

QA/QC Meeting 22 May 2025

Participants: LH, IF, FT, PE, LA, KMK, MR, PR, TB, AG, FLT, LS, YW, SB, ZG, YZ (16)

Including uploads in 2025, FLUXNET now has:

- **AWS:** fluxes and meteo 2006-2024, excl. 2012
- **CHA:** fluxes and meteo 2005-2024, incl. N₂O and CH₄ 2012-2022 [Overview](#)
- **DAV:** fluxes and meteo 1997-2024, incl. CH₄ 2016-2017, 2020-2023
- **FOR:** fluxes (N₂O, CH₄, CO₂+?) and meteo 2024
- **FRU:** fluxes and meteo 2005-2024
- **LAE:** fluxes and meteo 2004-2024
- **OE2:** fluxes and meteo 2004-2024, incl. CH₄ and N₂O 2022-2023, and CH₄ 2018
- **TAN (Tnk):** fluxes and meteo 2024, incl. N₂O and CH₄

Available Level-1 Fluxes

• For info about the different flux levels, see [Flux Processing Chain](#)

UPDATED

also for other sites

Columns: PRINT EXCEL CSV COPY PDF

Show All entries Search

Site & Year	SA	GA	CO ₂	H ₂ O	N ₂ O	CH ₄	Current Version	EFDC Version	EFDC Upload	EFDC Calc	Details
CH-CHA 2005	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2006	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2007	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2008	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2009	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2010	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2011	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2012	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2013	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2014	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2015	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2016	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2017	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2018	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2019	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2020	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2021	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2022	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2023	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	UPDATE	Show
CH-CHA 2024	R350	RGA75	CO ₂	H ₂ O			FF-202503	FF-202503	20 Apr 2025	NEW	Show
CH-CHA QCLGR 2012	R350	QCL			N ₂ O	CH ₄	FF-202501	FF-202501	28 Feb 2025	UPDATE	Show
CH-CHA	R350	QCL			N ₂ O	CH ₄	FF-202501	FF-202501	28 Feb 2025	UPDATE	Show

Processing Docs Jupyter book about new CH-CHA PI dataset



Search

CH-CHA Flux Product

Overview

Meteo Data

Management Data

Flux Processing Chain

Instrumentation

Variables

Supplementary Information

Known Issues

Used Software

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References

Notebook overview

Dataset Versions

CH-CHA Flux Product

This dataset description is currently in progress.

produced by [Lukas Hörtzogl](#)

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 **2023-05-01** 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](#).

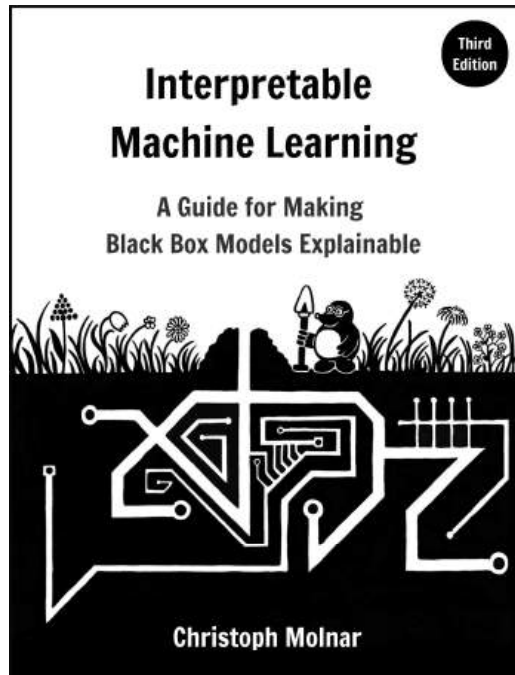
Acknowledgments

We acknowledge the scientific advice by Iris Feigenwinter, Yi Wang, Lukas Hörtzogl, 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 Köller, Florian Kaslin 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

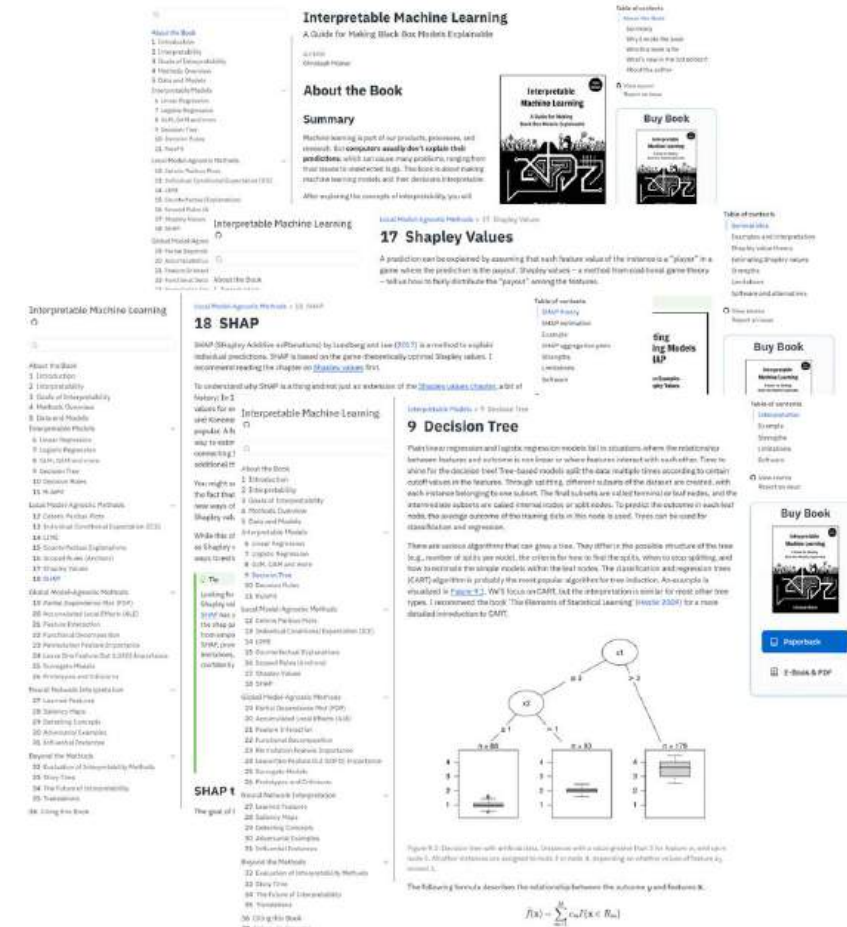
UPDATED

Jupyter book

https://holukas.github.io/dataset_ch-cha_flux_product/intro.html



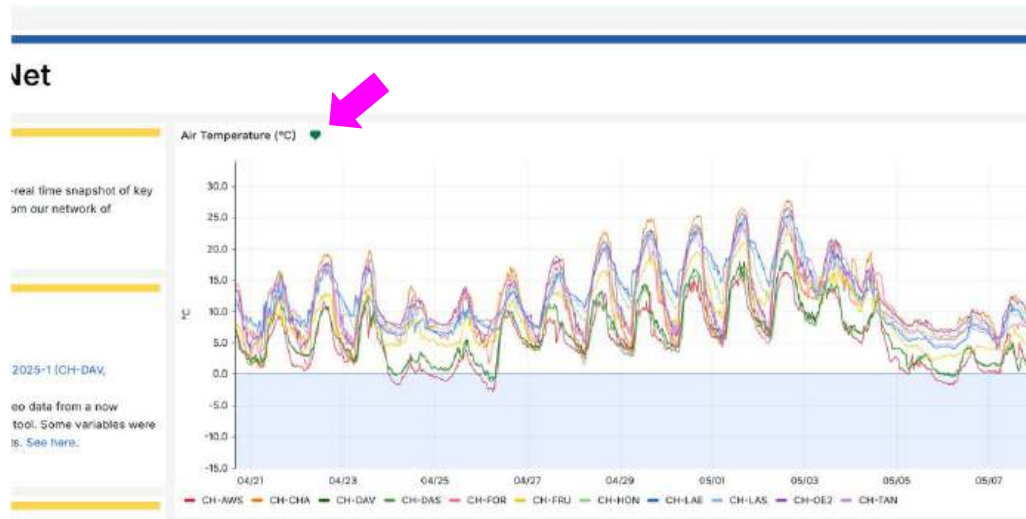
- Free online version
- Good chapters e.g. about SHAP
- Also: there is an extra book (not free) about [Interpreting Machine Learning Models With SHAP](https://christophm.github.io/interpreting-machine-learning-models-with-shap/)



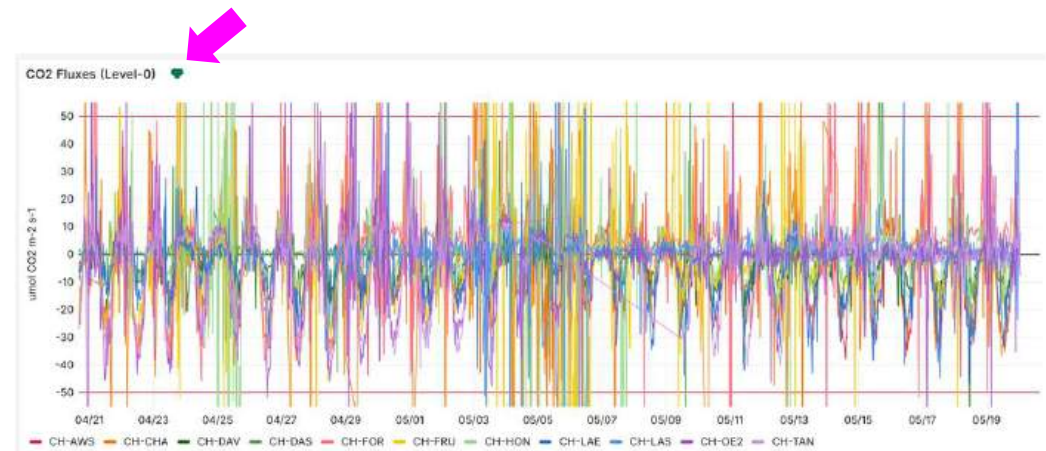
<https://christophm.github.io/interpretable-ml-book/>

ALL SITES Updated Grafana Alerts

UPDATED



Green heart means that all 11 sites have more than zero values for the shown air temperature variable over the last **48 hours**.



Green heart means that all 11 sites have more than 50% of potential FC fluxes available over the last **72 hours**. Alert is run once every 24 hours, approx. at noon 12:20.

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:

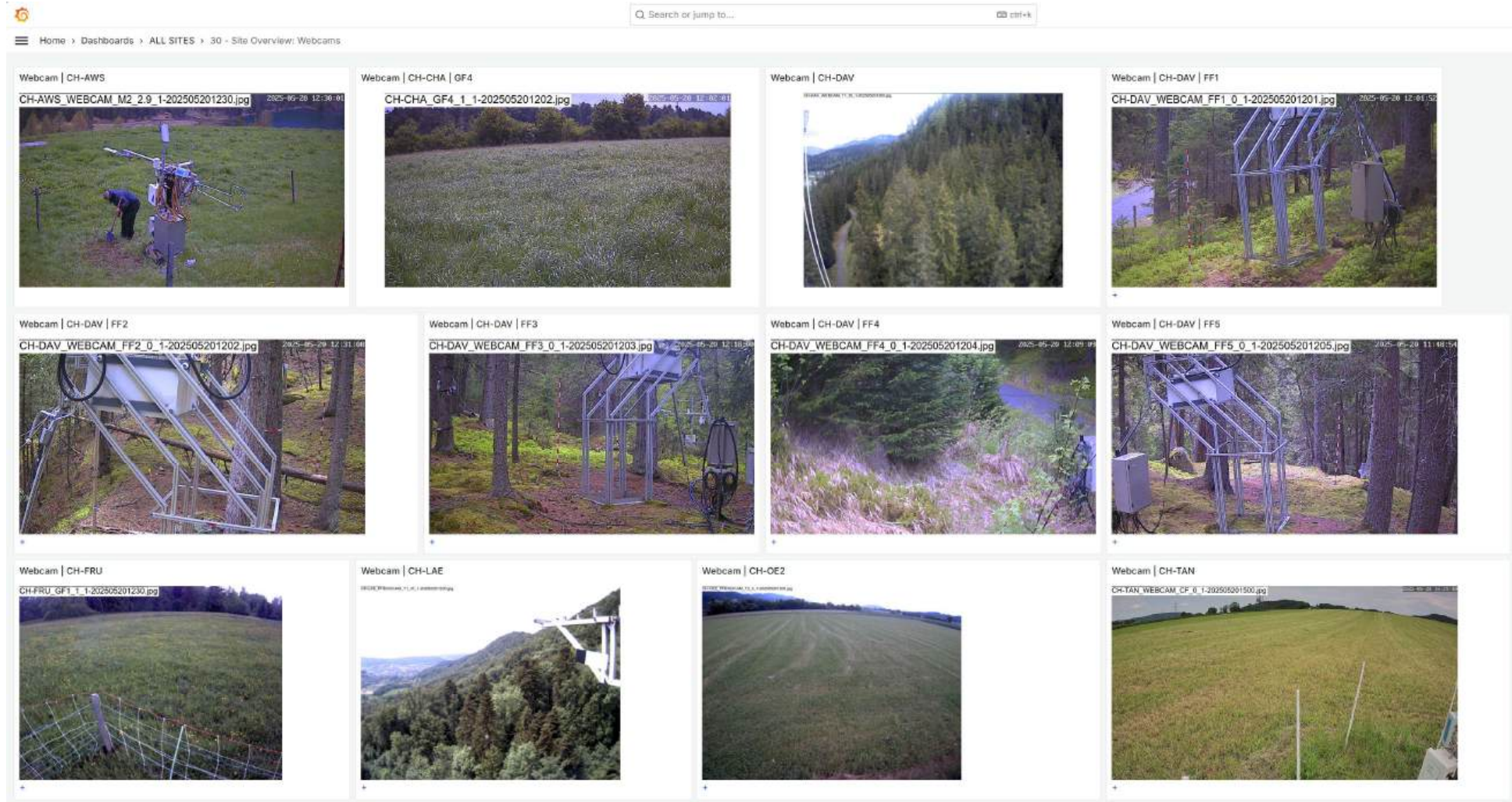
- bico starts **6:00** / 6:00
- dataflow 10_meteo upload starts **8:00** / 7:00
- dataflow 11_meteo_valley upload starts **8:02** / 7:02
- dataflow 12_meteo_rainfall upload starts **8:04** / 7:04
- dataflow 13_meteo_pressure upload starts **8:06** / 7:06
- dataflow 15_meteo_snowheight upload starts **8:08**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

ALL SITES

Recent webcam pictures

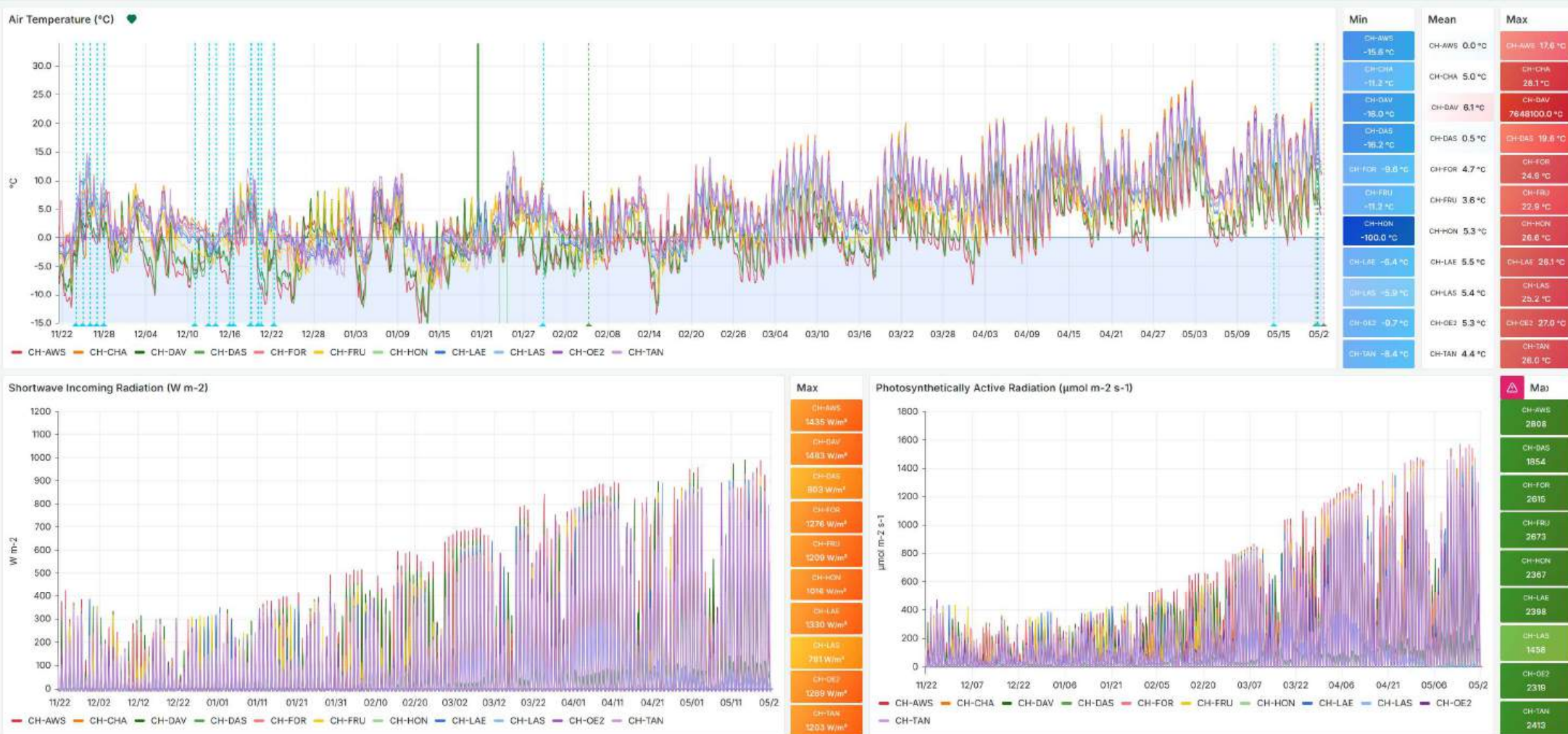


<https://dataviews.swissfluxnet.ethz.ch/d/AmnD0qx7z/30-site-overview3a-webcams?orgId=1&from=now-6h&to=now&timezone=Africa%2FTunis>

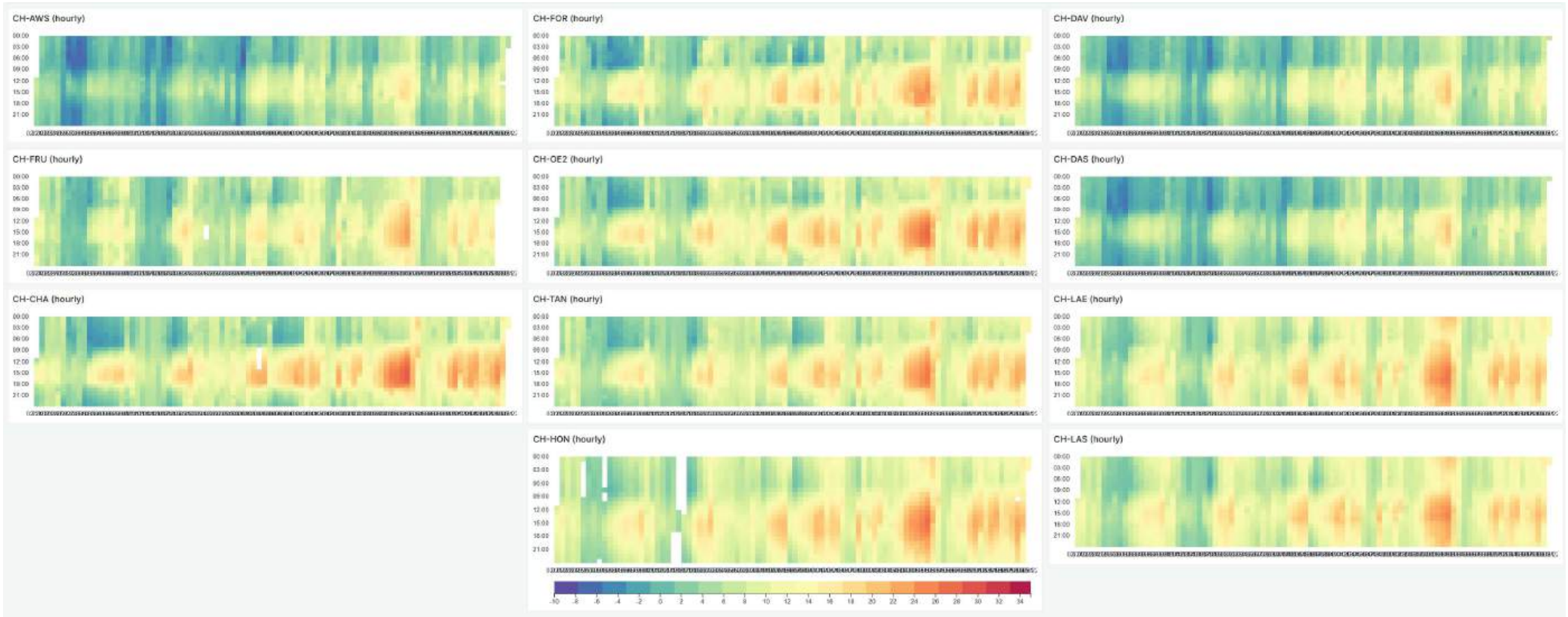
ALL SITES

Meteo data, all sites

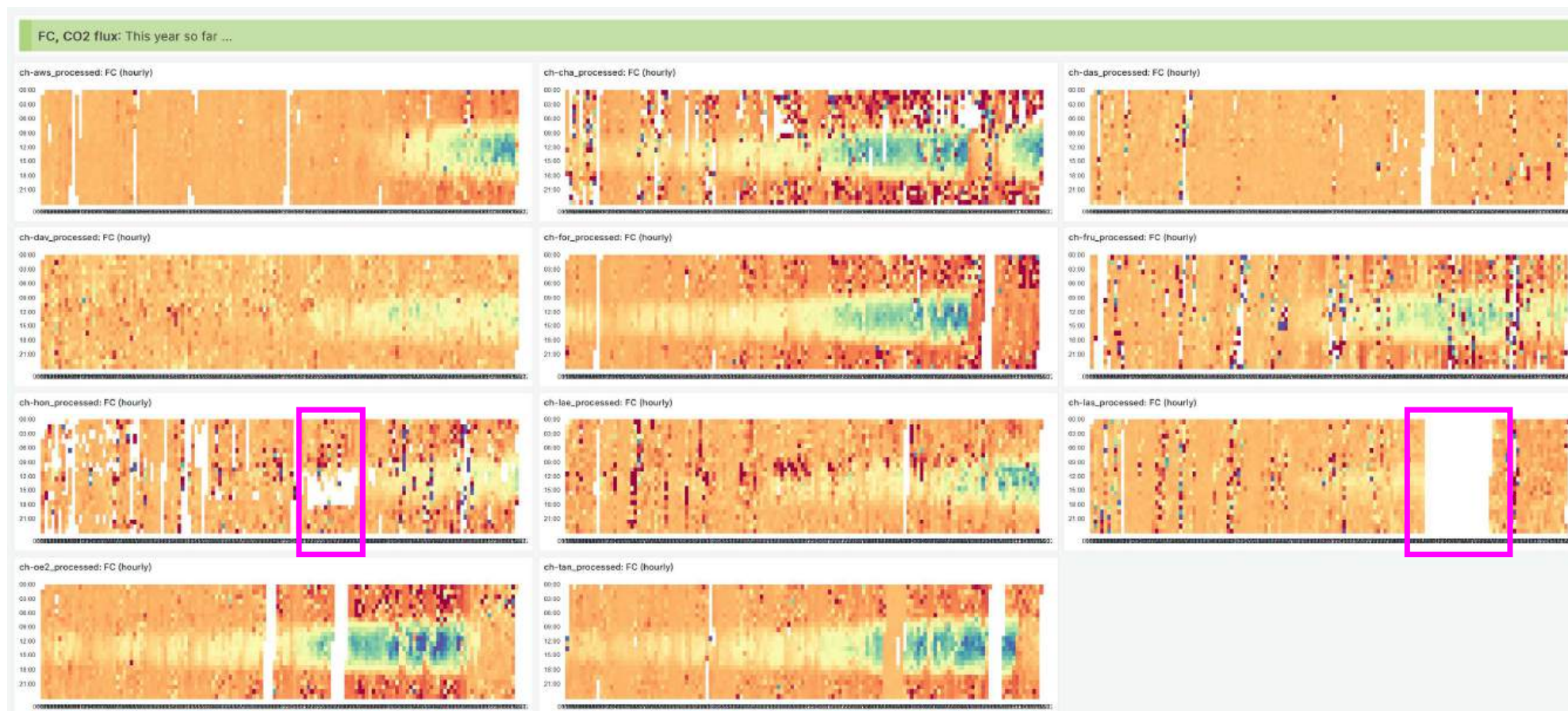
Last 6 months



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



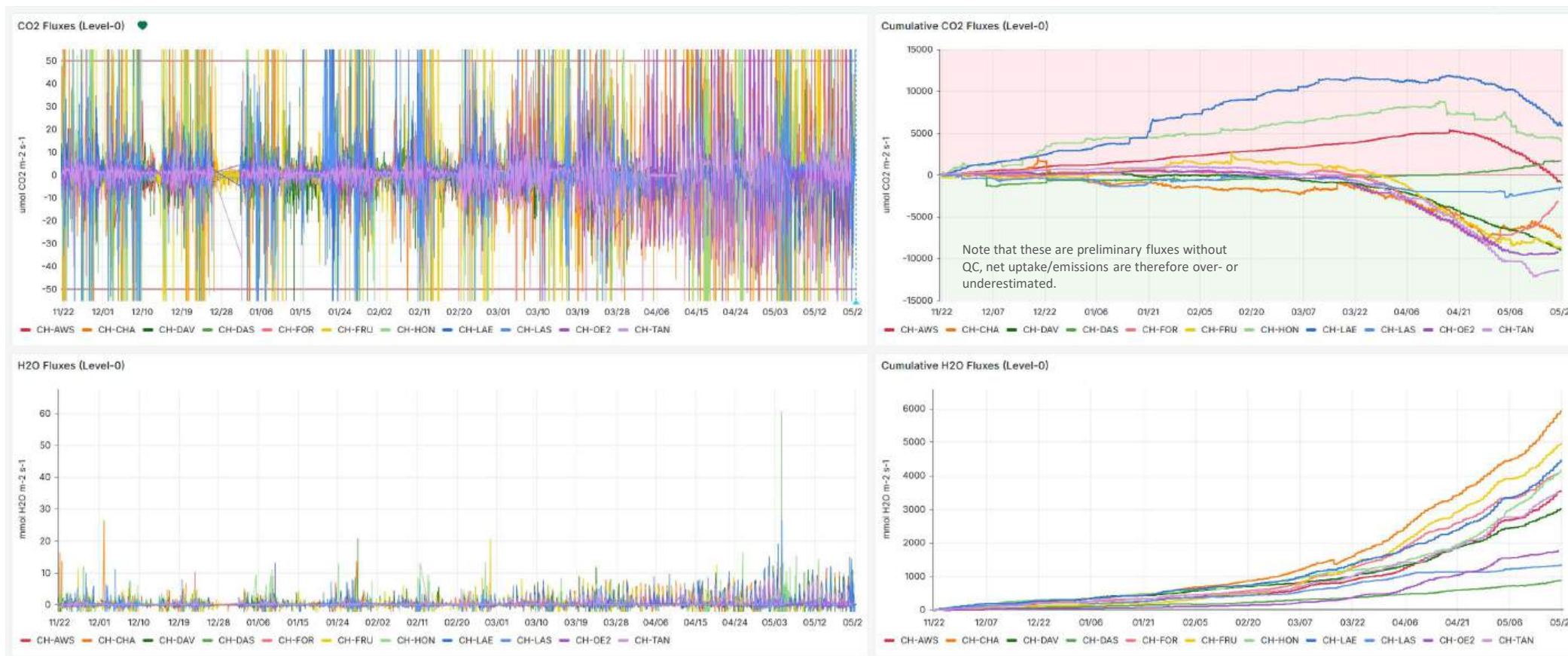
<https://dataviews.swissfluxnet.ethz.ch>



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

ALL SITES CO₂ and H₂O fluxes

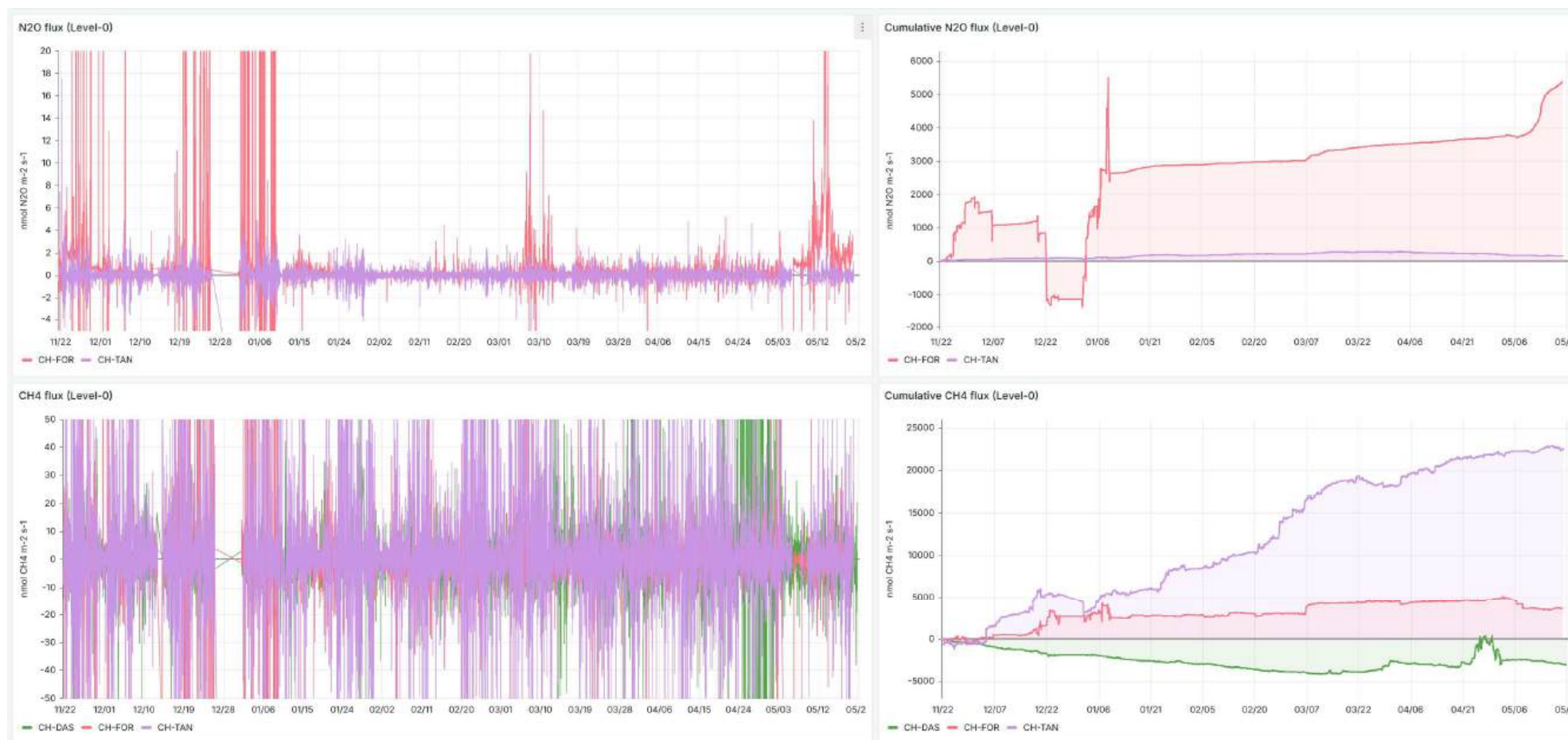
Last 6 months



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

ALL SITES N₂O and CH₄ fluxes

Last 6 months

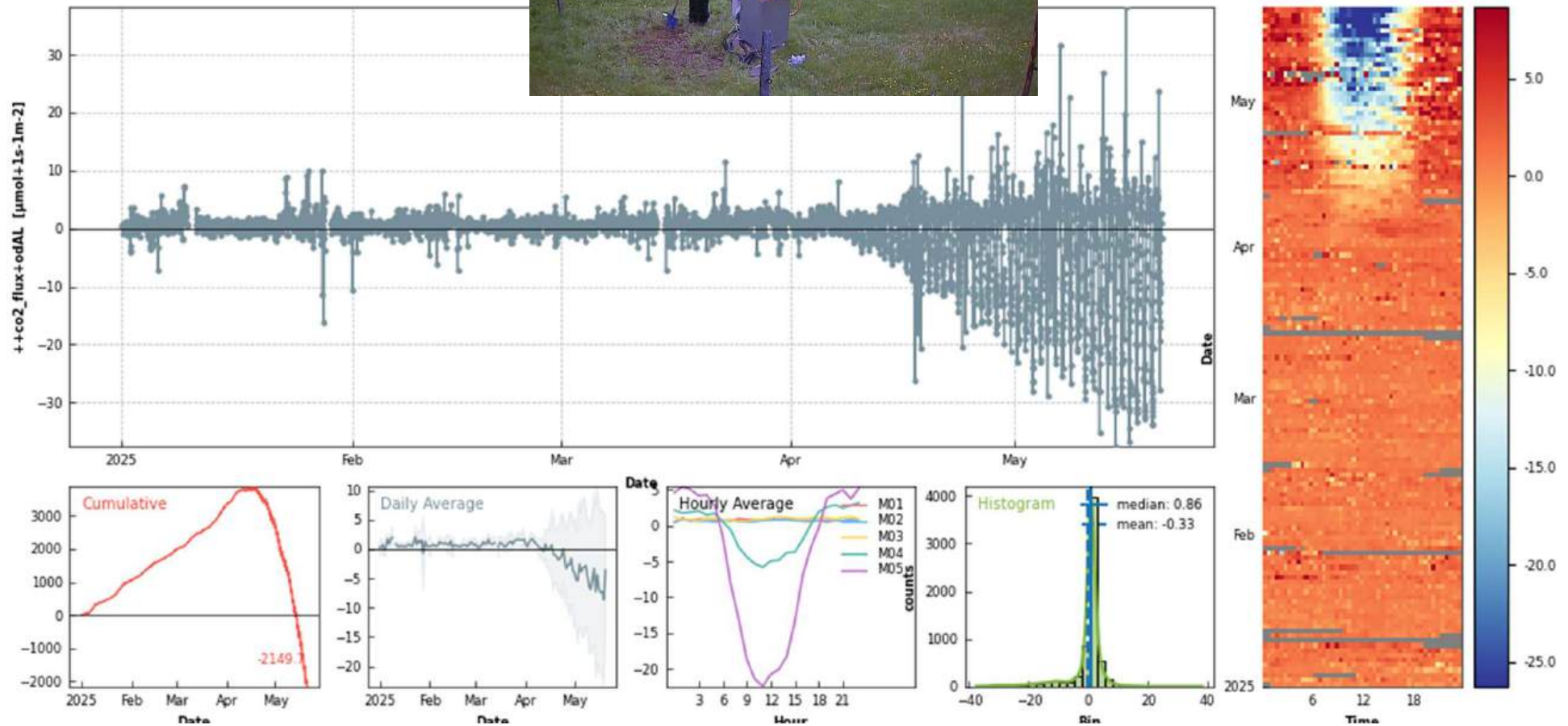


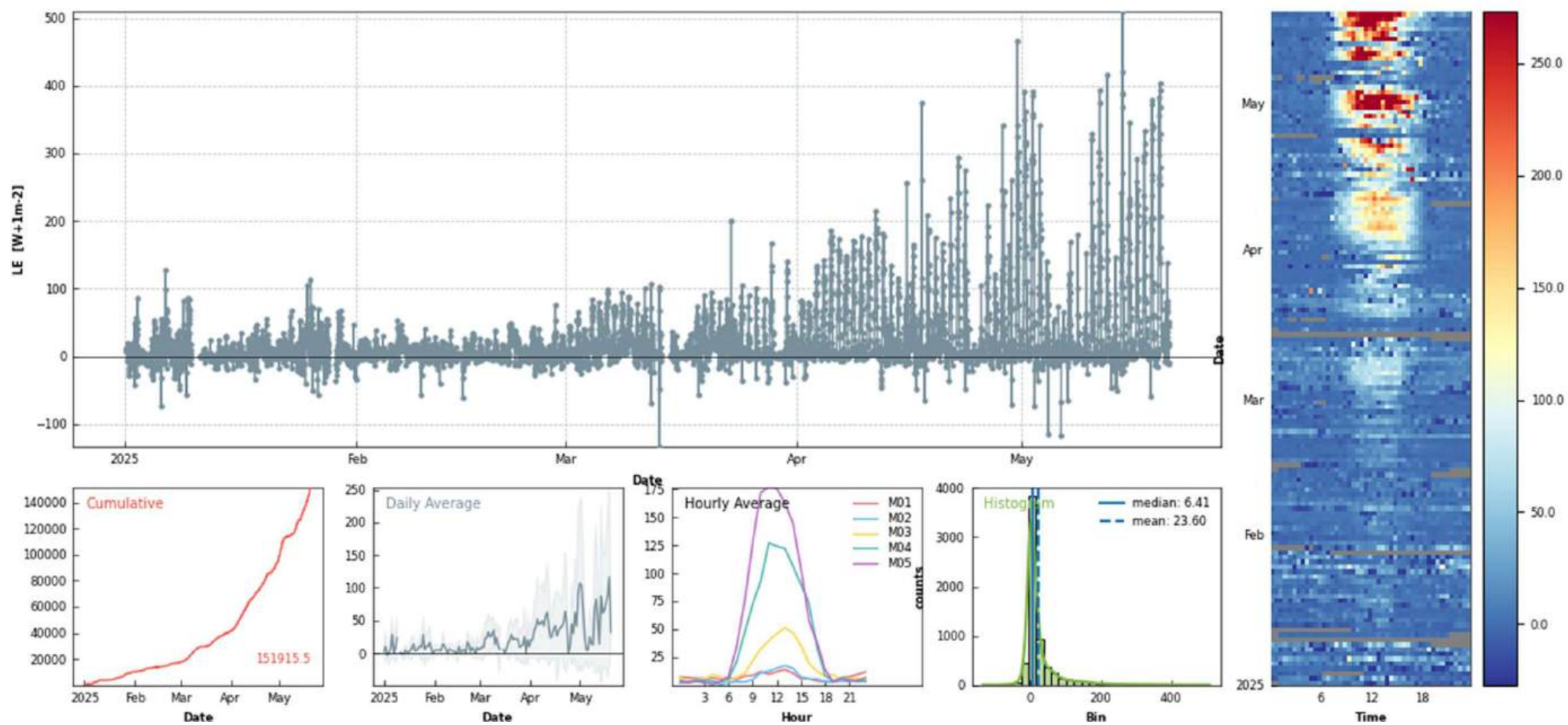
<https://dataviews.swissfluxnet.ethz.ch>



Photo: Matthi Barthel

CH-AWS CO2 flux





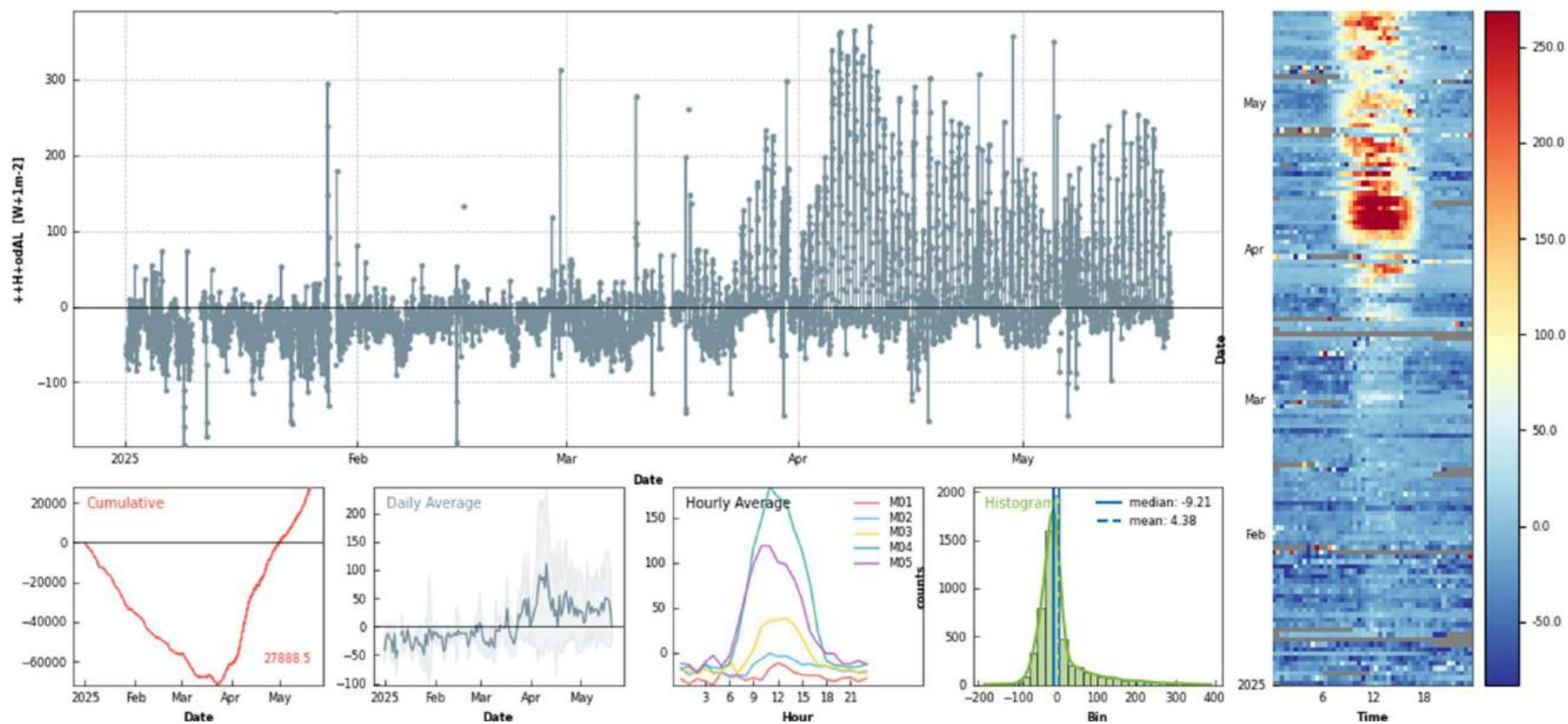


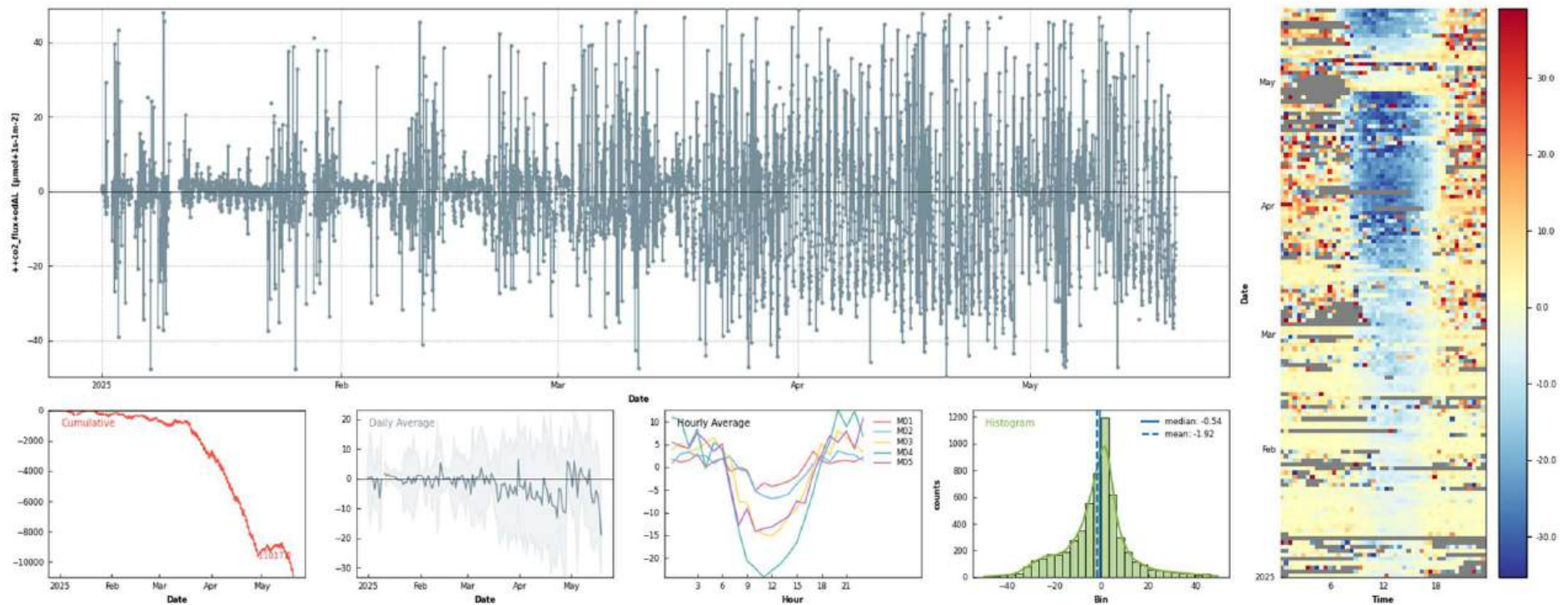


Photo: Lukas Hörtnagl

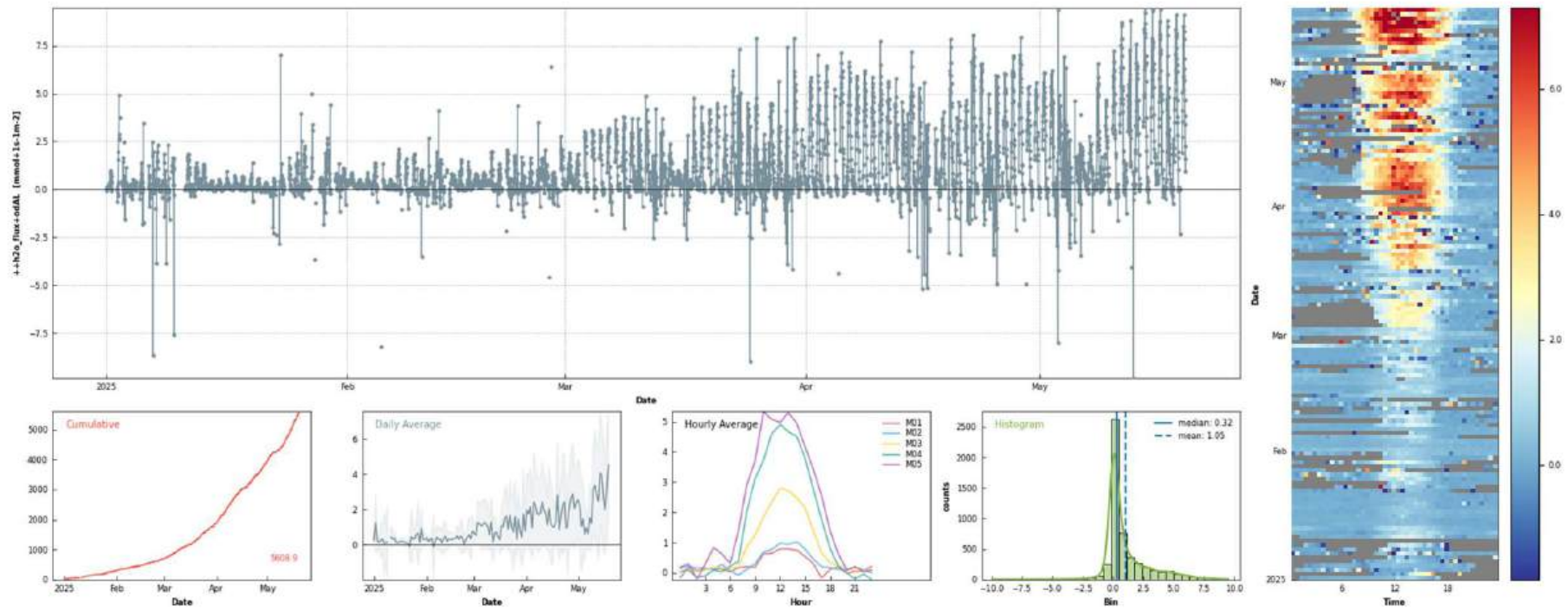
CH-CHA CO2 flux

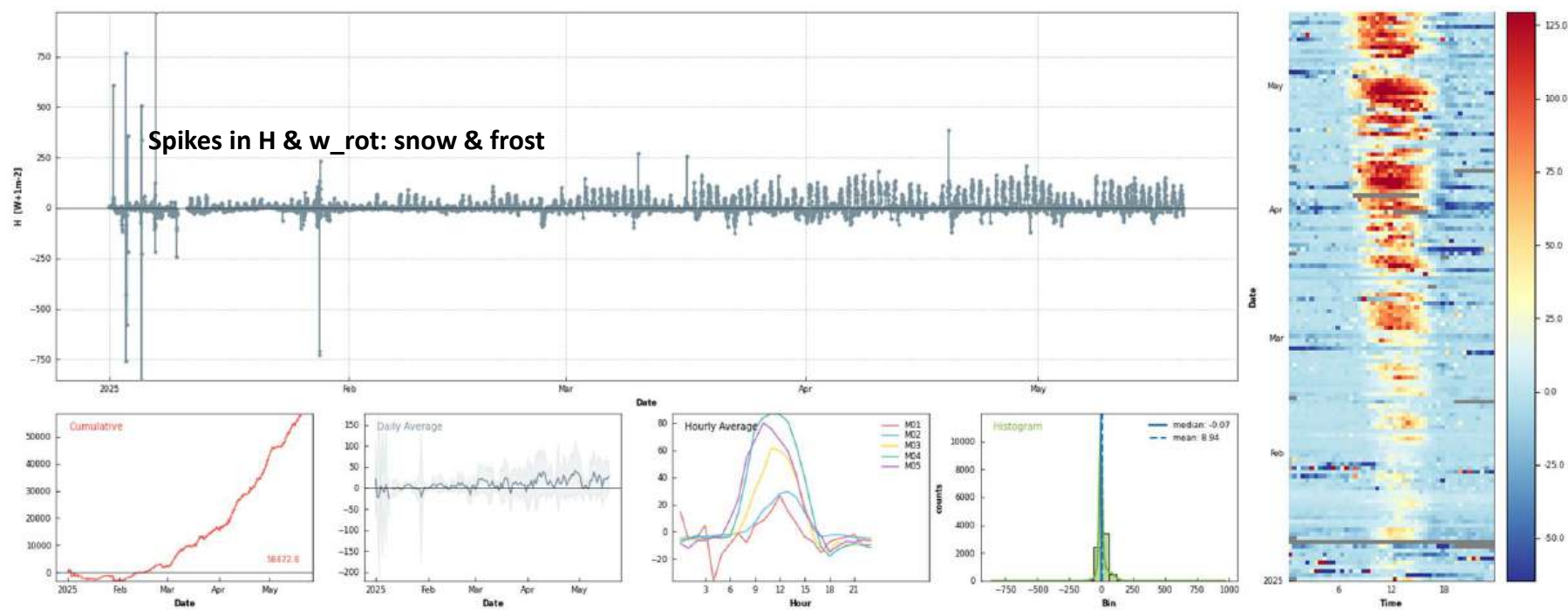


- First mowing: 2025.04.28



CH-CHA H2O flux





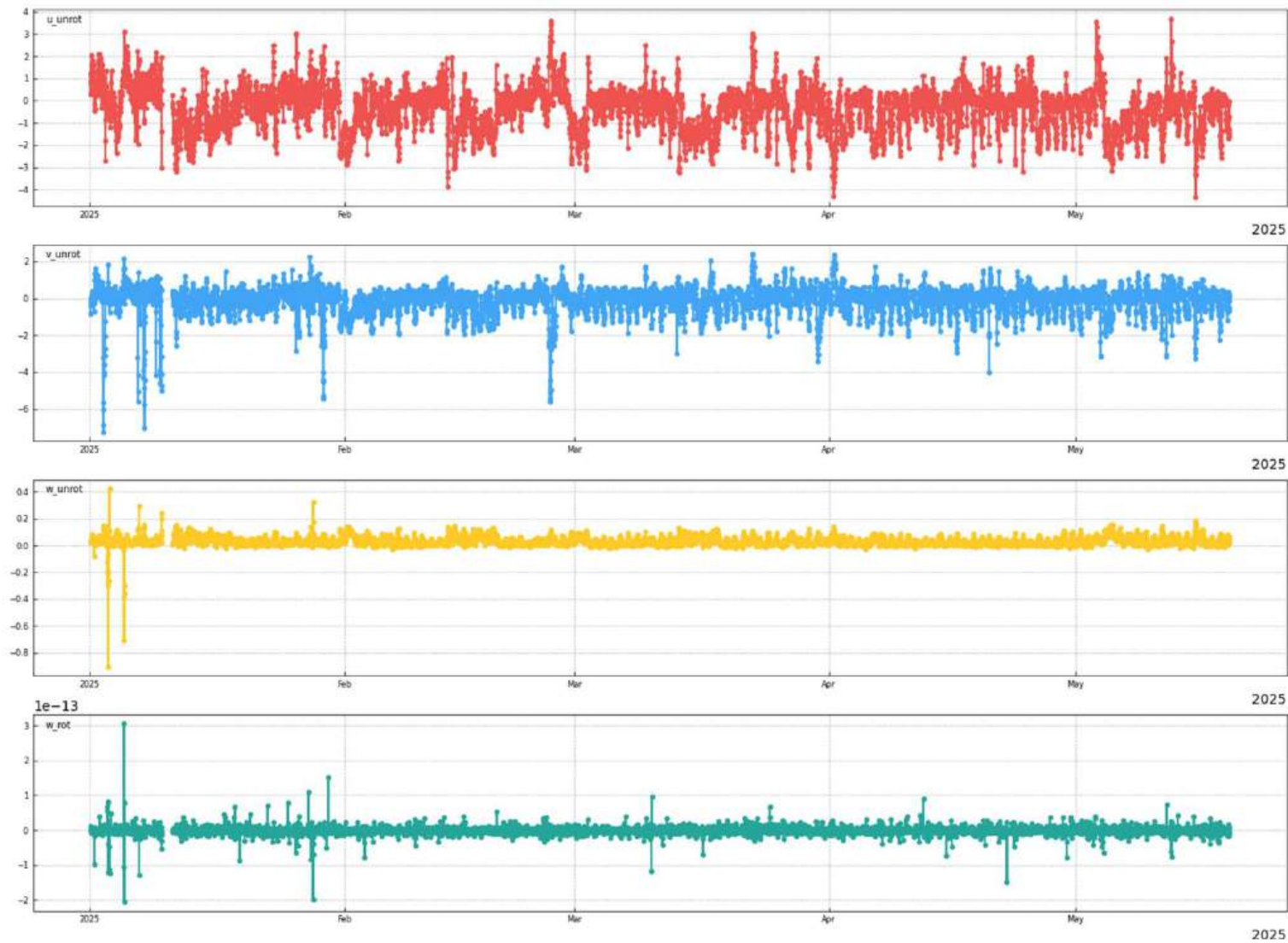


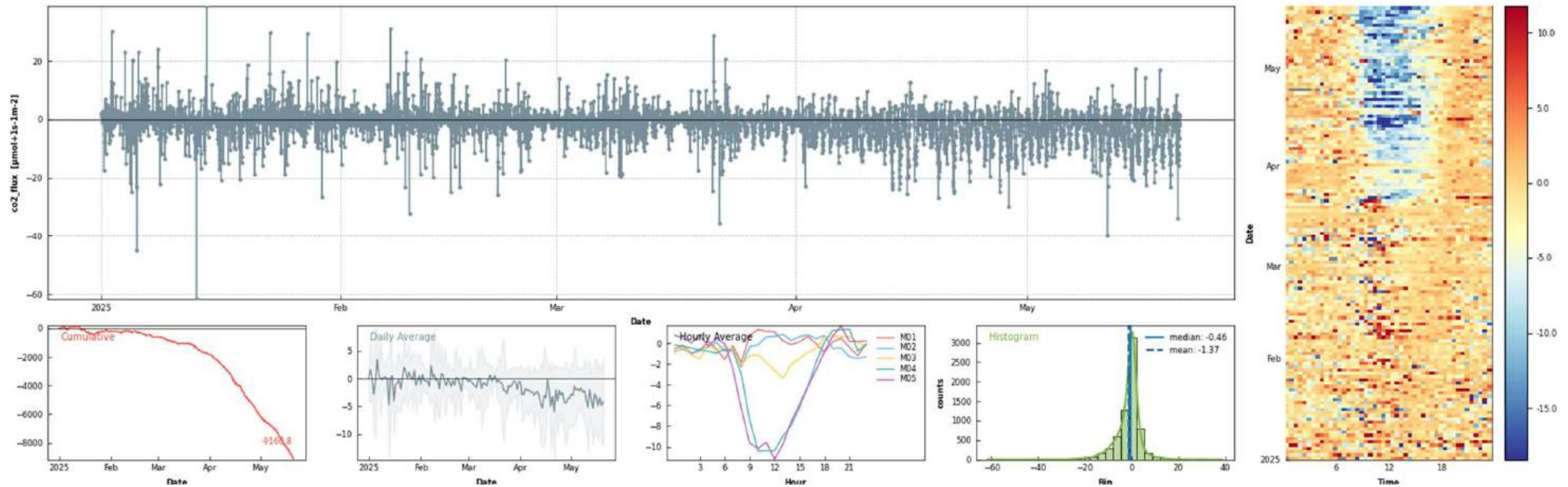


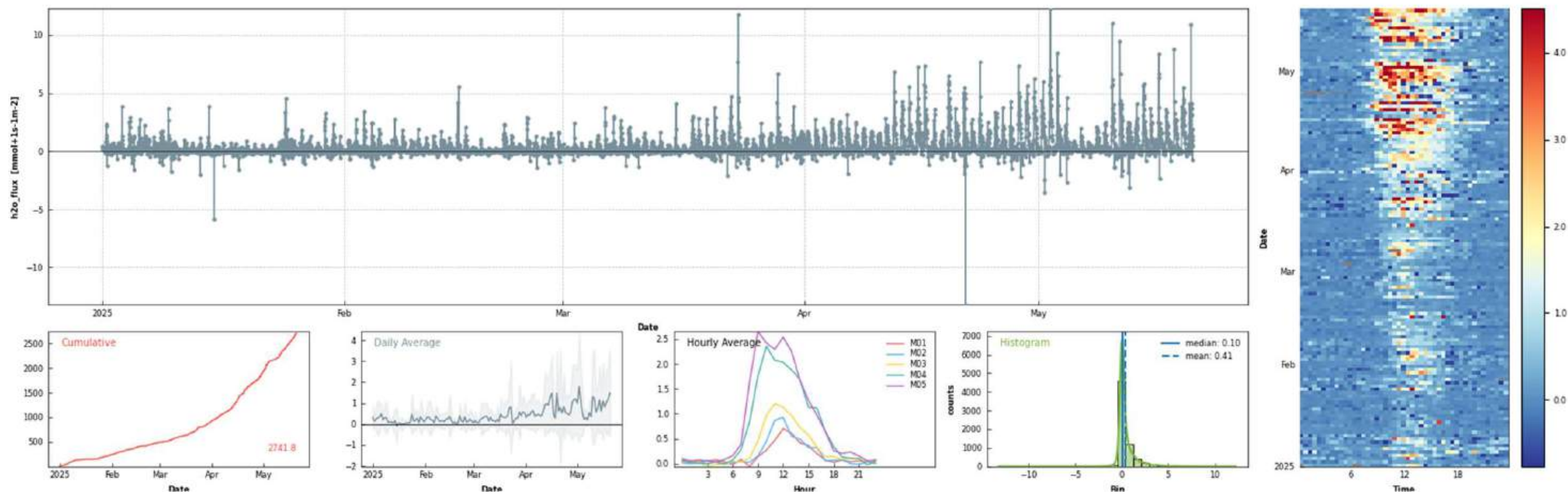
Photo: Lukas Hörtnagl

[site info](#)



- Net CO₂ uptake during the day has started
- No snow anymore





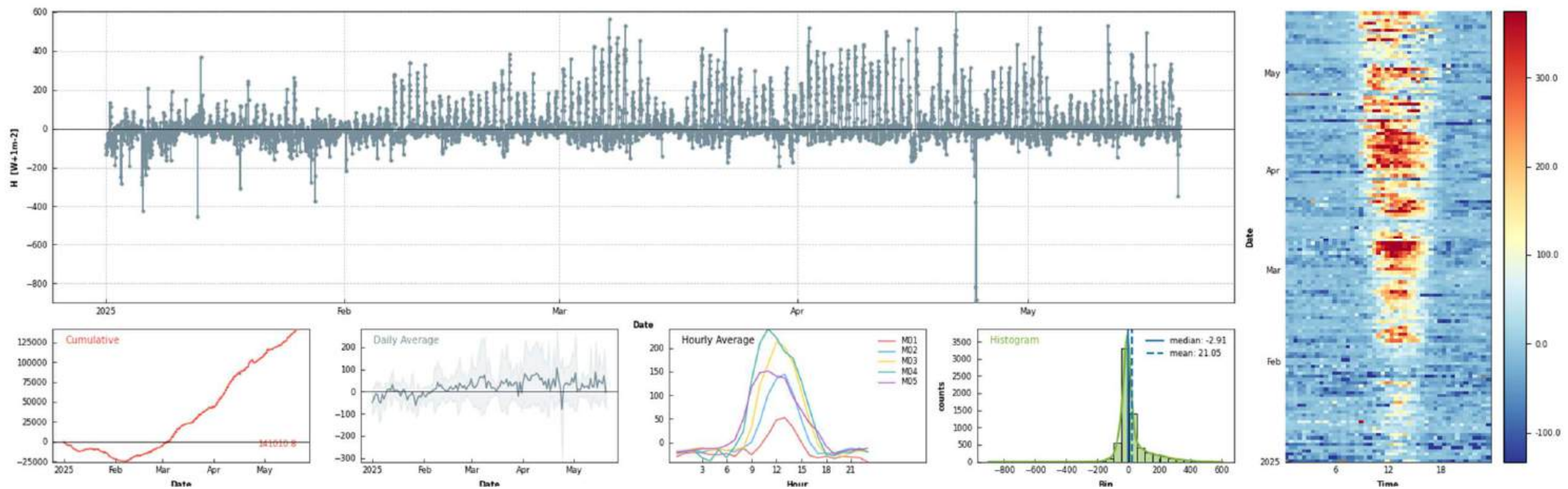
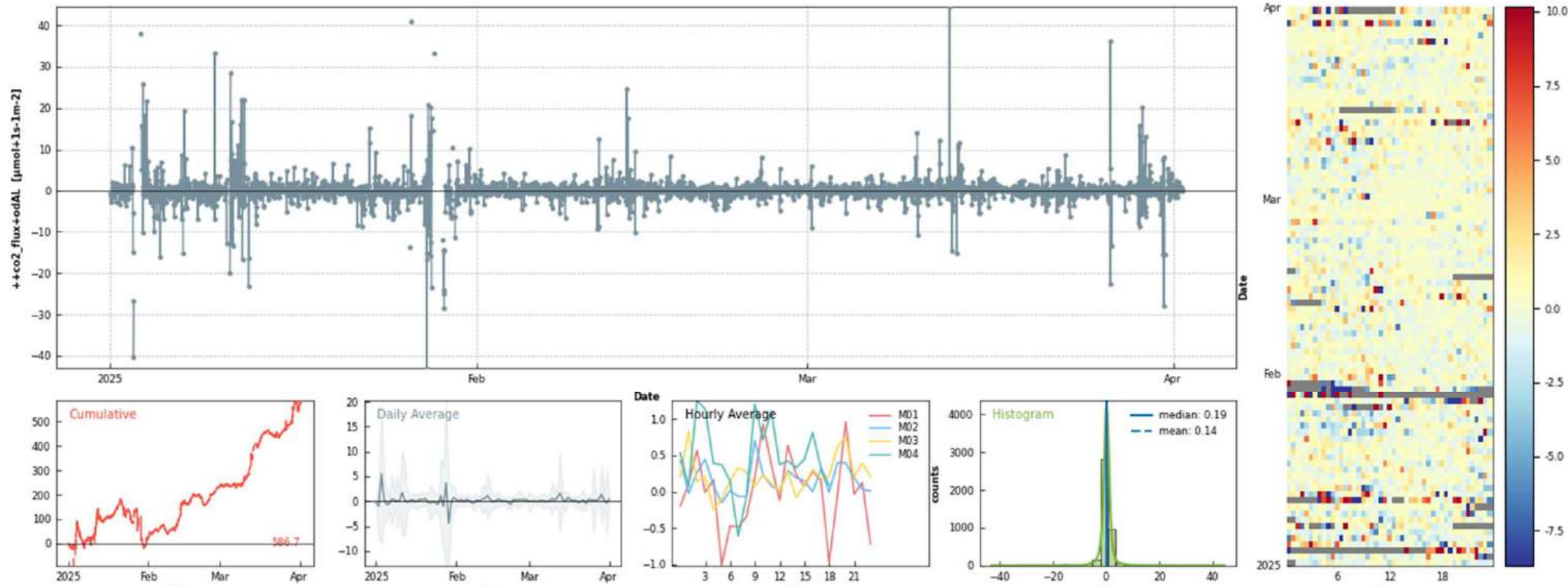
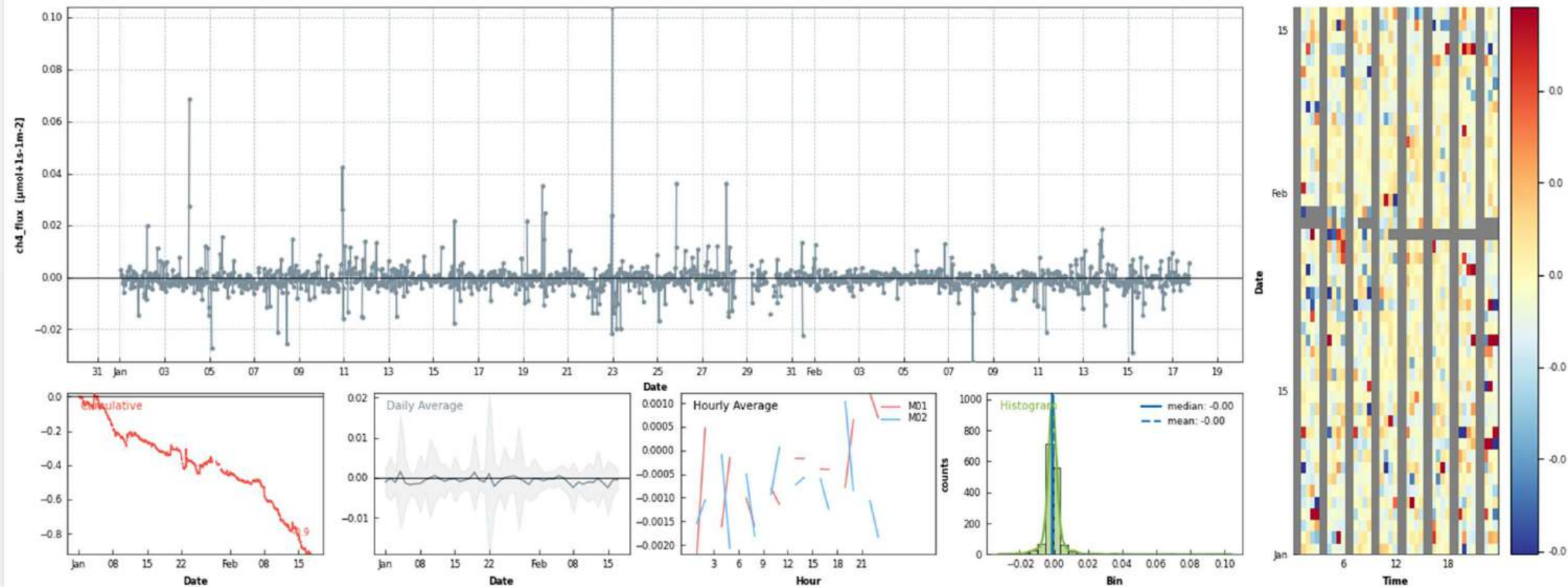
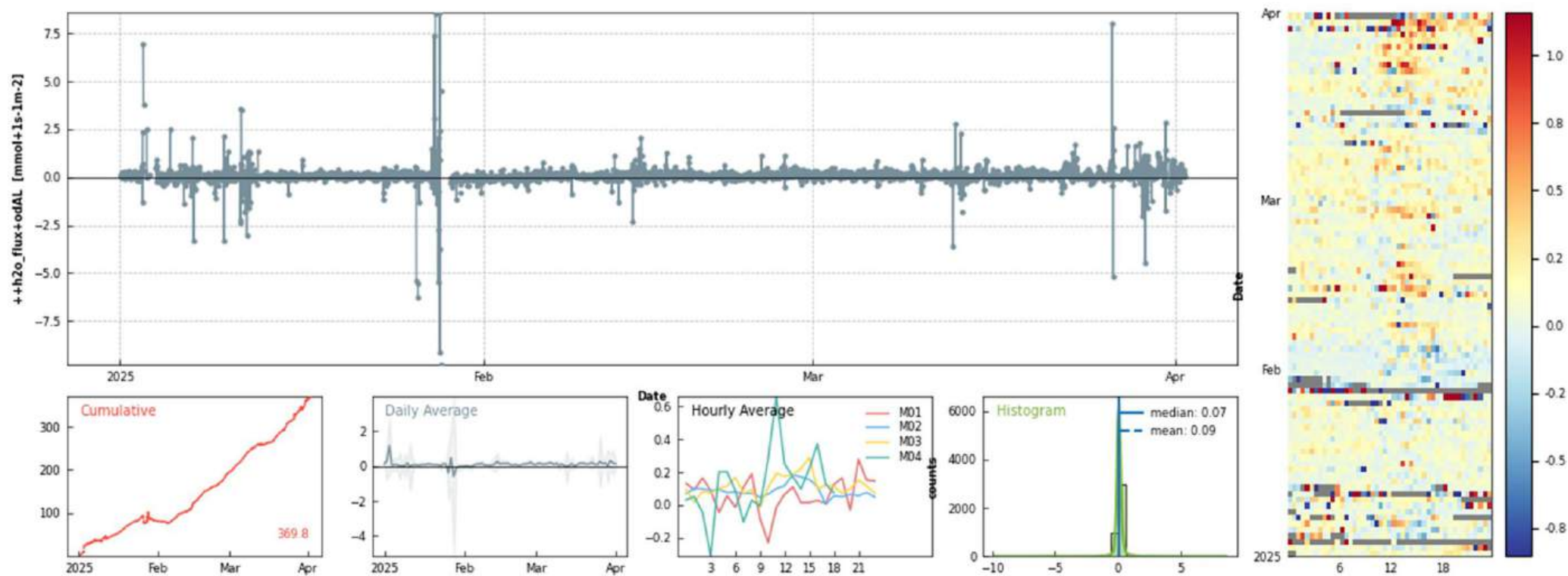




Photo: Luana Krebs







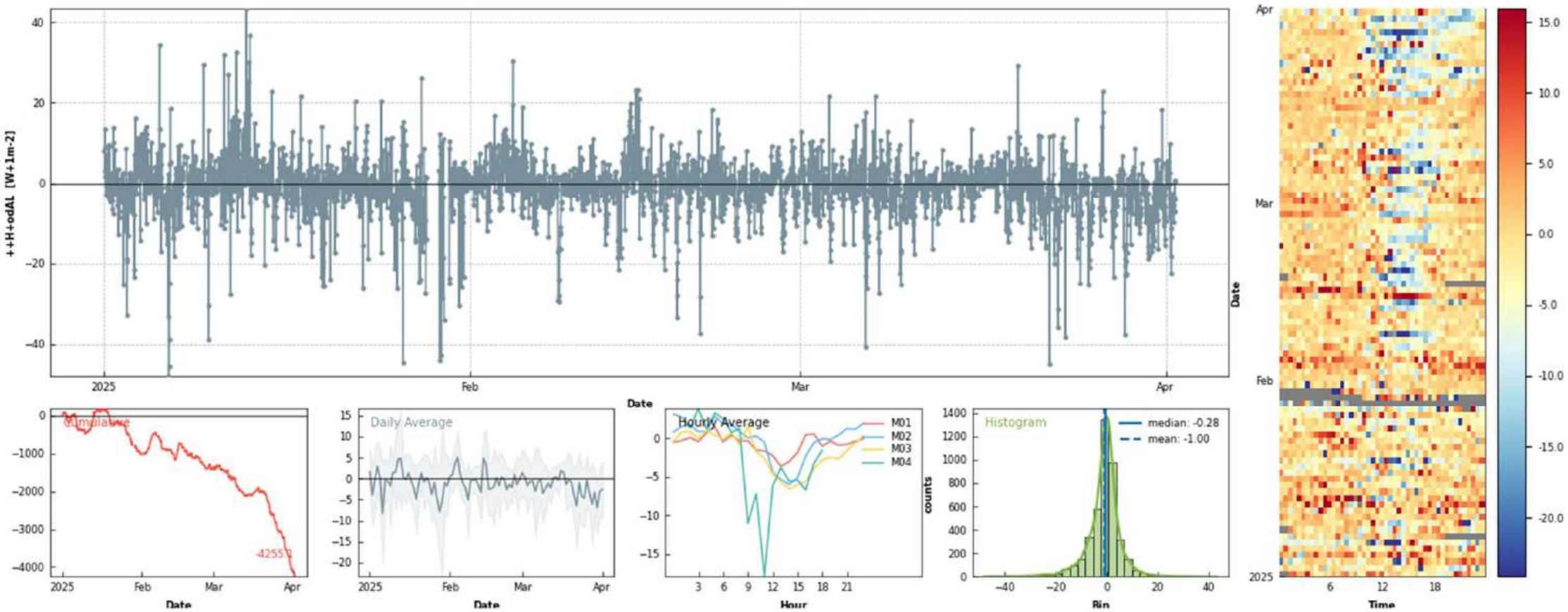
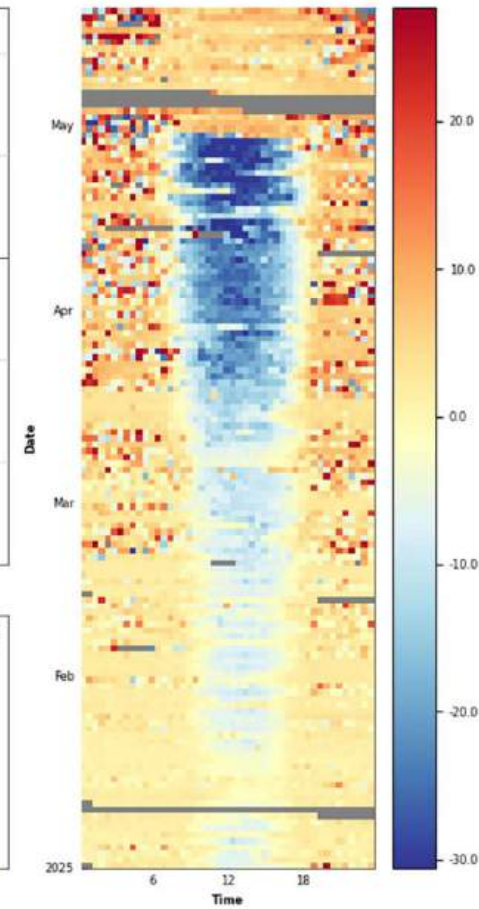
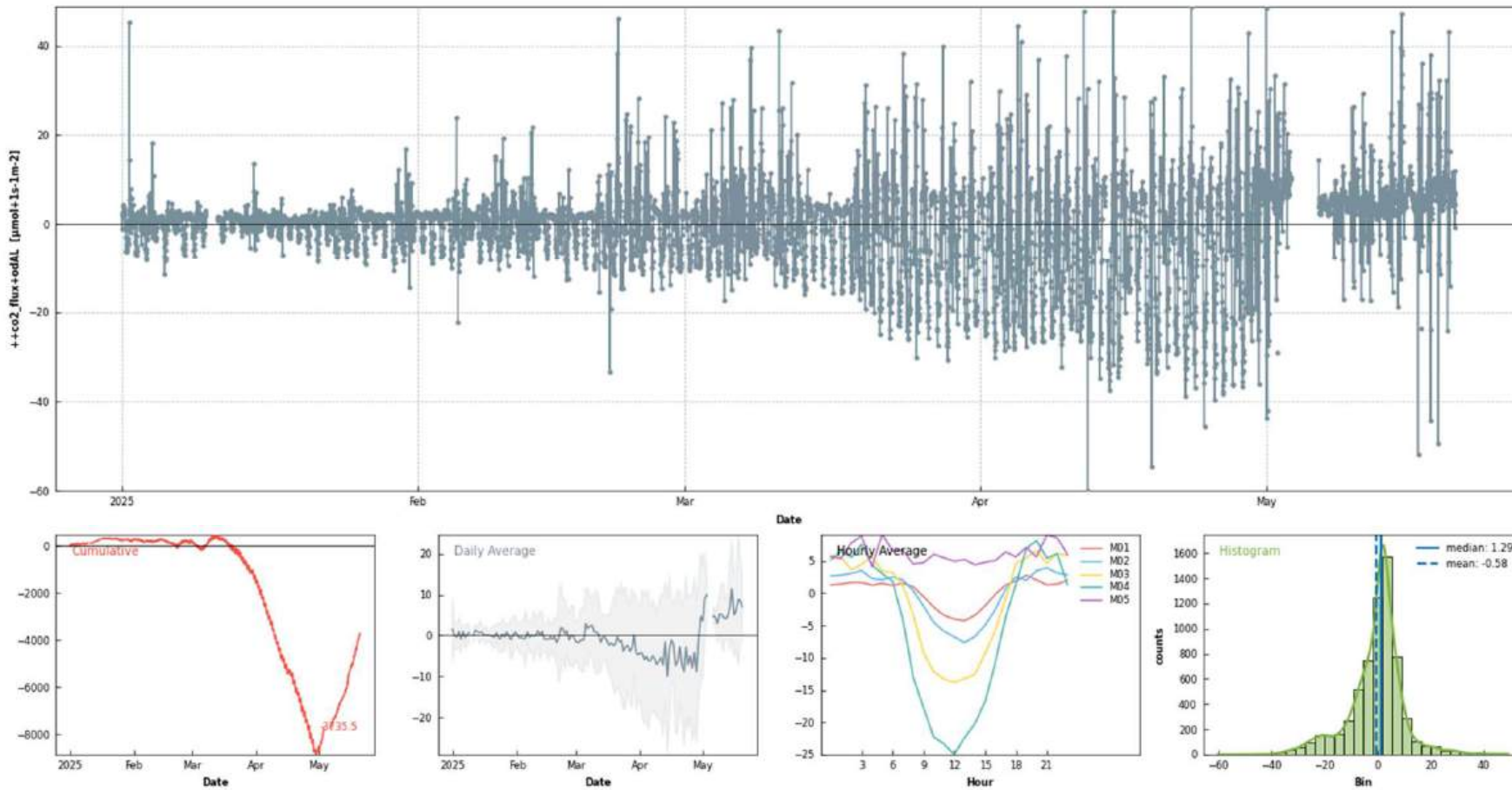
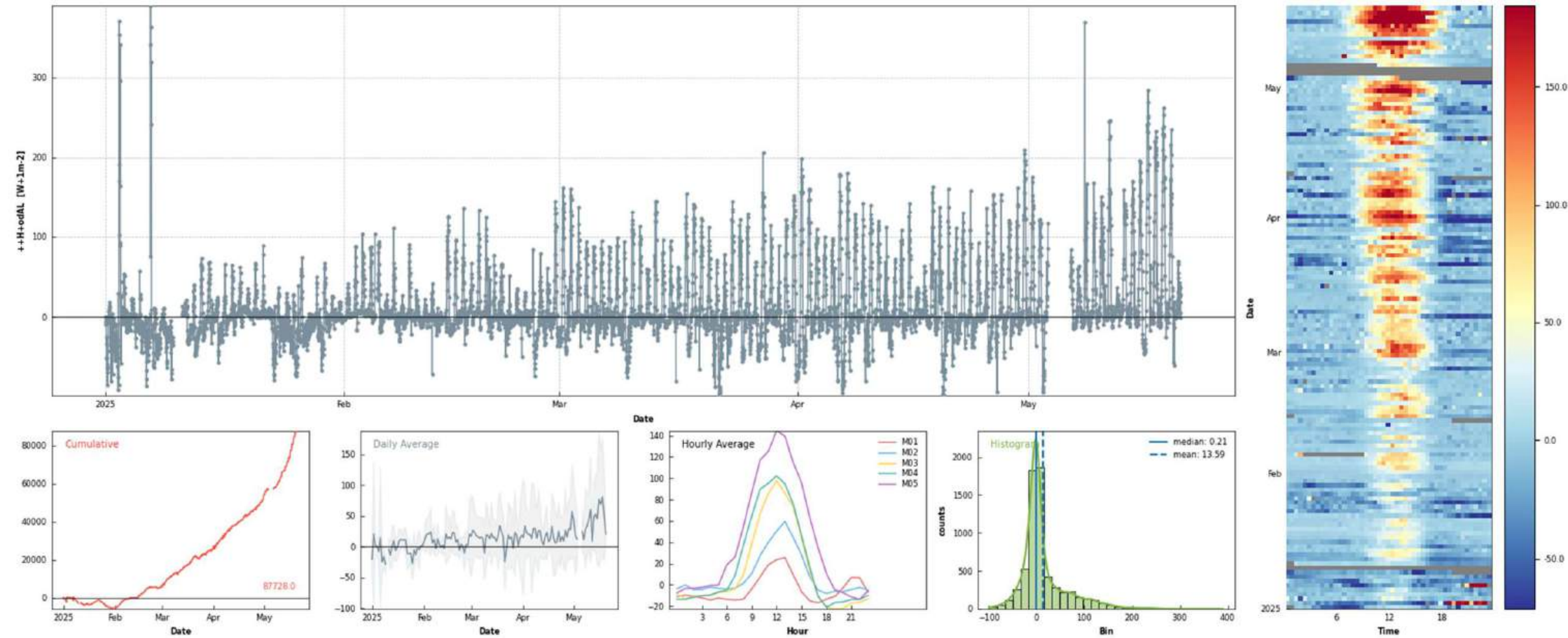


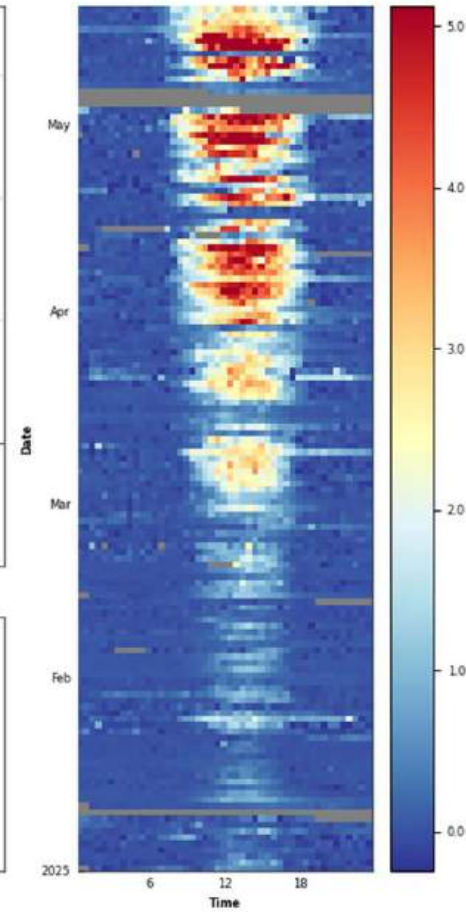
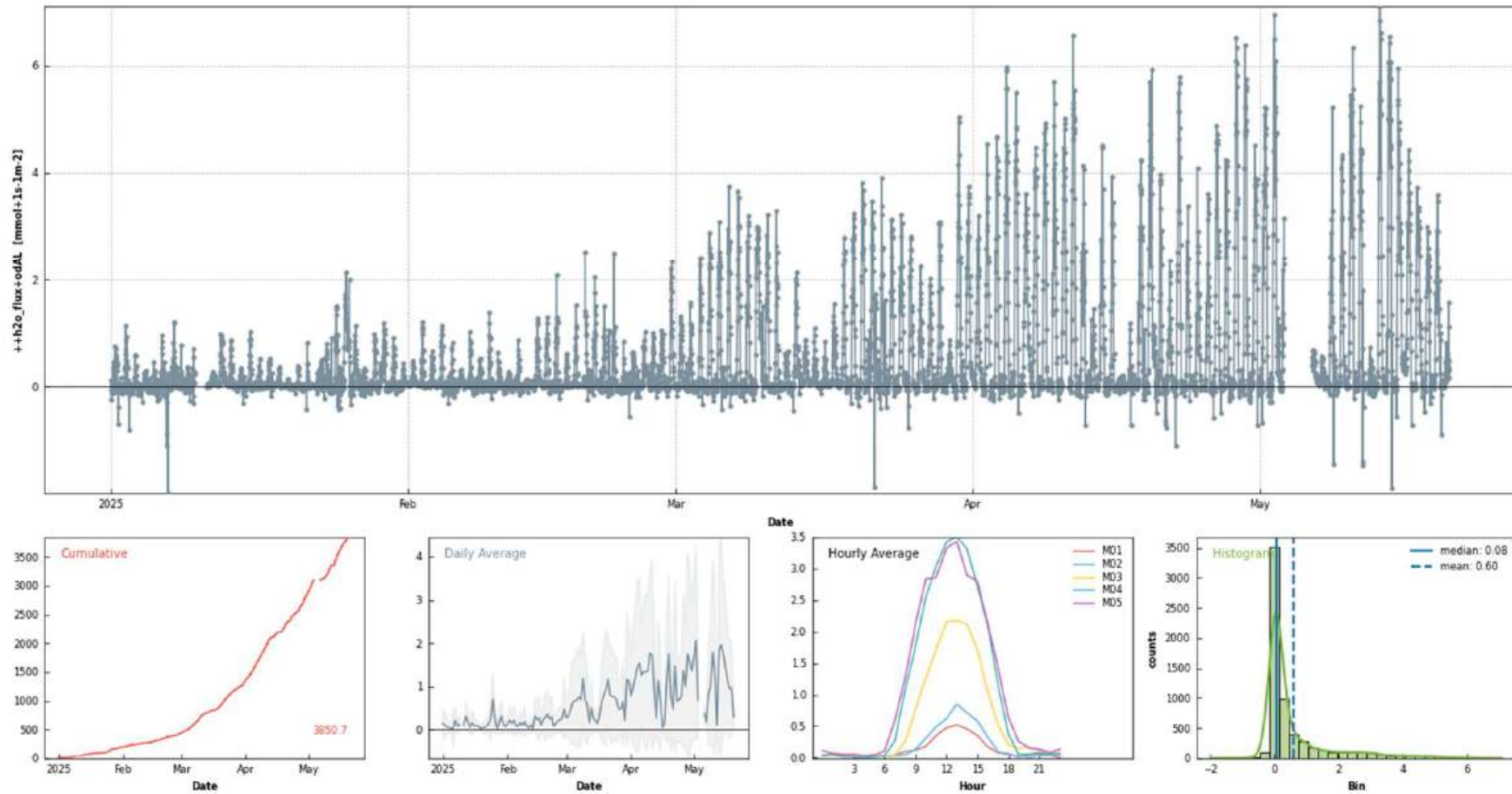


Photo: Lorenz Allemann

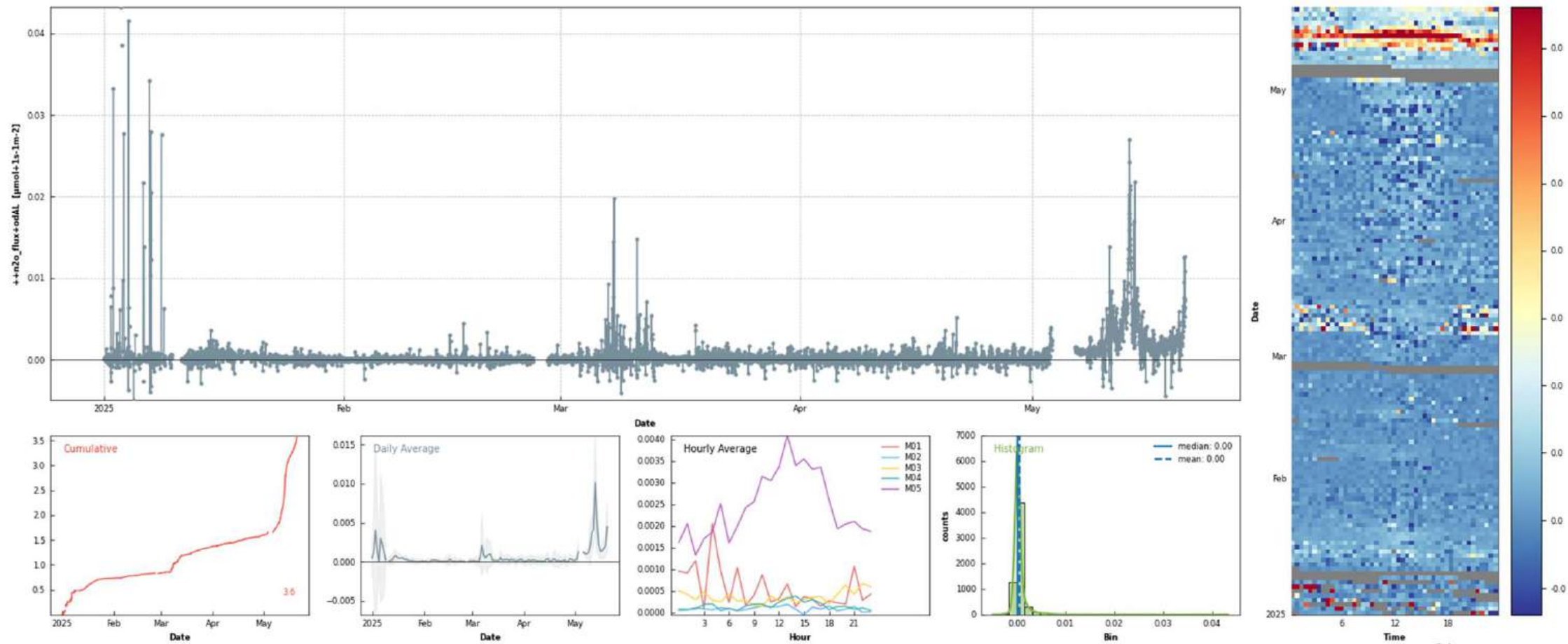
- 29.04 Last harvest of meadow
- 02.05 Farmer added manure
- 03.05 Farmer ploughed and broke sonic. 3 day data gap
- 10.05 Field preparation for sowing
- 11.05 Maize sowing







- 06.03 Fertilization (slurry)
- 29.04 Last harvest of meadow
- 02.05 Farmer added manure
- 03.05 Farmer ploughed and broke sonic. 3 day data gap
- 10.05 Field preparation for sowing
- 11.05 Maize sowing



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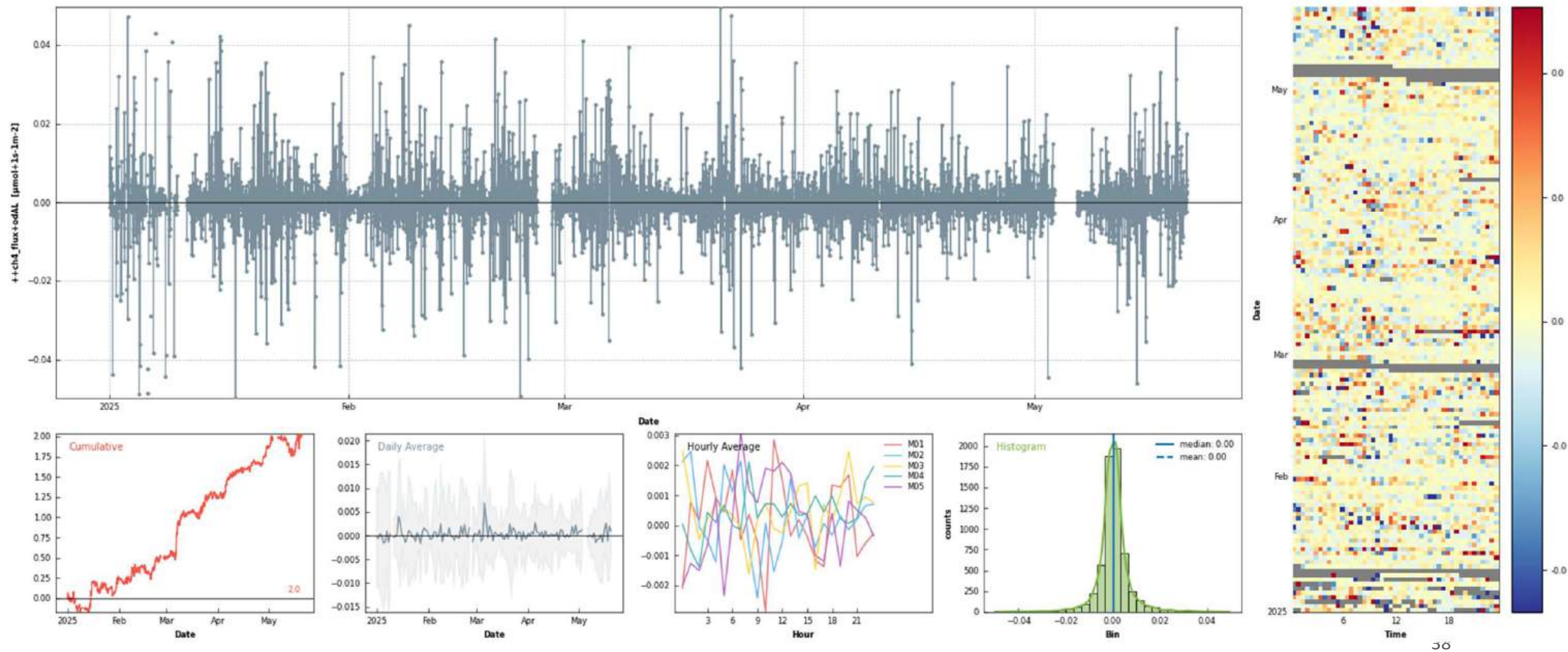


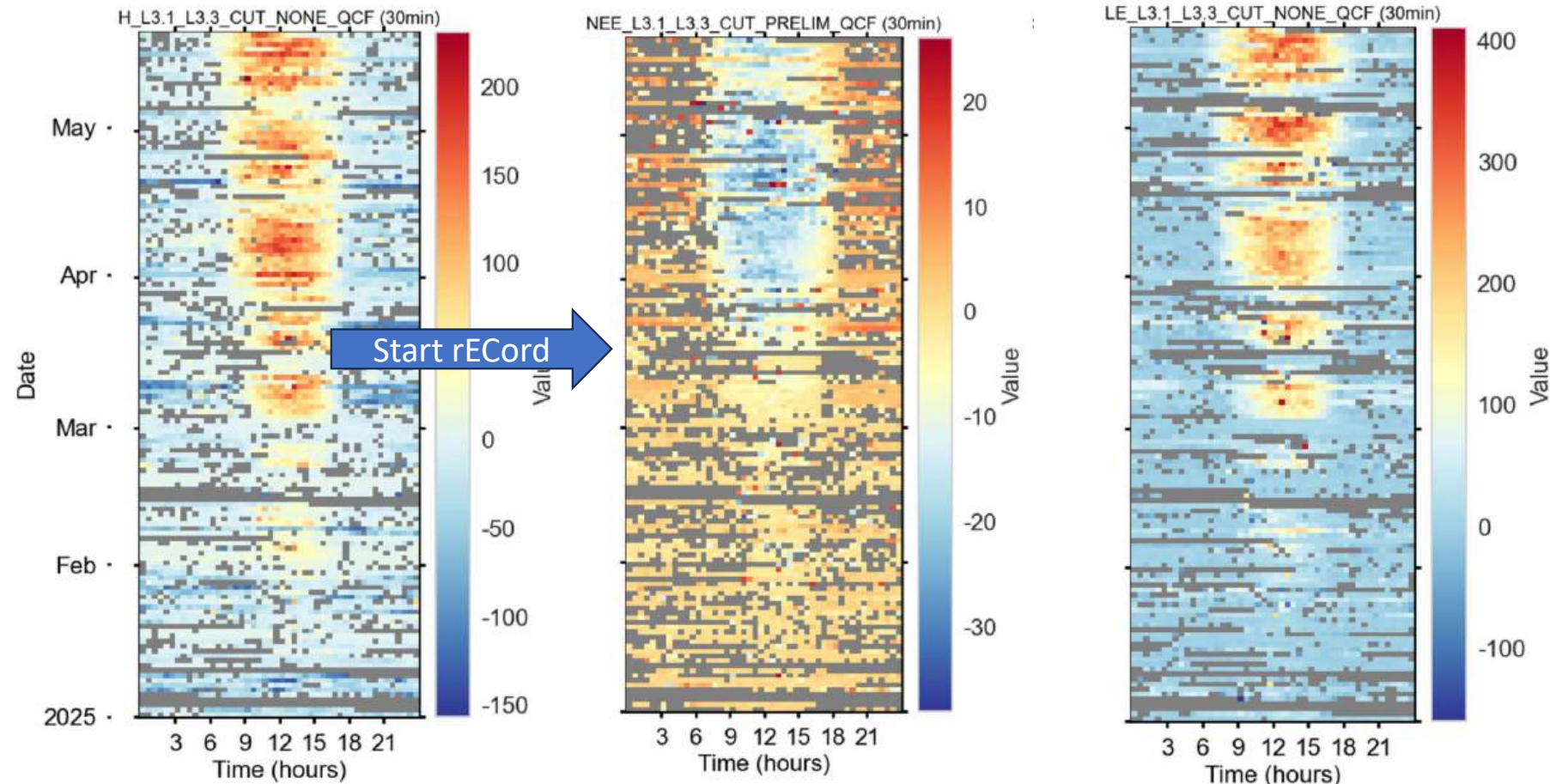


Photo: Lukas Hörtnagl

H

CO₂ flux

LE



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

=====

QCF FLAG EVOLUTION

=====

This output shows the evolution of the QCF overall quality flag when test flags are applied sequentially to the variable NEE_L3.1.

Number of NEE_L3.1 records before QC: 6082

+++ FLAG_L2_FC_MISSING_TEST rejected 0 values (+0.00%) TOTALS: flag 0: 6082 (100.00%) / flag 1: 0 (0.00%) / flag 2: 0 (0.00%)

+++ FLAG_L2_FC_SSTC_TEST rejected 489 values (+8.04%) TOTALS: flag 0: 3146 (51.73%) / flag 1: 2447 (40.23%) / flag 2: 489 (8.04%)

+++ FLAG_L2_FC_COMPLETENESS_TEST rejected 0 values (+0.00%) TOTALS: flag 0: 3143 (51.68%) / flag 1: 2450 (40.28%) / flag 2: 489 (8.04%)

+++ FLAG_L2_FC_SCF_TEST rejected 12 values (+0.20%) TOTALS: flag 0: 3106 (51.07%) / flag 1: 2475 (40.69%) / flag 2: 501 (8.24%)

+++ FLAG_L2_FC_SIGNAL_STRENGTH_TEST rejected 213 values (+3.50%) TOTALS: flag 0: 3054 (50.21%) / flag 1: 2314 (38.05%) / flag 2: 714 (11.74%)

+++ FLAG_L2_FC_CO2_VM97_SPIKE_HF_TEST rejected 7 values (+0.12%) TOTALS: flag 0: 3048 (50.12%) / flag 1: 2313 (38.03%) / flag 2: 721 (11.85%)

+++ FLAG_L2_FC_CO2_VM97_DROP_OUT_TEST rejected 0 values (+0.00%) TOTALS: flag 0: 3048 (50.12%) / flag 1: 2313 (38.03%) / flag 2: 721 (11.85%)

+++ FLAG_L3_2_NEE_L3_1_QCF_OUTLIER_ZSCOREDNT_TEST rejected 183 values (+3.01%) TOTALS: flag 0: 3014 (49.56%) / flag 1: 2164 (35.58%) / flag 2: 904 (14.86%)

+++ FLAG_L3_3_CUT_PRELIM_NEE_L3_1_USTAR_TEST rejected 1182 values (+19.43%) TOTALS: flag 0: 2552 (41.96%) / flag 1: 1444 (23.74%) / flag 2: 2086 (34.30%)



Photo: Lukas Hörtnagl

[site info](#)

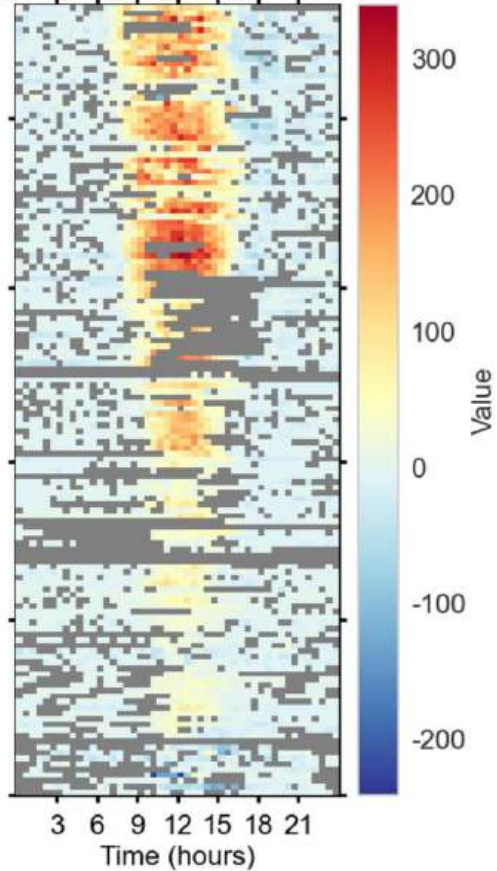
CH-HON Fluxes H, H₂O, CO₂

H

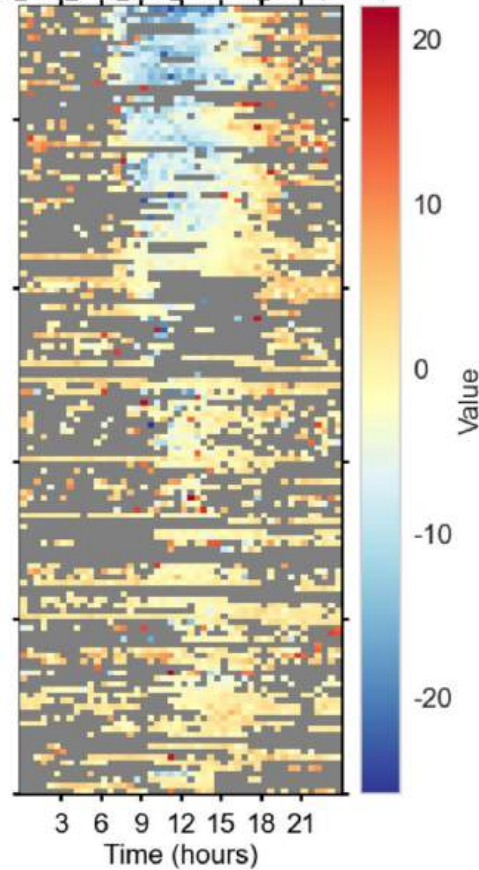
CO₂ flux

LE

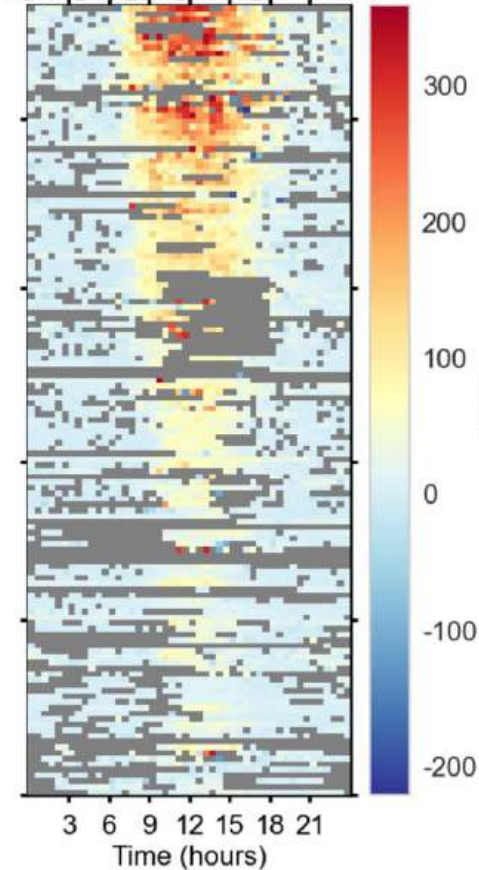
H_L3.1_L3.3_CUT_NONE_QCF (30min)



NEE_L3.1_L3.3_CUT_PRELIM_QCF (30min)

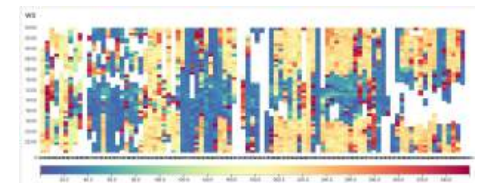


LE_L3.1_L3.3_CUT_NONE_QCF (30min)



§

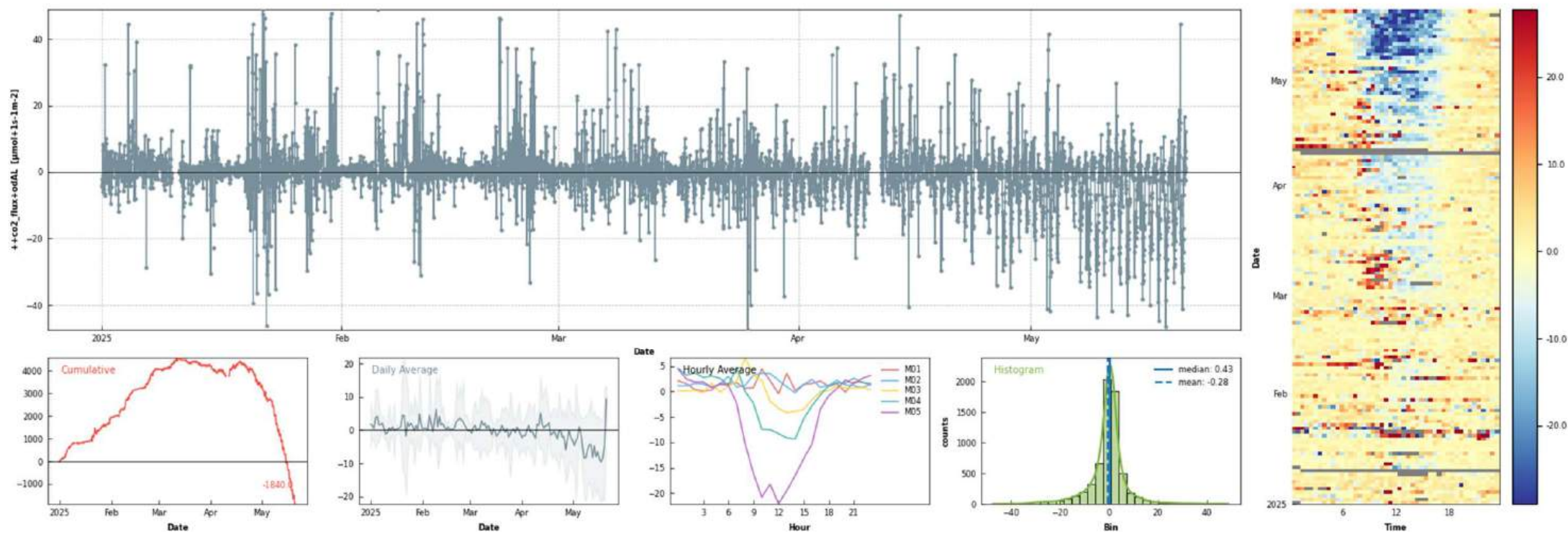
- With preliminary QCF using the diive notebook
notebooks/FluxProcessingChain/QuickFluxProcessingChain.ipynb
- Highest- and medium-quality fluxes
- Preliminary outlier removal
- With preliminary USTAR filtering for NEE



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



Photo: Markus Staudinger



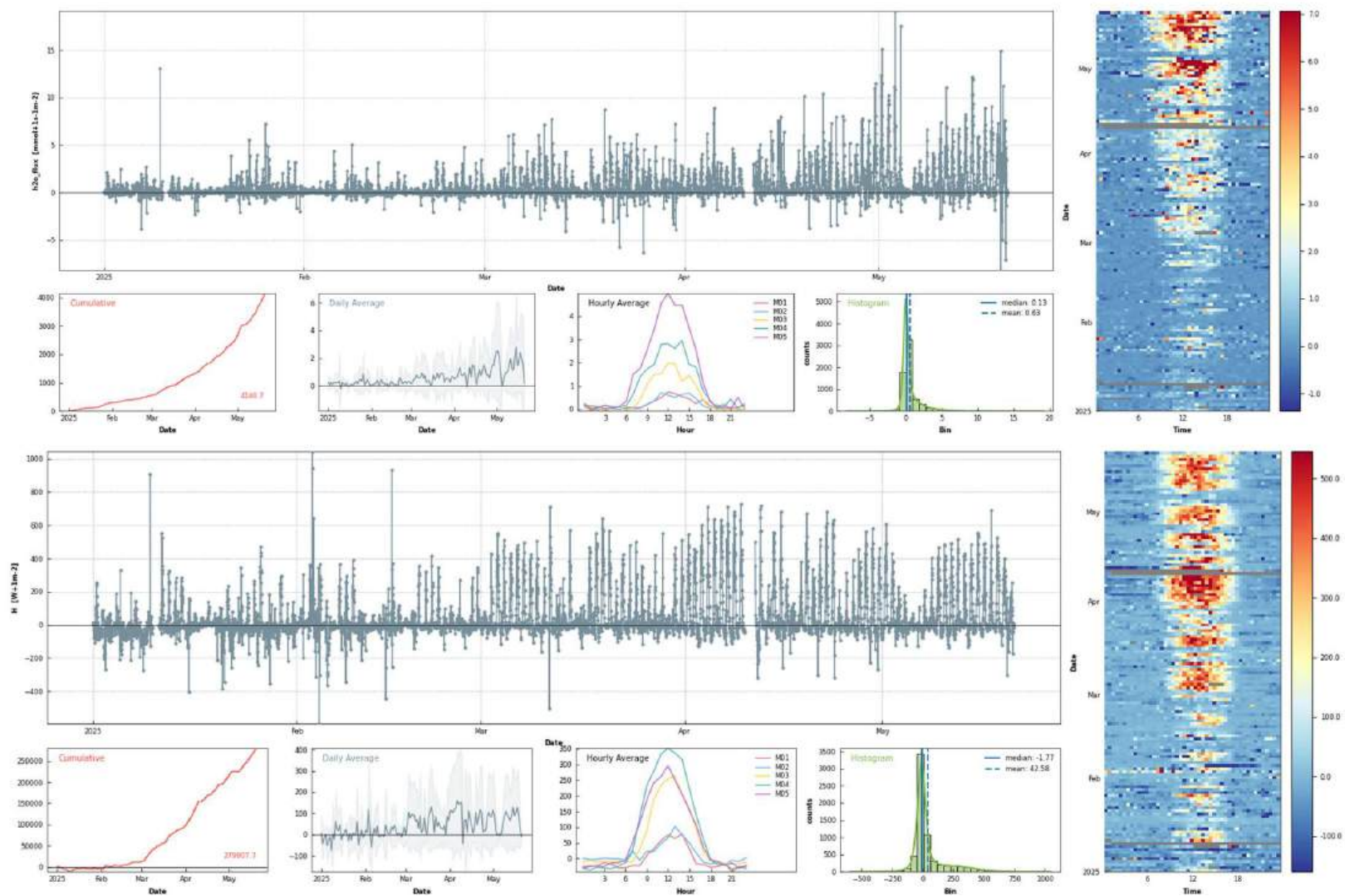
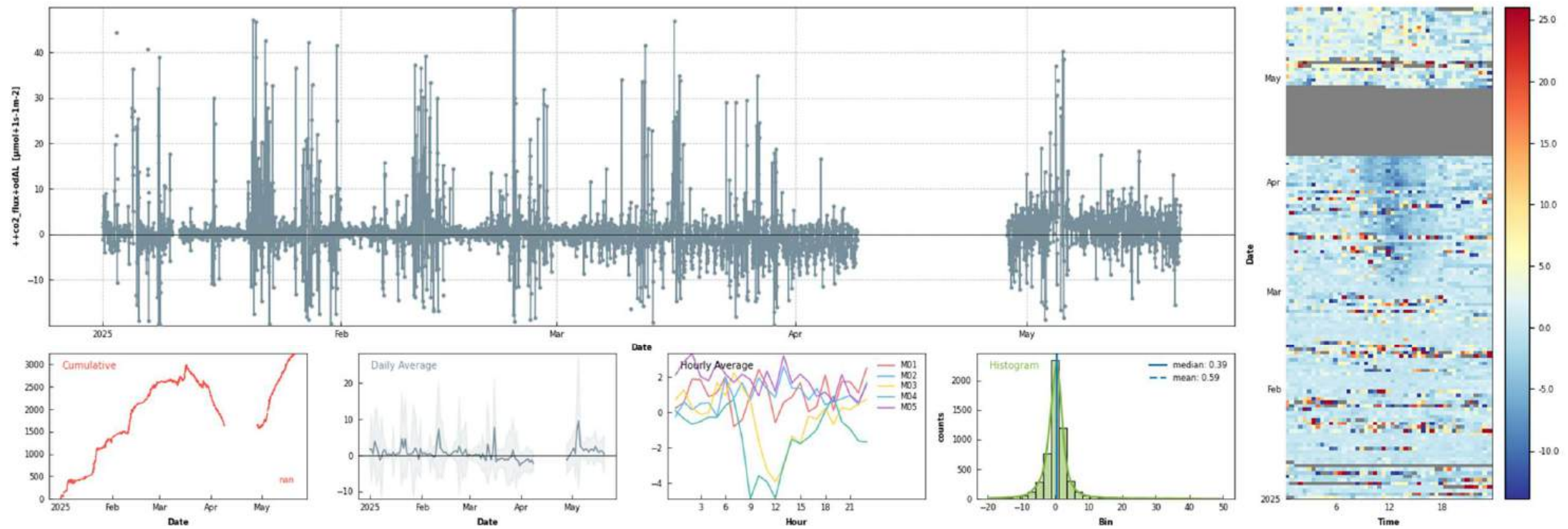




Photo: Liliana Scapucci



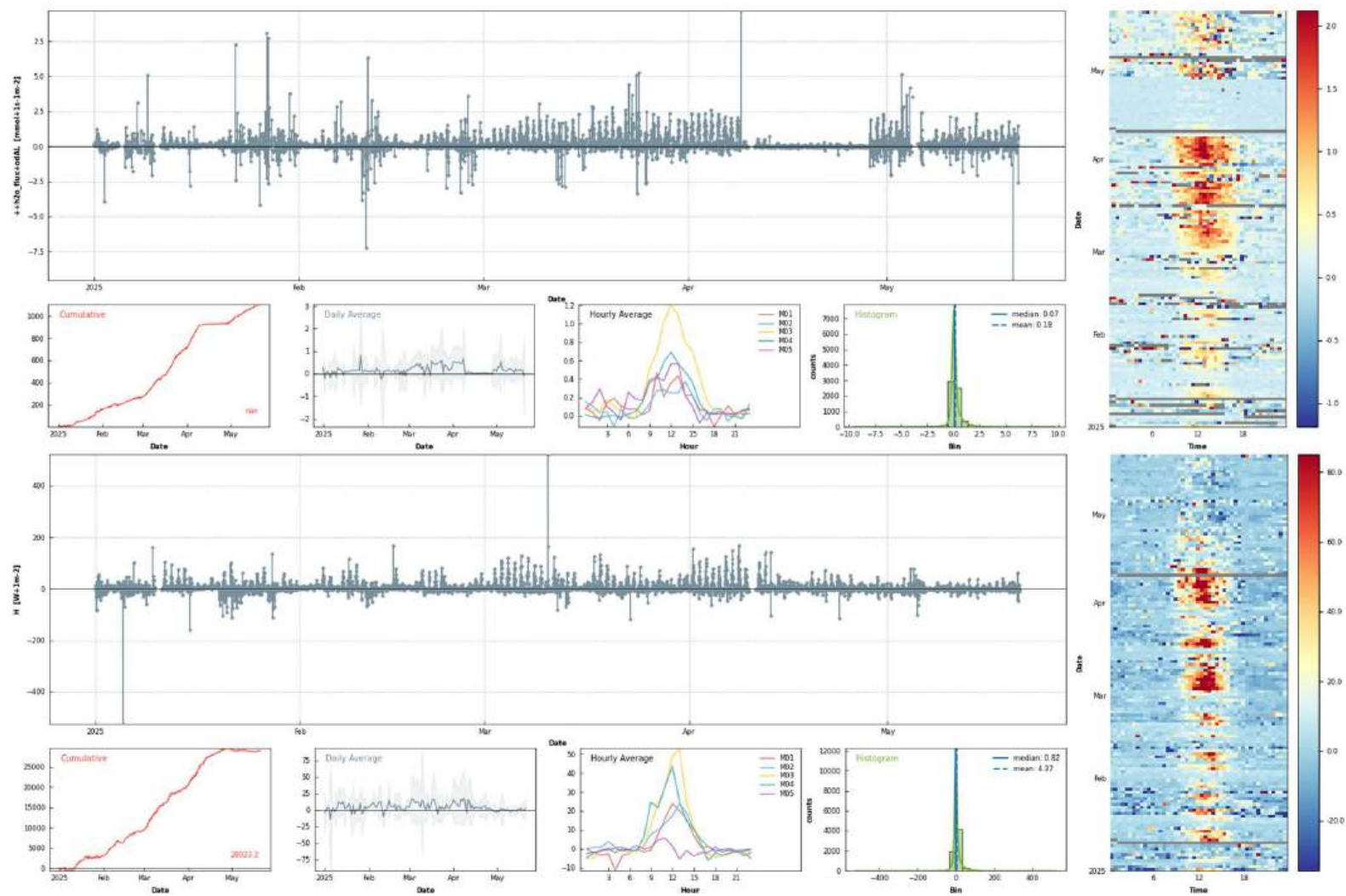




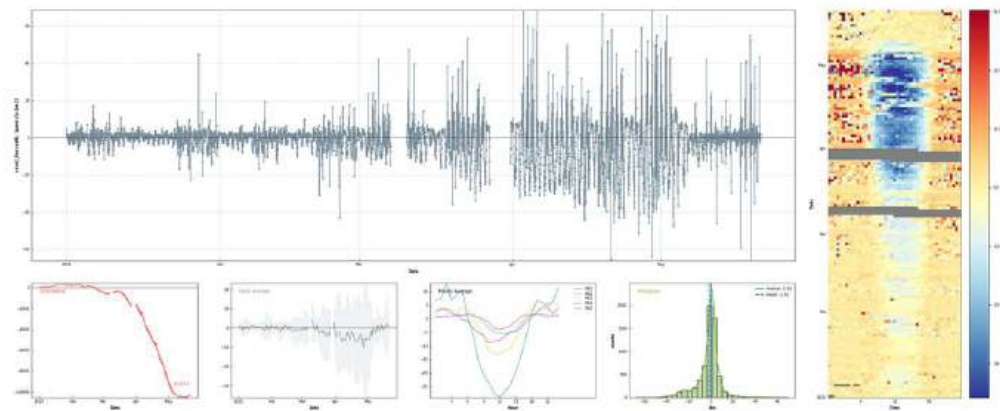
Photo: Regine Maier

CH-OE2

2 gaps due to IRGA → first we don't know why, the second due to power shortage

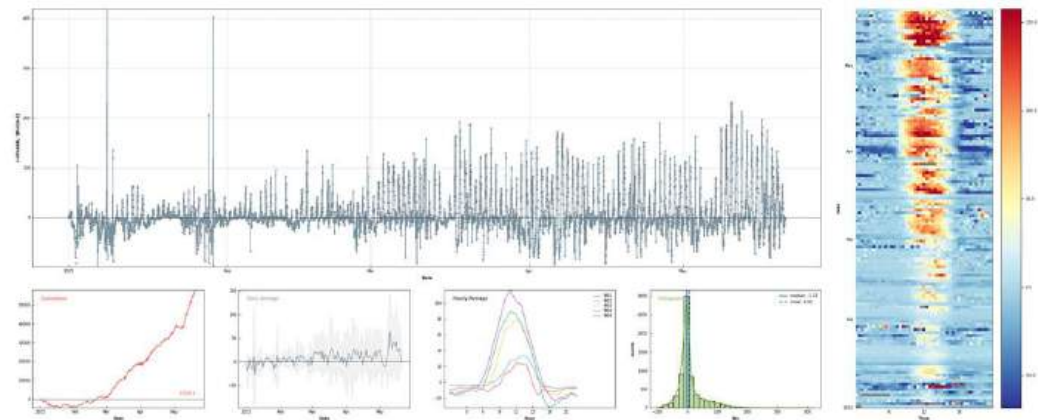
CO₂ flux

Abs limits: -70+70



H

Abs limits: -100+450



H₂O flux

Abs limits: -2+20

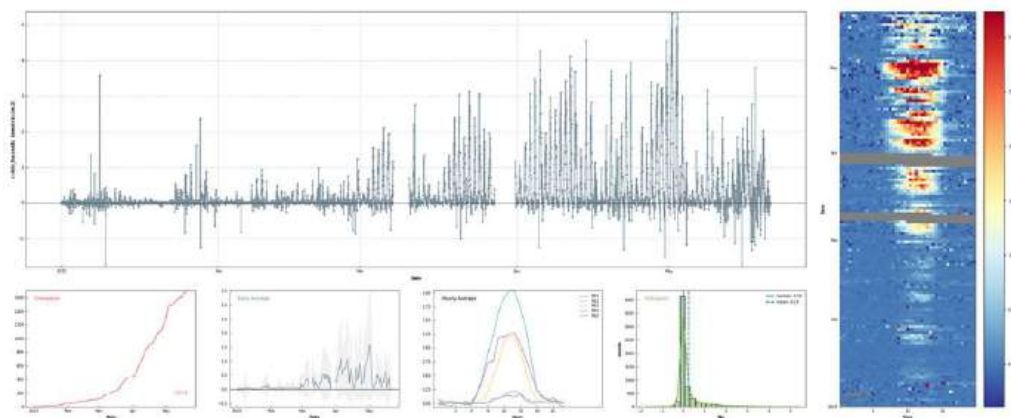




Photo: Fabio Turco

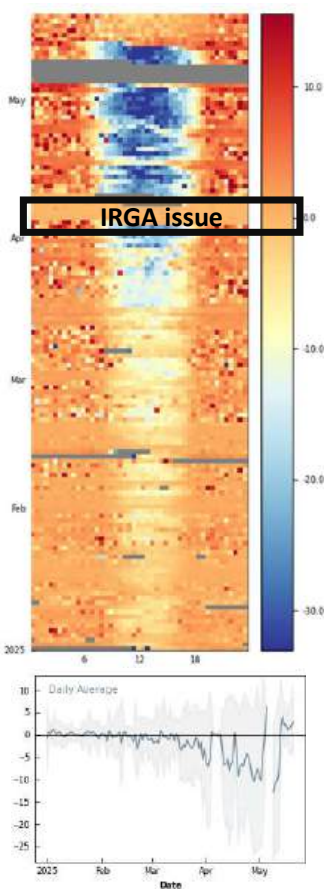
CH-TAN

Last QAQC meeting for CH-TAN?!



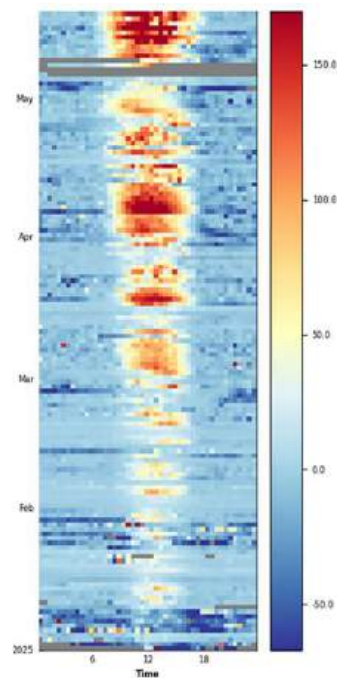
CO2 flux

Abs limits: -50+40



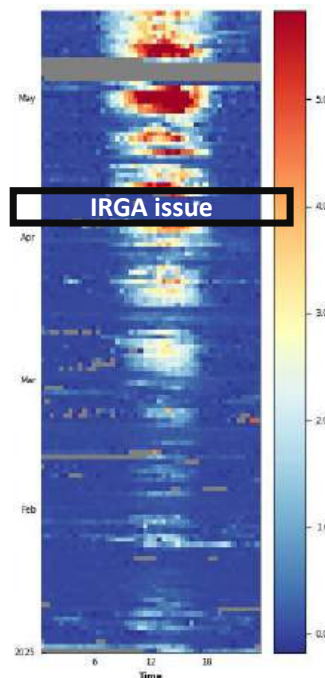
H

Abs limits: -100+450



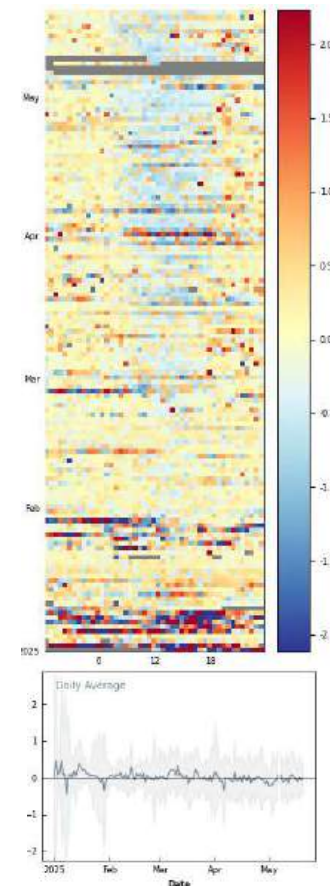
H2O

IRGA issue



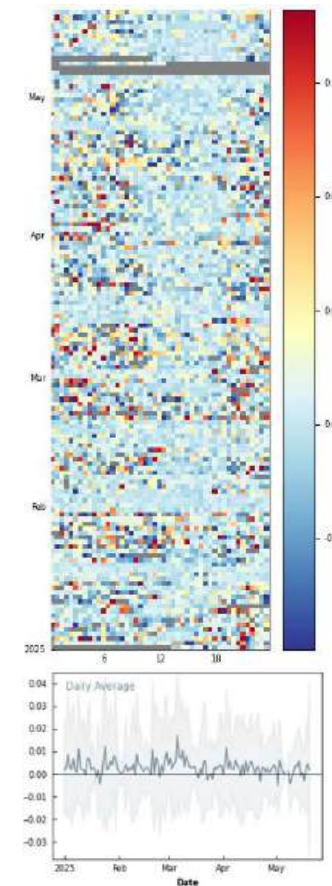
N2O

Abs limits: -0.005+0.05



CH4

Abs limits: -0.05+0.1



- Slurry application on March 6
- Grassland cut on May 13
- 2 gaps →
 1. IRGA issue
 2. Problem with station computer