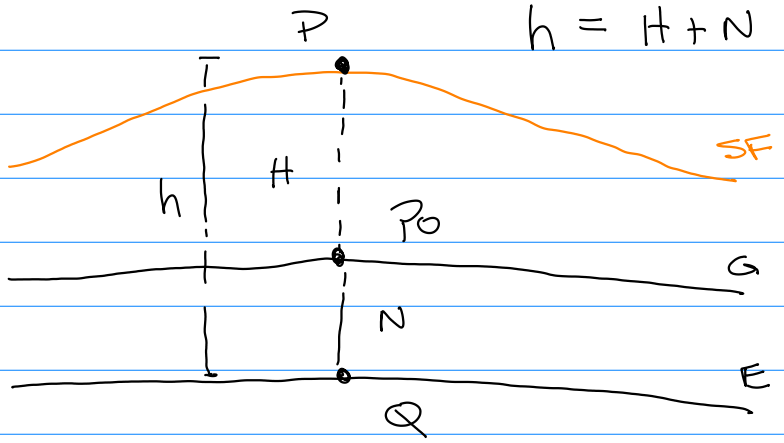
Classical gravity anomalies

gravity anomaly

$$\Delta g_P = g_0 - \gamma_Q$$



Free-air anomaly Δg_P^{FA}

approximations

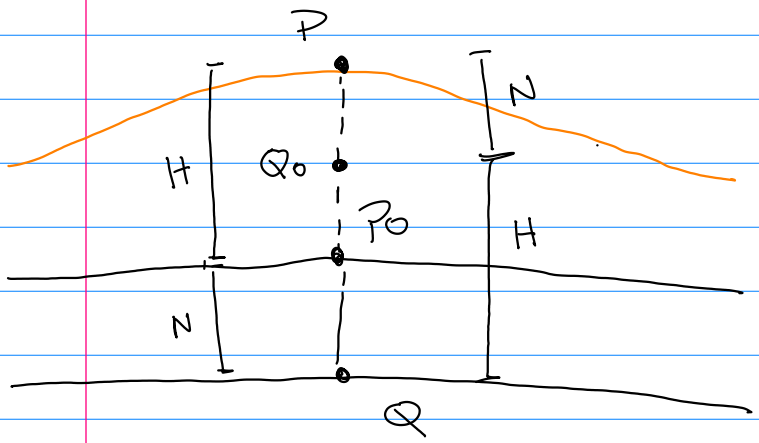
$$g_P \approx g_0 + \frac{\partial g}{\partial H} H$$

$$\frac{\partial g}{\partial H} \approx \frac{\partial \gamma}{\partial h} \approx -0{,}3086 \text{ mGal/m}$$

$$\Delta g_P^{FA} = g_0 - \gamma_Q$$

$$\approx \left(g_P - \frac{\partial \gamma}{\partial h} H \right) - \gamma_Q$$

$$\approx g_P - \underbrace{\left(\gamma_Q + \frac{\partial \gamma}{\partial h} H \right)}_{\approx \gamma_{Q_0}}$$

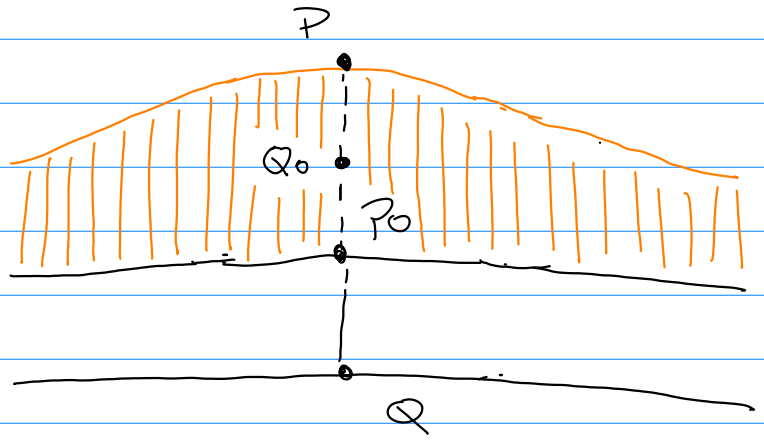


Bouguer anomaly Δg_P^B

approximations

$$g_P \simeq g_0 + \frac{\partial g}{\partial H} H + g_P^t$$

$$\frac{\partial g}{\partial H} \simeq \frac{\partial \gamma}{\partial h}$$



$$\Delta g_P^B = g_0 - \gamma_Q$$

$$\simeq g_P - \frac{\partial \gamma}{\partial h} H - g_P^t - \gamma_Q$$

$$\simeq g_P - \left(\gamma_Q + \frac{\partial \gamma}{\partial h} H\right) - g_P^t$$

$$g_P^t \simeq 10^{-5} \times 2\pi G \rho H \quad \text{(BOUGUER plate)}$$