

## **Geometrics Knowledgebase**

### **Why you need a Base Station**

Your need of a base station depends on the objective of the survey. If one is performing a geologic survey to investigate deep structure (exploration for mineral deposits, oil/gas, geology) then the wavelengths of the "target" body are typically long (long in meters, therefore long in data acquisition time). The rate at which the Earth's natural magnetic field responds to interaction with the solar wind is also typically many seconds to minutes (diurnal variations). Since the geologic and diurnal variations are of similar wavelengths, a geologic mag survey usually requires a base station. Please read the introductory sections of the Applications Manual for Portable Magnetometers offered on our website for more details.

If you are moving fast (fast in the sense of a brisk walk, ~1m/s) and looking for small targets (UXO, archaeological artifacts, environmental targets like drums, pipes, etc.) then you are up and over them in a matter of seconds and typically the earth's field does not change in this time frame. So there is less need for a base station for these type surveys. Of course, it never hurts to have a base station running and if you are surveying over multiple days, having a reference station will allow easier block leveling of multiple day surveys.

<http://support.geometrics.com/kb/questions.php?questionid=48>