

**Meeting Notes
with Recommendations**

AGENDA

1. Opening and introduction
2. Adoption of agenda
3. Review progress actions after GWEF/3
4. Forum's goals:
 - a. Mutually beneficial engagement
 - b. Long-term capacity building
 - c. Education and training of the next generation scientists and technologists
 - d. Improved access and exchange of global weather information
5. Forum's achievements, issues and way forward:
 - a. Elaborating a common vision and goals
 - b. Membership, working arrangements
 - c. Communication and outreach
6. Information on coming events 2019 (InterMET Asia events, WMO Cg-18)
7. Time, place, agenda and attendees of next meeting
8. Any other business
9. Closure

1. Opening

1.1. The 4th GWE Forum meeting (GWEF-4) was held on January 10, 2019 by Webex and in Phoenix, AZ simultaneously on the margins of the AMS Meeting. Mr. Michael Staudinger, Director General of Austria's Central Institution for Meteorology and Geodynamics (ZAMG), PR of Austria with the WMO, chaired the meeting in his role as co-chair of the GWEF.

1.2. The GWEF-4 was attended by 20 participants including 10 of its members, members of the GWE Coordination Group, invited experts, and observers. The list of participants is in **Annex 1**.

2. Progress reports on the agreed tasks

2.1. Update on the tasks was submitted prior the meeting and posted on the internal web-site. It will be reposted on the GWE Forum website as part of the materials migration.

Task 1: Make all relevant information flow more freely by removing barriers and by supporting a culture that is user oriented and includes all PPA sectors.

Task 1, Sub-Task 1.1. – Develop a market place concept for data exchange/sharing.

The creation of the Slack channel allowed for a very elaborate online discussion of various aspects of the WDX concept that was presented in Amsterdam. All the questions raised during this exchange were addressed and reflected in the document. Additional comments were made during the meeting: one on the critical part of data sharing is detailed meta data, as well as the access of research community to the data sets. Nevertheless, the concept has reached the stage where it is beneficial to bring the idea to the WMO community for further discussion.

WMO noted that a study of emerging data challenges including a technical and political risk assessment is currently being done by an ad-hoc team of the WMO Commission for Basic System (CBS). The report of this team will be submitted for consideration by the 18th Congress in June 2019. Inputs to this discussion could be provided to WMO through the Executive Council Working Group on Strategic and Operational Planning (EC WG-SOP) which will meet in March/April. Such inputs could be done by a member of the SOP group. It was also noted that a session of the WMO Regional Association I (Afrika) will be held late February and will provide an opportunity to discuss specific issues of data exchange in developing and data-sparse countries.

Forum agreed that:

- a) The draft report on emerging data challenges when ready for publishing to be shared by the WMO with the Forum members (note: a draft version is already available as part of the EC-70 report which could be downloaded from library.wmo.int);
- b) It will be necessary to work further on risk assessment for all sectors with regard to availability and access to data in the future
- c) Forum and CG members are invited to contribute to the discussion on data exchange during the regional conference before the RA I session (18-19 February, Cairo) and inputs proposed to the AMCOMET meeting that will follow.

Task 1, Sub-Task 1.3. - Monitor current exchange in terms of data quality and quantity to identify and inform major deficiencies; suggest correction measures.

The work on creating the on-line data monitoring tool is ongoing. The new WIGOS data quality monitoring system (WDQMS) is going through pilot stage and is expected to be fully operationalized by mid-2019 after having been approved by the World Meteorological Congress. In parallel, WMO is working on the new concept and requirements for the Global Basic Observing Network (GBON) which will be submitted for approval by the Congress. This should lead to improvement of temporal and spatial availability of basic data. Concept notes and additional information documents on the GBON are available on the WMO website.

The Forum raised several questions on the availability of data and need for more detailed information on the use and upload of data by countries. This evidence-based information would help build a case for a review and improvement of the data exchange systems.

The Forum agreed:

- a) To share the links describing GBON and WDQMS with the Forum members as well as referencing them on the GWE Forum website.

Task 1, Sub-Task 1.4. - Set, revise and enforce data and information standards.

Additional input was collected from HMEI and other sources on this subtask and the results will be presented during the next GWEF meeting in Singapore.

The Forum agreed:

- a) To review this task in more details during the next meeting.

Task 2: Developing and maintaining workforce for the GWE

Task 2, Sub-Task 2.1. - Expand training (by academia predominantly) and enhance skills and competencies in the whole global weather enterprise value chain.

The challenge of attracting top quality students to the atmospheric science and adjust curriculum to the demands of the evolving GWE remains highly important. In several meetings it was suggested that lack of sufficiently trained and educated personnel is a limiting factor in projects. It would be important to establish the extent to which the diminishing workforce is a serious factor in the developing countries. At the same time, the WMO has done a great job in providing training mostly focused on the public sector (NMHS personnel). Given the growing role of the private sector, its specific training needs should be addressed in the future training programs. In addition, capacity for applied research should be strengthened in the developing countries. Seamless coordination between operational and scientific community remains to be a challenge that results in communication disconnects and public confusion.

The Forum discussed whether HMEI could be the link between academia and private sector communicating the needs and challenges. At the same time, Forum was made aware of the legal barriers that exist in applying academic research in the private sector.

The Forum agreed:

- a) To continue developing proposals for measures to make meteorology an attractive field of studies.

- b) To analyze successful models that work and see how to apply them in the context of the GWE.
- c) The paper on this task will be finalized and submitted to the WMO, HMEI and IAMAS for consideration in their respective research and training actions.

Task 3: Strengthening application and basic research and speeding the deployment of proven applied science, especially in the areas where it strengthens the GWE

Task 3, Sub-Task 3.1. – Update will be provided during the next GWE Forum meeting.

Task 4: Advance work on sustainable business models

Task 4, Sub-Task 4.1. - Development partners to investigate and promote implementation of business models that focus on data provision and service delivery in a long-term sustainable way. The work on the pilots (Nepal and Myanmar) launched by the GFDRR is in progress. The objective of the pilots is to identify possible business models that NMHS could consider for sustainable operations. The study on the PPE is going through the review process and will be presented in the public domain by the end of June 2019. GFDRR plans to have some visibility events, at some occasions (e.g. InterMet Asia, a side event at the WMO Congress).

The Forum agreed:

- a) To share the outcomes of all the pilots for further discussion during (or prior) InterMET Asia and next GWEF meeting.

Sub-Task 4.2. - Complement the above by proposal/methodology for systemic performance assessment of the service delivery and corrective actions.

A list of existing indicators of the WMO Regional Association II Strategic Operating Plan which are related to the indicators of the Global Target (g) of the Sendai Framework were proposed as initial draft indicators for monitoring systemic performance assessment of development partners' business models on assisting NMHSs' (data provision and) service delivery. It was noted that reporting indicators of the Sendai Framework is challenging for many countries (only 30%? Country reported). Indicators proposed should be modified as they are more inclusive of private sector activities and other services provided by NMHSs in addition to that for DRR.

The Forum agreed:

- a) to note the approach of using Sendai Framework to establish indicators for performance effectiveness with the understanding that it is not the full picture.
- b) That the task should continue and expand beyond DRR-related performance measures.
- c) That a set of KPIs should be developed based on countries' compliance with the international requirements (WMO) along the value chain; such KPIs should provide incentive for improved compliance.

3. Vision Statement

The revised vision statement was submitted to the attention of the Forum and adopted by the members. The document is aimed to help people outside of the forum to understand its main goals and vision.

The Forum agreed:

- a) To share it on the GWEF website.

4. Data Policy Overview

Additional output on data policy was produced in the context of the task 1.2 which was completed. A fair and sustainable data policy is the key for the Global Weather Enterprise, the global community of producers and users of weather information. Relative success based on Resolutions 40, 25 and 60 has been achieved, however, data gaps still exist in some regions and new approaches should be found for filling those gaps. The presentation delivered to the forum investigates possible ways to cover the gap, including incentive-driven marketplace approach. The GBON concept will establish requirements for basic data sets which will be shared globally at more frequent time intervals than today. The regional associations should play a strong role in identification and follow up of data gaps through cooperation with those countries that lack capacity, including financing for their observing networks, e.g., upper-air observations. The issues should be looked at collectively from proper business perspective.

It was further discussed that there is very little available information on the use of data. There is a need to develop a good methodology to measure the usefulness and the benefits from data. This also applies to the research community. We should not forget about historical data that is crucial for climate research.

The Forum agreed:

- a) To agree on the matrix and to expand the section on actions and possible solutions
- b) To provide an executive summary in addition to the presentation. This summary would help to see the link to the WDX.
- c) To prepare an issue paper for the attention of the Congress (provided that it is submitted through the EC WG-SOP) with the suggestion to address these issues through appropriate group and to take this agenda forward with the aim of developing solutions/strategy on the end-to-end value chain of weather and climate data.

5. Membership and Working Arrangements

One year of GWE Forum operation demonstrated that the Forum has matured into a functional mechanism with its clear goals and outreach. At the same time, there are several lessons learned:

- There are difficulties to identify members from sectors and ensure their participation while there is an interest from the industry to participate in the Forum;
- There are no agreed procedures on how the members should be selected;
- Increasing number of tasks and activities require Secretariat support.

Key challenge is to find a balance between keeping the Forum an open structure but manage its size in order to maintain it as a highly functional structure. It was proposed to use as an example the organization of the WEF groups that work on global challenges; their usual size is of up to 20 members.

Another comment that was shared during the meeting was a suggestion to reverse the trend and use the GWEF meetings to actually work on the task items and brainstorm

together rather than an opportunity to report on the progress as it currently is. Reporting can be done after the meeting electronically.

The Forum agreed:

- a) The coordination group to discuss how to handle the membership (benefits and disadvantages of increasing the membership, and if increasing – by how much?)
- b) To consider reformatting the next GWEF meeting during the InterMET Asia;
- c) Consider the need for funding mechanisms for Forum activities.

6. Communication and outreach

The website on the GWE Forum was launched and is now fully operational.

The group discussed the option of having an opportunity to have a slot at the Executive Council Meeting once a year to present the work the Forum is doing and highlight key agenda items. The annual meeting between WMO and HMEI could potentially serve this purpose.

Next Meetings:

The next meeting will take place during the InterMET Asia 2019 (Singapore) on March 25. On March 26 the results of the Forum work will be reported to a wider audience during the GWE Workshop.

The World Meteorological Congress (3-13 June 2019) will be supplemented by the World Met Expo (5-6 June 2019). There will be a session on the GWE (no exact date yet). Potentially, another meeting of the GWEF could be organized in the margins of the Forum.

The Forum agreed:

- a) To discuss options to organize GWEF meeting during the Congress or a side event on the GWE.

APPENDIX 1**GWEF/4, 10 January 2019, Phoenix, Az****LIST OF PARTICIPANTS**

	Name	Position	E-mail	onsite	webex
Pr	Daisuke ABE	Chief Service Officer Weathernews Inc. (WNI)	dskab@wni.com	x	
Pr	Peter Platzer	Chief Executive Officer Spire Global, Inc.	peter@spire.com	x	
Pr	Alessandra Liberto	Business Development Manager, Campbell Scientific Inc.	aliberto@campbellsci.com		x
Pr	Patrick Benichou	Chief Executive Officer Meteo-France International	benichoup@mfi.fr		x
Ac	David Parsons	School of Meteorology, University of Oklahoma	dparsons@ou.edu		x
Ac	Leonard Smith	Department of Mathematics, University of Oxford	lenny@maths.ox.ac.uk	x	
Pu	Michael Staudinger	PR Austria	michael.staudinger@zamg.ac.at	x	
Pu	Agnes Kijazi	PR Tanzania	agnes.kijazi@meteo.go.tz		x
Pu	Tatsuya Kimura	Director, Public Awareness and Partnerships Division, JMA, Japan	tkimura@met.kishou.go.jp		x
Pu	Roar Skålin	Director General Norwegian Meteorological Institute	roars@met.no		x
	Satoshi Ogawa	JMA	s.ogawa@met.kishou.go.jp		x
	Lance Steele	Weathernews Inc		x	
	Brian Day	HMEI	brian.day@campbellsci.ca	x	
	Bryce Ford	HMEI	bford@spectrasensors.com	x	
	Naohisa Koide	WB GFDRR	nkoide@worldbank.org	x	
	Anna-Maria Bogdanova	WB GFDRR	ambogdanova@worldbank.org		x

GWEF/4, 10 January 2019, Webex/Phoenix, AZ - Meeting Notes

	Alan Thorpe	WB GFDRR	alan.thorpe@gmx.com	x	
	David Rogers	WB GFDRR	drogers@bluewin.ch		x
	Dimitar Ivanov	WMO	divanov@wmo.int	x	
	John Hirst	WMO	hirstjohn1@msn.com		X
	Rob Varley	WMO	robert.a.varley@gmail.com		X
	Jack Hayes	AMS	jack.hayes422@aol.com	x	