



## **The CO<sub>2</sub> flux and the chemistry of the crater lake in 2013-2015 evidence for the enhanced activity of El Chichon volcano, Mexico**

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During 2013-2015, four CO<sub>2</sub> flux surveys were performed in the El Chichon crater both, from the lake surface and from the soil of the crater floor. The chemistry of the lake water, as well as its physical parameters (surface area, depth, temperature) were also determined. The CO<sub>2</sub> flux in 2014-2015 compared to the 2007-2008 data (Mazot et al., 2011, BV, 73: 423-441) increased almost one order of magnitude (from ~ 140 t/d in 2008 to ~ 840 t/d in 2014). During the last two years the lake became the largest for the whole time of observations with the maximum surface area more than 18 ha covering completely the NE fumarolic field and all thermal springs feeding the lake with mineralized water. Despite the maximum volume of the lake it was characterized in 2015 by the highest since 2007 chloride content (~2500 ppm) and temperature (34°C). A large degassing spot in the middle of the lake for the first time was observed in April 2015 with more than 10,000 g m<sup>-2</sup> d<sup>-1</sup> of the CO<sub>2</sub> flux. These observations evidence that the volcano-hydrothermal system of El Chichon volcano came into a new stage of activity associated most probably with changes in the magmatic activity at depth.