

## ***Interactive comment on “Recording of climate and diagenesis through fossil pigments and sedimentary DNA at Laguna Potrok Aike, Argentina” by A. Vuillemin et al.***

### **Anonymous Referee #1**

Received and published: 28 December 2015

This paper provides a very interesting overview about the processes underlying the sedimentary microbial assemblages during time and geochemical pressure. One very important feature on lacustrine studies which remains poorly understood is the identification of the ancient DNA, the DNA which corresponds to the organisms living at a given period and the DNA from more recent organisms which used the sedimentary depositions as a substrate. This paper provides some light to the selective preservation of microbial assemblages by a pluridisciplinary approach.

Precautions should be taken by assuming that the identified biota in a sediment core reflects the real situation at the time when the sediments were on the surface of the

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lake bottom, due to potential selective preservation as mentioned in several papers in the past and as stated in this paper in the abstract. In my opinion, this work has been well structured and the defined objectives are well answered at the end of the paper. Taken into account the amount of uncertainties to which the team should face when working with ancient DNA, the conclusions are well written as they recognize the limitations of the approach.

I consider that the paper should be published with just a few modifications to take into account.

Some minor technical remarks: -Please, consider to use words instead of numbers at the beginning of a sentence, such as in line 2 on page 18354. -Line 27, page 18353: please, include definition of OUT -Fig 2, page 18384. The footnotes are a little bit confusing to identify the different parts of the figure.

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Interactive comment on Biogeosciences Discuss., 12, 18345, 2015.

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