Author response to editor and reviewers

We thank the reviewers for their comments to the paper, and have revised the paper accordingly.

Main revisions include the following:

- The paper has been thoroughly revised, restructured and written for brevity.
- The volcanic matching between RICE and WAIS Divide has been revised:

  The revision was based on a new conductivity-to-Ca excess depth profile, directly calculated from the two CFA records. Due to slight differences in depth assignment of the two records, we previously refrained from calculating their differences, and instead compared the two records visually. However, having a directly calculated record of the non-sea-salt conductivity simplified the volcanic matching between the two cores.

  The main difference from the previous matching is that we have removed some of the volcanic matches that we did not consider to be completely certain. Using the new non-sea-salt conductivity record, we were also able to identify and match up many more of the volcanic peaks in RICE to a counterpart in WAIS Divide.
- The new RICE volcanic record (Table 2) only includes volcanic events that are visible both in the RICE and WAIS Divide ice cores. We therefore do not attribute peaks in the RICE acidity records that do not exist in WAIS Divide as clear evidence of volcanic eruptions.
- We corrected an error in the calculation of uncertainty on the RICE accumulation rates. With this correction, the uncertainty bounds on the accumulation rates become much smaller going back in time, allowing us to infer past trends in accumulation rate with greater certainty.
- The connection between climate drivers and RICE accumulation rates have been described in more detail.

Point-by-point replies to the two reviewers' comments are provided separately.

With these changes, we hope that you will agree to the submission of a revised version of the paper.

On behalf of the authors,

Mai Winstrup