**PTC-2016, 4.1(1)/5 Emerging data challenges**

**Summary of discussion**

19 January 2016

DCLPA

The following summarizes discussion and specific next steps from the PTC-2016 agenda item on emerging data challenges.

Discussion

Input for the CBS led-review of the challenges and risks, opportunities and benefits of big data, crowd sourcing and social media as the basis for production of a guidance document for Members:

* Crowd-sourcing applications as a complement to traditional observations
  + can be an important source of verification of observations and forecasts for quality control (CIMO)
  + can be useful for assessing health impacts, e.g. in relation to air quality (CAS)
  + will be explored by CHy using simple devices for stage measurement for irrigation dishes (results can be input into CBS-led review)
  + can be used to assess phenology, noting that reference data is also still required, e.g. the case of eastern Europe (CAgM)
  + examples generating actual data
    - Weather Observations Website (WOW) engine
    - Weather Underground (generates 170,000 observations globally, used after QC)
    - Hong Kong, China COWIN (mostly used for education purposes)
  + CBS has a team on public weather services that addresses big data from new media, including a focus on information products and improvement. CMA (China) has had relevant experiences with documentation of actions taken by the public based on warnings.
* Public-private dimensions
  + Reliance on private sources can create dependencies, e.g. if a company making car thermometer readings available changes its access policy or goes out of business
  + The private sector is good at marketing it services, and may make claims regarding quality and cost-effectiveness that WMO would not endorse, including to policy-makers
  + The review should clarify what can and cannot be done, while being careful not to favor any particular private interests
  + Some data (traditional or non-traditional) may have high commercial value (e.g. marine weather) and/or may be commercially protected.
* There is a need for a bench-marking system for evaluating the value of different types of non-traditional observations, as they may either fill gaps or be redundant. The assessment can involve the use of NWP models and can also validate the value of traditional meteorological observations at the same time.
* Big, structured, data sets will become increasingly important and the size will increase fifty-fold due to resolution improvements. Receiving stations are expensive. ICT-WIGOS may establish a TT on data issues which could contribute to the review in these areas.

N.B. The review needs to be highly visible and give WMO’s view on the current state of the art and what can be done. There is a relationship between the review of the implications of Resolution 60 (Cg-17), on international exchange of climate data and products, and emerging data from non-traditional sources, since if partners find they cannot access data through NMHSs they may be forced to turn to (or even establish) alternatives. Some development partners such as UNDP and the World Bank are already channeling significant resources into strengthening observing systems but not necessarily according to WMO standards. PRs are under pressure to accept these ad hoc systems. Therefore the situation with respect to both traditional and non-traditional systems, and the business models that support them, are changing and need to be evaluated together, along with considerations about public-private partnerships. The reviews called for by this resolution (65, Cg-17) and Resolution 60 (Cg-17) together provide an opportunity to answer questions such as, “how much is good enough? how much should countries invest in observations? and what are some of the options/schemes for sustaining adequate observations drawing on traditional and non-traditional sources?”

Next steps

The president of WMO invites technical commissions and GCOS to prepare a set of initial essays addressing emerging data issues as discussed in Cg-17 (abridged report section 9 and resolution 65) and the points discussed at PTC-2016, a template for which includes:

* Relevance of, and issues encountered (or perceived) with respect to, managing big and non-conventional data
* Issues encountered (or perceived) with respect to working with non-conventional sources
* Challenges, opportunities, risks, and benefits
* Guidance to EC on next steps.

The essays should be sent to the SG and will be given to CBS to consolidate and pass to the EC. The president of WMO will work with the SG to integrate this input into decision processes. There is a need to act quickly, since to package the input and provide it to the EC CBS will need the commission and GCOS inputs by March, 2016. A version of the consolidated essays may be published in the WMO Bulletin.