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## Application of remote sensing in the development of green tourism. Case study: Parks of Belgrade (Serbia)

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Modern achievements of technology greatly improve the development of tourism and today it directly depends on it. Application of modern technology, remote sensing with GIS, as well as their integration enables monitoring, management and better systematic use of data. Observation and monitoring of green and recreational areas is important in urban areas because it creates a pleasant and suitable environment for living. These functions are important for improving the quality of life of citizens. Due to large urbanization, the open space and green areas of the city provide opportunities for recreation and experiencing nature.

Green areas represent a space for recreation, rest and entertainment, which is covered with different urban vegetation: grass, trees, bushes, etc. This space consists of: parks, playgrounds, courtyards, public seating areas, squares, etc. Green spaces represent a significant factor of environmental impact in urban settlements, especially because they are an important part of urban vegetation that is cooler than the surrounding populated areas.

Green tourism includes several aspects: buildings (their construction, renovation, energy-saving efficiency, etc.), protection and preservation of anthropogenic and natural attractions (attractions and events), infrastructure (vehicles that represent the least pollutants in nature are preferred: railway traffic, bicycles, walking, etc.).

The Normalized Difference Vegetation Index (NDVI) was used for the analysis of Belgrade's parks (23 in total), as well as satellite images from the Landsat Thematic Mapper 4 -5 satellite captured on August 7, 1992 and from the Landsat 8 Optional Land Image satellite captured on August 9, 2020.

The results showed that the area of parks and forests in Belgrade decreased by 3.47% for a period of 30 years (1990 -2020). For the same period, the urban area increased by 1.66%. The most green areas were detected in Košutnjak, Pioneer city and Topcider parks (3.8 km<sup>2</sup>) and Big War Island (2 km<sup>2</sup>). However, one of the most important parks in Belgrade, the greatest conditions for the development of green tourism based on detection, the wealth of cultural and historical heritage is Kalemegdan Park with the fortress (area 0.44 km<sup>2</sup>). Kalemegdan with its surroundings in recent decades has been recording increasing visits, different attractiveness and content. Some of the most important ones are: the Victory Monument and the Gratitude Monument to France; museums: Natural History Museum, Military Museum, "Cvijeta Zuzoric" Art Pavilion; Church of Saint Petka and Ruzica; Kalemegdan fortress and landscaped basketball and tennis courts, etc.

Green tourism in Belgrade leaves the possibility for additional economic activities and further improvement of Belgrade's tourist offer. Various festivals and events are often held in Belgrade parks. Parks in Belgrade are green spaces, green oases, intended for sports, various activities and recreation.

Keywords: Belgrade's parks, green tourism, remote sensing, green areas, development, activities

### Biography:

Dr Radmila Jovanovic is Research Associate, Postdoctoral Researcher, at Department of Geography, Faculty of Tourism and Faculty of Philosophy and Letters, University of Malaga, Spain. My field of research are Tourism (wine tourism and viticultural areas), (Geo)Spatial analysis (big data, data mining), Applied Cartography, Tourism and Territorial (Planning), Geographic Information Systems (GIS), smart (tourist) destinations, etc. I finished all levels of studies (BSc, MSc, PhD) at Faculty of Geography, University of Belgrade, (Serbia). From March of 2022, I started second PhD studies at Faculty of Tourism, University of Malaga, Spain. During 2021 at the same Faculty, I finished my first postdoc research. From November 2022 I started my second postdoc research. Also, I am researcher on two projects: "Residents versus tourists in Andalusian historic centers? Conflicts, strategies and new post-Covid scenarios" (P20\_01198), call for R+D+I research projects within the framework of the Andalusian Plan for Research, Development and Innovation (PAIDI 2020), Government of Spain and "New strategies for new tourist conflicts in Andalusian historic centers" (UMA-FEDER-005), University Of Malaga, Department Of Geography, Faculty Of Tourism, Campus of Teatinos (Spain).