



Inter-decadal changes in synoptic variance over Eurasia continent in the early 2000s

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The synoptic activity variance of atmospheric circulation has a remarkable decadal variation in early 2000s over the Eurasia (50-66°N, 56-110°E) in winter (December-February), and the variance decreases from 1688m² during 1979-1999 to 1255m² during 2000-2013, decreasing by about 26% and being statistically significant at the 99% level. There may be a close relationship between the variations of atmospheric baroclinicity and synoptic activity variance. After the early 2000s, the maximum grow rate decreases over the upper basin of Eurasia, which is attributed to the decrease of temperature gradients. And the variation of temperature gradients may be related to the cooling over Eurasia. Besides, after the early 2000s, the barotropic and baroclinic energy conversions from the mean flow to synoptic disturbance is decreased, which is not favorable for the development of synoptic activity.