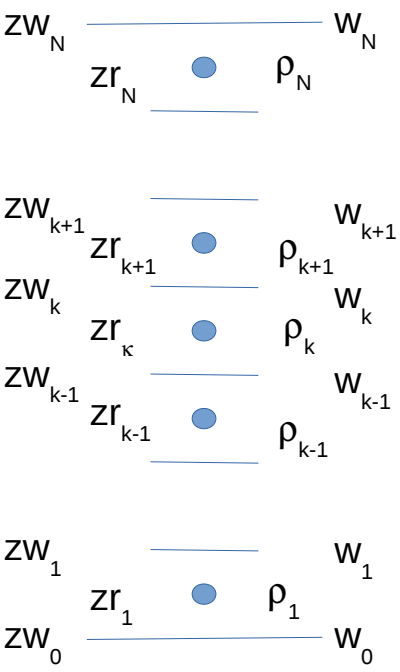
Gradient de pression dans ROMS

Routine prsgrd.F

Pressure on level ρ



First surface pressure

from k=1 to N-1

$$dZ_k = zr_{k+1} - zr_k$$
$$dR_k = \rho_{k+1} - \rho_k$$

$$dZ_N = dZ_{N-1}$$
$$dZ_0 = dZ_1$$
$$dR_N = dR_{N-1}$$
$$dR_0 = dR_1$$

Then accumulate from the surface

from k=N to 1

$$dZ_k = \frac{2 * dZ_k * dZ_{k-1}}{dZ_k + dZ_{k-1}}$$

if $(dR_k * dR_{k-1}) > 0$ then

$$dR_k = \frac{2 * dR_k * dR_{k-1}}{dR_k + dR_{k-1}}$$

else

$$dR_k = 0$$

$$P_N = g.zw_N + \frac{g}{\rho_0}\left[\rho_N + \frac{0.5*(\rho_N - \rho_{N-1})*(zw_N - zr_N)}{zr_N - zr_{N-1}}\right]*(zw_N - zr_N)$$

from k=N-1 to 1

$$P_k = P_{k+1} + \frac{g}{2\rho_0}\left[(\rho_{k+1} + \rho_k)*(zr_{k+1} - zr_k)\right.$$
$$\left. - \frac{1}{5}\left[(dR_{k+1} - dR_k)*\left(zr_{k+1} - zr_k - \frac{1}{12}(dZ_{k+1} + dZ_k)\right)\right.\right.$$
$$\left.\left. - (dZ_{k+1} - dZ_k)*\left(\rho_{k+1} - \rho_k - \frac{1}{12}(dR_{k+1} + dR_k)\right)\right]\right]$$