

Publication of Geology of Nago and Yambaru district, northern and central Okinawa main-island

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This abstract is in Geology of Nago and Yambaru district. The geological map occupies the northern and central Okinawa main-island. The district is basementally geologically divided into the Ie, Nakijin, Motobu, and Nago, and Kayo zones. The latter Nago and Kayo zone corresponds to the Cretaceous Shimanto zone of Southwest Japan, but the former early Cretaceous Ie and Motobu zone corresponds to e. g., the Jurassic northern Kitakami and related zones of Northeast Japan, not with the Chichibu zone of Southwest Japan. In this district, the Ie zone, and then the Triassic Nakijin zone occupies the highest structural position by the Hedo reverse fault, but it followed lateral tectonic translation from tropical zone. It is a primary characteristic that the hanging wall Anne Unit of the Motobu Complex separated from the footwall of more metamorphosed Nago Complex, by the Kijoka detachment fault. The Motobu complex is divided into the two units by the additional major detachment fault. Exhumation of the metamorphic rocks, consisting mostly of the Nago Complex, especially the Miyagi Unit, exhumed by this later D2 brittle event, which includes also major reverse faulting, asymmetric folding, and reversing of strata. Early D1 event is a ductile non-coaxial deformation less than outcrop-scale, but associated with prograde metamorphism. Overthrust nappe of the Nakijin Complex is included in later D2 phase. Also the juxtaposition of the Nago and Kayo complexes is by the Futami reverse fault included in D2, but the Kayo complex is characterized by D1 coaxial deformation including major asymmetric folding.

The Valanginian to Hauterivian Ie complex consists of sandstone and mudstone, and includes exotic blocks of red chert, limestone, and basalt. The Carnian Nakijin complex consists of marl and basalt, but includes exotic blocks of Permian calcareous schist at Hedo-misaki. The Valanginian to Hauterivian Motobu Complex includes the Anne and Yanaza Units, bounded by the Yaedake detachment fault. The hangingwall Yaedake Unit is distributed in the Motobu Peninsula, and consists of sandstone and mudstone as a matrix, and includes exotic blocks of Triassic chert, Permian limestone, and basalt. The Anne Unit consists of an alternated psammitic and pelitic schist, but includes exotic blocks of mafic, calcareous, and siliceous schists. The Albian Nago Complex includes the Miyagi, Inogama, and Oku Units, but only contains trace fossils. The Miyagi Unit occupies the western flank of backbone range, the Inogama Unit lies on the range, also within window, and along eastern coast, and the Oku unit occupies the eastern flank, in general. The Miyagi Unit consists of mafic schist below and pelitic schist and then thin alternated psammitic and pelitic schist above. The Inogama Unit consists of thick alternated psammitic and pelitic schist, and conformably overlies the Oku Unit. The Oku Unit consists of pelitic schist, siliceous schist (silicic tuff), and thin alternated psammitic and pelitic schist. The Eocene Kayo complex consists of alternated sandstone and mudstone, but contains hemipelagic mudstone at Henoko misaki.

The cover sediments are the Upper Miocene and Pliocene Shimajiri Group, and the Pleistocene Ryukyu Group, consisting of the Kunigami, Guga, Nakoshi, and Naha Formations. The Kunigami Formation is a constituent of the higher terrace, the Guga Formation represents a coastal river valley and fan truncates the higher terrace, but partly deposited in a half graben bounded by the Nago fault, the Nakoshi Formation is a marine sediments covered the Guga Formation, and the Naha Formation, deposited on the Nakoshi Formation, is a reefal but detrital limestone, which formed a kind of two terraces. The Pleistocene is strongly affected by NW-SE trending normal faulting, other than NE-SW trending Nago fault. These active faults are responsible for the opening of the Okinawa trough. The present morphology and sedimentation reflects the active faulting.

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