



Optimal combination of integral solutions of gradiometric boundary value problem

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Optimal estimation of geopotential coefficients is an important matter in gravitational field recovery using satellite gravity gradiometry. Combination of gradiometric data and using tensor spherical harmonics is useful in this field. In this paper we present a new strategy to combine different spectral solutions of the gradiometric boundary value problem by defining and formulating degree-order variance components and using the condition adjustment model. Numerical results show that, the spectral combination by considering one degree-order variance component for each type of observation yields better results than the case where one degree-order variance component is estimated for each integral solution of the gradiometric boundary value problem. In this study we do not consider the variance components estimation in the standard way but the variance components are mainly used to absorb the discretization error of the integral solutions.