

Thank you to the Chairs for your introduction and thank you to all of the participants, whatever your time zone, for joining us for this important topic.

I would like to provide some background on how we got to where we are today, what are WMO's current data policies and why we feel it is time for renewal.

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Any discussion of data and data exchange in the WMO context needs to start with the WMO Convention. This was adopted by the Washington Conference on 11 October 1947 and ratified on 23 March 1950, establishing the Organization. Some minor changes to the wording have been introduced by subsequent Resolutions but it largely remains unchanged.

Under "Purpose", the Convention states:

- (a) To facilitate worldwide cooperation in the establishment of networks of stations for the making of meteorological observations as well as hydrological and other geophysical observations related to meteorology, and to promote the establishment and maintenance of centres charged with the provision of meteorological and related services; and
- (b) To promote the establishment and maintenance of systems for the rapid exchange of meteorological and related information;

So the exchange of data is in the DNA of the organization and is the primary reason for its existence in the first place.

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Over the years, WMO has built up thousands of pages of resolutions, regulatory material and guidance to support this purpose. In terms of where we are today, data policy is captured in three resolutions:

- Resolution-40, probably the most well-known, from the 12th WMO Congress in 1995;
- Resolution-25, covering hydrological data, from the 13th Congress in 1999; and
- Resolution-60, covering climate data and products, from the 17th Congress in 2015.

Of these, arguably, Resolution-40 has had the most impact and is the most binding in its requirements on Members to freely exchange those data types defined in the first Annex.

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The policy adopted in Resolution 40 states:

As a fundamental principle of the World Meteorological Organization (WMO), and in consonance with the expanding requirements for its scientific and technical expertise, WMO commits itself to broadening and enhancing the *free and unrestricted international exchange* of meteorological and related data and products;

The strength of Resolution-40 is in its prescriptiveness. Annex 1 states in some detail the specific types of data that should be exchanged, and this has been backed up by regulatory material, initially the Manual on the Global Observing System and now the WIGOS Manual, as well as the manual on the Global Data Processing and Forecasting System (GDPFS) and the Manual on the WMO Information System (WIS)

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Resolutions 25 and 60 both build on the policy and framework of Resolution 40. In the case of Resolution 25, whilst it states that Members shall exchange those hydrological data and products ... in support of the protection of life and property and ... well-being,

there is no following regulatory material outlining which data and products need to be exchanged.

In the case of Resolution 60, the Resolution refers to the free and unrestricted exchange of Global Framework for Climate Services-relevant data and products. The Resolution is, however, non-binding as it does not contain any “shall” statements over and above those outlined in Resolution 40.

Resolution 40 is seen as the jewel in the crown of WMO data policy, and rightly so. Its passing ended a period of significant turmoil within the organization and averted the possible breakdown of the exchange of data that lies at its core. For this reason, there has been a reluctance to reopen the Resolution, or even to update its Annex.

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So why update WMO Data Policy? What are the drivers pushing the organization toward this?

In the case of Resolution 40, its prescriptiveness – which I earlier described as a strength – is also a weakness. For example, its Annex refers to obsolete data formats and six-hourly observations that do not meet the needs of modern meteorological systems. This prescriptiveness has also led to contradictions between the Resolution itself and the supporting regulatory material.

The world has moved on significantly since 1995 when Resolution 40 was passed. There has been an explosion of digital technology and a data revolution that has impacted all aspects of society.

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The way in which value is extracted from meteorological observations has undergone a transformation in the past two decades. Improvements in the skill of global models mean that model products from a relatively small number of global producing centres now underpin the service delivery of all WMO members,

from the biggest to the smallest. And the models require huge amounts of data – far more than was envisaged when Resolution 40 was framed.

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The role of satellites has also changed significantly in this period. In 1995, whilst satellites were important for numerical modelling, the primary value was seen to be in severe weather warnings and tropical cyclone warnings, as specified in the Annex to Resolution 40. These functions remain very significant but, of course, satellite observations now make up the vast bulk of data assimilated into numerical weather prediction systems. ECMWF, as a global leader in NWP, now routinely assimilates more than 90 satellite products.

The meteorological business itself has changed radically over the past two decades with private sector actors entering at all parts of the value chain. The internet of things and ubiquitous communications have led to a proliferation of private suppliers of in situ observations. The reducing cost of access to space has led to private suppliers of meteorological satellite data, something that only recently was something that only governments could supply. And at the service delivery end, a multitude of app developers and small and large businesses take advantage of the availability of data to develop tailored, localized and personalized services to meet the needs of an increasingly demanding public.

As the complexity of prediction and analysis systems grows, the lines between what is weather, climate and water data are becoming blurred. There is a need to observe not just the atmosphere, but the oceans and cryosphere as well. The Earth Systems approach outlined in the WMO Strategic Plan reflects this need and anticipates the increasing dependencies and teleconnections that will need to be taken into account over the coming decade.

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In IT, there is something called Conway's Law. It basically says that websites and software will reflect the underlying organizational structure that created them. In the case of a company it might mean a different part of the website for the marketing team, engineering and so on. In the case of WMO, this is undoubtedly also true, but it has also manifested itself in the way we have constructed data policy.

The restructuring of WMO and the breaking down of the organizational boundaries between the traditional domain areas of weather, water, climate and environment represent a unique opportunity for the organization to rethink the way it does its core business. We have a new constituent body structure and a new organizational structure to support this. We have the stated goal of Earth system prediction in our strategic plan. I believe it is time we had an overarching WMO data policy that both reflect the new paradigm and enables the achievement of this strategic goal.

Thank you