

FORM TO SPECIFY INPUT DATA FOR
OCEAN SOUND-SPEED MODEL CSMUNK1*

This subroutine specifies the "canonical" model for a sound channel derived by Munk. The four parameters of the model can vary linearly with longitude, ϕ . The user specifies values for the four parameters at two longitudes, ϕ_1 , and ϕ_2 , and the program interpolates linearly to get the values at other longitudes.

$$C = C_A [1 + \varepsilon(\eta + e^{-\eta} - 1)] ,$$

where

$$\eta = 2/H (z - z_A) ,$$

$$C_A = C_{A1} + (C_{A2} - C_{A1})(\phi - \phi_1)/(\phi_2 - \phi_1) ,$$

$$z_A = z_{A1} + (z_{A2} - z_{A1})(\phi - \phi_1)/(\phi_2 - \phi_1) ,$$

$$H = H_1 + (H_2 - H_1)(\phi - \phi_1)/(\phi_2 - \phi_1) ,$$

$$\varepsilon = \varepsilon_1 + (\varepsilon_2 - \varepsilon_1)(\phi - \phi_1)/(\phi_2 - \phi_1) ,$$

and $z = r - r_e$, where r_e is the earth radius.

Specify--

the model check for subroutine CSMUNK1 = 5. (W150)

the input data format code = (W151)

an input data set identification number = (W152)

an 80-character description for the sound-speed model,
including description of parameter values:

the reference sound speed, C_0 = km/s, m/s (W153)

longitude of first profile, ϕ_1 = rad, deg, km (W154)

the sound speed on the axis, C_{A1} = km/s, m/s (W155)

the height of the axis, z_{A1} = km, m (W156)

the scale depth, H_1 = km, m (W157)

the fractional increase of C with depth, η = (W158)

longitude of second profile, ϕ_2 = rad, deg, km (W159)

the sound speed on the axis, C_{A2} = km/s, m/s (W160)

the height of the axis, z_{A2} = km, m (W161)

the scale depth, H_2 = km, m (W162)

the fractional increase of C with depth, η = (W163)

Other models required: Any sound-speed perturbation model. Use NPSPEED if no perturbation is desired.

*Munk, W. H., (1974), Sound channel in an exponentially stratified ocean, with application to SOFAR, J. Acoust. Soc. Amer. 55, 220-226.