Geophysical Research Abstracts, Vol. 8, 02870, 2006
SRef-ID: 1607-7962/gra/EGU06-A-02870

Weakly magnetic crust in the Canadian Cordillera

M. Pilkington (1), D. Snyder (1), **K. Hemant** (2)

(1) Geological Survey of Canada, Ottawa, Canada, (2) GeoForschungsZentrum, Potsdam, Germany

The magnetic field over the Canadian Cordillera as measured by two low altitude (300m; 5 km) magnetic data sets, is characterized by complex, short-wavelength ($<$100 km) anomalies associated with intrusive, metamorphic and volcanic rocks that occur at shallow depths ($<$5 km) within accreted terranes. The long-wavelength ($>$100 km) portion of the Cordilleran field is subdued and mainly featureless, and suggests a lack of magnetic sources at greater depths. Seismic reflection data from three major transects in the Yukon and British Columbia, Canada support this view and indicate that sedimentary-like formations make up the majority of the crust. Consequently, over much of the Cordillera, magnetic sources are limited to shallow levels and not the lower (more mafic) crust as is often suggested. Distinguishing between sources at different crustal levels is possible with the low-altitude survey data but not with satellite-altitude magnetic field data, which has little depth resolution. This ambiguity is well illustrated by the reasonable match between recently acquired CHAMP satellite data and the effects of an existing global crustal magnetization model based simply on published surface geology.