



**Agenda Item 6: Planning of new MET projects**

**Effect of meteorological conditions on flight operations and how to prevent their risks**

(Presented by the Secretariat)

<b>Summary</b>	
This working paper presents aircraft incidents occurred in recent years in the SAM Region, and proposed mitigation measures.	
<b>References:</b> <ul style="list-style-type: none"><li>• Annex 3 – Meteorological service for international air navigation</li><li>• Manual of aeronautical meteorological practice (Doc 8896)</li></ul>	
<b>ICAO strategic objectives:</b>	<i>A – Safety</i> <i>B – Air navigation capacity and efficiency</i> <i>C – Environmental protection and sustainable development of air transport</i>

**1 Background**

1.1 Meteorological conditions have affected flight operations since the beginning of aviation and the world has witnessed multiple accidents and incidents attributable to them.

1.2 Although statistics define human factors as the main cause of accidents and incidents, meteorological conditions continue to play a major role in the number of accidents and incidents worldwide, being a contributing factor thereto.

1.3 Chapter 5 of Annex 3 – *Meteorological service for international air navigation* and protocol question (PQ) 4.271 of the operations (OPS) audit area of the Universal safety oversight audit programme (USOAP) continuous monitoring approach (CMA) require that all contracting States arrange for routine, special and extraordinary meteorological observations to be provided by aircraft of its registry flying on international routes, as well as for the registration and reporting of these observations.

1.4 Item 7.1.1 stipulates that SIGMETs shall be issued by a meteorological watch office and shall give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en-route weather phenomena and other phenomena in the

atmosphere which may affect the safety of aircraft operations, and of the development of those phenomena in time and space.

1.5 The Regional Aviation Safety Group – Pan America is working on mitigation measures for incidents related to severe adverse meteorological conditions.

## 2 Discussion

2.1 In the last few years, especially in 2018, the Region has suffered several aircraft incidents in which storms, icing and severe turbulence were contributing factors or the cause thereof.

2.2 In South America alone, in the last four months of 2018, occurrences related to severe turbulence or hail caused injuries to the crew and passengers and damage to the windshields and structure of aircraft.

2.3 Hazards associated to storms and convective weather conditions include electrical storms with severe turbulence, intense upward and downward currents, lightning, hail, heavy precipitation, icing, wind shear, microbursts, low-level strong winds, and tornados.

2.4 The Regional Aviation Safety Group – Pan America (RASG-PA) is working on mitigation measures to reduce the number of incidents caused by severe meteorological phenomena en route and in the terminal area.

2.5 Within this context, consideration is being given to the possibility of running a project involving air navigation service providers, aeronautical meteorological service providers, aircraft operators, safety oversight agencies, and other stakeholders, which, under the umbrella of RASG-PA, could analyse these events and submit a document on procedures to mitigate these aircraft incidents related to meteorological phenomena that affect air navigation. Meteorological service providers could express their willingness to participate in this working group.

2.6 Furthermore, taking into account occurrences in recent years, the new scenario resulting from climate change in our planet could be significantly contributing to the intensity, recurrence and presence of increasingly severe meteorological conditions that represent a major hazard for flight operations. A more accurate knowledge of the location, severity, presence and recurrence of events will help prevent and avoid risks facing flight crews. It would be important to organise workshops on the new WAFS products related to turbulence and icing that could contribute to better forecasts on routes and terminal areas.

2.7 The Meeting could agree on the need to submit a new project in this regard or work within the context of Project H1.

2.8 Likewise, it would be necessary to review ATS/MET coordination agreements. In this regard, in addition to actions carried out on a routine basis, it would be important to reinforce activities such as:

- ✓ Definition of a procedure for receiving special air reports at ATS units;
- ✓ Conduction of recurrent courses on the drafting of SIGMET messages based on special air reports and other sources of information (satellite imaging, weather radar, observations, numerical prediction models);
- ✓ Establishment of pre-flight meteorological briefing procedures for aircraft operators;

- ✓ Establishment of procedures for updating MET personnel;
- ✓ Review and update of ATS/MET agreements
- ✓ Establishment of agreements with ATS units and operator's staff (DOV, crews) for the conduction of update workshops on SIGMET information.

2.9 The Meeting could also consider conducting a regional workshop on SIGMET addressed to the aeronautical community (ATM personnel, DOV, Pilots, AIS/AIM personnel, safety inspectors, etc.).

### 3 **Suggested action**

3.1 The Meeting is invited to:

- a) take note of the information provided in this working paper;
- b) agree on actions it may deem appropriate, especially regarding items 2.5, 2.7 and 2.8.

-----