Workshop of World Meteorological Centres

Beijing, China, 26-29 March 2019

Questionnaire for World Meteorological Centres

(as of 27 February 2019)

Note: The following seven questions will be used to orient participants' discussion on:

- *Agenda III. WMCs in the context of WMO Constituent Bodies Reform*, and
- *Agenda IV. Overall coordination mechanism between WMCs and WMCs/RSMCs to support Members*.

Your answers will be distributed to all participants in advance.

I would deeply appreciate if you could send your feedback **before or on 15 March** 2019

Name of World Meteorological Centres: Deutscher Wetterdienst, Offenbach, Germany

Agenda III

1. What areas your WMC wants to improve in near future and in the long-term by considering the functionality described in WMO-No. 49

Note: World Meteorological Centre (WMC). A centre of the GDPFS that has the primary purpose of issuing meteorological analyses and prognoses, including probabilistic information and long-range forecasts on a global scale. (WMO-NO. 49, Technical Regulations, Basic Documents No. 2, Volume I – General Meteorological Standards and Recommended Practices)

GPC long-range forecasts: Further advancement of long-range prediction system through improvements in data assimilation, ensemble generation and post-processing. Migration to a new forecast model (coupled version of ICON).

RSMC global deterministic and ensemble NWP: Increase in number of ensemble members in ICON: 250 for global ensemble data assimilation and 40 members for global ensemble prediction, maintaining current resolutions of 26km, globally, for ICON-EPS, and 13 km for ICON-deterministic, both with 120 vertical layers. Further advancements in data assimilation techniques to allow assimilation of new observations.

Collaboration: We are interested in improving the coordination with other WMCs.

2. What could be additional roles of your WMC to support the WMO Constituent Body Reform and Strategic Plan of WMO, especially Strategic Objectives 2.3

Note: Strategic Objective 2.3: Enable access and use of numerical analysis and prediction products at all temporal and spatial scales from the WMO seamless Global Data Processing and Forecast System

References:

- *Reform presentation - CBR-TF-sc,*
- *Constituent Bodies Reform - substructures and presidents and vice presidents,*
- *EC70 Strategic Plan*

Available at http://www.wmo.int/pages/prog/www/DPFS/Meetings/WMCs-Workshop_Beijing2019/Docplan.html

No answer.

Agenda IV

3. Please provide the name of organizations that you are currently working with / worked / will work, identifying the nature of the work and your role and responsibilities.

Note: organizations can be UN agencies, NGOs, Regional entities such as RIMES and other GDPFS Centres

We are not providing an exhaustive list here on the ongoing collaborations and interactions we maintain with national universities and research institutes, as well as international partners, but focus on those considered relevant in the context of our WMC/RSCM/GPC/RCC activities.

For the provision of tropical cyclone tracks, based on global ICON EPS forecasts, collaboration is ongoing with ECMWF to explore the application of their tracking algorithm to ICON EPS forecasts. Further interaction with ECMWF is ongoing regarding the integration of ICON-EPS into the TIGGE dataset, and in the context of development of our long-range forecasting system.

In the context of COPERNICUS, DWD maintains a number of collaborations and provides data and services, e.g. contribution of seasonal forecasts to the C3S multi-model ensemble, exchange with other providers (ECMWF, UKMO, MF, CMCC). Contributions are also made to the Mediterranean and South-Eastern European Climate Outlook Forum.

Further, DWD proposed a contribution to the WMO initiative to support humanitarian agencies, is involved in developing the “Guidance document on operational practices for seasonal forecasting” of WMO, and leads a first test-phase for the cataloging of extreme events.

DWD as Regional Telecommunication Hub (RTH) and RSMC for Nuclear and Non-Nuclear Emergency Response is involved in the work of the Expert Team on Emergency Response Activities (ET-ERA) of WMO.
Within ET-ERA the different RSCMs, IAEA and CTBTO collaborate, discuss and set standards for current and future mandatory products as well as the accompanying amendments to the manual on GDPFS.

4. In relation with question 1, what are the most difficult challenges you met and how you did overcome it, if you did.

Examples for challenges comprise the development of ensemble data assimilation on all timescales, and the implementation of the icosahedral, non-hydrostatic grid of our new

model ICON, including the required adaptations in numerical approaches. Fruitful collaborations with national research institutes, universities and within the COSMO consortium helped to better tackle these challenges.

5. Is there a good example of coordination mechanism between your WMC and other centres you want to share. Tell us why it is a good example of coordination mechanism.

Making available our regional model COSMO, together with initial and boundary conditions, for the application by developing countries free of charge. Through training courses on our models and their application, means for capacity development are offered at no charge. An annual user seminar, organized at DWD, offers a platform for scientists who are working on the models, or apply them for their research, to share their recent results and exchange ideas.

6. As a WMC, do you have specific request to make to SIDS and LDCs to help improve your system?

Note: For instance, Ghana utilized cloud resources with Reading University for forecasting drought. They provided their observations which were assimilated in UKMO Land Surface Model to enhance quality of drought forecast.

DWD is interested in, e.g. bilateral interactions and the establishment of feedback mechanisms with countries who are using models, forecasts and products provided by DWD to obtain information about the quality of our systems in the regions, the identification of forecast busts or as a contribution to forecast verification. For specific demands, additional reference/specialized or observation based data sets would be useful to provide guidance for further advancing our models and improving our forecasts.

7. LDCs and SIDS are interested in not only chart-type products but also NWP output. To help them to develop applications (post-processing), how do you see your WMC addressing these needs?

From our perspective it would be important to assess possible use cases, reflecting the needs and capabilities of countries or regions that want to make use of data, products and services. Based on these use cases, the appropriate data, products and services can be developed.

The use cases could, e.g. be guided by assessing what kind of data products would support the local warning and forecasting process: forecasting charts depicting weather objects tailored to local requirements (e.g. severe convection, drought), raw NWP-output beyond the data that is already provided according to WMO-No.49 or at different spatial or temporal resolutions, … all of this also depends on bandwidth available for data transfer.