

Interactive comment on “Amino acid racemization in Quaternary foraminifera from the Yermak Plateau” by Gabriel West et al.

Anonymous Referee #1

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The study present amino acid data from three sediment cores raised from the eastern slope of the Yermak Plateau in the Arctic Ocean. Such studies have the possibility both to contribute in efforts to establish a reliable chronology and in efforts regarding identifying variability in bottom temperatures, both issues have been challenging in the Arctic ocean. The paper is well written and present an important set of data and deserve to be published. However, the discussion could be strengthen and the paper could be of larger general interest if the authors in a moderate to minor revision consider the following issues:

1. How good is the presented chronology beyond radiocarbon? Give some of the assumption it is based on and also the challenges in using a lithological/magnetic parameters in correlation in this geological setting. The age model for the older part of the

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core with the longest record seems reasonable, however the actual correlation seems not very convincing? 2. IRD. In discussing ratios not in stratigraphic order, the authors should also discuss the possibility of reworking by sea ice and ice berg. Presentation of an iRD curve and some biostratigraphic data, if available, could be useful for this discussion. 3. Hydrography. The authors should present the main watermasses in the Arctic ocean basin and give the location of the cores relative to these. In the discussion of the diagenetic temperatures it should be focused on possible changes in the deep water temperature and an evaluation of how this could influence on the amino acid diagenesis. 4. In the discussion of the wider implication of the data it should be a more focused on published data on the same species from i basins with possibly different temperature histories, and investigate if the amino acid data could contribute to a discussion of changing deep water temperatures related to the climatic variability and locus of deep water formation (early attempt on this in Sejrup and Haugen 1992). 5. Background is generally good, however, it should be mentioned the large early work of D.L. Clark and others who in a number of papers suggested uniformly extremely low sedimentation rates in the Arctic ocean based mostly on interpretation of magnetic reversals. Amino acid data were actually the basis for some of the early challenging of this framework (Xuan and Channell 2010 intro).

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