

WMO DATA POLICY (RESOLUTIONS 40, 60) AND UPDATE ON CBS DISCUSSIONS

(Submitted by the Secretariat)

Summary and Purpose of Document

The prospect of private-sector operators of basic satellite systems has triggered renewed attention to the issue of data access for global WMO applications, in particular for near-real-time applications. There is potential value in exploiting data from private operators of satellite-based meteorological observing systems, however, potential risks need to be recognized, such as loss of transparency of the observation and processing chain and thus of data quality and integrity, limitations to data access, and more difficult international coordination of satellite missions. While the value of WMO Resolution 40 for increasing the availability of meteorological data for WMO applications, the satellite-specific provisions in the Resolution reflect the technical reality of the mid-1990 when the main use of satellite data was imagery for nowcasting.

This document recalls:

- WMO Resolution 40 (Cg-XII, 1995) : WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities (https://www.wmo.int/pages/about/Resolution40_en.html)
- WMO Resolution 60 (Cg-17, 2015): WMO Policy for the International Exchange of Climate Data and Products to Support the Implementation of the GFCS (http://library.wmo.int/pmb_ged/wmo_1157_en.pdf#557)

and states current discussions in CBS on the topic of data access and exchange.

ACTION PROPOSED

The thirteenth session is invited to discuss a WMO position on the potential implications of the provision of satellite data by private operators on access to and quality of such data for WMO applications. Such a position should focus on how to achieve the best value from satellite data for WMO Members. Developing such a position may also need to consider data derived from commercially-operated non-satellite (surface-based) observing systems.

WMO DATA POLICY (RESOLUTIONS 40, 60) AND UPDATE ON CBS DISCUSSIONS

1. In the context of observational data for weather and climate applications, there are different perceptions of the word “essential”:
 - (i) users often perceive it as the data most critical for their application (e.g., as “the ten data streams with the highest impact on forecast skill of a NWP model”);
 - (ii) data providers often denote data “essential” if they are being distributed in an open manner, with no limitations on use, free of charge; in contrast, “additional” data are subject to some limitations or charges
 - (iii) WIS centres (such as Global Information System Centres, GISC) perceive “essential” data that require caching; hitherto only few satellite datasets are registered in the WIS catalogues

2. WMO Resolution 40 (Cg-XII, 1995) was put in place to secure free and unrestricted international exchange of meteorological data to enable all WMO Members to generate forecasts and warnings for the provision of services. The Resolution, *inter alia*, states the following:

“Recognizes:

(1) The increasing requirement for the global exchange of all types of environmental data in addition to the established ongoing exchange of meteorological data and products under the auspices of the WWW,

(2) The basic responsibility of Members and their NMSs to provide universal services in support of safety, security and economic benefits for the peoples of their countries,

(3) The dependence of Members and their NMSs on the stable, cooperative international exchange of meteorological and related data and products for discharging their responsibilities,

(4) The continuing requirement for Governments to provide for the meteorological infrastructure of their countries,

(5) The continuing need for, and benefits from, strengthening the capabilities of NMSs, in particular in developing countries, to improve the provision of services,

(6) The dependence of the research and education communities on access to meteorological and related data and products,

(7) The right of Governments to choose the manner by, and the extent to, which they make data and products available domestically or for international exchange,

Recognizes further:

(1) The existence of a trend towards the commercialization of many meteorological and hydrological activities,

(2) The requirement by some Members that their NMSs initiate or increase their commercial activities,

(3) The risk arising from commercialization to the established system of free and unrestricted exchange of data and products, which forms the basis for the WWW, and to global cooperation in meteorology,

(4) Both positive and negative impacts on the capacities, expertise and development of

NMSs, and particularly those of developing countries, from commercial operations within their territories by the commercial sector including the commercial activities of other NMSs,

Reminds Members of their obligations under Article 2 of the WMO Convention to facilitate worldwide cooperation in the establishment of observing networks and to promote the exchange of meteorological and related information; and of the need to ensure stable ongoing commitment of resources to meet this obligation in the common interest of all nations;

Adopts the following policy on the international exchange of meteorological and related data and products:

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 unrestricted¹ international exchange of meteorological and related data and products;

Adopts the following practice on the international exchange of meteorological and related data and products:

(1) Members shall provide on a free and unrestricted basis essential data and products which are necessary for the provision of services in support of the protection of life and property and the well-being of all nations, particularly those basic data and products, as, at a minimum, described in Annex 1 to this resolution, required to describe and forecast accurately weather and climate, and support WMO Programmes;

(2) Members should also provide the additional data and products which are required to sustain WMO Programmes at the global, regional, and national levels and, further, as agreed, to assist other Members in the provision of meteorological services in their countries. While increasing the volume of data and products available to all Members by providing these additional data and products, it is understood that WMO Members may be justified in placing conditions on their re-export for commercial purposes outside of the receiving country or group of countries forming a single economic group, for reasons such as national laws or costs of production;

(3) Members should provide to the research and education communities, for their non-commercial activities, free and unrestricted access to all data and products exchanged under the auspices of WMO with the understanding that their commercial activities are subject to the same conditions identified in Adopts (2) above;
Stresses that all meteorological and related data and products required to fulfil Members' obligations under WMO Programmes will be encompassed by the combination of essential and additional data and products exchanged by Members;

Urges Members to:

(1) Strengthen their commitment to the free and unrestricted exchange of meteorological and related data and products;

(2) Increase the volume of data and products exchanged to meet the needs of WMO Programmes;

[...]"

3. Annex 1 to Resolution 40 is broad regarding "essential" satellite data, saying that

"The purpose of this listing of meteorological and related data and products is to identify a

¹ "Free and unrestricted" means non-discriminatory and without charge. "Without charge", in the context of this resolution means at no more than the cost of reproduction and delivery, without charge for the data and products themselves.

minimum set of data and products which are essential to support WMO Programmes and which Members shall exchange without charge and with no conditions on use. The meteorological and related data and products which are essential to support WMO Programmes include, in general, the data from the RBSNs and as many data as possible that will assist in defining the state of the atmosphere at least on a scale of the order of 200 km in the horizontal and six to 12 hours in time.”

The Annex 1 further recognizes as “essential”:

“Those data and products from operational meteorological satellites that are agreed between WMO and satellite operators. (These should include data and products necessary for operations regarding severe weather warnings and tropical cyclone warnings). “

4. The distinction of “essential” and “additional” data in the sense of Res. 40 has helped that different data access and distribution policies could coexist among WMO Members: while those Members with a data policy favouring open and free access declared all their data “essential”, for others with more restricted data policies, the Resolution enabled commercial distribution of some data while declaring other data as “essential”.
5. The wording “...agreed between WMO and satellite operators” in the Annex 1 was targeted at satellite operators that are not owned by one single state (e.g., EUMETSAT); it could also apply to other public or private entities. In the case of satellite operators owned by one state, Recognizes (7) of the Resolution applies (“...the right of Governments to choose...”).
6. Satellite data exchange and use has dramatically changed since 1995, due to:
 - (i) A transformed ICT landscape, allowing for a range of data access and exchange mechanisms beyond managed, point-to-point lines (e.g., internet, DVB-S), and data reproduction at virtually no cost to providers;
 - (ii) Dramatic improvements in temporal and spatial resolution from satellites; and
 - (iii) The NWP community being the single largest satellite data user today, whereas Res. 40 is formulated against the backdrop of mainly using (geostationary) satellite imagery for nowcasting and severe weather warnings
7. Regarding (non-real-time) climate data, Resolution 60 (WMO Cg-17, 2015) advocates that GFCS relevant data and products developed or acquired under WMO auspices should be made accessible among Members on a free and unrestricted basis; the Annex to the Resolution specifies that such data include, among others,
 - “(3) Climate relevant coastal interface data, in particular sea level, waves and storm surges;
 - (4) Data on the composition of the atmosphere including aerosols;
 - (5) Climate relevant satellite data and products;
 - (6) Climate relevant cryospheric data, in particular snow cover, snow depth, glacial monitoring, permafrost and lake and river ice.”
8. The GEO Data Sharing Principles promote the full and open exchange of EO data, metadata, and products, recognizing international instruments and national policies and legislation. The Principles are currently under revision to favour a more open position to data exchange by recommending that data should be shared as Open Data by default, and made available as part of the GEOSS Data-CORE (Collection of Open Resources for Everyone). The GEO Data Sharing Principles largely follow work pursued by the Committee on Data for Science and Technology (CODATA; Uhlir et al., 2009) and were recently updated ([The Value of Open Data Sharing, November 2015](#)).
9. The prospect of private-sector operators of basic satellite systems has triggered renewed attention to the issue of data access for global WMO applications. Actors such as PlanetIQ, GeoMetWatch, and others propose models of data commercialization and utilization whereby they plan to sell data under a restricted use licence to users.

10. Another issue is that, where commercial satellite data streams are used to substitute for traditional in situ measurements, the replacement data streams may not be available to WMO members. An example could be the substitution of GPS-RO data for upper air balloon soundings. This could have the effect, over time, of reducing overall availability of data to WMO members.
 11. This issue was considered at a 2014 meeting of the CBS Expert Team on Satellite Systems (ET-SAT), which recognized that:
 - (i) Private information sources [especially in the space domain] were traditionally outside the scope of meteorological activity, however, with the move towards a more integrated Earth system monitoring, a more open approach may be needed.
 - (ii) There are however related risks. In particular:
 - a. Loss of total transparency of the observation and processing chain, and control over integrity and reliability of the data. This may happen if some information cannot be disclosed because they involve proprietary knowledge, or in case of conflict of interests. This risk has to be fully controlled through contracts.
 - b. Limitations to data access. Maintaining and expanding international data sharing is a fundamental goal of WMO, regulated by Resolution 40. Essential data must be exchanged openly without any restrictive condition, but the exchange of additional data may be subject to conditions and possibly charged.
 - c. Preserve international mission coordination for the smooth implementation of the WMO-agreed vision, with priority effort to fill the gaps, and on interoperability.
 12. At the 2015 4th Session of the Inter-Commission Coordination Group on WIGOS (ICG-WIGOS), this issue was addressed in a discussion paper (available from: http://www.wmo.int/pages/prog/www/WIGOS-WIS/meetings/ICG-WIGOS-4/Doc-6.4_Data-Management_Data-Policy-v02.doc)
 13. The CBS Inter-Programme Expert Team on Satellite Utilization and Products (IPET-SUP) has at its meeting in 2015 decided to develop a Position Paper from the satellite user perspective on what types of satellite data should be considered essential, i.e. available on a free and unrestricted basis (in the sense of Resolution 40), for the protection of life and property.
 14. The thirteenth session is invited to discuss a WMO position on the potential implications of the provision of satellite data by private operators on access to and quality of such data for WMO applications. Such a position should focus on how WMO Members can derive the best value from satellite data. Developing such a position may also need to consider data derived from commercially-operated non-satellite (surface-based) observing systems
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