



WMO/IOC/UNEP/ICSU  
GLOBAL CLIMATE OBSERVING  
SYSTEM (GCOS)

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**13th GRUAN Implementation-  
Coordination Meeting (ICM-13)**

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Session 1

Virtual

15 November - 19 November 2021

## GRUAN Site Report for Ny-Ålesund

*(Submitted by Marion Maturilli)*

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### **Summary and Purpose of this Document**

Report from the GRUAN site Ny-Ålesund for the period January to December 2020.

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## Overview

The Ny-Ålesund site is contributing to GRUAN with its sounding program and according data streams for RS41, ECC and CFH. The daily radiosonde data, weekly ozone sonde data, and bi-monthly CFH data are promptly submitted to GRUAN LC, no problems are apparent. During short-term campaign activity in 2020, also several RS11-G radiosondes and COBALD sondes were added to the balloon payload, and the data submitted to GRUAN LC. Furthermore, Ny-Ålesund has an established dataflow of GNSS data to the GRUAN GNSS Processing Centre at GFZ, including manufacturer raw data, converted raw data (RINEX) and instrument logs that contain all equipment changes. Operational processing as GNSS-PW-GDP is performed. In the future, Ny-Ålesund may contribute with lidar and microwave radiometer data streams once formal data products have been defined.

## Change and change management

During 2020, there were no changes in the sounding operation procedures, and all GRUAN data streams were retrieved in routine operation. In September 2020, the GNSS receiver has been changed (from receiver type JAVAD TRE\_3 to SEPT POLARX5) as documented in the GNSS log file.

## Resourcing

Funding for the daily routine radiosounding is assured. Any additional soundings depend on extra funding, but so far no problems are encountered.

## Operations

Operational challenges at Ny-Ålesund are mostly related to environmental issues. The necessity of R23 for CFH operation is critical, and we support efforts that are taken to develop a replacement. For logistical reasons, it is impossible to recover even the large payloads after flight, as they land either in the ocean or on inaccessible ground. In Arctic climate conditions, the decomposition of any sounding material is decelerated, and there is a growing awareness of the public that the soundings result in waste being left in the environment. Requests in this regard have already been brought up to the station on several occasions. As for the justification of the sounding program to the public, we would appreciate a general statement from official side to back up our replies. In 2021, an Environmental Impact Assessment for Ny-Ålesund is launched (see <https://nyalesundresearch.no/research-and-monitoring/researchers-guide/environmental-considerations-andthinking-green>) and may potentially affect the sounding program (e.g. CFH) in the future.

## **Covid-19**

There are no effects of the pandemic on the Ny-Ålesund contribution to GRUAN. All programs were kept in operation.

## **Site assessment and certification**

Ny-Ålesund was re-certified in 08/2018.

## **GRUAN-related research**

At Ny-Ålesund, we try to support the development of new instrumentation to replace the R23-dependent CFH instruments. In this context, the Peltier-CFH campaign by Teresa Jorge (ETHZ) was hosted at Ny-Ålesund in February 2020. Furthermore, we took advantage of a Japanese campaign with cloud particle sensor (CPS) sondes to have dual launches of Meisei RS11-G and Vaisala RS41 radiosondes in Ny-Ålesund, and contribute with a new sonde combination to the parallel sounding database. The Ny-Ålesund site representative Marion Maturilli is supporting the network as co-chair for the GRUAN Task Team Sites. She has also provided feedback to GRUAN LC on various issues in the BETA1 version of the RS41 product for Ny-Ålesund and the MOSAiC expedition.

## **WG-GRUAN interface**

See chapter “Operations”: a general statement from official side confirming the necessity to launch CFH instruments with the related use of R23 would be appreciated.

## **Other archiving centers**

The CFH data are archived at NDACC.

## **Participation in campaigns**

In February 2020, AWIPEV research base in Ny-Ålesund hosted the Peltier-CFH project by Teresa Jorge (ETHZ). The main objectives of the PCFH campaign in Ny-Ålesund was to find PI controller parameters which allow the PCFH to measure the frost point temperature as accurately as the CFH in the upper troposphere and lower stratosphere. Jointly with the base personnel, Teresa and her co-workers launched 4 combined payloads of CFH and Peltier-CFH sondes, respectively. To optimize scientific output of the launches, also COBALD instruments were added. The campaign was very

successful, as the four flights allowed for substantial development of the PCFH instrument. Teresa Jorge has reported on the status of the PCFH development at ICM-12. Regarding the environmental issues of the use of R23 with CFH sondes, the Ny-Ålesund site is strongly interested to find qualified substitute instrument. In March 2020, several cloud particle sensor (CPS) sondes were launched in Ny-Ålesund in a joint campaign with Japanese colleagues Jun Inoue and Sato Kazutoshi. While the CPS sondes do not contribute to GRUAN, they are operated in connection with the Meisei RS11-G radiosonde. Taking advantage of this occasion, we launched these in a dual set-up together with the RS41 radiosonde. Prelaunch checks of both radiosonde types in the Specific Humidity Chamber were performed, and the RS11-G data were submitted to the RS11-G Data Processing Center via GRUAN LC. Thereby, the Ny-Ålesund site contributes to the parallel sounding database with a set of 13 launches with RS11-G and RS41 sets.

## **Future plans**

In 2021, regular operation is planned for the Ny-Ålesund site, no campaign activity.



# GRUAN Site Report for NyAlesund (NYA), 2020

Reported time range is Jan 2020 to Dec 2020

Created by the Lead Centre

Version from 2021-04-27

## 1 General GRUAN site information

Object	Value
Station name	NyAlesund
Unique GRUAN ID	NYA
Geographical position	78.9200 °N, 11.9400 °E, 5.0 m
Operated by	AWI   Alfred-Wegener-Institut für Polarforschung, part of: HELMHOLTZ   Helmholtz-Gemeinschaft
Main contact	Maturilli, Marion
WMO no./name	01004 NY-ALESUND II
Operators	currently 23, changes +5 / -0
Sounding Site	1
GNSS	1

### 1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
NYA-GN-01	GNSS Site NYA2	GNSS	1	operational
NYA-RS-01	Ny-Aalesund Radiosonde Launch Site	Sounding Site	9	539

### 1.2 General comments from Lead Centre

No comments from Lead Centre.

## 2 System: GNSS Site NYA2 (NYA-GN-01)

<b>Object</b>	<b>Value</b>
System name	GNSS Site NYA2
Unique GRUAN ID	NYA-GN-01
System type	GNSS (GN - GNSS)
Geographical position	78.5136 °N, 11.5212 °E, 49.1 m
Operated by	GFZ   Deutsches GeoForschungsZentrum GFZ, part of: HELMHOLTZ   Helmholtz-Gemeinschaft
Instrument contact	Ramatschi, Markus
Started at	2000-03-13
Defined setups	1 (HOURLY)
Possible streams	-

### 2.1 Lead Centre comments

#### 2.1.1 Dataflow

Dataflow of GNSS data to GRUAN LC and the GRUAN GNSS processing centre at GFZ has started in September 2013. This GNSS station is one of two test sites to implement the GNSS dataflow in GRUAN. The current dataflow includes manufacturer raw data, converted raw data (RINEX) and instrument logs, containing all equipment changes.

The operational processing as GNSS-PW-GDP is performed.

### 3 System: Ny-Aalesund Radiosonde Launch Site (NYA-RS-01)

Object	Value
System name	Ny-Aalesund Radiosonde Launch Site
Unique GRUAN ID	NYA-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	78.9230 °N, 11.9227 °E, 15.7 m
Operated by	AWI-POTSDAM   Forschungsstelle Potsdam, part of: AWI   Alfred-Wegener-Institut für Polarforschung, part of: HELMHOLTZ   Helmholtz-Gemeinschaft
Instrument contact	Maturilli, Marion
Started at	-
Defined setups	9 (ROUTINE, OZONE, FLASH, CFH, DUAL1, ROUTINE2, OZONE2, CFH2, RESEARCH)
Possible streams	CFH, COBALD, ECC, RS-11G, RS41, RS92

### 3.1 Lead Centre comments

#### 3.1.1 Dataflow

Sonde dataflow to the GRUAN LC is operational since April 2012.

Currently, the dataflow includes streams of the Vaisala RS41-SGP, ECC Ozone sonde, and CFH water vapour. All launches are promptly submitted using the RsLaunchClient.

A regular measurement program for the observation of stratospheric water vapor was performed using CFH.



## 3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI
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### 3.2.1 Stream: CFH

CFH		10	10	
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### 3.2.2 Stream: COBALD

COBALD		4	4	
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### 3.2.3 Stream: ECC

ECC		83	83	
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### 3.2.4 Stream: RS-11G

RS-11G		13	13	
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### 3.2.5 Stream: RS41

RS41		539	539	
RS41-GCA	001		509	
RS41-RAW	001		538	
RS41-EDT	001		538	
RS41-GDP-ALPHA	003		169	
RS41-GDP-ALPHA	004		186	
RS41-GDP-BETA	001		533	
RS41-GDP-BETA	002		85	

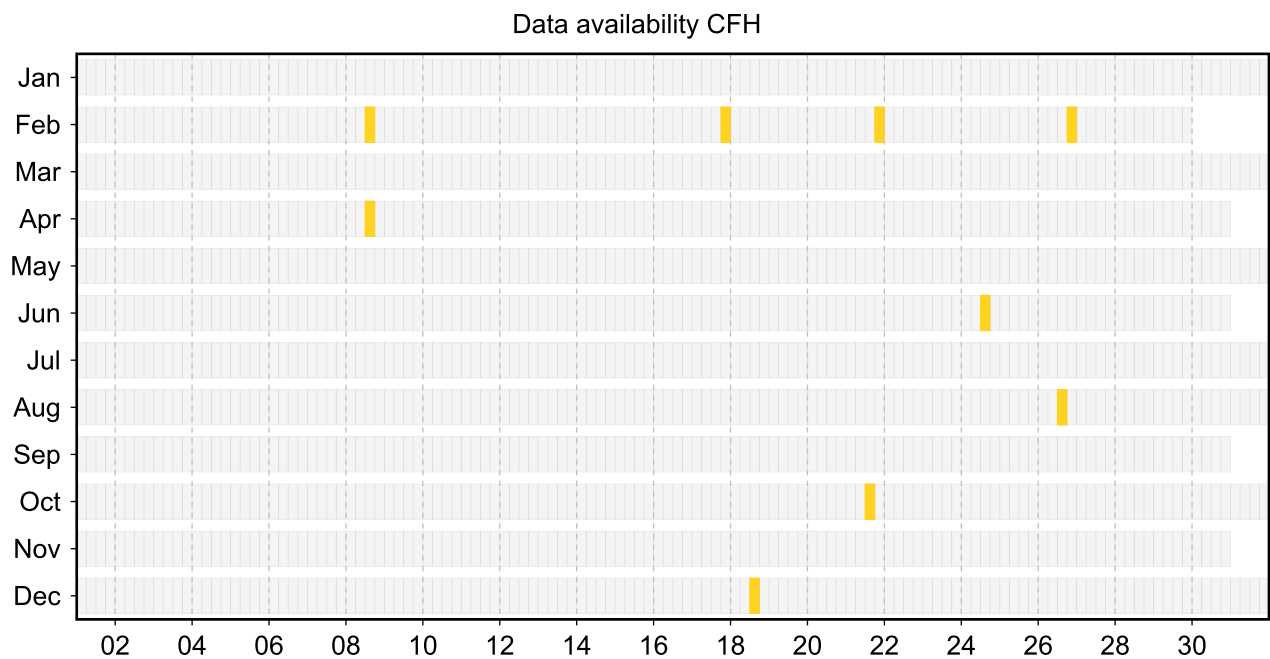
### 3.3 Availability of data products

Available (green): All steps of data processing have been successfully completed. The data product file is available at LC (e.g. files that didn't pass QA/QC or uncertified GRUAN data products) and/or at NCEI (a certified GRUAN data product file that did pass QA/QC).

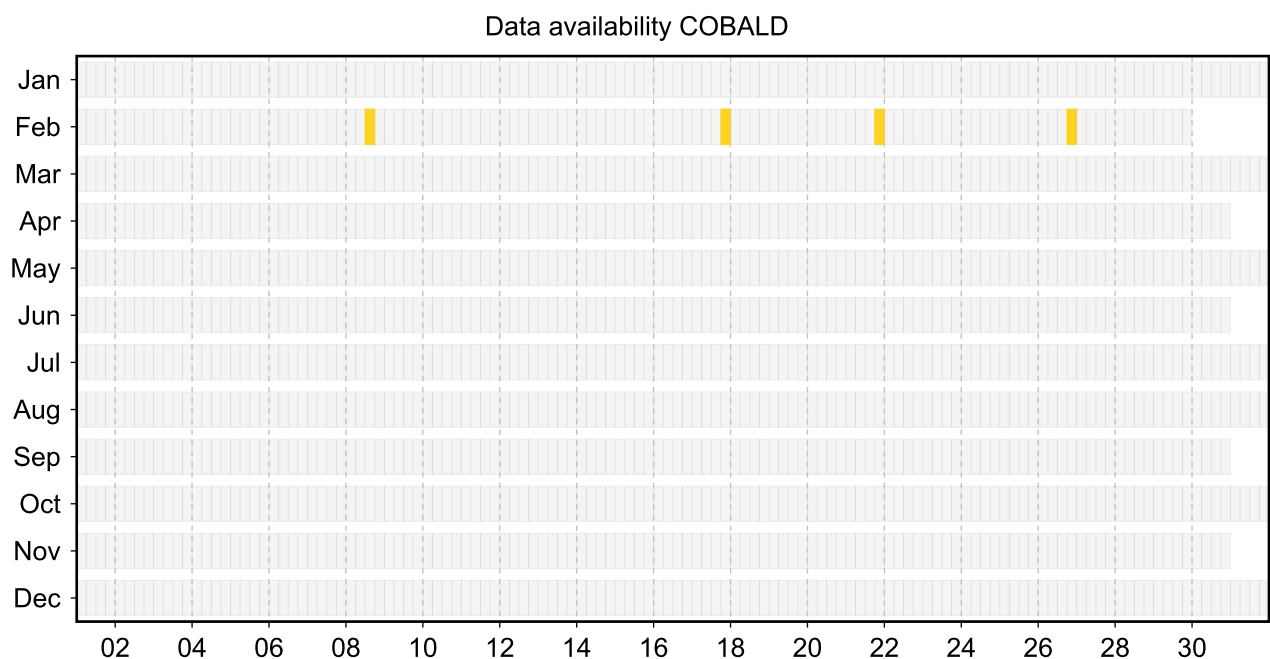
Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software error.

Original (red): The original, manufacturer-produced, raw data file is available (e.g. MWX data file) but was not converted into a GRUAN-standardized raw data format (NetCDF). Reasons for this may be missing data conversion software, a software error, or a corrupt data file.

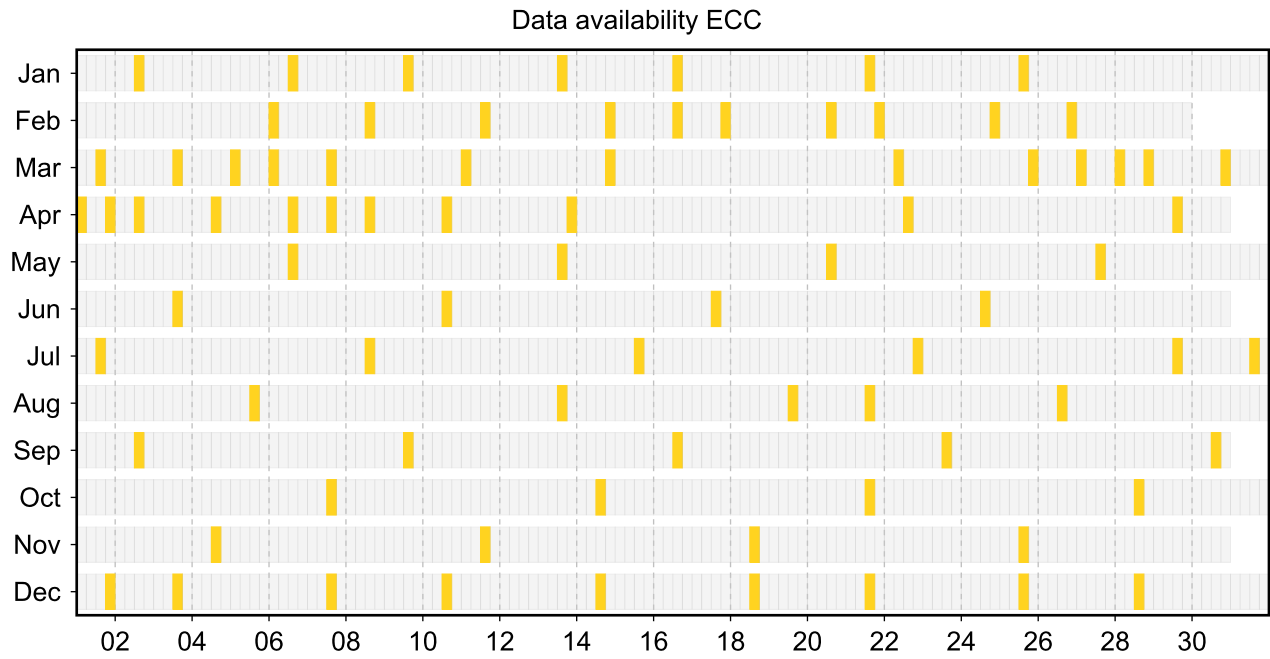
#### 3.3.1 Stream: CFH



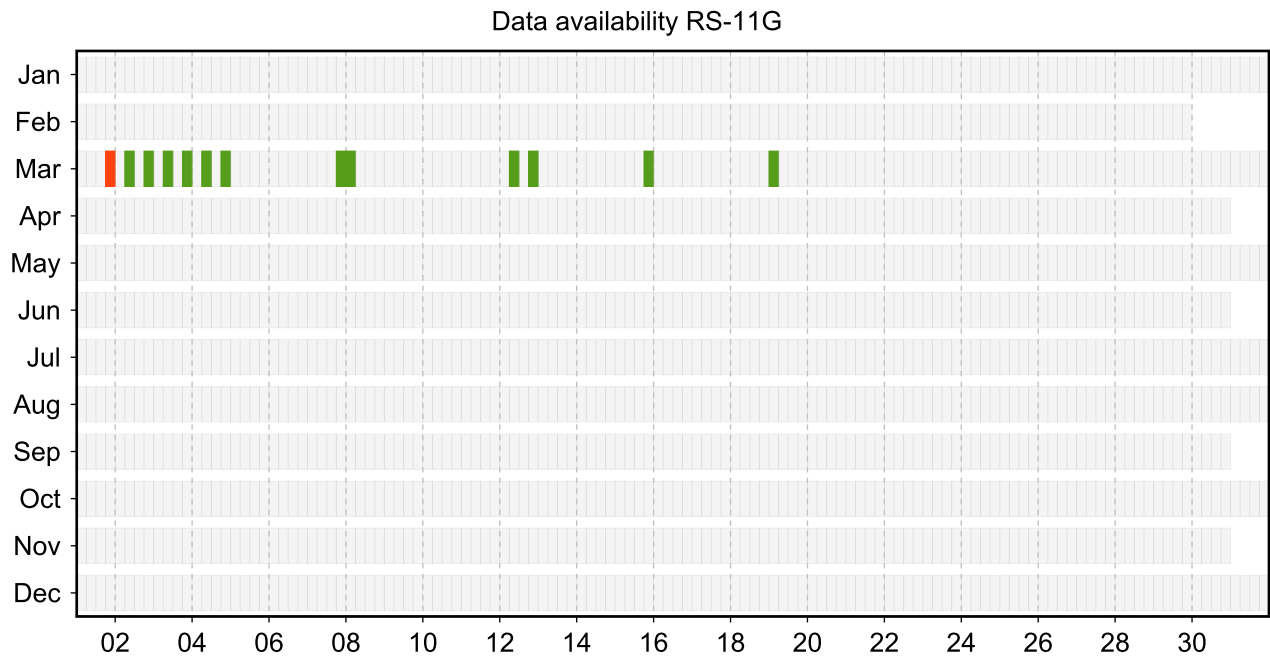
#### 3.3.2 Stream: COBALD



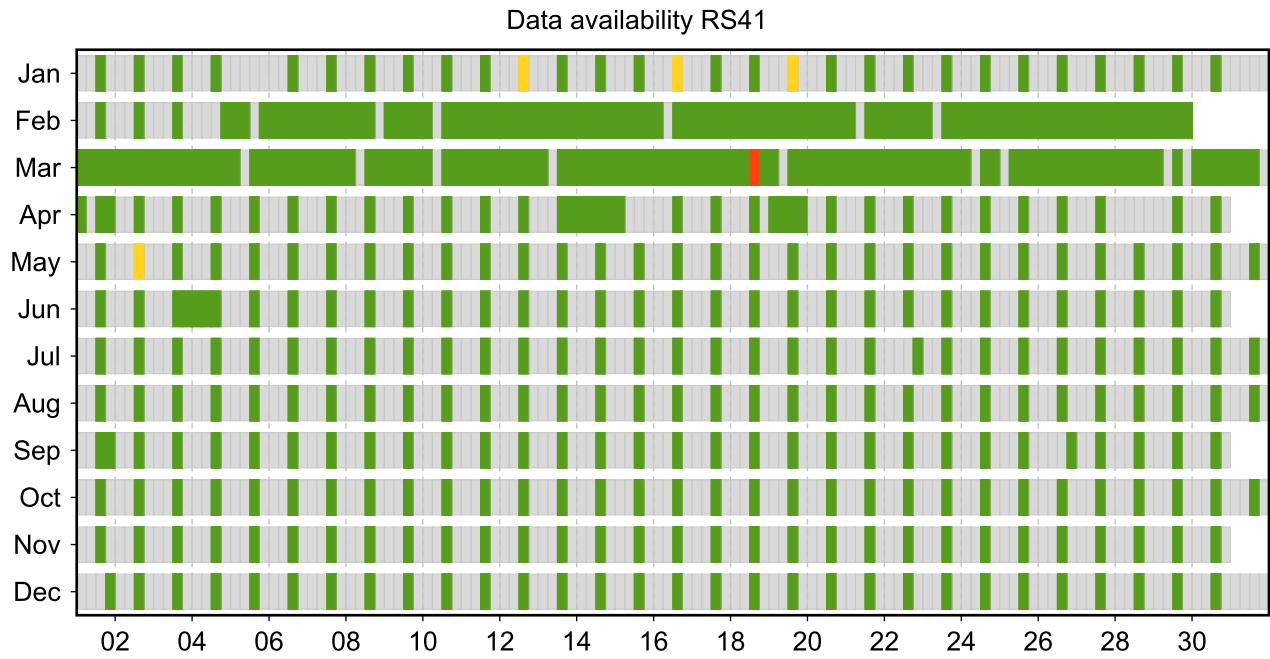
### 3.3.3 Stream: ECC



### 3.3.4 Stream: RS-11G



### 3.3.5 Stream: RS41



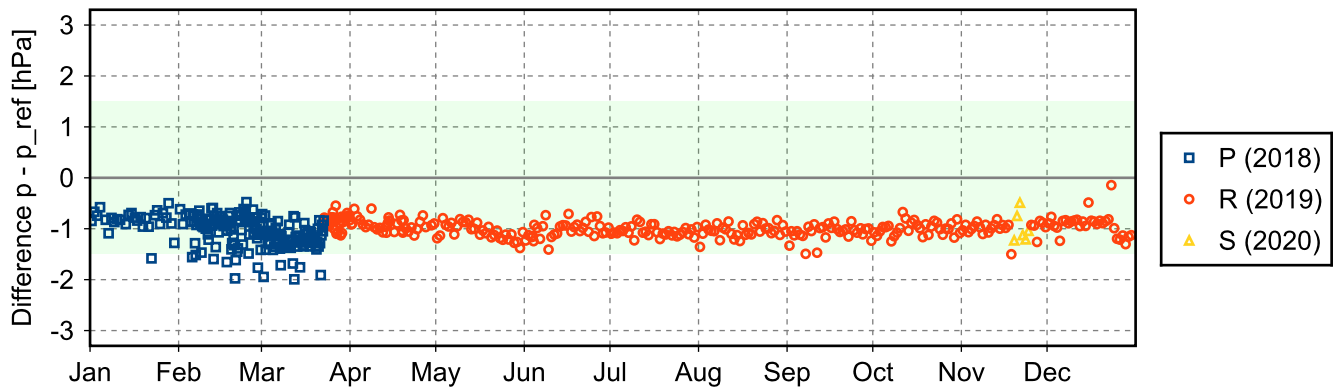
### 3.4 Instrument combinations of NYA-RS-01

Count	Instrument combination
4	CFH, COBALD, ECC, RS41
6	CFH, ECC, RS41
73	ECC, RS41
13	RS-11G, RS41
443	RS41

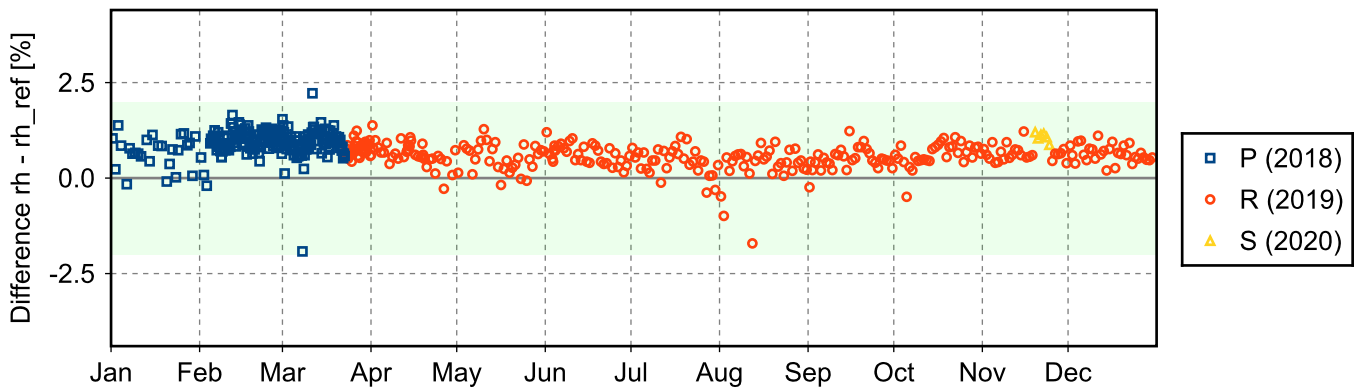
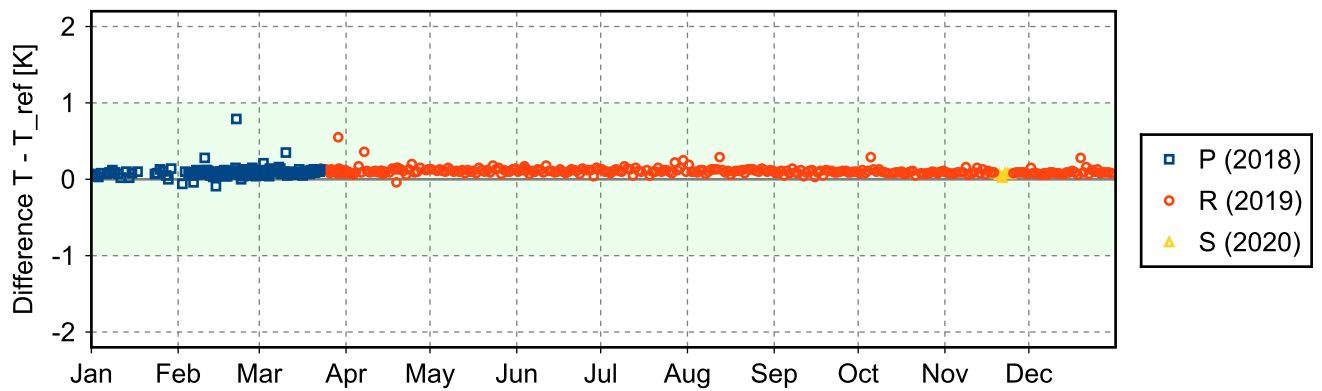
### 3.5 Instrument ground check

#### 3.5.1 Stream: RS41

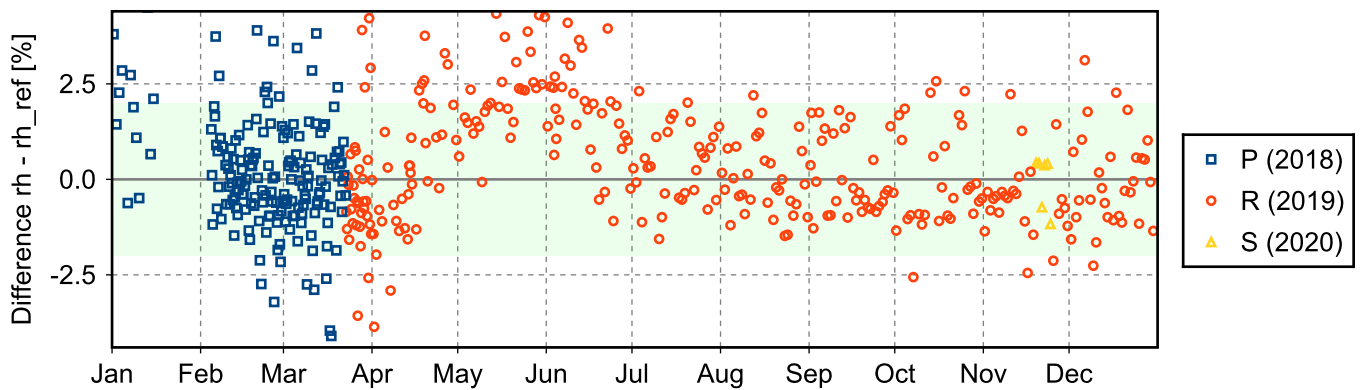
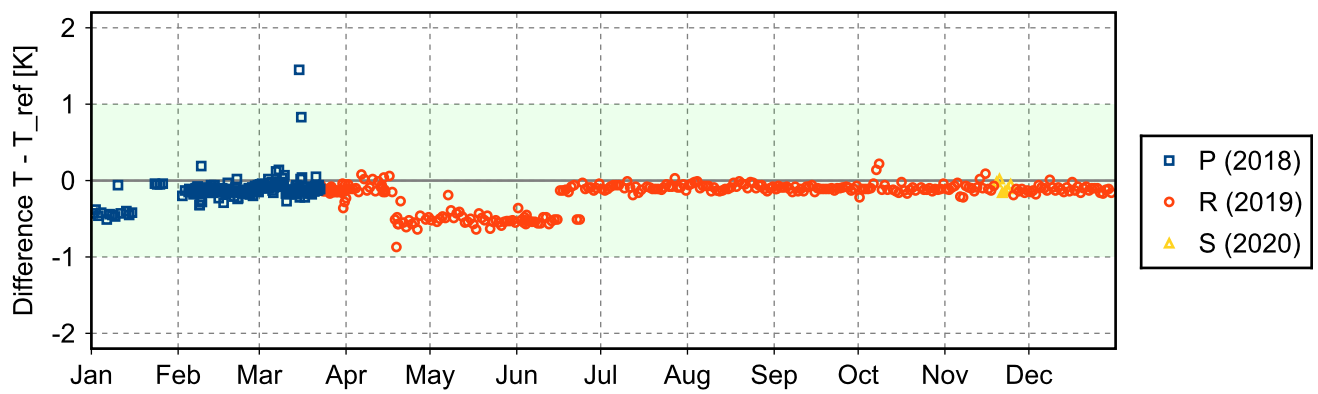
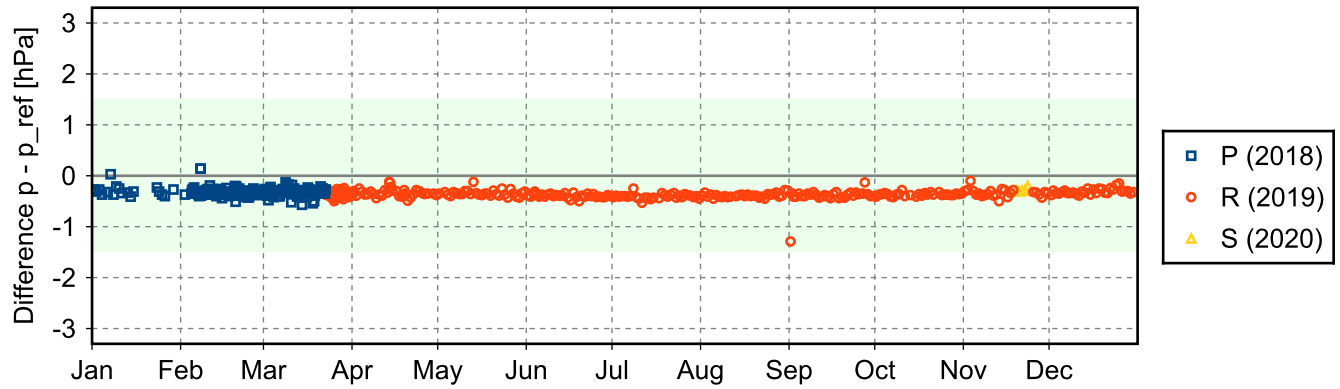
(1) GroundCheck: GC-RI41



(2) GroundCheck: GC-SHC



(3) GroundCheck: GC-SHELTER



3.6 Measurement events

