

Baseline Networks (GSN & GUAN) (AOPC Session – Tuesday 20th April 2021)

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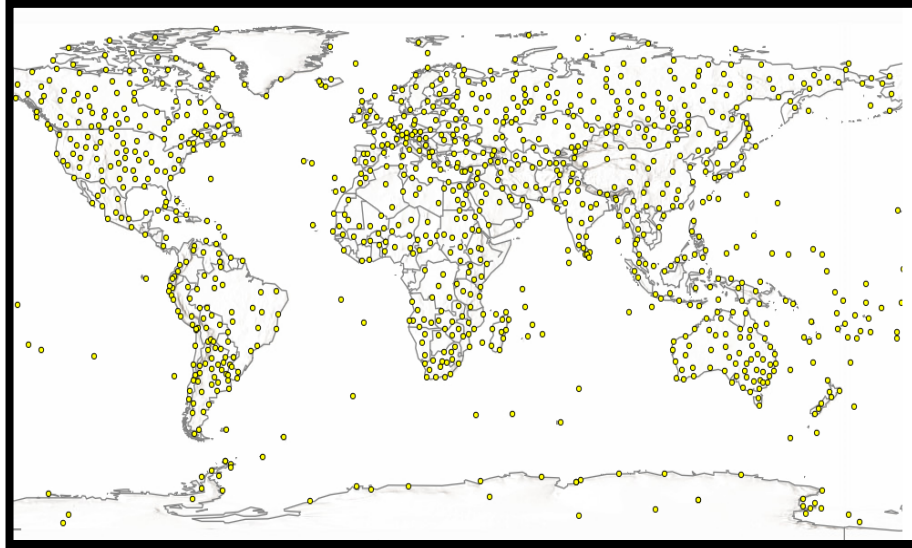
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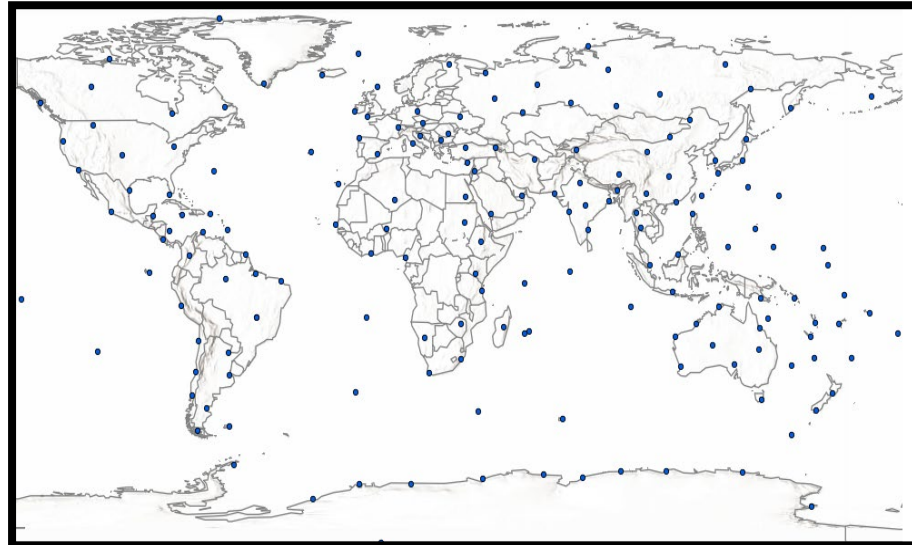
- **GCOS 'Nominated' Networks – GSN; GUAN**
- **Monitoring (2020)**
- **Support to GSN & GUAN (GCOS Cooperation Mechanism)**
- **Requests to AOPC**

GCOS Nominated Networks

GCOS Surface Network
(GSN) - 1023



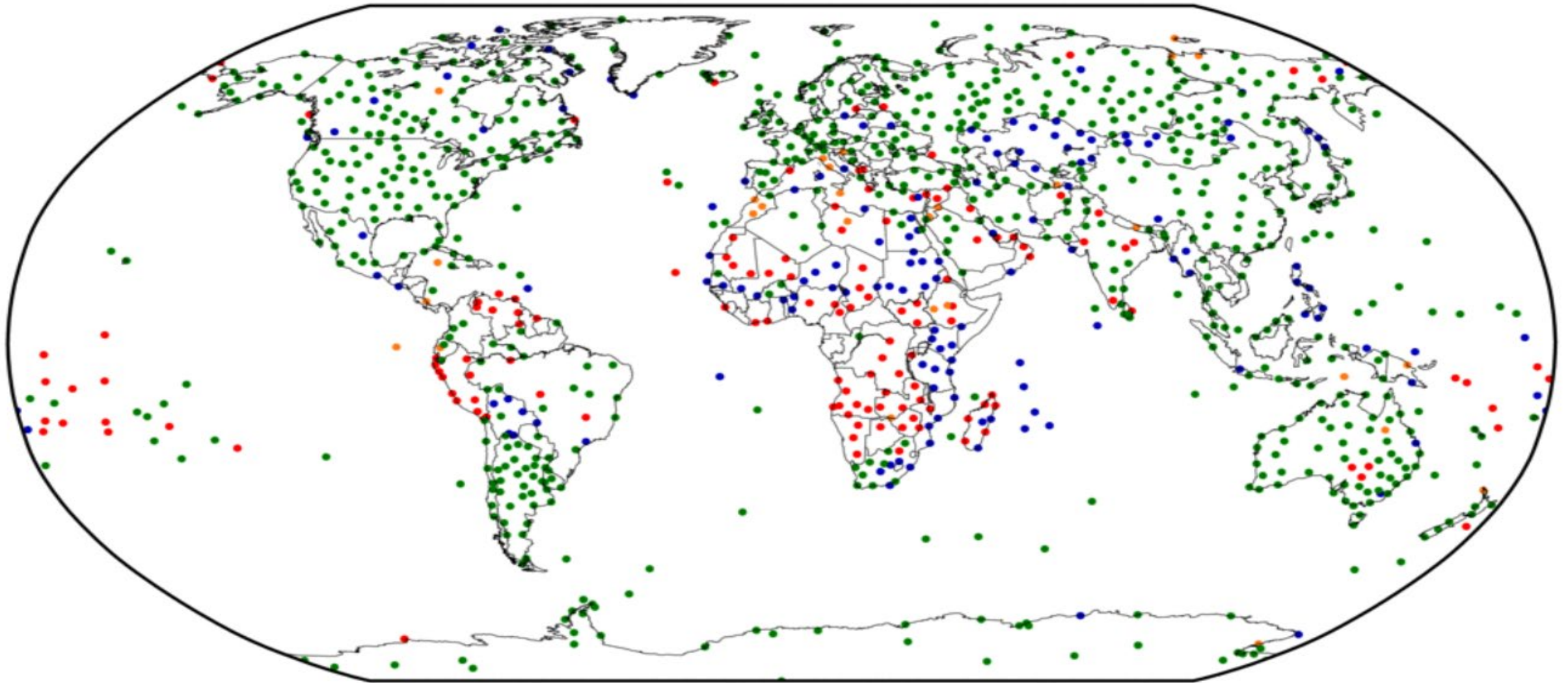
GCOS Upper-Air Network
(GUAN) - 177



- Designed and implemented 20+ years
- Recognised 'Brand' and have successfully sustained the availability of land surface and upper-air observations (note one of the primary drivers for these networks was the threat to closure of long-term stations)
- GCOS requirements but governance through WMO technical regulations
- WMO Members commitment. 'Passive' monitoring by GCOS

GSN Monitoring 2020 (NCEI)

GSN, No. months reporting (202001 to 202012), GREEN=12, BLUE=6 to 11, ORANGE=1 to 5, RED=0



Network Performance

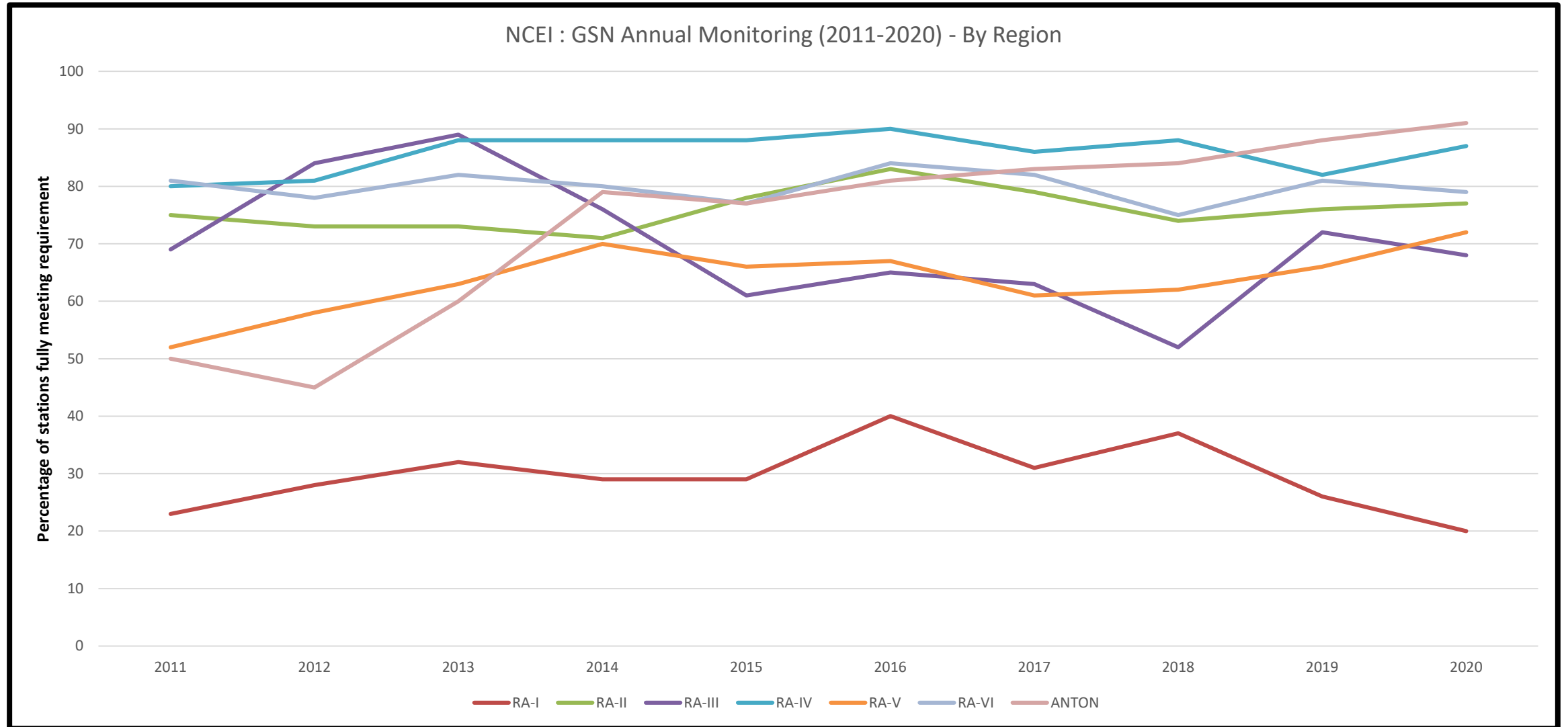
GCOS Surface Network (GSN)

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 2020 percentage of stations that are compliant and those that are partially or non-compliant. In brackets are the statistics for 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012 and 2011 respectively.

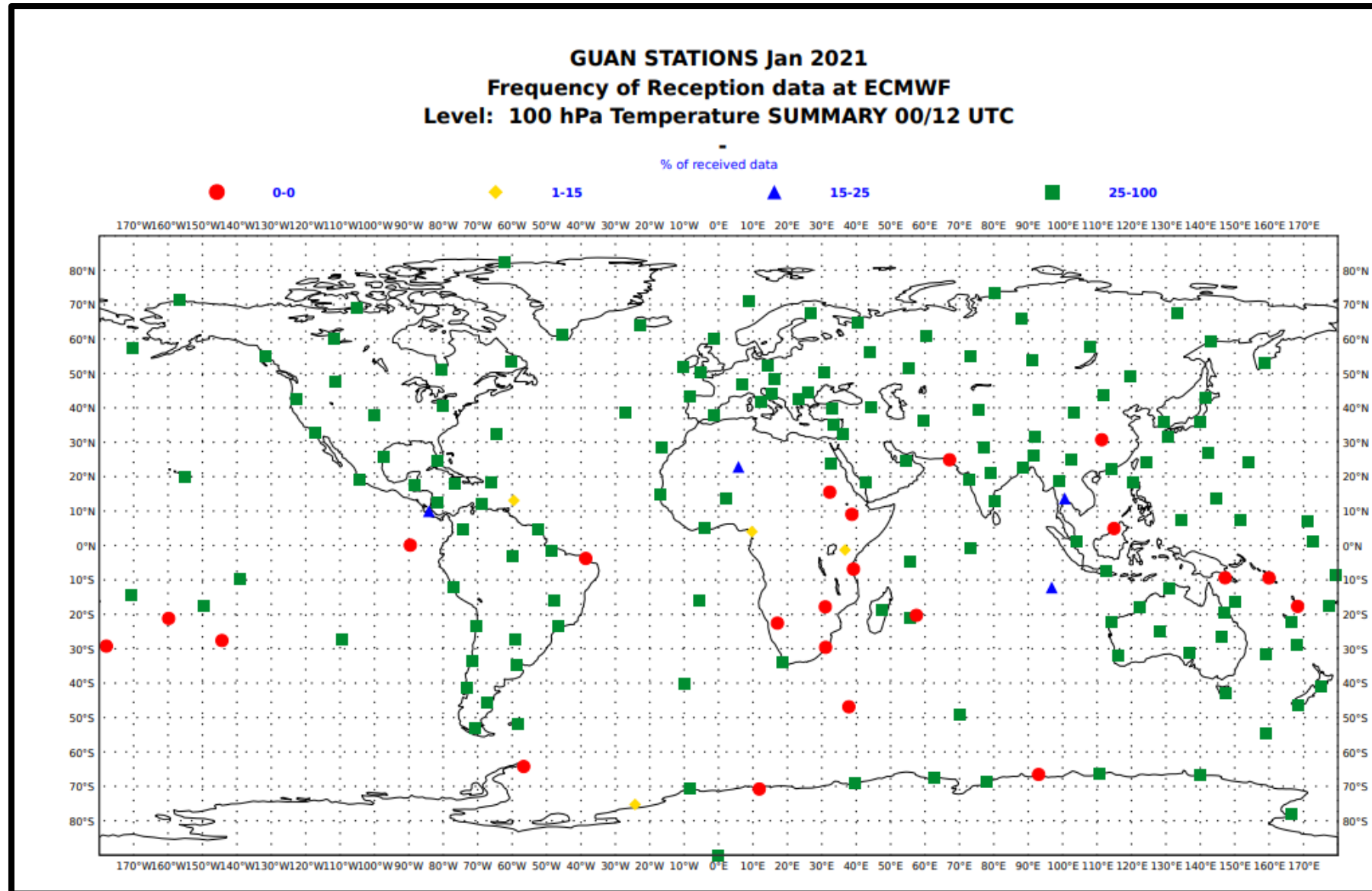
GCOS Surface Network (GSN)

| Region | No. | 12 Monthly CLIMAT | 6 - 11 Monthly CLIMAT | 1 - 5 Monthly CLIMAT | 0 Monthly CLIMAT |
|--------|-----|---|---|--|---|
| RA-I | 155 | 20% (26% 2019) (37, 31, 40, 29, 29, 32, 28, 23) | 37% (33% 2019) (21, 34, 25, 31, 33, 33, 36, 39) | 4% (6% 2019) (5, 3, 9, 15, 10, 10, 11, 14) | 39% (35% 2019) (37, 32, 26, 25, 28, 25, 25, 24) |
| RA-II | 258 | 77% (76% 2019) (74, 79, 83, 78, 71, 73, 73, 75) | 14% (17% 2019) (14, 15, 10, 14, 21, 19, 19, 19) | 2% (1% 2019) (5, 0, 2, 2, 3, 2, 2, 1) | 7% (6% 2019) (7, 6, 5, 6, 5, 6, 6, 5) |
| RA-III | 101 | 68% (72% 2019) (52, 63, 65, 61, 76, 89, 84, 69) | 7% (5% 2019) (24, 15, 29, 35, 20, 6, 13, 28) | 2% (9% 2019) (1, 6, 0, 0, 1, 0, 0, 0) | 23% (14% 2019) (23, 16, 6, 4, 3, 5, 3, 3) |
| RA-IV | 178 | 87% (82% 2019) (88, 86, 90, 88, 88, 88, 81, 80) | 9% (16% 2019) (7, 12, 7, 9, 10, 11, 17, 18) | 2% (1% 2019) (4, 1, 2, 2, 1, 1, 1, 1) | 2% (1% 2019) (1, 1, 1, 1, 1, 0, 1, 1) |
| RA-V | 151 | 72% (66% 2019) (62, 61, 67, 66, 70, 63, 58, 52) | 11% (15% 2019) (21, 21, 15, 16, 17, 16, 23, 34) | 3% (4% 2019) (1, 3, 3, 4, 1, 7, 7, 1) | 14% (15% 2019) (16, 15, 15, 14, 13, 14, 12, 11) |
| RA-VI | 138 | 79% (81% 2019) (75, 82, 84, 77, 80, 82, 78, 81) | 7% (7% 2019) (15, 8, 7, 14, 9, 12, 17, 15) | 4% (3% 2019) (1, 2, 2, 3, 5, 2, 1, 0) | 10% (9% 2019) (9, 8, 7, 6, 6, 4, 4, 4) |
| ANTON | 42 | 91% (88% 2019) (84, 83, 81, 77, 79, 60, 45, 50) | 5% (10% 2019) (14, 12, 17, 19, 19, 36, 43, 33) | 2% (2% 2019) (2, 5, 2, 2, 2, 2, 5, 12) | 2% (0% 2019) (0, 0, 0, 2, 0, 2, 7, 5) |

GSN Monitoring 2020 (NCEI)



GUAN Monitoring (ECMWF)



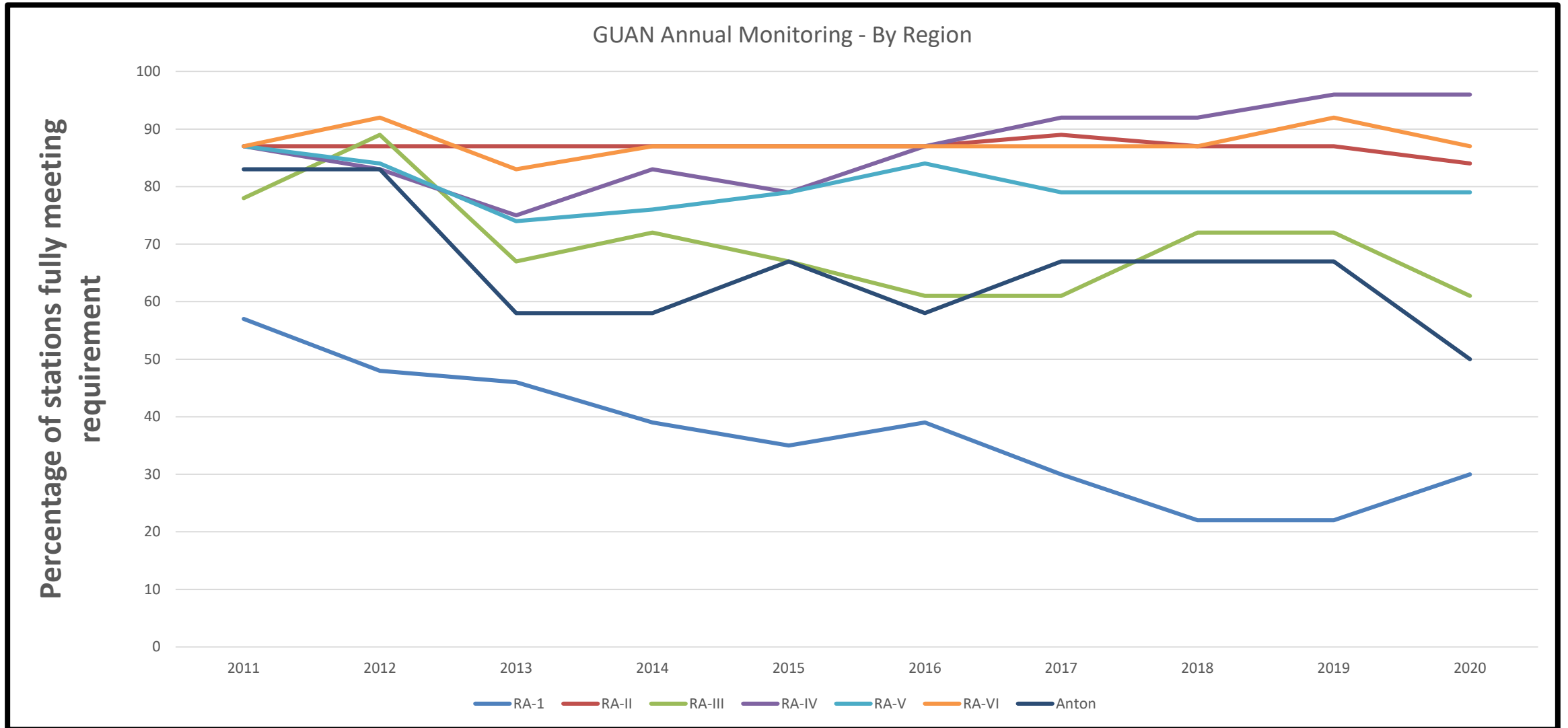
GCOS Upper Air Network (GUAN)

The following table is the 2020 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 ECMWF. In brackets are the same statistics for 2011 to 2019. For 2013 to 2018 these are based on availability according to NCEP, and for 2011 to 2012 to NCEI.

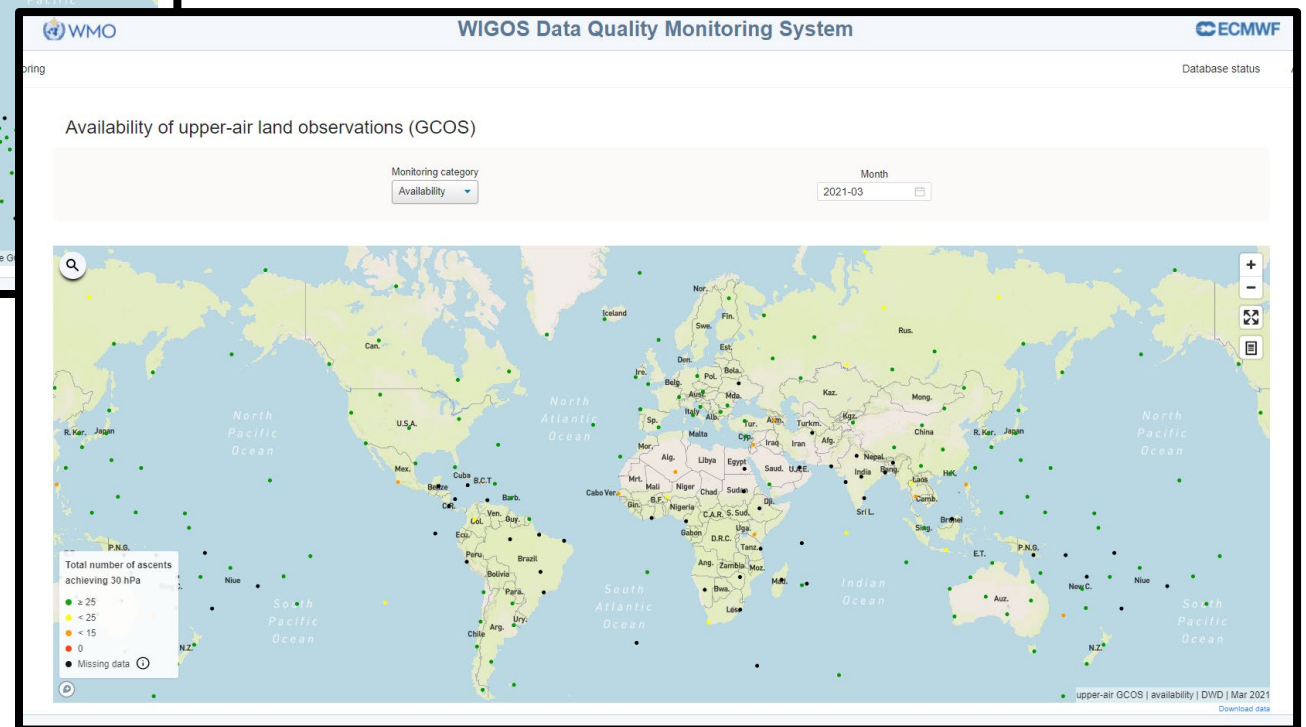
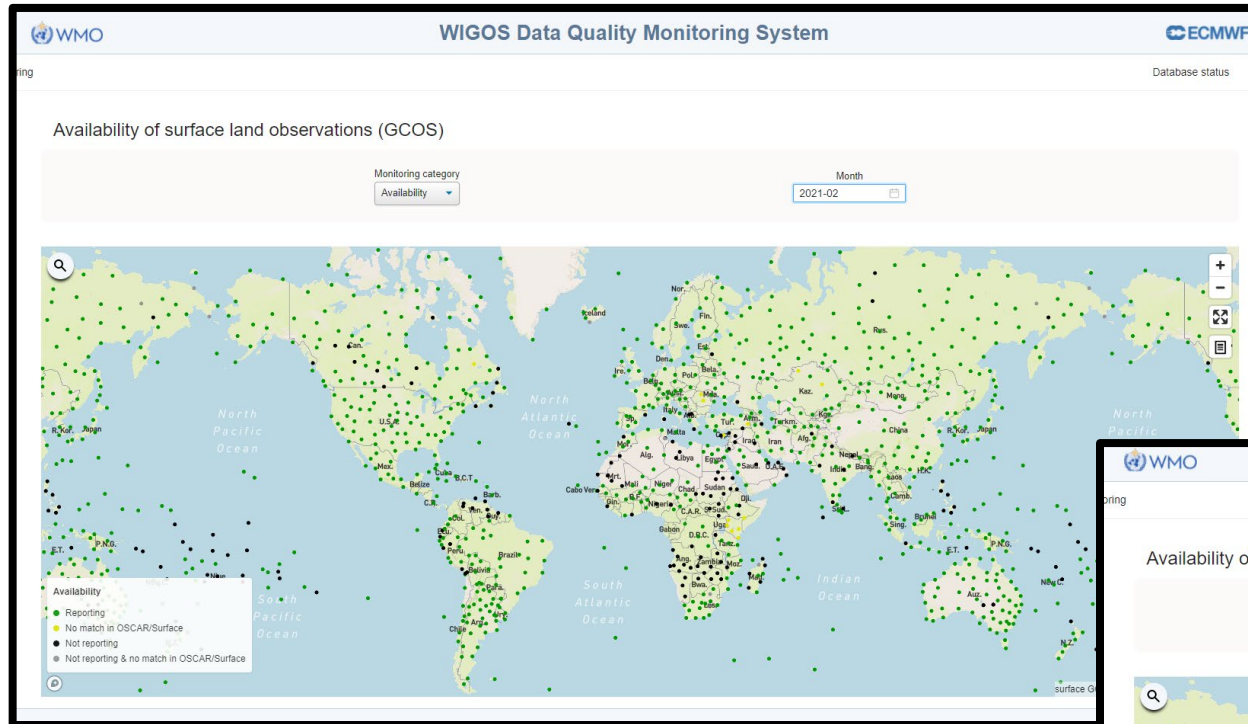
| Region | Number of GUAN stations | % meeting minimum GCOS requirements in 2020 (% for 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012 and 2011) |
|------------|-------------------------|--|
| RA-I | 23 | 30% (22%, 22%, 30%, 39%, 35%, 39%, 46%, 48%, 57%) |
| RA-II | 38 | 84% (87%, 87%, 89%, 87%, 87%, 87%, 87%, 87%, 87%) |
| RA-III | 18 | 61% (72%, 72%, 61%, 61%, 67%, 72%, 67%, 89%, 78%) |
| RA-IV | 24 | 96% (96%, 92%, 92%, 87%, 79%, 83%, 75%, 83%, 87%) |
| RA-V | 38 | 79% (79%, 79%, 79%, 84%, 79%, 76%, 74%, 84%, 87%) |
| RA-VI | 24 | 87% (92%, 87%, 87%, 87%, 87%, 87%, 83%, 92%, 87%) |
| Antarctica | 12 | 50% (67%, 67%, 67%, 58%, 67%, 58%, 58%, 83%, 83%) |

Twelve (12) of the GUAN stations (7%) were 'Silent' (zero reported TEMP observations) during 2020, same as in 2019, which is the highest since this monitoring was started in 2011. In 2018 and 2017 it was eleven (11), 2016 and 2015 it was seven (7), 2014 and 2013 it was three (3), four (4) in 2012 and five (5) in 2011.

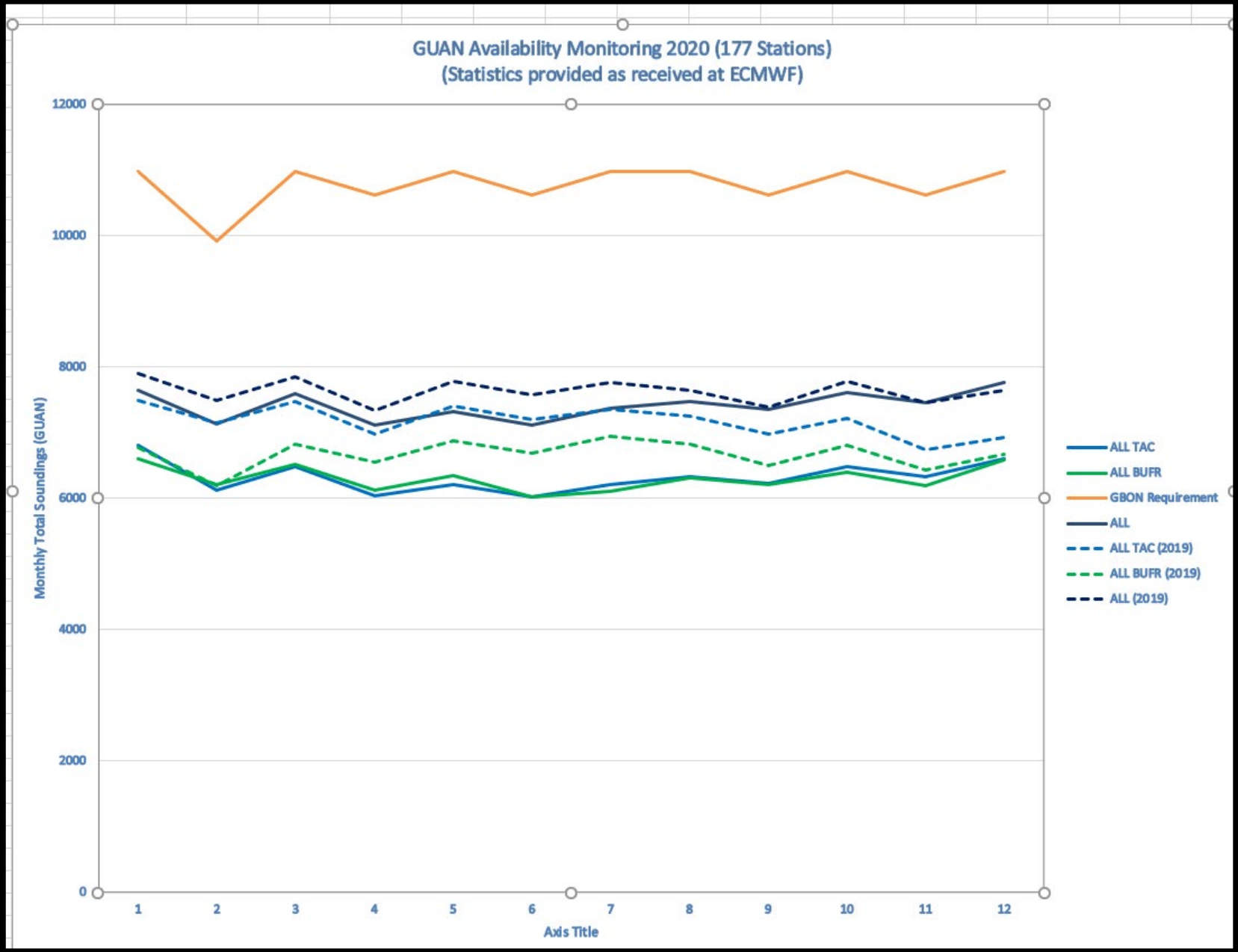
GUAN Monitoring 2020 (ECMWF)



New Monitoring (WDQMS)



GUAN Monitoring – Availability and Coding



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, approximately 4 million USD was raised to accomplish projects dedicated to improving climate observation systems.

GCM projects (2020/21)



AOPC change approval of network stations (GSN)

Network Station List (2021 update)

GCOS Surface Network (GSN)

| | | |
|--------------|--|--|
| RA-I | 154 Stations (-1) (South Africa) (Tunisia) | Delete 68262 (<u>Pretoria Eendracht</u>) - Station was closed on 31 March 2014, and has stayed closed despite several attempts to reopen. No CLIMAT reports for many years. Confirmed by email with OSCAR/Surface contact Feb 2021. ----- 60767 (<u>Gabes Matmata</u>) to 60765 (<u>Gabes</u>) - Station was closed for many years. Replacement station now providing CLIMAT reports. |
| RA-II | 258 Stations (0) | No Changes |
| RA-III | 101 Stations (0) | No Changes |
| RA-IV | 178 Stations (0) (Canada) | 71066 (High Level, Alta) to 73085 (High Level) – Change request received from Met Service Canada (MSC). Same site but measurement location approx. 1.08km difference. Six-month period of overlapping measurements. 71066 CLIMAT stopped in Jan 2021. |
| RA-V | 151 Stations (0) | No Changes |
| RA-VI | 139 Stations (+1) (Belarus) (Greece) | <u>Add 26554 (Verkhnedvinsk)</u> - Request from country to add station. Only one other GSN in Belarus (South). Station began observations in 1891 and is located in the North of the country. Providing monthly CLIMAT reports. ----- Delete 16734 (<u>Methoni</u>) - Automation in 2012. Stopped reporting CLIMAT. Confirmed by email with OSCAR/Surface contact Feb 2021. Add 16627 (<u>Alexandroupoli</u>) - Replacement station proposed by HNMS. Existing climate station with request to generate CLIMAT reports from April 2021. |
| ANTON | 42 Stations (0) | No Changes |
| TOTAL | 1023 Stations | |

AOPC change approval of network stations (GUAN)

GCOS Upper Air Network (GUAN)

| | | |
|--------------|--------------------------------|--|
| RA-I | 23 Stations (0) | No Changes |
| RA-II | 38 Stations (0) | No Changes |
| 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) (Spain) | La Coruna 0-20000-0-08001 43.3658°N, 8.4214°W, 58m (Closed) Bens-A Coruna 0-724-0-0000000000008001 43.3633°N, 8.4417°W, 132m (Open) Station relocation due to change from manual to automated system. |
| ANTON | 12 Stations (0) | No Changes |
| TOTAL | 177 Stations (0) | |

Thank you



**GLOBAL CLIMATE
OBSERVING SYSTEM**

KEEPING WATCH OVER OUR CLIMATE



WMO



IOC

International
Science Council



UN
environment

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