

HeatResilientCity

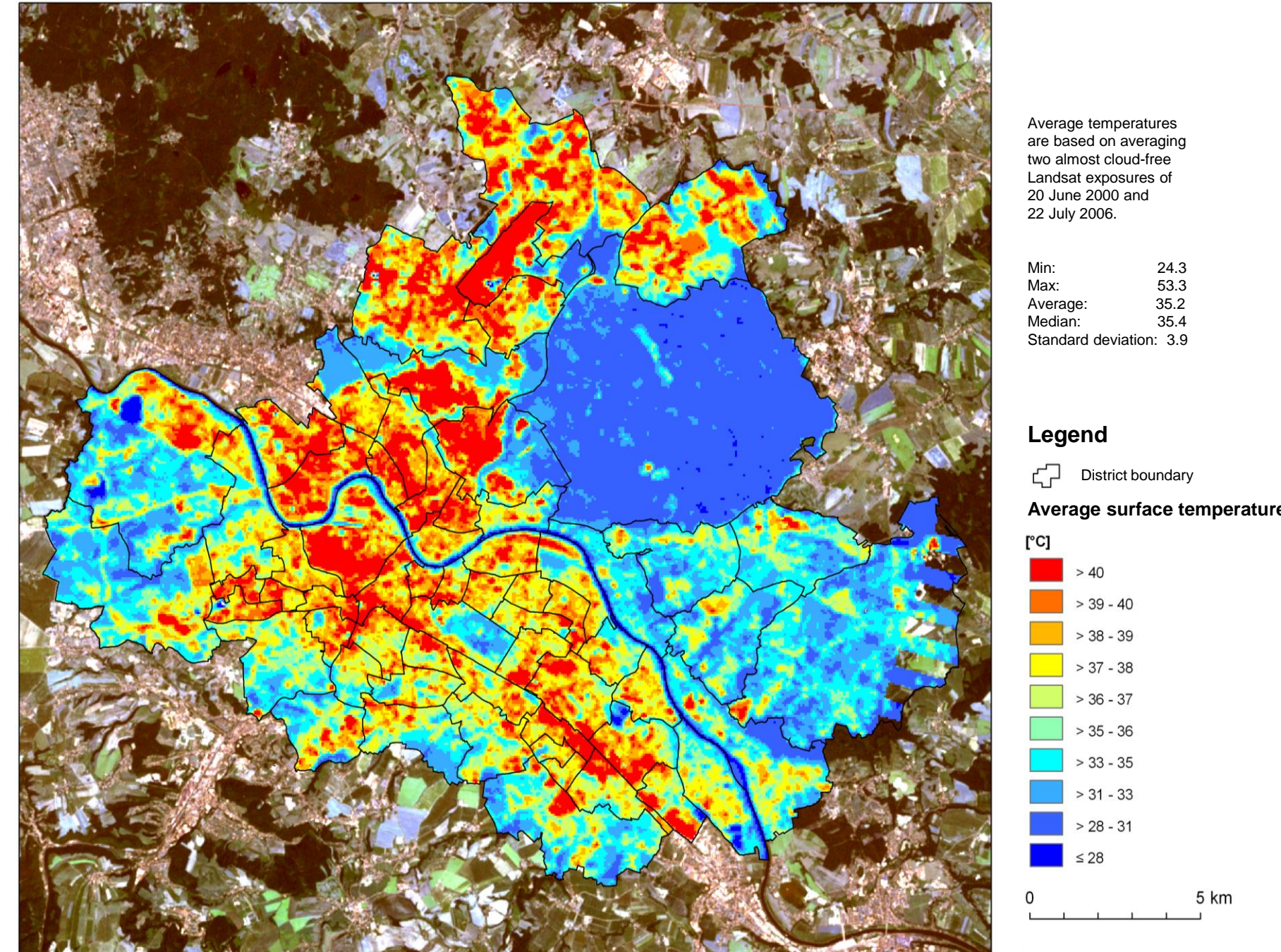
Heat-resilient urban and neighborhood development in large cities – Resident-oriented knowledge generation and implementation in Dresden and Erfurt

Challenges

How does it feel to live with hot outside temperatures in a strongly compacted residential quarter? In such neighborhoods, heat stress is a serious issue for residents, as summer heat waves can significantly reduce people's well-being and performance both indoors and outdoors, leading to serious health problems.

It is considered certain that the summer heat stress in Central Europe will increase due to progressive climate change. However, the exact impact of this on people outdoors and in buildings and how effectively adaptation measures can mitigate the adverse effects are only beginning to be understood.

How can the quality of life be improved with reasonable effort despite summer heat? What role do the building structure and the materials used play? How much energy will be needed in the future - for heating in winter and cooling in summer? What real effect can one expect from façade greening, open watercourses and green areas? These questions are the focus of the project. The involvement of the residents is of central importance here. In addition, the project aims to fill the term "ecosystem service" with concrete content with regard to the heat balance of urban districts.



Distribution of the mean surface temperature in Dresden on a hot day.

Data analysis/Cartography: Dr. Tobias Krüger, IÖR.

Aims

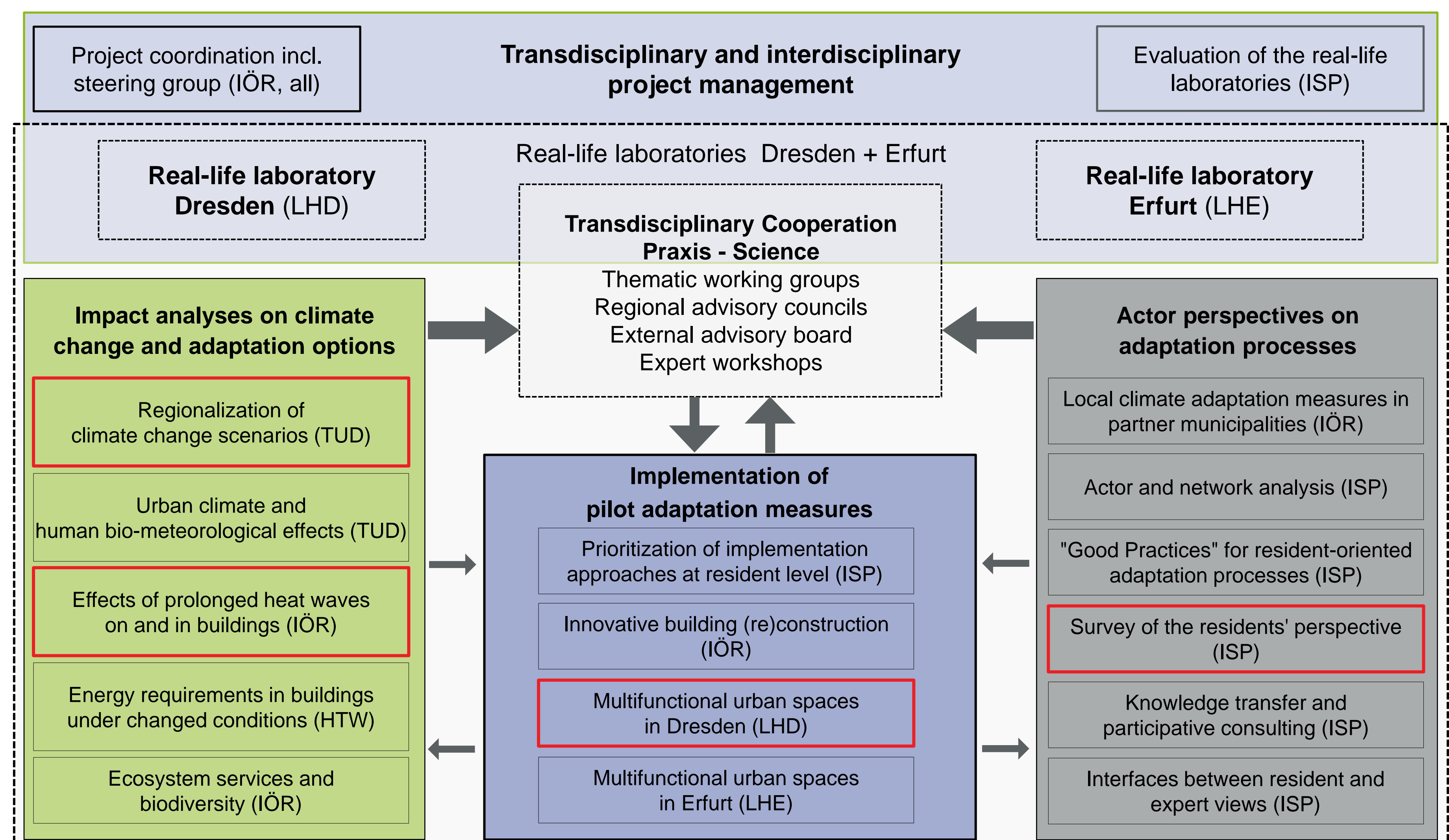
HeatResilientCity develops and implements innovative, socially just and user accepted adaptation measures to reduce the summer heat load of people in buildings and open spaces. The interdisciplinary and transdisciplinary research network analyses the existing conflicts of objectives, increases the acceptance of climate adaptation measures, reduces implementation barriers and thus makes a contribution to sustainable urban development.

Example quarters in Dresden and Erfurt serve as real-life laboratories. Here the project team asks for the opinion of the residents. Together with the scientific partners, actors from the building industry and urban development form a creative and innovative environment. The two municipalities coordinate the inner-city networking, organize and coordinate the work in the real-life laboratories and support the development and implementation of adaptation measures through the participation of their specialist authorities and through their prestige with the citizens as non-commercial administrators of the general public.

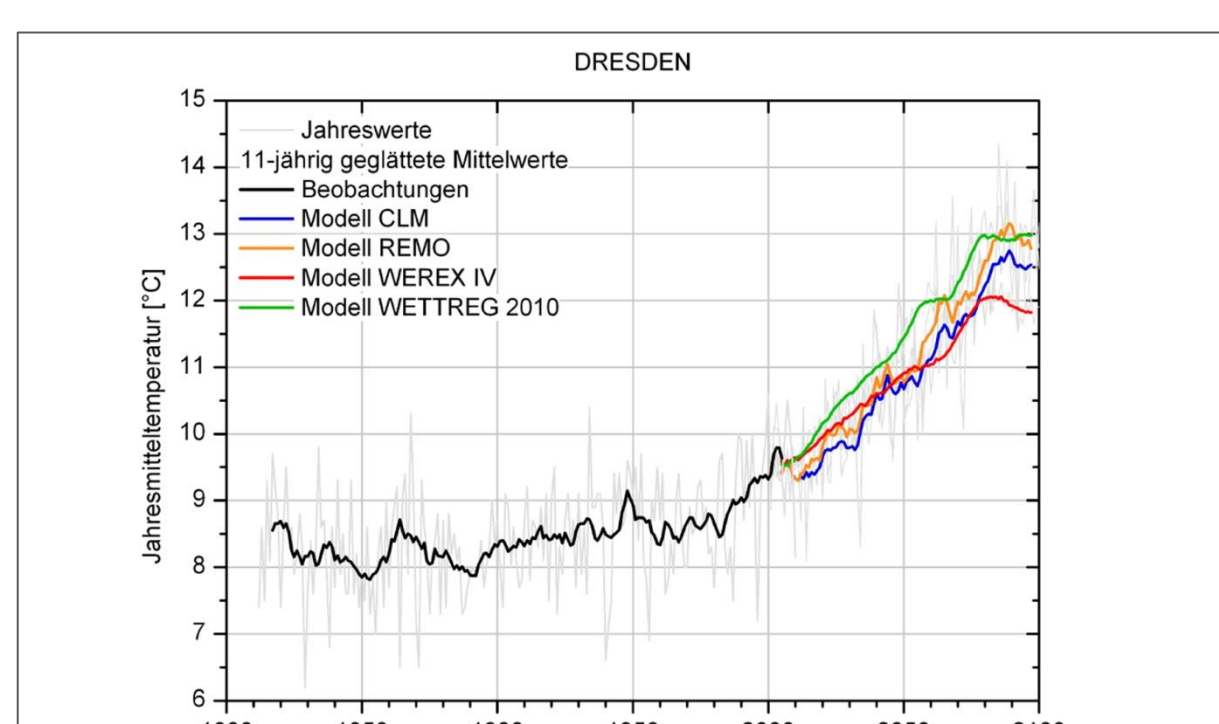
Project partners

- Leibniz-Institut für ökologische Raumentwicklung** (IÖR)
Leibniz Institute of Ecological Urban and Regional Development, Research Department Environmental Risks in Urban and Regional Development (IÖR)
- Institut für Stadtplanung, Planung und Kommunikation der Fachhochschule Erfurt** (ISP)
Institute for Urban Research, Planning and Communication of the University of Applied Sciences in Erfurt (ISP)
- Technische Universität Dresden** (TUD)
Institute of hydrology and meteorology (TUD)
- City of Dresden** (LHD)
Environment Agency (LHD)
- City of Erfurt** (LHE)
Agency for Environment and Nature Conservation (LHE)
- University of Applied Sciences Dresden** (HTW)
Chair for Building Physics and Building Climatology
Chair for Building Construction (HTW)
- Eisenbahner-Wohnungsbaugenossenschaft Dresden eG** (EWG)
Räume werden Wirklichkeit (EWG)

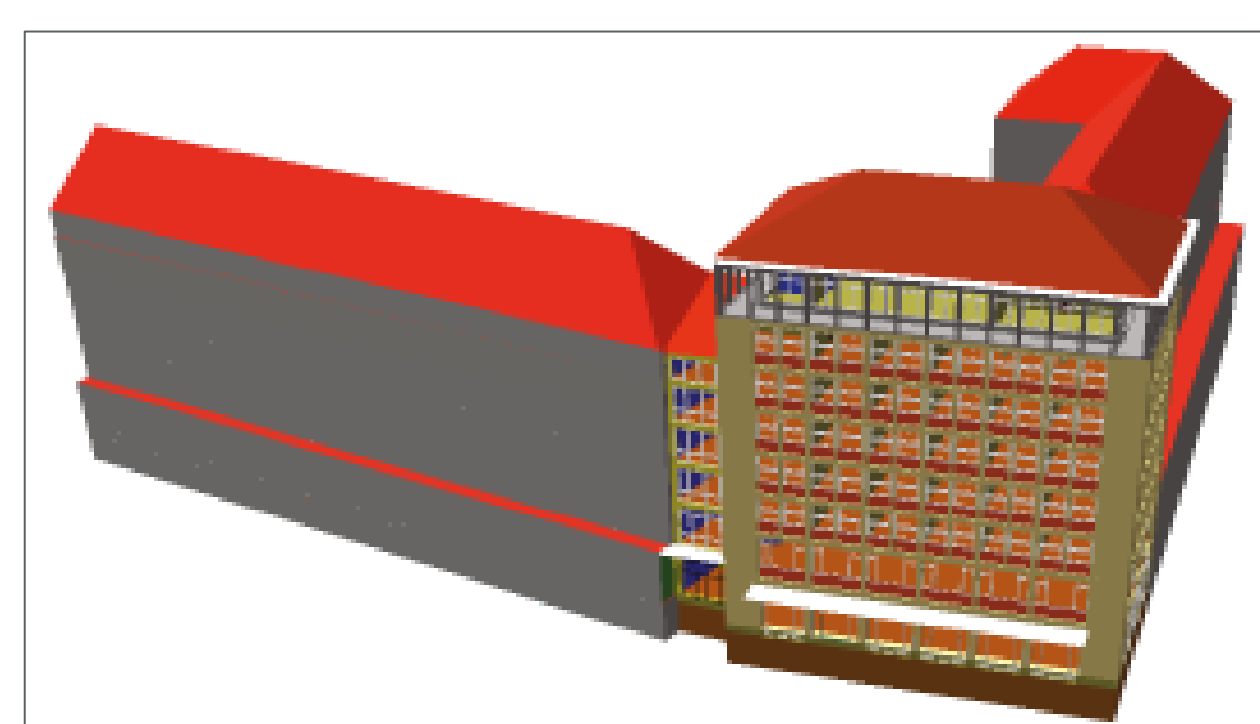
Network structure



Adaptation to increasing heat loads in buildings and neighborhoods



Regionalization of climate change
Development of the annual mean temperature at the station Dresden-Klotzsche from 1812 to 2100 (Model data for the emission scenario A1B).
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Effect of prolonged heat waves on buildings
3D models for thermal simulation.
© Marc-Steffen Fahrion, TU Dresden, Institut für Baukonstruktion.



Design of multifunctional urban spaces
© Eisenbahner-Wohnungsbaugenossenschaft Dresden eG (EWG), Landschaftsarchitektur-Büro Grohmann



Survey of the residents' perspective
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