

Fact sheet #1

Climate information for reducing disaster risk

www.wmo.int/wcc3

United Nations World Meteorological Organization
United Nations International Strategy for Disaster Reduction

By the World Meteorological Organization (WMO), with the United Nations International Strategy for Disaster Reduction (UN/ISDR) and other international partners

Over the last 50 years, nine out of ten natural disasters around the world have been the result of extreme weather and climate events. Storms, floods, droughts, heatwaves, dust storms, wildfires and many other natural hazards threaten the lives and livelihoods of millions of people worldwide. The threat is expected to grow due to climate change, with climate models predicting weather extremes of greater frequency and intensity in the future. Although natural hazards cannot be eliminated, societies need accurate science-based climate information now to facilitate effective disaster risk reduction strategies that prevent the hazards from becoming disasters today and in the future.

Weather and climate extremes affect every sector of society, including agriculture, public health, water, energy, transport, tourism and overall socio-economic development. A single natural disaster can significantly set back economic progress in any given community. Hurricane *Ivan* in 2004 caused losses in Grenada of about 2.5 times its annual gross domestic product (GDP).

The communities exposed to the greatest risk are found in developing countries, which often have populations in sensitive coastal areas, less diversified economies and fragile infrastructures, combined with low capacities for risk reduction and disaster management measures. Poor people are most vulnerable, as they lack financial resources to respond to disasters.

Rising sea levels in particular pose a growing threat to communities in low-lying coastal areas and small island developing states. Glacial and ice cover melt is raising sea levels, compounding sea-level rise due to the heating and expansion of the oceans. The Intergovernmental Panel on Climate Change (IPCC), which was established by WMO and the United Nations Environment Programme, estimates that sea level may rise by 0.6 metres by the year 2100. Some countries could lose large areas of land for both habitat and food production. Sea-level rise, coupled with increases in floods, droughts and tropical cyclones, could force thousands to millions of people to relocate. Climate change is therefore a humanitarian issue, as well as a scientific one, affecting every aspect of people's lives.

Enhanced climate information in support of disaster risk reduction is a vital tool that can help communities respond to these growing threats. Shifting from emergency response to preparedness and prevention strategies, as called for in the Hyogo Framework for Action, requires the use of climate predictions and information to identify, assess and monitor disaster risks.

Science-based disaster risk reduction offers a high return on investment: one dollar invested in disaster preparedness can save seven dollars' worth of disaster-related economic losses. More accurate weather and climate forecasts and warnings play a key role in anticipating risk to lives and property.



World
Meteorological
Organization

Weather • Climate • Water



World Climate Conference-3
Geneva, Switzerland, 31 August–4 September 2009



UN SYSTEM
DELIVERING AS ONE ON
CLIMATE KNOWLEDGE

www.un.org/climatechange

Protecting Viet Nam with climate information

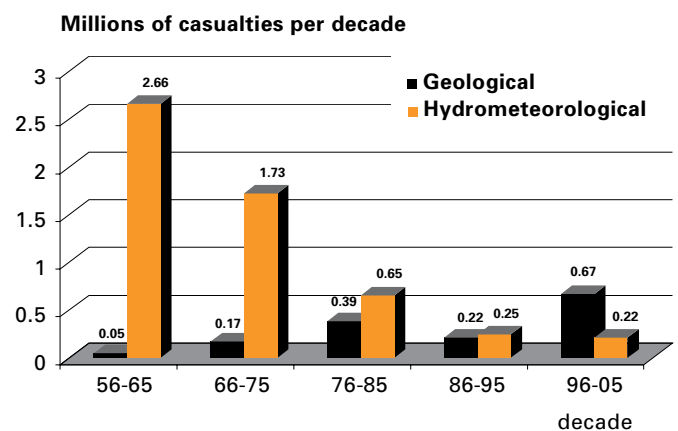
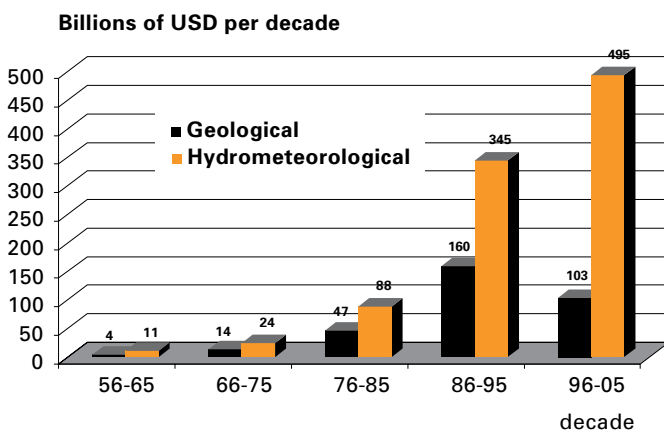
Soaring populations, rapid coastal development and climate change are placing increasing stress on coastal regions. Mangrove forests that once protected many coastal regions from storms, waves and erosion have declined, and infrastructure is not keeping pace with the growing risks. Now more than ever, many of these communities recognize the need for reliable climate information to assess the dangers they face and to facilitate action to prevent disasters. Viet Nam is one such country.

Central Viet Nam is prone to natural hazards, being affected by frequent typhoons and floods. Heavy rainfall in November 2007 washed away more than 10 000 homes. Floods in coastal areas are expected to worsen with the effects of climate variability and change, exacerbated by sea-level rise and storm surges. The World Bank estimates that a 1-metre sea-level rise would wash away 28 per cent of the country's wetlands, decrease its GDP by 10 per cent and force the relocation of millions of people.

In response to these growing threats, the Government of Viet Nam has initiated a target plan on climate change, with the support of donor countries. The plan includes several pilot projects for the Quang Nam and Mekong River Delta regions. Recent research has noted the

special vulnerability of the Mekong Delta, where mangrove forests continue to be cleared for agriculture and aquaculture. Viet Nam has recently launched several mangrove restoration programmes, but the challenge continues. Mangrove restoration has been introduced as a disaster prevention strategy in a number of coastal areas, from Viet Nam to Bangladesh to the British Virgin Islands.

Replanting such coastal forests is just one adaptive measure for communities to shore up their defences against weather extremes. Another priority in Viet Nam is reinforcing and raising existing sea dikes along the coast, because a breach in these dikes can cause salt water to surge inland from the ocean and destroy agricultural and other land. In addition, Viet Nam's draft target plan includes strategies and zoning plans for socio-economic and regional development, which are aimed at encouraging more resilient construction and infrastructure design, as well as watershed management strategies. Viet Nam has a network of hydrometeorological stations that support current climate research in the country and internationally. The draft target plan depends on accurate climate information, including data from climate models, to assess the impact of current and future climate changes on the economy and environment.



Economic losses related to disasters are on the way up, but early warning systems have helped reduce casualties from hydrometeorological hazards.

Source: EM-DAT: The OFDA/CRED International Disaster Database

Efforts to defend against disasters using climate information

A number of projects around the world are using climate predictions and information in support of disaster risk reduction. A sampling of such recent and ongoing projects includes:

The WMO Tropical Cyclone Programme provides information on tropical cyclone hazards and the WMO Severe Weather Information Centre real-time tropical cyclone advisories.

The WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) forecasts sand and dust storm events to provide early warning, in addition to conducting multidisciplinary research on the hazards. Approximately 14 Operational Research Dust Forecasting Centres produce daily dust and sand forecasts.

The WMO-supported Regional Specialized Meteorological Centre in Singapore is dedicated to the forecasting of wildfires and related events. It was established in the wake of the 1997 South-East Asia fires through the efforts of members of the Association of Southeast Asian Nations. The centre provides public satellite imagery and information about the location and size of major fires and smoke plumes. WMO, in cooperation with the World Health Organization and the United Nations Environment Programme, has developed guidelines for policymakers on actions that can be taken in response to fires.

The WMO Guidelines on Climate Watches describe how to establish a climate watch system that provides advance information for continuous risk reduction. Based on ongoing collaboration with climate information users, the system is a mechanism for initiating preparedness activities that limit impacts from climate extremes such as excessive precipitation over a period of several months. The guidelines are intended to help National Meteorological and Hydrological Services that have limited resources.

Based on its series of research studies on past and future climate change in Hong Kong, China, the Hong Kong Observatory has provided to engineering and disaster management departments and organizations information about extreme events in the last century and projections of temperature and rainfall in Hong Kong in the twenty-first

century. The Hong Kong Observatory also maintains a comprehensive online database of climate information for Hong Kong, including regional information on climate norms and extremes, to facilitate use by the general public and specialized users for planning purposes. It also routinely makes available to the public seasonal and annual outlooks for temperature, rainfall and tropical cyclones affecting Hong Kong.

Mauritius Meteorological Services issues seasonal outlooks for both the summer and winter seasons to facilitate planning by all sectors. It also provides forecasts and warnings of severe weather and climate events, such as tropical cyclones, torrential rain and extreme temperatures.

The International Federation of Red Cross and Red Crescent Societies (IFRC) works closely with WMO to help countries better respond to the challenges of climate change, in particular by promoting adaptation and mitigation measures. The IFRC's Geneva-based Policy and Preparedness Department works closely with WMO's weather and disaster risk reduction programmes to minimize risks from weather and climate extremes. Collaboration occurs in affected countries as well, with more than 30 National Red Cross and Red Crescent Societies working with National Meteorological and Hydrological Services in their respective countries. The Red Cross/Red Crescent Climate Centre in the Netherlands liaises with the IPCC and encourages Red Cross and Red Crescent Societies to work closely with their National Meteorological and Hydrological Services.

The Climate Prediction and Applications Centre (formerly the Drought Monitoring Centre for the Greater Horn of Africa), which is operated by the Intergovernmental Authority on Development in Nairobi, Kenya and is co-sponsored by WMO, provides climate-based drought information to regions of Burundi, Djibouti, Eritrea, Kenya, Rwanda, Somalia, Sudan, United Republic of Tanzania and Uganda. Ten-day, monthly and seasonal climate bulletins and other specialized information contain advisories covering both droughts and floods. Seasonal climate outlooks are now available through the WMO Regional Climate Outlook Forums for the Greater Horn of Africa and other regions of the world.

Facts and figures

- Between 1991 and 2005, natural disasters affected 3.47 billion people, with 960 000 killed and economic losses totalling US\$ 1.193 trillion. [UN/ISDR]
- Ninety per cent of natural disasters over the last 50 years have been of hydrometeorological origin. [Centre for Research on the Epidemiology of Disasters]
- Between 1956 and 2005, the number of weather-, water- and climate-related disasters increased by a factor of nearly 10, while the accompanying economic losses grew almost 50-fold. However, the reported loss of life has fallen from 2.66 million (over the decade 1956–1965) to 0.22 million (over the decade 1996–2005), due to enhanced disaster risk management and increasingly accurate early warnings in particular. [WMO]
- Global sea-level rise by 2100 will be 18 to 59 centimetres (cm), with an additional 10 to 20 cm possible if the recent melting of polar ice sheets continues. [IPCC]
- Sea-level rise could displace millions of people in Bangladesh, India and China. [US Department of Defense]
- Sub-Saharan Africa, including West and East Africa, experienced heavy rains in 2008, which caused the worst flooding on record in Zimbabwe and affected more than 300 000 people in West Africa during the monsoon season. [WMO]
- Climate change models indicate that wildfires will continue to increase in both frequency and intensity with rising global temperatures. [IPCC]
- Cyclone *Nargis* killed 84 000 people in Myanmar in early May 2008. [WMO]
- In January 2008, 1.3 million square kilometres in 15 provinces in southern China were covered by snow and this region experienced persistent low temperatures and icing. [WMO]
- In 2008 heavy monsoon rains and torrential downpours in South Asia, including India, Pakistan and Viet Nam, produced flash floods that killed more than 2 600 people and displaced 10 million people in India. [WMO]
- China spent US\$ 3.15 billion on flood control between 1960 and 2000 and is estimated to have averted losses of some US\$ 12 billion. [UN/ISDR]
- The disaster mitigation and preparedness programmes in Andhra Pradesh, India, yielded a benefit-to-cost ratio of 13:3. [UN/ISDR]

WCC-3 will initiate actions to enhance climate services for climate adaptation and the management of climate risks and opportunities around the world.

For more on climate and disaster risk reduction:

WMO information on natural hazards:
http://www.wmo.int/pages/themes/hazards/index_en.html

WMO Severe Weather Information Centre:
<http://severe.worldweather.org>

Alerting Europe for extreme weather:
<http://www.meteoalarm.eu>

WMO Guidelines on Climate Watches:
<http://www.wmo.int/pages/prog/wcp/wcdmp/documents/GuidelinesonClimateWatches.pdf>

WMO Disaster Risk Reduction Programme:
http://www.wmo.int/pages/prog/drr/index_en.html

UN International Strategy for Disaster Reduction:
<http://www.unisdr.org>

Red Cross/Red Crescent Climate Centre:
<http://www.climatecentre.org/>

Climate Resilient Cities:
www.worldbank.org/eap/climatecities

UN-Habitat:
<http://www.unhabitat.org>

For more information, please contact:

At WMO:

Ms Carine Richard-Van Maele
Chief, Communications and Public Affairs
Tel: +41 22 730 83 14/15, E-mail: cpa@wmo.int

Ms Lisa M.P. Munoz
Press Officer, Communications and Public Affairs
Tel: +41 22 730 82 13, E-mail: lmunoz@wmo.int

Ms Gaëlle Sevenier
Press Officer, Communications and Public Affairs
Tel: +41 22 730 84 17, E-mail: gsevenier@wmo.int

At UN/ISDR:

Ms Brigitte Leoni
Acting Head of Communications
Tel: +41 22 917 88 97, Email: leonib@un.org

At UN-Habitat:

Mr Sharad Shankardass
Spokesperson, Press & Media Relations Unit
Tel: +254 20 762 31 53, E-mail: Sharad.Shankardass@unhabitat.org