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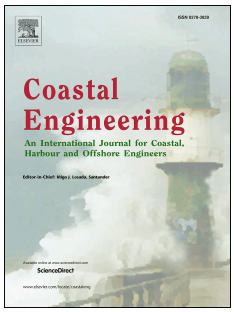


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# Modeling Wave Effects on Storm Surge and Coastal Inundation

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## Abstract

We present a parametric study of surface wave effects on storm surge and coastal inundation. Hurricane wind forcing terms, atmosphere pressure gradient terms, and radiation open boundary conditions are implemented into an existing quasi-3D nearshore model, NearCoM-TVD, which uses a shock-capturing TVD scheme and can better simulate the wetting-drying process during inundation than a conventional finite difference model. Systematic numerical experiments are carried out in an idealized continental shelf-beach-land system to identify the role of waves in modeling storm surge and inundation under different storm characteristics. Four storm parameters, including storm intensity, storm size, translation speed and incident angle are investigated. Modeling results reveal that the presence of waves can increase the maximum storm surge heights significantly through wave setup, and the con-