

**SPATIAL AND TEMPORAL VARIABILITY OF METHANE AND ITS FLUXES  
DISTRIBUTION ON WATER-ATMOSPHERE BOUNDARY AT THE KURIL ISLANDS  
OFFSHORE ZONE IN THE SEA OF OKHOTSK AND THE PACIFIC OCEAN**

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**ABSTRACT**

The Pacific Oceanological Institute, Far Eastern Branch of the Russian Academy of Sciences, has been investigating gas hydrate deposits and methane fluxes distribution at the Kuril Islands offshore zone in the Sea of Okhotsk and the Pacific Ocean for a number of years. In practice water-dissolved methane serves an indicator for hydrocarbon detection (oil, coal, gas and gas hydrates deposits). Measuring methane fluxes on water-atmosphere boundary is a matter of primary significance as methane plays the important role in the world climate formation. Lately in our experimental studies we continued investigating methane distribution in the surface layer and its fluxes on water-atmosphere boundary. The purpose of investigation was to detect zones of abnormally high methane concentration and zones of close to steady state methane concentration. The mechanism of gas exchange on water-atmosphere boundary suggested by the authors allowed to calculate gas exchange rate taking into account the influence of different factors typical of the explored zone. To describe the gas exchange processes we used the flow-field and impurities transfer evaluation models explaining when methane is concentrated in the middle of a cyclonic rotation in sea waters convergence zone and at the periphery of rotation in the Sea of Okhotsk.

**Key words:** sea offshore zone, gas hydrate, methane, hydrochemistry.

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