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# Distribution of methane fluxes on the water–atmosphere interface in different regions of the World Ocean

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**Abstract.** For the first time, methane fluxes at the water-atmosphere interface were calculated for the water area of Pacific, Indian, and Atlantic oceans (for the area about 30,000 miles) on the basis of the expeditionary measurements of methane concentrations in the surface layer of water and subsurface layer of the atmosphere along the entire course of the vessel. Methane fluxes at the water-atmosphere interface were calculated for the water areas of the Pacific, Indian and Atlantic oceans. In the result of the studies carried out in various regions of the World Ocean, an uneven spatial distribution of methane fluxes from strong absorption to emission of anomalous intensity was observed. The article presents the results of a detailed study for the deep-water area of the Indian Ocean open waters in the northern part of the Ninetyeast Ridge. Both supersaturation and undersaturation of seawater respectively to its concentrations in the atmosphere have been revealed on the basis of the direct measurements of methane concentrations in the ocean surface water layer. The distribution of dissolved methane in the water column of the Indian Ocean has been considered.

*Keywords:*
**methane flux, distribution, methane concentration, Indian Ocean**

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