

## 水力幾何型態因子與河相關係之探討

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**摘要** 本研究利用河寬、水深、流速、流量和斷面型態等資料來探討河川的分類方法。藉由蒐集蘭陽溪相關水文和地貌資料，並利用不同的流量所對應之河寬、水深、流速等參數，推估每個流量區間的水力幾何型態指數，並將此指數關係繪製成三角關係圖。藉由三角關係圖可得知，隨著流量增加每個斷面型態特徵之變化趨勢。同時運用河川於滿槽流量下所得之水力幾何型態指數來劃分河川為沿程特性，如此可得不同河段所呈現之河型。本研究所採用之河相演變機制及分析方法可呈現河型之動態變化，並提供治理規劃之參考。

**關鍵詞：**河川型態、水力幾何型態指數、三角關係圖。

## The Relationship of Hydraulic Cross-Section Characteristics and River Morphology

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**ABSTRACT** Channel width, hydraulic depth, mean velocity, discharge and cross section are the basic parameters to understand the type of river morphology in river planning and controlling. This research collected hydrology and geography data from the hydrologic stations and cross sections of the Lan-Yang River. These data can estimate the hydraulic geometry exponents and analysis their variations with different discharge through channel width, depth and mean velocity. According to the triangular coordinate system plotted by hydraulic geometry exponents, we can distinguish the stream type and the cross sectional characteristics with increasing discharge. The river could be divided into several sections which possess their hydraulic parameters in bankfull discharge based on the river regime. The preliminary results yielded the evolution of river morphology along stream longitudinal axis through this research. The results can offer some suggestions for engineers as a reference.

**Key Words:** river morphology, hydraulic geometry exponents, triangular coordinate system.

### 一、前言

河川型態演變或成因之相關研究眾多，諸如地貌

界限假說(Schumm, 1977)、能耗率極值假說(Chang, 1979)、穩定性理論(Fredsoe, 1978)、隨機理論(倪晉仁及馬藹乃, 1998)、統計分析(Begin, 1981)等。其中

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