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Gridded Climate Monitoring Products to be openly available

The Met Office (UK) has announced plans to publish its gridded climate monitoring products under an “open” license on 31 July. The United Kingdom believes that there is high value in making this move, which will enable national meteorological services and governments to use the gridded data for any purpose. For example, the data may be useful in producing climate adaptation and resilience strategies for sectors that are essential to society such as energy or transport.

In many cases, reports of this nature are considered commercial and, therefore, in breach of any non-open use policy. However, Met Office climate monitoring products use data that are freely transmitted over the Global Telecommunications System (GTS) and from historical agreements of data sharing. These data have been processed to create gridded products from which it is impossible to retrieve any of the raw station data. Thus, there is no conflict with third parties own holdings of the original station series. To create Met Office gridded monitoring products (for example, HadCRUT4 monthly mean surface temperature, HadISDH monthly mean surface humidity), the data used have been quality controlled, averaged with other stations, averaged to monthly resolution and, in many cases, converted to anomalies from a 30-year reference period.

The data used in Met Office products constitute both “essential” and “additional” data under the WMO Resolution 40 Annex 1 description. The Met Office plans to use the UK’s Open Government License, a national standard document, for this purpose. The license can be found at:

www.nationalarchives.gov.uk/doc/open-government-licence/version/3.

Winners of the Global Competition for Youth-led Projects on Floods and Droughts

The winners of the Global Competition for Youth-led Projects on Floods and Droughts – organized by the Water Youth Network in collaboration with the joint WMO/Global Water Partnership Associated Programme on Flood Management (APFM) and the Integrated Drought Management Programme (IDMP) – were announced at the Youth Forum for the Global Platform on Disaster Risk Reduction (GPDRR) on 22 May in Cancun, Mexico. Both projects were presented at the United Nations Major

Group for Children and Youth (UN MGCY) Youth Forum poster session and Market Place.

The Competition showcased practical examples of advances in the integrated approach to flood and drought risk management through the involvement of youth. The focus was on three themes: understanding risk, early warning system development, and risk management and planning.

Category 1 winner: Ongoing projects - Integrated Participatory and Collaborative Digital Mapping to Enhance Disaster Resilience in Nepal, Prakash Khadka, Center for Social Development and Research (CSDR). This project engages young social mobilizers and volunteers by training them to integrate community-based participatory mapping processes with Internet-based collaborative digital mapping technologies. The main objective is to map key information pertaining to flood hazard, exposure and vulnerability at the household and community-level across lower Karnali river basin before the 2017 monsoon, and to develop a transdisciplinary approach that can be replicated in similar regions across Nepal. So far, volunteers have remotely-mapped 54 communities in the Kailali and Bardiya districts, including over 2 500 houses and over 100 km of roads and trails.



Volunteers map key flood hazard, exposure and vulnerability information in Nepal through the Center for Social Development and Research project entitled Integrated Participatory and Collaborative Digital Mapping to Enhance Disaster Resilience

Category 2 winner: New project proposals - "Preparing our Home" by Lily Yumagulova, Casey Gabriel, Sandy Bernice and students from the "Preparing our Home" programme at the Xetólacw Community School and International Sustainability Education Foundation (ISEF). This community-based disaster resilience programme was designed and implemented by Canada's First Nations communities. It developed multiple grade school curricula and created intergenerational, multi-stakeholder opportunities to understand risk and context-specific youth-led, and community implemented, risk management and planning activities. Training activities focus on understanding risk and developing flood and drought resilience strategies as well as emergency management plans and preparedness planning.

The Water Youth Network, APFM and IDMP will work closely with the winners, supporting them technically in order to maximize the social impact in their communities.

Advice on low-cost Air Pollution Sensors

Low-cost air pollution sensors are an exciting opportunity for atmospheric chemistry research and are a potentially disruptive technology for air pollution monitoring. In mid-June, the Scientific Advisory Group on Reactive Gases of the Global Atmosphere Watch (GAW) Programme issued an advisory note aimed at users considering adopting sensor approaches for air pollution measurements. It identifies some of the basic technologies, key operational factors and possible deployment scenarios.

The benefits of using sensors are clear: they may allow many new observations to be made economically with high spatial densities and provide a means to track human exposure to air pollution when carried on a person. However, there is a growing body of literature that shows that sensors can be prone to cross-interferences from other atmospheric pollutants, are very sensitive to environmental variables, such as temperature and humidity, and have untested medium and long-term stability. They are also difficult to calibrate using existing reference materials. It is, therefore, essential that users of low cost sensors validate that performance meets the technical requirements of specific applications.

The applications where air pollution sensors could be used are many, ranging from the support of air quality regulations through to purely indicative measurements of pollution in general terms. It is important that the analytical requirements of each application are matched against the proven capabilities of any given sensor device. Since the variety of sensors on the commercial market is wide, there is no straightforward answer to the question "what can sensors be used for"? This must be established by the user on a case-by-case basis.

The GAW advisory note, which can be accessed at the main page of the programme www.wmo.int/gaw, offers a generalized set of recommendations on sensors use for different applications.

Benefits and Costs of Action and Inaction on Drought

Significant progress has been made over the past decade to improve our understanding of droughts and their impacts. However, several questions remain, including the real costs to a country's economy, and whether the price of preparing for droughts is worth the cost. A new study released by the WMO/Global Water Partnership (GWP) Integrated Drought Management Programme seeks to answer these questions.

The working paper – part of efforts to support the development of more proactive drought policies and better predictive mechanisms – reviews an extensive range of literature on the benefits of action and costs of inaction of drought mitigation and preparedness.

Following its release, the World Bank, the National Oceanic and Atmospheric Administration (NOAA) and the Integrated Drought Management Programme organized a joint workshop on the topic in Washington DC on 26-27 April. Participants explored the benefits of action and the costs of inaction of drought preparedness, which includes the evolution of resilience across time scales, namely how lessons on proactive drought management have been learned (and which actions were taken) over time and in different sectors. The study is available in English at www.droughtmanagement.info/literature/IDMP_BACI_WP.PDF

ECMWF backs WMO Capacity Building

The European Centre for Medium-Range Weather Forecasts (ECMWF), a long-standing partner of WMO in capacity building, is now applying its numerical weather prediction expertise to help assess operational capabilities in WMO Member States and Territories. In March, Anna Ghelli, ECMWF's international liaison officer, joined WMO on a visit to Saudi Arabia's national meteorological service as part of a numerical weather prediction expert team.

The Saudi Arabia General Authority of Meteorology and Environmental Protection has embarked on a major modernization project that includes the development of numerical weather prediction capacity. It has also asked for advice in the areas of observations, climate services, public weather services, atmospheric research and environmental protection. The visit came one year after the General Authority signed up to receive ECMWF data under a non-commercial license specifically designed for WMO Members. Saudi Arabia has been connected to the ECMWF managed Regional Meteorological Data Communication Network (RMDCN) since 2005.

The WMO Executive Council meeting in May (EC-65) recognized ECMWF as a World Meteorological Centre along with Beijing, Exeter, Melbourne, Montreal, Moscow, Tokyo, and Washington DC. In June, ECMWF confirmed its support, amongst others, for the Severe Weather Forecasting Demonstration Projects (SWFDPs) in the operational phase, and that it would provide reliable access to ECMWF ocean data for Member State users. It also agreed to the WMO Secretary-General's request to make graphical products, and associated training, available to support the WMO contribution to the UN system and other international organisations.

ECMWF's current 10-year strategy includes an explicit commitment to support training and capacity building of WMO Members. This partnership ranges from providing essential data, to supporting fellowships and projects, in order to improve severe weather forecasting in developing countries.

Expansion of the Severe Weather Forecasting Demonstration Project

The WMO Severe Weather Forecasting Demonstration Project (SWFDP) is now being extended to the Eastern Caribbean islands. SWFDP launched in 2006 in five Southern African countries, and now serves more than 50 countries globally, providing them with reliable forecasts of hazardous weather in support of disaster risk reduction. Its ongoing sub-projects cover Southern and Eastern Africa, the Southwest

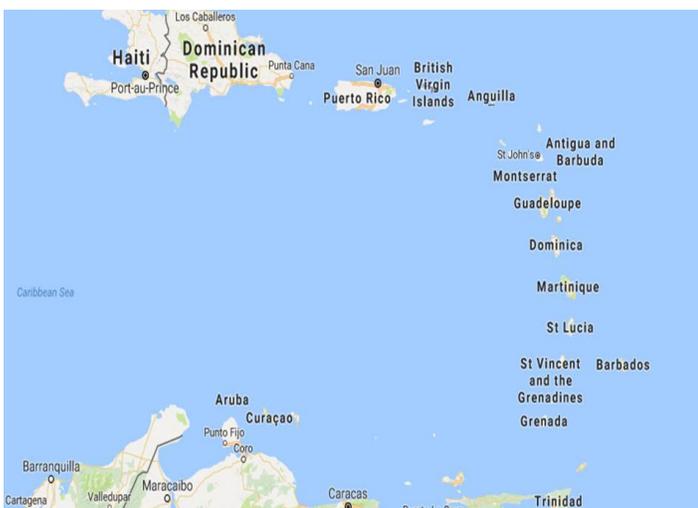
Pacific, the Bay of Bengal, Southeast and Central Asia and the Eastern Caribbean, and will also include West Africa later this year.

SWFDP uses a “Cascading Forecasting Process” – global to regional to national:

- Global Centres provide Numerical Weather Prediction (NWP) and Ensemble Prediction System (EPS) products, including probabilities for a specific time frame;
- Regional Specialized Meteorological Centres interpret the information received from the Global Centres and prepare daily guidance products (1–5 day) for distribution to National Meteorological Centres;
- National Meteorological Centres issue alerts, advisories, severe weather warnings; liaise with disaster management and other economic sectors, and contribute feedback on the project.

At the end of May, an expert group developed the implementation plan for the Eastern Caribbean sub-project, which will follow the SWFDP’s general methodology. Canada, France, ECMWF and the United States of America will act as global NWP centres for the sub-project. The regional office of Météo France in Martinique will serve as a regional forecast support facility and will issue daily severe weather forecast guidance products for use by the National Meteorological Centres of participating island states and territories who, in turn, will issue advisories and severe weather warnings. National Meteorological Centres responsibilities include liaising with disaster management and other economic sectors and providing feedback through quarterly performance reports. The National Hurricane Center (Miami, USA) continues to be responsible for hurricane updates and warnings in the sub-region.

The Caribbean Institute of Meteorology and Hydrology (CIMH) in Barbados will contribute to the sub-project as a regional technical support centre. It will focus on capacity development through specialized training workshops to enhance the interpretation and use of forecast products in order to improve severe weather forecasting skills and strengthen engagement with users.



The Eastern Caribbean sub-project is being implemented in the Small Island Developing States and Member Island Territories with seed funding from Canada

The Bay of Bengal and Southwest Pacific sub-projects are ready to enter demonstration and operational phases respectively. The Southwest Pacific sub-project, covering the Cook Islands, Fiji, Kiribati, Niue, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu, was launched in 2009. The

Bay of Bengal sub-project, launched in January 2012, was expanded in 2016 to cover nine countries in the region including Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka and Thailand.

Participation in the UNFCCC Subsidiary Body for Scientific and Technological Advice

WMO, United Nations Framework Convention on Climate Change (UNFCCC), the Global Climate Observing System (GCOS) and the Met Office (UK) took part in a joint side-event on 9 May during the UNFCCC Subsidiary Body For Scientific And Technological Advice (SSBSTA) in Bonn, Germany. The side-event highlighted changes to the WMO Statement on the State of the Global Climate (annual Statement) and in global observing requirements. It also offered an overview of a new WMO mechanism for the recognition of long-term observing stations. WMO outlined plans to enhance the annual Statement by providing, amongst others, updates on open science issues – such as the apparent cooling of the southern ocean, the apparent increase in the Antarctic sea ice and the attribution of extreme events to natural and anthropogenic factors of climate change – and information on impacts.

GCOS focused on the expansion of global observing needs to cover regional and national level needs. The level of national climate change mitigation measures should be based on accurate, long-term observations that detect small changes – compared to annual variations – that will add up significantly over longer time periods. These observations should also contribute to early warning systems and monitoring for a range of Sustainable Development Goals. GCOS has been leading efforts to identify climate indicators that summarize the 55 Essential Climate Variables (ECV) and, in so doing, provide a small set of observed data that demonstrate the scale and scope of changes that are occurring. GCOS and the UNFCCC plan a series of regional workshops to look at national and regional observing needs, which will initially focus on fresh water: precipitation, rivers and lakes.

Long-term meteorological observations are part of the irreplaceable cultural and scientific heritage of mankind that serve the needs of current and future generations for long-term high quality climate records. They are unique sources of past information about atmospheric parameters, thus the new WMO mechanism to recognize such stations. Later in May, WMO recognized a first list of 60 long-term observing stations (see public.wmo.int/en/our-mandate/what-we-do/observations/long-term-observing-stations).

Pacific Island Projects soar ahead

Many Small Island Developing States and Island Territories are low-lying and highly vulnerable to weather extremes and climate change, including the increased severity of cyclones, storm surges, heavy rains, droughts, sea-level rise and ocean acidification. Investments in disaster risk reduction, including early warning systems and adaptation measures for critical sectors, are essential for building resilient island communities and facilitating sustainable development. Since 2015, the WMO Programme for WMO Small Island Developing States and Member Islands has pursued targeted capacity development actions to strengthen their weather and climate services. Below, we highlight such initiatives in the Pacific Islands Countries and Territories (PICTs).

Meteorological Strategy - Following a mid-term review of the Pacific Islands Meteorological Strategy (PIMS) 2012-2021, a final updated draft PIMS 2017-2026 will be presented at the fourth meeting of the Pacific Meteorological Council and the second Pacific Ministers Meeting on

Meteorology in Honiara, Solomon Islands, in August 2017. The draft updates the framework for the Directors of National Meteorological and Hydrological Services (NMHSs) to ensure that weather and climate services are sustained and ensured of the best quality possible.

Enhancing climate services is one of the PIMS 2012–2021 priorities. Thus, in 2014, work started on the development of the Pacific Roadmap for Climate Services. The final draft, completed earlier this year, prioritizes key actions for implementing the Global Framework for Climate Services (GFCS) and expands on the five GFCS focus areas – agriculture and food security, disaster risk reduction, sustainable energy, health and water – by adding tourism, fisheries and aquaculture. It provides overall guidance for the generation and delivery of climate services in the region, recognizing that no single approach will suit all. The draft will also be presented at the Solomon Islands meetings in August 2017.

Training - The Fiji Meteorological Service Training Centre in Nadi is currently (from 24 May to 29 June) hosting the 2017 Basic Instruction Package – Meteorological Technicians (BIP-MT) Training Course. The 17 trainees represent 9 PICTs: Fiji, Kiribati, Nauru, Niue, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Fiji Meteorological Service, with support from WMO, Japan International Cooperation Agency (JICA), Japan Meteorological Agency (JMA) and the Australian Bureau of Meteorology, furnishes such training courses to ensure that meteorological data of high quality standard – both in accuracy and timeliness – are collected and maintained in a sustainable manner. The Government of Japan through JICA, the Government of Russia through the United Nations Development Programme (UNDP) Regional Disaster Resilience in the Pacific Small Island Developing States (RESPAC) Project and the Government of Fiji are funding the course.

The HimawariCast Project - Since the beginning of June, Samoa has been accessing image data from the most recent new generations of geostationary meteorological satellite. HamawariCast receiving and processing systems installed earlier in the month became operational following staff training coordinated by WMO and JMA.

Coastal Inundation Forecasting Demonstration Project (CIFDP) – Implementation of CIFDP-Fiji (2016-2019) is progressing as per the workplan. 2017 activities include model development (waves and storm surge only), purchase and installation of wave buoy and a stakeholders' workshop. Finalization and pre-operational testing of models as well as their integration into a combined operational forecast and warning system will occur in 2018-2019 along with further training workshops. The Project will yield a reliable open source coastal inundation end-to-end operational forecasting and warning system.

Climate Outlook Forums - Two regional Climate Outlook Forums have been organized in the PICTs. These have brought together the providers of climate information – NMHSs – and end users of this information such as the disaster risk management community, the water, agriculture and health sectors, and many more.

Implementation of National Climate Outlook Forum (NCOF) in the PICTs' accelerated in the latter half of 2015 with funding support from WMO and the Government of Canada, through Environment and Climate Change Canada (ECCC), and projects implemented by the Secretariat of the Pacific Regional Environment Programme (SPREP). Kiribati, Papua New Guinea and Vanuatu were the first to implement NCOFs. Papua New Guinea's National Weather Services and the Vanuatu Meteorology and Geo-Hazard Department (VMGD) have been regularly briefing national stakeholders on the status of El Niño/La Niña Southern Oscillation.

Obituary



An obituary for our colleague Dev Raj Sikka, "the Monsoon Guru" and former Director of the Indian Institute of Tropical Meteorology (IITM), is available in the online version of MeteoWorld.

Newly issued

2016 Highlights Annual Report, WMO No. 1190, ISBN 978-92-63-11190-6. Available in Arabic, Chinese, English, French, Russian and Spanish. E-version is available on public.wmo.int.



Upcoming events

12-15 September: AMCOMET-African Hydromet Forum, Addis Ababa, Ethiopia

23-24 October: Seventeenth Session of the Commission for Atmospheric Sciences (CAS-17), Bali, Indonesia

25-31 October: Fifth session of the WMO-IOC Joint Commission for Oceanography and Marine Meteorology (JCOMM-5), Bali, Indonesia

6-10 November: WMO Aeronautical Meteorology Scientific Conference, Toulouse, France

We welcome your comments about MeteoWorld and look forward to hearing from you: editor@wmo.int

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World Meteorological Organization

7 bis, avenue de la Paix, PO Box 2300
CH-1211 Geneva 2, Switzerland
Tel.: +41 (0) 22 730 83 14 / 83 15
Fax: +41 (0) 22 730 80 27
Internet: public.wmo.int

