

Timothy Beach
The C.B. Smith, Sr. Centennial Chair
Director & Founder of the Soils and Geoarchaeology Labs
CV 2020 August

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I. Background & Positions

- a. 2 Endowed Chairs; Full Professor at 2 top Research 1 Universities; Founder/
Director of Soils & Geoarchaeology Lab

II. Awards

- a. Guggenheim, AAAS, DO Fellow; Georgetown U-wide Research Award; Gilbert
Award; Georgetown U-Wide Teaching Award; CSUC Alumnae of the Year

III. Publications & Research

- a. >100 Peer-reviewed pubs (*Nature, Science, PNAS, 5 Annals*; 6 Edited Peer
reviewed journal volumes; NSF & NGS grants; 100s Presentations in 20
countries; NSF, NGS, and other grants

IV. Advising & Teaching

- a. Taught >30 different courses; Advised >30 graduate & 100s undergrads;
Taught and took > 100 graduate and undergraduates in the field to 10
countries

V. Service & Leadership

- a. Director of 2 University Programs; Chair of 3 Specialty Groups; Organizer for
17 Conference Sessions in five disciplines since 2014; > 30 External Reviews

I. Background & Positions

Education

Ph.D., 1989, University of Minnesota: Major: Geography/Geomorphology; Minor Areas:
Soils and Geology; Dissertation: *Accelerated Erosion and Sedimentation in Southern
Minnesota*; Graduate Advisors: Dwight Brown, Philip Gersmehl, & John Borchert,
Geography; H.E. Wright, Jr, Geology and Paleocology; Terry Cooper, Soils.
M.A., 1984, University of Minnesota: Major: Geography. Related Areas: Statistics,
Ecology
B.A., 1982, California State University, Chico: Major: Geography, and Three Minors: Art
History, History, and English Honors; Phi Kappa Phi, Gamma Theta Upsilon

Research and Teaching Specialization

Research: geoarchaeology, long-term human-environmental change on geomorphology, soils, paleoecology, and hydrology; long-term climate change, and agro-ecosystems: Central America and Mediterranean

Field Work: Four to twelve weeks in the field per year: Central America (Belize, Mexico, Guatemala, Nicaragua: 1-3 field seasons per year, 1991-2019); Mediterranean (Turkey, 1-2 field seasons per year 1995-2012; Italy (Sicily & Rome 2017-2019, Syria 1995); Elsewhere (Iceland: 4 fieldtrips), Colombia, Peru, China, France

Teaching: Environmental science/ geoarchaeology: climate change, soils, geomorphology, climatology, long-term environmental change, and field and laboratory methods; integrating environmental geoscience with international environmental policy and management

Professional Experience Since 1989

- 2014- Professor and Centennial Chair with Tenure; Director and Founder, Soils and Geoarchaeology Lab, University of Texas at Austin
- 2008-2014 Professor and Cinco Hermanos Chair with Tenure; Georgetown University
- 2012-2014 Director, Science, Technology, and International Affairs Program
- 2009-2010 Director, Science, Technology, and International Affairs Program
- 1999-2007 Director, Center for the Environment, Georgetown University,
- 1999-2008 Associate Professor with Tenure; Georgetown University.
- 1993-1999 Assistant Professor STIA; SFS; Georgetown University.
- 1989-1993 Assistant Professor: University of Wisconsin-Eau Claire; Visiting Assistant Professor: University of Georgia, Western Washington, and University of Oregon

References upon request

II. Academics Awards and Honors

- 2018 **Distinguished Alumni** from College of Behavioral and Social Sciences CSU Chico, which has more than 138,000 alumni around the world.
- 2017 Delivered **Invited Lecture at the Vatican** in the Vatican Conference on Biological Extinctions Sponsored by the Pontifical Academy of Sciences and Pontifical Academy of Social Sciences, Vatican City 02-28-2017. See the following:
<http://www.pas.va/content/accademia/en/publications/scriptavaria/extinction/beach.html>
- 2017 **Carl O. Sauer Distinguished Scholarship Award** by the Conference of Latin Americanists Geographers (CLAG). CLAG awards this “in recognition for a corpus of important published work or other significant contribution towards Latin American geography. Recipients will be scholars who are leading authorities in specific research topics and geographic areas of Latin America. . .”
- 2015/2016 College Research Fellowship, College of Liberal Arts, UT Austin
- 2015/2016 Faculty Research Award, Graduate School, UT Austin
- 2014 **Awarded C.B. Smith, Sr., Centennial Chair, UT Austin**

- 2014 Elected **Professor of the Year, Georgetown School of Foreign Service's Teaching Award** and Tropaia (Honor's Ceremony) Speaker (1 for University)
- 2014 Awarded Vicennial Medal Georgetown University
- 2013-2017 Awarded **Honorary Professor of Australian Catholic University**
- 2013 Awarded **George Mason University College of Science Publication Award** for Coauthored PNAS Paper with S. Luzzadder-Beach and N. Dunning*
- 2010 Awarded **Georgetown University Distinguished Research Award** (1 for the University)
- 2010 Awarded **G.K. Gilbert Award in Geomorphology**, with S. Luzzadder-Beach
- 2009 Awarded **Cinco Hermanos Chair in Environment and International Affairs**
- 2007 Awarded **John Simon Guggenheim Fellowship**, The Guggenheim Foundation, New York.
- 2007 Awarded **Harvard University's Dumbarton Oaks Fellowship** in Pre-Columbian Studies.
- 2006 Elected **Fellow of the American Association for the Advancement of Science** for "major research contributions that improved understanding of the linkages among ancient agriculture, environmental change, and soil-geomorphic processes in Mesoamerica."
- 2004 Awarded Georgetown University Senior Faculty Fellowship
- 1997 Awarded Georgetown University Junior Faculty Fellowship

III. Publications (Students underlined)

Peer-Reviewed Articles and Chapters

In Press/Accepted

- Sekhon, N., T. Beach, S. Krause, S. Eshleman. (Accepted 8/23/20) Understanding climate trends in Central America through practical problem-based learning. *Journal of Geography in Higher Education*.
- James, A., **T. Beach**, D. Richter (Accepted 8/16/20) Floodplain and Terrace Sediment as a Widespread Record of Anthropogenic Environmental Change. *Annals AAG*.
- Luzzadder-Beach, S., **T. Beach**, N. Dunning. (Accepted 7/8/2020) Wetland Farming and the Early Anthropocene from Lidar and Multiproxy Ground Verification. *Annals AAG*.
- Dunning, N., J. Jeffrey Brewer, C. Carr, A. Anaya Hernandez, **T. Beach**, J. Chmilar, L. Grazioso Sierra, R. Griffin, D. Lentz, S. Luzzadder-Beach, K. Reese-Taylor, W. Saturno, V. Scarborough, M. Smyth, and F. Valdez (in Review) Harvesting Ha: Ancient Water Collection and Storage in the Elevated Interior Region of the Maya Lowlands In: Jean T. Larmon, Lisa J. Lucero, and Fred Valdez (eds). *A Path to Sustainability: The Past and Future Role of Water Management*. University Press of Colorado.
- Lentz, David, Nicholas Dunning, Payson Sheets, **T. Beach**, Sheryl Luzzadder-Beach, and Cynthia Robin (in Review) Intensive Agriculture and Water Management Practices of the Ancient Maya, In: Jean T. Larmon, Lisa J. Lucero, and Fred Valdez (eds). *A Path to Sustainability: The Past and Future Role of Water Management*. University Press of Colorado.

2020

- Beach, T.**, Sheryl Luzzadder-Beach, Nicholas Dunning, Sam Krause (2020) Paleoeology, Soil, and Water in Maya History (~8700 words). Chap 13, 229-249, in: Scott Hutson and Traci Ardren (eds.) *The Maya World*. Routledge.
- Guderjan, T., J. Kwoka, C. Hanratty, **T. Beach**, S. Luzzadder-Beach, S. Krause, S. Eshleman, T. Ruhl, C. Doyle. (2020) Early Onset Anthropocene: Control of the Landscape by the Ancient Maya in Northwestern Belize. *Research Reports in Belizean Archaeology* 17, 105-117.
- Dunning, N., T. Ruhl, C. Carr, **T. Beach**, C. Brown, and S. Luzzadder-Beach (2020) The Ancient Maya Wetland Fields of Acalán. *Mexicon*
- Dunning, N., **T. Beach**, and Sheryl Luzzadder-Beach (2020) Ancient Maya Agriculture (~8100 words). Chap 27, 501-518, in: Scott Hutson and Traci Ardren (eds.) *The Maya World*. Routledge.
- Delgado, W., **T. Beach**, S. Luzzadder-Beach (2020) Solar Desalination: Cases, Synthesis, and Challenges. *WIRES Water* First published: 04/07 2020
<https://doi.org/10.1002/wat2.1434>
- Delgado, W., **T. Beach**, and S. Luzzadder-Beach. (2020). "Solar rich and water poor: The case for solar desalination in El Paso, Texas." *The Professional Geographer*, 1-13. DOI: 10.1080/00330124.2019.1653776
- Inomata, T., D. Triadan, Verónica A. Vázquez López, Juan Carlos Fernandez Diaz, Takayuki Omori, María Belén Méndez Bauer, Melina García Hernández, **Timothy Beach**, Clarissa Cagnato, Kazuo Aoyama, Hiroo Nasu (6-3-2020) Monumental architecture at Aguada Fénix and the rise of Maya civilization. *Nature* 582: 530-533 (17 pp SI).
- Eshleman, Sara, **T. Beach** (2020). Soils of cohune palm (*Attalea cohune*) dominant forests compared to mixed forests in northwestern Belize" *Plant Soil*.
<https://doi.org/10.1007/s11104-020-04575-4>
- 2019**
- Beach, T.**, S. Luzzadder-Beach, S. Krause, T. Guderjan, F. Valdez, Jr., J. C. Fernandez-Diaz, S. Eshleman, C. Doyle. 2019. Ancient Maya wetland fields revealed under tropical forest canopy from laser scanning and multiproxy evidence. *Proceedings of the National Academy of Sciences*. 116(43):21469–21477.; SI online pp. 1-8. DOI: 10.1073/pnas.1910553116. (covered in 50 media features in 10 countries). 10/22/19. ArchaeoGLOBE Project (**Beach, T** author list on SI). 2019 (8-30). Archaeological assessment reveals Earth's early transformation through land use. *Science* 365, 897–902.
<http://doi.org/10.1126/science.aax1192>
- Beach, T.**, S. Luzzadder-Beach, N. Dunning. (2019 August) "Out of the Soil: Soil (Dark Matter Biodiversity) and Societal 'Collapses' from Mesoamerica to the Mesopotamia and Beyond" Chapter 5, 138-174 in Partha Dasgupta, Peter Raven, Anna McIvor (Eds.) *Biological Extinctions: New Perspectives* (Proceedings of the Vatican Workshop on Biological Extinction) *Cambridge University Press*, ISBN:9781108711814.
- Beach, T.**, S. Luzzadder-Beach, C. Cordova. (2019) "Human impacts on geomorphic systems and the legacy of Karl W. Butzer", *Geomorphology* 331 1-3.
- Krause, S., **T. Beach**, S. Luzzadder-Beach, T. Guderjan, F. Valdez, S. Eshleman, C. Doyle, S. Bozarth. (2019) Ancient Maya Wetland Management in Two Watersheds in Belize: Soils, Water, and Paleoenvironmental Change. *Quaternary International* 502 (Part B) 280-295.

- Krause, S., T. Beach, Gerald Islebe, Duncan Cook, Colin Doyle, Thomas Guderjan, Sara Eshleman, Sheryl Luzzadder-Beach. (2019) "Wetland geomorphology and paleoecology near Akab Muclil, Rio Bravo floodplain of the Belize coastal plain", *Geomorphology* 331 146-159.
- Dunning, N. P., A. Anaya Hernández, **T. Beach**, C. Carr, R. Griffin, J. Jones, D. Lentz, S. Luzzadder-Beach, K. Reese-Taylor, and I. Šprajc. (2019). Margin for Error: Anthropogenic Geomorphology of *Bajo* Edges in the Maya Lowlands. *Geomorphology* 331 127-145.
- Beach**, T., S. Luzzadder-Beach, C. Doyle, and W. Delgado. 2019. "Environments of El Zotz: Water and Soil Chemistry, the El Zotz Dam, and Long-Term Environmental Change" Ch. 7, 163-188 in: Thomas G. Garrison and Stephen Houston (Eds.) *An Inconstant Landscape: The Archaeology of El Zotz, Guatemala*, The University Press of Colorado, Boulder.
- Luzzadder-Beach, S., **T. Beach**. 2019. "Using Water Chemistry to Understand Ancient Maya Land and Water Use Interactions." Keynote Chapter in H. Chenchouni et al. (Eds.): *Exploring the Nexus of Geoecology, Geography, Geoarchaeology and Geotourism: Advances and Applications for Sustainable Development in Environmental Sciences and Agroforestry Research. Proceedings of the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1)*, Tunisia 2018. Springer Nature Switzerland AG, pp. 3-4.
- Beach**, T., S. Luzzadder-Beach, S. Krause, C. Doyle. 2019. "An Early Anthropocene Analog: the Geomorphology and Hydrology of the Rio Bravo Watershed in the Belize Tropics." Keynote Chapter in Boughdiri et al (Eds.): *Paleobiodiversity and Tectono-Sedimentary Records in the Mediterranean Tethys and Related Eastern Areas: Proceedings of the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1)*, Tunisia 2018 Springer Nature Switzerland AG, pp. 11-14.
- Heckbert, S., C. Isendahl, J. Gunn, S. Brewer, V. Scarborough, A.F. Chase, D.Z. Chase, R. Costanza, N. Dunning, **T. Beach**, S. Luzzadder-Beach, D. Lentz and P. Sinclair. 2019. "Growing the ancient Maya social-ecological system from the bottom up." Chapter in: Handbook of Historical Ecology and Applied Archaeology, C. Isendahl & D. Stump, eds. Oxford University Press, UK, pp. 302-322.
- 2018**
- Dunning, N., **T. Beach**, E. Graham, and S. Luzzadder-Beach. (2018) "Maize, Manioc, Mamey and More: Precolumbian Lowland Maya Agriculture" (33 pp). Ch. 14, 329-352, in: *The Archaeology of Caribbean and Circum-Caribbean Farmers (6000 BC - AD 1500)*, Edited by Basil A. Reid. *Routledge*.
- Beach**, T., Sheryl Luzzadder-Beach, Duncan Cook, Samantha Krause, Colin Doyle, Sara Eshleman, Greta Wells, N. Dunning, Michael Brennan, Nicholas Brokaw, Marisol Cortes-Rincon, Gail Hammond, Richard Terry, Debora Trein, Sheila Ward, (2018). Stability and Instability on Maya Lowlands Tropical Hillslope Soils. *Geomorphology* 305, 185-208. (24 published pages)
- Beach**, T., Austin Ulmer, Duncan Cook, Michael Brennan, Sheryl Luzzadder-Beach, Colin Doyle, Sara Eshleman, Samantha Krause, M. Cortes-Rincon, Richard Terry. (2018)." Geoarchaeology and Tropical Forest Soil Catenas of Northwestern Belize" *Quaternary International* 463, 198-217. (20 published pages)

2017

- Chin, A., **T. Beach**, S. Luzzadder-Beach, W. Solecki, (2017) Challenges of the “Anthropocene”(Editorial) *Anthropocene* 20, December 2017, 1–3.
- Beach, T.**, Luzzadder-Beach, S., Flood, J., (2017, December) Synthesis of geoarchaeological research around Kinet Höyük, Hatay, Turkey. Chapter 39, pp., 771-802 in *Festschrift for Marie-Henriette and Charles Gates "Veröffentlichungen zur Kultur und Geschichte des Alten Orients und des Alten Testaments* Ugarit Verlag, Münster, Germany.
- Beach, T.** (2017 December) Morals to the Story of the “Mayacene” from Geoarchaeology and Paleoecology. Chapter in: *Exploring Frameworks for Tropical Forest Conservation: managing production and consumption for sustainability*. Edited by Nuria Sanz, 110-139. *UNESCO, Paris*.
- Cook, D.E., **Beach, T.**, and Demarest, A.A. (2017) Slaughter and soil: a geophysical record of the late Classic Maya from Cancuen, Guatemala. *Journal of Archaeological Science: Reports* 15, 330-343.
- Hixson, D., **T. Beach**, S. Luzzadder-Beach and B.H. Dahlin. (2017) “Environmental Heterogeneity in the Chunchucmil Economic Region.” Chapter 6 in: Scott Hutson (Editor), *Ancient Maya Commerce: Multidisciplinary Research at Chunchucmil, University Press of Colorado*. Pp. 139-155.
- Luzzadder-Beach, S. and **T. Beach**. 2017. “Hydrology on the Edge of the Chicxulub Crater: Chunchucmil and Ucí-Cansahcab Groundwater Resources.” Chapter 7 in: Scott Hutson (Editor), *Ancient Maya Commerce: Multidisciplinary Research at Chunchucmil, University Press of Colorado*. Pp. 157-167.
- Beach, T.**, S. Luzzadder-Beach, R.V. Sweetwood, P. Farrell, D. Mazeau, and R.E. Terry. 2017. “Soils and Agricultural Carrying Capacity” Chapter 9 in: Scott Hutson (Editor), *Ancient Maya Commerce: Multidisciplinary Research at Chunchucmil, University Press of Colorado*. Pp. 197-219.
- Guderjan, T.H., S. Luzzadder-Beach, **T. Beach**, S. Bozarth, and S. Krause. 2017. “Production of Ancient Wetland Agricultural Commodities in the Maya Lowlands.” Ch. 2 in: J.P. Mathews and T.H. Guderjan, (Eds.), *The Value of Things: Prehistoric to Contemporary Commodities in the Maya Region*. The *University of Arizona Press*, Tucson. Pp. 30-48.
- Luzzadder-Beach, S., **T. Beach**, T. Garrison, S. Houston, J. Doyle, E. Roman, S. Bozarth, R. Terry, S. Krause, and J. Flood. 2017. “Paleoecology and Geoarchaeology at El Palmar and the El Zotz Region, Guatemala.” *Geoarchaeology* 32, 90-106. doi:10.1002/gea.21587.

2016

- Krause, S., T. Guderjan, **T. Beach**., and S. Luzzadder-Beach (2016). Sixty Years of Remote Sensing in the Maya Lowlands: A Review of Techniques and Tools. *Center for Archaeological and Tropical Studies Occasional Papers* 21, 61-80.
- Smyth, M. P., **T. Beach**, and E. Weaver (2016) Climate Change and Chiefdom Ecodynamics in the Eastern Andean Cordillera of Colombia. *Center for Archaeological and Tropical Studies Occasional Papers* 21, 15-32.
- Aebersold, L., **T. Beach**, S. Luzzadder-Beach, T. Guderjan, and F. Valdez (2016) The Blue Creek Rejollada Revisited: Transitional Imprints in Sedimentological Records. *Center for Archaeological and Tropical Studies Occasional Papers* 21, 33-48.

- Beach, T., S. Luzzadder-Beach, N. Dunning, D. Cook, 2016.** Maya climatic changes and collapses. *PAGES (Past Global Changes) Special Issue "Climate change and cultural evolution"* Edited by Claudio Latorre, 24(02):66-67 (3 column pages).
- Beach, T., K. M. Johnson, M. McCusker Hill, S. Munoz, M. Peros, 2016.** The view from the "Anthropocene": New perspectives in human-induced environmental change, *Anthropocene* 15, 1-2.
- Guderjan, T., S. Krause, S. Luzzadder-Beach, T. **Beach**, and C. Brown. (2016). Visualizing Maya Agriculture along the Rio Hondo: a Remote Sensing Approach. *Perspectives on the Ancient Maya of Chetumal Bay*, edited by Debra Walker. University of Press of Florida, pp. 92-106.
- Beach, T.** 2016. Guest Editor Special Issue on Climate Change and Archaeology in Mesoamerica. *Global and Planetary Change*, Vol. 138, pp. 1–2.
- Medina Elizalde, M; S. J. Burns; J. Polanco Martinez; F. Lasas-Hernández; **T. Beach**; Shen Chuan-Chou; Wang Hao-Cheng. (2016) High-resolution speleothem record of precipitation from the Yucatan Peninsula spanning the Maya Preclassic Period. *Global and Planetary Change*, Vol. 138, pp. 93-102.
- Luzzadder-Beach, S., **T. Beach**, S. Hutson, and S. Krause (2016). Sky-earth, lake-sea: climate and water in Maya history and landscape. *Antiquity*, Vol. 90, 426-442.

2015

- Beach, T., S. Luzzadder-Beach, S. Krause, S. Walling, N. Dunning, J. Flood, T. Guderjan, F. Valdez. (2015)** "Mayacene' Floodplain and Wetland Formation in the Rio Bravo Watershed of Northwestern Belize" *The Holocene* 25(10):1612–1626.
- Beach, T., S. Luzzadder-Beach, D. Cook, N. Dunning, D. Kennett, S. Krause, R. Terry, D. Trein, F. Valdez. (2015).** Ancient Maya impacts on the earth's surface: an early anthropocene analog? *Quaternary Science Reviews* 124:1–30.
- Beach, T., Luzzadder-Beach, S., Guderjan, T., and Krause, S. 2015.** The floating gardens of Chan Cahal: soils, water, and human interactions. *Catena* 132: 151-164.
- Beach, T., Luzzadder-Beach, S., Flood, J., Houston, S., Garrison, T., Roman, E., Bozarth, S., and Doyle J. 2015.** A Neighborly View: Water and Environmental History of the El Zotz Region. Ch. 12 In: D. Lentz, N. Dunning, V. Scarborough (Eds.), *Tikal: Paleoecology of an Ancient Maya City*. Cambridge University Press, pp. 258-79.

2014

- Kennett, D., and **T. Beach**. 2014. Archaeological and Environmental Lessons for the Anthropocene from the Classic Maya Collapse. *The Anthropocene* 4: 88-100.
- Braje, T. J., Erlandson, J.M., Aikens, C.M., **Beach, T.**, Fitzpatrick, S., Gonzalez, S., Kennett, D.J., Kirch, P.V., Lee, Gyoung-Ah. Lightfoot, K.G., McClure, S.B, Panich, L.M., Rick, T.C., Roosevelt, A.C., Schneider, T.D., Smith, B., and Zeder, M.A. 2014. An Anthropocene Without Archaeology—Should We Care? *The SAA Archaeological Record* 14 (1):26-29.
- Dunning, N., D. Wahl, T. **Beach**, J. G. Jones, S. Luzzadder-Beach, Carmen McCormick (2014) "The End of the Beginning: Drought, Environmental Change, and the Preclassic to Classic Transition in the Maya Lowlands" Ch. 6, 107-126, In: *The Great Maya Droughts in Cultural Context*, Edited by Gyles Iannone. University Press of Colorado.

Before 2014

- Dunning, N., **T. Beach**, L. Grasiozo Sierra, J. G. Jones, D. L. Lentz, S. Luzzadder-Beach,

- V. L. Scarborough, M. P. Smyth. 2013. A Tale of Two Collapses: Environmental Variability and Cultural Disruption in the Maya Lowlands *Diálogo Andino* 41: 171-183.
- Beach**, T., S. Luzzadder-Beach, and J. Lohse. (2013). Landscape Formation and Agriculture in the Wetlands of Northwestern Belize. In: Jon C. Lohse, ed., *Classic Maya Political Ecology*. Pp 43-67. Los Angeles: *UCLA Cotsen Institute of Archaeology Press*.
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- Dunning, N., T. **Beach**, S. Luzzadder-Beach. 2012. *Kax and Kol*: Collapse and Resilience in Lowland Maya Civilization. *Proceedings of the National Academy of Science* 109:3652–3657.
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- Beach**, T., S. Luzzadder-Beach, N. Dunning, R. Terry, and S. Houston, and T. Garrison. 2011. Carbon Isotopic Ratios of Wetland and Terrace Soil Sequences in the Maya Lowlands of Belize and Guatemala. *Catena* 85(2), 109-118.
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- Bhattacharya, T., T. **Beach**, D. Wahl. 2011. An Analysis of Modern Pollen Rain from the Maya Lowlands of Northern Belize. *Review of Palaeobotany and Palynology* 164: 109-120.
- Guderjan, T., J. Barrett, T. **Beach**. 2010. Current Research in Northwestern Belize 2008 and 2009. *Research Reports in Belizean Archaeology*, Vol. 7, 219-228.
- Dahlin, B, D. Bair, T. **Beach**, M. Moriarty, R. Terry. 2010. The Dirt on Food: Ancient Feasts and Markets among the Lowland Maya. In: *Pre-Columbian Foodways: Interdisciplinary Approaches to Food, Feasting, and Festivals in Ancient Mesoamerica*. Pp. 191-234, Edited by John E. Staller and Michael Carrasco. Springer-Verlag.
- Dunning, N., and T. **Beach**. 2010. Farms and Forests: Spatial and Temporal Perspectives on Ancient Maya Landscapes. In: *Landscapes and Societies*, Edited by I. P. Martini and Ward. Pp., 369-389. Chesworth. Springer-Verlag.
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- Dunning, N., T. **Beach**, and S. Luzzadder-Beach. 2009. Creating a stable landscape: soil conservation among the ancient Maya. In: *The Socio-Natural Connection: Integrating Archaeology and Environmental Studies for 21st Century Conservation*, Edited by C. Fisher, B. Hill, and G. Feinman. University of Arizona Press.
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- Hutson, S, A. Mangoni, T. **Beach**, R. Terry, B. Dahlin, M. Schabel. 2009. Phosphate fractionation and spatial patterning in ancient ruins: A case study from Yucatan. *Catena* 78, 260-269.
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Edited Special Journal Issues (Peer-reviewed & no publications fees)

- Beach**, T., S. Luzzadder-Beach, and B.L. Turner, II. (In progress) Special Issue of *Progress in Physical Geography* on Long-Term Human Environmental Change of the Maya Lowlands. This has eight articles with 15 authors from Geography, Geology, Ecology, Archaeology, and Engineering from Mexico, Puerto Rico, the US, Nicaragua, and Australia. Articles due for review: 30 December 2020.
- Beach**, T, S. Luzzadder-Beach, and C. Cordova, Guest Editors, (2019) “Human Geomorphological Interactions and the Legacy of Karl Butzer”, *Geomorphology* Vol. 331, pp. 1-190. Impact Factor: 3.819 (Special Issue of 12 articles based on the 2017 AAG Physical Geography Symposium of 25 papers over three days.)
- Beach**, T., S. Luzzadder-Beach, and W. Solecki, Guest Editors, (2017) Challenges of the “Anthropocene”, *Anthropocene* 20, December. Impact Factor: 3.339
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Articles, Chapters, & Books Submitted and in Preparation

- Inomata T., J-C Fernandez-Diaz, D. Triadan, M. Mollinedo, A. Flores, F. Pinzón, M. García Hernández, A. Sharpe, **T. Beach**, J.J. Durón Díaz, A. Guerra Luna, L. Guerrero Chávez (In Review) Early ceremonial complexes in the Olmec and Maya regions examined with broad-area lidar.
- Krause, S., **Beach, T.**, Sheryl Luzzadder-Beach, D. Cook, et al. (In Review) Wetlands in the Anthropocene: Reconstructing a Maya agricultural wetland on the Rio Bravo Floodplain, Northwestern Belize. *The Anthropocene*
- Flood, J., S. Luzzadder-Beach, **T. Beach** (In Review) Groundwater Geochemistry and Oracular Phenomena at the Temples of Apollo at Delphi, Didyma and Claros.
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- Brokaw, N., S. Ward, T. Beach et al. (in prep) The Ancient Maya and the Modern Forest.
- Luzzadder-Beach, S., T. Beach, C. Doyle (in prep) Aspects of the Hydrogeology of Belize: Beyond the Maps
- Flood, J., A. Walthall, T. Beach, S. Luzzadder-Beach. (in prep) Morgantina's Lost Port and Buried River: Geoarchaeological Insights into the Paleohydrology of Central Sicily. Manuscript in preparation for Geoarchaeology.
- Walthall, A., J. Millar, T. Beach, S. Luzzadder-Beach, J. Flood. "Revisiting Judson's Erosion and deposition in Italian stream valleys during historic times" planned

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Submitting in Fall 2020.

Dunning, N. P. and T. **Beach**. In progress (complete draft). *An Ancient Maya Tropical Landscape: The Environmental Archaeology and Paleoecology of the Petexbatun Regional Archaeology Project*. Book accepted by Vanderbilt University Press, Nashville, TN.

50+ Internally Reviewed Articles & Informés (Field Reports)

Book Reviews

- Beach, T. 2006. Review of *Amazonian Dark Earths: Origins, Properties, and Management*. J. Lehmann, D. Kern, B. Glaser, and W. I. Woods (eds.) The Netherlands: Kluwer. *Holocene* 16 (6): 928-9
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Op Ed Essays

- 9-23-2018 The Endangered Species Act: *Austin American Statesman*
- 4-21-2017 Earth Day, Science and Politics: *USA Today*, *Austin American Statesman*, *Psychology Today*, *San Antonio Express News*, and others.
- 8-25-2016 On the Centennial of the National Park Service “National parks are road maps to a new frontier” versions ran in *the Houston Chronicle*, *Dallas Morning News*, *Austin American Statesman*, *Waco Tribune Herald*, and others.

Conference, Workshop, and Invited Lectures

17 Organized Sessions since 2014 in 5 organizations

- Co-Organizers and Chairs: **T.Beach**, R. Mandel, and S. Krause (2020 October) Soils and Long-Term Environmental Change GSA Organized Session of 19 papers in two Technical Sessions: T153 I & II
- Co-Organizers and Chairs: T.Beach, A. Runggaldier, D. Stuart, S. Luzzadder-Beach, and S. Krause (2020) Mesoamerica LiDAR Workshop: 2020 UT Sibley Conference and Planet Texas 2050. UT Austin (2 days of meetings 2-28-2-29).
- Co-Chair and Organizer: S. Luzzadder-Beach, T. Beach, & G. Perry (2019) The geological Substrate on Which Maya Civilization Developed. Phoenix GSA Organized Session of 12 papers, 9-24-2019. T. Beach coauthor on 5 papers.
- Co-Chair, Organizing Committee. (2019) Association of American Geographers Meeting Theme: “Geographies of Human Rights: The Right to Benefit from Scientific Progress.” One of three major Themes soliciting papers, panels, posters, and sessions that integrate the theme topic. The AAG identifies themes to help give

- each annual meeting a more specific focus. More than 8000 members attended this meeting.
- Co-Chair, Organizing Committee. (2019) Association of American Geographers Meeting Theme: “Physical Geography in Environmental Science.” One of three major Themes soliciting papers, panels, posters, and sessions that integrate the theme topic. The AAG identifies themes to help give each annual meeting a more specific focus. More than 8000 members attended this meeting.
- Co-Chair, Organizer. (2019) Wetlands and Watersheds in the Anthropocene: a Geomorphological and Geoecological Approach Organized Session (co-chairs C. Doyle, T. Beach) Annual Meeting of the American Association of Geographers, Washington DC
- Co-organizer: S. Krause, T. Beach, N. Dunning, J. Brewer (2018) LiDAR Studies of Tropical Forest Physical Geography and Cultural Ecology Parts 1-3. Organized Session Association of American Geographers annual meeting, New Orleans, LA.
- Co-Chair and Co-Organizers.* T. Beach, S. Luzzadder-Beach, C. Fisher. (2018) Scientific Session: Airborne Laser Mapping Research in Tropical Forests and Archaeological Sites. *2018 Annual Meeting, American Association for the Advancement of Science.* 16 February 2018. Austin TX.
- Lead Co-Organizer, 2017. Symposium on Physical Geography. Annual Meeting of Association of American Geographers: Apr 4-9: Boston, MA. Association of American Geographers.*
- Co-Organizer, Co-Host, & Discussant (with Dr. P. Newberg, GOVT-UT, and Dr. S. Luzzadder-Beach GEOG-UT). 2017. “Climate Vulnerability and Coastal Cities of South Asia Workshop.” UT and Georgetown U. Joint Hosts. Georgetown University SFS Qatar Campus, Doha, Qatar. 9-11 January.
- Co-Chair and Session Co-organizer for the Physical Geography Symposium on Physical Geography: Challenges of the “Anthropocene”, an organizer, chair, and fundraiser for three days of sessions at AAG 2016.
- Co-Chair and Organizer with W. Doolittle, T. Beach, and R. Mandel, A Special Session in Honor of William Woods at AAG Annual Meeting, San Francisco, CA. 2016.
- Co-Chair and Organizer with G. Stinchcomb, T. Beach, T. Hoffman; “Developing proxies for human impact on soil and sediment mass transfer throughout the Holocene” a Special Session at the *Geological Society of America*, Baltimore, MD, 11-2015.
- Co-Chairs and Organizer with Eleanor Harrison-Buck and T. Beach “Advances in Wetland Archaeology in the Americas”, An Organized Session for the 80th Annual Meeting of the Society for American Archaeology, San Francisco, CA. 17 April 2015.
- Co-Chairs and Organizer with M. Peros, T. Beach, and S. Munoz. “New Perspectives in Paleoenvironmental Change and Geoarchaeology”: An Organized Session for the *Association of American Geographers Annual Meeting*, 20 April 2015, Chicago, IL.
- Co-Chairs and Organizers Beach, T., and S. Luzzadder-Beach. “Past and Present Environmental Science of the Neotropics and Beyond”: An Organized Panel Discussion for the *Association of American Geographers Annual Meeting*, April 24, 2015, Chicago, IL.
- Session Organizer and Chair for a Special Session on Mesoamerican Climate with 13 papers at the Annual Meeting of the Society for American Archaeology at Austin, TX on 4-25-2014.

Conference and Invited Lectures (40 invited since 2014)

2020

Beacht, T., S. Krause, and S.Luzzadder-Beach (2020) Going Back to the Trowel: Wetlands, Resilience, and Climate Change in Maya History. SAA Zoom Session: Local Manifestations of Climate Change for Archaeological Research. Finalist for AMERIND Research Seminar. 4/24/2020.

Beach, T. (2020) COVID-19 Pandemic Cancelled Talks and Sessions at SAA & AAG.

Invited: Beach, T. (2020) TOWER Fellow Program Lecture: The Birds of Paradise Wetlands: Lasers from the Sky and the Global Early Anthropocene from the Maya Tropical Forest (3-5-2020).

Beach, T. (2020) Twenty Years of Excavation and Mapping and Two Days of Lidar! Mesoamerica LiDAR Workshop: UT Sibley Conference and Planet Texas 2050. UT Austin.

Invited: Beach, T. (2020) Under the Forest Canopy: Prehispanic Wetland Agroecosystems in Global Context Invited Lecture: Latin American, Caribbean, and Latinx Studies program at the University of Alabama (2-6-2020).

Flood, J.; Walthall, A.; Beach, T.; & Gorham, R. (2020). Morgantina's Lost Port and Buried River: Geoarchaeological Insights into the Paleohydrology of Central Sicily. Paper Presented at the Annual Meetings of the Archaeological Institute of America, Session 8E, 1-5-2020, Washington, D.C.

Taylor, R., et al. T. Beach, (2020) The Aqua Traiana before Trajan. Paper Presented at the Annual Meetings of the Archaeological Institute of America, Session 21, 1-5-2020, Washington, D.C.

Rabinowitz, A. et al. Beach, T. The University of Texas Histria Multiscalar Archaeological Project (UT-HMAP): Preliminary Results of the First Two Seasons (2018 and 2019) Paper Presented at the Annual Meetings of the Archaeological Institute of America, Session 3b, 1-5-2020, Washington, D.C.

Flood, J.; Beach, T.; Walthall, A.; Luzzadder-Beach, S; Millar, J; and Donn, L. (2020). Fluvial Degradation and Resiliency in Central Sicily from the Bronze Age to the Plastic Age. Paper Presented at the Annual Meetings of the American Association of Geographers, Denver, CO.

2019

Doyle, C, T. Beach, S. Luzzadder-Beach, F Casal. 2019. Ancient Maya Wetland Agriculture as a Lens for Long-term Resilience in Floodplains. AGUFM 2019, H53L-1935

Zimmer, A. and T. Beach. AGU 2019. Future of Periglacial Landscape: alpine ecosystems and deglaciation in the Tropical Andes and French Alps. AGUFM 2019, C23C-1549

Zimmer, A. and T. Beach. 50th Binghamton Geomorphology Symposium (BGS), Denver, Co., October 11-13, 2019. Poster presented: Future of periglacial landscape: alpine ecosystems and deglaciation in the Tropical Andes and French Alps.

T. Beach, S. Luzzadder-Beach, N.P. Dunning, and Jed Dale (2019). Ancient Maya Wetland Management and the Early Anthropocene: A Preliminary Synthesis from Lidar and Multiple Proxies, 9-24-2019. GSA Annual Meeting in Phoenix, Arizona, USA-2019.

Dale, J., T Beach, S Hutson, SM Krause, S Eshleman, SR Bozarth (2019) Geoarcheological Investigation of Maya Landscape Adaptation in an Ancient Yucatan Aguada or Reservoir. GSA Annual Meeting in Phoenix, Arizona, USA-2019.

- Dunning, N., T. Beach, C. Carr, S. Luzzadder-Beach, E. Perry 2019. Sak Lu'um: Ancient Maya Interactions with Environmental Gypsum GSA Annual Meeting in Phoenix, Arizona, USA.
- Cook, D., T. Beach, S. Luzzadder-Beach, R. Terry. 2019. Mercury and the Ancient Maya Of Lowland Central America. GSA Annual Meeting in Phoenix, Arizona, USA.
- Luzzadder-Beach, S., T. Beach, N. Dunning. 2019. The Hydrology and Hydrogeology of the Ancient Maya: Yucatán, Mexico, Northern Belize, and Petén, Guatemala. GSA Annual Meeting in Phoenix, Arizona, USA.
- G. Wells, Sheryl Luzzadder-Beach, T. Beach Geomorphologic and geochronological reconstruction of Holocene jökulhlaups along the Hvítá River and Gullfoss waterfall, Iceland. INQUA 2019 Meeting, Dublin, Ireland. 29 July 2019.
- T. Beach, S. Luzzadder-Beach. "Ancient wetland agroecosystems based on multiproxy excavation and LiDAR Imagery of the Maya tropical forest." INQUA 2019 Meeting, Dublin, Ireland. 29 July 2019.
- S. Luzzadder-Beach and T. Beach. "Building resilient hydrologic systems for the future using lessons from past societies: from Ancient Rome to the Maya Lowlands." INQUA 2019 Meeting, Dublin, Ireland. 29 July 2019.
- Invited. T. Beach and S. Luzzadder-Beach (co-Presenters). "How do scientists study wetlands and people? Learning to look and think like an archaeologist." Science Friday at the Crooked Tree Museum, Crooked Tree Belize. 31 May 2019.
- Invited: T. Beach, S. Luzzadder-Beach, Nick Dunning, Sam Krause, Colin Doyle, and Sara Eshleman. "Ancient Maya Water Control, Wetlands, and the Fiery Pool." Presentation at the Society of American Archaeology annual meeting, Albuquerque, NM.
- Doyle, C., Beach, T., Luzzadder-Beach, S. (2019) Multi-proxy and LiDAR Evidence for Intensive Maya Wetland Agriculture Along the Rio Bravo. Presentation at the Society for American Archaeology annual meeting, Albuquerque, NM, April 2019.
- Invited: Sara Eshleman, T. Beach, S. Luzzadder-Beach, Colin Doyle, and Fernando Casal. "Soil and water chemistry: Aguada Fenix, Tabasco and Northern Belize." Presentation at the Society of American Archaeology annual meeting, Albuquerque, NM.
- T. Beach, S. Luzzadder-Beach, Nick Dunning. "The perpetuation of error in the Science of wetlands." Presentation at the Association of American Geographers annual meeting, Washington, DC.
- Doyle, C., Beach, T., Luzzadder-Beach, S. (2019) Modeling Wetland Hydrology with LiDAR in Northwest Belize. Presentation at the American Association of Geographers annual meeting, Washington, D.C., April 2019.
- Flood, J.; Beach, T.; Walthall, A.; Luzzadder-Beach, S; Millar, J; and Donn, L. The Fluvial Evolution of the Catania Plain and Rivers of Central Sicily. Paper Presentation at the Annual Meetings of the American Association of Geographers, DC., April 2019.
- Invited. T. Beach, S. Luzzadder-Beach Maya Wetlands in Global Context over the Late Holocene: Controversies and Consiliences from Multi-Proxy Evidence. Texas A&M Geography Colloquium Series, College Sta. TX. 25 January 2019.
- Invited. Sheryl Luzzadder-Beach, Timothy Beach, S. Krause, G. Wells, C. Doyle, S. Eshleman, L. Donn. "Water Matters: Using Water and Soil Interactions to Understand the Geoarchaeology of Wetlands in the Maya Lowlands." Soil Science Society of America International Meetings. San Diego CA. 7 January 2019.

Invited. Timothy Beach, Sheryl Luzzadder-Beach, S. Krause, S. Eshleman, C. Doyle, L. Donn. “Soil and Archaeology in the Maya Tropical Forest.” Soil Science Society of America International Meetings. San Diego CA. 7 January 2019.

2018

Invited: T. Beach, S. Luzzadder-Beach, S. Krause, C. Doyle. LiDAR and the Early Anthropocene in the Maya Tropical Forest. Paper presented at the American Geophysical Union Annual Meeting. 12-12-2018.

Keynote Lecture: T. Beach, S. Luzzadder-Beach, S. Krause, C. Doyle. An Early Anthropocene Analog: the Geomorphology and Hydrology of the Rio Bravo Watershed in the Belize Tropics. Springer-Nature First International Conference of the Arabian Journal of Geosciences. 11-13-2018.

Invited Keynote. Sheryl Luzzadder-Beach, Timothy Beach, Beach Labs. “Using Water Chemistry to Understand Ancient Maya Land and Water Use Interactions.” 13 November 2018, *10th Anniversary Conference of the Arabian Journal Of Geosciences*. Tunis, Tunisia.

Invited: T. Beach, S. Luzzadder-Beach, S. Krause, S. Eshleman. Soil Catenas and the Future of Soil Chronosequences in the Maya Lowlands. Paper presented at the Geological Society of American Annual Meeting. 11-05-2018.

Invited: T. Beach, S. Luzzadder-Beach, L. Donn, C. Doyle, S. Eshleman. “Ground-truthing the First LiDAR Imagery of Ancient Maya Wetland Fields: Twenty Years of Field Work and Two Days of LiDAR” Presentation at NCALM, University of Houston. 9-26-2018.

T. Beach, S. Luzzadder-Beach, and Richard Terry. “*The Maya Anthropocene: Soils, Paleosols, and ancient Agriculture (but no Terra Preta) in the Maya Lowlands.*” *21st World Congress of Soil Science*, 17 August 2018, Rio De Janeiro, Brazil.

T. Beach, S. Luzzadder-Beach, Fred Valdez, Tom Guderjan, Sam Krause, Colin Doyle. “*Ground verifying the first LiDAR imagery of ancient Maya wetland fields: twenty years of fieldwork and two days of LiDAR.*” Presentation at the Association of American Geographers annual meeting, New Orleans, LA.

S. Krause, T. Guderjan, T. Beach, S. Luzzadder-Beach. “*Canals, Sacbeob and defining space in ditched agricultural fields in the Three Rivers Region.*” Presentation at the Society of American Archaeology annual meeting, Washington, DC.

Flood, J.; Beach, T.; Walthall, A.; Luzzadder-Beach, “*Lost Harbors, Abandoned Towns, Vanished Shorelines: Causes and Consequences of the Ancient Progradation of Sicily’s Catania Plain.*” Paper Presentation at the Annual Meetings of the American Association of Geographers, New Orleans, LA. 2018

Invited Speaker. S. Luzzadder-Beach and T. Beach. “The Re-enchantment of Traditional Wetland Agriculture around the World.” *California State University Chico, College of Behavioral and Social Sciences*. 8 March 2018. Chico CA.

T. Beach and S. Luzzadder-Beach. “Two Days of LiDAR and Two Decades of Multiproxy Geoarchaeology in Northwestern Belize”. In Scientific Session: Airborne Laser Mapping Research in Tropical Forests and Archaeological Sites. *2018 Annual Meeting, American Association for the Advancement of Science*. 16 February 2018. Austin TX.

2017

- Invited: T. Beach, S. Luzzadder-Beach. "Geoarchaeology of Maya Wetland Agroecosystems" *Global Shanghai Archaeology Forum 2017*, Institute of Archaeology, *Chinese Academy of Social Sciences*, 12-10-2017.
- Invited Keynote: S. Luzzadder-Beach and T. Beach. "Hydraulic Society and Water Management in the Ancient Maya Lowlands of Mesoamerica," Shanghai Archaeology Forum, hosted by the Institute of Archaeology, Chinese Academy of Social Sciences. Shanghai, China. 8th-14th December 2017.
- Beach, T., S. Luzzadder-Beach, F. Valdez, N. Dunning. 2017. Ancient Maya Geoarchaeology of Rediscovered Landesque Capital and Applied Quaternary Science. Geological Society of American Annual Meeting. 10-23-2017.
- Invited: T. Beach and S. Luzzadder-Beach. Stability and Instability on Maya Lowlands Tropical Toposequences, 2017 Binghamton Symposium Texas State University, San Marcos, TX. 10-15-2017.
- Invited: T. Beach and S. Luzzadder-Beach. Environmental History of the Maya from Soils, Ecology, and Airborne Mapping, Presentation at the Maya Peoples Making History Symposium at The Mexican Cultural Institute, Washington, DC, 9-08-2017.
- Invited: S. Luzzadder-Beach and T. Beach. Sensing a Revolution in Ancient Maya Studies. Presentation at the Maya Peoples Making History Symposium at The Mexican Cultural Institute, Washington, DC, 9-08-2017.
- Luzzadder-Beach, S. and T. Beach. "The Legacy of Karl Butzer in Physical Geography and Beyond." *Keynote Butzer Legacy Session, American Association of Geographers Annual Meeting*. Boston MA. 5 April 2017.
- Krause, S., T. Beach, S. Luzzadder-Beach, C. Doyle, Daniela Florez. "The Importance of Maya Wetlands for Human Ecology and Environmental History: Multi-Scaler Case Studies from Northwestern Belize." Paper presented at *American Association of Geographers Annual Meeting*. Boston MA. 7 April 2017.
- Eshleman, S., C. Doyle, S. Krause, T. Beach, Ann-Marie Jacoby, S. Luzzadder-Beach, and T. Guderjan. "Exploring the Rio Hondo: traversing an understudied river and borderland." Paper presented at *American Association of Geographers Annual Meeting*. Boston MA. 9 April 2017.
- Doyle, C., T. Beach, S. Krause, and S. Luzzadder-Beach. "LiDAR and Multiproxy Evidence for Spatial and Temporal Human Impacts in a Fluviokarst Watershed in Central America." Paper presented at *American Association of Geographers Annual Meeting*. Boston MA. 9 April 2017.
- Luzzadder-Beach, S. T. Beach, N. Dunning, V. Scarborough and F.Valdez. "A Quarter-Century of Exploring the Three Rivers Watersheds in Belize." Symposium at *Annual Meetings of the Society for American Archaeology*. Vancouver BC. 30 March 2017.
- Beach, T. S. Luzzadder-Beach (Presenter), C. Doyle, N. Dunning, and N. Brokaw. "The Critical Zone Revolution from 2016 Lidar and Two Decades of Multiproxy Geoarchaeology around the Programme for Belize." Symposium at *Annual Meetings of the Society for American Archaeology*. Vancouver BC. 30 March 2017.
- Krause, S., T. Beach, S. Luzzadder-Beach, T. Guderjan and C. Doyle. "New Frontiers in Wetland Archaeology: Mapping Maya Agricultural Systems with Lidar." Symposium at *Annual Meetings of the Society for American Archaeology*. Vancouver BC. 31 March 2017.

Invited Lecture Vatican: Timothy Beach and Sheryl Luzzadder-Beach, “Societal Collapses from the Maya to Mesopotamia and Beyond” at the Vatican Workshop on Biological Extinction. Sponsored by the Pontifical Academy of Sciences and Pontifical Academy of Social Sciences, Vatican City 02-28-2017.

Invited: Beach, T. "Ancient Maya Agroecosystems: Twenty Years of Fieldwork and Two Days of LiDAR" Colloquium Lecture at the University of Florida. Gainesville, 02-03-2017.

Tim Beach, Sheryl Luzzadder-Beach, Samantha Krause, and Colin Doyle. Maya Wetland Systems from Earth and Sky and Holocene to Anthropocene. Paper Presented at Conference of Latin Americanist Geographers, New Orleans LA, 01-4- 2017.

Eshleman, S., C. Doyle, S. Krause, A.M. Jacoby, T. Beach, S. Luzzadder-Beach. J. Telepak, T. Guderjan Exploring Borderlands: A dugout canoe trip along the Belize-Mexico border. Presentation at CLAG, New Orleans, 01-05-2017.

2016

Beach, T., S. Luzzadder-Beach, S. Krause, C. Doyle, N. Dunning, N. Brokaw, Richard Terry. Tropical Forest Soil Catenas of Northwestern Belize. Presented at INQUA Focus Group QUASAP Pedogenesis-Workshop "The Route of Humboldt", UNAM, Mexico City. 12-08-2016.

Krause, S., T. Beach, S. Luzzadder-Beach, and C. Doyle. Anthropogenic and natural formation patterns of soil sequences in tropical karst sinks and slopes, Northwestern Belize and Campeche, MX. Presented at INQUA Focus Group QUASAP Pedogenesis-Workshop "The Route of Humboldt", UNAM, Mexico City. 12-08-2016.

Invited: Beach, T., The Re-Enchantment of Maya Wetland Fields from Earth and Sky at Tulane University Middle American Research Institute, 10-28-2016.

Beach, T., L. Donn, S. Luzzadder-Beach (Presenter), S. Krause, and C. Doyle. “Reconstructing Ancient Maya Wetland Fields and Alluvial Fans in the Neuendorf Wetlands, Belize.” Paper presented at the *Geological Society of American Annual Meeting*. Denver CO. 9-26-2016.

Beach, T., S. Luzzadder-Beach, S. Krause. “The Geoarchaeology and Geomorphology of Maya Wetlands from the Late Holocene to the Anthropocene” International Geographical Conference, Beijing, China, 8-22-2016.

Invited Plenary: Beach, T., S. Luzzadder-Beach, S. Krause, C. Doyle. “Palimpsests of the ‘Anthropocene’: Ancient Maya Wetland Fields and Alluvial Fans in Belize and Beyond” AMQUA Meetings, Santa Fe, NM, 7-1-2016.

Invited: Beach, T., Human impacts from Hillslopes to Floodplains in the Maya Tropical Forests. EGU, Vienna, Austria 19 April 2016.

Invited: Beach, T., The Maya Tropical Forest: Cascading Human impacts from Hillslopes to Floodplains. Columbia, SC 15 April 2016

Invited: Beach, T., “Equifinalities and the Limits of Soil, Ecology, and Climate Knowledge in Maya History” Invited Lecture at the Annual Meeting of the Society for American Archaeology, Orlando, FL. , 4-6 April 2016.

Beach, T., A. Ulmer, R. Terry, S. Krause, S. Eshleman, C. Doyle, “William Woods: Soils, Geoarchaeology, and the Tropical Forest Soil Catenas of Northwestern Belize.” Association of American Geographers Annual Meeting, SF, April 2019.

Invited: The Re-Enchantment of Maya Wetlands in Global Context during the Holocene and Anthropocene. George Rieveschl Geo-lecture Research Talk at the University of Cincinnati, 4 March 2016

Invited: The Maya Anthropocene: a Mirror for a Small Planet George Rieveschl Geo-lecture Public Talk at the University of Cincinnati, 3 March 2016.

Invited: “Is the development of global Climate Policy (Paris Agreement?) calibrated with the latest scientific evidence with particular reference to IPCC Fifth Assessment Report (AR5) to effectively address both short and long term threats of climate change.” Punjab Higher Education Commission (PHEC) in collaboration with the American Institute for Pakistan Studies (AIPS) and Information Technology University (ITU), Lahore, Pakistan, 22 January 2016.

Invited: Seminar/ Lecture: “Several Studies shows that ‘South Asia will be severally impacted by the harmful impacts of the climate Change”. What could be the particular impacts on key economic sectors of the region (Agriculture) and what should be the specific adaptation measures? COMSATS University, Islamabad, Pakistan, 20 January 2016.

Invited: “Trends in long-term climatic system changes and its impacts on agriculture and water management sustainability and vulnerability with particular reference to countries like Pakistan.” COMSATS University, Islamabad, Pakistan, 19 January 2016.

Beach, T., S. Luzzadder-Beach, and N. Dunning, The Environmental Backdrop of the Petexbatun and Beyond. The Maya Meetings, University of Texas at Austin, 15 January 2016.

2015

Invited: “A review of late Holocene fluvial systems in the karst Maya Lowlands with focus on the Rio Bravo, Belize” Paper at the American *Geophysical Meeting in San Francisco* in the Session: Fluvial Morphodynamics: Channels Patterns, Process-Based Unsteadiness, Tropical Rivers, and Beyond. Section/Focus Group: Earth and Planetary Surface Processes, 18 December 2015.

Invited: “Morals to the Story of the “Mayacene” from Geoarchaeology and Paleoecology” Paper presented at the *UNESCO Meeting: Exploring Frameworks for Tropical Forest Conservation: managing production and consumption for sustainability session*. Session: Interpreting the Past to Inform the Present and Implications for the Future: lessons from archaeology and historical archaeology in Xalapa, Veracruz on 6-8 December 2015.

Keynote on Soil and Sediment Transfers in Middle America at the *PAGES working group on Global Soil and Sediment Transfers in the Anthropocene (GloSS)* at the Department of Geography, University of Bonn, Germany on 19th – 21st Aug. 2015.

Invited: “Paleosols as the golden spike of the Maya Early Anthropocene in the Central American Neotropics” Session H32 Geoarchaeology: integrating palaeoenvironmental and archaeological records. *INQUA Congress*, Nagoya, Japan, 31 July 2015.

Invited: “Water and Climate in Southern Asia” 04-05-2015. Workshop on environmental cooperation across borders at the University of Texas in Austin, hosted by S Luzzadder-Beach and Paula Newberg.

- Beach, T., D. Cook, M. Bishop, S. Luzzadder-Beach; T. Guderjan; S. Krause. “Maya Wetland Fields from 2014 and Earlier Coring Evidence,” SAA annual Meeting, 17 April 2015, San Francisco, CA.
- Luzzadder-Beach, S., T. Beach, S. Krause, “ ‘Mayacene’ Floodplain and Wetland Formation in the Rio Bravo Watershed of Northwestern Belize” in a Special AAG Session on “New Perspectives in Paleoenvironmental Change and Geoarchaeology” April 20, 2015, Chicago, IL.
- Beach, T., and S. Luzzadder-Beach. “The ‘Mayacene’: Maya Mirror for the Americas” in a Special AAG Session on Measuring the Historic Human Impact on the Environment and Landscape. April 25, 2015, Chicago, IL.
- Beach, T. Archaeological Studies Seminar Series, University of Texas at Austin “Maya Climate over the Millennia: Implications for Archaeology” 02-16-2015
- Invited:* “Overview of the Environmental Impacts of Shale Development and some insights from Paleoclimatology.” 2014 Sheikh Abdullah Saleh Kamel Symposium titled, “An Energy Revolution? The Political Ecologies of Shale Oil in the Middle East, US and China,” Georgetown University’s Center for Contemporary Arab Studies (CCAS) 02-12-2015.
- Invited:* Beach, T. “Maya Food, Farming, and Forests: ‘Landesque Capital’ vs Land Degradation”. Crops, Water and Climate Change: What Can We Learn from the Maya? Lectures and discussion with William L. Fash, Douglas Kennett, Timothy Beach and Vernon L. Scarborough at the *Boston Museum of Science* 02-11-2015.

2014

- “Late Holocene Floodplain and Reservoir Sedimentation in Belize and Yucatan, Mexico” With S. Luzzadder-Beach and S. Kraus. Geological Society of America, Vancouver, BC, Canada 10-19-2014.
- “The Re-enchantment of Maya Wetlands in Global Contexts” UT Austin, Mesoamerican Studies Seminar 09-25-2014.
- Invited:* “The Mediterranean Environment,” Invited Presentation for the Summer Institute’s “Integrating the Mediterranean into World History: Approaches and New Teaching Resources” at the Center for Contemporary Arab Studies at Georgetown University, August 11-15, 2014.
- Invited:* T. Beach and S. Luzzadder-Beach “The Mayacene: Environmental Change and Maya Impacts on Soils and Earth Surfaces of the Maya Lowlands compared with Eastern Mediterranean Turkey”. Workshop on New Perspectives on Past Climate Change and Societal Disruption at the University of Urbino, Italy on 6-19-2014.
- Invited:* S. Luzzadder-Beach and T. Beach “Channeling Chaac: Communicating Collapse, Climate, and Complex Society through the Ancient Maya”. Workshop on New Perspectives on Past Climate Change and Societal Disruption at the University of Urbino, Italy on 6-19-2014.
- “Wetlands, Wetland Farming, and Ecological Change in Maya History and Around the World”. Invited Presentation by T. Beach to the Maya Research Program in Blue Creek, Belize on 5-30-2014.
- “You and I are only “temporarily not soil”. **Tropaia** Lecture for Professor of the Year Teaching Award in the Walsh School of Foreign Service in Gaston Auditorium on 5-16-2014.

- “Wetland Agricultural Commodities in the Maya Lowlands” by S. Luzzadder-Beach and T. Beach. Presentation at the Annual Meeting of the Society for American Archaeology at Austin, TX on 4-27-2014.
- “Maya Wetland and Floodplain Formation” Societal Stability and Environmental Change: Papers in Honor of Karl W. Butzer at the Annual Meeting of the Society for American Archaeology at Austin, TX on 4-24-2014.
- “The Mayacene: an Ancient Maya Microcosm for the Anthropocene” by Timothy P. Beach and Sheryl Luzzadder-Beach. Invited Presentation to the Workshop at the University of Texas at Austin on the Anthropocene in the Longue Durée on 4-21-2014.
- “Missions and Mentors”. Tropaia Student- Faculty Banquet Lecture in the Mortara Center on 4-21-2014.
- “A Generation in the Rainforest. Tim Beach, Cinco Hermanos Chair and Director of STIA, overviews Maya environmental history and a generation of research in his mid-career.” A Presentation to the GU Community in the McGhee Library on 4-16-2014.
- “Geoarchaeology of Maya Tropical Forest Transect”. By T.Beach; Sheryl Luzzadder-Beach; Nicholas Brokaw; Samantha Krause. Presentation at the Annual Meeting of the American Geographers in Tampa, FL on 4-10-2014.
- “The ‘Mayacene’, an Early Anthropocene Analog for Human Impacts on the Earth’s Surface.” **Keynote** Lecture at the PAGES Conference, Leuven, Belgium on 2-5-2014.
- "The Mayacene: Wetlands and Ecological Change in Maya History" **Invited** Coffee Hour Lecture at Penn State University Geography Dept. on 1-31-2014.

2013

- “Wetland and Fluvial Aggradation by Anthropogenic and Climatic Change in the Maya Lowlands”. Presentation at the Geological Society of America Meetings in Denver on 10-27-2013.
- “Four Millennia of Human Interactions with the Wetlands of the Americas”. Lecture at Syracuse University on 10-25-2013.
- "Geomorphic Impacts of Maya Civilization" Paper presented at 8th International Conference on Geomorphology of the International Association of Geomorphologists. Paris, France, 8/30/2013.
- Sheryl Luzzadder-Beach, Timothy P. Beach, Stephen Houston, Thomas Garrison, James Doyle, Jonathan Flood Steven Bozarth. 2013. "Paleoecology and Geoarchaeology in the Central Peten of Guatemala at Zotz and Palmar." Paper presented at *Association of American Geographers Annual Meeting*, Los Angeles CA. 4/10/13.
- Timothy Beach, Sheryl Luzzadder-Beach (presenter), Thomas H. Guderjan, Nicholas V. Brokaw. 2013. "Geoarchaeology and Paleoecology of Wetlands in Northwestern Belize." Paper presented at *Association of American Geographers Annual Meeting*, Los Angeles CA. 4/10/13.
- Nicholas Brokaw, Sheila Ward, Colin Doyle, Marisol Cortes-Rincon, Timothy Beach, Sheryl Luzzadder-Beach, Stanley Walling. 2013. "Consequences of Long-Term Change in the Maya Environment." Paper presented at *Association of American Geographers Annual Meeting*, Los Angeles CA. 4/10/13.

- Sheryl Luzzadder-Beach, Timothy P. Beach, Nicholas V. Brokaw, Stanley Walling, Jonathan M. Flood. "Hydrological Investigations of the La Milpa, Dos Hombres, and Chawak But'o'ob Archaeological Sites." Paper presented in Symposium 213, *Society for American Archaeology 78th Annual Meetings*, Honolulu HI, 4/6/13.
- Timothy Beach, Sheryl Luzzadder-Beach (presenter), Nicholas Brokaw, Stanley Walling, 2013. "Wetland Field Systems at Chan Cahal, Chawak, and Ojos de Agua Northwestern Belize." Paper presented in Symposium 213, *Society for American Archaeology 78th Annual Meetings*, Honolulu HI, 4/6/13.
- Douglas Kennett, Timothy Beach. 2013. Ancient Environmental Transformations and the Maya Collapse, *Society for American Archaeology 78th Annual Meetings*, Honolulu HI, 4/6/13.
- Timothy Beach, Sheryl Luzzadder-Beach. 2013. "Soil and Human Interactions in Maya Wetlands." Keynote Solicited Paper in Symposium SSS5.3 –Soil as a record of the past *European Geosciences Union General Assembly*, Vienna Austria, 4/10/13. Abstract in *Geophysical Research Abstracts: Vol. 15 2013-5007*. <http://meetingorganizer.copernicus.org/EGU2013/EGU2013-5007.pdf>

2012

- Beach, T., S. Luzzadder-Beach, 2012. An Early Anthropocene Analog: Ancient Maya Impacts on the Earth's Surface. Paper presented at *Geological Society of America Annual Meetings*, Geomorphology of the Anthropocene: The Surficial Legacy of Past and Present Human Activities, Charlotte, NC. 11-4-2012.
- Luzzadder-Beach, S., T. Beach, et al. 2012. Tracing Wetland Formation by Geological and Anthropogenic Factors in the Maya Lowlands. Paper presented at *Geological Society of America Annual Meetings*, Wetlands: Form, Function and History I, Charlotte, NC
- Luzzadder-Beach, S., T. Beach, Jonathan Flood and Scott Hutson. 2012. "Living on the Edge of the World: Hydrogeoarchaeology of the Chunchucmil and Uci-Cansahcab Maya Sites." Paper in Symposium 167 Bruce H. Dahlin Memorial Session Part 2: Adaptations and Maladaptations to Environmental Change, *Society for American Archaeology 77th Annual Meetings*, Memphis TN 4/20/12
- Flood, J., T. Beach, S. Luzzadder-Beach, S. Houston, and T. Garrison. 2012. "Paleoecology at Zotz and its Surroundings." Paper in Symposium 66, An Inconstant Landscape: Archaeological Investigations at El Zotz, Guatemala. *Society for American Archaeology 77th Annual Meetings*, Memphis TN 4/19/12
- Dunning, N., K. Tankersley, R. Griffin, T. Beach, and S. Luzzadder-Beach (Reader). 2012. "Akalche: On the Origins and Maya Use of Peten Bajo Soils". Paper in Symposium 167, *Society for American Archaeology 77th Annual Meetings*, Memphis TN 4/20/12
- Beach, T., S. Luzzadder-Beach, R. Terry, and D. Hixon. 2012. "Bruce Dahlin and Subsistence in Maya Soil Research." Paper in Symposium 167, *Society for American Archaeology 77th Annual Meetings*, Memphis TN 4/20/12
- Luzzadder-Beach, S., T. Beach, S. Walling, F. Valdez, D. Howard, J. Flood, and K. Doctor. 2012. "Tracing Paleoenvironmental Change in the Maya Lowlands: The Chawak But'o'ob and Sierra de Agua Wetland Field Complexes." Paper in Session 1501, New Perspectives to Paleoenvironmental Change and Geoarchaeology II. *Association of American Geographers Annual Meetings*, New York NY 24 February 2012.

Doctor, K., S. Luzzadder-Beach, T. Beach, and R. Resmini. 2012. "Mapping the Extent of Ancient Maya Wetland Canals using High Resolution Imagery". Paper in Session 1601, New Perspectives to Paleoenvironmental Change and Geoarchaeology III. *Association of American Geographers Annual Meetings*, New York NY, 24 February 2012.

2011

Beach, T., S. Luzzadder-Beach, and D. Howard. 2011. "Ground Water interactions in Natural and Ancient Maya Wetland Formation and Use". Paper 161-4 in Session 161-T132, The History of Humans and the Hydrologic System: Exploring Relationships between Cultures, Climate, and Hydrology through Time I, *Geological Society of America Annual Meeting*, Minneapolis MN. 11 October 2011.

Beach, T, Luzzadder-Beach, S., "Tropical Wetland Formation in Belize: Ancient Maya and Natural Interactions in the Late Holocene" INQUA Conference Bern, Switzerland, July.

Beach, T, Luzzadder-Beach, S., "Perennial Wetlands of the Ancient Maya: Testing Models of Human-Nature Interactions." AGU Chapman Conference on Climates, Past Landscapes, and Civilizations. Santa Fe, NM, March.

Beach, T, Luzzadder-Beach, S., "Soil Evidence for Use and Formation of Wetland Fields and Canals in Northern Belize." Society of American Archaeology, Sacramento, CA, April.

Beach, T. Forum Discussant: "Anthropogenic sediments as archaeological objects" Society of American Archaeology Meetings, Sacramento, CA, April.

Luzzadder-Beach, S., Beach, T., Houston, S., Garrison, T. "Investigating Water Management Structures at El Zotz, Peten." Society of American Archaeology, Sacramento, CA, April.

Luzzadder-Beach, S., Beach, T., Howard, D., Doctor, K., and Flood, J. "Tracing Ancient Human Terrain in the Maya Lowlands." AAG Annual Meetings, Seattle, WA, April.

2010

Beach, T, Luzzadder-Beach, S., "*Wetland Formation and Ancient Maya Land Uses in the Maya Lowlands.*" Paper presented at Geological Society of America Annual Meetings, Denver, CO. 11/03/10. *Nature news article:*
<http://www.nature.com/news/2010/101105/full/news.2010.587.html>

Beach, T, Luzzadder-Beach, S., "Collapse and Depressions: Maya Lowlands Transitions through the Prism of Wetlands." Paper presented at Association of American Geographers (AAG) Annual Meetings, Washington DC. 4/16/10.

Beach, T., Panelist for Panel: "Abrupt Change, Scale, 'Collapse'". AAG Annual Meetings. 4/15/10.

Co-Organizing with R. Dull, two AAG Special Sessions on "Environmental History and Geoarchaeology: Papers in Honor of Karl Butzer's 50 years in Academia" 4/26/09.

Luzzadder-Beach, S. and T. Beach (Presented by Scott Hutson, U KY), "Wetlands Agriculture Research". Paper presented at Soc. for Amer. Archaeology, St. Louis MO. 4/15/10.

Luzzadder-Beach, S. and T. Beach., "Testing Wetland Formation Models in the Maya Lowlands" Paper presented at AAG Annual Meetings, Washington DC. 4/16/10.

Dunning, N., T. Beach, D. Wahl, Sheryl Luzzadder-Beach, C. McCormick, J. Jones, "The End of the Beginning: Reflections on the Preclassic Maya Collapse" Paper presented at AAG Annual Meetings, Washington DC. 4/16/10.

2009

Beach, T., Panelist for Panel: "How to Perform Interdisciplinary Paleoenvironmental Research," Las Vegas NV, 4/25/09.

Co-Organizing with M. Benedetti and Carlos Cordova, four AAG Special Sessions Soils, Sediments, and geoarchaeology, Las Vegas NV, 26 March 2009.

Luzzadder-Beach, S., T. Beach, 2009. "Proxies of Formation and Land Use in a Maya Wetland Field Complex" Paper Presented at the Association of American Geographers Annual Meetings, Las Vegas NV, 26 March 2009. Abstract.

Beach, T., R. Terry, C. Brown, and S. Luzzadder-Beach, 2009. "Terra Preta in Maya Soils" Paper Presented at the Association of American Geographers Annual Meetings, Las Vegas NV, 26 March 2009. Abstract.

Luzzadder-Beach, S., T. Beach, 2009. "A Tale of Two Wetlands: Water Chemistry and Palaeoecological Comparisons in Northern Belize" Paper Presented at the Society of American Archaeology Meetings, Atlanta GA, 25 April 2009. Abstract.

Beach, T. and S. Luzzadder-Beach, 2009. "Models of wetland formation and management in the Maya Lowlands" Paper Presented at the Society of American Archaeology Meetings, Atlanta GA, 25 April 2009. Abstract.

2008

Co-Organizer with Paul Hudson and Karl Butzer, "Fluvial Deposits and Environmental History." 39th Annual Binghamton Geomorphology Symposium, University of Texas at Austin, 8-11 October. Presented paper and co-edited the special volume.

Beach, T., S. Luzzadder-Beach, N. Dunning, and D. Cook. 2008. "Human and Natural Impacts on Fluvial and Karst Depressions of the Maya Lowlands." Binghamton Geomorphology Meetings, Austin, TX, October 2008. Invited. Abstract and Paper in special issue, *Geomorphology*.

Co-Organizing with R. Terry and Presenting, SAA Special Session of 10 papers on Soils and Maya Archaeology, Vancouver, BC, 03-27-2008.

Luzzadder-Beach, S., T. Beach, 2008. "2006/7 Field Seasons: Modern Water Chemistry and Ancient Soils in Northern Belize" Paper Presented at the Society of American Archaeology Meetings, Vancouver BC, March 2008. Abstract.

Beach, T. and S. Luzzadder-Beach, 2008. "Soil Chemistry and Ecofacts of Wetland Fields in Belize" Paper Presented at the Society of American Archaeology Meetings, Vancouver BC, March 2008. Abstract.

Beach, T., S. Luzzadder-Beach, N. Dunning. 2008. "Wetland Formation and Land Use Responses in the Maya Lowlands." Paper Presented at 2008 Annual Meetings of the Association of American Geographers. Boston, MA. April 2008. Abstract.

Beach, T., S. Luzzadder-Beach. 2008. "Ancient Maya Wetland Fields: A New Model Based on Multiple Proxies," Presented by Elizabeth Graham at the World Archaeological Congress, Dublin, Ireland.

2007

Beach, T., S. Luzzadder-Beach, and N. Dunning. "Human and Natural Mechanisms of Wetland Change in the Maya Lowlands" Paper to be Presented at the Society of American Archaeology Meetings, Austin, TX, April 2007.

Dunning, N. and T. Beach. "Environmental Instability and Human Response in the Late Preclassic Southern Maya Lowlands." Paper to be Presented at the Society of American Archaeology Meetings, Austin, TX, April 2007.

Luzzadder Beach, S. and T. Beach. "Why Did the Ancient Maya Build Wetland Fields at Blue Creek, Belize?" Paper to be Presented at the Society of American Archaeology Meetings, Austin, TX, April 2007.

2006

Beach, T. and S. Luzzadder-Beach. Human and Natural Impacts on Ancient Maya Wetland Formation, Northern Coastal Plain, Belize. Poster Presented at the American Geophysical Union Fall Meeting, San Francisco, CA. 11-15 December 2006.

Luzzadder Beach, S., T. Beach, and D. Howard. "The Role of Water Chemistry in Wetland Morphology in Northwestern Belize", Poster presented at the 2006 American Geophysical Union Fall Meeting, San Francisco, CA. 11-15 December 2006.

Howard, D., S. Luzzadder Beach, and T. Beach. "Mapping and Morphology of Patterned Ground in the Wetlands of Northwestern Belize", Poster presented at the 2006 American Geophysical Union Fall Meeting, San Francisco, CA. 11-15 December 2006.

Beach, T. and S. Luzzadder-Beach. "Human & Natural Impacts on Landscape Aggradation in the Mayan Lowlands". Poster Presented at the Binghamton International Geomorphology Symposium, Columbia, SC. October 2006.

Beach, T., S. Luzzadder-Beach, J. Lohse, and N. Dunning. "Ancient Maya Wetland and Bajo Fields in Northern Belize: Formation and Evidence about Forest Gardens." Paper Presented at the International Congress of Americanists Meetings, Seville, Spain, July 2006

Luzzadder Beach, S. and T. Beach: "Water Chemistry Constraints and Possibilities for the Ancient and Contemporary Maya Lowlands." Paper Presented at the International Congress of Americanists Meetings, Seville, Spain, July 2006.

Terry, R., R. Sweetwood, C. Balzotti, and T. Beach. "Evidence for "Black Earths" in the Maya Lowlands" Paper Presented at the World Congress of Soils, Philadelphia, PA, July 2006.

Beach, T. S. Luzzadder-Beach, N. Dunning, and J. Jones. "Bajo and Wetland Agriculture around Blue Creek and the Three Rivers Region, Belize" Paper Presented at the Society of American Archaeology Meetings, San Juan, PR, April 2006.

Sweetwood, R., R. E. Terry, and T. Beach. "Agricultural resources of ancient rural sites surrounding Chunchucmil, Guatemala" Belize" Poster Presented at the Society of American Archaeology Meetings, San Juan, PR, April 2006.

Luzzadder Beach, S., T. Beach, and J. Lohse. "Water Chemistry and Human Impacts on Environmental Change in Blue Creek, Belize." Paper Presented at the Society of American Archaeology Meetings, San Juan, PR, April 2006.

Luzzadder Beach, S., and T. Beach. "Field Patterns of Paradise: Surface Patterns of Ancient Maya Wetland Fields." Paper Presented at 2006 Annual Meetings of the Association of American Geographers (AAG). Chicago, IL.

Beach, T. and Aysegul Vural. Geomorphology and History: Excavations of Buried Roman Roads and Deciphering Aggradation on Turkey's Mediterranean Coast." Paper Presented at 2006 Annual Meetings of the Association of American Geographers (AAG). Chicago, IL.

AAG Panel: Chicago, IL, 8 April 2006 “Prehistory, Geoarchaeology, and Paleobiogeography: Prospects for Engagement and Synthesis” (Sponsored by Cultural and Political Ecology Specialty Group, Biogeography Specialty Group, Geomorphology Specialty Group). Organized and Chaired by Robert Dull, University of Texas at Austin, and T. Beach.

AAG Panelist: T. Beach, Georgetown University, Sheryl Luzzadder-Beach, George Mason University; Karl W. Butzer, University of Texas-Austin; William E. Doolittle, University of Texas; Mark Blumler, SUNY-Binghamton; Sally P. Horn, University Of Tennessee; CHAIR: Robert Andrew Dull, University of Texas at Austin.

2005

Beach, T. Tsunami Panel: Georgetown University Institute for the Study of International Migrations: 22 January: speech and chapter on Environmental Background and Early Warning Systems, on line at: <http://www.georgetown.edu/sfs/programs/isim/Event%20Summaries&Speeches/The%20Tsunami%20Tragedy.pdf>

Beach, T. Environmental Archaeology of the Eastern Mediterranean, Turkey. Paper Presented at 2005 Annual Meetings of the Association of American Geographers (AAG). Session: “Geoarchaeology and Geomorphology I: Soils, Sediments, and the Maya.” Denver CO, 7 April.

Organized three special sessions with 14 papers on Geoarchaeology for a Special Issue of the Journal “*Geomorphology*.” Currently editing articles for journal.

Beach, T. and S. Luzzadder-Beach. “Arising from the Wetlands: 2005 Field Report on Wetland Fields and Maya Agriculture at Blue Creek Belize” Paper Presented at 2005 Annual Meetings of the Association of American Geographers(AAG). Session: “Geoarchaeology and Geomorphology I: Soils, Sediments, and the Maya.” Denver CO, 7 April.

AAG Panel: Denver CO, 8 April 2005 “Prehistory, Geoarchaeology, and Paleobiogeography: Prospects for Engagement and Synthesis” (Sponsored by Cultural and Political Ecology Specialty Group, Biogeography Specialty Group, Geomorphology Specialty Group). PANELISTS: T. Beach, Georgetown University, Sheryl Luzzadder-Beach, George Mason University; Karl W. Butzer, University of Texas-Austin; William E. Doolittle, University of Texas; Mark Blumler, SUNY-Binghamton; Sally P. Horn, University Of Tennessee; CHAIR: Robert Andrew Dull, University of Texas at Austin.

2004

Beach, T. and S. Luzzadder-Beach. Patterned Ground in Wetlands of the Maya Lowlands: Anthropogenic and Natural Causes. San Francisco, CA. Abstract in American Geophysical Union *Abstracts*. 12-17.

Luzzadder-Beach, T. Beach, J. Lohse. 2004. Geoarchaeology Field Investigation, Blue Creek, Belize. Paper presented at 2004 MAD-AAG Annual Meetings. University of Maryland-College Park MD. April 2004. Abstract in MAD-AAG Annual Meeting *Program & Abstracts*. 4-16.

Beach, T., S. Luzzadder-Beach, N. Dunning, J. Lohse. “Geoarchaeology of Wetland Agriculture in the Maya Lowlands”. Society of American Archaeology. Montreal, Canada. Abstract in 69th Annual SAA Meeting *Abstracts*. 4-1.

- Dunning, N., T. Beach, S. Luzzadder-Beach. "Maya Marvels and Mishaps: Anthropogenic Environmental Change in Context", Society of American Archaeology. Montreal, Canada. Abstract in 69th Annual SAA Meeting *Abstracts*. 4-1.
- Luzzadder-Beach, S., T. Beach, J. Lohse. "2003 Geoarchaeology Field Investigation, Blue Creek, Belize." Paper presented at 2004 AAG Annual Meetings. Philadelphia PA. March 2004. Abstract in AAG Annual Meeting *Program & Abstracts*. 3-18.
- Beach, T., S. Luzzadder-Beach, E. Akpınar. "Holocene Soil Erosion on the Southeastern Mediterranean Coast of Turkey". 2004 AAG Annual Meetings. Philadelphia PA. March 2004. Abstract in AAG Annual Meeting *Program & Abstracts*. 3-17.
- Beach, T., S. Luzzadder-Beach, E. Akpınar. "Holocene Soil Erosion on the South Eastern Mediterranean Coast of Turkey". Sponsored by International Association of Hydrologic Sciences (IAHS), International Geographical Union (IGU), and Centre Technologic Forestal de Catalunya. Solsona, Spain. Abstract published in *Conference Programme and Abstracts of the International Conference on River Catchment Dynamics: Natural Processes and Human Impacts*. 17 May.
- Beach, T., & S. Luzzadder-Beach. "Holocene Soil Erosion on the Southeastern Mediterranean Coast of Turkey." *Eastern Mediterranean/Near Eastern Geoarchaeology Meeting, hosted by University of Tubingen Department of Archaeology*. Tubingen, Germany, 5-22-23.
- Luzzadder-Beach, S., T. Beach and W. I. Woods. "Wetlands as the Intersection of Soils, Water, and Complex Human Society: Patterns in the Americas" Book Chapter presented at Wasan Island Soils and History Conference. Breuninger Foundation Support and Host, Wasan Island, Ontario Canada. 19-26 August.
- Beach, T., S. Luzzadder-Beach, W. I. Woods, and N. Dunning. "Soils and History in Meso- and North America" Book Chapter presented at Wasan Island Soils and History Conference. Breuninger Foundation Support and Host, Wasan Island, Ontario Canada. 19-26 August.

2003

- Beach, T., Nicholas Dunning, S. Luzzadder-Beach. Ancient Maya Impacts on Soils and Soil Erosion. Paper presented at 2003 Regional Geomorphology Conference, "Geomorphic hazards: towards the prevention of disasters," hosted by Mexican Society of Geomorphology, Mexico City, Mexico. 30 October.
- Beach, T., N. Dunning, and S. Luzzadder-Beach. *Soil Erosion and Paleosols in the Maya Lowlands*. Paper presented in one of four special sessions titled *Soils in Archaeological and Cultural Context* organized by the author for the Assoc. of American Geographers Annual Meeting, New Orleans, LA. March.
- Dunning, N. and T. Beach. *Soil Erosion and Paleosols in the Maya Lowlands*. Paper presented in one of four special sessions titled *Soils in Archaeological and Cultural Context* organized by the author for the Assoc. of American Geographers Annual Meeting, New Orleans, LA. March.
- Luzzadder-Beach and T. Beach. *Soil Erosion and Paleosols in the Maya Lowlands*. Paper presented in one of four special sessions titled *Soils in Archaeological and Cultural Context* organized by the author for the Assoc. of American Geographers Annual Meeting, New Orleans, LA. March.
- Bishop, R., D. Cook, and T. Beach. *Elemental Prospecting and Geoarchaeology at Cancuen, Guatemala*. Paper presented in one of four special sessions titled *Soils*

- in Archaeological and Cultural Context* organized by the author for the Assoc. of American Geographers Annual Meeting, New Orleans, LA. March.
- Beach, T., D. Cook, and S. Luzzadder-Beach. *Elemental Prospecting and Geoarchaeology at two sites in the Maya Lowlands*. Society for American Archaeology Annual Meeting, Milwaukee, WI. April.
- Beach, T., S. Luzzadder-Beach, J. Lohse, and D. Cook. *Pre-Columbian Aggradation and Ancient Maya Wetland Soils in Belize*. Second International Conference on Soils and Archaeology, Pisa, Italy, May.
- 2002**
- Dunning, N., and T. Beach. Noxious or Nurturing Nature? Maya Civilization in Environmental Context. "One Hundred Years of Maya Archaeology" Special Session at *American Anthropological Association* Annual Meeting in Washington, D.C. February.
- Beach, T. and S. Luzzadder-Beach. Environmental Change and Wetland Agriculture in Belize. Paper presented at the *Society for American Archaeology Annual Meeting, Denver, CO*. March.
- Magnoni, A., S. Hutson, S., and T. Beach. ICPAES Elemental Prospecting at Chunchucmil, Mexico. Paper presented at the *Society for American Archaeology Annual Meeting, Denver, CO*. March.
- Beach, T. and S. Luzzadder-Beach. Pre-Columbian Aggradation and Wetland Agriculture in Belize. Paper presented at the *Assoc. of American Geographers Annual Meeting, Los Angeles, CA*. March.
- Luzzadder-Beach, S. and T. Beach. Water Quality and Hydrology of Northern Belize. Paper presented at the *Assoc. of American Geographers Annual Meeting, Los Angeles, CA*. March 2002.
- 2001**
- Beach, T., N. Dunning, S. Luzzadder-Beach, and V. Scarborough. *Bajo* Soils in the Programme for Belize: Natural and Ancient Maya Impacts. Poster Paper presented at *The Lowland Maya Area: Three Millennia at the Human-Wildland Interface*, the 21st Symposium in Plant Biology, University of California, Riverside, 18-20 January.
- Beach, T. and Luzzadder-Beach, S. Soil Erosion and Geoarchaeology in the Eastern Mediterranean. Paper presented in one of four special sessions titled *Soils in Archaeological and Cultural Context* organized by the author for the *Assoc. of American Geographers Annual Meeting, New York, New York*, 3 March.
- Luzzadder-Beach, S. and T. Beach. Elemental Prospecting and Geoarchaeology in Turkey and Mexico. Paper presented in one of four special sessions titled *Soils in Archaeological and Cultural Context* organized by the author for the *Assoc. of American Geographers Annual Meeting, New York, New York*, 3 March.
- Dunning, N. and T. Beach. Fruit of the *Luum*: Lowland Maya Soil Knowledge and Agricultural Practices. Paper presented in one of four special sessions titled *Soils in Archaeological and Cultural Context* organized by the author for the *Assoc. of American Geographers Annual Meeting, New York, New York*, 3 March.
- 2000**
- Beach, T., and S. Luzzadder-Beach. Soil Erosion and Geoarchaeology in the Eastern Mediterranean. Paper presented at the *Workshop on the Long-term Effects of*

- Land-use on Soil Erosion in a Historical Perspective*. European Society for Soil Conservation. Oxford University, 15-17 September.
- Beach, T., N. Dunning, and S. Luzzadder-Beach. Environmental Change in the Bajos of the Three Rivers Region, Northwestern Belize. Paper presented at the *Society for American Archaeology Annual Meeting*, Philadelphia, PA, April 2000.
- Beach, T., N. Dunning, and V. Scarborough. Human and Natural Impacts on Depressions Soils in Northwestern Belize. Paper presented at the *Assoc. of American Geographers Annual Meeting*, Pittsburgh, PA, April 2000.
- Luzzadder-Beach, S.L., and T. Beach. Geoarchaeological Field Investigations of the Deli Çay Watershed, Southern Turkey. Paper presented at the *Assoc. of American Geographers Annual Meeting*, Pittsburgh, PA, April 2000.
- Luzzadder-Beach, S. and T.P. Beach. 2000. "Geoarchaeology around Kinet, Turkey." Poster presented at "Near Eastern Archaeology at the Beginning of the Third Millennium AD, 2nd International Congress on the Archaeology of the Ancient Near East". Abstract in Proceedings. University of Copenhagen, Denmark, May 22-28, 2000.
- Beach, T. Symposium Discussant in *Spotlight on Science at State: Where Science Fits in Foreign Policy*, AAAS Annual Meetings, Washington, DC, 2-21-00.
- 1999**
- Beach, S.L., and T. Beach. Water Resources and Pedoarchaeology of Turkey's Mediterranean Coastal Valleys. Paper presented Middle Atlantic Division, *Assoc. of American Geographers Annual Meeting*, Reston, VA. October 15.
- Beach, T. Field Report on the Pedoarchaeology of Turkey's Mediterranean Coastal Valleys. Paper presented in one of three special sessions titled *Soils in Archaeological and Cultural Context* organized by the author at the *Assoc. of American Geographers Annual Meeting*, Honolulu, HI., March 23-27.
- Dunning, N., V. Scarborough, F. Valdez, J. Jones, S. Luzzadder-Beach, and T. Beach. *Water Mountain Breakdown: Ancient Maya Landscapes in Northwestern Belize*. Paper presented in one of three special sessions titled *Soils in Archaeological and Cultural Context* organized by the authors at the *Assoc. of American Geographers Annual Meeting*, Honolulu, HI., March 23-27.
- Beach, T., J. Hageman, N. Dunning, J. Lohse, and V. Scarborough. Ancient Maya Terracing in the Three Rivers Region of Belize. Paper presented in a special session on the regional archaeology of La Milpa Belize at the *Society for American Archaeology Annual Meeting*, Chicago, IL, March 23-27.
- 1998**
- Beach, T. Soils Archaeology of Chunchucmil, Northwest Yucatán, Mexico. Paper presented at the *Society for American Archaeology Annual Meeting*, Seattle, WA, March 25-29.
- _____. Soil Catenas, Erosion, and Tropical Deforestation in Ancient Maya Landscapes. Paper presented at the *Assoc. of American Geographers Annual Meeting*, Boston, MA, March 25-29.
- 1997**
- _____. Ancient and Modern Soil Constraints on Northwest Yucatan's Development. Paper presented in one of three special sessions titled *Soils in Cultural Context* organized by the author at the *Assoc. of American Geographers Annual Meeting*, Ft. Worth, TX, April.

Dunning, N. and T. Beach. Pedo-Archaeological Investigations of Ancient Maya Landuse in Northeastern Belize. Paper presented in one of three special sessions titled *Soils in Cultural Context* organized by the authors at the *Assoc. of American Geographers Annual Meeting*, Ft. Worth, TX, April 1997.

1996

Beach, T. Maya Geoarchaeology and Geomorphic Evolution of the Celestún Peninsula, Mexico. Paper presented at the *Assoc. of American Geographers Annual Meeting*, Charlotte, NC, April 9-13.

Dunning, N., S. L. Beach, T. Beach, P. Hughbanks, and F. Valdez. Ancient Maya Soil Use and Abuse: Pedo-archaeological Investigations in the Programme for Belize. Paper presented at the *Society for American Archaeology Annual Meeting*, New Orleans, LA. April 12.

Dahlin, B., T. Beach, S. L. Beach, and D. Vlcek. The Chunchucmil Regional Economy Project, Yucatán, Mexico. Paper presented at the *Society for American Archaeology Annual Meeting*, New Orleans, LA. April 13.

1995

Dahlin, B, A. Andrews, and T. Beach. Punta Canbalam in Context. Paper presented at the 60th Annual Meeting of the *Society for American Archaeology*. Minneapolis, MN, May 3-7.

Beach, T., B. Dahlin, and S.L. Beach. Geoarchaeology of the Chunchucmil Regional Economy Project, Yucatán, Mexico. Paper presented at an Invited Symposium of the *Assoc. of American Geographers Annual Meeting*, Chicago, IL, March 15-19.

Dunning, N., T. Beach, et al. The Paleoecology of the Laguna Tamarindito, El Petén, Guatemala. Paper presented at an Invited Symposium of the *Assoc. of American Geographers Annual Meeting*, Chicago, IL, March 15-19.

Beach, S. L., T. Beach, and B. Dahlin. Ground Water Flow, Geoarchaeology, & Development in the NW Yucatán, Mexico. Paper presented at the *Assoc. of American Geographers Annual Meeting*, Chicago, IL, March 15-19.

Farrell, P., T. Beach, and B. Dahlin. Under the Roots of the Chukum Tree: A Preliminary Soil Analysis of the Chunchucmil Region. Paper presented at the *Assoc. of American Geographers Annual Meeting*, Chicago, IL, March 15-19.

1986 to 1994 (names included where coauthored)

Cycles of Erosion: The Classical Maya and the Modern Rainforest. Paper presented at the *48th International Congress of Americanists*, Stockholm, Sweden, 8-7-94.

with Dunning, N.P. Soil Erosion and Soil Conservation Practices of The Ancient Maya in the Guatemala Lowlands. Paper presented at the *Assoc. of American Geographers Annual Meeting*, San Francisco, CA, 3-30-94.

with Beach, S. L. Developing a GIS for Resource Management Questions at Archaeological Sites. Paper presented at the *Assoc. of American Geographers Annual Meeting*, San Francisco, CA, 3-30-94.

with Dunning, N.P., D. Rue, and A. Traverse. The Paleoecology of the Laguna Petexbatún, Guatemala: A Preliminary Assessment. Paper presented at *Assoc. of American Geographers Annual Meeting*, Atlanta, GA., 4-10-93.

with Dunning, N.P. Soil Erosion, Slope Management, and Ancient Terracing in the Maya Lowlands. Paper presented at the *Society for American Archaeology Annual Meeting*, Pittsburgh, 4-12-93.

- with Dunning, N.P. Erosion and Sedimentation in the Maya Lowlands of Guatemala. Paper presented at the *Assoc. of American Geographers Annual Meeting*, San Diego, CA, 4-92.
- with Dunning, N.P. Ancient Terracing and Slope Management in the Maya Lowlands. Paper at the *Assoc. of American Geographers Annual Meeting*, San Diego, CA, 4-92.
- Historical Erosion and Early Watershed Studies of Land Use and Erosion. Paper Presented at the *Assoc. of American Geographers Annual Meeting*, Miami, Florida. 4-91.
- with Dunning, N.P. Ancient Terracing and Slope Management in the Maya Lowlands. Paper at the *Assoc. of Pacific Coast Geographers Annual Meeting*, Bellingham, WA, 9-10-90.
- with Dunning, N.P. and David Rue. Ecology and Settlement in the Petexbatún Region: A Preliminary Assessment. Paper Presented at the *47th International Congress of Americanists*, New Orleans, 7-9-90.
- Comparisons of Fluvial Sediment Budgets. Paper Presented at the *Assoc. of American Geographers Annual Meeting*, Toronto, Ontario. 4-90.
- Estimating Historical Erosion in Medium Size Drainage Basins. Paper Presented at the *Assoc. of Washington Geographers Annual Meeting*, Bellingham, WA. 10-90.
- Systems of Accelerated Erosion and Sedimentation in Southern Minnesota. Paper Presented at the *Association of American Geographers Annual Meeting*, Baltimore, MD. 4-21-89.
- Geography of Floodplain Sedimentation in Three Southern Minnesota Stream Valleys. Paper Presented at the *Assoc. of American Geographers Annual Meeting*, Phoenix, AZ. 4-88.
- Historical Soil Erosion in Southern Minnesota. Paper Presented at the *Pacific Coast Geographers Meeting*, San Diego, CA. 9-88.
- Empirical Data on Sedimentation in Southeastern Minnesota. Paper Presented at the *Assoc. of American Geographers Meeting*, Portland, OR., 4-87.
- Sedimentation and Soil Surveys in Southeastern Minnesota. Paper Presented at the *Pacific Coast Geographers Meeting*, Davis, CA., 9-86.

Selected Grants Since 2003

- 2019-21. National Science Foundation- BCS Archaeology. Award # 1821932. Timothy Beach, Senior Personnel, Co-Director of Paleoenvironmental Investigations. (PI: T. Garrison, Ithaca College). "Military Origins of Middle America." Total Funded: \$137,575. UT Portion: Field Research Travel for 2 faculty, and Lab Analyses for 2 years. Performance Period: 9/1/18-8/31/21.
- 2019-21. National Endowment for the Humanities. Timothy Beach, Senior Scientist, Paleoenvironmental Specialist. (Director: S. Houston, Brown U.; Co-Director: T. Garrison, Ithaca College) "Citadels and Surveillance: State Defense of the Classic Maya Fortresses of La Cuernavilla." Total Funded: \$217,026. UT Portion: Field Research Travel for 2 faculty, and Lab Analyses for 3 years. Performance Period: 5/1/19-12/31/21.
- 2018-20. Australian Research Council. Timothy Beach, Partner Investigator (co-PI). (Chief Investigators/PI's: Dan Penny, Sydney University and Duncan Cook, Australian Catholic University; Partner Investigators/co-PI's: S. Luzzadder-Beach UT, L. Graham U.C. London, D. McGee MIT, Q. Hua, ANSTO). "Disruption and

- persistence: resolving the Maya climate-collapse hypothesis.” Amount awarded: 2018: AUD\$104,000; 2019: AUD\$50,000; 2020: AUD\$58,846. Total funded: AUD \$208,846 (=USD \$158,263.) UT Portion; field and lab support for 2 faculty. Performance Period: 1/1/18-12/31/20.
- 2017- UT Austin VP for Research. Bridging Barriers Research Initiative. “Planet Texas 2050: Planning for a Resilient Texas.” **Participating Investigator**. (Principal Investigators: J. Banner, M. Corsi, H. Houser, K. Lieberknecht, A. Rabinowitz, L. Rodriguez, M. Young). Initial Funding: \$1 million for 2018. Participating in 3 sub-themes: Past Societies; Urban Watershed Evolution; and Communications, Arts, & Culture. Total Internal Funding: \$7 Million over 5-7 years
- 2011-2014 *National Science Foundation- GEO- Dynamic Coupled Natural-Human Systems #1114947*. “CNH-Ex: The Collapse of the Ancient Maya: Multi-Disciplinary Research on Society and the Environment” **Tim Beach Senior Scientist** (PI: Nicholas Brokaw, Univ. of Puerto Rico; Co PIs; Marisol Cortes-Rincon Humboldt State; Sheryl Luzzadder-Beach GMU; Stan Walling Com. Coll. Philadelphia; Sheila Ward UPR). Total Budget: \$249,770.00.
- 2011-2015 *National Science Foundation- BCS- Archaeology - # 1063691*. “Collaborative Research: Uci-Cansahcab Regional Integration Project” (Yucatan, Mexico) **Tim Beach, Co PI**; (PI S. Luzzadder-Beach; Collaborative with Scott Hutson, PI, University of Kentucky, and PI Richard Terry, BYU) Amount Awarded: \$ 27,778 (GMU, transferring to U TX Austin).
- 2009-2014 *National Science Foundation- BCS- Geography Grants*. Principal Investigator. BCS 0924510 “Collaborative Research: Perennial Wetland Formation and Human Adaptation in NW Belize” Awarded 09/11/2009, continuing thru 02/28/2012. **PI T. Beach**, Collaborative with George Mason U. (Luzzadder-Beach PI, 0924501) Total Collaborative budget: \$322,481.00.
- 2009-2011 *National Science Foundation- BCS-Archaeology Grants*. Award # 0840930. Senior Scientist, Co-Director of Environmental Studies. (PIs: Stephen Houston, Tom Garrison, Brown U.). “Landscape Succession in Lowland Maya Archaeology.” Submitted 1 July 2008. Awarded November 2008. Budget Awarded to Brown U.: \$247,664.00. GMU Portion: ~\$12,000.00 (Lab support + field travel expenses).
- 2008 National Geographic Grant, Co-PI with S. Luzzadder-Beach, and T. Guderjan “Excavation and analysis of a well-preserved ancient Maya fieldhouse associated with ancient ditched field agricultural systems at the Classic Maya city of Blue Creek, Belize.”
- 2007 Georgetown University (GU) School of Foreign Service (SFS) Summer Grant (\$7,500) for Soil Research in Belize and Turkey.
- 2007 National Science Foundation, Archaeology, Collaborator with Bruce Dahlin, Howard University and Amy Frappier, Boston College.
- 2006 National Science Foundation, Geography. *Petén Bajos*. Collaborator with N. Dunning, University of Cincinnati, PI.
- 2006 National Science Foundation, Geography. Binghamton Geomorphology Symposium, Co-PI with P. Hudson and K. Butzer, University of Texas Austin.
- 2006 FAMSI Grant (\$5000) for Cave Studies in Belize, Collaborator with Dr. Jon Lohse, U New Mexico.
- 2006 Georgetown University (GU) School of Foreign Service (SFS) Summer Grant (\$7,500) for Soil Research in Belize and Mexico

- 2005 National Geographic Society Grant (\$19,500) PI: "Environmental change in the wetlands of northwestern Belize."
- 2005 GU SFS Fall Grant with J. McNeill (\$5,000) for Illustrations for Environmental History book: *Soils and Societies*
- 2005 GU SFS Summer Grant (\$6000) for Soil Research in Turkey
- 2003-2004 National Science Foundation Grant for Chunchucmil Project, Yucatán, Mexico. Contributor with Bruce Dahlin, Howard University, & Tracy Ardren, Florida State University.
- 2003-2005 National Science Foundation Grant for Mayapan Project, Yucatán, Mexico. Contributor with Marilyn Masson, SUNY Albany.
- 2004 GU SFS Summer Grant (\$5000) for Soil Research in Turkey
- 2003 National Geographic Society Grant (\$18,900) PI: "Environmental change in the wetlands of northwestern Belize."

Selected Field Work since 1991

Guatemala 1991-2020: Petexbatun, Punta de Chimino, Antigua, and Cancuen Archaeology Projects with Drs. A. Demarest or Eugenia Robinson, Project Directors Mexico; El Zotz Project with Drs. Stephen Houston and Tom Garrison; Mexico 1994-2018: Yucatán, **Mexico 1994-2020:** Chunchumil, Pakbeh, Mayapan, Motul, and Tabasco Projects, with Drs. B. Dahlin, A. Andrews, M. Masson, S. Hutson, T. Inomata Directors; **Belize 1995-2020:** Three Rivers and Boston University Projects, Program for Belize; Maya Research Program, Blue Creek, Drs. F. Valdez, N. Hammond, J. Lohse, or T. Gudderjan, Directors; **Colombia**, 2015 with Dr. Mike Smyth; **Turkey** 1996-2012: Alanya, Kinet, Pisidia Projects, Mediterranean Turkey, Drs. M. H. Gates, S. Redford, and L. Vandeput, Directors; **Nicaragua 2009:** with Dr. Clifford Brown, Director; **Germany** 2000: Leipzig Environmental Research Center: Coal Mine Restoration; **Syria** 1996: Jabbul Project, Dr. G. Schwartz, Director; **Iceland 2007, 2012, 2015, 2017;** **Peru** 2017; **Italy (Rome and Sicily) 2017-2019.**

Selected Invited Lectures before 2014

Syracuse University: *Four Millennia of Human Interactions with the Wetlands of the Americas*

Carleton College Humanities Center: *Environmental History of the Maya*

Brown University, Anthropology: *Maya Wetland Formation and Management*

Cornell University, Geosciences: *Maya Marsh Models*

University of Pennsylvania, Geosciences: *Maya Wetland Formation*

University of Maryland, Geography: *Soils and Geomorphic Change in the Maya World*

University of Delaware, Geography: *Maya Wetland Formation and Ancient Human Use*

University of Texas, Geography: *Wetlands and Geomorphic Change in the Maya World*

Brigham Young University, Soils: *Soils in the Maya World*

University of Kansas, Environmental Studies: *Jared Diamond's Maya Collapse*

Georgetown University, Environmental Studies and Biology: *Many Topics*

Georgetown University, Qatar Campus, International Affairs: *Global Warming*

George Washington University, Geography: *Geoarchaeology in Turkey*

Leipzig University, Germany, Geography: *Geoarchaeology of the Maya*

Leipzig Environmental Research Center, Germany: *Coal Mine Restoration*

Bilkent University, Ankara, Turkey, Archaeology: *Geoarchaeology of Issos*

Koc University, Istanbul, Turkey, Archaeology and History: *Many Topics*
Pre-Columbian Society of Washington, DC
EPA Washington, DC
USGS, Reston, VA.
Foreign Service Institute, Arlington, Virginia: *Many Topics*

IV. Teaching/ Courses Overview

Graduate Advisees at UT Austin

Doctoral

Jonathon Flood (second Adviser; 2017; Park Archaeologist Skagway National Park)
Samantha Krause (Adviser, 2018; Assistant Professor Tx St. U)
William Delgado (Adviser, ABD 2020)
Colin Doyle (Adviser, ABD 2019)
Greta Wells (second Adviser, ABD 2018)
Anais Zimmer (Adviser, ABD 2020)
Sara Eshleman (Adviser) (Comps 2020)
Leila Donn (Adviser) (Comps 2020)
Byron Smith (Adviser)
Will Pratt (Co-adviser)

Masters

William Delgado (Co-Adviser 2017)
Colin Doyle (Co-Adviser 2017)
Greta Wells (second adviser 2016)
Leila Donn (Adviser 2018)
Sara Eshleman (Adviser 2018)
Jedidiah Dale (Adviser 2020)
Danielle Ruffe (Co-Adviser 2021)

Graduate Committees at UT and Elsewhere

Moulay M. Sounny-Slitine, Ph.D. Candidate, UT Austin Geography
Sisimac Duchicela, Ph.D. UT Austin Geography (ABD 2018)
Lara Sanchez Morales, Ph.D. Candidate, UT Austin, Anthropology
Camille Weinberg, Ph.D. Candidate, UT Austin, Anthropology
Patricia Neuhoff, Ph.D. Candidate, UT Austin, Anthropology
Fatemeh Ghareri, Ph.D. Candidate, UT Austin, Anthropology
Lily Serach, Ph.D, Candidate, UT Austin, in Geosciences
Zachary I. Phillips, Ph.D. Candidate, UT Austin, Integrative Biology
Max Sherrard, Ph.D., UT Austin, STEM Education
Blaise Murphy, Ph.D. UT Austin Geography (Comps 2020)
Ryan Wallace, Ph.D., UT Austin, Science Journalism (Comps 2020)
WM van der Meij, Ph.D., Wageningen University, NL (2020, July)
Margaret Kathleen Clark, Ph.D., UT Austin, Classics (2019, July)
Clark Alejandrino, Ph.D. Georgetown University History (2019)
Robert Bean, Ph.D. UT Austin Geography (2018)
Jinok Lee, Ph.D. UT Austin, Anthropology (2018)

Luisa Aebersold, Ph.D. UT Austin, Anthropology (2018)
Tegan Lee Hall, Ph.D in Geosciences, University of Sydney (2017)
Xiwei Guo, Master's UT Austin Geography (2017)
Douglas Howard, Ph.D., George Mason University (2008)
Aysegual Vural, Master's Bilkent University, Turkey, Archaeology (2007)
George Vrtis, Ph.D. Georgetown University History (2006)
Ezgi Akpinar, Master's Bilkent University, Turkey, Archaeology (2004)
Charles Conrad, Ph.D. University of Georgia, Geography Climatology (1993)

Undergraduate Advising of Students using the Soils and Geoarchaeology Lab

Labree Dotson, 2021, Environmental Science BS
Samuel C. Gonsoulin, 2021, Environmental Science BS
Carolyn Henein, 2021, Chemistry BS; The Polymathic Scholars Honors Program
Sophia LeBlanc, 2021, Environmental Science BS
Fernando Casal, 2020, Geography Honors; advising thesis
Clarice Norton, 2019, Geography Honors; advised thesis titled: "Performing LiDAR data point reduction using hyperspectral imaging"
Bailey Anderson, 2016, Geography and COLA Honors; advised thesis and successful Marshall Scholarship
Thesis: "An Analysis of Alaskan Flood Stages Using Stationary and Non-Stationary Flood Frequency Analysis Methods"
Kira Holland, 2017, Geography and Geology; advised Honors thesis
Thesis: "Characterizing Lake Sediment Records as an Indicator of Environmental Change, Vardeborgsletta, Western Spitsbergen"
Daniela Pachon Florez, 2017, Environmental Science; advised thesis
Kathryn Latour Elston, 2017, Environmental Science; advised thesis
Katherine Bui, 2018, Environmental Science; advising thesis
Erica McCormick, 2018 (Plan II and EVS): Advising and research experience in Soils lab
Fernando Casal, 2018 (Geography): Advising and research experience in Soils lab

Teaching Evaluation for all 50+ GU courses, Question # 5 "Overall evaluation of instructor": Median for all courses: 4.9 out of 5; Mean: 4.89; and Mode: 5 (17 courses ranked 5 out of 5).

Courses Prior to Georgetown University

1. Introduction to Soils; 2. Physical Geography; 3. Conservation; 4. World Affairs; 5. Geomorphology; 6. Climatology; 7. Human Geography
- 1993--2014 Courses, School of Foreign Service, Georgetown University
8. STIA 102: Introduction to Environmental Science
9. STIA 312: Atmosphere, Climate, and Global Change
10. INAF 429: Natural Resources Conservation, Policy, and Management
11. INAF 449: Seminar: Environmental Change
12. STIA 362: Environmental Hydrology
13. STIA 311: Environmental Geomorphology
14. STIA 408: Seminar: Environmental Restoration and Reconstruction
15. STIA 414: Seminar: Water in the Global Environment Seminar
16. STIA 368: Transboundary Water Issues in the Middle East
17. STIA 310: Environmental Archaeology

18. INAF 100: SFS Freshman Proseminar: Environment, Science, and World Affairs
 19. STIA 377: Environments of the Mediterranean (Teaching in Turkey)
 20. STIA 378: Environments of the Mediterranean Laboratory (in Turkey)
 21. STIA 329: Global and Local Food and Farming Systems
 22. STIA 202: Climate and History
 23. STIA 497: The Environmental History and Paleoecology of the Maya Courses at UT Austin
 24. GRG 396T: Seminar in Soil Geomorphology
 25. GRG 396T: Seminar on the Geoarchaeology of Mesoamerica
 26. GRG 333K: Climate and Humanity: Past and Future
 27. GRG 396T: Wetlands: Earth System Science and History
 28. GRG 396T: Seminar on Long-Term Climate Change and History
 29. GRG 350/LAH 356: Honors Global Sustainability and Soil
 30. GRG 382: Seminar on Geoarchaeology and Environmental History
- Field teaching and mentoring hundreds of students from the UT Austin (COLA, Geosciences), GU (College, SFS, Graduate School, and the School of Nursing and Health Studies) to do research in Mexico, Belize, Guatemala, Turkey, and Germany from 1994 through 2019. These field projects were funded by competitive grants from the NSF, NGS, GU's Center for the Environment, and SFS Office of the Dean. These teaching experiences came from environmental field research into soil, hydrology, geomorphology, conservation, paleoecology, and geoarchaeology. Each student was in an intense learning and research experience for two to four weeks as a field application to STIA courses they had with Prof. Beach. These included studying real examples of natural phenomena first presented by multiple media in courses. Activities include reconnoitering for research sites and studying stratigraphy of sediments, sampling and testing water and soil, mapping, and sampling for fossils and artifacts that help recreate the processes of landscape formation. Students also live and work in a field camp where they gain direct exposure to and here lectures from many expert scientists from universities around the world. They also learn how to catalogue, store, preserve hundreds of samples, and deal with foreign officials.

V. Service

Selected Media

Periodic Adviser to *Newsweek*, the *BBC*, *Voice of America*, and *The History Channel*.

Many media appearances

2010. **Nature** | doi:10.1038/news.2010.587 | Published online 5 November 2010 |

"Mayans converted wetlands to farmland: The sophistication of the civilization's agricultural systems rivalled their pyramids" Reported by: Amanda Mascarelli. (Based on Beach & Luzzadder-Beach GSA Paper, Presented 11/3/10 in Denver CO.) <http://www.nature.com/news/2010/101105/full/news.2010.587.html>

2010. **The Diane Rehm Show**. Earthquake Hazards around the world 3/2/2010.

2010. **Earth and Sky Interview and Podcast**: <http://earthsky.org/food/tim-beach-google-earth-view-of-ancient-mayan-argiculture>

2012. **VoiceAmerica Radio Interview** | Sheryl Luzzadder-Beach and Timothy Beach "Who Were the Ancient Maya?" | Broadcast on the 9/12/12 episode of "*Indiana Jones*:"

Myth, Reality, and 21st Century Archaeology" Interviewed by: Dr. Joseph Schuldenrein, geoarchaeologist.

2012. **Physics Today** | *Down to Earth*, Daily Edition | Published online 24 August

2012 | "The Old Maya and the Sea" Reported by: Rachel Berkowitz. (News item on Luzzadder-Beach, Beach and Dunning 2012 PNAS

Papers) http://www.physicstoday.org/daily_edition/down_to_earth/the_old_maya_and_the_sea

2015 **PNAS** <http://blog.pnas.org/2015/10/journal-club-maya-altered-their-environment-significantly-for-better-or-worse/>

2015. **Voice of America Radio Interview and Youtube podcast** | Timothy Beach and Sheryl Luzzadder-Beach "Ancient Mayan Civilization Adapted to Climate Change" |

Broadcast/posted on 9/17/15. Interviewed by: Greg Flakus, VOA

Reporter. https://www.youtube.com/watch?v=TWj_4jmhTzk

2017. Vatican Lecture:

http://www.pas.va/content/dam/accademia/booklet/booklet_extinction.pdf

2018. **AAAS Meeting Press Briefing**. Sheryl Luzzadder-Beach, Juan C. Fenandez-Diaz, Chris Fisher, Timothy Beach. "Airborne Mapping Reveals a Far More Populated pre-Columbian Mesoamerica." Reported by Kathleen O'Neill, AAAS. 2/15/18.

<https://www.aaas.org/news/airborne-mapping-reveals-far-more-populated-pre-columbian-mesoamerica>

2019 Beach, T. et al. Ancient Maya wetland fields revealed under tropical forest canopy from laser scanning and multiproxy evidence. *Proceedings of the National Academy of Sciences*. 116(43):21469–21477.; SI online pp. 1-8. DOI:

10.1073/pnas.1910553116. (covered in 50 media features in 10 countries). 10/22/19.

Scores of National Sessions Organized at AAG, SAA, and GSA on Soils, Geomorphology, and Geoarchaeology

Hundreds of Conferences Papers with Abstracts in Geography, Geology, Soils, and Archaeology

Reviewing and Editing

External Tenure and Promotion Reviewer for Geomorphologists, Ecologists, Cultural Ecologists, Archaeologists, and Paleoecologists: UCLA, University of Delaware, Virginia Tech, University College London, Koch University, Istanbul, Texas State University, UC Santa Barbara, University of San Francisco, University of Connecticut, University of Colorado, Australian Catholic University, University of Iowa, Arizona State University, West Virginia University, University of Nevada, Bishops University Quebec, Skidmore College, University of Cincinnati, University of New Mexico, LSU, MIT, Penn State, University of Pittsburgh, University of North Carolina, University of Georgia
Editorial Board for the *Anthropocene*, Elsevier Journal; *Frontiers in Earth Science*
Shanghai Archaeology Forum Advisory Committee, Corresponding Member. Invited. 2017-pres.

Chaired: several successful Senior and Junior Faculty hiring and Promotion and Tenure committees

National Science Foundation: many reviews and panels

National Geographic Society: many reviews

Time Life Books on Geography and Environmental Science
Oxford University Press

Peer-Reviewed Journal Reviews: Quaternary Research, Nature, Science, PNAS, Quaternary Science Reviews, The Geographical Review, Geology, Geomorphology, Geoderma, The Holocene, Land Degradation and Development, Annals of the Association of American Geographers, Third International Conference on Geomorphology, Physical Geography, Journal of Archaeological, Soil Science Society of America Journal, Ancient Mesoamerica, Latin American Antiquity, Geoarchaeology, Paleo³ (Paleogeography, Paleoclimatology, Paleoecology), USDA Agriculture Research Service Bulletin, The Professional Geographer, The Arab World Geographer, The Journal of Arid Environments, Current Anthropology, and many more.

University and Professional Service

Director and Founder of the Soils and Geoarchaeology Laboratory, UT Austin
Environmental Science Program Advisor for UT Geography & the Environment

Editorial Boards: Anthropocene, Frontiers in Earth Science

Bridging Disciplines Program's Environment & Sustainability Faculty Panel

Texas 2050, Bridging Barriers: Active on three Committees 2017

Co-Author of UT Austin Cluster Hire 2019: "Climate extremes: decision making under uncertainty" with Geosciences, LBJ, Business, Economics, and Engineering; accepted to second round.

Co-Author of UT Austin Cluster Hire 2019: "Maya Archaeology, Environment and Religion" with the Mesoamerican Center, Religious Studies, and LLILAS; successful.

COLA Promotion and Tenure Committee, 2016-2018

GRG Graduate Studies Committee Chair, 2014-2018

GRG Graduate Studies and Admissions Committee, 2014-present

GRG Merit Review Committee, 2014-2017, 2018, 2019

AMQUA Councilor Terrestrial Geoprocesses <http://www.amqua.org/index.php?id=8>

Honors Committee of the Geomorphology Specialty Group of the AAG

Treasurer, Chair AAG Geomorphology Specialty Group

Chair, AAG, Paleoenvironmental Change Specialty Group

<http://www.aagpec.com/boardmembers>.

Chair elect 2019, Geological Society of America, GSA Soils and Soil Processes Division
Society for American Archaeology (SAA) Program Committee 2019

Directing Georgetown's Environmental Studies, 1999-2007 and STIA 2009-2010 and 2013-2014, Responsibilities:

Overseeing budgets; Hiring and overseeing 7-10 adjunct instructors and assistants;
Development

Organizing ten or more guest lectures, panels, and other events per annum; Advising majors and minors; Developing courses and curriculum

Memberships in Professional Organizations

American Association of Geographers

American Association for the Advancement of Science

American Geophysical Union

Geological Society of America
Society for American Archaeology
Soil Science Society of America