



SCAR Visiting Professor Scheme Report



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Summary of Visit

During the visit I gave several seminar presentations about SCAR, the Past Antarctic Antarctic Ice Sheet dynamics (PAIS) Scientific Research Programme, British Antarctic Survey research and recent research conducted by my group (see details in section below). I met with many staff, other visiting scientists and students in the Department of Geology and the Norwegian Polar Institute, individually and in groups. This included a number of meetings with my host, Dr Forwick, during which we discussed current work and opportunities for future research, and we worked out a plan for developing a specific research proposal (see 'Future plans' section below). I met with Dr Forwick and Professor Jürgen Mienert to discuss the potential for future gas hydrate-related work around Antarctica. I met with members of the Centre for Arctic Gas Hydrate, Environment and Climate (CAGE) sub seabed workpackage, led by Professor Karin Andreassen, to learn about their research and tell them about the work my group are doing. I discussed research on glaciated continental margins with Dr Tom Rydningen and the forthcoming conference at the Geological Society of London on this theme that we both planned to give presentations at.

I met with Dr Giuliana Panieri to discuss her research on re-mineralisation of foraminifera in sulfate-methane transition zones and the potential for extending this type of work to Antarctica. Dr Panieri has subsequently visited BAS to follow up this discussion. I met with visiting scientists Dr Mark Furze and Dr Anna Pieńkowski, from MacEwan University, Canada to discuss common interests in reconstructing past ice sheet and ice shelf limits, and subsequently Dr Furze has been to visit my group at BAS for further discussions on this topic. I met with MSc student Simon Sørli, who is studying sediment cores and geophysical data that my group had collected on the continental shelf north of the Brunt Ice Shelf in the Weddell Sea, together with his supervisors, Dr Forwick and Professor Jan Sverre Laberg. We inspected the split sediment cores and agreed a plan for further analyses on them. I met many of the research students working in the department during the conference on Arctic Marine Geology and Geophysics that was held there during my visit (see further information in the section below). Subsequently I met with PhD student Aleksander Dominiczak to discuss the origin of some subglacial bedforms in the field area he had been studying. One of the students I met at the conference has since visited me at BAS to seek my advice on postgraduate research opportunities in the UK, and in particular to find if there might be any suitable openings in the near future at BAS or the Scott Polar Research Institute. At the Norwegian Polar Institute I met Dr Nalân Koç (Research Director), Dr Katrine Husum and Dr Kenichi Matsuoka and discussed opportunities for collaboration. Dr Husum recently won funding for a joint project with Dr Kelly Hogan, who works with me at BAS.

While I was in Tromsø the research vessel operated by the University and the Norwegian Polar Institute, the RV *Helmer Hansen* came into port and Dr Forwick gave me a guided tour. The opportunity to see the ship and be shown its scientific facilities was a very interesting bonus that I had not expected. I was impressed to see how a relatively small ship had been adapted and equipped to make it both a very capable research vessel and an excellent teaching facility.

From my point of view the visit went very well and exceeded my expectations. I think my host was very pleased with the way it went as well.

Capacity Building, Education and Outreach Activities

A conference on Arctic Marine Geology and Geophysics, organized annually by members of the Department of Geology as a showcase for work by PhD students and young postdoctoral researchers in the department, was held over 2 days at the start of the second week of my visit. I attended the conference and gave an invited presentation on *Ice sheet extent around West Antarctica at the Last Glacial Maximum and subsequent ice retreat*. Although my presentation was about work in the opposite hemisphere to the focus of the conference, the methodology is very similar to that used to study past Arctic ice sheets, and understanding the impact of ice sheet change on past and future sea level requires a bi-polar approach.

I also had several stimulating discussions with students during the poster sessions at the conference.

At the end of the first week of my visit I gave two seminars at the Norwegian Polar Institute in Tromsø, on *Scientific research conducted and supported by the British Antarctic Survey, focussing particularly on geoscientific, ice dynamic and marine research* and *The Past Antarctic Ice Sheet Dynamics (PAIS) research programme of the Scientific Committee on Antarctic Research (SCAR): Objectives and opportunities*. These seminars were advertised in advance on the Events page on the Polar Institute website, and are recorded on a page on the site that lists past events (<http://www.npolar.no/en/events/index.html?exp=on>). I repeated one of these seminar presentations the following week during a meeting in the Department of Geology with members of the Centre for Arctic Gas Hydrate, Environment and Climate (CAGE) sub seabed workpackage led by Professor Karin Andreassen. Finally, I gave a lecture in the main lecture theatre in the department on *The application of geophysics in reconstructing past Antarctic ice masses*. I hope that these seminars were helpful to young researchers interested in becoming involved in Antarctic science.

During the visit I discussed developing future Antarctic activities with Dr Forwick, Professor Jürgen Mienert and Dr Giuliana Panieri. Dr Forwick and I scoped out some ideas to develop a research proposal for a cruise on the new Norwegian icebreaker research vessel, RV *Kronprins Haakon*, to investigate ice sheet history and deep-sea sedimentary processes in the Riiser Larsen Sea.

Future Plans

As mentioned above, Dr Mark Furze and Dr Giuliana Panieri have visited Cambridge to discuss further collaboration since meeting me in Tromsø, and one of the research students I met in Tromsø has visited me to seek my advice on postgraduate research opportunities in the UK. Dr Furze is waiting to hear the outcome of a research grant application, and there is scope for members of my group to collaborate on the project if he is successful. We plan to send some sediment core samples to Dr Panieri for her to analyse, and she also plans to submit requests for samples from archived Ocean Drilling Program cores that we identified as being of interest. I also met Dr Tom Rydningen again at the conference on *Glaciated Continental Margins* that was held at the Geological Society of London at the beginning of June and had further stimulating discussions with him there.

I have maintained contact with my host, Dr Matthias Forwick, via email and contributed to a proposal he submitted for funding for a small workshop to consider opportunities for Antarctic marine research on the new Norwegian icebreaker research vessel, RV *Kronprins Haakon*. The proposal for “Arrangementstøtte”, as part of the Norwegian KLIMAFORSK call, had the aim of bringing together an international group of scientists interested in developing a multidisciplinary research project focusing on the Riiser Larsen Sea. The proposal was successful and Dr Forwick plans to host the workshop near Tromsø next summer. I will participate in the workshop together with two or three colleagues from BAS.

I have also maintained contact via email with the MSc student, Simon Sørli, who is studying sediment cores and geophysical data that my group provided. In particular I have advised him on interpretation of multibeam swath bathymetry data, while my colleague Dr Claus-Dieter Hillenbrand has advised him on interpretation of sediment core analyses.

What were the highlights of your visit?

The entire visit was a fantastic experience. It was great to spend time in a different institution, to find out about the diverse range of research going on there, and to have time to discuss topics with people in much greater depth than is usually possible at conferences. The fortunate coincidence of my visit with the Arctic Marine Geology and Geophysics Conference provided an excellent opportunity to meet research students working in the department and to see them give presentations on their work. A particular highlight for me, and an unexpected bonus, was the tour I was given of the RV *Helmer Hansen* when it came into port.

What things could have been better?

A departmental 'ski dag', a regular Spring team bonding activity, had been scheduled in the middle of the second week of my visit. This would have been an excellent opportunity to meet more members of the department and talk with them in an informal setting. Ironically, it had to be cancelled because of heavy snowfall!

How did the SCAR Visiting Professor Award impact your research? your career objectives? you personally?

The award enabled me to make an extended visit to Tromsø, which would not have happened otherwise. As outlined above, as a direct outcome of the visit I am exploring new research possibilities with Dr Forwick, with Dr Furze and with Dr Panieri. As my post at BAS does not involve regular teaching, it was an interesting challenge for me to give so many seminars within such a concentrated period, and this experience will be valuable if and when any teaching opportunities occur in the future.

We often like to use quotes from these reports in advertising the programme. Do you have a specific quote you would like us to use?

The following sentence might be the most useful one for such purposes:

"It was great to spend time in a different institution, to find out about the diverse range of research going on there, and to have time to discuss topics with people in much greater depth than is usually possible at conferences."

We are always looking to improve SCAR's activities. Are there suggestions you have that we could do to help make this programme more effective?

The programme as it stands is an excellent catalyst to enhance dialogue between research groups in different countries. One suggestion I have is to increase flexibility in the use of the awarded funds. Transport and living costs will vary greatly depending on the length of flights and the economic circumstances in the host country. In some cases the main cost of a visit may be accommodation in the host city, but a strict interpretation of the present rules places the burden of these costs entirely on the host institution. This could be a significant impediment to setting up such visits in some countries, so I suggest relaxing the rule that the award cannot be used to subsidise accommodation costs.

Other comments:

Thank you!