



On the marine geoid computations using MSL

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Satellite altimetry, which could be regarded as the best global sea level observation technique, has been very successfully used for the computation of the “static sea level”, known as “Mean Sea Level (MSL)” in geodesy. Though MSL is not an equipotential surface but plays a major role in the definition and realization of the geoid, as an equipotential surface, which best fits to MSL. In this paper, various methods for marine geoid computations based on MSL are tested and compared with each other. It has been shown that all methods for marine geoid computations can be classified under following three groups:

1. Boundary Value Problem approaches which use MSL as a boundary data.
2. Geopotential approaches which are based on evaluation of geopotential values at the MSL
3. Geometrical approaches which are based on computational of Sea Surface Topograph (SST) and its removal from MSL.

As the case study, the new MSL model computed by the geodesy and hydrography laboratory of the University of Tehran, is used and the marine geoid computed by the various computational methods are compared.