

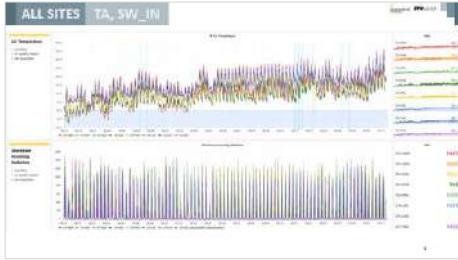
# QA/QC Meeting

## 13 July 2023

Participants: LH, IF, MR, AS, SO, YW, LS, LK, FR (9)

**General Info**

- Attention! If you are [Back-EPF] please attach GA-ICC results/outputs (if you have) needed for planning of the meetings.
- Start statement: N2O & dichloro- plasma prepare event calendar 2023 year (use it and print it at this date together with the photo). You can also create the calendar yourself (e.g. Google Sheets).
- Important note: Please attach the GA-ICC results/outputs (if you have) needed for planning of the meetings. These specific issues are crucial in the group. Please let me check if the mentioned EPF values to see what is missing.
- Information:**
- Check all site status:
  - Check the data for CH-AWS and TA\_SW\_IN, take a look at CC-aw data file and check if there is a file.
  - Check if new data files are available and converted to CC-aw data file.
  - Please send your data file to me, e.g. for CH-DAS: [ch\\_das@pmw.uzh.ch](mailto:ch_das@pmw.uzh.ch)
- Weekly flux calculations on the DTS:
  - Please calculate fluxes and check them in a couple weeks or more often if no work is done.
  - Please make sure to update results every 10 days to the respective latest version.
  - EDS Notes: The last 9 of June 2023, calculation is temporary broken. Please run LantMeth calculations (provisional fluxes) to the last 9 of June 2023 and then run the EDS again. This will fix the error.
  - CH-DAS: Chaudhury, D., et al. (2023) (and G. g) is running in parallel to v7 in this sample.
  - CH-AWS: I have not checked the calculations, this means that we now know about the working environment where we can run a proper calculation.
  - Please refine separate numbers to reflect data related issues, e.g. flux processing, control and self-control to take care.
  - Use of GA/CC Meeting dates: [GA-ICC Meeting 2023](https://ga-icc-meeting-2023.sciencesetup.org/).



# 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\_Chamaus\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, started and will continue to take place.
- **List of QA/QC Meeting dates:** [QA/QC Meetings 2023](#)

# Talking Points

- Make sure to check the plots of a random EC raw data file from time to time
- Checking SW\_IN, VPD and TA, site overview
- Checking recent fluxes
- The wind component w shows an offset during some time periods at some sites, maybe we can correct this directly in EddyPro (see next slide)



File View Run Help

New Open Save Save As Close Project Creation Basic Settings Advanced Settings Run Output Run Express Mode Advanced Mode Stop

**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

Turbulent fluctuations: Method: Select automatically, Rotation method: Double rotation, Planar Fit Settings

Time lags compensation: Detrend method: Block average, Time constant: 250.0 [s], Time lag detection method: Covariance maximization with default, Time Lag Optimization Settings

Compensation of density fluctuations: Compensate density fluctuations (WPL terms)

Add instrument sensible heat components, only for LI-7500

Surface temperature estimation: Simple linear regressions (radio button selected), Multiple regressions

Day time Night time

Bottom:  $T_{air} = 0.944 + T_s + 2.57$   
Top:  $T_{air} = 1.005 + T_s + 0.24$   
Span:  $T_{air} = 1.019 + T_s + 0.36$

Restore Default Values Default values as from Burba et al. (2008)

Other options

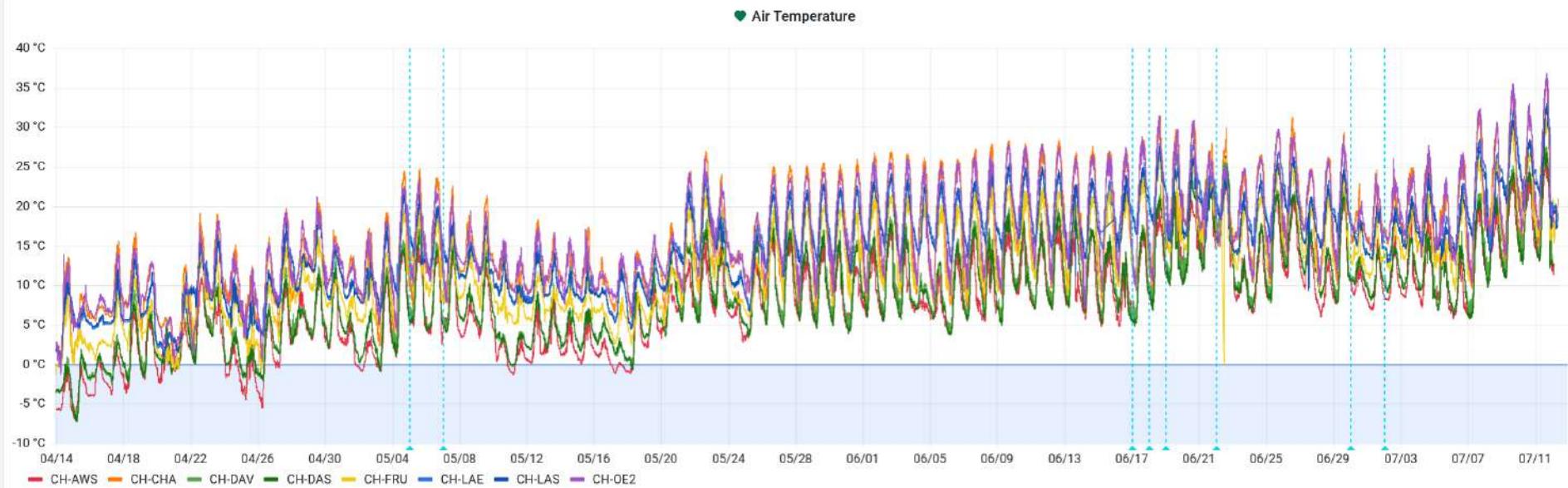
Quality check Flagging policy: Mauder and Foken (2004) (0-1-2 system)  
 Footprint estimation Footprint method: Kljun et al. (2004)

Restore Default Values

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

**Air Temperature**

- raw data
- no quality checks
- full resolution

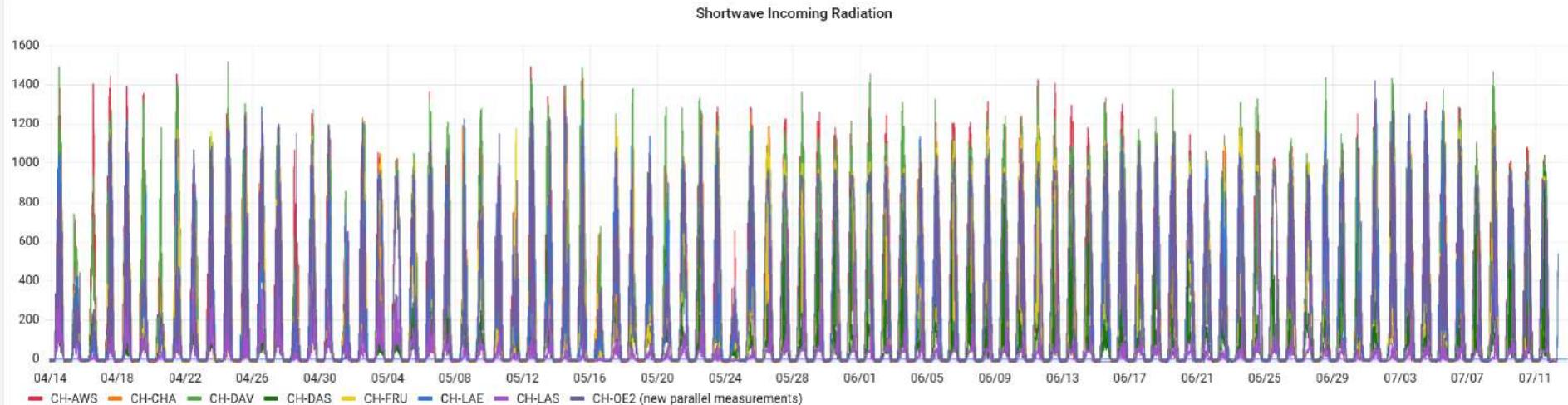


Max

CH-AWS	25.5
CH-CHA	35.8
CH-DAV	27.6
CH-DAS	27.6
CH-FRU	31.1
CH-LAE	33.4
CH-LAS	32.7
CH-OE2	36.9

**Shortwave Incoming Radiation**

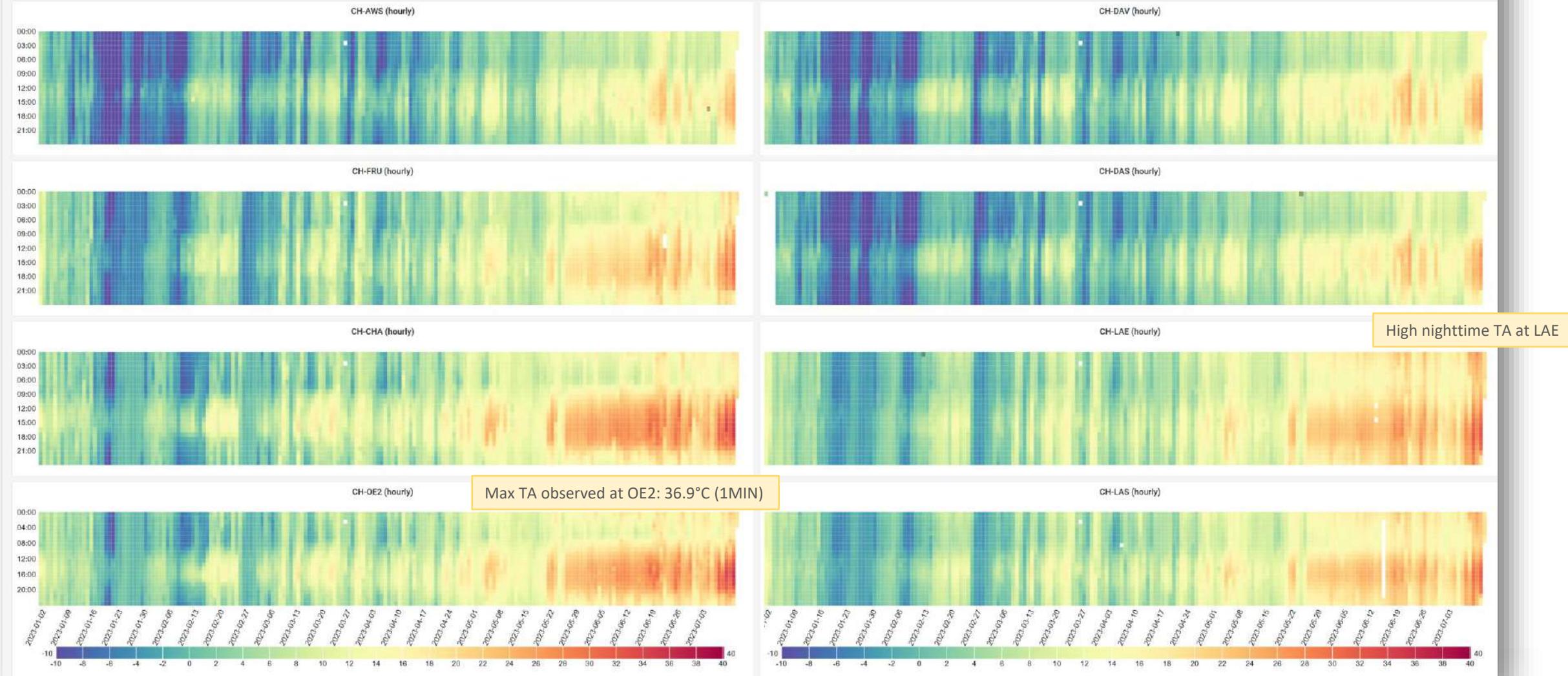
- raw data
- no quality checks
- full resolution

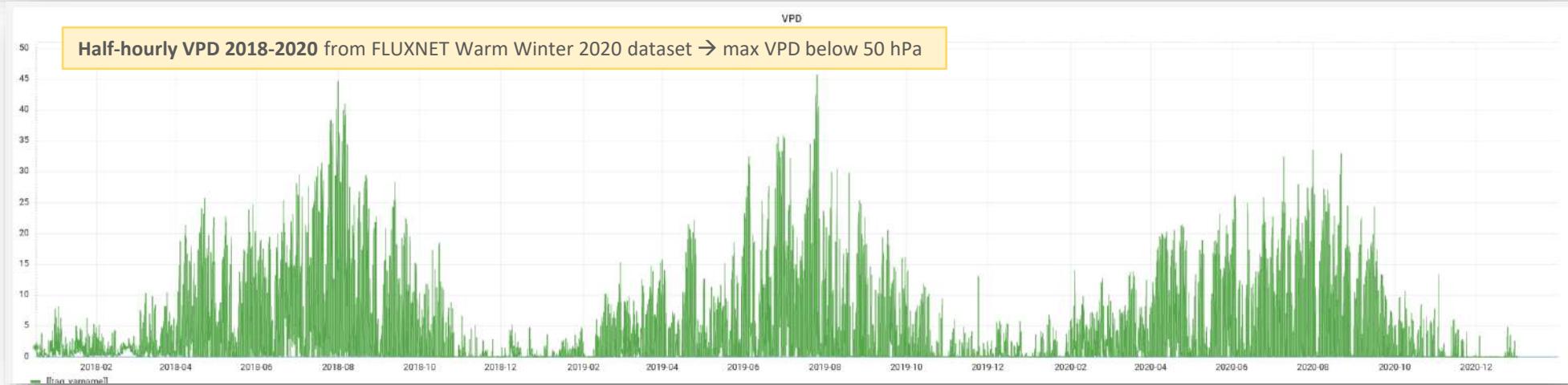
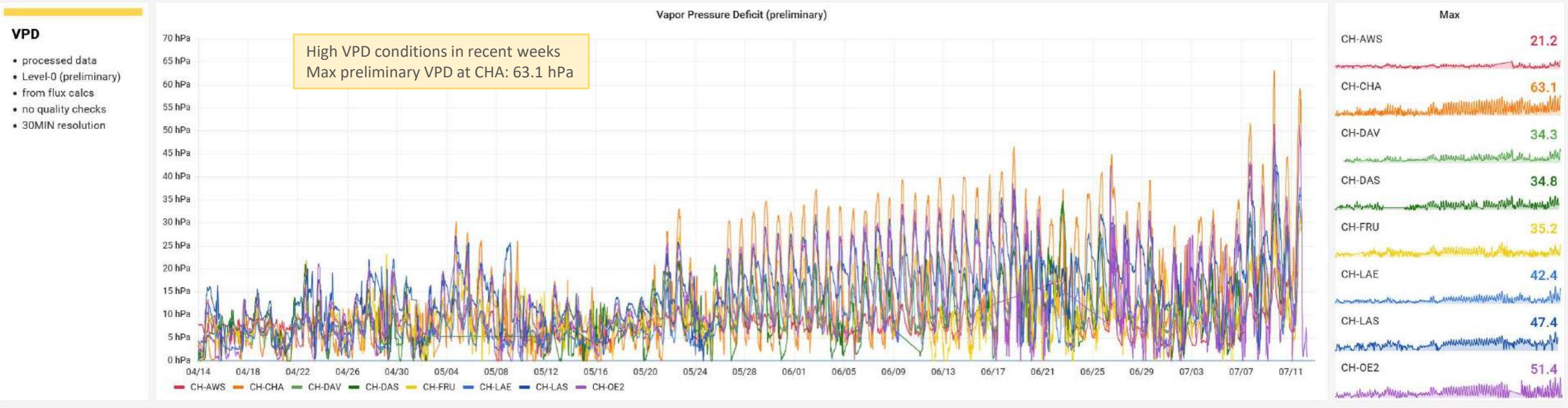


Max

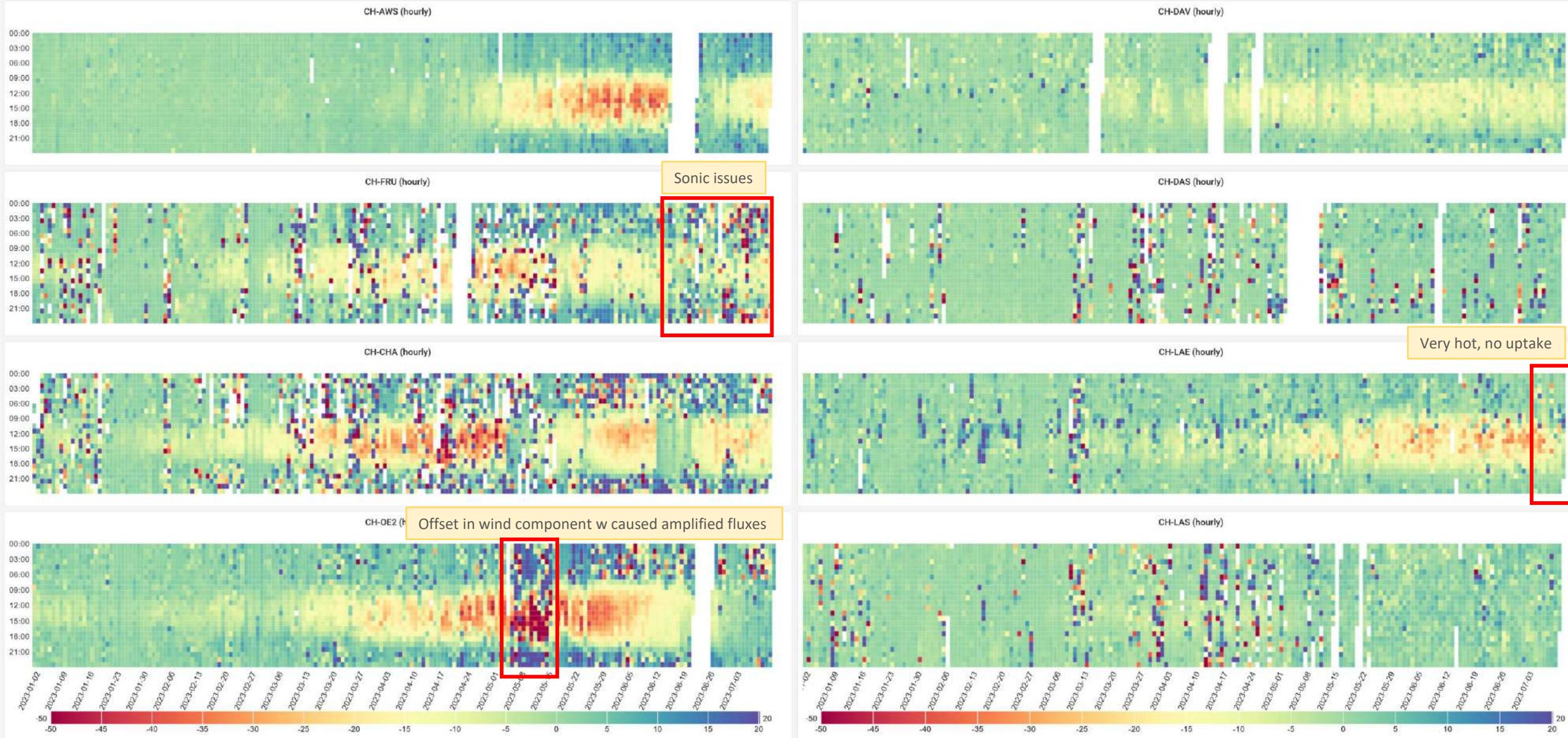
CH-AWS	1495
CH-CHA	1269
CH-DAV	1522
CH-DAS	968
CH-FRU	1209
CH-LAE	1329
CH-LAS	
CH-OE2	1426

## Air Temperature: This year so far ...

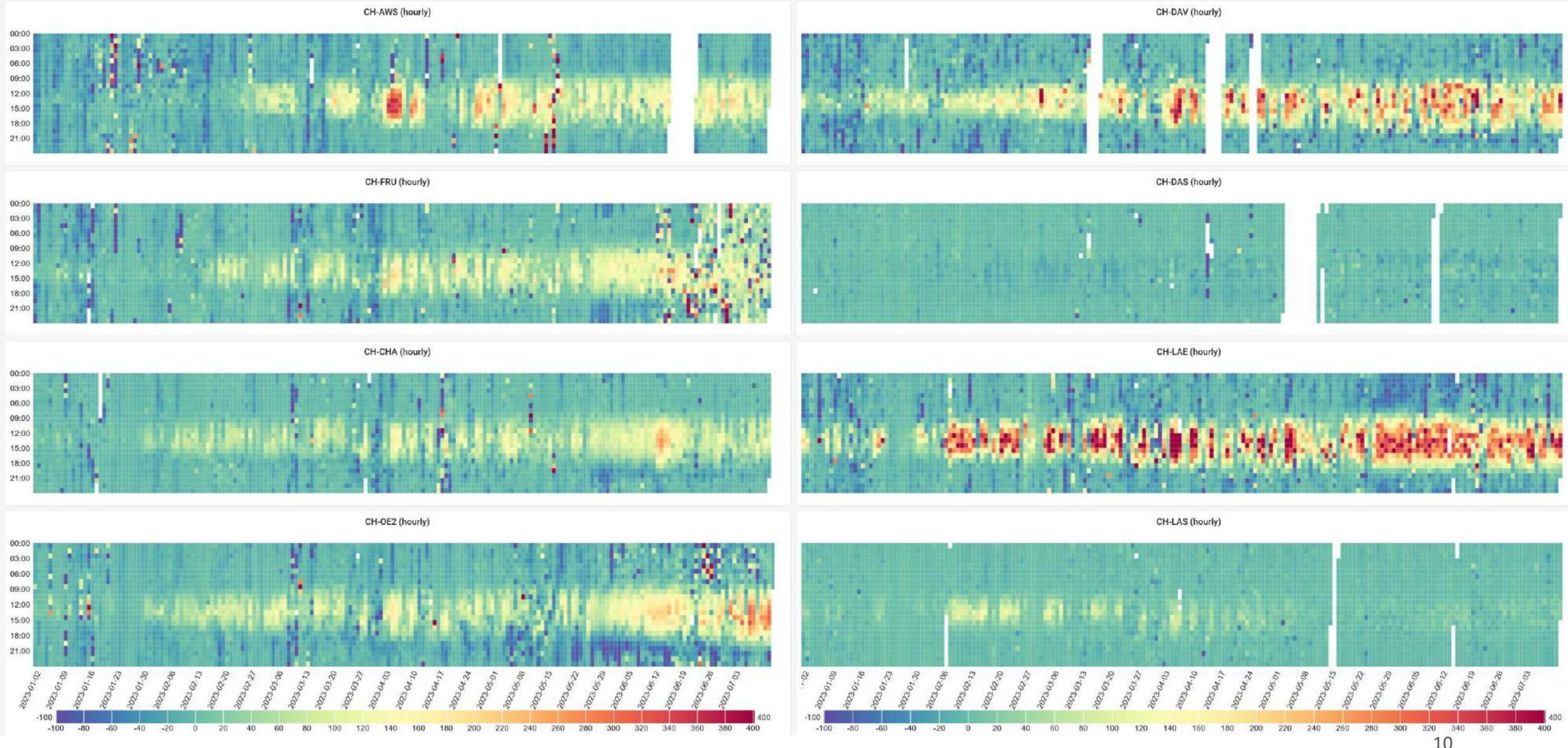




C

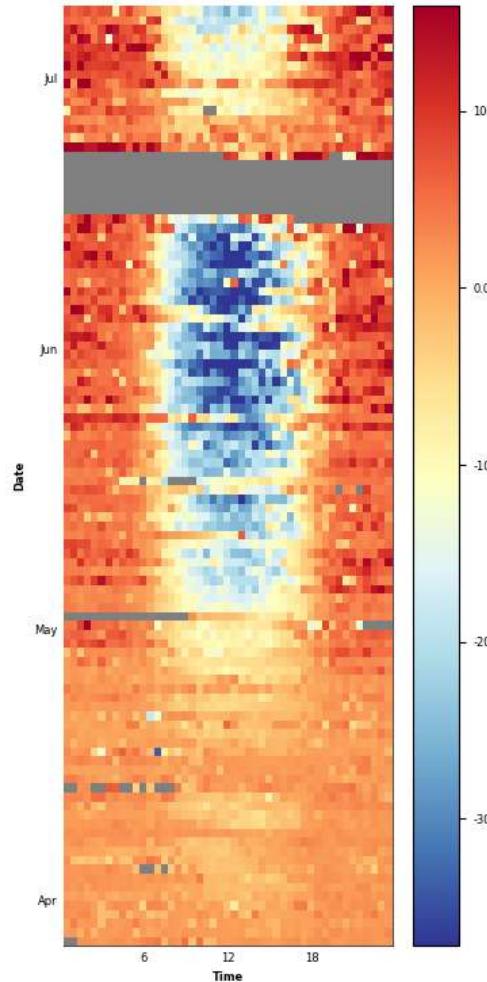
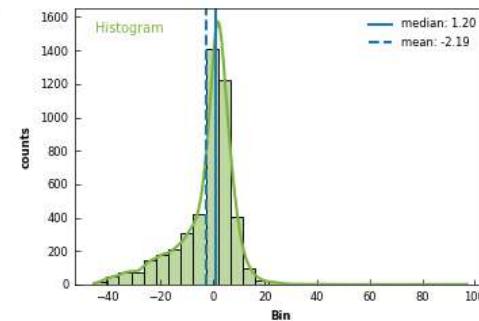
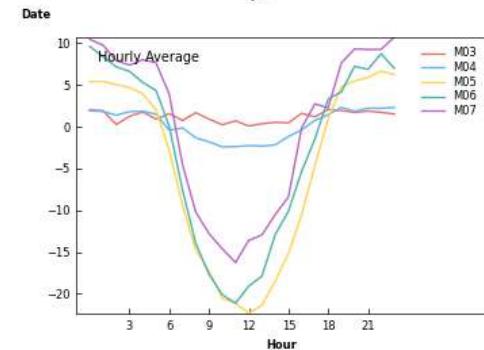
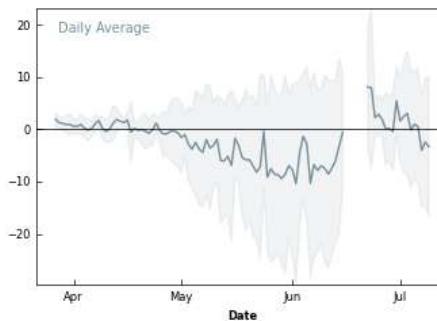
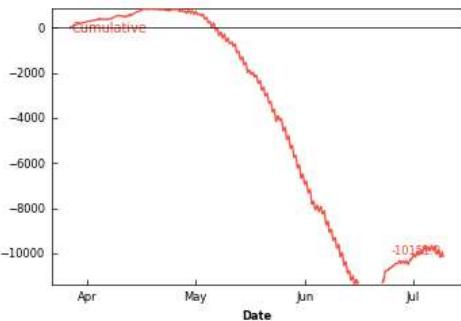


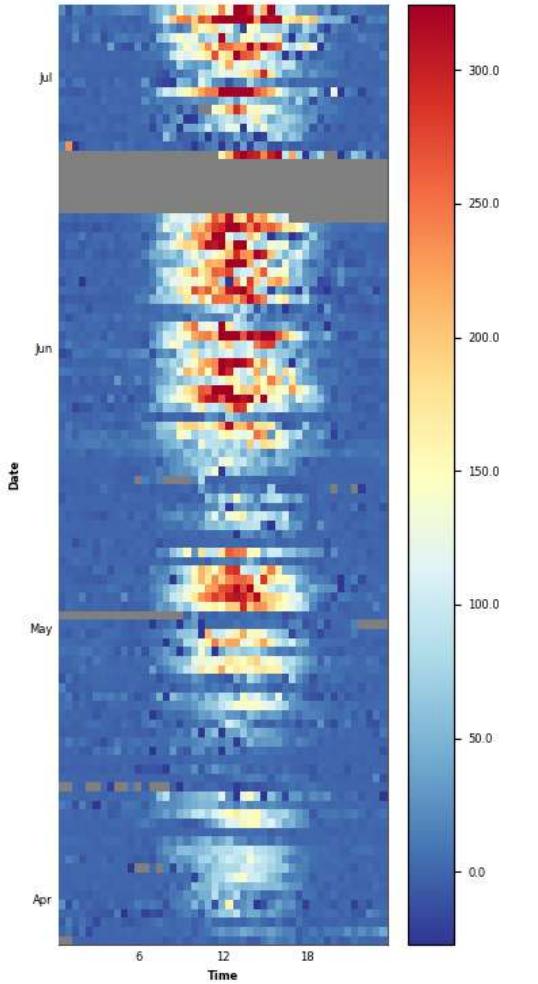
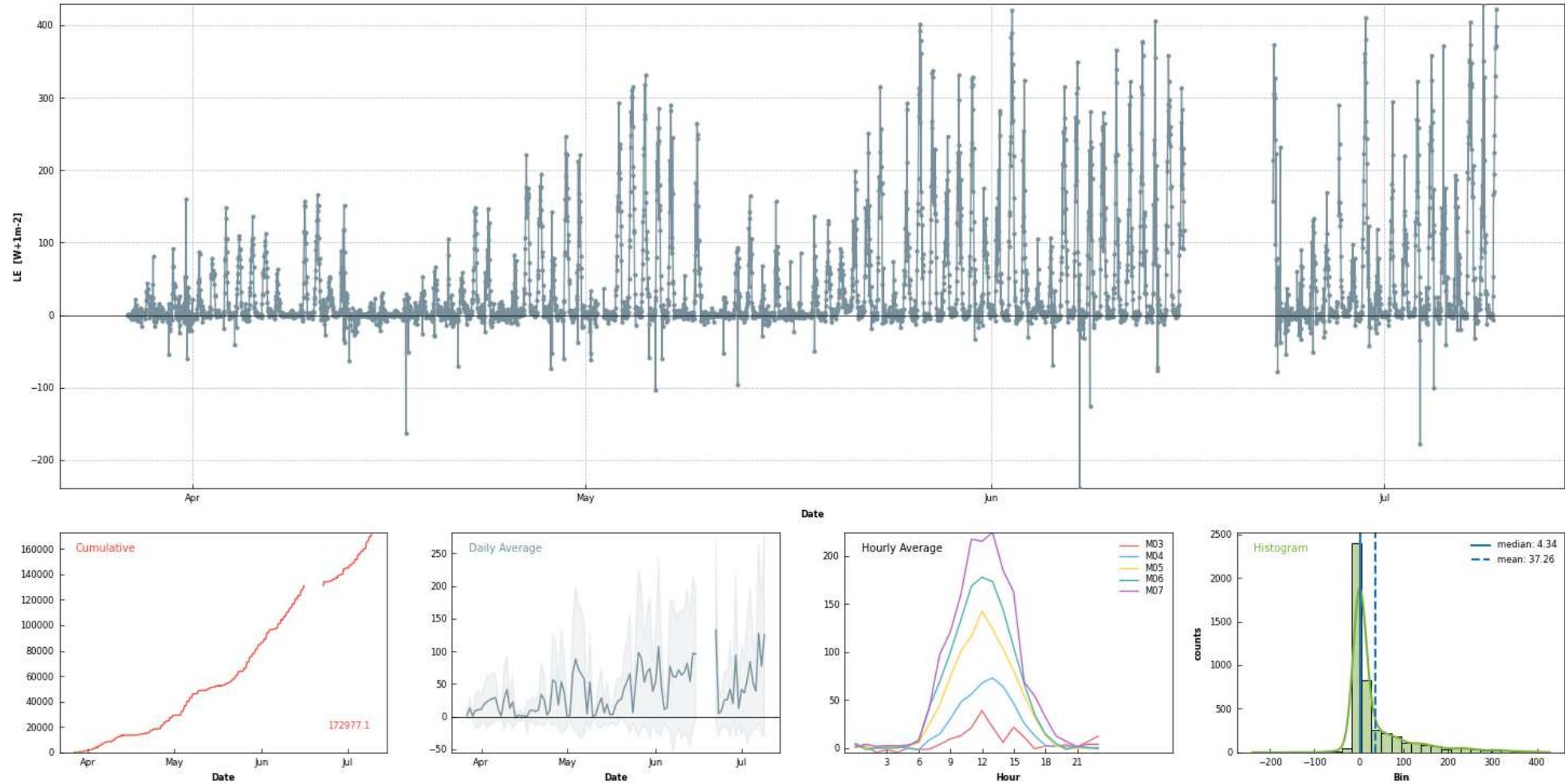
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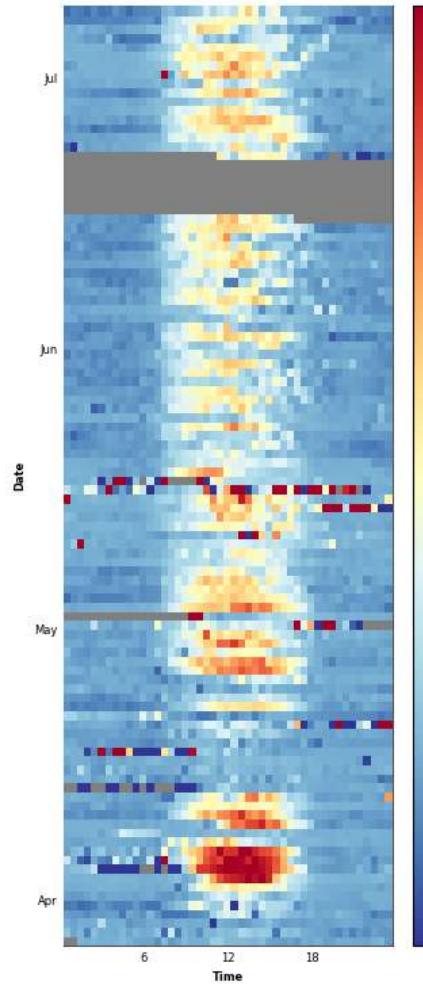
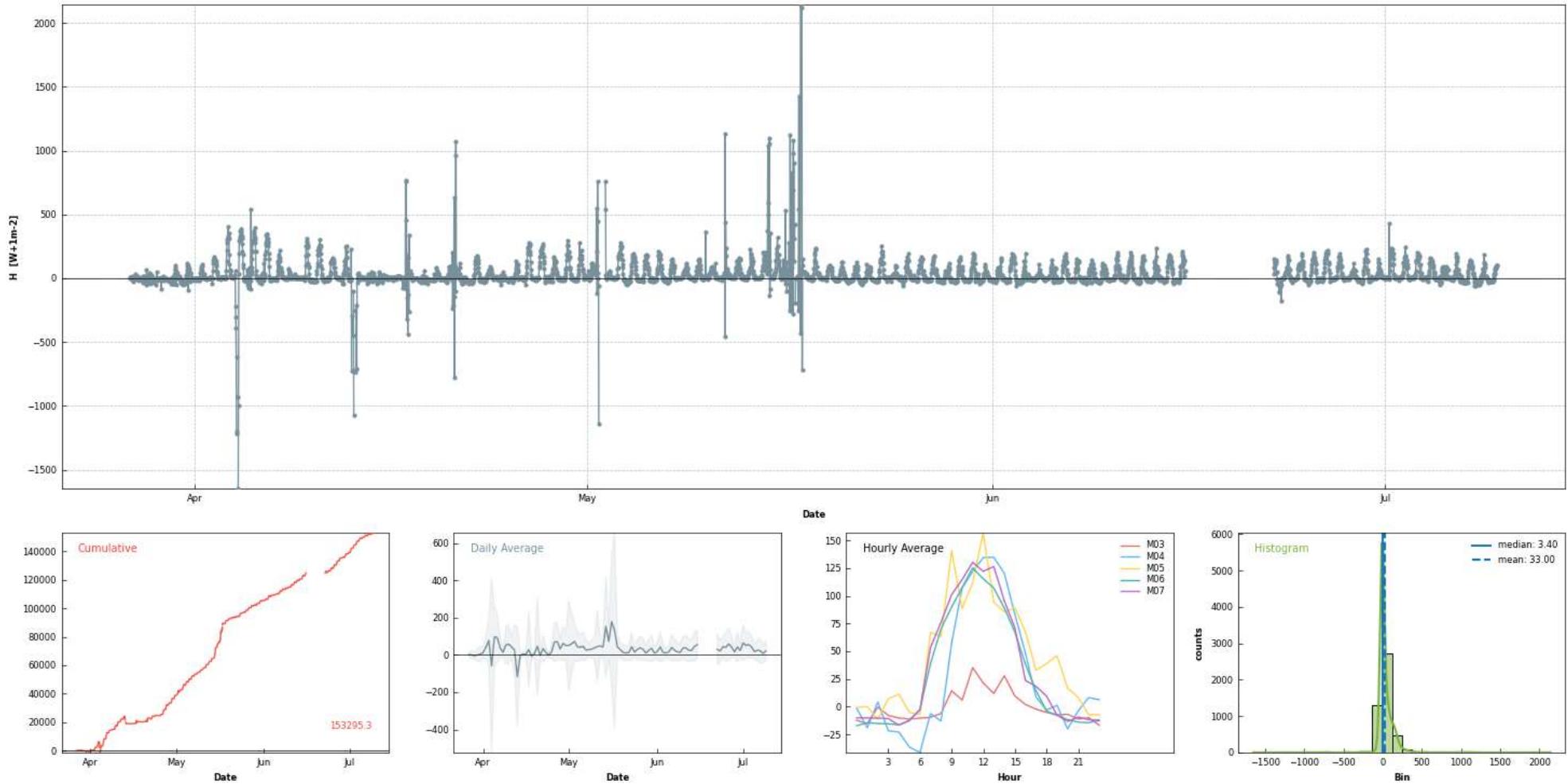




- All good at CH-AWS!
- CO2 uptake starting to increase again after cows have eaten everything and moved somewhere else







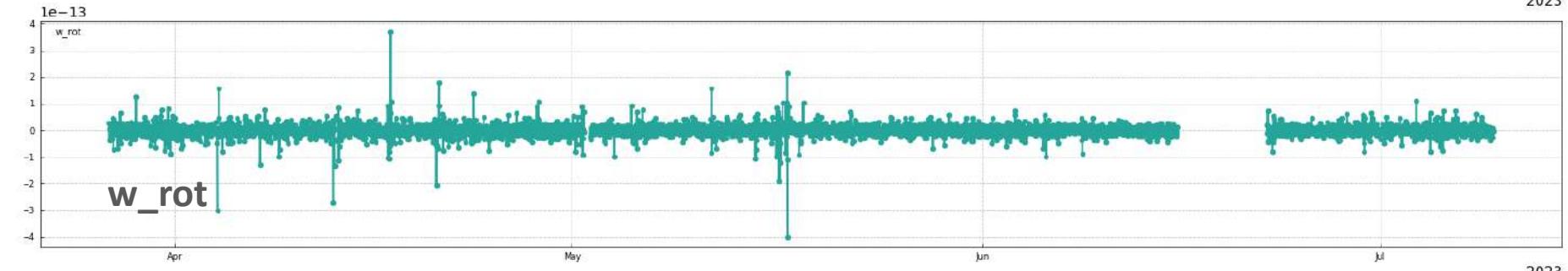
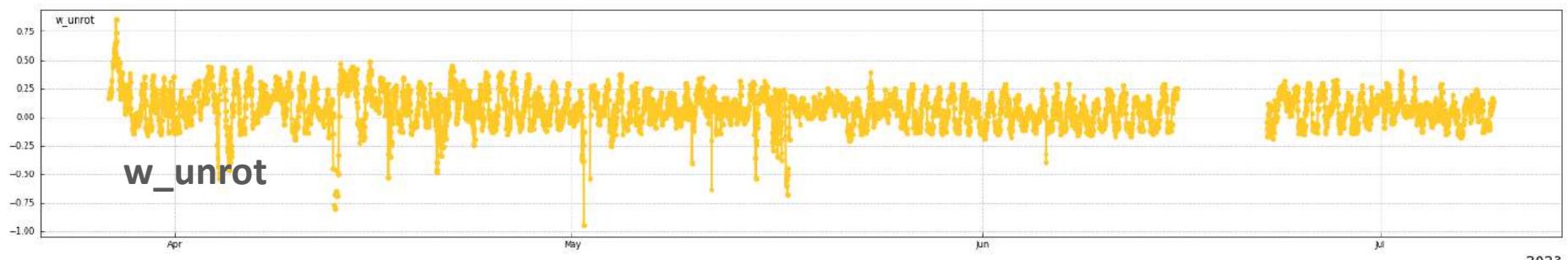
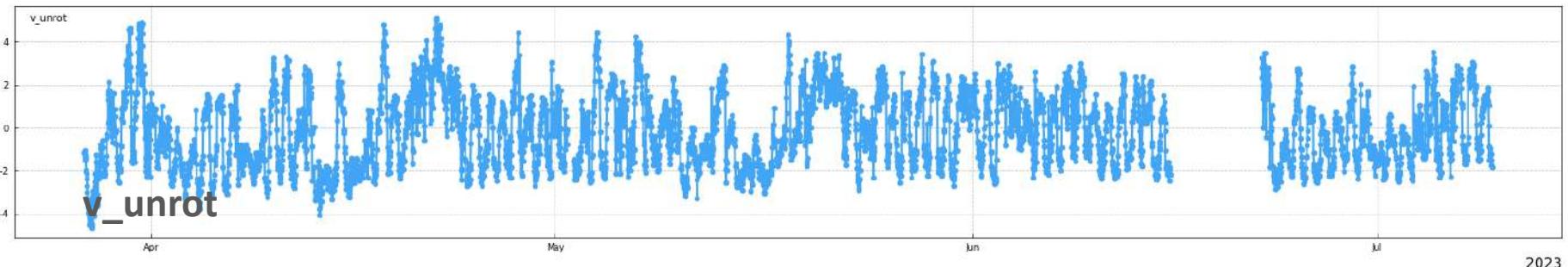
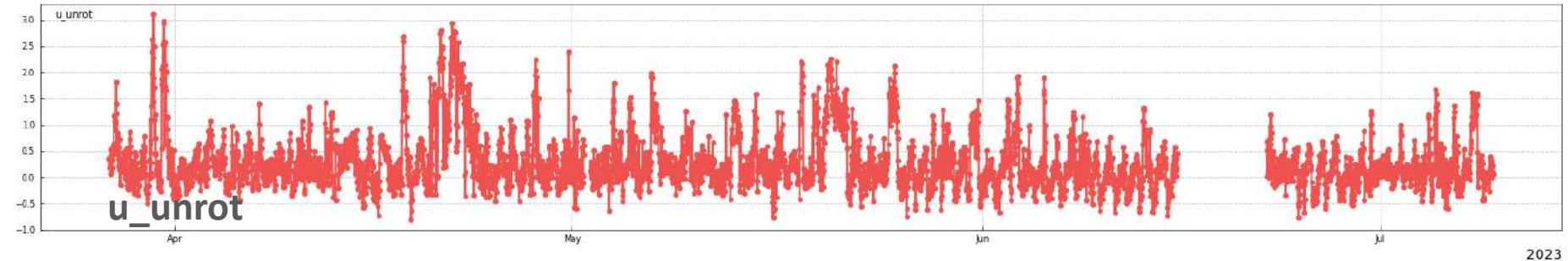
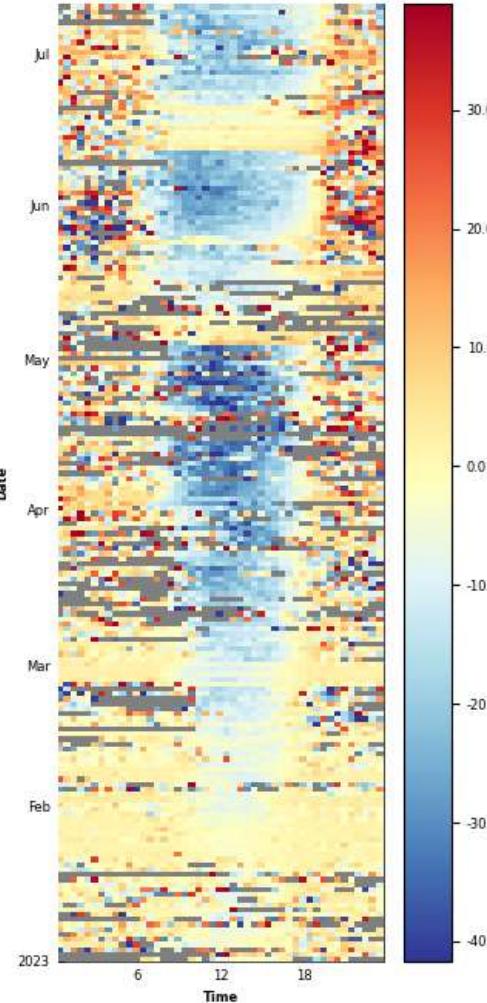
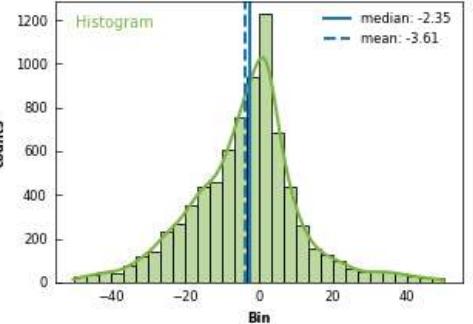
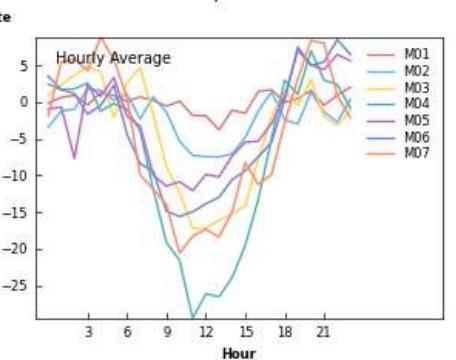
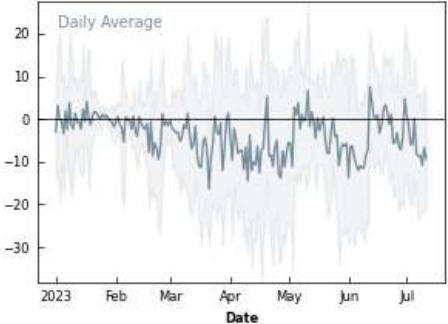
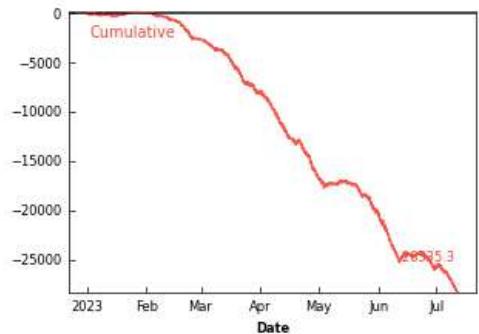
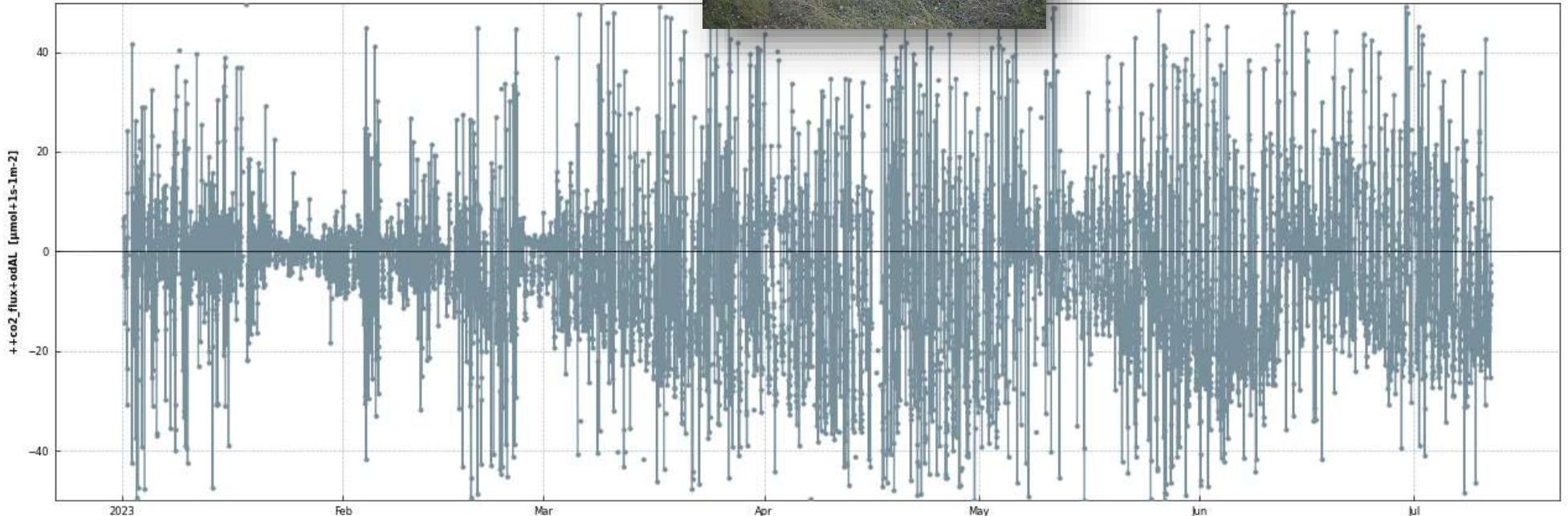


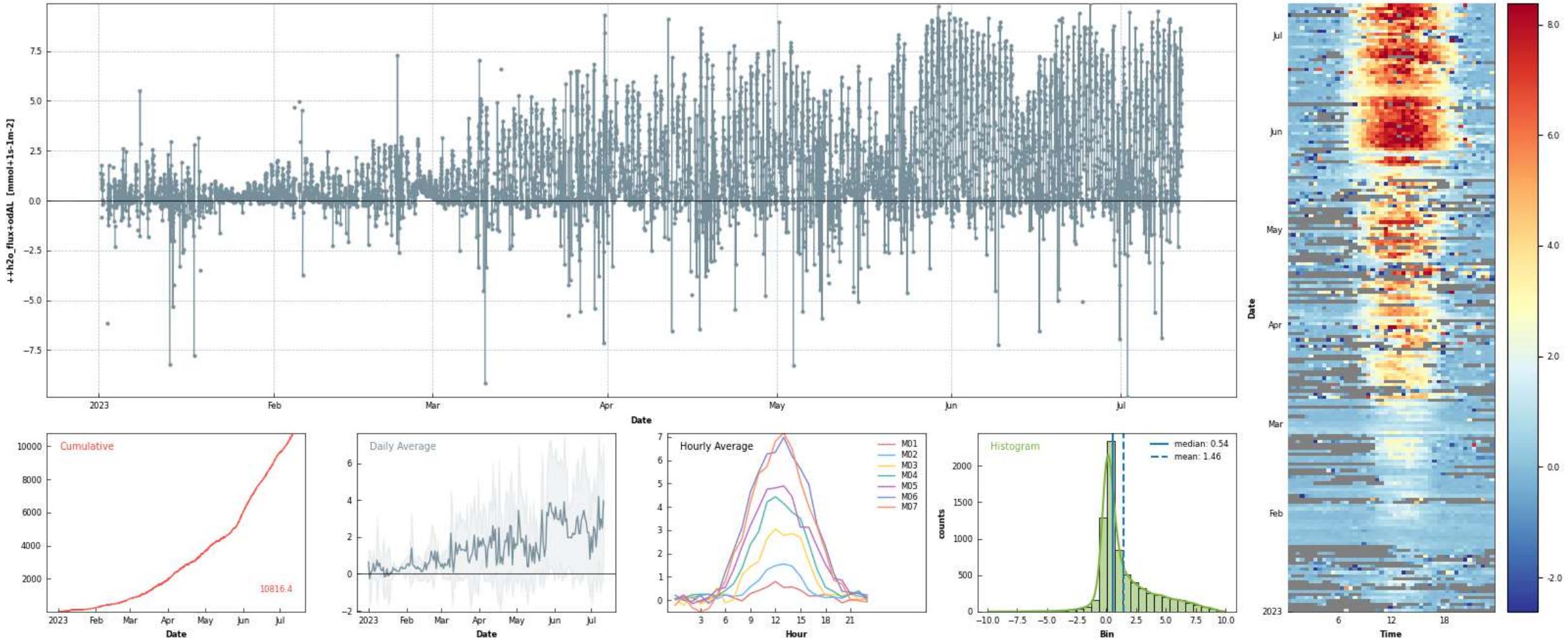


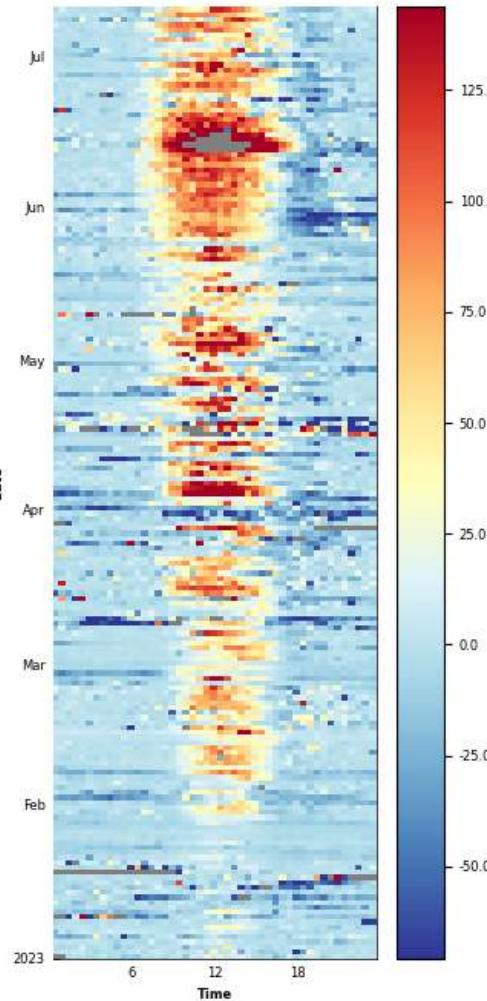
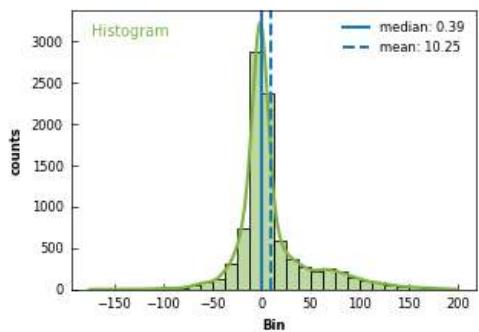
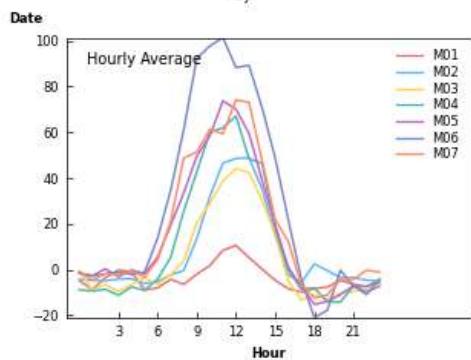
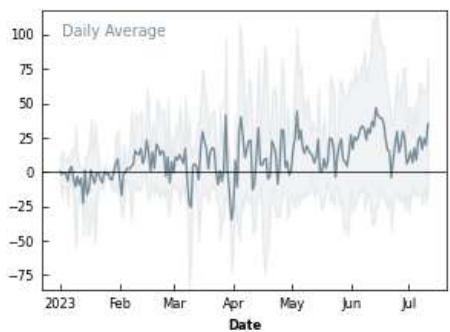
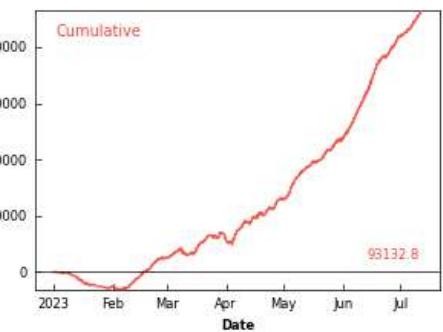
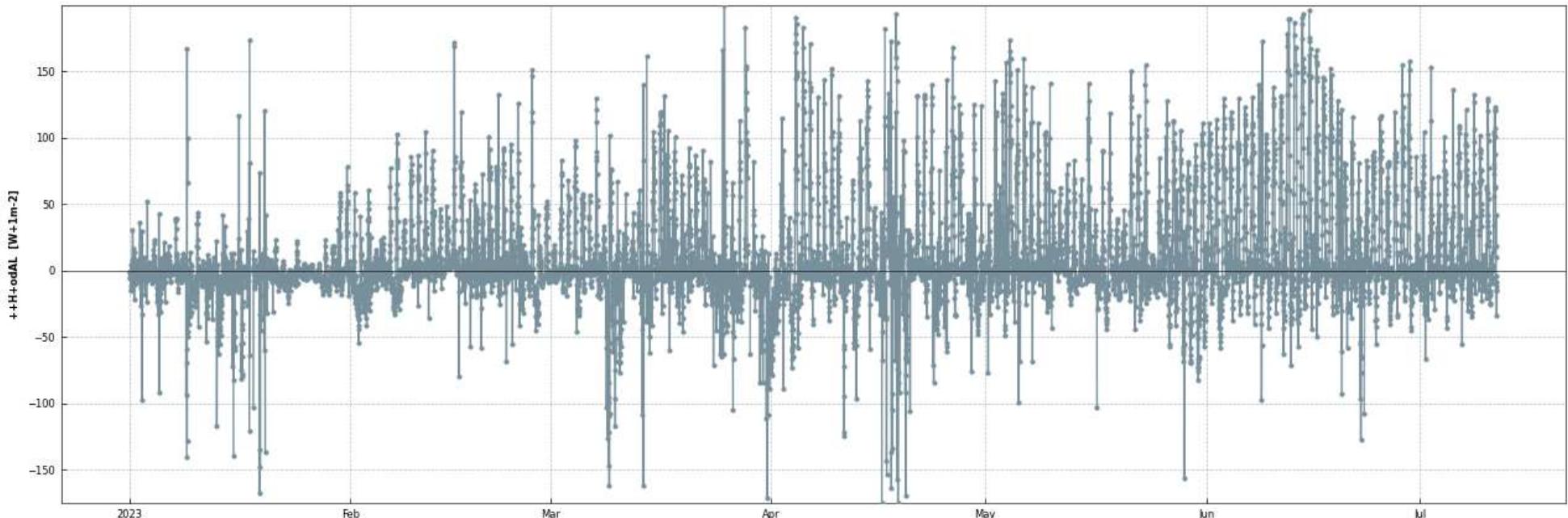
Photo: Lukas Hörtnagl

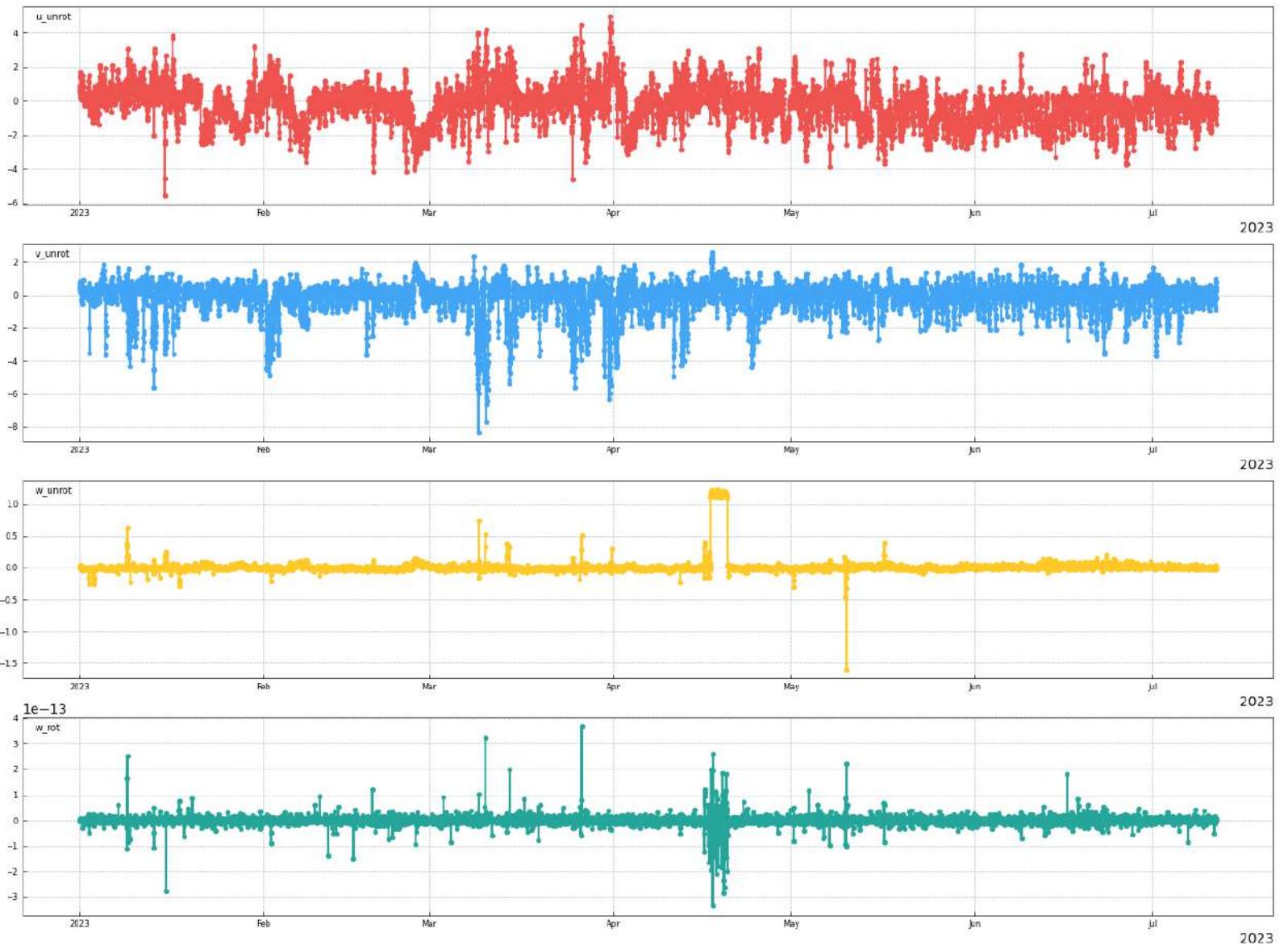


- 1st mowing: 2023.05.04
- 2nd mowing: 2023.06.11
- 3rd mowing: probably today









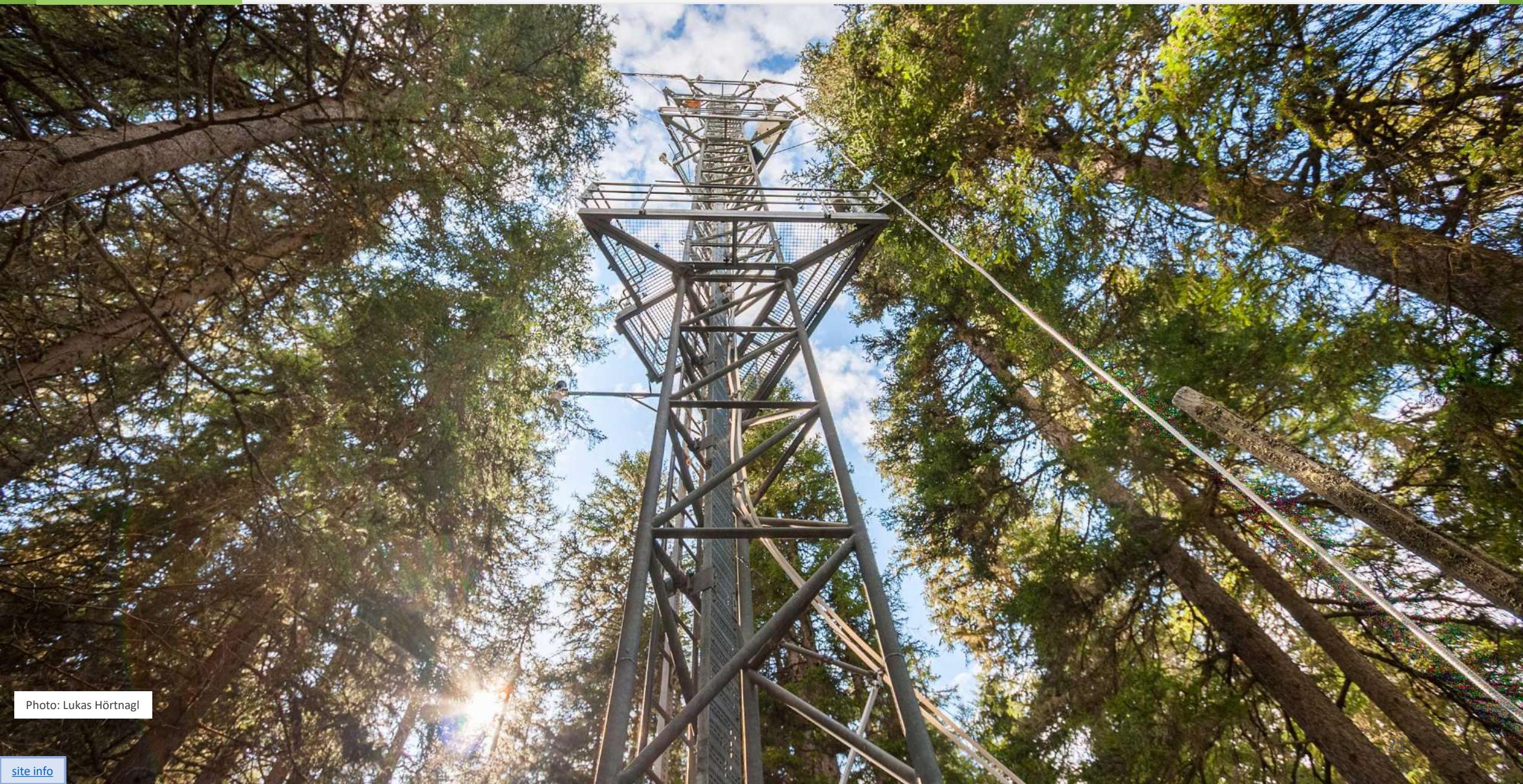
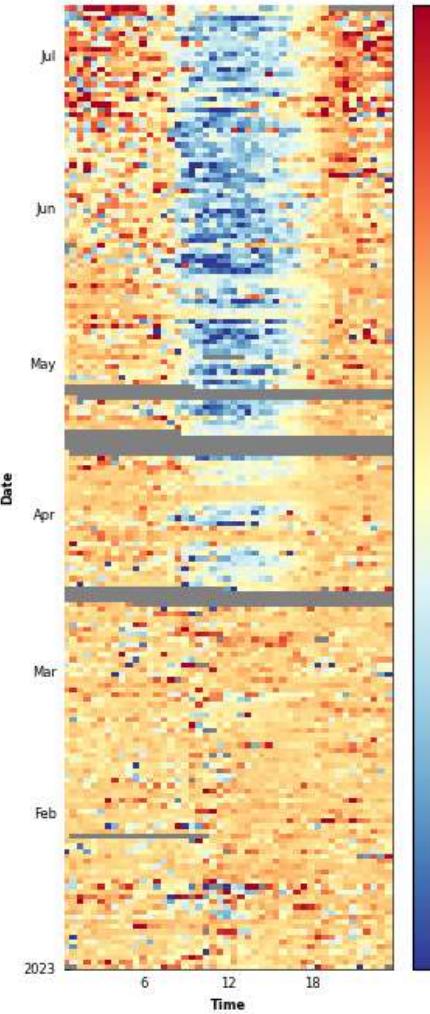
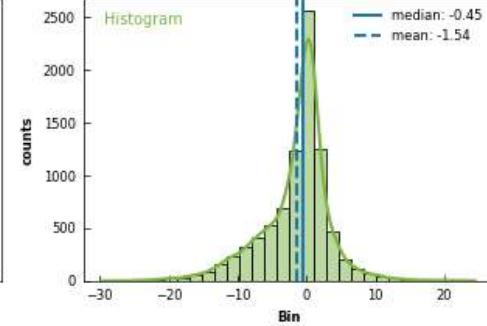
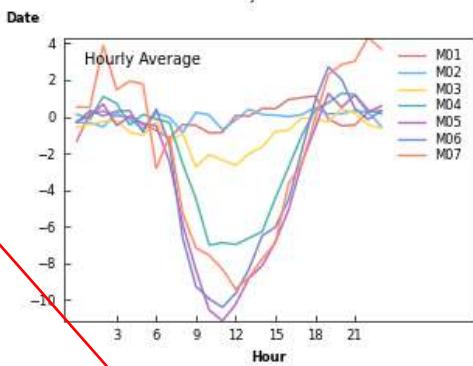
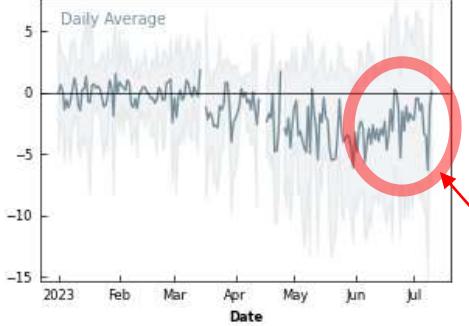
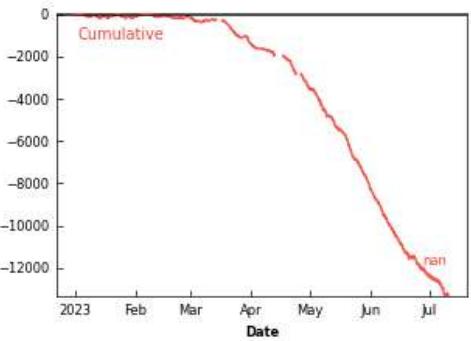
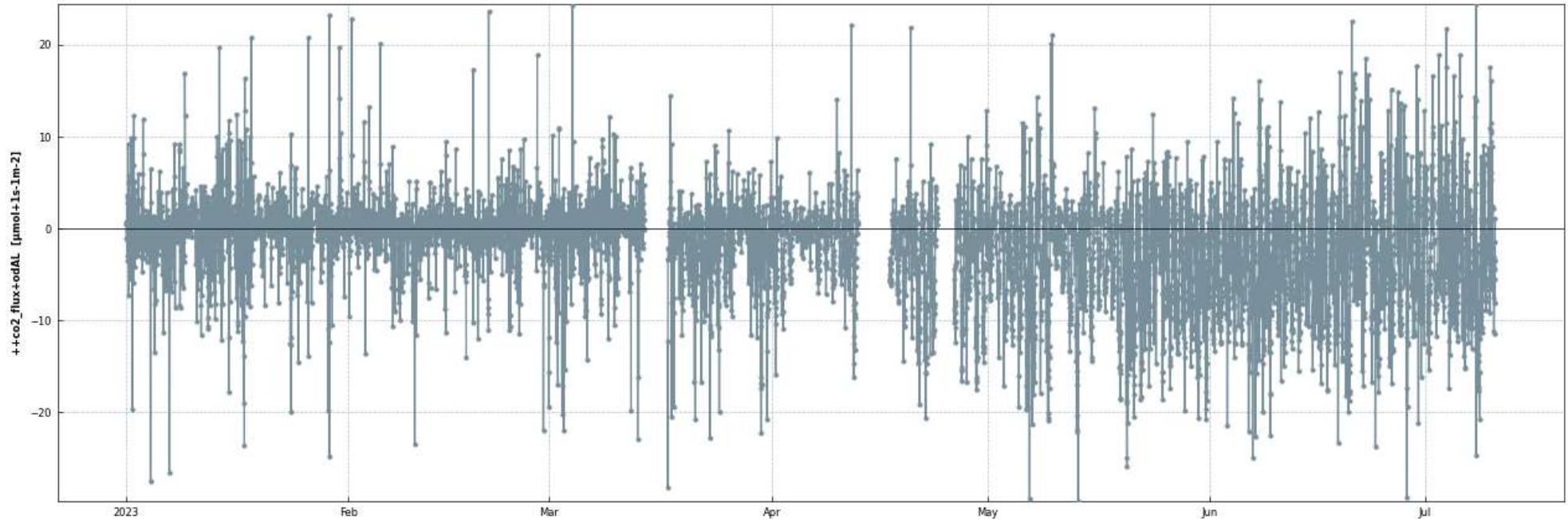


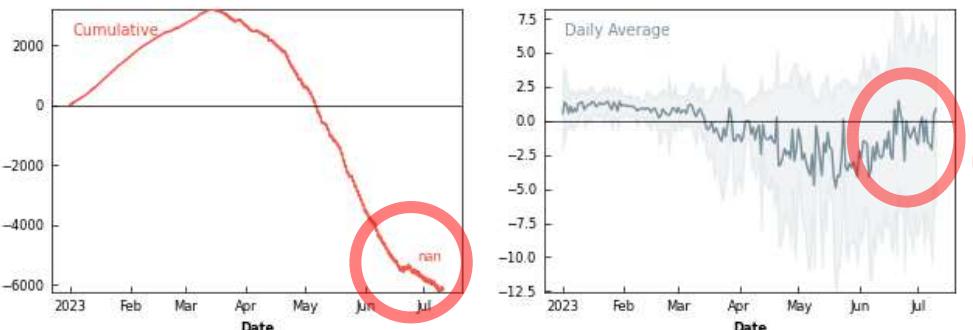
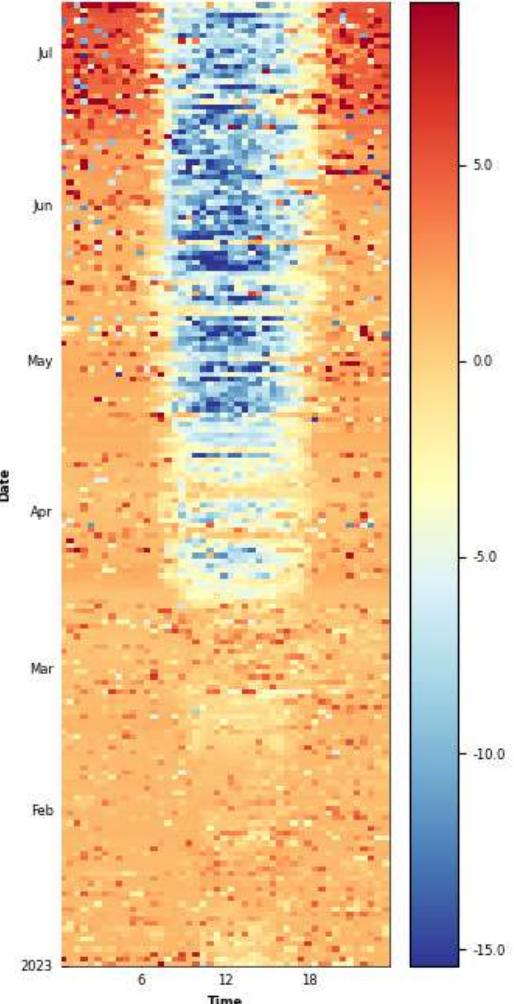
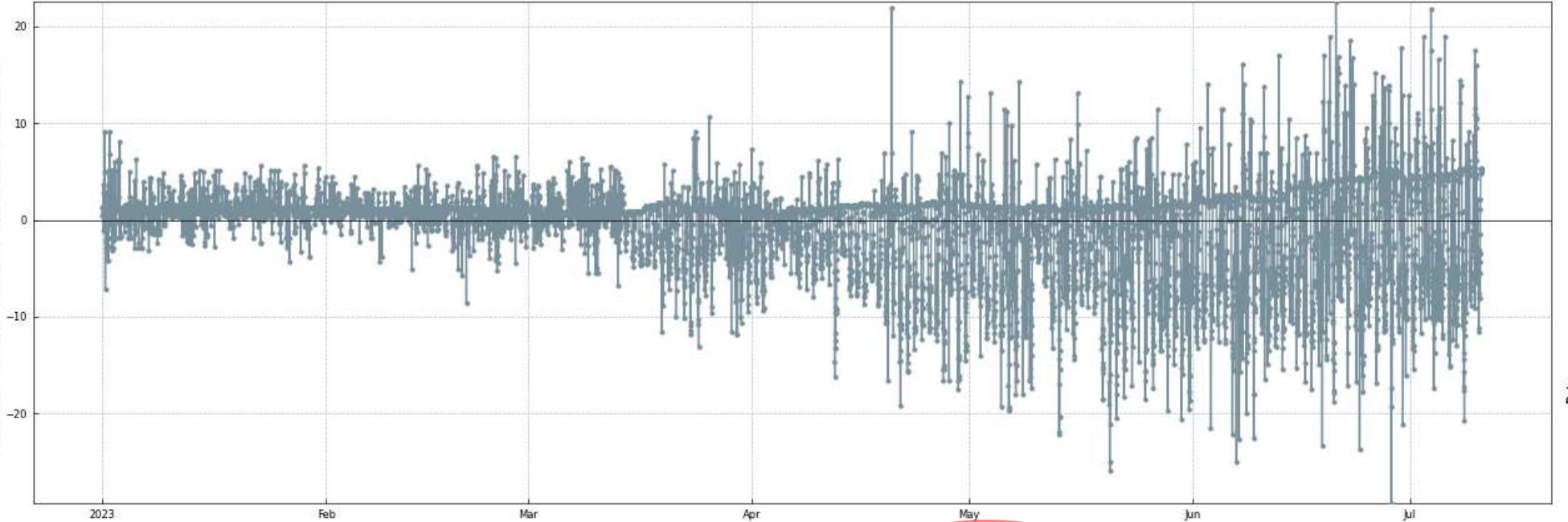
Photo: Lukas Hörnagl

CO<sub>2</sub> flux with absolute limits applied



- Is this increase for real?

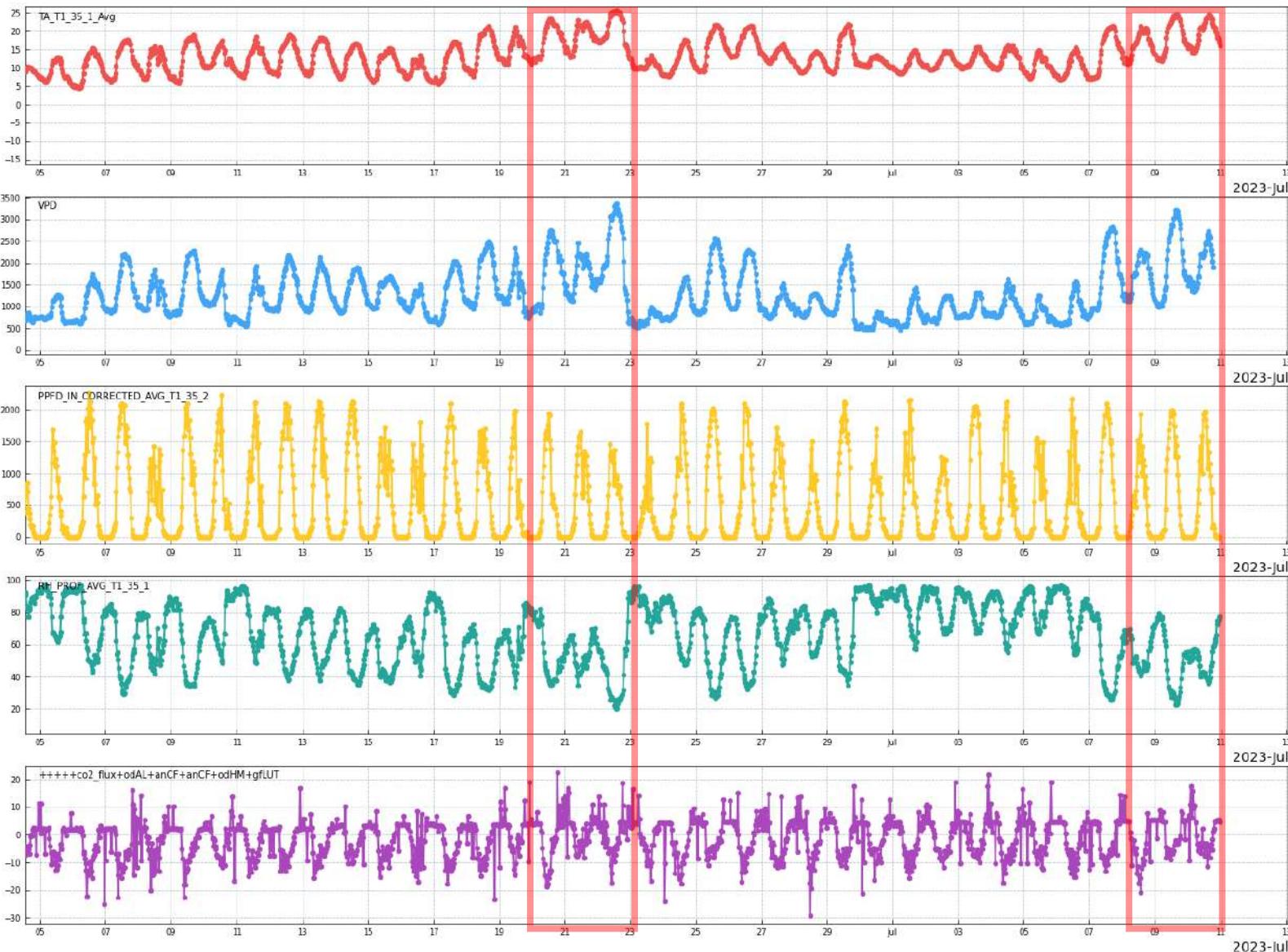
CO<sub>2</sub> flux quality checked, despiked, u\*filtered, gapfilled (MDS)



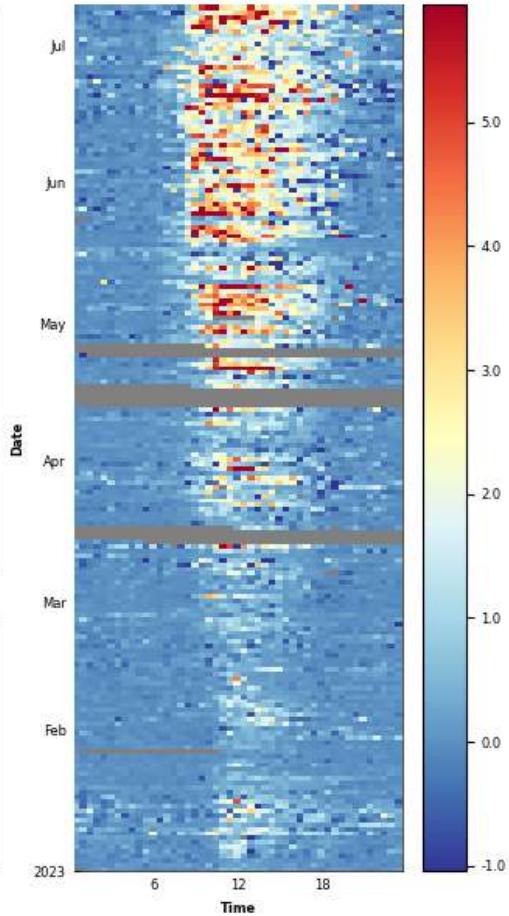
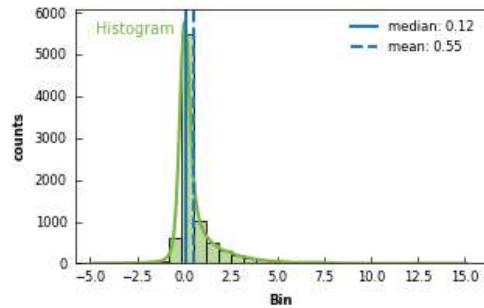
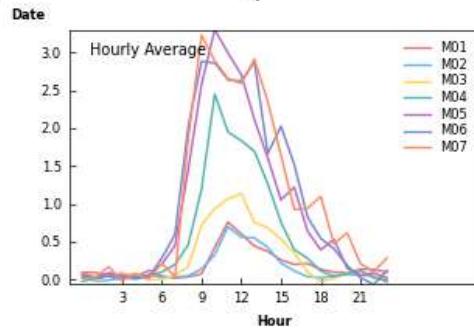
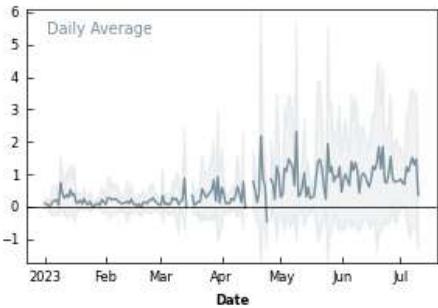
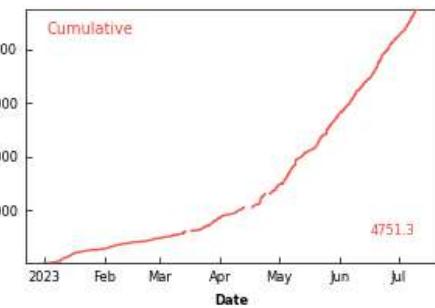
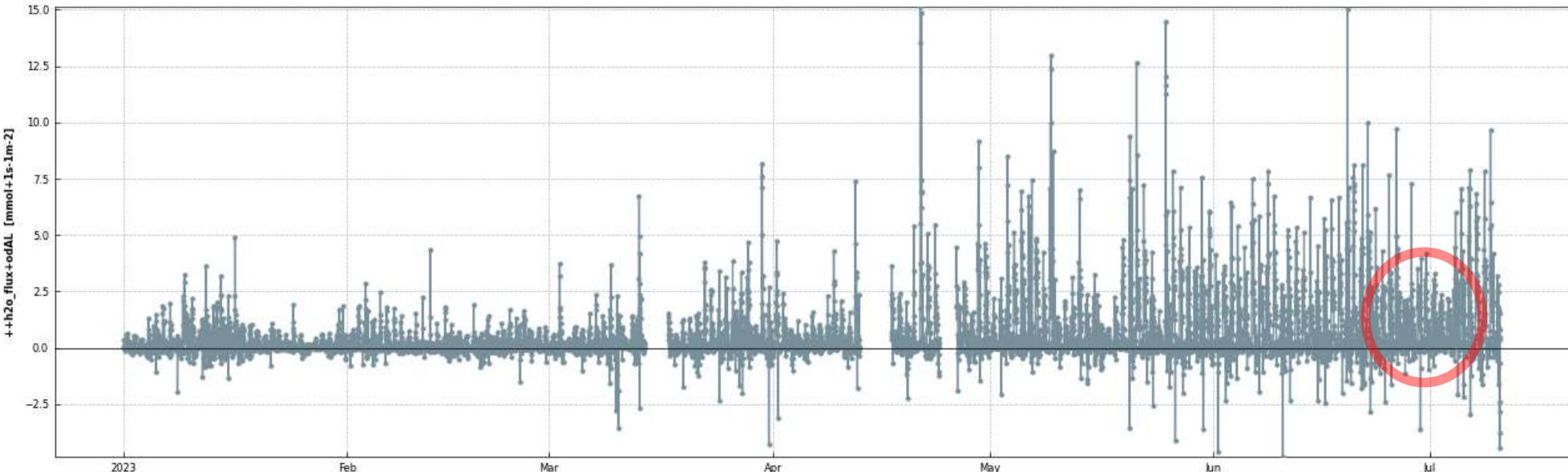
Slope changes

- Forest seems to be a short-term source of CO<sub>2</sub>
- CO<sub>2</sub> uptake decreased towards end of June
- Increase in nighttime respiration from June onwards

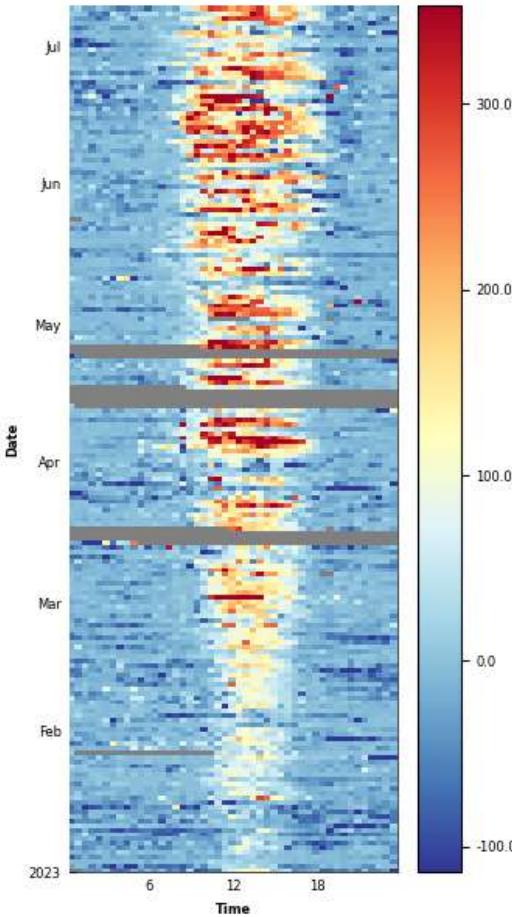
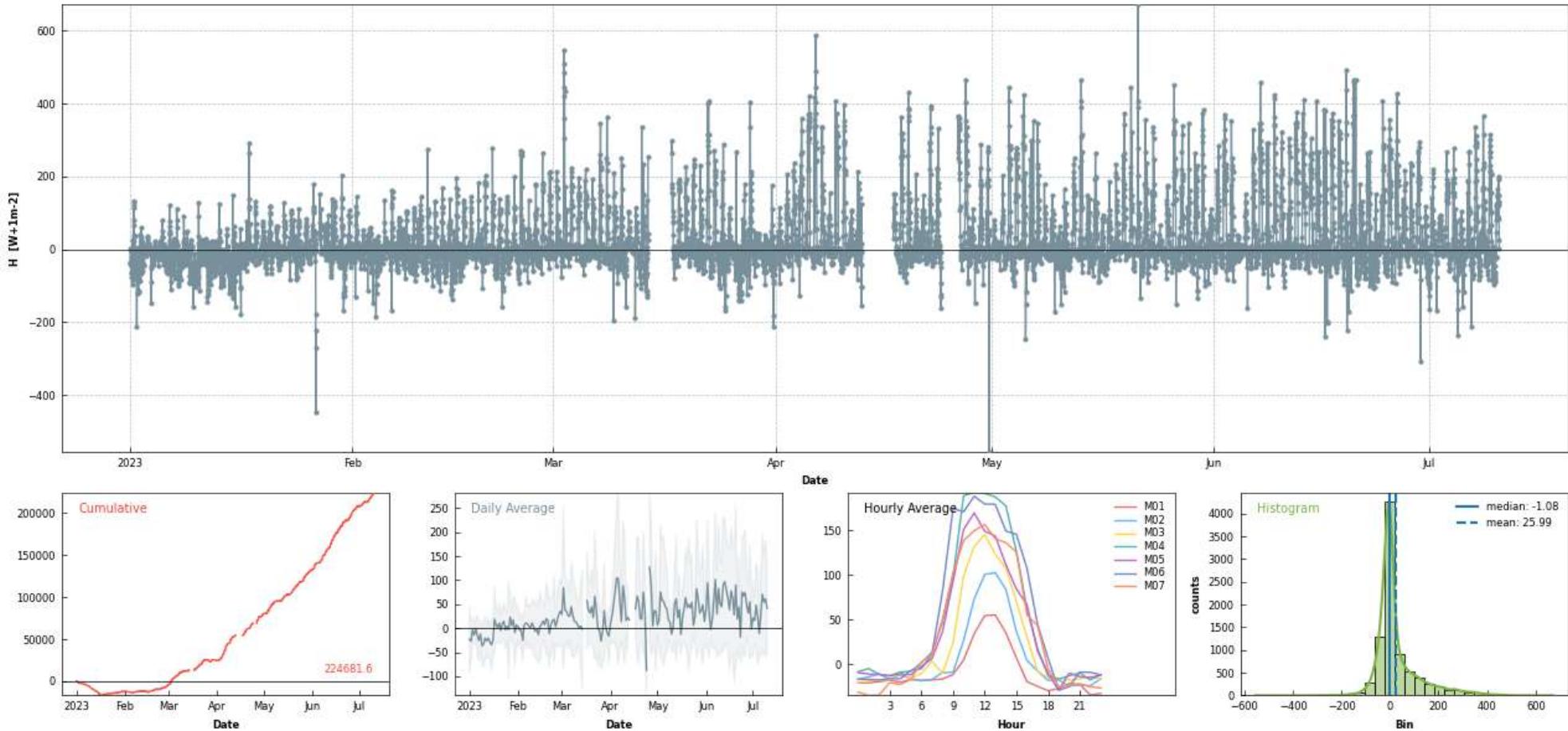
- Tair, and VPD very high around 22nd of June and just recently
- Increased CO<sub>2</sub> emissions during the night and reduced CO<sub>2</sub> uptake during daytime turn the forest into a short-term CO<sub>2</sub> source



Looks ok, decrease around beginning of July



Looks ok, also slightly decreased around beginning of July



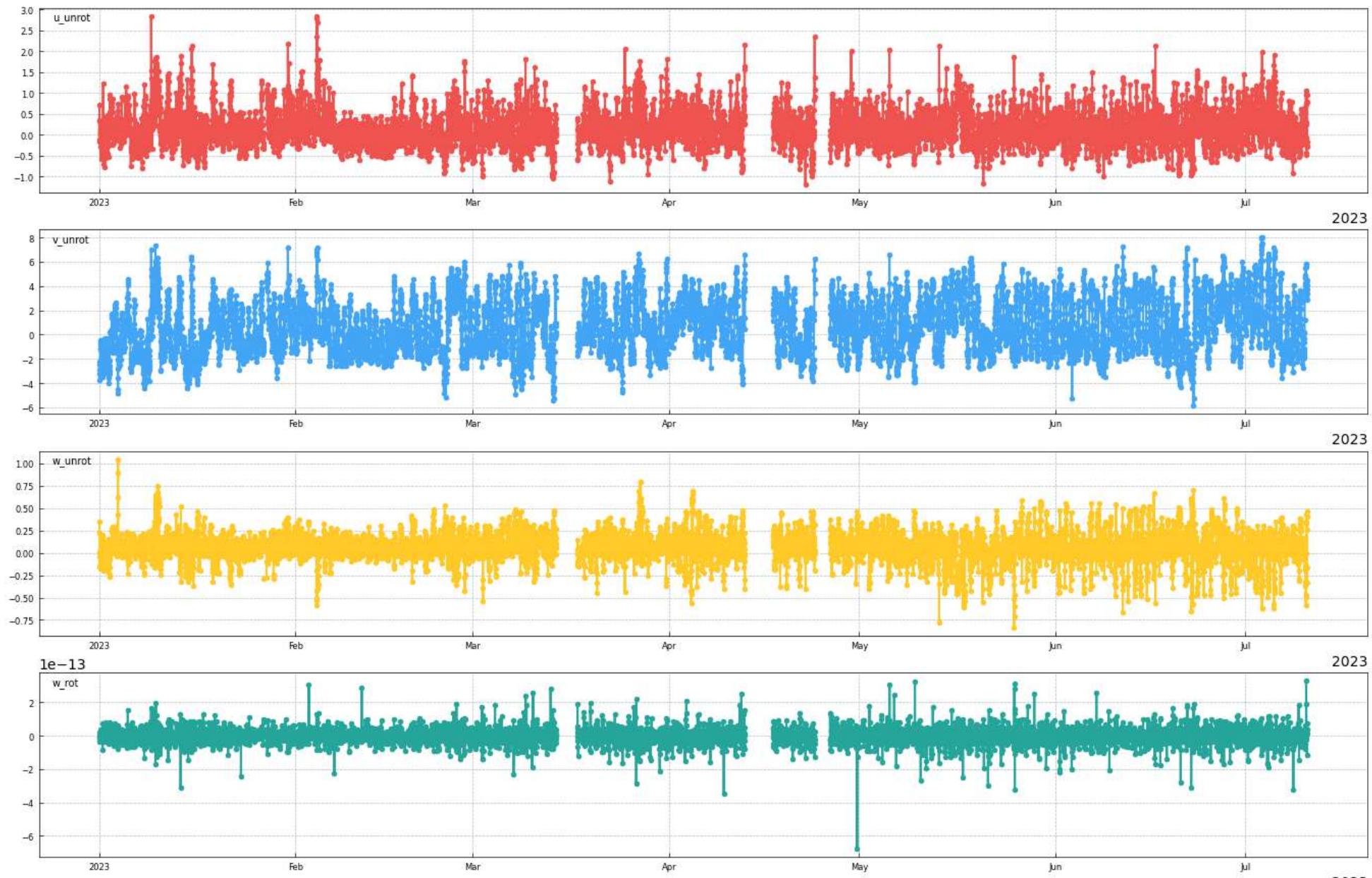
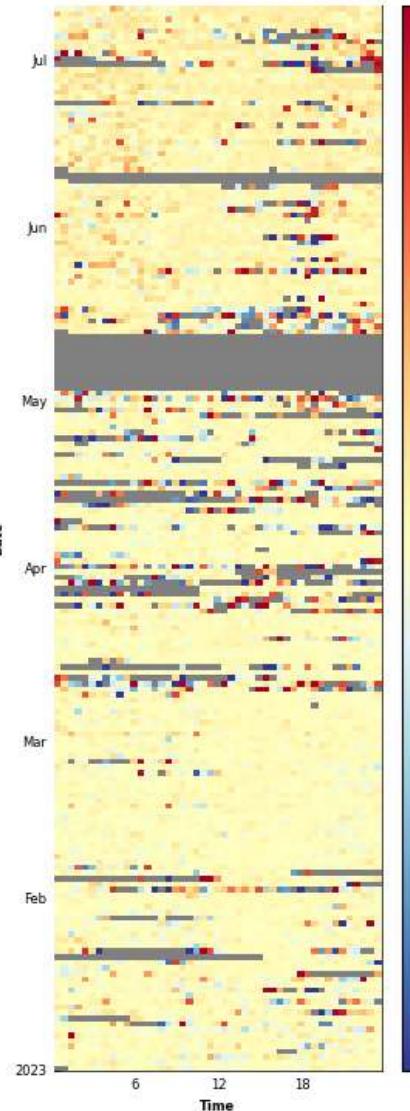
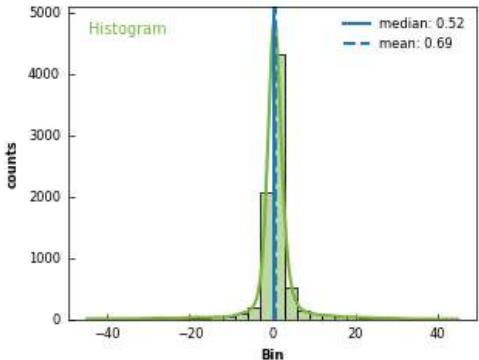
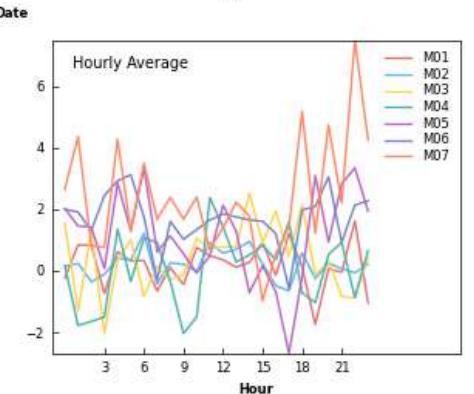
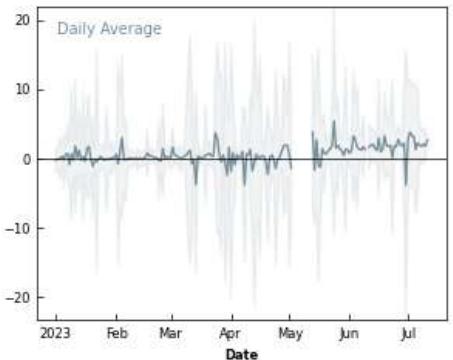
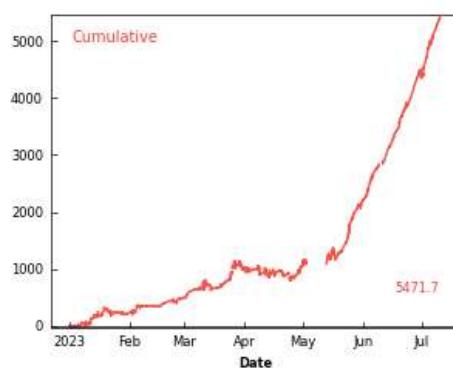
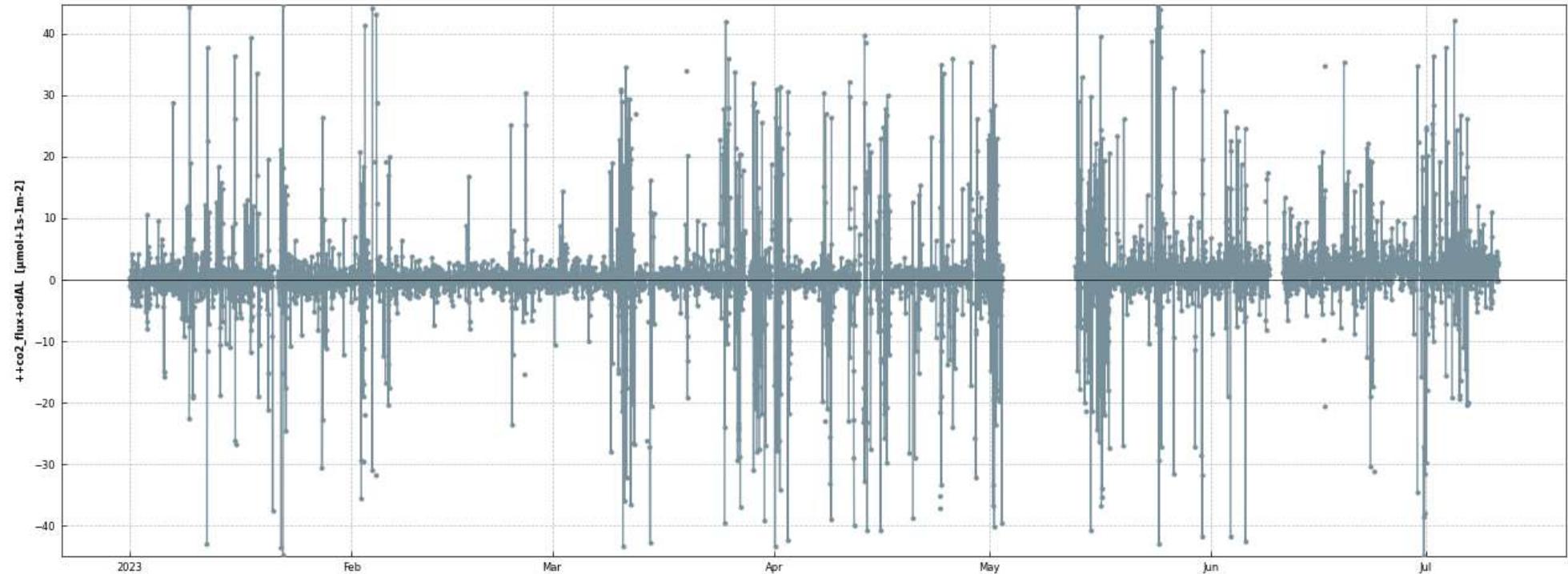
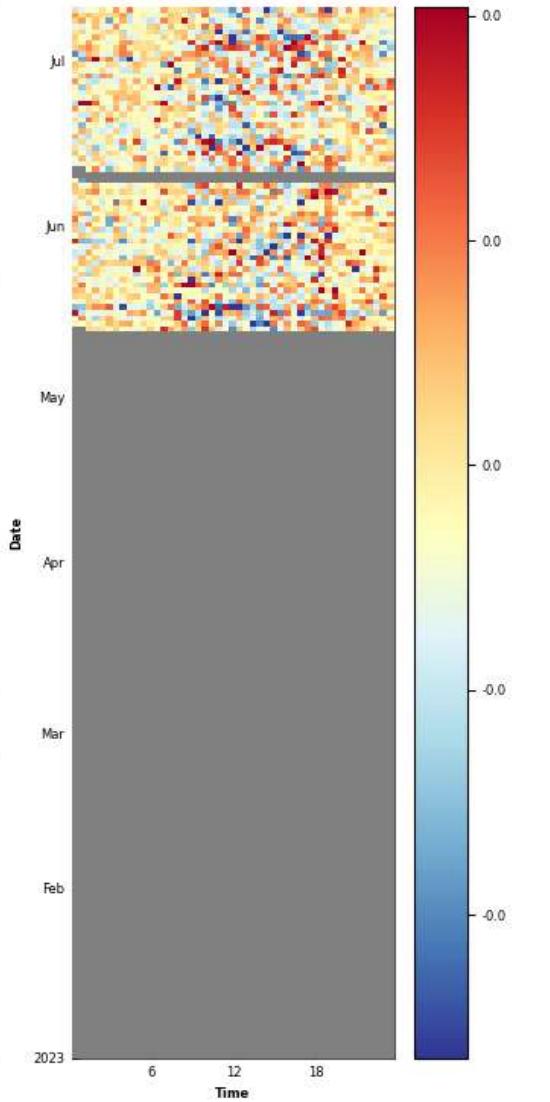
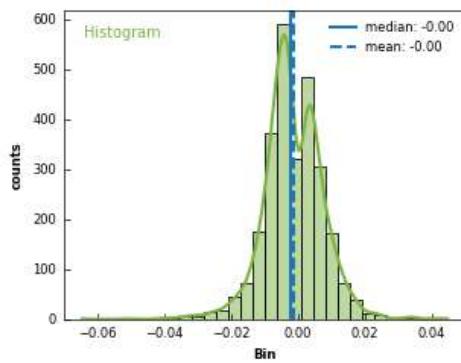
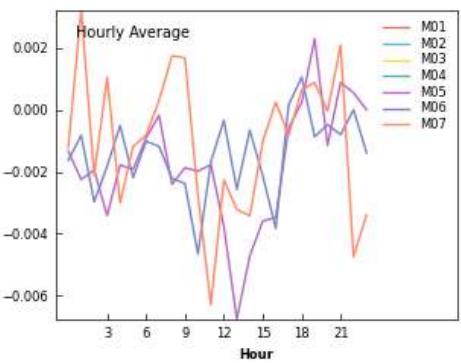
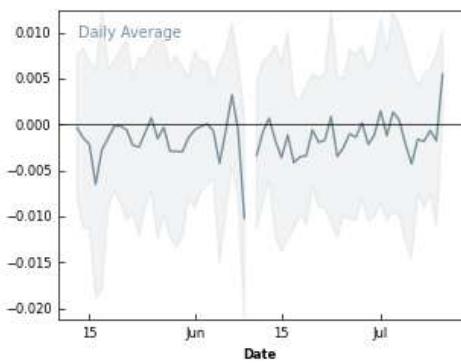
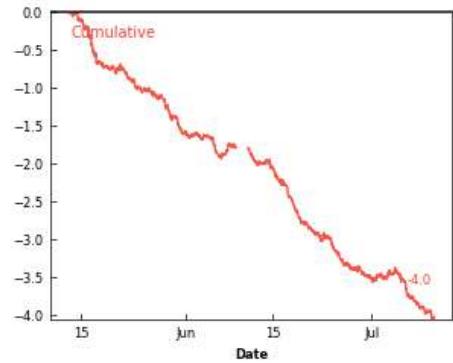
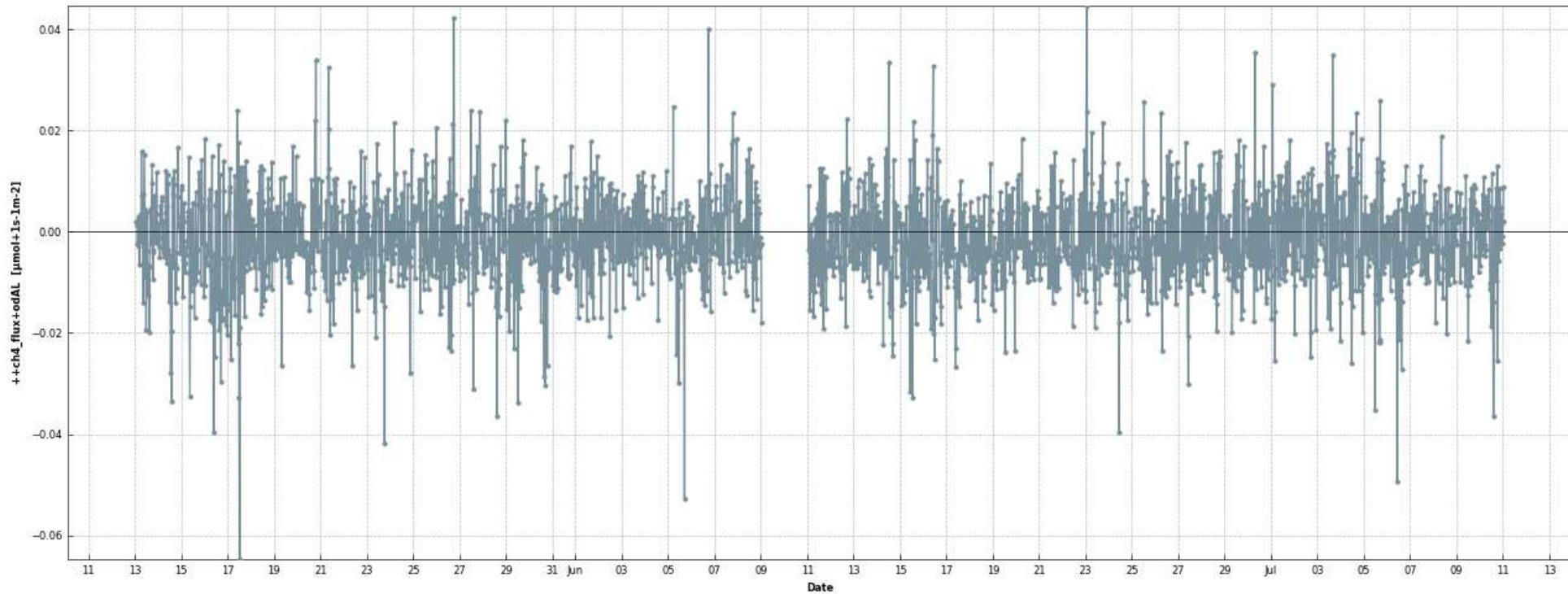
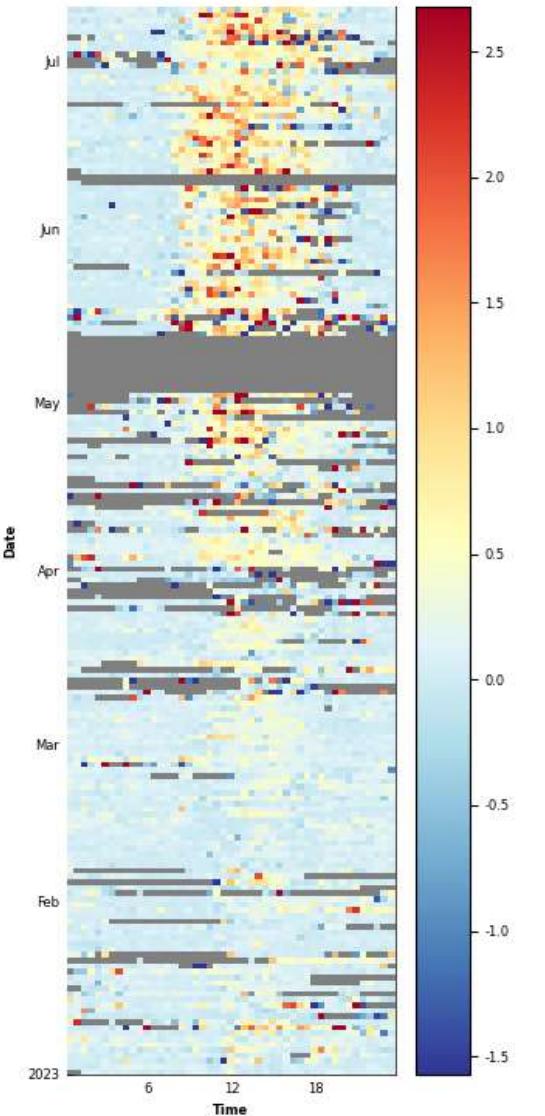
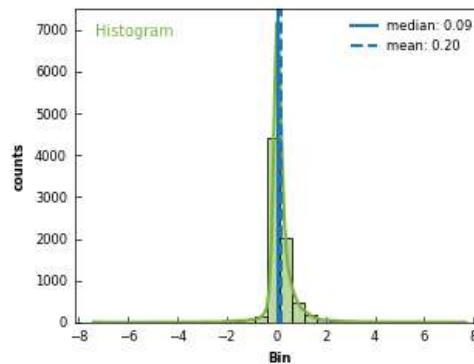
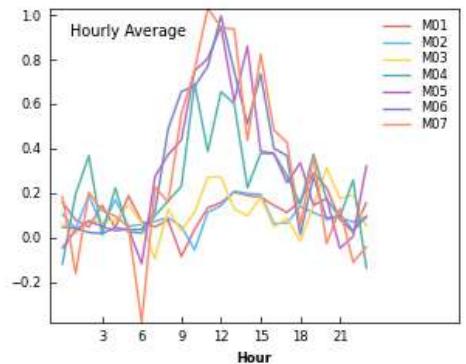
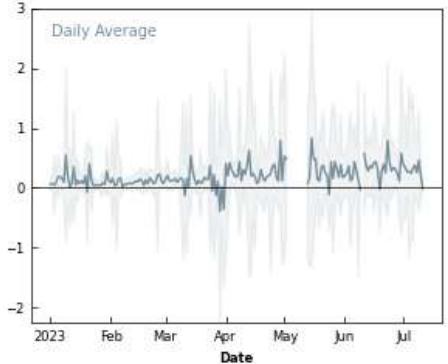
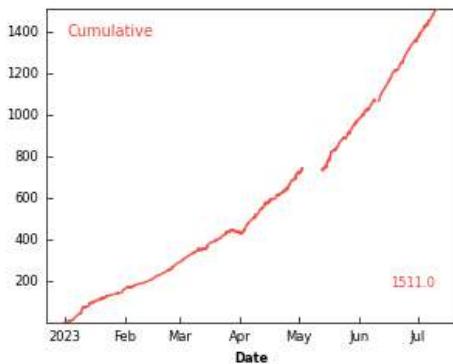
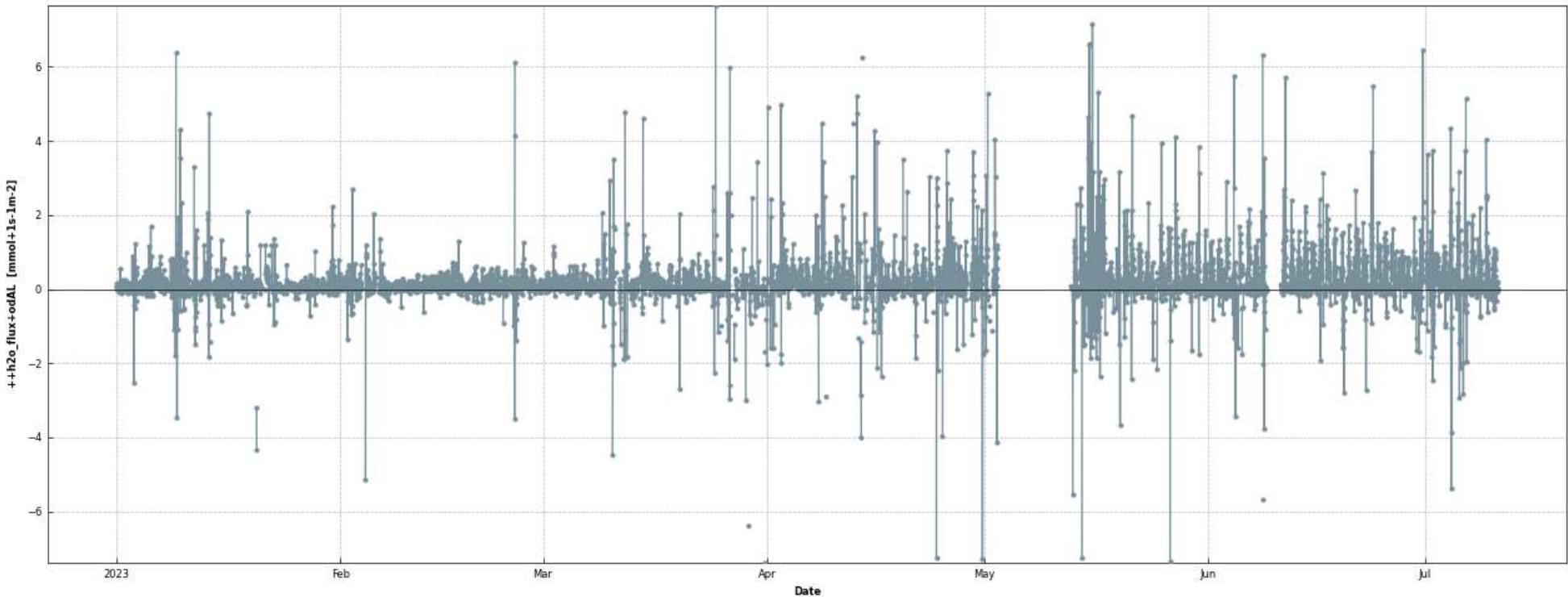


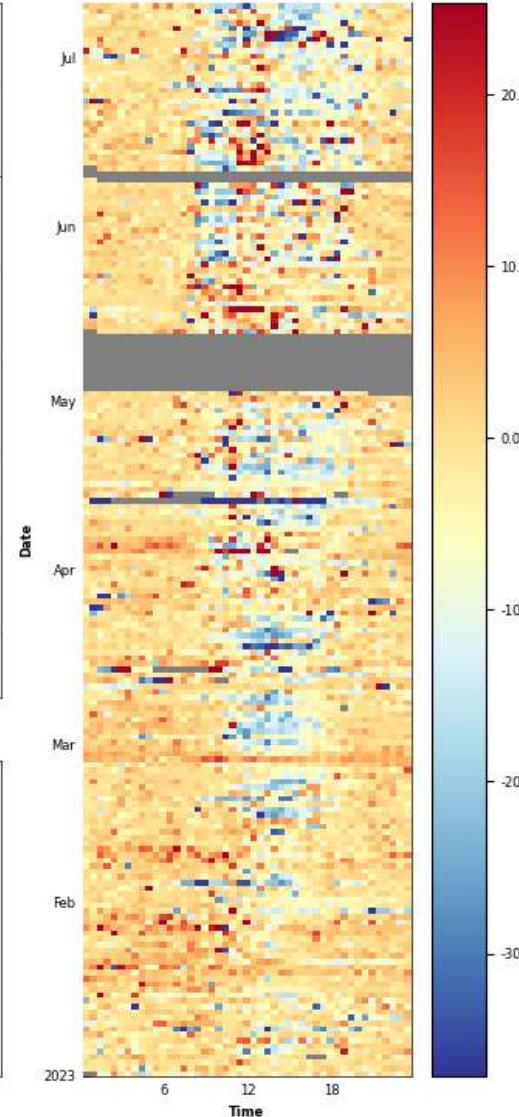
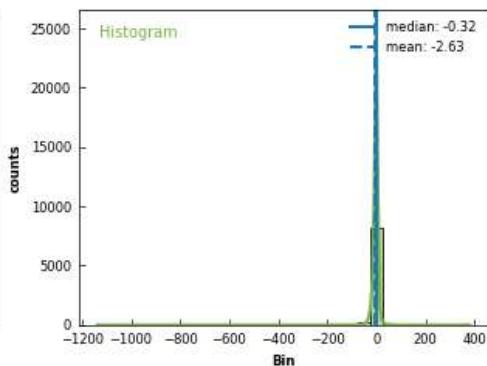
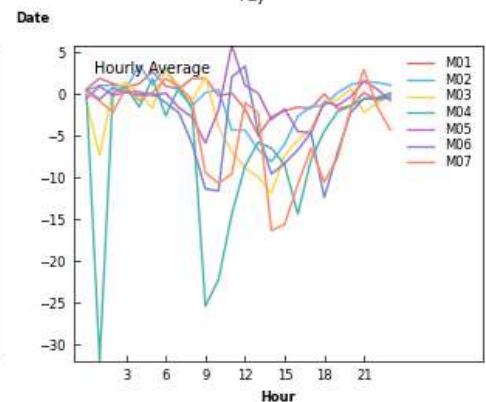
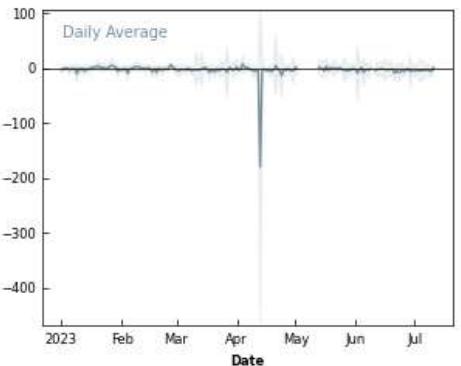
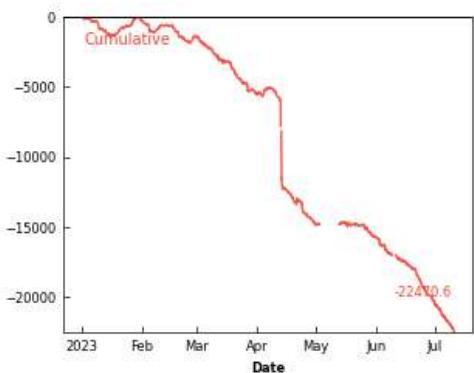
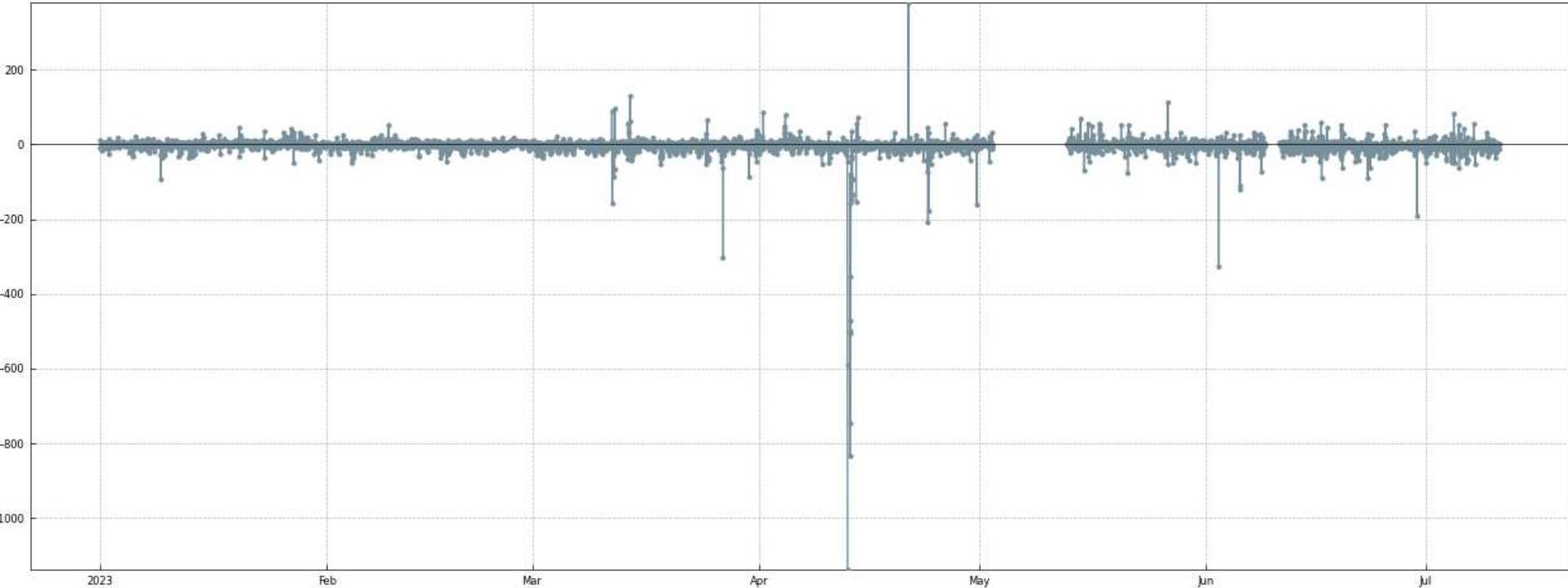


Photo: Luana Krebs







H [ $\text{W} \cdot \text{m}^{-2}$ ]

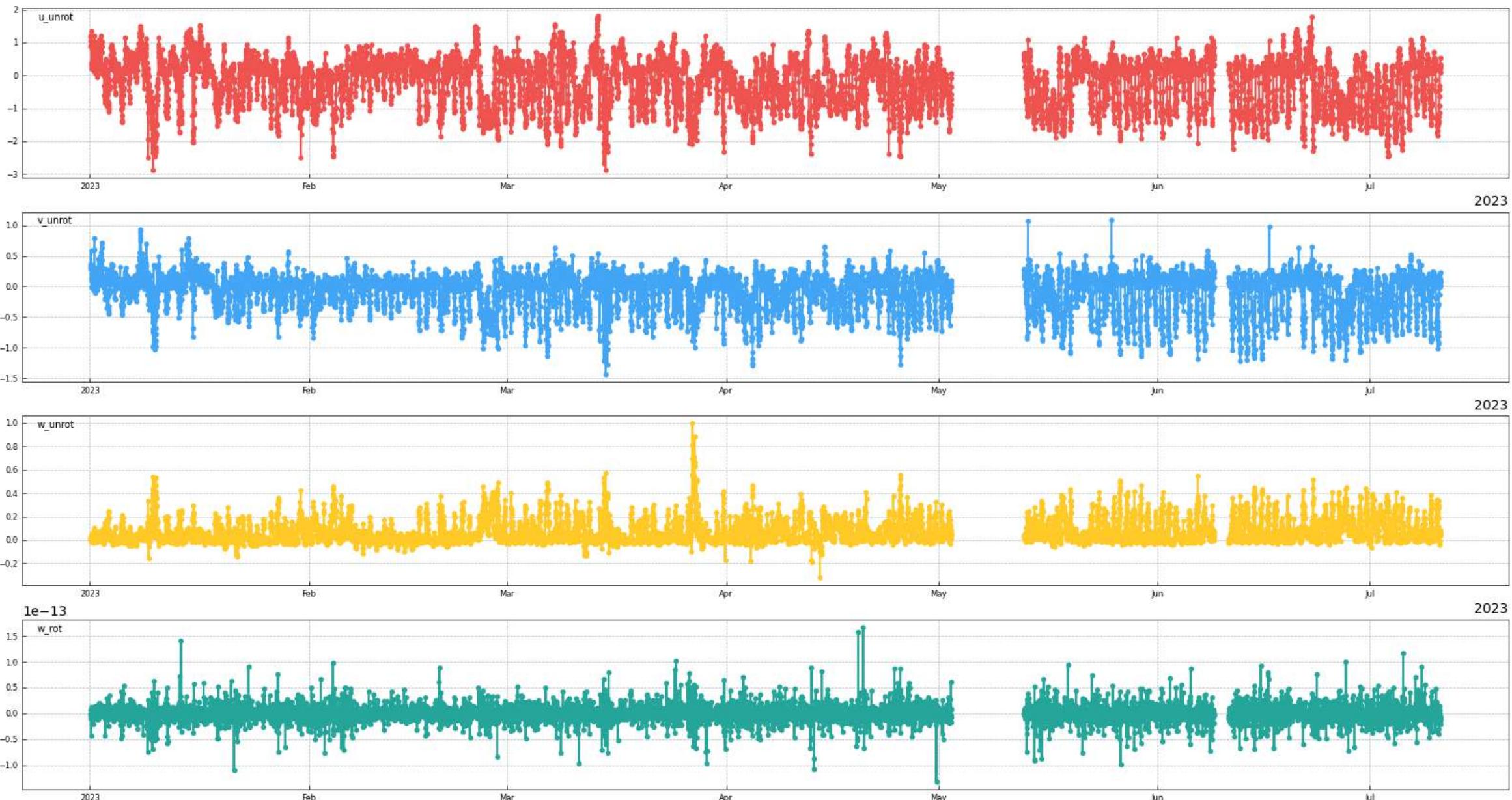
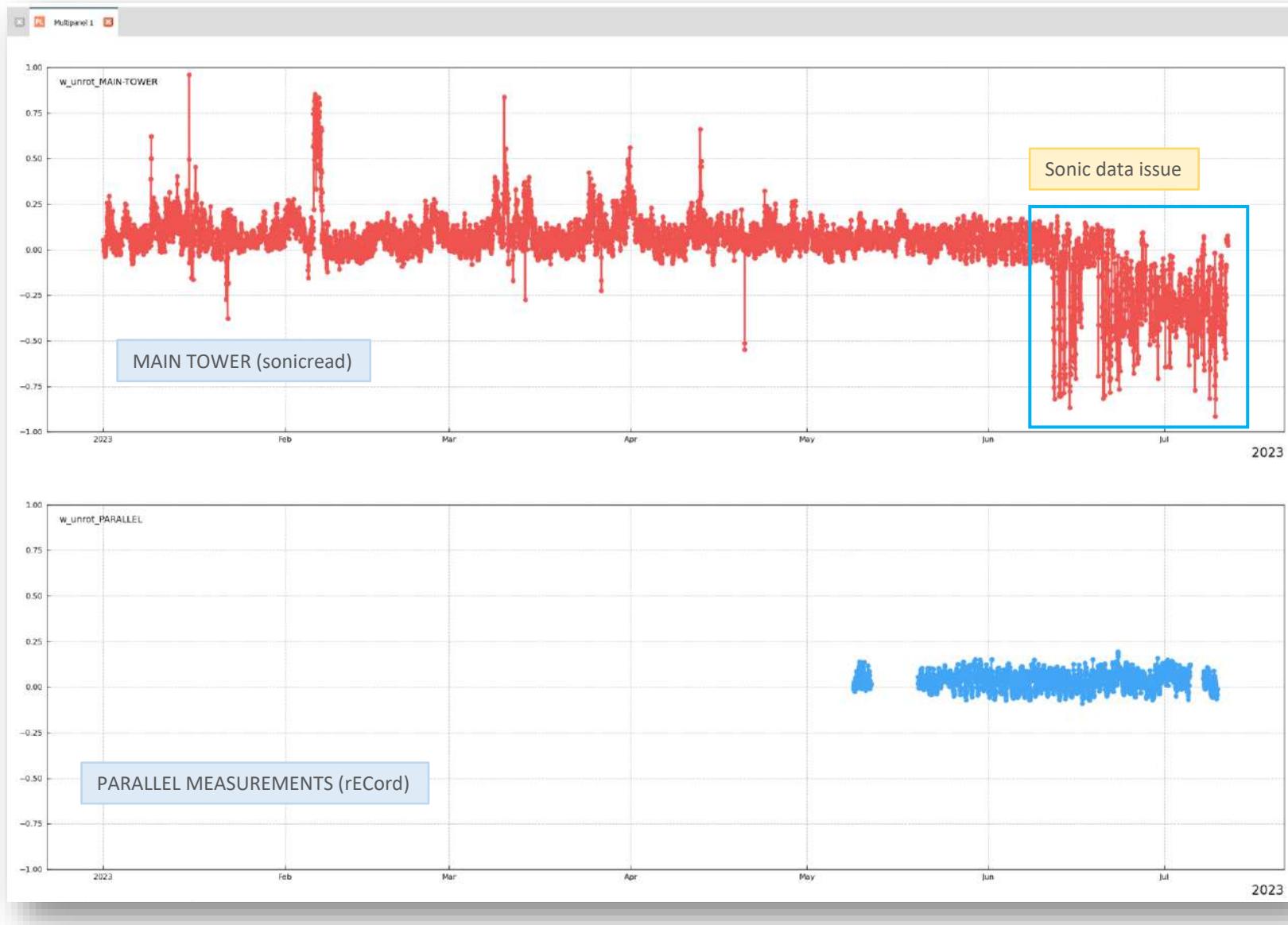




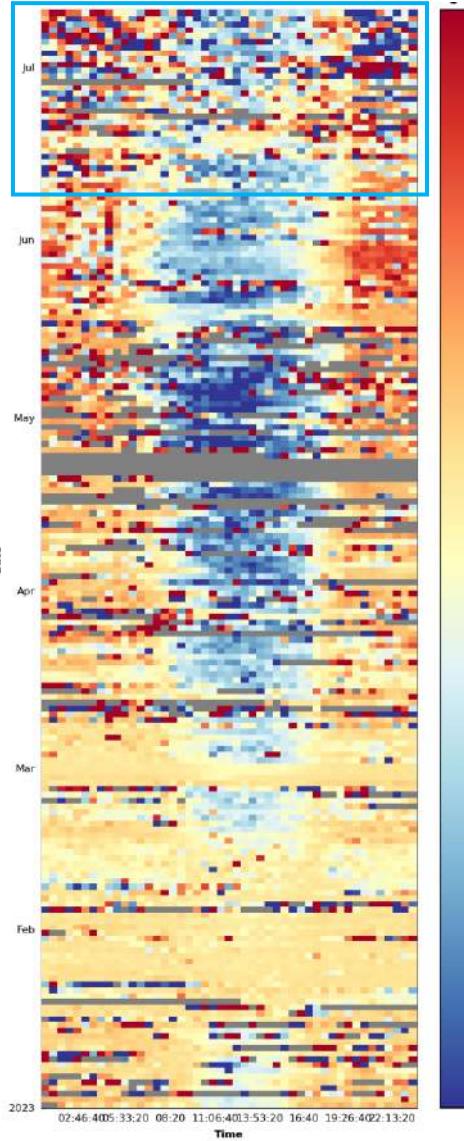
Photo: Lukas Hörtnagl



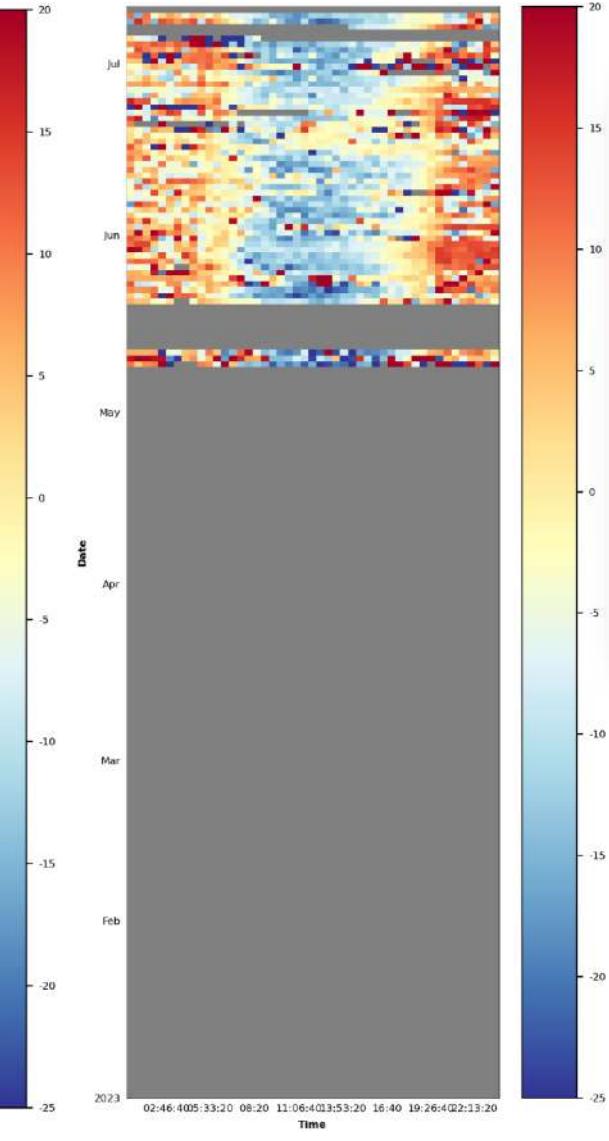
- Issues with sonic data started on 12 Jun 2023
- But sonic data from parallel measurements look good



MAIN TOWER (sonicread)

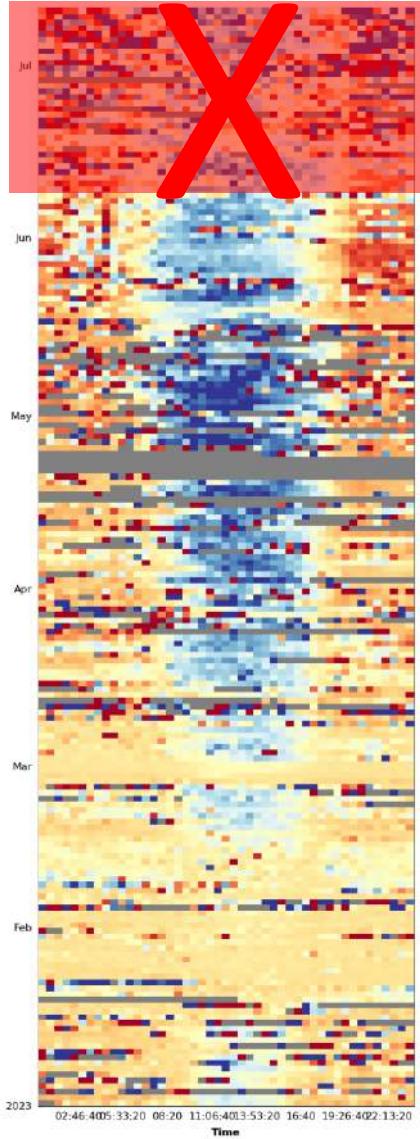


PARALLEL MEASUREMENTS (rECord)

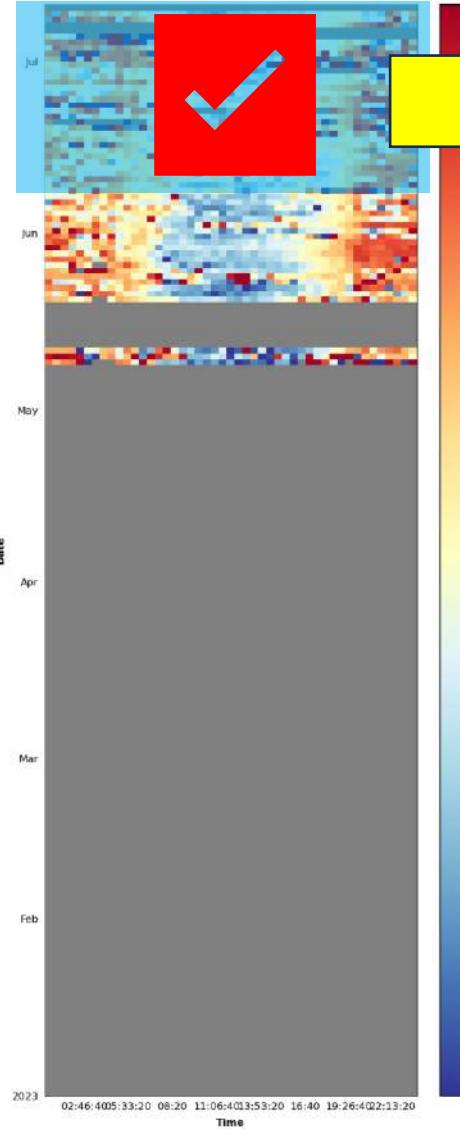


- Both systems measure similar fluxes under normal (no issues) conditions
- We can merge the two time series to one complete time series
- The parallel system replaces data from the main system from 12 Jun onwards (see next slide)

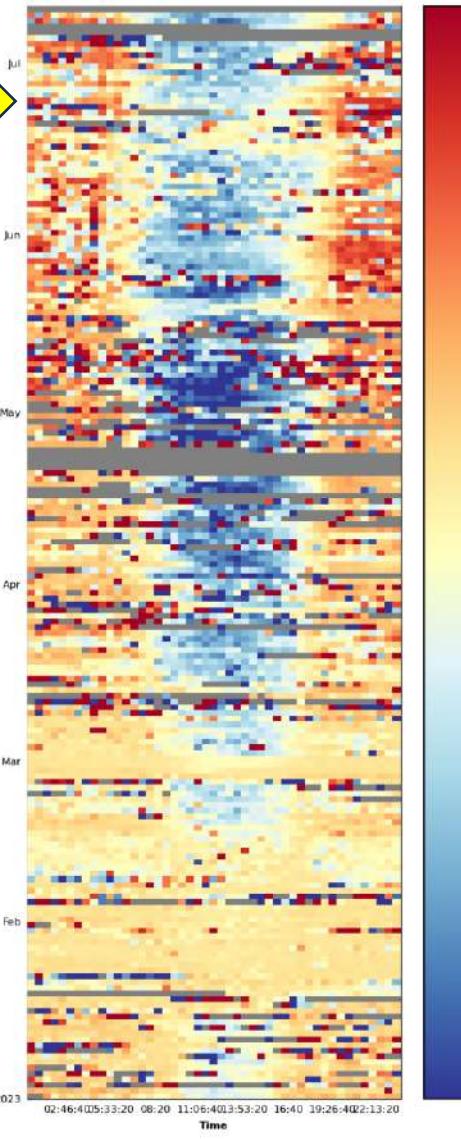
MAIN TOWER (sonicread)

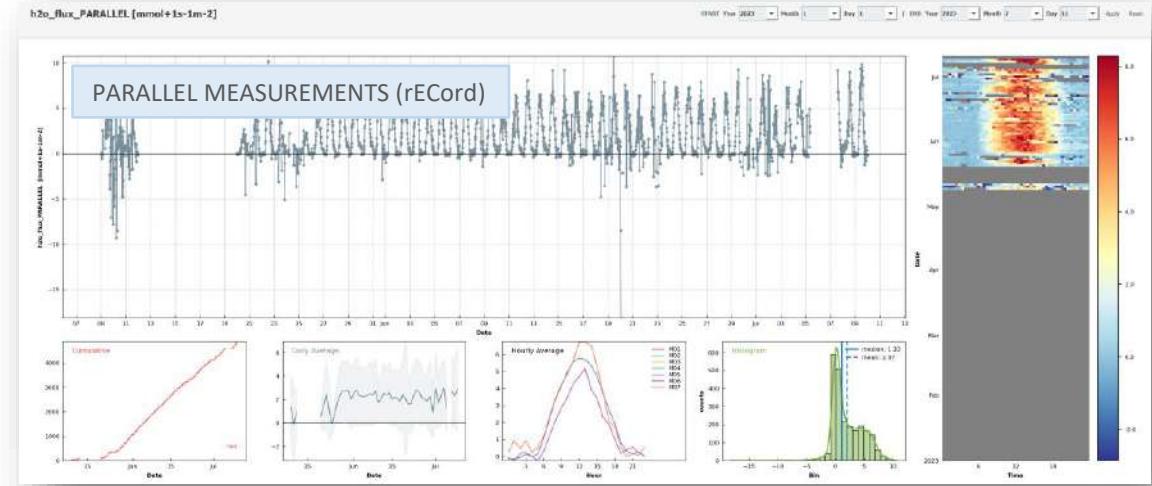
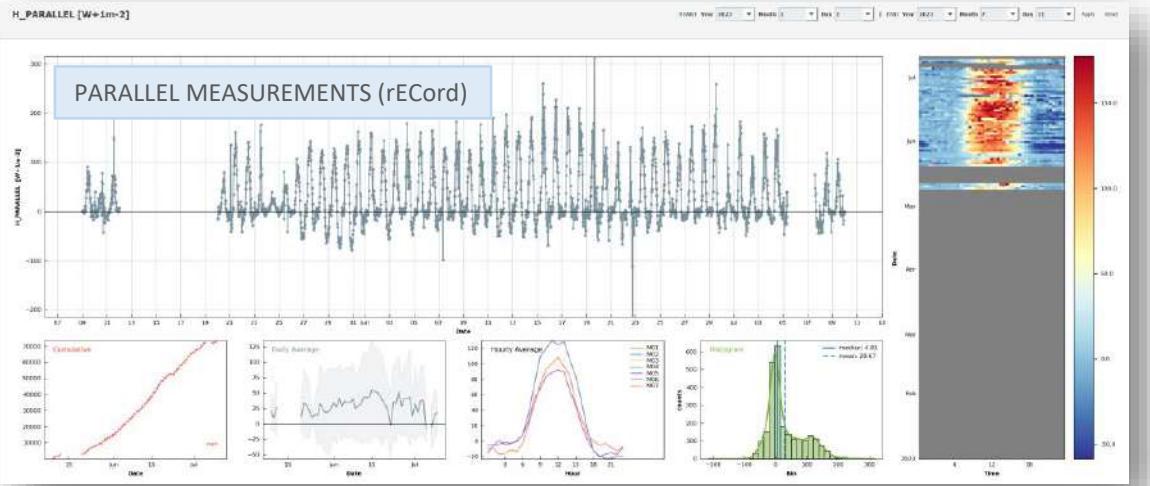
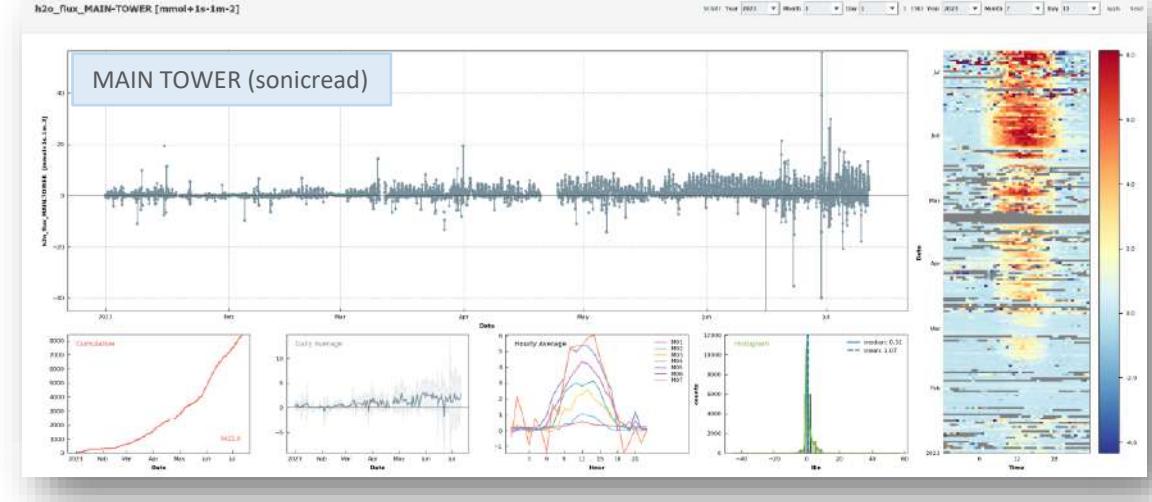
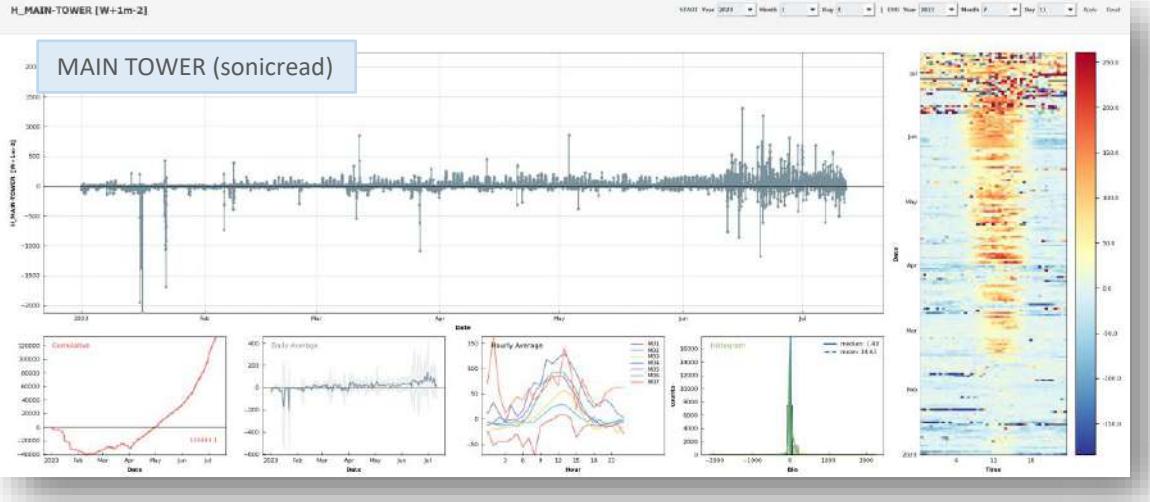


PARALLEL MEASUREMENTS (rECord)



MAIN TOWER replaced with PARALLEL data from 12 Jun onwards





- All fluxes from the main tower are affected by the sonic issues

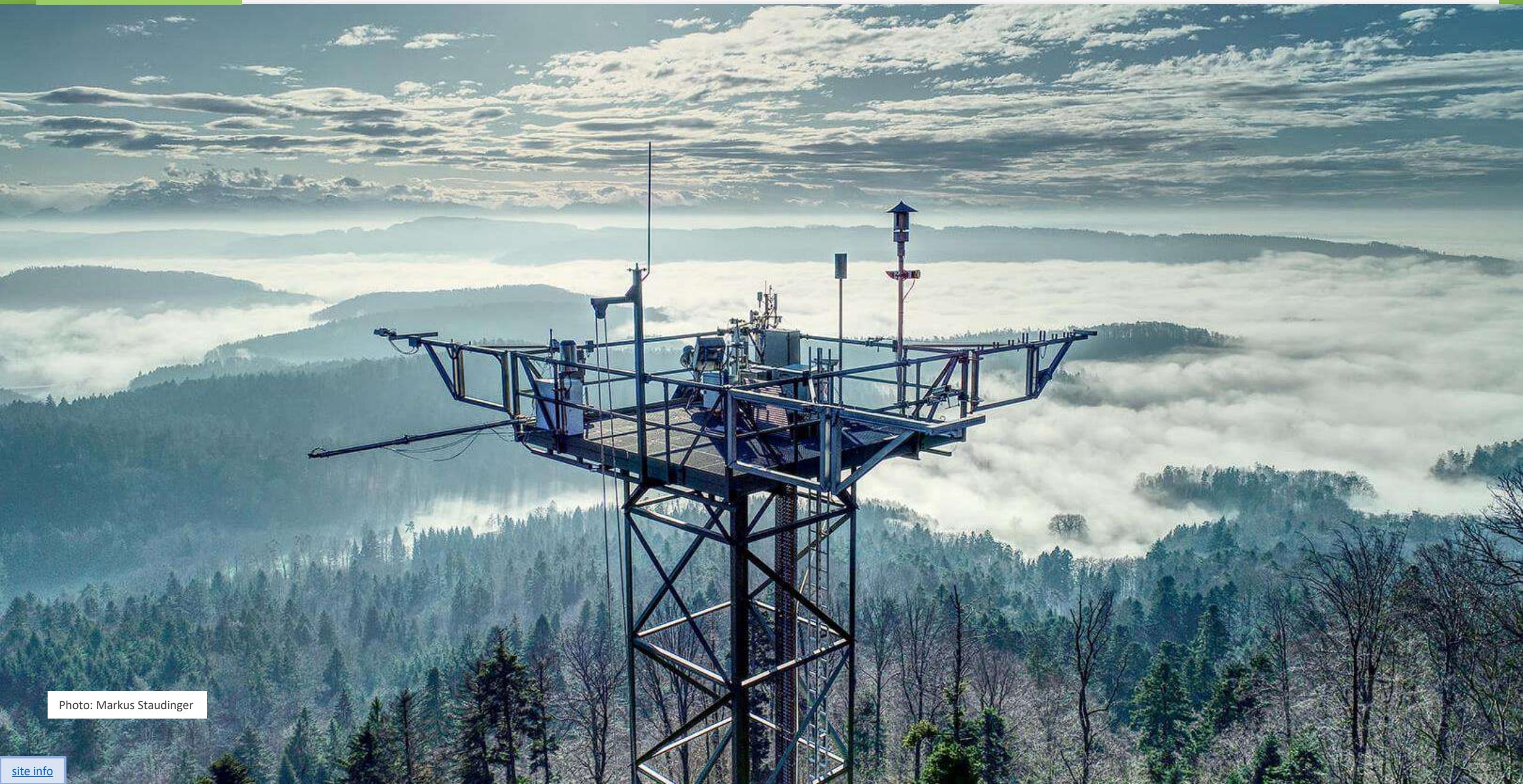
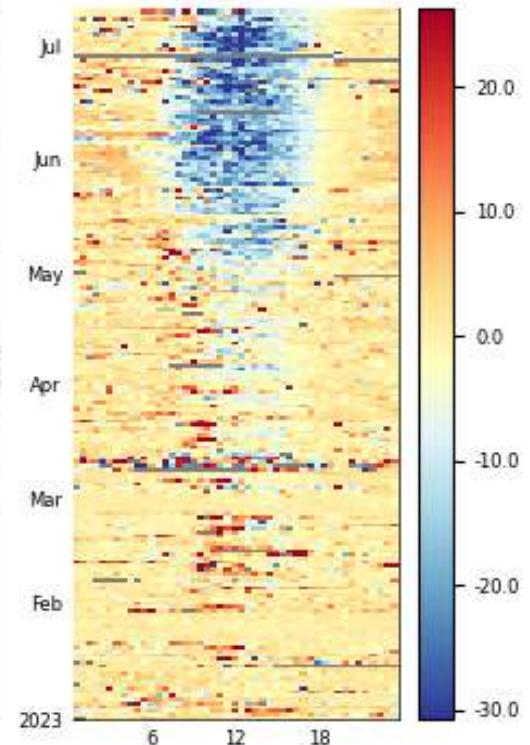
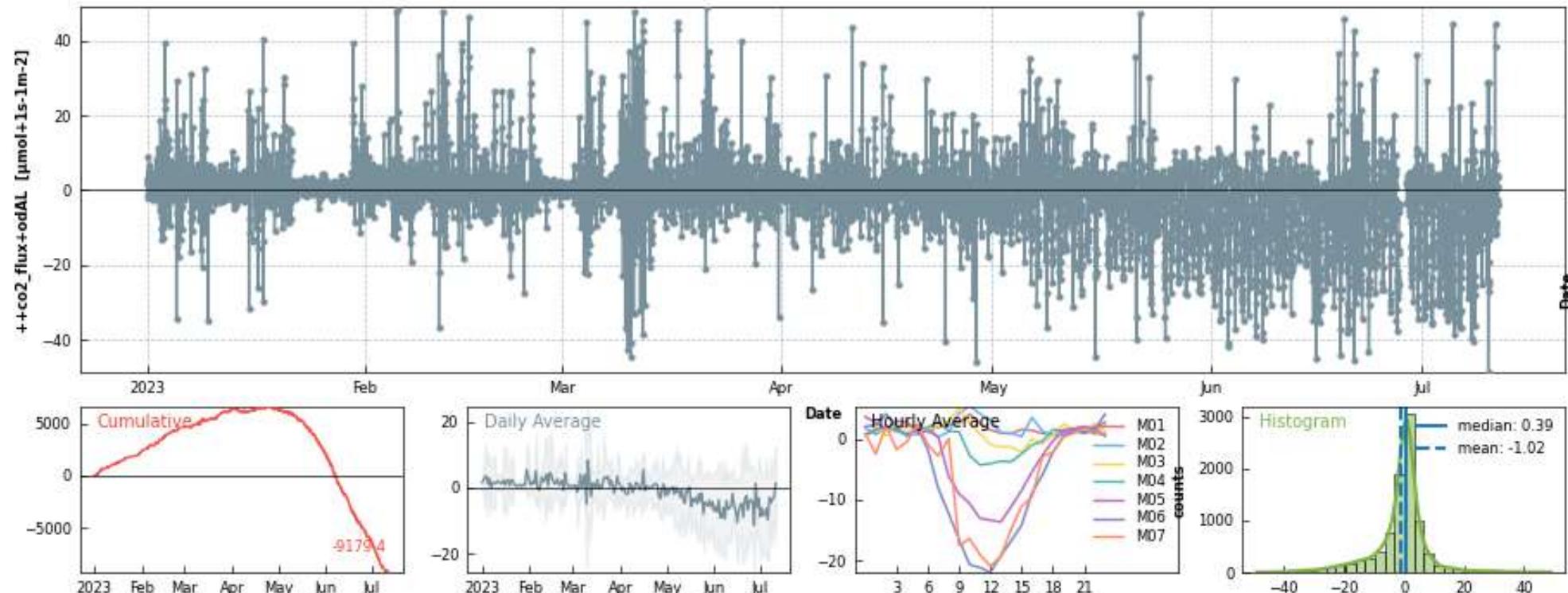
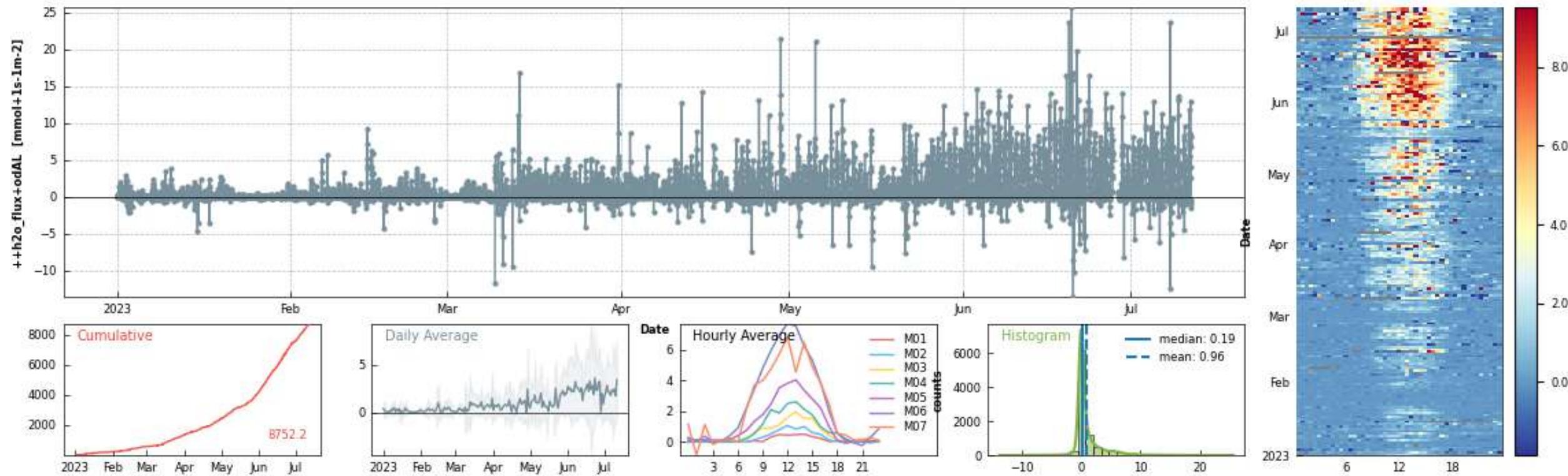
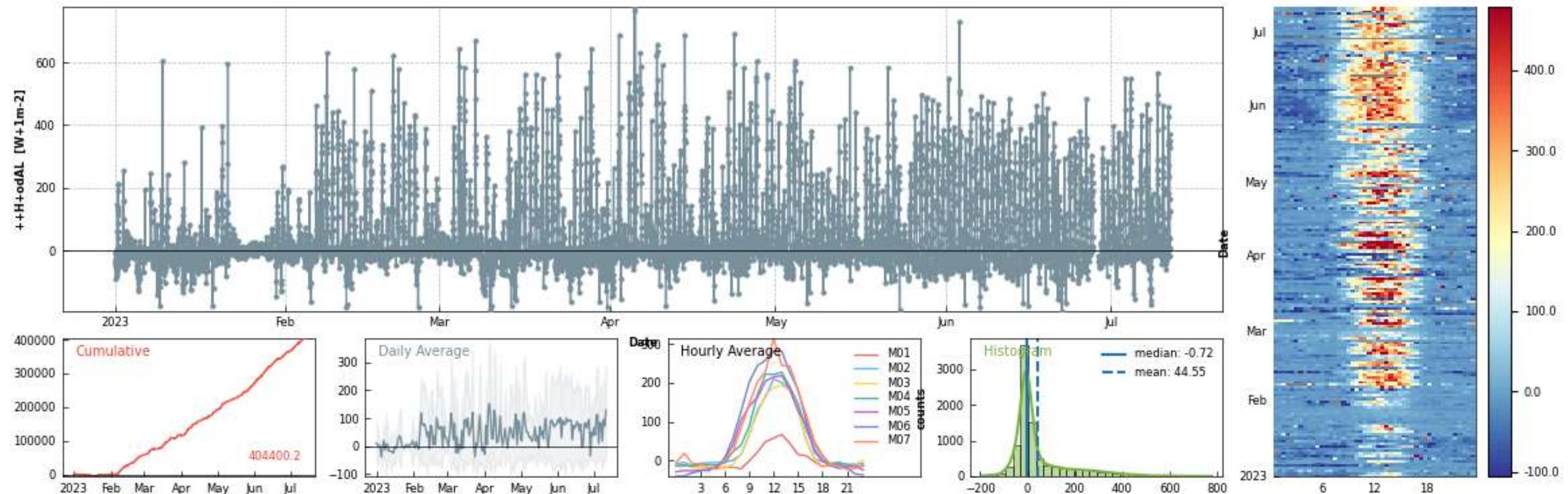


Photo: Markus Staudinger







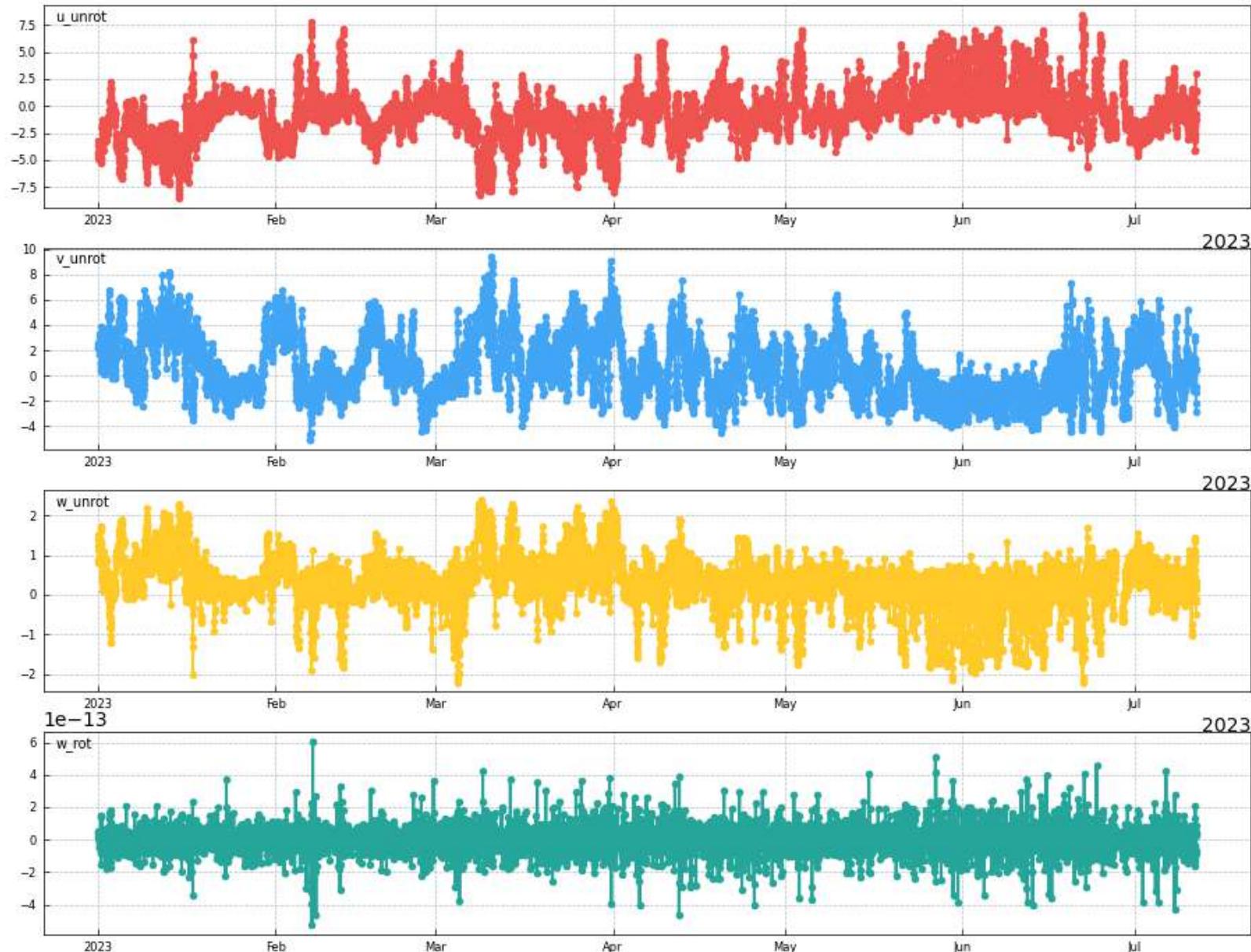
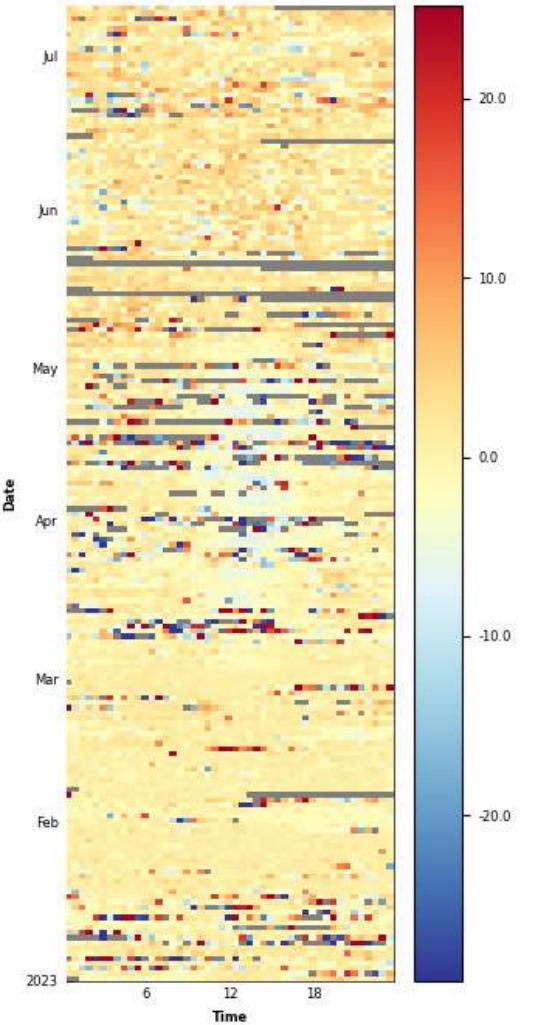
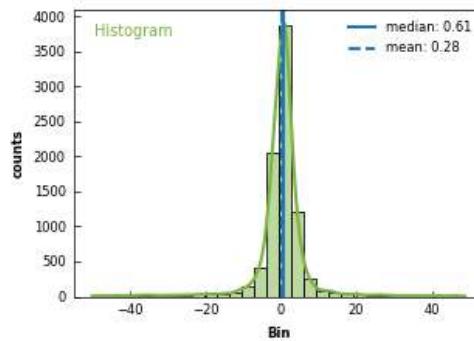
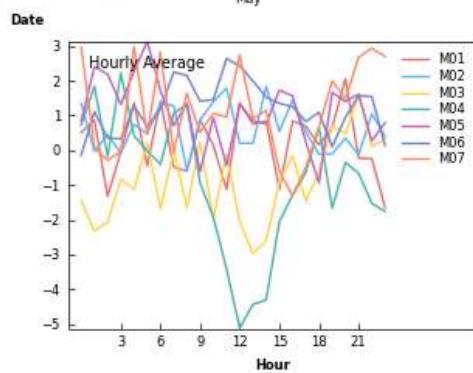
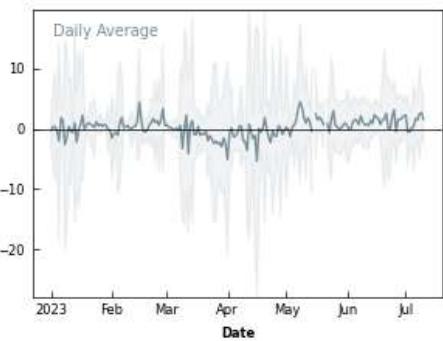
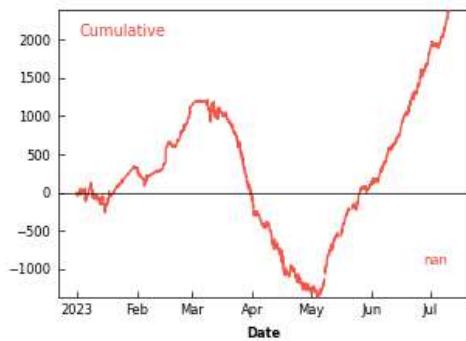
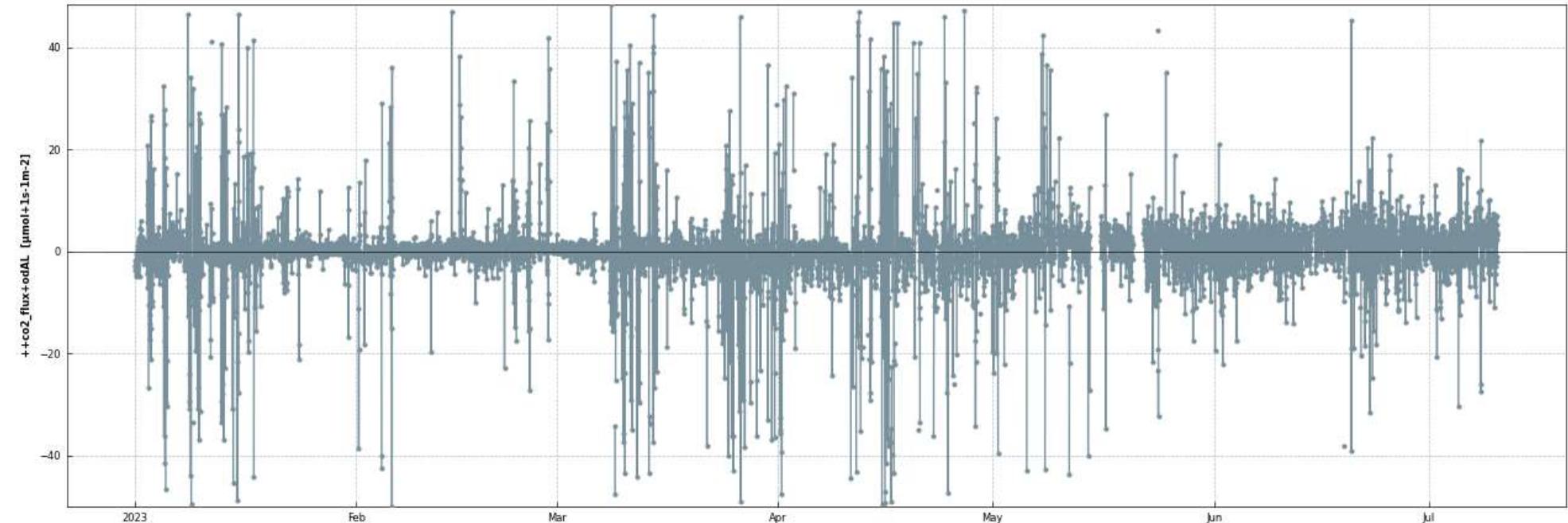
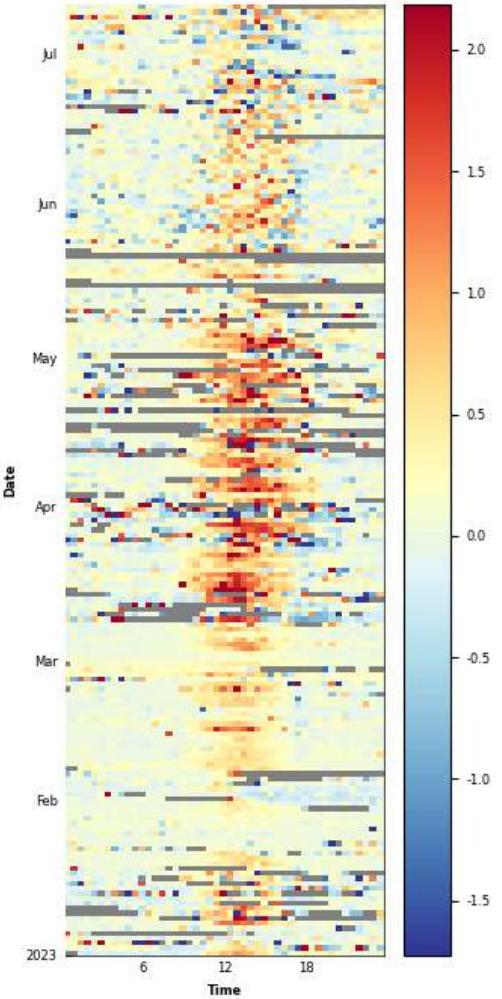
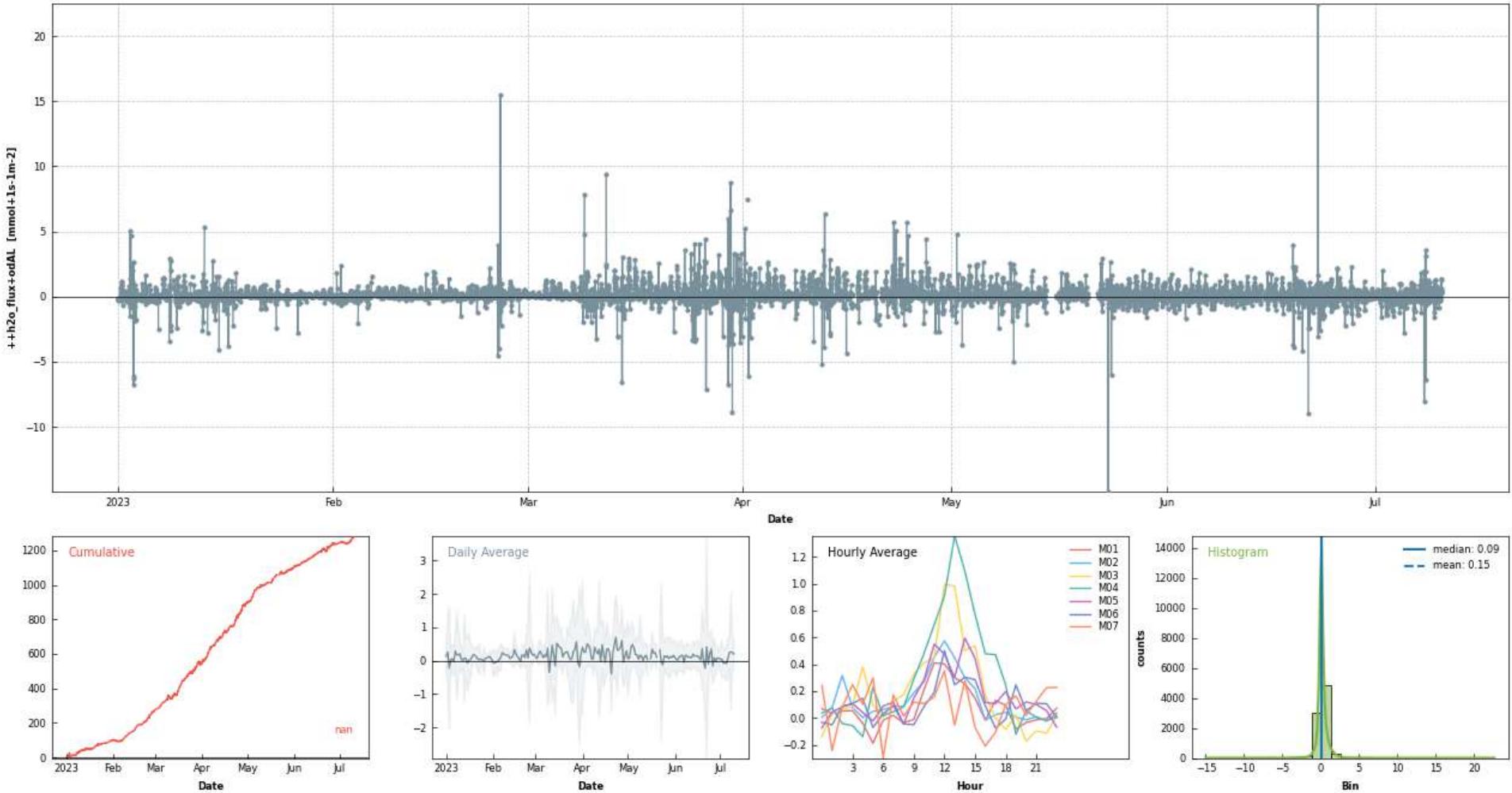
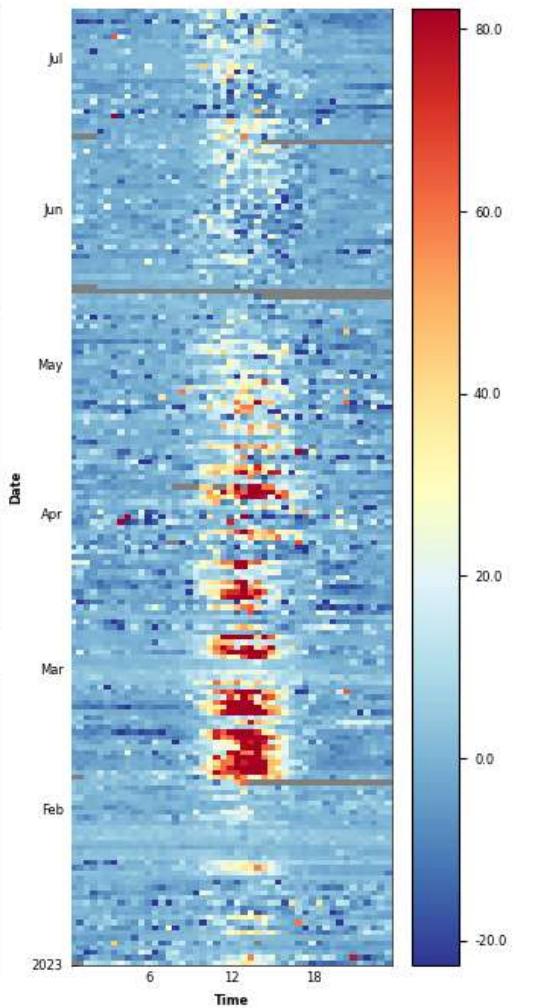
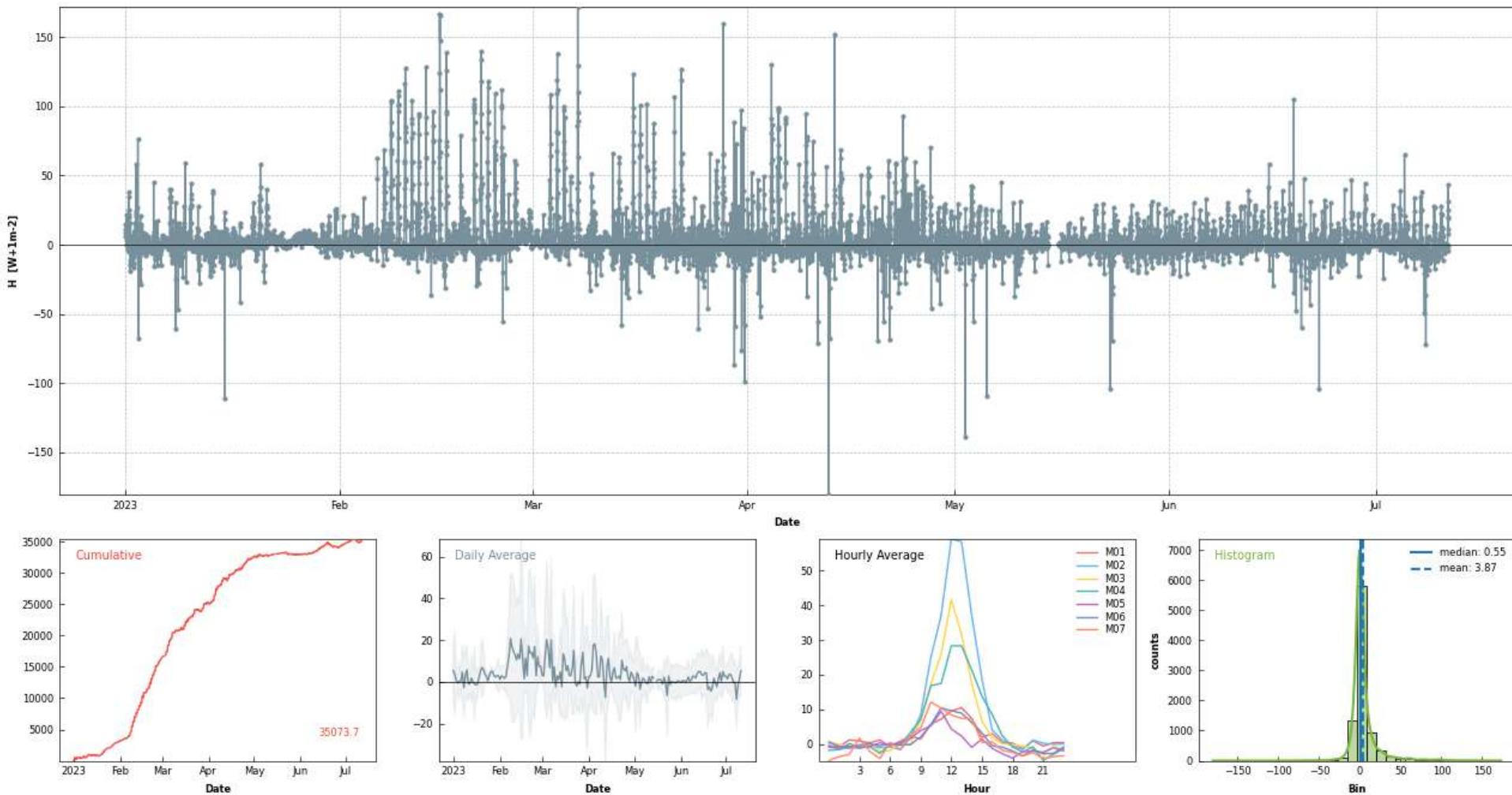




Photo: ETH GL Group







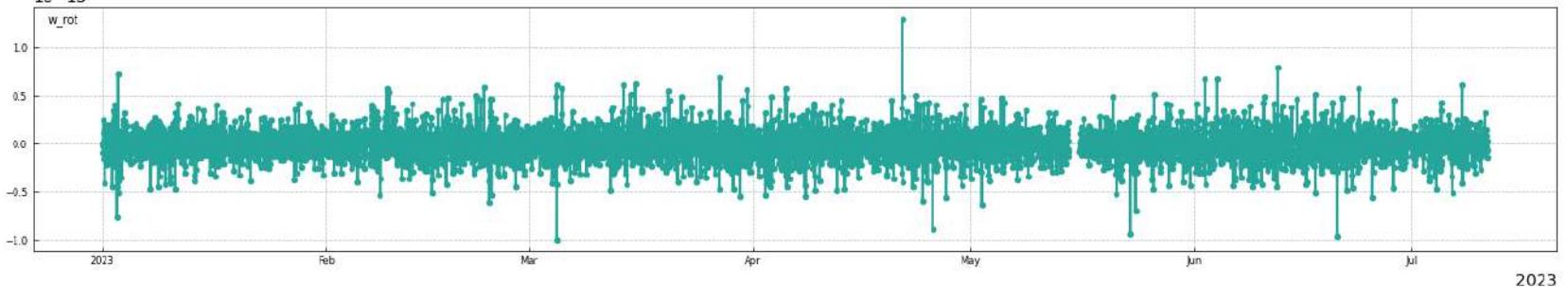
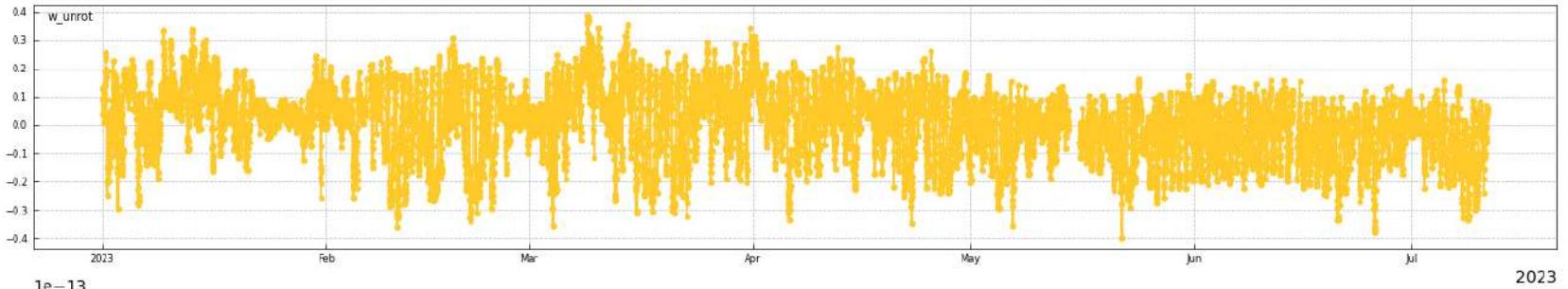
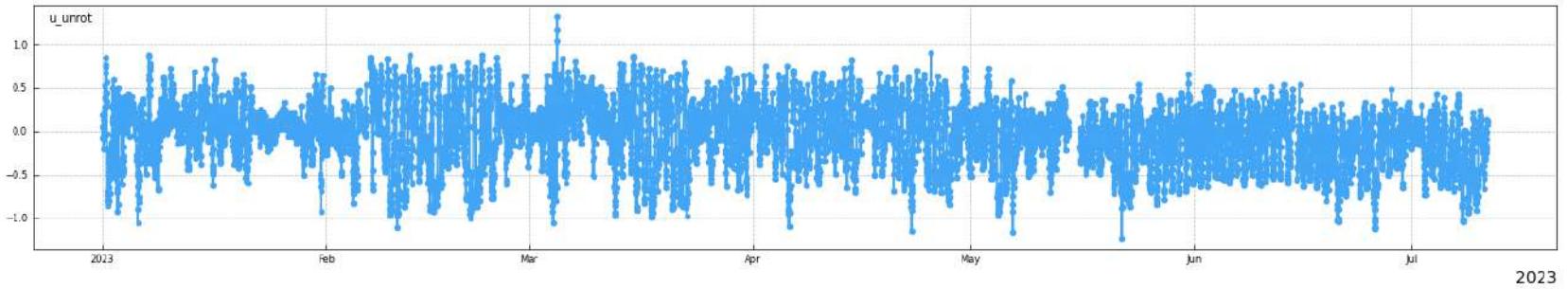
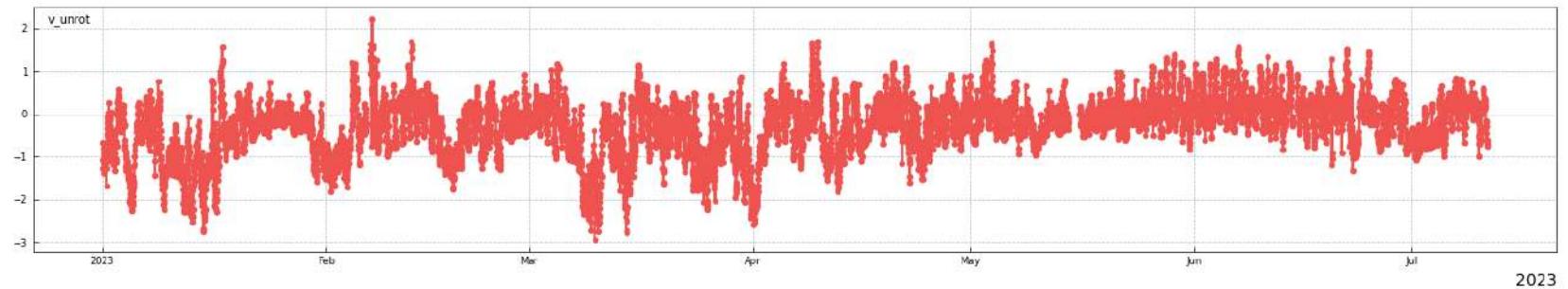
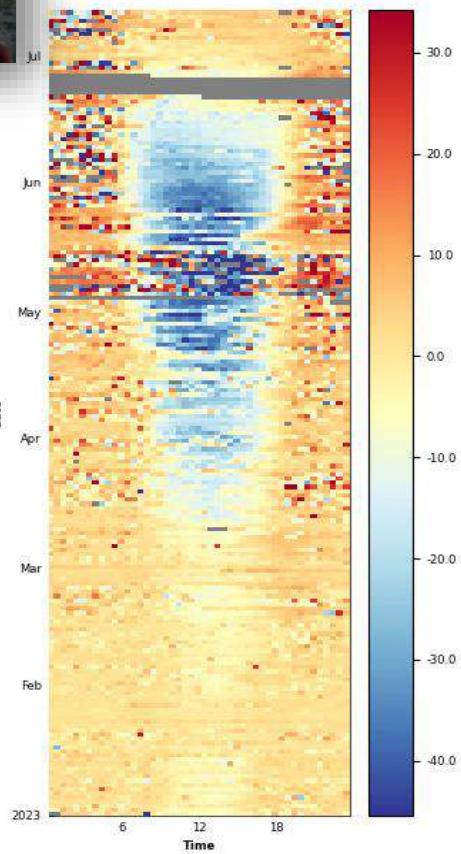
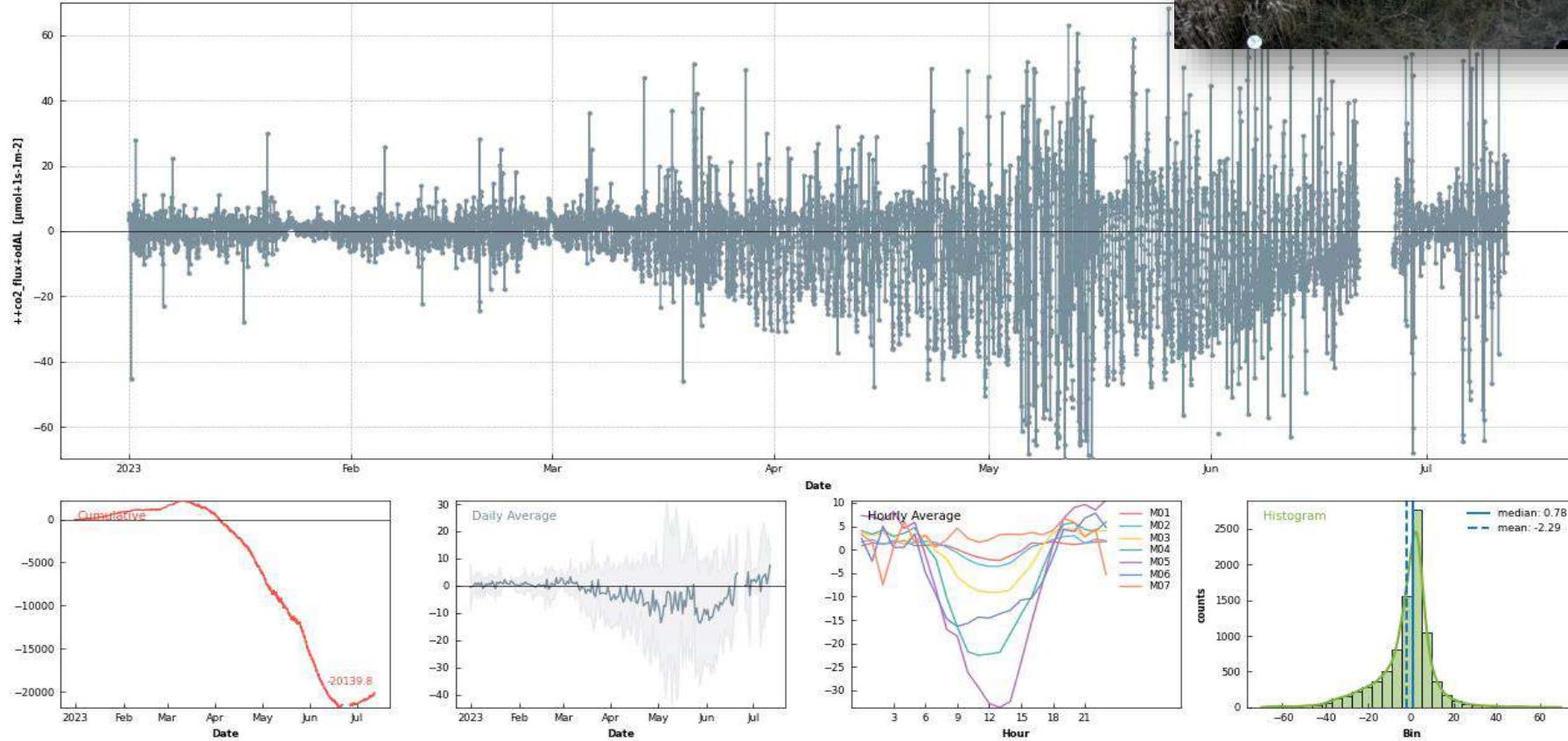
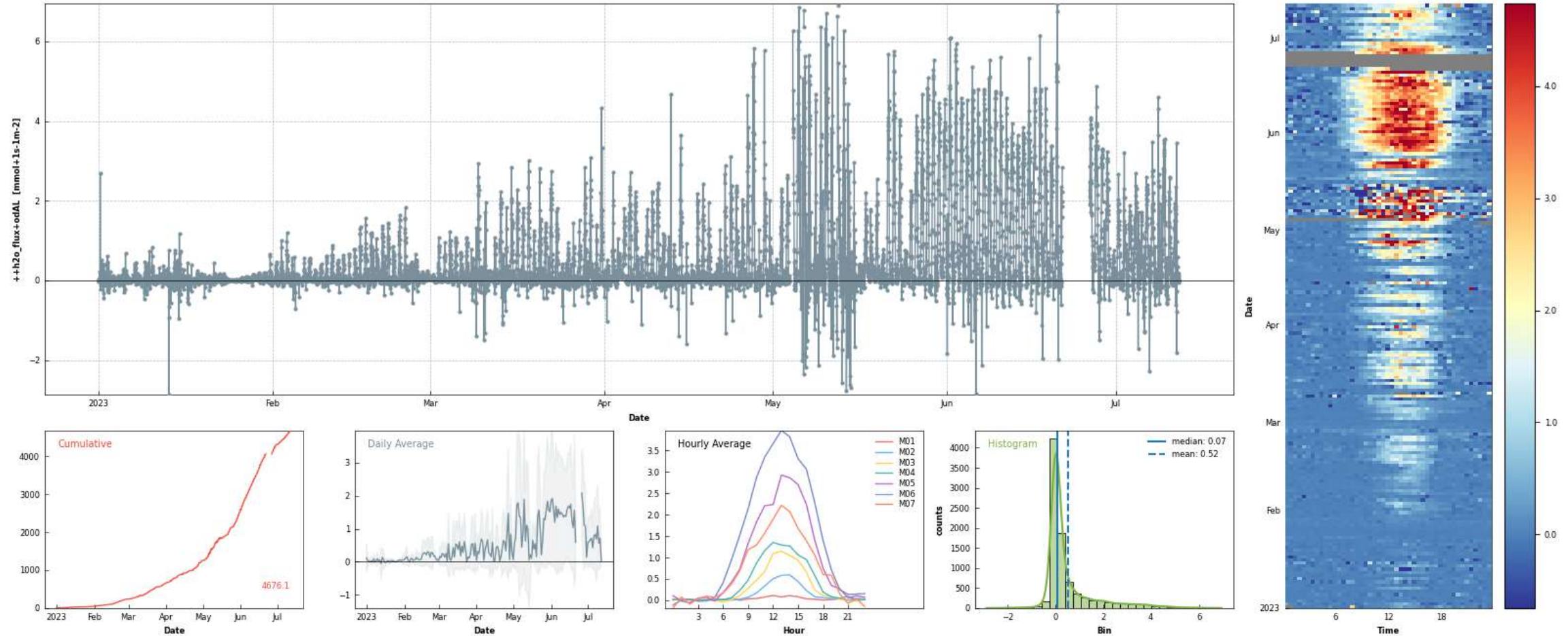
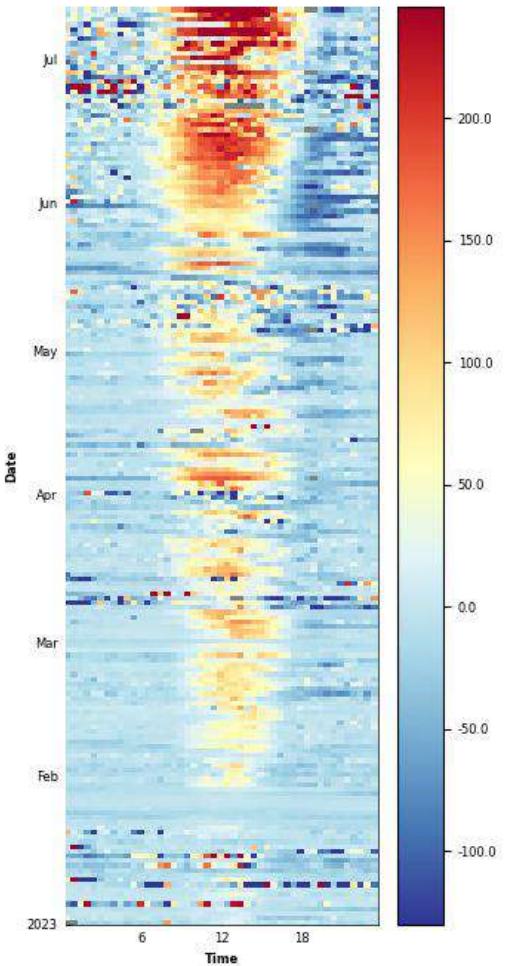
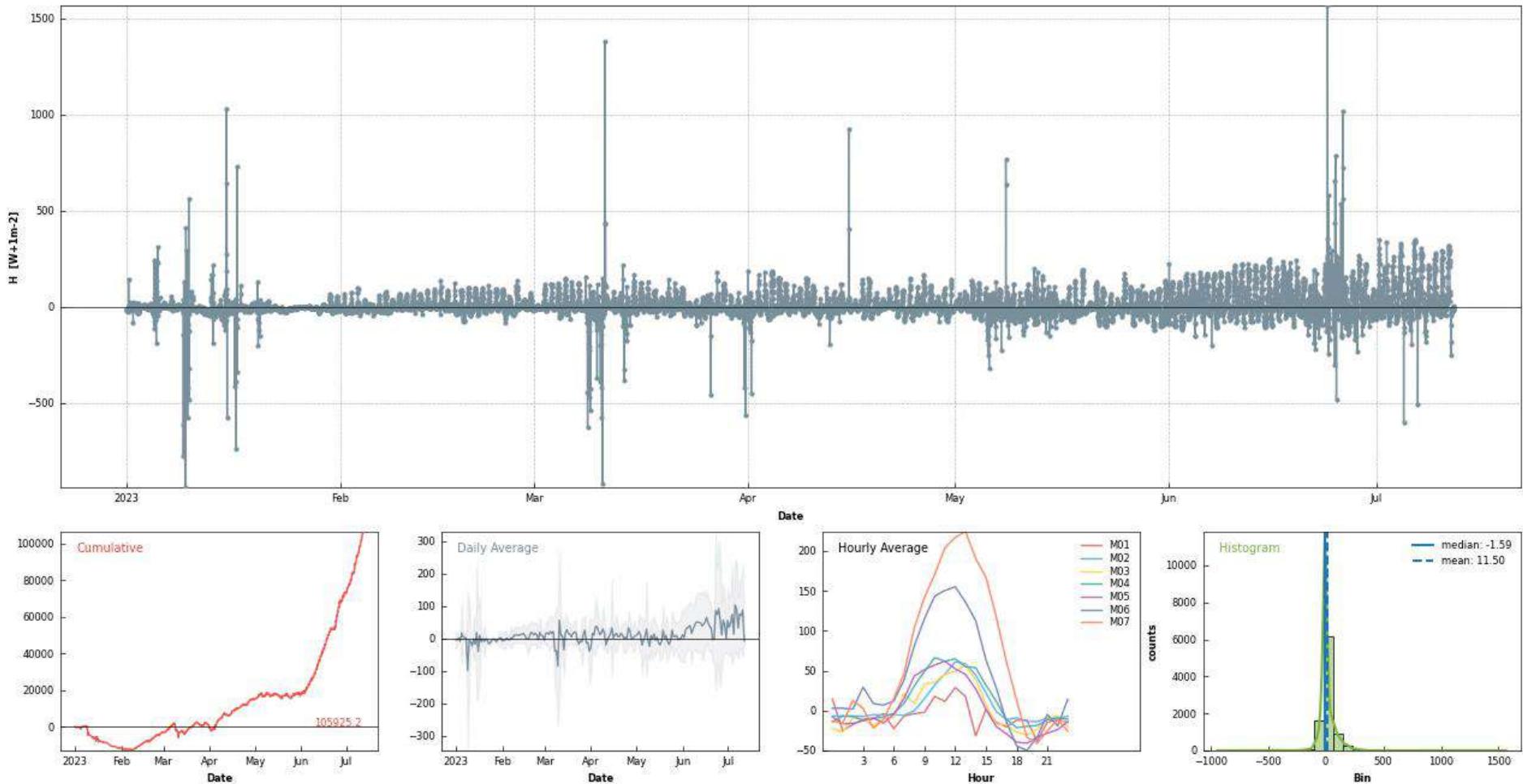


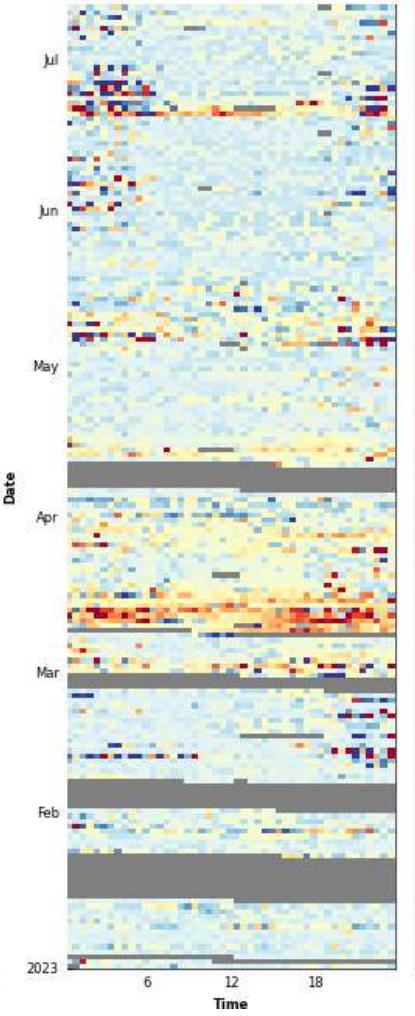
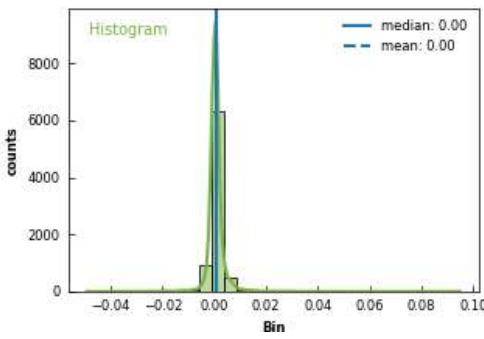
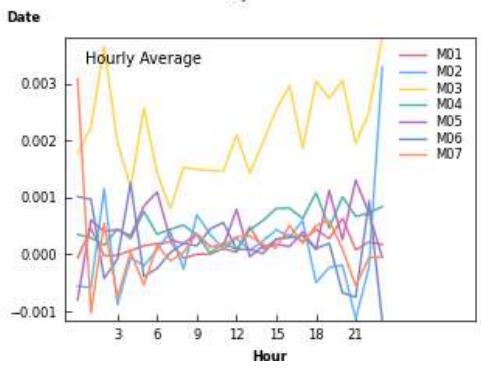
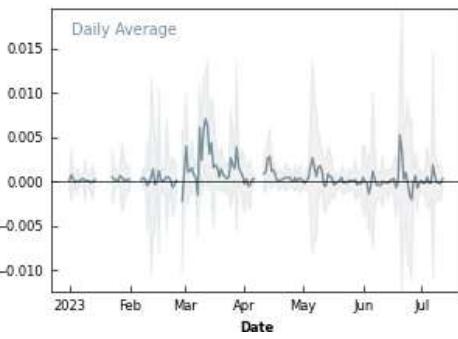
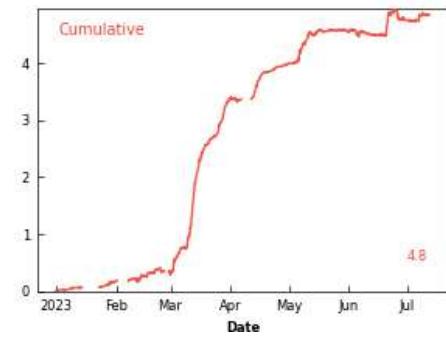
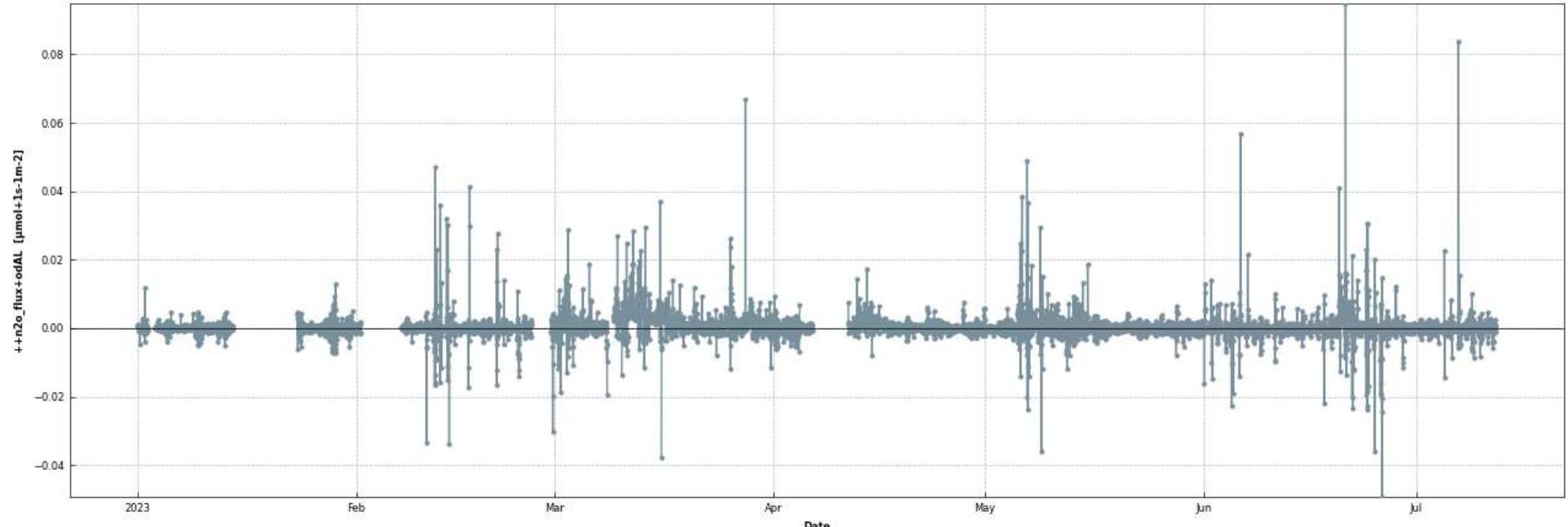


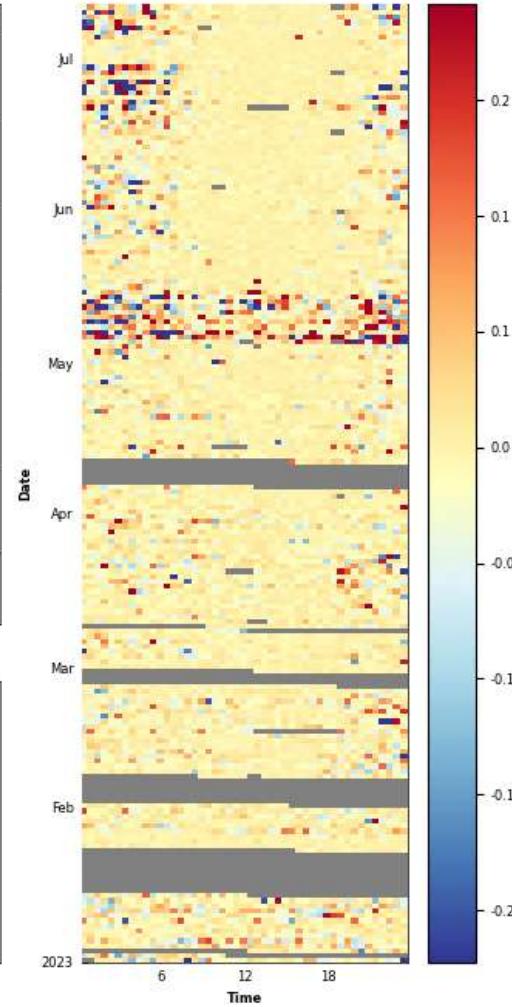
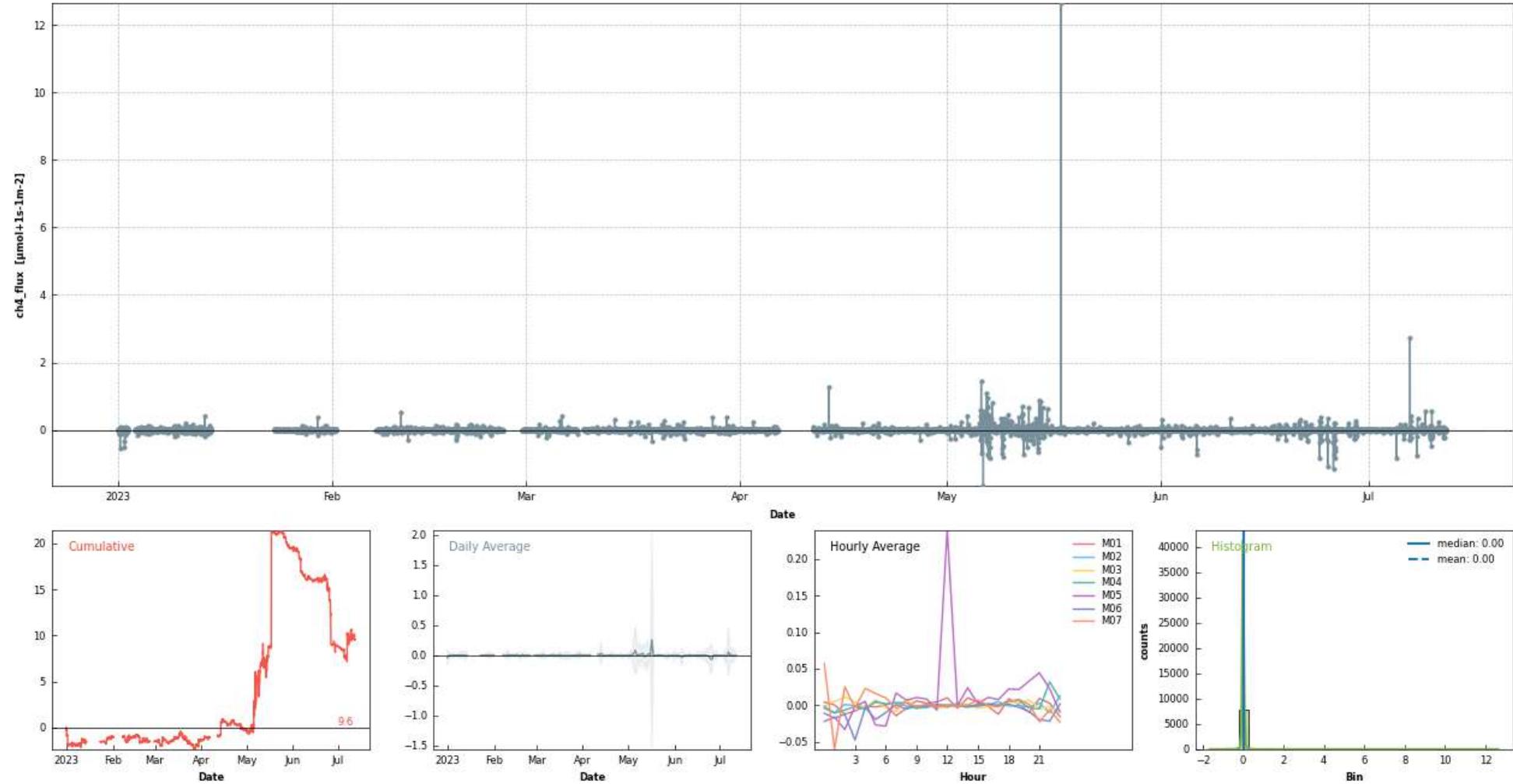
Photo: Regine Maier

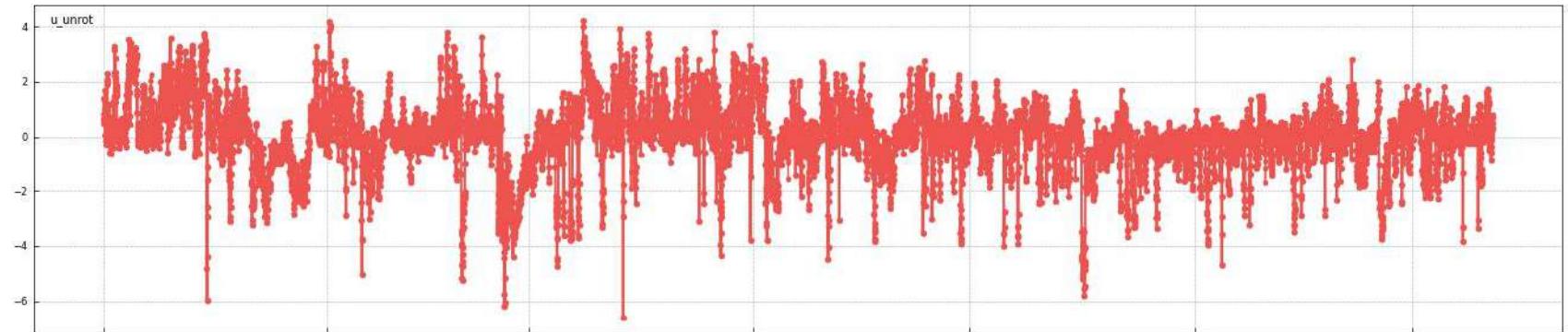




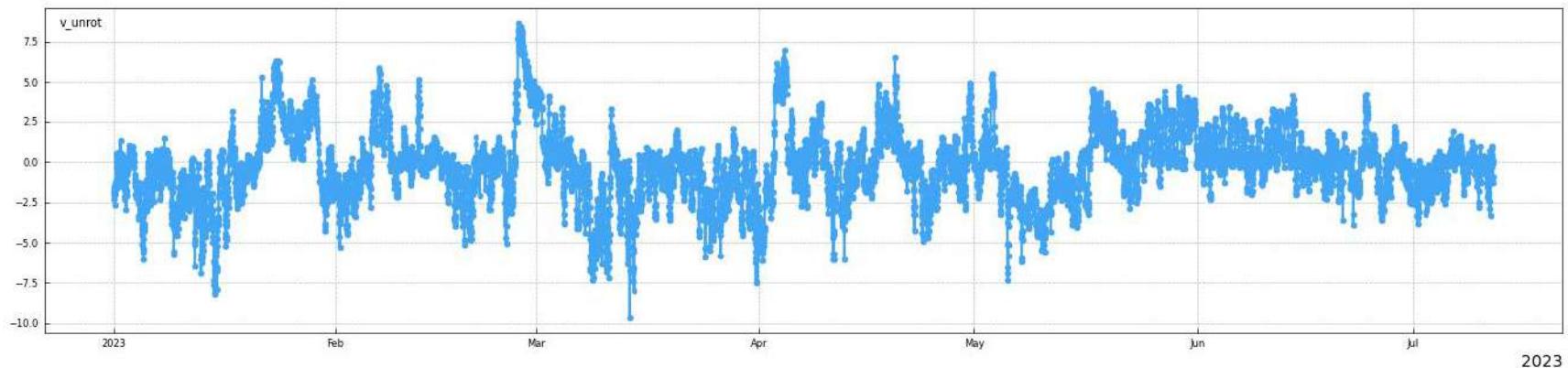




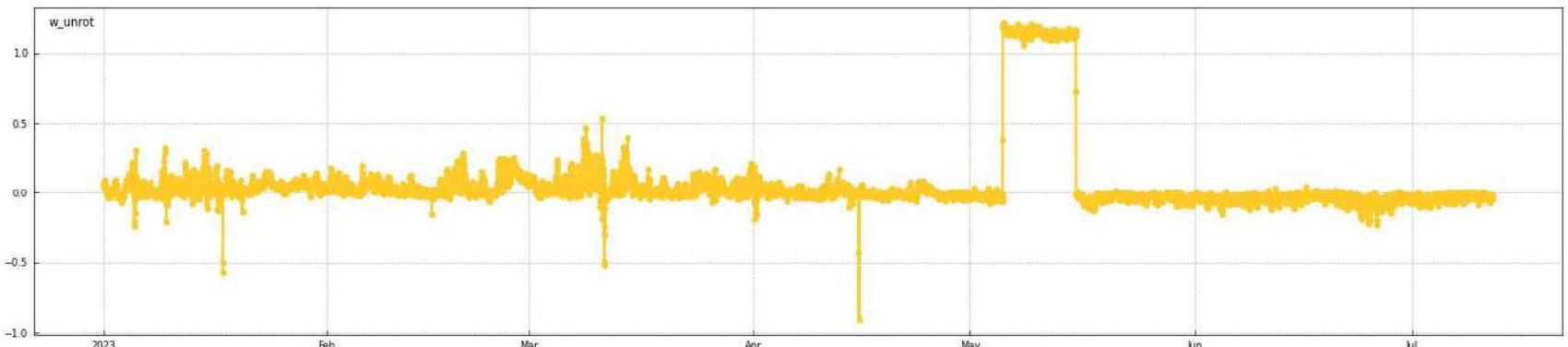




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