

Increasing disaster awareness of the community by flood potential mapping of densely-populated urban river watershed in south and west Jakarta with LIDAR data segmentation

Lestari Margatama^{ab}; Silvia Salmi Al-Hikmah^c; Indra Riyanto^{ac}; Dwi Pebrianti^d; Luhur Bayuaji^e; Dodi Sudiana^f; and Josaphat Tetuko Sri Sumantyo^g

^a Center for Environmental Studies, Universitas Budi Luhur, Jl. Cileduk Raya No. 99, Petukangan Utara, Jakarta Selatan, Jakarta, Indonesia

^b Faculty of Information Technology, Universitas Budi Luhur, Jakarta Selatan, Jakarta, Indonesia

^c Faculty of Engineering, Universitas Budi Luhur, Jakarta Selatan, Jakarta, Indonesia

^d Fakulti Kejuruteraan Elektrik Dan Elektronik, Universiti Malaysia Pahang, Pekan, Pahang, Malaysia

^e Faculty of Computer Science and Software Engineering, Universiti Malaysia Pahang, Gambang, Kuantan, Malaysia

^f Department of Electrical Engineering, Faculty of Engineering, University of Indonesia, Depok, Indonesia

^g Center for Environmental Remote Sensing, Chiba University, Inage, Chiba, Japan

ABSTRACT

Degradation of environment quality is currently the prime cause of the recent occurrence of natural disasters; it also contributes in the increase of the area that is prone to natural disasters. This research is intended to map the flood potential area of Pesanggrahan river in DKI Jakarta by segmenting the Digital Elevation Model derived from LIDAR data. The objective of this segmentation is to find the watershed lines of the DEM image. Data processing in this research is using LIDAR data which take the ground surface data, which is overlaid with Jakarta river map and Next, the data is then segmented the image. The expected result of the research is the flood potential area information, especially along the Pesanggrahan river in South Jakarta.

KEYWORDS:

Digital Elevation Model; Digital Surface Model; Flood mapping; image segmentation; LIDAR; Urban flood potential