

CORRELATION ANALYSIS BETWEEN SEAWATER INTRUSION AND MANGROVE GREENBELT

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Abstract	<p>Seawater intrusion is an entry process of seawater to land. Many factors have caused seawater intrusion from freshwater exploitation until mangrove degradation. Mangrove ecosystem is a type of forest ecosystem which has an ability to reduce seawater intrusion. This paper analyzes the estimation and prediction of seawater intrusion and correlation between widths of mangrove with seawater intrusion. The relation analysis between the width of mangrove greenbelt with seawater intrusion used an equation model to predict seawater intrusion. The research method used sampling technique, system analysis with powersim software, correlation analysis and mathematical method with trend line analysis. Results show that (1) the mangrove density in the coastal area is approximately 50 - 109 trees/ha. (2) Simulation results showed seawater intrusion rate was about 0.20 km year⁻¹ (with mangrove as a component system), but reached 0.3 - 0.4 km/year (without mangrove as a component system). (3) The simulation result also showed that freshwater salinity was estimated to increase from 1.92 ppt to 4.86 ppt. (4) The relation model between seawater intrusion and mangrove greenbelt showed that correlation coefficient was 0.97 with the equation seawater intrusion (m) = 2264.9 * exp (-0.009 * the width of mangrove greenbelt (m)), the correlation of mangrove width with seawater intrusion was 0.97. (5) <i>Avicennia marina</i>, <i>Avicennia alba</i>, <i>Rhizophora stylosa</i>, <i>Sonneratia alba</i> and <i>Sonneratia caseolaris</i> were the mangrove species that had the best ability to reduce seawater intrusion.</p>
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