

FIELD INVESTIGATIONS AT COASTAL RESEARCH STATION (CRS) IN LUBIATOWO

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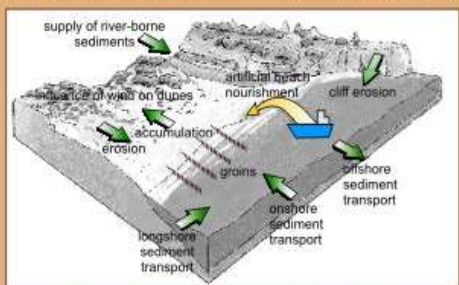
The sixties of 20th century



At present

Laboratory is located in an adapted building of an old coastal rescue station

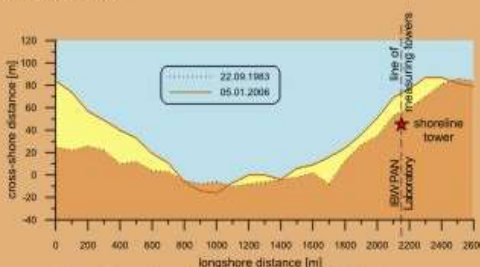
The Coastal Research Station (CRS) in Lubiato, located about 75 km NW of Gdańsk, is a field laboratory of the Institute of Hydro-Engineering of the Polish Academy of Sciences (IBW PAN). The station houses both stationary and portable equipment for measurements and monitoring of waves, currents, sediment transport, beach and shore topography and other factors of coastal dynamics.



Shore stability depends on sediment budget in a coastal zone

Existence of CRS Lubiato and the multi-aspect field investigations carried out in various time-spatial scales provide huge amount of data and observations of the Baltic coastal zone. This knowledge, obtained in undisturbed natural conditions, facilitates verification of many theoretical considerations and helps to understand complicated coastal physics.

At the coastal zone built of sandy sediments, the hydrodynamic phenomena, together with human activities (influence of coastal structures) cause distinct response of the littoral system. The sea bed evolves to achieve the state of equilibrium with respect to predominating wave-current conditions.



Shoreline migration registered at CRS Lubiato



Measuring towers in the coastal zone of Lubiato



Erosion of beach and wood-overgrown dune

The highest wave measured 4.5 km offshore CRS Lubiato attained 7.57 m while the most intensive nearshore wave-driven currents have velocities of 1.5 m/s.



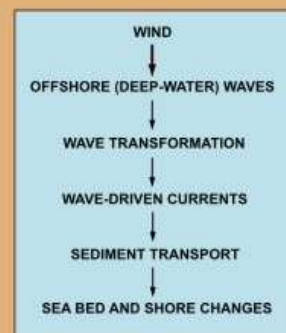
Installing devices for measurements of sand motion



Installing devices for measurements of nearshore waves and currents



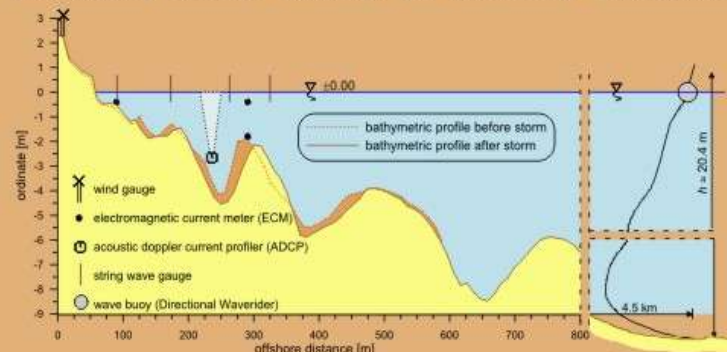
Fascine dune-forming fences and dune facing made by services of the Maritime Office in Gdynia



Sequence of physical processes in a coastal zone

A strategy of shore protection comes under administration of local governmental agencies (the Maritime Offices in Gdynia, Słupsk and Szczecin), which are responsible for implementation of *Integrated Coastal Zone Management (ICZM)*. In the parliamentary "Law on the establishment of a multi-year programme of shore protection" (of 18th April 2003), point 2 of the article 2 recommends stabilisation of the shoreline in the position of 2000 and prevention against beach erosion. To achieve this goal, artificial beach nourishment is indicated as the primary shore protection measure, while the modernisation of coastal structures is recommended as the secondary measure. Besides, monitoring of coastal evolution is recommended.

About 60-70% of the Polish coast is eroded, with a shoreline retreat of 0.5-0.9 m/year. Recently observed climatic changes cause increase in intensity and frequency of severe storms, as well as accelerated sea level rise. These effects are reasons for high coastal erosion rate. Optimisation of shore protection measures depends on detailed identification and understanding of coastal physical processes. This requires extensive theoretical and experimental investigations.



Shape of measuring profile at CRS Lubiato with exemplary layout of equipment