AREP

Thermal comfort in non-standard environments

Glazed, semi-open, composite or large spaces, known as atypical spaces, make up many of our living spaces. The proper design of their envelopes and the layout of their programs depend on considering their varied and changing climatic atmospheres, and the nature of the uses they accommodate. These spaces therefore require a complex dynamic thermal approach providing spatialized results , that cannot be obtained using traditional tools.

L'hypercube refers to AREP's internal research and scientific support workshop, specializing in the modeling of complex physical phenomena.

Contacts
Mateusz.Bogdan@arep.fr
Antoine.Hubert@arep.frr

Our Expertise

Our approach is based on a combination of specific tools involving **dynamic thermal simulations**, **solar flux distribution calculations and fluid mechanics** . These results are integrated into a model **of human metabolism**, which produces maps of the levels of **thermal comfort** experienced by users.

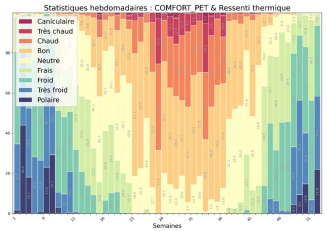
Our Services

Analysis of the risk of exceeding discomfort thresholds for a current or future climate

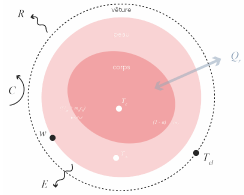
- Calculating and mapping comfort levels on an hourly basis,,
- Assessing the benefits of installing architectural and/or technical features (solar protection, natural ventilation, screens, misting, etc.).

Architectural or Urban design assistance by recommending preventive and corrective solutions.

Lyon Part Dieu train station
Instantaneous thermal comfort mapping.



Lyon Part Dieu train station
% of surface area in each comfort categories.



The variables taken into account on our comfort modeling approach.