## WORLD METEOROLOGICAL ORGANIZATION

# **REPORT OF 1<sup>st</sup> MEETING OF THE STEERING COMMITTEE OF THE INDIAN OCEAN DATA RESCUE INITIATIVE (INDARE)**

29 September -1<sup>st</sup> October 2014

Geneva, Switzerland

**Date of Publication: December 2014** 

## 1. Opening

Mr Jeremiah Lengoasa, Deputy Secretary General of WMO welcomed the participants. He emphasized that the investment in observation networks and related human and infrastructure capacities constitutes one of the strongest focuses of WMO and the National Meteorological and Hydrological Services. He indicated that the Indian Ocean domain is a medium where weather and climate events can be of major societal impacts that need to be assessed predicted and make long term projections for in the region. He underlined that with the good number of countries and international organizations and projects being engaged in the Indian Ocean Data Rescue initiative, there are sufficient ingredients for making a successful showcase in delivering high quality, well controlled long term historical climate data sets. He concluded that capacity building as a key component of this initiative will certainly help countries in need to accelerate data rescue and digitization in the region and assist them in using it for progressing science and delivering climate services.

## 2. Organization of the meeting

The meeting elected Mr Peter Ambenje to chair the meeting. The agenda for the meeting was adopted with no revisions which is given in Annex II. The list of participants is presented in Annex III. All meeting presentations and documents can be accessed at:

#### https://www.wmo.int/pages/prog/wcp/wcdmp/INDARE.php

# **3.** Review of INDARE Implementation Plan, INDARE structure and Terms of Reference of the SC and Working Groups

Omar Baddour briefed the steering committee on the outcome of the first international workshop on the Recovery of Climate Heritage in the Indian Ocean rim countries and islands, Maputo, Mozambique 21-24 April 2014. Participants at that workshop agreed to establish an Indian Ocean Data Rescue Initiative (INDARE) akin the Mediterranean Data Rescue initiative which was established in 2008. The workshop adopted a declaration which included the finalization of an Implementation Plan for INDARE. The steering Committee was invited to review the implementation plan and the definition of its structure and working groups as well as the workplan for 2014-2015.

The Steering Committee reviewed the draft INDARE implementation plan which was developed in Maputo and made few amendments. It adopted the new version of the INDARE implementation plan. This version is now published as a wcdmp series (wcdmp-No.84) and made available on the INDARE website:

## https://www.wmo.int/pages/prog/wcp/wcdmp/documents/INDAREimplementationPlan.pdf

The Steering Committee reviewed the proposal made at the Maputo workshop on the INDARE Structure which includes a Steering Committee and 4 Working Groups. It adopted a final structure and terms of references of the steering committee and the working groups. The SC developed and adopted a work-plan for 2014-2015. The structure, the terms of references of the Steering Committee and the working groups as well as the work-plan for 2014-2015 are provided in ANNEX I.

## 4. CCl Expert Team on Data Rescue

Aryan Van Engelen made a presentation on the Commission for Climatology Expert Team on Data Rescue (ET-DARE), which is the technical advisory group for WMO on Data Rescue and related practices, tools, methods and technologies. ET-DARE key priorities include the development of an International Data Rescue web portal (I-DARE) and collaboration with the Joint CCI/WCRP/JCOMM Expert Team on Climate Change Detection and Indices (ET-CCDI) for organizing joint data rescue / climate indices workshops and promoting setting up regional component of the International Climate Assessment and Data sets (ICA&D). The Steering Committee noted that ET-DARE could be involved in helping INDARE in particular on countries need for recovering their old climate archives and linking with ICA&D (see next sections).

## 5. Presentation of Country Data Rescue projects

The Steering Committee (SC) was briefed by its members on the ongoing projects and initiatives in the countries and noted the needs expressed for Data rescue, Climate Data Management Systems and other related aspects. It particularly noted the country needs in developing DARE projects, or funding already existing ones. It noted that there was also needs expressed from number of countries to get assistance to get their of their old climate archives that are located in other countries. In this regards SC requested to involve ET-DARE and relevant international organizations to help recover these old archives and provide them to the origin country.

The SC proposed to use the WMO or CCI website where we should provide a link to locate these old archives. The SC recommended setting up a project to locate, recover and digitize records belonging to pre-independence period, such as those records of India, Pakistan, Bangladesh, Srilanka and Maldives which were collected during the British administration. The meeting

agreed to liaise with these countries in collaboration with the Indian Meteorological Department. ACRE offered to facilitate setting up a special project on this sub-region.

The SC agreed to address the most urgent needs including the upgrade of CDMS for Mauritius, Madagascar, Mozambique and Sri-Lanka. The SC recommended that country projects will be submitted in an appropriate template to constitute a project compendium as an Annex to the next version of the INDARE-IP. Secretariat will send to the countries a template for INDARE project proposals. The SC also noted the following needs expressed during the discussions of countries project presentations:

- Bangladesh needs expert mission to develop a DARE project
- Kenya needs support a Kenyan DARE project, i.e. funding equipment to accelerate the recovery on old archives
- Madagascar needs assistance in setting up a DARE project and to get Microfiches from Belgium DARE project
- Maldives needs to locate SYNOP data (1967-1974) and data lost during 2004 Tsunami
- Mozambique needs a DARE project for Solar radiation, Sunshine, air pollution records
- Pakistan needs to recover missing Pakistan Ship records
- Seychelles needs to locate Records of Seychelles that are available in UK, East Africa (Kenya), India, Mauritius, with proposal of missions of two experts in these countries to assess the status of these records and find a way for their recovery and digitization and taking back to Seychelles (ACRE would help on this)
- South Africa is keen to work with through WMO and INDARE for archiving long term climate records, learning best practices (ACRE). SAWS will continue to collaborate with various national stakeholders on recovery of terrestrial, marine and meteorological data
- Tanzania needs assistance for equipment for imaging records. Using the existing Cameras at the Tanzania Meteorological Department seems to be a slow process and not user-friendly
- Myanmar uses QC based on Climsoft as part of project supported by Norway (Met No).
   There is a problem in QC of the data, there is a need for finding out the problem. ACRE can help providing digitized data to Myanmar. The meeting suggested that in addition to Climsoft QC, Myanmar can use another software to run quality checks (e.g. R-Climdex), but R-Climdex has only three parameters.

## 6. International initiatives

The Steering Committee welcomed the valuable information provided by a series of presentations on international initiatives dealing with climate data and Data rescue, including the Pacific Climate Change for South Asia and Pacific (PACCSAP) by Geoff Gooley (through a teleconference), the Atmospheric Circulation Reconstruction over the Earth (ACRE) by Rob Allan,

the WMO Mediterranean Data Rescue initiative (MEDARE) by Manola Brunet, the International Climate Assessment and Data Sets (ICA&D) by Aryan Van Engelen, the International Data Rescue portal (I-DARE), by Peter Seigmund and the Climate Data Management Systems Specifications by Peer Hechler. SC recommended to benefit from these important initiatives, and involve the experts attending this meeting to be part of the working Structure of INDARE.

## 7. Recommendations on Data Exchange and Data Portal

The Steering Committee (SC) agreed that Data Exchange is an important component of INDARE and it recommended toagree on a minimum number of Stations to be shared. It is recommended that a minimum would be Stations belonging to RBCN. It was also mentioned that Data recovered through INDARE should also be made available for exchange. A prototype of Data exchange protocol for ECA&D will be provided by Dr Aryan Van Engelen. A partnership through WMO RCC will be useful in promoting Data Exchange.

The SC recommended that for the expected INDARE Data portal there is a need to define minimum requirements, in terms of hardware, Software, and also on the content and organizational aspect of the Portal. The WG-2 on INDARE infrastructure will be tasked to provide these requirements. It is expected that WG-2 to meet early 2015. WG2 should include Expertise from the region as well as from the international communities to help design the portal. The meeting recommended English, French and Portuguese (at the extent possible) to be used in the portal.

The SC noted that the MEDARE portal template would be a good template to base on, while also looking at service aspects such the one made available by ICA&D. A linkage on this aspect with ICA&D is highly desirable.

The SC welcomed the offer by MEDARE to help in providing assistance on technical aspects on the design, architecture, and content of MEDARE web portal.

The SC welcomed the offer from INDIA (Sophisticated IT infrastructure with operational services) and Indonesia (New Data center + Training facilities) to host the INDARE web portal. Other potential candidacy including from Africa will be considered.

## 8. ET-CCDI workshop report

Manola Brunet provided a report on the ET-CCDI workshop on climate indices which was held in Maputo in April 2014 as a parallel technical segment of the International Workshop of the Recovery of Climate heritage in the Indian Ocean rim countries and Islands. She reported on countries contribution and the follow-up activities. The meeting appreciated the progress made so far and the collaboration of several countries in providing their national reports on Stations data and metadata and Quality Control. The SC noted there were promising results from the analysis of historical data and encouraged the NMHSs to further Manola Brunet to achieve a comprehensive scientifically sound analysis of climate change in the region based on a more complete and high quality station data and metadata.

## 9. Election of chair and vice chair of INDARE

The meeting unanimously elected Mr Peter Ambenje as chair of the Steering Committee of INDARE, and Dr Pattabhi Rama Rao E. as vice chair.

**10.** Next steering Committee meeting: The next Steering Committee meeting would take place in one year, September or October 2015. The meeting venue is yet to be decided.

## **11. Other WMO relevant initiatives**

Deon Terblanche made a presentation on the Global Atmospheric Watch followed by a presentation on Green House Gases measurements by Michel Ramonet. The Indian Ocean region is lacking sufficient measurement for GHGs to address the environmental issues. Nevertheless, the experience which exists in the region should be utilized by the other countries. Also the use the opportunities of twinning and partnership with other regions can be considered for network development in the region. SC suggested adding an agenda item at its next session to evaluate the potential link between INDARE and Environmental issues.

Steve Forman made a presentation the WMO Information System (WIS) and the WMO Integrated Observing System (WIGOS). WIS provides worldwide access to information services on the available data and products through designated GISCS, DCPC and National WIS Centers. WIS offers a formidable architecture and standards for the discovery of climate archives. There are good showcases that can be considered such as the Arctic Data centre (National WIS centre, previously was a DCPC)

Etienne Charpentier made a presentation on the JCOMM Marine Climate Data System (MCDS) which was initiated by JCOMM as a follow-up of the modernization of the Marine Climatology Summaries Scheme, MCSS, established in 1963. This initiative would be a good area of collaboration with the commission for climatology and its initiative on High Quality Global Data Management Framework for Climate (HQ-GDMFC). There is a potential synergy to be sought between INDARE and the existing or future centres for Marine Meteorological and Oceanographic Climate Data (CMOCs) which have Data Rescue as part of their mission.

Cecilia Tamara Avellan made a presentation on the "Programme for Implementing the Global Framewok for Climate Services (GFCS) at the Regional and National Scales". She described the various component of the programme which is funded by Canada. For example, the programme

provides support to several initiatives such as RCC and RCOFs, Data Rescue and Cryosphere Watch. The Programme is developed around 5 Key Results. The SC thanked MRs Avellan for the information provided as well as the Canadian support for INDARE. In fact the programme supported significant portion of INDARE activities including co-sponsoring the first workshop which was held in Mozambique in April, as well as several participants at the INDARE-SC.

Karolin Eichler made a presentation on World Weather Records. These records have been collected and published since 1927 and have been important in constituting global data sets for climate assessment. The WWR are being collected on annual basis since 2011, replacing the previous practice of 10 years collection basis. All WMO Members are requested to submit their WWRs by 6 months following the end of the year, according to the WMO executive council resolution (Resolution 14 EC-64). WMO guidelines on how to submit the WWR are available on WMO website.

Anahit Hovsepyan made a presentation on Regional Climate Centres (RCCs) and Regional Climate Outlook Forums (RCOFs). There is a need for accelerating DATA Rescue to improve seasonal forecasting and climate watches. It was noted that there are three RCOFs that belong to the domain of INDARE; SWIOCOF, SASCOF A, ASEANCOF and that two RCCs in the INDARE domain are in demonstration mode: The IGAD Climate Prediction and Application Centre (ICPAC) in Nairobi, Kenya and the Indian Meteorological Department. These two centres will provide support to Data sets issues. There should be close collaboration between INDARE and these RCOFs and RCCs.

Fulipe Lucio made an intervention near the closing of the meeting, with emphasis made on the GFCS and its pillars, in particular the observation and monitoring pillar which includes strengthening climate observations. He emphasized that not only climate data are required for GFCS but also socio-economic data needs to be taken care of in this pillar. He recalled that Data Rescue is one of fast track priority projects included in the GFCS implementation plan. National GFCS consultations meetings form a mechanism that GFCS office has been promoting and facilitating across the world. (It is worth-noting that GFCS co-sponsored the Maputo Workshop which launched INDARE)

## ANNEX-I: WORKING STRUCTURE AND WORKPLAN FOR 2014-2015

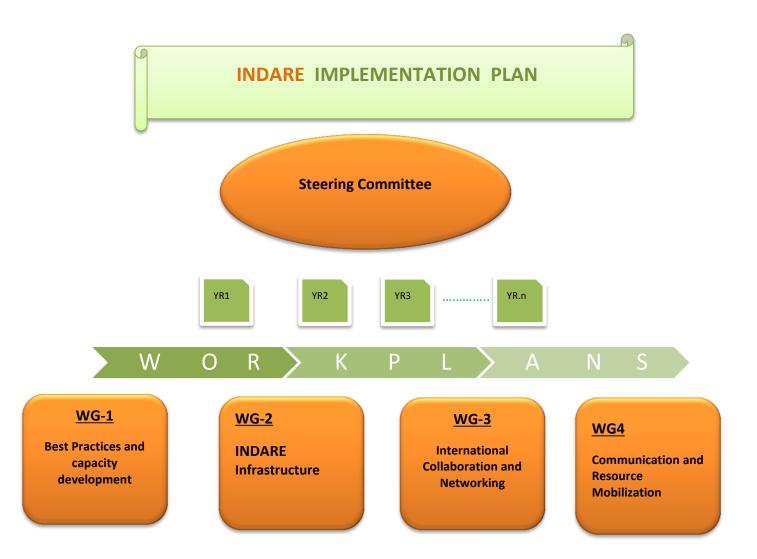
## I- Working Structure

In the framework of the newly established Indian Ocean Data Rescue Initiative (INDARE) and its implementation plan which was agreed at the International Workshop on the Recovery of Climate Heritage in the Indian Ocean rim countries and Islands 21-24 April 2014, a steering Committee and 4 Working Groups are established to provide guidance and advice on the implementation of INDARE. This structure was drafted by the WMO Secretariat, discussed and adopted at the first meeting of the meeting of the Steering Committee of INDARE, which took place in Geneva, 29 September-1st October 2014.

## 1. Steering Committee (INDARE-SC)

The Terms of Reference of the Steering Committee are:

- (a) Advise on the needs and priorities in the domain of Data Rescue and digitization of climate records and related techniques and data management systems
- (b) Develop annual work-plans and monitor their undertaking
- (c) Promote useful linkages and collaboration with regional and international projects and initiatives having interest in Data Rescue and Climate Data Management
- (d) Assess project proposals and provide suggestions and advice on resource mobilization
- (e) Monitor INDARE implementation and oversee the work of the INDARE Working Groups (see WGs T.o.R in section 2)
- (f) Make adjustment in the structure and work plans as deems appropriate
- (g) Review and adopt reports provided by the chair and the co-chair



#### 2. Working Groups (WGs).

The WGs will work under the oversight of the Steering committee based on the agreed annual workplans. All WGs should provide their reports to the Chair of SC at least 3 months before the next session of the SC.

#### WG1 on best practices and Capacity development on DARE;

- Liaise with the Commission for Climatology and JCOMM relevant ETs and Task Teams for identifying best practices and modern tools in Data Rescue and Data Management;
- Undertake surveys in the region for gap analysis in DARE and CDMSs;

- Provide recommendations on DARE Tools, Techniques and Software that are suitable and ready to use by the countries
- Recommend training and capacity development activities, including through training workshops,
   Expert missions for assistance in developing DARE projects

## WG2 on INDARE infrastructure

- Assess the existing facilities and expertise in the region that would be made available to develop optimal repository and Infrastructure for Data Rescue and Management functions;
- Advise on solutions for an optimal sharing among INDARE Members of their physical and technological infrastructure and human resources;
- Advise on developing a prototype of a web portal for INDARE with consideration of existing international experiences
- Recommend appropriate facilities that can be adopted to support INDARE activities
   WG3 on international collaboration and networking
- Propose synergies and collaboration mechanisms with identified regional and international data platforms and projects;
- Assess current suitability status of RCCs in the region that would be used to contribute in undertaking tasks that support INDARE objectives and implementation plan;
- Recommend actions for the networking of INDARE with suitable international climate assessment, adaptation and climate and development projects and mechanisms;

## WG4 on communication and resource mobilization

- Propose promotional activities to raise awareness on INDARE with the use of suitable communication tools for this purpose;
- Provide recommendations on expanding INDARE activities through reciprocal collaborations with national archives and data repositories
- Develop strategies and plans for communicating with Policy and Decision makings as appropriate
- Work with the WMO Secretariat on Data Rescue Project formulation and proposals;
- Identify existing funding opportunities and propose suitable approaches for benefiting INDARE projects.

#### II- Work Plan November 2014- October 2015

The INDARE work-plan is a translation of the INDARE Implementation Plan into activities which will lead to deliverables in a year time frame spanning from November 2014 to October 2015. The activities will be undertaken by the INDARE-SC and WGs, with the facilitation role provided by the WMO Secretariat and the technical support of Commission for Climatology Experts and other international Experts. Most of the work will be undertaken through correspondence and web conferencing. Some face-to-face meetings could be arranged if required and funds are available. The activities are described by the following narrative text followed by an activity table with deadlines (See Table A).

#### **Description of activities**

#### Activity 1. Constitution of WGs

WMO Secretariat will write to the INDARE Members to nominate their representatives in the working Groups which they would like to be part of. A Country will be eligible for two WGs, not more. A working group membership should not exceed 4 experts in total. It is expected that the constitution of the 4 WGs be made by December 2014. Experts from international organizations will be also invited to join the working groups as full members or invited experts.

#### Activity 2. INDARE Portal

WG-2 on INDARE infrastructure should meet preferably early 2015 to propose characteristics of the INDARE web portal and the suitability for hosting it in the region or abroad. The web portal should be aligned with the I-DARE objectives and concept (Reference to I-DARE white paper). Prior to the meeting the Group should look at the existing facilities in the region and investigate the potential offered by DARE portals in other regions. The finding of the preliminary work should constitute input to the WG-2 meeting and a basis for its recommendation. 1 or 2 international experts will be invited to assist if required.

Based on the CCI ongoing work on the international Data Rescue Portal (I-DARE, ref white paper on I-DARE) and the work of the WG-2, a design of the INDARE portal will be submitted to the SC for endorsement. The work can be based on a close cooperation with an existing DARE portal. Nevertheless there should be some specificity of the region with respect to Marine data which need to be closely investigated with Experts from Marine community in addition to the Commission for Climatology expertise.

#### Activity 3. DARE projects proposals

Guidance for project proposal was discussed and adopted at the 1st SC meeting in Geneva, it was further refined by the CCI Expert Team on Data Rescue at its meeting in November 2014. The guidance will serve for formulating projects for undertaking Data Rescue that might be eligible for an international funding. WMO will be able to facilitate the coordination of an INDARE project compendium and make it

available to the donors and funding agencies. INDARE Members will submit their proposal based on this guidance, preferably by February 2015.

## Activity 4. Tools and Software to be made available for undertaking DARE

Working Group (WG-1) on DARE best practices and capacity development will work in close interaction with CCI Expert Team on Data Rescue and CCI Expert Team on Climate Data Management as well as with ETCCDI and ICA&D experts. The WG should assess the existing tools in these areas of expertise that can quickly be implemented at NMHSs and start using them for the generation of products and services. A meeting for this Group can be decided when some progress is made in the preliminary assessment work. Nevertheless few online meetings can be arranged by the WMO secretariat. Demonstration projects seeking the implementation of a full set of Data tools , i.e DARE,CDMS and ICA&D software would be useful to carry out during Year-1

## Activity 5. International collaboration and networking

With the help of the international experts attending INDARE-SC, the Working Group on international collaboration and networking (WG-3) will work through correspondence and teleconferences to investigate collaboration mechanisms, including the identification of regional and international data platforms and projects. The group will liaise with the existing RCCs in the region that would be used to contribute in undertaking tasks that support INDARE objectives and implementation plan. It is expected that the WG provides its recommendations by August 2015.

## Activity 6. Strategy for communication and resource mobilization

WMO Secretariat will assist the WG-4 on communication and resource mobilization in order to develop a communication strategy for resource mobilization. This should lead to the development of a poster and a leaflet. The communication material will be distributed at the WMO Congress in June 2015 and will serve for any side meetings and international conferences dealing with climate data issues. International Experts will assist the WG 4 in identifying a list of key international projects and initiatives that INDARE can benefit from their funding opportunities. Activity 6 and 5 should be linked to each other

## Table A: Work-Plan summary

Activity	Deliverable	Deadline	Who
Activity 1. Countries nominations for the WGs	Constitution of 4 WGs	December 2014	WMO Secretariat, INDARE-SC Chair and Co-chair
Activity 2. Meeting of WG-2	<ul> <li>Assessment of the feasibility of implementing an INDARE web portal,</li> <li>Recommendations for its development and hosting</li> </ul>	May 2015	WG 2, WMO Secretariat, MEDARE, ACRE, ICA&D
Development of the INDARE portal	Development of INDARE Web Portal prototype	August 2015	WG 2, WMO Secretariat, MEDARE, ACRE, ICA&D
Activity 3. DATA Rescue projects proposals	DARE project compendium	February 2015	WMO Secretariat, INDARE-Members,
Activity 4. Meeting of WG1 Tools and Software to be made available for undertaking DARE	<ul> <li>Recommendations         <ul> <li>on useful tools and             software,</li> <li>Recommendations             of Demonstration             projects</li> </ul> </li> </ul>	August 2015	WG1, Secretariat ET-DARE, ET-CDMS, ICA&D, ET-CCDI
Activity 5. International collaboration and networking	<ul> <li>Recommendations on international projects and initiatives that INDARE will be associated with</li> </ul>	August 2015	WG.3 International experts
Activity 6. Meeting of WG.4 Strategy for communication and resource mobilization	<ul> <li>Development of Communication material (Poster, Leaflet, Brochure)</li> <li>Identification of funding sources.</li> </ul>	May 2015	WG.4 WMO Secretariat INDARE-SC Chair and Co-Chair
Second meeting of INDARE-SC September 2015	Adopt WG reports Adopt report of the Chair and Co-chair Develop the Work- plan for Year 2 November 2015- October 2016		SC members

WG1	WG2	WG3	WG4
Best Practices and	INDARE Infrastructure	International	Communication and
Capacity Development		Collaboration and	Resource Mobilisation
		Networking	
Bangladesh,	India	Australia (CSIRO)	COI
Mozambique,	Indonesia, lead	Communicate with	Lead after confirmation
Indonesia,	Pakistan	BOM ( ask for co-	with SG of COI
Seychelles,	Mauritius, co-lead	leading)	Kenya, co-lead
South Africa, Lead		Madagascar	India
Sri-Lanka , Co-lead		Maldives Co-lead	Seychelles
		Mozambique	
		Tanzania	
		South Africa	

Note: The following countries will take membership in WG-1 during Year 2: November 2015-October 2016: Madagascar, Mauritius, Mozambique, Myanmar, Pakistan, Tanzania to replace the current year WG-1 members: Bangladesh, Mozambique, Indonesia, Seychelles, South Africa and Sri-Lanka

#### ANNEX-II: AGENDA

#### DAY-1: Monday 29 September

09:30 Opening and introduction of participants

10:00 Election of a Chair for the meeting and adoption of the Agenda

10:10 Overview on the Indian Data Rescue initiative, Omar Baddour

10:30 Break

**11:00** Review of the INDARE Implementation Plan

12: 10 CCI Expert Team on Climate Data Rescue; Aryan Van Engelen

#### 12: 30 Lunch Break

**14:00** Presentation of Data Rescue projects in the region which require technical / financial support through INDARE, *SC members* <sup>(1)</sup>

**15:30** Agree on INDARE Structure and the Terms of Reference of the INDARE Steering Committee and WGs

#### 16: 30 coffee break

17:00 Presentations on other WMO initiatives, WMO (\*)

#### 18:00 Adjourn

#### DAY 2: 30 September

**09:00** Overview on Pacific-Australia Climate Change Science Adaptation Planning Program (PACCSAP) by Geoff Gooley

followed by discussions

**09:30** Presentation of MEDARE (Focus on Structure WGs and the portal) by Manola Brunet followed by discussions

**10:00** Presentation of ICA&D (Purpose, structure and data portal) by *Aryan Van Engelen* followed by discussions

#### 10:30 Break

**11:00** Presentation on ACRE (Purpose, structure and data portal) by Rob Allan followed by discussions

**11:30** Presentation of the International Data Rescue Portal (I-DARE), *Peter Siegmund* followed by discussions

**12:00** General Discussions on Data Portal, Data policy, and requirements for sustainability on data initiatives, *moderated by Rob Allan and Aryan Van Engelen* 

#### 12:30 Lunch Break

14:00 INDARE Portal and the way forward for its development and implementation,

moderated by Peter Siegmund and Manola Brunet

16:00 Presentation on WMO CDMS specifications by Peer Hechler

#### 16:30 Break

17:00 Presentations on other WMO Initiatives, WMO (\*)

## 18:00 Adjourn

## DAY-3: 1 October

09:00 Consideration of pending issues from DAY2, if any

09:30 Presentation of draft Guidance for the submission of DATA Rescue projects, Omar

Baddour, followed by discussions and Agree on the draft guidance

#### 10:30 Break

11:00 Progress and next steps of the ETCCDI part of the Maputo workshop - Manola Brunet

12:00 Discussion and endorsement of the INDARE work-plan for 2014-2015

## 12:30 Lunch Break

14:00 Election of a Chair and a Vice Chair of the INDARE SC during 2014-2015 period

14:30 Presentations on other WMO Initiatives, WMO (\*)

16:00 Next SC meeting and AOB

## 16:30 Closure of the meeting

(1) Project should be presented in a concise manner with provision of information on the project purpose, scope, and expected duration, and funding estimates and partners, if any. A two- page sheet should describing the project should be submitted to WMO prior to the meeting. At the meeting project presentation are possible, but should not exceed 5 minutes. The projects proposals will be submitted to seek funding within WMO, GFCS and other donors

(\*) Upon time availability the meeting will be informed on other WMO key areas. It is expected that each day, there will two presentations chosen from the following topics : GFCS, RCOFs, WIGOS-WIS, Atmospheric Research, World Weather Records, Marine Climatology

#### **ANNEX III : LIST OF PARTICIPANTS**

#### BANGLADESH

Mr Shah Alam Bangladesh Meteorological Department

E-mail: <u>info@bmd.gov.bd</u>

## INDIA

#### Dr Pattabhi Rama Rao E

Indian National Centre for Ocean Information Services (INCOIS)

Email: pattabhi@incois.gov.in

#### INDONESIA

#### -Dr Ardhasena

Meteorological Climatological and Geophysical Agency

E-mail: andi.eka.sakya@bmkg.go.id

tuk@bmkg.go.id

#### -Mr Urip Haryoko

Meteorological Climatological and Geophysical Agency E-mail: andi.eka.sakya@bmkg.go.id

tuk@bmkg.go.id

## KENYA

Mr Peter Ambenje Kenya Meteorological Service E-mail: <u>ambenje@meteo.go.ke</u> <u>pambenje@yahoo.co.uk</u>

#### MADAGASCAR

#### Mr Elia Antoine Andrianavoala

Direction Générale de la météorologie E-mail : <u>eandrianavoala@yahoo.com</u>

#### MALDIVES

Mr Ahmed Rasheed Maldives Meteorological Service E-mail: admin@meteorology.gov.mv

#### MAURITIUS

**Mr Dookharansing Seetohul** 

Meteorological Services

E-mail: meteo@intnet.mu

#### MOZAMBIQUE

Mr Berino Francisco Silinto Instituto Nacional de Meteorologia E-mail: <u>berino s@inam.gov.mz</u> <u>b.silinto@gmail.com</u>

## **MYANMAR** Ms Lai Lai Aung Department of Meteorology and Hydrology E-mail: lailaimaung23@gmail.com PAKISTAN Mr Arif Mahmood Rana Pakistan Meteorological Department E-mail: dgpakmet@gmail.com pakmet islamabad@yahoo.com SEYCHELLES **Mr Marcel Belmont** National Meteorological Services E-mail: m.belmont@meteo.gov.sc **SOUTH AFRICA** Mr Tshikana Rasehlomi South African Weather Service E-mail: tshikana.rasehlomi@weathersa.co.za **SRI LANKA** Mr Dayananda Malavige Don Department of Meteorology E-mail: daya md7@hotmail.com Dayananda md7@yahoo.com TANZANIA Ms Janeth Loning'o Mollel

Ms Janeth Loning'o Mollel Tanzania Meteorological Agency E-mail: janeth.loningo@meteo.go.tz

## INTERNATIONAL EXPERTS

AUSTRALIA Dr Geoff Gooley, ( by webex) Pacific-Australia Climate Change Science & Adaptation Planning Program (PACCSAP) CSIRO Email: Geoff.gooley@csiro.au FRANCE Dr Michel Ramonet Laboratoire des Sciences du Climat et de l'Environnement (LSCE) Email : michel.ramonet@lsce.ipsl.fr The NETHERLANDS Royal Netherlands Meteorological Institute (KNMI)

#### -Dr Aryan van Engelen

E-mail : aryan.van.engelen@knmi.nl

-Dr Peter Siegmund

E-mail: peter.siegmund@knmi.nl UNITED KINGDOM **Dr Rob Allan Atmospheric Circulation Reconstruction** over the Earth (ACRE) **UK Met Office** E-mail: <a href="mailto:rob.allan@metoffice.gov.uk">rob.allan@metoffice.gov.uk</a> **SPAIN Dr Manola Brunet** Centre for Climate Change (C3) University Rovira i Virgili, Tarragona E-mail: manola.brunet@urv.cat **COMMISSION DE L'OCEAN INDIEN (COI) Mr Jean Paul Gaudechoux** Mauritius E-mail : jeanpaul.gaudechoux@coi-ioc.org **WMO** -Mr Omar Baddour Chief, Data Management Applications Division WIS/OBS E-mail: obaddour@wmo.int -Mr Peer Hechler Scientific Officer, Data Management Applications Division WIS/OBS E-mail: phechler@wmo.int -Ms Karolin Eichler **Data Management Applications Division** WIS/OBS E-mail: keichler@wmo.int

The following WMO staff participated as well with presentations on relevant WMO activities during the meeting, including:

Dr Deon Terblanche, Director Atmospheric Research and Environment <u>Dterblanche@wmo.int</u> Mr Filipe Lucio, Director GFCS Office, <u>Flucio@wmo.int</u>

Mr Etienne Charpentier, Observing and Information System Department, <u>Echarpentier@wmo.int</u> MRS Anahit Hovsepyan, Climate and Water Department, <u>Ahovsepyan@wmo.int</u> MRS Cecilia Tamara Avellan, Climate and Water Department, <u>Cavellan@wmo.int</u>