

Interactive comment on “Rock magnetic properties, magnetic susceptibility, and organic geochemistry comparison in core LZ1029-7 Lake El’gygytgyn, Far Eastern Russia” by K. J. Murdock et al.

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This is very interesting study of sediments from lake El’gygytgyn, NE Asia. Different magnetic parameters were analysed and allowed the identification of magnetic and paramagnetic iron minerals present in the sediment. The goal was the understanding of the relation between ferromagnetic (and paramagnetic) minerals variation and climate changes for the last 70 kyr. Nevertheless the manuscript has to be improved in order to provide better presentation of the work. I have a lot of remarks and questions and there are many errors, which need to be corrected - this manuscript needs

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major revision in form and in the content. To simplify, authors want to explain changes of the magnetic mineralogy observed, by changes in the intensity of detrital input to the lake and processes of dissolution and authigenesis in the basin, both processes acting in different climate conditions. To identify magnetic minerals, their contents and size as well as to identify some paramagnetic minerals, authors used parameters as magnetic susceptibility, magnetic hysteresis and low temperature analyses. It is very interesting, however I think, that you could explore more your results, particularly from magnetic hysteresis. Also, the probable identification of paramagnetic at room temperature minerals by in low temperature analyses, should be confirmed and precised by other methods. Magnetic susceptibility is not so easy parameter to interpret. It is not only related to detrital input to the sedimentary basins, as it is often used, and as point authors, but also it depends on the processes during and after deposition. These processes can alter or even destroy terrestrial signal through magnetic minerals. In discussion about authigenesis of iron minerals in anoxic conditions, it is important to see the difference between anoxia on the bottom of the lake and in the sediment. This is also related to the time of the authigenesis – syn or post depositional. In the case of this study, the discussion on it is extremely important since you correlate low values of the magnetic susceptibility (interpreted as due to the magnetite dissolution and the authigenesis of paramagnetic at room temperature iron minerals) with cold climate and high values of the magnetic susceptibility with detrital magnetite. Organic geochemistry is exploited just a little.

Specific (no exhaustifs) comments on form and content are on an appended document (supplement pdf file).

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Please also note the supplement to this comment:

<http://www.clim-past-discuss.net/8/C2280/2012/cpd-8-C2280-2012-supplement.pdf>

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