

Review: "Late Pleistocene – Holocene denudation, uplift, and morphology evolution of the Armorican Massif (western Europe)" for consideration in Earth Surface Dynamics.

The paper has improved significantly and seems to approach the final submission stage.

However, I noticed that my initial comments regarding dynamic topography and the role of mantle processes in the long-term uplift of the Armorican Massif were not addressed. This was a major point in my initial review. While I understand the workload involved, I believe it would be informative to add at least a sentence or, ideally, better references to support this aspect. The only reference I found in the Introduction is quite general and pertains to the African Superplume. Could you provide more relevant references and include a few sentences discussing this process in either the Introduction or the Geological Setting section?

Few last adjustments from my side:

Here I reported my previous comment and author answer to ensure continuity:

Reviewer comment:

L306-307: It is more likely that these sediments have been deposited in the last 125 thousand years rather than over the past 2.5 million years. Are there seismic lines that show the most recent transgressive and regressive deposits on the shelf? Over the past 2.5 million years, there have been many fluctuations in sea level and several phases of erosion (both subaqueous and aerial) on the shelf. If the deposits are Quaternary, the sedimentation rates should be between 1 and 5 meters per 125 thousand years, resulting in up to 40 meters per million years.

Authors:

Given the available data, the finite sediment thickness is a few meters to a few tens of meters and is interpreted as the total sedimentary record over the Quaternary. We based our models on this information. Another point of view can indeed be drawn as the time constraints are small. Considering variation of the integration time, given their location we assume it more likely that the sedimentation duration is associated with the high-stand period hence during the Holocene and not 125 kyrs, because these locations were onshore during the glacio-eustatic low-stands (more likely subject to erosion or null sedimentation).

Reviewer follow-up:

I agree with the authors and understand the assumptions. However, as stated, if deposition had occurred only in the last 7-6 ka (HST), the resulting rates would be even higher. This explanation is not clearly stated in the paper. I strongly recommend adding a note clarifying that the considered estimates used to inform the model represent minimum values.

Lines 530 to 537- It is inconsistent to state that high erodibility promote fast erosion rates post 2 Ma and on the next sentence state that high erosion and relief are due to low erodibility..

Erodibility should not directly control erosion; usually and follow the theory, the erodibility should set the channel steepness and relief and they should adjust to each other without impacting erosion ($E = k_{sn} \times K$, if we consider a linear form). So, if K increase, k_{sn} (or relief) would decrease, and viceversa. If there are high relief and lower erodibility that s does not imply differences in erosion rates.

A possible way to have lower erosion (without variation in Uplift) may be having stronger rock and lower erodibility, but not the opposite.. Instead of discussing erodibility, erosion, and relief in this

way, I suggest focusing on the process of surface denudation in highly erodible marine sequences, as this would provide a clearer and more robust discussion.

Suggested revision: “the east-west difference in denudation rates, without spatial variation in uplift rates, can be explained by spatial variability in erosional efficiency of Red Sands. All the selected catchments are characterized by the similar bedrock and rainfall rates (?; references), but the presence of high erodible Faluns formation in the western catchments during the Quaternary, may have produced a low-relief landscape. Therefore, the difference in topographic relief might have been produced by the quick erosion of young marine deposits since 2 Ma, producing a low-relief landscape on the western region.

I am looking forward to see the manuscript accepted and published

Cheers,

Romano Clementucci