

# Manual on the High Quality Global Data Management Framework for Climate – an outline and proposed evolution pathway

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**WMO OMM**

World Meteorological Organization

Organisation météorologique mondiale

# Manual on High Quality Global Data Management Framework for Climate

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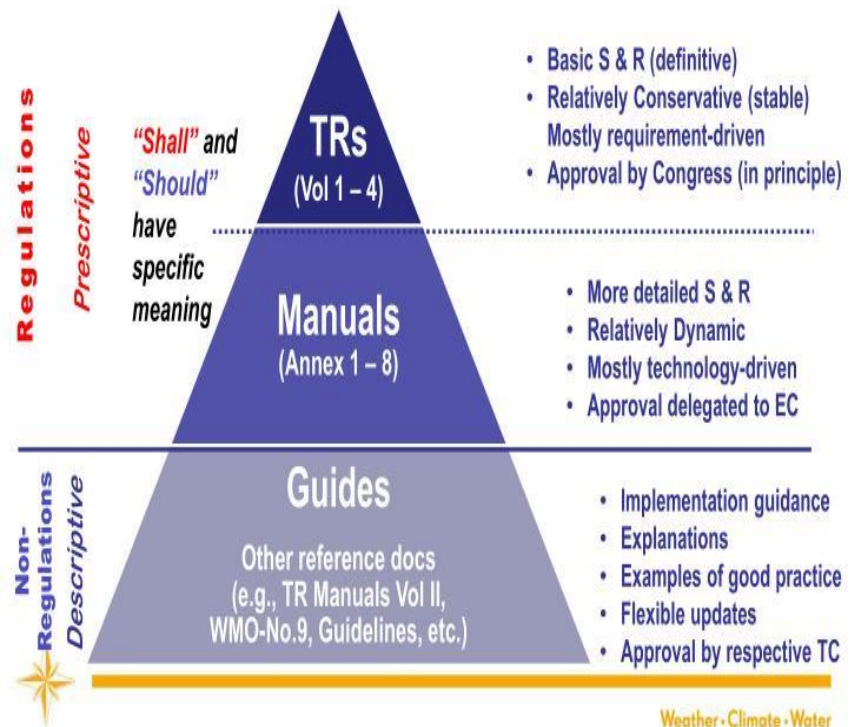
*“An important point to remember is that the most important stakeholders for our data have not been born yet and that we are custodians of this data for their future use”*



# Technical Regulations, Manuals and Guidelines

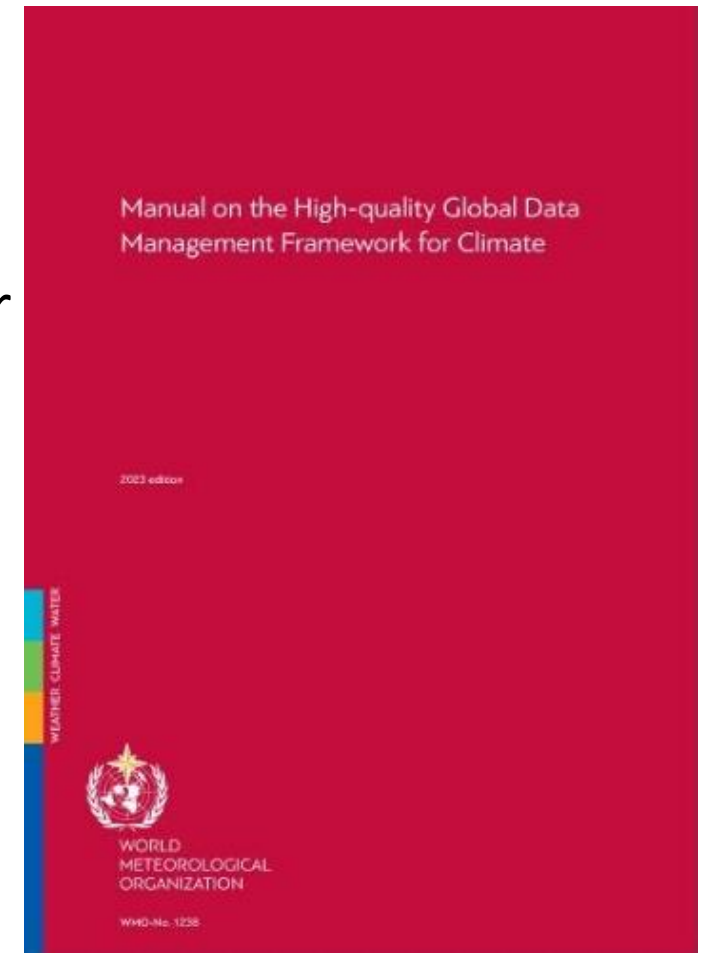
- WMO No 49 is the highest level of Technical Regulations, which comprise high-level standards and regulations for WMO activities.
- WMO No 49 has nine annexes, called Manuals, which provide greater detail on Standards and Regulations (S & R) for all weather related activities.
- Manuals – WMO No 49 and all Annexes - set out S & R for mandatory and recommended practices via *Shall* and *Should* statements
- Manuals are at a higher level than Guidelines, which do not have regulatory status

## WMO TR: Composition & generic concept



# About the Manual on HQ-GDMFC

- WMO No 1238 is Annex IX to the TR, and provides specific S & R on the management of climate data. It is the first, and only, Regulatory material for climate disciplines
- First edition was published in 2019. A second edition was developed to introduce new material and updated definitions etc, but publication was stalled by INFCOM in 2021.
- The Manual is very new compared with other Manuals, and therefore as yet not widely known about.



# A brief history of WMO No 1238

- A Concept Note was prepared by the WMO Secretariat in 2016, and Congressional approval given to develop the Manual
- The Manual was one of three components of the HQ-GDMFC (the others were the SMM-CD, and a Catalogue of quality-assessed Global and Regional datasets.
- First draft of Manual was prepared by William Wright & Omar Baddour (2017)
- A Working Group convened at KNMI in 2018 to work on the HQ-GDMFC, including a drafting team to produce a more advanced draft of WMO No 1238.
- The Manual was approved by Congress, and published in 2019.



# About data – scope of the Manual

*Regulations around past, present and future data which are used to enable climate services and research*

The definition of what data is of interest for climate purposes is extensive, and includes:

- ✓ All Essential Climate Variables from GCOS - **Atmospheric, anthropospheric, cryospheric, biospheric, hydrological, and marine** data;
- ✓ Observational data derived from both **in-situ** and **remotely-sensed** measurements (satellite and radar);
- ✓ The output generated by numerical models, including predictions & projections, and gridded data;
- ✓ Climate **Metadata** – must not be overlooked; and
- ✓ Certain Climate Products (e.g. CLINO, DAYCLI)



# General Layout of the Manual

- General Provisions (general material, also found in other Manuals, covering technical regulations, information on appendices and annexes, update procedures etc);
- Preamble (basically, what the Manual seeks to do);
- High-level principles (in this case, on data management);
- Collaborating entities (i.e NMHS and other entities, expected to comply with the Manual provisions);
- Enabling mechanisms (including WIS, WIGOS and WIPPS);
- Definitions

*Then*

- Four discrete Chapters covering:
  - Data sources;
  - Data management activities;
  - The Stewardship Maturity Matrix (for Global & Regional Datasets);
  - Long-term station recognition and Extremes validation processes.

# Some text examples - 1

## Definitions

**Climate data management system (CDMS).** A system that facilitates the effective archival, management, analysis, delivery and utilization of a wide range of climate data. According to *Climate Data Management System Specifications* (WMO-No 1131), a CDMS combines both IT and governance components. It utilizes a set of interrelated modules that perform specific functions with the data. The purpose of a CDMS is to assist a Member, often through its NMHS, to manage its climate record securely and sustainably. Guidance on CDMSs is provided in the cited publication.



## Regulatory statement:

**2.4.10 Entities **shall** record, as part of the provenance metadata, any homogenization and reprocessing carried out on the data, and provide links to documentation of how the homogenization and reprocessing were performed.**

**2.5.12 Entities providing public access to the climate record or climate archive **should** provide that access through a copy of the data and not allow public access to the original database.**

# The case for expanding the Manual - 1

- **There is currently no other home for climate Regulatory material, yet the discipline of climate science depends on agreed, transparent irreproachable standards for the whole climate value chain, including the collection, management, analysis and use of climate data and products.**
- WMO No 1238 in its current form (2<sup>nd</sup> edition, 2023) represents a good exposition of the atmospheric data/data management aspects, but mostly does not cover the vital domains of climate monitoring, assessment, modelling (e.g. CC projections), and other services
- Current references to climate standards and products are spread out across several other Manuals, and are often not easy to find and out of context.



## The case for expanding the Manual - 2

- For WMO not to have specific Technical Regulations for climate science deprecates climate science at a time when the rest of the United Nations, and nearly all global Governments, regard climate science as one of their most important concerns. Climate science is also heavily scrutinised.
- It is likely that ongoing and emerging research demands, the need to improve Early Warnings for climate extremes, and for a sound Climate Rationale as the basis for climate project funding, will require the development of further climate change-resilient standards and regulations.
- The inclusion of WMO's record climate extremes evaluation process (Ch 4, 2<sup>nd</sup> edition), and the agreed transition of Marine Climate material into WMO No 1238, are a start. However rather more work is needed, in particular input from other climate domains and WMO bodies, including the Global Framework for Climate Services and the National Framework for Climate Services.



**Obrigado pela vossa atenção**  
**Thank you for your attention**  
**Merci de votre attention**



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