August 13, 2020

The chart below is a concatenation of an RM3100 in ground mounted magnetometer run from 0308UTC to 1558UTC and 1613UTC to 2400UTC on August 12 (15 minute gap between stopping runMag to retrieve first log and restarting runMag for continued logging.

During this period, sub surface mounted RM3100 environmental temperature slowly increased by less than 0.4C.

The graph is of Z axis values plotted directly from log data using Open Office Calc. The RM3100 is plugged into a Dave Witten MR3100 Magnetometer board version 0.0.10 which connects to a Raspberry Pi 3B+ 400 feet away via differential i2c signalling over direct burial shielded CAT5 #24 solid copper twisted pair. The 5V and ground conductors are shared over two pairs unlike the current proposal to make one pair ground and the other +5.

There is apparently a 'start up transient' at the beginning of each runMag sequence which dies out over an hour or more into each run. The apparent upslope in the last half of the total run may or may not be related to temperature. The cause of the startup 'transient' is unknown at this time; the other axis data shows a similar pattern.

I am running a new test with another RM3100 board directly connected to the Pi i2c bus in what should be a magnetically stable environment to look for any difference in behavior related to the beginning of a run. More testing is required and anyone else with the capability should do so.

Jules Madey-K2GJ