

# WMO activities in aeronautical meteorology

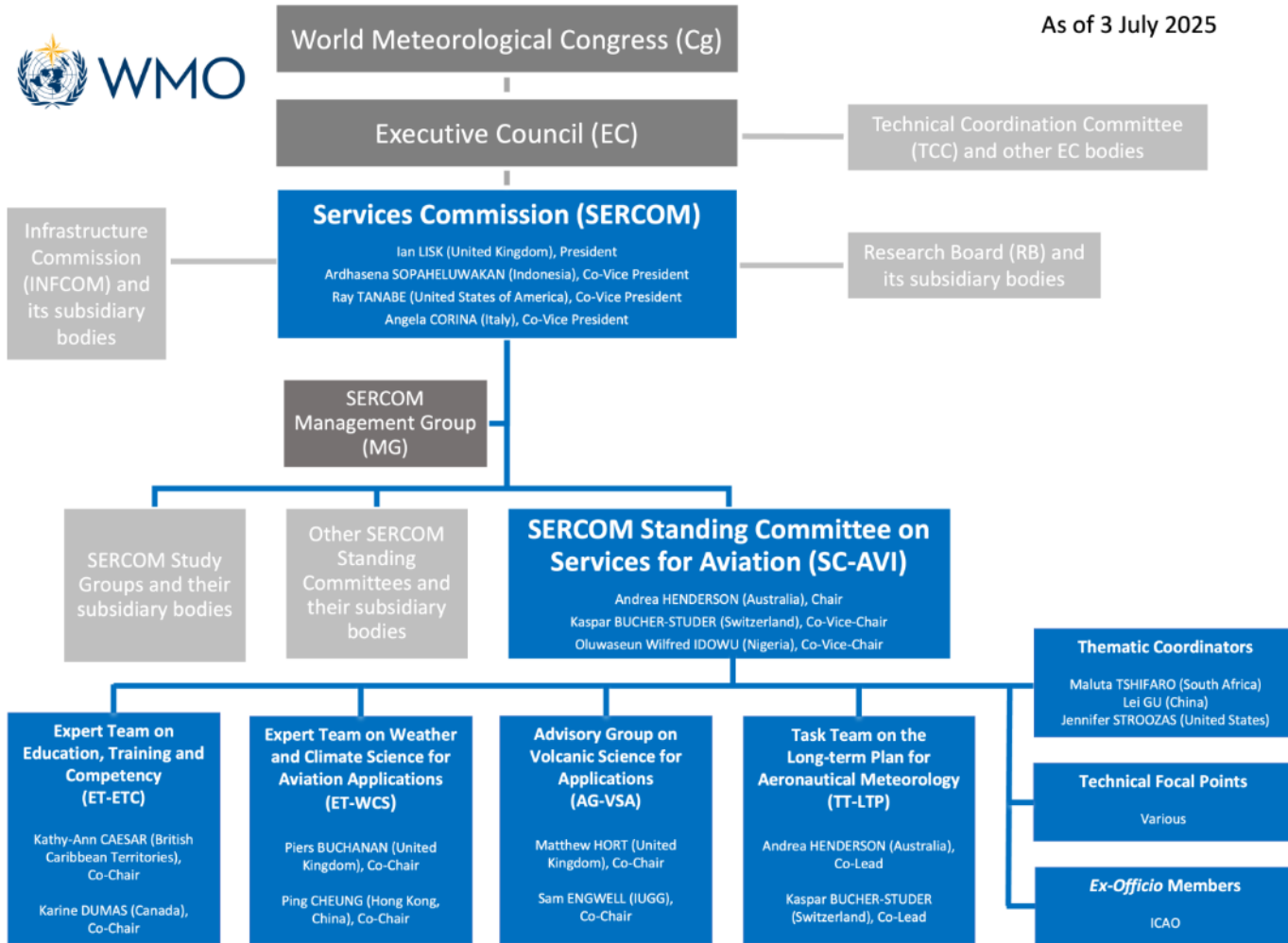
***Workshop on enhancing MET capabilities***

ICAO MID

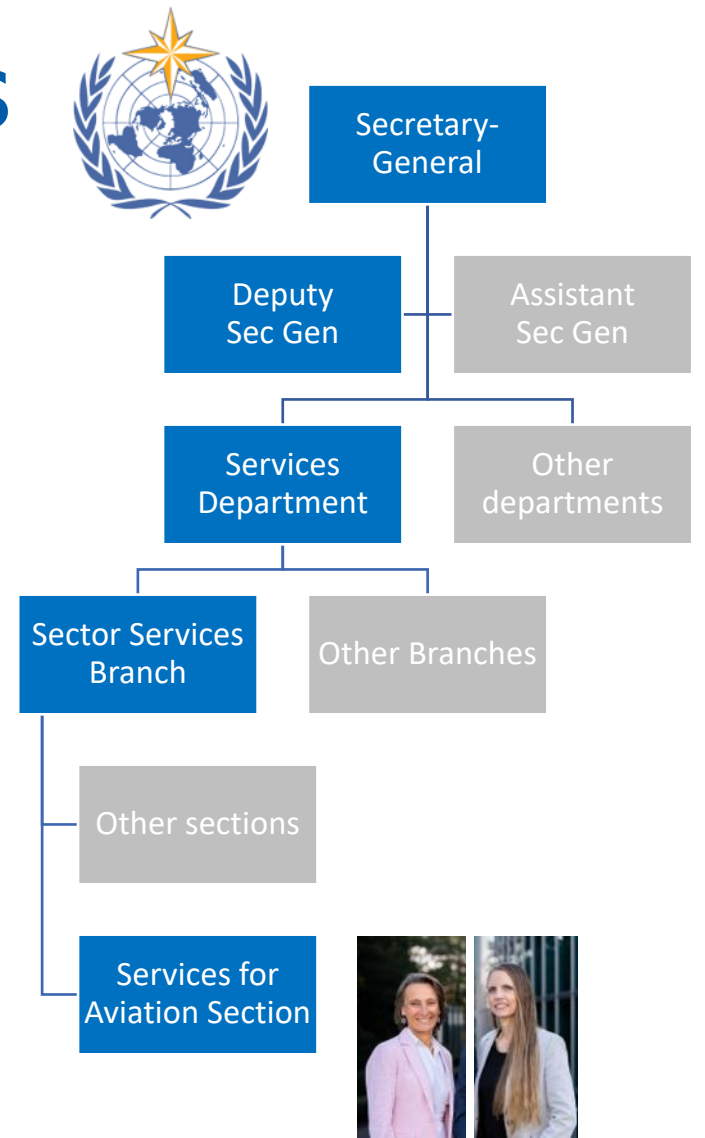
15 December 2025

# WMO organizational structures

Members level



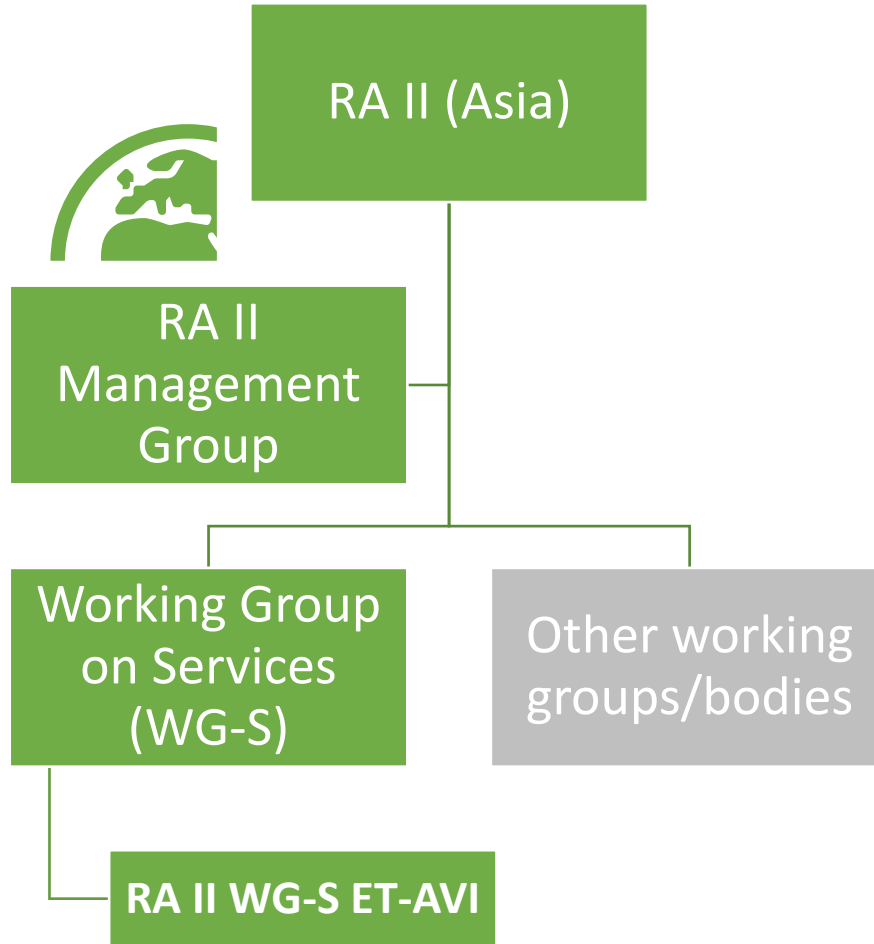
Secretariat level



Stéphanie, Adriana

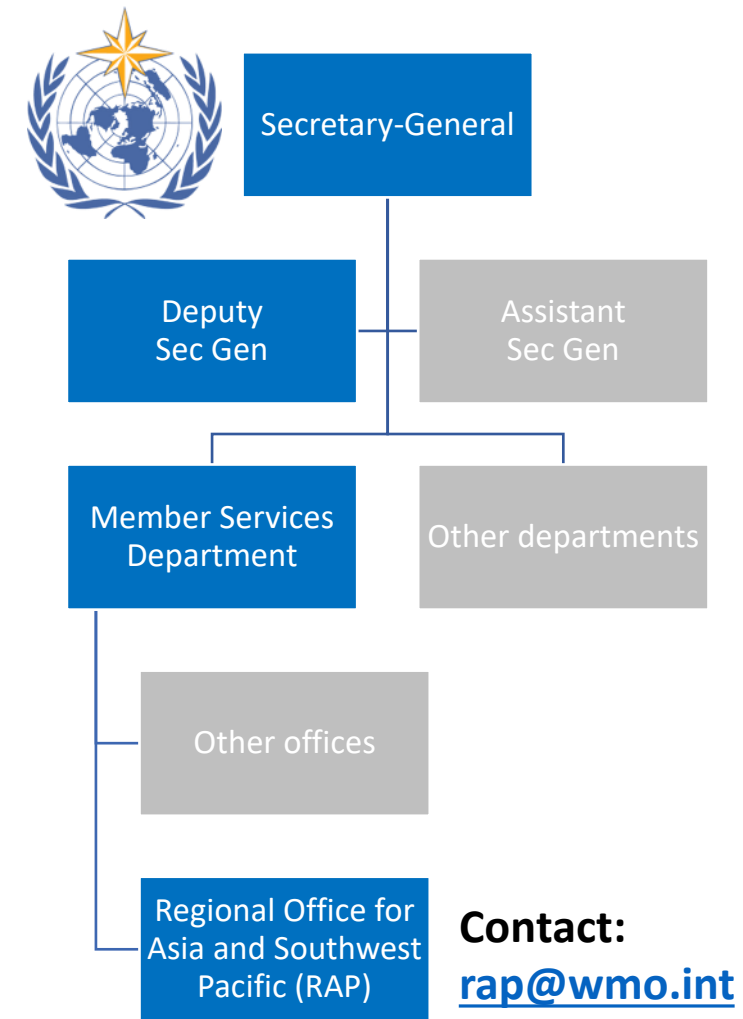
# WMO organizational structures

Members level



<https://community.wmo.int/site/knowledge-hub/governance/regional-association/RA-II>

Secretariat level



Contact: [rap@wmo.int](mailto:rap@wmo.int)

- Director
- Programme Officer
- Regional Coordinator
- Other staff

Regional level



ICAO

Air Navigation Commission

# WMO contribution to METP

METP  
(and METP MG)

Other Panels

WG-MRAD

Requirements and developments

HWIS

AMOIS & AMFIS

Other IS requirements

WG-MIE

Information exchange

MET-SWIM Technical

MET-SWIM Planning & Policy

Other IE requirements

WG-MOG

Operations

WAFS

SADIS/WIFS

IAVW

SWX

WG-MCRGG  
(Disbanded March 2025)

Cost recovery and governance

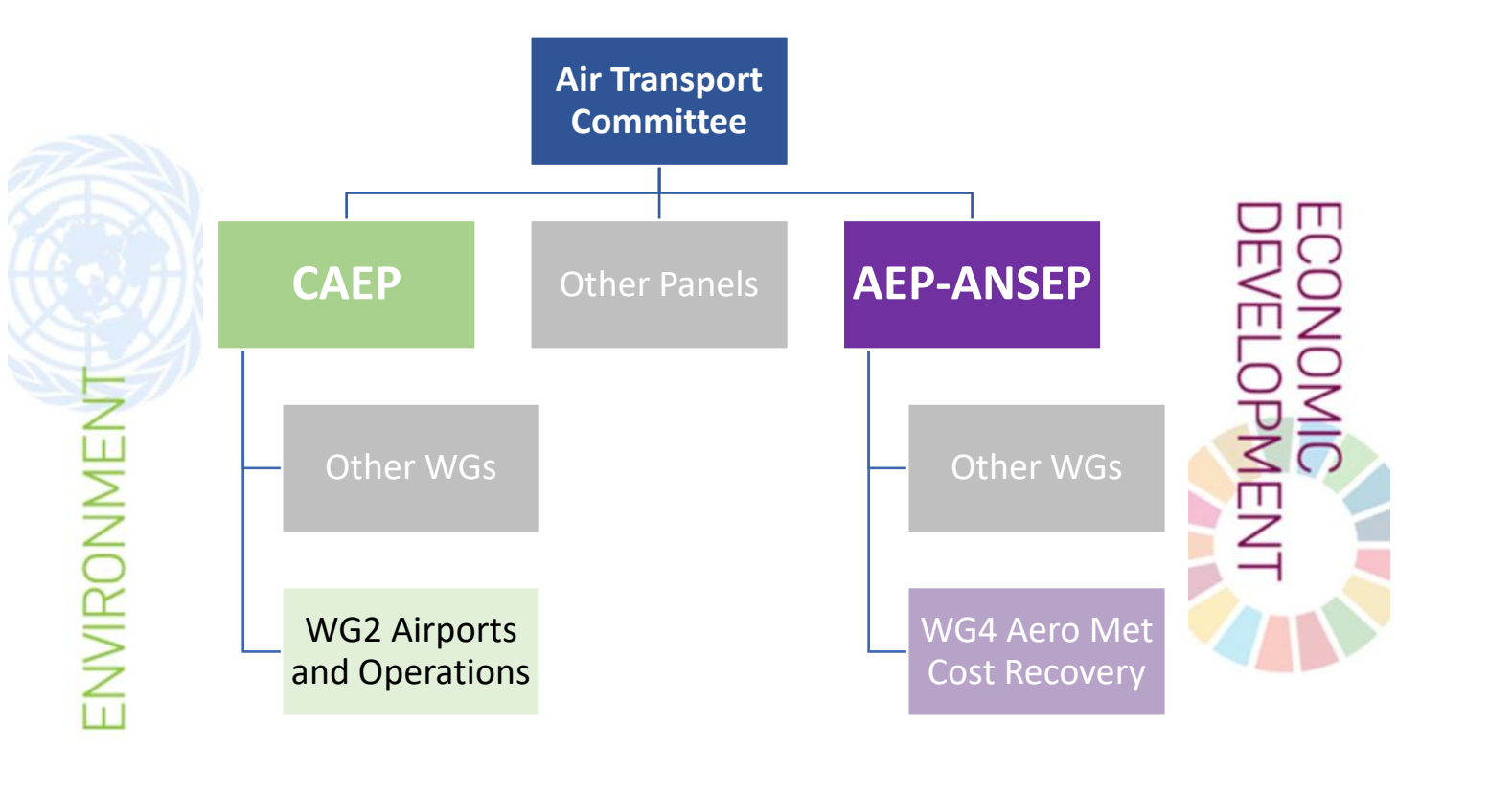
Simplified illustration



Updated in 2024

STANDING COMMITTEE ON SERVICES FOR AVIATION

# WMO contribution to other ICAO and non-ICAO initiatives



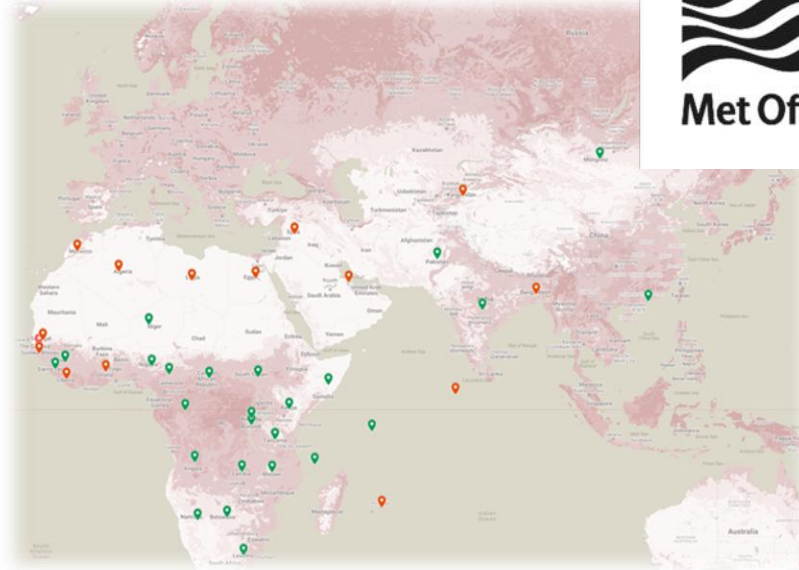
# WMO contribution to regional initiatives



## Aviation Meteorology Training Seminar

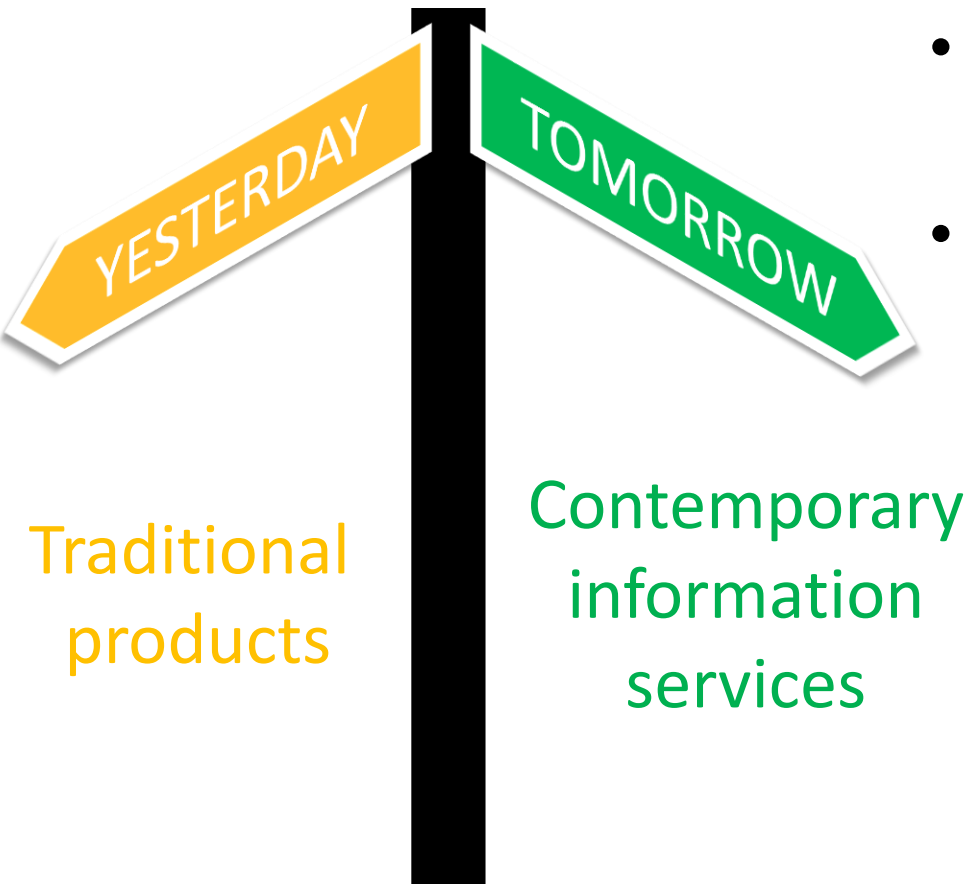


September/October 2024, Pretoria



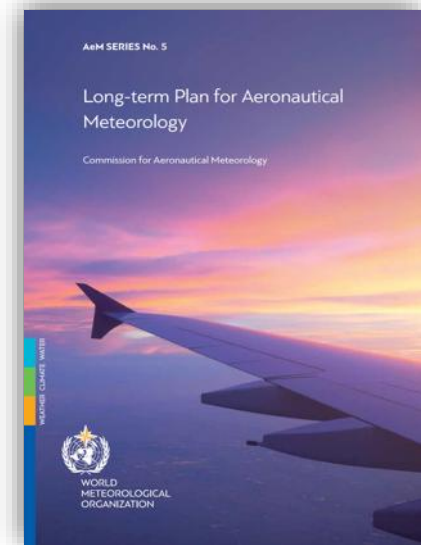
*Next Aviation Meteorology Training Seminar tentatively scheduled in May 2026, to be hosted by TSMS*

# Long-term Plan for Aeronautical Meteorology



- Service delivery transformation
- Drivers for change and influencing factors include:
  - Investment in the global weather enterprise
  - Evolving user requirements
  - Scientific and technological advances
  - Environmental sustainability
  - Future role of observers and forecasters

[AeM SERIES No. 5](#)



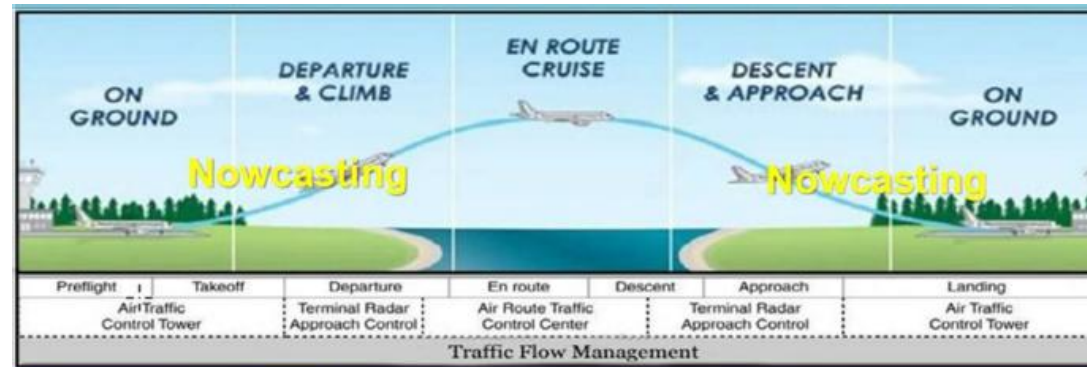
New edition in development  
(publication ± 2027)



# Aviation Research and Development Project Phase 2 (AvRDP-2)



*To develop, demonstrate and quantify the benefits of improvements to the forecasting of significant convection and associated hazards*



*Developing and demonstrating advancements in nowcasting, probabilistic forecasting and statistical methods plus forecast verification and validation*



# Aeronautical Meteorology Scientific Conference

21-24 October 2024, Geneva

AEROMETSCI-2024

## THEME

*"Aviation, weather and climate: scientific research and development for enhanced aeronautical meteorological services in a changing climate."*

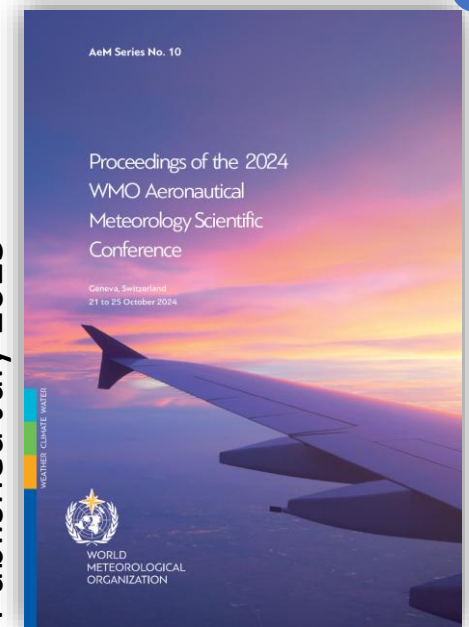
## THEMATIC SESSIONS

- Science underpinning meteorological observations, nowcasting and deterministic and probabilistic forecasts
- Impact-based information and decision support services for aviation
- Science to understand the impacts of climate change on aviation and aviation environmental issues



c. 150 participants

[AeM SERIES No. 10](#)



Published July 2025



WORLD  
METEOROLOGICAL  
ORGANIZATION

Homepage: [AeroMetSci-2024 on the WMO Community platform](#)

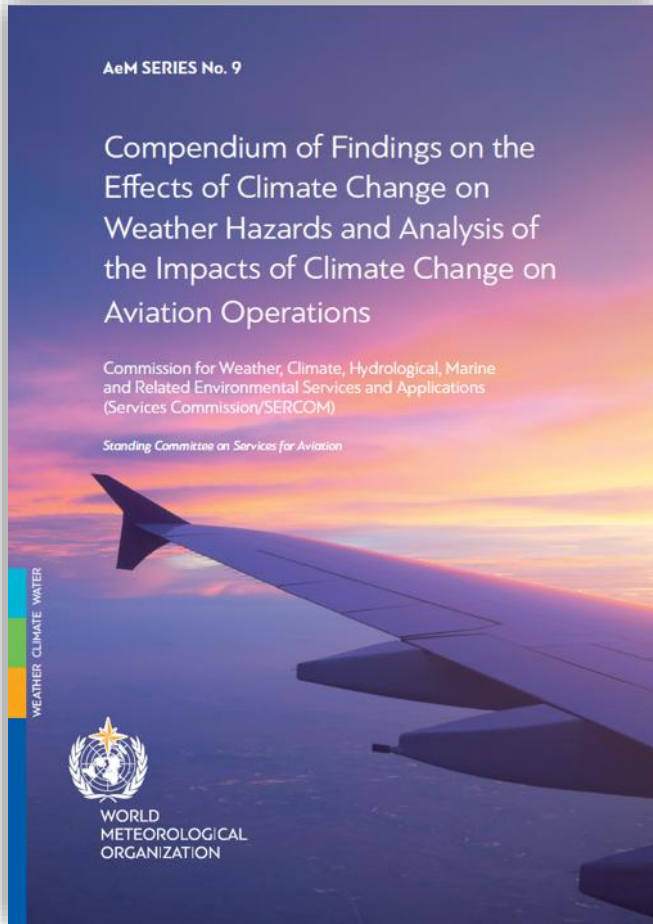
Publication: <https://library.wmo.int/idurl/4/69607>



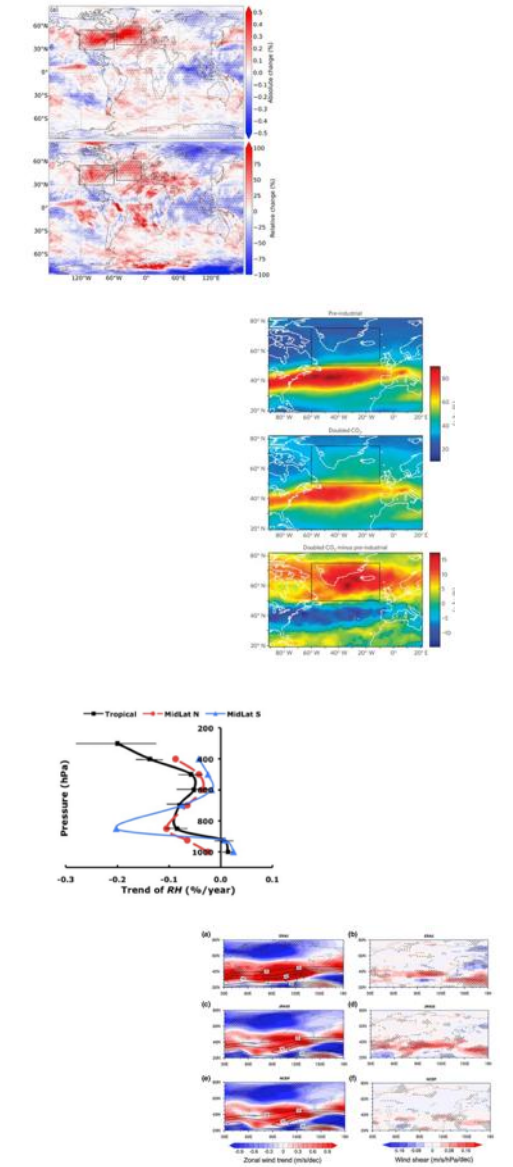
# AeM SERIES No. 9



Published March 2025



- Climate change may increase turbulence frequency and severity due to stronger jet streams. Better global forecasting is essential, especially in areas with high-density air traffic.
- Historical and future trends in icing are unclear although limited research suggests rising icing altitudes. Dedicated research on all icing indicators, including temperature, humidity and cloud water, is needed for a more accurate assessment.
- Rising global temperatures are projected to increase severe convection and hailstorm frequency, particularly at higher latitudes, impacting aviation operations on the ground and in the air.
- Climate change is expected to strengthen jet streams, affecting wind speeds, clear air turbulence and flight times, but with regional variations. The effects in the northern hemisphere are expected to be weaker due to Arctic amplification.
- Climate projections indicate a rising tropopause height globally, but trends vary. More research is needed on the effect of climate change on the tropopause.
- Warmer near-surface temperatures impact aircraft take-off performance, fuel efficiency and runway conditions. Increased weight restrictions and potential surface damage are concerns, but more research is needed to assess the critical threshold meteorological conditions.
- Climate projections suggest fewer tropical cyclones overall, but these cyclones are expected to be more intense, with higher peak wind speeds and heavier precipitation due to global warming.
- Low-level wind shear studies are scarce. Near-surface wind speeds are projected to decrease in the northern hemisphere and increase in the southern hemisphere, though these projections carry significant uncertainty. More research is needed to understand the effects of climate change.
- Research on the impact of climate change on sandstorms and dust storms is limited. More robust studies are needed to understand future trends and the associated impacts on aviation.
- Fog frequency varies regionally, influenced by temperature, humidity, wind and local topography. Climate change affects fog patterns; however, for an improved understanding of fog trends, aerosol concentration projections are also needed.
- Freezing precipitation, mostly in the northern hemisphere, is shifting poleward and inland. However, more research is needed to improve future projections of freezing precipitation in a changing climate and to better understand the associated impacts on aviation.
- Global mean sea level rose more rapidly in the twentieth century than in any prior century in the last three millennia and continues to accelerate. If this trend continues, coastal and low-lying airports will be particularly vulnerable to increased flooding and storm surges.



# Discontinuation of WMO *Technical Regulations* (WMO-No. 49), Volume II



- Late 2010s: Substantive duplication acknowledged between WMO-No. 49, Volume II and ICAO Annex 3
- Early 2020s: Endorsement of the **two-stage discontinuation** of WMO-No. 49, Volume II
  - Parts I and II discontinued in **2023**
  - Parts III and IV to be discontinued in **±2027**
    - Any material of continuing relevance transferred to ICAO PANS-MET (Doc 10145), Amendment 1



# Qualification and competency requirements for aero met personnel

Observers and forecasters 

*SARPs: Technical Regulations (WMO-No. 49), Volume I, Part V*

Competency frameworks:  
WMO-No. 1209

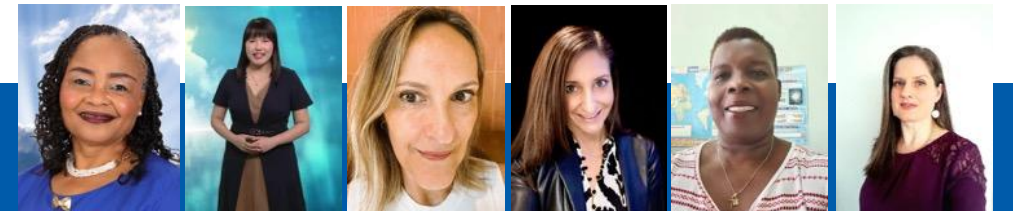
**!** Amendment applicable on 1 January 2026 **!**



# Gender Action Plan



♀ Women in ♀  
**LEADERSHIP**  
in Aeronautical Meteorology

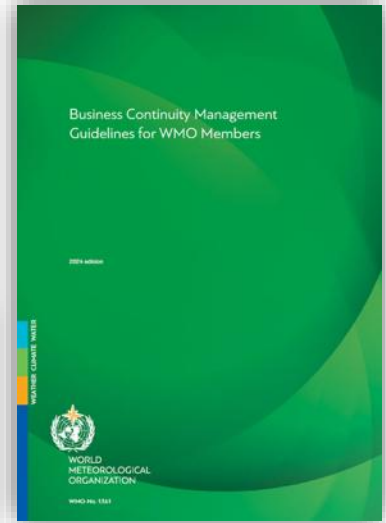


# General MET SARPS

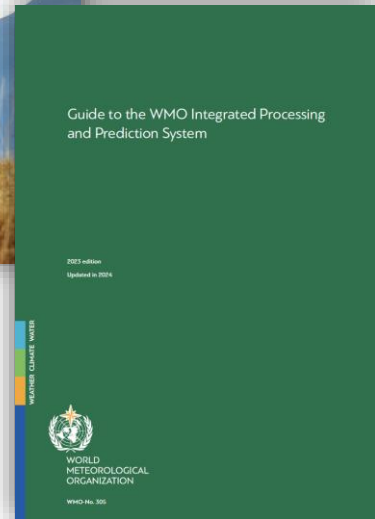
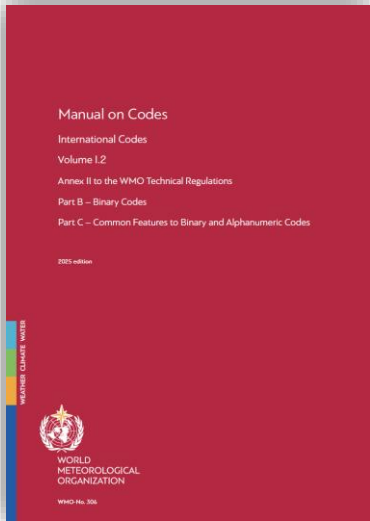


# New or updated WMO publications

# Business Continuity



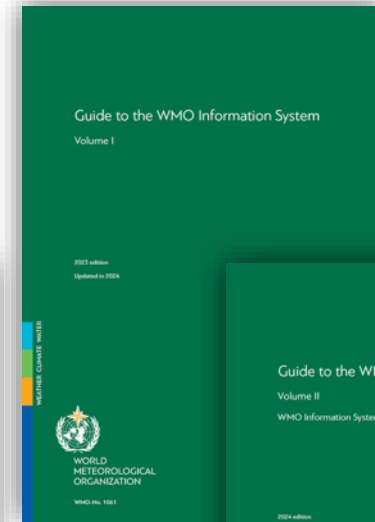
# Manual on Codes



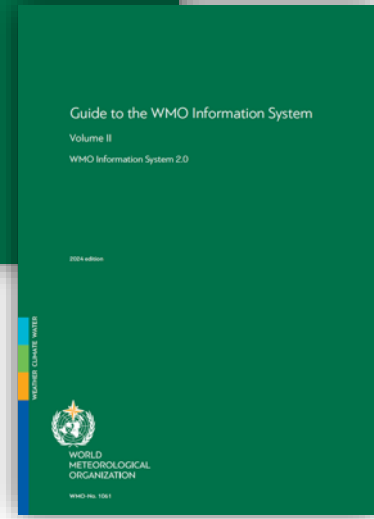
WIPPS



"CIMO Guide"



WIS 2.0



...among others



SERVICES FOR AVIATION  
**NEWSLETTER**

WORLD METEOROLOGICAL ORGANIZATION

Newsletter Issue 2/2024



**Foreword by the Chair of the WMO Standing Committee on Services for Aviation (SC-AVI)**

Dear colleagues,

Welcome to this edition of the WMO Services for Aviation Newsletter. This issue comes at a pivotal time for our community, as we continue to advance our understanding and capabilities in aeronautical meteorology.

Last month I had the pleasure of attending the Aeronautical Meteorology Scientific Conference (AeroMetSci-2024) in Geneva. The event highlighted the immense value of bringing experts together to share their work, and foster networking and collaboration opportunities. Over the five days, numerous valuable insights were exchanged among the scientific community and industry stakeholders. These insights are already being utilised in the ongoing development of the second edition of WMO's Long-term Plan for Aeronautical Meteorology. [Read more...](#)

**Andrea Henderson**

Bureau of Meteorology, Australia

Chair of WMO Standing Committee on Services for Aviation (SC-AVI)


- Issued twice per year ± June and December
- Articles on recent, ongoing and upcoming developments in aeronautical meteorology and related fields
- 1,300+ recipients worldwide
- To subscribe for free, please email: [aviation@wmo.int](mailto:aviation@wmo.int)



# WMO resources and further information

## Homepage

To WMO website العربية 中文 **English** Français Русский Español


 **Community** Knowledge Hub

Governance Programmes and Initiatives Community Events Community News Monitoring About Resources

[Home](#) / [Programmes and Initiatives](#) / [Aviation Services](#)

### Aviation Services

WMO aims to advance the use of meteorology in aviation by supporting Members' service providers to deliver high-quality, timely, and cost-effective meteorological, climatological and decision-support services for international civil aviation worldwide.



[Visit the AVI website !](#)



[aviationtraining.wmo.int](https://aviationtraining.wmo.int)



Moodle








### Education, Training & Competencies

This Moodle training portal is provided and maintained by the **Expert Team on Education, Training and Competency (ET-ETC)** of the **World Meteorological Organization (WMO)** Standing Committee on Services for Aviation (SC-AVI). The ET-ETC comprises aeronautical meteorology experts from around the world nominated by WMO Member States and Territories. Additional information on the activities of WMO in this application area is available [here](#).

The aim of this resource is to provide aeronautical meteorology training and guidance material sourced from around the world. The web site's content covers both operational and non-operational aspects of aeronautical meteorology although the site's primary focus is the specialist needs of the aeronautical forecaster. All the material on the site is reviewed by the ET/ETC.

Please notify the system administrator of any broken link or outdated content via email at [aviation@wmo.int](mailto:aviation@wmo.int)

### Meet the core members of the ET-ETC

 <b>Kathy-Ann CAESAR</b> Co-Chair British Caribbean Territories Caribbean Institute for Meteorology and Hydrology (CIMH)	 <b>Karine DUMAS</b> Co-Chair Canada Meteorological Service of Canada (MSC)	 <b>Lyndon ALVES</b> Core Member Guyana Hydrometeorological Service	 <b>Harrison BURNS-FABB</b> Core Member Australia Bureau of Meteorology (BoM)
 <b>Jannie STANDER</b> Core Member South Africa	 <b>Turgut UNAL</b> Core Member Türkiye	 <b>Erika HAYAMI</b> Ad-hoc Member Japan	



— END —



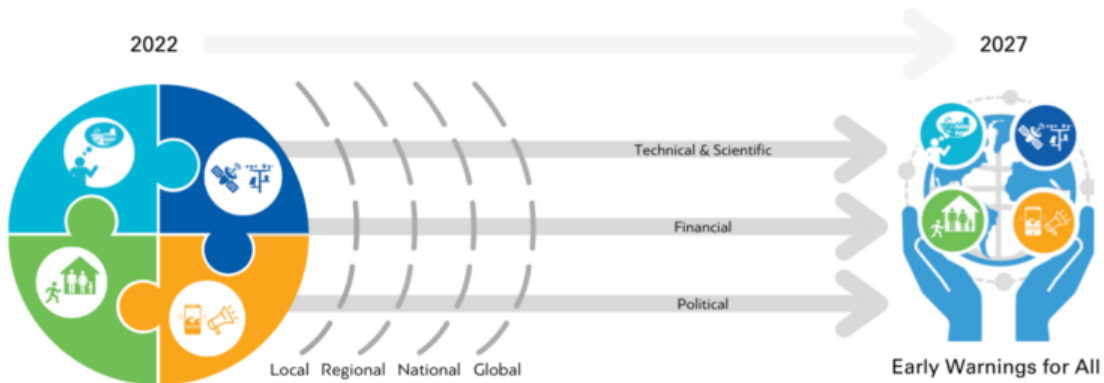
[aviation@wmo.int](mailto:aviation@wmo.int)



[www.wmo.int/aviation](http://www.wmo.int/aviation)

# Spare slides

# Early Warnings for All



Pillar 1 lead by UNDRR

**Disaster risk knowledge**  
Systematically collect data and undertake risk assessments

- Are the hazards and the vulnerabilities well known by the communities?
- What are the patterns and trends in these factors?
- Are risk maps and data widely available?

**Preparedness and response capabilities**  
Build national and community response capabilities

- Are response plans up to date and tested?
- Are local capacities and knowledge made use of?
- Are people prepared and ready to react to warnings?

Pillar 2 lead by WMO

**Detection, observations, monitoring, analysis and forecasting of hazards**  
Develop hazard monitoring and early warning services

- Are the right parameters being monitored?
- Is there a sound scientific basis for making forecasts?
- Can accurate and timely warnings be generated?

**Warning dissemination and communication**  
Communicate risk information and early warnings

- Do warnings reach all of those at risk?
- Are the risks and warnings understood?
- Is the warning information clear and usable?

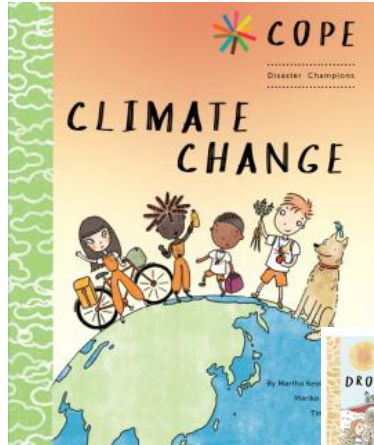
Pillar 4 lead by IFRC

Pillar 3 lead by ITU





# Youth Action Plan



WMO and COPE Academy Ltd partnership

Aligned with international agendas

In harmony with the broader UN System



Working together with youth-oriented organizations

For meaningful youth engagement



- 
**Governance**

**Institutionalize Youth Engagement**  
Establish policies, structures, and mechanisms to ensure sustained and meaningful youth participation across WMO governance and decision-making processes.
- 
**Capacity Development**

**Strengthen Intergenerational Skills**  
Foster learning opportunities for youth, WMO staff, and partners to enhance skills, improve collaboration, and integrate youth perspectives into weather, water, and climate initiatives.
- 
**Human Resources**

**Enhance Career Pathways and Professional Growth**  
Improve recruitment, career and leadership development opportunities for young professionals within WMO and its Member Institutions.
- 
**Communication, Outreach & Partnerships**

**Expand Communication, Outreach, and Strategic Partnerships**  
Amplify youth engagement through targeted outreach, innovative communication strategies, and strengthened collaboration with UN entities, youth networks, and external stakeholders.
- 
**Monitoring & Evaluation**

**Ensure Accountability and Monitoring**  
Underlying all the pillars are clear key performance indicators (KPIs) and reporting mechanisms to track progress and integrate youth considerations into WMO broader strategic frameworks.

