

EFFECT OF COASTAL RECLAMATION ON METRO MANILA WEATHER: A NUMERICAL EXPERIMENT

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ABSTRACT

Due to the increasing population and rapid urbanization in Metro Manila, there is a high demand for land resources, which has caused policymakers to consider land reclamation. Land reclamation is the process of creating new usable land from bodies of water such as seas and lakes. Reclamation along the Manila Bay is projected to reach around 100 square kilometers. While land reclamation has been shown to influence local weather and climate in other regions, limited research in Metro Manila has examined its meteorological impacts. This study aims to (1) characterize coastal Metro Manila weather and (2) to analyze the effect of land reclamation on different meteorological variables like temperature and local wind circulations. We will be conducting high-resolution numerical simulations using the Weather Research and Forecasting (WRF) model. The simulation consists of two nested domains with resolutions 6 km and 1 km, with the finer domain focused on the Metro Manila Bay. Dates with weak synoptic conditions will be used as case studies for this paper, to ensure that local wind circulation will dominate. We will investigate different land reclamation extents i.e., present, completed, and doubled. The present case, which will be treated as the control setup, is validated using observational data from surface stations. Initial validation results show good model accuracy. The results of this study may help deepen our understanding on the weather changes that land reclamation introduces to this region.