

## ***Interactive comment on “Controls on the distribution of cosmogenic $^{10}\text{Be}$ across shore platforms” by Martin D. Hurst et al.***

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We would like to thank Vincent Regard for his encouraging comments. We have collected  $^{10}\text{Be}$  measurements from shore platforms in East Sussex which will be the focus of a future publication.

We are grateful for these remarks and will clarify the details of the influence of beach cover on  $^{10}\text{Be}$  production if invited to revise the manuscript. The average production rate at the beach surface is calculated as the average production rate across a single tidal cycle, the same method as in the commenter's own work (Regard et al., 2012). The production rate decays exponentially with beach depth following Equation 8 in our manuscript. Critically, the beach material is assumed to have the same density as bedrock, and we do not adjust this density based on wetting and drying by the tides as

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the commenter is suggesting. Future site specific studies should be concerned about these nuances. Our exploratory modelling, however, was intended to highlight the first-order sensitivity of platform  $^{10}\text{Be}$  concentrations to the presence and variation in beach cover.

Sections 6.1 to 6.3 were intended, in part, to highlight some of these outstanding challenges that arise following Regard's own work and the experiments we have performed here. We cited the block removal study from south-east England (Dornbusch and Robinson, 2011) but were unaware of the study on the French coast (Regard et al., 2013), which we will also cite in any revision. In particular, and as discussed in the manuscript, Figure 7 reveals the potential to document rates of step back-wearing, sampling the shore platform at high density. The two sites highlighted in this comment would be excellent places to test such an approach. With regards to platform down-wearing, our modelling results suggest there is need to couple  $^{10}\text{Be}$  measurements with observations of platform downwearing rates. Sites where downwearing has been observed using micro-erosion-metres might be appropriate because the records are somewhat longer than those available through topographic surveying (LiDAR + multi-beam bathymetry) at this stage. But as the commenter suggests, these efforts will become more fruitful as time elapse.

References:

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