



Analysis of atmospheric measurements at Mt. Kenya within the KADI project

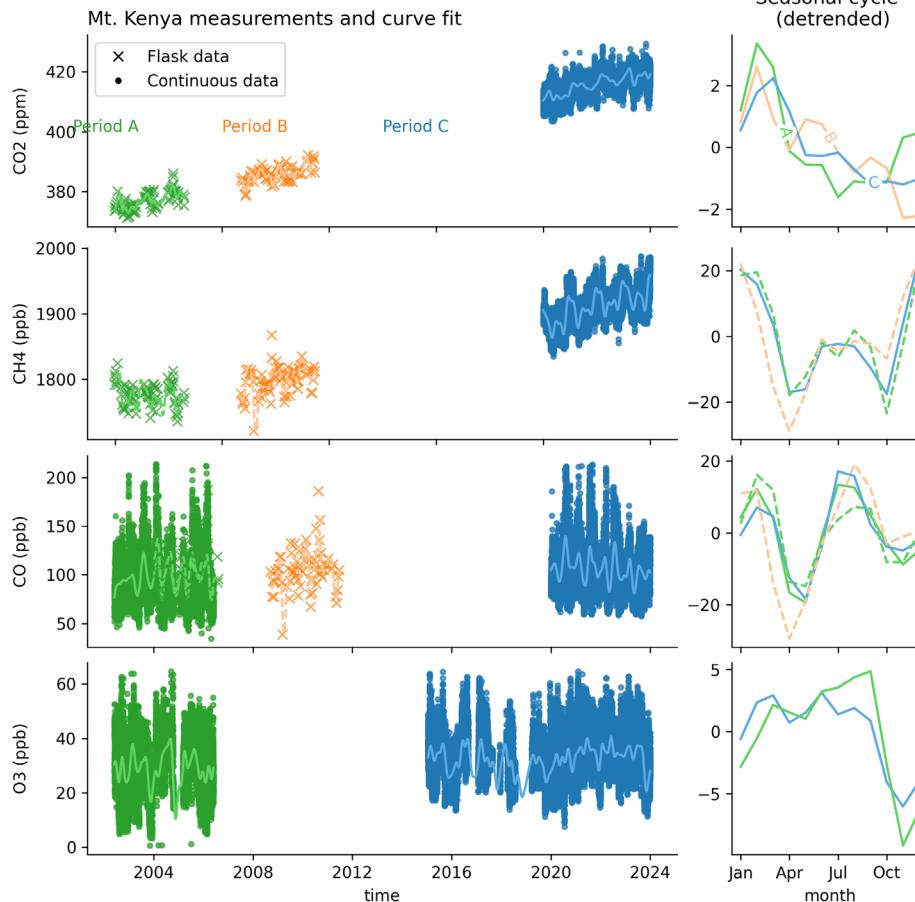
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05 June 2024 - KADI meeting

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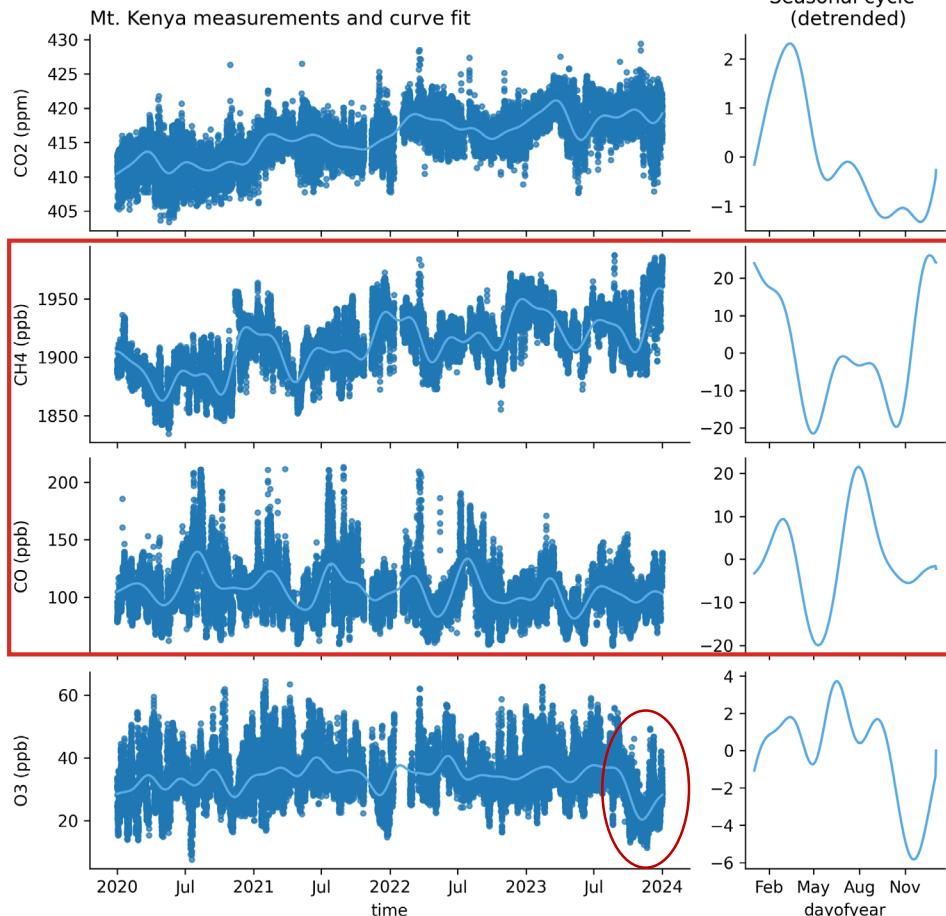


Overview of atmospheric composition measurements at Mt. Kenya



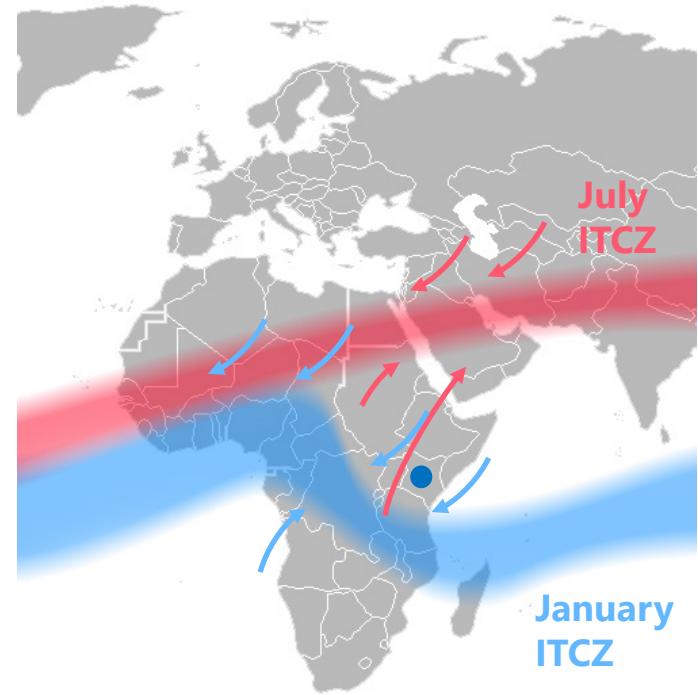
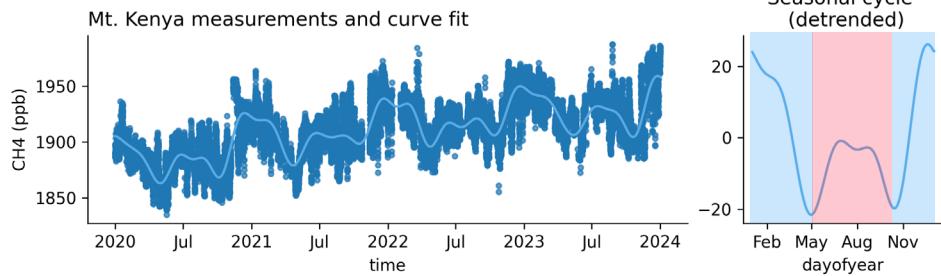


Continuous measurements since 2020



- Clear trends visible for CO₂ and CH₄
- CO₂: "flat" seasonal cycle (typical for tropics)
- CH₄: link to northern/southern air masses
- CO: link to wildfires
- Drop in Ozone data in fall 2023

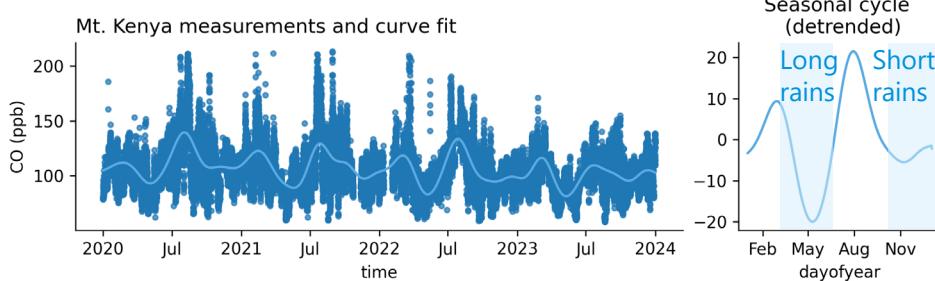
Methane – in between southern and northern air masses



adapted from commons.wikimedia.org



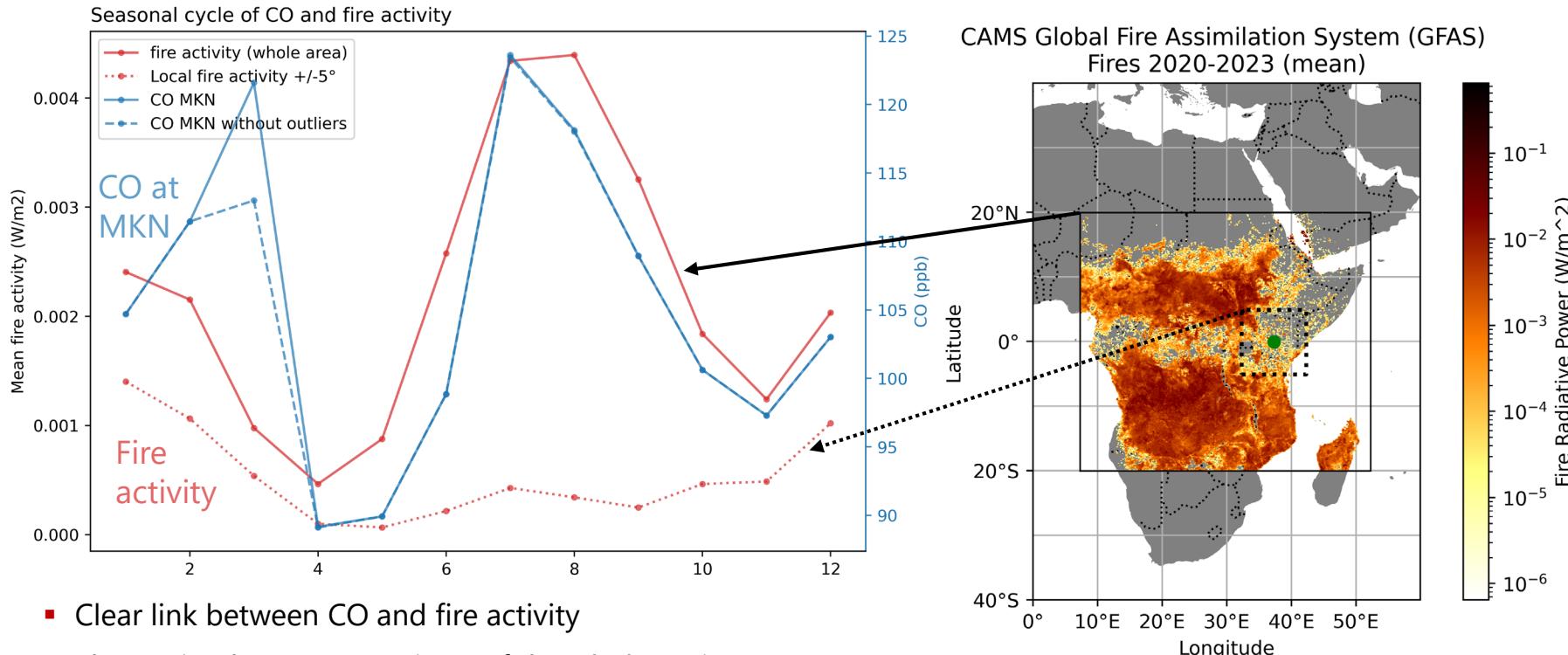
Carbon monoxide



- CO: more CO in dry seasons -> strong relationship to wildfires



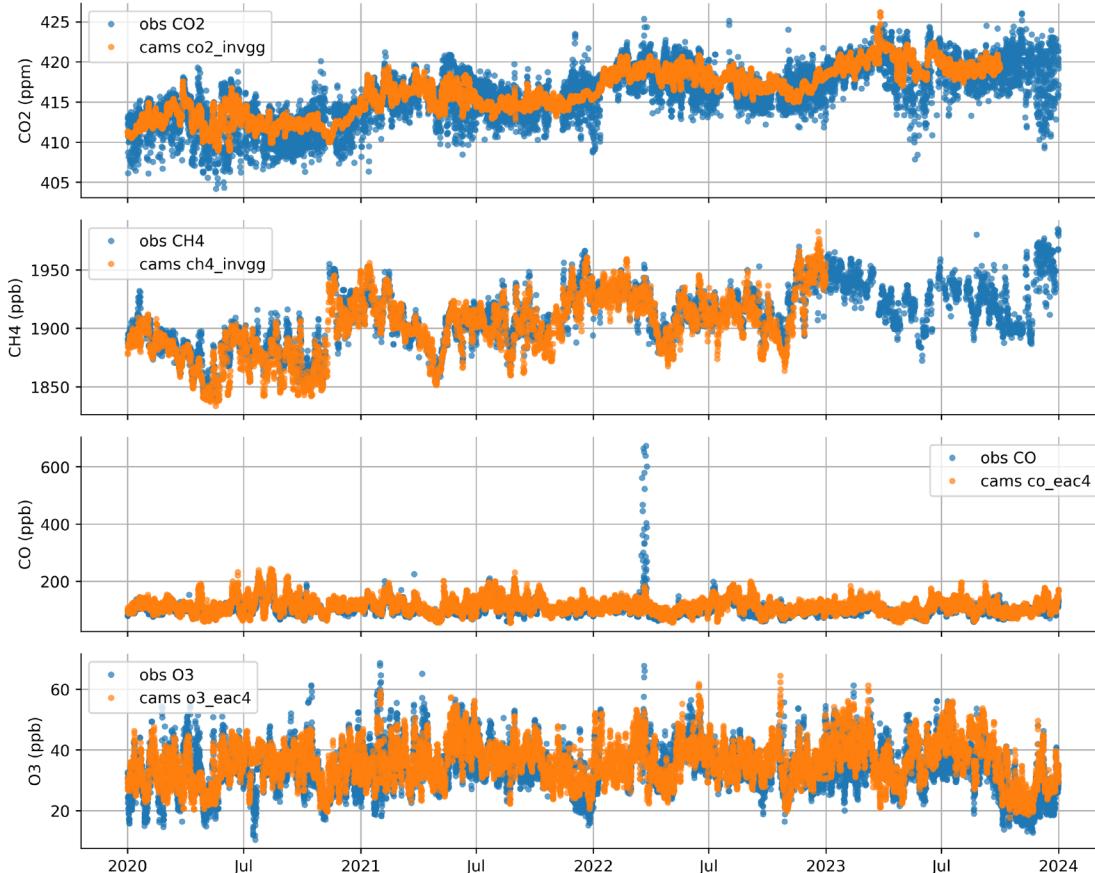
Carbon monoxide and fire activity



- Clear link between CO and fire activity
- The station has an «overview» of the whole region



Comparison to CAMS

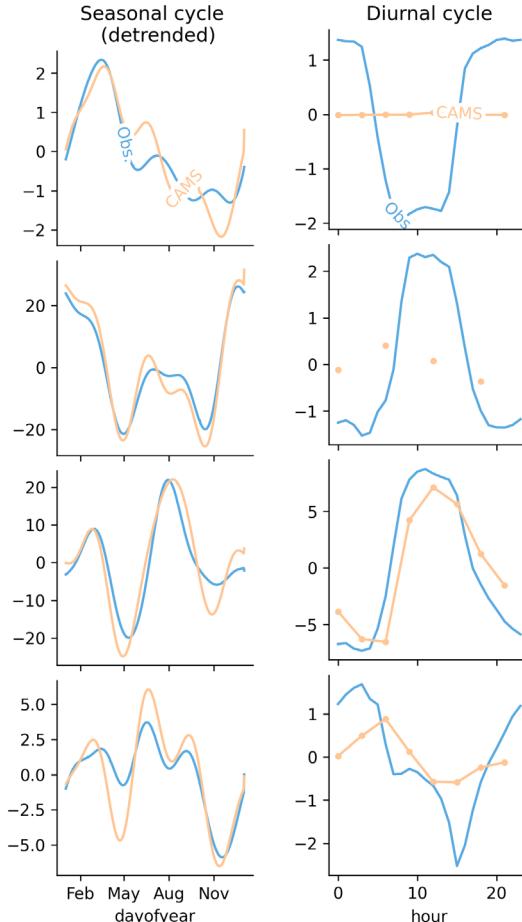
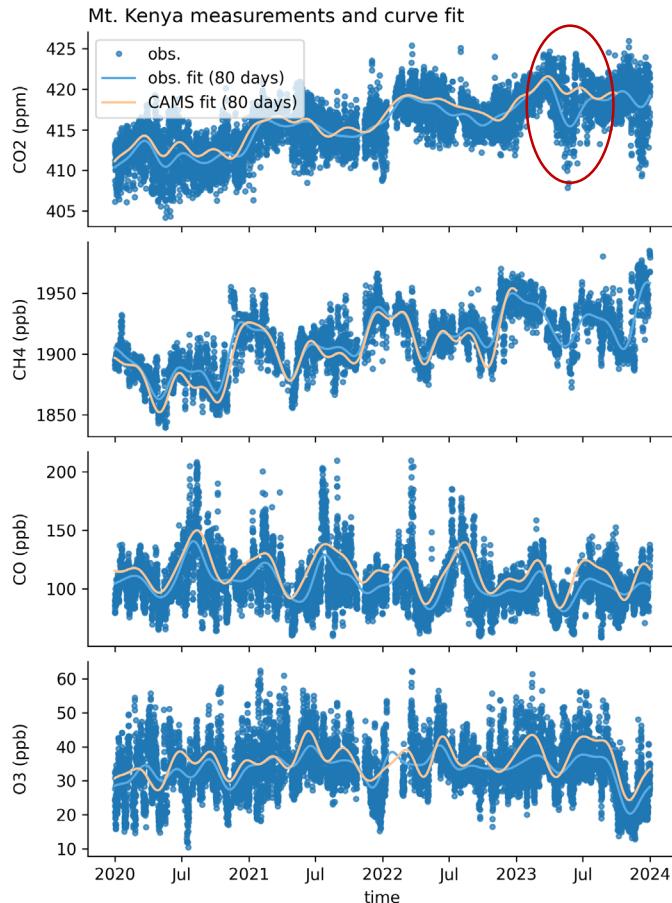


CAMS products

- **invgg:** CAMS global inversion-optimised greenhouse gas fluxes and concentrations (CH₄, CO₂)
- **EAC4:** CAMS Global reanalyses (CO, O₃)



Comparison to CAMS – line fits and cycles



- Good agreement, small differences in seasonal cycle
- Difference in CO₂ in mid-2023?
- CAMS does not well resolve diurnal cycles (especially for CO₂ and CH₄ (inversion product))



What next? Suggestions and ideas?

Aerosol data

- Analyse data
- compare with wildfire data and CO

Fire event March 2022

- Investigate the event as a case study

Comparision with other tropical stations (e.g. Seychelles)

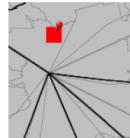
Comparison with **ozonesonde data** from Nairobi?

Modelling (air mass trajectories)

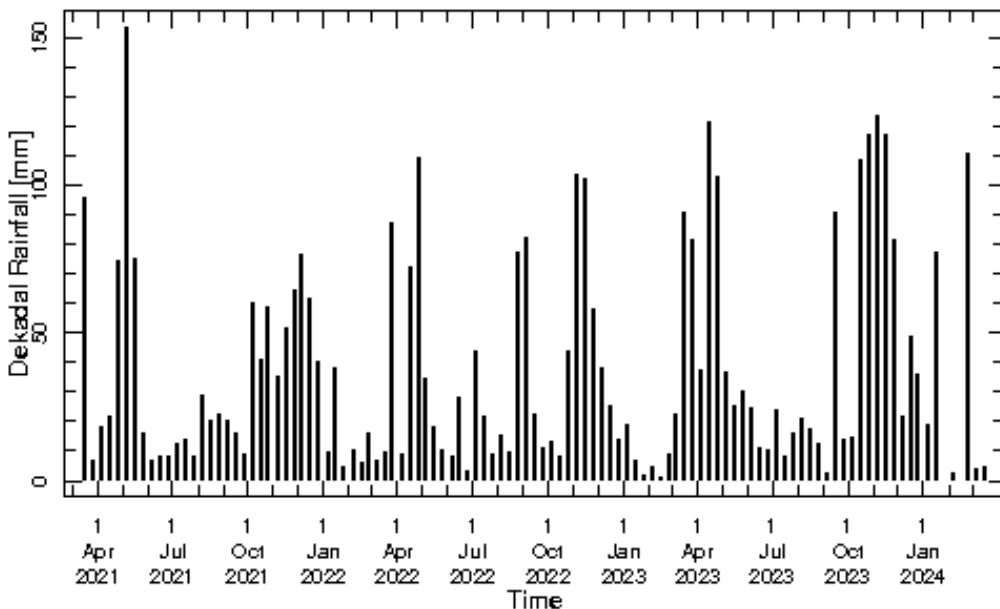
- Compute and investigate footprints to identify the origin of airmasses



KMD Maproom



Merged Station-Satellite Rainfall for [37.3E-37.35E, 0.05S-1.8041124E-16N]



- Time series available?
- kmddl.meteo.go.ke