

# Declaration

## International Workshop on the Recovery and Digitization of Climate Heritage in the Indian Ocean Rim Countries and Islands 21-24 April 2014 - Maputo, Mozambique

### Establishment of the Indian Ocean Data Rescue - INDARE

Recalling:

- 1) Resolution 16 of World Meteorological Congress 16 on climate data requirements deciding that priority should be given to:
  - à Accelerating rescue and digitization of climate records and promoting global and regional initiatives to collaborate on data rescue (DARE) and the exchange of related scientific knowledge and technological advances; and
  - à Promoting the use of improved methodologies and techniques to analyse climate data from various sources, including in situ, remote-sensing and reanalysis data by National Meteorological and Hydrological Services (NMHSs), in particular amongst the developing and least developed countries;
- 2) Resolution 18 of the World Meteorological Congress 16 where the new structure of the World Climate Programme was agreed to have a component on Climate Service Delivery with Data Rescue and Data Management as key elements;
- 3) Resolution 48 of WMO Congress 16 to establish the Global Framework for Climate Services (GFCS) consisting of 5 pillars namely the User Interface Platform, the Climate Services Information System, the Observations and Monitoring Pillar, the Research, Modeling and Prediction Pillar and Capacity Development;
- 4) The decision to adopt the establishment of the Marine Climate Data System at the Fourth meeting of the Joint World Meteorological Organization-Intergovernmental Oceanographic Commission Technical Commission on Oceanography and Marine Meteorology (JCOMM) in May 2012;
- 5) The adoption of the GFCS Implementation Plan by the Extraordinary Session of the World Meteorological Congress in October 2012 which included Data Recovery as a fast track activity and emphasized the importance of promoting international and regional data set initiatives;
- 6) The adoption of the Indian Ocean Commission Regional Climate Change Adaptation Strategy (2012-2020) by the IOC's 28th Council of Ministers in January 2013 and the recommendation to establish a Regional Climate Change Adaptation Observatory in support of the coordination of the collection of climate data of the IOC country's Meteorological Services;

Recognizing:

- 1) That an improved understanding of climate variability and climate change in the Indian Ocean basin is hampered by the lack of availability of climate data - both historical and

contemporary - with the required quality and spatial and temporal coverage. This strongly limits the generation of improved weather and climate forecasts, that help in the early detection of extreme weather and climate events and in the generation of high quality climate services;

- 2) That improving climate data generating capacity, its management and the use of modern tools for its analysis and reanalysis are a prerequisite for building a solid foundation to meet the user needs for high quality data sets in the 4 priority sectors of the GFCS: Agriculture and Food Security, Water, Health and Disaster Risk Reduction, in addition to other sectors such as Tourism, Transport, Marine, Energy and Environment.

Noting:

- 1) The sustained international efforts to enhance data rescue, recovery and use of climate records by initiatives such as the International Environment Data Rescue Organization (IEDRO), the Atmospheric Circulation Reconstruction of the Earth (ACRE), the International Climate Assessment and Data Sets (ICA&D), etc.;
- 2) The importance of using relevant technical references such as, the WMO Climate Data and Monitoring Program (WCDMP) guidelines and the WMO Guide to Climatological Practices (WMO Nr. 100);
- 3) The long standing efforts by WMO on providing state-of-the-art climate data management systems to its Members and the renewed commitment to standardizing and modernizing currently available systems to serve as core elements in the Climate Services Information System of the GFCS;
- 4) The successful and diverse partnerships and initiatives at global (ICA&D, ACRE, WMO I-DARE), regional (i.e. SADC Climate Service Center, ICPAC, MEDARE, SASSCAL) and national levels (see Annex 1) on data rescue;
- 5) The efforts on strengthening regional initiatives under the GFCS to enhance the linkage and flow of information from the global to the national level and vice versa;
- 6) The critical importance of enhanced integration of marine data, metadata and products from the atmosphere and the ocean for a better understanding of the global climate system;

Underlining:

- 1) The crucial relevance of climate data, and climate and weather information for the sustained adaptation to climate change and variability in particular for Small Island Developing States that are among the most vulnerable countries exposed to the effects of climate change and related extremes;
- 2) The need to accelerate the recovery of the region's large volume of invaluable historical climate records, that still exist in the form of hard copy or on obsolete media, through improved modern archiving facilities, quick electronic imaging and digitization. This data should then be made available for the use in research and the generation of high value climate products and services;

- 3) The pressing need for an enhanced capacity development through training, provision of modern data management systems, software and guidance on modern data rescue, data management standards, and data analysis and visualization tools.

Welcoming:

The high spirit of collaboration expressed at the workshop by the international, regional and national institutions to help in locating historical and dispersed climate records prior to independence and making them available to the countries of origin,

The delegates and participating organizations declared the following items to be of key importance for the data rescue and digitization efforts across the region:

- 1) To raise the awareness of governments and decision makers on the importance of data rescue efforts for sustainable development and adaptation to climate change and variability while creating integrated and sustainable financing mechanisms that foster the coordination and cooperation of data rescue initiatives, i.e. under the GFCS Trust Fund;
- 2) To foster the exchange, while complying with national data policies and agreed data sharing arrangements, and the rescue and recovery of terrestrial and marine climate data held in the diverse archives to be found in-country and those of the pre-independence period (in particular the United Kingdom, Germany, France and Portugal);
- 3) To place a specific emphasis on sustained capacity development in terms of human capacities and infrastructure for data rescue, data management, quality control and climate data product generation including the continuous renewal of necessary and relevant hard- and software;
- 4) To provide innovative training methods of staff that result in a more effective application of the knowledge such as train-the-trainer, twinning and longer term support concepts;
- 5) To support the creation of a sustained infrastructure for a registry of accomplished and outstanding data recovery records as proposed under the Commission for Climatology lead initiative I-DARE.

Delegates and participating organizations (WMO, GFCS, IEDRO, ACRE, COI, C3 Spain, JCOMM, UK Met Office, ):

- 1) Agreed to work collectively to establish the INDARE initiative and finalize its implementation plan (Annex 2) as proposed by this workshop's scientific committee.

**Annex 1: Current capacities of countries in terms of data rescue and data management**

<b>Country</b>	<b>Number/type of observing kit</b>	<b>Data management system</b>	<b>Rescued data</b>	<b>Gaps/needs</b>
<b>Myanmar</b>	118 stations in total (50 of which disseminate to the GTS)	Preparing to use CLIMSOFT and RCLimDex with Norwegian funds	1965-2013 daily climatological data of 37 stations are digitized in Excel format most of the data still in hard copies	Technical assistance for proper mgmt. of CLIMSOFT
<b>Sri Lanka</b>	95 stations plus 350 rain gauges		new archive room, status of data quite poor in some cases; previous attempts of scanning the data failed due to the poor quality of the paper	
<b>Yemen</b>	climate data since 1881 of South Yemen under the British empire	CLDB –Microstep-MIS. Previously used CLICOM (up to 2006)	data is mainly on paper	
<b>Kenya</b>	many stations, diverse purposes	CLIMSOFT	efforts to rescue paper records with the highest risk of loss first; archives are in mobile cabinets	
<b>Madagascar</b>	25 synops, many are at the coastline, 15 AWS	CLIMSOFT and CLYSIS	sheets of observation in CLYSIS	country has more than 40 microclimates - network not dense enough, some standard observing kit is missing ie anemometers etc
<b>Maldives</b>	5 manned stations, 20 AWSs, 1 radar, satellite receiving station, upper air observation, 3 tide gauge	Excel (CLICOM was used but is no longer functional)		

Country	Number/type of observing kit	Data management system	Rescued data	Gaps/needs
<b>Mauritius</b>	observations started in 1774, since 1950s proper observations, 21 AWSs,	in 1980s used CLICOM software, CLIMSOFT never worked bc of incompatibility issues	most raw data still in hard copy	
<b>Mozambique</b>	3 main institutions that collect climate data, INAM has data records since 1909	1989 started with CLICOM - still works	digitization of all data since 1951 onwards, 105 stations with data prior to 1951 was rescued, Danish funding supported a consultant to clean the data and to produce a gridded map from 234 rainfall stations since 1951	AWS data needs more storage space - new storage and mgmt systems are needed
	ocean data is also being collected by 2 institutions - sea level and research vessels			
<b>Seychelles</b>	2 manned stations at airports, 10 AWSs	Excel (CLIMSOFT crashed on the computer it was installed on)		some islands are privately owned so maintaining equipment is sometimes a hassle
				distances btw islands is far
				when AWS fail it takes time to restore
				continuity of personel at outer stations is hard
				software to decode BUFR and CREX message from AWSs

Country	Number/type of observing kit	Data management system	Rescued data	Gaps/needs
				trained people have moved on and hence new personnel does not know how to decode the messages
<b>Tanzania</b>	start in 1886 - main focus on rainfall, data gaps during WWI	CLIDATA mgmt system (2013, previously they had Clicom)	hard copies sent to hard rooms	
	Fully operational stations in the 30s and 40s		historical data still in paper format	
			45-50% of rainfall and temp has been digitized	
			DFID project to rescue data - digitize data that is at highest risk of being lost and that is crucial for climate change adaptation	
<b>Pakistan</b>	Under Royal Indian Met Services until 1947, since then in Pakistan Met Dept	Climate data in ASCII format and being processed through Fortran and Basic languages	data stored on Punch cards	ten of millions of records still in paper form
	96 observing stations (4 regional centers) plus many other		in 1991 157 of stations were transferred from cards to tapes	use of digital cameras and large size, high speed scanners, training of personnel to overcome backlog
	in early 1970s National Met Data Processing Center		1988 Climate Data Processing Center (CDPC) used PC for storage	
			digital data is saved on hard disks, CDs and	

