

O14-5**THE COASTAL GEOMORPHOLOGY OF THE SEMANI RIVER MOUTH-KARAVSTA LAGOON IN THE SOUTHERN ADRIATIC SEA****NIKO PANO**¹ and **ALFRED FRASHERI**²¹ Hydrometeorological Institute, Oceanographic Dep., Academy of Sciences, Tirana, Albania² Faculty of Geology and Mining, Polytechnic University of Tirana, Albania

The paper present natural characteristics, the hydro-economical importance and the ecological balance of the Semani-Shkumbini littoral area. The Semani-Shkumbini area is situated in the Southern Adriatic Sea Albanian littoral and represents one of the most active and interesting coastal areas in the Mediterranean Sea. In this area is located the Karavasta Lagoon. It is located on the western lowland of Albania, between the mouths of the Shkumbini and the Semani rivers.

Semani River is one of most important river of the hydrographic network of Albania. The surface of catchment of this river is $F=5\ 649\ \text{km}^2$, the average altitude of $H=863\ \text{m}$, and the average water discharge is $Q_0=95.7\ \text{m}^3/\text{s}$. Total sediment load is $16.5 \cdot 10^6$ tones/year, while the turbidity $r=4\ 390\ \text{g}/\text{m}^3$. The flow module of the sediment discharge in the surface of catchment of the Seman river is $r_0=2\ 340\ \text{ton}/\text{km}^2$.

Semani is the most turbid river in Mediterranean Sea. The sediment deposits in the sea area are around the mouth of the river. This process is very dynamic and making the Semani mouth very active. The Semani River has often changed its delta in the Adriatic Sea. During the last centuries these changes have happened within in a wide of about 25-km long. The Shkumbini River has a catchment basin of $2\ 440\ \text{km}^2$ with an average altitude of 753 m. The average water discharge is $61.5\ \text{m}^3/\text{s}$ and the total sediment load of $7.2 \cdot 10^6$ tones/year.

The Karavasta lagoon is the biggest and most important lagoon on the coastal area of the Adriatic Sea. The Karavasta lagoon has a surface of $43.3\ \text{km}^2$, with a maximal length of 10.6 km, a maximal width of 4.3 km, and a maximal depth of 1.5 m. A component part of this lagoon is another small lagoon named "Godulla". This last lagoon has a surface of $8.5\ \text{km}^2$ with a length of 5 km, a width of 3.8 km and a maximum depth of 3.8 m. Maximum waves converge toward north-Easter zone of southern Godulla.

The Karavasta lagoon communicates with the Adriatic Sea through three short channels. Through these channels a water exchange process with an average discharge of $15\text{-}30\ \text{m}^3/\text{s}$ is realized. Hydrochemical regime of the Karavasta lagoon water is determined by the hydrological and climatic regime of its surrounding area and by the degree of water exchange with the Adriatic Sea. The maximum salinity observed values are in excess of 55 ppt in the eastern part of the lagoon. The minimum salinity values, below 20 ppt, are observed in winter in the eastern part of the lagoon where the tidal influence is weaker.

The Karavasta lagoon is an enormous international importance for its biodiversity and natural productivity, too. The area well known for the Dalmatian pelican colony *Pelicanus crispus* which numbers some 60-70 couples, which represent 5% of the total world population of this species.

Integrated offshore and onshore geological and geophysical surveys performed for study of Albanian Adriatic shelf, showed that Semani-Shkumbini littoral area is located in Albanian Sedimentary Basin, which extends widely into the Adriatic Sea. Albanian Sedimentary Basin represents a foredeep depression filled with Miocene and Pliocene molasses, and covered by Quaternary deposit (Q) are represented by different genetic types: marine deposits which have a thickness up to 200 meters in the Adriatic littoral areas, lagoon's and coastal marsh deposits, and alluvial deposits and clayey earth. In the accumulation coast the width of sandy belt reaches up to 5 km. The flat shelf sinks gradually up to the depth 100m. Up to this depth the majority of deposits represents by sand and silt. According to submarine geological mapping and geoelectrical survey data,

has been determined that marine deep erosion is developed in accumulation littoral of Adriatic shoal. The sandstone banks have been mapped in western submarine anticline limbs.

The Semani coastline has beautiful sandy beach. Sand dunes are situated along the sandy littoral belt, with a length of 25 km and an average width of 50-100 m. Generally, the granulometry of quartzite sand deposits represented by: very fine sand ($f < 0.1$ mm) 6.43%, fine sand ($f = 0.1-0.4$ mm) 88.15%, medium sand ($f = 0.4-1.25$ mm) 4.66% and coarse sand ($f = 1.25$ mm) 0.76%. Based on integrated geological-geophysical exploration, in quartzite fine sand littoral deposits has been discovered sea coastal beach placers of heavy and rare mineral deposits. The Semani Neogene structures continued from mainland to the Albanian Adriatic shelf for 5-10 km. Evolution of Albanian Adriatic coastline has a very intensive dynamics. There are observed old and present shoreline migration up to 5-7 m/year, during the period from 1918 up to 1998. The Karavasta lagoon system together with Shkumbini and Seman river outlets and Terbufi and Myzeqe drainage channels form one of the most complicated and dynamic hydrographic system in Albania. The changes of sediment load, carried by the Semani and Shkumbini River, have been caused by human activities in the upper catchment basin in the floodplains. The human activity in this area is intensive. Agricultural development has often reduced the area of the wetland, and altered the drainage pattern around many important hydrographic areas. Another activity in this area is the chemical plants, oil and gas fields, oil refinery, the paper factory, etc. The anthropogen activity and the lack of the water treatment has made it possible for the agriculture, industrial and urban pollution to have a negative influence in the ecological balance of the Karavasta lagoon system. A regular monitoring of this system should be established.