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Influence of surface heat fluxes for the secondary cyclone intensification over the South Atlantic Ocean
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Over the South Atlantic Ocean was found that two kinds of secondary cyclones occur. One kind develops in the western part of the primary system and other in the eastern part. Studies have shown that heat fluxes from the ocean to the atmosphere have an important role in the formation and intensification of cyclonic system. The latent heat flux from the ocean to the atmosphere is like a fuel to cyclonic system through latent heat released from formation of clouds. The sensible heat fluxes can strengthen or weaken the system depending on location. If the sensible heat fluxes heats warm region and cools cold region, it can increase the gradient of temperature enhancing the baroclinicity, and opposite may weaken. In this study we verified the influence of the sensible and latent heat fluxes in the secondary system that developed in April 2010 to the east of the primary system over the South Atlantic Ocean. We performed several numerical simulations by using the Weather Research and Forecasting (WRF) model. The results show that the latent heat flux has a more significant influence on the intensity of the secondary system than the sensible heat flux, which practically does not affect the intensity and location of the secondary system. The absence of latent heat flux delays the development of secondary low pressure center and it weakens both secondary and primary system. Regarding the location, the latent heat flux did not change either primary or secondary system. Therefore, the latent heat flux from the ocean to the atmosphere affects the intensity of the secondary system and delays the development of secondary cyclone more significantly.

キーワード: secondary cyclone, heat flux, South Atlantic, WRF model, extratropical cyclogenesis
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