



## Scour Caused by Extreme Waves and Currents near Offshore Gravitational Platforms

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A soil scour problem is very important by operation of the gravity based structures (GBS). Strong scour may lead to loss of stability of the structure and cause technological disaster. In connection with this, it is necessary to assess and minimize the possibility of scour. Here we present the results of physical modeling of bed scour near the GBS with flat bottoms, close to the square and rectangular. The results of measurements of the bottom deformation caused by extreme waves and currents are given.

The experiments were conducted in enclosure of model basin (40 x 6.2 m), within the work area (12x 6.2 m) with the model bottom and GBS. The work area was a broad crested weir. The bottom was formed by fine sand with a mean particle diameter of 0.22 mm. The wind waves were created by portable beam-type wave maker (the length of the beam was 6.1 m) mounted on the bottom of the basin. The modeling of the current was performed using standard centrifugal pump through pipes and valves. The wave impact was carried out using a single stationary vacuum wavemaker. The soil scour modeling was performed according to Froude number in the self-similar area of the Reynolds numbers. The modeling scale was 1:60. The optical measurements system of the surfaces (OMSS) was used to evaluate the bed deformation. The 3-D maps of the bottom after the end of the tests and drying of the model were given using the OMSS. The contactless acoustic measurement system has been applied for measuring of the bottom change during the large-amplitude wave action on the GBS model at discrete points. The results are used for the preparation of recommendations for the protection against scour.