

Dear Authors,

I carefully read your responses to the reviewer's comments and your revised manuscript. You addressed most of the reviewer's comments and you improved the manuscript. Thank you.

However, there are a few points that I would like to you to work on. Most of them are related to open questions of the reviewers in their comments. While you answer very well to these questions in your point to point response, too often, you do not include that information in the text of your manuscript. I think you should include such information because, if the reviewer asked that question, it is most probably because the information was missing or should be clarified in the manuscript. Here is the list of things I would like you to consider in a revised version of your manuscript.

- I suggest that you add the explanation provided to Lazarus comment's about the glue somewhere in the text, maybe in section 2.3
- I also suggest to add on line 286 : "(...) and to send any suggestion to improve the taxonomical framework of the database" or something similar.
- I suggest you add something in the discussion about the usefulness of improving the identification to a level that is useful for paleoenvironmental research.
- While your answer to Lazarus comment at bottom of your page 5 (your point by point response to reviewers), I still think you should add a comment about the usability of this system and his limitation in the text of the MS.
- Again, it might be interesting to add a comment in the text about the appropriate sample size for radiolarian in terms of number of specimens to be counted.
- Sample coverage: I suggest that you add a disclaimer about how geographic variation in morphology, or variation over time in lineages might affect the system's performance by blurring between species distinctions. I understand that you are going to detail this in an upcoming study, but I also acknowledge that the reviewer has a good point here.
- Reviewer Lazarus suggested to move some of the preparation method to SOM. Why do you think it is useful to keep it in the main text body? Maybe you have very good reasons to keep here, but please provide an answer.
- It would be nice to mention in the text of the MS that autostacking does not affect correct identification, even for delicate specimens such as the one mentioned by reviewer Friesenhagen (something more than point 3 of your conclusion).
- Once again, you answer the question of reviewer Friesenhagen about the ontogenic stages, but you do not add anything about it in the MS. I invite you to explain somewhere that ontogenetic stages are visible in numerous classes and, when they are sufficiently imaged, can be distinguished, for instance in section 2.3
- Friesenhagen asks: "What is the procedure for (intact) specimens which extend over the borders of the 324 FOV and are parted/bisected? (...)". You should include your answer in the manuscript.
- Fig.1 Please add a scale.
- Fig. 2 There is some shading on the legend of each panel that looks unnecessary to me, making the letters less clear.
- L 213: What is a ResNet50? please add a reference to resnet50 topology.

- L 277 and following: I guess it should read “(...) then trained to be recognised with a current overall ~~precision~~ accuracy of just above 90 % (90.1 %) over every class. The average precision is above 85 % (85.6 %) and the (...)”.
- Fig 4. Caption: add that the figure is also available as an Excel spreadsheet in supplement.
- L 305 and following: Fig. 6 should be changed to Fig. 5
- L 485. Marchant at al should be accepted, or in press, but please make it consistent throughout the MS.
- Section Biostratigraphy: I’m puzzled that no data or figure supports this section. Where is the Excel sheet that you are referring too?
- Figure A1 is not called for in the text. The caption of this figure should contain some information about the samples
- I suggest you also refer to your web site and make more publicity about its content. It is quite nice!
- L 395 (competing interest) : I think you should declare that one co-author, Luc Beaufort, is an associate editor of Climate of the Past.

I think these points can be very easily addressed, and I’m therefore looking forward to your revised manuscript.

Best Regards

Pierre Francus, associate editor