



Impact of physical environmental variations of coastal wetland over the West Sea on PM10 concentration in the Seoul metropolitan area, Korea

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In this study, the impact of physical environmental variations of coastal wetland on PM10 concentration was analysed using the WRF-Chem model and observation data (e.g., tidal and air quality data) during summer 2016. The coastal wetland over the West Sea, which indicate large tidal range (up to 9 m) and vast tidal flats (about 875.5 km²), changes land cover periodically (approximately 6-7 hours) from high tide (i.e. water bodies) to low tide (i.e., barren or sparsely vegetated). To analyse the correlation between tidal change and PM10 concentration, the data of 5 tidal stations and 13 air quality monitoring sites adjacent to coastal wetland were used. In the observation data analysis, PM10 concentration increased somewhat at two stations (e.g., Incheon and Incheon Songdo) during high tide. The WRF-Chem modelling was performed by two sets of experiments according to land cover condition of coastal wetland: (1) the water bodies representing high tide (i.e. EXP-HIGH case) and (2) the barren or sparsely vegetated representing low tide (i.e. EXP-LOW case). The PM10 concentration of EXP-HIGH case was slightly higher (up to 10 ug m⁻³) adjacent to the coastline than that of EXP-LOW case at specific time (i.e. the alternation of flood tide and ebb tide).

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