

評估使用衛星反演地表短波輻射量對土壤資料 同化系統之影響

Evaluation on the impact of using surface shortwave radiation flux retrieved from satellite observation in High Resolution Land Data Assimilation System (HRLDAS)

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摘 要

土壤資料同化系統以地面溫度、濕度、風場、降水及輻射通量作為大氣強迫作用，並藉由Noah 土壤模式將大氣強迫作用透由土壤物理過程逐步影響至深層土壤，進而取得土壤與大氣強迫作用平衡的土壤溫度及土壤濕度，此即為土壤溫度與濕度的分析場。氣象局現行作業的土壤資料同化系統，除了降水是使用觀測資料外，其餘皆使用本局區域模式之預報資料，其結果會受模式預報誤差所影響。本局衛星中心發展透過同步衛星反演地表短波輻射通量之產品，經與地面測站之日射計觀測之校驗結果顯示，其品質具有可性度。由於地表短波輻射通量對土壤溫度之影響相當顯著，且模式預報的地表短波輻射通量具有較高的不確定性。因此，本研究將評估使用衛星反演地表短波輻射量對土壤資料同化系統的影響。

關鍵字：土壤資料同化、地表短波輻射量

Abstract

HRLDAS uses surface temperature, humidity, wind, precipitation and radiation flux as atmospheric forcing. Through Noah land surface model, the atmosphere forcing is affected to the deep soil progressively by the physical process of soil. Then obtain analysis field of soil temperature and moisture. Except for precipitation using observational data, the others atmospheric forcing use the forecast data of CWB regional model. Therefore, the atmospheric forcing will include model forecast errors. Meteorological Satellite Center (MSC) of CWB has developed a surface shortwave radiation flux product retrieved from geosynchronous satellite. MSC has evaluated the quality of data by comparing with solarimeter to make sure the data is reliability. Since the effect of surface shortwave radiation flux on soil temperature is significant, in addition the surface shortwave radiation flux has higher uncertainty in model forecast, the impact of using surface shortwave radiation flux by satellite retravel in HRLDAS is evaluated in this study.

Key words: Land data assimilation, surface shortwave radiation flux