

Wedge extrusion followed by out-of-sequence thrusting and duplexing, and solving knocker problem, the Sambagawa HP-LT sc

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The Sambagawa high P/T metamorphic rocks central Shikoku is regionally mapped, and characteristic major structures performed the exhumation of high grade metamorphic rock is clarified. Our geologic map is expected to be an index map available for researchers of the Sambagawa zone. As noted by Osozawa and Pavlis (2007), the most fundamental structure is the extrusional wedge, rebelled D2-1 in this paper. The S directed extruded wedge consists of a series of normal faults domain at hanging wall of the Asemigawa detachment N directed, and a series of thrust faults domain of the footwall S directed. These faults bound every metamorphic mineral zone, and the thermal culmination of the Asemigawa section is oligoclase-biotite zone, hanging wall of the detachment fault. To the W, we now confirm that the culmination contains a metamorphic ultramafic rocks- amphibolite-eclogite complex. To the E, these extrusional wedge and a series of normal and thrust faults are linearly traceable on regional map, but suddenly discontinuous to the footwall chlorite zone. The disruption is due to the D2-2 Hamegano out-of-sequence thrust, newly found in this paper, and the hanging wall consists of the high grade rocks. The OST divides the chlorite zone into the upper L tectonite consisting of varicolored mafic schist, and the other main pelitic schist regionally distributed. D2 folds at the hanging wall is disjunctive and broken by the movement of brittle OST. The OST is traceable to the W from the Asemigawa area. To the N, the Tomisato syncline is observed as mapped by previous studies, but it exists only on hanging wall, and the structure is discordant to the footwall main chlorite zone. Its S limb, hanging wall of the OST, is extrusional wedge, but the NW limb consists of stacked metamorphic mineral zones, and the syncline is asymmetric. Further to the N, OST and hanging wall duplex is involved in the W plunging D2-3 Oboke anticline. We named the D2-2 duplex stack formed near anticlinal axis, the Tomisato duplex. OST and duplex directed S, as the second expression of metamorphic exhumation, following the first wedge extrusion. The Median Tectonic Line might have played an important role for exhumation as a root, and the high grade rocks, including eclogite, is consequently rootless. The Oboke anticline contains the structurally lowest psammitic schist included in the main chlorite zone. The similar psammitic schist unit of the upper different horizon is newly recognized only at the NW limb of the anticline. The psammitic schist and the Oboke thrust is concordantly folded with the OST and duplex at the Oboke anticlinal axis. Another anticline is to the S, the Nakashichiban area, where the psammitic schist of the same horizon is once again exposed. Metamorphosed ultramafic rocks, amphibolite (mafic schist) except for eclogite, calcareous schist, and piemontite siliceous schist are distributed in every metamorphic zone. The rocks are affected by D1 stretching and W directed shear, but never tectonic melange. Therefore, ultramafic rocks were amalgamated with surrounding rocks before D1, and possible mixing mechanism is sedimentary melange. The eclogite might be derived from metamorphic sole of the Jurassic Mikabu ophiolite as the same fashion.

Keywords: Sambagawa HP-LT metamorphic rocks, exhumation, extrusional wedge, out-of-sequence thrust, duplex, eclogite