Geophysical Research Abstracts
Vol. 15, EGU2013-6151, 2013
EGU General Assembly 2013

Human impacts on the evolution of Rosolina Mare (Northern Adriatic, Italy): first results

Corinne Corbau and Umberto Simeoni
University of Ferrara, Dipartimento di Fisica e Scienze della Terra, Ferrara, Italy (cbc@unife.it)

The Italian coasts have undergone profound changes over the last century, in particular after the late 1950's. With the tourism industry development, the coastal system has been hardened resulting in the drastic reduction of its evolutive capacity. Human activity has therefore become a geological agent that has affected the evolution of the coastal zone both directly and indirectly in the last century.
This study focuses on some of the coastal morphologies that have been modified by human actions in long and medium-term. The research was based on a comparison of sixty-year changes in land use, on dune-beach system and on the nearshore of Rosolina (Northern Adriatic, Italy). This coastal sandy zone extends over about 8 km in a N-NE - S-SW direction, and is delimited by the Adige River to the north and by the Porto Caleri to the south.
This littoral, characterized by highly humanized stretches and natural stretches without human activities, can be divided into three parts: the first in the north, about 2 km long, where the beach is almost non-existent, the second in the central part long about 3 km, with a wide beach and completely built up for tourism, and the third in the south, about 3 km long, is within a natural park and is characterized by a wide beach bordered by a complex dune system. In the central part the coastal dunes present the greater heights, with an average of about +7 m (+ 4.5 m to +11 m); in the northern part the rare dunes reach heights of about +5 m (+4.5 m to +5.5 m). In the southern part the dunes present lower heights averaging +4.2 m (from +3 m to +5.5 m).
The conservation state of the dunes is the result of coastal anthropization: blowouts and breaches in the coastal dune system are observed where there was the greatest urban development to allow users access to the beach. These "passages", however, constitute preferential sediment paths out of the beach as sediments are no longer stopped by the dune and its vegetation and are thus subtracted from the beach-dune system sedimentary budget.
The period of study from 1955 to 2009 has allowed documenting two phenomena of particular importance: the urban development (in 1960 Rosolina counted about 300 houses and there were about 4950 in 1981) and the regressive crisis of some coastal stretches. Other heavily modified elements were the increase of the pine forest superficies planting on the dune areas (+20%) and the development of urban areas from 1% to 28%.
The first results highlight a reduction of the sand "alimentation" of the coastal system that has strongly affected the resilience of the northern part, the dismantling of the dune systems due to sea storm erosion (northern part) and urbanization (central part). The erosion, loss of natural character of the coast and unregulated urbanization have exacerbated the loss of attractiveness of Rosolina, which in recent years shows a stagnation in tourism as evidenced by the application of the Butler model.