PACIFIC METEOROLOGICAL COUNCIL

SPREP Secretariat of the Pacific Regional Environment Programme

Sustainable Weather and Climate Services for a Resilient Pacific

Third Meeting of the Pacific Meteorological Council (PMC-3)

20-24 July 2015
Nuku'alofa
The Kingdom of Tonga

Agenda Item 12.3: Safe Skies for Aviation over the Pacific

Purpose

1. The purpose of the document is to highlight the need for members PMC to follow the global and regional developments aimed at enhanced Air Traffic Management (ATM), as outlined in the International Civil Aviation Organization (ICAO) Global Air Navigation Plan (GANP) and the Aviation System Block Upgrade (ASBU), and at the same time, address specific challenges that affect the current day-to-day operations of the Aviation Meteorological Services Providers (AMSPs), through a regional collaborative approach. The aim of such approach should be a rapid and tangible improvement of the meteorological services for aviation that would bring benefits to all aviation stakeholders and to the population of the region.

Background

2. It is recalled that the purpose of the meteorological services for international air navigation, as defined in ICAO Annex 3/WMO Technical Regulations Volume 2, is to contribute towards safety, efficiency and regularity of the aviation transport. The Conjoint ICAO/WMO Meteorology Divisional Meeting (METDIV 2014) held in Montreal in July 2014, provided directions and a long-term vision for the future development of the aeronautical meteorology aligned with the ICAO GANP and its ASBU methodology. The Seventeenth World Meteorological Congress (Cg-17) fully endorsed the recommendations of the METDIV 2014 and approved an approach for WMO support to their follow up, which will be coordinated by the Commission for Aeronautical Meteorology (CAeM).

3. When it comes to the follow-up actions of the METDIV 2014 recommendations, it is recognized that the regions and Members of WMO have very different starting positions. Large-scale Air Traffic Management (ATM) projects, such as NextGen in the USA, SESAR in Europe and CARATS in Japan, include significant meteorological modules on development of advanced techniques and methods for provision of highly detailed and accurate meteorological information in digital form that will be integrated in a more and more automated decision-making environment. Roadmaps and Concepts of Operations (RCOs) are being developed that will enable the integration of the digital meteorological information into the so called System-Wide Information Management (SWIM) that will serve variety of aviation stakeholders according their specific needs.

4. At the same time, a number of Members of WMO including those in the Pacific Island Countries and Territories (PTCTs) region are still struggling with the implementation of the current ICAO and WMO standards and recommended practices and in ensuring the provision of the requisite meteorological service to aviation at the required quality level and in a sustainable manner. In recognizing this large diversity of national and regional capabilities for satisfying the requirements, ICAO in 2014 adopted the approach "No Country Left Behind" aimed at providing targeted assistance to countries for the resolution of existing air navigation deficiencies. On the WMO side, a number of capacity development initiatives have been pursued with the same objective.

5. The PICTs region has a specific set of issues related to the provision of meteorological service for aviation which need to be carefully analyzed in order to create a suitable and realistic plan for improved and sustainable services, thus contributing to the safety, efficiency and regularity of the aviation operations in the region, as well as addressing related environmental concerns. Due to the scarce resources, it is highly recommended that such a plan should follow a strong regional collaborative approach. Such approach should address both the governance issues (including funding and cost-recovery) and the technical issues for improved monitoring and forecasting capabilities of the PICTs.

6. With regard to technology improvement and modernization, the following components should be considered:

(a) **Ensuring sustainable provision of high quality airport observations and reports:** The main international airports in the PICTs, as well as the smaller domestic airfields, have been struggling in providing regular METAR, SPECI and local reports, which are of primary importance for the operations. The problem could be resolved by supplying all airports with robust automated weather observing stations (AWOS) specially designed for the type of operations, infrastructural and climatic conditions. Such stations will provide high quality data for the regular supply of METAR, SPECI and local reports, but would also be used for other purposes, including climate data. Special measures should be taken for the maintenance and calibration of such AWOS, which should be equipped with means for remote diagnostics. The most effective and efficient way would be the establishment of a centralized regional service and depot of spare parts.

(b) **Communications and information exchange:** Once data is available, appropriate communication channels should be established for timely exchange of information. The PICTs have currently different communication means that need to be studied in order to identify the most efficient and sustainable way for data and information exchange. As per the ICAO Regional Air Navigation Plan, Fiji plays the role of data collection and bulletin compilation centre and this role should be supported by appropriate technology that will ensure reliable two-way communication with the other national centres in the region.

(c) Terminal Aerodrome Forecasts (TAF): TAFs are extremely important for the flight planning by airlines. Important decisions, such as the amount of extra fuel carried by aircraft, are based on the TAF information. Due to the large distance between the Pacific airports and lack of near alternates, diversions from the planned routes are highly inefficient and undesirable. Thus, all Aeronautical Meteorological Services Providers (AMSPs) in the PICTs region should endeavour to improve the quality of TAF, including the provision of timely amendments in case of rapidly changing meteorological conditions. The role of Fiji Meteorological Service as a provider of TAF for several other PICTs' aerodromes is of primary importance in this regard. It should be well understood that the production of TAF is very much dependant on the items

described in the paragraphs 6(a) and 6(b) above; in addition, suitable Numerical Weather Prediction (NWP) products and guidance should be available and tailored to the TAF-issuance for specific geographic locations. Finally, a TAF verification scheme should be implemented and integrated into the Quality Management System (QMS).

(d) **SIGMET and aviation hazards information:** The PICTs region is subject of frequent meteorological hazards affecting aviation, including tropical convective systems, tropical cyclones, volcanic ash. Local wind variations could also be potentially dangerous for small aircraft commuters between the islands. Thus the provision of accurate and timely warnings is extremely important for aviation safety. Based on the recommendations of METDIV 2014, a regional approach to SIGMET issuance should continue to be supported with enhanced capabilities. The monitoring capabilities of each AMSP should be assessed. Noting that weather radar observations in the PICTs region are not available, other affordable technological solutions should be sought, including lightning detection, etc. In this regard, the use of the high resolution HIMAWARI satellite information would provide new opportunities for detecting aviation related hazards. With regard to volcanic ash, the PICTs region could be affected by non-monitored volcanoes (e.g., in Tonga archipelago). It is strongly recommended in this regard to cooperate with the developed countries, in finding solutions for monitoring the activities of active volcanoes and make such information available in accordance with the procedures of the International Airways Volcano Watch (IAVW).

(e) **Link with Disaster Risk Reduction (DRR):** Aviation plays a crucial role for the Small Island Developing Countries (SIDS) including the PICTs in any post-disaster relief operation, being the only transport mode that could deliver essential goods to assist affected areas. In this regard, it is crucial to resume operations as soon as possible after the disaster and make the local airports ready to receive humanitarian flights. This includes immediate access to meteorological information for the flight planning by operators. Thus, it is recommended that all PICTs' AMSPs should develop contingency plans, including availability of spare simple meteorological equipment that would be able to provide the basic meteorological data in case of destroyed or damaged main AWOS equipment. Such contingency planning should be conducted in close cooperation with other stakeholders to ensure that information flow will be resumed in a way that would ensure the safety of the operations in the immediate post-disaster phase.

(f) **Capacity development:** All the above proposed measures for improved service provision involves capacity development actions in terms of: support to the development of realistic national and regional plans in conformity with the international requirements established by WMO and ICAO, development of technical specifications, related training and on-site assistance. WMO will be in the position, in cooperation with other partner organizations, such as ICAO, and developed countries to support and coordinate the needed capacity development actions.

Recommendations

7. The Meeting is invited to:

- **Note** the need for improvement of the meteorological service provision in support of safety, efficiency and regularity of the air transport operations in the region;

- **Note further** the specific challenges facing the PICTs and the need to find realistic and efficient solutions through a regional collaborative approach;

- **Recommends:**
  (a) To establish a regional roadmap for phased improvements of the meteorological service to aviation, that would serve as a basis for relevant project(s) supported by WMO and other partner organizations;

  (b) To establish 6 priorities as described in paragraphs 6(a) to 6(f) above;

  (c) To designate a regional coordinator or a team to work closely with WMO and ICAO in developing a project proposal that addresses the issues described in paragraphs 6(a) to 6(f) above;

- **Endorse**s a regional target or dateline for development of a project proposal for the improvement of meteorological service to aviation in the PICT region; and

- **Endorses further** the need for early wins as a result of a regional collaborative approach towards improved meteorological services for aviation, with a strong focus, on airport observations/reports quality and improved communications for "near-real-time" data exchange.

Attachments

Nil

18 July 2015