Introduction

Magnetic susceptibility (MS) is a measure of a sample material’s ability to be magnetized by an applied magnetic field. Applied to sedimentology, it provides us with a proxy indicator for the concentration of magnetizable minerals present at each depth. This knowledge, in conjunction with directional magnetic alignment data, climatic histories, and other records, is used to piece together the history of Earth’s magnetic field. Susceptibility also factors into the study of seismic/volcanic events, climate models, glaciations/de-glaciations events, and biological productivity rates. As a correlative tool for many types of magnetizable materials with varying susceptibility strengths spanning orders of magnitude, MS measurements have become a ubiquitous facet of almost every branch of paleoresearch.

Measuring Magnetic Susceptibility

Automated Metering Device

Field susceptibility track

Susceptibility measurements are also useful in the field, wherever sediment cores are collected. In order to insure a continuous sedimentation record, cores taken at different depths must be overlapped. Magnetic susceptibility is a quantifiable internal property of the sediment material by which features may be plotted and visually identified (usually left and below). This provides us with a rapid, non-destructive way to verify that a scientifically useful and gap-free record has been acquired before leaving the field. For most field measurements, manual methods can suffice until more precise lab data is gathered at a later time.

Field susceptibility measurements are now more convenient with the portable track system. The track is operated manually and accommodates cores up to 3cm in diameter. It assembles in minutes and can be used on uneven ground (see below).