

Dataset contents:

The dataset comprises of surveyed thermal comfort and occupant behaviour data (**ThermalComfortandOccupantBehaviourSurvey.csv**), hourly room indoor air temperature (**IndoorAirTemperature.csv**) and sub-hourly outlet air-conditioning unit temperature and derived state (on/off) of the units (**AirconditioningOutletTemperature.csv**); all collected during the data collection campaign of homes in summer 2019 in Catania (ITA). The thermal comfort survey is further formatted according to ASHRAE comfort database (**ThermalComfort_ASHRAEComfortDatabaseFormat.csv**) in ASHRAE Global Thermal Comfort Database II (<http://www.comfortdatabase.com>).

The data was grouped according to construction characteristics at building level which were labelled as:

- **TM2** refers to the group of studied rooms with high thermal mass, being constructed with load-bearing internal/external volcanic stone walls, which is a traditional technique in Catania. "Thermal mass 2 – TM2", the "2" is used to distinguish this construction style from the "1". Areal heat capacity of TM2 room is 436.86 JK-1m-2 and the response factors of 4.32.
- **TM1** refers to the group of studied rooms with reduced thermal mass compared to TM2 since they are built using concrete structures and hollow bricks as the main material for internal/external walls. Areal heat capacity of TM2 room is 162.4 JK-1m-2 and the response factors of 1.79.

The period of measurement was characterized by the following **local heat-health advisories and heatwaves**:

- Between the 07th and the 11th of June 2019 in Catania (Italy): level 1 of alert, maximum apparent temperature equals 36°C;
- Between the 26th and the 29th of June 2019 in Catania (Italy): level 1 of alert, maximum apparent temperature equals 36°C;
- Between the 02nd and the 10th of July 2019 in Catania (Italy): 1st heatwave on the 10th of July (level 2 of alert - maximum apparent temperature equals 41°C);
- Between the 24th and the 31st of July 2019 in Catania (Italy): 2nd heatwave on the 27th of July (level 2 of alert –maximum apparent temperature equals 38°C);
- Between the 1st and the 14th of August 2019 in Catania (Italy): level 1 of alert, maximum apparent temperature equals 39°C.

Standard-compliance:

All instruments and measurements protocol were carried out in agreement with the following standards: UNI EN ISO 7726:2001, UNI EN ISO 7730:2005. The thermal comfort survey are based on the 7-point scale thermal sensation votes, 5-points of thermal preference, 2-points of thermal acceptability in ASHRAE 55-2020UNI and EN ISO 16798:2019.

The instruments used:

- 17 air temperature sensor - IButtons DS1921G-F5
- 44 air temperature sensor - IButtons DS1922L-F5
- 45 air temperature and relative humidity - IButtons DS1923
- 2 Heat-stress meters HT2000
- 6 Heat-stress meters HT30
- 1 unidirectional anemometer - 405-V1 TESTO
- 12 occupancy sensors – HC-SR501 Passive Infrared (PIR)
- 8 Magnetic switch HOBO UX90-001