

## **Antarctic Science Bursary Award 2006 - Initial Report**

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### ***Advanced Course in Jurassic-Cretaceous-Cenozoic organic-walled Dinoflagellate Cysts: Morphology, Stratigraphy and Palaeoecology Urbino, Italy, July 13-18th, 2006***

The course was held at the Istituto di Geologia, □Università di Urbino, convened by Henk Brinkhuis of Utrecht University (The Netherlands), and taught with contributions from dinoflagellate cyst ('dinocyst') experts from The Netherlands, Canada, Norway, Germany and the UK. There were 32 participants from Universities (Masters, PhD, Post-Docs, Lecturers) and oil companies from Europe, South and North America and Africa. The knowledge base of participants was wide, from dinocyst novices (including me) to those who had been working with dinocysts throughout their careers. Many of the latter have attended the course annually since it was first organised, considering it an excellent way of updating their knowledge on current taxonomy, analytical methods and dinocyst biostratigraphy.

The course schedule involved an introduction to modern dinoflagellates, their life cycle and ecology, followed by the preservation of cysts in the fossil record and issues with their interpretation and application to palaeoenvironmental and biostratigraphic analysis. The remainder of the course concentrated primarily on dinocyst taxonomy and palaeogeographic distribution from the Triassic through the Neogene. The final day allowed participants the chance to view and discuss Neogene dinocysts using transmitted light microscopes. Participants have been provided with extensive and invaluable reference material including completely revised first and last occurrence datums recalibrated to the recently revised timescale of Gradstein et al (2004). A field excursion to the Gubbio Cretaceous/Tertiary (K/T) boundary and Contessa section was also included in the programme, along with evening presentations by participants and teachers.

I found participation in this course invaluable. I now have a sound understanding of the basics of dinocyst analysis, and a grasp on their taxonomy and palaeoenvironmental interpretation throughout the geological record. I have made some excellent contacts, including those of particular interest to my current project: Argentinian palynologists working on K/T sections in southern Argentina, a Cretaceous dinocyst expert at Statoil in Norway, and laboratory technicians from Stockholm and Utrecht Universities who routinely process dinocyst material. I have also had useful discussions with Henk Brinkhuis who has undertaken research on K/T boundary palynology around the world. I have found out about the best software and reference databases used routinely by dinocyst workers worldwide. I have had extremely useful advice about the pros and cons of various laboratory and analytical techniques and offers of assistance if required from several people. Martin Pearce from Statoil has offered to visit Leeds University on an upcoming trip to the UK to demonstrate his laboratory technique, and I have also been invited to the palynology laboratories at Utrecht University. I have arranged for several sub-samples to be processed at both the British Geological Survey and at Utrecht University to compare the palynological output from those established laboratories with my own preparations at Leeds University. In addition to these outcomes, I also volunteered for and gave a 20 minute powerpoint presentation to the participants and teachers about our Maastrichtian project, which generated a lot of excitement with respect to the high resolution nature of the section on Seymour Island and the tied marine, terrestrial and geochemical proxy data that will eventuate from the analysis.

Participation on this course has been extremely beneficial for both my current project and for my career development, with exposure to state-of-the-art information about dinocyst analysis and discussions with palynological experts. I have had the opportunity to renew acquaintance with research leaders in Cenozoic palaeoclimatology, including Jim Zachos and Mark Pagani. I have also been approached to be part of a team conducting further analysis on the third Cape Roberts Project core to refine the terrestrial palynology. I have also had an idea for a future Antarctic palaeoclimate project.

In summary, thank you again for the funding to attend this course as it has been educational, inspiring and has allowed me exposure to an expert forum to showcase our current research in high southern palaeolatitude ice sheet history and palaeoclimate.