

地球物理学报 » 2014, Vol. 57 » Issue (3) : 727-737 doi:10.6038/cjg20140304

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引用本文(Citation):

韩哲, 李双林, 李琛, 等. 2014. 2008年和2012年冬季欧洲气候的差异及成因. 地球物理学报, 57(3): 727-737, doi: 10.6038/cjg

HAN Zhe, LI Shuang-Lin, LI Chen, et al. 2014. The differences and causes of European climate between 2008 and Geophysics, 57(3): 727-737, doi: 10.6038/cjg20140304

2008年和2012年冬季欧洲气候的差异及成因

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The differences and causes of European climate between 2008 and 2012 winter

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摘要

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摘要

2008年冬季(1月和2月)和2012年冬季均发生了较强的拉尼娜事件,但欧洲气候,尤其是西欧在这两年差异较大,2008年异常偏暖,而2012年却出现了极寒事件.诊断表明,大气环流异常是造成气候差异的直接原因.2008年冬季,北大西洋上空大气环流异常与位相的北大西洋涛动,有利于欧洲异常偏暖;2012年冬季,北大西洋和欧亚高纬阻塞的长期维持是西欧发生极端严寒的重要原因.通过数值试验,研究了前期海表热状况异常对大气的影.结果表明:北大西洋海温异常能在一定程度上解释这两年欧洲各自的气候异常;尽管热带海温异常对2012年冬季的北大西洋环流形势和欧洲气候异常起一定的贡献,但不能解释2008年的情形;靠近欧洲的高极海冰异常偏少使得欧洲气候偏冷,对2008年的偏暖气候贡献为负,对2012年则有正贡献.

关键词 欧洲气候, 北大西洋涛动, 阻塞, 海温, 海冰

Abstract:

There are huge differences in the European climate between 2008 and 2012 winter (January and February), and La Nina occurred in both winters. The surface temperature was above normal during 2008 winter, and was below normal during 2012 winter. The atmospheric circulation anomalies are the direct reasons for the different climate. In 2008 winter, the North Atlantic Oscillation anomaly was in positive phase, benefited the Europe warming. During 2012 winter, the blocking over the North Atlantic and high-latitude Eurasia benefited the extreme cold event in Europe. The role of sea surface temperature (SST) and sea ice concentration anomalies were investigated by an atmospheric general circulation model. The SST anomalies over the North Atlantic can explain the atmospheric circulation over Atlantic in Europe in a certain extent separately for these two years, so they are important for the climate differences. While the tropical SST anomalies can just simulate similar atmospheric responses over the North Atlantic in 2012 winter, while they seemed play a negative role in 2008 winter. The loss of sea ice over Arctic adjoined Europe lead to cold conditions over Europe, so it played a negative role during 2008 winter, while positive role during 2012 winter.

Keywords [European climate](#), [North Atlantic Oscillation](#), [Blocking](#), [Sea surface temperature](#), [Sea ice](#)

Received 2013-02-28;

Fund:

国家重点基础研究发展计划(2012CB417204)资助.

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