



On the review of the non-linear effect in the precise geoid computations

Y. M. Wang

NOAA/NGS, Geoscience Research Lab, Silver Spring, United States (yan.wang@noaa.gov)

For precise geoid computation, the non-linear effects in the geodetic boundary value problem, the topographic reduction and gravity reduction have to be taken into account. The non-linear effect of the topographic and gravity reductions has been investigated in many local regions. It is worthwhile to examine the impact of the non-linear terms on the geoid on a global scale. Especially, how it does affect the stability of the solutions with increasing resolution. For the investigation, the SRTM30 digital elevation model, a gravity anomaly grid computed from the global gravity model EGM08, and the NGS surface gravity data will be used. The results will be shown and will be used for future geoid computations.

This paper reviews the non-linear effect in the topographic and gravity reductions only. The non-linear effect in the geodetic boundary value problem will not be discussed here.