# Wave forecasting system in Benin based on the TOMAWAC-TELEMAC model

This work presents the development of a model to simulate the propagation of swell along the Beninese coastline. TOMAWAC is a module of TELEMAC that models the propagation of swell from the open sea to the coast. It simulates changes in wave agitation over time and space for applications in the marine and coastal domain. The model uses the finite element method to discretize the domain. TOMAWAC models the swell by solving the conservation equation of the swell's frequency and directional action wave spectrum. The aim of this work is to establish a swell forecasting system on the Beninese coast. The TOMAWAC swell propagation model requires several forcings to operate. Therefore, PREVIMER forecasts are extracted, interpolated, and prescribed at the open southern boundary of our domain. The tidal harmonic constants used for the forcing come from the FES 2014 Atlas (LEGOS). It also presents the results of validating the TOMAWAC model for the year 2016 using in-situ swell data from an oceanographic buoy. Forecasts are always made from D1 at 10 PM (UTC+1, Benin) until D1+N at 10 PM (where N is the number of days between 1 and 3). In June 2018, the system allowed IRHOB to predict and pass through the National Agency for Civil Protection (ANPC) to issue an alert about rough sea conditions.

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