

Geological Map of Japan 1:200:000, Oita

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The Oita district, located in the northeastern part of Kyushu Island, geologically comprises various rock types of Paleozoic to Quaternary in age.

The following Paleozoic units are distributed: 1) Late Cambrian ultramafic rocks consisting of serpentinite and pyroxenite with small amounts of gabbro and amphibolite, 2) Late Devonian to Early Silurian Mikuni Cataclastic Granitic Rocks and Honjo Metamorphic Rocks, 3) Silurian to Devonian formations, 4) Permian accretionary complexes, and 5) Early Permian Usukigawa Quartz Diorite.

Mesozoic units on the north side of the UYTL (Usuki-Yatsushiro Tectonic Line) are 1) Cretaceous high-temperature, low-pressure Asaji Metamorphic Rocks and plutonic rocks and Cretaceous low-temperature and high-pressure Sanbagawa Metamorphic Rocks, and 2) a small body of an Early Jurassic accretionary complex of the Nishikawauchi Formation and cataclasite of Cretaceous quartz diorite mylonite.

Mesozoic units on the south of the UYTL are 1) Early Cretaceous high-temperature metamorphic rocks, 2) Late Triassic to Early Jurassic low-temperature and high-pressure metamorphic rocks, 3) Jurassic to Early Cretaceous and Cretaceous accretionary complexes, 4) Late Triassic, Late Jurassic and Cretaceous formations, and 5) Eocene formations. The Mesozoic accretionary complexes are younger approaching apparent lower structural levels, and the thrusts between the each accretionary complex originally dip gently northwest.

The Jurassic to Early Cretaceous accretionary complexes tectonically underlie the serpentinite complex composed of Paleozoic plutonic and metamorphic rocks, low-temperature and high-pressure metamorphic rocks, Permian accretionary complex and Paleozoic and Mesozoic formations.

The Miocene Okueyama Volcano?intrusion Complex is composed of effusive rocks, granitic rocks, and ring dikes. The Ono Volcanic Rocks comprise pyroclastic flow deposits, lava, and tuffaceous sediments.

The Late Pliocene and Early Pleistocene volcanic rocks are composed of Yoshinomoto Andesite, Kantodake Andesite, Hitomidake Andesite, the Shonai, Komatsudai, Tsuetate, Kusu, and Karutoyama volcano groups (VGs), and the Shishimuta Caldera. The Middle Pleistocene to Holocene volcanic rocks are the Tokisan, Kanagoe, Pre-Aso, Haneyama, Ogidake, and Waitasan VGs, the Amagoidake, Takasakiyama Volcano, the Noinedake, Tateishiyama, and Takahirayama VGs, the Ayukawa, Kamiyashiki, Nakatoge, and Yufugawa pyroclastic flow deposits (PFDs), and the Nekodake, Aso, Kuju, Yufu, and Tsurumi Volcanoes.

Pliocene to early Middle Pleistocene fluvial sediments, such as the Sekinan and Oita Groups, the Otagawa Formation, and Tanaka and Hiraishi Gravel members are exposed in the downstream basin of the Oita and Ono Rivers where marine sediments are included in and around the Kusu Basin and in the middle area of the Ono River.

In the northern part of the district, many E?W trending active normal faults are developed. This is called the Beppu?Haneyama Fault Zone.

This area is famous as a dense deposit zone. Especially, Tin deposits in the vicinity Furusobo San (Obira, Mitate and Toroku mine) and limestone of Tsukumi City (Todaka and Shintukumi mine) are well-known. In addition, oldest sulfur mine of Japan was present in the Kuju Volcano.

A high-gravity anomaly trending ENE-WSW is located in the northeastern part of this region. This high-gravity anomaly is consistent with the distribution of high-density metamorphic rocks. Four segments of low-gravity anomalies are observed in the northern part of the region. The northwest low-gravity anomaly segment may be a volcanic basin, namely the Shishimuta Caldera. The other three low-gravity anomalies correspond to tectonically formed basins. The low-gravity anomaly at the west edge of this region originated in the Aso caldera. A wide low-gravity anomaly is observed at Okue Yama in the southern part of this region. This low-gravity anomaly might reflect the physical property of batholithic mass beneath Okue Yama.

Keywords: regional geology, Sanbagawa Metamorphic Rocks, Onogawa Group, Cretaceous accretionary complex, Oita Group, Aso Caldera