



Effects of tidal flat and urbanization on surface meteorological fields in a major coastal city of Korea

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The study domain is the Seoul metropolitan area on the west coast of Korea, which is a unique coastal city with a well-developed vast tidal flat and high-densities multi-stories buildings including a fairly complex coastline and a number of islands. In this study, the effects of tidal flat and urbanization on surface meteorological fields were evaluated using the Weather Research and Forecasting (WRF) meteorological model. To analyze and compare tidal flat and urban land surface, the land cover (LC) was extracted from the Environmental Geographic Information System (EGIS-LC). The fractions of tidal flat and urban land cover occupy about 7 % and 19 % of total surface area (km²), respectively. These analyses were performed during two specific time periods, i.e. day and night. The large differences in temperature and wind fields were shown distinctly by the effects of urbanization and tidal flat. However, the magnitude of the differences was distinguished between the two land surfaces and between the time periods. The decrease in the surface wind speed by urbanization effect was somewhat stronger during the day than at night. The effect of tidal flat on surface temperature fields was more apparent along the coastline and adjacent sea during the day.

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