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REGIONAL ASSOCIATION II
(ASIA)

ITEM 6.4

ENGLISH ONLY

**WORKING GROUP ON PLANNING AND
IMPLEMENTATION OF THE WWW IN REGION II
FOURTH SESSION**

MOSCOW, 10-13 SEPTEMBER 2003

**REGIONAL ASPECTS OF THE WWW COMPONENTS AND SUPPORT FUNCTIONS,
INCLUDING REPORTS BY THE RAPPORTEURS/COORDINATORS**

WWW Data Management (DM), including Codes

*(Submitted by Mr A. Shimazaki, Rapporteur on the Regional Aspects
of the Data Management and Codes)*

Summary and purpose of document

This document summarizes the result of the survey on data management issues conducted by the Rapporteur on Regional Aspect of Data Management in RA II.

ACTION PROPOSED

The group is invited to note the information included in the document.

- Appendices:**
- A. Availability and requirement for the additional data and products
 - B. The result of the survey on use of the Internet
 - C. The result of the survey on the migration to TDCFs
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INTRODUCTION

1. Two surveys have been conducted by the Rapporteur on Regional Aspect of Data Management in RA II on the following:

- a) Revision of the current reporting practice on precipitation in RA II
- b) Proposal on the promotion of the availability of snow depth reporting in SYNOP
- c) Preparation and distribution of coding samples for CLIMAT and CLIMAT TEMP with detailed instructions for correct coding
- d) Survey on the requirement for additional data
- e) Survey on the use of the Internet
- f) Study on the current status in the migration to BUFR and CREX for data representation

2. The first survey was conducted in June 2003 concerning the tasks a), b) and c) and the results were separately submitted by the Rapporteur. The present document summarizes the results of the second survey in July 2003 with regard to the tasks d), e) and f).

3. Of the 34 Members of RA II, 15 have responded to the questionnaire as of 18 August 2003. The results are summarized below for the respective three subjects.

REQUIREMENT FOR ADDITIONAL DATA

4. The data monitoring such as AGM (Annual Global Monitoring) and SMM (Special MTN Monitoring) present that since the 1990s the availability of surface observations (SYNOP) in RA II has maintained a high level (about 80 %) compared with other Regions. As for the upper-air observations (TEMP), availability has been gradually deteriorated from 80 % to 50 % in RA II during the same decade, though it has been slightly improved for the recent years. In this regard, newly introduced observations such as those by aircraft, satellites and wind profilers are expected to supplement the performance of the upper-air observations of RBSN (Regional Basic Synoptic Network).

5. In fact, six respondents indicated that they are producing data/products, such as those from aircraft, satellites and/or wind profilers, aiming at supplementing RBSN, and meanwhile, all respondents expressed their wish to receive such further additional data/products (see Appendix A to this document). The Members of RA II are invited to pay attention to the tables with a view to enhancing the exchange of such data/products between Members in the Region. In response to the request of the Rapporteur, the Japan Meteorological Agency (JMA) plans to put the tables 1 and 2 onto the Agency's WWW server to foster the exchange of the data/products among the Members in the Region until next session of RA II. The Members of RA II are invited to inform the Rapporteur to update the information included in the tables as appropriate.

USE OF THE INTERNET

6. E-mails play a significant role in exchange of information between the Members of WMO through the Internet. Moreover, the Internet allows us to exchange large volume of meteorological data/products and is expected to be more valuable for the data exchange in the future. The Rapporteur conducted a survey on the operational use and the security issue of the Internet for more reliable operation. The results and relevant information for use of the Internet are summarized in the Appendix B to this document.

7. The survey shows that all in all respondents (15 Members) are accessing the Internet, however the significant gaps are found in traffic speeds of the Internet connection among the Members. Considering that:

- a) the Internet is used to complement the GTS especially for large volume of meteorological data/products, such as numerical weather prediction and satellite products, and
- b) the volume of data/products exchanged by the Internet will increase in the future with development of the Internet,

the Members are encouraged to keep abreast of the development of the Internet in their countries/ territories to enhance their Internet connection as far as possible.

8. With the enhanced use of the Internet, the security problem has gained an increasing attention of the users. It is well-known that behind the convenience of the Internet, there is wide range of risks. The survey indicates that almost all the respondents have taken measure(s) for the security problem. Nevertheless, they seem to be insufficient. Even a "virus protection software/system" is not yet introduced by some Members. For the securer use of the Internet, the "Fire wall", "User account and password" and "Intruder detection system" would be recommended.

MIGRATION TO BUFR AND CREX (TABLE DRIVEN CODE FORMS)

9. CBS Extraordinary session (Cairns, December 2002) (CBS Ext.(02), hereafter) adopted a plan for the migration from Traditional Alphanumeric Codes (TACs) to Table-Driven Code Forms (TDCFs) with a view to meeting the requirements for new and evolving observational data by making the best use of TDCFs which are highly flexible, as well as expandable. Consequently, the plan was approved by the fourteenth Congress of the WMO (CG-XIV). The schedule for the migration is reproduced in the Annex to Appendix C.

10. According to the migration plan, each NMHS is requested to develop their own national migration plan and the migration be completed by the target years designated in the plan (see Annex to Appendix C). To this end, relevant implication with the migration is to be reviewed from both regional and national points of view. The Rapporteur conducted a survey to look for the current situation of the Members on the migration issue. The result of the survey is shown in Appendix C.

11. According to the survey, only one out of the 14 respondents has already developed the national migration plan, two are currently preparing, and eleven intend to develop the plan in the future.

12. As regards the circumstances for the migration, three respondents noted that there is no sufficient telecommunication means to exchange BUFR data/products. However, currently available Internet connection will allow them to exchange BUFR data, and CREX can also be used instead of BUFR through the GTS. Thus, the telecommunication issue may not be a crucial problem for the migration.

13. Ten respondents have not yet dealt with BUFR/CREX, while four have been processing data/products in BUFR/CREX. The survey indicated that all respondents anticipated the distribution of the encoding/decoding software for BUFR/CREX free of charge and the International Training Seminar.

14. Preparation for the migration to the TDCFs in the Region should be accelerated. In this regard, Members are encouraged to establish their national migration plans and lay out a clear strategy to achieve the goal. Support from the WMO Secretariat is indispensable through the coordination for software distribution to the Members and holding the International Training Seminars.

Appendix A

AVAILABILITY AND REQUIREMENT FOR ADDITIONAL DATA/PRODUCTS

TABLE 1 - Additional data/products for provision

Country/Territory	Types of data/products	Parameter	Status	Measure	Code	In providing
China	Aircraft	Temp, Wind, Altitude	Not defined	n/s	AMDAR	no
Hong Kong, China	Wind profiler	Wind, Temp	Essential	GTS	BUFR	yes
Japan	Aircraft	Wind, Temp	Essential	GTS	AMDAR, AIREP	yes
	Satellite	Wind, Cloud, TBB	Essential	GTS, Internet	SATOB, GRIB(edition 1), BUFR	yes
	Wind profiler	Wind	Essential	GTS	BUFR	yes
	Maritime	SST, Salinity, Current, Wave, Pressure	Essential	GTS	TESAC, BUOY	yes
Macao, China	Wind profiler	Wind, Temp	n/s	n/s	n/s	no

NOTES: Abbreviations in parameter columns etc. are:

Wind = U and/or V or speed and/or direction of wind, Temp = temperature, Cloud = cloud amount,

TBB = Equivalent Black Body Temperature, SST =Sea surface temperature, Tcloud = cloud top temperature

n/s = Not specified

TABLE 2 - Additional data/products currently received and wish to receive

Country/Territory	Types of data/products	Currently receiving			Wish to receive		
		Parameter	Originator	Measure	Parameter	Measure	Purpose
Bahrain	Satellite	none	-	-	n/s	Internet	plotting
China	Aircraft	Temp, Wind, Altitude	JMA(Japan)	n/s	Temp, Wind, Altitude	GTS	assimilation
	Satellite	n/s	JMA	n/s	n/s	n/s	
	Wind profiler	n/s	JMA	n/s	n/s	GTS	
Hong Kong, China	Aircraft	Wind, Temp, Humid, Vertical gust	NOAA(USA), BoM(Australia), FSL (USA)	GTS GTS Internet	Temp, Wind, Humid	GTS	assimilation
	Satellite	Wind, Precipitable water	NOAA	GTS, Internet	Wind	GTS or Internet	
	Wind profiler	Wind	JMA	GTS	Wind	GTS	
Japan	Aircraft	Wind, Temp, Humid, Turbulence	NOAA, UKMO(UK), DWD(Germany), BoM, Met Service (New Zealand)	GTS	Temp, Wind, Humid, Turbulence	GTS	assimilation
	Satellite	Thickness, Precipitable water, Cloud, Wind, Temp, etc.	NOAA, EUMETSAT	GTS	Temp, Wind, Thickness, Precipitable water, Cloud, etc.	GTS	
	Wind profiler	Wind, Temp	NOAA, UKMO, DWD, KNMI (Netherlands), HKO(Hong Kong,China)	GTS	Temp, Wind	GTS	
	Maritime	SST, Salinity, Current	NOAA, Meteo France, MSC(Canada), BoM, Service Argos	GTS	SST, Salinity, Current	GTS	

Lao, People's Democratic Republic	Satellite	Image	n/s	Internet	Temp, Wind, Pressure, RR, Humid, Tdew, Pc	GTS	plotting
	Wind profiler	n/s	TMD(Thailand)	GTS	n/s	GTS	
Macao, China	Aircraft	none	-	-	Temp, Wind, Humid(Tdew)	Internet	assimilation, plotting
	Satellite	none	-	-	Cloud track wind, TOVS	Internet	
	Wind profiler	Wind	HKO	n/s	Temp, Wind	Internet	
Maldives	Aircraft	none	-	-	Temp, Wind	Internet	plotting, issue warnings & advisories
	Satellite	none	-	-	Temp, Wind, Volcanic ash, Tropical cyclone	Internet	
Mongolia	Aircraft	none	-	-	Pressure, Height, Temp, Wind, R	VSAT	assimilation, plotting
	Satellite	none	-	-	Temp, Wind, Height	VSAT	
Myanmar	Satellite	Image, Tcould	IMD(India),TMD, ECMWF	n/s	Temp, Wind	GTS, Internet	climate analysis and NWP
	Wind profiler	Wind	n/s	n/s	Wind	GTS, Internet	
Nepal	Aircraft	none	-	-	Temp, Wind	GTS and Internet both	plotting
	Satellite	none	-	-	Image, Temp, Wind	GTS and Internet both	
	Wind profiler	none	-	-	Wind	GTS and Internet both	
Pakistan	Satellite	none	-	-	Temp, Wind	Internet GTS	plotting
Qatar	Aircraft	none	-	-	Temp, Wind, Sig	n/s	assimilation, general and aviation weather services
	Satellite	none	-	-	Cloud, Ctype, Cvector	n/s	
	Wind profiler	none	-	-	Temp, Wind	n/s	
Thailand	Aircraft	none	-	-	any	GTS	assimilation, plotting
	Satellite	none	-	-	any	GTS	

	Wind profiler	none	-	-	any	GTS	
Uzbekistan	Aircraft	none	-	-	Temp, Wind, Height, Humid	GTS	plotting
	Satellite	none	-	-	Temp, Wind, Height, Humid	GTS	
	Wind profiler	none	-	-	Wind	GTS	
Viet Nam	Satellite	none	-	-	Wind (Quikscat), SST	GTS, Internet	assimilation, plotting
	Wind profiler	none	-	-	Temp, Wind	GTS, Internet	

NOTES: Abbreviations in parameter columns etc. are:

Wind = U and/or V or speed and/or direction of wind, Temp = Temperature, Humid = Relative humidity, Tcloud = Cloud top temperature,

SST =Sea surface temperature, Cloud = Cloud amount, Ctype = Type of cloud, Cvector = Cloud motion vector,

Sig = Significant weather, Tdew = Dew-point temperature

n/s = Not specified

Appendix B

The result of the survey on use of the Internet

1. Accessibility to the Internet

Q.2-1 Does your Service access the Internet?

- a. Yes. We have accessed the Internet since _____ (month/year). [15]
- b. No. We have not yet accessed the Internet, [0]
 - b-1. but we plan to access the Internet as from _____ (month/year).
 - b-2. nor we have no plan to access the Internet because of:
 - b-2-1. the immature infrastructure (Internet Service Provider (ISP) is not available)
 - b-2-2. the financial constraints
 - b-2-3. no requirement
 - b-2-4. others:

Q.2-2 How many ISPs are there in your country/territory?

- a. 0 [0]
- b. 1 [4]
- c. 2-10 [4]
- d. 11 or more [5]
- e. unknown [2]

Q.2-3 What is the mode for the Internet connection and how much is the nominal traffic speed in total?

- a. optical cable: _____ M bps [5]
- b. xDSL: _____ M bps [3]
- c. ISDN: _____ k bps [3]
- d. dial-up: _____ k bps [7]
- e. others: [0]
- Not specified [2]

2. Data exchange by the Internet

Q.2-4 What is the purpose for the Internet access?

- a. obtaining meteorological data/products [2]
 - a-1. by WWW (World Wide Web) [12]
 - a-2. by ftp [11]
 - a-3. others [0]
- b. providing meteorological data/products [2]
 - b-1. by WWW [7]
 - b-2. by ftp [4]
 - b-3. others [0]
- c. E-mail [12]
- d. others: point to point TCP/IP link with RTH [1]

Q.2-5 What types of data/products does your Service obtain via the Internet?

- a. metadata and/or operational information [6]
- b. surface and/or upper-air observations [6]
- c. satellite observations [2]
- d. satellite imagery [12]
- e. NWP model products [11]
- f. weather forecasts [10]
- g. severe weather forecast (typhoon, volcanic ash etc.) [5]
- h. weather charts [8]
- i. climatological data [9]

- j. hydrological data [3]
- k. environmental data (ozone, greenhouse gasses, etc.) [5]
- l. others: earthquake information, maritime data [2]

Q.2-6 Which organization does your Service obtain the data/products via the Internet from?

- a. NMHSs [10]
- b. government agencies
 - b-1. foreign [13]
 - b-2. domestic [4]
- c. institutes for education or research
 - c-1. foreign [7]
 - c-2. domestic [2]
- d. private companies/industrial sectors
 - d-1. foreign [2]
 - d-2. domestic [3]
- e. others [0]

Q.2-7 What types of data/products does your Service provide via the Internet?

- a. metadata and/or operational information [4]
- b. surface and/or upper-air observations [6]
- c. satellite observations [2]
- d. satellite imagery [5]
- e. NWP model products [3]
- f. weather forecasts [12]
- g. severe weather forecast (typhoon, volcanic ash, etc.) [5]
- h. weather charts [5]
- i. climatological data [9]
- j. hydrological data [5]
- k. environmental data (ozone, greenhouse gasses, etc.) [2]
- l. others: RADAR imagery, maritime data, El Nino monitoring and outlook [2]

Q.2-8 What are the users of the data/products provided from your Service via the Internet?

- a. NMHSs [7]
- b. government agencies
 - b-1. foreign [8]
 - b-2. domestic [7]
- c. institutes for education/research
 - c-1. foreign [5]
 - c-2. domestic [9]
- d. private companies/industrial sectors
 - d-1. foreign [3]
 - d-2. domestic [9]
- e. mass media
 - e-1. foreign [3]
 - e-2. domestic [8]
- f. others [0]

3. Security of the Internet

Q.2-9 Has your Service experienced any problems of the Internet securities?

- a. Yes
 - a-1. computer virus [12]
 - a-2. SPAM mail [6]
 - a-3. DOS attack [2]
 - a-4. identity theft ("snooping", pretending authorized user)[1]

- a-5. alteration of stored data [1]
- a-6. destruction of computer systems [1]
- a-7. leakage of information [0]
- a-8. others [0]
- b. No [3]

Q.2-10 Has your Service taken any measures to prevent unauthorized access to your internal system via the Internet?

- a. Yes
 - a-1. firewall [6]
 - a-2. user account and password [10]
 - a-3. intruder detection software [2]
 - a-4. virus detection software [12]
 - a-5. others [0]
- b. No [0]
- Not specified [1]

Q.2-11 Who takes charge of the Internet security for your Service?

- a. staff of our NMHS [11]
- b. ISP (Internet Service Provider) [6]
- c. computer/software company [0]
- d. none [2]
- e. others [0]
- Not specified [1]

Appendix C

The result of the survey on the migration to the TDCFs

Q.3-1 Does your Service deal with data/products in TDCFs, namely BUFR and/or CREX?

- a. Yes, we have been
 - a-1. generating data/products in BUFR [2]
Wind profiler, AWS
 - a-2. generating data/products in CREX [1]
 - a-3. receiving data/products in BUFR [4]
Wind profiler, TOVS, ATOVS, AMV
 - a-4. receiving data /products in CREX [0]
- b. No [11]

Q.3-2 Why doesn't your Service deal with BUFR/CREX data/products?

- a. not necessary to use BUFR/CREX data/products [0]
- b. lack of telecommunication means especially for the data/products in BUFR [3]
- c. no application software to deal with BUFR/CREX data/products [6]
- d. others: not prepared [1]
- Not specified [4]

Q.3-3 Has your Service developed a national migration plan?

- a. Yes [1]
- b. No
 - b-1. we are now developing a national migration plan. [3]
 - b-2. we will develop a national migration plan. [11]
 - b-3. we will not develop a national migration plan. [0]

Q.3-4 According to the migration plan, some NMHSs may use CREX instead of BUFR due to circumstances, e.g. communication constraints. Does your Service plan to use CREX instead of BUFR?

- a. Yes [0]
- b. No [3]
- c. Not decided [12]

Q.3-5 During the migration process, NMHSs may perform so called "double transmission" or "dual dissemination" upon request, where data is transmitted both in TACs such as SYNOP, TEMP, etc. and in BUFR/CREX. Does your Service need (or plan to use) the data in TACs during the migration process?

- a. Yes [3]
Area code 48, SYNOP, TEMP, SHIP
- b. No [2]
- c. Not decided [9]
- Not specified [1]

Q.3-6 To complete the migration successfully, encoder/decoder software for BUFR/CREX is indispensable. Has your Service secured (or will your Service secure) the encoder/decoder software for the migration? If “yes”, please describe who developed (or will develop) the software?

- a. Yes
 - a-1. staff of our NMHS
 - a-1-1. the software has already been completed. [0]
 - a-1-2. the software will be completed by _____ (month/year). [2]
End of 2005
 - a-2. private company/industrial sector
 - a-2-1. the software has already been completed. [1]
 - a-2-2. the software will be completed by _____ (month/year) [2]
Oct. 2005, Feb. 2004
 - a-3. other NMHS
 - a-3-1. the software has already been provided. [0]
 - a-3-2. the software will be provided by _____ (month/year) [0]
 - a-4. others: [0]
- b. No [11]

Q.3-7 CBS Ext. (02) paid attention with praise that the European Centre for Medium-range Weather Forecast (ECMWF), United Kingdom and Russian Federation developed or would develop the encoder/decoder software for BUFR/CREX which are available for the WMO Members free of charge. Is your Service interested in the software?

- a. Yes [15]
- b. No [0]

Q.3-8 International training seminars are planned to be held in order to execute the migration smoothly. A seminar for the Members in east area of RA II and west area of RA V is tentatively scheduled for next spring. Also, a seminar for the Members in west area of RA II and east area of RA VI is planned. Does your Service have an intention to join either seminar?

- a. Yes [14]
- b. No [1]

CODE MIGRATION SCHEDULE

	Category					
	Cat.1: common	Cat.2: satellite observations	Cat.3: aviation⁽¹⁾	Cat. 4: maritime	Cat. 5⁽²⁾: miscellaneous	Cat. 6⁽²⁾: almost obsolete
Lists of Traditional code forms	SYNOP SYNOP MOBIL PILOT PILOT MOBIL TEMP TEMP MOBIL TEMP DROP CLIMAT CLIMAT TEMP	SAREP SATEM SARAD SATOB	METAR SPECI TAF CODAR AMDAR WITEM ARFOR ROFOR	BUOY TRACKOB BATHY TESAC WAVEOB SHIP CLIMAT SHIP PILOT SHIP TEMP SHIP CLIMAT TEMP SHIP	RADOB RADREP IAC IAC FLEET GRID (to GRIB) MAFOR HYDRA HYFOR RADOF	ICEAN GRAF NACLI etc. SFAZI SFLOC SFAZU ROCOB ROCOB SHIP
	Schedule					
Start experimental exchange⁽³⁾	Nov. 2002 for some data (AWS SYNOP, TEMP USA)	Current at some Centres	2007 2002 at some Centres for AMDAR	2005 2003 for Argos data (BUOY, sub-surface floats, XBT/XCTD)	2004	Not applicable
Start operational exchange⁽³⁾	Nov. 2005	Current at some Centres	2008 2003 for AMDAR	2007 2003 for Argos data (BUOY, sub-surface floats, XBT/XCTD)	2006	Not applicable

Migration complete	Nov. 2010	Nov. 2006	2015 2005 for AMDAR	2012 2008 for Argos data (BUOY, sub-surface floats, XBT/XCTD)	2008	Not applicable
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NOTES:

- (1) METAR, SPECI, TAF and ROFOR codes require ICAO coordination and approval. Experimental exchange may start in 2007 in line with amendment 74 to ICAO Annex 3/WMO Technical Regulations.
- (2) Category 5 codes will need to be reviewed to determine if there is a final requirement to be migrated to BUFR/CREX. If not, they will be moved to category 6. Codes in category 6 are not to be migrated.
- (3) All dates above are meant as "not later than". However, Members and organizations are encouraged to start experimental exchange, and, if all relevant conditions (see below) are satisfied, to start operational exchange as soon as possible.
 - (a) **Start of experimental exchange:** data will be made available in BUFR (CREX if needed) but not operationally, i.e. in addition to the current alphanumeric codes, which are still operational;
 - (b) **Start of operational exchange:** data will be made available in BUFR (CREX if needed) whereby some (but not all) Members rely on them operationally. Some distribution of the current alphanumeric codes will still be done;
 - (c) **Migration complete:** at this date the BUFR (CREX if needed) exchange becomes the standard WMO practice. Distribution of the current alphanumeric codes is terminated. For archiving purposes and where BUFR or CREX exchange still causes problems, the alphanumeric codes may be used on a local or national.

Relevant conditions to be satisfied before experimental exchange may start:

- (a) Corresponding BUFR/CREX-tables and templates are available;
- (b) Training of exchanging parties has been completed;
- (c) Required software of exchanging parties (encoding, decoding, viewing) is implemented.

Relevant conditions to be satisfied before operational exchange may start:

- (a) Corresponding BUFR/CREX-tables and templates are fully validated;
 - (b) Training of all concerned parties has been completed;
 - (c) All required software (encoding, decoding, viewing) is operational.
-