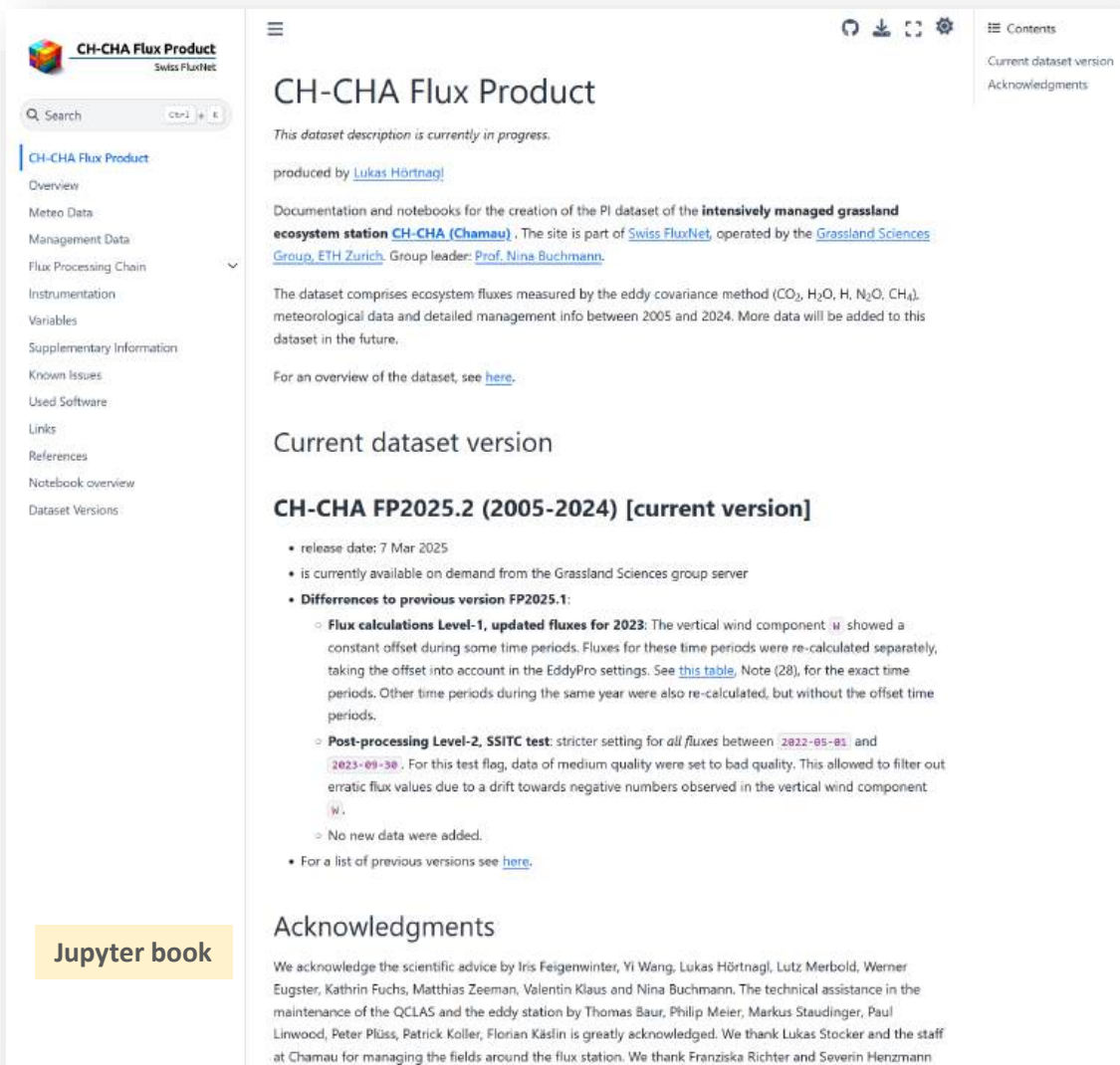


QA/QC Meeting 3 Apr 2025

Participants: LH, FT, YW, KMK, PM, TB, AKG, IF, PE, PR, LS, LK, YZ (13)





CH-CHA Flux Product

This dataset description is currently in progress.

produced by [Lukas Hörtnagl](#)

Documentation and notebooks for the creation of the PI dataset of the **intensively managed grassland ecosystem station CH-CHA (Chamau)**. The site is part of [Swiss FluxNet](#), operated by the [Grassland Sciences Group, ETH Zurich](#). Group leader: [Prof. Nina Buchmann](#).

The dataset comprises ecosystem fluxes measured by the eddy covariance method (CO_2 , H_2O , H , N_2O , CH_4), meteorological data and detailed management info between 2005 and 2024. More data will be added to this dataset in the future.

For an overview of the dataset, see [here](#).

Current dataset version

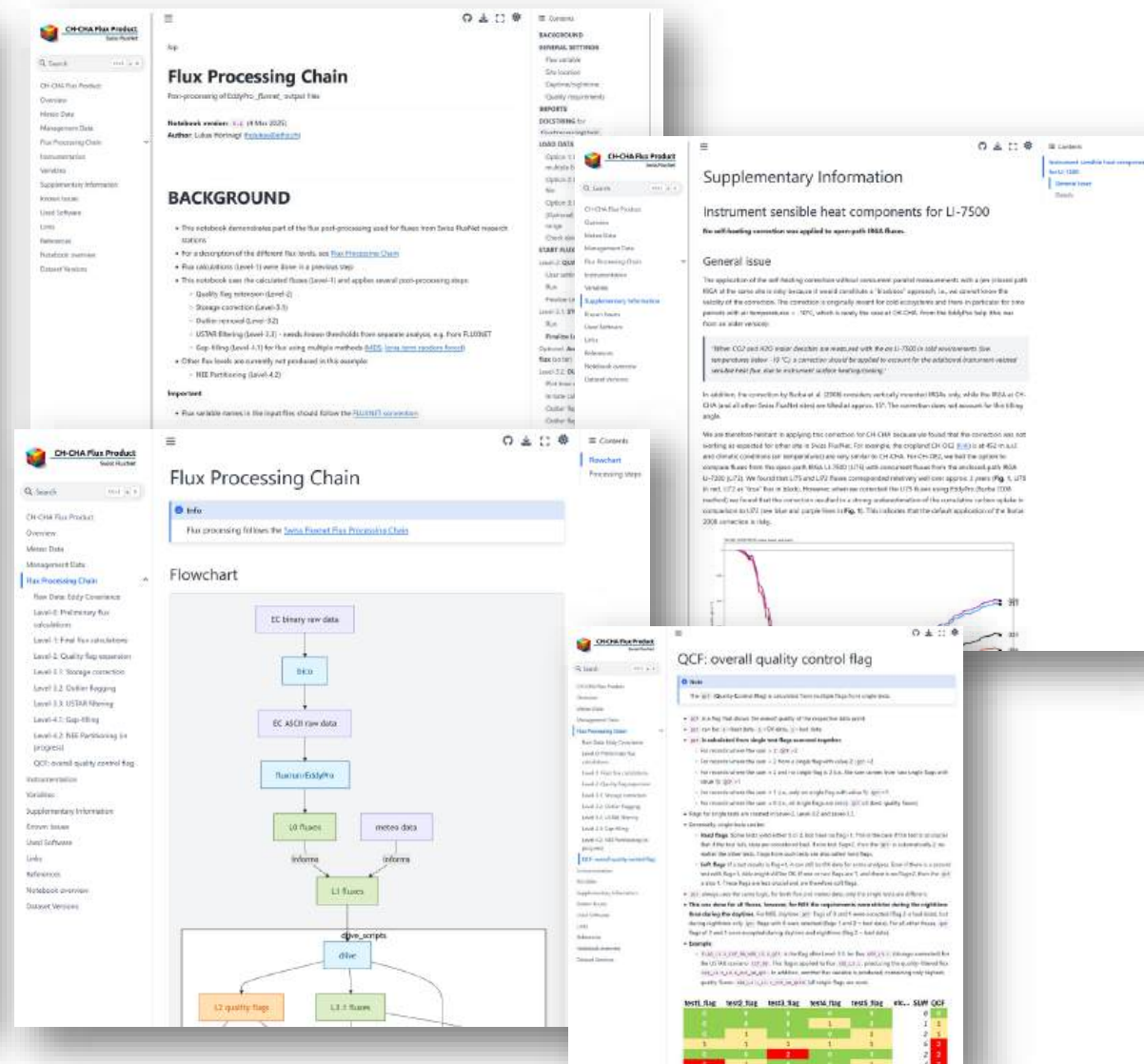
CH-CHA FP2025.2 (2005-2024) [current version]

- release date: 7 Mar 2025
- is currently available on demand from the Grassland Sciences group server
- Differences to previous version FP2025.1:**
 - Flux calculations Level-1, updated fluxes for 2023:** The vertical wind component w showed a constant offset during some time periods. Fluxes for these time periods were re-calculated separately, taking the offset into account in the EddyPro settings. See [this table](#), Note (28), for the exact time periods. Other time periods during the same year were also re-calculated, but without the offset time periods.
 - Post-processing Level-2, SSITC test:** stricter setting for *all* fluxes between **2022-05-01** and **2023-09-30**. For this test flag, data of medium quality were set to bad quality. This allowed to filter out erratic flux values due to a drift towards negative numbers observed in the vertical wind component w .
 - No new data were added.
- For a list of previous versions see [here](#).

Acknowledgments

We acknowledge the scientific advice by Iris Feigenwinter, Yi Wang, Lukas Hörtnagl, Lutz Merbold, Werner Eugster, Kathrin Fuchs, Matthias Zeeman, Valentin Klaus and Nina Buchmann. The technical assistance in the maintenance of the QCLAS and the eddy station by Thomas Baur, Philip Meier, Markus Staudinger, Paul Linwood, Peter Plüss, Patrick Koller, Florian Käslin is greatly acknowledged. We thank Lukas Stocker and the staff at Chamau for managing the fields around the flux station. We thank Franziska Richter and Severin Henzmann

Jupyter book



Flux Processing Chain

Post-processing of EddyPro, Fluxnet, output files

Release version: 1.0 (14 Mar 2025)
Author: Lukas Hörtnagl [@holukas](#)

BACKGROUND

- This notebook demonstrates part of the flux post-processing used for fluxes from Swiss FluxNet research stations.
- For a description of the different flux levels, see [the Processing Chain](#).
- Flux calculations (Level 1) were done in a previous step.
- This notebook uses the calculated fluxes (Level 1) and applies several post-processing steps:
 - Quality flag revision (Level 2)
 - Storage correction (Level 3)
 - Broken record removal (Level 3)
 - USDA EddyPro (Level 3.1) - leads to new thresholds from separate analysis, e.g. from FLUXNET
 - Gap-filling (Level 4.1) for flux using multiple methods [\(see new section below\)](#)
 - Other flux levels, are currently not produced in this example
 - RE Partitioning (Level 4.2)
- Important:
 - Flux variable names in the input files should follow the [FluxNet convention](#).

Flowchart

```

graph TD
    A[EC binary raw data] --> B[EC]
    B --> C[EC ASCII raw data]
    C --> D[Fluxnet-EddyPro]
    D --> E[L1 fluxes]
    E --> F[L2 quality flags]
    E --> G[L3 fluxes]
    F --> G
    G --> H[Fluxnet-EddyPro]
    H --> I[L2 quality flags]
    H --> J[L3 fluxes]
    I --> J
    J --> K[Fluxnet-EddyPro]
    K --> L[L2 quality flags]
    K --> M[L3 fluxes]
    L --> M
    M --> N[Fluxnet-EddyPro]
    N --> O[L2 quality flags]
    N --> P[L3 fluxes]
    O --> P
    P --> Q[Fluxnet-EddyPro]
    Q --> R[L2 quality flags]
    Q --> S[L3 fluxes]
    R --> S
    S --> T[Fluxnet-EddyPro]
    T --> U[L2 quality flags]
    T --> V[L3 fluxes]
    U --> V
    V --> W[Fluxnet-EddyPro]
    W --> X[L2 quality flags]
    W --> Y[L3 fluxes]
    X --> Y
    Y --> Z[Fluxnet-EddyPro]
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    Z --> AB[L3 fluxes]
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    BB334 --> BB336[L3 fluxes]
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    BB339 --> BB340[Fluxnet-EddyPro]
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    BB399 --> BB402[L3 fluxes]
    BB401 --> BB402
    BB402 --> BB403[Fluxnet-EddyPro]
    BB403 --> BB404[L2 quality
```

- **Dec 2024:** general preparations: backup/update database and Grafana (LH)
- **2025:**
 - First we need to get rid of the automatic bico/fluxrun data:
 - **Delete** all bico converted ASCII files
 - **Delete** all Level-0 fluxes
 - Then convert/calculate for complete year
 - **Convert** all EC binary files using bico, all data
 - **Calculate** Level-0 fluxes across all data
 - Meteoscreening
 - **Calculate** Level-1 fluxes across all data
 - Put **management** data in management file (XLSX)
 - **Share** fluxes with FLUXNET (also N₂O, CH₄)
 - **Share** meteo data with FLUXNET
 - **Share** metadata with FLUXNET (BADM files)

The scripts [bico](#) and [fluxrun](#) are running automatically on the **GROUP-RDS**.

- bico converts sonicread binary files to ASCII
- fluxrun calculates fluxes
- execution times are defined in the Windows Task Scheduler
- **all times are CEST (UTC+2)**

Name	Status	Triggers	Next Run Time
[bico] CH-AWS Convert EC raw data binaries		At 06:00 every day	28.05.2024 06:00:00
[bico] CH-CHA Convert EC raw data binaries		At 06:10 every day	28.05.2024 06:10:00
[bico] CH-DAS Convert EC raw data binaries		At 06:20 every day	28.05.2024 06:20:00
[bico] CH-DAV Convert EC raw data binaries		At 06:30 every day	28.05.2024 06:30:00
[bico] CH-FOR Convert EC raw data binaries		At 06:40 every day	28.05.2024 06:40:00
[bico] CH-FRU Convert EC raw data binaries		At 06:50 every day	28.05.2024 06:50:00
[bico] CH-HON Convert EC raw data binaries		At 07:00 every day	28.05.2024 07:00:00
[bico] CH-LAE Convert EC raw data binaries		At 07:10 every day	28.05.2024 07:10:00
[bico] CH-LAS Convert EC raw data binaries	Ready	At 07:20 every day	28.05.2024 07:20:00
[bico] CH-OE2 Convert EC raw data binaries	Ready	At 07:30 every day	28.05.2024 07:30:00
[bico] CH-TAN Convert EC raw data binaries	Ready	At 07:40 every day	28.05.2024 07:40:00
[fluxrun] CH-AWS Calculate fluxes	Ready	At 08:00 every day	28.05.2024 08:00:00
[fluxrun] CH-CHA Calculate fluxes	Ready	At 08:10 every day	28.05.2024 08:10:00
[fluxrun] CH-DAS Calculate fluxes	Ready	At 08:20 every day	28.05.2024 08:20:00
[fluxrun] CH-DAV Calculate fluxes	Ready	At 08:30 every day	28.05.2024 08:30:00
[fluxrun] CH-FOR Calculate fluxes	Ready	At 08:40 every day	28.05.2024 08:40:00
[fluxrun] CH-FRU Calculate fluxes	Ready	At 08:50 every day	28.05.2024 08:50:00
[fluxrun] CH-HON Calculate fluxes	Ready	At 09:00 every day	28.05.2024 09:00:00
[fluxrun] CH-LAE Calculate fluxes	Ready	At 09:10 every day	28.05.2024 09:10:00
[fluxrun] CH-LAS Calculate fluxes	Ready	At 09:20 every day	28.05.2024 09:20:00
[fluxrun] CH-OE2 Calculate fluxes	Ready	At 09:30 every day	28.05.2024 09:30:00
[fluxrun] CH-TAN Calculate fluxes	Ready	At 09:40 every day	28.05.2024 09:40:00
[ppicos] CH-DAV Convert to ICOS formats	Ready	At 03:35 every day	28.05.2024 03:35:00

The script [dataflow](#) is running automatically on **GL-CALCS**.

- dataflow uploads data to the database
- Meteo data upload starts between 7:00 (AWS) and 7:46 (TAN)
- Flux data upload starts between 11:00 (first site, AWS) and 11:20 (last site, TAN)
- execution times are defined in the *crontab* file
- after upload, data are immediately available in Grafana
- **all times are CET (UTC+1): this means that during summer data uploads start one hour later**

Example AWS during **summer**/**winter** local time:

- bico starts **6:00** / **6:00**
- dataflow 10_meteo upload starts **8:00** / **7:00**
- dataflow 11_meteo_valley upload starts **8:02** / **7:02**
- dataflow 12_meteo_rainfall upload starts **8:04** / **7:04**
- dataflow 13_meteo_pressure upload starts **8:06** / **7:06**
- dataflow 15_meteo_snowheight upload starts **8:08** / **7:08**
- fluxrun starts **8:00** / **8:00**
- dataflow flux upload starts **12:00** / **11:00**

General Info

- **Attendance:** If you are (Tech-)SRP, please attend QA/QC meetings or tell LH if you can't, needed for planning of the meetings.
- **Short statement:** SRP & Tech-SRP: please prepare short statement about your site and post it on the slide together with the plot(s). You can also extend the already available text snippet(s) from previous meetings. (max. 2 sentences)
- **Purpose:** The purpose of QA/QC meetings is to check on current, incoming data. SRPs choose specific issues we should look at together and discuss in the group. Fluxes are checked if the respective SRP wishes to do so.
- **Variables:** There is a list of known variable abbreviations that you can use in case you wonder what an abbreviation means: [Variable Abbreviations](#)
- **Check of EC raw data files:**
 - Recommended check for SRPs and T-SRPS: take a look at EC raw data files and check if they look OK
 - Current EC raw data files are automatically converted to ASCII each day (done by the Python script bico)
 - Files and their plots can be found here, e.g. for CH-LAS:
`gl-processing\CH-LAS_Lae-Subcanopy\20_ec_fluxes\2022\raw_data_ascii`
- **Weekly flux calculations on the RDS:**
 - Please calculate fluxes and check them once per week, or more often if you wish to do so.
 - If you cannot calculate the fluxes, try to find a substitute, e.g. LH.
 - Please move your Level-0 results from the RDS to the respective Level-0 folder.
- **RDS folder:** The folder P:\Flux\RDS_calculations is a temporary folder. Please move Level-0 flux calculations (preliminary fluxes) to the Level-0 folder on gl-processing. For example, for CH-CHA move files to Z:\CH-CHA_Chamau\20_ec_fluxes\2022\Level-0 (gl-processing is mounted as drive Z in this example).
- The RDS now has access to the database. This means that we now have a shared working environment where we can run Jupyter notebooks.
- **FluxCoffee:** separate meetings to discuss data related issues, e.g. flux processing and technical issues, started and will continue to take place. There are extensive notes available in the Data/FluxCoffee group on Microsoft Teams.
- **List of QA/QC Meeting dates:** [QA/QC Meetings 2024](#)

Home > Dashboards > ALL SITES > 30 - Site Overview: Webcams

Search or jump to... ctrl+k

Webcam | CH-AWS

CH-AWS_WEBCAM_M2_2_9_1-202504011230.jpg 2025-04-01 12:30:01



Webcam | CH-CHA | GF4

CH-CHA_GF4_1_1-202504011202.jpg 2025-04-01 12:02:00



Webcam | CH-DAV

CH-DAV_WEBCAM_FF1_0_1-202504011201.jpg 2025-04-01 12:01:52



Webcam | CH-DAV | FF1

CH-DAV_WEBCAM_FF1_0_1-202504011201.jpg 2025-04-01 12:01:52



Webcam | CH-DAV | FF2

CH-DAV_WEBCAM_FF2_0_1-202504011202.jpg 2025-04-01 12:02:00



Webcam | CH-DAV | FF3

CH-DAV_WEBCAM_FF3_0_1-202504011203.jpg 2025-04-01 12:03:00



Webcam | CH-DAV | FF4

CH-DAV_WEBCAM_FF4_0_1-202504011204.jpg 2025-04-01 12:04:00



Webcam | CH-DAV | FF5

CH-DAV_WEBCAM_FF5_0_1-202503311205.jpg 2025-03-31 11:48:20



Webcam | CH-FRU

CH-FRU_GF1_1_1-202503161230.jpg



OUTDATED!

Webcam | CH-LAE

CH-LAE_WEBCAM_FF1_0_1-202503161230.jpg



Webcam | CH-OE2

CH-OE2_WEBCAM_FF1_0_1-202503161230.jpg

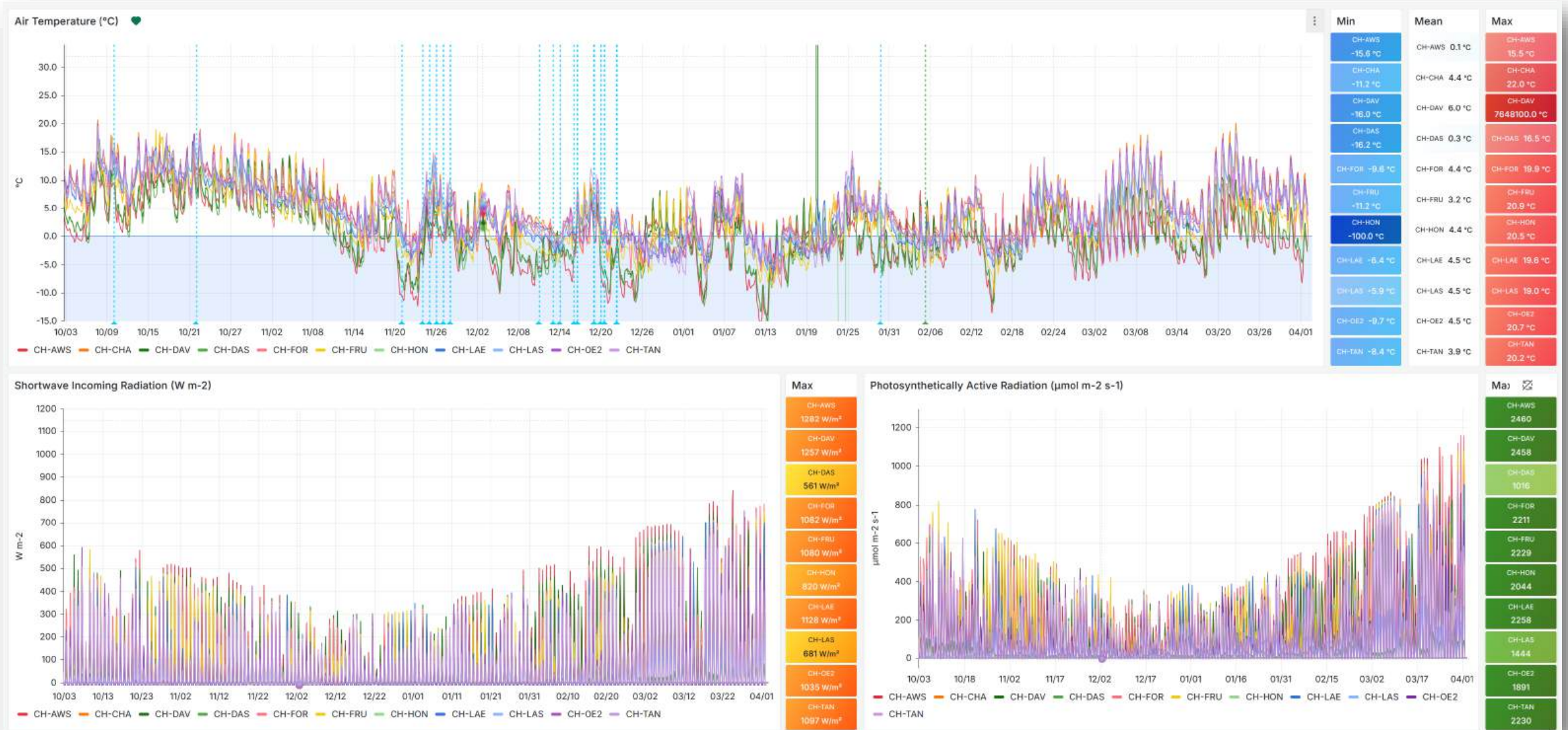


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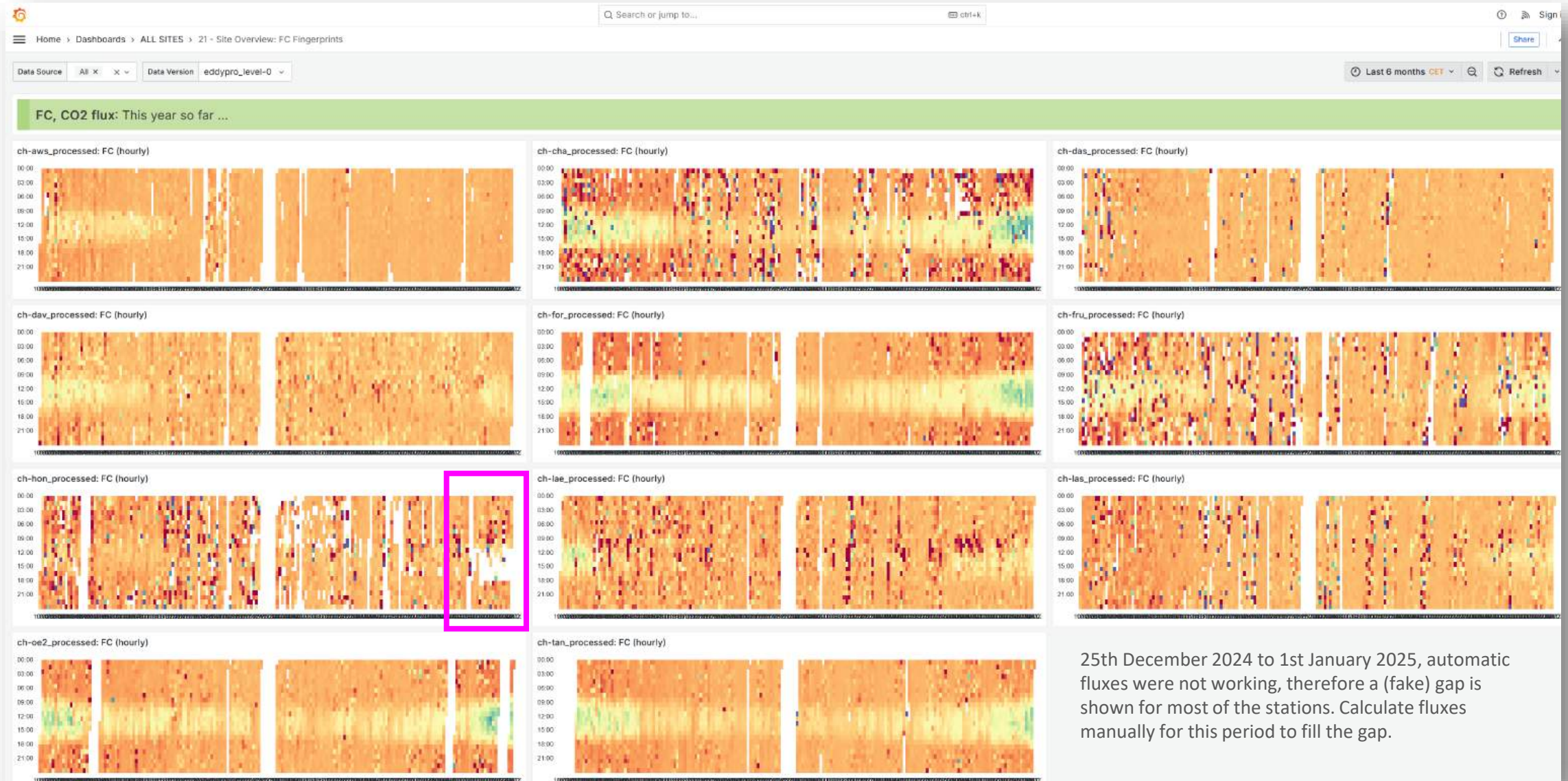


Last 6 months


<https://dataviews.swissfluxnet.ethz.ch>



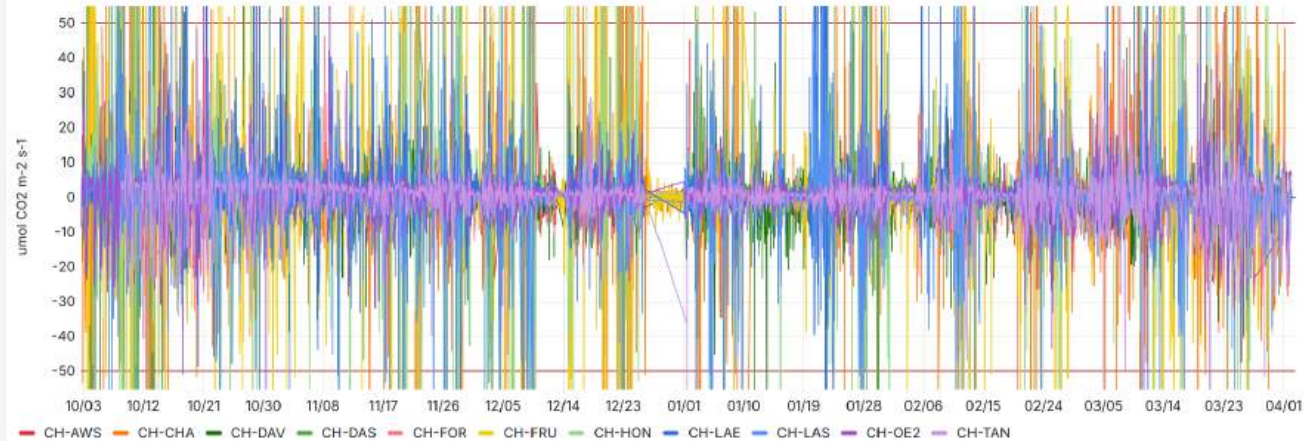
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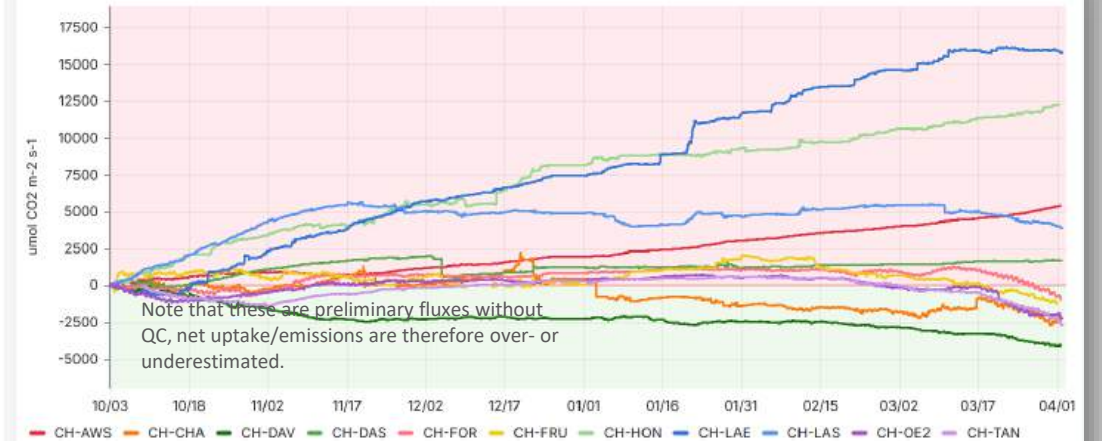
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Last 6 months

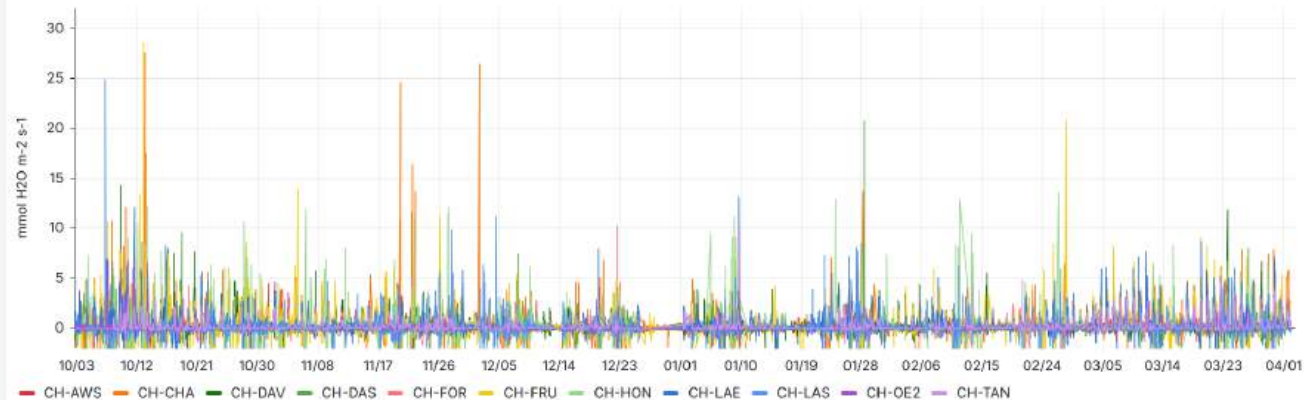
CO₂ Fluxes (Level-0)



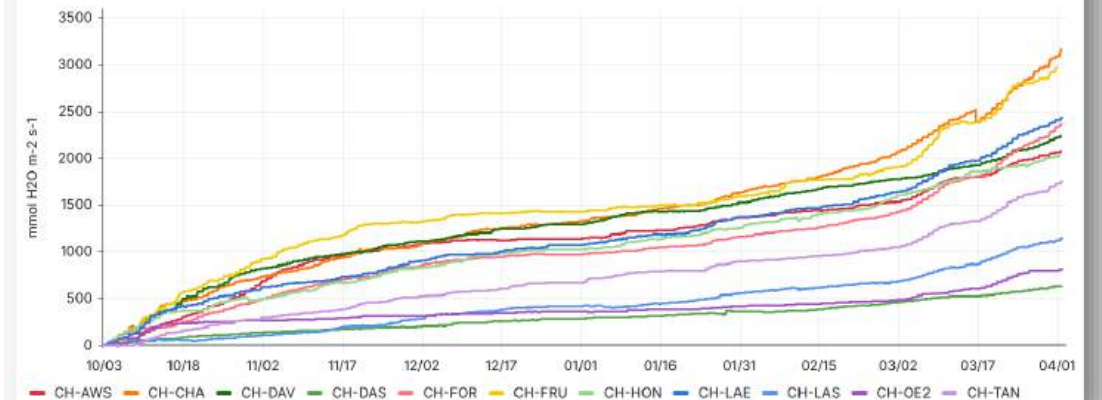
Cumulative CO₂ Fluxes (Level-0)



H₂O Fluxes (Level-0)

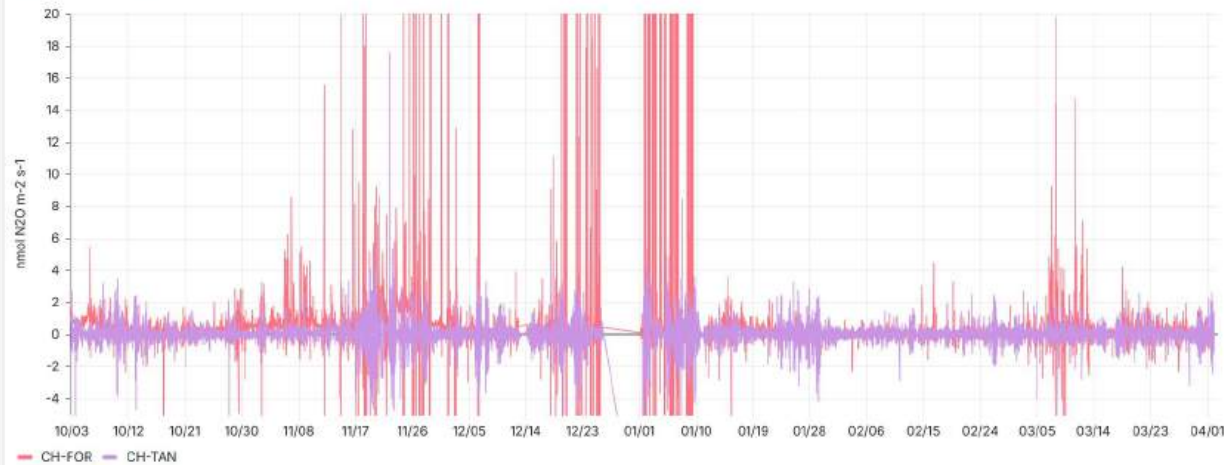


Cumulative H₂O Fluxes (Level-0)



2024 complete, 2025

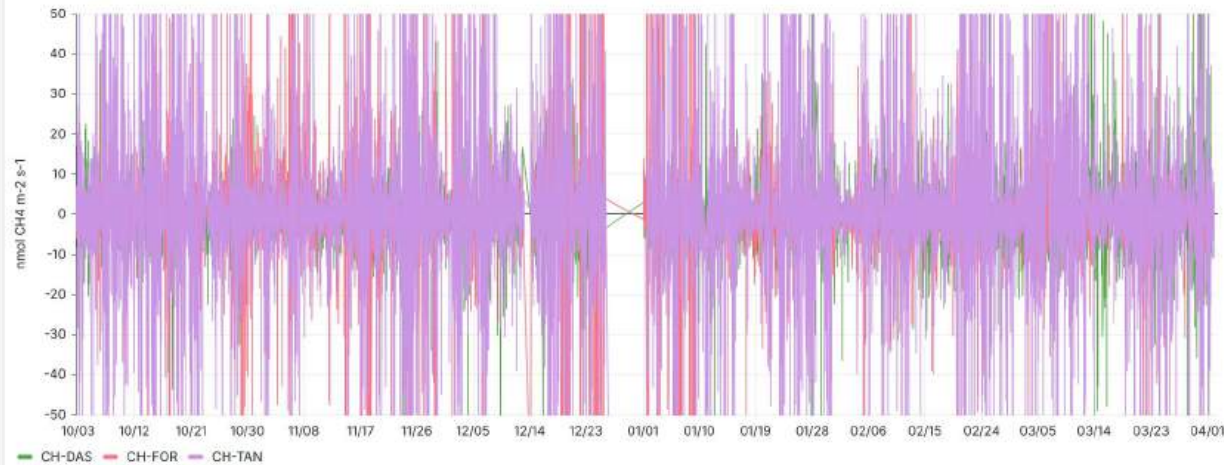
N₂O flux (Level-0)



Cumulative N₂O flux (Level-0)



CH₄ flux (Level-0)

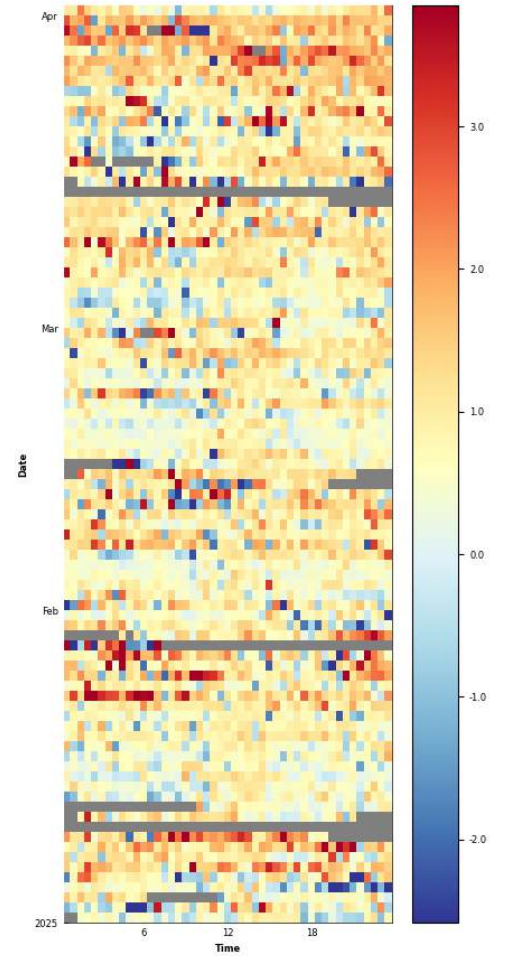
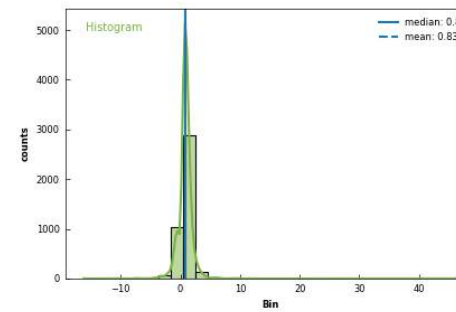
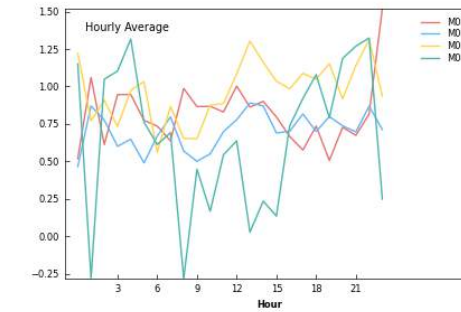
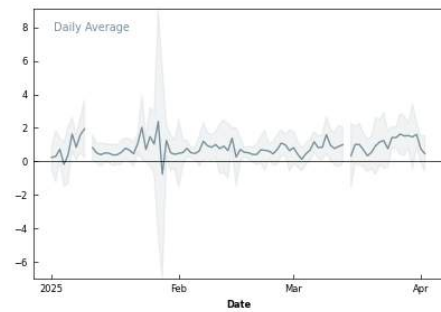
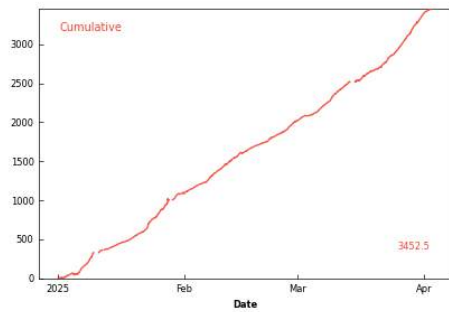
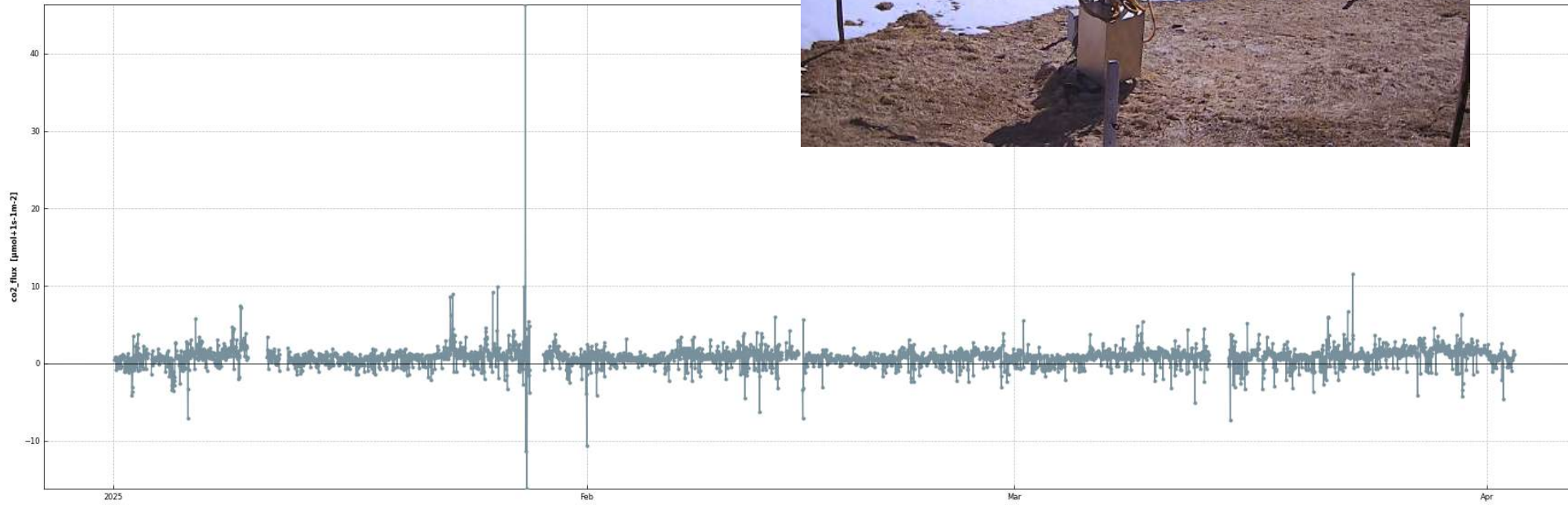


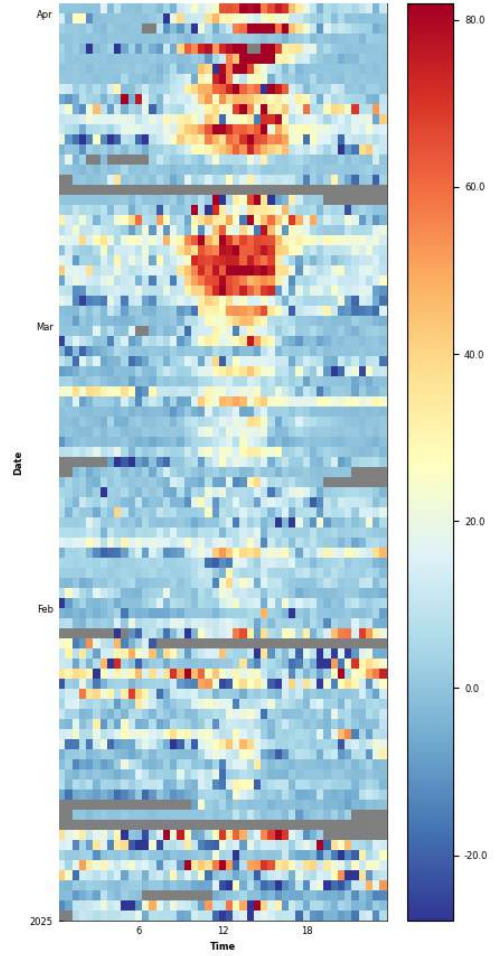
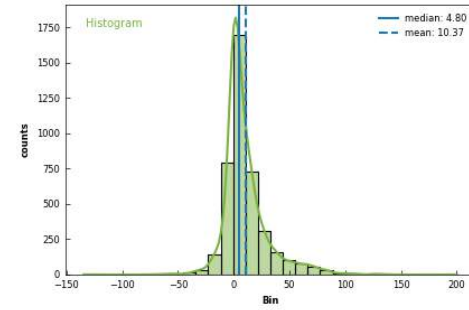
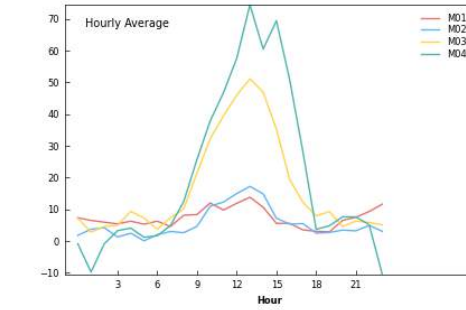
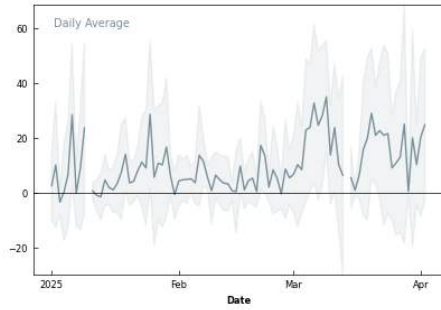
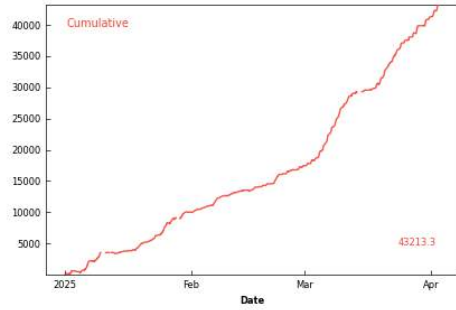
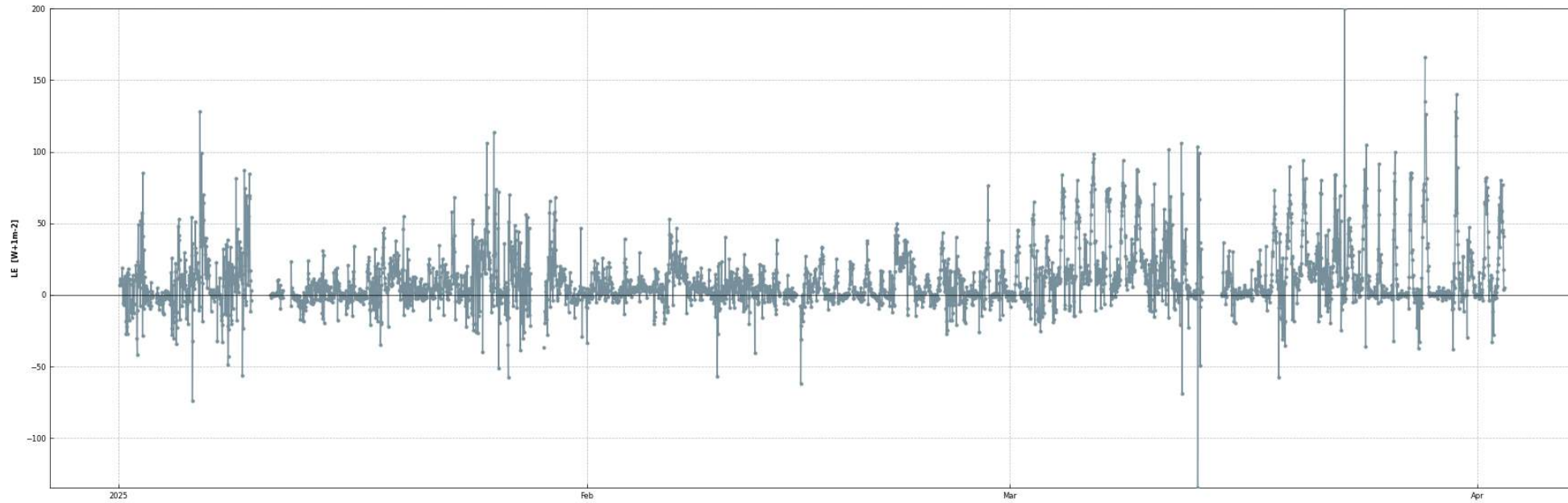
Cumulative CH₄ flux (Level-0)

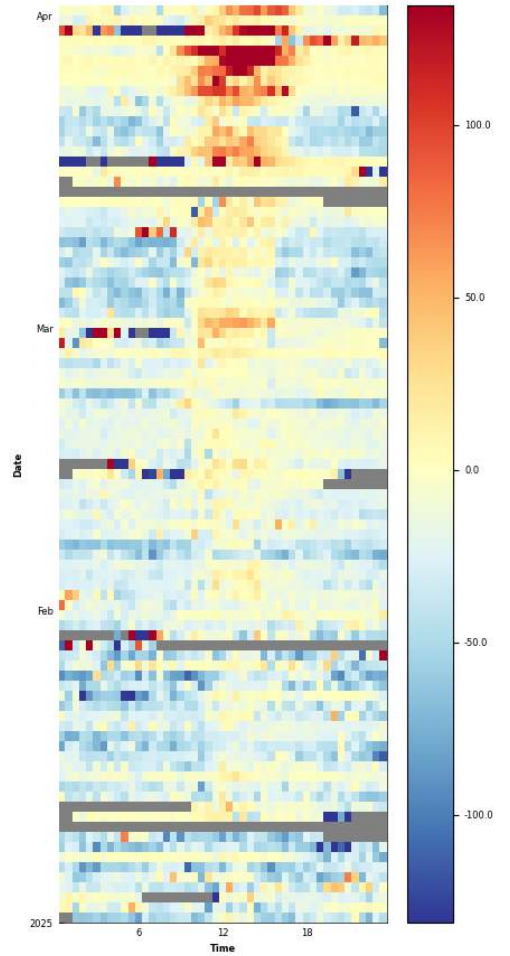
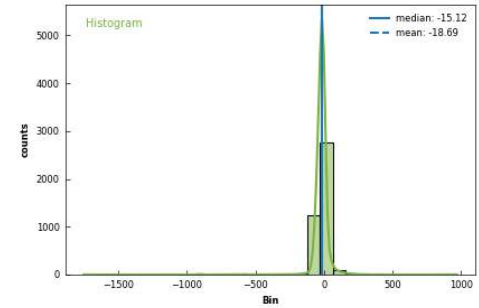
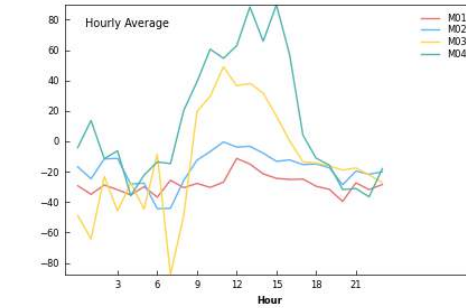
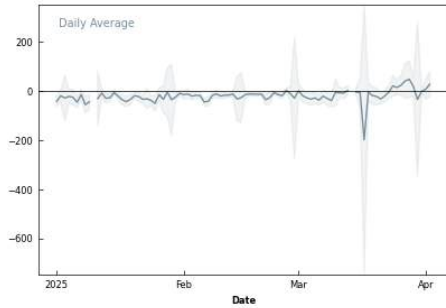
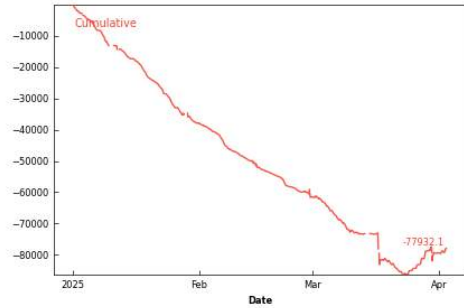
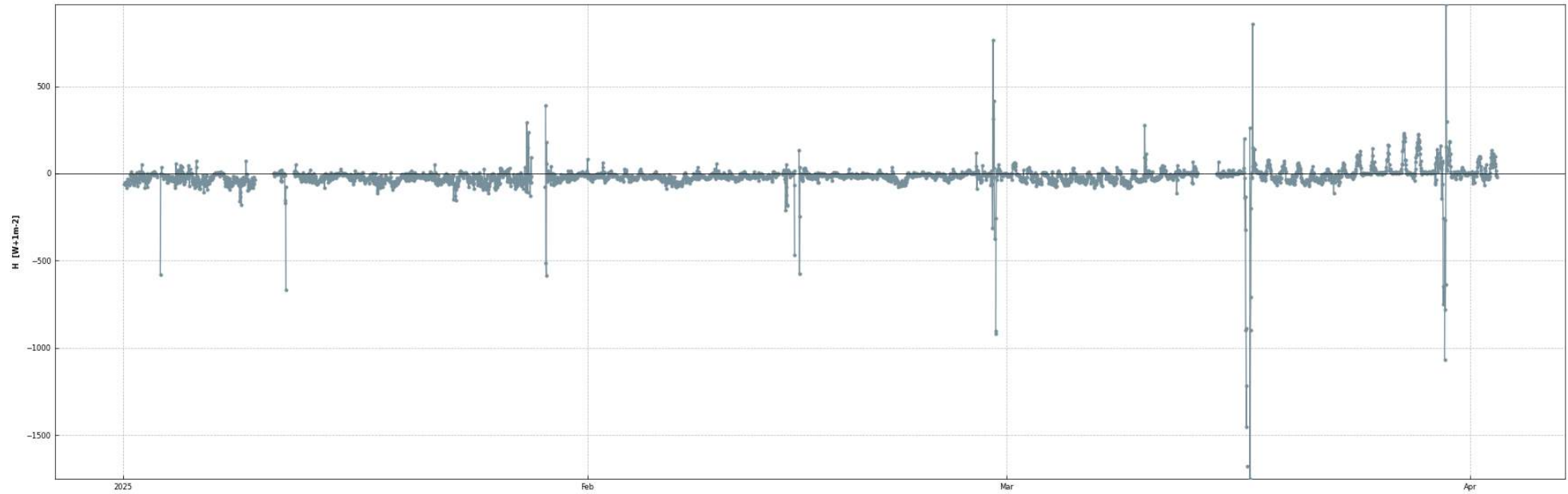


<https://dataviews.swissfluxnet.ethz.ch>

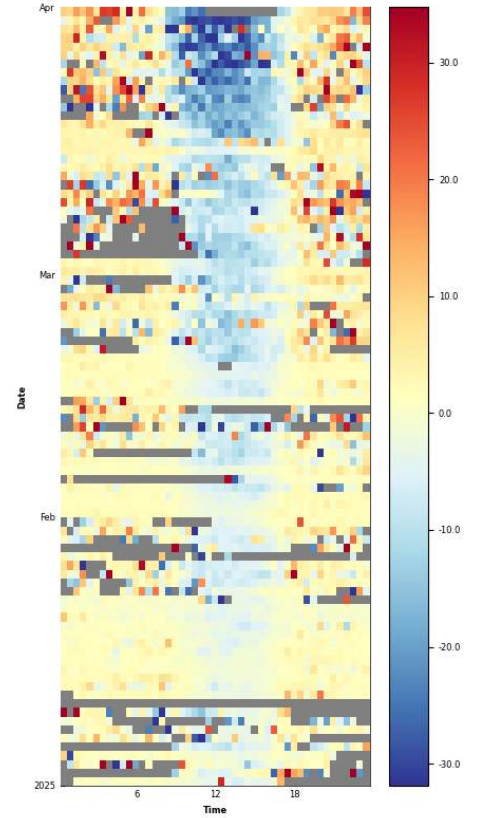
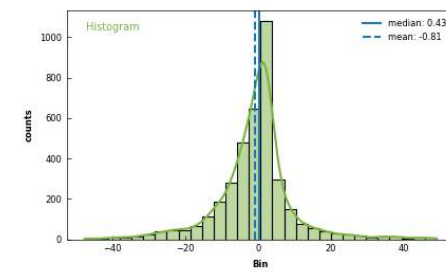
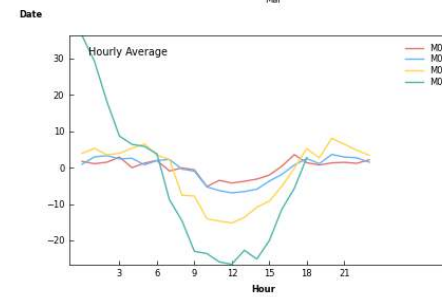
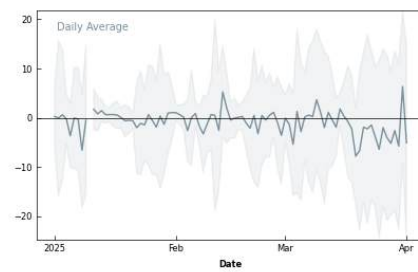
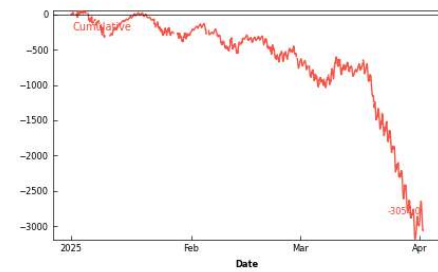
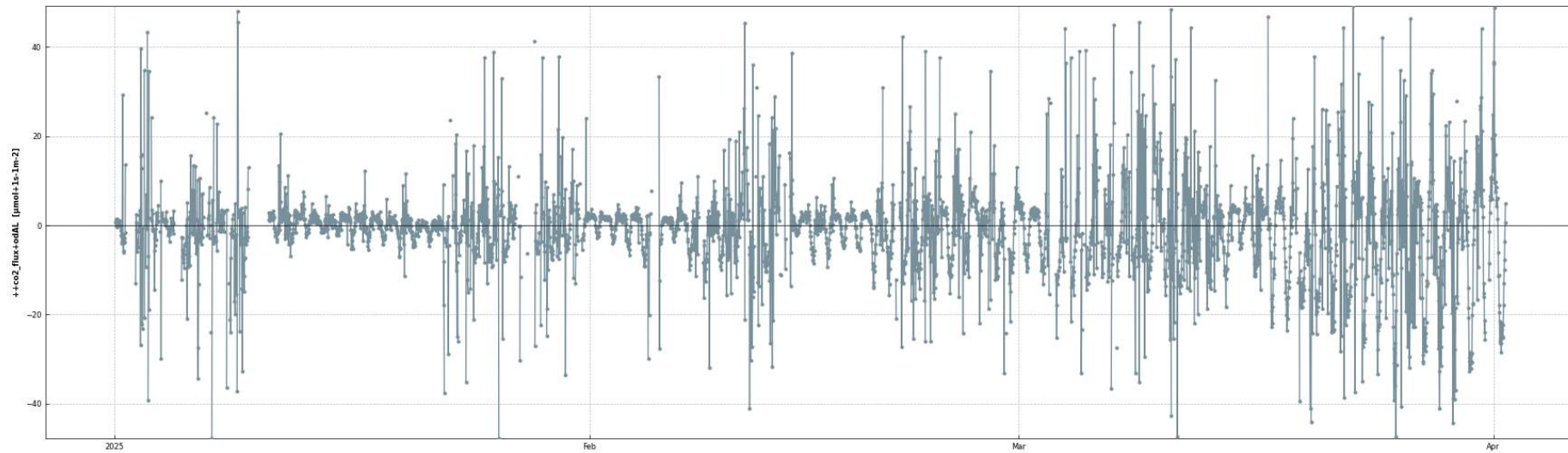


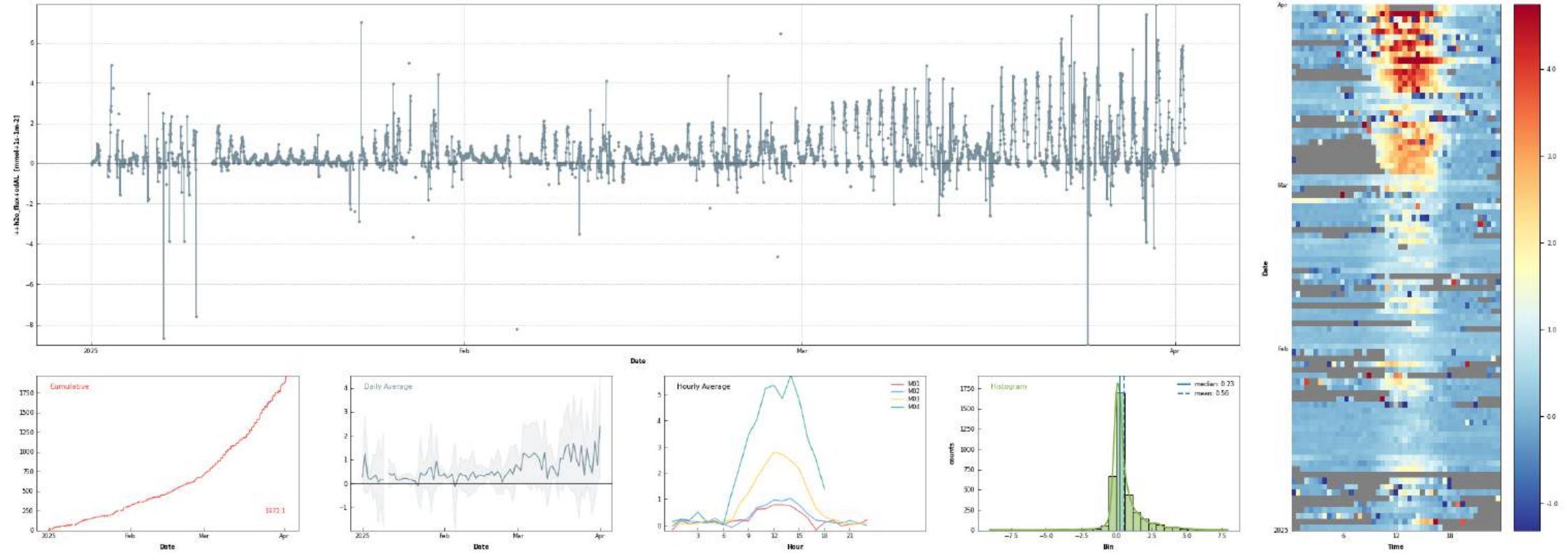












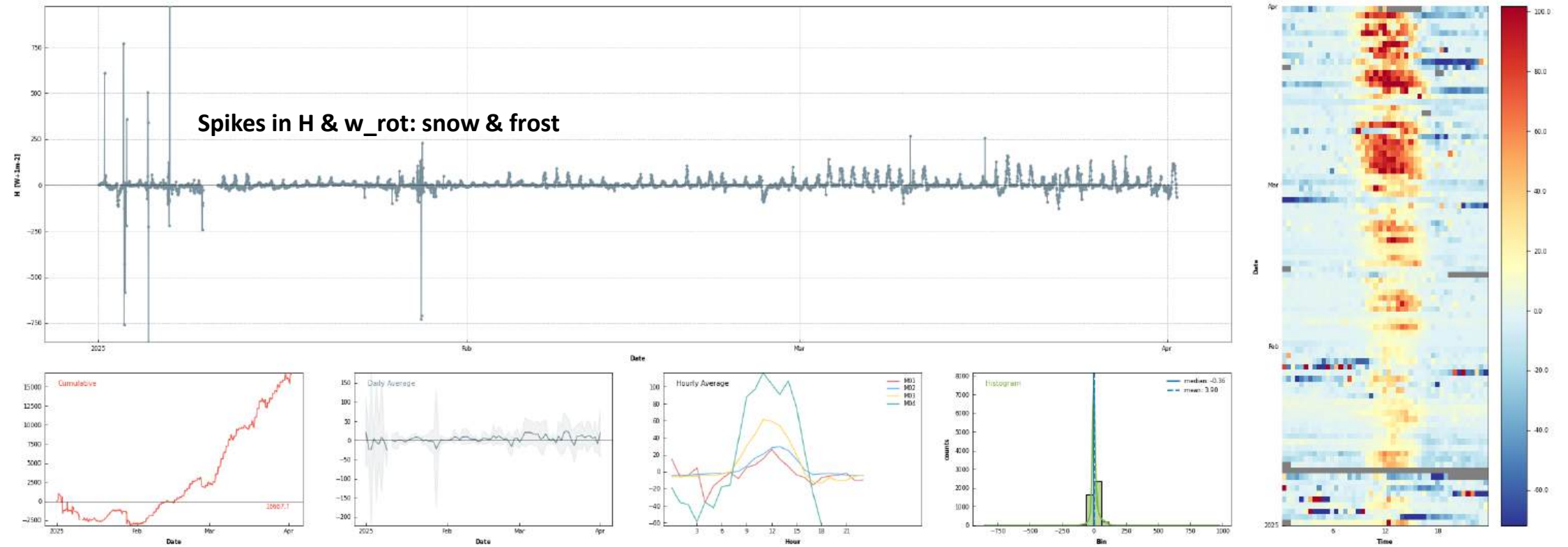
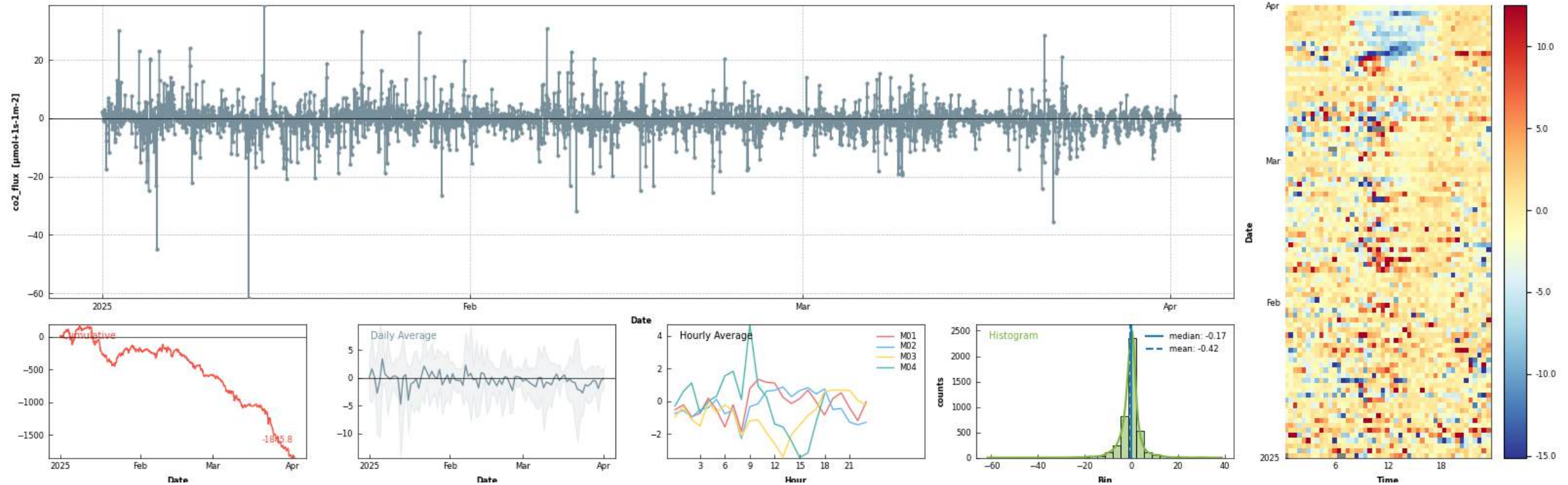


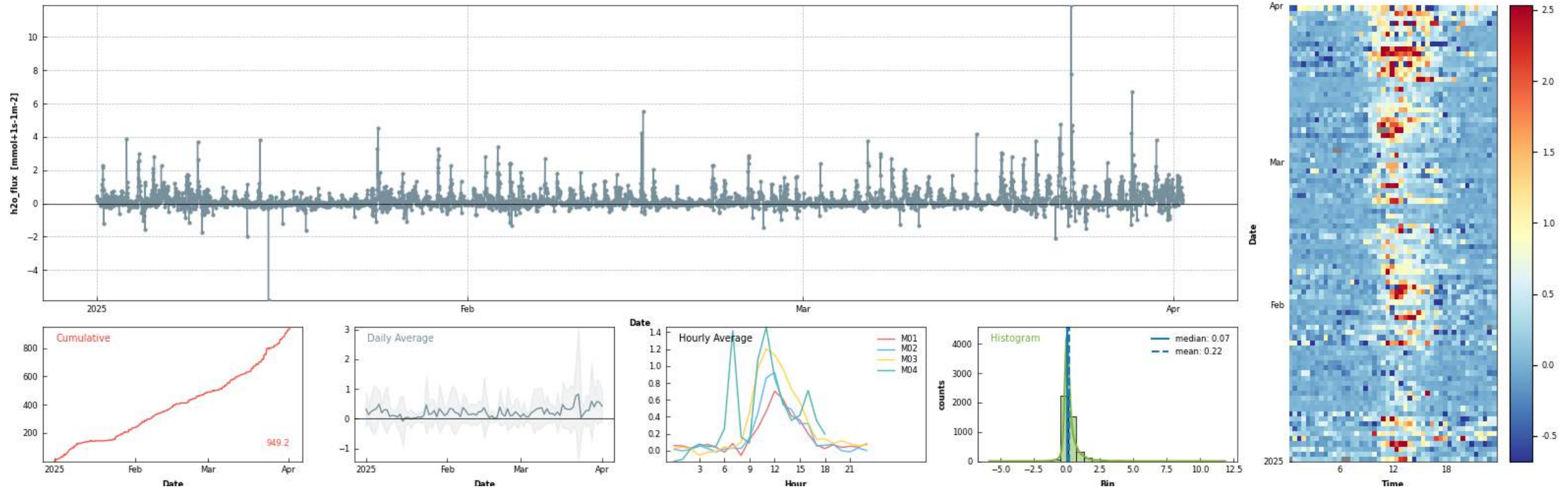


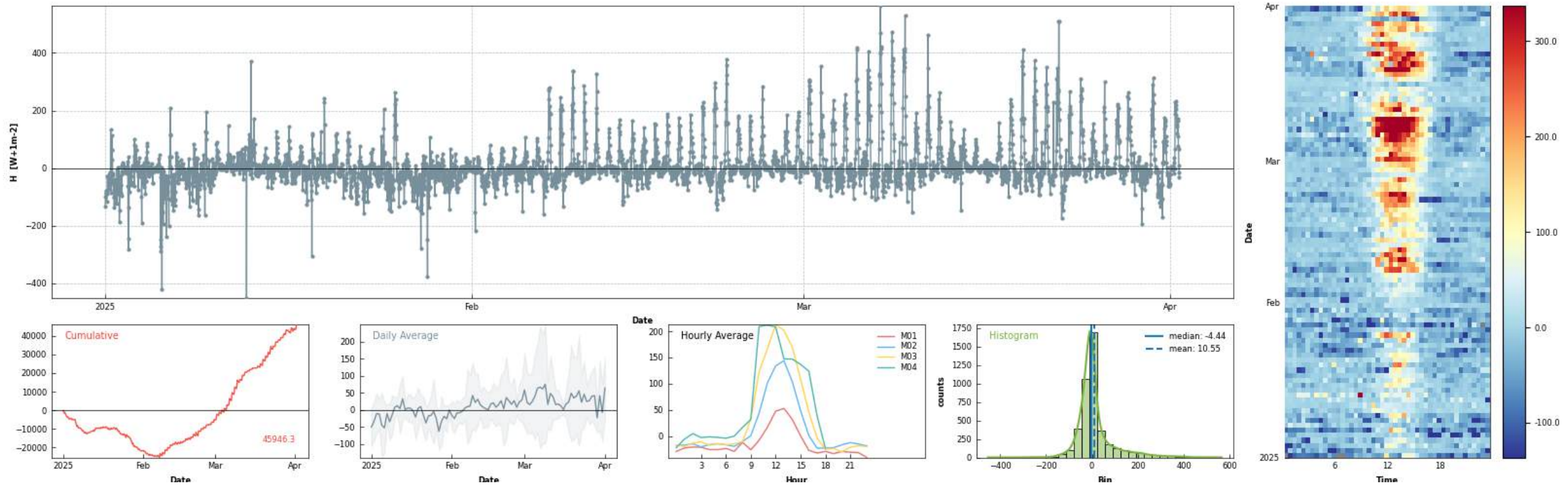
Photo: Lukas Hörtnagl

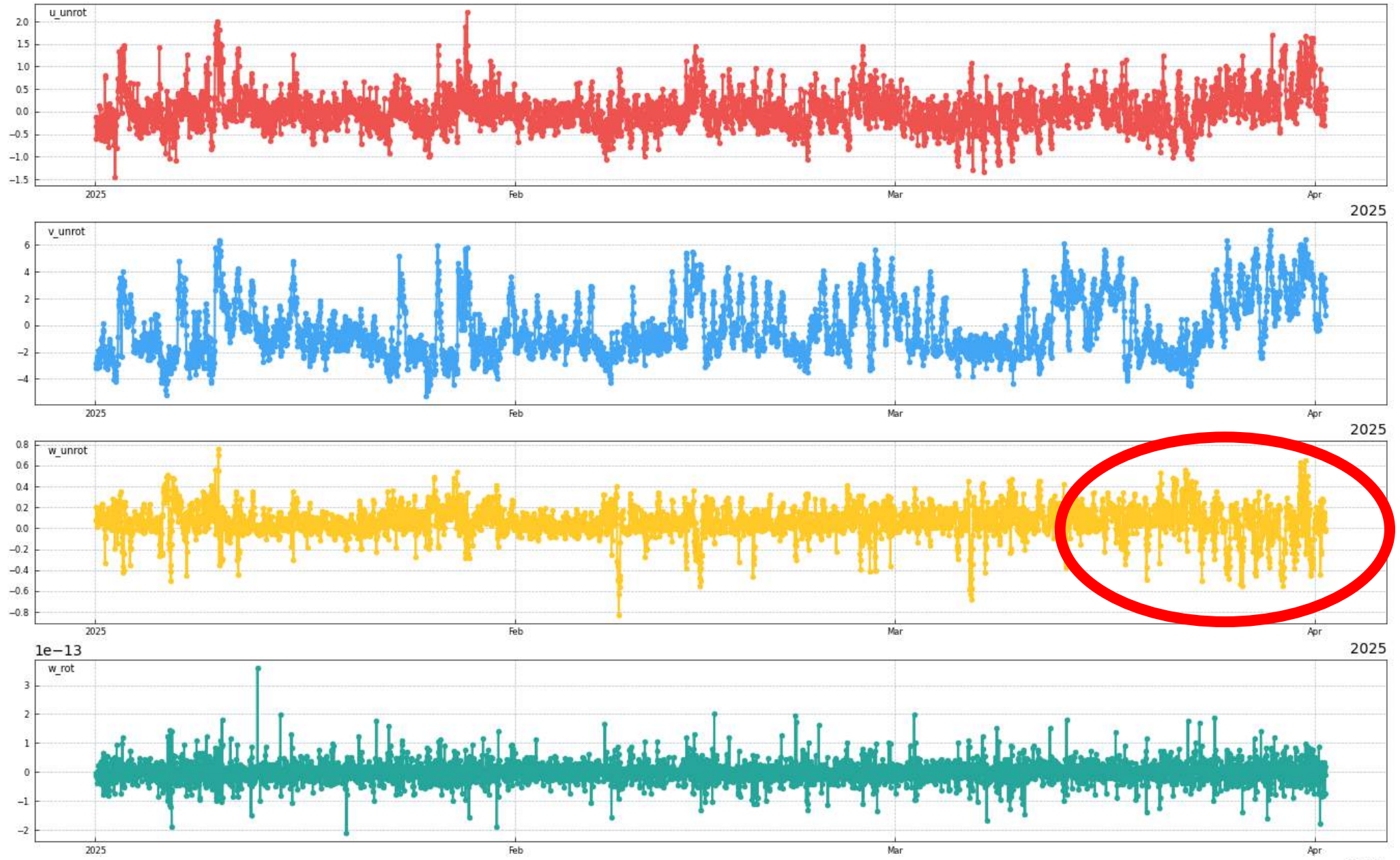


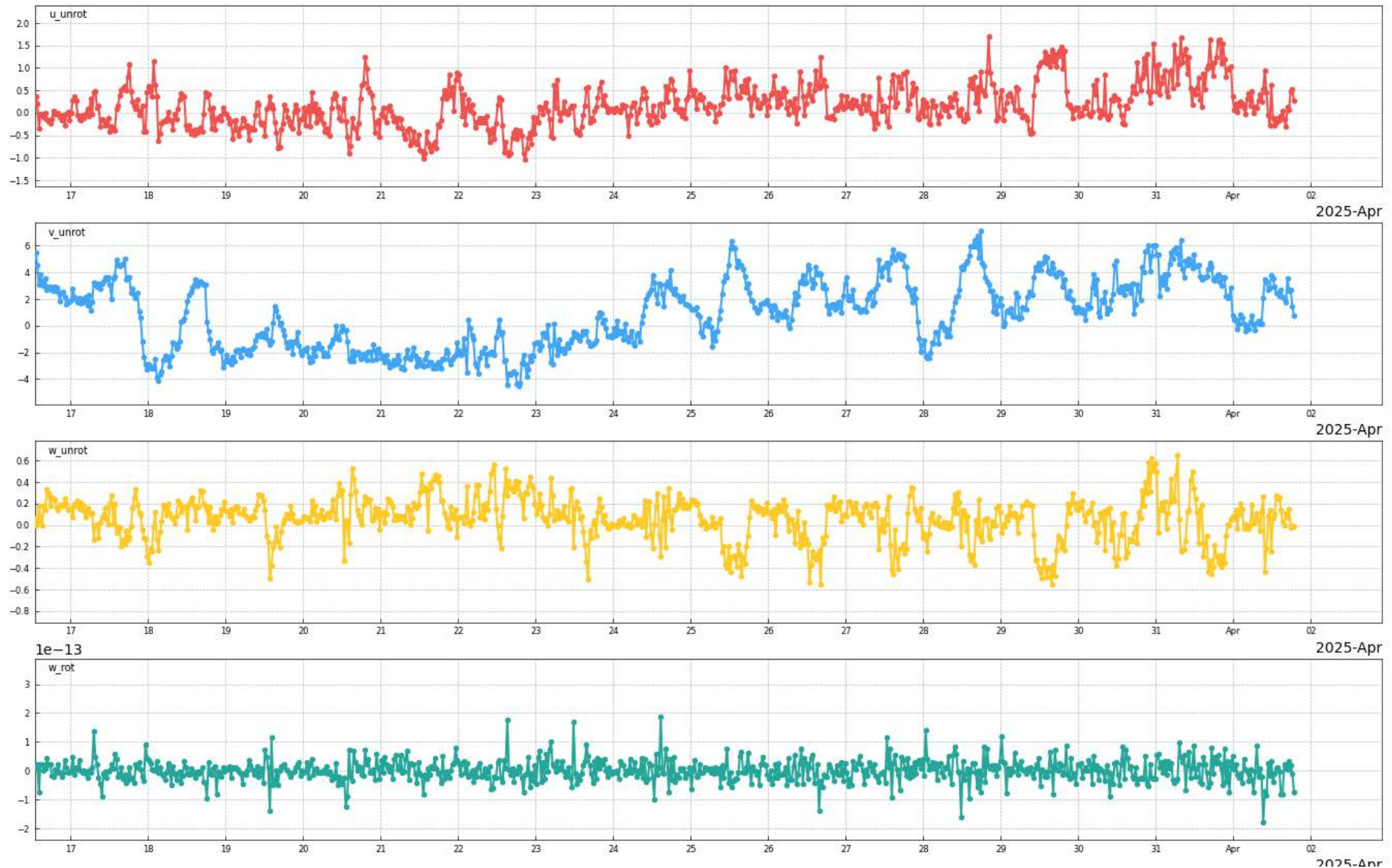
Net CO₂ uptake during the day
has started



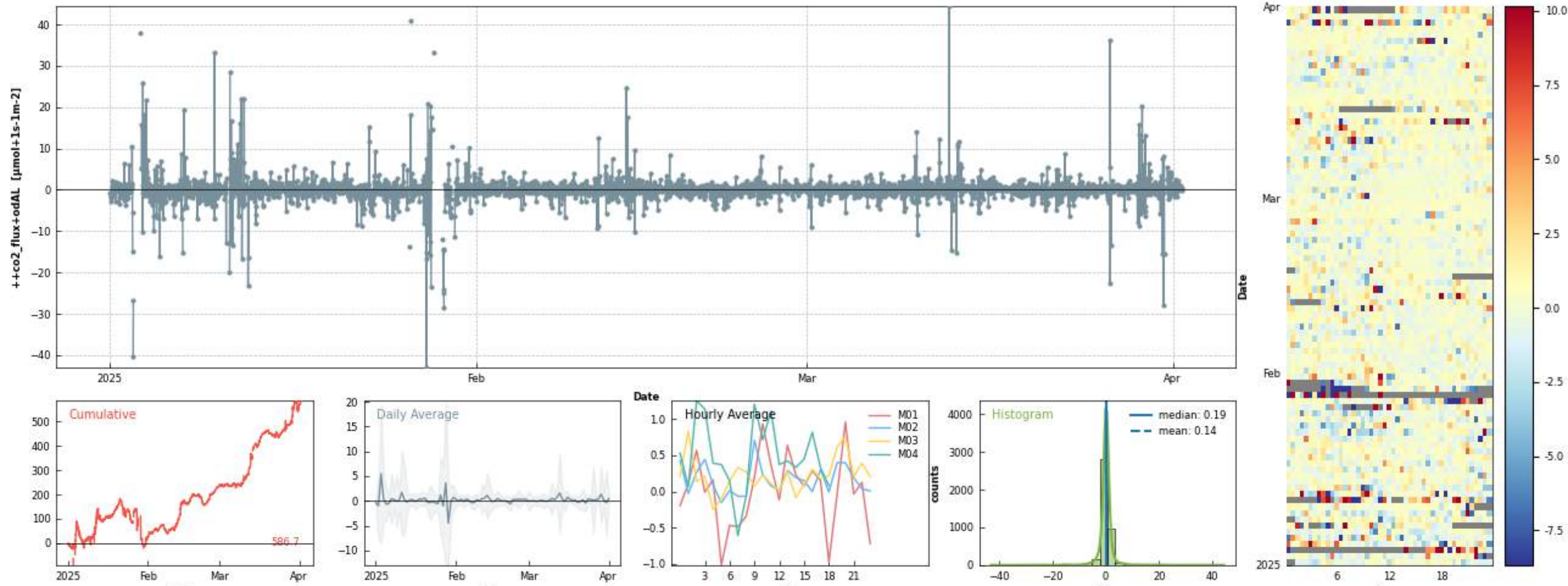


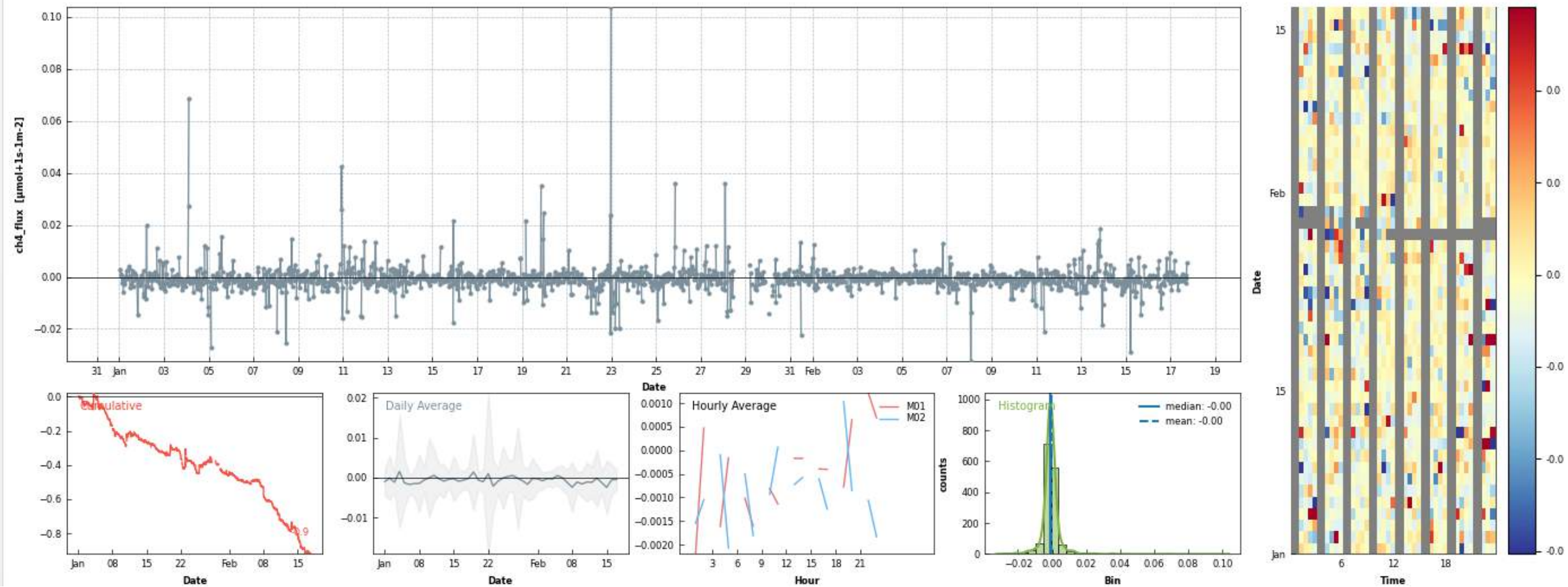


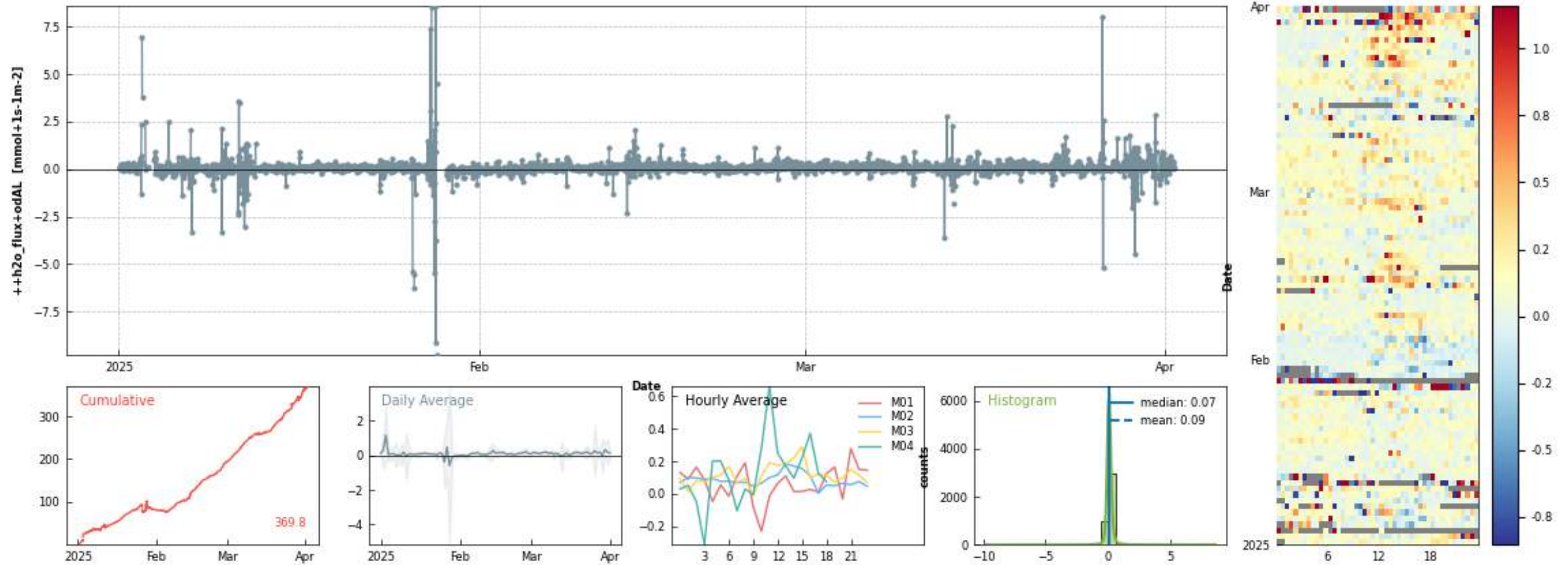












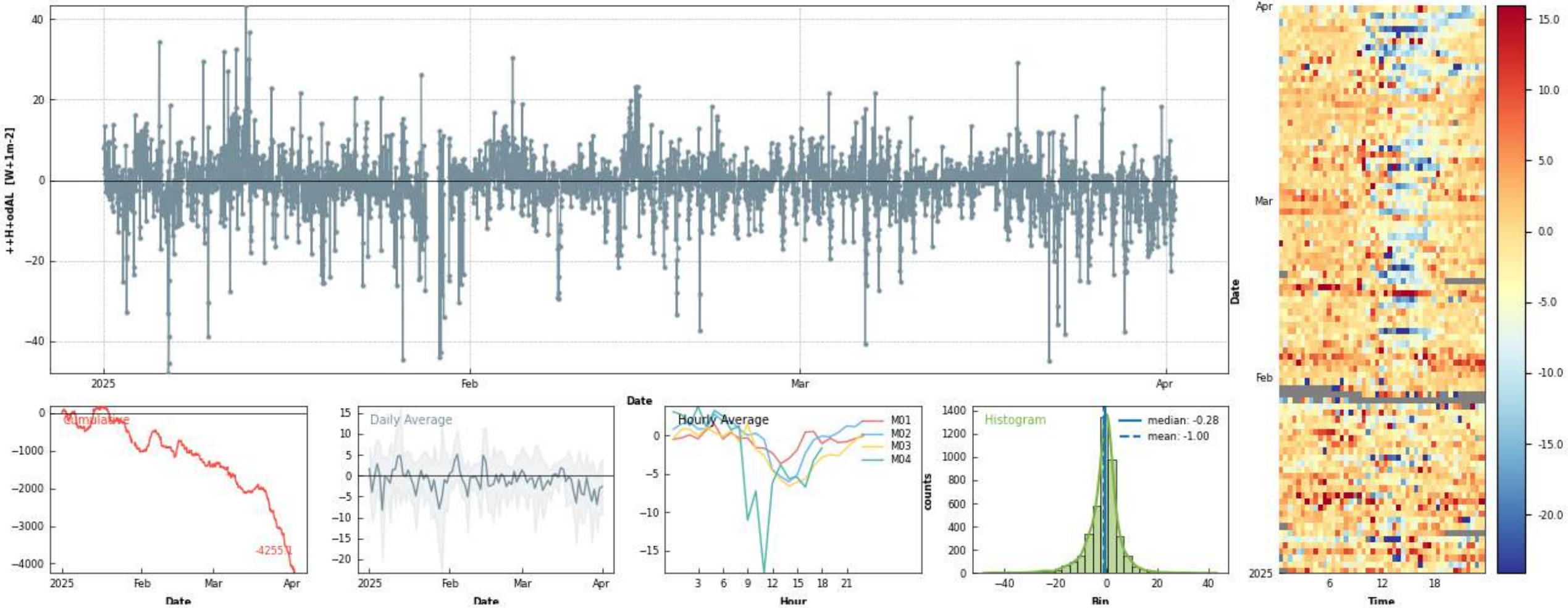
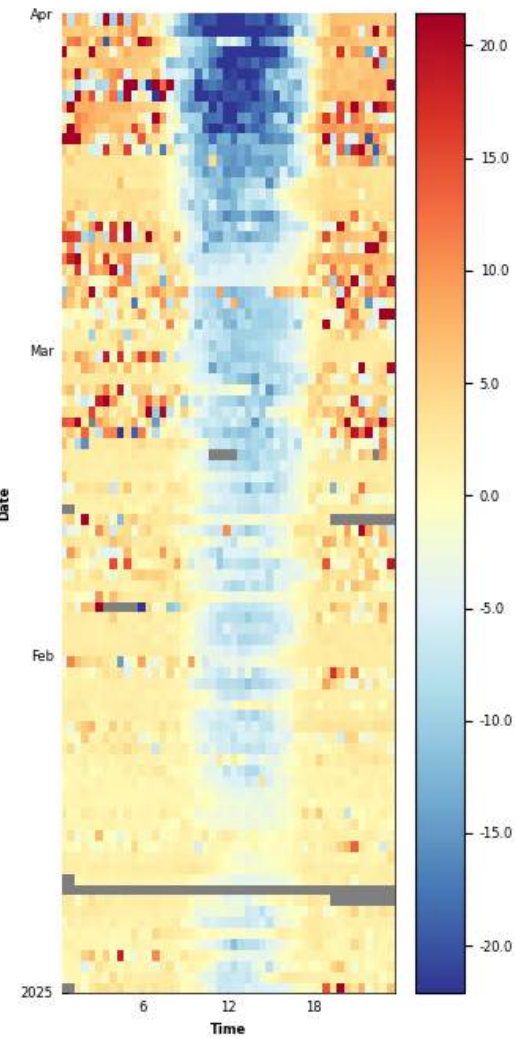
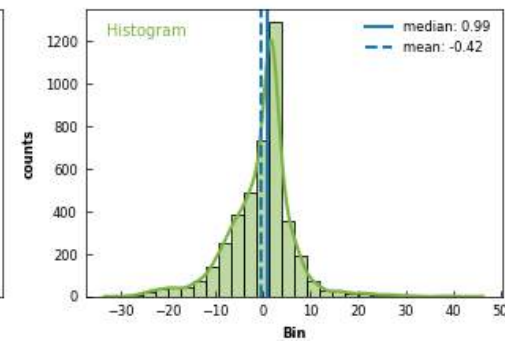
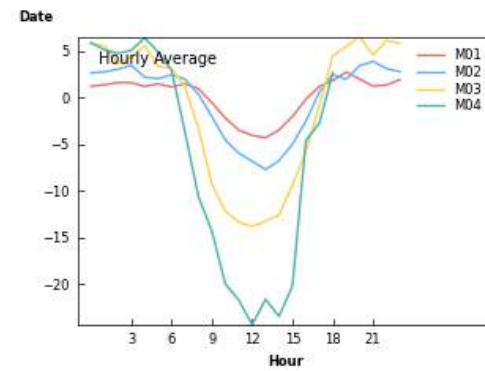
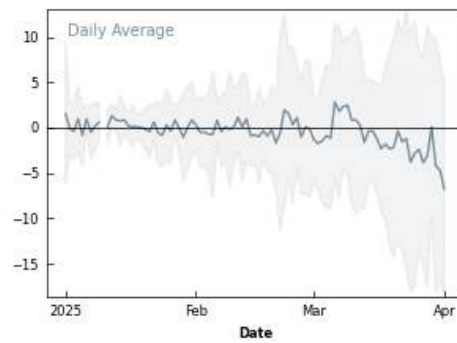
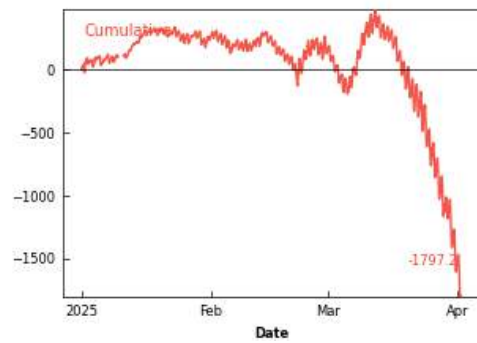
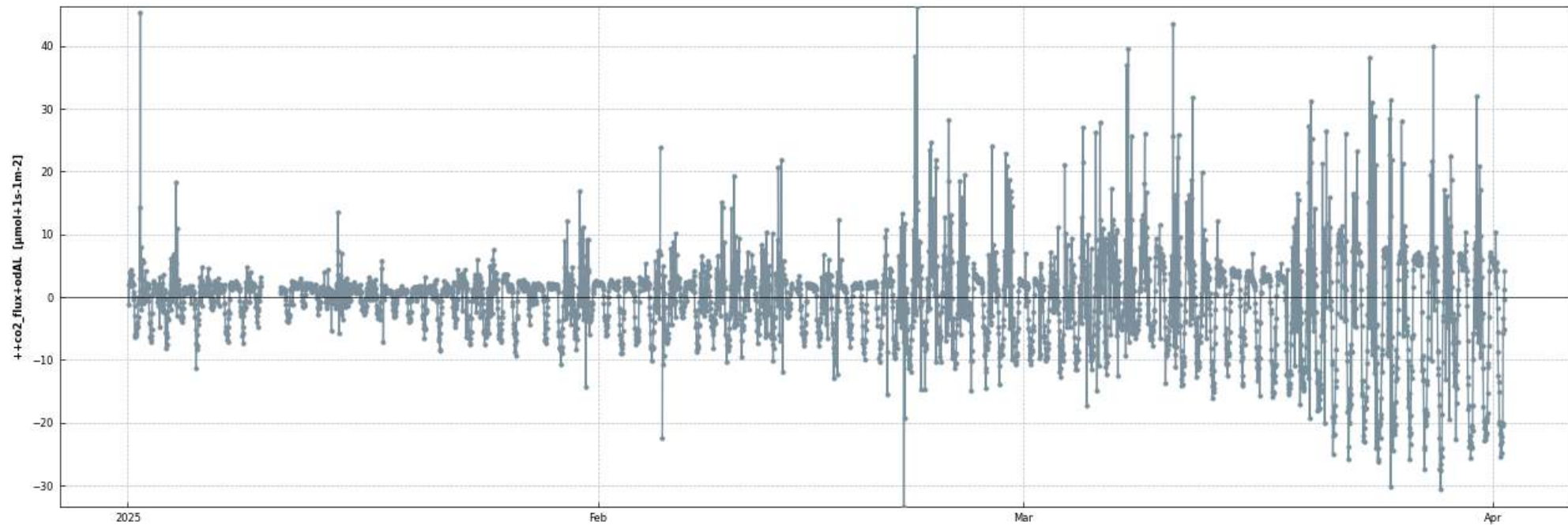


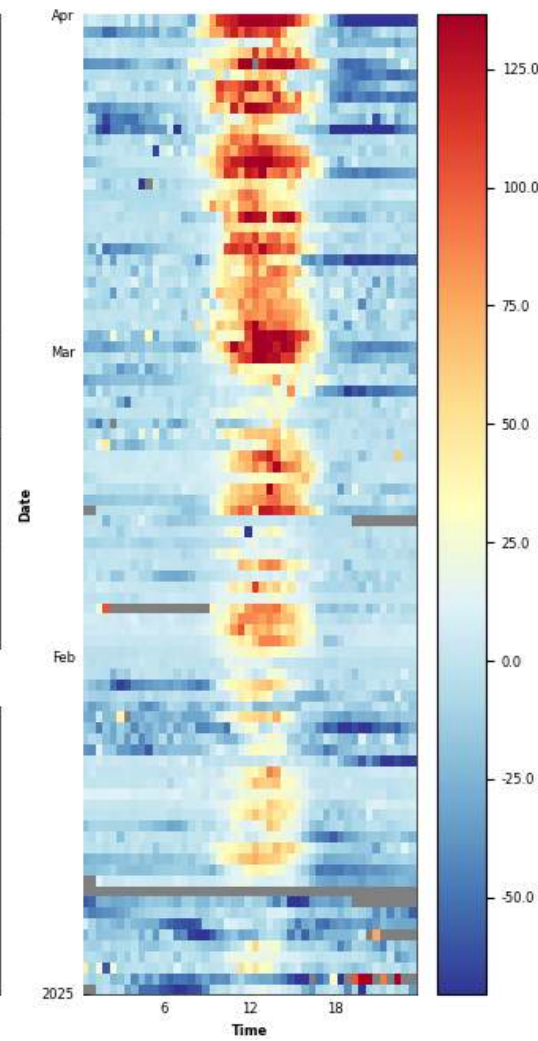
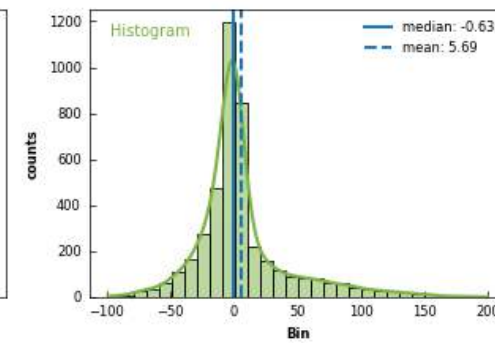
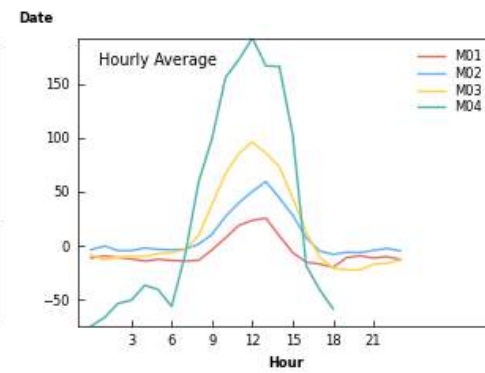
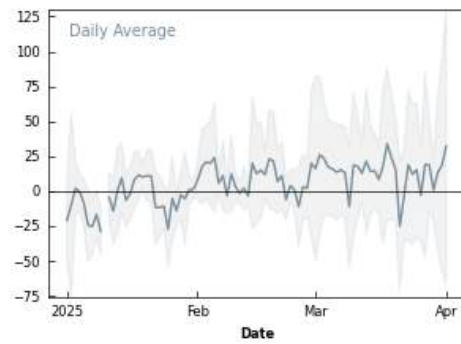
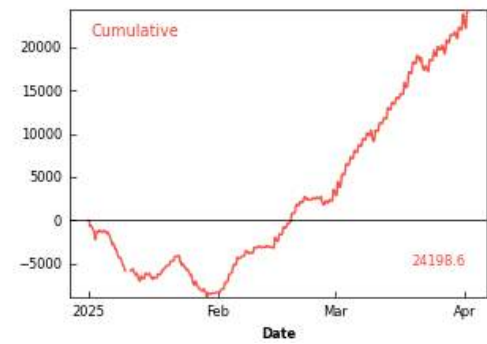
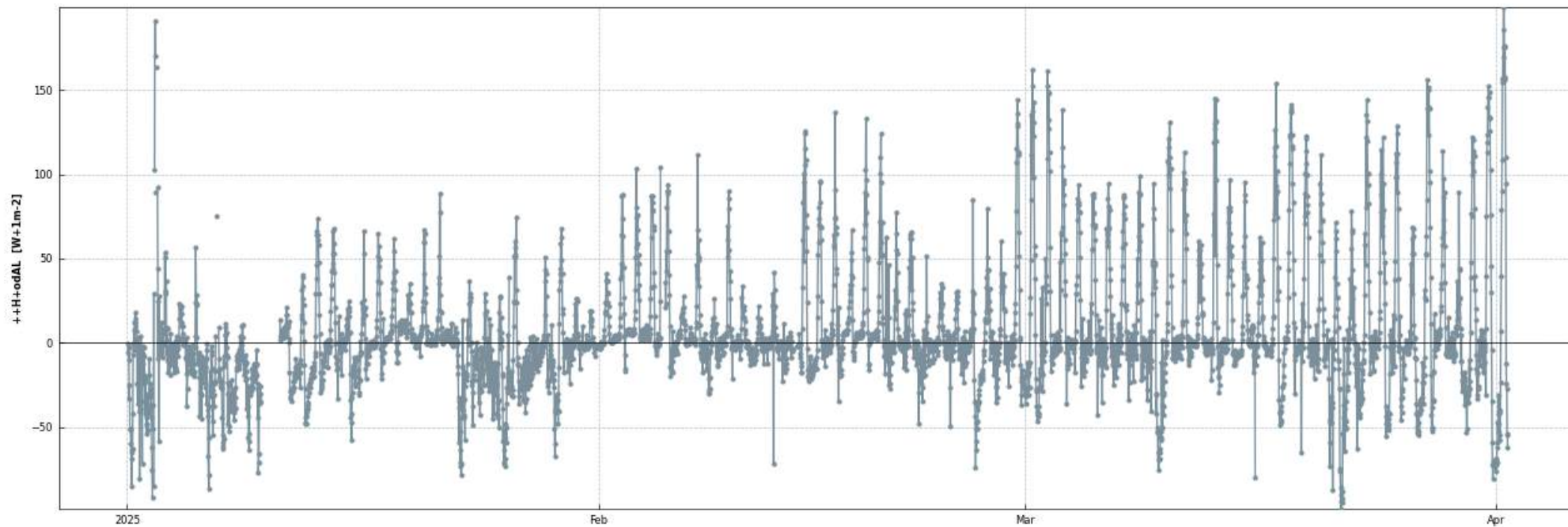


Photo: Lorenz Allemann

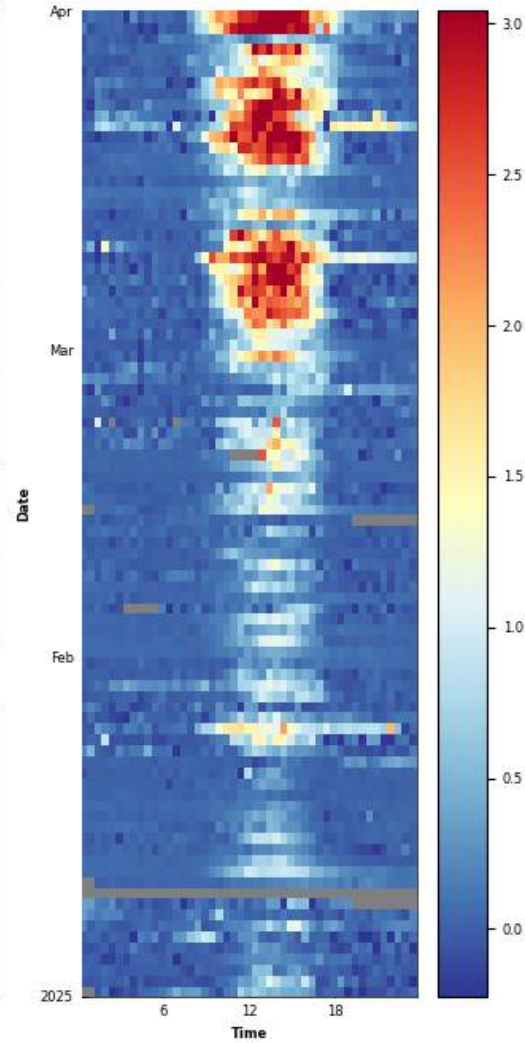
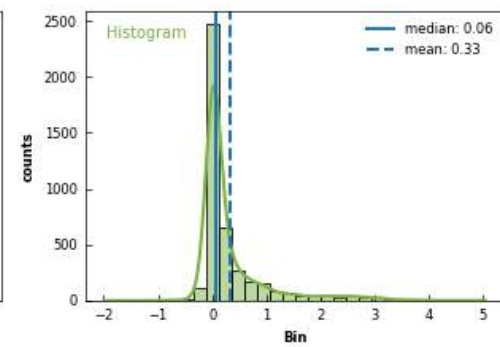
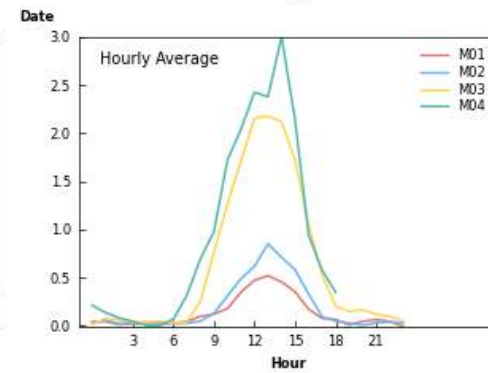
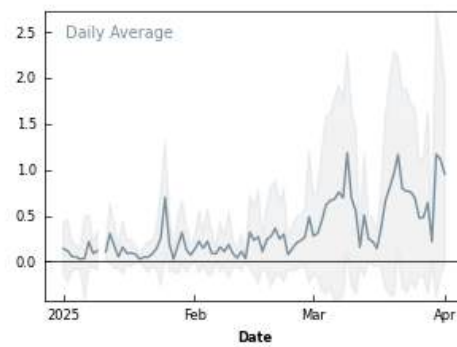
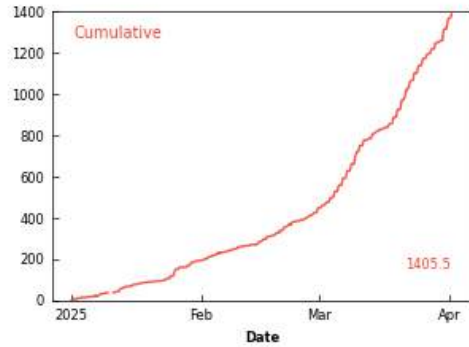
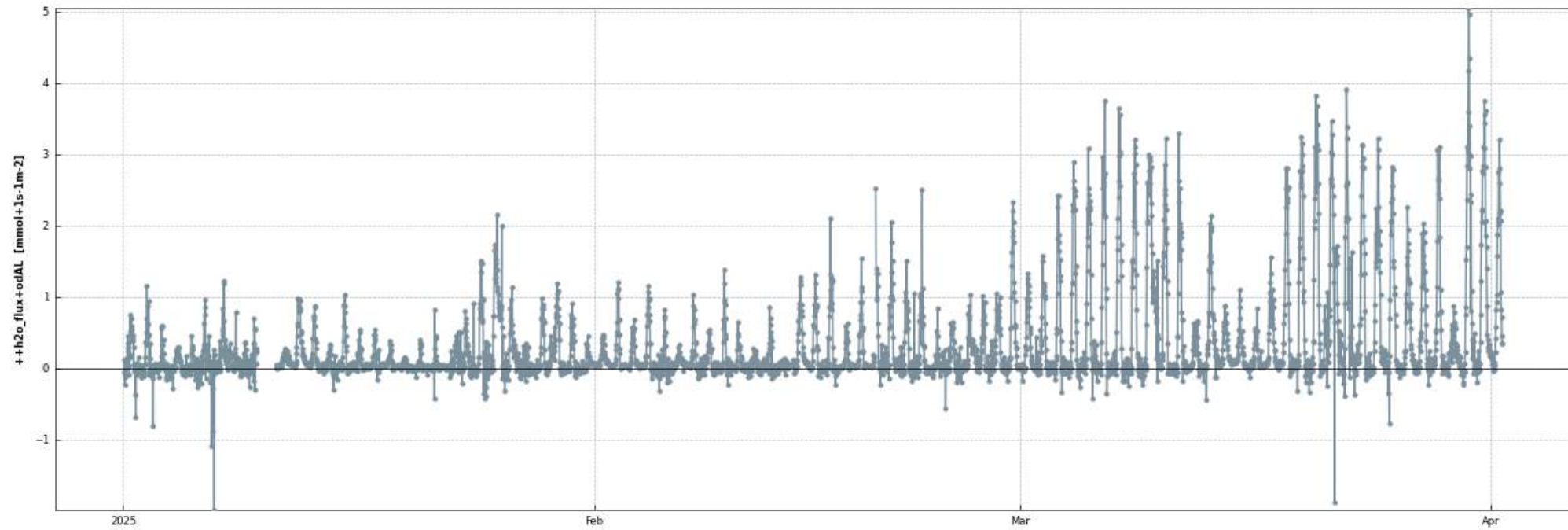
- All good



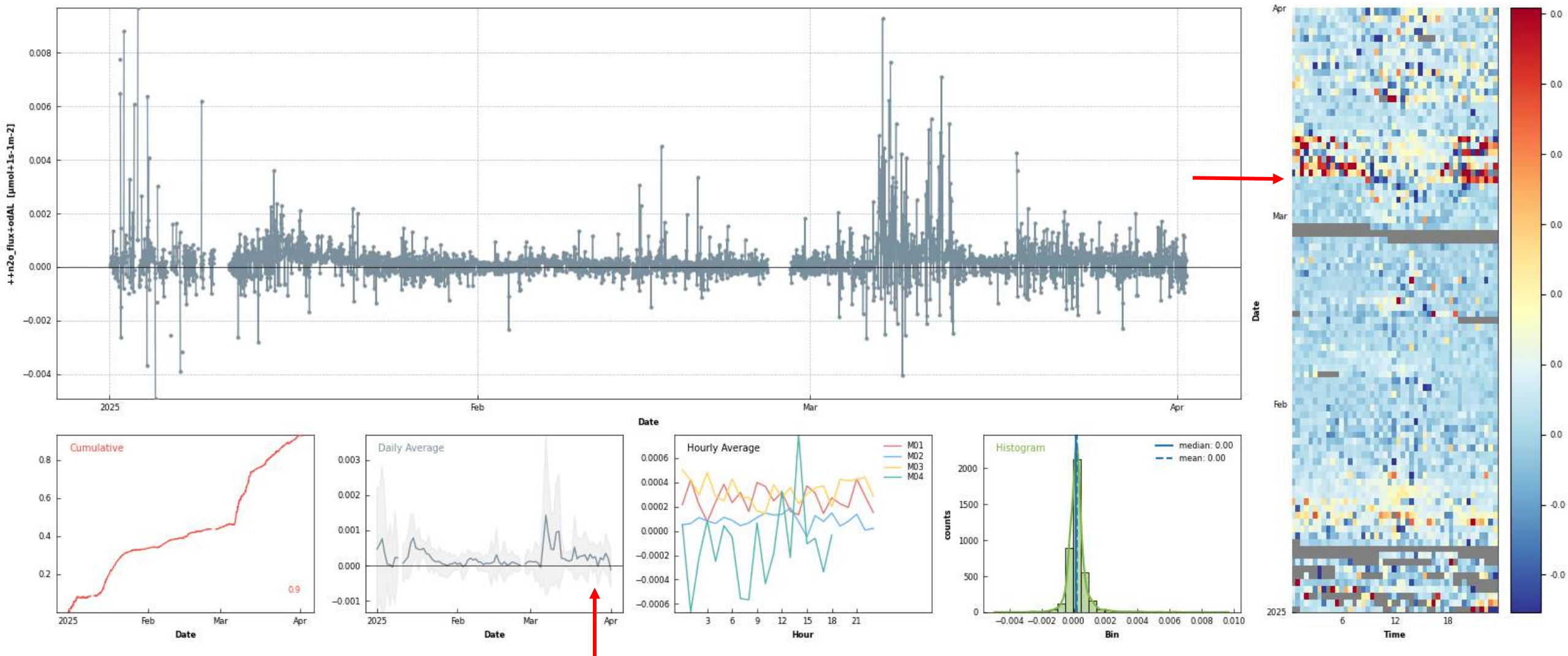
- All good



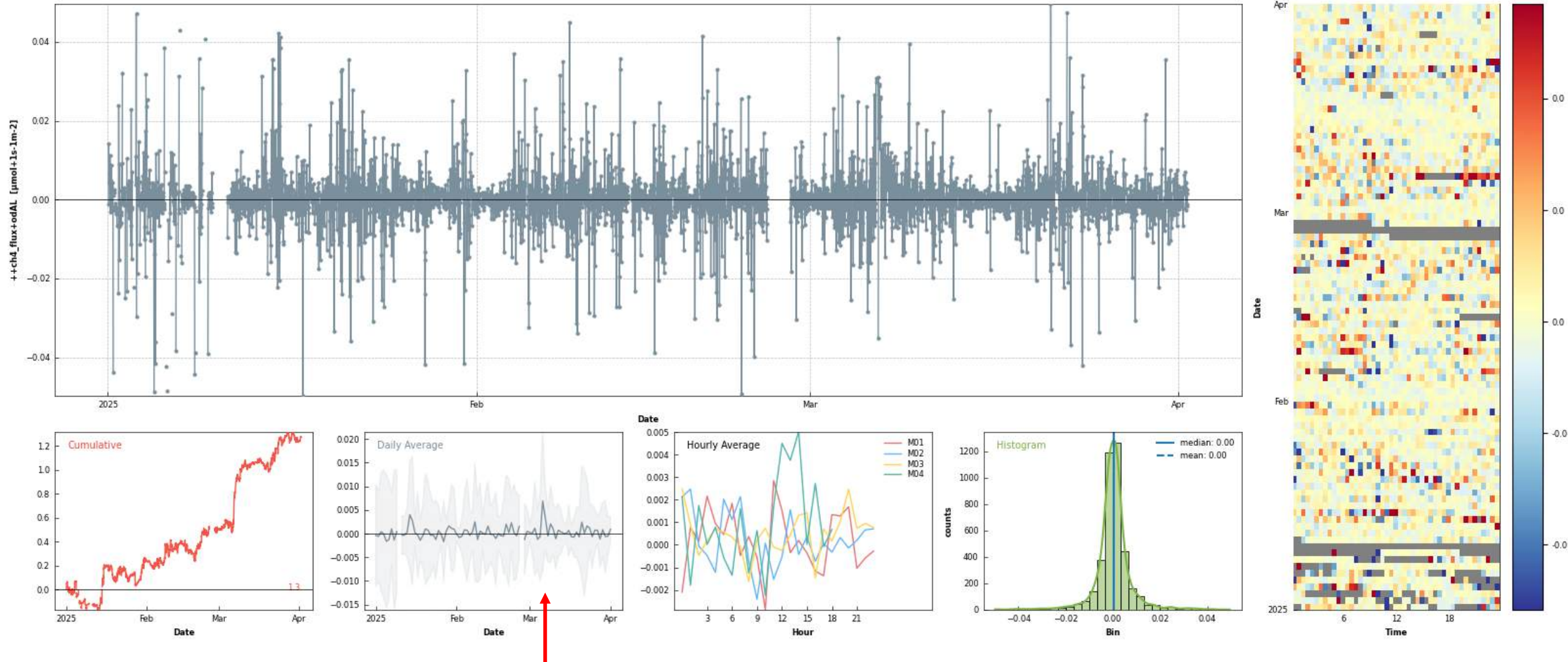
- All good



- 25.02. LGR stopped running. Reason unknown
- 06.03. 1st fertilization (slurry)



- Higher baseline fluxes after peak



- Small peak after fertilization

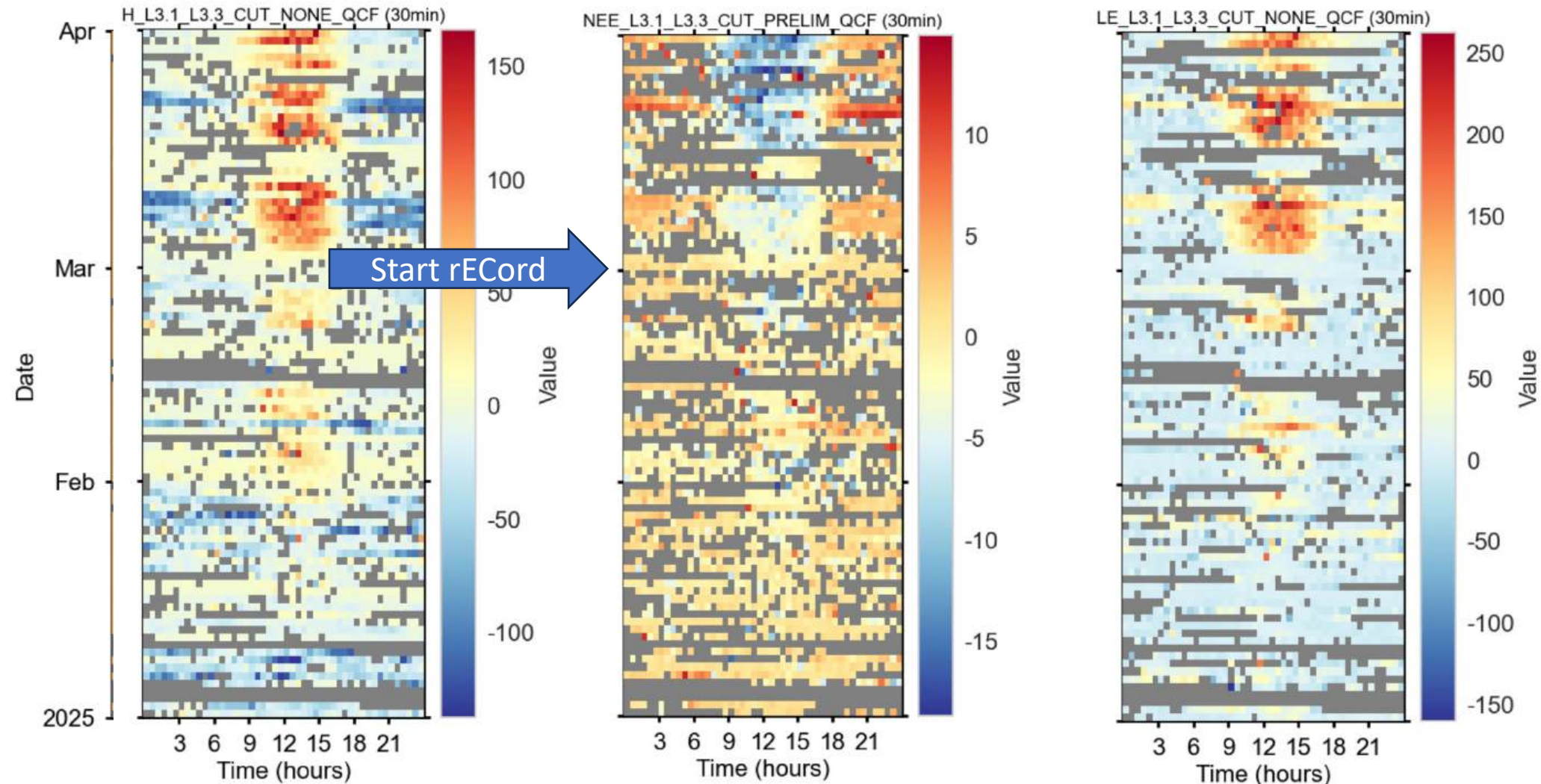


Photo: Lukas Hörtnagl

H

CO₂ flux

LE



- With preliminary QCF using the diive notebook notebooks/FluxProcessingChain/QuickFluxProcessingChain.ipynb
- High and medium and low-quality fluxes
- Preliminary outlier removal
- With preliminary USTAR filtering for NEE

```
+++ FLAG_L2_FC_MISSING_TEST rejected 0 values (+0.00%) TOTALS: flag 0: 3792 (100.00%) / flag 1: 0 (0.00%) / flag 2: 0 (0.00%)
+++ FLAG_L2_FC_SSITC_TEST rejected 347 values (+9.15%) TOTALS: flag 0: 1691 (44.59%) / flag 1: 1754 (46.26%) / flag 2: 347 (9.15%)
+++ FLAG_L2_FC_COMPLETENESS_TEST rejected 0 values (+0.00%)
+++ FLAG_L2_FC_SCF_TEST rejected 8 values (+0.21%) TOTALS: flag 0: 1661 (43.80%) / flag 1: 1776 (46.84%) / flag 2: 355 (9.36%)
+++ FLAG_L2_FC_SIGNAL_STRENGTH_TEST rejected 139 values (+3.67%) TOTALS: flag 0: 1639 (43.22%) / flag 1: 1659 (43.75%) / flag 2: 494 (13.03%)
+++ FLAG_L2_FC_CO2_VM97_SPIKE_HF_TEST rejected 7 values (+0.18%) TOTALS: flag 0: 1633 (43.06%) / flag 1: 1658 (43.72%) / flag 2: 501 (13.21%)
+++ FLAG_L2_FC_CO2_VM97_DROPOUT_TEST rejected 0 values (+0.00%) TOTALS: flag 0: 1633 (43.06%) / flag 1: 1658 (43.72%) / flag 2: 501 (13.21%)
+++ FLAG_L3.2_NEE_L3.1_QCF_OUTLIER_ZSCOREDTNT_TEST rejected 139 values (+3.67%) TOTALS: flag 0: 1611 (42.48%) / flag 1: 1541 (40.64%) / flag 2: 640 (16.88%)
+++ FLAG_L3.3_CUT_PRELIM_NEE_L3.1_USTAR_TEST rejected 736 values (+19.41%) TOTALS: flag 0: 1345 (35.47%) / flag 1: 1071 (28.24%) / flag 2: 1376 (36.29%)
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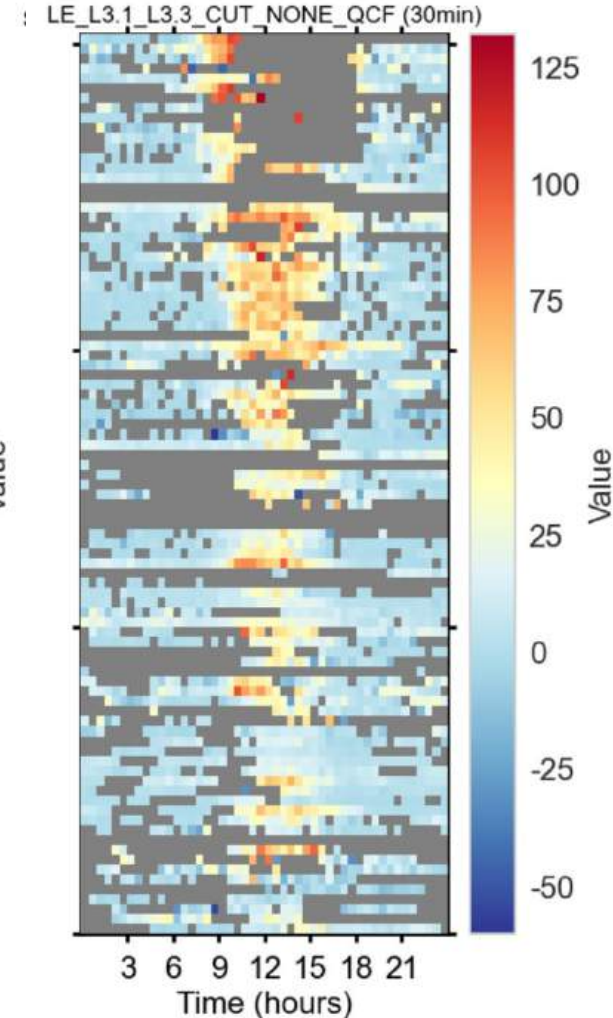
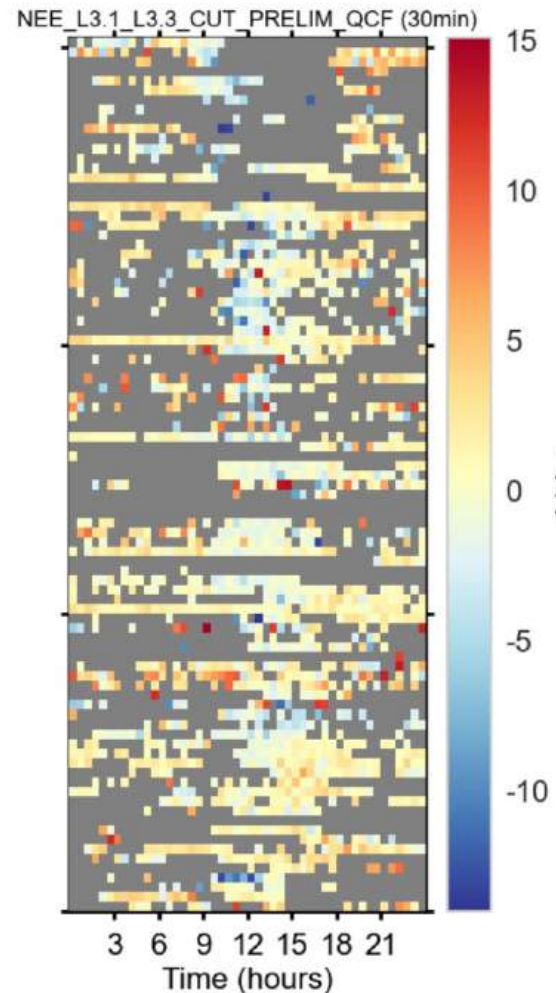
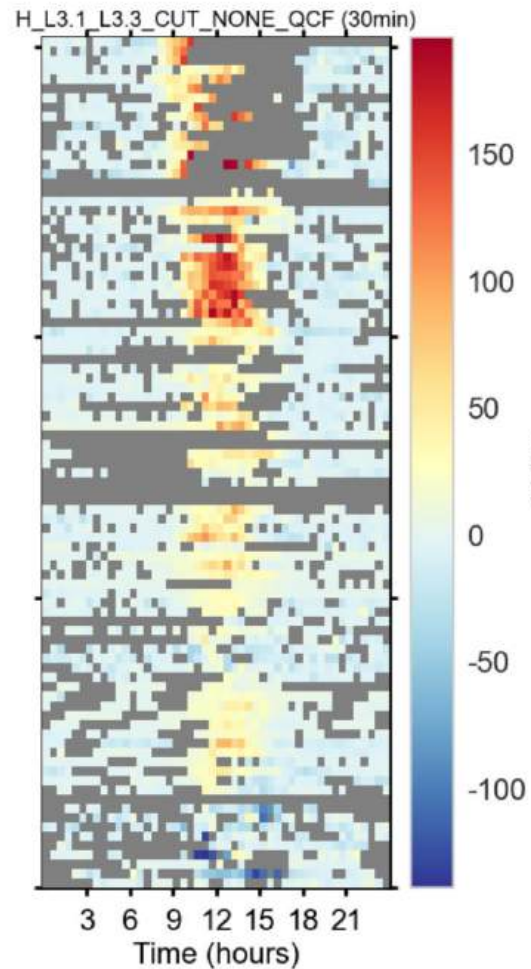


Photo: Lukas Hörtnagl

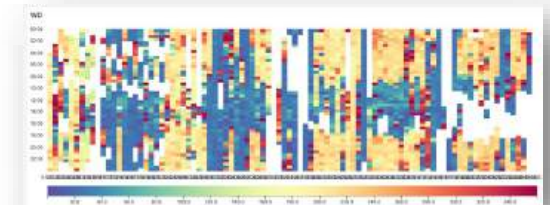
H

CO₂ flux

LE



- With preliminary QCF using the diive notebook
notebooks/FluxProcessingChain/QuickFluxProcessingChain.ipynb
- Highest- and medium- and low-quality fluxes
- Preliminary outlier removal
- With preliminary USTAR filtering for NEE



- Wind direction this year so far
- red/blue/green = footprint of interest
- Orange = behind tower, on path
- Will need QC with wind direction included

CH-HON Missing files

2025032207.h00	2025-03-22 22:00	H00 File	5'976 KB
2025032218.h02	2025-03-23 07:03	H02 File	13'716 KB
2025032301.h00	2025-03-23 22:00	H00 File	11'813 KB
2025032307.h00	2025-03-23 22:00	H00 File	11'352 KB
2025032317.h54	2025-03-23 22:00	H54 File	2'167 KB
2025032319.h00	2025-03-24 07:03	H00 File	11'813 KB
2025032401.h00	2025-03-24 22:00	H00 File	11'813 KB
2025032407.h00	2025-03-24 22:00	H00 File	9'172 KB
2025032412.h42	2025-03-25 07:03	H42 File	12'404 KB
2025032419.h00	2025-03-25 07:03	H00 File	11'813 KB
2025032501.h00	2025-03-25 22:00	H00 File	11'813 KB
2025032507.h00	2025-03-25 22:00	H00 File	8'760 KB
2025032517.h21	2025-03-25 22:00	H21 File	3'249 KB
2025032519.h00	2025-03-26 07:03	H00 File	11'813 KB
2025032601.h00	2025-03-27 03:00	H00 File	11'813 KB
2025032607.h00	2025-03-27 03:00	H00 File	10'468 KB
2025032615.h51	2025-03-27 03:00	H51 File	6'202 KB
2025032619.h00	2025-03-27 07:03	H00 File	11'813 KB
2025032701.h00	2025-03-27 22:00	H00 File	11'813 KB
2025032707.h00	2025-03-27 22:00	H00 File	8'000 KB
2025032717.h59	2025-03-27 22:00	H59 File	2'002 KB
2025032719.h00	2025-03-28 07:03	H00 File	11'813 KB
2025032801.h00	2025-03-28 22:00	H00 File	11'813 KB
2025032807.h00	2025-03-28 22:00	H00 File	11'813 KB
2025032813.h00	2025-03-28 22:00	H00 File	936 KB
2025032817.h48	2025-03-28 22:00	H48 File	2'363 KB
2025032819.h00	2025-03-29 07:03	H00 File	11'813 KB
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2025032907.h00	2025-03-29 22:00	H00 File	11'813 KB
2025032913.h00	2025-03-29 22:00	H00 File	2'548 KB
2025032918.h00	2025-03-29 22:00	H00 File	1'969 KB
2025032919.h00	2025-03-30 07:03	H00 File	11'813 KB
2025032901.h00	2025-03-30 22:00	H00 File	11'813 KB
2025033007.h00	2025-03-30 22:00	H00 File	5'968 KB
2025033017.h17	2025-03-30 22:00	H17 File	3'380 KB
2025033019.h00	2025-03-31 07:03	H00 File	11'813 KB
2025033101.h00	2025-04-01 07:03	H00 File	11'813 KB
2025033107.h00	2025-04-01 07:03	H00 File	6'820 KB
2025033117.h56	2025-04-01 03:00	H56 File	2'101 KB
2025033119.h00	2025-04-01 07:03	H00 File	11'813 KB

- Missing or shorter files around noon/early afternoon



Photo: Markus Staudinger

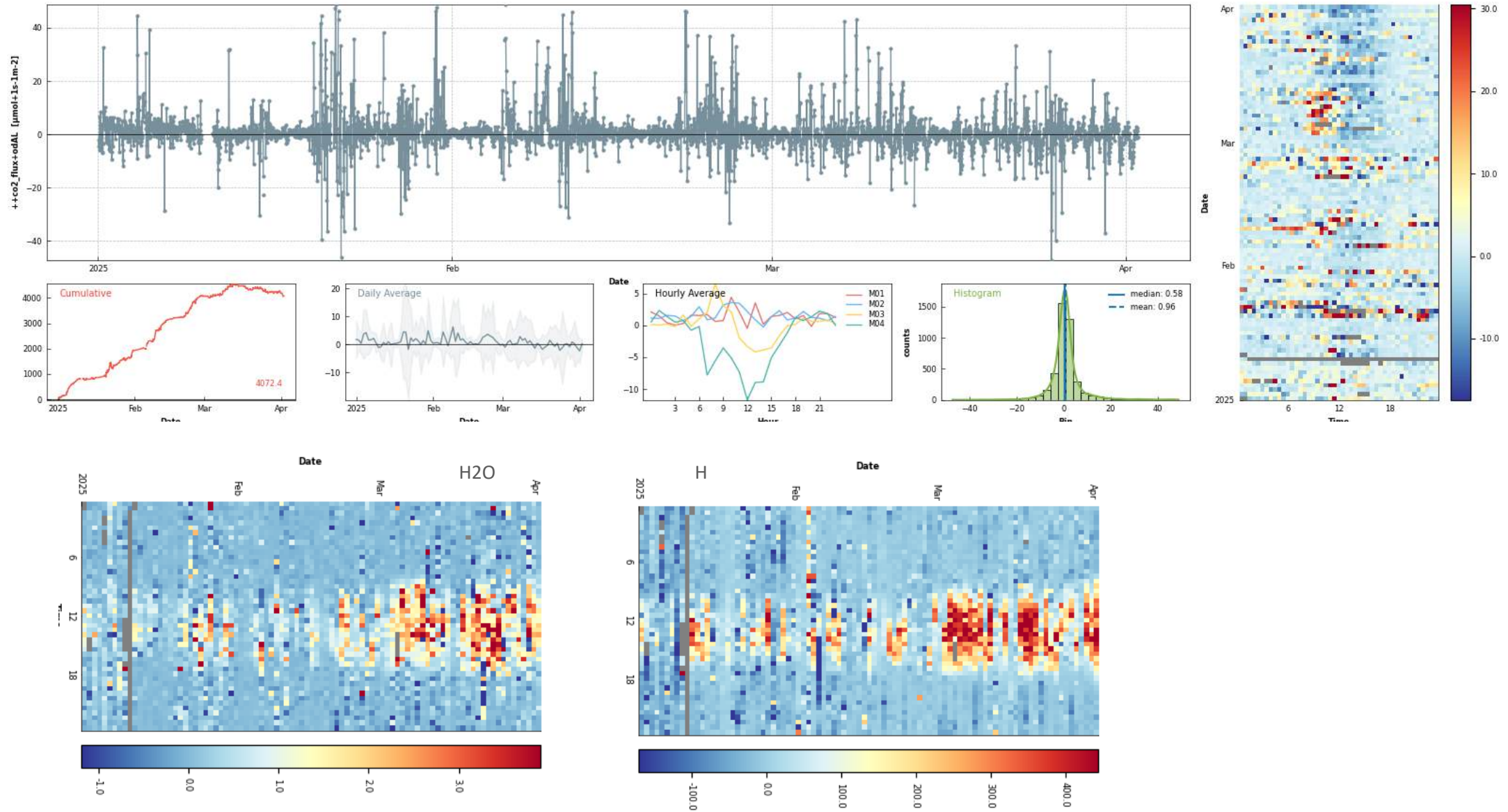




Photo: Liliana Scapucci

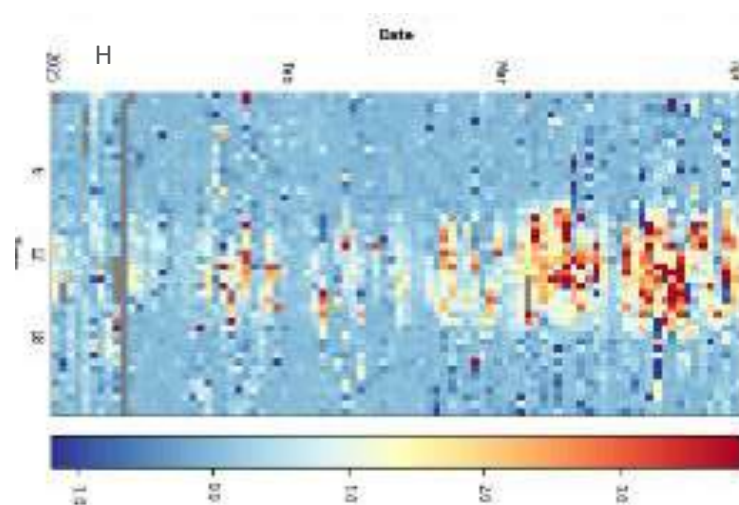
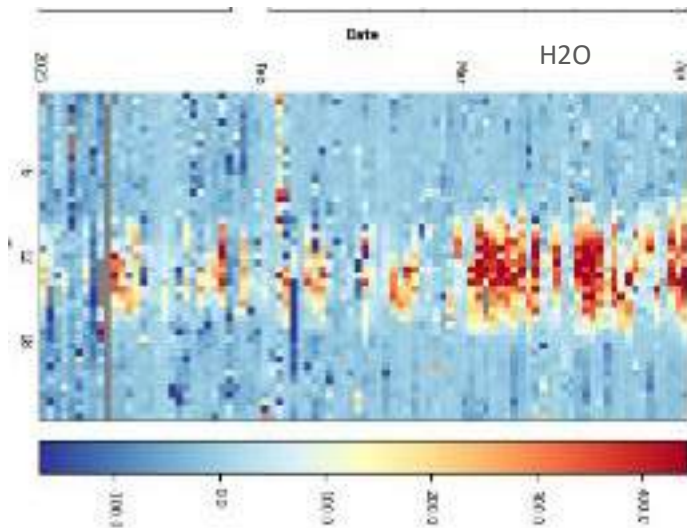
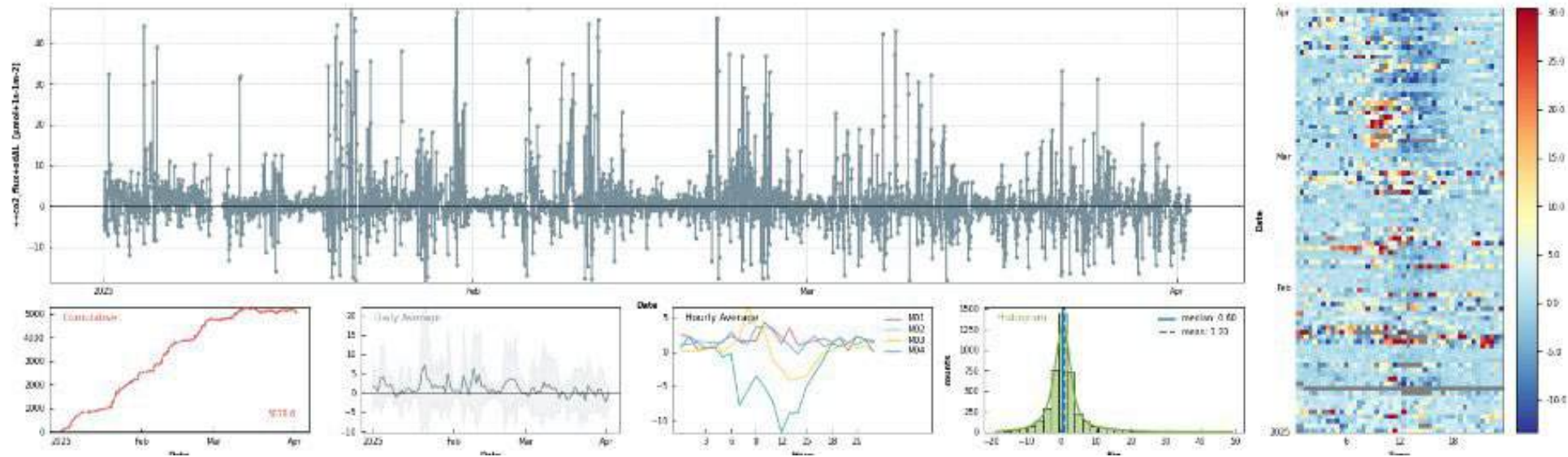
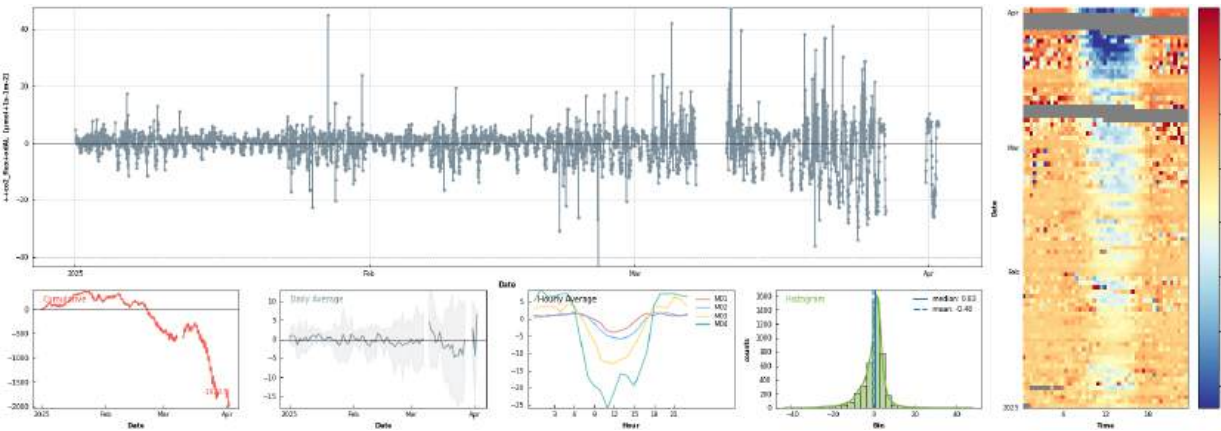




Photo: Regine Maier

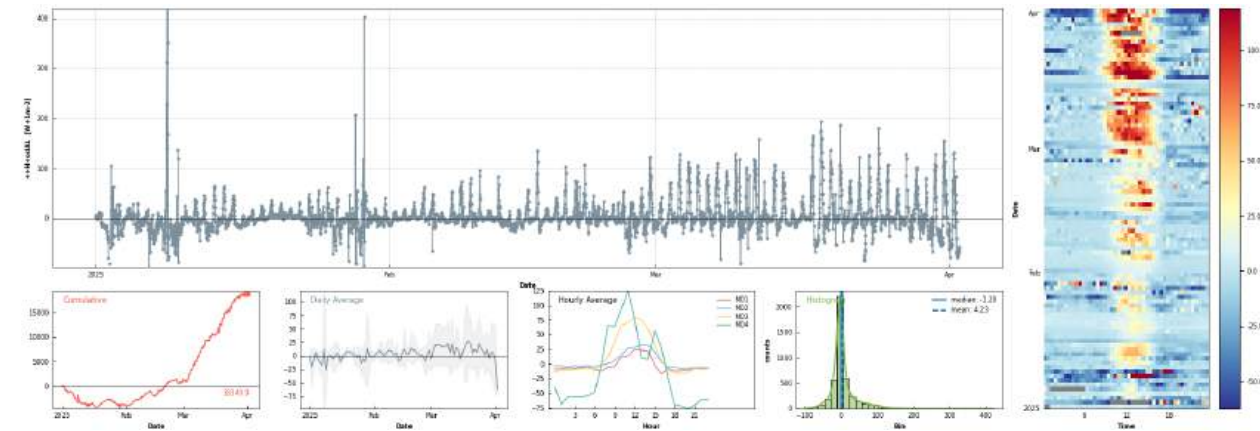
CO₂ flux

Abs limits: -70+50



H

Abs limits: -100+450

H₂O flux

Abs limits: -2+20

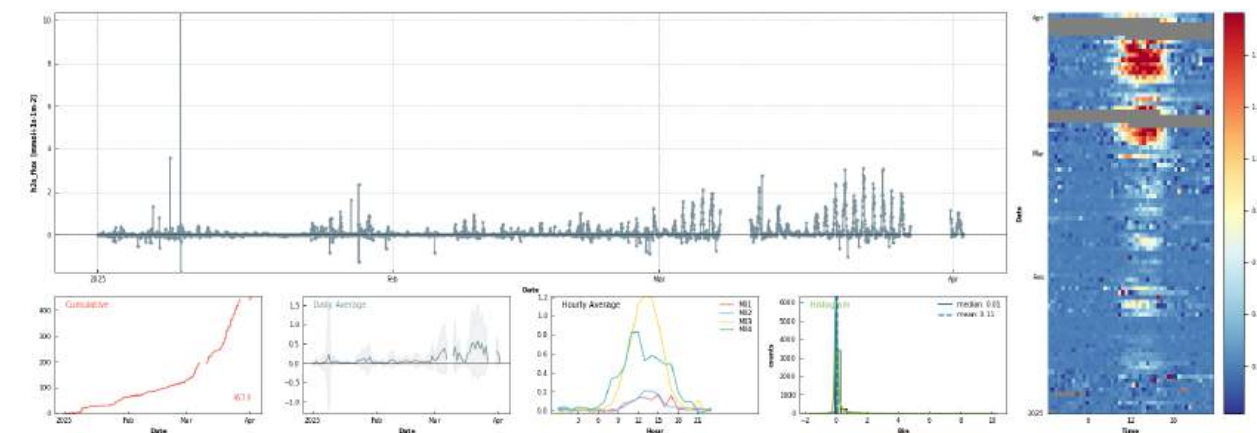


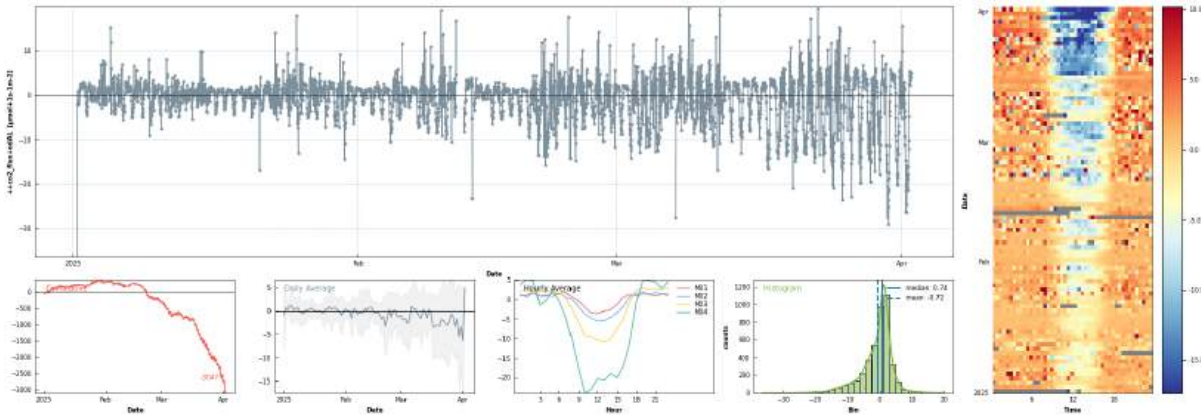


Photo: Fabio Turco

Slurry application on March 6 → CH₄ peak but no N₂O peak, maybe only now?

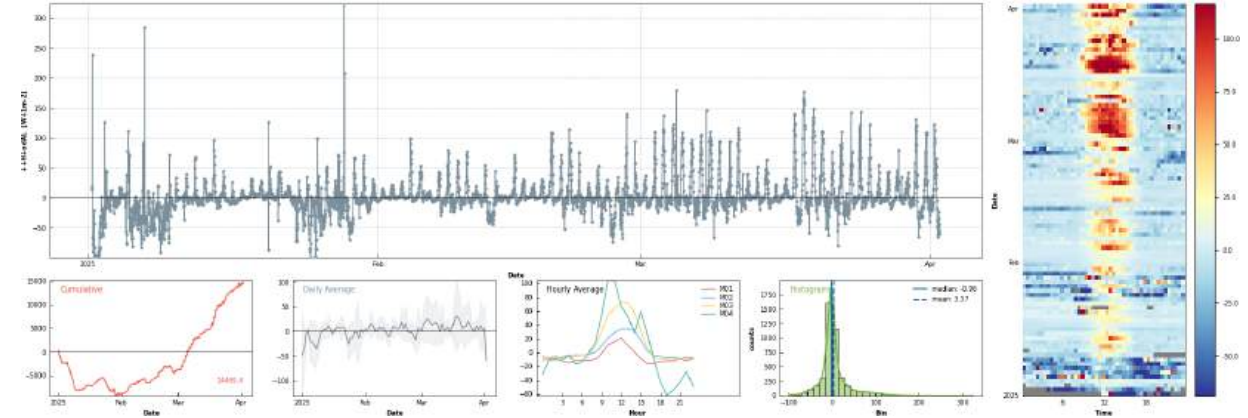
CO₂ flux

Abs limits: -40+20

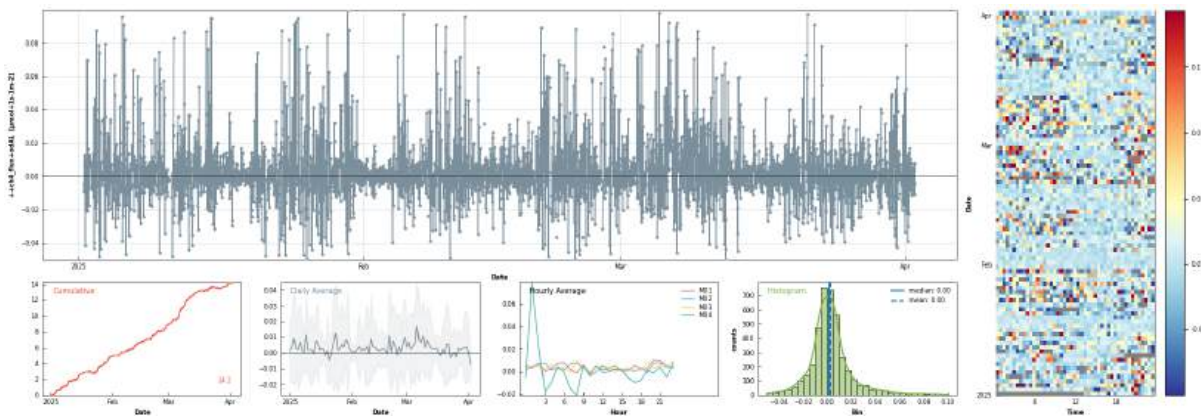


H

Abs limits: -100+450

CH₄ flux

Abs limits: -0.05+0.1

N₂O

Abs limits: -0.005+0.05

