



ILMATIETEEN LAITOS  
METEOROLOGISKA INSTITUTET  
FINNISH METEOROLOGICAL INSTITUTE

# **GRUAN site: Sodankylä, Finland**

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Sodankylä site is operated by the Finnish Meteorological Institute Arctic Research Centre (FMI-ARC). Location of the site is 67.4 °N, 26.6 °E, 179 m above mean sea level; WMO station's number is 02836

GCOS Reference Upper-Air Network





1. **Which of your existing radiosonde launches already meet the mandatory requirements (GCOS121: once weekly best production quality radiosonde, once monthly stratospheric water vapor; recommended twice daily), and which additional launches need to be instigated or augmented?**
  - **Twice daily 00/12 UT: RS92 radiosondes launched on regular basis**
  - **Stratospheric water vapor sondes:**
  - **Cryogenic Frostpoint Hygrometer (CFH)**
  - **Fluorescent Advanced Stratospheric Hygrometer (FLASH)**
  - **Stratospheric sondes have been flown during winter/spring period to sample the Arctic vortex. During the recent years we have flown the stratospheric sondes also during other seasons. Stratospheric water vapor sondes have always included comparison with the RS92 models.**
  - **Tests of the new Vaisala sonde RRD100, which is currently in the development phase.**
  - **Also experimental version of the FLASH sonde has been flown in Sodankylä.**



- 2. Which ground based measurements can you provide in addition to the mandatory GPS total water vapor column (microwave, FTIR, lidar, ...) and how can you use these additional observations to make sure that measurement uncertainty estimates will be consistent?**
- New FTIR is installed at the station in December 2009. Microwave radiometer measurements and measurements by Lidar are also expected to provide additional observations. Total water vapor comparisons are included in the objectives of the LAPBIAT Atmospheric Sounding Campaign in January-March 2010 at Sodankylä, when visiting instruments provide additional data.**



- 3. Do you have any limitations regarding the development of GRUAN launch protocols for routine and reference sonde launches (e.g. the use of autosonde launchers)?**
  - In our case the limitation is the use of autosonde launcher. There are also frequent manual sonde launches which include the RS92 sondes, for example the ozonesonde launches and the research hygrometer measurements.**
  
- 4. Do you have any limitations regarding the development of uniform GRUAN data processing schemes for remote sensing observations?**
  - Limitations are related to the availability of personnel for this task.**



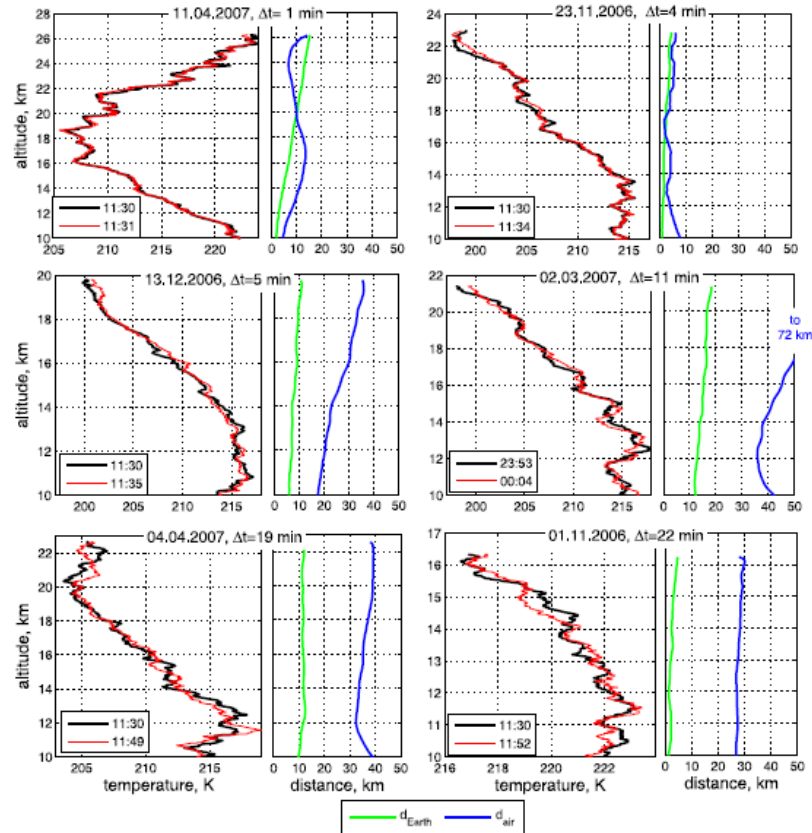
- 5. What local analysis can you provide to assure that measurements uncertainties will be consistent across the network (analysis of redundant observations either dual sonde launches or sonde + remote sensing observations)?**
  - **RS92 radiosondes will be added in the payload of the CFH and FLASH sondes.**
- 6. For sonde observations: Can you provide all raw data for central archiving?**
  - **We can provide all data from the sonde observations, including the dc3db data files from the RS92.**
- 7. For remote sensing observations: Will you be able to archive all raw data for possible future reanalysis and reprocessing?**
  - **We will store the raw data of the remote sensing instruments in the local data base.**



- 8. What help do you need from the Lead Centre / WGARO / GCOS Secretariat in moving forwards?**
  - **The choice of the reference sonde and ideas on how to secure the regular launches of the reference instruments.**
- 9. Will you be able to host local intercomparison campaigns (yet to be scheduled)?**
  - **We are hosting a local intercomparison campaign during January 2010- March 2010 (the LAPBIAT Atmospheric Sounding Campaign in Sodankylä). Sondes of this campaign include RS92, RRD100, RS80, InterMet, Graw, FLASH, CFH, COBALD, BKS, ozonesondes. Remote sensing instruments include MIAWARA-C radiometer by the University of Bern and the MARL lidar by AWI and DWD.**
- 10. Are there any special infrastructure needs that should be addressed?**
  - **Reference instrument related discussion.**



# Temperature profiles in the stratosphere



Citation: Sofieva, V. F., F. Dalaudier, R. Kivi, and E. Kyrö (2008), On the variability of temperature profiles in the stratosphere: Implications for validation, *Geophys. Res. Lett.*, 35, L23808, doi:10.1029/2008GL035539.