Supporting Information for "Enhanced vertical mixing in coastal upwelling systems driven by diurnal-inertial resonance: numerical experiments"

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1. Figures S1 to S6

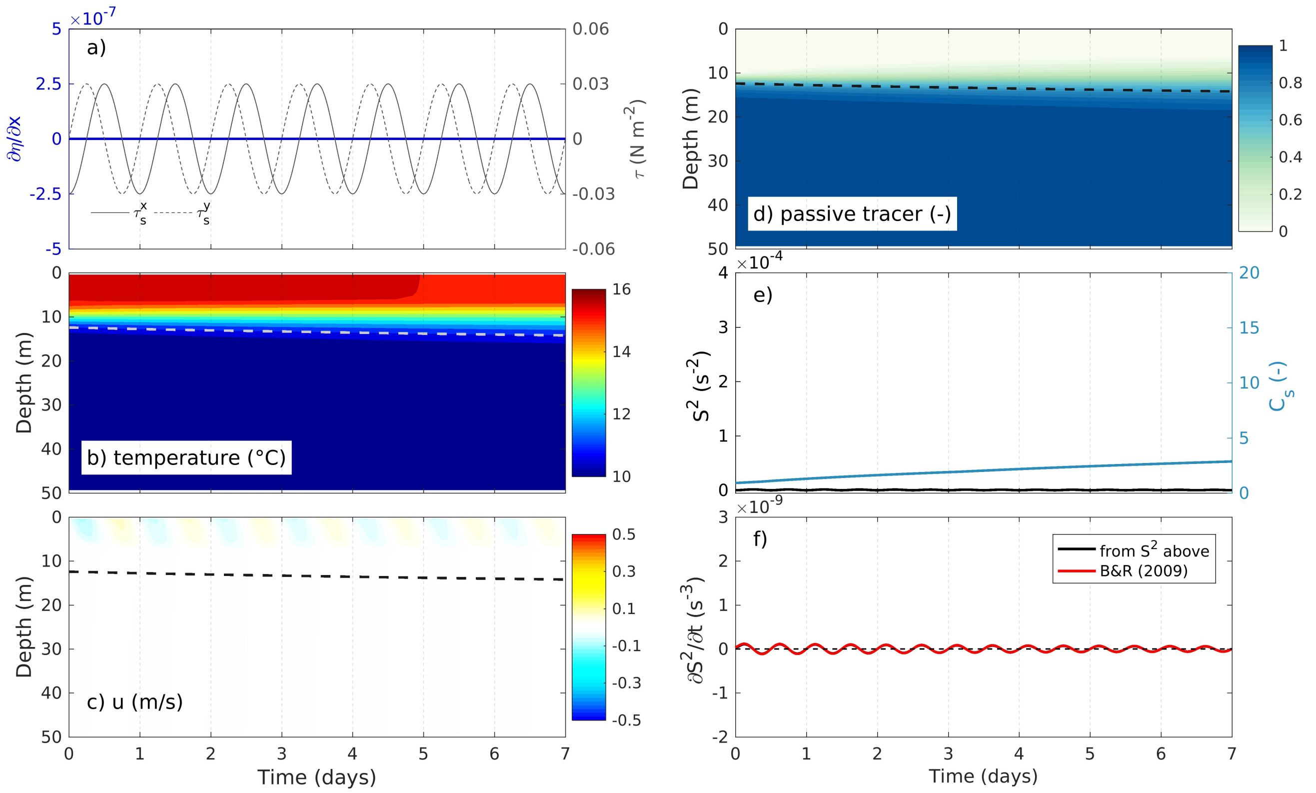

Figure S1. As per Figure 3 in the paper, but with the 1D-vertical model now integrated with clockwise rotating wind stress forcing. Inertial oscillations are not generated.

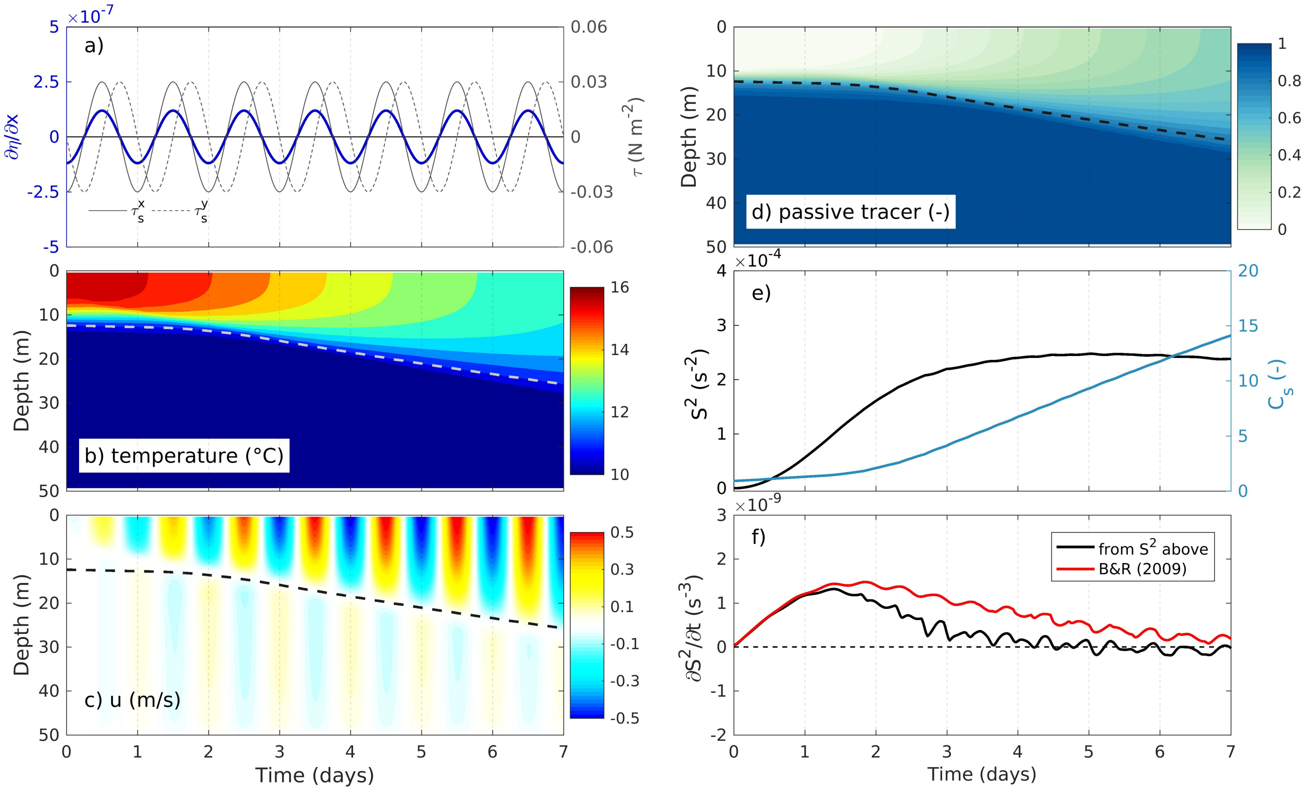

Figure S2. As per Figure 4 in the paper, but with the 1D-vertical model now integrated excluding bottom friction terms in computing $\frac{\partial \eta}{\partial x}$ from Equation 6. The zero depth-average cross-shore transport assumption is violated.

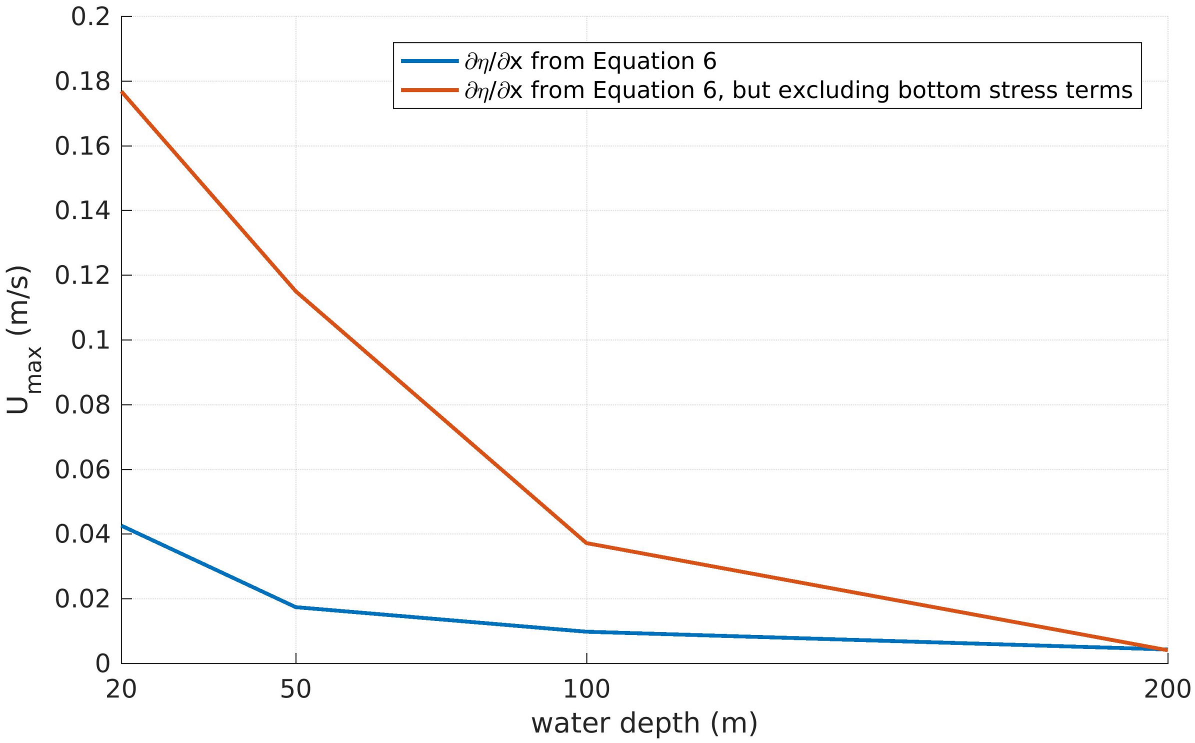

Figure S3. Sensitivity of the depth averaged velocity U_{max} to water depth for experiments shown in Figures 4 and S2. U_{max} is computed as the maximum depth averaged cross-shore velocity over the fifth day of the simulation. Note that $\frac{\partial \eta}{\partial x}$ is derived under the assumption of zero depth averaged cross-shore velocity and significant deviation of U_{max} from zero represents a violation of this assumption.

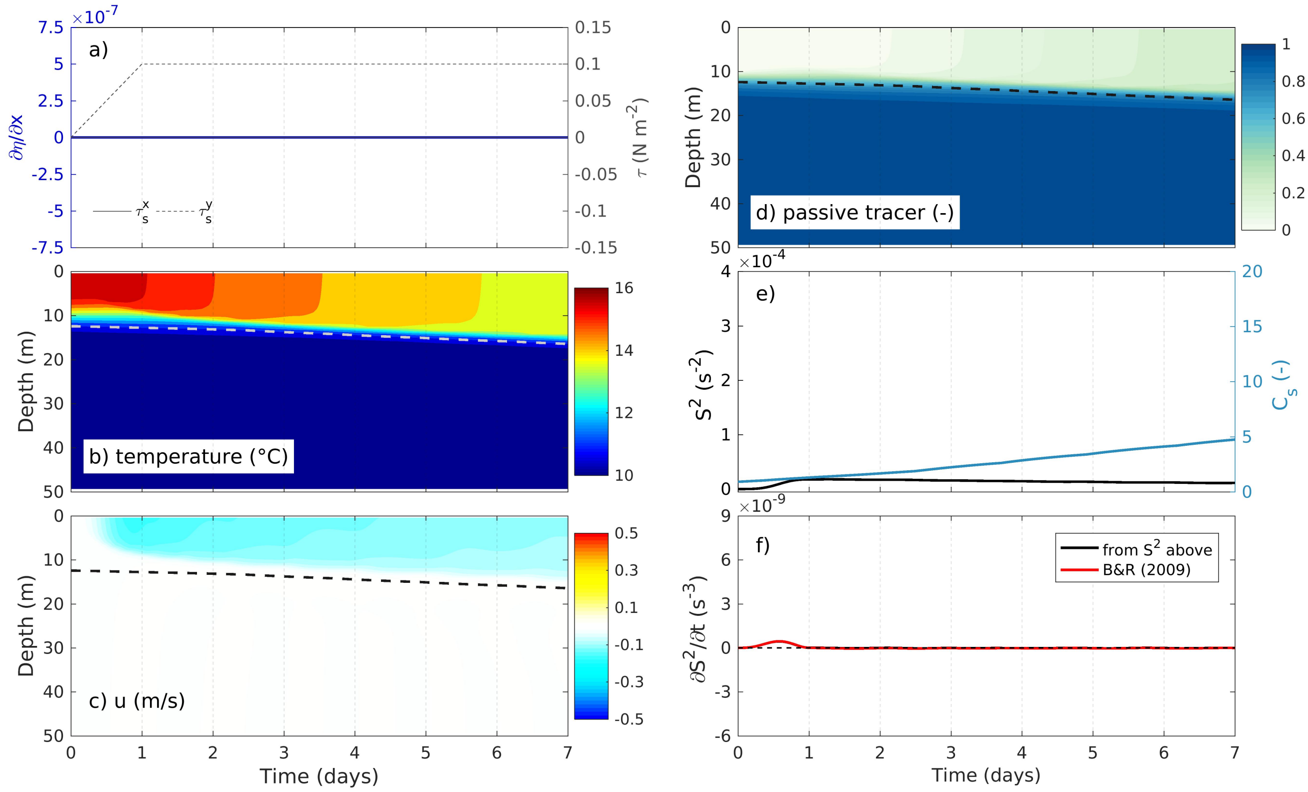

Figure S4. As per Figure 5 in the paper, but with the 1D-vertical model now integrated with a constant alongshore wind stress and ignoring the land boundary effect. Classic Ekman theory predicts a cross-shore surface layer transport ($U_E = \frac{\tau_s^y}{\rho f}$) of -1.34 m^2 s^{-1}, which is predicted by the model to within 1.5%. The constant wind stress is spun-up smoothly from rest over 1 day.

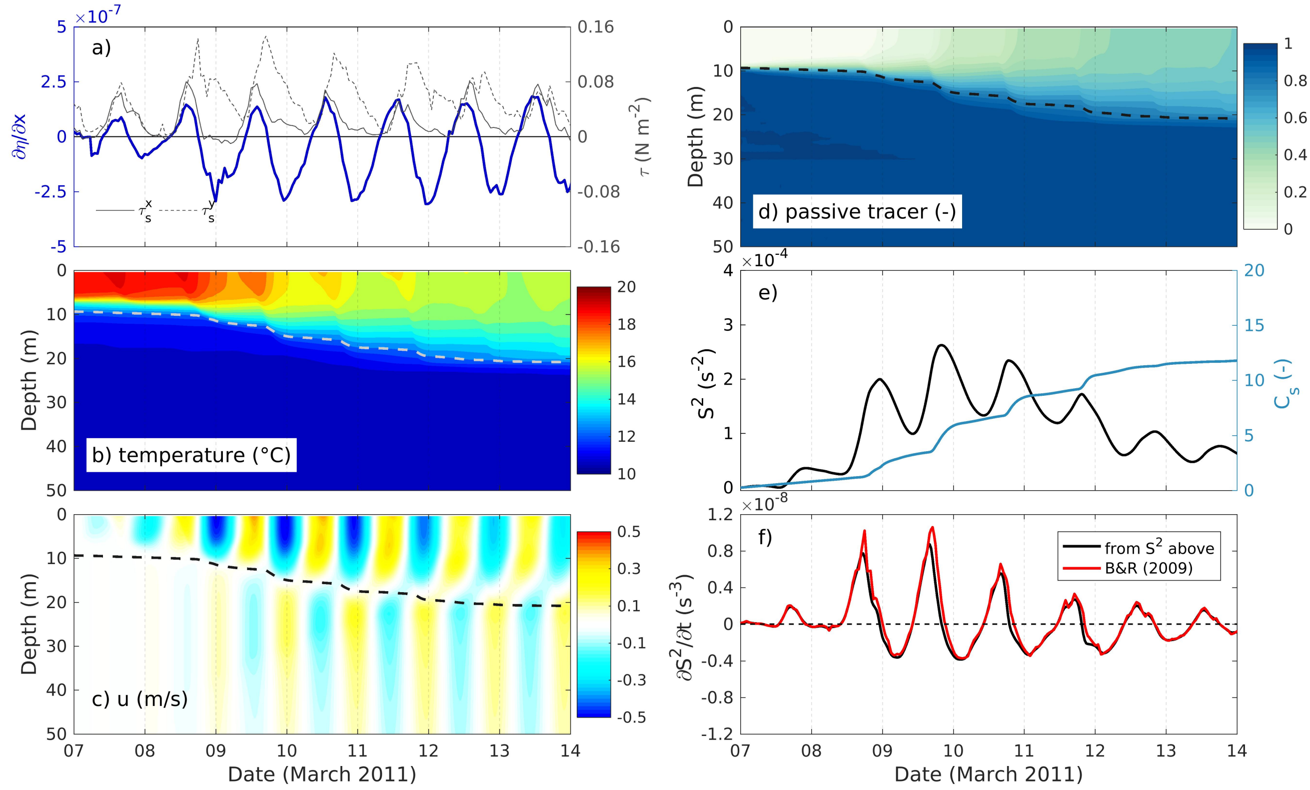

Figure S5. Realistic model configuration for comparison with observations.

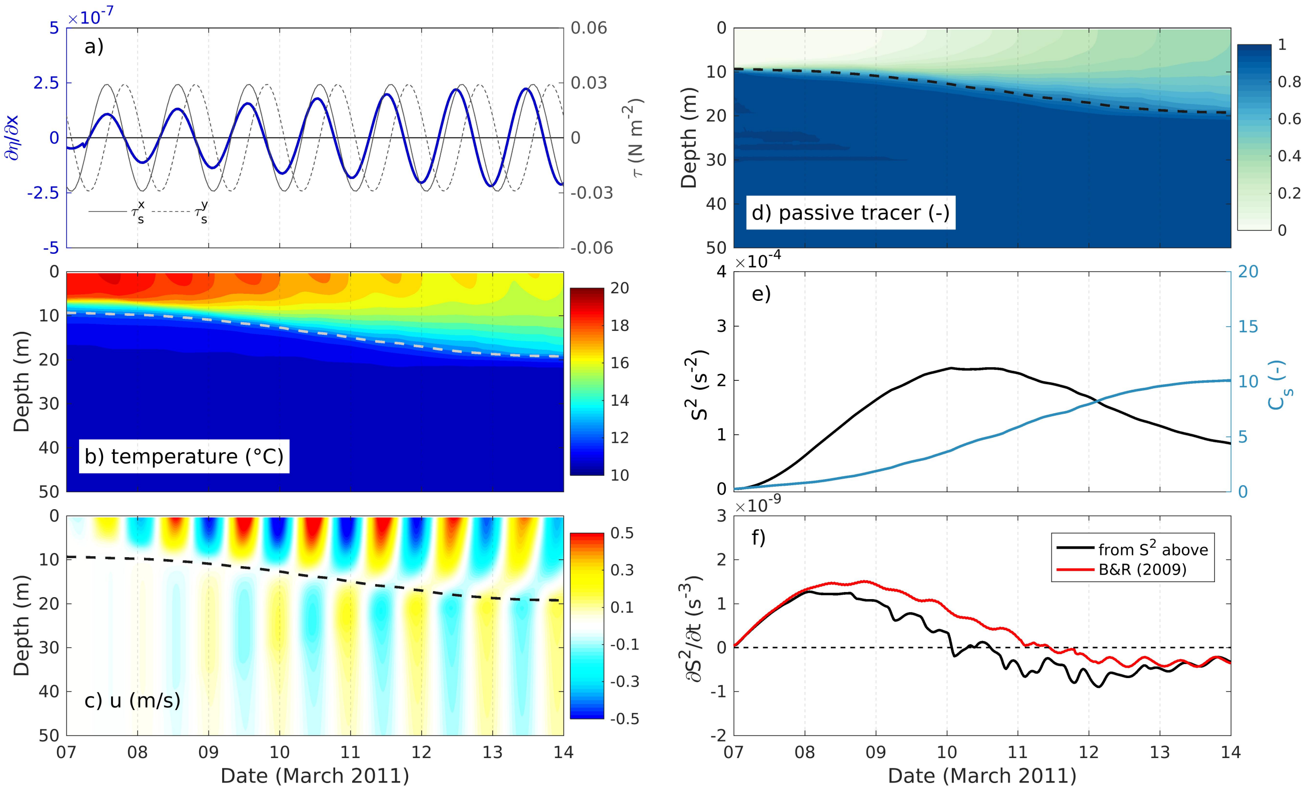

Figure S6. As per Figure S5 but forced with the diurnal anticlockwise rotary component of the wind stress (τ^{ac}).