

华南中生代大地构造研究新进展

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中文摘要:华南地区中生代构造动力体制经历了从特提斯构造域向滨太平洋构造域的转换,由此产生了强烈的陆内造山作用和岩浆活动,形成了复杂构造组合的晚中生代陆内造山带和火成岩省。本研究在下列几个方面取得了新的进展:(1)通过对雪峰山地区沅麻盆地的野外调查和构造测量,确定了该盆地晚中生代-早新生代5期构造应力场及其演替序列:中晚侏罗世近W—E向挤压、早白垩世NW—SE向伸展、早白垩世中晚期NW—SE向挤压、晚白垩世近N—S向伸展、古近纪晚期NE—SW向挤压。构造应力场方向的变化记录了不同板缘的动力作用对该区的影响。(2)识别了湖南地区晚古生代-早中生代海相地层中发育的横跨叠加褶皱构造,并基于地层接触关系和已有火成岩同位素年代学数据分析,认为该地区横跨叠加褶皱构造记录了中生代两期构造挤压和地壳增厚事件:早期近东西向褶皱构造是对三叠纪华南地块南北边缘大陆碰撞和增生作用的远程响应,晚期NE—NNE向褶皱构造则是对中晚侏罗世古太平洋板块向华南大陆之下低角度俯冲作用的变形响应。(3)对湖南衡山西缘拆离断裂带的变形结构和运动学特征进行了详细的调查和构造测量,确定了衡山变质核杂岩构造,并对拆离带中韧性剪切变形的钠长岩脉的锆石进行了SHRIMP U—Pb测年,从而确定了华南地区伸展构造的起始时代约137 Ma,即早白垩世早中期。(4)通过锆石U—Pb年代学测试分析,揭示了东南沿海长乐—南澳构造带早白垩世2期构造-岩浆事件:早期(147~135 Ma)表现为强烈的混合岩化作用和深熔作用形成的片麻状花岗岩、花岗片麻岩等;晚期(135~117 Ma)岩浆岩以含石榴子石花岗岩为主。这个结果表明东南沿海构造带是晚中生代陆缘造山带,造山作用可能起始于晚侏罗世,于早白垩世早中期(135 Ma)以来发生伸展垮塌。在上述研究结果的基础上,探讨了华南地区三叠纪“印支运动”和中、晚侏罗世“燕山运动”的表现及其产生的板块构造动力体制及其转换时代、早白垩世从挤压构造应力体制向伸展构造应力体制转变的时间节点。

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The New Progress in the Study of Mesozoic Tectonics of South China


Abstract: Mesozoic tectonic regime underwent the transform from the Meso-Tethyan tectonic domain to the west Pacific tectonic domain, which caused intense intraplate orogenesis and magmatism in South China, forming a wide and complex intracontinental orogen and igneous province in this region of East Asia. Some progresses have been achieved recently in the study of this Mesozoic tectonics of South China, which are summarized as follows: (1) On the basis of field analysis of fault kinematics affecting different lithostratigraphic units of the Yuanma basin in central South China, a five-stage tectonic stress evolution history from Late Mesozoic to Early Cenozoic period was established, which included Middle-Late Jurassic E-W compression, Early Cretaceous NW-SE extension, Early Cretaceous NW-SE compression, Late Cretaceous N-S extension and Paleogene NE-SW compression. The change in tectonic stress directions was interpreted in terms of the change either in plate tectonic settings or in deep-seated crustal process. (2) Superposed folds involving Late Paleozoic to Mesozoic strata in Hunan Province were recognized; it is considered that these cross folds might record the effects of plate boundary tectonics, i.e., the earlier W-E to WNW-ESE trending folds were formed in response to the Triassic collision of the South China Block with the North China Block and the Indochina Block, and the late NE to NNE trending folds were generated as the far-field effect of a low angle subduction of the Paleo-Pacific oceanic plate beneath the South China Block, which occurred in Mid-Late Jurassic. (3) The Hengshan metamorphic core complex was determined on the basis of detailed field investigation of a normal detachment fault zone developed along the western margin. SHRIMP U-Pb dating of zircons from strongly sheared albite made sure that the normal faulting was initiated in Early Cretaceous, at about 137 Ma. (4) Field observations and U-Pb dating of zircons revealed that the Changle-Nan' ao tectonic zone along the coast of southeast China corresponds to a Late Mesozoic orogenic zone formed in Late Jurassic to Early Cretaceous; it was materialized by gneissic granites, migmatites and amphibolite facies metamorphic rocks, which were dated to be 147-135 Ma. This orogenic zone began to collapse in 135-117 Ma, characterized by fine-grained granites. Based on the above results, this paper discusses the manifestations and plate tectonic backgrounds of the Indosinian and Yanshanian movements, and the time of the change from the compressive tectonic regime to the extensional region in Early Cretaceous.

keywords: [intra-continental orogenesis](#) [tectonic stress field](#) [cross folds](#) [Mesozoic tectonics change in tectonic regime](#) [Yuanma basin](#) [Changle-Nan' ao tectonic zone](#) [South](#)

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