ABSTRACT ONLY

PROLIFERATION OF NIGHTTIME ARTIFICIAL LIGHTING AND LIGHT POLLUTION IN MAJOR URBAN AREAS OF LATIN AMERICA

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Light pollution is a form of environmental degradation that is increasing worldwide and affecting the natural environment, flora, fauna, and various aspects of human life. Despite growing concern about this issue, its study is still limited in Latin America. In this research work, we conducted a comprehensive analysis of the expansion of artificial night light in major Latin American urban centers between 2012 and 2022. The study focused on the cities of Ciudad de Mexico, São Paulo, Bogota, Lima, Santiago, Buenos Aires, Rio de Janeiro, Caracas, San Jose, Havana, Quito, Asuncion, Montevideo, and La Paz. The data reveals a wide range of radiance growth rates across the surveyed cities. While Asuncion and Lima experience significant annual radiance increases (4.55 and 6.84, respectively), Caracas shows a notable decline (-2.28). This disparity suggests diverse trajectories in urban lighting practices. Cities like Santiago de Chile and Buenos Aires show substantial increases in the illuminated area (847 km^2 and 547 km^2, respectively). Conversely, cities like Caracas and La Habana demonstrate a reduction in illuminated areas. These findings provide valuable information on the growing threat of light pollution in Latin America and supports the need for action to help control associated environmental degradation. It is essential to raise awareness of the negative impacts of light pollution on the ecosystem, human health, and astronomical observations. Implementing lighting regulations, promoting energy-efficient lighting technologies, and incorporating light pollution considerations into urban planning are essential steps to mitigate the effects of light pollution and protect the natural environment in major Latin American urban centers.

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