

## ***Interactive comment on “Quantification of octacalcium phosphate, authigenic apatite and detrital apatite in coastal sediments using differential dissolution and standard addition” by J. F. Oxmann and L. Schwendenmann***

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Received and published: 21 April 2014

This is a detailed study of the solubility of calcium phosphate phases over a range of pH values. Given the importance of phosphorus in terrestrial and marine sediments significant effort has been directed on the development and application of methods to identify the different mineral and organic phases containing phosphorus in soils and marine sediments. Of these phases, calcium phosphates are widespread and of great general importance. As described in this paper there is a number of different calcium phosphate phases typically present in sediments and these phases have different prop-

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erties that have implications for phosphorus cycling. Interest in identifying P phases is demonstrated by the over 400 citations of the SEDEX sequential extraction method developed by Ruttenberg 1992.

This manuscript presents the results of extraction experiments on well-characterized standard materials showing that the pH of extraction can be used to distinguish different calcium phosphate phases. Notable aspects of this manuscript include: 1) use of a standard addition approach to understand the potential problems associated with matrix effects; 2) the correspondence of the pH value determined in this study to that of the Ruttenberg SEDEX method for extracting carbonate fluorapatite; 3) exploration of the extraction properties of fish bones, a potentially important component of some sediments; 4) data showing the potential importance of octacalcium phosphate, an important precursor phase in the formation of apatite.

The standard addition experiments were performed in fairly sandy sediments. Perhaps the authors could add a sentence or two with their thoughts on the potential matrix effects of doing similar extractions in more clay rich sediments, which are often the focus of marine studies.

The manuscript is in great shape and will be helpful to those examining phosphorus distribution in sediments. However, the text size on many of the figures is so small that it is nearly illegible. Perhaps I missed it in the text but a better description of where the thermodynamic data was obtained to create Figure 1 would be nice.

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Interactive comment on Ocean Sci. Discuss., 11, 293, 2014.