This study makes an attempt to characterise Quaternary sediments in terms of their heavy minerals (HM) composition. Authors focus on the Mazovian Lowland, Central Poland, where a number of clastic sediments of different age and origin overlap. Five sedimentary settings, covering the Saalian-Holocene (MIS 1-6) time frame, have been studied to reveal whether these sediments have single or multiple source areas and to decipher sediment transformations. In the glacial setting either garnet- or amphibole-dominated sediments occur. This unequivocal mineral combination likely reflects a multi-sourcing resulting from multi-directional ice advance. The HM taken from fan-like forms and aeolian sediments are closely related; these sediments are largely multicyclic and likely derived from pre-existing recycling sediments. Similar mineral suite is also typical for long-lasting aeolian processes and is observed in dune sediments. Ultrastable components are less frequent in the coversand, which points at a shorter-lived aeolian process. Finally, the fluvial setting reveals multi-sourcing largely depending on local geological conditions.

Five different kinds of broad-scale characterizations of the marine environment were used for marine bottom landscape mapping. In addition to three "primary" environmental parameters of the BALANCE project – sediment types, available light and near-bottom water salinity two more were also taken into account: near-bottom temperature and ice cover. Combination of these parameters allows for distinguishing 21 types of marine bottom landscapes. The dominant landscape type is located far beyond the surface photic zone and not influenced by the ice-cover. It is characterized by mud sediment type, salinity of 11–18 psu and deep low variable relatively cold near bottom waters (4–8 °C) with ulterior seasonal variability. The most perspective marine landscape, from the point of view of nature conservation zones, is small area located in the Curonian Spit marine nearshore zone where bottom sediments are represented by the relict lagoon hard clays partly covered by sands. These clays are unique bottom oasis where the numbers of benthic organism species sharply increase in contrast to almost lifeless adjacent extensive sand areas.

The aim of the study is to assess hydrokinetic energy resources of small and medium-size rivers in Lithuania. The estimation of technical resources was carried out for river segments, where for average long-term runoff the flow velocity exceeded 0.4 m/s, and the average depth was more than 0.5 m.
The results of hydrological studies were used to calculate the average flow rate and the relationship between flow velocity and river depth. The width and depth of the river channel was estimated in accordance with physical and geographical factors.
Part of the favourable for use sites of rivers located within protected areas cannot be used for energy production because of the priority of environmental protection. Navigation, recreation and other factors also limit the use of streams for energy production. In addition, in winter due to ice phenomena, hydrokinetic devices in small and medium rivers should be protected from mechanical obstacles. Moreover, Lithuania is a flat country and available hydrokinetic resources of such plain rivers are very small. Their estimated capacity comprises 13.6 MW, and they can generate 79.4 GWh of electric energy per year.

Ryabchuk, D., Vallius, H., Zhamoida, V., Kotilainen, A.T., Rybalko, A., Malysheva, N., Deryugina, N., Sukhacheva, L., 2017. Pollution history of Neva Bay bottom sediments (eastern Gulf of Finland, Baltic Sea). *Baltica*, 30 (1),31–46 Vilnius. ISSN 0067-3064. **http://dx.doi.org/10.5200/baltica.2017.30.04**

Neva Bay is the shallowest and easternmost part of the Gulf of Finland (Baltic Sea). St. Petersburg, Russia's second largest city, occupies the coastal area where the Neva River debouches into Neva Bay. St. Petersburg has a protracted history of industrial, transportation and urban related activity that have affected Neva Bay. By the sealing off the bay from the eastern Gulf of Finland, the St. Petersburg Flood Protective Facility, which was constructed from the 1970's to 2011, transformed Neva Bay into a "technogenic" lagoon. Neva Bay sediments record a unique history of pollution near the metropolis. Heavy metal concentrations of most elements studied varied consistently throughout sediment cores. Temporal trends indicate that metals started to accumulate abruptly in the first half of the 20th century. Zinc, lead and copper were the first metals to reach contaminant thresholds implicating the regional base metal industry as a source. Significant increase in cadmium levels a decade or two later suggests pollution from the regional chemical industry. Comparison of geochemical data collected from sediment cores and recent annual sediment surveys highlighted the temporal history and potential sources of pollution in Neva Bay. Intensive dredging in 2007–2008 resuspended and redistributed contaminated sediment around Neva Bay causing a dramatic increase in benthic sediment heavy metal concentrations. Concentrations of all measured metals subsequently declined from 2009–2014 relative to the elevated values observed for 2007–2008. Pollution history of Neva Bay bottom sediments is closely linked with changing of sedimentation conditions. Analyses of sedimentological data collected by 20th and 21st century scientific surveys reveal dramatic shifts in Neva Bay sedimentation processes over the last three centuries. The western part of Neva Bay has transitioned from a sand-dominated system to one of mud accumulation with the aerial extent of mud deposition expanding significantly during the 20th century. This inventory coupled with an understanding of primary natural and anthropogenic processes can help inform decision makers to support the overall ecological health of the bay.

Emelyanov, E., Vallius, H., Kravtsov, V., 2017. Heavy metals in sediments of the Gulf of Finland : a review. *Baltica* 30 (1), 47–54. Vilnius. ISSN 0067-3064. **http://dx.doi.org/10.5200/baltica.2017.30.05**

The Gulf of Finland has during the last centuries been loaded with heavy metals of anthropogenic origin. Work with mapping of the chemistry of the sediments have been done in all surrounding countries during several decades, first in the Soviet Union and later in Russia and similarly in Finland. More recent sediment chemistry data from the last two decades was in this study combined into sediment chemistry maps added with some data from the commercial Nord Stream project. The result shows that zinc, copper and chromium are enriched in the eastern part of the Gulf of Finland, while mercury, cadmium and lead are showing the highest concentrations in the north- eastern part of the gulf.

Kosmoswska-Ceranowicz, B., Sachanbiński, M., Łydżba-Kopczyńska. B., 2017. Analytical characterization of "Indonesian amber" deposits: evidence of formation from volcanic activity. *Baltica*, 30 (1), 55–60. Vilnius. ISSN 0067-3064. **http://dx.doi: 10.5200/baltica.2017.30.06**

In this study the new mineralogical and geochemical evidence for the reason behind intensive resin production in trees and the formation of Indonesian resin deposits is presented. The analysed specimens of the "Indonesian amber" were subjected to the following comprehensive investigations: PAS, IR, RS XRD and SEM-EDS. It was found that the resins are originated due to intensive volcanic activity. Based on spectroscopic investigations, "Indonesian amber" was assigned to the glessite group. The investigations revealed that the traces of volcanic activity have survived in the studied specimens in their structure were the presence of tonstein and inorganic minerals are related to volcanic phenomena. "Floating" in opaque solid–foam resin indicated that resinous substance was strongly heated trough volcanic activity.

Grigelis, A., Vallius, H., 2017. Weighty contribution to marine geosciences knowledge: a review. *Baltica*, 30 (1), 61–62. Vilnius. ISSN 0067–3064. **http://dx.doi.org/10.5200/baltica.2017.30.07**

In 2016, SPRINGER has published in the *Encyclopedia of Earth Sciences* Series a big volume entitled *Encyclopedia of Marine Geosciences*). DOI 10.1007/978-94-007-6238-1. This Encyclopedia comprises the current knowledge in marine geosciences and offers an overview of the oceans' and marginal seas' geo-resources. The Edition is arranged alphabetically as is a rule for encyclopedias taking descriptions from Abyssal Plains to Wilson Cycle, in 195 topics. Short but concise texts, actually in three–four pages, are of high scientific value, informative, well illustrated and supplied by bibliographies; at the end of texts the cross-reference terms are given, that in general with the detailed author and subject indexes makes easier to search required information.