

Task Team on Radiosonde

- Progress Report for April 2018-May 2019 -

Masatomo Fujiwara (Hokkaido Univ., Japan),
Christoph von Rohden (GRUAN LC, DWD, Germany),
and the Task Team Radiosonde members

The general tasks of the Team are to:

- **Provide guidelines** for the GRUAN on how to obtain the best possible, reference quality data from **radiosoundings**
- **Evaluate radiosonde data products** on the basis of the GRUAN specifications

Membership

- New members:
 - **Sergey Kurnosenko** (Scientific Software Consultant, USA) and **Bruce Ingleby** (ECMWF)
- 12 members currently. [Note: Autolauncher task team has more ad hoc members]
- Seeking more members (e.g., the radiosonde experts from the GRUAN sites) !!

<i>Name</i>	<i>Affiliation</i>	<i>Status</i>
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
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	
Sergey Kurnosenko	Scientific Software Consultant, USA	
Bruce Ingleby	ECMWF, UK	

Updates of the Tasks

Current Main Tasks

1. **Autolauncher**: Auto-launchers versus manual launches → Breakout session on Wed; talk on Thu
2. **Multi-payload** launch configurations → TD-7 published; scientific studies needed

Tasks led by LC or other body

1. GRUAN Radiosonde Fundamental Technical Document
2. GRUAN TD / GRUAN Data Product (GDP) for non-RS92 sondes
 - Meisei RS-11G: TD-5 & Kobayashi et al. AMT 2019 in press (in prep. for Meisei iMS-100)
 - Modem M10: Dupont et al. JTECH submitted
3. RS92 GDP version 3 (with new radiation correction; & time lag correction intercomparisons for Vaisala RS92 humidity)
4. RS41 GDP
5. Amendments to the Manual on Codes (WMO No. 306) for BUFR to transmit uncertainties, etc.

Other related Tasks

1. Ozonesondes data product
2. UT/LS water vapour data product (frost-point hygrometers, Lyman- α hygrometer, etc.)

Supplementary Slides
follow . . .

Autosondes: Auto-launchers vs. manual launches

- An ad hoc team including TT Radiosonde, relevant sites, LC, etc.
- Questions:
 - i) Is there a bias between manual and auto-launched sondes?
 - ii) Does the random uncertainty change?
 - iii) long term performance and traceability
 - An assessment paper manuscript is being prepared (Madonna et al.)
 - iv) Can we create a GDP? (e.g., can we add manufacturer-independent GC?)
 - Will be discussed at the breakout session on Wed.
- Contents of the assessment paper manuscript (by Madonna et al.):
 - Autolauncher systems considered: Vaisala, Modem, and Meisei
 - Stability and ground check
 - Comparison with available simultaneous manual sounding data
 - Balloon burst altitude statistics
 - Data quality evaluation using ECMWF forecast model (obs minus bg statistics)

Radiosonde Fundamental Technical Document

- Originally intended:
First GRUAN reviewable version in January 2019
- Achieved:
 - First revision of Ch. 5 (Measurement Practice)
 - Draft of Ch. 10 (Change management)
 - Detailed Outline/structure for chapters on GDP creation and Data Management
 - Little progress in some places in the other chapters
 - Document format converted to LaTeX
- Reason for delay:
Highest priority at RS41 GDP development incl. experimental work on radiation error and documentation

Introduction: Task Team Radiosonde

- Provide **guidelines** for the GRUAN on how to obtain the best possible, reference quality data from **radiosoundings**
- **Evaluate radiosonde data products** on the basis of the GRUAN specifications
- Survey **radiosondes and sensors** (in particular considering their performance in **intercomparisons**)
- Review the **uncertainty analyses** and **correction algorithms**
- Recommend **radiosonde launch procedures** and **metadata** to be collected
- Draw conclusions on the **suitability** of radiosondes, specific sensors, procedures, and algorithms **for the network**
- Promote scientific efforts for assessing and improving radiosondes
- Recommend measures for ensuring long-term stability of radiosonde records.
- Provide input to the **GRUAN manual** by defining launch procedures and pre-launch checks that need to be followed by the sites