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

Session 7

La Réunion

28 November – 2 December 2022

Task Team Progress Report for November 2022 – Radiosondes

(Submitted by Masatomo Fujiwara, Christoph von Rohden and the team members)

Summary and Purpose of this Document

Progress report from the task team on Radiosondes.

Summary

Some tasks had good progress, but others need more community inputs and help.

This table shows the current members (13) of the team.

| Name | Affiliation | Status |
|----------------------|--|---------------------|
| Masatomo Fujiwara | Hokkaido University, Japan | Co-chair |
| Christoph von Rohden | GRUAN Lead Centre, DWD, Germany | Co-chair |
| Frank Schmidlin | NASA Retiree, USA | |
| Hannu Jauhiainen | The Association of Hydro-Meteorological Equipment Industry; Vaisala, Finland | HMEI representative |
| Rigel Kivi | Finnish Meteorological Institute, Finland | |
| Masami Iwabuchi | Japan Meteorological Agency, Japan | |
| Yang RongKang | China Meteorological Administration, China | |
| Jean-Charles Dupont | Institut Pierre-Simon Laplace, France(**) | |
| Sergey Kurnosenko | Scientific Software Consultant, USA | |
| Bruce Ingleby | ECMWF, UK | |
| David Edwards | Met Office, UK | |
| Gonzague Romanens | Meteoswiss, Switzerland | Added 4 Jan 21 |
| Frédéric Vogt | Meteoswiss, Switzerland (DVAS for UAI2021) | Added 4 Jan 21 |

Note: Michael Hicks has moved from NOAA/NWS to NIST, USA, and left this task team.

Progress on the main tasks

(The task list is from ANNEX 3: Agreed ICM-13 Actions of the GCOS 242 report on ICM-13, <https://www.gruan.org/documentation/gcos-wmo>)

Task C7

Task: C7. Justification for high ascent attainment (Criteria to include NWP impact, seasonal predictability, importance of monitoring LS winds, radiative transfer calculations, satellite validation, climatology, etc.)

Main Contact: TT Radiosondes, IPET-OSDE

Due Date: The first draft for a journal paper by ICM-14

Status: Ongoing, presentation at ICM-14

Milestone: Publication in the peer reviewed literature or a technical report

Progress & Issues: An ad hoc team has been formed. Masatomo Fujiwara has started to gather related information/publications to draft outline.

Some suggestions: Check presentations at WMO Impact Workshops. Try to make a statement that is

as justified as possible to provide a basis. Needs the modelling community to prove it. Background: The goal would be to extend GRUAN radiosondes another 10 km from 20 hPa (25 km), typically 50% of the GRUAN radiosondes since 2016 reached this level, to 5 hPa (35 km), typically only 2% reached this for 2016-2020. Regarding benefits of consistently achieving 5 hPa in the context of satellite sensor validation, Tony Reale will kindly pursue a specific GSICS recommendation for the GRUAN meeting. A survey of balloon sizes used at each GRUAN site is also needed.

Additional notes: TT radiosondes to progress an analysis of the additional benefits of high altitude attainment (10 hPa compared to 30 hPa) with a view to arising one or more papers. Criteria to include not only climate monitoring, but also NWP impact, seasonal predictability, importance of monitoring LS winds, satellite validation, radiative transfer calculations, etc. ...GMAC discussions ...in the context of CMIP6: <https://doi.org/10.5194/essd-12-2157-2020> (the radiative kernels themselves can underestimate the adjustment if they are developed from data with a low altitude profile top.) Met Office assessing additional NWP FSOI impact of 10 hPa ascents vs 30 hPa ascents. Lack of data bit of a problem, but will look at US flight data (much more data available over US). An example of a recent study describing a potential application of high-reach radiosonde ascents is Kinoshita et al. (2022), <https://doi.org/10.1175/JTECH-D-21-0011.1>. The aim here is to provide information regarding vertical atmospheric structures (gravity wave and planetary wave activity) upward to ~40 km.

Task C6

Task: C6. Standardizing cloud treatment

Main Contact: TT Radiosondes, TT AM (satellites) [and TT Sites and LC]

Due Date: A manuscript Published as GRUAN Report No. 5 in June 2022

Status: Closed

Milestone: Publication in the peer reviewed literature or a technical report

Progress & Issues: GRUAN-RP-5, "Cloud Observations" Fujiwara et al.

<https://www.gruan.org/documentation/gruan/rp/gruan-rp-5>

List of other tasks

(The lead of these tasks are other teams/groups.)

Task C10

Task: C10 Metrological closure of GNSS-IWV and radiosondes

NOTES

In addition to the Agreed ICM-13 Actions for TT Radiosonde (listed in the GCOS-242 report), members of the TT Radiosonde were active in the development and advancement of GRUAN data products for various radiosondes.