Appendix. Temperature model for inner Southern California Bight

The model for the ocean temperature, *T*, as modified slightly from that derived in Gelpi and Norris (2008) is a function of depth, *z* and time, *t*. In complex notation, $i = \sqrt{-1}$

$$T(z,t) = T_0(z) + T_1(z,t)$$

$$T_0(z) = -C_0^{'} z + A$$

$$T_1(z,t) = \frac{C'}{2i\alpha}\left[\frac{e^{-\beta z} - e^{-i\alpha z}}{i\alpha + \beta} + \frac{e^{-\beta z}}{i\alpha - \beta}\right] e^{-i\omega t}$$

$$C_0^{'} = \frac{L_0 \beta}{c_p \rho \kappa}$$

$$C' = \frac{L_1 \beta}{c_p \rho \kappa} e^{i\phi}$$

$$\alpha^2 = \frac{i\omega}{\kappa}$$

with *z* and *t* in meters and seconds, respectively.

Table A. Parameter values for temperature model

κ	Vertical eddy diffusion coef.	1.1 x 10^{-4} $m^2 s^{-1}$
β	Light extinction	0.435 m^{-1}
ρ	Density of sea water	1024 kg/m^3
c_p	Specific heat of water	4186 J-kg^{-1}-$^oC^{-1}$
L_0	Mean surface flux	82.7 W-m^{-2}
L_1	Amplitude of surface flux	125.3 W-m^{-2}
ω	Angular frequency of year	$2\pi/(31.577 \times 10^6 s)$
ϕ	Insolation phase	2π(180.7 d/365.25 d)
A	Surface mean temperature	17.7 ^oC