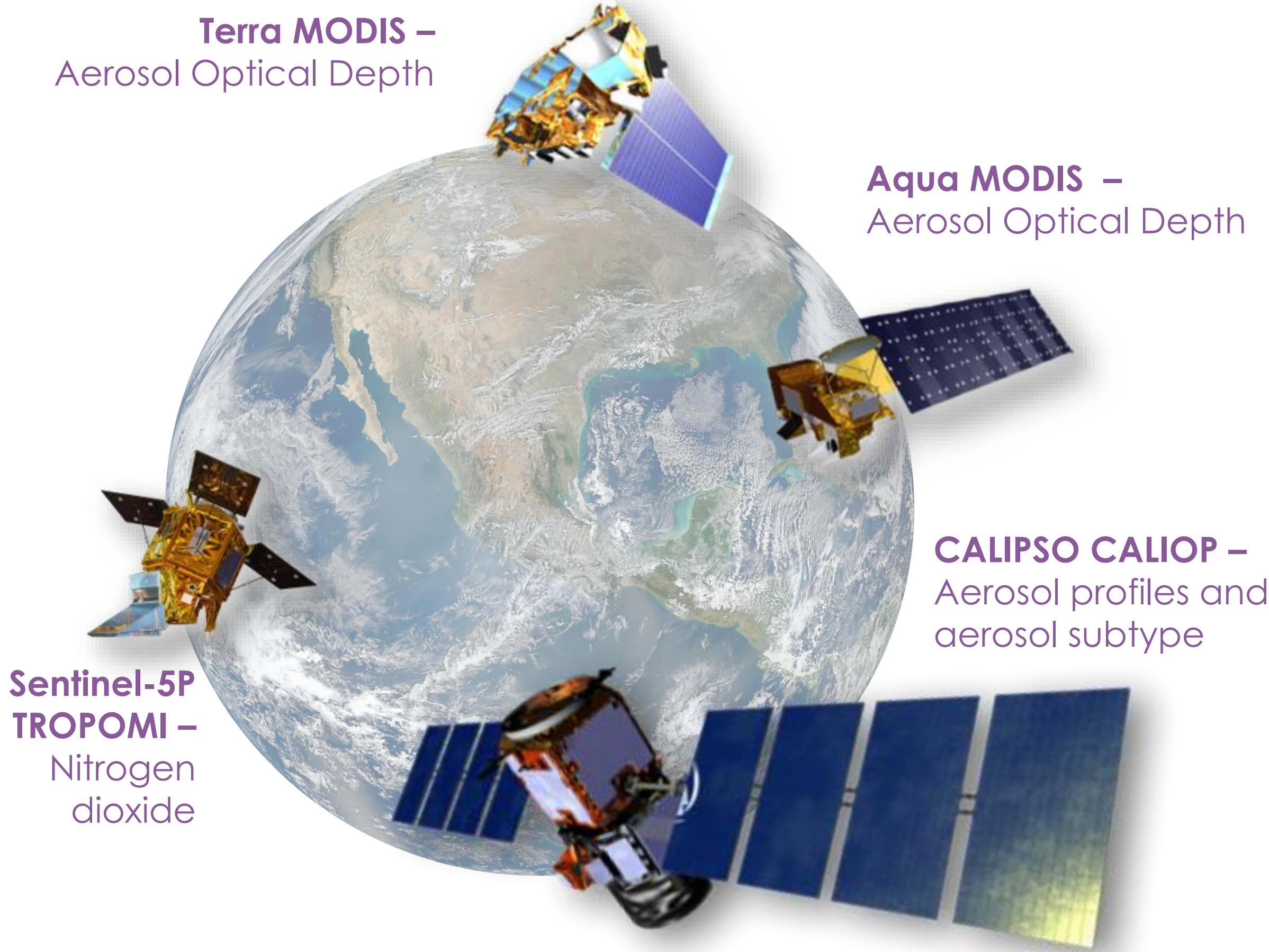
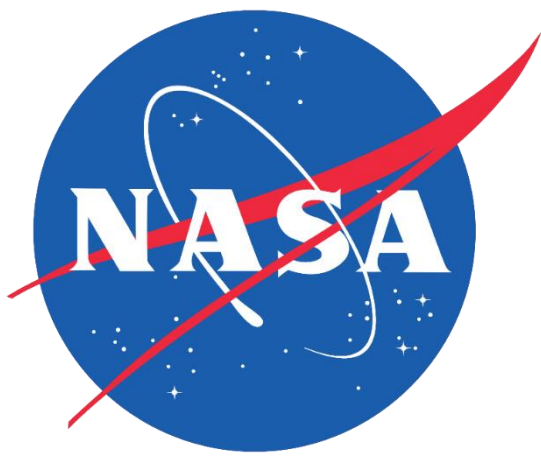




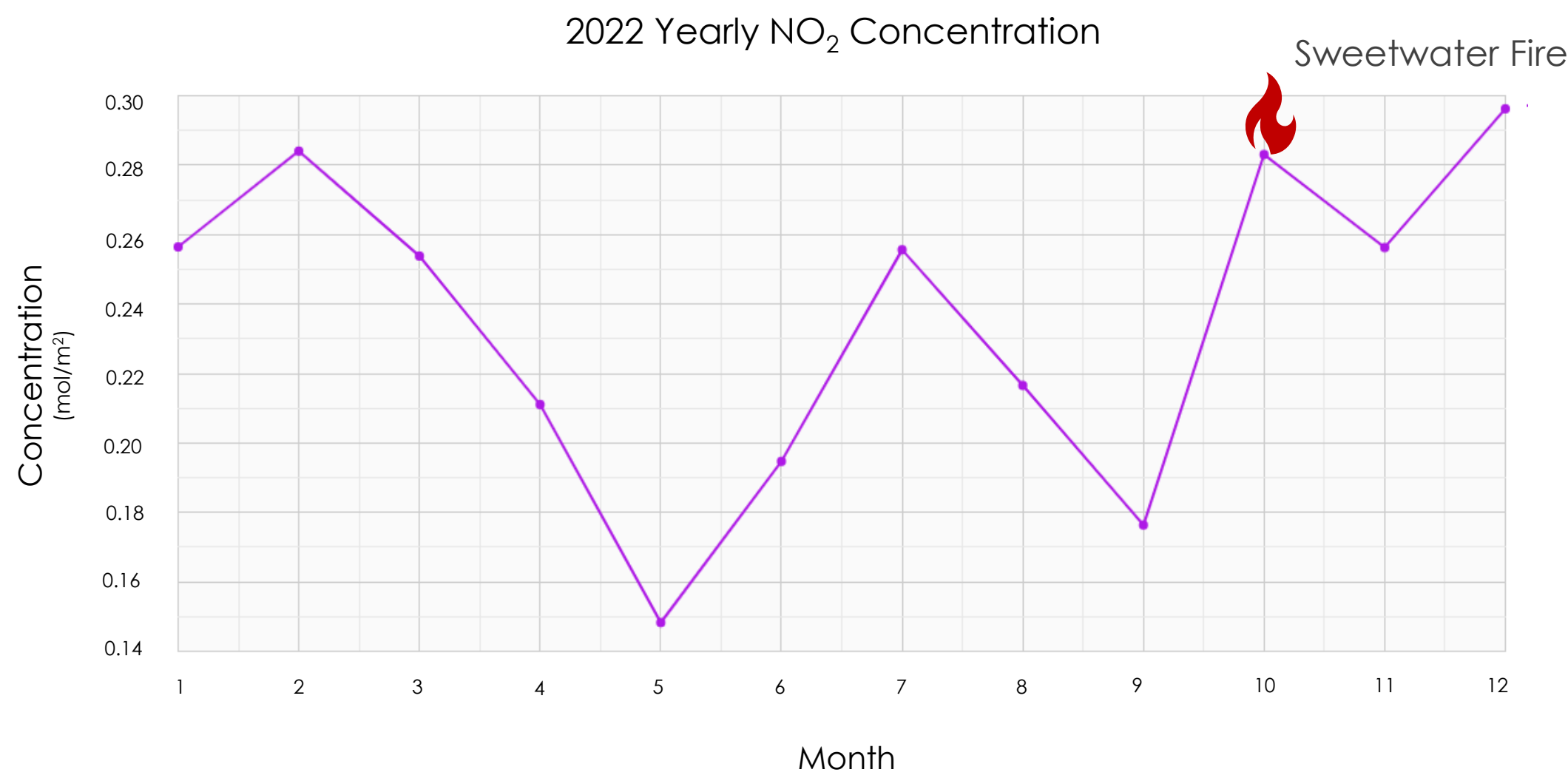
Colorado Springs Health & Air Quality

Using Earth Observations to Monitor Wildfire Smoke and Air Pollution for Enhanced Air Quality Management in Colorado Springs, Colorado



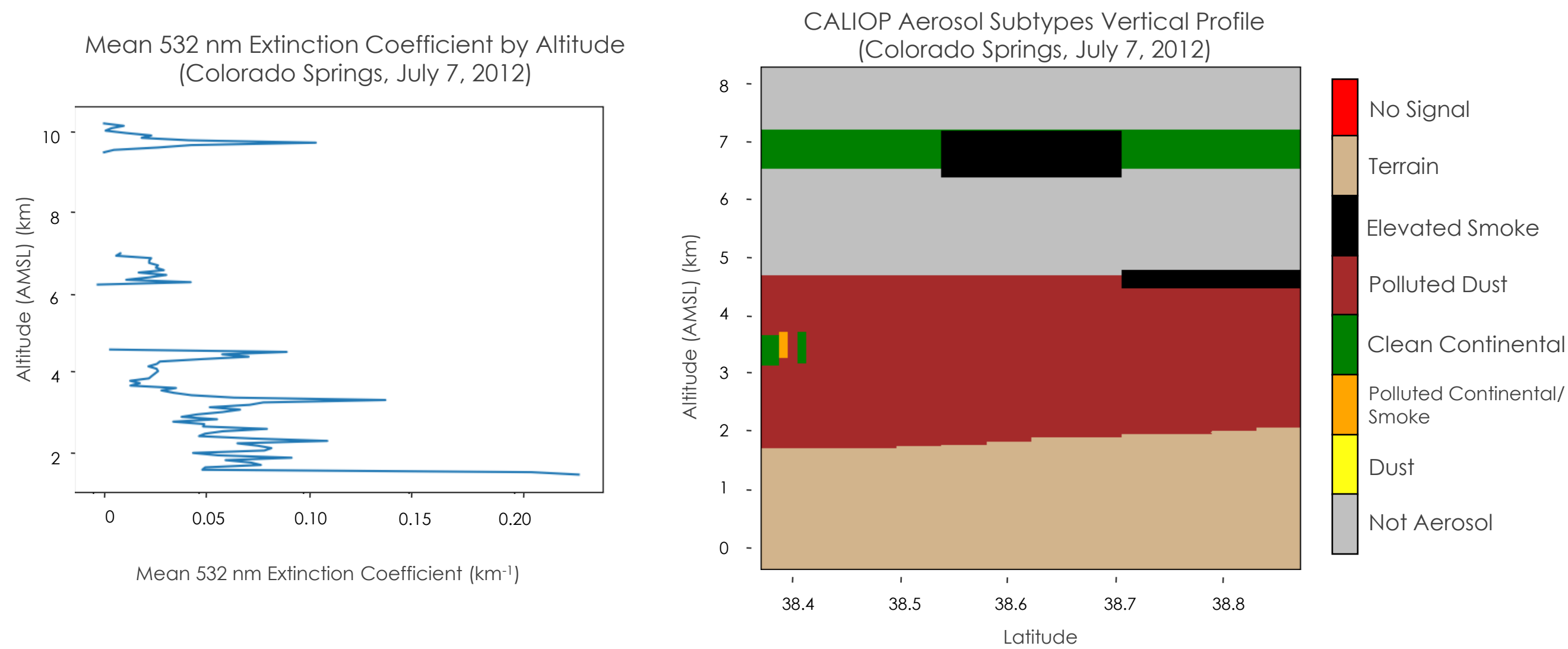
TROPOMI

TROPOMI can assess **long-term trends in nitrogen dioxide** (NO_2), a precursor for ground-level ozone. Spikes in NO_2 concentration are seen during the summer and after wildfire events, such as the peak in October following the Sweetwater Fire.



CALIOP

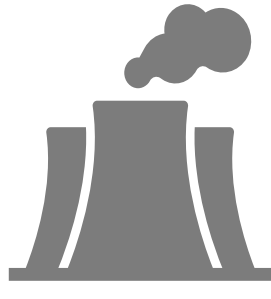
CALIOP data can potentially validate *in situ* ground monitor data using the **extinction coefficient**, or how much light is attenuated due to hitting aerosol particles, and by **vertical profiles of aerosol subtypes**. Shown below: aerosol subtypes and presence following the Waldo Canyon Fire (2012).



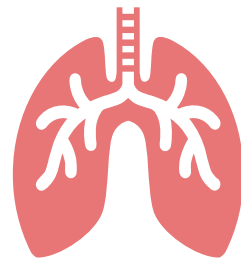
Takeaways

- Earth and atmospheric observations can elucidate **spatiotemporal trends in air quality**, bolstering the City of Colorado's capacity to mitigate air quality impacts on its citizens.
- MODIS, CALIOP, and TROPOMI** data show **spikes** in indicators of poor air quality **following fire events** ($\text{PM}_{2.5}$, aerosols, NO_2).

Community Concerns



Adherence to Clean Air Act quality standards



Adverse health risks to communities breathing polluted air

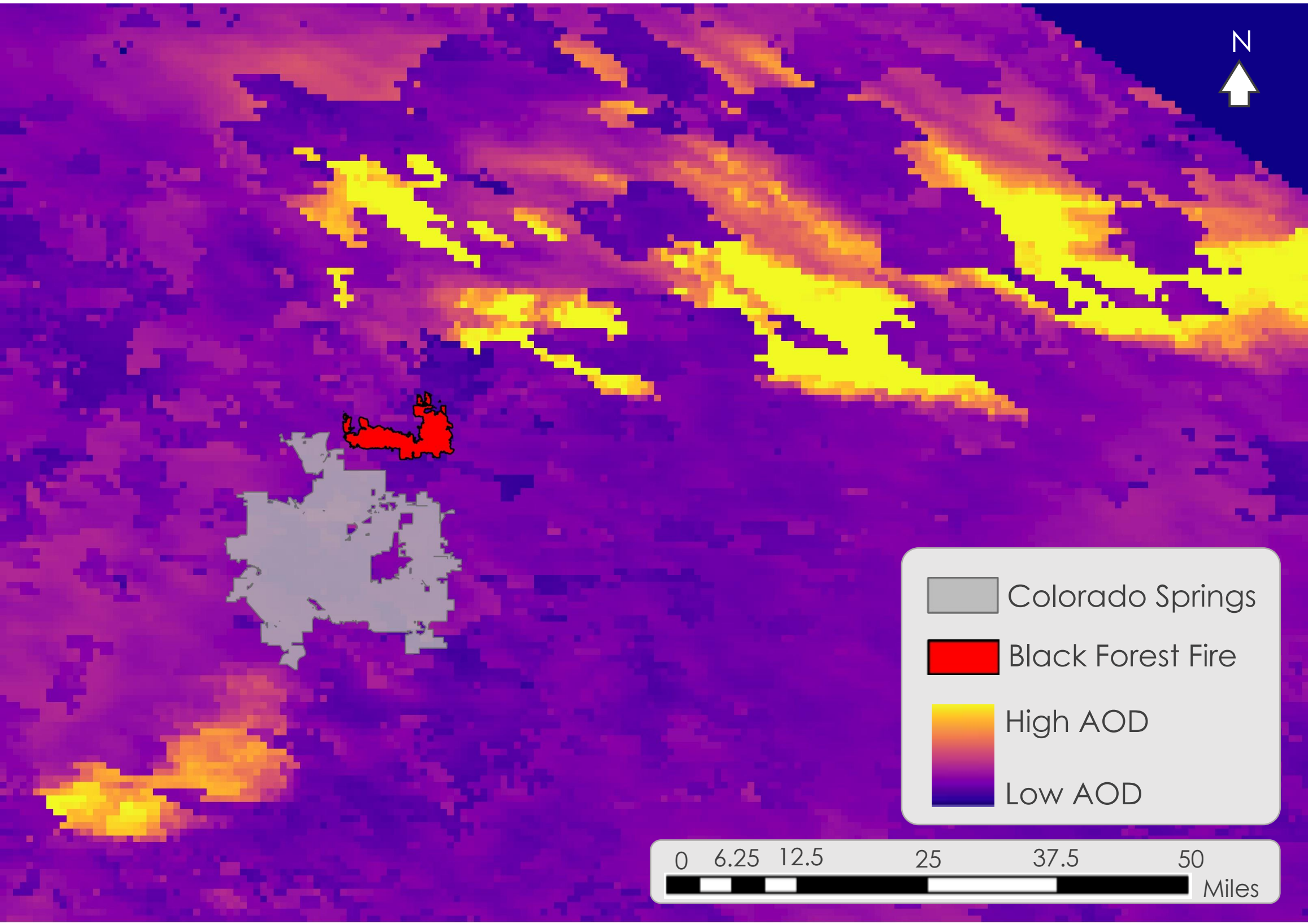


Intensifying wildfire regimes in the region, fueled by climate change

The City of Colorado Springs, situated in Colorado's Front Range corridor, is grappling with **poor air quality** exacerbated by **intensifying wildfire regimes**, a major concern for its rapidly growing population.

Through the application of **Earth observations**, this project developed products **to monitor wildfire events** and their impacts on air quality, including **particulate matter** and NO_2 .

MODIS



MODIS aerosol optical depth (AOD) measurements can be used as a proxy to monitor spatiotemporal trends in fine particulate matter ($\text{PM}_{2.5}$), a primary pollutant emitted by wildfires. High AOD concentrations can indicate smoke plumes, such as those from the 2013 Black Forest Fire, pictured above.

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