

Pemodelan zona inundasi paleotsunami menggunakan metode finite difference di kawasan pesisir selatan Malingping, Kabupaten Lebak, Provinsi Banten = Paleotsunami inundation zone modeling using finite difference method in the south coastal area of Malingping, Lebak Regency, Banten Province

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Abstrak

Deposit paleotsunami telah ditemukan di berbagai lokasi di Indonesia, diantaranya ialah di kawasan Pacitan, Kulon Progo, Cilacap, Pangandaran, serta kawasan Lebak, Banten. Penelitian kali ini dilakukan dengan tujuan untuk mendapatkan model yang ideal dalam penentuan luasan zona inundasi paleotsunami di sepanjang kawasan pesisir selatan Malingping, Kabupaten Lebak, Provinsi Banten dengan metode pemodelan numerik finite difference melalui perangkat lunak ComMIT yang berbasis sistem MOST (Method Of Splitting Tsunamis). Kegiatan lapangan dilakukan guna mengidentifikasi keberadaan endapan paleotsunami pada kawasan lembahan atau swale. Beberapa skenario seperti peristiwa Pangandaran 2006, Aceh 2004, Tohoku 2011, serta gempa yang bersumber pada kawasan segmen megathrust Selat Sunda, dan megathrust sepanjang selatan Jawa digunakan dalam proses pemodelan untuk melihat karakteristik paleotsunami yang paling mungkin mengendapkan deposit di kawasan penelitian. Pemodelan dilakukan dengan berbagai macam skema yaitu dengan memanfaatkan unit source dengan bentuk segmen-segmen pada zona subduksi pada database ComMIT, serta menggunakan parameter sumber gempa yang dimasukkan secara manual untuk selanjutnya dilakukan pemodelan pada ComMIT. Hasil pemodelan menunjukkan skenario tsunami terburuk yang mungkin pernah terjadi di kawasan penelitian ialah peristiwa tsunami dengan nilai magnitudo mencapai 9.1Mw, dengan jangkauan inundasi maksimum sejauh 5,2 kilometer, serta amplitudo gelombang mencapai 32 meter, yang diperkirakan menjadi peristiwa tsunami yang mengendapkan deposit paleotsunami yang ditemukan di daerah penelitian.

.....Paleotsunami deposits have been found in various locations in Indonesia, such as in the Pacitan area, Kulon Progo, Cilacap, Pangandaran, and Lebak, Banten. This research was conducted with the aim of obtaining an ideal model in determining the area of the paleotsunami inundation zone along the southern coastal area of Malingping, Lebak Regency, Banten Province with the finite difference numerical modeling method through ComMIT software based on the MOST (Method Of Splitting Tsunamis) system. Field activities were carried out to identify the presence of paleotsunami deposits in the swale area. Several scenarios such as the Pangandaran 2006, Aceh 2004, Tohoku 2011, as well as earthquakes originating in the Sunda Strait megathrust segment area, and megathrust along the south of Java were used in the modeling process to see the characteristics of paleotsunami that were most likely to produced the tsunami deposits in the study area. Modeling is carried out with various schemes, such as using the ComMIT database unit source in the form of segments in the subduction zone, as well as using earthquake source parameters that are entered manually for further modeling on ComMIT. The modeling results show that the worst tsunami scenario that may have ever occurred in the study area is the tsunami event with a magnitude value of 9.1Mw, with a maximum inundation range of 5.2 kilometers, and a wave amplitude of up to 32 meters, which is estimated to be a tsunami event that deposits paleotsunami deposits found in the study area.