WORLD METEOROLOGICAL ORGANIZATION

World Meteorological Organization
Working together in weather, climate and water

Presidents of Technical Commissions

3 February 2016

BRIEFING FOR ESSAYS ON BIG DATA

REQUEST

1. At the meeting of the Presidents of Technical Commissions held from 19 to 20 January 2016, Mr Grimes, President of WMO, invited the Presidents of Technical Commissions to prepare "essays" on the topic of "Big Data" and to send these to the Secretary General before 1 March 2016 (see section 4.1(1).5 of the report of the meeting). These essays would then be passed to the Commission for Basic Systems to consolidate and present to the sixty-eighth session of Executive Council. A consolidated report based on the essays would also be published in the WMO Bulletin.

BACKGROUND

2. During the discussion at the meeting of Presidents of Technical Commissions, a consensus emerged that Big Data in the sense used by the marketing industry of very large sets of unstructured information that could be analysed statistically had some, but very limited, relevance to the work of WMO. The sources of such data, and in particular the ability of organizations to process them and derive information used in decision making, posed both opportunities and threats to achieving the objectives of WMO.

3. The meteorological community is accustomed to handling large volumes of structured information, such as satellite data and numerical weather prediction products. Just as in the past when the needs of meteorology for telecommunications capabilities were outstripped by those of the media industry, in the future the ability of organizations to handle unstructured big data is likely to exceed the capacity available to NMHS to handle structured data. Organizations capable of analysing Big Data are likely to expand into offering comprehensive information services. These technologies also make it easier to distribute responsibilities for storage and computation.

4. A characteristic of Big Data in the marketing sense is that information gathered for one purpose may have aspects that can be extracted to infer information of benefit to other applications. An example of this in meteorology is the use of GPS signals to derive humidity profiles.

5. Techniques used by social media and increasing internet connectivity of objects that have built-in sensors provide unprecedented opportunities for gathering information that is potentially relevant to WMO activities. Private organizations also collect information relevant to WMO activities, sometimes in large volumes. Although these sources of information may not achieve the highest levels of quality, their sheer volume and availability my provide qualitative, and even quantitative, information. Key to the interpretation of the information is knowledge of the quality aspects surrounding their generation.

6. Use of information and resources outside the direct control of an organization may offer benefits, but these benefits may come at a risk of the impacts of changes in practice, or even cessation of production of the information, over which the organization has not influence.

7. The intention of the essays is to explore the potential of Big Data for WMO, looking at both the benefits and on impacts that might need to be mitigated.

SUGGESTED STRUCTURE FOR ESSAYS

8. In order to help CBS combine the essays into a coherent document, Presidents are invited to base their essays on the following structure but not to be inhibited by any constraints implied by the structure.

    1. External trends in technology and information availability that may impact on WMO and NMHS.
    2. Potential opportunities from additional sources of information
    3. Potential opportunities from availability of organizations and tools able to process additional information
    4. Actions needed by WMO and/or NMHS to take advantage of the opportunities
    5. Potential threats to WMO and/or NMHS from changes in technology associated with Big Data, social applications and the "internet of things"
    6. Potential threats to WMO and/or NMHS from changes in behaviour of businesses and other organizations
    7. Actions needed by WMO and/or NMHS to mitigate the threats
    8. Recommendations to EC-68 to optimize the potential for WMO and NMHS

The above serve as a guide with the expectation that each President will provide pertinent insights in their respective Commission area of responsibility.

P. Taalas

Secretary General