

Wave force of the 1883 Krakatau tsunamion the outer sea dike in Jakarta bay

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Abstrak

The increased volcanic activity of Mount Anak Krakatau has raised the awareness of the potential tsunami impact for the construction of National Capital Integrated Coastal Development (NCICD) Project. This research is aimed to evaluate the tsunami impact on the outer sea dike of NCICD. The 1883 Krakatau tsunami was used as reference to evaluate the coastal infrastructure. Time series data from the 1883 Krakatau tsunami is extracted as an input to calculate the wave force. There are three different methods used such as Rule of Thumb (wave force is twice that of hydrostatic force), Linear Theory, Sainflou method. The results show that the tsunami will hit the outer sea dike with at least force about 70 kN. The outer sea dike OSD-1A is the least impacted sea dike while OSD-3A is the most impacted. For OSD-1A, Rule of Thumb and Linear Theory estimate 303.30 kN of wave force while Sainflou method predicts only 73.45 kN. On the other hand, OSD-3A endured wave force of 131.91 kN (Sainflou method) or 531.91 kN (Rule of Thumb and Linear Theory). Sainflou method is for efficient design while the other methods have the benefit of safety factor.