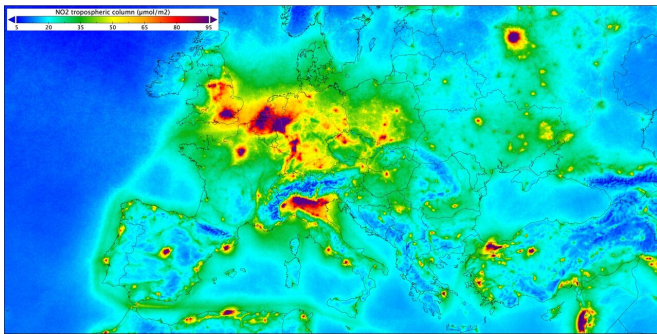


19 EU member states record nitrogen dioxide concentrations above the annual limit value in 2018

21 May 2019



Based on measurements gathered by the Copernicus Sentinel-5P mission between April 2018 and March 2019, the image shows nitrogen dioxide over Europe. Nitrogen dioxide pollutes the air mainly as a result of traffic and the combustion of fossil fuel in industrial processes. It has a significant impact on human health, contributing particularly to respiratory problems. Credit: contains modified Copernicus Sentinel data (2018-19), processed by KNMI/ESA

Air pollution is a global environmental health problem, especially for those living in urban areas. Not only does it negatively impact our ecosystems, it considerably affects our health. According to the World Health Organization (WHO), around 8 million premature deaths per year are linked to air pollution, more than double of previous estimates.

One of the pollutants with the strongest evidence of [health](#) effects is [nitrogen](#) dioxide. In the EU, the largest contributor to nitrogen dioxide emissions is the road transport sector, as well as pollution produced from industrial activities, and residential combustion.

According to the Air quality in Europe report published in 2018 by the European Environment Agency (EEA), nineteen of the EU Member States

recorded nitrogen dioxide concentrations above the annual limit value.

Not only is nitrogen dioxide damaging the ecosystem, it also causes significant health issues contributing to respiratory problems ranging from causing cardiopulmonary ailments, to exacerbating asthma and even impacting cognitive abilities.

With air quality increasingly becoming a serious concern, the Copernicus Sentinel-5P satellite was launched in 2017 to map a multitude of air pollutants around the globe. With its state-of-the-art instrument, Tropomi, it is able to detect atmospheric gases to image air pollutants more accurately and at a higher spatial resolution than ever before from space.

Folkert Boersma, Associate Professor at Wageningen University and Research Scientist from the Royal Netherlands Meteorological Institute (KNMI), comments, "The spatial resolution of the satellite is so good, that we can pinpoint emissions in fine detail and also detect gradients of emissions in large cities."

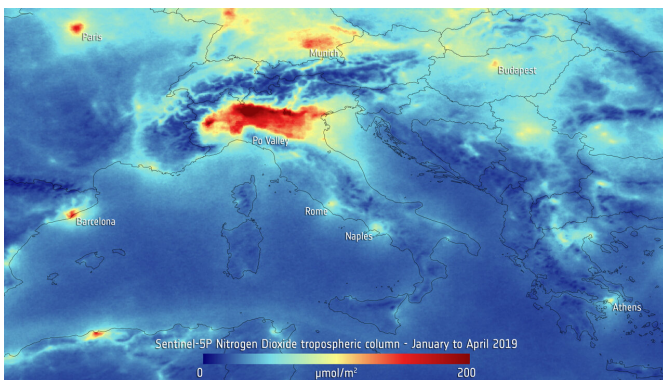
As part of the Living Planet Symposium School Lab taking place in Milan this week, ESA has given schools around the Lombardy and Milan area, the exciting opportunity to assemble and operate their own air monitoring stations. The Living Planet Symposium School Lab aims to make school students to discover the exciting science and technology behind Earth observation.

Based on a Raspberry Pi computer, each station is equipped with a set of sensors to measure different characteristics of ambient air. The stations measure nitrogen dioxide, carbon dioxide, carbon monoxide and particulate matter, as well as temperature and humidity. They also have a GPS receiver for

positioning. Once the platform has Wi-Fi access, it automatically sends its measurements to an online map where they can be retrieved in real time.

Throughout the week, the results will be published on an interactive map, showcasing how both children and citizens can contribute in monitoring different [air quality](#) parameters, as well as gaining an insight regarding [air pollution](#) and how satellite missions can help monitor these issues.

Italy is among the top countries in Europe with the largest health impacts attributed to [nitrogen dioxide](#) exposure, as well as Germany, France, Spain and the United Kingdom. In northern Italy, the densely populated and heavily industrialised Po Valley area, makes it one of the areas with the dirtiest air in Europe.



Based on measurements gathered by the Copernicus Sentinel-5P mission between January and April 2019, the image shows high levels of nitrogen dioxide in the Po Valley in northern Italy. Nitrogen dioxide pollutes the air mainly as a result of traffic and the combustion of fossil fuel in industrial processes. It has a significant impact on human health, contributing particularly to respiratory problems. Credit: contains modified Copernicus Sentinel data (2019), processed by ESA, CC BY-SA 3.0 IGO

Provided by European Space Agency

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