# OOKA LAB.

## Energy and atmospheric environment control for sustainable urban planning

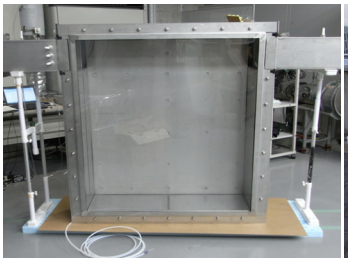
**Department of Human and Social Systems**

http://venus.iis.u-tokyo.ac.jp

**Urban Environmental Engineering**

Department of Architecture,
Faculty of Engineering

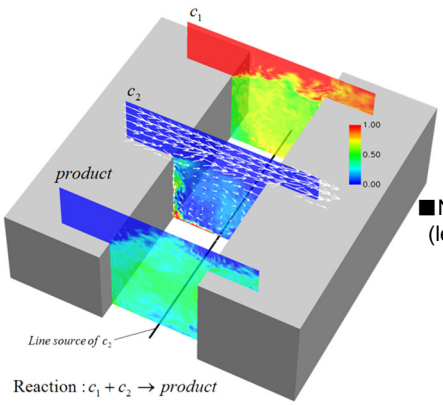
In order to realize Zero Energy Building(ZEB), how to improve heat source system has been developed as a way to reduce energy consumption. For details, air-conditioning system with natural energy and optimizing operation of heat source system have been studied mainly.



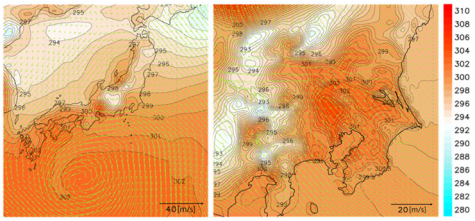
■Dispersion experiment of concentration fluctuation in urban canyon

■Wind velocity observation with a Doppler radar

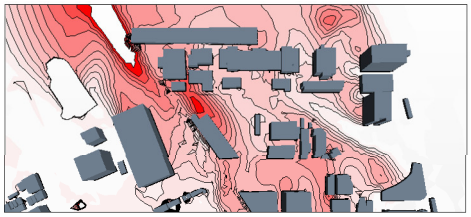
■Estimation of heat and momentum fluxes using a Scintillometer




■LES on air pollutant dispersion with chemical reaction



■Numerical estimation of local climate using WRF
(left: Typhoon No. 10, 2006; right: Heat island effect)

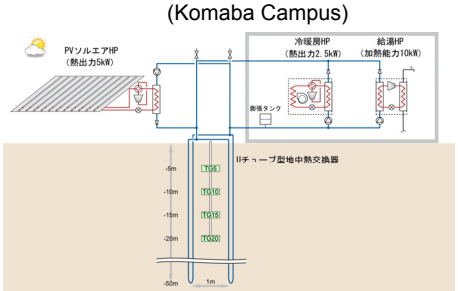


■Analysis of heat-island effect by anthropogenic exhaust heat using CFD coupled with radiative analysis

## Systems for realizing Zero Energy Building

■21KOMCEE
(Komaba Campus)

■Field measurements of the performance of a radiant ceiling system




■MMHP Syetem
(Multi Source Multi Use Heat Pump)

■Actual size model in Chiba experiment station

## Prediction of Urban Atm. Environment

Predicting systems for urban thermal and atmospheric environment has been developed to achieve sustainable urban space, focusing on transports of substances and energy in multiple scales from human-ambient to urban/regional.