

MEMBANGUN METODE IDENTIFIKASI LONGSOR BERBASIS FOTO UDARA FORMAT KECIL DI DAS BOMPON, MAGELANG, JAWA TENGAH

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INTISARI

Tujuan penelitian ini adalah (1) membangun metode identifikasi longsor berbasis foto udara format kecil; (2) melakukan pemetaan kerawanan longsor berbasis hasil interpretasi foto udara format kecil dan berbasis analisis DEM TerraSAR.

Metode penelitian yang digunakan yaitu (1) identifikasi longsor berdasarkan interpretasi foto udara format kecil secara visual *On-screen* 2D dengan teknik langkah demi langkah (*stepwise method*); (2) penyusunan peta kerawanan longsor menggunakan metode *Frequency Ratio* (FR) parameter pemicu longsor dengan menggunakan piranti lunak *Integrated Land Water Information System* (ILWIS). Longsor hasil interpretasi foto udara format kecil dilakukan validasi berdasarkan pengecekan lapangan. Peta kerawanan longsor dihasilkan berdasarkan longsor hasil interpretasi foto udara format kecil yang sudah di validasi dengan pengecekan lapangan.

Hasil penelitian menunjukkan bahwa foto udara format kecil berdasarkan kenampakan objek dapat digunakan untuk identifikasi longsor. Teknik identifikasi longsor menggunakan teknik langkah demi langkah (*stepwise method*), yaitu proses identifikasi longsor dilakukan dari umum hingga khusus untuk setiap bagian longsor. Identifikasi longsor secara umum yaitu mengidentifikasi area yang terpengaruh longsor. Identifikasi secara khusus yaitu mengidentifikasi bagian-bagian longsor yang terdapat pada area terpengaruh longsor. Identifikasi longsor menggunakan teknik langkah demi langkah dilakukan secara sistematis dan tidak dapat dibolak balik berdasarkan kenampakan objek pada foto udara format kecil. Kenampakan objek foto udara format kecil yang dapat digunakan untuk identifikasi longsor, yaitu: *i*) tutupan lahan, *ii*) bidang gawir longsor, *iii*) bentuk longsor, *iv*) erosi parit, *v*) asosiasi jalan dan *vi*) asosiasi sungai. Unsur interpretasi yang digunakan untuk identifikasi longsor, yaitu: rona/warna, bentuk, asosiasi, pola, bayangan, dan tinggi. Hasil uji akurasi inventori longsor berdasarkan interpretasi foto udara format kecil dengan inventori longsor survei lapangan, yaitu 90%. Kesalahan 10% dalam analisis uji akurasi berupa kesalahan identifikasi longsor pada foto udara format kecil, namun tidak sesuai dengan kondisi di lapangan.

Persentase kelas kerawanan tinggi (27.43%), kelas kerawanan sedang (52.13%) dan kelas kerawanan rendah (20.44%). Nilai uji validitas peta kerawanan longsor menggunakan *success rate*, yaitu 74%

Kata Kunci: Kunci Interpretasi, Longsor, Kerawanan, Foto Udara Format Kecil.

DEVELOPING METHOD FOR LANDSLIDE IDENTIFICATION BASED ON SMALL FORMAT AERIAL PHOTOGRAPH IN THE BOMPON CATCHMENT, MAGELANG, CENTRAL JAVA

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Abstract

The purpose of this study are (1) developing method landslide identification based on small format aerial photograph in the Bompon Catchment; (2) conduct landslide susceptibility mapping based on result of small format aerial photograph interpretation and based on Geomorfometri analysis of TerraSAR DEM.

The method which used are (1) landslide identification based on small format aerial photograph interpretation using visual interpretation on screen 2D and step by step technique (stepwise method); (2) constructing of landslide susceptibility map using Frequency Ratio (FR) parameter triggering landslide based on on result of small format aerial photograph interpretation and based on Geomorfometri analysis of TerraSAR DEM. The software which use to Frequency Ratio (FR) analysis is *Integrated Land Water Information System (ILWIS)*.

Landslide result based on small format aerial photograph validated by field survey. Landslide susceptibility map produced by landslide result based on small format aerial photograph which has been validated by field survey.

The result shows that small format aerial photograph can be used to landslide identification based on object appearance in the small format aerial photograph. The technique which used to landslide identification is using step by step method (stepwise method). It is means that to identification landslide from general identification to specific identification in each part of landslide. Landslide general identification is means identify area which affected of landslide. Landslide specific identification is means identify specific part of landslide in the area which affected landslide. Identification landslide using stepwise method cannot be inverted each other based on object appearance in small format aerial photograph. The object appearances which used to landslide identification are *i*) landover, *ii*) escarpment, *iii*) form of landslide, *iv*) gully erosion, *v*) road association and *vi*) river association. The element of interpretation which used are hue / color, shape, association, patterns, shadows, and height. Landslide inventory accuracy based on small format aerial photograph interpretation and landslide inventory based on field survey is 90%. There error accuracy is around 10%. It caused by misidentification between landslide inventory based on small format aerial photograph and field survey. The landslide susceptibility is divided into three classes. The high of landslide susceptibility classes mostly in the lower reaches of Bompon Catchment. The percentage of high landslide susceptibility is around (27.43%), the percentage of moderate landslide susceptibility classes is around (52.13%) and the percentage of low landslide susceptibility landslide is around (20.44%). The value of landslide susceptibility validity using success rate is 74%.

Keyword: Key Interpretation, landslide, Susceptibility, Small Format Aerial Photograph.