

论文

青藏高原南部雅鲁藏布江缝合带地区地壳电性结构研究

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摘要 为了探测青藏高原南部雅鲁藏布江缝合带地区地壳浅部和深部构造沿东西和南北方向的变化特征, 在雅鲁藏布江缝合带地区布设了三条南北向剖面(错那—墨竹工卡、亚东—雪古拉、吉隆—措勤), 采用超宽频带大地电磁测深方法进行了地壳、上地幔电性结构探测研究, 发现该区主要电性结构特征为: 1. 雅鲁藏布江缝合带附近表层发育大规模的高阻体, 岩体延伸最深达30km以上, 是冈底斯花岗岩体的反映. 2. 雅鲁藏布江缝合带的南部有小规模的良导体, 在其下方和北侧发育有大规模良导体. 3. 沿剖面从南往北壳内普遍发育良导体, 各良导体主体间是不连续的, 规模逐渐增大, 总体北倾, 在缝合带附近产状较陡. 4. 在雅鲁藏布江缝合带附近良导体由西往东规模逐渐增大, 导电性逐渐变好, 相对雅鲁藏布江在剖面上的位置逐渐南移. 这些重要的电性特征可能是印度板块向北俯冲所形成的, 深部大规模的良导体特征沿东西向的差异可能是板块碰撞引起物质沿东西向运移作用的结果.

关键词 电性结构 大地 电磁测深 雅鲁藏布江 缝合带 青藏高原南部

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Martyn Unsworth, et al. Crustal electrical conductivity structure beneath the Yarlung Zangbo Jiang suture in the southern Xizang plateau

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Abstract To study the structure in the shallow and deep crust along the east west and north south direction beneath the Yarlung Zangbo Jiang suture in the southern part of Xizang plateau, three magnetotelluric profiles with super wide band of frequencies (Cona Maizhokunggar, Yadong Xuegula, Gyirong Coqên) across the Yarlung Zangbo Jiang suture were deployed. The result shows that large scale high resistive bodies exist near the Yaluzangbu suture surface, which extend to the maximum depth of more than 30km. They are the reflection of the Gangdese granite. There are small scale conductive bodies in the southern part of the Yarlung Zangbo Jiang suture, and large scale ones under the suture and in the northern part. Conductive bodies widely spread in the crust from south to north along the profiles. They are discontinuous with each other, and become larger in scale from south to north. They decline to the north, and are the steepest near the suture becoming deeper gradually from about 20km depth in the south part to about 70km depth in the middle of the suture. Under the Yarlung Zangbo Jiang suture, the conductive bodies becomes larger in scale, more conductive gradually from west to east. These important electrical characters are possibly caused by the India plate underthrusting to the north. The variation in characters of the large scale conductive bodies from west to east may be the proof that plate collision causes materials moving to the east

Key words Electrical conductivity structure; Magnetotelluric sounding; Yarlung Zangbo Jiang Suture; Southern Xizang Plateau

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