Abstract

Information on the characteristics of ocean waves is very necessary for sea transportation and the economy around the waters of the Jakarta bay. In addition, the problem of regular flooding and land subsidance that hit the capital city of Jakarta must be beware because it can cause the city of Jakarta to sink in the next few years. The DKI Provincial Government cooperates with the National Capital Integrated Coastal Development (NCICD) to create an offshore embankment master plan in the form of an eagle as an iconic country of Indonesia. The existence of offshore dikes is expected to overcome the problems that exist in the capital city of Jakarta. But it needs to be simulated to find out the impact of the sea dikes being built in the waters of the bay of Jakarta. In this study a numerical Simulating Waves Nearshore (SWAN) model was used to obtain ocean wave simulations that were influenced by monsoon conditions in the waters of the Jakarta bay. The scenario that is done is simulated the average wave phase with the numerical SWAN model divided into 3 domains namely first domain is global, second domain is Indonesian sea and third domain is Jakarta bay. The largest domain is used as the initial condition and boundary conditions for equations in the next domain. The simulation results at the Jakarta bay around Tanjung Priok harbor without the presence of giant sea wall showed a significant wave height (Hs) of 1.5 m while the design of giant sea wall was 0.5 m. Wave period (Tp) without the presence of giant sea wall of 6 s while with the presence of giant sea wall of 3 s. The data used in this simulation comes from General Bathymetric Chart of the Oceans (GEBCO).

Keywords: Wave Characteristics, Wave Simulation, Jakarta Bay, Offshore Sea Wall, Phase Average, SWAN.