WMO Global Operational Network in Support of Multi-Hazard Early Warning Systems
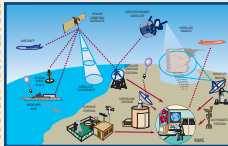
Natural hazards do not need to lead to disasters
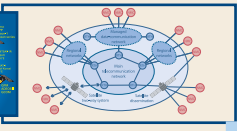
World Meteorological Organization
Weather • Climate • Water

G L O B A L

Observing and monitoring

The WMO Global Observing System (GOS) involves two subsystems, i) surface-based that is operated mainly by Members' National Meteorological and Hydrological Services (NMHSs) and, ii) space-based subsystem that is operated by either national or international space agencies. Since 1963, the WMO GOS has enabled coordination of the observation and collection of weather, water and climate information from around the globe. Through this system, data are collected from 17 satellites, hundreds of ocean buoys, aircraft, ships and nearly 10 000 land-based stations and are exchanged and archived in near-real time. Everyday more than 50 000 weather reports and several thousand charts and digital products are disseminated among countries to provide services for society's benefit.

WMO Global Observing System (GOS)

Analysing and forecasting

Global Data-processing and Forecasting System (GDPFS)

The WMO Global Data-processing and Forecasting System (GDPFS) is organised as a network of, i) three World Meteorological Centres (WMCs) and ii) 40 Regional Specialized Meteorological Centres (RSMCs). Operated or supported by National Meteorological Services, those centres carry out data archiving, processing and forecasting functions at the global and regional levels, respectively. This coordinated system provides analysis, modelling, forecasting and other products and services in support of forecasting and early warnings of weather- and climate-related hazards to all countries. WMO specifically ensures that capacities are implemented within the National Meteorological and Hydrological Services of developing and least developed countries, for issuance of forecasts and warnings of various hydro-meteorological hazards.

G L O B A L   A N D   R E G I O N A L

Global Communication

Global Telecommunication System (GTS)

WMO's Global Telecommunication System (GTS) is comprised of a dedicated network of surface-based and satellite-based telecommunication links and centres operated by countries 24 hours a day, seven days a week all year round. It interconnects all National Meteorological and Hydrological Services (NMHS) for round-clock reliable and near-real-time collection and distribution of all meteorological and related data, forecasts and alerts. WMO GTS is the backbone system for global exchange of data and information in support of multi-hazard, multipurpose early warning systems, including all meteorological and related data; weather, water and climate analyses and forecasts; tsunami related information and warnings and seismic parametric data.

WMO is expanding its GTS to an overarching integrated WMO Information System (WIS), enabling a systematic access, retrieval and automatic dissemination and exchange of information of all WMO and related international Programme. The WIS will also be able to provide critical data to other national agencies and users dealing with many sectors including disaster risk management.

WMO Information System (WIS)

N A T I O N A L

Providing warnings and other services in support of disaster risk management

National Meteorological and Hydrological Services (NMHS)

National Meteorological and Hydrological Services (NMHS) are technical agencies operating 24 hours a day, seven days a week, all year round to provide government authorities, civil defence agencies, private sector users, media and the general public with data products, analysis, forecasts and warnings of various weather-, water- and climate-related hazards. These services constitute critical information needed for preventive, preparedness and response measures that can reduce the impacts of potential disasters.

| GENERAL PUBLIC | GOVERNMENT | CIVIL DEFENCE AGENCIES | MEDIA | PRIVATE SECTOR |

signal system   recorded announcement   radio broadcasts   TV news

WARNING BROADCASTING

An example: WMO Global Operational Tropical Cyclone Early Warning System

Tropical cyclones (also known as hurricanes, typhoons and cyclones) are monitored and forecasted daily globally through the WMO Global Tropical Cyclone Warning System. This system is built upon WMO's global operational network (GOS, GDPFS and GTS) enabling observation, data exchange, regional forecasting and analysis for tropical cyclones. Through six designated Regional Specialised Meteorological Centres (Honolulu, La Réunion, Miami, Nadi, New Delhi, Tokyo), forecasts, alerts and bulletins of severity, projected path and land fall are provided around the clock to the National Meteorological Services of all countries at risk, with lead-times of at least 24 hours up to several days. At the national level, National Meteorological Services issue tropical cyclone warnings to designated government authorities, media, and public at risk. In addition to operational capacities, through the five WMO Regional Tropical Cyclone Committees, forecasting skill of the tropical cyclone models are being enhanced on an on-going basis, and efforts are made to ensure forecasts are integrated in disaster risk management and response planning.

Early warning systems should be an integral part of disaster risk reduction planning in all countries and should be considered as an investment.

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