Meteorology and its related fields, such as climatology, hydrology and environmental sciences, have been a global interest for more than 150 years. By the mid-1950s, almost every country had established a national agency to deal with the collection of data, and later, the provision of forecasts and life-saving weather warnings.

Although the early years of the meteorological sector had shown some elements of enterprise, the various participants, such as publicly funded government agencies (national meteorological and hydrological services), academic institutions and private manufacturing industries, were not regarded as a single enterprise. The connections between the various stakeholders were not considered to be close, at national or international level.

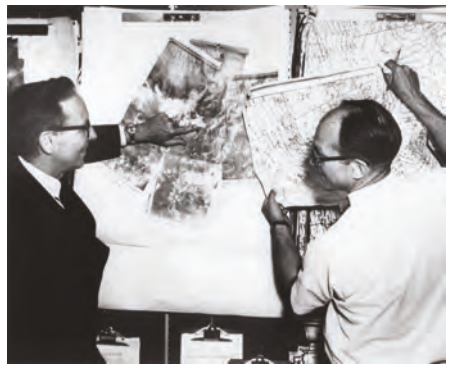
It wasn't until the establishment of the World Meteorological Organization (WMO) as an intergovernmental organization and UN specialized agency in 1951 that the weather sector became globalized. The private weather sector grew substantially at the same time – combined, the two evolved into what we today call the Global Weather Enterprise (GWE).

MOVING WITH THE TIMES

Today, there is growing recognition that in order to meet the societal needs of the 21st century for decision-support information, the main stakeholders of the GWE should collaborate more closely to reshape the meteorological sector and promote innovative, efficient and sustainable operational and business solutions. Weather-informed decision making has become a mainstream activity at all levels, building demand for highly accurate localized information in support of disaster risk management; long-term climate projections for strategic planning by governments and international bodies; tailor-made products to mitigate weather and climate sensitivity of industrial sectors; hydrometeorological information to help water management; and reliable, accurate, easily accessible information for people in their daily activities.

Observations support growth in many economic sectors, including agriculture

In years past, the analysis of weather charts was time-consuming and manual



Forum objectives

The GWE Forum's terms of reference include:

a) Helping to identify and exploit opportunities and to mitigate risks associated with the growth and development of the GWE. In doing so, the Forum builds upon existing capacity and capabilities across the weather enterprise to identify the potential for further development;
b) Contributing to the establishment of a common understanding of the GWE landscape and related roles and responsibilities of its stakeholders. It will work on developing agreed principles of mutually beneficial partnerships and code of ethics in the GWE context;
c) Keeping in focus the need of the developing and least-developed countries and making proposals that engage the public and private sectors to create solutions to improve their capacity and engagement in the GWE;
d) Providing input to the WMO Executive Council, HMEI Council, and to relevant global practices and groups within the World Bank Group on matters related to the GWE;
e) Recommending studies and evidential reports on the status and progress of the GWE;
f) Coordinating the publication of position papers and other communication materials regarding the growth and development of the GWE;
g) Promoting a series of dialog opportunities for the three sectors of the GWE to meet and discuss developments;
h) Exploring ways to engage and involve the community as widely as possible.

The GWE, however, is undergoing major structural change.[1] Private sector organizations now have the capability to do far more than in the past, from providing observations and undertaking global modeling, to providing value-added services such as cloud-based high-performance computing. The science and technology of the GWE is also advancing rapidly, with more accurate predictions over longer timescales. These changes need to be reflected in corresponding shifts in infrastructure investments, education and training. Therefore, it is highly necessary to engage in a constructive dialog between all partners.

For decades, the GWE has comprised of intertwined contributions from the public and private sectors, with support from academia, and greater engagement between all parties would only lead to further growth and prosperity for the whole enterprise. Failure to manage the latest structural changes may have a detrimental impact on inter-industry collaboration and could even have significant consequences for the goals set forth by the UN Agenda 2030,[2] the Sendai Framework[3] and Paris Agreement[4].

ANNUAL LOSSES FROM DISASTERS AVERAGE US$300bn

THE CHALLENGE

The World Economic Forum's (WEF) *Global Risks Perception Survey 2017-2018* lists weapons of mass destruction, extreme weather events, natural disasters, failure of climate change mitigation and adaptation, and water crises, as the top-five risks that will have the biggest impact in the next 10 years. The four environmental risks all have a higher than average likelihood of occurrence and are tangibly affecting human well-being, including health and economic prosperity.

WEF 2018 highlighted the need to build a shared future that better predicts extreme risks and fosters the resilience required to mitigate these risks. More than one billion people have lifted themselves out of poverty in the past 15 years, but climate and disaster risks threaten these achievements.[5]

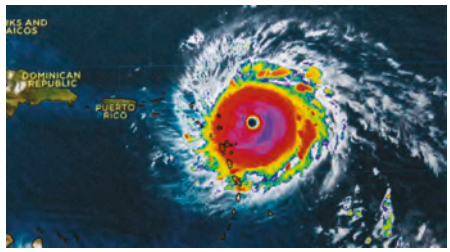
Global asset losses from disasters are now reaching an average of more than US$300bn per year. A recent World Bank report found that the impacts of disasters on well-being are equivalent to a US$520bn drop in consumption (60% more than the asset losses usually reported) and force some 26 million people into poverty every year.

Marshalling the combined resources of the GWE is an essential step in providing society with the means to increase their resilience to the increasing risks associated with more extreme weather events. In *The future of the Global Weather Enterprise: Opportunities and risks*, Thorpe and Rogers highlight the need for the GWE to grow if it is to fulfill the requirements of today's society for weather information, and that this growth will be best achieved by improved and more frequent dialog and co-designed initiatives between the various actors in the public, private and academic sectors.

GWE FORUM

The WMO, the Association of Hydro-Meteorological Equipment Industry (HMEI), and the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank Group, created the GWE Forum

Real-time satellite imaging enhances our understanding of, preparation for and response to weather events



Hurricane Maria ravaged the Caribbean islands in 2017, causing an estimated US$95bn in damages and 146 fatalities

First meeting of the Global Weather Enterprise Forum held in April 2018 at the InterMET Asia Conference, Singapore

to facilitate dialog among the public, private and academic sectors. The Forum is an independent consultative platform to assist the sectors in considering the necessary coordinated actions to address the growth of the GWE, and to make recommendations for consideration by relevant bodies, including the WMO and development partners.

As Thorpe and Rogers demonstrate, the GWE is facing increasing challenges, which may, among other things, require deliberated guidance from the Forum. Such challenges include, but are not limited to: the growing demand for weather and climate information; technical innovation; the public support for fundamental research; the integrity and sustainability of the global observing system; the growth of private sector capabilities; the structure of international financing; the roles of the private and public sectors; the growth of a service-based approach toward the provision of data; weather information standards and access; and support for low- and middle-income countries. The GWE must also address education and training, with greater focus on communication programming, big data statistics, and machine learning.

Thanks to the technological advances of modern society, the GWE also has more opportunity to combine its resources and propose innovative ways of working together to maximize the overall benefit to society. A variety of relationships between national and international players in the public, private and academic sectors are possible all along the meteorological, climatological and hydrological value chain, which has the potential to produce better, more sustainable, cost-effective services to society if they are mutually beneficial, properly funded, ethical and respectful of sovereignty.

Consequently, the GWE Forum activities will focus on: identifying the attributes of, and ways to remove, the barriers to 21st century meteorological and hydrological information services; and fostering the emergence of partnerships within the GWE to maximize socio-economic benefit of meteorological and hydrological information worldwide.

In that context, the areas of consultations in the Forum include: incentivizing the creation of fit-for-purpose data by all sectors; making all relevant information flow more freely; developing and maintaining the GWE workforce; strengthening application and basic research, and speeding the deployment of proven applied science; uptake of innovation in service delivery; and advancing work on sustainable business models, especially through rational public-private partnerships.

The GWE has reached a turning point where it has the opportunity to evolve and maximize its support of the UN's Sustainable Development Goals. The GWE Forum is fostering dialog inside the GWE in this respect, taking into account the important guiding principle that everybody should have access to high-quality weather information and that no one should be left behind, especially those in low- and middle-income countries that are highly vulnerable to weather and climate extremes. ▮

Authors
Michael Staudinger, ZAMG, Austria; Patrick Benichou, Meteo France International; David B Parsons, University of Oklahoma, USA; Alan Thorpe, David Rogers, Vladimir Tsirkunov, Makoto Suwa, and Anna-Maria Bogdanova, GFDRR/WBG; Brian Day and Bryce Ford, HMEI; and Dimitar Ivanov and John Hirst, WMO

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4) United Nations, 2015b, Paris Agreement
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Find out more…

The Global Weather Enterprise will be hosting a two-day Weather Enterprise conference in parallel with this year's CIMO TECO-2018, which is being held alongside Meteorological Technology World Expo 2018 on October 9-11, in Amsterdam. The conference, which will be held on October 11-12, has been organized by the WMO in cooperation with the World Bank GFDRR and the Association of Hydro-Meteorological Equipment Industry (HMEI). It will focus on two key themes: data and business models. To read more about the event, turn to page 66.