

WMO STRATEGIC PLAN

2020–2023

WEATHER CLIMATE WATER



WORLD
METEOROLOGICAL
ORGANIZATION

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FOREWORD

The Strategic Plan adopted by the Eighteenth World Meteorological Congress, in June 2019, sets the directions and priorities to guide the activities of the World Meteorological Organization (WMO) during 2020–2023 and up to 2030 to enable all Members to improve their information, products and services.

The Plan anticipates an increased demand for meteorological, hydrological and climatological services and embraces a new comprehensive vision for the Organization: “By 2030, we see a world where all nations, especially the most vulnerable, are more resilient to the socioeconomic consequences of extreme weather, climate, water and other environmental events; and underpin their sustainable development through the best possible services, whether over land, at sea or in the air.”

It also sets three overarching priorities – enhancing preparedness for hydrometeorological extremes, supporting climate-smart decisions and enhancing socioeconomic benefits of related services – with a view to contribute to the societal needs reflected in the global agenda to realize sustainable development.

The Plan recognizes the demand for actionable, accessible and authoritative science-based information to address the increasing threats of extreme weather and the urgency of climate action for resilience, mitigation and adaptation, as well as the need to reduce the growing capacity gap in infrastructure and services by making use of rapid advancements in science and technology and innovative partnerships.

To address these ambitious aspirations, the Strategic Plan pursues five long-term goals and associated objectives:

1. Better serve societal needs: Delivering, authoritative, accessible, user-oriented and fit-for-purpose information and services;

2. Enhance Earth system observations and predictions: Strengthening the technical foundation for the future;
3. Advance targeted research: Leveraging leadership in science to improve understanding of the Earth system for enhanced services
4. Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens;
5. Strategic realignment of WMO structure and programmes for effective policy- and decision-making and implementation;

These five long-term goals provide a reference framework for the organization of the renewed system of constituent and other bodies adopted by Congress to support their implementation. The Strategic Plan forms the basis for the four-year Operating Plan for implementation by the six regional associations, the two technical commissions, the Research Board and other bodies, and by the Secretariat. The investments that will be required are described in the results-based budget of the Organization. Implementation will be monitored through a system of performance indicators.

We are fully confident that the WMO Members will take the Strategic Plan into account in developing and carrying out their national development, disaster risk reduction, climate services and other relevant strategies on programmes in meteorology, hydrology and related disciplines, as well as in their participation in the programme activities of the Organization, to ensure that its aspirations and vision for a resilient and sustainable world will be realized.

G. Adrian
President

P. Taalas
Secretary-General

OUR VISION

By 2030, we see a world where all nations, especially the most vulnerable, are more resilient to the socioeconomic consequences of extreme weather, climate, water and other environmental events;¹ and underpin their sustainable development through the best possible services, whether over land, at sea or in the air.

OUR MISSION

Our Mission is outlined under Article 2 of the WMO Convention as to facilitate worldwide cooperation on monitoring and predicting changes in weather, climate, water and other environmental conditions through the exchange of data, information and services, standardization, application, research and training.

For more than a century, WMO has been providing the essential worldwide leadership and coordination in support of nations' responsibilities to provide weather, climate, water and related environmental services that protect lives, property and livelihoods. The cross-border nature of the weather, water and climate phenomena requires close coordination among all WMO Members States and Territories in building highly standardized systems for their monitoring, analysis and prediction. WMO, through its various bodies and programmes, has established and facilitated an unprecedented global scientific and operational cooperation, encompassing Members' National Meteorological and Hydrological Services (NMHSs), academic and research institutions, business partners, communities and individuals.

WMO is a specialized agency and an authoritative voice of the United Nations

WMO Member States and Member Territories (hereunder referred as "Members") own and operate the scientific infrastructure required for providing the weather, climate, water and related environmental services, and primarily delivered through their national meteorological and hydrological organizations.

WMO enables the performance of its Members in the provision of their monitoring, forecasting and warning services, leads and informs the global agenda where it best serves their interest through provision of credible information, reports and assessment at global, regional scales, channels their scientific expertise to address emerging issues such as climate change, and fosters effective and strategic partnerships.

The role of WMO will remain to support the activities of its Members in understanding the past, monitoring the present and predicting the future state and interactions of the atmosphere, the hydrosphere and other vital elements of our planet, enabling adequate and effective preparedness, adaptation and response to related natural hazards and disasters. This will require further enhancement of coordinated and interoperable networks and systems for data collection and processing, improvement of predictive skill through advanced science and computational technologies, and finally highly innovative approaches of service delivery that will ensure that accurate, fit-for-purpose information will reach its users on time for making their weather-, water- and climate-informed decisions.

¹ In the context of this Strategic Plan, the term "**weather**" refers to short-term variations in the state of the atmosphere and their phenomena or effects, including wind, cloud, rain, snow, fog, cold spells, heat waves, drought, sand and dust storms and atmospheric composition, as well as tropical and extratropical cyclones, storms, gales, the state of the sea (e.g. wind-generated waves), sea ice, coastal storm surges etc. "**Climate**" refers to longer-term aspects of the atmosphere-ocean-land surface systems. "**Water**" includes freshwater above and below the land surfaces of the Earth, their occurrence, circulation and distribution, both in time and space. Related "**environmental**" issues refer to surrounding conditions affecting human beings and living resources, for example the quality of air, soil and water, as well as "space weather" – the physical and phenomenological state of the natural space environment, including the Sun and the interplanetary and planetary environments.

OUR CORE VALUES

The WMO recognizes, above all, in fulfilling its mandate, the principles of striving to ensure that “no Member State or Territory should be left behind”, and to sustain the public trust and confidence in the science underpinnings and the authoritative voice of the Organization and its Members. As WMO works to translate its vision into results, the Organization will be guided by the following values:

- (1) **Accountability for results and transparency.** To serve as an authoritative voice and a global leader in its field of work, WMO decisions and actions must be characterized by adherence to the highest scientific and technical standards, integrity, professionalism, capacity to perform and effectiveness. WMO sets clearly defined objectives and assumes responsibility for delivering high-quality results. In so doing, the WMO remains mindful of the need for quality management and cost-effectiveness;
- (2) **Collaboration and partnership.** Collaboration lies at the foundation of WMO mandate. WMO recognizes the importance of partnerships among Members, multilateral and bilateral development partners and other relevant actors, including the private sector, academia and other non-state players, to leverage investment, enhance capability and performance of National Meteorological and Hydrological Services, and deliver improved outcomes for society. WMO would expect that any such partners uphold the highest standards of ethical behaviour;
- (3) **Inclusiveness and diversity.** WMO is committed to support all Members and narrow the capacity gaps among them in the delivery of services by sustaining government support, international cooperation, catalysing investment and targeted assistance. Based on the priorities identified by its regional bodies, WMO will ensure the coordination and implementation of its programmes, strategies and activities

and facilitate the transfer of knowledge within and across regions to better serve the needs of its Members. WMO will also pursue gender equality and effective participation of women and men in governance, scientific cooperation and decision-making in the implementation of the WMO Gender Equality Policy and UN criteria. These developments contribute to achieving all relevant sustainable development goals.

The WMO Core Values also guide the behaviour of Secretariat staff. As custodians of the Organization’s image and reputation, they are expected to uphold a commitment to the highest standards of ethical behaviour as expressed in the WMO Code of Ethics and the Standards of Conduct for the International Civil Service.

KEY DRIVERS

Global agenda creating unprecedented demand for actionable, accessible and authoritative science-based information

The 2030 Agenda for Sustainable Development, the Paris Agreement on climate change, and the Sendai Framework for Disaster Risk Reduction serve as the centrepieces for national and international policymaking and action. And as a consequence, their implementation will increasingly demand actionable, accessible and authoritative information and services on the changing states of the entire Earth System.²

As governments, organizations and international bodies align their development activities within these frameworks, WMO and NMHSs in particular, have enormous roles to play in supporting implementation. The concomitant decisions at all levels will continue to be contingent upon a better understanding of the changing threat levels

² In this context, the Earth is being considered as an integrated system of atmosphere, ocean, cryosphere, hydrosphere, biosphere and geosphere, which informs policies and decisions based on a deeper understanding of the physical, chemical, biological and human interactions that determine the past, current and future states of the Earth.

from natural hazards, weather, water and climate extremes and climate change. The measurements and reports of the WMO community in these areas currently serve as the backbone of Earth System monitoring and prediction services. Global Earth System observations will provide a basis for meeting the demand for increasing seamless prediction capability from weather to climate scales based on a unified modeling approach.

As new forms of measurements emerge, and new uses for these measurements become more sophisticated, the reliance on WMO through its Members for this authoritative information will only increase. Furthermore, advancing the global observation and numerical modeling system will provide a foundation for addressing the increasing requirements for impact decisions related to a wide range of applications from public safety, to agriculture, energy, health, and water resource management and relevance to climate change.

This means that the quality of these decisions will depend to a greater extent on the WMO ability to properly measure and report on changes in the climate, to assess and communicate weather, climate, water-related and air quality risks and to provide effective multi-hazard, extended range forecasts and early warnings. Governments, organizations, and international bodies would increasingly rely on information

from WMO and NMHSs as they pursue their sustainable development goals on land, at sea and in the air.

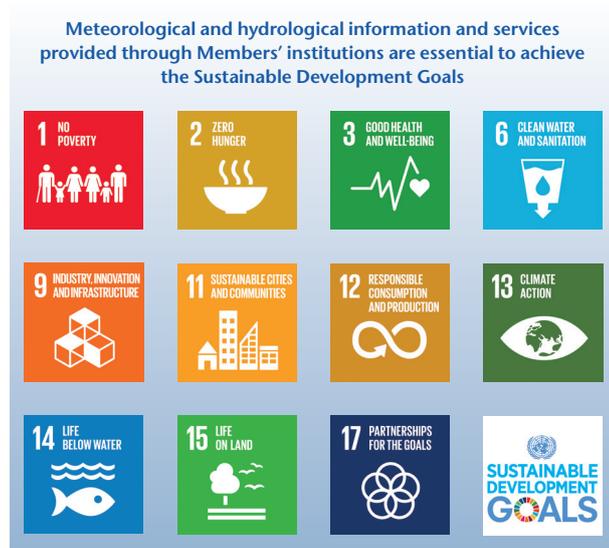
The provision of climate services at global, regional and national levels for economic sectors in support of energy, water, health, and food production among others will be vital in building a low-carbon and climate-resilient economy. The Global Framework for Climate Services (GFCS) provides a basis to support international policies and actions, National Adaptation Plans and progress towards achieving Nationally Determined Contributions.

To address these growing demands for actionable scientific information, Members' NMHSs will need targeted investments, scientific and technical development and strategic partnerships.

Increasing threats of extreme weather and climate urge action for resilience, mitigation and adaptation

High-impact weather, water and climate extremes have devastating consequences for the safety of people, national economies, urban and rural environments, and food and water security. Over the period 1998–2017, extreme hydrometeorological³ events accounted for more than 90% of the world's disasters.⁴ According to the Intergovernmental Panel on Climate Change, these extremes are expected to occur with greater frequency and intensity as greenhouse gas concentrations continue to rise. Sea levels rise, also linked to climate change, will further increase the threat to the world's population who are living in coastal regions.

Society's exposure and vulnerabilities to these hazards will be further exacerbated due to: population growth, reaching more than 9 billion by 2050; the development of human settlements, further urbanization and growth of mega cities worldwide, particularly in flood plains and coastal



³ Hydrometeorological hazards are of atmospheric, hydrological or oceanographic origin.

⁴ CRED-UNISDR, Economic losses, poverty and disasters 1998–2017, Geneva 2018.



zones; significant expansion of built environments and critical infrastructures to service human needs; and the relocation of vulnerable populations. To affect smart mitigation and adaptation policy development and decision-making by governments at all levels, international institutions, economic decision-makers and citizens, demand for increasingly useful, accessible, and authoritative meteorological and hydrological information and services is growing.

To support national agendas for disaster risk reduction and climate adaptation, WMO fosters the production and delivery of accessible and authoritative meteorological and hydrological information and services. This information is critical to strengthening resilience to the impacts of high impact weather, climate and water extremes. It provides an essential underpinning to support the development and implementation of National Adaptation Plans under the Paris Agreement and UN system needs on humanitarian and crisis management.

Growing capacity gap threatens global infrastructure and services

All WMO Members collectively contribute to the global meteorological and hydrological

infrastructure and facilities. While this collective global system is a public good that benefits all, the contribution and service performance among the Members continues to be uneven. Many NMHSs are facing substantial development needs and capability gaps in providing the weather, climate, water and related environmental information and services to meet national, regional and global requirements. The typical challenges center around maintaining sustainable infrastructure, human resources, and the ability to benefit from the advances in science and technology.

Such deficiencies are often present in those countries that are particularly vulnerable to natural hazards. These could jeopardize effective protection of life and property and slow down socioeconomic recovery. Moreover, globalization and the interdependence of critical infrastructure may further contribute to widening capacity gaps among NMHSs and related agencies. Narrowing the capacity gaps by sustaining government support, international cooperation, catalyzing investment and targeted assistance is more important than ever in view of the increasing frequency and intensity of weather-, climate- and water-related extremes.

Rapid advancements in science and technology and changing landscape of data and service delivery urge for innovative partnerships

Rapid progress in science and technology provides the opportunity to greatly improve services and to make them more accessible. Advanced weather, climate and hydrological services contribute to timely and effective planning and decision-making, resulting in greater socioeconomic benefits. The contribution of science and technology is further enhanced by accelerating the research-to-operations cycle in all fields.

This poses challenges to WMO since the 21st century systems for monitoring, prediction and service delivery are of the highest complexity increasingly large datasets and sophisticated numerical models. Therefore, WMO plays a major role in the transfer of modern knowledge and technology from developed to developing countries to enable them to benefit from the new information era.

The increasing demand for more and more diverse services from increasingly sophisticated and capable users changes rapidly the service delivery and business models in many parts of the world. Trends like “big data”, “crowd sourcing” and “open system”, the appearance of commercial observing networks, data and service providers, the affordability of digital technology, the introduction of artificial intelligence and cognitive computing to rapidly extract useful information from “big data”, all are game changers. The private sector, as well as academia and other players, contribute by accelerating the uptake of technological innovations, and assisting Members in offering more efficient, attractive and accessible services in support of their sustainable development goals. There are many opportunities for optimization and efficiency through integration of networks, computing power and service delivery through use of social media.

Members must support their NMHSs to better and readily adapt to this dynamic changing

environment, while WMO must elaborate the means to strengthen cooperation, mutual reinforcement and complementarity among state and non-state actors. It is important to advocate for the essential role of NMHSs in providing the critical infrastructure, competence and authoritative services for serving their governments’ fundamental public good function for protecting life and property.

OVERARCHING PRIORITIES

The Strategic Plan sets out long-term goals for 2030 horizon and strategic objectives, focused on addressing the most pressing developments and needs during the 2020–2023 planning cycle of the Organization. The Plan articulates expected outcomes expressing clear benefits to Members. As we translate these goals and objectives into detailed plans we will focus our resources in accordance with three overarching priorities:

- (1) Enhancing preparedness and reducing loss of life, critical infrastructure and livelihood from hydrometeorological extremes;
- (2) Supporting climate-smart decision making to build or enhance adaptive capacity or resilience to climate risk;
- (3) Enhancing socioeconomic value of weather, climate, hydrological and related environmental services.

Reflecting on these key priorities, there will be a need to involve a broad set of stakeholders and multidisciplinary expertise to address the current and future challenges facing society as a consequence of changing weather, climate and water patterns worldwide. To be effective, WMO fosters collaborative mechanisms to better align interests, build community and engage stakeholders and experts under weather, climate and water.

LONG-TERM GOALS AND STRATEGIC OBJECTIVES

Goal 1 Better serve societal needs: delivering, authoritative, accessible, user-oriented and fit-for-purpose information and services

Long-term outcome: Enhanced capability of Members to develop, access and utilize accurate, reliable and fit-for-purpose weather, climate, water and related environmental impact-based services to best support the policy-making and actions that implement sustainable development and mitigate weather, climate and water-related risks.

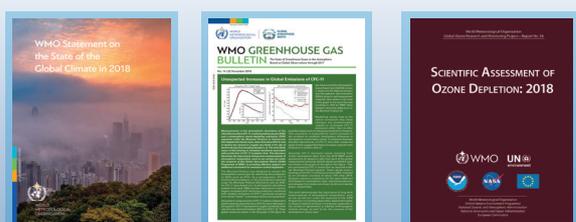
Objective 1.1 Strengthen national multi-hazard early warning/alert systems and extend reach to better enable effective response to the associated risks

Warnings on weather, climate, water and other environmental extreme events are essential for the safety of lives and livelihoods, recognized under UN Global Agenda and foundational to all governments' NMHSs' mandates. In many countries capacities to deliver warnings are lacking and will be addressed, particularly through focused action in the most vulnerable least developed countries.

Focus in 2020–2023:

- Enhance impact- and risk-based extended forecast and warning products and services to enable better preparedness and response to hydrological and meteorological events.
- Strengthen national capacity in multi-hazard early warnings.

World Meteorological Organization Authoritative flagship products



- Enhance access to official national meteorological and hydrological forecasts and warnings globally in support of regional and global requirements.

Objective 1.2 Broaden the provision of policy- and decision-supporting climate information and services

The Global Framework for Climate Services (GFCS) provides a unique platform for guiding and supporting activities across the value chain for climate services, which contribute to adaptation, mitigation and reduction of loss and damage. Availability and access to these products will be expanded and broadened to benefit all Members.

Focus in 2020–2023:

- Advance a climate service information system enabling all Members to access, and add value to, the best available global and regional climate information products and methodologies through improved processing, exchange and enhancement of information on past, present and future climate.
- Support Members' production and delivery of authoritative national climate information products and services in GFCS priority areas to adapt and respond to climate variability and change, including through participation in National Adaptation Plans, and to avert loss or damage as well as to optimize benefits from climate-related opportunities.
- Refine WMO products containing key climate indicators, seasonal outlooks, and improved characterization of extremes and associated impact information recognized as key inputs for international climate-related policy implementation and UN system action.

Objective 1.3 Further develop services in support of sustainable water management

To reduce related risks and subsequent losses, improved access to reliable global and regional information on the current status and future

conditions of water resources is critical, but stakeholders do not have a central source for this information. WMO will establish a system to enable easy access to essential water resources information to support informed decisions based on current and expected hydrological conditions.

Focus in 2020–2023:

- Enable better access to improved hydrological services, forecasts and warnings for water resources, drought and flood risk management and planning.
- Facilitate exchange of transboundary data and products through the Global Hydrological Status and Outlook System to enhance understanding of current and future water resources.
- Regular reporting on the state of global water resources.

Objective 1.4 Enhance the value and innovate the provision of decision-supporting weather information and services

Weather-informed decision-making for all modes of transport (aviation, marine, land), energy, agriculture, health, tourism, urban and other sectors will be raised to new levels, resulting in substantial productivity gains and positive environmental impacts. Service delivery approaches will be innovated to build Members’ capacity to provide modern, fit for purpose and high quality services.

Focus in 2020–2023:

- Enhance and increase weather services through the uptake of modern technology in service delivery, providing service excellence and implementing quality systems.
- Design and implement new weather and water prediction services for the specific needs of megacities and other urban areas.
- Provide NMHSs with further guidance and assistance in the assessment and enhancement of socioeconomic benefits of their services.

- Establish principles and guidance for successful public-private engagement, and facilitate a continuous dialogue between players and stakeholders based on collaboration and mutual reinforcement.
- Develop and adopt international standards, quality control mechanisms and recommended practices in a holistic manner for all service areas based on best national practices.

Goal 2 Enhance Earth system observations and predictions: Strengthening the technical foundation for the future

Long-term outcome: An integrated Earth system observational network increasingly automated and optimized to ensure effective global coverage. High quality fit-for-purpose traceable measurements feeding a continuous global data exchange underpinned by data management and data processing mechanisms.

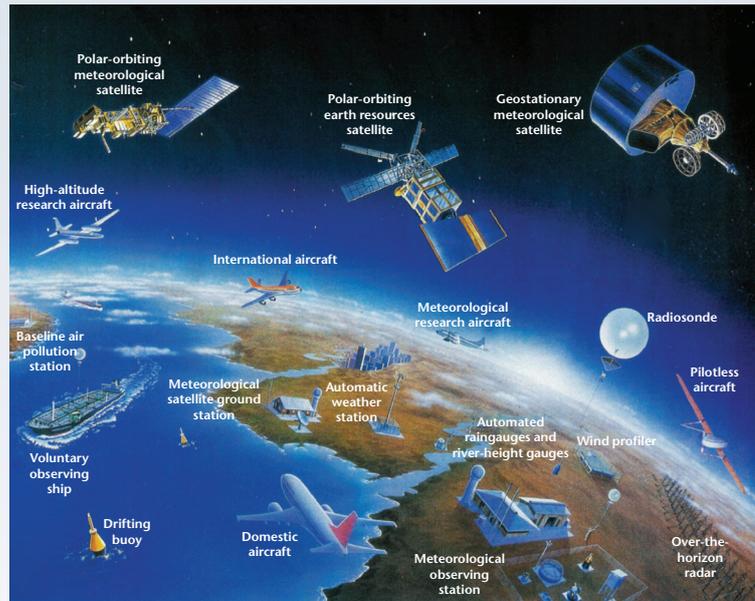
Objective 2.1 Optimize the acquisition of Earth system observation data through the WMO Integrated Global Observing System (WIGOS)

All in-situ and space-based observing programmes of WMO are being consolidated in a single integrated system, the WIGOS, which will be operational in 2020. Worldwide implementation of WMO standards, principles and tools will enable Members to optimize their observing networks. It will allow Members to leverage observing systems operated by all relevant government agencies, research entities, non-profit organizations and private companies, including also non-traditional data acquisition vehicles such as crowd-sourcing and the Internet of Things.

Focus in 2020–2023:

- Advance the implementation of WIGOS rapidly through coordinated global and regional plans, in particular further development and operational implementation of Global Basic Observing Network (GBON), electronic metadata inventories for all observing

WMO Integrated Global Observing System



platforms, along with quantitative tools to monitor their data delivery and data quality.

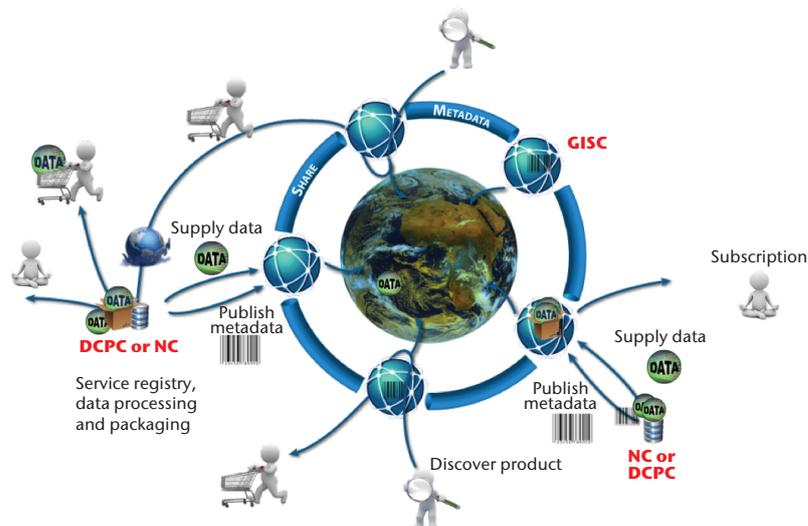
externally-sourced observations under the WIGOS umbrella.

- Increase compliance with regulations and standards, and identify critical gaps in observational data coverage and address that through the integrated design of observing networks.
- Develop additional regulatory and guidance material developed to facilitate integration of

Objective 2.2 Improve and increase access to, exchange and management of current and past Earth system observation data and derived products through the WMO Information System

The useful shelf life for observations accessed through the WIS is unlimited. Atmospheric composition, climate, hydrological and

WMO Information System



WMO Designated Global Data-processing and Forecasting System Centres

- Long-range and Climate Forecasting (over 30 days)

Updated on 04 July 2019



Legend

- ☉ World Meteorological Centres (WMCs)* (9)
- ☉ RSMCs(NRT***) Lead Centre for coordination of ADCP**** (1)
- ☉ RSMCs(NRT***) Lead Centre for coordination of LRFMME***** (2)
- ↑ RSMCs(NRT***) Lead Centre for coordination of LRF verification (2)
- ✚ RCC - Networks Regional Climate Prediction and Monitoring NODEs (11)
- ✚ RCCs Regional Climate Prediction and Monitoring (9)
- ★ GPC for ADCP**** (4)
- ★ GPC for Long-Range Forecasting (13)

* World Meteorological Centres are also Global Producing Centres for a) Deterministic Numerical Weather Prediction, b) Ensemble Numerical Weather Prediction, and c) Long-Range Forecasts.

**NRT stands for Non-Real-Time

***ADCP stands for Annual to Decadal Climate Prediction

*****LRFMME stands for Long-Range Forecast Multi-Model Ensemble

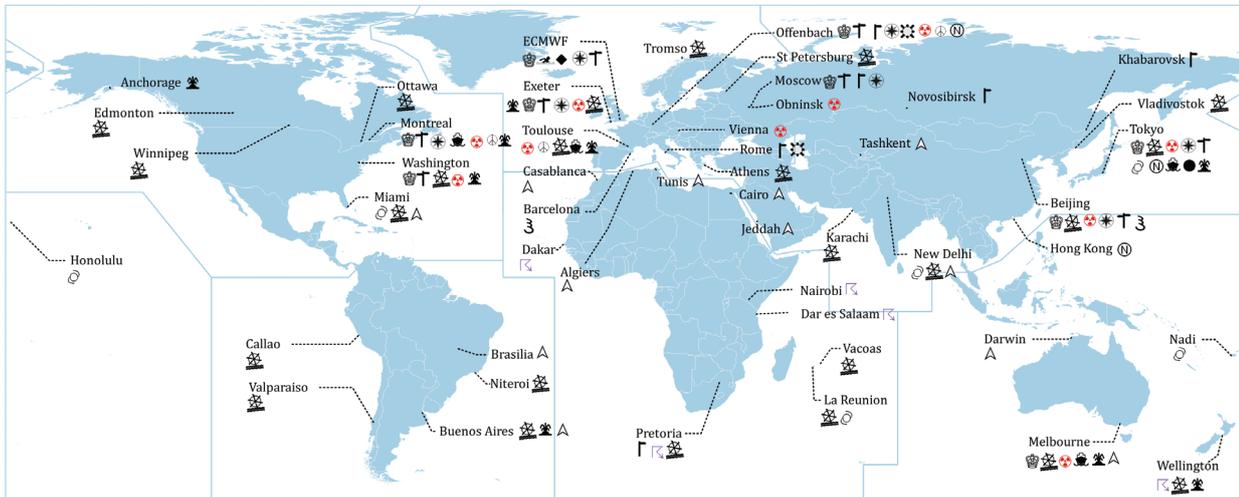
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WMO Designated Global Data-processing and Forecasting System Centres

- Nowcasting and Weather Forecasting (upto 30 days)

Updated on 19 August 2019



Legend

- ☉ World Meteorological Centres (WMCs)* (9)
- △ RSMCs Geographic Specialization (12)
- ⚓ RSMCs(NRT****) Lead Centre for Coordination of Wave Forecast (1)
- RSMCs(NRT****) Lead Centre for Coordination of EPS Verification (1)
- ◆ RSMCs(NRT****) Lead Centre for Coordination of DNV (1)
- 🌊 RSMCs Numerical Ocean Wave Prediction (4)
- 🌀 RSMCs Tropical Cyclone Forecasting (6)
- ⚡ RSMCs Severe Weather Forecasting (5)
- 🌊 RSMCs Marine Meteorological Services (24)
- ☢ RSMCs Nuclear Emergency Response** (10)
- ☣ RSMCs Non-Nuclear Emergency Response** (3)
- 3 RSMCs Sand and Duststorm Forecasts (2)
- Ⓜ RSMCs Nowcasting (3)
- ⚡ RSMCs Limited Area Ensemble NWP (2)
- ☉ RSMCs Global Ensemble NWP (7)
- Γ RSMCs Limited Area Deterministic NWP (6)
- ⊕ RSMCs Global Deterministic NWP (8)
- 🌋 ICAO designated Volcanic Ash Advisory Centres (9)

* World Meteorological Centres are also Global Producing Centres for a) Deterministic Numerical Weather Prediction, b) Ensemble Numerical Weather Prediction, and c) Long-Range Forecasts.

** RSMC for nuclear and non-nuclear emergency response have Atmospheric Transport and Dispersion Modelling (ATDM) capabilities.

*** NRT stands for Non-Real-Time

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oceanographic observations from all times will need to be continuously available and accessible for research, climate monitoring, re-analysis and other applications. Therefore, WMO will streamline and coordinate all WMO data management systems.

Focus in 2020–2023:

- Foster the continuous growth and evolution of WIS to accommodate and exploit the different technical capabilities of the Members and provide continued access to all observations acquired under WIGOS and all data generated under the Global Data Processing and Forecasting System for all Members.
- Further develop regulatory and guidance material governing international exchange of data, along with strengthened monitoring of compliance.
- Consolidate and further develop WMO data management systems and practices through WIS to help ensure that all observational data and key products are properly archived.

Objective 2.3 Enable access and use of numerical analysis and Earth system prediction products at all temporal and spatial scales from the WMO seamless Global Data Processing and Forecasting System

Major weather patterns are routinely predicted more than a week ahead, tropical cyclone landfalls are predicted accurately several days ahead, and even small-scale severe weather with high local impact is often forecasted with enough lead-time to mitigate its impact. WMO will further promote the development of Earth system Prediction, facilitate the use of cascading seamless system of numerical models⁵ operated by centres around the world and coordinated through WMO to enhance national forecasting capabilities of all Members.

Focus in 2020–2023:

- Advance the GDPFS to accommodate increased emphasis on probabilistic forecasting and coupled Earth system modelling to improve

predictions over time scales ranging from long-term climate variability to seasonal/sub-seasonal to short-term weather events.

- Further develop regulatory and guidance material governing the functioning of the GDPFS.
- Enhance the GDPFS to enable all Members to develop and/or improve their own national predictive capabilities benefiting from advances in quantitative model- and impact-based forecasting products.

Goal 3 Advance targeted research: Leveraging leadership in science to improve understanding of the Earth system for enhanced services

Long-term outcome: Leveraged global research community resulting in fundamental advances in the understanding of the Earth system, leading to improved policy-relevant advice and predictive skill at all time scales in a seamless context. This will result in the strengthened forecast and warning performance of all Members as research and operations coalesce to apply the best science to all components of the service value chain.

Objective 3.1 Advance scientific knowledge of the Earth system

WMO is uniquely placed to step up to the challenges and opportunities associated with fundamental Earth system science questions and will lead a global research effort that draws on the best expertise within NMHSs, academia and research institutes.

⁵ “In the context of WMO, seamless prediction considers not only all compartments of the Earth system, but also all disciplines of the weather–climate–water–environment value chain (monitoring and observation, models, forecasting, dissemination and communication, perception and interpretation, decision-making, end-user products) to deliver tailor-made weather, climate, water and environmental information covering minutes to centuries and local to global scales” (WMO/WWRP, Catalysing Innovation in Weather Science: WWRP Implementation Plan 2016–2023, 2016).

Focus in 2020–2023:

- Address overarching challenges in Earth system scientific research, modelling, analysis and observations, on topics such as atmospheric composition, the ocean/atmosphere/ land coupling, cryosphere, clouds and circulation, water availability, droughts and flooding, regional sea level and coastal impacts, high-impact weather, and climate variability and change.
- Prioritize research implementation plans and mobilize broad scientific community to help leverage global research potential to generate enhanced knowledge and understanding of the Earth system and related weather, water and climate linkages.
- Support advancement of WMO-coordinated priority scientific assessments and services.

Objective 3.2 Enhance the science-for-service value chain ensuring scientific and technological advances improve predictive capabilities

WMO demonstrates the value of translating science into enhanced operational service delivery with societal benefits. Considering the exponential growth in the expectations of users and stakeholders in improved predictive capabilities and socioeconomic relevance, WMO will work to ensure an effective science-for-service transition by accelerated research to operations applications.

Focus in 2020–2023:

- Improve predictive capabilities in high-impact weather forecasting, seasonal to sub-seasonal to decadal prediction, polar prediction, urban and environment prediction and water cycle prediction.
- Enhance relevance and utility of products and services through a broader engagement of social science expertise and users including the consideration of local wisdom and local knowledge and closer collaboration

between physical and social scientific groups by appropriately addressing sociocultural aspects.

Objective 3.3 Advance policy-relevant science

In the next decade science is expected to provide tools and solutions for suitable use in the implementation of national and international policies and actions. WMO key research initiatives, working closely with its partners, will advance scientific assessments and climate projections, authoritative global reports on greenhouse gases and other atmospheric constituencies, and new technologies to better quantify the carbon, energy and water cycles.

Focus in 2020–2023:

- Implement an integrated global greenhouse gas information system to enable Members to improve the quality and confidence in national greenhouse gas emission inventories.
- Enhance the body of scientific knowledge assessed by IPCC and other global scientific reports.
- Improve the basis of understanding for water resource management decisions drawing upon improved capabilities, especially in sub-seasonal to seasonal range.

Goal 4 Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens

Long-term outcome: Improved access to regional and global monitoring and prediction systems and utilization of weather, climate and water information and services bringing tangible benefits to developing Members, in particular least developed countries, small-island developing states and Member island territories. This will be

achieved through strategic investments, technology transfer, knowledge and experience sharing, and by taking due account of social inclusion and gender factors.

Objective 4.1 Address the needs of developing countries to enable them to provide and utilize essential weather, climate, hydrological and related environmental services

The increasing vulnerability of many societies and economies to natural hazards and extreme weather events and the gaps in the capabilities of NMHSs to deliver adequate services – particularly those of developing countries, least developed countries and small island developing States and Member island territories – require WMO to strengthen its capacity development efforts, building upon existing capacities in NMHSs, taking advantage of the capacity of developed country NMHSs in twinning and other arrangements, and leveraging the investments of the UN system and other development partners towards this goal.

Focus in 2020–2023:

- Improve understanding of the specific capacity needs of each developing country with respect to technical, institutional and human resources, to enable them to provide adequate weather, climate, hydrological and related environmental services, in particular for protection of life, property and economic productivity.
- Mobilize strategic resources involving development partners and national governments and assisting NMHSs to develop long-term strategies and operational plans to address the identified capacity needs.
- Increase visibility and sustainability of NMHSs in LDCs and SIDS by demonstrating, promoting and communicating the societal-economic value of their weather, climate, water and related environmental observations, research and services.

Objective 4.2 Develop and sustain core competencies and expertise

There is a growing deficit in the capability and numbers of adequately educated and trained staff needed to provide weather, climate, hydrological and related environmental services in many countries and territories. Additionally, rapid advances in scientific innovation and technological developments and means for public communication require corresponding and continuous training of NMHS personnel. WMO will increase its training and long-term education activities to help Members to obtain and maintain needed competencies.

Focus in 2020–2023:

- Support Members in the recruitment and retention of staff with the appropriate qualifications and competencies required for effective service delivery through appropriate education and training programmes focused on WMO standards and recommendations.
- Support cooperation between developing and developed Members and full utilization of the WMO Regional Training Centres.

Objective 4.3 Scale-up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery

Enhance the full spectrum of the weather, climate and hydrological services delivery to support the protection of life, property and the environment and the security of food production, energy and water resources. Scale up partnership investments to minimize cost and maximize the opportunity for the networks to be sustainable long beyond the lifetime of donor funded projects.

Focus in 2020–2023:

- Strengthen partnerships and alliances to share knowledge, technology and expertise with particular emphasis on the use of twinning arrangements.
- Enter into strategic, functional and mutually beneficial development partnerships

and alliances with the key relevant UN, intergovernmental and nongovernmental organizations, development agencies, the private sector, and academia.

- Provide leadership in promoting the principles on which global meteorology is built, emphasizing authoritative voice, common standards, data and product sharing.

Goal 5 Strategic realignment of WMO structure and programmes for effective policy- and decision-making and implementation

Long-term outcome: Improved relevance, effectiveness and efficiency of the constituent bodies and implementation of this Strategic Plan through closer alignment of structures and processes with the strategic goals of the Organization.

Objective 5.1 Optimize WMO constituent body structure for more effective decision-making

Ensure the effective and efficient use of resources, including those of Members, through a more strategic focus of the WMO action, and constituent body constructs, structures and processes adapted to implement the Strategic Plan.

Focus in 2020–2023:

- Implement the decisions of Congress on optimized constructs, processes and duties of WMO constituent bodies and organs to enhance the efficiency and effectiveness of the Organization and good governance.

Objective 5.2 Streamline WMO programmes

WMO scientific and technical programmes need to be periodically reviewed by the Congress to ensure their relevance to the Strategic Plan of the Organization as well as their effectiveness and efficiency of delivery. This will be done based on the principles of quality management, cost-effectiveness, and optimal support by contributing experts and the Secretariat.

Focus in 2020–2023:

- Streamline WMO scientific, technical and service programmes to enable the Organization to better achieve the goals and objectives set in the Strategic Plan, ensuring coherence and consistency between the strategic, programmatic and financial frameworks.

Objective 5.3 Advance equal, effective and inclusive participation in governance, scientific cooperation and decision-making

Organizations that respect diversity and value gender equality demonstrate better governance, improved performance and higher levels of creativity. Gender equality and the empowerment of women are further key to scientific excellence and essential to meeting the challenges of climate change, disaster risk reduction and sustainable development, particularly Sustainable Development Goal 5.

Focus in 2020–2023:

- Advance gender equality across the Organization, especially in governance and decision-making, in implementation of SDG5 and the WMO Gender Equality Policy.
- Provide equitable access to, interpretation of and use of information and services to women, men and all individuals irrespective of their gender and in particular to those from marginalized groups.
- Attract more women, girls and individuals from marginalized groups to science and employment in NMHSs through showcasing role models and investing in human capital.

IMPLEMENTATION OF THE STRATEGIC PLAN

This Strategic Plan will guide the decisions and activities of WMO in helping to realize its 2030 vision, and will serve as the focus for the upcoming

financial period 2020–2023, bringing the greatest benefits to Members.

The Strategic Plan takes into account strategic, operational, financial, compliance and reputational risks for the Organization and its Members as outlined in key drivers.

The integrated WMO Operating Plan 2020–2023 presents time-bound programme activities and

projects, result-oriented budgets and success indicators. The latter are available on the WMO website and the WMO Community Platform.

The Operating Plan forms the basis for resource allocation, and defines the risks and performance matrices against which to assess progress to achieve expected outcomes through the WMO Monitoring and Evaluation System.

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