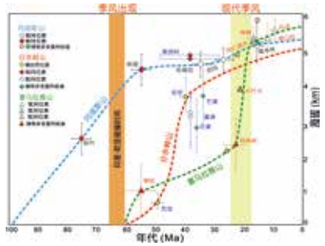
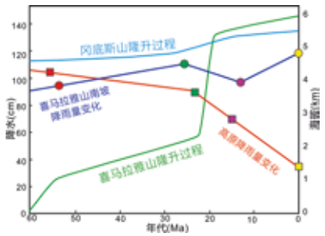
Research Group of "Continental Collision and Tibetan Plateau Uplift"
Institute of Tibetan Plateau Research, Chinese Academy of Sciences



青藏高原主要山脉隆升历史

Uplift history of major mountain ranges in the Himalaya-Tibet Plateau

The systematic research by the group has led to the original finding of the peripheral foreland basin system along the entire length of the northern Himalaya, extending from the Yarlung Zangbo Suture Zone in the center of southern Tibet to the eastern and western syntaxis. The timing of the foreland basin development confines the first India-Eurasia collision to occur along the central segment of the suture zone at 65 Ma, and then propagated to the eastern and western end of the Himalaya at 50 Ma. They reconstructed the uplift history of the Himalaya, Gangdese, and Central Watershed mountain ranges from the seafloor to the roof of the world, which answered the question about how the uplift of the Tibetan Plateau could exert effects on the processes and mechanisms of the environmental change. Based on their newly developed methodologies of deep Earth exploration, they discovered morphological structures of the Indian continent subducting northward beneath the plateau along the Main Himalayan Thrust. With these outstanding scientific achievements, this research group promoted the study of multi-layer interactions between tectonic deformation, magmatism, seismicity and plateau uplift, and significantly contributed to frontier studies of the continental collision and plateau uplift, and the sustainable social development of the Tibetan Plateau region.



高原主要山脉隆升与降雨量变化关系

Relationship between the rising of main mountain ranges and precipitation

Outstanding contributors of this research group

Ding Lin
He established a new model of India-Eurasia continental collision, revealed the transition from oceanic to continental subduction, and quantitatively reconstructed the uplift history of the main mountain ranges.

Bai Ling
She developed a multi-scale double-difference earthquake relocation method which revealed high-resolution structures of the Himalayan collision zone and key morphologies related to the faulting of large earthquakes.

Pei Shunping
He established a 4D tomography method that produced images of the entire process of co-seismic changes and post-seismic recovery in the Longmenshan areas, revealed an evolution law of seismic structures, and established an important role for time-lapse seismology.

Major contributors

Zhao Junmeng
Fan Weiming
He Jiankun
Sun Yali
Zhang Qinghai
Cai Fulong
Zhang Liyun
Li Zhenyu
Xu Qiang
Zhang Heng
Yue Yahui
Lai Qingzhou
Xie Jing
Wang Chao
Wang Houqi
Song Peiping
Huang Qishuai

5600 万年前冈底斯山与喜马拉雅山复原图

The reconstructive morphography of Gangdese and Himalaya prior to 56 million years

可可西里野外地质考察

Field investigations in the Hoh Xil areas

青藏高原碰撞隆升研究集体

推荐单位：中国科学院青藏高原研究所

研究集体主要科技贡献：

该研究集体率先提出利用雅鲁藏布江碰撞周缘前陆盆地系统研究印度－欧亚大陆碰撞的科学途径，建立了印度与欧亚大陆碰撞的新模式，揭示印度－欧亚大陆于~6500 万年在中部首先碰撞，随后向两侧封闭，于~5000 万年发生全面碰撞；重建了高原主要山脉从海底到世界屋脊的隆升过程，回答了高原隆升影响环境变化的过程和机制；提出并发展了深部探测的科学方法，揭示了印度大陆沿主喜马拉雅逆冲断裂向北俯冲到高原之下的形态；促进了高原构造变形－岩浆作用－地震活动－地表隆升等多圈层相互作用的研究；该研究集体成果为青藏高原研究赢得了国际学术地位，同时为我国青藏高原社会发展做出了贡献。

研究集体

Group photo

印度－欧亚大陆碰撞新模式

New model of India-Eurasia continental collision

研究集体突出贡献者

丁　林 Ding Lin

丁　林　中国科学院青藏高原研究所

主要科技贡献：提出了印度−欧亚大陆碰撞方式和时限的新认识，揭示了高原由大洋俯冲到大陆俯冲的转换，定量恢复了高原主要山脉的隆升历史。

白　玲 Bai Ling

白　玲　中国科学院青藏高原研究所

主要科技贡献：发展了多尺度双差地震定位方法，揭示了喜马拉雅碰撞带的精细结构和影响大地震断层破裂的关键几何形态。

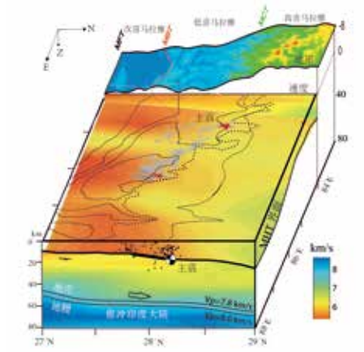
裴顺平 Pei Shunping

裴顺平　中国科学院青藏高原研究所

主要科技贡献：建立了4D成像方法，实现了龙门山地震同震变化和震后恢复全过程成像，揭示了地震结构演化规律，奠定时移地震学基础。

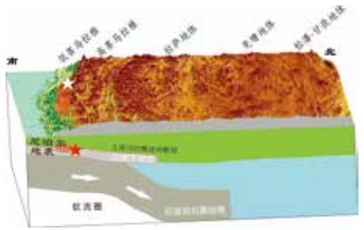
研究集体主要完成者

赵俊猛　范蔚茗　何建坤　孙亚莉　张清海　蔡福龙　张利云
李震宇　徐　强　张　衡　岳雅慧　来庆洲　谢　静　王　超
王厚起　宋培平　黄启帅



喜马拉雅碰撞带结构与地震破裂

Structure and earthquake rupture of the Himalayan collision zone



印度大陆地壳与地幔分层俯冲模型

Decoupled subduction model of Indian crust and mantle