15. Spatial mapping of air quality

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Data is attached

Increased concentrations of air pollutants cause adverse health effects for humans. World-wide 7 million people die prematurely from air pollution and in the Netherlands people live on average one year less because of air pollution. These health effects come mainly from expose to NO_2 and particulate matter . These compounds are measured with high precision instruments at 40-50 locations in the Netherlands. Emissions of NO_2 have decreased over the past 20 years due to policy measures and technological developments.

Task: Determine spatial maps of the NO_2 concentrations for in the Netherlands for the year 2018.

The data will be provided for 2018 for rural and urban background. Analyze the NO_2 data for all stations and apply different methods to spatially interpolate the concentrations and determine the uncertainties. Apply, simple (linear) regression, inverse distance weighting, and Kriging.

If time permits, do the same for PM_{10}.

References:

- Spatial maps for NO_2: https://www.rivm.nl/gcn-gdn-kaarten/concentratiekaarten/cijfers-achter-concentratiekaarten/gcn-concentratiekaartbestanden-achterliggende-jaren
- Average trend in NO_2: https://www.clo.nl/indicatoren/nl0231-stikstofdioxide (in Dutch)
- Information on the high quality measurement stations in the Netherlands: https://www.luchtmeetnet.nl