

**Meeting Notes  
with Recommendations**

**AGENDA**

1. Opening
2. GWEF composition and administrative questions
3. Progress reports on the agreed tasks
4. Discussion on Definitions pertinent to GWE
5. Information on recent and coming events
  - a. Briefing on WMO Executive Council Session (EC-70) decisions relevant to GWE
  - b. GFDRR analytical study on PPE in hydromet services
  - c. Other events
6. Actions and timelines for completion

## 1. Opening

1.1. The 2<sup>nd</sup> GWE Forum meeting was held on July 9, 2018 via Webex, three months after the inaugural meeting in Singapore in April 2018. Dr. David Parsons, Professor of Meteorology, University of Oklahoma, chaired the meeting.

1.2. The meeting was attended by 24 participants, including 11 GWEF members, invited experts, advisers and representatives of the supporting organizations – the Association of Hydro-Meteorological Equipment Industry (HMEI), the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Meteorological Organization (WMO). The list of participants is in **Annex 1**.

## 2. GWEF composition and administrative questions

2.1. *Academic representation:* The GWE Coordination Group is still looking for representatives of academic sector to join the GWE Forum. Several candidates that have been approached, but no firm commitments have been made.

2.2. *Public Sector representation:* The GWE Coordination Group will try to identify additional representatives from the public sector for the GWEF to ensure balanced representation especially from Africa.

2.3. *GWE Coordination group:* In line with the agreements reached during the 1<sup>st</sup> GWE Forum, the group that consists of the representatives from the GFDRR, HMEI, WMO and three co-chairs of the Forum representing each sector is fully operational now. GWE CG holds meeting every two weeks where the group tries to advance as many activities identified by the Forum as possible. The GWE CG is in the process of strengthening representation from the academic sector. The incoming Secretary-General, Steve Ackerman, of the International Association Meteorology and Atmospheric Sciences (IAMAP) has agreed to participate in this capacity.

2.4. *Memorandum of Understanding:* Responding to the decision of the GWEF-1, the CG is finalizing the Memorandum of Understanding (MoU) between WMO, HMEI and the World Bank which recognizes the status and visibility of the GWE Forum by all three parties.

2.5. *Publications:* GWE CG is finalizing the paper on the GWE for the submission for the Meteorological Technology International journal. Another publication has been accepted by the Bulletin of the American Meteorological Society (BAMS) which describes the GWE and mentions the Forum (<https://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-17-0194.1>), as well as the letter response to the letter by Serra et al on the global observing system and the contribution of the private sector. These papers will be posted to the GWE website.

## 3. Progress reports on the agreed tasks

3.1. Contributions on most of the agreed tasks were submitted prior the meeting. It was agreed that for the future GWEF meetings the documents would be submitted

earlier to give sufficient time to the GWEF members to study them. The full set of documents is available on the GWE website.

**Task 1, Sub-Task 1.1.** There is a shared understanding of the importance of having the largest amount of data being available to the largest number of people in the easiest form possible. The idea of the weather data exchange (WDX) 'market' solution stems from this understanding. The presented draft is the first attempt to visualize how such a trading mechanism might look, and how it can create incentives for different stakeholders, both public and private, to participate. The GWEF discussed the risks of a possible transition period and the need to align the new proposed data exchange approach with the existing WMO systems like WIGOS and WIS to facilitate such a transition. Also, the Forum discussed the need to identify a mechanism for quality control of data to ensure that data being exchanged follow quality standards including those established by the WMO.

**The Forum agreed:**

- a) To revise the paper based on the comments made by the GWEF and recirculate among the members.
- b) To launch case studies for a small country/commercial entity/open data environment/restricted data environment to test how the data exchange market will work and uncover possible shortcomings/advantages.
- c) To expedite the development of a mature WDX proposal that could be submitted for consideration by the WMO Congress-18 in June 2019.

**Task 1, Sub-Task 1.2.** A new mechanism is needed to get data from data-scarce areas. Under the current WMO Resolution 40, free and unrestricted sharing of data works only for 60-70% of Members. There are huge areas where there is too little data or even when there are data, they are not always shared. Similar to the previous sub-task, it is important to come up with the new system of incentives for countries with limited infrastructure and financial resources. There is clearly the need to update the WMO Resolution 40 (as well as 25 and 60) and accompanying regulations to address the issue of missing data. A Weather data exchange could be an alternative solution if it can demonstrate clear benefit, value and workable implementation mechanisms.

**The Forum agreed:**

- a) To merge sub-tasks 1.1 and 1.2. as they are intertwined.
- b) The GWEF will provide inputs on the weather data exchange into the documents submitted to the World Meteorological Congress (Deadline to submit documents for the Congress is February/March 2019. The initial concept can be prepared and submitted by then with better analytical data of the current situation (Lars Peter would be able to provide WIGOS monitoring data)).
- c) To align the concept with the proposal to launch case studies.

**Task 1, Sub-Task 1.3.** No written progress report has been produced so far. At the same time, there are different sets of data already available and ways to visualize them that can be prepared to inform the concept paper that will be prepared for the World Meteorological Congress.

**The Forum agreed:**

- a) By the end of the 2018 WMO will provide monitoring results in a “map” format that will show the status of the current data exchange between the NMHSs. The map will be used to illustrate major gaps and inform the concept.
- b) To increase collaboration between sub-tasks 1.1,1.2 and 1.3 being parts of the main ‘data-exchange’ package.
- c) Sub-task groups and other GWEF members will have a separate discussion offline and will inform the CG on the agreed next actions.

**Task 1, Sub-Task 1.4.** There is an ongoing work on this activity item together with several meteorological institutes as well as with the WMO. The focus has been on reviewing standards related to observational practices. This work will have further development during the upcoming CIMO-17 session in October 2018 in Amsterdam. At the same time, the GWEF members are inclined to expand the scope of the sub-task in order to include issues related to verification and validation of quality. It was recognized that forecast quality and verification hasn't received sufficient attention. The issue has a growing importance in the current multi-stakeholder service environment with multiple sources of information for the same time/location. The large differences in basic quantities, such as surface temperature, among various forecast applications poses problems for users and may undermine public confidence. In addition, the group was discussing the idea to have an independent third party to provide standardized verification for various providers and weather forecasting apps. WMO could in principle fulfil this role as outlined in its recently adopted PPE Policy Framework. In particular, the World Weather Research programme (WWRP) of the WMO has a main role in defining a universally acceptable verification methodology similar to the one used for numerical weather forecasts (realizing that the NWP verification is a much easier task than the verification of local public or specialized forecasts).

**The Forum agreed:**

- a) To redefine the description of the task and what is the expected output of this task.
- b) To investigate possible mechanisms of weather forecast verification/validation/rating (for different types of forecasts) and present an initial draft concept paper at the next GWEF meeting.

**Task 2, Sub-Task 2.1.** There is a challenge of attracting top quality students to the atmospheric sciences. Figure from the US National Science Foundation shows that the number of the PhDs awarded in earth sciences have flatlined since 1990s which is a challenge to such a vibrant research field. Sustaining the workforces is another challenge, specifically in the low-income countries. The paper submitted to the GWEF presents the opinion of interviewed representatives of academia and private sector on the changes that should be made in curriculum, additional skills, including communication skills, that should be added to the learning programs, etc. Private sector also calls for graduates with business skills. The group discussed the ways to increase awareness and attract potential students. Comments made during the meeting will be considered and the revised paper will be circulated among GWEF members.

**The Forum agreed:**

- a) To carry out detailed analysis on the curriculum
- b) To propose action plan based on the analysis

**Task 3, Sub-Task 3.1.** The forum reviewed and discussed a paper by Lenny and Dave presenting the challenges that have led to an observed “innovation gap” in the current GWE. At the moment the research is driven by the short-term goals to improve forecast scale, while more innovative long-term research is often remote from the operational forecast modelling systems. The GWE should address the gap of bringing researches focusing on the long term problems with the knowledge of current operational NWP systems. Additional challenge is to find a way in which new ideas can be tested and implemented. Research hubs are one possible solution. The relationship between the Research Hubs and both Operational Centres and the private sector would more resemble those of Bell Labs with AT&T (or Watson Research Centre with IBM). Ideally models like the UK’s Francis Crick Institute and other examples of government, industry, academia research collaboration across the globe could be realised. Ultimately, the Research Hubs would have to prove sufficiently attractive on economic grounds that the private sector would prefer financial support of the Hubs over in-house operations (or other service providers of the future). The aim would be to increase the speed of innovation and deployment across the GWE.

**The Forum agreed:**

- a) To foster further discussion in order to finalize the paper on this item for consideration by the next meeting.

**Task 4, Sub-Task 4.1.** The topic of the sub-task was slightly amended to reflect the processes happening at all levels of the service value chain (global, regional, local). The idea is to break up the value chain into a set of segments and to analyse/categorize possible types of partnerships (including PPP) suitable for each segment of the value chain and linked to strategies for enhancing the service delivery. The GWEF members discussed the need to amplify the risks factor related to the PPP approach with a preference to a more cautious notion of public-private engagement (PPE) also adopted by the WMO in its recent Policy Framework . It’s also important to look at the partnerships not just from the perspective of the NMHS but rather from a multi-stakeholder perspective. That would allow a better analysis of risks and opportunities of various PPE business models.

**The Forum agreed:**

- a) Finalize categorization of the potential partnership mechanisms and their specifications
- b) Based on the identified partnership modalities, with the help of the GWEF members and maybe external consultants, try to define the priority cases that the group would like to pilot in projects/countries.
- c) To link this work on the partnerships/business-models with the PPE study carried out by the GFDRR.

**Task 4, Sub-Task 4.2.** With regard to developing relevant and representative KPIs based on which to carry out performance assessment of the service delivery, the task is complicated due to the fact that the mission of each NMHS vary largely depending on the country. To simplify the task, an initial proposal was put the focus of the discussion on the service delivery in support of Disaster Risk Reduction (DRR), the rationale being that these DRR-related services would be a common target of almost all NMHSs of the world. Following this logic, a review has been conducted of several WMO performance assessment criteria put in place

with a view to make a selection of those criteria that would be suitable for a broader service delivery performance monitoring in the GWE. It was noted however that it would be challenging to assess the performance of the DRR-related services due to the great variation in the roles, responsibilities and national arrangements. Nevertheless, an effort to find a way to measure better the contribution of the GWE in the decision-making for the DRR since it is a major part of the mission of many GWE stakeholders.

**The Forum agreed:**

- a) Continue working on the concept and proposals for performance measurement;
- b) With regard to the DRR-related service delivery, try to utilize a metrics system which is aligned with the indicators used in the Sendai Framework

**4. Discussion on Definitions pertinent to GWE**

4.1. An initial draft of the Glossary of terms was distributed for the review of the Forum. The GWEF members agreed that more work is needed on the definitions starting from the definition of the “*partnership*” which is the most used term in the context of the GWE. When talking about the GWE, using the Public-Private Partnership (PPP) may be counterproductive for “socializing” the idea of the GWE. In addition, it may not necessarily include academic sector.

The Forum agreed:

- a) GWE Coordination Group will take the work on the definitions offline and will present the results in the next GWEF meeting.

**5. Information on recent and coming events**

5.1 WMO Executive Council Session (EC-70): The EC approved a resolution on the Public-Private Engagement. The following key decisions were made:

- a) To **adopt policy framework on PPE** which was requested by the EC last year. This is the first formal document of the WMO on the PPE which will be published soon as a standalone document soon. It is a living document that will be updated and amended as required.
- b) To **acknowledges the establishment of a Global Weather Enterprise (GWE) Forum** supported by the WMO, the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank and the Association of the Hydro-Meteorological Equipment Industry (HMEI), as a consultative platform between the public, private and academic sectors, to steer the dialogue between the sectors, consider necessary coordinated actions to address the growth of the GWE, and derive recommendations for consideration by relevant bodies, including the WMO.
- c) To **set up a drafting team** on the future high-level policy document on the PPE/GWE. The task team is led by Michael. The first draft document should be ready by September 2018 to be later ‘socialized’ in a broader community for building consensus and seeking inputs from all parties. This final draft will be submitted to the Congress and will aim to replace the current Geneva Declaration which is outdated and quite NMHS-centric.

5.2. The WMO is working on the resolution that regulates cooperation/partnerships with global private companies (e.g. Alphabet/Google). The need of such resolution came from the call for partnership from Google which is working on a flood forecasting product and require hydrological data.

5.3. The EC agreed on a proposal for the restructuring of the WMO constituent bodies, which will be submitted for a final approval by the Congress in June 2019. The current eight technical commissions will be consolidated into two: one commission covers all aspects of infrastructure (observation, data processing, information management, forecasting), the second one - services (aviation, marine, public weather services, others). Hydrology remains an open question and most likely will keep a separate commission. A significant restructuring is also envisaged in the science and research bodies with the Commission for Atmospheric Sciences (CAS) being replaced by a Scientific Advisory Panel (SAP) and a Research Board. All these developments will have their finalization by the Congress in 2019. As part of these changes, WMO is also modifying some of its regulations that will facilitate and encourage broader participation of experts from private and academic sectors in its expert bodies and standard-making processes.

**The Forum agreed:**

- a) To participate in the consultative process and provide all necessary support and input to the drafting of the new WMO Declaration covering the PPE and GWE (to replace the Geneva Declaration from 1999) and other relevant preparations for the WMO Congress 18.

5.4. GFDRR has recently launched an analytical study on the public-private engagement in hydromet services which was triggered by the need of the development practitioners and development countries governments to have a more structured dialogue on the PPE. The objective is to develop guidance materials on the potential PPE based on the comparative analysis in the selected countries. The general approach and the timeline of the study were presented to the GWEF members.

**The Forum agreed:**

- a) to provide inputs to the study and link it to the extent possible with the ongoing activities/sub-tasks identified by the GWE Forum.

5.5. The GWEF discussed the overall need to raise awareness of the GWE as the knowledge and understanding is quite uneven in various parts of the world, for example in South America.

5.6. The next GWEF meeting will be a face-to-face meeting in the margins of the Met Tech World Expo 2018 in October in Amsterdam. The current plan is to organize a GWE Conference on 11 and 12 October, partly conjoint with the WMO CIMO Technical Conference (on 11<sup>th</sup> in the afternoon; this part with a focus on the observations). The Forum meeting will most likely take place on the 12<sup>th</sup> October in the afternoon and on 13<sup>th</sup> October (Saturday) in the morning. Dimitar will provide further information on the WMO planned events in due course. The GWE CG will work on the agenda and logistics arrangements.

5.7. The GWEF agreed that the leads on the subtasks remain the same for now, but may be revised in the working order. Every member of the forum is welcome to contribute and participate in the work of each group. The inputs under each sub-task should be distributed before or on October 1, 2018.



## LIST OF PARTICIPANTS

Pr	<b>Daisuke ABE</b>	Chief Service Officer Weathernews Inc. (WNI)	dskab@wni.com
Pr	<b>Peter Platzer</b>	Chief Executive Officer Spire Global, Inc.	peter@spire.com
Pr	<b>Alessandra Liberto</b>	Business Development Manager, Campbell Scientific Inc.	aliberto@campbellsci.com
Pr	<b>Patrick Benichou</b>	Chief Executive Officer Meteo-France International	benichoup@mfi.fr
Ac	<b>David Parsons</b>	School of Meteorology, University of Oklahoma	dparsons@ou.edu
Ac	<b>Erland Kallen</b>	Department of Meteorology, University of Stockholm	erland@misu.su.se
Ac	<b>Leonard Smith</b>	Department of Mathematics, University of Oxford	lenny@maths.ox.ac.uk
Pu	<b>Michael Staudinger</b>	PR Austria	michael.staudinger@zamg.ac.at
Pu	<b>Celeste Saulo</b>	PR Argentina	celeste.saulo@gmail.com
Pu	<b>Tatsuya Kimura</b>	Director, Public Awareness and Partnerships Division, JMA, Japan	tkimura@met.kishou.go.jp
Pu	<b>Neil Jacobs</b>	Assistant Secretary of Commerce for Environmental Observation and Prediction, NOAA	neil.jacobs@noaa.gov
Pu	<b>Courtney Dragon</b>	Director, NWS International Affairs Office, NOAA	courtney.draggon@noaa.gov
Pu	<b>Taylor Jordan</b>	Senior Policy Advisor, NOAA	Taylor.Jordan@noaa.gov
A	<b>Naohisa KOIDE</b>	Senior Scientific Officer Office of International Affairs, JMA	koide-n@met.kishou.go.jp

GWEF/2, 9 July 2018, Webex – Meeting Notes

A	<b>Jack Hayes</b>	AMS, IFMS	jack.hayes422@aol.com
CG	<b>Brian Day</b>	HMEI	brian.day@campbellsci.ca
CG	<b>Bryce Ford</b>	HMEI	bford@spectrasensors.com
CG	<b>Vladimir Tsirkunov</b>	WB GFDRR	vtsirkunov@worldbank.org
CG	<b>Makoto Suwa</b>	WB GFDRR	msuwa@worldbank.org
CG	<b>Alan Thorpe</b>	WB GFDRR	alan.thorpe@gmx.com
CG	<b>David Rogers</b>	WB GFDRR	drogers@bluewin.ch
CG	<b>Anna-Maria Bogdanova</b>	WB GFDRR	ambogdanova@worldbank.org
CG	<b>Dimitar Ivanov</b>	Executive Assistant to Secretary-General, Public-Private Partnerships, WMO	divanov@wmo.int
CG	<b>Lars Peter Riishojgaard</b>	WIGOS project manager, WMO	Iriishojgaard@wmo.int

