International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Eleventh Meeting of the GREPECAS Aeronautical Meteorology Subgroup (AERMETSG/11)
Lima, Peru, 28 to 30 November 2011

Agenda Item 6: Transition from the AERMETSG Subgroup and its Task Forces to the MET Programme and its projects

PROJECTS PROPOSAL FOR THE CAR/SAM REGION

(Presented by the Secretariat)

SUMMARY

This working paper presents information on the Air Navigation System Performance-based Implementation Plans developed by ICAO CAR/SAM Regions, in compliance with GREPECAS Conclusion 15/01, in order to establish a well defined strategy for the implementation of ATM systems and to align the work of the Subgroup within the projects scheme approved by GREPECAS.

References

- Report of the Fifteenth Meeting of the CAR/SAM Regional Planning and Iimplementation Group (GREPECAS/15), Rio de Janeiro, Brazil, 13 – 17 October 2008;
- Report of the Sixteenth Meeting of the CAR/SAM Regional Planning and Iimplementation Group (GREPECAS/16), Punta Cana, Dominican Republic, 28 March – 1 April 2011
- Global Air Navigation Plan (Doc 9750), Third Edition, 2007

ICAO Strategic Objectives:	*A – Safety* *C - Environmental Protection and Sustainable Development of Air Transport*

1. Introduction

1.1 The global ATM operational concept represents ICAO vision of an integrated system, harmonized and globally interoperable ATM system for all users during all phases of flight that meets the agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements.

1.2 The ATM operational concept describes the services that will be required to operate the global air traffic system up to and beyond 2025 and addresses what is needed to increase user flexibility and maximize operating efficiencies in order to increase system capacity and improve safety levels in the future ATM system.

1.3 In view of the new requirements derived from the implementation of the ATM operational concept, the States of the CAR/SAM Regions shall consider the planning of improvements and strengthening of meteorological services and focus in the new global requirements, besides regional and national requirements, taking into account the Global Air Navigation Plan (Doc 9750) initiatives as well as new provisions and requirements that require implementation in the short and medium term, and the related components of the cited concept.

2. Discussion

2.1 The objective of the Global Air Navigation Plan related to aeronautical meteorology is to improve the availability of meteorological information in support of a seamless global ATM system among its components (Global Plan Initiative (GPI) 19 – *Meteorological systems* refers). The strategy described in the Global Plan requires that the following developments be completed and implemented during the next few years:

a) immediate access to real-time, global OPMET information is required to assist ATM in tactical decision making for aircraft surveillance, ATFM and flexible/dynamic aircraft routing, which will contribute to the optimization of the use of airspace. Such stringent requirements will imply that most meteorological systems be automated and that meteorological service for international air navigation be provided in an integrated and comprehensive manner through global systems such as the WAFS, the IAVW and the ICAO tropical cyclone warning system;

b) enhancements to WAFS, IAVW and the ICAO tropical cyclone warning system to improve the accuracy, timeliness and usefulness of the forecasts issued will be required to facilitate the optimization of the use of airspace; and

c) increasing use of data link to downlink and uplink meteorological information (through such systems as D-ATIS and D-VOLMET) will assist in the automatic sequencing of aircraft on approach and will contribute to the maximization of capacity. The development of automated ground-based meteorological systems in support of operations in the terminal area will provide OPMET information (such as automated low-level wind shear alerts) and automated runway wake vortex reports. OPMET information from the automated systems also assists in the timely provision of forecasts and warnings of hazardous weather phenomena. These forecasts and warnings, together with automated OPMET information, contribute to maximizing runway capacity.

Strategy for the implementation of performance objectives

2.2 The CAR/SAM States should make all possible efforts to ensure that the meteorological service for international air navigation and operational procedures follow ICAO Standards and Recommended Practices (SARPs) and harmonize with national regulations.

2.3 In this regard, and in compliance with GREPECAS Conclusion 15/01, ICAO Lima and Mexico Offices developed Air Navigation System Performance-based Implementation Plans for the CAR and SAM Regions, in order to establish a well defined strategy for the implementation of ATM systems, which includes the performance framework forms (PFF) for aeronautical meteorology, presented in the **Appendix** to this working paper.

2.4 The Meeting could agree that with the new work organization and methodology adopted by GREPECAS (IP/10), the tasks of the Subgroup could be made as follows:

MET programme

- Project for QMS/MET implementation;
- Project for WAFS implementation
- Project for IAVW implementation; and
- Project for OPMET exchange optimization, including SIGMET (WS, WV and WC) and warnings.

3. **Action required**

3.1 The Meeting is invited to:

a) take note of the information contained in this working paper and its Appendix;

b) define the required strategies in order to apply the CAR/SAM performance objectives for aeronautical meteorology and MET projects; and

c) agree on other actions as necessary.

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APPENDIX

PERFORMANCE FRAMEWORK FORM (PFF) FOR AERONAUTICAL METEOROLOGY – CAR REGION

12. IMPROVE AVAILABILITY OF METEOROLOGICAL INFORMATION				
Benefits				
Efficiency **Safety**	• improve aerodrome and airspace capacity • improve situational awareness of pilots • reduce unnecessary consumption of fuel and prevent unnecessary delays due to minimal meteorological conditions at the airports • improve flight planning schedule • Increase the number of flights in areas of fair weather conditions and prevent or reduce flights in areas of adverse meteorological conditions and volcanic ash clouds • prevent landing operations at aerodromes under minimal meteorological conditions			
Strategy				
ATM Component	**TASK DESCRIPTION**	**START – END**	**RESPON-SIBLE**	**STATUS**
AOM, DCB, AO, TS, AUO	a) Increase facilities to disseminate and exchange aeronautical meteorological information i) Increase NOAAnet workstations, AFTN terminals and internet facilities to disseminate OPMET data at meteorological offices and stations. ii) Increase AFTN, internet and other communications facilities to relay aircraft special reports from the air traffic control units to the meteorological offices. iii) Expand the number of WIFS workstations used to receive OPMET data and meteorological products of the World Area Forecast System.	2009-2012	States / Territories	Valid
	b) Increase availability, timeliness and quality of OPMET data i) Improve the use of the METAR and TAF codes/templates used to disseminate meteorological reports and aerodrome forecasts ii) Enhance preparation and availability of SIGMET information on hazardous meteorological conditions and volcanic ash clouds iii) Enhance the availability of landing forecasts, TREND, considering user requirements	2009-2012	States / Territories	Valid
	c) Ensure continuous operation of meteorological and communications equipment at the meteorological offices and stations, through: - Implement lightning, voltage spike and line protections to prevent damage to automatic meteorological stations	2009-2015	States / Territories	Valid

	d) Establish contingency procedures to disseminate OPMET data, via Internet, in case of failure of the AFTN or NOAAnet facilities.	2009-2012	States / Territories ICAO	Valid
AO	e) Improve the quality of data, provided by meteorological sensors, used in meteorological reports • Establish verification and calibration programmes of data provided by meteorological instruments and automated weather systems at the aerodromes	2009-2015	States / Territories	Valid
AUO	f) Implement oversight programmes to ensure availability and quality of OPMET data issued by CAR States and Territories and Territories and provide assistance if required	2009-2015	States / Territories	Valid
AUO	g) Improve participation of States and Territories in the International Airways Volcano Watch and provide assistance if necessary	2009-2015	ICAO Washington VAAC	Valid
AUO	h) Improve participation of States and Territories in the International Tropical Cyclone Watch and provide assistance if necessary	2009-2015	ICAO Miami TCAC	Valid
AOM, DCB,AO, TS, AUO	i) Implement Quality Assurance System programmes for the aeronautical meteorological service	2010-2012	States / Territories	Valid
AUO	j) Develop yearly staffing analysis and training programme on aeronautical meteorological matters for operational personnel	2009-2015	States / Territories ICAO, WMO AR IV	Valid
AUO	Prepare monthly satellite and radar weather images to detect areas of low frequency of cumulonimbus and thunderstorms to be used for air traffic flow planning	2010-2016	States / Territories ICAO	Valid
AO, TS	k) Increase the number of automated weather systems at the aerodromes	2011-2015	States, Territories	Valid
	l) Implement meteorological data downlinks at the MET and ATS units	2012-2015	States / Territories	Valid
	m) Implement meteorological data up links from automated meteorological stations and MET and ATS units for aircrafts	2012-2015	States / Territories	Valid
SDM	n) Monitor implementation progress	2009-2016	ICAO	Valid
GPIs	GPI/6: air traffic flow management; GPI/7: flexible/dynamic ATS route management; GPI/9: situational awareness; GPI/14: runway operations; GPI/17: implementation of datalink applications; GPI/18: aeronautical information; GPI 19: Meteorological systems.			

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PERFORMANCE FRAMEWORK FORM (PFF) FOR AERONAUTICAL METEOROLOGY – SAM REGION

<table>
<tr><th colspan="5">REGIONAL PERFORMANCE OBJECTIVE: <u>SAM/MET 01</u>
IMPLEMENTATION OF THE MET INFORMATION QUALITY MANAGEMENT SYSTEM</th></tr>
<tr><td colspan="5">Benefits</td></tr>
<tr><td>Safety</td><td colspan="4">• Ensure the quality of meteorological data and products provided to all the users of the ATM community
• Improve the trust of the user with respect to meteorological data used for flight planning and re-planning.</td></tr>
<tr><td colspan="5">Metrics</td></tr>
<tr><td colspan="5">• Number of international aerodromes with implemented QMS/MET.
• Number of international aerodromes with certified QMS/MET.</td></tr>
<tr><td colspan="5">2012 – 2018
Strategy</td></tr>
<tr><td>ATM OC COMPONENTS</td><td>TASKS</td><td>PERIOD</td><td>RESPONSIBILITY</td><td>STATUS</td></tr>
<tr><td rowspan="4"></td><td>a) Ensure the implementation of the MET information quality management system QMS/MET)</td><td>(*) 2012-2015</td><td>Regional Project States</td><td>Valid</td></tr>
<tr><td>b) Develop the LAR-MET</td><td>2013-2015</td><td>Regional Project States</td><td>Valid</td></tr>
<tr><td>c) Certify and maintain the certification of the QMS/MET quality management system by an approved organisation in all AOP aerodromes.</td><td>(*) 2015</td><td>States</td><td>Valid</td></tr>
<tr><td>d) Monitor the process of QMS/MET implementation</td><td>2012-2018</td><td>GREPECAS</td><td>Valid</td></tr>
<tr><td>Relationship with GPIs</td><td colspan="4">GPI/18: Aeronautical information and GPI/19: Meteorological systems.</td></tr>
</table>

(*) Indicates that the task has been started before the date contemplated in this planning.

<table>
<tr><th colspan="5">REGIONAL PERFORMANCE OBJECTIVE: <u>SAM/MET 02</u>
IMPROVEMENTS IN MET FACILITIES</th></tr>
<tr><th colspan="5">Benefits</th></tr>
<tr><td>Safety</td><td colspan="4">• Provide more reliable MET information to all the ATM community.
• Assistance in decision-making for ATM.
• Assurance of availability of MET information for the user
• Contribute to situational awareness of aeronautical users for all weather operations (AWO).</td></tr>
<tr><th colspan="5">Metrics</th></tr>
<tr><td colspan="5">• Number of international aerodromes with operative AWOS.
• Number of MWOs with the required equipment and systems.
• Number of AOP aerodromes with updated summaries and climatological tables.</td></tr>
<tr><th colspan="5">2012 - 2018
Strategy</th></tr>
<tr><th>ATM OC COMPONENTS</th><th>TASKS</th><th>PERIOD</th><th>RESPONSIBILITY</th><th>STATUS</th></tr>
<tr><td rowspan="4">AOM
DCB
AO
AUO
ATM-SDM
CM</td><td>a) Establish a regional plan for the automation of meteorological data at all AOP aerodromes.
b) Establish a regional plan to strengthen Meteorological Watch Offices (MWOs) with the infrastructure required for the effective watch in the FIRs.</td><td>2012-2018</td><td>Regional Project States</td><td>Valid</td></tr>
<tr><td>c) Establish programmes for periodic inspection and calibration of meteorological instruments of EMA(s)</td><td>2012-2014</td><td>States</td><td>Valid</td></tr>
<tr><td>d) Develop and implement a programme for the update of the summaries and climatological tables of AOP aerodromes.</td><td>2012-2014</td><td>States</td><td>Valid</td></tr>
<tr><td>e) Monitor the implementation of the different programmes</td><td>2012-2014</td><td>GREPECAS States</td><td>Valid</td></tr>
<tr><td>Relationship with GPIs</td><td colspan="4">GPI/9: Situational awareness, GPI/14: Runway operations, GPI/18: Aeronautical information and GPI/19: Meteorological systems.</td></tr>
</table>

REGIONAL PERFORMANCE OBJECTIVE: SAM/MET 03
IMPROVEMENTS IN THE IMPLEMENTATION OF INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW), SURVILLANCE OF THE ACCIDENTAL RELEASE OF RADIOACTIVE MATERIAL AND THE ISSUANCE OF SIGMETs

Benefits	
Safety	• Increased flight safety with the provision of information on volcanic ash and severe phenomena
Environmental protection and sustainable	• Support pre-flight planning, optimising air routes with respect to volcanic ash and the accidental release of radioactive material. • Support the planning of new air routes in a safe and sustainable manner.

Metrics

- Number of States with IAVW and their implemented evolutions.
- Number of States with contingency plan for volcanic ash and accidental release of radioactive material, approved.

2012 – 2018
Strategy

ATM OC COMPONENTS	TASKS	PERIOD	RESPONSIBILITY	STATUS
AOM **AO** **AUO** **ATMSDM** **DCB** **CM**	a) Develop a plan to ensure the implementation of improvements in the international airways volcano watch	(*) 2012	Regional Project	Valid
	b) Develop a Guide for IAVW implementation in the Region, based on ICAO Document 9766.	2012-2013	Regional Project States	Valid
	c) Update the letters of agreement between CAAs/MET/State vulcanologic bodies, describing the responsibilities of each institution (including VONA format)	(*) 2012	States	Valid
	d) Where applicable, develop written agreements with national meteorological services (NMS) in case of accidental release of radioactive material.	(*) 2012	States	Valid
	e) Update the letters of operational agreement between ATS/MET units,	(*) 2012	States	Valid
	f) Develop a regional contingency planfor cases of volcanic activity	2012-2013	Regional Project	Valid
	g) Develop a regional contingency plan for cases of accidental release of radioactive material.	2012-2013	Regional Project	Valid
	h) Update the procedures in MWOs and VAACs according to Amendments 76 and 77 of Annex 3	2013-2018	States	Valid
Relation-ship with GPIs	GPI/9: Situational awareness, GPI/14: Runway operations, GPI/16: Decision support and alerting systems, GPI/18: Aeronautical information and GPI/19: Meteorological systems.			

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REGIONAL PERFORMANCE OBJECTIVE: SAM/MET 04 IMPROVEMENTS IN OPMET INFORMATION EXCHANGE AND FOLLOW-UP OF WAFS EVOLUTION	
Benefits	
Safety	• Timely provision of duly coded OPMET information to the ATM community • Increased regional use of meteorological forecasts (upper wind, turbulence, icing, convective clouds and others).
Environmental protection and development of air transport	• Increased efficiency of operations and reduced carbon emissions
Metrics	
• Increased availability of OPMET information (in percentage) at regional and international level. • Number of States that have implemented WAFS and its evolutions.	
2012 - 2018 ***Strategy***	

ATM OC COMPONENTS	TASKS	PERIOD	RESPONSIBILITY	STATUS
AOM **DCB** **AO** **AUO** **ATMSDM** **CM**	a) Establish a regional procedure to ensure timely availability of duly coded OPMET information	(*) 2018	States / Brasilia OPMET database	Valid
	b) Develop contingency procedures for the dissemination of OPMET information through the Internet in case of communication system failure.	2012 - 2013	States	Valid
	c) Implement the new turbulence, icing, and convective cloud forecasts	(*) 2013	States	Valid
	d) Develop and implement a transition plan for OPMET information coding in XML format	2013-2018	Regional Project States	Valid
	e) Establish plans for the migration from ISCS to WIFS.	(*) 2014	States	Valid
	f) Develop, together with COM units, a migration plan that permits WAFS products to be compatible with the future NextGEN/SESAR environment.	2013-2018+	Regional Project	Valid
	g) Develop and implement regional procedures in support of ATM.	(*) 2018+	ICAO States	Valid
Relation-ship with GPIs	GPI/9: Situational awareness, GPI/14: Runway operations, GPI/18: Aeronautical information and GPI/19: Meteorological systems.			

(*) Indicates that the task has been started before the date contemplated in this planning.

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