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Role of the Tibetan Plateau on the Pacific storm track activity in the mountain uplift experiment

Kyung-Ja Ha[†]; Sun-Seon Lee; June-Yi Lee; Akio Kitoh; Bin Wang; Jong-Ghap Jhun
[†] Pusan National University, South Korea
Leading author: kjha@pusan.ac.kr

In order to comprehend well-organized topographic roles on the transient eddy growth and structure, the uplift effect of Tibetan Plateau (TP) on the Pacific storm track activity has been examined using the MRI CGCM 2.3.2 with the five mountain height control experiments: 0% (no TP run), 25% (TP25), 50% (TP50), 75% (TP75), and 100% (control run). As the TP height increases, the Pacific jet core intensity during cold season increases while the upper level wind weakens over the TP which coherently reduces the storm track activity. On occasion of climatological subseasonal variation, the distinct midwinter suppression of the Pacific storm track activity is highly modulated by the TP height. The MRI CGCM 2.3.2 is capable of reproducing the midwinter suppression and then double peak of annual cycle with the realistic TP height (control run). On the other hand, the TP25 experiment simulates the single peak of annual cycle with the maximum storm track activity in midwinter. The midwinter suppression is filled up as the TP height decreases,suggesting that the TP induces the weakening of downstream eddy development and decreasing of baroclinic energy conversion, and consequently leads to the reduction of Pacific storm track activity. The sensitivity of eddy-mean flow interaction and baroclinicity with the mountain uplift will be further discussed.