



World
Meteorological
Organization

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MeteoWorld

Weather • Climate • Water

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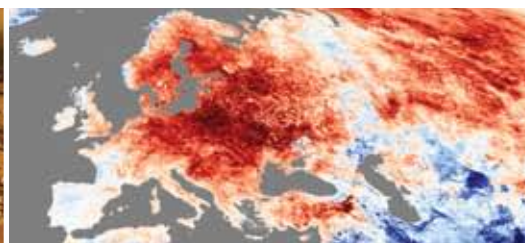
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NEWS IN BRIEF

Open science conference of the Earth System Science Partnership (ESSP)

The 800 participants in the Second Open Science Conference on Global Environmental Change—Regional Challenges (Beijing, China, 9-12 November 2006) urged society at all levels and in all sectors to collaborate in the face of an environment which is changing at an increasingly faster rate.

The organizers, ESSP, declared it would “take responsibility to mobilize knowledge for action and provide society with the scientific information to better meet present and future needs”.

In view of the importance of the impacts on human health, the Conference launched the Global Environmental Change and Human Health Project. The Conference also initiated the Monsoon Asia Integrated Regional Study to examine the threats posed to

populations and ecosystems in monsoonal Asia.

The ESSP was created to bridge disciplinary gaps in environmental sciences by four global environmental change programmes: DIVERSITAS (an international programme of biodiversity science which links biology, ecology and social sciences); the International Geosphere-Biosphere Programme; the International Human Dimensions Programme on Global Environmental Change; and the World Climate Research Programme (of which WMO is a co-sponsor).

The World Climate Research Programme convened 10 sessions addressing the achievements but also knowledge gaps and uncertainties in global climate research. Many WCRP scientists have contributed substantially to the forthcoming fourth assessment report of the Intergovernmental Panel on Climate Change, co-sponsored

by WMO and the United Nations Environment Programme.

Environmental data for decision-makers by satellite

GEONETCast is a new and unique system by which environmental satellite and in situ data, products and services are transmitted free of charge or at low cost to users worldwide.

GEONETCast will allow data about, for example, disease, drought, natural disasters, air and water quality, ocean conditions, ecosystems, to be broadcast in near-real-time, user-friendly formats. With a 24/7 data stream, GEONETCast will provide the critical information required to protect lives, accelerate sustainable development in remote regions and better manage the planet’s natural resources.

The global service will give steady access to data needed to better understand the links

between the environment and important sectors such as public health: integrating environmental data with data about disease vectors, pollutants, rainfall and sea-surface temperature, for instance, can help in predicting, mitigating and even preventing a health threat before it becomes a crisis.

The service will put a vast range of essential environmental data at the disposal of decision-makers and many others around the globe who would not otherwise have access to such information.

GEONETCast is already available to users in Europe, Africa, North, Central and South America and will be made available in Asia.

This important new capability is a cooperative effort led by the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the Group on Earth Observations, the Chinese Meteorological Administration and WMO.

Polar meteorology

International Polar Year 2007-2008

International Polar Year (IPY) 2007-2008 begins on 1 March 2007. In order to have full and equal coverage of both the Arctic and the Antarctic, IPY will cover two full annual cycles from March 2007 to March 2009. More than 200 projects, with thousands of scientists from over 60 nations, will examine a wide range of physical, biological and social research topics. It is an unprecedented opportunity to demonstrate, follow and get involved with, cutting-edge science in real-time.

The first International Polar Year (1882-1883) and the second (1932-1933) had a major influence on our understanding of global processes in these important areas. The last major initiative was the International Geophysical Year (IGY) in 1957-1958, in the pre-satellite era, in which 80 000 scientists from 67 countries participated. It was during this period that many of the Antarctic research stations that exist today were established. The

IGY also gave rise to the formulation of the Antarctic Treaty in 1959 and its ratification in 1961.

IPY takes place amidst abundant evidence of changes in snow and ice. At the end of 2006 it was observed that the pattern of sharply decreasing Arctic sea ice had continued. The average sea-ice extent for the entire month of September was 5.9 million km², the second lowest on record missing the 2005 record by 340 000 km². Including 2006, the September rate of sea ice decline is now approximately -8.59% per decade, or 60 421 km² per year.

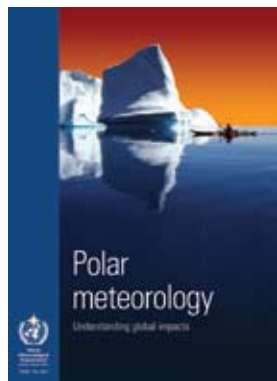
Changes in the large ice sheets will impact global sea level, affecting coastal cities and low-lying areas. Changes in snowfall and shrinkage of glaciers will influence millions of people whose daily use of water for personal consumption or for agriculture depends on snowpack and glacial sources. Thermal degradation of permafrost will mobilize vast reserves of frozen carbon, some of which, such as methane, will increase the global greenhouse effect. Changes in sea ice combined with enhanced river inputs of freshwater will lead to substantial changes in ocean circulation. Warming of polar

POLAR METEOROLOGY: UNDERSTANDING GLOBAL IMPACTS

In view of the importance of IPY and its legacy for the world's population, it was decided that the theme for World Meteorological Day (celebrated every year on 23 March) in 2007 would be "Polar meteorology: understanding global impacts".

WMO has produced a brochure, a poster, a folder and a film, as well as a message by the

Secretary-General. These are available on a special Website dedicated to World Meteorological Day 2007 (<http://www.wmo.int/wmd/>) and upon request from the WMO Secretariat.





COMING EVENTS

- 19-22 March 2007: WMO International Conference on Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services (Madrid, Spain)
- 19-30 March 2007: CAS Joint Scientific Steering Committee of Open Programme Area Group on Environmental Pollution and Atmospheric Chemistry (Geneva)
- 20-24 March 2007: JCOMM Expert Team on Wind Waves and Storm Surge—second session (Geneva)
- 26-27 March 2007: JCOMM Expert Team on Marine Climatology—second session (Geneva)
- 26-29 March 2007: Expert Meeting on Gender Mainstreaming (Geneva)
- 28-31 March 2007: JCOMM Expert Team on Sea Ice—third session (Geneva)
- 7-25 May 2007: Fifteenth World Meteorological Congress (Geneva)

oceans, coupled with changes in ice coverage and river runoff, will alter marine ecosystems with significant consequences for fisheries globally.

Polar changes occur not on a remote planet, but in the daily living environment of more than 4 million people. Northern communities face changes in their natural environment and in their natural resources and food systems at a rapidity and magnitude beyond recent experience or traditional knowledge. They also face unique health challenges related in part to pollutants transported to polar regions, and accelerating pressures of development and commercialism.

The IPY is expected to provide significant contributions to the assessment of climate change and its impacts. The observing networks to be established or improved during the IPY period should therefore be kept in operational mode for many years.

This would be an important part of the IPY legacy.

IPY is being organized by WMO and the International Council for Science.

Global climate highlights in 2006

Extreme events

Heatwaves, drought, heavy rainfall and flooding continued to cause severe damage to infrastructure, lives and properties in many parts of the world. The Greater Horn of Africa suffered for several years from a long, continuous drought, followed by one of the most devastating flooding in the last 50 years.

The global mean surface temperature in 2006 is estimated at +0.42°C above the 1961-1990 annual average (14°C), making it the sixth warmest year on record. Final figures will be released in March 2007.

A WARM AUTUMN AND WINTER IN EUROPE

Averaged separately for both hemispheres, 2006 surface temperatures for the northern hemisphere (0.58°C above 30-year mean of 14.6°C) are likely to be the fourth warmest and for the southern hemisphere (0.26°C above 30-year mean of 13.4°C), the seventh warmest in the instrumental record from 1861 to the present.

Since the start of the 20th century, the global average surface temperature has risen approximately 0.7°C. Since 1976, the global average temperature has risen sharply, at 0.18°C per decade. In the northern and southern hemispheres, the period 1997-2006 averaged 0.53°C and 0.27°C above the 1961-1990 mean, respectively.

Tropical cyclones

Ten tropical storms formed in the North Atlantic basin, of which five became hurricanes and two became major hurricanes (just slightly below the long-term averages). The number of four hurricanes in September was above the long-term average for that month. Three tropical storms made landfall in the USA but no hurricanes for the first time since 2001.

The eastern North Pacific season had 18 tropical storms, of which 10 were hurricanes with five becoming major hurricanes (the 1971-2005 year mean is 15 tropical storms, nine hurricanes and four major hurricanes).

A total of 23 named tropical cyclones formed in the western North Pacific in 2006, of which 15 reached typhoon intensity. Although lower than the 1971-2000 average (26.7), they caused serious damage, mainly in China, the Philippines and Viet Nam.

The north Indian Ocean saw near-normal cyclonic activity with the formation of 12 systems (average is 15). Three (average is five to six) intensified into cyclonic storms. Only one cyclonic storm and one depression formed over the Arabian Sea and dissipated over the sea itself. The Bay of Bengal was more active with two cyclonic storms, two deep depressions and five depressions.

Temperatures in a large part of Europe reached a record high during the autumn of 2006 (September, October and November). Compared to the 1971-2000 average it was more than 3°C warmer from the northern side of the Alps to southern Norway. The year-to-year differences in autumn temperatures in this region are almost always less than 2°C, making this a highly unusual event.

It was the warmest autumn on record in Belgium, Denmark, Germany, the Netherlands, Switzerland and the United Kingdom (records in central England go back to 1659, in the Netherlands to 1706 and in Denmark to 1768). In most of Austria, southern Sweden, southern

Norway and parts of Ireland, the autumn was also the warmest on record. In early January 2007, temperatures continued to be excessively mild.

Under the assumption that the climate does not change, the observed temperatures for 2006 would occur with a probability of less than once every 10 000 years in a large part of Europe. Global warming explains part of the temperature anomaly but the unusual weather played a large role. During most of the autumn, a strong and persistent southerly flow brought warm air to the north of the Alps.

The occurrence of these weather patterns was still an unusual event, expected

to occur no more than once every 100-200 years. Research is underway to see which factors contributed to the high temperatures and whether or not they are related to global warming.

Such anomalies can have far-reaching impacts in socio-economic terms, especially in the health and tourism/leisure sectors. In the 2006/2007 season, many ski slopes in the Alps were not open because of the lack of snow. Ski events had to be moved, postponed or cancelled. Resorts had to implement alternative activities. Many were facing severe financial problems.

An understanding of the causes of these weather anomalies is therefore essential. WMO promotes research into climate and weather anomalies, their causes and effects and preparedness measures.



Warm temperatures and less-than-average snowfall changed the face of winter sports in European alpine areas at the beginning of winter 2006/2007.

WMO encourages research work into tropical cyclone formation and movement and facilitates training for specialized forecasters in developing countries in the latest techniques. It also contributes to work in the area of disaster prevention and mitigation from natural hazards including tropical cyclones.

Africa and climate

Vital climate information for Africa

The African continent is highly vulnerable to climate change and most natural disasters that occur there are related to weather, climate and water.

The Global Climate Observing System (GCOS) and its partners have launched an important new initiative for Africa with the release of the report and implementation strategy: *Climate Information for Development Needs: An Action Plan for Africa (ClimDev Africa)*.

Principally driven by agriculture, health and water resources, the 10-year programme will address climate observing needs as well as improved climate services, climate risk management and decision-making. Phase I will focus on how climate risk information can be used to help protect lives, livelihoods and property.

The new report and strategy have been formally endorsed by the African Union Commission and

the UN Economic Commission for Africa.

WMO is the chief sponsor of GCOS.

Helping Africa adapt to climate change

During the 12th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 12) (Nairobi, Kenya, 6-17 November 2006), a press conference was organized to emphasize Africa's acute vulnerability to climate change. WMO made a presentation entitled "Weather and climate monitoring, data gaps and implications for global climate forecasting and Africa".

RECENT AWARDS

On 2 October 2006, the President of WMO, Dr A. Bedritsky, and the Secretary-General, Mr M. Jarraud, presented the 51st International Meteorological Organization (IMO) Prize to Lennart Bengtsson (Sweden) for his pioneering research in numerical weather prediction. Prof. Bengtsson has contributed to the development of meteorological science and international cooperation for more than 40 years.

On 6 December 2006, the Secretary-General presented the Professor Dr Vilho Väisälä

Award for the Development and Implementation of Instruments and Methods of Observation to John Nash, Richard Smout, Mark Smees (all from the United Kingdom) and Carl Bower (USA).

The four winners received the award for their



paper: "Dar-es-Salaam demonstration test of IMS 1600 integrated Upper-air System, Dar-es-Salaam, 18-30 October 2004".

The test assessed the system's ability to measure winds as well as temperature and humidity from radiosondes and was conducted with the assistance of the Tanzania Meteorological Agency. Scientists estimate that the future implementation of such systems will lead to a significant reduction in operational costs.

WMO also made a statement to COP 12 on the role of WMO and National Meteorological and Hydrological Services (NMHSs) in work on impacts, vulnerability and adaptation to climate change. The statement helped improve the understanding of delegates of the role of WMO, and NMHSs in the adaptation process.

COP 12 adopted the Nairobi Programme of Work on Impacts, Vulnerability and Adaptation to Climate Change in which the role of WMO and NMHSs in the adaptation process is officially recognized.

WMO's exhibition booth showcased selected publications and provided an opportunity for networking with other participating agencies and NGOs.

Tackling drought and desertification

Land degradation affects an estimated 250 million people and threatens one billion in more than 100, mostly developing, countries. Climate assessment is an important element in the battle against land degradation.

Under the scenario of climate change, droughts, flash floods, duststorms, famine, migratory movements and forest fires—all linked to desertification—are likely to increase, and so will their impact on global food security.

The UN Convention to Combat Desertification and WMO organized the International Workshop on Climate and Land Degradation, which took place in Arusha, United Republic of Tanzania (11-15 December 2006). The workshop issued a series of recommendations on how climate information can be used to combat desertification.

Recommendations include increasing and strengthening the network of meteorological, hydrological and agrometeorological stations around the world to provide data on rainfall intensity, soil temperature and soil moisture; using land management strategies to increase the amount of rainfall used in crop production; and the development and implementation of national drought policies.

Women, weather, climate and water

Woman and girls bear the greater burden of ensuring that families are provided with water for domestic purposes in most developing countries. Mainstreaming gender within the context of integrated water-resources management is therefore critical for sustainable development.

Gender-sensitive water and sanitation infrastructure and services, and equal access, voice and participation of women and



men in decision-making at all levels of water-resources management are vital.

WMO promotes efforts in education and building awareness of the issues involved and a move towards changing the culture of decision-making.

Following the success of the Second International Meeting on the Participation of Women in Meteorology and Hydrology in 2003, WMO is organizing an expert meeting on gender mainstreaming to be held in Geneva from 26 to 29 March 2007. The expected outcomes are a WMO policy and specific tools for use by NMHSs in their efforts in this area.

WMO encourages the participation of women in the work of the National Meteorological and Hydrological Services and of the Secretariat.



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Recently issued

*A career in meteorology
(WMO-No. 1012)*



*Guide on the quality management system for the provision of meteorological service for international air navigation
(WMO-No. 1001)*

*Guide on meteorological observing and information distribution systems for aviation weather services (second edition)
(WMO-No. 731)*