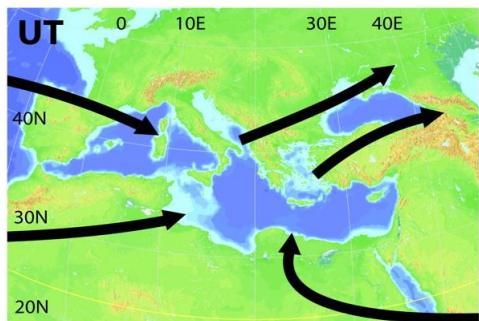
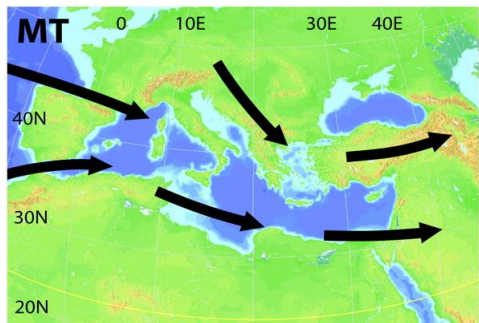
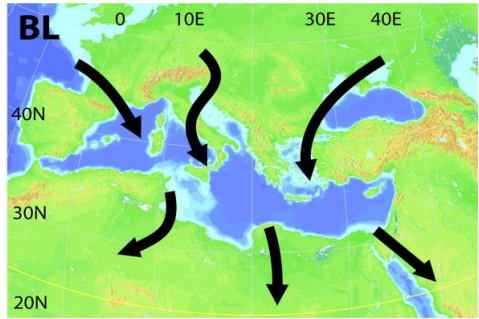




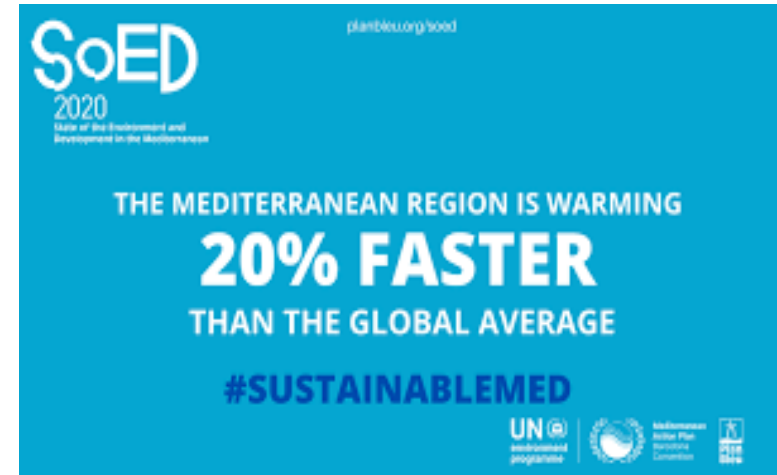
Wildfires in Greece and their impact on air quality: Is this the new normality?

D. Balis, K. Michailidis, M.E. Koukouli, K. Garane, D. Karagkiozidis, A. Pseftogkas, M. Mermigkas, T. Panou, G. Peletidou, K.A. Voudouri, M. de Graaf, T. Giannaros and A. Bais

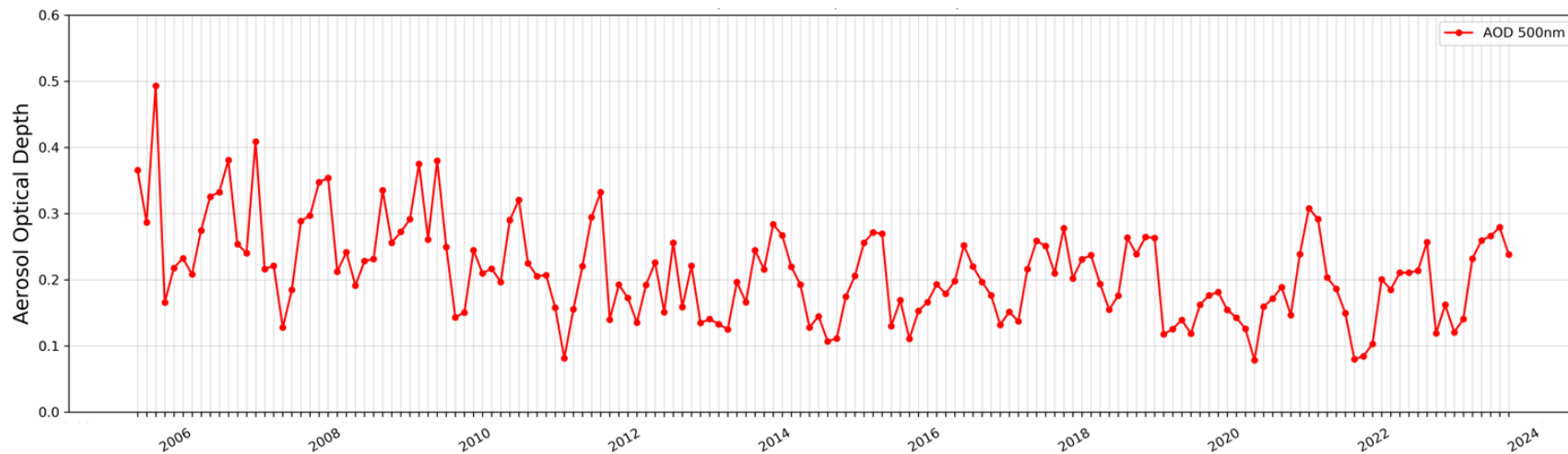
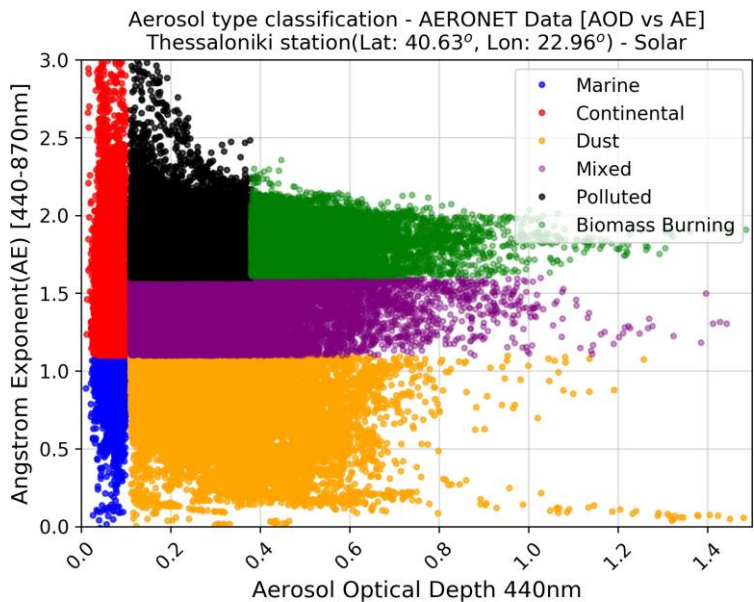




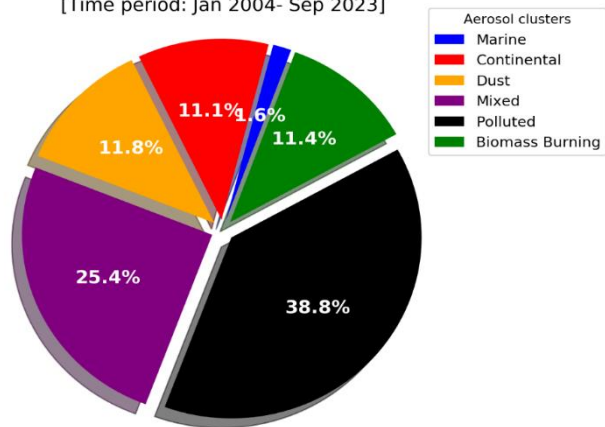
- The SE Mediterranean is a crossroad for different pollution sources
- The Mediterranean is considered as a hotspot in most future climate scenarios.
- Extreme weather events (heatwaves, floodings) seem already more intense and frequent.
- At Thessaloniki we have a unique infrastructure to monitor related changes in atmospheric composition



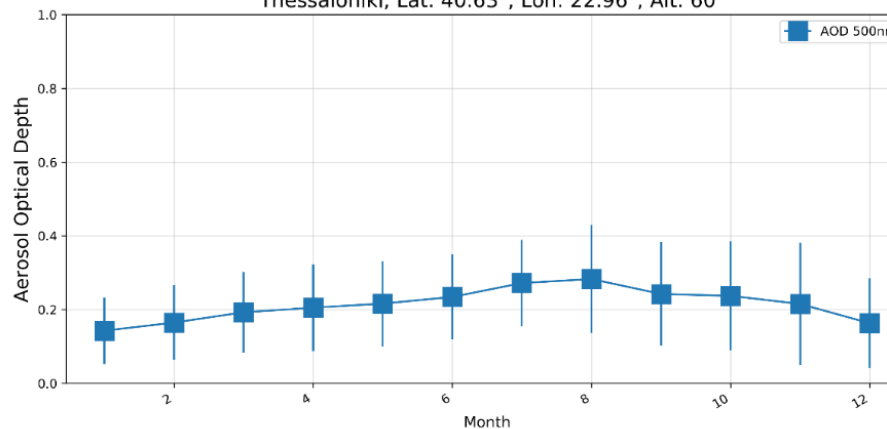
Characteristics of urban background pollution using remote sensing | The case of Thessaloniki, Greece



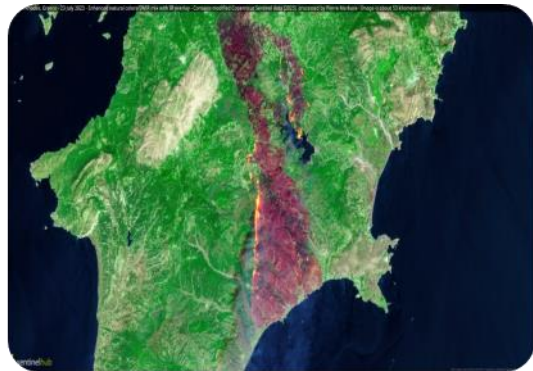
Aerosol classification clusters / Percentages [%]
[Time period: Jan 2004 - Sep 2023]



Aerosol Optical Depth, Level 1.5 (AERONET) Jan 2004 - Sep 2023
Thessaloniki, Lat: 40.63°, Lon: 22.96°, Alt: 60



Massive wildfires in Greece during summer 2023



Rhodes



Athens



Dadia National Park (NE Greece)



More than 13,500 hectares of forest burned



More than 30000 hectares of forest burned



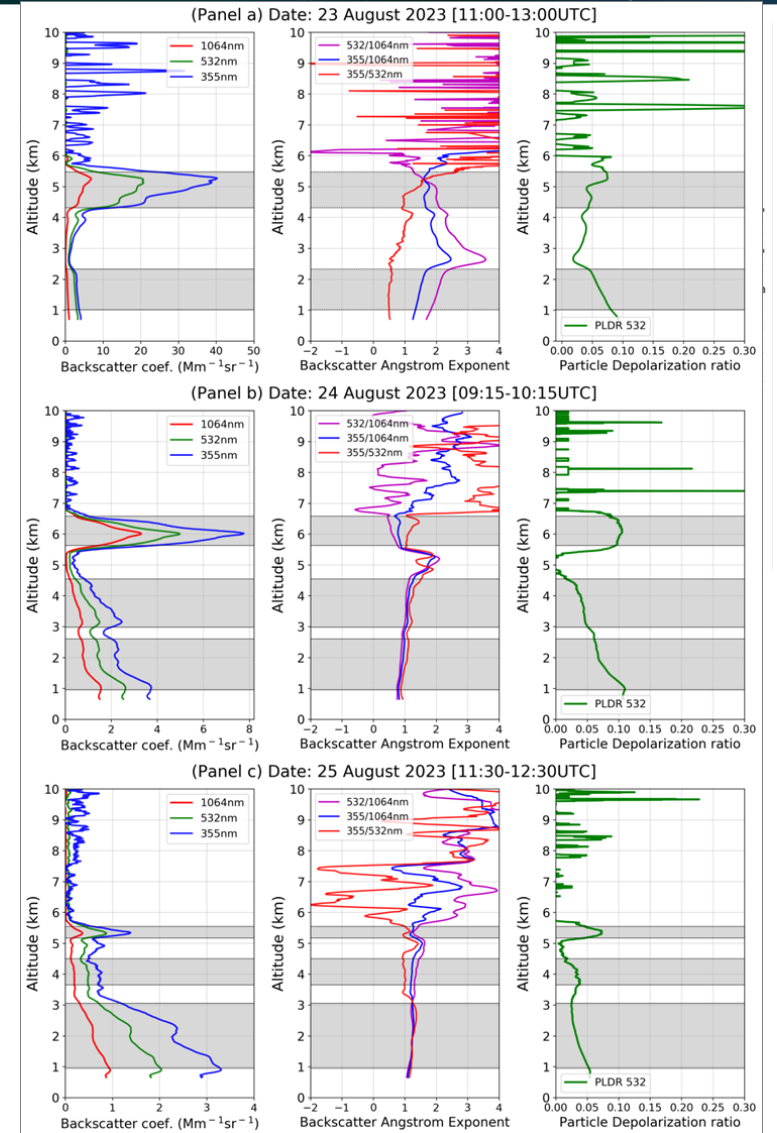
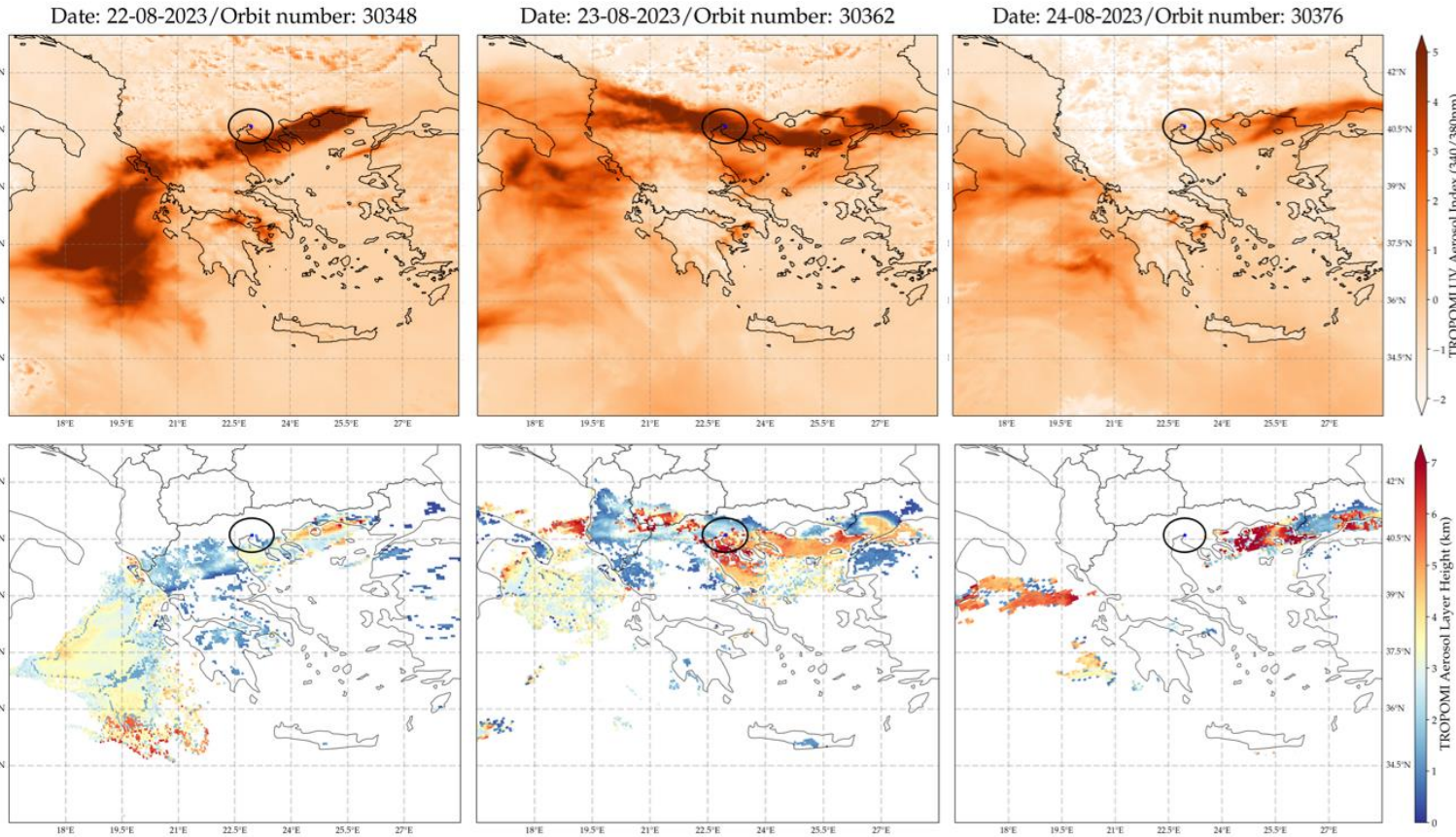
More than 100000 hectares of forest burned.

Images from Copernicus Sentinel 2

Impact on aerosol load in the region

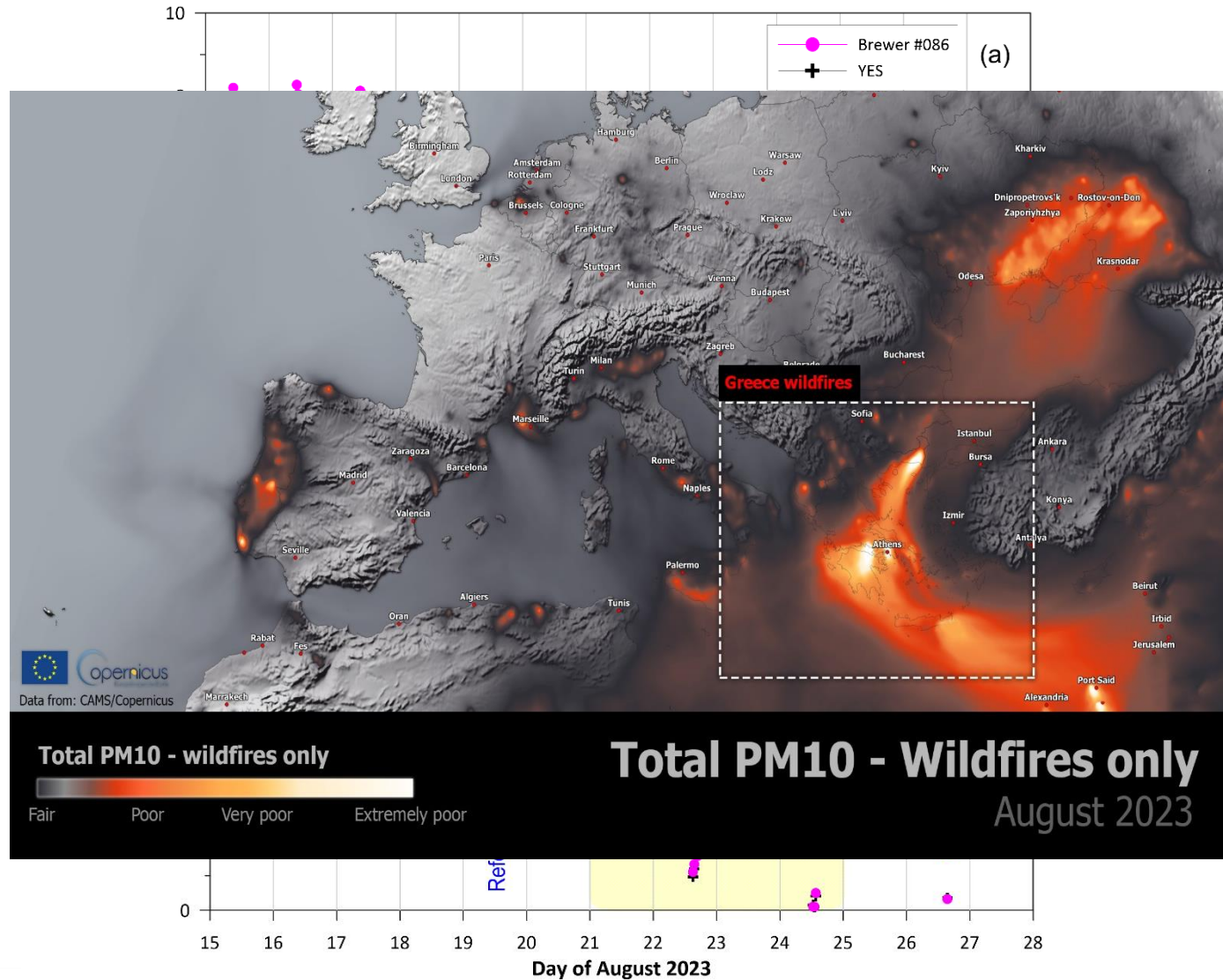
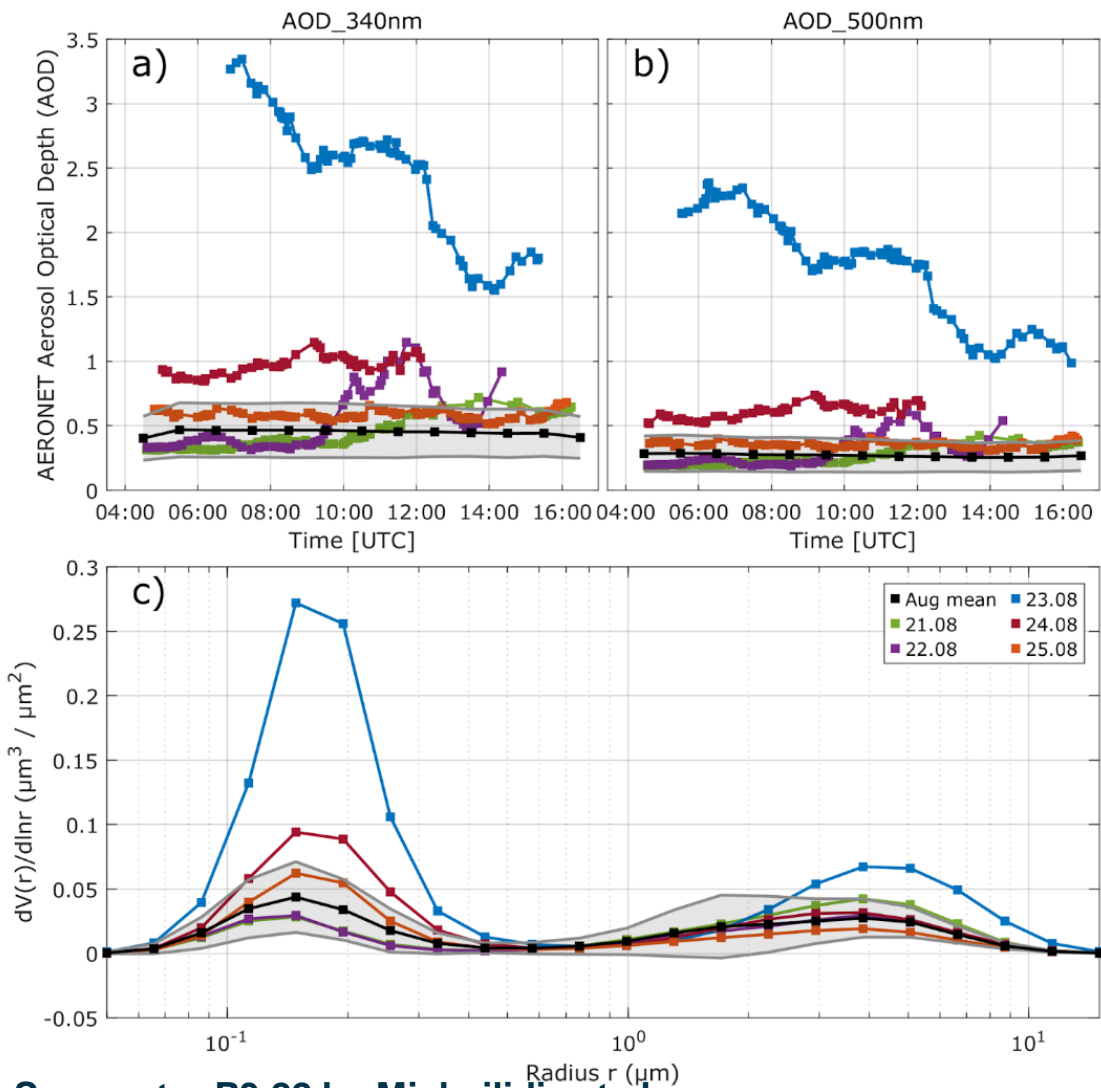
TROPOMI UVAI

TROPOMI ALH



See poster P3.22 by Michailidis et al.

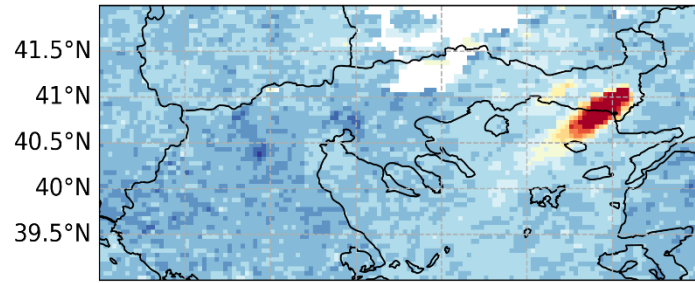
Impact on aerosols, UVI and PM10 over Thessaloniki



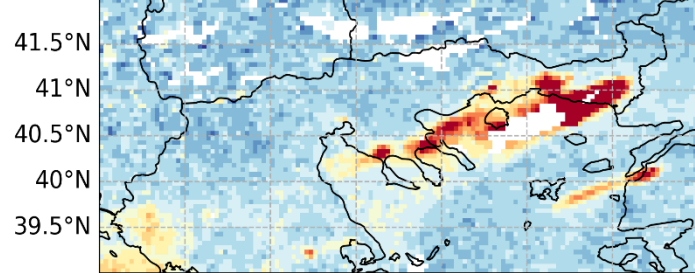
See poster P3.22 by Michailidis et al.

Impact on tropospheric NO₂ levels in the region

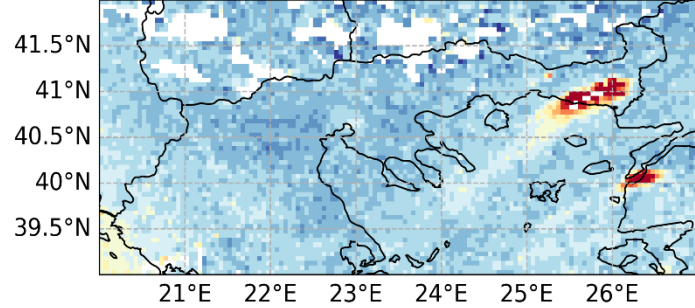
TROPOMI NO₂ VCD 21.08 enhancement



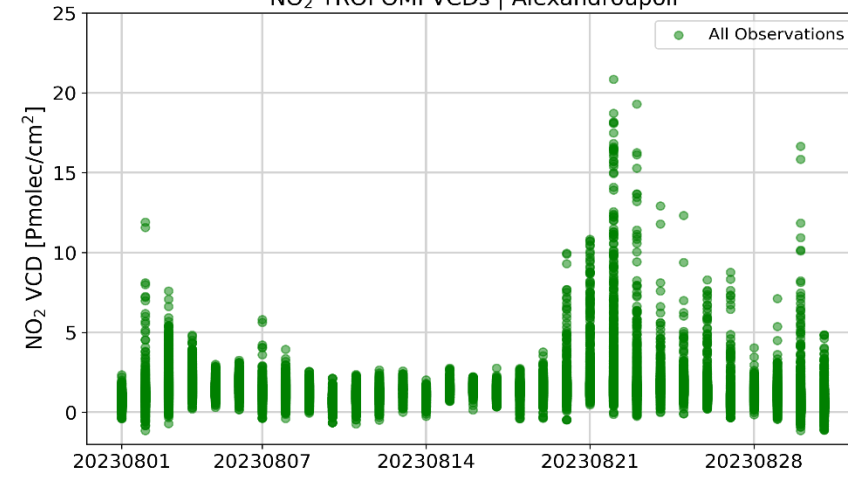
TROPOMI NO₂ VCD 22.08 enhancement



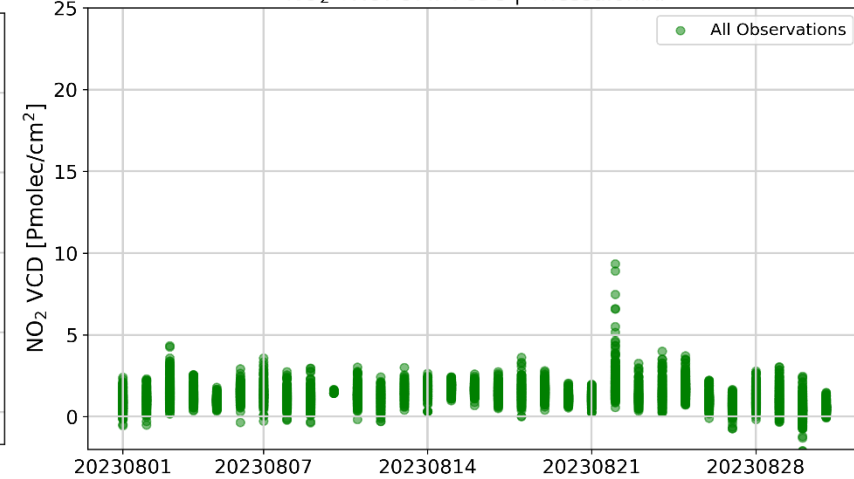
TROPOMI NO₂ VCD 23.08 enhancement



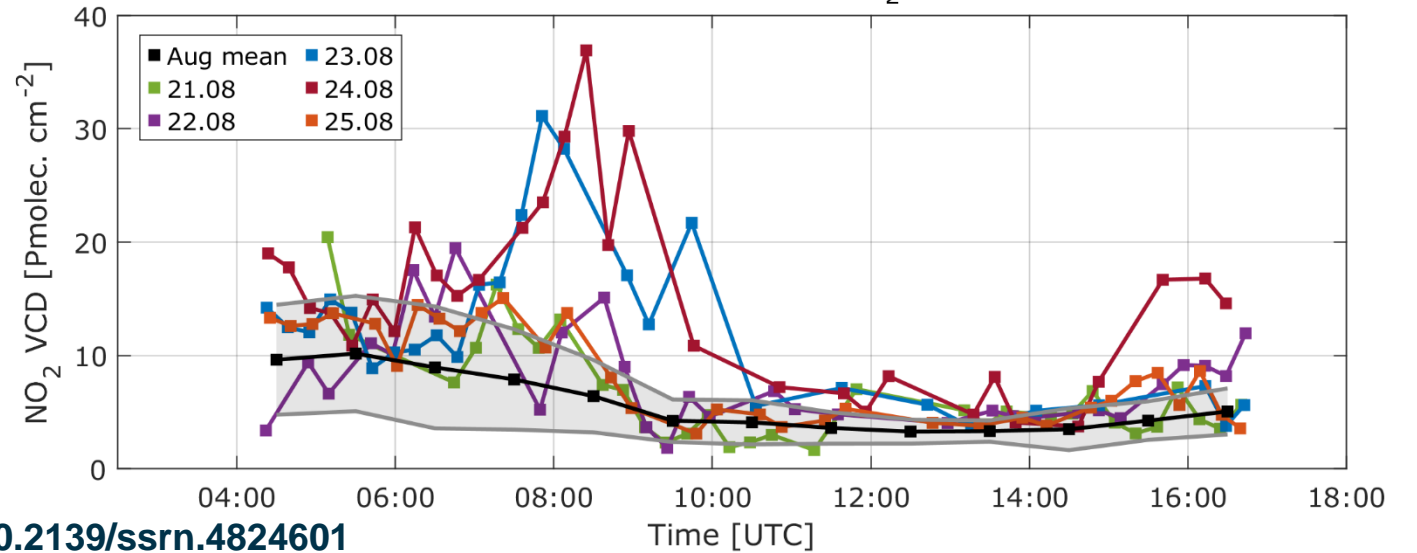
NO₂ TROPOMI VCDs | Alexandroupoli



NO₂ TROPOMI VCDs | Thessaloniki



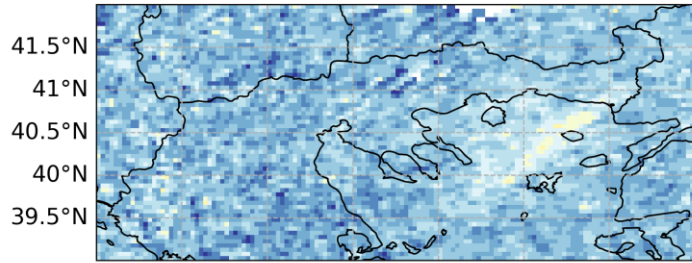
MAX-DOAS tropospheric NO₂ VCDs



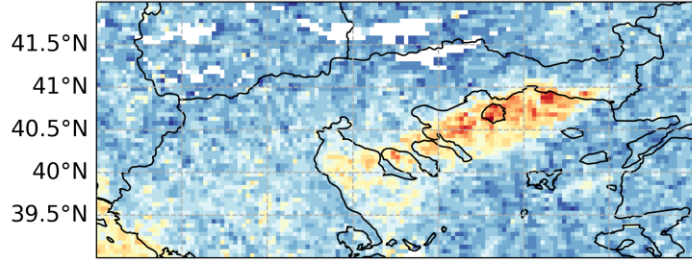
See poster P3.7 by Koukouli et al. & <https://dx.doi.org/10.2139/ssrn.4824601>

Impact on HCHO levels in the region

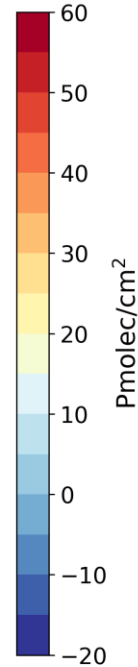
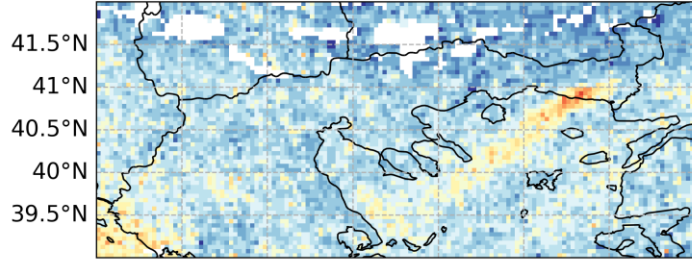
TROPOMI HCHO VCD 21.08 enhancement



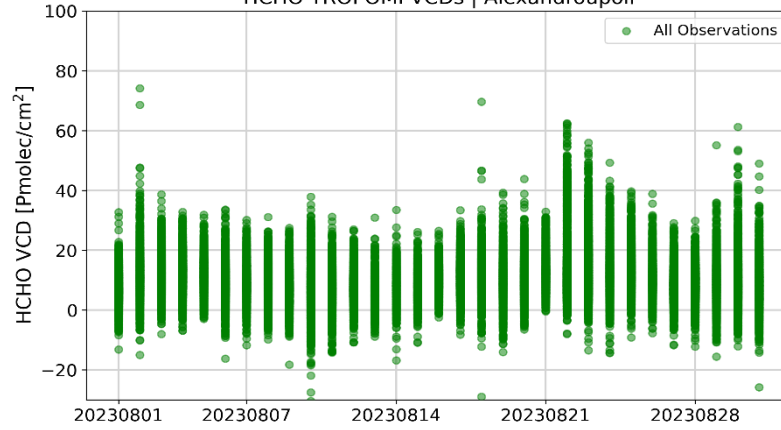
TROPOMI HCHO VCD 22.08 enhancement



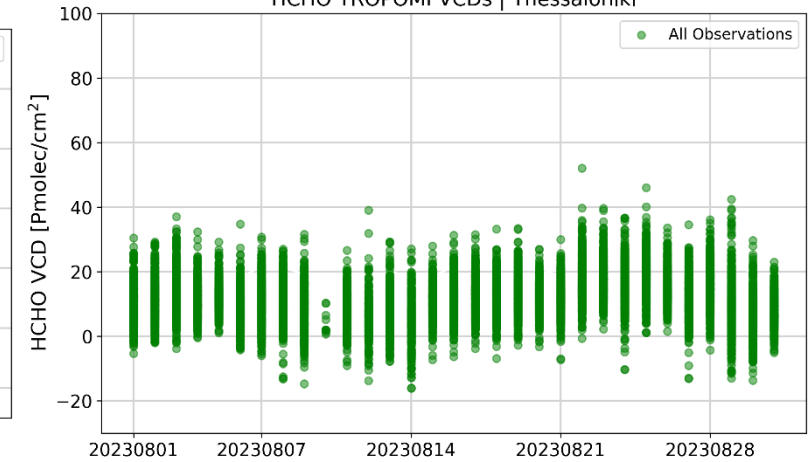
TROPOMI HCHO VCD 23.08 enhancement



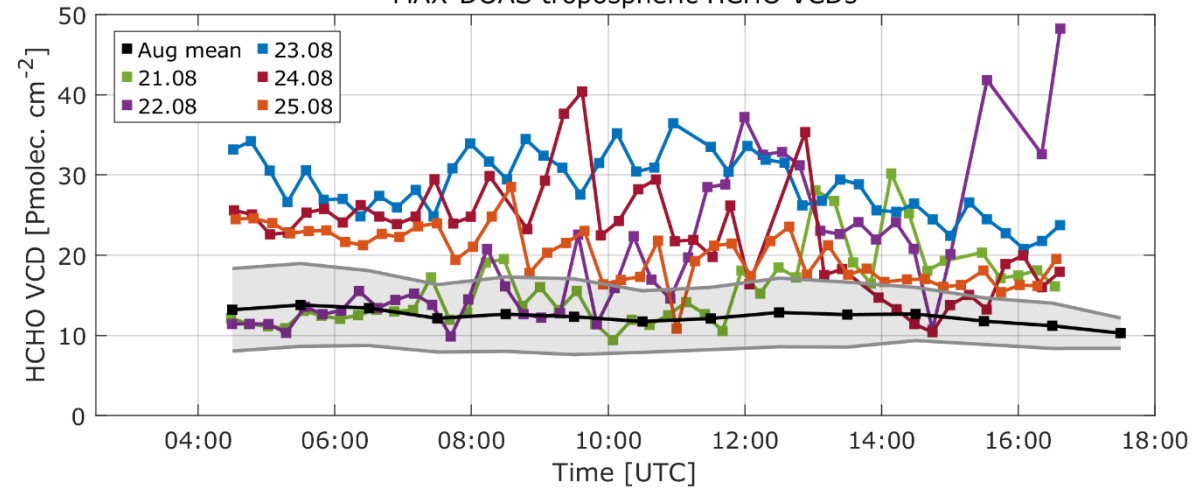
HCHO TROPOMI VCDs | Alexandroupoli



HCHO TROPOMI VCDs | Thessaloniki



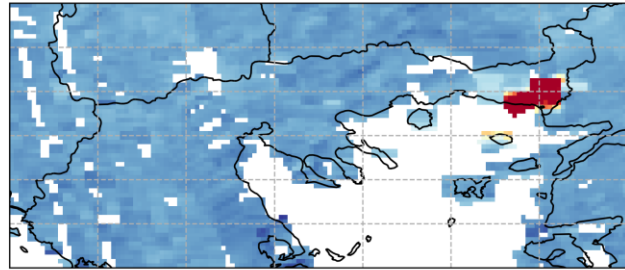
MAX-DOAS tropospheric HCHO VCDs



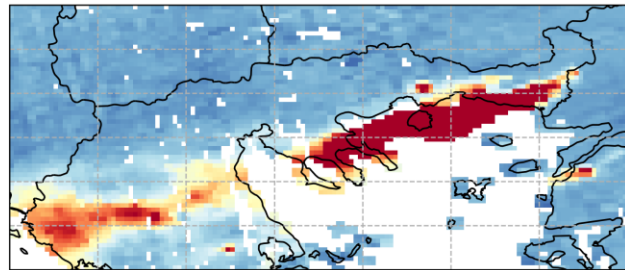
See poster P3.7 by Koukouli et al. & <https://dx.doi.org/10.2139/ssrn.4824601>

Impact on CO levels in the region

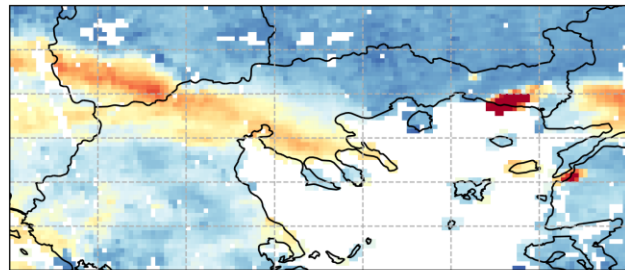
TROPOMI CO column vmr 21.08 enhancement



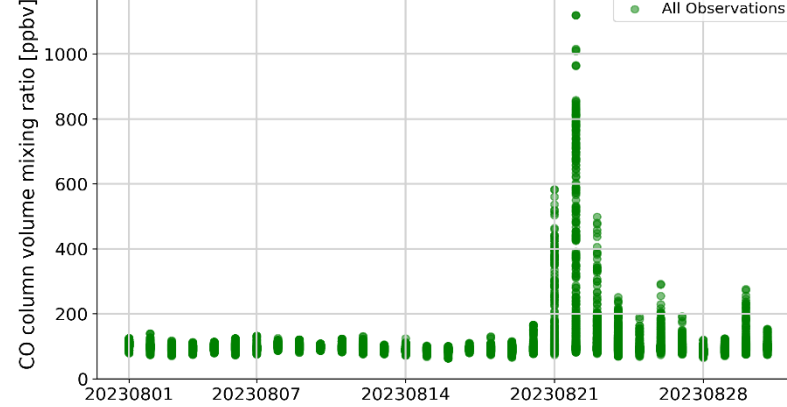
TROPOMI CO column vmr 22.08 enhancement



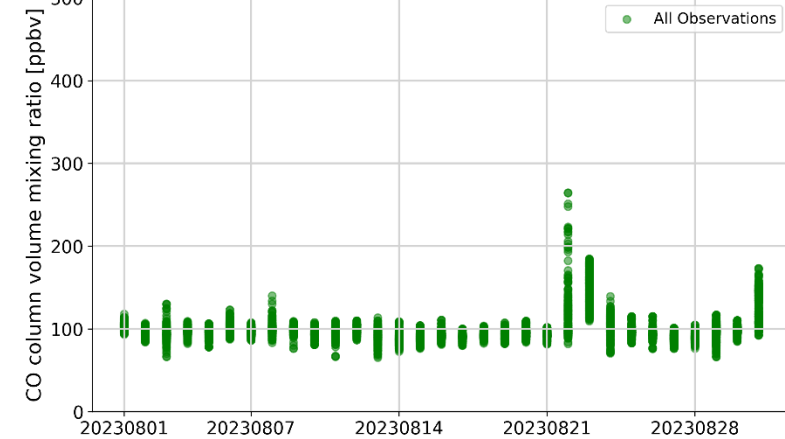
TROPOMI CO column vmr 23.08 enhancement



CO column volume mixing ratio | Alexandroupoli

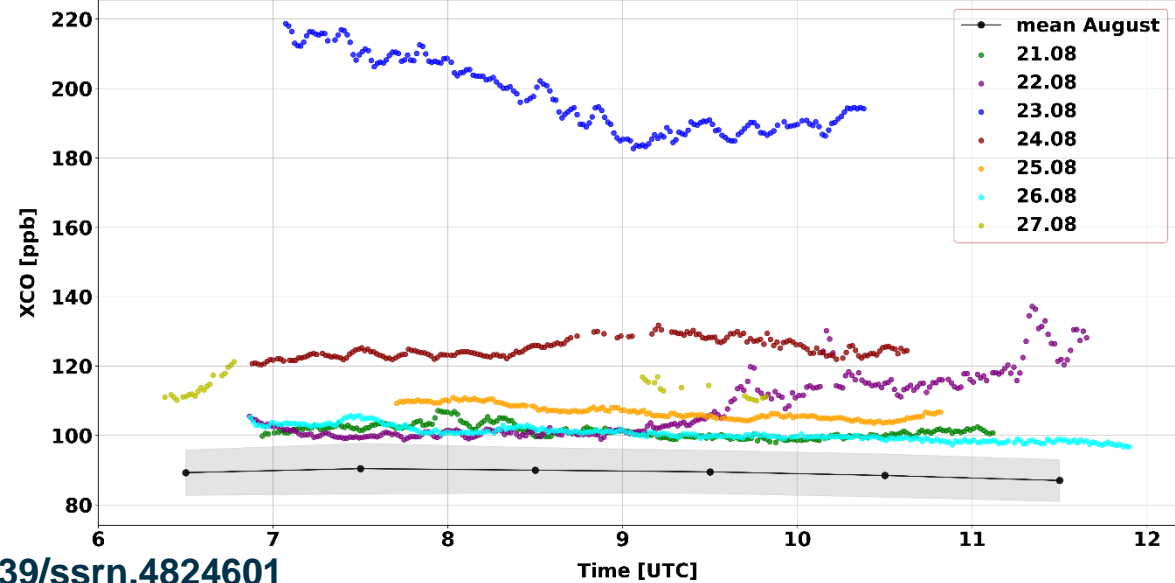


CO column volume mixing ratio | Thessaloniki



ppbv

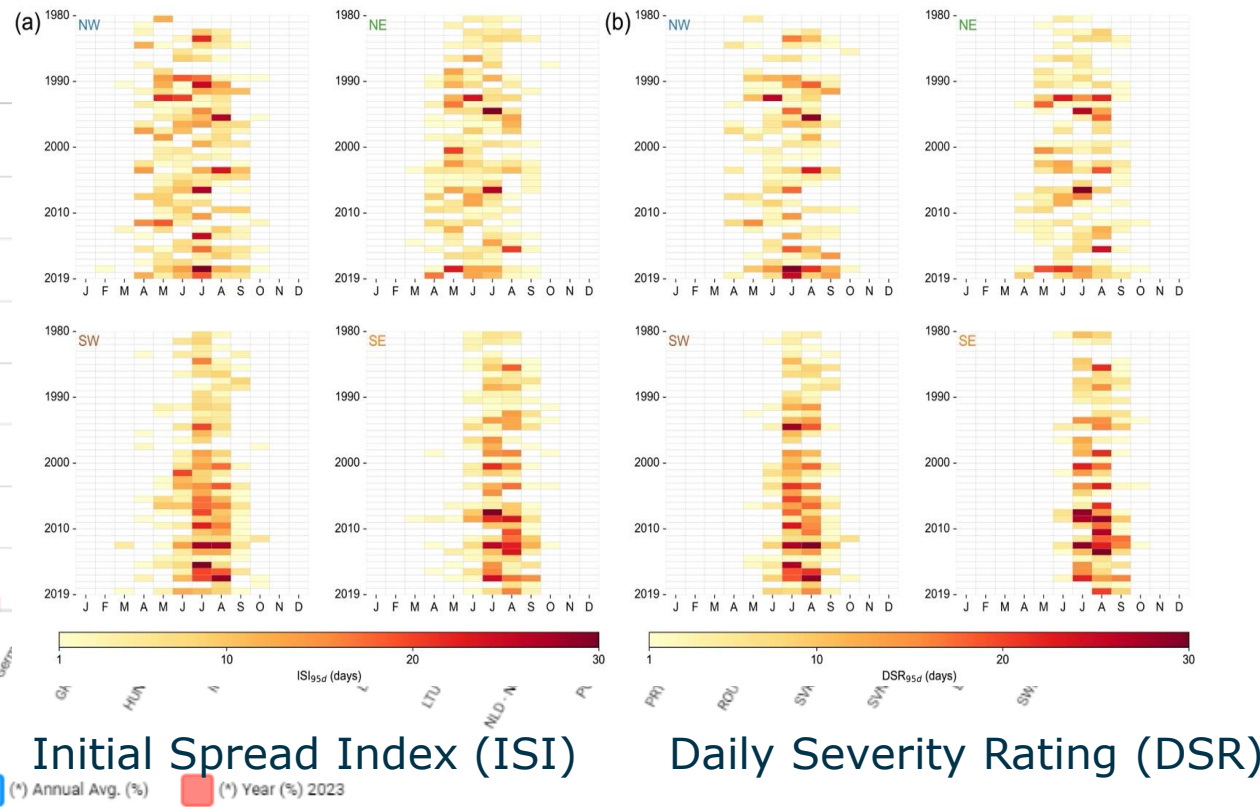
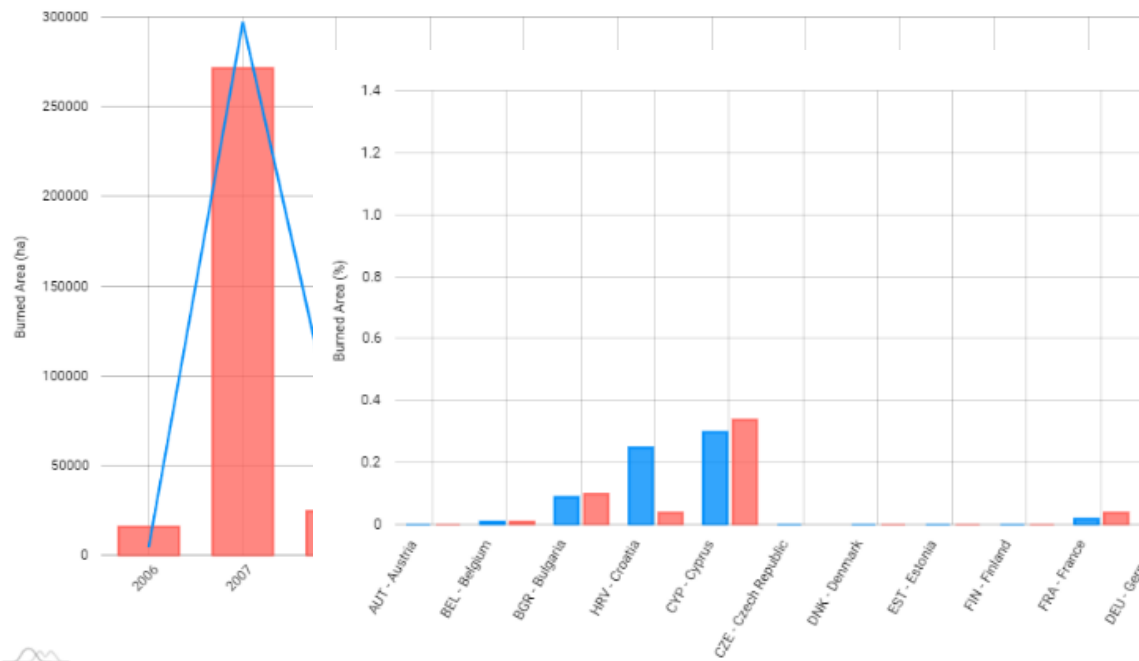
XCO diurnal variability over Thessaloniki, Greece



See poster P3.7 by Koukouli et al. & <https://dx.doi.org/10.2139/ssrn.4824601>

Are such events more frequent?

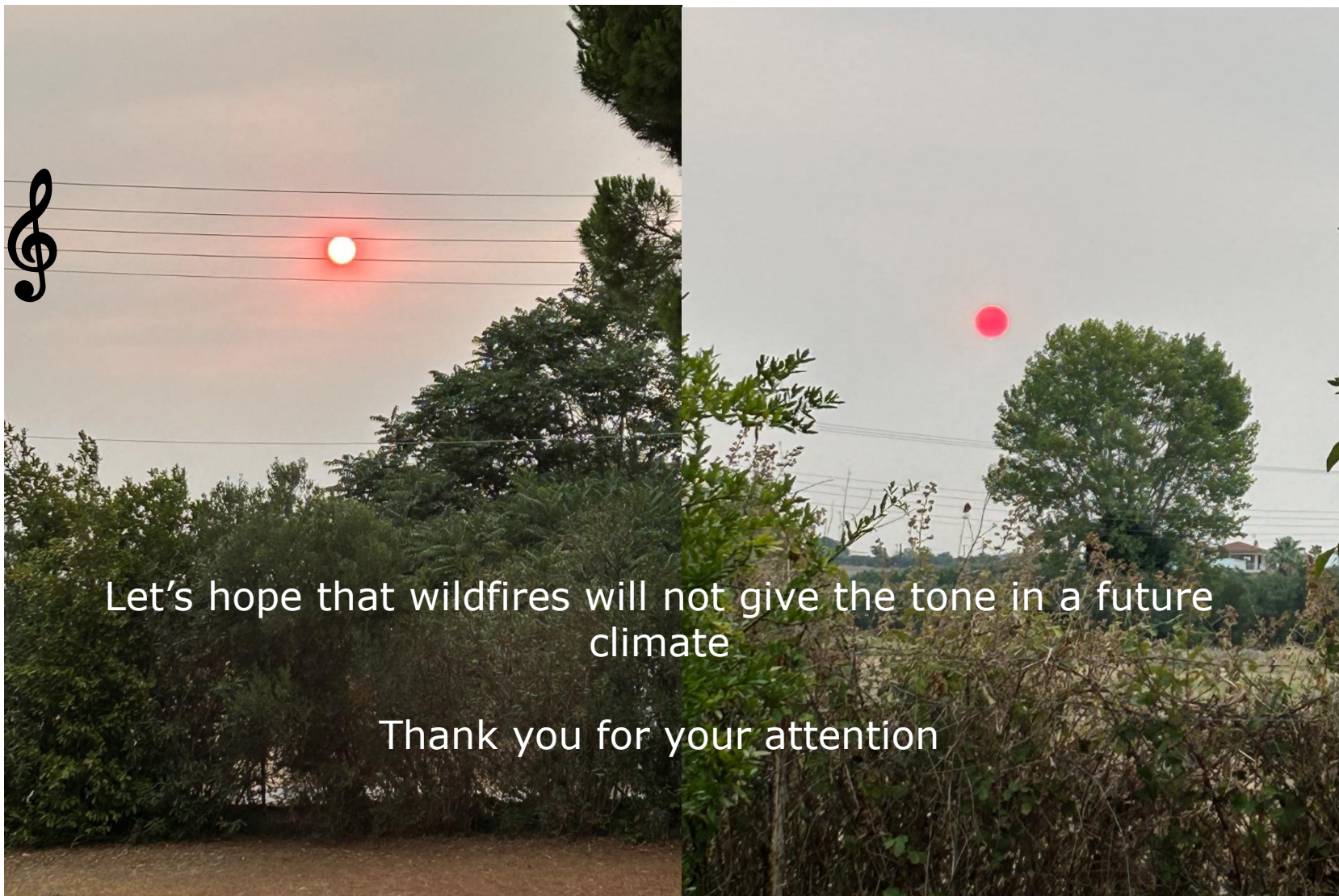
European Forest Fire Information System (EFFIS) Annual statistics for Greece



ISI integrates the moisture content of fine fuels and wind speed to provide a numeric rating of the potential rate of fire spread

DSR reflects the non-linear increase in the difficulty of control as the fire grows

Giannaros et al., <https://dx.doi.org/10.2139/ssrn.4428674>, 2023



Let's hope that wildfires will not give the tone in a future climate

Thank you for your attention