

## ***Interactive comment on “Deciphering tectonic, eustatic and surface controls on the 20 Ma-old Burdigalian transgression recorded in the Upper Marine Molasse in Switzerland” by Philippos Garefalakis and Fritz Schlunegger***

**Philippos Garefalakis and Fritz Schlunegger**

philippos.garefalakis@geo.unibe.ch

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Dear Editor, Dear Reviewer,

We greatly appreciate the critical, constructive and detailed comments on our manuscript which requires a major reorganisation. Indeed, the comment mainly addresses editorial issues, in the sense that the organisation of the paper is not satisfying. The reviewer suggest numerous points in the annotated manuscript of how the article can be restructured. Apparently, the proposed structure leads to a paper ar-

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chitecture which builds on methods, results, interpretation and discussion (the current version is indeed different). We will fully consider this recommendation upon revising our manuscript.

Our contribution is a detailed sedimentological analysis of 5 sites distributed within the Upper Marine Molasse (OMM) in the central north Alpine foreland basin between Lucerne and Fribourg. We used this dataset to reconstruct the transgression and sedimentation pattern across the basin, from which we extract signals related to eustatic, sediment supply and tectonic controls. However, such an analysis also requires a chronological framework of the analysed deposits. Therefore, as a second contribution of our work, we compiled published biostratigraphic and magnetostratigraphic datasets, which resulted in a revised chronological framework of the Molasse deposits in the study area. We acknowledge, that our refined chronological framework mainly results from the discussion of compiled data. Therefore, we consider shifting the synthesis of the magnetostratigraphic and biostratigraphic data to the discussion section (first chapter). The following sections will build on these data and comprise the discussion of the palaeogeographic maps, which in turn base on the sedimentological analysis presented in the result and interpretation sections. As a final part, we will discuss the underlying controls associated with the Burdigalian transgression. We will thus restructure the paper as proposed by the reviewer.

We will also include the table with the sedimentological lithofacies (supplement) in the full text, as suggested. The result section will thus comprise the presentation of the sedimentological observations together with new photos from the field. The reviewer claims, that the shift of the table with the lithofacies assemblages to the main manuscript will allow to shorten the text. We agree on this and will proceed accordingly. Finally, we will certainly improve the link between the supplementary information and the main text, and we will rephrase redundant statements that are outlined by the reviewer in the annotated manuscript.

In summary, we consider the requested changes as justified and fully feasible, and

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we are happy and ready to proceed accordingly after we have received the interactive comments of the additional reviewer.

We would like to thank the editor for handling our manuscript and the reviewer for his time he invested in our work.

Sincerely, Philippos Garefalakis & Fritz Schlunegger

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Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2019-27>, 2019.