



Paleoclimate, Paleoenvironment, and Paleoecology of Neogene Central America: Bridging Continents and Oceans (NICA-BRIDGE)

An International Continental Scientific Drilling Program (ICDP) Workshop
Montelimar, Nicaragua, 2nd-5th March 2020

Lakes Nicaragua and Managua lie in a trench-parallel half graben that formed since the Pliocene and hosts a Quaternary volcanic arc. The lakes are ideally suited for multidisciplinary scientific investigation of long, continuous sediment profiles because of their: 1) long records (several Ma) of terrestrial and related marine basin development at the southern Central American margin, 2) alternating lacustrine and marine environments, 3) proximity to both the older and the younger volcanic arcs, separated by slab rollback, 4) significance as a hot spot for biological endemism, and 5) strategic location for study of the great American biotic interchange. The proposed project will combine seismological, volcanological, paleoclimatological, paleoecological, and paleoenvironmental studies on land and in the ocean. The Sandino Basin, offshore Nicaragua, is the oceanic continuation of the depression in which the lakes are located, and will be targeted for a second, seagoing drilling phase of the project to understand the evolution of the entire complex margin.

We anticipate collecting the oldest lacustrine records in the continental Neotropics, which will enable (a) development of a long Neotropical environmental and paleoclimate record, (b) determination of the times and rates of marine transgressions and regressions, their tectonic and climatic controls and ecological consequences, (c) investigation of recurrence rates and magnitudes of natural hazards, (d) identification of constraints on the timing and magmatic compositional changes during shifts of the volcanic arc, (e) exploration of linkages between long-term terrestrial and marine paleoenvironmental records, (f) assessment of ancient basin development and the deeper structure of western Nicaragua, and (g) study of climatic, geologic and anthropogenic influences on biodiversity and limnological variables, and consequent effects on micro- and macrobiota. We envision a long-term, two-phase project in the region. Phase I will include drilling up to 100-m-long cores, provide pre-site survey data for deep drilling, and confirm the feasibility of achieving the scientific goals in the second, deep-drilling phase. Phase II will also involve IODP drilling of the marine Sandino Basin. Complementary investigation of lacustrine and marine records will be invaluable to achieve scientific goals related to margin structure and basin evolution.

The workshop will be held in Montelimar, Nicaragua, 2-5 March 2020, and will include a field trip to Lake Nicaragua and nearby volcanoes. The workshop agenda will include plenary and working-group discussions, covering drilling targets, scientific goals, the two-phase amphibious drilling strategy and related science plans, *in situ* investigations, core analyses, scientific collaborations, as well as operations, logistics, funding and permitting. The workshop is convened by Steffen Kutterolf, Mark Brenner, Armin Freundt, Jens Kallmeyer, Sebastian Krastel, Sergei Katsev, Axel Meyer, Liseth Pérez, Juanita Rausch, Armando Saballos, and Wilfried Strauch.

Scientists wishing to contribute to this workshop are invited to submit an application with contact details, a 1-page CV, and a 1-page summary of their relevant expertise and intended project contribution to Steffen Kutterolf (skutterolf@geomar.de) prior to Dec 11, 2019. A scientific committee will decide on invitations and travel support (fully or partially) taking into account the relevance of the applicants' research relevant to the goals of the workshop, the workshop budget, and the need for balanced disciplines. Early career scientists and scientists from ICDP member countries are encouraged to apply.

