Coastal inundations are an increasing threat to the lives and livelihoods of people, living in low-lying, highly populated coastal areas. The management of such risk represents a great challenge to scientists – meteorologists, hydrologists and oceanographers alike – policy-makers, emergency management and for coastal planning. Operational systems for integrated coastal inundation forecasting and warning provide objective basis for coastal disaster (flooding) management that reduce losses of life, livelihood and property and enhance resilience and sustainability in weather-ready, climate-smart, water conscious coastal communities.

Floods are the most common natural disaster, causing enormous loss of life and property. Flood impact records show that the number of flood fatalities is gradually decreasing, thanks in part to better early warning. But economic losses continue to increase, spurred by lack of attention to prevention, economic growth and lack of flood sensitive land-use planning. Absolute safety from flooding is a myth but it is possible to live with floods if properly prepared. Integrating land use, water resources and risk management in river basins can help us minimize loss of life from flooding and maximize net benefits from flood plains.

Drought is a prolonged dry period in the natural climate cycle that can occur anywhere in the world. It is a slow on-set phenomenon caused by a lack of rainfall. Compounding factors, such as poverty and inappropriate land use, increase vulnerability to drought. When drought causes water and food shortages, there can be many impacts on the health of the population, which may increase morbidity and result in death. In recent years, most drought-related mortality has occurred in countries also experiencing political and civil unrest. In the period from 1970 to 2012, drought caused almost 680 000 deaths, due to the severe African droughts of 1975, 1983 and 1984.

FAST FACTS

Longest lasting tropical cyclone was 31 days from 10 August 1994 to 10 September 1994 during Hurricane/Typhoon John in Northeast & Northwest Pacific Basins.

Largest tropical cyclone (winds from centre) gale winds [17 metres per second, 34 knots, 39 miles per hour] extending 1 100 kilometres (675 miles) from centre on 12 October 1979 during Typhoon Tip in Northwest Pacific Ocean.

Highest storm surge ever recorded was 13 metres (42 feet) on 5 March 1899 during Tropical Cyclone Mahina in Bathurst Bay, Queensland, Australia.

Highest temperature recorded was 56.7°C (134°F) on 10 July 1913 in Furnace Creek (Death Valley), CA, United States.

Longest dry period recorded was 173 months from November 1903 to January 1918 in Arica, Chile.

Greatest 24-hour rainfall recorded was 1.825 metres (71.8 inches) 7 to 8 January 1966 in Foc-Foc, La Réunion.

World's highest significant wave height by buoy recorded was 19.0 metres (62.3 feet) on 4 February 2013 in the North Atlantic.

For more information, please contact:

World Meteorological Organization

7 bis, avenue de la Paix – P.O. Box 2300 – CH 1211 Geneva 2 – Switzerland

Communications and Public Affairs Office

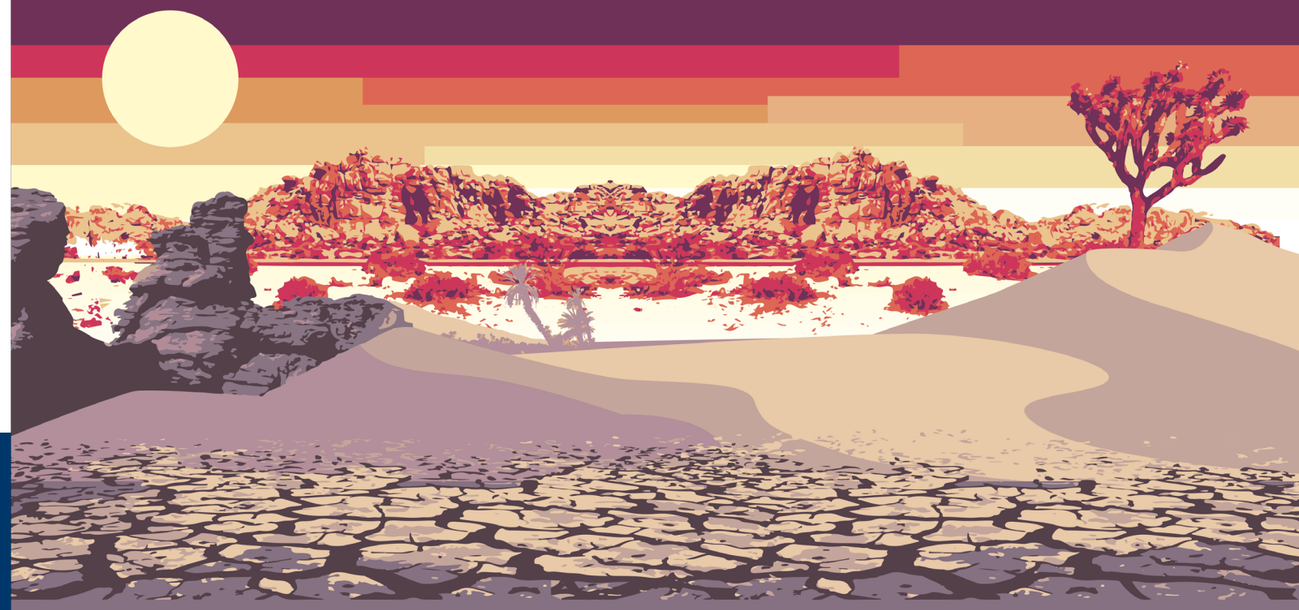
Tel: +41 (0) 22 730 83 14 – Fax: +41 (0) 22 730 80 27

Email: cpa@wmo.int

public.wmo.int

JN 18274

Weather-ready, climate-smart



WORLD METEOROLOGICAL ORGANIZATION

The ever-growing global population faces a wide range of hazards from tropical cyclones, storm surges, heavy rains, heatwaves, droughts and many more. Long-term climate change is increasing the intensity and frequency of some of these events and is causing sea level rise and ocean acidification. Urbanization and the spread of megacities means that more of us are exposed. Now more than ever, we need to be weather-ready, climate-smart and water-wise.

This is why the top priority of WMO and National Meteorological and Hydrological Services (NMHSs) is to protect lives, livelihoods and property, thereby supporting the global agenda on sustainable development, climate change adaptation and disaster risk reduction.

WMO and NMHSs promote research and design operational services ranging from daily weather forecasts to long-term climate predictions that help society be weather-ready and climate-smart. Furthermore, their hydrological services are essential for the sound management of fresh water resources for agriculture, industry, energy and human consumption. These services empower us to manage the risks and seize opportunities related to weather, climate and water.

Early warning systems and other disaster risk reduction measures are vital for boosting the resilience of our communities. Climate services can inform decisions on both climate change mitigation and adaptation. Hydrological monitoring provides the data needed to track the quantity and quality of water resources, and better prepare for floods and droughts.

WEATHER-READY

Dark clouds gather. Lightning splits the sky. The wind gusts and waves crash. Drops of rain become torrential. Are you ready for the storm? Did you receive the weather warnings? Are you acting on good, sound advice? Do you stay put or evacuate?

An early warning is a major element of disaster risk reduction. Multi-hazard early warnings simultaneously address flooding, storms and other major hazards. Long before such hazards arise, early warning projects prepare those at risk as well as those who may be involved in providing assistance so that they will be weather-ready when warnings sound. Impact-based early warning provide more understandable information to those that need to act on the warnings.

To be effective, early warning systems need to actively involve the people and communities at risk. Impact-based, multi-hazard early warning systems incorporate communities, political leadership, weather forecasters, disseminators of warnings, media, emergency response authorities, health facilities and recovery plans. By ensuring strong coordination among all relevant stakeholders, they are more effective and cost-efficient than stand-alone, single-hazard systems.

Weather forecasts require observations of our environment around the clock and around the world. The bulk of those observations are carried out by National Meteorological Services as part of the WMO World Weather Watch, which networks the observing stations to national, regional and global weather and climate prediction centres 24 hours a day in real-time. The World Weather Watch collects meteorological, climatological, hydrological and oceanographic data from over 15 satellites, 100 moored buoys, 600 drifting buoys, 3 000 aircraft, 7 300 ships and some 10 000 land-based observation stations. This data has to be comparable and up to standards in order to be usable by the prediction centres in the numerical weather prediction models that produce daily weather forecasts and early warnings for natural hazards such as hurricanes. Thus, the World Weather Watch also produces the standards for measurement of the data collected.

CLIMATE-SMART

The air is dry and dusty and the heat is overpowering. Droughts have become more frequent and severe in the last years. If you're a farmer: Should you wait for the rain? Switch to a different type of crop or sell precious cattle before they die? If you're in the health authorities: Should you have health facilities prepare for respiratory and heat-related illnesses?

Developing climate services and increasing the number of professionals and students trained in meteorology and climatology is one step in creating climate-smart societies. In developing and emerging countries, climate data are often of poor quality and do not meet the prerequisites for the provision of climate services for decision-makers.

WMO projects are restructuring science curricula to align with current and future needs in the these regions, and developing more effective communication channels so that decision-makers – farmers, health, water and other professionals, politicians – receive the climate services they need.

Agriculture is one of the most climate-sensitive areas. Droughts, slow onslaught climate events, have claimed millions of lives. Climate services and climate science form are important components of early warnings systems for famine. Agroclimatologists provide outlooks to farmers on six to eight months ahead and with shorter lead times as the seasons approach then start. Climate-smart farmers use such information to decide what seeds to plant, when best to plant, whether irrigation will be required, when best to harvest and to make other important decisions.

WMO helps its Members to monitor the Earth's climate on a global scale so that reliable information is available to support evidence-based decision-making on how to best adapt to a changing climate and manage risks associated with climate variability and extremes. Climate information is essential for monitoring the success of efforts to reduce greenhouse gas emissions that contribute to climate change, as well as for promoting efforts to increase energy efficiency and to transition to a carbon-neutral economy.

WATER-WISE

As the global population grows and the demand for water increases, how can we effectively and sustainably manage our limited water resources? Year by year, the ocean advances as sea levels rise. The coastline is eroding, urban infrastructure is vulnerable and freshwater is tainted with salt. Should higher sea defences or bigger dams be built? Should we relocate communities and even cities?

Climate change and urbanization are leading to more water-stress and increasing the exposure of communities and assets to extreme hydrological events, such as floods and droughts. It is crucial to make early warning information and products available that can help minimize the loss of life and impact on economies. To do so, we need data on all water resources, in what quantity and quality, how variable they are, and how they will evolve in the foreseeable future.

WMO helps strengthen the technical, human and institutional capabilities of its Members to enable them to independently assess their water resources and respond to the threat of floods and drought.