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The Aral Sea in the First Decade of the Century

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This overview report summarizes the present state of the physical, chemical, and biological systems of the Aral Sea, as well as the changes that have occurred in the first decade of century XXI. The discussion is based on the data collected in 13 field surveys of the Aral Sea between 2002 and 2011 with a special focus on the latest survey of 2011, whose data are reported for the first time. In November, 2011, the Sea surface level was at 27.31 m a.o.l., compared with 26.79 m in the fall of 2010. Therefore, the Aral Sea level increased for about 0.5 m for the first time since 2004. The surface salinity was about 117 ppt, while the bottom salinity was over 145 ppt. A new formula connecting the CTD-derived pseudo-salinity of the water and the salinity is derived.

The water budget components are analyzed to estimate the conditions for the imminent stabilization of the lake. The present hydrophysical state of the Sea is described in detail, including the structure and variability of the thermohaline and density fields, physical properties of the water, circulation regime and water exchanges between the distinct parts of the Sea. Further, we discuss the recent changes in the ionic composition of the Aral Sea water and assess the masses of the minerals precipitated on the bottom in the course of salinity build-up. The biological communities and the biodiversity of the present Aral Sea are also discussed.