

QA/QC Meeting 30 May 2024

Participants: LH, SB, IF, KMK, PM, LS, LK, MR, SE, FT, LA (11)

ALL SITES Data schedule

The sample list and 2022 data collection schedule for the GRASP sites. The schedule is divided into two parts: the first part shows the data collection schedule for the sites, and the second part shows the data collection schedule for the sites.

Site	Year	Start	End	Frequency
CH-DAV	2022	01/01	12/31	1x
CH-DAS	2022	01/01	12/31	1x
CH-FOR	2022	01/01	12/31	1x
CH-FRU	2022	01/01	12/31	1x
CH-HON	2022	01/01	12/31	1x
CH-LAE	2022	01/01	12/31	1x
CH-LAS	2022	01/01	12/31	1x
CH-DE2	2022	01/01	12/31	1x
CH-TAN	2022	01/01	12/31	1x

The second part of the schedule shows the data collection schedule for the sites, with columns for the site name, year, start date, end date, and frequency. The schedule is divided into two parts: the first part shows the data collection schedule for the sites, and the second part shows the data collection schedule for the sites.

ALL SITES Recent webcam pictures



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**

```
holukas@gl140-86: ~  
/home/holukas/.hushlogin file.  
holukas@gl140-86:~$ ssh holukas@grasslandserver.ethz.ch -p22118  
setsockopt socket 3 IPV6_TCLASS 16: Operation not permitted:  
holukas@grasslandserver.ethz.ch's password:  
setsockopt socket 3 IPV6_TCLASS 16: Operation not permitted:  
Last login: Mon May 27 00:00:44 2024 from 77.58.58.73  
[holukas@grasslandserver ~]$ df -h  
Filesystem                Size      Used Avail Use% Mounted on  
devtmpfs                  63G         0   63G   0% /dev  
tmpfs                     63G    144K   63G   1% /dev/shm  
tmpfs                     63G     19M   63G   1% /run  
tmpfs                     63G         0   63G   0% /sys/fs/cgroup  
/dev/sda2                 77G     66G   6.6G  91% /  
/dev/sda1                 477M    199M   254M  44% /boot  
/dev/sdc1                 287G    241G    38G  72% /export  
hest.nas.ethz.ch:/fs1201/green_groups_gl_processing 6.9T 5.8T 1.2T 84% /mnt/gl-processing  
hest.nas.ethz.ch:/fs1201/green_groups_gl_rawdata 8.8T 6.7T 2.2T 76% /mnt/gl-raw-data  
tmpfs                    13G     12K   13G   1% /run/user/88119  
tmpfs                    13G    36K   13G   1% /run/user/200785  
tmpfs                    13G    4.0K   13G   1% /run/user/158699  
tmpfs                    13G    4.0K   13G   1% /run/user/541795  
nas12:/fs1202/green_groups_gl_export 300G 150G 147G 52% /mnt/new  
hest.nas.ethz.ch:/fs1201/green_groups_gl_data/PAY 500G 377G 124G 76% /export/home/UPLOAD_ICOS/PAY  
tmpfs                    13G         0   13G   0% /run/user/16983  
tmpfs                    13G         0   13G   0% /run/user/0  
//gl108-241.d.ethz.ch/data$ 100G 19G 82G 19% /mnt/loggerdata  
tmpfs                    13G         0   13G   0% /run/user/127995  
[holukas@grasslandserver ~]$
```

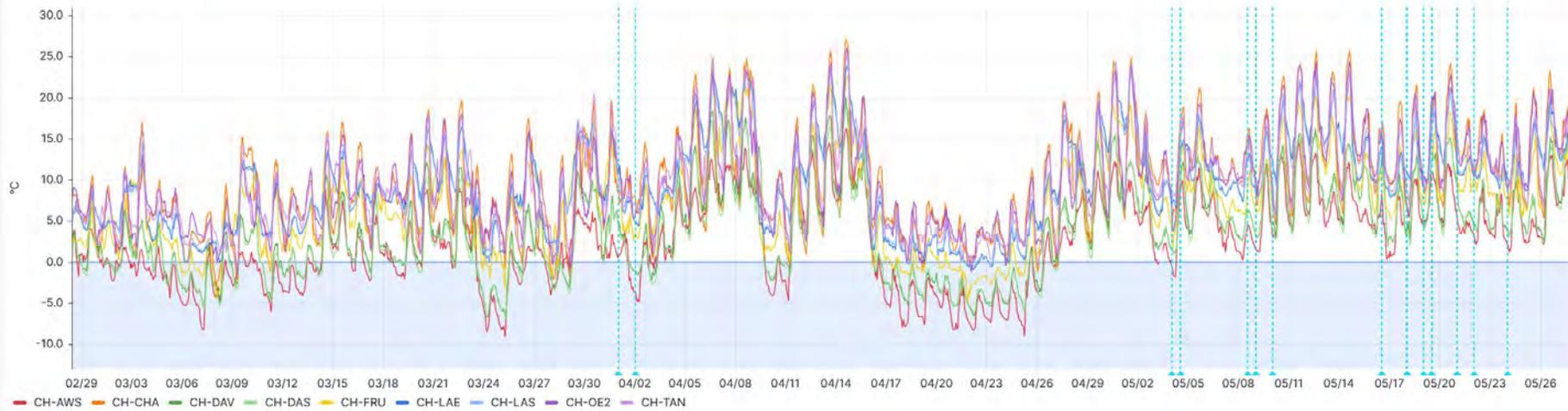
CH-PAY occupies a lot of disk space on /export

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](#)

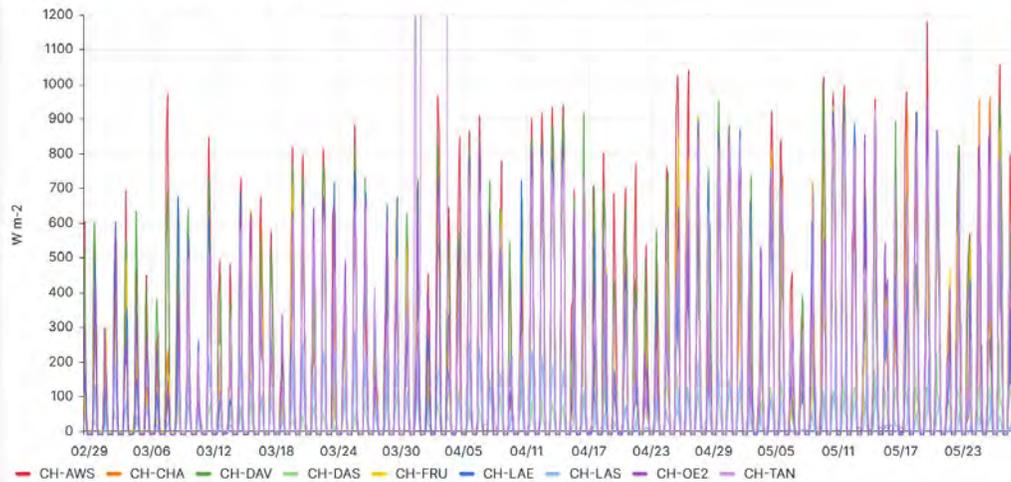


Air Temperature (°C) ❤️



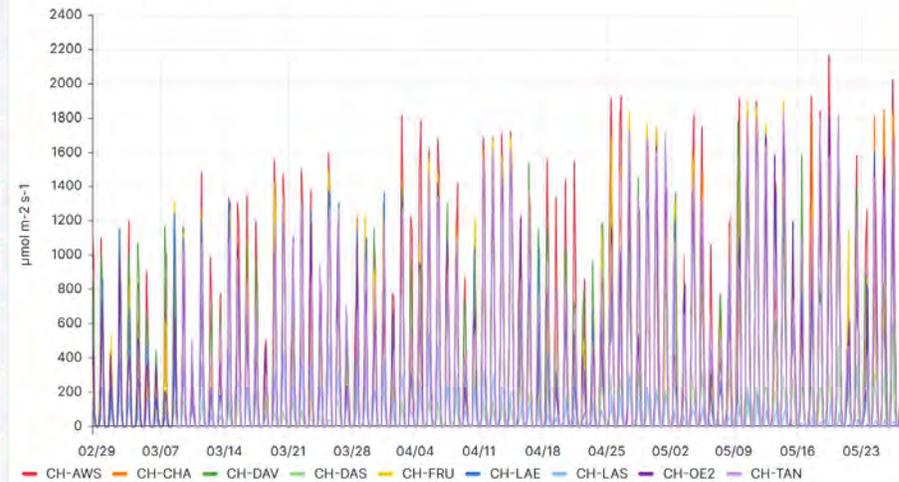
Min	Mean	Max
CH-AWS -9.5 °C	CH-AWS 1.9 °C	CH-AWS 16.8 °C
CH-CHA -3.0 °C	CH-CHA 9.8 °C	CH-CHA 27.5 °C
CH-DAV -6.9 °C	CH-DAV 4.2 °C	CH-DAV 20.4 °C
CH-DAS -7.0 °C	CH-DAS 3.7 °C	CH-DAS 19.2 °C
CH-FRU -6.1 °C	CH-FRU 7.7 °C	CH-FRU 24.6 °C
CH-LAE -0.8 °C	CH-LAE 9.6 °C	CH-LAE 24.5 °C
CH-LAS -0.6 °C	CH-LAS 8.1 °C	CH-LAS 25.6 °C
CH-OE2 -2.1 °C	CH-OE2 9.1 °C	CH-OE2 26.7 °C
CH-TAN -1.5 °C	CH-TAN 9.3 °C	CH-TAN 25.8 °C

Shortwave Incoming Radiation (W m⁻²)



Max
CH-AWS 1522 W/m ²
CH-DAV 1520 W/m ²
CH-DAS 893 W/m ²
CH-FRU 1204 W/m ²
CH-LAE 1416 W/m ²
CH-LAS 792 W/m ²
CH-OE2 1250 W/m ²
CH-TAN 28263 W/m ²

Photosynthetically Active Radiation (μmol m⁻² s⁻¹)

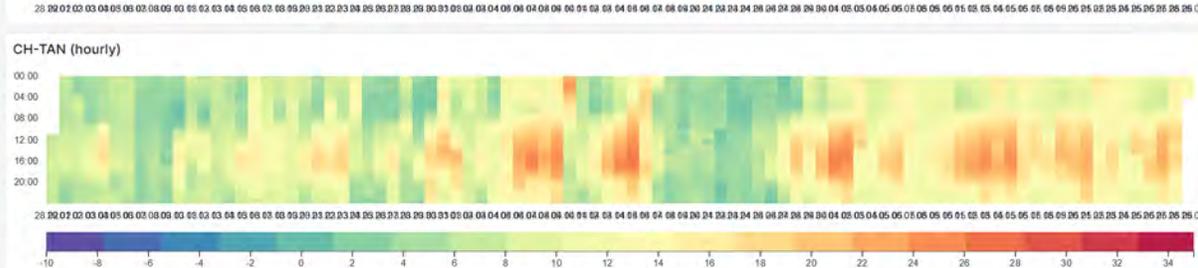
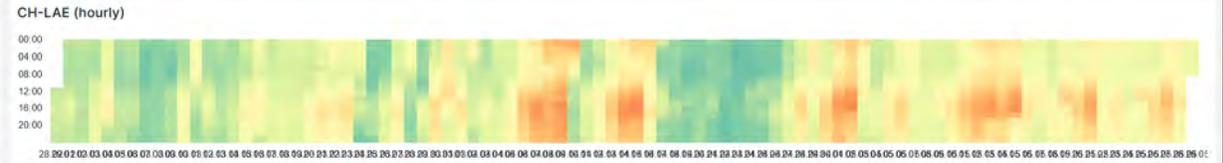
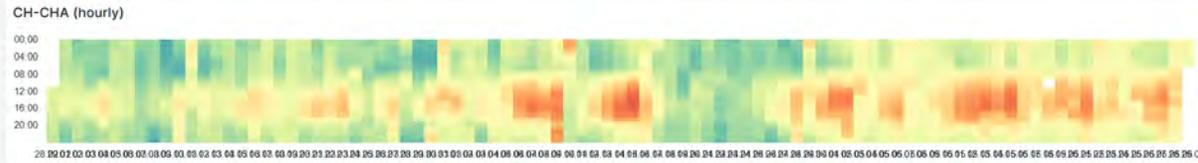
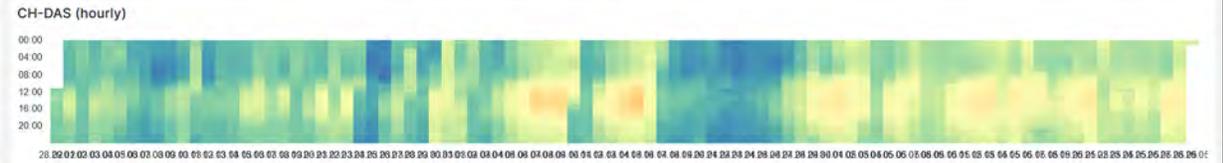
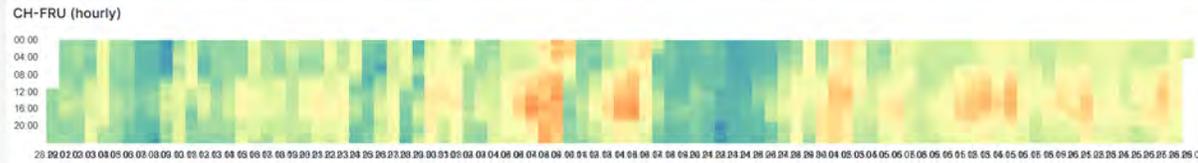
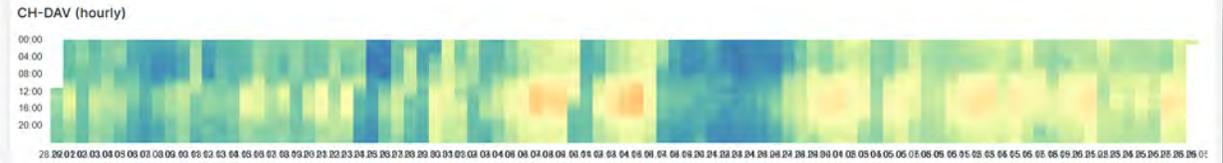
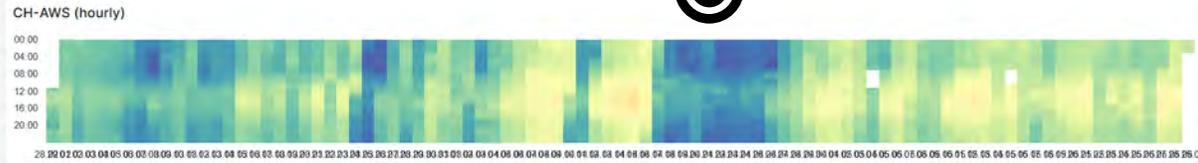


Max
CH-AWS 3010
CH-DAV 2930
CH-DAS 1952
CH-FRU 2962
CH-LAE 2496
CH-LAS 1520
CH-OE2 2426

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

Last 90 days

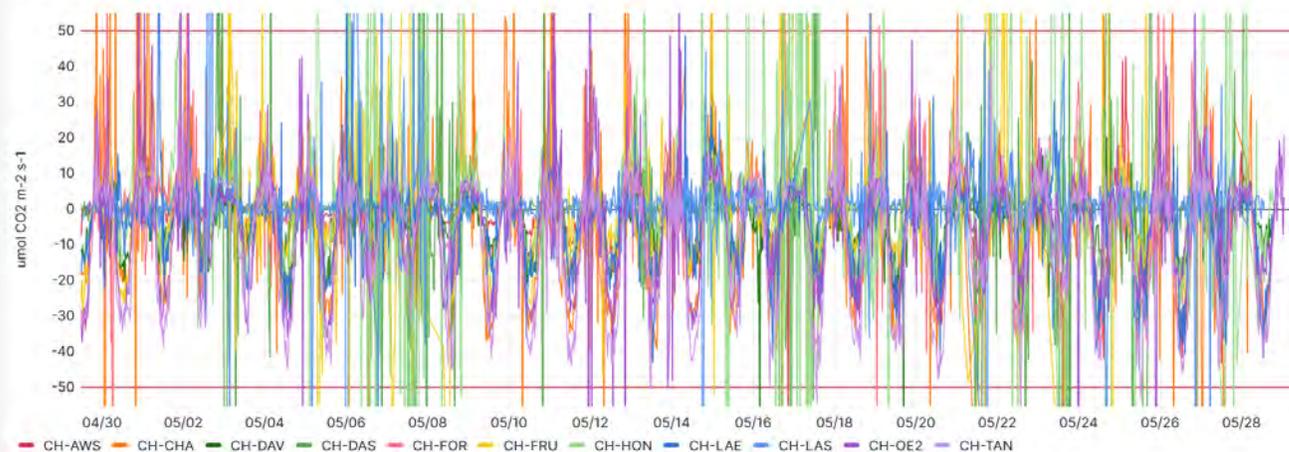
Cooltest site



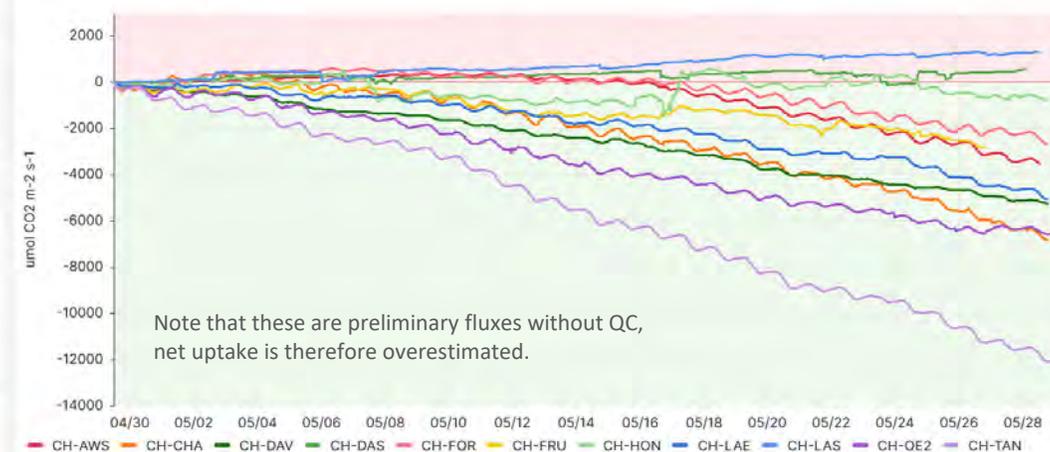
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Last 30 days

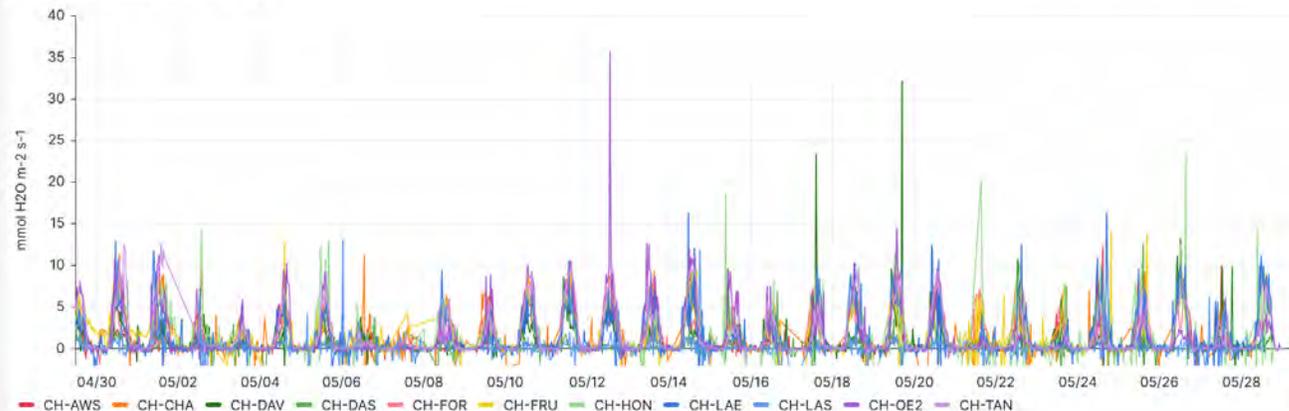
CO₂ Fluxes ($\mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$)



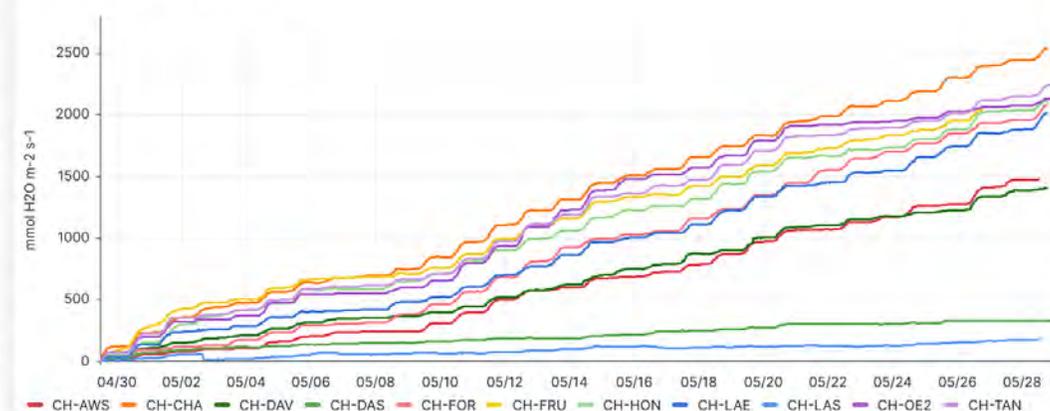
Cumulative CO₂ Fluxes (Level-0)



H₂O Fluxes ($\text{mmol H}_2\text{O m}^{-2} \text{ s}^{-1}$)



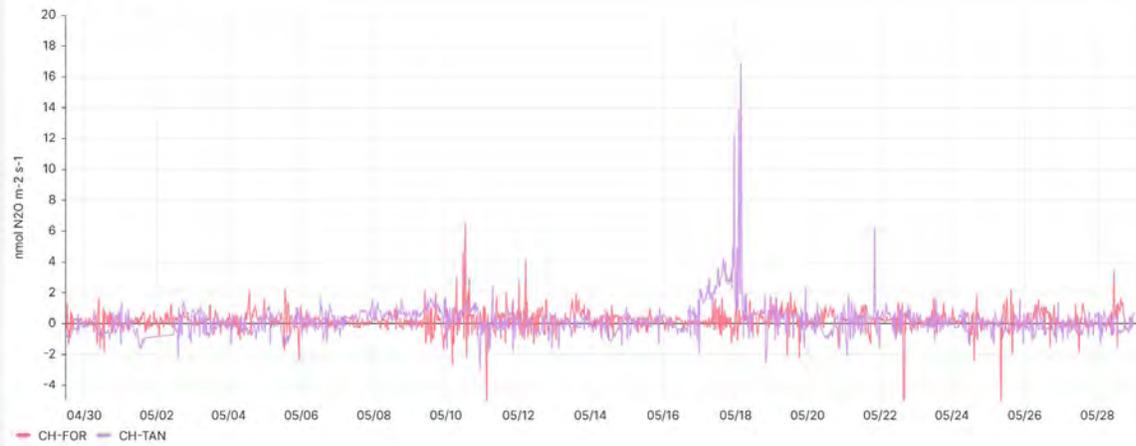
Cumulative H₂O Fluxes (Level-0)



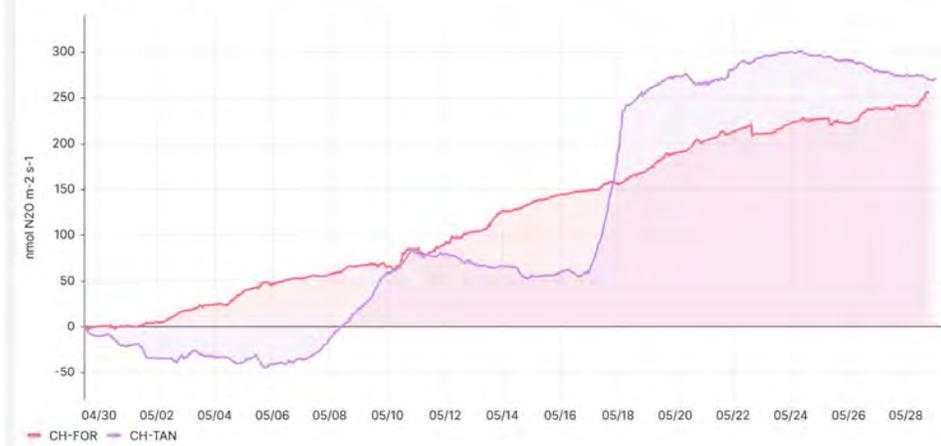
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Last 30 days

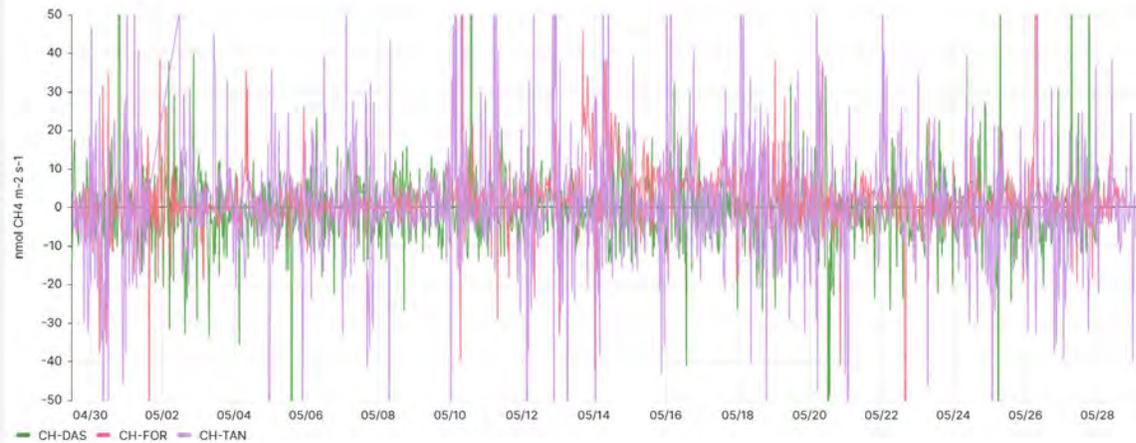
N₂O flux (Level-0)



Cumulative N₂O flux (Level-0)



CH₄ flux (Level-0)



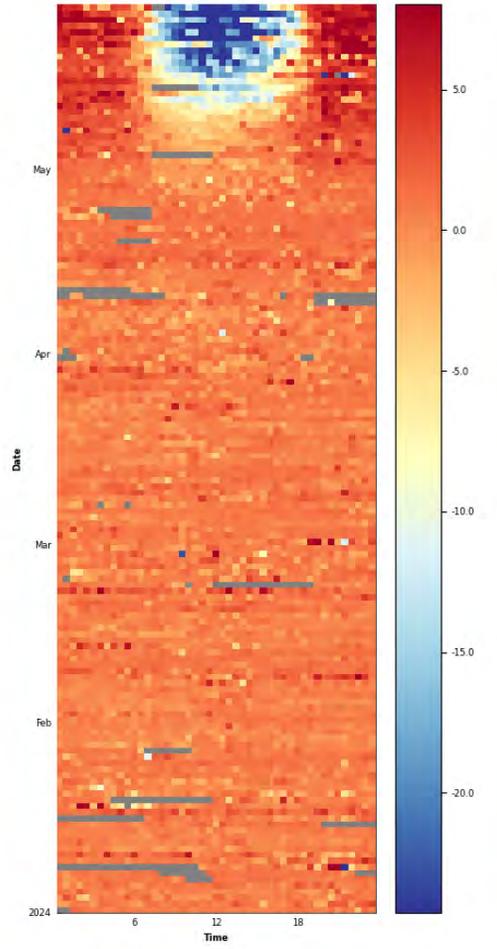
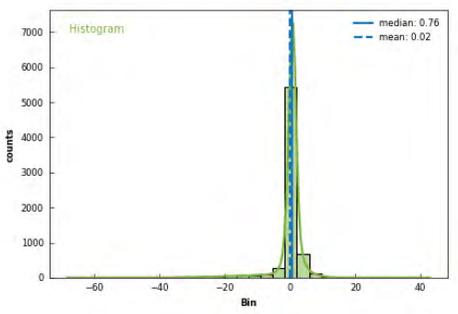
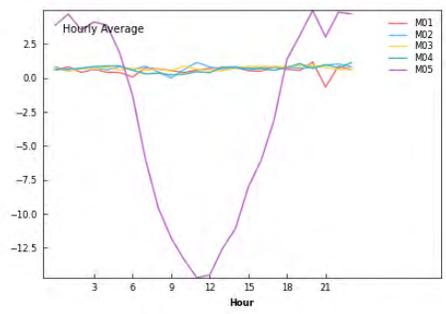
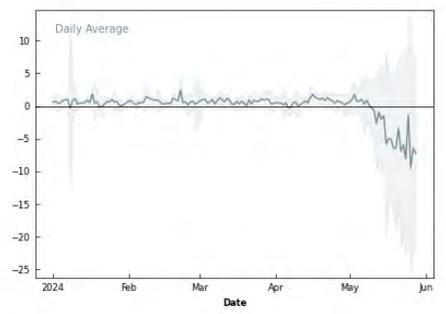
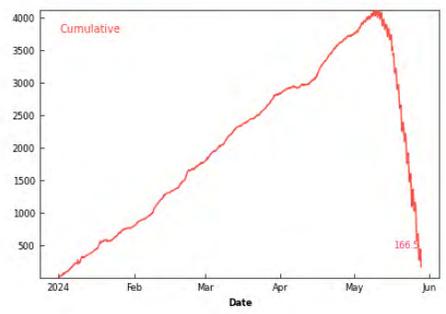
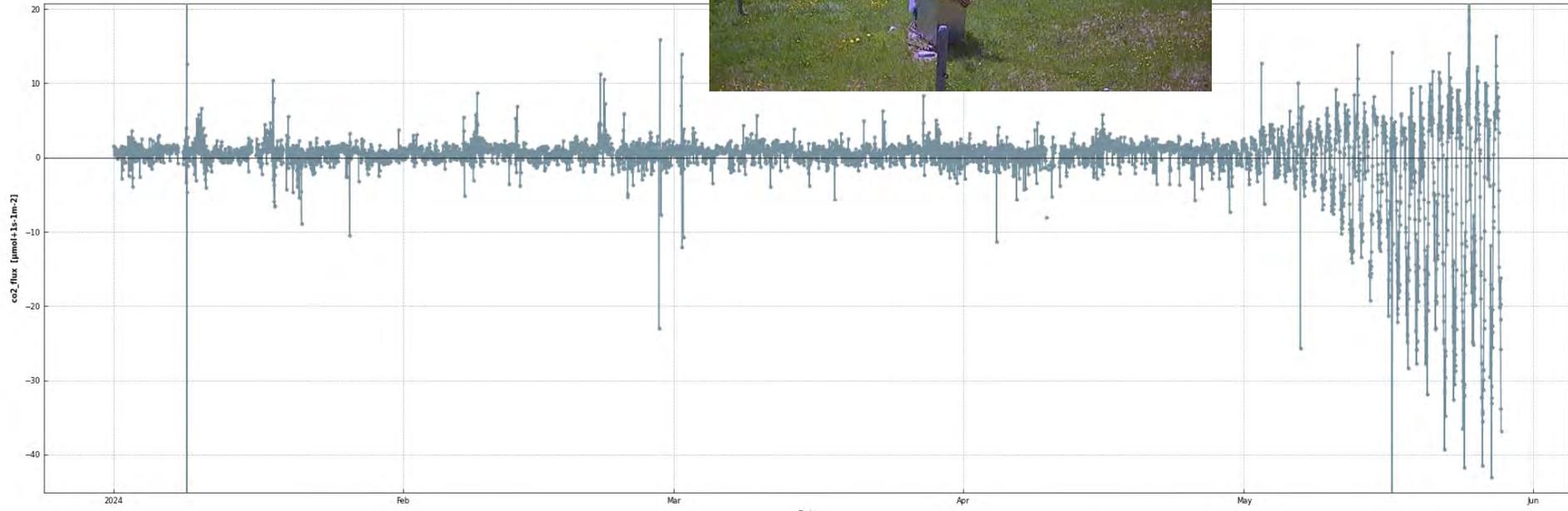
Cumulative CH₄ flux (Level-0)

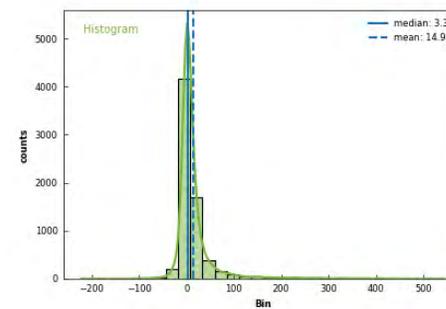
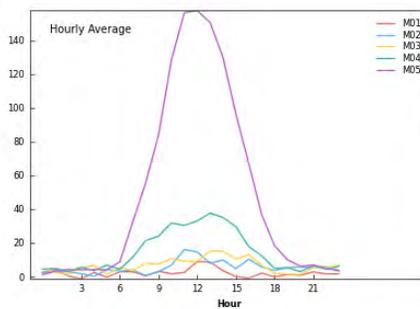
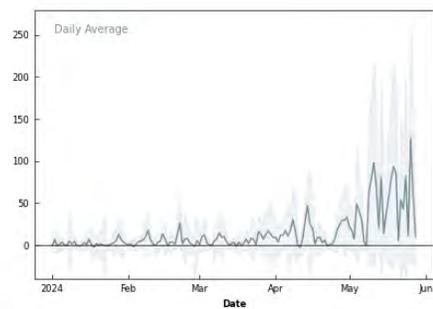
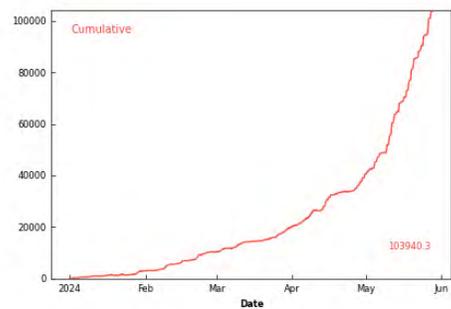
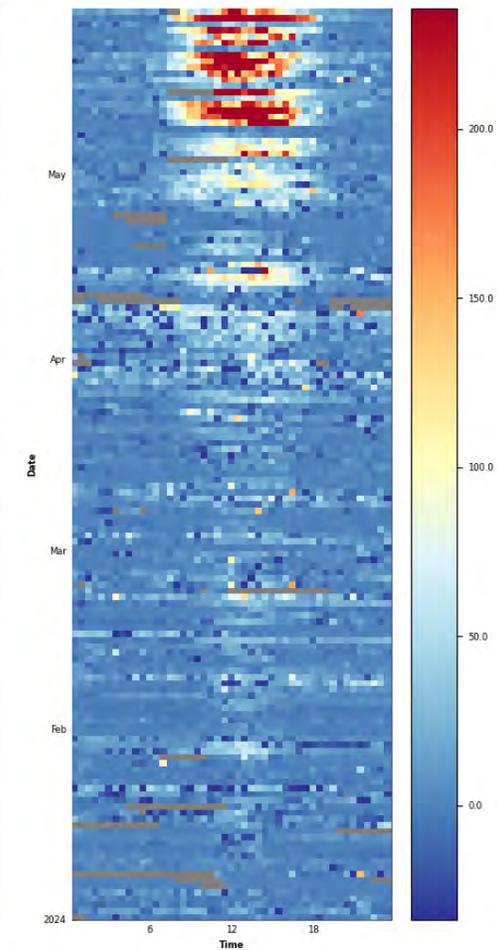
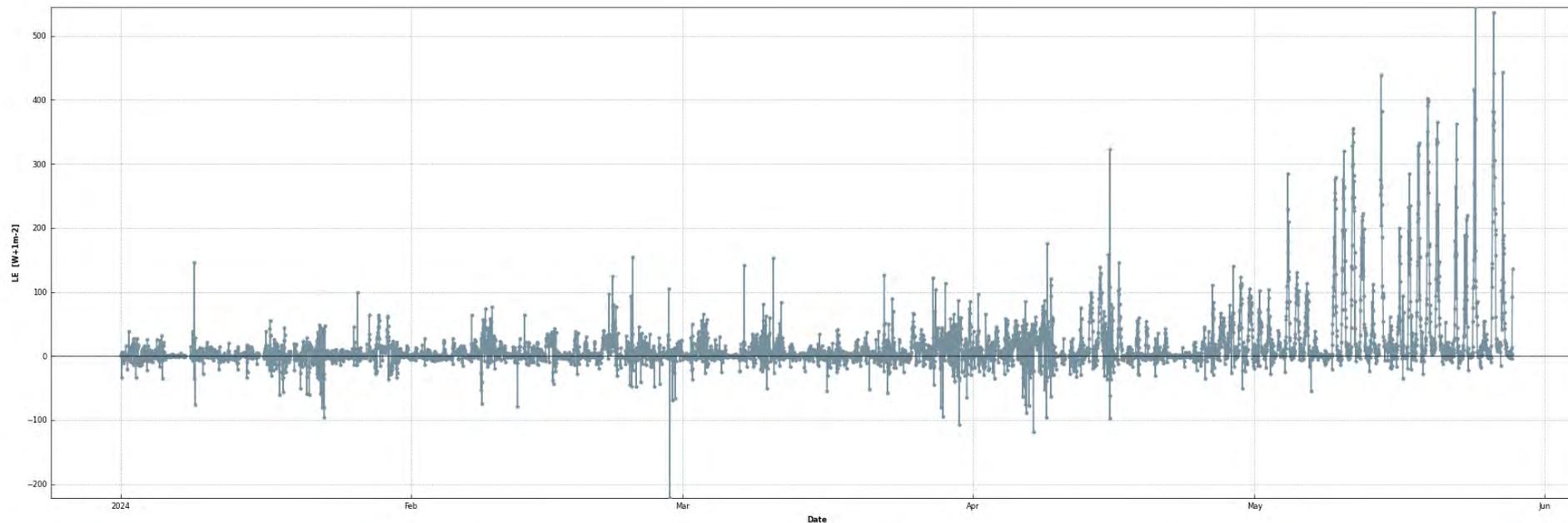


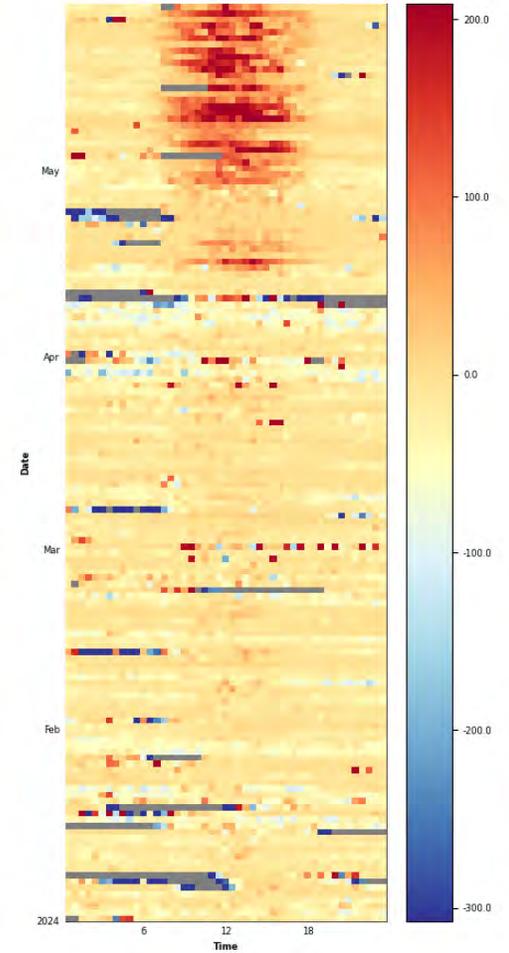
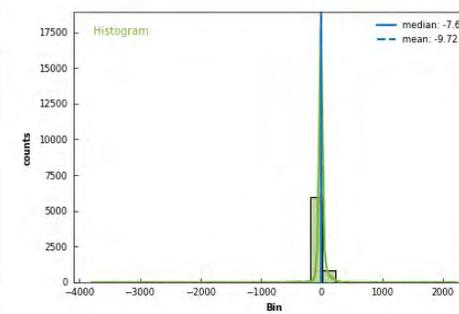
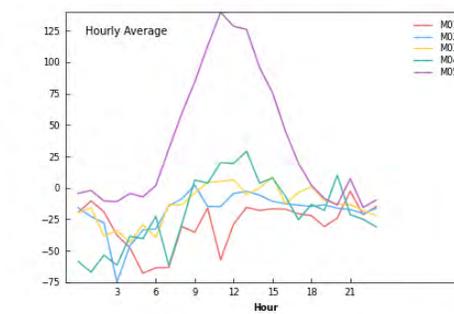
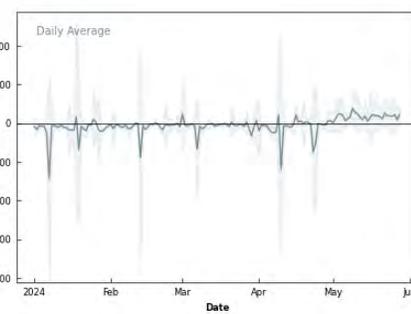
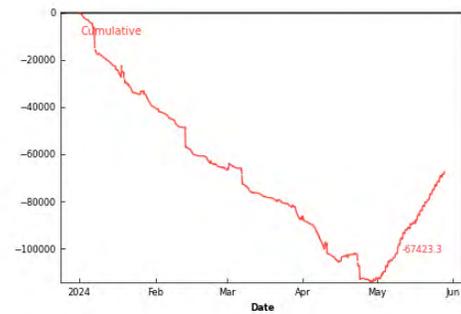
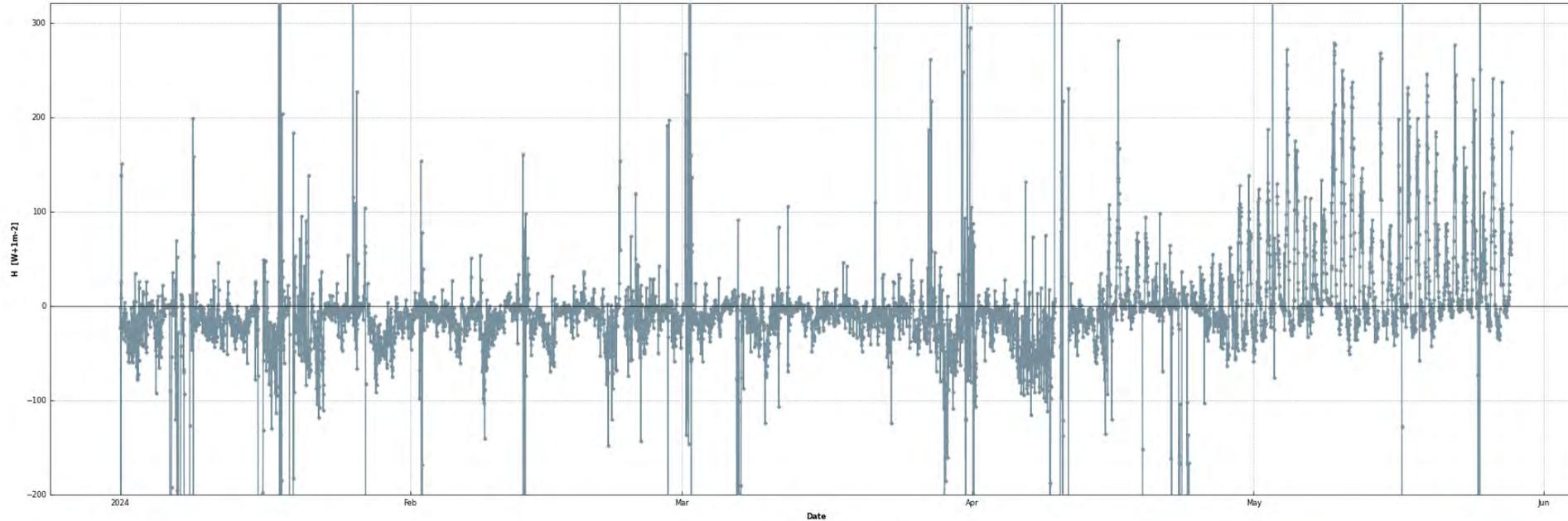
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CH-AWS CO2 flux





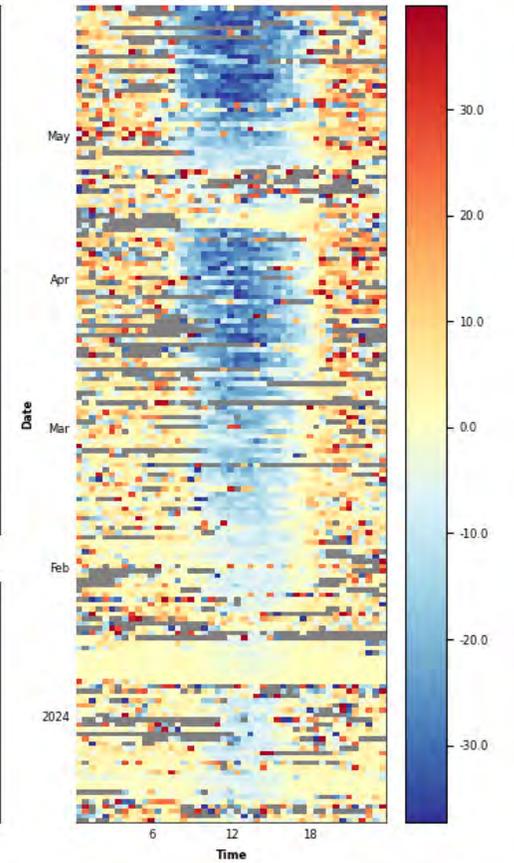
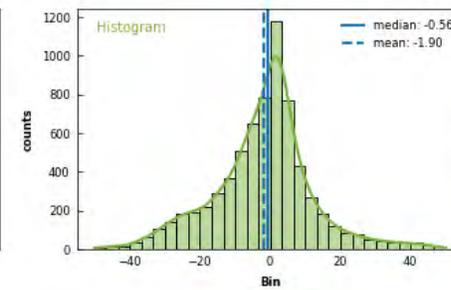
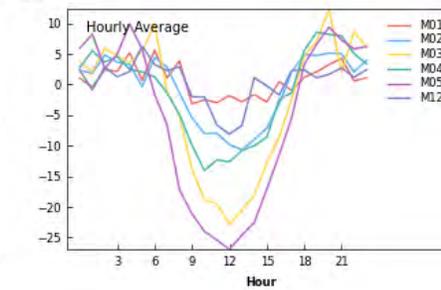
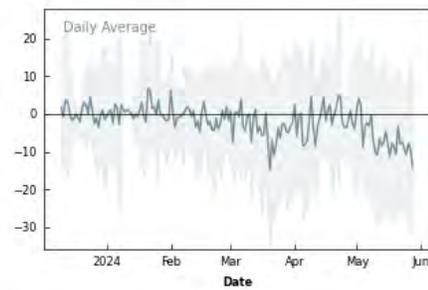
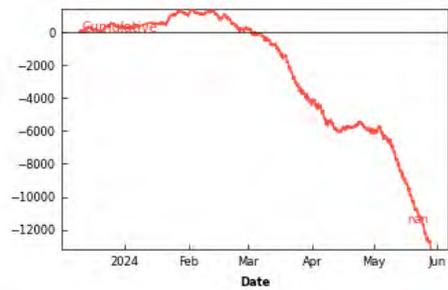
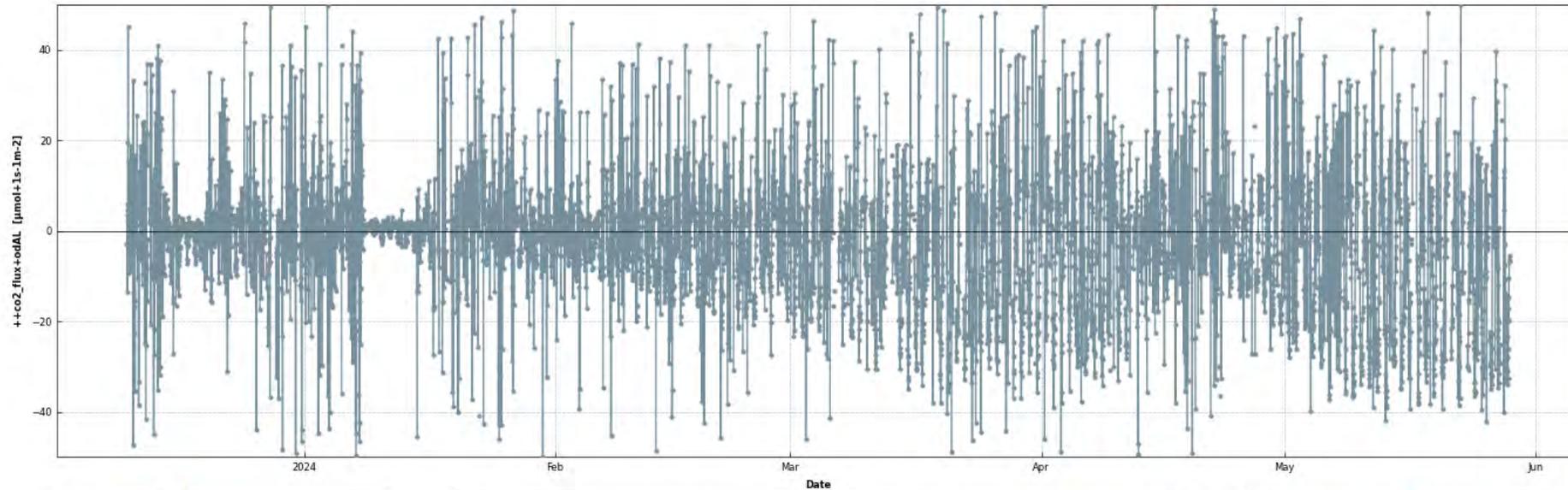


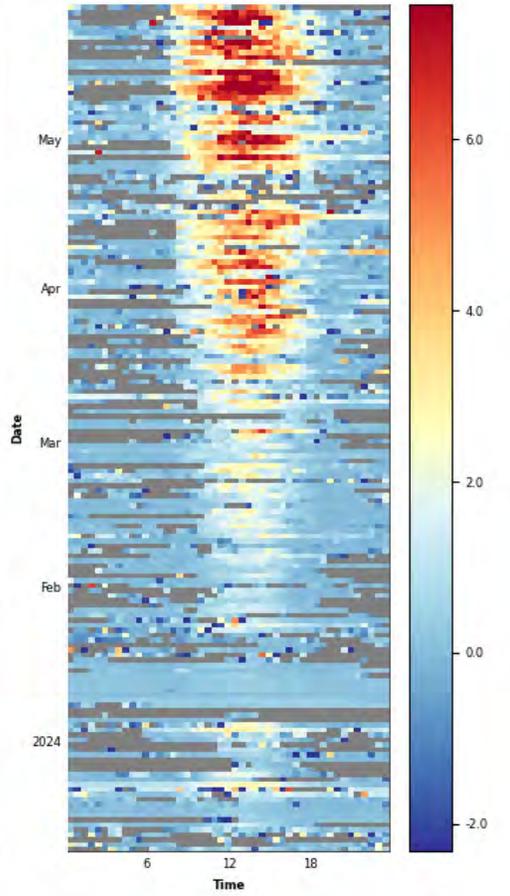
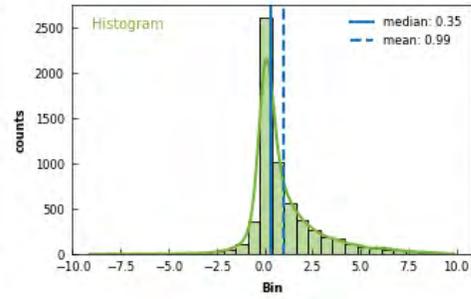
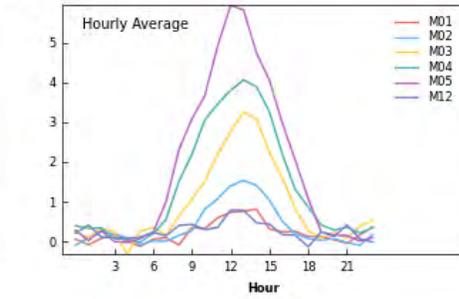
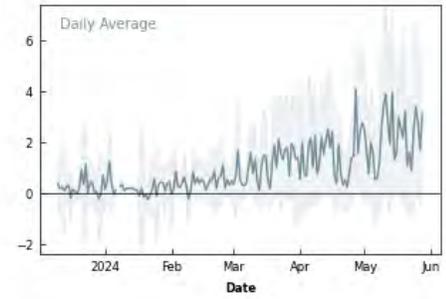
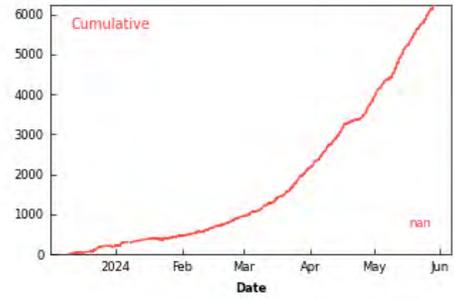
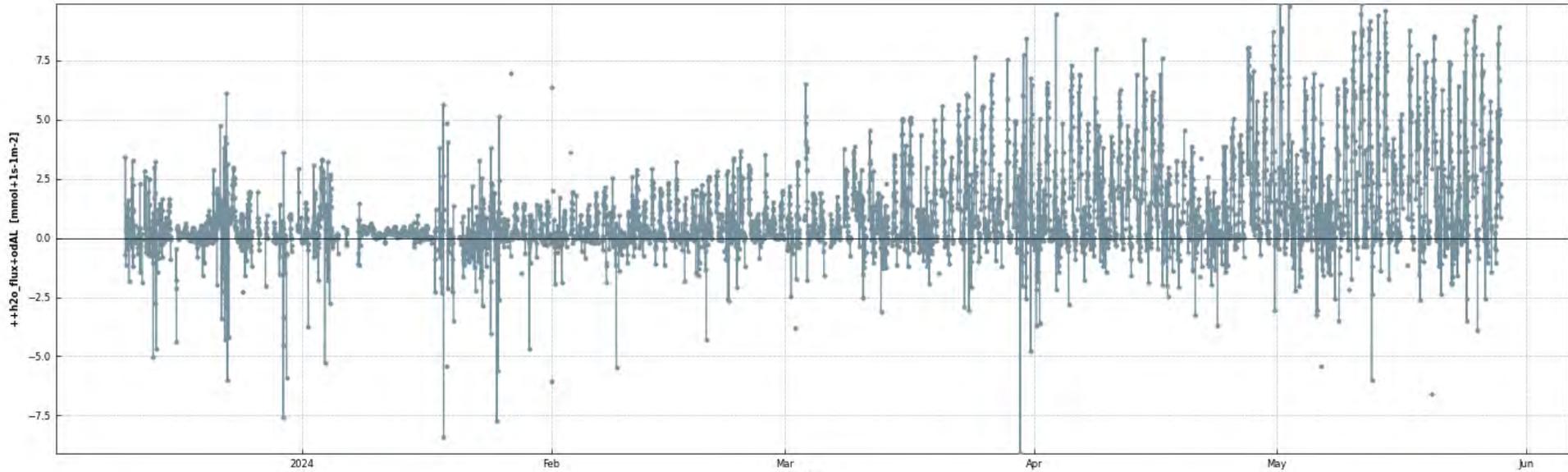


CH-CHA CO2 flux



- Grazing: 2024.01.20 - 2024.01.23
- 1st mowing: 2024.04.11





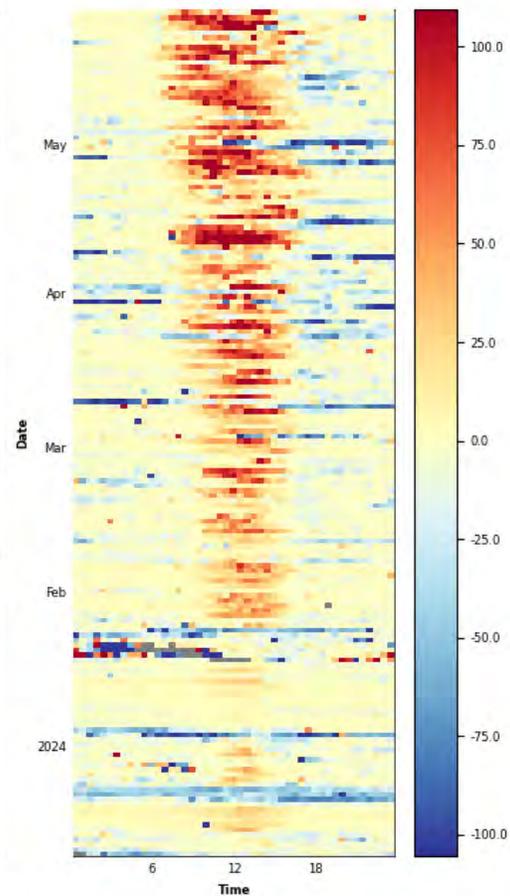
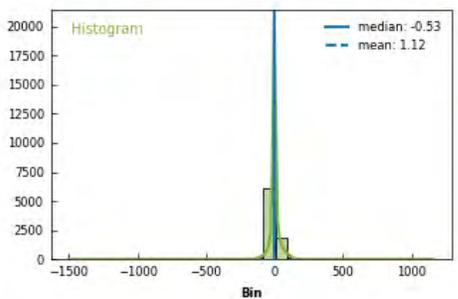
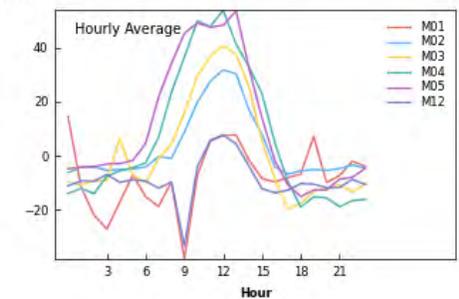
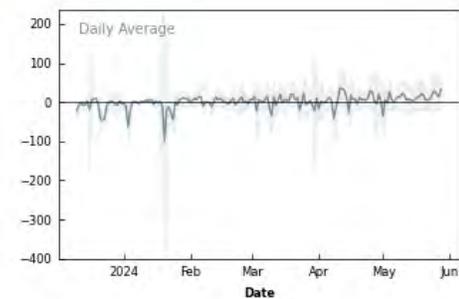
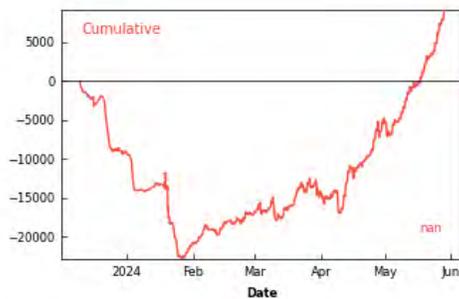
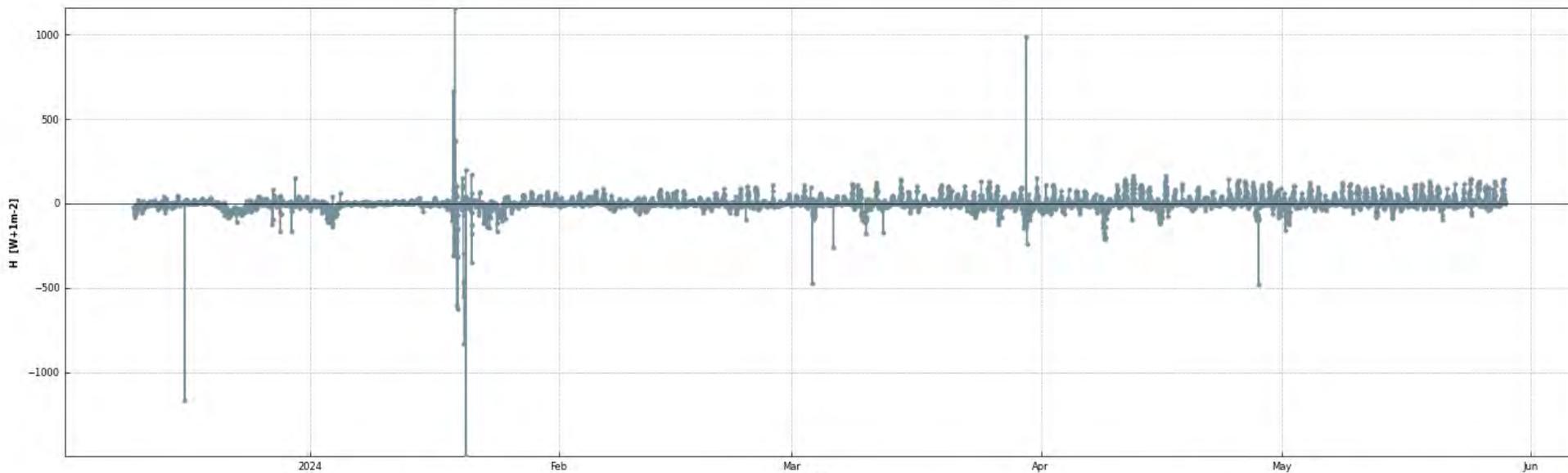
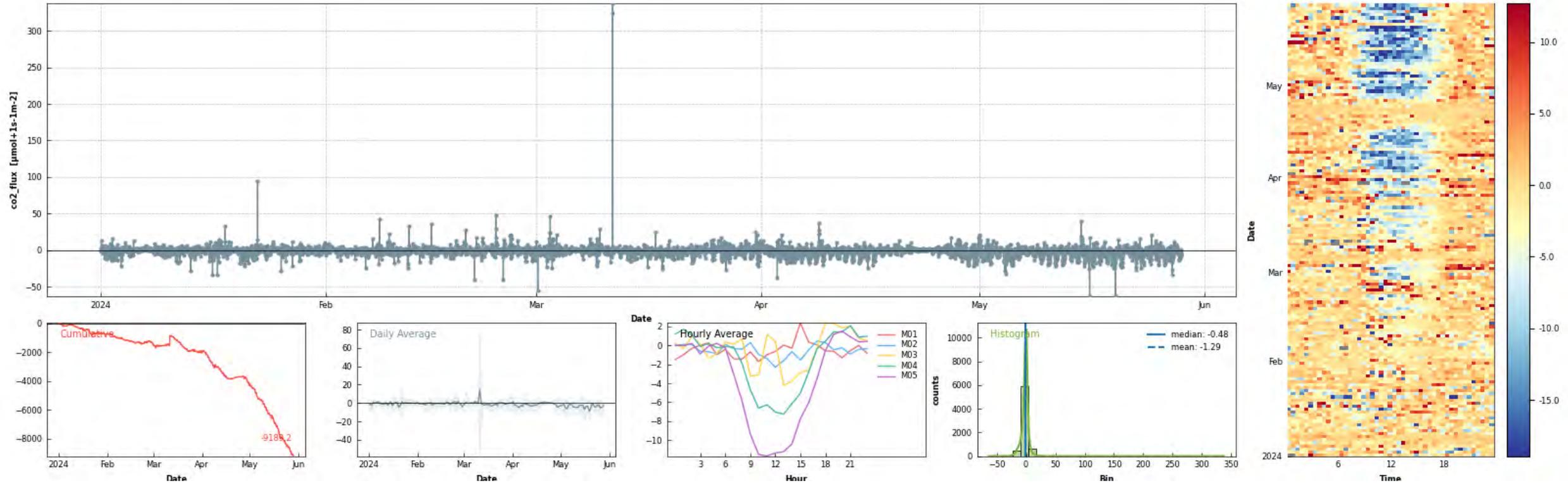


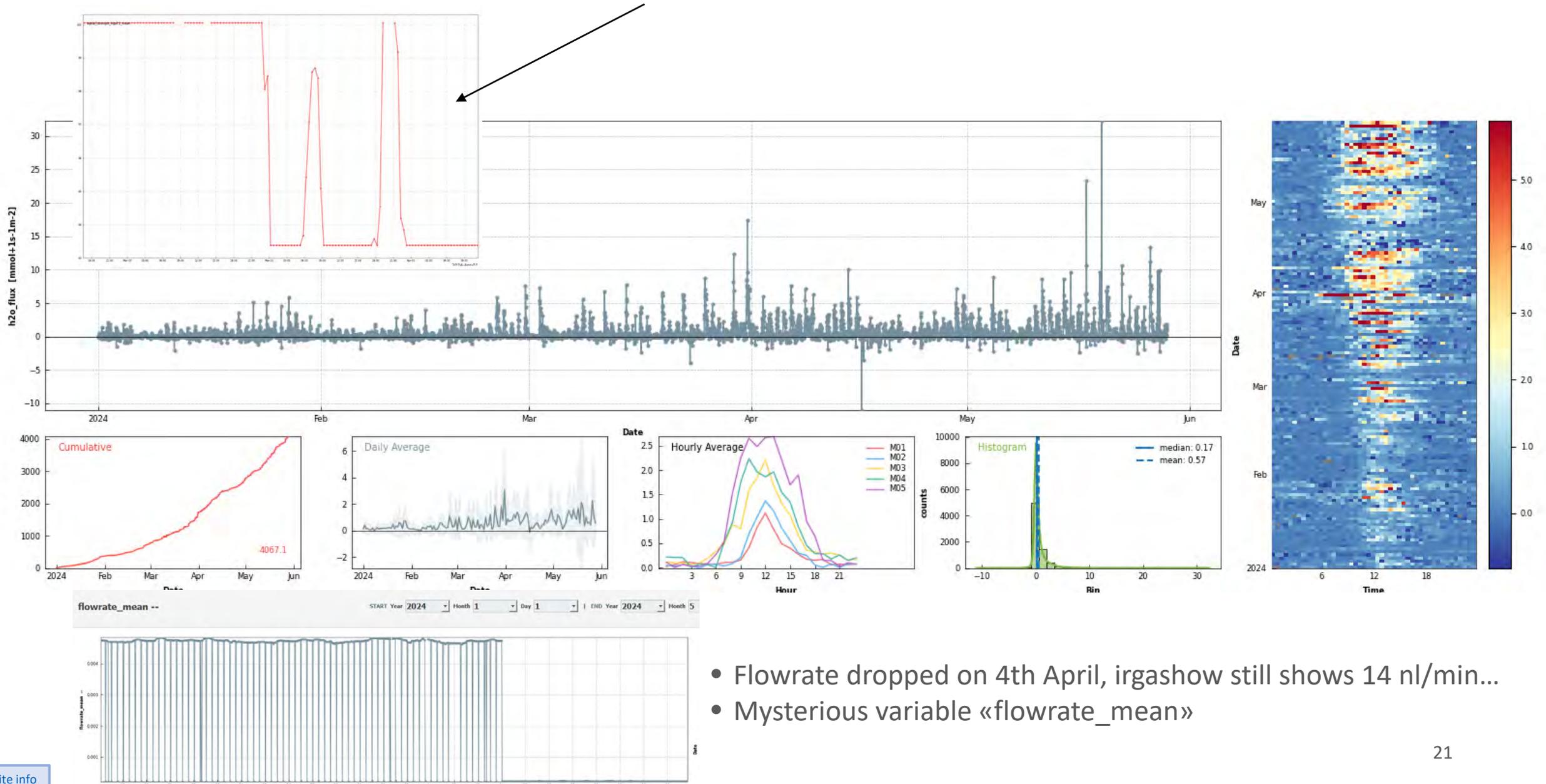


Photo: Lukas Hörtnagl

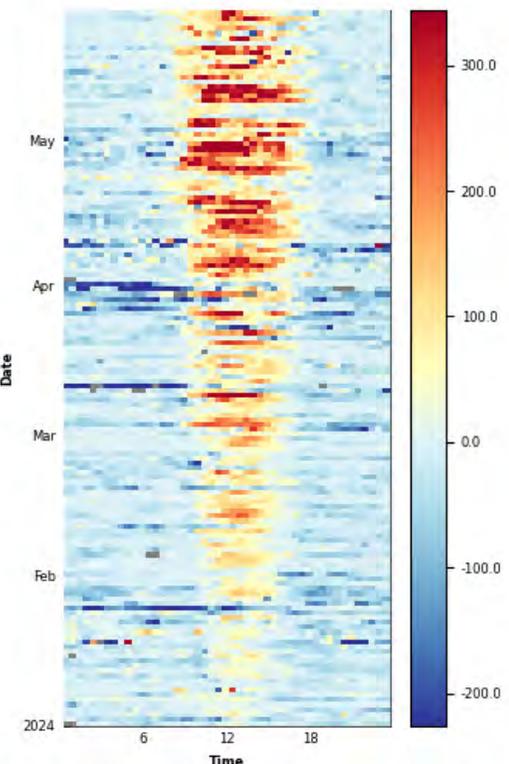
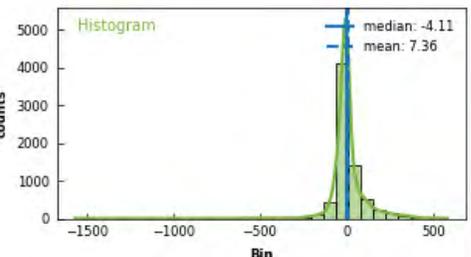
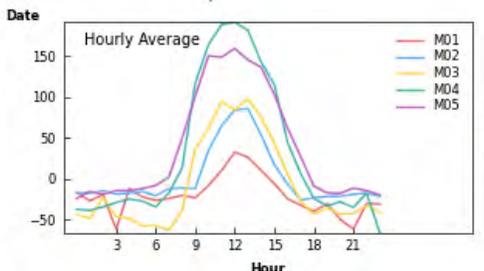
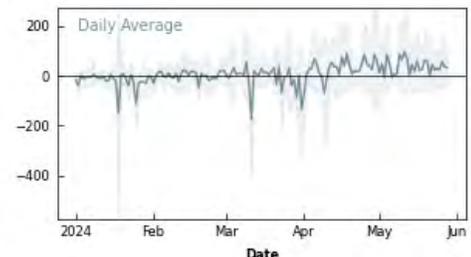
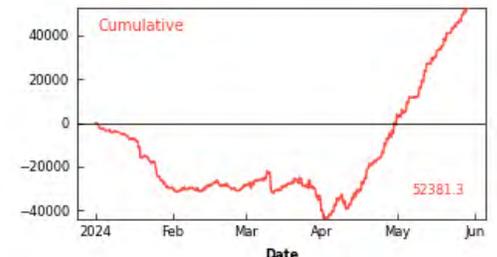
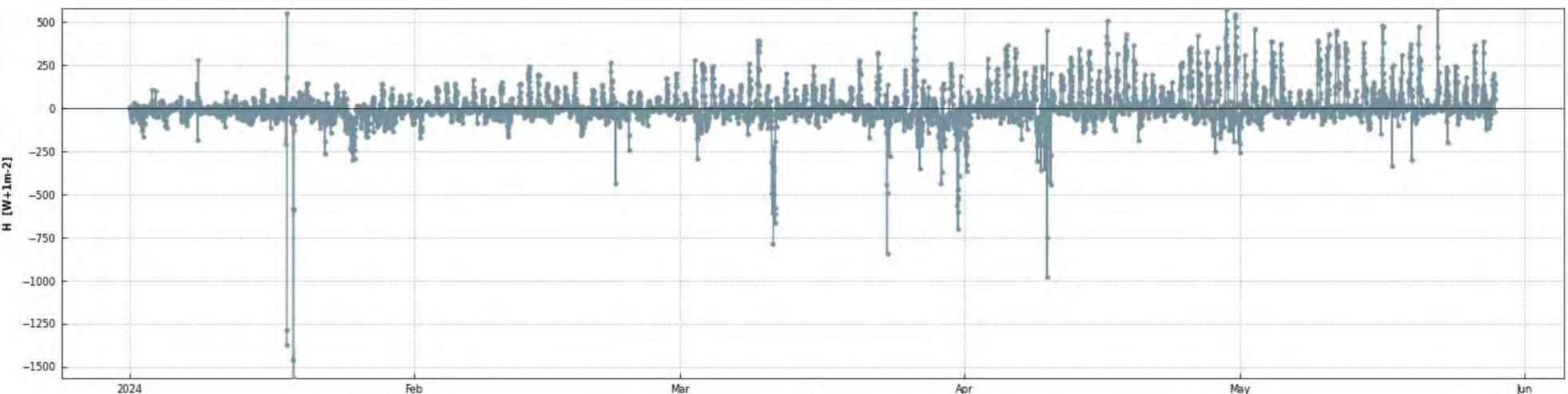
- No major gaps
- Interruption in net CO₂ uptake in mid-April due to snow
- May is usually the most productive month of the year



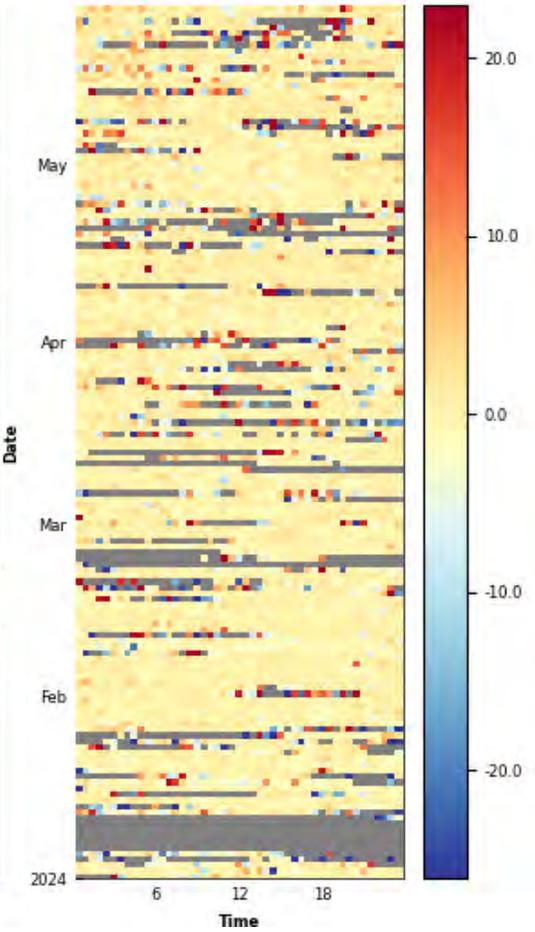
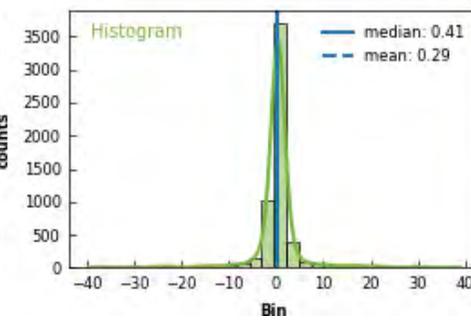
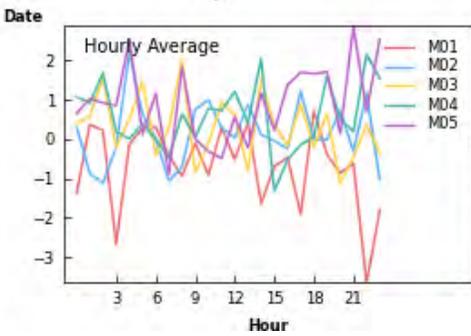
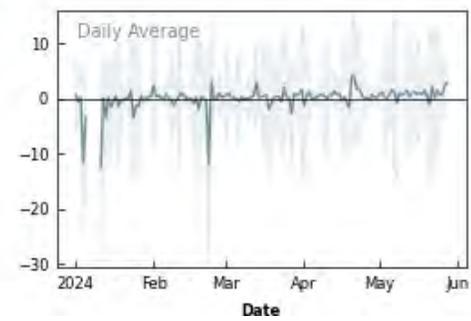
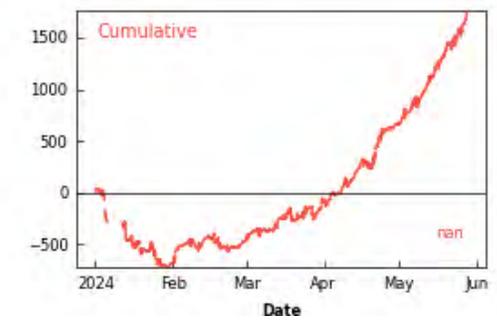
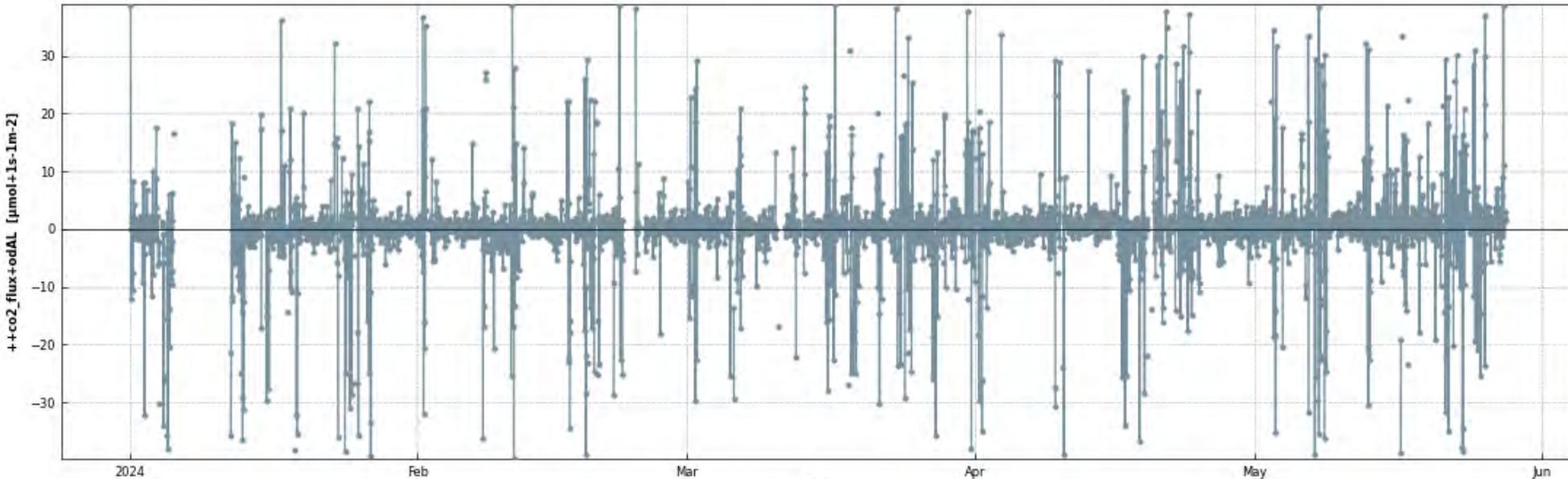
- Strange evaporation pattern on March 31 at 6 am
- Coincides with drop and fluctuations in IRGA signal strength

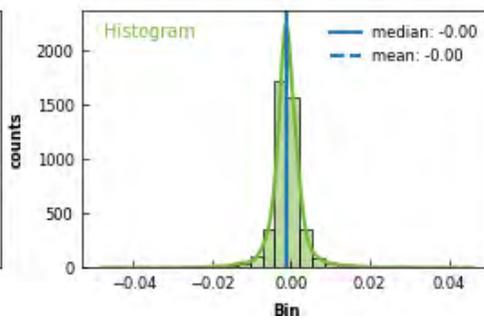
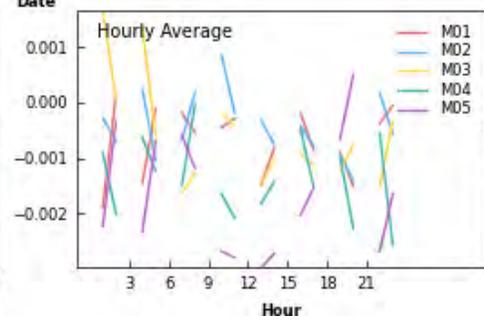
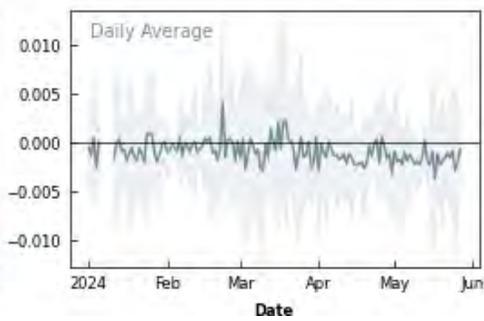
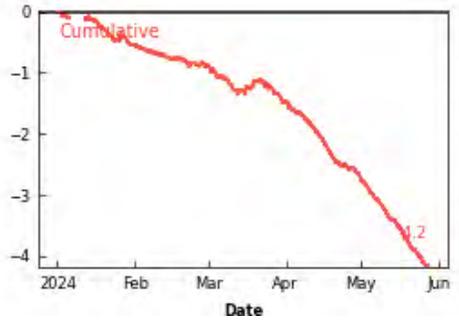
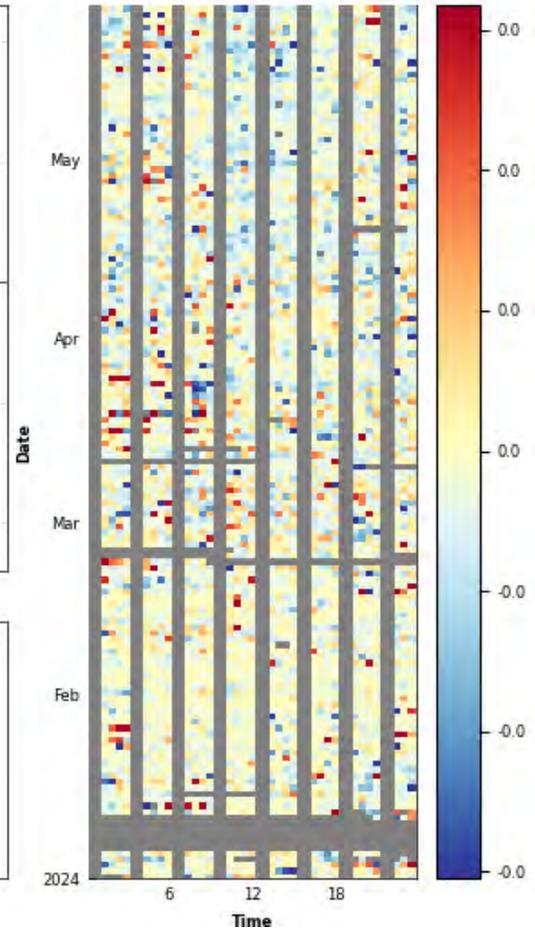
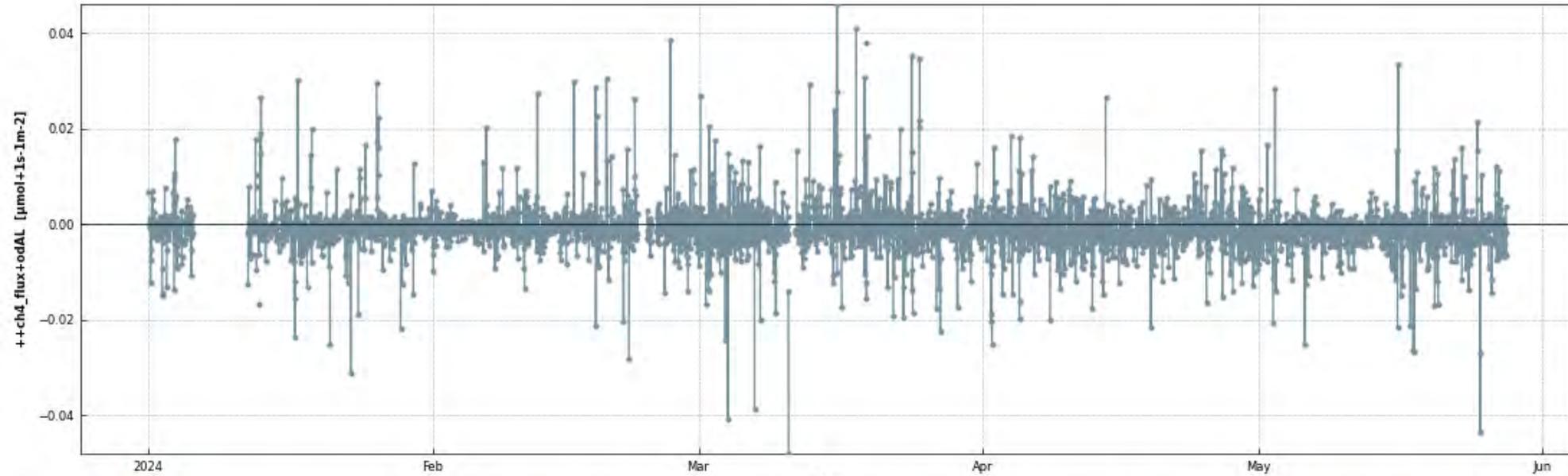


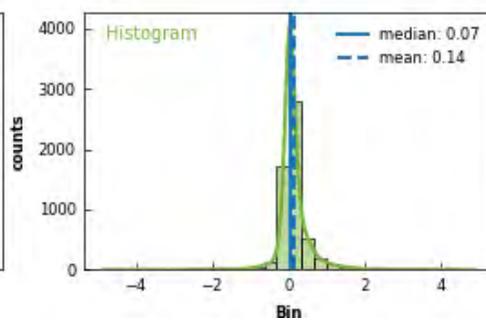
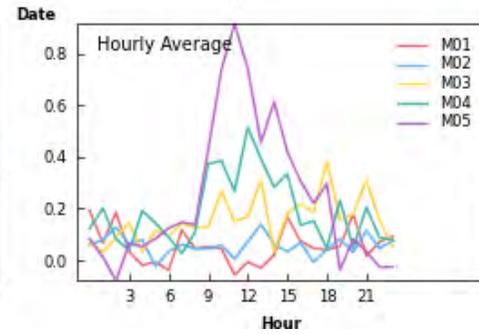
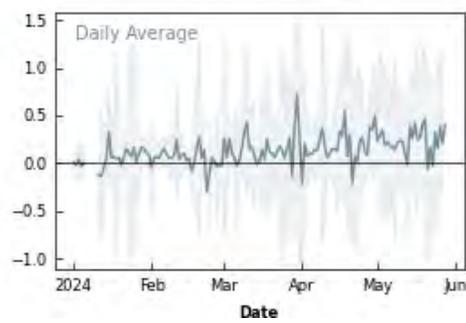
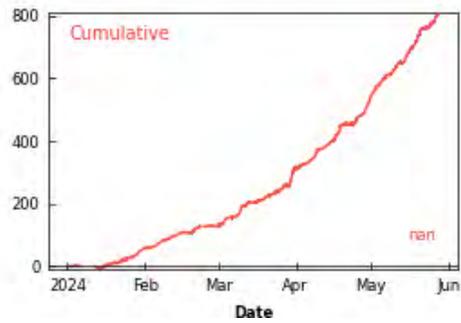
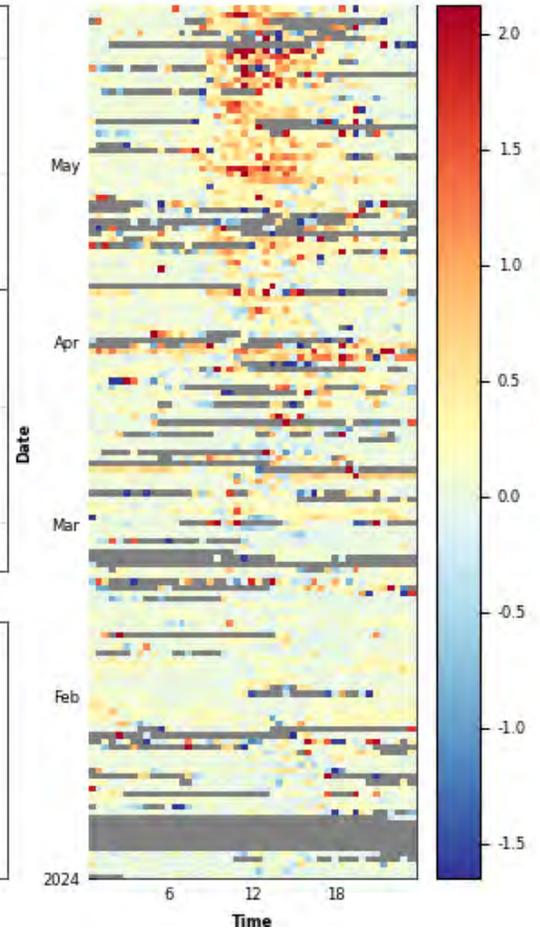
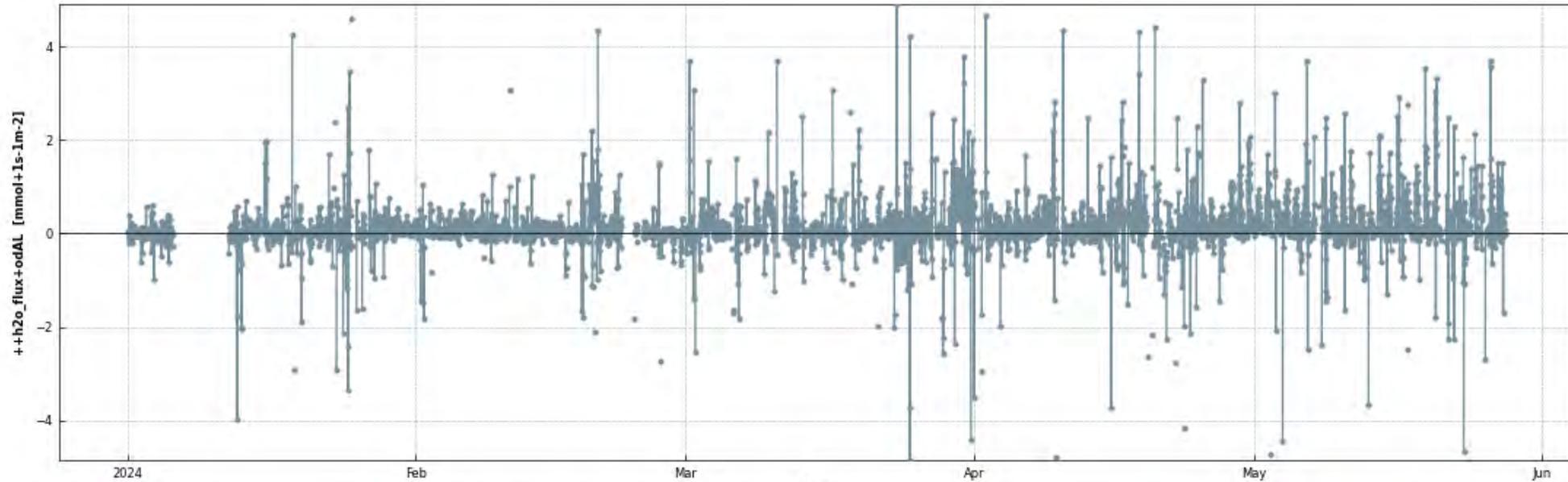
- Flowrate dropped on 4th April, irgashow still shows 14 nl/min...
- Mysterious variable «flowrate_mean»











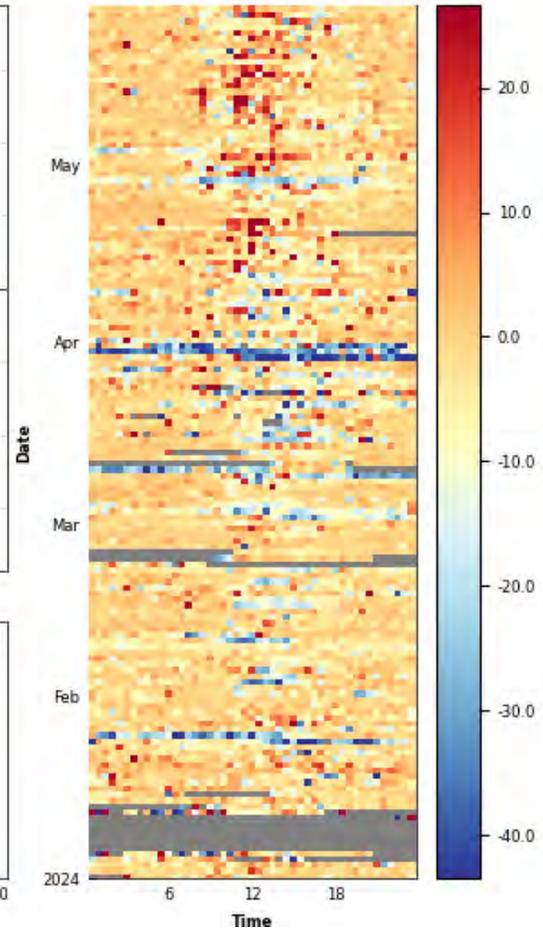
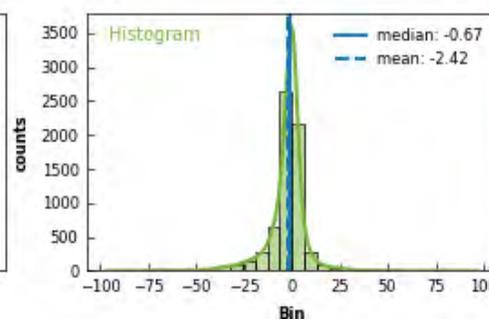
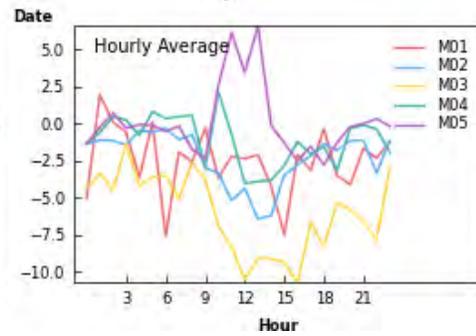
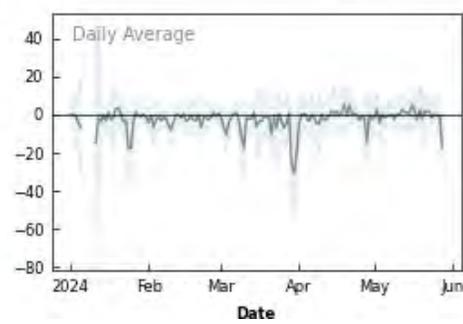
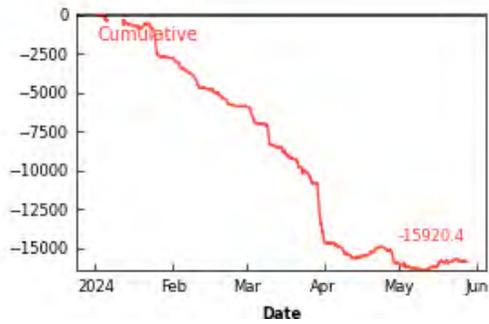
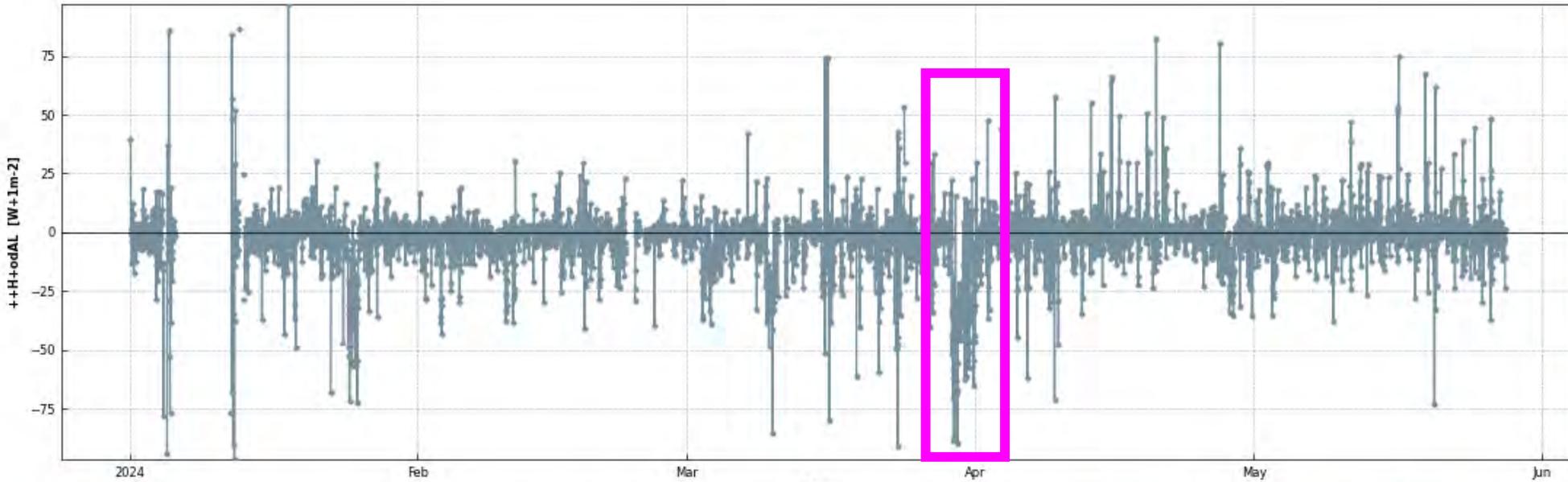
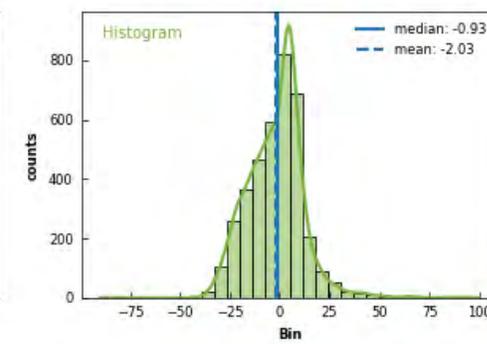
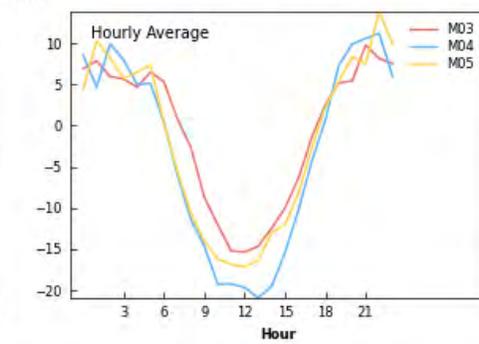
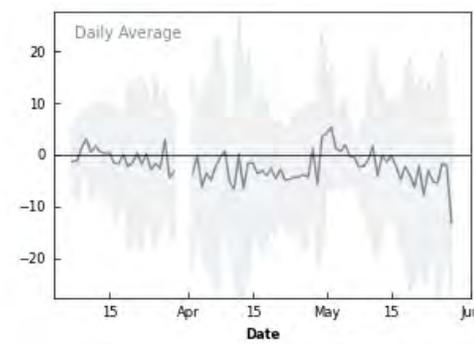
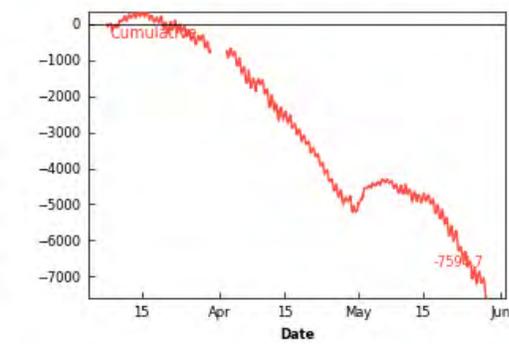
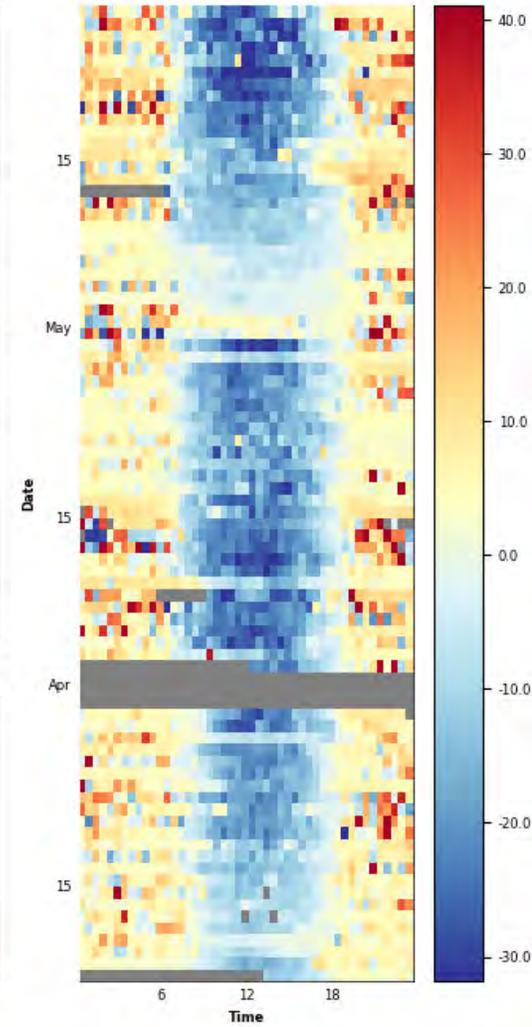
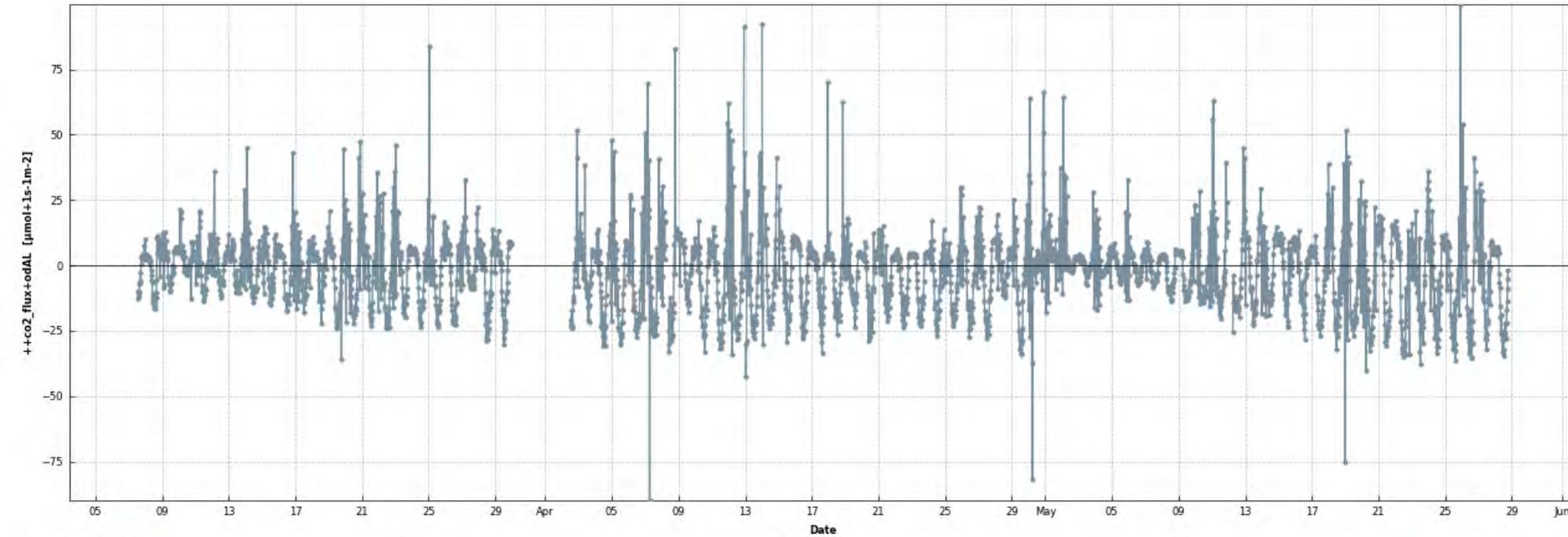


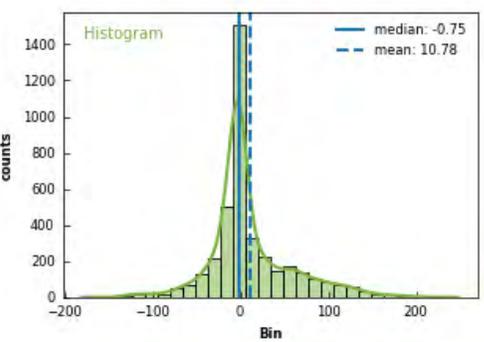
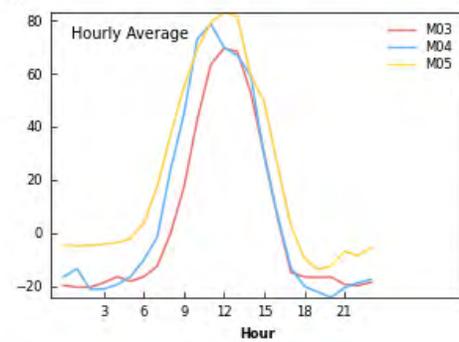
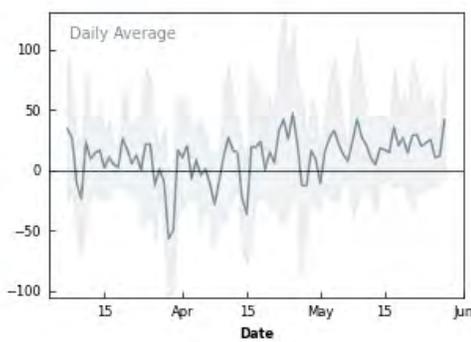
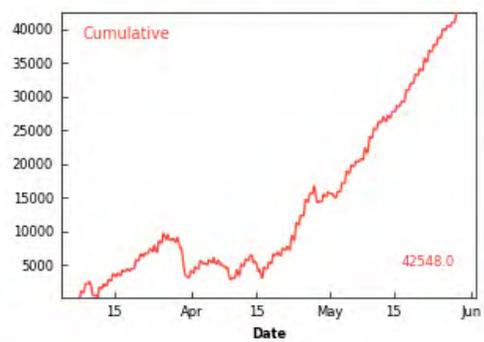
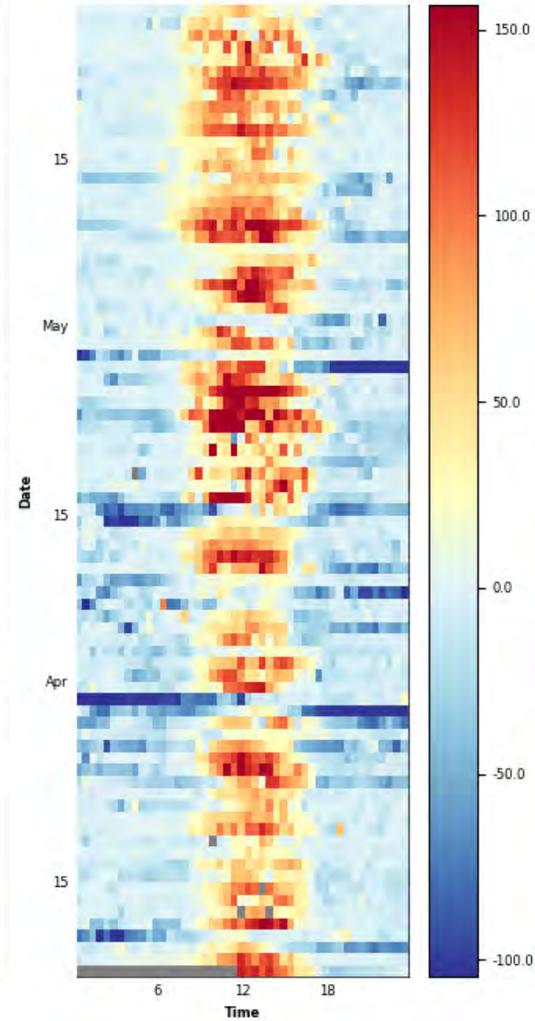
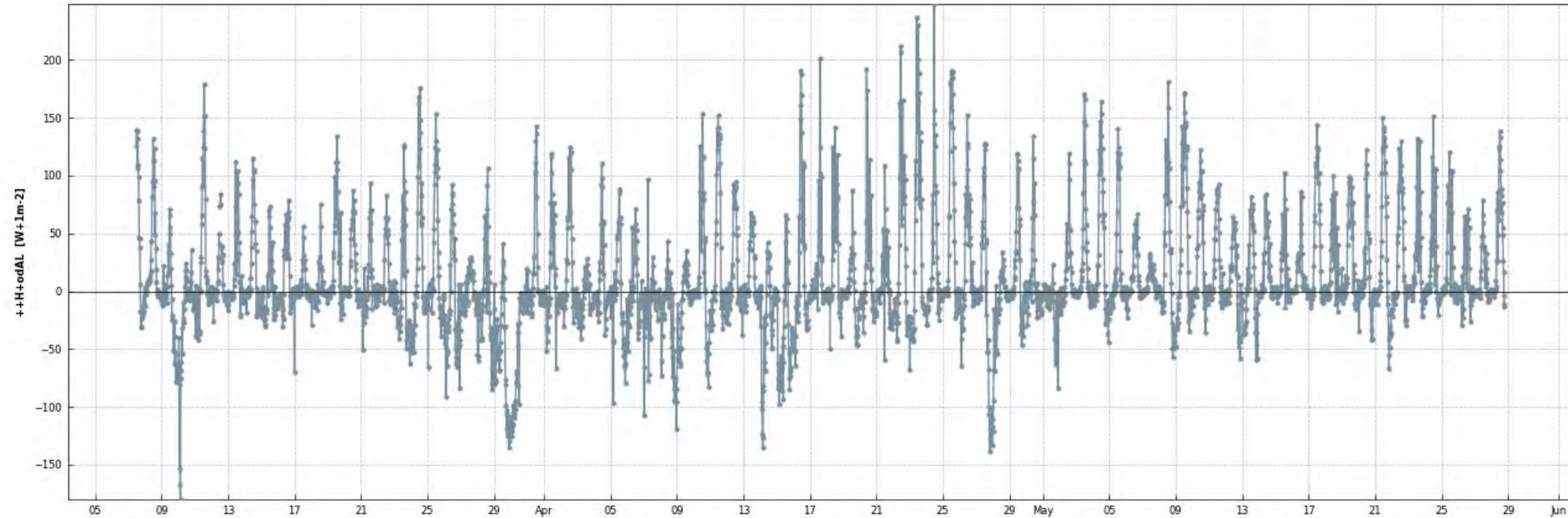


Photo: Lorenz Allemann

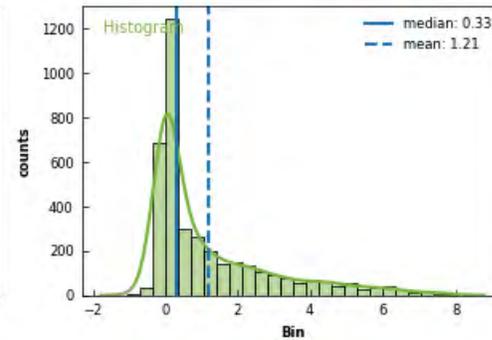
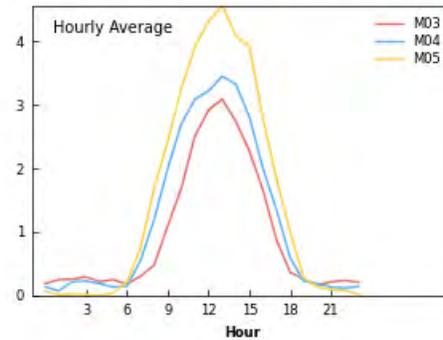
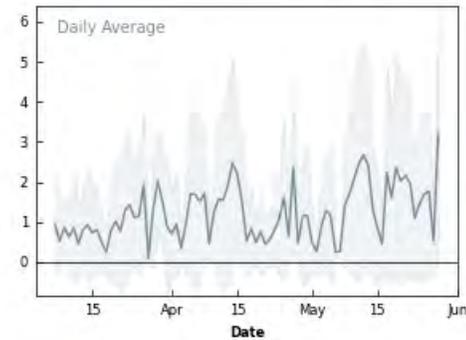
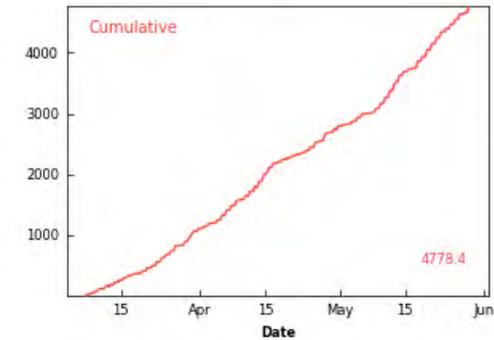
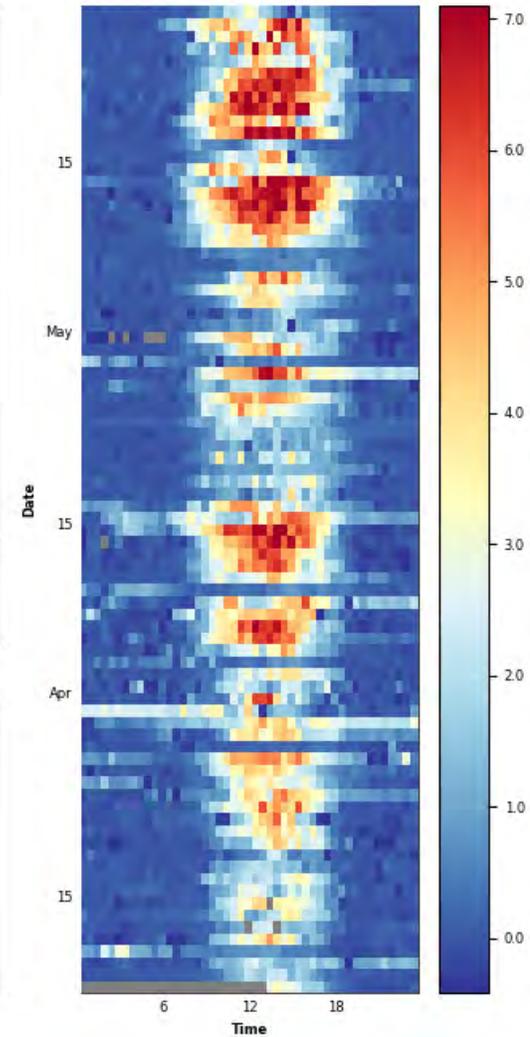
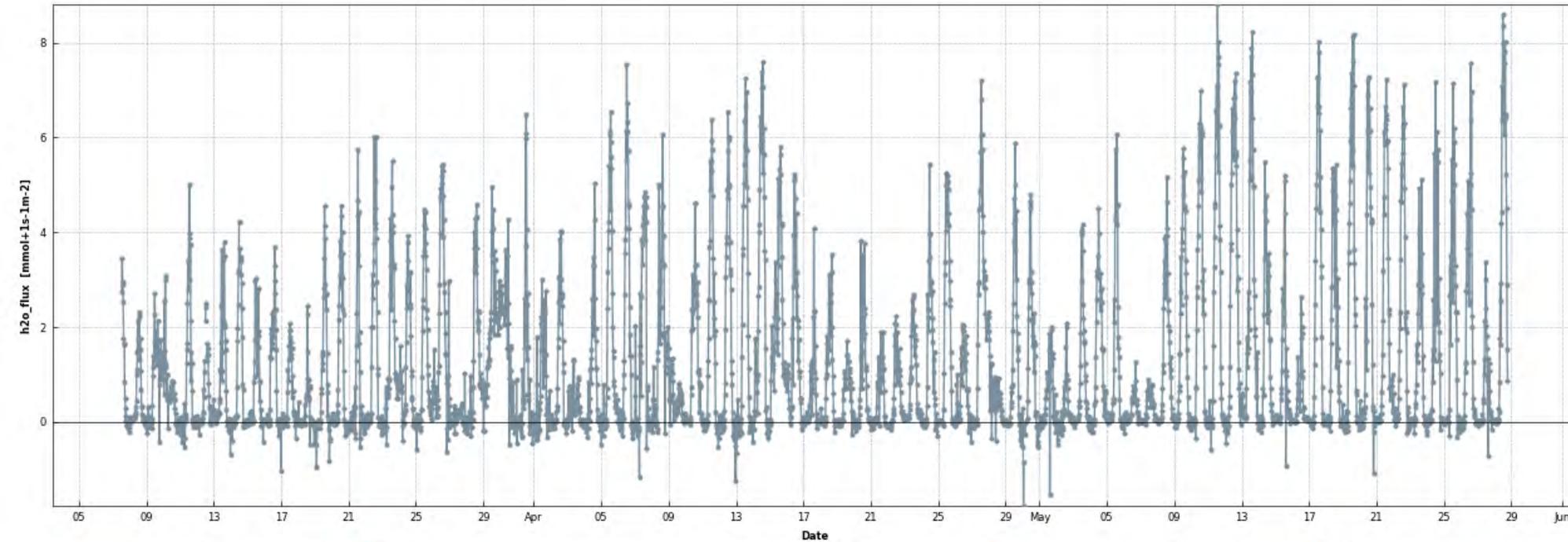
- 1st mowing: 29.04
- Fertilization: 8.3 and 13.5



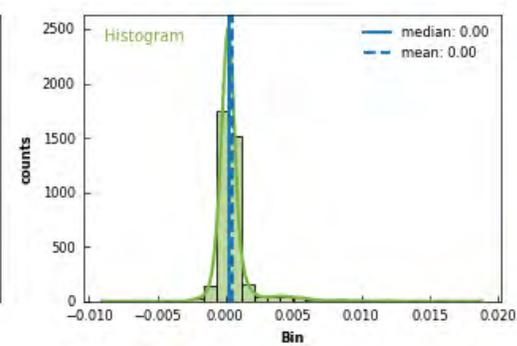
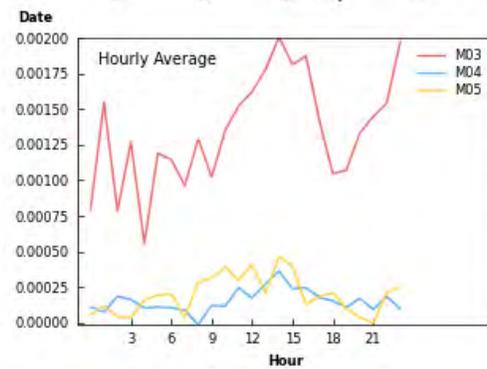
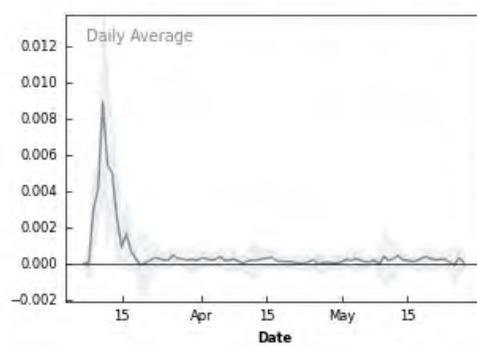
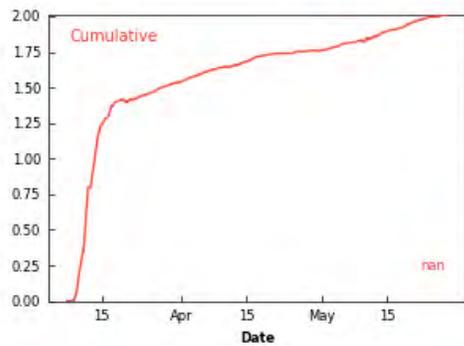
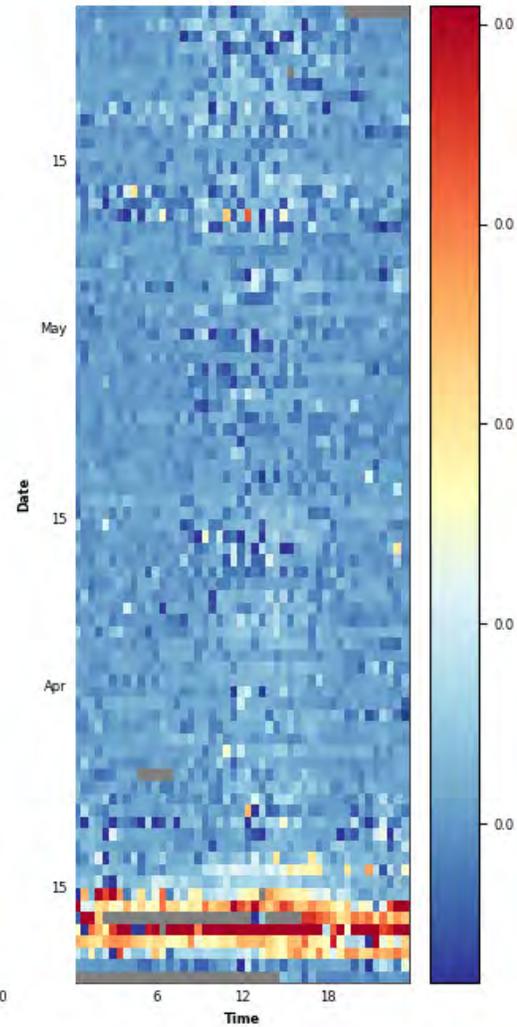
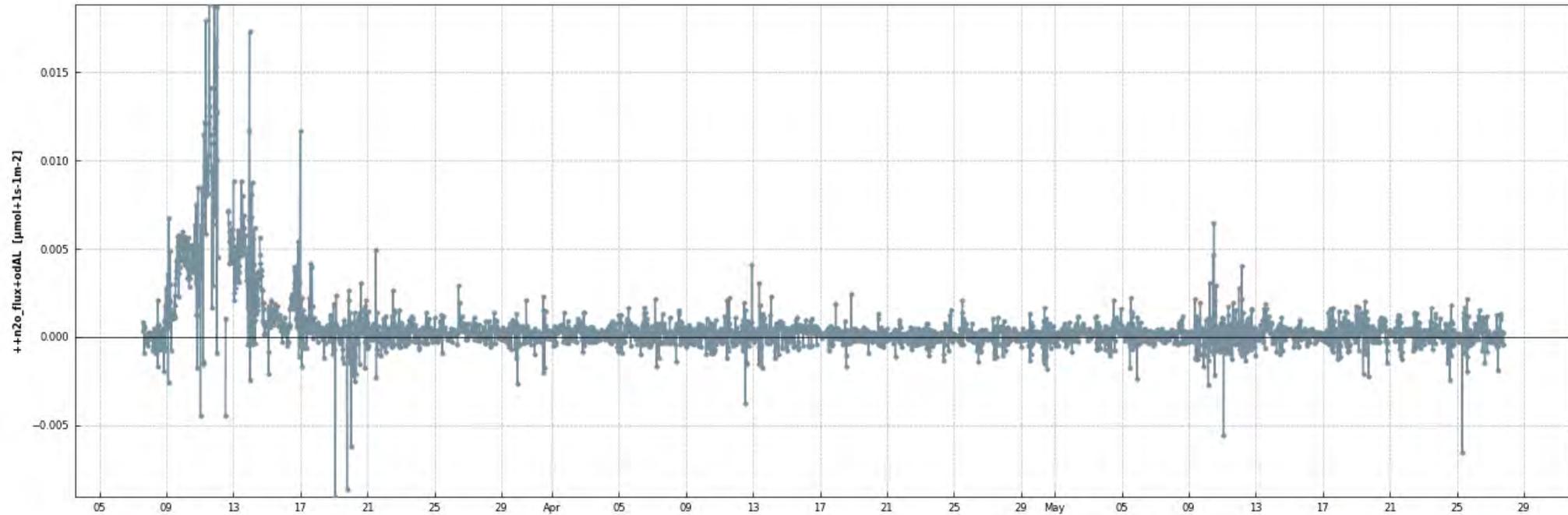
- 1st mowing: 29.04
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- 1st mowing: 29.04
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- 1st mowing: 29.04
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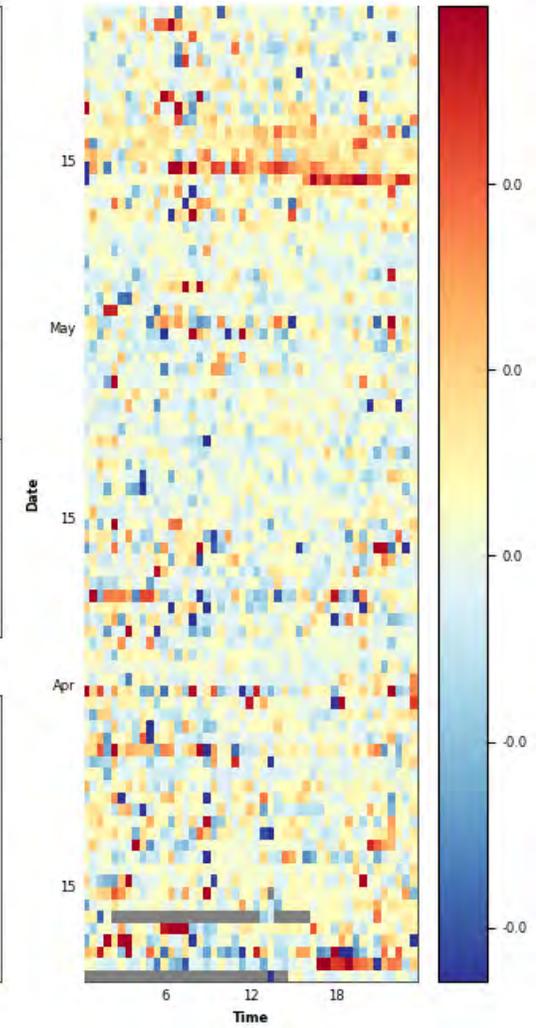
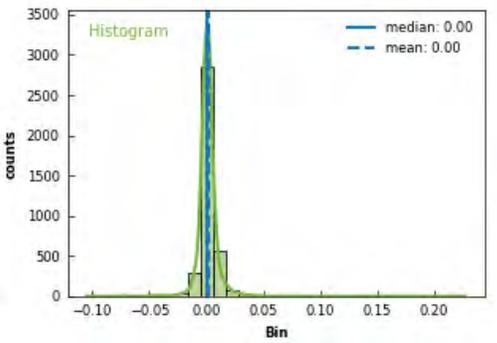
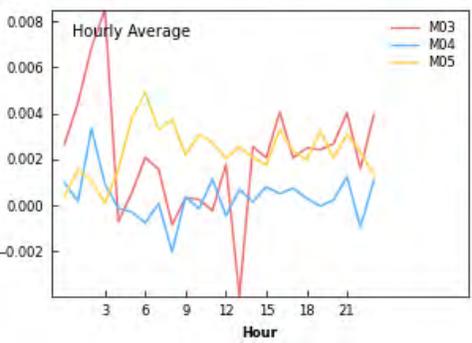
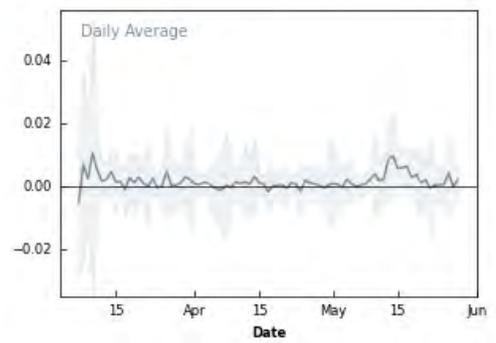
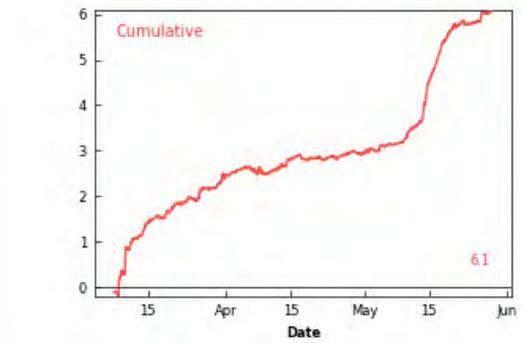
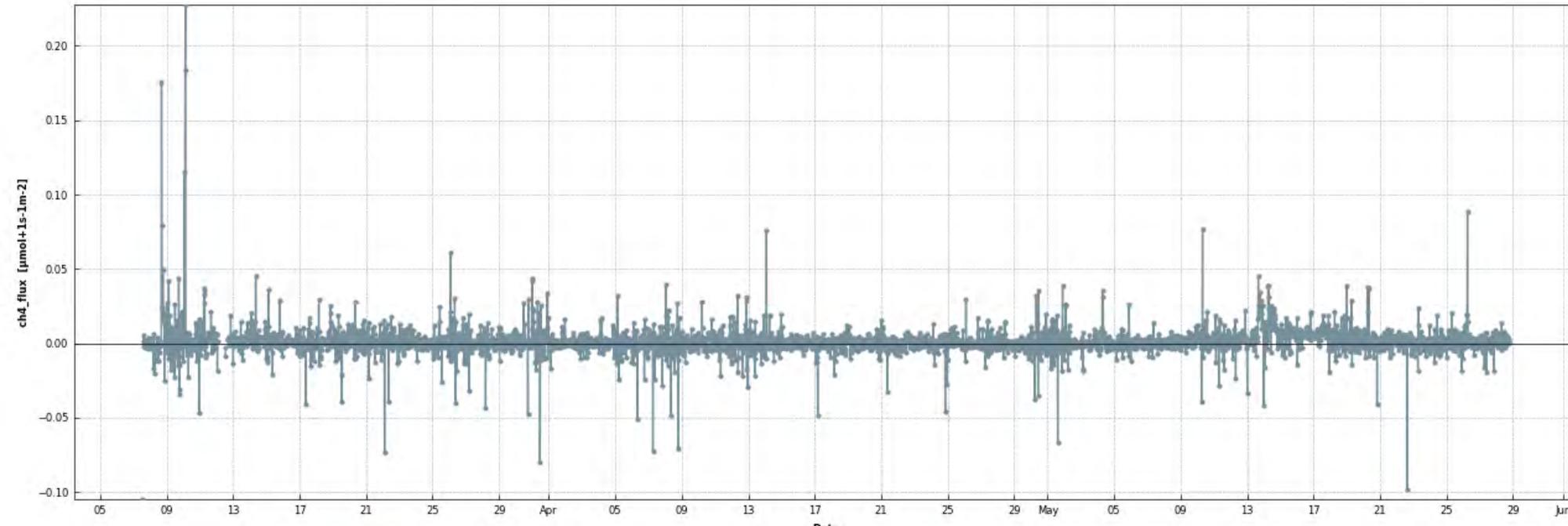
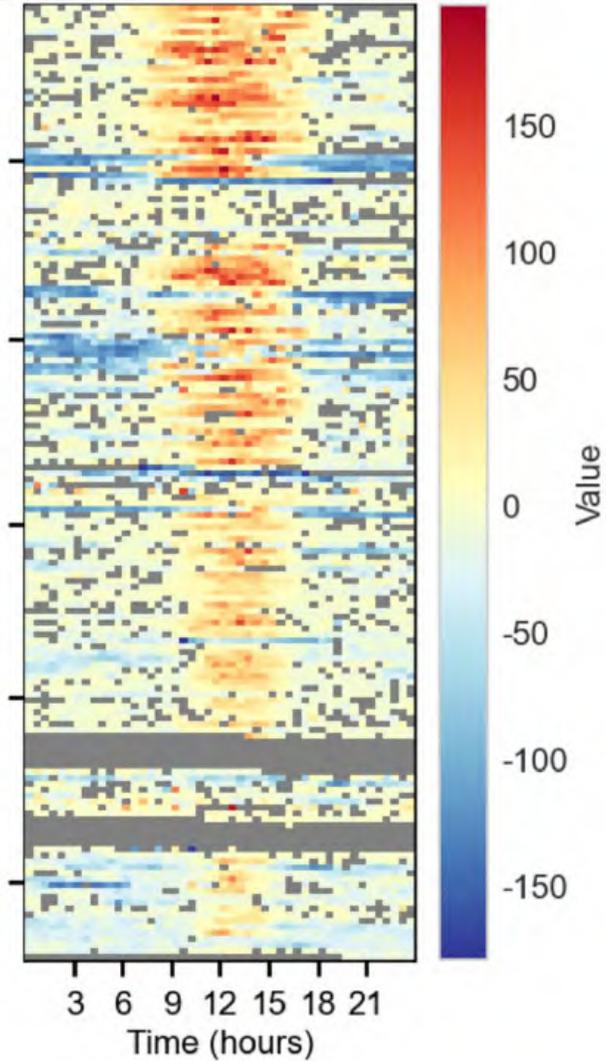




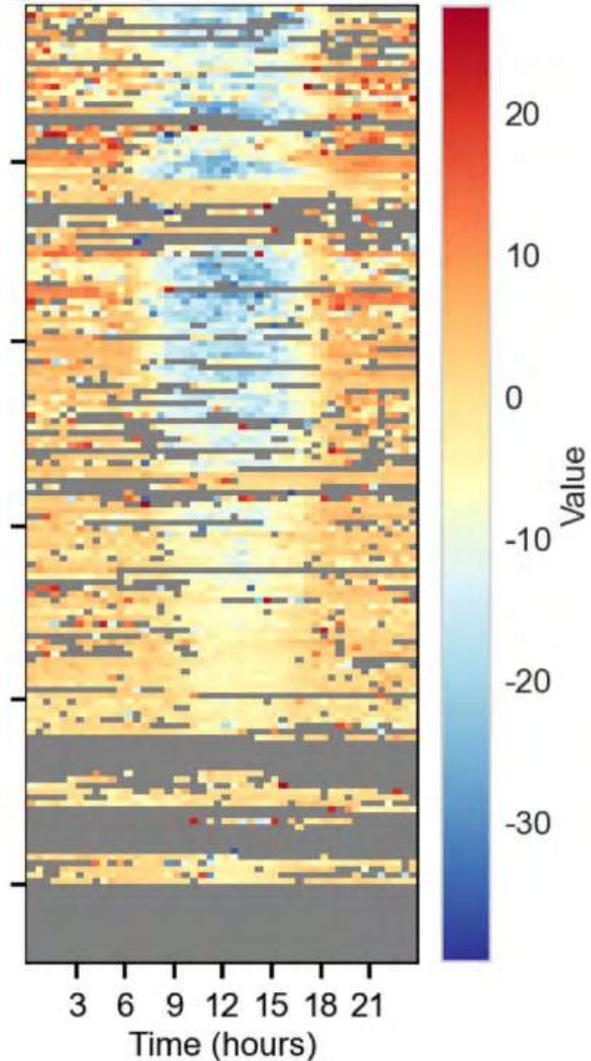
Photo: Lukas Hörtnagl

H

H_L3.1_L3.2_QCF in 30min time resolution

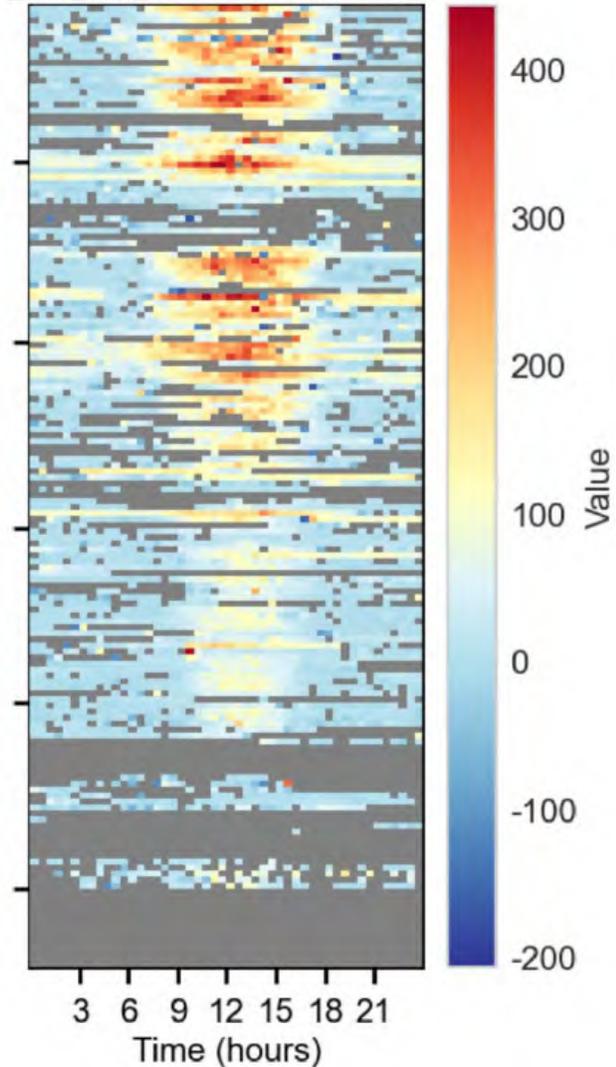
CO₂ flux

NEE_L3.1_L3.2_QCF in 30min time resolution



LE

LE_L3.1_L3.2_QCF in 30min time resolution

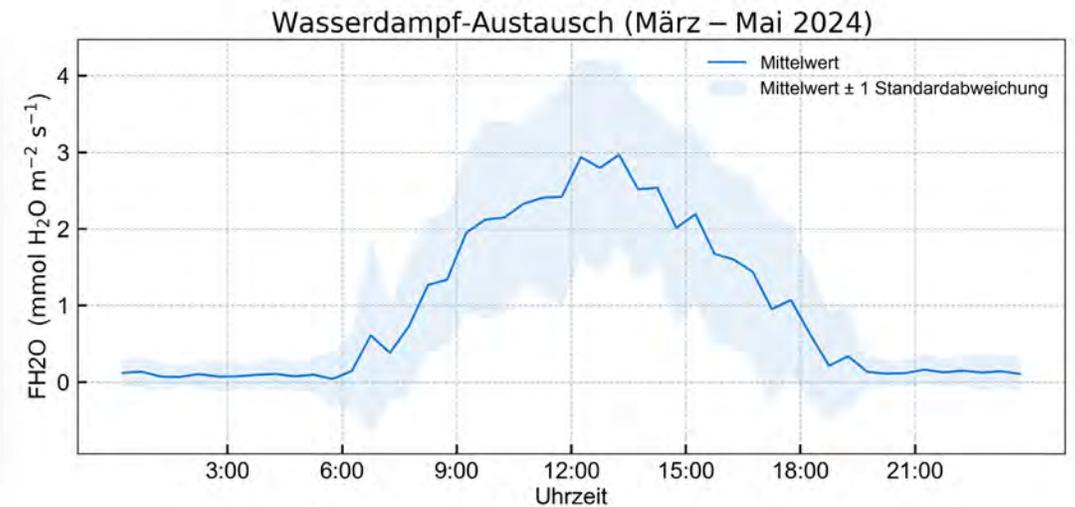
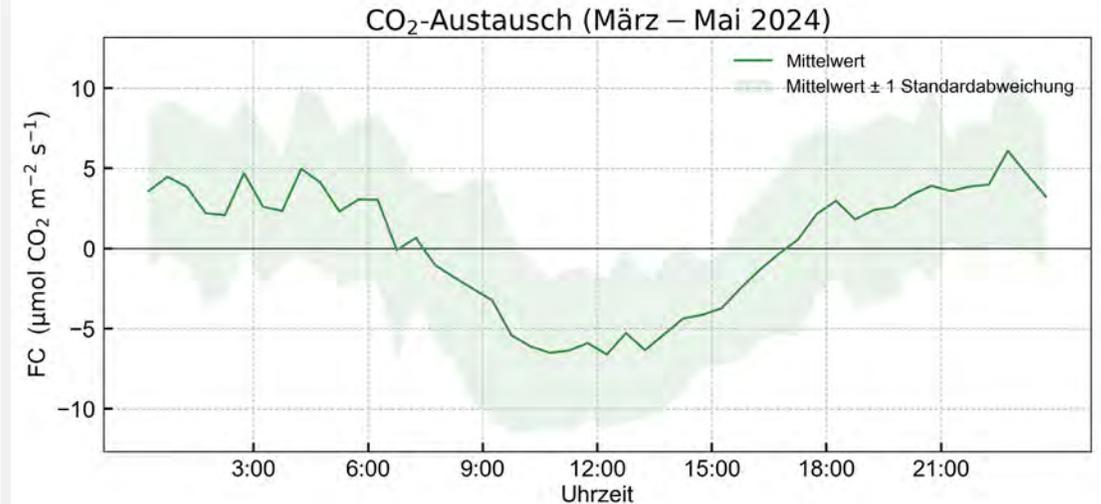


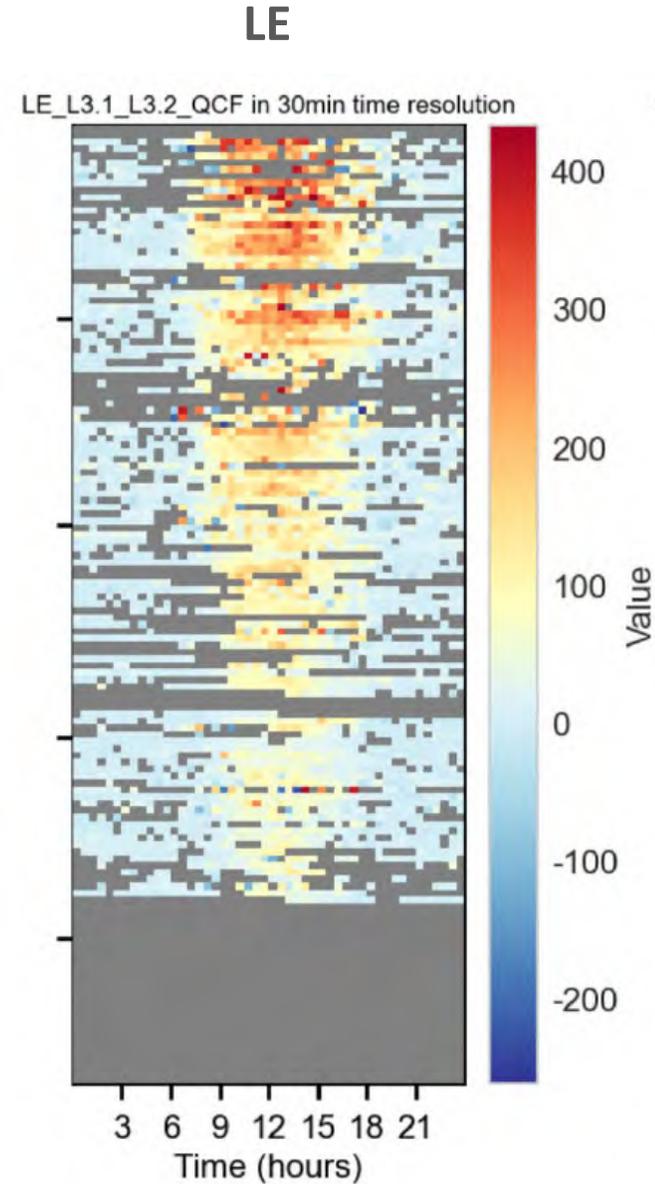
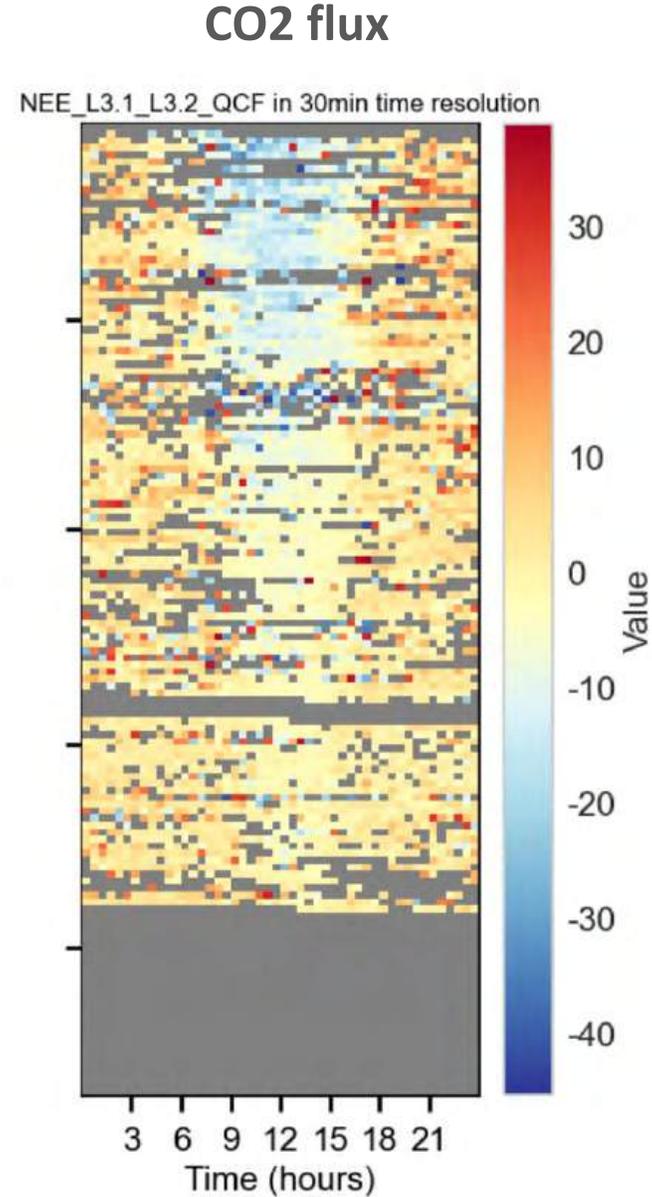
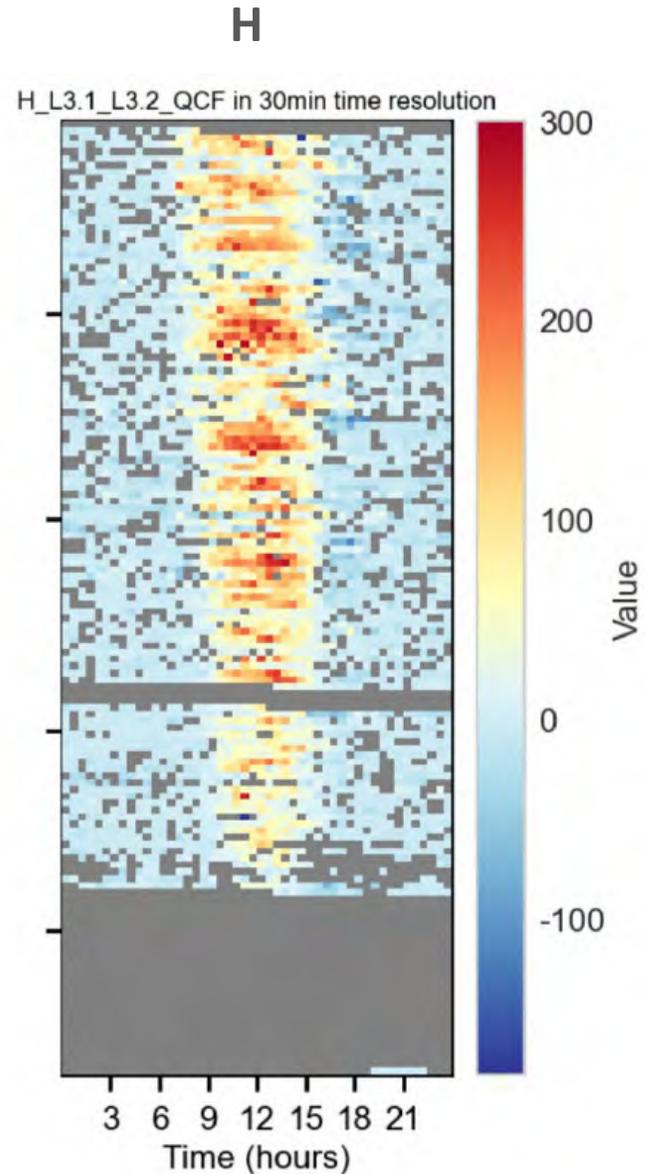
- With preliminary QCF using the diive notebook `notebooks/FluxProcessingChain/QuickFluxProcessingChain.ipynb`



Photo: Lukas Hörtnagl

- First fluxes for CH-HON
- Test plantations with coniferous and deciduous tree species from different places of origin, research is being carried out into what the forest of tomorrow could look like. This area in the Zurich forest laboratory is one of 59 test areas throughout Switzerland. The site is part of the [Waldlabor Zürich](#).





- With preliminary QCF using the diive notebook `notebooks/FluxProcessingChain/QuickFluxProcessingChain.ipynb`



Photo: Markus Staudinger

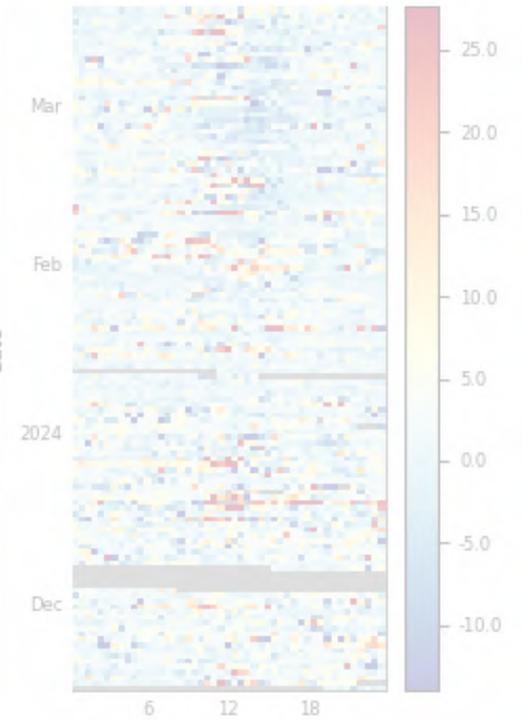
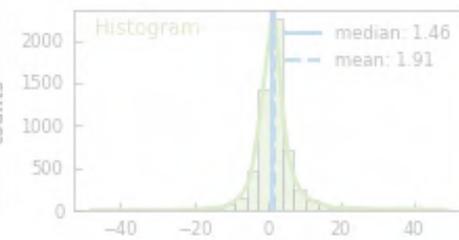
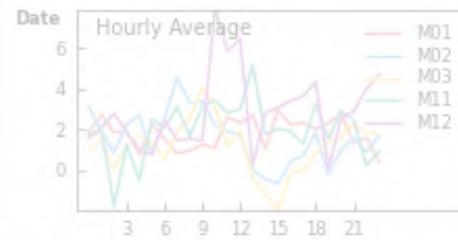
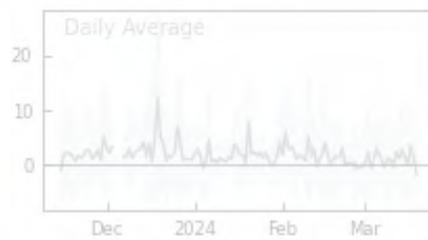
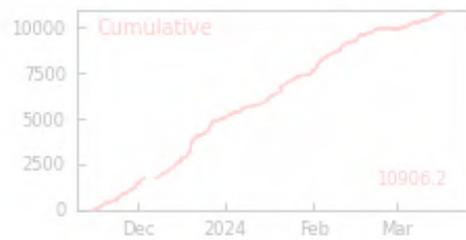
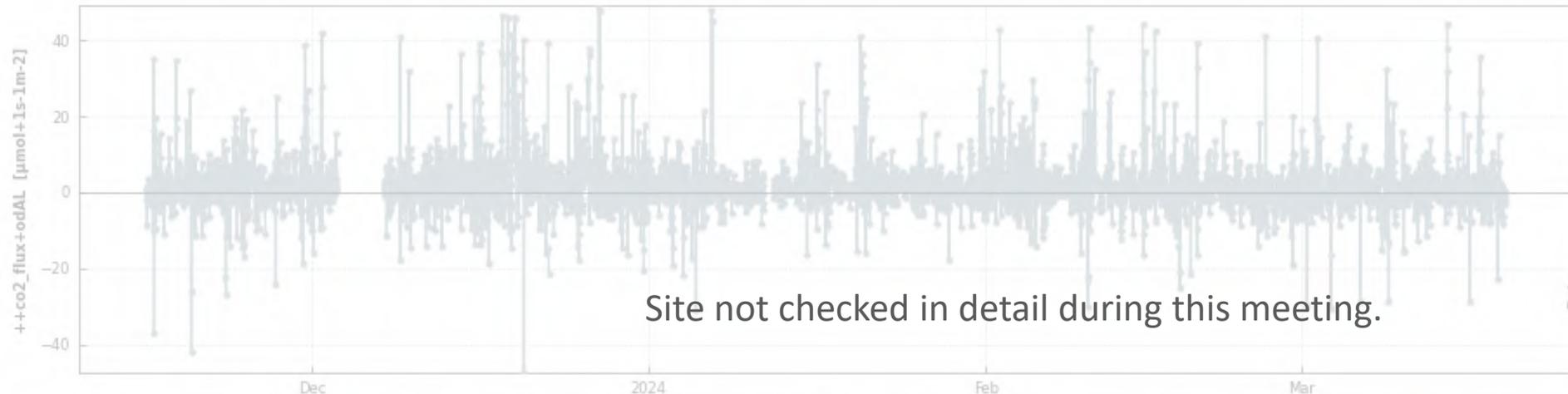
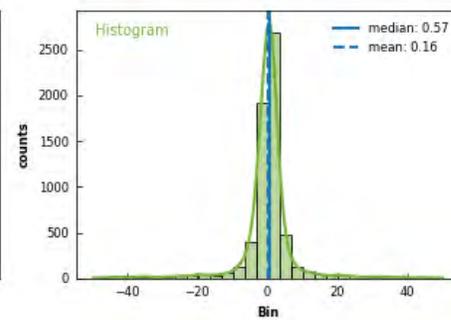
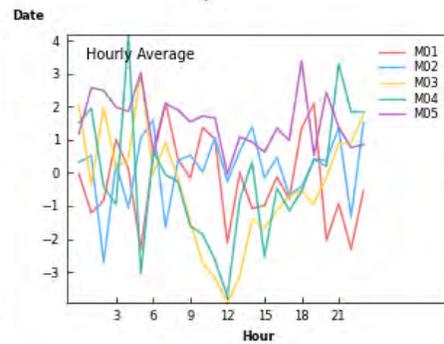
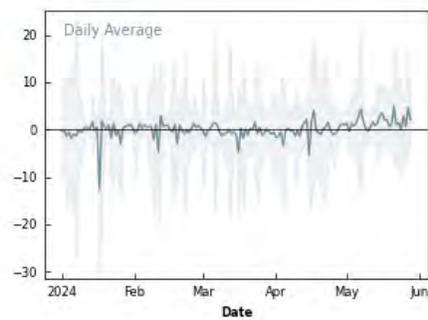
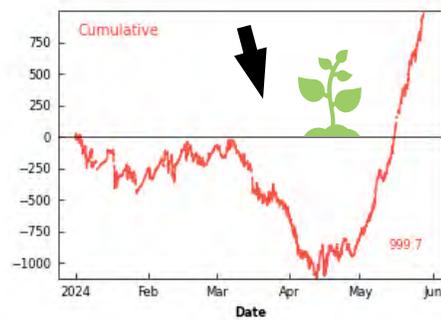
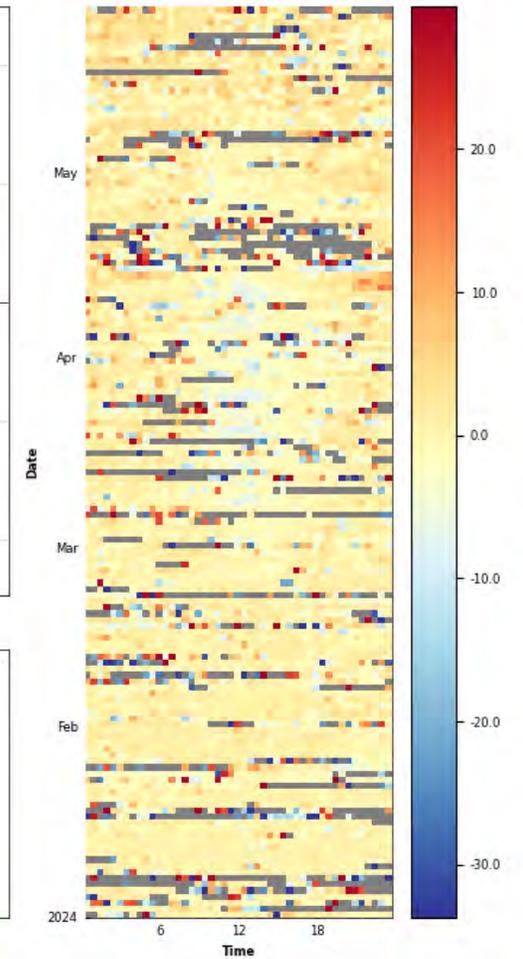
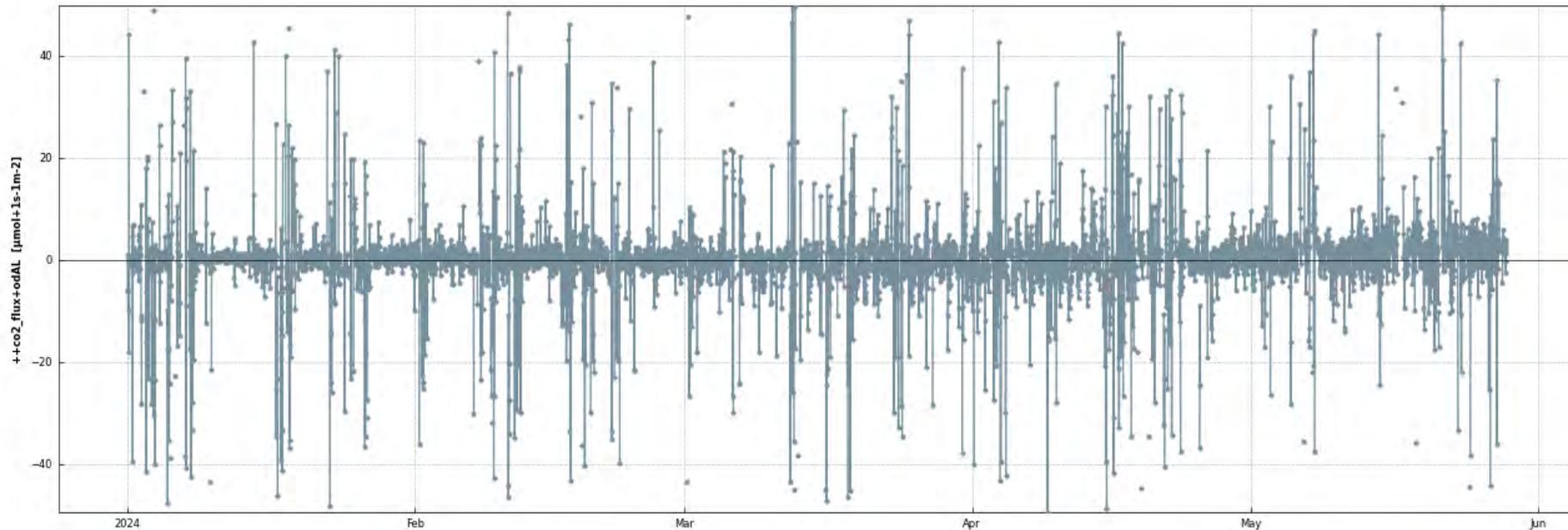
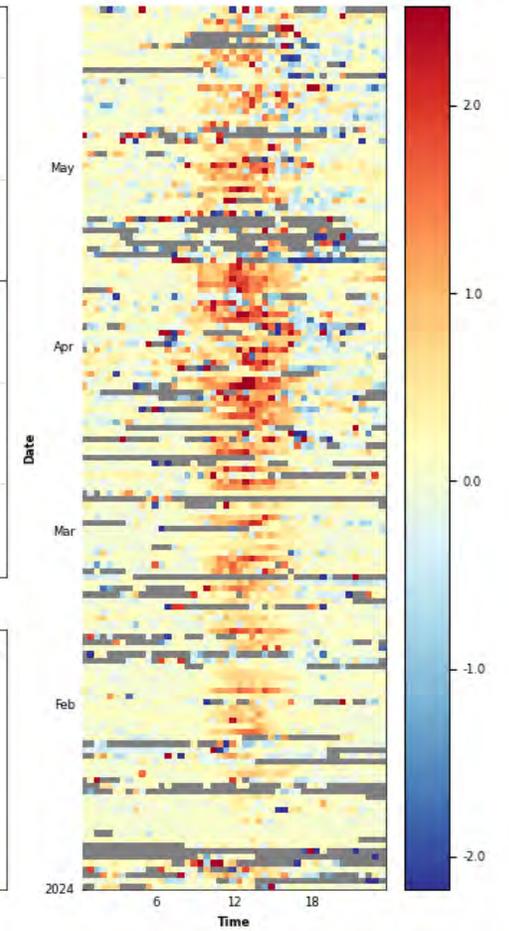
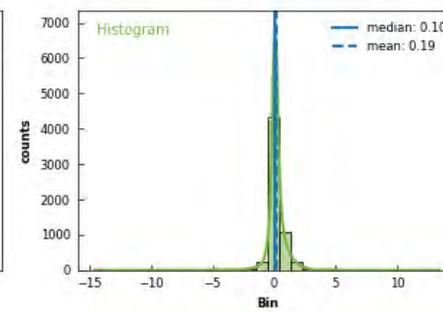
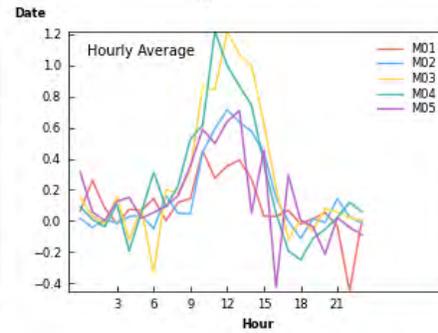
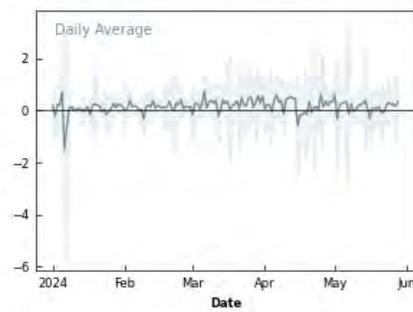
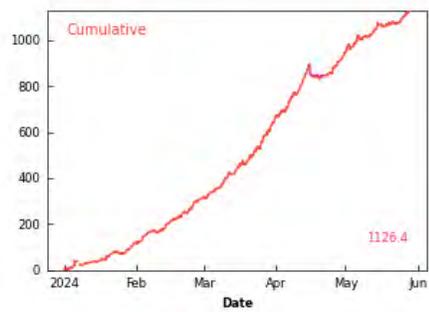
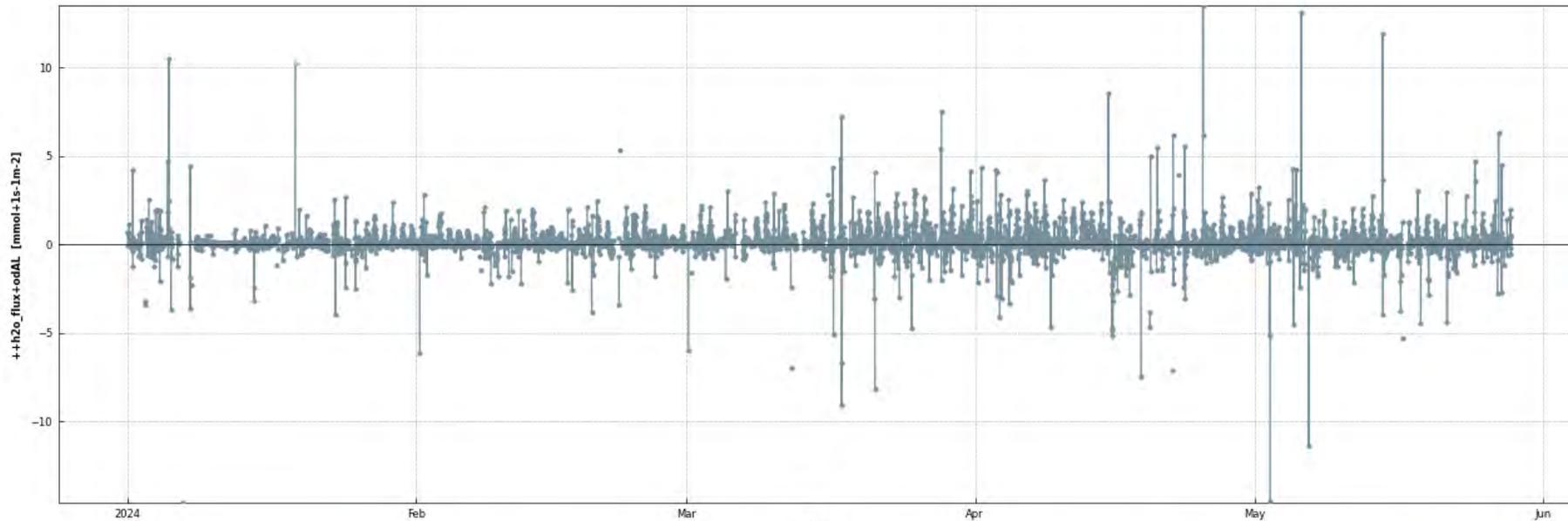




Photo: Liliana Scapucci





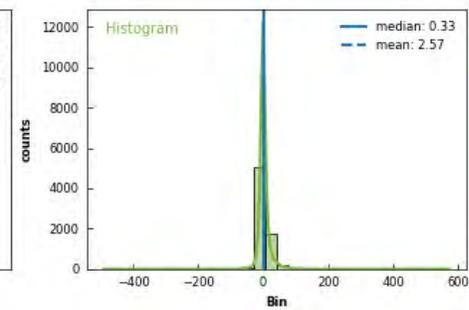
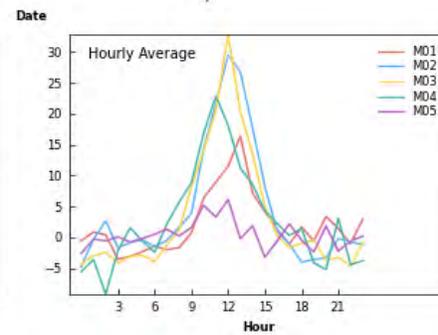
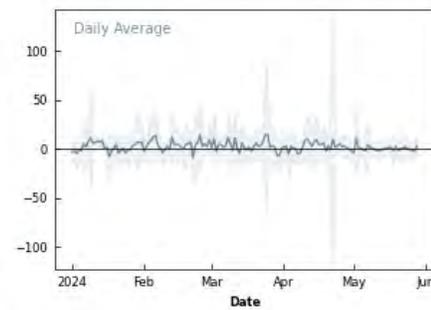
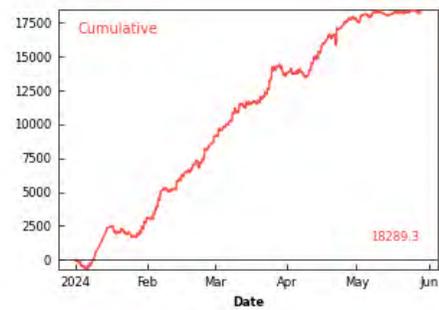
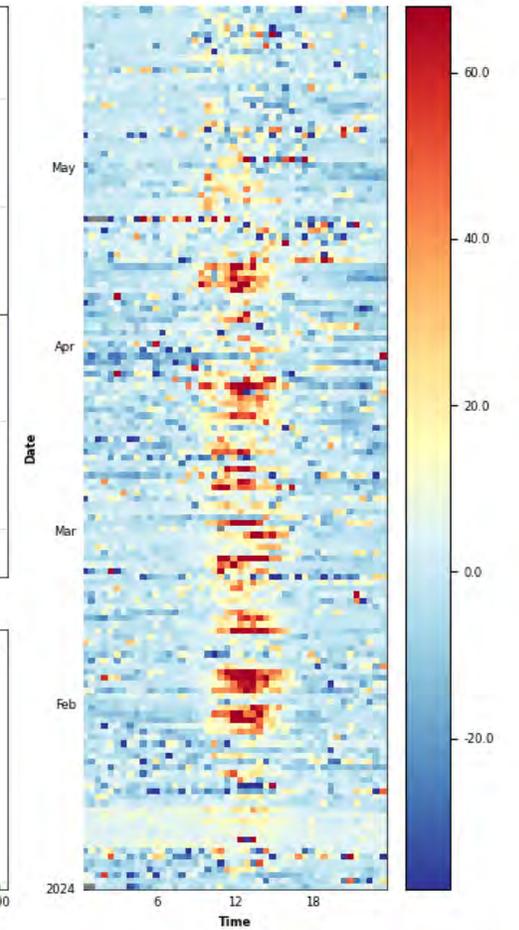
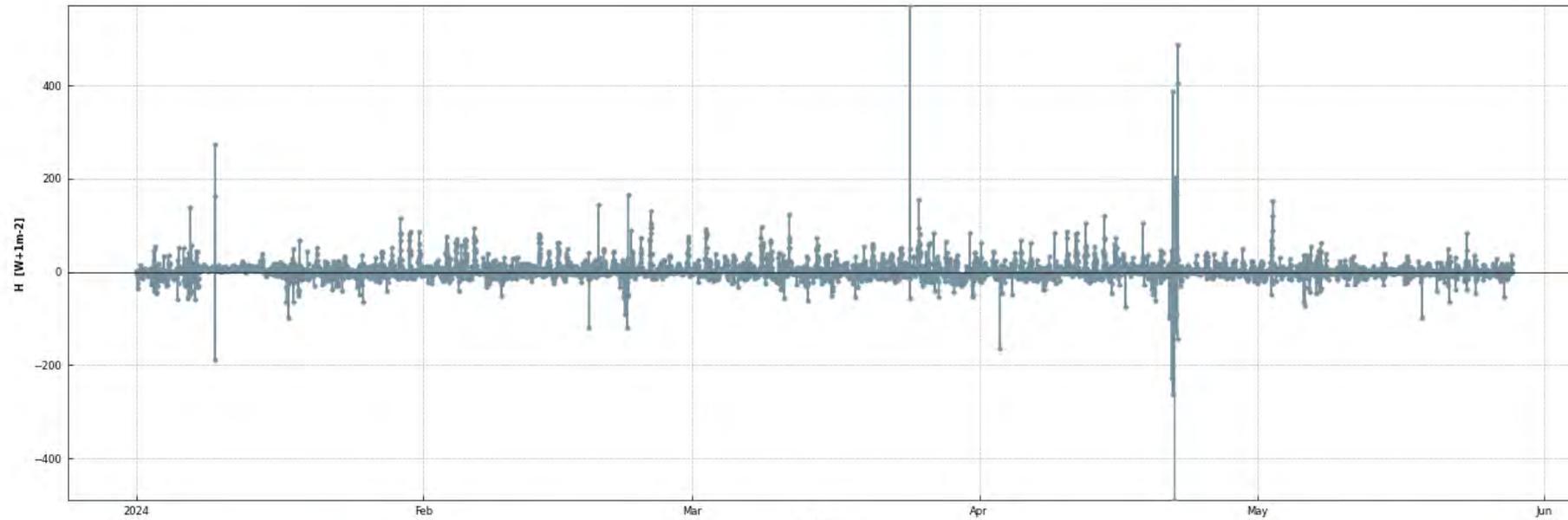
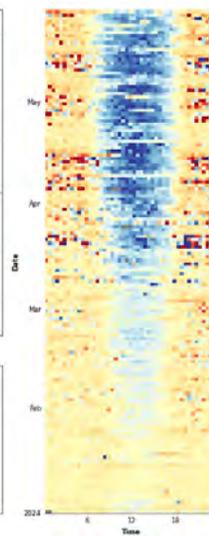
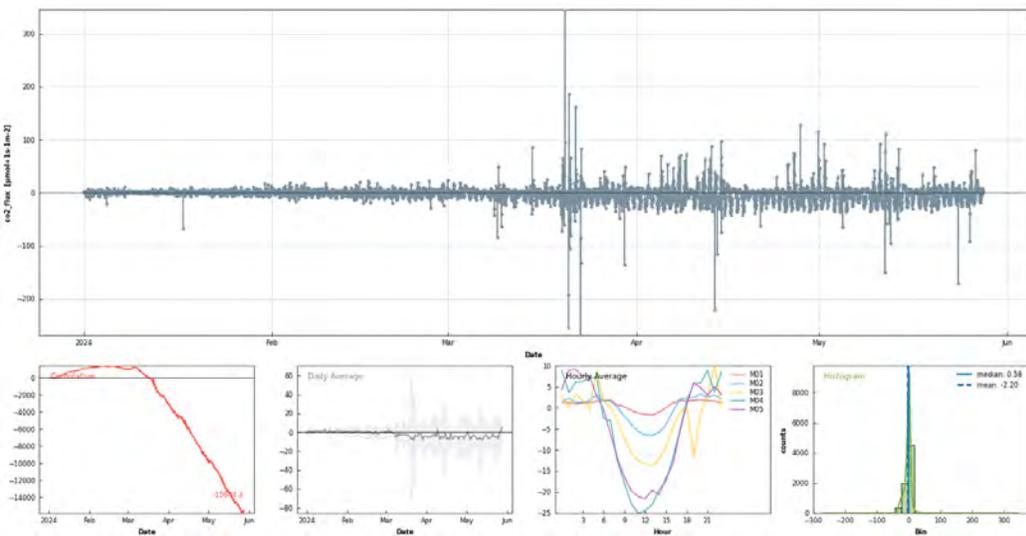




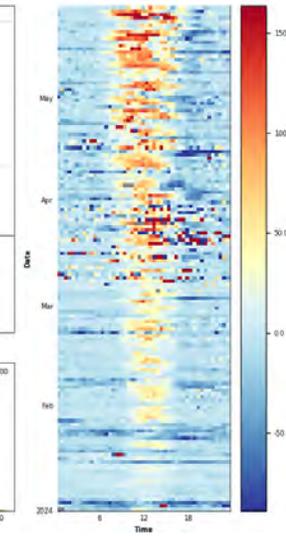
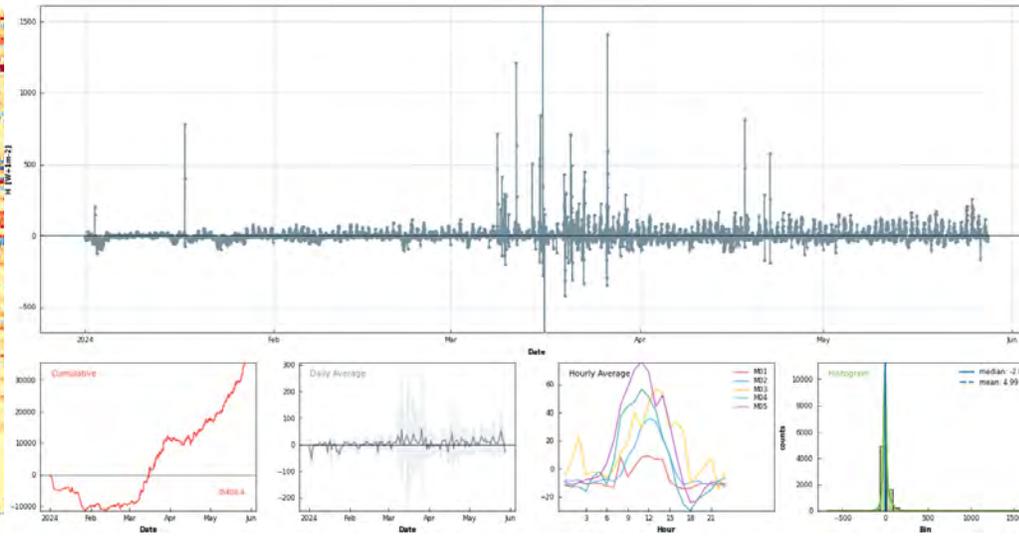
Photo: Regine Maier

- No issues to report
- Sonic issue fixed on April 5 → now H looks good

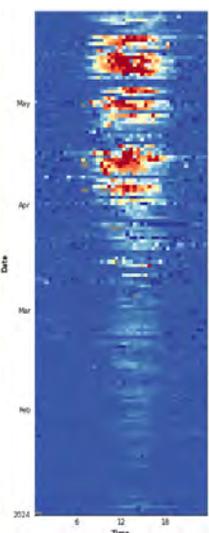
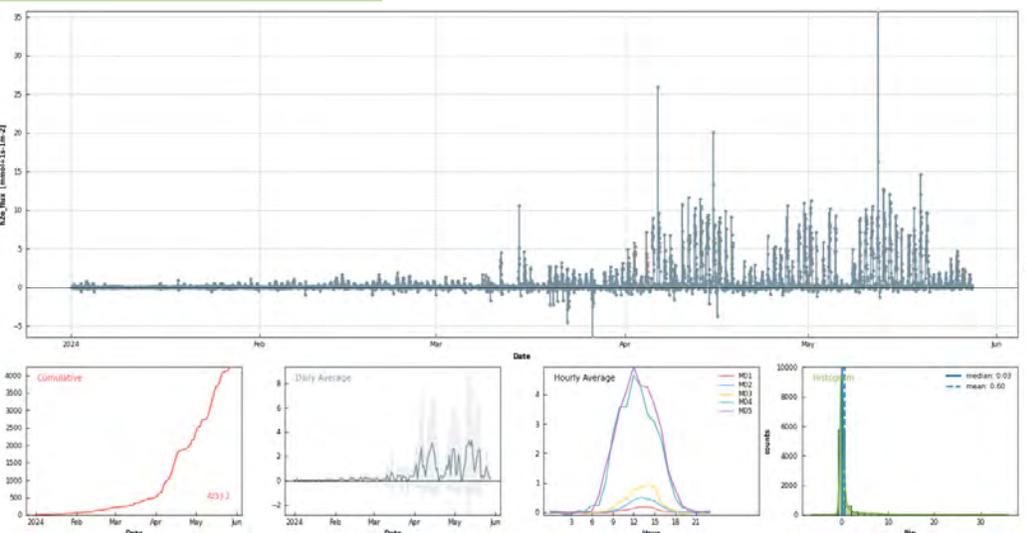
CO2 flux



H



H2O flux



w_unrot

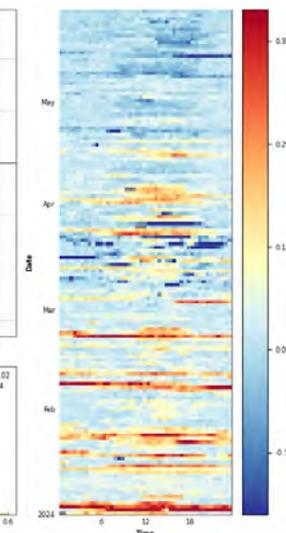
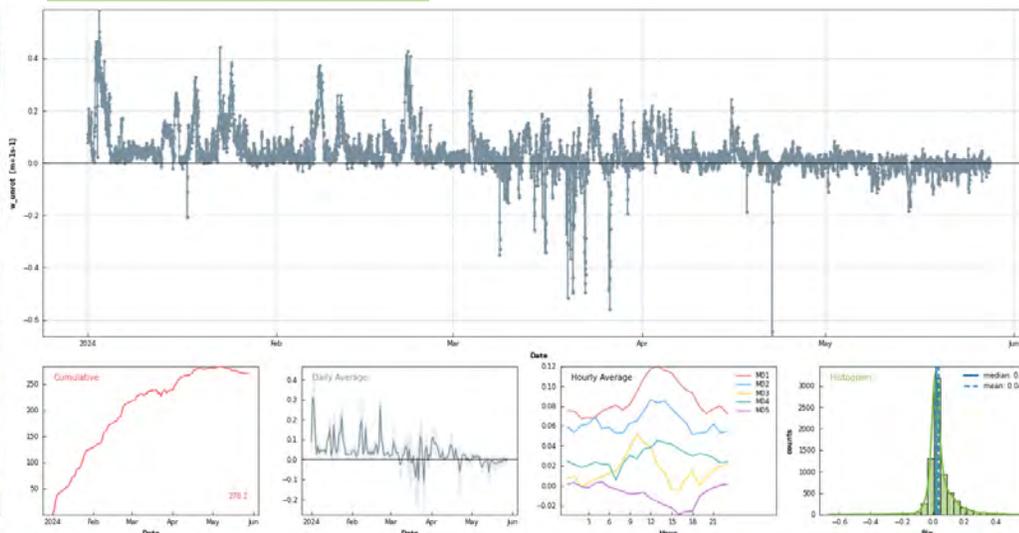




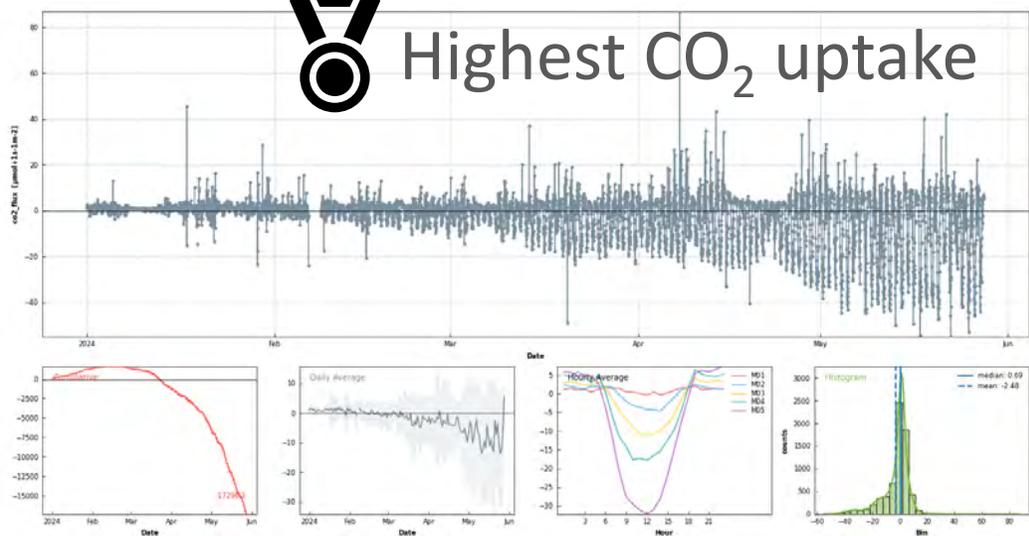
Photo: Fabio Turco

- No issues to report
- Two clear N₂O peaks observed following the 2nd and the 3rd fertilizer applications

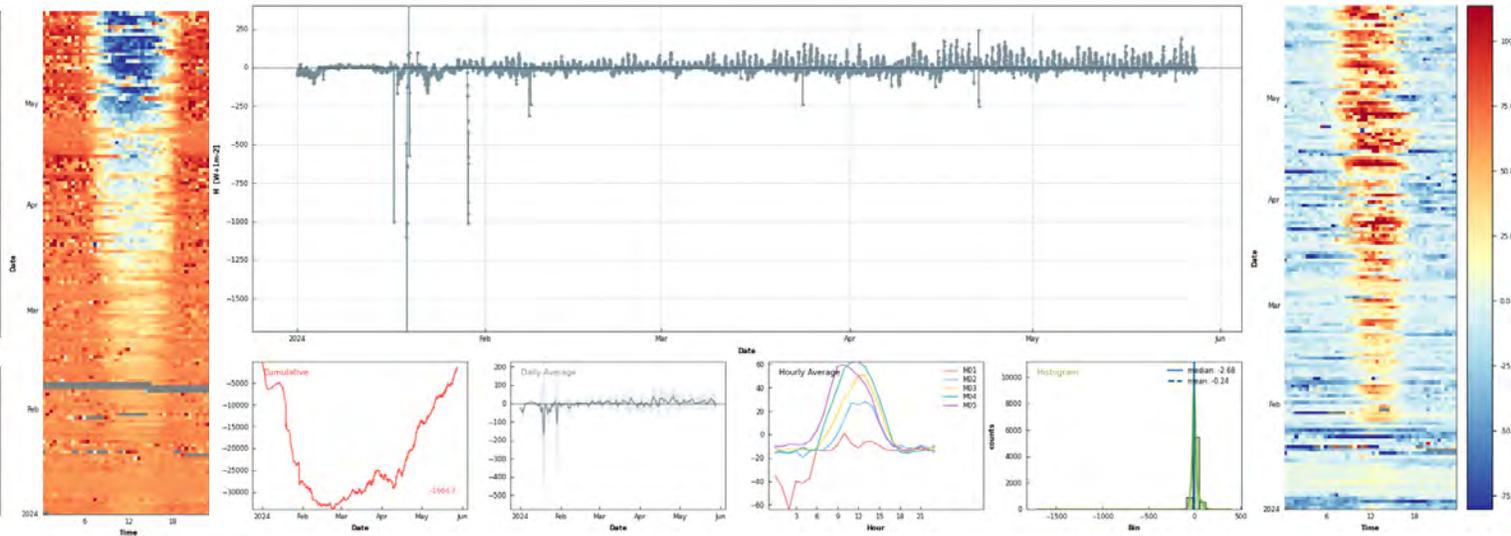
CO₂ flux



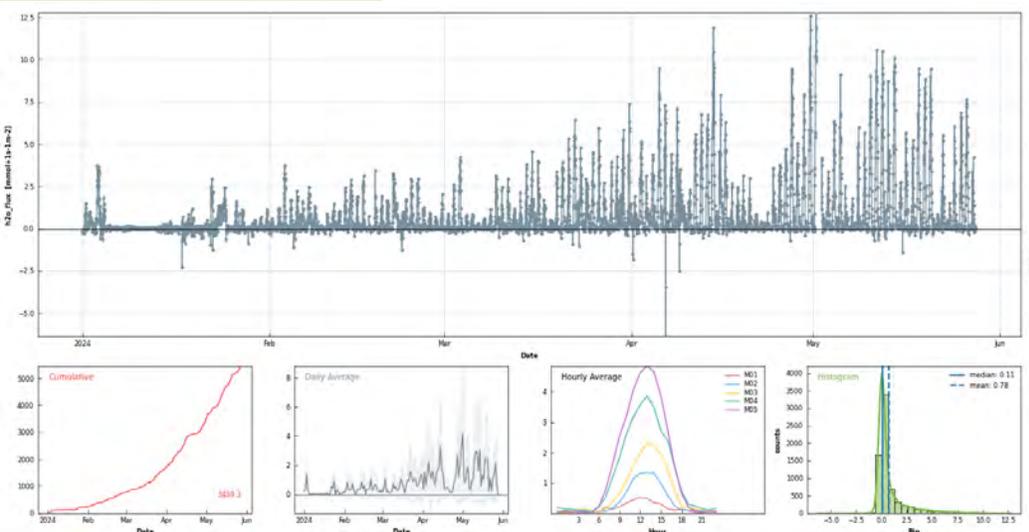
Highest CO₂ uptake



H



H₂O flux



N₂O

Mineral N fertilizer applications

