STORM SURGES IN THE BAY OF BENGAL

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ABSTRACT

Using shallow water equations the
paper describes a non-linear numerical
model to simulate a wind-generated surge
produced by a tropical cyclone, which hit
the coast of Bangladesh on November 12-13,
1970. The model used a quadratic law for
sea bed friction. The non-linear con-
vective terms were computed by successive
approximation. Two different values of
the drag coefficient for sea bed friction
were used for the storm surge. It was
observed that super-position of the tide
on the surge led to an over-estimate of
the actual sea level elevation. The con-
tribution of non-linear convective terms
was found to be small, but a quadratic
law of sea bed friction was an improve-
ment over the linear law, because the
latter tended to damp the surge in shallow
waters. Computations revealed that the
inclusion of tide-surge interaction
advanced the time of arrival of the peak
surge. A better agreement with actual
observations of the peak surge was obtain-
ed by the inclusion of tide-surge inter-
actions. Non-linear interactions between
the tide and the wind generated surge are
also discussed in terms of different
scales.

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