提高中央氣象局FV3GFS模式水平解析度之測試研究
A Study of Improving Horizontal Resolution in CWB FV3GFS

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摘　　要

中央氣象局自2018年起開始進行FV3模式準作業化之預備工作，已於局內高速電腦(HPC)環境下發展出具臺灣特色的FV3GFS，成功建置全球水平解析度C384T（約25公里），並於臺灣區域使用巢狀網格（約4.8公里）以提高預報解析度。有鑒於未來電腦資源提升，本研究提高水平解析度至C768T無巢狀網格（約13公里）進行cold start實驗。在所需計算資源方面，C384T無巢狀網格預報時使用了18個節點平均耗時間約為2小時，C768T則是使用了48節點並且平均花費4小時，約為C384T的5.3倍。預報一個月的結果方面可由距平相關度(Anomaly Correlation)初步得出C768T確實有較佳的表現，並針對颱風等天氣現象做深入討論。詳細結果將於研討會中說明。

關鍵字：中央氣象局 FV3GFS、數值天氣預報、模式水平解析度

Abstract

FV3 model has been implemented at Central Weather Bureau (CWB) since 2018, and has developed a Taiwan featured FV3GFS by using a C384T (about 25 km) resolution in global domain with a 4.8 km resolution nested domain near Taiwan. Because of the increasing of computer resource in the near future, C768T resolution (about 13 km) without nested domain in cold start is proposed in this study. In terms of computational resource, C384T without nested domain uses 18 nodes in about 2 hours, while C768T uses 48 nodes in 4 hours, which is 5.3 times than C384T. The result of one month forecast shows that C768T has a better score on anomaly correlation, and we also focus on some impact weathers like typhoon that will be discussed the details in the conference.

Keywords: CWB FV3GFS, numerical weather prediction, model horizontal resolution