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Task Team Progress Report for April 2018 – Radiosondes

(Submitted by Masatomo Fujiwara and Christoph von Rohden)

Summary and Purpose of this Document

Progress report from the task team on Radiosondes.

Summary

Christoph von Rohden became a co-chair in September 2017 (as the replacement of Rolf Philipona). We have several tasks, some of which had good progress.

Composition of the Radiosonde task 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 | |
| Micheal Hicks | NOAA/NWS/OOS, USA | |
| Larry Miloshevich | MILO-Scientific, USA | |
| Rigel Kivi | Finnish Meteorological Institute, Finland | |
| Masami Iwabuchi | Japan Meteorological Agency, Japan | |
| Yang RongKang | China Meteorological Administration, China | |
| Martial Haeffelin | Institut Pierre Simon Laplace, France | |

Progress on main tasks

Task: Assess the effects of the use of auto-launchers compared to manual launches on measurement uncertainty estimates for radiosondes

Main Contact: Rigel Kivi, Fabio Madonna, Martial Haeffelin, Masami Iwabuchi, Masatomo Fujiwara
Due Date: August 2018 to define small set of well-posed questions to be addressed. December 2018 to submit manuscript or report

Status: Ongoing

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

Progress & Issues: Information has been summarized for Sodankyla (Kivi), Potenza (Madonna), and Tateno (Kizu). Information from French sites will also be added. Still in the process to finalize the analyses.

Task: Assess multi-payload launch configurations for GRUAN usage

Main Contact: Hannu Jauhiainen and Masatomo Fujiwara

Due Date: (New target and new deadline to be set at ICM-10)

Status: A GRUAN TD manuscript was completed and submitted to LC in June 2017; it is currently under review.

Milestone: Document detailing the issues surrounding multi-payload soundings to be drafted and

submitted either to peer reviewed literature (first choice) or to WG-GRUAN for review as a TD

Progress: A GRUAN TD manuscript is currently under review.

Issues: The second phase would be to encourage sites and researchers to make quantitative studies with several soundings of the same set of instruments with different flight configurations. This would be feasible for two operational radiosonde intercomparison flights (e.g., LCs test flights for RS41 and RS92, Tatenos flights for RS92 and RS-11G (and iMS-100)), but would not be easy for much heavier and complicated payloads.

Task: Amendments to the Manual on Codes (WMO No. 306) for BUFR to transmit uncertainties, etc.

Main Contact: Masatomo Fujiwara (with the help of JMA, Task Team Radiosonde, Task Team Sites, Lead Centre, WMO CBS, etc.)

Due Date: (Not clear at this moment as there are several steps to reach the goal to be discussed at ICM-10)

Status: Ongoing

Milestone: GRUAN metadata and uncertainty data are transmitted through the Global Telecommunication System as BUFR

Progress: Alexander Kats made the official procedure to make the amendments to the BUFR. As of 3 May 2017 the four new information (0 02 088 Volume of gas used in balloon; 0 03 027 Type of flight rig Code; 0 08 037 Baseline check significance; 0 08 038 Instrument data significance) can be sent with the BUFR code. In the meantime Alexander Kats has published, as one of the coauthors, the following paper: Ingleby et al. (2016), Progress towards high-resolution, real-time radiosonde reports, BAMS (<http://doi.org/10.1175/BAMS-D-15-00169.1>).

Issues: Masatomo took over Kats's work in June 2017, and was given a lecture on the basics of the BUFR code from Kensaku Shimizu in March 2018. Masatomo needs time to work further on this.

NOTES ON OTHER TASKS

(The primary contact for these tasks is the Lead Centre or other body. The Task Team Radiosonde is to help and support their work.)

Task: GRUAN Radiosonde Omnibus/generic Technical Document

Main Contact: Christoph von Rohden, with the help of June Wang, Greg Bodeker, Masatomo Fujiwara, and others

Due Date: Apr-2018

Status: Ongoing

Milestone: Manuscript prepared for review by the GRUAN WG.

Progress: A draft is written.

Issues: None.

Task: GRUAN Technical Documents for non-RS92 radiosondes

Main Contact: Relevant sites and Task Team Radiosonde.

Due Date: (Different groups are working separately with their own target deadlines.)

Status: Ongoing

Milestone: GRUAN TDs for Meisei, Modem, Meteolabor, and other manufacturers radiosondes are written up.

Progress: The GRUAN TD No. 5 for Meisei RS-11G and iMS-100 radiosondes was published in March 2018.

Issues: None

Task: RS92 GRUAN Data Product version 3 (with new radiation correction; & time lag correction intercomparisons for Vaisala RS92 humidity)

Main Contact: Lead Centre, Task Team Radiosonde, Task Team Ancillary Measurements.

Due Date: (To be discussed at the ICM-10)

Status: Ongoing

Milestone: RS92 GRUAN Data Product version 3 will be created that includes a new radiation correction.

Progress & Issues: It was found at the LC that the existing experimental setup for solar radiative heating effects on temperature measurements has number of conceptual deficiencies. Thus, the LC has developed a completely new extended setup and started first set of tests in April 2018. The new experiments will be made by the summer of 2018. Data from these new experiments will be used for the radiation correction parameterizations for the next versions of the GDP. (Also, intercomparisons of various time lag correction methods for Vaisala RS92 humidity were to be completed and published; this is currently on hold.)

Task: RS41 GRUAN Data Product

Main Contact: Lead Centre, Task Team Radiosonde.

Due Date: (To be discussed at the ICM-10)

Status: Ongoing

Milestone: RS41 GRUAN Data Product will be created.

Progress & Issues: It was found at the LC that the existing experimental setup for solar radiative heating effects on temperature measurements has number of conceptual deficiencies. Thus, the LC has developed a completely new extended setup and started first set of tests in April 2018. The new experiments will be made by the summer of 2018. Data from these new experiments will be used for

the radiation correction parameterizations for the next versions of the GDP.