

ELISE

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**Energy & Location webinar
INSPIRE 2020 Online Conference**

05.06.2020

**Scale-up to multiple
geographical levels of the
characterization of electricity
consumption in buildings
using dynamic measured data
and INSPIRE datasets**

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ELISE Energy & Location Applications

Scale-up electricity consumption characterization of residential households and public buildings using metering data and INSPIRE datasets.

Goal

To **exploit the usage of electricity metering data and INSPIRE harmonized datasets** to provide a characterization of the electricity consumption in the **residential sector and public buildings** to support government and private sector regarding energy efficiency and energy use trends.

Geographical levels and data requirements



Region
City
Postal code
Census tract
Building

Metering data

Buildings / households location

Weather data

Cadaster data

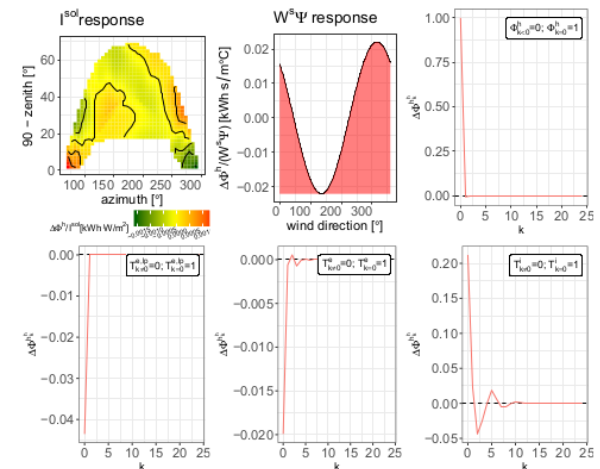
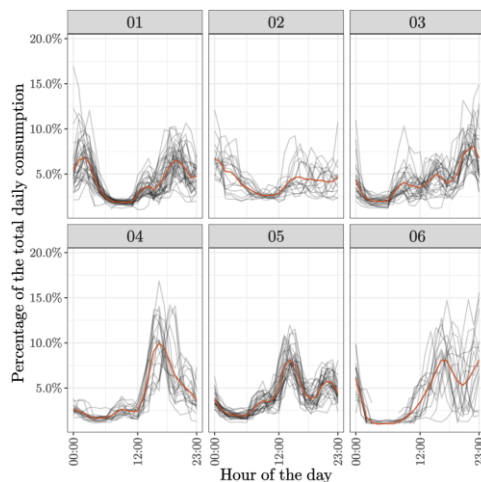
Socio-economic data

Vectorial geographical levels data

Characterization at individual level

Using **weather and metering data** and applying **machine learning** techniques to detect:

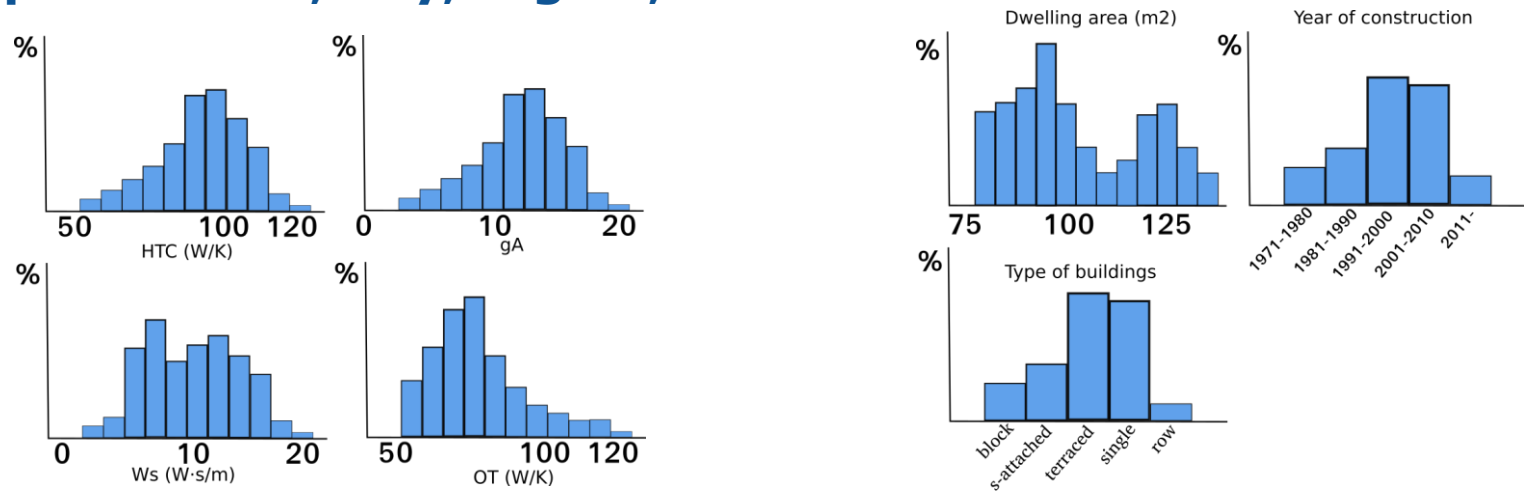
- User behaviour and activity patterns
- Weather dependence
- Characterization indicators (heat transfer coefficient, air infiltrations, solar gains, stand-by and fixed loads, ...)



How to scale-up?

Aggregating the individual characterization results, the cadastral data and socio-economic data to the multiple geographical levels.

→ **Transforming the individual results to distributions representing each postal code, city, region, ...**



Validation during 2020

Residential households use case

- Location: Spain – Mainly Catalonia region.
- Anonymized metering data from CIMNE.
- Approximate location is known, 25 postal codes will be analysed.
- Socio-economical data and cadastral data at census tract level.

Public buildings use case

- Location: Spain – Mainly Catalonia region.
- Metering data coming from EU project EDI-NET and Open-Data platforms.
- Detailed location is known, >100 buildings will be analysed.
- Cadaster data is at building level.
- Socio-economical data at census tract level.

Potential applications

- to **benchmark** the electricity consumption of residential sector and public buildings on **multiple geographical regions**, cities or districts
 - Policy makers, citizens in general
- to identify and assess geographical focus groups to **implement energy efficiency programs**
 - Policy makers, private sector (ESCO's, building retrofitting companies,...)
- to help **predictive maintenance** of the grid
 - Policy makers, private sector (DSO's,...)
- to **infer correlations and trends** among **energy** usage, **socio-economical** aspects and **building stock** characteristics.
 - Policy makers, scientific sector



Questions?
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