

## **Gas hydrate stability condition on the NE Sakhalin continental slope, Okhotsk Sea**

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The northeastern Sakhalin continental slope (NESS), Okhotsk Sea is characterized by an abundant occurrence of gas hydrate. Multidisciplinary surveys have been carried out to investigate gas hydrate accumulation on the NESS under the frameworks of Korea-Russia-Japan international projects (CHAOS and SSGH) since 2003.

The Okhotsk Sea is one of the southernmost ice-covered seas in the Northern Hemisphere where winter sea ice covers up to 85% of the area. Cold water temperature (~ 0° C below the 150 m water depth) makes top of the gas hydrate stability zone (TGHSZ) remarkably shallow. The bottom simulating reflectors on the seismic profiles clearly merge with the seafloor at 300 m water depth that is theoretically expected. Gas flares in the water column appear to persist above 300 m water depth. Gas hydrates have been sampled on the seafloor at water depths of 385 m and 390 m in 2005, which would be the shallowest hydrate ever sampled in the area. As such a shallow TGHSZ should be easily unstable by changes in stability condition like sea-level fall or rise, the Okhotsk Sea is the promising area to study methane transfer from gas hydrate system to atmosphere through ocean which could cause global warming.