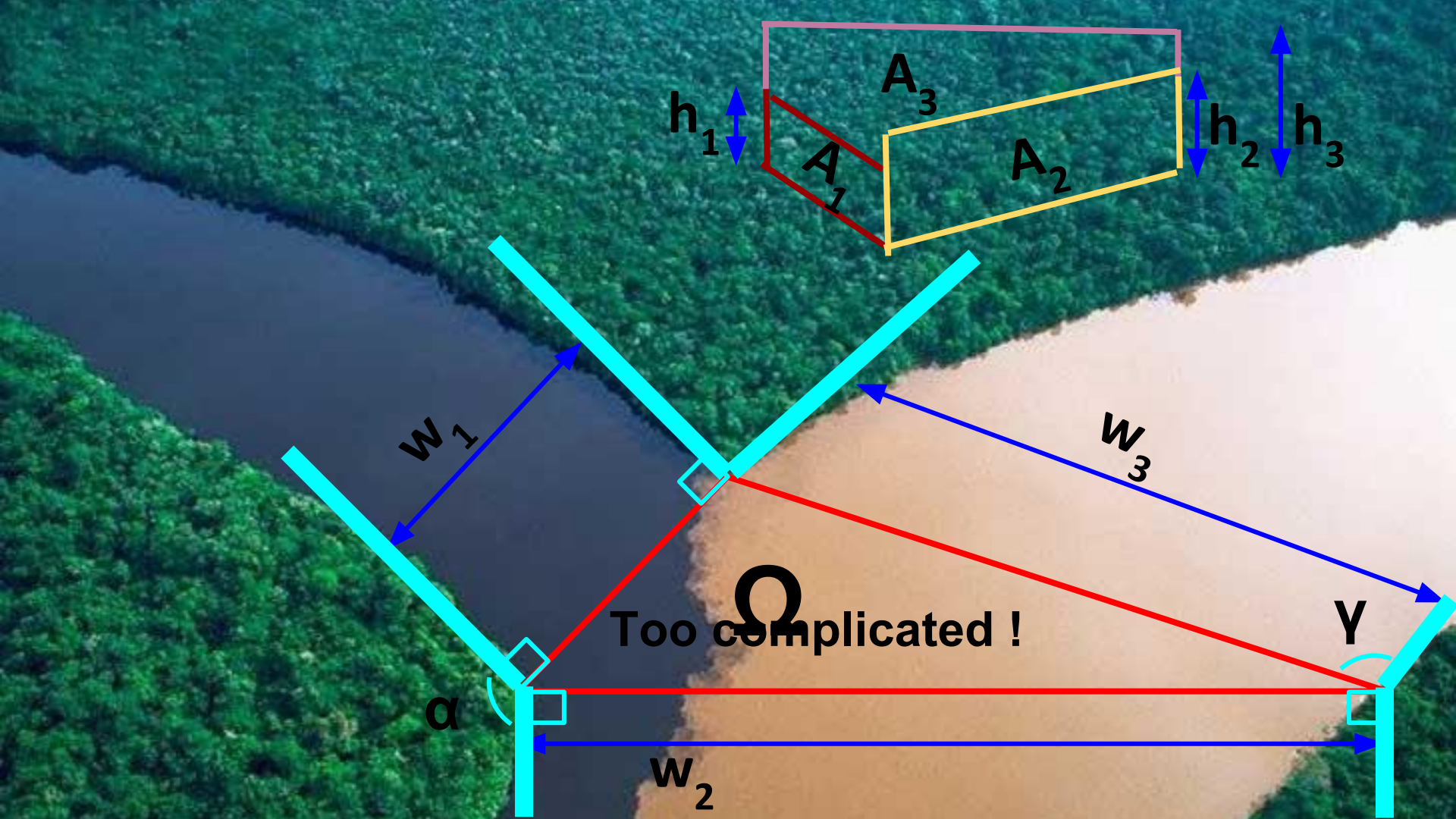


The Meeting of Rivers

Faiza Alssaedi, Artur Gower, Róisín Hill, Songkai Qiu

4th Annual **Stokes Modeling Workshop**

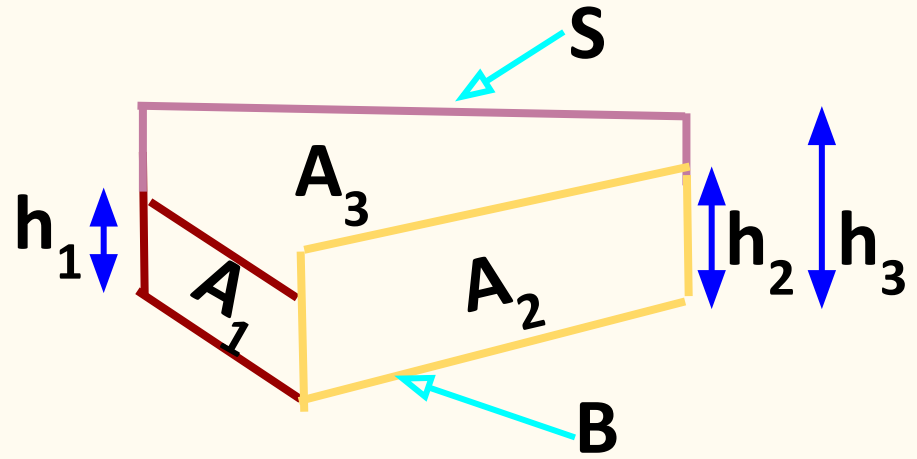
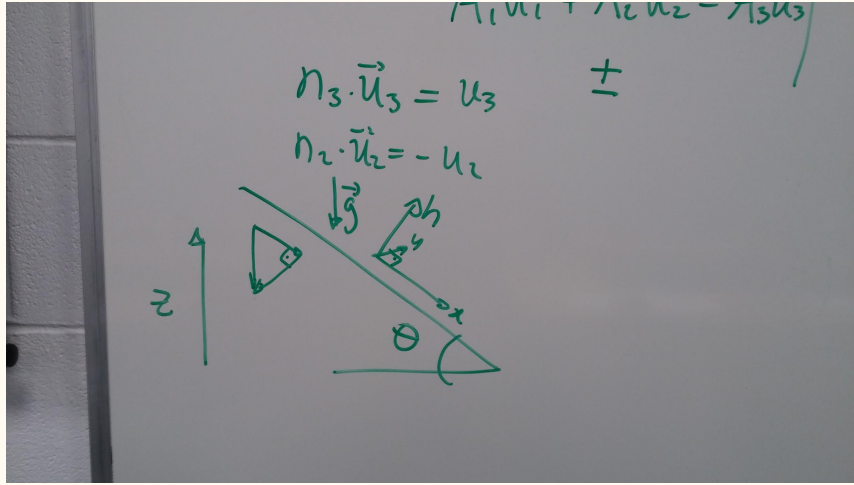


Conservation of Mass

$$\frac{d}{dt} \int_{\Omega} \rho du = - \int_{\delta\Omega} (\rho u) \cdot n dA$$

$$h_1 w_1 u_1 + h_2 w_2 u_2 = h_3 w_3 u_3$$

Conservation of momentum



$$\frac{d}{dt} \int_{\Omega} \rho u dv = - \int_{\delta\Omega} (\rho u) u \cdot n dA + \int_{\Omega} \rho g dv + \int_{\cancel{B} + \cancel{S} + \delta\Omega_1 + \delta\Omega_2 + \delta\Omega_3} \sigma \cdot n dA$$

The Results

$$\pm u_1^2 \sin(\tau_2 - \gamma) h_1 w_1 \mp u_2^2 \sin(\tau_1 + \gamma) h_2 w_2 \mp u_3 w_3 h_3 = -w_1 \frac{gh_1^2}{2 \cos \theta} \sin(\tau_2 - \gamma) + w_2 \frac{gh_2^2}{2 \cos \theta} \sin(\tau_1 + \gamma) - w_3 \frac{gh_3^2}{2 \cos \theta}$$

$$u_1 w_1 h_1 + u_2 w_2 h_2 = u_3 w_3 h_3$$

