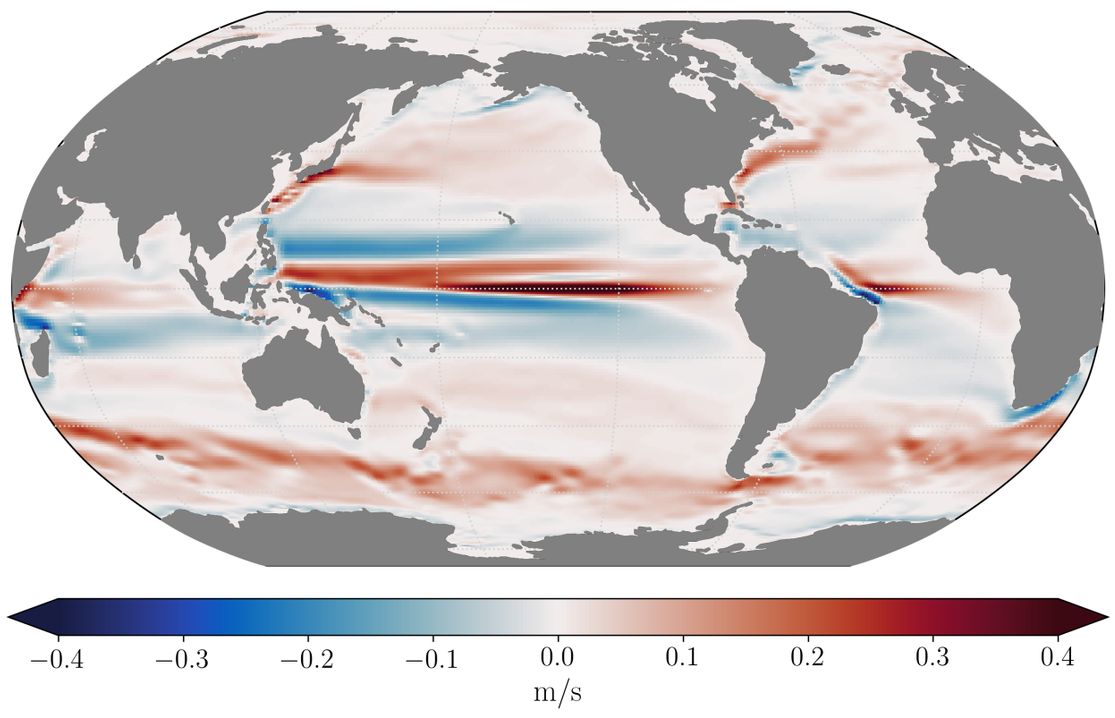
EUC Transport Algorithm

1. Compute time mean zonal velocity:

$$< u > = \frac{1}{N_{months}} \sum_{t_i=1}^{N_{months}} u(x, y, z, t_i)$$

Where N_{months} = 300 for 1993-2017



ECCOv4r4 1993-2017 time mean zonal velocity at 105m depth (Vertical level 11, with upper, lower bounds at 100.2m, 110.5m depth)

2. Compute Eastward Transport Per Width (ETPW):

for x $= 140°E \rightarrow 80°W$

for y $= 1.5°S \rightarrow 1.5°N$

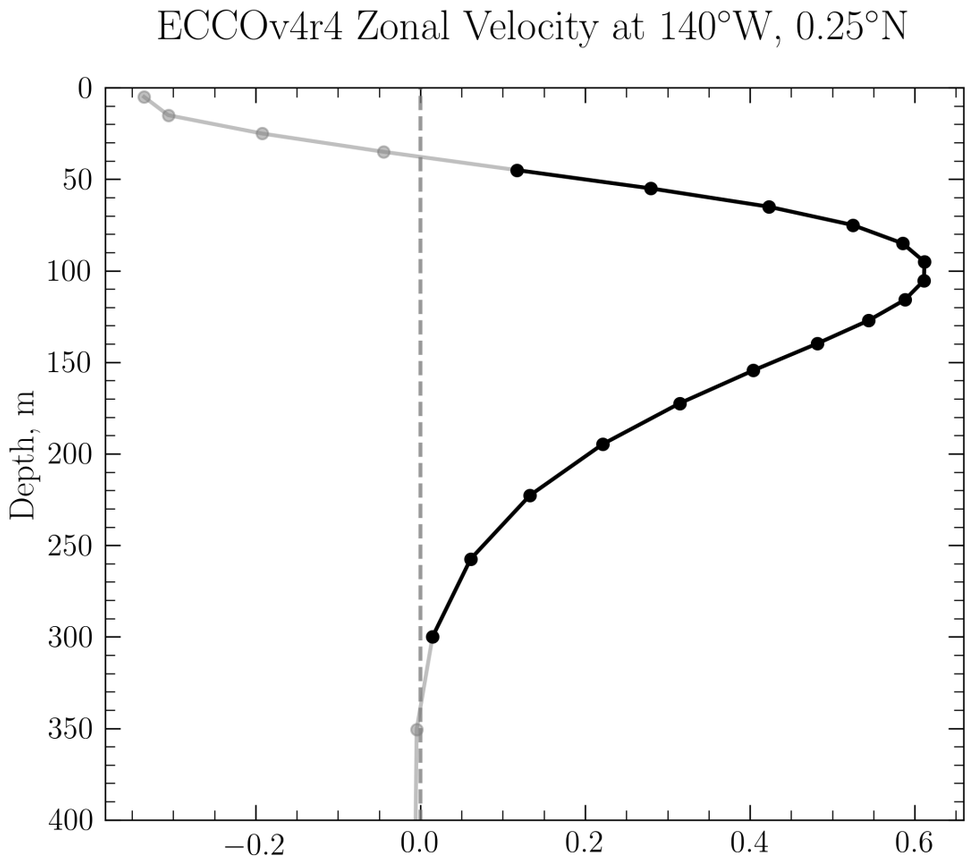
for z $= 0m \rightarrow 400m$

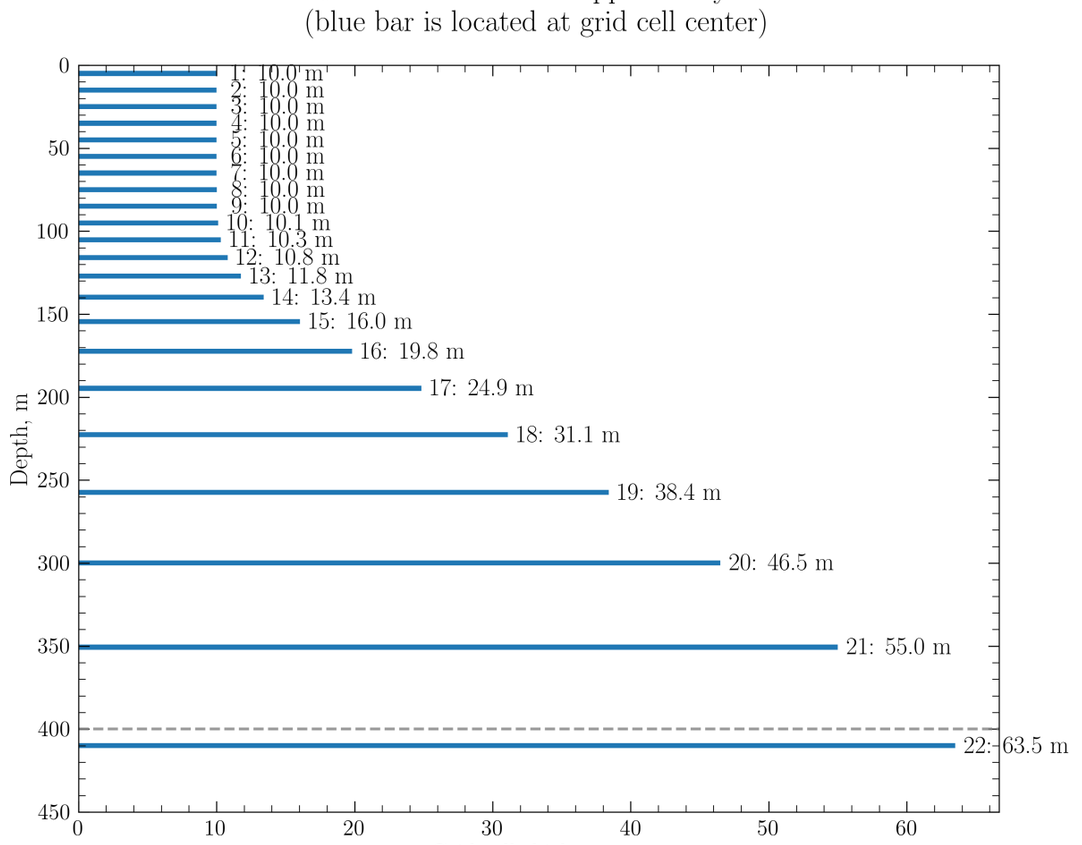
if $< u > (x, y, z) > 0$

$$ETPW(x, y) = \sum_z < u > (x, y, z)\Delta z(z)$$

else

$$ETPW(x, y) = 0$$



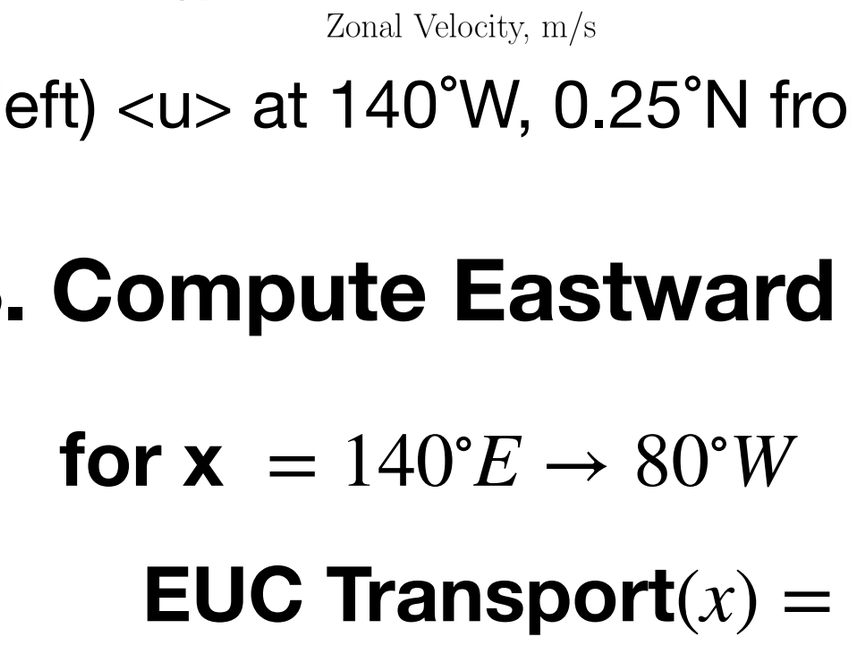


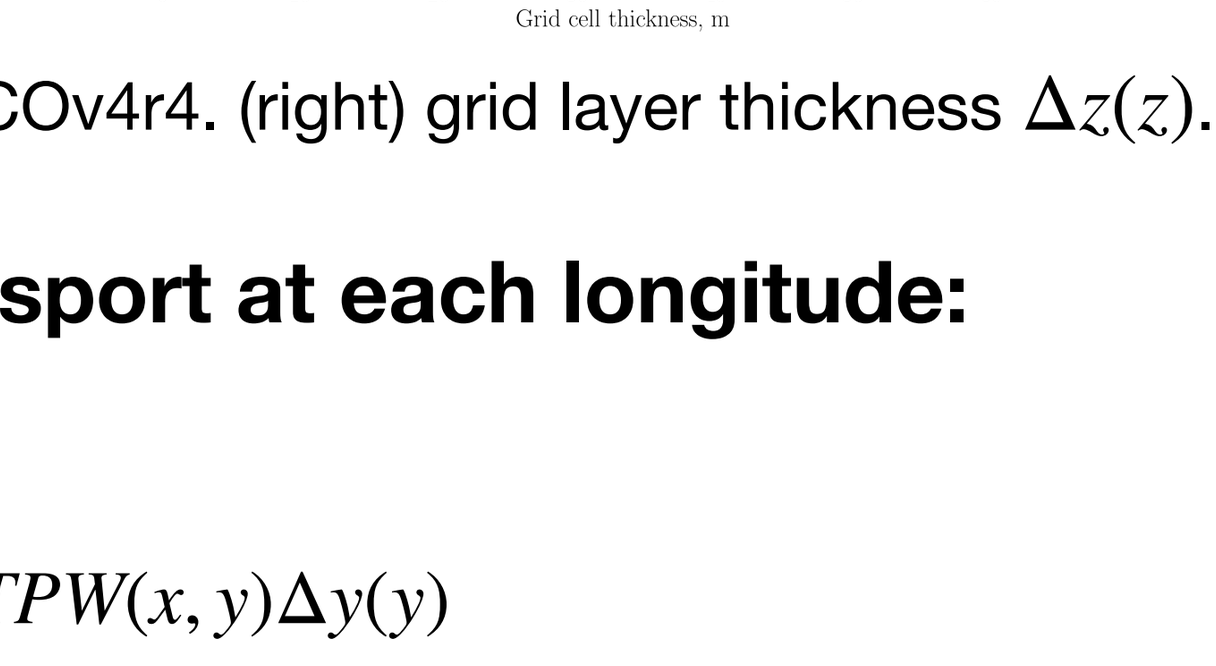
(left) <u> at 140°W, 0.25°N from ECCOv4r4. (right) grid layer thickness $\Delta z(z)$.

3. Compute Eastward Transport at each longitude:

for x $= 140°E \rightarrow 80°W$

$$\textbf{EUC Transport}(x) = \sum_y ETPW(x, y)\Delta y(y)$$





(left) $ETPW$ at 140°W from ECCOv4r4. (right) grid cell width $\Delta y(y)$.