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# MarineTraffic collaborates with academia in Accu-waves project to build a decision support tool for navigation management in ports



Ports are vital links of the maritime network and their seamless operation is crucial for the efficiency and safety of maritime transportations. Recent reports of maritime accidents show







that most of them occur within ports. In many cases those accidents could have been avoided if additional means of support for navigation existed.

The Accu-waves project (abrev. for accurate waves) contributes towards this direction as it develops a decision support tool for navigation in ports

that provides reliable data on prevailing sea states in port approaches and harbor basins in three-day forecasts at 3hr-intervals. Accu-waves contributes to the safety of maritime transportation, by analysing sea states and understanding related environmental data. This contribution's impact on the maritime ecosystem is two-fold. It provides quality data for limiting the human error in navigation (I.M.O. e-Navigation strategy) and improves our understanding of operational conditions during towage and navigation services. The latter is a necessary step to support the EU Space Agency procedure for certified navigation paths in ports.



Figure 1. Spatial distribution of the significant wave height inside the New Port of Patra, Greece

The Accu-waves project has to address two major challenges. The first challenge is to reach a scientific breakthrough on the application of hydrodynamic numerical models. Consortium members from the Laboratories of Harbor Works (N.T.U.A.) and Maritime Engineering (A.U.Th.) develop three hydrodynamic numerical models for this purpose and combine them so that the





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outcome takes advantage of each model's different characteristics and strengths. A 3rd generation spectral wave model for wind-induced irregular wave fields will be used to simulate waves in port approaches, a mild-slope equation wave model will tackle wave propagation and transformation inside harbors, and a hydrodynamic model for barotropic circulation will incorporate effects related to surges and astronomical tides. Then, with respect to each port's special characteristics, the project will combine intermediate results from up to the three of the developed numerical models, in a single highly accurate and concise sea state forecast.

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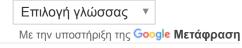
Accu-waves' second challenge is to build a system to acquire data for initial conditions required from each model and orchestrate their executions. MarineTraffic will build such a system with its focus to deliver a scalable data fusion and processing platform that will be capable to acquire low resolution forecasts for atmospheric parameters (wind and sea level pressure), wave and hydrodynamic circulation from open data repositories on a daily basis and transform them based on each model's needs. The goal is to synchronize execution plans and to deliver a 3-day per 3-hour forecast for 50 major ports around the globe to end users.

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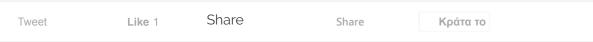
The Accu-waves project is co-funded by the European Union and Greek national funds under grant agreement T1EDK-05111.

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