SCOR Meeting on Coordination of International Marine Research Projects

Venice, Italy, 23-24 September 2004

WCRP CLIVAR response to Request for background Information (compiled by Howard Cattle, Director, ICPO)

Data Management Discussion

The CLIVAR Scientific Steering Group has not explicitly discussed the recommendations of the SCOR Data Management Meeting. It has, however, as part of an overall self-assessment of progress with CLIVAR over the past 5 years, considered a critical review of CLIVAR data management, carried out by Neville Smith. CLIVAR has also recently instituted a new Panel – the CLIVAR Global Observations and Synthesis Panel (GSOP), the terms of reference for which are to:

1.Develop, promote and seek to implement strategies for a synthesis of global ocean, atmosphere and coupled climate information through analysis and reanalysis efforts and through the use of other techniques where appropriate. Initial emphasis will be on global ocean synthesis efforts, building on previous experiences and developments.

2 Be responsible for the definition and fulfilment of CLIVAR's global needs for sustained observations (in collaboration with relevant WMO and IOC bodies, including GCOS, GTOS, GOOS, AOPC and OOPC, and JCOMM), and for the development of a strategy for their evolution/optimization based on new science and reanalysis insights, and fostering the use of resulting data sets in global synthesis efforts.

3.Promote activities to develop the surface flux data sets required by CLIVAR in liaison with the WGNE, global atmospheric reanalysis efforts and the WCRP Working Group on Surface Fluxes.

4.Provide an overview of and directions to CLIVAR data management and information activities in collaboration with other WCRP projects and in liaison with CLIVAR-relevant data centres and DACS and the ICPO.

5.Liaise and collaborate with CLIVAR Panels and Working Groups in identifying the requirements for and coordinating the development of an observing system for CLIVAR.

ToR 4 tasks GSOP with oversight of CLIVAR data management. This will be a topic for the first GSOP meeting, which will take place in November this year. GSOP will consider the outcomes of the review of CLIVAR data management referred to above. The ICPO will ensure that the outputs from the SCOR data management meeting are fed into these discussions.

For information, the 1st CLIVAR Data Planning Meeting on Ocean Observations was held from 24-26 March 2004 at Scripps Institution of Oceanography, La Jolla, California, USA as a first activity of GSOP in this area. A primary objective of the meeting was to: engage and build links between the CLIVAR DACs and the CLIVAR user community (as represented by its basin panels). The outcomes of the meeting were fed into the CLIVAR review of its data management activities and will further inform the first GSOP meeting

A report of the Data Planning Meeting will be available shortly.

GOOS activities

Sustained ocean observations are key to many of CLIVAR's interests. CLIVAR's main interaction with GOOS comes through collaborative activities and involvement with OOPC. The OceanObs'99 Conference was perhaps the key event so far as ocean sustained observations is concerned. The Conference was jointly supported by OOPC and the CLIVAR Upper Ocean Panel (UOP) and from the outset had objectives that encompassed both CLIVAR and operational applications. The UOP and GODAE also endorsed a project we now know as Argo.

The UOP later evolved into the CLIVAR Ocean Observations Panel, COOP, (as distinct from the GOOS COOP which focuses on coastal) and this more recently into the wider remit of GSOP. There was intentioned cross-membership between the UOP/CLIVAR OOP and OOPC. More recently, and for the past two meetings, CLIVAR has been represented at OOPC by representatives of its Atlantic, Pacific, Southern and Indian Ocean Panels. The chair of OOPC also attends the CLIVAR SSG. As will be seen from its ToR 2 above, GSOP will provide the route through which CLIVAR links to GOOS and related activities in the future.

As for data management, CLIVAR has recently carried out a critical review (again by Neville Smith) of its activity in sustained observations over the past 5 years.

The attached pdf (globocean.pdf) provides a short summary of CLIVAR interests in and requirements for global ocean observations.

Southern Ocean Research

CLIVAR has a panel devoted to the Southern Ocean region. The panel is jointly sponsored by CLIVAR and WCRP's Climate and Cryosphere (CliC) Project and, more recently, by SCAR. A summary of the Panel's objectives and activities is given on the attached pdf (so.pdf).

The CLIVAR/CliC Southern Ocean Panel has, through its Co-Chair, Steve Rintoul, been active in the development of an strategy for the IPY, the Title Page and Executive Summary of which are given in Annex A to this document.

Time Series Stations

CLIVAR has clear requirements for these and has been active in planning for these. Further information will be provided at the meeting.

Environmental Assessments

The key CLIVAR activity here is input to IPCC. It does this in particular through the activities of the joint JSC for WCRP/CLIVAR Working Group on Coupled Modelling

(WGCM), though a considerable number of scientists involved with CLIVAR (and WCRP more widely) are also involved in a personal capacity in the IPCC assessments. WGCM has been involved in the past helping to plan, coordinate and run scenario experiments for input to IPCC. It has also informed IPCC through its Coupled Model Intercomparison Project (CMIP). CMIP subprojects, of which some 28 are currently active, have produced a large number of peer-reviewed publications, contributed significantly to the IPCC Third Assessment Report and will play a key role in the upcoming Fourth Assessment Report (AR4). A CMIP-related activity will involve collection and analysis of the most recent standard CMIP simulations as well as 20th, 21st, and 22nd century simulations for AR4. A specific call has gone out through CLIVAR Exchanges and elsewhere announcing the opportunity for the community to participate in climate model analyses leading towards input to AR4.

Input to AR4 will also come through the joint Commission for Climatology/CLIVAR Expert Team on Climate Change Detection.

Annex A

The Role of Antarctica and the Southern Ocean in Past, Present and Future Climate: A Strategy for the International Polar Year

The strategy has been prepared by Steve Rintoul on behalf of the CLIVAR/CliC/SCAR Southern Ocean Implementation Panel. The panel recognised a number of common threads and opportunities for synergy in the submissions to the ICSU IPY Planning Group. The panel volunteered to draft a strategy for integration of individual IPY proposals in order to stimulate development of a coherent and coordinated IPY program in the southern hemisphere. The strategy is based on input from a wide cross-section of the community who submitted ideas to the IPY planning group and provided direct input to the panel (contributors are listed in the appendix).

Contacts:

Steve Rintoul Co-chair, CLIVAR/CliC/SCAR Southern Ocean Implementation Panel Antarctic Climate and Ecosystems CRC and CSIRO Marine Research, Hobart, Australia <u>Steve.rintoul@csiro.au</u>

Mike Sparrow International CLIVAR Project Office <u>m.sparrow@soc.soton.ac.uk</u>

Executive Summary

The purpose of this document is to outline a strategy for an integrated and interdisciplinary approach to understand the role of Antarctica and the Southern Ocean in past, present and future climate during the International Polar Year (IPY) 2007-2008.

Climate research proposed for the IPY can be organized into five themes:

- 1. Antarctica and the Southern Ocean in the global water cycle
- 2. Southern hemisphere teleconnections
- 3. Climate processes at the Antarctic continental margin
- 4. Climate ecosystem biogeochemistry interactions in the Southern Ocean
- 5. Records of past Antarctic climate variability and change

To address these themes, an integrated IPY Southern Ocean observing system is needed that includes synoptic, multidisciplinary transects; time series measurements; enhanced atmospheric measurements; and new paleoclimate data sets. Extensive use of new technologies such as autonomous floats, gliders and aircraft will be required to sample regions, seasons and variables that have eluded us in the past.

The IPY observing system will tackle a number of key unknowns. The IPY will:

- Obtain the first circumpolar snapshot of the Southern Ocean environment, including physical, ecological and biogeochemical properties.
- Measure the circumpolar volume (extent and thickness) of Antarctic sea ice through an annual cycle for the first time.
- Observe the sub-ice ocean circulation, water mass properties and biological distributions

The strategy directly addresses four of the science themes identified by the ICSU IPY 2007-2008 Planning Group: to determine the present environmental status of the polar regions; to understand past and present change in the polar regions; to advance our understanding of polar-global teleconnections; and to investigate the unknowns at the frontiers of science in the polar regions.

The Southern Ocean strategy and the AOSB/CliC initiative "The Northern Seas at a time of Global Change" together form the integrated bi-polar program required to address the goals of the IPY.

The Southern Ocean IPY will leave a legacy of a targeted, affordable, sustained observing system; a circumpolar snap-shot to serve as a benchmark for the assessment of past and future change; models capable of simulating interactions between climate, ecosystems and biogeochemical cycles, providing vastly improved projections of future change; a well-integrated interdisciplinary polar research community; and inspire a new generation of polar researchers.