冬季東亞地區能源與冷源對大氣環流之動力作用

Dynamical Action of Heat Source and Sink on the Mean Circulation over the Far East in Winter

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摘 要

本文利用四層準地轉模式，考慮地形對大氣之抬舉與阻擋作用，且利用熱力方程式，假設大氣之水平移流與垂直移流之差數，爲外界之加熱效應；分別計算斜壓，地形及加熱效應之垂直速度，進而解答渦旋度方程，以討論冬季東亞地區熱源冷源對平均環流的動力作用。

冬季東亞地區熱源中心在日本附近，而西藏高原南麓及阿留申群島附近爲冷源。大氣受到地形及加熱作用，在中國大陸之固定槽，由下層向上層逐漸發展，以趨向平均大氣環流的形態。日本東南方海面之高空噴射氣流，有減弱及北移的趨勢。由於阿留申群島附近的冷源作用，使低氣壓系統向東北迅速移動，以維持阿留申群島永久低壓的存在。

一、引 言

大氣運動有效位能的生成，恰好抵消摩擦消散，而保持大氣環 的形態。外界的加熱效應將帶給大氣環流形態的改變，爲了研討大氣環流的變化，我們就不能不考慮熱源與地形的作用。

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Abstract:

By making use of a 4-layer quasi-geostrophic model, the numerical solutions of the vorticity and the ω-equations are examined. In this model, the effects of orography and diadatic heating are taken into considered.

Of considerable significance in the patterns of atmospheric temperature perturbation in the winter season is the existence of a broad positive zone over Japan and Eastern China Continent, while it is apparent that the negative zones are in the southern part of Himalayes and about Aleutian Inslands. Due to the mechanical influences of orography and diabotic heating, the anchor trough located over the Continential China developes from the lower troposphere toward the upper layer, and the quasi-stationary Aleutian Low is probably maintained.