



Rescue and Digitization of Climate Records

Historical data on weather and climate are of critical importance to the country within which they were taken, and to the world community. The societal benefits resulting from long records range from saving lives to providing a safer and higher life standard. In addition, there are great economical and scientific benefits.

However, millions of old records have already perished with the valuable information contained within, lost forever. These unique records, some dating back to the 1500s, reside on paper at great risk from mould, mildew, fire, vermin, and old age that deteriorate paper and ink or from being tossed away because of lack of storage space.

Old weather and climate records including from pre-industrial times and beyond are of immense value for a variety of applications and sectors. They can provide global climate modelling studies with baseline information to better predict weather and climate extremes. Historical data added to modern data can help filter natural climate variability from anthropogenic climate change in climate assessment studies. Weather records spanning a century or more will help better understanding and predicting climate variability and change through more accurate calibration and validation of climate models. Long weather records also assist in explaining historical events such as plagues and famines and are used in epidemiological and health studies. The analyses of long time series of weather data also let farmers know better the frequency of climate events such as droughts, floods, extreme temperatures and in some areas, the amount of sunshine enabling them to better plan crop varieties and irrigation or drainage systems increasing their food production and helping to alleviate hunger.

The rescue of historical weather data is a high

priority activity for the World Meteorological Organization (WMO) with the aim to save the vast amount of meteorological data collected in all parts of the world and make sure they are properly preserved in electronical form allowing their accessibility to the user communities faster. Many of the world's climate datasets contain digital data back to the 1940s, but few have a great volume of data before this time, which is a strong asset for climatological studies on local, regional and global scales.

National Meteorological Services around the world are engaged in data rescue. However, it is a race against time, as the condition of many paper records are deteriorating with age.

In the United States, NOAA's National Climate Data Center is (and has been) digitizing billions upon billions of observations made by hand on paper since 1776, and since the 1890s, on punch cards which was the first ever information in digital form. The billions of punch cards filled every conceivable space



in the Center and soon led to major storage and preservation problems. It was not before the 1930s that a mammoth data management challenge was taken up under the Work Progress Administration to address the historical backlog of weather observations going back hundreds of years. The military soon realized the strategic advantages that arose from analysing weather statistics during war times, and the science of utilizing weather and climate data began to develop at great speed. Today, almost every

sector has a keen interest on the most accurate weather data and long climate records.

The Bureau of Meteorology in Australia has computerised and analysed millions of historical weather records as part of its effort to understand long-term climate change in Australia. Now the bureau is turning to its Pacific neighbours and their precious weather records that could help in the understanding of wider climate changes affecting the Asia-Pacific region. 'The information stored in countries in the Pacific Basin is vital to our global understanding of climate variability and climate change. And for the islands themselves, this is historical data that their meteorologists can use for forecasting weather trends and extremes for their country' said Dr Nicholls, a climate scientist with the Bureau of Meteorology Research Centre, to the media.

Data rescue activities are underway in the meteorological services on almost all continents of the world, but progress is slow due to time and budget pressure.

To address the importance of rescuing data for regional climate studies and predictions, for the calibration of data and the generation of climate quality reanalyses data, an *International Workshop on Rescue and Digitization of Climate Records in the Mediterranean Basin* is currently being organized from 28-30 November 2007 in Tarragona, Spain, by the WMO, the Instituto Nacional de Meteorología and the University of Rovira i Virgili.

The Workshop aims to inform about and discuss the techniques and procedures on data and metadata recovery, digitization, composing, formatting, archiving and disseminating long-term climate records. Recommendations will be outlined to the international scientific community, decision makers and other end users. In addition, an inventory on country basis

will be established of the currently available long-term data records in digital form. Further, opportunities to mobilize resources at the



A high value outcome of the Workshop will be the development of a web portal for inventorying the current available climate data, the potential data to be recovered and the actions to be undertaken for developing national and regional data rescue activities. This will constitute therefore a major information about climate data in the Mediterranean region for researchers as well as for data rescue project designers and donors. On the other hand this certainly will be another window of information to be opened within the WMO Information System (WIS).

national and regional scales will be identified.

As one of the expert teams of the Commission for Climatology (CCI) acting through the WMO Climate Data and Monitoring Programme (WCDMP), the Expert Team on Climate Monitoring is working to stimulate and coordinate climate monitoring activities around the world to give all countries access to the fullest array of new monitoring products and information. The team has now developed a new website to facilitate the sharing of information, data and products with a special focus on promoting the use of satellite and marine data. The website is a portal to climate monitoring products and information from and for meteorological services worldwide and provides operational information and software on variables ranging from temperature, precipitation, snow, sea ice and glaciers to ENSO (El Niño Southern Oscillation) and tropical cyclones. [c arndt]

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References and links

DARE project http://www.wmo.int/pages/prog/wcp/wcdmp/dare/index_en.html

Expert Team on Climate Monitoring <http://www.omm.urv.cat/index.html>

International Workshop on Rescue and Digitization of Climate Records in the Mediterranean Basin <http://www.omm.urc.cat/Med-DARE>

WCDMP http://www.wmo.int/pages/prog/wcp/wcdmp/wcdmp_home_en.html

WMO <http://www.wmo.int>

WMO (2004) Guidelines on Climate Data Rescue. WMO