考慮青康藏高原的阻擋及偏向作用的相當正壓模式

An Equivalent Barotropic Model Which Considers the Blocking and Deflecting Effects of Tibetan Plateau

蔡　清　彥

台 灣 大 學 大 氣 科 學 系

一、前言

近年來國內各氣象單位正著手研究數值天氣預報在台灣地區的應用。蔡清彥（ 1975 及 1976 ）曾經介紹相當正壓模式的結構，其中包括網格點結構，預報方程式，邊界條件，地形，資料分析及修勻方法等。他特別着重多天綜觀幅度天氣系統的個案預報。一般而言，相當正壓模式能夠準確的預報 500mb 上槽脊線在 24 小時以內的移動。但是在 36 小時以後，幾種有規則的預報誤差產生。其中最嚴重的是，在槽線尾端通過青康藏高原的東北角時，正渦旋度中心不合理的往南移動。因而造成低壓中心不合理的與主槽線分離而滯留於華中，華南地區，嚴重

Abstract

In a recent study of an equivalent barotropic model in the area of Taiwan and its vicinity, Tsay(1975,1976) found several systematic errors in the predictions after 36 hours. The most serious error is the unrealistic southward movement of a positive vorticity center during a trough passing over the northeast part of Tibetan Plateau. As a result, an unrealistic low pressure system is separated from the main trough and atagnates in Southeast China. The error is suspected as a result of the model without considering the blocking and deflecting effects of Tibetan Plateau. Research effort is devoted to the study of simulating the blocking and deflecting effects of the Plateau by including an inner boundary in the model. Results of the model, which uses a smoothed topography contour of 5000 or 4000meters as an inner boundary of constant stream function, shows great improvements in the predictions. However, unrealistically large vorticity values along the north and south boundaries are generated by this boundary condition. We modified boundary condition by allowing the stream increasing southward along the west and east boundaries and having two different constant values for the north and south boundaries. This boundary condition proves to be better than the former one.