Climate Watches add value to Weather Watches

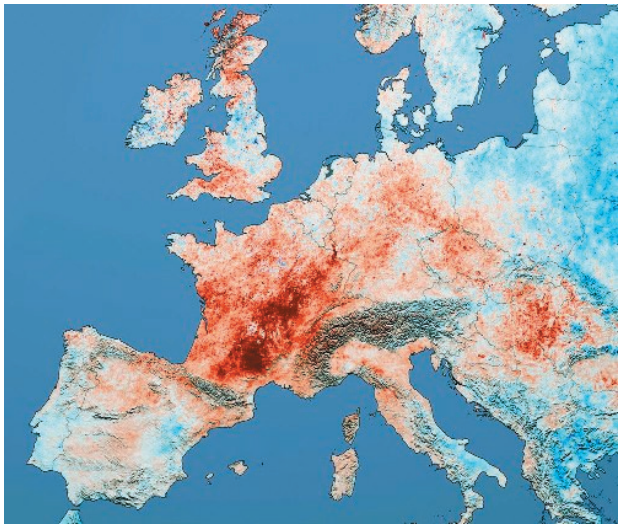
Many countries have developed Weather Watches. National Meteorological and Hydrological Services (NMHSs) issue early weather warnings upon the expectation of weather that may be hazardous to life and property.

Tornados, thunderstorms, hurricanes and winter storms require Weather Watches while droughts and monsoons, floods, heat and cold waves require additional Climate Watches, meaning: long-term monitoring and assessment of the state of climate, a comparison with historical observations and its integration into the context of global climate circulation patterns.

Climate Watch systems enable continuous and timely climate-related risk assessment and management to avoid damages to humans, their livestock and livelihoods, instead of crisis management that usually occurs as a 'clean up' operation after the climate anomaly has set in.

Anticipatory measures have been implemented in various parts of the world.
The North American Drought Monitor integrates the information of several key climate and drought-related indicators such as stream flow, vegetation health, soil moisture and impacts to produce weekly 'drought maps'. Through the Internet, local and national newspapers and television these maps are distributed, to reach even the most remote areas.
Another excellent example of an international collaboration between climate centers has been jointly developed by the World Climate Programme (WCP) of the World Meteorological Organization (WMO) and the African Centre of Meteorological Applications for Development (ACMAD) in Niamey, Niger, for Africa. The Climate Watch Africa bulletin provides information on climate analysis and predictions at the continental and sub-regional scales.
The IGAD Climate Prediction and Application Centre (ICPAC) in Nairobi, Kenya, has established a regional Climate Watch system responsible for the Greater Horn of Africa. The Centre provides regular regional climate advisories including ten-day, monthly and seasonal climate bulletins as well as timely early warning information on evolving climate extremes (e.g. droughts) and associated impacts.

The process of developing a Climate Watch system may vary from one national meteorological service to another, although in general it involves the following: (i) developing ongoing climate monitoring activities; (ii) scientific assessment of regional climate anomalies, including their relationship to large-scale climate variability; (iii) developing a long-range forecasting system or using publicly available long-range forecasts; (iv) consulting with prospective end users on the development of indices, criteria and policies for issuing Climate Watches; (v) developing a system for promulgating the Climate Watches



European areas experiencing a major heat-wave in summer 2003. Deep red indicates areas where the temperatures were 10°C warmer in 2003 compared to 2001. Source: NASA.

in consultation with the user community; and (vi) evaluating the Climate Watches and their effectiveness in meeting the needs of the users.

The establishment of national and regional Climate Watch systems in all countries will heighten awareness and improve preparedness for adverse climatic conditions – and reduce socioeconomic vulnerability to climate hazards by alerting the user community well in advance. By incorporating information from recent climate analysis as well as outlooks

Droughts, such as this one in Australia, and floods like in Bangledesh after monsoon, require long-term monitoring and assessment of the state of climate to facilitate early warnings. Source: Aus. Gov. DFAT; E. Al-Majed.

from long-range forecasts Climate Watches serve as advisories and forewarnings of climate anomalies. The main focus of the Climate Watch system is on the user community in order to influence decision-making. Farmers need access to climate information before they have made decisions about planting, crop management and harvesting. And health officials need to stock up resources to fight against malaria before favourable climate conditions speed up a mosquito-plaque and hence, increase malaria risk.

Different user communities have different needs when considering climate information for decision making. The climate-sensitive end-user community comprised of farmers, herders, business owners and others often prefer to receive climate information through intermediaries who interpret and transform the technical information into an easy-to-understand form. Intermediaries are meteorological officers, climate scientists, government policy advisers and also media communicators and journalists. While establishing a national or regional Climate Watch system partnerships with these intermediaries will be the best choice to meet the user's different needs and requirements. Also, user stakeholders which are aid agencies, non-governmental organizations and other groupings representing (and empowering) end users base their decisions on climate information. To embed the Climate Watch effectively in a comprehensive network liason with radio, television and print media as well as internet platforms will be essential to reach a vast array of users including the decision makers: government agencies, food security organizations, water and electricity suppliers amongst others.

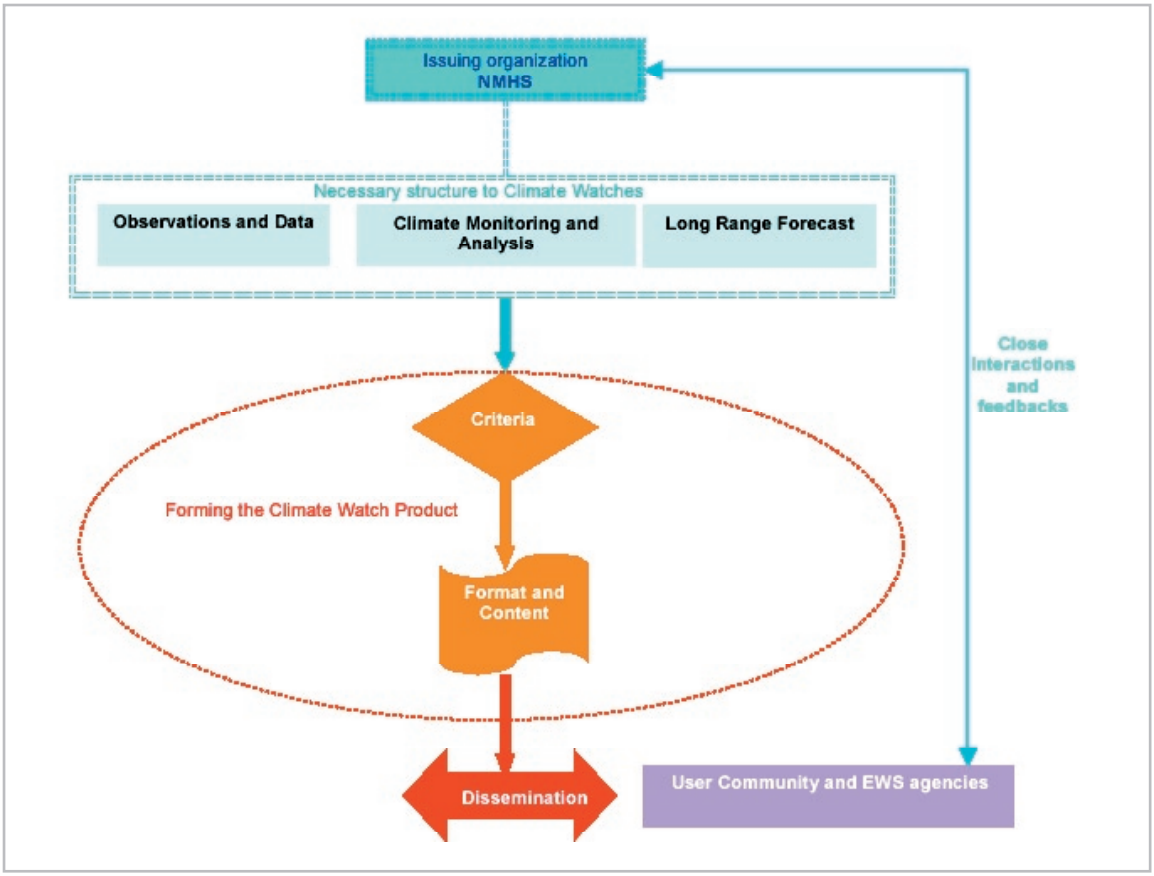
The WMO Commission of Climatology recently issued *Guidelines on Climate Watches* which have been developed by the WMO World Climate Data and Monitoring Programme recognizing the need for national meteorological services to improve their climate data and monitoring services. These guidelines provide assistance on how to develop and implement climate services, and present processes and technological solutions that attempt to address the special situation and needs of smaller meteorological centres which have limited resources.

In order to implement Climate Watches, national meteorological services need Robust Climate Data Management Systems (CDMS) and modern techniques for monitoring climate parameters and events at various space-time scales of the climate system. As part of its efforts, WMO through the World Climate Data and Monitoring Program – WCP/WCDMP- is implementing modern CDMSs in developing and least-developed countries and is issuing each year the WMO authoritative statement on the status of the global climate system for its annual monitoring of the global climate system. WCDMP provides also through the Commission for Climatology experts in the Open Program Area Group on Monitoring and Analysis of climate variability and changes (OPAG2), guidelines to the Members to assist them on best practices in climate monitoring including the use of satellite and marine data and products.

Many countries rely on pre-processed and pre-analysed data from developed countries

because they lack the capacity to access, develop and disseminate climate information. The WMO Climate Information and Prediction Services (CLIPS) have made great efforts to train personell in many African countries to produce their own best-practice rainfall forecasts. Capacity building continues to be one of the priorities of the WMO. Trained professionals at the National Meteorological Services and regional climate centres have the responsibility to obtain up-to-date climate information, interpret it and apply techniques to develop and distribute it in an efficient and timely manner.

The National Meteorological and Hydrological Services have the lead and oversight when developing and establishing a Climate Watch system. Because meteorological and climatological expertise resides here, they manage and coordinate Climate Watches, gather observations, establish (present and historical) data archives, perform data analysis and develop a long-range forecasting system. Ideally, each climate centre has a large network of observational stations and records additional metadata. Relevant climate data include air temperature, precipitation, humidity, atmospheric circulation (wind velocity) and atmospheric pressure at high temporal and spatial resolution. A major challenge is then to place regional climate conditions into context with large-scale climate phenomena such as the ENSO cycle (El Niño Southern Oscillation: El Niño and La Niña), NAO (North Atlantic Oscillation) and MJO (Madden-Julian Oscillation). When comparisons with historical average reveals warrant conditions the NMHS should then issue formal climate watches with monthly updates to alert the user community.



Schematic structure of the Climate Watch system. Source: *Guidelines on Climate Watches*.

The WMO *Guidelines on Climate Watches* provide background and information on technical practicalities in detail to encourage the establishment of regional and national Climate Watches worldwide – even where resources are limited. *[ca]*

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Guidelines on Climate Watches (2005) WMO Publication TD No. 1269/WCDMP No. 58 www.wmo.ch/web/wcp/wcdmp/html/Guidelines%20on%20Climate%20Watches.pdf.

IGAD Climate Prediction and Application Centre www.icpac.net.

NOAA's National Weather Service's Storm Prediction Center (div. Weather Watches) www.spc.noaa.gov/products/wwa/.

North American Drought Monitor (NADM) (Climate Watch on droughts) www.ncdc.noaa.gov/oa/climate/monitoring/drought/nadm/.

World Meteorological Organization (WMO) www.wmo.int.

WMO Commission for Climatology (CCl) www.wmo.ch/web/wcp/ccl/CCLmenu.html.

WMO Climate Information and Prediction Services (CLIPS) www.wmo.ch/web/wcp/clips2001/html/.

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