2008/No. 2

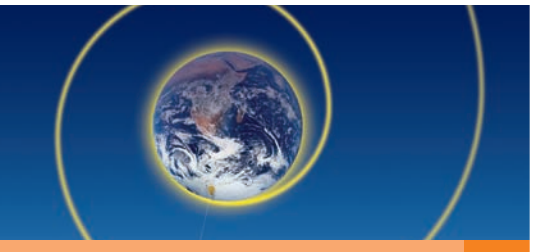
World Meteorological Organization

www.wmo.int/meteoworld

April 2008

MeteoWorld

Weather • Climate • Water



NEWS IN BRIEF

World Meteorological Day 2008

Each year, on 23 March, WMO—the Secretariat and its 188 Members—and the worldwide meteorological community celebrate World Meteorological Day. This Day commemorates the entry into force, on that date in 1950, of the WMO Convention creating the Organization. Subsequently, in 1951, WMO was designated a specialized agency of the United Nations System.

World Meteorological Day this year was celebrated around the theme: "Observing our planet for a better future", in recognition of the scientific and socio-economic benefits derived by WMO Members and their National Meteorological and Hydrological Services (NMHSs) from the expanded, wide-ranging and authoritative observations made in the context of WMO's mandated activities in weather, climate and water.

The choice of theme this year is particularly timely in view of the WMO Integrated Global Observing System and WMO Information System initiatives currently underway (see item on page 2 and box on page 3).

Observing systems, especially end-to-end multi-hazard early warning systems and environmental data-acquisition capabilities will become ever more vital in the context of a changing climate and economies increasingly sensitive to hydrometeorological impacts.

Celebrations at the WMO Secretariat this year took place on 25 March. After a welcome address by the Secretary-General, a presentation was made by the guest speaker, Rajendra Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC), entitled "Climate change: harnessing knowledge towards a better future". The IPCC, which was awarded the Nobel Peace Prize in 2007, together with Al Gore Jr, is co-sponsored by WMO and the United Nations Environment Programme. There was also a photo exhibition "Four elements in Nature", interspersed with poems and scientific texts on climate change.

WMO produced a kit for the occasion, containing a brochure, a poster and a message from the Secretary-General, as well as a film (all in English, French, Russian and Spanish). The kit may be obtained from the WMO Secretariat upon request. All these materials, as well as the presentations made by guests at the official ceremony, are available online on the dedicated World Meteorological Day Website: http://www.wmo.int/pages/wmd/index_en.html.

Agrometeorology in the service of humanity

Agricultural growth contributes directly to food security, supports poverty reduction and acts as an engine of overall economic growth in much of the developing world. The success of the agricultural sector at the global level has not been shared uniformly across regions and countries, however, and seems to have waned since the early 1990s. It is estimated that, by 2020, the world's population will reach 7.5 billion and that much of this growth will occur in the developing world. To meet the increasing global demand for cereals, for example, the world's farmers will have to produce 40 per cent more grain in 2020.

Agriculture accounts for 70 per cent of all water use in the world and as much as 95 per cent in many developing countries—almost all for irrigating crops. Today, more than 1.2 billion people live in areas of water scarcity and, by 2025, over 3 billion people are likely to experience water stress.

The gap between available water supply and water demand is increasing in many parts of the world, limiting future expansion of irrigation. In areas where

COMING EVENTS

13-15 May: CCl Expert Team on the Rescue, Preservation and Digitization of Climate Records (Bamako, Mali)

19-21 May: Ozone Research Managers' Meeting (co-sponsored by WMO) (San José, Costa Rica)

27-29 May: Workshop on Climate Change and Offshore Industry (Geneva, Switzerland)

4-6 June: WMO/COST Action Symposium on Climate Change and Variability: Agrometeorological Monitoring and Coping Strategies for Agriculture (Aas, Norway)

9-27 June: International Hydrometeorology Analysis and Forecasting Course (co-sponsored by WMO) (Boulder, Colorado, USA)

17 June: Sixtieth session of the WMO Bureau (Geneva, Switzerland)

18-27 June: Executive Council—60th session (Geneva, Switzerland)

supply is already limited, water scarcity is likely to be the most serious constraint on agricultural development, especially in drought-prone areas.

WMO therefore encourages agrometeorological requirements to be taken into account when developing farm-level strategies and making specific proposals for applications to agriculture, forestry and fisheries. It also promotes targeted regional training needs to improve agrometeorological services to those sectors.

The density of agrometeorological station networks needs to be enhanced to improve the spatial resolution and quality of agrometeorological products. WMO will assist and collaborate with institutions that establish and maintain agrometeorological stations.

WMO has recommended that Directors of National Meteorological and Hydrological Services (NMHSs) should engage in dialogue with universities and institutes involved in agricultural research with a view to establishing a national agrometeorological station network. Such a network would bring all the stations being operated by the different entities under one umbrella.

A questionnaire for NMHSs has been developed on the use of remote-sensing and geographical information system technology.

Promoting sustainable agriculture in Asia

Although the agricultural sector in Asia continues to grow, it is declining in relative importance, both in terms of its contribution to gross domestic product and its share of the labour force. More than half the economically active population is involved in agriculture in East, South-East, South and South-West Asia and agricultural employment is especially important for the livelihoods of the poor. Asia is also home to a majority of the world's poor. Domestic agriculture provides the bulk of food for the poor in both rural and urban areas. It is also a key provider of jobs in rural areas, where the majority of the poor live.

NASA

The Asian region is extremely vulnerable to a wide range of natural hazards, ranging from catastrophic events such as tsunamis, earthquakes, floods, droughts, cyclones, forest fires and landslides to pests and diseases of plants, animals and humans. Nearly 90 per cent of the people affected by disasters between 1975 and 2005 lived in Asia. On average, about 100 000 people are injured or killed in Asia each year by natural disasters, and over four million people lose their homes. In East Asia alone, the total material costs between 1995 and 2004 were estimated at US$ 304 billion.

Especially in poor rural areas, these disasters cause much suffering, infrastructure and environmental damage, aggravate food insecurity and slow down or even reverse development gains. They often add extra burdens on already struggling rural communities and adversely impact rural livelihoods.

In order to review and assess how agricultural meteorology can contribute to sustainable agricultural development in Asia, WMO has reviewed the approaches in promoting the more active use of agrometeorological research products by end-users. It reviewed and summarized the status of seasonal and early warning prediction, as well as the monitoring of drought in the region by conventional and remote-sensing techniques. Climate change impacts and adaptation to climate change to cope with them—important issues in Asia—were also reviewed.

Pest and disease management is an important aspect of many crops and cropping systems of Asia and WMO has examined the current procedures of agrometeorological forecasts in this respect.

WMO has also examined modern and traditional methods of rainwater harvesting for agricultural use in Asia. These are crucial to enhance the efficiency of water use. It will be necessary to educate and train agrometeorological personnel with particular reference to early warning and monitoring of drought so as to promote and support these activities in the region. WMO is also assisting in the development of a strategy to promote sustainable urban and indoor agriculture.

Integrated global observing systems

There is a broadly recognized need for a comprehensive, coordinated and sustainable global observing system which integrates diverse space- and surface-based observing systems holistically in a fashion which optimizes knowledge of current environmental conditions and the exploitation of this information for predictive weather, climate and water products and services. WMO's response to this need is the WMO Integrated Global Observing System (WIGOS) concept.

WIGOS is based on the observational requirements of all WMO programmes. It will ensure the availability of required data and information and facilitate access through the WMO Information System (see box above), according to identified temporal, geographical and organizational requirements, including those for real-, near-real-time and delayed modes. In so doing, it will respect data-sharing policies and help ensure high data-quality standards and benefits.

The surface- and space-based components of WIGOS will include networks to observe the weather, atmospheric composition and radiation, marine meteorological networks and arrays, hydrological observing networks and the various atmospheric, hydrological, oceanographic and terrestrial observing systems contributing to the Global Climate Observing System.

Improved monitoring through the integration of surface- and space-based observations is essential for understanding global climate and the components of the global climate system: atmosphere, hydrology, ocean, land surface and cryosphere.

WIGOS development and implementation will proceed in parallel with the planning and implementation of the WMO Information System. The combination of both efforts will allow for an integrated WMO end-to-end system of systems designed to improve Members' capability to effectively provide a wide range of services and to better serve research programme requirements.

WIGOS will create an organizational, programmatic, procedural and governance structure that will significantly improve the availability of observational data and products. It will provide a single focus for managing all WMO observing systems, as well as a mechanism for interactions with co-sponsored observing systems.

Integration will lead to efficiencies and cost savings that can be re-invested to overcome known deficiencies and gaps in present structures and working arrangements.

WMO INFORMATION SYSTEM

The WMO Information system (WIS) is the pillar of the WMO strategy for managing and moving weather, water and climate information in the 21st century. WIS provides an integrated approach suitable for all WMO programmes to meet the requirements for routine collection and automated dissemination of observed data and products, as well as data discovery, access and retrieval services for all weather, climate, water and related data produced by centres and Member countries in the framework of any WMO Programme.

WIS is being designed to extend WMO Members' ability to collect and disseminate data and products, providing linkages for all WMO and supported programmes associated with weather, climate, water and related natural disasters. It is being built upon the Global Telecommunication System of WMO's World Weather Watch, using standard elements and at a pace feasible for all Members.

Global Climate Observing System (GCOS)

GCOS Reference Upper-Air Network (GRUAN)

Implementation has begun of the new GCOS Reference Upper-Air Network (GRUAN) The reference network will provide long-term, high-quality climate records to constrain and calibrate data from more spatially comprehensive global observing systems, including satellites and radiosonde networks.

The implementation meeting for GRUAN, organized by the Working Group on Atmospheric Reference Observations of the GCOS Atmospheric Observation Panel for Climate, was held in February 2008 at the Richard Assmann Observatory in Lindenberg, Germany. The Observatory was recently designated by WMO as the Lead Centre for the GRUAN network for a pilot phase. The meeting focused on the actions required to refine the cooperation with all partners, resolve scientific and technical issues and define a work plan for the implementation of the network.

Re-analysing climate data

Climate records often show biases that mask long-term variations in the climate system. The technique of re-analysis—the reprocessing of all available historical data, both *in situ* and satellite observations—has greatly improved our ability to analyse climate variability and provides the basis for climate projections. Re-analysis produces comprehensive, integrated datasets describing the evolution of components of the climate system over recent decades, using the process of data assimilation.

More specifically: re-analysis processes the heterogeneous and expensively accumulated observational database and, by merging it with a numerical model, converts it into a coherent description of the changing atmosphere. Similarly, ocean, land-surface or sea-ice data can be re-processed and variations in these domains analysed, leading to a coherent description of the climate system.

Products of global re-analysis have provided the basis for advances in many areas, including climate nowcasting and

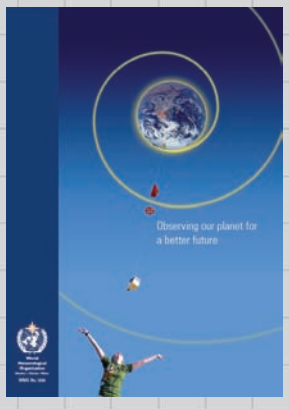
CLIMATE EXTREMES ARCHIVE

Monitoring weather and climate extremes requires robust, accurate and reliable databases. These are needed to put the observed extreme weather events, such as those associated with heavy rainfall, heat waves, strong winds and high categories of tropical cyclones, in their geographical and historical context, thus allowing reference to the highest observed records. The application sectors, research areas, media and the general public need to have such historical background for geographical and historical intercomparisons.

WMO has established recently a freely accessible world weather/climate extremes archive, which is hosted by Arizona State University (http://wmo.asu.edu).

Recently issued

WMO Bulletin 57 (1) January 2008 (theme "Observing our planet for a better future")



Observing our planet for a better future (kit containing brochure (WMO-No. 1030), poster and message from the Secretary-General [E]-[F]-[R]-[S]

diagnostic studies of complex systems such as monsoons and El Niño-Southern Oscillation. Global re-analysis is also the foundation for regional re-analysis projects and downscaling to study local climate and climate impacts.

In addition, the development of comprehensive Earth system models requires the scope of re-analysis to be expanded and coupled atmosphere-ocean data assimilations conducted.

As the science of re-analysis grows, there is an urgent need to align financial and infrastructure resources for data handling and processes and to foster sustained international cooperation.

Integrated flood management

Integrated flood management is a process that promotes an integrated, rather than a fragmented, approach to flood management. It integrates land- and water-resources development in a river basin, within the context of integrated water-resources management, and aims to maximize the net benefit from floodplains, whilst minimizing the loss of human lives from flooding.

In an effort to promote and support the adoption of the integrated flood management approach by its Members, WMO has developed, through its Associated Programme on Flood Management, a series of training activities aimed at the professionals directly involved at national level with flood management responsibilities.

The courses/workshops include a theoretical section, covering the overall integrated flood-management concept and its technical, legal, social, environmental and economic aspects and a series of practical exercises focusing on the application of the concepts in everyday situations adapted to the specific local conditions prevailing in the country where the course is being held.

The first such workshop was held in Cochabamba, Bolivia, in March 2008, co-organized by the municipality of Cochabamba, the National Meteorological Service of Bolivia and the Centro Agua of the Universidad Mayor de San Simón and WMO.

It was attended by some 60 technical officers of various Bolivian municipalities who are responsible for flood management. They decided to issue a statement declaring their willingness to adopt integrated flood management and agreed on a series of actions to achieve a rational flood management policy in Bolivia.

Water, natural disasters and sanitation

Natural hazards such as floods, droughts, tsunamis and tropical cyclones have the potential to inflict death and the destruction of property and infrastructure. Two of the most serious consequences of natural disasters for human society, especially in developing countries, are contaminated drinking water supplies, which can cause acute sickness such as cholera, and waterborne diseases, such as malaria and dengue fever. The costs involved in disaster relief can be significantly reduced when the linkages between water, sanitation and disaster are taken into account in public works and programmes.

WMO and UNESCO and other partner agencies launched the International Flood Initiative in 2005. The Initiative functions as a thematic platform of the International Strategy for Disaster Reduction system, dedicated to reducing flood disaster risks.

WMO stresses the importance of disaster risk reduction in the context of strategies to adapt to climate change.

World Water Day 2008

World Water Day is celebrated every year on 22 March. The year 2008 was declared the International Year of Sanitation by the United Nations to accelerate progress for the 2.6 billion people worldwide who are without proper sanitation facilities. In order to highlight the importance of the issue, World Water Day in 2008 had sanitation as its theme.

The Secretary-General of the United Nations said on the occasion that every dollar invested in water and sanitation yields an estimated seven dollars worth of productive activity. Moreover, immeasurable gains are to derive from cutting poverty, improving health and raising living standards.

WMO works to protect health by ensuring safe water and an environment less vulnerable to natural hazards.

World Meteorological Organization

World Meteorological Organization
7 bis, avenue de la Paix, PO Box 2300
CH-1211 Geneva 2, Switzerland
Tel.: +41 (0) 22 730 83 14 / 83 15
Fax: +41 (0) 22 730 80 27
Internet: http://www.wmo.int

We welcome your comments about MeteoWorld and look forward to hearing from you: jtorres@wmo.int