Estimating reservoir sedimentation by gravimetry technique: A case study in Tseng-Wen reservoir

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The study proposes a new method for estimating variation in reservoir sediment by gravimetry technique. The study area is located in Tseng-wen reservoir, which is the largest reservoir in Taiwan. Several field gravity surveys with FG-5 gravimeter have been carried out at three gravity stations surrounding the reservoir (shown in figure) during 2014–2016. The observed gravity values caused by the effects of ocean tide, polar motion, atmospheric pressure, and underground water will be well predicted and removed. The variation of Tseng-wen reservoir sedimentation derived from gravimetry technique will be compared to those derived from bathymetric lidar. The purpose of the research is to develop a more efficient and economic method to measure the sediment variations in reservoirs, and subsequently bring contributions to soil and water conservation.

Keywords: gravimetry, reservoir sediment, FG-5 gravimeter