

We are way off track



2021 must be the year for climate action – “the make it or break it year,” said United Nations Secretary-General António Guterres at the launch of WMO’s report on the [State of the Global Climate 2020](#) which highlighted accelerating climate change indicators and worsening impacts.

“This is a frightening report. It needs to be read by all leaders and decision-makers in the world,” Mr Guterres told journalists.

Mr Guterres joined WMO Secretary-General Prof. Petteri Taalas in releasing WMO’s trademark report, which includes input from national meteorological services, UN partners and the broader scientific community.

“This report shows that 2020 was also another unprecedented year of extreme weather and climate disasters. The cause is clear: Anthropogenic climate change – climate disruption caused by human activities, human decisions and human folly,” he said.

The report is accompanied by a [Storymap](#) showing details of key climate indicators, including record greenhouse gas concentrations, increasing land and ocean temperatures, sea level rise, melting ice and glacier retreat and extreme weather. It also highlights impacts on socio-economic development, migration and displacement, food security and land and marine ecosystems.

“All key climate indicators and associated impact information provided in this report highlight relentless, continuing climate change, an increasing occurrence and intensification of extreme events, and severe losses and damage, affecting people, societies and economies,” said Prof. Taalas.

“It is therefore important to invest in adaptation. One of the most powerful ways to adapt is to invest in early warning services and weather observing networks and hydrological services,” he said.

2020 was one of the three warmest years on record, despite a cooling La Niña event. The global average temperature was about 1.2° Celsius above the pre-industrial (1850-1900) level. The six years since 2015 have been the warmest on record. 2011-2020 was the warmest decade on record.

“Our challenge is clear,” said the UN Secretary-General. “To avert the worst impacts of climate change, science tells us that we must limit global temperature rise to within 1.5 degrees of the pre-industrial baseline. That means reducing global greenhouse gas emissions by 45% from 2010 levels by 2030 and reaching net zero emissions by 2050,” he said. “We are way off track.”

Mr Guterres listed a number of concrete advances in the run up to the UN Climate Change negotiations (COP26) in Glasgow this November. These include:

- A global coalition committed to net zero emissions – to cover all countries, cities, regions, businesses and financial institutions.
- The next 10 years need to be a decade of transformation, with more ambitious nationally-determined contributions and climate plans under the Paris Agreement.
- These commitments should be backed up with concrete immediate action. The trillions of dollars spent on COVID-19 recovery must be aligned with the Paris Agreement and the Sustainable Development Goals.
- Subsidies to polluting fossil fuels must be shifted to renewable energy. And developed countries must lead in phasing out coal by 2030 in OECD countries, and 2040 elsewhere.
- Developed countries also need to deliver on climate finance for the developing world, particularly the promise of US\$ 100 billion per year. Half of all climate finance from donors and multilateral and national development banks must flow to resilience and adaptation, from a much lower level of 20% today. Access to these sources of finance must also be made easier for the most vulnerable.

“I count first on developed countries to deliver on climate finance and, as I mentioned, the promised US\$ 100 billion a year at the G7 Summit in June. Then, I will urge the G20 countries to take on the greening of the broader financial architecture, to address debt and make climate-related financial disclosure mandatory,” said Mr Guterres.

“This is truly a pivotal year for humanity’s future. This report shows we have no time to waste,” he said.

The Systematic Observations Financing Facility wins support

The Systematic Observations Financing Facility (SOFF) held its first Funders Forum on 24 March. The event underscored the rise in support for the Facility, with declarations from leaders of the United Nations and development and climate finance agencies in the Alliance for Hydromet Development, as well as beneficiary countries and the meteorological community. The creation of SOFF is a commitment and priority of the Alliance for Hydromet Development, which is a coalition of major climate and development finance institutions.

SOFF will provide grants and technical assistance to countries with the largest capacity gaps for the long-term generation and international exchange of basic surface-based weather and climate observations. Such observations are critical for the improved weather forecasts and climate services needed to boost resilience to more extreme weather and to adapt to climate change impacts.

As a priority, SOFF will support Least Developed Countries and Small Island Developing States, which face the most serious shortfalls in observations. This will bring benefits to the rest of the globe. Investments to close gaps in data-sparse regions will have disproportionately high returns, with potential returns of 1:25.

“The network of surface-based observations today is not sufficiently advanced, especially in developing countries. And yet, observations in these areas of the world are most precious and are well-worth investing in,” stated Dr Florence Rabier, Director General of the European Centre for Medium-Range Weather Forecasts (ECMWF). ECMWF estimates that an investment in the observing system in French Polynesia would offer benefits up to 50 times greater than investing in France.

Science and data are at the heart of the fight against climate change,” said Dr Kristalina Georgieva, Managing Director of the International Monetary Fund. “Better data means better forecasts and stronger Early Warning Systems. For the IMF, better weather data will underpin our work to boost economic growth and financial stability across our membership as we scale up our work on climate change. In the new climate economy weather data is economic data and sharing this information is absolutely vital,” she said in a video message.

Prime Minister Frank Bainimarama of Fiji said that SOFF would save lives in vulnerable countries and support disaster readiness and disaster resilience through more advanced early warning systems. “We are calling on our development partners to back this facility. The benefits of the data it collects and the work it supports extend well beyond the Pacific. It supports a greater global campaign to build a more resilient world,” he said in a video message.

The virtual event was attended by more than 130 participants from 50 countries and institutions. It was chaired by Johannes Linn in his capacity as SOFF Global Facilitator. Subsequent Funders’ Forums are planned for early July and mid-October 2021. The launch of SOFF is planned for the UN Climate Change Conference (COP26) in November 2021.

World Meteorological Day 2021 – The Ocean, our Climate and Weather



This year’s World Meteorological Day on 23 March was devoted to the theme “the ocean, our climate and weather” and was selected to highlight the start of the UN Decade of Ocean Science for Sustainable Development (2021 to 2030).

WMO, together with the United Nations family, the ocean and scientific communities and National Meteorological and Hydrological Services (NMHSs), celebrated with more than 400 participants in a virtual ceremony on 23 March. Speakers included WMO Secretary-General Petteri Taalas, UN Secretary General’s Special Envoy for the Ocean Peter Thomson, UN Climate Action Assistant Secretary General Selwin Hart, Alfred Wegener Institute Director Antje Boetius, yachtswoman Alexia Barrier, and youth campaigner Salvador Gómez-Colón.

At the ceremony, a new video was presented as well as the special edition of the WMO Bulletin highlighting the vital role of the ocean in our interconnected world, the increasing impact of climate change, and the need for better ocean services, science and observations to protect lives at sea and in coastal areas. WMO Members also held special activities to promote their 24/7 work in protecting lives and livelihoods, be it on land or at sea.

“The ocean and the atmosphere are two titans of the Earth system. Carefully balanced and inextricably connected, the relationship between air and sea dictates weather and climate around the globe. Climate change is disrupting this delicate equilibrium,” said UN Secretary-General Antonio Guterres in a message.

“Sea-level rise has accelerated because of melting glaciers and ice caps, threatening coastal megacities and small island nations alike. Science is also revealing how melting could affect mighty ocean currents, further exacerbating climate disruption. Scientific research and better ocean observations are increasing our understanding of the changes taking place. But, as we embark on the UN Decade of Ocean Science for Sustainable Development, big gaps remain. Only by understanding and protecting our planet can we ensure a sustainable future for humanity,” he said.

World Meteorological Day takes place every year on 23 March, commemorating the date in 1950 when the Convention establishing the World Meteorological Organization (WMO) came into force. It promotes the 24/7 work of National Meteorological and Hydrological Services in protecting lives and property not just on land but also at sea.

For more information on this year’s theme and event, click [here](#).

Action-oriented decisions to increase proactivity and efficiency in the WMO Regional Association IV

The 18th session of the WMO Regional Association for North America, Central America and the Caribbean (RAIV) in February focused on how to improve service delivery, disaster risk reduction and climate resilience in the context of the WMO Reform and the unprecedented situation with the COVID 19 pandemic.

Implementation of WMO Reform in the Region and major technical activities related to enhanced services, regional climate centres, observations and data exchange, hydrology and water resources, capacity development and research were among the key discussion and action items.

The RA IV Members decided on regional priorities, approved a new operating plan for 2021–2023 and created four new regional Committees –for infrastructure, hurricanes, hydrology and water resources, and services. Focal points were also established: (i) Capacity Development, (ii) Education and Training, (iii) Disaster Risk reduction, (iv) Research and Modelling and (v) Satellite Data Requirements.

Significant attention was given to regional engagement with the regional UN and inter-governmental system, as well as with development partners and public-private engagement.

A special Ocean side event aimed to explore the needs, find the gaps and identify priorities in ocean matters. Key regional ocean priorities were discussed: Improved Coastal and Marine services, Coastal Hazards and Multi-Hazard Early Warning Systems (MHEWS), Research and Capacity Development, Maritime Safety, and Polar, International and Regional Cooperation. The side-event paved the way for RA IV to move forward with a clear vision and roadmap to address priority ocean actions in the upcoming Ocean Decade.

Mr Evan G. Thompson, Permanent Representative of Jamaica to the WMO, and Luz Graciela Calzadilla, Permanent Representative of Panama to the WMO, were elected respectively president and vice-president at the meeting. This is the first time that Jamaica assumes the RA IV presidency and the second time that Panama is in the vice-presidency.

To follow-up the RA IV-18 several activities have been planned for April and early May: the 28th RA IV Management Group meeting, the Third RA IV Hydrological Advisors Forum to discuss the Regional Road Map on Hydrology and Water Resources and the Regional Workshop on Aircraft Based Observations.

One of the key outcomes of the session was an agreement to strengthen the integration of the English- and Spanish-speaking Members under one RA IV common vision and action plan to take advantage of the opportunity offered by the rich diversity across the region and to serve all Members better.

18th Session of the Regional Association I (Africa)

The 18th Session of the Regional Association I (RAI-18, Africa), held virtually on 18-19 March, focused predominantly on the WMO Reform and established a High-level Task Team to lead the Regional Concept for Regional Associations (RAs). In addition, the session established Committees on Services, Infrastructure and Research

and on Capacity Development to align with the new WMO Governance Structure. The RAI Management Group was also reconstituted to take on board these new subsidiary bodies.

The Session further amended the Tropical Cyclone Committee of the South West Indian Ocean to reflect emerging issues. Participants agreed upon the establishment of a Hydrological and Water Coordination Panel but left it to the hydrological community to constitute the membership at a later date. The Session took note of the 2020 State of Africa Climate Report and urged all Members to contribute to the Report.

The Session identified multi-hazard early warning systems, capacity development, operational hydrology, public private engagements and gender main streaming among its priorities for the period from 2021–2023. RAI-18 further decided to implement the following in the period:

- Regional/Global Basic Observing Network – RBON/GBON and increase of observational data on Global Telecommunication System (GTS) to improve global Numerical Weather Prediction (NWP)
- Aircraft-based observations (ABO) and the global Aircraft Meteorological Data Relay (AMDAR)
- Multi-Hazard Early Warning systems (MHEWS) at national and regional levels and the launch of the Global Multi-Hazard Alert System (GMAS)
- Strengthening the capacity of Members in the development of products (including NWP and satellite products) and services
- Enhanced Research and Innovation on the continent through the Climate Research for Development (CR4D) initiative and its Inter-governmental Collaboration Platform (ICP) in partnership with WMO Science and Innovation Department
- Enhanced support to Gender equality policy, under United Nations Sustainable Development Goal 5, and strengthening partnerships between NMHSs and other bodies (public and private sectors).

RAI-18 elected Ms Stella Aura, Director of Kenya Meteorological Department and Permanent Representative of Kenya with the WMO, as its new vice-president.

Some 290 participants registered for RAI-18, including representatives from the private and public sector such as United Nations agencies, the African Union Commission (AUC), African Development Bank, World Bank, EUMETSAT, SWIFT and Varysian Ltd. Many highlighted how they could partner with WMO to achieve concrete deliverables with key performance indicators for the period 2021–2023 in priority areas in Africa. The WMO Regional Office will follow-up on the commitments from these organizations.

By Mr Daouda Konaté, President Regional Association I and Permanent Representative of Côte d'Ivoire to the WMO.

African Ministerial Conference on Meteorology appoints new Bureau

The 5th African Ministerial Conference on Meteorology (AMCOMET-5) Session, which took place virtually on 17 March, elected a new Bureau and adopted the revised Integrated African Strategy on Meteorology (AMCOMET) Strategy (Weather and Climate Services).

The new Bureau, which will be in office for two years, is composed of:

- Chair: Cameroon's Minister of Transport, Mr Jean Ernest Masséna Ngalle Bibehe
- First Vice-Chair: Sudan's Minister of Irrigation and Water Resource, Prof. Yasir Abbas M. Ali
- Second Vice-Chair: Niger Republic's Minister of Transport, Mr Sadou Seydou
- Third Vice-Chair: Mozambique's Minister of Transport and Communications, Mr Janfar ABDULAI.

The previous chair is now the Rapporteur and will be represented by Egypt's Minister of Civil Aviation, Pilot Mohamed Manar Anba.

The Strategy on Meteorology had earlier been reviewed and validated by AMCOMET Member States in five virtual regional meetings, co-organized and hosted by the African Union from 23–27 November 2020. The revisions highlight emerging issues such as gender, data and infrastructures, research, innovation, development and training as well as public-private engagement. AMCOMET-5 further supported the establishment of the ClimDev Special Fund (CDSF) AMCOMET Facility Fund to mobilize resources for implementation of the Strategy on Meteorology. The Ministers also welcomed the establishment of the Systematic Observations Financing Facility (SOFF) that was established by WMO in collaboration with international organizations, under the umbrella of Alliance for Hydromet Development. There was a strong call on partners for good coordination in the implementation of the revised African Strategy on Meteorology to avoid duplication of efforts and to maximize human, financial and time resources.

The Ministers took note of significant progress made in other areas since the fourth session of AMCOMET. This included implementation of the *Abidjan Declaration on the Next Generation Satellite Products for Weather and Climate Services in Africa*, and the establishment of a joint working group to operationalize the Declaration. This Joint Working Group is expected to facilitate African preparedness for, and ensure a smooth transition to, Meteosat Third Generation (MTG) satellites and establish an African Meteorological Satellite Application Facility (AMSAF).

AMCOMET's participation in the Africa Regional Forum for Sustainable Development (AFRSD) in February 2020 in Victoria Falls, Zimbabwe, was also highlighted. There, AMCOMET called upon its Members to give more recognition to hydrometeorological services, noting that disasters related to natural hazards are on the rise in Africa and due to the increase in frequency and severity of extreme hydrometeorological events. Ministers also took note of the joint WMO and African Union Commission webinar in June 2020 on the impacts of COVID-19 on national and hydrological services in Africa, which brought to the fore that many essential services had been interrupted and needed

government extra support. For example, there was a significant decrease of revenues from the aviation sector.

Other deliberations addressed the Minamata Convention on the banning, transportation and use of mercury, which came into force in December 2020. The Ministers were urged to support the Convention and replace their Mercury-based instruments.

The outcomes of AMCOMET-5 were summarized in the [AMCOMET-5 Declaration](#).

Outcomes of the HIGHWAY project: saving lives on Lake Victoria



The four-year HIGHWAY project in East Africa has come to an end, having demonstrated how improved weather, water and climate services save lives and livelihoods and support socio-economic development of vulnerable communities.

More than 200 000 people have benefited directly and 1.4 million indirectly from the project, which was funded by the UK Government's Foreign, Commonwealth and Development Office (FCDO) through the Weather and Climate Information Services for Africa (WISER) programme. It has reduced annual weather-related deaths on the lake by 30% – saving more than 300 lives per year. The associated economic benefits are estimated at US\$ 44 million per year, a benefit to cost ratio of 16:1.

The main achievements of the project include:

- the development of forecasts, co-designed by National Meteorological and Hydrological Services (NMHSs) and fishing communities, to meet the needs of fisherfolk and ensure their safety on Lake Victoria
- the dissemination of high impact weather warnings from NMHSs to fishing communities through radios, flags, notice boards and social messaging applications
- the establishment of a regional WMO Integrated Global Observing System (WIGOS) centre to monitor meteorological data quality in East Africa, jointly run by the Kenya Meteorological Department and the Tanzania Meteorological Authority
- the improvement of meteorological data through enhanced observations tools in the Lake Victoria Basin, notably through the revival of Upper Air Stations in the region; and

- the development and enhancement of meteorological tools (Met Office 4km Unified East Africa model; the RDT (Rapid Development Thunderstorm); Near-Cast product, and Convective Rain Rates (CRR) products) to improve the accuracy of severe weather forecasting in the region
- the establishment of a pilot regional Early Warning System to inform fisherfolk and other local stakeholders about high impact weather events on Lake Victoria.

Together with the East African Community (EAC), the project partners developed a strategy, the Regional Early Warning System Vision 2025 for East Africa, for coordinating and issuing severe weather warnings throughout the EAC's six Member States – Burundi, Kenya, Rwanda, South Sudan, Uganda and United Republic of Tanzania. HIGHWAY project partners are calling for further investment by international development partners to build on the FCDO investment and to support the implementation of its regional strategy.

EAC Members have committed to increasing regional cooperation for the delivery of more accurate, timely and reliable impact-based early warning services, notably through the WMO Information System (WIS) and the application of the EAC policy for sharing of meteorological data. They also work to ensure sustained resourcing for such efforts within their respective governments.

For more information on the project, click [here](#).

Nigeria's 2021 Seasonal Climate Prediction



On 2 February, the Nigerian Meteorological Agency (NiMet) held an event in Abuja for the launch of the 2021 Seasonal Climate Prediction (SCP) to provide information on expected climate patterns in relation to the various sectors of the country. The live-streamed event was attended by state governors, several ministers and parliamentarians as well as other top government dignitaries, academics, traditional rulers, farmers and students. NiMet also used the event to release the 2020 State of the Climate in Nigeria report and to launch a Mobile Weather App.

The opening remarks of the Director General of NiMet and Permanent Representative of Nigeria with the WMO, Professor Sani Abubakar Mashi highlighted the theme, "supporting the economy to cope with the challenges of the COVID-19 global pandemic in Nigeria." He stated that the theme was a fulfilment of the Agency's mandate to provide timely, accurate weather and climate forecasts and

advisories against possible adverse and extreme events that may affect various sectors of the economy.

The Minister of Aviation, Senator Hadi Sirika, provided a summary of the SCP: a normal to above-normal annual rainfall amount is expected in most of the country, except in parts of the northwest where below-normal rainfall totals are envisaged. The rainfall onset, which signifies the growing season, is predicted to be normal to earlier than normal and is expected to range between 110 to 300 days in the extreme north and south respectively. The Minister described NiMet as one of the best meteorological agencies in Africa owing to its continuous strive for excellence in meeting national, regional and global expectations in weather and climate service delivery to mitigate the increasing trend of uncertainties regarding weather and the changing climate.

WMO Secretary-General Professor Taalas spoke briefly on the importance of climate reports and highlighted the WMO interventions planned for developing countries. The Secretary-General recognized the contributions of NiMet to the WMO community and called on the Agency to extend more technical support to weaker national meteorological services in the region.

Through WMO, NiMet accesses data products from various World Meteorological Centres, international initiatives such as the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), European Center for Medium-Range Weather Forecasts (ECMWF), National Meteorological Services such as the Met Office (UK), Météo-France, Environment and Climate Change Canada, , Deutscher Wetterdienst (German Weather Service, DWD), National Oceanic and Atmospheric Administration (NOAA), and projects such as the WMO Severe Weather Forecasting Demonstration Project (SWFDP). These support the development of the Seasonal Climate Prediction in Nigeria on an annual basis.

Madagascar, first developing country to use the German Agrometeorological Model



Agriculture plays an important role in the national economy of Madagascar as well as in the household revenues and food security of a large part of its population. Thus, to improve the accuracy of its agrometeorological products, Madagascar's Direction Générale de la Météorologie (National Meteorological Service, DGM) launched a five-year collaboration in 2017 with the Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation, GIZ) and the Deutscher Wetterdienst (DWD) for the Adaptation of Agricultural Value Chains to Climate Change (PrAda)

project. As a result, Madagascar has become the first developing country to adapt the German AMBAV_global agrometeorological model.

PrAda aims to enhance the quality and accuracy of climate services and to thus increase acceptance and use of agrometeorological products among agricultural stakeholders. AMBAV_global – an agrometeorological model developed by DWD – is an essential part of the project. AMBAV_global determines two key parameters:

- actual evapotranspiration from plants and soils and
- soil moisture in the root zone of agricultural soils.

Both parameters are valuable in agriculture to reduce the risk of yield losses due to weather and climate, to optimize the use of resources and to adapt to increasing climate variability and change.

Now, three years into PrAda, AMBAV_global has been adapted to the limited availability of meteorological data in Madagascar and calibrated for five crops: peanut, ginger, millet/sorghum, castor oil plant and onion. Several experts from DGM and other national research institutions have also been trained to use and improve the model. Now, DGM is working on optimizing both the calibrations and the operational use of AMBAV_global to their seasonal crop calendars. They have also found that they could improve some of their other information products using the model.

As agreed in a Memorandum of Understanding between DGM and DWD, experts from both services will continue to collaborate on further developments to AMBAV_global and its applications for Madagascar.

PrAda is implemented by GIZ on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). The five-year project (2017-2022) is co-financed by the European Union as part of the “Programme to support the Financing of Agriculture and Inclusive Value Chains in the South of Madagascar” (AFAFI Sud).

Further information about the PrAda project can be found [here](#).

New Indian Submerged Tsunami Buoy System

India’s National Institute of Ocean Technology (NIOT), in its Ministry of Earth Sciences (MoES), has designed and tested a submerged tsunami buoy system as an alternative to conventional DART surface tsunami buoy system currently used globally. The International Tsunami Partnership (ITP), a Task Team under the Data Buoy Cooperation Panel, has been coordinating the technological development of submerged tsunameters and has developed best practice method for its use and coordinated the sharing of water level data with NOAA National Data Buoy Center.

NIOT is engaged in the establishment and maintenance of the Data and Tsunami Buoy Network for measurement of met-ocean parameters and tsunami warning in Indian waters. As part of those activities, it developed the submerged tsunami buoy to provide reliable warnings to the coastal communities. The conventional deep ocean tsunami buoy system consists of surface buoys that float on the sea surface and thus are prone to wear and tear, fouling, damages due to vandalism and harsh marine environments, cyclone, etc. This heightens the risks of missing warning messages during a tsunami event. To overcome

these constraints a power efficient and cost effective, vandalism-free, reliable and environment-friendly subsurface moored buoy system namely CHATUR (Continuously Homing submerged Autonomous Tsunami UnderwaterR system) was developed.

CHATUR buoys remain subsurface at an approximate depth of 300 metres. The buoys ascend to the surface when a tsunami message from the Bottom Pressure Recorder (BPR) is detected. As the buoy ascends, the antenna transmits the data to a shore station. The system floats on the sea surface in the watch circle area, then after a predefined time the buoy sinks back down to its homing depth using underwater winch systems. The bottom part follows a taut mooring with acoustic release connected to the anchor.

The system has been tested in the field in both the Arabian Sea and the Bay of Bengal, using Ocean Research Vessel Sagar Kanya and Sagar Nidhi respectively. The CHATUR’s reliability assessment, using numerical methods, was published in the [Journal of Marine Technology Society](#). An article was also published daily Times of India on 25 March 2021.

Responding to Challenges Beyond the New Normal: A Global Campus Event

The WMO Global Campus virtual event on Responding to Challenges Beyond the New Normal, held online from 20 to 22 January, gathered over 175 participants to develop action plans to address COVID-19 related challenges in education and training. The first day of the event addressed the coordination of training decisions with the WMO Strategic Plan, alignment with the WMO Competency Frameworks and Qualification standards, and referencing and use of key WMO guidance, while the second day consisted of presentations and posters on education and training strategies adopted during the pandemic.

In advance of the event, those who registered for the event were invited to submit a list of education and training challenges due to the pandemic. A group of facilitators then classified the list of 95 challenges received into 10 main themes for group discussions during the third day. Training and education without face-to-face classroom interaction continues to be a challenge for all mostly due to a lack of infrastructure and qualified personnel for distance learning. Other challenges included:

- handling technical issues and the lack of infrastructure (particularly low-quality network connections)
- conducting assessments at distance
- availability of subject matter experts trained to design and deliver distance learning
- providing training on the use of meteorological instruments.

The breadth of innovations implemented in response to the challenges highlighted the importance of having a well-defined competency framework, the effectiveness of distance learning for reaching broad and diverse audiences, and the value of partnerships for fostering collaborations and support between training providers.

Following the presentations, breakout groups discussed strategies to address the challenges that had been grouped under ten main themes and to devise courses of action.

The strategies highlighted the impact of the [WMO publication on Global Campus Innovations \(ETR-No.27\)](#) on education and training partners. The application of knowledge and methods acquired during the WMO course on Education and Training Innovations (2020) was frequently mentioned by participants when explaining how they are responding to challenges and improving the quality of education and training.

Forty-two institutions in 33 countries, including WMO Regional Training Centres, education and training partners, and National Education and Training Focal Points, participated in the event. All resources shared during this [WMO Global Campus Event can be accessed at Responding to Challenges Beyond the New Normal: A WMO Global Campus Collaborative Webinar](#). The outcomes from the event will feed into the Symposium on Education and Training (SYMET-14) to be held later this year.

Statement on the low-cost sensors for atmospheric composition



The development and use of low-cost sensors to monitor reactive air pollutants, particulate matter and greenhouse gases is accelerating. Low cost sensors are used in academic research and regulatory surveillance as well as by individuals, governments and businesses. The Global Atmosphere Watch evaluates the role of this emerging technology in a new report launched on 16 February: *An update on low-cost sensors for the measurement of atmospheric composition*. The original report, published by WMO in 2018, was fully revised in this edition to update new scholarly understanding of low-cost sensors that have been published in the peer-reviewed literature.

Highlights from the report include:

- a summary and methodological description of many of the most common measurement techniques used by the low-cost sensors currently available.

- an emphasis that low-cost sensors are not a direct substitute for reference instruments, especially for purposes of mandatory monitoring, but are being used successfully complementarily to reference monitoring as a qualitative source of atmospheric composition data.
- a summary of strategies to consider on how to communicate on low-cost sensors, its data and its impact on society.

The report was developed in collaboration with the World Health Organization (WHO), United Nations Environment Programme (UNEP), European Monitoring and Evaluation Programme (EMEP) and International Global Atmospheric Chemistry (IGAC) Project.

The recordings and presentations from the virtual event and the updated report are available [here](#).

Obituary



An obituary for Professor Sergej Zilitinkevich, a great scientist and leader of numerous international research projects, is available in the [online version](#) of *MeteoWorld*.

Newly Issued

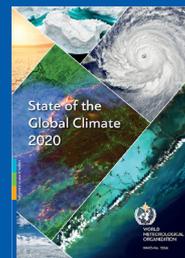
State of the Global Climate 2020, WMO No.1264. Available in English.

WMO Bulletin, ISBN 0042-9767. Available in English. Translations are being prepared for French, Russian and Spanish.

WMO Open Consultative Platform White Paper #1 - Future of weather and climate forecasting, WMO No. 1263, ISBN 978-92-63-11263-7, is now available in English.

First Report of the WMO COVID-19 Task Team: Review on Meteorological and Air Quality Factors Affecting the COVID-19 Pandemic, WMO No. 1262, ISBN 978-92-63-11262-0, is now available in English.

Guidelines for Public-Private Engagement, WMO No. 1258, ISBN 978-92-63-11258-1, is now available in English, French and Spanish. Arabic, Chinese and Russian will be available shortly.



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