Highlights of the IOSF 2009 meeting

The Second International Ocean Stewardship Forum took place at NOCS between the 10th and 12th June, and drew delegates together from as far afield as the United States, France, Germany and Australia to examine governance issues around the two principal topics of this year - the Arctic Ocean and Marine Geoengineering. Thirteen presentations were given, five of them keynotes, and two parallel focus groups were convened to work through selected elements of each theme before reporting back to the plenary session. As a result of this, two initiatives were set in motion – one to develop a proposal to the Arctic Council Observers Group, to present to the Governing Meeting in November, and a second to organize an NGO awareness forum on marine scientific research related to ocean fertilization. An Editorial Board was established to prepare a summary meeting report of the IOSF 2009 for submission to a popular science journal "policy" section.

The main outcomes/observations of the meeting could be summarized as follows:

Public understanding of, and to some extent the exposure of non-governmental organisations to, marine scientific research on both of the issues under discussion was perceived to be less well informed than it should be, and in some cases, driven by misconceptions, or incomplete information.

The inevitability of the effects of climate change – particularly those resulting from sea-level rise and ice-cover decrease - on the Arctic Ocean, its surrounding lands, its ecosystems and environment, have to be quantified and appropriate governance systems set in place to take these into account.

In his presentation, **Paul Berkman** warned of the steady decrease in ice cover in the Arctic owing to atmospheric warming, and provided the context for the extant legislative instruments in place for the region. He contrasted the different stages in stakeholder development in governance systems in the Arctic and the Antarctic, highlighting that the Arctic has probably reached the end of an 'Establishment' phase and is now starting an 'Accommodation' phase, only after which can a 'Global Stewardship' phase' proceed.

Richard Mills described the UK Government's perspective on Arctic governance, noting the operation of the Arctic Council and its working groups. The UK is an active and coordinating Observer to the Council, and seeks to facilitate appropriate interface between marine scientific research and statutory instruments applied in the region.

Tavis Potts encouraged a wide view on governance of the Arctic region, to include specifically human and biogeographical aspects of any treaty system(s) envisaged. Many of the delegates in the meeting echoed his arguments against developing a new treaty for the Arctic, and supported a system of legislative initiatives built on existing instruments and entities, such as UNCLOS, CBD, IMO, the Arctic Council, etc.

Ola Johannessen stressed that present figures of ice cover and sea level change in the Arctic should be viewed in the context of natural variability, but were still alarming. With a percentage ice cover change of -4.6% per decade over the past thirty years, an ice-free summer ocean was predicted by all realistic models for the region. Professor Johannessen emphasized that great care should be taken to ensure that the connectivity

between the Arctic and adjacent ocean systems was considered in models of water mass circulation and climate change effects.

Martin Pratt provided a comprehensive resumé of the status of current maritime boundaries in the Arctic Ocean, including details of a number of cases of disputed sovereignty. The continuing process of establishing continental shelf beyond 200 nautical miles highlights jurisdictional differences between these areas and the high seas.

On the matter of the effects of noise pollution to the marine environment from commercial shipping, **Veronica Frank** provided a comprehensive summary of current targets for decibel reduction over the next 10-30 years, by means of new technologies, routing and speed restrictions. These issues may be particularly important for increased shipping activity in the Arctic Ocean.

The effectiveness of ocean fertilization in terms of CO2 capture largely remains an unknown, although predictions can be made based on a few key experiments. Whilst many other options are commonly cited for marine geoengineering the earth system to mitigate the continued and threatening rise of atmospheric CO2, iron fertilization shows the most promise.

Peter Liss described methods of geoengineering, both direct and indirect, and provided a realistic assessment of the options, consigning many to the untested, impractical or inefficient category. Detailed evaluation of iron fertilization experiments looked promising, but he concluded that the amounts of carbon that could be sequestered into deep oceanic waters remains largely unknown.

Margaret Leinen provided further evidence on projected atmospheric CO2 trends towards the end of the century, providing optimistic and pessimistic predictions of carbon drawdown by land and ocean, coupled with outputs from ocean fertilization models.

Richard Lampitt summarised the results from the twelve or so ocean fertilization experiments which had taken place to date. He noted the difficulties that unjustified negative public perception had on essential scientific research. Research addressed not only the efficiency of the biological carbon pump from iron fertilization but also the risks resulting from these methods.

Daniel Owen brought clarity to the issues regarding legal status of ocean fertilization in the context of pollution and/or dumping, and their relevance to scientific experimentation, as well as reminding the audience of the precautionary principle message emanating from the CBD‘s position on the activity.

Robin Warner, in a wide ranging overview of Environmental Impact Assessments (EIA) in areas beyond national jurisdiction, reviewed the critical next steps needed to tackle unregulated activities in the high seas, effective compliance measures and coordination of extant binding and non-binding regulatory systems.

Chris Vivian delivered a rigorous timetable of responses from scientific groups and governing bodies of the London Convention and Protocol (among others) and key events following recent commercial proposals involving iron fertilisation.

Finally, **James Baker** provided a sobering analysis of the consequences for world climate, environment and humankind if total CO2 content rose to 1000ppm, and global temperature increased by 5 degrees above pre-industrial levels. He balanced this with an optimistic view on the benefits of systematic and strategic high-level fora to allow alliances to develop and information to be shared.

The vigorous debate stimulated by these presentations and the comprehensive information on legal and scientific issues exchanged over the three days of the Forum will be very useful in providing advice to policy makers engaged in Artic Ocean and marine geoengineering issues. The IOSF 2009 organizers would like to thank all those who contributed their thoughts, data and dreams to improvement of stewardship of the world's oceans.

Elsewhere on this site you will find downloadable copies of all the presentations made at IOSF 2009 (at *www.oceanstewardship.com*). If you have any comments you would like to add to the debate, we would be pleased to hear from you (*info@oceanstewardship.com*).

As mentioned above, the IOSF 2009 Editorial Board is preparing a letter to Science/Nature to report in detail both the content of the debates and, more specifically, the proposed actions arising out of the working group sessions. We will circulate this summary as an information note to all our correspondents/attendees. If you would like to be kept informed of progress on IOSF 2009 results and indeed for the plans for IOSF 2010, please contact *info@oceanstewardship.com*.

Lindsay Parson , July 2009
email: L.Parson@noc.soton.ac.uk