

**Paper No. 202-1**

**Presentation Time:** 8:00 AM-12:00 PM

## **ONTOGENETIC RADIOCARBON VARIATION IN MODERN PRE-BOMB PERUVIAN MOLLUSK SHELLS AS A PROXY FOR UPWELLING**

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Upwelling along the coast of Peru influences the concentration of  $^{14}\text{C}$  in seawater through vertical mixing of radiocarbon-depleted deep water with atmospheric radiocarbon-enriched surface water. Marine mollusks record this  $^{14}\text{C}$  variation in their shells. Sampling these shells from umbo to edge reproduces radiocarbon variation in seawater during the organisms' lifetimes. We report radiocarbon and stable oxygen isotope analyses of the mollusk species *Donax obesulus*, *Protothaca asperima* and *Semele corrugata* collected from several locations in Peru. These shells were collected prior to the 1950s and archived in museum collections and thus avoid radiocarbon contamination effects from above ground nuclear testing. Radiocarbon concentration was measured using Accelerator Mass Spectrometry (AMS) and concurrent stable oxygen and carbon isotope profiles were generated using sequential micromill sampling. The profiles of radiocarbon concentration along shell ontogeny for the different species show changes in upwelling for the Peruvian coast at seasonal and inter-annual scales, therefore this method may serve as a useful proxy for paleo-upwelling.

Upwelling along this coast is influenced by different phenomena related to El Niño/Southern Oscillation (ENSO), such as variation in thermocline depth and wind patterns. This capacity for recording external upwelling influences makes this technique an important paleoclimate proxy and may yield insight into changes in vertical mixing related to ENSO over multiple timescales.

[2006 Philadelphia Annual Meeting \(22–25 October 2006\)](#)  
[General Information for this Meeting](#)

Session No. 202--Booth# 29

[Paleoclimatology/Paleoceanography: Proxies, Patterns, and Processes \(Posters\)](#)

Pennsylvania Convention Center: Exhibit Hall C  
8:00 AM-12:00 PM, Wednesday, 25 October 2006

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