試驗性香港月預報
Experimental monthly forecast in Hong Kong

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摘要
Abstract

　　香港天文台於二零零六年從美國氣候實驗預測中心引進一套全球—區域氣候模式支持香港季度預報的工作。全球模式的水平分辨率約為 200 公里，垂直方向分為 28 層。全球模式以美國 NCEP 的再分析數據或 NCEP 全球預報系統的實時數據作為初始條件，而全球模式的輸出則用作區域模式的邊界條件。使用者可自行調校區域模式的覆蓋範圍及水平分辨率。本文比較了該區域模式在 15 公里及 60 公里分辨率的表現。結果顯示雖然 15 公里模式能預測季度氣溫及雨量的距平，但它過度高估雨量的絕對數值。另一方面，60 公里模式不但能給出較為合理的雨量預測，在季度預報方面的能力亦較 15 公里模式優勝。本文進一步探討以 60 公里模式預測香港月溫度及雨量的可能性，並以天文台過去 10 年的數據來驗證模式預報。從驗證結果可以看到模式存在一些系統性的偏差，但簡單的迴歸方法能有效修正模式的直接輸出，顯示這個 60 公里模式可用作提供香港月溫度及雨量的定量預報。

　　The Hong Kong Observatory operates a suite of global-regional climate model adapted from the US Experimental Climate Prediction Center (ECPC) since 2006 to support seasonal forecasting in Hong Kong.　The global model has a horizontal resolution of some 200 km and a vertical resolution of 28 layers.　It is initialized by re-analysis data provided by the National Centers for Environmental Protection (NCEP) or real-time data generated by the Global Forecast System of NCEP.　Outputs of the global model serve as boundary conditions for the regional model.　The global-regional climate model offers users the flexibility to adjust the horizontal resolution and spatial coverage of the regional model domain.　The present study compares the performances of the regional model running at a 15-km and 60-km resolution respectively.　It was found that although the 15-km regional model had some skill in forecasting seasonal temperature and rainfall anomaly, it tended to grossly over-estimate the absolute rainfall amount.　On the other hand, initial findings indicated that the 60-km model, not only generated more reasonable rainfall forecasts but also had generally higher skill than the 15-km model in forecasting the seasonal temperature and rainfall.　A further study was undertaken to explore the feasibility of using the 60-km model to generate monthly temperature and rainfall forecasts for Hong Kong.　Data of the Observatory for the past ten years were used to verify the monthly forecasts produced by the 60-km model.　Verification results revealed that the model exhibited some systematic bias in the temperature and rainfall forecasts.　Once the systemic bias was removed by regression method, the 60-km model demonstrated good potential to produce quantitative monthly temperature and rainfall forecasts for Hong Kong.