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Bangkok, Thailand, 12-16 July 2004

Agenda Item 8: Implementation of ISCS and SADIS

DEVELOPMENTS TO THE WAFS AND SADIS SERVICE

(Presented by the United Kingdom)

SUMMARY

- * It is the current expectation that the second generation (2G) SADIS programme will be implemented on 1 September 2004.
- * The forthcoming cessation of the T.4 products on 1 July 2005 will require all users to upgrade their visualisation software so that they can utilise the GRIB and BUFR encoded equivalent products.
- * Due to limited funding opportunities little progress has taken place with regard to establishing a collective tender process for the procurement of SADIS visualisation software.

1. INTRODUCTION

1.1 The SADIS Operations Group (SADISOPSG) has asked the SADIS provider to complete a trial of the prototype SADIS 2G system and to roll-out an operational 2G service (SADISOPSG Conclusion 8/12 and Conclusion 9/15 refer).

1.2 The final phase of WAFS will be implemented on 1 July 2005 which involves the cessation in transmission of the T.4 wind and temperature charts and the T.4 SIGWX charts. On this date these products will be replaced respectively with GRIB and BUFR encoded equivalent products.

1.3 Both of these tasks have significant implications to SADIS users.

2. DISCUSSION

2.1 SADIS Second Generation (2G)

2.1.1 The SADIS provider is nearing the completion of the trial of the prototype 2G system. This system involves a new type of data modulation and utilises internet protocol (IP) end-to-end. The system is engineered to make use of largely “off-the-shelf hardware”, as opposed to the proprietary nature of the current first generation (1G) system hardware. A number of different suppliers of 2G hardware will be offering compatible receivers. These factors will ensure that end user reception hardware is priced competitively and is more readily available than the current 1G hardware.

2.1.2 The difference in modulation schemes employed by the first and second generation broadcasts will *require all SADIS users to purchase a new receiver that is compatible with the 2G broadcast*. Agreement has been reached by the SADISOPSG to have an overlap period of 4 years (SADISOPSG/9 Conclusion 9/15 part a refers; *SADIS 1G service is scheduled for termination on 31 December 2008*) during which time both broadcasts will be available.

2.1.3 A separate working paper has been prepared detailing the user migration plan from the current (1G) broadcast to SADIS 2G.

2.1.4 SADIS 2G will be large step forwards for the SADIS programme with regards to the level of technology which is used to deliver WAFS data to end systems. However users should note that the products delivered via 2G will be identical to those currently provided using the existing 1G broadcast.

2.2 Visualisation Software Upgrades

2.2.1 On 1 July 2005 it is the current expectation that the World Area Forecast Centres (WAFCs) will cease production of the wind and temperature charts and significant weather (SIGWX) charts in T.4 facsimile format. These products will be officially replaced by GRIB and BUFR encoded equivalent products respectively. *Most users will need to purchase new workstation software in order to be able to use these code forms correctly*. This important change will affect all SADIS users.

The SADIS provider would like to emphasise to all users of the WAFS products that it is important that compliant GRIB and BUFR visualisation software is either developed or procured ahead of this cut-off date.

2.2.2 Most of the current BUFR visualisation packages supplied by commercial software vendors continue to exhibit a number of non-compliances to the ICAO standard (see <http://www.metoffice.com/sadis/software/index.html>), some significant. To try and improve the quality of these packages the SADIS provider has completed a review of these packages. These reviews have enabled a list to be compiled of those packages that can produce SIGWX charts from the BUFR code in a compliant manner.

These compliant packages will be brought to the attention of SADIS users via an ICAO State letter and via the ICAO and Met Office web sites. As additional packages reach compliancy more companies will be added to this list. A separate IP has been submitted which details the methodology employed during the software review process, and the outcomes from this work.

2.2.3 At the time of writing two software packages have reached compliancy – these are listed below. An additional two companies are nearing the same quality standard.

- *METLAB* application produced by GST/3SI
- *GIS Meteo* application produced by MapMaker Group Ltd.

2.2.4 It is strongly recommended to users who anticipate procuring new visualisation software that allowance is made for *subsequent upgrades* that will be required when future changes to the BUFR code are introduced. Such modifications include the introduction of crossing jets and jet-stream vertical height information that will be included in amendment 73 to ICAO Annex 3 (introduction November '04). Changes of this kind will necessitate multiple software upgrades for users in the future. It is considered that users may wish to ensure that a series of on-going upgrades are included in any terms and conditions assigned to software purchases.

2.3 SADIS Backup

2.3.1 To further increase the resilience of the SADIS service an ISDN link has been established between NWSTG (National Weather Service Telecommunications Gateway) in Washington and the SADIS uplink hub at Whitehill. This link has been established on a dial-up basis to ensure cost effectiveness. The primary purpose of this link is to provide an alternative source of operational WAFS data in the event of

problems with the hub infrastructure in Exeter. The service entirely bypasses the communications infrastructure of the SADIS provider.

2.4 *Collective Software Tender*

2.4.1 SADISOPSG Conclusion 8/11 requested that the ICAO regional offices should consult with SADIS users regarding their preference for participating in a collective software tender process to procure new SADIS software, with the option for on-going maintenance, support and software upgrades, and as necessary, on-site installation and training. Interest in this process was expressed by a number of users in the Asia/Pacific region. The prime motivator for establishing this process was to secure a mechanism that could provide competitive software for the least developed countries (LDCs). However the process was not restricted to the LDCs. Potentially it could realise cost savings to other SADIS users.

2.4.2 At SADISOPSG/9 the SADIS provider State informed the meeting that the consultation had established that funding would be required for at least 21 LDCs and that this would not be a simple task because funding via the SCRAG had already been ruled out following a consultation with the Secretary of the SCRAG. Consequently the only avenue that was considered potentially viable was the WMO Voluntary Cooperation Programme (VCP). In this regard ICAO was requested to invite WMO to encourage donor States to contribute to VCP with a view to upgrading SADIS workstations for those users in the LDCs. In view of the demanding time frame it is not considered very likely that sufficient funding will be established to make a collective software tender viable.

2.5 *Encoding of Medium Level WAFS SIGWX (SWM) Data in BUFR*

2.5.1 The WAFCs are planning to start disseminating BUFR encoded SWM data towards the end of 2004. To accommodate this new data a revised bulletin schedule has been produced. This is reproduced below.

BUFR FEATURES	COMMON NAME	WMO HEADER used by WAFc London	WMO HEADER used by WAFc Washington
Jet-streams	JETS	JUWE96 EGRR	JUWE96 KKCI
Clear Air Turbulence (C.A.T.)	CAT	JUCE00 EGRR	JUCE00 KKCI
Embedded Cumulo- nimbus	CLOUD	JUBE99 EGRR	JUBE99 KKCI
Tropopause height	TROP	JUTE97 EGRR	JUTE97 KKCI
Frontal Systems	FRONTS	JUFE00 EGRR	JUFE00 KKCI
Tropical Cyclone, Sandstorms & Volcanoes	V_T_S	JUVE00 EGRR	JUVE00 KKCI
SWM Tropopause height	M-TROP	JUOE00 EGRR	JUOE00 KKCI
SWM jet-streams	M-JETS	JUTE00 EGRR	JUTE00 KKCI
SWM fronts	M-FRONTs	JUJE00 EGRR	JUJE00 KKCI
SWM cloud, in-cloud icing and turbulence	M-CLOUD	JUNE00 EGRR	JUNE00 KKCI

The bulletins containing forecast CAT (JUCE00 EGRR and JUCE00 KKCI) and tropical cyclones, sandstorms and volcanoes (JUVE00 EGRR and JUVE00 KKCI) information are valid for both SWH and SWM charts.

2.5.2 The SWM BUFR bulletins will be distributed via SADIS on Port 1 PVC3. Users are advised that an update to BUFR visualisation software will be required to utilise the data in these bulletins.

2.6 Addition of Vertical Height Information and Crossing Jets to WAFS SIGWX Charts

2.6.1 Amendment 73 to ICAO Annex 3 will become valid 1 November 2004. One of the amendments requires the WAFCs to start including the height of the 80kt isotach above and below the point of maximum wind speed on each jetstream, and allows the depiction of crossing jetstreams – see example below.

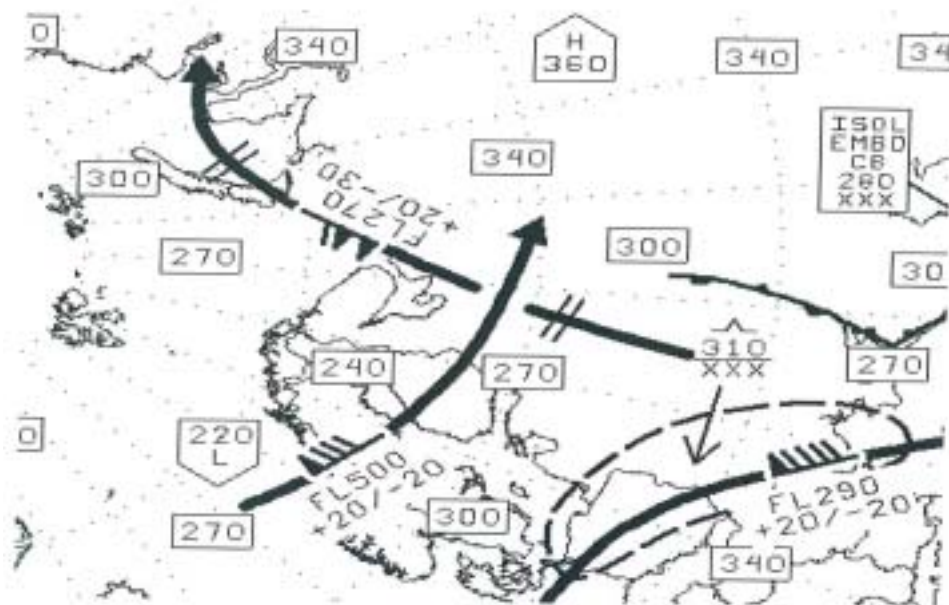


Figure 4 – Jetstream depiction showing correct display of vertical height information at locations of maximum speed, and crossing jets.

Format of vertical height data +DD/-DD, where +DD refers to the height of the 80 knot isotach above the jet core, and the -DD below the jet core, in hundreds of feet

2.6.2 The WAFCs intend to implement this requirement in November 2004. The change will be included on the WAFS T.4 SIGWX charts (SWH and SWM), and in the BUFR encoded SIGWX bulletin for jetstreams (JUTE00 EGRR/KKCI). Users are advised that an update to BUFR visualisation software will be required to utilise the additional data in these bulletins.

2.7 Further Information and Contact Details

SADIS Home Page: <http://www.metoffice.com/sadis/index.html>

Operational SADIS information: <http://www.metoffice.com/sadis/news/index.html>

SADIS News: <http://www.metoffice.com/sadis/news/update.html>

SADIS Hardware and Software suppliers: <http://www.metoffice.com/sadis/about/manufacturers.html>

Results of SADIS software reviews: <http://www.metoffice.com/sadis/software/index.html>

SADIS hardware and software procurement guidelines:

http://www.metoffice.com/sadis/news/sadis_s_h_procure.html

WAFc London Manager: Mr. Nigel Gait Tel: +44 1392 886268; Fax: +44 1392 885681; Email: nigel.gait@metoffice.com

WAFc London SADIS contact: Mr. Richard Orrell Tel: +44 1392 884892; Fax +44 1392 885681; Email: richard.orrell@metoffice.com

3. SUMMARY

3.1 On 1 July 2005 it is the current expectation that the World Area Forecast Centres (WAFCs) will cease production of the wind and temperature charts and significant weather (SIGWX) charts in T.4 facsimile format. These products will be officially replaced by GRIB and BUFR encoded equivalent products respectively. Most users will need to purchase new workstation software in order to be able to use data in these code forms correctly. This important change will affect all SADIS users.

3.2 From 1 September 2004 a new second generation (2G) SADIS service will become available. The current (or first generation – 1G) service will continue to be broadcast in parallel with the 2G service for a period of 4 years. Within this 4-year period users will have a requirement to purchase a new receiver (DRO) and MegaPAC* which is compatible with the 2G service.

(*Note: users procuring a 2G receiver manufactured by BURS Ltd. will not require a MegaPAC if they require WMO TCP sockets protocol to be available for output data.)

4. ACTION

4.1 The SADIS provider invites the CNS/MET SG to note the information contained within this paper, with particular emphasis on the actions highlighted in section 3 that will be required of SADIS users.

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