Helicity index of atmospheric vortices

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Different constituent terms of the helicity balance equation for intense atmospheric
vortices, such as tropical cyclones, tornadoes and dust devils, are discussed. It is sug-
gested that the downward flux of helicity through the top level of a turbulent viscous
boundary layer can serve as a useful index of the strength of the primary circulation
in the vortex. Based in this approach, examples are given of case studies of tropical
cyclones and tornadoes and of assessment (classification) of their intensity and pos-
sible destructive impact; corresponding analysis of dust devils on Earth and Mars is
also presented.