



# CLIMATE DETECTIVES 2020 – 2021

## CAMARATE SOB INVESTIGAÇÃO!

Camarate sob investigação!  
Agrupamento de Escolas de Camarate - Loures



### RESEARCH QUESTION

Why does the climate change during confinement periods?

### SUMMARY OF PROJECT

Several studies have shown that, in fact, there have been temporary reductions in pollutant gas emissions during confinement periods. Based on the research we carried out, we selected two pollutants (NO<sub>2</sub> and PM<sub>10</sub>) to measure and classify air quality in the Camarate region. We found that the presence in the air of ultrafine particles (eg PM<sub>10</sub>) from airplanes is bad for our health. As for the limit values in terms of air quality for NO<sub>2</sub>, they exist but not for NO or NO<sub>x</sub>. There are natural sources of NO<sub>2</sub> (forest fires and lightning) and artificial sources, include burning fossil fuels and biomass. NO<sub>x</sub> emissions are an important precursor to secondary particles. We selected the months of confinement due to the COVID-19 pandemic of March, April and May 2020 in comparison with the same period of 2019. We looked for the number of flights made from Lisbon airport before and after confinement (source of direct pollution) and related to local and satellite measurements during that period.

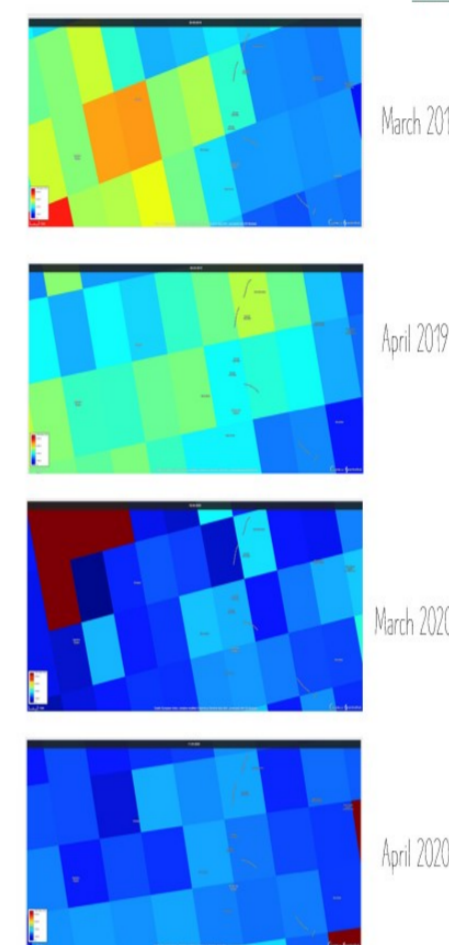


Figure 1: Given the proximity of the Lisbon airport and our school, it is possible to detect a sign of confinement, in

### MAIN RESULTS

Through the images collected by the Sentinel 5p on EO Browser, it was possible to verify by the timelapses that there was a decrease in the NO<sub>2</sub> concentration during the pandemic. When we analyze the local data provided by the European Environment Agency, concerning PM<sub>10</sub> and NO<sub>2</sub> particles, we conclude that: comparing the same month of March in different years (pre covid and covid period), there is a decrease in the concentration of gases and PM<sub>10</sub> particles, as well as a decrease in the number of flights at Lisbon Airport. However, it is also possible to detect by the graph, for the same year but in different months (March and April) that, although the flight record has been accentuated, the concentration of gases / particles in general decreases. Thus, it would be necessary to carry out an analysis of the variation in road traffic, recorded in the months of March and April 2019, in order to better understand its influence on the region's air pollution.

Data Source: EO Browser



Data Source: Link: <https://www.nav.pt/nav/quem-somos/dados-de-tr%C3%A1fego/riv-lisboa-2014>  
Air quality and COVID-19 — European Environment Agency (europa.eu)



Figure 2: We achieved our main objective, which was to prove the reduction of pollutants in the atmospheric air of the Camarate region.

### ACTIONS TO HELP LESSEN TO THE PROBLEM

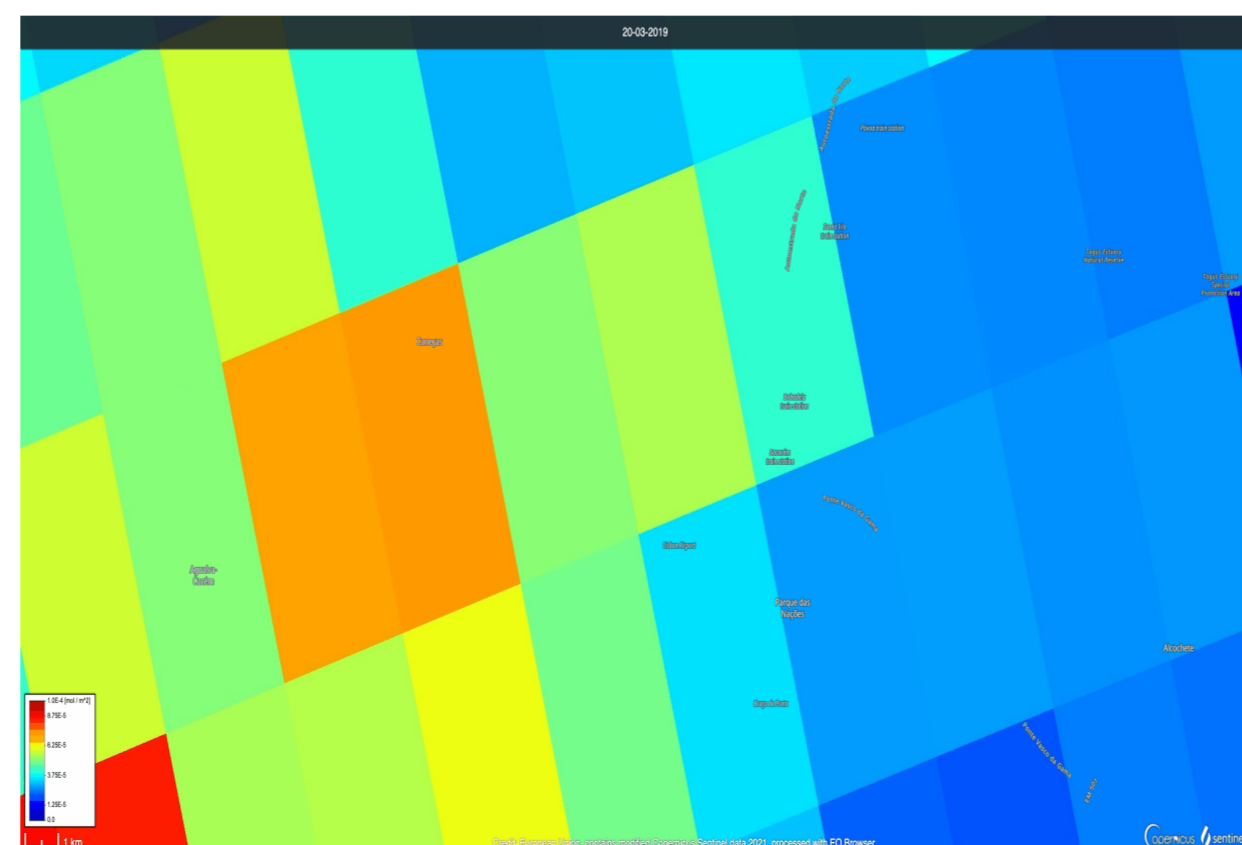


Figure 3: The timelapses that we created, with images from the EO Browser shows the changes, before and during pandemic period.

We disseminate the results obtained to the school community through the publication of the Padlet mural on the Facebook and Instagram pages entitled, Sciences at School. In addition, we shared our results in the national project named "Acting" and published a photo report by Young Reporters within the scope of the National "Ecoescolas" program.