Geophysical Research Abstracts
Vol. 12, EGU2010-10200, 2010
EGU General Assembly 2010

Affections of SSTa in North Atlantic and Arctic Ocean on cold air activity over the east China marginal seas

Jilin Sun (1), Xiaomeng Shi (2), Yan Jiao (3), and Xinxin Ye (4)

(1) Physical Oceanography Laboratory & Ocean-Atmosphere Interaction and Climate Laboratory, Ocean University of China, Qingdao [U+FF0C] 266100 (jlsun0202@yahoo.com.cn), (2) Physical Oceanography Laboratory & Ocean-Atmosphere Interaction and Climate Laboratory, Ocean University of China, Qingdao [U+FF0C] 266100, (3) Physical Oceanography Laboratory & Ocean-Atmosphere Interaction and Climate Laboratory, Ocean University of China, Qingdao [U+FF0C] 266100, (4) Physical Oceanography Laboratory & Ocean-Atmosphere Interaction and Climate Laboratory, Ocean University of China, Qingdao [U+FF0C] 266100

Abstract

Using monthly mean sea surface temperature anomaly (SSTa) in the Northern Atlantic and Arctic from 1951-2004,the reanalysis data of sea surface pressure, air temperature and geopotential height at 500 hPa, SVD analysis were done to study the relations among the SSTa's and the cold air activity over the east China marginal seas. It is found that [U+FF0C] in boreal winter, cold air activity over the east China marginal seas can be predicted by the SSTa in the Northern Atlantic and Arctic by the Autumn [U+FF1A] the positive SSTa in northern Atlantic and negative SSTa in regions south of Iceland and Greenland during September, October and November, can resulted to the pressure increasing over the east China marginal seas; lower sea surface temperature in the east sea of Novaya Zemlya, and higher SST in the east sea of Novaya Zemlya, northwest of Barents Sea together with lower SST in southeast of the Barents Sea during September, October and November coincides with higher sea level pressure of China east coast. The mechanism in these affections is that positive SSTa in the Northern Atlantic can make the development of bridge at the 500hPa; higher SST in north Atlantic coincides with the development of high-altitude ridge, and then the ridge extends to the north, coincides with higher Geopotential height over the area between Novaya Zemlya and Urals. The Negative vorticity advection in front of the ridge leads cold air to key areas, then affects China east coast area, and then forms surface cold anticyclone, and vice versa.

Key words [U+FF1A] Northern Atlantic; sea regions around Novaya Zemlya [U+FF1B] SST anomaly [U+FF1B] SVD analysis [U+FF1B] east China marginal seas [U+FF1B] cold air activity