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Dear Participants,

Welcome to Open Readings 2023, the 66th International Conference for students of Physics and Natural Sciences!

As the organizing team, we are excited to bring together young researchers from all around the world for this year's live event. Open Readings offers a platform for sharing your work, exchanging ideas, and connecting with fellow scientists.

With a diverse range of topics, distinguished speakers, and enthusiastic young researchers like yourselves, this conference promises a memorable and enriching experience. We encourage you to approach this opportunity with curiosity and creativity, fostering collaboration and pushing the boundaries of knowledge.

Good luck on your scientific journey, and may Open Readings 2023 inspire you to stay curious and innovative.

Sincerely,

The Open Readings 2023 Organizing Team



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THE WAVE CLIMATE PARAMETERS CHANGE IN NEARSHORE ALONG THE CURONIAN SPIT SEA COAST IN 2003-2019

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The shore formation is determined by hydro-aeolian processes and anthropogenic activities. The appearance, development or decline of coastal landforms (beach and foredune) depends on passive (geological framework, coastal morphology, amount of sediments, etc.) and active (wind, sea level, waves, currents) factors. The global sea level rise, increasing cyclonic activity and anthropogenic load lead to the intensification of coastal erosion. Modern active geomorphological processes - wind, waves, currents, etc. play an important role in shaping the coastal relief. The wave force in open nearshore can be used in assessment of an alongshore and cross-shore sediment transport magnitude and direction. Since the Curonian Spit Baltic Sea coast is open to wave activity, it is crucial to analyze the wave climate parameters change in space and time.

Previously the wave climate parameters (height, period, direction) in the Lithuania nearshore of the Baltic Sea was assessed by a visual method at three observation points - Klaipėda, Nida and Palanga [1]. However, the scientific researches [2, 3, 4] have revealed that visual wave monitoring data is insufficient for a correct assessment of the coastal processes.

The goal of this study was to investigate the Baltic Sea wave climate parameters change along the Curonian Spit nearshore during the 2003-2019 period.

To investigate the Baltic Sea wave climate parameters dynamic, the Baltic Sea wave hindcast data from the Copernicus Marine Environment Monitoring Service database were used. The wave parameters were computed with the wave spectral model WAM and surface forcing from ECMWF's ERA5 reanalysis products. This database covers 28 years of data (1993–2021), with the horizontal grid resolution of 1 nautical mile and provides hourly model data [5]. Mean values of wave parameters (significant wave height, mean wave direction, mean wave period) were analysed for every year at 24 coastal monitoring points.

The results revealed strong correlation between the changes of Baltic Sea wave parameters along the entire Curonian Spit nearshore which may mean that the highest and lowest waves usually occur at the same spots. The average wave height in the nearshore of the Curonian Spit reached 0.72 m. The highest waves prevailed in the nearshore between Pervalka and Preila, and the lowest in the nearshore between Lesnoe and Zelenogradsk settlements. It was found out that the change of prevailing wave direction is also homogeneous. The change of coastline and wave direction may be essential reasons creating differences of coast development in the different sections of the Curonian Spit Sea coast.

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