



Effects of Surface Sensible Heat Fluxes on the Tropical Cyclone Intensity

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The contributions of surface sensible heat fluxes (SHX) to the evolution of tropical cyclone (TC) intensity and structure are examined in this study by conducting cloud-resolving simulations. Results suggest that although the peak values of SHX could account for nearly 30% of those of the total surface latent and sensible heat fluxes, the impact of SHX on TC intensification is nonetheless not distinct. However, the TC size shows great sensitivity to the SHX that the storm is shrunk by over 20% after removing the SHX. The reduced total surface enthalpy fluxes due to the removal of SHX do not necessarily result in weakened TCs, while the larger surface latent heat fluxes (LHX) basically correspond to stronger TCs. This suggests that the TC intensity is largely dependent on the LHX rather than the total surface enthalpy fluxes, although the latter is generally dominated by the former.