



Outlook on seawaters dynamics and geological factors of development of Albanian Adriatic coastline

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Results of integrated hydrographical and geological-geophysical surveys in Albanian Adriatic Littoral are presented in this paper.

The Albanian coastal area of the Adriatic Sea represents the Easter side of Otranto Strait. River mouths and deltas, lagoons system, riverbeds, marshes, sandy beaches, dunes covered with vegetation, dense forests are found in the Albanian littoral.

Integrated studies for the Albanian coastal area have been performed during the period 1958-2010. Hydrological and hydro-geomorphologic data are based on the Albanian hydrometric network that consists more than 220 meteorological and hydrometric stations, during the observed period of 20-100 years. Hydro-geomorphologic studies have been performed to evaluate the evolution of Albanian Adriatic coastline, based on archival documentation as topographic maps and Landsat imagery from different periods. Determination of littoral sediment transport and coastal sedimentation, classification of erosion and accumulation processes under the wave refraction etc. are studied by analyzing of marine and onshore surveys data. Limnological observations on the Albanian lagoon system were performed in hydrometric stations for physic and chemical characteristics of water, the discharge in lagoon channels, sediment and evaporation in the lagoon surfaces. Oceanographic studies have been performed using data from the hydrometric station network and marine expeditions since 1958. Integrated geological-geophysical onshore surveys of the Albanian littoral areas have begun since 1958, and offshore surveys on the Albanian Adriatic shoal shelf have started from 1976. Marine geological mapping has been performed using submarine surveys. Integrated offshore geophysical surveys have been carried out using reflection seismic, electrical soundings and profiling, magnetic recognition, and radiometric surveys. Offshore geological-geophysical surveys were performed in the shoal littoral shelf, in a belt with a width of 5-10 km parallel to the coastline. Climate change was analyzed using the inversion of the ground surface temperature history based on temperature records in deep wells and shallow boreholes, and by the meteorological observations data.

According to the study results, the geomorphologic classification of the Albanian coastal area of Peri-Adriatic Depression is composed of three different segments: accumulative that represent the main part of the coastline; erosive segments; and submerged littoral areas where it is observed marine ingressions toward the mainland.

The Adriatic coastline dynamics geomorphology is conditioned by geological setting of the western side of Albanides, by the neotectonic developments, the dynamics of the seawaters, the solid material discharge from Albanian River network to the Adriatic Sea, and their deposition along the coastal zone.

Accumulative coastlines are extended at plain areas. Beautiful sandy beaches and dunes are main elements of these areas. Marine Quaternary deposits from plain sea floor up to some kilometers in the land have a thickness from some to hundred meters. The lagoons are formed in sea bays that were closed by solid sediments transported by rivers to the sea. Erosive coastlines are extended in the hilly base of some capes. The hills are situated northwestern part of the Neogene's anticlines. Sandstone banks are extended in the sea floor. Neotectonic development at the present has caused submergence of three sectors within the accumulative areas.

The conclusions of the study have helped to explain and predict changes of the Adriatic coastline, which have impacted the economic activity in these areas.