Digging into Easter Island's climate history

May 3 2018

Nicholas Balascio and James Van Hook admiring Rano Kau while hiking out with one of many sediment cores. Credit: William D'Andrea at LDEO

During March, a team of scientists led by William D'Andrea, associate research professor at Columbia University's Lamont-Doherty Earth Observatory, travelled to Rapa Nui (Easter Island) to work on a major

research project in the island's most important wetlands. The collaborative field team also included Lamont-Doherty's Lorelei Curtin; Andrea Seelenfreund from Chile's Universidad Academia de Humanismo Cristiano; Nicholas Balascio and James Van Hook from the College of William and Mary in Virginia; and Raymond Bradley from University of Massachusetts Amherst.

The team successfully collected sediment cores from the wetlands of Rano Kau, Rano Raraku, and Rano Aroi, recovering geologic records that likely span the past 30,000 years on Rapa Nui and which will be used to examine various aspects of climatic, environmental, and human land-use history.

Water is a precious commodity in Rapa Nui, and demands from agriculture, animal husbandry, and human needs—exacerbated by the island's growing tourism industry—are increasing every year. There is already evidence that water availability on the island has varied considerably in past millennia due to natural variations in the climate of the Pacific. Today, the lake at Rano Raraku, the famous quarry from which the ancient Rapanui people carved iconic moai statues, is completely dried up and the lakebed is exposed. This dramatic change occurred only in the past year or two – previously the lake was a site of an annual local competition that involved swimming and boating. Sadly, this competition had to be relocated to the ocean this year due to the desiccation of the lake.

How often in the past has this lake dried up? Has it ever been deeper than it was in historical times? Is the drying of the lake at Rano Raraku and greater Rapa Nui a result of anthropogenic climate change, or is this a temporary situation due to short-term climate variations? The researchers will use the sediments from the lakes, which accumulate year after year like pages of a book, to address these questions, as well as to examine the climate conditions experienced by the ancient Polynesians

of Rapa Nui.

The samples will ultimately be analyzed at the Lamont-Doherty Earth Observatory of Columbia University for molecular evidence of past climate and environmental change. Analyses will focus on lipid biomarkers that can be used to quantify past changes in precipitation and human-landscape interactions.

The cores were collected with the support of Ma'u Henua (Rapa Nui's community administrating the National Park), Chile's Forest Service, the National Monument's Council, and Isla de Pascua's Technical Department of Heritage.

This field campaign is possible due to funding from the Center for Climate and Life of Columbia University, the Vetlesen Foundation, the Explorers Club of New York, and the College of William and Mary Reves Center for International Studies.

This story is republished courtesy of Earth Institute, Columbia University http://blogs.ei.columbia.edu.

Provided by State of the Planet