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Water-deposited sulfur of Golovnin and Mendeleev volcanoes (Kunashir Island, Southern Kuril Islands, Russia)

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Abstract. It is generally believed that the sulfur of volcanic lakes is of exogenous origin and is formed as a result of the interaction of volcanic gases with each other and with atmospheric oxygen in the aquatic environment. This work contains descriptions the deposits of water-deposited sulfur, at clarifying the conditions and causes of their formation, and at assessing the importance of these deposits in the general genesis of sulfur in volcanic lakes. The conducted field, laboratory, and theoretical studies, taking into account the previously obtained results, do not confirm the exogenous origin of sulfur in volcanic lakes. Sulfur from hydrothermal springs on the surface and at the bottom of volcanic lakes, seas, and oceans is exclusively of endogenous (condensate) origin. Colloidal sulfur also has an endogenous (condensate) origin and does not precipitate in turbulent and convective water flows, gradually collapsing in sulfur disproportionation reactions. Aqueous deposits of fine crystalline sulfur occur under specific conditions of a saturated concentration of sulfur suspension. These deposits are the same local phenomenon as the formation of needle-shaped crystalline sulfur around gas outlets in terrestrial thermal fields.

Keywords:
native sulfur, condensation, colloid, Golovnin volcano, Mendeleev volcano

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