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**Lake Izabal Basin Research Endeavor (LIBRE)
Workshop**



The Lake Izabal Basin in eastern Guatemala developed along the Polochic Fault, the northern fault of the Polochic-Motagua Fault System (PMFS), the onland extension of the North American and Caribbean plate boundary. In 1976, the plate boundary ruptured in a 7.5 M_w earthquake, killing >23,000 people and causing catastrophic damage to homes and other infrastructure in Guatemala. Despite sharing characteristics with the North Anatolian, San Andreas, and Dead Sea faults, relatively little is known about this plate boundary. The Izabal Basin developed ~12 My ago and has accumulated >4 km of sediment because of continuous sinistral movement along the Polochic Fault. Presence of the northern strand of the Polochic Fault along the north shore of Lake Izabal, along with the thick sediment cover, make the site ideal for multidisciplinary study of past tectonic, climatic, volcanic, and biological changes in the area. We propose a drilling project (LIBRE) with two main objectives. First, we will drill, log, and core the Polochic Fault to investigate the loading state of the fault and assess seismic risk. Second, we will target the progradational infill of the Lake Izabal Basin along the depocenter migration axis, with the goal of recovering overlapping cores that contain a record spanning at least 1, and possibly as much as 5-10 My. Data from the cores will provide information about climate in the Neotropics over multiple glacial-interglacial cycles, the origin, extinction and migration of species in the area, and volcanic activity along the Central American volcanic arc.

Members of the international scientific community are invited to attend a scientific drilling workshop, funded jointly by the International Continental Scientific Drilling Program (ICDP) and the US National Science Foundation (NSF). The aims of the workshop are: 1) to develop a detailed scientific plan and formulate questions that can be addressed by drilling the Polochic Fault and the depocenter of the Lake Izabal Basin; and 2) to develop ideas and collaborations for future proposals to fund drilling. We will also address logistical challenges associated with the proposed drilling project. The first workshop goal is to discuss creation of a fault observatory that will lead to a better understanding of: 1) the loading state and seismogenic depth of the fault, 2) the spatial and temporal evolution of the state of stress, and 3) the fault's relation to the proposed fault switch activity with the southern Motagua Fault. The second goal is to discuss the importance of drilling the progradational infill of the strike-slip basin to provide a sedimentological record that will enable investigation of: a) climate over multiple glacial-interglacial cycles; b) rates of origin, extinction and migration of species during the Quaternary, which gave rise to the main ecosystems that occupy the area today; and c) volcanic activity along the Central American volcanic arc since the Pliocene.

The workshop will be held in Antigua, Guatemala, 2-5 August 2020, with an optional field trip to Lake Izabal from 5-8 August 2020. The workshop is convened by Jonathan Obrist-Farner, Andreas Eckert, Peter Douglas, Mark Brenner, Jason Curtis, Caroline Burberry, Liseth Perez, Carlos Jaramillo, Isabelle Domaizon, Alex Correa-Metrio, Nigel Wattrus, Paul Mann, Stephen Gao, Francisca Oboh-Ikuenobe, Tripti Bhattacharya, Susan Zimmerman, and Emanuele Lodolo.

Partial and full travel funding is available for a limited number of participants, thanks to the support of ICDP and NSF. To apply, please send a 1-page CV and a statement of interest in the workshop to obristj@mst.edu. The application deadline is 15 February 2020. We request that individuals who plan to attend the workshop, but do not require travel assistance, also submit a statement of interest to obristj@mst.edu by 15 February 2020. Early applications are encouraged, to better enable workshop planning. Early career scientists are strongly encouraged to apply and help shape what will be a long-term project; preference will be given to scientists from ICDP member countries.