**Spatial Analysis of Light Pollution Dynamics Around Bosscha Observatory and Timau National Observatory Based on VIIRS-DNB Satellite Images**

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ABSTRACT

Bosscha Observatory is the only observatory in Indonesia that still actively doing astronomical research since 1928. Bosscha Observatory was originally very suitable for observing astronomical objects because of its ideal night sky conditions and covered most of the northern and southern sky areas. However, starting at the end of 1980, the quality of night sky at Bosscha Observatory has decreased along with the development of cities around the observatory. Therefore, the construction of a new observatory in Indonesia is currently underway, namely the Timau National Observatory. One of the main causes of the decreasing quality of the night sky at Bosscha Observatory is light pollution. Light pollution is one form of pollution caused by excessive light outside the room released into the sky, causing an increase in brightness of the night sky. The brightness increasing of the night sky causes relatively faint astronomical object, e.g. Milky Way Galaxy difficult to observe. Based on the analysis of the dynamics of light pollution in a radius of 20 km from Bosscha Observatory and at a radius of 90 km from the Timau National Observatory in 2013-2017 using VIIRS-DNB satellite imagery, it is known that there is a wide change in light pollution for the very low, low, medium, high, and very high. The average area of light pollution at a radius of 20 km from Bosscha Observatory for the category of very low, low, medium, high, and very high categories experienced a rate of -41.25 km2 / year, 5.89 km2 / year, 15.13 km2 / year, 18.03 km2 / year, and 2.10 km2 / year. The rate of increase in the extent of light pollution for the medium, high, and very high categories occurs south of the Bosscha Observatory, which is towards the city of Bandung. The average area of light pollution in a 90 km radius from the Timau National Observatory for the very low, low, medium, and high categories experienced a rate of 20.76 km2 / year, -22.08 km2 / year, 2.95 km2 / year, and -1.63 km2 / year. Therefore, the night sky in the 90-270 degree azimuth direction at Bosscha Observatory is relatively not ideal as a location for observing astronomical objects, and the Timau National Observatory is still relatively ideal as a location for observing astronomical objects, but it is necessary to monitor the dynamics of light pollution in the direction of 180-270 degrees azimuth which leads to Kupang City.

*Keywords: light pollution; VIIRS-DNB satellite images; Bosscha Observatory; Timau National Observatory*