Closure of the Seine bank road: Impact on air quality and results of the first monitoring campaign

In September 2016, the City of Paris decided to close to the traffic the Georges Pompidou road along the riverbank. Following some public concerns about the impact on air quality of this pedestrianisation, a specific study has been set up by Airparif. The first air quality monitoring campaign was conducted in the fall 2016. The results demonstrate a proven impact of this mitigation measure with an improvement in air quality along the riverbanks closed to traffic but a degradation around the intersections in the surrounded area and at the end of the pedestrianized part. This situation is accentuated at the peak of morning traffic. Impacts are also perceptible, but less marked, on the reporting routes.

To monitor changes in air quality linked to this measure, the study should cover:

- A sufficiently large area to take into account both the traffic lanes closed to traffic and those potentially impacted by these traffic changes in Paris and the suburbs.
  → **In total, nearly 80 measurement points were installed, including one point every 300 meters along the riverbanks.**
- A period long enough to take into account the seasonal variations and changes in user behavior.
  →**Two one-month campaigns were scheduled, one in the fall of 2016 and the next one six months apart, in the spring of 2017.**

The following elements present the lessons learned from this first campaign, which took place from 15 November to 13 December 2016. The work was carried out over the past six months by Airparif in order to identify and to reconstitute the traffic-related variations, and especially the changes induced by the closure of the riverbank lanes in pollution levels.

Impacts of the riverbank road closure between 2015 and 2016

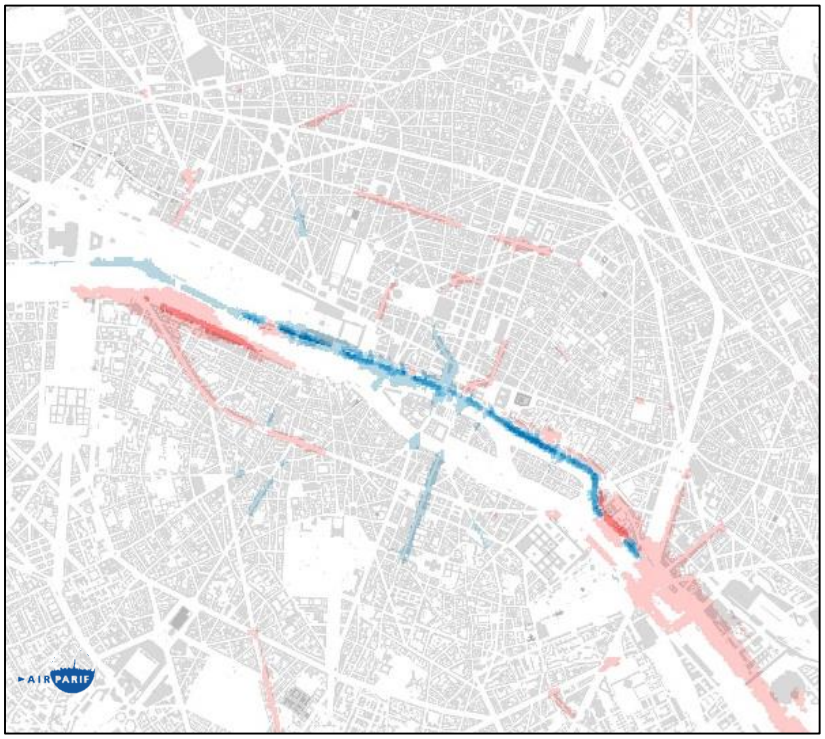
Airparif recalculated, hour by hour, the levels of pollution that would have been observed without the riverbank road closure by maintaining the traffic conditions of 2015 but by applying the weather conditions of 2016. This modelling work has been calibrated and validated by the monitoring stations and the measurement campaign. Therefore it is possible to evaluate the specific impact of this measure, by avoiding the role of meteorology (like during the pollution episode of December 2016). The maps below highlight areas where air quality has changed between 2015 and 2016, from mid-November to mid-December.

The blue areas show an overall improvement in air quality along the riverbanks (up to -25%): the total suppression of two lanes on the low platforms offsets the increases on the upper level.

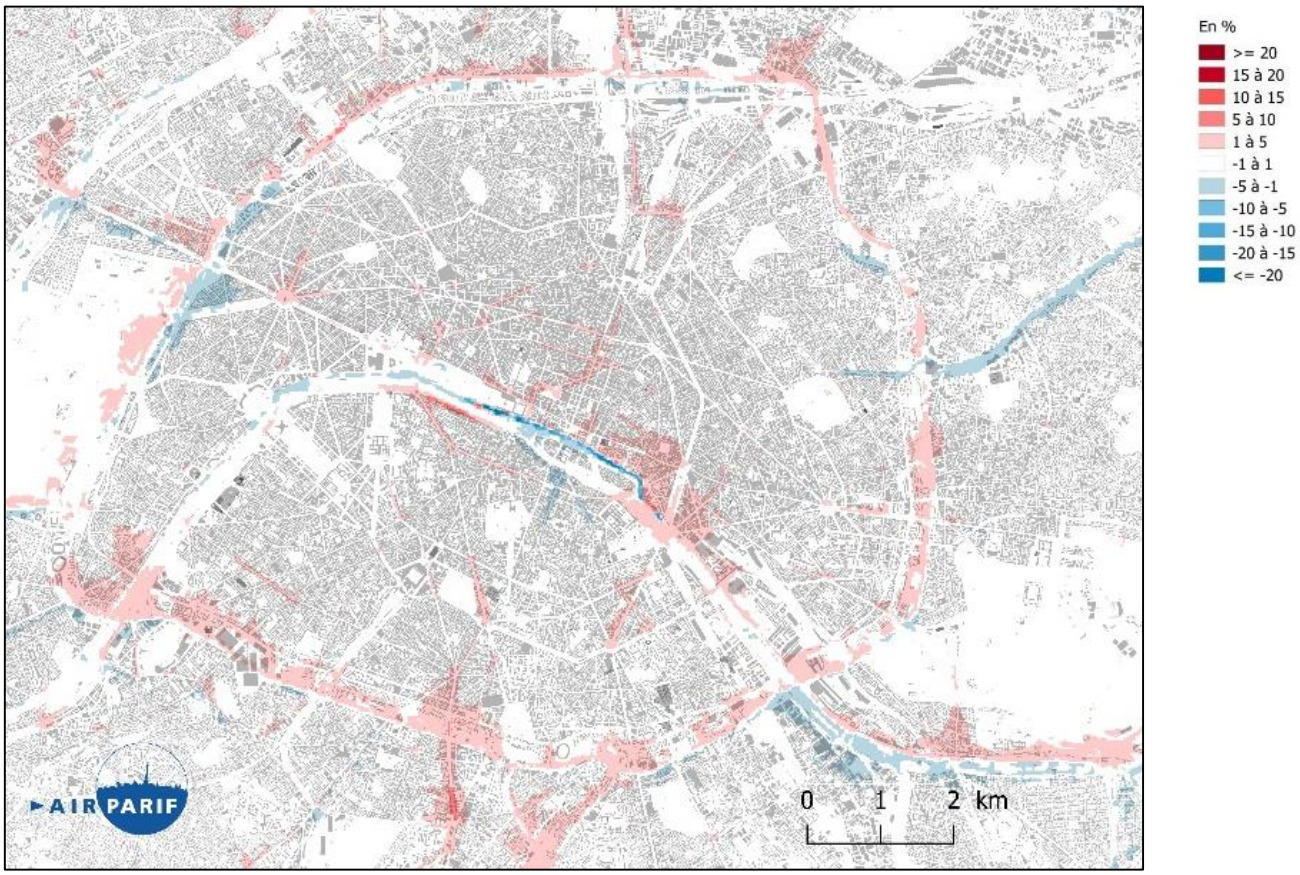
Red areas show, more or less, a deterioration in air quality:

- Especially at the end of the pedestrian zone, towards the eastern Paris (from +5 to + 10%), especially Quai Anatole France and from Quai Henri IV (left bank).
- To a less extent (up to + 5%), on alternative routes, such as Boulevard Saint-Germain, the southern ring road and on the high quays, or at crossroads where congestion has increased.

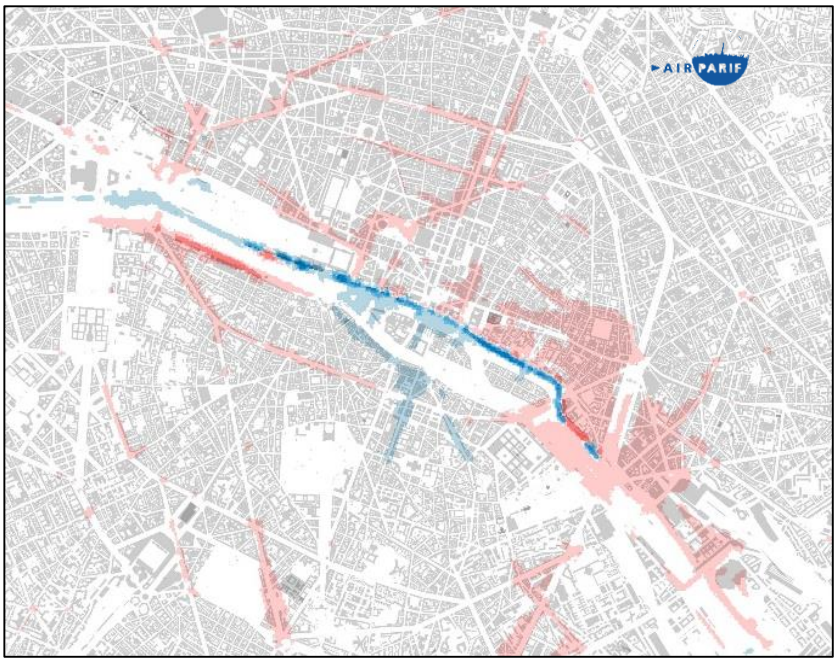
Difference in NO2 average levels in Paris between the 2016 campaign and the same period in 2015, and zoom on the riverbanks



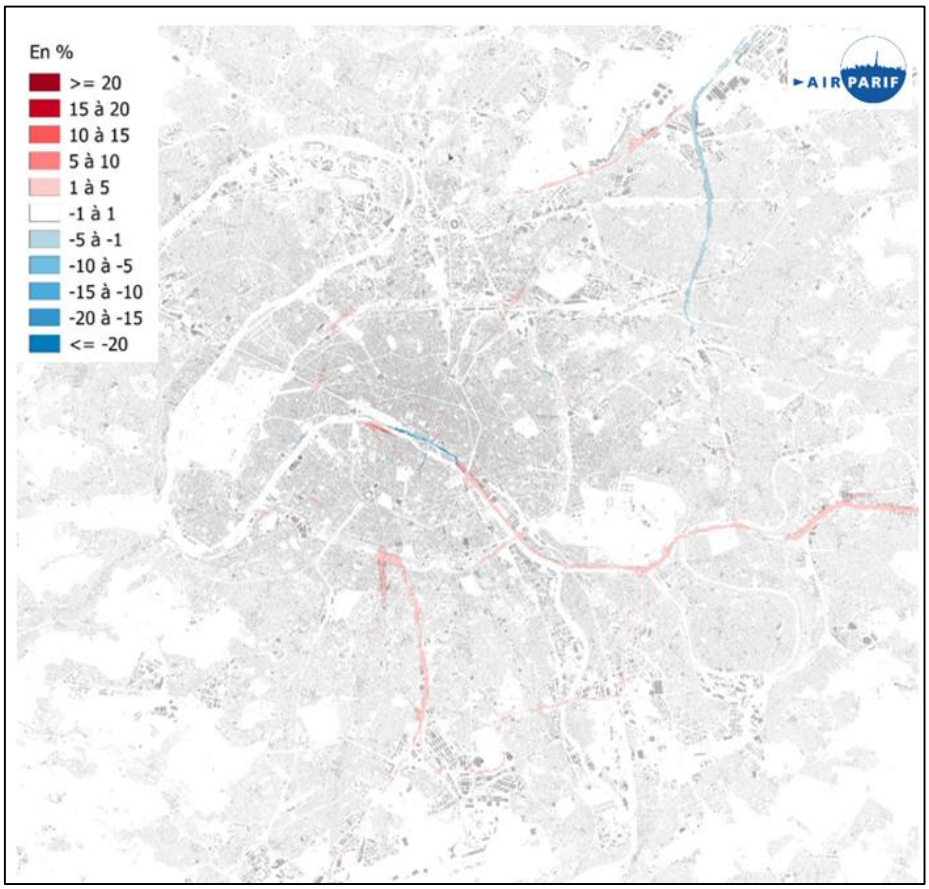
This situation is accentuated at the morning rush hour. A greater degradation of air quality appears on the high quay, almost continuously from the « Hôtel de Ville » (city town hall), and on more axes, mainly north of the Seine. Boulevard Saint-Germain is also impacted on a longer portion. On the other hand, the impacts are less pronounced at evening rush hour, which is more spread over time, and with generally more dispersive meteorological conditions than in the morning.



Difference in NO2 average levels in Paris between the 2016 campaign and the same period in 2015, during morning rush hour and zoom on the riverbanks



On the scale of the greater Paris area (metropolitan territory), the variations are much less marked and are limited mainly to the main axes. In addition, they are not likely all linked to the riverbank road closure. It should be noted that the pedestrianisation represent 0.16% * of the annual mileage of the region.



Difference in the NO2 levels in the Greater Paris area between the 2016 season and the same period in 2015

Details of the measurement campaign from mid-November to mid-December 2016

The variability of nitrogen dioxide levels along the riverbank road from West to East is significant: from 57 to 88 µg/m^3.
These levels are quite comparable to traffic stations in the agglomeration (from 60 to 93 µg/m^3**).**
The difference between two consecutive measurements can be explained by three factors:
- **the number of vehicles;**
- **traffic flow;**
- **the topology of the axis.**

More information on the French webpage: http://www.airparif.asso.fr/actualite/detail/id/195

Perspectives

Mid-May, Airparif will launch the second measurement campaign that will:
- confirm the first results of the winter campaign and monitor trends in air quality;
- Identify possible changes in driver behavior by comparing the two campaigns.

It should be noted that, apart from the closure of the riverbank road, other road works and modifications are likely to have an impact on the results.

The full review of both campaigns is scheduled for September 2017.