

# GRUAN and GSRN status update

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# GRUAN management

- ICM-11 was held in Singapore in June 2019
  - RS92-RS41 transition
  - RS41 GRUAN data product
  - R23 and its replacements
  - Progress in new GRUAN data products
- Task team on ancillary measurements split
  - Task team on satellite measurements and applications
  - Task team on ground based measurements
- Working group membership refreshed

# Station status update

- Newly certified:
  - Lamont
- New candidate stations:
  - Neumayer
  - Ross Island
- In progress:
  - Sites in Suriname, Niger, Hong Kong, Argentina, Brazil are in discussion with Lead Centre, WG Chairs and GCOS Secretariat.

# Current network configuration

GCOS Reference Upper-Air Network

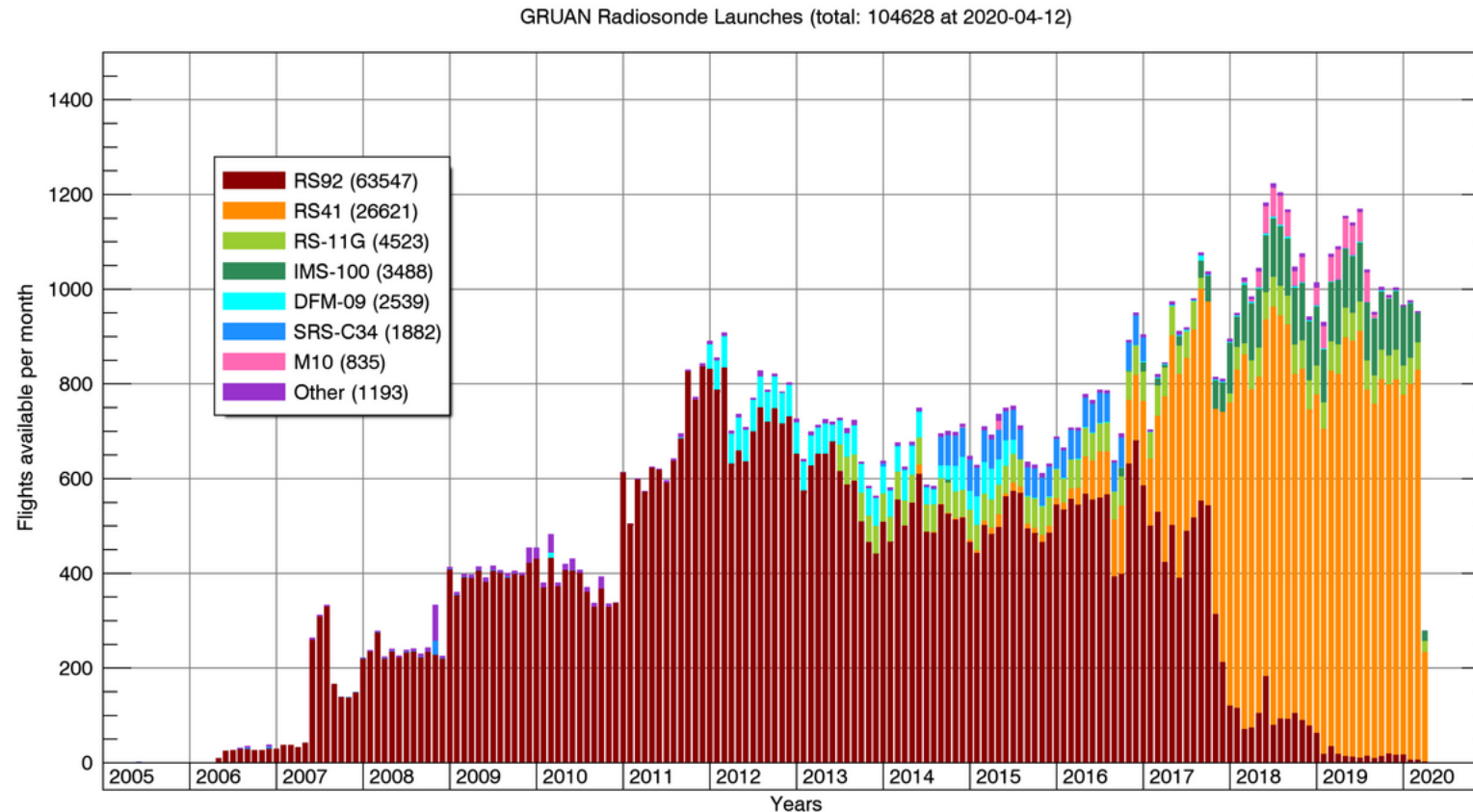








# Total radiosonde launches archived with deep metadata sufficient to process







# GNSS-PW data product in final stages

- Paper published
- Data processing initiated
- Requires certification following review
- GNSS-IPW will be available from all sites at 10-minute resolution

# R23 replacement

- R23 is a very potent GHG currently used as a coolant in frostpoint measurement techniques
- Being phased out under the Kigali amendment
- Work ongoing on:
  - Peltier cooling techniques
  - Replacement coolants
- Ice/ethanol as replacement coolant showing promise

# Other products at varying stages of development

- CFH / FPH
- Lidar
- MWR
- FTIR
- Ozonesonde

# Selected relevant papers

- Madonna, F., Kivi, R., Dupont, J.-C., Ingleby, B., Fujiwara, M., Romanens, G., Hernandez, M., Calbet, X., Rosoldi, M., Giunta, A., Karppinen, T., Iwabuchi, M., Hoshino, S., von Rohden, C., and Thorne, P. W.: Use of automatic radiosonde launchers to measure temperature and humidity profiles from the GRUAN perspective, *Atmos. Meas. Tech. Discuss.*, <https://doi.org/10.5194/amt-2019-472>
- Dirksen, R. J., Bodeker, G. E., Thorne, P. W., Merlone, A., Reale, T., Wang, J., Hurst, D. F., Demoz, B. B., Gardiner, T. D., Ingleby, B., Sommer, M., von Rohden, C., and Leblanc, T.: Progress in managing the transition from the RS92 to the Vaisala RS41 as the operational radiosonde within the GCOS Reference Upper-Air Network, *Geosci. Instrum. Method. Data Syst. Discuss.*, <https://doi.org/10.5194/gi-2019-36>
- Kobayashi, E., Hoshino, S., Iwabuchi, M., Sugidachi, T., Shimizu, K., and Fujiwara, M.: Comparison of the GRUAN data products for Meisei RS-11G and Vaisala RS92-SGP radiosondes at Tateno (36.06° N, 140.13° E), Japan, *Atmos. Meas. Tech.*, 12, 3039-3065, <https://doi.org/10.5194/amt-12-3039-2019>
- Carminati, F., Migliorini, S., Ingleby, B., Bell, W., Lawrence, H., Newman, S., Hocking, J., and Smith, A.: Using reference radiosondes to characterise NWP model uncertainty for improved satellite calibration and validation, *Atmos. Meas. Tech.*, 12, 83-106, <https://doi.org/10.5194/amt-12-83-2019>,

The job of this Task Team was to provide the documentation and work necessary to WMO members to decide if this is indeed something that the global climate community wants to take on. The report is completed (GCOS-226)

## NEXT STEPS

Next steps:

- approval of the proposed GSRN by relevant WMO programmes, the GCOS programme and other sponsors;
- an offer to host and staff appropriately a Lead Centre;
- offers of suitable sites for an initial GSRN.

The task team will work to help achieve these aims

WMO:

GSRN part of the deliverables of the standing committee “Earth observing systems and monitoring networks” of the Infrastructure Commission:

- Establishment of a GCOS Surface Reference Network (GSRN); identifying candidate stations; call for Lead Centre. (2020)
- Planning and Organizing for GSRN Implementation and Coordination Meetings. (2021)

Precise role for GCOS and AOPC remains to be determined.