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Department of Marine Sciences Presents a Seminar By

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Miocene Global Cooling Processes

During the late Miocene epoch, about seven million years ago, large areas of the continents experienced drying, enhanced seasonality, and a restructuring of terrestrial plant and animal communities. These changes are seen throughout the subtropics, but have typically been attributed to regional tectonic forcing. Here we present a set of globally distributed sea surface temperature records spanning the past 12 million years based on the alkenone unsaturation method. We find that a sustained late Miocene cooling occurred synchronously in both hemispheres, and culminated with ocean temperatures dipping to near-modern values between about 7 and 5.4 million years ago. The period of maximum cooling coincides with evidence for transient glaciations in the Northern Hemisphere and with a steepening of the pole to equator temperature gradient, as well. We thus infer that late Miocene aridity and terrestrial ecosystem changes occurred in a global context of increasing meridional temperature gradients. We conclude that a global forcing mechanism, such as the previously hypothesized decline in atmospheric CO_2 levels between eight and six million years ago, is required to explain the Late Miocene changes in temperature, climate and ecosystems.

Host: David Lund
Time & Date: 11:00 am, Friday, September 30, 2016
Place: Marine Sciences Building, Seminar Room 103

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