



## **Magnetic surveying in the classroom using modern mobile devices**

Jens Tronicke and Trauth Martin

Universität Potsdam, Institut für Erd- und Umweltwissenschaften, Potsdam, Germany

Today's mobile devices (i.e. smartphones and tablet computers) are equipped with a variety of sensors typically including a three-axis magnetometer. We investigate the feasibility and the potential of using such mobile devices to mimic magnetic geophysical surveying in the classroom in a table-top setup. We present our basic experimental setup to collect three-component magnetic data across well-defined source bodies and structures. Our results demonstrate that the quality of the recorded data is sufficient to demonstrate and develop a basic understanding of analyzing, processing, and interpreting such geophysical data sets. In addition to experiments addressing the vectorial nature of geomagnetic fields and the influence of inclination on the shape of the measured anomalies, we present experiments addressing the resolution capabilities of such data sets. Furthermore, we demonstrate that such data sets can be used as examples to develop filtering and interpretation approaches (including data inversion) as they are typically employed when processing magnetic data sets recorded for real-world field applications. Thus, we conclude that such table-top experiments represent an easy-to-implement experimental procedure (as student exercise or classroom demonstration), which can provide first hands-on experience in the basic principles of magnetic surveying and helps to establish the link between the theoretical and the practical aspects of this geophysical method.