

A Modelling Study to Compare the Storm Surge along Oman Coast Due to Ashobaa and Nanauk Cyclones

Authors : R. V. Suresh Reddi, Vishnu S. Das, Mathew Leslie

Abstract : The weather systems within the Arabian Sea is very dynamic in terms of monsoon and cyclone events. The storms generated in the Arabian Sea are more likely to progress in the north-west or west direction towards Oman. From the database of Joint Typhoon Warning Center (JTWC), the number of cyclones that hit the Oman coast or pass within close vicinity is noteworthy and therefore they must be considered when looking at coastal/port engineering design and development projects. This paper provides a case study of two cyclones, i.e., Nanauk (2014) and Ashobaa (2015) to assess the impact on storm surge off the Oman coast. These two cyclones have been selected since they are comparable in terms of maximum wind, cyclone duration, central pressure and month of occurrence. They are of similar strength but differ in track, allowing the impact of proximity to the coast to be considered. Of the two selected cyclones, Ashobaa is the 'extreme' case with close proximity while Nanauk remains further offshore and is considered as a more typical case. The available 'best-track' data from JTWC is obtained for the 2 selected cyclones, and the cyclone winds are generated using a 'Cyclone Wind Generation Tool' from MIKE (modelling software) from DHI (Danish Hydraulic Institute). Using MIKE 21 Hydrodynamic model powered by DHI the storm surge is estimated at selected offshore locations along the Oman coast.

Keywords : costal engineering, cyclone, storm surge, modelling

Conference Title : ICMES 2019 : International Conference on Marine and Environmental Systems

Conference Location : Dubai, United Arab Emirates

Conference Dates : March 21-22, 2019