

WORLD METEOROLOGICAL ORGANIZATION

(15.03.2017)

CBS LEAD CENTRES FOR GCOS

Original: ENGLISH

REPORT OF THE CBS-LC-NOAA/NCEI FOR GCOS

*(Submitted by Jay Lawrimore, Bryant Korzeniewski, and Matt Menne
NOAA/National Centers for Environmental Information)*

SUMMARY AND PURPOSE OF DOCUMENT

The document provides a summary of activities of the CBS Region IV Lead Centre-NOAA/NCEI.

DISCUSSION

Background

The National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) serves as the GCOS Lead Center for Region IV and also as the Global Archive and Analysis Center. Region IV stretches from the Canadian Arctic to the equator. It includes three large countries; USA, Canada and Mexico which contain more than 75% of the surface-based observing stations as well as many smaller countries and island nations that provide critical coverage for weather and climate observations throughout the region. The large number of small nations makes the continuing effort of coordination and support an essential part of ensuring the health of the region's observing network.

This report contains a summary of the state of the surface-based global observing system for GSN and GUAN networks with a specific focus on those provided by Region IV members. Also included is a summary of global land observations collected and maintained through the Global Historical Climatology Network (GHCN) as part of NOAA/NCEI's Archive and Analysis responsibilities.

NCEI provides monthly updates of web accessible GSN and GUAN reports which provide information on the number of hourly, synoptic, and CLIMAT reports received at the Center. The reports are available at <ftp://ftp.ncdc.noaa.gov/pub/data/gcos/>. Representatives from other Lead Centers are invited to review these reports and provide feedback on their usefulness and any recommendations for further changes. There are two basic types of reports; the first providing an annual total of the number of reports received by type and hour of the day and secondly files that provide month-year totals of the number of hourly and synoptic reports received and if CLIMAT data were received

Performance of the RBCN and GSN networks in Region IV

There are 337 CLIMAT stations in the current RBCN inventory for Region IV. As with the RBSN surface network, Canada and the U.S. have the greatest number of stations providing CLIMAT reports; 134 and 105 stations, respectively. The subset of GSN stations consists of 177 stations in the region. The number of RBCN stations providing at least nine CLIMAT reports each year has remained above 80% since 2012 (Figure 1). The GSN network has remained above 90% since 2007.

Figure 2 shows the reporting frequency of each GSN station in 2016. The same is shown for RBCN stations in Figure 3. System outages resulted in several stations providing less than complete annual coverage. This occurred most notably in remote areas for which unscheduled maintenance cannot be readily performed (Table 1). The greater than 95% coverage of stations with good reporting practices in the GSN network

indicates the benefit that careful monitoring and attention to the performance of a subset of stations can provide to improving data collection.

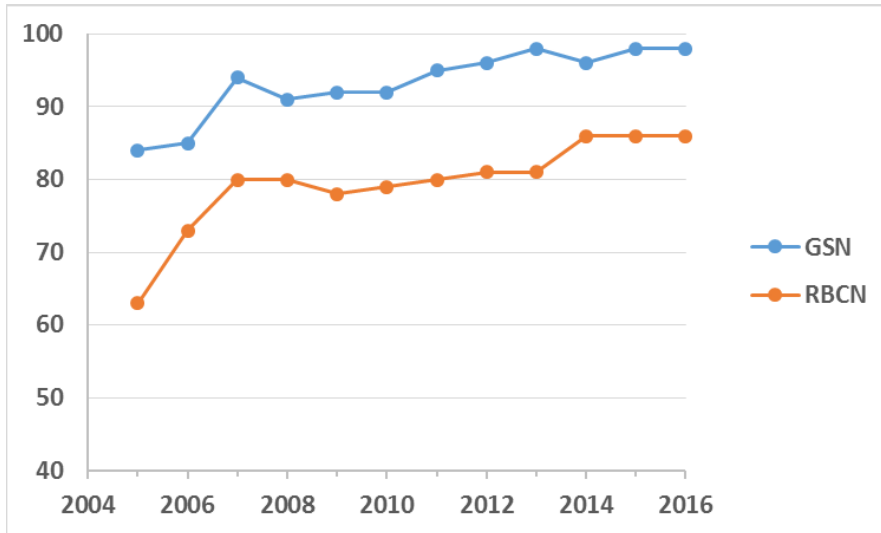


Figure 1. Percentage of Region IV RBCN stations providing CLIMAT reports (red line) and the subset of GSN stations (blue line) providing CLIMAT reports in at least nine months each year from 2005 through 2016.

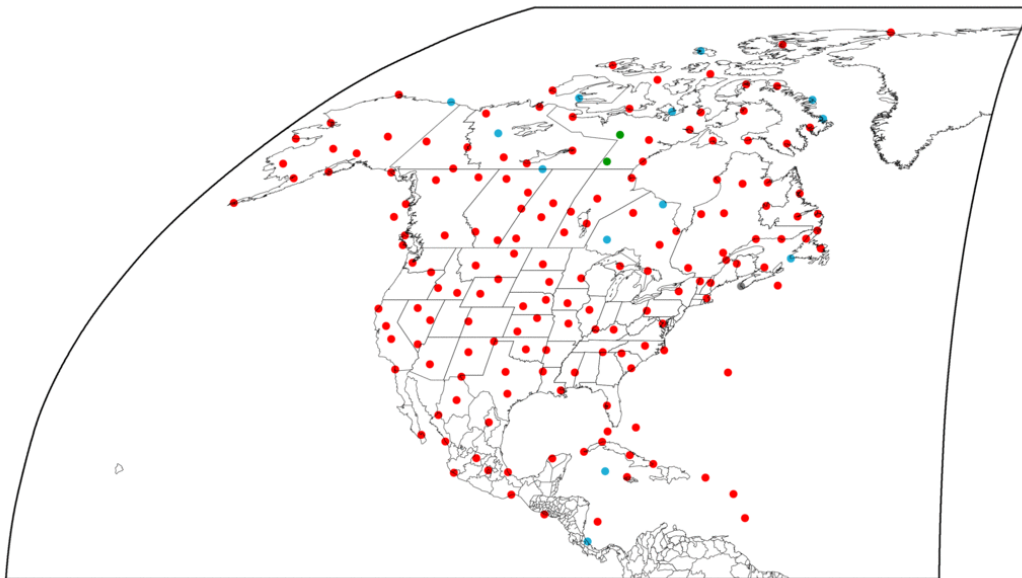


Figure 2. The reporting frequency of the Region IV stations in the GSN network in 2016; stations reporting all 12 months of the year (red), from 6 to 11 reports (blue), 1 to 5 reports (green), and 0 reports (gray).

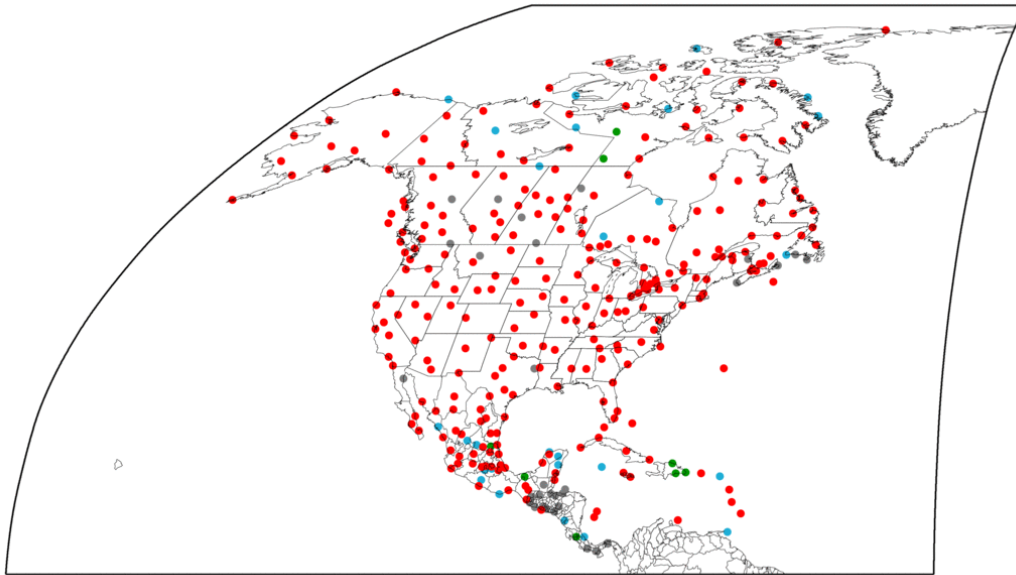


Figure 3. The reporting frequency of the Region IV stations in the RBCN network in 2016; stations reporting all 12 months of the year (red), from 6 to 11 reports (blue), 1 to 5 reports (green), and 0 reports (gray).

The following provides a summary of GSN stations with reporting problems in 2016. There are many other stations that require ongoing personal contact to ensure receipt of data throughout the all areas of the Region. The Region IV Lead Center made direct e-mail contact to resolve reporting issues for more than 100 CLIMAT reports for GSN stations in 2016.

Table 1. Region IV GSN stations with reporting issues in 2016.

Data-Months	WMO #	Station Name	Country	Findings
11/2016	71074	ISACHSEN (AU	Canada	Station had an antenna icing issue intermittently.
11/2016-Present	71490	Robertson Lake	Canada	Station experienced power issues and likely won't report until a technician can service the site in the summer due to the remote location of the station.
11/2016-Present	71923	Ennadai Lake	Canada	Station experienced power issues and likely won't report until a technician can service the site in the summer due to the remote location of the station.
2-3/2016, 11-12/1/2016	70086	Barter Island	United States	Insufficient data due to transmission problems. ASOS3 station only operates when air traffic is occurring. Should consider removing from GSN network.
10/2016	71480	Norman Wells Climate NWT	Canada	Station experienced communications issues since October 5th. Data acquisition system updated in early December.

8/2016	71197	Port Aux Bas	Canada	Data missing due to communications issues at the station. The controller was replaced and the station started transmitting again on August 24th.
12/2015-6/2016	71923	Ennadai Lake	Canada	The station began missing data on 11/26/15 due to issues with power. A wind generator and solar panels were installed the past summer to try and mitigate power issues, but the solution was short lived. Power returns with higher sun elevation and a lengthening day.
10/2015-4/2016	71074	ISACHSEN	Canada	Station data were missing for intermittent periods due to ice accretion on the antenna. A longer term solution to the intermittent outages is being investigated, but the remoteness of the location does not provide consistent reliability for the data transmission.
3/2016	71357	QIKIQTARJUAQ/Broughton Island	Canada	Station was missing for March 2016 due to communication problems at the site due to phone line intermittent gaps in data transmission. Improvements made in June.
3/2016	71362	Fort Smith Climate	Canada	Station was missing for March 2016 due to communication problems at the site. Problem resolved at the end of March.
2/2016-3/2016	71842	Sioux Lookout	Canada	Station was missing for February and March 2016 due to an error in the script used to generate the CLIMAT message. It was corrected in time for April's CLIMAT message.
1/2016	71434	Peawanuck (A)	Canada	There was a communication problem at the station from January 6th to January 21 st resulting in the CLIMAT message not being generated for January 2016.
11/2015-1/2016	71358	Clyde River	Canada	Continuing communication issues across the Nunavut Territory in the far north; a significant increase in the number of late or missing observations from dial up stations in Nunavut Territory. Station had problems establishing or maintaining a connection. Worked with the local telephone company to troubleshoot the issue. Data missing for both Resolute CS and Clyde River.

Upper Air Observations

There continued to be a high level of data collected from stations in the GUAN network in the past year, extending benefits of ongoing rehabilitation and system improvement that have occurred in recent decades. For the globe as a whole, more than 160 GUAN stations were operating at some point in 2016, and more than 95 met minimum performance requirements for all variables (Figure 4). As of December 2016 all stations were operating in Region IV. Performance was best in the U.S. and Canada. Many stations had at least 30 soundings reaching 50 hPa and 10h Pa in all twelve months of the year (Figure 5).

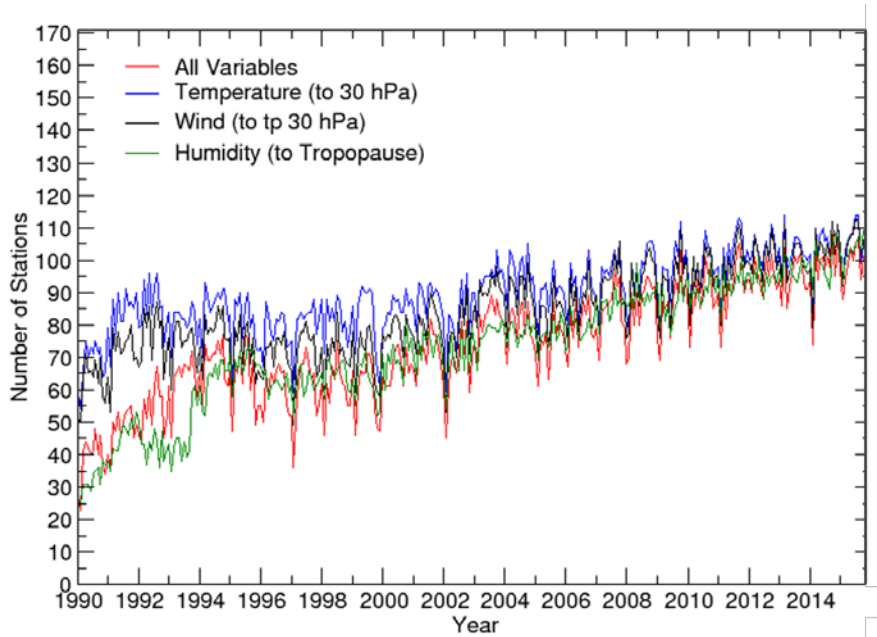


Figure 4. Time series of the number of GUAN stations meeting the minimum performance requirements. Perfect receipt = 171.

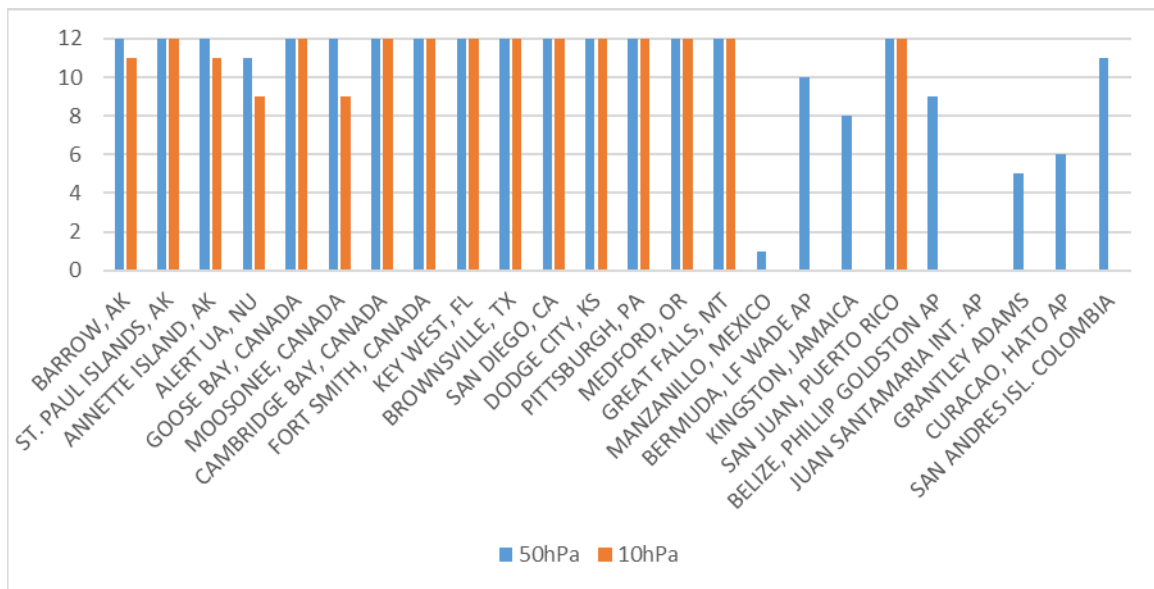


Figure 5. The number of months in which at least 30 soundings reached 50 hPa (blue) and 10 hPa (red) in 2016 at each Region IV GUAN site.