

Dear Referee #1,

in the following we will answer to your comments for the various points raised up.

Referee comment

I personally think that the type of material presented is not suitable for the journal and mainly because it is a numerical simulation of the performance of a restraining net. I do not see any good or relevant connection with this journal.

The general presentation in terms of subject should be much more general, more "Earth System oriented",

Answer

We think that our paper is interesting for the journal readers and that it fits exactly the journal scopes. The journal 'Aim and scope' states:

*'NHESS serves a wide and diverse community of research scientists, practitioners, and decision makers concerned with detection of natural hazards, monitoring and modelling, vulnerability and risk assessment, and the design and implementation of mitigation and adaptation strategies, including economical, societal, and educational aspects.*

*The scope of NHESS includes the following:*

- *the study of the evolution of natural systems towards extreme conditions, and the detection and monitoring of precursors of the evolution;*
- *the detection, monitoring, and modelling of natural phenomena, and the integration of measurements and models for the understanding and forecasting of the behaviour and the spatial and temporal evolution of hazardous natural events as well as their consequences;*
- *the design, development, experimentation, and validation of new techniques, methods, and tools for the detection, mapping, monitoring, and modelling of natural hazards and their human, environmental, and societal consequences;*
- *the design, implementation, and critical evaluation of mitigation and adaptation strategies to reduce the impact of hazardous natural events on human-made structures and infrastructure, to reduce vulnerability and to increase resilience of individuals and societies;*
- *the analysis of the impact of climatic and environmental changes on natural hazards and their consequences.'*

Our paper is within the "risk assessment", "design and implementation of mitigation and adaptation strategies" and "the design, implementation, and critical evaluation of mitigation and adaptation strategies to reduce the impact of hazardous natural events on human-made structures and infrastructure, to reduce vulnerability and to increase resilience of individuals and societies".

Furthermore, we have focused our research on the problem of deterioration of net fences, that is a key problem for the public administrations. It is a specialized topic but with large importance (economical and legal) on the performance of these products. Moreover, this aspect has never been investigated in detail before.

We also observe that there are papers published on this journal on defense structures design.

The studied problem of risk management is clearly linked with Earth Systems. Rockfall problem cannot be disjointed from protection devices design. Rockfall event is a studied phenomenon but if the degradation of the protection devices reduces their effectiveness, the risk analysis changes very much. The obtained results give a clear indication that this topic cannot be disregarded and has to be taken into account by producers and decision makers.

the English language should be improved. But this last point is not substantial.

For the remaining, the manuscript is presenting a numerical exercise, even if with a refined numerical code, showing the change in efficiency at changing some of the system strengths for a standard block impact.

I am really sorry but this really disconcert me, also because apart for the exercise there is really no way to see a direct and simple application of the method for standard use by technical personnel.

The same kind of analysis should probably be done directly by the producer to certify the capability of its restraining system.

English will be reviewed if requested by a native language reviewer.

The presented numerical model is not only “*a numerical exercise*” but it is strictly linked with a complete understanding of the net fence behavior.

A complete review of many case history in Italy allowed us to define that the chosen examples are the most critical points when a net fence deteriorates.

On the contrary, the obtained results are really giving a data that can be used in risk analysis procedures, since we assess a residual efficiency value.

Furthermore, we are giving to designers and to producers a procedure to assess the long-term performances of their products.

We agree that it should be producers to assess these performances as requested by ETAG 027 standards but, as University researchers, we should point out and define the correct procedure.

### Conclusions

Following all these aspects, we really think that the paper should be published.

We are available to send a revised English version if requested.