S42B - The Analysis of Extreme Formaldehyde and Nitrogen Dioxide Columns in Oregon Caused by The Beachie Creek Fire

Sunday, January 28, 2024

6:30 PM - 8:30 PM

Hall E (100 Level, The Baltimore Convention Center)

Abstract

Nitrogen dioxide and formaldehyde are some of the most significant contributors to poor air quality and tropospheric ozone pollution. There are many different anthropogenic and biogenic sources of formaldehyde and nitrogen dioxide but forest fires do yield a significant amount which greatly affect the health and quality of life in the impacted areas. I am concerned about how forest fires in the Pacific Northwest affect the air quality and concentrations of NO2 and CH2O under climate change. Understanding the extent of NO2 and formaldehyde will help develop mitigation strategies that will help these air quality and climate change issues.

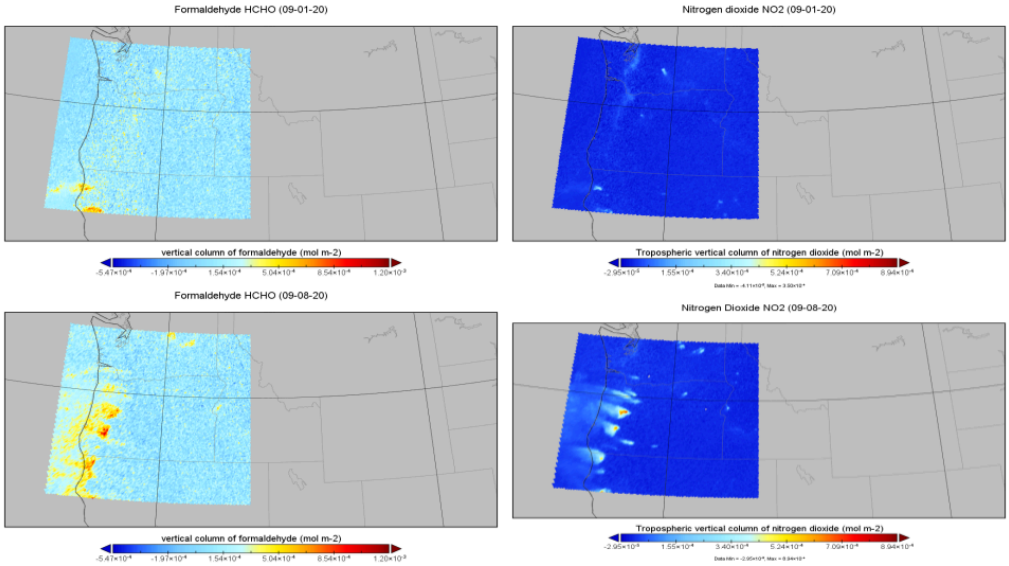
Using the Sentinel-5p TROPOMI instrument, I observed the 2020 Beachie Creek forest fire that started in late August and ended in early October. The fire truly exploded on September 8th and caused severe destruction. Analyzing this main fire day is important due to the fact of how massive the flames truly were. I looked for columns of formaldehyde and nitrogen dioxide and compared these NO2 and CH2O readings to the same area on a non-fire day.

The Beachie Creek forest fire released copious amounts of trace gasses into the troposphere and beyond due to its massive size (as seen below in **Figure 1)**. Analyzing these trace gasses is helpful in better understanding the intensity and spatial extent of fire-related NO2 and CH2O and mitigating their health impacts.

There are two underlying questions I am trying to answer within this study:

1. How does the presence of the Beachie Creek forest fire affect the columns of formaldehyde and nitrogen dioxide within the troposphere of the Pacific Northwest?
2. How do formaldehyde and nitrogen dioxide transport throughout the Beachie Creek forest fire?

These questions were the vital first step of this project and were thoroughly discussed while analyzing this undertaking.



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