# Debris avalanche deposits related to a large-scale collapse of a Permian seamount in the southern Mino terrane, central Japan

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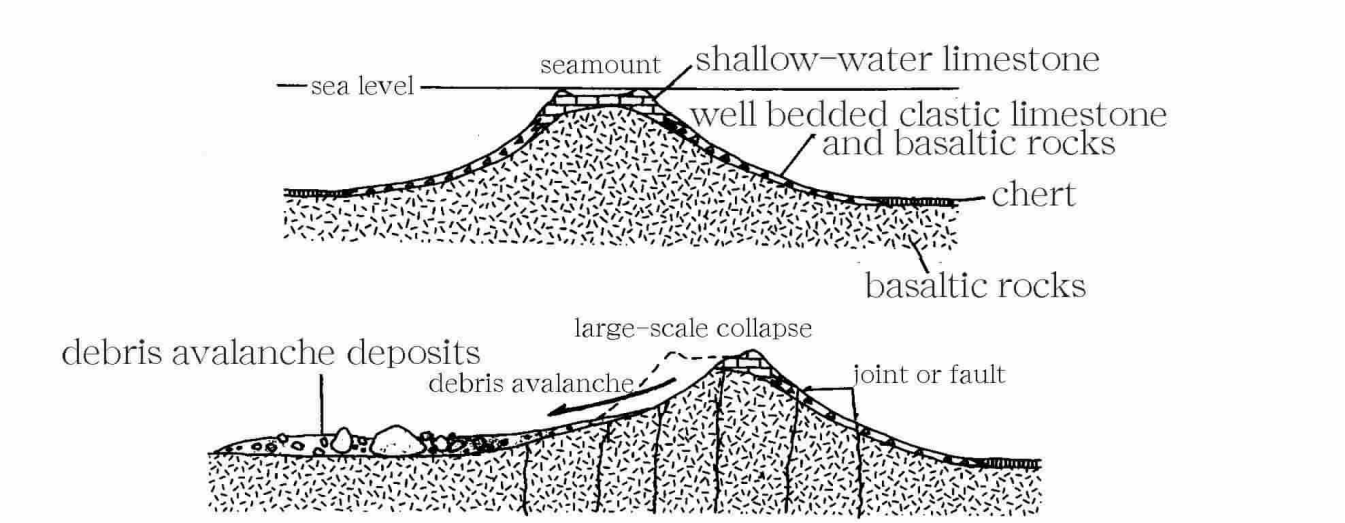
Rock-masses composed of a chaotic mixture of Permian oceanic rocks without terrigenous materials are widely distributed in the south part of the Mino belt, the northern Suzuka Mountains, central Japan. It has exactly the structural features of a debris avalanche deposits. A large amount of variously-sized blocks of the oceanic rocks are randomly set in a matrix made up of fine basalt volcaniclastic materials. The original stratifications in the blocks are mostly completely preserved and discontinuous into the matrix. The blocks are isolated and supported by the surrounding matrix.

The stratigraphic reconstruction of the Permian oceanic rocks reveals that blocks of the oceanic rocks are originated in a seamount in an open ocean. The oceanic rocks are divided into three lithologic successions: a shallow-water limestone conformably overlying on basaltic rocks, well-bedded clastic rocks made up of limestone clasts and basalt volcaniclastic materials, and chert. The oceanic rocks of the lithologic successions were formed as Permian sediments on the top, the slope, and the foot of a basaltic seamount.

The stratigraphic and structural features of the rock-masses in the south part of the Mino belt, the northern Suzuka Mountains indicate that the formative process of the chaotic oceanic rocks is best explained by a huge collapse of a seamount in open ocean realm. The Permian oceanic rocks were crushed and intermixed by a debris avalanche triggered by the collapse of the gravitationally unstable seamount before its encounter with land-derived material.




Model explaining the chaotic intermixing of oceanic rocks of the south part of the Mino terrane. 1: Accumulation of the shallow-water limestone, well bedded clastic limestone and basaltic rocks, and chert on the top, flank, and foot of a seamount in an open ocean. 2: Large-scale collapse of the unstable seamount split by cooling joints or faults. The collapse products accumulated on the foot of the seamount by a debris avalanche. Modified from Yamagata (2000)