

## The Albanian sea-coast problems and prospects

Leke GJIKNURI

The Faculty of Natural Sciences, TIRANA (Albania)

The Albanian sea-coast includes the most eastern and southern parts of the Adriatic sea-shore and the north-eastern part of the Ionian sea-shore. It is little dissected and there are few caps and bays, and only one important island. The general length of the Albanian sea-coast is 450 km (excluding the coast line of the lagoons), from which 284 km belong to the Adriatic Sea. The main capes are: Rodoni, Bishti i Palles, Karaburun; and the bays are those of Drini, Lalzi, Durres, Vlora, and Saranda.

1. The Albanian sea-coast is divided into two basic types from a geomorphological point of view : a) the low coast, mainly accumulative of the Adriatic Sea and b) the high rocky coast mainly corrosive of the Ionian Sea (KABO *et al.*, 1990). The main geomorphological features of the Albanian Adriatic sea-coast with a S-N extension are : the presence of the beaches, the sands arrows and archs, lagoons, dunes and above all the presence of a highly expressed dynamic of the coast line. These features are mainly connected with the sincline structure that builds our Coast Lowland, and the solid deposits (53.250.000 tons/yr.) of the numerous rivers. The presence of the cliffs, the rocky capes, the gritty beaches, and a limited dynamic of the coast-line are the main features of the Ionian Sea with a SE-NW extension. These geomorphological features are connected with anticline structures, the calcareous formations, and the slight water flows (KABO, 1990).

2. The geomorphological classification is coherent with the geological one: a) there are some discernible characteristic zones of the Albanian Adriatic sea-coast like those of swampy accumulative (among the outfalls of the rivers), littoral sands, and radical rocks. In the last one, we can discern some sectors, like that of calcareous of Kretac (Shengjin); sandy-clays of Tortonian (Rodon) ; of alveolar-clays, and the sandy-conglomerations of Pliocen (Kavaje); of sandy-calcareous and clay-carbonics of Helvecen (Zverec) (KONOMI, 1991); b) in the Ionian Sea sea-coast, we can evidence : the zone of carbonic rocks of Juras-Paleocene (Uji i Ftohte, Karaburun, Dhermi, Himare, Sarande) ; the zone of clay-alveolar sandy rocks of Oligocen and Akuitanian (Radhime, Piqeras, Lukove) and the zone of the friable proluvial-deluvial rocks (Orikum, Palase, Vrine) (KONOMI, 1991).

3. The littoral zone of Albania has its characteristic flora clearly differentiated from one area to another : a) *Ammophila arenaria* and *Agropyron junceum* are the prevalent species of the dunes; b) *Halimione portulacoides* and *Halochnemum strobilaceum* are prevalent halophyte species of the salted lands; c) *Limonium* and *Cerithium* are the prevalent species of the rocky coast of the Ionian Sea; d) the *Quercus ilicis* class of the mediterranean brushwoods vegetation is in the other rocky coast; e) the thermophyll downfall foliage plantations of the *Querceta pubescentis* class are in the hilly supermediterranean floor of the Adriatic. In the albanian coast many exotic species of the genera : *Eucalyptus Cupressus*, *Robinia*, etc. are cultivated, but the main aspect is formed by the coniferous forests, where the *Pinus halepensis* is prevalent (Divjak, Poro etc. ) (VANGJELI, 1991).

4. The outer geomorphology of the coast is coherent with its inner topography; the isobats of the corrosive zone are near the coast line, whereas they go away in the accumulative zone. There are three evident belts of the Adriatic shelf : a) the littoral shallow (0-50 m) mainly with sandy sediments ; b) the flat shelf lowland (50-100m) with sandy-aleuritic sediments ; c) the shelf slanting lowland (100-200m) with aleuritic and aleuritic-deltic sediments (PAPA, 1985).

5. Among the hydrological characteristics of the albanian coast, we can mention : a) the values of the temperature of the superficial waters : perennial average value 19.2°C (Saranda) and 17.7°C (Shengjin); the highest value 29.8°C and the lowest value 7.7°C; b) the water salinity 30‰ -39.1‰ ; c) the tide amplitude 20-30 cm; d) the waves' height can reach up to 3 - 5 m in the bays and 9 - 8 m in the open sea ; e) the currents follow a South to North direction (PANO *et al.* , 1990).

6. Biogeographically, the albanian coast presents a special importance in the Mediterranean basin. The biological studies of our coast are limited. Up to now 131 species of multicellular algae, 251 species of fish, 46 species of echinoderms, 104 decapod species, 84 species of molluscs, etc... have been identified. (GJIKNURI *et al.* 1991). The presence on our coast, of such species of fish as : *Lugarus imperialis*, *Ranzania laevis*, *Coelorhynchus coelorhynchus*, *Lebistes reticulatus* (RAKA *et al.* 1991); of the algae *Fucus virsoides*, *Tenarea undulosa*, *Acetabularia parvula* ; of the echinoderms *Ophiaster ophiidianus*, *Holothuria helleri* and of the mollusc *Charonia seguenziae* completes their known spread in the Mediterranean.

7. Generally, the albanian coast is nonpolluted and includes several virgin areas. There is no record of mucus aggregates mucilage up to now. Nevertheless, there are some problems caused by human activity such as : the pollution of the sea from the technological wastes in the Bays of Vlora and Drin, in the outfall of Seman, Shkumbin, Mat, etc. ; ruinous exploitation of the sand masses of the rivers and coasts ; and the consequences from the forced reclamations of the wetlands; the illegal use of explosive materials for fishing that have caused reduction of valuable fish and of *Penaeus kerathurus* catches.

8. There is a great interest on littoral lagoons for their biological, ecological and economical importance. Their general surface is 15 000 ha. They are not only important centers for the fishery (about 8 000 kv/year ), and producing of the salt (Narte, 120 000 tons/year), but also they are important centers of the water-fowls (*Ardeidae*, *Phalacrocoracidae*, *Pelecanidae*, etc.). The lagoon of the Karavasta is wellknown for the nesting of *Pelecanus crispus*. Near the lagoons there are some natural parks and reserves (GJIKNURI *et al.* , 1991).

9. It is forecasted that the albanian coast will be in the near future an object of a broad intervention, especially for tourism. It is forecasted that only in 1996, the tourism will be extended with 35 000 beds (from 4 000 of nowadays), whereas up to the year 2 000 this number will reach 100 000. There have begun, a year ago, the prospects for the gas and oil by five foreign companies in the shelf of the albanian coast. Their activity can not exclude the potential danger for the pollution of the environment.

The definition of the values of the different zones of this coast, their classification according to the priorities, and on this base, the planification of the protection and exploiting masses from all points of view, are some of the problems that need quick solutions. Some international organisations have offered their help for the studies of the Albanian coast.

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