

International Engagement - Department of Geography and Geology
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Geoscientists in the Department of Geography and Geology conduct research on all six inhabited continents, and offer several study abroad and study away programs each academic year.

1. **CHINA:** Dr. Xingang Fan, Visiting Professor at Chengdu University of Information and Technology (CUIT), visited CUIT in summer 2015 and 2016. Presented seminars, offered weather modeling training class, and conducted collaborative research on multiple topics including meteorology and public health (one journal paper submitted), severe weather simulation over Tibetan Plateau/Sichuan Basin area, and radar meteorology.



WRF weather modeling training for young professors/graduate students at CUIT, 12 participants.

2. Dr. Xingang Fan, Visiting Professor at the Institute of Atmospheric Physics, Chinese Academy of Sciences, is involved as a co-PI in a research project, entitled "Study of "Three-Water" Transformations in the Yellow River Basin under Influences of Climate Change and Human Activities" and funded by the Chinese National Science Foundation.

3. Dr. Mahmood is also collaborating with colleagues from Institute of Atmospheric Physics (IAP) of Chinese Academy of Sciences (CAS) in Beijing, China. Their

collaboration is focused on LULCC impacts in Monsoon Asia and China. Several papers have been published. Dr. Mahmood has made several trips to Beijing, China as a part of this collaboration. He also hosted visiting scientists from China.

4. Dr. Chris Groves and WKU senior Megan Laffoon attended the International Symposium on Sustainable Development in Water Resources and Ecological Environment in Guangzhou, China in March. Laffoon, a student in the Chinese Flagship Program and the Honors College at WKU, presented results of her WKU Honors thesis, *Potential Application of Hugelkultur to Increase Water Holding Capacity of Karst Rocky Desertified Lands*, coauthored with Groves and Biology Professor Albert Meier.

Groves was the conference's opening keynote speaker, presenting *Measurement of Inorganic Carbon Fluxes from Large River Basins in the South Central Kentucky Karst*, co-authored with Connor Salley, Laura Osterhoudt, Jason Polk, Kegan McClanahan and Autumn Turner. All co-authors except Dr. Polk, Associate Professor of Geography, are Geoscience graduate students whose research has contributed to the project



WKU Honors College Senior Megan Laffoon presents her research in China

5. Dr. Groves was invited to serve a second five-year term as member of the Board of Governors of the International Research Center on Karst (IRCK) in Guilin, China. The IRCK is administered under the auspices of the United Nations Educational Scientific, and Cultural Organization.

6. **WORLD:** Dr. Groves was invited by Professor Elena Trofimova of the Russian Academy of Sciences to serve on Steering Committee for the Karst Commission of the International Geographical Union. Dr. Groves also served as an invited member of the International Association of Hydrogeologists Karst Commission, and was invited to serve as an Associate Editor for the *Hydrogeology Journal*, the journal of the International Association of Hydrogeologists.

7. **BRAZIL:** Dr. Josh Durkee's primary research focuses on remote sensing and precipitation science of severe thunderstorms over subtropical South America. Dr. Durkee has presented this research at the AGU Meeting of the Americas Conference in Foz do Iguacu, Brazil.

8. WKU Meteorology/Federal University of Rio Grande do Sul, Brazil RCAP research collaboration examine atmospheric chemistry to trace water vapor trajectories for severe thunderstorms over Brazil.

9. -WKU Meteorology/Federal University of Rio Grande do Sul, Brazil Visiting Scholar Exchange and WKU Meteorology/University of São Paulo Visiting Student participation for the WKU Storm Chase.

10. **SOUTH AFRICA:** Dr. Josh Durkee has been formerly invited to visit the University of Cape Town, South Africa to participate in a research collaboration meeting November 2016 regarding severe thunderstorms over southern Africa.

11. **MEXICO:** Dr. Rezaul Mahmood has developed collaboration with the National Autonomous University of Mexico (UNAM), Mexico City, Mexico. They are collaborating on impacts of land use land cover change (LULCC) on weather and climate with particular focus on irrigation impacts. Several papers have been published. This collaboration also engaged colleagues from Meteo-France (equivalent of NOAA) and will be further developed in the coming years. Dr. Mahmood has hosted scientists from both UNAM and Meteo France here at WKU. He also visited UNAM in Mexico.

12. Recently, Dr. Pat Kambesis was invited to participate as the project geologist/hydrologist for the Proyecto Espeleological Sistema Huautla, a long-term speleological research project that is ongoing in the State of Oaxaca in southern Mexico. She continued the work that was initially started by WKU M.S. Geography student Jim Smith in 1994, who wrote his thesis on the hydrology of the area. Kambesis continued with geologic mapping and reconnaissance for future karst groundwater studies to be conducted in collaboration with U.S. and Mexican graduate students.

13. Dr. Pat Kambesis is involved in an ongoing project to document the caves and karst systems of Quintana Roo on the Yucatán Peninsula, which is a continuation of her dissertation research in the area. One of her research questions was to determine the geologic controls on cenote and cave development and, in August 2015, she continued rock sampling. In Spring 2016, an M.S. Geoscience graduate student completed an independent study that helped analyze the samples.

14. **AUSTRALIA:** Dr. Mahmood is developing collaboration with Curtin University, Perth, Australia. Current research is focused on LULCC impacts on severe weather in Bangladesh. One manuscript is completed and will be submitted soon and several others are currently in preparation.

15. **NEPAL:** Dr. Nahid Gani has received three grants (one external ACS-PRF UNI grant, and two internal RCAP grants) to investigate geo-scientific problems in East Africa and in the Himalayas using cutting edge methods and techniques.

16. M.S. Geoscience graduate student Indu Bhattarai is conducting her thesis research on understanding the exhumation of the Nepalese Himalayas. She is working on the sandstone samples collected from Nepal for thermochronologic analysis.

17. **ETHIOPIA:** Dr. Nahid Gani has an advisee, Geology undergraduate major, Helen Deborah Flynn, who recently completed a [geoscience research fieldtrip](#) on the Ethiopian Plateau, Ethiopia. After coming back from her trip to Ethiopia, Deborah is now applying for a Fulbright scholarship to go back to Ethiopia to understand the tectonic controls on natural spring occurrences. Her research would benefit the sustainable development of water resources in Ethiopia.

18. M.S. Geoscience Graduate student Nathaniel Blackburn recently completed his Geoscience Master's thesis research on the Ethiopian Plateau, investigating the thermal history of the Blue Nile Canyon.

19. **COLOMBIA:** Interdisciplinary, collaborative research continues on youth mobility and gang violence in Medellín, Colombia, with Dr. Holli Drummond (Sociology), Dr. David Keeling (Geography), and Dr. John Dizgun (KIIS, Honors). Recent publications have appeared in [Youth and Society](#), in the [Journal of Interpersonal Violence](#), and [FOCUS on Geography](#).

20. **PERU:** Dr. David Keeling continues research on transport infrastructure issues, with a paper published recently in the [Journal of Transport Geography](#).

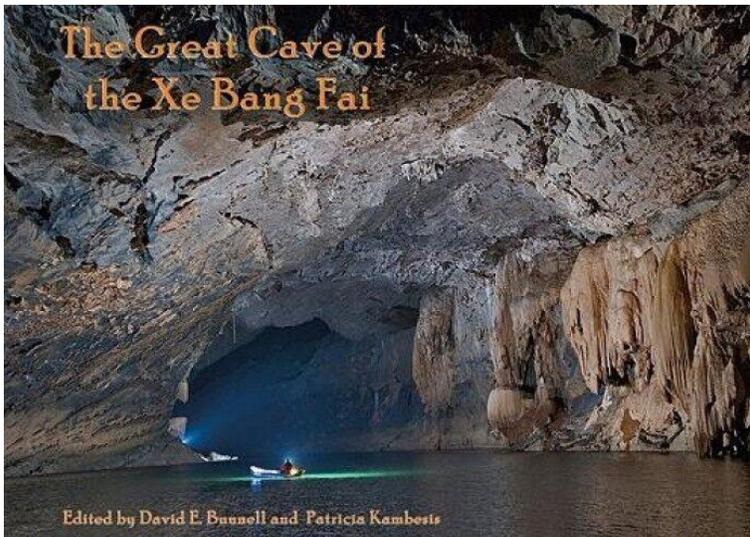
21. **ARGENTINA:** Dr. David Keeling continues research in Argentina and is writing a second edition of the *Geography of Argentina* monograph. He has also worked on the Argentine-U.K. conflict over the Falkland Islands recently published in a [Routledge book](#).

22. **U.K.** Dr. David Keeling continues research on railway infrastructure in the U.K., following up on his recently published work on the Lincolnshire by-pass project that appeared in [FOCUS on Geography](#). See also the [recent news announcement](#) on summer 2016 research in the U.K. with Dr. Peggy Gripshover.

23. **ICELAND:** This summer, Dr. Jason Polk, M.S. Geoscience graduate student Anisha Tuladhar, and undergraduate geography student Caleb Koostra conducted fieldwork in Iceland to sample glacier meltwater rivers throughout the southern coast of Iceland (see picture below). The project is part of Ms. Tuladhar's thesis research in collaboration with the Iceland Meteorological Office and aims to increase understanding of how climate and human activity are influencing glacier melting processes.



24. **LAOS:** Dr. Pat Kambesis was part of an international team that conducted documentation field work in Xe Bang Fai, a world-class river cave and one of Laos' most significant show caves. Field work consisted of cave survey and inventory, photo-documentation, and field reconnaissance in support of future research projects, resource management, and touristic development. Kambesis co-edited a book that summarized the project results which included sections on cultural geography, cave and surface biology, karst geology and hydrology. Detailed cave maps and photographs accompanied the text. The book was published in May 2016 and is being distributed nationally and internationally. A significant outcome of the field work and book was that it supported the Lao government's application for World Heritage status for Xe Bang Fai and the Him Namno karst that contains the cave system.



25. **NIGER:** M.S. Geoscience recent graduate Jonathan Oglesby, along with Dr Leslie North, are researching water literacy in rural areas of Niger, Africa, [using sophisticated eye-tracking software](#).

26. **HAITI:** Dr. Pat Kambesis recently led an international team of American and Haitian speleologists to the Grande Anse of southern Haiti to work on water quality and water access issues in the extensive karst of Beaumont. Though the area is drained by large coastal springs, all of the water is underground, which results in significant water shortages during the dry seasons. The field work involves delineating groundwater basins in the region.

27. **BELIZE:** Dr. Jason Polk, Dr. Leslie North, and graduate student Bo Schaefer conducted training in Belize for the Friends of Conservation and Development on Karst Management and Environmental Tourism. The goal of the training was to assist the land management group, which is in charge of Chiquibul National Park, home of the longest cave in Belize and largest cave chamber in the Western Hemisphere, as well as hosting the primary watershed for much of Belize and Guatemala. The team helped FCD develop a geodatabase for inventorying the Park's cave and karst features and plans to return this year to assist with the project and remapping of the cave.

28. **VIETNAM:** Dr. Leslie North and Dr. Jason Polk of the WKU Center for Human-GeoEnvironmental Studies (CHNGES) conducted research in Vietnam in Phong-Nya Ke Bang National Park on human disturbance to the karst landscape. The park is home to the largest cave in the world, Son Doong, and their efforts are assisting Park managers with tourism and resource management activities. Currently, a memorandum of agreement is being developed to continue building the relationship and to support student research and engagement.



29. **MULTIPLE COUNTRIES:** Dr. David Keeling represents WKU and the American Geographical Society on educational expeditions to various destinations around the world. Expeditions completed in the last few years have visited: Argentina, Australia, Azerbaijan, Bermuda, Bhutan, Brazil, Cambodia, Chile, Egypt, Fiji, Germany, India, Indonesia, Italy, Jordan, Maldives, Mauritius, Morocco, Namibia, Nicaragua, Palau, Peru, Poland, Portugal, Russia, Samoa, South Africa, Sri Lanka, Tanzania, Thailand, U.K., and Vanuatu. Dr. Keeling has visited over 100 countries on educational expeditions over the past few years.

30. Departmental **Study Abroad** programs are offered in Argentina and Chile (KIIS), in Iceland (WKU), and in Ireland (WKU) each summer. During the Winter and Summer terms, the Department has offered Study Away programs (WKU) to Hawaii, the Mojave, the Bahamas, and it offers the award-winning [annual summer Storm-Chase program](#). For example, this past summer Drs. Jason Polk, Leslie North, and Bernie Strenecky led a group of 19 students to Iceland for a study abroad course that also included a service learning component. The students learned about climate change, water resources, and environmental education in the Arctic, while also participating in community projects and giving presentations to community stockholders. Drs. Polk and North were appointed Visiting Associate Researcher positions at the University of Akureyri during the course, due to burgeoning collaboration between the universities.

NOTE: Photos can be linked from the news stories that are hyperlinked in this document. Other pictures can be obtained by contacting the faculty member directly.