

The Morphotectonic 3-D Modelling of Cisadane Watershed Based on Interpretation of Satellite Imagery and Field Survey in the Region of South Tangerang, West Java, Indonesia

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Key words: Deformation measurement; Remote sensing; morphotectonic, 3-D model, sagpond, active fault, Cisadane river

SUMMARY

Cisadane watershed stretched from Bogor, Tangerang and Jakarta. The vital infrastructures is in this region. In physiographic, the area is included in coastal plain Jakarta and Bogor Zones. There are 18 rock formations that make up this region, Tertiary to Quaternary. There are anticline, syncline, and faults that developed in the study area. The most significant structures is Cisadane ancient fault, trending nearly north-south. Traces the geological structure is occupied by the main flow of the river Cisadane which can be interpreted from remote sensing data. Given the existence of the geological structure in this region potentially active, it is important to create a 3-D model of morphotectonic. The models are expected to provide further information related to the period of tectonic control of the region.

Data obtained from the interpretation of satellite imagery and field survey. Includes identification units associated with tectonic geomorphology, morphometric measurements on topographic maps, and field surveys. The data were then processed using Micromine software for easy construct 3-D models. In addition, do also quantitative data analysis using a probabilistic approach.

The results showed that the indications of the existence of the geological structure as the product of Quaternary tectonic include sagpond, folded river terraces, lithology offset, springs, and fracture. The old sagpond sediment outcrops under Serpong Formation, located in the East Cisadane river current. Some of the fields expected to be younger sagpond. The old sagpond lies in Cisadane be indicative of the presence of faults that control Cisadane trending Northwest - Southeast. The mechanism of trans-tensional faults due to horizontal motion resulted in the formation of sagpond. This goes on repeatedly so that the river terraces seem formed repeatedly. Sagpond relatively young, in the form of chanell elongated parallel to the river which was formed on the river banks. This phenomenon is also a response to the presence of active faults horizontal. Zona shift in

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Cisadane river.

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