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## The extraction of urbanized areas based on the high-resolution night lights images: A case study in Barcelona, Spain

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The definition of urbanized areas, both regionally and globally, is an important basis for urban development monitoring and management, as well as an important condition for studying social policies, economics, culture and the environment.

Thanks to the development of science and technology, urban expansion is developing rapidly. The method of extracting urbanized areas quickly and accurately has become the focus of research.

In the 1970s, with the beginning of the Defense Meteorological Satellite Program (DMSP), the images of night lights that provide a new method for the extraction of urbanized areas were born.

However, due to the limits of spatial resolution and spectral range, it's true that there are defects in urbanized area extraction based on DMSP-OLS nightlight images.

In recent years, with the development of remote sensing technology, remote sensing data with a higher resolution emerged, providing an effective and applicable data source for urban planning monitoring.

I suppose that the images of night lights with a higher resolution have greater precision than the old ones in the extraction of urbanized areas.

This work has dedicated the images of night lights (NPP-VIIRS and Luojia1-01) and the images of urbanized areas (FROM-GLC 2017) to construct a logistic regression model to evaluate and compare the accuracy of the two images of night lights in the extraction of urbanized areas.

The case study is Barcelona metropolitan area, Spain. (636 km<sup>2</sup>, 3.3 million inhabitants).