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Session 4

Task Team Progress Report for April 2018 – Ancillary

(Submitted by Thierry Leblanc and Tony Reale)

Summary and Purpose of this Document

Progress report from the task team on Ancillary Measurements.

Task Team on Ancillary Measurements (TTAM) progress report as of April 2018

TTAM oversee the production and integration of ancillary measurements, namely MWR, FTIR and ground-based lidar in compliance with GRUAN best measurement practices. Satellite observations also provide a source of ancillary measurement and their integration for use in overall validation, weather and climate applications is overseen.
Co-chair. Tony Reale has agreed to step down as Task team co-chair (to assume GSICS POC). It is proposed that Lori Borg, from Univ. Wisconsin, assume role. Lori has a strong background in satellite validation (sensor and sounding) and use of ancillary ground data for SASBE; she is currently funded under NOAA JPSS proposal (led by Tony) and is highly suited for this role.
The remaining team is unchanged.

Lidar

Version 1 of the GRUAN Lidar Analysis Software Suite (GLASS) has been developed to a mature stage throughout 2017 and 2018. The software is now capable of analysing large amounts of raw signals from 12 ozone, water vapor, aerosol, and temperature lidar instruments belonging to 3 networks, namely GRUAN (Payerne, Ny-Ålesund, Cabauw), NDACC (Lauder, Eureka, Mauna Loa, 3 x Table JPL-Mountain), and TOLNet (NASA Langley, NASA Goddard, and Environment Canada). By the end of 2018, the GLASS will be able to ingest the raw data of 3 or 4 additional NDACC lidar systems. The full metadata ingestion framework required for long-term, mass-processing is now in place. More than 120 input parameters are ingested, with the option, for each parameter, to be either read in a default metadata file, or overridden using optional keywords during runtime (IDL). All parameters are instrument-dependent and time-dependent, making the analysis and re-analysis quick and versatile. Three more components of the GRUAN Lidar Data Stream are yet to be finalized:

1. LidarRunClient interface: A new version of the Client was produced in the second half of 2017. Technical difficulties remain in the design of the Client to make it fully compatible with the lidar investigator needs, and with the GLASS operational needs at the same time. These difficulties should eventually be resolved, but time commitment is critical, yet very difficult to find, both on the Lead Center and TTAM sides.

2. GLASS I/O in GRUAN environment: Currently, all Level 0 (raw) data and Level 2 (products) are locally available on the machine where GLASS is running (JPL Table Mountain). There is no issue in transferring data from/to the source lidar and/or GRUAN Lead Centre. However, a seamless data stream in parallel with the rest of the GRUAN Products is still desirable and yet to be achieved.

3. Lidar Data Stream Technical Documentation: The document write-up was delayed in order to accommodate 1) the new LidarRunClient version, and 2) the numerous new functionalities of the GLASS. Most functionalities are now fully operational, and the documentation will be written in the weeks/months to come.

   To conclude on the Lidar Data Stream progress and future: considering the very heavy agenda of the current investigators involved in the development of the GRUAN Lidar Data Stream, it is HIGHLY DESIRABLE that the Lead Centre, or another organization, considers the hiring of a part-time person to work specifically on items 1) and 2) mentioned above. Progress will continue to be very slow if no such personnel is hired.

FTIR

There is no progress in the potential development of GRUAN FTIR products. Because of the low resolution of the technique in the troposphere, the most suitable contribution to GRUAN would be the production of a total precipiatble water product. This prodcut however is not standard for FTIR. Another application is the FTIR HDO product, providing indirect information on the transport of water vapor in the lower stratosphere. TTAM member Matthias Schneider (KIT) is the main POC for this activitiy.

MWR

A first version of the Best Measurement Practices and Guidelines document was released in early 2017. TTAM member Nico Cimini (University of L'Aquila) is the main POC for this activity.

Satellite

Accomplishments:

NPROVS infrastructure upgrades to store satellite Sensor Data Records (SDR) for hyper-spectral infra-red and advanced microwave sensor observations (NOAA and EUMETSAT); 500 km radius Re-configurations to access/store RIVAL (see Lori Borg presentation) dual and dual sequential RS41 / RS92 / satellite collocations (w/SDR)
NPROVS expanded to include NOAA-20 (January, 2018); *NOAA-20 targeted in RIVAL.*
NPROVS assigned to COSMIC-2 cal/val team *and includes use of GRUAN for assessment (with and without GRUAN processing?). (Bomin)*

Path Forward:

Coordinate with LC and configure user access of RIVAL collocations (and SDR); options include link to NPROVS, store at LC (or both):

- NPROVS Radiosonde averaged (see Bomin) to 100 vertical layers suited for RT ...
- LC would provide full hi-density radiosonde access ...

Coordinate with Scheduling WG (Tom Gardiner) to initiate Ancillary data streams, assessments (i.e., consistency within uncertainty) and use/value for SASBE (per site).
Consider retrospective SDR for all timely GRUAN and satellite collocations (NPROVS)
Facilitate GRUAN / GSICS satellite sensor (RT model) assessments (Bomin Sun)
Access /integrate (NPROVS) CFH radiosonde (nrt and retrospective) (i.e. Beltsville, ARM) ... target satellite overpass
Facilitate access of COSMIC-2, GRAS post-processed and associated targeting at GRUAN ... *mutual feedback to GRUAN and GPSRO agencies*