Impressions from the field trip to the Latvian Baltic Sea coast

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The field trip of the courses "Coastal Research and Management" and "Sedimentology" started at the end of September, 2017, under the direction of associated professor Donatas Pupienis. Karolina Grinevič, and the alumnus graduated from Vilnius University, the Hydrology and Climatology department, who currently works in Aviation Meteorology Centre of the Lithuanian Hydrometeorological Service, joined the field trip. The purpose of the field trip was to visit the Latvian coast and examine the sedimentological and coastal processes. The examination mainly focussed on cliffs and extensively eroded sectors of the Baltic Sea coast.

On the way to the Latvian seacoast we decided to visit the national stone museum of Lithuania in Mosėdis. In the Vaclovas Intas museum of rare stones, founded in 1979, we had pleasure to see two different exhibitions. The first one, located in the main building, presents a rich collection of different rocks, minerals and fossils from all over the world. There is considerable contribution to this exhibition made by Lithuanian geologists and professors like G. Motuza and A. Bitinas who enriched the exhibition with their personal donation of their spectacular mineralogical-petrographical collections. The second part of the museum located in a park next to the main building and contained a collection of more than 200 huge metamorphic and magmatic boulders that were found in the Baltic States. The boulders – 'glacial erratic's – have their origin in Scandinavia and were transported to the Baltic States by glaciers during the ice age.

From Mosėdis we headed north, crossed the Lithuanian - Latvian border, and arrived to Kuldiga (a town where salmons were captured in the air), where we visited the widest waterfall in Europe. At this place, depending on the water level, the width of Venta River can reach 275 m and the height can vary between 1.6-2.2 m. Close to the waterfall we explored outcrops of Devonian dolomite which was a building material for churches and castles in this region.

From Kuldiga we went to the coast of Latvia to the north of the seaport of Ventspils. This coastal zone is dominated by 2.0-2.5 m high cliffs with peat outcropped. The visited coastal stretch is unique for a 2.0 m high waterfall, the only one present on the southeastern Baltic Sea coast. Latvian scientists stated that this peat formed during the Boreal – Atlantic period 9.0-5.5 ka BP when organic sediments accumulated in the Litorina Sea lagoons. On the relatively narrow 20-25 m width beach, pebbles and poorly sorted coarse sand, the product of the prevailing erosive processes, dominate.

We found very different conditions in the southern side of the Ventspils seaport, where prevailing 100 m wide beaches are composed of fine and very well sorted sand. The obvious significant morphometric and lithological differences between the beaches of the northern and southern coast stretches on both sides of Ventspils, Pavilosta, and Liepaja seaports are visible. These locations are characterised by human activity which controls coastal processes. On the west coast of Latvia, the main alongshore current flows parallel to the coast from south to north. The jetties of Ventspils, Pavilosta, and Liepaja seaports interrupt the alongshore sediment transport resulting in sand accumulation southwards and erosion northwards from the seaport.

We spent the evening and overnight in Jūrkalne, where we had a traditional student dinner (pasta with sausages). In the evening we chatted in a friendly and pleasant atmosphere, sharing thoughts about the differences between our countries and studies.

The Jūrkalne coast stretch is dominated by wave abrasion processes, sand scarps, and moraine cliffs being constantly eroded. The height of the cliffs and scarps often exceed 20 m. Deposits from the Pleistocene glacial period outcrop in cliffs. According to Latvian coastal researchers, during the storms the coast retreats 10-15 m.

The greatest impressions have left Užava (Užava baka) and Akmenraga (Akmenraga baka) lighthouses that are open for visitors and spectacular views widespreading from the top of the lighthouses. The Užava lighthouse is 19 m high, whereas the observation deck in Akmenraga lighthouse is at a height of 38 m.

During the trip, we discussed the relationship between the coastal processes and human activity which we observed in the field. It was unanimously agreed that such practical trips are very useful and essential in order to strengthen the theoretical and practical knowledge. Such excursions are a great opportunity to communicate in an informal environment, not only with academic teachers, but also with Vilnius university alumni. Since the trip has obviously left a profoundly positive impression, we hope that the students will have more possibilities to participate in similar excursions in the future.

Unique waterfall, the only one present on the southeastern Baltic Sea coast

Magnetic susceptibility measurements on the beach south of Ventspils seaport