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Session 2

Task Team 5 (Ancillary Measurements) progress report 01/2012

(Submitted by Thierry Leblanc and Tony Reale)

Summary and Purpose of Document

Progress report from the task team 5 (Ancillary Measurements) covering period from 09/2011 till 01/2012.

Task Team 5 (Ancillary Measurements) progress report for February 2012

SUMMARY

The Task Team on Ancillary Measurements (TT5) met in what was their first team-wide teleconference on February 2, 2012. Besides the usual updates on ongoing tasks, live discussions triggered a number of new tasks, as itemized below. Several projects parallel to GRUAN have reached significant maturity, allowing unprecedented leverage to the benefit of GRUAN: 1) key information on microwave measurements gathered in the framework of MWRnet will be compiled in the upcoming GRUAN Microwave Guidelines (Aug 2012); 2) the potential use of consistent FTIR retrievals from the MUSICA project; 3) the coordination of ancillary measurements leading to site atmospheric state best estimate (SASBE) parameters. A first draft of the GRUAN Lidar Guidelines was made available in January. A revised version will be available within a few weeks. A similar document will be initiated for microwave and FTIR (first draft due Aug 2012). Additional details on the above topics as well as other topics covered by TT5 can be found under each individual task listed below.

PROGRESS ON TASKS REPORTED ON THE PREVIOUS REPORT: Completed tasks

Task: MWRNet Update, including tasks pertaining to all TT5 Terms of Reference
Main Contact: N. Cimini **Due Date:** None **Status:** **Completed**
Milestone: 14-16 march 2011: Second Meeting in Koln (EG-CLIMET)
Progress: 13 actions and 19 recommendations. Reports available to MWRnet members at: (http://cetemps.aquila.infn.it/mwrnet/main_files/reports.html). Inventory of registered instruments and contacts: http://cetemps.aquila.infn.it/mwrnet/
Issues: None

Task: Validation Strategies and Results (Lidar, Microwave, FTIR, Sonde): New Publications
Main Contact: T. Leblanc **Due Date:** Recurring **Status:** **Completed**
Milestone: Dec. 2011, Jan 2012: AMT Special Issue on MOHAVE-2009
Progress: 4 papers published in AMT: Stiller et al (MIPAS), Hurst et al. (FPH+radiosonde), Leblanc et al. (MOHAVE Overview), Leblanc et al. (TMF lidar).
Issues: None

Task: Validation Strategies and Results (Microwave): New Publication
Main Contact: A. Haefele **Due Date:** Recurring **Status:** **Completed**
Milestone: Sept. 2011: AMT paper on ARIS Campaign (microwave)
Progress: Straub, C., et al.: ARIS-Campaign: intercomparison of three ground based 22 GHz radiometers for middle atmospheric water vapor at the Zugspitze in winter 2009, Atmos. Meas. Tech., 4, 1979-1994, doi:10.5194/amt-4-1979-2011, 2011
Issues: None

Task: Consistent ground-based FTIR Retrievals: H2O and HDO/H2O
Main Contact: M. Schneider **Due Date:** None **Status:** **Completed**
Milestone: Feb. 2011: start of MUSICA (http://www.imk-asf.kit.edu/english/musica)

Progress: Consistent H2O and HDO/H2O data are now available for the ten ground-based FTIR sites of MUSICA.

Issues: Still missing is a detailed characterisation of the products for each individual site and observation: averaging kernels and error budgets.

Task: Suitability of Deployed Equipment: Best Measurement Practices (Microwave)

Main Contact: N. Cimini **Due Date:** Recurring **Status:** **Completed**

Milestone: 14-16 march 2011: Second Meeting in Koln (EG-CLIMET)

Progress: Best Measurement Practices discussed and reported within MWRnet will be transferred into the GRUAN microwave radiometer guidelines (see new task below)

Issues: None

PROGRESS ON TASKS REPORTED ON THE PREVIOUS REPORT: Ongoing tasks

Task 1: Inventories of Retrievals and Products from satellites

Main Contact: T. Reale **Due Date:** ICM-4 **Status:** Ongoing

Milestone: ICM-4

Progress: Identify available derived satellite products and associated (metadata) for atmospheric temperature and moisture profiling suitable for validation exercises at GRUAN sites

Issues: None

Task 2: Validation Strategies and Results (Satellite): Coordination with JPSS

Main Contact: T. Reale **Due Date:** ICM-4 **Status:** Ongoing

Milestone: April 2011: Sounding Operational Algorithm Team (SOAT)

Progress: Provided briefs to JPSS cal/val team on routine validation of NPP Environmental Data Record (EDR) for atmospheric temperature and moisture soundings and opportunities for special validation exercises at GRUAN sites. Focus of intensive validation at ARM sites (resource permitting) for special sonde launch(s) at NPP overpass during 2012

Issues: Delay in resource allocation and planning for special sonde launches

Task 3: Validation Strategies and Results (Satellite): Satellite Products Cal/Val (NPROVS)

Main Contact: Tony Reale **Due Date:** ICM-4 **Status:** Ongoing

Milestone: October 2011

Progress: Developed initial NOAA Products Validation System (NPROVS) interface to integrate, display and analyze GRUAN (radiosonde) observations accessed from NCDC using NPROVS

Issues: Still need to integrate GRUAN sondes with historical NPROVS satellite collocation data (2011, Lindenberg, Tateno) and incorporate "uncertainty" in analysis

Task 4: Consistent FTIR and IASI Retrievals and Products: H2O and HDO/H2O

Main Contact: M. Schneider **Due Date:** 2016 **Status:** Ongoing

Milestone: Feb. 2011: start of MUSICA (http://www.imk-asf.kit.edu/english/musica)

Progress: First paper on consistency of MUSICA's ground- and space-based H2O and HDO/H2O remote sensing products for a subtropical ocean scene; Schneider and Hase, ACP, 11, 11207–11220, 2011,

Issues: Next steps: Examine long-term consistency (the whole IASI period: 2007-2012) and develop IASI land scene retrievals

Task 5: Products and Uncertainty Budgets (Lidar): ISSI Team on NDACC Lidar Algorithms

Main Contact: T. Leblanc **Due Date:** Summer 2012 **Status:** Ongoing

Milestone: August 2011: Standardization Tools for Vertical Resolution Validated
Next milestone: Sept. 2012 with Meeting # 3 (final)

Progress: Vertical resolution: Tools available, Manual being written, due May 2012. Results posted here: http://www.issibern.ch/teams/ndacc/private/NDACC_Tools_Vertical_Resolution.htm (currently, login needed, but eventually will become public). Tools for "NDACC-standardized" reporting of uncertainties to be developed in the spring of 2012.

Issues: 4-month delay for uncertainties, Meeting # 3 planned for Sept. 2012

Task 6: Products and Uncertainty Budgets (Satellite): GEWEX

Main Contact: M. Schröder **Due Date:** Post 2013 **Status:** Ongoing

Milestone: Second workshop on the GEWEX water vapour and temperature profile assessment announced: DWD, Offenbach, Germany, Sept. 2012

Progress: The workshop preparation is well advanced, the first circular has been distributed, and first participants/experts already registered. The assessment will be introduced at the upcoming International TOVS Science Conference in Toulouse, France. The assessment plan is based on the GEWEX News from May 2011 on the first workshop and has been largely extended. A first distribution is planned for March 2012. First proposals in support to the assessment are planned and a few have already been submitted to appropriate funding agencies

Issues: None

Task 7: Inventories of Potential Instruments (Microwave)

Main Contact: N. Cimini **Due Date:** Recurring **Status:** Ongoing

Milestone: Last: 2nd Workshop, March 2011; Next: TBA

Progress: 3 new units have joined MWRnet: 2 in Germany, 1 in USA

Issues: None

Task 8: Validation Strategies and Results (Microwave)

Main Contact: N. Cimini **Due Date:** Recurring **Status:** Ongoing

Milestone: 14-16 march 2011: Second Meeting in Köln (EG-CLIMET)

Progress: Validation statistics available for some GRUAN sites will be made available and reported on GRUAN microwave radiometer guidelines

Issues: None

Task 9: Validation Strategies and Results (Lidar, Microwave, FTIR, Sonde): New Publications

Main Contact: T. Leblanc **Due Date:** Recurring **Status:** Ongoing

Milestone: Jan 2012: AMT Special Issue on MOHAVE-2009

Progress: 1 paper in AMT-Discussions: Whiteman et al. (ALVICE lidar), Two more papers to be submitted soon: McGee (STROZ lidar), and Toon et al. (FTIR).

Issues: TBA

Task 10: Validation Strategies and Results (Microwave): New Publication

Main Contact: A. Haefele **Due Date:** Recurring **Status:** Ongoing
Milestone: Fall 2011: AMT-Discussion paper on suitability of microwave for NWS
Progress: Löhnert, U. and Maier, O.: Assessing the potential of passive microwave radiometers for continuous temperature profile retrieval using a three year data set from Payerne, Atmos. Meas. Tech. Discuss., 4, 7435-7469, doi:10.5194/amtd-4-7435-2011, 2011
Issues: None

Task 11: Meta Data (Microwave)
Main Contact: N. Cimini **Due Date:** None **Status:** Ongoing
Milestone: TBA
Progress: MWR data from most common units have been collected to start the activities on data and metadata format harmonization
Issues: None

Task 12: Suitability of Equipment: Best Measurement Practices (Lidar Guidelines)
Main Contact: T. Leblanc **Due Date:** ICM-4 **Status:** Ongoing
Milestone: January 2012: Draft version 0.1 released
Progress: First draft of the GRUAN Lidar Guidelines released and submitted for review to TT5 members as well as other GRUAN collaborators. Guidelines propose an overall structure that would allow full traceability of instrument and data processing changes. The structure includes the use of a so-called "IGLIMP" document fully describing each GRUAN lidar programme (instrumentation and SOP), an interface utility ("LidarRunClient") uploading all necessary data and meta-data, and a centralized processing software ("GLASS"). The draft is now being reviewed. A revised version will be available at ICM-4.
Issues: TBA

NEW TASKS AND PROGRESS TO DATE

Task 13: GRUAN Manual Add-ons by TT5 in Secs. 6.4.2 and 7.1.4
Main Contact: All TT5 **Due Date:** ICM-4 **Status:** New
Milestone: Feb 2012: TT5 input returned
Progress: "Scheduling" and "Remote sensing instruments" add-ons by TT5 now being finalized (to G. Bodeker)
Issues: None

Task 14: Suitability of Equipment: Best Measurement Practices (Microwave Guidelines)
Main Contact: N. Cimini **Due Date:** ICM-5 **Status:** New
Milestone: Aug 2012: First draft due
Progress: Large amount of material collected from MWRnet activities, and to be compiled for use in the GRUAN Microwave guidelines
Issues: None

Task 15: Suitability of Equipment: Best Measurement Practices (FTIR Guidelines)
Main Contact: M. Schneider **Due Date:** ICM-5 **Status:** New
Milestone: Jul 2012: First draft due
Progress: TT5 FTIR experts will work on a first draft following principles applied in Lidar Guidelines doc.
Issues: None

Task 16: Interface with other expert teams: EARLINET Centralized Algorithm (lidar)

Main Contact: A. Apituley **Due Date:** TBA **Status:** New

Milestone: Aug 2012: First report due

Progress: A. Apituley and T. Leblanc will inquire to EARLINET colleagues on the status of their Centralized Data processing Algorithm and study the potential synergy between EARLINET and GRUAN

Issues: None

Task 17: Suitability of Equipment: AERI as a potential GRUAN FTIR instrument (FTIR)

Main Contact: J. Hannigan **Due Date:** TBA **Status:** New

Milestone: Aug 2012: First report due

Progress: J. Hannigan and M. Schneider, together with D. Tobin, will investigate on the possibility to bring AERI instrument into GRUAN.

Issues: None

Task 18: Suitability of Deployed Equipment: Site Atmospheric State Best Estimate (SASBE)

Main Contact: Tobin/Reale **Due Date:** TBA **Status:** New

Milestone: September 2102

Progress: D. Tobin with J Dykema to investigate essential "recipe" of GRUAN ancillary and sonde measurements (including uncertainties) to calculate SASBE with focus on atmospheric temperature and moisture for NPP satellite hyperspectral products validation

Issues: None