

Building Science and Climate Adaptation

BUILDING-URBAN ENVIRONMENT INTERCONNECTEDNESS

Current work:

- Human-Building-Climate Control
 - Adaptive thermal comfort
 - Passive-Adaptive systems
 - Solar gain: exterior blinds BCIT
- Restorative Urban Built Environment:
 - Blue-green roofs: thermal-water
 - Building-Urban thermal/materials
 - Urban microclimates
 - Outdoor Thermal comfort
 - Transitional spaces

Future work:

- Personalized comfort systems
- Human-climate adaptive systems
- Building-Urban Climate simulations

INDOOR ENVIRONMENTAL HEALTH IAQ AND VENTILATION

Current work:

- MURB ventilation systems
 - Central versus in-Suite
 - Demand controlled ventilation
 - Cooking ventilation
 - Air distribution: suite-room
 - Pollutant migration: suite-suite
 - HRV room

Future work:

- Field measurements: case studies
- Lab. HRV suite air distribution
- Lab. personalized ventilation

BUILDING RESILIENCE IAQ AND WILDFIRES SMOKE

Current work:

- MURB ventilation systems
 - Ventilation Control
 - Ventilation Filtration
 - Effects of Airtightness and Compartmentalization
 - Pressure control
 - Portable air cleaners (PAC)
 - Couple AC cooling

Future work:

- Field measurements: case studies
- Lab. Ventilation filtration

SUSTAINABLE RETROFITS

Current work:

- Ventilation: suite case study
- Envelope: assessment using drones (planning phase)

Future work:

- Building typologies
- Field measurements
- Drone thermal envelope scanning
- Couple pressurization testing
- Envelope assessment: thermal bridges, air leakages, moisture
- Envelope to Energy modeling
- Image recognition