

Assessment of the urban heat island in the city of Galati

Wednesday 9 July 2025 19:40 (20 minutes)

This article evaluates the urban heat island in the city of Galati, in Southeastern Romania, for the months of March and April 2023. Temperature measurements were taken every day in 10 points: five points in the city of Galati and five in the periurban and rural areas. The layout of the 10 points covered the north-south transect, between Galati and Braila, the neighboring city. Other parameters were also measured, such as humidity, pressure, heat index, wind speed, Dew point. Regarding the measured temperature, it was observed that in April there was a more balanced temperature distribution, with values around the average. March showed greater variability, with more frequent thermal extremes. Strong positive correlations were obtained between temperature and the heat index, and between temperature and Dew point. The relative humidity varied inversely with temperature, the coefficient of variation being -0.54. For wind, no consistent relationship was established with the other parameters, possibly due to the fact that it depends more significantly on several local factors (topography, buildings etc.). The t-test for Independent Samples revealed significant differences between point 4 and the other points ($p < 0.05$), indicating a consistent heat island effect. The Tukey HSD test was applied to identify which stations differ significantly from each other in terms of temperature. Thus, differences appeared between points, some quite large ($>8^\circ\text{C}$). The study revealed a clear north-south and west-east temperature gradient, with the city's urban center being the thermal core. Water and vegetation determined local temperature drops.

Primary author: Ms DRASOVEAN, Romana ("Dunărea de Jos" University of Galați)

Co-authors: Ms CONDURACHE-BOTA, Simona ("Dunărea de Jos" University of Galați); Mr MURARIU, Gabriel ("Dunărea de Jos" University of Galați); Mr TIGAU, Nicolae ("Dunărea de Jos" University of Galați); Mr SIMBOTIN, Petrica Ciprian ("Dunărea de Jos" University of Galați)

Presenter: Ms DRASOVEAN, Romana ("Dunărea de Jos" University of Galați)

Session Classification: Poster Session 2

Track Classification: S04 –Environmental and Solar Physics, Meteorology and Geophysics