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## Mercury background monitoring in the Lake Baikal region

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During 2013-2015 the gaseous elemental mercury (thereafter, mercury) measurements were carried out at two weather monitoring stations/sites (Listvyanka – from 25 July until 19 November 2013 and Tankhoj – from 27 July 2014 until 11 January 2015). The mercury analyzer Lumex RA-915AM was used for measurements. Although in the Northern Hemisphere the minimal average mercury concentration is about 1.5 ng m<sup>-3</sup>, the obtained results indicated that in the southern part of the Lake Baikal the lowest average concentration was about 1.18 ng m<sup>-3</sup>. Thus, the natural reserve territory of the Lake Baikal can be used as the main region to the background level of especially clean areas for monitoring heavy metals and persistent organic pollutants.

For the Listvyanka measurements, the mercury analyzer was installed at 20 m distance from a shore of the lake. During July-November 2013, the average concentration value was about 1.41±0.37 ng m<sup>-3</sup> (with max - 4.81, min - 0.16). For the July-August period, the maximum variance distribution was estimates as 0.62 ng m<sup>-3</sup>. For the August-November period, the variance did not exceed the value of 0.38 ng m<sup>-3</sup>. Mercury from the atmosphere is deposited on the underlying surface, and with increasing intensity of total solar radiation the re-emission of mercury occurred resulting in increased concentrations of mercury at Listvyanka. A rather low mercury values were recorded during October-November 2013. Analysis of atmospheric transport during summer showed, that main sources of pollution are situated to the west of the lake, and it is a relatively larger area in the southwestern sector, and therefore, it is complex to identify exact locations of such pollution sources.

For the Tankhoj site, in July 2014 the mercury analyzer was installed at about 100 m distance from a shore of the lake. It was for the first time, when the mercury monitoring was conducted for such long-term period of time in the Lake Baikal region. Note, that short-term measurements of mercury do not provide full understanding of the background level mercury and are insufficient to study dynamics. Analysis of obtained time-series showed that summer is characterized by a high variability of mercury (max - 2.86, min - 0.27, with an average 1.19±0.27 ng m<sup>-3</sup>). In particular, in July an average value of 1.18 ng m<sup>-3</sup> (max - 2.68, min - 0.43) was obtained, which corresponds to concentrations observed in the Northern Hemisphere. In August the average value of 1.22 ng m<sup>-3</sup> (max - 2.86, min - 0.27) was obtained.

Moreover, obtained results showed that location of the Tankhoj monitoring site can be used for long-term background monitoring of mercury.