



## Modeling of Tidal Inlet of Pulicat Lagoon

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**Abstract:** Tidal inlet is the portion of water body between the sea and a river that is subjected to ingress of tide during high tide and flushing during low tide. These inlets remain cut off from the ocean whenever sand bars form across their entrances. Such seasonal closure of inlet causes many issues to the mankind and ecosystem. Keeping the inlet permanently open, ensuring year around navigability and improving the flushing of the estuaries/ lagoon continue to evince the hydrodynamic flow model of Kondurupalem lagoonal inlet on South East coast of India. The present study on the hydrodynamic flow model of the inlet was formulated after a comprehensive survey on the subject for a decade. The numerical model used in the analysis of the hydrodynamics of the tidal inlet is a depth - averaged, two-dimensional modelling system. Standard numerical modelling procedures were applied to understand the hydrodynamics of the study area. High resolution bathymetric data collected in 2018 was used to study the hydrodynamic behaviour of the inlet. The bathymetry data, bed resistance coefficients, wind field, hydrodynamic boundary conditions and eddy viscosity were fed as basic inputs. The hydrodynamic module simulated water level variations and flows in response to a variety of forcing function in lakes, estuaries and coastal areas. The characteristics of waves during south west and northeast monsoon of Kondurupalem coast were measured and analysed. The significant wave height during south west monsoon period ranged from 0.3 to 0.8 m with an average value of 0.45 m. Frequency distributions of wave heights show that 50 % of significant wave heights are in the range of 0.3 - 0.5 m indicating low wave activity during the observation period. Numerical models for water surface elevation shows a correlation of 0.8. It is concluded that numerical modelling results confirm satisfactorily with the site monitoring observations.

**Keywords:** Tidal inlet, Hydrodynamic modelling, Bathymetry data, Significant wave height, Numerical models

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