



Aeronautical Meteorology Course: METAR/TAF, SIGMET, Aerodrome Warnings and Service Quality



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Introduction:

Aeronautical meteorology course on METAR/TAF, SIGMET, aerodrome warnings and service quality, held over 5 days for meteorological service, airport and airline operations and air navigation service personnel, ending with an Aerodrome Meteorological Service Improvement Plan for a case organisation. Late TAF amendments, missed wind shear alerts and inconsistent SIGMET issue lead to diversions, unplanned holding and extra fuel uplift that dependable weather products could have prevented. Nominees already observe, forecast or act on aviation weather and work through case files of coded reports, model output and user feedback. CoreConcept Training Center delivers this aeronautical meteorology course.

Course Objectives:

- Explain the roles of aerodrome meteorological offices, meteorological watch offices and aviation users under ICAO Annex 3 for a given aerodrome
- Assess AWOS sensor siting, RVR and ceiling measurement and METAR, SPECI and TREND coding against the applicable code rules
- Produce and amend TAF forecasts using NWP guidance, world area forecast products and the correct change groups
- Issue SIGMET messages, aerodrome warnings and wind shear alerts against agreed criteria and route them to the users who act on them
- Design impact-based warning thresholds with airport and airline operations and verify forecast performance within a quality management system
- Prepare an Aerodrome Meteorological Service Improvement Plan for a case organisation

Target Audience:

- Staff responsible for surface observations, AWOS operation and METAR and SPECI issue at aerodromes
 - Staff responsible for preparing TAF, SIGMET and aerodrome warnings at meteorological forecast offices
 - Staff responsible for quality management, forecast verification and user liaison in meteorological services
 - Staff responsible for flight dispatch, operations control and crew weather briefing in airlines
 - Staff responsible for airport operations, apron safety and de-icing decisions that depend on weather
 - Staff responsible for tower and approach units at air navigation service providers who relay weather to aircraft
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Course Outline:

Day 1: Aeronautical Met Service Landscape, Users and Baseline Review

- ICAO Annex 3 Meteorological Service Roles and Provider Functions
- Aerodrome Met Office and Meteorological Watch Office Duties
- Flight Phase Weather Hazards From Icing to Low Ceiling
- Aviation User Needs of Pilots, Dispatchers and Tower Controllers
- Aerodrome Met Service Baseline Using Product Timeliness Records

Day 2: Observing Networks, AWOS and Coded Report Standards

- AWOS Sensor Suite for Wind, Visibility, Ceiling and Pressure
- Ceilometer, Transmissometer and RVR Sensor Siting Checks
- METAR and SPECI Code Groups With TREND Appendix
- Radiosonde, Aircraft Data Relay and Weather Radar Inputs
- IWXXM Digital Exchange Format for Aeronautical Met Messages

Day 3: Forecast Products, NWP Guidance and TAF Production

- NWP Model Guidance and World Area Forecast Product Use
- TAF Change Groups FM, BECMG, TEMPO and PROB Selection
- TAF Amendment Criteria With AMD and COR Handling
- SIGMET Phenomena Coding for Severe Turbulence and Icing
- Flight Documentation Packs and Significant Weather Chart Briefing

Day 4: Aerodrome Warnings, Wind Shear Alerts, Impact-Based Warnings and Quality

- Aerodrome Warning Criteria for Gusts, Thunderstorms and Squalls
- Low-Level Wind Shear Warning and Alert Issue Procedures
- Impact-Based Forecasting Matrix Linking Weather to Airport Operations
- Quality Management System Controls for Met Product Accuracy
- TAF Verification Scores and Customer Feedback Review Cycle

Day 5: Case Study for an Aerodrome Meteorological Service Improvement Plan

- Case Aerodrome Product Archive and User Complaint File Review
 - Case TAF and METAR Verification Against Observed Conditions
 - Case Warning Thresholds Agreed With Airport and Airline Users
 - Case Dissemination Map for ATIS, VOLMET and Briefing Channels
 - Aerodrome Meteorological Service Improvement Plan Completion
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Skills You Will Gain:

- AWOS Sensor Siting Review
- METAR and SPECI Coding
- TAF Construction and Amendment
- SIGMET Phenomenon Coding
- Wind Shear Alert Handling
- Impact-Based Threshold Setting
- Forecast Verification Analysis
- Met Service Quality Auditing

Why Attend This Course:

- Deliver an Aerodrome Meteorological Service Improvement Plan to the head of the aeronautical met office and the airport operations manager for approval
- Decide when an observed change warrants a SPECI, a TAF amendment or an aerodrome warning, and which users must receive it
- Avoid diversions, unplanned holding, extra fuel uplift and apron incidents caused by late, missed or unclear weather products
- Coach observers, forecasters and dispatch colleagues with coding checklists, warning criteria tables and verification templates

Conclusion:

Back at work, the participant presents the Aerodrome Meteorological Service Improvement Plan to the head of the aeronautical met office, the airport operations manager and airline dispatch partners. They use it to agree sensor upgrades, TAF amendment and warning criteria, impact thresholds for each user and the verification measures reported under the quality management system. After the first season under the plan, the unit should review TAF verification scores, warning lead times, missed wind shear events and user complaints, and adjust criteria where products failed operations.

Frequently Asked Questions FAQ:

What should participants know before the aeronautical meteorology course on METAR/TAF, SIGMET and aerodrome warnings?

Participants should already observe, forecast or use aviation weather in daily work and read basic weather charts. No programming skill is needed. Bringing recent coded reports, TAFs and warning logs from their own aerodrome helps them apply the case work to their service.

How does aeronautical meteorology differ from a hazard-specific early warning or air traffic management course?

It covers the whole aerodrome weather service: observations, coded reports, TAF, SIGMET, aerodrome warnings and service quality. Hazard-specific courses follow one phenomenon from source to warning, while air traffic management courses deal with airspace, flow and capacity rather than weather products.

Why do TAF amendments matter in aeronautical meteorology?

A TAF amendment tells dispatchers and pilots that expected conditions have changed enough to alter fuel, alternate or arrival decisions. Late or missing amendments leave flights planned on outdated weather, so clear amendment criteria sit at the centre of service quality.

What do participants take back from the aeronautical meteorology course?

Participants take back an Aerodrome Meteorological Service Improvement Plan for a case organisation, with a sensor and coding review, TAF amendment and warning criteria, impact thresholds agreed with users, a dissemination map and verification measures they can adapt to their own aerodrome.