WMO MEDARE initiative

The WMO MEditerranean DAta REscue Initiative:

MEDARE

RATIONALE:

The wealthy heritage of the data is still largely underexploited, despite of the efforts paid in the past for conscientiously monitoring the Mediterranean atmosphere and the currently urgent need of developing long, reliable and high-quality climate time series in order to better understand, detect, predict and respond to global climate variability and change and its impacts over the Mediterranean fragile socio-ecosystems. Such key datasets are not only of immense scientific value, they also ultimately offer political, social and economic advantages, and they are required in order to:

- Place extreme events in a longer-term context allowing, for example, for more accurate assessments of their return periods
- Enhance our knowledge about instrumentally measured climate variability and change, and the possible factors causing these changes across the region
- Contribute to the advancement of climate change detection and attribution studies
- Develop climate change scenarios by combining instrumental climate data with projections from Regional Climate Model (RCM) simulations
- Provide input to extended historical reanalysis (i.e. reanalyses prior to 1948)
- Calibrate natural/documentary proxies to extend the known climatic history of a country/region
- Calibrate satellite estimates of surface variables
- Provide better observational data for the validation of climate model outputs (both RCMs and Global Climate Models [GCMs])
- Perform more robust analyses in climate and applied climatological studies
- Provide the best regional climate data sets for the use in environmental studies including the real and potential threats that various terrestrial, hydrological and marine ecosystems faces in the changing climate conditions.
- Improve adaptation to climate change impacts, by developing longer series for assessing impact sector models

- Enhance the scientific contribution in the climate component of large field experiments/programmes

In this regard, the Greater Mediterranean Region (GMR) has a very long and rich history in monitoring the atmosphere, going back in time several centuries in some countries and at least to the mid-19th century across much of the GMR However, despite the efforts undertaken by some National Meteorological and Hydrological Services (NMHS), research centres, scholars and motivated individuals in Data Rescue (DARE) activities aimed at transferring historical climate records from fragile media (i.e. paper forms) to new electronic media, accessible digital climate data is still mostly restricted to the second half of the 20th century for a few countries and since 1970s for most of them. This reality is preventing the region from developing more robust, accurate and reliable assessments of climate variability and change and its adverse impacts on the socio-ecosystem of the Mediterranean Basin, at the same time it is impeding the development of optimum strategies to mitigate and/or adapt to the current and future negative impacts of global climate change over the GMR.

The GMR is especially vulnerable to interannual (and longer timescale) climate variability. Its socio-ecosystem is very sensitive to a variety of physical, chemical and biological degradation processes; and climate change may add to existing problems of soil erosion and salinity, land degradation, loss of biodiversity, water scarcity and desertification. There are also concerns that an increase in the frequency and intensification of hotter and drier conditions may be accompanied by a northward expansion of the area prone to desertification. Such changes pose major threats to water supplies, human health, and food production, and have the potential to disrupt the national economies of countries across the region. These impacts reinforce the need to strengthen our knowledge of spatial and temporal patterns of climate variability, and their related causal mechanisms, across the Mediterranean region.

Drought effects on a Spanish water reservoir in the Northern Plateau

To address these issues, the World Meteorological Organization (WMO) MEDARE initiative was set up at International Workshop on Rescue and Digitization of Climate Records in the Mediterranean Basin (*http://www.omm.urv.cat/MEDARE/index-workshop-outcomes.html#atitol*) organised by the WMO under its World Climate Data and Monitoring Programme (WMO-WCDMP), the Agencia Estatal de Meteorología (AEMET: Spanish Met Office) and University Rovira I Virgili. Recently MEDARE got the endorsement of the WMO-Executive Council-LX resolution No. 821/EC-LX/APP-WP 3.5.3.3:

"The Council endorsed the MEDARE initiative… and urged all Members, particularly those in the Mediterranean Region, to support the initiative"

WHAT IS MEDARE?

The WMO MEditerranean climate DAta REscue (MEDARE) Initiative is a cooperative effort aimed at enhancing instrumental climate data availability and accessibility over the GMR, which brings together climatologists from NMHSs with scholars and scientists from universities, research centres and international bodies and projects.

The key elements in this enterprise are collaboration, partnership, information sharing, multilateral projects, networking among its members.

MEDARE GOAL AND AIMS:

MEDARE has as long-term goal to foster, consolidate and progress climate data and metadata rescue activities across the GMR, in order to develop comprehensive high-quality instrumental surface climate datasets for the GMR. This will be achieved by

- fostering collaboration among climate related institutions and agencies across GMR in order to consolidate and progress surface climate data and metadata rescue
- developing comprehensive, long and high-quality surface climate datasets for the GMR with a focus on the relevant Essential Climate Variables (ECVs) of the Global Climate Observing System (GCOS), which are currently required to support the work of the UNFCCC, the IPCC and the WMO/World Climate Program (WCP)
- seeking and mobilising resources and efforts at the national, regional and international scales in support of Data Rescue and Homogenisation (DARE&H) of long climate records over the GMR and undertake specific national and transnacional DARE projects
- carrying out research on DARE techniques, quality control and homogenisation, and on the development of high-quality climate datasets, and promote capacity building on these methods by demonstration and training activities addressed to young climatologists and scientists from developing countries in the GMR
- assisting the countries, by providing expertise to the NMHSs and other data archiving centres, in the recovery, organization and archiving of their historical heritage of meteorological observations, based on the WMO general guidelines and the international scientific and technological expertise in the field
- developing a common GMR inventory of the longest possible instrumental climate records available within NMHSs as well as other old valuable sources of weather and climate records available in the archives of various centres and organizations
- Implementing a web-based data and metadata portal for

the management and exchange of data sets and related metadata in a compliance with a commonly agreed data policy among MEDARE Members

- monitoring and reporting on DARE projects and activities undertaken worldwide and make benefit to MEDARE of the outcome from the most successful ones based on a wide international collaborative approach.
- fostering collaboration with international programmes, organizations and initiatives having interest in climate data and raise awareness on the key and essential role of developing high-quality climate data sets among decision makers and users in GMR and worldwide in particular of the role of climate data in supporting the climate change mitigation and adaptation measures

MEDARE ORGANISATION:

The MEDARE Initiative is organised in a Steering Group (SG) and four Working Groups (WGs). The SG is composed by four NMHSs representatives from NW, NE, SE and SW Mediterranean sub-regions and four members from other research centres and organizations. It will function on a 3-years rotating basis to allow all MEDARE members (countries) to be part of the system.

The first MEDARE SG is composed of Pierre Bessemoulin (WMO/CCl President) and Manola Brunet (co-chair WMO/CCl OPAG2) as co-chairs. And as regular members by Phil Jones (CRU, UEA), Sylvie Jourdain (Meteo France), Tania Marinova (Bulgarian NMHS),

Serhat Sensoy (Turkish NMHS), Azzadine Sazi (Algerian NMHS) and Elena Xoplaki (UBern)

MEDARE will be based on four working expert groups open to all countries in the GMR and other relevant organizations and individuals. The four WGs are:

WG1. Inventorying, assessing, approaching old material sources and holders

WG2. DARE techniques and procedures (including digitization)

WG3. Approaches on best practices for quality controlling and homogenizing specific climate variables

WG4. Promotional activities, bringing MEDARE to the wider scientific and other communities

MEDARE ACTIVITIES, OUTPUTS & CURRENT STATUS:

Since the idea of MEDARE was born, the Community has been very active and productive in order to set up the Initiative. Different activities have been carried out as follows:

- The Workshop proceedings has been published and its available on-line at: *http://www.omm.urv.cat/MEDARE/docs/Proceedings_MEDARE.pdf*

- The first version of the MEDARE web Portal is available online: *http://www.omm.urv.cat/MEDARE/index.html*.
- The formal Call for Membership and the finalization of the working structure started after EC-LX and its expectable to be finished by early 2009.
- The GCOS/WCRP Atmospheric Observation Panel for Climate commended the MEDARE initiative and firmly endorsed its conclusions (ref GCOS – 122, WCRP 9/2008 (WMO/TD No. 1436), *http://www.wmo.int/pages/prog/gcos/Publications/gcos-122.pdf*
- WMO Executive Council, endorsed MEDARE; EC-LX, Geneva, 18 to 27 June.

Besides the MEDARE Community has been very active publicising and raising awareness at the:

- WMO/CCl/ETCCDI Meeting: Vietnam, December 2007
- UNFCCC Expert Meeting on Methods and Tools and Data and Observations under the NWP on Impacts, Vulnerability and Adaptation to Climate Change (March 2007)
- European Geophysical Union Annual Meeting (Vienna, 2008)
- WMO/CCl Expert Team on the Rescue, Preservation and Digitalization of Climate Records: Mali, May 2008
- ENSEMBLES/ETCCDI: Holland, May 2008
- 31st International Geographical Congress: Tunis, August, 2008
- 8th EMS/7th ECAC Meeting: Amsterdam, September, 2008
- Symposium on *Climate Extremes During Recent Millennia and their Impact on Mediterranean Societies*, Athens, September, 2008
- 6th International Meeting of Asociación Española de Climatología, Tarragona, October, 2008

In organizational activities, like the setting up of the SG and WGs, and in financial tasks, as submitting proposals to international, European and national agencies.

CONCLUDING REMARKS:

MEDARE is, then, an open initiative addressed to:

- NMHSs in the GMR
- Research groups and organizations involved in recovering, documenting, digitising, quality controlling, homogenising, archiving and developing high quality climate datasets
- Motivated individuals in other fields, such as geographers, engineers, historians, physicists, observers and others either in the active or retired spheres of activity

HOW TO JOIN MEDARE?

Any motivated individual and organization in the field of DARE&H can take part of the MEDARE Initiative by sending its expression of interest to *http://www.omm.urv.cat/MEDARE/how-to-join.html* or by email to *manola.brunet@urv.cat* or *OBaddour@wmo.int*

By Manola Brunet, co-chair MEDARE Steering Group