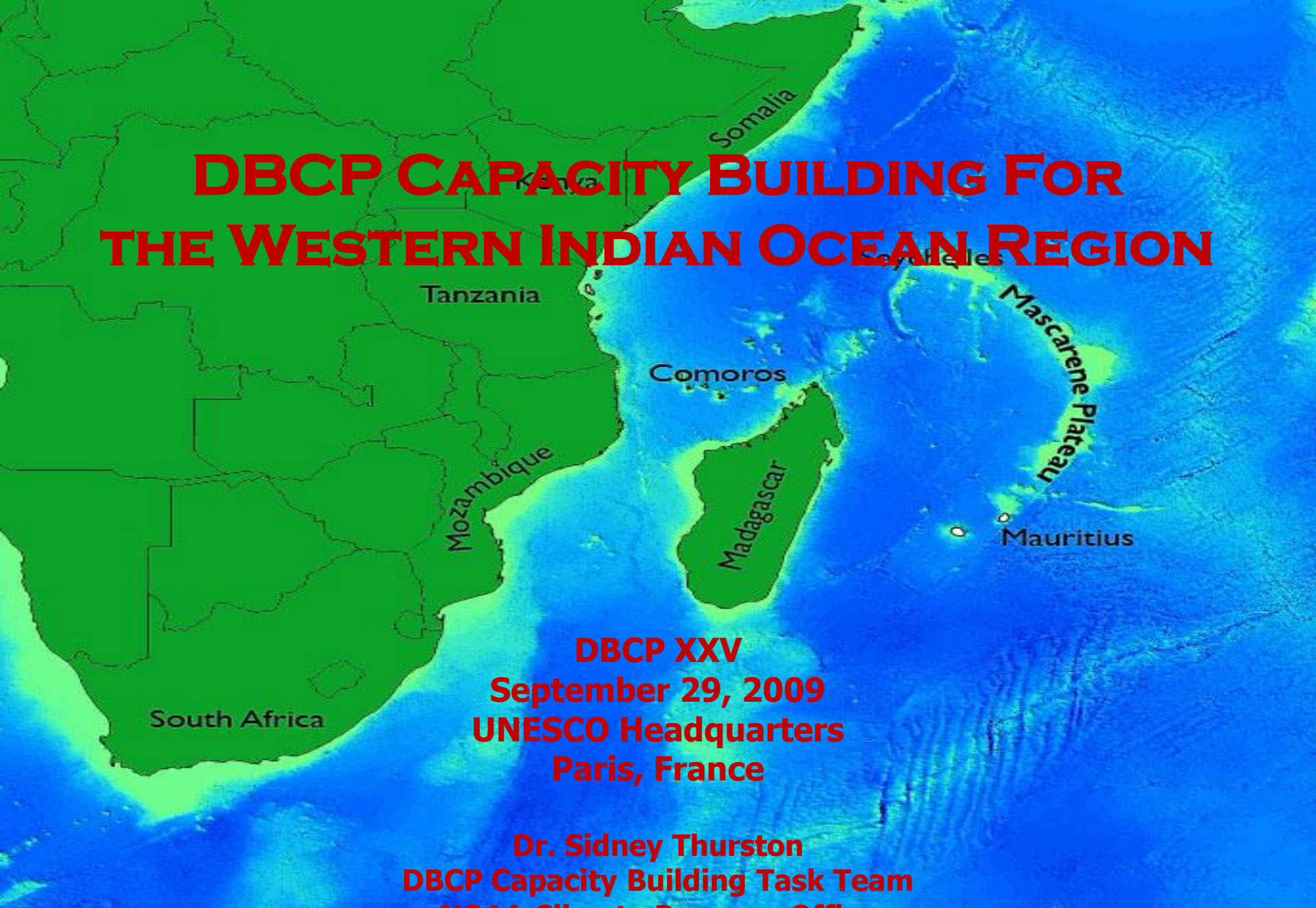


# DBCP CAPACITY BUILDING FOR THE WESTERN INDIAN OCEAN REGION



**DBCP XXV**  
**September 29, 2009**  
**UNESCO Headquarters**  
**Paris, France**

**Dr. Sidney Thurston**  
**DBCP Capacity Building Task Team**  
**NOAA Climate Program Office**



# DBCP Capacity Building Task Team

Etienne CHARPENTIER

Ken JARROTT

Boram LEE

David MELDRUM

V. RAJENDRAN

Lucy SCOTT

Johan STANDER

Hester VIOLA

AI WALLACE

Sidney W. THURSTON

New Colleagues are Most Welcome!



# Introduction

- The Intergovernmental Oceanographic Commission (IOC) has identified the Western Indian Ocean as one of the highest Priority Regions for Capacity Building in 2009.
- As the IOC celebrates its 50th anniversary in 2010, beginning with its roots of the *International Indian Ocean Expedition* of 1960, it is timely that after half a Century this basin is once again receiving the spotlight and attention that it deserves.
- During the October 2008 DBCP-XXIV Meeting, hosted by the South African Weather Service (SAWS) in Capetown South Africa, the DBCP CB-TT met to discuss options forward to address this IOC priority and to advance operational oceanography and applications for the Region.



# 1960 Indian Ocean Expedition

*“The Indian Ocean expedition was a pioneering effort in international oceanographic planning. It was like the International Geophysical Year, but on a much bigger scale. We learned how difficult the task was. Everyone should be reminded that this is the Indian Ocean, and not the Woods Hole or Scripps ocean. To attain any lasting results, the work has to be carried on partly by the scientists of the Indian Ocean area. This does not mean just coming along for a ride, but actually give a major share in planning, analysis, and reporting. It was important, therefore, to involve developing countries, so that the expedition would not appear to be what Revelle called 'A club of outside countries that wanted to do oceanography'. Here, help came from the late N. K. Panikkar, an Indian scientist on SCOR, whom Revelle remembers as 'very sensible and very enthusiastic'.*

In a letter to the fourth issue of the *Indian Ocean Bubble* in July 1959, LaFond

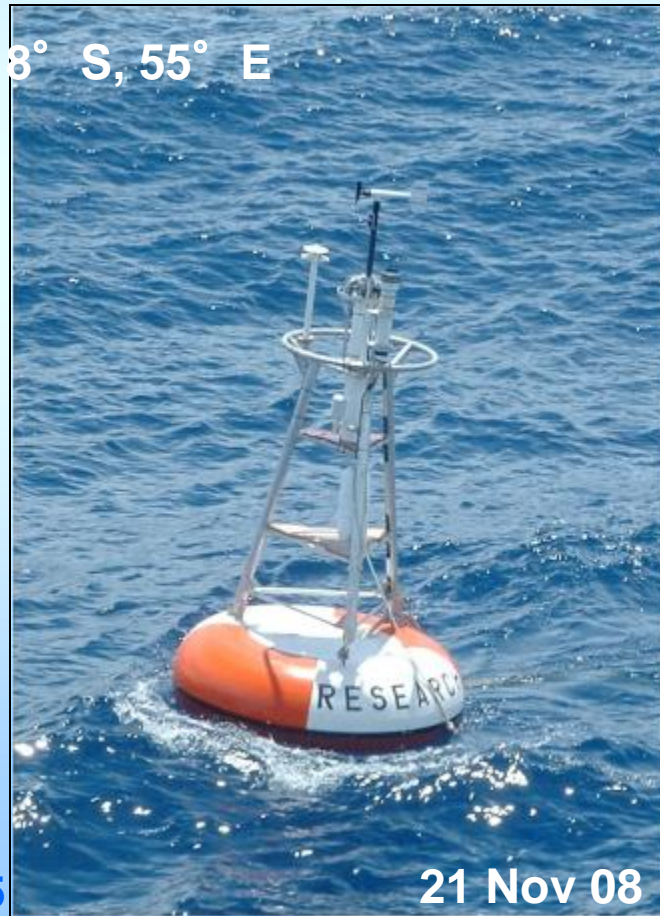




# NOAA and ASCLME

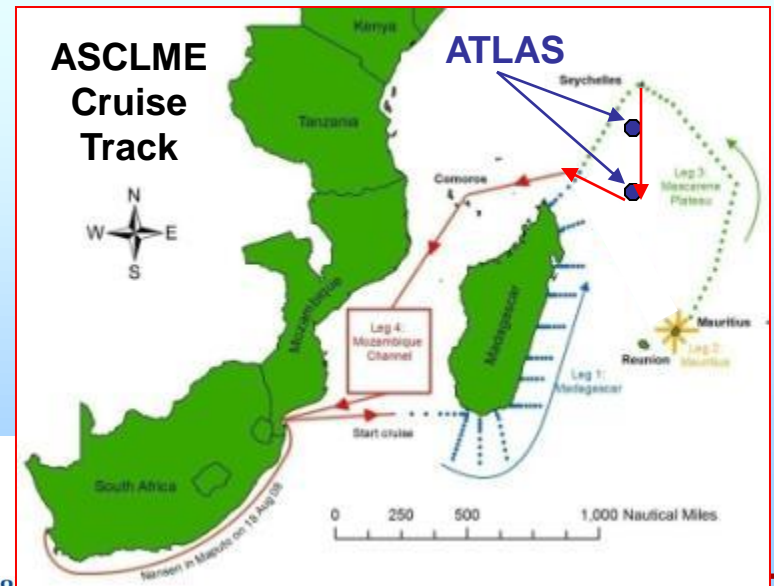
2 ATLAS and 4 Argo floats deployed during ASCLME cruise on *R/V Fridtjof Nansen*

Mahe, Seychelles to Pemba, Mozambique  
18-27 Nov 2008



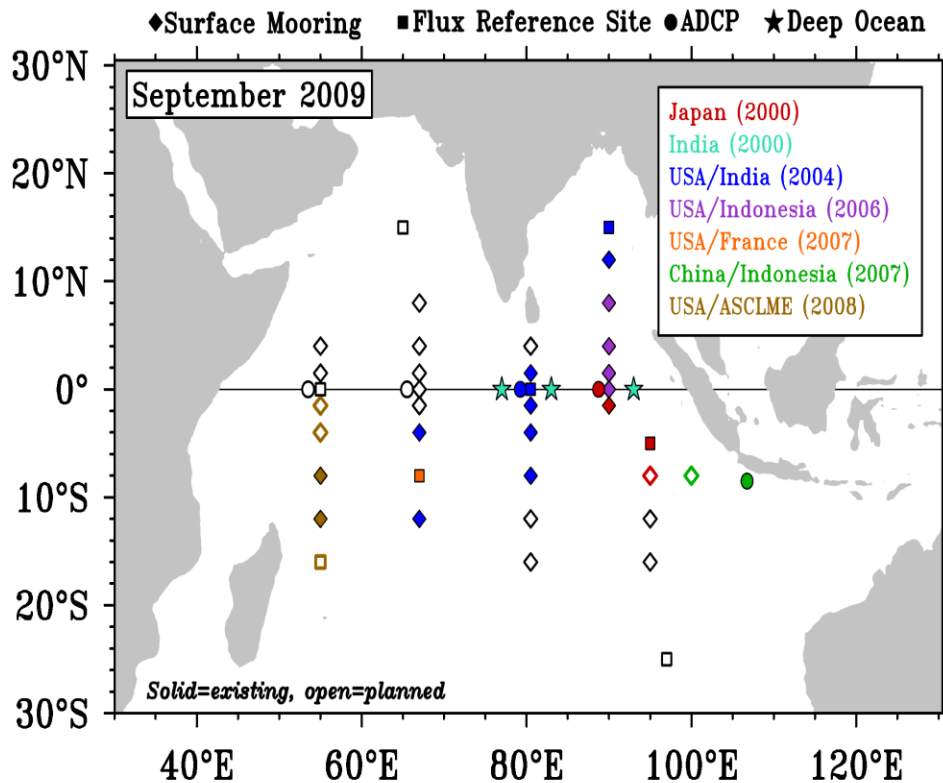
8° S, 55° E

21 Nov 08



# RAMA Implementation Status

## Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (*RAMA*)



- Number of sites occupied: 24, or 52% of the IOP plan.
- Planned and proposed sites for September 2010: 80%

# Workshop Objectives

- Increase the flow of products to the Region by using new ocean observations in the Region to help satisfy the needs of Modellers for quality and resolution (space, time, parameter).
- The workshop will focus on data collection and management, as well as modelling, products and validation by in-situ ocean observations.



# Kenya Met Department Organized A Meeting of Regional Institutions

- Seychelles Meteorological Department and Seychelles Fisheries,
- Mauritius Meteorological Department and Mauritius Oceanographic Institution,
- Mozambique Meteorological Department and INAHINA,
- Tanzania Meteorological Agency,
- ASCLME,
- Institute of Marine Science, University of Dar es Salaam, Tanzania and others.





# Principal Regional Requirements

- The use of fixed and drifting buoy data for national and regional Climate and Ocean models, both as inputs for boundary conditions and validation;
- Training on how to deploy and maintain fixed and drifting buoys;
- How to access and process these data streams;
- Grid interpretation of the data streams; and delivery of model products for practical socio-economic application.



# Data Streams for Models

- Wind (direction and speed)
  - Sea Surface Temperature
  - Air temperatures
  - Sea level
  - Temperature and salinity profiles
  - Velocity profiles
- These data streams, particularly the air temperatures and wind, can be used as input for initial forecasting conditions and model validation in a regional climate model.
  - The availability of this data will improve the model skills.



# Nine Countries Working With ASCLME in the Western Indian Ocean Region

1. Comoros,
2. Kenya,
3. Madagascar,
4. Mauritius,
5. Mozambique,
6. Seychelles,
7. Somalia,
8. South Africa,
9. Tanzania.



# ASCLME Capacity Building

- A key output of the ASCLME is that of capacity building and training (CB&T) in relation to the long-term LME monitoring and management process.
- The ASCLME training course offers trainees an excellent grounding in theoretical “classroom” oceanography, and fisheries science, followed by hands-on training in data collection, analysis and survey planning.
- The ASCLME project is currently compiling training requirements for each participating country as well as undertaking a number of regional training courses, in conjunction with regional partners.
- CB&T concentrate on the basic principles, concepts, methods and technologies applied in the collection of near-shore oceanographic and biological data.
- The planned DBCP western Indian Ocean Capacity Building Workshop is the natural progression of the initial training undertaken by the ASCLME. Of particular importance will be predictive capability and practical products that can be used by researchers, decision makers and end users.
- The use of in-situ ocean data in the region provides an excellent training platform, and the opportunity to understand the changing ocean conditions in the region, and the types of data and model output products that will have practical applications, both to the country and the regional requirements of the LME approach.





# Other Contributing Parties

- IOC Capacity Building Programmes for East Africa
- Zanzibar Project



# Two Parallel Sessions

- 1) "data collection/ management",
- 2) "modelling/products and validation",

with common Joint sessions for modellers to convey their ocean observation data requirements for assimilation into models.



# Data Collections/Management Sessions

- Continuity and extension from the earlier successful DBCP capacity building Workshop in Oostend will be used as the foundation.



# Modelling/Products and Validation Sessions

- Coordinating with ongoing modellers from local Institutes for local scales of practical socio-economic importance





# Draft Agenda

DBCP Western Indian Ocean Capacity Building and Training Workshop,  
February 2010, Draft July 2009

## Data Collection/Management Sessions: *The Why, How and Where of Data Buoy Observations*

Day	Theme, topics and sub-topics	Prepared and delivered by	Supporting materials	Practical work and assignments
<b>Day 1 AM</b>	<b>1. Overview of Regional marine observing systems</b> <ul style="list-style-type: none"> <li>• Satellites               <ul style="list-style-type: none"> <li>○ Active</li> <li>○ Passive</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• To be defined</li> </ul>	Access to satellite imagery archives
	<ul style="list-style-type: none"> <li>• Ships               <ul style="list-style-type: none"> <li>○ OWS, VOS</li> <li>○ XBTs, XCTDs</li> <li>○ ASAP</li> <li>○ Manual obs</li> <li>○ Shipboard AWS</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• To be defined</li> </ul>	
	<ul style="list-style-type: none"> <li>• Fixed platforms               <ul style="list-style-type: none"> <li>○ Oilrigs, lighthouses</li> <li>○ Moored buoys</li> </ul> </li> <li>• Profiling floats</li> </ul>		<ul style="list-style-type: none"> <li>• To be defined</li> </ul>	
	<ul style="list-style-type: none"> <li>• Drifting buoys</li> <li>• Tsunameters and tide gauges</li> <li>• Autonomous vehicles</li> <li>• Seabed observatories</li> </ul>		<ul style="list-style-type: none"> <li>• To be defined</li> </ul>	
<b>Day 1 PM</b>	<b>2. The need for buoy observations</b> <ul style="list-style-type: none"> <li>• Role of oceans in weather and climate</li> <li>• Limitations of satellite obs</li> <li>• Limitations of ship obs</li> <li>• Value for money considerations</li> </ul>		<ul style="list-style-type: none"> <li>• To be defined</li> </ul>	
	<ul style="list-style-type: none"> <li>• Specific needs in terms of               <ul style="list-style-type: none"> <li>○ Observed variables</li> <li>○ Spatial coverage</li> <li>○ Temporal coverage</li> <li>○ Availability and timeliness</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• WMO and OOPC docs</li> </ul>	<ul style="list-style-type: none"> <li>• Summarise marine observing systems and their underlying requirements</li> </ul>



# Draft Agenda

<b>Day 2 AM.</b>	<b>3. Buoy hardware: communications</b> <ul style="list-style-type: none"> <li>• GSM and radio</li> <li>• Satellite             <ul style="list-style-type: none"> <li>○ LEOs: Argos, Orbcomm, Iridium, Globalstar</li> <li>○ GEOs: Meteosat/GOES/GMS, Inmarsat</li> </ul> </li> <li>• Acoustics</li> <li>• Energy considerations</li> </ul>		<ul style="list-style-type: none"> <li>• Satcomms overview</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
	<b>4. Buoy and float deployment</b> <ul style="list-style-type: none"> <li>• Strategic issues             <ul style="list-style-type: none"> <li>○ High impact areas</li> <li>○ Optimisation strategies</li> <li>○ Remote areas</li> <li>○ Contact with Regional focal points and high level sponsors</li> </ul> </li> <li>• Practical issues             <ul style="list-style-type: none"> <li>○ Air and sea deployment opportunities</li> <li>○ Coordination with other agencies</li> </ul> </li> </ul>			<ul style="list-style-type: none"> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>○ Deployment techniques and handling of deployment packages</li> <li>○ Pre-deployment tests</li> <li>○ Safety issues</li> </ul>			
<b>Day 2 PM</b>	<b>5. Shore-side data processing, dissemination and archiving</b> <ul style="list-style-type: none"> <li>• Data reception</li> <li>• Location techniques</li> <li>• GTS Formats</li> <li>• Metadata</li> <li>• Data delays</li> </ul>		<ul style="list-style-type: none"> <li>• DBCP docs</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>• Developments by service providers             <ul style="list-style-type: none"> <li>○ Argos</li> <li>○ Iridium</li> <li>○ Inmarsat</li> </ul> </li> </ul>			

# Draft Agenda

Day 3 AM	<ul style="list-style-type: none"> <li>○</li> </ul>		•	•
	<ul style="list-style-type: none"> <li>○</li> </ul>			
	<p><b>6. Data access and consultation</b></p> <ul style="list-style-type: none"> <li>• Data access policies</li> <li>• Data systems               <ul style="list-style-type: none"> <li>○ WMO Information System (WIS)</li> <li>○ Global Telecommunication System (GTS)</li> <li>○ Other data pathways                   <ul style="list-style-type: none"> <li>▪ Designated archiving centres: RNODC/DB, SOC/DB</li> <li>▪ GDP Data Assembly Centre</li> <li>▪ ICOADS</li> <li>▪ WDCs</li> <li>▪ RAMA, OceanSITES, Arctic data, Argo</li> <li>▪ National Centres</li> </ul> </li> </ul> </li> <li>• Archival mechanisms               <ul style="list-style-type: none"> <li>○ Operational support centres: JCOMMOPS, OSMC, NDBC</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• DBCP, WMO and MEDS docs</li> </ul>	<ul style="list-style-type: none"> <li>• Report on the availability of buoy data from various sources</li> </ul>
Day 3 PM	<p><b>7. International coordination</b></p> <ul style="list-style-type: none"> <li>• WMO</li> <li>• IOC</li> <li>• JCOMM and JCOMMOPS</li> <li>• DBCP and its action groups</li> </ul>		<ul style="list-style-type: none"> <li>• WMO and IOC docs</li> </ul>	•
	<ul style="list-style-type: none"> <li>• Case study : IBPIO, Indian Ocean activities and coordination</li> </ul>			
	<ul style="list-style-type: none"> <li>• Argo</li> <li>• Other emerging initiatives: GEOSS, EU FP7</li> <li>• Future visions</li> </ul>			
	<ul style="list-style-type: none"> <li>○</li> </ul>			



# Current Sponsors

- Agulhas and Somali Current Large Marine Ecosystems ([ASCLME](#)) Project
- DBCP Capacity Building Task Team
- NOAA Office of Climate Observation (OCO)
- Seek Additional Sponsors for Strong Regional Capacity Building





# African Monitoring of the Environment for a Sustainable Development” program (AMESD).

- Improved access by African users to existing basic Earth Observation data.
- Development of regional information services to improve decision making process by African institutions.
- Development of human resources via i. a. training sessions, staff exchange, fellowship programs, etc.
- The “Mauritius Oceanography Institute” (MOI) was mandated to implement the “Indian Ocean Commission” (IOC) component of this project.



# Next Steps

- Meet Today to Refine Plan
- Invite Additional Sponsors
- Final Agenda – End of October
- Participant & Trainers Invitations – November
- Logistics Finalized - November



# Thank You



**DBCP Capacity Building Task Team**