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Looking for a storm in the beach-ridges: a microscale perspective from eastern Baltic

Edyta Kalinska and Piotr Weckwerth

Nicolaus Copernicus University in Toruń, Faculty of Earth Sciences and Spatial Management, Poland (edyta.kalinska@umk.pl)

Sand coastal landforms occur commonly around the world, and the western, southern and eastern Baltic Sea coast is one of them. The latter is rich in nearly parallel and rhythmic beach-ridges, which are related with the Holocene Baltic Sea history and serve as an archive of storminess and climate and sea level changes in the past. Sand sediment of beach-ridges in Gulf of Riga (Latvia) have not gained an attention in these terms, and thus were sampled and subjected to sediment particles (grains) analyses in a microscale. Scanning electron microscopy (SEM) has a great potential in determining the depositional environment and was applied to check out the grain shape, its surface, type of microtextures and their frequency. Parallel with this, an automated particle shape analyser was used to measure thousands of particles in dozen directions. Based on this, several grain parameters were produced, which provide an information about duration and type of sediment transportation. Combination of these two methods followed by the statistical methods led to robust insight in the sediment particle characteristic and past storm detection.

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