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(56) 2011 Annual Meeting, Seattle, Washington

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AAG Annual Meeting

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Assessing the Impacts of Late-Holocene Droughts on Pre-Hispanic Agriculture in Southwestern Costa Rica

is part of the Paper Session:

Quaternary Environmental Change: Student Oral Presentations

scheduled on Friday, 4/15/11 at 16:40 PM.

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Abstract:

Multiple sediment records, principally from the Yucatan Peninsula and the Cariaco Basin off the coast of Venezuela, have connected the collapse of the Mayan civilization with a series of severe droughts. These records, particularly from the Cariaco Basin, suggest that the droughts were regional in scope and were caused by a southward displacement of the Intertropical Convergence Zone (ITCZ) during the northern hemisphere summer.

A more southerly ITCZ reduces convective precipitation across the northern neotropics and shortens the summer rainy season. To date, most research has focused on the Mayan region and relatively little is known about the impacts of these droughts on pre-Hispanic societies in southern Central America.

Here we present a 2000-year, high-resolution record of agricultural intensity from southwestern Costa Rica that we compare to the regional precipitation record from the Cariaco basin. To determine agricultural intensity we used total organic content and bulk sediment stable carbon isotope measurements from a network of sediment cores recovered from Laguna Zoncho. Both indicators suggest that pre-Hispanic agriculture declined dramatically well before the Spanish Conquest, with a sharp reduction in agricultural intensity immediately after the dry period from 750-910 AD, and the near complete cessation of agriculture following a second dry period around 1250 AD. These findings suggest that the impacts of late-Holocene droughts were not confined to the extreme northern neotropics and may have strongly influenced populations throughout Central America.

Keywords:

Stable Carbon Isotopes, Lake Sediments, Pre-Hispanic Agriculture, Costa Rica, Drought

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