

Department of Urban Engineering,
Osaka City University Graduate School of Engineering

Faculty : Masaki Nakao (Professor),
Masatoshi Nishioka (Associate Professor),
Minako Nabeshima (Lecturer)

Field of study :

Since the department was founded in 1999, we have continuously researched the subjects of thermal environment in the urban area, including urban greening, water retentive pavement and retro-reflector panels as heat island countermeasures. We also research the urban climate and heat recovery systems using thermal energy in urban areas.

★Methods to improve the energy metabolism in urban areas

- Transportation of waste heat from the exhaust location to the demand side by using the existing infrastructure, such as water works, sewers, or industrial water pipes
- Feasibility study of a district cooling system that utilizes the bottom layer of coastal seawater
- Thermal energy storage system in the urban area consisting of a closed aquifer surrounded by underground cutoff walls

★Thermal environment analysis of the urban streets and groups of buildings

- Analysis of the thermal response of the surfaces of groups of buildings to the urban climate
- Practical modeling on the moisture evaporation of water retentive pavement
- Development of the retro-reflector array and its application to buildings as a countermeasure to urban heat island.

★Observation and analysis of urban climate

- Time and spatial characteristics of climate elements, temperature, humidity, wind speed and long and short-wave radiation in urban areas
- Methods of the time and spatial interpolation for temperature distribution mapping
- Sea breeze effects on temperature in the urbanized area of a coastal city, Osaka.
- Spatial analysis on natural greenery coverage of the urban surface for improving the thermal environment

Number of students :

Graduate school doctor's course : 2

Graduate school master's course : 8

Undergraduate students : 6

Foreign students : 2 (in master's course)