



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

Doc. 7.20
(09.IV.2019)

**11th GRUAN Implementation-
Coordination Meeting (ICM-11)**

Session 7

Singapore
20 - 24 May 2019

GRUAN Site Report for Singapore

(Submitted by Wong Shwei Lin)

Summary and Purpose of this Document

Report from the GRUAN site Singapore for the period January to December 2018.

Overview

Current dataflow to GRUAN LC:

- Twice-daily RS41-SG radiosonde soundings
- Monthly ECC ozonesonde soundings
- Hourly GNSS and meteo data files

Change and change management

Implemented hourly sending of raw GNSS data, with corresponding meteo data, to GFZ as of January 2019.

Resourcing

NIL

Operations

- Difficulties in regularly attaining the burst point at 10 hPa during evening (12UTC) launch. At present, early bursting rate is about 10% to 20% during evening, could be as high as 40% to 50% during rainy season.
- Given Singapore's highly urbanized landscape, we have issues when radiosondes / ozonesondes land at
 - Airports and air bases.
 - Private properties
 - Commercial properties disruptions to their operations

Site assessment and certification

Undergoing certification

GRUAN-related research

NIL

WG-GRUAN interface

Not at the moment

Items for ICM-11 plenary discussions

NIL

Other archiving centers

NIL

Participation in campaigns

NIL

Future plans

- Testing of Totex DX350-1000 double balloons and Hwoyee balloons to assess suitability for launch
- Monthly comparison launch of Graw DFM09 and Vaisala RS41SG radiosondes (pending relevant authorities approval)



GRUAN Site Report for Singapore (SNG), 2018

Reported time range is Jan 2018 to Dec 2018

Created by the Lead Centre

Version from 2019-05-13

1 General GRUAN site information

Object	Value
Station name	Singapore
Unique GRUAN ID	SNG
Geographical position	1.3404 °N, 103.8880 °E, 21.0 m
Operated by	MSS Meteorological Service Singapore, part of: NEA National Environment Agency
Main contact	Lin, Wong Shwei
WMO no./name	48698 SINGAPORE/CHANGI AIRPORT
Operators	currently 8, changes +0 / -0
Sounding Site	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
SNG-RS-01	Singapore Radiosonde Launch Site	Sounding Site	4	712

1.2 General comments from Lead Centre

No comments available from Lead Centre.

2 System: Singapore Radiosonde Launch Site (SNG-RS-01)

Object	Value
System name	Singapore Radiosonde Launch Site
Unique GRUAN ID	SNG-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	1.3404 °N, 103.8880 °E, 23.5 m
Operated by	MSS Meteorological Service Singapore, part of: NEA National Environment Agency
Instrument contact	Lin, Wong Shwei
Started at	-
Defined setups	4 (ROUTINE2, ROUTINE, OZONE, OZONE2)
Possible streams	DFM-09, ECC, RS41

2.1 Lead Centre comments

2.1.1 Dataflow

Sonde dataflow to the GRUAN LC is operational since April 2016.

Dataflow includes twice daily soundings of Vaisala RS41-SG, monthly soundings of ECC Ozone sonde, and monthly soundings of Graw DFM-09. All soundings are submitted using RsLaunchClient.

2.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI
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2.2.1 Stream: DFM-09

DFM-09		14	14	
DFM-09-RAW	001		14	

2.2.2 Stream: ECC

ECC		11	11	
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2.2.3 Stream: RS41

RS41		698	698	
RS41-GCA	001		688	
RS41-RAW	001		698	
RS41-EDT	001		696	
RS41-GDP-ALPHA	002		542	

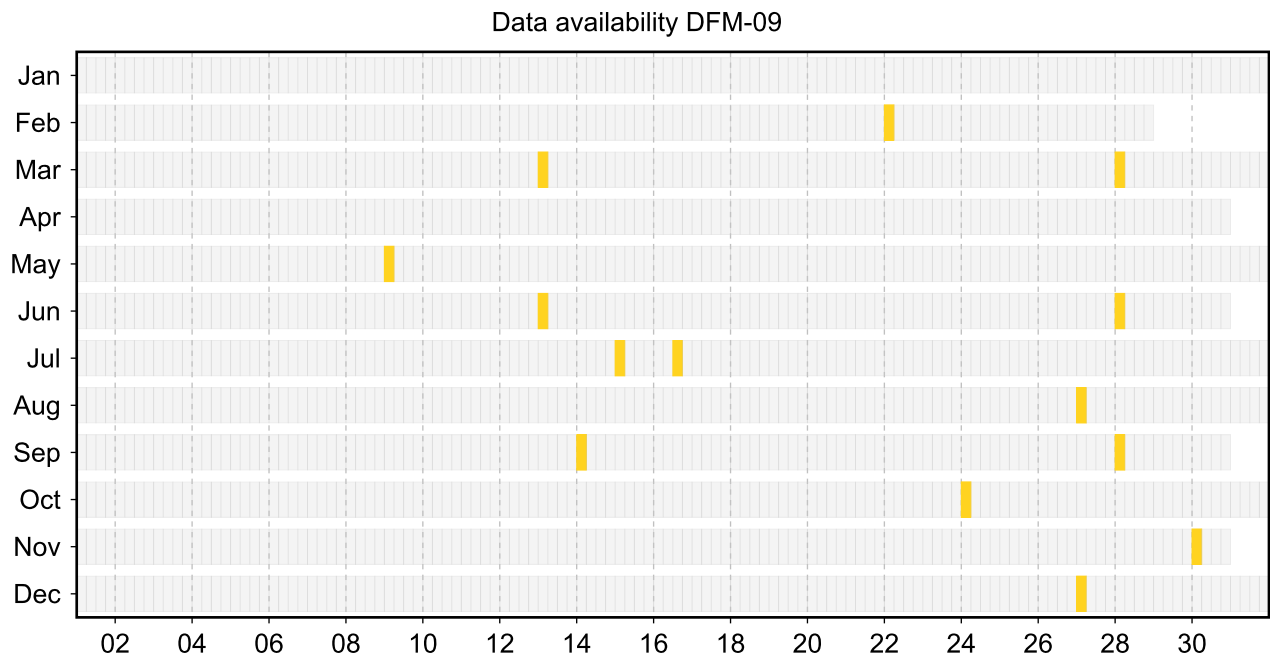
2.3 Data availability of data products

Available (green): All steps of processing have been successfully completed. The data file is available at LC (e.g. unapproved or uncertified GRUAN data products) and at NCEI (approved and certified GRUAN data products).

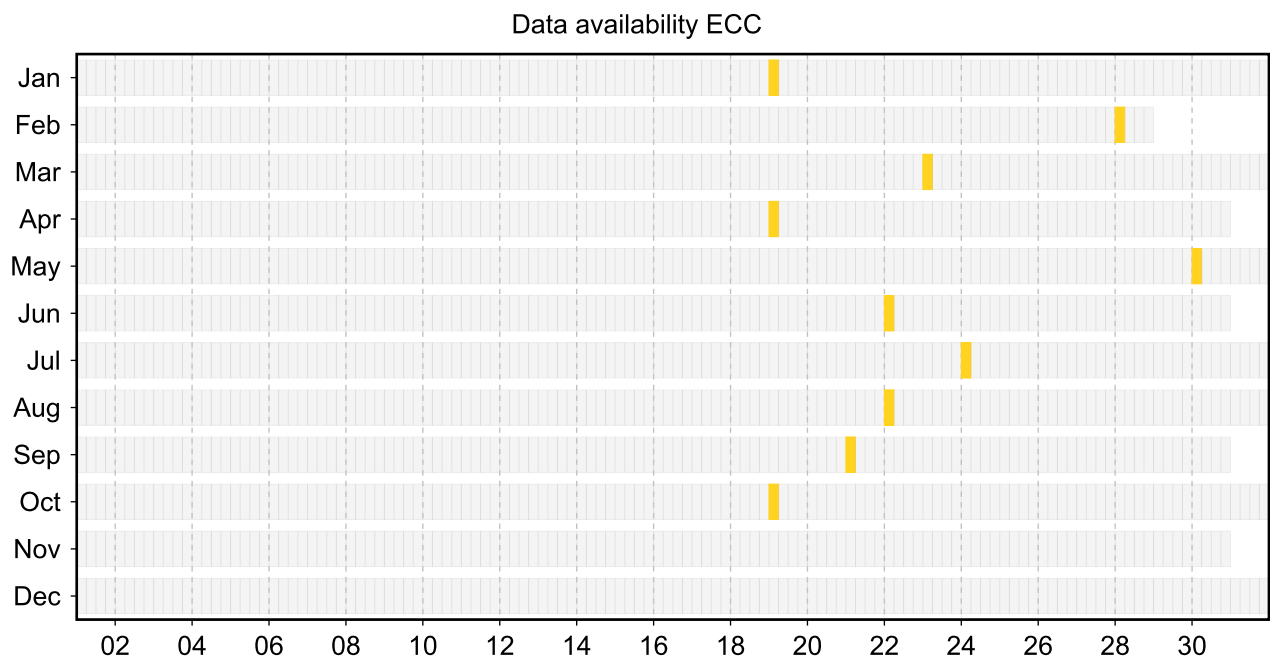
Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing (e.g. GRUAN data processing) has not yet been done, or has not been completed. Reason may be a processing routine which does not yet exist, or software errors.

Original (red): The original raw data file is available (e.g. MWX). The raw data file was not converted to a GRUAN standardized raw data file format (NetCDF). Reason may be a converting routine which does not yet exist, or a corrupt original raw data file, or software errors.

2.3.1 Stream: DFM-09

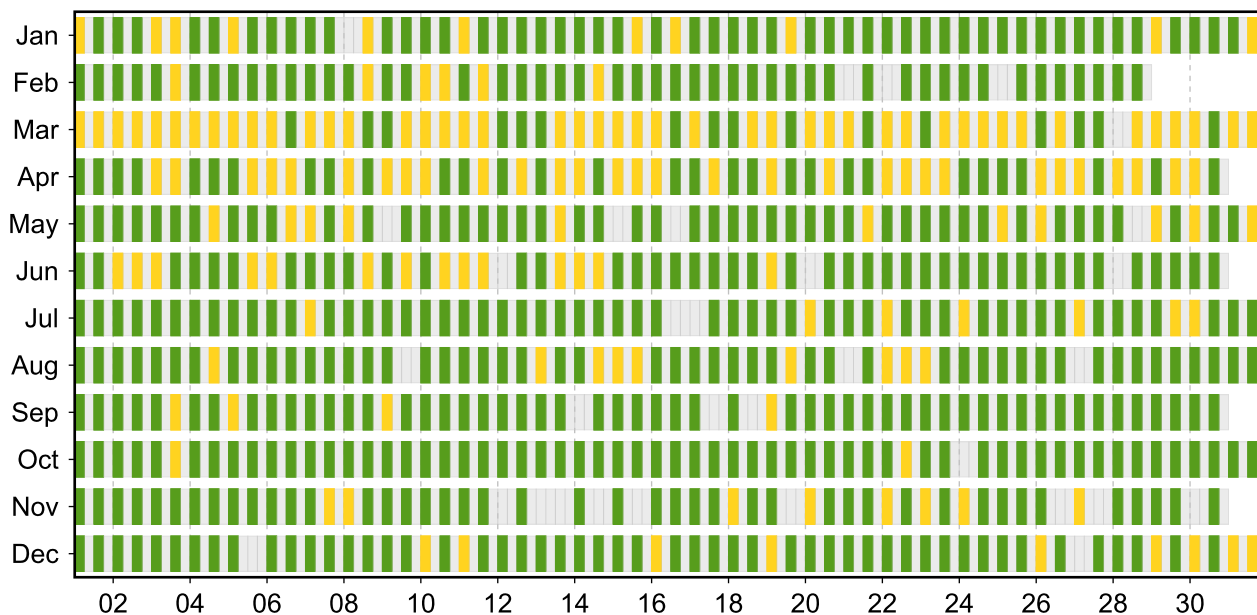


2.3.2 Stream: ECC



2.3.3 Stream: RS41

Data availability RS41



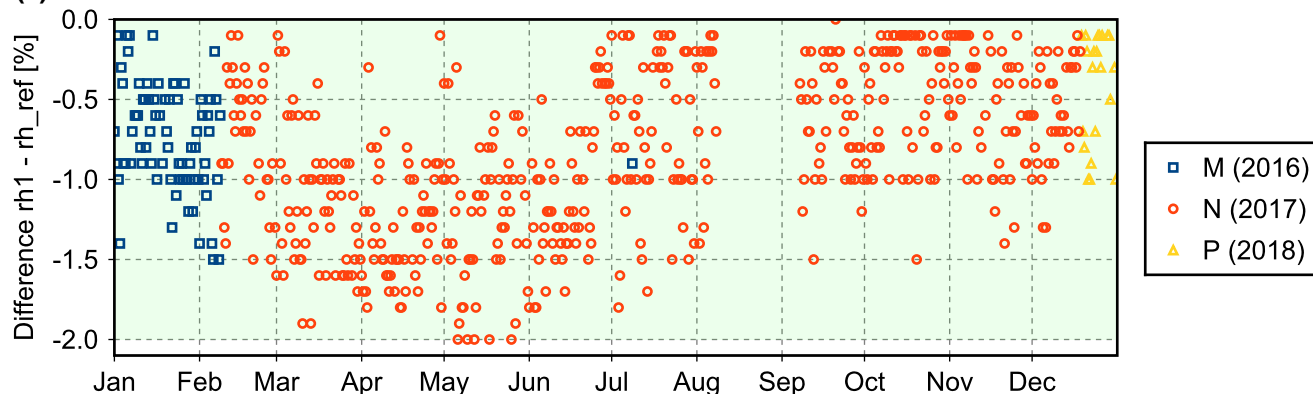
2.5 Instrument combinations of SNG-RS-01

Count	Instrument combination
14	DFM-09
9	ECC, RS41
1	2x ECC, RS41
688	RS41

2.6 Instrument ground check

2.6.1 Stream: RS41

(1) GroundCheck: GC-SHC



2.7 Measurement events

