

# DESTINATION EARTH

## Air quality from a user perspective: The Netherlands

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**Destination Earth** implemented by



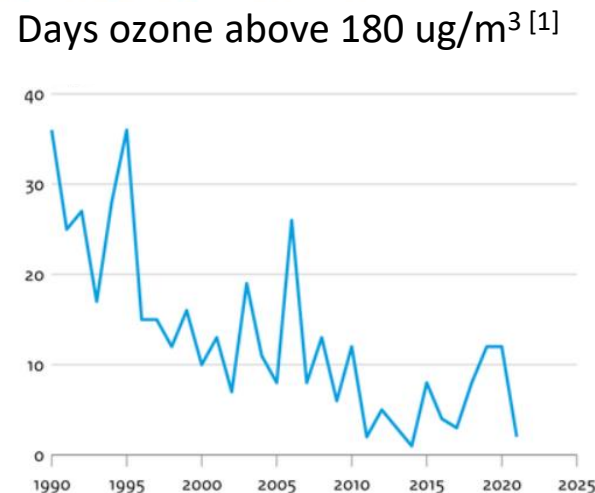
# Content

“RIVM works towards a healthy population living in a sustainable, safe and healthy environment”

- Independent scientific research
  - Provide advice to the government, to professionals, to the public
- 
- Air quality: Situation Netherlands
  - Measurements
  - Modelling
  - Products
  - User-needs

# Situation in the Netherlands

- Air quality has significantly improved since 1990s
- Concentrations mostly below EU limit values, but above WHO guidelines
- Clean Air Agreement: Cities aiming for the WHO guidelines
- High ozone levels still occur:

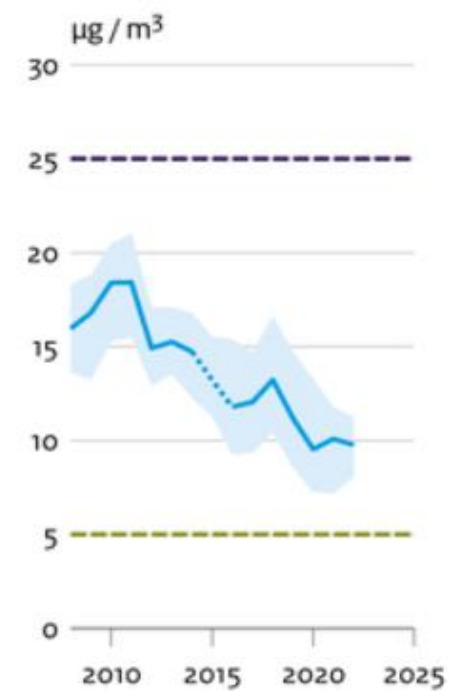


Yearly averaged concentrations<sup>[1]</sup>:

$\text{NO}_2$  traffic



$\text{PM}_{2.5}$  traffic



[1] <https://www.clo.nl>

# Air quality measurements: High quality network

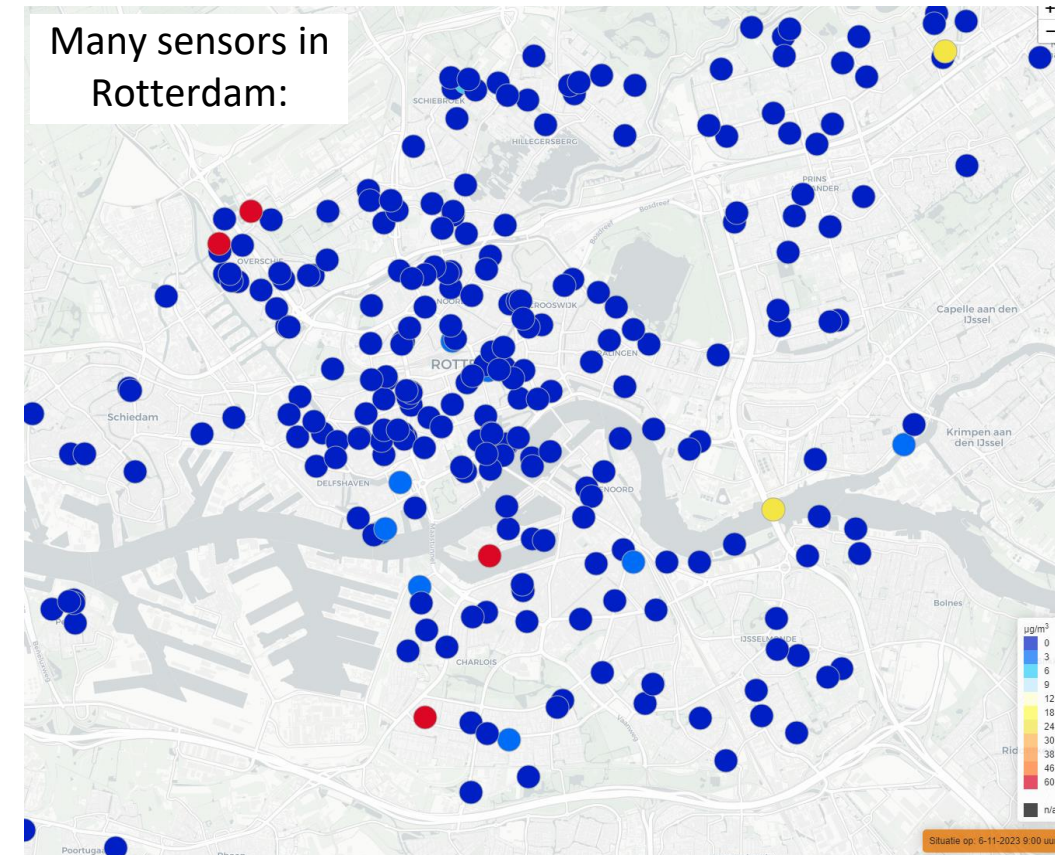
- According to EU regulations
  - Networks from several organizations
  - Hourly/daily observations of many components
  - 27 regional background
  - 26 city background
  - 28 stations in streets
  - 11 stations in industrial
- All data publicly available: online and immediate





# Air quality measurements: Sensors

- Citizen science
  - Thousands of sensors: PM<sub>2.5</sub> and PM<sub>10</sub>
  - Much less for NO<sub>2</sub> (lower quality/more labor intensive)
  - Also, passive samplers for NH<sub>3</sub> in nature areas
  - Data publicly available online
- Our role:
  - Calibration
  - Advise on sensors
  - Data portal (website)
  - Connection with the public
- Data also used for official concentration maps
- Sensors help identify local sources, e.g. Rotterdam



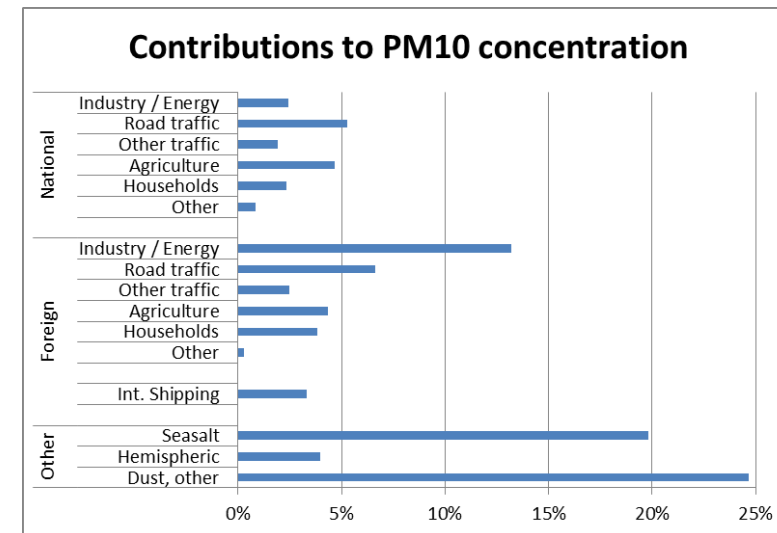
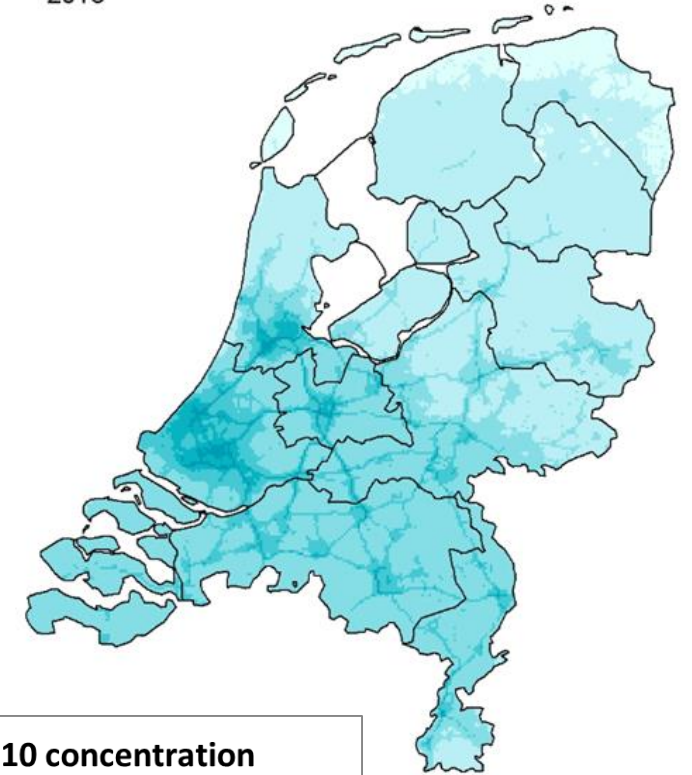
2015

# Modelling: Netherlands

Two types of models in use:

## 1. Lagrangian-plume model

- Trajectory model for long-range transport
- Plume model for short range dispersion
- (Mostly) linearized chemistry
- Annual averages:  $\text{NO}_x$ ,  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$ , etc.
- Resolution: 1x1 km
- Detailed source apportionment
- Used for official mapping
- EU air quality regulations



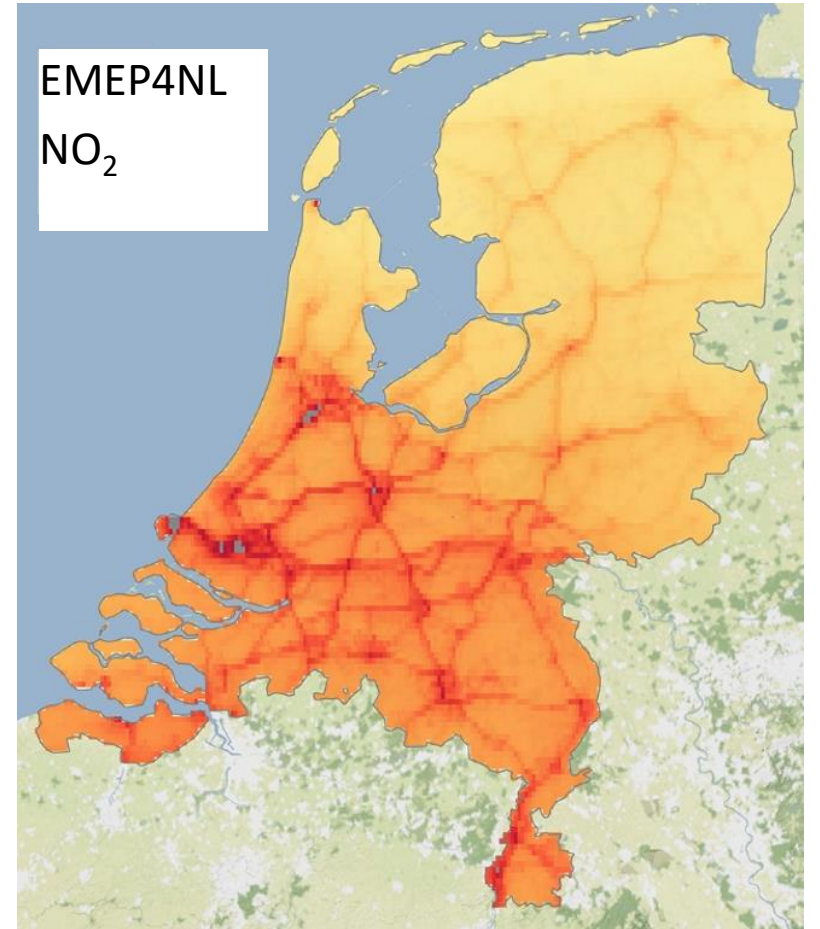
<https://www.rivm.nl/gcn>

# Modelling: Europe

Two types of models in use:

## 2. Eulerian model

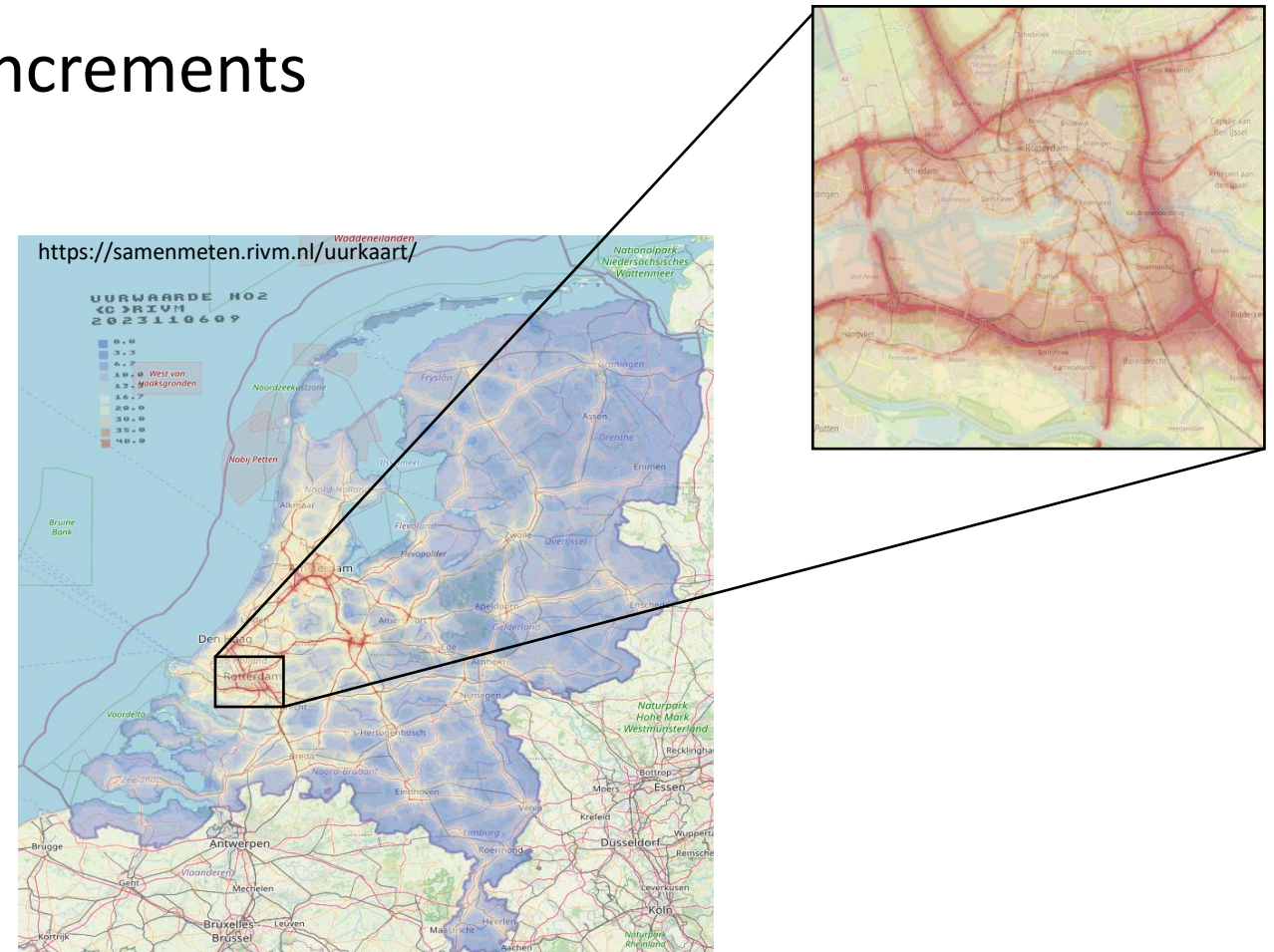
- EMEP Unified model
- Detailed chemistry and transport
- Hourly concentrations
- Resolution up to 1x2 km for NL
- Reference for other model
- Detailed chemical studies





# Products: Hourly maps NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>

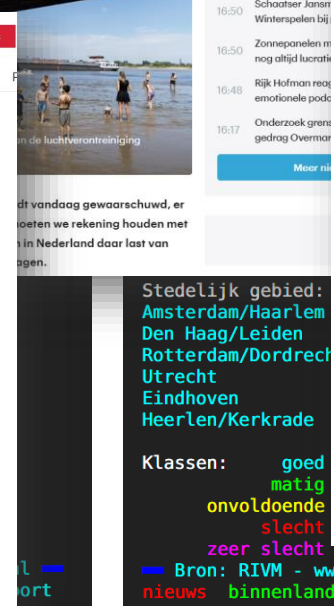
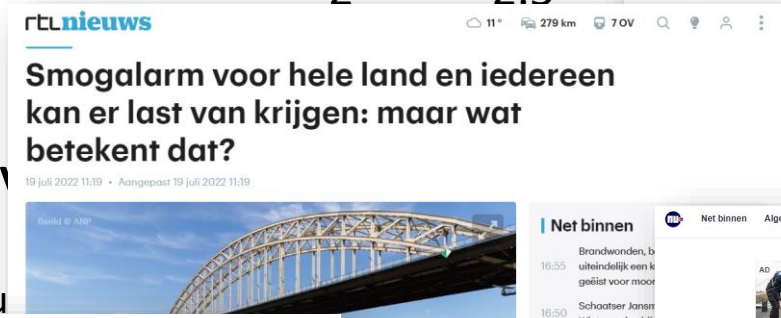
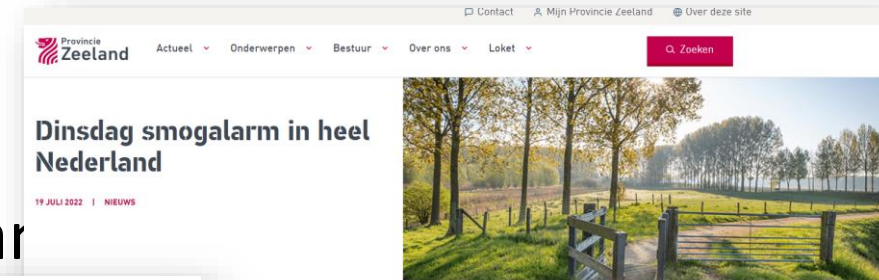
- Observations + calculated local increments
- Available on a website
- High detail, thanks to high-res information on traffic





# Products: Short term forecasts

- Forecast 1-2 days for high levels of NO<sub>2</sub>, PM<sub>2.5</sub> and O<sub>3</sub>
- Based on EU/CAMS models
- Advice to limit outdoor activities
- Several times a year
- Also, app Lung patient association



NOS Teletekst 711	
3/4	verwachting
Koning	
vandaag	morgen
4	4
4	4
5	4
vandaag	morgen
7	8
8	9
7	8
vandaag	morgen
77	78
83	78
83	79

# Products: Short term forecasts

- Wood burning mostly not for heating, but for a pleasant atmosphere
  - Adverse health effects in streets
- Alert for not burning wood
  - Unfavorable meteorological conditions
  - Raising awareness
- Some municipalities will prohibit burning wood in open air



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## Stookwijzer

Het stoken van een vuurtje kan gezellig zijn, maar het kan overlast geven voor je buren. En het is niet altijd veilig. Weet wanneer het voor je beter is om te stoken, bekijk dan eerst even de Stookwijzer. Zo weet je het zeker.

Typ een postcode of woonplaats  
Of klik in de kaart om een locatie te kiezen



### Krappe meerderheid van Utrechtse gemeenteraad stemt voor verbod op houtstook in buitenlucht

3 november, 13:00 • 1 minuut leestijd



© Pixabay

Utrecht - In de gemeente Utrecht mag in de open lucht geen hout meer worden gestookt vanaf 1 januari 2025. Dat besloot de gemeenteraad gisteravond. Het plan van GroenLinks en de Partij voor de Dieren om vuurkorven en barbecues die op hout worden gestookt te verbieden, is aangenomen. Het gaat om alle plekken buiten, dus ook om je eigen tuin.

# User needs

- Actual information on air quality in their neighborhood
- Forecasts (1-2 days) about local air quality
- Availability 24\*7
- Website, Text TV, News releases, Data portals
- High levels of NO<sub>2</sub>, PM<sub>2.5</sub>, Ozone
- Also, information of other potential pollutants (PAH, PFAS, ...)