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Study of the Black Sea coastal geosystems in the north-eastern sector

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During last decade, specialists of the Southern Branch of the P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences (SB SIO RAS) and Marine Hydrophysical Institute (FSBSI MHI) have been conducting joint research of coastal zone geosystems of the Crimean and Caucasian coast. The complex activity aims to work out general approaches to evaluation of the current state and forecast of the evolution of coastal geosystems having regard to variability of natural factors and anthropogenic pressure. The research tasks are solved using up-to-date information technologies based on complex analysis which combined both the acquisition and analysis of new data of the field observations and systematization and analysis of archived data as well as materials of space sounding and aerial photographs. By processing the satellite images and the contact measurements for the period 1941-2016 the analysis of the variability of the shoreline test plots were done. The classification of natural catastrophic phenomena gives their relative brevity and genesis. Based on received data, selected sections of the coast that are most strongly influenced by the intense level are identified developed program for calculating the propagation of waves such as Tsunami in the coastal zone. The analysis of storm activity in the Black Sea in the area of Anapa bay-bar for the last years was done. There was a trend of increasing storm intensity. In the framework of the annual cycle increases the impact of the summer months. In November-December there was a decrease of the storm activity. When considering the spread of the most noticeable feature is the significant strengthening of the eastern component, while weakening the west one. The storms of the south-west directions are the most dangerous. These storms most commonly develop waves with energies exceeding 100 kW/m. In the framework of the inter-annual variability increased the number of moderate storms with energies up to 10 kW/m. Analyzed the annual series of biogenic elements in coastal waters of the Heraklean Peninsula. The analysis of the main transformation processes of coastal biocenoses of the individual sections of the coastal zone. The regular updating of the previously generated specialized database of oceanographic data of the coastal zone in the Black Sea is provided. The base includes data on temperature, salinity, hydrochemistry, hydrooptix, currents, meteorology, drifter data and satellite observations, including more than 90 thousand hydrological and 18 thousand hydro-chemical. The use of new technologies and techniques to evaluate their applicability for the study of complex and dynamic natural features like the sea shores. The new data on the current status of the components of coastal geosystems were obtained. The accuracy, detail and spatial coverage of the data could not be achieved by traditional methods of research.

Biography

Ruben Kosyan has completed his PhD in 1974 from P.P. Shirshov Institute of Oceanology, Academy of Sciences of the USSR and D.Sci. Degree in 1991 from Moscow State University, Department of Geography. He is the Head of Lithodynamics Laboratory. He has published more than 400 papers in reputed journals, 12 monographs and has 9 patents of inventions. He is an adviser to the international program "Medcoast", a member of the Association of Balkan Scientists, the American Association for the Development of Scientific Research, the European Union for the Protection of the Seaside (EUCC, Holland), the International Institute of coasts, oceans, ports and rivers. He is a member of the Since 2010, a member of the Scientific and Technical Committee of the International Center for Environmental Management of Enclosed seas (Kobe, Japan).

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