyright and assessment.

2. The Grants 101: Professional grant proposal writing workshop. St Louis MO. September 22–24, 2004.
3. Designing Hydrologic observatories as a community resource: A Consortium for the Advancement of Hydrologic Sciences, Inc. (CUAHSI) national workshop, Logan, UT. August 24-25, 2004.
4. Workshop for Early Career Teachers in the Geosciences. National Association of Geoscience Teachers (NAGT)/National Science Foundation (NSF). Montana State University, Bozeman, MT. June 23-26, 1999.
5. NASA Earth Science Summer School - Process of Global Change. California Institute of Technology, CA. July 29 - August 2, 1996.
6. U.S. Occupational Safety and Health Administration 40 HOUR HAZWOPER Certified. Since 1995.
7. Short course in "Building and Using Wetlands". Kellogg Biological Station, Hickory Corners, MI. March 29-30, 1993.

WORK EXPERIENCE

Dates	Title	Institution
7/2017 to present	Professor	Department of Earth Sciences University of Delaware
7/2012 to 7/2017	Professor	Boone Pickens School of Geology Oklahoma State University
7/2014 to 7/2015	Visiting Professor	Department of Earth and Environmental Sciences Botswana International University of Science and Technology
7/2012 to 7/2013	Professor and Interim Head	Boone Pickens School of Geology Oklahoma State University
9/2006 to 7/2012	Associate Professor	Boone Pickens School of Geology Oklahoma State University
9/2003 to 7/2006	Assistant Professor	Department of Geol. Sci. & Engineering University of Missouri-Rolla (Missouri University of Science and Technology)
1/1999 to 8/2003	Assistant Professor	Department of Geological Sciences Indiana University Purdue University Indianapolis
1/1998 to 6/1998	Assistant Professor	Department of Geology Central Michigan University
7/1997 to 6/1998	Adjunct Assistant Professor	Department of Geosciences Western Michigan University
7/1992 to 12/1996	Doctoral Associate	Department of Geosciences Western Michigan University

AWARDS AND HONORS

- 2014 **Distinguished Alumni of the year**. Department of Geology, University of Maryland College Park.
- 2012 **Fellow of the Geological Society of America**.
- 2009 **Distinguished Alumni of the year**. Department of Geosciences, Western Michigan University.
- Recipient of the **2008 Sterling L. (Bud) Burks Award** for Outstanding Environmental Research.
- **“Best Paper”** - Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP’10) April 11-15, 2010, Keystone Resort & Conference Center, Keystone, Colorado, USA. *Atekwana E.A., Abdel Aal G.Z. and Atekwana E.A., 2010. Investigating the effect of bioclogging on electrical and flow and transport properties of porous media.* - Paper was invited and presented at the European Association of Geoscientists & Engineers-Near Surface Geophysics Joint Annual Meeting, Zurich, Switzerland – September 6-10, 2010.
- Science Direct: **TOP 25 articles within the Journal of Contaminant Hydrology** - October to December 2005. *Atekwana E.A., Atekwana E., Legall, F.D. and Krishnamurthy R.V., 2005, Biodegradation and mineral weathering controls on bulk electrical conductivity in a shallow hydrocarbon contaminated aquifer.* J. Contaminant Hydrology 80, 149-167.
- **Applied Geochemistry-Most requested articles April 2004 - March 2005.** *Marfia A.M., Krishnamurthy R.V., Atekwana E.A. and Panton W.F., 2004. Isotopic and geochemical evolution of ground and surface waters in a karst dominated geological setting: a case study from Belize, Central America.* Applied Geochemistry 19, 937-946.
- **Economic Geology “1 of 24 Interesting papers in other Journals” Volume 99-5 EG.** Study from Belize, Central America—*Marfia A.M., Krishnamurthy R.V., Atekwana E.A. and Panton W.F., 2004. Isotopic and geochemical evolution of ground and surface waters in a karst dominated geological setting: a case study from Belize, Central America.* Applied Geochemistry 19, 937-946.
<http://economicgeology.org/content/99/5/1049.full>.
- Best Paper - Symposium on the Application of Geophysics to Environmental and Engineering Problems, February 22-26 2004, Colorado Springs, CO. *Atekwana, E.A., Atekwana E.A., Legall F.D., Krishnamurthy R.V. and Sauck, W.A. 2004, Relationship between biodegradation and bulk electrical conductivity.* Paper was invited and presented at the European Association of Geoscientists & Engineers-Near Surface Geophysics Joint Annual Meeting – Utrecht, Netherlands – September 6-9 2004.
- **University of Missouri Rolla New Faculty Teaching Scholar** (2004-2005)
- **Governor of Indiana Environmental Award.** Awarded to the IUPUI Center for Earth and Environmental Science (I was a research faculty at the Center).
- **Outstanding Student Papers.** *Atekwana, E.A. and Krishnamurthy, R.V., 1997. Seasonal variations in the concentrations and stable carbon isotope ratios of dissolved inorganic carbon in a stream-tributary system in SW Michigan.* EOS, Transactions, American Geophysical Union, Fall Meeting Supplement 78, (46), p. F226. (<http://www.agu.org/meetings/fm97osph.html>).

- **Doctoral Associate**, Western Michigan University (1992-1996).
- National Association of Black Geologists and Geophysicists Scholarship (1986, 1995).
- **Teaching Assistant Mentor**, Western Michigan University (1995, 1996).
- Sigma Gamma Epsilon.

PUBLICATIONS AND OTHER SCHOLARLY CONTRIBUTIONS

A. PEER REVIEWED JOURNAL ARTICLES AND BOOK CHAPTERS

*denotes student author

1. *Missi, C. and **Atekwana, E.A.**, 2019. Physical, chemical and isotopic characteristics of groundwater and surface water in the Lake Chilwa Basin, Malawi. *Journal of African Earth Sciences*, p.103737. <https://doi.org/10.1016/j.jafrearsci.2019.103737>.
2. *Njinju, E.A., Atekwana, E.A., Stamps, D.A., Abdelsalam, M.G., **Atekwana, E.A.**, Mickus, K.L., Fishwick, S., Rajaonarison, T.A., Kolawole, F., Nyalugwe, V.N., 2019. Lithospheric Structure of the Malawi Rift: Implications for Magma-Poor Rifting Processes. *Tectonics*, 38, 3835-3853, <https://doi.org/10.1029/2019TC005549>.
3. *Njinju, E.A., Kolawole, F., Atekwana, E.A., Stamps, D.S., **Atekwana, E.A.**, Abdelsalam, M.G. and Mickus, K.L., 2019. Terrestrial heat flow in the Malawi Rifted Zone, East Africa: Implications for tectono-thermal inheritance in continental rift basins. *Journal of Volcanology and Geothermal Research*. doi.org/10.1016/j.jvolgeores.2019.07.023.
4. Achang, M., Pashin, J.C., **Atekwana, E.A.**, 2019. The influence of moisture on the permeability of crushed shale samples. *Petroleum Science*, 16, 492–501 (2019) [doi:10.1007/s12182-019-0324-8](https://doi.org/10.1007/s12182-019-0324-8).
5. *Akondi, R.N., **Atekwana, E.A.** Molwalefhe, L., 2019. Origin and chemical and isotopic evolution of dissolved inorganic carbon (DIC) in groundwater of the Okavango Delta, Botswana. *Hydrological Sciences Journal*, 64:1, 105-120, DOI: 10.1080/02626667.2018.1560447.
6. **Atekwana, E.A.**, *Geyer, C.J., 2018. Spatial and temporal variations in the geochemistry of shallow groundwater contaminated with nitrate at a residential site. *Environmental Science and Pollution Research*, 25(27), 27155-27172.
7. Abongwa, P.T., **Atekwana, E.A.**, 2018. A laboratory study investigating the effects of dilution by precipitation on dissolved inorganic carbon and stable isotope evolution in surface waters. *Environmental Science and Pollution Research*, 25, 19941. <https://doi.org/10.1007/s11356-018-2085-0>
8. Kgabi, N.A., **Atekwana, E.**, Ithindi, J., Uugwanga, M., Knoeller, K., Motsei, L., Mathuthu, M., Kalumbu, G., Amwele, H.R., Uusizi, R., 2018. Isotopic composition and elemental concentrations in groundwater in the Kuiseb Basin and the Cuvelai-Etosha Basin, Namibia. *Proceedings of the International Association of Hydrological Sciences*, 378, 93-98.
9. **Atekwana, E.A.**, Molwalefhe, L., *Kgaodi, O., Cruse, A.M., 2016. Effect of evapotranspiration on dissolved inorganic carbon and stable carbon isotopic evolution in rivers in semi-arid climates: The Okavango Delta in North West Botswana. *Journal of Hydrology: Regional Studies* 7, 1-13.
10. Ali, H.N., **Atekwana, E.A.**, 2016. Dissolved inorganic carbon evolution in neutral

- discharge from mine tailings piles. *Hydrological Processes*. DOI: 10.1002/hyp.10774
11. Abongwa, P.T., **Atekwana, E.A.**, Puckette, J., 2016. Dissolved inorganic carbon and stable carbon isotopic evolution of neutral mine drainage interacting with atmospheric CO_{2(g)}. *Science of The Total Environment* 545, 57-66.
 12. **Atekwana, E.A.**, *Seeger, E.J., 2015. Carbonate and carbon isotopic evolution of groundwater contaminated by produced water brine with hydrocarbons. *Applied Geochemistry* 63, 105-115.
 13. *Meier, S.D., **Atekwana, E.A.**, Molwalefhe, L., Atekwana, E.A., 2015. Processes that control water chemistry and stable isotopic composition during the refilling of Lake Ngami in semiarid northwest Botswana. *Journal of Hydrology* 527, 420-432.
 14. *Abongwa, P.T., **Atekwana, E.A.**, 2015. Controls on the chemical and isotopic composition of carbonate springs during evolution to saturation with respect to calcite. *Chemical Geology* 404, 136-149.
 15. *Leseane K., Atekwana E.A., Mickus, K.L., Abdelsalam M.G., Shemang E.M., **Atekwana E.A.**, 2015. Thermal perturbations beneath the incipient Okavango Rift Zone, northwest Botswana. *Journal of Geophysical Research: Solid Earth* 120, 1210-1228.
 16. *Heenan, J., Slater L., Ntarlagiannis D., Atekwana E.A., Fathepure B., Dalvi S., Ross C., Werkema D., **Atekwana, E.**, 2014. Electrical resistivity imaging for long-term autonomous monitoring of hydrocarbon degradation: lessons from the Deepwater Horizon oil spill, *Geophysics* 80, B1-B11.
 17. Jaiswal, P., Al-Hadrami F., Atekwana E.A., **Atekwana E.A.**, 2014. Mechanistic models of biofilm growth in porous media. *Journal of Geophysical Research: Biogeosciences* 119, 1418-1431. doi:10.1002/2013JG002440.
 18. *Abongwa P.T., **Atekwana, E.A.**, 2013. Assessing the temporal evolution of dissolved inorganic carbon in waters exposed to atmospheric CO_{2(g)}: a laboratory approach. *Journal of Hydrology* 505, 250-265.
 19. *Akoko, E., **Atekwana, E.A.**, Cruse, A.M., Molwalefhe, L. Masamba, W.R.L., 2013. River-wetland interaction and carbon cycling in a semi-arid riverine system: The Okavango Delta, Botswana. *Biogeochemistry* 114, 359-380. DOI:10.1007/s10533-012-9817-x.
 20. *Mosley-Bufford K., Atekwana, E.A., Abdelsalam, M.G., Shemang, E. **Atekwana, E.A.**, Mickus, K., Moidaki, M., Modisi M.P., Molwalefhe L., 2012. Geometry and faults tectonic activity of the Okavango Rift Zone, Botswana: evidence from magnetotelluric and electrical resistivity tomography imaging. *Journal of African Earth Science* DOI:10.1016/j.jafrearsci.2012. Top most downloaded/read articles <http://www.journals.elsevier.com/journal-of-africaneearth-sciences/most-read-articles/>.
 21. *Simkins, L.M., Simms, A.R., Cruse, A.M., *Troiana, T., **Atekwana, E.A.**, Puckette, J., Yokoyama, Y., 2012. Correlation of early and mid-Holocene events using magnetic susceptibility in estuarine cores from bays along the northwestern Gulf of Mexico. *Palaeogeography, Palaeoclimatology, Palaeoecology* 346-347, 95-107.
 22. *Ali, H.N., **Atekwana, E.A.**, 2011. The effect of sulfuric acid neutralization on carbonate and stable carbon isotope evolution of shallow groundwater. *Chemical Geology* 284, 217-228, doi:10.1016/j.chemgeo.2011.02.023.
 23. **Atekwana, E.A.**, Meints, F., Krishnamurthy, R.V., 2010. A versatile glass tube cracker for transfer of gases from sealed glass tubes for stable isotope ratio and chemical analyses. *Rapid Communications in Mass Spectrometry* 24, 3219-3220.
 24. Abdel Aal, G.Z., Atekwana, E.A., **Atekwana, E.A.**, 2010. Effect of bioclogging in porous

- media on complex conductivity signatures. *Journal of Geophysical Research* 115, G00G07, doi:10.1029/2009JG001159.
25. *Persellin, C.J., Gregg, J.M., Shelton, K.L., Somerville, I.D., **Atekwana, E.A.**, 2010. Base metal sulfide mineralization in Lower Carboniferous strata. Northwest Ireland. *Exploration and Mining Geology* 19, 35-54.
 26. Atekwana, E.A., **Atekwana, E.A.**, 2010. Biogeophysical signatures of hydrocarbon contaminated sites. *Surveys in Geophysics*, doi:10.1007/s10712-009-9089-8.
 27. **Atekwana, E.A.**, *Fonyuy, E.W., 2009. Dissolved inorganic carbon concentrations and stable carbon isotopes ratios in streams polluted by variable amounts of acid mine drainage. *Journal of Hydrology* 372, 136-148, doi:10.1016/j.jhydrol.2009.04.010.
 28. *Che-Alota V., Atekwana, E.A, **Atekwana, E.A.**, Sauck, W.A., Werkema, D.D., 2009. Temporal geophysical signatures due to contaminant mass remediation. *Geophysics* 74, P.B113–B123, 10.1190/1.3139769.
 29. *Ali, H.N., **Atekwana, E.A.**, 2009. Effect of progressive acidification on stable carbon isotope of dissolved inorganic carbon in surface waters. *Chemical Geology* 260, 102-111, doi:10.1016/j.chemgeo.2008.12.008.
 30. *Fonyuy, E.W., **Atekwana, E.A.**, 2008. Dissolved inorganic carbon evolution and stable carbon isotope fractionation in acid mine drainage impacted streams: insights from a laboratory study. *Applied Geochemistry* 23, 2634-2648, doi: 10.1016/j.apgeochem.2008.05.012.
 31. Hart, M. Whitworth, T.M., Atekwana, E., 2008. Hyperfiltration of sodium chloride through kaolinite membranes under relatively low-heads - implications for groundwater assessment. *Applied Geochemistry* 23, 1691-1702, doi:10.1016/j.apgeochem.2008.02.
 32. *Fonyuy, E.W., **Atekwana, E.A.**, 2008. Effects of acid mine drainage on dissolved inorganic carbon and stable carbon isotopes in receiving streams. *Applied Geochemistry* 23, 743-764.
 33. *Allen, J.P., Atekwana, E.A., **Atekwana, E.A.**, Duris, J.W., Werkema, D.D., Rossbach, S., 2007. Changes in microbial community structure of petroleum contaminated sediments are reflected in geophysical signatures. *Applied and Environmental Microbiology* 73, 2860-2870.
 34. Atekwana, E.A., Werkema, D.D., **Atekwana, E.A.**, 2006. Biogeophysics: The effects of microbial processes on geophysical properties of the shallow subsurface. In *Applied Hydrogeophysics*, H. Vereecken et al. (eds.), NATO Science Series IV, Earth and Environmental Sciences 71, 161–193.
 35. *Davis, C.A., Atekwana, E. **Atekwana, E.A.**, Slater, L.D., Rossbach S., Mormile, M.R., 2006. Microbial growth and biofilm formation in geologic media is detected with complex conductivity measurements. *Geophysical Research Letters* 33, doi:10.1029/2006GL027312.
 36. **Atekwana, E.A.**, Atekwana, E., Legall, F.D., Krishnamurthy, R.V., 2005. Biodegradation and mineral weathering controls on bulk electrical conductivity in a shallow hydrocarbon contaminated aquifer. *Journal of Contaminant Hydrology* 80, 149-167.
 37. **Atekwana, E.A.**, Atekwana, E.A., Legall, F.D., Krishnamurthy, R.V., 2004. Field evidence for geophysical detection of microbial activity. *Geophysical Research Letters* 31, doi:10.1029/2004GL21576.
 38. Atekwana, E.A., **Atekwana, E.A.**, Werkema, D.D., Allen, J.P., Smart, L.A., Duris, J.W., Cassidy, D.P., Sauck, W.A., Rossbach, S., 2004. Evidence for microbial enhanced electrical conductivity in hydrocarbon-contaminated sediments. *Geophysical Research Letters* 31,

- L23501, doi:10.1029/2004GL021359.
39. **Atekwana, E.A.**, Krishnamurthy, R.V., 2004. Extraction of dissolved inorganic carbon (DIC) in natural waters. Chapter 10. In *Handbook of Stable Isotope Analytical Techniques* (ed. P.A. de Groot), Elsevier.
 40. **Atekwana, E.A.**, Atekwana, E.A., Rowe, R.S., Werkema, D.D. Legall, F.D., 2004. The relationship of total dissolved solids measurements to bulk electrical conductivity in an aquifer contaminated with hydrocarbon. *Journal of Applied Geophysics* 56, 281-294.
 41. *Abdel Aal, G.Z., Atekwana, E.A., Slater, L.D., **Atekwana E.A.**, 2004. Effects of microbial processes on electrolytic and interfacial electrical properties of unconsolidated sediments. *Geophysical Research Letters* 31 L12505 10.1029/2004GL020030.
 42. **Atekwana, E.A.**, Richardson, D.S., 2004. Geochemical and isotopic evidence of a groundwater source in the Corral Canyon meadow complex, central Nevada, USA. *Hydrological Processes* 18, 2801-2815, doi:10.1002/hpy.1495.
 43. **Atekwana, E.A.**, Krishnamurthy, R.V., 2004. Investigating landfill-impacted groundwater seepage into headwater streams using stable carbon isotopes. *Hydrological Processes* 18, 1915-1926. doi:10.1002/hpy.1457.
 44. Marfia, A.M., Krishnamurthy, R.V., **Atekwana, E.A.**, Panton, W.F., 2004. Isotopic and geochemical evolution of ground and surface waters in a karst dominated geological setting: a case study from Belize, Central America. *Applied Geochemistry* 19, 937-946, doi: 10.1016/j.apgeochem.2003.10.013.
 45. Atekwana, E.A., Werkema, D.D, Duris, J.W., Rossbach, S., **Atekwana, E.A.**, Sauck, W.A., Cassidy, D.P., Means, J., Legall F.D., 2004. In-situ apparent conductivity measurements and microbial population distribution at a hydrocarbon-contaminated site. *Geophysics* 69, 56-63.
 46. **Atekwana, E.A.**, Tedesco, L.P., Jackson, L.R., 2003. Dissolved inorganic carbon (DIC) and hydrologic mixing in a sub-tropical riverine estuary, Southwest Florida, USA. *Estuaries* 26, 1391- 1400.
 47. Krishnamurthy, R.V., Schmitt, D.M., **Atekwana, E.A.**, Baskaran, M., 2003. Isotopic investigations of carbonate growth on concrete structures. *Applied Geochemistry* 18, 435-444.
 48. Cassidy, D.P, Hudak, A.J., Werkema, D.D., Atekwana, E.A., Rossbach, S., Duris, J.W., **Atekwana, E.**, Sauck, W.A., 2002. *In-situ* Rhamnolipid production at an abandoned petroleum refinery by *Pseudomonas Aeruginosa*. *Soil and Sediment Contamination* 11, 769-787.
 49. Bogatsu, Y.G., **Atekwana, E.A.**, Ekosse, G.E., Atekwana, E.A., Totolo, O., 2001. Landfill-groundwater-stream interaction and pollution. *Botswana Notes and Records* 32, 159-164.
 50. Fang, J., Barcelona, M.J., Krishnamurthy, R.V., **Atekwana, E.A.**, 2000. Stable carbon biogeochemistry of a shallow sand aquifer contaminated with fuel hydrocarbons. *Applied Geochemistry* 15, 157-169.
 51. **Atekwana, E.A.**, Krishnamurthy, R.V., 1998. Seasonal variations of dissolved inorganic carbon and $\delta^{13}\text{C}$ of surface waters: application of a modified gas evolution technique. *Journal of Hydrology* 205, 265-278.
 52. Krishnamurthy, R.V., **Atekwana, E.A.**, Hillol G., 1997. A simple, inexpensive carbonate-phosphoric acid reaction method for the analysis of carbon and oxygen isotopes of carbonates. *Analytical Chemistry* 69, 4256-4258.
 53. *Nascimento C., **Atekwana, E.A.**, Krishnamurthy, R.V., 1997. Concentrations and isotope

ratios of dissolved inorganic carbon in denitrifying environments. *Geophysical Research Letters* 24, 1511- 1514.

54. **Atekwana, E.A.**, Agendia, P.L., Atekwana, E.A., Fonkou, T.H., 1995. Wetland vegetation colonization and expansion in small impoundments in Yaounde, Cameroon, West Africa. *Wetlands* 15, 354-364.
55. Schwartzman, D.W., Stieff, L., Kasim, M., Kombe, E., **Atekwana, E.**, Johnson, J., Schwartzman, K., 1991. An ion-exchange model of Pb-210 and lead uptake in a foliose lichen - application to quantitative monitoring of airborne lead fallout. *Science of The Total Environment* 100, 319-336.

B. SCIENTIFIC PROCEEDINGS AND FIELD TRIP GUIDES

- 1) **Atekwana, E.A.**, Atekwana, E.A, Legall, F.D., Krishnamurthy, R.V., Sauck, W.A., 2004. Relationship between biodegradation and bulk electrical conductivity. Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP'04) March 26-28 Colorado Springs, CO, 354-362.
- 2) *Abdel Aal, G.Z., Atekwana, E.A., Slater L.D., **Atekwana, E.A.**, 2004. Effect of different phases of diesel biodegradation on low frequency electrical properties of unconsolidated sediments: Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP'04), Colorado Springs, CO, 386-395.
- 3) *Werkema, D.D., Atekwana, E.A., **Atekwana, E.A.**, Rossbach, S., Sauck, W.A., 2004. Laboratory and field results linking high conductivities to the microbial degradation of petroleum hydrocarbons. Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP'04), March 26-28 Colorado Springs, CO, 363-373.
- 4) *Sherrod, L.A., Werkema, D.D., Sauck, W.A., Atekwana, E.A., Rossbach, S., **Atekwana E.A.**, 2003. Column experiments and anomalous conductivity in hydrocarbon-impacted sands. Eighth International Congress of the Brazilian Geophysical Society p. 1-6.
- 5) **Atekwana, E.A.**, Atekwana, E.A., *Rowe, R.S., 2003. Relationship between total dissolved solids and bulk conductivity at a hydrocarbon-contaminated aquifer. Symposium on the Application of Geophysics to Environmental and Engineering Problems SAGEEP'03, San Antonio TX, Paper CON06.
- 6) *Burton, M.E., **Atekwana, E.A.**, Atekwana, E.A., 2003. Mineral grain surface observations at a hydrocarbon-contaminated aquifer: implications for the geoelectrical properties of soils. SAGEEP'03, San Antonio TX, Paper CON09.
- 7) **Atekwana, E.A.**, Tedesco, L.P., 2001. A Potential method for monitoring hydrologic restoration effectiveness in estuaries in SW Florida using dissolved inorganic carbon to identify water sources and to quantify hydrologic mixing. *Estuarine Research Federation* 2001. Florida Field Trip Guide, p 13-15.

C. NON REFEREED CONTRIBUTIONS (TECHNICAL REPORTS)

- 1) **Atekwana, E.A.**, 2008. The Gillette Company: Concentrations of dissolved inorganic carbon and stable carbon and stable oxygen isotopes in groundwater at Gillette properties in Rio de Janeiro and San Paulo, Brazil. 38p.
- 2) Tedesco, L.P., **Atekwana, E.A.**, Filippelli, G., Licht, K., Shrake, L.K., Hall, B.E., Pascual,

- D.L., *Latimer, J., *Raftis, R., Sapp, D., Lindsey, G., Maness, R., Pershing, D., Peterson, D., Ozekin, K., Mysore, C., Prevost, M., 2003. Water quality and nutrient cycling in three Indiana watersheds and their reservoirs: Eagle Creek/Eagle Creek Reservoir, Fall Creek/Geist Reservoir and Cicero Creek/Morse Reservoir. Central Indiana Water Resources Partnership, CEES Publication 2003- 01, IUPUI, Indianapolis, IN, 163 p.
- 3) **Atekwana, E.A.**, 2001. Stable isotopic analyses of ground and surface water from the KS Bearing facility, Greensburg, Indiana. CEES Publication 01-01, 12 p.
 - 4) Tedesco, L.P., **Atekwana, E.A.**, Barr, R.C., Hall, B.E., 2001. Field trip to the White River riparian restoration site and the Lilly ARBOR project: 9th National Non-Point Source Monitoring Workshop: CEES Publication 01-02, 16 p.
 - 5) Barr, R.C., **Atekwana, E.A.**, Tedesco, L.P., Hall, B.E., Barr, H., Hernly, F.V., 2001. An environmental assessment of the Ritchey Woods Natural area: CEES Publication 01-03, 147p.
 - 6) Miller, J.R., Jewett, D.G., **Atekwana, E.A.**, 2000. Instream flow requirements for supporting riparian ecosystems in unpland watersheds of central Nevada: An integrated study. A Report to the Stream Systems Technology Center. Contract no. 28-CCS7-028.

D. ABSTRACTS AND PRESENTATIONS (PROFESSIONAL MEETINGS)

National and International (*denotes student authors)

1. Fregoso-Sanchez, D.C., Compton, K., Ngameni G.C.Y., Njilah C., Ramatlapeng, G., Kahnyuy E., Bikuu, V.A., Counts, N.T., Njilah, I.K., **Atekwana, E.** and Ali, H. 2019. Investigating the influence of tidal fluctuations on shallow groundwater conditions in a coastal neighborhood in the Wouri Estuary, Cameroon Geological Society of America Abstracts with Programs. Vol. 51, No. 5, doi: 10.1130/abs/2019AM-337692.
2. Ramatlapeng, G., Counts, N.T., Bikuu, V.A., Kahnyuy E., Fregoso-Sanchez, D.C., Compton, K., Ngameni G.C.Y., Njilah C., Ali, H., Njilah, I.K. and **Atekwana, E.**, 2019. Investigating the effects of estuarine water on groundwater quality in a populated neighborhood in the Wouri Estuary, Cameroon. Geological Society of America Abstracts with Programs. Vol. 51, No. 5 doi: 10.1130/abs/2019AM-339660
3. Oromeng K, **Atekwana, E.**, Ramatlapeng, G. and Molwalefhe, L.N., 2019. Solute transport in a semi-arid endorheic basin, Okavango Delta, Botswana: a time series investigation. Geological Society of America Abstracts with Programs. Vol. 51, No. 5 doi: 10.1130/abs/2019AM-339382
4. **Atekwana, E.A.**, Molwalefhe, L., 2018. Temporal variations in the stable isotopes of hydrogen and oxygen in the outlet of the Okavango Delta in semiarid Botswana. Abstract H13G-1808. In AGU Fall Meeting Abstracts.
5. Molwalefhe, L., Atekwana, **E.A.**, 2018. Spatial and temporal variations in the stable isotopes of hydrogen and oxygen in the Okavango River in semiarid Botswana. Abstract B51L-2112. In AGU Fall Meeting Abstracts.
6. Whaley, C.A., Ali, H. and **Atekwana, E.**, 2018. Geochemical and isotopic investigations of the effect of mine drainage on a small stream (west little sugar creek) in the green valley mine area, Indiana USA. Geological Society of America Abstracts with Programs. Vol. 50, No. 1 doi: 10.1130/abs/2018SC-310018.
7. Atekwana, E.A., Ali, H., Ndondo, N., 2017. Investigating anthropogenic perturbations on carbon cycling in an urbanized tropical west African estuary. Paper GC11B-0738 presented

- at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.
8. Abongwa, P., Atekwana, E., James Puckette, J., 2017. Kinetic and isotopic equilibration of a neutral mine discharge with atmospheric CO_{2(g)}: case study of a gold mine discharge at the cripple creek mining district, Colorado, USA. Final Paper Number 69-23. Geological Society of America Abstracts with Programs. Vol. 49, No. 6 doi: 10.1130/abs/2017AM-302576.
 9. **Atekwana, E.**, *Heibel, K., *Laviolette, C., *Lukoczki, G., *Missi, C., *Prock, A., 2016, Research in introductory stable isotopes: Determining the source of carbon dioxide and organic carbon in select carbonated beverages using stable carbon isotopes. Geological Society of America Abstracts with Programs. Vol. 48, No. 7, doi: 10.1130/abs/2016AM-287493.
 10. **Atekwana E.A.**, E.A. Atekwana, A. Enright, D. Ntarlagiannis, L. D Slater, R. Bernier, C. L. Beaver, S. Rossbach, 2016. High magnetic susceptibility in a highly saline sulfate-rich aquifer undergoing biodegradation of hydrocarbon results from sulfate reduction, AGU Fall Meeting, San Francisco, CA, December 12-16, 2016, H53G-1782.
 11. Wanless, D., M. D. Kurz, J. Elsenbeck, J. Curtice, A.M. Shaw, **E. A. Atekwana**, E.A. Atekwana, 2016. Helium isotopes in hot spring gases as magmatic tracers during incipient rifting in Malawi and Zambia, AGU Fall Meeting, San Francisco, CA, December 12-16, 2016, T44C-05.
 12. **Atekwana, E.A.**, A. Enright, **E.A. Atekwana**, C.L. Beaver, S. Rossbach, L.D. Slater, D. Ntarlagiannis, 2016. Magnetic susceptibility as a proxy for the hydrobiogeochemical cycling of iron within the water table fluctuation zone at hydrocarbon contaminated sites, AGU Fall Meeting, San Francisco, CA, December 12-16, 2016, NS24A-04.
 13. *Njinju, E.A., Atekwana, E.A., Abdelsalam, M., Mickus, K.L., **Atekwana, E.A.**, Lao Davila, D., 2015. Possible crustal and sub-continental lithospheric mantle decoupling beneath the Malawi Rift. Geological Society of America Abstracts with Programs. Vol. 47, No. 7, p.617.
 14. **Atekwana, E.A.**, Atekwana E.A., Abdelsalam, M., *Niles, M.C., 2015. The geochemistry of hot springs of the Luangwa Rift Valley, Zambia show no evidence of mantle processes. Geological Society of America Abstracts with Programs. Vol. 47, No. 7, p.617.
 15. *Wisler, S.M., **Atekwana, E.**, 2014. Investigating sedimentation from mega paleolake deception near Gumare, NW Botswana using sedimentary, chemical and isotopic proxies. Geological Society of America Abstracts with Programs. Vol. 47, No. 1, p.52.
 16. Christiano, A.W., Atekwana E.A., Cruz A., Ali, H., 2015. A geochemical characterization of well cuttings from an oil producing well in the Central Kansas Uplift using metal analysis and magnetic susceptibilities. American Association of Petroleum Geologists, Mid-Continent Section Meeting, October 2015
 17. *Roethe, J.L., **Atekwana, E.**, Abongwa, P., 2014. A comparative assessment of the water quality of Claremore Lake, Oklahoma: population growth and its effect on water quality. Geological Society of America Abstracts with Programs. Vol. 47, No. 1, p.51.
 18. Abongwa, P.T., Geyer, C., Puckette, J.O., **Atekwana, E.A.**, 2014. Geochemical and isotopic investigation of carbon evolution in mine discharge waters: implications for CO₂ sequestration. Geological Society of America Abstracts with Programs. Vol. 47, No. 1, p.12.
 19. *Beckwith, B., Quan, T.M., **Atekwana, E.**, 2014. The nitrogen cycle within a high latitude ocean basin (Weddell Sea) before, during and after the cretaceous/paleogene extinction event. Geological Society of America Abstracts with Programs. Vol. 47, No. 1, p.11

20. Stone, J., Latimer, J.C., **Atekwana, E.A.**, 2013. Late Pleistocene lake-level history of paleolake Mababe. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.423.
21. Ali H., Reed S., Atekwana E., **Atekwana E.**, 2013. Magnetic susceptibility is associated with oil-bearing intervals in an oil field, north-central Kansas, SEG Technical Program Expanded Abstracts, pp 581-586 <http://dx.doi.org/10.1190/segam2013-0739.1>.
22. *Akondi, R., **Atekwana, E.A.**, 2013. Carbon cycling and groundwater evolution in the Okavango Delta, Botswana. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.218.
23. *Niles, M.C., Obenberger, K., **Atekwana, E.**, Atekwana, E., 2013. Chemical and isotopic variations in hot and cold springs and streams along the Luangwa Rift, Zambia. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.767.
24. Ali, H., **Atekwana, E.**, 2013. Experimental simulation of temporal variations in dissolved inorganic carbon (DIC) and $\delta^{13}\text{C}_{\text{DIC}}$ evolution of discharge from neutralized mine drainage. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.576.
25. *Meier, S.D., Atekwana, E., Molwalefhe, L., 2013. Investigating processes that control the chemistry during refilling of Lake Ngami in semiarid northwest Botswana. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.29.
26. *Abongwa, P., **Atekwana E.**, 2013. Investigating the effects of precipitation on carbon evolution in surface water that interact with atmospheric $\text{CO}_{2(\text{g})}$: significance of stable carbon isotope ratios. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.786.
27. *Abongwa, P.T., **Atekwana, E.A.**, 2012. Investigating potential loss of carbon dioxide from karst springs: constraints from dissolved inorganic carbon (DIC) and stable carbon isotope ratios of DIC ($\delta^{13}\text{C}_{\text{DIC}}$). Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p.153.
28. *Paizis N., Geyer, C. **Atekwana, E.**, 2012. Investigation of diel variations of water quality and stable carbon isotopes across the Okavango Delta, northwest Botswana. Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p.394.
29. *Geyer, C. Paizis, N., **Atekwana, E.** 2012. Temporal investigation of the sources and fate of nitrate contamination at a residential site. Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p.393.
30. *Leseane, K., Atekwana, E., Mickus, K., Shemang, E. *Obenberger, K., *Matende, K., *Motseokae, G., **Atekwana E.**, 2012. Geophysical studies of continental rift initiation: an example from the Okavango Rift Zone, NW Botswana. Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p.426.
31. *Rutelonis, J.W., * Meier, S.D., *Kauhanda, K., *Mokganedi, E.Z., *Gares, S., **Atekwana, E.**, Molwalefhe, L.N., 2012. International student research experience: the effects of evapotranspiration on river water chemistry in the Okavango Delta, northwest Botswana. Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p.394.
32. *Meier, S.D., *Rutelonis, J.W., **Atekwana, E.A.**, Molwalefhe, L.N., Mokganedi, E.Z., Kauhanda, K. Gares, S., 2012. International research experience: investigating the spatial variation in water chemistry of the newly formed Lake Ngami, northwest Botswana. Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p.136.
33. *Heenan, J.W., Slater, D.L., Ntarlagiannis, D., Atekwana, E.A., *Ross, C., *Nolan, J.T., Atekwana, E.A., Werkema D.D., Fathepure, B., 2012. Long-term autonomous resistivity monitoring of oil-contaminated sediments from the Deepwater Horizon spill. Abstract

- B21A- 0340 presented at 2012 Fall Meeting, AGU, San Francisco, CA 3-7 Dec.
34. **Atekwana, E.A.**, Atekwana, E.A., Slater, D.L., Ntarlagiannis, D., 2011. Enhanced trapping of CO₂ under saline conditions in Barrier Islands. Abstract GC43E-04 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
 35. Broun I., Atekwana E.A., Abdel Aal G.Z., Atekwana E.A., Sarkisova S., Patrauchan M., 2012. Understanding Alginate Gel Development for Bioclogging and Biogeophysical Experiments. Abstract B23B-0451 presented at 2012 Fall Meeting, AGU, San Francisco, CA. 3-7 Dec.
 36. *Heenan, J.W., Ntarlagiannis, D., Slater, D.L., Atekwana, E.A., *Ross, C., *Nolan, J.T., **Atekwana, E.A.**, 2011. Long term geoelectrical monitoring of Deep-Water Horizon oil spill in the Gulf Coast. Abstract B31C-0339 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
 37. *Paizis, N., *Lepera, A., *Stargel, D. *Guderian, E., *Mphinyane, T., *Kgaodi, O., *Jeshango, T., *Batlhomamisi, B.D., **Atekwana, E.**, and Molwalefhe, L.N., 2011. Geologists vs. the wild: A true story of conducting undergraduate and graduate research in the Okavango Delta, Botswana. Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 619.
 38. *Abongwa, P.T., **Atekwana, E.A.**, 2011. Assessing temporal loss of CO₂ from natural waters using dissolved inorganic carbon concentrations and stable carbon isotopes. Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 530.
 39. *Buren, D.D., Latimer, J.C., *Mcbride, W.J., **Atekwana, E.A.**, Atekwana, E.A., 2011. Metals as indicators of detrital provenance in paleo-lake Mababe, Botswana. Geological Society of America Abstracts with Programs, Vol. 43, No. 1, p. 60.
 40. *Kgaodi, O., *Koontse, T., Molwalefhe, L., **Atekwana, E.**, Cruse, A.M., Masamba, W., Ringrose, S., 2010. The effects of evaporation on the chemistry of the Okavango River, northwestern Botswana. Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 292.
 41. *Paizis, N., *Geyer, C., *Kgaodi, O., *Koontse, T., *Akoko, E., Cruse, A.M., **Atekwana, E.A.**, Molwalefhe, L., Masamba, W., Ringrose, S., 2010. Of cows, hippos and carbon: Conducting international research with U.S. and Botswanan undergraduate and graduate students in the Okavango Delta. Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 438.
 42. *Geyer, C., *Paizis, N., *Kgaodi, O., *Koontse, T., *Akoko, E., **Atekwana, E.A.**, Cruse, A.M., Molwalefhe, L., Masamba, W., Ringrose, S., 2010. The effects of evaporation on the chemistry of the Okavango River, northwestern Botswana. Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 292.
 43. Cruse, A.M., **Atekwana, E.A.**, Molwalefhe, L., 2010. Preliminary geochemical analyses of sediments from the Okavango Delta, northwestern Botswana to further constrain the paleolimnological history of the Paleolake Mababe system. Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 405.
 44. Atekwana, E.A., **Atekwana, E.A.**, 2009. Incipient rifting in the Okavango, MARGINS Workshop- Rupturing continental lithosphere: Synthesis and new perspectives. Charleston, South Carolina, April 30 - May 2, 2009.
 45. Atekwana, E.A., Corter, D., Abdel Aal, G.Z., **Atekwana, E.A.**, Elias, D., 2009. Understanding geophysical signatures of bacterial nanowires. 4th Annual DOE-ERSP PI Meeting, Landsdowne, VA, April 20-23, 2009.

46. Atekwana, E.A., *Che-Alota, V., **Atekwana, E.A.**, Werkema, D.D., 2009. Temporal biogeophysical signatures at hydrocarbon contaminated sites associated with long-term remediation efforts. *Eos Trans. AGU*, 90(22), Jt. Assem. Suppl., Abstract H12A-01. **INVITED**
47. Abdel Aal, G.Z., Atekwana, E.A., **Atekwana, E.A.**, 2009. Investigating changes in flow and transport properties due to bio-clogging of porous media from complex conductivity measurements. *Eos Trans. AGU*, 90(22), Jt. Assem. Suppl., Abstract H13A-01.
48. *Seeger, E., Atekwana E.A., **Atekwana, E.A.**, Hogan, J., *Waltman, P.B., *Jordan, R., *Arneson, K., 2009. Geochemical study of river waters and springs in Zambia: Providing international research experience for students. *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 441.
49. Cruse, A.M., **Atekwana E.A.**, *Gamrod, J., Atekwana E.A., Ringrose, S., *Teter, K., Huntsman- Mapila, P., 2009. Environmental change driven by tectonic processes and climate shifts as recorded in the sedimentary record of Paleolake Mababe, Northern Botswana. *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 362.
50. **Atekwana E.A.**, Cruse, A.M, *Teter, K., Latimer, J., Atekwana E.A., Ringrose, S., Huntsman- Mapila, P., *Gamrod, J., *McBride, W., 2009. Changes in biological productivity in response to tectonic and climate processes recorded in the sediments of Paleolake Mababe, Northwestern Botswana. *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 362.
51. *Winchester, C., Mosley, K., Atekwana E.A., Shemang, E., Moidaki, M., Modisi, M.P., Mickus, K., **Atekwana E.A.**, 2009. Geophysical characterization of the Okavango Rift Zone (ORZ), NW Botswana: Providing international research experience for students. *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 444
52. *Miller, L., Simms, A.R., Cruse, A., **Atekwana, E.A.**, Yokoyama, Y., Rodriguez, A., 2009. Was the 8.2 Ka climatic event 3 events? *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 273.
53. **Atekwana E.A.**, Atekwana E.A., 2009. Geophysical signatures of microbial activity: A decade of research in the field of Biogeophysics. NABGG, 2009 Annual Technology Conference "Sustaining the Geosciences", September 9-12, 2009. University of Arkansas – Fayetteville, AR. Program with abstract.
54. Atekwana, E.A., *Che-Alota, V., **Atekwana, E.A.**, Werkema, D.D., 2009. Temporal biogeophysical signatures at hydrocarbon contaminated sites associated with long-term remediation efforts. *Eos Trans. AGU*, 90(22), Jt. Assem. Suppl., Abstract H12A-01., Toronto, Canada. **INVITED**
55. *Che-Alota, V., Atekwana, E.A., **Atekwana, E.A.**, Sauck, W.A., Nolan, J.T., Slater, L.D., 2008. Attenuated geophysical signatures associated with ongoing remediation efforts at Wurtsmith Air Force Base, Oscoda, Michigan, SEG-Extended Abstracts 2719-2733, SEG Las Vegas, Annual Meeting.
56. *Joyce, R., Che-Alota, V., Atekwana, E., **Atekwana, E.**, Werkema, D., Rossbach, S., Abdel Aal, G., Davis, C., Nolan, J., 2008. Temporal geophysical investigations of the FT-2 plume at the Wurtsmith Air Force Base, Oscoda, Michigan, Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP'08). Philadelphia, PA, 242-254.
57. *Joyce, R., Werkema, D., Atekwana, E.A., **Atekwana, E.A.**, 2008. Complex conductivity response to nanomaterials in a sand matrix, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl.,

- Abstract NS43B-1196.
58. *Kelsey, M., Atekwana, E., Shemang, E., Moidaki, M., Modisi, M.P., Mickus, K., **Atekwana, E.**, 2008. Geoelectrical imaging of developing border faults of the Okavango Rift Zone (ORZ), NW Botswana: Providing international research experience for students. Geological Society of America Abstracts with Programs, Vol. 40, No. 6, p. 138.
 59. *Ali, H., **Atekwana, E.**, 2008. Dissolve inorganic carbon (DIC) and stable carbon isotope evolution in a tailings pile. Geological Society of America Abstracts with Programs, Vol. 40, No. 6, p. 132.
 60. *Gamrod, J., Cruse, A.M., Atekwana, E., **Atekwana E.A.**, Teter, K., Huntsman-Mapila P., 2008. Constraining the relative influences of watershed and authigenic processes using an integrated sedimentological-geochemical approach in Paleo Lake Mababe, Botswana. Geological Society of America Abstracts with Programs, Vol. 40, No. 6, p. 134.
 61. *Teter, K., **Atekwana, E.**, Cruse, A., Atekwana, E., Gamrod, J. 2008. Carbon concentrations and stable carbon isotopes as indicators for wet and dry phases of Paleo-Lake Mababe, Botswana: Providing international research experience for students. Geological Society of America Abstracts with Programs, Vol. 40, No. 6, p. 281.
 62. Abdel Aal, G.Z., Atekwana, E.A., **Atekwana E.A.**, Rossbach, S., Radzikowski, S., 2008. Electrical properties of bacteria in sand columns: Live vs. dead cells. AGU Chapman Conference on Biogeophysics, October 13-16, 2008, Portland Maine.
 63. *Che-Alota, V., Atekwana, E.A., **Atekwana, E.A.**, Sauck, W.A., Rossbach, S. Nolan, J.T., Werkema, D., 2008. Using geophysical signatures to investigate temporal changes due to source reduction in the subsurface contaminated with hydrocarbons. AGU Chapman Conference on Biogeophysics, October 13-16, 2008, Portland Maine.
 64. Rossbach, S., Atekwana, E.A., **Atekwana, E.A.**, 2008. Geoelectric signatures as a guide for microbiological sampling during bioremediation of petroleum-contaminated sites. AGU Chapman Conference on Biogeophysics, October 13-16, 2008, Portland Maine.
 65. Che-Alota, V., Atekwana, E.A., **Atekwana, E.A.**, Sauck, W.A., Nolan, J.T., Slater, L.D., 2008. Attenuated geophysical signatures associated with ongoing remediation efforts at Wurtsmith Air Force Base, Oscoda, Michigan, SEG-Extended Abstracts.
 66. *Ali, H., **Atekwana, E.**, 2008. Geochemistry and stable carbon isotope characterization of the impact of mine spoils on surface, soil and groundwater at the St Joe state park, SE Missouri. Geological Society of America Abstracts with Programs, Vol. 40, No. 3, p. 35.
 67. *Drueckhammer, S. *Ali, H.N., **Atekwana, E.A.**, 2008. Water quality in the North Bosque River watershed, Erath County Texas. Geological Society of America Abstracts with Programs, Vol. 40, Issue 3, pp.7.
 68. Atekwana, E.A., **Atekwana, E.A.**, 2007. US-Africa collaborative research on incipient continental rift zones. Eos Trans. AGU, 88 (52), Fall Meet. Suppl., U33A-0803 –**INVITED**.
 69. Hager, C., Atekwana, E.A., Gorby, Y.A., Duris, J.W.; Allen, J.P., **Atekwana, E.A.**, Ownby, C., Rossbach, S., 2007. Are microbial nanowires responsible for geoelectrical changes at hydrocarbon contaminated sites? Eos, Trans. AGU, Vol. 88, Issue 23, Suppl.
 70. *Che-Alota, V., **Atekwana, E.A.**, Atekwana, E.A., Sauck, W.A., Nolan, J.T., Slater, L.D., 2007. Attenuated geophysical signatures associated with ongoing remediation efforts at Wurtsmith Air Force Base, Oscoda, Michigan. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract NS11B- 0494.
 71. *Ali, H., **Atekwana, E.A.**, 2007. Simulating dissolved inorganic carbon and stable carbon isotope evolution in AMD using acidified sodium bicarbonate solution. Geological

- Society of America Abstracts with Programs, Vol. 39, No. 6, p. 482.
72. *Bahr, L.M., Hogan, J., **Atekwana, E.A.**, 2007. Experimental observations on the growth of a calcium carbonate stalactite. Geological Society of America Abstracts with Programs, Vol. 39, No. 6, p. 462.
 73. Gorby, Y.A., *Davis, C.A., Atekwana, E., **Atekwana, E.**, 2006. Bacterial nanowires: Is the subsurface hardwired? Eos Trans. AGU, 87(36), Jt. Assem. Suppl., Abstract NS34A-03.
 74. *Davis, C.A., Atekwana, E.A., **Atekwana, E.A.**, Slater, L.D., *Bottrell, P.M., *Chasten, L.E., Heidenreich, J.D., 2006. Detecting microbial growth and metabolism in geologic media with complex conductivity measurements. Eos Trans. AGU, 87(36), Jt. Assem. Suppl., Abstract NS41A-03.
 75. Rossbach, S., Allen, J.P. Atekwana, E.A., **Atekwana, E.A.**, 2006. 16S rRNA gene libraries to characterize the microbial community structure at petroleum-contaminated aquifers exhibiting anomalous high electrical conductivities. Geological Society of America Abstracts with Programs, Vol. 38, Issue 7, pp. 28.
 76. *Davis, C.A., Atekwana, E.A., **Atekwana, E.A.**, Slater, L.D., *Wagner, B.H., 2006. Direct and indirect contribution of microbial metabolic byproducts to the electrical properties of porous media. Eos Trans. AGU, 87(36), Jt. Assem. Suppl., Abstract NS41A-02.
 77. *Allen, J.P., Atekwana, E.A., **Atekwana, E.A.**, Rossbach, S., 2006. Altered geophysical response reflects changes in microbial community structure in petroleum contaminated sediments. Eos Trans. AGU, 87 (36), Jt. Assem. Suppl., Abstract NS41A-01.
 78. *Fonyuy, E.W., **Atekwana, E.A.**, 2006. Dissolved inorganic carbon evolution in acid mine drainage impacted waters: Insights from laboratory reactors. Geological Society of America Abstracts with Programs, Vol. 38, No. 7, p. 433.
 79. Rossbach, S., Allen, J., Atekwana, E.A., **Atekwana, E.A.**, 2006. Spatial and temporal changes in microbial community structure in petroleum contaminated sediments are reflected in geoelectrical signatures. 11th International Symposium on Microbial Ecology, Vienna, Austria, August 20 – 25, 2006.
 80. Rossbach, S., Allen, J., Atekwana, E.A., **Atekwana, E.A.**, 2006. 16s rRNA gene libraries to characterize the microbial community structure at petroleum-contaminated aquifers exhibiting anomalous high electrical conductivities. Geological Society of America Abstracts with Programs, Vol. 38, Issue 7, p. 28.
 81. Fonyuy, E.W., **Atekwana, E.A.**, 2005. Impacts of acid mine drainage on dissolved inorganic carbon and stable carbon isotopes in streams. Geological Society of America Abstracts with Programs, Vol. 37, Issue 7, pp. 359.
 82. *Allen, J.P., Atekwana, E.A., Atekwana, E.A., *Davis, C., Slater, L., *Eversole, R.R., Rossbach, S., 2005. Investigating the structure and dynamics of microbial communities in zones of anomalous geophysical signatures and the effect of these communities on electrical properties. Eos Trans. AGU, 86(18), Jt. Assem. Suppl., Abstract NS51B-08.
 83. *Abdel-Aal, G.Z., Atekwana, E.A., Slater, L.D., **Atekwana, E.A.**, 2004. Effect of different phases of diesel biodegradation on low frequency electrical properties of unconsolidated sediments. Proceedings - Symposium on the Application of Geophysics to Engineering and Environmental Problems SAGEEP, Vol. 2004, pp. 386-395.
 84. **Atekwana, E.A.**, Atekwana, E.A., *Legall, F.D., Krishnamurthy, R.V., Sauck, W.A., 2004. Relationship between biodegradation and bulk electrical conductivity. Proceedings Symposium on the Application of Geophysics to Environmental and Engineering Problems

- (SAGEEP'04), Colorado Springs, CO, 354-362.
85. *Werkema, D.D., **Atekwana, E.A.**, Atekwana, E.A., Rossbach, S., Sauck, W.A., 2004. Laboratory and field results linking high conductivities to the microbial degradation of petroleum hydrocarbons: Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP'04), Colorado Springs, CO, 363-373.
 86. **Atekwana, E.A.**, Atekwana, E. *Werkema, D. *Duris, J., Rossbach, S., Sauck, W., Koretsky, C., Cassidy, D., Means, J., *Sherrod, L., 2003. Investigating the effects of microbial communities on electrical properties of soils: Preliminary results from a pilot scale column experiment. Geophysical Research Abstracts, Vol. 5, p. 13832.
 87. *Legall, F., **Atekwana, E.A.**, Atekwana, E., Krishnamurthy, R., Sauck, W., 2003. Geochemical and isotopic characteristics associated with high electrical conductivities in a shallow hydrocarbon-contaminated aquifer. Geophysical Research Abstracts, Vol. 5, p. 07225.
 88. Salazar, K.A., Tedesco, L.P., **Atekwana, E.A.**, Swope, R.J., Pachut, J.F., Lindsey, G., Hernly, F.V., Hall, B.E., 2003. The Lilly Arbor Project: Promoting science-based environmental education and outreach within an urban riparian setting. Geological Society of America Abstracts with Programs, Vol. 35, Issue 6, pp. 119.
 89. Shrake, L.K., Tedesco, L.P., **Atekwana, E.A.**, Hall, B.E., Latimer, J., Filippelli, G.M., 2003. Watershed contribution to three central Indiana reservoirs; characterization of suspended sediment and dissolved loads. Geological Society of America Abstracts with Programs, Vol. 35, Issue 6, pp.144-145.
 90. Raftis, R.R., Filippelli, G.M., Tedesco, L.P., **Atekwana, E.A.**, Souch, C., Latimer, J., Pascual, D.L., Shrake, L.K., 2003. Nutrient cycling and water quality in an urban drinking water reservoir. Geological Society of America Abstracts with Programs, Vol. 35, Issue 6, pp. 145.
 91. Miller, C.M., **Atekwana, E.A.**, 2003. Temporal controls on carbon cycling in a small urbanized catchment, Indianapolis, IN. Geological Society of America Abstracts with Programs, Vol. 35, Issue 6, pp. 241.
 92. Jackson, L., **Atekwana, E.**, Tedesco, L. Savarese, M., Shrake, L., 2003. Hydrologic exchange and carbon cycling in variably altered sub-tropical estuaries of southwest Florida, USA. Geological Society of America Abstracts with Programs, Vol. 35, Issue 6, pp. 284.
 93. **Atekwana, E.A.**, Atekwana, E.A., Rowe, R.S., 2003. Relationship between total dissolved solids and bulk conductivity at a hydrocarbon-contaminated aquifer. Symposium on the Application of Geophysics to Engineering and Environmental Problems SAGEEP, April 2003, Vol. 2003, pp. 228-237.
 94. Atekwana, E., **Atekwana, E.**, *Werkema, D.D., *Duris, J.W., Rossbach, S., Koretsky, C., Jay, Means, J., Sauck, W.A., Cassidy, P.D., 2002. Biogeochemical influences on geoelectrical properties: Challenges of a mesoscale pilot study- I. INRA/INEEL Subsurface Science Symposium, October 13-16, 2002. Boise ID. (Abstract on CDROM).
 95. **Atekwana, E.A.**, Atekwana, E., *Werkema, D.D., *Duris, J.W., Rossbach, S., Koretsky, C., Jay, Means, J., Sauck, W.A., Cassidy, P.D., 2002. Biogeochemical influences on geoelectrical properties: Challenges of a mesoscale pilot study- II: Results. INRA/INEEL Subsurface Science Symposium, October 13-16, 2002. Boise ID. (Abstract on CDROM).
 96. *Legall, F.D., **Atekwana, E.A.**, Atekwana, E.A., Krishnamurthy, R.V., *Werkema, D.D., Sauck, W.A., 2002. Vertical geochemical and geophysical profiling of a shallow aquifer

- contaminated with hydrocarbons, In Proceedings of the NGWA/API 2002 Petroleum Hydrocarbons Conference and Exposition, November 5-8, 2002, Atlanta, GA.
97. *Legall, F.D., **Atekwana, E.A.**, Atekwana, E.A., Krishnamurthy, R.V., 2002. Vertical profile of vadose zone carbon dioxide and its isotopic composition under fluctuating water table conditions in a shallow sandy aquifer contaminated with hydrocarbons, AGWSE 2002 Annual Meeting and Conference, December 8-11, Abstract with Program, p. 72.
 98. **Atekwana, E.A.**, Tedesco L.P., Barr, R.C., *Wingate, J., Hall, B.E., 2002. Carbon isotopes as a tool to identify water sources of wetlands in headwater catchments in glaciated terrains. Society of Wetland Scientists 23rd Annual Conference, Program with abstracts, p. 67.
 99. Tedesco L.P., **Atekwana, E.A.**, Lindsey, G. Barr, R.C., Hall, B.E., 2002. The Lilly ARBOR Project: Testing strategies for urban riparian restoration. Society of Wetland Scientists 23rd Annual Conference, Program with abstracts, p. 159.
 100. *Shrake, L. **Atekwana, E.A.**, Tedesco, L., Savarese, M., 2002. Riverine and estuarine interactions with seasonal and tidal variations: Blackwater River Estuary, southwest Florida, Geological Society of America Abstracts with Programs, Vol. 34, Issue 6, pp.262.
 101. Guthrie, G.D., **Atekwana, E.A.**, Carey, J.W., 2001. Microenvironments associated with alkali- silica reaction (ASR) in concrete. 11th Annual V.M. Goldschmidt Conference 3908 pdf.
 102. **Atekwana, E.A.**, Tedesco, L., *Shrake, L., Savarese, M., 2001. Identifying hydrologic sources and mixing of estuarine water using dissolved inorganic carbon (DIC): An example from the Blackwater River estuary southwest Florida, USA. 16th Biennial Conference of the Estuarine Research Federation, Abstract Volume, p. 7.
 103. *Shrake, L.K., **Atekwana, E.A.**, Tedesco, L.P., Savarese, M., 2001. Dry season hydrologic mixing in estuaries for different tidal stages: Blackwater River, southwest Florida, USA. Geological Society of America Abstracts with Programs, Vol. 33, Issue 6, pp.183.
 104. Barr, R.C., Tedesco, L.P., **Atekwana, E.A.**, Barr, H.M., Hall, B.E., Hernly, F.V., 2001. Beaver (*Castor Canadensis*) and the preservation and expansion of wetlands at the Ritchey Woods Natural area, Hamilton County, Indiana. Society of Wetland Scientists National Meeting, Abstracts, p. 5.
 105. Tedesco, L.P., Barr, R.C., **Atekwana, E.A.**, Lindsey, G., Hall, B.E. 2001. The Lilly ARBOR Project: An ecological restoration program for an urban waterfront: Society of Wetland Scientists National Meeting, Abstracts, p. 65.
 106. **Atekwana, E.A.**, *Jackson, L.R., Tedesco, L.P., 2000. Inorganic carbon cycling and tidal mixing in a sub-tropical estuary, Florida, USA. Geological Society of America Abstracts with Programs, Vol. 32, (7), p. A438. **Atekwana, E.**, *Abongwa, P., 2013. Assessing the temporal evolution of dissolved inorganic carbon in surface waters that interact with atmospheric CO₂(g), Geological Society of America Abstracts with Programs, Volume 45, No. 4, p. 57.
 107. **Atekwana, E.A.**, Lovan, N., 2000. Annual carbon cycling in surface waters of mid-latitude groundwater controlled lakes. Geological Society of America Abstracts with Programs, Vol. 32, Issue 4, pp. 2-3.
 108. **Atekwana, E.A.**, 2000. Isotopic identification of sources of water that support high altitude wet meadow complexes. Geological Society of America Abstracts with Programs, Vol. 32, (7), p. A143.
 109. *Schmitt, D.M., Krishnamurthy, R.V., **Atekwana, E.A.**, Baskaran M., 1999. Multiple

- isotopic studies of calcite growth in concrete structures. EOS, Transactions, American Geophysical Union 1999 Spring Meeting Supplement, 80, (17), p. S348.
110. **Atekwana, E.A.**, Krishnamurthy, R. V., 1998. Seasonal variations in the isotope ratios of landfill leachate and gases. Geological Society of America Abstracts with Programs, Vol. 30, issue7, p. 23.
 111. **Atekwana, E.A.**, Krishnamurthy, R.V., 1997. Seasonal variations in the concentrations and stable carbon isotope ratios of dissolved inorganic carbon in a stream-tributary system in SW Michigan. EOS, Transactions, American Geophysical Union, Fall Meeting Supplement, 78, (46), p. F226. (**Outstanding Student Paper**).
 112. **Atekwana, E.A.**, Krishnamurthy, R.V., 1997. Pollutant carbon flow diagnostics: A study using isotopic techniques. International Conference on Isotopes in the Solar System, Ahmedabad, India, Abstracts with Program, p.165.
 113. Laton, R. W., Hascall, A., **Atekwana, E.A.**, and Hampton, D., 1996. Seepage meter spatial and temporal variability in the study of groundwater interaction with surface water features. EOS, Trans., American Geophysical Union Fall Meeting Supplement, 77, (46), p. F259.
 114. **Atekwana, E.A.**, Krishnamurthy, R.V., Straw W.T., 1996. δD investigation of surface water/groundwater interaction downgradient of a landfill in SW Michigan. EOS, Transactions, American Geophysical Union Spring Meeting Supplement, 77, (17), p. S140.
 115. **Atekwana, E.A.**, Krishnamurthy, R.V., 1996. Concentrations and ^{13}C of dissolved inorganic carbon (DIC) in groundwater, and surface water impacted by a landfill in southwest Michigan, USA. Abstracts with Programs - Geological Society of America, Vol. 28, Issue 7, p. 140.
 116. **Atekwana, E.A.**, Agendia P.L., Atekwana, E.A., 1994. Vegetation establishment and evolution in four ponds that received sewage and waste water in a portion of the Olezoa wetland complex, Yaounde, Cameroon. Geological Society of America Abstracts with Programs, Vol. 26, Issue 5, pp. 2.
 117. **Atekwana, E.**, Sutter, John F., Schwartzman, D., 1989. Thermochronology of the Pennsylvanian Liberty Hill, Pageland, and Lilesville plutons and the Wadesboro Basin, North and South Carolina. Geological Society of America Abstracts with Programs. Vol. 21, Issue 3, p. 2.
 118. **Atekwana, E.A.**, Sutter, J.F., Schwartzman, D.W., 1988. Precise crystallization ages of quickly-cooled plutons using $^{40}Ar/A^{39}Ar$ techniques on hornblende: An example from Late Paleozoic plutons in the Appalachian Piedmont. Geological Society of America Abstracts with Programs. Vol. 20, Issue 7, p.305.

2. Local and Regional

105. *Abongwa P. and **Atekwana E.** 2013. Investigating the transformation of dissolved inorganic carbon in karst springs: The role of carbon isotope ratios. 24th Annual Research Symposium Oklahoma State University. Research Symposium Paper Presentation Abstracts p2.
106. *Meier, S., *Rutelonis, J. W., **Atekwana, E. A.**, Molwalefhe, L. N., *Mokgamedi, E. Z., *Kauhanda, K., *Gares S., 2013. Investigating processes that control the water chemistry of the newly form Lake Ngami, northwest Botswana. 24th Annual Research Symposium Oklahoma State University. Research Symposium Paper Presentation Abstracts p42.
107. *Leseane, K. Atekwana E. A., Mickus K. L., Abdelsalam M. G., Shemang E. M.,

- *Obenberger K. C., *Matende K., *Motseokae G. A., and **Atekwana E. A.**, (2013). Geophysical studies of incipient rift initiation: An example from the Okavango Rift Zone, NW Botswana. 24th Annual Research Symposium Oklahoma State University. Research Symposium Poster Presentation Abstracts p27.
108. *Ostroski M. and **Atekwana E.**, 2013. Investigating the Formation and Evolution of Mega- paleolakes in the Middle Kalahari of Semi-arid Botswana from Sedimentary and Geochemical Proxies. 24th Annual Research Symposium Oklahoma State University. Research Symposium Poster Presentation Abstracts p33.
109. *Abongwa P. and **Atekwana E.** 2012. Assessing Temporal Loss of CO₂ from Natural Waters using Dissolved Inorganic Carbon concentrations and Stable Carbon Isotopes. 23th Annual Research Symposium Oklahoma State University. 2012 Research Symposium Paper Presentation Abstracts p2.
110. *Fonyuy, E.W., **Atekwana, E.A.**, 2006. Acid mine drainage pumps carbon dioxide to the atmosphere, 25th National Association of Black Geologists and Geophysicists (NABGG) annual anniversary technology conference, Houston, Abstracts with Programs, P. 39.
- *Ali, H.N., **Atekwana, E.A.**, 2006. Mass transfer of carbon dioxide in acidic surface waters, 25th National Association of Black Geologists and Geophysicists (NABGG) annual anniversary technology conference, Houston, Abstracts with Programs, P. 37.
111. **Atekwana, E.A.**, Tedesco L.P., Barr, R.C., *Wingate, J., Hall, B.E., 2002. Identification of water sources of wetlands in headwater catchments in glaciated terrains using stable carbon isotopes. Association of State Wetland Managers National Symposium, Indianapolis, IN. (abstract on CDROM).
112. Tedesco, L.P., **Atekwana, E.A.**, Lindsey, G. Barr, R.C., Hall, B.E., 2002. The Lilly ARBOR Project: Testing strategies for urban riparian restoration. Association of State Wetland Managers National Symposium, Indianapolis, IN (abstract on CDROM).
113. Barr, R.C., Tedesco, L.P., **Atekwana, E.A.**, and Hall, B.E., 2000. The White River experimental restoration project. 116th Annual Meeting Indiana Academy of Science, Abstract with Programs, p.53.
114. **Atekwana, E.A.**, Lovan, N., *Jacobs S., 1999. Carbon cycling and pollution in the Saginaw Bay watershed streams. Michigan Academician, 31, (2), p 176-177.
115. Atekwana, E.A., **Atekwana, E.A.**, 1992. Tectonic Evolution of the Adamawa Uplift: constraints from Landsat MSS Data. 96th Annual Meeting of the Michigan Academy of Sciences, Arts, and Letters, March 6-7 1992, Programs with Abstracts.

E. INVITED TECHNICAL PRESENTATIONS

1. GeoPRISMS. Theoretical and Experimental Institute for the 2017 GeoPRISMS RIE Initiative (2/07/2017 to 2/10/2017).
2. Managing your career: research and publishing. University Institute of Technology (IUT), Douala (Cameroon) January 8 2016.
3. Stable Carbon isotopes in carbonate environments and Managing your career: research and publishing. University of Buea Cameroon: January 7 2016.
4. Managing your Career: research and publishing. University of Bamenda, Cameroon. January 6 2016.
5. OSU Boone Pickens School of Geology Graduate Student Development Workshop. Research, Teaching, Service and Diversity Statements. March 31 2017.
6. African Students Organization, Oklahoma State University. Challenges of writing in

- academia: How to avoid pitfalls with emphasis on plagiarism and managing your research. Writing Symposium, Oklahoma State University. (October 13, 2013).
7. Department of Geology & Geography, West Virginia University. Carbon flow diagnostics: dissolved inorganic carbon (DIC) in the hydrologic environment. (April 5, 2012)
 8. Department of Geology & Geography, West Virginia University Effects of Acidification on Carbon Cycling in Streams. (April 5, 2012).
 9. Department of Environmental Earth Systems Science, Stanford University. Carbon cycling in acid mine drainage systems. (May 2012).
 10. Department of Earth and Environmental Sciences, Rutgers University, Newark. Assessing acidification of surface waters using stable carbon isotopes: Implications for carbon cycling. (March 7, 2011).
 11. NSF EPSCoR Research Infrastructure Improvement Program. 2007 Competition Plenary Session. Oklahoma State University. (March 23, 2007).
 12. Microbial Nanowire Theme, Center for Microbial Nanowire Research at Oklahoma State University. NSF EPSCoR Research Infrastructure Improvement Program. PHF Research Park, Oklahoma City. (April 25, 2007).
 13. Department of Geography, Geology and Anthropology, Indiana State University, Kalamazoo Michigan. Impact of Acid mine drainage on dissolved inorganic carbon and stable carbon isotopes in receiving streams. (4/12/2007)
 14. Department of Botany, Oklahoma State University. Acid mine drainage. (2/21/07).
 15. School of Geology, Oklahoma State University. Impact of acid mine drainage on dissolved inorganic carbon and stable carbon isotopes in receiving streams. (2005).
 16. University of Missouri Rolla, Environmental Research Center. Impacts of watershed hydrologic modification on freshwater drainage and productivity in three sub-tropical estuaries, SW Florida, USA. (2005).
 17. School of the Environment. Duke University. Carbon flow diagnostic. Inorganic carbon in the hydrologic environment. (2005).
 18. Department of Geosciences, University of Missouri – Kansas City. Carbon flow diagnostic. Inorganic carbon in the hydrologic environment. (2005).
 19. Department of Geological Sciences, Iowa State University, Ames, IA. Carbon flow diagnostic. Inorganic carbon in the hydrologic environment. (2004).
 20. Department of Geology, Western Michigan University, Kalamazoo Michigan. Carbon cycling in a sub-tropical estuarine system, Florida USA. (2003).
 21. Department of Geology/Geography University of Georgia, Athens Georgia. Inorganic carbon in the hydrologic environment: A processes based model. (2002).
 22. State of Indiana. Indiana land Use Forum. Urban and suburban growth: A geological perspective. (2002).
 23. Department of Geology and Geophysics, University of Missouri- Rolla, Rolla, MO. Dissolved Inorganic Carbon (DIC) and Hydrologic Mixing in a Sub-Tropical Riverine Estuary, Southwest Florida, USA. (2001).
 24. Miami University - Oxford, OH. Inorganic carbon in the hydrologic environment: A processes based model. (2001).
 25. Florida Gulf Coast University, Fort Myers, FL. A potential method for monitoring hydrologic restoration effectiveness in SW Florida: Using dissolved inorganic carbon to identify water sources and to quantify mixing. (2001).
 26. The Great Basin Ecosystem Management Project, USDA Forest Service, Rocky Mountain

- Division, Reno Nevada. Isotopic identification of sources of water that support high altitude wet meadow complexes. (2000).
27. IUPUI Dept. of Geology. Groundwater surface water interaction downgradient of a municipal landfill using stable carbon isotopes. (1998).
 28. California State University at Fullerton. Seasonal variation in landfill leachates and gases
 29. Central Michigan University. Identifying landfill contamination of groundwater using stable carbon isotopes. (1977).
 30. Department of Geology, State University of New York at Binghamton. Identifying landfill contamination of groundwater using stable carbon isotopes. (1977).
 31. Indiana University. Groundwater surface water interaction downgradient of a municipal landfill using stable carbon isotopes. (1997).
 32. Department of Geology, Western Michigan University, Kalamazoo MI. Dissolved inorganic carbon in the hydrologic environment. (1977).

F. NON TECHNICAL PRESENTATIONS / COMMUNITY OUTREACH

1. Western Michigan University King-Chavez-Park Program (1996)
2. Western Michigan University Black History Month Seminar Series (1996)
3. Western Michigan University Geography Day (1995)
4. Milwood Middle School, Kalamazoo, Michigan (1995)
5. Loy Norrix High School, Kalamazoo Michigan (1995)
6. Kalamazoo Area Math and Science Conference for Minorities (1995)

G. INVITED PROFESSIONAL WORKSHOPS, EXPEDITIONS, AND INTERNATIONAL ACTIVITIES

1. The 2002 Subsurface Science Symposium, co-organized by the Inland Northwest Research Alliance (INRA) and the Idaho National Engineering and Environmental Laboratory (INEEL), October 13-16, 2002. Boise ID. Biogeochemical influences on geoelectrical properties: Challenges of a mesoscale pilot study- I. (co Presenters: Atekwana E., Werkema D.D., Duris J.W, Rossbach S., Koretsky, C., Means, J., Sauck, W.A. and Cassidy P.D)
2. The 2002 Subsurface Science Symposium, co-organized by the Inland Northwest Research Alliance (INRA) and the Idaho National Engineering and Environmental Laboratory (INEEL), October 13-16, 2002. Boise ID. Biogeochemical influences on geoelectrical properties: Challenges of a mesoscale pilot study- II: Results. (co Presenters: Atekwana E., Werkema D.D., Duris J. W, Rossbach S., Koretsky, C., Means, J., Sauck, W.A. and Cassidy P.D)

FUNDED GRANTS AND CONTRACTS

A. RESEARCH RELATED GRANTS

1. University of Delaware

EXTERNAL GRANTS

- 1) National Science Foundation: \$179,113 (8/01/2018-7/31/2021). Collaborative Research: IRES: U.S. - Cameroon Collaboration Investigating Anthropogenic perturbations on Carbon Cycling in an Urbanized Tropical Estuary. PI.

INTERNAL GRANTS

2. Unidel Foundation: \$870,072 (2018-2019). Core Facility for Isotope Sciences (CORFIS). Co PI (PI Sturchio et al.).

3. Oklahoma State University

EXTERNAL GRANTS

- 1) Newfield Exploration Company: \$546,894.00 (4/9/14-6/1/16) "High resolution stratigraphy, paleoceanography, and conodont biostratigraphy of the Mississippian Strata and Devonian Woodford Shale in the Newfield Central Oklahoma coring project". Co-PI.
- 2) Chevron Energy Technology Company: \$317,421 (5/01/11 -4/30/16). "Biogeophysics for Optimized Mitigation of Hydrocarbon Contaminated Soils: From Theoretical Developments, Laboratory Experiments to Field Validation". Subcontracts to Colorado School of Mines, Rutgers University, Newark and Western Michigan University. Co-PI. Lead PI is Estella Atekwana. Note, this project ended by Chevron awarded a 4th year. This brings the total Chevron grant to \$1,117,421. Co-PI.
- 3) National Science Foundation (5/1/11-4/31/14). Collaborative Research: Integrated studies of early stages of continental extension: From incipient (Okavango) to young (Malawi) rifts. \$5.4 M (OSU - \$527,618.00). Co-PI.
- 4) National Science Foundation (9/1/09-8/30/13). IRES: Research opportunities to investigate carbon cycling in the Okavango River Delta, Botswana for US undergraduate and graduate geoscience students. \$149,927.00. PI.
- 5) National Science Foundation (8/15/10-9/15/12). RAPID Proposal: Understanding early time biogeophysical signals of the microbial degradation of crude oil from the BP spill in saline marshlands. \$192,749.00. Co-PI.
- 6) National Science Foundation (3/1/09-2/28/10). Workshop on geophysical studies of continental rift initiation at Woods Hole Oceanographic Institution, Massachusetts. \$18,887.00. Co-PI.
- 7) National Science Foundation (3/15/07-2/28/10). MRI: Acquisition of a field emission environmental scanning electron microscope to enhance research and teaching at Oklahoma State University. \$605,208.00. Co-PI.
- 8) National Science Foundation (10/1/06-9/30/09). IRES: Research Opportunities in neotectonics of incipient continental rift zones for US undergraduate and graduate

geosciences students in Botswana and Zambia. \$150,000.00. Co PI.

- 9) National Science Foundation (11/10/06-10/31/09). Impacts of acid mine drainage on carbon cycling in receiving streams. \$159,918.96 (+ REU Supplement 24,450). PI. (*Transferred from MS&T*).
- 10) National Science Foundation (10/1/06-9/30/08). Collaborative Research: Investigating the impact of microbial interactions with geologic media on geophysical properties: Implications for assessing geomicrobiological processes. REU Supplement. \$54,300.00. Co-PI. (*Transferred from MS&T*).
- 11) National Science Foundation (10/1/06-9/30/08). Collaborative Research: Investigating the impact of microbial interactions with geologic media on geophysical properties: Implications for assessing geomicrobiological processes. \$216,344.00. Co-PI. (*Transferred from MS&T*).

INTERNAL GRANTS

- 12) College of Arts and Sciences (2010) FY 2010 Spring Travel grant \$1,000.00. PI.

4. Missouri University of Science & Technology (MS&T)

EXTERNAL GRANTS

- (*Transferred to OSU*). National Science Foundation (2005-2010). Impacts of acid mine drainage on carbon cycling in receiving streams. \$ 159,918.96 (+ REU Supplement 24,450.00). PI.
- (*Transferred to OSU*). National Science Foundation (2004-2007). Collaborative Research: Investigating the impact of microbial interactions with geologic media on geophysical properties: Implications for assessing geomicrobiological processes, Total award amount of \$458,985 to MS&T, Rutgers, and Western Michigan University. MS&T amount \$216,344.00. Co-PI.
- (*Transferred to OSU*) National Science Foundation (06/01/05-08/31/07). Collaborative Research: investigating the impact of microbial interactions with geologic media on geophysical properties: Implications for the assessment of geomicrobiological processes – REU Supplement. \$54,300.00. Co-PI.
- 14) Missouri Research Board (01/01/05-12/31/06). Carbon cycling in blind river estuaries, SW Florida, US. \$43,900.00. PI.

INTERNAL GRANTS

- 15) University of Missouri-Rolla (2004). Opportunities for Undergraduate Research Experience. \$1,250.00. Supervisor to student PI.
- 16) PI Appleyard Fund (2004). Application for funds from the Appleyard Fund to purchase an analytical balance. \$1549.95. PI.

5. IUPUI

EXTERNAL GRANTS

- 1) US Filter Indianapolis Water/Vivendi (12/02-2/04). Water quality and nutrient cycling in three central Indiana watersheds and their reservoirs: Eagle Creek/Eagle Creek Reservoir, Fall Creek/Geist Reservoir and Cicero Creek/Morse Reservoir. \$141,365. Co-PI.
- 2) US Filter Indianapolis Water/Vivendi. (8/02 -12/02). Sedimentologic and biogeochemical characterization of the Eagle Creek watershed: Implications for nutrient cycling and water

quality. \$38,531.00. Co-PI.

- 3) Eli Lilly Endowment (4/01-4/06). The Lilly ARBOR Project: An Experiment in Urban Riparian Restoration. \$200,000.00. Co-PI.
- 4) National Science Foundation (1/02-12/02). Collaborative Research: Biogeochemical influence of geophysical signatures at LNAPL-contaminated sites. \$75,000.00. Co-PI.
- 5) The Children's Museum of Indianapolis (1/02-1/03). Monitoring ecological restoration at Ritchey Woods natural area. \$7,000. Co-PI.
- 6) U.S. Department of Agriculture Forest Service (9/99-12/01). Isotopic quantification of sources of water that support streamflow and riparian vegetation. \$30,000.00. PI.

INTERNAL GRANTS

- 7) IUPUI Office for Professional Development (5/00 - 4/01). White River Restoration Project: An urban reforestation program. \$10,000.00. Co-PI.
- 8) IUPUI Faculty Development Grant Research Summer Fellowship (summer of 1999). A stable isotopic approach to elucidated CO₂ sources in carbonates of concrete degrading environments. \$6,000.00. PI.
- 9) Center for Earth and Environmental Science (CEES), IUPUI. Summer Faculty Fellowships for Research Proposal Development (summer of 1999). Annual carbon cycling in mid-latitude, groundwater-controlled lakes: The importance of dissolved inorganic carbon modeling within a hydrologic framework. \$5,000.00. PI.
- 10) IUPUI School of Science Undergraduate Research Program (1/00-12-01). Temporal controls of dissolved inorganic carbon in stream systems. \$1,966.00.
- 11) IUPUI School of Science Undergraduate Research Program (1/00-12-01). Inorganic carbon cycling and mixing in a tropical riverine estuary, Florida, USA. \$1,950.00.
- 12) IUPUI School of Science Undergraduate Research Program (1/99-12/00). Heavy metal concentrations in stalactites from concrete degradation as proxies for heavy metal accumulation in the environment, \$1,985.00.

B. TEACHING RELATED GRANTS

1. OSU

- 13) OSU College of Arts and Sciences Student Technology Fee (2012). Request for purchase of YSI 556-01 Multi-parameter probe pH and DO kits s and Solinst 3001 LT Levellogger and Barrologgers. \$9,147.00. PI.
- 14) OSU College of Arts and Sciences Student Technology Fee (2007). Request for purchase of YSI 556-01 Multi-parameter probes and Solinst 3001 LT Levellogger Gold. \$17,330.00. PI.

2. IUPUI

- 15) Central Indiana Community Foundation – Efroymsen Fund (5/03-5/04). The Starling Wetland Restoration Project: A University, Corporate, Community Partnership to enhance biodiversity and expand nature studies and enjoyment at Indianapolis' largest park. \$70,395.00. Co-PI.
- 16) Central Indiana Educational Service Center. Project Seam Professional Development Workshops 3/03-10/03. An ecological field study experience. \$7,350.00. Co-PI.
- 17) Central Indiana Educational Service Center. Project Seam Professional Development

Workshops 3/02-10/02. An ecological field study experience. \$7,350.00. Co-PI.

- 18) National Association of Geoscience Teachers (NAGT) and the National Science Foundation (NSF). June 23-26, 1999. Early Career Faculty in the Geosciences: Teaching, Research and Managing Your Career. Montana State University, Bozeman, Montana. Cost for room and board.

C. SERVICE RELATED GRANTS

- 19) The Children's Museum of Indianapolis (02/02 -6/02). The Children's Museum of Indianapolis Ritchey Woods Watershed Project. A proposal to conduct a baseline hydrologic assessment. \$5,600.00. Co-PI.
- 20) National Fish and Wildlife Federation (8/02 -8/01). The White River Riparian Restoration Project \$9,960.00. Co-PI.

TEACHING EXPERIENCE

A. COURSES TAUGHT (DEVELOPED COURSES UNDERLINED)

1. Professor, University of Delaware, 8/2017 to present

GEOL 108 ONLINE - Volcanoes and Earthquakes. Violent geologic activity as illustrated by volcanoes and earthquakes. The nature, causes and origins of volcanic and earthquake activity, their interactions with humans and their potential control.
Repeatable for Credit: N Allowed Units: 3 Multiple Term Enrollment: N Grading Basis: Student Option. University Breadth: Mathematics, Natural Sciences and Technology
General Education Objectives: Read Critically Analyze Arguments and Information
Communicate Effectively in Writing Work Individually Across a Variety of Cultures
Critically Evaluate Ethical Implications Reason Quantitatively Reason Scientifically

GEOL 108 - Volcanoes and Earthquakes. Violent geologic activity as illustrated by volcanoes and earthquakes. The nature, causes and origins of volcanic and earthquake activity, their interactions with humans and their potential control.
Repeatable for Credit: N Allowed Units: 3 Multiple Term Enrollment: N Grading Basis: Student Option. University Breadth: Mathematics, Natural Sciences and Technology
General Education Objectives: Read Critically Analyze Arguments and Information
Communicate Effectively in Writing Work Individually Across a Variety of Cultures
Critically Evaluate Ethical Implications Reason Quantitatively Reason Scientifically

GEOL 107 - Geology of Dynamic Earth (4CR.). Principles of physical geology and its application in interpreting earth processes. Laboratory covers identification of earth materials and the interpretation of topographic and geologic maps.
Allowed Units: 4 Grading Basis: Student Option
University Breadth: Mathematics, Natural Sciences and Technology Course Typically

2. Visiting Professor, Botswana International University of Science and Technology, 8/2014-6/2015

GEOL 306: Research Methods in Earth and Environmental Sciences. Application of the scientific method to geosciences research; introduction to library and internet searches; writing competitive research proposals; managing research activities; disseminating research results.

GEOL 303: Geochemistry and Exploration.

3. Assistant Professor/Professor, OSU, 8/2006 to present

ONLINE GEOL 1014 (L,N) Geology and Human Affairs. Lab 2. The influence of geology and related earth sciences on the human environment. Energy and material resources, beneficial and hazardous natural processes, and the planetary and biological evolution of earth. Lab investigations environmentally oriented. No general education credit for students who are taking or have taken GEOL 1114.

GEOL 3503 Environmental Geology. Prerequisite: GEOL 1114 or consent of **GEOL 1014 (L,N) Geology and Human Affairs. Lab 2.** The influence of geology and related earth sciences on the human environment. Energy and material resources, beneficial and hazardous natural processes, and the planetary and biological evolution of earth. Lab investigations environmentally oriented. No general education credit for students who are taking or have taken GEOL 1114.

GEOL 3503 Environmental Geology. Prerequisite: GEOL 1114 or consent of instructor. Application of geologic principles to environmental issues, including human use of the surface and subsurface of the earth and human interaction with extreme natural events such as earthquakes, floods, and landslides. Field trip required.

GEOL 4300* Geology Colloquium. Prerequisite: 15 credit hours in geology and junior status. Discussions of selected topics in the geological sciences with emphasis on professional presentation practices.

GEOL 4403 Geochemistry. Prerequisite(s): GEOL 1014 or 1114 or consent of instructor; CHEM 1314; CHEM 1515 or concurrent enrollment; MATH 1513 or above. Application of chemical principles to geological processes. Processes affecting the composition of surface and ground waters.

GEOL 4990* Special Problems in Earth Science. 1-8 credits, max 8. Prerequisite(s): 25 hours of geology and permission of instructor. Individually designed study projects involving assigned reading, library work, field work, laboratory work or a combination of these. Field trips may be required.

GEOL-4990-353. International Field Experience. 1-4 credits. A 6 to 8 weeks of research conducted in a foreign country.

GEOL 5000 Thesis. 1-6 credits, maximum 6. Prerequisite: approval of graduate committee. Work toward Master's thesis in geology.

GEOL 5243. Research Methods and Techniques in Geosciences. 3 credits. Application of the scientific method to geosciences research; introduction to library and internet searches; writing competitive research proposals; managing research activities; disseminating research results.

GEOL 5300* Geology Colloquium. 1 credit, max 2. Prerequisite(s): Graduate standing. Discussion of selected topics in the geological sciences with emphasis on professional presentation practices.

GEOL 5433 Isotope Geochemistry. Lab 2. Introduction to the basic principles of stable

isotope geochemistry. Study of the production, distribution, and use of naturally occurring and anthropogenically introduced stable isotopes in the earth's near surface environment with applications to hydrology, biogeochemistry, global change and petroleum systems.

GEOL 5553* Environmental Geochemistry. Lab 3. Prerequisite(s): Introductory chemistry. Origin and evolution of natural water quality. Distribution and mobility of elements in the secondary environment. Computational methods for the interpretation of water analyses.

GEOL 5710. Advanced studies in Geology. 1-4 credits, maximum 8. Prerequisite: consent of instructor. Individual library, laboratory and/or field projects on facets of geology not covered by existing courses. Field trips may be required.

GEOL-5710-364. International Field Experience. A 6 to 8 weeks of research conducted in a foreign country.

GEOL 5981 Geoscience Internship. Prerequisite(s): Consent of instructor. Student participation in a research project during an internship in a Geoscience-related professional work setting for graduate credit. Graded on a pass/fail basis.

GEOL 6000* Doctoral Dissertation Research. 1-12 credits, max 60. Work toward doctoral dissertation in Geology.

4. Assistant Professor, MS&T, 8/2003 to 6/2006

G051 Physical and Environmental Geology (Lect 3.0 and Lab 1.0). Materials, structures and other features of the Earth and planetary bodies are studied in the context of Earth resource hazards and environmental challenges. The laboratory focuses on the study of common rocks and minerals, air photographs, maps, and case studies of geological problems. One field trip is required.

G101 Special Topics (Oceanography) This course is designed to give the department an opportunity to test a new course. The study the geological, physical, chemical and biological characteristics of the worlds ocean. Emphasis on oceanic origin/evolution, plate tectonics, ocean/atmosphere circulation, chemical composition and pollution of the marine ecosystem, and primary production and the adaptations and distribution of marine organisms. Course coverage will include a basic understanding of the transfer of mass and energy between the oceanic, land, and atmospheric environment at different temporal and spatial scales.

G275 Introduction to Geochemistry (Lect 3.0). Application of basic chemical principals towards investigations of element distributions in geologic systems. Emphasis on origin of elements in our Solar System, element distribution during planetary formation, phase equilibria, rock-water interactions, thermodynamic principles, environmental and isotope geochemistry. Prerequisite: Chem 1.

G301 Special Topics (Stable isotope Geology). This course is designed to give the department an opportunity to test a new course. Principles and application of stable isotope in earth and environmental systems. Emphasis on commonly used light stable isotopes (e.g., H, C, N, O, and S). May also include other stable and radioactive as appropriate.

G375 Applied Geochemistry (Lect 2.0 and Lab 1.0). Application of the principles of geochemistry and techniques of geochemical analysis in a student research project investigating geochemical processes (mineral deposits, environmental geochemistry,

trace element migration, or water-rock interaction). Field trip fee required. Prerequisites: Geo 113 and Geo 275.

G376 Aqueous Geochemistry (Lect 3.0). Studies of the interaction of water with minerals and organic materials at low temperatures; including processes affecting the migration of elements (alteration, precipitation, and adsorption), the influence of geochemical processes on water composition, weathering, soil formation, and pollution. Prerequisite: Geo 275.

G410 Seminar (Variable). Discussion of current topics.

G490 Research (Variable). Investigations of an advanced nature leading to the preparation of a thesis or dissertation.

5. Assistant Professor, IUPUI, 9/1998 to 6/2003

G107 Environmental Geology 3 hrs. An introduction to geology through discussion of geological topics that show the influence of geology on modern society. Topics include mineral and energy resources, water resources, geologic hazards and problems, geology and health, and land use

G132 Environmental Problems 3 hrs. This course is offered via the Internet, and provides experience in addressing some of the kinds of problems that arise in studies of the environment. Particular attention is given to developing skills in evaluating scientific articles; specifically, the relevance of the information in an article, the credibility of the author, and the accuracy and usefulness of the quantitative information provided. The kinds of problems considered in this course will vary from semester to semester, but will be chosen from a list that includes global warming, tropical rain forests, acid rain, water pollution, solid waste disposal, appropriate use of land, and the ability of regulations to protect the environment. Three or four such topics will be covered each semester.

410 Undergraduate Research in Geology 1-6 hrs. Field and laboratory research in selected problems in geology.

G303 Geologic Mapping and Field Methods 4hrs. Geologic Maps and Field Methods is designed to introduce the students to applied aspects of field geology. The course includes exercises in several methods for mapping. Measuring and describing stratigraphic sections of sedimentary rocks, surficial deposits, soils, and geologic structures are important components of the course. The course also relies on interpretation of maps, aerial photographs, and satellite imagery to provide the student with a wide range of field analysis techniques.

G430 Principles of Hydrology. 4 hrs. Introduction to the hydrologic cycle with emphasis on environmental aspects and problems. Designed for the student to appreciate the complexities of the interrelated components of the hydrologic cycle and our environment. The student will gain elementary knowledge of natural and geologic processes and the methodologies used in the study of the hydrologic cycle, including contributions from the sciences of math, physics, chemistry and biology. The student will also understand the effects of human interaction with the hydrologic cycle, their problems and possible solutions.

G451 Principles of Hydrogeology 3 hrs. Geologic and hydrologic factors controlling the occurrence and dynamics of ground water. Emphasis on basic physical and chemical relationships between water and geologic material. Recommended: G205 and G110, or

consent of instructor.

G495 Senior Thesis in Geology 1hr. Capstone experience involving a research project. Written report required. Prerequisite or Co-requisite: G303, G304, G323, G334, & two 400-level geology courses.

G690 - Advanced Geology Seminar 1-3 hrs. Variable titles, seminar format. Prerequisite or Co- requisite: Consent of instructor. **Isotope Hydrology 3 hrs.** Principles of isotope fractionation. Experimental techniques in isotope mass spectrometry. Carbon, oxygen, and hydrogen isotope systematics in the hydrologic cycle. Application of stable isotope techniques to study ground water- surface water interaction. Use of nitrogen isotope measurements in understanding ground water nitrogen cycling and fate of nitrate load. Introduction to developments in the application of chlorine isotopes in hydrology. The course will include a seminar style approach requiring summarizing of recent research papers. *Prerequisite:* Instructor's consent.

G700 - Geologic Problems 1-5 hrs. Consideration of special geologic problems. Prerequisite or Co- requisite: Consent of instructor.

G810 - Geology Thesis Research 1-6 hrs. Thesis Research. Prerequisite or Co-requisite: Consent of instructor.

6. Adjunct Assistant Professor, Western Michigan University, 9/1997 to 6/1998

GEOS 512 Principles of Hydrogeology 3 hrs. The study of surface and ground water with special emphasis on its occurrence, movement, and relation to the Geologic environment. *Prerequisite:* GEOS 301 or GEOS 335; MATH 122. MATH 123 may be taken concurrently.

GEOS 300 Oceanography 3 hrs. The ocean system encompasses over seventy percent of the world's surface, and comprises one of the largest resources that the peoples of the world hold in common. This course will explore our understanding of this complex system, and the evolution of technology on which this understanding is based. The costs and benefits of the past, present, and future use of the world ocean will be considered in the context of competing values and interests.

7. Assistant Professor, Central Michigan University, 1/1998 to 6/1998

GEL 380 Hydrogeology 3 hrs. Introduction to the study of groundwater, groundwater flow, well hydraulics, groundwater quality and pollution and resource exploration, evaluation, and management. Field trip fee required. Prerequisites: GEL 101 or 105, and GEL 102; or GEL 100 or 130; MTH 106 or higher; junior standing

GEL 402 Environmental Geochemistry 3. Application of chemical principles to environmental- geological topics. Explores geochemical aspects of contemporary problems such as water and soil pollution, including data analysis and problem solving. Prerequisite: GEL 380; CHM 132.

8. Doctoral Associate, Western Michigan University, 8/1992 to 12/1996

GEOS 100 Earth Studies 4 hrs. Students are introduced to the origin of the solar system and the earth-moon system with emphasis on humankind's place in the universe. Students will investigate the materials and processes that shape the earth and the Geologic hazards that affect our lives. Mineral, water, and energy resources will be considered in the context of their occurrence and limitations. Plate tectonics and the origin and evolution

of life will be used to frame the course. 3 lectures and a 2 hour lab period.

GEOS 130 Physical Geology 4 hrs. A study of the common rocks and minerals and the Geologic processes acting upon these materials that form the structure and surface features of the earth. Three lectures and a two-hour laboratory period.

GEOS 300 Oceanography 3 hrs. The ocean system encompasses over seventy percent of the world's surface, and comprises one of the largest resources that the peoples of the world hold in common. This course will explore our understanding of this complex system, and the evolution of technology on which this understanding is based. The costs and benefits of the past, present, and future use of the world ocean will be considered in the context of competing values and interests.

Courses for which I taught as a Doctoral Associate

GEOS 523 Hazardous Waste Operation and Emergency Response 1 hr. Training in safety procedures for working on hazardous sites. Training in the safe handling of hazardous materials which might be encountered during drilling, soil sampling, or water sampling. Review of State and Federal regulations. Use of personal protection equipment. Satisfies OSHA 40 hour training requirements. *Prerequisite:* GEOS 412 or 512.

GEOS 524 Remediation Design and Implementation 1 hr. Principles and techniques for the remediation or cleanup of ground water and soils contamination. Introduction to pump and treat systems, bioremediation, soil vapor extraction, air sparging, and others. Choosing the appropriate system and sizing it for economical application to a specific site. Field trips required. *Prerequisite:* GEOS 412 or 512.

GEOS 525 Surface Geophysics 1 hr. An introduction to the use of those surface geophysical methods used in the investigation of ground water. Includes shallow seismic electrical methods, and ground-penetrating radar. *Prerequisite:* GEOS 412 or GEOS 512.

GEOS 526 Principles and Practices of Aquifer Testing 1 hr. Introduction to the methods of aquifer testing with emphasis on step drawdown pump-tests, forty-hour pumping test with recovery, slug tests and bail tests, data processing, using computer software, water level recorders, data loggers, and water level measuring equipment. *Prerequisite:* GEOS 412 or GEOS 512.

GEOS 527 Principles of Well Drilling and Installation 1 hr. An introduction to hollow-stem auger drilling and well installation, rotary drilling with mud and air, cable tool drilling, monitoring well design, sample collection and description; cuttings, split spoon, and Shelby tube, borehole geophysics, and installation and development of wells. *Prerequisite:* GEOS 412 or GEOLS 512.

GEOS 528 Principles and Practices of Ground-water Sampling and Monitoring 1 hr. An introduction to state-of-the-art techniques for sampling, monitoring, and evaluating ground water systems and surface water interactions. Includes quality control and assurance procedures, ground- water sampling equipment and procedures, field hydrochemical equipment and procedures, and vadose zone sampling of water and gas. *Prerequisite:* GEOS 412 or GEOS 512.

B. UNPUBLISHED LECTURE NOTES

- GEOS 100 Earth (Western Michigan University).
- GEOS 130 Physical Geology (Western Michigan University).

- GEOS 300 Oceanography (Western Michigan University).

C. TEACHING WORKSHOPS AND SEMINARS ATTENDED

1. MS&T Advising Program (2003-2004)

1. October 25, 2004. MS&T Academic Advising Program

2. OnCourse Workshop. CERTI Workshop

2. 6/1 to 7/1/2005 Helping Students Get On Course

3. MS&T Freshman Faculty (2003-2004)

1. Sep 03, 2003. Wayne Huebner (Vice-Provost Research). Presentation on: Making your funding proposals winners.
2. Sep 17, 2003. Gerry O'Brennan (Customer Support Manager, Computing and Information Services) with Meg Brady (interim Director) and Kerry Benson (Technical Support Manager). Presentation on: Practical information for faculty about MS&T computing services.
3. Sep 17, 2003. Ben Lea (Reference Librarian/Electronic Resources Coordinator) Practical information for faculty about the MS&T library (ppt).
4. Oct 01, 2003. Staff of Office of Sponsored Programs. How the Office of Sponsored Research can help you get funding.
5. Oct 01, 2003. Ray Bono (interim Director of Environmental Health and Safety), Melanie Hopper (Laboratory Safety Coordinator). Presentation on: Your legal role in campus environmental health and safety.
6. Oct 15, 2003. Tammy Pratt (Assistant Director, Academic Support Programs). Presentation on: Insights into student academic psyche – how to guide students to success.
7. Oct 15, 2003. Ronald Bieniek (Director, LEAD and New Faculty Programs). Presentation on: Research associate appointments in governmental research centers.
8. Nov 05, 2003. Debra Robinson (Vice-Chancellor for Student Affairs). Presentation on: Overview of the MS&T's organizational structure.
9. Nov 19, 2003. Paula Lutz (Dean, College of Arts & Sciences). Presentation on: Working within MS&T's academic structure.
10. Dec 03, 2003. Larry Gragg (Distinguished Teaching Professor), "DJ" Belarbi (recipient of 2004 Governor's Award for Excellence in Teaching), James Drallmeier (member of Committee on Effective Teaching). Presentation and discussions on: How to get – or avoid – good teacher ratings.
11. Jan 21, 2004. Dan St. Clair (Chair of Computer Science), Jeff Cawlfeld (Head of Geological Engineering), Greg Hilmas (Assistant Professor of Ceramic Engineering), Cesar Mendoza (Associate Professor of Civil Engineering), Presentation on: Striking a Successful Balance on the Road to Tenure.
12. Feb 04, 2004. Robert Mitchell (Dean, School of Engineering). Your forthcoming Annual Faculty Activity Report.
13. Mar 03, 2004. Robert Schwartz (Professor, Ceramic Engineering). Presentation on: How to engage students in active learning.
14. Apr 07, 2004. Harvest Collier (Vice-Provost for Undergraduate and Graduate Studies), Mike Hilgers (Co-Chair of Committee on Effective Teaching). Presentation on: Strategies Faculty Can Use to Motivate Undergraduate and Graduate Student

Success.

15. May 05, 2005. Ron Bieniek (Director of New Faculty Programs and LEAD Program), discussion on: What's been learned and experienced this past year - an exchange of ideas, information, advice and tips.

4. New Faculty Teaching Scholars (NFTS) Program (2004-2005) monthly forum

1. Sep 8, 2004 YT Shah, Ron Bieniek, and NFTS alumni Bill Fahrenholtz and Daniel Tauritz: Orientation to the NFTS Program.
2. Oct 13, 2004 NFTS alumnus Bill Weeks: Implementing Ideas from the Course Design Retreat.
3. Nov 10, 2004 Henry Wiebe and NFTS alumnus John Myers: Why, When and How to Offer a Distance Course with a Sample Course Syllabus.
4. Dec 8, 2004 NFTS Alumni Bill Fahrenholtz, Glenn Morrison, & Thomas Vojta: Tips for Being a Successful Teacher-Scholar in an Evolving University: The NSF CAREER Award as a guide to a balanced academic career.
5. Jan 12, 2005 Mariesa Crow: The Tenure Process: Fact and Fiction.
6. Feb 9, 2005 Wayne Huebner: MS&T's Research Mission.
7. Mar 9, 2005 NFTS alumni Jeff Smith and Glenn Morrison: Lessons from the Teaching Renewal Conference and the Pre-Tenure Writers workgroup.
8. Apr 13, 2005 MS&T Student Council representatives Chad Deshon and Dan Dillard: What Students Expect from Professors.
9. May 17, 2005 Campus Tenure & Promotion Committee reps Barry Flachsbart and Jeff Cawlfeld at the Academic Portfolio Retreat: The ins and outs of the tenure evaluation process.

5. New Faculty Teaching Scholars (NFTS) Program (2004-2005) Special Events

1. 27 September 2004, Neil Fleming: Making Better Use of Student Group Work
2. 22 October 2004, Eric Mazur: Active Learning and Interactive Lectures. Included video of presentation and examples and sources of concept Tests.

6. New Faculty Teaching Scholars (NFTS) Program (2004-2005) System-wide events

1. 30 September – 2 October 2004, Course Design Retreat, Holiday Inn SunSpree Resort and Conference Center, Lake of the Ozarks.
2. 24-26 February 2005, Teaching Renewal Conference, University of Missouri – Columbia
3. 16-18 May 2005, Building Your Academic Portfolio, Tan-Tar-A Resort and Conference Center, Lake of the Ozarks.

7. Workshop attended while at IUPUI (1999)

1. Workshop for Early Career Teachers in the Geosciences. National Association of Geoscience Teachers (NAGT)/National Science Foundation (NSF). June 23-26 1999, Montana State University, Bozeman, Montana.

	Supervised/Committee Chair/member	Total
UD	Undergraduate research/laboratory assistant	1
	MS students	2
	PhD Students	0
OSU	Undergraduate research/laboratory assistant	9
	MS students	30
	PhD Students	5
MS&T	Undergraduate research/laboratory assistant	2
	MS students	5
	PhD Students	3
IUPUI	Undergraduate research/laboratory assistant	10
	MS students	7
	PhD Students	0
	High School Students	1
IUPUI, MS&T, OSU		
IUPUI, MS&T,		
MS External Examiner		6
PhD External Examiner		10

A. University of Delaware

1. Undergraduate Research, Thesis and Projects

- **McGee.** Project to be determined. Fall 2018

2. M.S. Students Supervised

- **Goabaone Jaqueline Ramatlapeng,** Temporal variation of river water chemistry in the distal part of the Okavango delta in semi-arid Botswana. 9/2018 to present.
- **Kopo Veronicah Oromeng,** High-frequency data reveals that hydrology dominates the spatiotemporal variations of solutes in a semi-arid environment. 9/2018 to present

B. Oklahoma State University

1. Undergraduate Research, Thesis and Projects

- **Dylan Morton.** Project to be determined. Spring 2017
- **Waterman, Bre.** Project to be determined. Spring 2017
- **Joe Petralia,** Stable hydrogen and oxygen in evaporated rivers, 2016 to present.
- **Wes Rutelonis,** Carbon cycling in the Okavango Delta, 2012-2013.
- **Jessica Magers,** Acid mine drainage contamination of Neosho and Spring Rivers and Grand Lake in the Tar Creek area. Lew Wentz Fellowship recipient, 2006-2007.
- **Sara Drueckhammer,** Water Quality in the North Bosque River Watershed, Erath County Texas. Lew Wentz Fellowship recipient, 2006-2007.
- **Christopher Geyer.** Laboratory/research assistant - Investigating Lake Mababe and Lake Ngami sediments for paleoenvironmental information.01/09 -06/11.
- **Nicole Paizis.** Laboratory/research assistant – Investigating carbon cycling in the Okavango Delta, Botswana 8-2009 – present.
- **Lauren Guidry.** Laboratory Assistant

- **Jayme Foster.** Laboratory Assistant.

3. M.S. Students Supervised

- **Laviolette, Chris.** Predicting water quality in a wet climate change scenario in the Okavango Delta, semi-arid Botswana. 9/2016-12/2018
- **Missi Charles.** Major ion chemistry and stable isotopes of groundwater in Southern Malawi 9/2016 -15/2018
- **Krystal Heibel.** Investigating the paleoenvironmental conditions in the Middle Kalahari of norther Botswana. 9/2015 – 6/2017.
- **Mary Niles.** Investigating the chemical and isotopic signatures of hot spring along the Luwanga rift valley, Zambia. 01/2013 – 12/2015.
- **Rawlins Akondi.** Investigating the carbon evolution of groundwater in the Okavango Delta. Northwest Botswana. 09/12 -5/14.
- **Scot Meier.** Investigating processes that control water chemistry during refilling of Lake Ngami in semiarid northwest Botswana. 09/12 -5/14.
- **Stephanie Wisler.** Investigating sedimentation in the Upper Okavango Delta Botswana from sedimentary and geochemical proxies. 09/12 -5/14.
- **Nicole Paizis.** Investigating carbon cycling in the Okavango Delta, Botswana 09/12 - 5/14.
- **Christopher Geyer.** Investigating groundwater contaminated with nitrates at a residential site in Stillwater Oklahoma from stable isotopes. 09/12 -5/14.
- **Morgan Ostroski.** Investigating the formation and evolution of mega-paleolakes in the middle Kalahari of semi-arid Botswana from sedimentary and geochemical proxies. 09/11 - 5/13.
- **Eric Seeger.** Investigating the fate of solutes and organic contaminants from highly saline produced waters in freshwater environments. 09/10 -5/14.
- **Akoko Eric.** Carbon cycling in a semi-arid riverine system: The Okavango River, Botswana.
Graduated 2012.
- **Kristi Teter.** Paleoenvironmental reconstruction of paleo-lake Mababe, northwestern Botswana from sediment chemistry and biological productivity data. **Graduated 2009.**

4. PhD Students Supervised

- **Pride Abongwa.** Assessing temporal loss of CO₂ from natural waters using dissolved inorganic carbon concentrations and stable carbon isotopes. **Graduated 2014.**
- **Hendratta Ali.** Carbon cycling and stable isotope evolution in neutral mine drainage **Graduated 2009.**

5. Service on Graduate Student Committees (Non-Advisees)

- **Kyle Obenberger (MS).** School of Geology, OSU. **Current.**
- **Cofrancesco, Jessica** School of Geology, OSU. **Graduated.**
- **Matin Alavi (MS).** School of Geology, OSU. **Current.**
- **Khumo Leseane (MS).** School of Geology, OSU. **Graduated.**
- **Andrew Nelson (MS).** School of Geology, OSU. **Graduated.**
- **Fathiya Al Hadhrami (MS).** School of Geology, OSU. **Graduated.**
- **Sen Wei (MS).** School of Geology, OSU. **Graduated.**

- **Keith Rivera** (MS). School of Geology, OSU. **Graduated.**
- **Jennifer Thorstad** (MS). School of Geology, OSU. **Graduated.**
- **Sruthi Subbanna** (MS). Environmental Sciences Program, OSU. **Graduated.**
- **Jennifer Gramrod** (MS). School of Geology, OSU. **Graduated.**
- **Vukenkeng Che-Alota** (MS). School of Geology, OSU. **Graduated.**
- **Kelsey Mosley** (MS). School of Geology, OSU. **Graduated.**
- **Ryan Joyce** (MS). School of Geology, OSU. **Graduated.**
- **Jeffries Roden** (MS). School of Geology, OSU. **Graduated.**
- **Maggie Silvertooth** (MS). School of Geology, OSU. **Graduated.**
- **Jessica Magers** (MS). School of Geology, OSU. **Graduated.**
- **Meghan Dailey** (MS). School of Geology, OSU. **Graduated.**
- **Ekenem Adigwe** (MS). School of Geology, OSU. **Graduated.**
- **Cameron Ross** (MS). School of Geology, OSU. **Graduated.**
- **Rita Asoba** (MS). School of Geology, OSU. **Graduated.**

6. External Examiner

- **Bokani, Nthaba** (MS) Botswana International University of Science and Technology. **Current.**
- **Charity Pema** (MS) Botswana International University of Science and Technology. **Current**
- **Arua, Ugo** (PhD) Chemistry Department, OSU. **Current.**
- **Rianna Hopson** (PhD) Chemistry Department, OSU. **Current.**
- **Johanna Ithindi** (MS) Department of Civil and Environmental Engineering, Polytechnic of Namibia, Namibia **Graduated**
- **Davis Caroline** (PhD). Department of Geological Sciences and Engineering, MS&T. **Graduated.**
- **Tsigabu Gebrehiwet** (PhD). Western Michigan University. **Graduated.**

MS&T

1. Undergraduate Research Thesis and Projects

- **Sara Grondin.** Environmental information from concrete carbonates.
- **Leah Bahr.** Laboratory Assistant

2. M.S. Students Supervised

- **Crews Jeffrey.** Water chemistry and stable isotope analyses of karstic waters in central Missouri.
- **Silva Andrea.** Elucidating environmental information from stalactites formed in concrete degrading environments.

3. Ph.D. Students Supervised

- **Arindam Murkerjeh.** Carbon cycling in groundwater impacted by acid mine drainage.
- **Ernest Fonyuy.** Impacts of Acid Mine Drainage on Carbon Cycling in Receiving Streams.

4. Service on Graduate Student Committees (Non-Advisees)

- **Hart Megan L** (PhD). Department of Geological Sciences and Engineering, MS&T.

- **Schlegel Matthew (MS)**. Department of Geological Sciences and Engineering, MS&T.
- **Sean O'Donnel (MS)**. Department of Geological Sciences and Engineering, MS&T.
- **Hart, Megan L (MS)**. Department of Geological Sciences and Engineering, MS&T.

5. External Examiner

- **Jennifer Wingate (PhD)**. Miami University of Ohio.
- **Laura Smart (PhD)**. Western Michigan University.
- **Ahmed Ali Abdalla Murad (PhD)**. Western Michigan University.
- **Loago Molwalefhe (PhD)**. Western Michigan University.

C. IUPUI

1. Undergraduate Thesis

- **Christina Miller**. Temporal controls on dissolved inorganic carbon in a small urbanized catchment.
- **Tracey Dill**: Spatial Trends in Water Quality of the White River and its tributaries in the City of Indianapolis, Indiana.
- **Rebecca Rowe**. Comparative study of total dissolved solids from groundwater contaminated with hydrocarbon using microelectrode and gravimetric measurement Techniques
- **Mark Fisherkeller**. Environmental information from carbonates formed from concrete degradation.

2. Undergraduate Research Project

- **Christina Miller**. Temporal controls on dissolved inorganic carbon in a small urbanized catchment.
- **Kelly Probst**. Temporal variation in Silica and Alkalinity in groundwater and Stream water from White River Field Station near IUPUI, Indianapolis Indiana
- **Leda Jackson**. A comparative study of hydrologic exchange in sub-tropical estuaries, southwest, Florida, USA.

3. Service Learning Intern

- **Edward Selig**. Environmental Geology (G107) at the Lilly Arbor Project, White River, Indianapolis IN.

4. Laboratory Intern (IUPUI)

- Kelly Probst, Prubakar Ruppa, Hamid Dakhily, Rehj Cantrell, Chris Hall, Christina Miller, Leda Jackson

5. M.S. Students Supervised

- **Birgreta Cahill**. Isotopic analysis of a high altitude riverine paleomeadow sequence in Central Nevada.
- **Dorothea Richardson**. Geochemical and isotopic evidence of groundwater support of the corral canyon wet meadow complex, central Nevada, USA.
- **Jennifer Wingate**. Hydrostratigraphic investigation of hydrologic and hydrogeologic processes in glacial and glacially derived sediments of central Indiana, USA.

6. Service on Graduate Student Committees (Non-Advisees)

- **Lynette De Sylvia (MS)**
- **Rosalice Buehrer (MS)**

7. External Examiner

- **Ahmed Ali Abdalla Murad (PhD)**. Western Michigan University
- **Loago Molwalefhe (PhD)**. Western Michigan University
- **Franklyn Legall (PhD)**. Western Michigan University
- **Mark Burton (MS)**. University of Missouri Rolla
- **Alice Mukwa (MS)**. Western Michigan University
- **Schmitt Danielle (MS)**. Western Michigan University
- **Anthony Mafia (MS)**. Western Michigan University

8. High School Student Research

- **Nathan Spearing**, Center Groove High School, Indiana. (Fall 2000)

9. Research Mentoring Activities

- April 19 -21, 2002. Attended the Keck research symposium in Amherst MA as a mentor to Leda Jackson
- April 25-27, 2002. Attended the National Undergraduate Research Symposium at University of Wisconsin at Whitewater as a mentor to Leda Jackson
- Keck undergraduate research mentor for Leda Jackson, SW- Florida. Summer 2001.

PROFESSIONAL/SERVICE ACTIVITIES**A. PROFESSIONAL ORGANIZATIONS**

- American Geophysical Union
- Geological Society of America
- National Association of Black Geoscientists

B. LEADERSHIP IN PROFESSIONAL ORGANIZATION/SERVICE**1. Professional Meeting**

- 2013. Joint Technical Program Committee. Geological Society of America, Hydrology Division.
- 2013. Session Chair, Geological Society of America Annual Meeting, North-Central Section, Kalamazoo, MI
 - 2008. National Science Foundation Workshop Leader. "Preparing for an Academic Career in the Geosciences: Workshop for Graduate Students and Post-Doctoral Fellows". July 31 to August 3 2008, the University of Oklahoma. (Conveners: H. Macdonald, College of William and Mary and R. W. Dunbar, Stanford University) <http://serc.carleton.edu/NAGTWorkshops/careerprep08/program08.html>.
- 2000. Session Chair, Geological Society of America Annual Meeting, North-

Central Section, Indianapolis, IN

- 1999. Judge of student poster presentation, American Association of Petroleum Geologists Annual Meeting

C. REVIEWER-JOURNALS/PROPOSALS/BOOKS

1. Panelist

- NSF Panelist: Graduate Research fellowship (2003, 2004, 2005, 2009, 2011)
- NSF Panelist - Cyber-Enabled Discovery and Innovation (CDI) (2009)
- NSF Panelist: Geoscience Education (GeoEd) Program, Track 2 (2010, 2011).

2. Journals/Books

I have reviewed numerous manuscripts and book chapters from publishers estimated at about 5 or more a year. Journals and publishers include:

- Applied Geochemistry (5)
- Chemical Geology (5)
- Engineering Science and Technology, an International Journal (1)
- Environmental Science & Technology (2)
- Estuarine, Coastal and Shelf Science (2)
- Geochimica et Cosmochimica Acta (3)
- Geosphere (1)
- Hydrological Processes (5)
- Journal of African Earth Sciences (5)
- Journal of Contaminant Hydrology (2)
- Journal of Geoscience Education (1)
- Journal of Hydrology (25)
- Journal of Hydrology: Regional Studies (1)
- Physical Geology by Murk and Skinner (3 chapters)
- Rapid Communications in Mass Spectrometry (4)
- Science of the Total Environment (4)
- Wetlands (2)

2. Proposal Reviews

- Israel Science Foundation (1)
- International Foundation for Science, Stockholm, Sweden (1)
- American Chemical Society (4)
- National Science Foundation (more than 50 proposals for NSF- IRES, NSF- EAR/GEO, GEO ED, NSF CDI-2009)

D. UNIVERSITY SERVICE

1. Service at University of Delaware (UD)

Department of Geological Sciences

- Personnel Committee – Member (2018 to 2019).
- Member Geophysics Search Committee (2018-2019)

- Member Instructor Search Committee (2018)

College Service

- Member CEOE Diversity Committee (2018-present)
- Member CEOE International Taskforce (2018-present)
- Member CEOE Strategic Planning Committee (2018-present)

2. Service at OSU

School of Geology Service

- Personnel Committee – Member (2006 to 2012).
- Space Committee – Chair (2007 to present).
- Webpage Committee (2009 to present).
- Preliminary Exam Committee (2009 to present).
- Emerging Technologies and Geoscience (ETAG) Committee (2010 to present).
- Department Safety Officer (2007-2010).

College Service

- Search & Screening Committee for the Dean of the School of Global Studies & Partnerships 2016-2017
- Arts and Science Promotion and Tenure Committee (2007 -2010).
- Reviewer the 2007 Seed grants (20) for the College of Arts and Science.

University Service

- Environmental Sciences Steering Council Member (2008 -present).
- Executive Committee Africana Studies Center (2007- present).
- Faculty Council (2010 to 2013).
- Faculty Council Budget Committee (2010 to 2013).
- Judge for the 2007 OSU Research Week.
- Co-Advisor for the African Student Organization (2006 to 2008).
- Advisor for the African Student Organization (2008 to present).

3. Service at MS&T

Department of Geological Sciences and Engineering

- Gave a tour of my laboratory to the SGMA XI MS&T Chapter on 4/24/2004.
- The annual phonathon for Geological Engineering and for Geology and Geophysics 9/12, 9/13/04, 9/17/05.
- Gave a laboratory tour for students of the Jacqueline Institute on June 16 2004.
- Departmental Tenure and Promotion study group. Fall 2004.
- Open House and departmental visits (10/18/03, 11/15/2003, 10/9/04, 11/13/04, 2/21/05, 4/25/04).

School of Materials, Energy, and Earth Resources

- Spring Open House 4/9/04, 9/29/04, 10/6/04, 10/18/04, 2/21/05.

University of Missouri-Rolla

- Information Technology/Computing Committee (ITCC) (2003 to 2006)

- Faculty Panel Discussion, International Education Week, Nov 18, 2004, Southwestern Bell Cultural Center, at MS&T.

4. Service at IUPUI

Departmental of Geology

- Graduate Committee (1999 to 2003)
- Consultancy: Quality Environmental Professional (QEPI), Indianapolis, Indiana and ATC Associates, Indianapolis, Indiana.

School of Science

- Executive Committee, Center for Earth and Environmental Science (2001 to 2003)
- IUPUI Graduate Showcase 2001, Indiana University Purdue University Indianapolis, Friday, October 26, 2001. Dry season hydrologic mixing in estuaries for different tidal stages: Blackwater River southwest Florida, USA. (Poster contribution by Lora K. Shrake; Lenore Tedesco and **Atekwana Eliot**).
- Judge, IUPUI School of Science Undergraduate Research Student Symposium (1999)
- Judge, IUPUI School of Science Graduate Student Research Symposium (1999)
- Academic Appeals Committee (1998)

E. OUTREACH ACTIVITIES

1. Outreach at MS&T

- Outdoor Kids. Truman Elementary, Rolla, MO (2004-2005).

2. Outreach at IUPUI

- Project SEAM Workshop for K-12 Teachers (2003).
- Contributed to the Geology component of the Science Olympiad, Butler University, February 22, 2003.
- Project SEAM Workshop for K-12 Teachers (2002).
- Mentor of High School Student; Center Groove High School, Indiana (2001).
- Panel Scientist: Watershed Distance Learning. The Children's Museum of Indianapolis, Indianapolis, Indiana (March 6 and 9, 2001).
- Scientist: Water quality demonstrations in "Water Conservation" for the Nickelodeon "Helpmobile. The Children's Museum of Indianapolis, Indianapolis, Indiana (2001).