

THE STUDIES ON THE GEOLOGICAL REMOTE SENSING FOR QINGHAI-TIBET PLATEAU RISING LOCUS

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Abstract:

The magnificent morphologic and geological appearance of Qingzang plateau and its special rock structure group combination have been recording the plentiful dynamic information about the plateau rising and evolution, which is considered as the folden key to open the mysteries of earth. The plateau is vast and covered by snow all the year round, where the living and working conditions are tremendously harsh. It is nearly impossible for the normal methods to complete the systematic investigation over the whole Plateau. It is remote sensing which can remedy the weaknesses of the normal methods. Using the method of remote sensing geological interpretation combined with regional petrology, and on the basis of general study over 3000000km² area of the Plateau and its neighbouring area ,the dynamic procedure of plateau forming and evolution was realized from the interpretation and positive-negative deduction for the movement and traces of geological bodies geological and morphological phenomena. The development trend was foreseen, and some new knowledge and distinctive opinion were obtained. The main contributions are following: In the procedure of geological and water system interpretation of remotely-sensed images, a large amount of dynamic information of horizontal movement of mountainous system around qingzang Plateau was Obtained. New knowledge was got for mechanic mechanism analysis of plateau forming and evolution, at the same time the water system genesis of the "great turn" of River Yarlung Zangbo etc. was interpreted reasonably and scientifically. The movement pattern and direction, any immigration strength of Himalaya, West kunlun, Altun and other mountain systems were estimated generally according to the half-quantitatively measurement of relative immigration amount of the water system pattern of the "great turn". In accordance with the information extracted from geotectonic frame recordings, the three great structure patterns including Pamir overthrust Nappe structure system, Sanjiang underthrust structure system and Taibaishan Nappe structure system were put forward. Their effect on the plateau forming and intensity was discussed. Remote sensing interpretation discovered an important clue of Zanda-Dinggye-Lhozhag-Gala fracture Zone, which may be an ophiolite zone. The structure pattern and movement characteristics of plateau shallow crust is described systematically. The blocks in near NS direction and relative movement features are defined. It is pointed out that the rising strength of the blocks in NS direction and in EW direction is different, the terrain is lower step by step from east to west, the fan-shape split in EW direction is dominated on the plateau surface. According to the theory of igneous rock pairs, six pairs of igneous rock were delineated, four of which are related with the plateau boundary. With the reference of plateau rising information recorded with Cenozoic molasses, it is put forward that the starting zone of plateau rise is Gangdise-Nu Jiang Tanggula zone which grows in both south and north directions, and the plateau expands horizontally in south and north directions. The Tahikurgan and Zadoi-Songpan structure zones and their neighbouring areas may be the new active area of plateau rising. The pattern of three great blocks assembly including the Indian block underthrust, the Tarim block pressing and the Yangtze block obstruction was set up and remedy some weakness of Tapponnier P theory.