

International Civil Aviation Organization



**THE FOURTH MEETING OF ASIA/PACIFIC METEOROLOGICAL
HAZARDS TASK FORCE (MET/H TF/4)**

ICAO Regional Sub-Office, Beijing, China

19 – 21 March 2014

Agenda Item C2: Advisory information

RECENT PROGRESS ON REGIONAL HAZARDOUS WEATHER INFORMATION

(Presented by Japan)

SUMMARY

This paper introduces recent global discussion on regional-based approach for the provision of information relating to hazardous meteorological conditions.

1. INTRODUCTION

1.1 The Meteorological Warning Study Group (METWSG), since its second meeting in May 2009, has developed the draft Concept of Operations (ConOps) for advisory services for hazardous meteorological conditions in support of international air navigation, which includes the concept of Regional SIGMET Advisory Centres (RSACs), to improve the implementation of WX SIGMET in some States and to establish a Regional-based system to address the situation.

1.2 In May 2013, at its 17th meeting, the APAC/MET SG recognized that the highly accurate and consistent output from numerical weather prediction should be considered one of the important requirements for the RSAC and that a verification framework for WX SIGMET Advisory needed to be established to assure effectiveness. After deliberation at the meeting, the group concurred that this issue should be considered in a relevant global ICAO group, the METWSG.

1.3 Therefore, Japan, as a member of the METWSG, suggested reflecting the outcomes of the Asia/Pacific regional meeting in the draft ConOps at the fifth meeting of the METWSG held in Montreal (see Attachment 1 to this paper). The group agreed that useful tools including accurate NWP output (see Attachment 2 to this paper) would be very important for regional SIGMET advisory production and that a suitable verification framework would need to be established.

1.4 Through further discussion on the concept of the regional advisory system, the METWSG has developed a high-level strategic statement relating to the short- and long-term vision for the provision of information relating to hazardous meteorological conditions for the endorsement at the MET Divisional Meeting in July 2014. The group concurred that the ConOps should continue to be improved as a living document, taking inspiration from the referred high-level strategic statement and with inputs from users and regulatory authorities. The group also agreed that a plan for future governance and equitable cost recovery of such a regionalized-approach to meteorological service provision should be realized.

2. ACTION BY THE MEETING

- 2.1 The meeting is invited to note the information contained in this paper.



METEOROLOGICAL WARNINGS STUDY GROUP (METWSG)

FIFTH MEETING

Montréal, 20 to 21 June 2013

Agenda Item 5: SIGMET/AIRMET and air reports

5.1 : SIGMET implementation issues

REQUIREMENTS FOR REGIONAL WX SIGMET ADVISORY CENTRE

(Presented by Jun Ryuzaki)

SUMMARY

This paper presents the recent discussion on the future requirements of regional WX SIGMET advisory centre (RSAC), reflecting the outcomes of recent Asia/Pacific regional meetings.

Action by the METWSG is in paragraph 4.

1. INTRODUCTION

1.1 The 2nd meeting of the Meteorological Warning Study Group (METWSG) which was held in May 2009 agreed to carry out a feasibility study of the provision of the SIGMET advisory information in Asia and Africa. The meeting also pointed out the importance of numerical weather prediction and remote sensing data from satellite to ensure provision of accurate and effective advisories.

1.2 In 2011, SIGMET advisory trials were conducted in Asia (hosted by China) and in Africa (hosted by France and South Africa). The 4th meeting of the METWSG evaluated the outcomes of these trials and finally agreed to consider establishing an ad-hoc group to discuss concept of operations for proposed Regional SIGMET Advisory Centres (RSACs).

1.3 At the 13th meeting of communications, navigations and surveillance / meteorology sub-group (CNS/MET SG/13) of ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG) which was held in Bangkok in November 2010, the Japan Meteorological Agency (JMA) introduced its NWP-derived forecast technique for turbulence, CB cloud, and icing which can help future possible RASCs provide timely and accurate advisories.

1.4 Also, in March 2013, at the conjoint session of the 11th meeting of the ICAO ASIA/PACIFIC ROBEX Working Group (ROBEX WG/11) and the 3rd meeting of ASIA/PACIFIC Meteorological Hazards Task Force (MET/H TF/3) in Bangkok, JMA presented a newly-developed detection technique for the area of thunder storm by using a Geostationary Meteorological Satellite. The meeting concurred that these techniques to forecast and detect significant weather should be useful for providing WX SIGMET advisories and suggested JMA introduce these at the fifth meeting of the Meteorological Warnings Study Group (METWSG/5).

2. DISCUSSION

NWP forecast indices for TB, CB, and Icing

2.1 JMA has been operating global and regional numerical weather prediction models and developed some application products which support the improvement of the issuance of SIGMET, such as TB index, index of CB cloud and icing index.

2.2 The TB index is a new turbulence forecast which can predict various kinds of turbulence. The TB index is constructed by using multiple turbulence indices. The index for CB is a new index to forecast the amount and cloud top height of CB clouds derived diagnostically from NWP output. The icing index is a new index based on the result of recent research in Japan. JMA presented those indices at the 13th meeting of the Communications, Navigations and Surveillance / Meteorology Sub-group (CNS/MET SG/13) of APANPIRG which was held in November 2010 (See attachment 1).

Automatic detection for Thunder Storm area by using Satellite data

2.3 JMA also operates a Geostationary Meteorological Satellite which is also useful for the advisories because it covers wide regions. By using this satellite observation and the global numerical prediction model, JMA is also developing an automatic detecting technique for thunderstorms. It is also useful to develop a new technique to enclose the TS region by a simple polygon from the detected CB area to be suitable for SIGMET. JMA presented the above techniques at the conjoint session of the 11th meeting of ASIA/PACIFIC ROBEX Working Group (ROBEX WG/11) and the 3rd meeting of ASIA/PACIFIC Meteorological Hazards Task Force (MET/H TF/3) in March 2013 (See Attachment 2).

Requirements for future RSACs

2.4 To support safety and efficiency of aircraft operation, it is important not only to improve the issuance of SIGMET but also to improve the content of the SIGMET. In order to assist States in issuing SIGMETs which have certain level of accuracy, the advisory itself should also be required to be accurate. It is only achievable when highly accurate NWP output is available as background forecast data. Therefore, future RSACs will be required to maintain well-developed, accurate and consistent NWP products.

2.5 Additionally, assuming that the meteorological watch offices (MWOs) which have already issued SIGMETs appropriately may also use advisories to add value to the existing information, the quality of advisories should be considered as one of the most important requirements for RSACs.

2.6 As the same as are in the WAFC products, it may also be essential to conduct regular and comprehensive verification of SIGMET advisories in order to assure that the advisories can help the States improve accuracy of SIGMETs. In this context, to establish a verification framework should be necessary.

3. **CONCLUSION**

3.1 Considering discussion above, when establishing requirements to regional SIGMET advisory centres, the METWSG may consider adopting following action.

Draft Action Agreed 5/xx — Requirements for Regional SIGMET Advisory Centre(s)

When considering requirements for future Regional SIGMET Advisory Centres, The METWSG is invited to;

- a) consider capability of providing well-developed, highly accurate, and consistent NWP outputs as one of the essential requirements for RSAC; and
- b) agree to establish verification framework for WX SIGMET Advisories to assure their quality and effectiveness to assist WMOs to improve their issuance of appropriate SIGMET.

4. **ACTION BY THE METWSG**

4.1 The METWSG is invited to:

- a) note the information contained in this paper; and
- b) consider adopting draft action agreed above.

Attachment 2 to ROBEX WG/12 & MET H/ TF/4 – IP/C5

AUTO SIGMET ADVISORY

VALID UNTIL 1600 UTC 19 AUG 2012

BASED AT 0600 UTC 19 AUG 2012

FT = 6

