



FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 3: Air Navigation System Performance Improvement

3.1: Proposals to improve the efficiency of air navigation services contributing to LTAG

IMPLEMENTATION OF A TROPICAL CYCLONE ADVISORY CENTRE (TCAC) IN BRAZIL

(Presented by Brazil, supported by the United States and Latin American Civil Aviation Commission (LACAC) Members States¹)

EXECUTIVE SUMMARY

This document addresses the importance of implementing the requirement for the provision of tropical cyclone monitoring and forecasting services in the South Atlantic, to support international air navigation as part of the *Global Air Navigation Plan* (GANP, Doc 9750). In this context, Brazil is applying as a candidate for establishing a tropical cyclone advisory centre (TCAC) in the western South Atlantic coverage area to be defined in the requirement.

Action: The Conference is invited to:

- a) take note of this working paper; and
- b) support Brazil's application for establishing a TCAC.

1. INTRODUCTION

1.1 Following the occurrence of hurricane Catarina, which hit the Brazilian coast in March 2004, the national and international scientific community began to take a closer look at the cyclones that form in the South Atlantic.

1.2 Since then, there has not been another hurricane, but there have been several occurrences of tropical and subtropical depressions and storms, stages that precede the hurricane itself.

1.3 The matter became an agenda item at ICAO, which has been discussing the designation of a tropical cyclone advisory centre (TCAC) to monitor part of the South Atlantic, the area of which comprises latitudes in the Brazilian territory.

¹ Argentina, Aruba (Kingdom of the Netherlands), Belize, Bolivia (Plurinational State of), Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela (Bolivarian Republic of).

1.4 Among some of the most recent discussions, the Fifth Meeting of the Program and Project Review Committee (PPRC/5), held in July 2019, analyzed a Study Note presented by the World Meteorological Organization (WMO), addressing the need to define an aeronautical requirement for advisory information on tropical cyclones in the western South Atlantic, in light of the tropical storm “Iba” that had occurred in March of that same year. At the time, the needed meteorological forecast and surveillance messages were not available as there was no TCAC designated by ICAO, which was legally responsible for providing advisory information on the phenomenon.

1.5 Said Committee decided that the North American, Central American and Caribbean Office, Mexico (NACC) and South American (SAM) Regional Offices, in coordination with the World Meteorological Organization (WMO), should undertake the necessary actions for the designation of a TCAC for the South Atlantic.

1.6 Still in 2019, the 9th Meeting of the Meteorological Operations Group (MOG/9) of the Meteorology Panel (METP) highlighted the importance of a TCAC in issuing advisory information on cyclones to increase safety and for the due inclusion of forecasts of significant phenomena in the significant weather (SIGWX) Charts, prepared by the world and regional centres.

1.7 The METP MOG/14 Meeting decided in 2021 to designate the TCAC to cover the eastern part of the North Atlantic and the western part of the South Atlantic, through consultation, respectively, with the ICAO European/North Atlantic Office and the South American Office, to assess the possibility of establishing a TCAC for the mentioned areas.

1.8 Recently, in January 2024, a seminar organized by the SAM Office addressed tropical and extratropical cyclones and their reports in aviation. At the time, Brazil informed its intention to establish a TCAC under its responsibility.

1.9 None of the other countries participating in the seminar demonstrated any intention to be responsible for a TCAC in the South Atlantic, but many encouraged Brazil in this initiative, with a view to the evolution of MET Services in the SAM Region.

2. DISCUSSION

2.1 After the repercussions of hurricane Catarina, Brazilian meteorology institutions began to interact more and implement collaborative actions regarding cyclones on the Brazilian coast.

2.2 By legal designation, the Brazilian Navy provides the Marine Meteorological Service, through the Directorate of Hydrography and Navigation (DHN), whose operational centre is the Navy Hydrographic Center (CHM), which has the role of monitoring, forecasting and disseminating the meteoceanographic conditions occurring in METAREA V, defined by the WMO. As part of this assignment, it is necessary to monitor the formation of cyclones.

2.3 As mentioned, the CHM monitors tropical and subtropical cyclones in part of the South Atlantic. The Integrated Aeronautical Meteorology Center (CIMAER) coordinates with the CHM the information necessary for the preparation of SIGWX Charts. The National Meteorological Institute of Brazil (INMET) and the National Institute for Space Research (INPE), the latter through the Center for Weather Forecasts and Climate Studies (CPTEC), interact with the CHM and CIMAER to provide a consensual and collaborative weather forecast.

2.4 Since the creation of CIMAER in 2017, Department of Airspace Control (DECEA) has been investing in the development of capabilities to improve the aeronautical meteorological service,

providing the Center with resources to be able to excel in the provision of meteorological services, as recommended by ICAO.

2.5 Within this proposal, CIMAER would be responsible for the TCAC, providing the aeronautical meteorological service specialized in tropical cyclones, in accordance with the roles set out in Annex 3 — *Meteorological Service for International Air Navigation* counting on the support of the other national meteorological institutions cited (Navy, INMET and INPE).

2.6 The Navy would continue to carry out meteorological surveillance in its area of responsibility and would support CIMAER in relation to the monitoring and prognosis of cyclones, with a view to achieving consensus forecasts.

2.7 INMET would address issues relating to press releases and information to the general public, coordinating actions, when necessary, with other national and state meteorological institutions.

2.8 INPE would work on developing specific atmospheric modeling for cyclone prognoses, as well as products and tools that support CIMAER and CHM in their activities.

2.9 Partnerships with Universities and Meteorological Institutions will be established for the professional development of meteorologists, focusing on tropical, subtropical and extratropical cyclones. Training and exchanges with other TCAC, as well as operational visits, will also be carried out to understand the operational doctrine used, as well as the activities and routines.

2.10 We expect Brazil will be capable of establishing a TCAC for the western South Atlantic, considering:

- a) the current Brazilian Meteorology structure;
- b) most of the area to be monitored is under Brazilian jurisdiction;
- c) Brazil is the most affected country when a cyclone occurs in the region;
- d) the Brazilian Navy, through the Navy Hydrographic Center (CHM), is responsible for monitoring tropical and subtropical cyclones in METAREA V of the South Atlantic; and
- e) CIMAER is responsible for preparing the SIGWX charts that cover the South Atlantic

3. CONCLUSION

3.1 The meeting is invited to:

- a) take note of the information contained in this working paper; and
- b) support Brazil's application for establishing a tropical cyclone advisory centre (TCAC) in western South Atlantic.