International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Eighteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/18)
Punta Cana, Dominican Republic, 9 to 14 April 2018

Agenda Item 4: Regional air navigation planning and implementation performance framework: Review of programmes and projects

4.7 Projects under the Aeronautical Meteorology Programme (B0-AMET)

(Presented by the Secretariat)

SUMMARY

This working paper presents the progress made in the projects under the GREPECAS Aeronautical Meteorology Programme in the CAR and SAM Regions.

REFERENCES

- Conclusions of the Seminar on MET quality management system (QMS/MET) and personnel competencies for the SAM Region, Lima, Peru, 21-25 September 2015.
- Report of the Meeting on GREPECAS MET Programme projects for the SAM Region, Lima, Peru, 23-27 November 2015.
- Report of the Third meeting (Mexico, 21-23 July 2015) and Fourth meeting (Lima, Peru, 12-14 July 2016) of the Programmes and Projects Review Committee (PPRC/3 and PPRC/4).
- Report of the Meeting on GREPECAS MET Programme projects for the CAR and SAM Regions, Lima, Peru, 18-22 September 2017.

ICAO strategic objectives:	*A – Safety* *B - Air navigation capacity and efficiency* *E – Environmental protection*

1. Introduction

1.1 The PPRC/3 meeting reviewed the status of GREPECAS MET projects and followed up on the activities carried out in the CAR and SAM Regions to comply with GREPECAS Conclusion 17/11, which was considered as finalised by the PPRC/4 meeting.

1.2 The CAR Region continued to follow up on GREPECAS MET projects and on planning and implementation activities through the "No country left behind" strategy of the NACC Regional Office.

1.3 In the SAM Region, the status of implementation of GREPECAS MET projects was reviewed at the meeting held on 23-27 November 2015 for the SAM Region.

1.4 The PPRC/4 continued reviewing GREPECAS MET projects and made some decisions regarding the reactivation of projects in the CAR Region and authorisation for a new project in the SAM Region.

1.5 The Regional Offices held a joint CAR/SAM meeting on GREPECAS MET Programme projects on 18-22 September 2017, in Lima, Peru, and the CAR Region held a meeting on 18 February-1 March 2018 in Mexico City, Mexico.

2. Discussion

2.1 During the PPRC/3 meeting, the CAR and SAM Regions reported on project activities in compliance with GREPECAS Conclusion 17/11. The meeting took note of the activities and agreed to continue with MET projects, formulating Conclusion PPRC/3-9.

2.2 The PPRC/4 meeting followed up on Conclusion PPRC/3-9 and took note of the activities carried out under the MET projects of the CAR and SAM Regions. The meeting approved the reactivation of Projects H2 and H3 and the extension of Project H4 for the CAR Region, and the extension of Projects H2, H3, and H4 for the SAM Region. It also authorised the creation of the new ***Project H5 – Improvement to MET services in accordance with the operational requirements in support of ATM***.

2.3 Furthermore, the PPRC/4 meeting took note that difficulties had been observed in the execution of MET projects related to scarce availability of experts in the CAR Region, errors in the headers and delays in messages during volcanic ash SIGMET exercises in both Regions, impact of changes in ISO 9001:2015 and scarce availability of resources in the States to manage QMS certification. Availability of OPMET data is still low in some States of both Regions and monitoring must continue using the quarterly reports by OPMET data banks.

3. Status of MET projects

3.1 A joint CAR/SAM meeting was held on GREPECAS MET Programme projects on 18-22 September 2017. The meeting agreed to update and optimise MET projects as follows:

a) H2 – Implementation of international airway volcano watch (IAVW), to introduce items related to the release of radioactive material, SIGMET improvements, and more clarity in tropical cyclone reports;
b) H3 – Implementation of the quality management system for MET information (QMS/MET), to introduce items related to competencies, qualifications, and professional training of aeronautical meteorology personnel;
c) H4 – OPMET exchange, to introduce IWXXM implementation;
d) The meeting approved the activities for the implementation of the space weather information service.

3.2 The new projects for the implementation of the space weather information service will be submitted to the consideration of the PPRC/5 meeting.

3.3 Status of MET projects in the CAR Region

a) CAR projects were updated based on the results of the joint meeting held in Lima in September 2017. Likewise, activities were optimised, and project teams (coordinator

and contributing experts) were nominated as required for expediting implementation, which is monitored through monthly teleconferences.

b) The NACC and SAM Regional Offices, in coordination with ICAO Headquarters, arranged for the assignment of a special implementation project to assist States with the adoption of amendments 77 and 78 to Annex 3, through an inter-regional workshop on the ICAO weather information exchange model (IWXXM) and space weather, to be held on the second half of 2018.

c) **Project H2** – Implementation of weather watch for monitoring severe en-route phenomena, volcanic ash, tropical cyclones and release of radioactive material. Two inter-regional FICTITUS exercises were conducted, and will continue on an annual basis. Progress was made in the implementation of a new web-based communication mechanism provided by the United States to improve communications between the CAR and SAM States with the Washington VAAC, and thus improve the quality and accuracy of volcanic ash advisories. New activities have been included to meet the intended goals. **Appendix A** to this working paper contains details of the project.

d) **Project H3 –** Implementation of the quality management system for MET information (QMS/MET): The scope of the project was modified to include the required transition from ISO 9001:2008 to ISO 9001:2015. It also incorporated an evaluation of qualification and competency requirements for aeronautical meteorology personnel, considered to be critical for QMS implementation and maintenance. **Appendix B** to this working paper contains details of the project.

e) **Project H4** – Optimisation of OPMET exchange, including SIGMETs (WS, WV, WC and WR), warnings and meteorological alerts. It is necessary to restore periodic delivery of OPMET controls performed by international OPMET data banks as an input for negotiating process optimisation activities with the States. At present, the FASID tables of the electronic air navigation plan (e-ANP) are being reviewed for those aerodromes that currently prepare meteorological information, the results of which will be reported to the Regional Office for coordination with the identified States. **Appendix C** to this working paper contains details of the project.

3.4 **Status of MET projects in the SAM Region**

The SAM Region has organised teleconferences to follow up on the development of MET projects. This analysis has covered the following:

a) **Project H2 –** *IAVW implementation*. The CAR/SAM Guide for the preparation and dissemination of SIGMET messages has been updated and circulated to States for updating contact point information. Regarding the SIGMET exercise, and based on its analysis, conclusions have been formulated on the need to continue with the exercises since errors were observed in the formats. **Appendix E** contains details of the project.

b) **Project H3 –** *Implementation of the quality management system for MET information (QMS/MET)*: QMS/MET status of implementation was analysed, as reflected in **Appendix F**. States have submitted action plans to adjust to the new requirements of ISO 9001:2015. During 2017, five SAM States completed the adjustment and

obtained the certification. In this regard, the PPRC/4 meeting noted that no State had implemented version 2015, showing 36% progress. Courses on risk management were conducted, as well as one on updated audit techniques, including ISO 9001:2015 requirements, in which 26 internal auditors were trained in ISO 9001:2015.

c) **Project H4 –** *Optimisation of OPMET exchange, including SIGMETs (WS, WV, WC and WR), warnings and meteorological alerts*: the OPMET controls conducted by the Brasilia international OPMET data bank have included formatting errors in OPMET messages, in accordance with industry complaints. Follow-up to this issue has resolved this problem to a large degree, noting 90% improvement since PPRC/4. Support is being provided to States in the transition to a digital environment and OPMET data management in a SWIM environment. A seminar on SWIM and XML messages was conducted in October, in Lima, Peru. Venezuela and Ecuador have developed programmes to convert alphanumeric messages to XML formats. Transmission in the XML/GML format is part of IWXXM implementation. Details of Project H4 are contained in **Appendix G.**

d) **Project H5** – Improvement to MET services in accordance with new operational requirements in support of ATM: the coordinator, together with the experts, has prepared the draft survey for circulation to States. The project is being carried out according to the terms described in **Appendix H**.

4. Conclusion

4.1 GREPECAS MET projects have made little progress and objectives have been partially attained, despite efforts made to coordinate tasks through follow-up teleconferences. Meetings were required to reactive and readjust the scope of the projects and agree on the required deliverables.

4.2 QMS/MET implementation and subsequent certification, and adjustment to requirements introduced by ISO 9001:2015 face the following challenges:

a) There are States that have completed implementation but cannot obtain the certification because certifying companies do not have a MET expert in the audit team and thus decide not to participate in the bidding processes organised by the State;
b) There are States that have completed implementation, but cannot obtain the certification because there are no certifying companies in the State;
c) There are States that have received technical assistance but have not completed the implementation process for reasons not provided to the Secretariat.

States that have not completed the implementation process could submit an action plan to the Secretariat, and, with the support of regional projects, could complete the QMS/MET implementation and certification process.

4.3 The latest two amendments to Annex 3 pose significant implementation challenges that require the formulation and development of new projects. In order to implement these amendments, States should take into account the infrastructure required for the implementation of the ICAO weather information exchange model (IWXXM), national and regional coordination to address cases of release of radioactive material, and the provision of new MET services to meet CDM and A-CDM requirements,

amongst other challenges related to the exchange of OPMET messages and the qualification of aeronautical meteorology personnel.

4.4 Taking into account that MET implementations have an impact on the CAR/SAM Air navigation plan, and taking note of the need to standardise project implementation and agree on regional implementation strategies, the need is felt for face-to-face meetings every two years, reporting on deliverables to PPRC and GREPECAS meetings, over the next six years.

5. Suggested action

5.1 The Meeting is invited to:

a) review the information contained in this working paper;

b) review the appendices and the status of implementation of MET projects; and

c) adopt any action it may deem appropriate.

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PROJECT H2 IMPLEMENTATION OF METEOROLOGICAL WATCH FOR THE MONITORING OF EN-ROUTE SEVERE PHENOMENA, VOLCANIC ASH, TROPICAL CYCLONES AND THE RELEASE OF RADIOACTIVE MATERIAL

CAR Region	PROJECT DESCRIPTION (PD)	PD N° H2	
Programme	**Project Name**	**Start**	**Finish**
Aeronautical Meteorology *Programme Coordinator:* *Luis Raúl Sánchez Vargas*	IMPLEMENTATION OF METEOROLOGICAL WATCH FOR THE MONITORING OF EN-ROUTE SEVERE PHENOMENA, VOLCANIC ASH, TROPICAL CYCLONES AND THE RELEASE OF RADIOACTIVE MATERIAL Project Coordinator: Ivan González (Cuba) Experts contributing to the project: Enrique Camarillo (México) Humberto Hernandez Peralta (México) Marco Antonio Coria Rodriguez (México) Glendell De Souza (Trinidad y Tabago)	March 2018	September 2020
Objective	Ensure that States implement the IAVW, Annex 3 Standards and Recommended Practices (SARPs) and CAR/SAM eANP (replacing basic Doc 8733), concerning the issuance and distribution of SIGMET information that could affect safety of aircraft operations.		
Scope	The Project comprises Meteorology Watch Offices (MWO) of the CAR Region included in the CAR/SAM e-ANP in coordination with ACC/FIC/NOF, and the Buenos Aires and Washington Volcanic Ash Advisory Centres (VAAC). The procedures for issuing of advisories and messages, the coordination between affected air spaces, as well as the transfer of responsibilities between MWOs will be reviewed and verified. Procedures for the transfer of responsibilities and assistance between the RSMC and the MWO will be defined.		
Metrics	SIGMET Tests continuous improvement. Amount of States with operational procedures implemented		
Strategy	The Project Deliverables will be executed by experts nominated by the CAR Region States, under the direction of the Project coordinator and MET Programme Coordinator oversight through GoToMeeting. Once deliverables are completed, the results will be submitted to the MET Programme Coordinator as a final document to be presented and if the case, for GREPECAS CRPP approval through the GREPECAS fast-track Procedure.		
Goals	100% SIGMET Tests acceptance, in terms of transmission and reception; 100% Of the States with operational procedures.		
Rationale	Severity, persistence, and increased frequency of volcanic activity, tropical cyclones, other severe weather phenomena and the release of radioactive materials into the atmosphere, impacting the Air Navigation Services provision, lead to the need to review, verify and implement operational procedures to increase safety of aircraft operations.		
Related Projects	➢ Air Space in-route structure optimization		

	➢ ATFM Implementation

Deliverables of the Project	Relationship with RPBANIP	Responsible	Implementation Status	Date of Delivery	Comments
SIGMET Guide reviewed, updated and aligned to the ICAO template.	RPO 8	Luis Sánchez Ivan Gonzalez Enrique Camarillo Glendell De Souza		June 2018	Guidelines for the Standardization and harmonization of procedures and formats related to the preparation and issuance of Aeronautical Meteorology Information related to en-route severe weather and other phenomena in the atmosphere. Responsibility transition between MWO´s procedures.
Learning Material to train MWOs technical staff	RPO 8	Ivan Gonzalez Enrique Camarillo Glendell De Souza		July 2018	Syllabus including: Necessary Trainer profile. Course General Information. Course Objectives. Course rules and policies. Grading and evaluation method. Learning Resources. Course Calendar
United States NWS Chat Implementation as a redundant mechanism for the interregional coordination.	RPO 8	Luis Sánchez Ivan Gonzalez Marco Antonio Coria		August 2018	
ICAO Doc 9766 Part V update	RPO 8	Ivan Gonzalez Enrique Camarillo Glendell De Souza		May 2018	
Guide to perform Regional SIGMET exercises	RPO 8	Iván Gonzalez States		December 2018, 2019	Guidance on the purpose, scope and procedures to perform Regional SIGMET practices.
Information Paper on AMDAR implementation in Mexico and it´s usage in SIGMET preparation	RPO 8	Luis Sánchez Humberto Hernandez Peralta		June 2018	
Protocols for radioactive	RPO 8	Luis Sánchez		August 2018	Protocol Model including procedures

material released or radioactive clouds cases in the FIR		Ivan Gonzalez Marco Antonio Coria			for radioactive material released. Include contingency protocols in coordination with National ATS authority. Teleconference to introduce the Protocol.
SIGMET and Radioactive Material Regional Seminar/Workshop Proposal	RPO 8	Luis Sánchez		December 2018	Workshop for States technical capabilities development to enable proper response to radioactive material released in the FIR To be managed in coordination with WMO, ICCAE/COCESNA.
Agreement Models involving Meteorological authorities, State volcano observatories, aeronautical information service authorities and ATS authorities.	RPO 8	Ivan Gonzalez Marco Antonio Coria		January 2019	
Project Final Report	RPO 8	Luis Sánchez Ivan Gonzalez		September 2020	
Necessary Resources	Funds to conduct meetings, translation of relevant documentation and publication in the NACC Regional Office Web Site. Availability for GoToMeeting.				

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Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

PROJECT FOR THE IMPLEMENTATION OF THE QUALITY MANAGEMENT SYSTEM FOR THE PROVISION OF THE METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION (QMS/MET)

CAR Region	PROJECT DESCRIPTION (DP)	PD N° H3	
Programme	**Title of the Project**	**Start**	**End**
Aeronautical Meteorology ***Programme Coordinator**:* *Luis Raúl Sánchez Vargas*	IMPLEMENTATION OF THE QUALITY MANAGEMENT SYSTEM FOR THE PROVISION OF THE METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION (QMS/MET) **Project coordinator:** Haley Anderson (Trinidad and Tabago) **Experts contributing to the project:** Carlos Fornés Valdés (Cuba) Marco Antonio Coria Rodriguez (México) Humberto Hernandez Peralta (México) Alejandro Bartolomé (Dominican Republic)	*March 2018*	*September 2020*
Objective	Assist States in the implementation of the QMS/MET and certification, where applicable, establish guidelines for the transition to the standard ISO 9001:2015 and projected to the interoperability of meteorological information in compliance with the provisions of Annex 3.		
Scope	Establishment and application of a Quality Management System at the Meteorological Offices in compliance with the standards and recommended practices of Annex 3 and the CAR/SAM e-ANP, Vol. I and Vol. II.		
Metrics	Number of States certified under ISO 9001:2015		
Goals	50% of CAR States apply and certify QMS/MET in accordance with standard ISO 9001:2015 on 31 December 2019; and 100% of CAR States have QMS/MET certified by an organization in accordance with standard ISO 9001:2015 by December 2020.		
Strategy	The Project Deliverables will be executed by experts nominated by the CAR Region States, under the direction of the Project coordinator and MET Programme Coordinator oversight through GoToMeeting. Once deliverables are completed, the results will be submitted to the MET Programme Coordinator as a final document to be presented and if the case, for GREPECAS CRPP approval through the GREPECAS fast-track Procedure.		
Rationale	Ensure the establishment and implementation of a properly organized quality system will contribute towards the safety, regularity and efficiency of international air navigation, improving ATM, optimizing the use of available aerodrome capacity and minimizing the environmental impact of air traffic. Performance management will be an important part of the quality assurance.		
Related projects	Air Space in-route structure optimization ATFM Implementation		

Project deliverables	Relationship with RPBANIP	Responsible	Status of Implementation1	Delivery Date	Comments
Corroborate the objectives of the QMS with the Manual on the quality management system for the provision of meteorological service for international air navigation Doc. 9873 ICAO / WMO		- Luis Sánchez - Haley Anderson - Alejandro Bartolomé		April 2018	
ICAO / WMO Regional level coordination to determine the CAR region QMS/MET implementation status ensuring reliable and verifiable information.		- Luis Sánchez - Haley Anderson - Alejandro Bartolomé		June 2018	Tool: Gap Analysis
Integration of CAR States into the WMO quality management forum.		- Luis Sánchez - Haley Anderson		June 2018	Tool: Email of instructions for joining WMO QMF
Dissemination of the guide for the implementation of Quality Management Systems for national meteorological and hydrological services and other relevant service providers - WMO-No 1100 Edition 2017		- Luis Sánchez - Haley Anderson		June 2018	Tool: Correspondence from NACC Office with instructions for accessing the Guide
Analysis of HRM processes to incorporate competency and qualification requirements of Aeronautical Meteorology Personnel, retraining and policies for continuous		- Haley Anderson - Humberto Hernandez		July 2018	

professional development.					
Plan for the evaluation of competences and qualification of aeronautical meteorological personnel.		- Haley Anderson - Humberto Hernandez		August 2018	
Virtual workshop for the interpretation of the ISO 9001: 2015 Standard and an implementation strategy.		- Luis Sánchez - Haley Anderson		September 2018	
Assessment of ISO 9001:2015 QMS implementation status, identification of areas for improvement, and the recommendation of corrective actions to be taken.		- Luis Sánchez - Haley Anderson		August 2019 August 2020	Tool: Gap Analysis New project deliverables may be developed based on findings
Installation and on-site training of SAETAF for the CAR / SAM States that require it.		- Carlos Fornés Valdés (Cuba)		September 2020	Cuba in coordination with WMO and ICAO will provide on-site installation and training to the CAR States at no cost. The states must guarantee passage and per diem of the experts according to the norm for the UN agencies.
Final Project Report		- Luis Sánchez - Haley Anderson		September 2020	
Necessary resources	Availability for GoTo Meeting teleconferences is required				

1 *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

PROJECT FOR THE OPTIMISATION OF OPMET EXCHANGE, INCLUDING SIGMETs (WS, WV, WC, AND WR), WARNINGS AND METEOROLOGICAL ALERTS

CAR Region	PROJECT DESCRIPTION (DP)	DP N° H4	
Programme	**Project Name**	**Start**	**End**
Aeronautical Meteorology ***Programme Coordinator***: *Luis Raúl Sánchez Vargas*	OPTIMISATION OF OPMET EXCHANGE, INCLUDING SIGMETs (WS, WV, WC, AND WR), WARNINGS AND METEOROLOGICAL ALERTS **Project Coordinator:** Enrique Camarillo (México) **Project Expert contributors:** Uvaldo René Milián Díaz (Cuba) Marshandy Luciano (Curacao) Alejandro Bartolome Reynoso (Dominican Republic) Raul Adalberto Murillo Silva (El Salvador) Marco Antonio Coria Rodriguez (México) Haley Anderson (Trinidad and Tobago)	*March 2018*	*September 2020*
Objective	Assist in the preparation and dissemination of METAR / SPECI reports and TAF aerodrome forecasts, timely and of high quality in the main airports of 100% of the States and Territories of the CAR Region; Assist the Meteorological Watch Offices (MWO) of the CAR Region, in the preparation and dissemination of timely and quality SIGMET messages for 100% of the Flight Information Regions (FIR) of the CAR Region.		
Scope	Correct preparation and timely dissemination of operational meteorological information involves the units that provide Meteorological Service for International Air Navigation and the international OPMET databanks.		
Metrics	The reception percentage measurement of OPMET information according to Annex 3, Appendix 10. The correct preparation (quality) of the OPMET information according to technical specifications of Annex 3, Appendices 3, 4, 5 and 6.		
Goals	Achieve at least 85% efficiency in the reception of high quality OPMET information for December 31, 2019, during the operating hours of the CAR Region aerodromes included in the FASID MET II-2 Table of the e-ANP , certified by ICAO.		
Strategy	The Project Deliverables will be executed by experts nominated by the CAR Region States, under the direction of the Project coordinator and MET Programme Coordinator oversight through GoToMeeting. Once deliverables are completed, the results will be submitted to the MET Programme Coordinator as a final document to be presented and if the case, for GREPECAS CRPP approval through the GREPECAS fast-track Procedure		
Justification	More timely meteorological information will optimize flight path planning and prediction, thus improving ATM system safety and efficiency. Meteorological information will also minimize the environmental impact of air traffic.		
Related Projects	En-route air space structure optimization ATFM Implementation		

Project Deliverables	Relation with the RPBANIP	Responsible	Implementation Satatus[1]	Delivery Dates	Comments
FASID MET Charts electronic Air Navigation Plan verification	RPO 8	- Trinidad and Tobago for the Eastern Caribbean - Marshandy Luciano For the Netherlands Territories. - Raul Murillo for Central America - Uvaldo René y Alejandro Reynoso For Major Antilles and Central Caribbean - Marco Antonio Coria for Mexico		April 2018	
OPMET Information efficiency and quality controls available in the Brasilia and Washington OPMET International Data Bank; equally through USA NWS Kansas City Aviation Weather Center, and airlines operational Centres as coordinated with IATA.	RPO 8	- Enrique Camarillo		April 2018	
Update the e-ANP FASID MET tables.	RPO 8	- Luis Sánchez - Enrique Camarillo - States		July 2018	
Working Paper to propose the elaboration of METAR reports every 30 minutes in the most critical airports and schedules (IATA concept)/define a metric to allow the proposal implementation.	RPO 8	- Luis Sánchez - Enrique Camarillo		August 2018	Background for the implementation of METAR Reports every 30 minutes in EUR/NAT region will be requested to the Regional Officer.
Exchange OPMET tests in XML/GML Format.	RPO 8	- Enrique Camarillo		To be determined	The feasibility of executing this activity will be reviewed
IWXXM Implementation Regional Workshop.	RPO 8	- Luis Sánchez - Enrique Camarillo		2018	It is planned to develop a workshop including Space Meteorology
Project Final Report.	RPO 8	- Luis Sánchez - Enrique Camarillo		September 2020	
Necessary Resources	Funds for meetings with the project members to assess results and propose correcting actions. Availability for GoToMeetings.				

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Grey *Task not started Yet*
Green *Activity being implemented as schedulled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemente don time, mitigation measures are required*

APPENDIX D

PROJECT ON THE IMPLEMENTATION OF INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW) AND PROTOCOLS IN CASE OF PRESENCE OF RADIOACTIVE MATERIAL

SAM Region	**PROJECT DESCRIPTION (DP)**		**DP N° H2**	
Programme	**Project Title**		**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Jorge Armoa)*	Implemenation of international airways volcano watch (IAVW) *Project coordinator:* *Experts contributing to the project:*	***Roxana Vasquez Ferro** (Argentina)* *Jorge Leguizamon (Argentina)* *Lourdes Martínez (Peru)* *Walter Rios (Bolivia)* *Rodrigo Fajardo Rosell* (*Chile)* *Marco Ortiz (Ecuador)* *Celestino Lamboglia (Panama)*	December 2011	December 2020
Objective	Ensure that States implement IAVW, the standards and recommended practices of Annex 3, and Volume I, Part MET of the electronic Air Navigation Plan related to the CAR/SAM Regions (replaces Doc 8733 Basic), regarding the drafting and distribution of reports on en-route meteorological phenomena and release of radioactive material that might affect the safety of aircraft operations, and on the evolution of these phenomena over time and space (SIGMET WV).			
Scope	The project will comprise all meteorological watch offices (MWOs) of the SAM Region listed in Table MET 1B of the CAR/SAM FASID, in coordination with the ACCs/FICs/NOFs, and the Buenos Aires and Wellington (New Zeland) volcanic ash advisory centres (VAACs). Procedures for the issuance of reports and coordination among the affected areas should be defined, as well as the transfer of responsibilities between MWOs. Procedures will be defined for the transfer of responsibilities and assistance between the RSMC and the MWOs.			
Metrics	Testing of volcanic ash SIGMETs shall result in continuous improvements once project deliverables are available to the States. Number of States that have established national procedures on responsibilities and counselling with civil aviation authorities, the national nuclear authority and MWOs.			
Strategy	All tasks will be carried out by experts nominated by SAM States participating in the project, led by the Project coordinator and under the supervision of the MET Programme coordinator through the "GoToMeeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme coordinator as a final document for submission to, and if necessary, approval by, the GREPECAS PPRC through the GREPECAS fast-track procedure. For the purpose of supporting collaborative decision-making, meetings will be held with the areas involved.			
Goals	a) 100% acceptance of SIGMET tests regarding transmission and reception of WV SIGMETs and ASHTAMs; b) full availability of information to avoid aircraft encounters with volcanic ash clouds in the SAM Region; and c) 100% of States with national procedures on responsibilities and counselling with civil aviation authorities, the nuclear authority and the MET service provider.			
Rationale	The severity, persistence and increased frequency of volcanic events with dispersion of ash and radioactive clouds in the SAM Region and their impact on the provision of air navigation services call for tools to provide information that will contribute to the improvement or increase in safety levels.			

Related projects	➢ Optimisation of the en-route airspace structure ➢ Implementation of ATFM

Project deliverables	Relationship with the Regional performance-based plan (PFF)	Responsible party	Status of Implementation[1]	Delivery date	Comments
SIGMET guide revised and updated and aligned with the template provided by ICAO	PFF SAM MET 03	MET programme coordinator and project coordinator		June 2018	The Guide will include procedures for transferring MWO responsibilities. This task is to be performed by the working group established at the GREPECAS MET Projects meeting held in November 2015.
Development of protocols for cases of presence of radioactive material in the FIRs	PFF SAM MET 03	MET programme coordinator		2018	Holding of teleconference for communicating the protocol.
Conduction of workshops and courses on radioactive material	PFF SAM MET 03	MET programme coordinator		2018	
Conduction of exercises on the release of radioactive material in the FIRs	PFF SAM MET 03			February 2019 June 2020	
Final report of the project		MET programme coordinator and project coordinator		First semester of 2021	
Resources needed	Funds to conduct the meetings and to translate the Regional volcanic ash contingency plan, and the Regional contingency plan in case of accidental release of radioactive material. Likewise, participants must be available to participate in GoTo Meetings.				

[1] ***Grey*** *– Task not yet started*
Green *– Activity being implemented as scheduled*
Yellow *– Activity started with some delay, but expected to be implemented on time*
Red *– Activity not implemented on time; mitigation measures are required*

APPENDIX E

PROJECT FOR THE IMPLEMENTATION OF THE MET INFORMATION QUALITY MANAGEMENT SYSTEM (QMS/MET)

SAM Region	**PROJECT DESCRIPTION (DP)**		**DP N° H3**	
Programme	**Project Title**		**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Jorge Armoa)*	Implementation of QMS/MET *Project coordinator:* *Experts contributing to the project:*	*Pablo Malve (Argentina)* *Arturo Lomas (Ecuador)* *Baldomero Thomas (Panama)* *Edward León (Venezuela)* *Roberto Salinas (Paraguay)?* *Ricardo Reyes (Peru)*	January 2016	December 2019
Objective	Assist States in the implementation, and certification, where applicable, of QMS/MET, and establish guidelines for the transition to ISO 9001:2015 aligned with ASBU and aimed at the interoperability of meteorological information, in compliance with Annex 3.			
Scope	Establishment and implementation of a quality management system for safety-related meteorological data in each MET unit of all SAM aerodromes listed in the CAR/SAM ANP, and compliance with the standards and recommended practices of Annex 3 and the CAR/SAM ANP Volumes I and II.			
Metrics	Number of AOP aerodromes certified under ISO 9001.			
Strategy	All tasks will be carried out by experts nominated by SAM States participating in the project, led by the Project coordinator and under the supervision of the MET Programme coordinator through the "GoTo Meeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme coordinator as a final document for submission to, and if necessary approval by, the GREPECAS PPRC through the GREPECAS fast-track procedure. In order to support collaborative decision-making, meetings will be held with the areas involved.			
Goals	a) 100% of SAM States with QMS/MET system established in accordance with ISO 9001:2008, by 30 June 2016; b) 70% of SAM States apply and certify the QMS/MET system in accordance with ISO 9001:2015, by 31 December 2017; c) 100% of SAM States with QMS/MET system certified by an organisation in accordance with ISO 9001:2015, by June 2019.			
Rationale	More accurate and timely meteorological information will optimise flight path planning and prediction, thus improving ATM safety and efficiency; improved aerodrome reports and forecasts will optimise the use of available aerodrome capacity; and meteorological information will minimise environmental impact of air traffic. Performance management will be an important part of meteorological information quality assurance.			
Related projects	➢ Automation ➢ Improved ATM situational awareness			

Project deliverables	Relationship with the Regional performance-based plan (PFF)	Responsible party	Status of implementation[1]	Delivery date	Comments
Guidelines for the transition to ISO 9001:2015	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		June 2018	The guidelines will facilitate the drafting of ISO 9001:2015 documentary framework by MET service provider States.
Tables of compliance with the CAR/SAM e-ANP, Part V – MET, Vol I.	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		June 2018	Close monitoring of compliance with Part MET of Volume I of the CAR/SAM e-ANP.
Report of the workshop on risk management in MET services	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		August 2016	June 2016 is the tentative date for conducting the workshop/seminar on "Risk analysis".
Update course for lead auditors	PFF SAM MET 02, 03 and 04	Project director		October 2017	An update course for auditors trained under ISO 9001:2008 should be conducted in order to provide proper training on the new standards introduced in version 2015.
Survey to States on MET personnel	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		November 2018	One of the main problems of MET service provider States is lack of personnel with the qualifications and competencies required by WMO and ICAO. State requirements will be officially communicated to ICAO contracting States. This task will be performed in compliance with Amendment 78 to Annex 3
Assessment of personnel competencies	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		November 2018	One of the main problems of MET service provider States is lack of personnel with the qualifications and competencies required by WMO and ICAO. State requirements will be officially communicated to ICAO contracting States. This task will be performed in compliance with Amendment 78 to Annex 3.

Collect State QMS/MET implementation certificates	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		April 2019	States will be requested to submit their QMS/MET certificates in compliance with Conclusion PPRC/3-9 item a)
Report of the project	PFF SAM MET 02, 03 and 04	MET programme coordinator and project director		July 2019	
Resources needed	Availability for GoTo Meetings.				

[1]
Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but expected to be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

APPENDIX F

PROJECT FOR THE OPTIMISATION OF OPMET EXCHANGE, INCLUDING SIGMETs (WS, WV, WC), WARNINGS AND METEOROLOGICAL ALERTS

SAM Region	PROJECT DESCRIPTION (DP)	DP N° H4	
Programme	**Project Title**	**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Jorge Armoa)*	*Optimisation of OPMET exchange, including SIGMETs (WS, WV, WC), warnings and meteorological alerts* *Project coordinator:* *(Venezuela)* *Experts contributing to the project:* *Aníbal Castro Cárdenas (Bolivia)* *Rafael Narvaja Zárate (Peru)* *Rodrigo Cortes (Argentina)* *(Brazil)* *Edison Lagos (Ecuador)* *Celestino Lamboglia (Panama)* *Fernando Reina (Venezuela)* *Antonio Espinoza (Venezuela)* *Warsodikromo Truusje Soetinie (Suriname)*	December 2015	December 2019
Objective	- Achieve at least 95% efficiency in the reception of OPMET information at the Brasilia IODB by 31 December 2018. - Achieve at least 70% efficiency in the transmission of OPMET information in XML/GML formats in SAM States by 31 December 2018.		
Scope	The correct preparation and timely dissemination of OPMET information involves all MET units [(EMA(s), AMO(s), MWO(s) and OPMET data banks] of all SAM aerodromes listed in the CAR/SAM ANP.		
Metrics	Percentage of OPMET messages received on time at the Brasilia International OPMET data bank (according to Annex 3, Appendix 10, OPMET control considers OPMET messages received with transit times of 10 minutes) and verification of proper production (quality) of OPMET information at MET services [(EMA(s), AMO(s), and MWO(s)] in standard format (Annex 3, Appendices 3, 4, 5, and 6, contains OPMET message planning tables).		
Strategy	All tasks and exchange exercises required to meet the objectives will be carried out by experts nominated by SAM States (points of contact – POCs) and by experts contributing to the project, led by the Project coordinator and under the supervision of the MET Programme coordinator through State letters sent by the ICAO Lima Office, by e-mail, and the "GoToMeeting" tool. Upon completion of the tasks, the results will be sent to the MET Programme coordinator as a final document for submission to, and if necessary approval by, the GREPECAS PPRC through the GREPECAS fast-track procedure. In order to support collaborative decision-making, meetings will be held with the areas involved.		

Goals	a) Reach 85% reception of OPMET data of the SAM Region in standard format at the Brasilia IODB by 31/12/17; and 95% by 31/10/18; b) Reach 70% reception of OPMET data of the SAM Region in the XML/GML format at the Brasilia IODB by 31/10/18; c) Reach 85% reception of OPMET data between SAM States in standard format by 31/12/17; and 95% by 31/10/18; d) Reach 30% reception of OPMET data between SAM States in XML/GML format by 31/12/17; and 70% by 31/12/18
Rationale	More timely meteorological information will optimise flight path planning and prediction, thus improving ATM system safety and efficiency, in compliance with GREPECAS Conclusion 12/64 (CAR/SAM OPMET EXCHANGE CONTROLS). Meteorological information will also minimise the environmental impact of air traffic.
Related projects	➢ Automation ➢ Implementation of ATFM ➢ Implementation of the MET information quality management system (QMS/MET) ➢ Enhanced ATM situational awareness

Project deliverables	**Relationship with the performance-based regional plan PBIP[1]**	**Responsible party**	**Status of implementation[2]**	**Date of delivery**	**Comments**
OPMET guide revised and updated	PFF SAM MET 02	MET Programme coordinator and project coordinator		March 2018	The OPMET guide prepared by the SAM Office will include procedures for preparing OPMET data and tables containing the AFTN/AMHS addresses where States must send OPMET information in accordance with the CAR/SAM FASID, thus facilitating the preparation and issuance of MET messages.
Efficiency and quality controls of OPMET information available in the Brasilia international OPMET data bank	PFF SAM MET 02	Brasilia international OPMET data bank		March, June, August, November 2016, 2017, 2018 October 2018	Measurement of OPMET information reception time at the Brasilia international OPMET data bank will take place every three months during the duration of the project.
Results of the analysis of information exchange coordinated controls	PFF SAM MET 02	MET Programme coordinator and project coordinator		April, July, October and December 2016, 2017 and 2018	The results obtained from coordinated controls of OPMET information exchange will allow SAM States, as applicable, to take corrective actions to meet continuous improvement goals.

Project deliverables	Relationship with the performance-based regional plan PBIP[1]	Responsible party	Status of implementation[2]	Date of delivery	Comments
OPMET information exchange tests in XML/GML format	PFF SAM MET 02	States with the technical capacity to conduct the test		October 2018 March 2019	OPMET information exchange tests will be carried out initially with those States capable of doing so, at least twice a year.
Results of the analyses of OPMET exchange tests in XML/GML format	PFF SAM MET 02	MET Programme coordinator and project coordinator		December 2018 June 2019	The results obtained in biannual OPMET information exchange controls will allow SAM States, as necessary, to take corrective measures to meet continuous improvement goals.
IWXXM implementation plan				June 2018	
Project report	PFF SAM MET 02	MET Programme coordinator and project coordinator		June 2019	The purpose of the project report to be submitted by the programme coordinator is to enable the Lima SAM Office to verify project achievements and propose to the Sates future measures to maintain the level attained through OPMET controls.
Resources needed	Funds for meetings with project members to assess the results and propose corrective actions. States could use their human resources to conduct the scheduled OPMET tests and controls, and, if necessary, cover financial costs, since the experience gained will result in an improvement of their own systems. Likewise, participants must be given facilities to participate in GoToMeetings.				

1 Air navigation system Performance-Based Implementation Plan for the SAM Region

2 *Grey Task not started*

Green	*Activity being implemented as scheduled*
Yellow	*Activity started with some delay, but expected to be implemented on time*
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APPENDIX G

NAME OF DRAFT PROJECT: IMPROVEMENTS TO MET SERVICES IN ACCORDANCE WITH THE NEW OPERATIONAL REQUIREMENTS IN SUPPORT OF ATM

SAM Region	**DESCRIPTION OF PROJECT (DP)**	**DP N° H5**	
Programme	**Project Title**	**Start**	**End**
Aeronautical meteorology *(Programme coordinator: Jorge Armoa)*	Improvements to MET services in accordance with the new operational requirements in support of ATM *Project coordinator:* *Arturo Lomas (Ecuador)* *Experts contributing to the project:* *Eduardo Recalde (Ecuador)* *Luis Felipe Alivtez (Peru)* *Daniel Cortes (Argentina)* *Eduardo Mingo (paraguay)* *Claudio Ribero (Argentina)* *Jimmi Noguiera* *Sergio Antonio*	January 2016	December 2019
Objective	Implement MET services within the framework of the ATM operational concept, CDM, and ASBU blocks related to data and system (SWIM) interoperability improvements by December 2018.		
Scope	Deliver quality and timely MET information to all stakeholders of the SAM Region, aligned with the global air navigation plan.		
Metrics	Number of States that responded to the survey. Submission by States of an implementation programme to improve MET services, including human and technological factors.		
Strategy	All tasks will be carried out by experts designated by SAM States participating in the project, under the leadership of the project coordinator and under the supervision of the MET programme coordinator through the GoTo Meeting tool. Once the tasks have been completed, the results will be delivered to the MET programme coordinator as a final document, for its submission to, and, if necessary, approval by, the GREPECAS PPRC through the GREPECAS fast-track procedure. To support collaborative decision-making, meetings will be held with the areas involved.		
Goals	Completion of the proposed survey by100% of States. Submission of a continuous improvement programme for MET services by 100% of States.		

Rationale	More precise and timely meteorological information will optimise flight path planning and prediction, thus enhancing the safety and efficiency of the ATM system; improved reports and aerodrome forecasts will optimise the use of available aerodrome capacity; and meteorological information will contribute to minimise the environmental impact of air traffic. Performance management will be an important part of meteorological information quality assurance.
Related projects	➢ Automation ➢ A-CDM implementation ➢ ATFM implementation ➢ PBN implementation ➢ Improvement of ATM situational awareness

Project deliverables	**Relationship with the SAM PBIP PFF[1]**	**Responsible party**	**Status of implementation[2]**	**Delivery date**	**Comments**
Design and development of an international air navigation survey to identify MET services required for CDM and A-CDM		MET Programme coordinator and project director		June 2018	The group will send the survey to the Secretariat for delivery to the States.
Reception of survey duly completed by the States				November 2018	
Analysis and assessment of results obtained from the survey and identification of gaps for improving MET services in order to increase efficiency, safety, and regularity		MET Programme coordinator and project director		March 2019	Communicate the results to the States through the Secretariat, so that each may prepare its MET service improvement programme.
Follow-up to programmes submitted by States based on the gaps identified		MET Programme coordinator and project director		July 2019	
Resources needed	Availability of GoToMeeting to define the content of the survey and analyse its results. States could use their human resources to plan the implementation of requirements in support of ATM. Availability of resources to hold meetings on the second year to review the project.				

[1] Air navigation system Performance-Based Implementation Plan for the SAM Region

[2]
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