GreenEquityHEALTH

Factsheet II:
The Value of Urban Parks for Health and Wellbeing.

Background

Urban green spaces provide a number of ecosystem services that are helpful to address challenges related to climate change and urbanisation. Urban vegetation regulates the microclimate and air quality. Green spaces promote physical activity, relaxation and social interaction and thus, are beneficial for health and wellbeing. The potential to provide these services might be impaired during extreme climatic conditions and weather events such as heat waves and droughts.

The GreenEquityHEALTH-project explored ecosystem services provision during recent summer heat and drought periods in two distinct urban parks in Leipzig, Germany, using a interdisciplinary, multi-method approach.

In detail, the objectives were to

- generate empirical evidence on the potential of urban parks to provide cooling under the heat and drought conditions in 2018 and 2019,
- explore physical activity patterns related to divers park characteristics under the heat and drought conditions in 2018 and
- analyse analyse physical and mental health effects related o park visits.


Friedenspark in July 2019

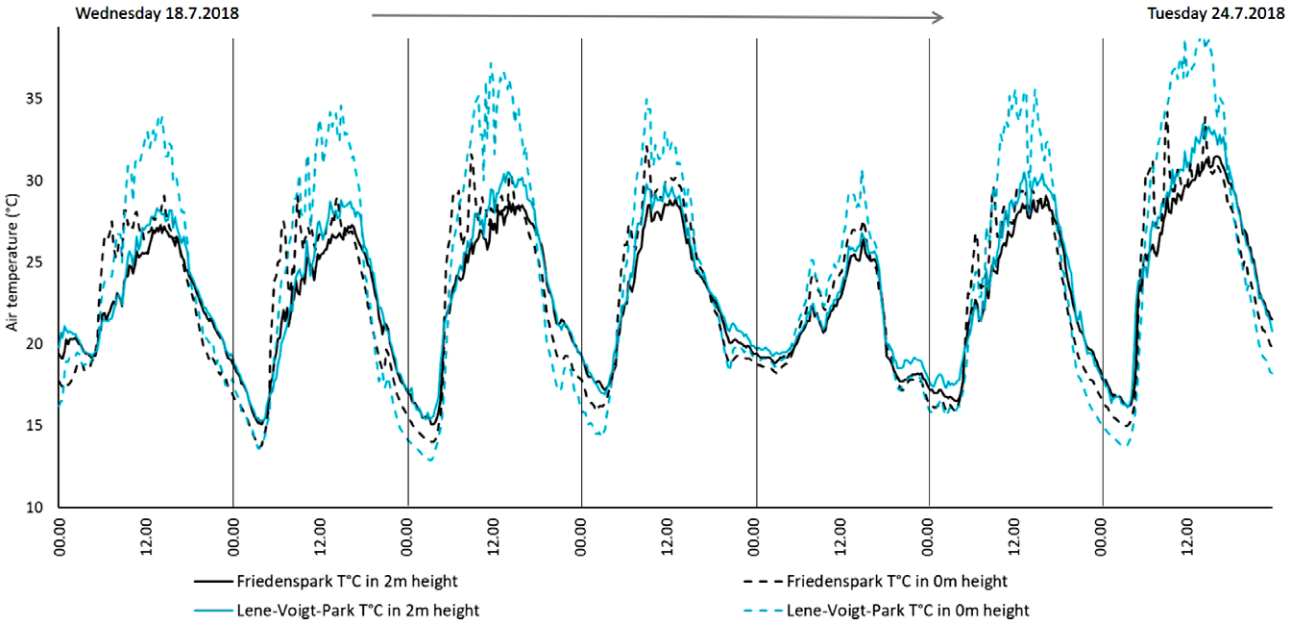

Friedenspark in June 2019


Lene-Voigt-Park in July 2018

Potential of urban parks to provide cooling during the heatwave

Increasing daily maximum air temperatures were measured in mid July 2018 illustrating the gradual heating-up of the urban landscape during the heatwave. The hottest day air temperatures were observed with 33.5 °C (2 m height) and nearly 40 °C above ground in the Lene-Voigt-Park. Mean air temperatures were slightly higher in the Lene-Voigt-Park than in the Friedenspark attributable to different vegetation and surface structures. The Friedenspark features high total vegetation cover (96%) with mature trees providing shading during the day and evapotranspiration at day and night time. Tree vegetation cover in the Lene-Voigt-Park is only about 15% and unvegetated open space is evident with ca. 20% of total area. In addition, major ground vegetation on lawns was severely impacted by the drought conditions. Vast open space in Lene-Voigt-Park promotes, however, vertical heat flux from the surface providing cooling over night.

Temperature trend in 2m and 0m height in the Friedenspark and Lene-Voigt-Park during field campaign in July 2018 (adapted from Kabisch and Kraemer, 2020).



Permanent sensor stations in Friedenspark (left) and Lene-Voigt-Park (right) measuring air temperature, air humidity and soil temperature and humidity.

Physical activity patterns related to divers park characteristics under heat and drought conditions

Active physical activities were observed on sports areas (basketball, soccer, streetball, football, beach volleyball) particularly in the Lene-Voigt-Park. In this park, sports areas are available majorily compared to the Friedenspark. Visitors jogging in the park were observed in higher numbers in the Friedenspark probably because of its bigger size and higher share of shaded space. Significantly lower numbers of joggers were observed with temperatures of 29.5°C or higher. Passive activities were observed on lawn areas and on benches for sunbathing, relaxing or talking with others during the day, particularly during lunch time and later in the afternoon and evening.

Friedenspark in July 2019

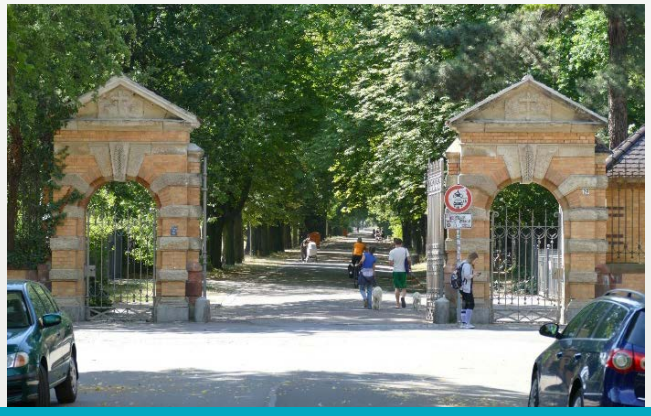
Friedenspark in June 2019

Lene-Voigt-Park in July 2018

Lene-Voigt-Park in July 2019

Physical and mental health effects related to park visits

In summer 2019, the GreenEquityHEALTH-team investigated the effects of short-term exposure of older people to divers urban parks and a busy street environment on physiological and psychological parameters. Heart rate variability, blood pressure, mood and perceived outcomes of restoration were measured in a sample of 33 older men and women (mean age 63.5). Results indicate decreases in systolic blood pressure and pulse pressure in the Friedenspark which indicate protective effects for cardiovascular health. By contrast, in the busy urban street area adverse changes of heart rate variability were found pointing to detrimental effects on cardiovascular health in this environment. Naturalness and restoration experience were rated highest in the older Friedenspark. Hence, visiting urban parks should be considered as an important preventive measure for promoting cardiovascular health.



Entrance of Friedenspark in July 2019

Lene-Voigt-Park in July 2019

Team:

Nadja Kabisch, Roland Krämer, Jan Hemmerling, Oskar Masztalerz, Marion Adam, Miriam Brenck*, Catharina Püffel*, Judith Rakowski*, Peer von Döhren*, Dagmar Wörister

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*Former employees

www.greenequityhealth.hu-berlin.de

nadja.kabisch@geo.hu-berlin.de

Publications

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