Air Pollution and Greenhouse Gas Emissions from the Agricultural Sector in South and Southeast Asia

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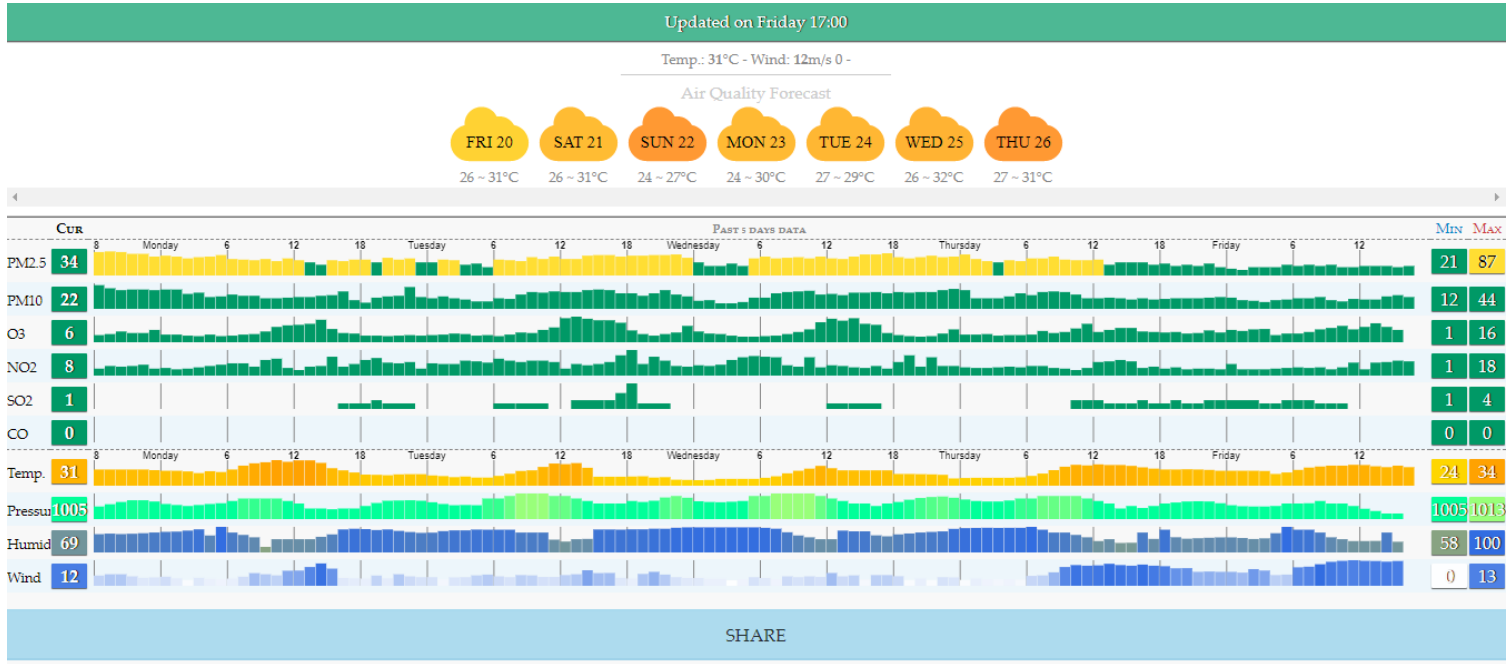
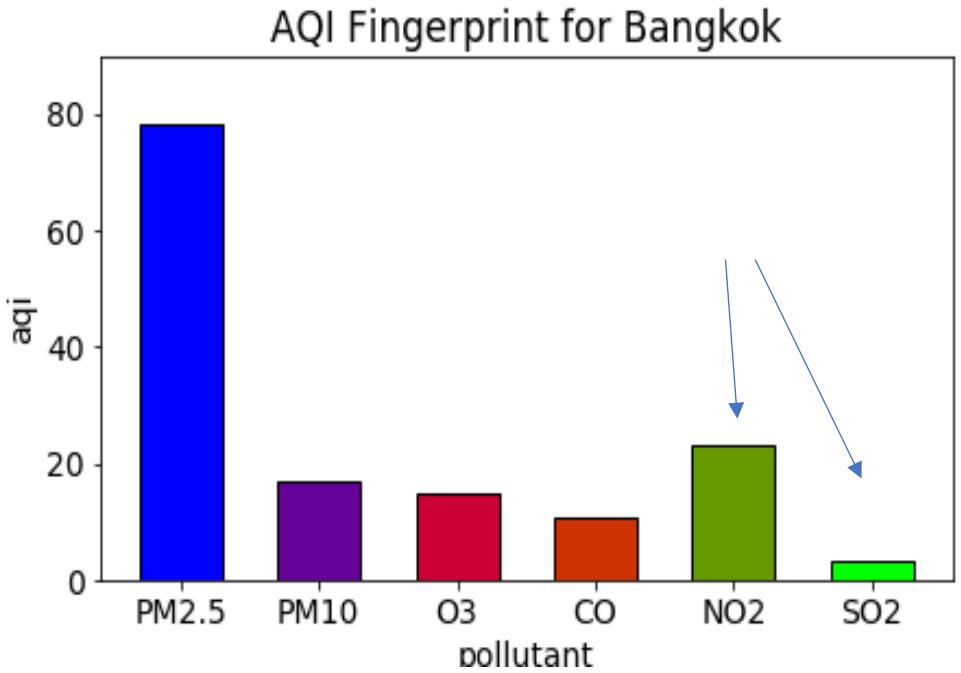
What's in the smoke?

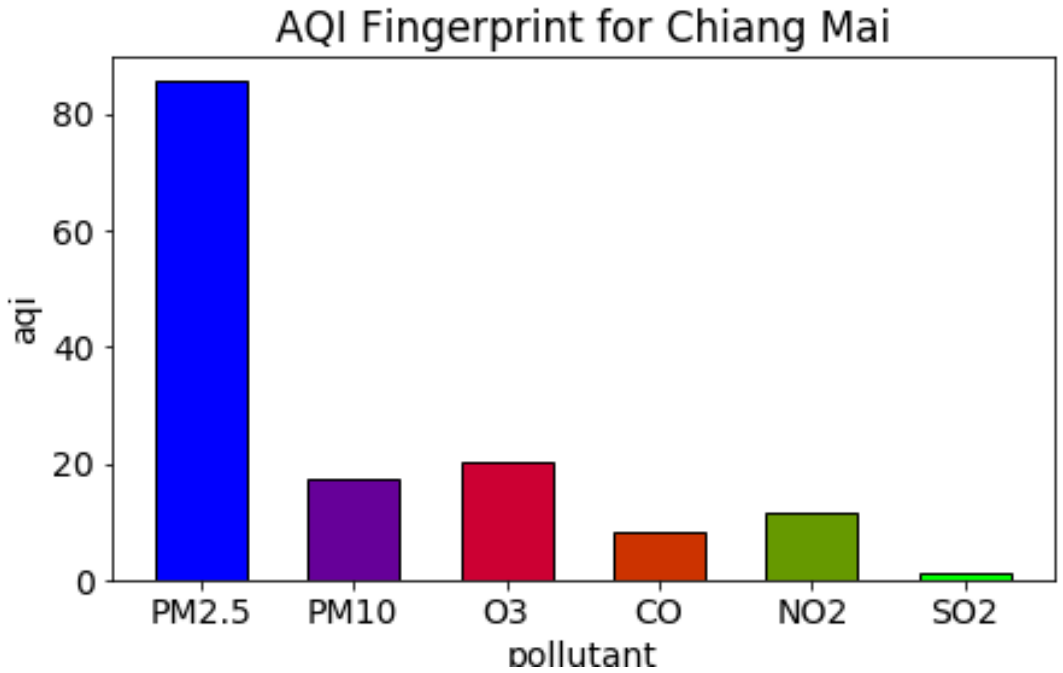
Distinctive Patterns in the Data Can Reveal Sources



Pollutant Chemical Profiles Tell the Story

The chemical profile of the air pollution in Bangkok has higher NO2 and SO2 than in North Thailand. Both pollutants suggest higher contribution from industrial/traffic activities.



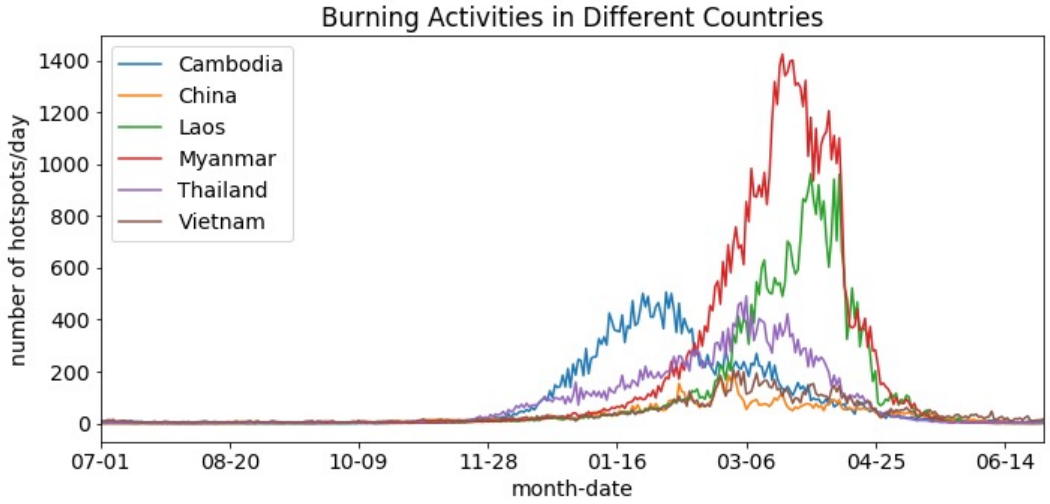


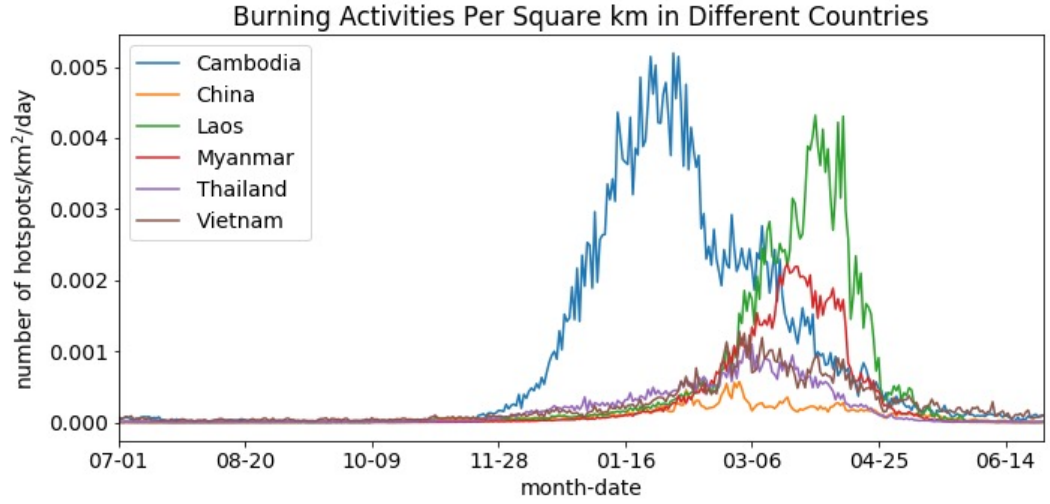
UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

Hotspots by Country

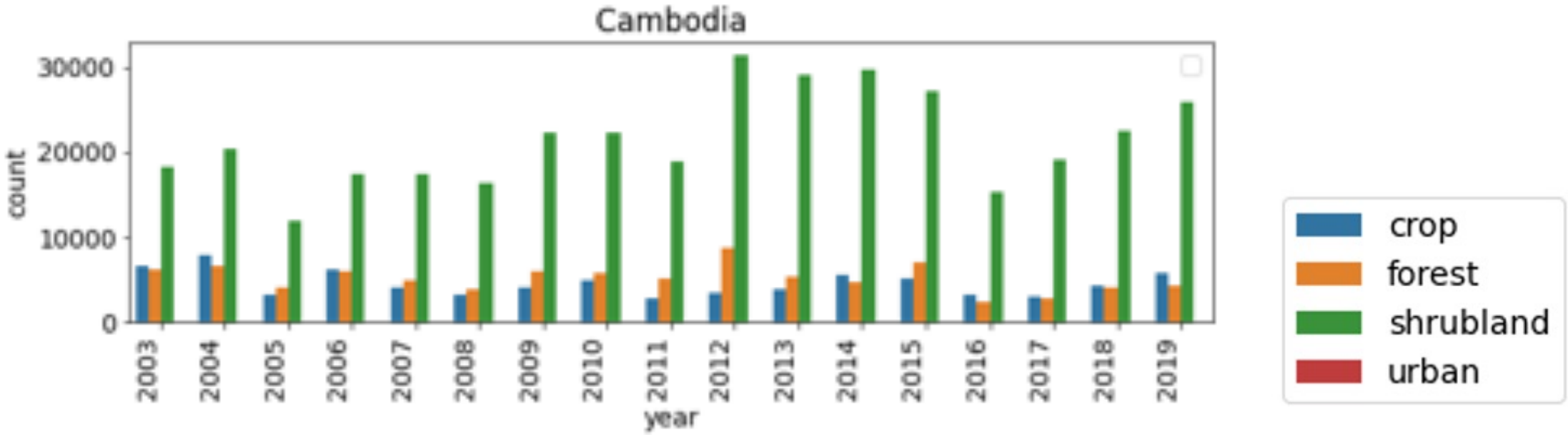
The number of hotspots is very high in Myanmar >Laos> Thailand

Size of the fire matters - Cambodia and Laos have the most burning density.





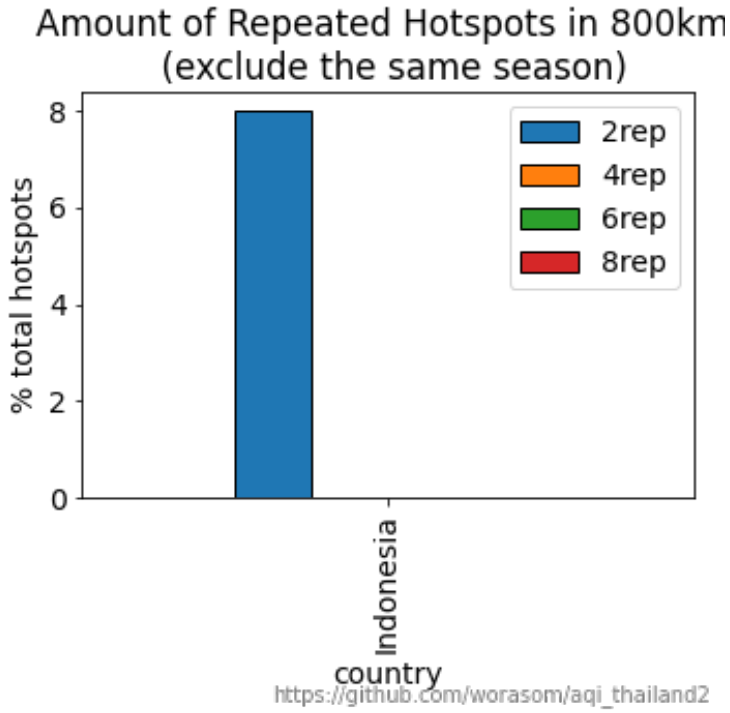
Cambodia Hotspots by Land Use Categorization

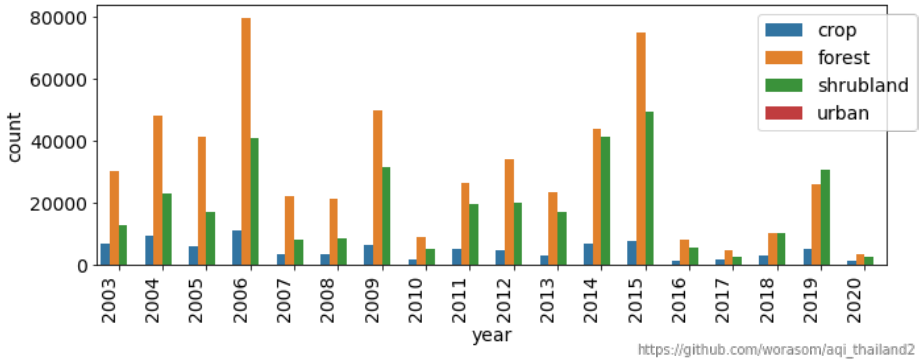


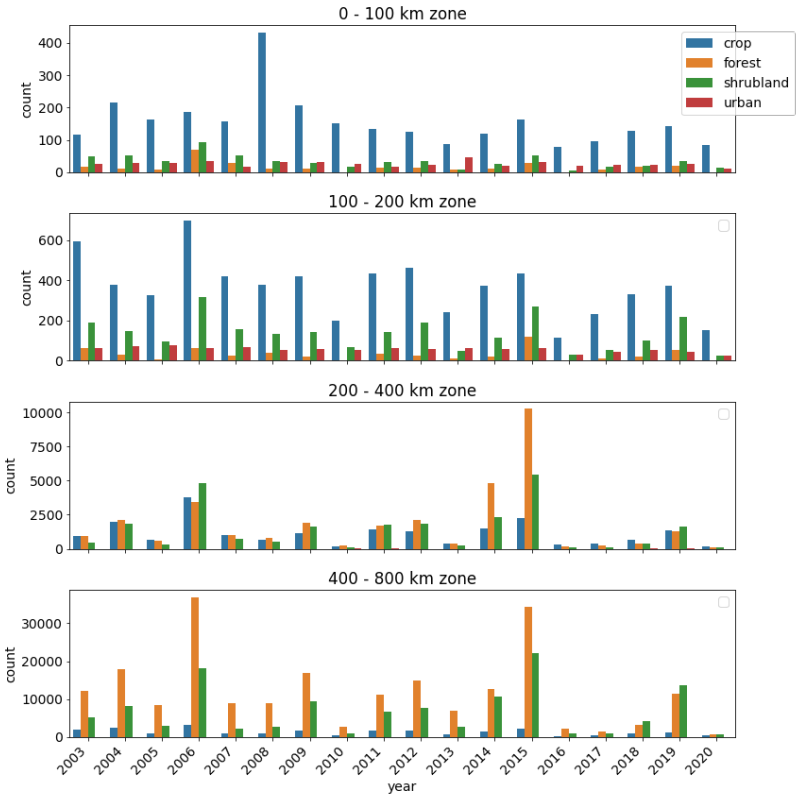
Indonesia: Land Use Categorization of Hotspots and Repeating Behaviors

Biomass Burning Impacting Jakarta

- The burning closed to the city is from cropland, but the majority of burning is in the outer zone and are from forest burning.
- Very small fraction of the fire has repeating pattern.

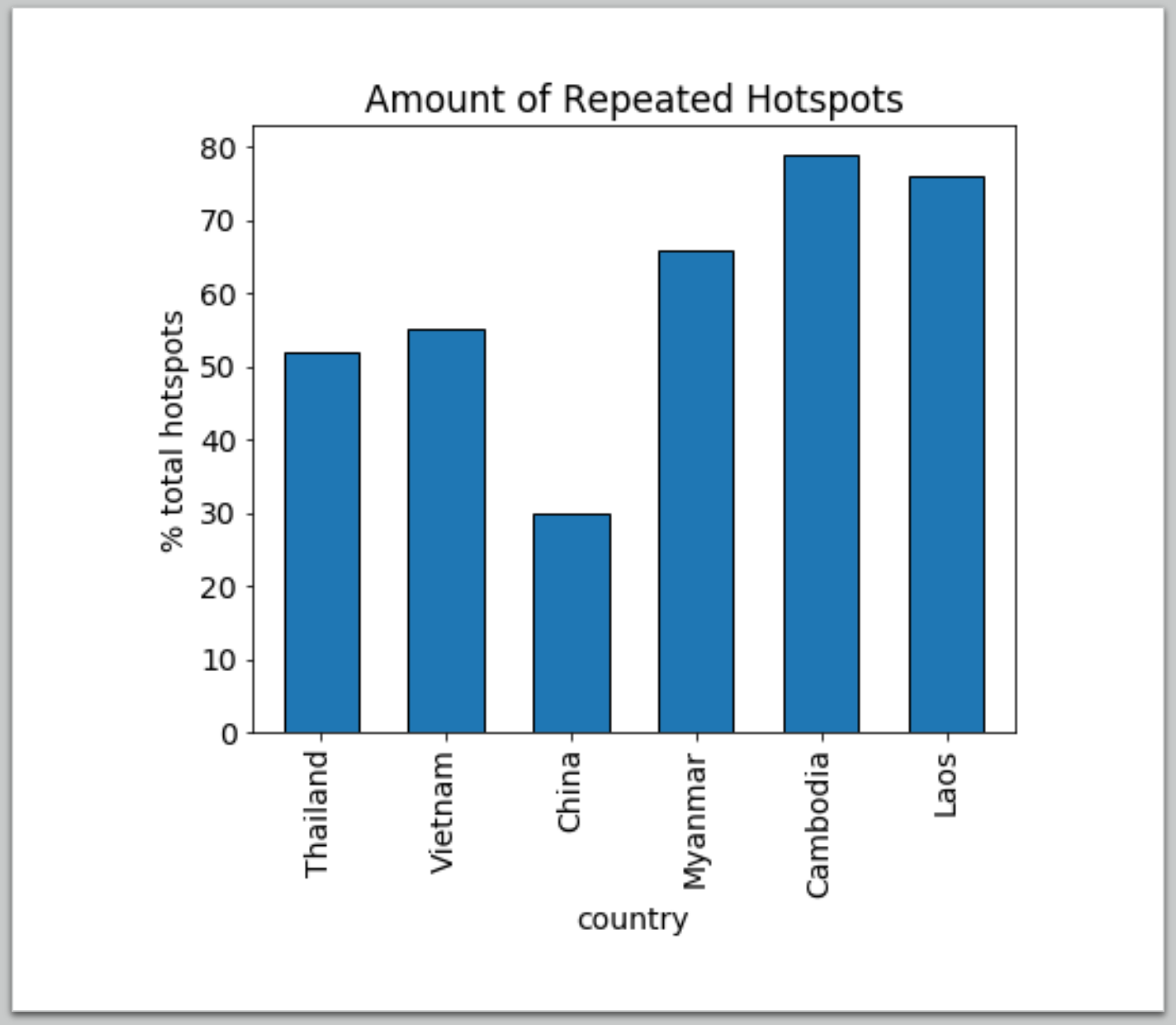


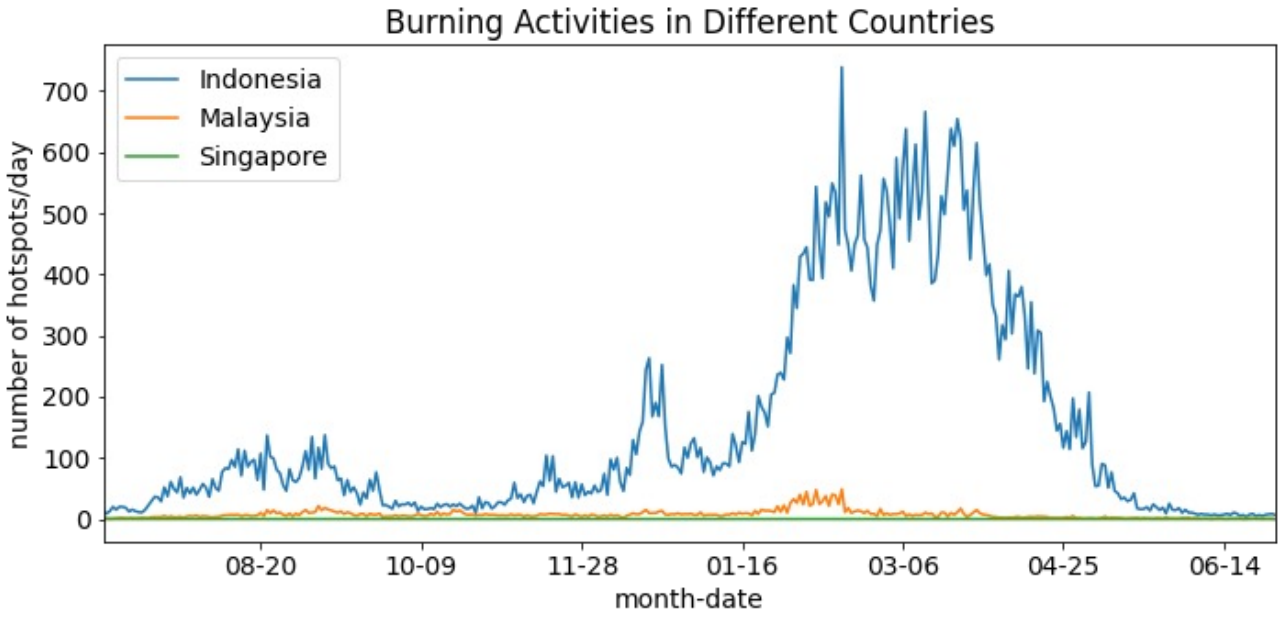




Repeating Hotspots

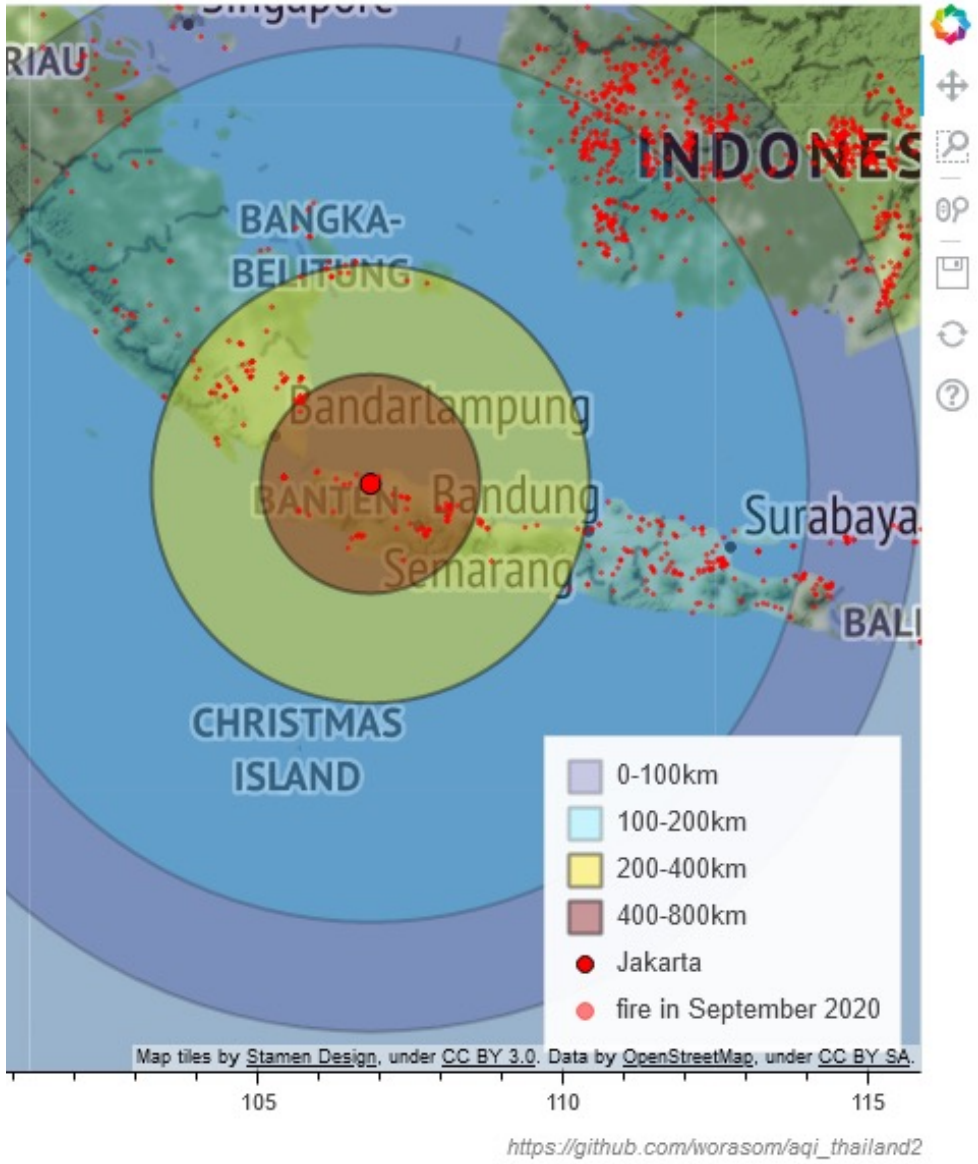
- Except for China, 50% of the hotspots occur more than once. This suggests that they are from farm burning



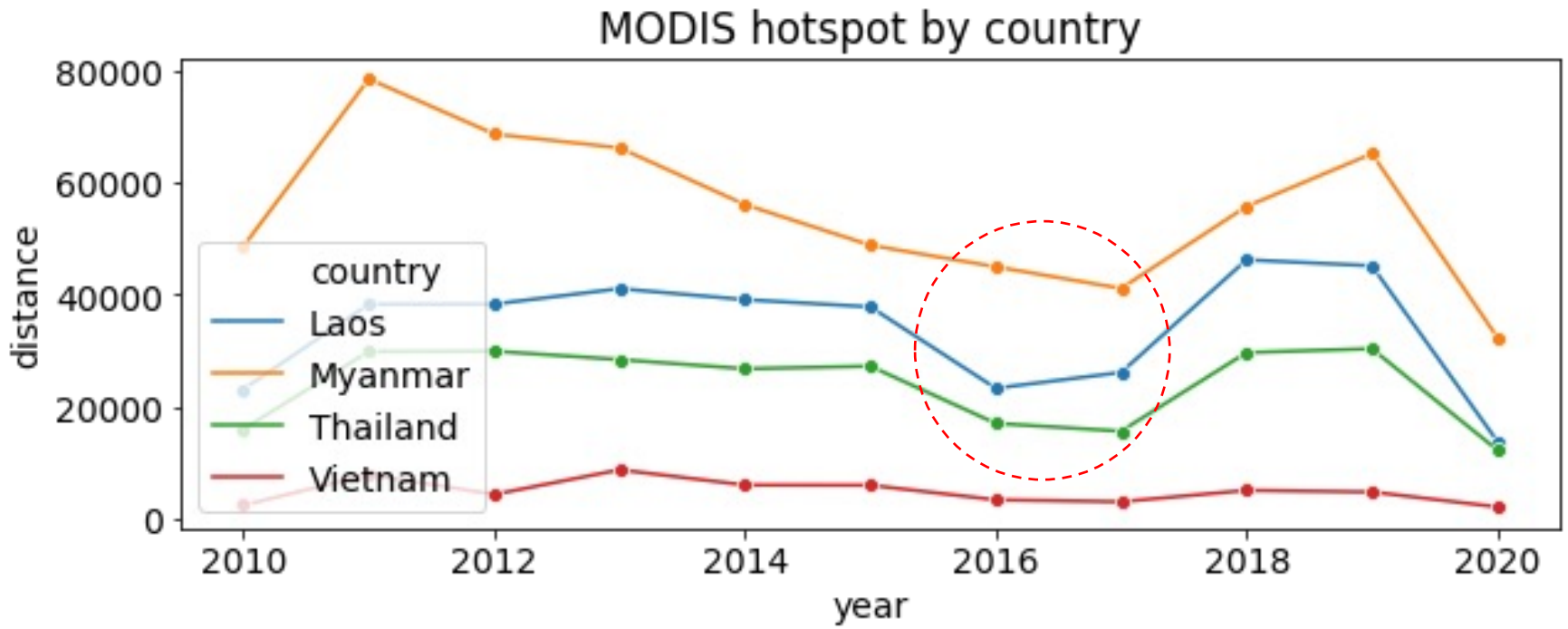


Indonesia: Fire Zones

- From a subregional perspective, the majority of the fires are in Indonesia. A small amount are from Malaysia
- Majority of burning is in the outer zone and are from forest burning.



Reduced Burning Efforts Showing Uneven Progress

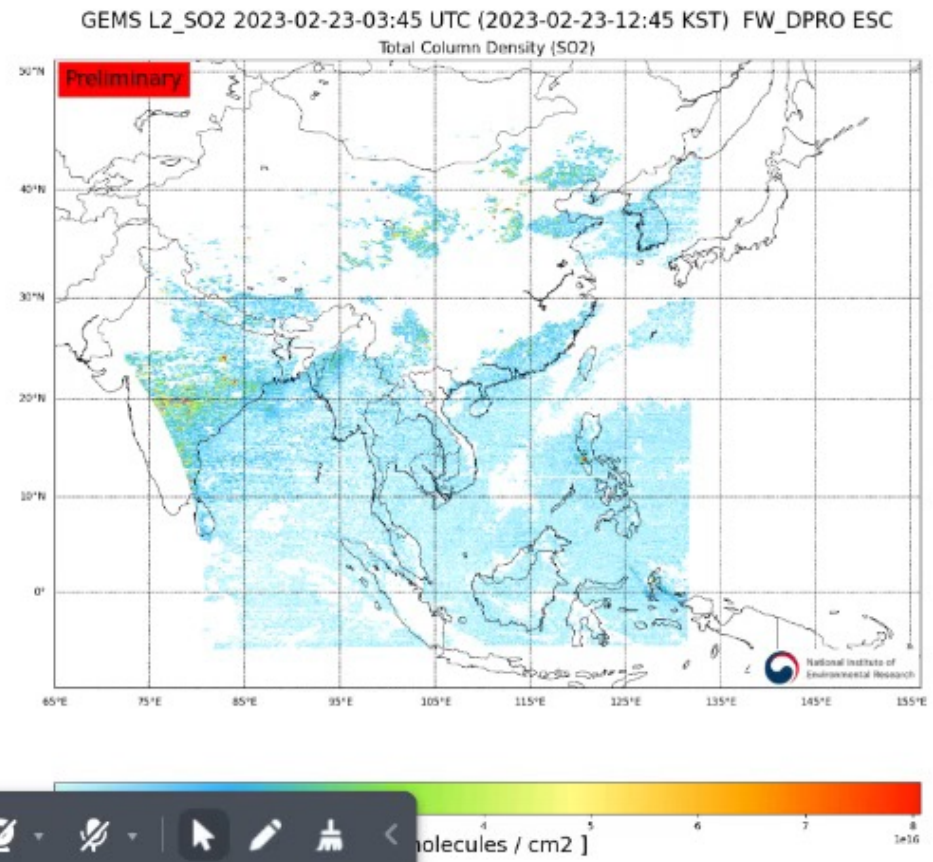


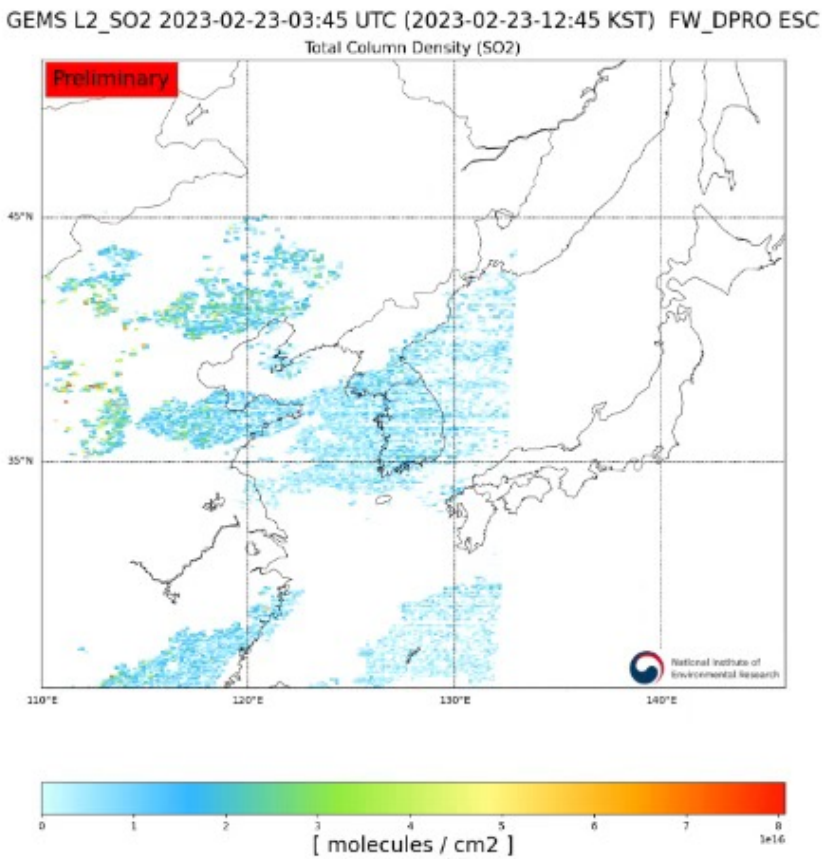
- Zero-burning is only implemented in Thailand, but may also influence behavior neighboring countries
- Alternatively, it happen to be a wet year and less forest fire

GEMS Satellite Data

Sulfur dioxide (SO2)

Aerosol Optical Depth (443nm)

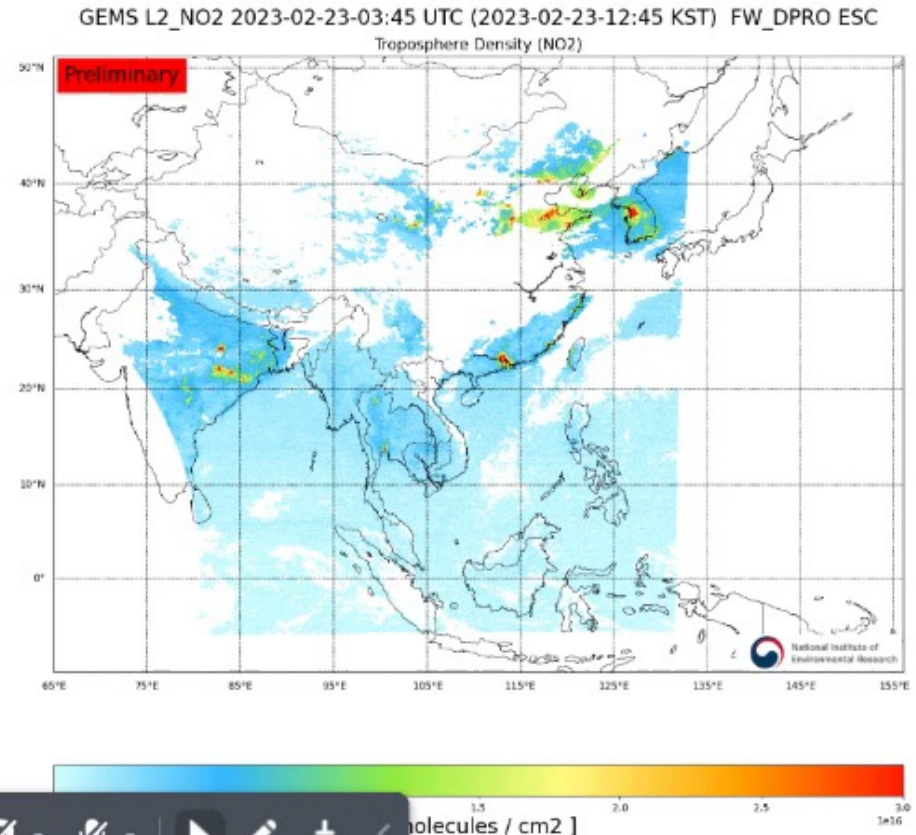


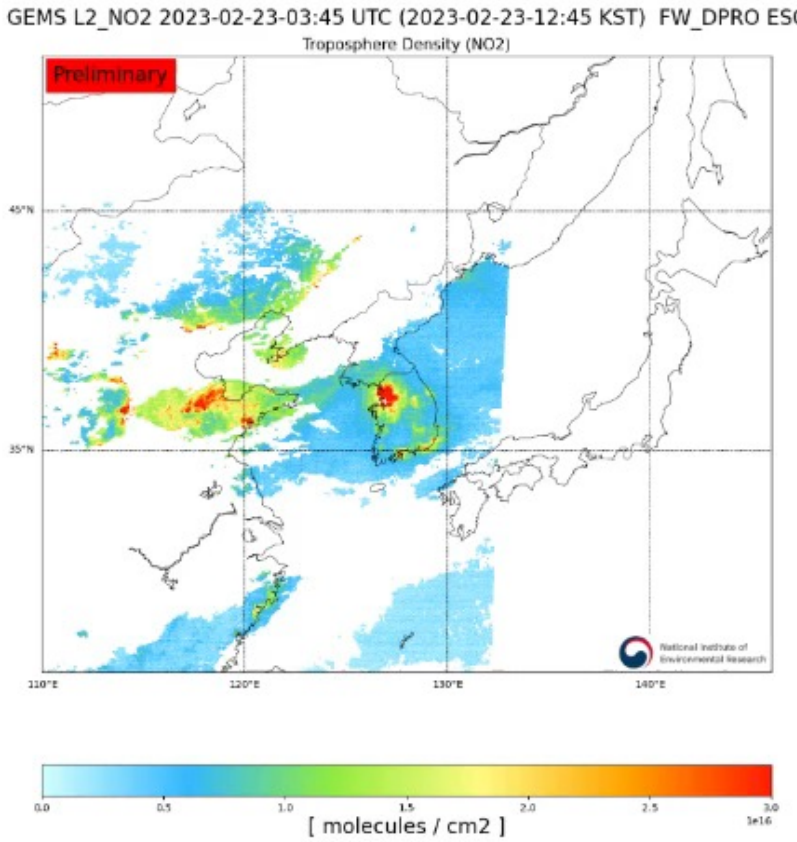


GEMS Satellite Data

Nitrogen Dioxide (NO2)

Aerosol Optical Depth (443nm)





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Summary

- Biomass burning in unsustainable agriculture is a major problem for Green House Gasses and air pollution
- Innovative approaches to data can bring the insight necessary to guide action
- Through the Regional Action Programme on Air Pollution, ESCAP is supporting countries to reduce their emissions
- GEMS data can be very beneficial for identifying and addressing emission sources