Radiation-related activities within new WMO Constituent Body structure

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Krunoslav Premec
(WMO Secretariat)
kpremec@wmo.int

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

Contents:

1) WMO reform
2) Infrastructure commission (INFCOM)
3) INFCOM/Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT)
4) SC-MINT/Expert Teams working on radiation-related activities
5) Some relevant WMO Regional centres
6) WMO key publications under SC-MINT
7) Future (envisaged) priorities and meetings

WMO Reform

WMO OMM

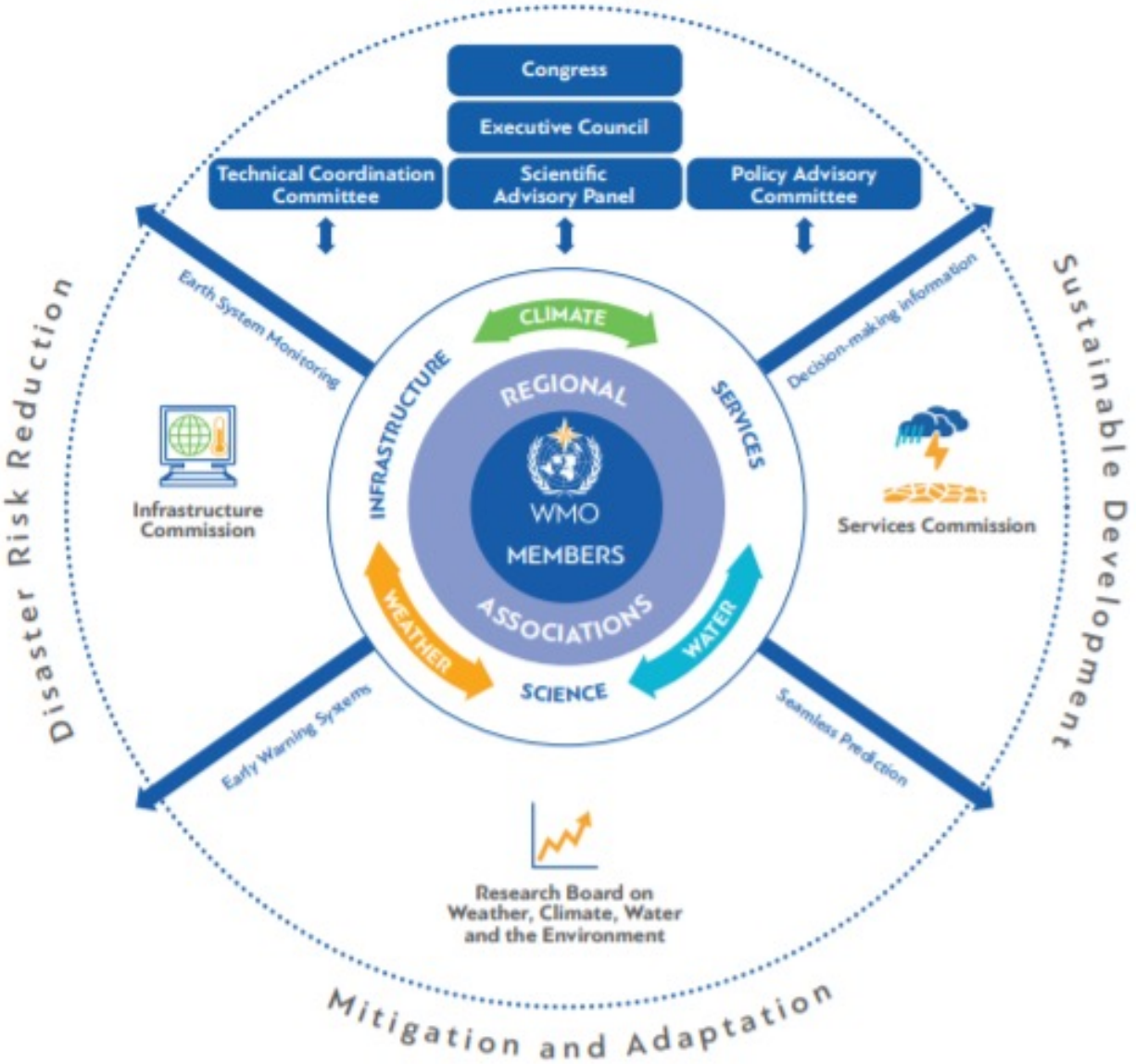
WMO Reform

[WMO Cg-18](#) (Res. 7&8)

WMO OMM

WMO Reform

[WMO Cg-18](#) (Res. 7&8)



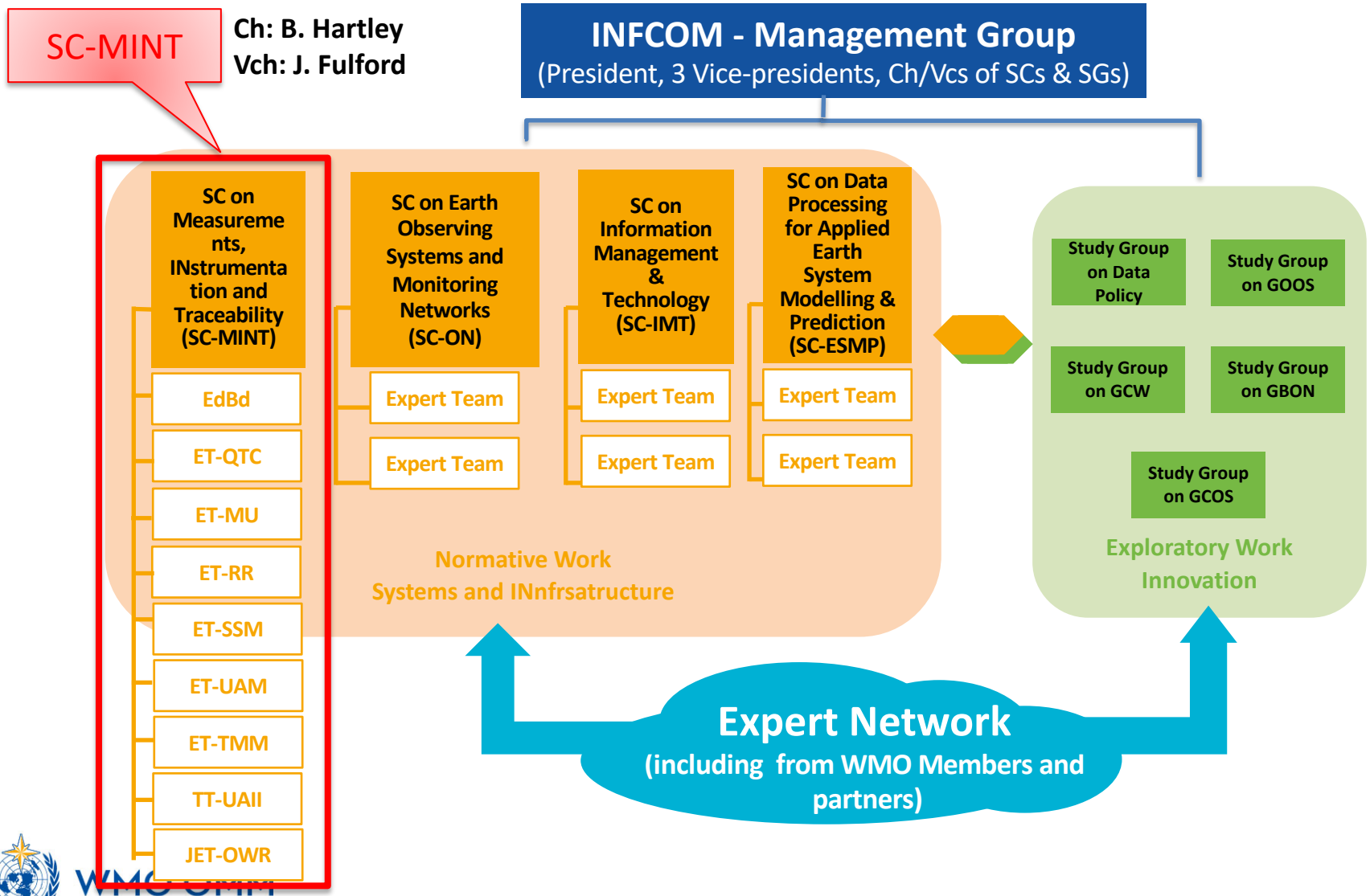
WMO

Infrastructure Commission (INFCOM)

WMO OMM

Infrastructure Commission

P: M. Jean, VPs: B. Forgan, S. Pecora, N. Pinardi



Infrastructure Commission

(Link to INFCOM under WMO Community platform)

The first session of the Infrastructure Commission (INFCOM-1) is organized in 3 parts:

Part I: Consultation in writing during **April and May 2020**.

Part II: Virtual Session from **9 to 13 November 2020**.

Part III: Virtual Session from **12 to 16 April 2021**.

Some key outcomes (SC-MINT related):

- **Measurement Quality Classification Scheme;**
- **Update of Guide to Instruments and Methods of Observations (WMO-No. 8);**
- **Mechanism for nomination/evaluation of measurement lead centres;**
- **Process for designation/supervision/reconfirmation of RICs;**
- **Global Basic Observing Network (GBON);**
- **Data Policy (DP);**
- **Systematic Observations Funding Facility (SOFF) ;**
- **Update of Technical Regulations and Manual on WIGOS.**

INFCOM/Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT)

WMO OMM

Vision for the future of environmental measurements

Mission: Fit-for-purpose environmental measurements through leadership, standards and guidance.

Vision: The WIGOS measurement community is the recognized source of information and guidance on performing measurements for environmental intelligence.

Desired Outcomes:

a) The WIGOS measurement community are **esteemed experts that gather and disseminate knowledge on measurements**.

b) Users and providers **understand measurement quality** and how fit-for-purpose measurements are achieved.

c) Users and providers understand **the importance of the measurement process in developing environmental intelligence**.

d) Users and providers of Essential Climate Variables are **committed to measurement traceability**.

e) The potential, quality and performance characteristics **of emerging measurement technologies** and their products are **documented in guidance material**.

SC-MINT - Purpose

(INFCOM-1-d03)

Responding to the WMO Convention, article 2(c) (*Basic Documents, No. 1* (WMO-No. 15)), which states that one of the primary purposes of the organization shall be:

"**To promote standardization of meteorological and related observations and to ensure the uniform publication of observations and statistics**",

the Standing Committee will focus on the normative work and technical systems required to achieve Objective 2.1 of the WMO Strategic Plan:

"{to} **Optimize the acquisition of Earth system observation data through the WMO Integrated Global Observing System (WIGOS)**",

in particular as concerns the capture and publication of measurand quality as supported by measurements, instrumentation and traceability.

- **WMO Instruments and Methods of Observation Programme (IMOP)**

SC-MINT - Terms of Reference

(Link to SC-MINT under WMO Community platform)

a) **Collaboration** with other groups (INFCOM, SERCOM, Research Board, Regional Association,…) to gather and review measurement requirements across all relevant technology streams;

b) **Innovation** and application of emerging technologies, techniques and integrated solutions in measurement;

c) **Effective standards**, regulatory and guidance material related to instrumentation and measurement practices;

d) **Traceability** of measurements to international standards;

e) **Characterizing the quality** of measurements from traditional and non-traditional data sources (Intercomparisons, etc..);

f) **Education and training** material in the field of environmental measurements;

g) **Compliance assessment** of WMO designated measurement-related centres;

h) **Engage** with other WMO structures and related international partner organizations.

SC-MINT/Expert Teams working on radiation-related activities

WMO OMM

SC-MINT Expert Teams

Acronym	Name	Leadership
EdBd	Editorial Board	Stephen Cohn – Chair Charles Fierz – Vice Chair
ET-MU	ET - Measurement Uncertainty	Andrea Merlone – Chair Jane Warne – Vice Chair
ET-QTC	ET - Quality, Traceability and Calibration	Drago Groselj – Chair Karen Grissom – Vice Chair
ET-RR	ET – Radiation References	Laurent Vuilleumier – Chair Christian Monte – Vice Chair
ET-SSM	ET - Surface and Sub-surface Measurement	Yves-Alain Roulet – Chair Mareile Astrid Wolff – Vice Chair Libor Duchacek – Vice Chair
ET-TMM	ET - Transitioning to Modern Measurement	Andrew Harper – Chair Rabia Merrouchi – Vice Chair
ET-UAM	ET – Upper-air Measurement	Junghong Wang – Chair Pak Wai Chan – Vice Chair
TT-UAII	TT – Upper-air Instrument Intercomparison	Ruud Dirksen – Chair Alexander Haefele – Vice Chair
JET-OWR	JET - Operational Weather Radar (with SC-ON)	Daniel Michelson – Chair Hiroshi Yamauchi – Vice Chair Tom Kane – Vice Chair

ET on Radiation Refereces (ET-RR)

Activities:

1. Recent developments of reference instruments for solar and terrestrial radiation;
2. Status of World Standard Group (WSG) and World Infrared Standard Group (WISG);
3. Suitability and sustainability of the WMO intercomparison frameworks;
4. Recommendation on requirement and timeliness for modification of radiation references;
5. Impact of reference changes for stakeholders;
6. Update of WMO-No. 8, and other WMO regulatory and guidance documents;
7. Liaison with ISO TC 180 (in particular SC1);
8. Collaboration with the GCOS/BSRN.

ET on Quality, Traceability and Calibration (ET-QTC)

Radiation-related activities (WP – no.):

1. Monitoring and assessment of RICs, RMICs and RRCs;
2. Strengthening quality management framework of RICs, RMICs and RRCs;
3. Streamline the concept of different regional centres and promote their collaboration;
6. Implementation of the strategy for traceability assurance;
7. Training on quality, traceability and calibration.

ET on Surface and Sub-surface Measurement (ET-SSM)

Radiation-related activities (WP – no.)**:**

2. Collaboration with ISO on the common WMO-ISO standards;
3. Updates of WMO-No. 8, and other guides, if appropriate.

Some relevant WMO Regional Centres

WMO OMM

WMO Regional Instrument Centres and Regional Marine Instrument Centres

Location of RICs by WMO Regional Association

RA I

Algiers (Algeria)

Gaborone (Botswana)

Cairo (Egypt)

Nairobi (Kenya)

Casablanca (Morocco)

RA II

Beijing (China)*

Tsukuba (Japan)*

RA III

Buenos Aires (Argentina)

RA IV

Bridgetown (Barbados)

RA V

Melbourne (Australia)*

Manila (Philippines)

RA VI

Toulouse (France)

Hamburg/Oberschleissheim (Germany)*

Bratislava (Slovakia)*

Ljubljana (Slovenia)*

Ankara (Turkey)*

RMICs

RMIC for Asia-Pacific Region

National Centre of Ocean Standards and Metrology (NCOSM), State Oceanic Administration of China, Tianjin China

RMIC for North and Central America

National Data Buoy Center, Mississippi, USA

SC-MINT ~~Testbeds and~~ Lead Centres

Measurement entres

Testbeds

- WMO-SC-MINT Testbed for Cryosphere and Precipitation (Sodankylä, Finland)
- WMO-SC-MINT Testbed for GAW Observations of Reactive Gases and Aerosols (Hohenpeissenberg, Germany)
- WMO-SC-MINT Testbed, Lindenberg Meteorological Observatory - *Richard Assmann Observatory* (Lindenberg, Germany)
- WMO-SC-MINT Testbed for Doppler Light Detection and Ranging (LIDAR) Systems for Aviation Applications (Hong Kong, China)
- WMO-SC-MINT Testbed for Ground-based Remote Sensing Observations (Cabauw, the Netherlands)
- WMO-SC-MINT Testbed for Integration of 3D Weather Observation System (Boseong, Republic of Korea)
- WMO-SC-MINT Testbed for Meteorological, Radiation and Ozone Observations – Voeikov Main Geophysical Observatory (Saint Petersburg, Russian Federation)
- WMO-SC-MINT Testbed for Aerosols and Water Vapor Remote Sensing Instruments (Izana, Spain)
- WMO-SC-MINT Testbed for In Situ and Remote Sensing Synergistic Profiling (Payerne, Switzerland)

Lead Centres

- WMO-SC-MINT Lead Centre on Process-oriented Observations, Lindenberg Meteorological Observatory - *Richard Assmann Observatory* (Lindenberg, Germany)
- WMO-SC-MINT Lead Centre on Precipitation Intensity - *Benedetto Castelly* (Genova, Vigna di Valle and Monte Cimone, Italy)
- WMO-SC-MINT Lead Centre on Evaluation of Precipitation Measurement Accuracy (Chupungnyeong, Republic of Korea)

WMO Regional Radiation Centres

World Radiation Centres (WRC)

World Radiation Centre (WRC)
Davos, Switzerland

World Radiation Data Centre (WRDC)
St. Petersburg, Russian Federation

Regional Radiation Centres (RRC)

Region I (Africa)
- Cairo (Egypt)
- Khartoum (Sudan)
- Kinshasa (Dem. Rep. of the Congo)
- Lagos (Nigeria)
- Tamanrasset (Algeria)
- Tunis (Tunisia)

Region II (Asia)
- Pune (India)
- Tokyo (Japan)

Region III (South America)
- Buenos Aires (Argentina)
- Lima (Peru)
- Santiago (Chile)

Region IV (North and Central America)
- Toronto (Canada)
- Boulder (United States)
- Mexico City (Mexico)

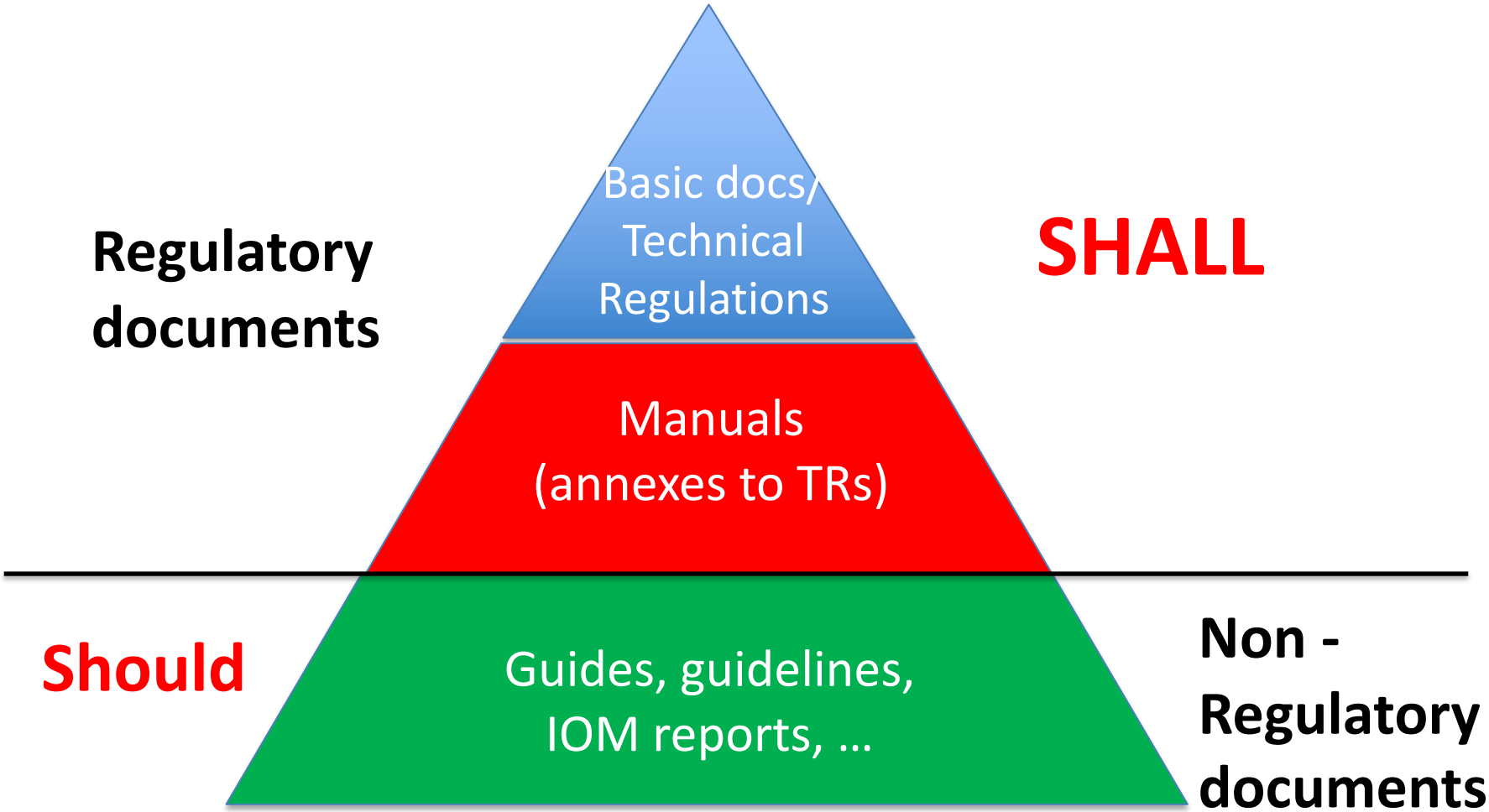
Region V (South-West Pacific)
- Melbourne (Australia)

Region VI (Europe)
- Budapest (Hungary)
- Davos (Switzerland)
- St. Petersburg (Russian Federation)
- Norrköping (Sweden)
- Trappes/Carpentras (France)
- Uccle (Belgium)
- Lindenberg (Germany)

Some key WMO publications under SC-MINT

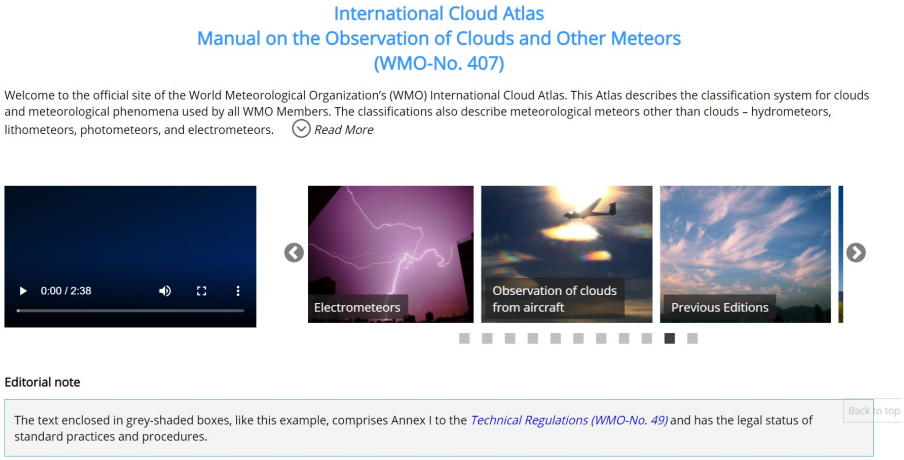
WMO OMM

WMO Publications:



Some key publications under SC-MINT

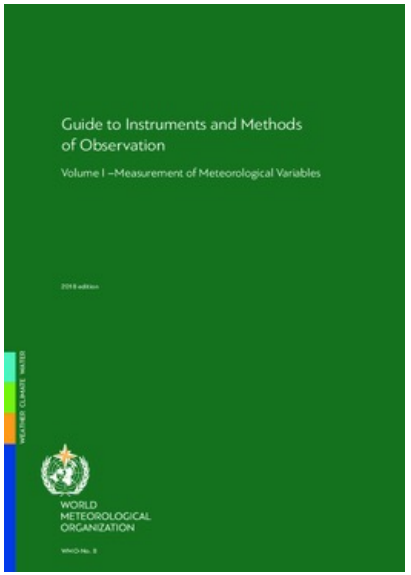
- **International Cloud Atlas - Manual on the Observation of Clouds and Other Meteors (WMO-No. 407)**



- **Guide to Instruments and Methods of Observation (WMO-No. 8)**

- 1st edition in 1954 (12 chapters);
- 2018 edition: 5 Volumes (40 chapters, approx. 1500 pages);

- *Of particular interest: Volume I:*
- *Ch. 7. MEASUREMENT OF RADIATION*
- *Ch. 8. MEASUREMENT OF SUNSHINE DURATION*



❖ Link to the Guide under Community platform

Some key publications under SC-MINT

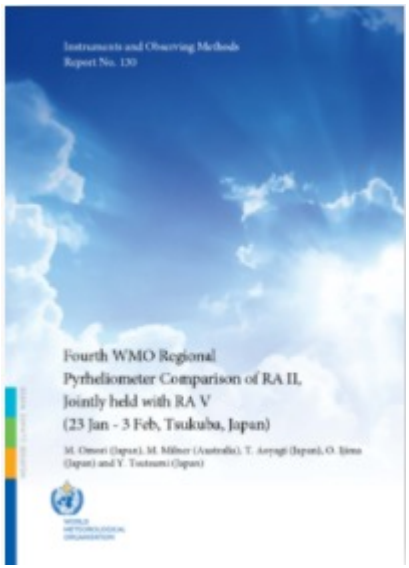
- **Common WMO/ISO standards (annexes in WMO-No. 8)**

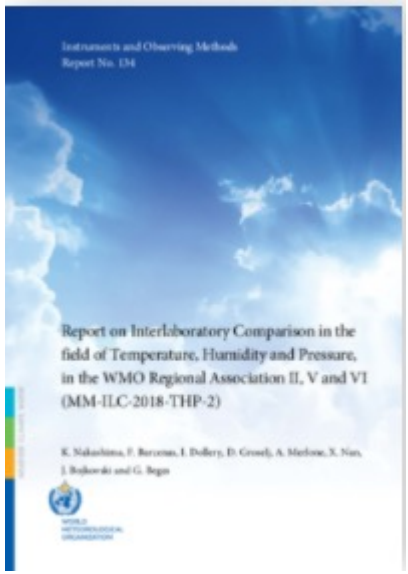
1) **SITING CLASSIFICATIONS FOR SURFACE OBSERVING STATIONS ON LAND** *(Volume I, Chapter 1,), (ISO 9289:2014(E)).*

2) **GROUND-BASED REMOTE-SENSING OF WIND BY HETERODYNE PULSED DOPPLER LIDAR** *(Volume III, Chapter 5),* (ISO *28902-2:2017(E)).*

3) **WEATHER RADARS – PART 1: SYSTEM PERFORMANCE AND OPERATION** *(Volume III, Chapter 7),* (ISO 19916-1 *:2019(E)).*

- **Instruments and Observing Methods (IOM) Reports**





WMO OMM

Future (envisaged) priorities and meetings

Some envisaged priorites

- Support to GBON, SOFF and Data policy;
- Increased compliance - Audit and certification of WMO Centres
- Environmental Sustainability of Observations
- Tiered Network Approach - criteria
- Emerging technologies - Evolution of Global Observing Systems
- Updated measurement-related regulatory and guidance publications (e.g., WMO-No. 8)

Some relevant coming events

- Extraordinary World Meteorological Congress

  11 – 22 October 2021, every second day – online

- WMO Upper-air Instrument Intercomparison

  lab campaign early 2022, field campaign Aug/Sept 2022, Lindenberg, Germany

- BIPM/WMO Metrology for Climate Action Workshop 2022

  26-30 September 2022 – planned as online event

- TECO-2022 & MTWE-2022

  10-14 October 2022, Paris, France

- INFCOM – 2

  November 2022 (TBC)

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Thank you
Merci

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale