

# **AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)**



## **AFI REGIONAL AIR NAVIGATION PLAN**

### **VOLUME III**

**Version 1.0, July 2022**

## REVISION INDEX

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AFI eANP VOLUME III

## ABBREVIATIONS

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*(Under development)*

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AFI eANP VOLUME III

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# **PART 0 – INTRODUCTION**

## **1. Introduction**

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction in Volume I. The procedure for amendment of Volume III is also described in Volume I. Volume III contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP).

1.2 The information contained in Volume III is related mainly to:

- a) Planning: objectives set, priorities and targets planned at regional or sub-regional levels;
- b) Implementation monitoring and reporting: monitoring of the progress of implementation towards targets planned. This information should be used as the basis for reporting purposes (i.e.: global and regional air navigation reports and performance dashboards); and/or
- c) Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.

1.3 The management of Volume III is the responsibility of the APIRG. Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements planned here above, through the use of tables/databases and/or references to online monitoring tools, as endorsed by APIRG. The status of implementation is updated on a regular basis as endorsed by APIRG.

## **2. Aviation System Block Updates (ASBUs), Elements and Roadmaps**

2.1 The ASBU Elements and Roadmaps form a key component to the GANP, noting that they will continue to evolve as more work is done on refining and updating their content and in subsequent development of related provisions, support material and training.

2.2 Although the GANP has a worldwide perspective, it is not intended that all Block Upgrade Elements are required to be applied in every State, sub-region and/or region. Many of the Block Upgrade Elements contained in the GANP are specialized packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. Accordingly, the Block Upgrade methodology establishes an important flexibility in the implementation of its various Elements depending on a region, sub-region and/or State's specific operational requirements. Guided by the GANP, ICAO AFI regional, sub-regional and State planning should identify Elements which best provide the needed operational improvements.

# **PART I – GENERAL PLANNING ASPECTS (GEN)**

## **1. Planning Methodology**

1.1 Guided by the GANP, the regional planning process starts by identifying the homogeneous ATM areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Elements from the Aviation System Block Upgrades (ASBUs) are evaluated to identify which of those Elements best provide the needed operational improvements. Depending on the complexity of the element, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of elements by drawing on supporting technology requirements. This is an iterative planning process which may require repeating several steps until a final plan with specific regional targets is in place. This planning methodology requires full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

1.2 Block 0 features Elements is characterized by technologies and capabilities which have already been developed and implemented in many parts of the world today. It therefore features a near-term availability milestone, or Initial Operating Capability (IOC), of 2013 for high density based on regional, sub-regional and State operational need. Blocks 1 through 4 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2019, 2025, 2031 and 2037 respectively.

## **2. Review and Evaluation of Air Navigation Planning**

2.1. The progress and effectiveness against the priorities set out in the regional air navigation plans should be annually reported, using a consistent reporting format, to ICAO.

2.2. Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified global/regional performance metrics are fundamental to the success of performance-based approaches.

2.3. The air navigation planning and implementation performance framework prescribes reporting, monitoring, analysis and review activities being conducted on a cyclical, annual basis. The tables AOP III-2, ATM III-2, SAR III-2, CNS III-2, AIM III-2 and MET III-2 provided in Part II are intended to be used by States for reporting on their planning and implementation of ASBU elements.

## **3. Reporting to APIRG**

3.1 Reporting and monitoring results will be analyzed by APIRG, States and ICAO Secretariat to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets if needed. The results will also be used by ICAO and aviation partner stakeholders to develop the annual Global Air Navigation Report. The report results will provide an opportunity for the international civil aviation community to compare progress across different ICAO regions in the establishment of air navigation infrastructure and performance-based procedures.

3.2 The reports will also provide the ICAO Council with detailed annual results on the basis of which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments to the GANP and the Block Upgrade Elements.

## **PART II – AIR NAVIGATION SYSTEM /ASBU APPLICABLE ELEMENTS**

### **1. Introduction**

1.1 The planning and implementation of the ICAO Aviation System Block Upgrades (ASBUs) should be undertaken within the framework of the APIRG with the participation and support of all stakeholders, including regulatory personnel.

1.2 The ASBU Threads/Elements adopted by the AFI Region should be followed in accordance with the specific ASBU requirements to ensure global interoperability and harmonization of air traffic management. APIRG determines the ASBU Threads/Elements, which best provide the needed operational improvements in the AFI Region.

### **2. ICAO AFI Region Air Navigation Objectives, Priorities, KPIs and Targets**

2.1 PIRGs are requested to establish priorities and targets for air navigation, in line with the ASBU methodology.

2.2 Considering that some of the ASBU threads and elements contained in the GANP are specialized packages that may be applied where specific operational requirements or corresponding benefits exist, States and PIRGs should clarify how each Block Upgrade thread/element would fit into the national and regional plans.

2.3 In establishing and updating the AFI Air Navigation Plan, the APIRG and States should give due consideration to the safety priorities set out in the Global Aviation Safety Plan (GASP) and the AFI Region Safety Strategy attached to the AFI Regional Aviation Safety Plan (AFI RASP).

2.4 The AFI Region air navigation priorities and targets are reflected in the AFI Region Air Navigation Strategy, which is being reviewed on regular basis to ensure that is aligned with the GANP (latest edition) and also reflecting the regional priorities. The AFI Region Air Navigation Strategy is available at: [https://portal.icao.int/RO\\_AFI/Pages/AFIDocs.aspx](https://portal.icao.int/RO_AFI/Pages/AFIDocs.aspx)

2.5 States contribute to the implementation of the GANP by developing national air navigation plans to ensure the provision of essential air navigation services for international civil aviation and the modernization of their air navigation system based on local performance and operational needs, taking into consideration regional requirements. In addition, States contribute to the implementation of the GANP by sharing best practices and lessons learned from implementation challenges, performing cost-benefit analyses and assessing environmental impact, human performance and safety ...

### **3. Identification of ASBU applicable elements to the Region**

#### **3.1. Description of the methodology**

3.1.1. The AFI Regional air navigation system implementation plan was aligned with the fifth edition of the GANP. Based on operational requirements and considering the benefits associated, the former 18 Block 0 modules were all chosen for implementation in the AFI region, with the categories as follows:

- a) Essential (E): These are the ASBU modules that provide substantial contribution towards global interoperability, safety, or regularity. The five (5) Modules for all States of AFI region are FICE, DATM; ACAS, FRTO and APTA.
- b) Desirable (D): These are the ASBU modules that, because of their strong business and/or safety case, are recommended for implementation almost everywhere. The eight (8) Modules for all States of AFI region are ACDM, NOPS, ASUR, SNET, AMET, TBO, CDO, and CCO.
- c) Specific (S): These are the ASBU modules that are recommended for implementation to address a particular operational environment in specific countries of AFI region (for example South Africa). The (3) Modules are OPFL, ASEP and WAKE.
- d) Optional (O): These are the ASBU modules that address operational requirements in specific countries of AFI region and provide additional benefits that may not be common everywhere. The two (2) Modules are SURF and RSEQ.

3.1.2. The modules were then allocated priority for implementation within the AFI Region as follows:

Priority	Modules
<b>Priority 1:</b> Immediate implementation where applicable covers most of the AFI States: Modules that have the highest contribution to the improvement of air navigation safety and/or efficiency in the AFI Region. Used for the purpose of regional air navigation monitoring and reporting	B0-65 APTA, B0-80 ACDM, B0-25 FICE, B0-30 DATM, B0-105 AMET, B0-10 FRTO, B0-101 ACAS, B0-05 CDO, B0-20 CCO
<b>Priority 2:</b> Recommended implementation applies to only specific States of AFI region: Modules based on identified operational needs and benefits.	B0-15 RSEQ, B0-70 WAKE, B0-75 SURF, B0-35 NOPS, B0-84 ASUR, B0-85 ASEP, B0-86 OPFL, B0-102 SNET, B0-40 TBO

3.1.3. The ASBU framework has been updated in the 6th edition of the GANP with better clarification of its concepts. Thus, the ASBU Element have become the core concept. It is a specific change in operations designed to improve the performance of the air navigation system under specified operational conditions.

3.1.4. While the first version of the AFI Regional air navigation system implementation plan was Module-oriented, the focus is now made on the applicability of the ASBU elements in the AFI region. The assessment of this applicability was conducted, considering the performance-based approach. Moreover, some ASBU Elements are made mandatory pursuant to the ICAO Standards and Recommended Practices (SARPs).

3.1.5. The identification of applicable ASBU Elements was conducted in the areas of AOP, ATM, SAR, AIM, CNS and MET as provided in the following tables.



**Table AOP III-1: ASBU applicable elements in AOP area**

ASBU Modules	ASBU Elements	Purpose of elements	Maturity Level	Applicable (Yes or No)	Rationale for applicability	Enablers	Stakeholders
ACDM-B0	ACDM-B0/1 Airport CDM Information Sharing	To generate common situational awareness by sharing relevant surface operations data among the local stakeholders involved in aerodrome operations.	Ready for Implementation	Yes	The element forms the first step for Airport Stakeholder collaboration in Aerodrome Operations. It generates situational awareness for effective decision making and does not need automation.	Surface operation milestones procedures	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> <li>• Aircraft operator</li> <li>• Ground handling agent</li> </ul>
						ACIS system	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> <li>• Aircraft operator</li> <li>• Ground handling agent</li> </ul>
						Training requirements for ACIS	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> <li>• ATM network function</li> <li>• Aircraft operator</li> <li>• Ground handling agent</li> </ul>
						ACIS Phraseology	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• Aircraft operator</li> </ul>
	ACDM-B0/2 integration with ATM Network function	Airport CDM operations will be enriched by enhanced arrival information from the ATM network and, at the same time, network operations will benefit from more accurate departure information from CDM airports	Ready for Implementation	Yes		Procedures for turnaround integration	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> <li>• ATM network function</li> <li>• Aircraft operator</li> </ul>
						Phraseology for turnaround integration	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> </ul>
						A-CDM system/platform- ATFM system interconnectivity	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> <li>• ATM network function</li> <li>• Aircraft operator</li> </ul>
						Training requirements for the integration of the turnaround	<ul style="list-style-type: none"> <li>• Airport operator</li> <li>• ANSP</li> <li>• ATM network function</li> <li>• Aircraft operator</li> <li>• Ground handling agent</li> </ul>

*Medium traffic density.* Where the number of movements in the mean busy hour is of the order of 16 to 25 per runway or typically between 20 to 35 total aerodrome movements.

**Table ATM III-1: ASBU applicable elements in ATM area**

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
APTA	APTA-B0/1 PBN Approaches (with basic capabilities)	This element represents the use of PBN in design of approach procedures to provide more flexibility to airspace planners to manage the use of airspace, and to facilitate access to airports. It includes the provision of instrument approach procedures with vertical guidance in support of stabilized approaches	Ready for implementation	Yes: <b>Essential</b> Expedite implementation	Any runway ends with or without existing procedures. Can be used to facilitate access at aerodromes where conventional procedures are not implementable, or in support of existing procedures for contingency use		Airport operator ANSP Aircraft operator CAA Aircraft Manufacturer
	APTA-B0/2 PBN SID and STAR procedures (with basic capabilities)	Use of PBN capabilities allows more flexible placement of arrival and departure routing without the need for Ground-based infrastructure to support these routes	Ready for implementation	Yes: <b>Essential</b> Expedite implementation	Applicable in all terminal areas. Arrivals facilitates descent and connects to the approach phase. Departures facilitates climb and provides lateral path top exit terminal area. The use of PBN procedures supports flexible airspace planning and development		Airport operator ANSP Airspace user CAA Aircraft manufacturer
	APTA-B0/4 CDO (Basic)	Reduce fuel burn by not requiring application or power during descent	Ready for implementation	Yes: <b>Essential</b> Expedite implementation	Non-congested terminal airspace with PBN STAR routings where greater efficiency is required. Noise sensitive areas requiring reduced noise footprint		ANSP Aircraft operator CAA Aircraft manufacturer
	APTA-B0/5 CCO (Basic)	Reduce fuel burn by not requiring level-offs during climb	Ready for implementation	Yes: <b>Essential</b> Expedite implementation	Non-congested terminal airspace with PBN SID routings where greater efficiency is required. Noise sensitive areas		ANSP CAA Aircraft operator Aircraft manufacturer

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
					requiring noise abatement procedures		
	APTA-B0/8 Performance based aerodrome operating minima – Basic aircraft	For Basic aircraft, improvements include:  Instrument approaches to non-instrument runways, improving airport access. Flexibility to gradually improve the ground infrastructure with consequent improvements in operating minima	Ready for implementation	Yes <b>Essential</b> Expedite implementation	Airports with limited infrastructure wanting to implement or improve instrument approach procedures		ANSP CAA Aircraft operator Aircraft manufacturer
FRTO	FRTO-B0/1 Direct routing (DCT)	Direct routings are established with the aim of providing airspace users with additional flight planning route options on a larger scale across FIRs such that overall planned leg distances are reduced in comparison with the fixed route network	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element will bring benefits in en-route airspace with low, medium and high complexity traffic		ANSP ATM network function Aircraft operator
	FRTO-B0/2 Airspace planning and Flexible Use of Airspace (FUA)	Establish the Flexible Use of Airspace (FUA) process and improve data exchange between civil and military stakeholders by automation to enable a more efficient use of airspace based on transparency and due	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element will bring benefits in en-route airspace with low, medium and high complexity traffic		CAA ICAO ANSP Aircraft operator ATM network function

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
		regard to national security needs					
	FRTO-B0/3 Pre-validated and coordinated ATS routes to support flight and flow	A collection of routes that have been pre-validated and coordinated with impacted air route traffic control centers and airspace users	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element will bring benefits in en-route airspace with low, medium and high complexity traffic		ANSP Aircraft operator
	FRTO-B0/4 Basic conflict detection and conformance monitoring	Reduction of ATCO's workload via early and systematic conflict detection and conformance monitoring	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element will bring benefits in en-route airspace with low, medium and high complexity traffic		ANSP
NOPS	NOPS-B0/1 Initial integration of collaborative airspace management with air traffic flow management	Introduce ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process applicable to the strategic through to the tactical phases of operations	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element should be undertaken by all ANSPs, AUs and the ATM Network function affecting both en-route and TMA operations		ANSP ATM network function
	NOPS-B0/2 Collaborative Network Flight Updates	Improve ATFM situation awareness in order to facilitate re-routings and coordinated application of ATFM measures	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element will involve all ANSPs, AUs and the ATM Network Function for the collaborative updates of the flight status within an ATFM area. This will enhance predictability and better utilisation of available capacity		ANSP ATM network function

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
	NOPS-B0/3 Network Operation Planning basic features	The Network Operation Planning provides an overview of the situation from strategic planning through real time operations with ever increasing accuracy up to and including the day of operations by a common situational awareness for all ATFM actors within and adjacent to the ATFM area and allowing network wide demand and capacity balancing	Ready for implementation	Yes <b>Essential</b> Expedite implementation	The Network Operation Planning will involve all the operational stakeholders providing an overview of the situation from strategic planning to real time operations with ever increasing accuracy optimising the efficiency of the ATM system while balancing demand with capacity		Airport operator ANSP ATM network function Aircraft operator
	NOPS-B0/4 Initial Airport/ATFM slots and A-CDM Network Interface	Initial integration of airports into the ATM network function	Ready for implementation	Yes <b>Essential</b> Expedite implementation	It concerns airports which have implemented A-CDM. The integration of airport planning with ATFM will involve all respective stakeholders in a collaborative decision facilitating slot adherence and some AUs preferences (limited slot swapping)		Airport operator ANSP ATM network function Aircraft operator
SNET	SNET-B0/1 Short Term Conflict Alert (STCA)	To assist the air traffic controller in preventing collision between aircraft, using position data from ground surveillance	Ready for implementation	Yes <b>Essential</b> Expedite implementation	STCA systems are applicable in all controlled airspace for all aircraft for which a controller has responsibility for separation or traffic information. Before operational use, the system must have been configured for the target		ANSP Airspace user Aircraft manufacturer Ground systems supplier

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
					airspace, to maximize the number of relevant alerts while keeping the number of unnecessary alerts to an acceptable level		
	SNET-B0/2 Minimum Safe Altitude Warning (MSAW)	To assist the air traffic controller in preventing controlled flight into terrain accidents by generating, in a timely manner, an alert of aircraft proximity to terrain or obstacles	Ready for implementation	Yes <b>Essential</b> Expedite implementation	All controlled airspace for all aircraft		ANSP Airspace user Aircraft manufacturer Ground systems supplier
	SNET-B0/3 Area Proximity Warning (APW)	APW is designed, configured and used to make a significant positive contribution to the prevention of accidents arising from unauthorized penetration of an airspace volume	Ready for implementation	Yes <b>Essential</b> Expedite implementation	All controlled airspace for all aircraft		ANSP Aircraft manufacturer Aircraft operator Ground systems supplier
	SNET-B0/4 Approach Path Monitoring (APM)	APM is a Ground-based safety net intended to warn the controller about increased risk of controlled flight into terrain accidents by generating, in a timely manner, an alert of aircraft proximity to terrain or obstacles during final approach	Ready for implementation	Yes <b>Essential</b> Expedite implementation	All controlled airspace for all aircraft in final approach		ANSP Aircraft manufacturer Aircraft operator Ground systems supplier
SURF	SURF-B0/1 Basic ATCO tools to manage traffic during ground operations	To improve safety and efficiency during ground operations by providing proper indications to pilots and vehicle drivers	Ready for implementation	Yes <b>Essential</b> Expedite implementation	Runway incursion is traditionally prevented using lighting systems on the Airport. Stop bars and other systems are highly contributing to the fluidity		ANSP Aircraft operator

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
					and safety of taxi operations		
TBO	TBO-B0/1 Introduction of time-based management within a flow centric approach	Provides for more efficient flight operation by using time-based scheduling versus more tactical measures such as holding to manage tactical synchronization	Ready for implementation	Yes <b>Essential</b> Expedite implementation	Benefitting stakeholder(s)		ANSP Aircraft operator
ACAS	ACAS-B1/1 ACAS Improvements	To provide airborne collision avoidance as a last resort safety net for pilots	Ready for implementation	Yes <b>Essential</b> Expedite implementation	Improve situational awareness of flight crew		CAA Aircraft manufacturer ANSP Aircraft operator
CSEP	CSEP-B1/1 Basic airborne situational awareness during flight operations (AIRB)	To improve traffic situational awareness in all phases of flight	Ready for implementation	Yes <b>Essential</b> Expedite implementation	AIRB may be introduced in a partial equipage of ADS-B OUT, in which only some aircraft are equipped with ADS-B OUT		CAA Aircraft manufacturer Aircraft operator Aircraft manufacturer
FRTO	FRTO-B1/1 Free Route Airspace (FRA)	The Free Route Airspace (FRA) concept brings significant flight efficiency benefits and a choice of user preferred routes to airspace users	Standardization	Yes <b>Essential</b> Expedite implementation	This element will bring benefits in en-route airspace with low, medium and high complexity traffic		ANSP ATM network function Aircraft operator
	FRTO-B1/2 Required Navigation Performance (RNP) routes	RNP routes should be deployed within en-route airspace where Free Route Airspace (FRA) is not planned or if FRA is deployed the RNP routes should ensure the connectivity between FRA and TMAs	Standardization	Yes <b>Essential</b> Expedite implementation	The element will bring benefit in an en-route medium to high complexity traffic environment		CAA ICAO ANSP Aircraft manufacturer Aircraft operator

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
	FRTO-B1/3 Advanced Flexible Use of Airspace (FUA) and management of real time airspace data	FUA and airspace management (ASM) need to be enhanced with collaborative airspace data sharing between all ATM actors, negotiation procedures, system support and real time ASM data integration	Standardization	Yes <b>Essential</b> Expedite implementation	The element will bring benefit in an en-route medium to high complexity traffic environment		CAA ICAO ANSP ATM network function Aircraft operator
	FRTO-B1/5 Enhanced Conflict Detection Tools and Conformance Monitoring	Enhancements of basic mid-term conflict detection (MTCDD)/ monitoring alert (MONA) functions and thus further improving the ATCO productivity and reducing the workload	Standardization	Yes <b>Essential</b> Expedite implementation	The element will bring benefit in an en-route medium to high complexity traffic environment		ANSP
GADS	GADS-B1/1Aircraft Tracking	To provide support to the ATSU Alerting Service in areas without ATS surveillance with an update rate of the aircraft position of at least once per 15 mins.	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element is only applicable in oceanic airspace lacking ATS surveillance with a position update rate of at least once per 15 mins		Aircraft operator
	GADS-B1/2 Contact directory service	To ensure that Point of Contact (PoC) information is available and can be accessed by Rescue Coordination Centres (RCCs), ATSUs and aircraft operators in support of emergency situations	Ready for implementation	Yes <b>Essential</b> Expedite implementation	This element is applicable in emergency situations		ANSP Aircraft operator RCC SAR authority



ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Enablers	Stakeholders
	NOPS-B1/6 Initial Dynamic Airspace configurations	ASM solutions and initial dynamic airspace configurations for ATFM planning, synchronisation of traffic flows and demand/capacity balancing	Standardization	Yes <b>Essential</b> Expedite implementation	This element will be addressed by ANSPs and the ATM Network function as required ensuring a synchronised availability of optimised airspace structures supported by dynamic sectors management to better address traffic demand		ANSP ATM network function
SNET	SNET-B1/1 Enhanced STCA with aircraft parameters	Assist the air traffic controller in preventing collision between aircraft, using position data from ground surveillance and flight intent reported by aircraft	Ready for implementation	Yes <b>Essential</b> Expedite implementation	Enhanced STCA systems with aircraft parameters are applicable in all controlled airspace for all aircraft for which a controller has responsibility for separation or traffic information		Aircraft manufacturer Aircraft operator ANSP Ground systems supplier

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**Table SAR III-1: ASBU applicable elements in SAR area**

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**Table CNS III-1: ASBU applicable elements in CNS area**

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
COMI	COMI-B0/1 - Aircraft Communication Addressing Reporting System (ACARS)	<ul style="list-style-type: none"> <li>▪ To enable the data exchanges through Controller/Pilot Data Link Communication (CPDLC);</li> <li>▪ To enable the data exchanges through Automatic Dependant Surveillance-Contract (ADS-C) Communication</li> <li>▪ To enable Airlines Operations Communication</li> </ul>	Ready for implementation	Yes	<p>Introduction of a datalink to support domestic data communications operations.</p> <p>Exchanges aviation data (AOC, CPDLC and ADS)</p>	<ul style="list-style-type: none"> <li>• Communication infrastructure (VHF &amp; HF Data Links)</li> </ul>	<ul style="list-style-type: none"> <li>• ANSPs</li> <li>• Airlines</li> </ul>
	COMI-B0/2- Aeronautical Telecommunication Network/Open System Interconnection (ATN/OSI)	To support Operational Data Exchange ( Flight Plans, NOTAMs and OPMET)	Ready for implementation	No	ATN/OSI is not selected for implementation in the AFI Region in consideration of Cost constraints	NA	NA
	COMI-B0/3- VHF Data Link (VDL) Mode O/A	To support Air /Ground Data Link Communication	Ready for implementation	Yes	<p>Introduction of a datalink to support domestic data communications operations. a supplement to voice communications</p> <p>Exchanges aviation data (AOC, CPDLC and ADS)</p>	<ul style="list-style-type: none"> <li>• Narrow-band transceiver operating in the VHF aviation protected spectrum band</li> <li>• Based double side band AM multi-shift eyeing modulation to transfer 2400 bps.</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSPs</li> <li>• Airlines</li> <li>• CSPs</li> </ul>
	COMI-B0/4- VHF Data Link (VDL) Mode 2 Basic	To support Air /Ground Data Link Communication with higher performance than VDLM0/A	Ready for implementation Standardized (Annex 10 Vol. 3 Chap 6)	Yes	<ul style="list-style-type: none"> <li>• Provides an Increase in data capacity over VDL Mode O/A</li> <li>• Exchanges aviation data (AOC, CPDLC and ADS)</li> <li>• More efficient use of spectrum</li> </ul>	VHF narrow-band transceiver operating in the protected spectrum band, under a set of air-ground protocols that increase the data rate to 31.5 kbits	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSPs</li> <li>• Airlines</li> <li>• CSPs</li> </ul>

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
	<b>COMI-B0/5-</b> Satellite Communication (SATCOM) Class C Data	<ul style="list-style-type: none"> <li>To provide surveillance and communications in Continental Remote and Oceanic airspaces, where VHF usage is not possible or practical.</li> <li>Satellite-based, narrow-band communication provided by multiple service providers that can be used for safety and routing communications</li> </ul>	Ready for implementation Standardized (Annex 10 Vol. 3 Chap 6)	Yes	<ul style="list-style-type: none"> <li>Supports improvement of surveillance and communication in airspace where procedural separation is being applied</li> </ul>	<ul style="list-style-type: none"> <li>Satellite and ground infrastructures</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
	<b>COMI-B0/6-</b> High Frequency Data Link (HFDL)	To exchange data messages between aircraft end-systems and corresponding ground based HFDL ground stations	Ready for implementation Standardized (Annex 10 Vol. 3 Chap 11)	Yes	<ul style="list-style-type: none"> <li>To communicate in areas where SATCOM and VHF are not available</li> </ul>	<ul style="list-style-type: none"> <li>HFDL network and avionics</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
	<b>COMI-B0/7-</b> ATS Message Handling System (AMHS)	To supports improved communication over AFTN To provide flight information coordination between ANSPs at adjacent FIRs, and with relevant military units, support separation assurance, potentially providing, when used in conjunction with other enablers (e.g. navigation capabilities), reduced separation. 1. Flight Plan/Clearance 2. AIDC: Flight transfer 3. MET data	Ready for implementation Standardized (ICAO Annex X Vol.2 & Vol.3 and Doc. 9880)	Yes	<ul style="list-style-type: none"> <li>To carry traffic for AIDC/Flight Plan/MET until SWIM is ready in</li> <li>Block 2 and accommodate SWIM compliance data message (IWXXM) until ANSPs readiness for SWIM</li> </ul>	<ul style="list-style-type: none"> <li>ATN infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>CSPs</li> </ul>
	<b>COMI-B1/1-</b> Ground-Ground Aeronautical	<ul style="list-style-type: none"> <li>To support of Air Traffic Service</li> </ul>	Standardization	Yes	. To enable the efficient integration of technologies with improved integrity to	<ul style="list-style-type: none"> <li>Modern robust, efficient and cost-</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> </ul>

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
	Telecommunication Network/Internet Protocol suite (ATN/IPS)	Communication (ATSC) as well as Aeronautical <ul style="list-style-type: none"> <li>Industry Service Communication (AINSC), such as Aeronautical Administrative Communications (AAC) and Aeronautical Operational Communications</li> </ul>	ICAO Annex X Vol.2 & Vol.3 and Doc. 9896		support air to ground aeronautical safety services and regularity of flight communications.	effective data communications network infrastructure <ul style="list-style-type: none"> <li>IPS nodes and networks operating in a multinational environment</li> </ul>	<ul style="list-style-type: none"> <li>CSPs</li> </ul>
	<b>COMI-B1/2-VHF Data Link (VDL) Mode 2 Multi-Frequency</b>	<ul style="list-style-type: none"> <li>To supports transmission of data link message sets to supplement current voice operations, thus</li> <li>reducing voice channel congestion, while increasing productivity and capacity.</li> <li>Support increased subnetwork capacity and reduces interference over the standard VDL Mode 2 system.</li> </ul>	Ready for implementation Standardized (Annex 10 Vol. 3 Chap 6)	Yes	<ul style="list-style-type: none"> <li>Provides an Increase in data capacity over VDL Mode O/A</li> <li>Exchanges aviation data (AOC, CPDLC and ADS)</li> <li>More efficient use of spectrum</li> </ul>	<ul style="list-style-type: none"> <li>VHF narrow-band transceiver operating in the protected spectrum band, under a set of air-ground protocols that increase the data rate to 31.5 kbits</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
	<b>COMI-B1/3-SATCOM Class B Voice and Data</b>	<ul style="list-style-type: none"> <li>To supports introduction of SATVOICE and SATDATA as a complement to HF voice communications.</li> <li>To provide for oceanic and domestic broadband IPS based safety critical data link operations.</li> <li>To support safety critical, safety and regularity of flight operations.</li> </ul>	Ready for implementation (Annex 10 Vol. 3 Chap 6)	Yes	<ul style="list-style-type: none"> <li>Use of SATCOM voice for all types of ATS communications (routine and emergency/urgency communications).</li> <li>Provide high-speed IP based broadband networks.</li> <li>Improved security</li> <li>Lower cost than the traditional circuit switched services (Classic Aero).</li> </ul>	<ul style="list-style-type: none"> <li>Inmarsat 4 satellite constellation, global coverage for SATCOM Class B (SB-S):</li> <li>Avionics, satellite modem</li> <li>Aircraft antenna capable of receiving Swift Broadband and</li> <li>Related equipment (diplexer, LNA, HPA &amp; cabling)</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
	<b>COMI-B1/4-</b> Aeronautical Mobile Airport Communication System (AeroMACS)	To reduce Separation & Efficiency To improve situational awareness To educed Cost	Ready for implementation	Yes	<ul style="list-style-type: none"> <li>To support Safety communications</li> <li>To ensure network connectivity on the airport surface for the safety critical and regularity of flight.</li> </ul>	<ul style="list-style-type: none"> <li>IPS Based wireless communications infrastructure and system</li> <li>Multilateration sensors,</li> <li>weather sensors, surface radar and fixed navigation aids.</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
<b>COMS</b>	<b>COMS-B0/1-</b> CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace	To supports : <ul style="list-style-type: none"> <li>reduction of voice channel congestion and increase of capacity in domestic airspace,</li> <li>improvement of communication and surveillance in airspace where procedural separation is being applied.</li> </ul>	Ready for implementation (Standardized in Annex X Vol.1, Annex X Vol.2 Chap. 8.2)	Yes	Complement to voice communications, controller–pilot data link communications (CPDLC) provide the controller and the pilot with the ability to communicate through exchange of data link messages.	<ul style="list-style-type: none"> <li>Aircraft ATN B1 CPDLC data link infrastructure</li> <li>ATSU CPDLC systems</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
	<b>COMS-B0/2-</b> ADS-C (FANS 1/A) for procedural airspace	To support improvement of surveillance in airspace where procedural separation is being applied	Ready for implementation (Standardized in Annex X Vol.1, Annex X Vol.2 Chap. 8.2)	Yes	<ul style="list-style-type: none"> <li>ADS-C capability to provide ATSUs with aircraft position and projected profile for the flight at time intervals, events or ondemand dictated by the ground need</li> </ul>	<ul style="list-style-type: none"> <li>FANS aircraft Flight Management System</li> <li>ATSU ADS-C systems</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
	<b>COMS-B1/1-</b> PBCS approved CPDLC (FANS 1/A +) for domestic and procedural airspace	To support: <ul style="list-style-type: none"> <li>reduction of voice channel congestion and increase of capacity in domestic airspace,</li> <li>introduction of performance-based reduced separation minima in procedural airspace</li> </ul>	Ready for implementation (Standardized in Annex X Vol.1, Annex X Vol.2 Chap. 8.2)	Yes	<ul style="list-style-type: none"> <li>RCP240 in procedural airspace, for CPDLC (FANS 1/A+) to provides ATCs with intervention capability, allowing when used in conjunction with other enablers (e.g. ADS-C and navigation capabilities),</li> </ul>	<ul style="list-style-type: none"> <li>FANS 1/A+ CPDLC systems compliant with RCP240 (procedural) and RCP130 (domestic).</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
					reduced separation minima and thus capacity increase <ul style="list-style-type: none"> <li>RCP 130 in domestic airspace, compliant CPDLC (FANS 1/A+) provides a complementary means of communications for en-route routine communications and the extension of CPDLC for ground operations (e.g. departure clearance)</li> </ul>		
	<b>COMS-B1/2</b> PBCS-approved ADS-C (FANS 1/A+) for procedural airspace	To support introduction of performance-based reduced separation minima in procedural airspace	Ready for implementation (Standardized in Annex X Vol.1, Annex X Vol.2 Chap. 8.2)	Yes	<ul style="list-style-type: none"> <li>FANS 1/A+ ADS-C systems (along with associated air-ground network and physical layers) are demonstrated</li> </ul>	<ul style="list-style-type: none"> <li>FANS aircraft Flight Management System</li> <li>ATSU ADS-C systems</li> <li>Compliance with RSP180</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>
	<b>COMS-B1/3-</b> SATVOICE (incl. routine communication) for procedural airspace	To increase quality of voice communications in procedural airspace without VHF coverage	Ready for implementation (Annex 10 Vol. 3 Chap 6)	Yes		<ul style="list-style-type: none"> <li>Dedicated networks and aircraft system</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
<b>NAVS</b>	<b>NAVS-B0/1-</b> Ground Based Augmentation System (GBAS)	To support Precision Approach and landing operations at a specific airport (one system may support all runway ends). As an option, may support arrival and departure phases of flight	Ready for implementation (Annex X Vol.1 Attachment D Chap7)	Yes	To introduce improved accuracy, integrity and availability through a local airport based differential satellite navigation and monitoring system	<ul style="list-style-type: none"> <li>Airport local network of reference receivers</li> <li>corrections computing and integrity monitoring systems</li> <li>VHF Data Broadcast link to users (operating in the 108 to 118 MHz band)</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSPs</li> <li>Airlines</li> <li>CSPs</li> </ul>

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
	<b>NAVS-B0/2-</b> Satellite Based Augmentation System (SBAS)	To support PBN in all phases of flight with an increased accuracy, integrity and availability compared to ABAS. Increases accuracy and integrity for the vertical guidance	Ready for implementation (Annex X Vol.1 Attachment D Chap 6)	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	To introduce improvements in the availability, accuracy and integrity of satellite navigation through a wide area differential satellite navigation position and integrity monitoring system	<ul style="list-style-type: none"> <li>• Network of ground reference systems in a region and connected via a data-network</li> <li>• Satellite signals Reference monitoring systems</li> <li>• Geostationary satellite broadcast to aircraft link correction</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSPs</li> <li>• Airlines</li> <li>• CSPs</li> </ul>
	<b>NAVS-B0/3-</b> Aircraft Based Augmentation system (ABAS)	To support all PBN navigation specifications with the exception of RNP APCH down to LPV/LP minima.	Ready for implementation (Annex X Vol.1 Attachment D Chap 5)	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	To support non-precision (LNAV) and vertically guided (LNAV/VNAV) approaches with Baro VNAV and other terminal and enroute navigations	<ul style="list-style-type: none"> <li>• ABAS Avionics.</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• Airlines</li> </ul>
	<b>NAVS-B0/4-</b> Navigation Minimal Operating Networks (Nav. MON)	<ul style="list-style-type: none"> <li>• To adjust conventional navaids networks through the increased deployment of satellite based navigation systems and procedures to ensure the necessary levels of resilience for navigation. <ul style="list-style-type: none"> <li>• To provide a minimum level of capabilities to accommodate State aircraft operations where there is a mismatch in terms of aircraft equipage.</li> <li>• To make a more efficient use of the frequency spectrum</li> </ul> </li> </ul>	Ready for implementation	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	To rationalize the ground based conventional infrastructure through the definition of minimal networks of ground navaids.	<ul style="list-style-type: none"> <li>• Conventional navaids networks</li> <li>• Satellite based navigation systems</li> <li>• Aircraft equipage.</li> <li>• Frequency spectrum</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>



ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
	NAVS-B1/1-Extended GBAS	To improve accuracy, integrity and availability through a local airport receivers stations	Validation	<ul style="list-style-type: none"> <li>No</li> </ul>	Not Mature	<ul style="list-style-type: none"> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>
ASUR	ASUR-B0/1-Automatic Dependent Surveillance - Broadcast (ADS-B)	To support the provision of Air Traffic Services and operational applications at reduced cost and increased surveillance coverage.	Ready for implementation (Annex X Vol.3 Chap 6.9.8)	<ul style="list-style-type: none"> <li>Yes</li> </ul>	<p>To provides precise position/velocity information in all airspace (accuracy not range-dependent as with radar)</p> <p>To provide aircraft call sign and precise position/velocity information to nearby aircraft with ADS-B-In receivers.</p>	<ul style="list-style-type: none"> <li>ADS-B Transmitter on board aircraft</li> <li>ADS-B Receiver and processing system in ATU</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>Airlines</li> <li>ANSPs</li> </ul>
	ASUR-B0/2-Multi-lateration cooperative surveillance systems (MLAT)	To provide an alternative to radar surveillance by using available aircraft transponders	Ready for implementation (ICAO Annex X Vol.4 and Doc 9924 Aeronautical Surveillance Manual, Appendix L)	<ul style="list-style-type: none"> <li>Yes</li> </ul>	To provide a new independent cooperative surveillance	<ul style="list-style-type: none"> <li>Ground Mlat Transmitters/Receivers stations</li> <li>Processing system.</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>Airlines</li> <li>ANSPs</li> </ul>
	ASUR-B0/3-Cooperative Surveillance Radar Downlink of aircraft Parameters (SSR-DAPS)	To obtain additional information from an aircraft transponder in support of the provision of Air Traffic Services	Ready for implementation (ICAO Annex X Vol.4 and Doc 9924 Aeronautical Surveillance Manual)	<ul style="list-style-type: none"> <li>Yes</li> </ul>	<p>To increase ATCOs awareness and reduce the volume of air-ground voice communications,</p> <p>To improve the performance of tracking systems or safety net systems such as STCA and MSAW</p>	<ul style="list-style-type: none"> <li>To obtain additional information from an aircraft transponder in support of the provision of Air Traffic Services.</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>Airlines</li> <li>ANSPs</li> </ul>
	ASUR-B1/1-Reception of aircraft ADS-B signals from space (SB ADS-B)	To provide surveillance coverage in locations where ground stations siting is not possible or not currently provided	Standardization	<ul style="list-style-type: none"> <li>No</li> </ul>	Not Mature	<ul style="list-style-type: none"> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>

ASBU Modules	ASBU Elements	Purpose of Elements	Maturity level	Applicable (Yes or No)	Rational of Applicability	Element Enablers	Stakeholders
<b>ACAS</b>	<b>ACAS-B1/1-ACAS</b> Improvement	To provide airborne collision avoidance as a last resort safety net for pilots	Ready for implementation (ICAO Annex X Vol.4 and Doc 9924 Aeronautical Surveillance Manual)	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	To ensure airborne collision avoidance	<ul style="list-style-type: none"> <li>• Avionics TCAS</li> </ul>	<ul style="list-style-type: none"> <li>• CAAs</li> <li>• Airlines</li> </ul>
<b>FICE</b>	<b>FICE-B0/1-</b> Automated basic facility data exchange (AIDC)	To improve the efficiency of coordination and transfer of control between ATSU's	Ready for implementation (ICAO Annex X Vol 2 and Vol3 & Doc.9694)	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	To implement the first automation step in the evolution of the coordination and transfer of control between neighbouring ATSU's units to guarantee that all related and necessary flight information will be available to the other unit as per agreement.	<ul style="list-style-type: none"> <li>• Compatible AIDC facilities and systems</li> </ul>	<ul style="list-style-type: none"> <li>• CAAs</li> <li>• ANSPs</li> </ul>

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**Table AIM III-1: ASBU applicable elements in AIM area**

ASBU modules	ASBU elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Element enablers	Stakeholders
<b>DATM-B0</b>	<b>DATM-B0</b>			<b>No</b>	Removed from the 6 <sup>th</sup> edition of the GANP		
<b>DAIM-B1</b>	<b>B1/1</b> - Provision of quality-assured aeronautical data and information	The main purpose of this element is to ensure that aeronautical data and information comply with quality standards to meet the needs of airspace users and support the safety of flight operations.	<i>Standardization</i>	<b>Yes</b>	<p>Although this element is at the standardization level of maturity, its following components are mandatory under SARPs:</p> <ul style="list-style-type: none"> <li>✓ Quality management system, <i>Annex 15 §3.6</i></li> <li>✓ Use of common references WGS84 and AIRAC, <i>Annex 15 §1.2 and §6.2</i></li> </ul> <p>Use of automated data-centric environment, <i>Annex 15 § 3.5</i></p>	<ul style="list-style-type: none"> <li>○ National regulatory framework for the provision of quality assured aeronautical data and information</li> </ul>	○ CAA
						<ul style="list-style-type: none"> <li>○ Operational procedures for the provision of aeronautical information services in an AIM environment</li> <li>○ Operational procedures for the application of a quality management system to the AIM processes.</li> <li>○ Automated aeronautical information management systems and infrastructure</li> <li>○ Training requirements for the provision of quality-assured aeronautical data and information</li> <li>○ Formal arrangements for data quality assurance</li> </ul>	<ul style="list-style-type: none"> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ CAA</li> </ul>
<b>DAIM-B1</b>	<b>B1/2</b> - Provision of digital Aeronautical Information Publication (AIP) data sets	To make available digital AIP data and information in an interoperable and mutually understood manner.	<i>Ready for implementation</i>	<b>Yes</b>	This element is Ready for implementation and the provision of AIP data sets is made mandatory under SARPs, <i>Annex 15 §5.3</i>	<ul style="list-style-type: none"> <li>○ National regulatory framework for the provision of digital Aeronautical Information Publication (AIP) data sets</li> </ul>	○ CAA
						<ul style="list-style-type: none"> <li>○ Procedures for the provision of digital AIP data sets</li> </ul>	○ ANSP
						<ul style="list-style-type: none"> <li>○ Aeronautical Information Exchange Model (AIXM) v 5.1+</li> </ul>	○ ANSP
						<ul style="list-style-type: none"> <li>○ Automated systems and infrastructure to support the provision of digital AIP data sets using AIXM</li> </ul>	○ ANSP
						<ul style="list-style-type: none"> <li>○ Training requirements for the provision of digital AIP data sets</li> </ul>	○ ANSP

ASBU modules	ASBU elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Element enablers	Stakeholders
	<b>B1/3</b> - Provision of digital terrain data sets	To make available digital terrain data and information in an interoperable and mutually understood manner.	<i>Ready for implementation</i>	<b>Yes</b>	This element is Ready for implementation and the provision of Terrain data sets is made mandatory under SARPs, <i>Annex 15 §5.3</i>	<ul style="list-style-type: none"> <li>○ National regulatory framework for the provision of digital terrain data sets</li> <li>○ Operational procedures for the provision of digital terrain data sets</li> <li>○ Automated systems and infrastructure to support the provision of digital terrain data sets using AIXM</li> <li>○ Training requirements for the provision of digital terrain data sets</li> </ul>	<ul style="list-style-type: none"> <li>○ CAA</li> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ ANSP</li> </ul>
<b>DAIM-B1</b>	<b>B1/4</b> - Provision of digital obstacle data sets	To make available digital obstacle data in an interoperable and mutually understood manner.	<i>Ready for implementation</i>	<b>Yes</b>	This element is Ready for implementation and the provision of obstacle data sets is made mandatory under SARPs, <i>Annex 15 §5.3</i> .	<ul style="list-style-type: none"> <li>○ National regulatory framework for the provision of digital obstacle data sets</li> <li>○ Operational procedures for the provision of digital obstacle data sets</li> <li>○ Aeronautical Information Exchange Model (AIXM) v 5.1+</li> <li>○ Automated systems and infrastructure to support the provision of digital obstacle data sets using AIXM</li> <li>○ Training requirements for the provision of digital obstacle data sets</li> </ul>	<ul style="list-style-type: none"> <li>○ CAA</li> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ ANSP</li> <li>○ ANSP</li> </ul>

ASBU modules	ASBU elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Element enablers	Stakeholders
DAIM-B1	B1/5 - Provision of digital aerodrome mapping data sets	To make available digital aerodrome mapping data and information in an interoperable and mutually understood manner.	<i>Ready for implementation</i>	Yes	This element is Ready for implementation and the provision of aerodrome mapping data sets is made mandatory under SARPs, <i>Annex 15 §5.3.</i>	○ National regulatory framework for the provision of digital aerodrome mapping data sets	○ CAA
						○ Operational procedures for the provision of digital aerodrome mapping data set	○ ANSP
						○ Aeronautical Information Exchange Model (AIXM) v 5.1+	○ ANSP
						○ Automated systems and infrastructure to support the provision of digital aerodrome mapping data sets using AIXM	○ ANSP
						○ Training requirements for the provision of digital aerodrome mapping data sets	○ ANSP
	B1/6 - Provision of digital instrument flight procedure data sets	To make available digital instrument flight procedure data in an interoperable and mutually understood manner.	<i>Ready for implementation</i>	Yes	This element is Ready for implementation and the provision of instrument flight procedure data sets is made mandatory under SARPs, <i>Annex 15 §5.3.</i>	○ National regulatory framework for the provision of digital instrument flight procedures sets	○ CAA
						○ Operational procedures for the provision of digital instrument flight procedures data set	○ ANSP
						○ Aeronautical Information Exchange Model (AIXM) v 5.1+	○ ANSP
						○ Automated systems and infrastructure to support the provision of digital instrument flight procedures data sets using AIXM	○ ANSP
						○ Training requirements for the provision of digital instrument flight procedure data sets	○ ANSP

ASBU modules	ASBU elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Element enablers	Stakeholders
DAIM-B1	B1/7 - NOTAM improvements	To provide timely and relevant information about status and condition of the ANS infrastructure to the next intended users via NOTAM.	<i>Ready for implementation</i>	Yes	This element addresses the identification of clear operational conditions under which a NOTAM shall or shall not be originated. It also prepares for the replacement of the paper-based NOTAM by a digital version using information exchange models. It is mandatory under SARPs, <i>Annex 15 §6.3.2.</i>	o National regulatory framework for the provision of NOTAM	o CAA
						o Operational procedures for the provision of an enhanced NOTAM service	o ANSP
						o Aeronautical Information Exchange Model (AIXM) v 5.1+	o ANSP
						o Automated systems and infrastructure to support the provision of NOTAM using AIXM	o ANSP
						o Training requirements for the provision of enhanced NOTAM	o ANSP

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**Table MET III-1: ASBU applicable elements in MET area**

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
<b>AMET-B0</b>  Global, regional, and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.	<b>AMET-B0/1</b> Meteorological observations products	Provides Meteorological observations in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning	<b>Ready for implementation</b>	<b>Yes</b>	<ul style="list-style-type: none"> <li>A3 Chap. 4: §4.1.5 requires that at aerodromes with runways intended for Category II and III instrument approach and landing operations, automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure shall be installed to support approach and landing and take-off operations.</li> <li>Annex 3 Appx. 6: §6.2.5 requires that the wind shear alerts shall be disseminated from automated, ground-based, wind shear remote-sensing or detection equipment in accordance with local arrangements to those concerned.</li> </ul>	<ul style="list-style-type: none"> <li>National framework amendment for the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> </ul>
						<ul style="list-style-type: none"> <li>Procedures for the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>Transmission of meteorological observations data from aircraft</li> </ul>	<ul style="list-style-type: none"> <li>Aircraft Manufacturer</li> </ul>
						<ul style="list-style-type: none"> <li>Automated systems and infrastructure to support the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>Airport Operator</li> <li>ANPS</li> <li>MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>Training requirements for the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSP</li> <li>MET Service Provider</li> <li>Airportà Operator</li> </ul>

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
	AMET-B0/2 Meteorological forecast and warning products	Provides Meteorological forecasts, advisories and warnings in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.	Ready for implementation	Yes	<ul style="list-style-type: none"> <li>Annex Chap. 3: §3.2 &amp; Appendix 2: §1.2 require for the provision of the new gridded WAFS information (e.g. Wind, Temperature, Icing, Turbulence, CB clouds).</li> </ul>	<ul style="list-style-type: none"> <li>National framework amendment for the provision of meteorological forecast products and warnings</li> <li>Procedures for the provision of Meteorological forecast products and warnings</li> <li>Training requirements for the provision of meteorological forecast products and warnings</li> <li>Systems and infrastructure to support the provision of meteorological forecast and warning products</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSP</li> <li>MET Service Provider</li> <li>CAA</li> <li>ANSP</li> <li>MET Service Provider</li> <li>Airport Operator</li> <li>MET Service Provider</li> </ul>
	AMET-B0/3 Climatological and historical meteorological products	Climatological products in support of the design and planning of infrastructure, flight routes and airspace	Ready for implementation	Yes	<ul style="list-style-type: none"> <li>Annex 3 Chap 8: §8.1.1 requiring for the provision of Aerodrome climatological information and historical meteorological products in support of the design</li> </ul>	<ul style="list-style-type: none"> <li>National framework amendment for the provision of climatological meteorological information products</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> </ul>



ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
		management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations			and planning of infrastructure, flight routes and airspace management.	<ul style="list-style-type: none"> <li>Procedures for the provision of climatological meteorological information products</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>Training requirements for the provision of climatological meteorological information products</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSP</li> <li>MET Service Provider</li> <li>Airport Operator</li> </ul>
						<ul style="list-style-type: none"> <li>Systems and infrastructure to support the provision of climatological meteorological products</li> </ul>	<ul style="list-style-type: none"> <li>MET Service Provider</li> </ul>
	<b>AMET-B0/4</b> Dissemination of meteorological products	Dissemination of meteorological products in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning	<b>Ready for implementation</b>	<b>Yes</b>	<ul style="list-style-type: none"> <li>The requirements for the dissemination of OPMET messages in both TAC and digital formats as of November 2020 prescribed by Annex 3 provisions (A3 App. 3: §2.1.3; App. 6: §1.1.6 &amp; §1.2)</li> </ul>	<ul style="list-style-type: none"> <li>National framework amendment for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> </ul>
						<ul style="list-style-type: none"> <li>Procedures for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>Communications infrastructure for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
						<ul style="list-style-type: none"> <li>• Training for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>• ICAO Meteorological Information Exchange Model (IWXXM) V1-V2</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
<b>AMET-B1</b>  Meteorological information supporting automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support	<b>AMET-B1/1</b> Meteorological observations information	Provides Meteorological observations information in support of automated decision processes or aids and performance based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.	<b>Standardization</b>	<b>Yes</b>	<ul style="list-style-type: none"> <li>• IWXXM format became a Standard for dissemination on 5 November 2020 with the applicability of Amendment 79 to Annex 3 for the following TAC products: SIGMET, AIRMET, METAR, SPECI, TREND, TAF, VAA, TCA and SWXA.</li> <li>• Significant weather (SIGWX) forecasts, is recommended for dissemination in IWXXM as of 4 November 2021</li> <li>• Furthermore, the Conclusion 23/29 of APRG/23 Established a Regional Space Weather Project to assist States with the implementation of Space Weather</li> </ul>	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
						<ul style="list-style-type: none"> <li>• Procedures for the provision of meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>• Transmission of meteorological observations information from aircraft</li> </ul>	<ul style="list-style-type: none"> <li>• Aircraft Manufacturer</li> </ul>
						<ul style="list-style-type: none"> <li>• Automated systems and infrastructure to support the provision of meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• Airport Operator</li> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
					requirements as per the provisions of Annex 3 to Chicago Convention.	<ul style="list-style-type: none"> <li>• Training requirements for meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
	<b>AMET-B1/2</b> Meteorological forecast and warning information	Meteorological forecast and warning information for automated support for decision processes or aids and performance based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision processes	<b>Standardization</b>	<b>Yes</b>	<ul style="list-style-type: none"> <li>• The above is applied</li> </ul>	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of meteorological forecast and warnings information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
<ul style="list-style-type: none"> <li>• Procedures for the provision of meteorological forecast and warnings information</li> </ul>						<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>	
<ul style="list-style-type: none"> <li>• Training requirements for Meteorological forecast and warning information</li> </ul>						<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>	
<ul style="list-style-type: none"> <li>• Systems and infrastructure to support the provision of meteorological forecast and warning information</li> </ul>						<ul style="list-style-type: none"> <li>• MET Service Provider</li> </ul>	

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
	<b>AMET-B1/3</b> Climatological and historical meteorological information	Climatological information in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.	<b>Standardization</b>	<b>Yes</b>	<ul style="list-style-type: none"> <li>Enhanced climatological data/Information with their associated characteristics such as metadata; required to support the design and planning of infrastructure, flight routes and airspace management.</li> </ul>	<ul style="list-style-type: none"> <li>National framework amendment for the provision of climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> </ul>
						<ul style="list-style-type: none"> <li>Procedures for the provision of climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>Training requirements for climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSP</li> <li>MET Service Provider</li> <li>Airport Operator</li> </ul>
						<ul style="list-style-type: none"> <li>Systems and infrastructure to support the provision of climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>MET Service Provider</li> </ul>
	<b>AMET-B1/4</b> Dissemination of meteorological information	Dissemination of meteorological information in support of automated decision process or aids, involving meteorological information, meteorological information	<b>Standardization</b>	<b>Yes</b>	<ul style="list-style-type: none"> <li>As of 5 November 2020, States were required by Annex 3 to the Convention to implement IWXXM format for the international exchange of MET information.</li> <li>States, ROCs and RODBs in a position to do so will begin to disseminate</li> </ul>	<ul style="list-style-type: none"> <li>National framework amendment for the dissemination of meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> </ul>
						<ul style="list-style-type: none"> <li>Procedures for the dissemination of meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
		translation, ATM impact conversion and ATM decision support.			<p>gridded and imagery products throughout Block 1.</p> <ul style="list-style-type: none"> <li>RODBs to implement TAC Request/Reply and IWXXM Request/Reply Procedures.</li> </ul>	<ul style="list-style-type: none"> <li>Communication infrastructure for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>
						<ul style="list-style-type: none"> <li>Training for the dissemination of meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>CAA</li> <li>ANSP</li> <li>MET Service Provider</li> <li>Airport Operator</li> </ul>
						<ul style="list-style-type: none"> <li>ICAO Meteorological Information Exchange Model (IWXXM) V3</li> </ul>	<ul style="list-style-type: none"> <li>ANSP</li> <li>MET Service Provider</li> </ul>

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#### 4. Reporting on the Status of Implementation of the ASBU Threads /Elements

##### Data collection

4.1. The process of data collection is one of the most critical processes at national and regional levels to support the monitoring and reporting of the status of implementation of the applicable ASBU Threads/Elements. APIRG urged AFI States to provide the ICAO AFI Regional Offices, with necessary data on implementation progress at least once a year (by 1<sup>st</sup> December every year) for the development of the AFI Region Air Navigation Reports, on annual basis.

4.2. The following Tables are used for the collection of detailed information related to the implementation of associated applicable ASBU Threads/Elements, which used also for the determination of the performance indicators included in the AFI Region Air Navigation Strategy. Other Tables might be developed for other Threads/Elements.

**Table AOP III-2: Collection of ASBU implementation data in AOP**

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments	
ACDM-B0	ACDM-B0/1 Airport CDM Information Sharing	(to be identified)						
		(to be identified)						
		(to be identified)						
	ACDM-B0/2 Integration with ATM Network function	(to be identified)						
(to be identified)								

**Table ATM III-2: Collection of ASBU implementation data in ATM**

*(Under development)*

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**Table SAR III-2: Collection of ASBU implementation data in SAR**

*(Under development)*

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**Table CNS III-2: Collection of ASBU implementation data in CNS**

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
COMI-BO	COMI-BO/1 Aircraft Communication Addressing Reporting System (ACARS)	ACARS-VDL					
	COMI-BO/3 VHF Data Link (VDL) Mode O/A	VDL Mode O/A					
	COMI-BO/4 VHF Data Link (VDL) Mode 2 Basic	VDL Mode 2					
	COMI-BO/5 Satellite Communication (SATCOM) Class C Data	SATCOM Class C Data					
	COMI-BO/6 High Frequency Data Link (HFDL)	HFDL					
	COMI-BO/7 ATS Message Handling System (AMHS)	AMHS					
COMI -B1	COMI B1/1 Ground-Ground Aeronautical Telecommunication Network/Internet Procol suite (ATN/IPS)	ATN/IPS					
	COMI-B1/2 VHF Data Link (VDL) Mode 2 Multi-Frequency	VDL Mode 2					

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
	<b>COMI-B1/3</b> SATCOM Class B Voice and Data	SATCOM Class B Voice and Data					
	<b>COMI-B1/4</b> Aeronautical Mobile Airport Communication System (AeroMACS)	AEROMACS (AMC)					
<b>COMS-B0</b>	<b>COMS-B0/2</b> ADS-C (FANS 1/A) for procedural airspace	ADS-C					
<b>COMS-B1</b>	<b>COMS-B1/1</b> PBCS approved CPDLC (FANS 1/A +) for domestic and procedural airspace	ADS-C/CPDLC					
	<b>COMS-B1/2</b> PBCS approved ADS-C (FANS 1/A +) for procedural airspace	ADS-C FANS1/A CPDLC					
	<b>COMS-B1/3</b> SATVOICE (incl. routine communication) for procedural airspace	SATVOICE					
<b>NAVS-B0</b>	<b>NAVS-B0/1</b> Ground Based Augmentation System (GBAS)	GNSS/SBAS					
	<b>NAVS-B0/2</b> Satellite Based Augmentation System (SBAS)	GNSS/SBAS					
	<b>NAVS-B0/3</b> Aircraft Based Augmentation system (ABAS)	GNSS/ABAS					
	<b>NAVS-B0/4</b> Navigation Minimal Operating	GNSS					

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
	Networks (Nav. MON)						
<b>ASUR-B0</b>	<b>ASUR-B0/1</b> Automatic Dependent Surveillance - Broadcast (ADS-B)	ADS-B, GNSS					
	<b>ASUR-B0/2</b> Multilateration cooperative surveillance systems (MLAT)	MLAT, GNSS and ADS-B					
	<b>ASUR-B0/3</b> Cooperative Surveillance sRadar Downlink of aircraft Parameters (SSR-DAPS)	SSR-DAPS					
<b>ACAS</b>	<b>ACAS-B1/1</b> -ACAS Improvement	TCAS Version 7.1					
<b>FICE</b>	FICE-B0/1 - Automated basic facility data exchange (AIDC)	AMHS					

**Table AIM III-2: Collection of ASBU implementation data in AIM**

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments	
<b>DAIM-B1</b> <i>Digital Aeronautical Information Management</i>	<b>DAIM-B1/1</b> - Provision of quality-assured aeronautical data and information	QMS						
		SLA						
		AIRAC						
		WGS-84						
	<hr/>							
	<b>DAIM-B1/2</b> - Provision of digital Aeronautical Information Publication (AIP) data sets	AIXM Database						
		Electronic AIP						
		AIP data sets						
	<hr/>							
	<b>DAIM-B1/3</b> - Provision of digital terrain data sets	Digital Terrain data sets – Area 1						
		Digital Terrain data sets – Area 2						
		Digital Terrain data sets – Area 3						
		Digital Terrain data sets – Area 4						
	<hr/>							
	<b>DAIM-B1/4</b> - Provision of digital obstacle data sets	Digital Obstacle data sets – Area 1						
		Digital Obstacle data sets – Area 2						
		Digital Obstacle data sets – Area 3						
		Digital Obstacle data sets – Area 4						
	<hr/>							

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
	<b>DAIM-B1/5</b> - Provision of aerodrome mapping data sets	Aerodrome mapping data sets					
	<b>DAIM-B1/6</b> - Provision of digital instrument flight procedure data sets	Digital instrument flight procedure data sets					
	<b>DAIM-B1/7</b> NOTAM improvements	NOTAM of required quality					

**Table MET III-2: Collection of ASBU implementation data in MET**

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments	
<b>AMET-B0</b> Global, regional and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.	<b>AMET-B0/1</b> Meteorological observations products	AWOS						
		Local Report						
		Aerodrome report						
		Lighting information						
		Ground based weather radar information						
		MET SAT imagery						
		A/C MET report (AIREPs, AMDAR)						
		Vertical wind & Temp profile						
		Volcano Observatory Notice for Aviation (VONA)						
		Wind shear alert						
	<b>AMET-B0/2</b> Meteorological forecast and warning products	WAFS						
		SIGWX						
		TAF						
		Trend						
		Take-off forecast						
		Volcanic Ash Advisory (VAA)						
		Tropical Cyclone Advisory (TCA)						
		SIGMET						
		AD WRNG						
		Wind shear warning						
	<b>AMET-B0/3</b> Climatological and historical meteorological products	Aerodrome climatological tables and Aerodrome climatological summaries						

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
		Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.					
	<b>AMET-B0/4</b> Dissemination of meteorological products	TAC format					
		Gridded data					
		Graphical format					
		BUFR Code					
		IWXXM (in XML/GML)					
<b>AMET-B1</b> Meteorological information supporting automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support	<b>AMET-B1/1</b> Meteorological observations information	Wind speed and direction (Aerodrome) including gusts					
		Wind speed and direction from Departure to Top of Climb & Top of Descent (TOD) to landing					
		Wind speed and direction en-route					
		Air temperature and dew point temperature (aerodrome)					
		Air temperature and dew point temperature from departure to TOC and then TOD to landing					
		Air temperature and dew point temperature (or equivalent) en-route					

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
		Pressure (aerodrome) (i.e. QNH/QFE)					
		Visibility (aerodrome) (horizontal, slant, vertical), Runway visual range (RVR)					
		Cloud type (of operational significance)					
		Cloud coverage, bases, tops and layers					
		Thunderstorms, Lightning, Convection (TCU & CB)					
		Precipitation (ie. drizzle, rain, freezing rain, snow, hail)					
		Weather (dust storm, sandstorm, funnel cloud, squall, smoke, haze, mist, fog)					
		Icing, including airframe and engine					
		Liquid Water Content, Iced Water Content					
		Turbulence, Mountain waves, Wind shear					
		Fronts					
		Radioactive clouds, Toxic chemicals					
		Tropical cyclones					
		Volcanic ash					
		Sulphur dioxide (SO2) and other hazardous gases					



ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments	
		Aerodrome surface (runway) temperature, state						
		Sea temperature, state and wave height (seaports)						
		Space weather events						
		Tsunami, Flood						
	AMET-B1/2 Meteorological forecast and warning information	Icing (airframe and engine),						
		Liquid Water Content, Iced Water Content						
		Turbulence, Mountain waves, Wind shear						
		Fronts						
		Radioactive clouds, Toxic chemicals						
		Tropical cyclones						
		Volcanic ash						
		Sulphur dioxide (SO2) and other hazardous gases						
		Aerodrome surface (runway) temperature, state						
		Sea temperature, state and wave height (seaports)						
		Space weather events						

ASBU Module	ASBU Element	Required Procedures/ Systems/ Services/ Facilities	Implementation Status	Date planned	Date completed	Evidence of implementation Status	Comments
	AMET-B1/3 Climatological and historical meteorological information	Historical information including meteorological observations and forecasts and their associated characteristics (metadata)					
		Climatological information for the range of meteorological parameters and phenomena and their associated characteristics (metadata)					
	AMET-B1/4 Dissemination of meteorological information	ICAO Meteorological Information Exchange Model (IWXXM) format					
		AFS/AMHS					
	Secure Internet services (WIFS/SADIS)						

## **5. Performance Monitoring of AFI Region Air Navigation System**

- 5.1. The monitoring of air navigation performance and its enhancement should be carried out through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets.
- 5.2. The monitoring of the regional implementation progress and performance Metrics/Indicators should be done for all Elements planned by APIRG. The monitoring should allow global correlation of status and expectations, appreciation of benefits achieved for the airspace users, as well as corrective actions to be taken by APIRG on implementation plans.
- 5.3. On the basis of operational requirements and taking into consideration the associated benefits, the AFI Region has focused on the implementation of ASBU Thread/Element applicable for the region from Block 0 and Block 1 and agreed on the subsidiary bodies that will be monitoring and supporting the implementation of the ASBU Threads/Elements.
- 5.4. The process of ASBU Threads/Elements implementation against the objectives and targets as set forth in the AFI Air Navigation Strategy Document.
- 5.5. In addition to the monitoring of the AFI Region applicable ASBU Threads/Elements (Block 0 and 1) and as part of the performance-based approach, an initial set of KPIs has been identified to be used for monitoring the performance of the Air Navigation System at National and Regional Levels, and has been addressed in the AFI Region Air Navigation Strategy.
- 5.6. Reporting and monitoring results of these KPIs will be analyzed by the APIRG, States and ICAO Secretariat to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets, as appropriate.

# **AERODROME OPERATIONS (AOP)**

Aerodromes /Aerodrome Operations (AOP)

**Table AOP III-3:** *(Provide reference and title of the ASBU element in AOP)*

*(Under development)*

**Explanation of the Table**

Fill in the information as provided for using the Column number

<b>Column number</b>	<b>Description</b>
<b>1.</b>	Name of State
<b>2.</b>	
<b>3.</b>	

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# AIR TRAFFIC MANAGEMENT (SEARCH AND RESCUE /SAR)

APTA : Improve arrival and departure operations

**Table ATM-III-3:** *(Provide reference and title of the ASBU element in ATM)*

*(Under development)*

**Explanation of the Table**

Fill in the information as provided for using the Column number

<b>Column number</b>	<b>Description</b>
<b>1.</b>	Name of State
<b>2.</b>	
<b>3.</b>	

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**Table SAR-III-3:** *(Provide reference and title of the ASBU element in SAR)*

*(Under development)*

**Explanation of the Table**

Fill in the information as provided for using the Column number

<b>Column number</b>	<b>Description</b>
<b>1.</b>	Name of State
<b>2.</b>	
<b>3.</b>	

AFI eANP VOLUME III



**COMMUNICATION,  
NAVIGATION AND  
SURVEILLANCE  
(CNS)**

**Table CNS III-3: Implementation status of applicable ASBU elements of COM I-B0 and COMI-B1, Aeronautical Mobile Service (AMS) - Air/Ground Communication**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of availability of <b>ACARS VHF Datalink (ACARS VDL)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>3</b>	Status of availability of <b>VHF Datalink Mode 0/A</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>4</b>	Status of implementation of <b>VHF Data Link Mode 2 (VDL Mode 2)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>5</b>	Status of implementation of <b>SATCOM Classe C</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>6</b>	Status of implementation of <b>HF Data Link (HL DL)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>7</b>	Status of implementation of <b>VHF Data Link Mode 2 Multifrequency (VDL Mode 2 Milti frequency)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>8</b>	Status of implementation of <b>Status of implementation of SATCOM Classe B</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>9</b>	Remarks

**Table CNS III-3A: Implementation status of applicable ASBU elements of COMI-B0 and COMI-B1 - ESAF**

ESAF States	ACARS VHF Datalink (ACARS VDL)	VHF Datalink Mode 0/A	VHF Data Link Mode 2 (VDL Mode 2)	SATCOM Classe C	HF Data Link (HL DL)	VHF Data Link Mode 2 Multifrequency (VDL Mode 2 Multi frequency)	SATCOM Classe B	Remarks
1	2	3	4	5	6	7	8	9
Angola		NI	NI	NI	NI	NI	NI	
Botswana	FI	NI	NI	NI	NI	NI	NI	
Burundi	FI	NI	NI	NI	NI	NI	NI	
Comoros	FI	NI	NI	NI	NI	NI	NI	
Djibouti	FI	NI	NI	NI	NI	NI	NI	
Eritrea	FI	NI	NI	NI	NI	NI	NI	
Eswatini	FI	NI	NI	NI	NI	NI	NI	
Ethiopia	FI	NI	NI	NI	NI	NI	NI	
Kenya	FI	NI	NI	NI	NI	NI	NI	
Lesotho	FI	NI	NI	NI	NI	NI	NI	
Madagascar	FI	NI	NI	NI	NI	NI	NI	
Malawi	FI	NI	NI	NI	NI	NI	NI	
Mauritius	FI	NI	NI	NI	NI	NI	NI	
Mozambique	FI	NI	NI	NI	NI	NI	NI	
Namibia	FI	NI	NI	NI	NI	NI	NI	
Rwanda	FI	NI	NI	NI	NI	NI	NI	
Seychelles	FI	NI	NI	NI	NI	NI	NI	
Somalia	FI	NI	NI	NI	NI	NI	NI	
South Africa	FI	NI	NI	NI	NI	NI	NI	
South Sudan	FI	NI	NI	NI	NI	NI	NI	
Uganda	FI	NI	NI	NI	NI	NI	NI	
United Republic of Tanzania	FI	NI	NI	NI	NI	NI	NI	
Zambia	FI	NI	NI	NI	NI	NI	NI	
Zimbabwe	FI	NI	NI	NI	NI	NI	NI	

**Table CNS III-3B: Implementation status of applicable ASBU elements of COMI-B0 and COMI-B1 - WACAF**

WACAF States	ACARS VHF Datalink (ACARS VDL)	VHF Datalink Mode 0/A	VHF Data Link Mode 2 (VDL Mode 2)	SATCOM Classe C	HF Data Link (HL DL)	VHF Data Link Mode 2 Multifrequency (VDL Mode 2 Multi frequency)	SATCOM Classe B	Remarks
1	2	3	4	5	6	7	8	9
Benin	FI	NI	NI	NI	NI	NI	NI	
Burkina Faso	FI	NI	NI	NI	NI	NI	NI	
Cameroon	FI	NI	NI	NI	NI	NI	NI	
Cape Verde	FI	NI	NI	NI	NI	NI	NI	
Central African Republic	FI	NI	NI	NI	NI	NI	NI	
Chad	FI	NI	NI	NI	NI	NI	NI	
Congo	FI	NI	NI	NI	NI	NI	NI	
Cote d'Ivoire	FI	NI	NI	NI	NI	NI	NI	
Democratic Republic of Congo	FI	NI	NI	NI	NI	NI	NI	
Equatorial Guinea	FI	NI	NI	NI	NI	NI	NI	
Gabon	FI	NI	NI	NI	NI	NI	NI	
Gambia	FI	NI	NI	NI	NI	NI	NI	
Ghana	FI	NI	NI	NI	NI	NI	NI	
Guinea Bissau	FI	NI	NI	NI	NI	NI	NI	
Guinea	FI	NI	NI	NI	NI	NI	NI	
Liberia	FI	NI	NI	NI	NI	NI	NI	
Mali	FI	NI	NI	NI	NI	NI	NI	
Mauritania	FI	NI	NI	NI	NI	NI	NI	
Niger	FI	NI	NI	NI	NI	NI	NI	
Nigeria	FI	NI	NI	NI	NI	NI	NI	
Sao Tome & Principe	FI	NI	NI	NI	NI	NI	NI	
Senegal	FI	NI	NI	NI	NI	NI	NI	
Sierra Leone	FI	NI	NI	NI	NI	NI	NI	
Togo	FI	NI	NI	NI	NI	NI	NI	
Saint Helena & Asuncion Islands	FI	NI	NI	NI	NI	NI	NI	

**Table CNS III-4: Implementation status of applicable ASBU elements of COMS-B0 and COMS-B1:  
Aeronautical Mobile Service (AMS) - Air/Ground Communication**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of implementation of <b>ADS-C (FANS 1/A) for procedural airspace)</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>3</b>	Status of implementation of <b>PBCS approved CPDLC (FANS 1/A+) for domestic &amp; procedural airspace:</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>4</b>	Status of implementation of <b>PBCS approved ADS-C (FANS 1/A+) for procedural airspace:</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>5</b>	Status of implementation of <b>SATVOICE (incl. routine communications) for procedural airspace:</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>6</b>	Status of implementation of <b>PBCS approved CPDLC (B2) for domestic and procedural airspace:</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>7</b>	Status of implementation of <b>PBCS approved SATVOICE (incl. routine communications) for procedural airspace:</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>8</b>	Remarks

**Table CNS III-4A: Implementation status of applicable ASBU elements of COMS-B0 and COMS-B1 - ESAF**

ESAF States	ADS-C (FANS 1/A) for procedural airspace)	PBCS approved CPDLC (FANS 1/A+) for domestic & procedural airspace	PBCS approved ADS-C (FANS 1/A+) for procedural airspace	SATVOICE (incl. routine communications) for procedural airspace	PBCS approved CPDLC (B2) for domestic and procedural airspace	PBCS approved SATVOICE (incl. routine communications) for procedural airspace	Remarks
1	2	3	4	5	6	7	8
Angola	FI	FI	PI	NI	NI	NI	
Botswana	NI	NI	PI	NI	NI	NI	
Burundi	NI	NI	PI	NI	NI	NI	
Comoros	FI	FI	PI	NI	NI	NI	
Djibouti	NI	NI	PI	NI	NI	NI	
Eritrea	NI	NI	PI	NI	NI	NI	
Eswatini	NI	NI	PI	NI	NI	NI	
Ethiopia	NI	NI	PI	NI	NI	NI	
Kenya	FI	NI	PI	NI	NI	NI	
Lesotho	NI	NI	PI	NI	NI	NI	
Madagascar	FI	FI	PI	NI	NI	NI	
Malawi	NI	NI	PI	NI	NI	NI	
Mauritius	FI	FI	PI	NI	NI	NI	
Mozambique	NI	NI	PI	NI	NI	NI	
Namibia	NI	NI	PI	NI	NI	NI	
Rwanda	NI	NI	PI	NI	NI	NI	
Seychelles	NI	NI	PI	NI	NI	NI	
Somalia	FI	FI	PI	NI	NI	NI	
South Africa	FI	FI	PI	NI	NI	NI	
South Sudan	NI	NI	PI	NI	NI	NI	
Uganda	NI	NI	PI	NI	NI	NI	
United Republic of Tanzania	NI	NI	PI	NI	NI	NI	
Zambia	NI	NI	PI	NI	NI	NI	
Zimbabwe	NI	NI	PI	NI	NI	NI	

**Table CNS III-4B: Implementation status of applicable ASBU elements of COMS-B0 and COMS-B1 - WACAF**

WACAF States	ADS-C (FANS 1/A) for procedural airspace)	PBCS approved CPDLC (FANS 1/A+) for domestic & procedural airspace	PBCS approved ADS-C (FANS 1/A+) for procedural airspace	SATVOICE (incl. routine communications) for procedural airspace	PBCS approved CPDLC (B2) for domestic and procedural airspace	PBCS approved SATVOICE (incl. routine communications) for procedural airspace	Remarks
1	2	3	4	5	6	7	8
Benin	FI	FI	PI	NI	NI	NI	
Burkina Faso	FI	FI	PI	NI	NI	NI	
Cameroon	FI	FI	PI	NI	NI	NI	
Cape Verde	FI	FI	PI	NI	NI	NI	
Central African Republic	FI	FI	PI	NI	NI	NI	
Chad	FI	FI	PI	NI	NI	NI	
Congo	FI	FI	PI	NI	NI	NI	
Cote d'Ivoire	FI	FI	PI	NI	NI	NI	
Democratic Republic of Congo	FI	FI	PI	NI	NI	NI	
Equatorial Guinea	FI	FI	PI	NI	NI	NI	
Gabon	FI	FI	PI	NI	NI	NI	
Gambia	FI	FI	PI	NI	NI	NI	
Ghana	FI	FI	PI	NI	NI	NI	
Guinea Bissau	FI	FI	PI	NI	NI	NI	
Guinea	FI	FI	PI	NI	NI	NI	
Liberia	FI	FI	PI	NI	NI	NI	
Mali	FI	FI	PI	NI	NI	NI	
Mauritania	FI	FI	PI	NI	NI	NI	
Niger	FI	FI	PI	NI	NI	NI	
Nigeria	FI	FI	PI	NI	NI	NI	
Sao Tome & Principe	FI	FI	PI	NI	NI	NI	
Senegal	FI	FI	PI	NI	NI	NI	
Sierra Leone	FI	FI	PI	NI	NI	NI	
Togo	FI	FI	PI	NI	NI	NI	
Saint Helena & Asuncion Islands	FI	FI	PI	NI	NI	NI	

**Table CNS III-5: Implementation status of applicable ASBU elements COMI-B0/7, B1/1 and FICE-B0/1:  
Aeronautical Fixed Service (AFS) - Ground/Ground Communication**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of implementation of <b>Aeronautical Fixed Telecommunication Network (AFTN)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>3</b>	Status of implementation of <b>ATS Message Handling Services (AMHS)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>4</b>	Status of implementation of <b>Air Traffic Service Direct Speech (ATS-DS)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>5</b>	Status of implementation of <b>ATS Interfacility Data Communication (AIDC)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>6</b>	Status of implementation of <b>Voice over Internet Protocole (VoIP)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>7</b>	Remarks



**Table CNS III-5A: Implementation status of applicable ASBU elements COMI-B0/7, B1/1 and FICE-B0/1 - ESAF**

ESAF States	Aeronautical Fixed Telecommunication Network (AFTN)	ATS Message Handling Services (AMHS)	Air Traffic Service Direct Speech (ATS-DS)	ATS Interfacility Data Communication (AIDC)	Voice over Internet Protocole (VoIP)	Remarks
1	2	3	4	5	6	7
Angola	FI	PI	FI	NI	NI	
Botswana	FI	PI	FI	NI	NI	
Burundi	FI	NI	FI	NI	NI	
Comoros	FI	PI	FI	PI	NI	
Djibouti	FI	NI	FI	NI	NI	
Eritrea	FI	NI	FI	NI	NI	
Eswatini	FI	NI	FI	NI	NI	
Ethiopia		PI	FI	NI	NI	
Kenya	FI	PI	FI	NI	NI	
Lesotho	FI	NI	FI	NI	NI	
Madagascar	FI	PI	FI	PI	NI	
Malawi	FI	NI	FI	NI	NI	
Mauritius	FI	PI	FI	FI	NI	
Mozambique	FI	PI	FI	NI	NI	
Namibia	FI	NI	FI	NI	NI	
Rwanda	FI	PI	FI	NI	NI	
Seychelles	FI	PI	FI	NI	NI	
Somalia	FI	PI	FI	NI	NI	
South Africa	FI	PI	FI	NI	NI	
South Sudan	FI	NI	FI	FI	NI	
Uganda	FI	PI	FI	NI	NI	
United Republic of Tanzania	FI		FI	NI	NI	
Zambia	FI	PI	FI	NI	NI	
Zimbabwe	FI	PI	FI	NI	NI	

**Table CNS III-5B: Implementation status of applicable ASBU elements COMI-B0/7, B1/1 and FICE-B0/1 - WACAF**

WACAF States	Aeronautical Fixed Telecommunication Network (AFTN)	ATS Message Handling Services (AMHS)	Air Traffic Service Direct Speech (ATS-DS)	ATS Interfacility Data Communication (AIDC)	Voice over Internet Protocole (VoIP)	Remarks
1	2	3	4	5	6	7
Benin	FI	PI	FI	PI	NI	
Burkina Faso	FI	PI	FI	PI	NI	
Cameroon	FI	PI	FI	PI	NI	
Cape Verde	FI	PI	FI	PI	NI	
Central African Republic	FI	PI	FI	PI	NI	
Chad	FI	PI	FI	PI	NI	
Congo	FI	PI	FI	PI	NI	
Cote d'Ivoire	FI	PI	FI	PI	NI	
Democratic Republic of Congo	FI	PI	FI	PI	NI	
Equatorial Guinea	FI	PI	FI	PI	NI	
Gabon	FI	PI	FI	PI	NI	
Gambia	FI	PI	FI	PI	NI	
Ghana	FI	PI	FI	PI	NI	
Guinea Bissau	FI	PI	FI	PI	NI	
Guinea	FI	PI	FI	PI	NI	
Liberia	FI	PI	FI	PI	NI	
Mali	FI	PI	FI	PI	NI	
Mauritania	FI	PI	FI	PI	NI	
Niger	FI	PI	FI	PI	NI	
Nigeria	FI	PI	FI	PI	NI	
Sao Tome & Principe	FI	PI	FI	PI	NI	
Senegal	FI	PI	FI	PI	NI	
Sierra Leone	FI	PI	FI	PI	NI	
Togo	FI	PI	FI	PI	NI	
Saint Helena & Asuncion Islands	FI	PI	FI	PI	NI	

**Table CNS III-6: Implementation status of applicable ASBU elements of NAVS-B0 and NAVS-B1:  
Aeronautical Radionavigation Service (ARNS) Conventional and GNSS Navaids**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of implementation of <b>VHF Omni Range (VOR)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>3</b>	Status of implementation of <b>Distance measurement Equipment (DME)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>4</b>	Status of implementation of <b>Instrument Landing System (ILS)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>5</b>	Status of implementation of <b>Global Navigation System (Core GNSS)</b> FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>6</b>	Status of implementation of <b>Ground Based Augmentation Systems (GBAS)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>7</b>	Status of implementation of <b>Satellite Based Augmentation Systems (SBAS)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>8</b>	Status of implementation of <b>Aircraft Based Augmentation Systems (ABAS)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>9</b>	Status of implementation of <b>Navigation Minimal Operating Networks (Nav. MON)</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable
<b>10</b>	Status of implementation of <b>Extended GBAS</b> : FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not applicable

**Table CNS III-6A: Implementation status of applicable ASBU elements of NAVS-B0 and NAVS-B1 – ESAF**

ESAF States	VHF Omni Range (VOR)	Distance measurement Equipment (DME)	Instrument Landing System (ILS)	Core GNSS	Ground Based Augmentation Systems (GBAS)	Satellite Based Augmentation Systems (SBAS)	Aircraft Based Augmentation Systems (ABAS)	Navigation Minimal Operating Networks (Nav. MON)	Extended GBAS
1	2	3	4	5	6	7	8	9	10
Angola	FI	FI	FI	FI	NI	NI	PI	NI	NI
Botswana	FI	FI	FI	FI	NI	NI	PI	NI	NI
Burundi	FI	FI	FI	FI	NI	NI	PI	NI	NI
Comoros	FI	FI	FI	FI	NI	NI	PI	NI	NI
Djibouti	FI	FI	FI	FI	NI	NI	PI	NI	NI
Eritrea	FI	FI	FI	FI	NI	NI	PI	NI	NI
Eswatini	FI	FI	FI	FI	NI	NI	PI	NI	NI
Ethiopia	FI	FI	FI	FI	NI	NI	PI	NI	NI
Kenya	FI	FI	FI	FI	NI	NI	PI	NI	NI
Lesotho	FI	FI	FI	FI	NI	NI	PI	NI	NI
Madagascar	FI	FI	FI	FI	NI	NI	PI	NI	NI
Malawi	FI	FI	FI	FI	NI	NI	PI	NI	NI
Mauritius	FI	FI	FI	FI	NI	NI	PI	NI	NI
Mozambique	FI	FI	FI	FI	NI	NI	PI	NI	NI
Namibia	FI	FI	FI	FI	NI	NI	PI	NI	NI
Rwanda	FI	FI	FI	FI	NI	NI	PI	NI	NI
Seychelles	FI	FI	FI	FI	NI	NI	PI	NI	NI
Somalia	FI	FI	FI	FI	NI	NI	PI	NI	NI
South Africa	FI	FI	FI	FI	NI	NI	PI	NI	NI
South Sudan	FI	FI	FI	FI	NI	NI	PI	NI	NI
Uganda	FI	FI	FI	FI	NI	NI	PI	NI	NI
United Republic of Tanzania	FI	FI	FI	FI	NI	NI	PI	NI	NI
Zambia	FI	FI	FI	FI	NI	NI	PI	NI	NI
Zimbabwe	FI	FI	FI	FI	NI	NI	PI	NI	NI

**Table CNS III-6B: Implementation status of applicable ASBU elements of NAVS-B0 and NAVS-B1 – WACAF**

WACAF States	VHF Omni Range (VOR)	Distance measurement Equipment (DME)	Instrument Landing System (ILS)	Core GNSS	Ground Based Augmentation Systems (GBAS)	Satellite Based Augmentation Systems (SBAS)	Aircraft Based Augmentation Systems (ABAS)	Navigation Minimal Operating Networks (Nav. MON)	Extended GBAS
1	2	3	4	5	6	7	8	9	10
Benin	FI	FI	FI	FI	NI	NI	PI	NI	NI
Burkina Faso	FI	FI	FI	FI	NI	NI	PI	NI	NI
Cameroon	FI	FI	FI	FI	NI	NI	PI	NI	NI
Cape Verde	FI	FI	FI	FI	NI	NI	PI	NI	NI
Central African Republic	FI	FI	FI	FI	NI	NI	PI	NI	NI
Chad	FI	FI	FI	FI	NI	NI	PI	NI	NI
Congo	FI	FI	FI	FI	NI	NI	PI	NI	NI
Cote d'Ivoire	FI	FI	FI	FI	NI	NI	PI	NI	NI
Democratic Republic of Congo	FI	FI	FI	FI	NI	NI	PI	NI	NI
Equatorial Guinea	FI	FI	FI	FI	NI	NI	PI	NI	NI
Gabon	FI	FI	FI	FI	NI	NI	PI	NI	NI
Gambia	FI	FI	FI	FI	NI	NI	PI	NI	NI
Ghana	FI	FI	FI	FI	NI	NI	PI	NI	NI
Guinea Bissau	FI	FI	FI	FI	NI	NI	PI	NI	NI
Guinea	FI	FI	FI	FI	NI	NI	PI	NI	NI
Liberia	FI	FI	FI	FI	NI	NI	PI	NI	NI
Mali	FI	FI	FI	FI	NI	NI	PI	NI	NI
Mauritania	FI	FI	FI	FI	NI	NI	PI	NI	NI
Niger	FI	FI	FI	FI	NI	NI	PI	NI	NI
Nigeria	FI	FI	FI	FI	NI	NI	PI	NI	NI
Sao Tome & Principe	FI	FI	FI	FI	NI	NI	PI	NI	NI
Senegal	FI	FI	FI	FI	NI	NI	PI	NI	NI
Sierra Leone	FI	FI	FI	FI	NI	NI	PI	NI	NI
Togo	FI	FI	FI	FI	NI	NI	PI	NI	NI
Saint Helena & Asuncion Islands	FI	FI	FI	FI	NI	NI	PI	NI	NI

**Table CNS III-7: Implementation status of applicable ASBU elements of ASUR-B0, ASUR-B1 and ACAS-B1:  
Aeronautical Surveillance Service (ASUR & ACAS)**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of availability of <b>Secondary Surveillance Radar Mode A/C (SSR Mode A/C)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>3</b>	Status of availability of <b>Secondary Surveillance Radar Mode S (SSR Mode S)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>4</b>	Status of implementation of <b>Automatic Dependent Surveillance – Broadcast (ADS-B)</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>5</b>	Status of implementation of <b>Multilateration cooperative surveillance systems (MLAT)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>6</b>	Status of implementation of <b>Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>7</b>	Status of implementation of <b>Reception of aircraft ADS-B signals from space (SB ADS-B)</b> FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>8</b>	Status of implementation of <b>ACAS Improvements</b> : FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>9</b>	Remarks

**Table CNS III-7A: Implementation status of applicable ASBU elements of ASUR-B0, ASUR-B1 and ACAS-B1 - ESAF**

ESAF States	Secondary Surveillance Radar Mode A/C (SSR Mode A/C)	Secondary Surveillance Radar Mode S (SSR Mode S)	Automatic Dependent Surveillance – Broadcast (ADS-B)	Multilateration cooperative surveillance systems (MLAT)	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	Reception of aircraft ADS-B signals from space (SB ADS-B)	ACAS Improvemnts	Remarks
1	2	3	4	5	6	7	8	9
Angola	FI	PI	NI	NI	NI	NI	NI	
Botswana	NI	FI	NI	NI	NI	NI	NI	
Burundi	NI	NI	NI	NI	NI	NI	NI	
Comoros	FI	FI	FI	NI	NI	PI	NI	
Djibouti	NI	NI	NI	NI	NI	NI	NI	
Eritrea	NI	NI	NI	NI	NI	NI	NI	
Eswatini	NI	NI	NI	NI	NI	NI	NI	
Ethiopia	FI	PI	FI	FI	NI	PI	NI	
Kenya	FI	FI	NI	NI	NI	NI	NI	
Lesotho	NI	NI	NI	NI	NI	NI	NI	
Madagascar	FI	FI	FI	NI	NI	PI	NI	
Malawi	NI	NI	NI	NI	NI	NI	NI	
Mauritius	NI	NI	NI	NI	NI	NI	NI	
Mozambique	NI	NI	NI	NI	NI	NI	NI	
Namibia	NI	NI	NI	NI	NI	NI	NI	
Rwanda	NI	NI	NI	NI	NI	NI	NI	
Seychelles	NI	NI	PI	NI	NI	PI	NI	
Somalia	NI	NI	NI	NI		NI	NI	
South Africa	FI	FI	PI	NI		NI	NI	
South Sudan	NI	NI	NI	NI		NI	NI	
Uganda	NI	FI	NI	NI		NI	NI	
United Republic of Tanzania	NI	FI	NI	NI		NI	NI	
Zambia	NI	FI	NI	NI		NI	NI	
Zimbabwe	NI	NI	NI	NI		NI	NI	

**Table CNS III-7B: Implementation status of applicable ASBU elements of ASUR-B0, ASUR-B1 and ACAS-B1 - WACAF**

WACAF States	Secondary Surveillance Radar Mode A/C (SSR Mode A/C)	Secondary Surveillance Radar Mode S (SSR Mode S)	Automatic Dependent Surveillance – Broadcast (ADS-B)	Multilateration cooperative surveillance systems (MLAT)	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	Reception of aircraft ADS-B signals from space (SB ADS-B)	ACAS Improvemnts	Remarks
1	2	3	4	5	6	7	8	9
Benin	FI	FI	FI	NI	NI	PI	NI	
Burkina Faso	FI	FI	FI	NI	NI	PI	NI	
Cameroon	FI	FI	FI	NI	NI	PI	NI	
Cape Verde	FI	FI	NI	NI	NI	NI	NI	
Central African Republic	FI	FI	FI	NI	NI	PI	NI	
Chad	FI	FI	FI	NI	NI	PI	NI	
Congo	FI	FI	FI	NI	NI	PI	NI	
Cote d'Ivoire	FI	FI	FI	NI	NI	PI	NI	
Democratic Republic of Congo	NI	NI	FI	NI	NI	NI	NI	
Equatorial Guinea	FI	FI	FI	NI	NI	PI	NI	
Gabon	FI	FI	FI	NI	NI	PI	NI	
Gambia	N/A	N/A	NI	NI	NI	NI	NI	
Ghana	FI	FI	FI	NI	NI	PI	NI	
Guinea Bissau	FI	FI	FI	NI	NI	PI	NI	
Guinea	N/A	N/A	FI	NI	NI	NI	NI	
Liberia	NI	NI	NI	NI	NI	NI	NI	
Mali	FI	FI	FI	NI	NI	PI	NI	
Mauritania	FI	FI	FI	NI	NI	PI	NI	
Niger	FI	FI	FI	NI	NI	PI	NI	
Nigeria	FI	FI	FI	NI	NI	PI	NI	
Sao Tome & Principe	NI	NI	FI	NI	NI	NI	NI	
Senegal	FI	FI	FI	NI	NI	PI	NI	
Sierra Leone	N/A	N/A	NI	FI	NI	NI	NI	
Togo	FI	FI	FI	NI	NI	PI	NI	
Saint Helena & Asuncion Islands	FI	FI	FI	NI	NI	PI	NI	

**Note:** The implementation of Automatic Dependent Surveillance Contract (ADS-C) is addressed in the ASBU COMS Modules elements (Table CNS III-2B) as part of the Data Link



**AERONAUTICAL  
INFORMATION  
MANAGEMENT  
(AIM)**

**DAIM Digital Aeronautical Information Management**

**Table AIM III-3 - Provision of AIM products and services of ASBU elements DAIM-B1/1 and DAIM-B1/2**

**Explanation of the table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of implementation of Quality Management System (QMS), where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>3</b>	Status of implementation of Formal agreements (SLA) between the AIS and data originators/sources, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>4</b>	Status of adherence to the AIRAC system, where: FI – Fully Implemented, PI – Partially Implemented NI – Not implemented, N/A – Not Applicable
<b>5</b>	Status of implementation of the World Geodetic System — 1984 (WGS-84), where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable.
<b>6</b>	Status of implementation of Aeronautical Information Exchange Model (AIXM) database, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>7</b>	Status of implementation of electronic AIP (eAIP), where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>8</b>	Status of implementation of AIP data sets, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>9</b>	Remarks — additional information, including detail of “FI”, “PI”, “NI” and “N/A”, as appropriate.

**Table AIM III-3A: Provision of AIM products and services of ASBU elements DAIM-B1/1 and DAIM-B1/2 - ESAF**

ESAF States	<i>DAIM-B1/1 - Provision of quality-assured aeronautical data and information</i>				<i>DAIM-B1/2 - Provision of digital Aeronautical Information Publication (AIP) data sets</i>			Remarks
	QMS	SLA	AIRAC	WGS-84	AIXM DB	eAIP	AIP Data sets	
1	2	3	4	5	6	7	8	9
Angola	NI	NI	PI	PI	NI	NI	NI	
Botswana	PI	PI	PI	PI	NI	NI	NI	
Burundi	NI	NI	PI	PI	NI	NI	NI	
Comoros	FI	PI	PI	PI	FI	FI	NI	
Djibouti	NI	NI	PI	PI	NI	NI	NI	
Eritrea	NI	NI	PI	PI	NI	NI	NI	
Eswatini	NI	NI	PI	PI	NI	NI	NI	
Ethiopia	FI	PI	PI	PI	NI	NI	NI	
Kenya	FI	PI	PI	PI	FI	FI	NI	
Lesotho	NI	NI	PI	PI	NI	NI	NI	
Madagascar	FI	PI	PI	PI	FI	FI	NI	
Malawi	NI	NI	PI	PI	NI	NI	NI	
Mauritius	NI	NI	PI	PI	NI	NI	NI	
Mozambique	FI	PI	PI	PI	NI	NI	NI	
Namibia	PI	PI	PI	PI	NI	NI	NI	
Rwanda	FI	PI	PI	PI	NI	NI	NI	
Seychelles	PI	PI	PI	PI	NI	NI	NI	
Somalia	NI	NI	PI	PI	NI	NI	NI	
South Africa	FI	PI	PI	PI	FI	PI	NI	
South Sudan	NI	NI	PI	PI	NI	NI	NI	
Uganda	FI	PI	PI	PI	NI	NI	NI	
United Republic of Tanzania	FI	PI	PI	PI	NI	NI	NI	
Zambia	FI	PI	PI	PI	NI	NI	NI	
Zimbabwe	NI	NI	PI	PI	NI	NI	NI	

**Table AIM III-3B: Provision of AIM products and services of ASBU elements DAIM-B1/1 and DAIM-B1/2 - WACAF**

WACAF States	<i>DAIM-B1/1 - Provision of quality-assured aeronautical data and information</i>				<i>DAIM-B1/2 - Provision of digital Aeronautical Information Publication (AIP) data sets</i>			Remarks
	QMS	SLA	AIRAC	WGS-84	AIXM DB	eAIP	AIP Data sets	
1	2	3	4	5	6	7	8	9
Benin	FI	PI	PI	PI	FI	FI	NI	
Burkina Faso	FI	PI	PI	PI	FI	FI	NI	
Cameroon	FI	PI	PI	PI	FI	FI	NI	
Cape Verde	FI	PI	PI	PI	FI	FI	NI	
Central African Republic	FI	PI	PI	PI	FI	FI	NI	
Chad	FI	PI	PI	PI	FI	FI	NI	
Congo	FI	PI	PI	PI	FI	FI	NI	
Cote d'Ivoire	FI	PI	PI	PI	FI	FI	NI	
Democratic Republic of Congo	NI	NI	PI	PI	NI	NI	NI	
Equatorial Guinea	FI	PI	PI	PI	FI	FI	NI	
Gabon	FI	PI	PI	PI	FI	FI	NI	
Gambia	NI	NI	PI	PI	NI	NI	NI	
Ghana	FI	PI	PI	PI	NI	NI	NI	
Guinea Bissau	FI	PI	PI	PI	FI	FI	NI	
Guinea	NI	NI	PI	PI	NI	NI	NI	
Liberia	NI	NI	PI	PI	NI	NI	NI	
Mali	FI	PI	PI	PI	FI	FI	NI	
Mauritania	FI	PI	PI	PI	FI	FI	NI	
Niger	FI	PI	PI	PI	FI	FI	NI	
Nigeria	NI	NI	PI	PI	NI	NI	NI	
Sao Tome & Principe	NI	NI	PI	PI	NI	NI	NI	
Senegal	FI	PI	PI	PI	FI	FI	NI	
Sierra Leone	NI	NI	PI	PI	NI	NI	NI	
Togo	FI	PI	PI	PI	FI	FI	NI	

**Table AIM III-4 - Provision of AIM products and services of ASBU elements DAIM-B1/3 and DAIM-B1/4**

**Explanation of the table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of implementation of digital terrain data sets for Area 1, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>3</b>	Status of implementation of digital terrain data sets for Area 2, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>4</b>	Status of implementation of digital terrain data sets for Area 3, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>5</b>	Status of implementation of digital terrain data sets for Area 4, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>6</b>	Status of implementation of digital obstacle data sets for Area 1, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>7</b>	Status of implementation of digital obstacle data sets for Area 2, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>8</b>	Status of implementation of digital obstacle data sets for Area 3, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>9</b>	Status of implementation of digital obstacle data sets for Area 4, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>10</b>	Remarks — additional information, including detail of “FI”, “PI”, “NI” and “N/A”, as appropriate.

**Table AIM III-4A: Provision of AIM products and services of ASBU elements DAIM-B1/3 and DAIM-B1/4 - ESAF**

ESAF States	<i>DAIM-B1/3 - Provision of digital terrain data sets</i>				<i>DAIM-B1/4 - Provision of digital obstacle data sets</i>				Remarks
	Area 1	Area 2	Area 3	Area 4	Area 1	Area 2	Area 3	Area 4	
1	2	3	4	5	6	7	8	9	10
Angola	NI	NI	NI	NI	NI	NI	NI	NI	
Botswana	NI	NI	NI	NI	NI	NI	NI	NI	
Burundi	NI	NI	NI	NI	NI	NI	NI	NI	
Comoros	NI	NI	NI	NI	NI	NI	NI	NI	
Djibouti	NI	NI	NI	NI	NI	NI	NI	NI	
Eritrea	NI	NI	NI	NI	NI	NI	NI	NI	
Eswatini	NI	NI	NI	NI	NI	NI	NI	NI	
Ethiopia	NI	NI	NI	NI	NI	NI	NI	NI	
Kenya	PI	PI	NI	NI	NI	NI	NI	NI	
Lesotho	NI	NI	NI	NI	NI	NI	NI	NI	
Madagascar	NI	NI	NI	NI	NI	NI	NI	NI	
Malawi	NI	NI	NI	NI	NI	NI	NI	NI	
Mauritius	NI	NI	NI	NI	NI	NI	NI	NI	
Mozambique	NI	NI	NI	NI	NI	NI	NI	NI	
Namibia	NI	NI	NI	NI	NI	NI	NI	NI	
Rwanda	NI	NI	NI	NI	NI	NI	NI	NI	
Seychelles	NI	NI	NI	NI	NI	NI	NI	NI	
Somalia	NI	NI	NI	NI	NI	NI	NI	NI	
South Africa	NI	NI	NI	NI	NI	NI	NI	NI	
South Sudan	NI	NI	NI	NI	NI	NI	NI	NI	
Uganda	NI	NI	NI	NI	NI	NI	NI	NI	
United Republic of Tanzania	NI	NI	NI	NI	NI	NI	NI	NI	
Zambia	NI	NI	NI	NI	NI	NI	NI	NI	
Zimbabwe	NI	NI	NI	NI	NI	NI	NI	NI	

**Table AIM III-4B: Provision of AIM products and services of ASBU elements DAIM-B1/3 and DAIM-B1/4 - WACAF**

WACAF States	<i>DAIM-B1/3 - Provision of digital terrain data sets</i>				<i>DAIM-B1/4 - Provision of digital obstacle data sets</i>				Remarks
	Area 1	Area 2	Area 3	Area 4	Area 1	Area 2	Area 3	Area 4	
1	2	3	4	5	6	7	8	9	10
Benin	NI	NI	NI	NI	NI	NI	NI	NI	
Burkina Faso	NI	NI	NI	NI	NI	NI	NI	NI	
Cameroon	NI	NI	NI	NI	NI	NI	NI	NI	
Cape Verde	NI	NI	NI	NI	NI	NI	NI	NI	
Central African Republic	NI	NI	NI	NI	NI	NI	NI	NI	
Chad	NI	NI	NI	NI	NI	NI	NI	NI	
Congo	NI	NI	NI	NI	NI	NI	NI	NI	
Cote d'Ivoire	NI	NI	NI	NI	NI	NI	NI	NI	
Democratic Republic of Congo	NI	NI	NI	NI	NI	NI	NI	NI	
Equatorial Guinea	NI	NI	NI	NI	NI	NI	NI	NI	
Gabon	NI	NI	NI	NI	NI	NI	NI	NI	
Gambia	NI	NI	NI	NI	NI	NI	NI	NI	
Ghana	NI	NI	NI	NI	NI	NI	NI	NI	
Guinea Bissau	NI	NI	NI	NI	NI	NI	NI	NI	
Guinea	NI	NI	NI	NI	NI	NI	NI	NI	
Liberia	NI	NI	NI	NI	NI	NI	NI	NI	
Mali	NI	NI	NI	NI	NI	NI	NI	NI	
Mauritania	NI	NI	NI	NI	NI	NI	NI	NI	
Niger	NI	NI	NI	NI	NI	NI	NI	NI	
Nigeria	NI	NI	NI	NI	NI	NI	NI	NI	
Sao Tome & Principe	NI	NI	NI	NI	NI	NI	NI	NI	
Senegal	NI	NI	NI	NI	NI	NI	NI	NI	
Sierra Leone	NI	NI	NI	NI	NI	NI	NI	NI	
Togo	NI	NI	NI	NI	NI	NI	NI	NI	

**Table AIM III-5 - Provision of AIM products and services of ASBU elements DAIM-B1/5, DAIM-B1/6 and DAIM-B1/7**

**Explanation of the table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of implementation of Aerodrome mapping data sets, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>3</b>	Status of implementation of Digital instrument flight procedure data sets, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>4</b>	Status of implementation of NOTAM of required quality, where: FI – Fully Implemented, PI – Partially Implemented NI – Not Implemented, N/A – Not Applicable
<b>5</b>	Remarks — additional information, including detail of “FI”, “PI”, “NI” and “N/A”, as appropriate.



**Table AIM III-5A - Provision of AIM products and services of ASBU elements DAIM-B1/5, DAIM-B1/6 and DAIM-B1/7 - ESAF**

ESAF States	<i>DAIM-B1/5 - Provision of aerodrome mapping data sets</i>	<i>DAIM-B1/6 - Provision of digital instrument flight procedure data sets</i>	<i>DAIM-B1/7 - NOTAM improvements</i>	Remarks
	Aerodrome mapping data sets	Digital instrument flight procedure data sets	NOTAM of required quality	
1	2	3	4	5
Angola	NI	NI	PI	
Botswana	NI	NI	PI	
Burundi	NI	NI	PI	
Comoros	NI	NI	PI	
Djibouti	NI	NI	PI	
Eritrea	NI	NI	PI	
Eswatini	NI	NI	PI	
Ethiopia	NI	NI	PI	
Kenya	NI	NI	PI	
Lesotho	NI	NI	PI	
Madagascar	NI	NI	PI	
Malawi	NI	NI	PI	
Mauritius	NI	NI	PI	
Mozambique	NI	NI	PI	
Namibia	NI	NI	PI	
Rwanda	NI	NI	PI	
Seychelles	NI	NI	PI	
Somalia	NI	NI	PI	
South Africa	NI	NI	PI	
South Sudan	NI	NI	PI	
Uganda	NI	NI	PI	
United Republic of Tanzania	NI	NI	PI	
Zambia	NI	NI	PI	
Zimbabwe	NI	NI	PI	

**Table AIM III-5B - Provision of AIM products and services of ASBU elements DAIM-B1/5, DAIM-B1/6 and DAIM-B1/7 - WACAF**

WACAF States	<i>DAIM-B1/5 - Provision of aerodrome mapping data sets</i>	<i>DAIM-B1/6 - Provision of digital instrument flight procedure data sets</i>	<i>DAIM-B1/7 - NOTAM improvements</i>	Remarks
	Aerodrome mapping data sets	Digital instrument flight procedure data sets	NOTAM of required quality	
1	2	3	4	5
Benin	NI	NI	PI	
Burkina Faso	NI	NI	PI	
Cameroon	NI	NI	PI	
Cape Verde	NI	NI	PI	
Central African Republic	NI	NI	PI	
Chad	NI	NI	PI	
Congo	NI	NI	PI	
Cote d'Ivoire	NI	NI	PI	
Democratic Republic of Congo	NI	NI	PI	
Equatorial Guinea	NI	NI	PI	
Gabon	NI	NI	PI	
Gambia	NI	NI	PI	
Ghana	NI	NI	PI	
Guinea Bissau	NI	NI	PI	
Guinea	NI	NI	PI	
Liberia	NI	NI	PI	
Mali	NI	NI	PI	
Mauritania	NI	NI	PI	
Niger	NI	NI	PI	
Nigeria	NI	NI	PI	
Sao Tome & Principe	NI	NI	PI	
Senegal	NI	NI	PI	
Sierra Leone	NI	NI	PI	
Togo	NI	NI	PI	

# **AERONAUTICAL METEOROLOGY (MET)**

**MET Meteorological information**

**Table MET III-3: AMET-B0/1 Meteorological observations products**

**Explanation of the Table**

Column number	Description
1	Name of the State
2	Status of implementation of Automatic Weather Observation System (AWOS) information, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
3	Status of implementation of Local reports (MET REPORT/SPECIAL), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
4	Status of implementation of Aerodrome reports (METAR/SPECI), where: FI – Fully Implemented PI – Partially Implemented NI – Not implemented N/A – Not Applicable
5	Status of implementation of Lightning Information, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable.
6	Status of implementation of Ground-based weather radar information, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
7	Status of implementation of Meteorological satellite imagery, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
8	Status of implementation of Aircraft meteorological report (ie. ADS-B, AIREP, etc.), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
9	Status of implementation of Vertical wind and temperature profiles, where:

	<p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
<b>10</b>	<p>Status of implementation of Wind shear alerts, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
<b>11</b>	Remarks

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**Table MET III-3A : AMET-B0/1 Meteorological observations products - ESAF**

ESAF States	AWOS	MET REPORT /SPECIAL	METAR /SPECI	Lightning Information	Ground-based weather radar information	Meteorological satellite imagery	Aircraft meteorological report	Vertical wind and temperature profiles	VONA messages	Wind shear alerts	Remarks
1	2	3	4	5	6	7	8	9	10	11	
Angola									N/A		
Botswana	FI								N/A		
Burundi									N/A		
Comoros											
Djibouti									N/A		
Eritrea											
Eswatini									N/A		
Ethiopia											
Kenya	FI								FI		
Lesotho									N/A		
Madagascar									N/A		
Malawi									N/A		
Mauritius	FI								N/A		
Mozambique									N/A		
Namibia	FI								N/A		
Rwanda	FI								N/A		
Seychelles	FI								N/A		
Somalia	FI								N/A		
South Africa	FI								N/A		
South Sudan									N/A		
Uganda	FI								N/A		
United Republic of Tanzania									N/A		
Zambia	FI								N/A		
Zimbabwe	FI								N/A		

**Table MET III-3B: AMET-B0/1 Meteorological observations products - WACAF**

WACAF States	AWOS	MET REPORT /SPECIAL	METAR /SPECI	Lightning Information	Ground-based weather radar information	Meteorological satellite imagery	Aircraft meteorological report	Vertical wind and temperature profiles	VONA Messages	Wind shear alerts	Remarks
1	2	3	4	5	6	7	8	9		10	11
Benin	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Burkina Faso	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Cameroon	FI	FI	FI	FI	NI	FI	NI	FI	NI	NI	
Cape Verde	FI	FI	FI	N	N	FI	FI	NI	FI	NI	
Central African Republic	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Chad	FI	FI	FI	FI	NI		NI	FI	N/A	NI	
Congo	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Cote d'Ivoire	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Democratic Republic of Congo	FI	FI	FI	NI	NI	NI	NI	NI	FI	NI	
Equatorial Guinea	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Gabon	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Gambia	FI	FI	FI	NI	NI	FI	NI	FI	N/A	NI	
Ghana	FI	FI	FI	NI	NI	FI	NI	FI	N/A	NI	
Guinea Bissau	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Guinea	NI	NI	NI	NI	NI	NI	NI	FI	N/A	NI	
Liberia	NI	NI	NI	NI	NI	NI	NI	NI	N/A	NI	
Mali	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Mauritania	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Niger	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Nigeria	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	
Sao Tome & Principe	NI	NI	NI	NI	NI	NI	NI	NI	N/A	NI	
Senegal	FI	FI	FI	N	NI	FI	NI	FI	N/A	NI	
Sierra Leone	NI	NI	NI	NI	NI	NI	NI	NI	N/A	NI	
Togo	FI	FI	FI	FI	NI	FI	NI	FI	N/A	NI	

**Table MET III-4: AMET B0/2 Meteorological forecast and warning products**

**Explanation of the Table**

Column number	Description
1	Name of the State
2	Status of implementation of World Area Forecast System (WAFS) gridded products, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
3	Status of implementation of Significant Weather (SIGWX), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
4	Status of implementation of Aerodrome Forecast (TAF), where: FI – Fully Implemented PI – Partially Implemented NI – Not implemented N/A – Not Applicable
5	Status of implementation of Trend Forecast (TREND), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable.
6	Status of implementation of Take-off Forecast, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
7	Status of implementation of SIGMET, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
8	Status of implementation of Aerodrome Warning, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable



<b>9</b>	Status of implementation of Wind Shear Warning, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>10</b>	Remarks

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**Table MET III-4A: AMET-B0/2 Meteorological forecast and warning products - ESAF**

ESAF States	WAFS	SIGWX	TAF	TREND	Take-off Forecast	VA Advisory	TC Advisory	SIGMET	Aerodrome Warning	Wind Shear Warning	Remarks
1	2	3	4	5	6	7	8	9	10	11	12
Angola											
Botswana											
Burundi											
Comoros											
Djibouti											
Eritrea											
Eswatini											
Ethiopia											
Kenya											
Lesotho											
Madagascar											
Malawi											
Mauritius											
Mozambique											
Namibia											
Rwanda											
Seychelles											
Somalia											
South Africa											
South Sudan											
Uganda											
United Republic of Tanzania											
Zambia											
Zimbabwe											

**Table MET III-4B: AMET-B0/2 Meteorological forecast and warning products - WACAF**

WACAF States	WAFS	SIGWX	TAF	TREND	Take-off Forecast	VA Advisory	TC Advisory	SIGMET	Aerodrome Warning	Wind Shear Warning	Remarks
1	2	3	4	5	6	7	8	9	10	11	12
Benin	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Burkina Faso	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Cameroon	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Cape Verde	FI	FI	FI	N	FI	N/A	N/A	FI	FI	NI	
Central African Republic	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Chad	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	NI	
Congo	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	FI	
Cote d'Ivoire	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Democratic Republic of Congo	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	NI	
Equatorial Guinea	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Gabon	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Gambia	NI	NI	NI	NI	NI	N/A	N/A	N/A	NI	NI	
Ghana	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	NI	
Guinea Bissau	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Guinea	NI	NI	NI	NI	NI	N/A	N/A	NI	NI	NI	
Liberia	NI	NI	NI	NI	NI	N/A	N/A	FI	NI	NI	
Mali	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Mauritania	FI	FI	FI	FI	FI	N/A	N/A	N/A	FI	NI	
Niger	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	NI	
Nigeria	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	NI	
Sao Tome & Principe	NI	NI	NI	NI	NI	N/A	N/A	NI	NI	NI	
Senegal	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	FI	
Sierra Leone	NI	NI	NI	NI	NI	N/A	N/A	NI	NI	NI	
Togo	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	NI	

**Table MET III-5: AMET B0/3 Climatological and historical meteorological Products**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of availability of Aerodrome climatological tables, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>3</b>	Status of availability of Aerodrome climatological summaries, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>4</b>	Status of historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
<b>5</b>	Remarks

**Table MET III-5A : AMET B0/3 Climatological and historical meteorological Products - ESAF**

ESAF States	Aerodrome climatological tables	Aerodrome climatological summaries	Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.	Remarks
1	2	3	4	5
Angola				
Botswana				
Burundi				
Comoros				
Djibouti				
Eritrea				
Eswatini				
Ethiopia				
Kenya				
Lesotho				
Madagascar				
Malawi				
Mauritius				
Mozambique				
Namibia				
Rwanda				
Seychelles				
Somalia				
South Africa				
South Sudan				
Uganda				
United Republic of Tanzania				
Zambia				
Zimbabwe				

**Table MET III-5B: AMET B0/3 Climatological and historical meteorological Products - WACAF**

WACAF States	Aerodrome climatological tables	Aerodrome climatological summaries	Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.	Remarks
1	2	3	4	5
Benin	NI	NI	NI	
Burkina Faso	NI	NI	NI	
Cameroon	NI	NI	NI	
Cape Verde	NI	NI	NI	
Central African Republic	NI	NI	NI	
Chad	NI	NI	NI	
Congo	NI	NI	NI	
Cote d'Ivoire	NI	NI	NI	
Democratic Republic of Congo	NI	NI	NI	
Equatorial Guinea	NI	NI	NI	
Gabon	NI	NI	NI	
Gambia	NI	NI	NI	
Ghana	NI	NI	NI	
Guinea Bissau	NI	NI	NI	
Guinea	NI	NI	NI	
Liberia	NI	NI	NI	
Mali	NI	NI	NI	
Mauritania	NI	NI	NI	
Niger	NI	NI	NI	
Nigeria	NI	NI	NI	
Sao Tome & Principe	NI	NI	NI	
Senegal	NI	NI	NI	
Sierra Leone	NI	NI	NI	
Togo	NI	NI	NI	

**Table MET III-6: AMET B0/4 Dissemination of meteorological products**

**Explanation of the Table**

Column number	Description
1	Name of the State
2	Dissemination of meteorological products using TAC, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
3	Dissemination of meteorological products using Gridded, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
4	Dissemination of meteorological products using Graphical, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
5	Dissemination of meteorological products using BUFR code, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
6	Dissemination of meteorological products using IWXXM (in XML/GML), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
7	Dissemination means includes AFTN, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
8	Dissemination means includes AMHS, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
9	Dissemination means includes ssecure internet services (WIFS/SADIS), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not applicable
10	Remarks

**Table MET III-6A: AMET B0/4 Dissemination of meteorological products - ESAF**

ESAF States	TAC	Gridded data	Graphical	BUFR	IWXXM	AFTN	AMHS	WIFS/SADIS	Remarks
1	2	3	4	5	6	7	8	9	10
Angola								FI	
Botswana								FI	
Burundi								FI	
Comoros								FI	
Djibouti								FI	
Eritrea								FI	
Eswatini									
Ethiopia								FI	
Kenya					FI			FI	
Lesotho									
Madagascar								FI	
Malawi								FI	
Mauritius								FI	
Mozambique								FI	
Namibia								FI	
Rwanda					PI			FI	
Seychelles								FI	
Somalia								FI	
South Africa					FI			FI	
South Sudan									
Uganda								FI	
United Republic of Tanzania								FI	
Zambia								FI	
Zimbabwe								FI	



**Table MET III-6B: AMET B0/4 Dissemination of meteorological products - WACAF**

WACAF States	TAC	Gridded data	Graphical	BUFR	IWXXM	AFTN	AMHS	WIFS/SADIS	Remarks
1	2	3	4	5	6	7	8	9	10
Benin	FI	FI	NI	NI	NI	FI	FI	FI	
Burkina Faso	FI	FI	NI	NI	NI	FI	FI	FI	
Cameroon	FI	FI	NI	NI	NI	FI	FI	FI	
Cape Verde	FI	NI	NI	NI	NI	FI	FI	FI	
Central African Republic	FI	FI	NI	NI	NI	FI	FI	FI	
Chad	FI	FI	NI	NI	NI	FI	FI	FI	
Congo	FI	FI	NI	NI	NI	FI	FI	FI	
Cote d'Ivoire	FI	FI	NI	NI	NI	FI	FI	FI	
Democratic Republic of Congo	FI	NI	NI	NI	NI	NI	NI	NI	
Equatorial Guinea	FI	FI	NI	NI	NI	FI	FI	FI	
Gabon	FI	FI	NI	NI	NI	FI	FI	FI	
Gambia	FI	NI	NI	NI	NI	NI	NI	NI	
Ghana	FI	FI	NI	NI	NI	FI	FI	Y	
Guinea Bissau	FI	FI	NI	NI	NI	FI	FI	FI	
Guinea	FI	FI	NI	NI	NI	NI	NI	NI	
Liberia	FI	FI	NI	NI	NI	NI	NI	NI	
Mali	FI	FI	NI	NI	NI	FI	FI	FI	
Mauritania	FI	FI	NI	NI	NI	FI	FI	FI	
Niger	FI	FI	NI	NI	NI	FI	FI	FI	
Nigeria	FI	NI	NI	NI	NI	FI	FI	FI	
Sao Tome & Principe	FI	NI	NI	NI	NI	NI	NI	NI	
Senegal	FI	FI	NI	NI	NI	FI	FI	FI	
Sierra Leone	FI	NI	NI	NI	NI	NI	NI	NI	
Togo	FI	FI	NI	NI	NI	NI	NI	NI	

**Table MET III-7: AMET B1/1 Meteorological observations information**

**Explanation of the Table**

Column number	Description
1	Name of the State
2	Status of implementation Wind speed and direction (Aerodrome) including gusts, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
3	Status of implementation Wind speed and direction from Departure to Top of Climb & Top of Descent (TOD) to landing, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicabl
4	Status of implementation Wind speed and direction en-route, where: FI – Fully Implemented PI – Partially Implemented NI – Not implemented N/A – Not Applicable
5	Status of implementation of Air temperature and dew point temperature (aerodrome), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable.
6	Status of implementation of Air temperature and dew point temperature from departure to TOC and then TOD to landing, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
7	Status of implementation of ir temperature and dew point temperature en-route, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
8	Status of implementation of Pressure (aerodrome) (i.e. QNH/QFE), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
9	Status of implementation of Visibility (aerodrome) (horizontal, slant, vertical), RVR, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable

10	<p>Status of implementation of cloud type (of operational significance), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
11	<p>Status of implementation of Cloud coverage, bases, tops and layers, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
12	<p>Status of implementation of Thunderstorms, Lightning, TCU &amp; CB, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
13	<p>Status of implementation of DZ, RA, FZ, SN, GR, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not applicable</p>
14	<p>Status of implementation of DS, SS, FC,SQL, FU, HZ, BR, FG), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
15	<p>Status of implementation of Icing, including airframe and engine, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
16	<p>Status of implementation of Liquid Water Content, Iced Water Content, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
17	<p>Status of implementation of TURB, MTW, WS, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
18	<p>Status of implementation of Fronts, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>

19	<p>Status of implementation of Radioactive clouds, Toxic chemicals, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
20	<p>Status of implementation of Tropical cyclones, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
21	<p>Status of implementation of Volcanic ash, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
22	<p>Status of implementation of Sulphur dioxide (SO<sub>2</sub>) and other hazardous gases, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
23	<p>Status of implementation of Aerodrome surface (runway) temperature, state, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
24	<p>Status of implementation of Sea temperature, state and wave height (seaports), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
25	<p>Status of implementation of Space weather events, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
26	<p>Status of implementation of Tsunami, Flood, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>

**Table MET III-7A: AMET B1/1 Meteorological observations information - ESAF \*\***

ESAF States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Angola																										
Botswana																										N/A
Burundi																										N/A
Comoros																										
Djibouti																										N/A
Eritrea																										N/A
Eswatini																										N/A
Ethiopia																										N/A
Kenya																										
Lesotho																										N/A
Madagascar																										N/A
Malawi																										
Mauritius																										
Mozambique																										
Namibia																										N/A
Rwanda																										N/A
Seychelles																										
Somalia																										N/A
South Africa																										
South Sudan																										N/A
Uganda																										N/A
United Republic of Tanzania																										
Zambia																										N/A
Zimbabwe																										

**Table MET III-7B: AMET B1/1 Meteorological observations information - WACAF \*\***

ESAF States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Benin	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Burkina Faso	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Cameroon	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Cape Verde	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Central African Republic	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Chad	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Congo	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Cote d'Ivoire	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Democratic Republic of Congo	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Equatorial Guinea	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Gabon	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Gambia	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Ghana	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Guinea Bissau	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Guinea	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Liberia	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Mali	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Mauritania	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Niger	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Nigeria	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Sao Tome & Principe	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Senegal	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Sierra Leone	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Togo	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A

**\*\*:** The following SWIM-compliant observational parameters and phenomena will begin to be made available to users and will include:

- A. Wind speed and direction (aerodrome) including gusts
- B. Wind speed and direction from departure to Top of Climb (TOC) and then Top of Descent (TOD) to landing
- C. Wind speed and direction en-route
- D. Air temperature and dew point temperature (aerodrome)
- E. Air temperature and dew point temperature (or equivalent, i.e. humidity) from departure to TOC and then TOD to landing (including the following derived outputs: freezing level, lower tropospheric temperature inversions)
- F. Air temperature and dew point temperature (or equivalent) en-route
- G. Pressure (aerodrome) (i.e. QNH/QFE)
- H. Visibility (aerodrome) (horizontal, slant, vertical), Runway visual range (RVR)
- I. Cloud type (of operational significance)
- J. Cloud coverage, bases, tops and layers
- K. Thunderstorms, Lightning, Convection (TCU & CB)
- L. Precipitation (ie. drizzle, rain, freezing rain, snow, hail)
- M. Weather (ie. dust storm, sand storm, funnel cloud, squall, smoke, haze, mist, fog)
- N. Icing, including airframe and engine
- O. Liquid Water Content, Iced Water Content
- P. Turbulence, Mountain waves, Wind shear
- Q. Fronts
- R. Radioactive clouds, Toxic chemicals
- S. Tropical cyclones
- T. Volcanic ash
- U. Sulphur dioxide (SO<sub>2</sub>) and other hazardous gases
- V. Aerodrome surface (runway) temperature, state
- W. Sea temperature, state and wave height (seaports)
- X. Space weather events
- Y. Tsunami, Flood

**Table MET III-8: AMET B1/2 Meteorological forecast and warning information \*\***

**Explanation of the Table**

Column number	Description
1	Name of the State
2	Status of implementation of Wind speed and direction (aerodrome) including gusts and operationally significant wind shifts, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
3	Status of implementation of Air temperature and dew point temperature (aerodrome), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicabl
4	Status of implementation of Upper level Wind (speed and direction), including departure to Top of Climb (TOC) and then Top of Descent (TOD) to landing :, where: FI – Fully Implemented PI – Partially Implemented NI – Not implemented N/A – Not Applicable
5	Status of implementation of Upper level Air temperature and dew point temperature, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable.
6	Status of implementation of Flight level and temperature of tropopause, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
7	Status of implementation of Geopotential altitude for flight levels, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
8	Status of implementation of Pressure (aerodrome) (i.e. QNH, QFE), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
9	Status of implementation of Visibility (aerodrome), Runway visual range (RVR), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable



10	<p>Status of implementation of Cloud type (of operational significance), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
11	<p>Status of implementation of Cloud coverage, bases, tops and layers</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
12	<p>Status of implementation of Thunderstorms, Lightning, TCU &amp; CB, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
13	<p>Status of implementation of DZ, RA, FZ, SN, GR, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
14	<p>Status of implementation of Weather (DS, SS, FC,SQL, FU, HZ, BR, FG), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
15	<p>Status of implementation of Icing (airframe and engine), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
16	<p>Status of implementation of Liquid Water Content, Iced Water Content, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
17	<p>Status of implementation of TURB, MTW, WS, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
18	<p>Status of implementation of Fronts, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>

19	<p>Status of implementation of Radioactive clouds, Toxic chemicals, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
20	<p>Status of implementation of Tropical cyclones, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
21	<p>Status of implementation of Volcanic ash, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
22	<p>Status of implementation of Sulphur dioxide (SO<sub>2</sub>) and other hazardous gases, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
23	<p>Status of implementation of Aerodrome surface (runway) temperature, state, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
24	<p>Status of implementation of Sea temperature, state and wave height (seaports), where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
25	<p>Status of implementation of Space weather events, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>
26	<p>Status of implementation of Tsunami, Flood, where:</p> <p>FI – Fully Implemented  PI – Partially Implemented  NI – Not Implemented  N/A – Not Applicable</p>

**Table MET III-8A: AMET B1/2 Meteorological Forecast and Warning information- ESAF \*\***

ESAF States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Angola																										
Botswana																										N/A
Burundi																										N/A
Comoros																										
Djibouti																										N/A
Eritrea																										N/A
Eswatini																										N/A
Ethiopia																										N/A
Kenya																										N/A
Lesotho																										N/A
Madagascar																										
Malawi																										
Mauritius																										
Mozambique																										
Namibia																										N/A
Rwanda																										N/A
Seychelles																										
Somalia																										N/A
South Africa																										
South Sudan																										N/A
Uganda																										N/A
United Republic of Tanzania																										
Zambia																										N/A
Zimbabwe																										

**Table MET III-8B: AMET B1/2 Meteorological Forecast and Warning information- WACAF \*\***

WACAF States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Benin	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Burkina Faso	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Cameroon	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Cape Verde	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Central African Republic	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Chad	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Congo	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Cote d'Ivoire	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Democratic Republic of Congo	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Equatorial Guinea	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Gabon	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Gambia	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Ghana	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Guinea Bissau	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Guinea	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Liberia	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Mali	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Mauritania	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Niger	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Nigeria	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Sao Tome & Principe	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Senegal	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Sierra Leone	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A
Togo	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	N/A

**\*\*:** The following SWIM-compliant forecast parameters and phenomena will begin to be made available to users and will include:

- A. Wind speed and direction (aerodrome) including gusts and operationally significant wind shifts
- B. Air temperature and dew point temperature (aerodrome)
- C. Upper-level Wind (speed and direction), including departure to Top of Climb (TOC) and then Top of Descent (TOD) to landing
- D. Upper level Air temperature and dew point temperature or equivalent (i.e. humidity), including height of freezing level and lower tropospheric temperature inversions
- E. Flight level and temperature of tropopause
- F. Geopotential altitude for flight levels
- G. Pressure (aerodrome) (i.e. QNH, QFE)
- H. Visibility (aerodrome), Runway visual range (RVR)
- I. Cloud type (of operational significance)
- J. Cloud coverage, bases, tops and layers
- K. Thunderstorms, Lightning, Convection (TCU & CB)
- L. Precipitation (ie. drizzle, rain, freezing rain, snow, hail)
- M. Weather (ie. dust storm, sand storm, funnel cloud, squall, smoke, haze, mist, fog)
- N. Icing (airframe and engine),
- O. Liquid Water Content, Iced Water Content
- P. Turbulence, Mountain waves, Wind shear
- Q. Fronts
- R. Radioactive clouds, Toxic chemicals
- S. Tropical cyclones
- T. Volcanic ash
- U. Sulphur dioxide (SO<sub>2</sub>) and other hazardous gases
- V. Aerodrome surface (runway) temperature, state
- W. Sea temperature, state and wave height (seaports)
- X. Space weather events
- Y. Tsunami, Flood

**Table MET III-9: AMET B0/3 Climatological and historical meteorological information**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>2</b>	Status of availability of En-route winds, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>3</b>	Status of availability of Airport parameters (i.e., air and surface temperature, wind, precipitation, etc.), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>4</b>	Status of availability of Metadata, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>5</b>	Remarks

**Table MET III-9A: AMET B1/3 Climatological and historical meteorological information - ESAF**

ESAF States	En-route winds**	Airport parameters (i.e., air and surface temperature, wind, precipitation, etc.)**	Historical Information on meteorological observations and forecasts and related metadata	Remarks
1	2	3	4	5
Angola				
Botswana				
Burundi				
Comoros				
Djibouti				
Eritrea				
Eswatini				
Ethiopia				
Kenya				
Lesotho				
Madagascar				
Malawi				
Mauritius				
Mozambique				
Namibia				
Rwanda				
Seychelles				
Somalia				
South Africa				
South Sudan				
Uganda				
United Republic of Tanzania				
Zambia				
Zimbabwe				

**Table MET III-9B: AMET B1/3 Climatological and historical meteorological information - WACAF**

WACAF States	En-route winds**	Airport parameters (i.e. air and surface temperature, wind, precipitation, etc.)**	Historical Information on meteorological observations and forecasts and related metadata	Remarks
1	2	3	4	5
Benin	NI	NI	NI	
Burkina Faso	NI	NI	NI	
Cameroon	NI	NI	NI	
Cape Verde	NI	NI	NI	
Central African Republic	NI	NI	NI	
Chad	NI	NI	NI	
Congo	NI	NI	NI	
Cote d'Ivoire	NI	NI	NI	
Democratic Republic of Congo	NI	NI	NI	
Equatorial Guinea	NI	NI	NI	
Gabon	NI	NI	NI	
Gambia	NI	NI	NI	
Ghana	NI	NI	NI	
Guinea Bissau	NI	NI	NI	
Guinea	NI	NI	NI	
Liberia	NI	NI	NI	
Mali	NI	NI	NI	
Mauritania	NI	NI	NI	
Niger	NI	NI	NI	
Nigeria	NI	NI	NI	
Sao Tome & Principe	NI	NI	NI	
Senegal	NI	NI	NI	
Sierra Leone	NI	NI	NI	
Togo	NI	NI	NI	

**\*\*:** Characteristics of the climatological information will include:

- Averages (daily/monthly/yearly) over 10, 20, 30, 50 years
- Extremes over 1, 5, 10, 20, 30 years, since start of measurement



**Table MET III-10: AMET B1/4 Dissemination of meteorological Information**

**Explanation of the Table**

<b>Column number</b>	<b>Description</b>
<b>1</b>	Name of the State
<b>1</b>	Dissemination of meteorological information using Gridded, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>2</b>	Dissemination of meteorological information using Graphical, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>3</b>	Dissemination of meteorological information using IWXXM , where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>4</b>	Dissemination means includes AMHS, where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>5</b>	Dissemination means includes ssecure internet services (WIFS/SADIS), where: FI – Fully Implemented PI – Partially Implemented NI – Not Implemented N/A – Not Applicable
<b>6</b>	Remarks

**Table MET III-10A: AMET B1/4 Dissemination of meteorological information - ESAF**

ESAF States	Gridded	Graphical	IWXXM	AMHS	WIFS/SADIS	Remarks
1	2	3	4	5	6	7
Angola						
Botswana						
Burundi						
Comoros						
Djibouti						
Eritrea						
Eswatini						
Ethiopia						
Kenya						
Lesotho						
Madagascar						
Malawi						
Mauritius						
Mozambique						
Namibia						
Rwanda						
Seychelles						
Somalia						
South Africa						
South Sudan						
Uganda						
United Republic of Tanzania						
Zambia						
Zimbabwe						

**Table MET III-10B: AMET B1/4 Dissemination of meteorological information - WACAF**

WACAF States	Gridded	Graphical	IWXXM	AMHS	WIFS/SADIS	Remarks
1	2	3	4	5	6	7
Benin	NI	NI	NI	FI	FI	
Burkina Faso	NI	NI	NI	FI	FI	
Cameroon	NI	NI	NI	FI	FI	
Cape Verde	NI	NI	NI	FI	FI	
Central African Republic	NI	NI	NI	FI	FI	
Chad	NI	NI	NI	FI	FI	
Congo	NI	NI	NI	FI	FI	
Cote d'Ivoire	NI	NI	NI	FI	FI	
Democratic Republic of Congo	NI	NI	NI	NI	NI	
Equatorial Guinea	NI	NI	NI	FI	FI	
Gabon	NI	NI	NI	FI	FI	
Gambia	NI	NI	NI	NI	NI	
Ghana	NI	NI	NI	FI	Y	
Guinea Bissau	NI	NI	NI	FI	FI	
Guinea	NI	NI	NI	NI	NI	
Liberia	NI	NI	NI	NI	NI	
Mali	NI	NI	NI	FI	FI	
Mauritania	NI	NI	NI	FI	FI	
Niger	NI	NI	NI	FI	FI	
Nigeria	NI	NI	NI	FI	FI	
Sao Tome & Principe	NI	NI	NI	NI	NI	
Senegal	NI	NI	NI	FI	FI	
Sierra Leone	NI	NI	NI	NI	NI	
Togo	NI	NI	NI	NI	NI	

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