



CAR/SAM/MP1

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**South American Regional Office**

**MEETING ON GREPECAS MET  
PROGRAMME PROJECTS**

**FINAL REPORT**

**(Lima, Peru, 18 to 22 September 2017)**

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## TABLE OF CONTENTS

i -	Table of contents.....	i-1
ii -	History of the Meeting.....	ii-1
	Place and duration of the Meeting.....	ii-1
	Opening ceremony.....	ii-1
	Organization of the Meeting.....	ii-1
	Working languages.....	ii-1
	Agenda.....	ii-1
	Schedule and Working Methodology.....	ii-2
	Attendance.....	ii-2
	List of conclusions.....	ii-2
iii -	List of participants.....	iii-1
	 <b>Report on Agenda Item 1:</b> .....	 1-1
	Review of Project H2 – Implementation of the International Airways Volcano Watch (IAVW)	
	 <b>Report on Agenda Item 2:</b> .....	 2-1
	Review of Project H3 – Implementation of the MET Information Quality Management System (QMS/MET)	
	 <b>Report on Agenda Item 3:</b> .....	 3-1
	Review of Project H4 – OPMET Exchange	
	 <b>Report on Agenda Item 4:</b> .....	 4-1
	Review of Project H5 – Improvements of MET services in accordance with the new operational requirements in support of ATM	
	 <b>Report on Agenda Item 5</b> .....	 5-1
	Feasibility studies of new MET Projects as a result of the necessary implementations within the framework of Proposal for Amendment 78 to Annex 3 and the conclusions of the work of the MET Panel	
	 <b>Report on Agenda Item 6</b> .....	 6-1
	Emerging aspects of implementation	
	 <b>Report on Agenda Item 7</b> .....	 7-1
	Other business	



## **HISTORY OF THE MEETING**

### **ii-1 PLACE AND DURATION OF THE MEETING**

The Meeting on GREPECAS MET Programme Projects was held at the ICAO South American Regional Office, Lima, Peru, from 18 to 22 September 2017.

### **ii-2 OPENING CEREMONY AND OTHER MATTERS**

Mr. Onofrio Smarrelli, on behalf of the Acting Regional Director of the ICAO South American Regional Office, welcomed the participants and highlighted the objectives of the Meeting, provided a brief explanation of the items to be reviewed. Also, recalled with regret the victims of the natural phenomena and disasters currently affecting the States of the Caribbean and North American regions. In addition, he expressed his satisfaction for the convening of this event, wishing the participants all success in their discussions and inaugurating the Meeting.

### **ii-3 ORGANIZATION OF THE MEETING**

The Meeting was chaired by Mr. Iván González Valdés (Cuba). Mr. Jorge Armoa, Aeronautical Information Management and Aeronautical Meteorology Regional Officer of the ICAO South American Office (SAM), acted as Secretary, with the assistance of Mr. Luis Sánchez, Aeronautical Meteorology and Environment Regional Officer of the ICAO North America, Central America and the Caribbean Office (NACC).

### **ii-4 WORKING LANGUAGES**

The working languages of the Meeting were Spanish and English, with simultaneous interpretation. The documentation was presented in both languages.

### **ii-5 AGENDA**

The following agenda was adopted:

Agenda Item 1: Review of Project H2 – Implementation of the International Airways Volcano Watch (IAVW)

Agenda Item 2: Review of Project H3 – Implementation of the MET Information Quality Management System (QMS/MET)

Agenda Item 3: Review of Project H4 – OPMET Exchange

- Agenda Item 4: Review of Project H5 – Improvements of MET services in accordance with the new operational requirements in support of ATM
- Agenda Item 5: Feasibility studies of new MET Projects as a result of the necessary implementations within the framework of Proposal for Amendment 78 to Annex 3 and the conclusions of the work of the MET Panel
- Agenda Item 6: Emerging aspects of implementation
- Agenda Item 7: Other business

## ii-6 **SCHEDULE AND WORKING METHODOLOGY**

The Meeting agreed to conduct its sessions from 08:30 to 16:00 hours, with suitable breaks.

## ii-7 **ATTENDANCE**

The Meeting was attended by 30 participants from 9 SAM States, 6 CAR States and one international organization, IFALDA/APADA, which are shown in the List of participants presented in page iii-1.

## ii-8 **LIST OF CONCLUSIONS AND RECOMMENDATION**

<b>NUMBER</b>	<b>TITLE</b>	<b>PAG</b>
1/1	UPDATE AND OPTIMIZATION OF PROJECT H2 - IAVW	1-1
1/2	MET PROJECTS UPDATE	5-2
1/3	MET PROJECTS PERIODIC MEETINGS	5-3

**LIST OF PARTICIPANTS****ARGENTINA**

1. Pablo Alberto Malvé
2. Daniel Antonio Cortes
3. Fernando Daniel Calvo
4. Gabriela Silvina Bianchi
5. Nis Mirtha Alejandra
6. Roxana Sandra Vasques Ferro

**BELICE**

7. Derrick Rudon
8. Ronald Gordon

**BOLIVIA**

9. Aníbal Castro Cárdenas

**BRAZIL**

10. Sergio Antonio Alves da Silva
11. Jimmy Nogueira de Castro

**CHILE**

12. Reinaldo Gutiérrez

**CUBA**

13. Iván González Valdés

**ECUADOR**

14. Arturo Lomas

**MÉXICO**

15. Marco Antonio Coria Rodríguez

**PANAMA**

16. Baldomero Thomas
17. Celestino Lamboglia

**PARAGUAY**

18. Gustavo Artemio Rodríguez Britez

**PERÚ**

19. Julio Quezada Pacheco
20. Martín Polo Puelles
21. Ricardo Reyes Távara
22. Hugo Rosado Soto

**REPÚBLICA DOMINICANA**

23. Alejandro Bartolomé
24. Enrique Reyes Altagracia

**TRINIDAD & TOBAGO**

25. Haley H. Anderson

**UNITED STATES/ESTADOS UNIDOS**

26. Michael J. Bettwy
27. Michael Graf

**VENEZUELA**

28. Reidy José Zambrano Méndez

**IFALDA/APADA - Argentina**

29. Gustavo Roberto D'antiochia
30. Marcelo Sana

**OACI**

31. Jorge Armoa
32. Luis Sánchez

**Agenda Item 1: Review of Project H2 – Implementation of the International Airways Volcano Watch (IAVW)**

Under this Agenda Item, the following working paper and presentation were presented:

- WP/02 – Analysis of IAVW Implementation in the SAM Region (*Secretariat*)
- WP/03 – Analysis of the International Airways Volcano Watch (IAVW) Implementation in the CAR Region (*Secretariat*)
- WP/04 – Volcanic Ash Exercises (*Argentina*)
- WP/05 – Guide for the preparation and dissemination of SIGMET messages for the CAR/SAM Regions (*Secretariat*)
- WP/17 – Information on en-route severe phenomena (*Secretariat*)
- Presentation of Argentina on the results of SIGMET Exercises on Volcanic Ash

1.1 The Meeting reviewed the development of Project H2 - Implementation of the International Airways Volcano Watch (IAVW) in the SAM Region. In this regard, the Meeting considered that since the approval of the project by GREPECAS Programmes and Projects Committee, the activities foreseen under the work plan for the SAM Region were approved.

1.2 The Secretariat presented the implementation status of the International Airways Volcano Watch (IAVW) in the CAR Region, describing the background and relevant activities developed, and proposed the plan of activities for Project H2 of the CAR Region, also, took note of the additional activities proposed in the Meeting, which would justify the change of the name of the project to extend its scope.

1.3 The Meeting, taking into account the items included in proposal for amendment 78, considered that the issues related to SIGMET improvement, tropical cyclones and the release of radioactive material should be included in this Project, thus, the name of the Project should be modified to extend its scope to all types of SIGMET and not be limited to those related to volcanic ash.

1.4 When analyzing these matters, the Meeting deemed important to formulate the following conclusion:

**CONCLUSION CAR/SAM/MP 1/1 UPDATE AND OPTIMIZATION OF PROJECT H2 – IAVW**

That, in order to update and optimize the continuation of Project H2, request PPRC authorization to:

- a) modify the scope and the name of Project H2 as "implementation of Meteorological Watch for the monitoring of en-route severe phenomena, volcanic ash, tropical cyclones and the release of radioactive material";
- b) approve the work programme of Project H2 for the CAR Region presented as **Appendix A** to this part of the report; and
- c) approve the changes made to Project H2 for the SAM Region as presented in **Appendix B** to this part of the report.

1.5 The Meeting urged States of the CAR Region to assign experts to develop the activities of Project H2 for this Region.

1.6 The Meeting reviewed the results of periodic tests on SIGMET related to volcanic ash named FICTITUS and considered that for its development a better coordination was necessary between the Regional Offices to increase participation of SAM States under the area of responsibility of VAAC Washington. The Meeting reaffirmed the need to maintain the schedule of the exercises and assess the modification of the frequency and duration.

1.7 The Meeting was also informed on the Secretariat's concern about the lack of procedures for cases of release of radioactive material into the atmosphere, radioactive or toxic clouds. In this regard, the Meeting urged States, first, to comply with the provisions of Annex 3 regarding the release of radioactive material into the atmosphere and, also, to complement with national developments establishing procedures or protocols with air traffic services to determine the actions that should be developed during an event of release of radioactive material. The Meeting also requested the Secretariat to consider the preparation of a Contingency Plan for the Release of Radioactive Material in coordination with the ATM area. In view of the aforementioned, the States were requested to verify their ATS/MET letters of agreement to confirm the procedures related to the release of radioactive material into the atmosphere, radioactive or toxic clouds and to request assistance to the Regional Offices if necessary.

1.8 With regard to the procedures to prepare SIGMET with a 30 km radius cylinder around the point of radioactive material release, as proposed by amendment to Annex 3, the Meeting expressed its concern for what might happen out of this 30 km radius cylinder. In this regard, it was specified that it would be prudent to wait the results of the work of the MET Panel for a better guidance in these cases.

1.9 The Meeting took note of the need to update the Guide for the preparation and dissemination of SIGMET messages for the CAR/SAM Regions and noted that the process requires the contact information of the units involved, which have been requested to the States. The Secretariat recalled METWSG Action Agreed 5/4 which determined that the Regions should have a Guide for the issuance of SIGMET messages and that the existing Guide should be adjusted to the template that came with the Action Agreed. The Secretariat urged States to provide the necessary information when a new round of consultation is made, in order to complete the review and update of the SIGMET Guide for the first half of 2018.

1.10 The Meeting took note of cases with problems related to the monitoring of en-route severe phenomena. In this regard, the issuance of SIGMET messages for a same phenomenon affecting several FIRs was noted. The problems detected are related to inconsistencies in the information of the affected areas, differences in the top levels and incoherence in the information related to severe phenomena across the Flight Information Region (FIR) boundaries. The Meeting recognized the difficulty for coordination among the States, but considered necessary to establish coordination procedures using technological means currently available (chat, teleconference, among others) in order to issue consistent reports between the Meteorological Watch Offices involved.

## APPENDIX A

### PROJECT FOR THE IMPLEMENTATION OF THE INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW)

CAR Region	PROJECT DESCRIPTION (DP)	DP N° H2	
Programme	Project Title	Starting date	Ending Date
Aeronautical Meteorology  <i>Programme Coordinator: Luis Raúl Sánchez Vargas</i>	IMPLEMENTATION OF THE INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW)  <i>Project Coordinator: To be determined Experts contributing to the project: To be determined</i>	<i>To be determined</i>	<i>To be determined</i>
<b>Objective</b>	To verify the implementation status of the IAVW in CAR Region promoting compliance with standards and recommended practices of Annex 3, The CAR / SAM Electronic Air Navigation Plan and ICAO Doc. 9766 , Handbook on the International Airways Volcano Watch (IAVW)		
<b>Scope</b>	In coordination with CAR States verify the procedures established by State volcano observatories, Aerodrome meteorological offices, Meteorological watch offices, Volcanic ash advisory centre, as well as the coordination procedures between mentioned entities and the Air traffic services units, aeronautical information services units, and procedures for the generation of Meteorological observations and reports.		
<b>Metrics</b>	# of verified entities in the States (State volcano observatories, Aerodrome meteorological offices, Meteorological watch offices, ATS Units, and Aeronautical Information Units).		
<b>Strategy</b>	All tasks will be carried out by experts nominated by CAR States participating in the project, led by the Project Coordinator and under the supervision of the MET Programme Coordinator through the “GoToMeeting”. 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 collaborative decision-making, meetings will be held with the areas involved.		
<b>Rationale</b>	The severity, persistence and increased frequency of volcanic activity events with ash dispersion in the CAR Region and their consequent impact on the provision of air navigation services lead to the need to provide all the necessary tools to the personnel involved in the different areas of air navigation receive, give proper use and disseminate quality information related to these events. Likewise, it is necessary to have contingency plans not only for this kind of events but also for radioactive clouds, due to the experience of Japan, when they affect one or more of the FIRs in the region		

<b>Related Projects</b>	<ul style="list-style-type: none"> <li>➤ Optimisation of the en-route airspace structure</li> <li>➤ Implementation of ATFM</li> </ul>				
<b>Project Deliverables</b>	<b>Relation with RPBANIP</b>	<b>Responsible Party</b>	<b>Status of Implementation<sup>1</sup></b>	<b>Delivery Date</b>	<b>Comments</b>
Deliverables of the project will be formulated jointly with the project team					
<b>Resources</b>	<i>To be determined</i>				

<sup>1</sup>

*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

## APPENDIX B

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

SAM Region	PROJECT DESCRIPTION (DP)	DP N° H2	
Programme	Title of the project	Start	End
<p>Aeronautical meteorology</p> <p>(Programme coordinator: Jorge Armoa)</p>	<p style="text-align: center;">Implementation of the international airways volcano watch (IAVW)</p> <p><i>Project coordinator:</i> Roxana Vasquez Ferro (Argentina)</p> <p><i>Experts contributing to the project:</i> Walter Rios (Bolivia)</p> <p style="padding-left: 20px;">Rodrigo Fajardo Rosell (Chile)</p> <p style="padding-left: 20px;">Marco Ortiz (Ecuador)</p> <p style="padding-left: 20px;">Celestino Lamboglia (Panama)</p> <p style="padding-left: 20px;">Gustavo Rodríguez (Paraguay)</p> <p style="padding-left: 20px;">Martín Polo Pulles (Peru)</p>	December 2011	December 2020
<b>Objective</b>	Ensure that States in the implement the IAVW and the standards and recommended practices of Annex 3 and of Volume I, Part MET of the CAR/SAM electronic Air Navigation Plan (replaces Doc 8733 Basic), concerning the issuance and distribution of the reports of en-route weather phenomena and of release of radioactive material likely to affect the safety of aircraft operations, and the evolution of such phenomena in time and space (SIGMET WV).		
<b>Scope</b>	The project will comprise all meteorological watch offices (MWO) of the SAM Region listed in Table MET 1B of the CAR/SAM FASID, in coordination with the ACCs/FICs/NOFs, and Volcanic Ash Advisory Centres (VAAC) Buenos Aires and Wellington (New Zealand). Procedures for the issuance of reports and coordination among the affected areas should be defined, as well as transfer of responsibilities between one MWO and others. Procedures will be defined for the transfer of responsibilities and assistance among the CMRE and the MWOs.		
<b>Metrics</b>	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 responsibility procedures and assistance among the civil aviation authorities, the national nuclear authority and the WMO.		
<b>Strategy</b>	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 CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
<b>Goals</b>	<ul style="list-style-type: none"> <li>a) 100% of acceptance of SIGMET tests, regarding transmission and reception of SIGMET WV and ASHTAM;</li> <li>b) full availability of the information to avoid aircraft encounters with volcanic ash clouds in the SAM Region; and</li> <li>c) 100% of States States with national responsibility procedures and assistance among the civil aviation authorities, the nuclear authority and the MET service provider.</li> </ul>		

<b>Rationale</b>	The severity, persistence, and increased frequency of volcanic events with ash dispersion and radioactive clouds in the SAM Region and their repercussions on the provision of air navigation services call for tools to provide information that collaborates with the improvement or increase in safety levels.
<b>Related projects</b>	<ul style="list-style-type: none"> <li>➤ Optimisation of the en-route airspace structure</li> <li>➤ Implementation of ATFM</li> </ul>

<b>Project Deliverables</b>	<b>Relationship with the performance-based regional plan (PFF)</b>	<b>Responsible Party</b>	<b>Status of Implementatin<sup>1</sup></b>	<b>Date of Delivery</b>	<b>Comments</b>
SIGMET guide revised and updated and aligned to the template provided by ICAO	PFF SAM MET 03	MET programme coordinator and project coordinator		June 2018	The guide will include the procedures for the transition of responsibilities of the MWO. This task will be developed by a working group established in the GREPECAS MET Projects Meeting, November 2015.
Development of SIGMET exercises on Volcanic Ash	PFF SAM MET 03	Project coordinator and States		December 2017, 2018, 2019	
Development of Protocols for cases of release of radioactive material in the FIRs	PFF SAM MET 03	MET programme coordinator		2018	Teleconference to share the Protocol.
Development of workshops and courses on Radioactive Material	PFF SAM MET 03	MET programme coordinator		2018	Development of workshops for the creation of technical capacities in the States to respond in cases of release of Radioactive or toxic Material into the atmosphere.
Development of exercises for the release of radioactive material in the FIRs	PFF SAM MET 03	Project coordinator and States		Febrero 2019 Junio 2020	Preparation of protocols and assessment of the results of the exercises.
Final Report of the Project		MET programme coordinator and project coordinator		1 <sup>st</sup> half of 2021	
<b>Recursos necesarios</b>	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 given facilities to participate in GoTo Meetings.				

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- <sup>1</sup>
- 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

**Agenda Item 2: Review of Project H3 – Implementation of the MET Information Quality Management System (QMS/MET)**

Under this Agenda Item the following working papers, information papers were presented:

- WP/06 - Analysis of QMS/MET Implementation in the SAM Region  
(Secretariat)
- WP/07 - Measuring Quality – (Secretariat)
- WP/08 - Analysis of QMS/MET Implementation in the CAR Region –  
(Secretariat)

2.1 The Meeting was informed on the current situation of QMS/MET implementation in the SAM Region. States took note that all implementations should be made with version 2015 of Standard ISO 9001. In addition, the Secretariat recalled States that QMS/MET certification should be extended to all meteorological units of every international airport of e-ANP CAR/SAM AOP Table.

2.2 The Meeting was also informed on the implementation status of the Quality Management System in the CAR Region, including background and relevant activities developed. Likewise, information on the challenges regarding the transition process to Standard ISO:9001:2008 and the expiration date of Standard ISO 9001.2015 starting September 2018 was provided, as well as the need to make all the efforts for the transition.

2.3 When analyzing the continuation of Project H3 - QMS/MET Implementation in the SAM Region, the Meeting provided information related to the current status of QMS/MET implementation and the activities carried out to this end. In this regard, the Meeting considered that the items related to personnel competencies and their evaluations; professional education, training and aeronautical meteorology personnel qualifications should be included under the activities of Project H3 – QMS/MET Implementation. In addition, the States updated the names of the experts that will work in the project. The update of the programme of activities and those responsible of Project H3 for the SAM Region are presented in **Appendix A** to this part of the report.

2.4 In addition, the States of the SAM Region provided information to update the current status of QMS/MET implementation. The comments and updates provided by the States are presented in **Appendix B** to this part of the report.

2.5 Regarding Project H3 for the CAR Region, the Meeting urged CAR States to assign experts to formulate and develop the Plan of Activities of the project and received Cuba's proposal to assign contributory experts.

2.6 The Meeting reviewed the proposal of quality measurements through the establishment of tangible and quantifiable metrics. In this regard, some States indicated that metrics regarding the efficiency and timeliness of METAR and TAF have been prepared, and that surveys are also carried out on customer's satisfaction. When making the analysis, the Meeting was informed that the surveys should go beyond customer's satisfaction regarding the investigation of other services that could be provided to the users that comply with the expectations and that are not currently being provided of aeronautical meteorological services.

2.7 With regard to the same item, States are suggested to prepare metrics regarding timeliness of SIGMET messages. In addition, States are urged to include as quality implementation indicators in their aeronautical meteorological services, every issue related to personnel competency, professional

education, training and aeronautical meteorological personnel qualifications in order to have background documents of initial courses, initial induction, recurrent courses, competencies assessment, OJT training and specialization courses of aeronautical meteorological personnel. States were urged to periodically verify in their QMS, the competency requirements of aeronautical meteorology personnel established by the World Meteorological Organization in order to guarantee an appropriate Human Resource Management.

## APPENDIX A

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

SAM Region	PROJECT DESCRIPTION (DP)	DP N° H3	
Programme	Title of the Project	Start	End
Aeronautical Meteorology  (Programme coordinator: Jorge Armoa)	Implementation of the QMS/MET  <i>Project coordinator: Pablo Malvé (Argentina)</i> <i>Experts contributing to the project: César Acosta (Ecuador)</i> <i>Baldomero Thomas (Panamá)</i> <i>Jorge Sánchez (Paraguay)</i> <i>Hugo Rosado (Perú)</i> <i>Ricardo Reyes (Perú)</i> <i>Edward León (Venezuela)</i>	January 2016	December 2020
<b>Objective</b>	Assist States in the implementation of the QMS/MET and certification, where applicable, and establish guidelines for the transition to the standard ISO 9001: 2015, aligned to ASBU and projected to the interoperability of meteorological information, in compliance with Annex 3.		
<b>Scope</b>	Establishment and application of a quality management system of meteorological data safety-oriented at each MET unit of all SAM aerodromes listed in CAR/SAM ANP and compliance with the standards and recommended practices of Annex 3 and the CAR/SAM e-ANP, Vol. I and Vol. II.		
<b>Metrics</b>	Number of AOP aerodromes certified under ISO 9001 in force.		
<b>Strategy</b>	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 CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
<b>Goals</b>	a) 100% of SAM States have established QMS/MET system in accordance with standard ISO 9001:2008 on 30 June 2016; b) 70% of SAM States apply and certify QMS/MET system in accordance with standard ISO 9001:2015 on 31 December 2017; and c) 100% of SAM States have QMS/MET system certified by an organization in accordance with standard ISO 9001:2015 in June 2019.		
<b>Rationale</b>	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 the environmental impact of air traffic. Performance management will be an important part of meteorological information quality assurance.		
<b>Related projects</b>	<ul style="list-style-type: none"> <li>➤ Automation</li> <li>➤ Improved ATM situational awareness</li> </ul>		

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of <sup>1</sup> Implementation	Date of Delivery	Comments
Guidelines for the transition to Standard ISO 9001:2015	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		September 2016	The guidelines will facilitate the drafting of ISO 9001: 2015 documentation by MET service provider States.
Survey to States on MET personnel completed	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		November 2016	One of the main problems facing MET service provider States is the lack of personnel with the qualifications and competencies required by WMO and ICAO. State requirements will be officially communicated to ICAO contracting States.
Prepare the assessment plan of personnel competency, qualifications, professional education and aeronautical meteorology personnel training.				Diciembre 2019	Follow up on the tasks related to this item in order to take note of compliance of Standard 2.1.5 of Annex 3 and to the requirements of WMO Technical Regulations No. 49, Part V and Part VI.
Table of compliance with Eanp CAR/SAM, Part VI – MET, Vol I.	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		June 2016	Close monitoring of compliance with Part MET of Volume I of the e-ANP CAR/SAM.
Report of the MET service risk management workshop	PFF SAM MET 02, 03, and 04	MET programme coordinator and project director		August 2016	June 2016 has been scheduled as a possible date for the development of the workshop seminar on “Risk Analysis”.
Update course in Leader Auditor	PFF SAM MET 02, 03, and 04	Project Director		October 2017	An update course for the auditors trained under the standards of ISO 9001:2008 should be developed in order to have the required knowledge in the new standards introduced in version 2015.
<b>Resources needed</b>	Availability for GoTo Meeting teleconferences is required.				

<sup>1</sup>

*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

**APPENDIX B****STATUS OF IMPLEMENTATION OF MET/QMS IN THE SAM REGION**

<b>QMS/MET Implementation– SAM Region</b>			
<b>STATUS</b>	<b>Implemented</b>	<b>Certified</b>	<b>Comments</b>
<b>Argentina</b>	✓	✓	
<b>Bolivia</b>	In process of implementation		The certification audit was held the last week of August
<b>Brazil</b>	✓	✓	
<b>Chile</b>	✓	✓	The complete re-certification process with versión 2015 has been finalized
<b>Colombia</b>	✓	✓	
<b>Ecuador</b>	In process of implementation		Ecuador presented a matrix of activities for the implementation. The activities are being developed according to the schedule.
<b>French Guiana</b>	✓	✓	
<b>Guyana</b>	✓	In process	Not initiated
<b>Panama</b>	✓		All the processes of the implementation have been completed and are currently under a certification audit
<b>Paraguay</b>	✓	✓	Have achieved re-certification with versión 2015
<b>Peru</b>	✓	✓	The re-certification audit is foreseen for March 2018
<b>Suriname</b>	✓	✓	
<b>Uruguay</b>	✓		30%
<b>Venezuela</b>	✓		Not initiated

**Agenda Item 3: Review of Project H4 – OPMET exchange**

Under this agenda item, the following working papers and presentations were discussed:

- WP/09 – Review of GREPECAS Project H4 (*Secretariat*)
- IP/04 – IWXXM status update for METAR/TAF/SIGMET
- IP/06 - Review of the Addition of US Non-AOP OPMET Data and Provision of Remarks as Part of the METAR (*United States*)

3.1 The Meeting took note of the continuation of Project H4 – OPMET exchange in the SAM Region.

3.2 The Secretariat noted that, in accordance with the OPMET controls conducted by the Brasilia International OPMET Databank, efficiency in the reception of OPMET data had increased by approximately 90%, except in very few cases. However, the Meeting noted with concern that efficiency in CAR States remained below the standard efficiency value required for OPMET exchange. Upon reviewing the tables used for OPMET control, the Meeting noted that they contained information on meteorological watch offices and aeronautical meteorological offices, which did not match the information contained in Tables MET II-1 and MET II-2 of Vol. II of the e-ANP. Accordingly, the Brasilia databank, the Secretariat and the States were requested to update these Tables before conducting further controls.

3.3 The Meeting reviewed the Guide for the preparation and dissemination of OPMET messages in the CAR/SAM Regions, noting that it still had to be updated. The Secretariat mentioned the difficulty to obtain data from the States because of lack of response to the letters sent and that it still required information on OPMET points of contact, aeronautical meteorological offices, postal addresses, e-mail addresses and phone numbers.

3.4 The meeting also recalled that those States that had experienced difficulties with (AMHS) transmission circuits in 2016 and 2017 had been able to solve the availability issue with their OPMET data through contingency procedures with the Brasilia and Washington OPMET databanks. In this regard, the Meeting requested that these contingency procedures be included in the OPMET Guide.

3.5 The Secretariat recalled that the SAM OPMET/14 meeting had formulated Conclusion 14/03 requesting the designation of local MET units as a backup for MWOs, because of the difficulties in signing letters of agreement with the MWOs of other States. In this regard, the Meeting urged SAM States to provide, as soon as possible, the names of the MET units (AMOs) that would take over the duties of MWOs in case these were out of service. However, it should be recalled that GREPECAS Conclusion 16/12, whereby backup meteorological watch offices had been established, was still in force. Therefore, all efforts should be made first to obtain the letters of agreement between meteorological watch offices.

3.6 Brazil informed that the Brasilia International OPMET databank was changing its infrastructure and communication systems in order to adjust the entire system to future implementations. Within the restructuring plans, communication tests would be conducted on the second half of October, and thus invited States to express if there were interested in participating.

3.7 The Meeting reviewed the chart of activities of Project H4 and made some updates. Since Mr. Alexander Quintero no longer worked in SERMETAVIA of Venezuela, it was decided to designate Mr. Reidy Zambrano as project coordinator. Likewise, following the recommendation of the *ad-hoc*

group established to review agenda item 5, the Meeting decided to include the IWXXM implementation plan within the activities of the project. Accordingly, completion was scheduled for December 2020. The updates and new activities are shown in **Appendix A** to this report.

3.8 The United States reported that, in response to the increasing use of non-AOP aerodromes for international operations, it had added 218 stations to the US international collectives. A list of 658 non-AOP stations was distributed at international level under the WMO header: FT/SA/SPUS21-25 KWBC. It also noted that 418 AOP and non-AOP airports under the WMO header FT/SA/SPUS71-75 KWBC had been retired earlier this year.

3.9 Furthermore, the United States reported on the status of development of IWXXM for METAR/TAF/SIGMET. In this regard, it noted that ICAO, under the sponsorship of the World Meteorological Organization (WMO), had worked in the creation of the ICAO meteorological information exchange model (IWXXM). The United States mentioned that it had begun initial translation of several Traditional Alphanumeric Code (TAC) products into the IWXXM data standard and would be transmitting METAR / SPECI, TAF, SIGMET, AIRMET and volcanic ash advisory products contained in the IWXXM version 1.1 and/or 2.0 standard by 31 March 2018. Follow-on work would add the additional IWXXM-formatted products (*e.g.*, tropical cyclone advisories).

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

<b>SAM Region</b>	<b>PROJECT DESCRIPTION (DP)</b>	<b>DP N° H4</b>	
<b>Programme</b>	<b>Title of the project</b>	<b>Start</b>	<b>End</b>
Aeronautical meteorology  (Programme coordinator: Jorge Armoa)	<p><i>Optimisation of OPMET exchange, including SIGMETs (WS, WV, WC, and WR), warnings and meteorological alerts</i></p> <p><i>Project coordinator: Reidy Zambrano (Venezuela)</i></p> <p><i>Experts contributing to the project: Rodrigo Cortes (Argentina)</i>  <i>Aníbal Castro Cárdenas (Bolivia)</i>  <i>Jimmy Nogueira de Castro (Brazil)</i>  <i>Sergio Antonio Alves da Silva (Brazil)</i>  <i>Edison Lagos (Ecuador)</i>  <i>Celestino Lamboglia (Panama)</i>  <i>Jorge Otiniano Rodríguez (Peru)</i>  <i>Warsodikromo Truusje Soetinie (Suriname)</i>  <i>Fernando Reina (Venezuela)</i>  <i>Antonio Espinoza (Venezuela)</i></p>	December 2015	December 2020
<b>Objective</b>	<ul style="list-style-type: none"> <li>- Achieve at least 95% efficiency in the reception of OPMET information by the Brasilia IODB by 31 December 2018</li> <li>- Achieve at least 95% efficiency in the transmission of OPMET information in XML/GML formats in SAM States by 31 December 2018</li> </ul>		
<b>Scope</b>	Correct preparation and timely dissemination of OPMET information involves all MET service units [(EMA(s), OMA(s), MWO(s) and OPMET data banks] of all SAM aerodromes listed in the CAR/SAM ANP.		
<b>Metrics</b>	The percentage of OPMET messages received on time at the Brasilia International OPMET Data Bank (according to Annex 3, Appendix 10, OPMET control considers as messages received those OPMET messages with transit times of 10 minutes) and verification of proper and standard production (quality) of OPMET information at MET services [(EMA(s), OMA(s), and MWO(s)] in standardized format (Annex 3, in Appendices 3, 4, 5, and 6, contains the OPMET message planning tables).		
<b>Strategy</b>	All tasks and previous exchange exercises necessary for the compliance of the objectives will be carried out by experts nominated by SAM States (Points of Contact – POC) 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 CRPP through the GREPECAS fast-track procedure. For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
<b>Goals</b>	<ul style="list-style-type: none"> <li>a) Reach 85% in the reception of OPMET data in standardized format of the SAM Region in the Brasilia IODB by 31/12/17; and 95% by 31/10/18;</li> <li>b) Reach 70% OPMET data reception in XML/GML formats in the SAM Region in the Brasilia IODB by 31/10/18;</li> <li>c) Reach 85% in the reception of OPMET data in standardized format among the States of the SAM Region by 31/12/17; and 95% by</li> </ul>		

	31/10/18; d) Reach 30% in the reception of OPMET data in XML/GML formats among the States of the SAM Region by 31/12/17; and 70% by 31/12/18.
<b>Rationale</b>	More timely meteorological information will optimise flight path planning and prediction, thus improving ATM system safety and efficiency, pursuant to GREPECAS Conclusion 12/64 (CAR/SAM OPMET EXCHANGE CONTROLS). Meteorological information will also minimise the environmental impact of air traffic.
<b>Related projects</b>	<ul style="list-style-type: none"> <li>➤ Automation</li> <li>➤ Implementation of ATFM</li> <li>➤ Implementation of the MET information quality management system (QMS/MET)</li> <li>➤ Enhanced ATM situational awareness</li> </ul>

<b>Project Deliverables</b>	<b>Relationship with the performance-based regional plan (PFF)<sup>1</sup></b>	<b>Responsible Party</b>	<b>Status of Implementation<sup>2</sup></b>	<b>Date of Delivery</b>	<b>Comments</b>
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 to which States must send OPMET information worldwide in accordance with the CAR/SAM FASID, thus facilitating the preparation and issuance of MET messages.
Controls of efficiency and quality of OPMET information available in the Brasilia International OPMET Databank	PFF SAM MET 02	Brasilia International OPMET Databank		March, June, August, November 2016, 2017, 2018 October 2018	Measurement of the time of reception of OPMET information by the Brasilia International OPMET Databank will be carried out every three months during the duration of the project.

Project Deliverables	Relationship with the performance-based regional plan (PFF) <sup>1</sup>	Responsible Party	Status of Implementation <sup>2</sup>	Date of Delivery	Comments
Results of the analysis of coordinated controls of exchange of information	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 necessary, to implement corrective actions to comply with the goals scheduled for the sake of continuous improvement.
OPMET information exchange tests in XML/GML format	PFF SAM MET 02	States in technical capacity of developing the test		November 2017 March 2018 October 2018	The OPMET information exchange tests will be carried out initially with the States that are in a capacity of doing so, at least twice a year.
Results of the Analysis of the OPMET exchange tests in XML/GML format	PFF SAM MET 02	MET programme coordinator and project coordinator		December 2017 December 2018	The results obtained with the biannual OPMET information exchange controls will allow SAM States, as necessary, to implement corrective actions to comply with the goals scheduled for the sake of continuous improvement.
Plan for IWXXM implementation				March 2018	
Final project report	PFF SAM MET 02	MET programme coordinator and project coordinator		March 2021	The purpose of the final project report to be submitted by the programme coordinator is to enable the Lima SAM Office to check the achievements of the project and propose to the States future measures to maintain the level attained through OPMET controls.
<b>Resources needed</b>	Funds for meetings with project members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen OPMET tests and controls, and, if necessary, cover the 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.				

<sup>1</sup> Air navigation system Performance-Based Implementation Plan for the SAM Region

<sup>2</sup> *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

**Agenda Item 4: Review of Project H5 – Improvement of MET services in accordance with the new operational requirements in support of ATM**

Under this agenda item, the following working papers and presentations were discussed:

- WP/10 – Analysis of ATM requirements and ASBU methodology (*Secretariat*)
- IP/04 – Implementation of new World Area Forecast Center (WAFC) algorithms for 2018-19 (*United States WAFC provider*)

4.1 The Meeting took note of the importance of transmitting quality meteorological products on a timely basis in support of the operations of the ATM community, and their relationship with the requirements of the Global Air Navigation Plan.

4.2 The Secretariat also described the ATM operational concept and the aviation system block upgrades (ASBU) methodology.

4.3 The Meeting recalled that the main objective of this project was the integration of aeronautical meteorological services with ATM, participating in the decision-making process for tactical, pre-tactical and strategic planning of flow management on the air and on the apron through the provision of timely and quality meteorological information.

4.4 With respect to the completion of the first activity under Project H5 concerning the design and conduction of surveys to international air navigation to identify the MET services required in the CDM and A-CDM environment, the Meeting took note that this document had been finalized and was made available to the Meeting for review and any other action it would deem appropriate. In this regard, the delegates agreed that this survey proposal should be reviewed by the experts participating in the project and, therefore, proposed that the Secretariat circulate it by e-mail to project members. The Meeting suggested that a deadline be set for receiving comments from the experts, no later than 6 October 2017. The proposed survey is shown in **Appendix A** to this part of the report.

4.5 The Meeting reviewed the table of activities for Project H5 of the SAM Region. In this regard, the names of the experts participating in the project were updated. The updated table appears in **Appendix B** to this part of the report.

4.6 The Meeting considered that the CAR Region could use the survey to collect information from CAR States and assess the need to formulate a project or work jointly with the SAM Region.

4.7 The United States presented the existing icing and turbulence products of the World Area Forecast Center and highlighted the future products that would include severity for en-route icing and turbulence forecasts. Regarding the products being developed, note was taken of the need to work with the States in order to get their feedback and implementation timetables for 2018 and 2019.

**APPENDIX A****Survey Proposal for Project H5 - Improvements of MET services in accordance with the new operational requirements in support of ATM**

(1 = lowest level – 10 = highest level)

1. Do you identify CDM and A-CDM concepts? Indicate your identification level from 1 to 10.
2. Has your State (country) implemented this concept? Indicate 0 or 1
3. Are you from the:
  - MET service provider \_\_\_\_\_
  - Meteorological authority? \_\_\_\_\_
4. How important do you consider MET information for air operations? Indicate the importance level from 1 to 10
5. What MET products are prepared by your service? Enumerate.
  - 
  - 
  - 
  - 
  -
6. What WAFS products do you use for the preparation of warning messages and services regarding severe weather for aviation? Enumerate
  - 
  - 
  - 
  - 
  -
7. Do you use your State's local models or other different than the one used by the WAFS for the preparation of warning messages and services on severe weather for aviation? If affirmative, indicate the name and origin of the model.
  - 
  - 
  - 
  - 
  -

8. How many airports of your State have A-CEM implemented? Indicate what airports.

- 
- 
- 
- 
- 

9. How does MET information integrate to CDM in your State?

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10. How does MET information integrate to A-CDM in your State?

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11. Do you know if your State has implemented the following:

- ATFM \_\_\_\_\_
- CDM \_\_\_\_\_
- A-CDM \_\_\_\_\_

12. What kind of systems are used by your Service to identify severe MET phenomena to aviation?

Severe Phenomenom	System
_____	_____
_____	_____
_____	_____

13. Have your State defined or implemented letters or agreement with Air Navigation Services (ATS, CNS, AIM, SAR, AGA, etc.) to share MET information?

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14. Do you know ICAO Doc 9971 – “Manual on Collaborative Air Traffic Flow Management”

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15. Who is the ATM provider in your State?

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16. How many MET offices, OVM, OMA, EMA, are available in your service?

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- 17. Has your State implement the National Air Navigation Plan aligned to the regional and global plan (Doc 9750) with the ASBU methodology?

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- 18. Do you know the implementation status of Module B0-ACDM, does it include meteorology issues?

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## APPENDIX B

**NAME OF THE 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	Title of the Project	Start date	End date
Aeronautical Meteorology  (Programme coordinator: Jorge Armoa)	Improvements to MET services in accordance with the new operational requirements in support of ATM  <i>Project coordinator:</i> Arturo Lomas (Ecuador) <i>Experts contributing to the project:</i> Daniel Cortes (Argentina) Claudio Ribero (Argentina) Jimmy Noguiera de Castro (Brazil) Sergio Antonio Alves da Silva (Brazil) Eduardo Recalde (Ecuador) Eduardo Mingo (Paraguay) Luis Felipe Alvites (Perú)	January 2016	December 2018
<b>Objective</b>	Implement MET services within the framework of the ATM operational concept, CDM, and ASBU blocks related to improvements favouring data and system interoperability (SWIM) by December 2018.		
<b>Scope</b>	Deliver quality and timely MET information to all stakeholders of the SAM Region, in alignment with the Global Air Navigation Plan.		
<b>Metrics</b>	Number of States that responded to the survey. Submission by States of an implementation programme to improve MET services, including human and technological factors.		
<b>Strategy</b>	All the work will be carried out by experts designated by SAM States participating in the project, under the leadership of the Project Coordinator and the supervision of the MET Programme Coordinator through the GoTo Meeting system. 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.		
<b>Goals</b>	Completion of the proposed survey by 100% of States. Submission of a continuous improvement programme in the provision of MET services by 100% of States.		
<b>Rationale</b>	Through more precise and timely meteorological information, it will be possible to 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.		

<b>Related projects</b>	<ul style="list-style-type: none"> <li>➤ Automation</li> <li>➤ A-CDM implementation</li> <li>➤ ATFM implementation</li> <li>➤ PBN implementation</li> <li>➤ Improvement of ATM situational awareness</li> </ul>
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Project deliverables	Relationship with PFF of the SAM PBIP <sup>i</sup>	Responsible party	Status of implementation <sup>ii</sup>	Delivery date	Comments
Design and drafting of a survey of international air navigation to identify MET services required for the CDM and A-CDM environment		MET Programme Coordinator and Project Director		June 2017	The group will send the survey to the Secretariat for circulation to the States.
Reception of the survey duly completed by the States				March 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		June 2018	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 on the basis of the gaps identified.		MET Programme Coordinator and Project Director		December 2018	
<b>Required resources</b>	Availability of GoToMeeting to define the content of the survey and analyse its results. The 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 in order to review the project.				

<sup>i</sup> Performance-Based Air Navigation Implementation Plan for the SAM Region

<sup>ii</sup>

<i>Grey</i>	<i>Task not started yet</i>
<i>Green</i>	<i>Activity being implemented as scheduled</i>
<i>Yellow</i>	<i>Activity started with some delay, but expected to be implemented on time</i>
<i>Red</i>	<i>Activity not implemented on time; mitigation measures are required</i>

**Agenda Item 5: Feasibility studies of new MET Projects as a result of the necessary implementations within the framework of Proposal for Amendment 78 to Annex 3 and the conclusions of the work of the MET Panel**

Under this Agenda Item the following working papers, information papers and presentations were discussed:

- WP/15 - Proposal for Amendment to Annex 3 (*Secretariat*)
- WP/16 - Need to Strengthen CAR Region GREPECAS Aeronautical Meteorology Program (*Cuba*)
- IP/05 – Update on ICAO Meteorology Panel Activities (*United States*)
- Presentation of United States on the Activities of the MET Panel
- Presentation of Cuba on the Implementation of TAF assessment automated system (*Sistema Automatizado para la Evaluación de los TAF – SAETAF*)

5.1 When reviewing the working papers, the Meeting noted that the proposal for amendment to Annex 3 – Meteorological Service for International Air Navigation includes changes related to seven important points, which are presented in **Appendix A** to this part of the report.

5.2 The Cuba delegation offered the States their development of a free software for TAF compliance assessment and requested the Meeting to include it as a Project within the GREPECAS MET Projects Programme.

5.3 The Secretariat and the Cuba delegation proposed the Meeting to consider the incorporation of the items of proposal for amendment to Annex 3 in GREPECAS MET projects currently in force or request the Programmes and Projects Review Committee (PPRC) the authorization to generate new projects.

5.4 The Meeting analyzed this proposal and deemed appropriate to create an Ad-hoc Group integrated by the representatives of Cuba, Trinidad and Tobago and United States for the CAR Region, and by representatives of Argentina, Ecuador and Panama for the SAM Region. This group was assisted by the Secretariat during their discussions.

5.5 The Ad-hoc Group recommended the following items:

- a) The item regarding Space Weather should be developed as a new project for both Regions. A programme of activities for this project was proposed, but without project coordinator, since the Space Weather Centre (SWXC) nomination should be expected, in view that the coordinator should be a delegate of the designated State. The proposal of activities presented to the Meeting is included as **Appendix B** to this part of the report.
- b) Regarding SIGMET messages for the release of Radioactive Material and Tropical Cyclones, these should be included in Project H2 – Implementation of International Airways Volcano Watch (IAVW) and encourage the change of the project's scope and name.
- c) With regard to IWXXM implementation, this should be developed as an activity associated to Project H4 – OPMET Exchange. Also, the Ad-hoc Group recommended that the aeronautical meteorological services providers should contact

the CNS area to specify the requirements regarding XML/GML conversion module in the AMHS terminals of MET units, as well as in the interconnections in AMHS required between States for the transmission of messages in XMLGML format.

- d) In respect of Qualifications, Personnel Competencies and their evaluations; Professional Education and training of Aeronautical Meteorology personnel, this should be developed under Project H3 – Implementation of the MET Information Quality Management System.
- e) Regarding TAF assessment automated system (*Sistema Automatizado para la Evaluación de los TAF*) - SAETAF implementation, a free software offered by Cuba to the States, the Group deemed important its utilization to generate metrics that could be used in the QMS/MET field, thus, recommended its utilization by those States that do not have similar implementations and include it as an activity under projects H3 of both Regions.

5.6 The Meeting, after analyzing the Ad-hoc group proposals, approved them and decided to formulate the following conclusion:

#### **CONCLUSION CAR/SAM/MP 1/2**

#### **MET PROJECTS UPDATE**

That in order to update the MET Projects Programme and include the items of the proposal for amendment to Annex 3 – Meteorology Service for International Air Navigation, the Meeting request the PPRC to:

- a) approve the activities formulated in Appendix B – Implementation of the Space Weather Information Service (CAR/SAM) of the Meeting report;
- b) modify Project H2 - Implementation of the International Airways Volcano Watch (IAVW) to include issues regarding the release of radioactive material, SIGMET improvement, as well as more clearly Tropical Cyclones reports;
- c) modify Project H3 - Implementation of the MET Information Quality Management System (QMS/MET) to include the items related to competencies, qualifications, professional education and training of aeronautical meteorology personnel;
- d) modify Project H4 – OPMET Exchange to include the item related to IWXXM implementation; and
- e) consider the harmonization of projects H2, H3 and H4 of the CAR Region with the projects of the SAM Region;

5.7 United States informed the Meeting on ICAO MET Panel activities describing in detail the working methodology, its structure and separation in five groups, as well as the topics currently under analysis; the delegate of United States emphasized that the items of the proposal for amendment are aligned to the conclusions of the first two meetings of the MET Panel. The Secretariat reiterated the invitation to follow the work of the Panel and promoted website consultation.

5.8 Regarding Cuba's interest to request GREPECAS to resume GREPECAS MET Programme annual meetings as CAR/SAM, preserving the programmes and projects format, and taking note of the meetings carried out by the SAM Region: OPMET/2014, SAM/MP/1 and COM/MET/2015, the Meeting considered to support the initiative of working together, but the frequency of the meetings should be every two years. The Meeting also considered that other activities could be carried out together for the benefit of the projects. For this reason, deemed appropriate to formulate the following conclusion:

**CONCLUSION CAR/SAM/MP 1/3**

**MET PROJECTS PERIODIC MEETINGS**

That, in order to follow up the continuation of MET projects and analyze new implementations and update guides and regional documentation related to aeronautical meteorology, GREPECAS is requested to:

- a) authorize the convening of periodic meetings of MET Projects for the CAR/SAM Regions, every two years; and
- b) consider that the working methodology will maintain the structure of GREPECAS Programmes and Projects.

## APPENDIX A

<b>Table 1 – Items considered for the Proposal for Amendment</b>		
<b>Purpose of Amendment</b>	<b>Origin</b>	<b>Rationale</b>
<b>INTRODUCTION OF SPACE WEATHER ADVISORY INFORMATION SERVICE</b>	METP/2	This amendment has been introduced to support the initial implementation of the provision of space weather advisory information to enhance the safety and efficiency of international air navigation consistent with the Global Air Navigation Plan. Due to the pressing need to implement the service, the global service is introduced as a matter of priority with subsequent consideration of the introduction of regionally-based models of integrated service delivery. The provision of this information would include advisories for space weather events affecting, or expected to affect, communications, GNSS-based navigation and surveillance systems, and which could pose a radiation risk to flight crew members and passengers within the next 24 hours.
<b>IMPROVEMENT OF THE PROVISION OF SIGMET INFORMATION BY METEOROLOGICAL WATCH OFFICES (MWOS)</b>	METP/2	The introduction of this proposal for a Note is needed to point to additional guidance material to be developed to support bilateral and multilateral cooperation and coordination of the issuance of SIGMET information before the introduction of the regional advisory system for select en-route hazardous meteorological conditions.
<b>INFORMATION ON THE RELEASE OF RADIOACTIVE MATERIAL INTO THE ATMOSPHERE</b>	METP/2	This proposed amendment has been introduced to support the standardization of the description of airspace affected by a release of radioactive material into the atmosphere by allowing the production of SIGMETs and AIRMETs in a vertical cylinder and when detailed information on the release is not available by allowing the use of a 30 km radius consistent with recommendations from the International Atomic Energy Agency.
<b>SIGMET AND AIRMET INFORMATION</b>	METP/2	This proposed amendment has been introduced to support the inclusion of a clear data line in volcanic ash and tropical cyclone advisories and related SIGMETs to denote those that are issued as part of tests or exercises. This change is necessary to clarify for both users and producers when volcanic ash and tropical cyclone advisories are for test or exercise purposes
<b>INTRODUCTION OF IWXXM</b>	METP/2	This proposed amendment has been introduced to support the exchange of aeronautical meteorological information using the ICAO Meteorological Information Exchange Model (IWXXM). This amendment supports the GANP and will encourage all ICAO States to ensure that they are ready to implement IWXXM for the international exchange of aeronautical meteorological information by November 2020.
<b>GREATER CLARITY IN THE PRESENTATION OF INFORMATION ABOUT TROPICAL CYCLONES (TC) (ANNEX 3)</b>	METP/2	This proposed amendment has been introduced to improve the clarity of the information on tropical cyclones (TC) provided by Annex 3, Table A2-2 Template for advisory message for tropical cyclones, with respect to the advisory number, observation time, centre position, and observed CB cloud. These proposed provisions are reflected in proposals for related changes to SIGMET and AIRMET message.
<b>AERONAUTICAL METEOROLOGICAL PERSONNEL</b>	METP/2	This proposed amendment has been introduced to update Annex 3 with regard to the qualifications, competency, education and training of meteorological personnel to be

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<b>QUALIFICATION AND COMPETENCY, EDUCATION AND TRAINING</b>		consistent with the relevant World Meteorological Organization Technical Regulations. This amendment is similar to the provisions already provided in Annex 15, 3.7.4.
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**APÉNDICE B**  
(Available in Spanish only)

**NOMBRE DEL BORRADOR DE PROYECTO CAR/SAM: IMPLANTACION DE LA METEOROLOGÍA ESPACIAL EN LAS OFICINAS METEOROLÓGICAS DE AERÓDROMOS / DE VIGILANCIA METEOROLÓGICA**

Región CAR	DESCRIPCIÓN DEL PROYECTO (DP)	DP N° H7	
Programa	Título del Proyecto	Fecha Inicio	Fecha Término
Meteorología Aeronáutica  (Coordinador del Programa: Luis Raúl Sánchez)	Implantación de la Meteorología Espacial en las oficinas meteorológicas de aeródromos / de vigilancia meteorológica.  Coordinador del proyecto: _____ (Estado del SWXC)  Expertos contribuyentes al proyecto: _____ (Estado del SWXC)	Diciembre 2017	Diciembre 2019
<b>Objetivo</b>	Apoyar a los Estados en la implantación de la Meteorología Espacial, de las normas y métodos recomendados del Anexo 3, en lo que respecta a la utilización de los productos del Centro de Meteorología Espacial (SWXC).		
<b>Alcance</b>	El proyecto abarcará todas las oficinas meteorológicas de aeródromo / de vigilancia meteorológica de la Región CAR y SAM que aparecen en el Volumen II Parte V – MET del e-ANP CAR/SAM.		
<b>Métricas</b>	Número de Estados que implementan la Meteorología Espacial al 31 de diciembre de 2019. (20 Estados).		
<b>Metas</b>	a) el 50% de los Estados CAR y SAM implementan la Meteorología Espacial al 31 de diciembre de 2018; y b) el 100% de los Estados CAR y SAM implementan la Meteorología Espacial al 31 de diciembre de 2019.		
<b>Estrategia</b>	Todos los trabajos serán ejecutados por expertos nominados por los Estados de la región CAR miembros del proyecto, bajo la dirección del Coordinador del Proyecto y supervisión del coordinador del Programa MET a través del GoTo Meetings. Una vez completadas las tareas, los resultados serán remitidos al Coordinador del Programa MET en forma de documento final para la presentación y, en caso necesario, aprobación del CRPP del GREPECAS a través del Procedimiento Expreso del GREPECAS. Para apoyar la toma de decisiones en colaboración, se harán reuniones con las áreas involucradas.		
<b>Justificación</b>	La introducción de los nuevos productos del SWXC aporta mejoras al WAFS, aumenta la precisión, distribución oportuna y utilidad de la información sobre las condiciones meteorológicas espaciales que afectan las comunicaciones y los sistemas de navegación y vigilancia basados en el GNSS y/o representan un riesgo de radiación para los miembros de la tripulación de vuelo y los pasajeros.		
<b>Proyectos relacionados</b>	<b>TBD</b>		

Entregables del Proyecto	Relación con los Plan Regionales basados en Rendimiento (PFF/RPBANIP)	Responsable	Estado de Implantación <sup>1</sup>	Fecha Entrega	Comentarios
Taller Región CAR/SAM para la implantación de la Meteorología Espacial.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Mayo 2018	
Guía del usuario del SWXC actualizada.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Julio 2018	La Guía será preparada por _____ como Estado del SWXC, sin embargo su actualización deberá hacerla el proyecto.
Uso operativo de los productos de la Meteorología Espacial.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Junio 2018	
Entrenamiento para los Estados CAR/SAM relacionado con los detalles y uso de los nuevos productos del SWAC.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Junio 2018	La Conclusión <b>18/</b> del GREPECAS solicitó que se invite al SWXC que se designe para que en coordinación con la OMM y la OACI brinde la capacitación a través del computador a los Estados CAR/SAM.
<b>Recursos necesarios</b>	Fondos para llevar a cabo el Taller Regional y para mantener actualizada la Guía del usuario del WIFS en inglés y español. Asimismo se requiere que el coordinador del proyecto y los expertos tengan disponibilidad de equipos y tiempo participar en las reuniones GoToMeeting.				

1

*Gris**Verde**Amarillo**Rojo**Tarea no iniciada**Actividad en progreso de acuerdo con el cronograma**Actividad iniciada con cierto retardo pero estaría llegando a tiempo en su implantación**No se ha logrado la implantación de la actividad en el lapso de tiempo estimado se requiere adoptar medidas mitigatorias*

**APÉNDICE B**  
(Available in Spanish only)

**NOMBRE DEL BORRADOR DE PROYECTO CAR/SAM: IMPLANTACION DE LA METEOROLOGÍA ESPACIAL EN LAS OFICINAS METEOROLÓGICAS DE AERÓDROMOS / DE VIGILANCIA METEOROLÓGICA**

Región SAM	DESCRIPCIÓN DEL PROYECTO (DP)	DP N° H7	
Programa	Título del Proyecto	Fecha Inicio	Fecha Término
Meteorología Aeronáutica  <i>(Coordinador del Programa: Jorge Concepción Armoa Cañete)</i>	Implantación de la Meteorología Espacial en las oficinas meteorológicas de aeródromos / de vigilancia meteorológica.  Coordinador del proyecto: _____ (Estado del SWXC)  Expertos contribuyentes al proyecto: <i>Sergio Dasso (Argentina)</i> <i>Jimmy Nogueira(Brasil)</i> <i>Sergio Antonio Alves da Silva(Brasil)</i>	Diciembre 2017	Diciembre 2019
<b>Objetivo</b>	Apoyar a los Estados en la implantación de la Meteorología Espacial, de las normas y métodos recomendados del Anexo 3 y del Volumen II Parte V – MET del ANP CAR/SAM, Básico y FASID, en lo que respecta a la utilización de los productos del Centro de Meteorología Espacial (SWXC).		
<b>Alcance</b>	El proyecto abarcará todas las oficinas meteorológicas de aeródromo / de vigilancia meteorológica de la Región SAM que aparecen en el Volumen II Parte V – MET del ANP CAR/SAM, Básico y FASID.		
<b>Métricas</b>	Número de Estados que implementan la Meteorología Espacial al 31 de diciembre de 2019. (13 Estados).		
<b>Metas</b>	a) el 50% de los Estados SAM implementan la Meteorología Espacial al 31 de diciembre de 2018; y b) el 100% de los Estados SAM implementan la Meteorología Espacial al 31 de diciembre de 2019.		
<b>Estrategia</b>	Todos los trabajos serán ejecutados por expertos nominados por los Estados de la región SAM miembros del proyecto, bajo la dirección del Coordinador del Proyecto y supervisión del coordinador del Programa MET a través del GoTo Meetings. Una vez completadas las tareas, los resultados serán remitidos al Coordinador del Programa MET en forma de documento final para la presentación y, en caso necesario, aprobación del CRPP del GREPECAS a través del Procedimiento Expreso del GREPECAS. Para apoyar la toma de decisiones en colaboración, se harán reuniones con las áreas involucradas.		
<b>Justificación</b>	La introducción de los nuevos productos del SWXC aporta mejoras al WAFS, aumenta la precisión, distribución oportuna y utilidad de la información sobre las condiciones meteorológicas espaciales que afectan las comunicaciones y los sistemas de navegación y vigilancia basados en el GNSS y/o representan un riesgo de radiación para los miembros de la tripulación de vuelo y los pasajeros.		
<b>Proyectos relacionados</b>	<b>TBD</b>		

Entregables del Proyecto	Relación con el Plan Regional basado en Rendimiento (PFF)	Responsable	Estado de Implantación <sup>1</sup>	Fecha Entrega	Comentarios
Taller Región SAM para la implantación de la Meteorología Espacial.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Septiembre 2018	
Guía del usuario del SWXC actualizada.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Julio 2018	La Guía será preparada por _____ como Estado del SWXC, sin embargo su actualización deberá hacerla el proyecto.
Uso operativo de los productos de la Meteorología Espacial.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto		Noviembre 2018	
Entrenamiento para los Estados CAR/SAM relacionado con los detalles y uso de los nuevos productos del SWAC.	PFF CAR MET —	Coordinador del Programa MET y Coordinador del Proyecto			La Conclusión 18/_ del GREPECAS solicitó que se invite al SWXC que se designe para que en coordinación con la OMM y la OACI brinde la capacitación a través del computador a los Estados CAR/SAM.
<b>Recursos necesarios</b>	Fondos para llevar a cabo el Taller Regional y para mantener actualizada la Guía del usuario del WIFS en inglés y español. Asimismo se requiere que el coordinador del proyecto y los expertos tengan disponibilidad de equipos y tiempo participar en las reuniones GoToMeeting.				

1

Gris

*Tarea no iniciada*

Verde

*Actividad en progreso de acuerdo con el cronograma*

Amarillo

*Actividad iniciada con cierto retardo pero estaría llegando a tiempo en su implantación*

Rojo

*No se ha logrado la implantación de la actividad en el lapso de tiempo estimado se requiere adoptar medidas mitigatorias*

**Agenda Item 6: Emerging aspects of implementation**

Under this agenda item, the following working papers and presentations were discussed:

- WP/12 – SWIM concepts and domains (*Secretariat*)
- WP/13 – Analysis of SAM-PBIP MET Chapter and PFF (*Secretariat*)
- WP/14 – Electronic air navigation plan (eANP) for the CAR/SAM Regions (*Secretariat*)
- Presentation on the SAM Performance-based air navigation implementation plan (PBIP) (*Secretariat*).
- Presentation on the NAM/CAR Regional performance-based air navigation implementation plan (RPBANIP) (*Secretariat*).
- Presentation on the Global Air Navigation Plan and the Aviation system block upgrades (ASBU) (*Secretariat*).
- Presentation on the ICAO perspective on SWIM (*Secretariat*).
- Presentation on the Regional electronic air navigation plan (CAR/SAM eANP)

6.1 The Meeting received information on the update of the Global Air Navigation Plan and its Aviation System Block Upgrades (ASBU) methodology, as approved by the 39<sup>th</sup> ICAO Assembly. Information was also provided on the work carried out by the ICAO NACC and SAM Regional Offices on the updating of the CAR/SAM electronic air navigation plan, which encompassed the respective regional performance-based air navigation implementation plans.

6.2 In this regard, the Secretariat requested CAR/SAM States to review the CAR/SAM electronic air navigation plan, Volume I and II, in order to keep it up to date. The Meeting also took note that the amendment procedure was set forth in Vol. I, **Appendix A – Procedure for the Amendment of Regional Air Navigation Plans**.

6.3 The Secretariat made two presentations, one to explain the relationship between the GANP and the ASBU methodology, and their operational impact, and the other on the ICAO perspective on SWIM, a module contained in PIA 2 under Block 1 of the ASBU methodology.

6.4 The Meeting recalled that in the current environment of technological change and growing aviation, information management is essential for safety, ensuring all aspects related to the quality and security of data and information sources. The Meeting recalled that, in the Global Air Navigation Plan, secure information management is essential for improving the entire aviation system.

6.5 Upon analysing SWIM implementation, the Meeting was reminded of its importance for achieving interoperability. It also recalled that the ATM community would largely rely on the provision of timely, relevant, accurate, accredited and quality information to support the adoption of decisions based on such information. System-wide exchange of information would allow the ATM community to conduct its activities and operations in a safe and efficient manner.

6.6 Accordingly, the Meeting urged the States to design procedures so that aeronautical meteorological service providers could develop plans for the implementation of models for the exchange of meteorological messages, and for the implementation of XML/GML messages for the introduction of meteorological messages into the SWIM environment.

6.7 In this regard, the Meeting took note that the MET personnel providing international air navigation services in the CAR/SAM Regions was still largely unaware of the existence and scope of the aforementioned documentation, and urged meteorological service providers of the CAR/SAM Regions to

become familiar with such documentation and use it as a reference to support the attainment of ICAO strategic objectives.

6.8 The Meeting took note that, in August 2017, the SAM Region had conducted a seminar/workshop for updating the SAM Performance-based air navigation implementation plan (PBIP). In this regard, it was noted that much progress had been made in the updating process and States were urged to review it again and submit their comments to the Secretariat by 6 October 2017, prior to its approval.

6.9 In 2016, the CAR Region conducted a seminar/workshop on ASBU implementation, which focused on informing States on the methodology as it applied to the performance-based decision-making process. Information was also provided on how the States could use a step-by-step process to assess the analysis of ASBU elements, the status of implementation, and the way of completing the ANRFs. In this regard, the ASBU Manual of the NAM Region was presented, which had been prepared by the FAA and NAVCANADA to follow up on the implementation of the modules. The Meeting requested that it be shared with SAM States.

6.10 The Meeting took note of the creation of an ASBU *ad-hoc* group made up by the focal points of the States. It was also noted that the NACC Regional Office would conduct a seminar/workshop in 2018 to update the RBANIP and assist States in the formulation and/or updating of National air navigation plans. It was noted that the points of contact of the ASBU Task Force should interact with the relevant entities for updating their information.

**Agenda Item 7: Other business**

Under this agenda item, the following working papers and presentations were discussed:

- IP/08 – Initial findings of a 2016/17 WMO CAeM Global Survey on Aeronautical Meteorological Service Provision (WMO)
- IP/09 - WMO CAeM/AeMP activities of relevance to ICAO (WMO)
- IP/10 – Verificación de Asesoramiento del VAAC de Washington para emisiones de ceniza volcánica del Volcán Reventador durante el año 2017
- Presentation by IFALDA – Aeronautical meteorology in flight planning

7.1 The Meeting acknowledged the contribution of the World Meteorological Organization and took note of the preliminary results of the global survey of the Commission for Aeronautical Meteorology (CAeM) on the provision of aeronautical meteorological services, conducted from November 2016 to February 2017, with the participation of States from both Regions.

7.2 The Meeting also took note of the most recent events and the upcoming activities of the CAeM in support of the WMO Aeronautical Meteorology Programme and ICAO, and highlighted the transition to the ISO 9001:2015 quality standard for quality management systems.

7.3 The Meeting took note of, and acknowledged, the presentation made by IFALDA, in which this organisation called for increased awareness of the importance of good meteorological planning by the aeronautical users in order to contribute to the strengthening of safety.

7.4 Ecuador requested the inclusion of Information Paper 10 (IP/10), containing an analysis of volcanic ash advisories generated by the Washington VAAC in 2017 and the data sources used by the VAAC. It requested that the products obtained from GOES satellites be validated, in order to determine whether it was really volcanic ash or volcanic gases. The Meeting took note of the information provided and recalled the SARPs contained in Annex 3, Chapter 3 concerning Volcanic Ash Advisory Centres and Volcano Observatories of the States and their responsibilities, as well as the need to improve communication channels within the context of Project H2 for the CAR Region.