

Year	Phase	Objectives	Activities
2013	Unique	1. Predictions of the wave climate in the Black Sea by conducting simulations with numerical wave models for a period of 10 years.	1.1. Downloading and processing the high resolution wind fields from international databases (for a period of 10 years, as close as possible up to the current date) in order to conduct simulations with the spectral wave model SWAN (Simulating Waves Nearshore).
			1.2. Conducting simulations with numerical wave models for the 10-year period considered.
		2. Comparison of numerical model data to the satellite observations for the 10-year period, analysis of the systematic errors that occur in the wave predictions.	2.1. Downloading from International databases (i.e. http://www.avisioceanobs.com) and processing the observed SWH data (significant wave height) to perform comparisons between measurements and predictions.
			2.2. Validation of the numerical wave model predictions by performing comparisons with satellite measurements. Evaluation of the main statistical parameters.
	2.3. Climatological analyses and comparisons with other enclosed seas, similar to the Black Sea (such as the Caspian Sea).		

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2014	Unique	1. Implementation of a DA (<i>Data Assimilation</i>) scheme based on sequential or variational methods for hindcast simulations.	1.1. Analyses of the main DA schemes applied in wave prediction systems.	
			1.2. Identification and implementation of a DA methodology where there is a balance between accuracy of results and numerical computation time.	
		2. Validation of the results applying the DA methodology for hindcast, for the period 1999-2008.	Comparisons and statistical analysis to validate the DA methodology applied to the hindcast data obtained for the period 1999-2008 (numerical simulations for a period of 10 years).	
			3. Dissemination of results.	3.1. Preparation of scientific articles to be published in ISI and BDI (international databases) journals. Preparation of scientific articles, presentations and posters for national and international conferences.
				3.2 Continuous updating of the site that disseminates the results of the DAMWAVE project.
	3.3 Supporting young researchers			

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2015	Unique	1. Validation of the results by applying the DA methodology for hindcast, for the period 2009-2010.	Additional simulations (this will include all types of activities needed for new simulations) for a period of about two years (2009-2010).
		2. Implementation of the operational wave predictions based on the SWAN model, with two computational levels: the generation area - the entire Black Sea basin, the transformation area - the Romanian nearshore.	2.1 Studies on the impact of various physical processes on the wave modelling in the context of the specific conditions from the Romanian nearshore.
			2.2 Focusing wave prediction system to local areas, high resolution, and analysis of the particular conditions which may affect the modelling process (i.e. the interaction between waves and currents in the Danube Delta).
		3. Developing of a DA methodology for the operational wave forecasting.	3.1 Adapting the DA validated methodology for hindcast to the operational prediction system.
			3.2 Extending the DA methodology to coastal areas and its use in in-situ measurements (i.e. Gloria platform measurements, other buoys, etc.).
		4. Assessment of other DA procedures.	4.1. Comparative studies of other methods based on sequential DA techniques.
			4.2. Opportunity analysis of implementing a Kalman filter based DA procedure.
			4.3 Assessing the effectiveness of different DA methods, balancing between the accuracy of results and the numerical computation time.
		5. Dissemination of results.	5.1 Preparation of scientific articles, monograph, presentations and posters to disseminate the results.
			5.2 Continuous updating of the site that disseminates the results of the DAMWAVE project.

Year	Phase	Objectives	Activities
2016	Unique	1. Completing of a complex DA procedure that is associated with the wave prediction system in the Black Sea, focused on the Romanian nearshore.	1.1. Identifying and implementing in the transformation area, and in high resolution local areas, of the most effective DA methodology corresponding to each computational level.
			1.2. Studies on the accuracy of the simulated results in extreme energy conditions.
			1.3. Evaluation of the cases when significant errors occur.
		2. Dissemination of the last results and conclusions.	2.1 Preparation for publication of the final results of the project.
			2.2. Preparation of the final report