

Dr. Mélida Gutiérrez

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EDUCATION

Ph.D. in Geohydrology. University of Texas at El Paso (UTEP), 1992.

Postgraduate Course in Environmental Science, International Institute of Hydrology,
Delft, The Netherlands, 1984-1985.

M.Sc. in Biological Wastewater Treatment, University of Karlsruhe, Germany, 1977-1979.

B.Sc. in Chemical Engineering, Technological Institute of Monterrey, Mexico, 1971-1975.

WORK EXPERIENCE

1992-1993 Assistant Professor at New Mexico State University, Geological Sciences.

1993-to date MSU faculty, Geography, Geology and Planning Department.

COURSES TAUGHT AT MSU

Courses taught include Physical Geology; Earth Science for Teachers; Water Resources;
Environmental Geology, Principles of Geochemistry, and Research in Geology.

RESEARCH AREAS

Research has focused on soil and water contamination, stream water quality, earth science
education, geochemistry of natural waters, and geochemical modeling.

RECENT PEER-REVIEWED PUBLICATIONS

Alarcón-Herrera MT, Bundschuh J, Nath B, Nicolli HB, Gutierrez M, Reyes-Gomez VM,
Nuñez D, Martín-Dominguez IR, Sracek O. Co-occurrence of arsenic and fluoride in
groundwater of semi-arid regions in Latin America: Genesis, mobility and remediation.
Journal of Hazardous Materials. In press.

N.Rono, R. Biagioni, C. Rovey II, and M. Gutiérrez, Geochemical sequestration reactions within
the Lamotte Sandstone at five different locations in Missouri. *Environmental
Geosciences*, 20, 97-108

Reyes-Gomez V.M., Alarcón-Herrera M.T., Gutierrez M. and Nuñez D., 2013. Fluoride and
Arsenic in an Alluvial Aquifer System in Chihuahua, Mexico: Contaminant Levels,
Potential Sources and Co-occurrence. *Water, Air, & Soil Pollution*.224:1433.

Gutierrez, M. and Baker, B. 2013. Making Connections to Real Data and Peer-Reviewed
Literature: A Short Soil Exercise in a Geochemistry Class. *Journal of Geoscience
Education*, 61, 53-58.

- Gutierrez, M., V Reyes, MT Alarcon-Herrera, Daniel Nuñez, 2012. Exploratory analysis of sediment geochemistry to determine the source and dispersion of Ba, Fe, Mn, Pb and Cu and in Chihuahua, northern Mexico, *Journal of Geography and Geology*, 4(4) 26-39.
- Nondorf, L, M. Gutierrez, and T. Plymate, 2011. Modeling carbon sequestration geochemical reactions for a proposed site in Springfield Missouri, *Journal of Environmental Geoscience*, 18, 91-99
- Camacho, L.M., M. Gutierrez, MT Alarcon-Herrera, ML Villalba and S. Deng, 2011. Occurrence and treatment of arsenic in groundwater and soil in Northern Mexico and Southwestern USA. *Chemosphere*, 83, 211-225.
- Gutierrez, M, and E. Johnson, 2010. Temporal variations of natural soil salinity in an arid environment using satellite images, *J. of South American Earth Sciences*, 30, 46-57.
- Gutiérrez, M, S. Johnson. 2009. Why save a can? *Science Activities*, 46, 7-11.
- Gutiérrez, M., M.T. Alarcon-Herrera, L. Camacho, 2009. Geographical distribution of arsenic in sediments within the Rio Conchos Basin, Mexico. *Environmental Geology*, 57, 929-935.
- Gutiérrez, M., C. Martinez-Pina, J. Luo, and K. Mickus, 2008. Geochemical processes contributing to the contamination of soil and surface waters in the Rio Conchos Basin, Mexico. *Geosphere*, 4, 600-611.
- Cornell, J., M. Gutiérrez, A. Wait, H.O. Rubio, 2008. Ecological characterization of riparian corridor along the Rio Conchos, Mexico. *The Southwest Naturalist*, 53, 96-100.

PRESENTATIONS AT SCIENTIFIC MEETINGS

- Mickus, K and M. Gutierrez. Gravity and magnetic analysis of the Methow Basin, North-Central Washington. GSA National Meeting – Denver CO, October 2013.
- Peebles, J. and Gutierrez, M., Spatial analysis of mining related sediment contamination of Turkey Creek Watershed in the Tri-state mining district, Joplin, MO. GSA National Meeting – Denver CO, October 2013
- Gutierrez, M., Johnson, E., Mickus, K. Utility of GeoEye in assessing riparian vegetation along the Rio Conchos, Mexico, GSA-Cordilleran, Queretaro, Mexico, March 2012
- Gutierrez, M., Spatial variability of Fe, Mn, and Ba of sediments within the Chihuahuan Desert, Mexico, GSA-Cordilleran, Queretaro, Mexico, March 2012
- Alarcón-Herrera M.T., V.M. Reyes-López, M. Gutierrez, and D. Nuñez. Temporal variation and co-occurrence of fluoride and arsenic in aquifers of an arid región in Chihuahua, Mexico. The 4th International Congress on Arsenic in the Environment; Understanding the Geological-Medical Interface of Arsenic, Cairns, Australia, 22-29 July 2012.
- Gutiérrez, M. and T. Plymate. Modeling solubility and mineral trapping of CO₂ at a proposed carbon sequestration site in SW Missouri. GSA Abstracts with Programs Vol. 43, No. 1, Joint Northeastern/North-Central Section Meeting, Pittsburgh, PA. March 2011
- Gutierrez, M. and M.T. Alarcon-Herrera, 2010. Arsenic anomalies of an arid region determined from sediment geochemistry, Water Rock Interaction Congress, Guanajuato, MX .

Nondorf L. and M. Gutierrez, 2010. Simulating the effects of carbon sequestration on the Lamotte Sandstone in SW Missouri using Geochemist Workbench. GSA Abstracts with Programs, V. 44, 12-6, p. 53.

Gutierrez, M. and L. Nondorf, Variability in the geochemical modeling of carbon sequestration of a sandstone aquifer. 2010 GSA Abstracts with Programs, V. 44,12-8, p. 53.

Gutierrez, M. and M.T. Alarcon-Herrera. Using large sediment geochemical databases to map lead, copper and arsenic anomalies in a desert environment. 2010. GSA Abstracts with Programs, V. 44, 20-6, p. 70.

GRADUATE STUDENTS PROJECTS

In Progress Mary Ann Davis, Online Instructional Approach and Assessments Applied to Teaching Earth Science at a Two-year College

In Progress. Justin Drane, Modifying the Conservation Projects (Project WET, WILD) to address Earth Sciences in High School Classrooms

In Progress Jessica Peebles, Mapping Soil Lead Contamination in the Tri-State Mining District

In Progress Jenny Kissel. Lead Accumulation in Native Plants Growing Near Abandoned Mine Tailings in Springfield MO.

2011 - M.Sc in Geospatial Science. Emily Sturnfield. *E. Coli* Incidence and Sources in the Dry Sac Watershed, Missouri.

2010 - M.Sc. in Earth Science Education, Kathi Oetting. Fostering Students' Comprehension of Sinkholes.

2010. M.Sc. in Earth Science Education. Clark Giboney. Effectiveness of “*Explore Geology CD roms*” in the Secondary Classroom.

2010 M.Sc in Geospatial Science. Lea Nondorf, Geochemical Modeling of the Lamotte Sandstone for Carbon Sequestration Purposes, SW Missouri.

2009 M.Sc. in Earth Science Education, Rick Snyder, Promoting Inquiry in the Science Curriculum.

RECENT RESEARCH GRANTS

2011 Gutierrez, M. Geochemical spatial analysis to identify distribution and sources of contaminants. MSU Faculty Research Grant.

PROFESSIONAL AFFILIATIONS

National Association of Geoscience Teachers

American Geophysical Union

Science Teachers Association of Missouri