



INTERNATIONAL CIVIL AVIATION ORGANIZATION

Western and Central African Office

Regional Office Implementation Support to States

Workshop on the provision of information on volcanic eruptions and ash clouds

(Yaoundé, Cameroon, 16 – 20 June 2025)

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1. INTRODUCTION

1.1 General

The workshop was conducted from 16 to 20 June 2025, under the framework of the implementation support provided to States. It aimed to assist the State and key stakeholders involved in enhancing their Capacity in managing volcanic activities.

1.2 Composition of the team

The workshop was facilitated by the experts listed in Table 1 below.

Table 1 – List of the facilitators

Name	Designation
Fanfe Bamba,	RO, AIM, ICAO WACAF Office
Goama Ilboudo,	RO, MET, ICAO WACAF Office
Serge Guy Tchanda	RO, ATM/SAR
Caroline Ngwa	Cameroon Volcano Observatory
Billy Diabasenga	Head of Air Navigation Division, RVA, Democratic Republic of the Congo
Sarah Puginier,	VAAC Toulouse
Sati Penda Armah	Team Assistant MET
Frank Aristide Bekole	MET Inspector, Cameroon CAA

1.3 Officials met and attendance

Officials met: The list of officials met during the workshop is in Table 2 below.

Table 2 List of Officials met during the mission

No	Name	Designation	Organization
1.	Mr. Allabira Mamadou	Deputy Director General	Cameroon Civil Aviation Authority
2.	Mrs. Possama Ngah épse Zambo	Technical Advisor No-3 to the Director General	Cameroon Civil Aviation Authority
3.	Mr. Ella Albert Patrick	Director of the Training School	of Cameroon Civil Aviation Authority
4.	Frank Aristide Bekol	ANS-MET Inspector	Cameroon Civil Aviation Authority

Attendance: Thirty-four (34) participants from Six (6) States (Angola, Cameroon, Cote d'Ivoire, Democratic Republic of the Congo, Liberia and Senegal), ASECNA and ROBERTS FIR attended the workshop. The list of participants is provided in **Appendix 1** to this report.

2. CONDUCT OF THE WORKSHOP

2.1 Opening session

2.1.1. The workshop opened with two keynote addresses. Mr. Romain Ekoto, ICAO WACAF Regional Director, thanked the Republic of Cameroon for hosting the event. He recalled recent volcanic ash events that disrupted aviation, outlined the workshop's objectives, and encouraged productive discussions to enhance the timely delivery of high-quality volcanic information.

2.1.2. The Deputy Director General of the CCAA, speaking on behalf of the Director General, explained the rationale behind organizing the workshop. He emphasized the need for strong collaboration among stakeholders and capacity building to manage volcanic risks. He expressed hope that the workshop's outcomes would improve information on volcanic eruptions and ash clouds.

2.2 Mission objectives and scope

2.2.1 This workshop is intended to:

- Strengthening the understanding of volcanic hazards and their impact on aviation;
- Enhancing coordination and communication among stakeholders; and
- Building capacity for timely detection, forecasting, and dissemination of ash cloud information

2.2.2 The workshop on the provision of information on volcanic eruptions and as ash clouds took place in Yaoundé, Cameroon and covered CNS, AIS and MET areas.

2.2.3 The workshop was held over nine (9) sessions and covered a broad range of topics, including:

- Overview of Volcanic Ash Advisory Systems;
- Challenges in the provision of volcanic ash information;
- Technical innovations and emerging solutions;
- Operational procedures for disseminating information on volcanic eruptions and ash clouds;
- Enhancing communication and dissemination strategies for volcanic ash information;
- Development of Standard Operating Procedures (SOPs);
- Capacity building initiatives;
- Sharing of experiences and resources;
- Establishment of collaborative frameworks for volcanic activity information; and
- Development of strategies to ensure a resilient air navigation system during volcanic eruptions and ash events.

2.3 Activities conducted and outcomes

2.3.1 A total of thirty-four (34) presentations and documents were discussed in accordance with the work programme outlined in **Appendix 2**. These sessions provided participants with a comprehensive understanding of international arrangements and regulatory frameworks for monitoring and reporting volcanic activity. Participants also shared experiences and best practices in managing volcanic events and discussed the associated challenges.

- 2.3.2 Following the discussions, participants divided into four groups, which collaborated to identify key challenges and propose actionable strategies to address them.

Group on the Strategy

- 2.3.3 The Group was composed of:

- Guy Baudouin Embolo Embolo
- Rony Judicael Nitchou Djomkam
- Eric Pouokam
- Emmanuel Lamblun Ndichout Molou
- Mebara Onana François Xavier
- Frank Bekol
- Abdoulaye Diakhate.

- 2.3.4 The group was tasked to:

- Mapping challenges and perspectives in the framework of volcanic eruption events; and
- Prioritizing key areas of improvement.

- 2.3.5 This group identified key challenges of volcanic activities and provided perspectives for improvement. **Appendix 3** summarizes the identified challenges and proposed remedial actions and prioritizing.

Group on the Volcanic Ash Contingency Plan (VACP)

- 2.3.6 The group was composed of:

- Armand Nlate
- Emmanuel Kouatang
- Guisse Tidiane
- Ritchie Oneal Talla
- Bekoa Ateba
- Sharon Withney Njinku
- Billy Diabasenga
- James L. Porter (Jr)
- Ndeye Daba Tine

- 2.3.7 This group was tasked to:

- Propose a stakeholder mapping and engagement;
- Draft a structured and phased action plan; and
- Develop the VACP template review.

- 2.3.8 This group conducted safety risks assessment on volcanic ash and drafted a Template of national volcanic ash contingency plan as provided in **Appendix 4** to this report.

Groupe on the Letter of Agreement (LoA)

- 2.3.9 The Group is composed of:

- Lutumba Tima
- Patrick Eloundou Nguene
- Armel Kamnde Tchapa
- Musongo Ngando
- Eddy Ferdinand Mbosi
- Pauline Wokwenmendam Np
- Caroline Ngwa Volcanologist
- Sahr K. James
- Khadaycha Aidara

2.3.10 This Group was tasked to:

- Identify the relevant FIRs directly concerned by the volcanic activity of volcano Alpha;
- Develop an action plan with a clear timeline leading to the signing of the LoA; and
- Draft the LOA using the template provided (check for consistency and completeness).

2.3.11 Upon discussions, the group proposed an action plan for drafting and signing of a LoA provided in **Appendix 5**, as well as a Template for developing a LoA between involved stakeholders as per **Appendix 6**.

Group on the Standard of Operating Procedures (SOP)

2.3.12 The Group was composed of:

- Gouamene Rock Levisé
- Mpel Apack Cyfride Brandone
- Dos Santos Miguel
- Mohammad Nche Njoya
- Ndibi Etoundi Delair Dieudonne
- Tchop Joseph

2.3.13 The SOP Group identified key stakeholders involved in the management of volcanic activities and proposed draft standard operating procedures accordingly. These procedures include:

- **Volcanological Observatory (VO):**
 - Operational procedure for a volcanic observatory conducting continuous volcanic activity monitoring
 - Operational procedure for prompt notification of a volcanic eruption
- **Volcanic Ash Advisory Centre (VAAC):**
 - Operational procedure for issuing a volcanic ash advisory by a Volcanic Ash Advisory Centre (VAAC)
- **Meteorological Watch Office (MWO):**
 - Procedure for issuing SIGMET
 - Coordination procedures with VAAC and ATC
- **Area Control Centres / Flight Information Centres (ACC/FIC):**
 - Operational procedure for the prompt dissemination of AIREPs related to volcanic ash by the ACC/FIC
- **International NOTAM Office (NOF):**
 - Operational procedure for issuing NOTAM / ASHTAM related to volcanic activities by the NOF
- **Aircraft Operators:**
 - Operational procedure for flight management in the presence of volcanic ash
- **Aerodrome Operators:**
 - Operational procedure for runway inspection and cleaning in case of volcanic ash contamination

2.3.14 The draft procedures are provided in the **Appendix 7** to this report.

2.3.15 Summary of the Outcomes Working Groups

- **Group on the Letter of Agreement (LoA) :** This group proposed an action plan for drafting and signing of an LoA, as well as a Template for developing an LoA between involved stakeholders.
- **Group on the Standard of Operating Procedures (SOP):** The SOP Group identified key stakeholders involved in the management of volcanic activities and proposed draft standard operating procedures accordingly.
- **Group on the Volcanic Ash Contingency Plan (VACP) :** This group conducted safety risk assessment on volcanic ash and drafted a Template of national volcanic ash contingency plan.
- **Group on the Strategy:** This identified key challenges of volcanic activities and provided perspectives for improvement.

Group	Results
Group on the Letter of Agreement (LoA)	1 Action plan template 1 Template of LoA developed
Group on the Standard Operational Procedures (SOP)	9 SOP developed
Group on the Volcanic Ahs Contingency Plan (VACP)	1 Action plan template 1 Template of VACP drafted
Group on the Strategy	13 Challenges identified / 17 Perspectives 15 Improvement Priorities

- 2.3.16 Participants formulated recommended actions as provided in **Appendix 3** to address the challenges identified. Of these recommendations, prioritized areas (PA) of improvements were identified and presented in **Appendix 8** to this report.

2.4 Closing session

- 2.4.1. The closing session was presided over by Mr. Allabira Mamadou, Deputy Director General, representing the Director General of the Cameroon Civil Aviation Authority. He commanded the outcomes of the workshop and requested participating States and Organizations to rigorously implement the recommendations for the improvement of quality of information on volcanic activities.

3. FOLLOW-UP ACTION

3.1 States and the concerned Stakeholders:

- 3.1.1. Consider the recommendations of the workshop to develop the action plan for the enhancement of their capacity in managing the volcanic events.
- 3.1.2. Identify and mobilize the resources necessary for the effective implementation of the action plan.

3.2 The Regional Office:

- 3.2.1. Coordinate, in conjunction with States and concerned stakeholders, to organize specific workshops to validate the generic materials developed by the SMEs Groups.
- 3.2.2. Adopt a project-based approach to tailor specific projects to assist States in addressing the prioritized improvement areas as outlined in the Appendix 8 to this report.

4. CHALLENGES AND OPPORTUNITIES

4.1 Challenges

- 4.1.1. Participants in the workshop raised concerns about the low level of participation in this important event, especially ESAF States. Another challenge is the limited resources of States to support the development of volcano observatories capacity to carry out their functions.

4.2 Opportunities

- 4.2.1. The Regional Office remains available to provide technical guidance and tools to help States and stakeholders improve the quality of information on volcanic activity and ash clouds.

5. CONCLUSION

- 5.1. States and stakeholders are hereby invited to take necessary actions with regard to the challenges identified, and the perspectives in addressing them effectively.

6. ACKNOWLEDGEMENT

- 6.1. The mission would like to thank and appreciate the Cameroon Civil Aviation Authority for the cooperation and support provided in the conduct of these activities.

APPENDIX 8: PRIORITY AREAS OF IMPROVEMENT

<i>Fields</i>	<i>Improvements</i>
<i>Communication links</i>	<i>PA-Rec. VA-1</i> Establish reliable and effective communication channels among the various stakeholders
	<i>PA-Rec. VA-2</i> Update the technical means of messages dissemination
<i>Coordination</i>	<i>PA-Rec. VA-3</i> Reinforce inter-agency coordination
<i>Monitoring and forecasting</i>	<i>PA-Rec. VA-4</i> Reinforce the capacity of Volcano Observatories for monitoring and forecasting volcanic eruptions
	<i>PA-Rec. VA-4</i> Raise awareness among the population about the importance of feedback in the event of a volcanic eruption
<i>Means of observation</i>	<i>PA-Rec. VA-5</i> Modernize the volcanic eruption and ash observation capabilities
<i>Information management</i>	<i>PA-Rec. VA-6</i> Enhance information management
	<i>PA-Rec. VA-7</i> Update the technical means of information dissemination
<i>Contingency operations</i>	<i>PA-Rec. VA-8</i> Align contingency plans with regulation
	<i>PA-Rec. VA-9</i> Test the contingency plans
<i>Exercises</i>	<i>PA-Rec. VA-10</i> Regularly carry out exercises on volcanic eruption and ash
<i>Training Needs</i>	<i>PA-Rec. VA-11</i> Build the capacities of staff across the different interested institutions
<i>Regulatory framework</i>	<i>PA-Rec. VA-12</i> Strengthen national regulatory and operational frameworks
<i>Finances resources</i>	<i>PA-Rec. VA-13</i> Increase the budgets allocated to relevant institutions for volcanic eruption and ash management
<i>Aerodrome facilities</i>	<i>PA-Rec. VA-14</i> Use robust and resilient infrastructures and facilities