

2nd GRUAN Implementation-Coordination Meeting (ICM-2)
Payerne, Switzerland
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Item 7.2.3

**Site report: ARM Climate Research Facilities – Barrow, AK, USA;
Darwin, Australia; Lamont, OK, USA; Nauru, Republic of Nauru;
Manus, Papua New Guinea**

(Submitted by Doug Sisterson)

Summary and Purpose of Document

This document contains an overview of the measurement programme at the ARM sites with respect to GRUAN requirements, and addresses the questions to be discussed in this session.

1. Which of your existing radiosonde launches already meet the mandatory requirements (GCOS-121: once weekly best production quality radiosonde, once monthly stratospheric water vapour; recommended twice daily), and which additional launches need to be instigated or augmented?

We only launch RS-92's at all of our sites. We launch 4 sondes per day 24/7 at the SGP, and 2 sondes per day 24/7 at the other sites. We are implementing CFH launches later this year at the Lamont, OK, site. There are no plans to add in Ozone sondes at this time, but it is a possibility subject to funds. Current planned launch frequency of CFHs is twice a month.

2. Which ground based measurements can you provide in addition to the mandatory GPS total water vapour column (microwave, FTIR, lidar, ...) and how can you use these additional observations to make sure that measurement uncertainty estimates will be consistent?

Surface Temperature & Humidity Reference System (SurTHRef) at the SGP. Nearby Temperature, Humidity, Winds and Pressure (THWAPS) system at the SGP. Nearby towers with T, RH and winds at multiple heights at the SGP and NSA sites. Ground Checks (GC-25), MWR's and nearby surface meteorology sites at the TWP, SGP and NSA sites.

The SGP site has Raman Lidar, microwave radiometers, and an AERI that provide additional information about the water vapour column.

None of the ARM sites operate their own GPS. The SGP and Darwin sites have GPS systems provided by others but ARM does not include this data formally in sonde evaluations.

3. Do you have any limitations regarding the development of GRUAN launch protocols for routine and reference sonde launches (e. g. the use of autosonde launchers)?

As long as there is no conflict with current sonde launch protocols. Subject to funds.

4. Do you have any limitations regarding the development of uniform GRUAN data processing schemes for remote sensing observations?

No, as long as there is no conflict with our current data collection and processing. Subject to funds.

5. What local analysis can you provide to assure that measurements uncertainties will be consistent across the network (analysis of redundant observations either dual sonde launches or sonde + remote sensing observations)?

We follow the same ground procedures for sonde preparation at all sites, GC-25's etc. Additional SurTHRef at the SGP. We do daily comparisons of the first two sonde values looking for inconsistencies.

We do intercomparison checks with nearby surface met and tower data.

We intercompare with collocated MWR on a consistent basis.

We do monthly reports that contain information from all sites on: telemetry issues, sonde termination reason, pressure at termination, altitude at termination and the GS-25 temp and RH corrections (desiccant check).

When CFH's are launched a RS-92 could be launched either on the same package or at the same time for intercomparison purposes.

6. For sonde observations: Can you provide all raw data for central archiving?

Yes.

7. For remote sensing observations: Will you be able to archive all raw data for possible future reanalysis and reprocessing?

Yes.

8. What help do you need from the Lead Centre / WGARO / GCOS Secretariat in moving forwards?

Unknown at this time. Effort is subject to funds.

9. Will you be able to host local intercomparison campaigns (yet to be scheduled)?

Yes. Requests are addressed through the IOP process.

10. Are there any special infrastructure needs that should be addressed?

Large covered structure for balloon filling at most sites. At some sites this requirement is more stringent than others (NSA, TWP).

The TWP sites are an issue all to themselves. Need to determine the availability of Helium or determine how to or if we can launch a CFH/Ozone sonde with Hydrogen and our remote balloon launchers.