Title: Computation of the CHAMP satellite altitude magnetic anomaly map and gradients over the Kursk Magnetic Anomaly to determine the causative body using inversion methods

Kis K.[1], P.T. Taylor[2] and G. Wittmann[3]
[1]Eötvös Loránd University, Budapest, Hungary, [2] NASA/GSFC Greenbelt, MD, USA, [3]MOL Hungarian National Oil Company, Budapest, Hungary

Abstract

We computed the magnetic field anomaly and its gradients at satellite altitude (324 km) over the Kursk Magnetic Anomaly (KMA) using CHAMP data as a proxy for Swarm measurements. Ten years of CHAMP data were used to simulate these Swarm data. East, north and vertical magnetic gradients were calculated. The vertical gradient was also determined using the Hilbert transform. Inversion of these data was computed using Simplex and Simulated Annealing algorithms. Our model was a horizontal quadrangle body the resulting inversion depth model is ten kilometers below the surface with a thickness of ten kilometers.

Biography

Patrick Taylor completed his PhD at Stanford University and did postdoctoral studies at Lamont-Doherty Earth Observatory. For twelve year he did marine geology and geophysics at the U.S. Naval Oceanographic Office and has been studying satellite altitude geopotential and imagery data at NASA/GSFC since 1978. He has served on several journal editorial boards.

Presenting author details
Patrick Taylor
Patrick.taylor@nasa.gov