

Update on Science Coordination Activities

Tom Gardiner, Richard Querel

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Background



- ICM-6 decided to appoint a Scientific Coordinator (SC) to provide a focal point for cross-network scientific research
- Tom Gardiner (NPL, UK) and Richard Querel (NIWA, NZ) were jointly appointed to the role in July.
- Main initial focus has been a series of one-to-one discussions to gather individual views on GRUAN and the priorities for scientific coordination (summarised in report).
- On the basis of the initial feedback we have reviewed the scope for the SC activities, and identified a number of scientific areas where cross-network collaboration would be widely beneficial.

SC Scope

- Original scope focussed on identifying and coordinating short-term (1-6 month) research projects and outcomes required to support GRUAN objectives.
- Still high priority but has been extended to include the following :
 - Identify common areas of scientific activity across the network, and look to facilitate cooperation and knowledge exchange between the groups involved.
 - Define research topics appropriate for longer term study that could form the basis of future research proposals and identify the potential stakeholders/collaborators for such research.
 - Build up a database of relevant publications that may be of interest to the GRUAN network.

One-to-one discussions



- On-going process, but have spoken to 12 people so far. Have already identified a number of common areas/issues.
- General comments
 - GRUAN is exciting and frustrating - it seems to lose momentum unless exciting things happen.
 - Need to market benefits of GRUAN internally and externally – case studies.
 - Data combination and sharing is key, including the uncertainties – GRUAN can provide leadership,
- Funding
 - Most sites currently have no funding dedicated to GRUAN.
 - Provide ideas or template for how sites could ask for funding.
- Radiosondes
 - Define data qualification process needed for new sondes.
 - Need a roadmap from Lead Centre for switch to RS41

One-to-one discussions (cont.)



- **Data processing and Uncertainties**
 - Need to demonstrate the added value of GRUAN analysis of raw data.
 - How do we standardize uncertainty reporting for various instruments (in-situ vs remote) ?
- **NWP and Satellite Validation**
 - Satellite validation is emphasized but is it used?
 - If GRUAN data provides QA for NWP runs then that raw GRUAN data should not be included in NWP assimilation
- **Links to wider community**
 - Need bidirectional communication between GRUAN sites and "regular" operational sites.
 - GRUAN should raise the quality of GUAN measurements.
 - Two-way interaction with other networks.
- **As a result of these discussions have identified four (initial) areas for coordinated activity.**

OSSE



- Observing System Simulation Experiment (OSSE) opportunity through NOAA.
- Needs experienced scientist and significant time, so not suitable for short term or PhD. Potential for international secondment.
- Main objective would be on GRUAN network design – where would new GRUAN stations add most value.
- Setting up the OSSE is the main challenge. Need to be very clear what goal of an OSSE is and therefore which GRUAN objectives are being addressed.
- Lunchtime meeting to discuss further.

- The Site Atmospheric State Best Estimate (SASBE) activities provide good opportunity to demonstrate GRUAN benefits.
- It provides an opportunity for each site to develop appropriate tools for their site.
- Linking to co-location and measurement redundancy uncertainty work (Alessandro and Fabio) could provide rigorous assessment of the uncertainty of the atmospheric state (links to GAIA-CLIM project).
- Many potential linked research topics :
 - vertical correlation of uncertainties from different measurement techniques (how to combine and report them),
 - uncertainty introduced by radiative transfer models when converting between parameter space and radiance space.
- Lunchtime meeting to discuss further

SASBE project



- DAAD-funded PhD student beginning at Lauder in March 2015.
- Co-supervised by Bodeker Scientific and NIWA
- Project is the generation of temperature, humidity and ozone SASBEs using Lauder measurements
- Invercargill co-location issue may be addressed

Sonde Qualification



- A number of groups have raised the issue of GRUAN qualification for non-RS92 sondes.
- Links directly to the work of the radiosonde task team and various groups will be taking about this at the ICM.
- May still be a role for the SCs to help coordinate these efforts and we will review this following the ICM.

Data Timescales



- An issue raised by potential NWP users of GRUAN data is the timeline for data availability, and how this links to the timescales for operational inclusion into forecast models.
- One potential study would be to look at the timescales for the various data streams and the added value (in terms of data quality and traceability) as a function of time/analysis steps.
- This would assess how current data streams could be used in NWP, and provide guidance on the development of new data streams (and upgrades to existing ones).
- How to take this forwards ? (GAIA-CLIM, TT3 – Scheduling ?)

Next steps



- Identify interested groups in research areas and help coordinate collaborations.
- Develop list of smaller research projects under broad themes.
- Continue one-to-one discussions.
- Develop reference database, following template on GRUAN website.
- How should we assess (measure?) usefulness of SC activities to the network.