



2006 - Ranking among Record Years

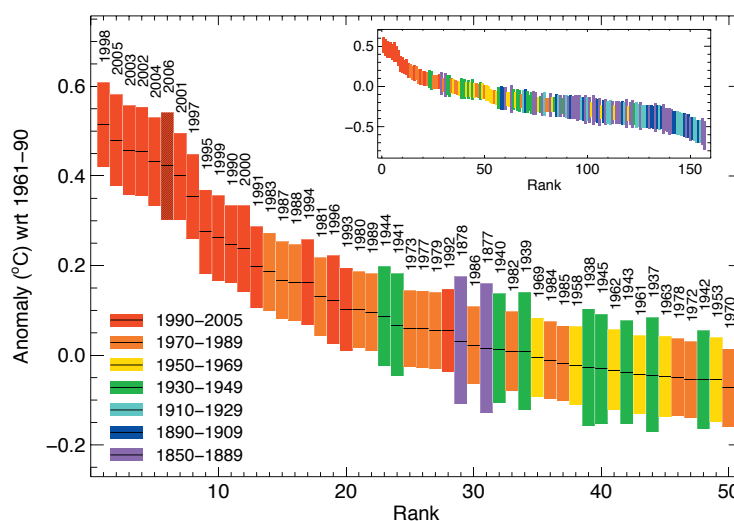
"Eleven of the last twelve years (1995-2006) rank among the 12 warmest years in the instrumental record of global surface temperature (since 1850)" says the *Summary for Policymakers* of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

With the exception of the year 2000 all years of the new century rank among the 10 warmest years of the whole observational period since 1850, including 2006. Nearly all parts in the world reported weather phenomena during 2006 that affected millions of people and led to high numbers in fatalities, evacuations and economic loss.

The year 2006 is characterized by several extreme weather and climate events worldwide. Estimated to be the sixth warmest year on record, the global mean surface temperature was about +0.42°C to +0.54°C above the 1961-1990 annual average. In particular, December 2006 was the warmest December since global surface records began in 1850. In the course of the year, parts of Europe, the USA and Australia experienced exceptional heat waves with record temperatures over 40°C or more in many regions. The 2006 typhoon season, even if below average in numbers, caused disastrous impacts on south-east Asian nations; typhoon Durian affected some 1.5 million people in the Philippines in November/December 2006, claiming more than 500 lives with hundreds still missing. Devastating floods and landslides due to heavy precipitation events were reported worldwide and affected especially the Philippines and the Greater Horn of Africa. Prolonged drought conditions persisted in

Africa, Australia, China and the USA where more than 3.8 million hectares burned through early December. The year 2006 continues the pattern of sharply decreasing Arctic sea ice; including 2006, the September rate of sea ice decline is now approximately -8.6% per decade, or 60,421 km², one-fifth the size of Germany, per year. Also this year, the Antarctic ozone depletion reached new record values. In general, the economic impacts of natural disasters show a marked upward trend during the past few years; in particular, the least developed and developing countries are most vulnerable to natural hazards with great socio-economic negative impacts.

With the *Annual Statements*, the WMO World Climate Data and Monitoring Programme, a component of the World Climate Programme, provides a comprehensive historical perspective on the variability and trends of surface temperatures, precipitation and extreme events since the nineteenth century. The Statements complement the periodic assessments of the WMO/UNEP sponsored IPCC and are intended to provide credible scientific information on climate and its variability. "Accurate and timely



Global ranked surface temperatures showing the last 50 warming years. The size of the bars indicates the uncertainty associated with each year. Figure: Hadley Centre, The Met Office, UK, and Climatic Research Unit, University of East Anglia, UK.

weather-, climate- and water-related products generated by the WMO and its Members' National Meteorological and Hydrological Services are prerequisites for the successful formulation and implementation of adaptive response policies and measures, especially to climate extremes" says Mr. Jarraud, Secretary General of the WMO.

Reliable weather information well in advance were essential in any of the following three examples, in order to reduce societal impacts.

(1) During the typhoon season, the world's leading meteorological centres constantly monitored the state of the atmosphere and the ocean in the North Pacific region and provided early warnings to the areas most likely hit by tropical cyclones. The season brought 23 tropical storms, 15 of which classified as typhoons in the north-west Pacific. Typhoons Chanchu, Prapiroon, Kaemi, Saomai, Xangsane, Cimaron and the tropical storm Bilis brought deaths, casualties and severe damage to the region. In August, southeastern China was hit by super typhoon Saomai, which slammed into Zhejiang province with maximum wind speeds of 60 to 80 meter per second, going down into the record books as the most powerful typhoon ever to land over China. At landfall, the intensity of typhoon Saomai was higher than that of hurricane Katrina that landed in the United States' New Orleans in 2005. Over 1.5 million people were evacuated well in advance, however, 440 fatalities were recorded. Earlier that year, the tropical storm Bilis set the record as the longest-living cyclone ever to be sustained over the country. Bilis remained active for five days – five times longer than the lifetime of the majority of tropical cyclones – inundating areas in the western part of South China with 300 to 500 mm of rain, causing devastating mudslides. Economic losses are estimated US\$ 10 billion in China, which made 2006 the severest year in a decade. The active typhoon season in 2006 was not an isolated event. Scientists found that typhoons have intensified over eastern and southeastern parts of China over the past half century.

(2) Early warnings were also fundamental to

East African countries and international aid services. Long-term drought continued in parts of Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Somalia, and the United Republic of Tanzania. At least 11 million people were affected by food shortages. Somalia was hit by the worst drought in a decade. Heavy rains arrived in October 2006 to the Great Horn of Africa with up to six times their average rainfall. The dry ground was unable to soak up the large amounts of rainfall, and led to severe flooding and widespread property damage and crop losses. Rare heavy rainfall in parts of the North African Sahara Desert in Algeria produced severe flooding in February affecting 50,000 people. In Kenya, health officials estimate that 3 million people are at risk of cholera and malnutrition as a result of the breakdown of sanitation and water supply and crop destruction caused by the worst floods in the past 50 years.

(3) Heavy precipitation and flooding also affected Central and southeast Europe during 2006. Extraordinarily fast progressing snowmelt and heavy rainfall pushed the Danube river to its highest levels for over a century. Floods began in Hungary in April. Further down the river in Serbia, floods submerged 3,000 houses and left 11,000 people displaced and homeless. Five percent of the country's cultural land was submerged, and local authorities estimated farm damage at 36 million Euros. At the lower reaches of the Danube, water volume reached double of its average value for the time of the year. In Romania, 15,000 people were evacuated, and over 500 km of roads were damaged. Early evacuation procedures to reduce fatalities and economic loss were essential during these flooding events.

WMO and the National Meteorological and Hydrological Services play major roles in the identification, assessment and monitoring of risks and the provision of early warnings to prevent natural hazards from becoming disasters. It is amongst the priorities of WMO, the weather, climate and hydrological services to prolong observational records and provide accurate weather forecasts well in advance, in particular to regions prone to tropical cyclones, droughts and floods. The data volume on



Together with the International Council for Science (ICSU), WMO is organizing the **International Polar Year**, a large scientific programme focused on the Arctic and the Antarctic. The IPY covers two full annual cycles from March 2007 to March 2009 and will involve over 220 projects with thousands of scientists from over 60 nations examining a wide range of physical, biological and social research topics.
www.ipy.org

climate system behaviour constantly grows to improve climate and weather information and forecasts. For sustainable development, there is a need for a better monitoring and understanding of the climate system as well as the further development of capabilities for predicting natural climate variability and human-induced climate change. [ca]

Contact

Omar Baddour and Hama Kontongomde
World Climate Programme, WMO
wcdmp@wmo.int

References and links

Summary for Policymakers (2007) Climate Change 2007: The Physical Science Basis. Intergovernmental Panel on Climate Change
www.ipcc.ch.

WMO-No. 1016 (2007) WMO Statement on the Status of the Global Climate in 2006. Available online www.wmo.int > Publications.

WMO-No. 768 (2006) WMO Statement on the Status of the global Climate in 2006. WMO Press Release, 14 December 2006. Available online www.wmo.int/web/Press/PR_768_English.doc.

World Meteorological Organization (WMO)
www.wmo.int.

World Climate Programme (WCP) www.wmo.int/web/wcp/wcp-home.html.