Proposal for user feedback on data quality and issues

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Motivation

- Most processing → fully automated in GRUAN
- If any errors occur → human involvement is necessary
- If no errors occur → data products are published without any human interactions
  → all seems fine (but without doublecheck)
- Visual monitoring of data products often is not feasible (time issue) by
  → Lead Centre
  → Processing Centres
- **User participation is desirable**

Users

- GRUAN-internal / GRUAN community
  - Sites → often great interest in their own data
  - Groups / teams → Working Group, Task Teams, Processing Centres, …
  - Any data usage e.g. for statistics, comparisons, analysis, development, …

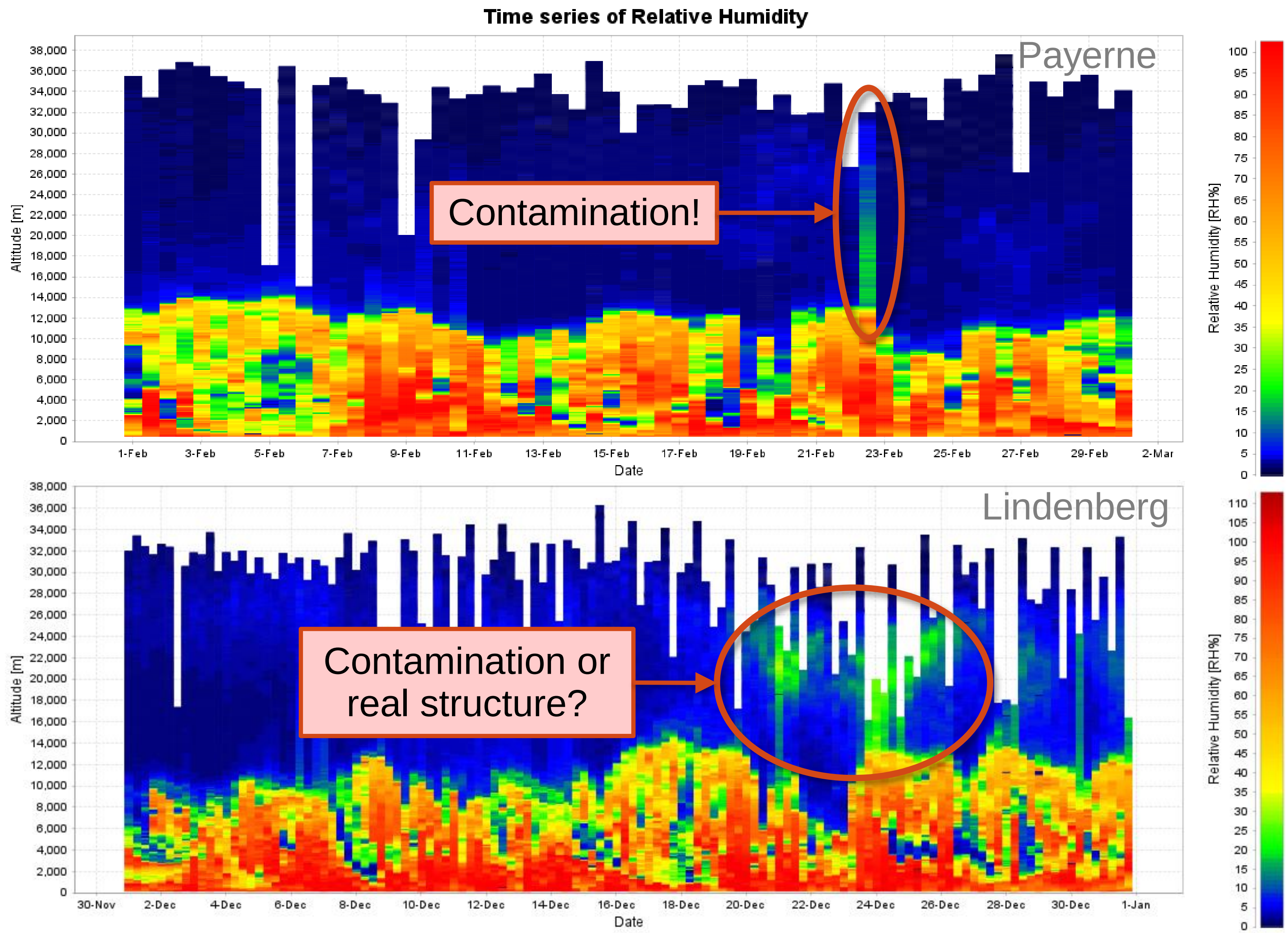
- External → any data user
  - Scientists, students, interested persons, …
  - Scientific studies, articles, statistics, cooperation, …

Usage of GDPs

- Users within very specific and different use cases
- Often very narrow focus → very intensive analysis of the data
- Usage examples:
  - Comparison between different products, data sources and instruments
  - Specific studies, e.g. time series, trend analysis, …
  - Data products in combination with other data
  - As source for model simulations, e.g. RTM, retrieval, …

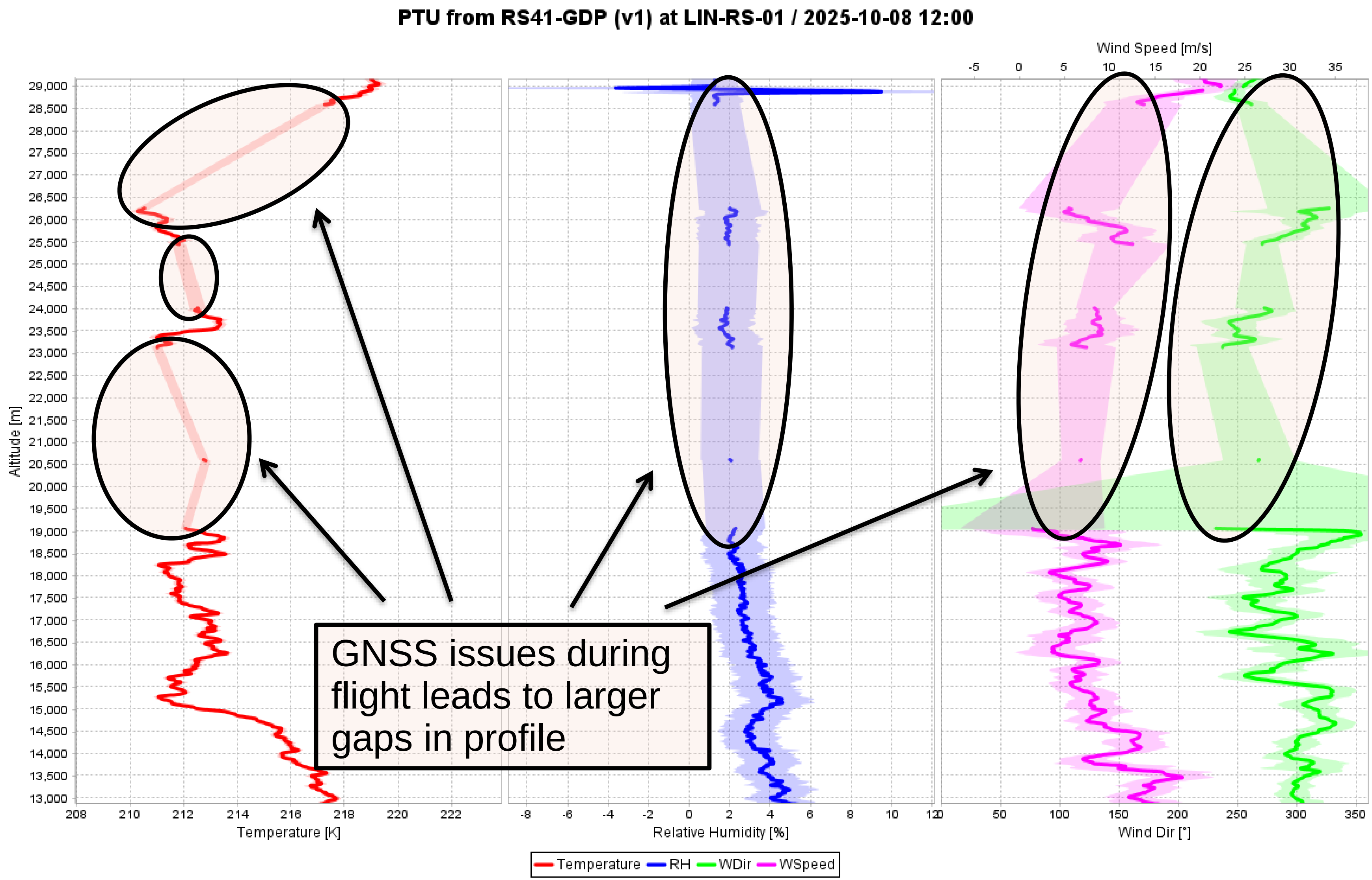
Example – Analysis of time series

Deutscher Wetterdienst
Wetter und Klima aus einer Hand



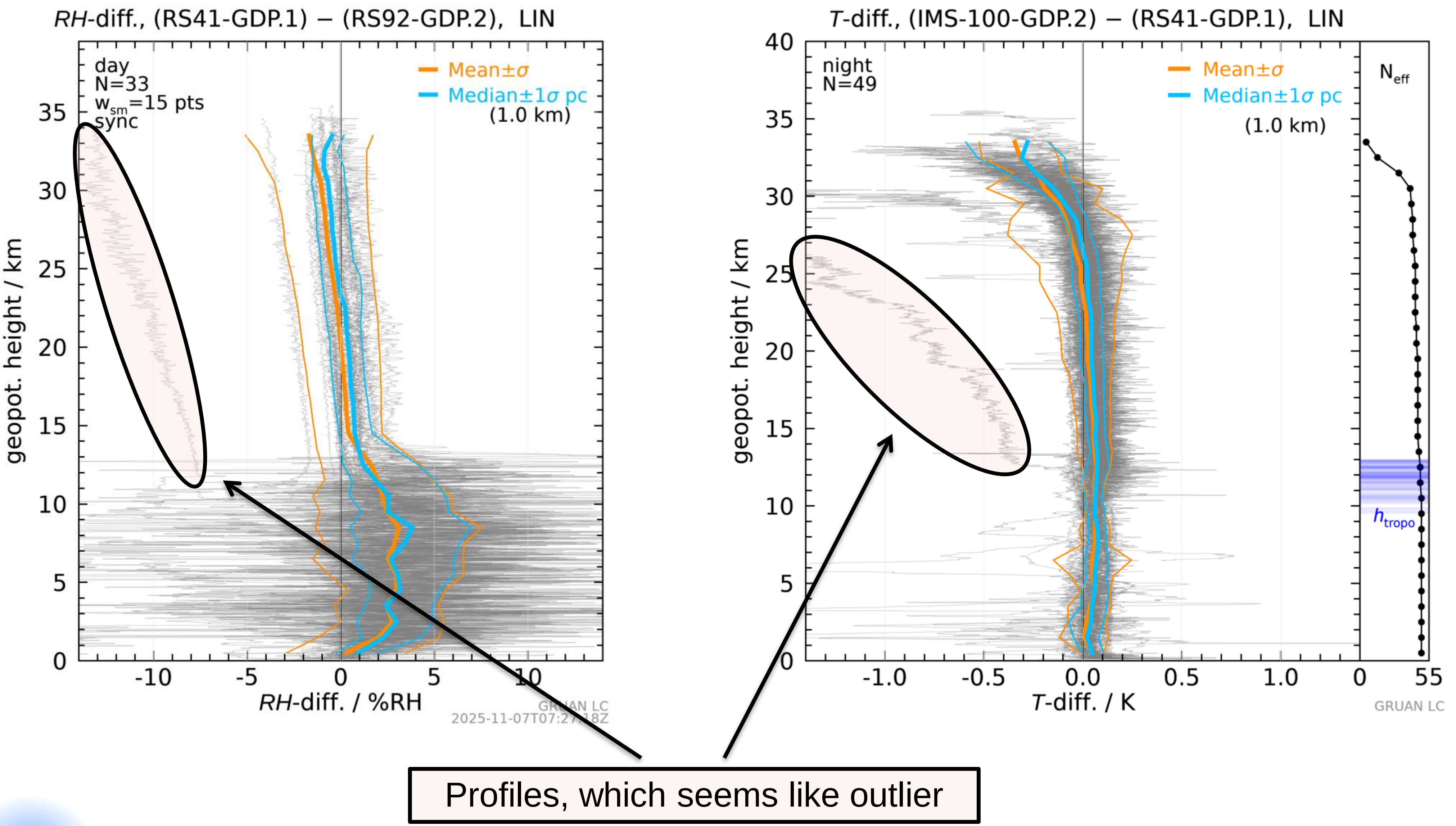
Example – Single launch

Deutscher Wetterdienst
Wetter und Klima aus einer Hand



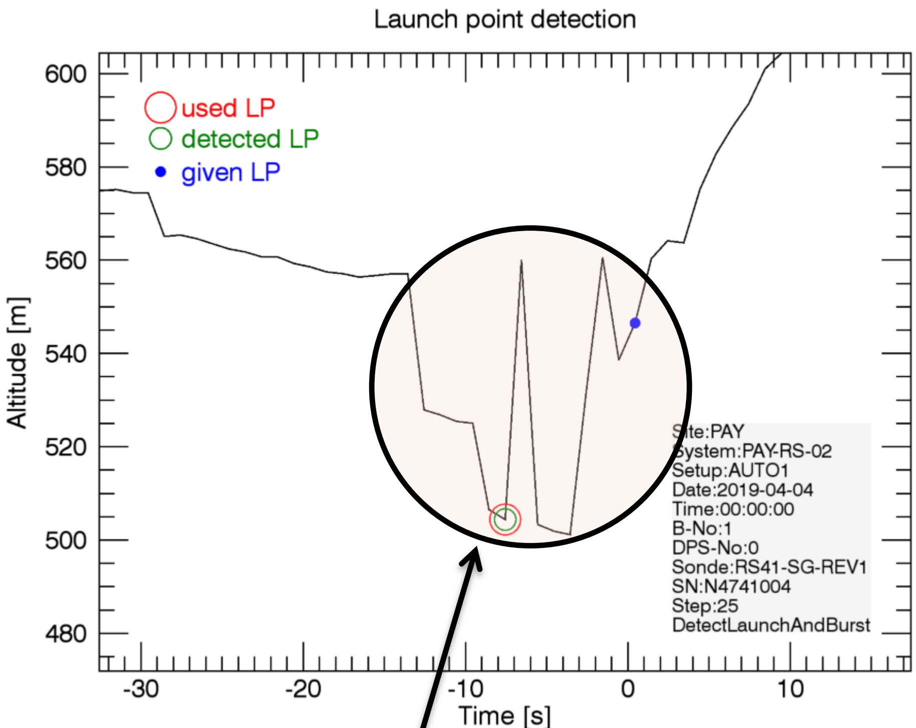
Example – Comparison launches

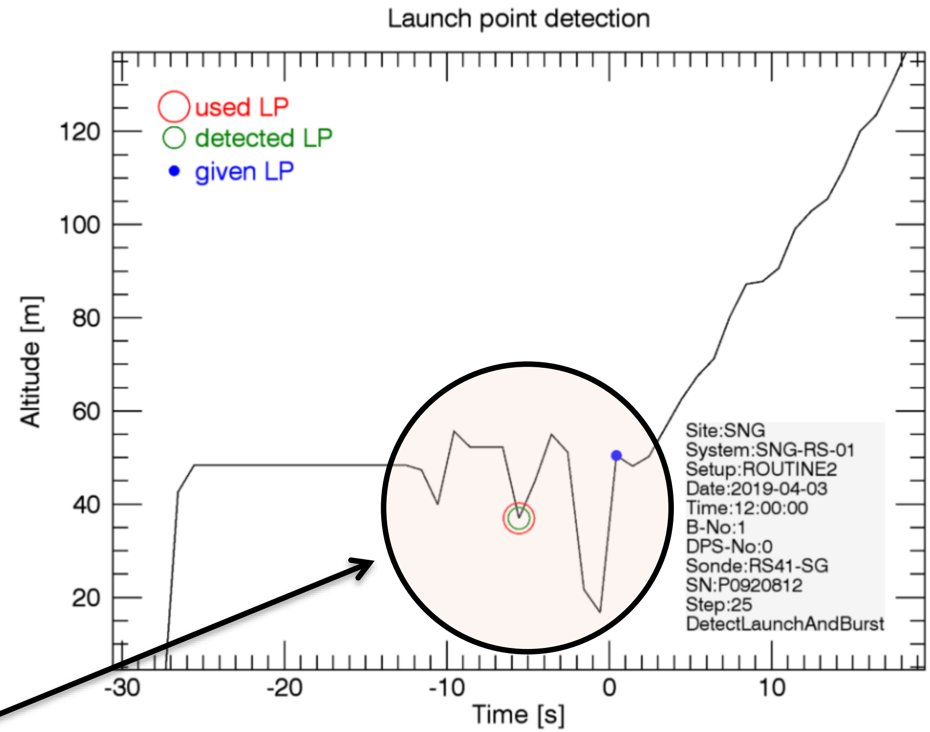
Deutscher Wetterdienst
Wetter und Klima aus einer Hand



Example – Raw data “outlier”

Deutscher Wetterdienst
Wetter und Klima aus einer Hand





Sometimes GNSS issues at ground with auto-launcher & indoors

Marking of data points as outlier or wrong data

Can help to optimise GDP processing

Feedback related to

- GRUAN Data Product (GDP)
  e.g. RS41-GDP.1, IMS-GDP.2, …
  - GRUAN site / system
    e.g. HKO, NYA, TEN-RS-01, …
    - Time range
      e.g. from 2024-01-01 to 2024-05-01
      - Single GDP file
        e.g. PAY-RS-02_2_RS41-GDP_001_20250730T000000_1-000-001.nc

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  - Meta-data attribute
    e.g. g.SurfaceObs.Temperature, g.GroundCheck.RI41.RefPressure, …
  - Data variable
    e.g. alt_gph, press_sens_corr, temp_uc, …
    - Profile section
      e.g. time [s]: from 100 to 520
      - Single data point
        e.g. index: 250, 256, 274, …

User feedback

- Metadata
  - Submitted by: user
  - Submitted at: timestamp
- Related to
  - Product, file, variable, attribute, …
- Description
  - Category, subcategory, …
  - Free comment
  - Files, e.g. example plots
  - Example values
- Work flow
  - Confirm, verify, (de)activate, …
  - Replies from other users, LC, PC, …
- Status / type
  - New, confirmed, reviewed, solved, …
  - Raw data, processing issue, …
- Reason & solution
  - Document reason of issue
  - Proposal for a solution

Possible implementation

- As online web tool
  - Like other web tools, but with a specific feedback function
- Step 1 – a prototype
  - User feedback to more general issues → down to a single file
- Step 2 – a useful tool
  - Review of user feedbacks by LC (or others)
  - Allow response, change of status, administration, …
  - **Optional:** allow attachments, e.g. example plots
- Step 3 – a manual step in QA/QC
  - Issues insight single GDP files → down to a single data point
  - **Optional:** marking / flagging of data points before processing

Summary

- Tool for user feedback on GRUAN data
- Could be helpful as part of future QA/QC
- This is a proposal → **Does GRUAN need such a tool?**

Thank you for your attention.