

應用雷達定量降雨估計信心度成果於流域集水區之探討

沈志全¹ 吳一平² 李嘉文² 張哲豪³ 唐玉霜⁴ 林品芳⁴
方圖科技股份有限公司¹ 經濟部水利署² 國立臺北科技大學³ 中央氣象局氣象衛星中心⁴

摘 要

在水資源與水文資訊應用過程中，最主要的影響因子是降雨量資訊。由於降雨量具有時間與空間的不確定性，因此在資料在水資源與水文分析與應用過程中往往會受到資料不確定性的影響與限制，也增加了分析資料成果的不確定性。透過中央氣象局、水利署、水保局長期合作的QPESUMS系統。自2005~2020年期間，水利署已經累積大量的雷達定量降雨量成果。可由單點降雨量站資料，進一步獲得面網格雷達定量降雨量資料。有助於了解降流域集水區內雨量在空間與時間的分布，及測站與測站間降雨量變化情況。

目前在水利單位使用的在雷達定量降雨量產品，主要是應用經雨量站校正之雷達定量降雨產品。但雨量站的資料品質與空間分布情況，會影響較正後的產品的信心度與可靠度。因此為了瞭解雷達定量降雨估計信心度成果。研究中以2018~2019年颱風豪雨事件案例進行比對與分析。將信心度產品網格，依流域集水區範圍進行分析與比對。以作為後續各流域集水區在應用雷達定量降雨產品之參考，同時也作為未來針對各流域集水區雨量站，增站與維護優先順序的參考資訊。

關鍵字：雷達定量降雨、信心度、水文分析應用、流域、集水區

Applied the Radar-Based Quantitative Precipitation Estimation of Reliability data in Catchment Areas

Jih_Cyuan Shen¹ Yi-Ping Wu² Chia-Wen Lee² Che-Hao Chang³ Yu-shuang Tang⁴ Pin-Fang Lin⁴
FondUS.inc¹ Water Resources Agency, MOEA² National Taipei University of Technology³
Meteorological Satellite Center, CWB⁴

Abstract

In the application of water resources and hydroinformatics, the most influential factor is precipitation dataset. Since precipitation has temporal and spatial uncertainties, it is often affected and limited by these uncertainties in the analysis and application, which also increases the uncertainty of the analytical data. The QPESUMS system, which is a long-term collaboration project between the Central Weather Bureau (CWB) and the Water Resources Agency (WRA). From 2005 to 2020, a large amount of QPESUMS precipitation data has been used by the WRA. The data of radar base quantitative precipitation can be obtained from the single point rainfall to the surface grid. It is useful for understanding the spatial and temporal distribution of rainfall within the catchments and basin, and the variation of rainfall between rain gauges.

At present, the QPESUMs products use in WRA are calibrated by rain gauges. However, the data quality and spatial distribution of rain gauges will affect the confidence and reliability of the precipitation products. In order to understand the reliability of QPESUMs precipitation results, we use the 2018~2019 data and the spatial distribution of rainfall stations to estimate the reliability of radar quantitative precipitation products. In this study, we compare and analyze the typhoon rainfall events. The product grid of the reliability is analyzed and compared according to the catchment area of each river basin. It can be used as a reference for the subsequent application of quantitative radar precipitation products in catchments, as well as a reference for the added rain gauges and maintenance in the catchments.

Keywords: Quantitative Precipitation Estimation, Reliability, hydrological analysis, watershed, catchment