



Monitoring the urban heat island of Bucharest (Romania) through a network of automatic meteorological sensors – first results

Sorin Cheval (1), Bogdan Lucaschi (1), Cristian Ioja (2), Alexandru Dumitrescu (1), Ancuta Manea (1), Adrian Radulescu (1), Catalin Dumitrache (1), George Tudorache (1), Gabriel Vanau (2), and Diana Onose (2)

(1) National Meteorological Administration, Bucharest, Romania (sorin.cheval@meteoromania.ro), (2) Faculty of Geography, University of Bucharest, Bucharest, Romania

Extreme warm temperatures and heat waves represent one of the major climate hazards which impact the city of Bucharest (Romania), favoured by the climate background and by the urban characteristics. Previous studies based either on sparse ground sensors or satellite remote sensing indicate that the average differences between the monthly temperature of the built area and the neighbouring rural buffers of Bucharest can reach 3-4°C, but instantaneous values are certainly higher. Since the city shelters about 2 million residents, as well as the major administrative and economic facilities of the country, the hazard management should receive a vivid attention.

The meteorological monitoring of the city is currently performed in a systematic manner by the National Meteorological Administration (NMA) through 3 ground-based stations following the standards of the World Meteorological Organization, and through radar and satellite remote sensing. In 2014, NMA set up 7 automatic sensors in specific urban conditions, while the University of Bucharest deployed 30 mobile sensors in a joint effort for enhancing the accuracy of the urban heat island monitoring. Both sensor devices are designed for continuous monitoring (24/7). This presentation focuses on the technical characteristics of the recently implemented network (1), and brings to the public the first results of the monitoring (2), including the implementation experience, the observed benefits and plans for development and applications. The data obtained are compared with the existing data sets from meteorological stations and satellite products, and they are currently integrated in a common database, providing valuable information about the Bucharest's urban heat island.

The results have been obtained within the project UCLIMESA (Urban Heat Island Monitoring under Present and Future Climate), ongoing between 2013 and 2015 in the framework of the Programme for Research-Development-Innovation for Space Technology and Advanced Research (STAR), administrated by the Romanian Space Agency.