Gravity Corrections

Here are the numbers to use for standard gravity corrections. Remember that most software (Excel, etc.) requires that arguments for sine and cosine be in radians, not degrees.

For the **latitude correction*** use:

gth = 9.7803267714*((1 + 0.00193185138639*SIN^2(Lat))/(sqrt(1- 0.00669437999013*SIN^2(Lat))))* (m/s2)

note that this is m/s^2 and you'll want cm/s^2; 100 cm = 1 meter.

For **free air (elevation only) corrections** use **0.3086 mgals/m** (0.09406 mgals/foot).

For **Bouguer slab corrections** (@2670 kg/m 3) use **0.11195 mgals/m** (0.03412 mgals/ft).

The common anomaly to present is the Bouguer anomaly (BA):

BA = observed gravity – latitude correction + FAC – BC.

For our class exercises we will collect gravity observations over a sufficiently limited area that we can ignore the latitude correction and Bouguer correction. Note that they may well be important in other archaeological applications. Terrain corrections, which account for variation in local and distant topography, may also be important.

*Blakely, 1995, Potential Theory in Gravity and Magnetic Applications, Cambridge Univ. Press, 441 p. This is for the recent, 1984, Geodetic Reference System adopted by the International Association of 5. Geodicists and corresponds to the WGS84 datum.