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Title: Mechanism of Heavy Rainfall near 'Gangneung' over the Korean Peninsula Associated with Typhoon 'Rusa'

Abstract: A severe tropical cyclone, typhoon Rusa passed over the Korean Peninsula in late August 2002. The coastal areas of the central-eastern peninsula were devastated by this typhoon, mainly due to the heavy rainfall. Especially in Gangneung area, accumulated rainfall during the rainfall event recorded 870.5(mm/day). Previous researches found that orographic effect was most important. However the heavy rainfall over the Gangneung is not caused by orographic effect only, because it had so much precipitation in compared to another mountain area. To examine another possible mechanism other than orographic effect, we conducted mesoscale model simulation without model terrain data using WRF(Weather Research and Forecasting) model. CON produced a accurate quantity and location of precipitation during the typhoon Rusa event. However, NT shows that precipitation band is formed like line shape with a southwest-northeast orientation in the vicinity of Gangneung as the typhoon approach the Korean Peninsula. It is evident that a front exists in this region. The 500mb upper-level trough over northern Korean peninsula and the typhoon rusa approached each other and cooperated to generate deformation field, which causes strong temperature gradient centered at Gangneung. And upper-level jet stream, which is formed by the upper- level trough forced the upper-level frontogenesis. Although the orographic effect may has a role in this event, upper-level frontogenesis by synoptic environment was also important. The strong convergence region over the Gangneung caused the strong convective cell.

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