

Computational optimization in high resolution gravity field modelling by the finite volume method

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Abstract

Although, the finite volume method has been successfully applied for global as well as local gravity field modelling, to obtain precise numerical solutions which are required by geodetic community, it needs very refined discretization. It is obvious that such a discretization will lead to large-scale parallel computations, so to optimize them, we present a special class of numerical techniques that are based on a physical decomposition of the computational domain. We test their efficiency in various numerical experiments and finally, we present high resolution gravity field modelling with more than ninety-three billion of unknowns.