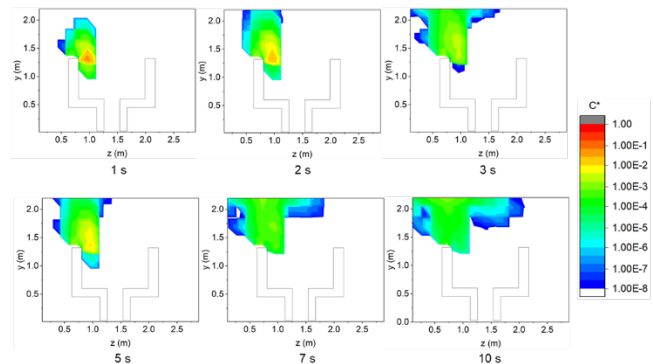


RESEARCH INSTITUTE FOR SUSTAINABLE URBAN DEVELOPMENT (RISUD)

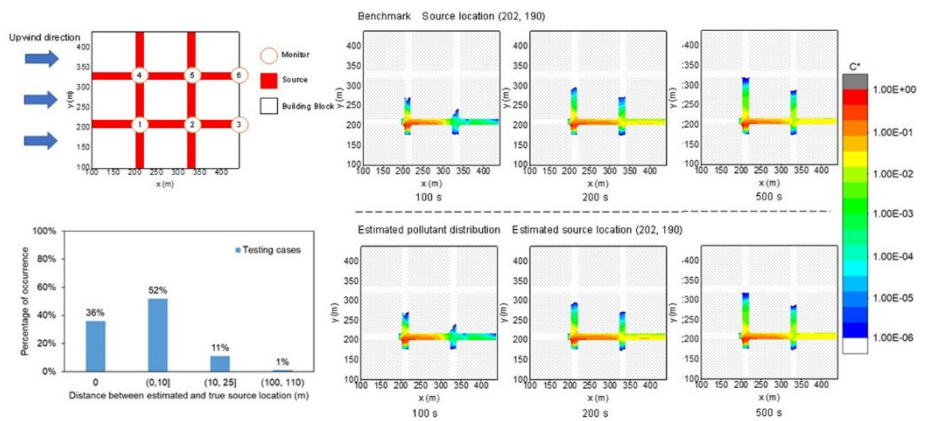
News Article for RISUD Emerging Frontier Area (EFA) Scheme

	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>)		

A stand-alone Markov chain solver was developed so that the calculations need not rely on commercial software. Airflow information from CFD simulation results, including the three-dimensional velocity components and turbulence kinetic energy, was used as surrogate for experimental measurement based on the spatial resolution of ultrasonic anemometers.



To efficiently estimate source location and emission profile in street canyons, this study developed a combined deep learning and physical modelling method using the monitoring data as inputs. First, a deep neural network (DNN)



was constructed for locating the source. The training datasets were generated from numerical simulations by the computational fluid dynamics (CFD)-Markov chain model. An inverse method based on Tikhonov regularization was then used to estimate the emission profile. Finally, the Markov chain model was used to calculate the air pollutant distribution in the whole street canyon.