Study of past climate change in Pacific Northwest lakes may presage future drought

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Members of Abbott's team head out onto Fish Lake in Utah in order to take sediment cores of the lake bottom for the recently published drought history study.

(Phys.org) —Sorting through oxygen isotopes in muddy sediment at the bottom of 10 Pacific Northwest lakes has led a research team including University of Pittsburgh scientists to conclude that droughts in that region match natural regional warming for various periods over the past 2,000 years.

The team—which includes Mark Abbott, professor and chair of Pitt's Department of Geology and Planetary Science in the Kenneth P. Dietrich School of Arts and Sciences, and Pitt alumnus Byron Steinman (A&S '11), now a postdoctoral fellow at Penn State—says in a paper published in *Geophysical Research Letters* online on April 14 that tying long-ago droughts to protracted natural climate change may show us what can be expected as man-made climate change warms the Earth.

Abbott and Steinman, along with their collaborators, took cores from the lake bottoms that penetrated into the lake mud as much as 30 feet. They measured the sediments that contain limestone for two oxygen isotopes—Oxygen 16 and Oxygen 18. Oxygen 18, the heavier of the two, is known to be present in greater abundance during periods of drought.

"This work contributes to our understanding of how the climate system has worked in the past with the goal of improving our ability to predict future droughts," Abbott says. "And this knowledge should give us a better idea of how often droughts might occur in the future as the climate system changes."

He also noted that the United Nations Intergovernmental Panel on Climate Change recently released its 2014 report, which predicts dire consequences, including drought, as a consequence of rapidly advancing man-made climate change.

More information: Steinman, B. A., M. B. Abbott, M. E. Mann, J. D. Ortiz, S. Feng, D. P. Pompeani, N. D. Stansell, L. Anderson, B. P. Finney, and B. W. Bird (2014), "Ocean-atmosphere forcing of centennial hydroclimate variability in the Pacific Northwest," *Geophys. Res. Lett.*, 41, DOI: 10.1002/2014GL059499.

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