



Quantifying gyroremanent magnetization in greigite-bearing sediments

Karl Fabian (1) and Thomas Frederichs (2)

(1) NGU, Geological Survey of Norway, Trondheim, Norway (karl.fabian@ngu.no), (2) FB Geowissenschaften, Universität Bremen, Bremen, Germany

The occurrence of a gyroremanent magnetization (GRM) in sediments typically indicates the presence of greigite (Fe_3S_4). It is commonly observed that during AF demagnetization of greigite-bearing sediments the NRM first decreases and then apparently increases again at higher demagnetization levels (> 40 mT) due to the generation of a gyroremanent component. To diminish this effect the NRM components may be measured repeatedly after demagnetization of each single direction. This method has been implemented in the automated 2G cryogenic magnetometer at the University of Bremen, such that NRM demagnetization at each field step results in three magnetization vector-measurements, one after demagnetizing in X -direction, one after demagnetization in Y -direction and one after demagnetization in Z -direction. In addition to the combined GRM-free NRM, consisting of the x -component of the 1st, the y -component of the 2nd, and z -component of the third measurement as described by Dankers and Zijdeveld (1981), these data contain six off-diagonal measurements for each demagnetization step. Based on data from ODP sites 911a and 910c a new method is tested to quantify the intensity of the gyroremanence by making use of these additional measurements. By describing the coercivity spectrum of GRM compared to the AF spectrum of the NRM we attempt to assess whether the NRM contains fractions less influenced by possible deflections due to GRM, and to estimate the total effect of greigite upon the NRM.