

Challenges to Marine Life: Settling

How to “avoid” settling out of the photic zone:

1) Be small, i.e., recall $|w_t| \propto r^2$

2) Be rough, i.e., a particle “shape factor” is incorporated into the Stokes drag (let’s call it γ) which is greater than 1 for non-spherical particles

Drag force on sphere $= -\gamma \cdot 6 \cdot \pi \cdot r \cdot \mu \cdot w$ **where $\gamma \geq 1$**

$$|w_t| = \frac{2 \cdot r^2 \cdot |\rho - \rho_s| \cdot g}{9 \cdot \mu \cdot \gamma}$$

3) Reduce your density (ρ_s), for example, by

a) Storing fats or oils

b) Storing air in small bubbles

4) Swim, be motile