FORM TO SPECIFY INPUT DATA FOR WIND/CURRENT MODEL VVORTX3

This model represents the wind/current velocity of a vortex with a viscous core and a Gaussian intensity profile in the vertical. The axis of the vortex is vertical and may be positioned above any geographic latitude and longitude. (However, the vortex will be distorted from circular unless it is on the equator.) The vortex rotates anticlockwise looking down. The core (inside r_0) is essentially a solid-rotating fluid, while outside r_0, $|u|$ falls off as the inverse radius.

$$u_\theta = -\frac{1.397 R_e U_0 r_0}{r^2}\left(1 - e^{-1.26 r^2/r_0^2}\right)(\phi - \phi_0)\, e^{-\left(\frac{h-h_max}{w_H}\right)^2}$$

$$u_\phi = \frac{1.397 R_e U_0 r_0}{r^2}\left(1 - e^{-1.26 r^2/r_0^2}\right)(\theta - \theta_0)\, e^{-\left(\frac{h-h_max}{w_H}\right)^2},$$

where $\theta_0 = \pi/2 - \lambda_0$ and r is the radial distance from the vortex center. The numerical constants normalize the function so that $|U| = U_0$ at $r = r_0$. R_e is the radius of the Earth, θ is the colatitude, ϕ is the longitude, and h is the height above sea level.

Specify–

the model check for VVORTX3 = 9.0 (w100)
the input data-format code = _____ (w101)
an input data-set identification number = _____ (w102)
an 80-character description of the model with parameters:

_____

and the model values:

maximum tangential wind/current speed, U_0 = _____ km/s, m/s (w103)
radius of the vortex core, r_o = _____ km (w104)
latitude of the vortex center, λ_0 = _____ rad, deg, km N (w105)
longitude of the vortex center, ϕ_0 = _____ rad, deg, km E (w106)
Gaussian width in height of the vortex, w_H = _____ km, m (w107)
height of the vortex, h_{max} = _____ km, m (w108)
Non-zero to print labels on the plot of projections on the ground _____ (w109)
X position to print columns 1-20 of above 80-character description _____ (w110)
Y position (if non-zero) to print columns 1-20 of above description _____ (w111)
X position to print columns 21-40 of above 80-character description _____ (w112)
Y position (if non-zero) to print columns 21-40 of above description _____ (w113)
X position to print "De-focusing" on the raypath plots _____ (w114)
Y position (if non-zero) to print "De-focusing" on the raypath plots _____ (w115)
X position to print "Focusing" on the raypath plots _____ (w116)
Y position (if non-zero) to print "Focusing" on the raypath plots _____ (w117)
X position to print "Virtual Source" on the raypath plots _____ (w118)
Y position (if non-zero) to print "Virtual Source" on the raypath plots _____ (w119)

OTHER MODELS REQUIRED: Any wind/current-perturbation model. Use NPCURR if no perturbation is desired.