

SYMPOSIUM: PALEOECOLOGY

Abstracts

FORAMINIFERA FROM THE CERRO BANDURRIA AND HORNITOS SECTIONS,
MEJILLONES PENINSULA, NORTHERN CHILE

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A total of 28 marine sediment samples were collected from the Cerro Bandurria and Hornitos sections of coastal northern Chile for micropaleontological analysis. The Neogene sediments at these sections have had little or no previous biostratigraphic or paleoenvironmental work. New information is provided about the age and paleoenvironments of the sections using foraminiferal data. The samples were processed for benthic and planktonic foraminifera using standard techniques. Statistical analyses, using Primer V.5, of the benthic foraminiferal data was used to identify biofacies and species assemblages. Planktonic foraminifera were used for age determination of the sections. Three benthic foraminiferal species assemblages and three biofacies were identified at Cerro Bandurria. The assemblages and biofacies indicate fluctuations in sea-level suggested as a combination of global sea-level eustacy and tectonic uplift. Five species assemblages and four biofacies were identified at Hornitos. Planktonic foraminifera identified at Hornitos provide an age estimate of Early to Middle Pliocene (~ 5.1 to 2.8 m.y). The benthic foraminiferal biofacies at Hornitos indicate a fall and rise in sea-level comparable to global sea-level curve estimates.

Keywords: *Foraminifera, Biofacies, Northern Chile, Pliocene*

MODERN FORAMINIFERA AND INTERPRETION OF HOLOCENE CLIMATE VARIABILITY OF
THE ANTARCTIC PENINSULA

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Foraminifera have been widely used as environmental proxies. The changing climate and receding ice shelves of the Antarctic Peninsula have prompted the use of these organisms as paleoecologic indicators in this region. This study determined the distribution of modern foraminifera from the Antarctic Peninsula, and their associations to environmental conditions. Statistical analyses of foraminiferal data from sediment samples recovered from the eastern and western continental margins of the Antarctic Peninsula were performed upon either agglutinated or calcareous foraminifera. Results of these analyses yielded statistically distinct biofacies boundaries for both groups.

The biofacies boundaries of calcareous species show strong associations with environmental factors, namely glacial and water mass conditions. Water mass associations with biofacies distributions include Ice Shelf Water, Weddell Sea Transition Water, and Circumpolar Deep

Water. Close associations to productivity, current energy and dissolution of calcium carbonate can also be identified. Agglutinated biofacies boundaries are gradational, and more weakly associated with environmental conditions. This reflects the more general requirements of agglutinated taxa described in this study.

The correlations between statistically determined biofacies and environmental conditions show that foraminifera are useful environmental indicators in this region. By using surface distributions as analogs, Holocene sedimentary records were interpreted with greater insight, allowing aspects of the Antarctic Peninsula's paleohistory to be revealed.

Keywords: *Foraminifera, Antarctica, Paleoecology, Biostatistics.*

SUBFOSSIL WOOD: PALEO-POTENTIAL IN MIDWESTERN STREAMS

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In light of climate change, paleo-climatological data are of high importance. In Midwestern U.S. long-term climate variability information are spatially and temporally limited. Low-resolution pollen, speleothem, and archeological time series provide some of our only Holocene period climate clues. Temporally, these data are relatively coarse in resolution (100 to 500 years) and rely on the accuracy of ^{14}C dating. The needs for long-term and high-resolution climate variability data are of particular importance in the Midwest where over 25 billion dollars in agricultural products are grown annually to support the global food economy. Dendrochronological research of sub-fossil wood in Midwestern streams has potential for providing added spatial coverage and annual resolution climate information over the last 14000 years. In this paper we describe the subfossil wood resource for several Midwestern region streams, present climatological analyses of a tree-ring record spanning the last 1000 years, and show preliminary results of Holocene climate variability. The research potential of paleo-botanical material from streams has been largely overlooked and shows promise in disciplines spanning ecology, botany, hydrology and climatology.

Keywords: tree-ring, dendrochronology, paleoclimate, Holocene

MICROTOPOGRAPHIC VARIATION IN POST-FIRE VEGETATION SUCCESSION OF TWO ALBERTA BOGS

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