

古付加体中にサイスミックードンの化石はあるか： 熱年代学的研究

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Are there any fossil seismic zone in an accretionary complex ? -A thermochronologic study-

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Research Abstract

Accretionary prisms develop along subducted continental margins by the offscraping and underplating of the mixture of oceanic sediments and trench fill continental deposits. Because subduction zones, where accretionary prisms develop, is the area of large earthquakes at the depth of 10-30km, the thermal energy radiated by earthquakes could cause various geological events to surrounding accretionary complexes, as is detected by the fission track (FT) method from rocks around the active Nojima Fault, Awaji Island, central Japan.

The Shimanto accretionary complex in northeastern Kyusyu, southwest Japan, is divided into four units based on microfossiles and rock facies. The degree of heating by regional metamorphism is estimated for each units using fission track method and vitrinite reflectance. The thermal disturbance within Mikado formation, which exists

south of the Nobeoka thrust, becomes higher from south to north according to FT ages and track-length distribution. The FT age of the sample collected from thrust gouge of the Nobeoka thrust fault shows higher thermal disturbance than that of hanging Kitagawa unit and the lower Mikado formation. The FT age, 31.2 ± 5.7 Ma, may indicate the time of heating by the thrust fault activity. The time range between sedimentation and the obtained FT age is less than 5 million years. Provided the velocity and the angle of subduction to be 50 mm/yr and 13° , respectively, underthrust sediments reach the depth, where plate-boundary earthquakes occur, within a few million years. Hence the obtained time of thrust activity may cause a large earthquake at the plate boundary. Other faults show no evidence of heating in FT data. This means that the degree of heating may vary along the fault plane.

Research Products (8 results)

All Other
All Publications

[Publications] 星野秀洋,池原琴絵,長谷部徳子: "付加体の形成過程における衡上断層の役割と温度構造"フィッション・トラックニュースレター. 14(印刷中). (2001) ▼

[Publications] 堀口高士,長谷部徳子: "サンアンドレアス断層におけるFT年代測定の間報報告"フィッション・トラックニュースレター. 14(印刷中). (2001) ▼

[Publications] 村上雅紀,田上高広,長谷部徳子: "野島断層掘削コアにおけるFT長分析"フィッション・トラックニュースレター. 14(印刷中). (2001) ▼

[Publications] Tagami et al.: "Thermal history analysis of the Nijima fault borehole samples by fission-track thermochronology"Proceedings of International workshop on the Nijima fault core and borehole data analysis. 203-209 (1999) ▼

[Publications] Hoshino, H., Ikehara, K.and Hasebe, N.: "A paleothermal structure and a role of thrust faults during the evolution of an accretionary prism"Fission Track News Letter. 14, (in press). (2001) ▼

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