

1

GOCE Observations for Detecting unknown Tectonic Features

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The global coverage of the satellite allows to investigate areas that are inaccessible due to either physical or political barriers. We intend to use the GOCE observations of the gradient field to detect unknown tectonic features in inaccessible areas. We make a simulation in which we construct a forward model that contains the known geologic features and compare it with the gravity and gradient fields now known and those we will obtain from GOCE. We show how the deviation of the model from the observations can be used to detect previously unknown geologic features, especially if associated to strong density contrasts, which might also be of economic potential. Our main study areas are the South American, African (in cooperation with Jorg Ebbing, NGU) and Eurasian continent, as part of different projects (e.g. GOCE-Italy, FAPESP). In particular for the great basins of South America, as Parana, Amazon and Paraiaba we integrate broadband and long period MT soundings with the gradient observations to solve the problem of the subsidence mechanism.