**Effects of Asymmetric SST Distribution on Straight-Moving Typhoon Ewiniar (2006) and Recurving Typhoon Maemi (2003)**

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The effects of asymmetric sea surface temperature (SST) distribution on the tropical cyclone (TC) motion around East Asia have been examined using the Weather Research and Forecasting Model for the straight moving Typhoon Ewiniar (2006) and recurving Typhoon Maemi (2003). The SST–TC motion relationships associated with the two different TCs and the physical mechanism of recurvature are investigated in the context of the potential vorticity tendency framework. A zonally asymmetric SST distribution alters the TC translating direction and speed, which is ascribable to the interaction between a TC and the environmental current associated with asymmetric SST forcing. A north–south SST gradient has an insignificant role in the TC motion. It is noted that the straight-moving (i.e., northward moving) TC deflects toward the region of warmer SST when SST is zonally asymmetric. A contribution of the horizontal advection including asymmetric flow induced by asymmetric forcing is dominant for the deflection. The recurving TC reveals northeastward acceleration and deceleration after the recurvature point in the western warming (WW) and eastern warming (EW) experiments, respectively. When it comes to a strong southerly vertical wind shear under the recurvature condition, diabatic heating can be a significant physical process associated with the downward motion over the region of upshear right. The enhanced (reduced) southwesterly flow effectively produces the acceleration (deceleration) of northeastward movement in WW (EW) after recurvature. (225 words)

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