



A global gravity field model by merging of regional refinement patches derived from innovative satellite data

A. Eicker (1), K.H. Ilk (1), T. Mayer-Guerr (1)

Institute of Theoretical Geodesy, University of Bonn (annette@geod.uni-bonn.de)

The satellite missions CHAMP, GRACE and GOCE promise a significant gain in accuracy in gravity field recovery. To exploit the information present in the satellite data to full content, it seems reasonable to improve global solutions by regional recovery strategies, as especially in the high frequency part of the spectrum the gravity field features differ in different geographical areas. Therefore the recovery procedure should be adapted according to the characteristics in the respective area. In the approach presented here a global gravity field represented by a spherical harmonic expansion up to a moderate degree is refined by regionally adapted high resolution refinements. These refinements are parameterized by splines as space localizing base functions.

Additionally in a second step those tailored regional solutions are merged to a global representation, from which a parameterization by global base functions such as spherical harmonics can be derived by means of quadrature methods as well.

The approach is demonstrated by GRACE and GOCE simulation scenarios and applied to CHAMP real data of a two years observation period.