Geophysical Research Abstracts
Vol. 20, EGU2018-10834-1, 2018
EGU General Assembly 2018

First model application of 3D infrared scanning on water surface (film covered) to understand sea-level fluctuations around sea vessels type propeller thrust and behavior of currents

Dursun Acar (1,2), Bedri Alpar (3), Sinan Ozeren (4), and Nazmi Postacioglu (5)

(1) Istanbul Technical University Emcol, Istanbul, Turkey (dursunacaracar@hotmail.com), (2) Anadolu Üniversity, (3) Institute of Marine Sciences and Management,Istanbul University, Istanbul, Turkey, (4) Istanbul Technical University Eurasia Institute of Earth Sciences, (5) Istanbul Technical University Faculty of Science and Letters, Physics Engineering

The infrared 3D scanners have great advantages for quick mapping of materials which has heat holder capabilities on surface. Water or glass type materials diffract the light quickly without heat gripping. The reason of absence of trace energy is with today's technology, because of low detection. We provided infrared heat reflection based water surface's 3D scan with Kinect structure motion sensor of the Microsoft©. Tight dark film laid to water surface and first water surface 3D image was provided without estimation of computer software related fluid dynamics. Technology is based to the 1970s 3D grid mapping. Instrument is using reference dot projector. We designed film covered water surface model with propeller settings at experience, considering that the sea vessels provide similar currents at nature. Six propellers were deployed to the floor of experiment pool and their propulsion started systematically. These twin propulsion electric motors are for one vessel with each symmetric mirrored propeller form's reverse turn direction. The symmetry at both structure and turn direction are used to eliminate some artificial errors. The experiment #1 used glycerin as high viscose liquid media at changing temperatures. Back side of the propeller merged very close cascading liquid level peak, as a stuck pile during its run. The rotational velocity of the propeller was low at the full support of 3 Volt power with low Reynolds fluid glycerin. In the experiment #2, 18 Celsius degree water was used. The propellers turned fast. We could not see close stuck pile form at the back side, but the surface topography raised up. The water at the front side was lowered due to the propeller suction. That elevation provides pulling forces and causes probable accidents for the nearby sea vessels. Because infinite support of deep sea creates currents at the same direction of elevational reduce of surface in order to fill the space. The little gyres caused by the six propellers rotating at the same direction during the preliminary experiment was similar to an atmospheric push force to the ocean surface by torsional winds, or gyre-type big water currents surrounded by regional reverse directed currents.