International Civil Aviation Organization

WORKING PAPER

Eleventh Meeting of the Meteorological Services Working Group (MET/S WG/11)

Web-conference, 24 to 26 March 2021

Agenda Item 3: Planning and implementation of meteorological services

NEW SPACE WEATHER ADVISORY HEADERS

(Presented by Australia)

SUMMARY

This paper provides a brief update on the provision of Space Weather Advisories and in particular 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.

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 the introduction of SWXA services on 7 November 2019, all SWXA's have been sent with the WMO Message Header (TTAAii) of FNXX01.

2.2 On 5 November 2020, the WMO message headers (TTAAii) for Space Weather Advisories in Traditional Alphanumerical Code (TAC) and in ICAO Meteorological Information Exchange Model (IWXXM) were updated to have separate headers for each 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

2.3 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.

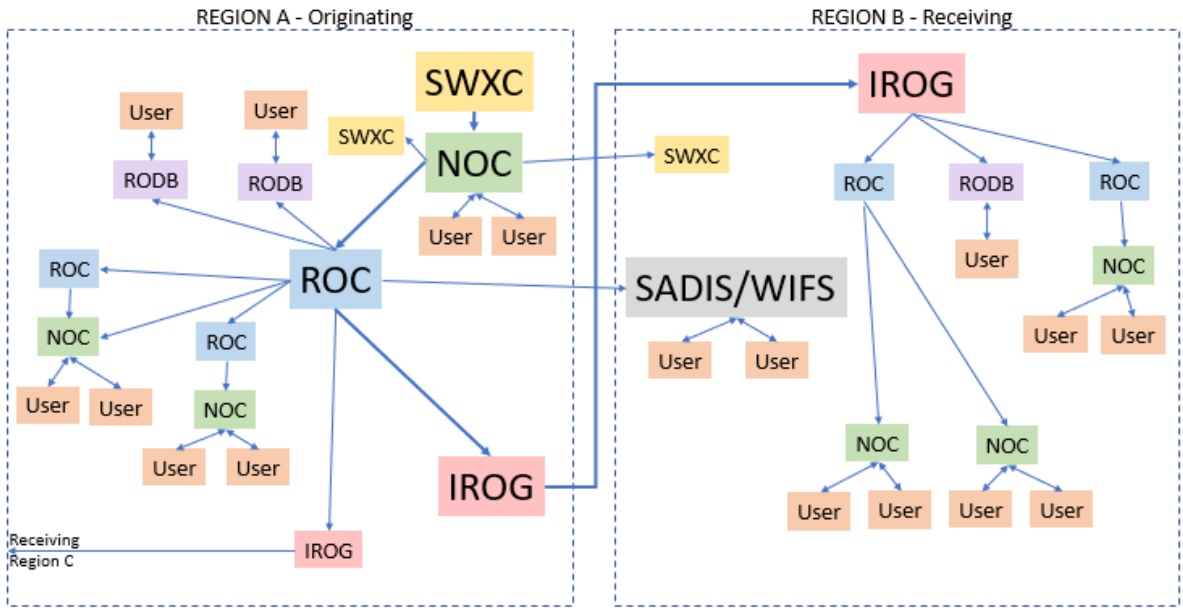

Figure 1. Distribution of SWXA's to users via the ROBEX system.

2.4 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 2.2 and ensure their systems are updated accordingly.

2.5 Since commencing operations, the global SWXCs have issued a series of TEST messages designed to test the dissemination of Space Weather Advisories (SWXA) through the AFTN/AMHS. This testing program will continue through 2021. The test messages are a good opportunity for users and meteorological agencies to ensure they are correctly receiving, decoding and displaying the advisories.

2.6 On 28 September 2020, the Bureau of Meteorology, acting as part of the ACFJ consortium issued the first ever real space weather advisories for aviation. In total 13 HF COM advisories were issued over a four-day period 28-Sept-2020 to 01-Oct-2020. (see Table 1 below). The advisories pertained to moderately disrupted HF COM conditions in the northern hemisphere, mostly over Europe, resulting from a high-speed solar wind stream that increased space weather activity around the globe.

Table 1: HF COM Space Weather Advisories issued by the Australian Bureau of Meteorology between 28/09/2020 and 01/10/2020

SWX Effect	Advisory number	Replaced	Issuance time	OBS SWX
HF COM MOD	2020/26	-	28-Sep-2020, 05:55:00 UTC	28/0532Z HNH MNH E000 - E060
	2020/27	2020/26	28-Sep-2020, 11:31:00 UTC	28/1124Z NO SWX EXP (end of event)
HF COM MOD	2020/28	-	28-Sep-2020, 23:19:00 UTC	28/2302Z HNH MNH E000 - E120
HF COM MOD	2020/29	2020/28	29-Sep-2020, 02:33:00 UTC	29/0228Z HNH MNH W120 - E020 (update)
	2020/30	2020/29	29-Sep-2020, 05:04:00 UTC	29/0500Z NO SWX EXP (end of event)
HF COM MOD	2020/31	-	29-Sep-2020, 19:24:00 UTC	29/1912Z HNH MNH EQN E015 - E060
	2020/32	2020/31	29-Sep-2020, 20:23:00 UTC	29/2012Z NO SWX EXP (end of event)
HF COM MOD	2020/33	-	30-Sep-2020, 04:15:00 UTC	30/0352Z HNH E000 - E075
	2020/34	2020/33	30-Sep-2020, 06:23:00 UTC	30/0612Z NO SWX EXP (end of event)
HF COM MOD	2020/35	-	30-Sep-2020, 23:12:00 UTC	30/2252Z HNH E000 - E045
	2020/36	2020/35	1-Oct-2020, 01:23:00 UTC	01/0112Z NO SWX EXP (end of event)
HF COM MOD	2020/37	-	1-Oct-2020, 20:08:00 UTC	01/1952Z HNH MNH EQN E000 - E060
	2020/38	2020/37	1-Oct-2020, 22:13:00 UTC	01/2202Z NO SWX EXP (end of event)

HNH – High (latitudes) Northern Hemisphere (> 60^{o} latitude band)

MNH – Mid (latitudes) Northern Hemisphere (30 – 60^{o} latitude band)

EQN – Equatorial (latitudes) Northern Hemisphere (0-30^{o} latitude band)

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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