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Ancient subduction zone in the Sea of Okhotsk

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In the Sea of Okhotsk in Eastern Sakhalin an ancient (Upper Cretaceous-Paleogene) subduction zone is distinguished. On the surface it is manifested by an ophiolite complex, which separates North Sakhalin Oil and Gas Basin from Deryugin Basin of the Sea of Okhotsk. This complex is represented with harzburgite, dunite, wehrlite, rodingite, gabbro and amphibolite forming ophiolite plates. It is supposed that 100 million years ago, the oceanic lithosphere of the Sea of Okhotsk subducted under Sakhalin, the eastern part of which was an andesite island arc. Behind andesite island arc, in western Sakhalin there was a back-arc basin where sandy - clayey deposits accumulated in the Late Cretaceous- Paleogene, which subsequently formed the basement of Cenozoic North Sakhalin Oil and Gas Basin. Approximately 10 - 15 million years ago subduction of the lithosphere of the Sea of Okhotsk apparently ceased. It is established that the Deryugin Basin was formed at the place of ancient deep trench, and Sakhalin Basin is located above the ancient (Late Cretaceous- Paleogene) subduction zone. So, the Late Cretaceous- Paleogene rocks of the North Sakhalin sedimentary basin formed in the conditions of back-arc basin may be favorable for generation, accumulation and conservation of hydrocarbons.