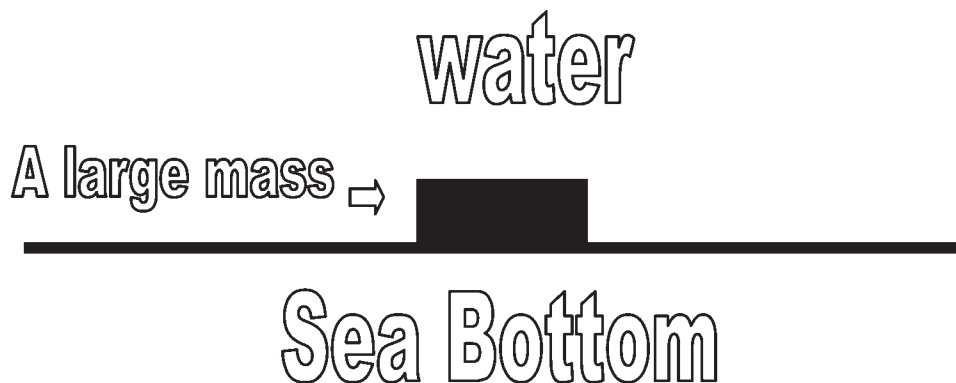


Points-to-Ponder-III

In this forum we invite authors to submit thought provoking questions which have short answers and which bring out some important issues in the theory or practice of exploration geophysics. The questions should be submitted, preferably, along with their answers; however, that is not mandatory and the editorial board will make efforts to find correct answers. Selected questions will be published with their answers.

A large heavy mass is kept at the bottom of a flat rigid sea surface.



Will the water surface above the mass sag , swell, or remain flat?

Answer

The equipotential surface will rise due to the presence of mass and water seeks equipotential surface. This leads to another question: In the offshore, since the ship sails on an equipotential water surface, how one can possibly measure any variation in gravity?

The answer to this second question lies in understanding the difference between gravity potential and the gradient of the potential. It is true that the potential remains the same all along the water surface, but its vertical gradient, which is what instruments measure, varies spatially and that is what we are after.