

**GCOS STEERING COMMITTEE
TWENTY-SEVENTH SESSION**

GCOS SC-27, 28–31 October 2019
Paris, France

**2018 GSN/GUAN performance and
GCOS Cooperation Mechanism update
(interim 2019 update for SC-27)**

(Submitted by the GCOS Secretariat – GCOS Network Manager)

1. Network Station List (2019 update)

1.1. GCOS Surface Network (GSN)

RA-I	155 Stations (0)	No Changes
RA-II	258 Stations (0)	No Changes
RA-III	101 Stations (0)	No Changes
RA-IV	178 Stations (0)	Canada 71600 (Sable Is.) to 73025 (Fisherman's Is.?) 71185 (Daniel's Harbour) to 73024 (Same name) 71197 (Port-Aux-Basques) to 73026 (Channel Port.) 71915 (Coral Harbour A) to 71134 (Coral Harbour RCS) 71945 (Fort Nelson A) to 71594 (Fort Nelson) 71869 (Prince Albert A) to 73002 (Prince Albert Glass Field) 71842 (Sioux Lookout A) to 73017 (Sioux Lookout A/P) 71603 (Yarmouth A) to 71884 (Yarmouth RCS) 71609 (Slave Lake AWOS A) to 71693 (Slave Lake RCS) Green denotes changed implemented (CLIMAT reports)
RA-V	151 Stations (0)	No Changes
RA-VI	138 Stations (0)	No Changes
ANTON	42 Stations (0)	No Changes
TOTAL	1023 Stations	

1.2. GCOS Upper Air Network (GUAN)

RA-I	23 Stations (0)	No Changes
RA-II	38 Stations (0)	Russian Federation 28698 (Omsk) to 28695 (Same station and location. Change to identifier)
RA-III	18 Stations (0)	No Changes
RA-IV	24 Stations (0)	No Changes
RA-V	38 Stations (0)	No Changes
RA-VI	24 Stations (0)	No Changes
ANTON	12 Stations (0)	No Changes
TOTAL	177 Stations (0)	

The above changes were submitted to the AOPC-24 meeting (March 2019) for approval. The 2019 update will be published in April 2019.

2. Network Performance

2.1. GCOS Surface Network (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 2018 percentage of stations that are compliant and those that are partially or non-compliant. In brackets are the statistics for 2017, 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	37% (31, 40, 29, 29, 32, 28, 23)	21% (34, 25, 31, 33, 33, 36, 39)	5% (3, 9, 15, 10, 10, 11, 14)	37% (32, 26, 25, 28, 25, 25, 24)
RA-II	258	74% (79, 83, 78, 71, 73, 73, 75)	14% (15, 10, 14, 21, 19, 19, 19)	5% (0, 2, 2, 3, 2, 2, 1)	7% (6, 5, 6, 5, 6, 6, 5)
RA-III	101	52% (63, 65, 61, 76, 89, 84, 69)	24% (15, 29, 35, 20, 6, 13, 28)	1% (6, 0, 0, 1, 0, 0, 0)	23% (16, 6, 4, 3, 5, 3, 3)
RA-IV	178	88% (86, 90, 88, 88, 88, 81, 80)	7% (12, 7, 9, 10, 11, 17, 18)	4% (1, 2, 2, 1, 1, 1, 1)	1% (1, 1, 1, 1, 0, 1, 1)
RA-V	151	62% (61, 67, 66, 70, 63, 58, 52)	21% (21, 15, 16, 17, 16, 23, 34)	1% (3, 3, 4, 1, 7, 7, 1)	16% (15, 15, 14, 13, 14, 12, 11)
RA-VI	138	75% (82, 84, 77, 80, 82, 78, 81)	15% (8, 7, 14, 9, 12, 17, 15)	1% (2, 2, 3, 5, 2, 1, 0)	9% (8, 7, 6, 6, 4, 4, 4)
ANTON	42	84% (83, 81, 77, 79, 60, 45, 50)	14% (12, 17, 19, 19, 36, 43, 33)	2% (5, 2, 2, 2, 2, 5, 12)	0% (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	22% (18, 23, 16, 17, 19, 13, 12)	15% (22, 17, 22, 20, 20, 23, 22)	4% (5, 8, 11, 8, 7, 12, 13)	59% (55, 52, 51, 55, 54, 52, 53)
RA-II	664	67% (77, 80, 73, 71, 73, 67, 57)	17% (14, 12, 17, 18, 15, 22, 30)	7% (1, 1, 2, 4, 4, 1, 2)	9% (8, 8, 8, 7, 8, 10, 11)
RA-III	298	57% (60, 64, 63, 73, 81, 73, 65)	15% (13, 22, 25, 14, 6, 15, 23)	1% (8, 1, 0, 1, 1, 1, 0)	27% (19, 13, 12, 12, 12, 11, 12)
RA-IV	337	75% (77, 80, 78, 78, 72, 67, 66)	10% (10, 8, 10, 11, 18, 18, 18)	4% (2, 2, 3, 3, 2, 2, 3)	11% (11, 10, 9, 8, 8, 13, 13)
RA-V	247	57% (60, 64, 63, 64, 59, 56, 50)	23% (19, 16, 18, 21, 17, 24, 34)	2% (4, 4, 4, 1, 9, 6, 3)	18% (17, 16, 15, 14, 15, 14, 13)
RA-VI	594	79% (85, 85, 79, 81, 77, 77, 74)	10% (5, 5, 12, 8, 13, 15, 18)	1% (1, 1, 1, 3, 3, 1, 1)	10% (9, 9, 7, 7, 7, 7, 7)

RA-I is the poorest performing region, with only 37% of stations meeting the minimum requirement, and 35% not providing any CLIMAT messages, this has not significantly changed, neither better or worse, over the last 8 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 recent drop in RA-III statistics of fully compliant stations was due to CLIMAT messages from Peru not being received at NCEI.

For the RBCN network, which includes the GSN, the situation is even worse in RA-I with only 22% of stations meeting the minimum requirement. Regions I and IV 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.

2.2. GCOS Upper Air Network (GUAN)

The following table is the 2018 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 2017, 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 2018 (% for 2017, 2016, 2015, 2014, 2013, 2012 and 2011)	<i>August 2019(1 month)</i>
RA-I	23	22% (30%, 39%, 35%, 39%, 46%, 48%, 57%)	26% (8 no reports)
RA-II	38	87% (89%, 87%, 87%, 87%, 87%, 87%, 87%)	89% (2 no reports)
RA-III	18	72% (61%, 61%, 67%, 72%, 67%, 89%, 78%)	78% (2 no reports)
RA-IV	24	92% (92%, 87%, 79%, 83%, 75%, 83%, 87%)	88% (2 no reports)
RA-V	38	79% (79%, 84%, 79%, 76%, 74%, 84%, 87%)	71% (4 no reports)
RA-VI	24	87% (87%, 87%, 87%, 87%, 83%, 92%, 87%)	87% (1 no reports)
Antarctica	12	67% (67%, 58%, 67%, 58%, 58%, 83%, 83%)	67% (2 no reports)

Eleven (11) of the GUAN stations (6%) were 'Silent' (zero reported TEMP observations) during 2018 and 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, four (4) in 2012 and five (5) in 2011.

3. GCOS Cooperation Mechanism (GCM)

The GCM is the system improvement and resource mobilization activity of the GCOS programme. It has been established following a decision by the UNFCCC SBSTA in 2004 (UNFCCC Decision 5/CP.5) in order "to enable developing countries to collect, exchange, and utilize data on a continuing basis in pursuance of the UNFCCC". Since then, more than 3 million USD was raised to accomplish projects dedicated to improving climate observation systems. The following projects were completed in 2018, or are still on-going:

- Support for the ongoing operations of the GUAN station at Gan, Maldives was sponsored by GCOS in 2018, with a new competitive tender for 400 units each of radiosondes and balloons, managed by GCOS. These were delivered in the 1st quarter of 2019.
 - Support for the ongoing operations of the GUAN station at Yerevan, Armenia was sponsored by Japan in 2018, with a new competitive tender for 400 units each of radiosondes and balloons, managed by GCOS. These were delivered in the 2nd quarter of 2019, and updated training was provided by the radiosonde vendor (MODEM, France)
 - Support to the CATCOS project (Switzerland), through a fund (CHF 20,000) made available to support ongoing operations and emergency maintenance. The agreement between WMO and CATCOS will be signed early in 2018 and will be in-force for 2 years.
 - Support for the ongoing operations of the GUAN station at Nairobi and a new station at Lodwar, Nairobi was organized in collaboration with the HIGHWAY project (managed by WMO using funds from UK). This involved a technical assessment of the systems at the two locations sponsored and an agreed action plan between HIGHWAY, GCOS and the Kenyan Meteorological Office. Procurement projects for 800 units of radiosondes and balloons and a new Hydrogen Generator System for Nairobi, is being managed by GCOS (through WMO) and was completed in the 3rd quarter of 2019. Routine twice daily soundings started on 8 August 2019.
 - Support for the restart of operations of the GUAN station at Dar es Salaam, Tanzania was organized in collaboration with the HIGHWAY project (managed by WMO using funds from UK). This involved a technical assessment of the system and an agreed action plan between HIGHWAY, GCOS and the Tanzanian Meteorological Agency. Procurement projects for 800 units of radiosondes and balloons and a new Hydrogen Generator System for Dar es Salaam, is being managed by GCOS (through WMO) and will be delivered in the 4th quarter of 2019.
 - Support for the ongoing operations of the UAN station at Entebbe, Uganda was organized in collaboration with the HIGHWAY project (managed by WMO using funds from UK). This involved a technical assessment of the system and an agreed action plan between HIGHWAY, GCOS and the Uganda National Meteorological Administration. Support is ongoing to help UNMA address a number of issues with the equipment and infrastructure at the station, and funds are available for the service/maintenance of the Hydrogen Generator System.
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