

INTISARI

ANALISIS POTENSI TANAH LONGSOR MENGGUNAKAN DATA MIKROTREMOR DI KECAMATAN TIRTOMOYO, KABUPATEN WONOGIRI, JAWA TENGAH

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Kecamatan Tirtomoyo, Kabupaten Wonogiri, Jawa Tengah merupakan salah satu wilayah dengan tingkat potensi tanah longsor tinggi. Hal tersebut dipengaruhi oleh kemiringan lereng, curah hujan, dan kondisi geologi daerah. Penelitian ini bertujuan untuk menganalisis potensi tanah longsor dengan mebobotkan informasi kelerengan, curah hujan tahunan, dan tata guna lahan serta hasil pengolahan data mikrotremor berupa nilai *Ground Shear Strain* (GSS), kecepatan gelombang geser pada kedalaman 30 m (V_{s30}), dan ketebalan lapisan sedimen (H) pada daerah penelitian menggunakan metode *Simple Additive Weighting* (SAW). Sebanyak 33 titik data mikrotremor terukur pada daerah penelitian. Data mikrotremor diolah menggunakan *software* Geopsy dengan metode *Horizontal to Vertical Spectral Ratio* (HVSr) dan *software* OpenHVSr berbasis Matlab dengan metode inversi HVSr. Hasil penelitian menunjukkan nilai *Ground Shear Strain* antara $1,8 \times 10^{-5} - 1,5 \times 10^{-3}$, nilai V_{s30} antara 228,86 – 627,77 m/s, nilai ketebalan lapisan sedimen antara 7,97 – 26,85 m. Analisis hasil pembobotan menunjukkan bahwa pada daerah penelitian terdapat daerah dengan potensi tanah longsor sedang seluas 2,9 km², potensi tanah longsor rendah seluas 2,2 km², dan potensi tanah longsor tinggi seluas 0,9 km². Daerah dengan potensi tanah longsor tinggi tersebut mengisi area – area pada bagian tengah daerah penelitian mulai dari barat daya hingga tenggara.

Kata Kunci : Mikrotremor, HVSr, *Simple Additive Weighting*, Tanah Longsor

ABSTRACT

LANDSLIDE POTENTIAL ANALYSIS USING MICROTREMOR DATA IN TIRTOMOYO DISTRICT, WONOGIRI REGENCY, CENTRAL JAVA

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Tirtomoyo District, Wonogiri Regency, Central Java is one of the areas with a high level of potential for landslides. This is influenced by the slope, rainfall, and geological conditions of the area. This study aims to analyze the potential for landslides by weighting slope information, annual rainfall, and land use as well as the results of microtremor data processing in the form of Ground Shear Strain (GSS) values, shear wave velocity at a depth of 30 m (V_s30), and sediment layer thickness (H) in the study area using the Simple Additive Weighting (SAW) method. A total of 33 microtremor data points were measured in the study area. Microtremor data was processed using Geopsy software with the Horizontal Vertical Spectral Ratio (HVSr) method and Matlab-based OpenHVSr software with the HVSr inversion method. The results showed that the Ground Shear Strain value was between $1,8 \times 10^{-5} - 1,5 \times 10^{-3}$, the V_s30 value was between 228.86 – 627.77 m/s, the thickness value sediment layer between 7.97 – 26.85 m. The analysis of the weighting results shows that in the study area there are areas with moderate landslide potential of 2.9 km², low landslide potential of 2.2 km², and high landslide potential of 0.9 km². The areas with high landslide potential fill the areas in the center of the study area from the southwest to the southeast.

Keyword : Microtremor, HVSr, Simple Additive Weighting, Landslide