

## Response of air quality to Covid-19 lockdown policies from Sentinel-5P TROPOMI sensor

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# Response of air quality to Covid-19 lockdown policies from Sentinel-5P TROPOMI sensor



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## ❖ 1. Background

- Most countries in Europe went through several waves of lock-down and relaxation.
- We chose Germany and the Netherlands for our research area, which went through more than 6 waves of lock-down.
- There are plenty of studies providing strong evidence on a decrease of air pollutants during long-term lock-down.
- While some studies argue that the improvement of air quality is not due to lockdown, but season influence or temporary change by coincidence.
- It is not clear what is the correlation between Covid enforced lockdowns waves and the dynamics of air pollutant.
- It is also not clear how the dynamics of air pollution respond to the stringency of policies.
- There are several studies that found a positive correlation between air pollutants and the Covid-19 features.
- But it is still not clear what the correlations among air pollutants, lockdown policy and Covid-19 features.

## ❖ 2. Data source

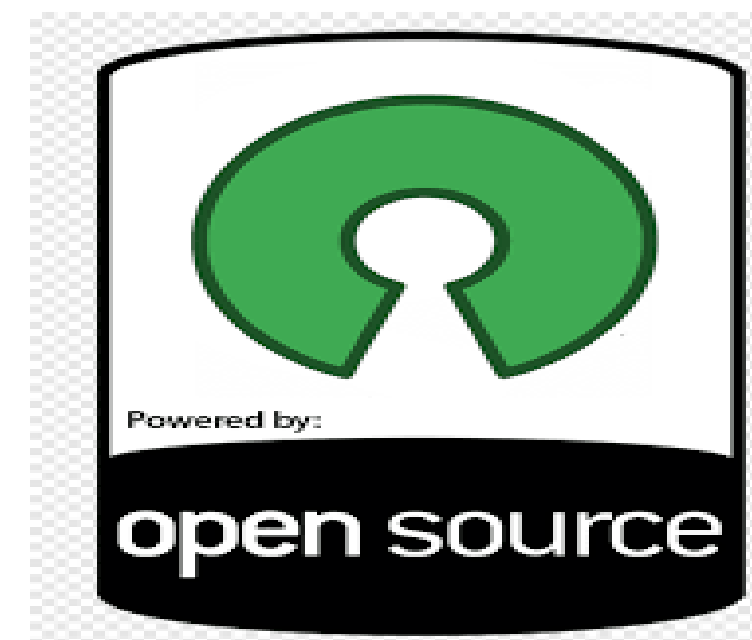


Air pollution geo-spatial features

Google Earth Engine data Catalog

Sentinel-5P OFFL L3 products  
 ✓ CH<sub>4</sub>  
 ✓ CO  
 ✓ NO<sub>2</sub>  
 ✓ SO<sub>2</sub> (tropospheric)

The Sentinel-5P TROPOMI sensor



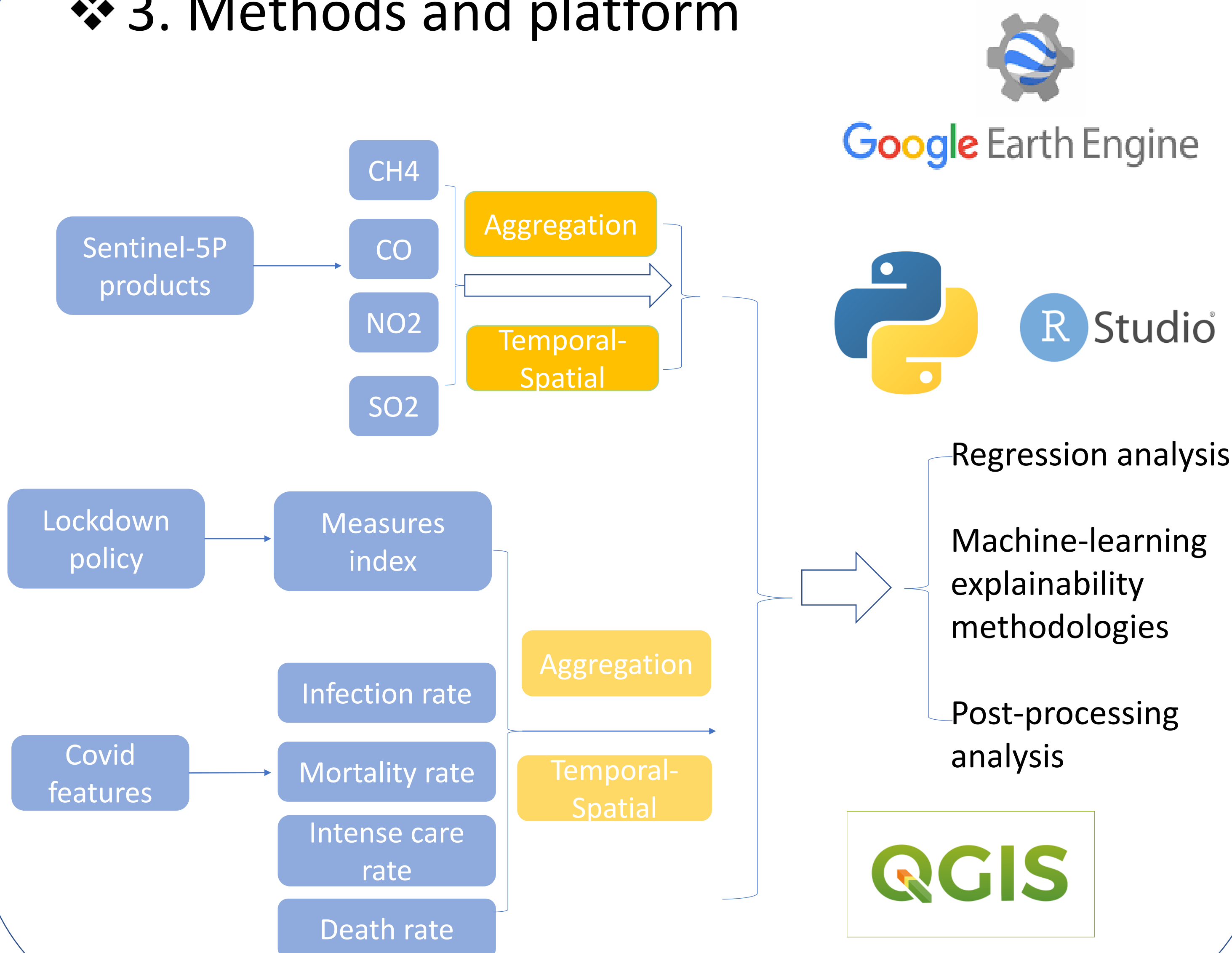
Covid features:

- ✓ Infection rate
- ✓ Mortality rate
- ✓ Intense care rate
- ✓ Death rate

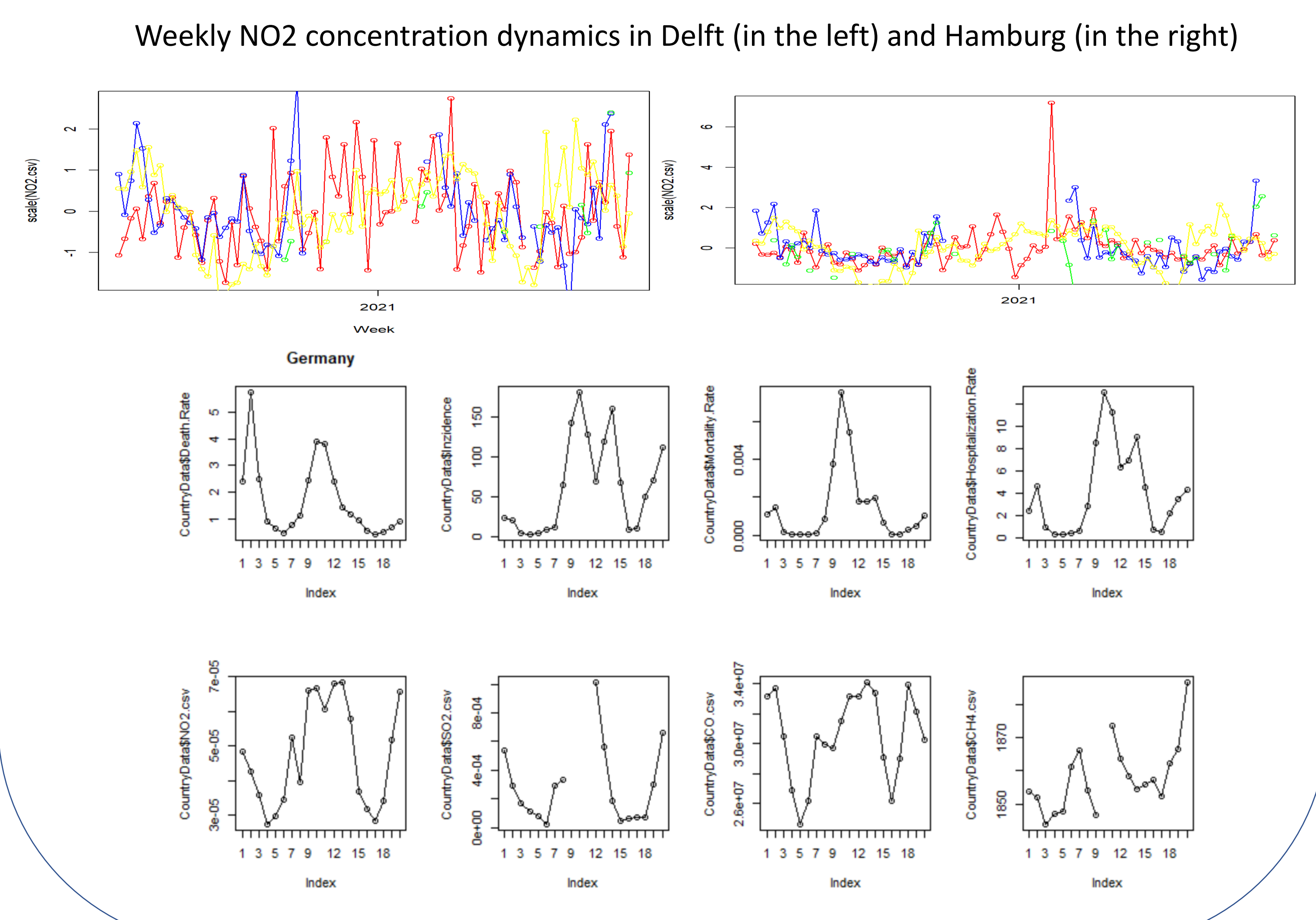
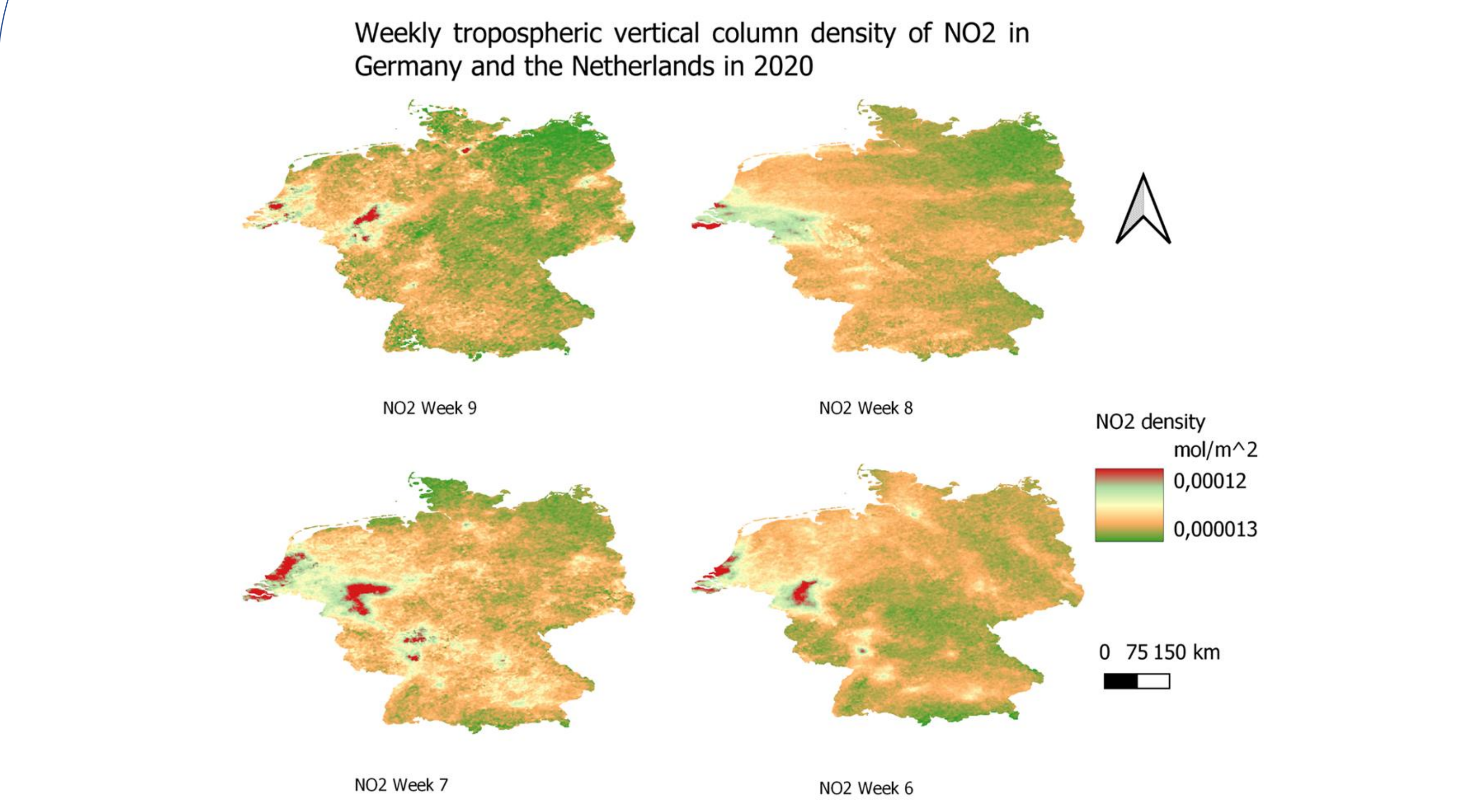
Policy indices:

- ✓ Measures index

## ❖ 3. Methods and platform



## ❖ 4. Preliminary results



## ❖ 5. Highlight and discussion

- Dynamics of air quality in terms of NO<sub>2</sub>, CH<sub>4</sub>, CO, SO<sub>2</sub> were studied in Germany and the Netherlands.
- There is a higher correlation between the Covid-19 hospitalisation rate with the NO<sub>2</sub> concentration than with the three air pollutants.
- What is the behind information on the high positive relationship between the air pollutants and the hospitalization rate?
- Does the different correlations between Covid-19 and air pollution in Germany and the Netherlands reflect the stringency of policies?