Statistical Analysis of Air Quality Data

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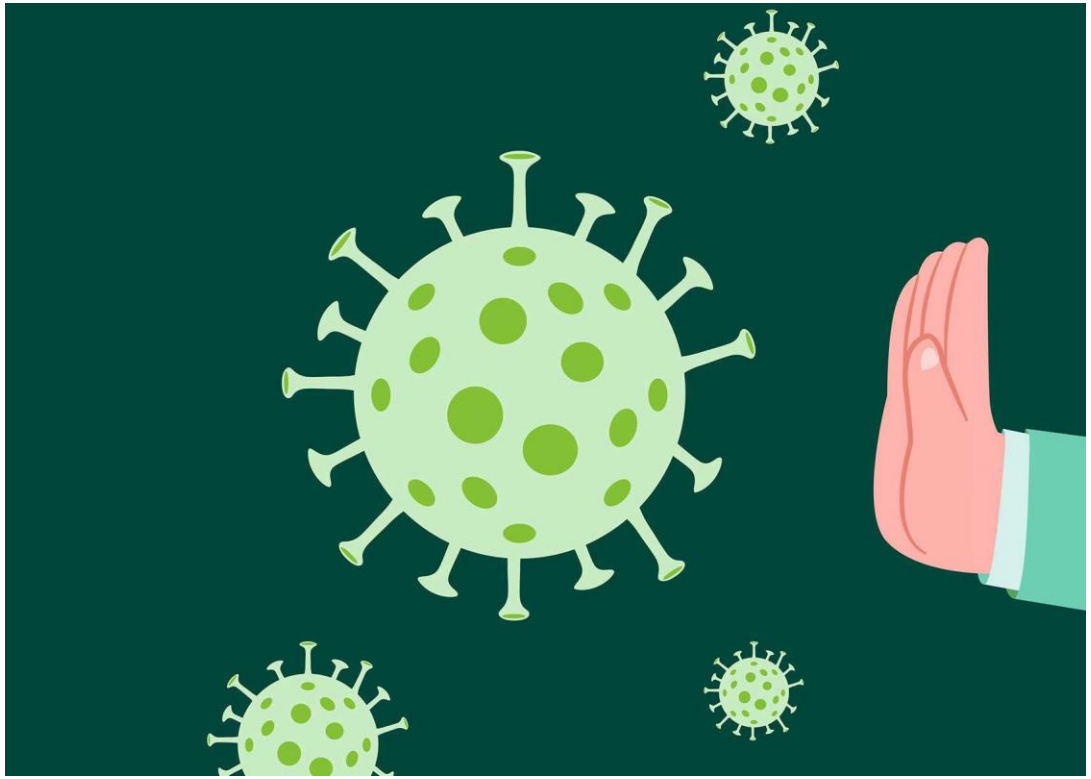
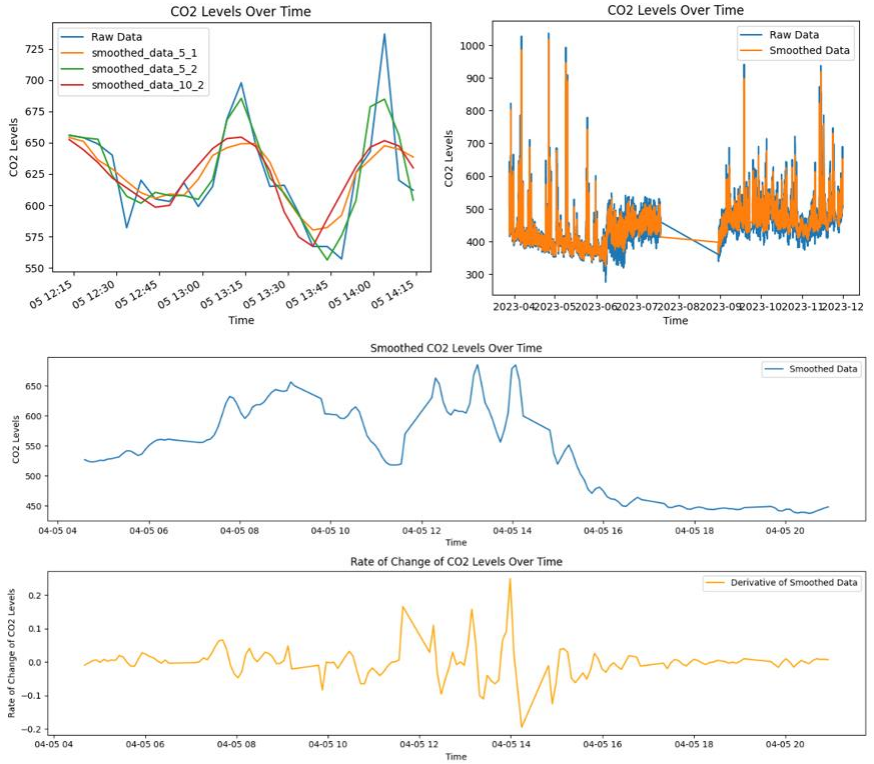
Introduction

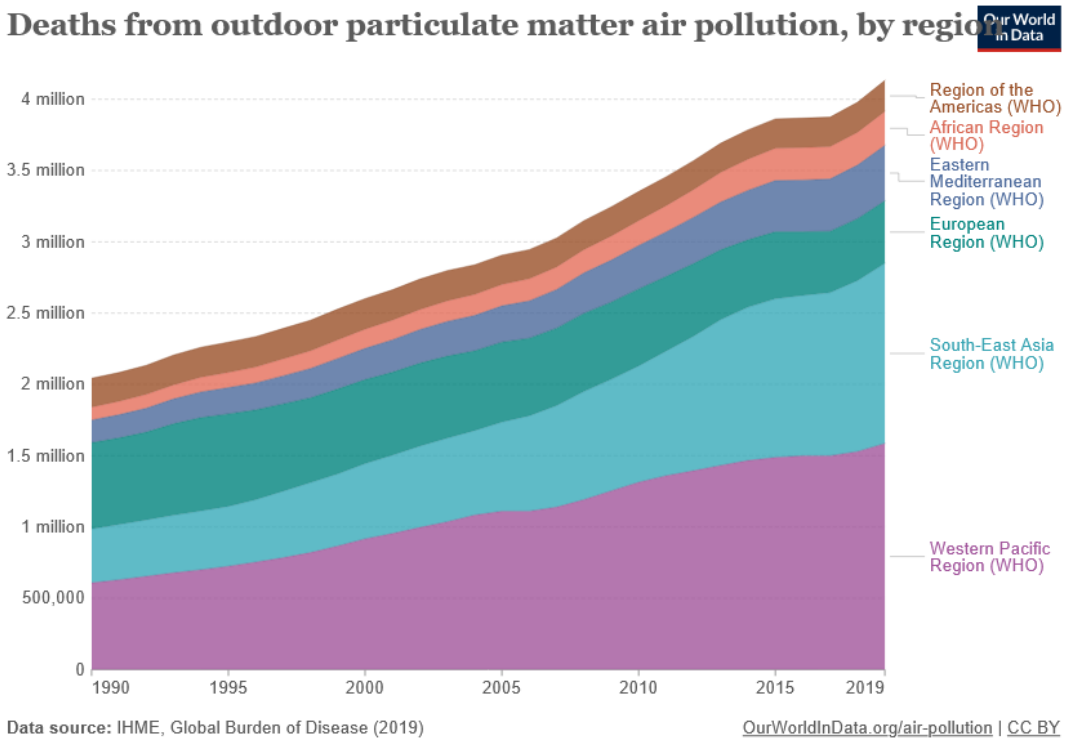
- **Why it matters**
- **Project Goal**

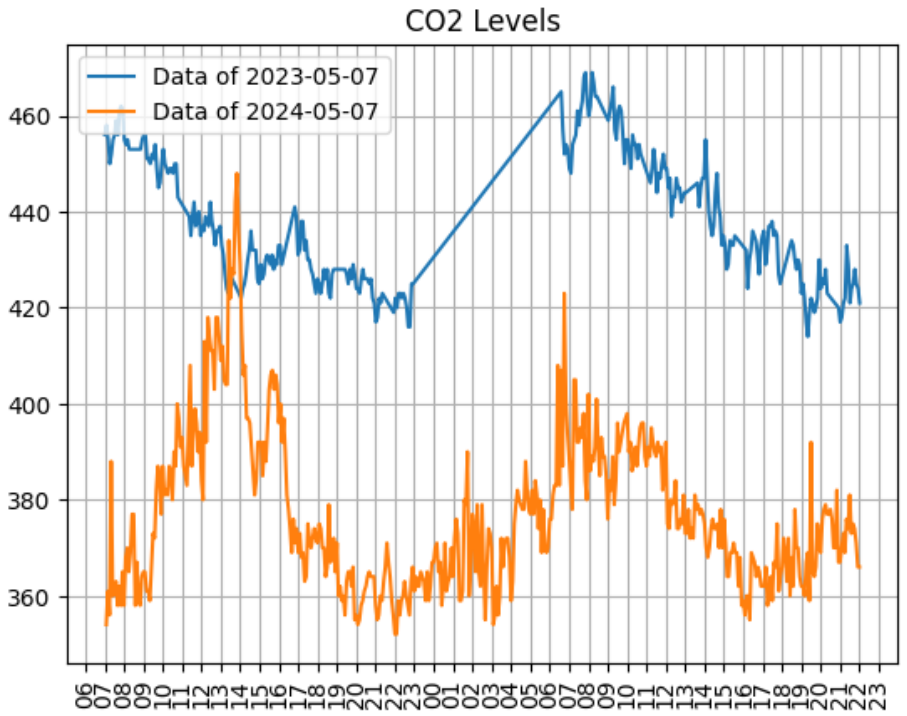




Context

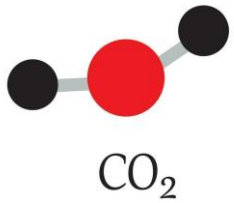
- **Reason for choosing this project**
- **Focus**



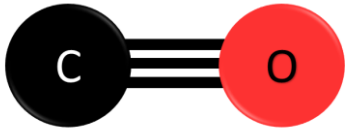


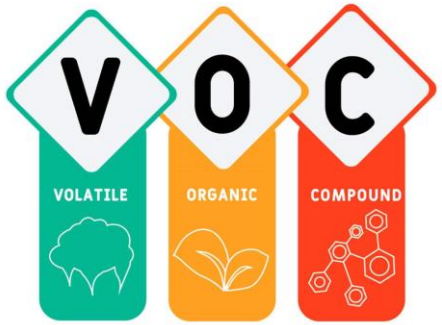
Sensors and Data

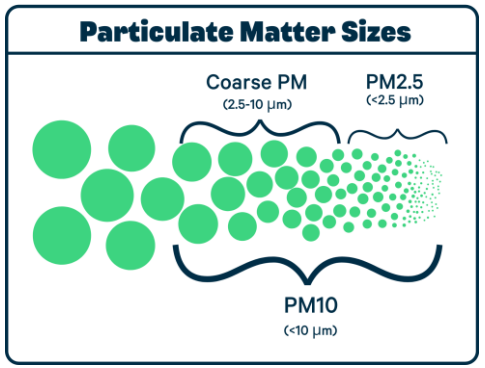
- **Types of Data Collected**
- **Sensor Placement**

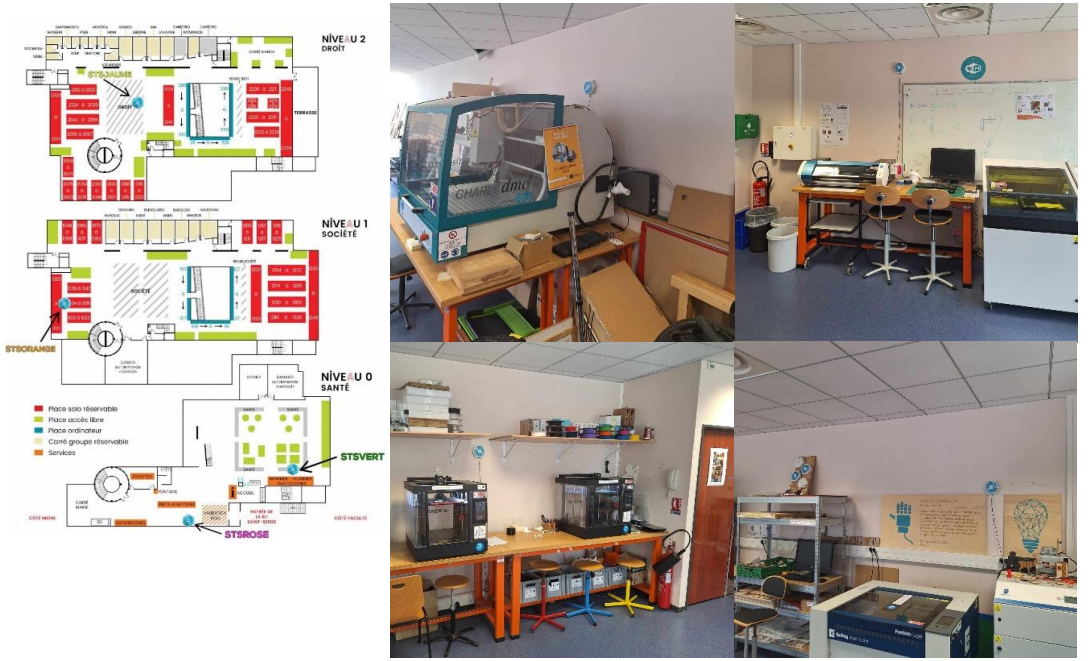


CO_2







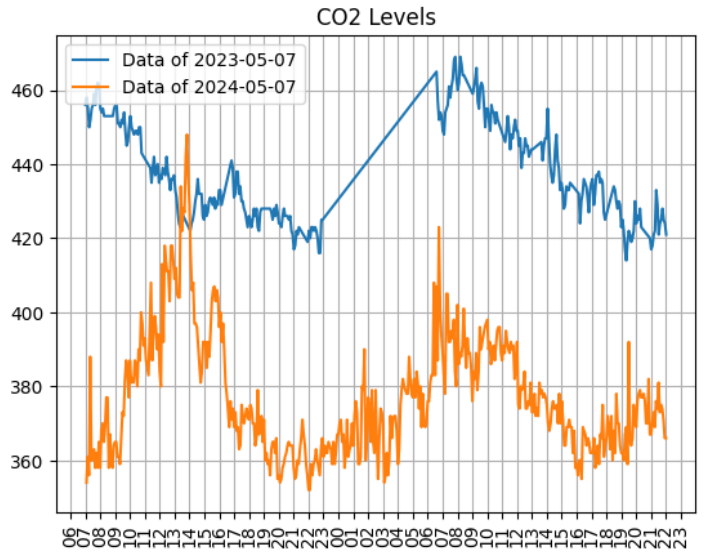


Showcase of sensors. Left – map of sensors in library. Right – sensors in FABLAB, colored blue.

Project Challenges

- **Uncalibrated or missing data**

date	FABLAB1	FABLAB2	FABLAB3	FABLAB4
2023-04-20 08:00:00	450.5	402	476.5	471.5
2023-04-20 08:10:00	450.5	413	478	466.5
2023-04-20 08:20:00	451	416	477	473
2023-04-20 08:30:00		420.5		476
2023-04-20 08:40:00				471.5
2023-04-20 08:50:00	452		473	472
2023-04-20 09:00:00	452.5		470	472
2023-04-20 09:10:00	449	407	467	467.5
2023-04-20 09:20:00	450.5	406	464.5	472
2023-04-20 09:30:00	458	405.5	458	468
2023-04-20 09:40:00	458	406	468	464
2023-04-20 09:50:00	457.5	411.5	469.5	462.5
2023-04-20 10:00:00	448	409	463.5	465
2023-04-20 10:10:00	450	414	464	460.5
2023-04-20 10:20:00	451.5	411.5	460.5	459
2023-04-20 10:30:00	447	418	468	
2023-04-20 10:40:00	453	405	464	466
2023-04-20 10:50:00	453.5	405.5		459
2023-04-20 11:00:00		405		467.5
2023-04-20 11:10:00		405		460
2023-04-20 11:20:00		402	458	457.5
2023-04-20 11:30:00	444		461	459
2023-04-20 11:40:00	445		458.5	460
2023-04-20 11:50:00	440.5	399	457.5	
2023-04-20 12:00:00	442	400	456	466.5
2023-04-20 12:10:00	442.5	395	458.5	464.5
2023-04-20 12:20:00	442.5	401	456	461.5
2023-04-20 12:30:00	440	402	453.5	457
2023-04-20 12:40:00	439	413.5	456.5	458
2023-04-20 12:50:00	443.5	399	454	451
2023-04-20 13:00:00	442.5	400.5	458.5	458.5
2023-04-20 13:10:00	444.5	396.5		461
2023-04-20 13:20:00		397	453	
2023-04-20 13:30:00		398		462
2023-04-20 13:40:00		398		457
2023-04-20 13:50:00	443.5			450
2023-04-20 14:00:00	440		449	448.5
2023-04-20 14:10:00	435.5		447.5	450.5
2023-04-20 14:20:00	433	389	438.5	455.5
2023-04-20 14:30:00	436	389	438.5	454



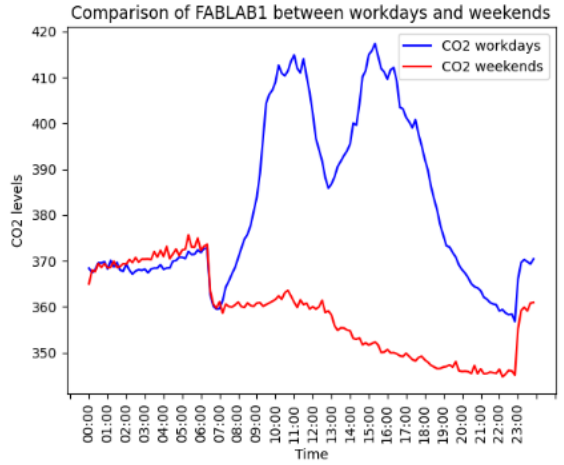
Methodology

DATA PROCESSING

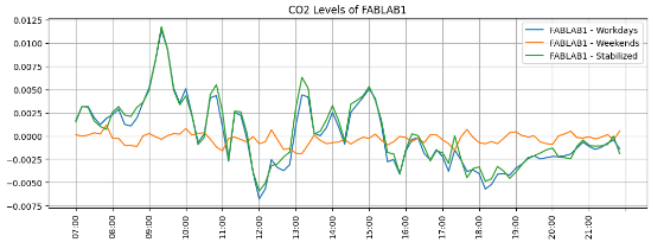
TOOLS USED - PYTHON

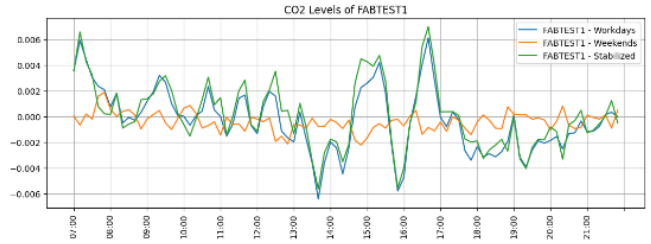
Key Findings

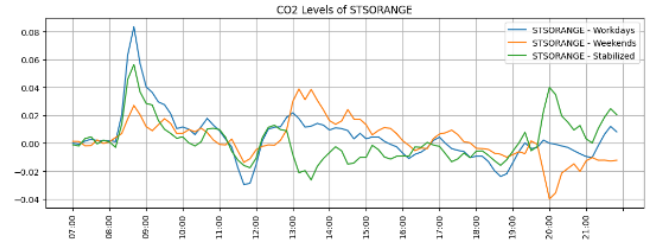
- **CO2 Data Analysis**
- **Health Implications**

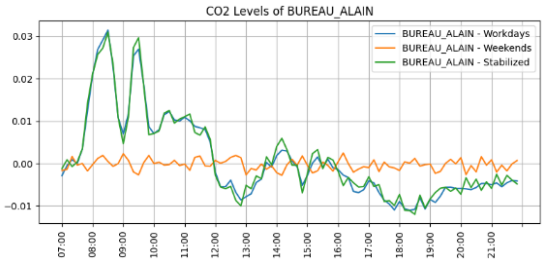


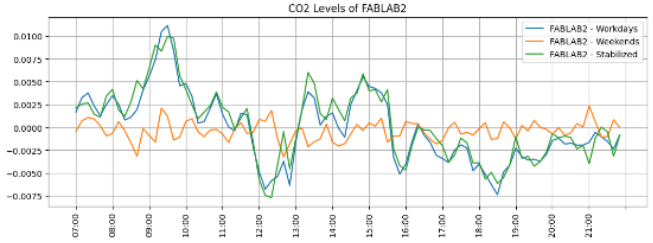
Derivative analysis – CO2

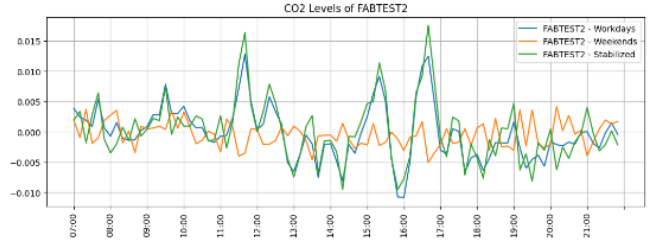


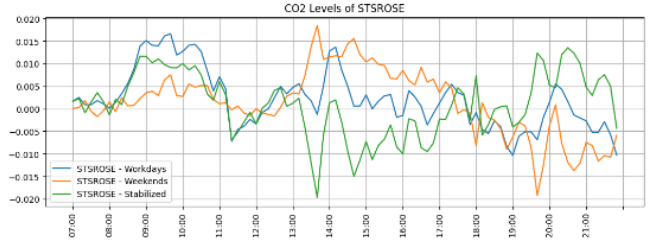


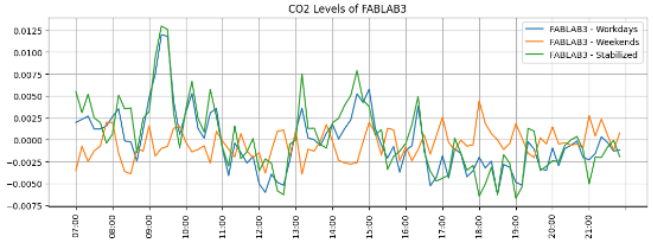


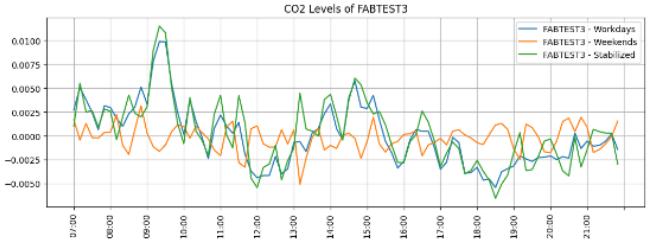


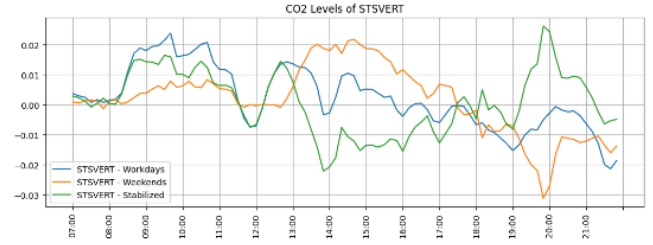


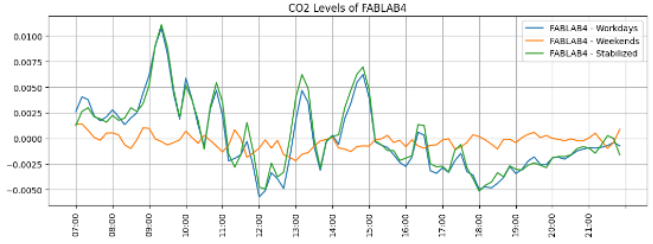


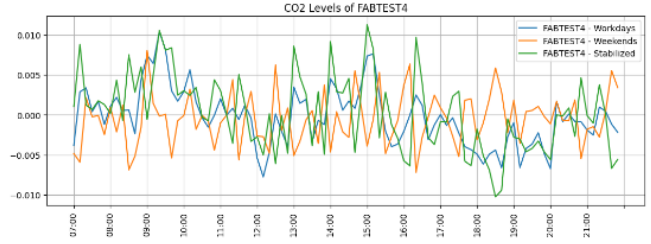


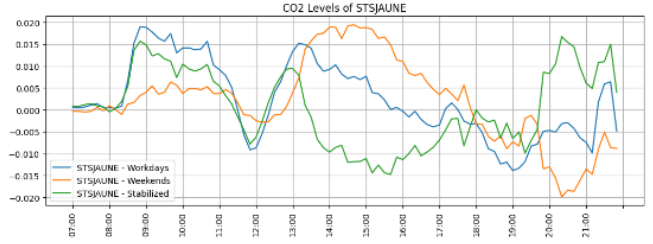










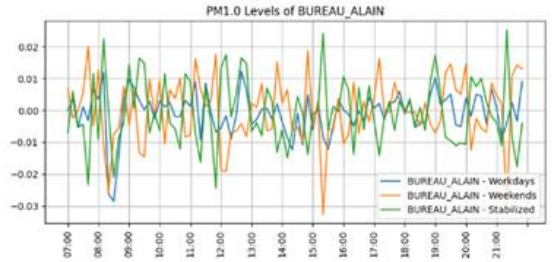


Graphs of all sensors of CO2 derivative data. First column – FABLAB, second column – FABTEST, third column – library with professors' office.

Data sampled from 2022-06 to 2024-06.

Note: not all sensors were active during that period, data is shown from 7:00-22:00.

Derivative analysis – PM1.0

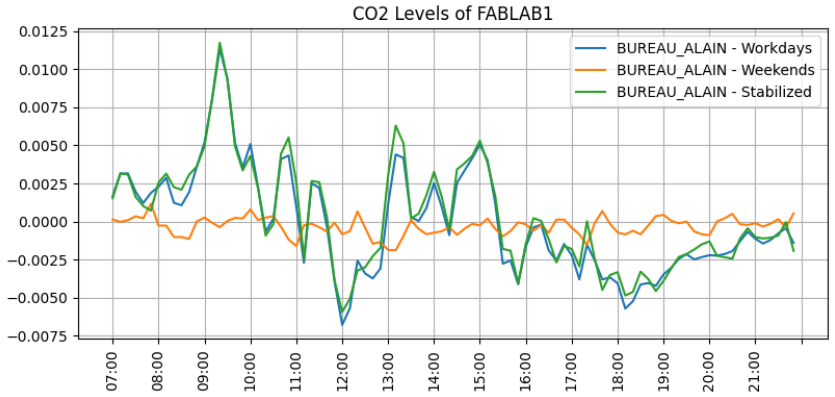


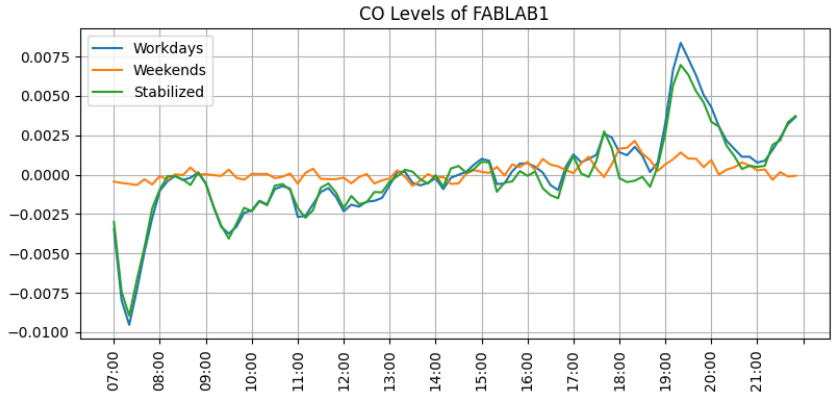
Graphs of all sensors of PM1.0 derivative data. First column – FABLAB, second column – FABTEST, third column – library with professors' office.

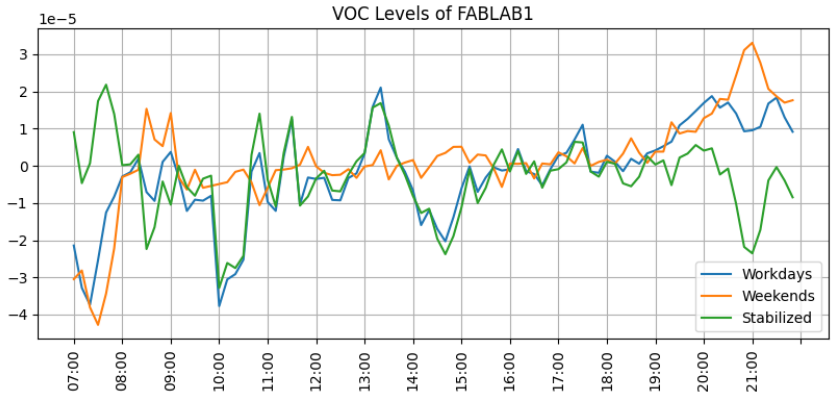
Data sampled from 2022-06 to 2024-06.

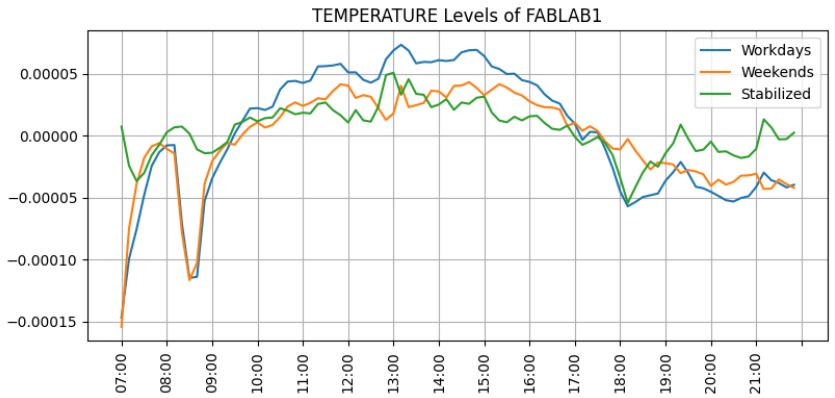
Note: not all sensors were active during that period, data is shown from 7:00-22:00.

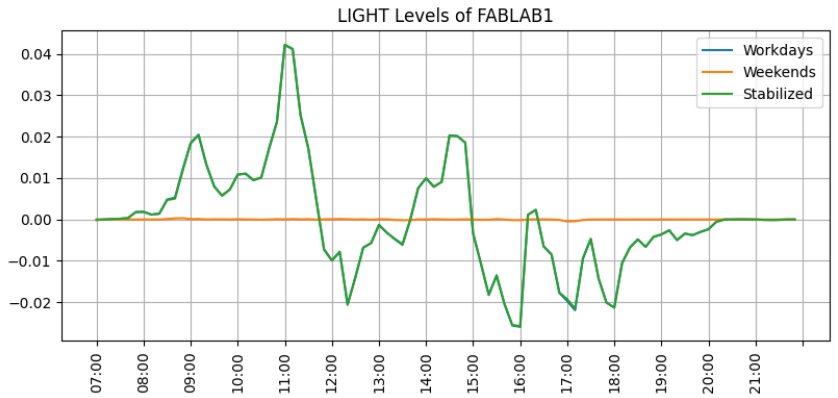
Derivative analysis – good parameters

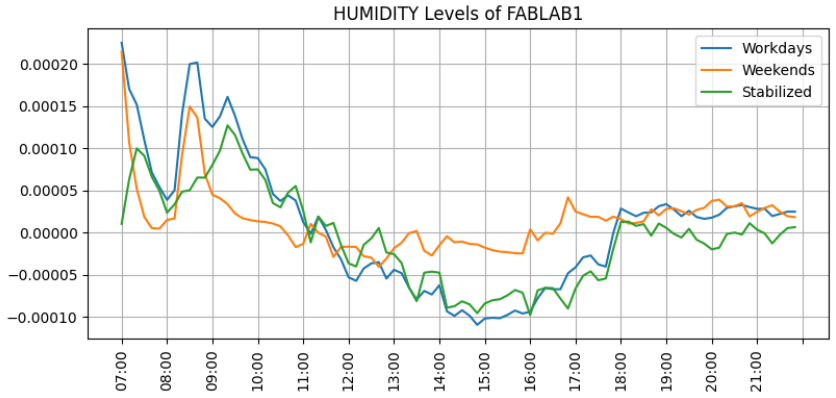




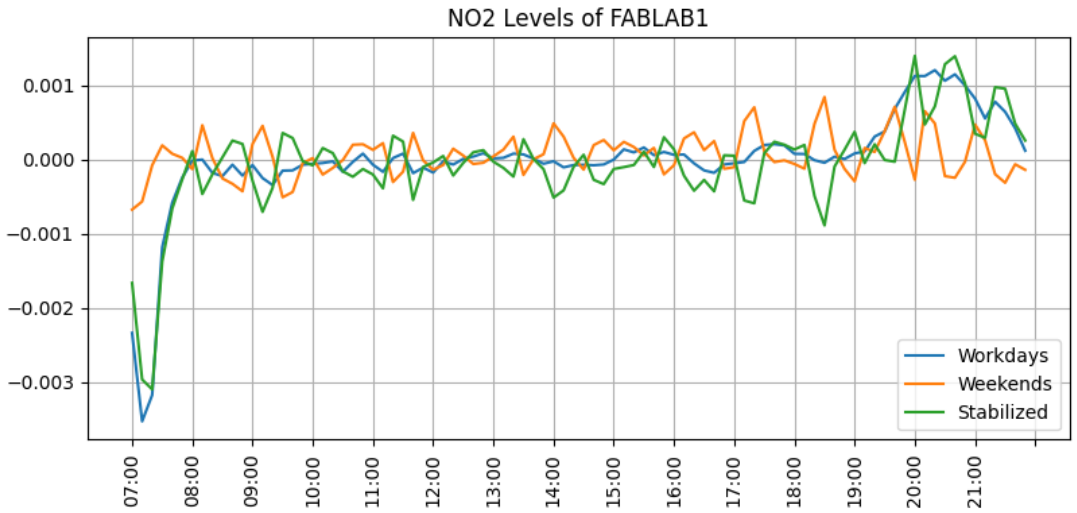


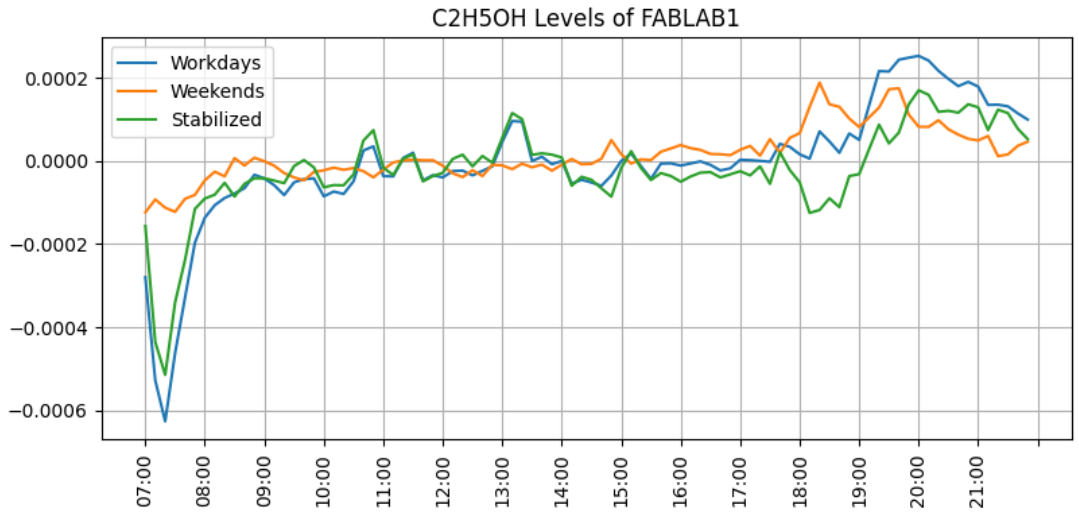






Derivative analysis – mediocre parameters





Derivative analysis – bad parameters

Conclusion

- **Achievements**
- **Future Applications**

Discussion