WMO activities of relevance to ICAO

ICAO APANPIRG METSG/29

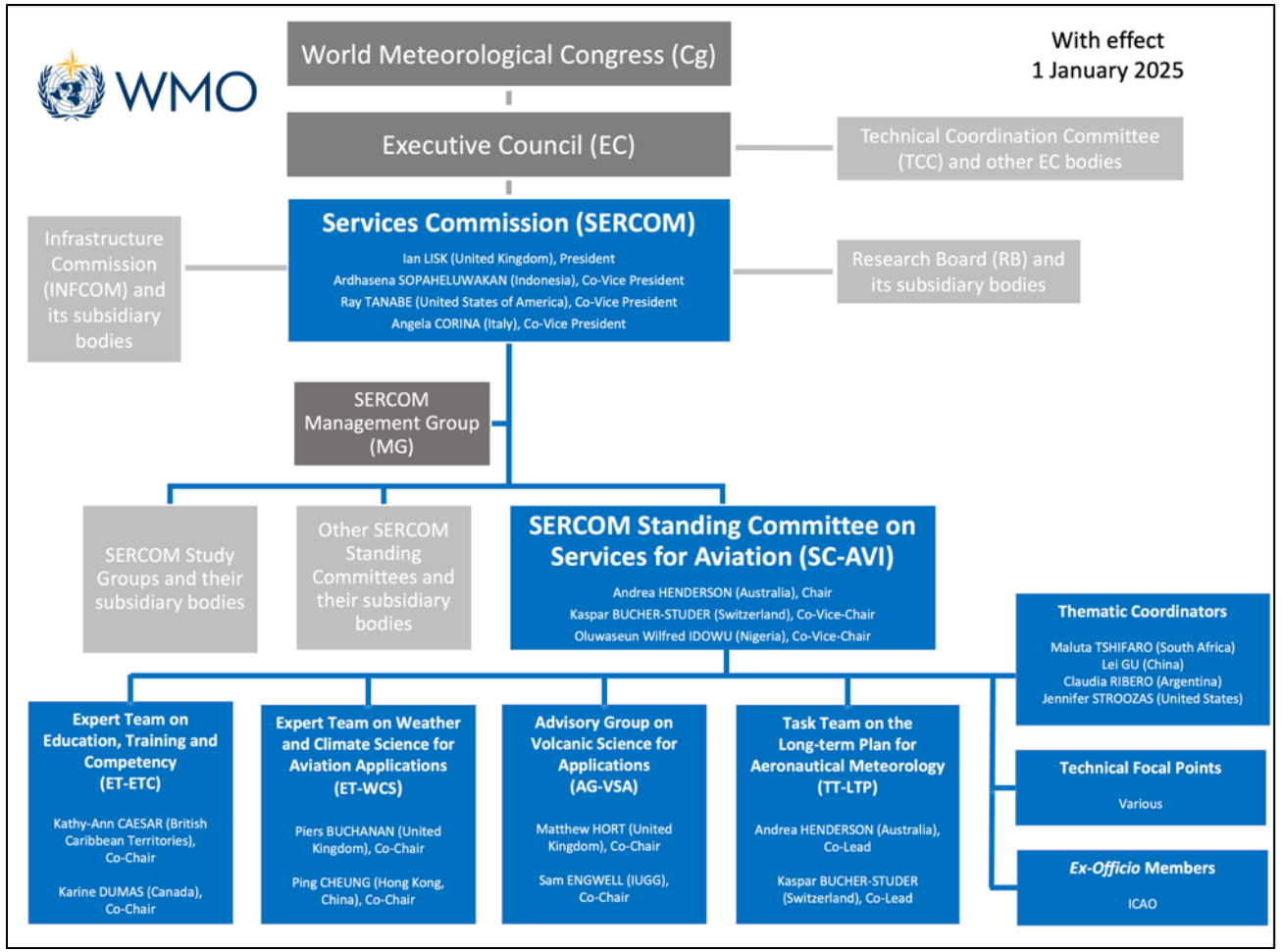
18-22 August 2025, Bangkok, Thailand

WORLD METEOROLOGICAL ORGANIZATION

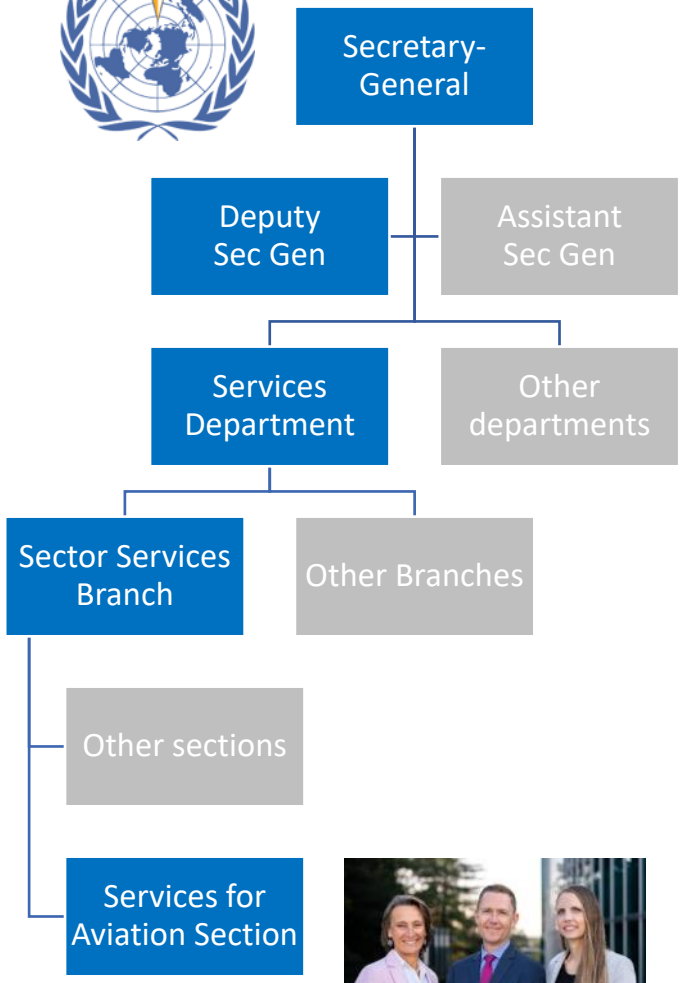
Presented by:
Greg Brock, Chief, Services for Aviation Section

WMO organizational structures

Members level



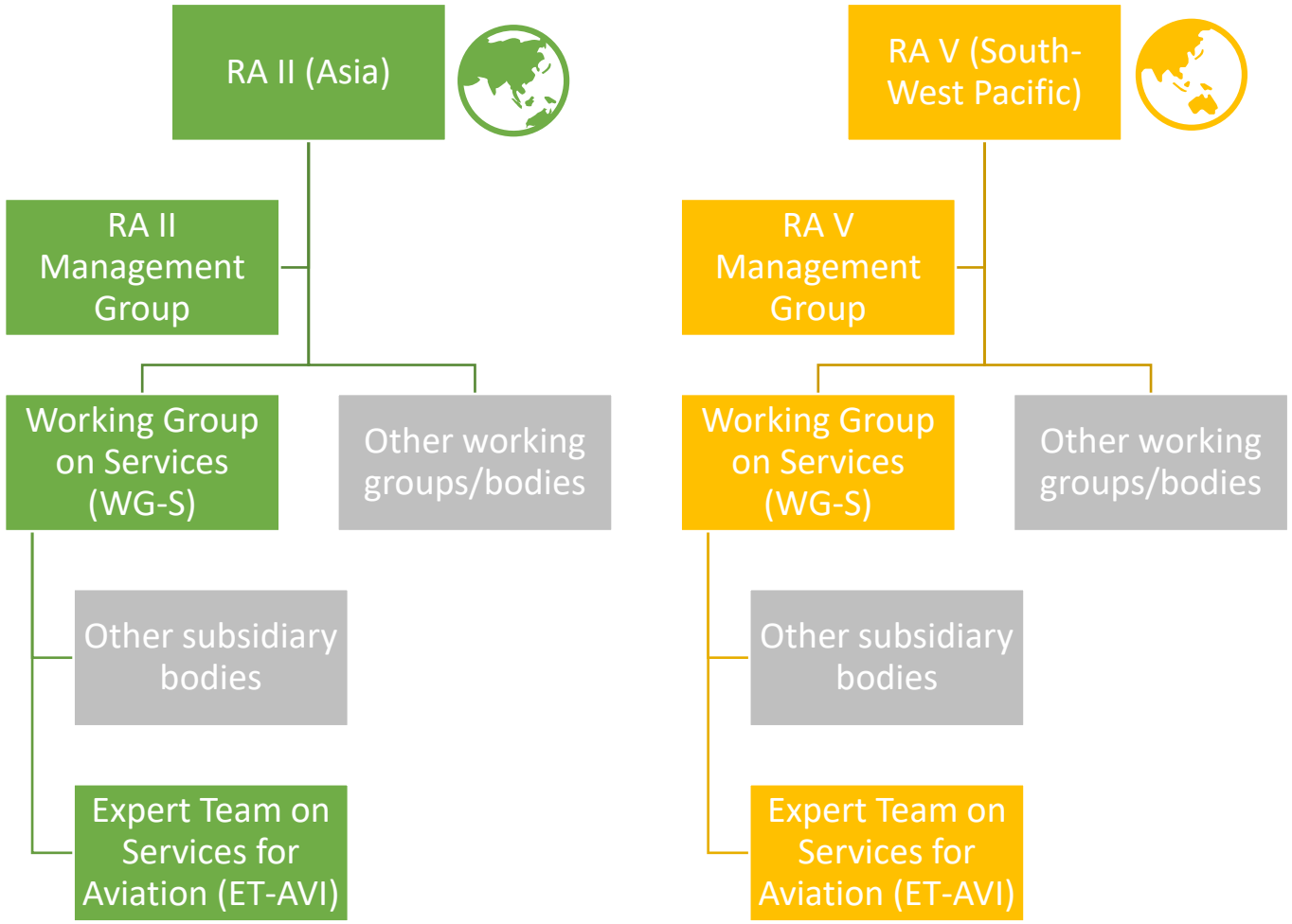
Secretariat level



Stéphanie, Greg, Adriana

WMO organizational structures

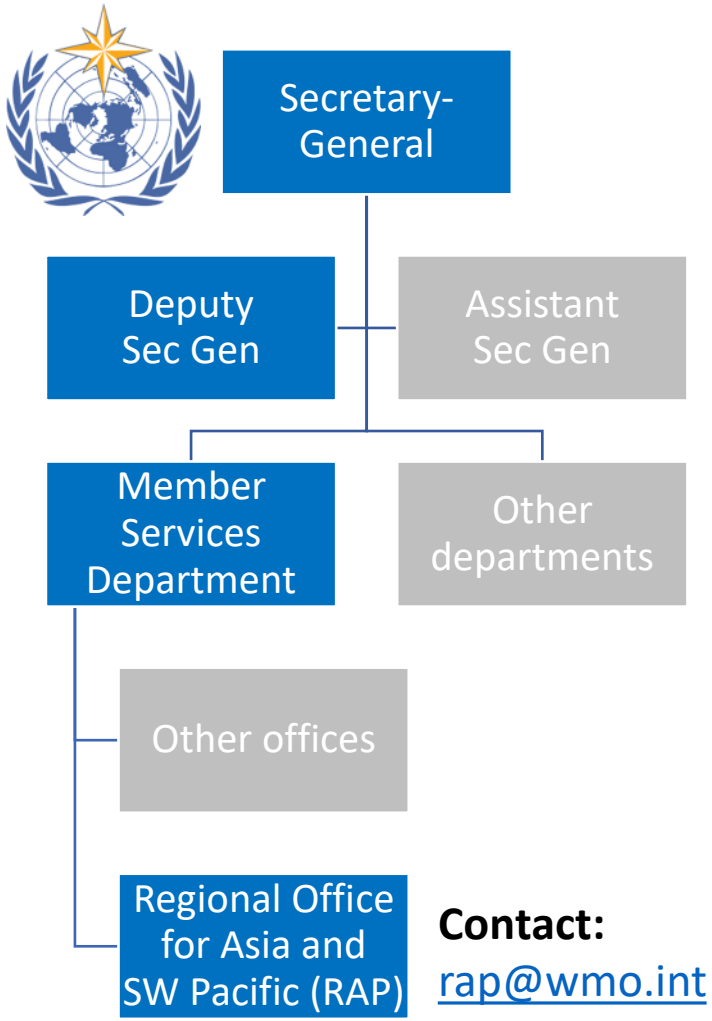
Members level



https://community.wmo.int/en/governance/regional-association

Regional level

Secretariat level

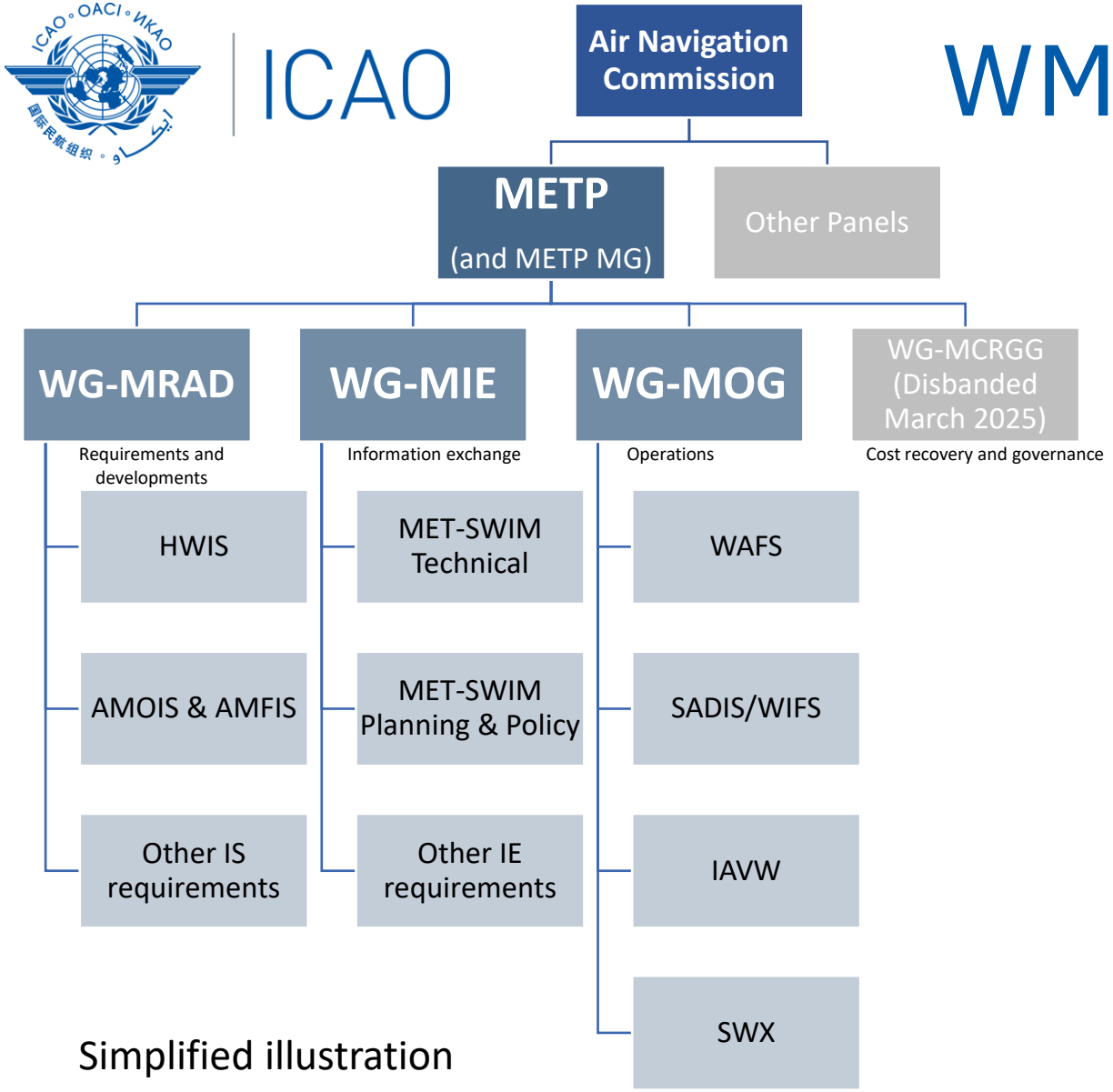


Contact:
rap@wmo.int

- Director
- Regional Officers
- Technical Coordinators
- Representative for SW Pac
- Other staff (admin, etc.)

WMO contribution to METP

ICAO



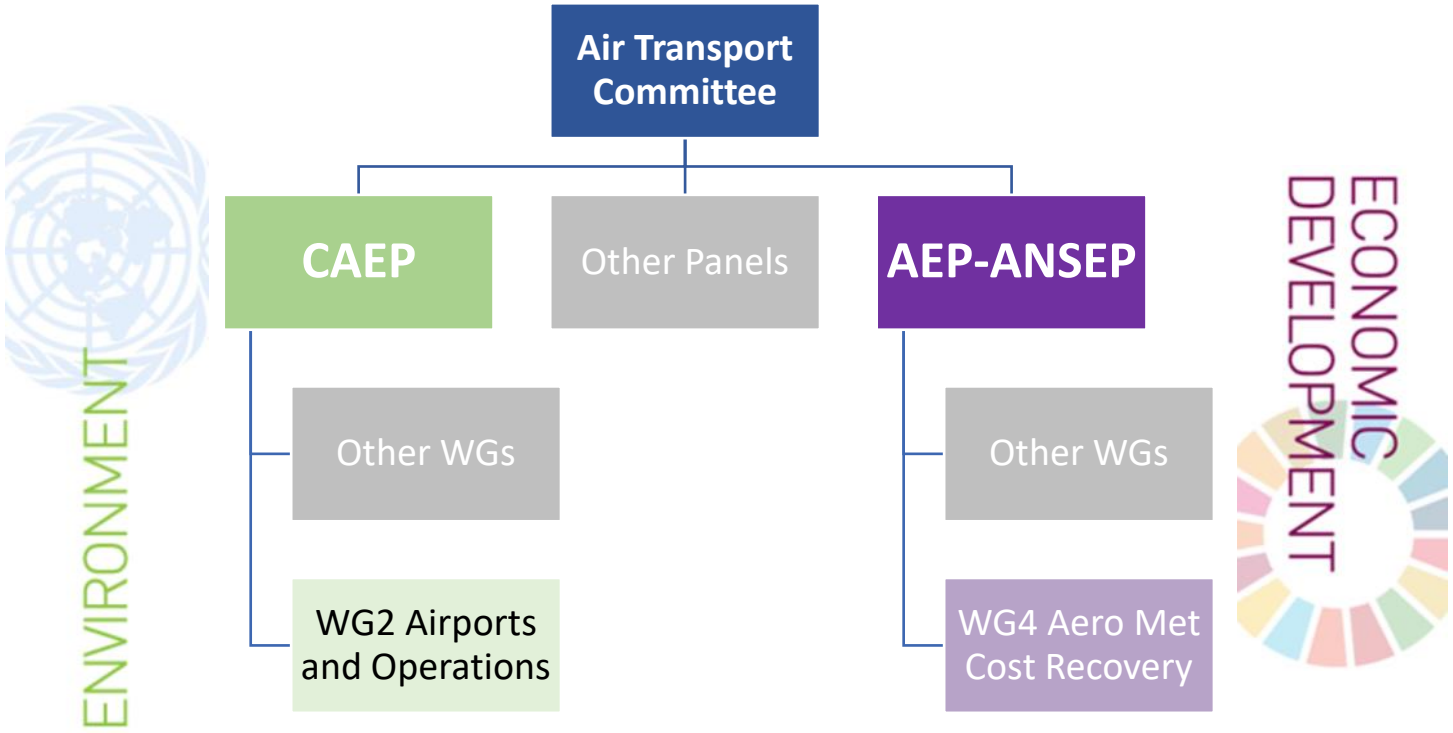
Simplified illustration

METEOROLOGY PANEL

Working Arrangements

STANDING COMMITTEE ON SERVICES FOR AVIATION

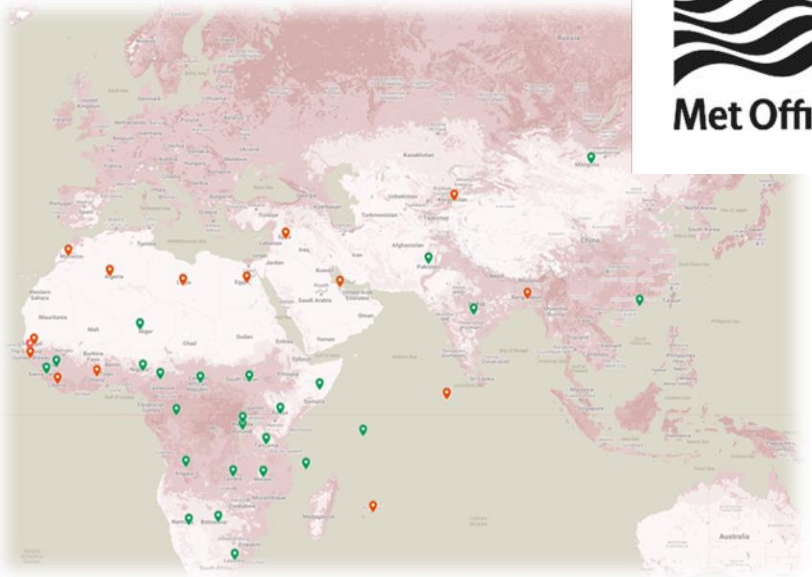
WMO contribution to other ICAO and non-ICAO initiatives



WMO contribution to regional initiatives

Aviation Meteorology Training Seminar

September/October 2024, Pretoria



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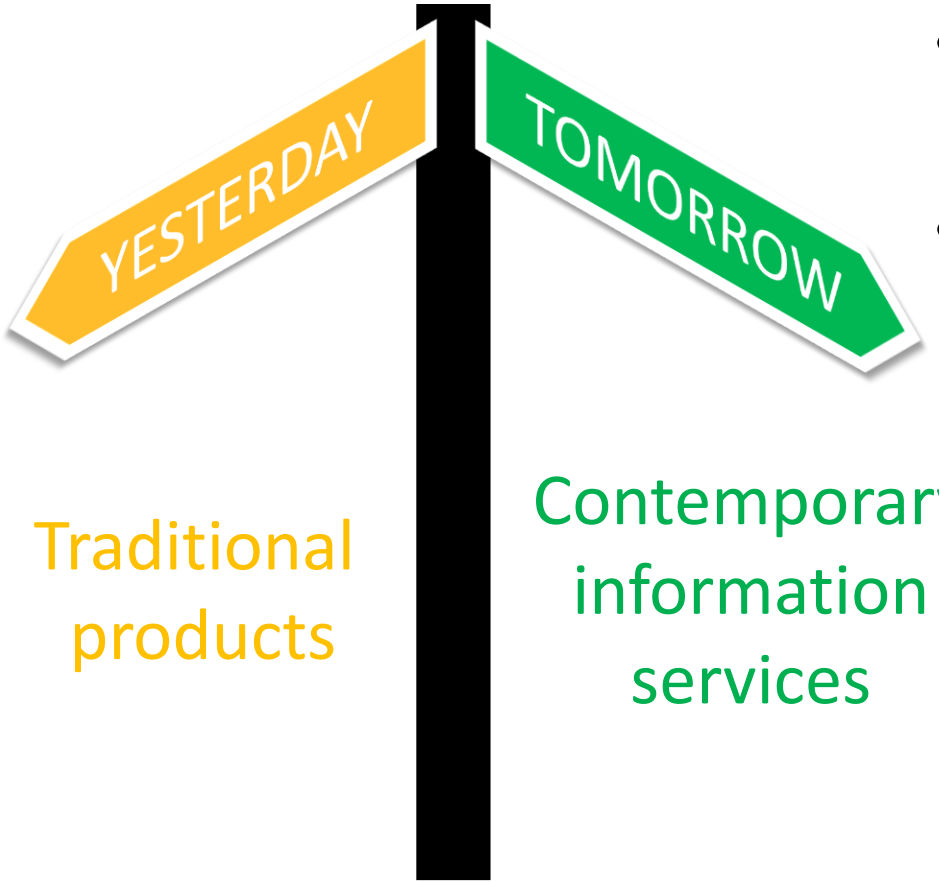
Met Office

South African Weather Service

Long-term Plan for Aeronautical Meteorology

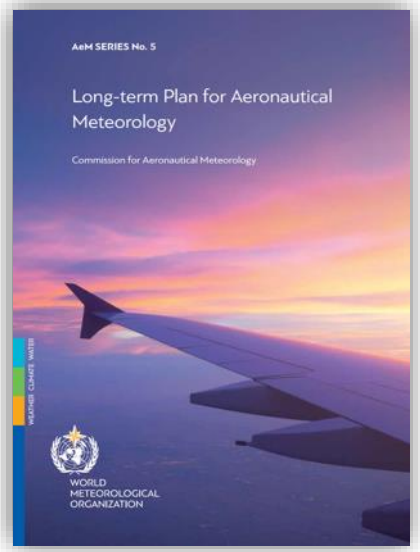


Traditional products

Contemporary information services

- 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

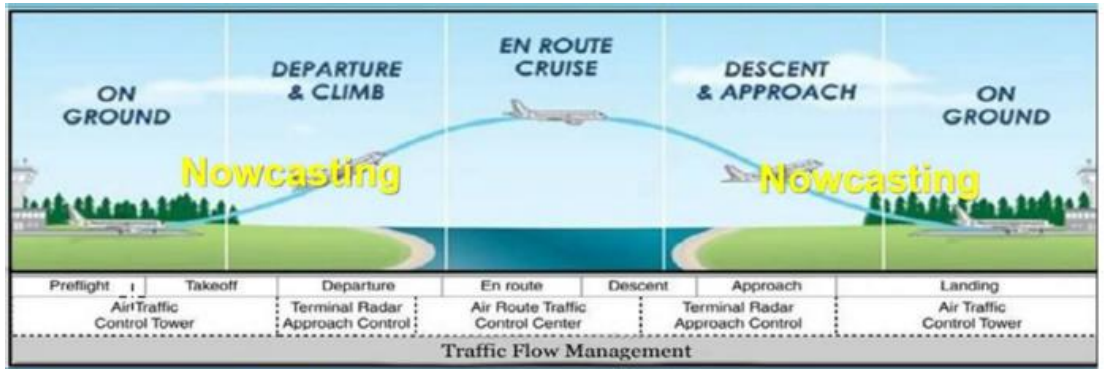
AeM SERIES No. 5



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

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https://avrdp.hko.gov.hk/Phase2/

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

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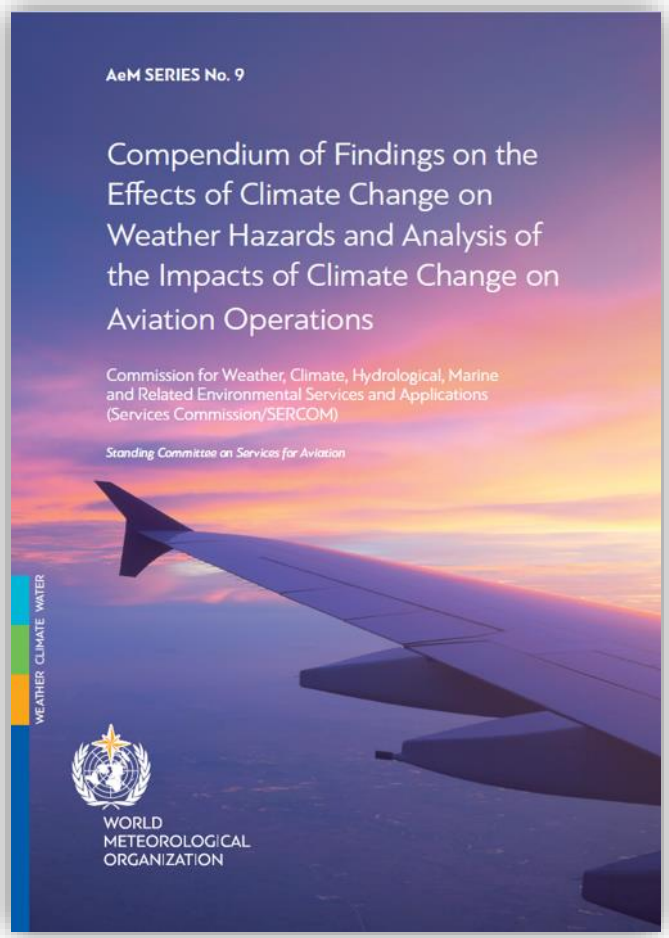
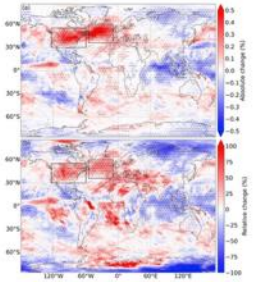
https://community.wmo.int/en/activity-areas/aviation/meetings/aerometsci-2024

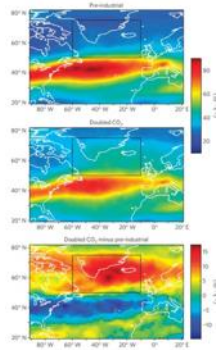
[AeM SERIES No. 9]

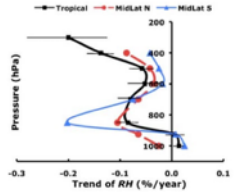
Published March 2025

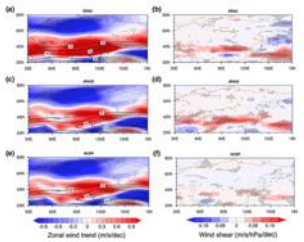


	Climate change may increase turbulence frequency and severity due to stronger jet streams. Better global forecasting is essential, especially in areas with high-density air traffic.
	Historical and future trends in icing are unclear although limited research suggests rising icing altitudes. Dedicated 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.
T	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.



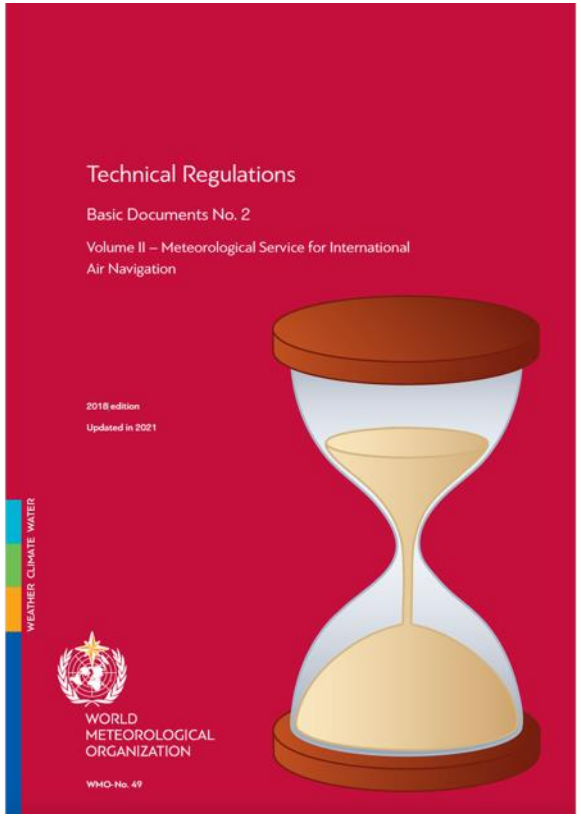






https://library.wmo.int/idurl/4/69458

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

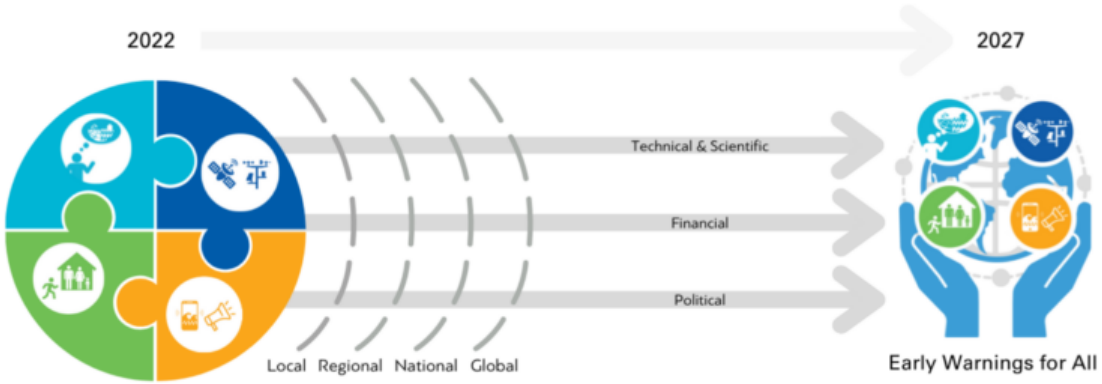
SARPs: *Technical Regulations* (WMO-No. 49), Volume I, Part V

Competency frameworks: WMO-No. 1209

! Amendment applicable on 1 January 2026 !

https://community.wmo.int/en/activity-areas/aviation/resources/amp-qual-comp-amendments

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?

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?

Pillar 4 lead by IFRC

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 preapred and ready to react to warnings?

Pillar 3 lead by ITU

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?

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https://wmo.int/activities/early-warnings-all/wmo-and-early-warnings-all-initiative

Gender Action Plan

♀Women in♀ LEADERSHIP in Aeronautical Meteorology

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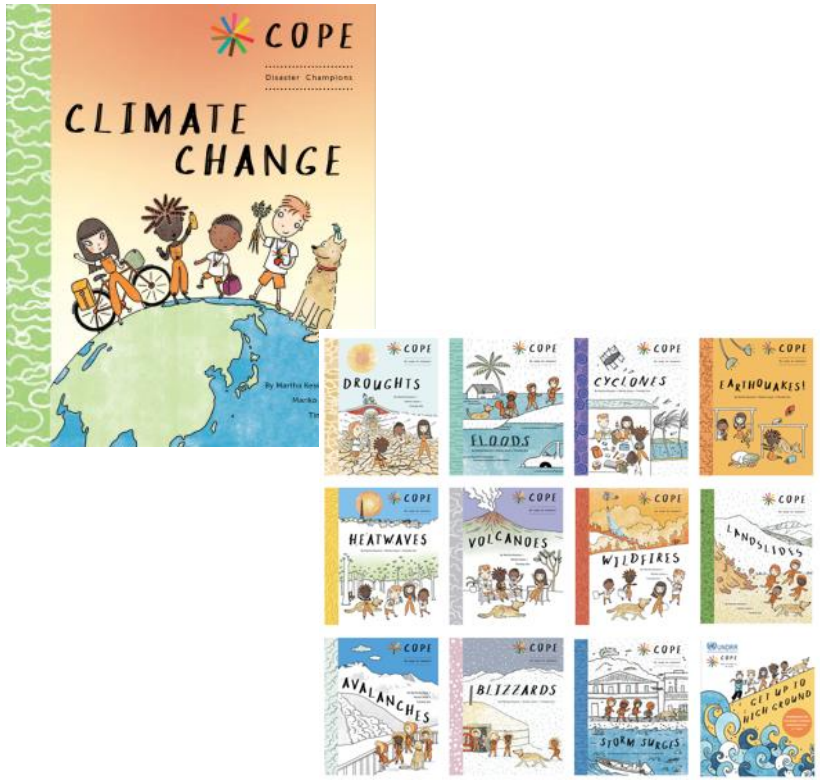
https://community.wmo.int/en/activity-areas/aviation/women-in-leadership

Youth Engagement

Youth Action Plan



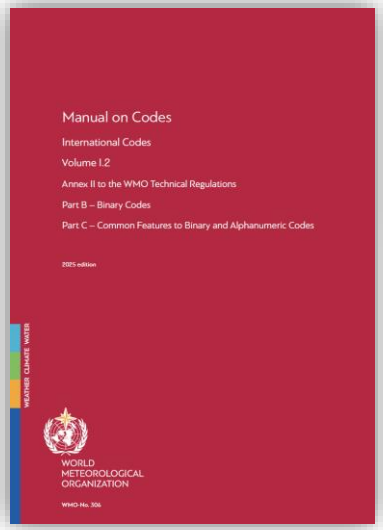
WMO and COPE Academy Ltd partnership

https://wmo.int/about-wmo/youth-engagement

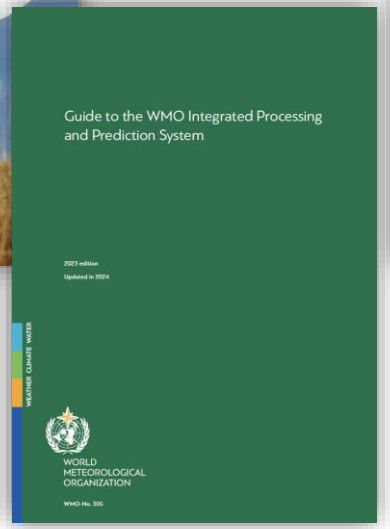
New or updated WMO publications

General MET SARPS

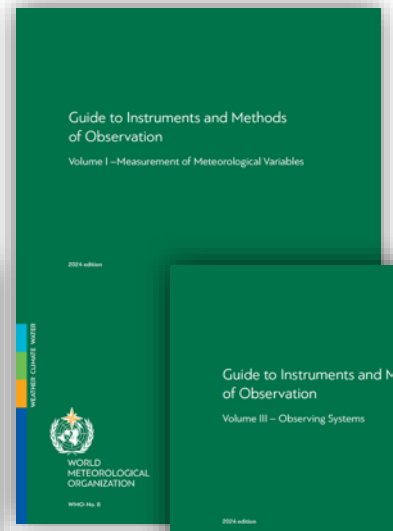
Manual on Codes

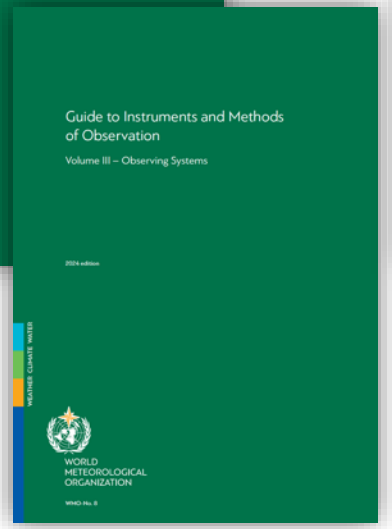


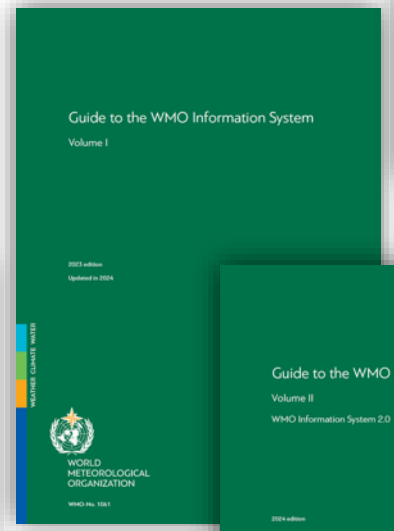
WIPPS



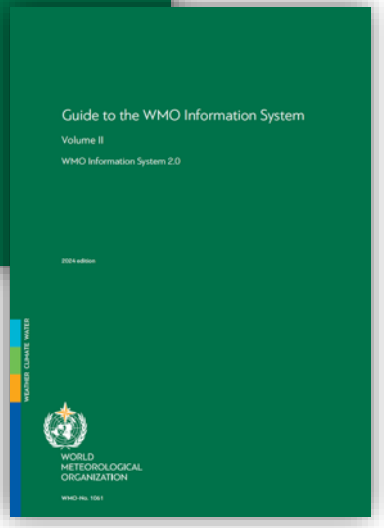
"CIMO Guide"



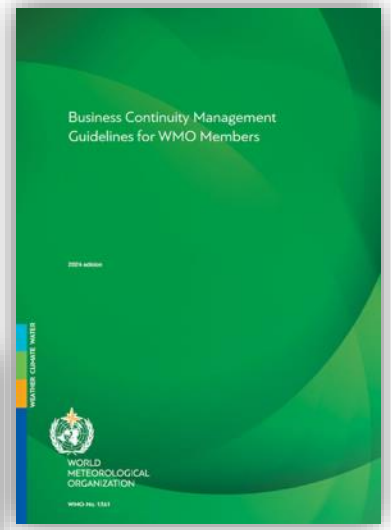




WIS 2.0



BCM



…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

WORLD METEOROLOGICAL ORGANIZATION

Previous newsletters:
https://community.wmo.int/en/activity-areas/aviation/resources/newsletters

All meetings/events shown are subject to change

Upcoming WMO meetings/events

Extraordinary session of the **World Meteorological Congress** (Cg-Ext. (2025))
20 to 24 October

Second meeting of the **Expert Team on Weather and Climate Science for Aviation Applications** (ET-WCS-2)
±April

Eighteith session of the **Executive Council** (EC-80)
22-26 June

Fourth session of the **Services Commission** (SERCOM-4)
±October

Q4 2025 | Q1 2026 | Q2 2026 | Q3 2026 | Q4 2026

Fourth meeting of the **Standing Committee on Services for Aviation** (SC-AVI-4)
4 to 6 November

WMO, UK Met Office and Turkish State Meteorological Service **Aviation Meteorology Training Seminar**
±May

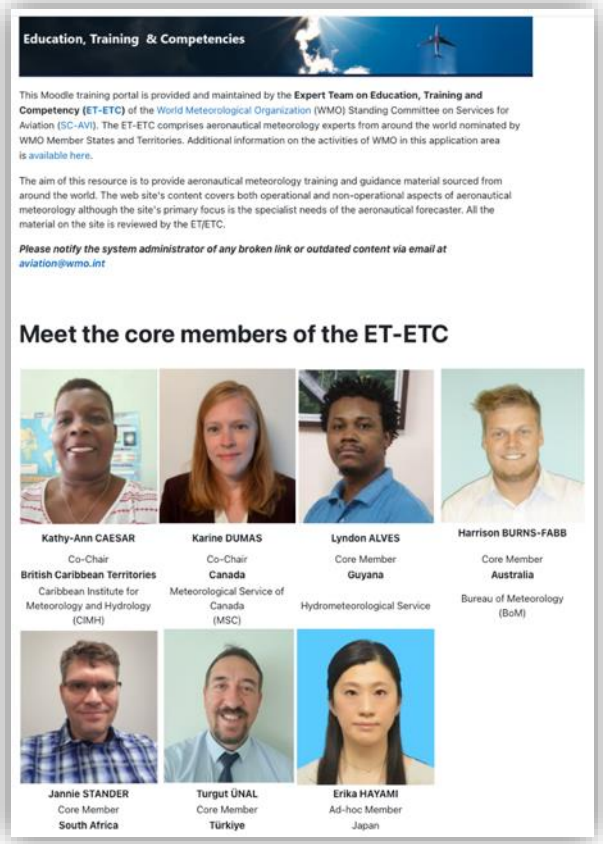
Additional information at: https://wmo.int/activities/events-and-meetings
and
https://community.wmo.int/en/activity-areas/aviation (under 'Upcoming meetings')

WMO resources and further information

Homepage

www.wmo.int/aviation/

Moodle



aviationtraining.wmo.int

— END —

aviation@wmo.int www.wmo.int/aviation

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