Multi-hazard detection in the southern part of Banyuwangi Regency using a geomorphological approach

ABSTRACT

Potential losses and damages caused by natural hazards in the future are essential information that the public and stakeholders need to understand. Banyuwangi Regency, located at the eastern most tip of Java Island, borders the Indian Sea on the south and the Bali Strait on the east. These areas are hazardous because they are at increased risks of severe weather with frequent occurrences of volcanic eruptions and tsunamis. The hazards and possibilities of the future can be detected through a geomorphological map. This map provides several details about the regional characteristics of Banyuwangi and information on the geomorphological configuration related to natural hazards and disaster-prone areas. Such information can be of use to the people, the government and stakeholders alike. Following the geomorphological approach in this study, we classified landforms using four aspects, such as (1) morphology; (2) morphogenesis; (3) morpho-arrangement and (4) morpho-chronology. The data sources used are geological maps, DEM Alos Palsar and Google Satellite imagery for interpretative analysis. In this study area, the landform mapping identified 15 different landforms. There are eight landforms with landslide hazards and three with tsunami hazards. The landform with a landslide hazard has a common morphological condition which is hilly morphology. The landform with tsunami hazards as the main triggering factor has a plain morphology and an elevation below 50 m above sea level. Those conditions allow the tsunami surge to run up to reach further areas until it reaches an undulating or hilly morphology