Summary Report of
the WMO Fact-finding Mission to
the State Hydrometeorological Administration (SHMA)
Democratic People's Republic of Korea

18-25 March 2011

Background

At the request of the State Hydrometeorological Administration (SHMA), a WMO Expert Team consisting of experts from the WMO Secretariat and China Meteorological Administration (CMA) visited Democratic People's Republic of Korea (DPRK) with a mission *"to assess the current status and requirements of SHMA to enhance its operational hydro-meteorological services"*. Given the recurrent natural disasters, such as floods, droughts and typhoons, experienced by DPRK in the recent years, the agricultural meteorology services and flood management issues were the focus of particular attention of the Expert Team during the mission. During the visit from 18th to 25th March 2011, the Team visited a couple of observation sites in and around Pyongyang and held extensive discussions with concerned departments and institutes including the user organizations such as the Ministry of Land Environment Protection (MoLEP) and the Academy of Agricultural Sciences (AAS).

SHMA directly reports to the Cabinet, and is headed by Mr Ko IL Hun, the Administrator, who also serves as the Permanent Representative of DPRK with WMO. SHMA is responsible for implementing the national policy and conducting systematic survey and research on meteorology, hydrology and oceanography; maintaining operational hydro-meteorological observation network for meteorology, climate, river, lake, reservoir and ocean; and providing services such as weather forecasts, flood forecasts, agricultural outlooks, climatic predictions and environmental monitoring to the government and the public.

DPRK suffers from more than its fair share of natural disasters. The extremes such as torrential rains, typhoon, flooding, storm surge, erosion and sedimentation, landslide, drought and dust/sand storm are very frequent. Frost, forest fire and hail are reported to be of medium frequency, while earthquake and air pollution occur with a very low frequency. Agriculture is severely affected by frequent weather extremes.

Status of meteorological, hydrological and agro-meteorological services in DPRK

The surface meteorological observation network of SHMA is comprised of 12 provincial stations and 186 county stations, including 27 international synoptic stations. As a member of WMO, SHMA provides available data from its synoptic stations through WMO Global Telecommunication System on a real-time basis regularly for the use of the international community. The network forms the basis of all weather forecast and weather services system, and plays a very important role in the global observation system. These observations are performed based on unified observation formats specified by SHMA. However, operational observation network is in a rather poor condition. The instruments used in meteorological, hydrological and agro-meteorological observations are old and outdated and are often not calibrated according to the standard practices. The quality management framework, setting down procedures for observations, inspections and standard practices is lacking. The National Data Center collects all hydrological, meteorological, climatic and oceanographic data but there are no laid down standard practices for data archiving and the capacity and reliability of the storage system is not up to the international standards.

The domestic communication system of SHMA, based on dial-up link via MODEM and telephone line is designed to collect domestic observations from provincial centers and county-level observation stations and sharing domestic observations with provincial centers. The telecommunication system is weak and technologically outdated that hampers real-time transmission of critical data for forecasts and dissemination to the users. The domestic and international communication system and satellite data broadcast receiving system are out-dated and with intermittent power supply it is unable to meet the modern requirements of data transferring and data sharing as the current system cannot support the new services, applications and observation system.

Weather forecasts are made for the provincial capitals, although given the uneven topography of the country, the user needs for agro-meteorological products as well as flood forecasting products requires weather forecasts at finer resolution. There is good capability within SHMA for Numerical Weather Prediction. However, the limited computer capacity restrains their ability to make use of the full potential. The climate change projections have been developed for two scenarios using one GCM and RCM with coarse resolution. The projection of sea level rise along the coast is yet to be carried out.

SHMA provides special services for agriculture, hydropower, health and salt making industry and provides direct information to the provincial authorities. The weather, hydrological and agro-meteorological forecasts are being disseminated through telephones, television and newspaper and limited computer network. Potential of these media are yet to be fully exploited in making services available to user-friendly formats. Daily weather forecast is disseminated to the general public through radio and television daily after the national news.

The basic technical capacity of the staff at SHMA is very good and it is amazing to see their enthusiasm and ability to perform beyond the available logistic support in terms of infrastructure. The technical staff, however, lacks exposure to the latest technology for study outside the country, lack of English knowledge and access to the Internet, and lack of in-service training.

Recommendations addressed to the international community

The Expert Team had a focus on the agro-meteorological services and provision of flood-forecasting services. Further, the Team in its discussions with the UNDP country team recognized that nutrition and food security; sustainable development and improving people's living standards; and environment and climate change, including disaster risk management have been identified by the Government of DPRK and the United Nations as the areas of cooperation for improving the capacity of the country by supporting the national efforts. In view of the above the Expert Team has made certain recommendations for consideration of the international community and SHMA.

As the 27 synoptic stations and two upper-air stations provide regular inputs to the global observation system, the international community should support SHMA to enable them to contribute to the safety and well being of people by providing quality data from these stations. As such, there is an urgent need to equip these stations with Automatic Weather Stations, with 12 provincial observatories getting immediate attention along with improved calibration facilities.

For the improvement of agriculture production in the country and in order to improve the safety of life and people against floods and droughts, it is important that SHMA is able to provide better weather forecasts up to the county level. In order for DPRK to improve its flood management and drought management practices, SHMA should be supported in developing its capacity to make better weather predictions through improved Numerical Weather Prediction; improving and expanding its agro-meteorological services to support food security; improving flood forecasting and flood mapping services; and developing drought early warning systems.

The agro-meteorological advisories provided through a pilot project in one of the provinces for the last five years, have proved to be useful in increasing production. These services are now required to be rolled out for the entire country in an operational mode, expanding and improving some of the products. The delivery and dissemination of the agro-met bulletin need to be more user-friendly and provided in user specific format through active engagements with the users. More intensive use should be made of the television and newspapers for the dissemination of agro-met services. Flood response activities are coordinated at national level but there are not sufficient tools in terms of disaster-prone maps or early warning systems to enable preventive measures and quick response.

The Team discussed with SHMA on four proposals to seek support from international community. These proposals, amounting to 3.2 million Euros, are for: improving agro-meteorological services; improving drought and flood early warning systems; improving climate information services; and improving observation networks and calibrations facilities.

Recommendations addressed to SHMA

SHMA should build advocacy through its users in agriculture, hydropower, health and disaster management agencies to convince the policy makers that money spent on meteorological services is not expenditure but investment. SHMA needs to set up a users' forum and make use of TV and print media to reach out to the users and build their awareness to weather and climate issues.

As an important player within the national disaster management activities as well as contributor to food security through provision of agro-meteorological services, SHMA should seek special bandwidth for data transmission use within the high-speed national network.

SHMA should rehabilitate the two global upper-air observing stations by upgrading the radiosonde system, and providing spare parts and a new set of hydrogen generator at Hamhung station. Within the given resources SHMA should set up a quality management system (QMS) for observations, developing products and delivering all kinds of services in a comprehensive manner. SHMA should make extra efforts to engage with WMO and participate in its activities by making use of regular trainings and workshops announced from time to time; participating in the activities of various WMO Technical Commissions, their expert groups and their capacity building activities; and sharing flood information and flood data with the international community through GTS, in addition to the data from the existing synoptic stations.