

Deformation pattern and kinematics of melange fabrics of the Funabuseyama Unit in the central part of the Mino terrane

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Although kinematic analyses of melange fabrics have commonly been applied to the Cretaceous accretionary complex in order to discuss about relative plate motion, restorations of such relative plate motion before the Cretaceous age are still ambiguous. In this study, we focused on the Middle Jurassic Funabuseyama Unit in the Mino terrane. The Unit is characterized by melange consisting of muddy matrix and fragments of terrigenous sandstone, pelagic siliceous mudstone and chert, and limestone and basalts of seamount origin. This study carried out detailed observations on the melange fabrics along the Neo and Ibi Rivers. S-C like asymmetric fabrics and sigma structures were recognized in the melange widely on mesoscopic and microscopic scales, suggesting that the melange of the Funabuseyama Unit are tectonic origin formed by regional-scale layer-parallel shearing. Regardless of strike variations due to km-scale northwestward-plunging folds, the asymmetric fabrics dominantly indicate a layer-parallel sinistral sense of shear on a plan view. Illite crystallinity values of the mudstone matrix within the melange indicate diagenetic zone, indicating that the melange of the Funabuseyama Unit formed in the depth of several kilometers during subduction.

In order to restore the slip directions of the melange fabrics to the original attitudes, we applied the method of Fukui & Kano (2007), which studied the melange of the Early Cretaceous Kanayama Unit situated below the Funabuseyama Unit, to exclude the effects of regional tectonic events after melange formation. As a result, restored slip directions of the melange fabrics are dominantly directed to the top-to-the SW (i.e. mean vector 229 ± 13 degrees). This restored slip directions are comparable with those of the Kanayama Unit that also have a dominant direction to the top-to-the SW (i.e. mean vector 224 ± 8 degrees; Fukui & Kano, 2007), but the restored directions in the Funabuseyama Unit are much more scattered than those in the Kanayama Unit. This difference may result from the subduction of seamount in the Funabuseyama Unit, by which the slip directions may be dispersed than the Kanayama Unit that contains no seamount and consists of only upper parts of ocean plate stratigraphy.