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大气环流年代际变化对东亚北部冬季气温异常的影响

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The effects of the interdecadal variations of atmospheric circulation on SAT anomaly of the North-East Asian in winter

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摘要 利用NCEP资料1949~1999年间的地表气温(SAT)进行经验正交函数分解(EOF).得到的前2个模态均表明,20世纪70年代中期以后,东亚北部地区冬季气温增暖明显,发生了显著的年代际变化.这种气温的异常变化主要受到东亚冬季风的直接影响.近20多年来,北极涛动维持在正位相并持续增强,其对东亚冬季风的影响也越来越显著,东亚冬季风持续减弱,使得东亚北部地区冬季气温增暖.通过对SAT和SLP进行奇异值分解(SVD),结果表明北极涛动的持续增强可能是东亚北部地区冬季增暖的重要原因之一.

关键词: 东亚北部 增暖 北极涛动 年代际变化

Abstract: The NCEP/NCAR reanalyzed surface atmospheric data (SAT) are used to analyze the temperature variations in winter from 1949 to 1999. The dominant spatial and temporal patterns of SAT in Asia are studied by empirical orthogonal function (EOF) analysis. The results demonstrate that SAT of EAN has increased since the 1970's, and has very clear interdecadal changeable feature. This kind of anomalous atmospheric temperature variability is mainly influenced by the winter monsoon. During the recent two decades, AO always stays at high phase and increases continuously, at the same time the winter monsoon is decreasing. The singular value decomposition (SVD) analysis for the SLP field and the SAT field is carried out. The results show that AO possibly effects the warming in EAN.

Key words: EAN warming Arctic Oscillation interdecadal variation

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