
International Civil Aviation Organization

ASBU/SIP/Lima/2012-WP/21C

Aviation System Block Upgrades


Module N° B0-105/PIA2

Meteorological information supporting enhanced operational efficiency and safety

Workshop on preparations for ANConf/12 – ASBU methodology
(Lima, 16-20 April 2012)

Module N° B0-105

Meteorological information supporting enhanced operational efficiency and safety



Summary	<ul style="list-style-type: none"> Aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome including windshear. Forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC) 												
Main Performance Impact	KPA(Capacity); KPA (Environment); KPA (Safety); KPA (Efficiency);												
Operating Environment/ Phases of Flight	Single word entries explaining operating environment(s), i.e airport surface, etc. and/or phases of flight, i.e. approach, en-route, etc. All phases of flight.												
Applicability Considerations	<p>Specifics on operating environment and/or types of airspace where Module is applicable</p> <p>Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.</p>												
Global Concept Component(s)	AOM - Airspace Operations and Management DCB - Demand and Capacity Balancing AO - Aerodrome Operations												
Global Plan Initiatives (GPI)	GPI-19 Meteorological Systems GPI-6 Air Traffic Flow Management GPI-16 Decision Support Systems and Alerting Systems												
Pre-Requisites	None. Meteorological information and supporting distribution systems are in existence today.												
Global Readiness Checklist	<table style="width: 100%; border-collapse: collapse;"> <tr> <td></td><td>Status (ready now or estimated date).</td></tr> <tr> <td>Standards Readiness</td><td>Ready now</td></tr> <tr> <td>Avionics Availability</td><td>Ready now</td></tr> <tr> <td>Ground System Availability</td><td>Ready now</td></tr> <tr> <td>Procedures Available</td><td>Ready now</td></tr> <tr> <td>Operations Approvals</td><td>Ready now</td></tr> </table>		Status (ready now or estimated date).	Standards Readiness	Ready now	Avionics Availability	Ready now	Ground System Availability	Ready now	Procedures Available	Ready now	Operations Approvals	Ready now
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Standards Readiness	Ready now												
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Operations Approvals	Ready now												

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Module N° B0-105: Baseline



- No Specific other that change brought by the Module
- **OPMET and QMS for MET (not included in this Module but mapped to this Module)**

Module N° B0-105: Change Brought by the Module



- The global availability of meteorological information provided by designated Centres within the WAFS, IAVW and the tropical cyclone watch on the ICAO AFS enhances pre-tactical and/or tactical decision making for aircraft surveillance, air traffic flow management and flexible/dynamic aircraft routing.
 - *Element 1: WAFS.*
 - *Element 2: IAVW*
 - *Element 3: Tropical cyclone watch*
 - *Element 4: Aerodrome warnings*
 - *Element 5: Wind shear warnings and alerts*

Module N° B0-105 – Intended Performance Operational Improvement



KPAs	Specific improvement provided.
KPA-02: Capacity	Optimized usage of airspace capacity, thus achieving arrival and departure rates. Metric: ACC and aerodrome throughput.
KPA-04: Efficiency	Harmonized arriving air traffic (en-route to terminal area to aerodrome) and harmonized departing air traffic (aerodrome to terminal area to en-route) will translate to reduced arrival and departure holding times and thus reduced fuel burn. Metric: Fuel consumption.
KPA-05: Environment	Reduced fuel burn through optimized departure and arrival profiling/scheduling. Metric: CO2 emissions.
KPA-10: Safety	Increased situational awareness and improved consistent and collaborative decision making. Metric: Incident occurrences.

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Module N° B0-105: Necessary Procedures (Air & Ground)



- No new procedures necessary.
- Supporting guidance material is contained in a number of ICAO manuals, including but not limited to: *Manual of Aeronautical Meteorological Practice* (Doc 8896); *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services* (Doc 9377); *Handbook on the International Airways Volcano Watch – Operational Procedures and Contact List* (Doc 9766); and *Manual on Low Level Wind Shear* (Doc 9817). In addition, the *Manual on volcanic ash, radioactive material and toxic chemical clouds* (Doc 9691) provides extensive guidance on, *inter alia*, the observation/detection and forecasting of volcanic ash in the atmosphere and the effect of volcanic ash on aircraft.

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Module N° B0-105: Necessary System Capabilities



- **Avionics**
 - No new or additional avionics requirements
- **Ground Systems**
 - ANSPs, Airport operators and Airspace users may want to implement functionalities allowing them to display in plain text the different messages provided by the different Met organisations. For Block 0 airspace users may use their AOC data link connection to the aircraft to send the information where appropriate.

Module N° B0-105: Training and Qualification Requirements



- Description of required training and qualification requirements: Where they exist or are under development, references to these must be provided. For training and qualification requirements to be developed, the requirement must be clearly stated
- No new or additional training and qualification requirements are brought about by this module

Module N° B0-105: Regulatory/Standardization needs and Approval Plan (Air & Ground)



- No new or additional regulatory/standardization needs and approval plan(s) are brought about by this module.
- Provisions relating to the WAFS, the IAVW and the tropical cyclone watch, as well as aerodrome warnings, wind shear warnings and alerts, already exist within ICAO Annex 3, regional air navigation plans, and supporting guidance

Module N° B0-105: Reference Documents



- **Standards**
 - ICAO and Industry Standards (ie; MOPS, MASPS, SPRs).
 - ICAO and World Meteorological Organization (WMO) international standards for meteorological information (including, content, format, quantity, quality, timeliness and availability).
- **Procedures**
 - Documented procedures by States and ANSPs. [To be developed]
- **Guidance Material**
 - ICAO Manuals, Guidance Material and Circulars. Also any similar industry documents
 - ICAO Doc 7192, Training Manual - Part F1 – *Meteorology for Air Traffic Controllers and Pilots*;
 - ICAO Doc 8896, *Manual of Aeronautical Meteorological Practice*;
 - ICAO Doc 9161, *Manual on Air Navigation Services Economics*;
 - ICAO Doc 9377, *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*;
 - ICAO Doc 9691, *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds*;
 - ICAO Doc 9766, – *Handbook on the International Airways Volcano Watch – Operational Procedures and Contact List*;
 - ICAO Doc 9817, *Manual on Low Level Wind Shear*;
 - ICAO Doc 9855, *Guidelines on the Use of the Public Internet for Aeronautical Applications*
 - *SADIS User Guide*;
 - Agreement on the Sharing of Costs of the Satellite Distribution System for Information relating to Air Navigation.
- **Approval Documents.**
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Module N° B0-105: Implementation - Benefits and Elements



Meteorological information supporting enhanced operational efficiency and safety

- **Benefits: Capacity, Cost-effectiveness, Efficiency, Environment, Flexibility, Global interoperability, Participation of the ATM Community, Predictability**
 - **Elements**
 - OPMET; QMS for MET not included in this Module
 - WAFS-IAVW-TCW
 - Aerodrome warning
 - Wind shear warning and alerts
- To be reflected in ANRF**

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