

# QA/QC Meeting 22 Feb 2024

Participants: LH, LS, LK, YW, KMK, FT (6)

### Talking points: News from FluxCoffee 21 Feb 2024

Starting this morning, we will discuss the following topics:

- Grassland is now open access!**  
<https://rnh2024.ecv.ethz.ch/fluxcoffee/>
- The CH-DAV** site is the first site in the world to have a permanent eddy covariance system. The site is located in the Davos region, Switzerland, and is part of the FLUXNET2022 network.
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### ALL SITES Recent webcam pictures



# Talking points: News from FluxCoffee 21 Feb 2024

Grafana is now open access!

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

Currently there are many updates (already done, in progress or upcoming) to various parts of our IT infrastructure.

- **InfluxDB** will have a major update later this year: Last year, v3 was released but there is no free edition available yet. Later this year the Community edition will be released which is optimized to work with long-term time series data. This version will be a huge improvement for our kind of data. → *InfluxDB will be updated later this year*

- The **Swiss FluxNet Homepage** is currently completely broken. → *ETH ID was informed and I hope this can be fixed. **DONE.***

- **GL-CALCS** is the Linux computer (VM) that is running our database. The VM was updated recently

and it seems like **Grafana** was DOWNGRADED in the process. → *Grafana needs to be re-upgraded soon*

- The **GROUP-RDS** is the VM that runs fluxrun, bico, ppicos and glwebcams automatically. The VM needed to be updated some months ago. Bico and ppicos are running normally. Fluxrun is still not working due to an access error. glwebcams is also not running, because of ETH restrictions. This script needs a secure (https) place to upload images to, but currently we do not have any options because ETH does not allow FTP transfers to transfer images to a webspace. → *Fluxrun and glwebcams need a solution*

- Unclear how long the **Python notebooks and Python scripts in general** will work on the **RDS**. The support for Python on the

RDS is generally very weak. I found that newer versions of miniconda (package manager) cannot be installed on the RDS, for whatever reason. As long as the current version of miniconda works we are fine. But if it breaks there might be no alternative for shared notebooks.

- There will be a **MAJOR update for the grasslandserver** in the coming months. Everything will be re-setup. This is needed due to security concerns regarding the current grasslandserver, which grew organically over decades. There will be some changes that might break the current scripts, e.g., the samba shares will likely be deactivated, we use these shares for flux calcs and bico. I think this is easy to solve, but of course needs a certain amount of time

investment that is difficult to assess. There was also a webspace on the grasslandserver that will be deleted. → *scripts have to be adjusted accordingly*

Database data: 2021-current should be there for all sites, the goal is to add all data this year

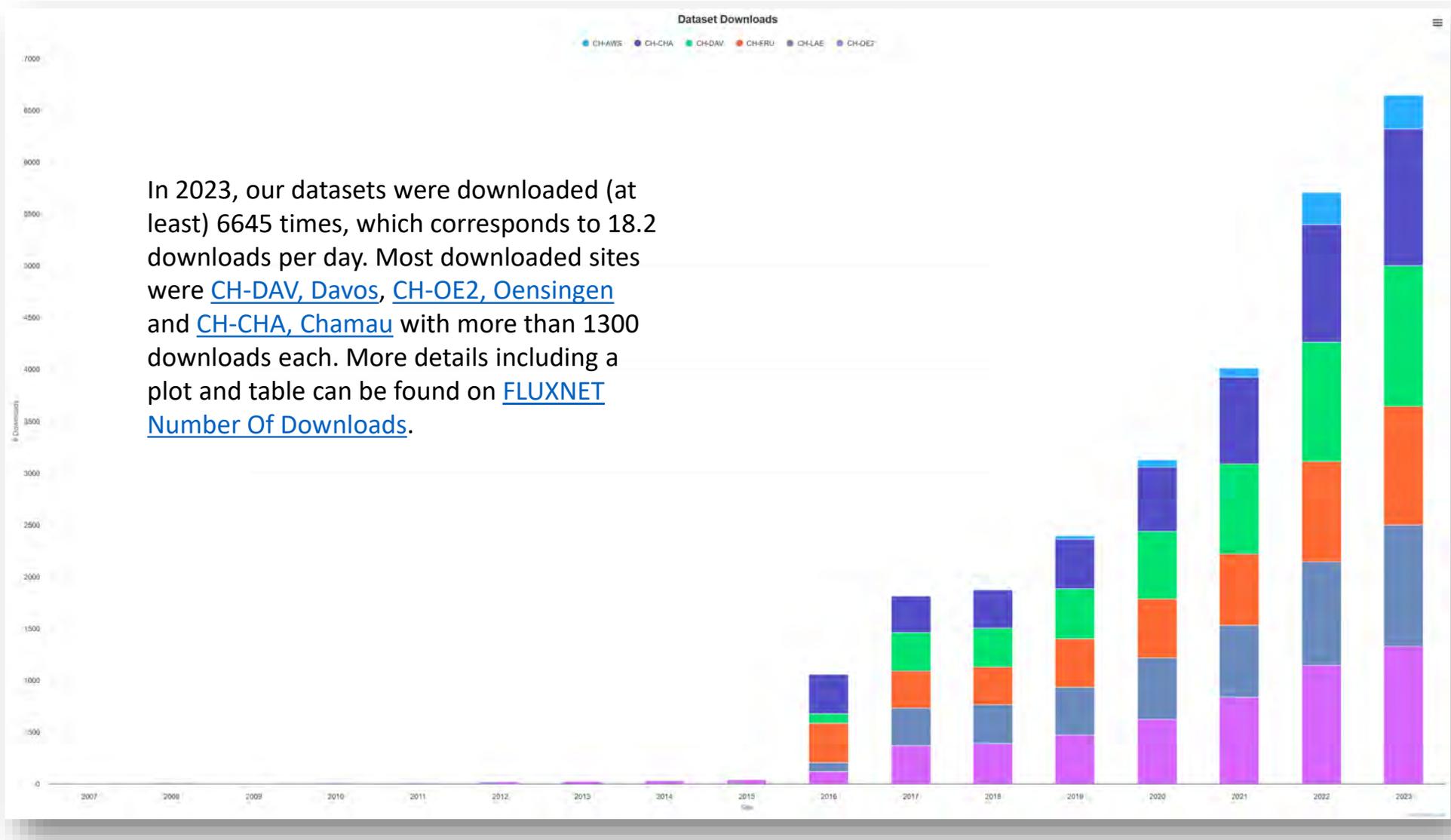
- Overview of (uploaded) Level-1 fluxes: we should provide 2023 data within the next 1-2 months

- Currently put on lower priority due to time constraints (LH): CH-HON, CH-TAN and CH-FOR

- When processing, please try to use a folder structure similar to previous years.

- Many updates to Swiss FluxNet HP.

# Data sharing: FLUXNET data downloads (2007-2023)



In 2023, our datasets were downloaded (at least) 6645 times, which corresponds to 18.2 downloads per day. Most downloaded sites were [CH-DAV, Davos](#), [CH-OE2, Oensingen](#) and [CH-CHA, Chamau](#) with more than 1300 downloads each. More details including a plot and table can be found on [FLUXNET Number Of Downloads](#).

Datasets:

- FLUXNET2015 (until 2014)
- FLUXNET2015 (until 2018)
- FLUXNET2015 (until 2020)
- FLUXNET-CH4
- LaThuile

Source:

<https://fluxnet.org/>  
<https://data.icos-cp.eu/stats/>

# 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](#)



## Processing Options

## Statistical Analysis

## Spectral Analysis and Corrections

## Output Files

## Raw Processing Options

## Raw data processing

Wind speed measurement offsets  $U$ : 0.000 [m/s]  $V$ : 0.000 [m/s]  $W$ : 0.000 [m/s]

- Fix 'w boost' bug (Gill WindMaster and WindMaster Pro only)
- Angle-of-attack correction for wind components (Gill's only)
- Axis rotations for tilt correction

Method: Select automatically

Rotation method: Double rotation

## Turbulent fluctuations

Detrend method: Block average

Time constant: 250.0 [s]

- Time lags compensation

Time lag detection method: Covariance maximization with default

## Compensation of density fluctuations

- Compensate density fluctuations (WPL terms)
- Add instrument sensible heat components, only for LI-7500

Surface temperature estimation: Simple linear regressions

Multiple regressions

Day time Nighttime

Bottom:  $T_{ws} = 0.944 \cdot T_s + 2.57$ Top:  $T_{ws} = 1.005 \cdot T_s + 0.24$ Spar:  $T_{ws} = 1.010 \cdot T_s + 0.35$ 

Restore Default Values Default values as from Burba et al. (2006)

## Other options

- Quality check
- Footprint estimation

Flagging policy: Mauder and Foken (2004) [0-1-2 system]

Footprint method: RJun et al. (2004)

Maybe we can correct the the w offset issue during the affected time periods with this setting here?

Restore Default Values

ALL SITES / 30 - Site Overview: Webcams

Webcam | CH-AWS  
CH-AWS\_WEBCAM\_M2\_2\_9\_1-202402211230.jpg 2024-02-21 12:30:01



Webcam | CH-CHA | GF4  
CH-CHA\_GF4\_1\_1-202402211202.jpg 2024-02-21 12:02:01



Webcam | CH-DAV  
CHDAV\_WEBCAM\_T1\_35\_1-202402211200.jpg



Webcam | CH-DAV | FF1  
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Webcam | CH-DAV | FF2  
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Webcam | CH-FRU  
CH-FRU\_GF1\_1\_1-202401251230.jpg



Webcam | CH-LAE  
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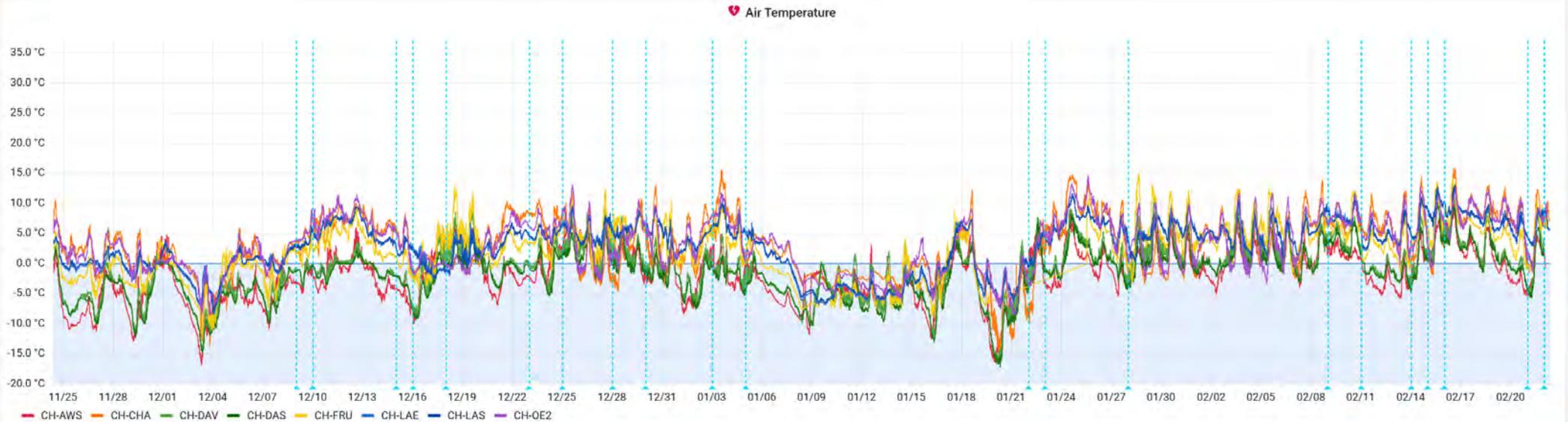


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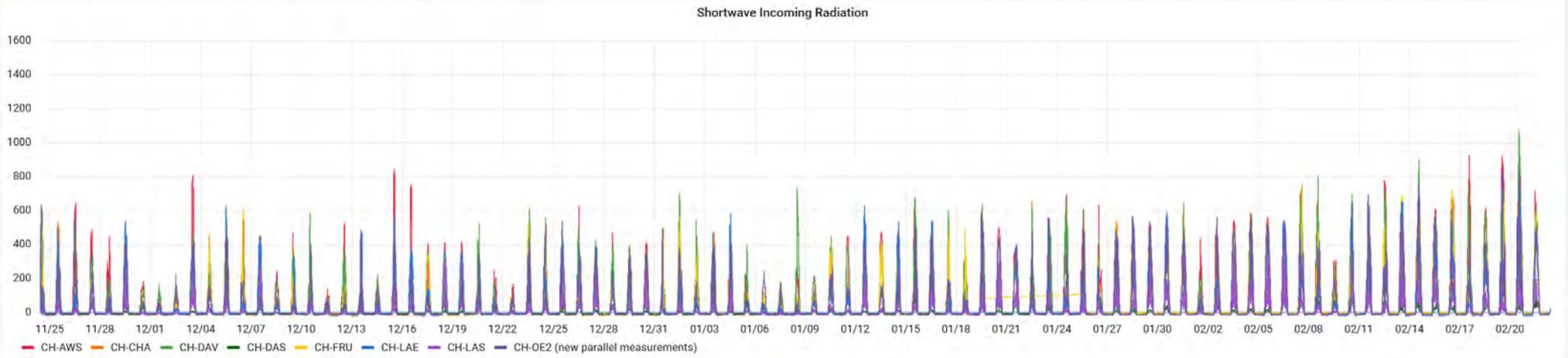
**Air Temperature**

- raw data
- no quality checks
- full resolution



**Shortwave Incoming Radiation**

- raw data
- no quality checks
- full resolution



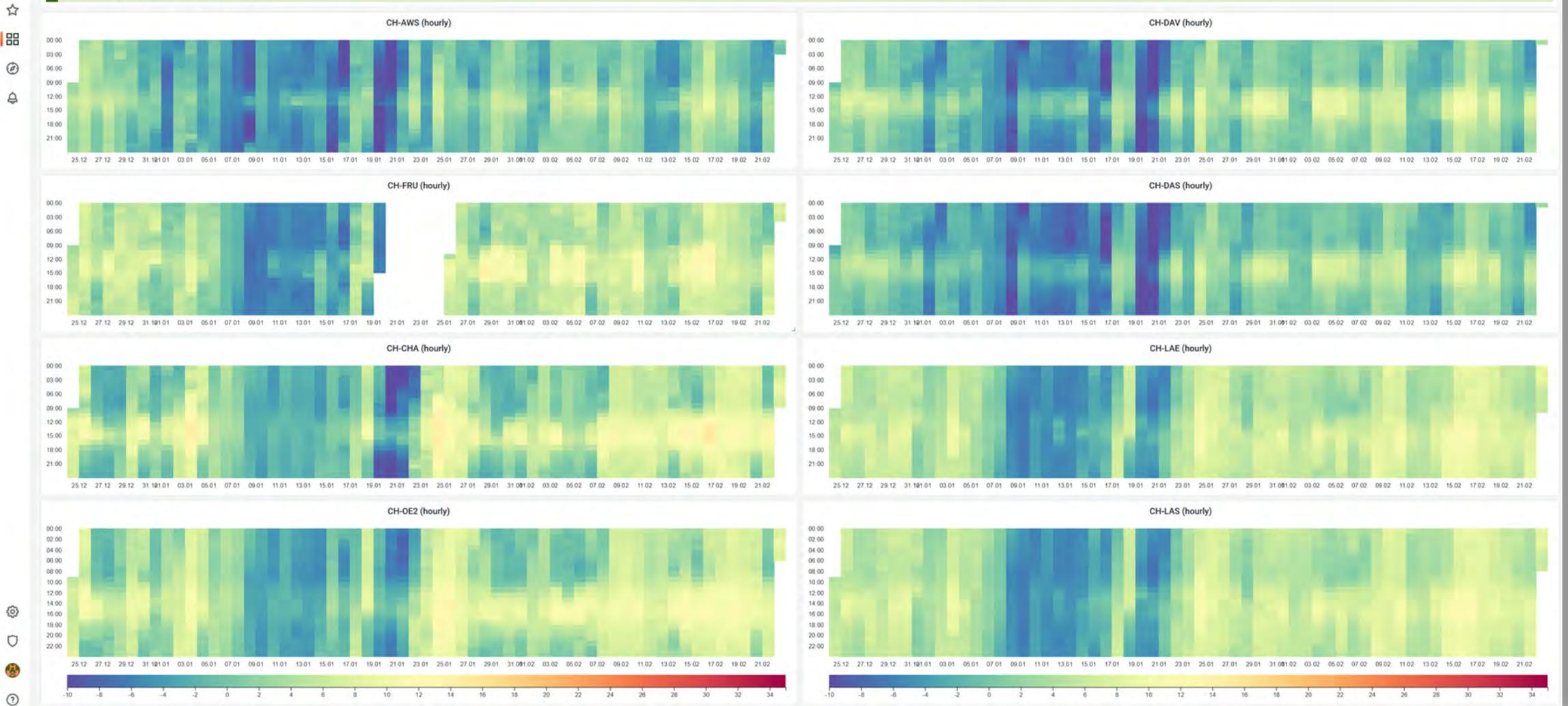
<https://dataviews.swissfluxnet.ethz.ch>

```
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68G 148k 68G 1% /dev/shm
68G 4.4G 64G 7% /run
68G 0 68G 0% /sys/fs/cgroup
82G 65G 13G 84% /
500M 208M 266M 44% /boot
222G 150G 61G 72% /export
7.6T 6.4T 1.2T 85% /mnt/gl-processing
9.7T 7.2T 2.6T 75% /mnt/gl-raw-data
537G 370G 168G 69% /export/home/UPLOAD_ICOS/PAY
14G 13k 14G 1% /run/user/88119
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14G 0 14G 0% /run/user/127995
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ALL SITES / 11 - Site Overview: TA Fingerprints ☆ 🔊

📄 🌐 🔄 Last 60 days CET 🔍 🔄 🗨️

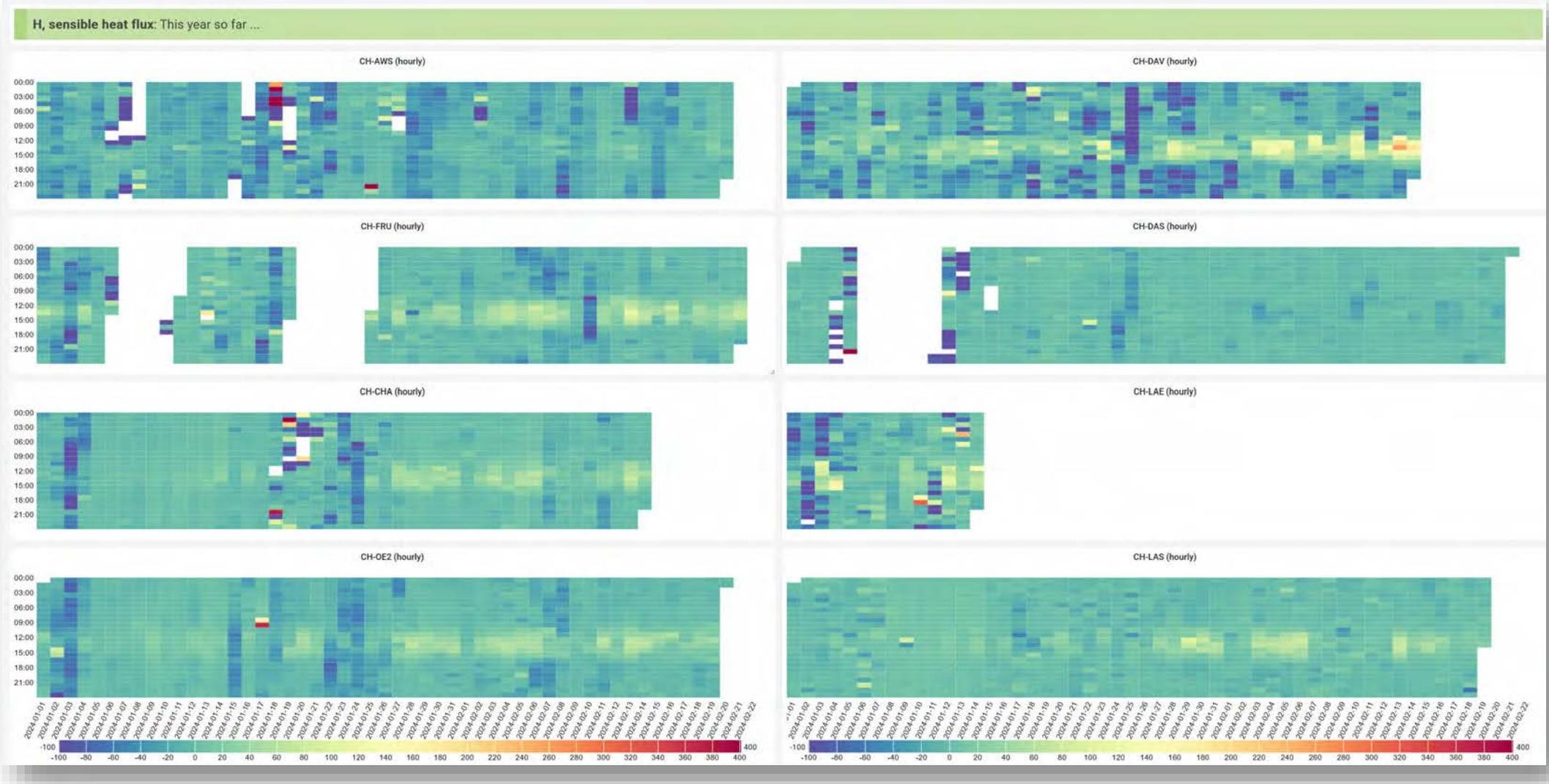
## Air Temperature: Last 60 days ...





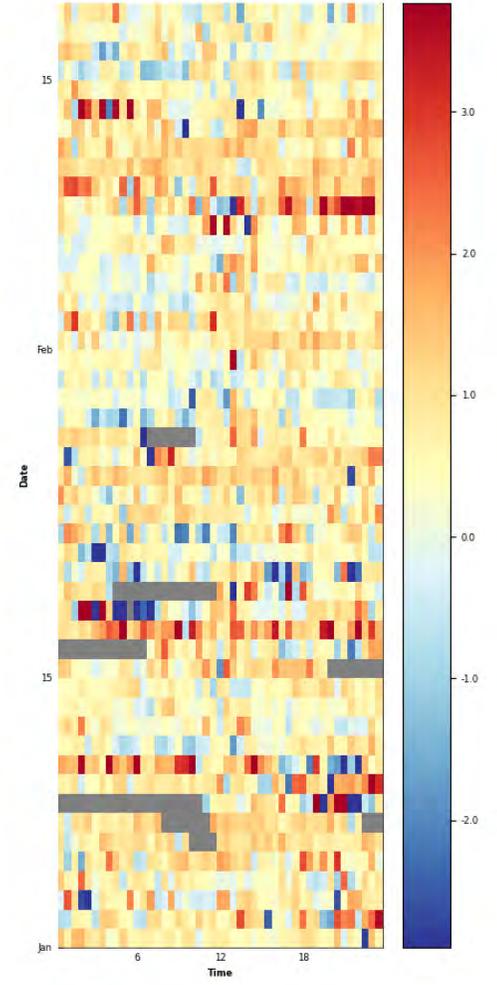
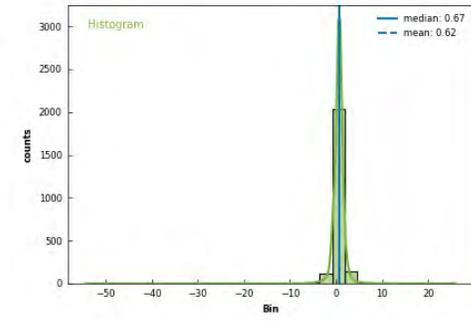
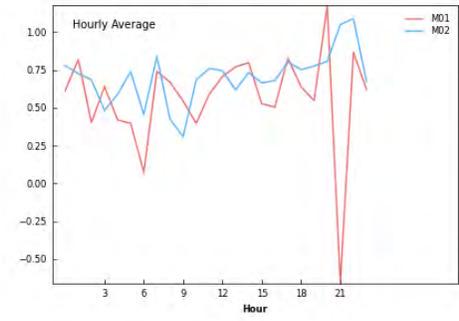
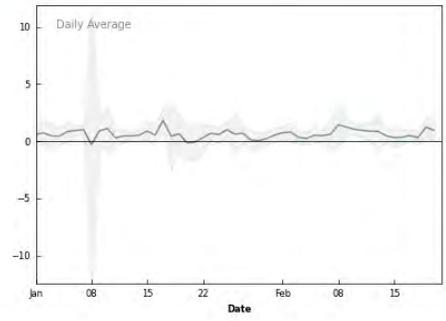
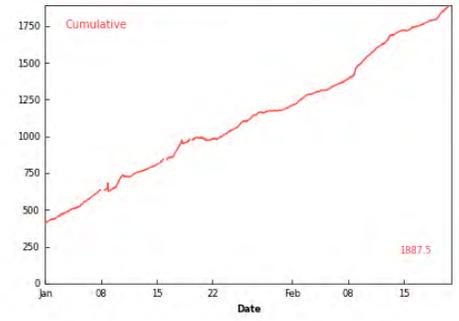
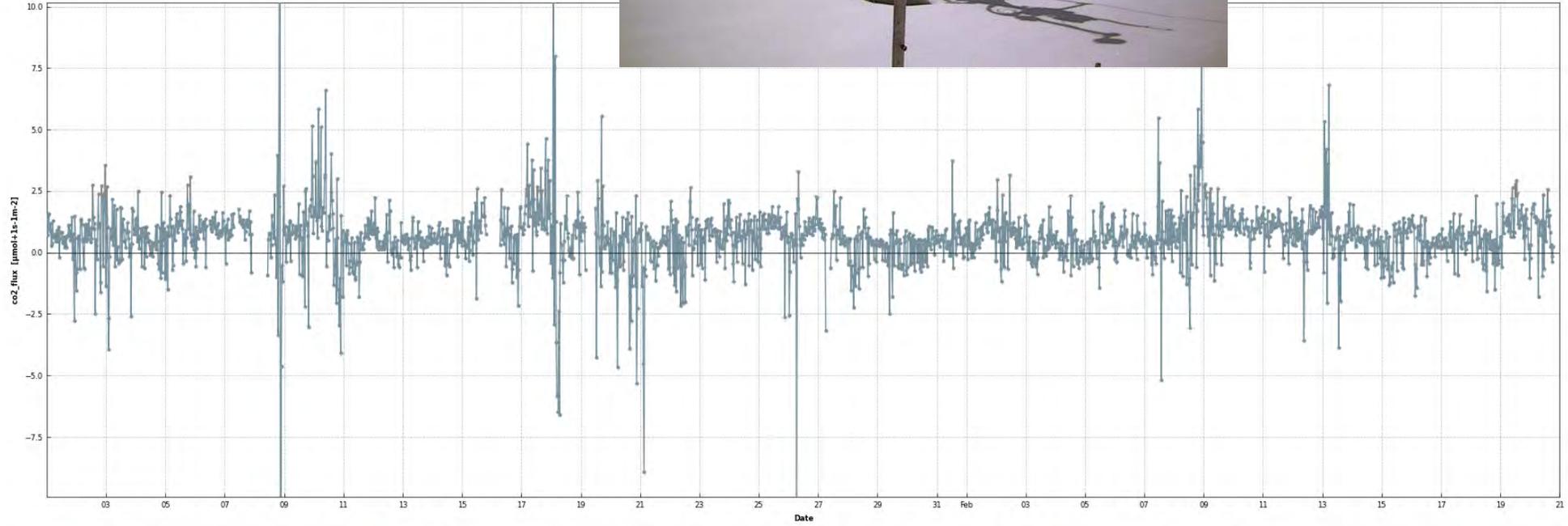
If you calculate fluxes on the RDS, please move results to GL-PROCESSING

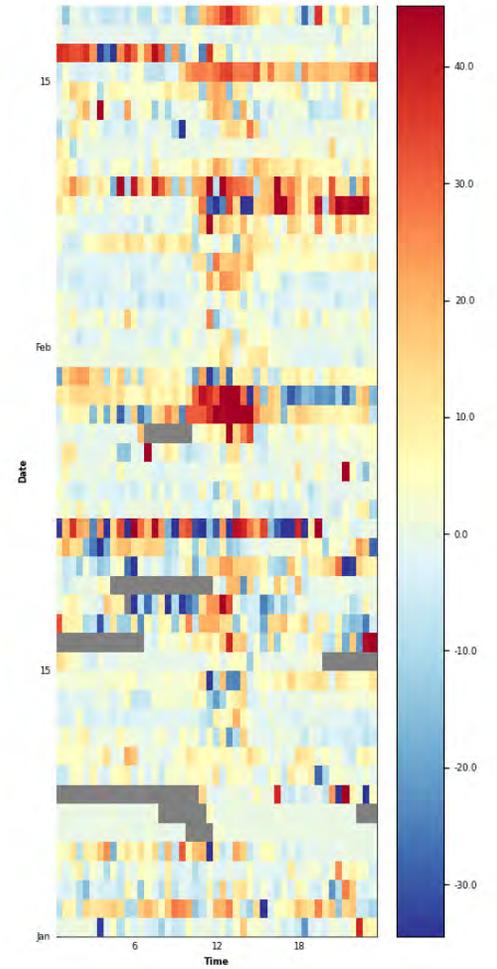
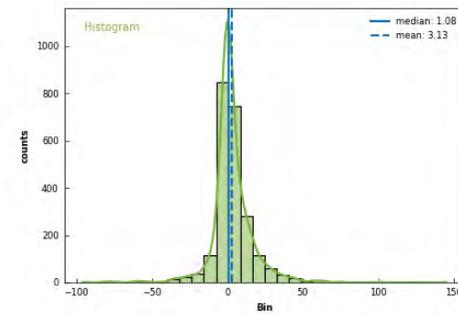
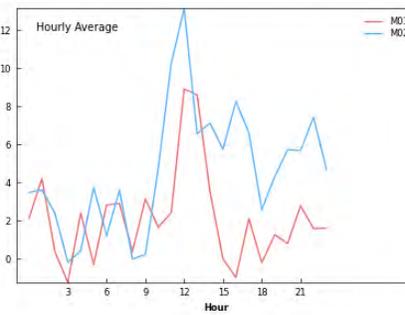
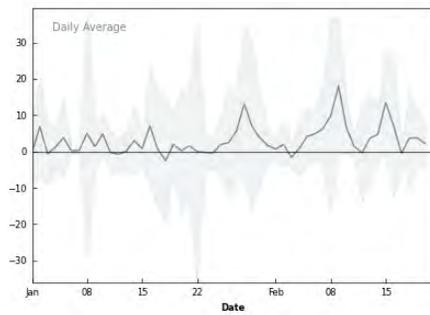
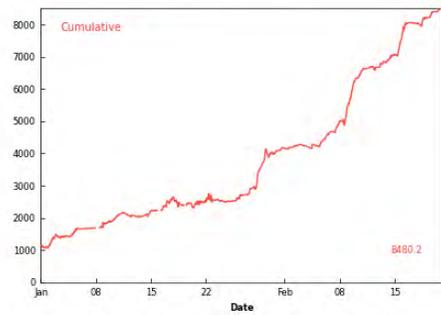
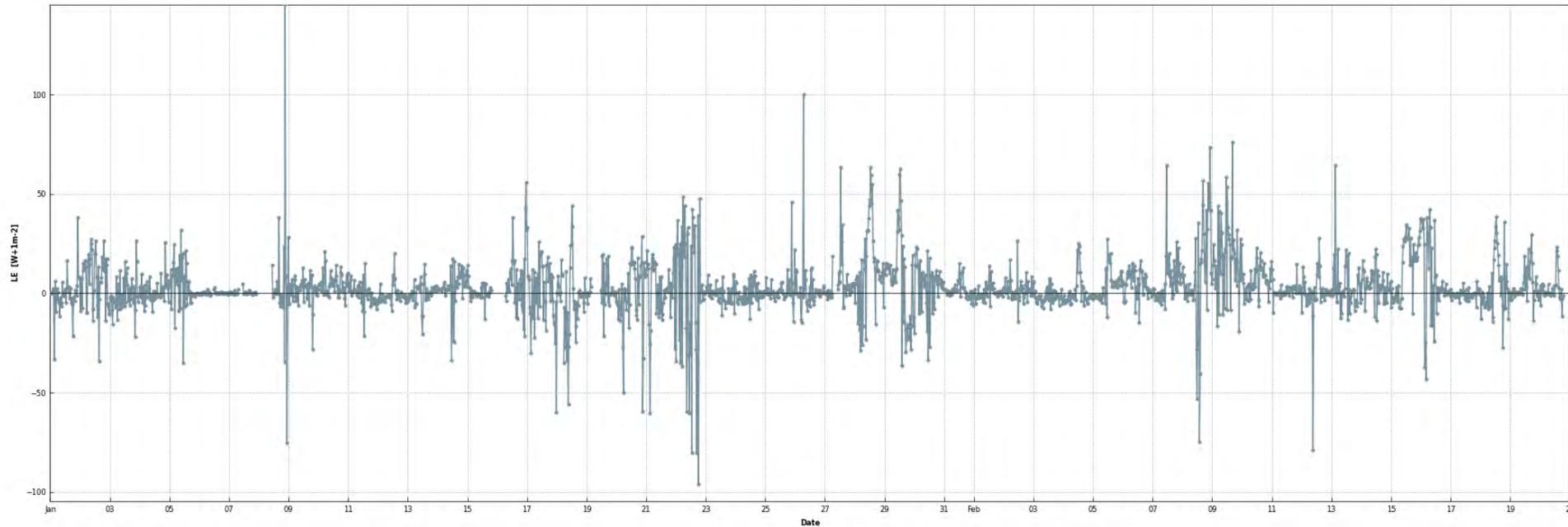
# ALL SITES Sensible Heat Fluxes (H)

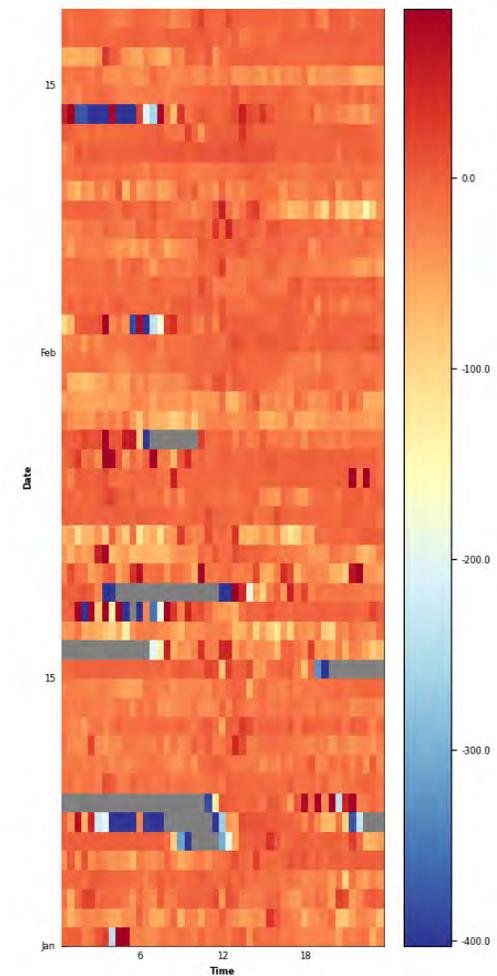
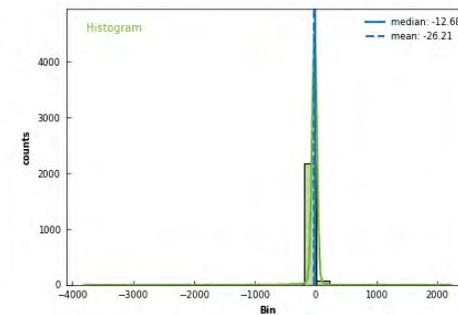
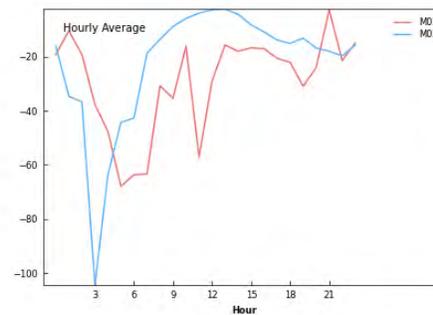
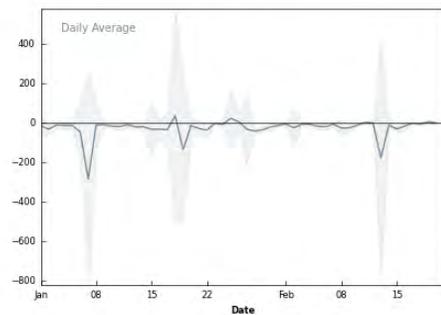
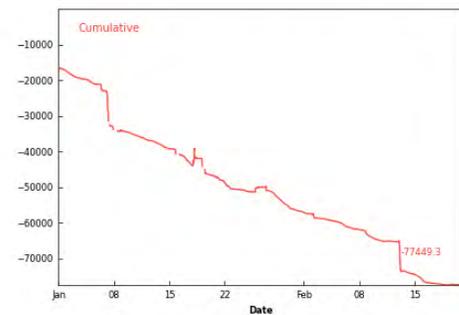
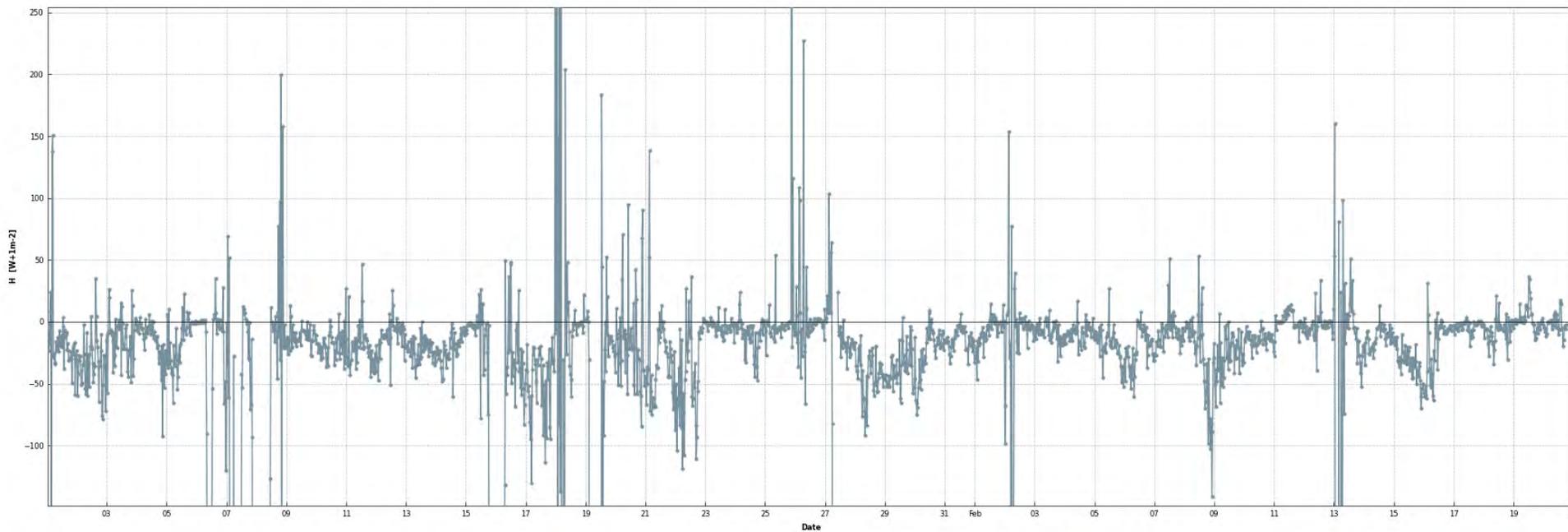




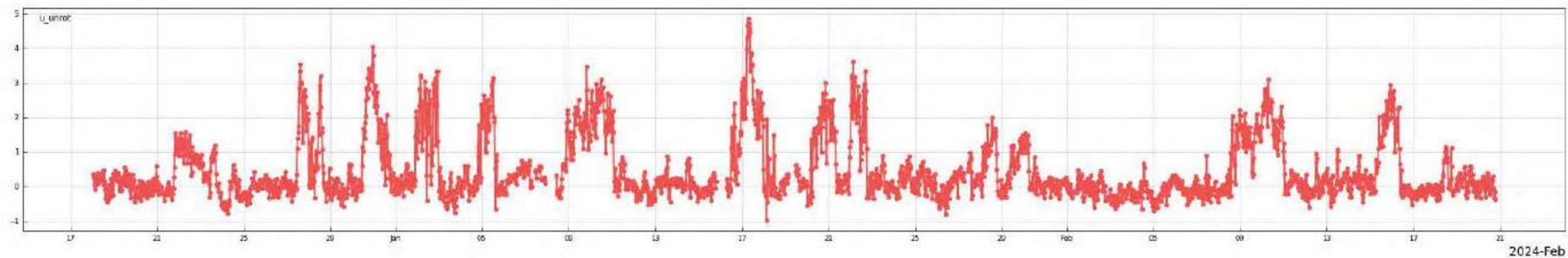
# CH-AWS CO2 flux



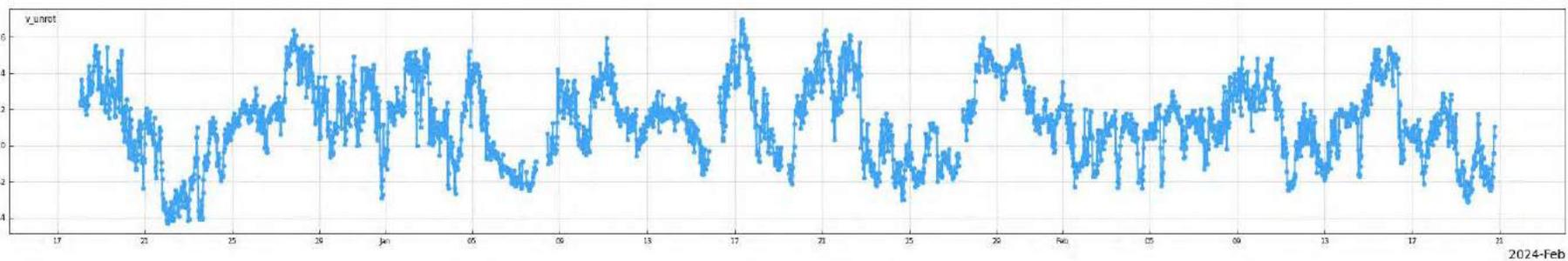




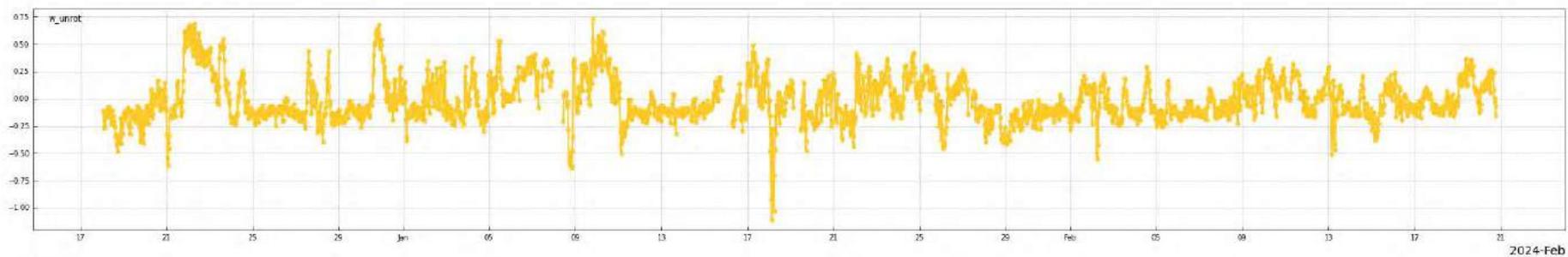
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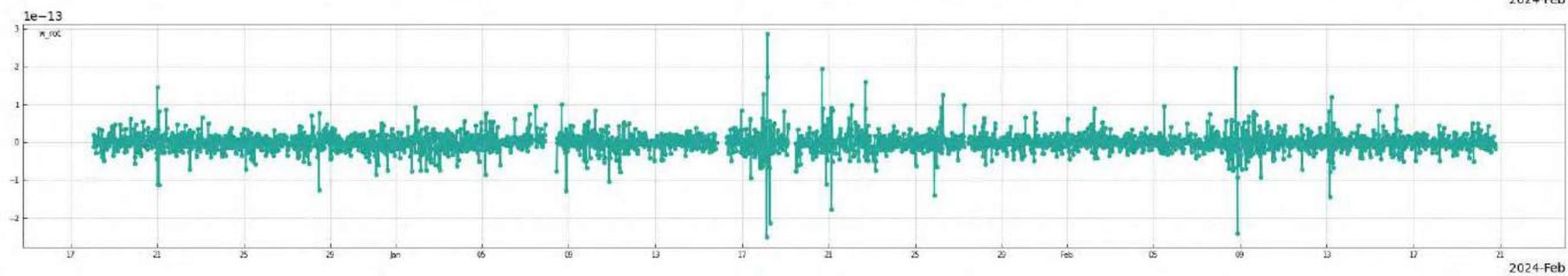
v\_unrot



w\_unrot



w\_rot

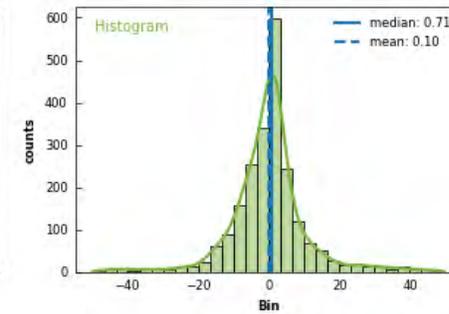
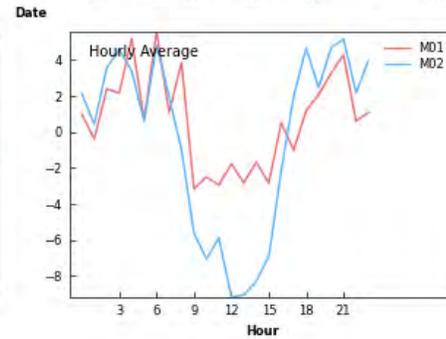
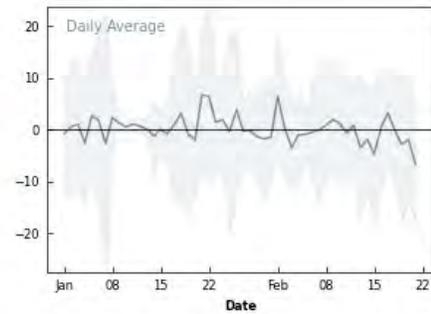
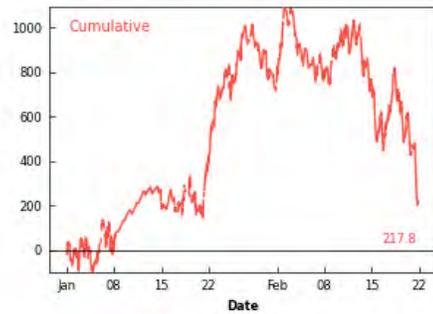
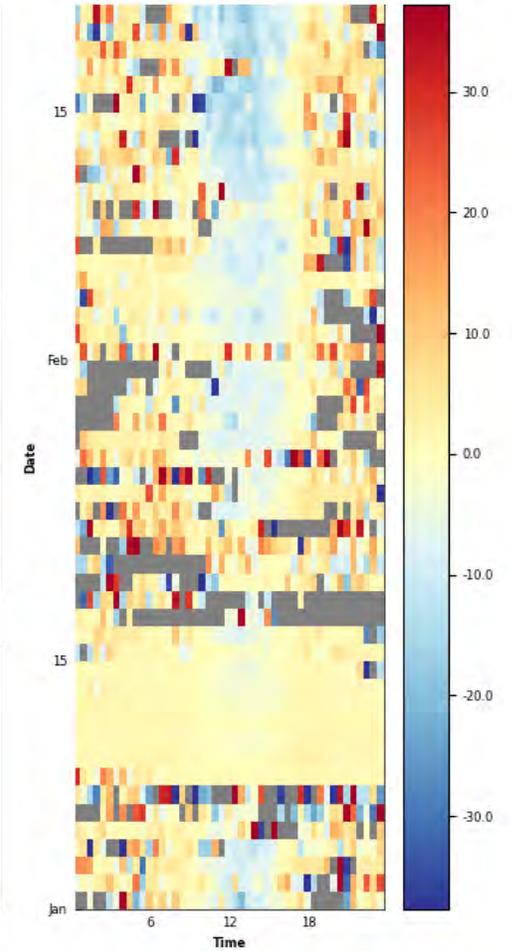
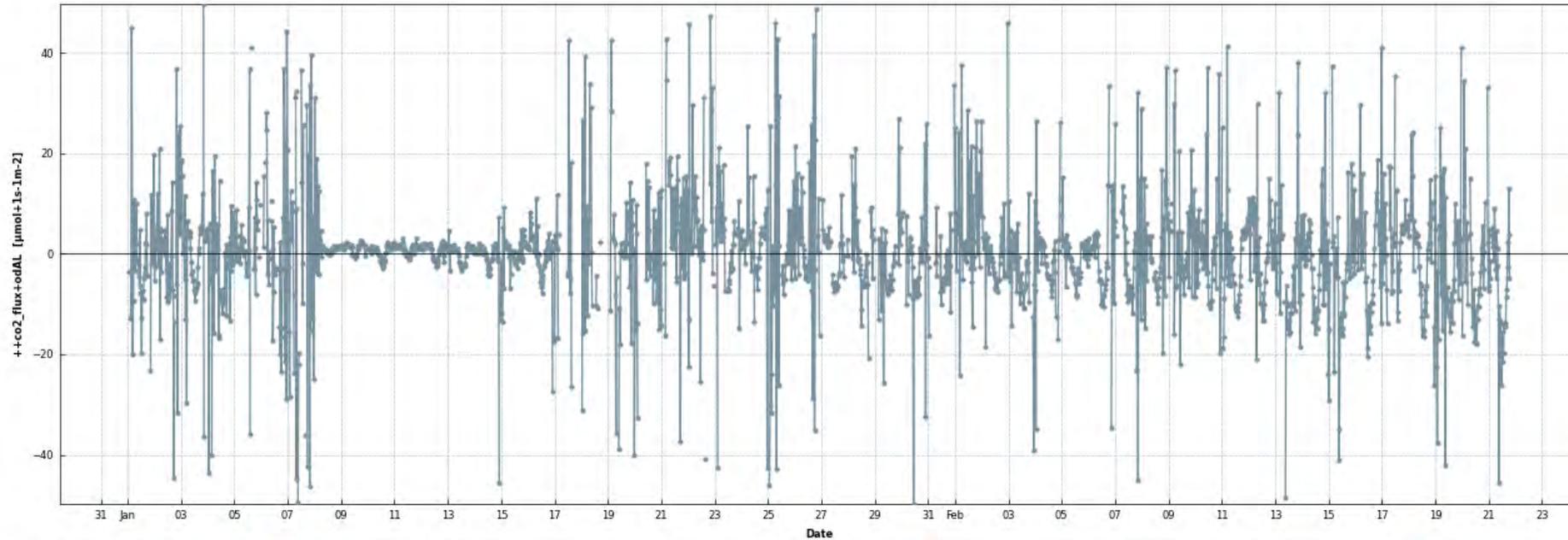




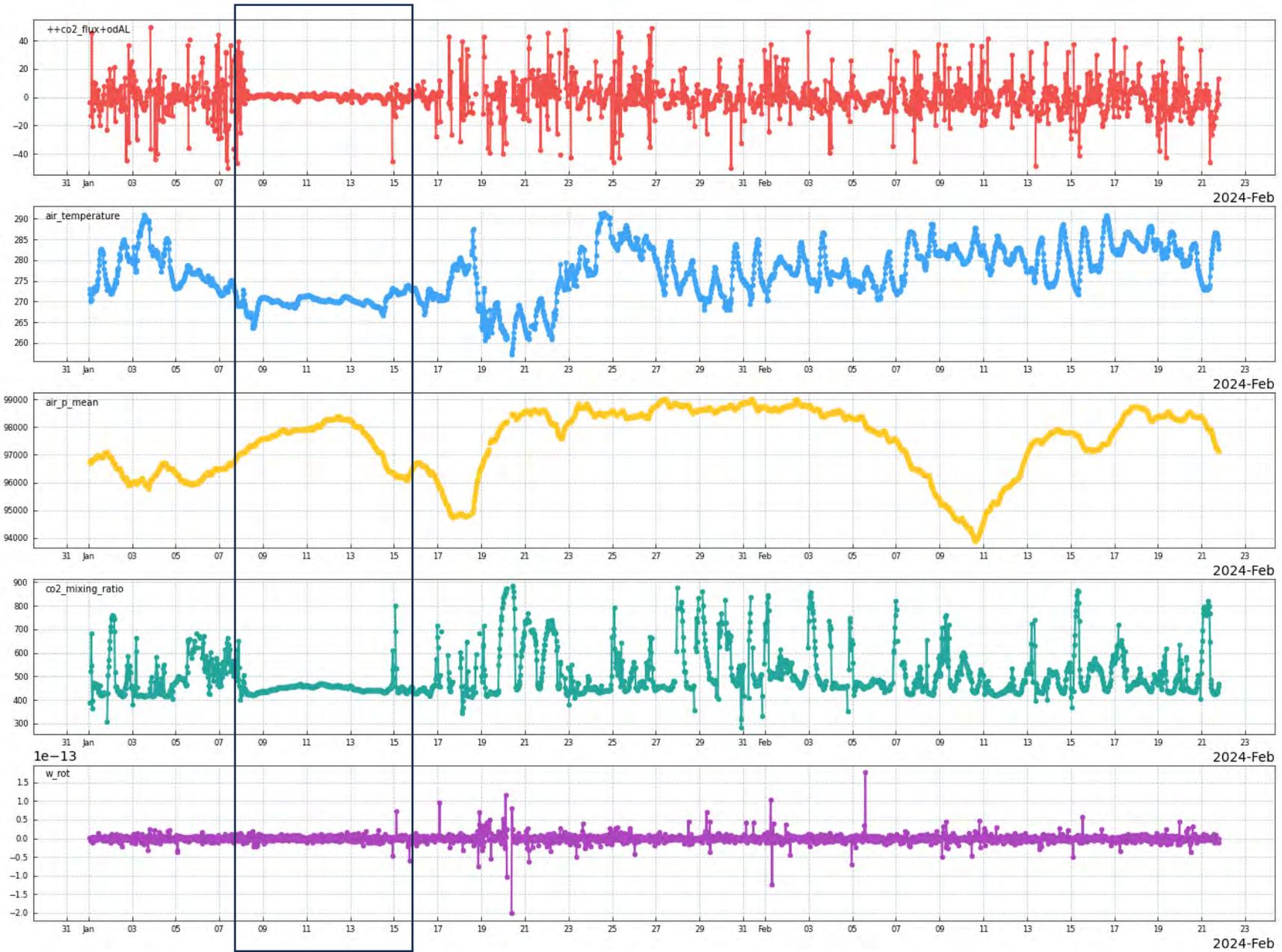
# CH-CHA CO<sub>2</sub> flux

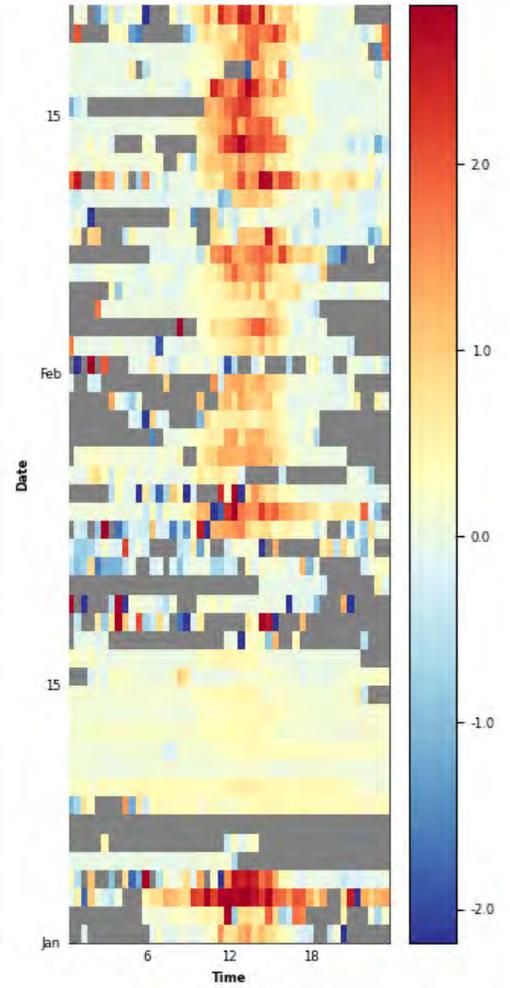
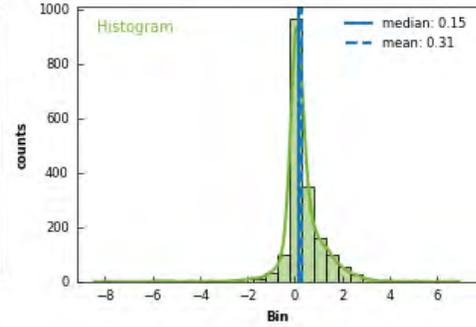
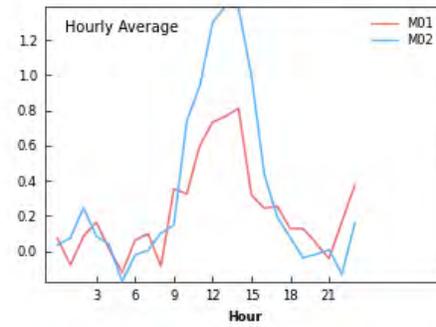
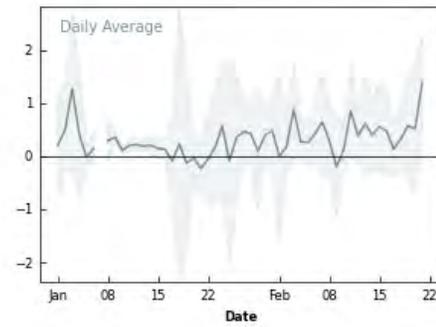
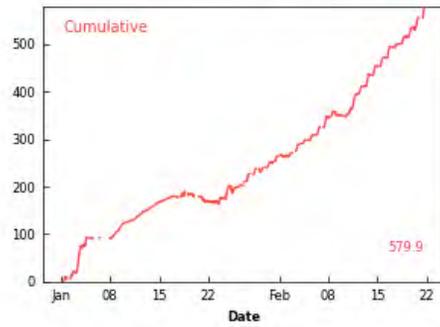
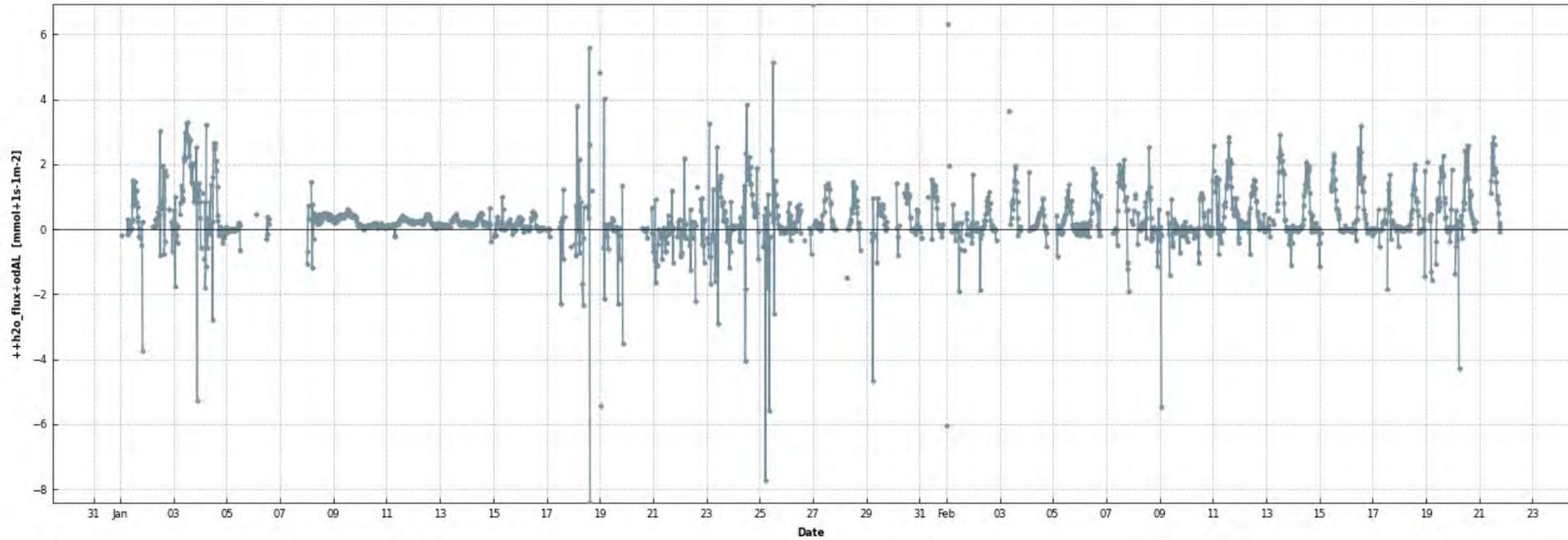


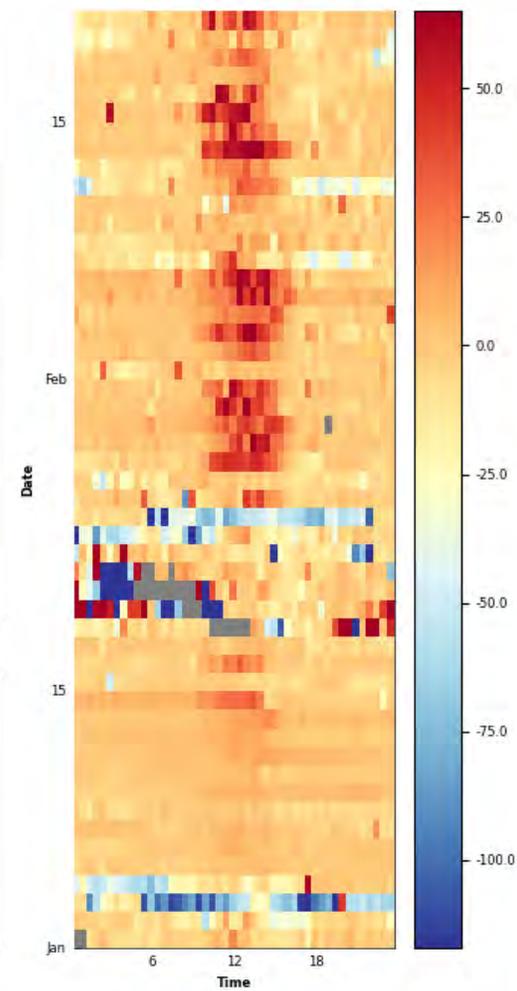
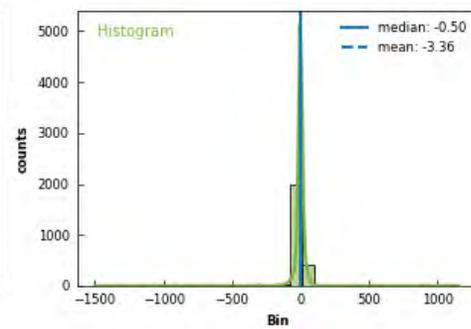
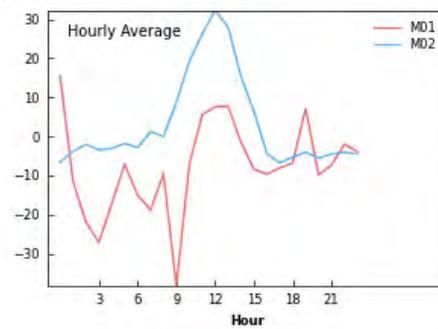
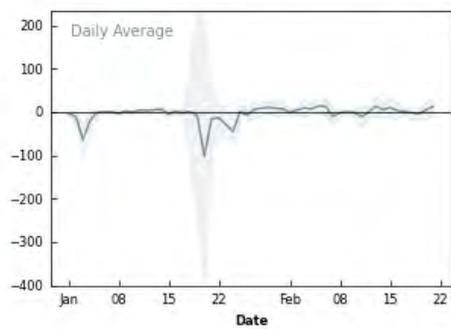
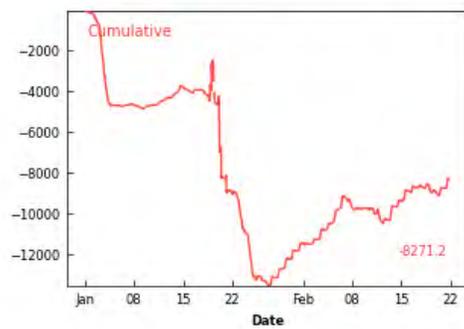
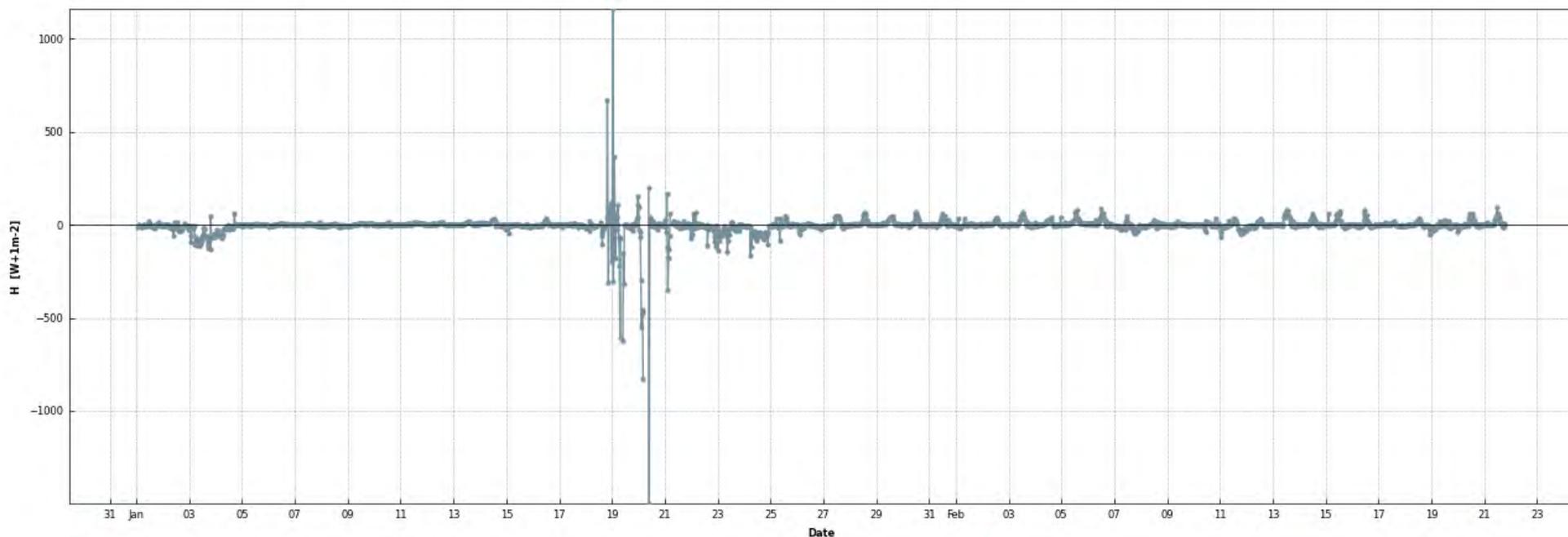
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- 3rd mowing: 2023.07.13
- 4th mowing: 2023.08.08
- 5th mowing: 2023.09.25
- 6th mowing: 2023.10.28
- Grazing: 2024.01.20 - 2024.01.23



# CH-CHA CO2 flux







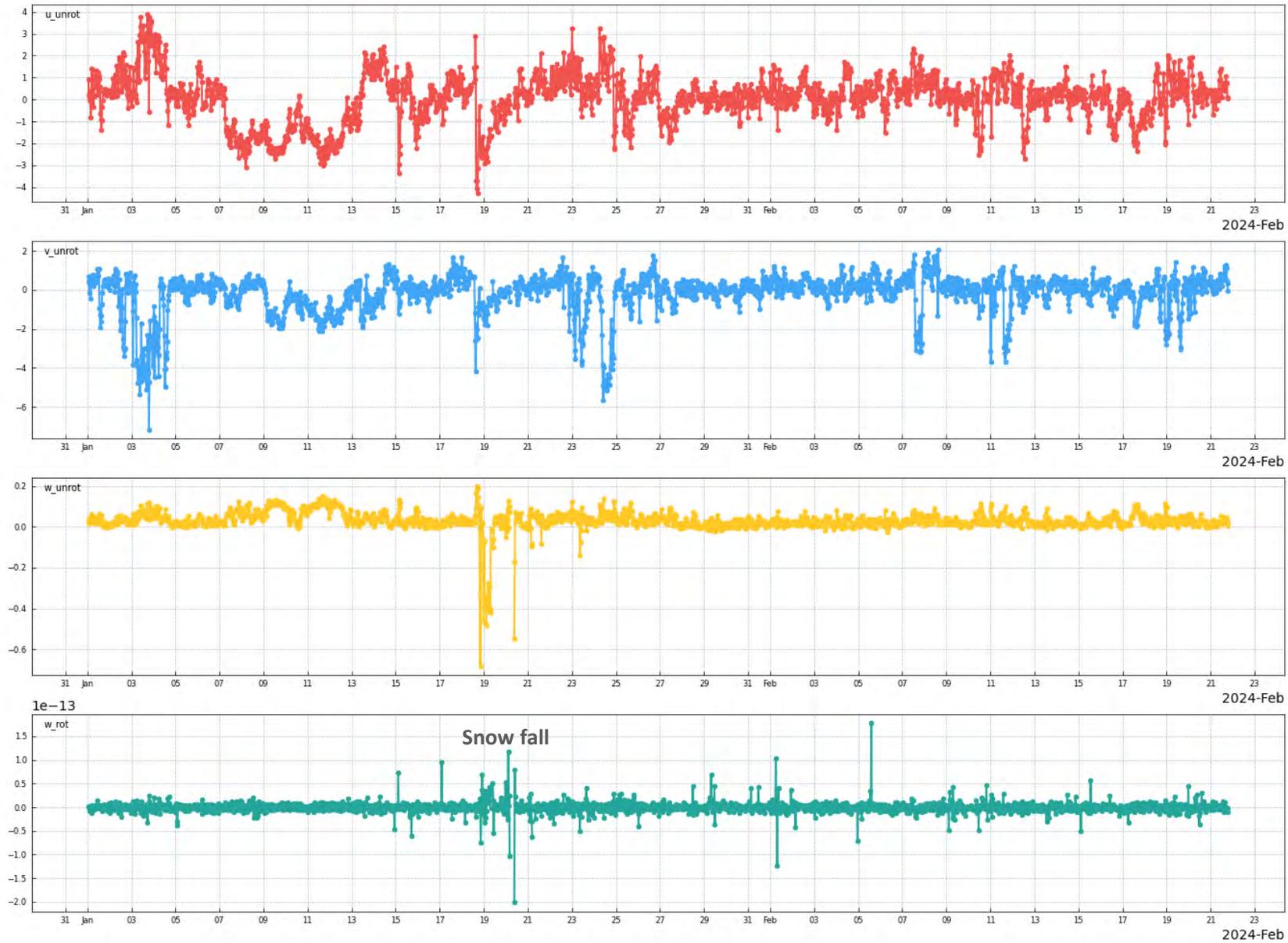
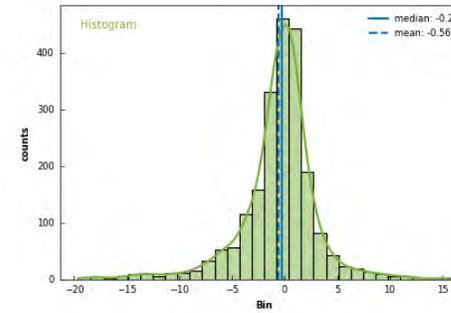
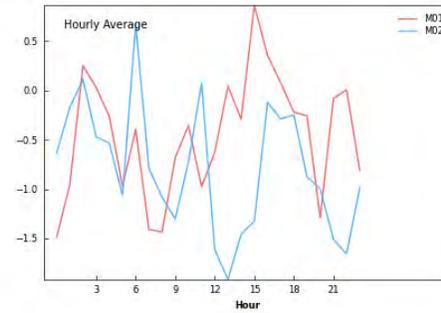
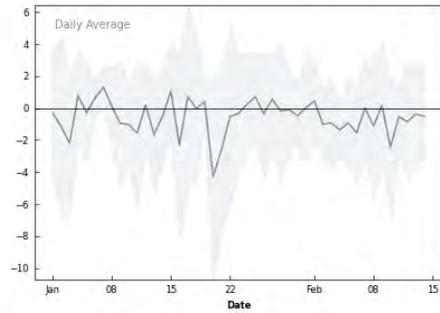
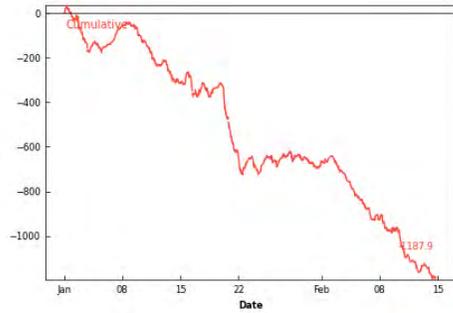
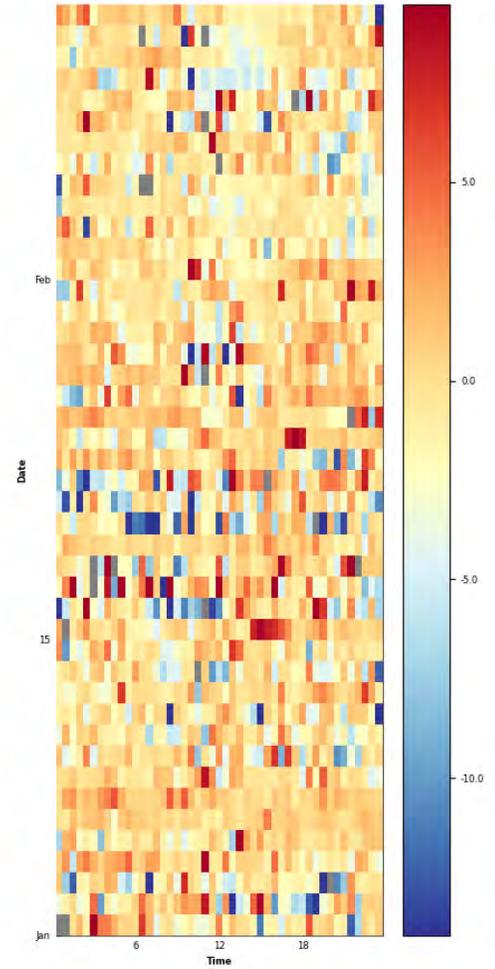
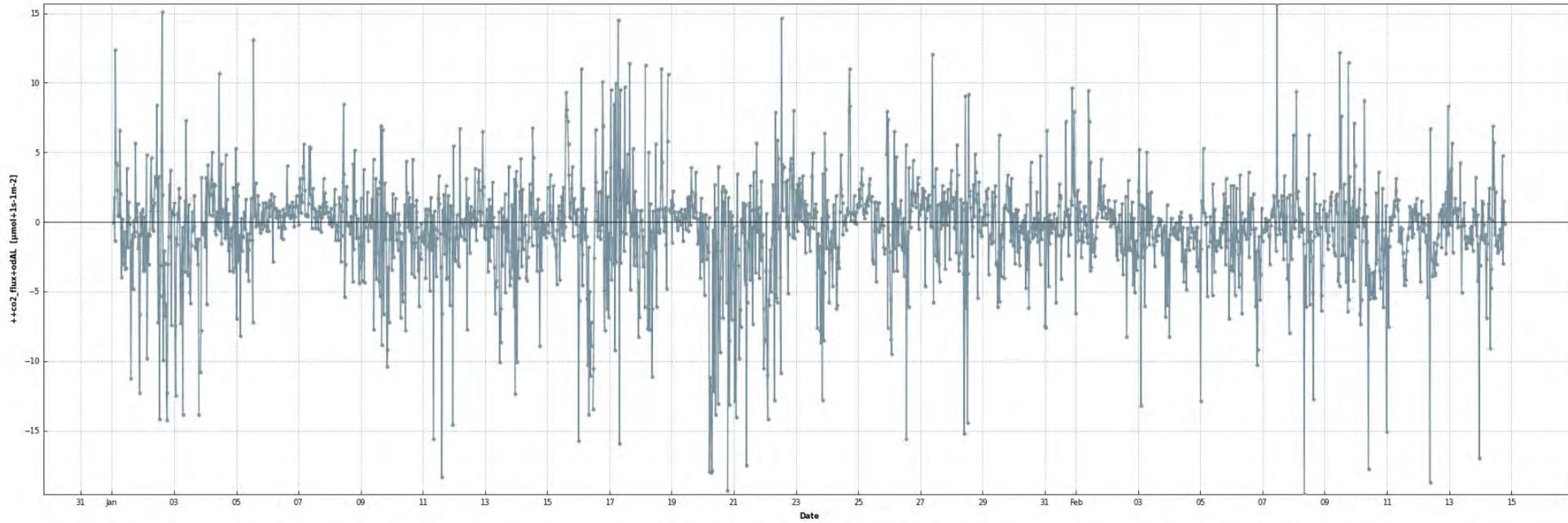
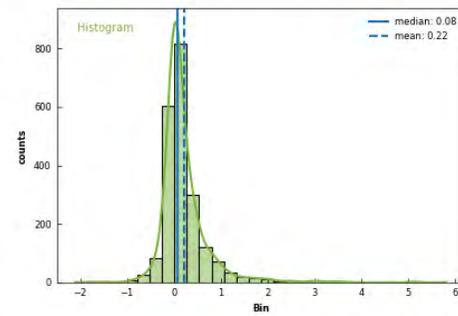
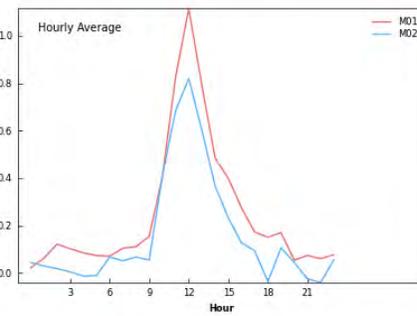
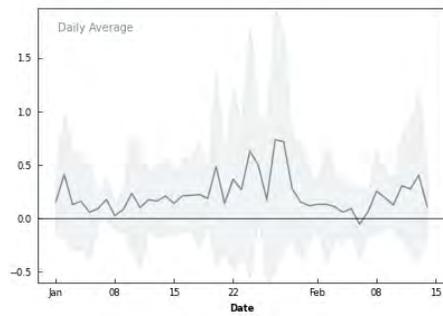
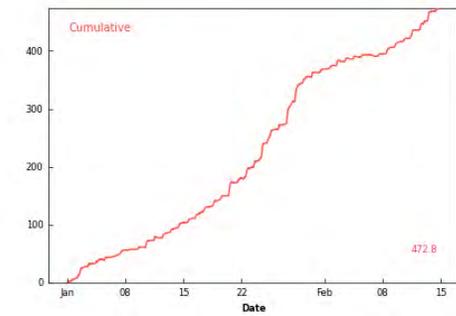
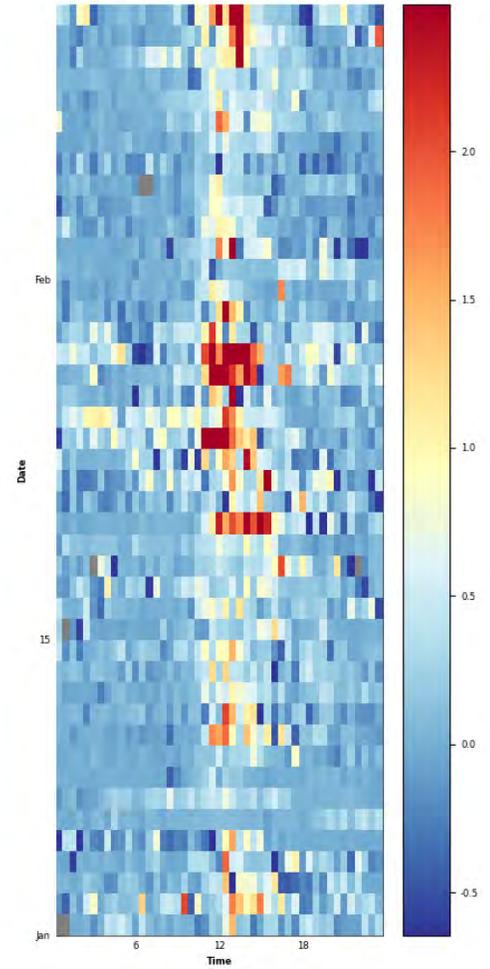
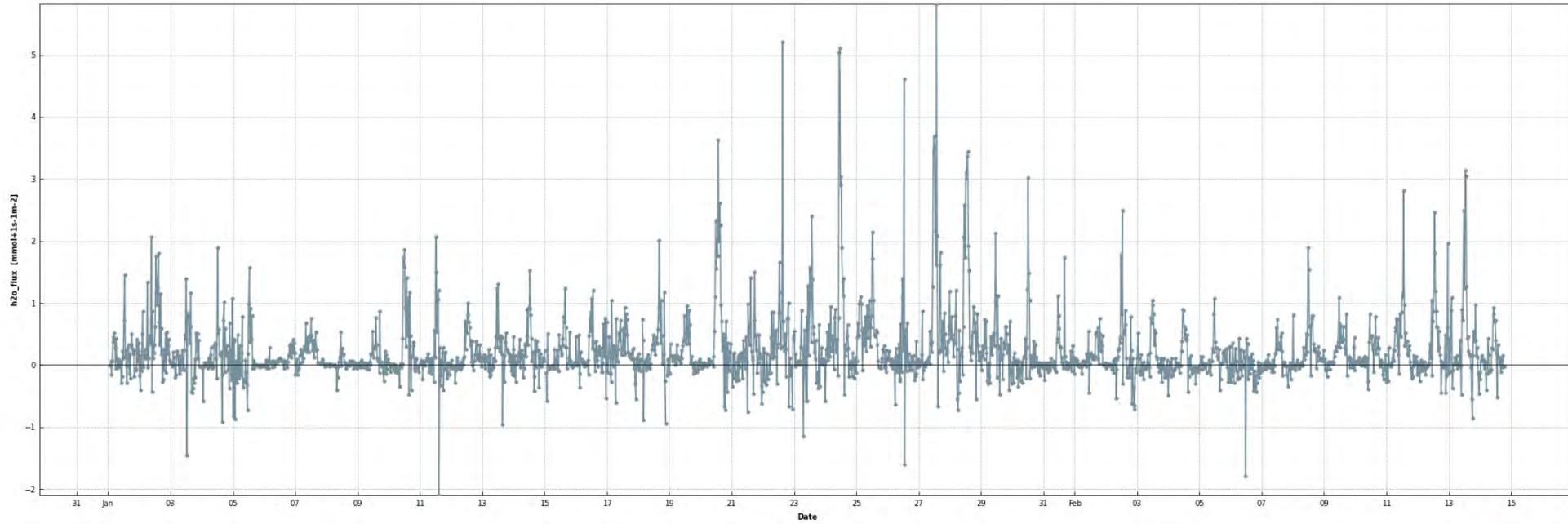


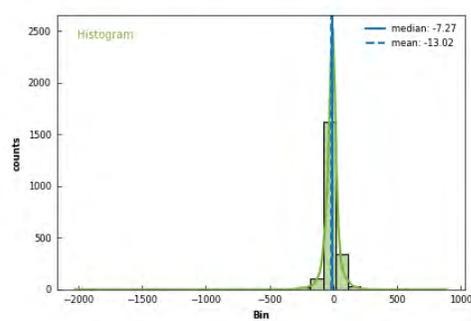
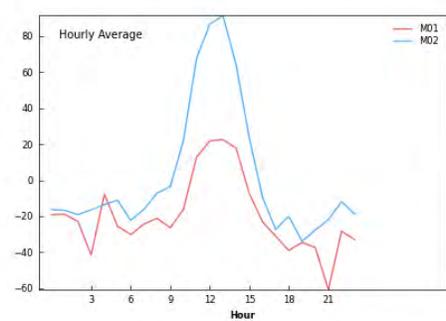
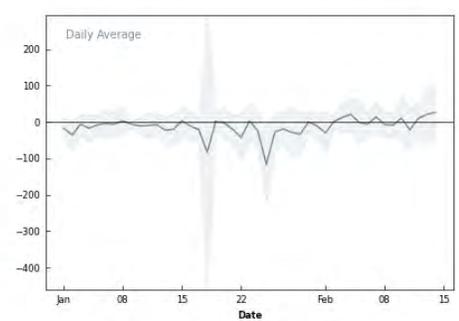
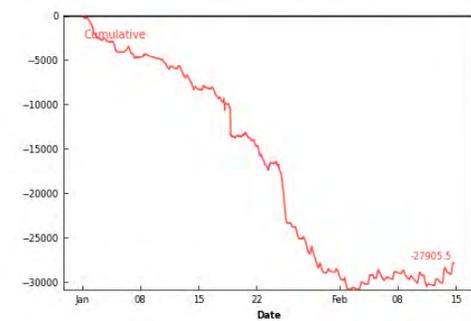
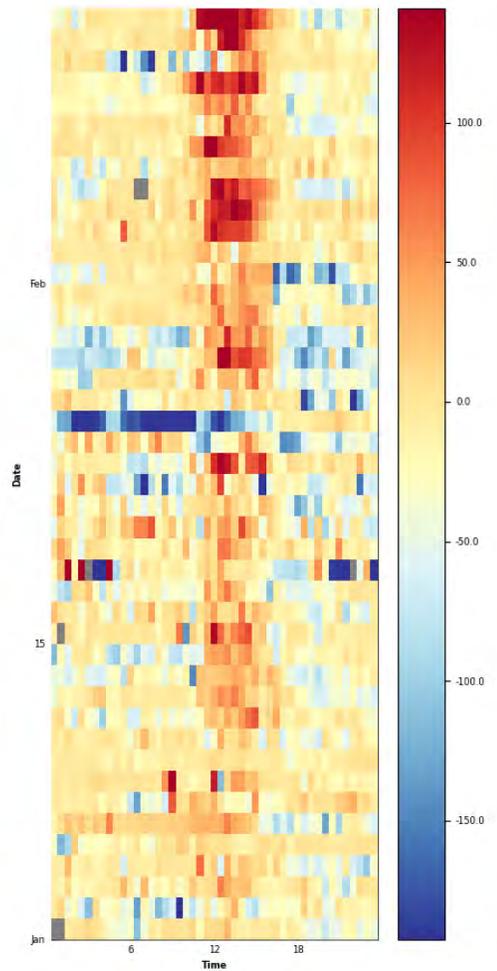
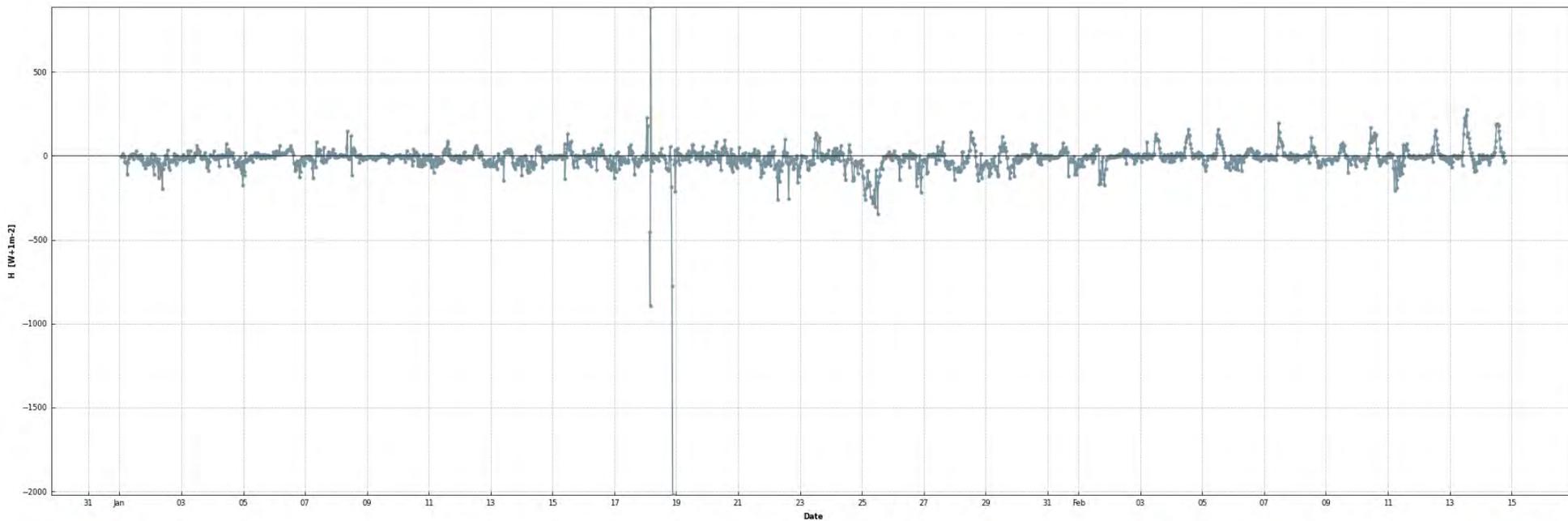


Photo: Lukas Hörtnagl

- Seems like the forest is currently a net sink? (see cumulative and daily averages)
- Could be due to rather warm winter







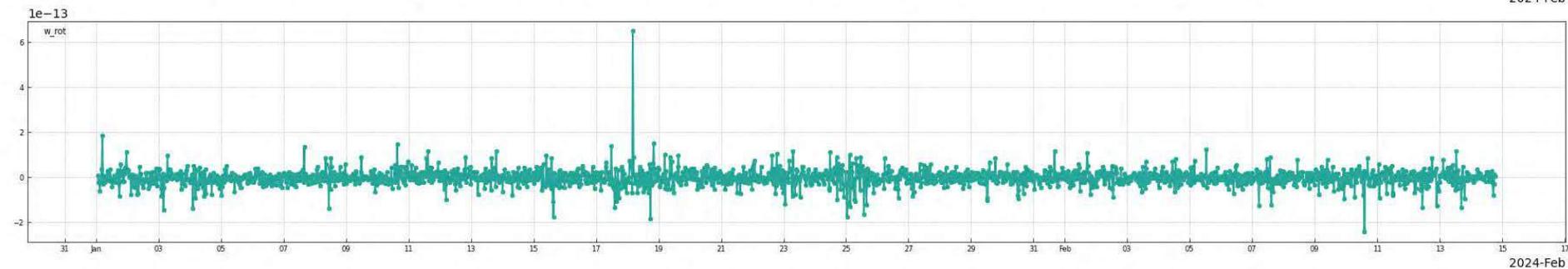
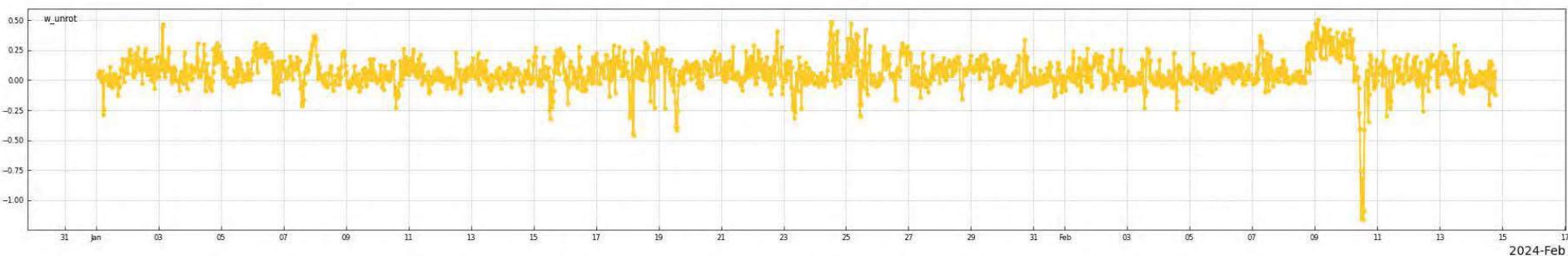
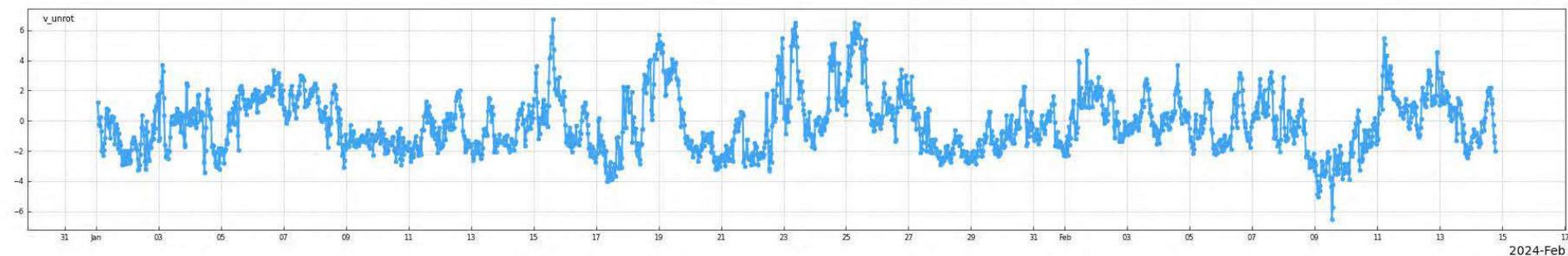
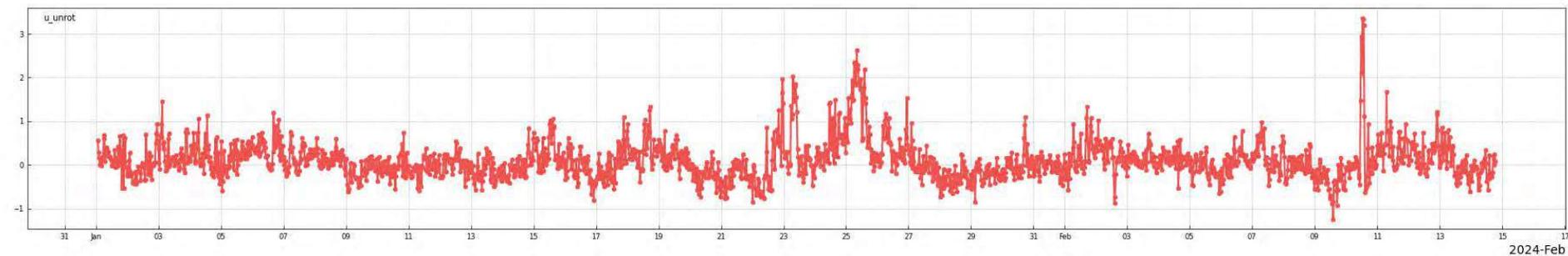
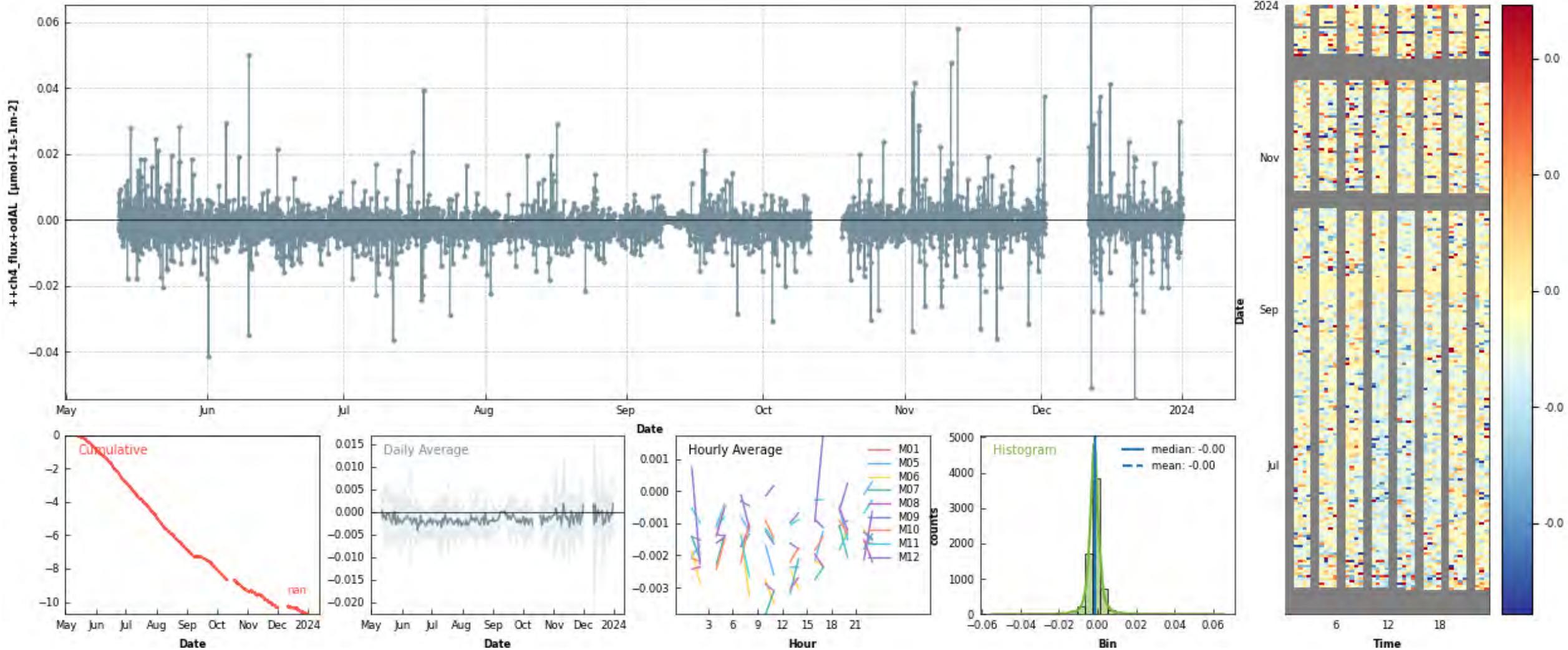


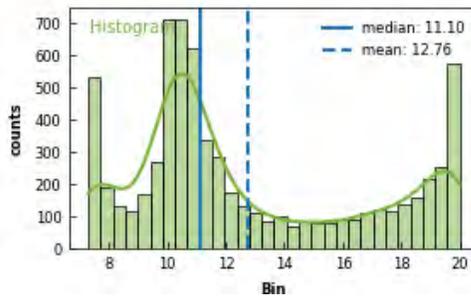
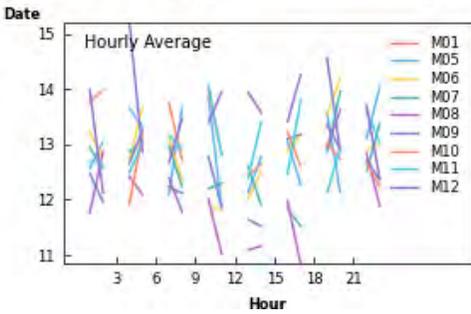
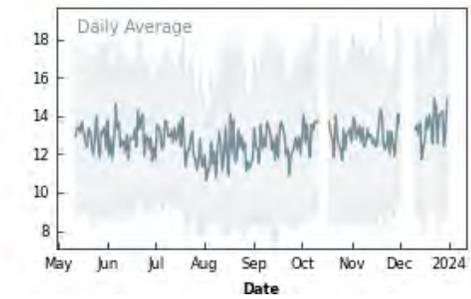
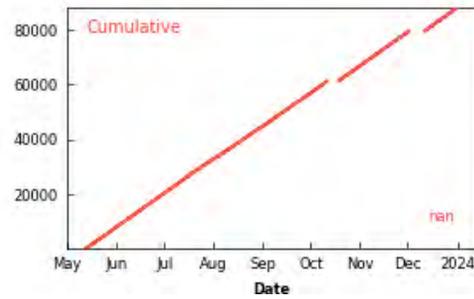
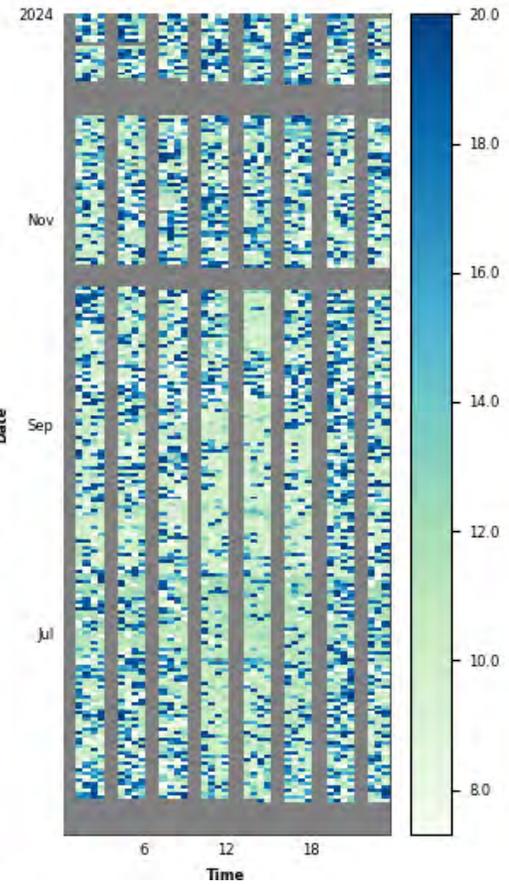
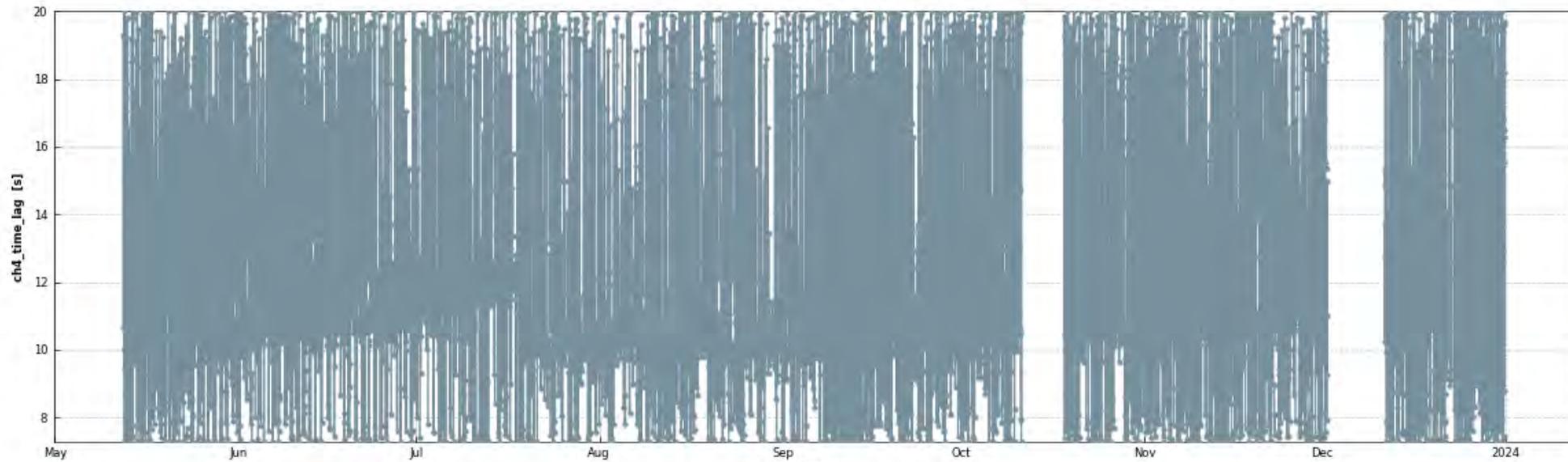


Photo: Luana Krebs

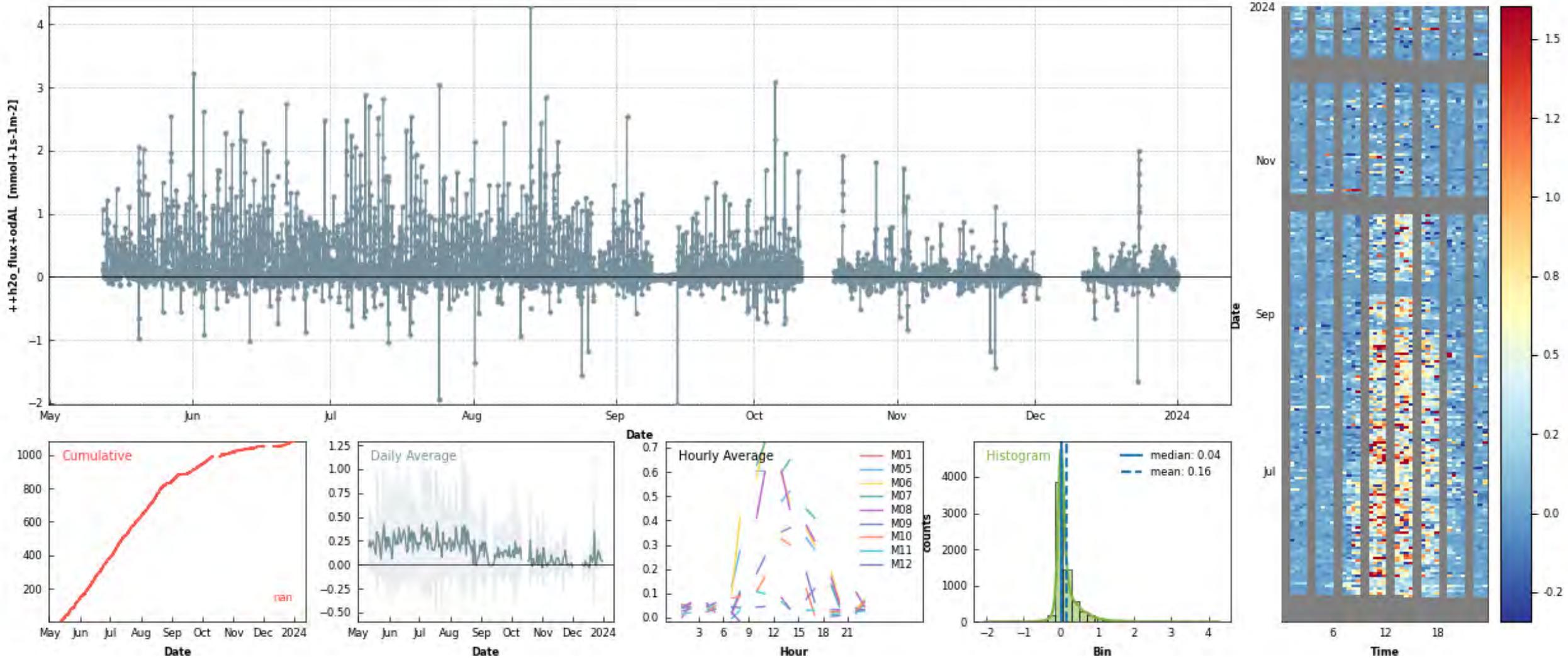
## 2023 fluxes filtered for chamber and storage periods

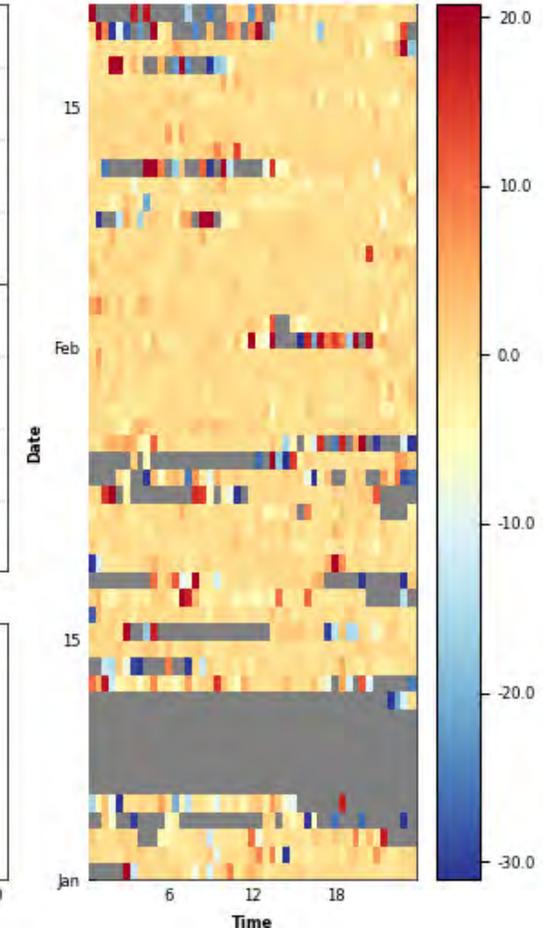
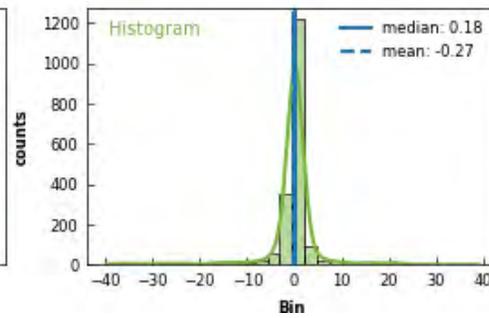
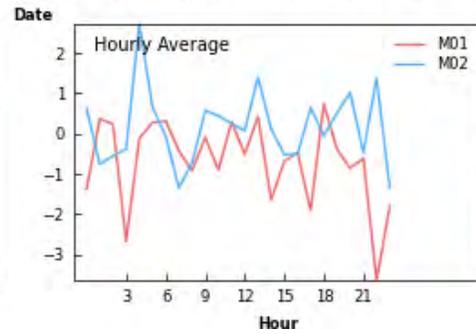
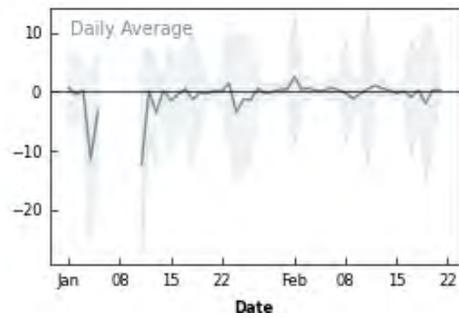
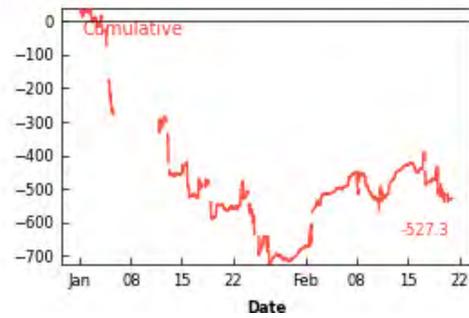
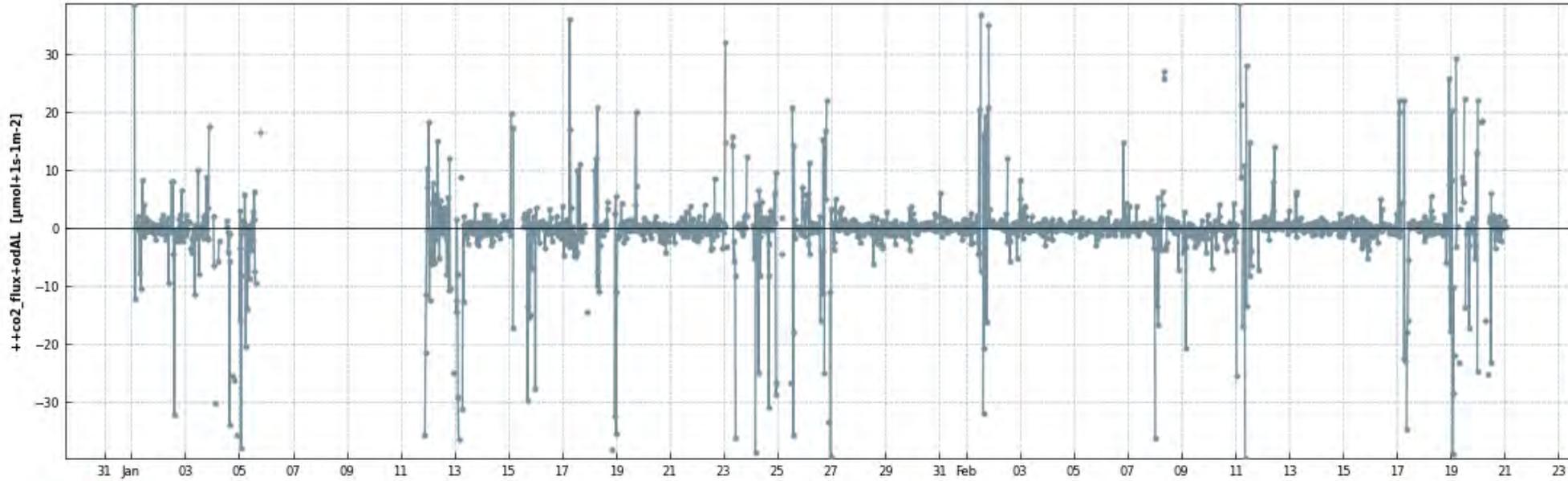


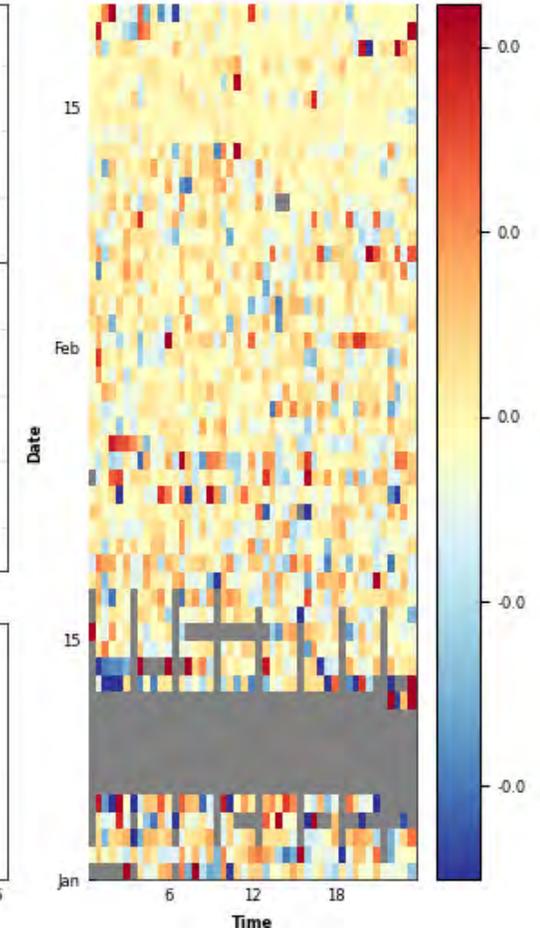
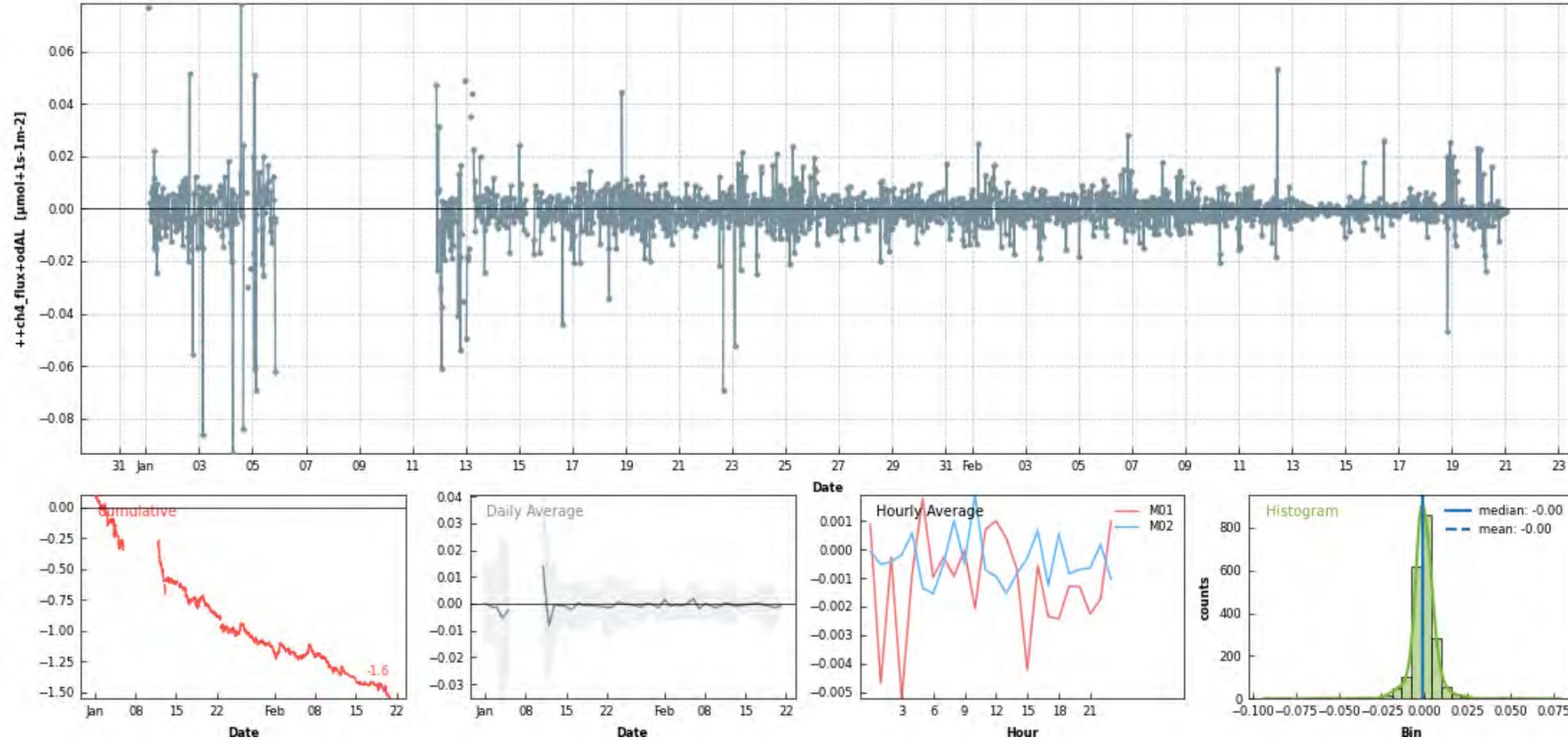
## 2023 fluxes filtered for chamber and storage periods

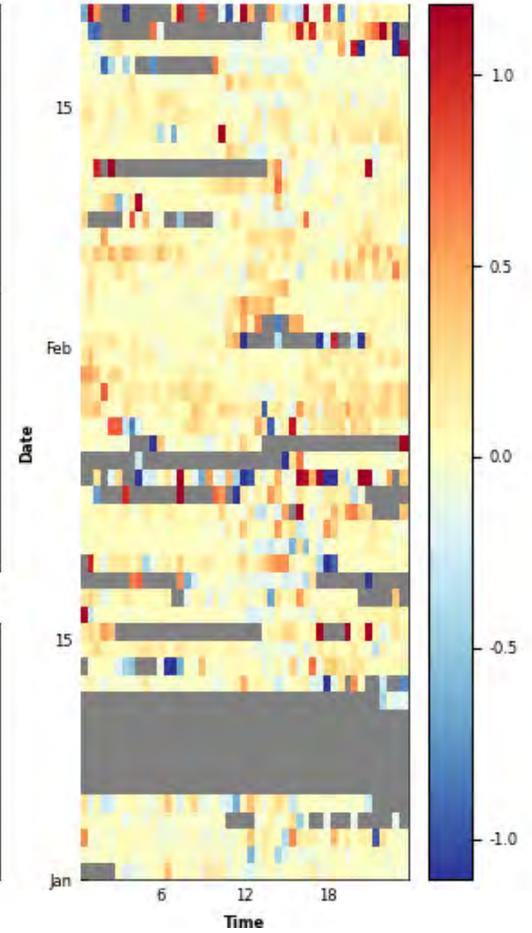
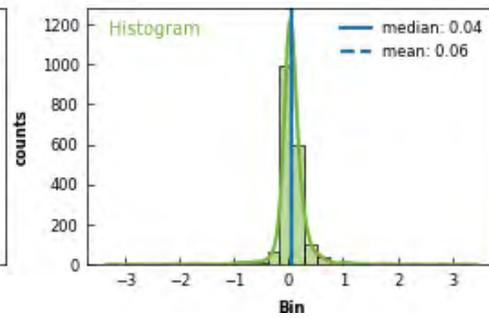
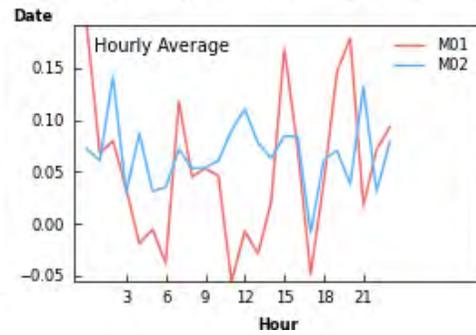
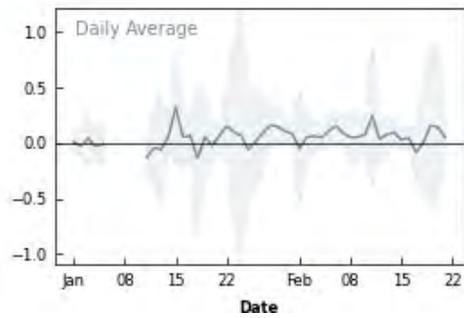
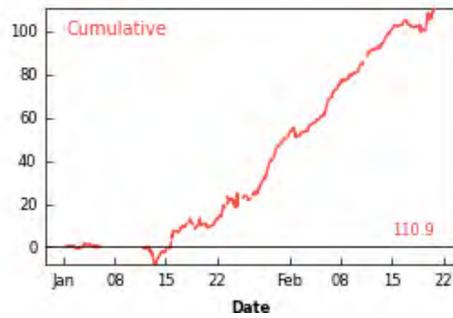
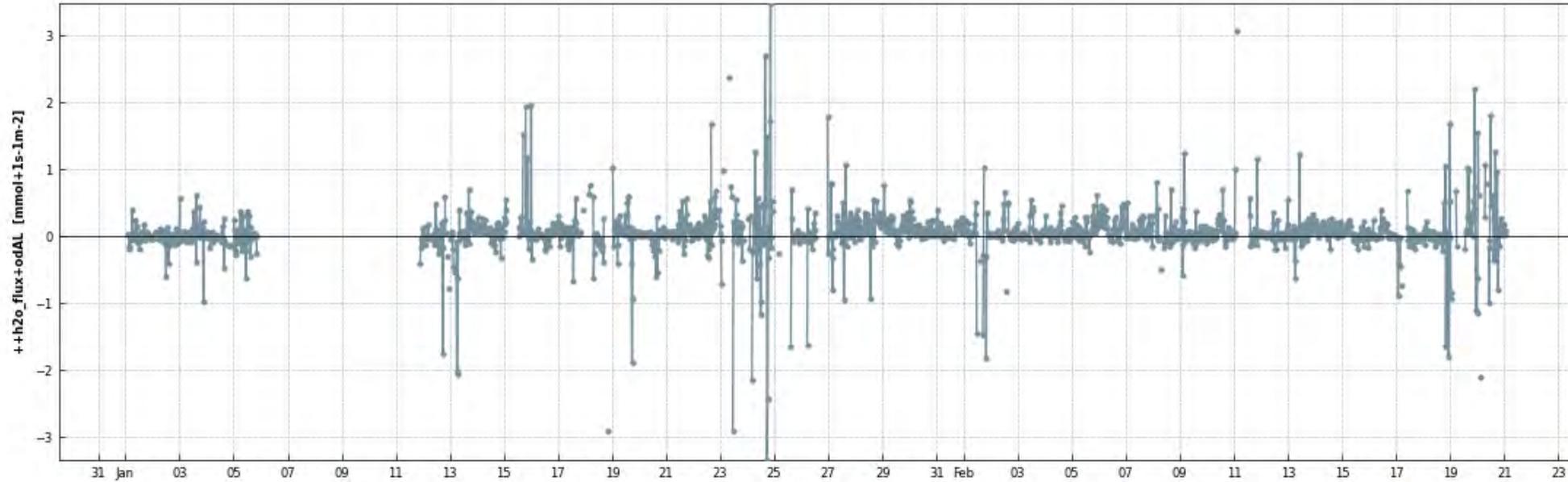


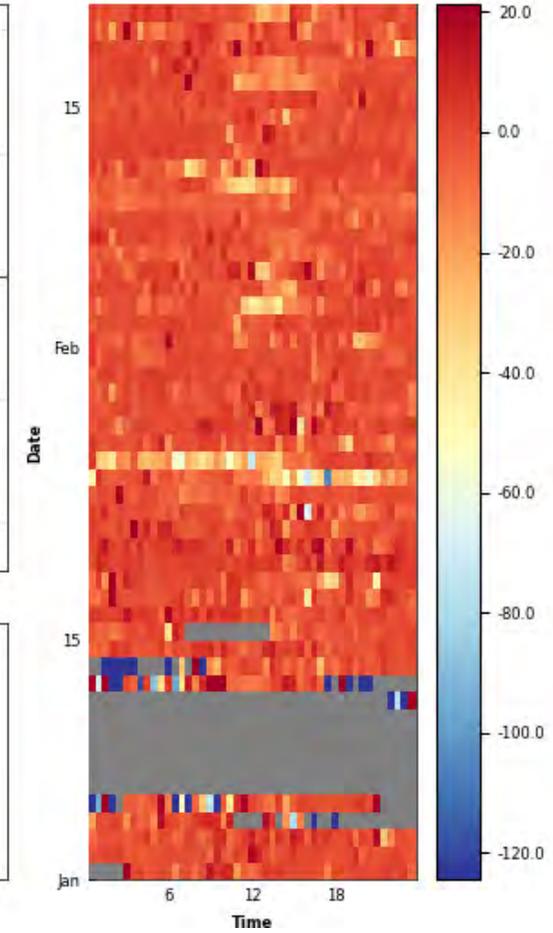
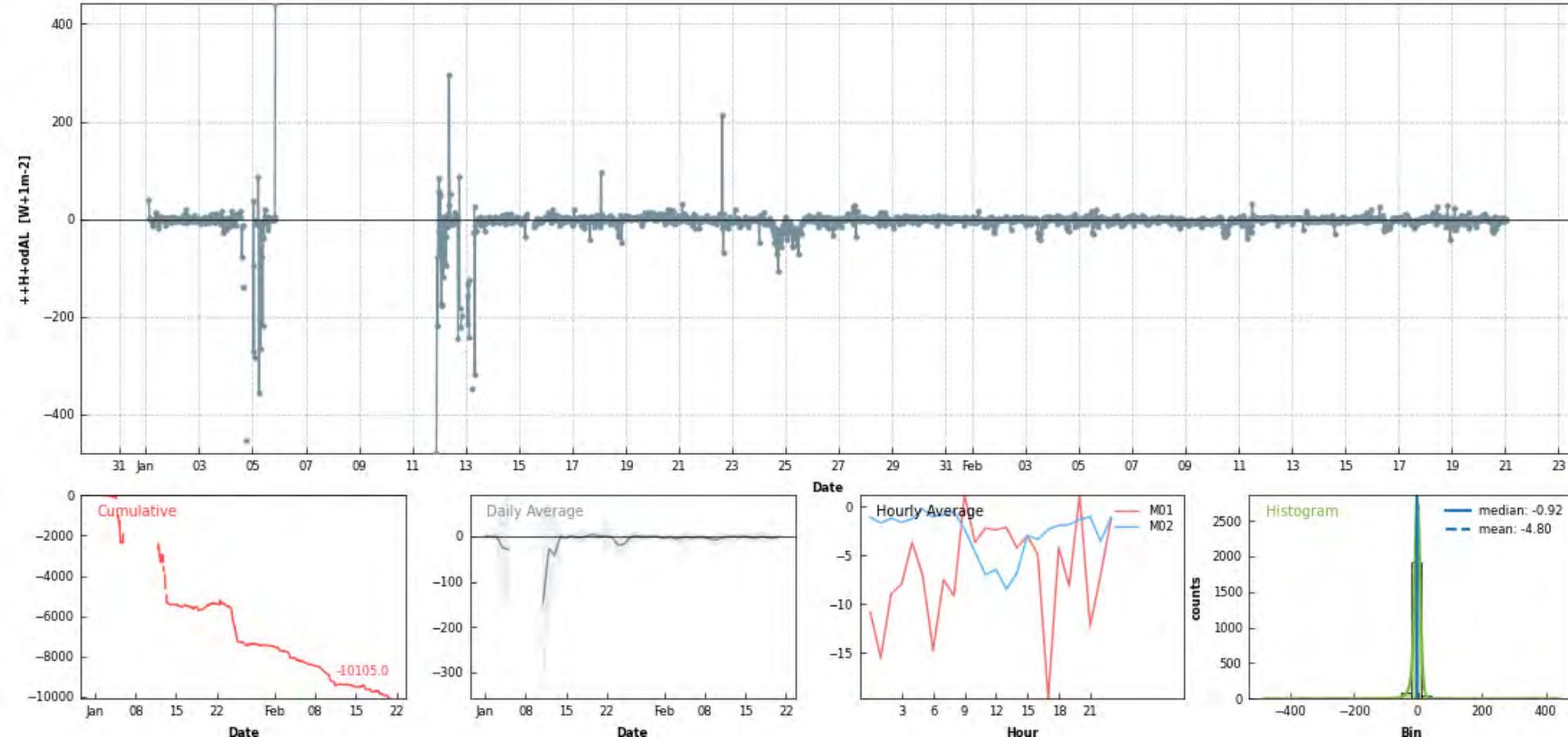
## 2023 fluxes filtered for chamber and storage periods











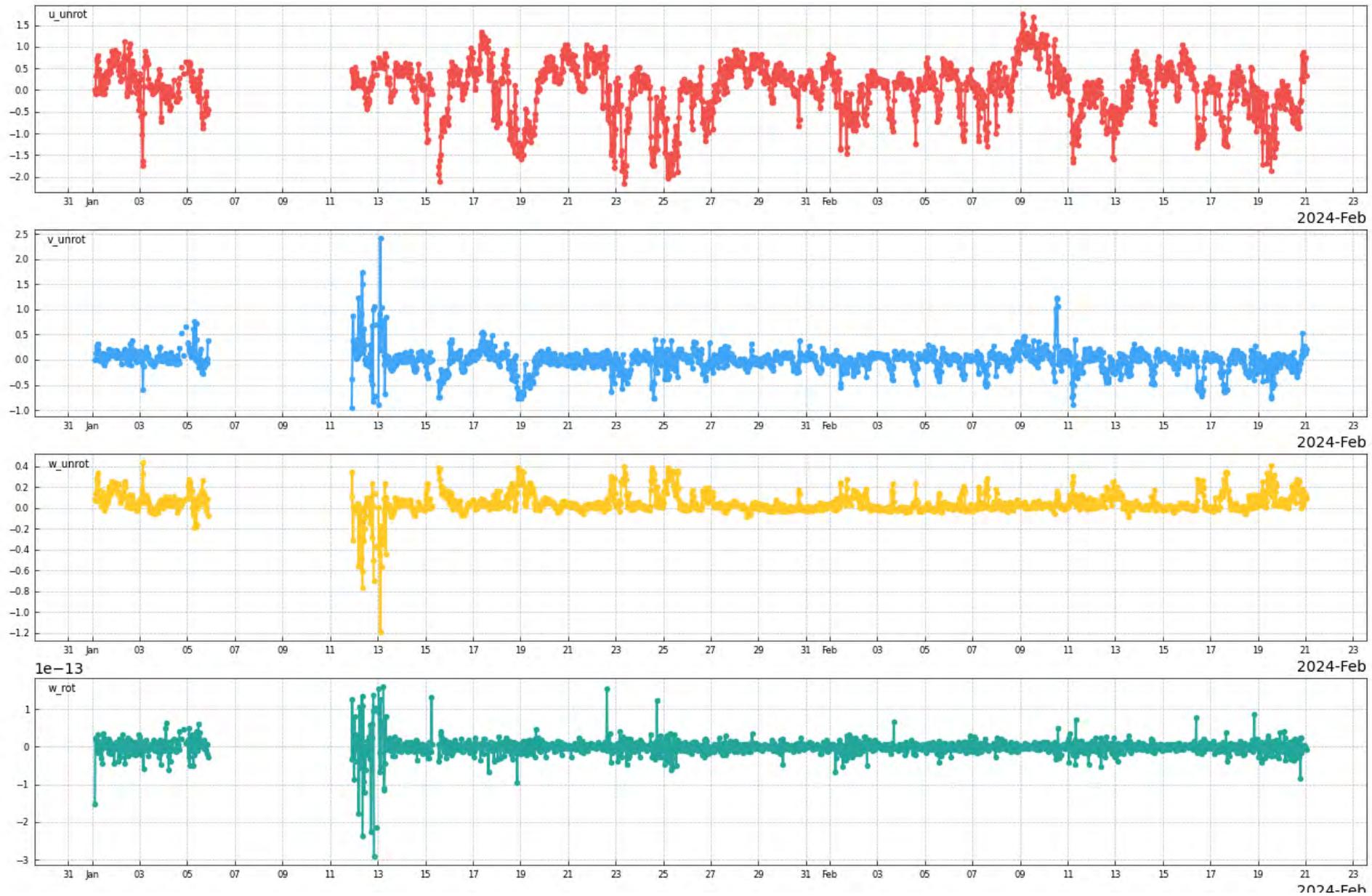
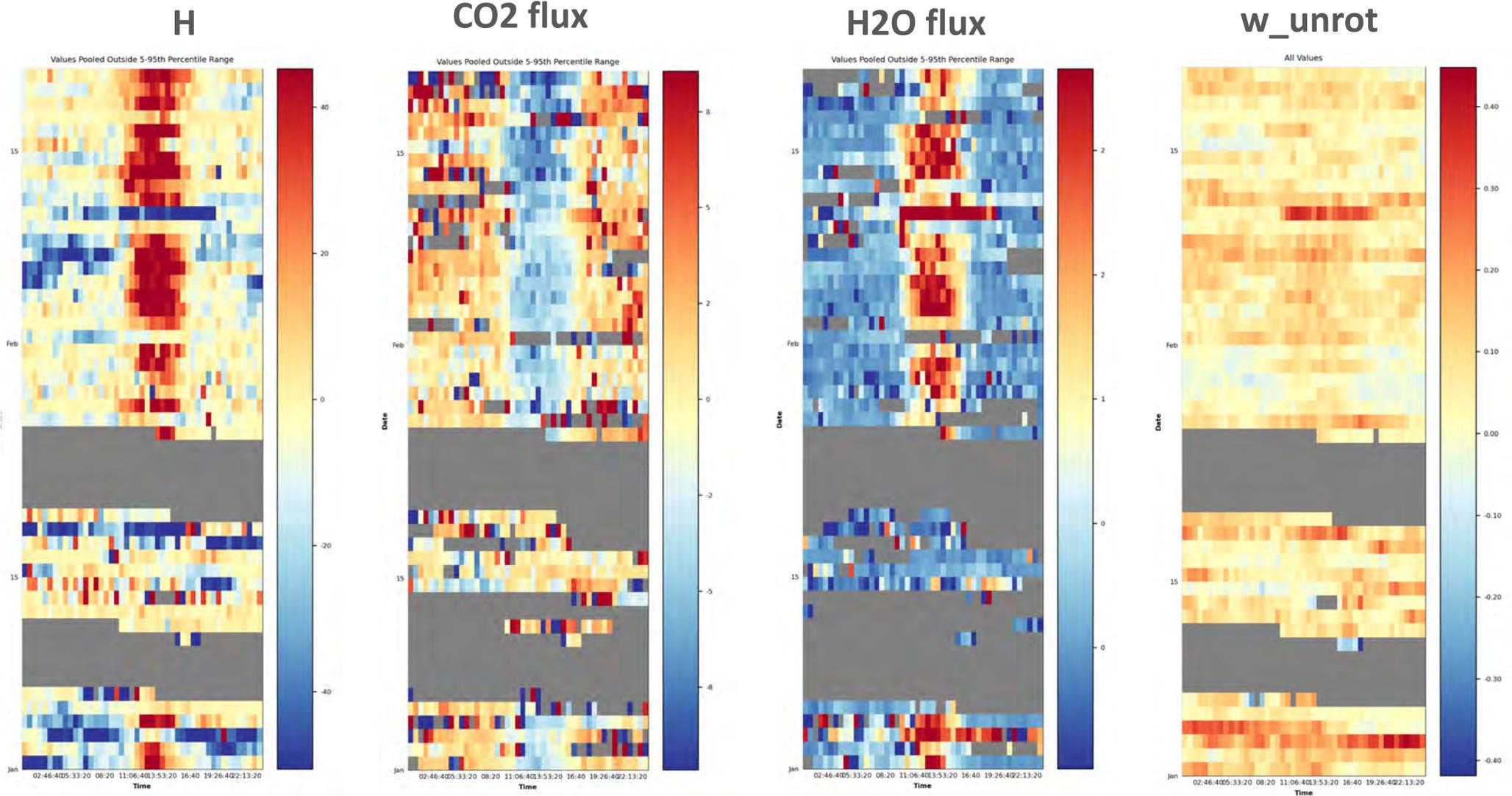




Photo: Lukas Hörtnagl



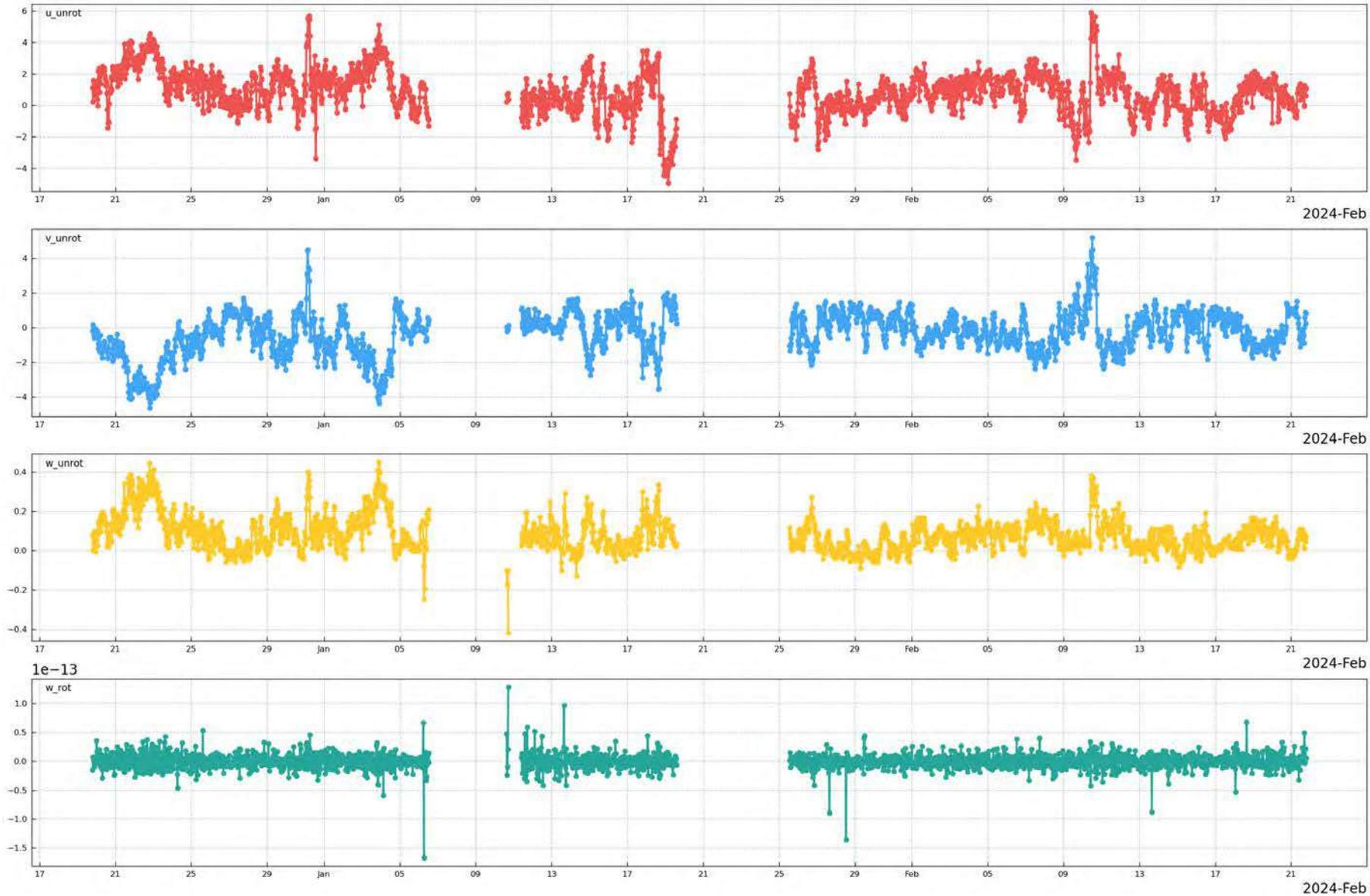
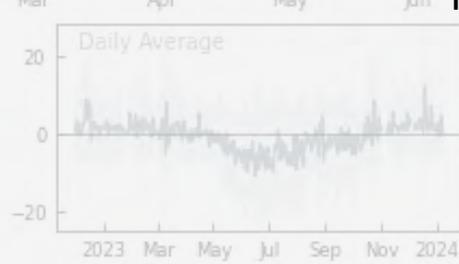
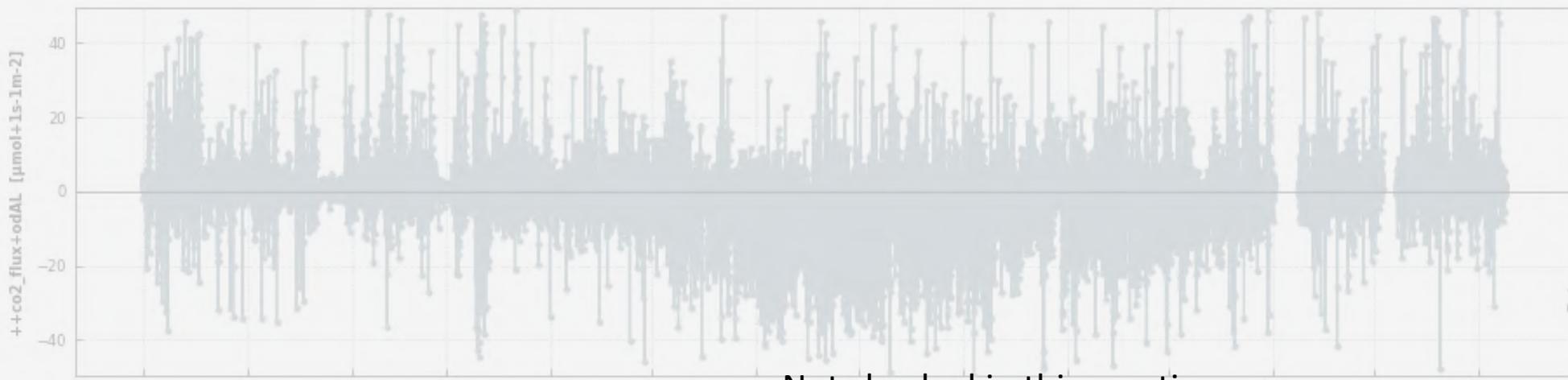
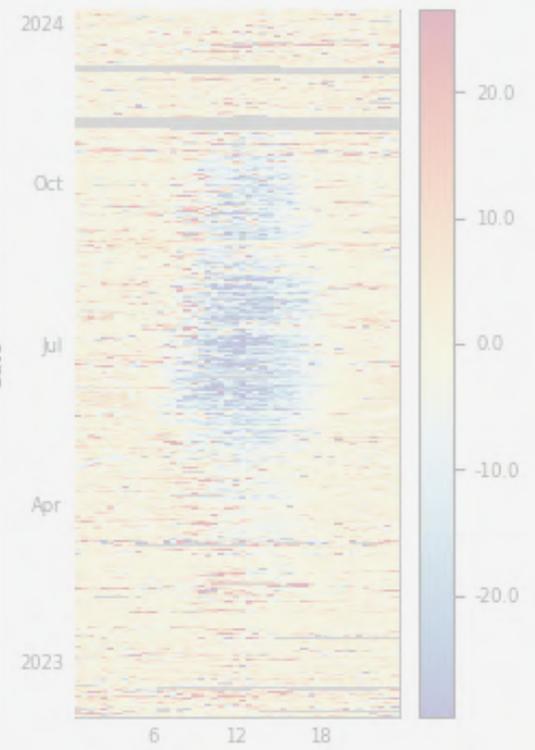
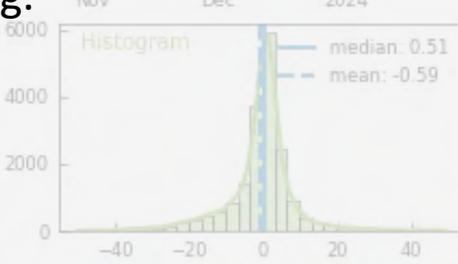
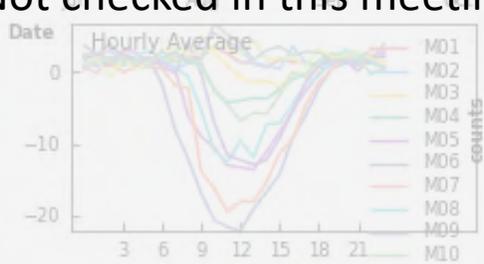


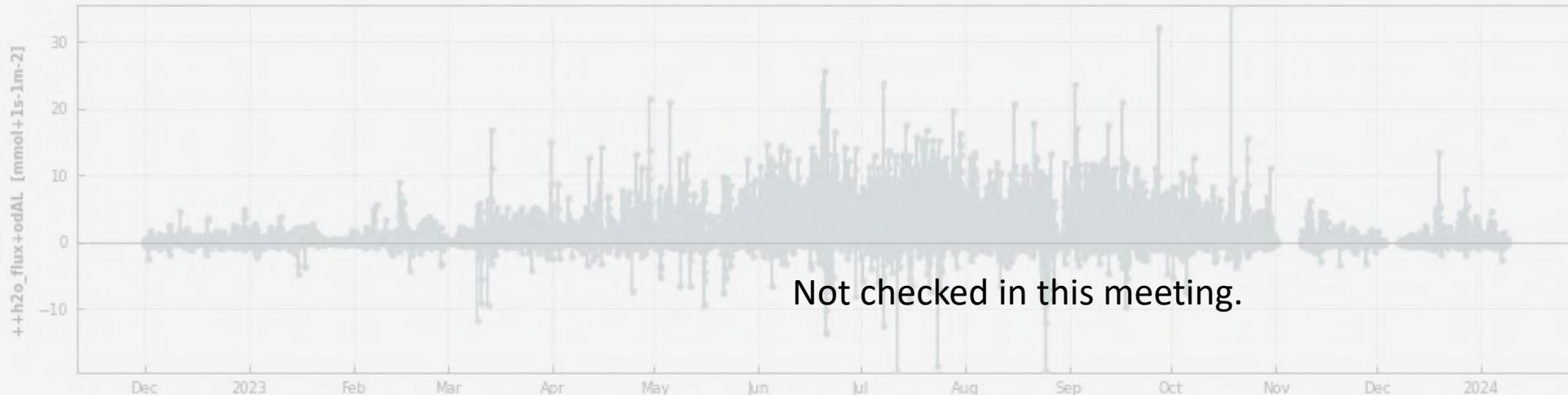


Photo: Markus Staudinger

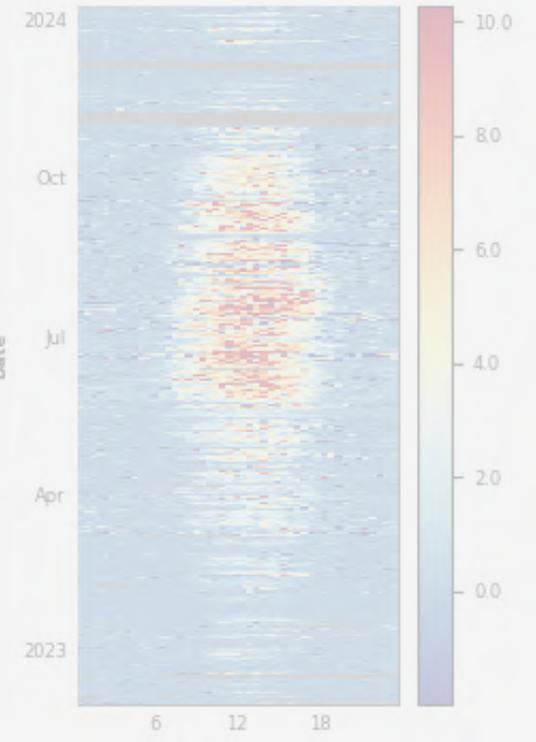
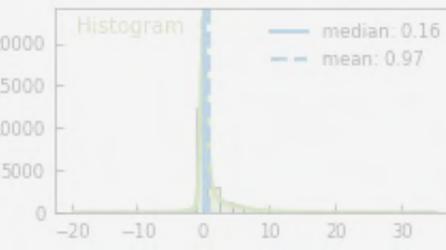
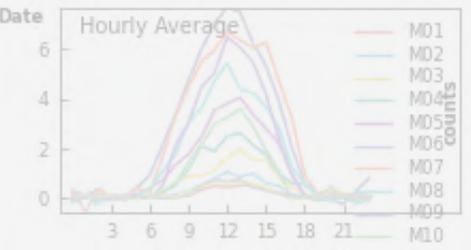
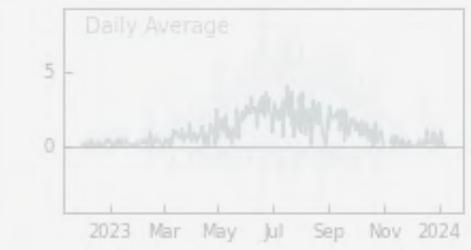


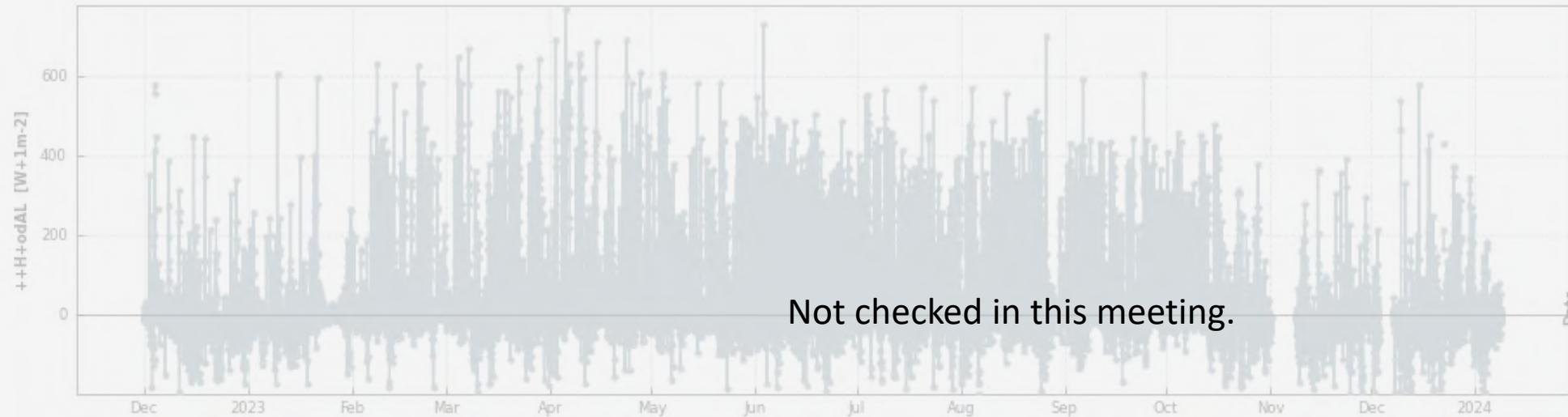
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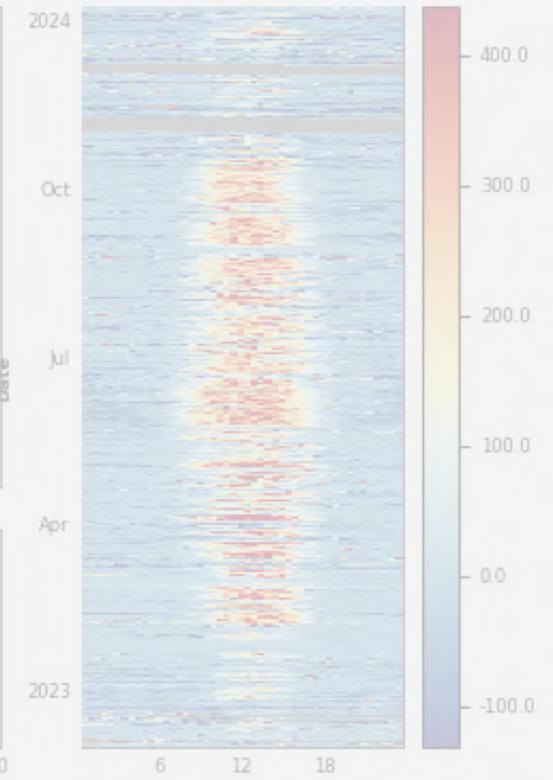
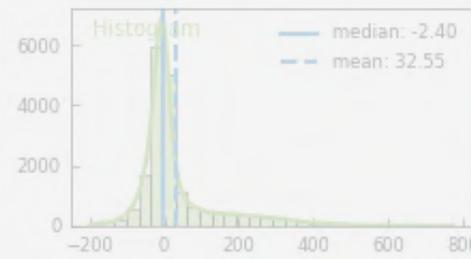
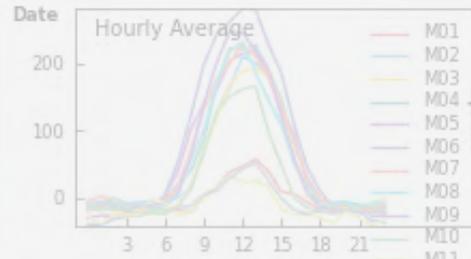
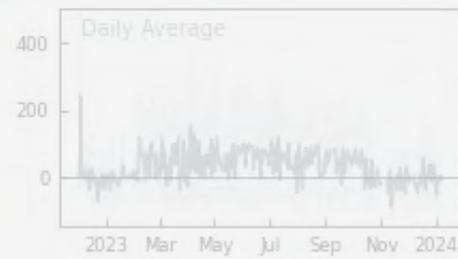


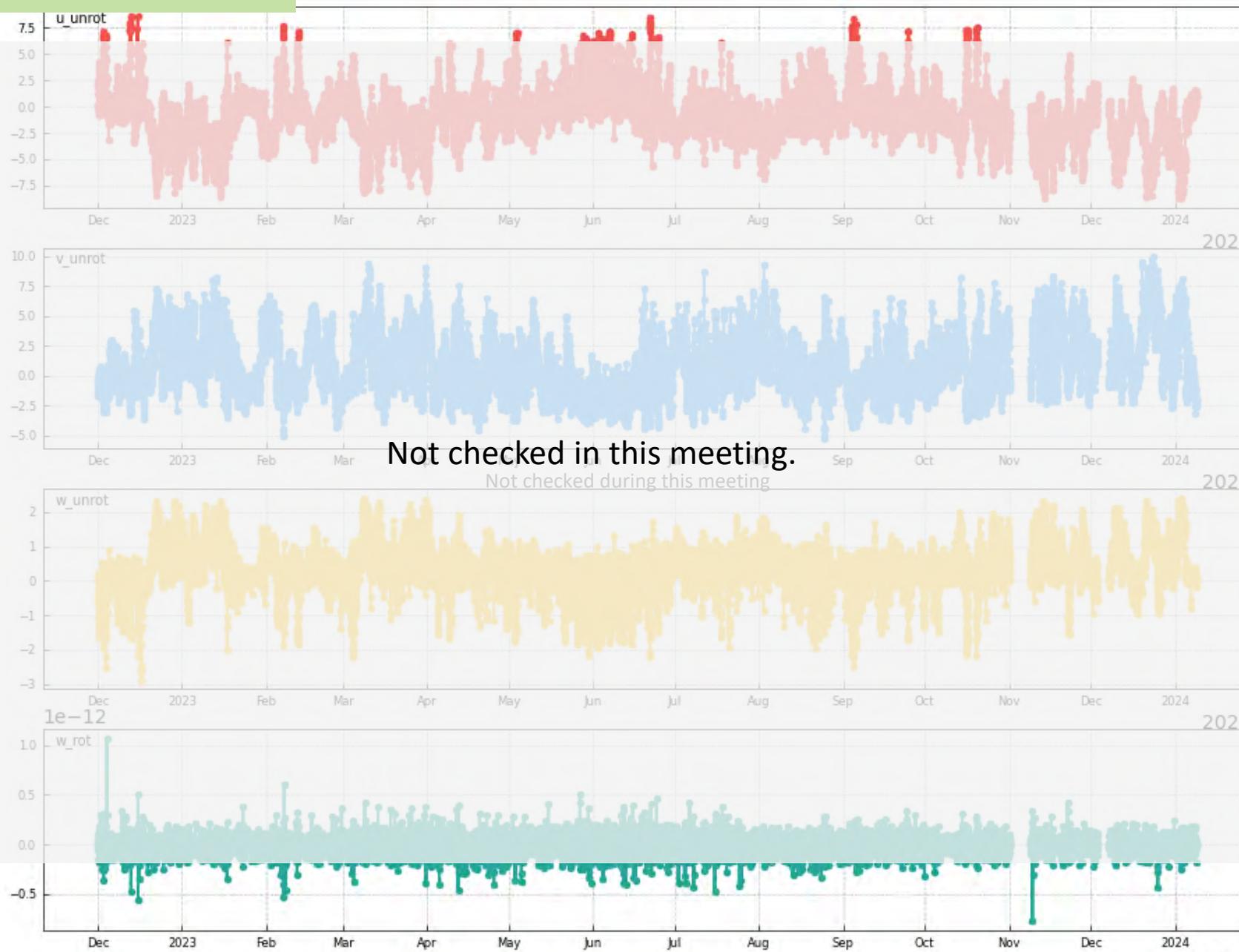
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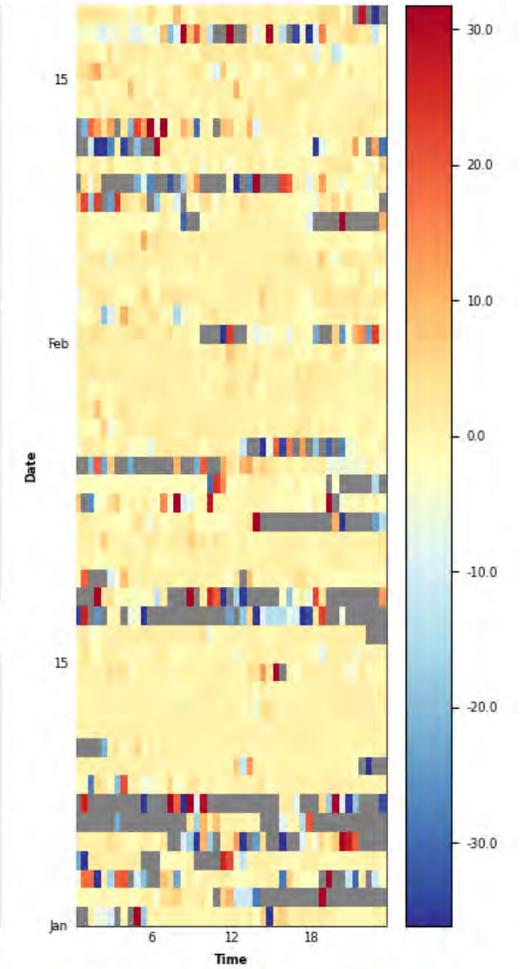
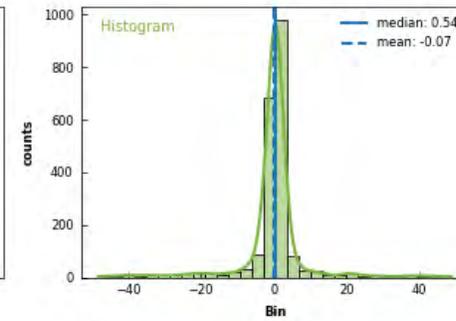
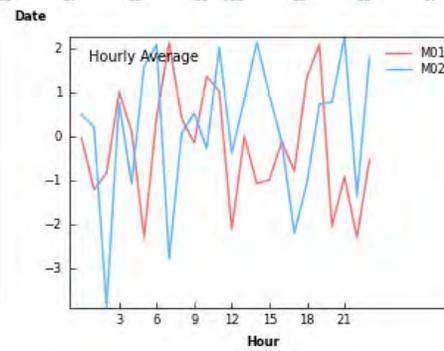
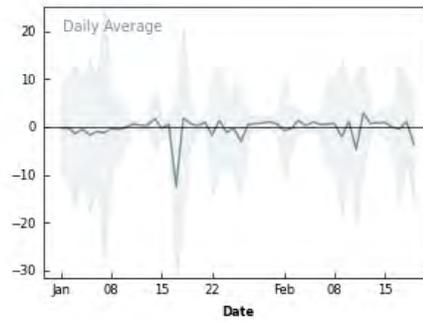
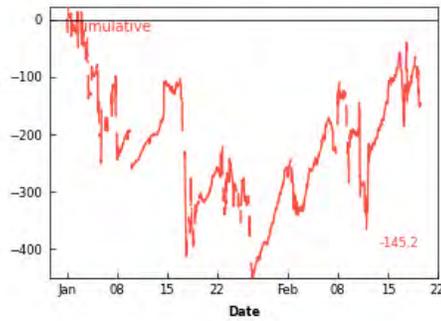
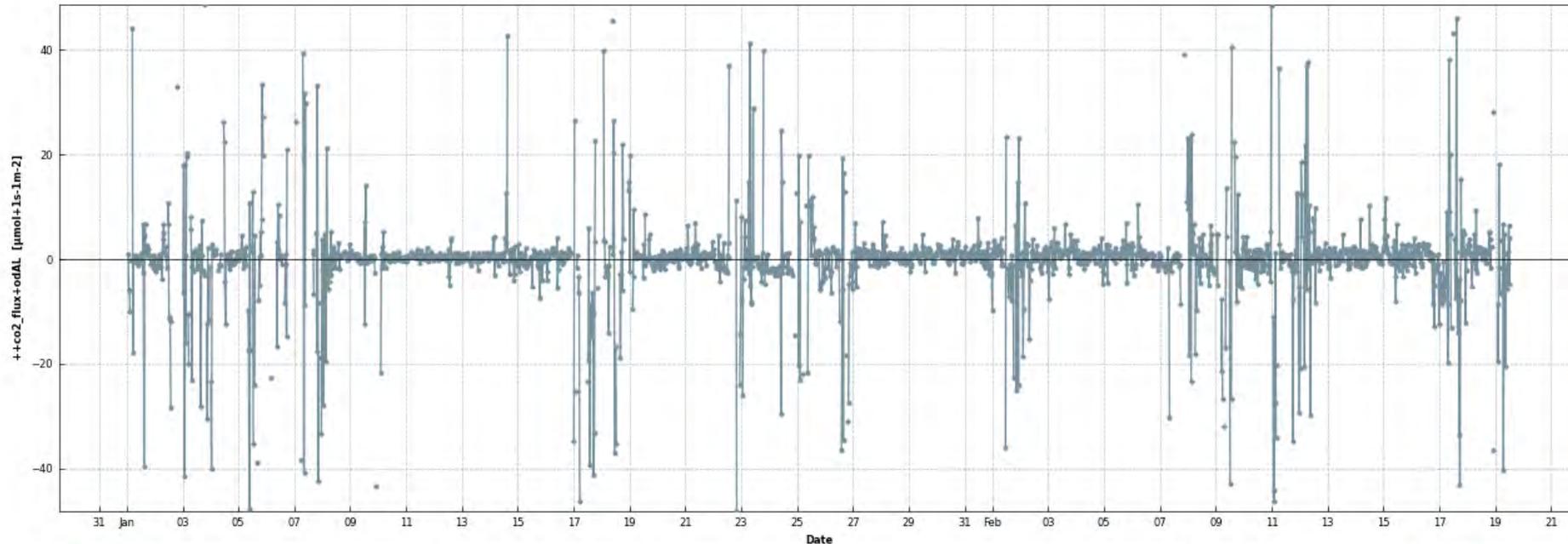


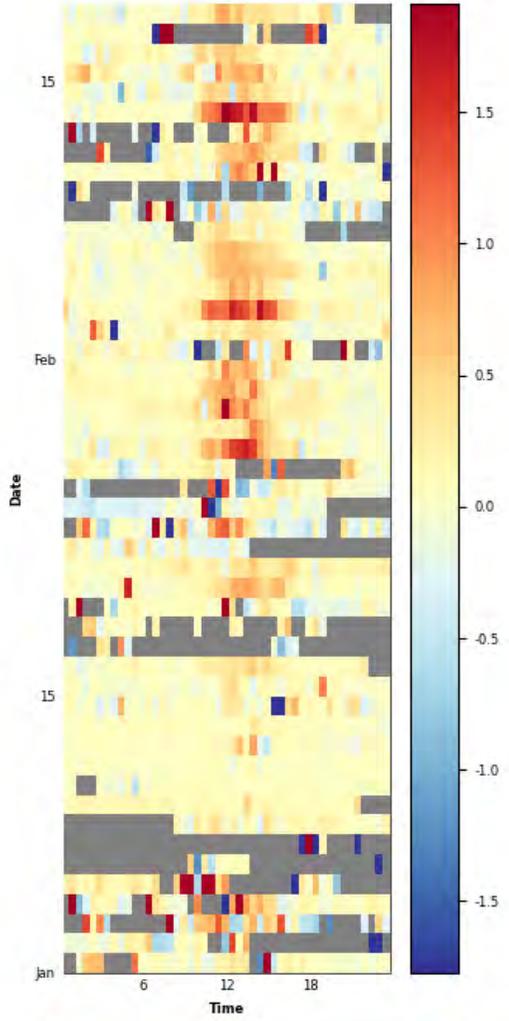
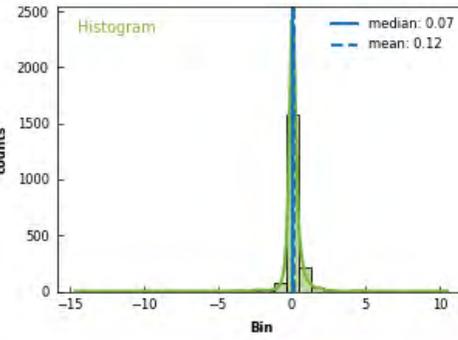
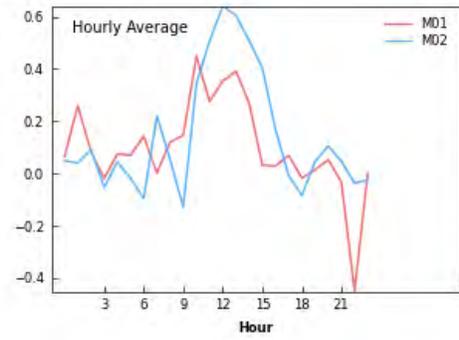
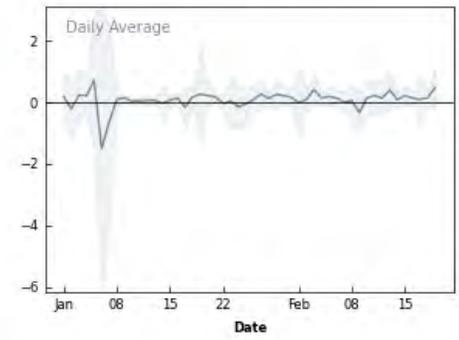
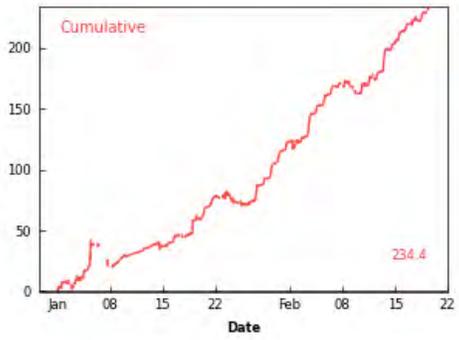
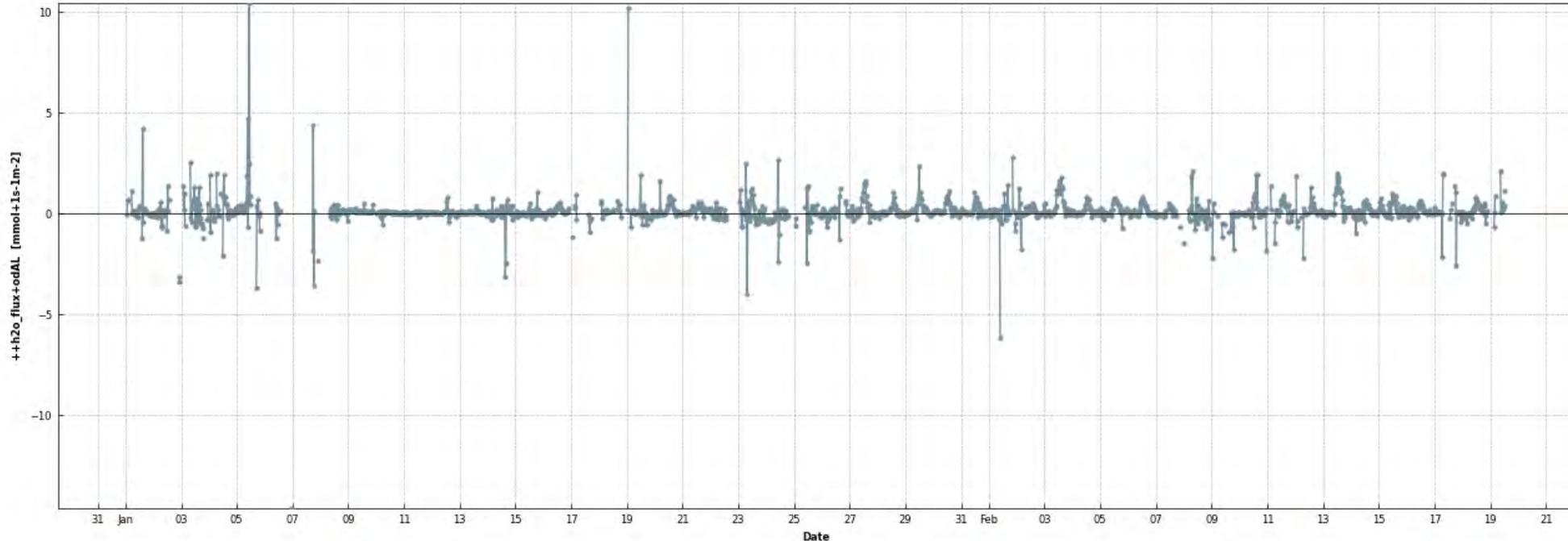
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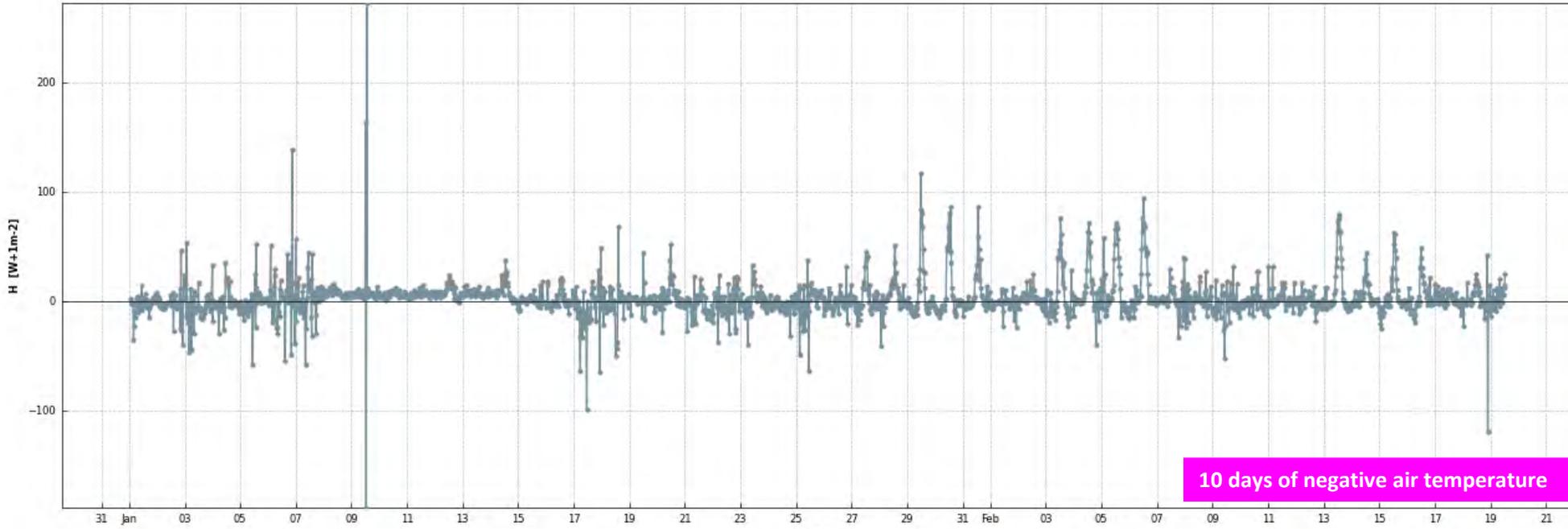
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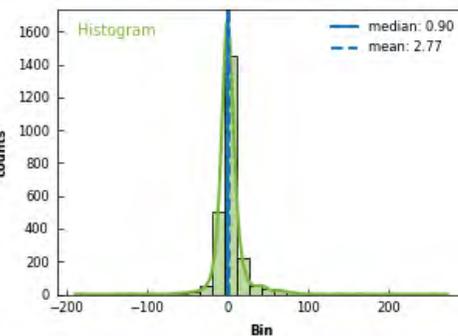
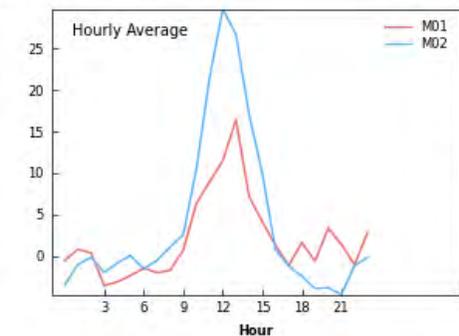
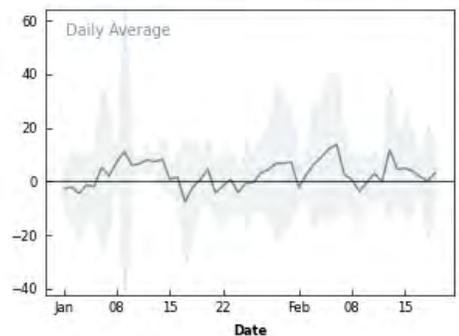
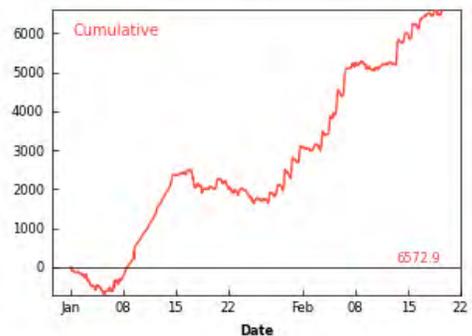
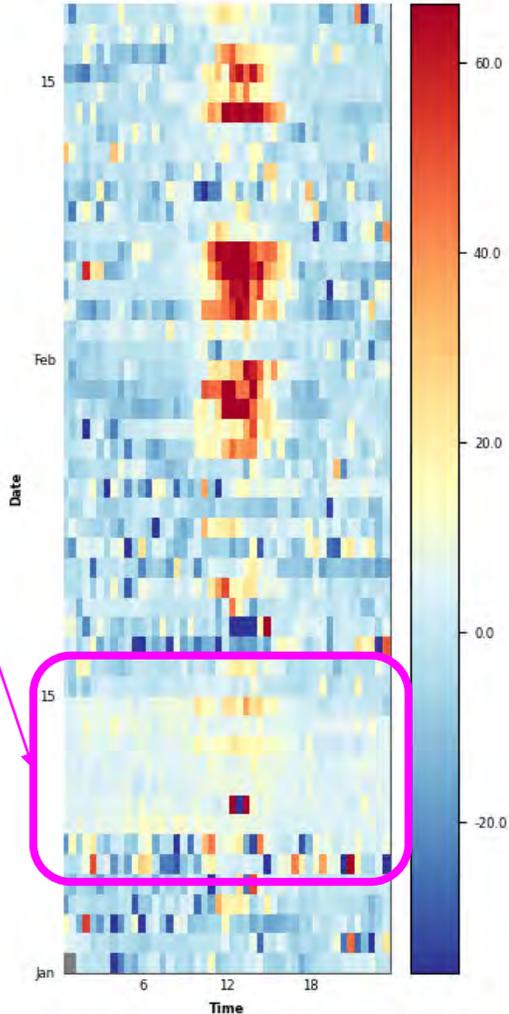
Photo: ETH GL Group



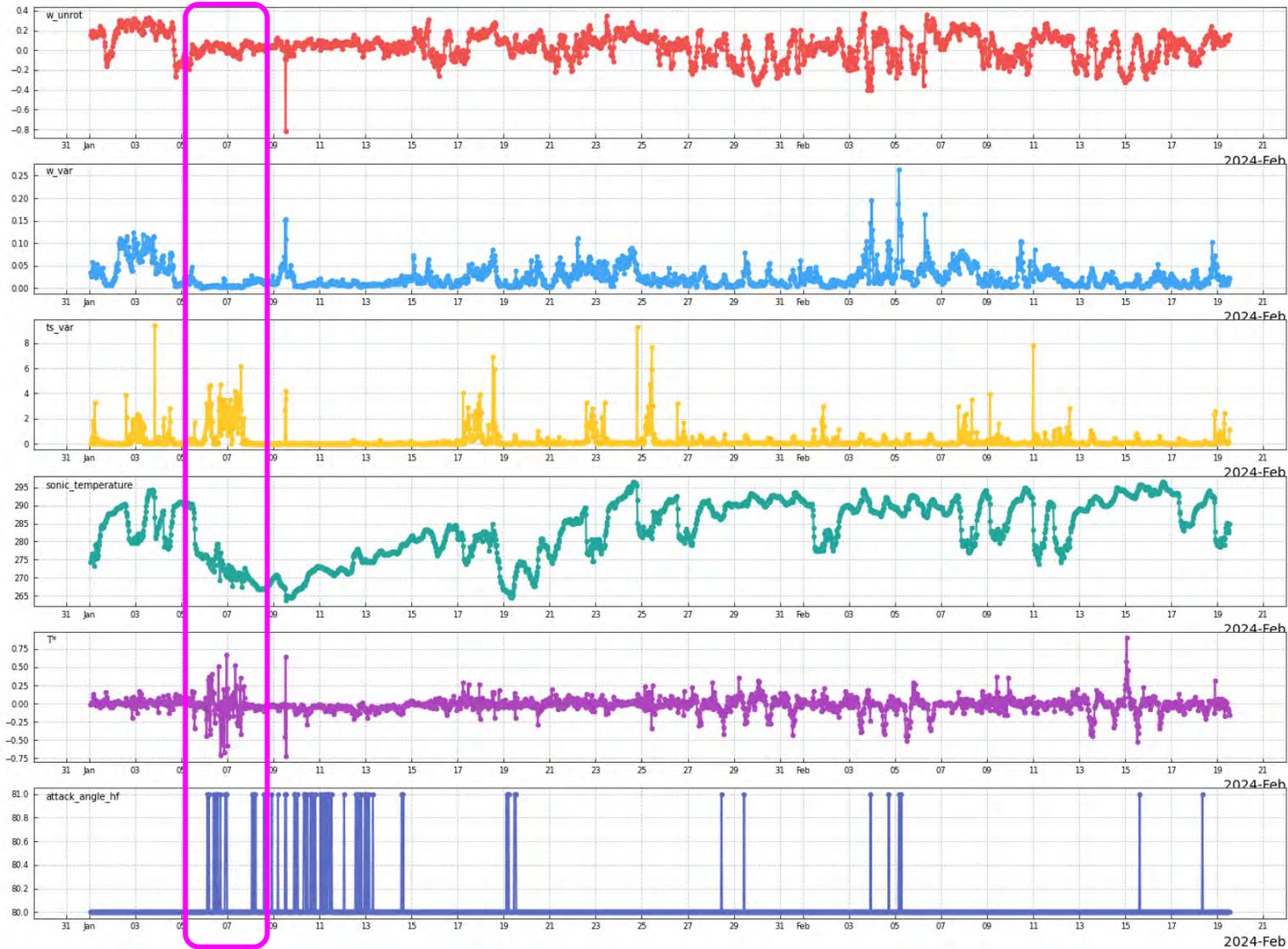




10 days of negative air temperature







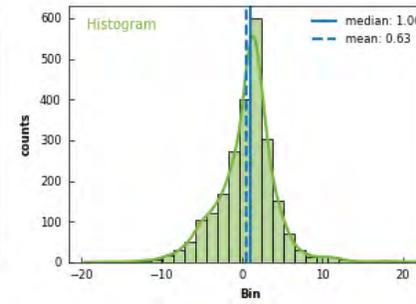
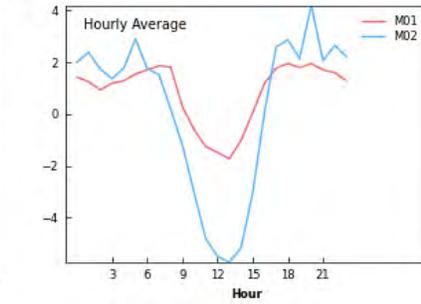
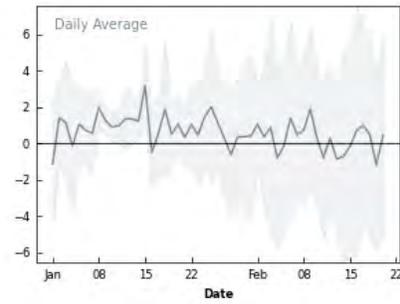
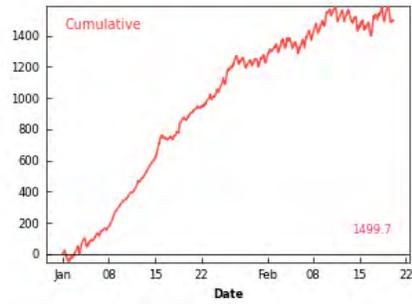
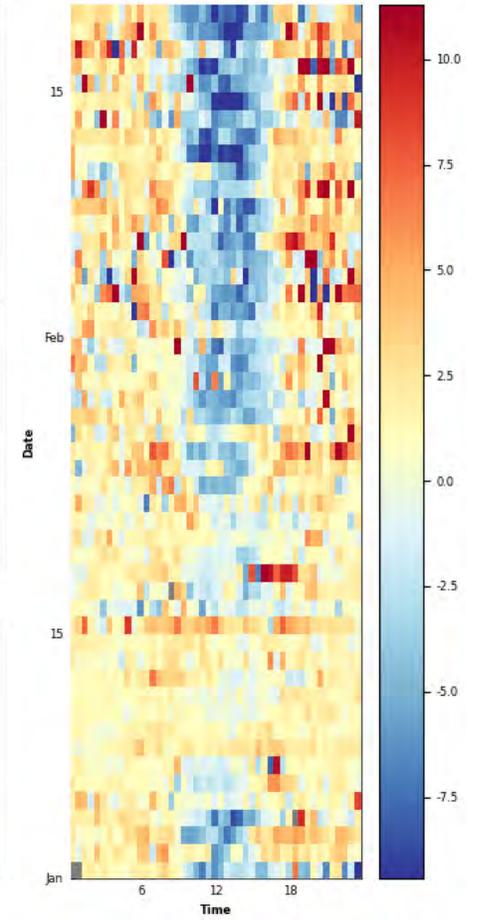
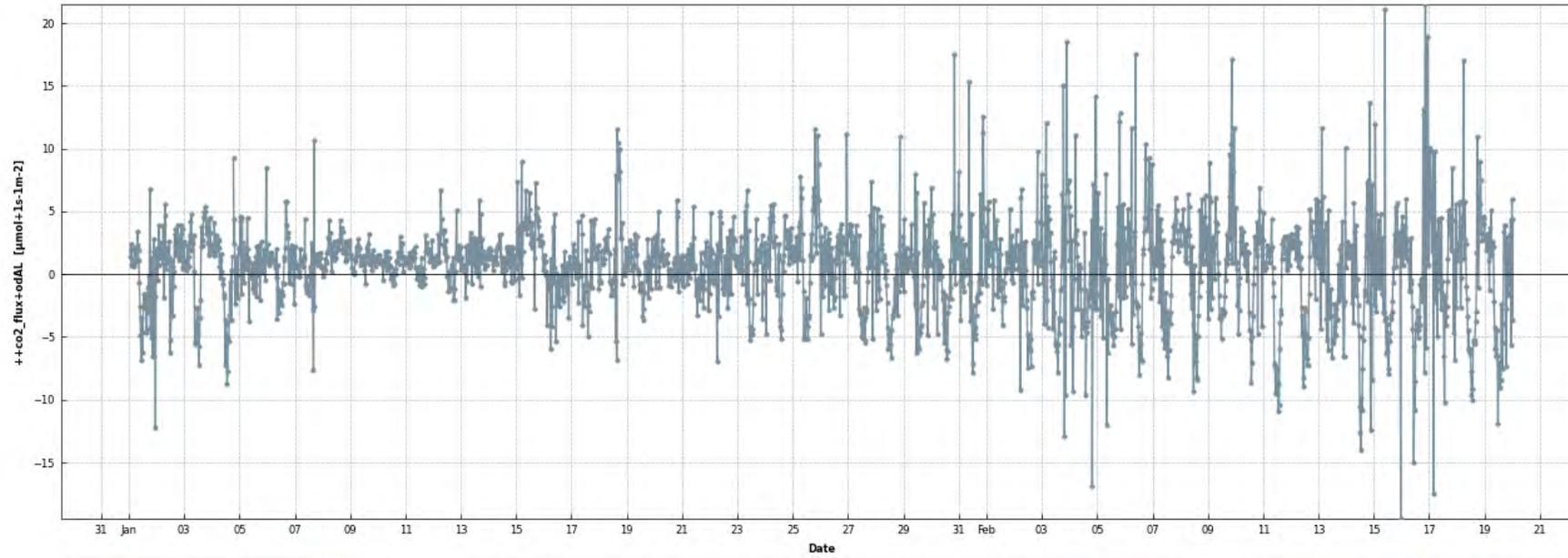
Offset or not offset?  
That's the dilemma



Probably not offset

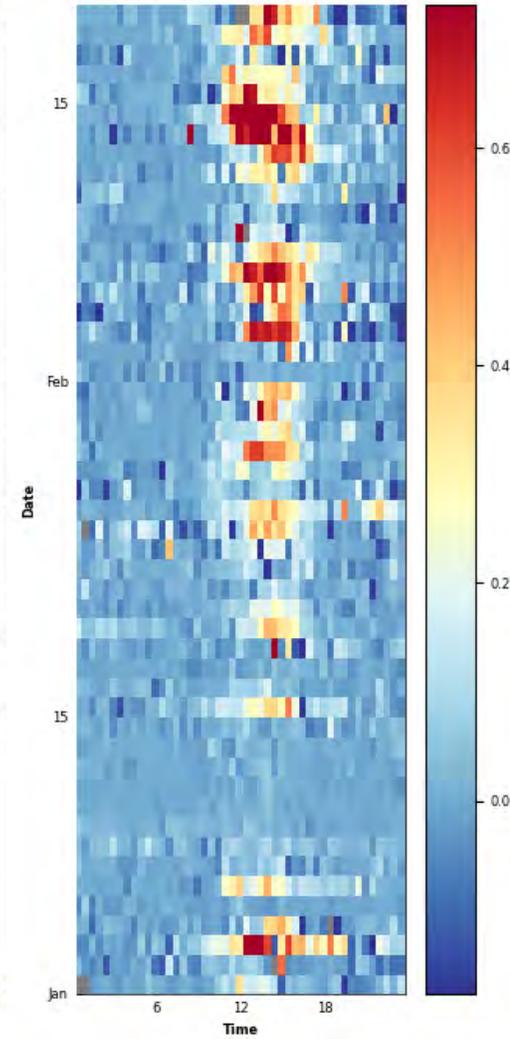
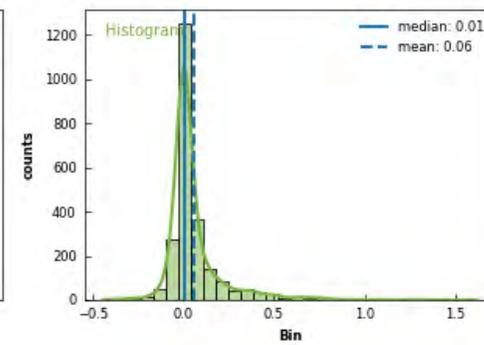
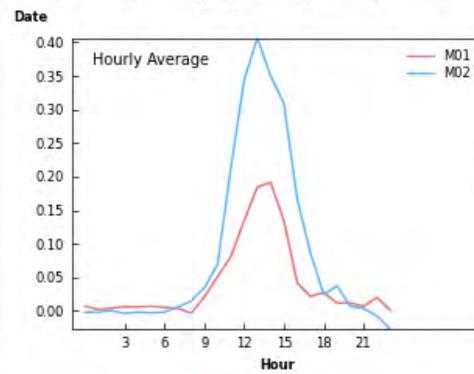
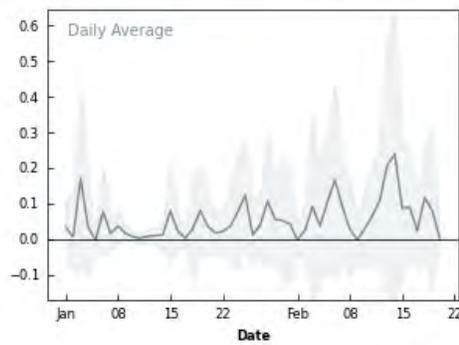
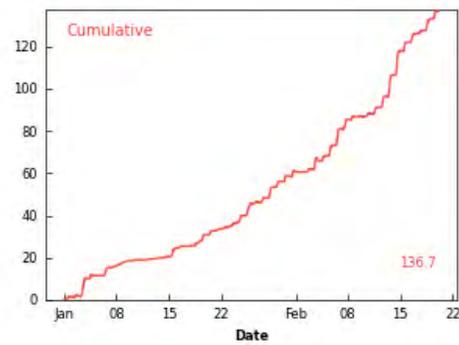
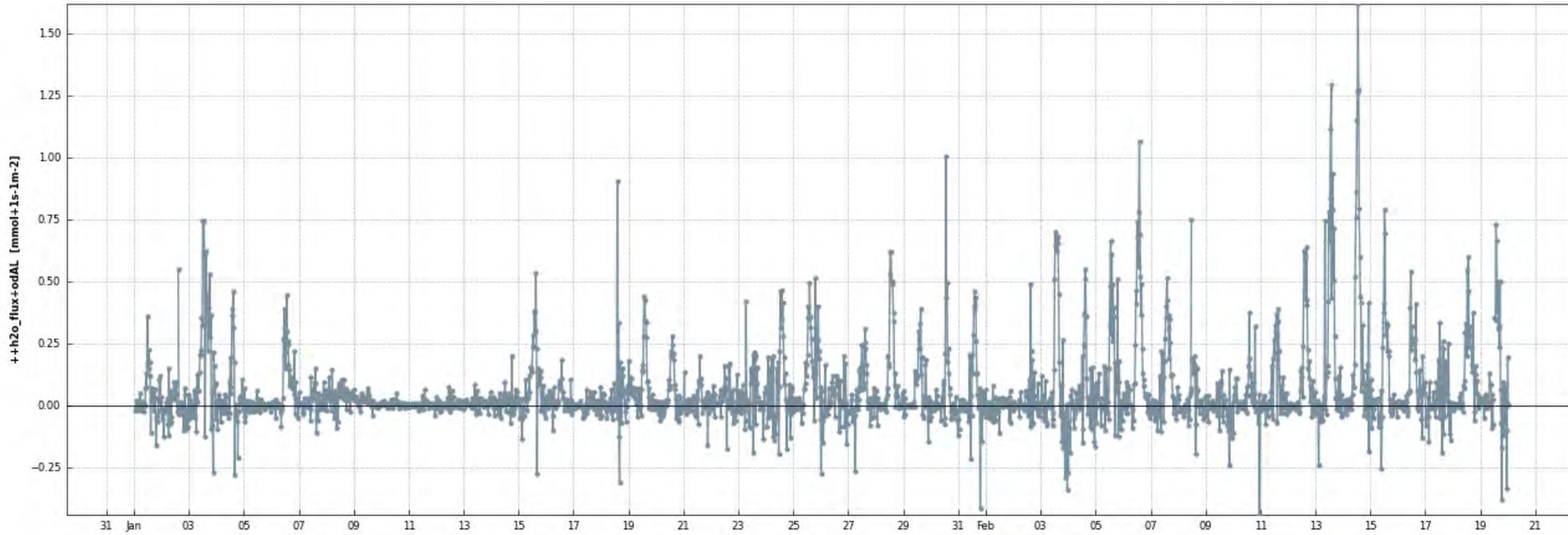


Photo: Regine Maier

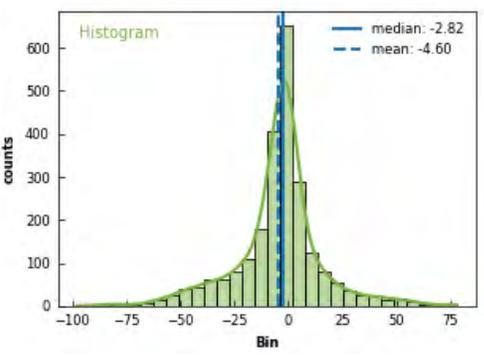
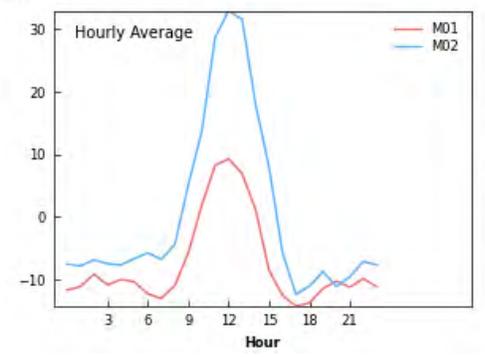
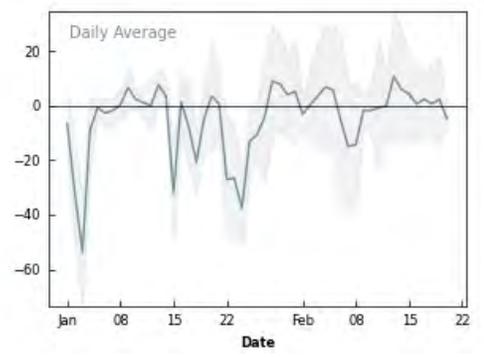
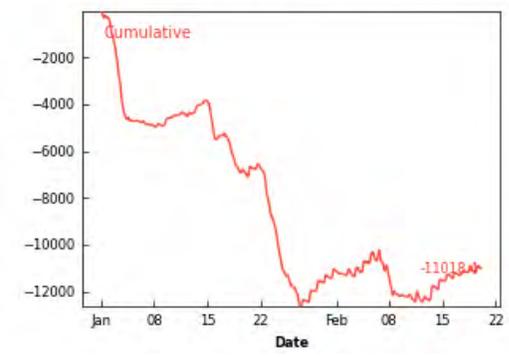
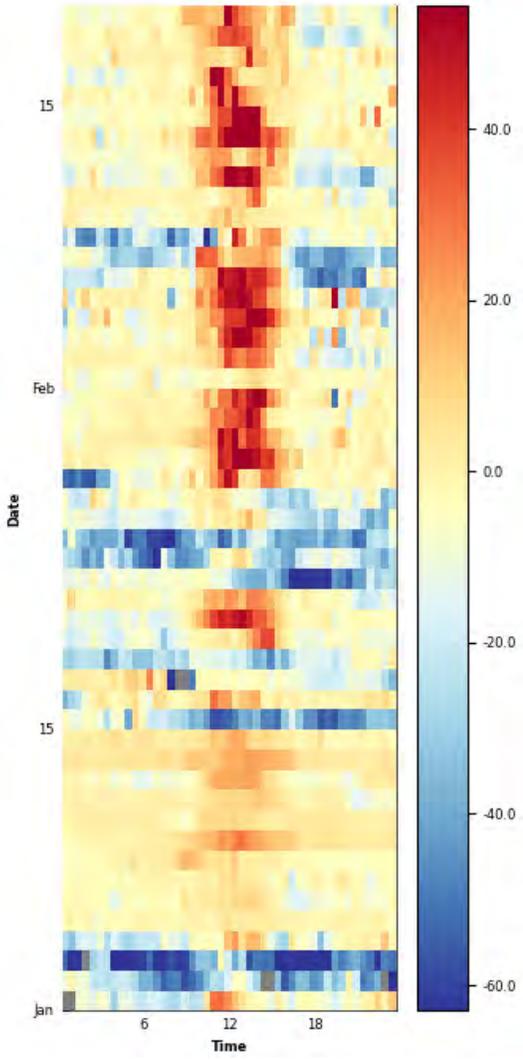
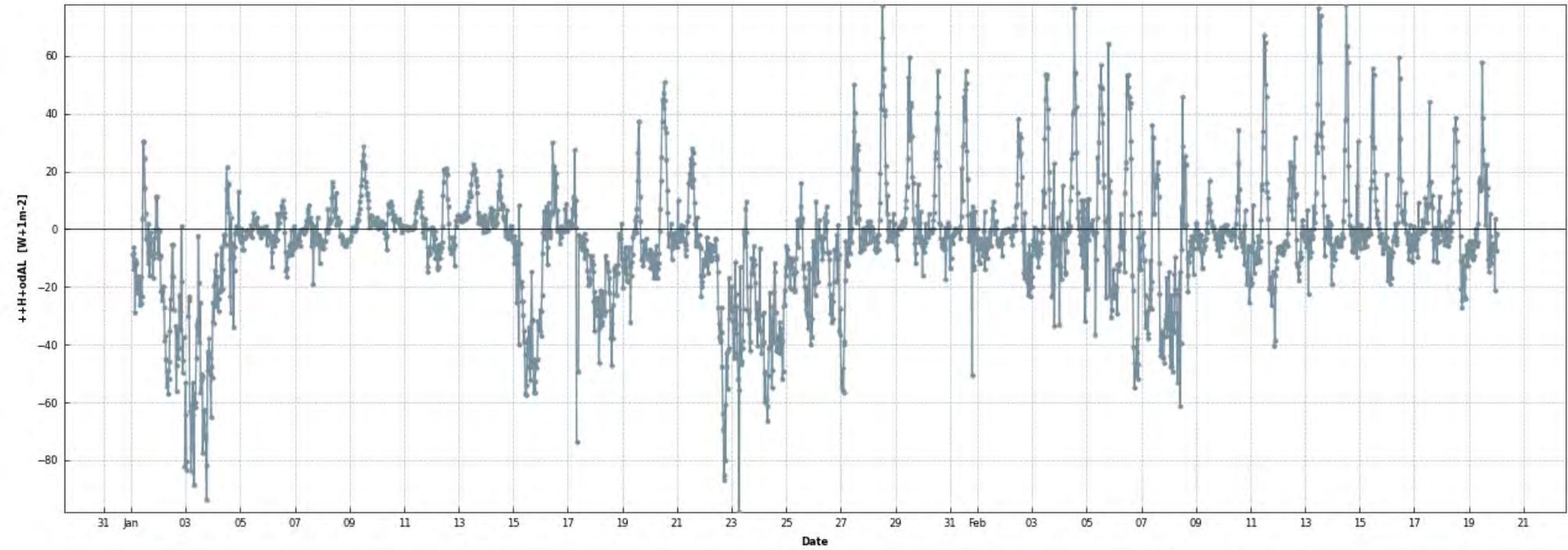


Absolute limits applied [-20, +20]





Absolute limits applied [-0.5, +2]



Absolute limits applied [-100, +100]

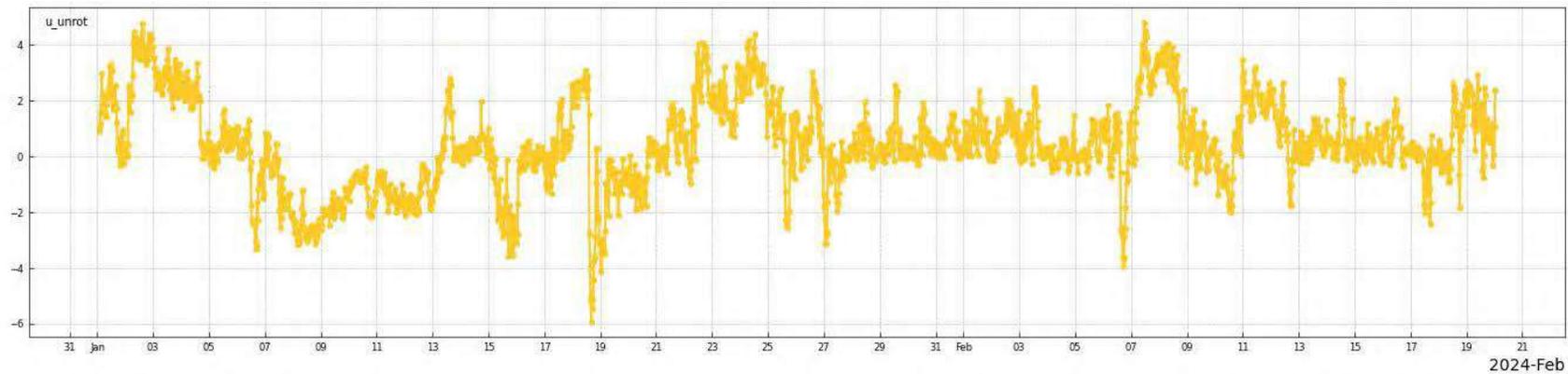
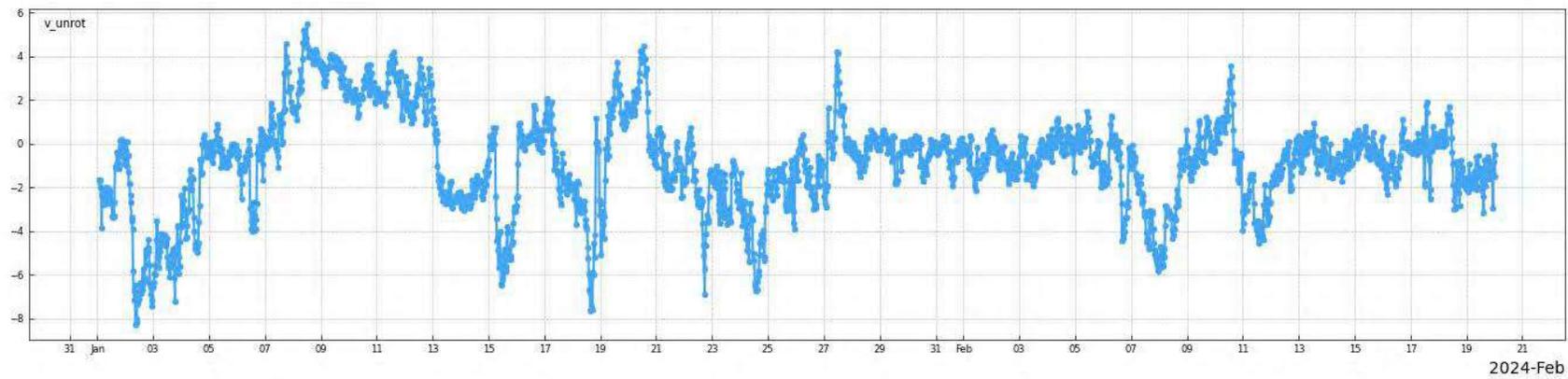
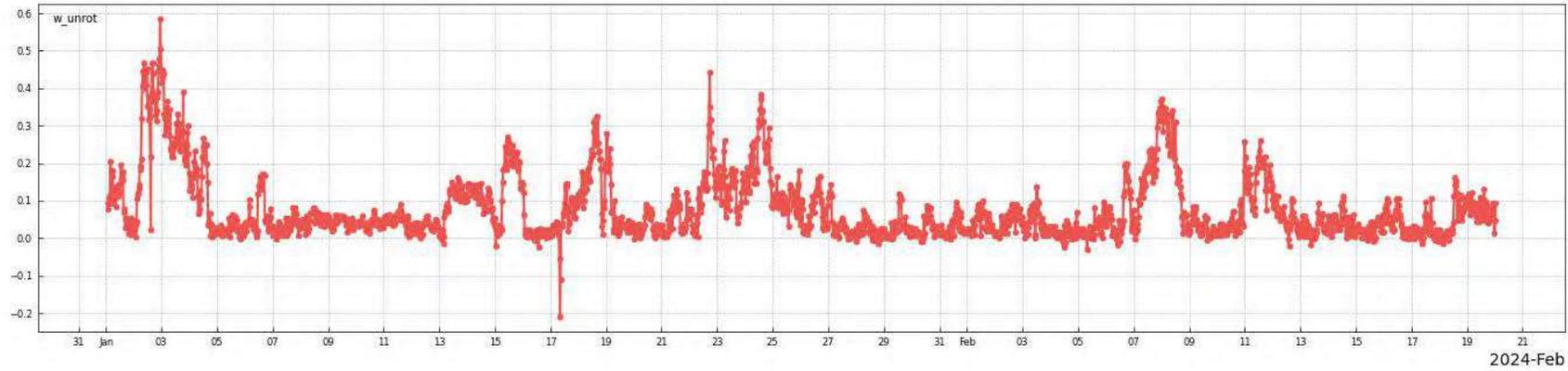
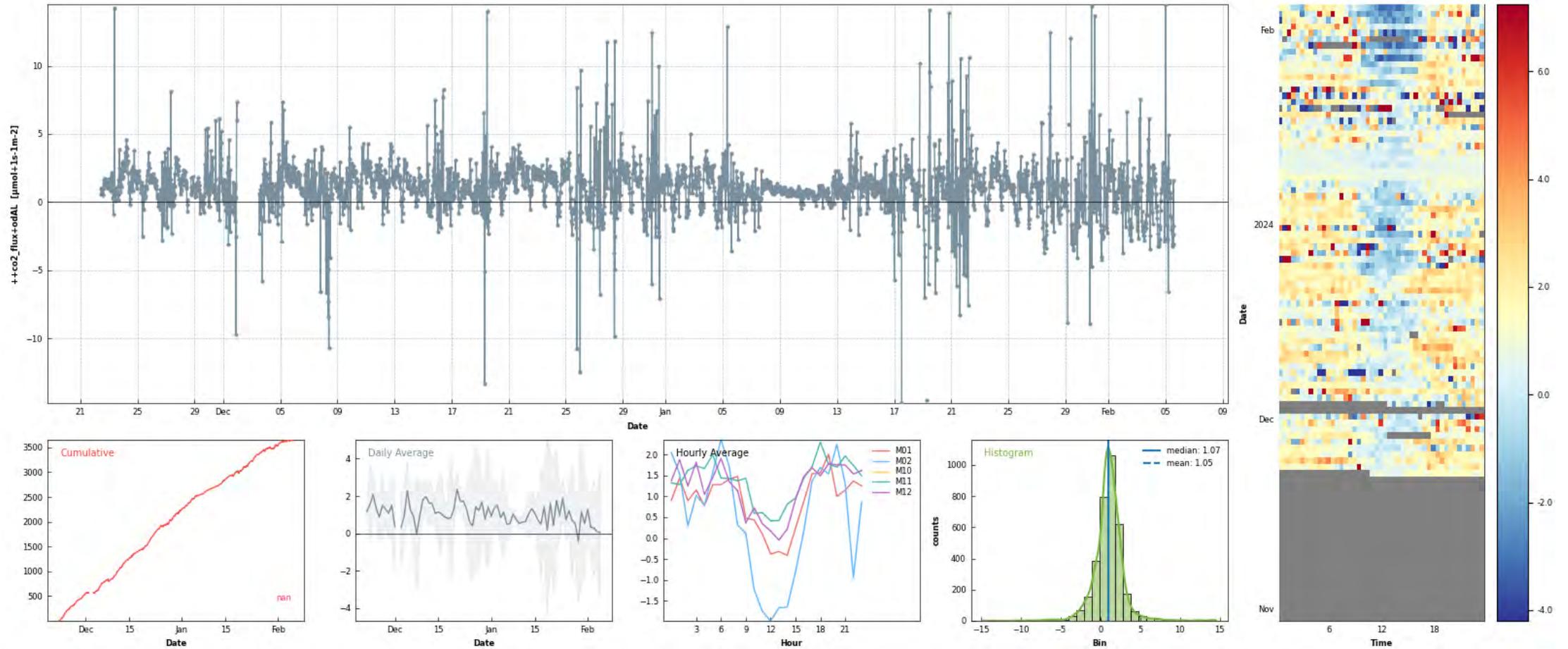
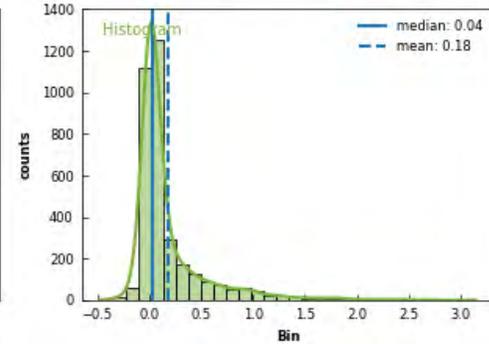
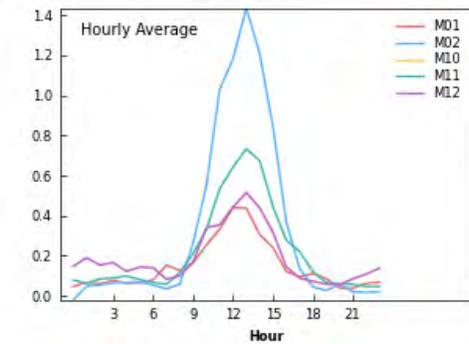
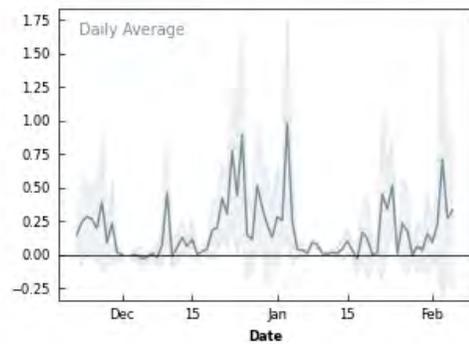
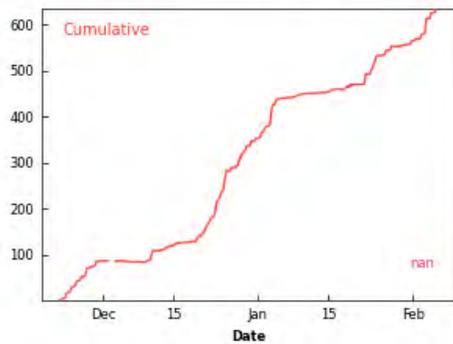
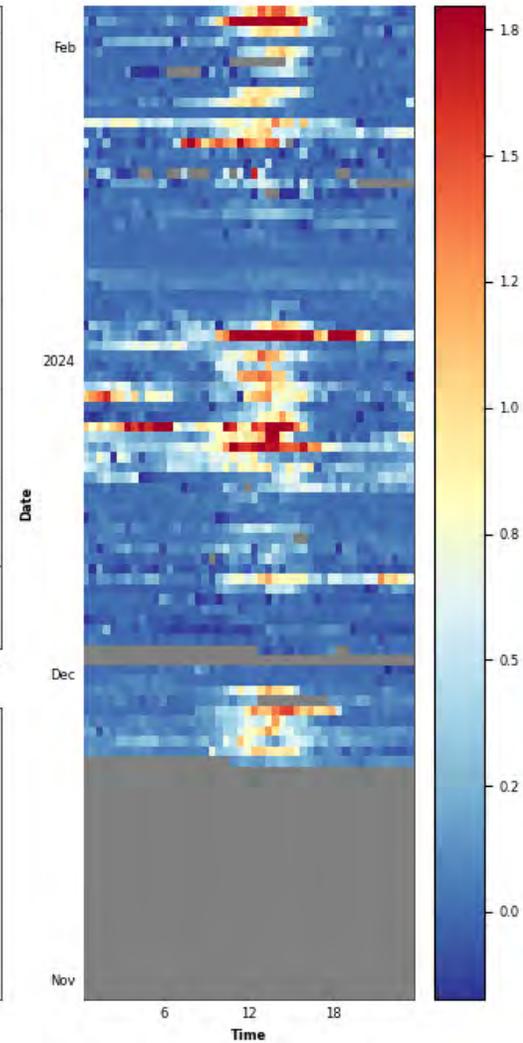
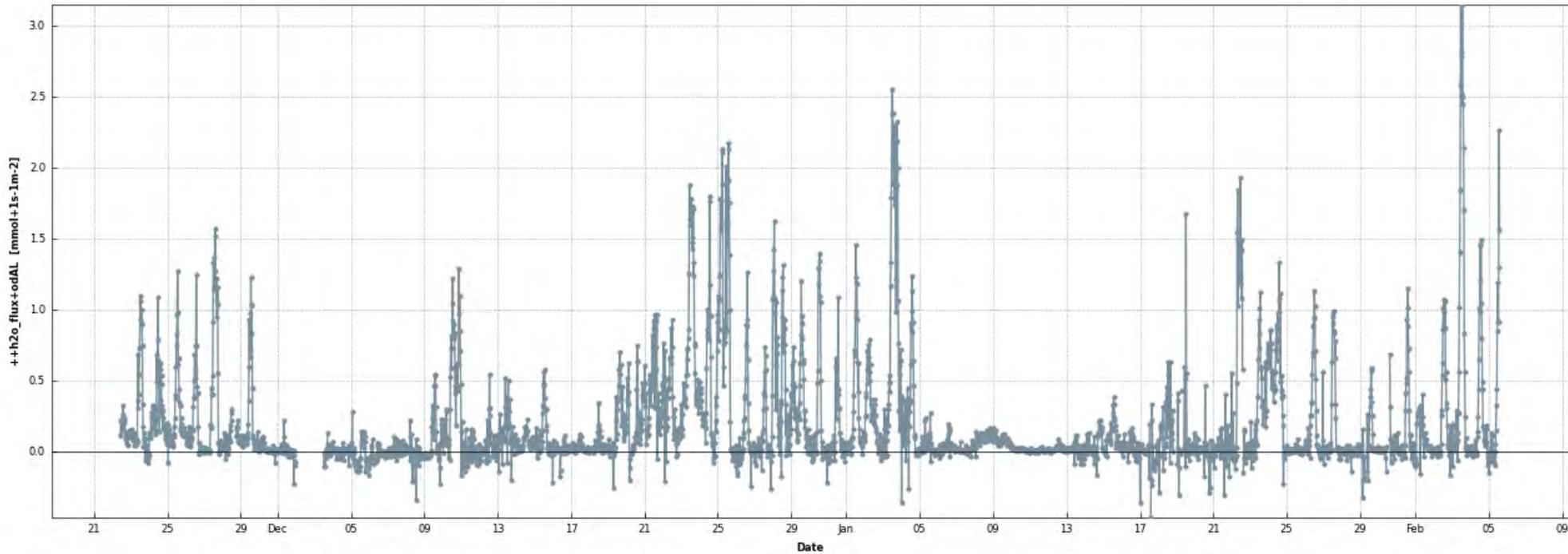




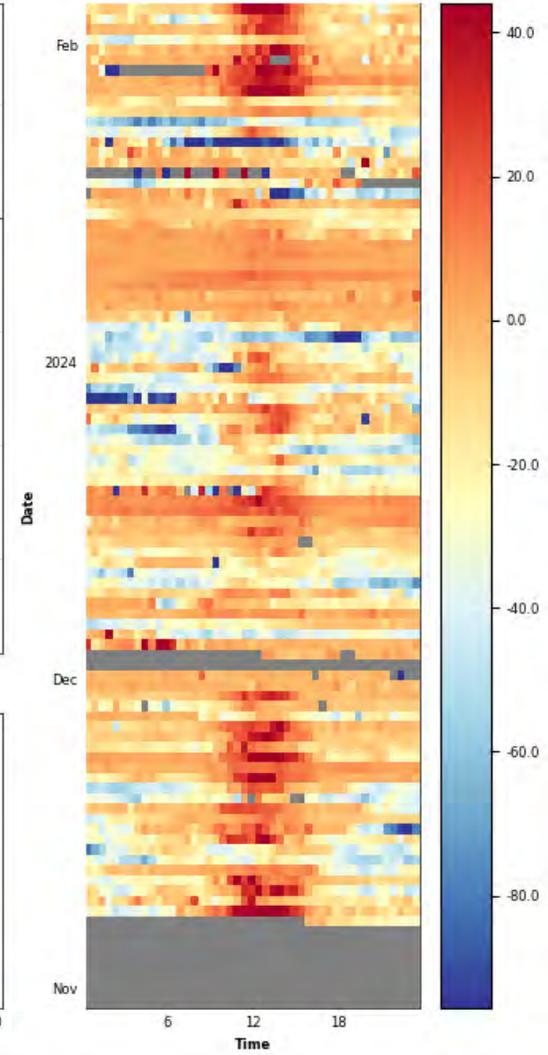
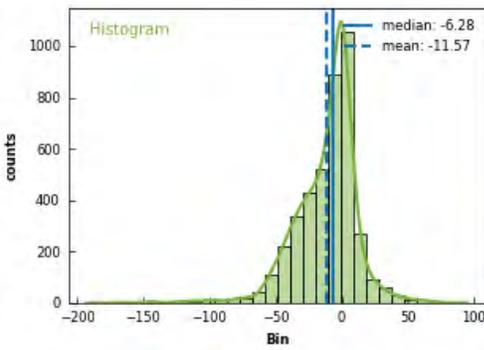
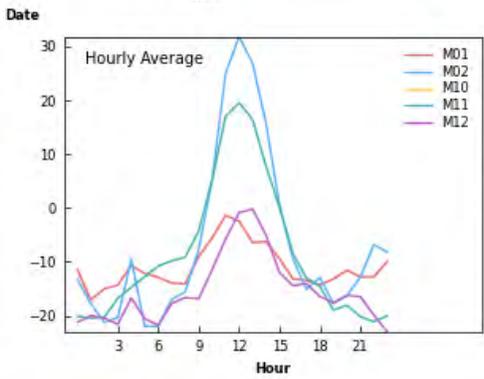
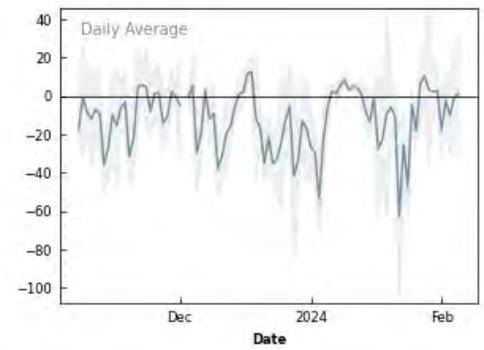
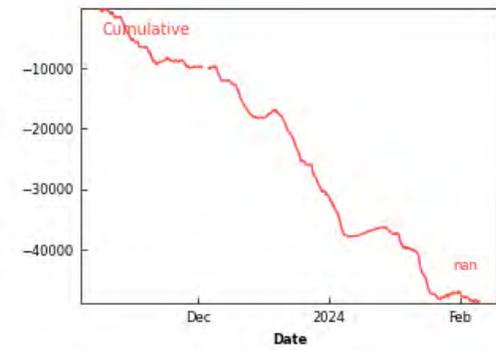
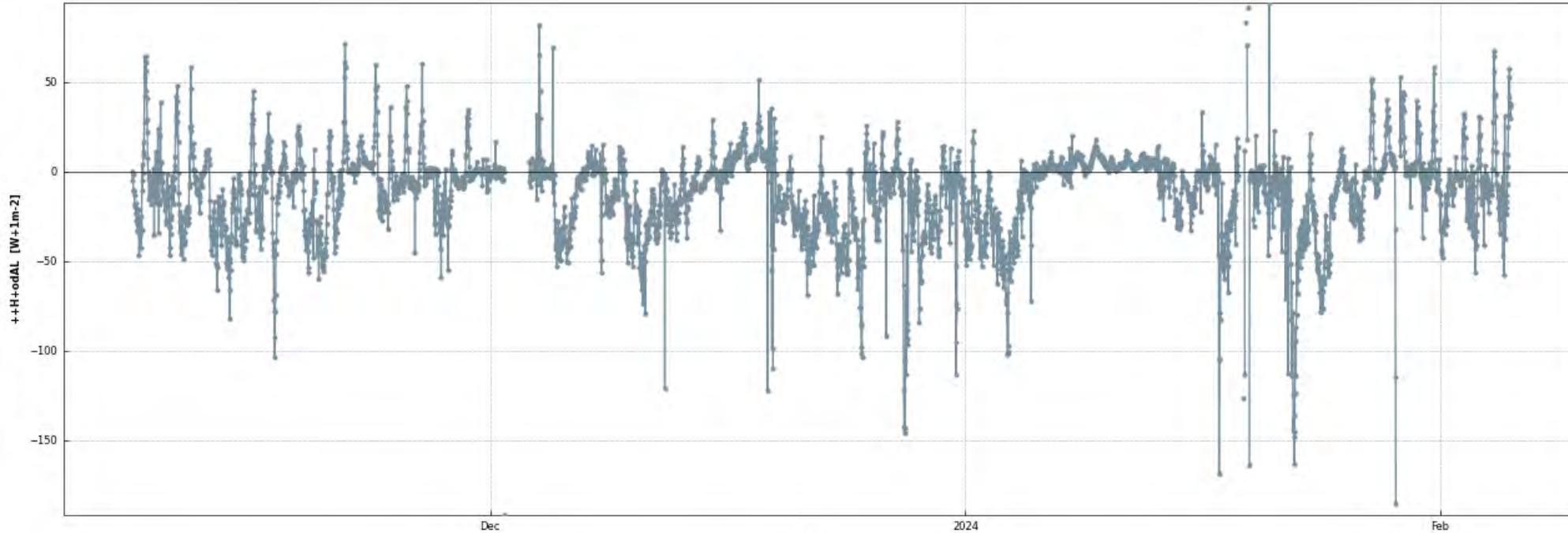
Photo: Fabio Turco



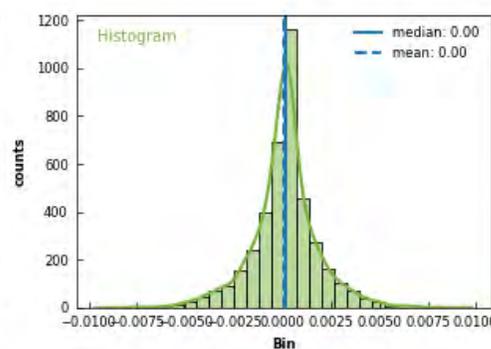
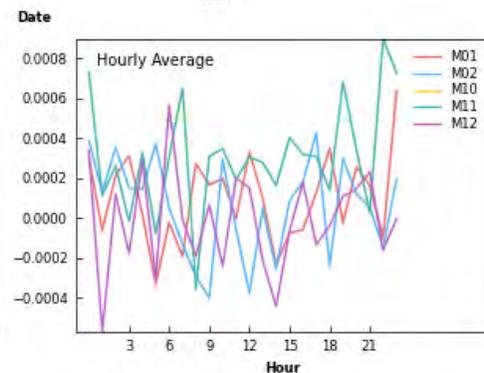
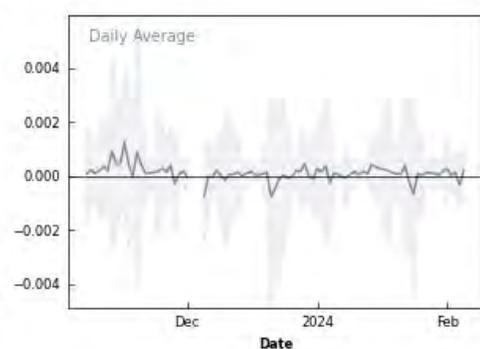
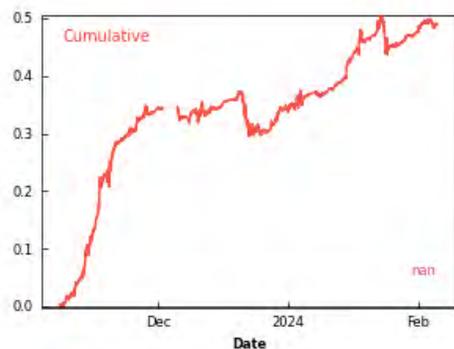
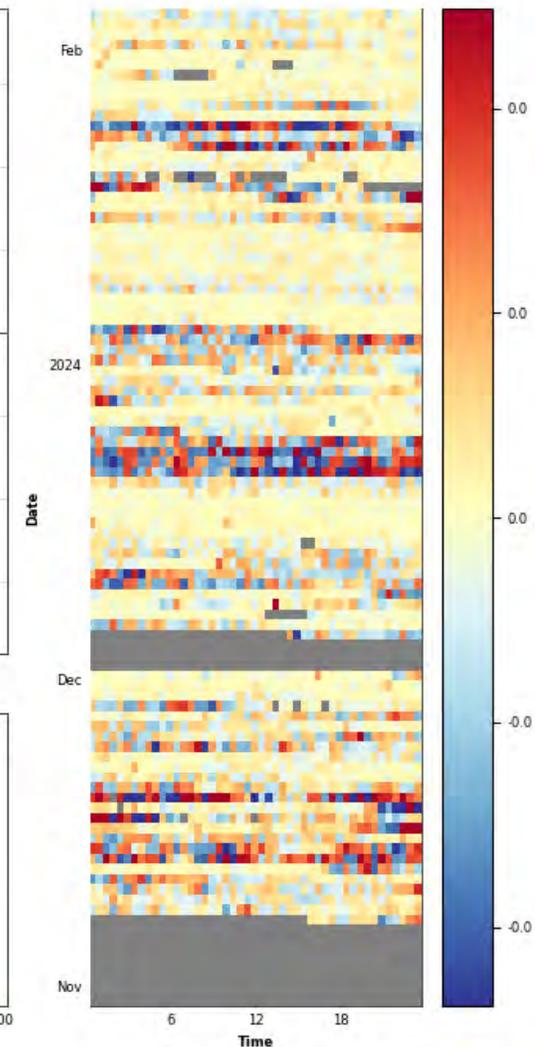
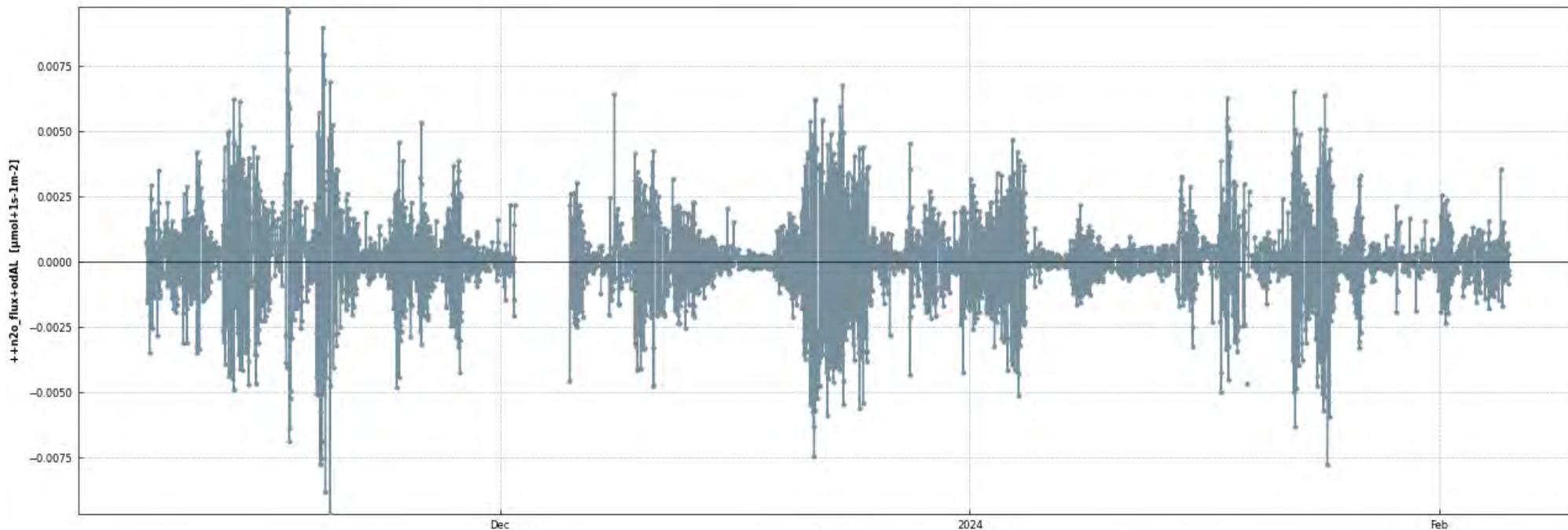
Absolute limits applied [-20, +20]



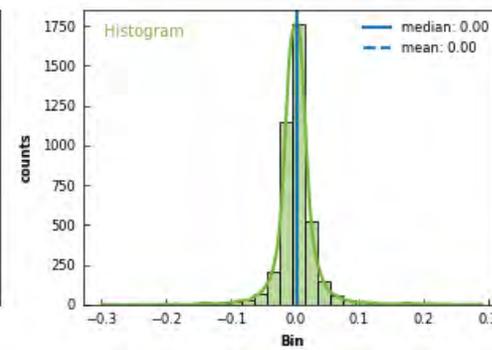
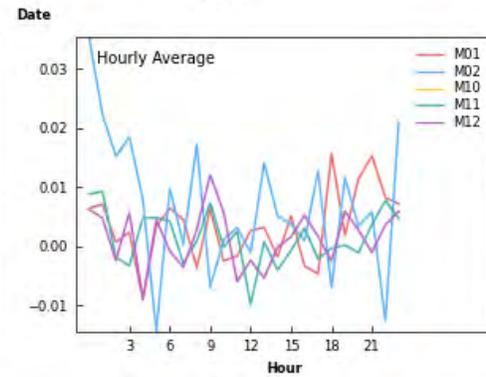
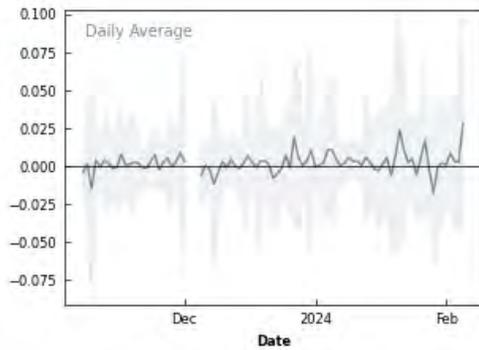
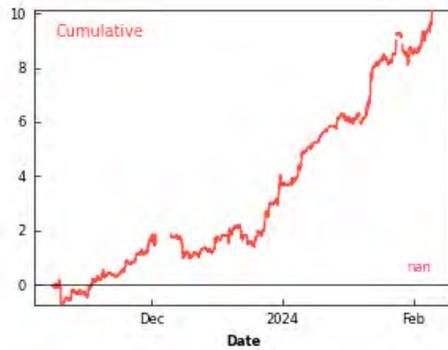
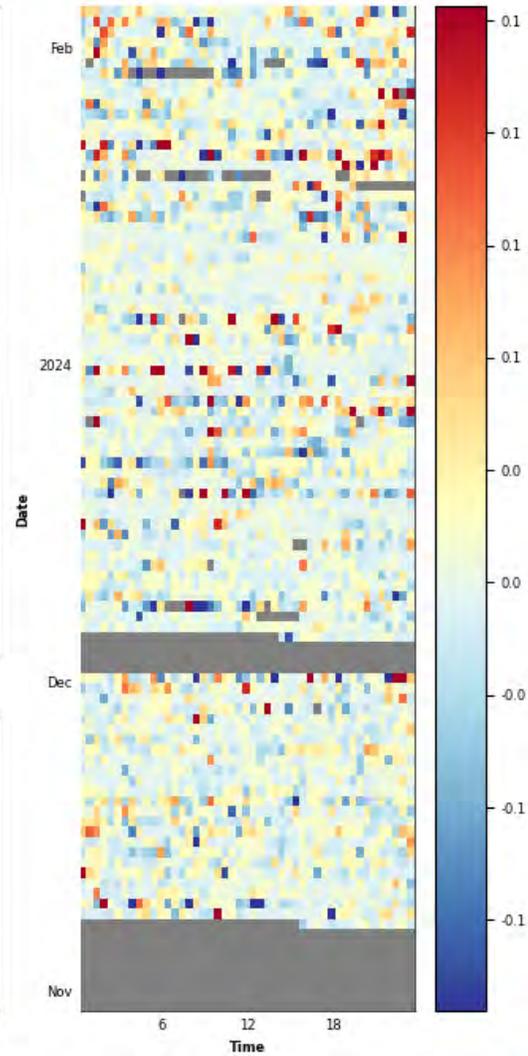
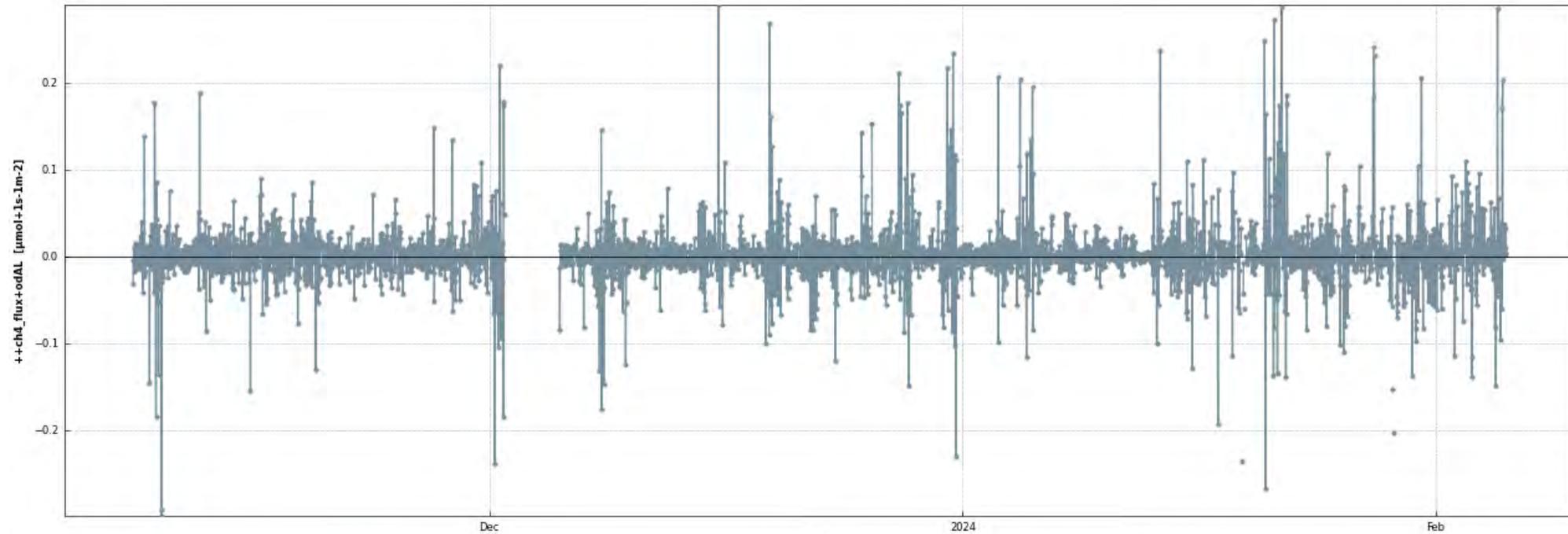
Absolute limits applied [-0.5, +5]



Absolute limits applied [-200, +100]



Absolute limits applied [-0.01, +0.01]



Absolute limits applied [-0.3, +0.3]

