

RESEARCH INSTITUTE FOR SUSTAINABLE URBAN DEVELOPMENT (RISUD)

News Article for RISUD Emerging Frontier Area (EFA) Scheme

- | | Name | Department |
|---|---|------------|
| 1. Principal Investigator: | Dr YOU Ruoyu | BEEE |
| 2. Name of EFA: | Urban Air Pollution Modelling | |
| 3. Project Title: | Air Pollution Modelling for Urban Areas in Hong Kong Based on Fast Fluid Dynamics (FFD) | |
| 4. Annual Progress/Achievement (<i>in layman's language, no more than two A4 pages, pls attach photos</i>) | | |

Roadside measurements for carbon monoxide (CO) were first conducted at a bus station close to the entrance of the Cross Harbour Tunnel in Hung Hom. However, this approach is not effective for estimating the traffic contribution for the CO concentration. A controlled field test in an idealized street canyon was then conducted with one petrol-fueled car. The carbon monoxide (CO₂) concentrations were measured at the car's tailpipe and surrounding areas. Environmental conditions including the wind velocity and direction, air temperature were also monitored during the test.



Accurate and reliable prediction of urban wind fields with complex terrains is essential to assess the pollutant dispersion in the urban atmosphere. Computational fluid dynamics (CFD) simulation was employed to calculate the local wind field around the Stonecutters Island



Sewage Treatment Works (SCISTW) in Hong Kong during a period of one day. The SCISTW was surrounded by mountains, a flat open sea, a wharf, and dense high-rise buildings. The simulated wind data were compared with the field measurements to validate the CFD calculation.