

BRYAN GREENWOOD MARK
Curriculum Vitae
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CONTACT

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EDUCATION

Ph.D. Earth Sciences, Syracuse University, 2001
M.A. Geography, Ohio State University, 1995
B.A. History, Brown University, 1992

POSITIONS

2016- Professor, Department of Geography, Ohio State University
2015- State Climatologist of Ohio
2011- Courtesy Appointment, School of Earth Sciences, Ohio State University
2010-2016 Associate Professor, Department of Geography, Ohio State University
2005- Faculty (PhD advising), Environmental Science Graduate Program, Ohio State University
2004- Research Scientist, Principal Investigator, Byrd Polar and Climate Research Center, Ohio State University
2004-2009 Assistant Professor, Department of Geography, Ohio State University
2001-2003 Postdoctoral Research Fellow, Max Planck Institute for Biogeochemistry, Jena, Germany, in collaboration with Glasgow University, Department of Geography and Geomatics, Glasgow, U.K.
1996-2001 University Fellow, Research Associate and Teaching Assistant, Syracuse University, Department of Earth Sciences

PUBLICATIONS

† indicates student author

Peer-reviewed Journal Articles

- 2020 Sambuco, E., B.G. Mark, N. Patrick, J.Q. DeGrand, D.F. Porinchu, S.A. Reinemann, G. Baker and J.E. Box. Mountain temperature changes from embedded sensors spanning 2000m in Great Basin National Park, 2006-2018. *Frontiers in Earth Science – Hydrosphere* (part of Special Research Topic: Connecting Mountain Hydroclimate Through the American Cordilleras, guest-edited by Fernandez, A., Mark, B.G., and Baraer, M.).
<https://www.frontiersin.org/articles/10.3389/feart.2020.00292/full>
- 2020 Rodriguez-Avella, K., M. Baraer, J. McKenzie, B.G. Mark, and L. Somers Comparing the performance of three methods to assess DOM dynamics within two distinct glacierized watersheds of the tropical Andes. *Environmental Pollution*, forthcoming.

- 2020 Shastry, A., M. Durand, J. Neal, A. Fernandez, S.C. Phang, B. Mohr, H.C. Jung, S. Kari, M. Moritz, B.G. Mark, S. Laborde, A. Murumkar and I. Hamilton. Small-scale anthropogenic changes impact floodplain hydraulics: simulating the effects of fish canals on the Logone Floodplain. *Journal of Hydrology*, forthcoming.
- 2020 Murumkar, A., M. Durand, A. Fernández, M. Moritz, B.G. Mark, S.C. Phang, S. Laborde, P. Scholte, A. Shastry and I. Hamilton. Trends and Spatial Patterns of 20th century Temperature, Rainfall and PET in the semi-arid Logone River Basin, Sub-Saharan Africa. *Journal of Arid Environments*, forthcoming.
- 2020 Guittard, A., M. Baraer, J. McKenzie, B.G. Mark, A. Rapre Cochachin, J. Bury, M. Carey and K. Young. Trace metal stream contamination in a post peak water context: Learnings from the Cordillera Blanca, Peru. Submitted to *ACS Earth and Space Chemistry*, October 2019; revised and resubmitted, February 2020; accepted March 2020.
- 2020 Kaufman, D. and many authors. A global database of Holocene paleo-temperature records. Submitted to *Scientific Data* (A Nature Research Journal), November; revision and resubmission recommended, December; in process; accepted, Feb 2020.
- 2020 Palacios, D., C. R. Stokes, F. M. Phillips, J. J. Clague, J. Alcalá-Reygosa, N. Andrés, I. Angel, P.-H. Blard, J. P. Briner, B. L. Hall, D. Dahms, A. S. Hein, V. Jomelli, B. G. Mark, M. A. Martini, P. Moreno, J. Riedel, E. Sagredo, N. D. Stansell, L. Vázquez-Selem, M. Vuille, and D. J. Ward. 2020. The deglaciation of the Americas during the Last Glacial Termination. *Earth-Science Reviews* **203**:103113. <https://doi.org/10.1016/j.earscirev.2020.103113>.
- 2019 Permana, D.S., L.G. Thompson, E. Mosley-Thompson, M.E. Davis, P-N. Lin, J.P. Nicolas, J.F. Bolzan, B.W. Bird, V.N. Mikhalenko, P. Gabrieli, V. Zagorodnov, K.R. Mountain, U. Schotterer, W. Hanggoro, M.N. Habibie, Y. Kaize, D. Gunawan, G. Setyadi, R.D. Susanto, A. Fernandez and B.G. Mark. Disappearance of the Last Tropical Glaciers in the Western Pacific Warm Pool (Papua, Indonesia) Appears Imminent. *Proceedings of the National Academy of Science* **116**, 26382-26388. <https://doi.org/10.1073/pnas.1822037116>.
- 2019 Somers, L. †, J. McKenzie, B.G. Mark, P. Lagos, G-H Ng, A. Wickert, C. Yarleque, M. Baraer and Y. Silva. Groundwater buffers decreasing glacier melt in the Andes - but not forever. *Geophysical Research Letters* **46**, 13016-13026. <https://doi.org/10.1029/2019GL084730>.
- 2019 Glas, R. †, L. Lautz, J. McKenzie, R. Moucha, J. Lane, D. Chavez and B.G. Mark. Hydrogeology of an alpine talus aquifer: Cordillera Blanca, Peru. *Hydrogeology Journal* **27**(6), 2137-2154. DOI: 10.1007/s10040-019-01982-5.
- 2019 Saberi, L. †, R.T. McLaughlin, G.-H.C. Ng, J. LaFrenierre, A.D. Wickert, M. Baraer, W. Zhi, L. Li and B.G. Mark. Multi-scale temporal variability in meltwater contributions in a tropical glacierized watershed. *Hydrology and Earth System Sciences* **23**, 405-425. <https://doi.org/10.5194/hess-23-405-2019>.
- 2019 Cooper, D., J. Sueltenfuss, K. Yager, D. Slayback, E. Oyague, E.M. Cabero Caballero, J. Argollo and B.G. Mark. Drivers of Peatland Water Table Dynamics in the Central Andes, Bolivia and Peru. *Hydrological Processes* **33**, 1913-1925. <https://doi.org/10.1002/hyp.13446>.
- 2019 Wigmore, O., B.G. Mark, J. McKenzie, M. Baraer, L. and Lautz. Sub-metre mapping of surface soil moisture in proglacial valleys of the tropical Andes using a multispectral unmanned aerial vehicle. *Remote Sensing of Environment* **222**, 104-118. <https://doi.org/10.1016/j.rse.2018.12.024>.
- 2018 Huh, K., M. Baraer, B.G. Mark, & Y. Ahn. Evaluating Glacier Volume Changes since the Little Ice Age Maximum and Consequences for Stream Flow by Integrating Models of Glacier Flow and Hydrology in the Cordillera Blanca, Peruvian Andes. *Water* **10**(12), 1732. doi:10.3390/w10121732.

- 2018 Glas R. †, L. Lautz, J.M. McKenzie, B.G. Mark, M. Baraer, D. Chavez† and L. Maharaj†. A review of the current state of knowledge of proglacial hydrogeology in the Cordillera Blanca, Peru. *WIREs Water* 2018, 5. doi: 10.1002/wat2.1299.
- 2018 Labore S., S.C. Phang, M. Ahmadou, N. Henry†, A. Fernández, M. Durand, I.M. Hamilton, S. Kari, A. Mahamat, B.G. Mark, P. Scholte, A. Shastry, R. Ziebe and M. Moritz. Co-producing research in the “Red Zone”: Adaptation to fieldwork constrains with a transdisciplinary approach. *Geographical Journal* **184**, 369-383. DOI: 10.1111/geoj.12264.
- 2018 Fernández, A., M. R. Najafi, M. Durand, B. G. Mark, M. Moritz, H. C. Jung, J. Neal, A. Shastry, S. Laborde, S. C. Phang, I. M. Hamilton & N. Xiao (2018) Corrigendum to 'Testing the skill of numerical hydraulic modeling to simulate spatiotemporal flooding patterns in the Logone floodplain, Cameroon' [*Journal of Hydrology*, volume 539 (2016) 265-280]. *Journal of Hydrology* **562**, 833-834.
- 2018 Eddy, A.†, B.G. Mark, M. Baraer, J. McKenzie, A. Fernandez, S. Welch and S. Fortner. Exploring patterns and controls on the hydrochemistry of proglacial streams in the upper Santa River, Peru. *Revista de Glaciares y Ecosistemas de Montaña*, **3**: 41-57.
- 2018 Aubry-Wake, C. †, D. Zéphir†, M. Baraer, J. M. McKenzie & B. G. Mark. Importance of longwave emissions from adjacent terrain on patterns of tropical glacier melt and recession. *Journal of Glaciology* **64**(243), 49-60. DOI:10.1017/jog.2017.85.
- 2018 Somers, L.D., J. M. McKenzie, S. C. Zipper, B. G. Mark, P. Lagos & M. Baraer (2018). Does hillslope trenching enhance groundwater recharge and baseflow in the Peruvian Andes? *Hydrological Processes* **32**(3):318-331. DOI: 10.1002/hyp.11423.
- 2018 Wigmore, O.†, and Mark, B.G. High altitude kite mapping: Evaluation of kite aerial photography (KAP) and structure from motion digital elevation models in the Peruvian Andes. *International Journal of Remote Sensing* **39** (15-16), 4995-5015. DOI: 10.1080/01431161.2017.1387312.
- 2017 Guittard, A. †, M. Baraer, J.M. McKenzie, B.G. Mark, O. Wigmore, A. Fernandez, A.C. Rapre, E. Walsh, J. Bury, M. Carey, A. French & K.R. Young. Trace-metal contamination in the glacierized Rio Santa watershed, Peru. *Environmental Monitoring and Assessment* **189**, 649. <https://doi.org/10.1007/s10661-017-6353-0>.
- 2017 Mark, B. G., A. French, M. Baraer, M. Carey, J. Bury, K. R. Young, M. H. Polk, O. Wigmore†, P. Lagos, R. Crumley†, J. M. McKenzie & L. Lautz (2017) Glacier loss and hydro-social risks in the Peruvian Andes. *Global and Planetary Change* **159**, 61-76. <https://doi.org/10.1016/j.gloplacha.2017.10.003>.
- 2017 Wigmore, O.† and B.G. Mark. Monitoring Tropical Debris Covered Glacier Dynamics from High Resolution Unmanned Aerial Vehicle Photogrammetry, Cordillera Blanca, Peru. *The Cryosphere*. <https://doi.org/10.5194/tc-11-2463-2017>.
- 2017 Mark, B.G. and A. Fernandez. The significance of mountain glaciers as sentinels of climate and environmental change. *Geography Compass* **11**(6). <https://doi.org/10.1111/gec3.12318>.
- 2017 Mark, B.G., N. Stansell and G. Zeballos†. The last deglaciation of Peru and Bolivia. *Cuadernos de Investigación Geográfica* (Geographical Research Letters) **43**(2), 591-628. ISSN 1697-9540. doi: <http://dx.doi.org/10.18172/cig.3265>.
- 2017 Huh, K.I., B.G. Mark, Y. Ahn and C. Hopkinson. Volume change of tropical Peruvian glaciers from multi-temporal digital elevation models (DEMs) and its volume surface area scaling. *Geografiska Annaler: Series A, Physical Geography* **99**(3), 222-239.
- 2017 Huss, M., B. Bookhagen, C. Huggel, D. Jacobsen, R. Bradley, J. Clague, M. Vuille, W. Buytaert, D. Cayan, G. Greenwood, B.G. Mark, A. Milner, R. Weingartner, M. Winder. Towards

- mountains without permanent snow and ice. *Earth's Future* **5**(5), 418-435. DOI: 10.1002/2016EF000514.
- 2017 Stansell, N. J. Licciardi, D.T. Rodbell and B.G. Mark. Tropical ocean-atmospheric forcing of Late Glacial and Holocene glacier fluctuations in the Cordillera Blanca, Peru. *Geophysical Research Letters* **44**, 4176–4185. DOI:10.1002/2016GL072408.
- 2017 La Frenierre, J.† and B.G. Mark. Detecting Patterns of Climate Change at Volcán Chimborazo, Ecuador by Integrating Instrumental Data, Public Perceptions and Glacier Change Analysis. *Annals of the Association of American Geographers* **107**(4), 979-997. DOI: 10.1080/24694452.2016.1270185.
- 2017 Lopez-Moreno, J.I., B. Valero-Garces, B.G. Mark, T. Condom, M. Frugone, J. Revuelto, C. Azorin-Molina, J. Bazo, S.M. Vicente-Serrano and J.A. Cochachin. Hydrological and depositional processes associated with recent glacier recession in Yanamarey catchment, Cordillera Blanca (Peru). *Science of the Total Environment* **579**, 272-282.
- 2017 Polk, M.†, K.R. Young, M. Baraer, B.G. Mark, J.M. McKenzie, J. Bury and M. Carey. Exploring hydrologic connections between tropical mountain wetlands and glacier recession. *Applied Geography* **78**, 94-103.
- 2017 Hellström, R.A., A. Fernandez, B.G. Mark and J. Covert†. Exploring scales of mountain valley winds and lapse rates in the Peruvian Andes: hydroclimatic insights from embedded observations and dynamical downscaling. *Annals of the Association of American Geographers* **107**, 260-273.
- 2017 Carey, M., O. Molden, M.B. Rasmussen, M. Jackson, A. Nolin and B.G. Mark. Impacts of Glacier Recession and Declining Meltwater on Mountain Societies. *Annals of the Association of American Geographers* **107**, 350-359.
- 2016 Fernández, A., M.R. Najafi, M. Durand, B.G. Mark, M. Moritz, A. Shastry†, S. Laborde, S.C. Phang, I. Hamilton, X. Ningchuan and J. Neal. Testing the skill of numerical hydraulic modeling to simulate spatiotemporal flooding patterns in the Logone floodplain, Cameroon. *Journal of Hydrology* **539**, 265-280.
- 2016 Laborde, S., A. Fernández, S. C. Phang, I. M. Hamilton, N. Henry†, H. C. Jung, A. Mahamat, M. Ahmadou, B. K. Labara, S. Kari, M. Durand, B. Mark, P. Scholte, N. Xiao, R. Ziebe, and M. Moritz. 2016. Social-ecological feedbacks lead to unsustainable lock-in in an inland fishery. *Global Environmental Change* **41**, 13-25.
- 2016 Somers, L.†, Gordon, R., McKenzie, J., Lautz, L., Wigmore, O.†, Glose, A.†, Glas, R.†, Mark, B., Baraer, M., T. Condom. Quantifying groundwater-surface water interactions in a proglacial valley, Cordillera Blanca, Peru. *Hydrological Processes* **30**(17), 2915-2929. DOI: 10.1002/hyp.10912.
- 2016 Fernández, A., and B. G. Mark. Modeling modern glacier response to climate changes along the Andes Cordillera: A multiscale review. *Journal of Advances in Modeling Earth Systems* **8**(1), 467-495. DOI:10.1002/2015MS000482.
- 2016 Moritz, M., S. Laborde, S.C. Phang, M. Ahmadou, M. Durand, A. Fernandez, I.M. Hamilton, S. Kari, B. Mark, P. Scholte, N. Xiao, and R. Ziebe. Studying the Logone Floodplain in Cameroon as a Coupled Human and Natural System. *African Journal of Aquatic Science* **41**(1), 99-108. DOI:10.2989/16085914.2016.1143799.
- 2015 Aubry-Wake, C.†, M. Baraer, J. M. McKenzie, B. G. Mark, O. Wigmore†, R. Å. Hellström, L. Lautz & L. Somers†. Measuring glacier surface temperatures with ground-based thermal infrared imaging. *Geophysical Research Letters* **42**, 8489-8497.

- 2015 Gordon, R., L. Lautz, J.M. McKenzie, B.G. Mark, D. Chavez[†] and M. Baraer. Sources and pathways of stream generation in tropical proglacial valleys of the Cordillera Blanca, Peru. *Journal of Hydrology* **522**, 628-644. DOI: 10.1016/j.jhydrol.2015.01.013.
- 2015 Baraer, M., J.M. McKenzie, B.G. Mark, R. Gordon, J. Bury, T. Condom, R.J. Gomez, S. Knox[†] and S. Fortner. Contribution of groundwater to the outflow from ungauged glacierized catchments: a multi-site study in the tropical Cordillera Blanca, Peru. *Hydrological Processes* **29**, 2561-2581, DOI: 10.1002/hyp.10386.
- 2014 Reinemann, S.A. [†], Porinchu, D.F., Gustin, M.S., and Mark, B.G. 2014. Historical Trends Of Mercury And Spheroidal Carbonaceous Particle Deposition In Sub-Alpine lakes in the Great Basin, United States. *Journal of Paleolimnology* **52**(4), 405-418. DOI: 10.1007/s10933-014-9801-7.
- 2014 Reinemann, S.A. [†], Porinchu, D.F., and Mark, B.G. 2014. Regional Climate Change Evidenced by Recent Shifts in Chironomid Community Composition in Sub-alpine and Alpine Lakes in the Great Basin of the United States. *Arctic, Antarctic, Alpine Research* **46**, 600-615. DOI: 10.1657/1938-4246-46.3.600.
- 2014 Reinemann, S.A. [†], Porinchu, D.F., MacDonald, G.M., Mark, B.G., and DeGrand, J.Q., 2014. A 2000 Year Reconstruction of Air Temperature in the Great Basin of the United States with Specific Reference to the Medieval Climatic Anomaly. *Quaternary Research* **82**, 309-317. DOI: 10.1016/j.yqres.2014.06.002
- 2014 Wrathall, D., J. Bury, A. French, M. Carey, B.G. Mark, K. Young. Migration and climate rigidity traps: Socio-ecological possibilism and resource politics in Honduras and Peru. *Annals of the Association of American Geographers* (Special Edition on Migration) **104**(2), 292-304.
- 2014 Carey, M., M. Baraer, B.G. Mark, A. French, J. Bury, K. Young and J. McKenzie. Toward Hydro-Social Modeling: Merging Human Variables and the Social Sciences with Climate-Glacier Runoff Models (Santa River, Peru). *Journal of Hydrology* **518**(A): 60-70. DOI: <http://dx.doi.org/10.1016/j.jhydrol.2013.11.006>.
- 2013 La Frenierre, J.[†] and B.G. Mark. A review of methods for estimating the contribution of glacial meltwater to total watershed discharge. *Progress in Physical Geography* **38**(2) 173–200. DOI: 10.1177/0309133313516161.
- 2013 Klein, E. [†], R. Booth, Z. Yu, B.G. Mark and N. Stansell. Hydrology-mediated Differential Response of Carbon Accumulation to Late Holocene Climate Change at Two Peatlands in Southcentral Alaska. *Quaternary Science Reviews* **64**, 61-75.
- 2013 Bury, J., B.G. Mark, M. Carey, K.R. Young, J.M. McKenzie, M. Baraer, A. French[†] and M. Polk[†]. New Geographies of Water and Climate Change in Peru: Coupled Natural and Social Transformations in the Santa River Watershed. *Annals of the Association of American Geographers* (Special Edition on Water) **103**(2), 363-374.
- 2013 Stansell, N.,D.T. Rodbell, M. Abbott and B.G. Mark. Proglacial lake sediment records reveal Holocene climate change in the western Cordillera, Peru. *Quaternary Science Reviews* **70**, 1-14.
- 2012 Salzmann, N., C. Huggel, M. Rohrer, W. Silverio, B.G. Mark, P. Burns[†], and C. Portocarrero. Glacier changes and climate trends derived from multiple sources in the data-scarce Cordillera Vilcanota region, Southern Peruvian Andes. *The Cryosphere* **7**, 103-118.
- 2012 Chae, H., H. Lee, S. Lee, Y. Cheong, G. Um, B.G. Mark and N. Patrick[†]. Local variability in temperature, humidity, and radiation in the BaekduDaegan Mountain Protected Area of Korea. *Journal of Mountain Science* **9**(5), 613-627.

- 2012 Huh, K.I. †, B.G. Mark and C. Hopkinson. Changes of topographic context of the Yanamarey glaciers in the Tropical Peruvian Andes *International Association of Hydrological Sciences Redbook* **352**, 333-336.
- 2012 Baraer, M. †, B.G. Mark, J.M. McKenzie, T. Condom, K.I. Huh †, C. Portocarrero, R.J. Gomez and S. Rathay †. Glacier recession and water resources in Peru's Cordillera Blanca. *Journal of Glaciology* **58**(207), 134-150. Doi:10.3189/2012JoG11J186. WITH SPANISH TRANSLATION
- 2011 Reinemann, S. †, N. Patrick †, G. Baker, D. Porinchu, B.G. Mark and J. Box. Climate change in Great Basin National Park: Lake sediment and sensor-based studies. *Park Science* **28**(2), 31-35.
- 2011 Fortner, S., B.G. Mark, J.M. McKenzie, J. Bury, A. Trierweiler †, M. Baraer †, P. Burns † and L. Munk. Elevated stream trace and minor element concentrations in the foreland of receding tropical glaciers. *Applied Geochemistry* **26**, 1792-1801.
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- 2010 Thompson, L.G., E. Mosley-Thompson, H.H. Brecher, D.R. Hardy and B.G. Mark. Glacier loss on Kilimanjaro is consistent with widespread ice loss in low latitudes. Response to Letter to *PNAS* entitled "Glacier loss on Kilimanjaro is an exceptional case" by Mölg, Kaser and Cullen. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, **107**(17), E69-70.
- 2010 Mark, B.G., J. Bury, J.M. McKenzie, A. French † and M. Baraer †. Climate Change and Tropical Andean Glacier Recession: Evaluating Hydrologic Changes and Livelihood Vulnerability in the Cordillera Blanca, Peru. *Annals of the Association of American Geographers* (Special Issue: Climate Change) **100**(4), 794-805.
- 2010 McKenzie, J.M., B.G. Mark, L.G. Thompson, U. Schotterer, and P-N. Lin. A geochemical survey of Kilimanjaro springs: implications for water sources and ages. *Hydrogeology Journal* **18**(4), 985-995, DOI: 10.1007/s10040-009-0558-4.
- 2010 Porinchu, D.F., S.A. Reinemann †, B.G. Mark, J. Box and N. Rolland. Application of a midge-based inference model for air temperature reveals evidence of late-20th century warming in sub-alpine lakes in the central Great Basin, United States. *Quaternary International* **215**, 15-26.
- 2009 Thompson, L.G., E. Mosley-Thompson, H.H. Brecher, D.R. Hardy and B.G. Mark. Glacier loss on Kilimanjaro Continues Unabated. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* **106**(47), 19770-19775.
- 2009 Baraer, M. †, J.M. McKenzie, B.G. Mark and S. Knox †. Characterizing contributions of glacier melt and ground water during the dry season in the Cordillera Blanca, Peru. *Advances in Geosciences* **22**, 41-49.
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- 2009 Hall, S.R., D.L. Farber, J.M. Ramage, D.T. Rodbell, R.C. Finkel, J.A. Smith, B.G. Mark and C. Kassel †. Geochronology of Quaternary glaciations from the tropical Cordillera Huayhuash, Peru. *Quaternary Science Reviews* **28**, 2991-3009.

- 2009 Rodbell, D.T., J.A. Smith and B.G. Mark. Glaciation in the Andes during the Late Glacial and Holocene. *Quaternary Science Reviews* **28**, 2165–2212.
- 2008 Rodbell, D.T., G.O. Seltzer, B.G. Mark, J.A. Smith and M.B. Abbott. Clastic sediment flux to tropical Andean lakes: Records of glaciation and soil erosion. *Quaternary Science Reviews* **27**, 1612-1626.
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- 2008 Vuille, M., B. Francou, P. Wagnon, I. Juen, G. Kaser, B.G. Mark, and R.S. Bradley. Climate change and tropical Andean glaciers – Past, present and future. *Earth Science Reviews* **89**, 79-96.
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- 2005 Mark, B.G. and K.F. Helmens. Reconstruction of glacier equilibrium-line altitudes for the Last Glacial Maximum on the High Plain of Bogotá, Eastern Cordillera, Colombia: climatic and topographic implications. *Journal of Quaternary Science* **20** (7-8), 789-800.
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- 2013 La Frenierre, J. † and B.G. Mark. Evaluating the Impact of Glacier Shrinkage on Water Supply at Volcán Chimborazo, Ecuador. Abstract GC21E-04 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 Fernandez, A. † and B.G. Mark. Assessing pan-Andean glacier response to climate changes since 1979. Abstract C22A-08 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 Anh, Y., K.I. Huh, B.G. Mark, J. Gulley and K.D. Park. Remote sensing of debris-covered glaciers: Change detection and analysis using multiple sensors. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 Moreno, J.I.L., B.V. Valero-Garces, J.Revuelto; C. Azorín-Molina, J. Bazo, A. Cochachin, S. Fontaneda and B.G. Mark. Recent glacier retreat and lake formation in the Querecocha watershed, Cordillera Blanca, Peru. Abstract GC23D-0961 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 Salzmann, N., C. Huggel, M. Rohrer, W. Silverio, B.G. Mark, A. Cochachin, W. Suarez and C. Giráldez. A new climate and glacier baseline for the Cordillera Vilcanota, Peru, reduces critical information gaps. Geophysical Research Abstracts, Vol. 15, EGU2013. Presented at 2013 European Geophysical Union General Assembly, Vienna, Austria, 7-12 April.
- 2012 Baraer, M., B.G. Mark, O. Wigmore†, A. Fernandez-Rivera†, J.M. McKenzie and E. Walsh†. From the Cordillera Blanca to the Pacific Ocean: hydrological changes and consequences across the Rio Santa watershed. Abstract GC52B-07 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 Gordon, R.P. †, L.K. Lautz, J.M. McKenzie, and B.G. Mark. Groundwater-surface water interactions in a glacierized catchment and their influence on proglacial water supply. Abstract GC52B-06 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 Slayback, D.A., K. Yager, M. Baraer, K.I. Mohr, J. Argollo, O. Wigmore†, R. I. Meneses, and B.G. Mark. Changing Hydrology in Glacier-fed High Altitude Andean Peatbogs. Abstract GC11A-0962 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 Huh, K.I. † and B.G. Mark. Assessing volume change of tropical Peruvian glaciers from multi-temporal digital elevation models (DEMs). Abstract GC11A-0964 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 Chavez, D. †, J.M. McKenzie, M. Baraer and B.G. Mark. Proglacial Groundwater Flux and Storage in the Cordillera Blanca, Peru. Abstract GC11A-0966 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 Mark, B.G. Change in mountain cryosphere and downstream impact. Forum title: Food, Water and the Environment. 4th International EcoSummit: “Ecological Sustainability: Restoring the Planet’s Ecosystem Services,” Columbus, OH, 30 September-5 October.
- 2012 Mark, B.G. Hydrologic transformation and human resilience to climate change in the Peruvian Andes. Symposium title: Ecosystem Change in Polar and Alpine Environments. 4th International EcoSummit: Ecological Sustainability: Restoring the Planet’s Ecosystem Services, Columbus, OH, 30 September-5 October, 2012.

- 2012 Yu, Z., J. Loisel, S. Hunt, E. Klein, R. Booth, D. Brosseau, J. Ramage, M. Jones, B. Mark, Q. Zhuang and B. Felzer. Alaskan Peatland Carbon Dynamics During Past Warm Climate Intervals. International Peat Congress, Stockholm, Sweden, June, 2012.
- 2012 Stansell, N.D., D.T. Rodbell, B.G. Mark and C.M. Sedlak. A ~13,000 year history of glacial variability in the tropical Andes recorded in lake sediments from the Peruvian Andes. EGU General Assembly Conference Abstracts, 2012, 22-27 April in Vienna, Austria., v 14, p.12536.
- 2011 Mark, B.G., J. Bury, M. Carey, J. McKenzie, K.I. Huh[†], M. Baraer[†] and A. Eddy[†]. Thresholds of glacier hydrologic change and emergent vulnerabilities in a tropical Andean waterscape. Abstract C53D-0701 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 December.
- 2011 Baraer, M. [†], B.G. Mark and J. McKenzie. Past peak water in Peru's Cordillera Blanca: diagnosing the demise of glacier influence on stream discharge. Abstract C33F-08 presented at the 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 December.
- 2011 Burns, P., A. Nolin, B. Naz, D. Lettenmaier, C. Frans, G. Clarke, B. Mark and K. Gleason. Using a hydrological model in a tropical glacier basin, Cordillera Blanca, Peru. Abstract C53D-0711 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 December.
- 2011 Burns, P., A. Nolin, B.G. Mark, K. Gleason. Using a Distributed Hydrological Model in a Tropical Glacier Basin, Cordillera Blanca, Peru. Paper #241-8. Geological Society of America Abstracts with Programs. Vol. 43, No. 5, p.577
- 2010 Mark, B.G., N. Stansell, J.G. Fairman[†], M.A. Plummer and D.T. Rodbell. Modeling the climatic controls and topographic form of modern and late Pleistocene tropical Peruvian glaciers. Abstract GC21A-0858 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2010 Baraer, M. [†], J.M. McKenzie and B.G. Mark. Proglacial hydrology in the Cordillera Blanca, Peru. Abstract H41G-1189 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2010 Brosseau, D.P., J.M. Ramage, Z. Yu, E.S. Klein[†], R.K. Booth, J. Loisel[†] and B.G. Mark. Peatland distribution and characterization in the Susitna River Basin, Alaska. Abstract B31E-0356 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2010 Stansell, N., B.G. Mark, D.T. Rodbell and C.M. Moy. A ~20,000 year history of glacial variability in the tropical Andes recorded in lake sediments from the Cordillera Blanca, Peru. Abstract GC21A-0854 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2009 McKenzie, J.M., B.G. Mark, and M. Baraer[†]. Proglacial hydrology in the tropical Andes: lessons from the Cordillera Blanca, Peru (INVITED). Eos Transactions of the American Geophysical Union, 90(52), Fall Meeting Supplement, Abstract PB23B-1393.
- 2008 Mark, B.G., J.M. McKenzie, and M. Baraer[†]. Glacier volume loss and hydrologic transformation in the Cordillera Blanca, Peru. EOS Transactions of the American Geophysical Union, 89(53) Fall Meeting Supplement, Abstract C32B-02.
- 2008 Fortner, S.K., B.G. Mark, J.M. McKenzie, M. Baraer[†] and M.J. Shoenfelt[†]. Metal Concentrations and Hydrochemical Dynamics in a Tropical-Glacier Watershed. EOS Transactions of the American Geophysical Union, 89(53) Fall Meeting Supplement, Abstract C23A-0598.
- 2008 Fairman[†], J.G., U.S. Nair, S.A. Christopher, B.G. Mark and M.A. Plummer. Impact of Upwind Land Cover Change on Mount Kilimanjaro. EOS Transactions of the American Geophysical Union, 89(53) Fall Meeting Supplement, Abstract C23A-0599.
- 2007 Porinchi, D., S. Reinemann[†], A. Potito, K. Moser, G. MacDonald, J. Munroe, B. Mark and J. Box, 2007: Evidence of Regional Warming during the 20th Century in Alpine and Subalpine

- Lakes in the Western United States. EOS Transactions of the American Geophysical Union, 88(52) Fall Meeting Supplement, Abstract GC31C-06.
- 2007 Hellström, R. A. and B. G. Mark, 2007: Observing Seasonal and Diurnal Hydrometeorological Variability Within a Tropical Alpine Valley: Implications for Evapotranspiration. EOS Transactions of the American Geophysical Union, 88(52) Fall Meeting Supplement, Abstract GC41A-0108.
- 2007 Baraer[†], M., J.M. McKenzie, B.G. Mark and S. Palmer[†], 2007: An Integrated Hydrochemical and Hydrologic Approach to Modeling Runoff in Glacier-fed Basins, Cordillera Blanca, Peru. International Commission for Snow and Ice Hydrology Workshop: *Glaciers in Watershed and Global Hydrology*, Obergurgl, Austria, 27-31 August 2007.
- 2006 Mark, B. G. and J. M. McKenzie, 2006: Assessing the Impact of Retreating Glaciers on Dry-Season Discharge in a Tropical Andean Watershed. EOS Transactions of the American Geophysical Union, 87(52) Fall Meeting Supplement, Abstract GC32A-02.
- 2006 Hellström, R. A. and B. G. Mark, 2006: An Embedded Sensor Network for Measuring Elevation Effects on Temperature, Humidity, and Evapotranspiration Within a Tropical Alpine Valley. EOS Transactions of the American Geophysical Union, 87(52) Fall Meeting Supplement, Abstract C33C-1280.
- 2006 Rodbell, D. T., B. G. Mark and J. A. Smith, 2006: Clastic Sediment Flux to Tropical Andean Lakes: Records of Glaciation and Soil Erosion. EOS Transactions of the American Geophysical Union, 87(52) Fall Meeting Supplement, Abstract PP22A-03.
- 2006 Hall[†], S. R., J. M. Ramage, D. T. Rodbell, R. C. Finkel, J. A. Smith, B. G. Mark, D. L. Farber. Geochronology and Equilibrium Line Altitudes of LLGM through Holocene Glaciations from the Tropical Cordillera Huayhuash, Peru. EOS Transactions of the American Geophysical Union, 87(52) Fall Meeting Supplement, Abstract PP31C-1767.
- 2005 McKenzie, J.M. and B.G. Mark, 2005: Water Resources in a Peruvian Mountain Watershed: Hydrochemical Tracing of Groundwater and Glacier Meltwater Impact on Streamflow. EOS Transactions of the American Geophysical Union, Fall Meeting Supplement, Abstract H21A-1322.
- 2004 Mark, B.G., J.M. McKenzie and K.A. Welch, 2004: Impact of Retreating Glaciers in an Intermontane Andean Watershed: Hydrochemical Analysis From the Callejon de Huaylas, Perú. EOS Transactions of the American Geophysical Union 85(47), Fall Meeting Supplement, Abstract U53A-0703.
- 2004 Hall[†], S.R., D.L. Farber, D.T. Rodbell, R.C. Finkel, J.M. Ramage, J.A. Smith, B.G. Mark and G.O. Seltzer, 2004: Geochronology of tropical alpine glaciations from the Cordillera Huayhuash, Perú. EOS Transactions of the American Geophysical Union 85(47), Fall Meeting Supplement, Abstract PP23A-1400.
- 2004 Ramage, J.M., D.T. Rodbell, S. Hall[†], J.A. Smith, B.G. Mark, G.O. Seltzer, R. Finkel, D. Farber and S. Otto, 2004: Paleo-ELA depression and regional ELA gradients in the Cordillera Huayhuash, Perú. Geological Society of America Abstracts with Programs, Vol. 36, No. 5, p. 513.
- 2001 Mark, B. G., G. O. Seltzer and D. T. Rodbell. Late Glacial and Holocene Deglaciation in the Peruvian Andes: A review of timing, rates, and climatic conditions. Geological Society of America and Geological Society of London, Earth System Processes - Programmes with Abstracts, p. 59.

- 1999 Rodbell, D. T., P. J. Castiglia, B. G. Mark, G. O. Seltzer, A. Y. Goodman, C. M. Moy and M. B. Abbott. Late Quaternary glacial chronology of the Cordillera Vilcanota-Queelccaya Ice Cap region in Southeastern Peru based on lake sedimentology, radiocarbon dates, and soils. Abstracts with Programs - Geological Society of America. v. 31 no. 7, p. 56-57.
- 1999 Castiglia, P.J., B.G. Mark, C.M. Moy, D.T. Rodbell, J.G. Rosenbaum and G.O. Seltzer. Magnetic record of late Holocene glacier fluctuations recorded in a lake sediment core from the Cordillera Blanca, Peru. Abstracts with Programs - Geological Society of America. v. 31 no. 2, p. 9.
- 1998 Moy, C. M., D. T. Rodbell, P. J. Castiglia, G. O. Seltzer, B. G. Mark, M. B. Abbott and J. G. Rosenbaum. A lacustrine sedimentologic record of late Holocene glaciation in Peru. Abstracts with Programs - Geological Society of America, v. 30, n. 7, p. 115.

ACADEMIC AWARDS AND HONORS

- 2020 Distinguished International Engagement Award, Office of International Affairs, Ohio State University. "Tracing Cryo-Hydro-Social Transformations in the Tropical Andes."
- 2017 Dr. Martha L. Corry Faculty Fellow (5-year term, 2017-2021), Department of Geography, Ohio State University.
- 2015 Visiting Scholar, Oeschger Centre for Climate Change Research, University of Bern, Switzerland (April – August 2015).
- 2014 Fulbright Scholar, Peru: Research & Teaching, San Marcos National University and Geophysical Institute of Peru (December 2014 – April 2015).
- 2011 Distinguished Undergraduate Research Mentor Award (student-nominated and selected), Denman Undergraduate Research Forum, OSU.
- 2010 Honored as faculty mentor in Sphinx-Mortar Board Honorary Faculty-Staff Reception (Michael Shoenfelt, Sphinx Senior Honorary Vice President, Class of 2010).
- 2010 Invited faculty mentor for Patrick Burns, honoree for Arts and Sciences at the President's Salute to Undergraduate Achievement, 1 April 2010, OSU.
- 2009 Honored as faculty mentor in Sphinx-Mortar Board Honorary Faculty-Staff Reception (Brent Ribble, Mortar Board Senior Honorary Class of 2009).
- 2007 Lawrence A. Brown Faculty Fellowship, Department of Geography, Ohio State University.
- 2006 New Investigator Award, NASA.
- 2003 International Young Scientists' Global Change Conference, Trieste, Italy.
- 2000 John James Prucha Field Research Award, Department of Earth Sciences, Syracuse University.
- 1999 Marjorie Hooker Award for outstanding thesis proposal, Department of Earth Sciences, Syracuse University.
- 1998 U.S. Fulbright Scholarship to Peru.
- 1997 Newton E. Chute Award for outstanding Geology graduate student, Department of Earth Sciences, Syracuse University.
- 1995 Syracuse University Graduate Fellowship (1995-99), including Dean's Research Assistantship (1995-96, 1997-98); 5 year tuition waiver and \$52,120 stipend.

RESEARCH GRANTS

- 2018-2020 USDA - AFRI RACC. *Regional integrated modeling of farmer adaptations to guide agroecosystem management in a changing climate*. 3 year, \$1,199,396. PI: R. Wilson; Co-PIs: B.G. Mark, K. Lekies, A. Wilson, K. Zhao, C. Yongyang, A. Randall, G. LaBarge, J. Cervenec, E. Irwin.
- 2017-2018 NSF #1707989, EAR Facilities & Equipment: *Acquisition of a Second-Generation Liquid Water Isotope Analyzer for Hydrological, Glaciological, and Geochemical Research*. 1 year, \$99,690. PI: W.B. Lyons; Co-PIs: D. Cole, S. Welch, A. Carey, B.G. Mark.
- 2017-2018 OSU Connect and Collaborate Grant. *Connecting Climate and People to Improve Outcomes for Ohio and Beyond*. PI: B.G. Mark. Program Manager: A. Wilson. Contributions from: OSU Extension, Office of Energy and Environment, Office of Research and Office of Outreach and Engagement. 1 year + extension, \$45,000.
- 2016-2018 Western National Parks Association. *Meadow and lake-sediment based reconstructions of Holocene fire histories for sub-alpine and montane ecosystems in Great Basin National Park*. Co-PIs: Scott Reinemann, OSU; David Porinchu, UGA. \$15,000 (\$7500 matching funds from OSU Geography).
- 2014-2018 NSF – USAID: PARTNERSHIPS FOR ENHANCED ENGAGEMENT IN RESEARCH (PEER) SCIENCE, Cycle 3: *Glacier retreat and water resource sustainability in the Peruvian Andes: informing adaptation strategies through collaborative science*. PI: Dr. Cirilio Lagos, Peruvian Geophysical Institute. US partner: B.G. Mark, Ohio State University. 2 years, \$22,010 (OSU), \$102,750 total.
http://sites.nationalacademies.org/PGA/PEER/PEERscience/PGA_152061
- 2014-2015 US Fulbright Teaching/Research Award #4506 PERU: *Andean glacier hydrology in a changing climate: advancing transdisciplinary understanding of water resources*. 4 months, \$16,450 December 2014 – April 2015 (FPL SP15 semester).
- 2014-2015 OSU Office of International Affairs Faculty Research Grant: *Changing Glacier Waterscapes: Advancing Transdisciplinary Andean Studies*. 12 months, \$4500 (\$5500 total).
- 2014-2015 The Battelle Engineering, Technology, and Human Affairs Endowment Fund (BETHA): *Harnessing Education and Technology for Environmental Detection (HEATED)*. PI: B.G. Mark; Co-Is: J. DeGrand, J. Cervenec, R. Mishalani, M. McCord, G. Sivandran and A. Nandi. 12 months, \$38,522 (total \$53,308).
- 2014-2017 NSF #1434248, BCS: *Doctoral dissertation research: Assessing variability in high elevation soil moisture: Integrating unmanned aerial vehicles, satellites, and field hydrology*. PI: B.G. Mark; Co-PI: Oliver Wigmore, Ohio State University. 2.5 years, \$15,999.
- 2014-2015 NSF #1342632, EAR: *Acquisition of an Ion Chromatograph for Hydrological, Geochemical and Biogeochemical Research*. PI: A. Carey; Co-PIs: D. Cole, W.B. Lyons, B.G. Mark, S.A. Welch, Ohio State University. 1 year, \$53,352.
- 2013-2016 NSF #1316432, EAR-HYDRO: *Collaborative Research: Groundwater-surface water interactions in tropical alpine catchments and their influence on sources and stability of water supply during glacial recession*. PIs: B.G. Mark, Ohio State University; Laura Lantz, Syracuse University. 3 years, \$311,624.
- 2012-2017 NSF #1211986, BCS – DYN COUPLED NATURAL-HUMAN: *CNH: Fish, floods and societies: exploring social, ecological, and hydrological regime shifts in the Logone*

- Floodplain, Cameroon*. PI: Mark Moritz; Co-PI's: B.G. Mark, M.T. Durand, I.H. Hamilton and N. Xiao, Ohio State University. 4 years, \$1,499,633.
- 2011-2014 National Aeronautical and Space Administration (NASA), NRA: NNH09ZDA001N-LCLUC. *The impact of disappearing tropical Andean glaciers on pastoral agriculture*. PI: D. Slayback, Science Systems & Applications, Inc. Collaborative subaward for 3 years; year 1: \$38,117; years 2&3: \$91,371 (\$119,488 total).
- 2011-2013 NSF #1103235, BCS - Doctoral Dissertation Research: *Assessing the Hydrologic Implications of Glacier Recession and the Potential for Water Resources Vulnerability at Volcan Chimborazo, Ecuador*. PI: B.G. Mark; Co-PI: Jeff La Frenierre, Ohio State University. 2 years, \$11,988.
- 2010-2013 NSF #1003780, EAR – Global Change: *Collaborative Research: RUI: Tropical Holocene climatic insights from Andean paleoglacier dynamics*. Co-PI's: Nathan Stansell, Ohio State University; Donald Rodbell, Union College. 3 years, \$328,961 (OSU) of \$657,908 total.
- 2010-2013 NSF #1010384, DEB – BE, DYN COUPLED NATURAL-HUMAN: *Collaborative Research: Hydrologic Transformation and Human Resilience to Climate Change in the Peruvian Andes*. Co-PIs: Jeffrey Bury, University of California, Santa Cruz; Kenneth Young, University of Texas, Austin; Mark Carey, Washington and Lee University. 3 years, \$322,069 (OSU) of \$1,013,521 total.
- 2010-2012 Western National Parks Association, Co-PI (with J. Box and D. Porinchu): *Recent and Historical Influence of Anthropogenic Activities in Great Basin National Park: Evidence from Lake Sediment and Water Geochemistry*. 2 years, \$15,000 (\$7,500 matching from Ohio State University, Department of Geography).
- 2009-2012 NSF #0819756, EAR – Geobiology and Low Temperature Geochemistry: *Collaborative Research: ETBC: Peatlands as Carbon and Water Sinks under Warm Climates in the Susitna Basin, South-Central Alaska*. PI: Zicheng Yu, Lehigh University. Co-PIs: Robert Booth, Joan Ramage, Lehigh University; B.G. Mark, OSU. 3 years, \$269,810 (OSU) of \$711,829 total.
- 2009 NSF # 0930016, Earth Sciences Division (EAR) – Instrumentation and Facilities (I/F): *Acquisition of a liquid water isotope analyzer for hydrological, glaciological and geochemical research*. Submitted Feb 2009. PI: F.W. Schwartz, OSU. Co-PIs: A.E. Carey; O.S. Costa; A. Grottoli; B.G. Mark; S. Welch; W.B. Lyons (all OSU). \$57,800.
- 2009 NSF REU Supplement BCS-0752175: *Collaborative Research: Glacier Recession and Livelihood Vulnerability in the Peruvian Andes*. Co-PI: Jeffrey Bury, University of California, Santa Cruz. 1 year, \$7,610 (\$15,220 total).
- 2008-2009 NSF #0752175, Behavioral & Cognitive Sciences (BCS) – Geography and Regional Science: *Collaborative Proposal: Glacier Recession and Livelihood Vulnerability in the Peruvian Andes*. Co-PI: Jeffrey Bury, University of California, Santa Cruz. 2 years, \$112,054 (\$233,488 total).
- 2008 NSF #0744166, EAR – I/F: *Acquisition of Automated Nutrient Analyzer*. Submitted 11 July 2007. PI: W. Berry Lyons, Ohio State University (OSU). Co-PIs: A.E. Carey, OSU; O.S. Costa; B.G. Mark; F.W. Schwartz (all OSU). \$64,800.
- 2007-2008 National Geographic Society, Committee for Research and Exploration: *Assessing the Volume of Recent Tropical Glacier Recession*. 1 year, \$30,000.

- 2007-2008 OSU Climate, Water and Carbon TIE Seed grant: *Quantifying tropical Andean ice volume loss using satellite radar altimetry data and airborne laser swath mapping*. 1 year, \$40,000.
- 2007-2011 OSU Climate, Water and Carbon TIE Core project (tri-leader with Ellen Mosley-Thompson and Lonnie Thompson): *Core Project: Low-latitude glacier retreat: Evidence of accelerating climate change and impacts on local to regional water resources*. Annual funding, renewable; detailed reporting: <http://cwc.osu.edu/>
- 2006-2009 National Aeronautical and Space Administration (NASA) New Investigator Program (NIP): *Assessing the Volume and Topographic Context of Tropical Glacier Recession*. Submitted 30 August 2005. 3 years, \$357,572.
- 2007 Ohio EPA 319(h) Section and City of Columbus Capital Improvements Project No. 650706: *Lower Olentangy River Ecosystem Restoration Project*. OSU (multi-department) undergraduate research support, 1 year, \$20,000.
- 2007 Western National Parks Association, Co-PI: *Contemporary Climate History and Climate Change Impacts in Great Basin National Park*. 1 year, \$7,495 (\$7,518 matching from Ohio State University, Department of Geography).
- 2006-2007 P-12 Scholars Grant, Office of University Outreach and Engagement, Ohio State University: *Science + Education = Science Education*. (In partnership with Carol Landis, Byrd Polar Research Center) 1 year, \$30,000.
- 2006 Office of International Affairs Faculty International Research Travel Grant, OSU, \$2,500 to develop inter-institutional collaborative agreement with INRENA, Perú.
- 2006 International Quaternary Association award for attending Tibet Workshop, Xining, China, \$2,100.
- 2006 Seed grant for Kilimanjaro field work, Department of Geography, \$7,500.
- 2005 SBS International Travel Grant, OSU, \$2000 to attend conference in Scotland.
- 2004 SBS International Travel Grant, OSU, \$2000 to attend conference in Perú.
- 2000 Geological Society of America Research Grant, \$900.
- 1999 Syracuse University Graduate School Research Grant, \$1,500.
- 1998 J. William Fulbright Foreign Scholarship Award, Perú (academic year 1997-98).
- 1997 Geological Society of America Research Grant, \$1,500.
- 1996 Syracuse University Graduate School Research Grant, \$1,500.
- 1996 Geological Society of America Research Grant, \$2,200.

INVITED PRESENTATIONS

Local / Campus

- 2020 School of Environment and Natural Resources, ENR 3470, Ohio State University. 14 September. "Is Climate Change a Moral Issue?"
- 2020 Environmental Professionals Network, Ohio State University (Statewide reach). Webinar on *Exploring Interactions between Water, Climate & Communication*. 17 March. "The changing cryosphere in Earth's water cycle."
- 2019 Ohio Sea Grant's 10th Annual Lake Erie Workshop, Stone Lab. 27 August. "Our Changing Ohio Climate: Current challenges & future impacts."

- 2019 Engineers for a Sustainable World, Ohio State University. 26 March. "Sustainable engineering & tropical glaciers: innovations in climate change research."
- 2019 Climate Change Symposium, Byrd Polar and Climate Research Center, Ohio State University. 22 March. Keynote address: "Physical Science Basis."
- 2019 Global Water Contexts Faculty Research Forum, Ohio State University. 8 February. "Pacific Andean Waterscapes in a Global Water Context."
- 2019 School of Environment and Natural Resources, ENR 3470, Ohio State University. 28 January. "Is Climate Change a Moral Issue?"
- 2017 Chemistry and Biochemistry Club, Ohio State University. 9 March. "From tropical glaciers to Kroger: Reflections on climate change from your unintentional State Climatologist."
- 2017 Feature keynote at 19th Annual Stone Lab Winter Program, Longaberger Alumni House, Ohio State University. 7 February. "From Glaciers to Asparagus: Tracing Climate Change in Peru."
- 2014 Department of Spanish and Portuguese, SP4516, Ohio State University. 5 March. "Recent Andean Glacier Recession & Environmental Issues: Adaptation to new water realities."
- 2014 Engineers for a Sustainable World, Ohio State University. 17 February. "Climate change & vulnerability in the Peruvian Andes."
- 2014 Water for the Americas tour, Ohio State University. 11 February. "Climate change and glaciers in Peru: hydrologic transformations and social vulnerabilities."
- 2013 Department of Geography, Ohio State University. 27 September. "Hydrosocial transformation in an Andean waterscape: Implications for coupling human variables with climate-glacier runoff models (Santa River, Peru)."
- 2013 School of Environment and Natural Resources, Ohio State University. 19 September. "Below the melting glaciers: Hydrologic change and emergent vulnerabilities in a tropical Andean waterscape."
- 2013 Geography Graduate Student Organization panel lecture. 18 April. "Olentangy River."
- 2012 Center for Latin American Studies, Department of Spanish, Introduction to students. Ohio State University. 27 September. "Recent Andean Glacier Recession & Environmental Issues: Summary & Implications."
- 2011 School of Earth Sciences, Division of Water, Climate and the Environment. Ohio State University, 18 November. "Climate change & glacier water resources."
- 2011 Engineering Department, Ohio State University, Columbus, OH, 13 May. "An unsustainable cryosphere? Causes and consequences of a warming world."
- 2009 Environmental Science Graduate Program, Ohio State University, Columbus, OH. "Evaluating Hydrologic Changes and Livelihood Vulnerability in the Cordillera Blanca, Peru."
- 2009 School of Earth Sciences, Ohio State University, Columbus, OH. "'Uma Vida:' Evaluating Glacier Hydrologic Changes in the Peruvian Andes."
- 2008 Byrd Polar Research Center, Ohio State University, Columbus, OH (with P.J. Kinder, and A.C. Riley, Canaan Valley Institute), 22 October. "Airborne Remote Sensing: LiDAR Applications in the Appalachian and Andes Mountain Ranges."
- 2005 Department of Geological Sciences, Ohio State University, Columbus, OH. "Tracing tropical glacier recession downstream: some geographical and hydrochemical analyses from Perú."
- 2004 Byrd Polar Research Center, Ohio State University, Columbus, OH. "Tropical glaciers in a changing climate: Forcing, rates of change, and impact to water supply."
- State
- 2020 "Solve Climate by 2030" a teach-in at Ohio State, 7 April. "Ohio's Changing Climate."
- 2018 TEDx Yearling Road, 24 October. "Climate's (un)common denominator."
- 2017 EPA "CREAT" training for regional water and wastewater utilities for building resilience to extreme weather, Cincinnati, OH, 23 May. "Climate projections for the Midwest and potential water sector impacts."

- 2014 Momentive Chemical, Inc., Columbus, Ohio. 15 September. "Climate change & vulnerability in the Peruvian Andes."
- 2014 Department of Geography, Ohio University, Athens, OH. 7 November. "Climate change and glaciers in Peru: hydrologic transformations and social vulnerabilities."
- 2013 Department of Geology, University of Dayton, Dayton, OH. 15 November. "Hydrologic change and emergent vulnerabilities in a tropical Andean waterscape."
- 2010 Department of Geology, College of Wooster, OH, 18 November. "The Geography of Tropical Glaciers in a Changing Climate."
- 2009 Miami University, Department of Geography, Oxford, OH. 20 March. "Climate change & tropical Andean glaciers: Evaluating impacts to water resources."
- 2008 University of Cincinnati, Department of Earth Science, Cincinnati, OH. 15 February. "Tracing Andean glaciers over space & time: Some lessons and transdisciplinary implications."

National

- 2018 Geological Society of America Annual Meeting, Indianapolis, IN, 4-7 November. Co-authored with James White (undergraduate student first author). "Wildfire as an Earth System: Perspectives on interdisciplinary research methods from Alaska and Nevada."
- 2017 Mountain Sentinels Workshop, 'Participatory Modeling of Mountain Social-Ecological Systems,' Bend, OR, 23-25 April. "Glacier loss and hydro-social risks in the Peruvian Andes."
- 2016 University of Georgia, Department of Geography, Athens, GA, 2 December. "Glacier loss and emerging hydrologic vulnerabilities in the tropical Peruvian Andes."
- 2015 American Geophysical Union Fall Meeting, San Francisco, CA, 14-18 December. "Glacier loss and emerging hydrologic vulnerabilities in the Peruvian Andes."
- 2014 American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December. Co-authored with McKenzie, J.M., R.P. Gordon, M. Baraer, L. Lautz, O. Wigmore, D. Chavez, and C. Aubry-Wake. "Water resources and groundwater in a glaciated Andean watershed (Cordillera Blanca, Peru)."
- 2012 4th International EcoSummit: Ecological Sustainability: Restoring the Planet's Ecosystem Services, Columbus, OH, 30 September-5 October. "Hydrologic transformation and human resilience to climate change in the Peruvian Andes."
- 2009 American Geophysical Union Fall Meeting, San Francisco, CA, 14-18 December. Co-authored with J. McKenzie and M. Baraer. "Proglacial hydrology in the tropical Andes: lessons from the Cordillera Blanca, Peru."
- 2009 World Bank, Latin America Environment Department, Washington, D.C., 20 January. "Hydrologic Transformation from Glacier Volume Loss in the Cordillera Blanca, Peru."
- 2008 Wagner School of Public Policy, Climate and Water Seminar, New York University, New York, NY. 13 November. "Climate change & tropical Andean glaciers: Evaluating impacts to water resources."
- 2007 Lehigh University, Bethlehem, PA, 26 October. "Climate Change and Tropical Andean Glaciers: Evaluating Impacts to Water Resources."
- 2007 Union College, Schenectady, NY. Environmental Studies Series on "Abrupt Climate Change," with other speakers Bill McKibben, Lonnie Thompson. "Global Climate Change: Water Resources and Human Occupation in the Tropical Andes."
- 2005 Department of Geosciences, Montana State University, Bozeman, MT. 5 March. "Tropical glaciers in a changing climate: Forcing, rates of change, and impact to water supply."

International

- 2020 Conéctate A+ Online Conference on Climate change, health and mountain ecosystems, Peru. "Hydroclimatic vulnerability in the Tropical Andes: Contributions from the Transdisciplinary Andean Research Network (TARN) and the path forward." Presentation and workshop discussion (in Spanish), July 7-8.

- 2020 Peruvian National Institute for Glaciology and Mountain Ecosystems (INAIGEM), “Viernes Científicos” presentation via zoom: “Agua y ciencia accesibles, bajo el hielo de los glaciares (in Spanish),” 3 July.
- 2019 International Conference in Huancayo, Peru: “Huaytapallana: Glaciers, Water and Climate Change.” 20 June. Keynote (in Spanish): “Recursos hídricos en la subcuenca Shullcas (Water resources in the Shullcas watershed).”
- 2018 2nd International Conference on Food & Agriculture. "Sustainable Agriculture for Food Security." Dhandbad, Jharkhand, India. 29 March. Keynote address: "Climate change assessment, adaptation and mitigation framework-USA."
- 2017 University of Concepción, Chile. 18 October. "Glacier loss and hydro-social risks in the Peruvian Andes."
- 2017 International workshop on Applied Hydrochemistry in Alpine Environments. Earth and Planetary Science Department, McGill University, with ETS University of Quebec, Montreal, Quebec, Canada. 10 January. "Mountain Hydrological Processes."
- 2016 International Symposium of Glaciers and Mountain Ecosystems, Peruvian National Institute of Glaciology and Mountain Ecosystems, Huaraz, Peru, 10-13 August. "Glacier Loss and Emerging Hydrologic Vulnerabilities in the Tropical Peruvian Andes."
- 2016 SnowWatch Meeting, Global Cryosphere Watch, in association with World Meteorological Organization, Columbus, OH, 14 June. "Andean cryospheric observation from a transdisciplinary perspective."
- 2015 University of Bern, Geographic Institute and Oeschger Centre for Climate Change Research, Bern, Switzerland, 3 June. “Tracing climate change in tropical Peru: A transdisciplinary evaluation of glaciers, water & society.”
- 2015 University of Innsbruck, Meteorology Institute, Innsbruck, Austria, 19 May. “Evaluating implications of change in the tropical Andean cryosphere: Integrating field and modeling perspectives from the Cordillera Blanca, Peru.”
- 2015 Pontifical Catholic University of Peru, Faculty of Geography and Environmental Science, Lima, Peru, 13 April (in Spanish). “Debajo de los glaciares que se derriten: Estudios integrados del cambio hidrológico y vulnerabilidades inminentes en las cuencas interandinas del Perú.”
- 2015 Peruvian Geophysical Institute, Lima, Peru, 20 March (in Spanish). “Debajo de los glaciares que se derriten: Estudios integrados del cambio hidrológico y vulnerabilidades inminentes en las cuencas interandinas del Perú.”
- 2014 Continental University Symposium, Huancayo, Peru. 2 July (in Spanish). “Desde los testigos de hielo hasta el agua doméstica: Evaluación de cambios climáticos, impactos hidrológicos y la vulnerabilidad en la Cordillera Blanca, Perú.”
- 2013 International Glacier Forum, Huaraz, Peru: <http://foroglaciares.pe/>. 1 July. “Below the melting glaciers: an integrated study of glacier hydrologic change and emergent vulnerabilities in a tropical Andean waterscape.”
- 2012 International Conference on Climate Change: Glaciers, Environment and Social Vulnerability. UNASAM, Huaraz, Peru (in Spanish). 3 July 2012. “Thresholds of glacier hydrologic change and emergent vulnerabilities in a tropical Andean waterscape.”
- 2012 Department of Geography, University of Zurich, Switzerland, 17 April. “Thresholds of glacier hydrologic change and emergent vulnerabilities in a tropical Andean waterscape.”
- 2012 Changes in the Mountain Cryosphere and their Downstream Impacts, workshop, Aeschi, Switzerland, 19-21 April. “Glacier Environmental Change: Assessing changes & implications.”
- 2011 University of Concepción, Chile (via telecom link, in Spanish), 18 November. “Desde los testigos de hielo hasta el agua doméstica: Evaluación de cambios climáticos, impactos hidrológicos y la vulnerabilidad en la Cordillera Blanca, Perú.”
- 2011 International Centre for Integrated Mountain Development, Kathmandu, Nepal, 25 September. “Global Glacier Change.”

- 2011 Adapting to a Changing Mountain World Workshop, Imja Lake Expedition, Nepal, 19 September. “Impacts of glacier recession on regional water supply (Cordillera Blanca, Peru).”
- 2010 International Seminar on Climate Change and Deglaciation: Impacts and Actions, Cusco, Peru (in Spanish), 21 July. “Desde los testigos de hielo hasta el agua doméstica: Evaluación de cambios climáticos, impactos hidrológicos y la vulnerabilidad en la Cordillera Blanca, Perú.”
- 2010 International Glaciological Conference. Valdivia, Chile, 1-3 February 2010. “Climate Change and Tropical Andean Glacier Recession: Evaluating Hydrologic Changes and Livelihood Vulnerability in the Cordillera Blanca, Peru.”
- 2009 University of Magallanes, Punta Arenas, Chile (in Spanish), 29 July. “Cambio climático & glaciares tropicales Andinos: Evaluando impactos hidrológicos.”
- 2009 Expert Panel, American Academy of Science and Technology - U.S. Embassy, Santiago, Chile (in Spanish & English), 28 July. “Climate change & tropical Andean glaciers: Evaluating impacts to water resources.”
- 2009 Centro de Estudios Avanzados en Zonas Áridas- CEAZA, University of La Serena, Chile (in Spanish), 27 July. “Climate change & tropical Andean glaciers: Evaluating impacts to water resources.”
- 2009 Invited participant on panel: “Agua y Cambio Climático: Enfoques socio-ambientales” (Spanish & English), International Symposium “Adapting to a World without Glaciers,” NSF-USAID, Lima-Huaraz, Peru, 7 July.
- 2008 Universidad Nacional “Santiago Antúnez de Mayolo,” Huaraz, Peru, 4 July. “The geography of tropical glacier recession: evaluating changing dimensions of mass and volume through time.”
- 2008 Peruvian Natural Resources Institute, Lima, Peru, 13 July. “Contexto Topográfico de la Recesión Glaciar Tropical: LIDAR y Evaluación del Volumen.”
- 2006 International Quaternary Association Workshop, “Timing and Nature of Mountain Glaciation, from High Asia to the World,” Xining, China, 13-22 September 2006. “Quaternary glaciation in Africa: key chronologies and climatic implications.”

RESEARCH PAPERS AND POSTERS (*) PRESENTED AT PROFESSIONAL MEETINGS

- 2019 Soni, N., B.G. Mark, J. Morgan Manos, M.E. Vega, F. Schoessow, J.Q. DeGrand, S.A. Reinemann and D.F. Porinchi. Interannual Rock Glacier Surface Elevation Changes using UAS in Great Basin National Park, Nevada. Submitted abstract# 633654. 2019 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.
- 2019 Mateo, E., B.G. Mark, M. Baraer and J. McKenzie. Evaluation of inter-annual to decadal changes in tropical Andean stream chemistry below debris-covered glaciers. Submitted abstract# 630936. 2019 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.
- 2019 Mark, B.G., E. Sambuco, N. Patrick, J.Q. DeGrand, D. Porinchi, S. Reinemann and J. Box. Hourly to decadal patterns of mountain temperature variability from embedded sensors spanning 2000m in Great Basin National Park, 2006-2018. Submitted abstract# 630337. 2019 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.
- 2019 Mark, B.G., J.M. McKenzie, M. Baraer, R. Hellstrom, A. Fernandez, L. Somers, K-I. Huh, J. La Frenierre, O. Wigmore, F. Schoessow and L. Lautz. Tracing cryo-hydro-social transformations in the tropical Andes. International Mountain Conference (IMC2019), Innsbruck, Austria, 8-12 Sep.
- 2019 Mark, B.G., A. Eddy, M. Baraer, J.M. McKenzie, A. Fernandez, S. Welch and S. Fortner. Exploring patterns of hydrochemical alterations below melting glaciers in Peru in long-term samples of stream water. Association of American Geographers Annual Meeting, Washington, D.C., 3-7 April.
- 2019 Porinchi, D.F., C.S. Cooper, S. Reinemann, J. DeGrand and B.G. Mark. Evidence for a severe fire event in Great Basin National Park, NV during the late 15th century. Twenty-ninth Pacific

- Climate Conference (PACLIM), Asilomar State Conference Grounds, Pacific Grove, CA, 17-20 Feb.
- 2018 *Hellström, R.A., A. Fernandez, B.G. Mark and J.M. Covert. Dynamical and thermal mechanisms of wet season convection and freezing level variability in the Peruvian Andes derived from WRF modeling and coupling a decade of surface and satellite observations. Abstract A31K-3021 presented at the 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.
- 2018 *Schoessow, F.S., N. Soni, E. Vega and B.G. Mark. UAV-borne remote sensing platforms for glacier-related hazard monitoring in high-mountain environments. Abstract G21C-0559 presented at the 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.
- 2018 Somers, L.D., J.M. McKenzie, B.G. Mark, P. Lagos, G.-H. Crystal Ng, A.D. Wickert and M. Baraer. Evaluation of Climate Impacts on Andean Hydrology Using an Integrated Groundwater, Surface Water and Glacier Model. Abstract H12C-03 presented at the 2018 Fall Meeting, AGU, Washington D.C., 10-14 Dec.
- 2018 *Gunderdson, J.D., B.G. Mark, A. Fernandez and E.J. Requeñas Rojas. Assessing the Dendroclimatological Potential of *Polylepis rodolfo-vasquezii* in the Tropical Peruvian Andes. Abstract PP43C-1931 presented at the 2018 Fall Meeting, AGU, Washington D.C., 10-14 Dec.
- 2018 Mark, B.G., N. Stansell and G. Zeballos-Castellon. The Last Deglaciation of Peru and Bolivia. Geological Society of America Annual Meeting, Indianapolis, IN. 4-7 November.
- 2018 White, J. and B.G. Mark. Wildfire as an Earth System: Perspectives on interdisciplinary research methods from Alaska and Nevada. INVITED. Geological Society of America Annual Meeting, Indianapolis, IN, 4-7 November.
- 2018 Sambuco, E., N. Patrick, B.G. Mark, J. DeGrand, S. Reinemann and D. Porinchi. A decade of observing vertical temperature in Great Basin National Park using an embedded sensor network. Geological Society of America Annual Meeting, Indianapolis, IN, 4-7 November.
- 2018 Schoessow, F.S., J.-M. Manos, B.G. Mark, J. DeGrand, N. Soni, S. Reinemann and D. Porinchi. Mapping rock glacier surface elevation changes in Great Basin National Park, Nevada. Geological Society of America Annual Meeting, Indianapolis, IN, 4-7 November.
- 2018 *Gunderson, J., E.J. Requeñas Rojas, B.G. Mark and A. Fernandez. Assessing the dendroclimatological potential of *Polylepis Rodolfo-Vasquezii* in the Peruvian Andes. Geological Society of America Annual Meeting, Indianapolis, IN, 4-7 November.
- 2018 Glas, R., L. Lautz, J. McKenzie, R. Moucha and B.G. Mark. Integrating multiple geophysical methods to understand groundwater storage and discharge in tropical proglacial catchments. 24th European Meeting of Environment and Engineering Geophysics, Near Surface Geoscience Conference & Exhibition. Porto, Portugal, 9-13 September 2018.
- 2018 Hellstrom, R., A. Fernandez, B.G. Mark, J. Covert. Coupling a decade of surface observations and satellite data to reveal convective forcing of tropical glacier mass balance in the Peruvian Andes. American Meteorological Society – Mountain Meteorology Meeting, Santa Fe, NM, 29 June 2018.
- 2018 Somers, L.D., J.M. McKenzie, B. Mark, P. Lagos, C.G-H. Ng, A. Wickert, M. Baraer, M. Sadler, 2018. How climate change and glacier recession impact a tropical proglacial watershed: towards a holistic modelling approach. Oral presentation, session CGU_H_01, Canadian Geophysical Union Annual Meeting, Niagara Falls, Canada, June 11, 2018
- 2018 Moritz, M., S. Phang, S. Laborde, A. Shastry, A. Murumkar, R. Ziebe, M. Ahmadou, S.Kari, B.G. Mark, M. Durand, A. Fernandez, and I. Hamilton. Synthesizing data, concepts, and models in interdisciplinary research of coupled systems, poster presentation at International Symposium

- at SESYINC Boundary Spanning: Advances in Socio-Environmental Systems Research, in Annapolis, Maryland, June 11-13, 2018.
- 2018 Mark, B.G., N. Stansell and G. Zeballos-Castellon. The Last Deglaciation of Peru and Bolivia. Association of American Geographers Annual Meeting, New Orleans, LA. 10-13 April.
- 2018 *Sambuco, E., B.G. Mark and J. DeGrand. Exploring microclimates in Great Basin National Park using a high-resolution embedded sensor network. Association of American Geographers Annual Meeting, New Orleans, LA. 10-13 April.
- 2018 *Morgan-Manos, J., B.G. Mark, J. DeGrand and O. Wigmore. Annual Surface Elevation Change of the Lehman Rock Glacier in Great Basin National Park, Nevada, USA. Association of American Geographers Annual Meeting, New Orleans, LA. 10-13 April.
- 2017 *Mark, B.G., A. Fernandez, P. Gabrielli, A. Montenegro, J. Postigo and R. Hellstrom. Studying the Effects of Amazonian Land Cover Change on Glacier Mass Balance in the Tropical Andes. 2017 Fall Meeting, AGU, New Orleans, 11-15 December.
- 2017 Vuille, M.F., M. Huss, B. Bookhagen, C. Huggel, D. Jacobsen, R.S. Bradley, J.J. Clague, W. Buytaert, M. Carey, A. Rabatel, D.R. Cayan, G.B. Greenwood, A. Milner, B.G. Mark, R. Weingartner and M. Winder. Towards Mountains without Permanent Snow and Ice – Impacts and Challenges for Adaptation. 2017 Fall Meeting, AGU, New Orleans, 11-15 December.
- 2017 *Glas, R., L. Lautz, J.M. McKenzie, R. Moucha and B.G. Mark. Proglacial Hydrogeology of the Cordillera Blanca (Peru): Integrating Field Observations with Hydrogeophysical Inversions to Inform Groundwater Flow Simulations and Conceptual Models. 2017 Fall Meeting, AGU, New Orleans, 11-15 December.
- 2017 *Shastry, A.R., M.T. Durand, A. Fernandez, S.C. Phang, I. Hamilton, S. Laborde, B.G. Mark, M. Moritz and J.C. Neal. Hydrodynamic Modeling to Assess the Impact of Man-Made Fishing Canals on Floodplain Dynamics: A Case Study in the Logone Floodplain. Abstract EP11A-1553 presented at the 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.
- 2017 Stansell, N.D., J.M. Licciardi, D.T. Rodbell and B.G. Mark. Ocean-atmospheric forcing of Late Glacial and Holocene glacier fluctuations in the Eastern and Western Cordillera of the tropical Peruvian Andes. Paper 351-10 presented at GSA Annual Meeting in Seattle, WA, 22-25 Oct.
- 2017 *Baker, E.A., L.K. Lautz, J.M. McKenzie and B.G. Mark. Methods for correcting ground-based time-lapse infrared imagery. Paper #372-2 presented at GSA Annual Meeting in Seattle, WA, 22-25 Oct.
- 2017 Somers, L., J. McKenzie, S.C. Zipper, B.G. Mark, P. Lagos, O. Wigmore, M. Baraer. Climate change and enhanced recharge in a non-glacierized mountain catchment, Shullcas River, Peru. Paper H01-05 presented at the Canadian Geophysical Union meeting, Vancouver, B.C., May 28-31.
- 2017 Mark, B.G., J.M. McKenzie, M. Baraer, L. Lautz, L. Somers, O. Wigmore, R. Hellstrom and P. Lagos. Glacier-water fluxes, feedbacks and groundwater connections in the Peruvian Andes. Association of American Geographers Annual Meeting, Boston, MA. 5-9 April.
- 2017 Hellstrom, R.A., A. Fernandez, B.G. Mark and J. Covert. Incorporating Autonomous Sensors and Climate Modeling to Gain Insight into Seasonal Hydrometeorological Processes Encompassing a Glacierized Valley in the Peruvian Andes. Association of American Geographers Annual Meeting, Boston, MA. 5-9 April.
- 2017 Lagos, P., B.G. Mark, J.M. McKenzie, M. Baraer, O. Wigmore, L.D. Somers and Y. Ccasani. Investigating Climate Forcing in the Huaytapallana Glacier, Central Peruvian Andes. Association of American Geographers Annual Meeting, Boston, MA. 5-9 April.

- 2017 Zeballos, G., B.G. Mark, A. Soruco, D. Cusicanqui and A. Rabatel. Complexities of the spatial and temporal dynamics of glaciers and peatlands in the Tropical Andes. Association of American Geographers Annual Meeting, Boston, MA. 5-9 April.
- 2017 Phang, S.C., Durand, M., Fernández A., Hamilton, I.M., Laborde, S., Mark, B., Murumkar, A., Shastry, A., Moritz, M. Putting the numbers in coupled human and natural systems conceptual models. Association of American Geographers Annual Meeting, Boston, MA. 5-9 April.
- 2017 Glas, R., L. Lautz, J.M. McKenzie., B.G. Mark, et al. Alpine groundwater storage in the tropics: using hydrogeophysics to constrain boundary conditions for future groundwater models in the Cordillera Blanca, Peru. Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) 2017, Denver, CO. 19-23 March.
- 2016 *Hellstrom, R.A., A. Fernandez, B.G. Mark and J.M. Covert. Examining Dynamical Processes of Tropical Mountain Hydroclimate, Particularly During the Wet Season, Through Integration of Autonomous Sensor Observations and Climate Modeling. Abstract A11N-0197 presented at the 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.
- 2016 Wigmore, O., B.G. Mark, P. Lagos, L.D. Somers, J.M. McKenzie, K.I. Huh, C. Hopkinson, M. Baraer and R. Crumley. Integrating Unmanned Aerial Vehicles and Terrestrial Structure from Motion Photogrammetry for Assessing High Mountain Glacier Change, Huaytapallana, Peru. Abstract C34C-06 presented at the 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.
- 2016 *Shastry, A.R., M.T. Durand, J.C. Neal, A. Fernandez, I. Hamilton, S. Kari, S. Laborde, B.G. Mark, M. Arabi, M. Moritz, S.C. Phang. Predicting the Effects of Man-Made Fishing Canals on Floodplain Inundation – A Modelling Study. Abstract GC41B-1097 presented at the 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.
- 2016 Lagos, P., B.G. Mark, J.M. McKenzie, M. Baraer, O. Wigmore, L.D. Somers and Y. Ccasani. Climate in the glaciated central Peruvian Andes observed since 1921: Trends in maximum, minimum, mean and DTR surface air temperature. Abstract GC54C-03 presented at the 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.
- 2016 Glas, R.L., L. Lautz, J.M. McKenzie, E.A. Baker, L.D. Somers, C. Aubry-Wake, O. Wigmore and B.G. Mark. Integrating Multiple Geophysical Methods to Quantify Alpine Groundwater-Surface Water Interactions: Cordillera Blanca, Peru. Abstract NS43C-1937 presented at the 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.
- 2016 Mark, B.G., J.M. McKenzie, M. Baraer, A. Fernandez, O. Wigmore, P. Lagos, L.Lautz, M. Carey and J. Bury. Assessing vulnerability to hydroclimatic change in the Tropical Peruvian Andes. 7th Mountain Climate (MtnClim) Conference, Leavenworth, WA, 17-21 October.
- 2016 Wilson, A., J. DeGrand, R. Cummings, J. Cervenec and B.G. Mark. Harnessing Education and Technology for Environmental Detection (HEATED): An innovative, low-cost device for monitoring the Columbus Urban Heat Island. Innovative Environmental Monitoring Technology Symposium, Ohio University, Athens, OH, 17-18 October.
- 2016 Cervenec, J., A. Wilson, J. DeGrand, B. Mark and R. Cummings. Harnessing Education and Technology for Environmental Detection (HEATED): Pedagogical innovations for engaging undergraduate students in research. Innovative Environmental Monitoring Technology Symposium, Ohio University, Athens, OH, 17-18 October.
- 2016 *Glas, R.L., L. Lautz, J.M. McKenzie, C. Aubry-Wake, E.A. Baker, L.D. Somers, B.G. Mark and O. Wigmore. Using Multiple, Integrated Hydrogeophysical Methods to Understand Groundwater/Surface Water Interactions in Glaciated, Tropical Catchments of the Cordillera Blanca, Peru. Paper No. 157-14. GSA Annual Meeting in Denver, Colorado, USA, 26 September.

- 2016 Mark, B.G., J.M. McKenzie, M. Baraer, A. Fernandez, P. Lagos, L. Lautz, M. Carey and J. Bury. Glacier loss and emerging hydrologic vulnerabilities in the tropical Peruvian Andes. International Symposium on Glaciers and Mountain Ecosystems, Huaraz, Peru, 10-13 August. INVITED.
- 2016 *Glas, R., L. Lautz, J.M. McKenzie, C. Aubry-Wake, E. Baker, L. Somers, B.G. Mark and O. Wigmore. Characterization of Aquifer Structure and Composition using Seismic Refraction Tomography in the Cordillera Blanca, Peru. International Symposium on Glaciers and Mountain Ecosystems, Huaraz, Peru, 10-13 August.
- 2016 *Wigmore, O., B.G. Mark, P. Lagos, L.D. Somers and J.M. McKenzie. Glacier Change at Huaytapallana Glacier, Huancayo Peru using Terrestrial Structure from Motion Photogrammetry. Eastern Snow Conference, Columbus, OH, 14-16 June. (Prize for best poster presentation.)
- 2016 *Somers, D.L., J.M. McKenzie, B.G. Mark, P. Lagos, R. Crumley, O. Wigmore and M. Baraer. The impact of glacier recession on water resources: time series analysis in Huancayo, Peru. Joint Scientific Congress of the Canadian Meteorological and Oceanographic Society and Canadian Geophysical Union, Fredericton, NB, 29 May - 2 June.
- 2016 *Fernandez, A. and B.G. Mark. Climatic Forcing of Glacier Surface Mass Balance Changes Along North-Central Peru: A Modeling Perspective. Association of American Geographers Annual Meeting, San Francisco, CA, 29 March-2 April.
- 2016 Wigmore, O., B.G. Mark, J.M. McKenzie, M. Baraer, R. Gordon and L. Lautz. High Resolution Thermal UAV Mapping of Proglacial Streams and Wetlands in the Cordillera Blanca, Peru. Association of American Geographers Annual Meeting, San Francisco, CA, 29 March-2 April.
- 2016 Baker, E.A., L.K. Lautz, J.M. McKenzie, C. Aubry-Wake, L. Somers, O. Wigmore, A. Glose, R. Glas and B.G. Mark. Infrared imaging and modelling of proglacial stream temperature in the Cordillera Blanca, Peru. Paper No. 16-4 presented at the Northeast Section GSA Annual Meeting, Albany, NY, 21-23 March, GSA Abstracts with Programs Vol. 48, No. 2.
- 2016 Stansell, N., D.T. Rodbell, JM. Licciardi, M.B. Abbott and B.G. Mark. Late glacial and Holocene glacier fluctuations in the Cordillera Blanca, Peruvian Andes. Paper No. 3-7 presented at the Northeast Section GSA Annual Meeting, Albany, NY, 21-23 March, GSA Abstracts with Programs Vol. 48, No. 2.
- 2015 Mark, B.G., J.M. McKenzie, M. Baraer, P. Lagos, L. Lautz, M. Carey, J. Bury, R. Crumley, O. Wigmore and L. Somers. Glacier loss and emerging hydrologic vulnerabilities in the Peruvian Andes. Abstract U42A-01 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec. INVITED.
- 2015 *Baker, E., L.K. Lautz, J.M. McKenzie, C. Aubry-Wake, L. Somers, O. Wigmore, A. Glose, R. Glas and B.G. Mark. Infrared imaging and modelling of proglacial stream temperature in the Cordillera Blanca, Peru. Abstract H23H-1670 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *Wigmore, O. and B.G. Mark. Mapping glacier dynamics and proglacial wetlands with a multispectral UAV at 5000m in the Cordillera Blanca, Peru. Abstract C41D-0719 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 Fernandez, A., M.R. Najafi, M. Durand, B.G. Mark, M. Moritz, A. Shastry, S. Laborde, S.C. Phang, I. Hamilton, X. Ningchuan and J. Neal. Modelling annual flooding in the Logone floodplain in Cameroon. Abstract GC44B-06 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *Shastry, A., M. Durand, A. Fernandez, I. Hamilton, S. Kari, B. Labara, S. Laborde, B.G. Mark, M. Moritz, J. Neal and S.C. Phang. Predicting the impacts of fishing canals on floodplain

- dynamics in Northern Cameroon using a small-scale sub-grid hydraulic model. Abstract H51N-1608 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 Somers, L., R. Gordon, J.M. McKenzie, L. Lautz, O. Wigmore, M. Baraer and B.G. Mark. Quantifying groundwater-surface water interactions using a stream energy balance model and dye tracing in a proglacial valley of the Cordillera Blanca, Peru. Abstract H31K-07 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *Guittard, A., M. Baraer, J.M. McKenzie, B.G. Mark, A. Fernandez, E. Walsh and A.S. Perez. Spatiotemporal variability and differentiation between anthropogenic and natural contamination of heavy metals of surface water: a case study in the Cordillera Blanca, Peru. Abstract H51N-1595 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *McKenzie, J.M., O. Wigmore, C. Aubry-Wake, B.G. Mark, R. Hellstrom and L. Lautz. Time-lapse and UAV thermal imaging of glacial and periglacial environments in the Peruvian Andes (Cordillera Blanca, Peru). Abstract NS21A-1916 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec. INVITED.
- 2015 *Hellstrom, R., A. Fernandez, B.G. Mark and J. Covert. Unraveling tropical mountain hydroclimatology by coupling autonomous sensor observations and climate modeling: Llanganuco Valley, Cordillera Blanca, Peru. Abstract A41G-0132 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *Aubry-Wake, C., D. Zephir, M. Baraer, J. McKenzie and B.G. Mark. Estimating Heat Transfer at Glacier Margins using Ground-Based Infrared Imagery. Abstract C43B-0799 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *Glas, R., L.Lautz, J.M. McKenzie, B.G. Mark, E. Baker, C. Aubry-Wake, L. Somers and O. Wigmore. Constraining Subsurface Structure and Composition Using Seismic Refraction Surveys of Proglacial Valleys in the Cordillera Blanca, Peru. Abstract H13E-1601 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 *Mark, B.G. and A. Fernandez. Climatic forcing of glacier surface mass balance changes along North-Central Peru: A modeling perspective. Abstract C53A-0758 presented at the 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.
- 2015 Laborde, S., M. Durand, A. Fernandez, I. Hamilton, B. Mark, S. Phang, N. Xiao, R. Ziebe, and M. Moritz. The risk of a computational 'streetlight effect' in social-ecological systems research. Conference on Complex Systems, Tempe, AZ, September 28 - October 02, 2015.
- 2015 Baraer, M., B.G. Mark, K.I. Huh, J.M. McKenzie, O. Wigmore and A. Fernandez. Post Peak Water in the Cordillera Blanca, Peru: toward a redistribution of water resources. Joint Assembly, Canadian Geophysical Union and American Geophysical Union, Montreal, 3-7 May, 2015.
- 2015 Santos Perez, A., M. Baraer, A. Guittard, J.M. McKenzie and B.G. Mark. Differentiation between anthropogenic and natural contamination of stream water by heavy metals: a case study in the Cordillera Blanca, Peru. Joint Assembly, Canadian Geophysical Union and American Geophysical Union, Montreal, 3-7 May, 2015.
- 2015 Guittard, A., M. Baraer, J.M. McKenzie, B.G. Mark, E. Walsh, O. Wigmore and A. Fernandez. Spatiotemporal variability of streams heavy metals contamination: a case study in the Cordillera Blanca, Peru. Joint Assembly, Canadian Geophysical Union and American Geophysical Union, Montreal, 3-7 May, 2015.
- 2015 Somers, L., J. McKenzie, L. Lautz, R. Gordon, O. Wigmore and B.G. Mark. Quantifying groundwater-surface water interactions with a stream energy balance, Cordillera Blanca, Peru.

- Joint Assembly, Canadian Geophysical Union and American Geophysical Union, Montreal, 3-7 May, 2015.
- 2015 McKenzie, J.M., R. Gordon, D. Cairns, L. Lautz, J. Byrne and B.G. Mark. Groundwater – Surface Water Interactions in Mountain Environments: Comprehending Heterogeneity. Joint Assembly, Canadian Geophysical Union and American Geophysical Union, Montreal, 3-7 May, 2015.
- 2015 Mark, B.G. and A. Fernandez. Hydro-climatic vulnerability to climate change in the tropical Andean cryosphere: integrating field and modeling perspectives from north-central Peru. Association of American Geographers Annual Meeting, Chicago, IL, 21-25 April, 2015.
- 2015 Porinchu, D., A. Campbell, N. Stansell, B.G. Mark, Z. Yu, R. Booth, E. Klein and S. Reinemann. A quantitative reconstruction of late Holocene climate and environmental change in south-central Alaska: evidence from lake sediment. Association of American Geographers Annual Meeting, Chicago, IL, 21-25 April, 2015.
- 2015 Fernandez, A., B.G. Mark, M. Durand, S.C. Phang, S. Laborde, M. Moritz and I. Hamilton. Investigating DEM noise reduction and resolution in flood modeling: a case study based on the Logone Floodplain, Cameroon. Association of American Geographers Annual Meeting, Chicago, IL, 21-25 April, 2015.
- 2015 Wigmore, O. and B.G. Mark. High resolution autonomous mapping of tropical glacier-hydrologic change: Development and Deployment of a Multispectral Mapping UAV at 5000m in the Cordillera Blanca, Peru. Association of American Geographers Annual Meeting, Chicago, IL, 21-25 April, 2015.
- 2015 Laborde, S., A. Fernandez, S. Phang, S. Kari, A. Mahamat, B. Mark, I. Hamilton, M. Durand, P. Scholte, R. Ziebe, N. Xiao and M. Moritz. Critical transition in a floodplain fishery: Feedbacks and the role of ‘social momentum.’ Presentation to Earth Observatory/Complexity Institute at Nanyang Technological University, Singapore, March 26th, 2015.
- 2014 *Moritz, M., S. Laborde, M. Ahmadou, M. Durand, I. Hamilton, S. Kari, B.G. Mark, M. Reza Najafi, S. Phang, N. Xiao and R. Ziebe. Regime Shifts and Runaway Processes in a Coupled Human and Natural System. ICREA Conference on Small-Scale Societies and Environmental Transformations: Co-evolutionary Dynamics in Barcelona, Spain, December 17th, 2014.
- 2014 McKenzie, J.M., R.P. Gordon, M. Baraer, L. Lautz, B.G. Mark, O. Wigmore, D. Chavez, and C. Aubry-Wake. Water resources and groundwater in a glaciated Andean watershed (Cordillera Blanca, Peru). 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec. INVITED.
- 2014 Aubry-Wake, C., M. Baraer, J. McKenzie, B.G. Mark, O. Wigmore and R. Hellstrom. Investigating glacier surface conditions using high-definition ground based infrared imagery: Insight from the Cordillera Blanca, Peru. 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.
- 2014 *Huh, K.I., B.G. Mark, M. Baraer and Y. Ahn. Evaluating glacier volume changes since the Little Ice Age maximum and consequences for stream flow by integrating models of glacier flow and hydrology in the Cordillera Blanca, Peru. 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.
- 2014 McKenzie, J.M., R.P. Gordon, M. Baraer, L. Lautz, B.G. Mark, D. Chavez and C. Aubry-Wake. Hydrogeology in a glaciated high-elevation Andean watersheds – results from the Cordillera Blanca, Peru. Paper No. 102-15 presented at the Geological Society of America Annual Meeting, Vancouver, BC, 19-22 Oct.

- 2014 Gordon, R.P., L. Lautz, J.M. McKenzie, B.G. Mark, D. Chavez and M. Baraer. Groundwater contributions to streamflow in a glacierized catchment of the Cordillera Blanca, Peru. Paper No. 102-16 presented at the Geological Society of America Annual Meeting, Vancouver, BC, 19-22 Oct.
- 2014 Mark, B.G., M. Baraer, K.I. Huh, M. Carey, A. French, J. Bury, K. Young, J. McKenzie, A. Eddy, A. Fernandez and Oliver Wigmore. From glaciers to the desert: Assessing hydrologic change and social vulnerability across a tropical Andean waterscape. 71st Annual Eastern Snow Conference, Boone, NC, 3-5 June.
- 2014 *Moritz, M., M. Durand, I. Hamilton, S. Kari, S. Laborde, B. Mark, N. Xiao and R. Ziebe. Modeling Regime Shifts in the Logone Floodplain, Cameroon. International conference on the “Contemporary evolution of African floodplains and deltas.” Dar Es Salaam, Tanzania, 27 to 30 May 2014.
- 2014 Baraer, M., B.G. Mark, K.I. Huh, J. M. McKenzie, O. Wigmore and A. Fernandez. Glacial retreat and hydrological response across the Rio Santa watershed, Peru. EGU General Assembly 2014, held 27 April - 2 May, 2014 in Vienna, Austria, id.4395.
- 2014 *Wigmore, O. and B.G. Mark. High Resolution Aerial Photogrammetry and DEM Generation in the Peruvian Andes: Evaluation of a Kite Based Platform. Annual Meeting of the Association of American Geographers, Tampa, FL, 8-12 April.
- 2014 Guo, W. and B.G. Mark. A multi-decadal study of the interaction between sea ice and Greenland ice sheet surface melt. Annual Meeting of the Association of American Geographers, Tampa, FL, 8-12 April.
- 2013 *Mark, B.G., A. Eddy, M. Baraer, J.M. McKenzie, E. Walsh, A. Fernandez, O. Wigmore, R. Battista and A. Guittard. Characterizing changing stream water quality in a glacierized tropical watershed. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 La Frenierre, J. and B.G. Mark. Evaluating the Impact of Glacier Shrinkage on Water Supply at Volcán Chimborazo, Ecuador. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 *McKenzie, J.M., R. Gordon, D. Chavez, L. Maharaj, M. Baraer, B.G. Mark and L. Lautz. Groundwater Flux and Storage in the Cordillera Blanca, Peru. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 Gordon, R., L. Lautz, J.M. McKenzie, B.G. Mark and D. Chavez. Groundwater, springs, and stream flow generation in an alpine meadow of a tropical glacierized catchment. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 *Huh, K.I., B.G. Mark, A. Fernandez, M. Baraer and Y. Ahn. Centennial-scale dynamics of glacier changes and stream flow in the Cordillera Blanca, Peru. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 *Anh, Y., K.I. Huh, B.G. Mark, J. Gulley and K.D. Park. Remote sensing of debris-covered glaciers: Change detection and analysis using multiple sensors. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 Fernandez, A. and B.G. Mark. Assessing pan-Andean glacier response to climate changes since 1979. 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- 2013 *Huh, K.I., B.G. Mark, C. Hopkinson and Y. Ahn. Assessing 50 years of tropical Peruvian glacier volume change from multi-temporal digital elevation models (DEMs). International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.

- 2013 *Hellstrom, R., B.G. Mark, R.J. Gomez and A. Chochachin. Applications and Limitations of Sustaining a Cost-Effective Embedded Sensor Network in Complex Terrain: Cordillera Blanca, Peru. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 *Lagos, P., B.G. Mark, J.M. McKenzie and M. Baraer. DISPONIBILIDAD DE AGUA EN EL VALLE DEL RIO MANTARO. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 *Zephir, D., M. Baraer, B.G. Mark, D. Slayback and J.M. McKenzie. Integrating glaciology, hydrogeology and surface hydrology in modeling tropical glacier-fed valley discharge. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 *Guittard, A., M. Baraer, J. McKenzie, E. Walsh and B.G. Mark. Current and future trace metals amounts in the Santa River. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 *Polk, M., K. Young, J. Bury, B.G. Mark, M. Carey, J.M. McKenzie, M. Baraer and A. French. Bofedales Tropicales de Altura y la Nueva Geografía de Agua en la Cuenca del Río Santa. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 Baraer, M., B.G. Mark, K.I. Huh, O. Wigmore, A. Fernandez, J.M. McKenzie and E. Walsh. Glacial retreat and hydrological consequences across the Rio Santa watershed. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 Mark, B.G., J. Bury, M. Carey, K. Young, J.M. McKenzie, M. Baraer, K.I. Huh and A. Eddy. Below the melting glaciers: an integrated study of glacier hydrologic change and emergent vulnerabilities in a tropical Andean waterscape. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July. INVITED.
- 2013 McKenzie, J.M., D. Chavez, R. Gordon, L. Maharaj, M. Baraer, B.G. Mark and L. Lautz. Groundwater Flux and Storage in the Cordillera Blanca, Peru. International Glacier Forum: <http://foroglaciares.pe/>, Huaraz, Peru, 1-4 July.
- 2013 Mark, B.G., M. Baraer, J.M. McKenzie, E. Walsh, O. Wigmore and A. Fernandez. Tracking stream flow and water quality below melting Andean glaciers: a survey along the Santa River, Peru. Association of American Geographers Annual Meeting, Los Angeles, CA, 9-13 April.
- 2012 Mark, B.G. Change in mountain cryosphere and downstream impact. Forum title: Food, Water and the Environment. 4th International EcoSummit: "Ecological Sustainability: Restoring the Planet's Ecosystem Services," Columbus, OH, 30 September-5 October.
- 2012 Mark, B.G. Hydrologic transformation and human resilience to climate change in the Peruvian Andes. Symposium title: Ecosystem Change in Polar and Alpine Environments. 4th International EcoSummit: Ecological Sustainability: Restoring the Planet's Ecosystem Services, Columbus, OH, 30 September-5 October, 2012. INVITED.
- 2012 Mark, B.G., M. Baraer, J.McKenzie and K.I. Huh. Diagnosing a threshold in glacier melt impact to streamflow in Peru. Association of American Geographers Annual Meeting, New York, NY, 24-28 February, 2012.
- 2012 Baraer, M., B.G. Mark, O. Wigmore, A. Fernandez-Rivera, J.M. McKenzie and E. Walsh. From the Cordillera Blanca to the Pacific Ocean: hydrological changes and consequences across the Rio Santa watershed. Abstract GC52B-07 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 Gordon, R.P., L.K. Lautz, J.M. McKenzie, and B.G. Mark. Groundwater-surface water interactions in a glacierized catchment and their influence on proglacial water supply. Abstract GC52B-06 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

- 2012 *Slayback, D.A., K. Yager, M. Baraer, K.I. Mohr, J. Argollo, O. Wigmore, R. I. Meneses, and B.G. Mark. Changing Hydrology in Glacier-fed High Altitude Andean Peatbogs. Abstract GC11A-0962 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 *Huh, K.I and B.G. Mark. Assessing volume change of tropical Peruvian glaciers from multi-temporal digital elevation models (DEMs). Abstract GC11A-0964 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 *Chavez, D., J.M. McKenzie, M. Baraer and B.G. Mark. Proglacial Groundwater Flux and Storage in the Cordillera Blanca, Peru. Abstract GC11A-0966 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- 2012 *Fernandez, A. and B.G. Mark. The application of a regionally distributed glacier-climate model and a dynamical downscaling in the central Andes of Chile and Argentina (30°S to 37°S): first results. Presented at International Glaciological Society - International Symposium: "Glaciers and ice sheets in a warming climate," University of Alaska Fairbanks, Alaska, 24 - 29 June.
- 2012 McKenzie, J.M., M. Baraer, E. Walsh and B.G. Mark. Evolving proglacial water resources: understanding how glacier recession will impact water quality and quantity in the Cordillera Blanca, Peru. Presented at the 2012 CWRA-CGU National Conference, Banff, Alberta, 5-8 June.
- 2012 Stansell, N.D., D.T. Rodbell, B.G. Mark and C.M. Sedlak. A ~13,000 year history of glacial variability in the tropical Andes recorded in lake sediments from the Peruvian Andes. EGU General Assembly 2012, held 22-27 April, 2012 in Vienna, Austria., p.12536.
- 2011 *Mark, B.G., J. Bury, M. Carey, J. McKenzie, K.I. Huh, M. Baraer and A. Eddy. Thresholds of glacier hydrologic change and emergent vulnerabilities in a tropical Andean waterscape. Abstract C53D-0701 Fall Meeting, AGU, San Francisco, Calif., 5-9 December.
- 2011 Baraer, M., B.G. Mark and J. McKenzie. Past peak water in Peru's Cordillera Blanca: diagnosing the demise of glacier influence on stream discharge. Abstract C33F-08 presented at the 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 December.
- 2011 *Burns, P., A. Nolin, B. Naz, D. Lettenmaier, C. Frans, G. Clarke, B. Mark and K. Gleason. Using a hydrological model in a tropical glacier basin, Cordillera Blanca, Peru. Abstract C53D-0711 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 December.
- 2011 *Burns, P., A. Nolin, B.G. Mark, K. Gleason. Using a Distributed Hydrological Model in a Tropical Glacier Basin, Cordillera Blanca, Peru. Paper #241-8. GSA Annual Meeting, Minneapolis, MN, 9-12 October.
- 2011 Huh, K.I. and B.G. Mark. Changes of topographic context of glaciers in the tropical Peruvian Andes: some case studies over Cordillera Blanca. Association of American Geographers Annual Meeting, Seattle, WA, 12-16 April, 2011.
- 2011 Mark, B.G., M. Baraer, J.M. McKenzie, T. Condom, K.I. Huh and S. Rathay. Glacier loss and changes to waters in the Cordillera Blanca, Peru. Association of American Geographers Annual Meeting, Seattle, WA, 12-16 April, 2011.
- 2011 *Stone, S.P., B.G. Mark. Evaluation of local climate variability in the Peruvian Andes through the analyses of high resolution observations. Accepted abstract, 2011 Combined Northcentral, Northeast Regional Meeting of the Geological Society of America, Pittsburgh, PA, 20-22 March.
- 2010 *Mark, B.G., N. Stansell, J.G. Fairman, M.A. Plummer and D.T. Rodbell. Modeling the climatic controls and topographic form of modern and late Pleistocene tropical Peruvian glaciers. Abstract GC21A-0858 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

- 2010 *Baraer, M., J.M. McKenzie and B.G. Mark. Proglacial hydrology in the Cordillera Blanca, Peru. Abstract H41G-1189 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2010 *Brosseau, D.P., J.M. Ramage, Z. Yu, E.S. Klein, R.K. Booth, J. Loisel and B.G. Mark. Peatland distribution and characterization in the Susitna River Basin, Alaska. Abstract B31E-0356 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2010 *Stansell, N., B.G. Mark, D.T. Rodbell and C.M. Moy. A ~20,000 year history of glacial variability in the tropical Andes recorded in lake sediments from the Cordillera Blanca, Peru. Abstract GC21A-0854 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- 2010 Mark, B.G., J. Bury, J.M. McKenzie, M. Baraer, K.I. Huh and A. French. Glacier hydrological transformation and livelihood vulnerability in the Cordillera Blanca, Peru: An integrated assessment. *Global Change and the World's Mountains: Perth II – Five Years Later*, Perth, Scotland, 26-30 September, 2010.
- 2010 Huh, K.I., B.G. Mark and C. Hopkinson. Changes of Topographic Context of the Yanamarey Glacier in the Tropical Peruvian Andes. *Remote Sensing and Hydrology 2010 Symposium*, International Association of Hydrological Sciences, Jackson Hole, WY, 27-30 September, 2010.
- 2010 Mark, B.G., J. Bury, J.M. McKenzie, M. Baraer, A. French, K. I. Huh, S. Fortner and R.J. Gomez. Glacier recession and human vulnerability in the Cordillera Blanca, Peru. International Glaciological Society Symposium, *Earth's Disappearing Ice: Drivers, Responses and Impacts*. Byrd Polar Research Center, Columbus, OH, 15 August, 2010.
- 2010 *Filippi, R., Y. Ahn, H. Brecher, L.G. Thompson, B.G. Mark, P. Burns, P. Gabrielli, K.I. Huh and M. Lanzinger. Recent ice area and volume changes on the Kilimanjaro Ice Cap using automatic DEM extraction. International Glaciological Society Symposium, *Earth's Disappearing Ice: Drivers, Responses and Impacts*. Byrd Polar Research Center, Columbus, OH, 15 August, 2010.
- 2010 Huh, K.I. and B.G. Mark. Assessing the volume and hypsometric changes of the Queshque glaciers in the tropical Peruvian Andes. International Glaciological Society Symposium, *Earth's Disappearing Ice: Drivers, Responses and Impacts*. Byrd Polar Research Center, Columbus, OH, 15 August, 2010.
- 2010 *Salzmann, N., C. Huggel, M. Rohrer, W. Silveriso, B.G. Mark, P. Burns, C. Portocarrero and D.R. Hardy. Observed glacier changes and related climate trends in the Cusco Region, S. Peruvian Andes. International Glaciological Society Symposium, *Earth's Disappearing Ice: Drivers, Responses and Impacts*. Byrd Polar Research Center, Columbus, OH, 15 August, 2010.
- 2010 Baraer, M., J.M. McKenzie, B.G. Mark and J. Bury. The retreat of tropical glaciers and water resources: results from a multidisciplinary research in the Cordillera Blanca, Peru. International Glaciological Society Symposium: *Snow, Ice and Humanity in a Changing Climate*. Sapporo, Japan, 21-25 June, 2010.
- 2010 Mark, B.G., J.M. McKenzie, M. Baraer, S. Fortner and M. Shoenfelt. Hydrochemical Insights to Changing Tropical Glacier Environments in Peru. Association of American Geographers Annual Meeting, Washington, D.C., 14-18 April, 2010.
- 2010 Huh, K.I. and B.G. Mark. Assessing the volume and hypsometric changes of two target glaciers in the tropical Peruvian Andes. Association of American Geographers Annual Meeting, Washington, D.C., 14-18 April, 2010.
- 2010 Mark, B.G., J. Bury, J.M. McKenzie, M. Baraer and A. French. Climate Change and Tropical Andean Glacier Recession: Evaluating Hydrologic Changes and Livelihood Vulnerability in the

- Cordillera Blanca, Peru. International Glaciological Conference: *Ice & Climate Change: A View from the South*. Valdivia, Chile, 1-3 February 2010. INVITED
- 2009 *McKenzie, J.M., B.G. Mark and M. Baraer. Proglacial hydrology in the tropical Andes: lessons from the Cordillera Blanca, Peru. American Geophysical Union Fall Meeting, San Francisco, CA, 14-18 December 2009. Abstract PP23B-1393. INVITED
- 2009 La Frenierre, J. and B.G. Mark. Using stable water isotopes to evaluate tropical glacier hydrological changes. Isotope Hydrology and Biogeochemistry Workshop, Oregon State University, 8 June 2009.
- 2009 Baraer, M., J.M. McKenzie, B.G. Mark and S. Knox. Nature and variability of water resources in the Rio Santa upper watershed, Peru. American Geophysical Union and Canadian Geophysical Union Joint Assembly, Toronto, Canada, 24 May.
- 2009 Mark, B.G., J.M. McKenzie, and M. Baraer. Glacier Volume Loss and Hydrologic Transformation in the Tropical Peruvian Andes. Association of American Geographers Annual Meeting, Las Vegas, NV, 24-27 March, 2009.
- 2009 Huh, K.I. and B.G. Mark. Assessing the volume and topographic changes of tropical glaciers in Peruvian Andes. Association of American Geographers Annual Meeting, Las Vegas, NV, 24-27 March, 2009.
- 2009 *Walls, K. and B.G. Mark. Synoptic Analysis of the Tornado and Derecho Climatology of Ohio from 1959-2000. Association of American Geographers Annual Meeting, Las Vegas, NV, 24-27 March, 2009.
- 2009 Mark, B.G. Climate change and tropical Andean glaciers: Evaluating impacts to water resources. 8th Annual Ohio Latin Americanist Conference, Ohio University, Athens, OH, 27-28 February, 2009.
- 2008 Mark, B.G., J.M. McKenzie, and M. Baraer. Glacier volume loss and hydrologic transformation in the Cordillera Blanca, Peru. American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December, 2008. Abstract C32B-02.
- 2008 Mark, B.G. Tropical glacier environmental change: overview of research methods and future directions. Mountain Research Initiative Meetings, Berkeley, California, 14 December, 2008.
- 2008 *Fortner, S.K., B.G. Mark, J.M. McKenzie, M. Baraer and M.J. Shoenfelt. Metal Concentrations and Hydrochemical Dynamics in a Tropical-Glacier Watershed. American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December, 2008. Abstract C23A-0598.
- 2008 *Fairman, J.G., U.S. Nair, S.A. Christopher, B.G. Mark and M.A. Plummer. Impact of Upwind Land Cover Change on Mount Kilimanjaro. American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December, 2008. Abstract C23A-0599
- 2008 Baraer, M., J.M. McKenzie, B.G. Mark and J. Bury. Climate change related evolution of water resources in the Cordillera Blanca, Peru. EGU Topical Conference Series, 4th Alexander von Humboldt International Conference: *The Andes: Challenge for Geosciences*. Santiago de Chile, Chile, 24 – 28 November 2008.
- 2008 *Porinchu, D., S. Reinemann, B. Mark and J. Box. Midge-based air temperature inference model provides evidence for peak Holocene warmth at ~5200 yr BP in the Eastern Great Basin, USA. MTNCLIM 2008, Silverton, CO, 9-12 June, 2008.
- 2008 Baraer, M., J.M. McKenzie, B.G. Mark and S. Palmer. Utilisation de traceurs naturels pour la modélisation de bassins hydrologiques alimentés par des glaciers : Étude de cas dans la Cordillera

- Blanca, Pérou. Actes de colloque de l'Institut Hydro-Québec en environnement, développement et société (IHQEDS), Québec-city Canada, March 2008.
- 2008 Mark, B.G. Evaluating hydrologic changes from tropical Andean glacier melt using stable isotopes in water and digital terrain analyses. Association of American Geographers Annual Meeting, Boston, MA, 15-19 April, 2008.
- 2008 Bumbaco, K., B.G. Mark, R. Hellström. Impact of Elevation and Terrain on Air Temperature and Vapor Flux in an Alpine Valley, Peru. Association of American Geographers Annual Meeting, Boston, MA, 15-19 April, 2008.
- 2007 *Hellström, R. and B.G. Mark. Observing seasonal diurnal hydrometeorological variability within a tropical alpine valley: Implications for evapotranspiration. American Geophysical Union Fall Meeting, San Francisco, CA, 10-14 December, 2007.
- 2007 Porinchu, D.P., S. Reinemann, G. MacDonald, K. Moser, J. Munroe, J. Box and B.G. Mark. Evidence of regional warming during the 20th century in alpine and subalpine lakes in the Western United States. American Geophysical Union Fall Meeting, San Francisco, CA, 10-14 December, 2007.
- 2007 McKenzie, J.M. and B.G. Mark. A multi-year analysis of stable isotopes to trace glacier melt water in the Cordillera Blanca, Peru. Geological Society of America, Denver Annual Meeting, 28-31 October 2007, Session No. 42: Innovative Uses of Environmental Isotopes in Hydrology.
- 2007 *Baraer, M., J.M. McKenzie, B.G. Mark and S. Palmer. An Integrated Hydrochemical and Hydrologic Approach to Modeling Runoff in Glacier-fed Basins, Cordillera Blanca, Peru. International Commission for Snow and Ice Hydrology Workshop: *Glaciers in Watershed and Global Hydrology*, Obergurgl, Austria, 27-31 August 2007.
- 2006 Mark, B.G. African glacial chronology and climate controls. Timing and Nature of Mountain Glaciation, from High Asia to the World. INQUA Workshop, sponsored by: Working Groups on Timing and Nature of Mountain Glacier Advances, Quaternary Glaciations and Chronology in Monsoonal Asia; US National Science Foundation; National Science Foundation of China. Xining, China and Tibet, 13-22 September 2006. (Invited presentation).
- 2006 *Fairman, J., B. G. Mark, M. A. Plummer. Modeling the climatic controls and topographic form of modern and Late Pleistocene tropical Andean glaciers. International Symposium on Cryospheric Indicators of Global Climate Change, Cambridge, UK, 21-25 August 2006.
- 2006 Mark, B. G. Tropical LGM equilibrium-line altitude reconstructions: climatic and topographic implications from the High Plain of Bogotá region, Colombia. Association of American Geographers Annual Meeting, Chicago, IL, 7-11 March, 2006.
- 2006 Fairman, J., B. G. Mark, M. A. Plummer. Inverse Climate Modeling of Tropical Highlands at the Last Glacial Maximum by Use of a 2D Numerical Model of Snow/ice Energy Balance and Glacier Flow. Association of American Geographers Annual Meeting, Chicago, IL, 7-11 March, 2006.
- 2005 *McKenzie, J. M. and B. G. Mark. Water Resources in a Peruvian Mountain Watershed: Hydrochemical Tracing of Groundwater and Glacier Meltwater Impact on Streamflow. American Geophysical Union Fall Meeting, San Francisco, CA, 5-9 December, 2005.
- 2005 Mark, B. G. Tracing Andean glaciers over space and time: some lessons and transdisciplinary implications. Open Science Conference: Global Change in Mountain Regions, Perth, Scotland, UK 2-6 October, 2005.

- 2005 Mark, B. G., J. M. McKenzie, and J. Gomez. Changes to water resources in a tropical mountain watershed: a hydrochemical assessment of glacier meltwater impact to streamflow. Open Science Conference: Global Change in Mountain Regions, Perth, Scotland, UK 2-6 October, 2005.
- 2005 Mark, B. G., J. M. McKenzie and J. Gomez. Hydrochemical evaluation of changing glacier meltwater contribution to stream discharge, Callejon de Huaylas, Perú. Association of American Geographers Annual Meeting, Denver, CO, 5-10 April, 2005.
- 2005 *Mark, B. G. and J. M. McKenzie. Tropical Glaciers in a Changing Climate. MTNCLIM 2005: A Science Conference on Mountain Climates & Effects on Ecosystems, sponsored by Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT), Chico Springs, Pray, MT, 1-4 March 2005.
- 2004 Mark, B. G. and G. O. Seltzer. Tropical glacier meltwater contribution to stream discharge: a case study in the Cordillera Blanca, Perú. Symposium on Recent Glacier Shrinkage and Consequences for Water Resources, sponsored by International Commission on Snow and Ice (ICSI), International Hydrological Association, Huaraz, Perú, 6-9 July, 2004.
- 2004 Mark, B. G., S. P. Harrison, A. Spessa, M. New and D. J. A. Evans. Snowline changes at the LGM: a global synthesis and evaluation. Association of American Geographers Annual Meeting, Philadelphia, PA, 14-19 March, 2004.
- 2004 *Mark, B. G., J. M. McKenzie and K. A. Welch. Impact of Retreating Glaciers in an Intermontane Andean Watershed: Hydrochemical Analysis From the Callejon de Huaylas, Perú. American Geophysical Union Fall Meeting, San Francisco, CA, 13-17 December, 2004.
- 2004 *Hall, S. R., D. L. Farber, D. T. Rodbell, R. C. Finkel, J. M. Ramage, J. A. Smith, B. G. Mark and G. O. Seltzer. Geochronology of tropical alpine glaciations from the Cordillera Huayhuash, Perú. American Geophysical Union Fall Meeting, San Francisco, CA, 13-17 December, 2004.
- 2004 Ramage, J. M., D. T. Rodbell, S. Hall, J. A. Smith, B. G. Mark, G. O. Seltzer, R. Finkel, D. Farber and S. Otto. Paleo-ELA depression and regional ELA gradients in the Cordillera Huayhuash, Perú. Annual Meeting of the Geological Society of America, Denver, CO, 7-10 November, 2004.
- 2003 Mark, B. G. and G. O. Seltzer. Tropical Peruvian glaciers in a changing climate: Forcing, rates of change and impact to water supply. The First International Young Scientists' Global Change Conference [competitively peer reviewed], Trieste, Italy, 16-19 November 2003.
- 2003 *Mark, B. G., S. P. Harrison, M. New, G. Bönisch and D. J. A. Evans. Snowline reconstructions during the Last Glacial Maximum: a palaeoenvironmental database and synthesis of tropical climate. International Quaternary Association (INQUA) Congress [posters only], Reno, Nevada, 23-30 July, 2003.
- 2003 *Mark, B. G., G. O. Seltzer and D. T. Rodbell. Late Quaternary Glaciations of Ecuador, Peru and Bolivia. International Quaternary Association (INQUA) Congress [posters only], Reno, Nevada, 23-30 July, 2003.
- 2002 Mark, B. G. Forcing mechanisms behind recent glacier recession in the Cordillera Blanca, Perú. International Glaciological Society British Branch Annual Meeting, Glasgow, UK, 4-5 September, 2002.
- 2002 Mark, B. G., S. P. Harrison, and D. J. A. Evans. The LGM Snowline Database Project. 4th Palaeoclimate Modelling Intercomparison Project (PMIP) International Meeting, Cambridge, UK, 22-26 June, 2002.
- 2001 Mark, B. G. Deglaciation in the Peruvian Andes: Comparing volumetric rates over time and evaluating hydrologic impact. 6th Scientific Assembly of the International Association of

- Hydrological Sciences: A New Hydrology for a Thirsty Planet, Maastricht, The Netherlands, 18-27 July, 2001.
- 2001 Mark, B. G., G. O. Seltzer and D. T. Rodbell. Late Glacial and Holocene Deglaciation in the Peruvian Andes: A review of timing, rates, and climatic conditions. Geological Society of America and Geological Society of London Earth Systems Processes Global Meeting, Edinburgh, Scotland, 24-28 June, 2001.
- 2000 *Mark, B. G. Modelling Peruvian Deglaciation. 4th International Conference on Integrating GIS and Environmental Modeling, Banff, Alberta, 2-8 September, 2000.
<http://www.colorado.edu/research/cires/banff/upload/546>
- 2000 Mark, B. G. Deglaciation in the Nevado Queshque region, Cordillera Blanca, Peru: A comparison of modern volume loss to Late-Glacial and Holocene loss. 10th Peruvian Geologic Congress, Lima, Perú, 19-22 July, 2000.
- 2000 Mark, B. G., D. T. Rodbell, G. O. Seltzer, A. Y. Goodman, P. J. Castiglia, C. M. Moy and M. B. Abbott. Late Glacial glacial fluctuations of ice volume inferred from lake sedimentology, radiocarbon dates, soils, and terrain modeling in the Cordillera Vilcanota-Quelccaya Ice Cap region, SE Peru. 10th Peruvian Geologic Congress, Lima, Perú, 19-22 July, 2000.
- 1999 *Mark, B. G., P. Castiglia, C. M. Moy, A. Y. Goodman, D. T. Rodbell and G. O. Seltzer. Late-Glacial fluctuations of ice volume inferred from lake-sediment mineralogy and terrain modeling in the Cordillera Blanca, Peru. Spring Meeting of American Geophysical Union, Boston, MA, 31 May - 4 June, 1999.
- 1999 *Mark, B. G., D. T. Rodbell, G. O. Seltzer, A. Y. Goodman, P. J. Castiglia, C. M. Moy and M. B. Abbott. Late-Glacial fluctuations of ice volume inferred from lake-sedimentology, radiocarbon dates, soils and terrain modeling in the Cordillera Vilcanota-Quelccaya Ice Cap region, SE Peru. Fall Meeting of the American Geophysical Union, San Francisco, CA, 13-17 December, 1999.
- 1999 Rodbell, D. T., P. J. Castiglia, B. G. Mark, G. O. Seltzer, A. Y. Goodman, C. M. Moy and M. B. Abbott. Late Quaternary glacial chronology of the Cordillera Vilcanota-Quelccaya Ice Cap region in Southeastern Peru based on lake sedimentology, radiocarbon dates, and soils. Annual Meeting of the Geological Society of America, Denver, CO, 1999.
- 1999 *Castiglia, P. J., B. G. Mark, C. M. Moy, D. T. Rodbell, J. G. Rosenbaum and G. O. Seltzer. Magnetic record of late Holocene glacier fluctuations recorded in a lake sediment core from the Cordillera Blanca, Peru. Annual Meeting of the Geological Society of America, Denver, CO, 1999.
- 1998 *Moy, C. M., D. T. Rodbell, P. J. Castiglia, G. O. Seltzer, B. G. Mark, M. B. Abbott and J. G. Rosenbaum. A lacustrine sedimentologic record of late Holocene glaciation in Peru. Annual Meeting of the Geological Society of America, Toronto, ON, 1998.

STUDENTS ADVISED

Doctoral (advisor)

Current

Forrest Schoessow (Geography) – Ohio State University.

Gabriel Zeballos Castellon (Geography) – Ohio State University, candidacy 2019.

Emilio Mateo (Geography) – Ohio State University.

Completed

- 2016 Oliver Wigmore (Geography) – Ohio State University, "Assessing Spatiotemporal Variability in Glacial Watershed Hydrology: Integrating Unmanned Aerial Vehicles and Field Hydrology, Cordillera Blanca, Peru."
- 2014 Kyung In Huh (Geography) – Ohio State University, "Glacier volume changes in the tropical Andes: A multi-scale assessment in the Cordillera Blanca, Peruvian Andes."
- 2014 Alfonso Fernandez-Rivera (Geography) – Ohio State University, "Waning and Waxing of Mountain Glaciers in South America: A Modeling Approach Over Multiple Spatial and Temporal Scales."
- 2014 Jeff LaFrenierre (Geography) – Ohio State University, "Assessing the Hydrologic Implications of Glacier Recession and the Potential for Water Resources Vulnerability at Vocán Chimborazo, Ecuador."
- 2013 Scott Reinemann (Atmospheric Science) – Ohio State University (co-advisor), "Holocene Climate and Environmental Change in the Great Basin of the Western United States."

Doctoral (exam and/or dissertation committee member)

Current

- Chen Zhao (Atmospheric Science) – Ohio State University.
- Zachary Leasor (Atmospheric Science) – Ohio State University, candidacy 2019.
- Zhiying Li (Geography, Atmospheric Science) – Ohio State University, candidacy 2019.
- Chengfei He (Atmospheric Science) – Ohio State University, candidacy 2018.
- Michalea King (Earth Sciences) – Ohio State University, candidacy 2018.
- Melisa Diaz (Earth Sciences) – Ohio State University, candidacy 2018.

Completed

- 2019 Apoorva Shastry (Earth Sciences) – Ohio State University, "Improving Topography Data for Flood Modeling: A Case Study in the Logone Floodplain."
- 2019 Jordan Pino (Geography, Atmospheric Science) – Ohio State University, "Modeling the Effects of Winter Storms on Power Infrastructure Systems in the Northern United States."
- 2019 Lauren Somers (Earth and Planetary Sciences) – McGill University, "Groundwater dynamics in proglacial Andean watersheds under climate change."
- 2018 Melissa Wrzesien (Earth Sciences) – Ohio State University, "Estimating North American montane snowpack with regional climate model simulations."
- 2017 Dan D'Amico (Atmospheric Science) – Ohio State University, "Dissolved oxygen in the oceans: An examination of the Late Ordovician and near future using an earth system climate model."
- 2017 Paul Kinder (Human and Community Development, Division of Resource Management) – West Virginia University, "Social Capital Structure and Dynamics in Stream Restoration: A Social Network Analysis Approach to the Upper Shavers Fork, West Virginia."
- 2016 Scott Stuckman (Environmental Science Graduate Program) – Ohio State University, "Global Three-Dimensional Atmospheric Structure of the Atlantic Multidecadal Oscillation as Revealed by Two Reanalyses."
- 2015 Justin Stroup (Earth Sciences) – Dartmouth College, "Holocene Fluctuations of Quelccaya Ice Cap, Peru."

- 2014 Grey Evenson (Geography) – Ohio State University, “A process-comprehensive simulation-optimization framework for watershed scale wetland restoration planning.”
- 2014 Evan Waltetzko (Environmental Science Graduate Program) – Ohio State University, “Carbon budgets of created riverine wetlands in the Midwestern USA.”
- 2013 Ryan Gordon (Earth Sciences) – Syracuse University, “Quantifying groundwater-surface water interactions to improve the outcomes of human activities.”
- 2013 Deb Leslie (School of Earth Sciences) – Ohio State University, “Applying Stable Isotopes, $\delta^{11}\text{B}$, $\delta^{18}\text{O}$, and δD , in Geochemical and Hydrological Investigations.”
- 2013 Eric Klein (Earth and Environmental Sciences) – Lehigh University, “Differential Response of Alaska Peatlands to Climate Changes of the Last Millennium.”
- 2013 Adam French (Environmental Studies) – Univ California Santa Cruz, “Water is Life: Climate Change, Globalization, and Adaptive Resource Governance in Peru’s Santa River Watershed.”
- 2012 Michel Baraer (Earth & Planetary Sciences) – McGill University, “Hydrogeology in the Cordillera Blanca, Peru: significance, processes and implications for regional water resources.”
- 2011 Michael Davis (Atmospheric Sciences) – Ohio State University, “Cloud-radiation feedback and ocean-atmosphere feedback in southeastern Pacific in IPCC global climate models.”
- 2010 Christopher Beekman (Environmental Science Graduate Program) – Ohio State University, “Differential Optical Absorption Spectroscopy of Trace Gas Species and Aerosols in the Upper Ohio River Valley.”
- 2009 Natalie Kehrwald (Earth Sciences) – Ohio State University, “Low latitude ice cores and freshwater availability.”
- 2008 Lijia Wei (Atmospheric Sciences) – Ohio State University, “Statistical Analysis of the Atmospheric Sulfate History Recorded in Greenland Ice Cores.”
- 2008 Sarah Fortner (Earth Sciences) – Ohio State University, “The geochemistry of glacier snow and melt: the Oregon Cascades and the Taylor Valley, Antarctica.”
- 2008 Colby Smith (Geology) – University of Cincinnati, “A Comparison of Glacial Chronologies between the Eastern and Western Cordilleras, Bolivia.”

Master’s (advisor)

Current

Tal Shutkin (Geography) – Ohio State University.

Alex Ihle (Geography) – Ohio State University.

Completed

2019 Emily Sambucco (Atmospheric Science) – Ohio State University, M.S., " Exploring Great Basin National Park using a high-resolution Embedded Sensor Network." Current position: Weather modeling, Liberty Mutual Insurance, Boston, MA.

2019 Jeffrey Gunderson (Geography) – Ohio State University, M.A., " Assessing the Dendroclimatological Potential of *Polylepis rodolfo-vasquezii* in the Tropical Peruvian Andes."

2015 Ryan Crumley (Geography) – Ohio State University, M.A., “Investigating Glacier Melt Contribution to Stream Discharge and Experiences of Climate Change in the Shullcas River Watershed in Peru.” Current position: PhD student, Oregon State University.

- 2014 Wenkai Guo (Geography) – Ohio State University, M.A., “The relationship between sea ice retreat and Greenland ice sheet surface-melt.” Current position: PhD student, Cambridge University, UK, postdoc beginning AU19 at UiT - The Arctic University of Tromsø.
- 2014 Colin Sinclair (Geography) – Ohio State University, M.A., “Glacial and Groundwater Contribution to Dry-Season Discharge and Bofedales in Tuni, Cordillera Real (Bolivia), and Pastoruri, Cordillera Blanca (Peru).” Current position: Environmental consulting.
- 2014 Nathan Patrick (Atmospheric Sciences) – Ohio State University, M.S., “Evaluating near surface lapse rates over complex terrain using an embedded micrologger sensor network in Great Basin National Park.” Current position: California-Nevada River Forecast Center.
- 2012 Alex Eddy (Geography) – Ohio State University, M.A., “A mixed method approach to exploring and characterizing ionic chemistry in the surface waters of the glacierized upper Santa River watershed, Ancash, Peru.” Current position: US National Park Service, Sequoia National Park, CA.
- 2009 Sarah Wright (Geography) – Ohio State University (co-advisor with Kendra McSweeney), M.A., “Melting Marvels: Tourist Responses to Climate Change and Glacial Melt in the Peruvian Andes.” Current position: Columbus Public Library, Columbus, OH.
- 2009 Kristin Walls (Atmospheric Sciences) – Ohio State University, M.S., “Synoptic Analysis of the Tornado and Derecho Climatology of Ohio from 1963-2002.” Current position: Chief Meteorologist, KAPP-TV/KVEW-TV, YakTriNews, Yakima, WA.
- 2008 Karin Bumbaco (Atmospheric Sciences) – Ohio State University, M.S., “Seasonal and diurnal variations in hydrometeorological variables in an Andean mountain environment and comparison to the NCEP/NCAR Reanalysis 1 Data.” Current position: Assistant State Climatologist, WA.
- 2006 Jonathan Fairman, Jr. (Atmospheric Sciences) – Ohio State University, M.S., “Investigating paleoclimatic conditions in the tropical Andes using a 2D model of glacial mass energy balance and ice flow.” Ph.D. at University Alabama, Huntsville; Postdoctoral Researcher, University of Manchester, U.K.; current position: Athenium Analytics (weather analytics)

Master’s (committee member)

Completed

- 2019 Meicheng, Shen (Environmental Science) – Ohio State University, M.S., "Empirical GPP Upscaling based on Time Series of Remote Sensing Data."
- 2019 Mary Grace Thibault (Geography) – Ohio State University, M.A., " Modeling seagoing migration of early Homo via paleoclimate drift experiments to Sulawesi, Indonesia."
- 2018 Ganesha Chandrasa (Atmospheric Science) – Ohio State University, M.S., "Evaluation of Regional Climate Model Simulated Rainfall over Indonesia and its Application for Downscaling Future Climate Projections."
- 2016 Zach Leasor (Geography) – Ohio State University, M.A., "Spatiotemporal Variations of Drought Persistence in the South-Central United States."
- 2016 Alexander McCarthy (Atmospheric Sciences) -- Ohio State University, M.S., “Review of the Advancements in the Research Regarding the Differences between Continental and Oceanic Convective Updrafts.”
- 2013 Qian Mou (Environmental Science Graduate Program) – Ohio State University, M.S., “Inter-annual Variation of Seasonal and Monthly Normalized Difference Vegetation Index (NDVI), Temperature, Precipitation and their Correlations in Ohio from 1982 to 2006.”

- 2012 Guangdong Liu (Environmental Science Graduate Program) – Ohio State University, M.S., “Urban watershed characterizations: Dry Run, Columbus, OH.”
- 2012 Lindsey Higgins (Geography) – Ohio State University, M.A., “Construction and Analysis of an Ice Core-derived Melt History from West Central Greenland (1765 – 2006).”
- 2011 Kaitlin Walsh (Earth Sciences) – Ohio State University, M.S., “Geospatial Analysis of Elevation, Volume and Velocity Changes of the Marine-Terminating Glaciers of the Geikie Plateau and Blosseville Coast, East Greenland, using Multiple Sensors and Datasets.”
- 2010 Heather Fair (Environmental Graduate Program) – Ohio State University, M.S., “Headwater landscape variations and biodiversity: Applicability of Ohio habitat evaluation indices in a glacier catchment of the Mekong River.”
- 2009 Joshua Jankot (Atmospheric Sciences) – Ohio State University, M.S., “Synoptic analysis of large snow storms affecting Boston Massachusetts.”
- 2009 Nathan Amador (Atmospheric Sciences) – Ohio State University, M.S., “Spatial and temporal characteristics of supra-glacial melt lakes in west-central Greenland from satellite optical remote sensing.”
- 2009 Elizabeth Birkos (Earth Sciences) – Ohio State University, M.S., “Stable Oxygen Isotopes in Tropical Ice Cores as Proxies for Temperature and Precipitation.”
- 2008 Scott Reinemann (Atmospheric Sciences) – Ohio State University, M.S., “A Chironomid-based paleolimnological study of recent and mid-Holocene changes in mean July air temperature in the Great Basin, Nevada, USA.”
- 2008 Aron Buffen (Earth Sciences) – Ohio State University, M.S., “Abrupt Holocene climate change: evidence from a new suite of ice cores from Nevado Coropuna, southwestern Peru and recently exposed vegetation from the Quelccaya Ice Cap, southeastern Peru.”

Undergraduate Thesis

- 2020 Alyssa Reynolds (Atmospheric Sciences, advisor): "Analyzing the Ohio Valley Region's Tornado Climatology from 1990 to 2017." With research distinction (approved; anticipated SP20).
- 2019 James White (Atmospheric Sciences, Earth Sciences, advisor): "Preserved Charcoal as a Proxy for Wildfire Activity in Great Basin National Park." Honors thesis with research distinction.
- 2012 Paul Soltész (Geography, co-advisor): “Assessing Mid-Holocene Aridity in Central Ohio Using a Multi-proxy Lake Based Approach.” With research distinction.
- 2011 Shawn Stone (International Studies, Environmental Science, advisor): “Evaluation of local climate variability in the Peruvian Andes: an analysis of high-resolution observations and regional trends.” With research distinction.
- 2010 Jacob Hindin (Geography, advisor): “Tracking Land-Use/Land-Cover Change in a Watershed of the Cordillera Blanca.” Honors thesis with research distinction.
- 2010 Patrick Burns (Earth Sciences, co-advisor): “Geochemical Analysis of Waters in a Tropical Glacial Valley, Cordillera Blanca, Peru.” Honors thesis with research distinction.
- 2008 Erica Harris (Geography, co-advisor): “Bathymetric Inversion from Shore-based Video Imagery.” Graduation SU08. Current position: M.S. student, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR.

POSTDOCTORAL AND RESEARCH SCHOLARS SUPERVISED

- 2016 Co-supervisor (with Mike Durand, SES) for NSF-funded (BCS #1211986) Postdoctoral Researcher, (Asmita Murumkar), Byrd Polar and Climate Research Center, MORSL Lab, OSU.
- 2014-15 Co-supervise (with Mike Durand, SES) for Postdoctoral Researcher (Alfonso Fernandez), Byrd Polar Research Center, MORSL Lab, OSU.
- 2013 Co-supervisor (with Mike Durand, SES) for Postdoctoral Researcher (Mohammed Reza Najafi), Byrd Polar Research Center, MORSL Lab, OSU.
- 2011-13 Supervisor for Senior Research Associate, Byrd Polar Research Center (Nathan Stansell) on NSF-funded Paleoclimate project.
- 2009-10 Supervisor for one of two postdoctoral Byrd Fellows (Nathan Stansell), co-awarded with matching funding from OSU CWC to conduct paleoclimate research using lake sediments in Andes and Tibet (with Broxton Bird).
- 2008-09 Hired and supervised post-doctoral researcher (Sarah Fortner) for collaborative hydrochemical research in Peruvian Andes.
- 2005-06 Supervisor for postdoctoral fellow shared between Department of Geography and Byrd Polar Research Center (Jeffrey M. McKenzie).

COURSES TAUGHT (4-digit term and year x # sections)

San Marcos Mayor National University (Peru)

Global Change in Mountains (in Spanish) (WI15)

Intensive course (3 hrs/day, month-long); students, faculty, engineers (35 enrolled)

Ohio State University

Problems in Climatology Graduate Seminar:

Climate Change in Coupled Human and Natural Systems (SP13)

Current Issues in Climate, Water & Carbon (AU07, SP07)

Mountain Environments (SP06)

Climate History: Physical and Human Dimensions (WI05)

Interdepartmental Seminar in Polar & Alpine Studies (SP14, WI12, SP09)

Global Climate and Environmental Change – Honors (SP14, SP13, WI12, WI11, AU10, AU09, SP09, AU08, SP08x2)

Global Climate Change: Causes and Consequences (SP20, AU19, SP19, AU18, SP18, AU17, SP17, AU16, SP16, AU15, AU14, AU13, AU12, AU11, AU10, SP10)

Physical Geography (SP20, SP19, SP18, AU16, AU15, AU14, AU13, AU12)

Severe Weather & Climate (SP17)

Climatology (WI07, SP06, AU04)

Physical Geography and Environmental Issues (AU11, AU10, AU09, AU08, AU07, AU06, WI05, SP04)

Earth Systems II: Atmospheric Environment (WI07)

Syracuse University (rec = recitation instructor)

Environmental Geology (SP01, SP00-rec, AU98, AU97-rec)

Introduction to Earth Science (AU00-rec, AU97)

Physical Geology (AU99)

History of Life (Historical Geology) (SP98)

PROFESSIONAL SERVICE

1. Editorial Activities

2019-20 Managing Associate Editor for Special Research Topic: Connecting Mountain Hydroclimate Through the American Cordilleras (<https://www.frontiersin.org/research-topics/9969/connecting-mountain-hydroclimate-through-the-american-cordilleras>)

Member, Editorial Board:

2016- Editorial board member of journal *Revista de Glaciares y Ecosistemas de Montaña - INAIGEM* (Peru).

2009-17 Editorial board member of journal *Annals of Association of American Geographers*, Environmental Sciences Section.

2005-07 *The Encyclopedia of Environment and Society*, a 4-volume reference published in 2007 by Sage Publications, Inc.; serving as Editorial Advisory Board Member.

Textbook Reviewer:

2013 Wiley (Botkin & Keller, *Environmental Science*, 9th ed., Chps 6, 14, 20)

2012 WH Feeman (Chp 18, *Environmental Science: Evaluating and Engaging Global Change*, 1st ed.)

2010 Wiley (Botkin & Keller, *Environmental Science*, 8th ed.)

2009 Prentice Hall (Christopherson, *Geosystems*, 7th ed.)

2007 John Wiley & Sons, Inc. (Chapter 23, Botkin and Keller, *Environmental Science*, 7th ed.)

2005 Jones & Bartlett Publishers, Inc. (Chapters 1-7, *Climatology*)

2004 John Wiley & Sons, Inc. (Chapter 5, Botkin and Keller, *Environmental Science*, 5th ed.)

Edited books:

2017 ICIMOD: "Comprehensive Assessment of the Hindu Kush Himalaya: Action to Sustain a Global Asset." Chapter reviewer for Chapter 8, "Water Security: Availability, Use, and Governance."

2016 GRADE Grupo de Análisis para el Desarrollo, Peru "CAMBIO GLOBAL, ALTA MONTAÑA Y ADAPTACIÓN: UNA APROXIMACIÓN SOCIOECONÓMICA Y GEOGRÁFICA"

2009 Springer Verlag: (W.L. Hare, A. Battaglini, C. Jaeger, W. Cramer, and M. Schaeffer eds.): Peer reviewed chapter for *Climate impact hotspots – Key vulnerable regions and climate change*.

2007 Springer DPER ("Developments in Paleoenvironmental Research"): Peer reviewed chapter for *Past climate variability from the Last Glacial Maximum to the Holocene in South America and Surrounding Regions*.

Journal Reviewer:

Ambio
Annals of AAG
Annals of Glaciology
Arctic, Antarctic and Alpine Research
Climatic Change
Cryosphere
Environmental Research Letters
Environmental Earth Sciences
Environmental Science & Technology
EOS - AGU
Geochemistry Geophysics Geosystems
Geografiska Annaler
GeoJournal
Geology
Geological Society of America Special Paper
Geomorphology
Geophysical Research Letters
Global and Planetary Change
GSA Today
Holocene
Historical Geography
Hydrological Sciences Journal
Hydrological Processes

Hydrology and Earth System Science
Int Assoc of Hydrol Sci Red Book
Journal of Geophysical Research
Journal of Glaciology
Journal of Hydrology
J Inst Glaciol Mount Ecosystems
Journal of Land Use Science
Journal of Mountain Science
Journal of Quaternary Science
Mountain Research & Development
Nature
Nature Geoscience
Palaeogeography, Palaeoclimatology, Palaeoecology
Physical Geography
PLOS One
Progress in Physical Geography
Quaternary International
Quaternary Research
The Cryosphere
Water
Water Resources Research

2. Grant Proposal Assessor

National Science Foundation (NSF)
American Association for the Advancement of Science (AAAS)
National Geographic Society (NGS)
National Aeronautics and Space Administration (NASA)
National Oceanic and Atmospheric Association (NOAA)
U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC)
U.S. Civilian Research & Development Foundation (CRDF)
CONICYT (Chilean National Science & Technology Foundation)
Czech Science Foundation
Austrian Science Foundation
French National Research Agency (Agence Nationale de la Recherche, ANR)
Netherlands Organization for Scientific Research (NWO)
Swiss National Science Foundation (SNFS)

3. Service as Graduate Faculty Representative

Doctoral student exam in another unit

2019 Priyanka Adapala – OSU, Candidacy Exam (second)
2018 Zachary Jacob Friedland (Music) – OSU, Defense
2017 Kristen Diesburg (Environment and Natural Resources) – OSU, Candidacy Exam
2016 Shimeng Li (Electrical and Computer Engineering) – OSU, Defense
2015 Ryan Hupe (Physics) – OSU, Defense
2014 Carlo dela Sena (Human Nutrition, Education & Human Ecology) – OSU, Defense

- 2012 Taniya Roy Chowdhury (Soil Science) – OSU, Defense
- 2011 Paul McCormick (English) – OSU, Defense
- 2009 Kevin Cordi (Education) – OSU, Defense
- 2006 Juan Liu (Agricultural, Environmental & Developmental Economics) – OSU, Defense
- 2005 Brian Gibbons (Physics) – OSU, Candidacy Exam
- 2004 Jason Ash (Chemistry) – OSU, Candidacy Exam

Senior Thesis Defense (committee member)

- 2015 John Banghoff (Atmospheric Sciences) – Ohio State University, "Correlation of Tornado Intensity with Dual-Polarization Characteristics."
- 2013 Kelsey Dailey (Earth Sciences) – Ohio State University, "Evaluating Anthropogenic Impact on Water Quality of Ohio Rivers Over Time"
- 2013 Kelsey Bisson (Earth Sciences) – Ohio State University, "Temporal Variability of Dissolved Inorganic Carbon in Streams at the McMurdo Dry Valleys, Antarctica"
- 2012 Andrea Portier (Earth Sciences) – Ohio State University, "Dissolution Kinetics of Andesitic/Dacitic Ash and its Role in CO₂ Consumption"
- 2011 Dana Borg (Earth Sciences) – Ohio State University, "Natural Variability of Trace Elements in Two Species of West Pacific Sclerosponges"
- 2011 John Volk (Earth Sciences) – Ohio State University, "Spatial and Temporal Variations of Water Quality in Hellbranch Run: A Historical Perspective"
- 2011 Claire Westervelt (Earth Sciences) – Ohio State University, "Geochemistry of Surface Water and Groundwater on the Campus of The Ohio State University"
- 2008 Jamey Stutz (Earth Sciences) – Ohio State University, "Establishing Local ELA and Landscape Analysis in Connection with Uplift and Climate: Muji Region, Western Tibetan Plateau"

Senior Honors Thesis Defense (Honors Faculty Representative)

- 2007 Adam David Dunkelberger (Chemistry) – Ohio State University, "Time-resolved electronic spectroscopy of 2,2'-Bisindene"

4. Other Service

Department and University

- 2016-19 Personnel Committee (elected, 3-year term)
- 2016 Review panel for Student Sustainability Grant, Office of Energy and Environment, OSU
- 2016-17 Chair, Robert Max Thomas Professor Search Committee for Full Professor of Atmospheric Sciences
- 2015-18 Member, Search Committee for Director, Byrd Polar and Climate Research Center, OSU
- 2015 Member, Search Committee for Data Analytics faculty hire in Atmospheric Sciences
- 2014-18 Undergraduate Studies Committee, Department of Geography, OSU
- 2013-14 Graduate Studies Committee, Environmental Studies Graduate Program, OSU

- 2013-14 Member, Ad-hoc Committee to review Atmospheric & Climate Science (ASC) curriculum, revise Graduate Handbook (Atmospheric Science), and strategize on program future
- 2011-14 Graduate Studies Committee, Department of Geography, OSU
- 2010-14 Chair, Center for Latin American Studies Working Group: “Changing Climate Landscapes and Prospects for Justice” OSU
- 2010-11 Environmental Science Steering Committee, OSU
- 2009-11 Undergraduate Studies Committee, Department of Geography, OSU
- 2009-10 Institute of Energy and the Environment Clean Renewable Energy Curriculum Committee (CRECC), OSU
- 2009- Executive Committee, Byrd Polar and Climate Research Center, OSU
- 2009 Faculty judge in Math and Physical Sciences Undergraduate Research Forum, OSU
- 2008-11 Personnel Committee (3-year elected term), Department of Geography, OSU
- 2007-09 Graduate Studies Committee (3-year term), Environmental Studies Graduate Program, OSU
- 2006-14 Faculty judge in Denman Undergraduate Research Forum, OSU
- 2006-09 Faculty judge in Maximus Competition of Undergraduate University Scholars, OSU

Guest Lectures at Ohio State

- 2020 School of Environment and Natural Resources, ENR 3470 (Religion & Environmental Values in America). 27 January. "Is Climate Change a Moral Issue?"
- 2019 School of Environment and Natural Resources, ENR 7380 Climate & Society, 16 September. “Global Warming – Science.”
- 2019 School of Environment and Natural Resources, ENR 3470 Religion & Environmental Values in America, 30 January. “Is Climate Change a Moral Issue?”
- 2017 School of Earth Science, EARTHSC 5650 Glaciology, 1 March. "Glacier Loss and Emerging Hydrologic Vulnerabilities in the Tropical Peruvian Andes."
- 2017 School of Environment and Natural Resources, ENR 3470 Religion & Environmental Values in America, 30 January. “Climate Change as a Moral Issue.”
- 2015 School of Environment and Natural Resources, ENR 7380 Climate & Society, 16 September. “Global Warming – Science.”
- 2014 School of Environment and Natural Resources, ENR 7380 Climate & Society, 24 September. “Global Warming – Science.”
- 2014 Geography Department, GEOG 8901, 12 September. “Reflections on my (prof) life.”
- 2014 Department of Spanish and Portuguese, SP4516, 5 March. “Recent Andean Glacier Recession & Environmental Issues: Adaptation to new water realities.”
- 2014 Geography Department, GEOG 3900, 3 February. “Global Climate Change: Causes & Consequences. Earth’s Radiative (Im)Balance.”
- 2013 Geography Department, GEOG 8901, 18 October. “Glacier Environmental Change: Assessing changes & implications.”
- 2013 School of Environment and Natural Resources, ENR 7380 Climate & Society, 28 August. “Global Warming – Science.”

Faculty advising for student organizations

- 2017- Faculty advisor for International Justice Ministry, student group advocating to end human slavery.
- 2011- Faculty advisor for Bike OSU, student led advocacy group for safe bicycling/commuting.
- 2011-14 Faculty advisor for H2O For Life, raising awareness and funds for water in developing world.
- 2010-14 Faculty advisor for International Friendships, hospitality group for international students.

External academic review

- 2017 University of Tennessee - Department of Geography: Promotion review for Full Professor
- 2017 Syracuse University - College of Arts and Science: Administrative candidacy review

Service to profession

- 2017 Co-convended a 3-day workshop on hydrochemical methods for tracing hydrologic end-members for upper-level graduate students from Canadian and US institutions. McGill University and ETS, Montreal. 9-11 January.
- 2010 Invited lecturer to workshop on climate change studies in glaciated mountains, sponsored by Swiss International Development Agency, Cusco, Peru.
- 2005- Member of International Activities workgroup in association with the Mountain Research Institute and CIRMOUNT-MNTCLIM
- 2002 Organized and ran First International Snowline Workshop, Glasgow, U.K.
- 2002 Delegate to The Mountain Ecosystems World Meeting, "Mountains Towards 2020: Water, Life and Production" in Huaraz, Peru, June 12-14, as part of UNESCO sponsored Year of the Mountains.
- 2000, 02 Invited instructor-lecturer of glacial geology and climatology (in Spanish) for the International Course on Glaciology and Environmental Geology, Huaraz, Perú
- 2000 Invited Science Day Congressional Visit delegate to inform U.S. Congress of environmental science relevancy and research imperatives, Washington, D.C., April 2000.

PROFESSIONAL SOCIETY MEMBERSHIP

American Association of Geographers (AAG)

Geological Society of America (GSA)

American Geophysical Union (AGU)

International Glaciological Society (IGS)

International Association of Hydrological Sciences (IAHS)

Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT)

Mountain Forum and Mountain Research Initiative (MRI)

Association of American State Climatologists (AASC)

Recent activities in professional societies

- 2020 Co-convencing three sessions at the AGU Fall Meeting, all virtual: "Environmental and Climate Change in Global Mountain Regions"

- 2018 Discussant, Changing landscapes and livelihoods in mountain regions 3 (Sponsored by Mountain Geography Specialty Group, Biogeography Specialty Group, Cultural and Political Ecology Specialty Group)
- 2018 Co-convening session at the AGU Fall Meeting, New Orleans, LA.
- 2017 AGU Session #C41F: "Understanding the High-Mountain Water Cycle and Cryosphere in the Anthropocene." Conceived and co-convened session with former PhD students Alfonso Fernandez and Oliver Wigmore; merged in association with international collaborators.
- 2017 Convened AAG Sessions (3): "Hydroclimatic change in mountain environments." I Human Dimensions, II Stream Discharge Characteristics, and III Weather and Climate Conditions (with Rob Hellstrom, Bridgewater State).
- 2015 Judge, Outstanding Student Paper Awards, Fall AGU Meeting, San Francisco.
- 2010-14 Organized and/or co-chaired sessions (5) at each Fall AGU Meeting, San Francisco; also judged student paper awards.
- 2011 Reviewed and judged student papers for Graduate Student Affinity Group (GSAG) Student Paper Award, AAG.
- 2009-13 Organized and co-chaired sessions (5) at each annual AAG meeting
- 2009-11 Served as Chair of Cryosphere Specialty Group, AAG
- 2007-09 Served as Treasurer/Secretary of Cryosphere Specialty Group, AAG

OTHER PROFESSIONAL ACTIVITY

- 2020- Invited to join the Mountain Research Initiative (MRI: <https://mountainresearchinitiative.org/>) Science Leadership Council (SLC), to provide advice and impetus for the MRI's scientific activities, and carry forward the MRI's scientific agenda as key contributor to research on mountain regions (<https://mountainresearchinitiative.org/who-we-are/team/science-leadership-council>)
- 2017 Co-convened a 3-day workshop on hydrochemical methods for tracing hydrologic end-members for upper-level graduate students from Canadian and US institutions. McGill University and ETS, Montreal. 9-11 January.
- 2008- Member of Board of Directors for Hope International Development Agency USA
<http://www.hope-international.com/>
- 2008- Member of International Advisory Committee on Climate Change for The Mountain Institute
<http://www.mountain.org/>

OUTREACH AND ENGAGEMENT ACTIVITIES

- 2020 Invited guest on "All Sides with Ann Fisher," WOSU Radio, May 27: "Climate Change and Infrastructure." <https://radio.wosu.org/post/climate-change-and-infrastructure#stream/0>
- 2019 Invited to present to UN Club for UN Day theme Our Planet, Our Future with talk: "Perspectives on the reality of our changing climate." 24 October.
- 2019 Organized and hosted inaugural 2-day "Ohio Climate Summit" at Byrd Polar and Climate Research Center, OSU, with representatives from Federal, State and Local entities and stakeholders interested in climate and climate services.

- 2018 TEDx Yearling Road, "Climate's (un)common denominator." 24 October. Participated in full evening event to public, communicating research and general science to all aged audience, with Q&A. <http://www.tedxyearlingroad.com/>
- 2018 Ohio Emergency Management Agency Fall Conference, OSU Union. "Anticipating Future Climate Impacts to Natural Disaster Risks in Ohio." A. Wilson and BG Mark. 18 October.
- 2018 Aurora Fall Board Meeting – Ohio State University Friends. "State Climate Office of Ohio (SCOO)." Presented and facilitated discussions of possible synergy with professionals from this 17-agency pooled fund focused on advancing road weather information systems. 16 October.
- 2018 Helped facilitate Roundtable Conversation on Climate Change and Health, Byrd Polar and Climate Research Center, featuring members of Wexner Medical Center, SCOO, and local public health community. 16 August.
- 2018 Invited to speak on climate change to Bethel Presbyterian Church. "A Christian's view of climate (change)." 29 May.
- 2018 Invited to moderate UC3 Convening research forum at OSU entitled, "Building Resilient Communities in a Changing Climate," OSU, 18 May. <https://oee.osu.edu/conference-at-ohio-state-addresses-challenges-from-changing-climate.html>
- 2017 Invited to École Kenwood, Columbus Public Schools (French immersion school) to give talk on professional appreciation day, "Introducing your State Climatologist: Discovering climate change science on glaciers." 20 November.
- 2017 Invited as State Climatologist to speak at Third Friday Democrats Luncheon, The Boat House, Columbus, OH. "The politicization of climate change." 17 November.
- 2017 Invited as Professor, State Climatologist and Presbyterian Elder to D.C. fly-in to join group led by National Religious Partnership for the Environment to visit Senate Delegations for OH, MO, PA and IN for "Toxic and Clean Water Advocacy Day." 26 September.
- 2017 Invited panelist for lunchtime televised discussion, "What happens if climate changes?" Columbus Metropolitan Club, The Boat House, Columbus, OH, 6 September.
- 2017 Invited as featured guest along with Jason Cervenec and Aaron Wilson to discuss our State Climate Office of Ohio (SCOO) on "Town Hall Ohio," Ohio Farm Bureau's weekly public affairs radio program with Joe Cornely, 25 August.
- 2017 Invited talk, "Climate projections for the Midwest and potential water sector impacts," delivered to water and wastewater utility managers during training session convened by U.S. EPA entitled, "Resilience planning and adaptation training for water and wastewater utilities" to teach on EPA's Climate Resilience Evaluation and Awareness Tool (CREAT), Greater Cincinnati Water Works, Cincinnati, OH, 23 May.
- 2017 Lead Q&A session with Ohio State Representative David Leland after screening of film, "Before the Flood" as part of OSU Office of Energy and Environment Student Film Series, 31 January (<http://oee.osu.edu/spring-semester-2017-student-environmental-film-series.html>).
- 2016 Invited speaker for luncheon talk, "Global Warming -- Science: Perspectives from an unintentional State Climatologist." TriVillage SERTOMA (Service To Mankind) charity organization, Fawcett Center, Columbus, OH, 16 November.
- 2016 Provided professional testimony about science and climate to Ohio State Senate committee, Ohio Statehouse, Columbus. 8 December. Hearing was on House Bill 554 to end freeze on renewable energy standards.
- 2016 Invited to lead Q&A session after screening of film, "Before the Flood," hosted by Office of Energy and Environment, Wexner Theater, 26 October.
- 2016 Invited guest appearance and talk, "Introducing your State Climatologist: Discovering climate change science on glaciers." Columbus Gifted Academy (5th grade), Columbus, OH, 26 May.
- 2016 Invited talk and discussion, "Confessions of a State Climatologist." Thomas Aquinas Dinner Group, Columbus, OH, 20 May.
- 2016 Invited to speak on "Glaciers, Water and People: exploring climate change in Peru." Upper Arlington Senior Center, 26 April.

- 2016 Invited to serve on a three-person panel at Moritz School of Law, OSU, to discuss Paris Climate Change Conference results in anticipation of Earth Day signing events, 6 April.
- 2015 Invited guest on live WOSU radio, "All Sides with Fisher Show," discussing Climate Change, 3 December. <http://radio.wosu.org/term/climate-change>.
- 2015 Invited to serve on a three-person panel at OSU Thompson Library to give public discussion entitled: "Will We Finally Reach Consensus? (Discussions on COP21, the 2015 Paris Climate Conference)," evening of 2 December.
- 2015 Invited to inform students about climate change and local to international impacts at Climate Action Day event, co-hosted by Institute for Energy and Environment, Ohio State Union. 19 November.
- 2015 Invited to facilitate discussion after opening student/public film in series sponsored by Office of Energy and Environmental Professionals Network. "Years of Living Dangerously, Episode 1: Dry Season." 27 October.
- 2015 Invited to join lobbying effort to Washington D.C. as climate scientist from Ohio to give overview science perspective on Clean Power Plan to members of Congress, including Ohio Senators Sharrod Brown and Rob Portman
- 2014 Indianola Presbyterian Church: research talk and discussion, "Science and Theology of Climate Change: personal reflections from the Andes & Ohio." 16 November.
- 2014 Shared about climate change and explain "Chasing Ice" video clips to various public audiences:
 - Momentive Chemical, Inc. (15 September);
 - Worthington Christian Schools (22 April); and
 - Blacklick Woods Metro Park (12 November) as part of the Climate Exploration series (<http://bprc.osu.edu/education/blog/2014/08/november-12-2014-climate-explorations/>).
- 2014 I taught a class at the Anselm Institute about modern science literacy, faith, practice and global climate change. This met for 3 hours per week on weekday evenings over six weeks (25 September – 30 October).
- 2013 Invited luncheon address (with Greg Hitzhusen) to Faculty and Staff Christian Fellowship, Ohio State University. 18 April. "The Truth about Global Climate Change."
- 2013 Invited keynote at Ohio Interfaith Power and Light Retreat, Procter Center, London OH, "Taking it to the Pews: Climate Change and Faith," 22 November.
- 2013 Invited keynote at Progress Ohio Press Conference, Columbus, OH, "The Scientific Reality of Climate Change," 29 May.
- 2013 Byrd Polar Research Center Public lecture: "Peru Night," Columbus, OH, 23 April. "Glaciers, Water & People."
- 2012 Byrd Polar Research Center Public lecture: "Peru Night," Columbus, OH, 15 February. "Recent Peruvian Glacier Changes: An update & why it matters to humans."
- 2011 Environment and Natural Resources Scholars, Climate Change Panel, Ohio State University, 8 November.
- 2011 Invited participation in, "Faculty Perspectives on Research Panel," Undergraduate Research Week, OSU, 10 October.
- 2011 Presentation to Miami Museum of Natural History via SecondLife, "Past & Present climate change: perspectives from tropical glaciers."
- 2010 Public presentation at The Ohio State University, Geography Awareness Week, "The Geography of Tropical Glaciers in a Changing Climate," 19 November.
- 2010 Invited by U.S. Embassy staff to deliver lecture to ~100 Chilean students on disappearing glaciers and impacts to water in the Andes via telecom, 5 November. "¿Cuáles son los glaciares tropicales y por qué son importantes?"
- 2010 Invited to deliver public address, "What is the Science of Global Warming?" at Brookwood Presbyterian Church, 26 September.

- 2010 Taught (in Spanish) in applied glaciology capacity building course to professionals, researchers and university students in Cusco, Peru. 19-20 July. “Mediando Cambios de Volumen en Glaciares Andinos: Evaluando cambios climaticos y recursos hidricos.”
- 2010 Led 10-week course on “Global Warming from a Scientific and Biblical Perspective,” with Dr. Jeffrey Chalmers, OSU, at Bethel Presbyterian Church, Columbus, OH.
- 2010 Invited panel presentation, Ohio State University, Thompson Library, BPRC 50th Anniversary, 12 May.
- 2010 Invited keynote presentation on Peruvian research with Lonnie Thompson to OSU campus, BPRC “Peru Night,” outreach emphasis to Peruvian nationals, 29 March.
- 2009 Invited presentation at The Ohio State University, Geography Awareness Week, “Hot stuff in cold places: Global climate change and the fate of human society,” 19 November.
- 2009 Hosted visiting photographic artist, Ivana George, for 3 week field work excursion in Peru as part of her public awareness through art. Work in progress; preliminary photos: <http://www.facebook.com/album.php?aid=94299&id=116426299649>
- 2009 Invited homily at Watershed service, First Presbyterian Church Watertown, MA, on “Science, Faith and Climate Change,” June 21.
- 2009 Invited lecture to Caring for Creation group at First Presbyterian Church of Granville, OH, “Science, Faith and Climate Change,” May 31.
- 2009 Invited Climate Change lecture with Lonnie Thompson and Leonid Polyak for Upper Arlington High School, Columbus, OH, January 22.
- 2009 Inaugural Byrd Polar Research Center Public lecture: “Peru Night,” with Lonnie Thompson, January 21.
- 2008 Invited presenter and discussant on panel, “Climate Change: What is the University’s Role in this Public Policy Debate?” at the Big 10 Government Affairs Conference hosted by OSU, October 21.
- 2008 Featured on student-run science web site, “What are tropical glaciers and why do they matter?” by Lindsey Konkell, 15 December: <http://scienceline.org/2008/12/15/ask-konkel-tropical-glaciers-melting-andes-mountains-runoff-groundwater/>.
- 2008 Invited keynote public keynote, “Measuring Andean Glacier Changes: Evaluating Climate Change and Water Resources.” FIRST LEGO League Climate Connections Kickoff Sinclair Community College, Dayton, OH. 6 September 2008.
- 2008 Interviewed live on national Peruvian television news show, Canal Siete, describing research on glaciers and water resources to general public, in Spanish.
- 2008 Invited talk on “Global Climate Change,” New Albany High School.
- 2007 Invited talk, “Glaciers, Water and God: A Christian’s view of the environment from the tropical cryosphere.” Intervarsity Graduate Christian Fellowship, Ohio State University, 2 November 2007.
- 2006 Invited talk “The diverse and beautiful land of Africa: A geographical review.” City of Upper Arlington, Senior Center, Ohio, USA, October 24.
- 2006 Interviewed live at Byrd Polar Research Center to explain climate change report on local television news with Chuck Gurney, meteorologist, WBNS-TV Channel 10, *10TV Eyewitness News This Morning*. November 2, 2006.