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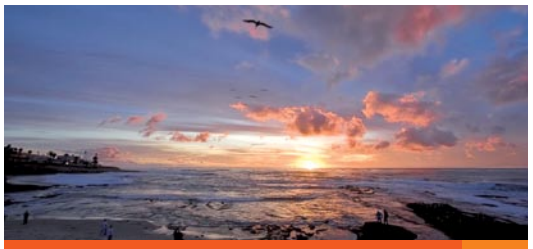





## NEWS IN BRIEF

### World Climate Conference-3: Climate prediction and information for decision-making

The demand for climate prediction and information services will be even higher in the context of climate change and the increasing vulnerability of populations, particularly in regions where climate variability is high and which are prone to climate-related disasters. The sustainability of economic development and living conditions will depend on our ability to manage the risks associated with extreme climate events, which are likely to be of greater frequency, intensity and extent.

The lack of an integrated approach to the delivery of climate prediction and information services and of appropriate supporting institutional mechanisms has meant that seasonal climate prediction has not always benefited society to the full. National, regional and global institutions, including Meteorological Services, have continued to improve their products and services without taking fully into consideration the needs of different users. Similarly, users have continued with their efforts to improve services for climate-dependent sectors without involving Meteorological Services and making use of available climate information.

A joint approach is required, which integrates climate predictions and information into policies to operate and manage climate-dependent sectors, including those addressing disaster risk reduction and adaptation to climate variability and change.

Recent natural disasters which inflicted devastating loss of life and property and incurred food insecurity, demonstrate the urgency of jointly addressing climate-related risks for the benefit of society.

WMO is therefore preparing World Climate Conference-3 (WCC-3), which will take place in Geneva from 31 August to 4 September 2009. WCC-3 will focus on how humankind can take advantage of scientific and technological advances to manage climate-related risks as a way of developing resilience through adaptation. It will propose global actions to enhance the provision of climate prediction and information services and their integration into the decision-making process. Countries will be urged to pool their resources and energies.

In this way, the world will be made safer, the use of natural resources optimized, food production enhanced and support to disaster risk reduction and adaptation to climate change increased.

### Food security

Restoring, improving and sustaining authoritative observations of weather, climate and water in the developing world is a key priority for food security. It requires upgrading and maintaining the observational infrastructure of National Meteorological Services (NMS), especially in the Least Developed Countries.

WMO and the NMSs can significantly contribute to enhancing sustainable agricultural production and food security by providing timely and accurate weather and climate information which aids farmers in making better decisions to improve the production and quality of crops, livestock, fisheries and forest products, reduce disease and pests and adapt to climate variability and change.

Natural disasters such as floods, storms and droughts are primary causes of lower crop production.

In 2008, heavy rain and flooding in the central USA reduced the yield and area of the US corn crop, contributing to a 15 per cent decrease in global stocks.

*Recently issued*


*WMO Bulletin 57 (3), July 2008 (theme: "Hydrology for water management")*
*[E] (F-R-S in preparation)*

Myanmar's rice crop is estimated to have decreased by 0.6 million tonnes, owing to an expected decline in planted area and yield as a result of damage from Cyclone *Nargis* in May.

Although natural hazards cannot be avoided, capacity-building can significantly reduce their impacts and, simultaneously, help adapt to climate change.

WMO promotes prevention and preparedness measures, including risk assessment and emergency planning, and the operation of multi-hazard early warning systems, which are not confined to individual risk types but, rather, are designed to address various environmental threats on a comprehensive basis, from the frequent to the exceptional.

WMO-sponsored Regional Climate Outlooks provide information that help farmers plan for the upcoming crop season in determining which crops to plant and when in order to obtain higher yields. WMO also facilitates vital research into applications of agricultural meteorology that can increase production.

Moreover, WMO coordinates seminars on weather and climate for farmers to stimulate interactions with the weather/climate and agricultural communities. The overall goal is to make farmers more self-reliant by helping them become better informed with weather and climate issues that influence their agricultural production and to give feedback to NMSs to improve their products and services.

## El Niño/La Niña update

An El Niño/La Niña update was issued by WMO in June 2008. It observed that a La Niña event of moderate intensity had prevailed through the first quarter of 2008, followed by a decline with near-neutral conditions expected for the middle of the year. There were no clear indications for enhanced likelihood of El Niño or La Niña in the second half of 2008.

There is a need for detailed regional evaluations of prevailing conditions, combining expected El Niño/La Niña influences with influences from other geographic regions as well, to arrive at the best estimates of regional and local weather patterns expected over the coming months.

The situation in the tropical Pacific will continue to be carefully monitored. More detailed interpretations of regional climate fluctuations will be generated routinely by the climate forecasting community over the coming months and will be made available through National Meteorological and Hydrological Services.

## Researching Pacific weather

While the name bestowed on the Pacific Ocean derives from the Latin word meaning peaceful, the Pacific Ocean basin is often the source of intense tropical cyclones and extra-tropical winter storms that batter the seas and heavily populated coastlines of the region with impacts that can be devastating. The THORPEX Pacific Asian Regional Campaign (T-PARC) is one of the largest field campaigns conducted to date that focuses on advancing the understanding and prediction of high-impact weather that has its roots over the Northwest Pacific. T-PARC began on 1 August 2008.

The field campaign and associated modelling efforts focus on three types of Pacific weather. One study is aimed at improving the prediction of the behaviour of tropical cyclones from genesis to landfall. A unique aspect will be combining ensemble modelling systems with a strategy that targets additional measurements in the environment around the storm to reduce the uncertainty in the prediction of the cyclone's movement at a time in the storm's lifetime that meteorologists call recurvature (e.g. when the storm first emerges from its tropical/subtropical origin and begins to move with the westerly flow of higher latitudes). Currently, errors in the prediction of the storm's location during recurvature can—and do—lead to large errors in predictions of where the storm will make landfall along the Asian coastline, making disaster mitigation and response efforts difficult.

A second focus of T-PARC is on what meteorologists call the extra-tropical transition of tropical cyclones (i.e. when these tropical storms move into, and interact with, the middle latitude flow). Extra-tropical transition can lead to difficulty in predicting local re-intensification of the storm as it evolves from a warm core tropical cyclone to a "wintertime" cyclone with fronts. In addition to the local forecast challenges, the extra-tropical transition process can also effect the planetary circulation, triggering large-scale propagating waves that are the source of other high-impact events far downstream from the cyclone itself so that North America and even Europe are affected days later by an event off the coast of Japan.

Unfortunately, when a tropical cyclone goes through its extra-tropical transition and generates other high-impact weather events downstream—just when society requires improved prediction, in fact—current forecasts have high uncertainty and such low skill that

## WMO WEATHER RESEARCH: THORPEX

On average, a five-day weather forecast of today is as reliable as a two-day weather forecast 20 years ago. Despite this major scientific and technical progress, challenges remain and the accuracy of individual weather forecasts varies significantly. The challenges include characterizing and communicating the changing uncertainties in individual forecasts and advancing our forecasting skill in areas where progress has been difficult (e.g. heavy rainfall and the genesis, intensity and structure of tropical cyclones).

The Observing System Research and Predictability Experiment (THORPEX) is the largest project of WMO's World Weather Research Programme. It aims to accelerate improvements in both the accuracy and utilization of one-day to two-week forecasts of high-impact weather.

decreases in forecast skill are often noted even when averaged over the entire northern hemisphere.

The tropical cyclone and extra-tropical transition components of the experiment will last until early October 2008. The third component of T-PARC is focused on winter cyclones and will take place between January and March 2009. The measurement strategy for this component is to follow features in the atmospheric flow over Asia and then across the Pacific Basin, using supplemental radiosonde measurements over the Russian Federation, dropsondes from two research aircraft and the adaptive use of satellite observations. These measurements are intended to improve the initial conditions for a sequence of forecasts for intense winter cyclones.

T-PARC is an umbrella programme for a collection of expanded national and international efforts initiated by WMO. T-PARC and associated efforts involve researchers and forecasters from Australia, Canada, China, France, Germany, Japan, the Republic of Korea, the Philippines, the Russian Federation, the United Kingdom and the USA.

## Hydrology of lakes and reservoirs

A long-standing gap in water data collection has been filled by the establishment of the International Data Centre for the Hydrology of Lakes and Reservoirs (HYDROLARE), following an agreement between WMO and the Federal Service of Russia for Hydrometeorology and Environmental Monitoring. The Centre is expected to become operational later this year.

HYDROLARE will help in improving water provision and management, detecting climate variability and change, and assessing climate change impacts. A key objective is to stimulate the development of the global monitoring system on lakes and reservoirs for rational use, preservation and management of their water resources. The Centre will contribute to the Global Terrestrial Network-Hydrology and to the Global Climate Observing System.

More than four million lakes play a principal role in the global water cycle and the global environment, as well as having a strong influence on the socio-economic development of hundreds of millions of people. As the storage capacity of freshwater lakes is slightly more than double the total average yearly precipitation over land, lakes serve as major buffers, ensuring a year-round water supply in many regions which is vital for health, agriculture and food security.

The Centre will help the scientific community in dealing with other related issues, such as the decreasing volume stored in the Aral Sea and Lake Chad, acidification, accelerated sedimentation, and toxic chemical contamination. The hydrological characteristics of lakes also reflect variations in climate, making them prime detectors of climate variability and change. A global database of the hydrological regime of lakes and reservoirs will serve scientific and educational purposes, modelling, development of different global and regional projects.

*The world's freshwater lakes play a vital role in the global water cycle, the environment and socio-economic development. The newly established International Data Centre for the Hydrology of Lakes and Reservoirs (HYDROLARE) will contribute to improving water provision and management, detecting climate variability and change, and assessing climate change impacts.*

## Forest fires and climate change

Given a complex of fuels in a wild-land environment, the way that a fire develops and burns from an ignition source depends largely on meteorological and climatic factors. Extended periods of low precipitation, low humidity and high temperature produce conditions in which dead vegetation, and to some extent living material, becomes highly flammable. Meteorological data are critical for forecasting the potential for fires to get started and their subsequent behaviour. Meteorological data are also needed for predicting smoke trajectories and dispersion.

Efforts to develop fire danger rating systems have been driven by a concern about fires burning out of control and endangering human lives and property. As countries have sought to protect public

## COMING EVENTS

*15-17 September 2008 — Training Workshop on the Assessment of Socio-economic Benefits of Meteorological and Hydrological Services (Sofia, Bulgaria)*

*15-19 September 2008 — International Workshop on Adaptation to Climate Change in West African Agriculture (Ouagadougou, Burkina Faso)*

*22-26 September 2008 — Eighteenth International Congress of Biometeorology (Tokyo, Japan) (co-sponsored by WMO)*

*6-9 October 2008 — WMO Coordination and Capacity Building Workshop for Least-developed Countries in Asia-Pacific (Port Vila, Vanuatu)*

*6-10 October 2008 — RA I Tropical Cyclone Committee for the South-West Indian Ocean– 8th session (Lilongwe, Malawi)*

*9-10 October 2008 — Regional Scientific and Technical Conference on the Role of NMHSs in Prevention and Mitigation of Natural Hazards Impact (Chisinau, Moldova) (co-sponsored by WMO)*

*20-25 October 2008 — Fourth International Workshop on Monsoons (Beijing, China)*

*3-5 November 2008 — Training Workshop on the Assessment of Socio-economic Benefits of Meteorological and Hydrological Services (Abu Dhabi, United Arab Emirates)*

*4-12 November 2008 — Commission for Hydrology–13th session (Geneva, Switzerland)*

*Forest fires destroy not only valuable trees but also ecosystems, agricultural crops and human communities and disable socio-economic activities. Smoke aerosols in the atmosphere affect the amount of radiation reaching the Earth's surface. With the likelihood that their occurrence and intensity will increase with climate change, WMO is contributing to improving prevention, mitigation and monitoring systems.*

health and safety, wildland and agricultural burning have attracted increasing attention and become the target of regulatory attention. Fire's influence on and response to the changing global climate and, on a smaller scale, fire's effects on regional and local air quality have become international issues.

WMO contributes to work to establish and improve operational weather systems for fire danger rating to help tackle the growing threat of forest fires worldwide. Together with partners, WMO has been developing tools to evaluate and predict the effects of weather and climate on fires and their potential.

Managers of wildland fire prevention and mitigation, environmental monitoring organizations and the Earth observation community met in July to review operational and prototype weather-based Fire Danger Rating systems.

A main focus was weather observations and networks, data management, weather analyses, approaches to defining and evaluating fire danger levels, additional indices of fire danger and smoke forecasting and monitoring. The purpose was to help develop appropriate strategies to improve operational fire weather systems and their application in fire management.

The importance of fire danger rating was recognized several decades ago but wildland fires have been increasing worldwide recently. Climate change models indicate that they will continue to increase in both frequency and intensity.

## New WMO Website for aviation meteorology

A new Website, developed by a WMO expert team, was launched in July 2008 to introduce prototype new terminal forecast products to aviation users and to collect their feedback. The Website was entrusted to the Hong Kong (China) Observatory (http://www.ntf.weather.gov.hk).

The expert team was set up to develop proposals for a new terminal weather forecast in view of the advances in meteorological science and the increasing impact of weather on airspace and airport capacity, especially in regions with rapid air traffic growth. The new terminal weather forecast aims to supplement the existing aerodrome forecast to support more effective decision-making for air traffic management and airport authorities in maximiziming airport and airspace capacity in the terminal area, thereby enhancing aviation safety and efficiency.

Currently, the prototype products available on the Website are the aviation-weather disaster risk reduction product, a demonstration of extended tropical cyclone forecast for aviation application, developed by the Hong Kong Observatory; and collaborative decision-making products for Paris Charles de Gaulle Airport, developed by Météo-France as a demonstration of tailored weather forecasts for airport operation and air traffic management.

It is expected that other prototype products will also be provided on the Website.

## Upper-air observing systems

Upper-air observing system experts met in Payerne, Switzerland, in June 2008, to review previous intercomparisons and tests, requirements for future intercomparisons and testing requirements for the Global Climate Observing System (GCOS) Upper-Air Reference Network.

The representatives of instrument manufacturers presented changes to their radiosondes made as a result of the WMO intercomparison of high-quality radiosonde systems in 2005. The WMO experts considered that the new designs were positive. They discussed their impact on global radiosonde data compatibility and the need for a new intercomparison.

The results of several recent international and national radiosondes tests as well as progress on testing interoperable upper-air systems were presented and discussed.

The main focus was the preparation of the eighth WMO Intercomparison of Radiosonde Systems scheduled to be held in China in 2010. The Regional Intercomparison would take place within two years, if required. In planning for future WMO global and regional radiosonde intercomparisons, the experts took into account the need for global intercomparison driven by the changes made in the designs of the high-quality operational radiosondes.

## Global Climate Observing System: visualization of networks

Visualization of the Global Climate Observing System (GCOS) Surface Network and the GCOS Upper-Air Network using Google Earth™ has been implemented via the GCOS Website (http://www.wmo.int/pages/prog/gcos/index.php?name=gearth). It allows rapid exploration of how the most climate-relevant surface and upper-air meteorological stations are distributed around the globe. This initiative aims to improve the display of networks for all users.

In the future, more detailed and accurate station coordinates will be included and, at a later stage, more comprehensive metadata and observational data.

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