

外热带大气扰动对ENSO的影响

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摘要 合成了20世纪80年代以来5次主要的ENSO事件, 发现外热带大气扰动通过经向风异常不仅对ENSO的发生起到重要的触发作用, 而且影响到ENSO的发展和衰减. 因此, 尽管ENSO对外热带大气扰动有影响, 但同时外热带大气扰动又与ENSO有相互作用. 在ENSO发生前, 南印度洋中纬度为反气旋异常, 并通过Rossby波的频散作用加强了澳大利亚附近的反气旋异常; 同时, 澳大利亚东部沿海的南风异常与菲律宾附近的北风异常在赤道辐合, 促进了赤道

西太平洋西风异常的爆发和其后ENSO的发生. 在ENSO发生之后, 东南太平洋上的气旋异常及相关的南风异常进一步增强了赤道中东太平洋的西风异常和ENSO的发展. 当ENSO达到成熟时, 澳大利亚东部的反气旋异常东移, 使东南太平洋的气旋异常减弱, 南方涛动型环流异常亦随之减弱; 同时, 阿留申气旋异常加强, 尤其是副热带北太平洋的风场异常可加强赤道中东

太平洋海水的涌升, 使该地区海表温度降低, 加速ENSO的消亡.

关键词 [ENSO](#) [外热带大气扰动](#) [西风异常](#) [经向风异常](#)

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The influence of the extratropical atmospheric disturbances on ENSO

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Abstract The composite analysis of the 5 major ENSO events since 1980's show that, through the meridional wind anomaly, the extratropical atmospheric disturbances play a role in triggering the occurrence as well as in the development and decay of ENSO. The extratropical atmospheric disturbances interact with ENSO although they are influenced by ENSO. Before the occurrence of ENSO, due to the anticyclonic anomaly in midlatitude of the South Indian Ocean, the anticyclonic anomaly over Australia tends to be enhanced through the dispersion of Rossby wave; In the meantime, the equatorial convergence of the southerly anomaly off the east of Australia and the northerly anomaly in the Philippine excite the onsets of the westerly anomaly in the equatorial western Pacific and the occurrence of ENSO. Afterwards, the cyclonic anomaly in the Southeast Pacific and the associated southerly anomaly further enhance the westerly anomaly in the equatorial middle and eastern Pacific and the development of ENSO. In the mature phase of ENSO, the cyclonic anomaly in the Southeast Pacific together with the South Oscillation is weakened due to the eastward movement of the anticyclonic anomaly to the east of Australia. Moreover, the cyclonic Aleutian anomaly, in particular the wind anomaly in the subtropical North Pacific, enhances the upwelling of sea water and decreases sea surface temperature in the equatorial middle and eastern Pacific, and therefore plays a role in the decay of ENSO.

Key words [ENSO](#); [The extratropical atmospheric disturbances](#); [The westerly anomaly](#); [The meridional wind anomaly](#)

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