

## Coastal physical vulnerability of Surabaya and its surrounding area to sea level rise = Kerentanan fisik pesisir Surabaya dan sekitarnya terhadap kenaikan muka air laut

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### Abstrak

Penelitian kerentanan fisik pesisir Surabaya dan sekitarnya terhadap kenaikan muka air laut difokuskan pada perhitungan indeks kerentanan fisik dengan pendekatan metode coastal vulnerability index (CVI) yang distandarisasi dengan multi criteria analysis (MCA) sesuai daerah kajian. Nilai setiap variabel kerentanan fisik diperoleh dari data satelit penginderaan jauh serta hasil penelitian dan kajian yang sudah dilakukan berupa hasil pemodelan dan peta-peta tematik, kemudian diintegrasikan dalam sistem informasi geografis (SIG). Berdasarkan hasil analisis, daerah pesisir Kabupaten Gresik, Kota Surabaya dan Kabupaten Sidoarjo memiliki tingkat kerentanan fisik terhadap kenaikan muka air laut pada kategori sangat rendah hingga sangat tinggi. Wilayah dengan tingkat kerentanan tinggi secara fisik merupakan wilayah dataran rendah dengan kondisi pantai langsung menghadap Laut Jawa. Di seluruh daerah penelitian diketahui berada pada kategori kerentanan tinggi hingga sangat tinggi sebesar 28,81% yang sebagian besar terdapat di bagian utara Selat Madura (Kabupaten Gresik). Sementara itu, Kota Surabaya dan Kabupaten Sidoarjo yang kondisi pantainya relatif lebih terlindung memiliki tingkat kerentanan sedang, rendah dan sangat rendah. Kondisi fisik yang paling berkontribusi terhadap tingginya tingkat kerentanan pesisir di daerah kajian adalah elevasi pantai.

The study for coastal vulnerability to sea level rise was carried out in Surabaya and its surrounding area, it has focused on calculations of the physical vulnerability index were used coastal vulnerability index (CVI) methods. It was standardized by the multi criteria analysis (MCA) approach according to the study area. The score of each physical variable derived from remote sensing satellite data and the results of studies that have been done, such as modeling results and thematic maps, and then integrated into geographic information systems (GIS). Result of this study shows that the coastal areas of Gresik, Surabaya, and Sidoarjo in the very low to very high vulnerability level. Physically, the low land areas with open and slightly open coastal have a high vulnerability category. The high level vulnerability was found located in the northern of Madura Strait (Gresik Regency) that overlooks to the Java Sea is about 28.81% from the entire of study areas. Meanwhile, the moderate, low and very low levels of vulnerability were located on Surabaya and Sidoarjo Regency that have more protected coastal area, relatively. According to the physical condition, the coastal elevation is the most variable that contributes to the high of vulnerability index in the coastal of Surabaya City and Sidoarjo Regency.