

Data collection

Data processing for model input

COAWST

Tree census/
Remote-sensing

Grid-scale forest
structural variables

e.g., $D_{stem,ave}$, n_{tree}

Vegetation module

e.g.,

$$F_{stem,u} = \frac{1}{2} C_D a_{stem} u \sqrt{u^2 + v^2}$$
$$F_{root,u} = \frac{1}{2} C_D a_{root} u \sqrt{u^2 + v^2}$$

drag, turbulence
production/
dissipation

Hydrodynamic
model (ROMS)

$u(z)$, $v(z)$

Root measurement

Root scaling
parameters

e.g., α_S , β_S , α_{HR} , β_{HR}

Rhizophora root
module

Compute vertical profile
of root projected area
given stem diameter

a_{root}

$D_{stem,ave}$,
 z , n_{tree}