



Wavelet frame descriptions of Earth's potential fields: applications to magnetic and gravity fields

I. Panet (1,3), **A. Chambodut** (2), L. Amsel (2), M. Holschneider (2), M. Diament (1), M. Manda (4) and O. Jamet (3)

(1) Laboratoire de Gravimetrie et Geodynamique, Institut de Physique du Globe de Paris, France.

(2) Department of Applied Mathematics, University of Potsdam, Germany.

(3) Laboratoire de Recherche en Geodesie, Institut Geographique National, France.

(4) GeoForschungsZentrum Potsdam, Section 2.3, Germany.

(panet@ipgp.jussieu.fr / chambodu@math.uni-potsdam.de)

Potential fields are classically represented on the sphere using spherical harmonics. However, such a decomposition is inadequate when dealing with unevenly distributed datasets or when regional models have to be built. To overcome this drawback, we have developed a representation of the magnetic and gravity fields which is based on Poisson multipole wavelet frames on the sphere. The chosen wavelets are of special interest for geophysical modelling because they allow a physical interpretation in terms of localized multipoles (Holschneider *et al.*, 2003). The first results in regional modelling the Earth's magnetic and gravity field are presented.