

INSTITUTIONAL SUPPORT TO AFRICAN CLIMATE INSTITUTIONS PROJECT - ISACIP/AFRICLIMSERV

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*Workshop on seasonal forecasts for operationalisation of the climate information system activity under the Production of Climate related information Component*

REGIONAL CLIMATE OUTLOOK FORUM PRESAOI - 01

“Climate Services for disaster risk management and climate change adaptation for sustainable development”

June 11 – 13, 2011 Moroni- Federal republic of COMOROS

# Workshop Report



## I. Background

1. Tropical Cyclones (TCs) are frequent and intense in the south Indian Ocean. They often dramatically affect maritime navigation, lives and economies in coastal areas. For example, TCs hit Mozambique quite significantly in 2000 with substantial reduction in national GDP. A Regional Climate Outlook Forum (RCOF) for South West Indian Ocean (PRESAIO-1) was held from June 11 to 13, 2012 at Hotel Kartala in Moroni, Federal Republic of Comoros to exchange knowledge and understanding and discuss methodologies for seasonal forecasting of South West Indian Ocean TCs.

## II. Organization and Participation

2. The workshop was organized by the African Centre for Meteorological Applications for Development (ACMAD) in the framework of ISACIP\_AfriClimServ project funded by AfDB with the support and collaboration of the World Meteorological Organization and hosted by the Meteorological Services of the Federal Republic of Comoros.
3. The workshop was attended by over 40 people from Meteorological and/or disaster management Services of member states of the Indian Ocean Commission (IOC), La Reunion (France) as well as other countries impacted by of the South West Indian Ocean tropical cyclone activity ( Tanzania, South Africa), and international institutions.  
Participants represented the following countries:  
Mozambique, Madagascar, Tanzania, Mauritius, Comoros, France(La Reunion), South Africa.
4. The following international organizations were represented at the workshop: Indian Ocean Commission (IOC), International Federation of Red Cross (IFRC), Red Crescent Societies, IGAD Climate Prediction and Applications Centre (ICPAC), Agency for Safety of Air Navigation in Africa and Madagascar (ASECNA).

## III. Opening Ceremony

5. Welcome remarks were made by Mr Poundja Mahmoud Ali Bay, Director General and Permanent Representative of Comoros with WMO. A statement was made by M. Andre KAMGA representative of the Director General of ACMAD.
6. The workshop was officially opened by His Excellency Mr. Abou Tchake Minister of transport and tourism of the Federal Republic of Comoros. In his speech, His Excellency indicated that climate change impacts are being felt since decades in the Comoros and the world. He mentioned that this forum is a response to policies initiated by His Excellency Dr. IKILILOU DHOININE and his government. He recalled that since 2009, high impacts weather events hit Comoros with significant social, economic and environmental impacts. He thanked all donors and organizations ( i.e His Excellency the president of Comoros, the National Army for Development, Diplomatic missions, COSEP, civil society, the diaspora, international organizations ...) involved in relief and recovery after the April 2012 floods and expressed sorrow and condolences to families affected.

7. He recalled that the 3-day forum will be the opportunity to discuss seasonal forecasting and that each country representative should use recommendations and conclusions of the forum to support national disaster management and other development related activities and programmes.
8. The Theme of the forum “Climate Services for disaster risk management and adaptation to climate change for sustainable development” is meant to highlight the role of meteorological services for socio-economic development. For the government of Comoros, given recent floods, we expect that the forum will contribute to reduction of impacts of water related hazards and vulnerability by providing early warning and prevention information.

#### IV. Climatology and Seasonal Forecasting of Tropical Cyclones

After the opening ceremony, the first session included presentations by ACMAD on climatology and interannual variability of TCs. Countries representatives made presentations on the status of countries activities on TC monitoring and forecasting.

ACMAD paper summarized available knowledge and understanding on climatology and interannual variability of Tropical Cyclones (TCs) of the south West Indian Ocean with years of under or hyper activity (Figure 1)

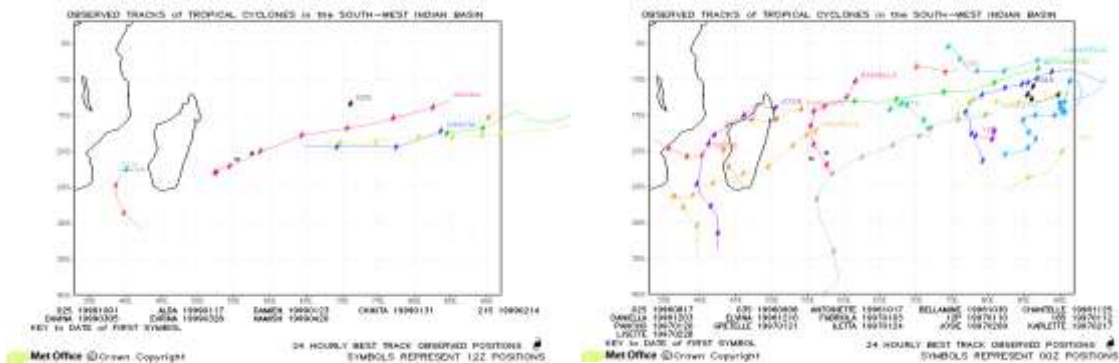


Figure 1: Observed tracks of tropical cyclones in the South West Indian Ocean for one under active year ( left) and one hyper active year ( right).

Participants were informed that a consolidated historical record of Southern Hemisphere Tropical Cyclone is being prepared by Bureau of Meteorology in Australia. Results of initial analysis of this dataset indicated that:

- There is no significant trend in the annual number of TCs;
- Significant trends of about +0.15TC/year were noted on the annual number of most intense TCs in the South Indian Ocean;
- the annual cycle of South West Indian Ocean tropical cyclone showed high frequency of TCs between December and January in La Nina years and between January and February in El Nino and ENSO neutral years;
- The average number of TC genesis is higher over the Australian side of the Basin in La Nina years;

- In the Mozambican Channel including coastal parts of Tanzania, South Africa and Madagascar, TC genesis is higher in El Nino and ENSO neutral years;

The paper indicated that much of variability of TCs in the region can be understood and predicted using broad-scale indices which describe the El Nino phenomenon. Geographical shifts in positions of maximum TC occurrences and changes in intensity maxima are identified in relation to ENSO.

A series of presentations shed some lights on countries tropical cyclones forecasting and applications activities:

- In Mozambique, the rainy season starts in October and ends in March of the following year. Precipitation is the only parameter forecasted at seasonal timescales. The meteorological service issues this forecast by the end of September. TC nowcasting and short range forecasting products from Global centres and the Regional Specialized Meteorological centre at La Reunion are used to monitor and forecasts TCs; in addition to Mozambique, Tanzania, Comoros, La reunion and South Africa are countries with no capacity to produce and deliver seasonal forecast information on TCs,
- Madagascar has developed climatological products and knowledge for TCs that hit the country and/or are active in the Mozambican channel; multilinear regression based statistical models have been built and are being used for seasonal forecasting of TC in the country;
- Mauritius produced operational seasonal forecasts including probabilities of expected TCs number, genesis locations and tracks; it is the country of the region with capacity to combine Global dynamical outputs, analogues and composite analysis based products, expert knowledge on TC climatology and interannual variability and generate TC forecasting information at seasonal timescales;
- La Reunion as a WMO designated Regional Specialized Meteorological Centre for TCs of the South West Indian Ocean region presented studies of the near surface climatology of the region and activities leading to guidance information on TCs; the centre provides training and secondment opportunities for forecasters during TC season; research to develop new models and improve objective guidance tools for TC forecasting is carried out.

## **V. Methodology for seasonal forecasting of South West Indian Ocean Tropical Cyclones**

Following presentations, ACMAD introduced discussions with elements of a document describing a common methodology to facilitate TC seasonal forecasting in the region. These elements included global centres dynamical methods, Madagascar and Mauritius National Meteorological Services approaches. Expert knowledge derived from operational activities in the region and TC data analysis by participating countries is also included.

## **VI. Conclusions an closure of the workshop**

After exchanges and discussions, a list of phenomena known to influence seasonal activity of TCs were collected and will be described in details in a methodology document. Moreover, regional features modulating seasonal TC activities at country levels, dynamical models parameters and outputs (Accumulated cyclone energy, cyclone frequency and density, cyclone types), statistical and analog year based tools and outputs will also be described and included in the document. The meeting conclusions and recommendations are summarized as follows:

- IOC countries expressed their commitment to continue contributing to development of a common methodology;
- IOC representatives noted the need to include TC seasonal forecasting for early warning in the sub-regional strategy for disaster risk reduction;
- ACMAD in collaboration with Meteo-France La Reunion and global centres agreed to provide relevant expertise to finalize the methodology document;
- Countries urged IOC and ACMAD to organize regularly Climate Outlook forums for IOC countries generating precipitation and TC forecasting at seasonal timescales

The workshop ended with commitment of country and international experts to continue developing the common methodology document for TC seasonal forecasting in the region. The closing ceremony ended on June 13, 2012 at 4:00 PM.

Annex 1: workshop agenda

**WORKSHOP PROGRAMME– PRESAOI-1 (Moroni, June 11-13, 2012)**

<p>June 09-10 , 2012</p>	<p>Welcome of participants</p>	
<p>Day 1  June 11, 2012</p>	<p>14 :00-15 :30 Registration</p> <p><b>Opening ( 11 :00- 10 :00)</b></p> <p><b>Chair : PR of Comoros with WMO                      Rapporteur : Comoros/ACMAD</b></p> <p>15:30 – 15:40    Remarks by PR of Comoros with WMO</p> <p>15:40-15:50:    Remarks by ACMAD</p> <p>15:50 – 16:00    Welcome address by the Representative of Comoros</p> <p>16 :00-16 :20    Group photo and break</p>	
	<p><b>Session I: CLIMATOLOGY AND SEASONAL FORECASTING OF TROPICAL CYCLONES</b></p> <p><b>Chair: ACMAD    Rapporteur: TANZANIA/Madagascar/La Reunion/South Africa</b></p> <p>16h20- 16h40: Climatology and interannual variability of tropical cyclones</p> <p>16h40-17h00: Pacific, Atlantic and Indian ocean SSTs and tropical cyclone activity</p> <p>17h00-17h20: MJO, other sub seasonal oscillations and tropical cyclone variability</p> <p>17h20- 17h40 : Statistical and Dynamical forecasting systems and products by countries</p> <p>17h40-18h00: Coffee Break</p> <p>18h00- 18h30: Statistical and Dynamical forecasting systems and products by countries (continue)</p>	<p>Countries</p> <p>Countries/ACMAD</p> <p>Countries</p>

<p>Day 2</p> <p>June 12, 2012</p>	<p>09h00-10h30: GPCs and international climate centres systems and products</p> <p>10h30-10h45: Coffee Break</p> <p>10h45-11h45 : Climatology, classification, interannual and sub-seasonal variability of tropical cyclones</p> <p>11h45-12:30: Discussions on methods and tools for Indian Ocean tropical cyclone forecasting</p> <p>12h30-14h30: Lunch Break</p>	<p>ACMAD/RCC and GPCs(-Meteo-France – UK met office- South Africa) La Reunion/France</p> <p>All</p>
	<p>14h30-15h10: Discussions continue</p> <p>15h10-16h30: Proposed methods and tools for seasonal forecasting</p> <p>16h30 – 16h45: Coffee Break</p> <p>16h45- 18h00: Presentation of session I and II reports</p>	<p>ACMAD</p>

<p>Day 3</p> <p>June 13, 2012</p>	<p><b>Session III: CLIMATE RISK MANAGEMENT</b></p> <p><b>Chair: IOC    Rapporteur: La Reunion/Mozambique</b></p> <p>09h00-09h30: Needs of countries for Cyclone Risk Management</p> <p>09h30-10h00: IOC initiatives for Climate Risk management in the sub-Region</p> <p>10h00-10h30: Cyclone Risk communication strategy by countries</p> <p>10h30-10h45: Coffee Break</p> <p>10h45-13h00: Preparation of workshop report</p> <p>13h00-14h30: Lunch Break</p> <p>14h30-16h00 Preparation (continue) and presentation of a first draft workshop report</p> <p><b>Session IV: CLOSING CEREMONY</b></p> <p><b>Chair: DG Comoros Meteorological Services</b></p> <p>16h00-16h10: Remarks by PR of Comoros with WMO</p> <p>16h10- 16h20: Remarks by countries representative</p> <p>16h20:16h30: Remarks by IOC</p> <p>16h30-16h40: Remarks by ACMAD</p> <p>16h40-16h50: Closing speech by the Representative of Comoros Government</p> <p>16h00: End of workshop</p>	<p>Countries/IFRC</p> <p>IOC Secretariat</p> <p>Countries/IFRC</p> <p>ACMAD/countries</p>
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## Annex II- List of participants

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MÉTÉO

# Premier forum de prévision saisonnière pour la région du sud-ouest de l'Océan Indien

Le centre africain pour les applications de la météorologie (ACMAD) organise le premier forum de prévision saisonnière pour la région du sud-ouest de l'Océan Indien, à l'Hôtel Karthala.

Le séminaire, ouvert lundi pour trois jours, réunit des experts venus de différents pays de la région est-africaine et de l'Océan Indien. Il est organisé en partenariat avec l'organisation mondiale de la météorologie et la direction de la météorologie comorienne.

D'après le représentant de l'ACMAD, André Kamigo, le forum a pour objectif principal d'élaborer une méthodologie afin d'établir la prévision saisonnière, pour la gestion des risques climatiques et l'adaptation au changement climatique dans la zone ouest de l'Océan Indien.

«Dans l'atlantique, dans le pacifique et dans l'est de l'Océan



«Elaborer une méthodologie afin d'établir la prévision saisonnière dans la zone sud ouest de l'Océan Indien.»

indien, les systèmes de prévision cyclonique sont en place. Il ne reste plus que la zone ouest de l'Océan Indien. Ce forum doit nous permettre de trouver les voies et moyens de mettre en place, d'ici fin octobre, la prévision saisonnière de l'activité cyclonique dans la région», a déclaré André Kamigo. Le ministre des transports Rastami Mouhidine, a insisté sur la vulnérabilité des îles Comores,

face aux effets des changements climatiques. Au cours de son discours prononcé à l'ouverture des travaux, le ministre comorien a rappelé les fortes pluies qui ont causé des inondations dans les régions de Hambou et de Bambaou. «Des villes ont été inondées, des familles sont sans abris, des routes sont détruites et nous avons enregistré des pertes en vie humaine. Cet atelier devra nous permettre de prévenir les

risques climatiques dans notre région et nos pays respectifs», a-t-il dit, appelant les divers pays de la région, à adopter les recommandations qui seront issues de ces assises.

### OUTILS POUR LA PRÉVISION SAISONNIÈRE

Au cours de la journée d'hier, les experts ont travaillé sur les systèmes de prévision. Ils ont abordé la climatologie, la classification et la variation interannuelles des cyclones tropicaux. Ils ont également travaillé sur les outils pour la prévision saisonnière.

Ce mercredi, les participants se focaliseront sur la gestion des risques. Il s'agira de démontrer à la fois, les besoins des pays pour la gestion des risques cycloniques, les initiatives de la Commission de l'Océan Indien et enfin la stratégie de communication des risques cycloniques.

A.A.HAMDI