Abstracts Volume with Program

Geologic Problem Solving with Microfossils III

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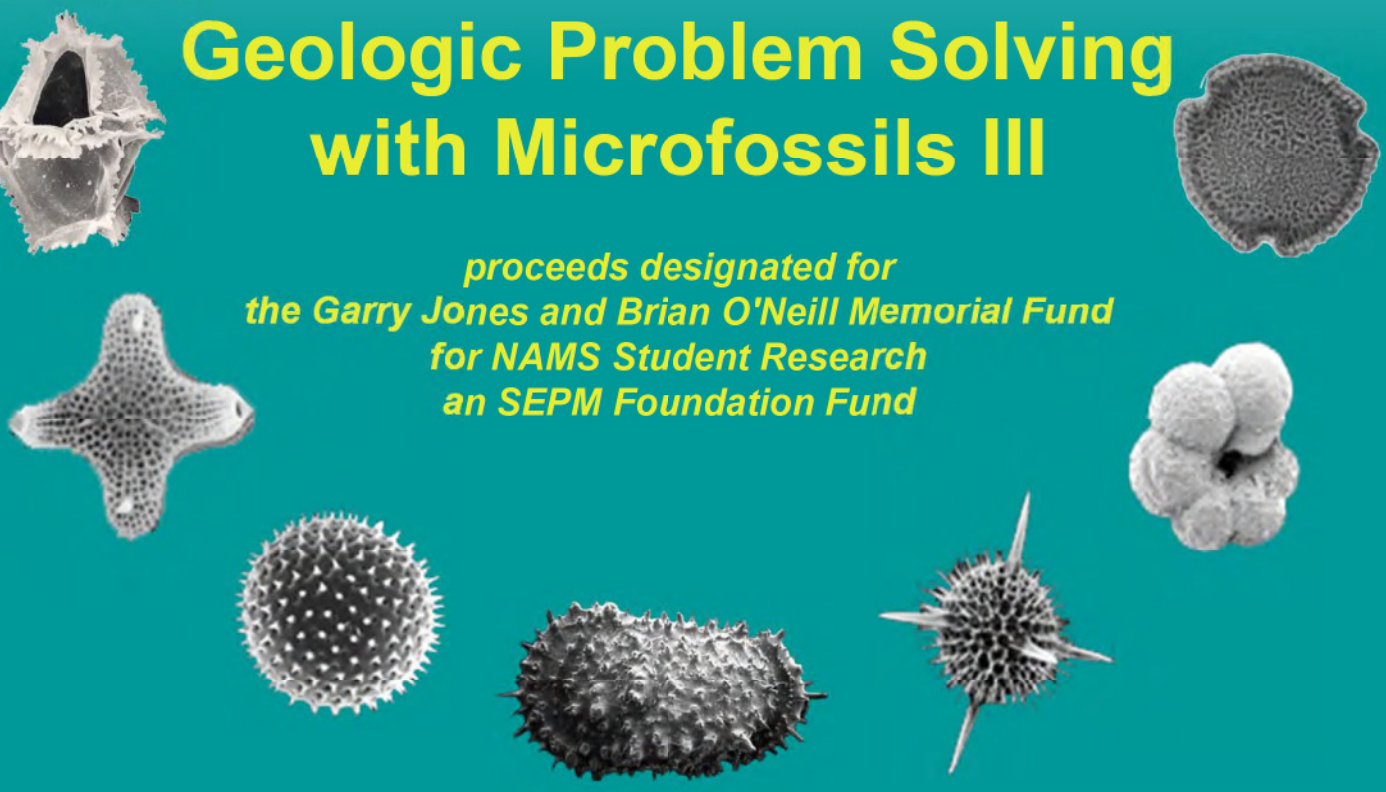

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the ice sheet cycle at 699-685 mbsf (Sandroni and Talarico, 2011). A study on the oxygen isotope composition of AND-2A indicates that the region experienced abundance and/or depletion of meltwater preceding ~16 Ma (Marcano *et al*., 2009). The retreat and expansion of ice and fluctuating meltwater would undoubtedly have had consequences on plant production.

Our project encompasses a detailed palynological analysis of the lower sections of AND-2A, from ~1138-650 mbsf (early Miocene; Acton *et al*., 2008). A total of 117 samples were selected from this interval based on spacing and lithology. Samples are analyzed for their palynomorph abundance at the CENEX Lab at LSU. Preliminary data from our study indicate an interval of increased palynomorph abundance occurred at ~908 mbsf. This section is dominated by two species of *Nothofagus*, the genus of Southern beech, and may indicate increased moisture availability (Griener *et al*., submitted) and warmer temperatures during this time. An additional increase in plant productivity occurs at ~997 mbsf. Both of these intervals coincide with or are proximal to periods of inferred ice sheet minima (Passchier *et al*., 2011). The completed palynological analysis of this core will allow additional comparison to known climatic factors such as ice sheet expansion/retreat (e.g. Passchier *et al*., 2011), water availability (Feakins *et al*., 2012), and global pCO_2 levels (e.g. Zachos *et al*., 2001; Pagani *et al*., 2011). Further comparison of these data with paleopalynological data can help us to determine the potential driving forces behind vegetation change, underlying factors behind climate evolution, the sensitivity of polar biology and glaciation to climate change, and can help us make predictions about the future of climate change.

The Ostracod Genus *Cyprideis* (Crustacea) and its Implication for Western Amazonia's Palaeoenvironments (Late Miocene; Solimões Formation; Brazil)

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Before the Late Miocene onset of the modern, W–E draining Amazon system an enormous wetland – the "Pebas" system – shaped Western Amazonia's landscape and life for several millions of years. One of the most controversially discussed issues of that ecosystem is the influence of marine incursions. Their existence, chronology, origin as well as their spatial extent is still disputed. Aside from sedimentological and ichnological indications, paleontological evidences (i.e., mangrove pollen, foraminifers, specific molluscs, barnacles) were used to infer transitorily marine influences. In addition, the occurrence of highly endemic, brackish water associated ostracods (particularly *Cyprideis*) motivated several authors to propose elevated salinities or even marine transgressions. Several outcrops around Eirunepé (SW Amazonas state), which expose the upper part of the Solimões Formation (Late Miocene), were sedimentologically and micropaleontologically investigated (FWF project P12748-N21). Vertically as well as laterally, highly variable fine-grained clastic successions were recorded. Based on the lithofacies assemblages, these sediments represent various subenvironments of a fluvial, possibly anastomosing river system. Lacustrine environments are restricted to local floodplain ponds/lakes. The taxonomic evaluation of the ostracod faunas documents a moderately diverse assemblage (19 species). A wealth of freshwater ostracods (mainly *Cytheridella*, *Penthesilenula*) was found co-occurring with taxa (chiefly *Cyprideis*), which are typically related to marginal marine settings. The observed faunal compositions as well as constantly very light $\delta^{18}O$- and $\delta^{13}C$-values, obtained by analyzing both groups, refer to entirely freshwater conditions, which corroborate the fluvial depositional model for this area. Apparently, *Cyprideis* has been successfully adapted to pure freshwater settings at least during the Late Miocene fade out of the "Pebas" system. Consequently, the occurrence of *Cyprideis* and probably of some other "brackish/marine" taxa (*Perissocytheridea*, *Rhadinocytherura*) provides no concrete evidence for brackish waters or marine incursions in Western Amazonia during the Miocene.

Benthic Foraminiferal Assemblages Reveal the History of the Burdigalian Seaway

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The opening and closure of seaways have immanent paleoclimatic, paleoceanographic and paleobiogeographic consequences as they determine the exchange of water masses between marine basins. During the Oligocene to Miocene severe alterations of marine gateway configuration (e.g., Tethyan Seaway, Pre-Gibraltar Seaway, Burdigalian Seaway; Harzhauser and Piller, 2007) shaped the evolution of the Mediterranean-Paratethys region.