^{10}Be dating of erratics at Hell Creek (Coast Mountains, BC, Canada)

M. ORTUÑO[1]*, S. EVANS[2], J.J. CLAGUE[3], R., PALLÀS[1], A. RODÉS, A. CUMAN[4], R. BRAUCHER[5] AND D. BOURLÈS[5]

[1]RISKNAT group, Fac. Dept. Geodinàmica i Geofísica, Univ. de Barcelona, Spain (*correspondence: maria.ortuno@ub.edu)
[2]Dept. of Earth Sciencies, Univ. of Waterloo, ON, Canada
[3]Dept. of Earth Sciencies, Simon Fraser Univ., BC, Canada
[4]Dipt.Geoscienze, Univ.degli Studi di Padova, Italy
[5]CEREGE UMR 6635, Plateau de l'Arbois 13545, Aix en Provence, France

Researchers have suggested that the Cordilleran ice sheet decayed by retreat at its margins and by thinning and downwasting in its interior. According to this model, high areas in the interior were deglaciated much earlier than adjacent valleys and plateaux. We tested this idea by sampling and dating erratics at high elevation (~2,200 m asl) in the southern Coast Mountains at Hell Creek. ^{10}Be exposure ages for four erratics are summarized in Fig. 1. Samples 2 and 4 yield an exposure age of 18.9 ± 1.5 ^{10}Be ka. These ages are in agreement with ^{14}C ages of proglacial sediments formed at the southern periphery of the Cordilleran ice sheet at the time it began to recede (end of Vashon advance). Samples 1 and 3 are, respectively, older and younger. The older age may result from ^{10}Be inheritance from previous exposure during the Port Moody interstade. Field observations suggest that the age of sample 3 may reflect postdepositional movement of the erratic or degradation of the rock surface by localized weathering. Our results highlight the usefulness of the ^{10}Be method for refining the chronology of deglaciation in western Canada, but also point out the importance of careful sample selection and of dating many samples.

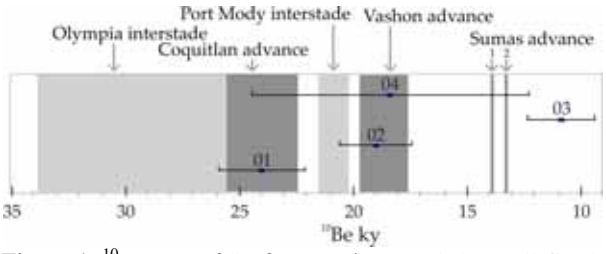

Figure 1: ^{10}Be ages of the four erratics sampled at Hell Creek. Canadian chronoestratigraphic stages in calibrated years are shown for comparison.

Modeling oxygen isotopes in the Mediterranean

A.H. OSBORNE[1]*, P.J.VALDES[2] AND D. VANCE[1]

[1]Bristol Isotope Group, Department of Earth Sciences, Univ. Bristol, Bristol, UK (*correspondence: anne.osborne@bristol.ac.uk) (d.vance@bristol.ac.uk)
[2]BRIDGE, School of Geographical Sciences, Univ. Bristol, Bristol, UK (p.j.valdes@bristol.ac.uk)

Planktonic foraminifera from deep sea cores consistently show excursions towards more negative δ^{18}O values during Plio-Pleistocene Mediterranean anoxic events. Anoxia has thus been linked to enhanced freshwater supply to the surface ocean, often attributed to an increased intensity of the African monsoon or a northward shift of the Intertropical Convergence Zone. Such mechanisms are supported by the precessional pacing of these events. However, anoxia also appears to be associated with greater precipitation over Europe and over the eastern Mediterranean, implying teleconnection between monsoonal climate drivers and those at higher latitudes. Each of the proposed freshwater inputs should produce a different pattern of δ^{18}O in the surface ocean but the dispersal of δ^{18}O in the Mediterranean is poorly understood and at present cannot be used to distinguish between the large-scale regional climate signals.

Here we present the preliminary attempts to reproduce modern Mediterranean circulation using NEMO (the Nucleus for European Modeling of the Ocean). We outline the parameterisation of δ^{18}O in the model, and how we will compare model results to observational data for the present day [1, 2]. We also test the response of the model to changes in freshwater input. Further experiments will represent the various scenarios put forward for development of anoxia in the Mediterranean in order to better understand what the sedimentary records are telling us about mid and low latitude climate conditions in the Quaternary.

[1] Pierre C. (1999) *Marine Geology* **153** 41-55. [2] Schmidt, Bigg & Rohling E.J. (1999) Global Seawater Oxygen-18 Database http://data.giss.nasa.gov/o18data/