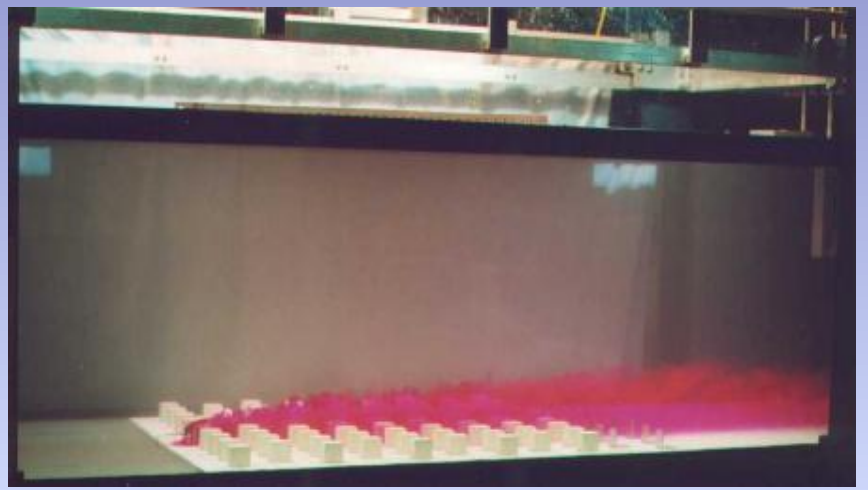
# DYNAMICS OF FLOW AND POLLUTANT DISPERSION IN URBAN STREET CANYONS

## Background

Urban air quality is dependant on the airflow processes within street canyons, especially the manner in which pollutants enter and leave those streets as a result of the wind motion.



*Simulation of flow and dispersion in a regular urban array*

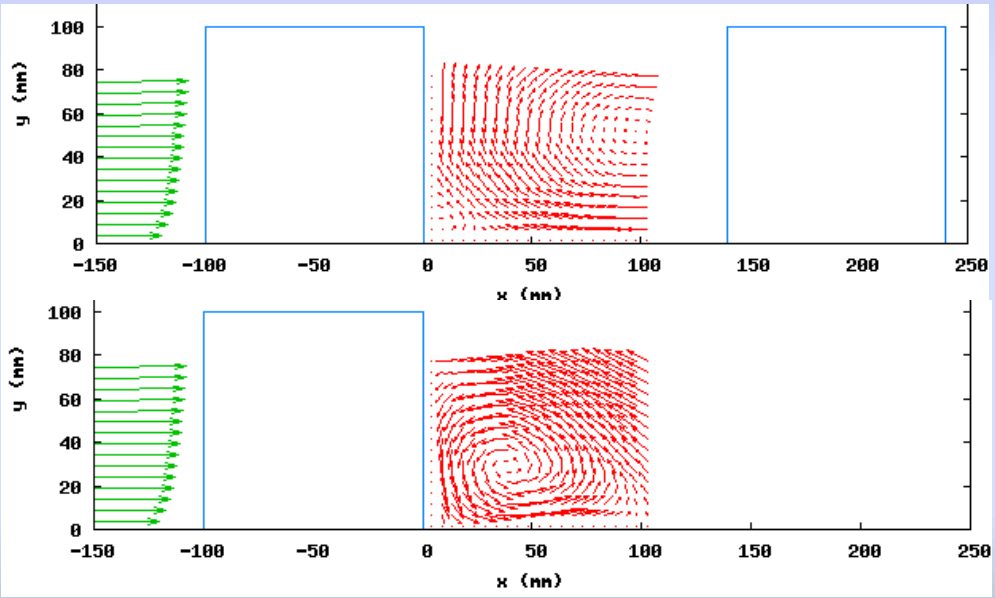
## Objective

Previous LES/DNS have shown the strong role of coherent turbulent structures in the intermittent mass and momentum exchange between the street and the flow above. We aim to quantify this experimentally.


*An urban street canyon with traffic*

# Research Being Carried Out

**The flow in and above a street canyon within a thick urban atmospheric boundary layer is being examined experimentally using PIV, phase-locked to the flow conditions at separation from the upstream building.**




*Effect of geometry on mean flow field (a) flow in 5th street of array (b) flow after single building*

*New boundary layer wind tunnel at Ecole Centrale de Nantes, France*

# Expected Outcomes

**Insight into the periodicity and strength of the mass and momentum transfer as a function of building geometry and oncoming flow turbulence.**