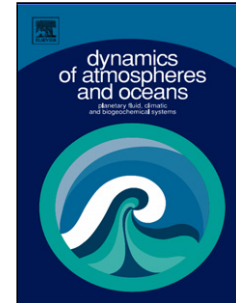


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Examining the Contribution of Surface Sensible Heat Flux Induced Sensible Heating to Tropical Cyclone Intensification from the Balance Dynamics Theory

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Highlights:

- Results from the Sawyer-Eliassen equation suggest that the balanced response to sensible heating induced by surface sensible heat flux is very weak.
- The horizontal gradient of diabatic heating is essential for driving the tropical cyclone response, while the influence of vertical gradient of diabatic heating is insignificant.
- Surface sensible heat flux-induced sensible heating cannot contribute to the intensification of tropical cyclones remarkably even by enhancing it to very large values.
- Surface sensible heat flux is inefficient in driving the spin up of the tropical cyclone from the balanced dynamics.
- Processes that can alter radial distributions of diabatic heating in tropical cyclone systems should be paid more attention.

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