

The Impact of Land Use Changes on Urban Heat Stress

– A Case Study of the Stuttgart region in the 2019 Heat Wave

In recent decades, Europe has experienced an increase in the frequency, duration, and intensity of extreme heat events. These events have led to increased mortality rates, water insecurity, and long-term economic and cultural stress. Urban areas, in particular, face substantial challenges due to heat stress.

This thesis aims to determine the influence of land use changes on urban heat stress in the Stuttgart region. This study examines the conditions of the 2019 heat wave in the urban area of Stuttgart. The European heat wave in July 2019 was preceded by anomalously warm and dry conditions, leading to a soil moisture deficit. High-resolution ICON climate model simulations will be used for to assess the impact of different land use scenarios on urban heat stress.

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