ACTRIS
Data Centre

Data Reporting and Data QC – Intro & Repetition

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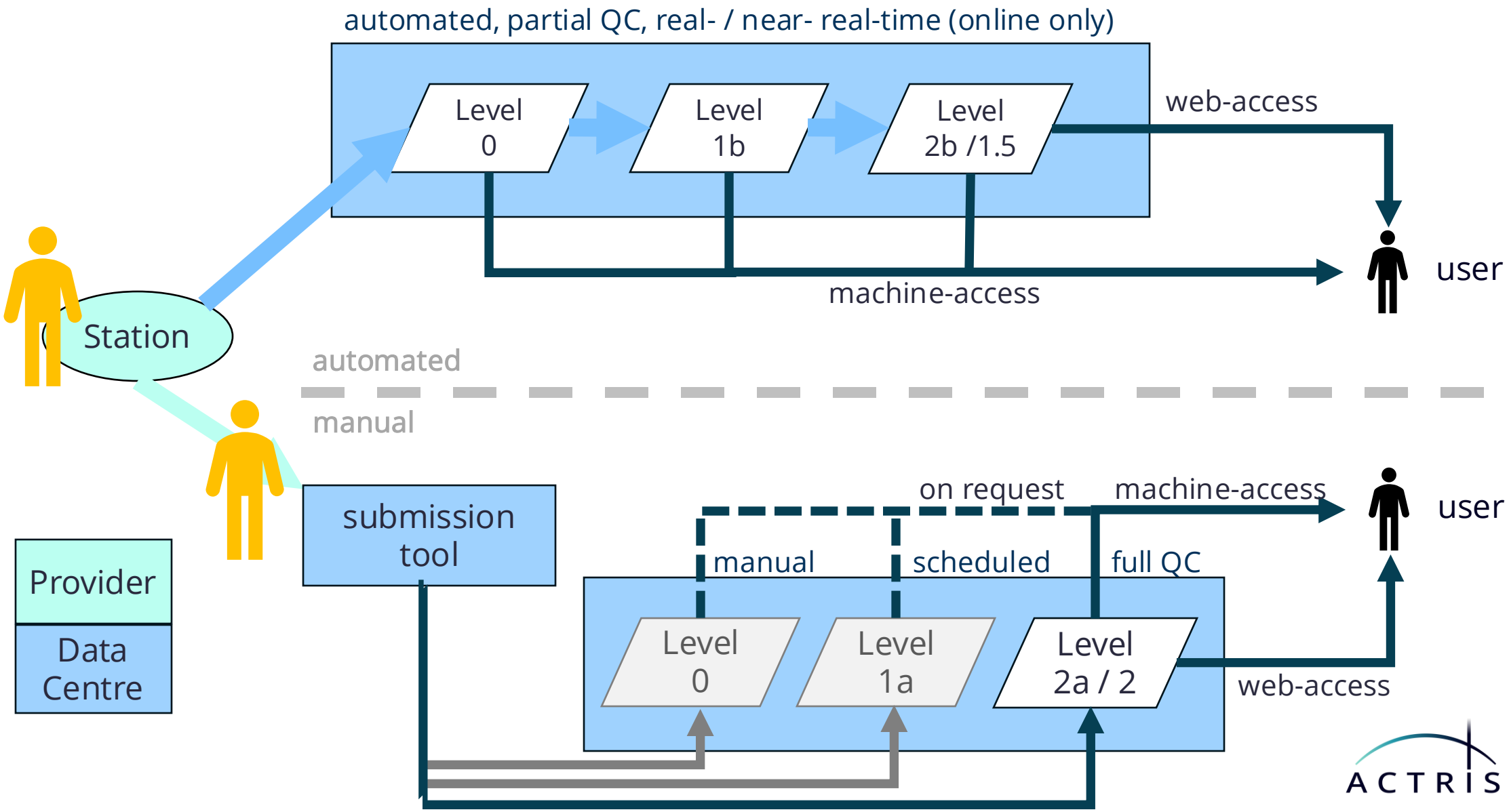
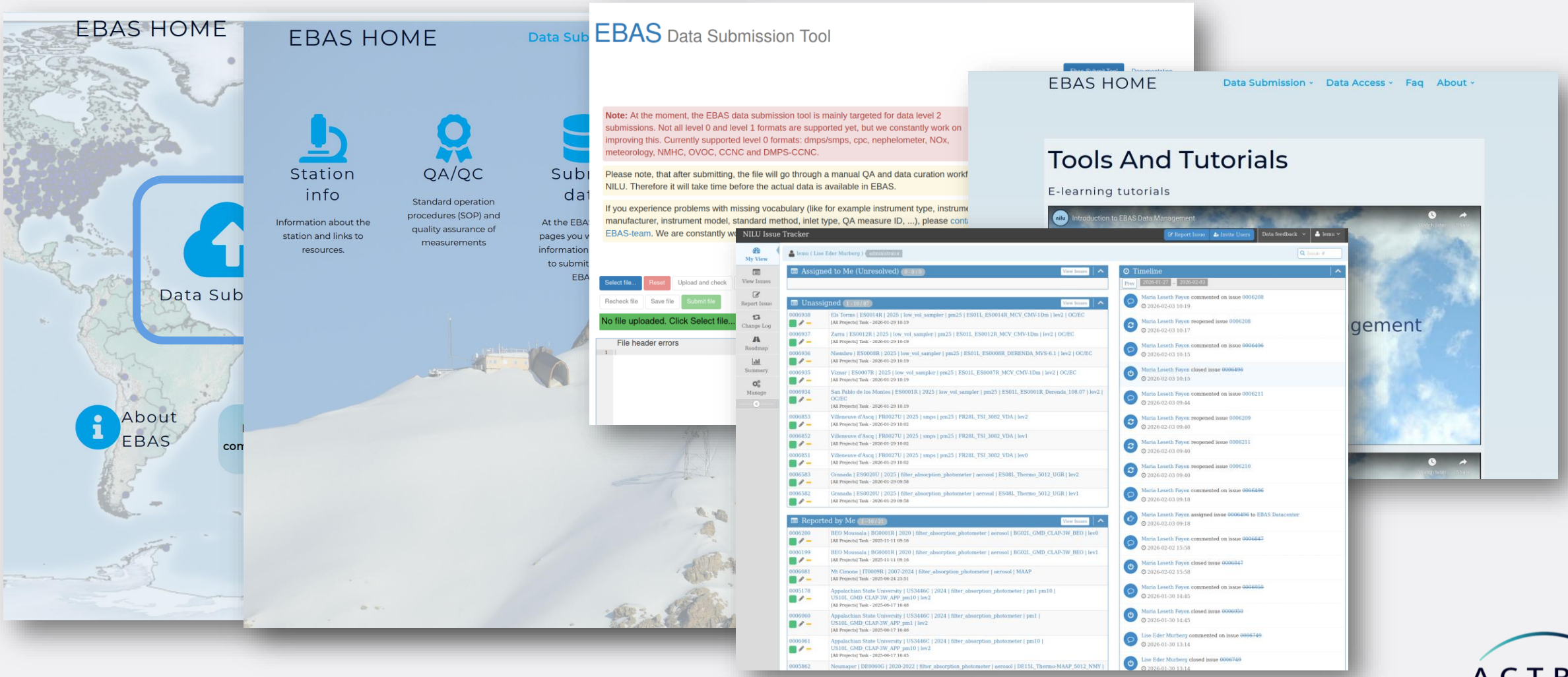
esp. Y. Lin & L. Eder Murberg

EBAS Data Production



EBAS Home

- *ebas.nilu.no*



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Data Submission – Resource URLs

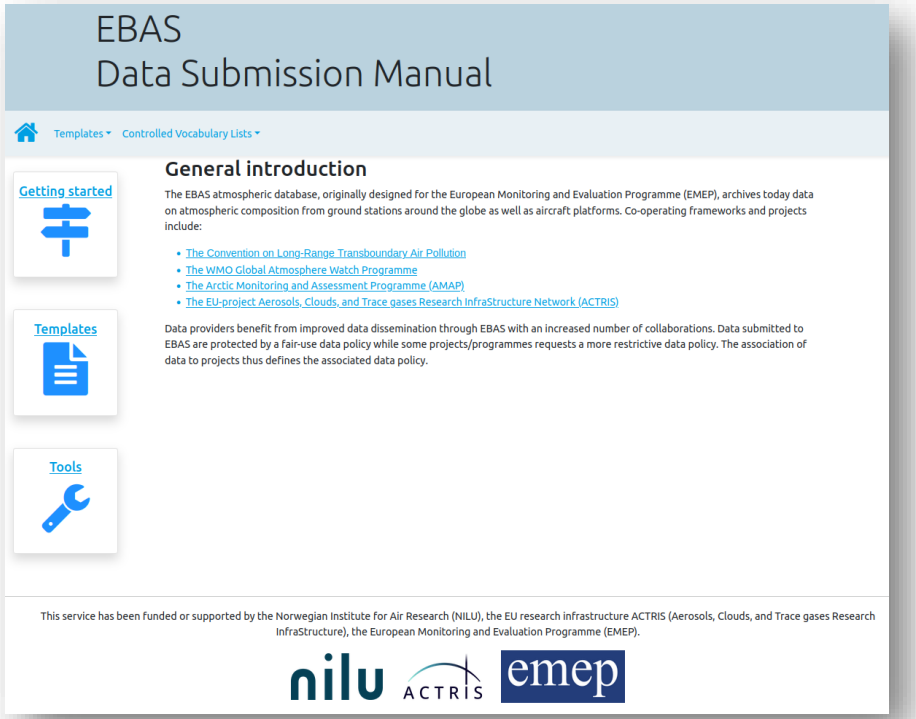
- Metadata / header – Find template
- Assemble data

Tools:

- EBAS Data Submission Manual
  http://ebas-submit.nilu.no/

- EBAS-io python package
  https://git.nilu.no/ebas/ebas-io/-/wikis/home

- E-learning videos
  https://ebas.nilu.no/delivery/tools-and-tutorials/



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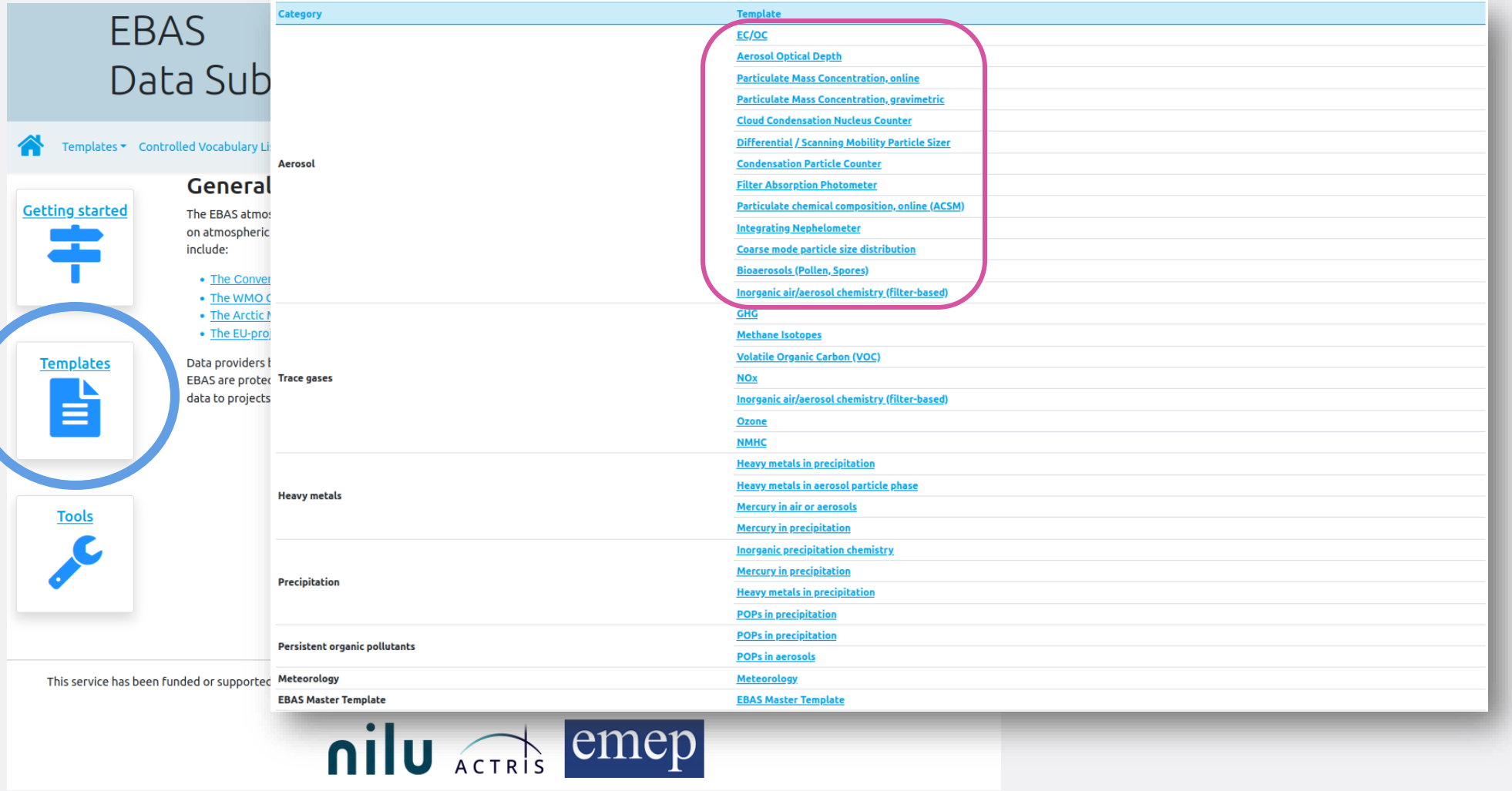
Data Submission – Create files - Templates

Find **template** at the **EBAS Data Submission Manual** http://ebas-submit.nilu.no/



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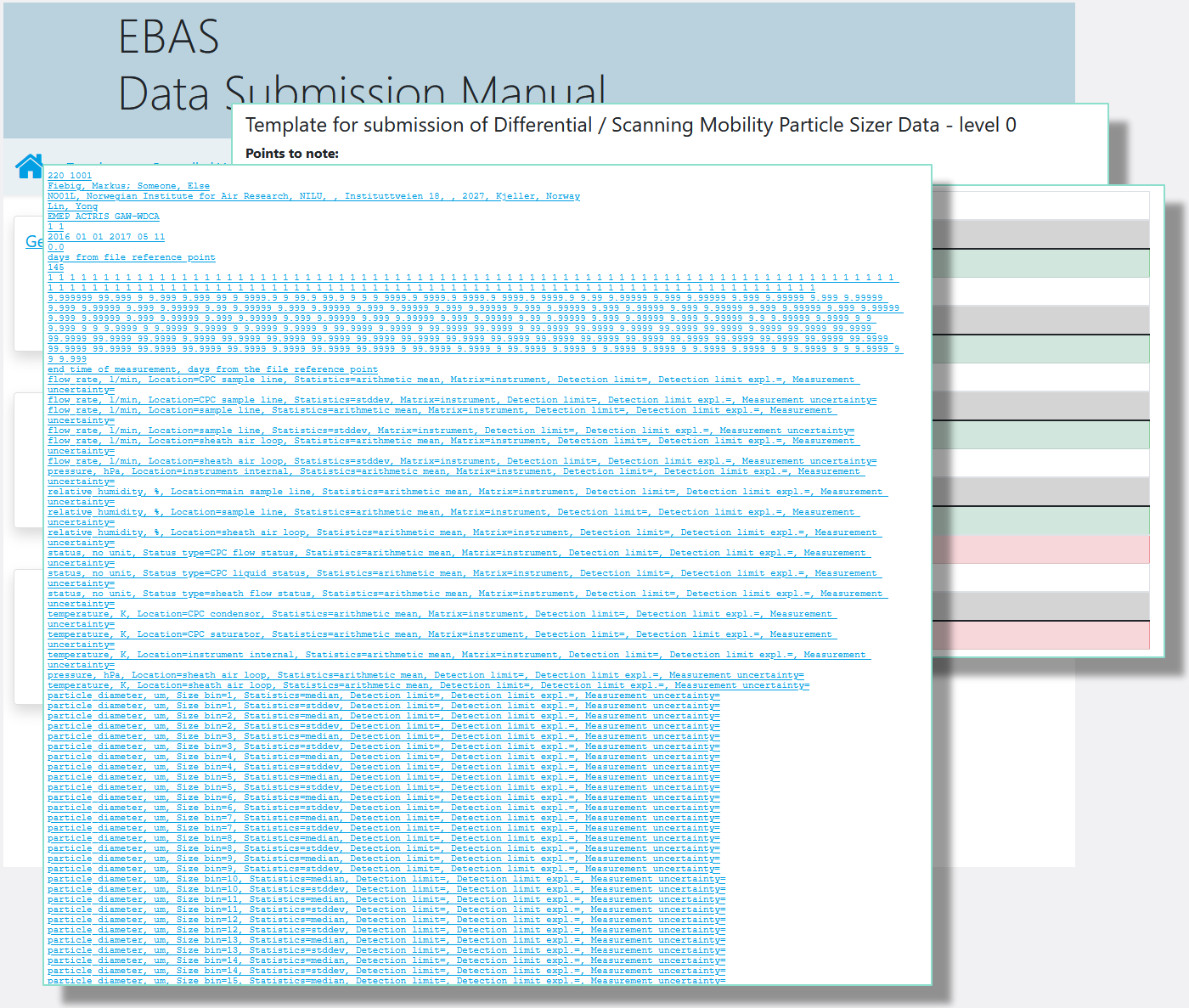
Data Submission – Create files - Templates



Each template page consists of:

- Points to note
- Flag shortlist
- Template, on page and for download.

What you do:

- Walk through all metadata elements, line by line with the explanation and customize to your station and your instrument
- Check if all variables are needed
- Update header from previous year, also inspecting each line for changes.
- Check for changes in template.
- Check frameworks associated with the data, e.g., EMEP, GAW, ACTRIS

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EBAS – Controlled vocabularies

- Instrument types, manufacturers and models
  https://ebas-submit.nilu.no/templates/comments/all_instrument_types_manufacturers

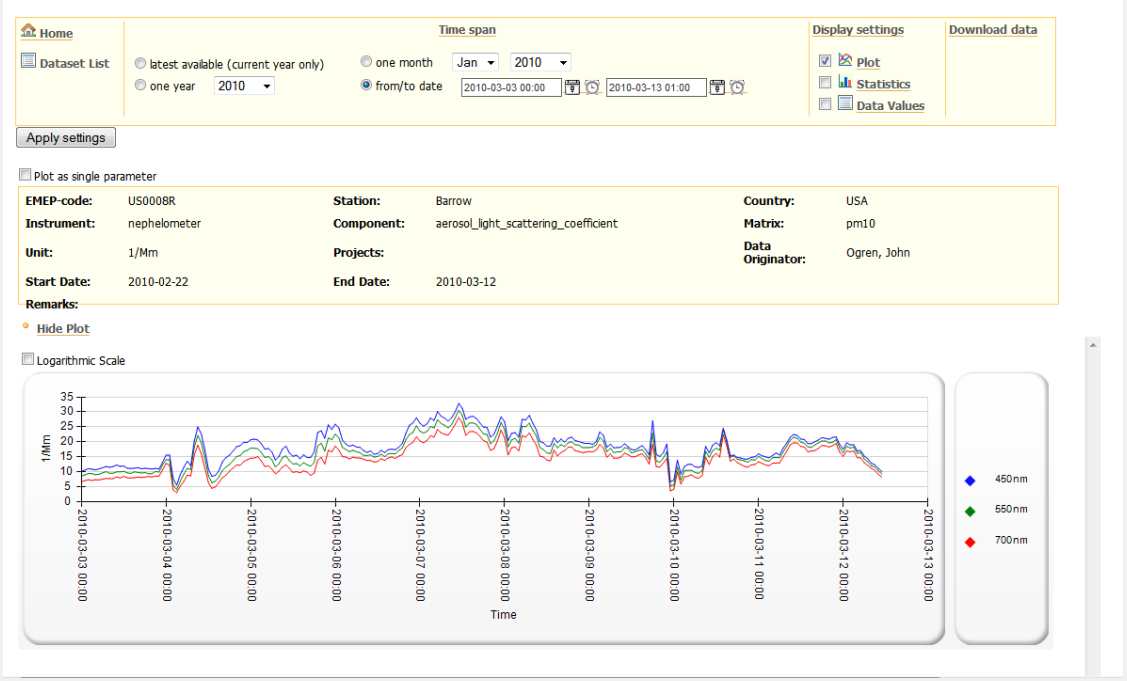
- Analytical Measurement Technique, Analytical Instrument Manufacturer and model
  https://ebas-submit.nilu.no/templates/comments/analytical_instruments

- QA Measures
  https://ebas-submit.nilu.no/qa

- ACTRIS vocabulary currently only for data download! Data submission still uses EBAS vocabulary.

Data Submission – Create files – Data Section

- Selection of time series to report:
  - Yearly data (multi-year submission possible)
  - Timeseries needs to be split according to any significant changes with regards to instrumentation etc.



- Quality assurance:
  - Follow the respective Standard Operating Procedure (SOP) valid for the instrument during data collection, data processing and evaluation.
  - Manual inspection of graphic display, 1-2 weeks at a time.
  - Inspect instrument status parameters for proper operation.
  - Inspect calibration protocols and station logs.
  - For invalid data, missing data -- Flagging

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Data Submission – Create files – Flag Philosophy

Observe differences in roles:

Data documentation: annotate your data with the best information you have, independent of application or use case.

Data analysis: data are filtered for one specific purpose or use case.

Thus:

Data invalid only for instrument failure (and construction at station, or other SOP violations).

All other conditions are flagged as local / regional influence, but valid.

Using flags from **shortlist** for homogeneous flagging across network is strongly recommended.

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Data Submission – Create a file – Flag Types

There are three different types of flag:

General flag (V, valid): Indicate a special condition at the station, but instrument has operated correctly, the data are therefore considered valid. Depending on policy, the flag might indicate the nature of the special condition.

Missing flag (M): Showing that data are not available (not measured, deleted)

Invalid flag (I): Mainly used for level 0 data to be able to exclude these data when being reprocessed to level 1 and level 2.

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Data Submission –Create a file – Flags

A shortlist of flags for each measurement and each level

For example: Mobility Particle Size Spectrometer

Level 0

Group 0: Valid data		
Flag	**Validity**	**Description**
000	V	Valid measurement
Group 1: Exception flags for accepted, irregular data		
Flag	**Validity**	**Description**
111	V	Irregular data checked and accepted by data originator. Valid measurement
Group 5: Chemical problem		
Flag	**Validity**	**Description**
559	V	Unspecified contamination or local influence, but considered valid
Group 6: Mechanical or instrumental problem		
Flag	**Validity**	**Description**
640	V	Instrument internal relative humidity above 40%
682	I	Invalid due to calibration or zero/span check. Used for Level 0.
Group 9: Missing flags		
Flag	**Validity**	**Description**
999	M	Missing measurement, unspecified reason

Level 1

Group 0: Valid data		
Flag	**Validity**	**Description**
000	V	Valid measurement
Group 1: Exception flags for accepted, irregular data		
Flag	**Validity**	**Description**
111	V	Irregular data checked and accepted by data originator. Valid measurement
Group 5: Chemical problem		
Flag	**Validity**	**Description**
559	V	Unspecified contamination or local influence, but considered valid
Group 6: Mechanical or instrumental problem		
Flag	**Validity**	**Description**
640	V	Instrument internal relative humidity above 40%
Group 9: Missing flags		
Flag	**Validity**	**Description**
999	M	Missing measurement, unspecified reason

Level 2

Group 0: Valid data		
Flag	**Validity**	**Description**
000	V	Valid measurement
Group 1: Exception flags for accepted, irregular data		
Flag	**Validity**	**Description**
111	V	Irregular data checked and accepted by data originator. Valid measurement
Group 3: Flags for aggregated datasets		
Flag	**Validity**	**Description**
390	V	Data completeness less than 50%
392	V	Data completeness less than 75%
394	V	Data completeness less than 90%
Group 5: Chemical problem		
Flag	**Validity**	**Description**
559	V	Unspecified contamination or local influence, but considered valid
Group 6: Mechanical or instrumental problem		
Flag	**Validity**	**Description**
640	V	Instrument internal relative humidity above 40%
Group 9: Missing flags		
Flag	**Validity**	**Description**
999	M	Missing measurement, unspecified reason

Use flag shortlists for data homogenization across the network!!!

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Boundary Checks and QA Documents

Boundary Check

https://ebas-submit.nilu.no/boundary_check

- A basic sanity check
- Default and station/instrument dependent boundaries
- All values with invalidating / checked flags are exempted from all boundary checks

ACTRIS Aerosol In-Situ Measurement Guidelines & Data Treatment Procedure:

- ACTRIS Guidelines for Manual Quality Control by TC and DC: http://www.actris-ecac.eu/measurement-guidelines.html
    - Manual QC of nephelometer (e.g., TSI 3563, Ecotech Aurora 4000-3000), Manual QC of filter absorption (AE33, MAAP), Manual QC of MPSS data

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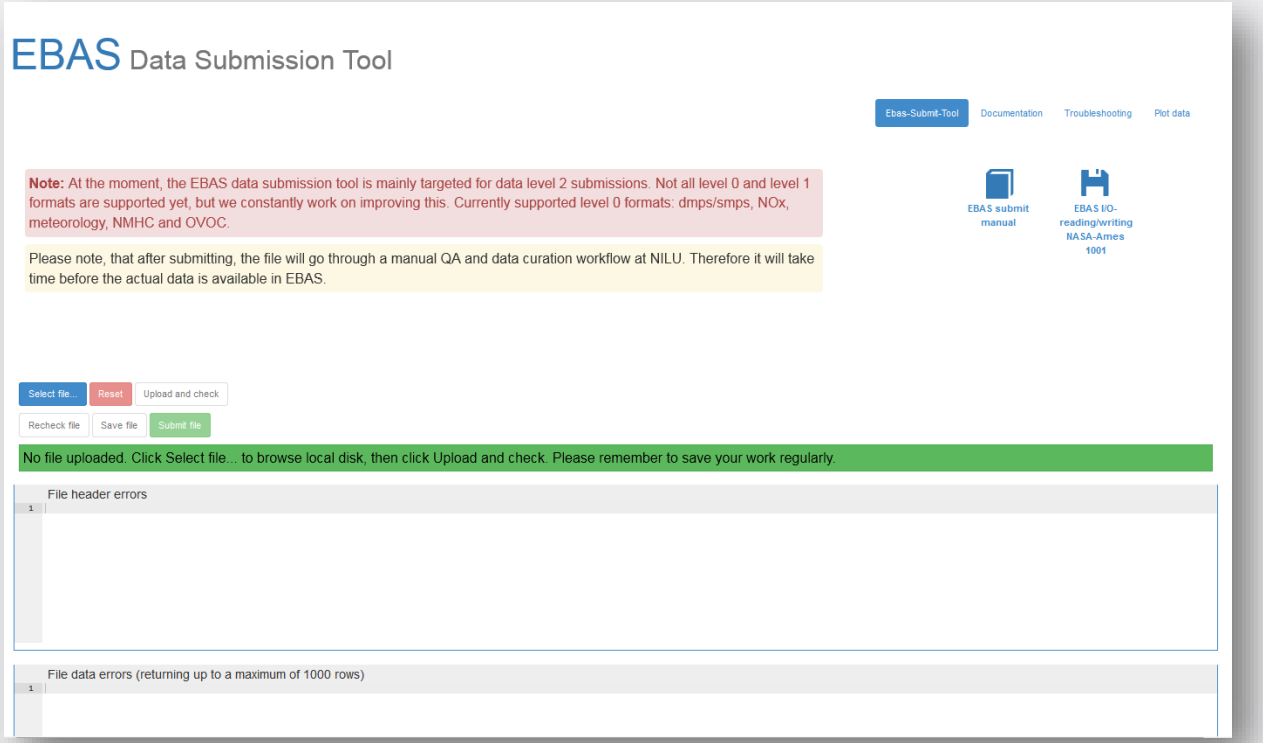
Data Submission – Check files and submit

Upload to EBAS data submission portal: http://ebas-submit-tool.nilu.no/



- Dedicated web-page for checking data files before submission.
- Errors in the header / metadata and data section will be highlighted and commented.
- Check plot of file
- "Submit file" when there is **0 error** in the data file.

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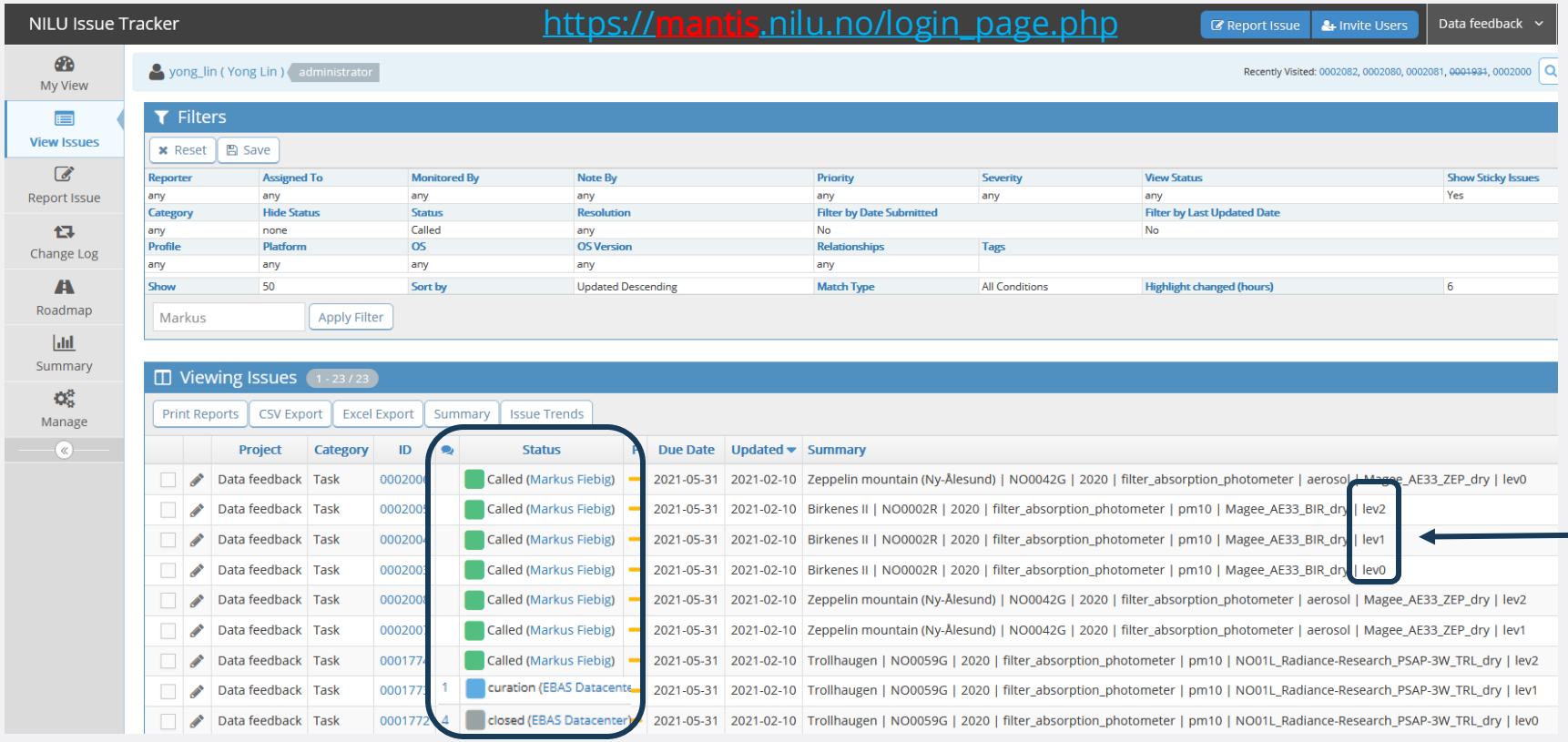
Data Submission – Follow up of files – Issue tracker

Mantis issues created for all expected data in January.

Issue statuses for EBAS data: Called, curation, feedback, and closed

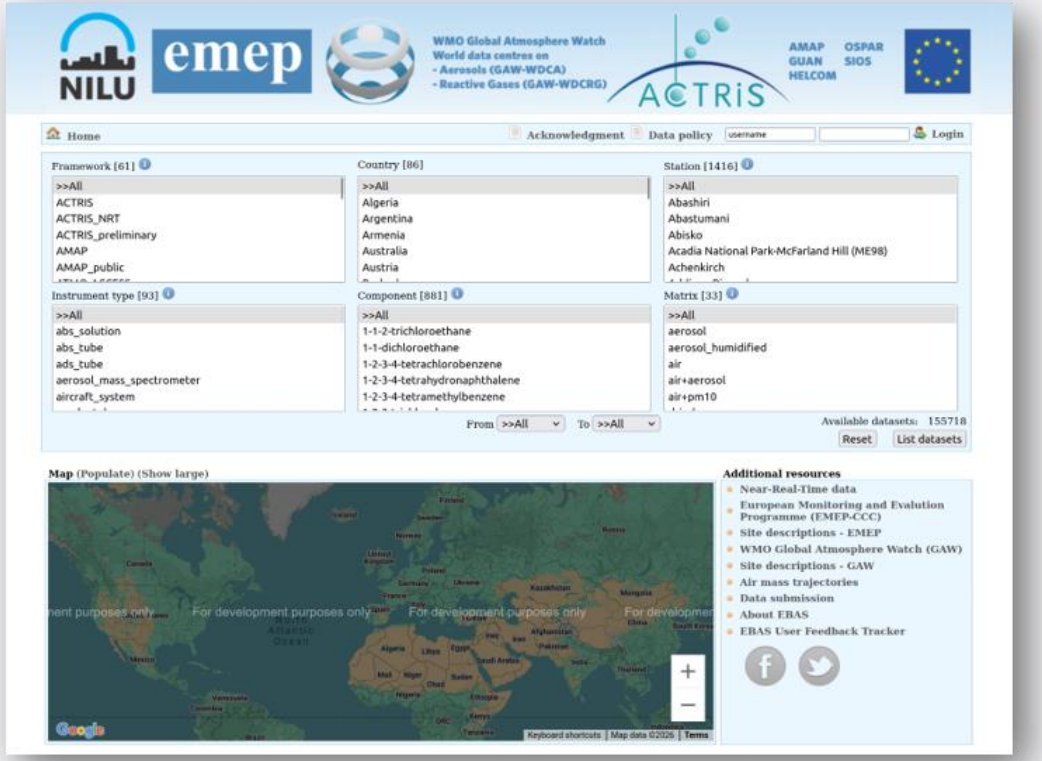


Links:

- Mantis – NILU Issue Tracker https://mantis.nilu.no/
- EBAS Queue / Data Curation Status https://data-curation-status.nilu.no/

Data Submission – Data archived and Accessible in Data Portals

EBAS Data Portal



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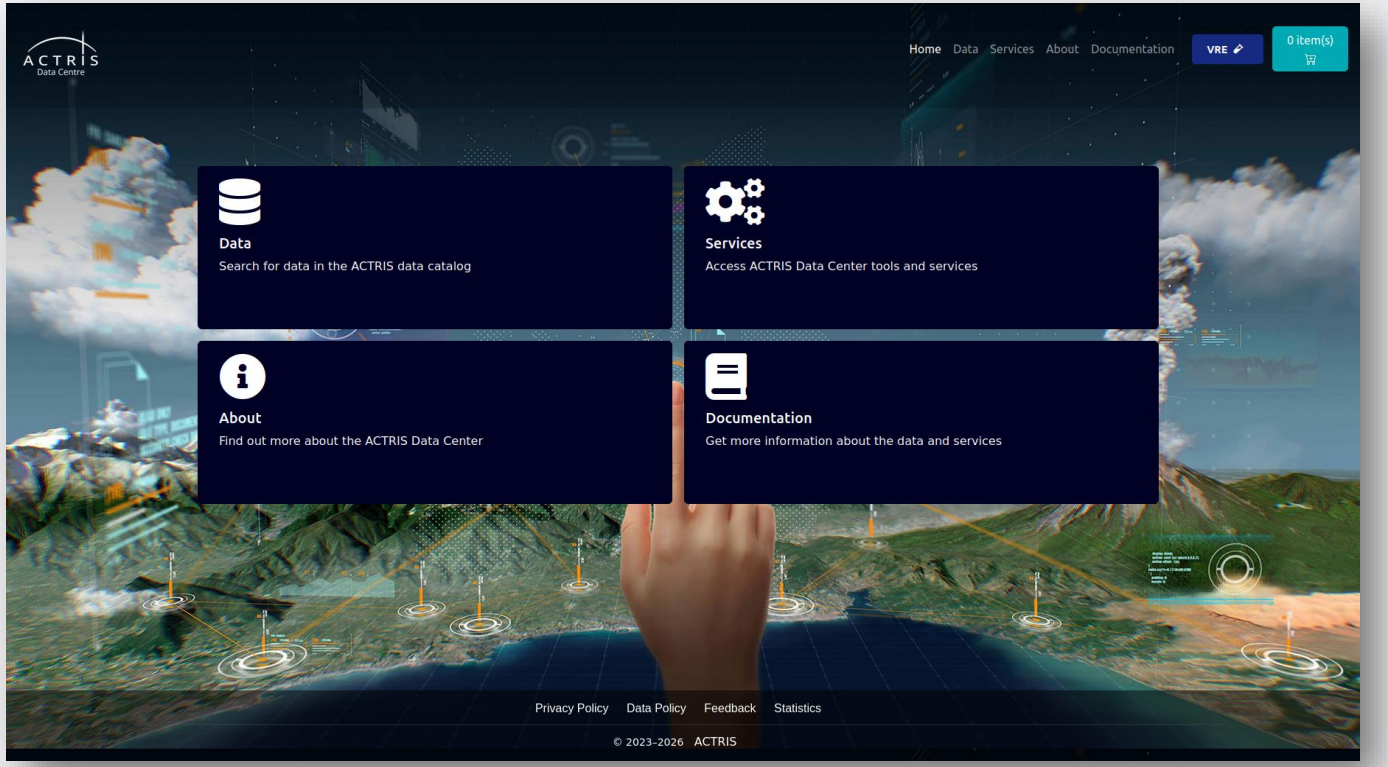

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Last Comments

Submission Requirements:

- **Deadline: May 31, iterated.**
- **Data levels: level 0, level 1 and level 2**

- Submit early: No “quick and dirty” submissions right before the deadline.
- No default deactivation of boundary checks.

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The End!