

Reconstruct the 1970 Bhola Cyclone and Analysis the Effects of Cyclone Track and Tide to the Flooding Area

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Bhola Cyclone caused nearly half a million casualties in the Bay of Bengal in 1970. This research aims to reconstruct the storm surge event and understand the effects of tides and cyclone track on the flooding area. In this study, the numerical simulations were performed with COMCOT storm surge model. The nonlinear shallow-water wave equation was solved on spherical coordinates, and physical terms such as pressure gradient force, wind shear force, bed friction force and Coriolis force were added to the momentum equation. To reconstruct the storm surge event, the tide component was considered by importing tidal boundary forcing from TPXO Global Tidal Solutions. The scenarios take a variety of cyclone track, cyclone moving speed, and cyclone intensity. Sensitivity tests are further introduced to see the storm coincides with high tide.

The results can help to understand the influence of tides and other cyclone parameters on flooding, also provide a practical contribution to the quick alert and disaster control of the storm surge in the Bay of Bengal in the future.

Keywords: Cyclones in the Bay of Bengal, COMCOT Model, Storm Surge, Tide and Path, Overflow

