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The influence of urban lakes on the land surface temperature – a remote sensing assessment

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The urban blue areas, either lakes or rivers, can potentially reduce the heat stress in the cities, and may play an important role in diminishing the Urban Heat Island (UHI) and improving the air quality. Most European cities nest at least one river or lake crossing their urban landscape, and the interest for urban blue services is increasing (EEA 2016). This study investigates the influence of the surface waters on the Land Surface Temperature and on the surface UHI, based on remote sensing products. Data retrieved from MODIS and LANDSAT products are analysed both separately and combined. The preliminary results obtained for Lacul Morii (2.4 km2), the largest lake of Bucharest (Romania), clearly demonstrate that the influence of the urban lakes on the LST depend on the land use/land cover, and urban morphology. During the summer, by daytime, the area over Lacul Morii is 2-4°C cooler than the downtown. However, the influence of the lake on its hinterland is limited to less than 1 km. The research methodology applied on several European cities from different climate zones has retrieved similar conclusions, with differences depending mainly on the size of the blue. This work has been funded by the project "Experimental Methods for Ecosystems Services Assessment of Urban Lakes under Climate Changes (EMERSA)", funding body The Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), PN-III-P2-2.1-PED-2016-1300.