

Implementation of Climate Watch Systems in RA II with focus on Monsoon affected areas General Summary and Recommendations

Introduction

Congress-XV requested WMO to support the organization of regional workshops on climate monitoring and issued a resolution on future climate monitoring priorities which include: To enhance climate monitoring capabilities for the generation of higher quality and new types of products and services. EC-LX, Geneva, 18 to 27 June 2008, noted the urgent need for NMHSs and regional climate institutions to make use of best practices in delivery, provision and evaluation of climate watches, and in managing efficiently and seamlessly the interaction among the three involved parties: Regional Institutions, the NMHSs and the end users.

The WMO series of regional workshops on climate monitoring including the implementation of climate watches constitute a WMO supporting mechanism to the Members in achieving these objectives by strengthening the role of the National Meteorological and Hydrological Services (NMHS) and the Regional Climate Centres to produce operational climate advisories and timely delivering them to the various sectors, decision makers and end users. This is required to help these communities in taking anticipatory measures to reduce the negative impacts of climate anomalies and related extremes.

The monsoon affected area of the Asian region records frequent extreme weather and climate related events such as droughts, dry spells, heat waves, cold waves, flooding, cyclones, wind storms, severe thunderstorms/lightning, land slides, costal erosions, salinity intrusion etc. In addition, the high density of the population exposes the sub-region to high climatic risks. These factors together require a cross-boundary and cross sectors collaboration to establish a sound climate watch system to deliver high quality climate monitoring products and watches.

To stimulate the inception of this system in RA-II WMO organized in collaboration with China Meteorological Administration (CMA) a workshop on climate monitoring including the implementation of a climate watch system in RA-II with focus on monsoon affected areas, Beijing China, 10-13 November 2009. The objectives of the workshop are:

1. To identify the need for climate watches in the region,
2. To Review the status of climate monitoring and long range forecasting capabilities at global, regional and national levels,
3. To build on successful showcases in the region and from abroad in producing useful climate advisories;
4. To work on tailoring the WMO guidelines on climate watches to the region needs,
5. To recommend best practices for the region in issuing climate watches,
6. To recommend strategies towards users of climate watches,
7. To develop an action plan to implement climate watches at national and regional level,
8. To recommend a follow-up mechanism on the implementation of climate watches.

Definition, Format, Content, Dissemination and Verification of climate watches

- A climate watch was defined in the WMO guidelines on climate watches, 2005 (WMO-TD No. 1269 / WCDMP-No.58) as an advisory issued by the NMHSs to heighten awareness amongst the users on a particular state of the climate. It serves as a mechanism for initiating preparedness actions. Participants agreed that the WMO guidelines should be the basis for organising a Climate Watch System in RA-II and for the delivery of related products and advisories at regional and national levels. A climate watch should be agreed with users and should include a standard format to be kept consistently used and avoid changing it. When feasible, and when it is within the responsibility of an NMHS, or of some national committee, the content of a climate watch should include information on expected impacts which should be assessed with the help of the sectors and provide guidance on

how to behave, or what to do to reduce negative consequences. RCCs should assist NMHSs by providing guidance on regional climate anomalies based on regional climate monitoring and long range forecasting products and services. Participants emphasized that user requirements and needs are best identified when there is a permanent structure including NMHS, governmental agencies and other users. This fits well with the WCC-3 outcome recommending the set up a User Interface. The participants were informed that the Espoo conference on *Living with climate variability and change* (LWCVC) provided a good reference in this matter as it conveyed useful users input from various sectors. The proceedings of the conference therefore provide good guiding recommendations on user requirements and needs.

- Socio-economic data is a key for implementing an efficient climate watch system in the region. Therefore there is a need for designing standard and inter-operable data base systems on socio-economic data using GIS. These data can for example help better target climate watches; thus becoming with less risk of negative side effects; as in some cases issuing a climate watch could trigger negative reactions in the local economic activities if the climate watch do not consider users socioeconomic concerns. It is therefore advised that when such risk arises, climate watches should be sector-specific with time-space resolution as high as possible. RCCs with the assistance of the WMO Disaster Risk Reduction Programme (DRR) are well placed to lead the development of such data bases. In addition National statistical Institutions / Bureaux, insurance and reinsurance companies provide good sources of such data. Show-cases and success stories can be used to promote the exchange of socio-economic data between sector agencies and NMHSs.
- In disseminating climate watches we should take advantage of the existing national structures to customise the information according to the recipient's requirements and needs. In many cases the information should target primarily high and/or medium level only to support contingency planning and actions. However field operation level should be always kept informed during the progress of the climate watch including on the end of the watch. Media should be handled carefully and delicately to avoid the risk of a misuse or misinterpretation of the content of a climate watch. Different countries have different policies in managing climate related hazards. Positive engagement of the media is therefore also important to ensure an efficient CWS with a proper use of the information by the users and particularly when the general public is also concerned by the watch. NGO's should be considered in designing an end to end climate watch system, in the sense they have good interactions with end users and the population and they might have fast reaction during disasters; therefore they can help heightening awareness among the population and get data from the field. They may also have a good access to information on socio-economic aspects. The use of cell phone technology could become an effective mean in several cases to help reach out remote areas in disseminating climate watches.
- The establishment of a regional/national databases on extreme events is required for an objective verification of climate watches. However it should be noted that a good dissemination mechanism is crucial to ensure an end-to-end operational climate watch system. In some cases despite good and timely advisories the lack of an efficient dissemination can lead to unsuccessful climate watches.

Basic infrastructure requirements and needs for climate watches in the region

- It is required to have a solid data foundation based on high quality data sets with timely exchange to ensure an operational climate watch system in the region. In this regards, efforts should be made by NHMSs for the generation of a good quality climate data. Countries having large gaps in the data bases need to accelerate the digitization of the data which are available in paper form. WMO can further strengthen data archival and rescue (DARE) programme over the RAI region particularly for the NHMSs where only limited data is available. WMO would help by organizing workshop/training programmes for the member countries to improve climate data management including handling missing data, data

quality and homogeneity, etc. Climate data which are readily available at different NMHSs (like gridded data and some stations data) need to be shared within the data policy framework to ensure better operation of the RCCs. Data available from international bodies such as NCDC, GPCP etc. can also be used as a complement. RCCs (BCC and TCC) and NMHS should strengthen links for exchanging the required climate and real time data for the operation of climate watch system in the region.

- Global climate information including climate analysis and LRF products which are routinely made available through websites by various global centres should serve to provide the global context when appropriate on an ongoing global climate anomaly and its future evolution. This is the case for monitoring the ENSO event for example. Regional climate monitoring and forecast products which are routinely made available by the Regional Climate Centres in RA-II should serve as regional guidance on climate anomalies and their evolving stages at regional scale. Therefore they provide input for developing climate watch advisories which should be further refined, targeted and adapted based on climate information and expertise existing at national level. The forecast information from BCC and TCC can be provided to NMHSs either through their web sites or through ftp servers. The Korean Meteorological Agency (KMA) is a WMO designated lead centre for Multi-Model Ensemble (MME) long range forecasting. KMA forecast products and MME-LRF data can therefore be made easily available to the NMHSs.
- NMHS have also direct access to information and tools related to the analysis of climate extremes and indices; these are provided by the Joint CCI/WCRP/Clivar/JCOMM Expert Team on Climate Change Detection and Indices (ETCCDI) using their website.
- Close coordination at national level between NMHSs and other scientific organisations and institutes should be established or strengthened. Interactions with the user communities should be developed by NMHSs when designing and operating climate watch system. There is a continuous need for capacity building for both users and providers to better understand each other and effectively cooperate in operating CWS. Also outreach and education programs need to be promoted for raising population awareness;
- At regional level, RCCs (at present BCC and TCC) should play an increased role in providing training to NMHSs about their existing capabilities in climate monitoring and LRF. There are also new capabilities developed by these Centers such as ClimatView, ITACS and extreme event data bases. There are also a number of specific requirements for NMHS to implement a climate watch system at national level; especially in developing countries. These include particularly upgrading climate infrastructure and strengthening the manpower; and the establishment of improved collaboration with other national organisations and institutes. Real opportunities exist in the region and should be used including participation in FOCRA-II meetings and other workshops and seminars; taking benefit of the visiting scholar and exchange programmes which are being promoted for example by BCC. At national level NMHSs can also easily organize national workshop for the users and the media.

Conclusions and recommendations

The main elements of climate watches were discussed during the plenary sessions of the workshop based on WMO guidelines on climate watches (WMO-TD No.1269 / WCDMP No. 58) and the existing capabilities at regional and national levels. The participative approach through working groups, involving climate experts and some participants from user sectors was very useful in developing a common vision on climate watches in the sub-region. Participants agreed on the urgent need for the establishment of a Climate Watch System as part of the implementation of the proposed GFCS. Collaboration between regional and national institutions in data exchange including historical data, databases for extreme events, climate products delivery, tools and capacity building were identified to be essential requirements for implementing a sound CWS. The

implementations of a CWS in the sub-region should start soon and should be based on the existing regional institutions (RCCs) and NMHSs in close collaboration with sectors and users.

I- Recommendations for actions to be undertaken in the short term (1-3 months)

- Publication of the proceedings of the workshop (Participants to submit paper of their presentation within one month);
- Presentations and soft copy of the proceedings will be put on RCC websites (BCC/TCC);
- The RCC websites will give announcement about the upcoming meetings and other events relevant to the topic taking place in the region.

II- Recommendations for actions to be undertaken in the medium term (1 year)

- Participants from NMHSs in RAIL are welcome to take part in FOCRAII which is organized in April each year. The organizers will send formal invitation to NMHSs. TCC is planning to have a meeting about how to use the GPCs products over the region;
- Pakistan Meteorological Department offered to establish a web-based discussion forum to follow-up on the implementation of climate watch system in RA-II;
- Dr. Azmat Hayat Khan from PMD, Pakistan and Dr. Dushmanta Ranjan Pattanaik from IMD, India offered to coordinate with the RA-II RCCs to develop a project proposal for funding by APN on climate watches implementation in the subregion.

III- Recommendations for regional mechanisms for collaboration on climate watches

- Use the existing WMO working group structure and focal points to further raise the needs and identify difficulties in implementing CWS and propose solutions; and inform on the progress made. The WMO working Group on climate will be the main WMO mechanism for this purpose;
- NMHSs in the region are encouraged to benefit from some existing programmes at BCC and TCC;
- The Regional Association will be informed about the need for data exchange within the region and with the RCCs (including historical and extreme events data) as part of the implementation plan of CWS.