

Flash update on:
The GRUAN Lidar Product
As of Spring 2024

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and the TT-GB Lidar reps**



(Almost) no GRUAN-dedicated work in 2022 due to **data transfer set up status quo**



In 2020, data processor (GLASS) went from development to production stage



In 2020, raw data automatically transferred from Payerne to processing center (JPL-TMF)



In 2020, test data from Ny-Aalesund and Cabauw lidars ingested



In 2021, automated transfer from Payerne to JPL-TMF interrupted due to transfer protocol changes on Payerne's end (suspected firewall issues)

NEW FROM LAST YEAR'S REPORT...



In 2022, raw data transfer protocol from Cabauw set up (just 1 week ago!)

NO CHANGE FORM LAST YEAR AND TWO YEARS AGO...



No progress in auto data transfer set up from Ny-Aalesund



Homogenization of meta data (e.g., through LidarRunClient) requires dedicated manpower, not available at this time



No progress in the (LC-suggested) raw data conversion to NetCDF



No progress in the setup of automated raw data transfer to GRUAN LC

GRUAN Lidar Product Progress as of 2024

- ✓ In 2020, data processor (GLASS) went from development to production stage
- ✓ In 2020, raw data automatically transferred from Payerne to processing center (JPL-TMF)
- ⚠ In 2021, automated transfer from Payerne to JPL-TMF interrupted due to transfer protocol changes on Payerne's end (suspected firewall issues) → **Change of strategy!**

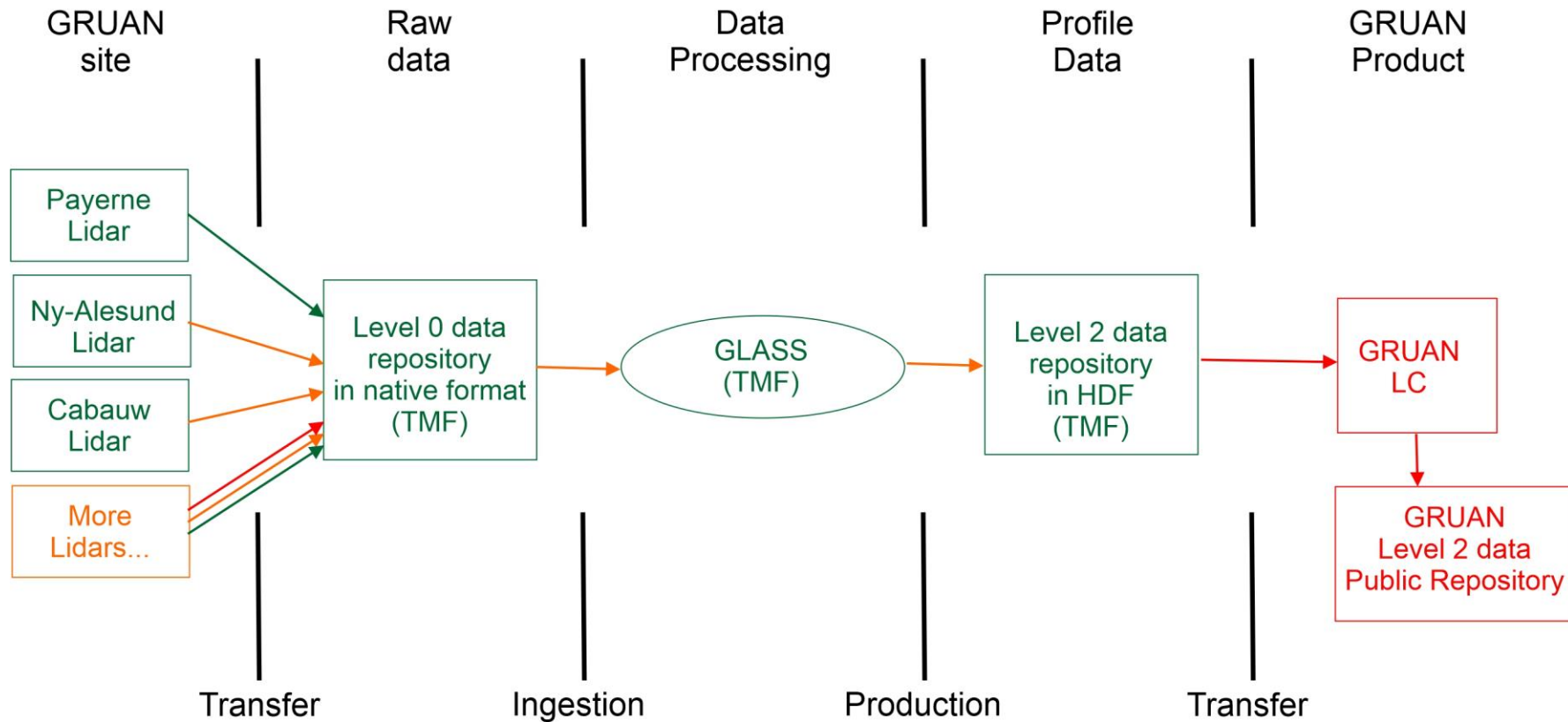
NEW FROM LAST REPORT...

- ✓ In 2023, Automated transfer from Payerne and Ny Alesund to **GRUAN LC**: Routine mode
- ✓ In 2023, Automated transfer from **GRUAN LC** to JPL-TMF: Routine mode
- ✓ In 2023, GLASS can now run in IDL **Virtual Machine** (VM) mode => no license required
- ✓ In 2024, new (unix-based) cloud server set up at GLASS LC for future GLASS operation
- ✓ In 2024, GLASS successfully tested on GRUAN LC PC/Windows

WHAT' NEXT ON THE AGENDA...

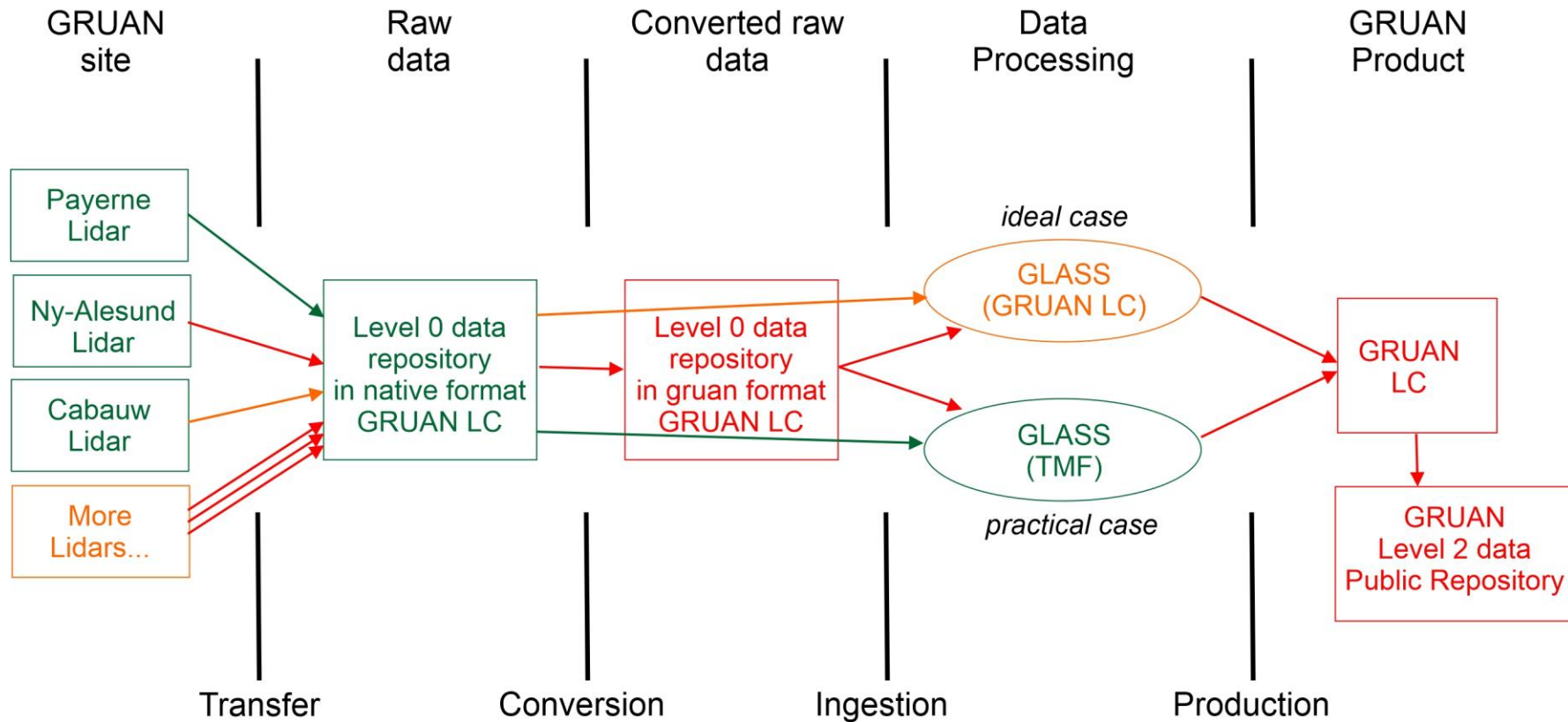
- ⚠ Auto data transfer set up to GRUAN LC from Cabauw, other sites?
- ⚠ Design/finalization of GRUAN Lidar Data Product content and format (NetCDF?)
- ⚠ Migrate GLASS from PC/Win to new (unix-based) GRUAN LC cloud server
- ⚠ Finalization of Lidar GDP Technical docs
- ✗ Unlikely to happen soon: raw data conversion to NetCDF (LC-suggested)
- ✗ Unlikely to happen soon: Homogenization of meta data through LidarRunClient

green = Operational and/or automated
 orange = Has happened, on a case-by-case basis, need to gear up
 red = Not in place, need serious work efforts



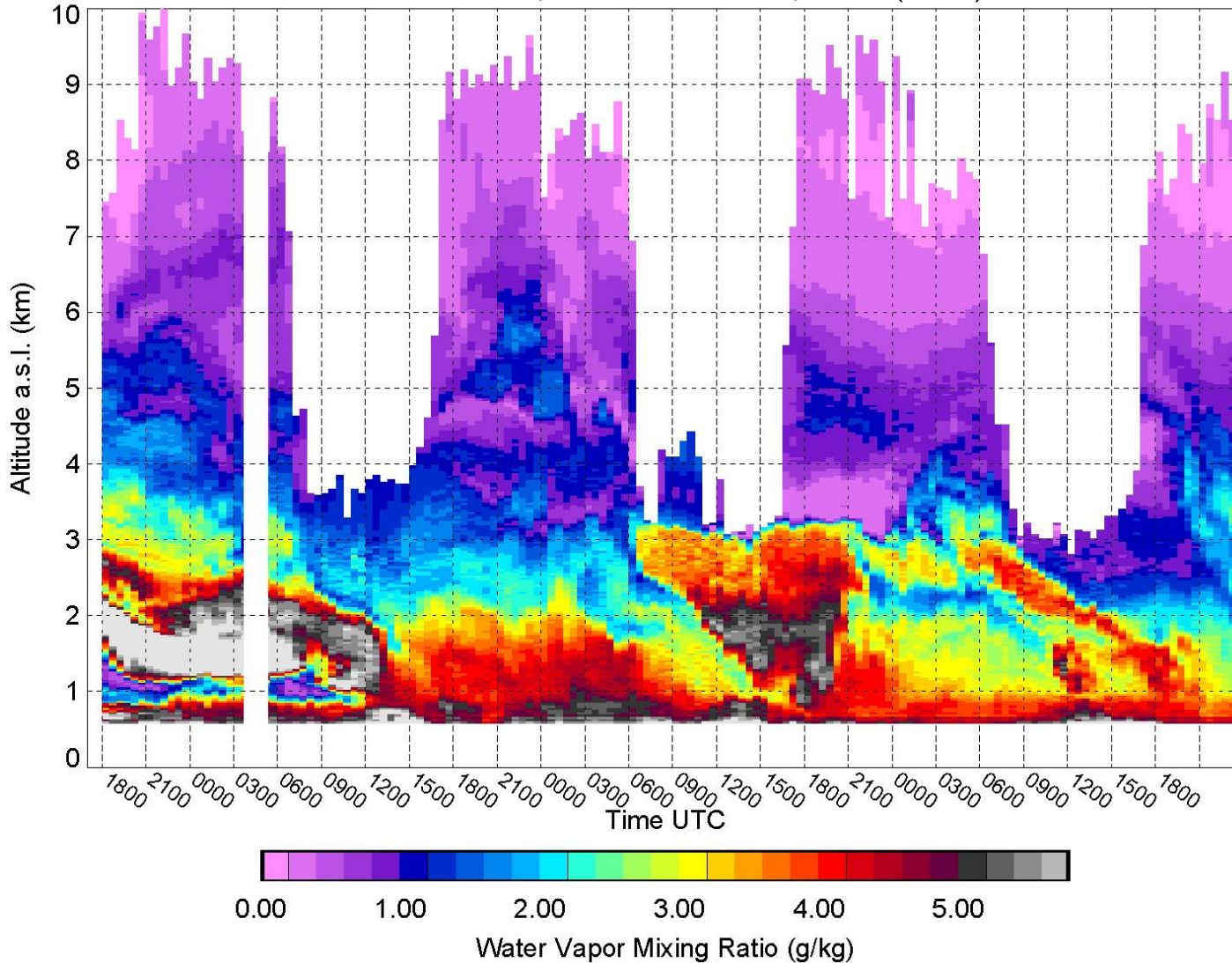
GRUAN Lidar Data Flow: Current

green = Operational and/or automated
 orange = Has happened, on a case-by-case basis, need to gear up
 red = Not in place, need serious work efforts

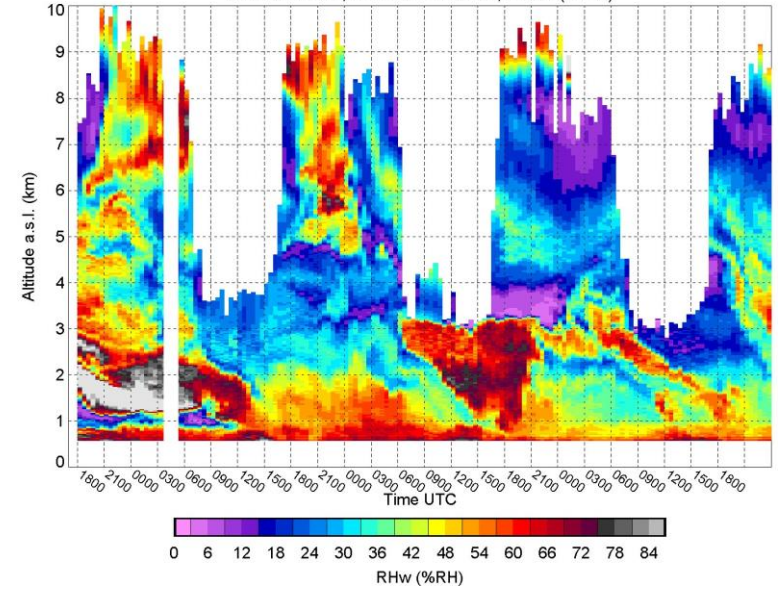


WV Mixing Ratio

RALMO lidar, Feb 02 - Feb 05, 2024 (UTC)

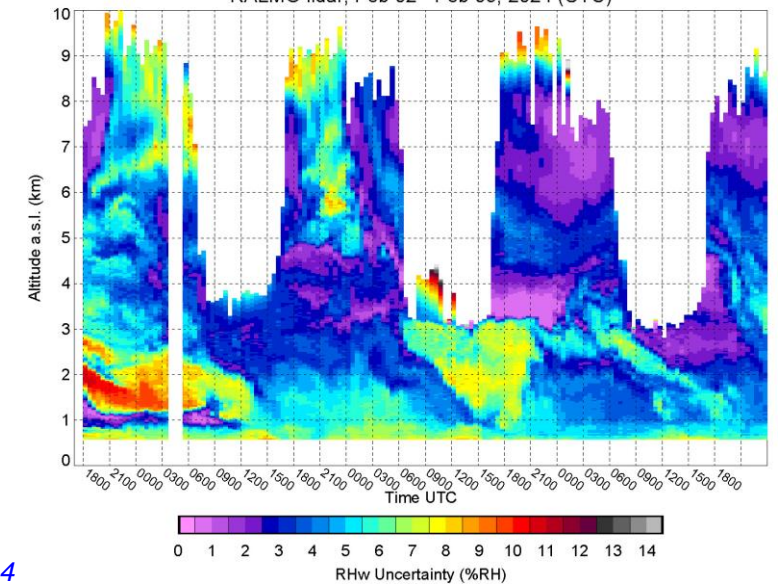


RALMO lidar, Feb 02 - Feb 05, 2024 (UTC)



RH

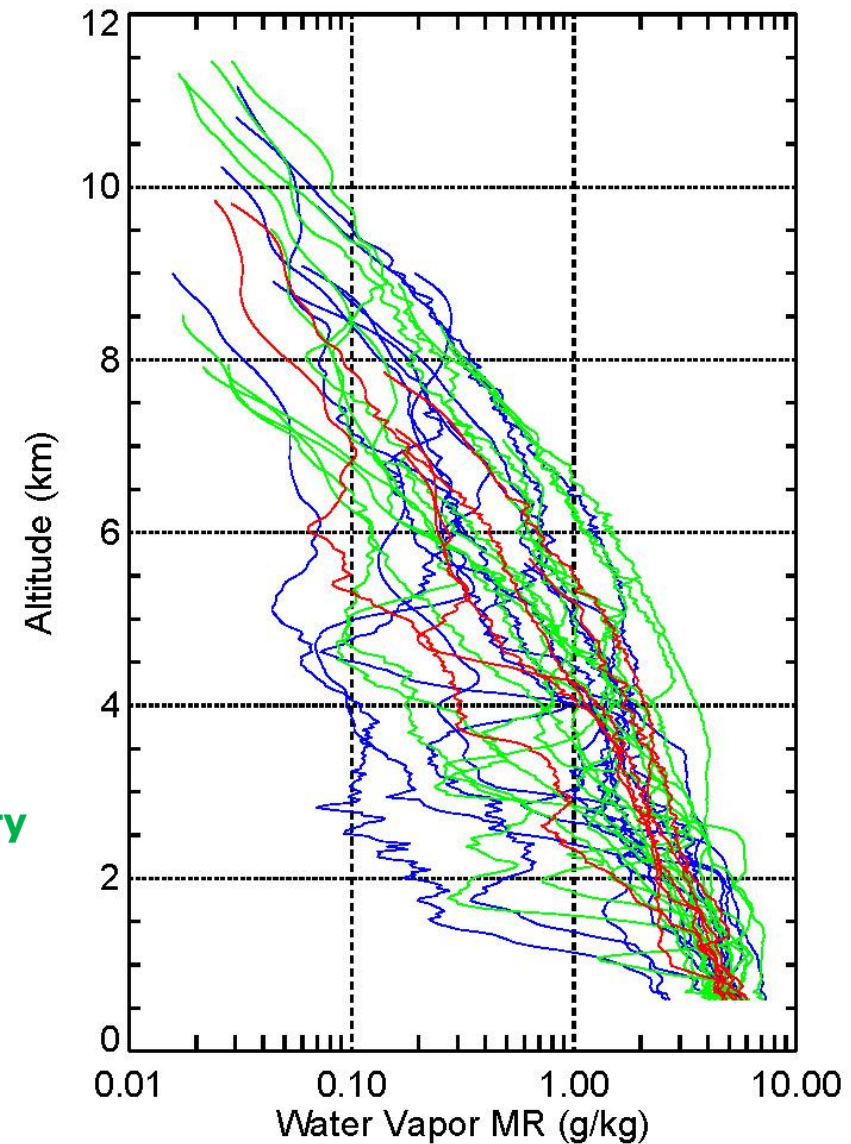
RALMO lidar, Feb 02 - Feb 05, 2024 (UTC)



RH
Uncert.

RALMO WV MR nightly means
All nights between January 1st and March 9, 2024
(33 profiles)

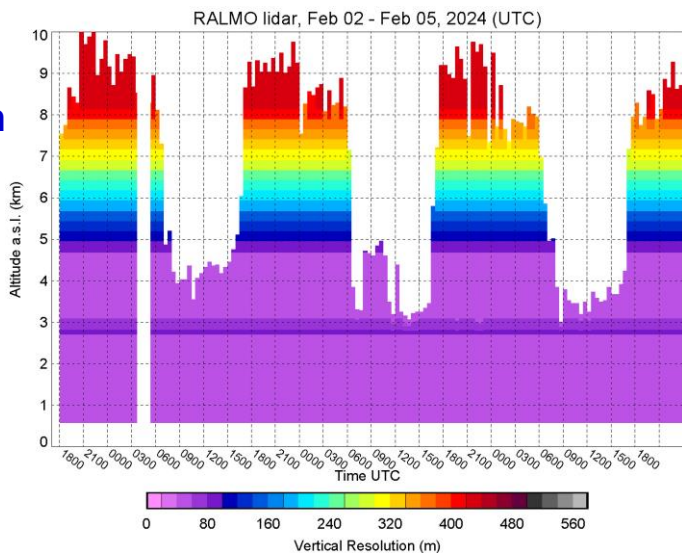
Blue=January
Green=February
Red=March



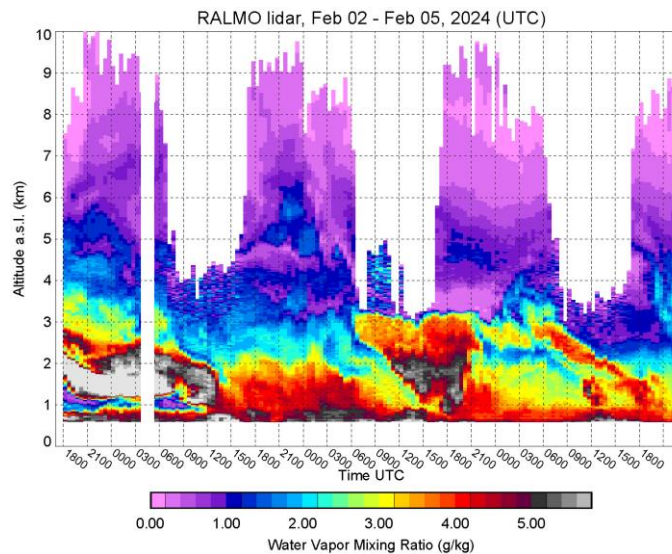
Vertical resolution constrained by altitude

Vertical resolution constrained by random uncertainty (case shown: 6%)

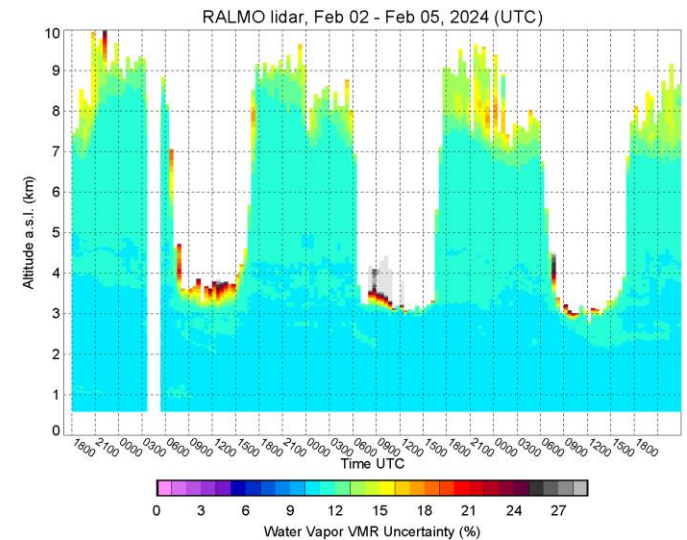
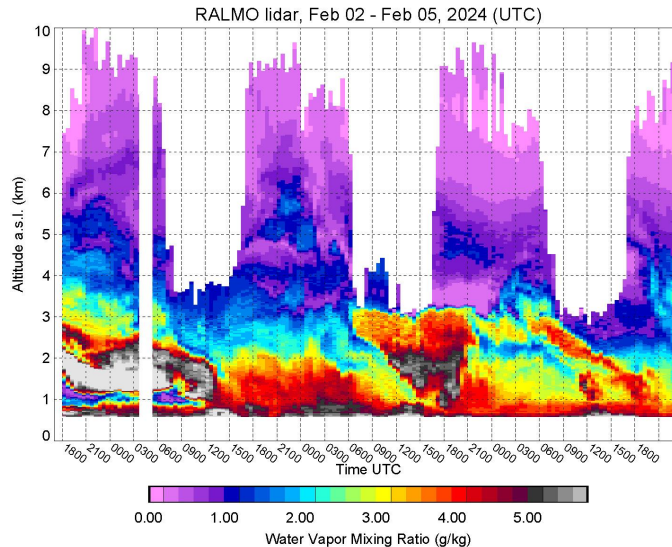
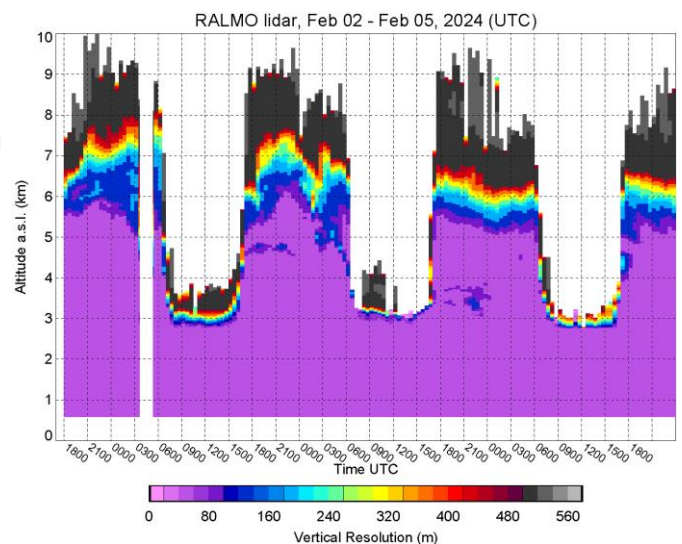
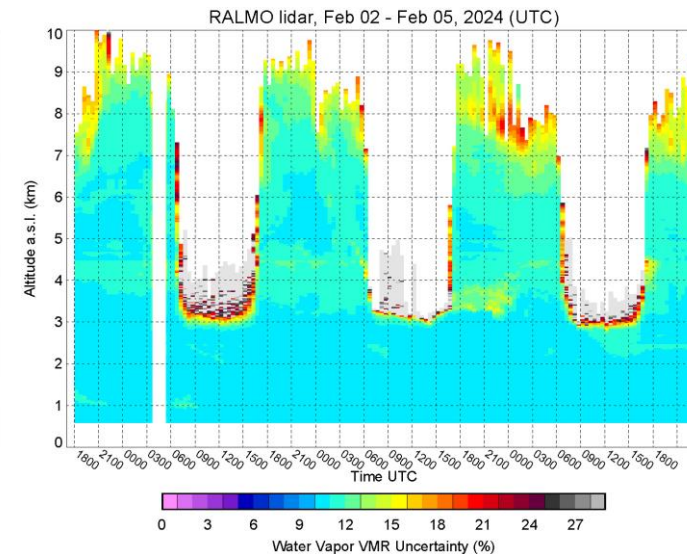
Vert. Resol.



WV MR



WV MR Uncert.



GRUAN Lidar Product: 2024 expectations in 1 slide

1. Consolidate test data processing at GRUAN LC for multiple GRUAN sites
2. Continue/expand data transfer from multiple GRUAN sites to GRUAN LC
3. Migrate GLASS from PC/Win OS to Unix-based GRUAN LC Cloud Server
4. Design/finalize content and format of Lidar GDP files
5. Finalize types of Lidar GDP:
 - a. Low-temporal resolution for long-term?
 - b. Hi-temporal resolution for case studies?
 - c. Combination of temporal and vertical low/hi resolution for validation (satellites...)?
 - d. (high-quality) data selection based on instrumental and atmospheric conditions?
6. Initiate **systematic** data processing at GRUAN LC for RALMO and other sites.

→ Thanks to GRUAN LC (Michael) for initiating GRUAN LC-centric data flow!

→ Now open for discussion (especially point #3 above)