

The National Aviation Conference 2026

NAC 2026 | 6-7 May 2026 | Emperors' Palace, Kempton Park

Mr. Albert Moloto

Senior Manager: Aviation

South African Weather Service (SAWS)



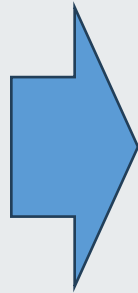
Presentation Outline

- Overview of Aeronautical MET Services (AMS)
- Governance Framework
- Impact of Weather on Aviation
- The evolution of AMS
- Innovation and new technology for improved safety
- Key takeaways

Overview

What is AMS?

- It is the specialised provision of weather information and forecasts to support safe, efficient, and regular air navigation. It encompasses observations, forecasting, warnings, and communication of meteorological data to the aviation community.
- It includes the provision of a **space weather information service**.



Observations

Surface, upper-air, METAR, SPECI reports



Forecasts

TAF, SIGMET, AIRMET, area forecasts



Warnings

Windshear, microburst, volcanic ash alerts



Data Relay

OPMET exchange via AFTN/SADIS/WIFS

Governance Framework



International Civil Aviation Organization

- Annex 3 – Meteorological Service
- Doc 10157 (PANS-MET)
- Doc 9328 Manual on Codes
- Meteorological Watch Offices (MWO)
- World Area Forecast System (WAFS)



World Meteorological Organization

- WMO Resolution 7 (CBS)
- Technical Regulations (Vol II)
- Global Observing System (GOS) - AMDAR
- Data exchange standards (IWXXM)
- Capacity development (training, etc)



Civil Aviation Authorities

- National MET Regulator (including space weather)
- Governing standards under the Civil Aviation Act
- Supporting Technical Guidance Material under the CA Act.
- Oversight & compliance to ensure the safety of flight operations

Impact of weather on aviation



Safety

- Windshear, turbulence & icing alerts prevent accidents. SIGMET warnings protect aircraft from severe en-route hazards.



Flight Efficiency

- Optimal routing using upper-wind forecasts saves fuel, reduces CO₂, and shortens flight times.



Delay Reduction

- Accurate TAFs and SIGMET allow proactive scheduling, reducing weather-induced delays and diversions.



Approach & Landing

- Precise RVR, ceiling, and wind data enable CAT II/III low-visibility procedures at busy airports.



Crew Planning

- Comprehensive flight weather briefings support informed pre-flight decision-making by pilots.



Economic Value

- Better MET services significantly reduce losses (ICAO estimates weather costs aviation \$3B+ annually).



**South African
Weather Service**

The Evolution of AMS



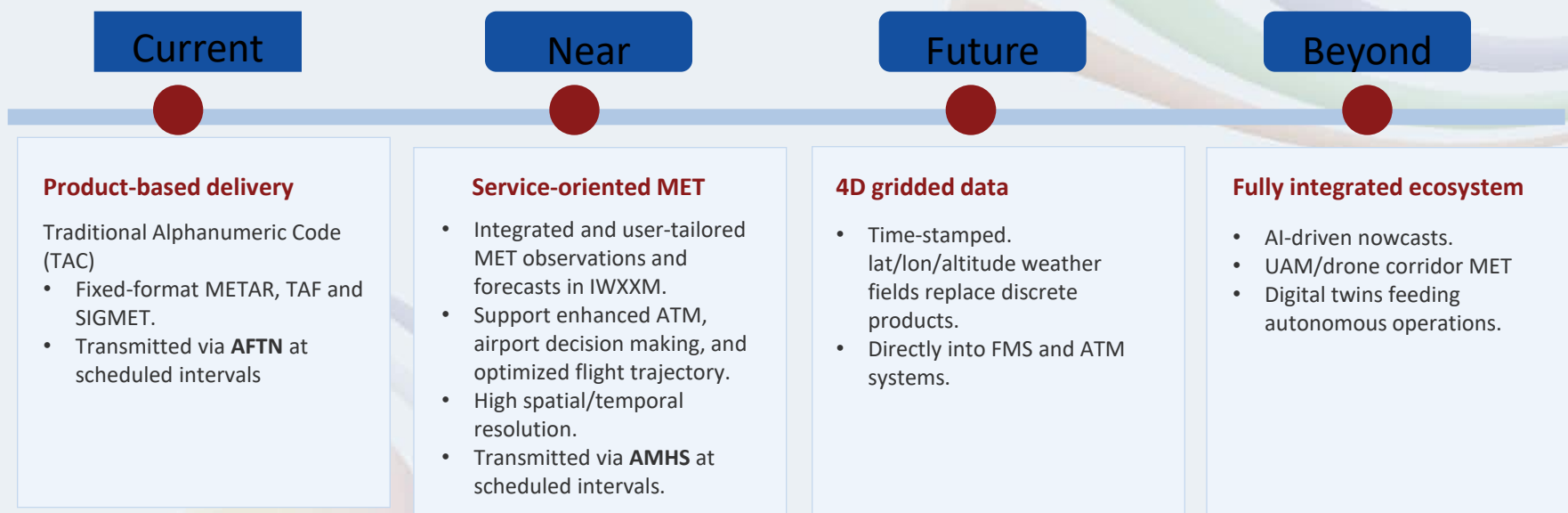
- ICAO Global Air Navigation Plan: AMET-B2 Module (2025 – 2030)
- Determined by the **MET Panel** through its structures
- **Objective:** to move away from the traditional product-based services to a dynamic, machine-readable MET data (**MET Information Services**).
- **Goal:** SWIM (MET integration with ATM, airline systems, and decision aids.
- **SWIM** is the foundation of a global, interoperable, and data-centric aviation ecosystem.

Meteorological Information Services (SWIM Context)

- Space Weather Information Service (SWIS) - Operational
- Aerodrome MET Observation Information Service (AMOIS) – 2029*
- Aerodrome MET Forecast Information Service (AMFIS) – 2029*
- Hazardous Weather Information Service (HWIS) – 2032*

*The planned implementation dates are provisional. Final timelines will depend on the completion of requirements and subsequent METP approval.

The Evolution of AMS



ROADMAP (ICAO GANP AND ASBU LIGNED)

Innovations and New Technology for Improved Safety

- Aircraft-Based Observations (AMDAR)
- Automatic Weather Observing Systems (AWOS)
- Satellite-based observations
- Dual-polarization weather radars
- Lightning detection network
- Numerical prediction models
- Global Telecommunication System (GTS)
- Digital database forecasting
- Next-generation forecast workstations
- Nowcasting systems
- Geographic information systems and
- Global Positioning System



AMDAR



AWOS



SWX

Key takeaways



- AMS is a globally mandated service governed by ICAO Annex 3 and WMO Technical Regulations.
- At a national level, AMS is governed by the National Civil Aviation laws
- Standards like SARPS, SIGMET/AIRMET, TAF, and METAR ensure uniform, interoperable service worldwide
- High-quality meteorological intelligence is directly linked to safer skies, efficient routing, and economic savings.
- Effective governance requires coordination between ICAO, WMO, CAAs, and designated MET providers.
- Technological advances (NWP, satellite data, AI) are transforming AMS towards higher accuracy and automation.
- The ATM community, including airlines and general aviation, requires collaboration, training, and capacity development.



Thank you

