International Civil Aviation Organization

WORKING PAPER

Twenty-fifth Meeting of the Meteorology Sub-group (MET SG/25)

Online, 18 – 22 October 2021

Agenda Item 5: Research, development and other initiatives

UPDATE ON THE PROVISION OF SPACE WEATHER ADVISORIES

(Presented by Australia)

SUMMARY

This paper provides a brief update on the provision of Space Weather Advisories (SWXA) including recent changes to WMO headers for these products. The paper also highlights the pending introduction of a fourth global Space Weather Advisory Centre operated by the China-Russian Federation consortium. It also reminds States to ensure they have systems and processes in place to distribute SWXA to aviation users within their airspace.

1. INTRODUCTION

1.1 The ICAO Space Weather Advisory (SWXA) service is provided 24/7 by the designated ICAO Space Weather Centres (SWXCs), these being the Australia-Canada-France-Japan (ACFJ) consortium, the Pan-European Consortium for Aviation Space weather User Services (PECASUS) and the United States. ICAO Council Decision 219-7 designated the China-Russian Federation Consortium (CRC) as a fourth global space weather centre which is likely to commence operations later this year.

2. DISCUSSION

2.1 Since commencing operations on 7 November 2019, the global SWXCs have issued 25 SWXAs covering six space weather events, where space weather parameters met the ICAO thresholds. The first ever SWXA was issued by the ACFJ consortium on 28/09/20. Since then, SWXAs have been issued on: 29/09/20, 30/09/20, 01/10/20, 15/05/21, 03/07/21, 31/07/21, 27/08/21, 28/08/21, and most recently on 08/09/21.

2.2 The SWXCs have also issued a series of TEST messages designed to test the dissemination of SWXA through the AFTN/AMHS communication networks. This testing program will continue through 2021 and into 2022. The test messages are a good opportunity for users and providers of aviation briefing services (e.g. Meteorological Service Providers and Air Navigation Service Providers) to ensure they are correctly receiving, decoding and displaying the advisories.

2.3 Since the introduction of the service, all SWXAs have been issued in Traditional Alphanumerical Code (TAC) format. Since 05 November 2020, SWXAs have also been issued in ICAO

Meteorological Information Exchange Model (IWXXM) format, containing the same information as the TAC-format SWXAs. Dissemination of IWXXM format SWXAs will become a Standard as of 04 November 2021. It should be noted that IWXXM can not be distributed over AFTN and instead requires distribution via an AMHS network (with File Transfer Body Part enabled).

2.4 At the commencement of the service (November 2019), all SWXA's were sent with the WMO Message Header (TTAAii) of FNXX01.

2.5 On 5 November 2020, the WMO message headers (TTAAii) for both TAC and IWXXM format SWXAs were updated to have separate headers for each space weather impact type: GNSS, HF COM, Radiation and SATCOM.

	WMO headers for advisories	
	TTAAii of advisory in TAC	TTAAii of advisory in IWXXM
GNSS	FNXX01	LNXX01
HF COM	FNXX02	LNXX02
Radiation	FNXX03	LNXX03
SATCOM	FNXX04	LNXX04

2.6 Unlike other advisory services (volcanic ash and tropical cyclones), distribution of SWXA is via the Regional OPMET Bulletin Exchange (ROBEX) system. Specifically from the Space Weather Advisory Centre (SWXC), to their local National OPMET Centre (NOC) who provides it their Regional OPMET Centre (ROC), who provides it to their Inter-regional OPMET Gateway (IROG), who provides it to IROGs in other regions. Each IROG, provides it to their ROCs, who provides it to their NOCs and NOCs arrange (in consultation with the Meteorological Authority) the provision of SWXA's to users within their State.

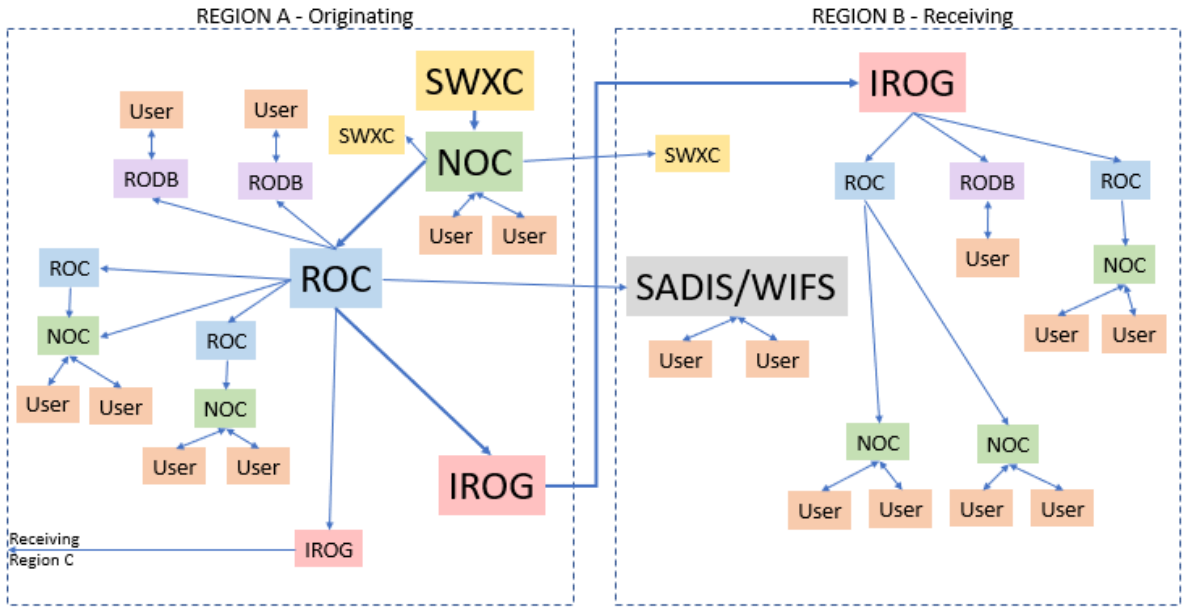

Figure 1. Distribution of SWXA's to users via the ROBEX system.

2.7 Therefore, States should now have implemented systems for onforwarding Space Weather Advisories to users. Any States with systems already in place should note the changes to headers in para 2.5 and ensure their systems are updated accordingly.

2.8 The 5th meeting of the ICAO Meteorology Panel (METP), in June 2021, considered provisions in Annex 3 and Annex 15 pertaining to space weather information dissemination via NOTAM including technical reviews at both the global and regional level and feedback provided by the ICAO Information Management Panel. Subsequently, a recommendation was made to remove any provisions for space weather information dissemination via NOTAM from Annex 3 and Annex 15.

2.9 ICAO Council Decision 219-7 designated the China-Russian Federation Consortium (CRC) as a fourth global space weather centre which is likely to commence operations later this year, pending a decision by the ICAO METP Working Group on Meteorological Information and Service Development (WG-MISD).

2.10 SWXAs for disturbances to SATCOM will not be issued pending further analysis on the impact of space weather disturbances to aviation SATCOM, and suitable alerting thresholds. States operating global SWXCs have filed differences for the requirement to issue SATCOM SWXAs.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a. Note the information contained in this paper; and
b. Request States implement/adjust systems for onforwarding Space Weather Advisories to users.

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