

## **Assessment of forest microclimates in different urban forest structures in Augsburg, Germany [Abstract]**

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## **Assessment of forest microclimates in different urban forest structures in Augsburg, Germany**

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The third-party-funded research project "Climate and Health Effects of Urban Forest Structures" (German Research Foundation under contract 471909988) aims to evaluate and compare different urban forest structures with regard to their microclimatic and health-related properties. In order to assess the microclimatic differentiations, extensive stationary and mobile measurements of various meteorological parameters have been carried out in the urban area of Augsburg since 2022. Thereby, four differently structured forest areas in the Augsburg "city forest," an inner-city park, and an urban comparison area are taken into account.

In all areas, between 5 and 7 Onset HOBO MX2300 loggers were installed to continuously (four-minute measurement intervals) record air temperature and relative humidity. In addition, measurement and survey campaigns were carried out in the study areas in all seasons and under different weather conditions. The campaigns took place in the early afternoon over a period of about 30 minutes along predefined paths that touched different structure types within the study areas.

For mobile microclimate measurements Kestrel 5400 WBGT Heat Stress Trackers and optional additional sensors have been used. In addition, physiological data (heart rate, cortisol level) of study participants have been collected, and surveys on subjective well-being have been conducted.

The microclimate measurements reveal not only climatic differences between the urban comparison area and park and forest areas in general, but also between the different urban forest structures and as well within the structure types.

In addition to the microclimatic differentiation, further analysis of the measurement results will provide information on the health relevance of different urban forest structures. Based on this, recommendations for the use and development of urban forests will be derived.