



An inventory of coastal spits of the eastern Mediterranean and Black seas

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Abstract

Coastal spits are low-lying landforms at the depositional shores and seem to be relatively young and vulnerable formations formed under the control of both terrestrial and marine environments. These features reflect the sedimentary and hydrodynamic characteristics of the relevant shores. They can develop in critical environmental conditions depending on high sediment supplies and shallow coastal platform settings with relatively low energies. Therefore, spits play a crucial role in understanding and interpreting the development of relevant coasts. In this study, we examined the shores of the eastern Mediterranean Sea and the Black Sea based partly on field observations and mostly on remote sensing analyses. In addition, we correlated the modern and older spit examples of the Azov Sea based on detailed maps prepared by an English marine explorer approximately two hundred years ago. Correlation shows that spits were destructed in time, diminishing their width by about one-fourth. The eastern Mediterranean region includes 82 spits, some of which are the longest examples in the world, reaching 112 km long (Lake Bardawill at the Levant Sea and Arabat at the Black Sea). Nearly half of them are shorter than 1000 m. We observed 18 spits (22% of total spits) along the coasts of the Levant Sea, 16 (19.5%) in the Aegean Sea, and 7 (8.5%) in the Sea of Marmara, and 41 (50%) in the Black Sea. 35 (42.7%) of them are seen on the coasts of Türkiye, which has the longest coast in the eastern Mediterranean Sea. A relative abundance of spits in the study area is found at the northeastern coasts of the Black Sea from Batumi to the Crimean Peninsula. Correlations within the studied coasts inspire that sediment supply and waves are the most effective agents for the development of spits. However, all are threatened by anthropogenic factors due to either touristic activities or sand mining. An efficient conservation program for the eastern Mediterranean Sea coasts is urgently needed.

Keywords Spit inventory · Coastal landforms · Mediterranean Sea · Levant Sea · Aegean Sea · Black Sea