Universität Basel

Research Project

URBANFLUXES - URBan ANthropogenic heat FLUX from Earth observation Satellites

Third-party funded project

Project title URBANFLUXES - URBan ANthropogenic heat FLUX from Earth observation Satellites
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Organisation / Research unit
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Department
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Status Completed

The main goal of the proposed project URBANFLUXES (URBan ANthrpogenic heat FLUX from Earth observation
Satellites) is to investigate the potential of Earth Observation (EO) to retrieve anthropogenic heat fluxes. The
main research question addresses whether EO is able to provide reliable estimates of anthropogenic heat flux
spatiotemporal distribution, at local and city scales. URBANFLUXES will investigate the potential of EO to retrieve
the anthropogenic heat flux, as a key component in the urban energy budget and by developing a method capable
of deriving it from space. The objective is to develop a method that could be used operationally in the near future,
when observations with adequate temporal resolution become available. URBANFLUXES EO-based approach
will be easily transferable to any urban area and capable of providing anthropogenic heat flux benchmark data for
different applications, including climate models to assess the implication of the anthropogenic heat on the Earth
system; building energy models to characterize buildings-to-atmosphere/soil/water heat exchange pathways; and
decision support systems for urban sustainable planning and mapping of emissions related to energy consumption.
URBANFLUXES is therefore expected to prepare the ground for further innovative exploitation of European space
data in scientific activities (Earth system modelling and climate change studies in cities) and future and emerging
applications (sustainable urban planning) by exploiting the improved data quality, coverage and revisit times of the
Copernicus Sentinels data. The Copernicus observations have the potential to reveal novel scientific insights, related
to monitoring the anthropogenic heat flux in cities, at both local and regional scales, generating new EO

opportunities.
The URBANFLUXES products will therefore support both sustainable planning strategies to improve the quality of
life in cities and Earth system models to provide more robust climate simulations.

Keywords Urban Energy Budget, Anthropogenic Heat Flux, Copernicus Sentinels Synergistic Observations, Sustainable Urban Planning; Earth System Modelling, Climate Change Mitigation at Local and Regional Scales
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Add publication

Published results

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