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Session 4

# Task Team Progress Report for April 2018 – Scheduling

*(Submitted by Tom Gardiner and Fabio Madonna)*

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**Summary and Purpose of this Document**

Progress report from the task team on Measurement Schedules and Associated Instrument-type Requirements.

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# Measurement Scheduling and Combination Task Team Summary (2017/2018)

Following the review by the Science Coordinators of areas of common research interest across the network in 2016 it was decided to extend the scope of the scheduling task team to cover the issues surrounding measurement combination. The aim of the revised task team is to develop methodologies to optimally combine measurements of ECVs from multiple instruments to meet all GRUAN objectives including climate trend detection, satellite calibration/validation, and studies of local mesoscale processes and events. In addition, it provides a chance to refresh the task team membership and bring together the various measurement scheduling and combination activities across the network. Task team membership: Tom Gardiner (co-chair), Fabio Madonna (co-chair), Dave Whiteman, Rigel Kivi, Lori Berg, Xavier Calbet Alvarez, Jordis Tradowsky, John Dykema, Alessandro Fasso, Tony Reale, Alexander Haefele, Richard Querel, Doug Sisterson and Rob Kursinski. The long term objective for the Task Team is to develop tools to characterise the atmospheric column above each site through the combination of measurements from multiple instruments, taking into account relevant collocation effects, with a view to:

- providing the best available estimate of the vertically resolved atmospheric column above the site;
- ensuring continuous measurements of an atmospheric parameter without temporal gaps;
- understanding and better quantifying the total uncertainty budget;
- optimising the operational costs.

In terms of scientific outputs from the task team, while the activity of the team remains a voluntary one without specific funding, the outputs mainly relate to relevant work within other projects and the main information sources are from peer-reviewed literature, GRUAN documentation, and currently unpublished studies of which the group is aware. Some limited new analyses are being undertaken by team members using existing data sets to start to address areas where critical gaps exist that prohibit scientifically defensible choices.
Recent activities by members of the task team have included:

- Initiation of the RIVAL campaign:
  - Dual radiosonde soundings (RS92 & RS41 on same balloon) will be performed at Eastern North Atlantic, North Slope Alaska and Southern Great Plains ARM sites weekly for 1-year (with possibility of 2nd year)
  - Launches will occur at JPSS overpass times

  - Following 2 trial launches the first RIVAL launch took place on 13th February 2018

- Involvement in the delivery of the final outputs from the GAIA-CLIM covering a range of relevant topics including:
  - Traceability and uncertainty assessments of key measurement techniques.
  - Development of co-location uncertainty tools.
  - Gap analysis of current atmospheric measurement capabilities.

- Initial work on Copernicus Climate Change Service development for reference and baseline network data covering a range of GRUAN-relevant ECVs.

- Ongoing development of temperature SASBE for Lauder.

- Ongoing programme of multi-payload sonde (RS92/RS41/CFH) launches from Sodankyla as part of Year of Polar Prediction, and planning for Antarctic campaign in late 2018 / early 2019.

- Investigation of the effect of local turbulence on radiative transfer and co-location uncertainties.