

The GRUAN IP (v3)

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GRUAN IP v3

- More strategic / aspirational – less specific
- Fewer actions (15 internal, 3 arising from GCOS IP), organised thematically
- Longer time horizon 2016-2021
- More consistent with (at least present) draft of GCOS third IP stylistically
- Proposed to publish after third GCOS IP to ensure consistency (as a ‘GRUAN response’?)
- Input from GRUAN community welcome on current draft (email Peter)

Relationship between IP and ICM year action plans

- New IP provides high-level goals
- Specific actions are the domain of ICM meetings which ensures against dating and allows agility / flexibility
- Both are important to keep in mind
- Propose that we should explicitly review every other year at the ICM where we are against the IP high-level aims.

From GCOS IP v3 draft

Action A17

Action: Continue implementation of the GCOS Reference Upper-Air Network of metrologically traceable observations, including operational requirements and data management, archiving and analysis.

Who: Working Group GRUAN, National Meteorological Services and research agencies, in cooperation with AOPC, WMO CBS, and the Lead Centre for GRUAN.

Time-Frame: Implementation largely complete by 2025

Performance Indicator: Number of sites contributing reference-quality data-streams for archive and analysis and number of data streams with metrological traceability and uncertainty characterisation. Better integration with WMO activities and inclusion in the WIGOS manual.

Benefits: Reference quality measurements for other networks, in particular GUAN, process understanding and satellite cal/val.

Action Axx

Action: Expand the number of GRUAN sites measuring with high-quality instruments (e.g. frostpoint hygrometers) in the UTLS and promote and support the development of more economical instrumentation for GRUAN and to enable wider adoption.

Who: NMSs, NMIs, HMEI and GRUAN

Time-Frame: Ongoing.

Performance Indicator: Number of sites providing data to GRUAN archive.

Benefits: Improved UTLS water vapour characterisation, CDRs

Action A2x

Action: To understand the vertical profile of radiation requires development and deployment of technologies to measure in-situ profiles, in the first instance at GRUAN sites.

Who: NMSs, NMIs, HMEI.

Time-Frame: Ongoing.

Performance Indicator: Data availability at GRUAN archive

Benefits: Understanding of 3D radiation field, model validation, better understanding of radiosondes

From the GRUAN community

Action 1

Action: Ensure day-to-day operation of the GRUAN network including undertaking annual Implementation and Coordination meetings and sponsor reporting activities.

Who: Lead Centre and WG-GRUAN

Time-frame: Continuous

Performance indicator: Satisfaction of sponsors, documentation available online

Benefits: Network coordination and buy-in from sites, network visibility within user community.

Action 2

Action: Develop an average of at least one new data stream per year between 2016 and 2021

Who: Task Teams, Lead Centre, WG-GRUAN, sites, contributing / collaborating networks.

Time-frame: By 2021

Performance indicator: For each data product there exists:

- a Technical document describing how the measurements are to be taken;
- a paper describing the traceability and uncertainty quantification;
- a centrally processed data stream that is publically accessible.

Benefits: Improved ability to characterize atmospheric column properties at sites, complementary measurements allow independent verification of adequacy of uncertainty budgets calculated.

Action 3

Action: Deploy data streams as they develop via the data portal and monitor indicators of usage such as publications that use the data.

Who: Lead Centre, Task Teams, sites

Time-frame: Continuous

Performance indicator: Data are publically accessible and there is demonstrable evidence of growing usage within the community.

Benefits: Long-term network utility and viability, return on investment

Action 4

Action: Periodic review of data streams for usage and issues raised

Who: WG-GRUAN, Task Teams, invited experts (as deemed necessary)

Time-frame: Continuous, for any given stream at least once per four years.

Performance indicator: Brief report available on data stream and its usage with any actions required clearly stated.

Benefits: Ensuring that data streams remain cutting edge forcing periodic re-review and (as deemed necessary) reprocessing

Action 5

Action: Recruit and retain on average not less than one extra candidate station per year. Station selection to be cognizant of user priorities.

Who: WG-GRUAN, Lead Centre

Time-frame: Continuous

Performance indicator: At least 30 sites present on map at the end of the IP period.

Benefits: Better more equitable network coverage, reference quality measurements in new regions important to stakeholders.

Action 6

Action: Review and re-review sites as detailed in the GRUAN manual so that there are at least 25 certified sites at the end of the IP period.

Who: WG-GRUAN, Lead Centre

Time-frame: Continuous, for any given site at least once per four years.

Performance indicator: Certified sites visible on up-to-date map; sites demonstrably delivering data streams via the relevant GRUAN data portal(s)

Benefits: Certification ensures a minimum quality to end users and a degree of compatibility / comparability of their data streams and quality to the contributing sites.

Action 7

Action: Undertake research to understand the effects of scheduling for different instruments and end-uses and provide quantitatively based advice on scheduling.

Who: Task Team on scheduling, Lead Centre, WG-GRUAN

Time-frame: Continuous

Performance indicator: Publications and evidence for progress in annual ICM reports, advice dispensed to sites and taken up.

Benefits: Optimal use of observational assets to meet stakeholder needs.

Action 8

Action: Create through appropriate data fusion approaches optimal estimates of the column ECV properties from multiple data streams building upon their respective strengths.

Who: Task Team on Ancillary Measurements, Science Coordinators, WG-GRUAN, Lead Centre

Time-frame: 2019 for first products, 2021 for more mature set of products

Performance indicator: Papers published and such estimators being produced and made available for data arising from GRUAN stations on a sustained basis.

Benefits: Better characterization than possible by any single instrument, better understanding of the instruments at GRUAN sites and their performance.

Action 9

Action: Using the transition away from RS-92 as an example instigate and propagate a change management protocol for quasi-network wide changes.

Who: Lead Centre, Task Team on Radiosondes, WG-GRUAN

Time-frame: 2019

Performance indicator: Change management accomplished without introducing inhomogeneities, paper(s) published, results disseminated to GUAN and broader GOS sonde networks through GCOS / WIGOS

Benefits: Better characterization than possible by any single site, economies of scale, broad scientific insights

Action 10

Action: Ensure sustained interactions with other networks interested in upper-air measurements of ECVs to realize synergies

Who: WG-GRUAN, Lead Centre, Task Teams

Time-frame: Continuous

Performance indicator: Memoranda of understanding enacted, appropriate cross-representation, joint participation in research projects

Benefits: Scientific insights, mitigation of capability redundancies, better governance in the framework of WIGOS.

Action 11

Action: Periodically review WG-GRUAN membership and terms of reference and whether task teams still relevant / additional task teams needed.

Who: WG-GRUAN, Lead Centre, Task Teams, AOPC

Time-frame: Review internally at GRUAN ICMs as a standing item but raised to AOPC only when a substantive suggested modification agreed by GRUAN community and then only infrequently.

Performance indicator: Discussions occur and are documented in the ICM reports

Benefits: Ensure continuous relevance of activities and relevant expertise is recruited and retained to address the present challenges.

Action 12

Action: Sustained engagement with the user community to ensure usage and exploitation of data arising from GRUAN activities.

Who: WG-GRUAN, Lead Centre, Task Teams

Time-frame: Continuous

Performance indicator: Papers published, presentations given, participation in international activities

Benefits: Ensures usage by expert community to drive value.

Action 13

Action: In collaboration with partner networks, assess the relevance and tractability of the full suite of remaining GRUAN target variables defined in GCOS-112 (updated if necessary with new ECV definitions in the third GCOS IP) in the context of measurement capabilities and measurement programmes underway in partner networks.

Who: WG-GRUAN, Lead Centre, Task Team on Ancillary Measurements

Time-frame: 2020

Performance indicator: Report available and some data streams for new ECVs not yet considered at a minimum under demonstrable development (stretch target: at least one additional ECV now has a GRUAN product).

Benefits: After network expansion the next benefit would be in starting to observe all important facets of the column at the sites which requires expanding the ECV set.

Action 14

Action: Gain official recognition within WIGOS as a contributing network and documentation in the WIGOS regulatory materials as to the nature of that agreement with subsequent recognition at Commission level.

Who: GCOS Secretariat, AOPC, WG-GRUAN, Lead Centre

Time-frame: CG-18

Performance indicator: Inclusion in relevant regulatory materials

Benefits: Recognition by NMSs who provide sites and / or analysis capabilities. Visibility with stakeholders such as the satellite cal / val community.

Action 15

Action: Develop and deploy NRT data streams of GRUAN products for use by stakeholders where both practicable and useable.

Who: Lead Centre, Task Teams, processing centres

Time-frame: Continuous

Performance indicator: Data streams available

Benefits: Increased usage, better constrained data for NRT applications than currently available.

Next steps

- Redraft based upon feedback
- Wait to see what final GCOS IP looks like
- Revise and circulate to WG for sign-off
- Submit to secretariat for publication

Most importantly:

- Execute the IP Actions over the next five years!