WORLD METEOROLOGICAL ORGANIZATION (31.08.2016)

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 2015 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 RBCN station in 2015. The same is shown for GSN stations in Figure 3. System outages resulted in several stations providing less than complete annual coverage, a greater number than in recent years. 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.

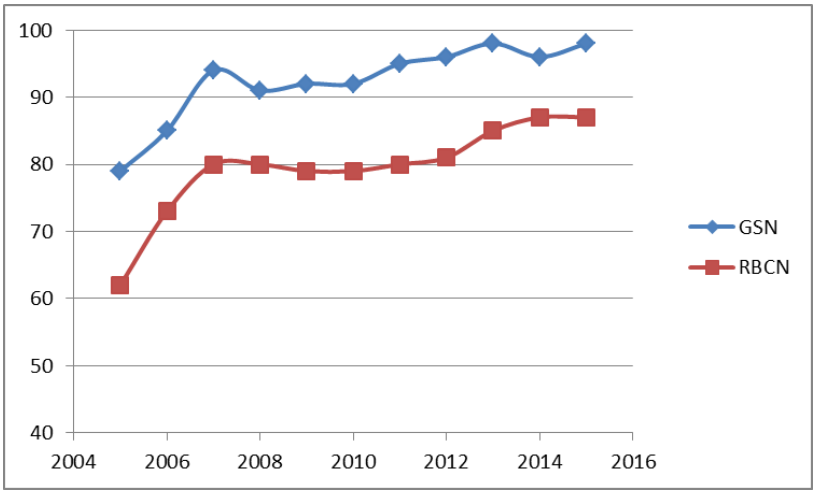

Figure 1. Percentage of Region IV RBCN stations providing CLIMAT reports (red line) and the subset of GSN stations (blue line) providing CLIMAT reports in at least nine months each year from 2005 through 2015.

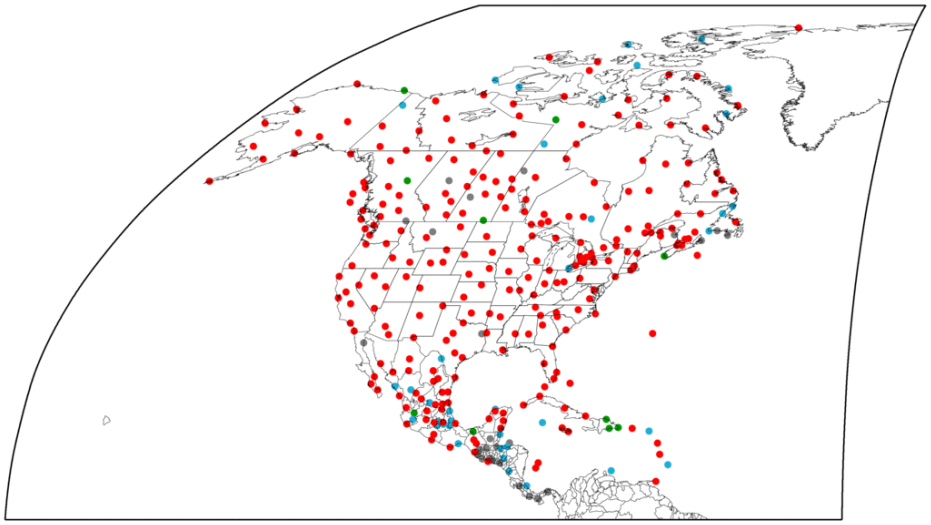

Figure 2. The reporting frequency of the Region IV stations in the RBCN network in 2015; stations reporting all 12 months of the year (red), from 6 to 11 reports (blue), 1 to 5 reports (green), and 0 reports (gray).

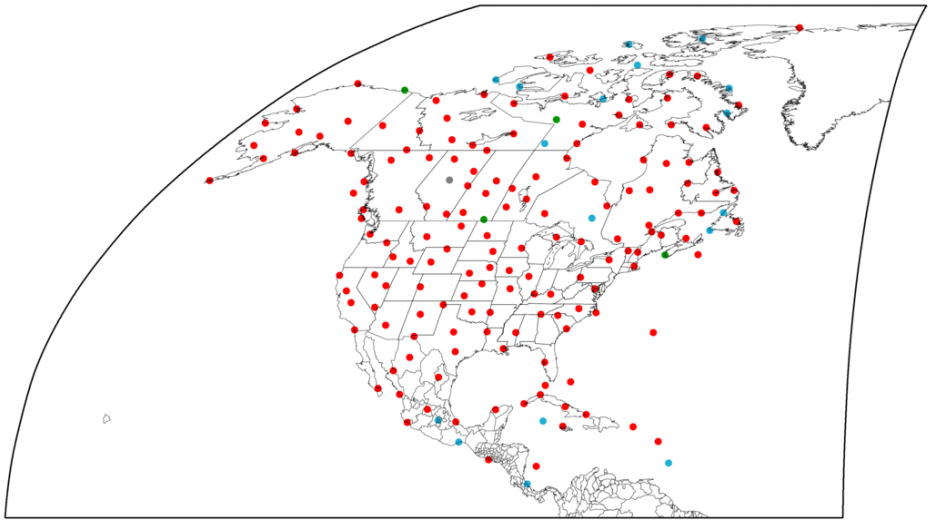

Figure 3. The reporting frequency of the Region IV stations in the GSN network in 2015; stations reporting all 12 months of the year (red), from 6 to 11 reports (blue), 1 to 5 reports (green), and 0 reports (gray).

Table 1. Region IV stations with reporting issues in 2015-2016.

Data-Months	WMO #	Station Name	Country	Issue
12/2015-Present	71923	Ennadai Lake	Canada	Power issues at the station since late November 2015.
11/2014-7/2015, 9/2015-Present	71490	Robertson Lake	Canada	Power and transmission issues. No expected resolution until at least July 2016 due to its remote location.
4/2015-Present	71559	Estevan RCS	Canada	Station moved from Estevan A/ (71862), but no official notification from WMO has been provided about this via GEONOT (General Notice).
4/2015-Present	71693	Slave Lake R	Canada	Station move from Slave Lake AB (71069), but no official notification from WMO has been provided about this via GEONOT (General Notice).
4/2015-Present	71884	Yarmouth RCS	Canada	Station moved from Yarmouth A/ (71603), but no official notification from WMO has been provided about this via GEONOT (General Notice).
10/2015-4/2016	71074	Isachsen (Au	Canada	Ice accretion issues on the antenna during the winter months.
9/2013-Present	91701	Kanton Islan	KIRIBATI	Awaiting details from point of contact regarding station status.
12/2013-Present	71844	Big Trout La	Canada	Station was decommissioned, but no official notification from WMO has been provided about this via GEONOT (General Notice).
12/2014-Present	71069	Slave Lake AB	Canada	Station moved to Slave Lake AB (71693), but no official notification from WMO has been provided about this via GEONOT (General Notice).
11/2015-Present	71358	Clyde River	Canada	Transmission issues.
3/2015-Present	71603	Yarmouth A/	Canada	Station moved to Yarmouth RCS (71884), but no official notification from WMO has been provided about this via GEONOT (General Notice).
11/2015-12/2015	71018	Resolute CS/	Canada	Transmission issues.

6/2015-9/2015	78954	Grantley Adams	Barbados	Station switched from TAC to BUFR during Jun 15. Notification of switch wasn't received until July 15 and took a few months to gain access to station's BUFR messages. Issue resolved in Nov 15 and only Jun 15 CLIMAT remains missing.
8/2015-9/2015	71197	Port Aux Bas	Canada	Power and transmission issues.
9/2013-8/2015	70086	Barter Island	United States	Sensor issue at the site during the affected data-months.
4/2015-6/2015	71363	Gjoa Haven C	Canada	Phone and transmission issues.
4/2015-5/2015	71185	Daniels Harbor	Canada	Phone and transmission issues.
2/2015-3/2015	71074	Isachsen (Au	Canada	Station had a power issue and station's generator was replaced during the annual station visit.
10/2014-2/2015	71923	Ennadai Lake	Canada	Power supply issues.
12/2013-Present	71844	Big Trout La	Canada	Was decommissioned as of early December 2013 and the GENOT (General Notice) hasn't been received by NCEI, and maybe the global community, as of 7/11/2016.

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 2015, and more than 95 met minimum performance requirements for all variables (Figure 4). As of December 2015 all stations were operating in Regions IV and VI. In the other regions a total of eight stations were silent and two were reporting intermittently.

NCEI's Integrated Global Radiosonde Archive (IGRA) serves as the database for the GUAN. The archive consists of three components: quality-assured individual soundings, monthly means, and sounding-derived humidity and stability parameters. All of these components are updated on a regular basis and are available for download from http://www1.ncdc.noaa.gov/pub/data/igra/.

IGRA version 1 was replaced with version 2 in August 2016. IGRA2 includes additional historical observations that have been digitized over the past decade, and new radiosonde data that have become available along with stations that have started operation. The beta version contains approximately 30% more soundings and nearly twice as many stations as IGRA1. Pilot balloon observations now extend back to 1905,

and there is a significant improvement in the spatial coverage of both radiosonde and pilot balloon observations, particularly before the 1970s. In addition to the temperature, dew point depression, and wind observations available in IGRA1, IGRA2 soundings also include the variables of relative humidity and elapsed time since launch whenever they are available in the original data sources.

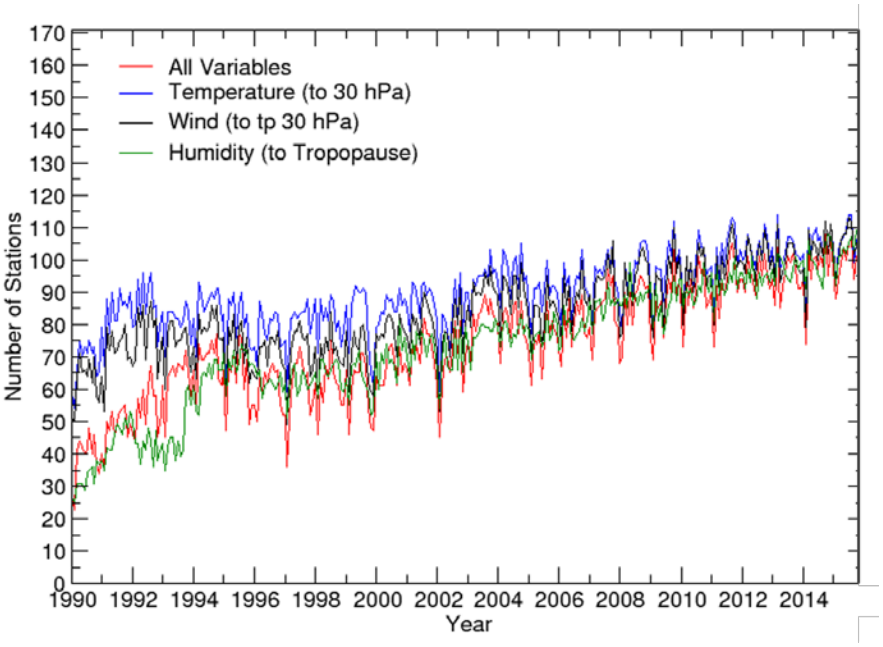

Figure 4. Time series of the number of GUAN stations meeting the minimum performance requirements. Perfect receipt = 171.