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Feasibility assessment for geoid improvement by shipborne gravity surveys on the reservoirs in Taiwan

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The study is aimed at computing the different geoid models over Tseng-Wen and Shih-Men reservoir areas in Taiwan with the consideration of the reservoir water level change. The strategy of the geoid modeling is based on Remove-Compute-Restore (RCR) procedure with Least Squares Collocation (LSC). The EGM2008 coefficients up to degree and order 360 are used for the computations of the long-wavelength geoid and gravity; a best Taiwan gravity grid with the resolution of 30 arc-minute is used for the middle-wavelength geoid modeling; a digital elevation model (DEM) with 5-meter spatial resolution is used for the computations of the short-wavelength geoid and gravity. The upward continuation technique is taken into account to obtain the simulated gravity values at different water levels in a reservoir area. The purpose of the research is to evaluate the applicability and necessity for further practical shipborne gravity missions over Tseng-Wen and Shih-Men reservoir areas.