



## **Coastal vulnerability assessment due to disaster-induced external forces in Korea**

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Coastal systems are frequently threatened by external forces such as typhoons, storm surges, and high waves. Recently, the intensity and frequency of the external forces seem to be increasing with global warming and then the damages are increasing gradually. For the coastal assessment of impact by climate-related damages, the Korea Hydrographic and Oceanographic Agency (KHOA) analyzed Sea Level Rises (SLR) through tidal observations data (more than 30 years) on coastal waters around the Korean peninsula, and conducted wave hind-casting modelling and storm surge modelling to assess the coastal disaster vulnerability.

The basic framework of vulnerability assessment is based on the IPCC (2001). The Coastal Disaster Impact Index (CDII) consists of the Coastal Exposure Index (CEI) and the Coastal Sensitivity Index (CSI). The coastal exposure index includes six indicators such as typhoon, storm surge, wave, tide, SLR, and costal erosion. The coastal sensitivity index consists of three indicators including Human, Physical and Geographical sensitivity. Indicators of each index were analyzed, using observation data by KHOA, numerical modelling results, spatial and statistical data by Korean government. Additionally, geocoding and spatial analysis were performed to quantify the grade of 1 (Very low) ~ 5 (Very high).

According to the results of CDII, Jeju city was rated as 5th grade highly, and Incheon-Gyeonggi, Chungnam, Southern Cheonnam, Busan–Gyeongnam province, and Ulleung were rated as 4th grade.

These results contribute to the prevention of coastal disasters by providing the quantitative data necessary for the National Climate Change Adaptation Plan and the coastal management and disaster mitigation policies of local governments.