Geophysical Research Abstracts,
Vol. 10, EGU2008-A-03491, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-03491
EGU General Assembly 2008

Late Messinian Glacio-marine deposit form James-Ross Island, Antarctica: Benthic foraminiferal contents insight on the ice-sheet evolution.

M.J. Vautravers (1), A.E. Nelson (1)

(1) British Antarctic Survey, Cambridge CB3 0ET, UK, (mava@bas.ac.uk)

Evidence for large environmental changes of global significance “biogenic bloom” or new oceanic basin connections have been identified at the end of the Messinian. Continuous and precisely dated proxy-records for oceanic circulation in the Southern Hemisphere capture a major event circa 5.5 Ma also in relation to sea level changes. However, to-date late Miocene-Pliocene climatic evolution related to Antarctic ice-sheet configuration changes or recorded by evidence nearest to Antarctic continent is very fragmentary because of the rarity of fossils bearing sediments or contentious due to dating uncertainties such as in the Sirius Group. In order to shed some light on the late Miocene (circa 6 Ma) Antarctic ice-sheet history in an area today very sensitive to climate change Fifty samples selected from 9 sites on James Ross Island Antarctic Peninsula have been examined for micropaleontological content and stable isotopes. Twenty-two, originating from 3 sites show significant benthic foraminifera fauna content. No specimen from agglutinated species is preserved. Benthic foraminifera bearing samples are found in units 2-3-4 at site D5.7, 2-3 at site D5.8 and 3-4-5, D5.10, which are mainly matrix-supported diamictites. This suggests that these sediments were deposited during interglacial episodes as confirmed by bivalve shells that are but not exclusively found associated with the microfossils.

We described faunal assemblages extremely similar to the one described in pre-existing work based on James Ross Island sediments. Dominant species are *Cassidulina crassa*, *Ammoelphidiella sp* and *Cibicides lobatulus*. Except for the species Ammoelphidiella all species are extant and common in shallow Antarctic Water. The

observed diversity is always low and the shells concentration per gram is very low too. The level of shells preservation is not excellent but do never prevent species identification. The exclusive presence of *Ammoelphidiella* sp in all samples confirms late Miocene age for these formations on JRI, in agreement with absolute dates. Crucially, species diversity and variability across these formations, although at very low resolution underpins that a record of environmental significance linked to ice proximity and/or sea level change is kept in these units of Messinian age. Preliminary, isolated isotopic measurements performed on benthic foraminifera at these sites may also be tracing local low salinity at the time and therefore could point to significant dynamic of the Antarctic Ice sheet during some late Miocene Glacial Interglacial transition.