Commission for Aeronautical Meteorology Management Group 2016 (CAeM-MG-2018)

22 - 24 January 2018, Geneva, Switzerland

Report of the President of CAeM, Mr Chi-Ming Shun

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

Progress since MG-2016

- **69th Session of the Executive Council**
  - ***SPECIAL DIALOGUE ON THE FUTURE OF AERONAUTICAL METEOROLOGICAL SERVICES***

SUMMARY OF THE SPECIAL DIALOGUE ON THE FUTURE OF AERONAUTICAL METEOROLOGICAL SERVICES

EC-69, GENEVA, 11 May 2017

Decision 42 (EC-69) – Future of AeM services

Requests the president of CAeM:

- To consider the outcomes of the Special Dialogue in preparing the agenda for CAeM-16 as well as to continue regular dialogue and consultation with relevant aviation stakeholders

Decision 42 (EC-69) – Future of AeM services

Requests the president of CAeM:

- In collaboration with presidents of regional associations, to develop a **methodology** and conduct a **sensitivity analysis** of various scenarios of future meteorological service delivery for aviation, including the degree of engagement of private sector providers, to assess possible impacts both on the NMHSs as aeronautical meteorological service providers and on the resulting service quality levels, where such analytical information is to inform WMO planning of aviation-related activities in the future
- Initial results for Cg-18 (?)
- PPP landscape survey being planned to be conducted in early 2018 may provide timely and pertinent inputs to this work

CAeM SERIES No. 1

Outcomes of the 2016-2017 CAeM Global Survey on Aeronautical Meteorological Service Provision

WMO CAeM

Geneva
November 2017

Credit: Jan Sondij, Co-chair of ET-GOV
Yi Wang, WDS/AEM Division internee

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Draft long-term plan

- Draft LTP-AeMP methodology endorsed by EC
  - compatible time horizon with the ICAO GANP
  - comparable systems-engineering approach based on a series of performance improvements areas, block (time steps) and modules
- P/CAeM, in coordination with presidents of other technical commissions concerned and supported by Secretariat, to finalize the LTP-AeMP by EC-70

LTP template (INF. 1)

WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR AERONAUTICAL METEOROLOGY

LONG-TERM PLAN
OF THE
AERONAUTICAL METEOROLOGY PROGRAMME

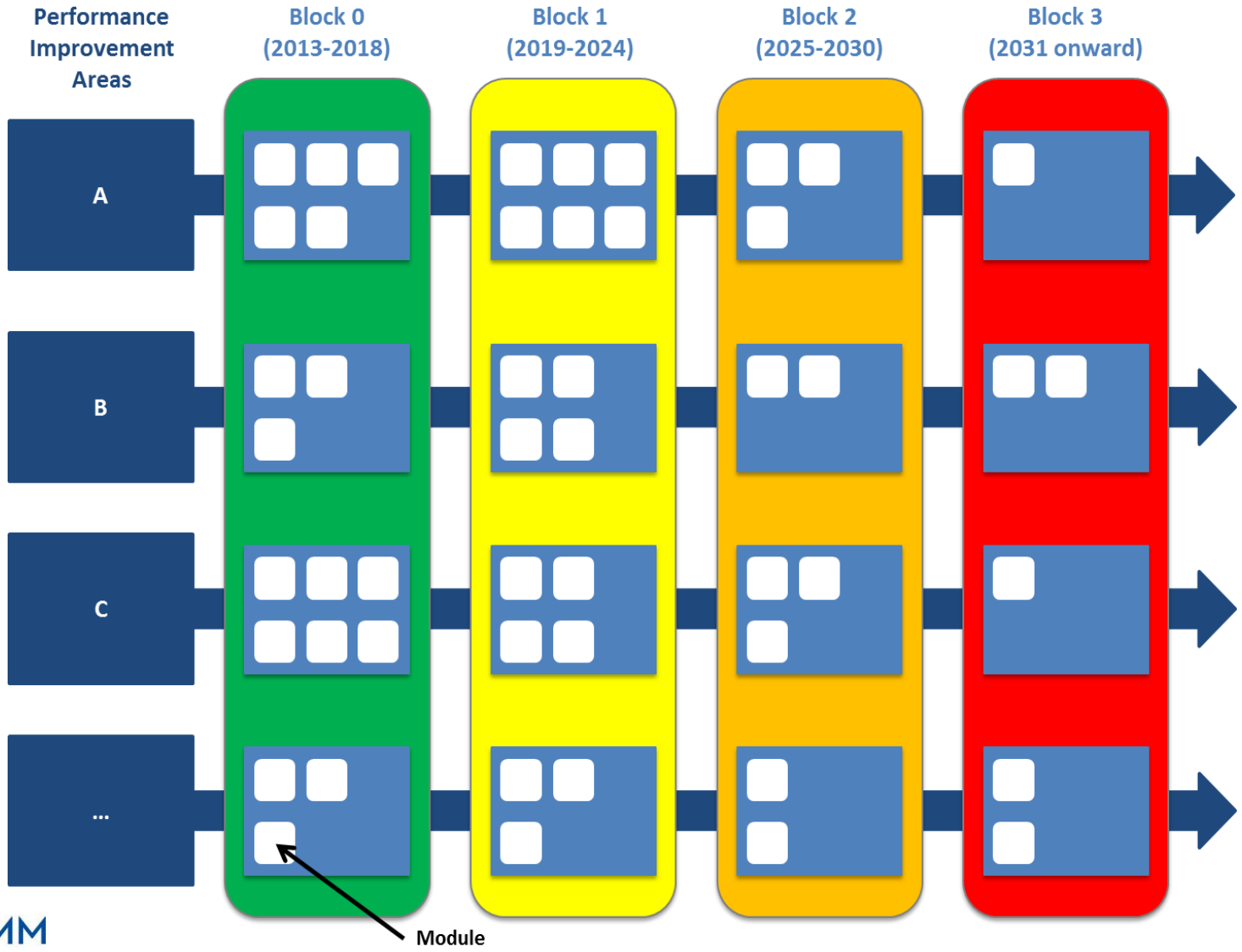
Version 0.0

<<Date>>

DRAFT

WMO OMM

Potential structure for AeMP long-term plan



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Typical aviation operations performed and their interest area

AERODROME	TERMINAL AREA	EN-ROUTE	TERMINAL AREA	AERODROME
Pre-flight planning	Take-off	Climb	Manoeuvering/Hold	Taxi
Parked	Initial climb	Cruise	Initial approach	Gate arrival
Gate push-back		Descent	Final approach	Parked
Taxi			Landing	Post-flight analysis

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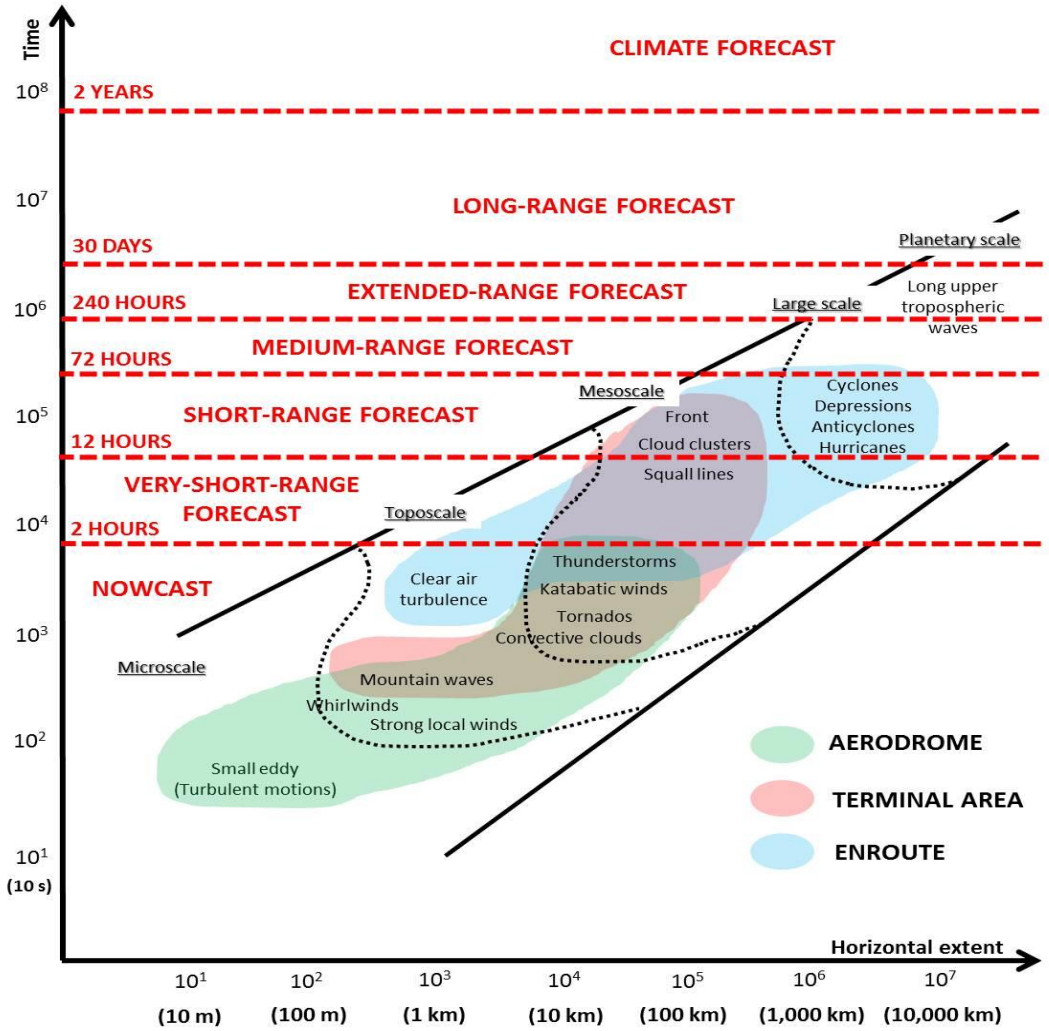
Temporal and spatial relationship between MET phenomena & aviation interest area



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More refined structure for AeMP long-term plan

PERFORMANCE IMPROVEMENT AREA	Block 0 (2013-2018)	Block 1 (2019-2024)	Block 2 (2025-2030)	Block 3 (2031 onwards)
MICROSCALE	B0-MICRO-AD	B1-MICRO-AD	B2-MICRO-AD	B3-MICRO-AD
TOPOSCALE	B0-TOPO-AD B0-TOPO-TMA B0-TOPO-ENR	B1-TOPO-AD B1-TOPO-TMA B1-TOPO-ENR	B2-TOPO-AD B2-TOPO-TMA B2-TOPO-ENR	B3-TOPO-AD B3-TOPO-TMA B3-TOPO-ENR
MESOSCALE	B0-MESO-AD B0-MESO-TMA B0-MESO-ENR	B1-MESO-AD B1-MESO-TMA B1-MESO-ENR	B2-MESO-AD B2-MESO-TMA B2-MESO-ENR	B3-MESO-AD B3-MESO-TMA B3-MESO-ENR
LARGE SCALE and PLENTARY SCALE	B0-MACRO-ENR	B1-MACRO-ENR	B2-MACRO-ENR	B3-MACRO-ENR

	Horizontal extent (typical)	Temporal extent (typical)	ABBREVIATION
Microscale	A few hundred metres or less	Seconds to a few minutes	MICRO
Toposcale	Several hundred metres to a few kilometres	Several minutes to a few hours	TOPO
Mesoscale	Several kilometres to a few hundred kilometres	Several hours to a few days	MESO
Large (synoptic) scale	Several hundred to a few thousand kilometres	Several days to a few weeks	MACRO
Planetary scale	Several thousand to many thousands of kilometres	Several weeks to months	

Aerodrome	Several kilometres to a few tens of kilometres	[redacted]	AD
Terminal area	Several tens of kilometres to a few hundred kilometres		TMA
Enroute	Several hundred to several thousands of kilometres		ENR

Performance Improvement Area: MICROSCALE

B#-MICRO-AD	Improved microscale meteorological observations and forecasts at the aerodrome
	This module addresses improvements to the observing and forecasting of microscale meteorological phenomena in the **very immediate nowcast timeframe (0 to 20 minutes)**. Microscale meteorological phenomena at the aerodrome includes **near-ground turbulence/small eddies**.
	Applicability
	This module is applicable to operations at the **aerodrome**.
	Benefits
	Access and Equity — Improved aerodrome access in the very immediate term due to a reduction in the disruption of air traffic flows, especially during periods where demand is higher than capacity.
	Capacity — Increased optimization of aerodrome capacity and departure/arrival rates (runway throughput) in the very immediate term through enhanced situational awareness and predictability.
	Efficiency — Increased operational efficiency in the very immediate term through harmonized sequencing of arriving and departing air traffic as well as fleet management.
	Environment — Environmental benefits through reduced fuel burn (fewer go-arounds, reduced holds, shorter aircraft run time, etc.).
	Flexibility — Improved flexibility in the very immediate term through the enhanced scheduling of dynamic traffic flows to, from and at the aerodrome.
	Interoperability — Seamless transition of aircraft at the aerodrome to/from terminal area airspace.
	Participation — Direct support to aerodrome users' collaborative decision-making (CDM) in the very immediate term.
	Predictability — Increased certainty/decreased uncertainty in the aerodrome demand predictions, capacity balancing and flight time punctuality in the very immediate term.
	Safety — Increased safety in the very immediate term through improved situational awareness and predictability.
	Cost
	Reduction in operating costs for users and service providers through reduced delays and optimized handling of air traffic at the aerodrome. Associated consequential cost benefit across the rest of the network (i.e. terminal area and enroute airspace).

Realistic inputs to EC-70

- Where they exist, mappings between the AeMP modules can be identified so as to ensure an integrated approach, preventing duplication and avoiding gaps that may otherwise appear.
- Similarly, mappings to the modules of ICAO's ASBU methodology can be identified to ensure alignment.

MG is invited to consider…

- If there is scope for **simplifying** the LTP structure (e.g. to focus on Block 0 and Block 1 initially)
- If a **drafting team** should be formed to carry out the work as a matter of priority
- If the **methodology** would need to be fine-tuned, e.g. to reflect not just the scientific/MET aspects but also the technological aspects such as:
  - deployment of EFB app supported by onboard wifi
  - IWXXM implementation
  - big data analytics and AI developments

WMO AeroMetSci-2017

230 participants

60 oral presentations

> 60 posters

Stephanie Desbois

Peter PW Li

Herbert Peumpel

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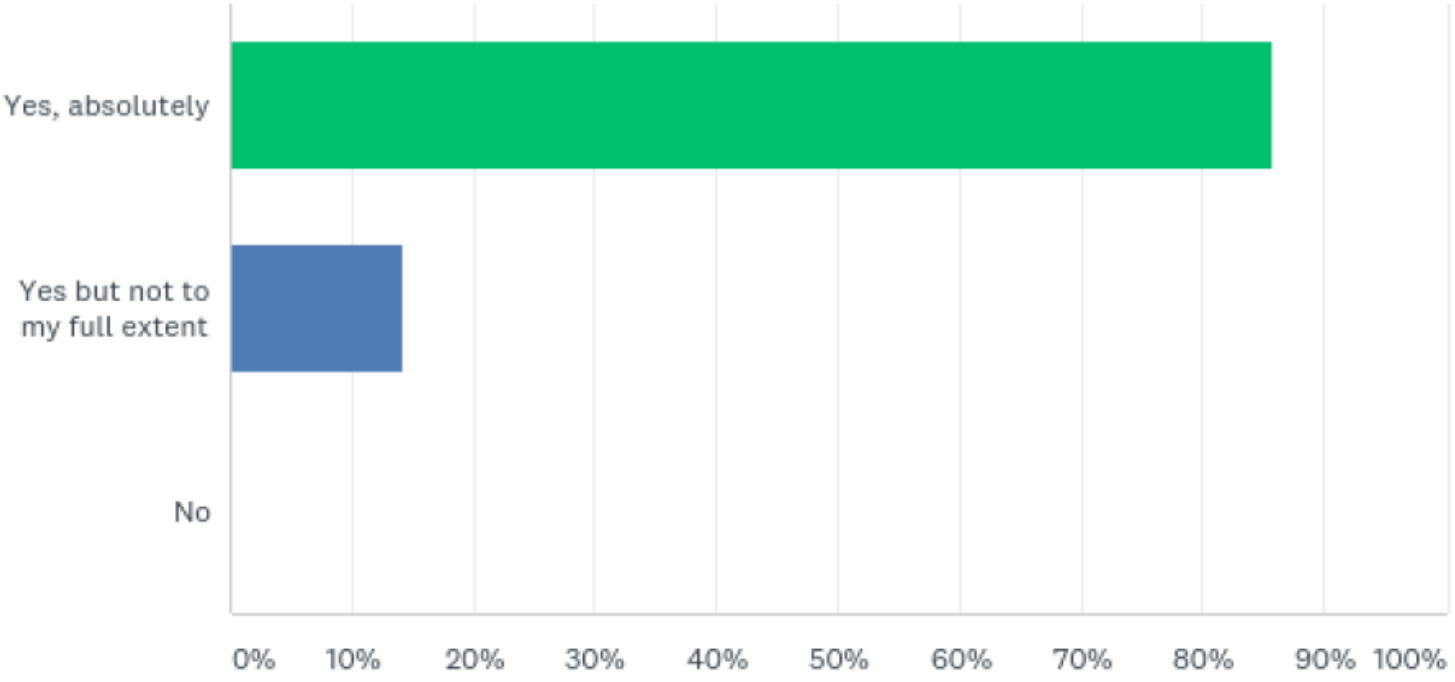
WMO AeroMetSci-2017

Q5: Did the conference fulfil your reason for attending? (Select only one)

Answered: 119 Skipped: 0



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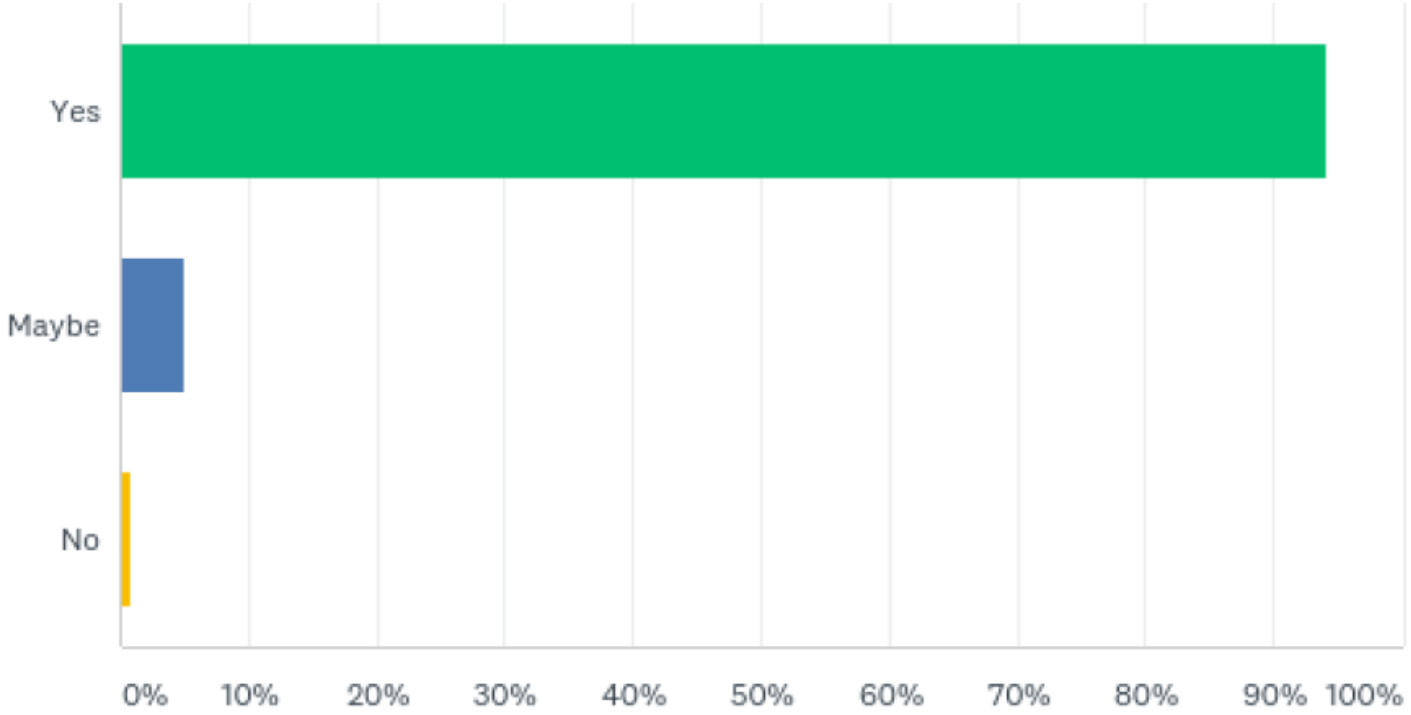
WMO AeroMetSci-2017

Q10: If WMO were to conduct a similar conference in the future, would you recommend this conference to others? (Select only one)

Answered: 119 Skipped: 0



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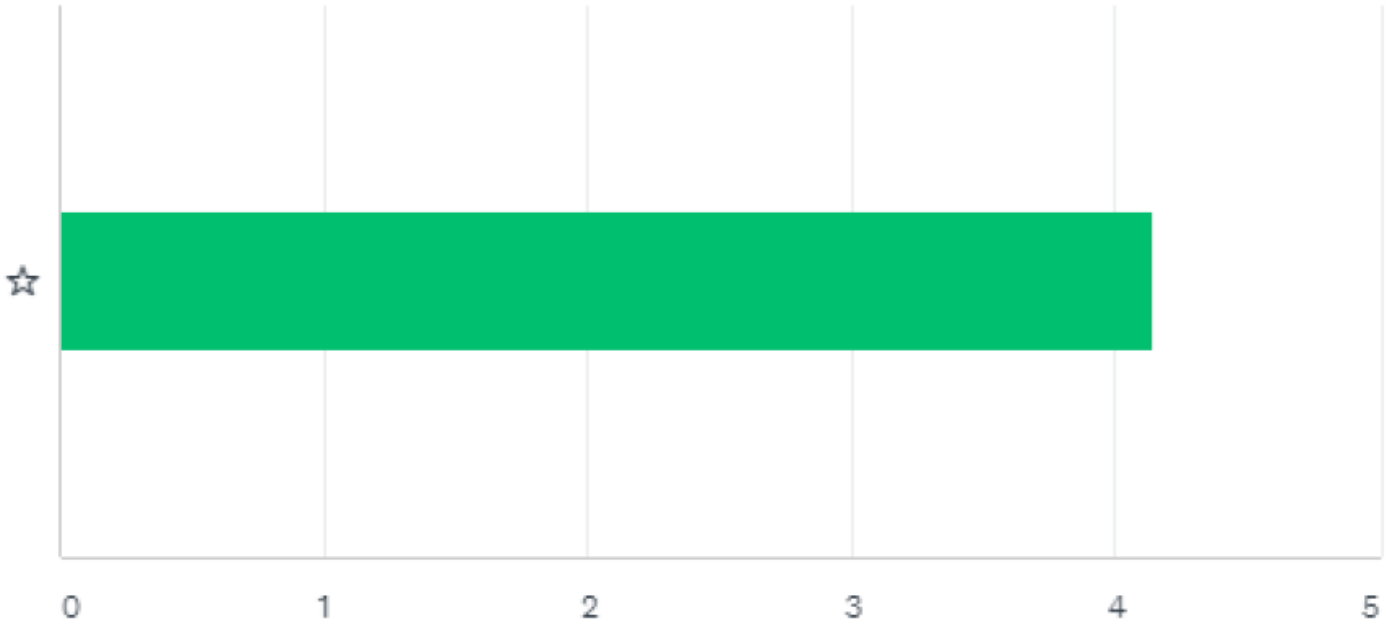
WMO AeroMetSci-2017

Q13: Overall, how would you rate this conference?
(1 star = poor, 5 star = excellent)

Answered: 119 Skipped: 0



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WMO AeroMetSci-2017

- Opened new and promising ways of a fruitful information exchange (**collaboration**) between scientists, operational actors and end-user communities going forward
- Highlighted the need for a mechanism for enhancing the sharing and use of **aircraft data**, in particular turbulence data, for the improvement of science and operations

Aircraft observations

- MG-2016 agreed to determine the need and feasibility of reinstating aircraft-based observations in the work programme of the CAeM:
  - recognition in ICAO's GANP that aircraft based meteorological observations are an enabler to enhanced operational decisions through integrated meteorological information
  - benefits in improving forecasting for TMA and airports
- Discussion is ongoing to enhance the collaboration between WMO and IATA on AMDAR program operation, especially in the context of collection and provision of automated turbulence reports from aircraft
- CAeM should play a proactive role in this discussion with a view to promoting enhanced sharing of all available aircraft observation data from both WMO and non-WMO sources benefiting both the meteorological and aviation communities. This collaboration may be considered as one of the low-hanging fruits in the PPP development initiative.

AvRDP Status

- Most participating airports have finished Phase I and moving on to Phase II but some NMHSs have issues in engaging ATM for Phase II
- 4 new airports to participate – to proceed to Phase II as early as possible for catching up with the others
- Phase II to be extended to summer 2019
- Three-day training workshop to be arranged in October 2018 (Venue TBD) focusing on aviation Impact and MET-ATM translation
- Project Implementation Plan for the CAeM/CAS/CBS Intercommission Aviation Research Project (2019) will be drafted for consideration by Cg-18

WMO-No. 49 Vol II

Resolution 14 (EC-69)

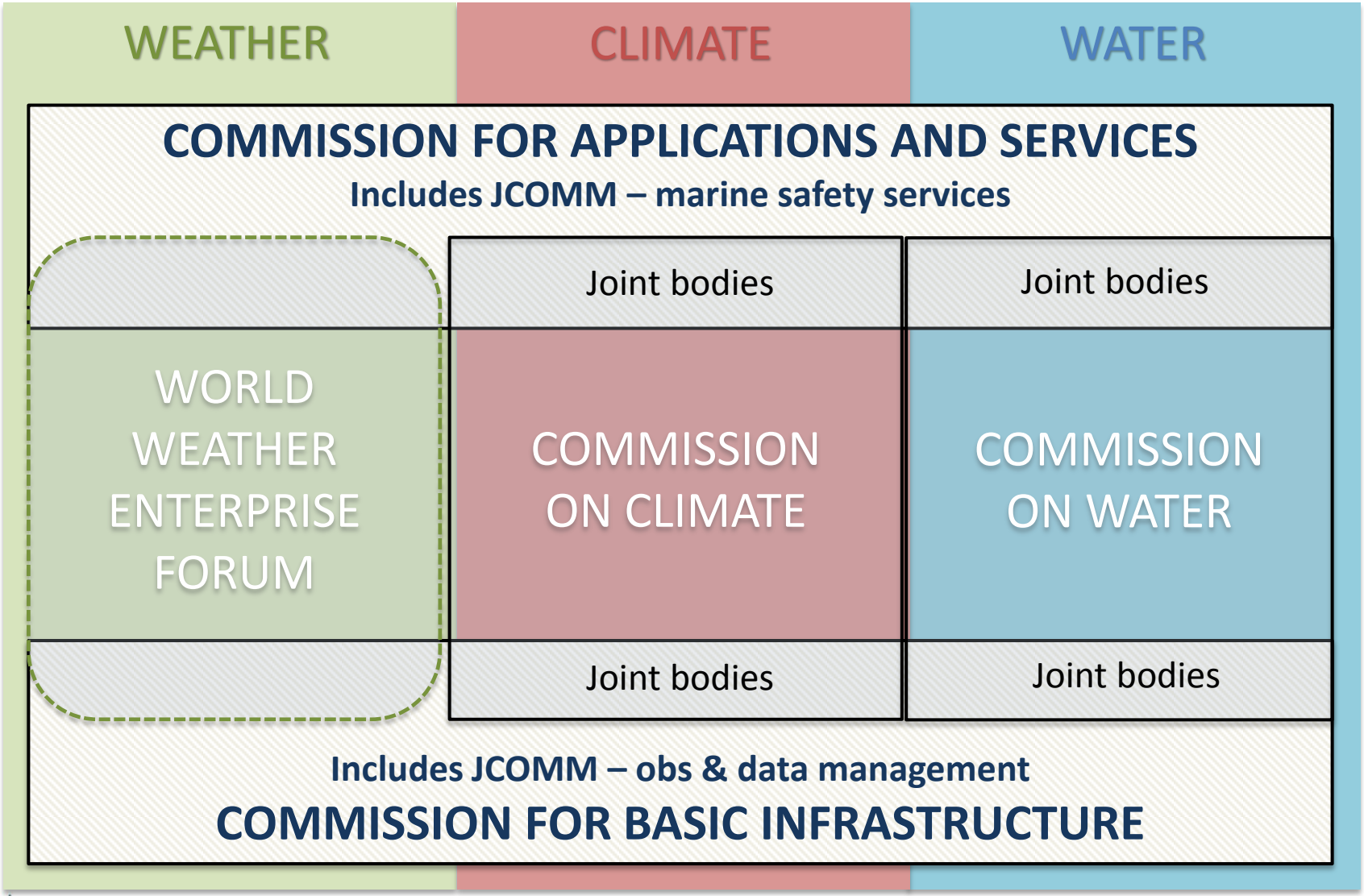
Amendment to the Technical Regulations (WMO-No. 49), Vol II – Meteorological Service for International Air Navigation

- ensuring necessary alignment of WMO Tech Reg with Amendment 77 to ICAO Annex 3
- Updated version subsequently published albeit with some delay

WMO Restructuring

- PTC-2017 (9 Jan 2017), Joint PRA/PTC-2017 (9-11 Jan 2017), second 2017 session of EC WG/SOP (16-17 Oct 2017), Joint PRA/PTC 2018 (17-19 Jan 2018)
- Not yet a consensus as of today
- Consolidated proposal will be further deliberated by the next meeting of EC WG/SOP and EC-70 prior to approval by Congress in 2019

WORLD METEOROLOGICAL CONGRESS



COMMISSION FOR BASIC INFRASTRUCTURE

COORDINATION GROUP

STANDING COMMITTEES

- Standing Committee on Observing Systems*
- Standing Committee on Data Exchange and Data Management*
- Standing Committee on Data Processing for Applied Earth System Modelling
- Standing Committee on Methods of Observations and Instrumentation*
- TBD

*SCs including sub-committees on hydrology, climate and marine

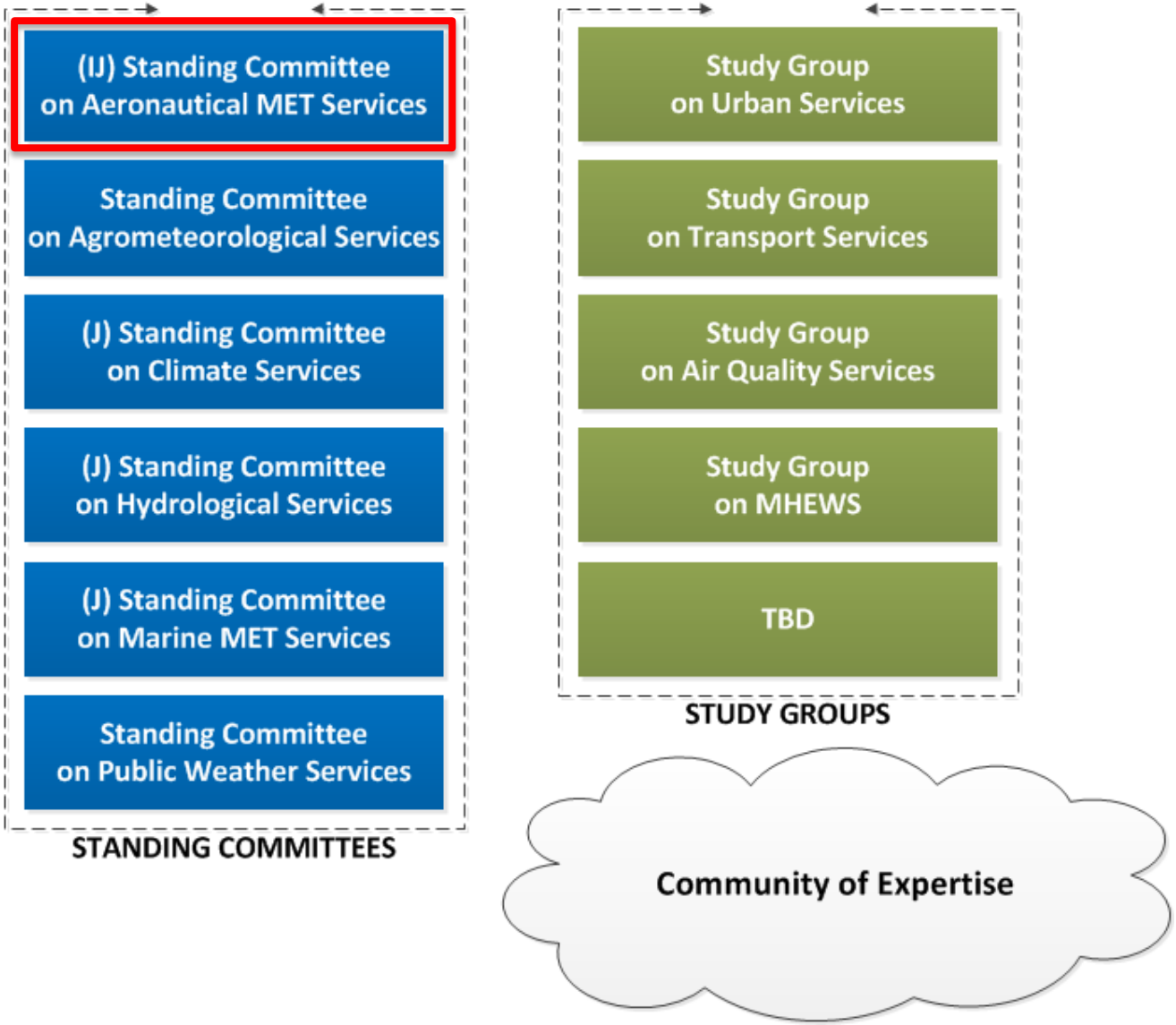
STUDY GROUPS

- Study Group on Network Integration
- Study Group on Cryosphere Observations
- Study Group on Space Weather
- TBD

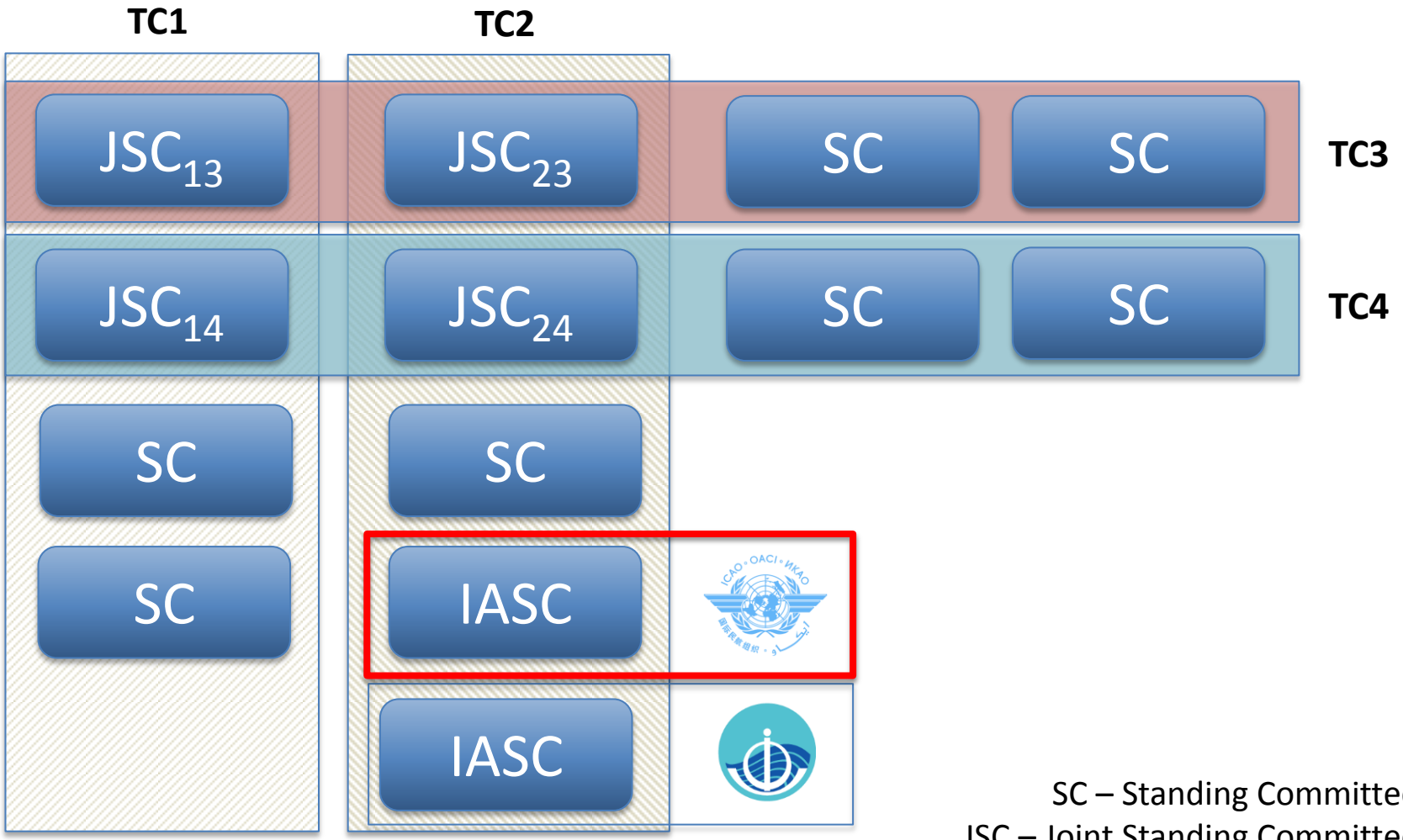
Community of Expertise

COMMISSION FOR APPLICATIONS AND SERVICES

COORDINATION GROUP



Matrix structure - TCs



SC – Standing Committee
JSC – Joint Standing Committee
IASC – Inter-Agency Standing Committee

SC-AeM (?)

- SC-AeM becoming an Inter-Agency Standing Committee (IASC) (??) – closer ties with ICAO
- International coordination and cooperation on aeronautical meteorological matters between WMO and ICAO will be further enhanced and the restructuring will see benefits
- AeMP is also expected to continue to play a pivotal role in WMO as demonstrated in its leadership in promoting QMS, competency framework, compliance culture, PPP etc. in the Organization

WMO Restructuring

- **Concerns:** in the midst of the restructuring and change in focus of the Organization, e.g. to accord higher priorities to PPP engagement, the availability of adequate staff resources supporting the AeMP is becoming an issue, especially in the imminent preparation of the next CAeM session to be held in July 2018 and deliverables for EC-70 and Cg-18

IWXXM

- EC-69 approved adoption of **Release 2.1 of IWXXM**
- “Fast Track” procedure for approval of adoption of sub-release 2.1.1 of IWXXM, with a proposed date of implementation of 15 May 2018
- International workshop on "Implementation of the IWXXM for the Exchange of OPMET Data" held in Hong Kong, China on 10-12 Oct 2017

QMS, competency & training

- New version of the WMO Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and Other Relevant Service Providers (WMO No. 1100) published
- WMO Guide on Competency to be published very soon → competency based training
- CAeM moodle website upgraded into a more contemporary version

Contributions to ICAO working groups

- ET members and WMO secretariat actively participated in METP WGs & other meetings:
  - WG-MOG (SADIS) and WG-MOG (WAFS), 4 to 7 April 2017, Exeter
  - WG-MOG (IAVW), 12 to 14 June 2017, Tokyo
  - WG-MISD (VASD), 14 June 2017, Tokyo
  - WG-MIE, WG-MRI, WG-MISD (SWx, RRM and RHWAC) and WG-MCRGG, 10 to 20 July 2017, Montreal
  - GANIS/2, 11 to 15 December 2017, Montreal

Space weather

- WMO (supported by the Ad Hoc Task Team on Aviation (TT-AVI) of IPT-SWeISS and secretariat) contributed actively to the coordination, preparation, site assessment and auditing for the imminent designation of the provider states of Space Weather Centres by ICAO

SIGMET/RHWAC

- Draft guidance material on improving SIGMET provision and coordination for inclusion in Doc 8896
- Functional and performance requirements for hazardous weather information in the en-route phase of flight for ASBU Block 1
- Concept of a globally-harmonized, multi-hazard information service to integrate into the future SWIM environment and draft provisions for inclusion in Amendment 79 to Annex 3
- WMO SIGMET coordination project for three Members in SE Asia operational in mid-2017 and efforts are being made to extent the coordination to other neighbouring Members

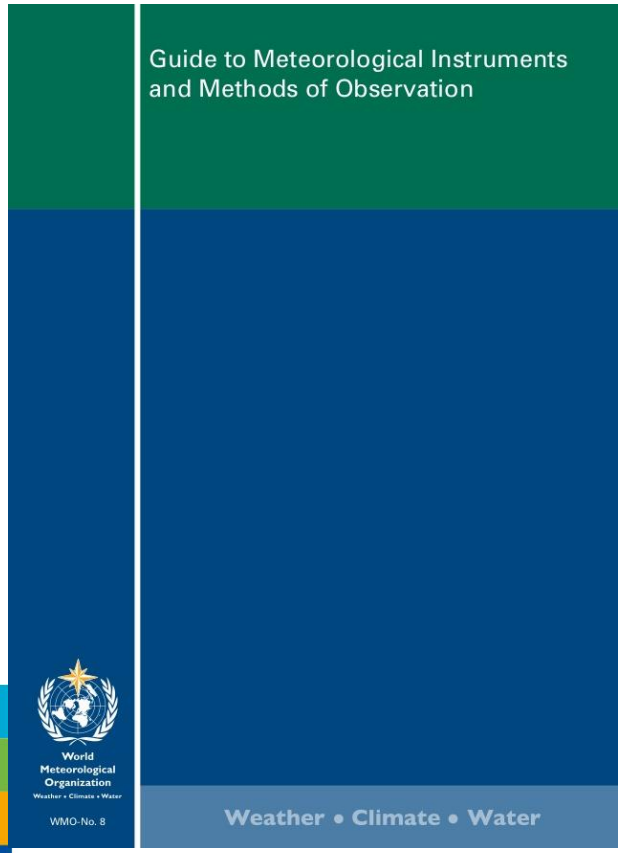
CAeM newsletters

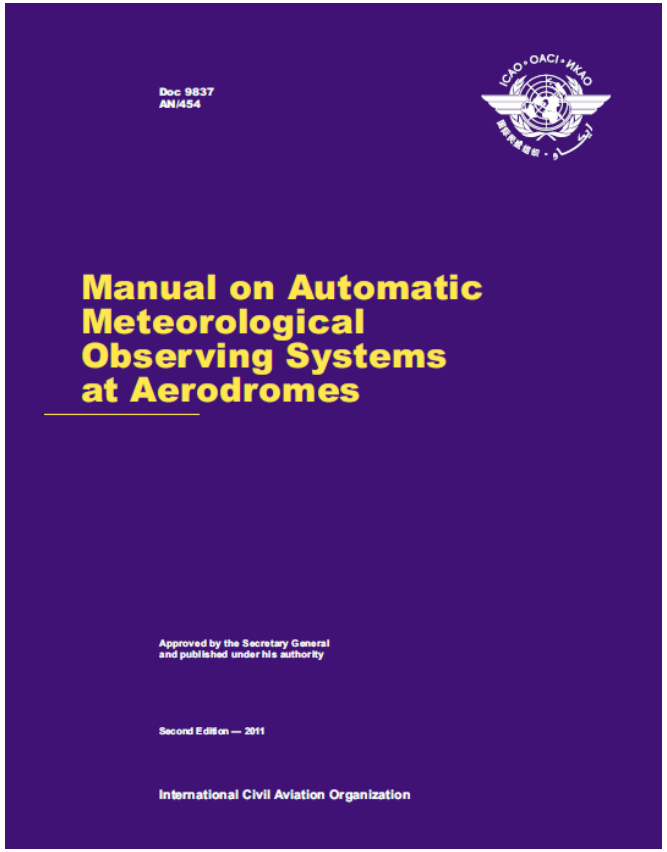
In this Issue:

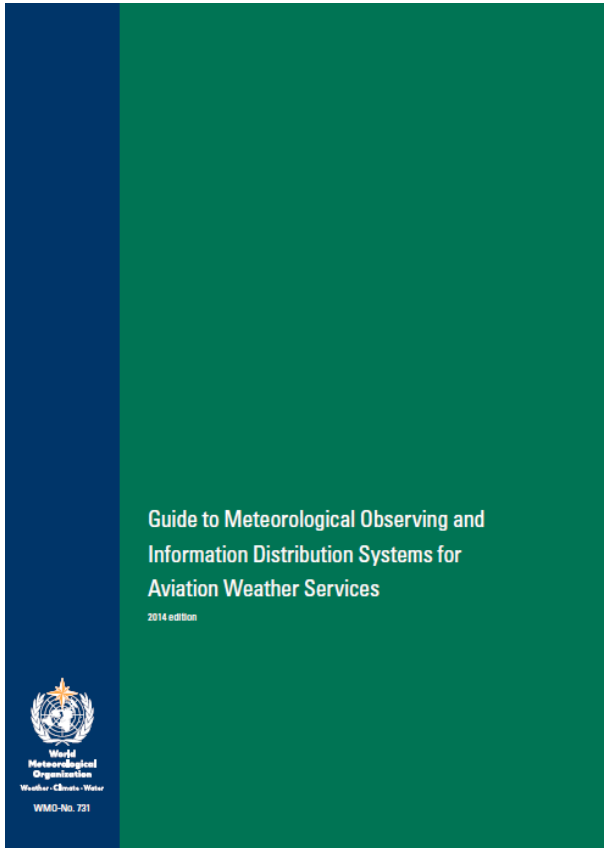
View this email in your browser

- Message from the President of CAeM
- High-level discussions between the WMO and ICAO Secretary Generals
- WMO EC-69 Special Dialogue on future aeronautical meteorological services
- Initial findings of the 2016/17 CAeM global survey on aeronautical meteorological service provision
- 16th Session of WMO Regional Association II (Asia) and 7th Regional Conference (RECO-7)

Consultation between CAeM and CIMO on methods of observation







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GANP/ASBU awareness events

- African Conference on Aeronautical Meteorology (ACMA) yet to be firmed up
- RA II awareness event needed
- ….

Forward Looking

- Heartfelt appreciation for the excellent support by all members of the MG including the secretariat members of both WMO and ICAO in past 8 years

WMO OMM

User Engagement

Scientific Expertise

Partnership

Professionalism

Inclusiveness

Proactiveness

Agility

WMO OMM

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Thank you
Merci

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale