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Task Team Progress Report for November 2020 – Ground-Based Remote Sensing Measurements

(Submitted by Nico Cimini and Thierry Leblanc, co-chairs)

Summary and Purpose of this Document

Progress report from the task team on Ground-Based Remote Sensing Measurements.

The Working Group GRUAN recently approved a proposition to split the (now former) Task Team on Ancillary Measurements (TT-AM) into two separate Task Teams: the Task Team on Ground-Based Remote Sensing Measurements (TT-GB) and the Task Team on Satellite-Based Remote Sensing Measurements (TT-SAT). The new GRUAN TT-GB oversees the integration and production of ground-based measurements from lidar, microwave, and infrared remote sensing techniques, in compliance with GRUAN best measurement practices.

As of Fall 2020, the TT-GB is still in its initiation stage (refining ToR, finalizing membership). It will leverage from work achieved in the past years under the TT-AM, thus continuing efforts in evaluating the relevance of ground-based remote sensing techniques to GRUAN, and eventually producing new GRUAN products.

TT-GB Co-chairs

DomeNico Cimini, CNR-IMAA, Italy

Thierry Leblanc, Jet Propulsion Laboratory, USA

Proposed TT-GB Terms of Reference

- Interface with other expert teams and networks (e.g., NDACC, ARM, MWRnet)
- Develop guidance on the type and number of data and associated metadata needed to be stored from the instruments, as needed
- Evaluate the data products (uncertainty budget etc.) and bring in missing knowledge
- Inventory instruments worldwide for potential inclusion in GRUAN
- Draw conclusions on the suitability of the deployed equipment and advise accordingly the GRUAN Task Team on Sites
- Establish campaign rationales for the validation of data from multiple platforms
- Establish a system for the routine collection and display of data from multiple platforms
- Report to WG-GRUAN on all above duties

These Term of Reference (ToR) for TT-GB were submitted to GRUAN in March 2020 and are available online at: <https://www.gruan.org/network/task-teams/tt-ground-based>

Proposed TT-GB Members

Name	Institution	Country	Expertise	Site
Arnoud Apitouley	KNMI	Netherlands	Lidar	Cabauw
Maria Cadeddu	ANL	USA	MWR	ARM SGP
Jonathan Gero	Univ. Wisconsin	USA	AERI	ARM SGP
Jim Hannigan	NCAR	USA	FTIR	Boulder
Christine Knist	DWD	Germany	MWR	Lindenberg
Fabio Madonna	CNR-IMAA	Italy	Lidar, MWR	Potenza
Gianni Martucci	MeteoSwiss	Switzerland	Lidar, MWR	Potenza
Christoph Ritter	AWI	Germany	Lidar, MWR	Ny-Ålesund
Matthias Schneider	KIT	Germany	FTIR	Tenerife
Michael Sommer	DWD	Germany	GRUAN LC	Lindenberg

Summary of Activity Progress and Perspectives

TT-GB Membership

All proposed members have been invited to join the TT.

Maria Cadeddu, Fabio Madonna, Christoph Ritter, Jonathan Gero, Gianni Martucci, and Michael Sommer have accepted the invitation. As former members of the GRUAN TT-AM, it is expected that Arnoud Apituley and Jim Hannigan will accept our invitation before ICM-12.

Matthias Schneider shifted recently towards more space-based remote sensing. He thus may join the TT-SAT and be the link with TT-GB, bringing up the need of ground-based references for successful satellite missions.

A response by Christine Knist is awaiting.

GLASS lidar processor

As of Fall 2020, a standardized lidar data processor (GLASS) is operational and produces test water vapor retrievals for the prospective GRUAN lidars at the sites of Ny Aalesund, Payerne and Cabauw. Pending a fully-automated raw data transfer between the sites and the data processing center (JPL-TMF), a more systematic processing of the data is anticipated in the months to come. A peer-reviewed manuscript describing GLASS is under preparation, and a draft version of Best Measurement Practice Guide for GRUAN Lidars is already available. Regarding microwave instruments, a draft version of Best Measurement Practice Guide for GRUAN Microwave instruments is also available.

Perspectives

There is currently no activity to report for the radiometric instruments (MWR, FTIR and AERI). Coordinated efforts will be undergone in 2021, following guidance provided by the TT-GB experts. When its composition is finalized, the TT-GB will meet to review and finalize the ToR, and to define a roadmap of activities and contributions for 2021. An expansion of the work efforts made under TT-AM in the past years for lidar and microwave will be among the TT proposed activities of 2021.