Sediments dynamics investigation in off-shore zone of Israel southern sea coast by means of luminescent tracers

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Investigations are based on the field experiments with luminescent tracers (LT) using. Sand grains were treated by anthracene dissolved in chloroform with resulting appearance of bright blue luminescence under UV lamp excitation. With the aim of high sensivity of LT detection on the background of untreated sand luminescence, the optimal parameters of LT excitation and luminescence were determined by means of excitation-emission spectroscopy. As may be seen, the best excitation wavelenght is at 350 nm and luminescence detection interval is 450-480 nm.

In the upstream measuring section sand taken from the same area and treated by luminophor have been placed on the bed by injection. In the downstream section ground samples have been taken at certain intervals. The luminescent analysis was made by the two following ways. Firstly, the standard quantity of the ground was examined using fluorescence microscope and the LT were detected and selected. The tracer concentration in a sample was determined as a ratio of the separated part weight to the total weight of the sample. Secondly, the luminescence intensity of different samples were determined by luminescence spectrometer under constant conditions. The tracer concentrations were defined by comparison with artificially prepared samples with fixed quantitites of LT. All results were treated by personal computer and corresponding statistical parameters were determined.

According to LT dispersion, sediments stream along the shore is calculated and submarine canyon (Ashkelon district) influence on its transit is determined. Comparative assesments of sediments interceptions by canyons are accomplished between Israel's sea coast and Black sea coast. Dependence between sediment stream characteristics and wind wake is proposed. Influence of hydrotechnical industrial enterprises on the sediments balance in the inshore zone is demonstrated.

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