Paleoclimate Initiative

As the consequences of ongoing climate change are becoming manifest around the globe, it is increasingly apparent that understanding how Earth's climate responds to external forcing is vital for human society, habitat preservation on land and in the oceans, water and food supplies, and global and national security. Accurate prediction of future climatic effects requires not only modeling of the present-day Earth system, but also a quantitative reckoning of how climate has changed in the past. Paleoclimate research provides critical, fundamental constraints on how local, regional, and global temperature and rainfall patterns have changed over time and how they might change in the future.

A focus area in paleoclimate research builds on our existing strengths in EAPS, including paleoclimate modeling, glacial reconstruction, paleo-temperature reconstruction, and geochronology, as well as modern climate, extreme weather, and environmental feedbacks between Earth's surface and its atmosphere. This focus area would appeal to a large group of undergraduate majors in environmental science, one of our rapidly growing majors, and would bridge between faculty research programs in atmospheric science, geology, and environmental science.

Quantitative paleoclimate researcher. Or paleoclimate program would be greatly enhanced by the addition of a faculty position in quantitative paleoclimate research that builds upon our current strengths and bridges diverse areas across the department, including meteorology, Quaternary geochronology, and environmental stable isotopes. Such a faculty position could potentially leverage existing and upcoming instrumentation including the Purdue stable isotope laboratory (PSI Lab), Purdue's accelerator mass spectrometry facility (PRIME Lab), the new ICP-MS facility under construction, the noble gas thermochronology laboratory, and the thermal ionization mass spectrometry (TIMS) facility. We are open to a wide variety of scientific approaches; example areas of expertise could include interpreting climate proxies such as stable isotopes, non-traditional isotopes, or biomarkers in records such as speleothems (i.e., cave deposits), ice cores, sedimentary records, or biologic records.