



EGUsphere, referee comment RC2
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Comment on egusphere-2022-643

Colin V. Murray-Wallace (Referee)

Referee comment on "Earthquake contributions to coastal cliff retreat" by Colin K. Bloom et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-643-RC2>, 2022

This is a very interesting manuscript on the nuanced issue to quantifying historical records of coastal cliff retreat based on an example from the Conway Flat area on the South Island of New Zealand. The manuscript is well-written and addresses many of the conceptual and methodological issues of quantifying coastal cliff retreat from time-series images.

For people unfamiliar with the area, it would be nice to have a few photographs illustrating the general nature of the coastal cliffs. This would help in part to understand the physical nature of the cliffs and for the reader to infer potential coastal processes responsible for the changing form of the cliffs through time. This would be good particularly for people unfamiliar with this coastal sector.

The manuscript could potentially be strengthened by some description and discussion of the inherent structural integrity of the lithological units on which the cliffs have developed. Apart from the deltaic successions, can some commentary be made about the other bedrock units in terms of the broad, regional-scale structural characteristics such as fault, joint or cleavage density and trends? Some discussion on whether some lithologies breakup in a predictable manner or in a more random fashion? - Unilinear or non-linear response to strain irrespective to earthquakes?

Perhaps modify Section header 5.1 as 'Geology' is a discipline rather than a descriptor of bedrock characteristics or lithologies.

I wondered if some commentary can be made where the sediment ends up post cliff collapse? It may be useful to have some commentary on this matter. Does the sediment end up on the continental shelf below storm weather wave base, or is it in part, transported along shore? If the latter, does beach nourishment protect the backing cliffs in some localities.

I also wondered if it is appropriate to have some commentary on the general aspect of the coastline at a more detailed level to consider contrasting wave attack and erosion? Are some sectors of the coastline more prone to erosion, therefore increasing the likelihood of coastal retreat irrespective of the influence of earthquakes?

Line 393 - can some supporting information be provided about the validity of the estimate of long-term cliff-top retreat?

Line 406 '... compared with retreat ...'

Indicate place name 'Conway Flat' on Figure 1.