MAGNET : MAgnetometer for Geophysical and Noise-Reduction ExperimenT

Mark B. Moldwin, Leonardo H. Regoli[1], Xianzhe Jia, Jeremy N. Basis, Paige Cooley, Yining Shi
Climate and Space Sciences and Engineering, University of Michigan

[1] Now at Johns Hopkins University Applied Physics Lab

We are developing and testing a new magnetometer called MAGNET (MAgnetometer for Geophysical and Noise-Reduction ExperimenT) to measure the Europa-Jovian-Space Environment magnetic field and waves and use these signals to infer near-surface composition and ice shell properties, detect the presence or absence of water plumes, detection of liquid water induced currents and, help interpret the proposed seismometer data. We are conducting modeling to help determine the performance requirements for such a surface magnetometer and to build upon the work done under a NASA H-TIDeS project that characterized a new style of commercial magnetometer called a magneto-inductive magnetometer by PNI corporation. The ICEE-2 effort has been focused on further developing and testing a software modified PNI RM3100 magnetometer for space environment conditions anticipated on the surface of Europa. Specifically, we have been conducting radiation testing (total ionizing dose and single event effects) testing. We have found that the RM3100 is radiation total ionizing dose tolerant up to 200 kRAD and suffered no single event latch ups (SEL) with LET > 75 MeVcm^2/mg.