ARC NESS
Postgraduate student report on attendance to conference or workshop

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QUEST ES4- Quantifying and understanding the Earth System, Earth Systems Science summer school, Bristol, UK, 12th to 23rd September 2005.

Major Activities

• Lectures presented on key themes in earth systems science by a variety of UK and European lecturers/researchers and policy makers e.g. data assimilation, nutrient biogeochemical cycles. While I found the science interesting what I found most novel were the lectures that linked the science to the human dimension and the ethics of creating and directing policy. It is an aspect of environmental science that I didn’t deal with in undergraduate studies.

• Practicals:
  ~ integrating data and models- ice sheet modelling, biome modelling and the inputs that go into such a complex model
  ~ using species abundance and diversity of forams to predict temperature in sediment cores and depth of a water profile above a sediment core.

• Interactive poster sessions with other post-graduate students. We presented our posters with a 10 minute talk on our research, its’ relevance and where it is going.

• Social evenings to increase interaction between students and also some of the lecturers and the QUEST team.

Major outcomes

• I found the two most interesting lectures were by Tim Lenton and Diana Liverman. Tim delved into Gaia hypothesis, homeostasis and regulation of the earth system through feedback mechanisms. Diana discussed the social science/policy aspects of dealing with changes in the environment. Both had fairly philosophical bents that questioned how we can regulate the Earth to a standard designed by humans, and the ethical implications of this, when the system as a whole is dynamic and bigger than us by far.

• The best aspect for hearing more cutting edge science was actually through the interactive poster session. Everyone was interested in each others work despite a wide variety of topics. Because everyone had relaxed over one week already, the discussion was focussed and interested without the nervousness that can come from presenting. The detail that was discussed was a little more in depth than the lectures.

• I got to meet some intelligent and focussed peers from a variety of scientific backgrounds doing interesting work. I had lots of fun with them and am keeping in contact with them.

• Although I felt a little out of place as my PhD topic is not climate related specifically, I came to realise that the other students were gaining the most from the lecturers that were slightly off their research topic. And many, like me, felt that they were not in the climate research area. Topics were presented as a more intense 3rd year lecture. This was useful in areas that I had no background in like ice-sheets, modelling and paleo-climate research, but meant that areas I had a background in were more refreshers.

Benefits for research:
With the main focus of my research the uptake and metabolism of trace metals in marine microalgae, the most directly applicable knowledge I gained was in the following topics:

- function of phytoplankton in oceanic systems;
- biogeochemical cycling of carbon, nitrogen, phosphorus, silicon and iron;
- remote sensing of chlorophyll and potentially other pigments,
- information about primary production as a sink for carbon; and
- oceanic circulation

My undergraduate studies were mostly in chemistry so gaining a better understanding of geological systems and oceanography was useful to my research.

**Recommendation:**

I would recommend the school as a peer-networking opportunity. It was a chance to step out of the PhD specific research box that you get so emersed in, and for two weeks explore some cutting-edge issues. However, students with a research project more along the lines of the QUEST program, with a focus on climate, would gain more than I did. I didn’t realise prior to going to this conference that a “Earth Systems Science” conference would be so specifically climate related and thought that there would be more discussion of pollutants, i.e. abiotic and biotic interactions other than those that affect climate or can predict climatic change. This may have just been my own misconception of what Earth Systems Science is. Although I found this to be the most disappointing facet of the summer school, it was nonetheless a fascinating and useful experience.