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

STATUS OF THE SURFACE-BASED SUB-SYSTEM OF THE GOS IN THE ANTARCTIC

(Submitted by the Secretariat)

SUMMARY AND PURPOSE OF DOCUMENT

The document provides information on the status of the surface-based sub-system of the GOS in the Antarctic.

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.

DISCUSSION

WMO NETWORKS IN THE POLAR REGIONS (ANTARCTIC ONLY)

THE ANTARCTIC OBSERVING NETWORK (ANTON)

1. Once in four years the WMO Congress or EC approves the Antarctic Observing Network (AntON) proposed by the EC Panel of Experts on Polar Observations, Research and Services (EC-PORS) to meet the collective needs of its Members. The integration of all Antarctic networks (former ABSN/ABCN) into an Antarctic Observing Network (AntON) comprising of all operational stations, all of which should produce climate messages, form an integrated surface-based basic network that facilitates synoptic and climate monitoring over the Polar Regions in particular the Antarctic. The list of stations constituting the AntON is given in the report of the most recent session of Congress (Cg-XVI) and is available on the WMO website at http://www.wmo.int/pages/prog/www/ois/rbsn-rbcn/rbsn-rbcn-home.htm.

2. 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 at http://www.wmo.int/pages/prog/www/ois/volume-a/vola-home.htm.

3. The status of implementation of AntON surface and upper-air stations as of 15 March 2014, according to information provided by Members, is presented in Table I. During the intersessional period, the level of implementation of the surface synoptic stations in the AntON (within Antarctica only) that make 8 observations per day (complete observational programme) increased to 82% (87 stations) out of 106 stations in total. The number of non-established or non operational stations decreased by one station. The remaining 17 stations (16%) perform observations at the 4 main standard hours per day, unchanged as in 2012. The number of automatic weather stations (AWSs) in the AntON also remained unchanged at 84 stations out of 106 stations.

Table I

Status of implementation of AntON stations (Antarctic only), as of March 2014 compared to those in 2012. The surface synoptic stations perform observations every three hours, every six hours and, less frequently; The upper-air synoptic observations at the 2 main standard hours and less frequently, as committed to by Members in Weather Reporting (WMO-No. 9, Volume A)

Type of observation	1 Complete Observational programme per day		2 Observations at main standard hours per day		3 At least one observation per day		4 Not established or non-operational		Total number of stations in the AntON (1+2+3+4)	
	Number of stations / (%)									
	2012	***2014***	***2012***	***2014***	***2012***	***2014***	***2012***	***2014***	***2012***	***2014***
Surface (SYNOP)	*84 (81%)*	*87 (82%)*	*17 (16%)*	*17 (16%)*	-	-	*3 (3%)*	*2 (2%)*	*104*	*106*
Upper-air (TEMP)	-	-	*5 (33%)*	*6 (40%)*	*10 (67%)*	*9 (60%)*	-	-	*15*	*15*

Note:
Main standard hours (Surface Obs.) – 0000, 0600, 1200, 1800 UTC; Intermediate hours – 0300, 0900, 1500, 2100 UTC
Main standard hours (Upper-air Obs.) – 0000, 1200 UTC; Intermediate hours – 0600, 1800 UTC

4. The level of implementation of the number of upper-air stations that make 2 observations per day also increased to 40% (6 stations) from a total of 15 stations (unchanged since 2012) in the AntON (see Table I above). The remaining 9 stations (60%) perform at least one or more observations per day. There are no non established upper-air stations in the AntON.

5. The overall implementation of climatological stations in the AntON (within Antarctica only) reporting CLIMAT is 100% out of 106 stations in total. The maximum percentage is possibly due to the formation of AntON comprising of all operational stations in the Antarctic, all of which should produce climate messages.

6. Detailed WMO performance monitoring statistics for the Antarctic are reported under 'Polar and Cryosphere Observations' and 'Performance Monitoring Results' in Docs. 4.4(2) and 4(8) respectively.

7. The recently concluded Antarctic Task Team Meeting (ATT), in Wellington, New Zealand, February 2014) concluded that the experience with the AntON suggests that it is very useful to have a comprehensive list of stations, but it does also require a dedicated monitoring centre to pick up when stations drop out and to give feedback on any issues that arise. WIS/WIGOS could help with regular RTH monitoring of the reception of data. The ATT also recorded the state of the AntON and the drawbacks listed below:

Surface Stations – SYNOP

• Asynoptic reporting may appear as data loss
• Aging AWS are failing
• Argos and Iridium charges have lead to loss of real-time data
• Some AWS are seasonally active, either due to power or deployment issues
• Staff do not always know why the observations are needed.
• Continued support is required for long term monitoring of basic meteorological parameters.

Upper-air Stations

• Some have a reduced frequency of flights
• Some have switched times, eg 00:00 to 12:00.
• Winter performance is declining
• Summer performance may be holding steady
• Continued support is required for long term monitoring of basic meteorological parameters.

Surface Stations – CLIMAT

• There were step changes in the distribution of CLIMATs; the first following appointment of the GCOS Lead Centre, and the second following the decision to generate partial CLIMAT message from SYNOP reports.
• GTS issues give varying availability of CLIMAT messages
• CLIMATs for AWS are often not available until data is downloaded and quality controlled. This may be after mid-month and sometimes towards the end of the month, depending on the availability of key staff.
• AWS often only measure a limited range of parameters.