



## Characteristics of tectonic activity phases along The Cao Bang – Tien Yen fault zone, Tien Yen – Lang Son section, Northeastern part, Vietnam

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### Abstract Реферат [PDF Rus](#)

The Cao Bang – Tien Yen (CB-TY) fault zone, Tien Yen – Lang Son (TY-LS) section is about 100 km long, running in the NW-SE direction, the northeastern part of the Red River fault zone. The field survey is conducted at 21 locations, including the description of lithological characteristics, fracture orientation measurement, stratigraphic displacement, and the evidence of striation motion on the fault surface. The analytical results of 59 striations on the fault surface along the CB-TY fault zone, TY-LS section identified that the lateral strike-slip stress states with the four compression phases E-W, NE-SW, NW-SE and N-S. From evidences obtained in the field, together with the comparison of previous studies, the main tectonic phases are arranged in the order of directions: 1) NW-SE; 2) E-W; 3) NE-SW and 4) N-S. In particular, the first compression phase of the NW-SE direction severely destroyed the old rocks of the Jurassic age and earlier, encountered at many survey locations along the CB-TY fault zone, TY-LS section; the second compression phase of the E-W direction occurred during the Cenozoic period, caused the left displacement of the Red River fault zone in the Oligocene-Miocene period and the left motion along the CB-TY fault zone formed the Neogen sedimentary basins: Cao Bang, That Khe, Lang Son, Na Duong; the third compression phase of NE-SW direction occurred during the Mid-Late Miocene, caused a tectonic inversion of the NW-SE faults in the northern part of the Red River basin, which are located in the southeast area of the CB-TY fault zone; the final compression phase of the N-S direction, occurred during the Pliocene – Quaternary period, caused the right motion along the CB-TY fault zone and the Red River fault zone.

### Keywords

CB-TY fault zone, Red River fault zone, Cao Bang basin, Neogene Na Duong basin, TY-LS section, thermal springs

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