

# Accepted Manuscript

The model SIRANE for atmospheric urban pollutant dispersion. PART III: Validation against NO<sub>2</sub> yearly concentration measurements in a large urban agglomeration

L. Soulhac, Chi Vuong Nguyen, P. Volta, P. Salizzoni



PII: S1352-2310(17)30547-2

DOI: [10.1016/j.atmosenv.2017.08.034](https://doi.org/10.1016/j.atmosenv.2017.08.034)

Reference: AEA 15504

To appear in: *Atmospheric Environment*

Received Date: 20 December 2016

Revised Date: 10 August 2017

Accepted Date: 14 August 2017

Please cite this article as: Soulhac, L., Nguyen, C.V., Volta, P., Salizzoni, P., The model SIRANE for atmospheric urban pollutant dispersion. PART III: Validation against NO<sub>2</sub> yearly concentration measurements in a large urban agglomeration, *Atmospheric Environment* (2017), doi: 10.1016/j.atmosenv.2017.08.034.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Research paper

### The model SIRANE for atmospheric urban pollutant dispersion. PART III: validation against NO<sub>2</sub> yearly concentration measurements in a large urban agglomeration

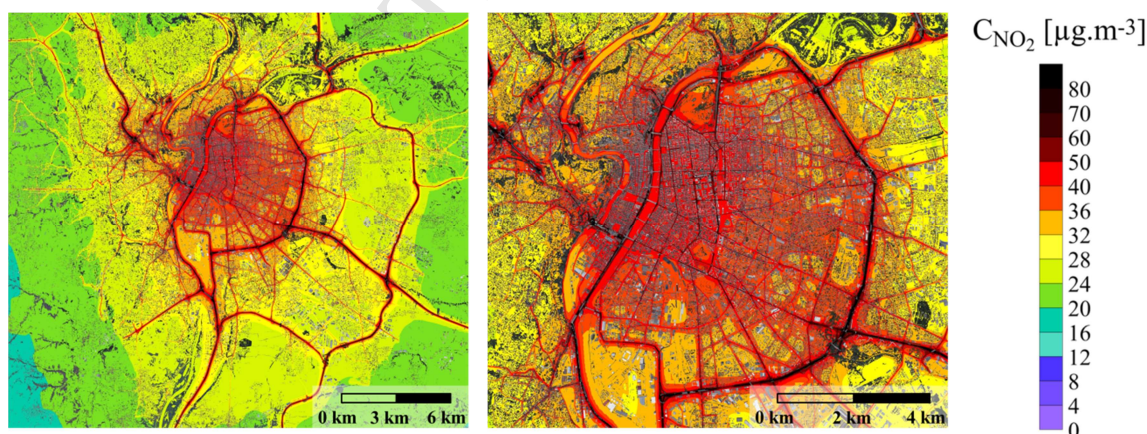
*L. Soulhac , Chi Vuong Nguyen, P. Volta, P. Salizzoni*

*Laboratoire de Mécanique des Fluides et d'Acoustique, UMR CNRS 5509 University of Lyon, Ecole Centrale de Lyon, INSA Lyon, Université Claude Bernard Lyon I, 36, avenue Guy de Collongue, 69134 Ecully, France*

#### Abstract

We present a validation study of an updated version of the SIRANE model, whose results have been systematically compared to concentrations of nitrogen dioxide collected over the whole urban agglomeration of Lyon. We model atmospheric dispersion of nitrogen oxides emitted by road traffic, industries and domestic heating. The meteorological wind field is computed by a pre-processor using data collected at a ground level monitoring station. Model results are compared with hourly concentrations measured at 15 monitoring stations over the whole year (2008). Further 75 passive diffusion samplers were used during 3 periods of 2 weeks to get a detailed spatial distribution over the west part of the city. An analysis of the model results depending on the variability of the meteorological input allows us to identify the causes for peculiar bad performances of the model and to identify possible improvements of the parameterisations implemented in it.

#### Graphical abstract



Map of the NO<sub>2</sub> annual mean concentration [µg.m<sup>-3</sup>] simulated with the SIRANE model (left: Lyon agglomeration; right: Lyon centre)

**Keywords:** urban air quality, atmospheric dispersion, street network, dispersion model

Download English Version:

<https://daneshyari.com/en/article/5753077>

Download Persian Version:

<https://daneshyari.com/article/5753077>

[Daneshyari.com](https://daneshyari.com)