Climate data on local scale for the heat-resilient urban development in the cities of Dresden and Erfurt / Germany

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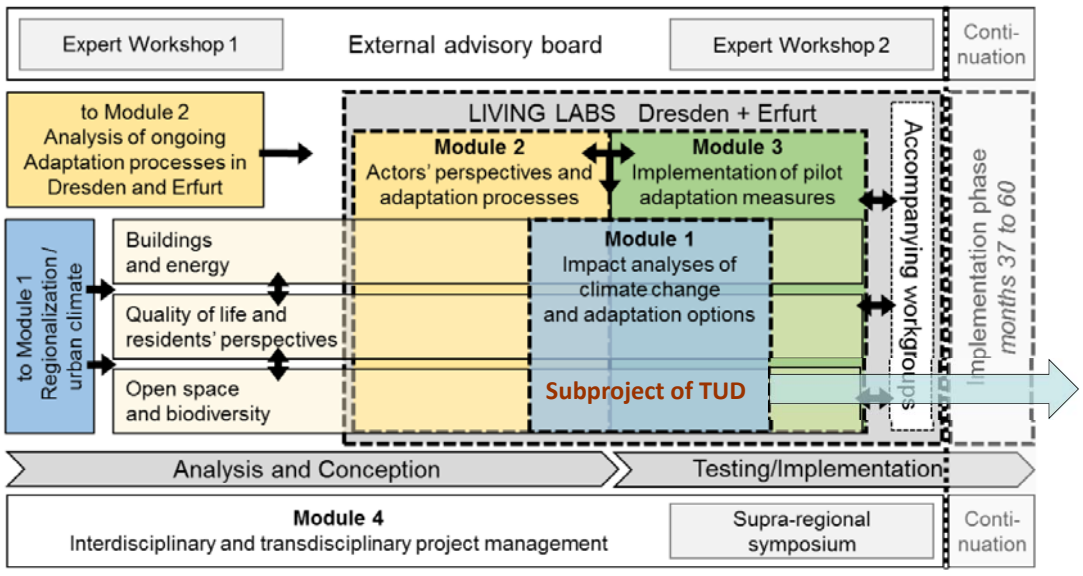


Modules in the Joint Project „HeatResilientCity (HRC)"

Subproject of TU Dresden, Chair of Meteorology

Objectives

1. Downscaling of climate data for Dresden and Erfurt to the scale of city districts, on the basis of structural parameters (buldings, vegetation)
2. Determination of meteorological and human-biometeorological effects in thermally stressed city districts
3. Assessment of planning effects on thermal indices (PET, UTCI) using measurements and modeling

Anticipated project results

User-oriented, spatially differentiated and freely available climate data base for present and near future for use in:

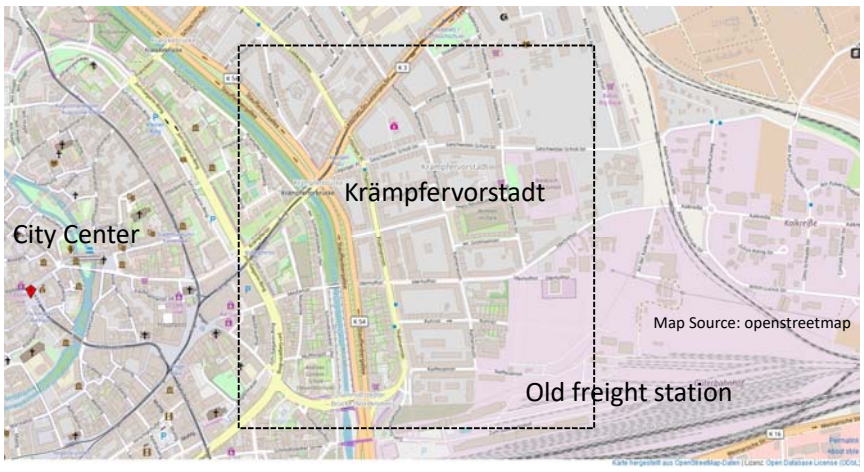
building climate control, city planning and district management (regional to local scale) in Dresden und Erfurt

Investigation Areas in Dresden and Erfurt

Dresden-Gorbitz

- Prefab slab building
- 3 buildings chosen with reconstruction measures by local housing company
- Modernisation of energy systems, Open-space concept to reduce deficits in urban green

(dashed line: measurement area)



Erfurt-Krämpfervorstadt

- Suburb, perimeter block development, Wilheminian Architecture
- Closure of facilities/ Restructuring measures, South: discontinued freight station
- Spatial consolidation and development of brownfields for planed housing

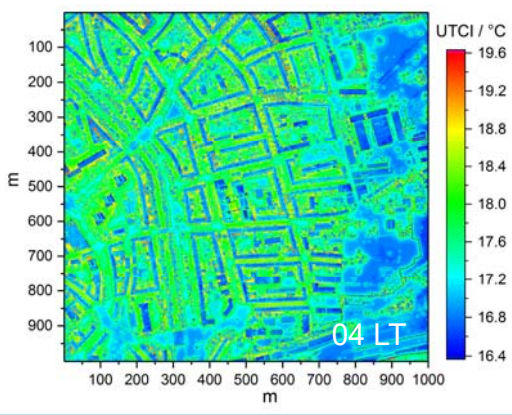
(dashed line: model area)

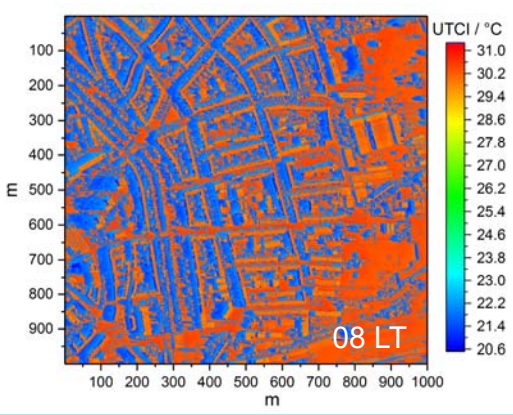
Mobile Measurements in Dresden

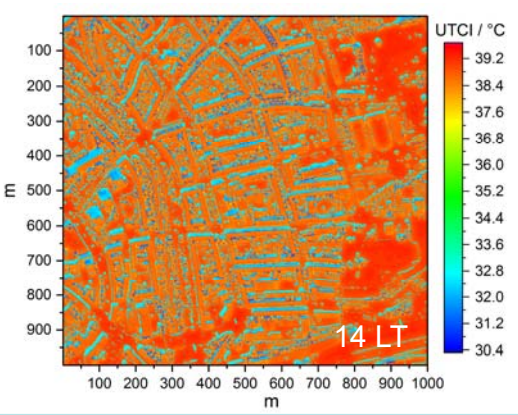
Thermal sensation (UTCI) measured on a round course in Dresden-Gorbitz for the morning and noon hours on a hot and sunny summer day using devices at a backpack

Modeling with SOLWEIG/Rayman in Erfurt

Thermal sensation (UTCI) for different times on a sunny summer day in Erfurt-Krämpfervortstadt. Simulation with the models SOLWEIG and RaymanPro using DOM with 1 m resolution.







First conclusion from the results

→Protection of open spaces and extension of shadow areas from trees have a major priority for the residents.

→Continuous participation of residents (who are affected by heat stress) in the process of project execution improves the chances for success!

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ISP - Institute for Urban Research, Planning and Communication, Erfurt
LHD – City of Dresden, Environmental Office, **LHE** – City of Erfurt, Environmental Office
HTW - University of Applied Sciences Dresden
EWG - Eisenbahner-Wohnungsbaugenossenschaft Dresden eG (housing association)

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