Thermal effect of the fluid flow in the Kenting Melange, Southern Taiwan

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It is believed that advective heat transfer of the pore fluid flow is effect the thermal structure of the Nankai Accrettionary Prism, in spite of the unclear in preaent sbduction zone. The purpose of this study is to estimate thermal the effect of the fluid flow in the melange. The Taiwan is located on the convergent boundary between the Philippine Sea and the Eurasian Plates. The Kenting Melange extends along the Hengchun fault, the Southern Taiwan, was formed by shearing at 1 to 0.5 Ma. The fault zone is composed of the alternation of the sandstone and mudstone, fault gouges including gravels and block-in-matrix fabrics in the sheared shale. There are distinct hydrothermal markers in the Southern Taiwan, and the dickite vein (hydrothermal clay mineral) is found in the sheared Kenting Melange. Therefore the Kenting Melange is a good field to understand the thermal effect of fluid flow. The thermal structure in the Kenting Melange have been investigated using by the vitrinaite reflectance and the heat conduction measurement. The sheared unit including the dickite vein shows high levels of thermal maturity due to hydrothermal environment. Reflectance values range from 0.6 to 1.5%Ro. The dickite is not contained sites which show lower reflectance values (0.6 to 1.0%Ro). On the other hand, in narrow areas where high level thermal maturity was occured several meters width, reflectance show 1.3%Ro, however 10 m away from the fluid flow unit reflectance show 0.8%Ro. The high reflectance zone is localized. Another place does not suffer thermal effect of the fluid flow. The fluid flow is transferred from the deeper position to the sea floor through the sheared shale, but the fluid flow is not transferred to the alternation of the sandstone and mudstone, and fault gouges, the heat is only conveyed by works on heat conduction. Just then the advective heat transfer of pore fluid flow is cooled down by the around the another fluid flow. The heat conduction measurement, density, specific heat of the shale imply that the heat does not diffuse. The heat is transferred by fluid flow does not effect the thermal structure of the Kenting melange. Therefore it is clear that advective heat transfer of pore fluid flow hardly effect the thermal structure in the accretionary prism.