Geological Surface Conditions Mapping of 2021 Post-Earthquake of Mamuju-Majene using satellite images and field observations

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ABSTRACT

Mamuju Regency is an earthquake-prone area, located between several active faults such as the Makassar Strait thrust fault and the Mamuju-Majene thrust fault. Data from the National Disaster Management Agency (BNPB) states that 90 people died, 47 of whom came from Mamuju Regency. Meanwhile, 12 people were seriously injured, 200 people had moderate injuries and 425 people had light injuries. Damage occurred to a number of buildings, including Maleo Town Square, shops, supermarkets, schools, and the Mitra Manakarra Hospital which collapsed, as well as the front of the West Sulawesi Governor's office. The traffic control office at Tampa Padang Airport and the Mamuju Detention Center were also reported to have suffered damage. Many efforts had been taken to normalize the situations and conditions after the incidence but yet still little has been researched about the geological condition. This research aims to map changes in surface geological conditions after the 6.2 magnitude earthquake that rocked Mamuju Regency, West Sulawesi in 2021. The methods used include satellite image analysis, field surveys, and taking soil and rock samples. The mapping results show significant shifts in geological structures including ground cracks, landslides and changes in river flow. This study also identifies new zones that are potentially prone to disasters. These findings are important for future disaster mitigation plans and infrastructure development. This research provides new insight into the impact of earthquakes on the morphology and geological structure in the Tapalang area, Mamuju..

Keywords: Surface Geology, Mamuju Earthquake, geological structure, Satellite Images