

INTISARI

Kabupaten Purworejo belum memiliki peta bencana banjir dengan data terkini tutupan lahan dan masih menggunakan peta BNPB tahun 2022. Kabupaten Purworejo merupakan wilayah yang sering terjadi bencana banjir. Menurut data Badan Penanggulangan Bencana Daerah Kabupaten Purworejo banjir besar pernah melanda Kabupaten Purworejo pada 29 Maret 2025 karena intensitas hujan yang berlebih, menyebabkan rumah dan jalan terendam air. Penelitian ini bertujuan untuk memetakan ancaman fisik bencana banjir di Kabupaten Purworejo. Pengolahan Pemetaan Ancaman Fisik Bencana Banjir dapat dihasilkan dengan memanfaatkan teknologi dari penginderaan jauh dan pengolahan data spasial pada *platform Google Earth Engine* (GEE).

Analisis faktor tutupan lahan menggunakan *Google Earth Engine*. Pemetaan ancaman fisik bencana banjir dilakukan dengan mengintegrasikan berbagai faktor seperti curah hujan, kelerengan, tutupan lahan, infiltrasi tanah, dan genangan banjir di Kabupaten Purworejo. Data tutupan lahan diklasifikasi dari citra Sentinel-2A, kelerengan dan genangan banjir dari Digital Elevation Model Nasional (DEMNAS), curah hujan dari data satelit CHIRPS, serta data infiltrasi tanah dari Kementerian Energi dan Sumber Daya Mineral. Uji akurasi hasil klasifikasi *Random Forest* menggunakan matrik confusion dengan ketelitian total 95,43%. Pemodelan genangan banjir telah dilakukan uji *matric confusion* dengan data Badan Penanggulangan Bencana Daerah Kabupaten Purworejo. Peta ancaman fisik bencana banjir di Kabupaten Purworejo dilakukan uji *matric confusion* dengan membandingkan kejadian banjir yang tercatat oleh Badan Penanggulangan Bencana Banjir.

Hasil penelitian menunjukkan bahwa Kabupaten Purworejo memiliki empat kategori ancaman banjir, yaitu ancaman tinggi seluas 5.746,74 Ha, ancaman sedang seluas 803,712 Ha, ancaman rendah seluas 11.694,01 Ha, dan sisanya tidak memiliki ancaman banjir. Luas wilayah faktor ancaman fisik bencana banjir, yaitu ada faktor kelerengan mencakup 75.279,94 Ha, ada faktor genangan banjir 57.655,93 Ha, dan ada faktor infiltrasi tanah 48.460,61 Ha. Peta ancaman fisik bencana banjir di Kabupaten Purworejo menunjukkan bahwa mayoritas memiliki potensi ancaman banjir.

Kata Kunci: Banjir, *Random Forest*, *Google Earth Engine*, Curah Hujan, Tutupan Lahan, Kelerengan, Infiltrasi Tanah

ABSTRACT

Purworejo Regency does not yet have a flood disaster map with updated data land cover and is still using the 2022 map from the BNPB. Purworejo Regency is an area that frequently experiences flooding disasters. According to data from the Purworejo Regency Regional Disaster Management Agency, a major flood hit Purworejo Regency on March 29, 2025 due to excessive rainfall intensity, causing houses and roads to be submerged in water. This study aims to map the threat of flooding in Purworejo Regency. This study was conducted to map flood hazard threats in Purworejo Regency as part of disaster mitigation efforts. Flood Hazard Mapping can be carried out by utilizing remote sensing technology and spatial data processing on the Google Earth Engine (GEE) platform.

The threat analysis of land cover uses Google Earth Engine. Mapping of physical threats from flood disaster was carried out by integrating various factors such as rainfall, slope, land cover, soil infiltration, and flood inundation in Purworejo Regency. Land cover data was classified from Sentinel-2A imagery, slope and flood inundation from the National Digital Elevation Model (DEMNAS), rainfall from CHIRPS satellite data, and soil infiltration data from the Ministry of Energy and Mineral Resources. The accuracy test of the Random Forest classification results used a confusion matrix with a total accuracy of 95,43%. Flood inundation modeling has been tested for accuracy with data from the Purworejo Regency Regional Disaster Management Agency. The physical threat map of flood disasters in Purworejo Regency was tested for accuracy by comparing flood events recorded by the Flood Disaster Management Agency.

The results showed that Purworejo Regency has four categories of flood threats: high threat covering an area of 5.746,74 Ha, medium threat covering an area of 803,712 Ha, low threat covering an area of 11.694,01 Ha, and the rest have no flood threat. The area of physical flood hazard factors includes slope covering 75,279.94 ha, flood inundation covering 57,655.93 ha, and soil infiltration covering 48,460.61 ha. Mapping of physical threats from flood disaster in Purworejo Regency indicates that the majority of the region is potentially at risk of flooding.

Keywords : *Flood, Random Forest, Google Earth Engine, Rainfall, Land Cover, Slope, Soil Infiltration*