

## 2005 年濁水河流域颱風降雨量與短期降雨預測之探討

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**摘 要** 本研究蒐集整理 2005 年颱風期間相關氣象網站資料及氣象衛星雲圖，於海棠、馬莎、泰利及龍王等四場颱風，進行濁水河流域颱風降雨預測。研究結果顯示，除龍王颱風因移動速度快，且受中央山脈天然屏障破壞其颱風結構，致降雨量推估結果相對誤差較大，其餘颱風之平均總降雨量預估，其預測準確度相對較佳。另利用類似降雨查詢及灰色系統理論等二法進行四場颱風期間短期降雨預測，其中類似降雨查詢法乃依據各雨量站之歷史資料進行比對，預報目前降雨事件的後續可能降雨，而灰色系統理論主要以灰預測模式為基礎，藉由目前之數據推求下一時距之降雨資料，期能得到更準確之預測結果，以提供河川預警及防災應用，減少因暴雨所造成災害損失。結果顯示以灰色系統理論預測短期降雨，灰色 3 點優於灰色 4 點；若以總雨量誤差（ECR）評估，第 1 小時預測在海棠、馬莎、泰利及龍王等四場颱風中，分別以修正臨前降雨 6 小時、臨前降雨 6 小時、灰色 3 點及臨前降雨 6 小時為較精確。

**關鍵詞：**衛星雲圖、類似降雨查詢法、灰色系統理論、短期降雨。

## Typhoon Rainfall and Short Term Rainfall Prediction of Cho-shui River Basin during the Typhoon Periods in 2005

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**ABSTRACT** This study takes four typhoons as examples in 2005 including Haitang typhoon, Matsa typhoon, Talim typhoon and Longwang typhoon. From this, the short-term rainfall of Cho-Shui river basin is predicted based on the available hydro-meteorological conditions and satellite data using the Similar Rainfall Consult model and Grey System model. The Similar Rainfall Consult model is predicted based on every precipitation station all over the test area by historical precipitation data. The Grey System model is predicted based on Gray prediction model by giving data to next interval rainfall data. The results show the predicted typhoon rainfalls of the basin agree well with the field measurement data besides the predicted data during Longwang typhoon. This is because the traveling speed of Longwang typhoon is quick, and the typhoon structure is destroyed during its attack on the Taiwan area through the Central Range. Moreover, the method of correction for six-hour antecedent rainfall leads to the best accuracy in predicting short-term rainfall. Therefore, we will be able to obtain more accurate forecasts to prevent and reduce flood damage.

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**Key Words:** satellite image, similar rainfall consult method, grey system theory, short-term rainfall.