WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMMME AREA GROUP ON
INTEGRATED OBSERVING SYSTEMS

IMPLEMENTATION-COORDINATION TEAM ON INTEGRATED OBSERVING SYSTEM (ICT-IOS)
Eighth Session

GENEVA, SWITZERLAND, 7 – 10 APRIL 2014

CBS/OPAG-IOS/ICT-IOS8 / Doc. 4.1
(21.03.2014)

ITEM: 4.1

Original: ENGLISH

REVIEW OF THE STATUS OF THE SURFACE-BASED COMPONENTS OF THE GOS

REGIONAL BASIC SYNOPTIC NETWORK (RBSN) AND REGIONAL BASIC CLIMATOLOGICAL NETWORK (RBCN)

(Submitted by the Secretariat)

SUMMARY AND PURPOSE OF DOCUMENT

The document provides information on the status of implementation of the RBSN and RBCN in WMO Regions.

ACTION PROPOSED

The Meeting is invited to note the information contained in this document when discussing how it organises its work and formulates its recommendations.

Appendices:
A. Status of implementation – RBSN surface synoptic stations
B. Status of implementation – RBSN upper-air synoptic stations
C. Status of implementation – RBCN climatological stations
D. Trends in the RBSN network of stations

DISCUSSION

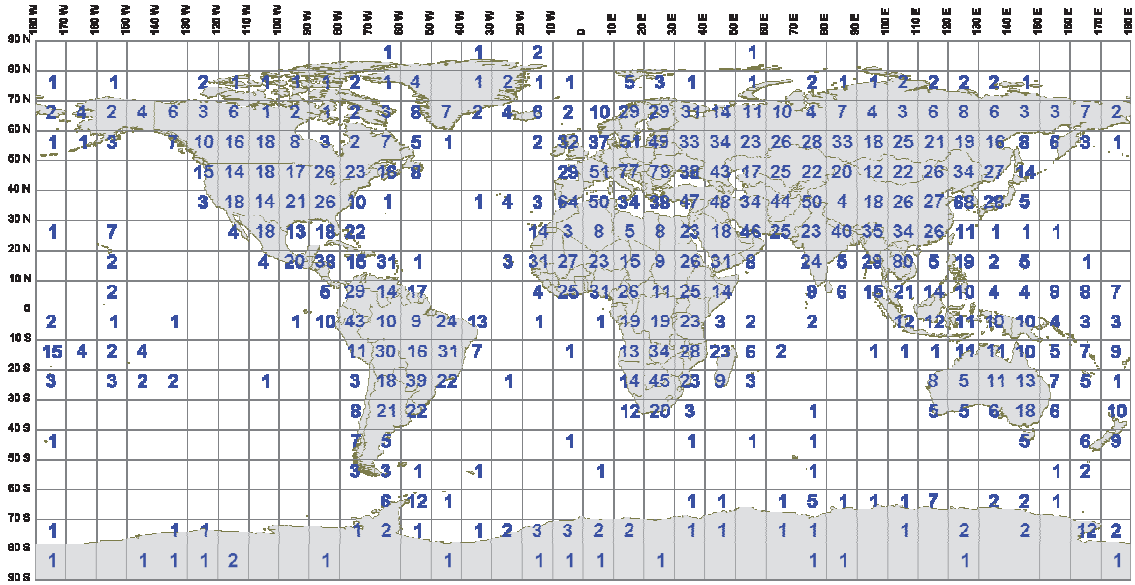
REGIONAL BASIC SYNOPTIC NETWORK (RBSN) AND REGIONAL BASIC CLIMATOLOGICAL NETWORK (RBCN)

1. Each WMO Regional Association once in four years draws up a Regional Basic Synoptic Network (RBSN) and a Regional Basic Climatological Network (RBCN) to meet the collective needs of its Members. Together, these Regional networks form an integrated global network that facilitates performance monitoring over the globe. Generally, surface synoptic stations are expected to report every six hours for global exchange and every three hours for regional exchange, while upper-air stations are required to report at least twice per day. The details of the observational programmes provided by these stations operated by WMO Members are given in *Weather Reporting* (WMO-No. 9, Volume A), and is available on the WMO website: http://www.wmo.int/pages/prog/www/ois/volume-a/vola-home.htm

Surface synoptic observations

2. The status of implementation of RBSN surface stations as of 15 March 2014, according to information provided by Members, is presented in Table I (Appendix A). The level of implementation of the surface stations in 2014 that make 8 observations per day (complete observational programme) varied from 29% in Region IV (performs 55% of observations at only the 4 main standard hours) to 98% in Region VI, with a global average increase from 72% (in 2012) to 74%. In Regions II, IV and VI there has been an appreciable increase in the number of stations resulting from the Regional Association sessions being held during the period 2012-2013. Globally, there has been a significant increase of around 10% in the number of RBSN stations continuing the positive trend witnessed during the previous intersessional periods. The percentage of stations not yet established or otherwise not recorded or non-operational (silent) has remained unchanged at 2%. The trends over the last 10 year period are shown in Figure II (see Appendix D).

Number of surface synoptic stations in the RBSNs (global network) – 2013

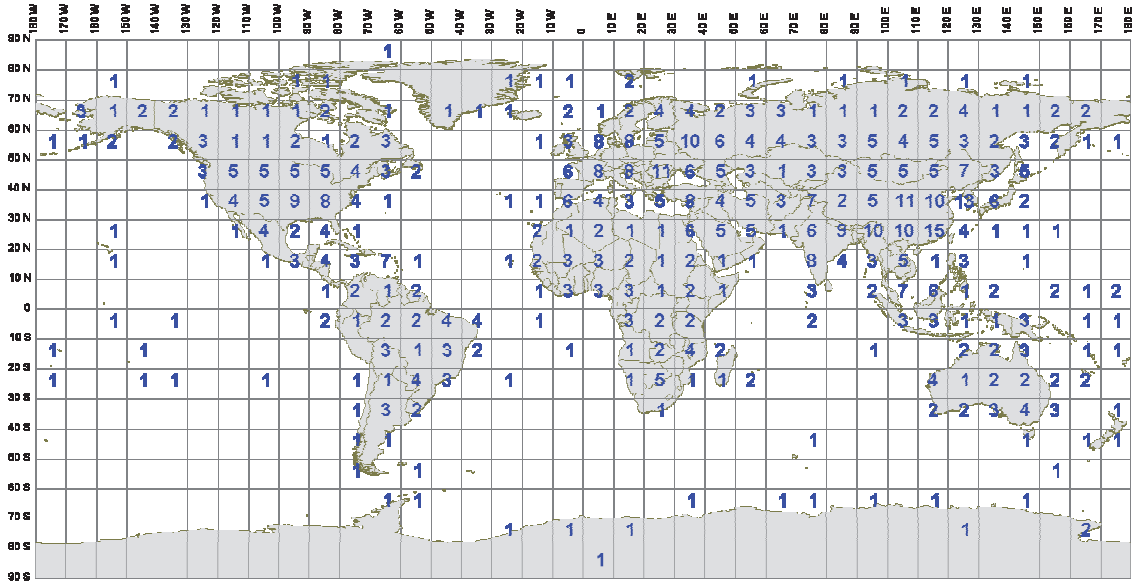


Upper-Air synoptic observations

3. Nearly 90 percent of all established upper-air stations are included in the RBSNs. The status of implementation of all upper-air stations in 2014 with comparable figures for 2012 is presented in Table II (Appendix B). During the intersessional period the number of radiosonde

stations has also shown a positive increase from 753 (in 2012) to 764 stations (in 2014). Also the overall implementation of stations (making 2 observations per day) in almost all regions remained unchanged with a marginal increase of around 1% globally in 2014. The percentage of stations not yet established or otherwise not recorded or non-operational (silent) has decreased to 2% (18 stations) globally compared to 3% (23 stations) during the same period. The trends over the last 10 year period are shown in Figure III (see Appendix D).

Number of upper-air synoptic stations in the RBSNs (global network) - 2013



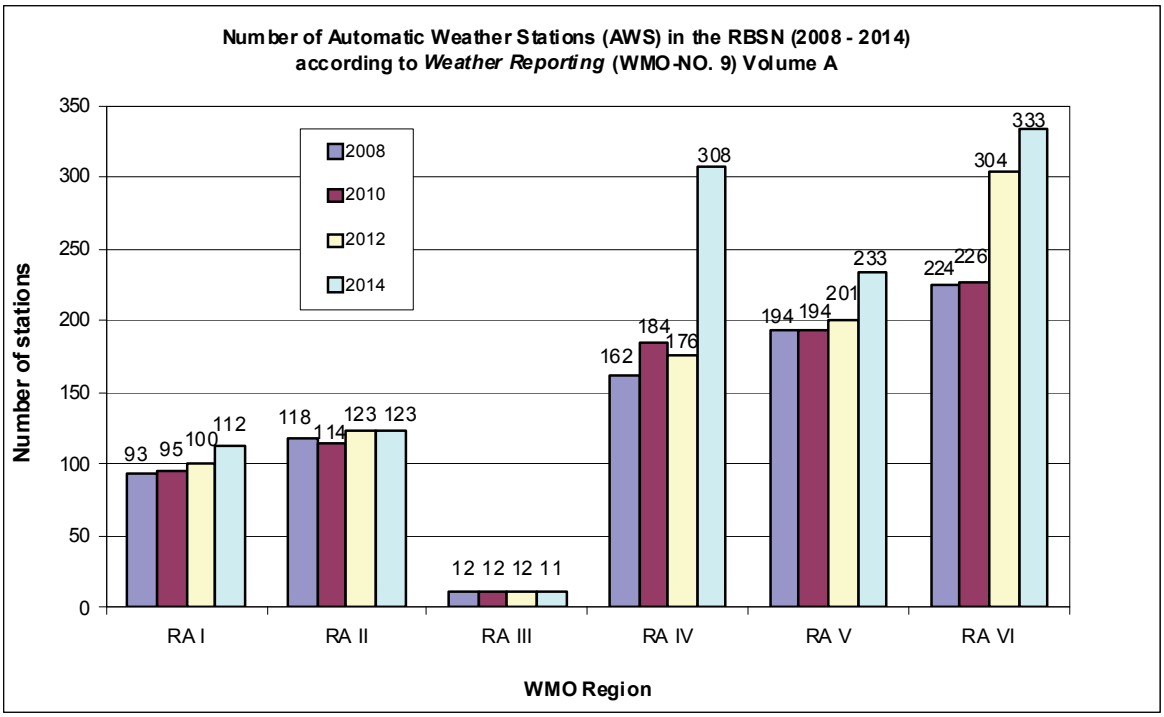
Climatological observations

4. The status of implementation of RBCN climatological stations as of March 2014, according to information provided by Members, is presented in Table III (see Appendix C). All regions comprise a total of 2863 (2840 in 2012) CLIMAT reporting stations in the RBCN. A few stations have been deleted or added from the approved list of RBCN stations during the intersessional period, with an increase in CLIMAT reporting stations mainly in Regions IV and VI which revised their list of stations following the respective Regional Association sessions. Overall implementation globally of climatological stations reporting CLIMAT increased by 5% to 89% with almost all regions showing a positive increase.

Automatic weather stations

5. The number of automatic stations in the RBSN according to information provided by Members in *Weather Reporting* (WMO-No. 9) Volume A, reached 1120 in 2014, compared to 916 stations in 2012, an increase of over 22% within the intersessional period. All Regions excluding Regions II and III show an increase in the number of automatic stations (Figure I), with the most significant increase recorded in Region IV. Out of the current globally established stations (11000+ recorded in Volume A) a total of 4712 stations are listed as automatic stations, of which 25% of all surface synoptic automatic stations are in the RBSN.

Figure I



6. The existing National Focal Points for WMO on operational matters related to Volume A; the Regional Basic Synoptic Network (RBSN); and for GCOS and related climatological data monitoring issues has significantly facilitated the collection of detailed information on national specifications and also serves as an informal channel for exchange of information between the WMO Secretariat, NMHSs and CBS Lead Centres. The respective lists of focal points are available on the WMO website (see www.wmo.int/pages/prog/www/FocalPoints.html. Prompt notifications of changes and updated information from members on a regular basis are encouraged to facilitate communication.

Table I

Status of implementation of RBSN surface synoptic stations as of March 2014 compared to those in 2012. The stations report every three hours, every six hours and, less frequently, as committed to by Members in Weather Reporting (WMO-NO. 9, Volume A)

WMO Regions	1 Number of stations making observations at both the main and the intermediate standard hours per day (complete programme)				2 Number of stations making observations at only the main standard or in addition at some intermediate hours per day (not the complete programme)				3 Number of stations making at least one or more observations per day (incomplete programme)				4 Number of stations not yet established or otherwise non-operational (silent)				Total number of stations in the RBSN (1+2+3+4)	
	Number / (%)				*Number / (%)*				*Number / (%)*				*Number / (%)*				*Number*	
	2012		***2014***		***2012***		***2014***		***2012***		***2014***		***2012***		***2014***		***2012***	***2014***
RA I	*467*	*(60%)*	*469*	*(60%)*	*47*	*(6%)*	*48*	*(6%)*	*245*	*(31%)*	*252*	*(32%)*	*21*	*(3%)*	*11*	*(1%)*	*780*	*780*
RA II	*1202*	*(88%)*	*1523*	*(92%)*	*49*	*(4%)*	*52*	*(3%)*	*104*	*(7%)*	*67*	*(4%)*	*10*	*(1%)*	*6*	*(1%)*	*1365*	*1648*
RA III	*158*	*(36%)*	*164*	*(38%)*	*2*	*(1%)*	*3*	*(1%)*	*271*	*(62%)*	*266*	*(61%)*	*4*	*(1%)*	*2*	*(1%)*	*435*	*435*
RA IV	*186*	*(35%)*	*181*	*(29%)*	*245*	*(46%)*	*349*	*(55%)*	*65*	*(12%)*	*57*	*(9%)*	*35*	*(7%)*	*48*	*(7%)*	*531*	*635*
RA V	*300*	*(75%)*	*309*	*(77%)*	*38*	*(9%)*	*41*	*(10%)*	*47*	*(12%)*	*41*	*(10%)*	*16*	*(4%)*	*8*	*(2%)*	*401*	*399*
RA VI	*817*	*(97%)*	*873*	*(98%)*	*5*	*(1%)*	*5*	*(1%)*	*16*	*(2%)*	*9*	*(1%)*	*2*	*(.2%)*	*1*	*(.1%)*	*840*	*888*
Global	***3130***	***(72%)***	***3519***	***(74%)***	***386***	***(9%)***	***498***	***(10%)***	***748***	***(17%)***	***692***	***(14%)***	***88***	***(2%)***	***76***	***(2%)***	***4352***	***4785***

Note: Main standard hours – 0000, 0600, 1200, 1800 UTC; Intermediate hours – 0300, 0900, 1500, 2100 UTC

Table II

Status of implementation of RBSN upper-air stations (Radiosonde stations) as of March 2014 compared to those in 2012. The number of stations expected to make observations at the 2 main standard hours and less frequently, as committed to by Members in Weather Reporting (WMO-No. 9) Volume A

WMO Region	1 Number of stations making observations at the two main standard hours per day				2 Number of stations making at least one observation at the main standard or at intermediate hours per day				3 Number of stations not yet established or otherwise non-operational (silent)				Total number of stations in the RBSN (1+2+3)	
	Number / (%)				*Number / (%)*				*Number / (%)*				*Number*	
	2012		***2014***		***2012***		***2014***		***2012***		***2014***		***2012***	***2014***
RA I	*18*	*(23%)*	*18*	*(23%)*	*51*	*(64%)*	*51*	*(64%)*	*10*	*(13%)*	*10*	*(13%)*	*79*	*79*
RA II	*228*	*(83%)*	*245*	*(86%)*	*40*	*(15%)*	*39*	*(13%)*	*6*	*(2%)*	*2*	*(1%)*	*274*	*286*
RA III	*21*	*(40%)*	*21*	*(40%)*	*28*	*(53%)*	*28*	*(53%)*	*4*	*(7%)*	*4*	*(7%)*	*53*	*53*
RA IV	*126*	*(95%)*	*127*	*(95%)*	*5*	*(4%)*	*6*	*(4%)*	*2*	*(1%)*	*1*	*(1%)*	*133*	*134*
RA V	*35*	*(39%)*	*33*	*(38%)*	*53*	*(60%)*	*54*	*(61%)*	*1*	*(1%)*	*1*	*(1%)*	*89*	*88*
RA VI	*107*	*(86%)*	*107*	*(86%)*	*18*	*(14%)*	*17*	*(14%)*	*0*	*0*	*0*	*0*	*125*	*124*
Global	***535***	***(71%)***	***551***	***(72%)***	***195***	***(26%)***	***195***	***(26%)***	***23***	***(3%)***	***18***	***(2%)***	***753***	***764***

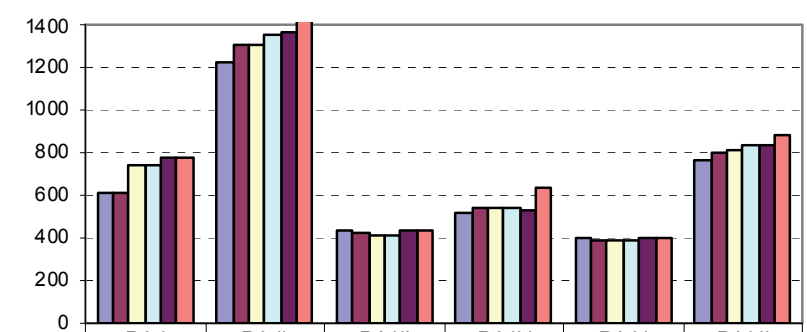
Note 1: All radiosonde (R) stations listed above includes radiowind (W) stations.
Note 2: Main standard hours – 0000, 1200 UTC; Intermediate hours – 0600, 1800 UTC

Table III

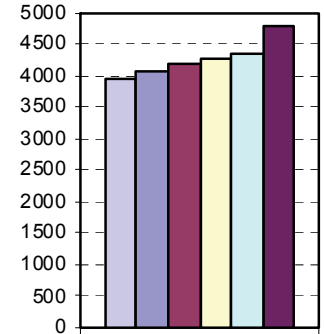
Status of Implementation of RBCN (CLIMAT) reporting stations as of March 2014 compared to those in 2012 as committed to by Members in Weather Reporting (WMO-No. 9) Volume A

WMO Regions	CLIMAT									
	Number of stations implemented as recorded in Volume A				Number of stations not implemented or not recorded in Volume A				Total number of stations in the RBCN	
	Number / (%)				*Number*				*Number*	
	2012		***2014***		***2012***		***2014***		***2012***	***2014***
RA I	*479*	*(66%)*	*480*	*(66%)*	*244*	*(34%)*	*243*	*(34%)*	*723*	*723*
RA II	*588*	*(88%)*	*642*	*(97%)*	*78*	*(12%)*	*22*	*(3%)*	*666*	*664*
RA III	*272*	*(91%)*	*282*	*(95%)*	*26*	*(9%)*	*16*	*(5%)*	*298*	*298*
RA IV	*297*	*(94%)*	*322*	*(96%)*	*19*	*(6%)*	*15*	*(4%)*	*316*	*337*
RA V	*220*	*(88%)*	*239*	*(97%)*	*31*	*(12%)*	*8*	*(3%)*	*251*	*247*
RA VI	*528*	*(90%)*	*586*	*(98%)*	*58*	*(10%)*	*8*	*(2%)*	*586*	*594*
Global	***2384***	***(84%)***	***2551***	***(89%)***	***456***	***(16%)***	***312***	***(11%)***	***2840***	***2863***

Figure II - Number of surface synoptic stations comprising the RBSN - Region/Global (Period 2004-2014)

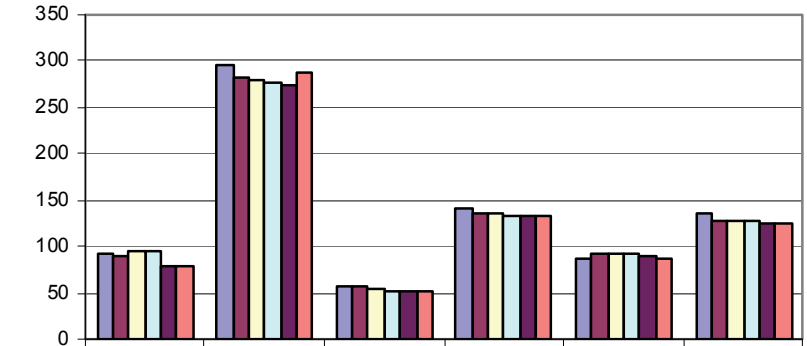


	RA I	RA II	RA III	RA IV	RA V	RA VI
2004	611	1234	435	512	395	770
2006	611	1313	416	535	389	797
2008	744	1309	407	535	389	808
2010	744	1355	407	538	389	834
2012	780	1365	435	531	401	840
2014	780	1648	435	635	399	888

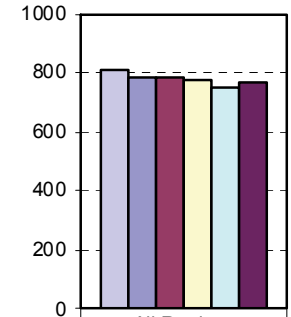


	All Regions
2004	3957
2006	4061
2008	4192
2010	4267
2012	4352
2014	4785

Figure III - Number of upper-air radiosonde stations comprising the RBSN - Region/Global (Period 2004- 2014)



	RA I	RA II	RA III	RA IV	RA V	RA VI
2004	92	295	58	142	87	135
2006	89	282	56	136	93	129
2008	94	279	54	136	93	127
2010	94	275	53	133	93	128
2012	79	274	53	133	89	125
2014	79	286	53	134	88	124



	All Regions
2004	809
2006	785
2008	783
2010	776
2012	753
2014	764