Great Bay (GRB) NERR Meteorological Metadata
January 1 – July 1, 2025
Latest Update: July 30, 2025

Note: This is a provisional metadata document; it has not been authenticated as of its download date. Contents of this document are subject to change throughout the QAQC process, and it should not be considered a final record of data documentation until that process is complete. Contact the CDMO cdmosupport@belle.baruch.sc.edu or the Reserve with any additional questions.

I. Data Set and Research Descriptors

1) Principal investigators and contact people

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2) Entry verification

Data are uploaded from the CR1000 data logger to a Dell Latitude E7440 computer with a Windows 7 or newer operating system. Files are exported using Campbell Scientific PC400 software. They are exported in a comma-delimited format and uploaded to the CDMO where they undergo automated primary QAQC and become part of the CDMO's online provisional database. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve

where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data and summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, append files, and export the resulting data file to the CDMO for tertiary QAQC and assimilation into the CDMO's authoritative online database. For more information on QAQC flags and QAQC codes, see Sections 11 and 12.

The data are downloaded to the PC approximately once a month. Files are stored on the PC and backed up on an external hard drive and to OneDrive. Lara Martin and Amanda Giacchetti were responsible for data management and QA/QC for the meteorological data set.

3) Research objectives

The principal objective is to record long-term meteorological data in the Great Bay Estuary to aid in the interpretation of potential changes in water quality, as well as to identify and catalog extreme weather events, and to maintain an historical database of weather conditions in the area.

4) Research methods

Campbell Scientific data telemetry equipment was installed at the GRB Greenland (grbglmet) station on 07/13/2006. It transmits data to the NOAA GOES satellite, NESDIS ID# 3B023714. The transmissions are scheduled hourly at 0:02:00 after the hour and contain 4 datasets reflecting 15-minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QAQC process detailed in Section 2 above. The "real-time" telemetry data become part of the provisional dataset until undergoing secondary and tertiary QAQC and assimilation in the CDMO's authoritative online database. Provisional and authoritative data are available at http://cdmo.baruch.sc.edu.

A Campbell Scientific TX312 GOES satellite transmitter and Yagi antennae (facing 180^{o} at a 47.5^{o} angle) are used for real-time access to the weather data. The TX312 transmitter was replaced 10/06/2023 with a Campbell TX321-G GOES satellite transmitter. The Yagi was not altered in any way.

A monthly download interval was chosen to coincide with the required monthly physical inspection of the weather station and probes.

Sensors are removed and sent back to Campbell Scientific for calibration according to NERR CDMO protocols.

During monthly QA/QC checks, a Kestrel 5000 handheld meter is used for a rough check of temperature, relative humidity, barometric pressure, and wind speed data. Wind direction is checked using a compass on a Smartphone. PAR data are compared to a sensor located on the University of New Hampshire's campus in Durham, NH. The sensor is on the other side of Great Bay, ~10 miles away. As a result, the data do not always correspond well.

Data are collected in Eastern Standard Time for the entire year.

The 15-minute data are collected in the following formats for the CR1000:

Averages from 5-second data:
Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), Wind Direction (degrees), Battery Voltage (volts)
Maximum and Minimum Air Temperature (°C) from 5-second data and the times of collection (Contact Reserve for this data.)
Maximum Wind Speed (m/s) from 5-second data and the time of collection
Wind Direction Standard Deviation (degrees)
Totals:
Precipitation (mm), PAR (millimoles/m^2), and Cumulative precipitation (mm)
(Cumulative precipitation is no longer available via export from the CDMO. Please contact the Reserve or the CDMO for more information or to obtain these data.)

Recommended calibration frequency for the MET station sensors:
- Temperature/Humidity - Annually
- Rain Gauge - Annually
- Wind Speed/Direction - Annually or every 2 years (depending on the sensor)
- Barometric Pressure - Every 2 years
- PAR - Every 2 years
- CR1000 - Every 5 years

5) Site location and character

The GRBNERR weather station is located on the eastern shore of Great Bay. The GPS coordinates for the location are 43.058646, -70.831128. The weather station is located approximately 0.5 km from the water's edge of Great Bay. The approximate distances from the weather station location to the NERR sampling sites are as follows:

Great Bay sonde: 1.5 km
Squamscott River sonde: 3 km
Lamprey River sonde: 5 km
Oyster River sonde: 8 km

Tower/Sensors	**Height from the ground**	**Notes**
Tower	6.1	~ 3 meters above mean high water
Temperature/Relative Humidity	1.8	Gill shield attached to the west side of the tower
Barometric Pressure	1.8	Inside the CR1000 enclosure
Wind	6.2	At the top of the tower
PAR	6.1	Mounted on the southern side of the cross-arm, at the very top of the tower.
Precipitation gauge	1.5	Located 5 meters from the west side of the tower

The CR1000 datalogger, telemetry instrumentation, and all sensors, except for the rain gauge, are mounted on the collapsible aluminum tower frame or inside the enclosure. The rain gauge is mounted on a separate pipe nearby. The surrounding area is farm fields with a variety of tall grasses, marsh plants, and small trees in the immediate vicinity of the station.

This location lacks AC power, and as a result, GRBNERR purchased a Campbell Scientific precipitation gauge (CS705) with a snowfall adapter that uses antifreeze to measure frozen precipitation in the winter. This unit was connected on 11/18/2005.

From 04/1997 through 10/12/2005, the GRBNERR weather station was located on the roof of the University of New Hampshire's Jackson Estuarine Laboratory. The lab is located on the shore of the Great Bay Estuary at Adams Point, which divides the Little Bay and Great Bay portions of the estuary.

Station Code	SWMP Status	Station Name	Location	Active Dates	Reason Decommissioned	Notes
GL	P	grbglmet	43.058646, 70.831128	10/2005 - present	NA	NA
GB		grbgbmet	43.092269, 70.865090	04/1997 - 10/2005	Station was relocated to be in better compliance with NERR SWMP protocols, in particular shading/blocking issues from nearby trees.	

6) Data collection period

Weather data has been collected at the GRBNERR since April 1997.

This metadata document covers the period from 01/01/2025 – 07/01/2025.

File Start Date and Time	File End Date and Time
12/19/2024 15:30	01/10/2025 14:45
01/10/2025 15:00	02/05/2025 15:45
02/05/2025 16:00	03/04/2025 10:15
03/04/2025 10:30	04/02/2025 14:00
04/02/2025 15:15	05/02/2025 14:00
05/02/2025 14:15	05/29/2025 14:30
05/29/2025 14:45	07/01/2025 07:45

7) Distribution

NOAA retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The NERRS retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the NERR site where the data were collected should be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

Requested citation format:
NOAA National Estuarine Research Reserve System (NERRS). System-wide Monitoring Program. Data accessed from the NOAA NERRS Centralized Data Management Office website: http://www.nerrsdata.org/; *accessed* 12 October 2025.

NERR meteorological data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal Investigators and Contact Persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page www.nerrsdata.org. Data are available in comma delimited format.

8) Associated researchers and projects

As part of the SWMP long-term monitoring program, GRB NERR also collects water quality parameters every 15 minutes at 4 sites (Great Bay, Squamscott River, Oyster River, Lamprey River) along with monthly grab samples and diel sampling for nutrient data which may be correlated with this meteorological dataset. These data are available at www.nerrsdata.org.

The weather data are used by several university and state agency scientists who are conducting biological, physical, and chemical projects in the estuarine and near shore environments. The data are used by the SWMP program to assist in the interpretation of short and long-term changes in water column conditions. Some general examples include 1) using rainfall data to understand changes in salinity 2) using wind speed and direction to understand changes in turbidity and 3) using PAR data to understand changes in fluorescence and chlorophyll-a concentrations.

Examples of other projects and researchers that use the data are:

Microbial source tracking and microbial pollution source identification studies by Dr. Steven Jones at UNH (rainfall data)

Submerged Aquatic Vegetation (SAV) research – Dr. David Burdick; Dr. Gregg Moore; Dr. Fred Short - Jackson Estuarine Laboratory. Supported by Piscataqua Region Estuaries Partnership and NH Department of Environmental Services.

II. Physical Structure Descriptors

9) Sensor specifications

Parameters: Temperature
Units: Celsius
Sensor type: 1000 Ω Platinum Resistance Thermometer (PRT)
Model #: EE181 Temperature and Relative Humidity Probe
Operating Temperature: -40°C to +60°C
Range: -40°C to +60°C
Accuracy: ± 0.2°C @ 23°C

Serial Number: 221716000442FC
Date of Calibration: 10/23/2024
Dates of Sensor Use: 11/25/2024 – present

Serial Number: 214116000415C8
Date of Calibration: 12/07/2023
Dates of Sensor Use: 12/14/2023 – 11/25/2024

Serial Number: 221716000442FC
Date of Calibration: 10/01/2022
Dates of Sensor Use: 02/09/2023 – 12/14/2023
12/05/2022 – 12/08/2022

Parameter: Relative Humidity
Units: Percent
Sensor type: HC101 - Capacitance
Model #: EE181 Temperature and Relative Humidity Probe
Range: 0-100% non-condensing
Accuracy at -25 to 60°C: ± (1.4 + 0.01 • RH reading) % RH
Temperature dependence of RH measurement +/- 0.03% RH/°C (-40 to 60°C)
Note: This sensor caps relative humidity values at 100%; measured values >100% are altered to 100%.

Serial Number: 221716000442FC
Date of Calibration: 10/23/2024
Dates of Sensor Use: 11/25/2024 – present

Serial Number: 214116000415C8
Date of Calibration: 12/07/2023

Dates of Sensor Use: 12/14/2023 – 11/25/2024

Serial Number: 221716000442FC
Date of Calibration: 10/01/2022
Dates of Sensor Use: 02/09/2023 – 12/14/2023
12/05/2022 – 12/08/2022

Parameter: Barometric Pressure
Units: millibars (mb)
Sensor type: Vaisala Barocap © silicon capacitive pressure sensor
Model #: PTB110/CS-106
Operating Range: Pressure: 500 to 1160 mb; Temperature: -40°C to +60°C
Humidity: non-condensing
Accuracy: ± 0.3 mb at +20°C, ± 0.6 mb at 0°C to 40°C, ± 1 mb at -20°C to +45°C, ± 1.5 mb at -40°C to +60°C
Stability: ± 0.1 mb per year

Serial Number: V0950843 (CS106) – new sensor
Date of Calibration: 09/23/2024
Dates of Sensor Use: 10/29/2024 – present

Serial Number: N0240394 (CS106)
Date of Calibration: 06/30/2021
Dates of Sensor Use: 08/30/2024 – 10/29/2024

Serial Number: K1220008 (CS106),
Date of Calibration: 07/17/2023
Dates of Sensor Use: 10/06/2023 – 08/30/2024

Parameter: Wind speed
Units: meter per second (m/s)
Sensor type: 18 cm diameter 4-blade helicoid propeller molded of polypropylene
Model #: R.M. Young 05103 Wind Monitor
Range: 0-60 m/s (134 mph); gust survival 100 m/s (220 mph)
Accuracy: +/- 0.3 m/s

Serial Number: WM190830
Date of Last Calibration: 02/28/2023
Dates of Sensor Use: 10/06/2023 – present

Serial Number: WM60353
Date of Last Calibration: 03/10/2022
Dates of Sensor Use: 05/24/2022 – 10/06/2023

Parameter: Wind direction
Units: degrees

Sensor type: balanced vane, 38 cm turning radius
Model #: R.M. Young 05103 Wind Sentry
Range: 360° mechanical, 355° electrical (5° open)
Accuracy: +/- 5%

Serial Number: WM190830
Date of Last Calibration: 02/28/2023
Dates of Sensor Use: 10/06/2023 – present

Serial Number: WM60353
Date of Last Calibration: 03/10/2022
Dates of Sensor Use: 05/24/2022 – 10/06/2023

Parameter: Photosynthetically Active Radiation (PAR)
Units: mmoles m-2 (total flux)
Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: SQ-110 Apogee Quantum Sensor
Light spectrum waveband: 400 to 655 nm
Temperature dependence: 0.06 ± 0.06% per °C
Stability: <±2% change over 1 yr
Operating Temperature: -40°C to 70°C; Humidity: 0 to 100%
Cosine Response: 45° zenith angle: +/- 2%; 75° zenith angle: +/- 5%
Sensitivity: 0.2 mV per µmoles m-2 s-1
Multiplier: 0.025 (this does not change)

Serial Number: 21141
Date of Calibration: 01/16/2024
Dates of Sensor Use: 10/29/2024 – present

Serial Number: 27086
Date of Calibration: 11/10/2022
Dates of Sensor Use: 12/05/2022 – 10/29/2024

Parameter: Precipitation
Units: millimeters (mm)
Sensor type: Tipping Bucket Rain Gauge
Model #: TE525WS (rain gauge), CS705 (precipitation adapter)
Rainfall per tip: 0.01 inch
Operating range: Temperature: 0° to 50°C; Humidity: 0 to 100%
Accuracy: +/- 1.0% up to 1 in./hr; +0, -3% from 1 to 2 in./hr; +0, -5% from 2 to 3 in./hr

Serial Number: 97869-0224 (new rain gauge)
Date of Calibration: 05/09/2025
Dates of Sensor Use: 05/16/2025 – present

Serial Number: 37249-1005

Date of Calibration: 11/28/2023, 08/31/2022
Dates of Sensor Use: 2005 – 05/16/2025

Snowfall adapter

Installed	Removed
01/10/2025 15:15	03/27/2025 14:45
01/04/2024 14:30	03/25/2024 07:45

The CR1000 has 2 MB of Flash EEPROM that is used to store the Operating System. Another 128 K Flash is used to store configuration settings. A minimum of 2 MB SRAM is (4 MB optional upgrade) available for program storage (16K), operating system use, and data storage. Additional storage is available by using a compact flash card in the optional CFM100 Compact Flash Module.

CR1000 Serial Number: 5243
Date CR1000 Installed: July 2006

CR1000 Removed	CR1000 Calibrated	CR1000 Reinstalled
10/16/2024	10/23/2024	10/29/2024
03/31/2020	04/03/2020	04/14/2020

CR1000 Firmware Version(s):

OS 32.05	01/06/2020 – present

CR1000 Program Version(s):

grbglmet_CR1000_6.5_020923.CR1	02/09/2023 – present
grbglmet_CR1000_6.5_040417.CR1	12/08/2022 – 02/09/2023
grbglmet_CR1000_6.5_120522.CR1	12/05/2022 – 12/08/2022
grbglmet_CR1000_6.5_040417.CR1	04/11/2017 – 12/05/2022

Transmitter: High Data Rate GOES Transmitter
Model Number: TX321-G
Serial Number: 2301
Date Installed: 10/06/2023 – present

Transmitter: High Data Rate GOES Transmitter
Model Number: TX312
Serial Number: 1340
Dates In Use: 07/13/2006 – 10/06/2023

10) Coded variable definitions

Sampling Station	Sampling site code	Station code
Greenland	GL	grbglmet

11) QAQC flag definitions

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is above or below sensor range or missing. All remaining data are then flagged 0, as passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

-5 Outside High Sensor Range
-4 Outside Low Sensor Range
-3 Data Rejected due to QAQC
-2 Missing Data
-1 Optional SWMP supported parameter
0 Passed Initial QAQC Checks
1 Suspect Data
2 *Open - reserved for later flag*
3 *Open - reserved for later flag*
4 Historical Data: Pre-Auto QAQC
5 Corrected Data

12) QAQC code definitions

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the CR1000, sensor errors are sensor specific, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a specific data point, but some comment codes (marked with an * below) can be applied to the entire record in the F_Record column.

General Errors
GIM Instrument malfunction
GIT Instrument recording error, recovered telemetry data
GMC No instrument deployed due to maintenance/calibration
GMT Instrument maintenance
GPD Power down
GPF Power failure / Low battery
GPR Program reload
GQR Data rejected due to QA/QC checks
GSM See metadata

Sensor Errors
SDG Suspect due to sensor diagnostics
SIC Incorrect calibration constant, multiplier or offset
SIW Incorrect wiring
SMT Sensor maintenance
SNV Negative value

SOC Out of calibration
SQR Data rejected due to QAQC checks
SSD Sensor drift
SSN Not a number / unknown value
SSM Sensor malfunction
SSR Sensor removed

Comments
CAF Acceptable calibration/accuracy error of sensor
CCU Cause unknown
CDF Data appear to fit conditions
CML Snowmelt from previous snowfall event
CRE* Significant rain event
CSM* See metadata
CVT* Possible vandalism/tampering
CWE* Significant weather event

13) Other Remarks/Notes

Data may be missing due to equipment or associated specific sensors not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NANs in the dataset stand for "not a number" and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

Small negative PAR values are within range of the Apogee sensor and are due to normal errors in the sensor and the CR1000 datalogger. The maximum signal noise error for the Apogee sensor is +/- 2.214 mmoles/m2 over a 15-minute interval. These values are automatically flagged and coded as <1> (CAF).

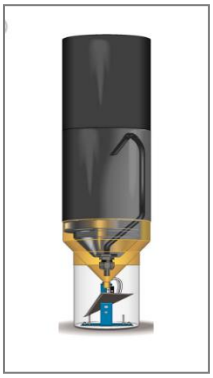
Relative Humidity data greater than 100 are within range of the sensor accuracy of +/-3% and are flagged and coded as suspect, <1> (CAF). Values greater than 103 are rejected <-3>.

Data recorded for all parameters (except for cumulative precipitation) at the midnight timestamp (00:00) are the 15-minute averages and totals for the 23:45-23:59 time-period of the previous day. Cumulative precipitation data at the midnight timestamp (00:00) are the sum of raw (unrounded) precipitation data from 00:00 to 23:59 of the previous day. Summing each individual 15-minute total precipitation value from the same period will result in small differences from cumulative precipitation due to rounding. It is especially important to note how data at the midnight timestamp are recorded when using January 1st and December 31st data.
Note: Cumulative precipitation is no longer available via export from the CDMO. Please contact the Reserve or the CDMO for more information or to obtain this data.

Snowfall Adapter
The Campbell Scientific CS705 Snowfall Adapter is typically installed December through March. (See picture below.) The adapter was filled with West Marine Premium Marine Antifreeze -100ºF. Precipitation that falls into the column causes liquid displacement and this liquid flows through the

overflow tube and is measured by the tipping bucket gauge. Liquid precipitation can cause the tipping bucket to activate within minutes although a minimum of 0.76 mm must be reached before overflow. During snowfall, the tipping bucket may not activate for several hours or longer and may not show equivalent snowfall totals until many days later as the snow melts slowly in the antifreeze, especially when temperatures are very low or when the snow is light and dry.

The tipping bucket measures 0.254 mm with every tip but because liquid displacement does not occur until 0.76 mm is reached, it is possible that small amounts of snow or rain may be missed when the snowfall adapter is installed. In addition, it is very common for the liquid overflow to occur all at once, rather than metered out during the precipitation event. All the precipitation is eventually recorded although the actual time of light rain or snowfall will rarely coincide with the tipping bucket timestamp. Dates and timestamps for snowfall adapter installation and removal are listed above. These periods are coded with a <0> CSM.



Snow events
Precipitation data collected with rain gauges that are not designed specifically for measuring frozen precipitation (snow/ice/hail), including heated gauges and those that use antifreeze to melt frozen precipitation, may not be measured accurately. Blowing wind, sublimation, and rate of snowfall/ice melt affect the amount of recorded precipitation. The reserve has made attempts to accurately record dates and times when frozen precipitation and subsequent melting has occurred. (See table at end of report.)

If data appeared aberrant or unseasonable, they were compared to two local outside sources. Barometric pressure data were corroborated with data collected by the National Data Buoy Center located at the Isles of Shoals, NH.
http://www.ndbc.noaa.gov/station_page.php?station=IOSN3

Temperature, relative humidity, PAR, and precipitation data were compared to data collected by the weather station at Morse Hall, University of New Hampshire http://www.weather.unh.edu or to historical weather data from Weather Underground for Portsmouth International Airport at Pease, New Hampshire https://www.wunderground.com/history/.

Remarks on Flagged/Coded Data:

01/10/2025 15:15 <0> (CSM)

01/10/2025 15:30 – 15:45 <5> [SMT] (CSM)
Snowfall adapter was installed at 15:10. While adding the antifreeze to the adapter vessel, an accidental accumulation of 0.5 mm occurred from 15:30-15:45. The total and the cumulative precipitation for the day were corrected.

01/17/2025 15:15 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 14:50, causing an accidental accumulation of 0.3 mm. The total and the cumulative precipitation for the day were corrected.

01/31/2025 09:00, 09:30, 10:30, 11:45 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 08:35, causing an accidental accumulation of 0.3 mm at 09:00. The tips that occurred at 09:30, 10:30, and 11:45 were caused by excess antifreeze slowly dripping into the tipping buckets, causing them to activate. Overall, 1.0 mm was recorded. The total and cumulative precipitation for the day were corrected.

02/05/2025 16:15 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 15:50, causing an accidental accumulation of 0.3 mm. The total and the cumulative precipitation for the day were corrected.

02/12/2025 15:45 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 14:55. The tip that occurred at 15:45 was caused by excess antifreeze slowly dripping into the tipping buckets, causing them to activate. Overall, 0.3 mm were recorded. The total and the cumulative precipitation for the day were corrected.

02/17/2025 03:15 – 06:45 <-2> [GPF] (CSM)
02/17/2025 07:00 <-3> [GPF] (CSM)
In the six hours before this failure, battery voltage dropped to 10 V. We suspect this was due to consistently low air temperatures, an increase in wind speed, and low PAR in days prior. We suspect these conditions prevented the battery from fully charging.
At 07:00, all parameters that report averages created from 5-second measurements (temp/rh, barometric pressure, wind direction and speed) were rejected as there was not a full 15-minute data collection period.

02/26/2025 15:45 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 15:30, causing an accidental accumulation of 0.3 mm. The total and the cumulative precipitation for the day were corrected.

03/04/2025 11:00, 11:45 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 10:40, causing an accidental accumulation of 0.3 mm. The tip that occurred at 11:45 was caused by excess antifreeze slowly dripping into the tipping buckets, causing them to activate. Overall, 0.5 mm were recorded. The total and the cumulative precipitation for the day were corrected.

03/16/2025 16:45 <5> [SMT] (CSM)

Refilled the snowfall adapter antifreeze at 15:00. The tip that occurred at 16:45 was caused by excess antifreeze slowly dripping into the tipping buckets, causing them to activate. Overall, 0.3 mm were recorded. The total and the cumulative precipitation for the day were corrected.

03/20/2025 08:15 <5> [SMT] (CSM)
Refilled the snowfall adapter antifreeze at 07:45, causing an accidental accumulation of 0.3 mm. The total and the cumulative precipitation for the day were corrected.

03/27/2025 14:45 <0> (CSM)
03/27/2025 15:00 <5> [SMT] (CSM)
Removed the snowfall adapter at 14:40. Manually activated the tipping buckets at 15:00 to make sure the rain gauge was working. The total and the cumulative precipitation for the day were corrected.

04/02/2025 15:15 <5> [SMT] (CSM)
Manually activated the tipping buckets at 15:10 to make sure the rain gauge was working. The total and the cumulative precipitation for the day were corrected.

05/16/2025 09:15 <5> [SMT] (CSM)
Installed a new rain gauge and cable. Manually activated the tipping buckets at 09:15 to make sure the rain gauge was working. The total and the cumulative precipitation for the day were corrected.