



WORLD
METEOROLOGICAL
ORGANIZATION

Monitoring and Predicting Global Hydrological Variability

HydroSOS – the pilot World Meteorological Organization global hydrological status and outlook system

AT A GLANCE



20 million
people at risk from
flooding



\$80 billion
in associated damage
from flooding



\$8 billion
in losses from drought



9.7 billion
population by 2050

Global hydrological variability poses one of the greatest challenges and threats to the world's population. Some 20 million people are at risk from flooding with the associated damage costing nearly \$80 billion; this could rise to 50 million people affected in just 15 years' time, according to the World Resources Institute. The effects of drought across the world cost up to \$8 billion a year from losses in agricultural and related businesses, according to the World Economic Forum. These challenges will intensify with future climate change and population growth. There will be 9.7 billion people living on our planet by 2050, according to the United Nations; this in itself presents a significant challenge in a world beset by hydrological variability on a global scale. Water features heavily in the new United Nations Sustainable Development Goals, not only in the explicit aim to ensure availability and sustainable management of water and sanitation for all but also because of the underpinning nature of water-related issues across many development areas.

Despite these looming issues, there is currently no operational global system capable of assessing the current status of surface or groundwater systems or for predicting how they will change in the coming weeks and months. The need, therefore, for the **World Meteorological Organization (WMO) Global Hydrological Status and Outlook System (HydroSOS)** cannot be clearer. Every month, the worldwide operational system will report:



The current global hydrological status including groundwater, river flow and soil moisture

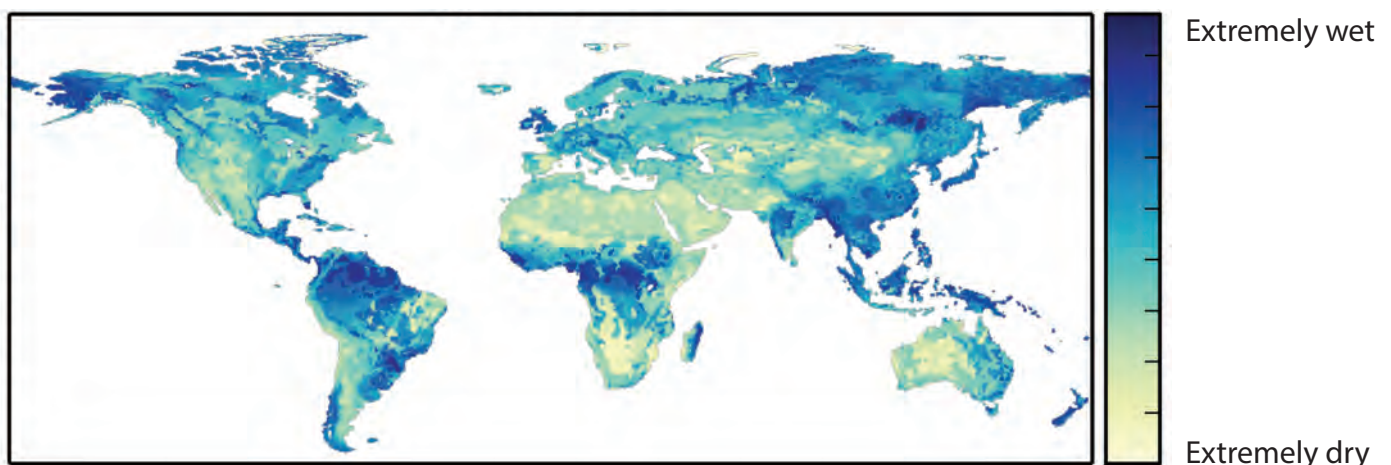


An appraisal of where the current status is significantly different from 'normal,' for example indicating drought and flood situations

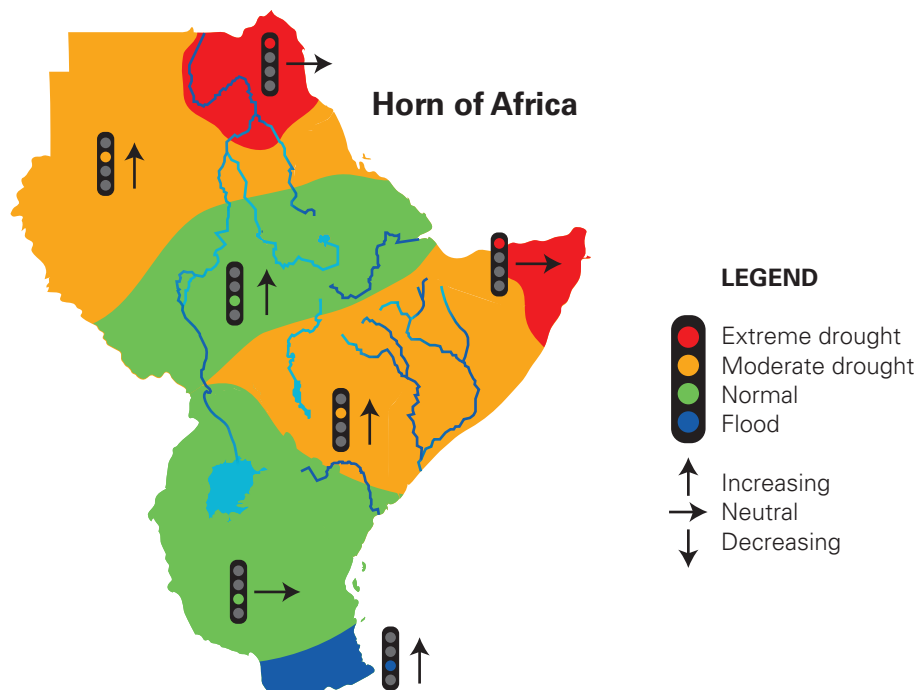


An assessment of whether this is likely to get better or worse over coming weeks and months

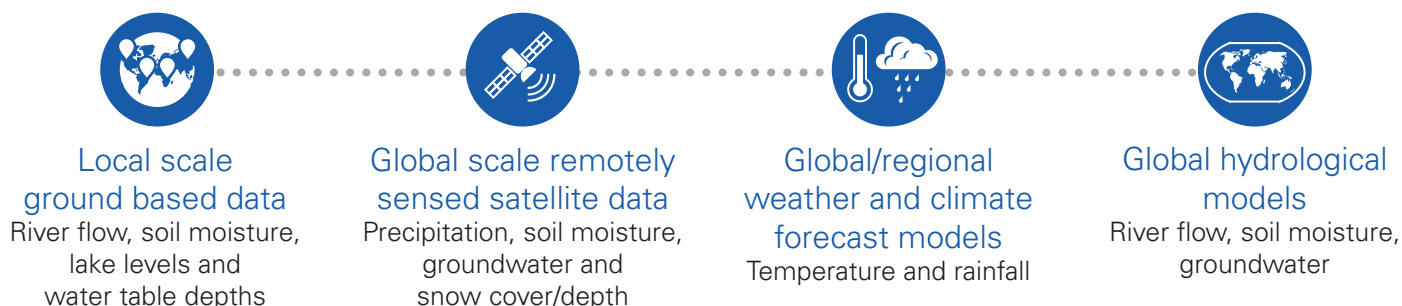
Global Hydrological Status on soil moisture from June to August



Outlook of conditions in coming weeks and months



From a scientific perspective, Numerical Weather Prediction and hydrological models are now sufficiently advanced to enable appropriate coupling for global scale application at relevant spatial and temporal resolution, including ensemble approaches. Satellite data products are widely available to provide information on hydrometeorological variables and ground based observations are increasingly available globally. At its core the system would use:



The programme will directly build on existing and planned WMO initiatives in relation to hydrological monitoring, data sharing and seasonal meteorological forecasting, to deliver a unique operational system providing up-to-date hydrological information from National Meteorological and Hydrological Services to a range of end-users. While the system's products will be global, they will also be capable of providing information on regional and national scales. The operational system will provide easily accessible hydrological information that can be made accessible to government bodies as well as regional and international aid agencies and the general public.

The time is now right to ensure that data and models are brought together effectively and efficiently at global scale and on a monthly basis.

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