

## Publication

## Anthropogenic Heat Flux Estimation from Space: Results of the second phase of the URBANFLUXES Project

**ConferencePaper (Artikel, die in Tagungsbänden erschienen sind)****ID** 3931527**Author(s)** Chrysoulakis, N.; Marconcini, M.; Gastellu-Etchegorry, J. -P.; Grimmond, C. S. B.; Feigenwinter, C.; Lindberg, F.; Del Frate, F.; Klostermann, J.; Mitraka, Z.; Esch, T.; Landier, L.; Gabey, A.; Parlow, E.; Olofson, F.**Author(s) at UniBasel** [Feigenwinter, Christian](#) ; [Parlow, Eberhard](#) ;**Year** 2017**Title** Anthropogenic Heat Flux Estimation from Space: Results of the second phase of the URBANFLUXES Project**Book title (Conference Proceedings)** 2017 Joint Urban Remote Sensing Event (JURSE 2017): Proceedings of a meeting held 6-8 March 2017, Dubai, United Arab Emirates**Place of Conference** Dubai, UAE**Publisher** Institute of Electrical and Electronics Engineers ( IEEE )**ISSN/ISBN** 978-1-5090-5808-2**Keywords** Copernicus Sentinels; Earth Observation; Urban Climate; Urban Energy Budget.

The H2020-Space project URBANFLUXES (URBan ANthropogenic heat FLUX from Earth observation Satellites) investigates the potential of Copernicus Sentinels to retrieve anthropogenic heat flux, as a key component of the Urban Energy Budget (UEB). URBANFLUXES advances the current knowledge of the impacts of UEB fluxes on urban heat island and consequently on energy consumption in cities. This will lead to the development of tools and strategies to mitigate these effects, improving thermal comfort and energy efficiency. In URBANFLUXES, the anthropogenic heat flux is estimated as a residual of UEB. Therefore, the rest UEB components, namely, the net all-wave radiation ( $Q^*$ ), the net change in heat storage ( $\Delta Q_s$ ) and the turbulent sensible (QH) and latent (QE) heat fluxes are independently estimated from Earth Observation (EO), whereas the advection term is included in the error of the anthropogenic heat flux estimation from the UEB closure. The project exploits Sentinels observations, which provide improved data quality, coverage and revisit times and increase the value of EO data for scientific work and future emerging applications. These observations can reveal novel scientific insights for the detection and monitoring of the spatial distribution of the urban energy budget fluxes in cities, thereby generating new EO opportunities. URBANFLUXES thus exploits the European capacity for spaceborne observations to enable the development of operational services in the field of urban environmental monitoring and energy efficiency in cities.

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