

U.S. Clean Air Act

Identified six major (conventional or **criteria pollutants**) for which maximum ambient air levels are mandated.

What are these things...where do they come from?

<https://www.epa.gov/criteria-air-pollutants>

Sulfur Oxides* (SO_x)

Nitrogen Oxides* (NO_x)

Carbon Monoxide*

Lead (Remember historically it was common in air because...)

Ozone**

- What do we mean tropospheric ozone? (closer to ground)
- What do we mean when we say ozone is a secondary pollutant? (formed from NO_x and VOCs when hit by UV)

Particulates*

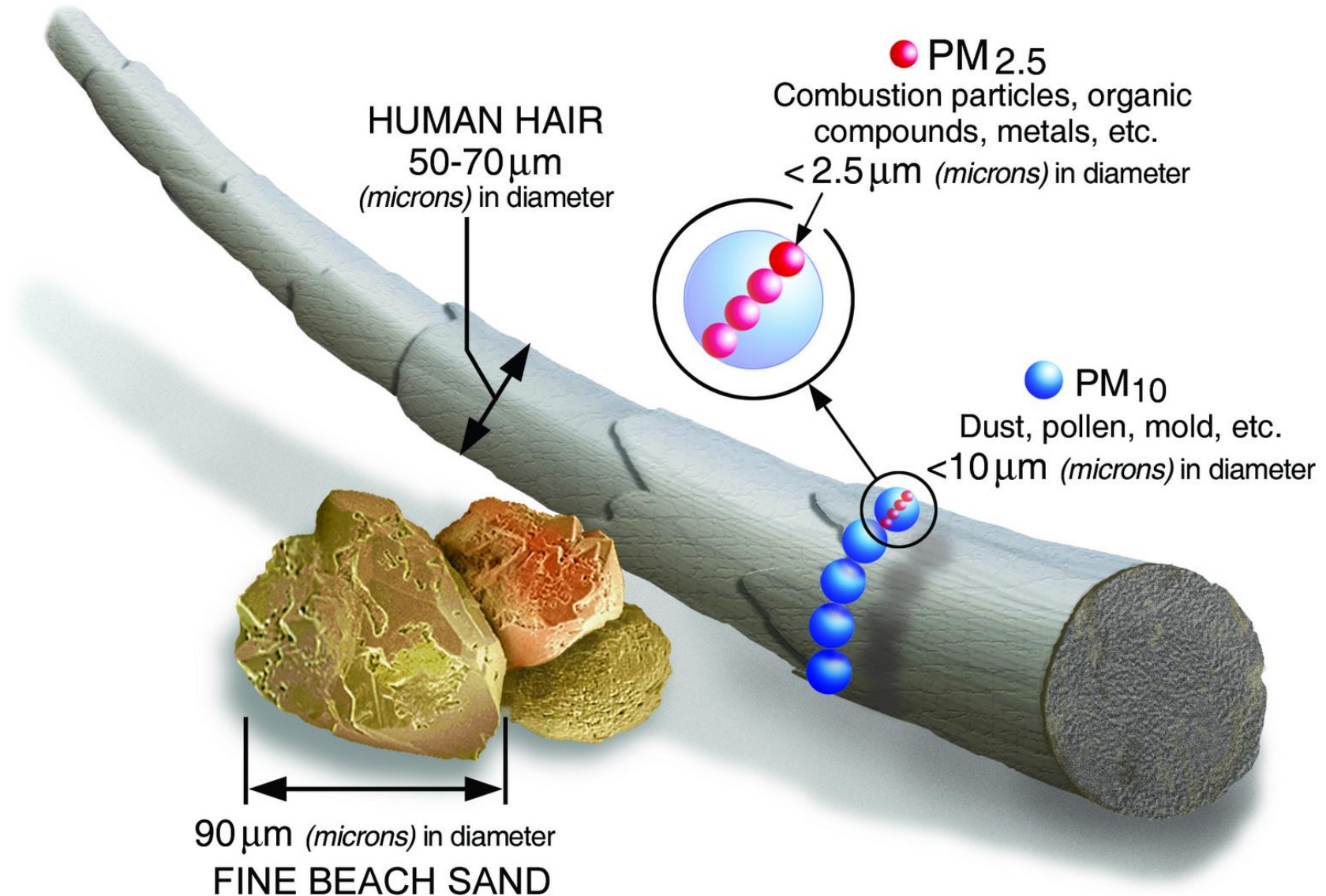
- What are the different sizes and how might their fate in the atmosphere and in your body depend on size?
- Which sizes are more dangerous and why? There are... PM₁₀, PM_{2.5} (Fine), Ultrafine (up to .1 micrometers)

*These are directly related to fossil fuel combustion!

** Indirectly related to fossil fuel combustion (secondary pollutant)

A focus on particulates....

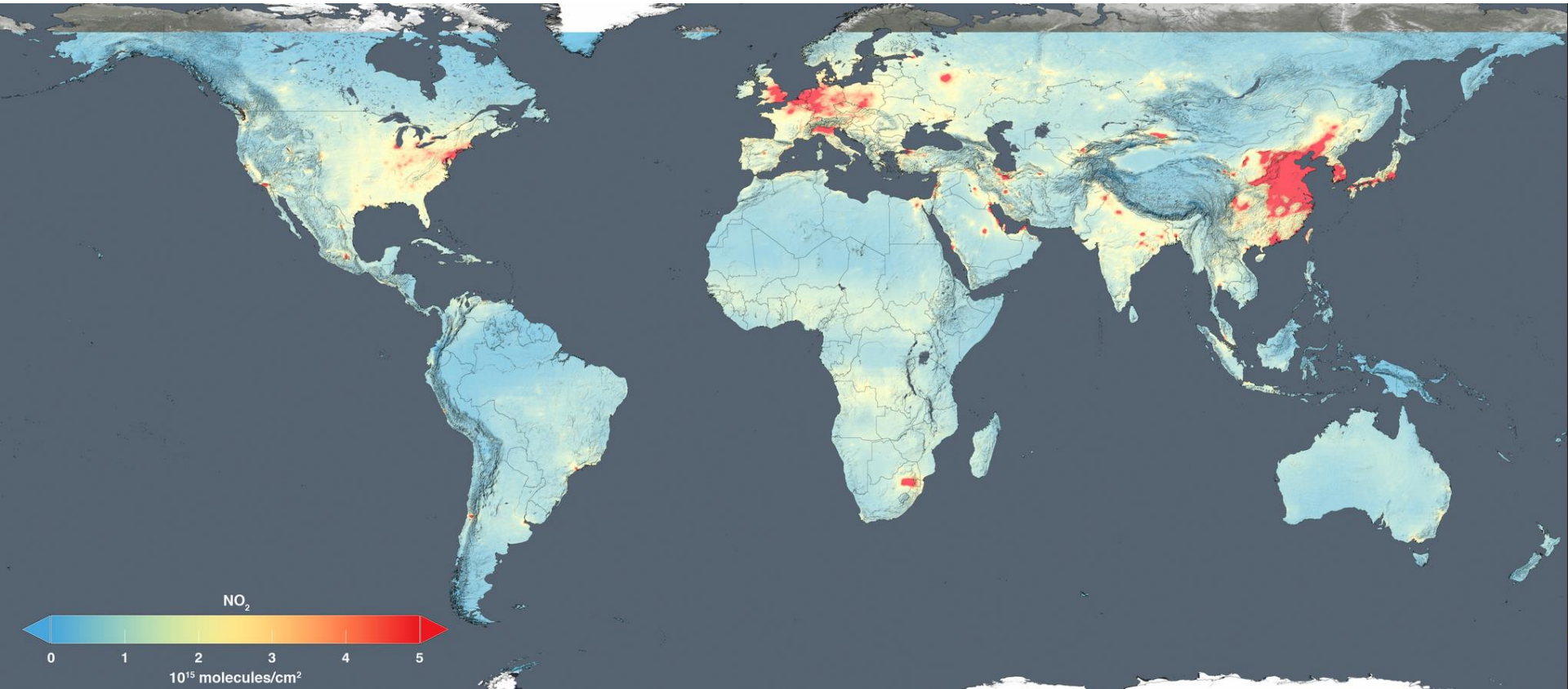
Micron is a millionth of a meter (also called micrometer)



Nitrogen Dioxide -Macro View-across continents

(basically an indicator of fossil fuel combustion)

<https://www.nasa.gov/press-release/new-nasa-satellite-maps-show-human-fingerprint-on-global-air-quality>



Across one year...2014

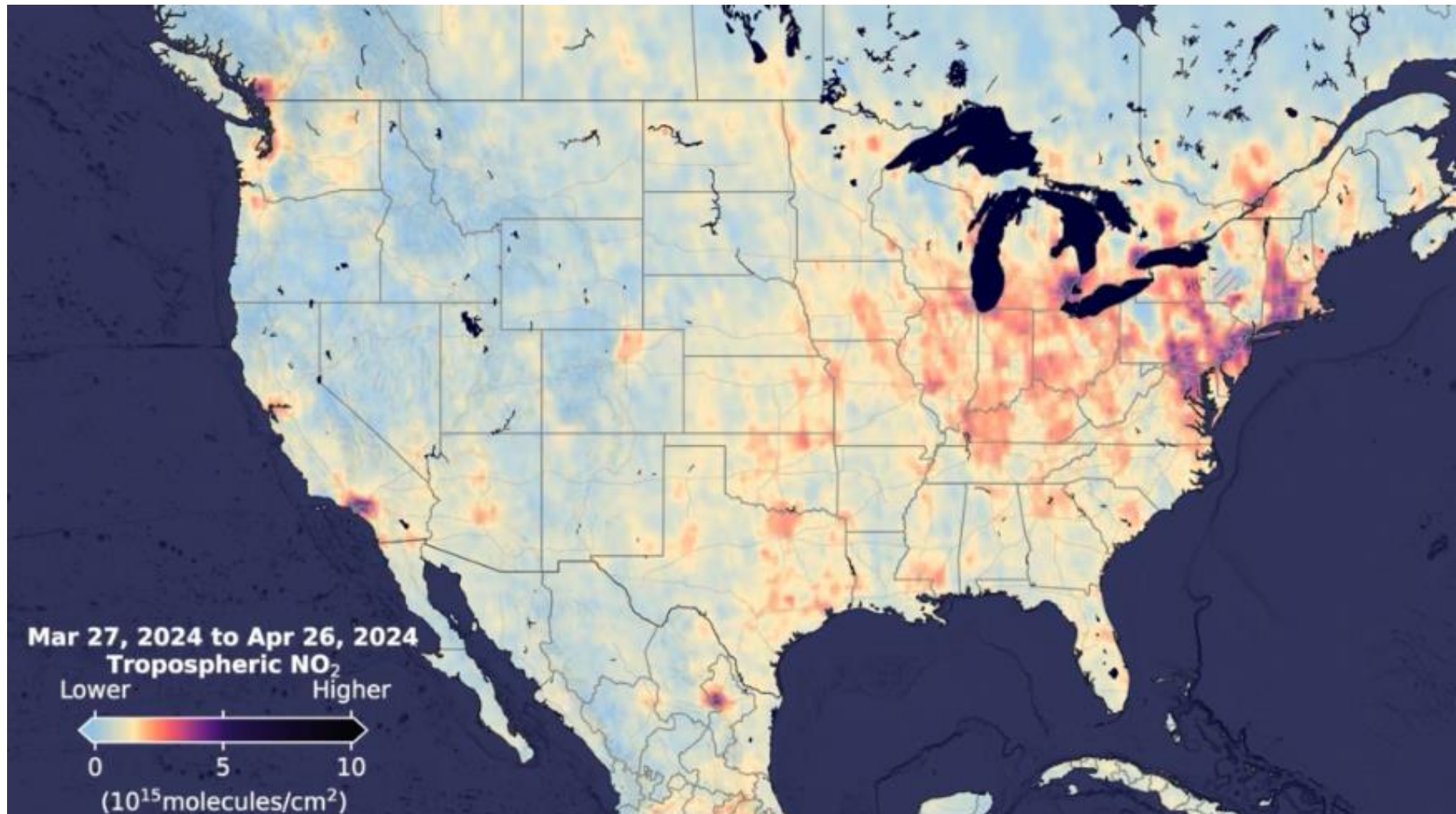
This global map shows the concentration of nitrogen dioxide in the troposphere as detected by the Ozone Monitoring Instrument aboard the Aura satellite, averaged over 2014.

Credits: NASA

FYI...Link to this website is in word press site.

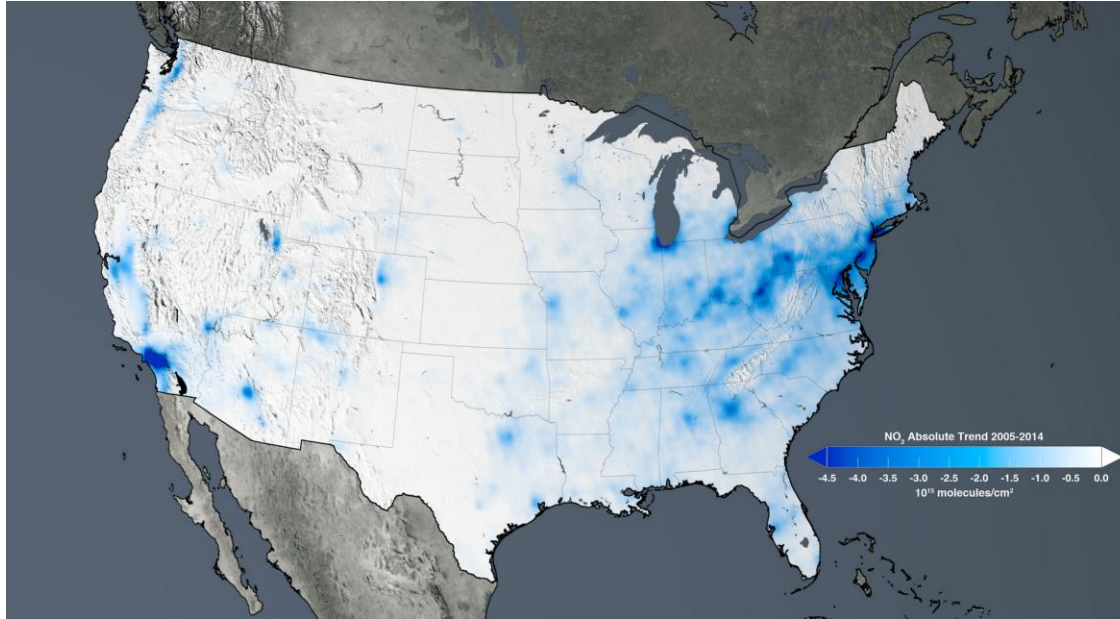
https://so2.gsfc.nasa.gov/no2/no2_index.html

Nitrogen Dioxide emissions last spring

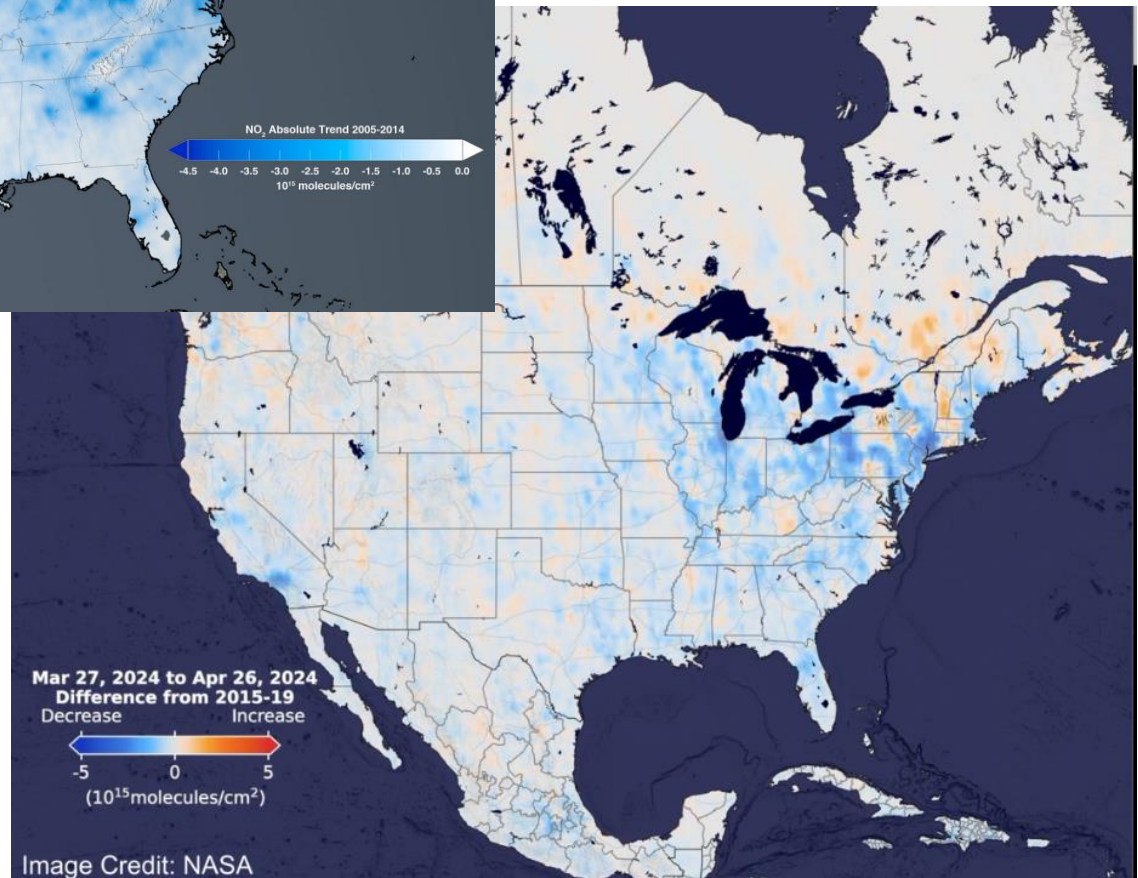


Change over time..2005-2014

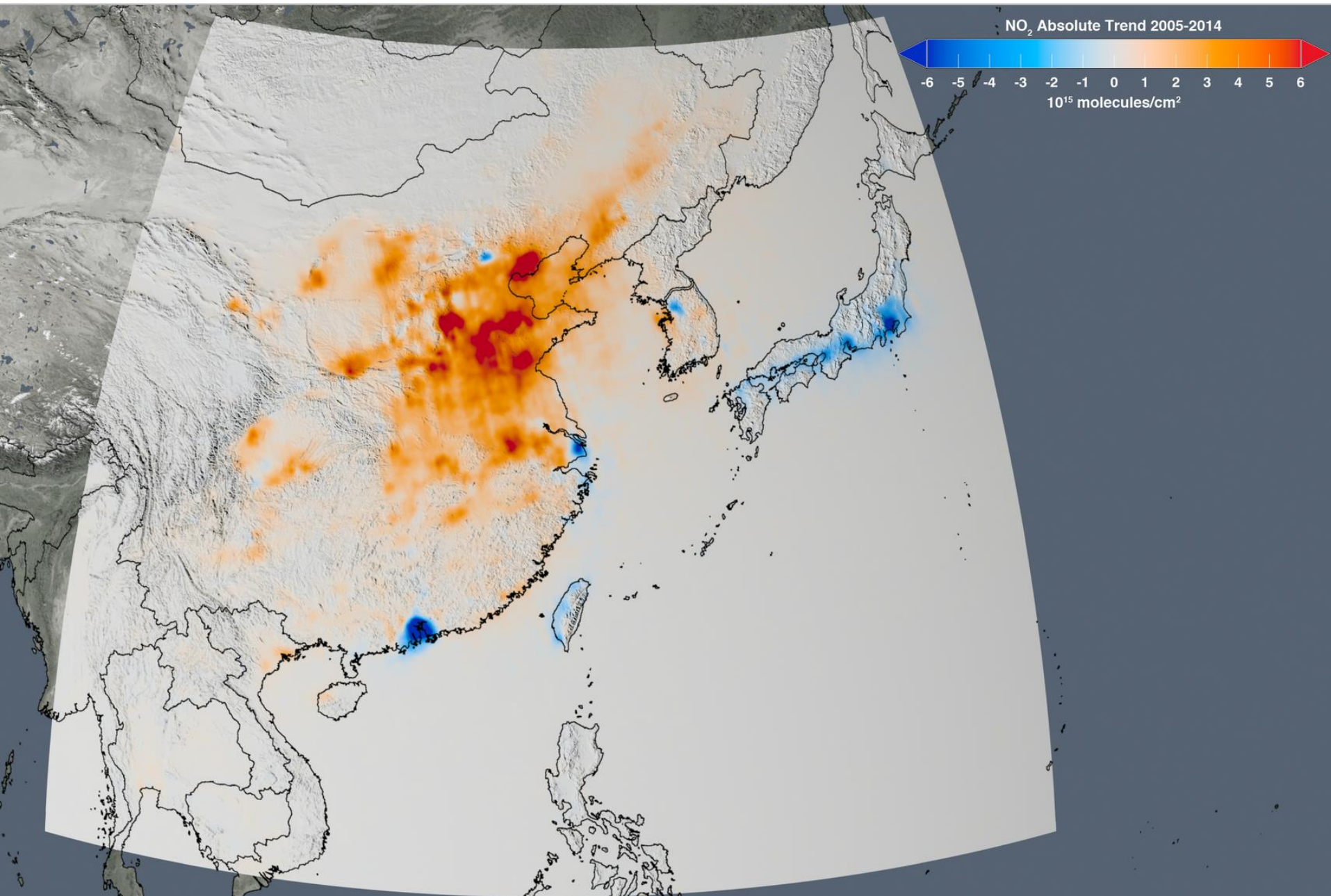
Nitrogen Dioxide



Change over
time..2015-2019
avg compared to
2024



Change over time..2005-2014



Environmental hazards and exposure

- Temperature
- Air pollution
- Noise

Vulnerability

- Low socio-economic status (low SES)
- High socio-economic status (high SES)

<https://insights.globalspec.com/article/11121/european-report-highlights-link-between-environmental-hazard-exposure-and-socioeconomic-status>

Where is air pollution at a more **micro (within city) level**?

Focus on purple curves which are air pollution.

Connects to “School Haze” podcast!

