

3.6 Potential density anomaly

Potential density anomaly, σ^θ or σ^Θ , is simply potential density minus 1000 kg m^{-3} ,

$$\begin{aligned}\sigma^\theta(S_A, t, p, p_r) &= \sigma^\Theta(S_A, t, p, p_r) = \rho^\theta(S_A, t, p, p_r) - 1000 \text{ kg m}^{-3} \\ &= \rho^\Theta(S_A, t, p, p_r) - 1000 \text{ kg m}^{-3} \\ &= g_P^{-1}(S_A, \theta[S_A, t, p, p_r], p_r) - 1000 \text{ kg m}^{-3}.\end{aligned}\tag{3.6.1}$$

Note that it is equally correct to label potential density anomaly as σ^θ or σ^Θ because both θ and Θ are constant during the isentropic and isohaline pressure change from p to p_r .