

GCOS Network Management

The GCOS Secretariat is reporting regularly on the GCOS Surface Network (GSN), the GCOS Upper-Air Network (GUAN) and the GCOS Cooperation Mechanism (GCM), including the station list update, monitoring statistics for past and current years and current and recent observations projects undertaken by the GCOS network management.

Since January 2016 additional monitoring of the GSN stations has been provided through the EUMETNET Quality Monitoring Portal (<https://eucos.dwd.de/ravi/>), QMP.

This enhanced QMP not only provides real-time availability and timeliness statistics for surface and upper-air messages received at DWD (Offenbach) but also measurement quality as compared with NWP background fields (ECMWF). Members are encouraged to monitor the performance of their GSN stations through this portal, and report any issues with the appropriate WMO/GCOS Secretariat.

Whilst the majority of Region VI Members are providing the monthly CLIMAT message, there are still a few that are not. It is important to remind Members on their commitment in providing the monthly CLIMAT message both for their GSN and RBCN stations. Further, it is important to remind Members that radiosonde soundings will need to reach 30hPa height levels, and that there are still a few GUAN stations in RA VI which do not reach the required level.

Performance Report of the GSN

The following statistics are an annual summary of the monthly CLIMAT messages in the GCOS Climate Archive (National Climate Environmental Information, NCEI, US). According to the GCOS requirements a fully compliant GSN/RBCN shall have 12 CLIMAT reports. The values represent the 2017 percentage (Oct 2016 to Sep 2017) of stations that are compliant and those that are partially or non-compliant. In brackets are the statistics for 2016, 2015, 2014, 2013, 2012 and 2011 respectively.

GCOS Surface Network (GSN)

Region	No.	12 Monthly CLIMAT	6 - 11 Monthly CLIMAT	1 - 5 Monthly CLIMAT	0 Monthly CLIMAT
RA I	155	36% (40,29,29,32,28, 23)	30% (25,31,33,33,36,39)	4% (9,15,10,10,11,14)	30% (26,25,28,25,25,24)
RA II	258	81% (83,78,71,73,73,75)	13% (10,14,21,19,19,19)	0% (2, 2, 3, 2, 2, 1)	6% (5, 6, 5, 6, 6, 5)
RA III	101	57% (65,61,76,89,84,69)	20% (29,35,20,6,13,28)	17% (0, 0, 1, 0, 0, 0)	6% (6, 4, 3, 5, 3, 3)
RA IV	178	89% (90,88,88,88,81,80)	7% (7, 9,10,11,17,18)	4% (2, 2, 1, 1, 1, 1)	0% (1, 1, 1, 0, 1, 1)
RA V	151	62% (67, 66,70,63,58,52)	20% (15,16,17,16,23,34)	2% (3, 4, 1, 7, 7, 1)	16% (15,14,13,14,12,11)
RA VI	138	82% (84,77,80,82,78,81)	7% (7,14, 9,12,17,15)	4% (2, 3, 5, 2, 1, 0)	7% (7, 6, 6, 4, 4, 4)
ANTON	42	81% (81,77,79,60,45,50)	19% (17,19,19,36,43,33)	0% (2, 2, 2, 2, 5, 12)	0% (0, 2, 0, 2, 7, 5)

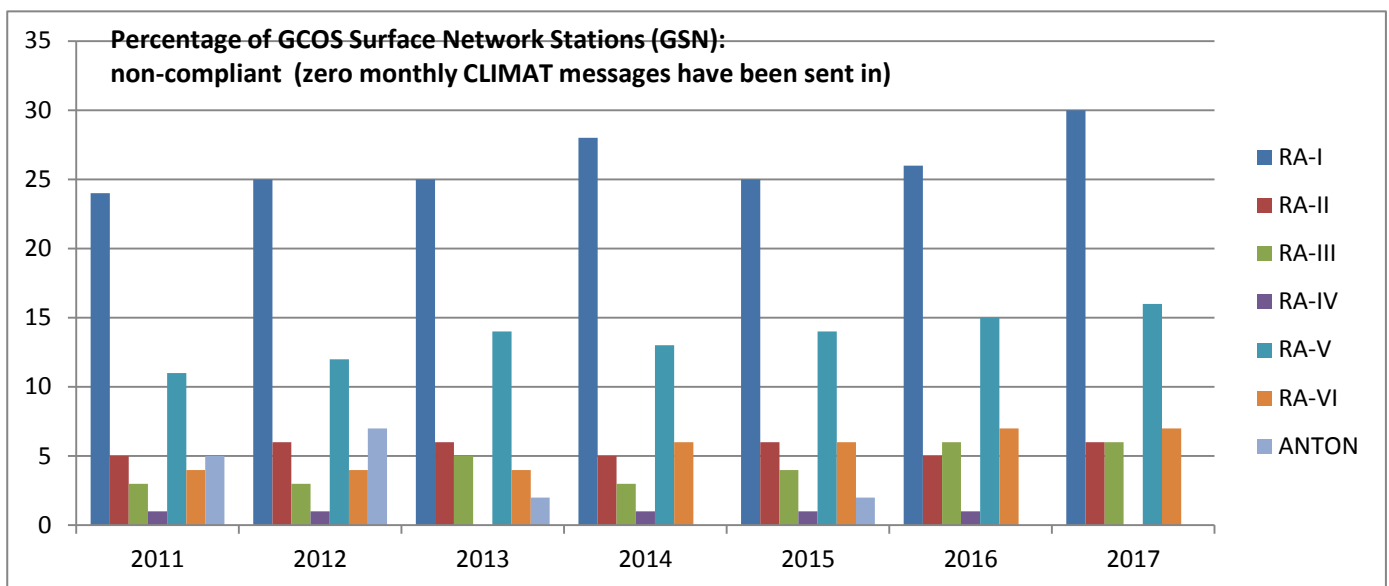
Regional Basic Climatological Network (RBCN, includes the GSN above)

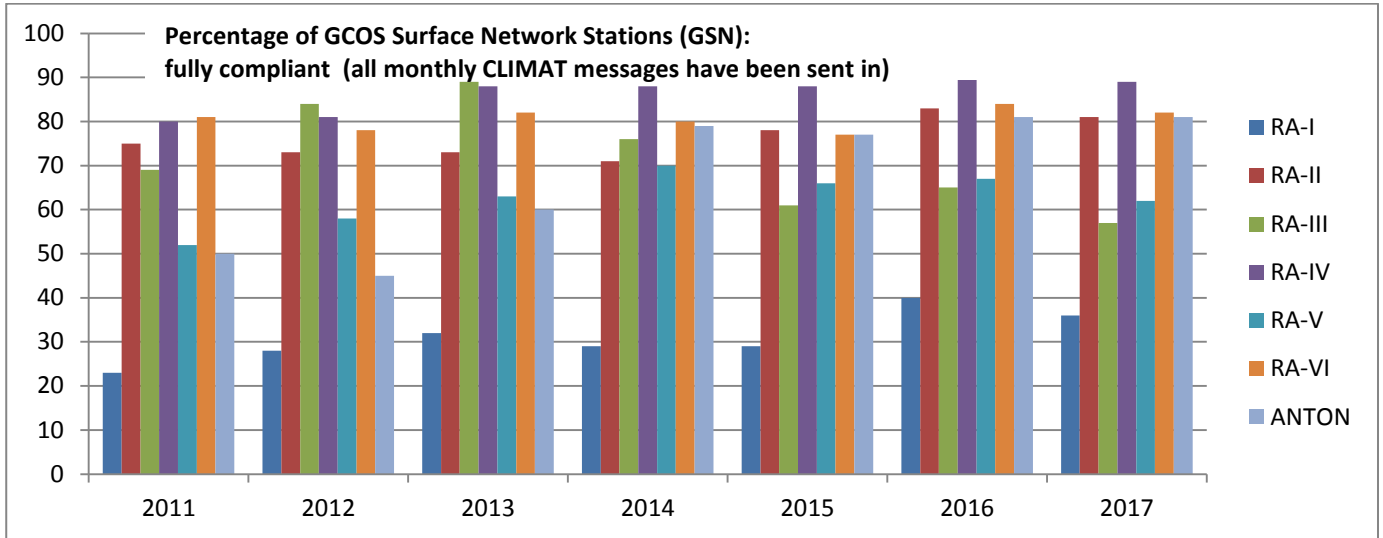
Region	No.	12 Monthly CLIMAT	6 - 11 Monthly CLIMAT	1 - 5 Monthly CLIMAT	0 Monthly CLIMAT
RA I	723	18% (23,16,17,19,13,12)	22% (17,22,20,20,23,22)	6% (8, 11, 8, 7,12,13)	54% (52,51,55,54,52,53)
RA II	664	78% (80,73,71,73,67,57)	14% (12,17,18,15,22,30)	1% (1, 2, 4, 4, 1, 2)	7% (8, 8, 7, 8, 10, 11)
RA III	298	59% (64,63,73,81,73,65)	14% (22,25,14, 6,15,23)	12% (1, 0, 1, 1, 1, 0)	15% (13,12,12,12,11,12)
RA IV	337	80% (80,78,78,72,67,66)	8% (8, 10, 11, 18, 18, 18)	3% (2, 3, 3, 2, 2, 3)	9% (10, 9, 8, 8, 13, 13)
RA V	247	60% (64,63,64,59,56,50)	21% (16,18,21,17,24,34)	2% (4, 4, 1, 9, 6, 3)	17% (16,15,14,15,14,13)
RA VI	594	85% (85,79,81,77,77,74)	5% (5, 12, 8, 13, 15, 18)	1% (1, 1, 3, 3, 1, 1)	9% (9, 7, 7, 7, 7, 7)

Ref.: 45567/2017-11 CLW/GCOS

RA I is the poorest performing region, with only 36% of stations meeting the minimum requirement, and 30% not providing any CLIMAT messages, this has not significantly changed, neither better or worse, over the last 7 years. Thus whilst this continues to reinforce the need for GCOS to focus its support in this region, it also highlights that recent efforts to improve these statistics have had little impact. The drop in RA III statistics of fully compliant stations was due to CLLIMAT messages from Peru not being reported.

For the RBCN network, which includes the GSN, the situation is even worse in RA I with only 18% of stations meeting the minimum requirement. Regions I, III, IV and V show a significant increase in the percentage of stations with zero reports (RBCN versus GSN), suggesting that not all countries are sending CLIMAT messages for their RBCN stations, in addition to the GSN stations.





Performance Report of the GUAN

The following table is the 2017 summary for the GCOS Upper-Air Network (GUAN) monitoring against the GCOS minimum requirements (25 daily soundings to 30hPa per month) for each region, according to the monthly statistics provided by NCEP. In brackets are the same statistics for 2016, 2015, 2014, 2013, 2012 and 2011. For 2012 and 2011 these are based on availability according to NCEI.

Region	Number of GUAN stations	% meeting minimum GCOS requirements in 2017 (% for 2016, 2015, 2014, 2013, 2012 and 2011)
RA I	23	30% (39%, 35%, 39%, 46%, 48%, 57%)
RA II	38	89% (87%, 87%, 87%, 87%, 87%, 87%)
RA III	18	61% (61%, 67%, 72%, 67%, 89%, 78%)
RA IV	24	92% (87%, 79%, 83%, 75%, 83%, 87%)
RA V	38	79% (84%, 79%, 76%, 74%, 84%, 87%)
RA VI	24	87% (87%, 87%, 87%, 83%, 92%, 87%)
ANTON	12	67% (58%, 67%, 58%, 58%, 83%, 83%)

Eleven (11) of the GUAN stations (6%) were 'Silent' (zero reported TEMP observations) during 2017, which is the highest since this monitoring was started in 2011. In 2016 and 2015 it was seven (7), 2014 and 2013 it was three (3), four (4) in 2012 and five (5) in 2011.

The key points for each region are as follows:

In Region I, only 30% of the GUAN stations have met the minimum requirement for 2017, compared with 39% for 2016, which continues, by some margin, to be the worst performing region. This poor, and worsening, performance is mainly associated with the necessary funding required to operate and maintain an upper-air station. Communication with the station at a technical level to establish the cause of the poor performance continues to be a challenge and often means that relatively simple issues can go unaddressed for long periods of time. In addition there are an increasing number of stations that have problems and failures with their hydrogen generator systems which has resulted in a period of long-term inactivity. Three (3) stations were in-active during the period; Vacoas, Mauritius (Radiosonde consumables); Khartoum, Sudan (Hydrogen system); and Dar es Salaam, Tanzania (Hydrogen system). Eight (8) stations had at least 1 month with zero reported TEMP observations; 61641; 62414; 63985; 64910; 67774; 68110; 68592 and 68816.

The performance in Region II in 2017 was similar to that for the previous years, with 4 stations not meeting the minimum requirement. No stations were completely in-active during the period, although the station in Pakistan (41780) is only launching PILOT balloons and with no TEMP soundings for 7 years, it is not meeting the GUAN requirements. The two stations in Thailand (48327 Chiang Mai and 48453 Bangna) both had lengthy periods of inactivity owing to radiosonde supply issues, similar to 2016.

The performance in Region III in 2017 was the same as 2016 but slightly worse than for the period 2013-2015, and a marked decrease from 2011-12, with 7 stations not meeting the minimum requirement. Three (3) stations were completely inactive, Manus 82332 and Fortaleza 82397, Brazil (Equipment and Hydrogen system) and San Cristobal 84008, Ecuador (Equipment and staffing issues).

The performance in Region IV in 2017 was again an improvement on the previous year, with 2 stations not meeting the minimum requirement. No stations were completely in-active during the period but two (2) stations, 76654 and 78762, had at least 1 month with zero reported TEMP observations.

Region V was slightly worse in 2017 compared to 2016, with 8 stations not meeting the minimum requirement. Four (4) stations were completely in-active during the period, Honiara, Solomon Islands; Vanuatu, Bauerfield; Rarotonga, Cook Islands and Port Moresby, PNG, all due to having no radiosonde consumables. Three (3) stations, 91610, 94302 and 96315, had at least 1 month with zero reported TEMP observations.

The performance in Region VI in 2017 was the same as for the previous 3 years, with 3 stations not meeting the minimum requirement. Only Yerevan, Armenia, had a period of inactivity owing to a fault with the hydrogen system, which was resolved at the end of March 2017.

The performance in the Antarctica region in 2017 was a small improvement than for 2016, with 4 stations not meeting the minimum requirement. No stations were completely in-active during the period. Halley Bay (89022) had an extensive period of inactivity owing to the station needing to be relocated for safety reasons.

