



Temperature Effects on the Features of the CHAMP Vector Magnetometer

Fan Yin (1), Shuying Ma (1), Hermann Luehr (2,1), and Jan Rauberg (2)

(1) School of Electronic Information, Wuhan University, China, (2) GFZ, German Research Centre of Geosciences in Potsdam, Germany

CHAMP (CHALLENGING Minisatellite Payload), a German small satellite mission to study the Earth's gravity field, magnetic field and upper atmosphere, ended in space on 19 September 2010. Thanks to the good quality of the satellite and to several altitude maneuvers, the satellite provided continuous and reliable observations including house-keeping data at different processing levels for more than 10 years. By processing the data of FGM (Flux-Gate vector Magnetometer), some effects of temperature on the FGM performance have been unfolded. The scale factors of the FGM show a positive correlation with the sensor temperature and the offsets show both positive and negative correlation. The 8 Hz disturbances from FGM x channel are temperature dependent and suppressed at higher temperature. It is very interesting that the noise power of the magnetometer has a larger magnitude at lower temperature rather than at higher temperature.