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Relationship between stratospheric polar vortex and SST Anomaly in the north Pacific in winter

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In this paper a stratospheric polar vortex strength index (VSI) is applied to study the relationship between stratospheric polar vortex and sst anomaly in north Pacific in winter. Althouth there are year-to-year variability to winter stratospheric polar vortex strength, the long-term VSI displays a decadal phase variation. It shows distinguished descending trend from the late 1960s to the early 1990s, and strong ascending trend after that.. Composited analysis show that during the weak polar vortex period (positive vsi situation), the ssta pattern in north Pacific is cold in the north part and warm in the south part, the critical line is 35 north degree. When the polar vortex is strong (negative vsi situation), positive ssta center in the north Pacific, while negative ssta settle around it, just like the "[U+0632]" distribution. The further analysis point out that correlation between the 10-year period polar vortex oscillation and ssta of the center north Pacific is complicated. The correlation is positive before the early 1990s, and turns to opposite after that. As to the mechanism, the variation of the dynamical coupling between the stratospheric and tropospheric arctic oscillation may attribute to it.