

# Paleoecologists offer new insight into how climate change will affect organisms

November 4 2009

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An article in the *Proceedings of the National Academy of Science* written by a team of ecologists, including Robert Booth, assistant professor of earth and environmental science at Lehigh University, examines some of the potential problems with current prediction methods and calls for the use of a range of approaches when predicting the impact of climate change on organisms.

According to Booth and his colleagues, one of the biggest challenges facing ecologists today is trying to predict how [climate](#) change will impact the distribution of organisms in the future. Combining the [environmental conditions](#) that allow a particular species to exist with the output from climate models is a commonly used approach to determining where these conditions will exist in the future. However, according to the authors, there some potential problems with the correlational approach that ecologists have traditionally used.

"This traditional prediction approach on its own is insufficient," said Booth. "It needs to be integrated with mechanistic and dynamic ecological modeling and systematic observations of past and present patterns and dynamics."

The paper uses examples from recent paleoecological studies to highlight how climate variability of the past has affected the distributions of tree species, and even how events that occurred many centuries ago still shape present-day distributions patterns. For example, the authors note that some populations of a Western US tree species owe their existence

to brief periods of favorable climatic conditions allowing colonization in the past, such as a particularly wet interval during the 14th century.

"The climate system varies at all ecologically relevant time scales," said Booth. "We see differences year to year, decade to decade, century to century and millennia to millennia. When trying to understand how species and populations will respond to changing climate, it's not just changes in the mean climate state that need to be considered, but also changes in variability "

Source: Lehigh University ([news](#) : [web](#))

Citation: Paleoecologists offer new insight into how climate change will affect organisms (2009, November 4) retrieved 26 April 2024 from <https://phys.org/news/2009-11-paleoecologists-insight-climate-affect.html>

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