



# ΕΛΛΗΝΙΚΟ ΙΝΣΤΙΤΟΥΤΟ ΝΑΥΤΙΚΗΣ ΤΕΧΝΟΛΟΓΙΑΣ HELLENIC INSTITUTE OF MARINE TECHNOLOGY

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COST 301

PROJECT NAME: OPERATIONAL WAVE SPECTRAL MODEL FOR THE AEGEAN SEA

PURPOSE: The purpose of this proposal is the construction of an operational wave spectral model for the Aegean Sea.

The need of such a model is justified by the absence of reliable model for the calculation of the wind generated waves in the Aegean Seas. Although existing spectral wave models are applicable in the entire Mediterranean Sea and applied in the named area, their accuracy in the Aegean Sea is very low. Both the geographical characteristics of the Aegean Sea and the peculiar climatological data of that sea determine the need for a more detailed of model.

Recent practical experiences, both in situ wave measurements and comparisons between existing models and real figures resulted to great and complex discrepancies.

The practical result of the wave spectral model for the Aegean Sea will be a higher security in the navigation plan-

ning and monitoring control of the maritime traffic, especially in restricted and defined areas of the Aegean.

BRIEF PROJECT LAY-OUT: The targets set by the project will be achieved by research activities which will be performed in five independent modules. The execution order of each one step among the first three is interchangeable whereas modules four and five may be completed upon completion of the first three modules.

Due to the complexity of the project it is not possible to complete all five modules within less than five to six years, at least for the first approach of real data.

The five modules are the following:

Module 1: Evaluation of the applicability of the existing models for calculation of the wind field from isobaric charts on the Aegean.

This evaluation aims to the definition of parameters which have to comply with the spectral model to be developed. This seems necessary in order to prevent compatibility of data from one model into another and permit the establishment of information charts for the whole Mediterranean area.

Module 2: Application of the existing theoretical models for the calculation of the wind generated waves for the Aegean and/ or construction of a new one.

This theoretical approach to the wind generated waves on the Aegean consists the mathematical expression of the model to be developed. Taking into account the results of module 1, this project ends the theoretical approach of the module.

Module 3: Direct measurements of the different parameters of wind and wave fields at several selected stations, in order to obtain real data and calibrate the proposed theoretical model of module 2.

Module 4: Correlation between real data and theoretically calculated for the improvement and/or correction of the wind-generated waves.

This module is the practical approach to the results of modules 1 and 2. It will establish formulas or correlation for the compatibility of the developed wave model of the Aegean Sea to the former existing wave models and will aim to an intermediterranean wave-data exchange.

Finally

Module 5: The Aegean wave spectral model will be analysed in order to enable its computerization. Target of the computerization is to propose a computer wave spectral model to be used operationally for analysis and prognosis, a target of high importance not only for the Greek Coast Guard and the port authorities but even for all mariners. This is why, the definition of the computerization of the wave spectral model must set as main criterion the simple operation of microcomputers, using all efforts of the european research in the micro-electronics field.