Comments by the US CLIVAR PSMIP panel

August 4, 2008

United States Participation in the 2011 Cooperative Indian Ocean Field Experiment (CIOFE) (prepared by *Chris Fairall* NOAA/ERSL, *Richard Johnson*, Colorado State University; *Michael McPhaden* (NOAA/PMEL); *Chidong Zhang*, University of Miami)

The PSMIP panel of the US CLIVAR was asked to comment on the draft proposal ''United States Participation in the 2011 Cooperative Indian Ocean Field Experiment''. One of our panel goals is to ensure that process studies lead to improvements in climate models. Over the course of the past few years we developed a set of ''best practices'' for process studies. These best practices are: (1) Modelers and experimentalists should be integrated in the study from the planning stage onward; (2) Synthesis data sets should be created that can be used as benchmarks for assessing and validating models; (3) Broad use of the data should be encouraged through: a) open data policies, b) centralized access to all components of experiment, c) archiving data in format intended for broad use.

The panel supports the preliminary plan with the following questions, comments, recommendations.

We note that tropical intraseasonal variability (TIV) and in particular the Madden-Julian Oscillation (MJO) play important roles in weather and climate. TIV/MJO influence tropical cyclone genesis, Asian and Australian monsoon onset and breaks, ENSO variability and evolution, near-surface ocean variability, including chlorophyll, atmospheric compositon, and provides teleconnection mechanisms with circulations in mid-latitudes. The current prediction skill for the MJO may be low due to the inability to reproduce the MJO/TIV by models used for weather and climate predictions. In particular the initiation of the MJO convection in the equatorial Indian Ocean is one of the least understood aspects of the MJO. There is a lack of direct observations of the atmosphere and ocean structure of the Indian Ocean during the MJO genesis, particularly observations under boreal winter conditions that provide longitudinal information.

Comment 1. We note that the US CLIVAR MJO Working Group endorsed the scientific merit of the proposal. We encourage CIOFE to involve modelers in their project early in the planning stage onward and address modeling issues. We encourage CIOFE proposers to discuss what synthesis data sets should be created that can be used as benchmarks for assessing and validating models – tasks which can be facilitated by collaboration with the US CLIVAR MJO WG.

Comment 2. We support broad use of the CIOFE data by encouraging open data policies, centralized access, and archiving data in an appropriate format and thereby suggest involving JOSS/EOL and NODC early on in the planning stages.

Comment 3. We encourage cooperation with the ARM Mobile Facility on Manus (should it be funded) as a successful collaboration could lead to in situ observations that describe the downstream MJO evolution from convective initiation to mature phase. We also advocate coordination with international efforts guided by the International CLIVAR Indian Ocean Panel (IOP) such as the planned multinational process studies CIRENE and HARIMARU. The International CLIVAR IOP could also assist with finding further supporting vessels if desired.

Comment 4. We note the possible role of MJO related convective systems and precipitation on modulation of aerosols and incoming solar radiation and MJO role on monsoon onset. These may be further exploited by coordination with the proposed Joint Aerosol-Monsoon Experiment (Lau et al, BAMS, 89, 2008) One such ongoing facility is Atmospheric Brown Cloud (ABC) project including observations on Maldives.

Comment 5. We note that the R/V Ron Brown with its radar system is a logical choice but that this system should be functional. We recommend the involvement of a radar PI who will help assess and improve the functionality of the Ron Brown Doppler radar, or help secure an alternative radar and platform if needed. If so, the international CLIVAR IOP may be able to assist with finding an alternative vessel.

Comment 6. We note that footnote "INDOEX and JASMINE did not explicitly target the MJO/TIV" should be qualified in that there is the connection between the MJO and the Indian monsoon onset, serving as one of the motivations for JASMINE.

Comment 7. We encourage the investigators to give a presentation to the NOAA climate board and inform NSF project managers.