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Sea-level can rise by expanding seawater resulting from the ocean warm and by melting ice over land due to climate change. It is widely known that sea-level rise contributes to the enhancement of seawater intrusion to coastal groundwater systems. We investigated the impacts of sea-level rise on coastal groundwater systems and provided recommendations to control seawater wedge through the SUTRA model. Freshwater recharge rates were estimated the precipitation projection data provided by the Korea Meteorological Administration. The observed electrical conductivity values at the Byeonsan1 and Byeonsan2 monitoring wells for seawater intrusion were used to estimate the transport parameters for the study sites. The changes in salinity at the monitoring wells for total 15 scenarios including the baseline period (2005-2015) were investigated with the combinations of 4 sea-level rise projections (0.12m sea-level rise by 2050 with linear regression, 0.32m sea-level rise by 2050 with polynomial regression of order 2, 0.57m sea-level rise by 2050 under Representative Concentration Pathways (RCP)4.5, 0.72m sea-level rise by 2010 under RCP8.5) and 4 freshwater recharge rates (0.00627kg s-1 in 2050s under RCP4.5, 0.0058kg s-1 in 2050s under RCP8.5, 0.00549kg s-1 in 2090s under RCP4.5, 0.00694kg s-1 in 2090s RCP8.5). While 0.72 sea-level rise contributed to the largest increase in salinity at monitoring wells without consideration of the changes in freshwater recharge rates, 0.57m sea-level rise with a freshwater recharge rate of 0.0058kg s-1 contributed to the larges salinity increase. The effect of the Saline Groundwater Extraction method on seawater intrusion was also investigated through the SUTRA model. The results showed that when both top and bottom extraction pumps were run, the seawater wedge could be effectively controlled. It is concluded that this study can be useful to secure water resources by efficaciously controlling the seawater wedge and subsequently lead to the reduction of saline damages to crops.