Response to Reviewer 2

- I would appreciate if the authors could provide the random field used for the computation of the initial condition for cohesion as supporting information along with the manuscript. If published, all information of initial conditions would be provided to repeat the experiments in a different framework and use this configuration as an benchmark experiment.

- page 4, l.4: "below its original value (2, Hibler, 1979). to increase the shear and uniaxial compressive strength " please remove the period.

- page 27, Fig. 7: as there are no subfigures, "(a)" in the beginning of the caption is not needed

Thank you very much for reading the paper again and for your additional comments. We corrected the two mistakes you mentioned (as well as a few other typos we found along the way).

Regarding your request for the initial fields of cohesion used, we would indeed encourage using the idealized and realistic Nares Strait configurations as benchmark experiments. However, we do not believe that publishing these two fields is relevant in the context of providing the initial conditions that are essential to repeat the experiments performed here. As explained and demonstrated in our response to your earlier comments, the noise introduced in the field of C does not prescribe the location of the simulated leads and bridges. The results described here do not depend on the exact spatial distribution of cohesion : simulations using the same value of C_{min} but different random spatial distributions of the disorder on C were compared and produced results that were very similar, sometimes even undistinguishable, in all of the aspects discussed in the paper. We now add the following sentence to further stress this point in the first paragraph of page 12, which describes the field of cohesion:
"Model simulations using the same value of C_{min} but different random spatial distributions of the disorder on C produced similar results, in all aspects comparable to those discussed below."

The important point we therefore aim to stress is: to repeat the experiments presented here, it would be sufficient to generate the noise in the field of C following the *same method* we employed. This method is described in the paper (page 12, first paragraph) and consists in (1) drawing randomly a value over each model element from a uniform distribution of values comprised between 1 and 2 and (2) multiplying the resulting random field by the desired value of C_{min}.

In other words, we believe that providing the two fields used to initialize the idealized and realistic simulations presented in the paper would convey the idea that using these exact fields is necessary to obtain the results described in the paper, which is not true.

The issue with providing these fields is also somewhat technical. On the one hand, possessing the exact fields of C is not sufficient. One would also need to work with the exact same finite element grid employed here, as interpolation would necessary alter these fields. On the other hand, providing the grid and code for the generation of these fields would allow reproducing fields of cohesion with the right characteristics but not the exact same fields used here, as the code is simply based on a random number generator that is seeded differently every time it is called. However, a field with the same characteristics as used here could be very easily generated for a given finite difference or finite element grid in most programming languages following the method described on on page 12, first paragraph.