



## Editorial

## Introduction to tectonics of China

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## ABSTRACT

The continental crust of China is a mosaic of cratonic blocks and orogenic belts, containing small cratons and terranes with various tectonic settings. They have diverse origins and complex histories of amalgamation, and often suffered repeated reworking after multiple episodes of amalgamation. In the last three decades, extensive geological, geochemical and geophysical investigations have been carried out on these cratonic blocks and intervening orogenic belts, producing an abundant amount of new data and competing interpretations. This provides important insights into understanding the formation and evolution of the Chinese continents. The papers assembled in this volume present a timely and comprehensive overview on major advancements and controversial issues related to the formation and evolution of continental crust in China. Complex tectonic histories were experienced not only by the large-scale cratonic blocks and orogenic belts, but also by small-scale terranes and orogens between and inside these blocks. Nevertheless, our understanding of lithotectonic units and geological processes has been greatly advanced by recent studies of zirconology and geochemistry for various rock types from major petroTECTONIC units in China. It has been further advanced from integrated interpretations of geochemical and petrological data for petrogenesis of magmatic rocks. An overview of these observations and interpretations provides new insights into understanding the continental plate tectonics and the chemical geodynamics of subduction zones.

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## 1. Foreword

China is located in a unique tectonic setting where the Paleo-Asian Ocean, Tethyan and Western Pacific domains meet in a triangular framework (Fig. 1). The tectonic framework of China is characterized by the assembly of several cratonic blocks along orogenic belts (Fig. 2). The China continent has undergone long and complex tectonic evolution from the Archean to Cenozoic (e.g., Zhao et al., 2001; Zhang et al., 2004; Zheng and Zhang, 2007; Zheng and Wu, 2009). The concept of plate tectonics has been applied to the interpretation of China geology since its establishment (e.g., Klimetz, 1983; Zhang et al., 1984). The full geological record and long, complicated tectonic history make China an excellent natural laboratory to investigate not only the accretionary and collisional orogenesis during plate convergence (e.g., Xiao et al., 2010a) but also the formation and evolution of continental lithosphere with respect to crust–mantle differentiation and subduction-zone recycling (e.g., Zheng, 2012).

There are a number of salient tectonic features in China, such as the Precambrian formation and Mesozoic destruction of the North China Craton (Gao et al., 2009; Xu et al., 2009; Zhang, 2009; Zheng and Wu, 2009; Zhu et al., 2012), the ultrahigh-pressure (UHP) metamorphic rocks in the central orogenic belt of China (Wang et al., 1995; Yang et al., 2003; Zheng et al., 2003, 2012; Zhang et al., 2008; Liou et al., 2009), Phanerozoic continental growth in the Chinese part of the Central Asian Orogenic Belt (Şengör et al., 1993; Jahn et al., 2000; Windley et al., 2007; Xiao et al., 2010b), and the continental collision and plateau rise in Tibet (Xu et al., 1994; Tapponnier et al., 2001; Mo et al., 2008; Zheng, 2012). These characteristic features have attracted extensive attention of the international geological community in the past three decades. Many international programs, such as the International Geological Correlation Projects (IGCP) and International Lithosphere Programs (ILP), have been launched to study various geological issues in China. As a result, recent investigations have made tremendous advances in understanding the tectonics of China. This forms a justification for our organization of this volume in which we invited representative experts working in the major cratonic blocks and orogenic belts of China to present timely and comprehensive overviews on major advancements and controversial issues related to the formation and tectonic evolution of China.

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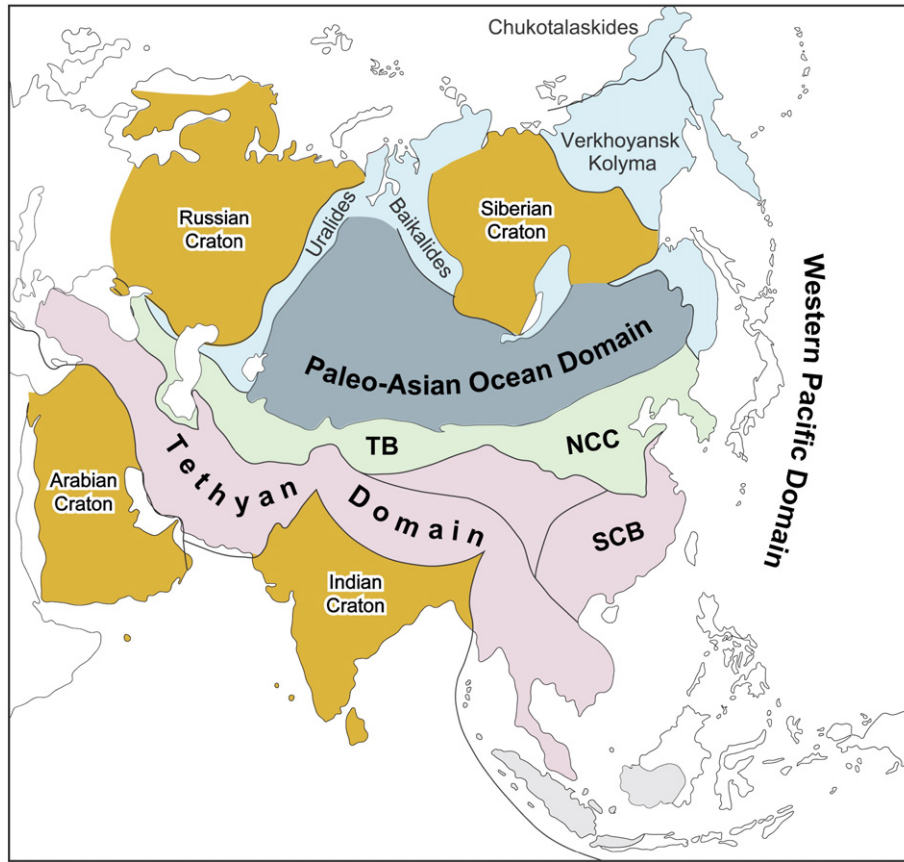


Fig. 1. Simplified tectonic map of Asia showing the North China Craton (NCC), the Tarim Block (TB) and the South China Block (SCB), together with the adjacent blocks surrounding China, within the framework of the joint triangle area of the Paleo-Asian, Tethyan, and Western-Pacific domains (modified after Şengör et al., 1993; Xiao et al., 2010b).

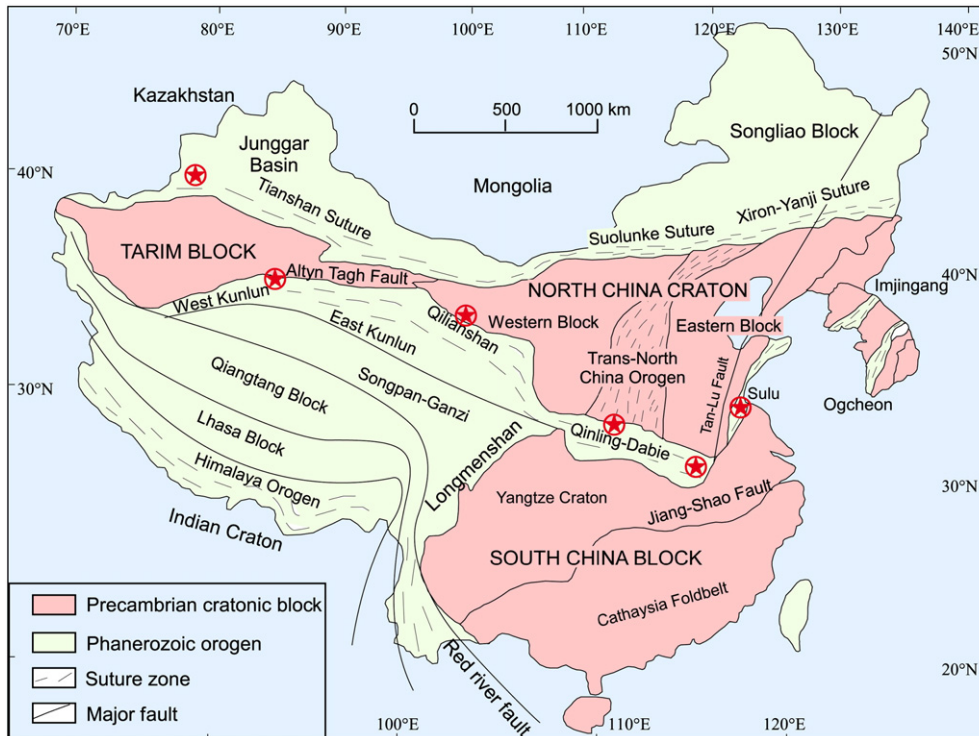


Fig. 2. Simplified tectonic map of China showing major cratonic blocks and orogenic belts (modified after Zhao et al., 2001). Circled asterisks denote the UHP metamorphic terranes in the central orogenic belt of China (Zheng et al., 2012), which occur from west to east: Southwest Tianshan, Altnyn, North Qaidam, North Qinling, and Dabie and Sulu.

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