



GRUAN - Update since ICM-14 and GDP status

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.... In a nutshell we made substantial progress with ...



- Network management
- GRUAN data tools and data serving
- Network expansion and consolidation
- Completion or progress with several actions (next talk will analyze).
- R23 replacement
- Some networking activities (including scientific papers)
- Priority 2 variables and partnerships with other networks

Network status

GCOS Reference Upper-Air Network

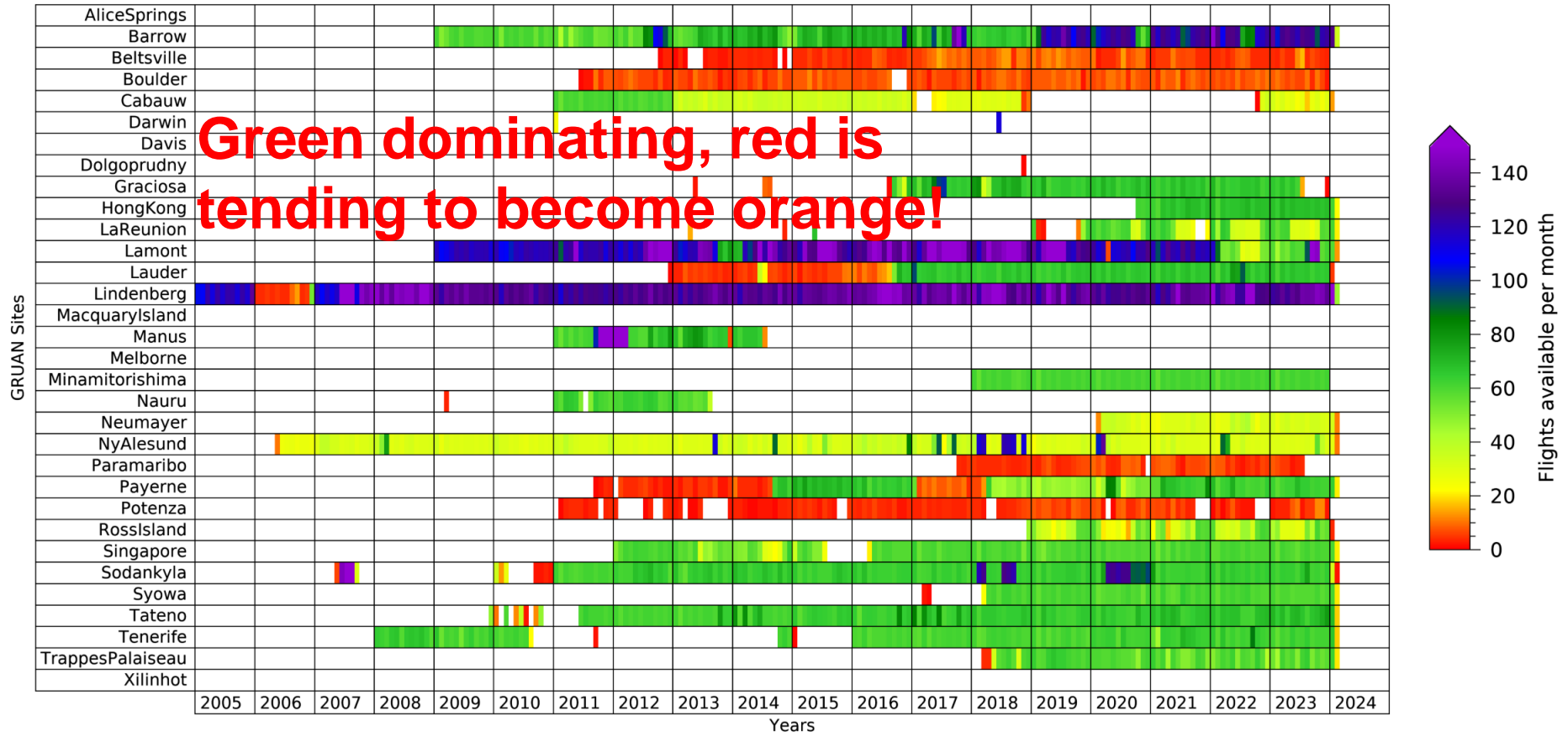


31 sites formally
23 active with a datastream
Only 13 certified
Regular recertification of sites

GDP data streams



GRUAN Radiosonde Launches (total: 165418 at 2024-02-11)

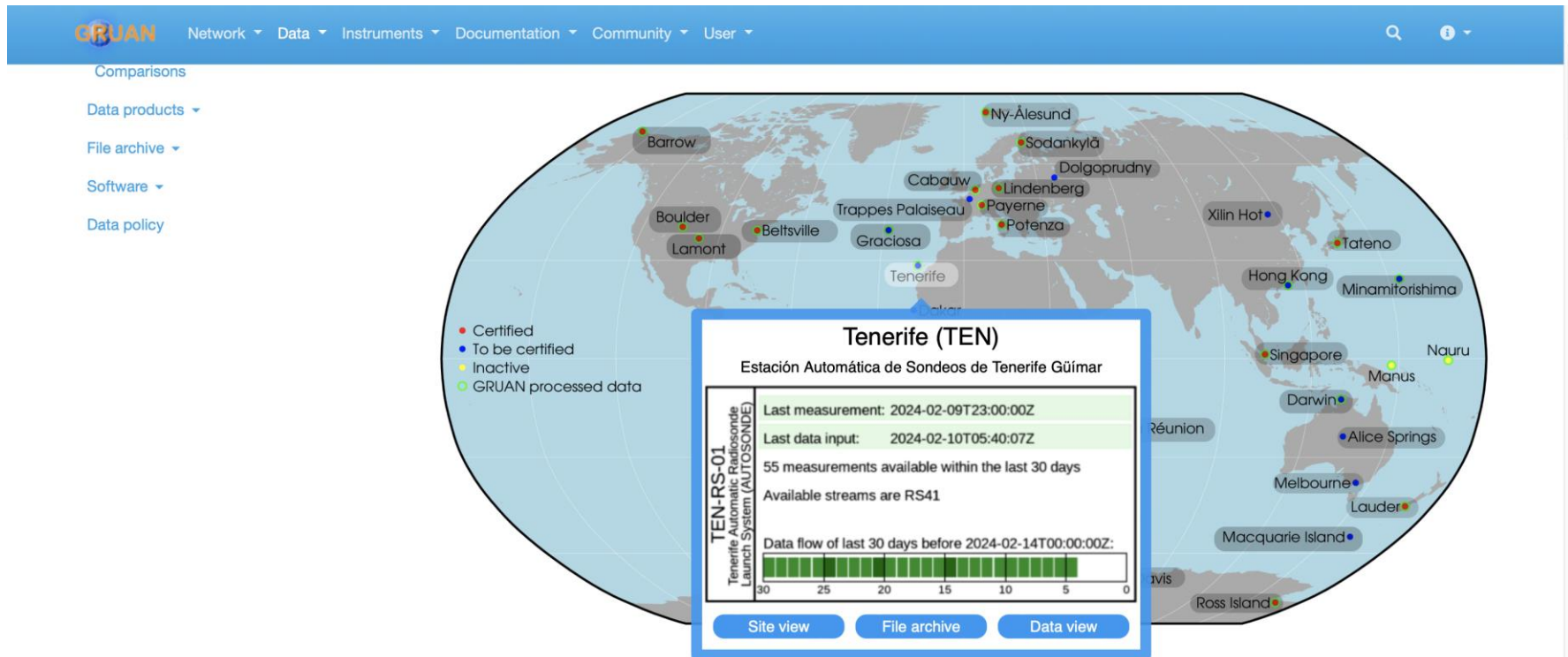


Paramaribo and Hong Kong: data flow active (some recent issues at few sites)

Interaction re-started with Australian sites



Monitoring data flow



Legend

The current status of the data flow in the network is determined at the GRUAN Lead Centre. Therefore, all information about availability refers to the GRUAN data archive at the LC.

If possible, the measurements should be submitted within a few days up to one month (30 days) (green background). Only if measurements of the last 30 days are available will a further evaluation take place. Otherwise, the times of the last data delivery or measurement are color-coded: up to 90 days

Website tools to monitor data flow in place
Many sites submitting data regularly, some can do better ..



New sites/propsectives sites status

GCOS Reference Upper-Air Network

- Candidate sites
- Potential sites



● DOME-C

The GRUAN desert started filling in....





GRUAN data serving

Different options are under discussion with hope to have a final solution soon:

- NCEI: request submitted for a continued support to the GRUAN data publication and to enhance visibility in the NCEI webpage for the dataset.
- PANGEA: AWI offered support to the GRUAN data publication.
- GRUAN website: new features have been implemented and others are to be implemented for the data download, not currently considered for a massive data download.
- Copernicus Climate Data Store (CDS) offered the possibility to publish data in NRT, data reformatted.



Reprocessing GDPs

Currently under discussion a document describing:

- Triggers for the reprocessing of a GDP and the procedure for the certification of the reprocessed data product. The guiding principle is to minimise the work required to undertake a reprocessing while still meeting the quality standards expected for a GDP.
- How to classify the reprocessing as a major or a minor update and to certify the new GDP version.
- Reprocessing of RS92 (v3) has been agreed as a priority for the LC, which is already working to improve their characterization and ensure consistency with the most recent GDPs.



Silent data policy

The WG has approved a policy for silent sites.

After the ICM-15, the policy will start to be applied.

- The GRUAN needs to show its real observing capabilities and the real amount of data available: silent sites may be an issue for the users who will not find any data for them (available on the GRUAN map, but no data).
- This process must not be seen as a way to exclude sites, which is the ultimate decision, but instead as an attempt to save the current network configuration and collect observations on a regular basis.



Status of new GRUAN GDPs

- No new GDPs since ICM-14
- Progress made with analysis of new sonde types (e.g. Modem M10/M20, Graw DMF-07)
- Progress with the lidar GDP (data flow setup at the LC for 2/3 sites)
- GNSS GRUAN GDP: are we at the last mile? Need to fix the data formatting issues ASAP ...
- Lessons learnt from the UAI2022 in Lindenberg about consistency of GDPs



Improved Management

An enhanced management has been achieved through:

- Regular meetings with co-chairs and LC
- Mid-term meeting in Lindenberg (very fruitful and foreseen also between ICM-15 and ICM-16)
- Regular TT meetings with the attendance by co-chairs and GCOS secretariat (identification of actions for each TT).
- Appreciation by the members to make networking
- Identification of internal actions to address specific tasks and improve efficiency of the TT modus operandi (this must be pushed by GRUAN «broader» actions agreed at ICMs)
- Clear need from the members to work closer and meet more frequently



2020 ban on R23 (CHF3)

- affects EU & Japanese sites
- reduction of sounding activity

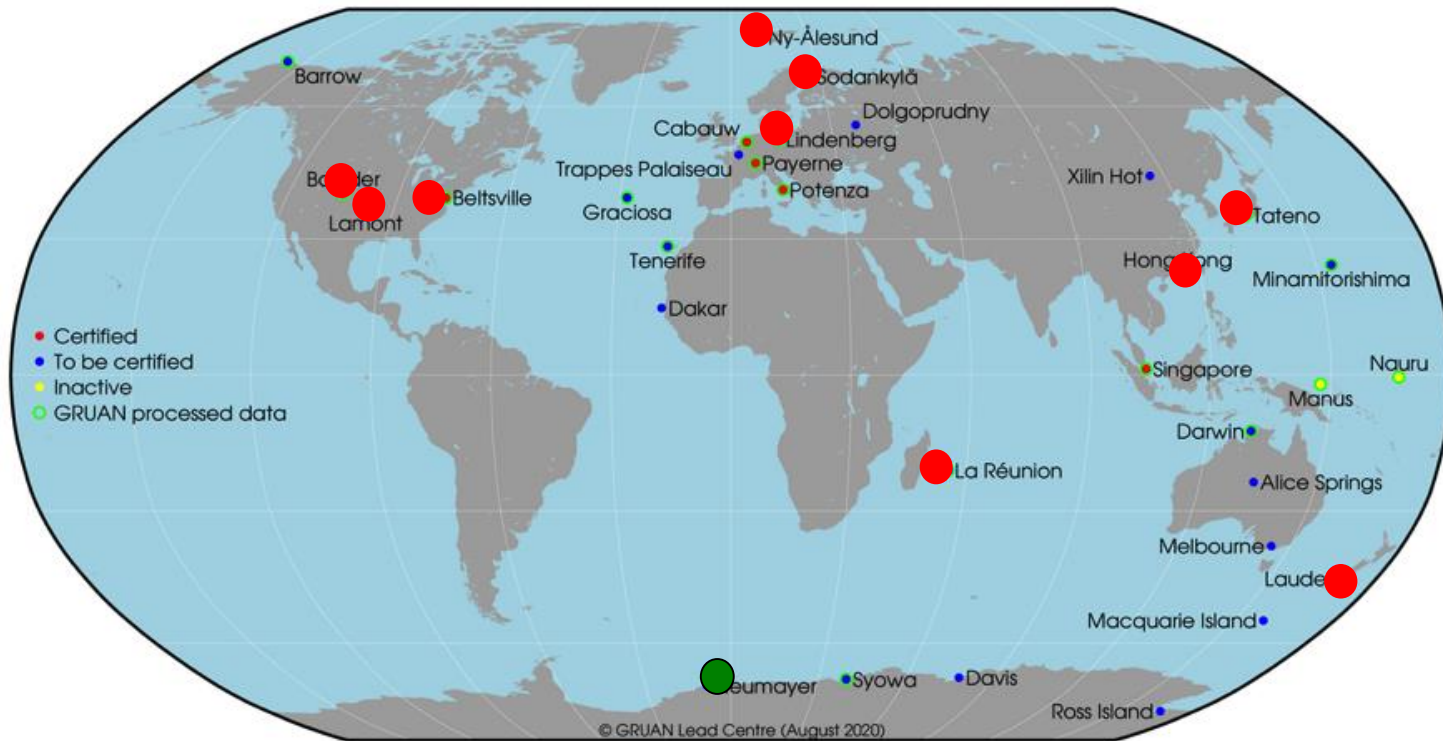
Alternative cryogen for CFH/FPH

- Ethanol/dry ice (Boulder)
- Liquid N₂ container (DWD & FZ Jülich)

Commercially available Peltier-based instrument

- Meisei – Skydew operated in Lindenberg since Feb 2023 (also dual launches to investigate reproducibility in sounding)
- PCFH under development (F. Wienhold: ETH-Zürich)

GRUAN sites with CFH measurements



- Huge effort spent by the stations over the years...
- But no GRUAN GDPs and not a clear timeline for their release
- Discussion about it and recommendations for the stations in this meeting



Requirements

An update of the GRUAN guide and manuals appears urgent: both documents are obsolete in several parts.

A first review by the co-chairs clearly showed that:

- The network changes over years must be reflected in the documents
- There are several sections with a level of detail in the measurement practice not necessarily adopted at the stations
- Requirements for the stations must be discussed and eventually amended/updated.



- Ozonesounding: no progress but clearly willing to e.g. SHADOZ)
- GDPs for radiation: a discussion was opened with BSRN and GSRN to implement such products
- Upper-air GDP uncertainty in clouds under investigation, may show the concrete need to have a GDP for cloud based on the lessons learnt from existing network/research

Outreach and joint publications



- Webinars arranged in 2023 within the C3S
- Outreach materials
- SHC manuscript: LC shared with co-chairs a sketch to then draft the paper
- High-ascent attainment manuscript
- Contribution to various workshops and conferences (WMO congress, AMS, MMC, GCOS AOPC,)



GRUAN looking for external fundings

Networking activities must be encouraged to foster cooperation among stations and scientists which are the foundation of the GRUAN community:

- EUMETSAT proposal for ICI/MWI validation is a good opportunity
- Apply to competitive call for funding
- Formalize partnership with research infrastructures

This aspect will be further discussed in the breakout session 1



ICM is our best opportunity to meet as a community and progress towards the implementation of GRUAN.

Let's discuss and work these days to progress and agree on all the needed viable actions to let GRUAN grow more and demonstrate its impact on the global observing system.