



## **The role of blue areas in mitigating the Urban Heat Island – a satellite-derived assessment**

Sorin Cheval (1,2), Ionuț Sandric (1), Cristian Iojă (1), Alexandru Dumitrescu (3), Diana Onose (1), and Gabriel Vânău (1)

(1) University of Bucharest, Bucharest, Romania, (2) Air Force Academy, Brașov, Romania, (3) National Meteorological Administration

The combined effects of urbanization and climate change challenges trigger significant concern for the common public, stakeholders and scientists, all striving for the development of effective mitigation and adaptation strategies. Nowadays, urban areas amass more than 50% of the world population, and three of four Europeans live in a city. The large demand for substantial assessment of urban climate has prompted for the implementation of urban monitoring networks of ground-based sensors (e.g. Birmingham, Bucharest, Szeged) to supplement the information from the existing WMO stations. In the recent decades, the remote sensing technology has become an important tool capable to provide useful information on different meteorological variables. The urban blue areas can potentially reduce the heat stress in urban areas, and have a consistent role in diminishing the Urban Heat Island (UHI) and in improving the air quality. Most European cities have at least one river or lake crossing their urban landscape, and there is growing understanding that water is as important for cities as energy or climate (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 Bucharest (Romania) clearly demonstrate that the urban lakes may determine the shape of the UHI and reduce its intensity. During the summer, the area over Lacul Morii (2.4 sq. km), the largest lake of Bucharest, is 2-4°C cooler than the downtown. The research methodology applied on several European cities from different climate zones has retrieved similar conclusions, with differentiations 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.