



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

Doc. 5.22  
(28.VI.2022)

---

**14th GRUAN Implementation-  
Coordination Meeting (ICM-14)**

---

Session 5

La Réunion

28 November - 02 December 2022

## GRUAN Site Report for Ross Island

*(Submitted by Richard Querel)*

---

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

Report from the GRUAN site Ross Island for the period January to December 2021.

---



## **Overview**

The first Antarctic GRUAN site, Ross Island, is actively submitting RS41 radiosonde data and a GNSS data stream for GRUAN processing. Both are on-line with established data flow to the Lead Centre (radiosondes) and GFZ (GNSS). The site is a distributed site spread across 5 km of Southern Ross Island, that includes Arrival Heights, Scott Base, and McMurdo station.

## **Change and change management**

No changes during this reporting period.

## **Resourcing**

No changes to resourcing. Measurement programmes are stable with long-term support.

## **Operations**

SHC ground checks are performed on the RS41 radiosondes.

The McMurdo-launched RS41 radiosondes use small balloons (200 gram), as their primary driver is to provide meteorological support for local aircraft operations and GTS submissions as a GUAN site. Understandably, those balloons cannot reach high altitudes (typical burst height is ~40 hPa during Summer and ~100 hPa during Winter). There is currently no procedure (or interest in) conditioning their balloons to attain higher altitudes during the Winter period (by dipping in ATK). Balloons are filled with Helium, but a plan is underway to install an on-site Hydrogen generation plant and they will switch to Hydrogen filled balloons once the new plant is operational. The Hydrogen generator installation has been delayed to 2022-2023 due to Covid-19 constraints.

## **Covid-19**

Measurements continued but access to the site was made more difficult by the requirement of 14-day quarantine in NZ before travel to Antarctica. This requirement has now been lifted and regular technical visits are planned for the upcoming field season (beginning September 2022).

## **Site assessment and certification**

N/A

## **GRUAN-related research**

An FPH campaign is planned for the 2022-2023 Antarctic field season to determine the viability of starting an upper-air sounding programme out of Scott Base that would rely on the AntarcticaNZ science technicians for labour. This was delayed from last year and will now be staged during November 2022. A NOAA-supplied FPH+POPS+ECC payload will be launched. The campaign will test the logistics and procedures involved to successfully launch the scientific payloads in that challenging environment.

## **WG-GRUAN interface**

Support letters from the Lead Centre are always helpful to demonstrate value to the institutes jointly collaborating in this Ross Island GRUAN site effort.

## **Other archiving centers**

GUAN, GAW, NDACC, WOUDC, LINZ

## **Participation in campaigns**

Nothing to report apart from the FPH campaign mentioned above.

## **Future plans**

Upper-air sounding campaign mentioned above.

When the McMurdo Hydrogen generator is installed and online, NIWA Lauder is proposing to provide larger balloons (500-700 g) to launch once weekly with McMurdos routine RS41 radiosondes to attain the higher burst heights expected within GRUAN. This trial would be run for one year.



# GRUAN Site Report for Ross Island (ROS), 2021

Reported time range is Jan 2021 to Dec 2021

Created by the Lead Centre

Version from 2022-11-15

## 1 General GRUAN site information

Object	Value
Station name	RossIsland
Unique GRUAN ID	ROS
Geographical position	-77.8500 °S, 166.6500 °E, 10.0 m
Operated by	COOP-NIWA-USAP-ANZ   Cooperation between NIWA and USAP and Antarctica New Zealand
Main contact	Querel, Richard
WMO no./name	-
Operators	currently 0, changes +0 / -0
Sounding Site	1
GNSS	1

### 1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
ROS-GN-01	GNSS site SCTB	GNSS	1	operational
ROS-RS-01	Ross Island Radiosonde Launch Site (McMurdo)	Sounding Site	1	500

### 1.2 General comments from Lead Centre

#### 1.2.1 General

The GRUAN site Ross Island is a distributed site with three places McMurdo Station, Arrival Heights Research Laboratory, and Scott Base.

## 2 System: GNSS site SCTB (ROS-GN-01)

<b>Object</b>	<b>Value</b>
System name	GNSS site SCTB
Unique GRUAN ID	ROS-GN-01
System type	GNSS (GN - GNSS)
Geographical position	-77.5056 °S, 166.4529 °E, -18.9 m
Operated by	USAP   United States Antarctic Program
Instrument contact	Querel, Richard
Started at	2019-01-01
Defined setups	1 (HOURLY)
Possible streams	-

### 2.1 Lead Centre comments

#### 2.1.1 Dataflow

Dataflow of GNSS data to GRUAN LC and to the GRUAN GNSS processing centre at GFZ has started in March 2019. The current dataflow to GRUAN LC includes instrument logs, and processed data.

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

### 3 System: Ross Island Radiosonde Launch Site (McMurdo) (ROS-RS-01)

Object	Value
System name	Ross Island Radiosonde Launch Site (McMurdo)
Unique GRUAN ID	ROS-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	-77.8500 °S, 166.6300 °E, 10.0 m
Operated by	USAP   United States Antarctic Program
Instrument contact	Querel, Richard
Started at	-
Defined setups	1 (ROUTINE)
Possible streams	RS41

#### 3.1 Lead Centre comments

##### 3.1.1 Dataflow

Sonde dataflow to the GRUAN LC is operational since December 2018.

##### 3.1.2 General

Routine soundings using Vaisala RS41-SG are performed two times per day.

Recommended burst altitude of 10 hPa is not reached on a regular basis.

During the dark winter months, the height of the burst point is significantly lower than during the rest of the year. This could be significantly improved by treating the balloons in an oil bath before launch.

#### 3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI
---------	---------	--------------------	-----------------	---------------------

##### 3.2.1 Stream: RS41

RS41		500	500	
RS41-RAW	001		500	
RS41-EDT	001		500	
RS41-GDP	001		493	
RS41-GDP-BETA	002		197	
RS41-GDP-BETA	003		308	

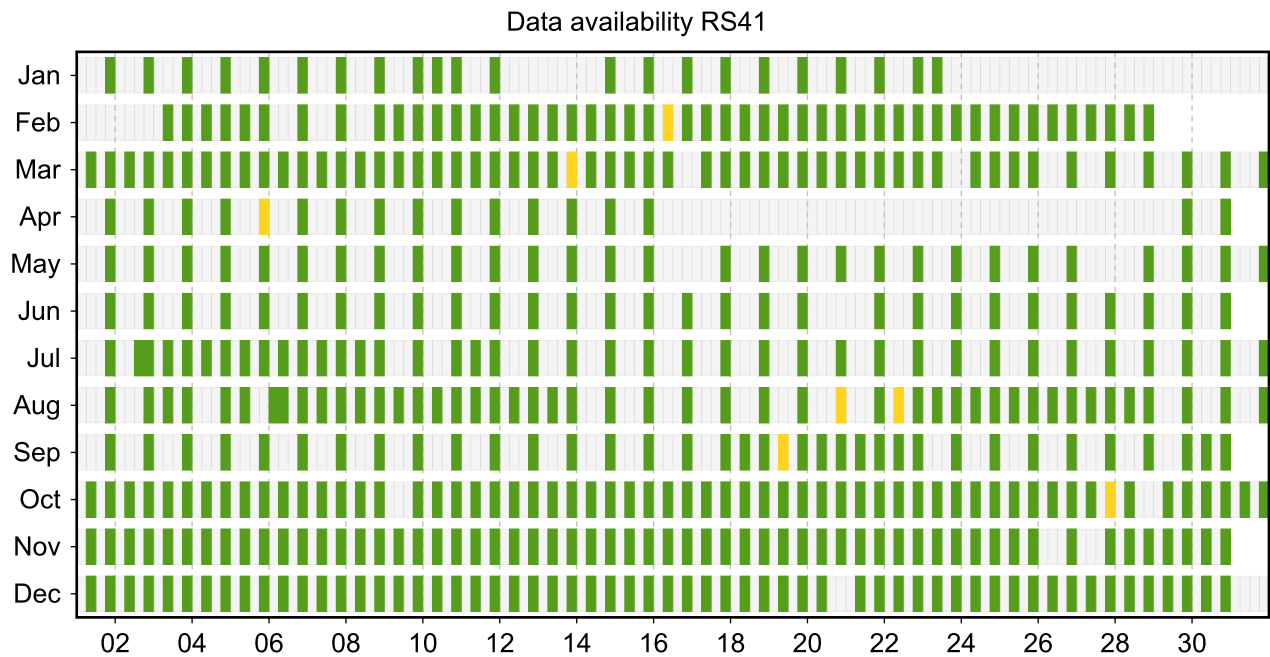
### 3.3 Availability of data products

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: RS41



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

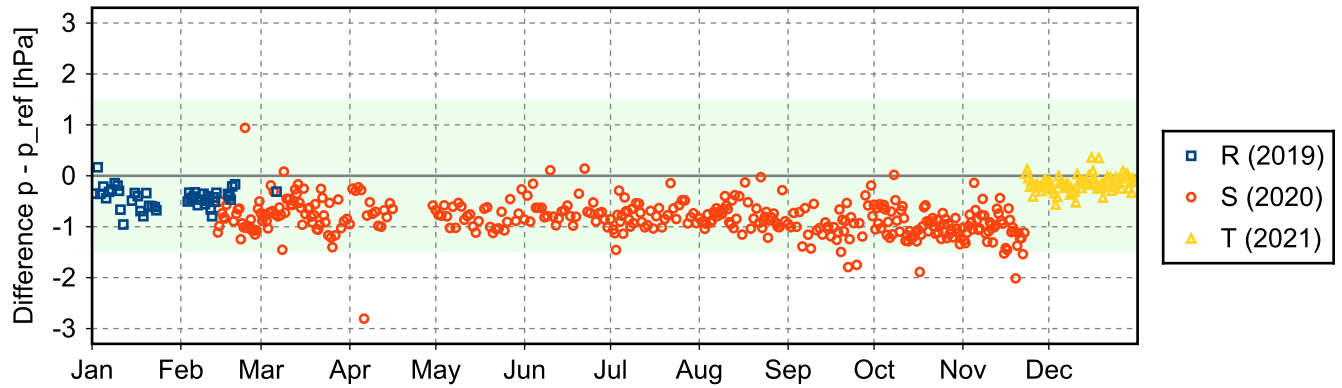
Count	Instrument combination
500	RS41



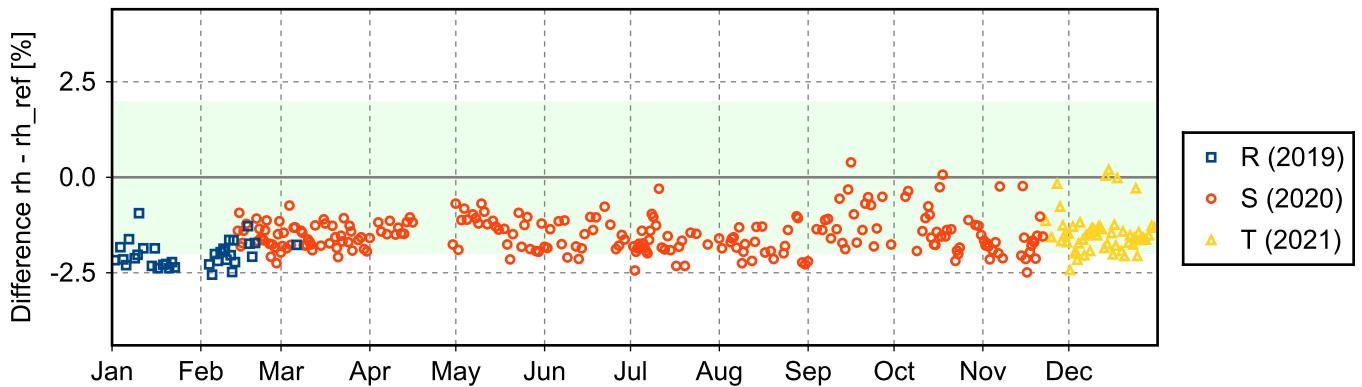
### 3.5 Instrument ground check

#### 3.5.1 Stream: RS41

(1) GroundCheck: GC-RI41



(2) GroundCheck: GC-SHC



### 3.6 Measurement events

