



Gravitational gradients in rotated frames for the study of oriented mass sources within the Earth system

Isabelle Panet

IPGP, IGN, ENSG, Université Paris Diderot, Sorbonne Paris Cité, UMR 7154 CNRS, Paris, France (panet@ipgp.fr)

This work presents a method based on gravitational gradients analysis in order to enhance the identification and separation of the gravity signals of elongated mass sources in the Earth's gravity field. For that, gravity gradients are defined at different spatial scales in rotated spherical frames, which are oriented according to the source. I describe the sensitivity of these gradients to the mass distribution from surface to depth, and investigate how a source width and orientation is reflected in these observables, considering simple elementary mass sources at various depths. The method can be applied to static and time-varying satellite gravity field models, and hopefully help resolve the ever increasing number of signals recorded in these high accuracy models.