International Civil Aviation Organization

INFORMATION PAPER

ICAO Asia and Pacific (APAC)
Twenty-Seventh Meeting of the Meteorology Sub-Group (MET SG/27)

Bangkok, Thailand, 04 to 08 September 2023

Agenda Item 6: Research, development and other initiatives

CSI PROJECT PROGRESS

(Presented by Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam)

SUMMARY

This paper outlines recent CSI Project progress, including follow-up discussions on SIGMET issuance for convective systems over multiple FIRs as presented at MET/S WG/13 in March 2023.

1. INTRODUCTION

1.1 Noting the presence of SIGMET discontinuity between Flight Information Regions (FIRs) and requirements of aviation operators for harmonized en-route hazardous weather information, the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), the Vietnam Air Traffic Management Corporation (VATM) and the Japan Meteorological Agency (JMA) launched the Demonstration Project on Collaborative SIGMET Issuance (CSI) in 2015. The Department of Meteorology and Hydrology of Lao PDR (LDMH), the Department of Meteorology and Hydrology of Myanmar (MDMH) and the Thai Meteorological Department (TMD) joined the project in 2016. Its operational phase began in April 2018, and the Malaysian Meteorological Department (MMD) joined as an observer in January 2020.

1.2 The project members submitted a Working Paper to the thirteenth meeting of the Meteorological Services Working Groups (MET/S WG/13) held in March 2023 to:

- acknowledge risk from missing SIGMET information when convective systems cross FIR boundaries and problems when the scale of coverage within FIRs does not meet the issuance criteria of the relevant Meteorological Watch Offices (MWOs); and
- identify two potential solutions, both of which required further consideration.

The meeting attendees discussed a potential third solution in which the scale of hazardous phenomena is considered holistically (rather than with simple focus on geographical scale within individual FIR), with MWOs using the results to mitigate risk to aviation in SIGMET issuance decisions. Other factors (e.g., intensity, movement and cloud top heights) may also need to be considered. (See WP/14 and the Final Report of the meeting for further details.)

2. DISCUSSION

Follow-up discussion on SIGMET issuance for convective systems over multiple FIRs

2.1 The project members considered the third potential solution appropriate, with some MWOs already having considered the overall system in SIGMET issuance. By way of example, PAGASA (issuance criterion of 2 x 2 degrees for the oceanic areas) may issue SIGMET information for TSs with a boundary whose scale within the Manila FIR exceeds 1 x 1 degrees without meeting the actual criteria.

2.2 While accepting this solution as a common principle for SIGMET issuance, the project members acknowledged potential exceptions. As the role of SIGMETs involves providing information for the avoidance of en-route hazardous weather phenomena in aviation, it may be of limited value to issue a SIGMET for a small or dissipating CB system within the FIR concerned, even if the overall system significantly large and still developing.

2.3 The project members will further review the solution based on SIGMET operations toward the production of written criteria.

CSI platform refinement

2.4 Under a function introduced in November 2022, SIGMET formatting errors (such as extra/missing digits and letters) are indicated by yellow polygons in the platform map area. The detected error(s) in their messages are also highlighted in yellow. This supports the function of the SIGMET message editor (available on the platform since its early days to enable appropriate message composition) in reducing formatting issues among MWOs on the platform.

2.5 In January 2023, Himawari Ash RGB composite imagery was introduced on the CSI platform for all-day detection of volcanic ash and sulphur dioxide. See JMA's quick guide for details.

2.6 CB Nowcast were also introduced on the platform in June 2023, providing information on expected CB areas up to 240 minutes ahead with 10-minute periodicity. The short-term information provided, along with other data on current CB areas and detected lightnings, supports decisions on SIGMET issuance when CB clouds are present around FIR boundaries, and assists SIGMET coordination among MWOs responsible for FIRs. Feedback from platform users is expected to support enhancement of the information provided.

Project assessment

2.7 Feedback from an online survey conducted from late March to April 2023 (34 Forecasters, 6 (all) organizations) indicated that:

- the CSI platform is used mainly for monitoring hazardous weather phenomena and interaction with neighbouring MWOs as per the intent of the project; and
- CB/TS-related information is the most-highly demanded data on the platform.

Project members maintain close cooperation for the issuance of harmonized SIGMETs, formulation of common regulations for FIR boundary areas in particular, and ongoing development of forecasting capability.

2.8 There were practical suggestions for CSI platform reinforcement for consideration by the development team.

2.9 A July 2023 online survey of aviation users produced 268 responses (including 46 from Air Traffic Controllers, 185 from Pilots and 26 from Flight Dispatchers). A brief summary of the result is provided in the Appendix. The results showed:

- The CSI Project's target phenomena (thunderstorms (TSs), turbulence (TURB) and tropical cyclones (TCs)) are the most commonly experienced, significantly affecting contributors' operations. TURB events in particular were of concern throughout the year.
- More than half of respondents answered that availability, timeliness, accuracy and consistency with neighbouring FIRs in SIGMETs for the CSI Project's target phenomena had improved. Around half of respondents also expect further improvement.

There were particular requests for precise data on altitudes and intensity in TURB SIGMETs, which the project members are now working on. The use of special air-reports (ARSs) derived from SIGMET users is feasible as a future step.

3. ACTION BY THE MEETING

3.1 Note the information contained in this paper.

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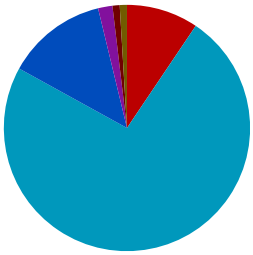
APPENDIX: SURVEY RESULTS

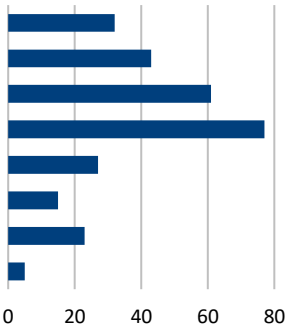
The following are excluded:

- responses from users who do not routinely use CSI Project members' SIGMETs; and
- responses from users who have used SIGMETs for less than seven years (i.e., since after the start of the project demonstration phase).

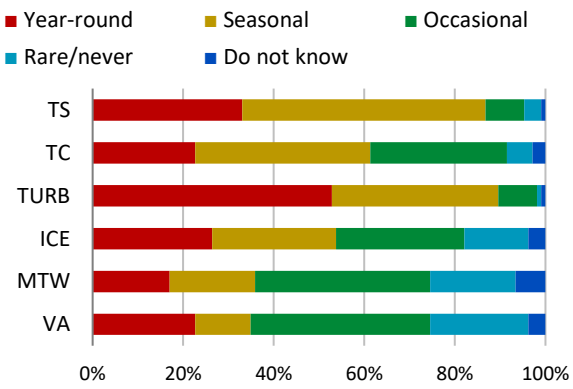
1) Respondents	
Air Traffic Controller	10
Pilot	78
Flight Dispatcher	14
Other Airline Staff	2
Meteorological Authority	1
Search and Rescue staff	1
Total	**106**



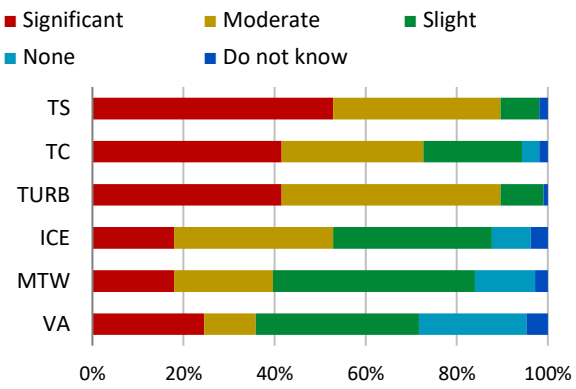
2) FIRs using SIGMET	
Bangkok	32
Fukuoka	43
Hanoi	61
Ho Chi Minh	77
Manila	27
Vientiane	15
Yangon	23
Other	5



3) Frequency of effects on operation

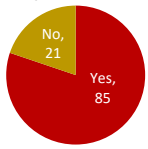


4) Effects on operation

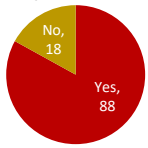


5) Use of TS/TURB/TC SIGMET since April 2018 and related SIGMET improvement rating

5-1) TS SIGMET



5-2) TURB SIGMET



5-3) TC SIGMET