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## Former bay of the desiccating Aral Sea as the newly formed world's largest heliothermal lake

Alexander Izhitskiy<sup>1</sup>, Georgiy Kirillin<sup>2</sup>, Igor Goncharenko<sup>1</sup>, Abilgazy Kurbaniyazov<sup>3</sup>, and Peter Zavialov<sup>1</sup>

<sup>1</sup>Shirshov Institute of Oceanology, Marine Physics, Moscow, Russian Federation

<sup>2</sup>Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany

<sup>3</sup>Yassawi International Kazakh-Turkish University, Turkestan, Kazakhstan

The Aral Sea desiccation is the worst aquatic ecological disaster of the last century, important for understanding the worldwide trends to degradation of arid lakes under water use and climate change. Formerly the fourth largest lake worldwide, the Aral Sea has lost ~90% of its water since the early 1960s due to irrigation in its drainage basin. Basing on field observations and numerical simulations, we show that the former bay of the Aral Sea — Chernyshev — turned to a meromictic heliothermal water body with extreme temperature, light and chemical regimes. The heliothermal regime of Chernyshev keeps the deep monimolimnion warm (about 15-16°C) throughout cold winter. Among less than 30 heliothermal waters worldwide, Chernyshev with its area of ~80-90 km<sup>2</sup> is the largest heliothermal lake, the second one being permanently ice-covered Antarctic lake Vanda. Chernyshev is also the youngest heliothermal lake, emerged within the last half-century. Seasonal thermal cycle of the basin, scenarios of its formation and possible consequences for the ecosystem are discussed.

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