

行政院國家科學委員會專題研究計畫 期中進度報告

青藏高原岩漿活動研究(2/3)

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計畫主持人：鍾孫霖

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東亞地體構造演化整合研究(III) – 進度報告

【子計畫】青藏高原岩漿活動研究 (2/3)

計畫編號：NSC 93- 2116 - M - 002 - 005

執行期限：93 年 8 月 1 日至 94 年 7 月 31 日

計畫主持人：台大地質科學系 鍾孫霖

計畫參與人員：溫大任、朱美妃、李皓揚 (博士生)

一、中文摘要

本研究計畫設計為一個三年期計畫，架構於國科會整合型專題計畫 CREATE (III)「東亞地函動力與板塊互動研究」之下，將系統性地探討發生在青藏高原南部至喜馬拉雅山脈之間主要的岩漿活動的演化細節及其所蘊涵的大地構造意義。印度和亞洲兩大陸塊的碰撞，是地球新生代歷史中最重要的大地構造事件，被普遍認為足以對區域甚至全球性的環境造成若干顯著的影響和衝擊。因此，這個大陸碰撞的過程以及它的直接結果 – 青藏高原與喜馬拉雅山脈的形成和演化，多年來一直是國際地學研究的焦點。申請人和研究團隊約在兩年前開始針對拉薩地塊東南部進行研究工作，目前已在該地區觀察到許多前人未見或誤解的地質現象，還對整個青藏高原的岩漿活動與構造演化提出了一個新的模式。本研究計畫一方面根據我們過去將近兩年來累積的經驗與初步研究成果，另一方面考量青藏高原極其遼闊的幅員和從事野外考察時必須面對的先天限制及困難，擬在青藏高原南部以至喜馬拉雅山脈地區重點性選擇目標，特別針對一些岩體和露頭，詳細進行野外工作與室內各項分析研究，以期獲得更進一步的突破，繼續與國際領先團隊爭鋒，探索青藏高原乃至印度 – 亞洲大陸碰撞的演化過程及其對全球環境的衝擊。

Abstract

This project is proposed as a 3-year project that, under the NSC integrated project CREATE-III “Mantle Dynamics and Plate Interactions in East Asia”, would perform a systematic investigation of selected magmatic rocks from the Lhasa terrane, the southern part of the immense Tibetan plateau. The collision of India with Asia, which resulted in the Tibetan-Himalayan orogen, marks the most important plate tectonics event in the Cenozoic Era of the Earth. The Tibetan plateau that represents the most outstanding natural lab for studying continental collisional orogenesis, and its impacts on the ocean and climate change, has been the subject of numerous investigations. Thus, a wide variety of hypotheses have been proposed for the Tibetan-Himalayan tectonic evolution. Our team started working on the geology of southeastern Lhasa terrane since about two years ago, from which we made some important new observations that, published or yet, have either never been reported or mis-interpreted by previous studies. We recently submitted an overview paper that proposes a new geodynamic evolution model for Tibetan magmatism and tectonism. If this project can be funded, it would be concentrated in detailed analysis of a few selected outcrops from the Gangdese batholith, Linzizong volcanic successions, and post-collisional ultrapotassic and adakitic magma bodies in the Lhasa terrane, southern Tibet. Such a selection is based on our working experience and primitive results obtained in the past two years. This study will be able to provide useful information for a comparative study that the proponent has been involved for years, which explores tectonomagmatic evolution in some older continental collision zones such as the one related to the Triassic collision between the North and South China Blocks.

本研究計畫第一年期執行以來，主持人和研究生三人於 92 年 8 月 20 日至 92 年 8 月 31 日赴

北京離子質溥儀分析中心，進行鋯石定年實驗；於 92 年 9 月 1 日至 92 年 9 月 14 日赴西藏東南部進行野外考察及採樣；於 93 年 4 月 26 日至 93 年 5 月 14 日赴澳洲 Macquarie 大學 GEMOC 研究中心，進行 LA-MC-ICPMS 分析實驗。主持人於 93 年 3 月 29 日至 93 年 3 月 31 日赴日本橫濱，參加 IODP 研討會；於 93 年 7 月 5 日至 93 年 7 月 9 日赴新加坡，參加第一屆 AOGS 學術研討會。本研究計畫執行第二年期間，主持人和研究生於 93 年 4 月 26 日至 93 年 5 月 14 日赴澳洲 Macquarie 大學 GEMOC 研究中心，進行 LA-MC-ICPMS 分析實驗。主持人和博士班研究生溫大任、碩士班研究生梁育瑄三人於 93 年 12 月 12 日至 18 日赴美國舊金山，參加 AGU 秋季大會，博士班研究生朱美妃、李皓揚兩人於 93 年 8 月 15 日至 20 日赴美國夏威夷，參加 WPGM 大會，下列為本計畫執行以來，已/將發表的相關研究成果：

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