INTISARI

PEMETAAN DAERAH RAWAN REKAHAN TANAH BERDASARKAN ANALISIS MIKROTREMOR DI KOTAMADYA DENPASAR DAN KABUPATEN BADUNG, BALI

Oleh
Urip Nurwijayanto Prabowo
13/356491/PPA/04435

Kotamadya Denpasar dan Kabupaten Badung merupakan daerah dengan pengambilan air tanah yang besar dan memiliki tingkat intensitas gempabumi yang tinggi. Hal ini menyebabkan daerah ini memiliki potensi terjadinya penurunan tanah yang dapat memicu terjadinya rekahan tanah jika penurunan tanah berlangsung di daerah yang memiliki perbedaan ketinggian *bedrock*. Penelitian ini telah dilakukan untuk memetakan daerah rawan rekahan tanah akibat pengambilan air tanah berlebihan dan gempabumi berdasarkan pengukuran mikrotremor *single station* yang dianalisis menggunakan metode HVSR dan pengukuran mikrotremor *array* yang dianalisis menggunakan metode *spatial autocorrelation* (SPAC). Hasil analisis metode HVSR dan nilai *peak ground acceleration* (PGA) dianalisis untuk mendapatkan nilai indeks kerentanan seismik dan nilai *ground shear strain*.

Hasil penelitian menunjukkan bahwa nilai faktor kualitas sebanding dengan nilai amplifikasi dan frekuensi dominan. Pada peta yang dihasilkan, diketahui nilai indeks kerentanan seismik berkisar antara 1,00-7,39, nilai *ground shear strain* berkisar antara $27{,}38 \times 10^{-6}$-$1753{,}90 \times 10^{-6}$ dan lapisan *bedrock* membentuk struktur cekungan di sebelah selatan daerah penelitian. Daerah yang rawan mengalami rekahan tanah akibat pengambilan air tanah yang besar berdasarkan peta ketinggian *bedrock* berada di Kec. Denpasar Barat. Daerah yang rawan mengalami rekahan tanah akibat gempabumi berdasarkan peta ketinggian *bedrock* dan nilai *ground shear strain* yang dikombinasikan menggunakan metode *simple additive weight* (SAW), berada di Kec. Denpasar Barat dan Kec. Denpasar Selatan.

Kata kunci: Rekahan, Mikrotremor, HVSR, SPAC, *Ground Shear Strain.*

ABSTRACT

MAPPING THE FISSURE VULNERABLE ZONES BASED ON MICROTREMOR ANALYSIS IN DENPASAR MANUCIPALITY AND BADUNG REGENCY, BALI

By
Urip Nurwijayanto Prabowo
13/356491/PPA/04435

Denpasar Manucipality and Badung Regency as the areas with excessive ground water exploitation and high earthquake intensity. This condition will cause these area are vulnerable with land subsidence which is triggering ground fissures when land subsidence occours in the area which have different bedrock height. This research was done to mapping the fissure vunerable area due to escessive ground water exploitation and earthquake using single station mictrotremor measurements which was analyzed using HVSR method and array microtremor measurements which was analyzed using spatial autocorrelation (SPAC) *method. The result of* HVSR *method and peak ground acceleration* (PGA) *value were analyzed to obtained ground shear strain value.*

The result of this research concluded that quality factor has linier relations with amplification and dominant frequency values. Based on the maps was made in this research, the area has seismic vunerability index value about 1,00-7,39*, ground shear strain value about* $27{,}38\text{x}10^{-6}$-$1753{,}90\text{x}10^{-6}$ *and bedrock formed basin structure at south of the area. The fissure vulnerable area due to the excessive ground water exploitation is west Denpasar subdistrict. In addition, based on the basement map and ground shear strain value which were combined using simple additive weight* (SAW) *method, there are two fissure vulnerable areas due to eathquake, i.e west and south Denpasar subdistrict.*

Keywords: *Fissures, Microtremor,* HVSR, SPAC, *Ground Shear Strain.*