

## ***Interactive comment on “Assessing the impact of explosive eruptions of Fogo volcano (São Miguel, Azores) on the tourism economy” by Joana Medeiros et al.***

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The authors wish to thank referee #2 for the constructive comments provided to the manuscript.

Regarding the comments on Table 3 and Section 6, the chosen discount rates of 2 and 4 % lie in the range of the values estimated for Portugal, which are 1.67 % (Florio and Sirtori, 2013) and 4 % (Florio, 2006). The choice of these two values is also justified by the associated uncertainty. The use of a higher discount rate can be seen, to some extent, as a way of giving less weight to the future and therefore uncertain or risky monetary flows related to touristic activity. The authors rewrote the text in Section

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3.4. by adding new data about the discount rates in Portugal. Florio, M.: Cost-benefit analysis and the European Union cohesion fund: On the social cost of capital and labour, *Regional Studies*, 40, 211-224, 10.1080/00343400600600579, 2006. Florio, M., and Sirtori, E.: The social cost of capital: recent estimates for the EU countries, Working Paper 201303, CSIL Milano, Centre for Industrial Studies, 2013.

The authors agree with the referee that would be interesting to apply a discount rate equal to 0 %. These new simulations were performed and, although being a less realistic scenario among economists and other agents, its use might be important to assess the impact of discounting. As expected, this exercise yields the highest Loss Present Value (LPV) in all economic scenarios. The authors added a new paragraph to section 6 and updated Table 3 with LPV values when applying a discount rate of 0 %.

Regarding the indication or estimation of the overall percentage of indirect losses, we could only consider the importance of the tourism sector in job creation, and consequently, in unemployment. Although we do not have data on this subject for the Vila Franca do Campo municipality, in the Azores archipelago, there has been an almost constant increase in jobs related to tourism from 2001 to 2018. In 2015 tourism employed 11,847 people and in 2018 it reached 19,614 people, having increased by 39.6 % in this time frame. These values give a good idea of the importance of this sector in the regional economy, which represents approximately 20 % of all employment in the Azores (Fortuna et al., 2020). Although the studies related to the economic loss in the sea and agriculture sectors related to explosive eruptions of Fogo volcano are still ongoing and data are not yet available, it is important to note that the losses on the tourism sector may also have implications for other activities, such as the consumption of fish (sea sector) and meat and milk/cheese (agriculture sector), etc. These are indirect effects on other activities and, thus, losses arising from “non-tourism”. The authors added two new sentences to section 7.2 discussing this matter. Fortuna, M., Vieira, J.C., and Maciel, R.: *Estimação do Emprego no Turismo: Uma Abordagem*

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com Contas Satélite, in: O Turismo na Economia dos Açores: Do Arranque do Século XXI à Pandemia de 2020, edited by Fortuna, M. and Maciel, R., Centro de Estudos de Economia Aplicada do Atlântico – CEEAplA, ISBN: 978-989-8870-31-5, 143-163, 2020.

Regarding the colours that represent the exposed elements in Figures 7, 8 and 9, we agree with the referee and think that a good solution is to change the colour of the “other” buildings to white, so that the tourism-related buildings stand out more in the figures. As in Figure 2 all buildings of the municipality are represented, without specifying any type, we think that they can remain in black colour, without any modification.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2020-239>, 2020.