

EVALUATION OF 1-HZ DATA FROM USGS GEOMAGNETIC OBSERVATORIES

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The U. S. Geological Survey Geomagnetism Program is now collecting one-second triaxial fluxgate magnetometer data at its observatories. Extensive testing is being done to validate the data and document its resolution and timing accuracy. Magnetometer resolution is evaluated by examining the second-to-second differences of each individual component to estimate the noise level. The noise level is determined for the data acquisition system itself and then at each observatory site. Timing accuracy is tested by using the one pulse per second (PPS) output from a GPS clock to trigger a pulse generator with delay. Through this test we are able to quantify the delay introduced by each component of our data acquisition system, including the fluxgate magnetometer and A/D converter. As a second test of timing accuracy, a sine wave is used to examine the delay in the analog output from the fluxgate. The results of these tests are compared with the standards of 0.01 nT resolution and 10 millisecond time accuracy as proposed by Intermagnet in 2008.

Observatory, data-quality, operations

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