

Interactive comment on “Selective preservation of organic matter in marine environments – processes and impact on the fossil record” by K. A. F. Zonneveld et al.

K. A. F. Zonneveld et al.

versteegh@uni-bremen.de

Received and published: 22 December 2009

We are happy with the positive General Comment.

With respect to the specific comments, the one section 2.2, which deals with FT-ICR-MS. We agree that a substantial fraction of the sedimentary organic matter pool might not be covered by the FT-ICR-MS approach indeed. However, the technique covers an additional, more polar fraction of the complex organic matter which was not accessible before. The classical lipid analysis is also dependent on suitable solvents and a large fraction of the apolar (and polar) organic matter in particles and sediments is uncharacterized because of the molecular complexity of the heteroatom-dominated NSO and

C3691

kerogen fractions. This is where FT-ICR-MS can yield important new molecular insights on organic matter preservation by using the more polar fraction of e.g. kerogen. So far this technique has only been applied for marine sediment porewater and not for the mineral associated organic matter. However, it has been shown in several works that polar organic extracts derived from soils and even rock samples are amenable (e.g. Kujawinski et al., 2002; Kramer et al., 2004; Hughey et al., 2008, Khanna et al., 2008). In the revised version of the manuscript we have addressed these comments and clarified that FT-ICR-MS requires selective extraction procedures and yields molecular information on a sub-fraction of complex organic matter.

Specific comment on section 2.5: references have been added to Arnarson and Keil., 2001; Coppola et al., 2007. The specific comment on section 3.3 refers to section 3.2. The reviewer is right and the error has been corrected.

All suggestions for technical corrections have been followed.

Interactive comment on Biogeosciences Discuss., 6, 6371, 2009.