

# Parallel soundings database

---

with focus to RS92-RS41



**Michael Sommer**  
*GRUAN Lead Centre, DWD*

11<sup>th</sup> GRUAN Implementation and Coordination Meeting (ICM-11)

Singapore

Session 6, 22 May 2019

- Current status – RS92-RS41 dataset
- Other parallel soundings in GRUAN archive
- Conclusion

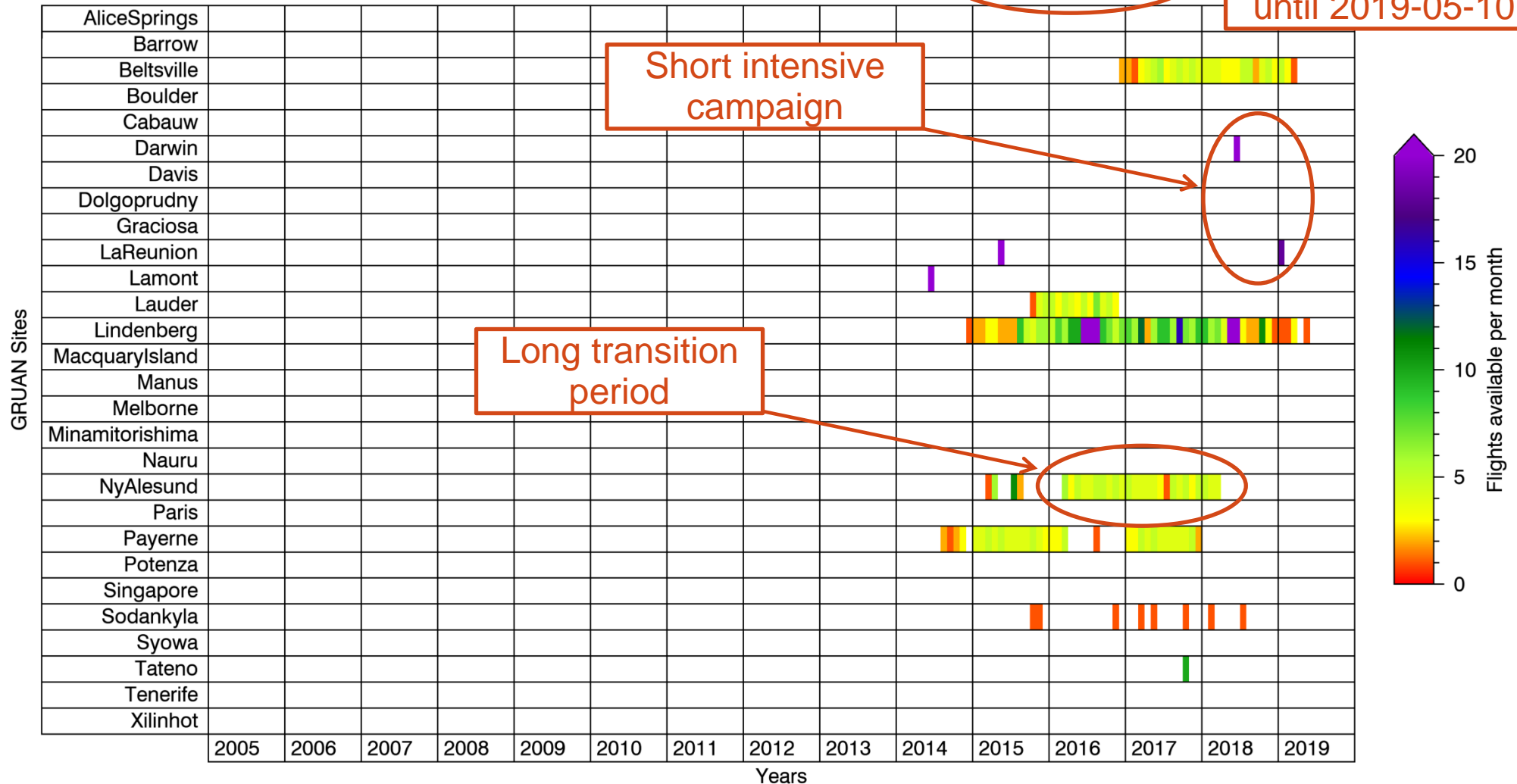
# Overview about RS92-RS41 comparison launches at GRUAN sites

Deutscher Wetterdienst  
Wetter und Klima aus einer Hand



GRUAN Vaisala RS92 vs. Vaisala RS41 Comparison Launches (total: 942 at 2019-05-10)

942 launches  
until 2019-05-10



→ plus ~100 launches at other sites



## ➤ GRUAN sites

- Long period: Beltsville (2016-2019), Ny-Alesund (2015-2018), Lindenberg (2014-2019), Lauder (2015-2016), Payerne (2014-2017), Lamont (2018-2019), Graciosa (2018-2019)
- Short campaign: La Reunion (2015,2019), Lamont (2014), Tateno (2017), Darwin (2018)
- Sporadically: Sodankylä (2015-2018), Barrow (2018)

## ➤ Additional non-GRUAN sites

- Table Mountain Facility (2014-2018)
- Nainital, Kathmandu, Palau (2016-2018) → StratoClim campaign
- Camborne (2013, 2018), Rothera (2017-2018)

## ➤ Are there other stations and campaigns which can provide data?

- Please contact the GRUAN Lead Centre → [gruan.lc@dwd.de](mailto:gruan.lc@dwd.de)

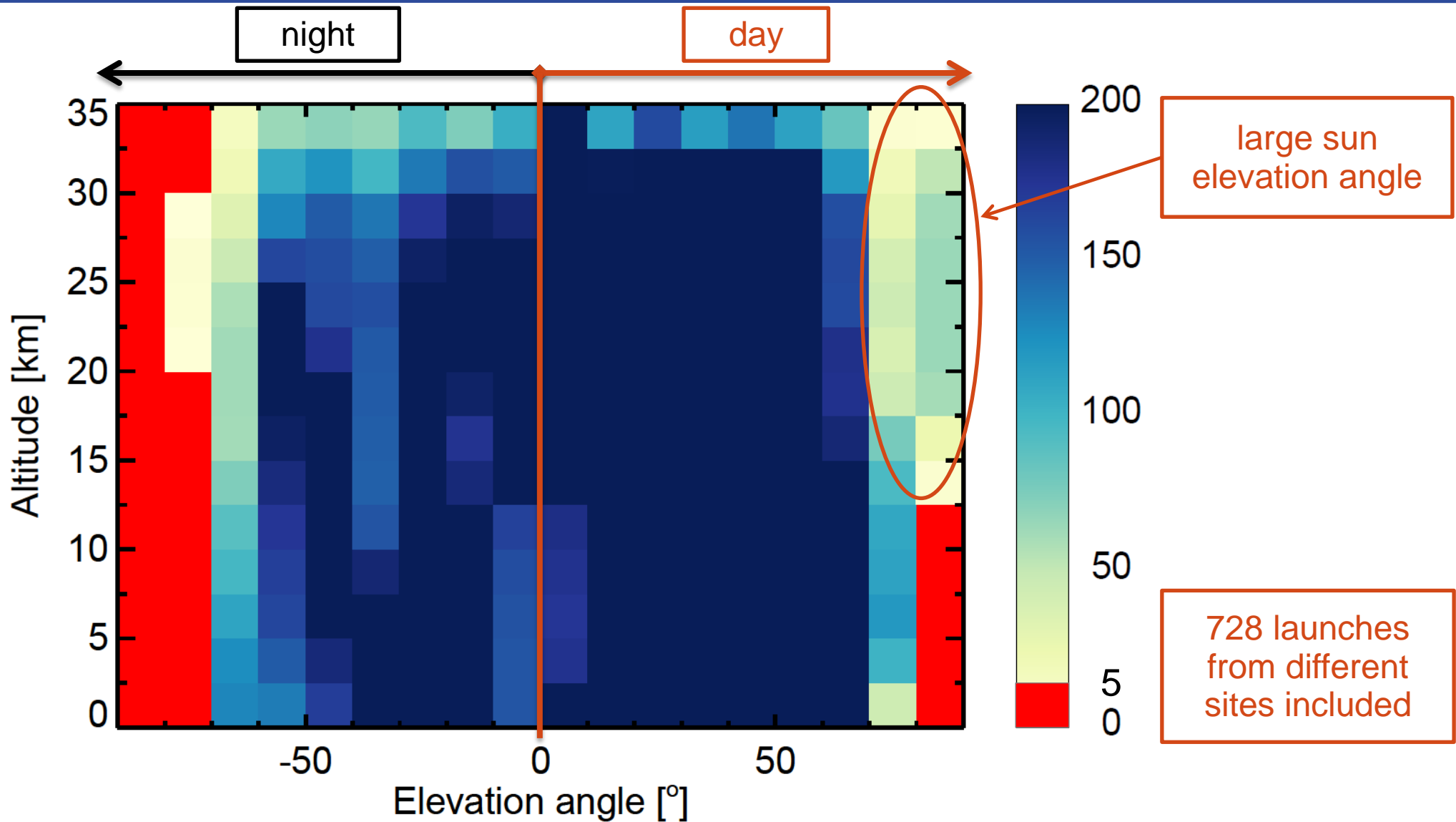
	RS92	RS41
➤ Radiosonde data files/products		
○ ORI → original files from manufacturer	DC3DB, MWX	MWX
○ RAW → converted raw data files	yes	yes
○ EDT → manufacturer data product	yes	yes
○ GDP → GRUAN data product	yes	yes (alpha.2)
➤ Ancillary data products	included?	
○ Other in-situ instruments, e.g. CFH	(yes)	
○ GNSS-PW (integrated water column)	(yes)	
○ LIDAR (temperature, humidity)	not yet	
○ MWR	not yet	
○ Satellite (temperature, humidity, other?)	(not yet)	
○ Other? (e.g. ceilometer, wind profiler, ...)	not yet	

How can this  
part of dataset  
be enhanced?

- List of all comparison launches with following content:
  - Site (launch position, LLA)
  - Launch date & time (UTC)
  
- Available at GRUAN website (all lists and plots)
  - <https://www.gruan.org/data/measurements/comparisons/>
  - Regularly updated (monthly)
  
- Additional content needed?

# Solar elevation angle vs. altitude

Deutscher Wetterdienst  
Wetter und Klima aus einer Hand

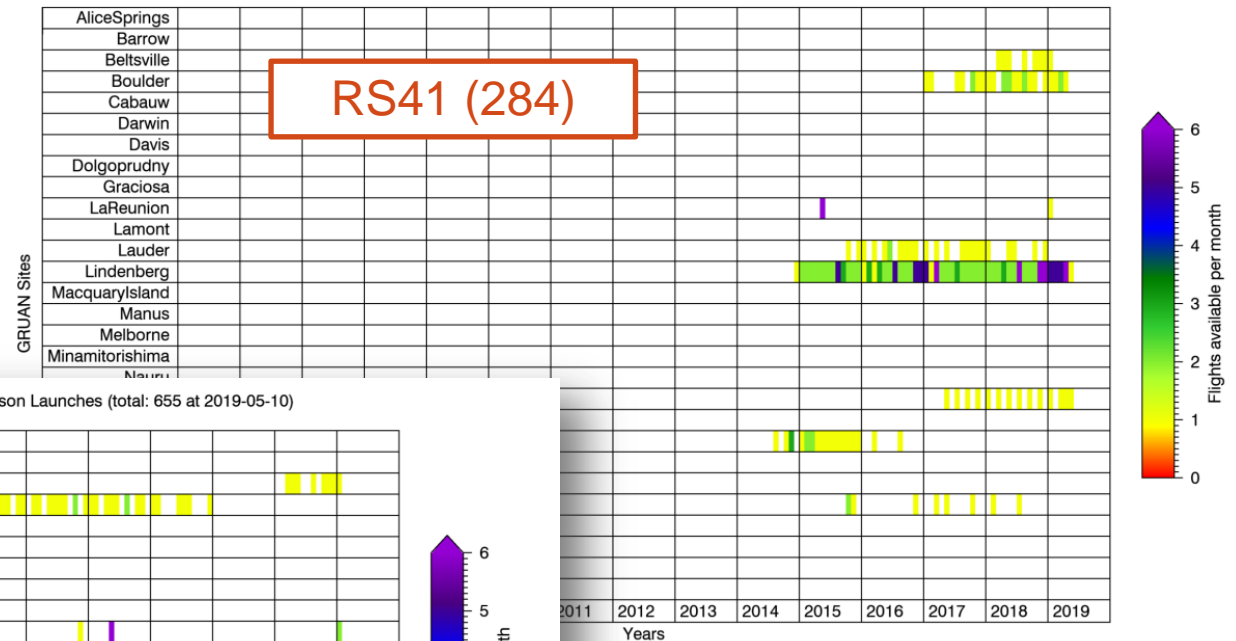


# Parallel with stratospheric humidity reference instruments

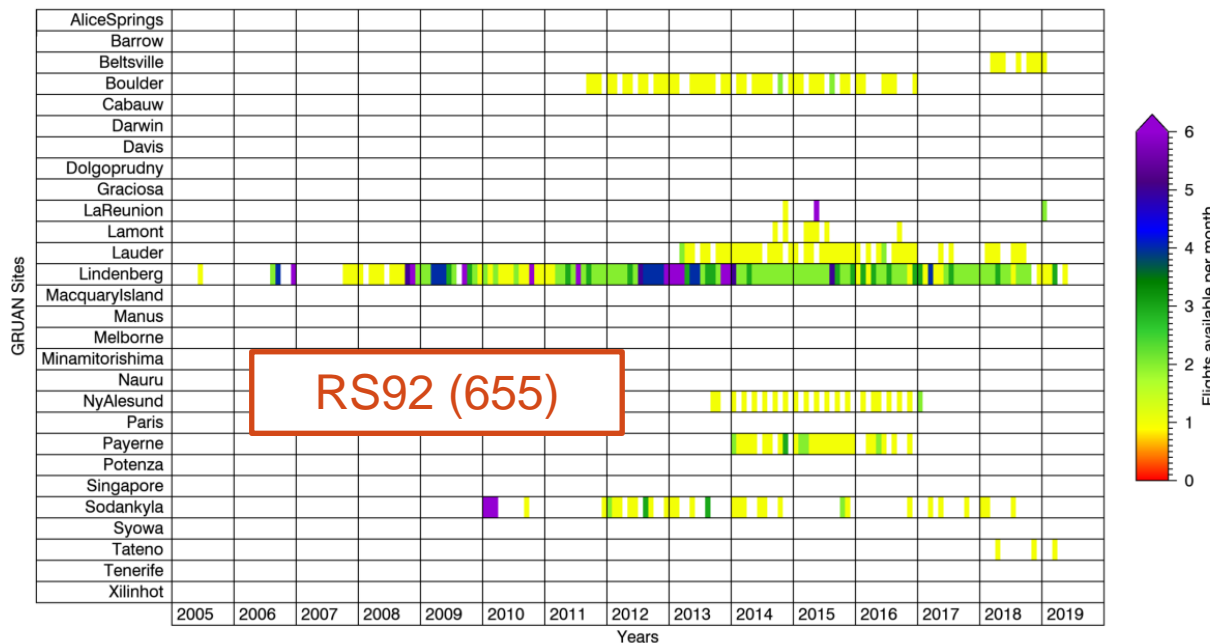
Deutscher Wetterdienst  
Wetter und Klima aus einer Hand



GRUAN Vaisala RS41 vs. Stratospheric Humidity Comparison Launches (total: 284 at 2019-05-10)



GRUAN Vaisala RS92 vs. Stratospheric Humidity Comparison Launches (total: 655 at 2019-05-10)



CFH, FPH,  
FLASH-B,  
SKYDEW



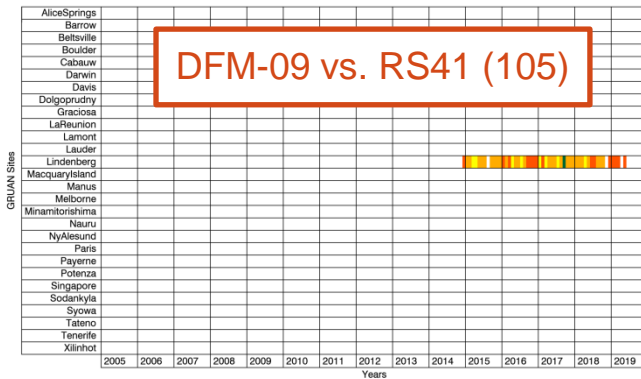


# Further parallel soundings – two different RS models

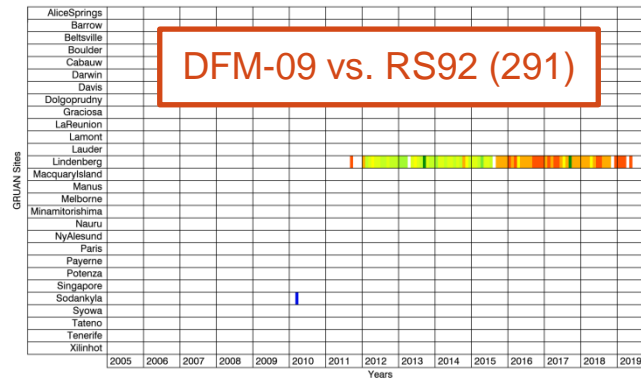
Deutscher Wetterdienst  
Wetter und Klima aus einer Hand



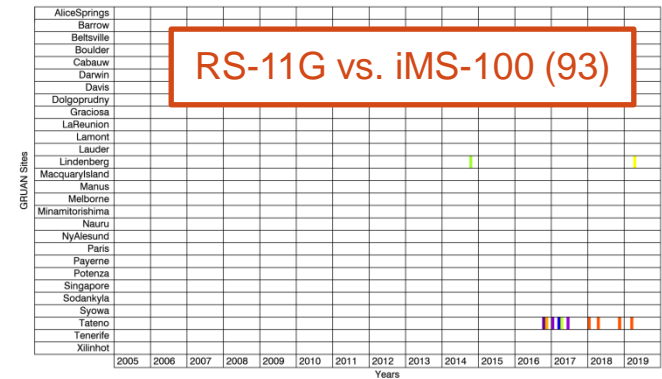
GRUAN Graw DFM-09 vs. Vaisala RS41 Comparison Launches (total: 105 at 2019-05-10)



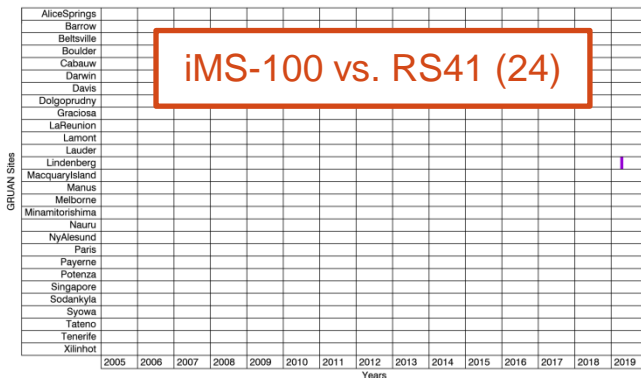
GRUAN Graw DFM-09 vs. Vaisala RS92 Comparison Launches (total: 291 at 2019-05-10)



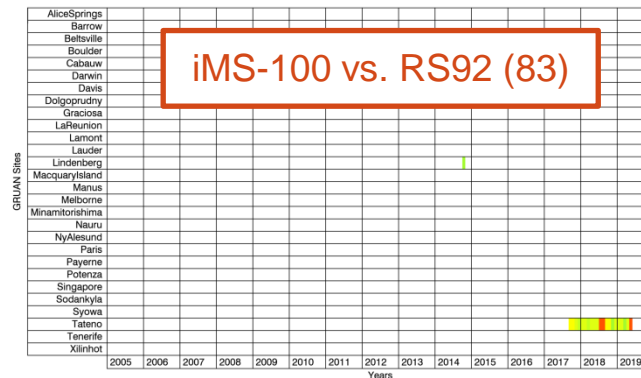
GRUAN Meisel RS-11G vs. Meisel IMS-100 Comparison Launches (total: 93 at 2019-05-10)



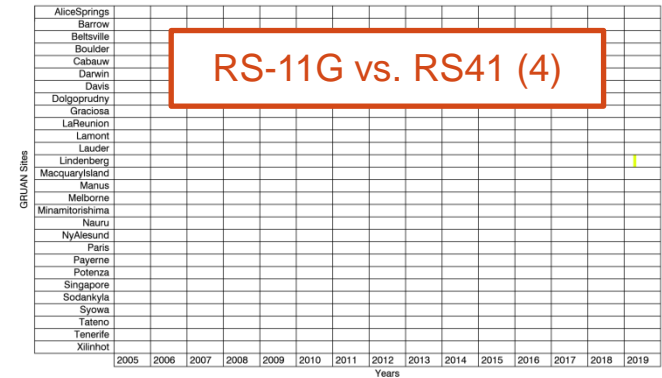
GRUAN Meisel IMS-100 vs. Vaisala RS41 Comparison Launches (total: 24 at 2019-05-10)



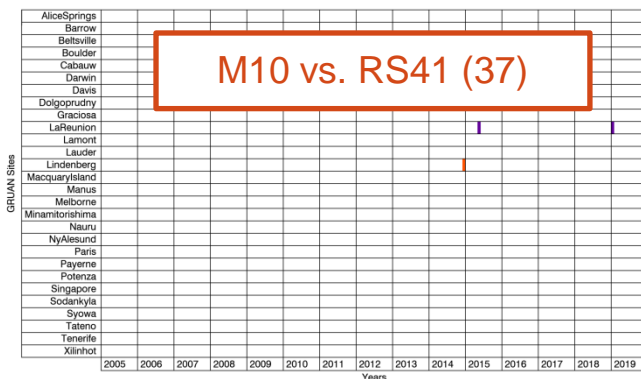
GRUAN Meisel IMS-100 vs. Vaisala RS92 Comparison Launches (total: 83 at 2019-05-10)



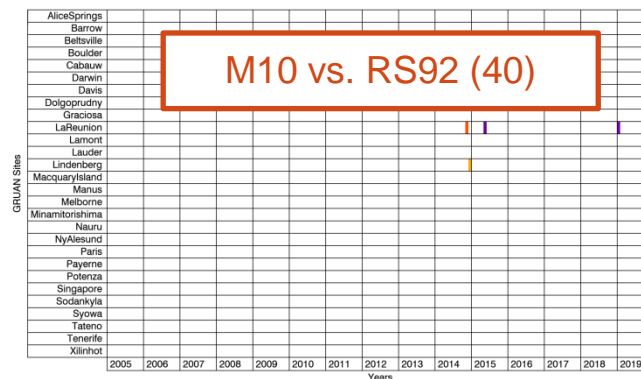
GRUAN Meisel RS-11G vs. Vaisala RS41 Comparison Launches (total: 4 at 2019-05-10)



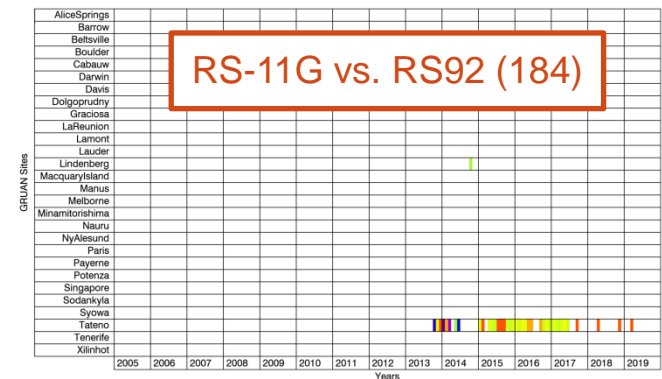
GRUAN Modem M10 vs. Vaisala RS41 Comparison Launches (total: 37 at 2019-05-10)



GRUAN Modem M10 vs. Vaisala RS92 Comparison Launches (total: 40 at 2019-05-10)



GRUAN Vaisala RS92 vs. Meisel RS-11G Comparison Launches (total: 184 at 2019-05-10)

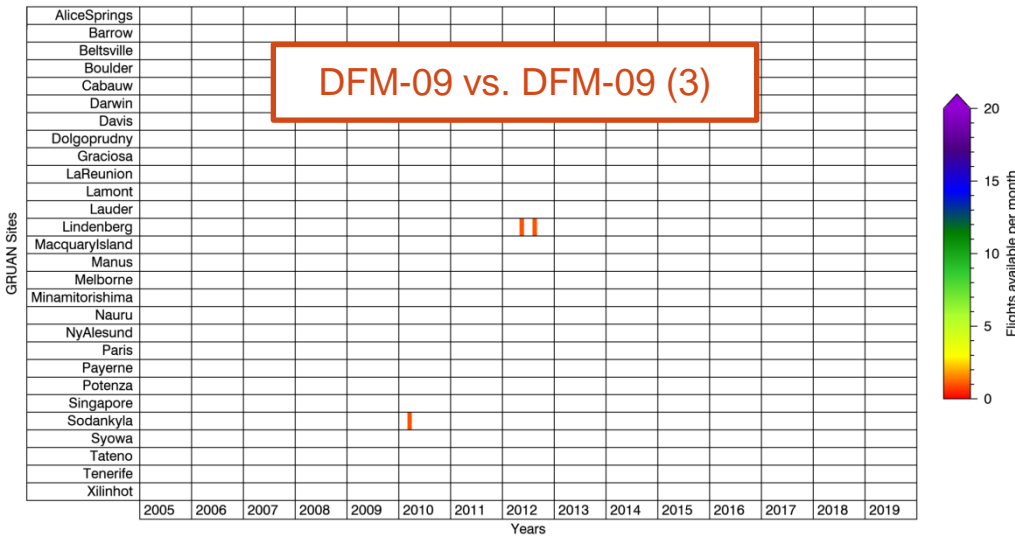


# Further parallel soundings – two units of one RS model

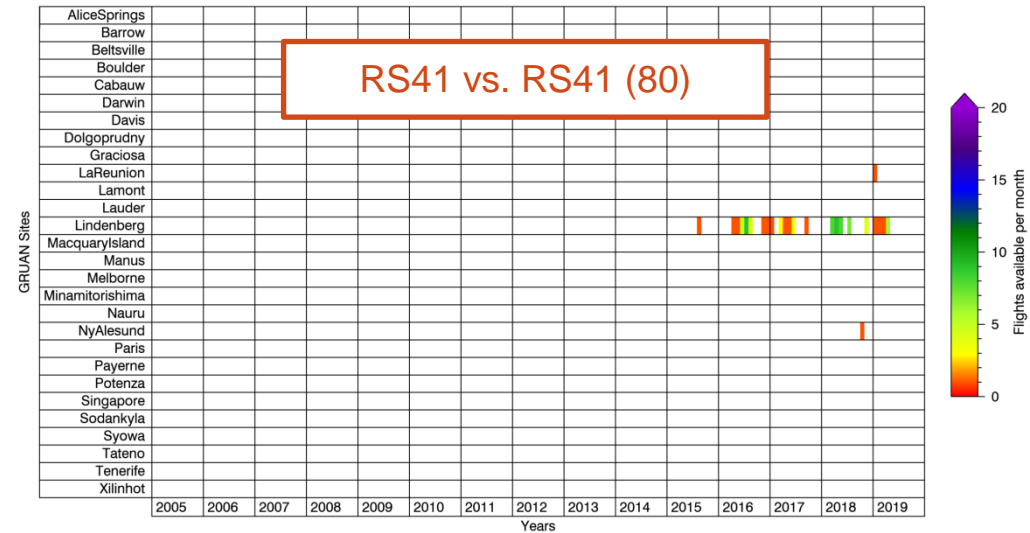
Deutscher Wetterdienst  
Wetter und Klima aus einer Hand



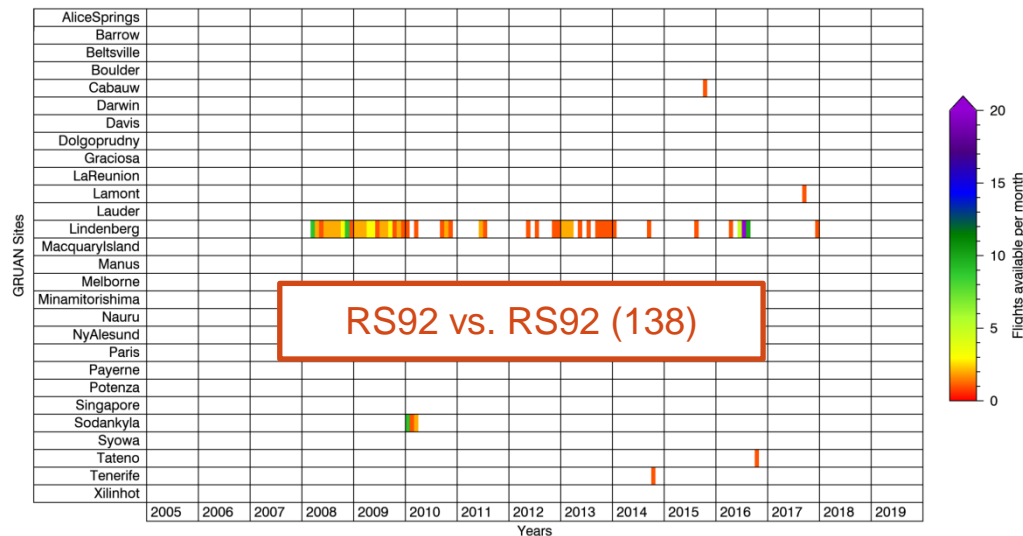
GRUAN Graw DFM-09 vs. Graw DFM-09 Comparison Launches (total: 3 at 2019-05-10)



GRUAN Vaisala RS41 vs. Vaisala RS41 Comparison Launches (total: 80 at 2019-05-10)



GRUAN Vaisala RS92 vs. Vaisala RS92 Comparison Launches (total: 138 at 2019-05-10)



“Repeatability”  
& relative check  
of calibration



- Should we extend the comparison dataset and make it more general?
  - LC thinks → YES
- A GRUAN site can manually upload complex and simple comparison configurations to GRUAN using the RsLaunchClient.
  - predictable additional work for site and LC
- Parallel soundings between different radiosondes are required in GRUAN archive, if a new GRUAN data product should be certified.

- Large dataset → **More than 1000 comparison launches**
- Missing ancillary data → Lidar, satellite, ...
- Extend dataset? → to a general comparison dataset

Thank you for your attention.