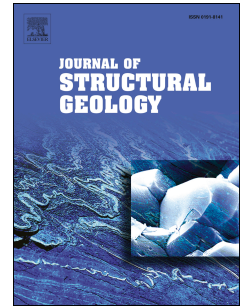


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Assessment of the precision of smart phones and tablets for measurement of planar orientations: A case study

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Abstract

Although paper and pencil approaches to geological mapping continue, digital mapping tools are being increasingly implemented in field geology. Of particular note is the use of an electronic compass/inclinometer built into tablets and smartphones for obtaining orientation data where an important question is the reliability of these digital devices relative to conventional, analogue compass/inclinometers. This paper deals with this question through detailed tests of two android devices: an Honor 3C smartphone and a Lenovo B8080-F tablet. In order to evaluate potential electronic noise effects the devices were tested in two modes, standard and airplane. Over 14,000 readings from the sensors were collected to evaluate the stability of the sensor's readings and showed that the magnetic sensor in the tablet was unacceptably unstable. Seven geological compass applications were installed on the Honor 3C smartphone and tested against the analogue Freiberg geological compass in a field experiment. During the experiment 25 fractures varying in azimuth and dip were measured

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