Joint WMO-IOC Technical Commission for
Oceanography and Marine Meteorology (JCOMM)

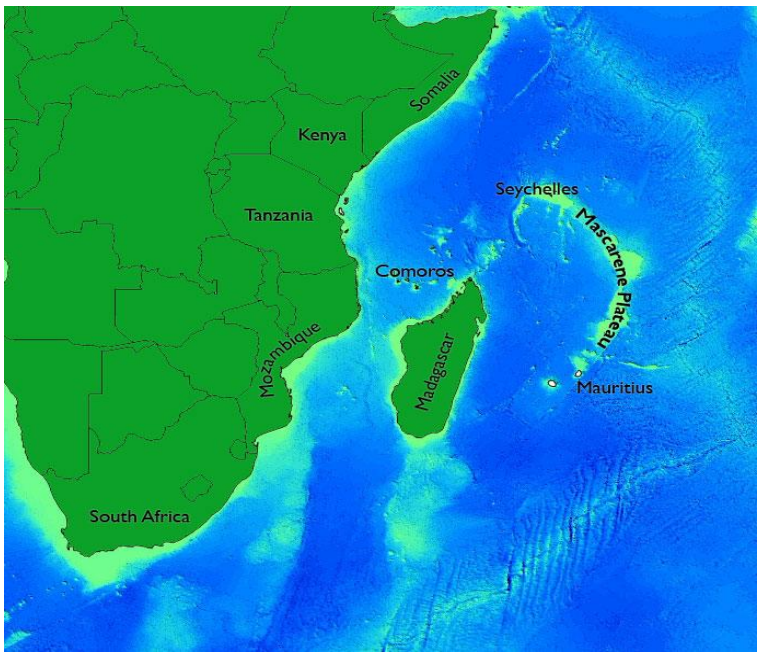
WORKSHOP GOALS AND PROGRAMME

Third In-Region Western Indian Ocean Capacity Building Workshop Of the WMO/IOC Data Buoy Cooperation Panel (DBCP) and Partners

"Implementation and Operation of Indian Ocean Data Buoy Networks and their Socio-Economic Applications for Enhancing Regional Predictive Capability"

16-20 April 2012
Venue: Travellers Beach Hotel

Mombasa Kenya



Hosted By the Kenya Meteorological Department (KMD)

Goals of the Third DBCP Western Indian Ocean (WIO-3) Capacity Building Workshop

The Following Goals and associated Actions reflect the needs of this 3rd Workshop and of the long-term Ocean Monitoring Capacity in the region:

1. Review and Consider Proposed Resolutions (included below) and Recommendations from the 2nd DBCP Workshop in Mauritius, Including National and Project Updates,

2. Learn Practical Implementation Aspects for the Deployment of Operational Data Buoys at Sea, the Collection of Buoy Data, and Related Data Management,

3. Discuss Ways to Mitigate Deployment Constraints Due to Piracy to Include Potential Coordination with *African Ministerial Conference on Meteorology* (AMCOMET), per their *Nairobi Declaration*, and by Using Gliders,
4. Continue to Align with Objectives of the *Global Framework for Climate Services* (GFCS) to Deliver Ocean Data to the End-User,

5. Enhance Regional and National Human, Institutional and Infrastructure Capacity Needed to Acquire, Process and Deliver Socio-Economic Benefits From Ocean Observations,
6. Establish a Regional Mentoring Network for Ongoing and Sustained Training and Capacity Building for Application of Ocean Observations,
7. Continue to Find Synergy between DBCP and *Agulhas-Somali Current Large Marine Ecosystem* (ASCLME) in-situ Ocean Observations and Satellite Observations of the Regional *Africa Monitoring of the Environment for Sustainable Development* (AMESD),
8. Enhance Coordination and Cooperation between the DBCP Task Team for Capacity Building (TT-CB) and WMO Regional Associations (RA-I/II),
9. Coordinate Regional Institutes for Increasing in-situ Western Indian Ocean Observations to Include Enhanced Coordination with DBCP *International Buoy Program for the Indian Ocean* (IBPIO),
10. Demonstrate the Crucial Role of Ocean Observations for Understanding and Predicting Regional Weather, Ocean and Climate,
11. Utilize advances in Information and Communication Technology (ICT) to Facilitate More Effective Outreach and Capacity Building Activities on a Larger Scale.

AGENDA

Day 1: Monday 16 April 2012

TIME	SUBJECT	LEAD
Opening Day Remarks, Updates and Workshop Objectives		
8:30-9:00	Registration	KMD
9:00-9:45	Welcome, Greetings and Opening Remarks Joseph R. Mukabana, Director-General KMD Al Wallace, Chair DBCP Mika Odido, IOC Africa Sub-Commission Johan Stander, JCOMM Representative Etienne Charpentier, WMO Representative Nick D'Adamo, IOC Representative	Sidney Thurston (DBCP)
9:45 – 10:00	Review Workshop Agenda, Objectives and Regional Deployment Goals for 2012	Sidney Thurston (DBCP)
10:00 – 10:30	Keynote Address: African Ministerial Conference on Meteorology (AMCOMET) – The *Nairobi Declaration*	Minister of Environment and Mineral Resources of the Republic of Kenya
10.30-11.00	**Morning Tea Break and Group Photograph**	All Participants
Session 1: Lead Presentations by Kenyan Institutions on the Use of Climate, Weather and Oceanographic Data and Knowledge In-Country Chair: Al Wallace, Rapporteur: Nick D'Adamo		
11.00-11.20	Host Institute Address: KMD's Operational Services Using Ocean Observation	Dr. Mukabana (KMD)
11.20-11.40	Impacts of Weather and Oceanographic conditions on Port Operations	Kenya Ports Authority
11.40-12.00	Requirements for Data and Information on Weather and Ocean Conditions for Marine Safety	Kenya Navy
12.00- 12.20	Challenges of Implementing SOLAS (Safety of Life at Sea) Convention in the Western Indian Ocean	Kenya Maritime Authority
12.20- 12.40	Observational Requirements for Maintaining a Healthy Marine Ecosystem	National Environmental Management Authority

12.40-1.00	Questions and Discussion on Use of Climate, Weather and Oceanographic Data and Knowledge In-Country	All Participants. Facilitator – Dr. Mukabana
1:00-2:00	**Lunch On Your Own**	All Participants
Session 2: Regional Context & Review from the 2nd DBCP Workshop in Mauritius (Including Country Requirement Updates) Chair: Johan Stander, Rapporteur: Magnus Ngoile		
2:00-2:20	Briefing on the New IOC Sub-Commission for Africa and Adjacent Island States. IOC and the Development of Oceanography in the Western Indian Ocean Region	Mika Odido, IOC Sub-Commission, Nairobi
2:20-2:40	*Marine Climate Data System*: WMO/IOC/JCOMM Response for Global Framework for Climate Services (GFCS)	Etienne Charpentier (WMO)
2:40-3:00	Predictions and Monitoring for the Indian Ocean Basin using the NOAA NCEP *Climate Forecast System* (CFS Overview)	Wassila Thiaw (NOAA/NCEP)
3:00-3:20	Status of Western Indian Ocean Observing System (IndOOS), RAMA, XBT, Argo, Gliders, Drifters - Discussion	Sidney Thurston (for M. Ravichandran INCOIS)
3:20-3.45	**Afternoon Tea Break**	All Participants
3:45-4:10	Regional Institutional Operational Data Stream Update and Requirements for Meteorological, Ocean and Climate Models	Ali Mafimbo (KMD)
4:10-5:30	Part I - Country Updates (Conveyed to Organizers in Advance With Emphasis on Current/Future Observations, Data analyses, Modelling, Applications)	Five Minutes Each Country
5:30-5:45	Discussion on Country Science Briefs and Related Recent Developments In Monitoring and Data Analyses	All Participants, Leader Ali Mafimbo
5.45 – 6.00	Daily Wrap-up & Tomorrow's Plans	Sidney Thurston (DBCP)
6.30-8:00	Social Evening	Host: KMD

AGENDA
Day 2: Tuesday 17 April 2012

TIME	SUBJECT	LEAD
Session 3: Delivering the Data to the End-User and Enhancing Regional and National Capacity to Deliver Results from Ocean Observations Chair: Mike Roberts, Rapporteur: Nick D'Adamo		
8.45-9:00	Daily Planning Objectives: Classroom Setup for Demonstrations and Training, Wi-Fi	Sidney Thurston (DBCP)
9:00-9:30	JCOMM in-situ Observing Platform Support Centre (JCOMMOPS)	Kelly Stroker (JCOMMOPS)
9:30-10:00	Social and Economic Relevance of Regional Ocean Science and Technology	David Vousden (ASCLME)
10.00-10.45	Science-to-Governance and the 'Weight-of-Evidence" Approach - What the Managers and the Decision-Makers Need	Magnus Ngoile (ASCLME)
10.45-11:00	**Morning Tea Break**	All Participants
11:00-11:30	Update on the latest ASCLME Alliance Research Cruise in the Western Indian Ocean	Tommy Bornman, Mike Roberts and Herman Ridderrinkof
11:30-11:50	Update on the African Monitoring of the Environment for Sustainable Development (AMESD) Program and E-Station	Eric Martial (AMESD)
11:50-12:20	Finding Synergies Between Field and Satellite Observations:AMESD, DBCP, ASCLME, and other Ocean Observations	David Meldrum (SAMS)
12:20-12:40	French Contributions to Regional Ocean Observations including the Livre Bleu and planned Indian Ocean Observatoire	Jean-Francois Ternon, Francis Marsac
12.40-1.00	Part I: Review of Regional and National Capacities as identified in ASCLME Marine Ecosystem Diagnostic Analysis (MEDA) Reports From Each Country	Lucy Scott (ASCLME)
1.00-2.00	**Lunch On Your Own**	All Participants
2:00-2:30	US National Weather Service Regional Engagement and Potential Observing Partnerships	Eric Linzey (NOAA/NWS)
2.30-3:15	Physical Oceanographic Instrumentation: Benefits of Using Simplest Methods to Build Useful Long-Term Monitoring Networks	Tammy Morris,Bernhard Diebold, Marcel

		Vanden Berg
3:15-3.40	Part II - Country Perspectives on Development and Observational Needs – General Discussion	All Participants, Leader Lucy Scott
3:40-4:00	**Afternoon Tea Break**	All Participants
4:00 - 5.00	Overview Discussion: Road-Map Design for a Regional Mentoring and Training Mechanism	All Participants, Leader Warwick Sauer
5.00 – 5.15	Daily Wrap-up & Tomorrow's Excursion Logistics& Homework: KMD, DBCP	Ali Mafimbo, Sidney Thurston

AGENDA
Day 3: Wednesday 18 April 2012

TIME	SUBJECT	LEAD
9.00 – 5.00	Workshop Excursion	All Participants
6.00-8.00	Workshop Dinner	Host: KMD

AGENDA
Day 4: Thursday 19 April 2012

Session 4: Improving and Sustaining Coordination and Cooperation for Regional Ocean Observations, Forecasting and Associated Governance Decision-making Chair: Ali Mafimbo, Rapporteur: Lucy Scott		
8.45-9:00	Daily Planning Objectives: Classroom Setup for Demonstrations and Training, Wi-Fi	Sidney Thurston (DBCP)
9.00-10.00	Operational Ocean Forecasting: BLUELink Advancements and Coordination with Regional Needs – Model Demonstration/Training	Gary Brassington (BoM)
10:00-11:00	Predictions and Monitoring for the Indian Ocean Basin using the NOAA NCEP *Climate Forecast System* (CFS Continued)	Wassila Thiaw (NOAA/NCEP)
11.00-11:15	**Morning Tea Break**	
11:15-12:00	Observing Parameters, Data Accessibility, Status of WIO Surface Drifting Buoys	Johan Stander (for IBPIO)
12:00-1:00	Data Quality Control Methods for In-Situ Observations (to Include WIO Glider Operations)	Walt McCall (NOAA/NDBC)
1.00-2.00	**Lunch On Your Own**	
2:00-2:30	Data Quality Control Methods for In-Situ Observations (to Include WIO Glider Operations)	Walt McCall (NOAA/NDBC)

2:30-3:00	*BaiLong* Buoy Technology and Atmospheric Weather Stations, FIO Training Opportunities	Sidney Thurston (for Chun Nin Ling)
3:00-3:30	Discussion: Based on Material presented, What Actions Can Be Taken to Build WIO Capacity	All Participants – Leader Johan Stander
3:30-4:00	**Afternoon Tea Break**	All Participants
4:00-4:30	Discussion – Workshop Report Recommendations	All Participants
4:30-5:00	Daily Wrap-up & Tomorrow's Plans	Sidney Thurston (DBCP)

AGENDA
Day 5: Friday 20 April 2012

TIME	SUBJECT	LEAD
Session 5: Formulation and Promotion of a Long-term Scientific Work Programme and Associated Capacity-building and Training (CB&T) Road-map As part of the DBCP and WIO Sustainable Ecosystem Alliance* *Formally Supported by DBCP and a Functional Activity Within the ASCLME and SWIOF Projects Chair: David Vousden, Rapporteur: Nick D'Adamo		
8.45-9:00	Daily Planning Objectives:	Sidney Thurston (DBCP)
9.00-9.30	Western Indian Ocean Sustainable Ecosystem Alliance Objectives and Activities	Magnus Ngoile (ASCLME)
9.30-10.00	Synergies and Long-Term Needs Resulting From the ASCLME-SWIOFP	Rondolph Payet (SWIOFP)
10.00-10.30	ASCLME MEDA: An Integrated Tool to Gather Information on the Environment, Socio-economics, Legislation	Lucy Scott
10.30-10:45	**Morning Tea Break**	All Participants
10.45-11.15	Outputs of MEDA for Monitoring Priorities	Lucy Scott
11.15-11:45	Discussion: Priorities for Long-Term Monitoring at the National & Regional Levels	Tommy Bornman to Facilitate
11.45-12:30	Discussion: Requirements for Expanding ATLAS and Other WIO Mooring Systems to Capture More BioGeoChemical Data	Tommy Bornman to Facilitate
12:30 – 1:00	Objectives of the DBCP Task Team for Capacity Building& Synergies With ASCLME/Partners	Sidney Thurston (DBCP)
1.00-2:00	**Lunch On Your Own**	All Participants
2.00-2.45	Discussion: Need for Road-Map for a Long-Term Ocean-Climate, Ecosystem Monitoring Program for Adoption by WIO Alliance Partners	All Participants: Leader, David Vousden

2:45-3:30	Discussion of Need for a Road-Map to develop a Joint CB&T Programme for Adoption by the WIO Alliance Partners	Warwick Sauer and Lucy Scott (ASCLME)
3:30-3:45	**Afternoon Tea Break**	All Participants
3:45-4:30	Agreement on a Road-Map/Way Forward to Develop 1. Long-Term Ocean-Climate and Ecosystem Monitoring Programme and 2. Associated Long-term CB&T Programmes for Adoption by the WIO Alliance Partners	Warwick Sauer and Lucy Scott
4:30-5:00	Workshop Assessment and General Discussions	All Participants: Leader, Ali Mafimbo
5:00-5:15	Workshop Wrap-Up: Recommendations for WIO-3 Workshop Report and JCOMM-IV	Sidney Thurston (DBCP)
5:15-5:30	Workshop Concluding Remarks	Al Wallace (Chair, DBCP)

Participating Organizations (alphabetical order**)**

- Agulhas-Somali Current Large Marine Ecosystem (ASCLME)
- African Monitoring of the Environment for Sustainable Environment (AMESD)
- CLIVAR - The Variability of the African Climate System (VACS) Panel
- China - First Institute of Oceanography (FIO)
- France - Institute of Research & Development (IRD)
- Germany - Leibniz Institute of Marine Sciences at a (IFM-GEOMAR)
- Global Learning and Observations to Benefit the Environment (GLOBE-Africa)
- Intergovernmental Oceanographic Commission (IOC)
- India - Ministry of Earth Sciences (MoES)
- Kenya - Kenya Meteorological Department (KMD)
- Mozambique National Institute for Fish Inspection (INIP)
- South Africa
    - South Africa Weather Service (SAWS)
    - Department of Environmental Affairs
    - Bayworld Centre for Research and Education
    - South African Environmental Observation Network (SAEON)
- South West Indian Ocean Fisheries Project (SWIOFP)
- United Kingdom - Scottish Association of Marine Sciences (SAMS)
- USA

  National Oceanic and Atmospheric Administration (NOAA):
    - Climate Program Office - Office of Climate Observation (OCO)
    - National Weather Service (NWS)
        - National Center for Environmental Prediction/Climate Prediction Center (NCEP/CPC)
        - National Data Buoy Center (NDBC)
    - National Marine Fisheries Service (NMFS)
- WMO/IOC Data Buoy Cooperation Panel (DBCP)

**Participating World Meteorological Organization (WMO)
Regional Association I, II NMHS Institutes (Alphabetical Order)**

1. Angola
2. Democratic Republic of the Congo
3. Egypt
4. Ethiopia
5. Kenya
6. Morocco
7. Mozambique
8. South Africa
9. Sri Lanka
10. Sudan
11. Tanzania
12. Togo

Resolutions from the Second DBCP Western Indian Ocean Capacity Building Workshop, Mauritius 2-6 May 2011

Workshop Resolutions

Resolution 1

The DBCP workshop participants recognise the growing partnerships within the WIO region in terms of Ocean-Atmosphere observations and the importance of effective coordination and sharing of resources to achieve the mutual aims and objectives in terms of data collection, analysis and its application for management and governance. The participants also recognise the role of the ASCLME Project in facilitating the development of a WIOSEA at both the scientific/technical level as well as the management and policy level. **The participants therefore encourage ASCLME to further the development of such an Alliance** in the WIO which will help to coordinate and integrate scientific effort and activities in the region with the ultimate aim of delivering end-products for management and governance in support of the social and economic needs of the countries.

Primary: ASCLME

Secondary: UNDP

Resolution 2

Recognizing the importance of collecting ocean and weather observations in data sparse areas such as the coast of Somalia where piracy precludes the security of research cruises and the placement of moorings, and currents preclude the placement of drifters. The Observation Development Team (ODT) recommends that **appropriate glider technology be used in a pilot project to see if real-time weather observations can be collected within this data sparse area.**

Primary: Ali Mafimbo

Secondary: Bill Burnett

Resolution 3

Recognizing the importance of **linksbetween remote sensing and in-situ observations**, for long term monitoring, and modelling purposes, the UNDP/GEF ASCLME Project and the Mauritius

Oceanography Institute (MOI) will pursue a collaborative agreement building on ASCLME activities in the WIO, AMESD and the proposed AMESD follow-on projects.

Primary: ASCLME

Secondary: Mauritius Oceanography Institute (MOI)

Resolution 4

Recognizing the importance of collecting ocean and weather observations in data sparse areas such as the Indian Ocean as well as the fact that members indicating willingness to become part of the International Buoys Deployment community the ODT recommends that **drifting weather buoys be supplied to African countries as a pilot project** and results be provided during the next Capacity Building Workshop. Interested participating African Met/Ocean Institutes will please provide a brief deployment plan to Primary and Secondary to include with their delivery address for the drifters shipment of when and how these drifters will be deployed.

Primary: Johan Stander

Secondary: Shaun Dolk

Resolution 5 (from WIO-1 Capetown Workshop April 2010)

During the first DBCP In-Region Western Indian Ocean Capacity Building Workshop in Capetown South Africa April 2010, representatives of Regional Met/Ocean Institutes put forward a Resolution to enhance ocean observations off the East coast of Africa to include five (5) Ocean Moored Buoys (Please see Figure 1). This resolution carried forward in Mauritius so is being included in this Second Workshop summary. Scientific justification for these additional in-situ observations off the East coast of Africa will help to better understand the following:

1. Intra-seasonal variability of the Somali jet over the East African coast and the mascarene pressures,
2. The response of the Somali current to the intraseasonal variability of the Somali Jet,
3. The dynamical and thermal feedback mechanisms between the cool temperatures in the filament and the modified wind stress,
4. The characteristics of the atmospheric convergence and divergence over the upwelling region and their influence on the climate of east African coast,
5. Specifically investigate how the SST and surface wind coupling affect vertical profile of the atmospheric boundary layer.

Primary: Kenya Meteorological Agency
Secondary: Tanzania Meteorological Agency

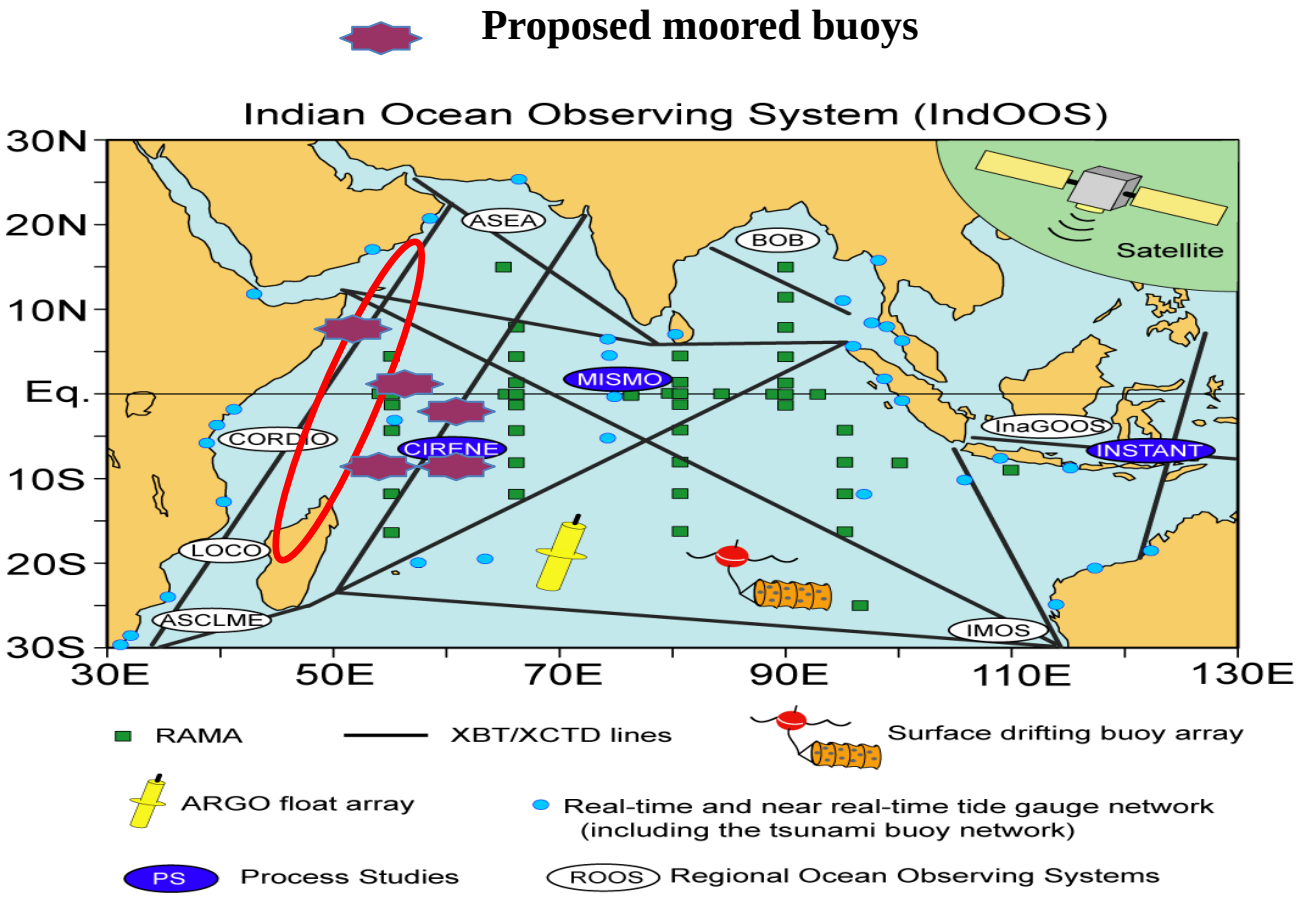


Figure 1 Proposed Western Indian Ocean Moored Buoys
To Augment the Indian Ocean Observing System IndOOS&
Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA) Moored Array