This article provides an interesting overview in temporal assessment of buildings and citizens exposed to natural hazards in Austria, including elements at risk to river flooding and mountain hazards. The paper is well written and it was a pleasures to read and to review it. In overall, the topic is highly 'hot' and interesting and could make a main contribution in this journal. However, I would suggest that some sections of the paper has to revised and extended (like also the other three reviewers mentioned). In overall, the paper can be very valuable for the scientific community as well as for decision makers. I consider the paper fitting very well into the scope of NHESS.

Dear Dr Thaler,
We kindly would like to acknowledge your detailed and insightful comments on our manuscript. In the following we will answer these comments as well as your concerns and suggestions step-by step. In red, you will find comments while in blue we included suggestions to improve the current version on the manuscript. Once the NHESSD interactive discussion is closed by the Editor, and we will have the permission to revise the manuscript, these parts will be used to improve the manuscript.

My main concerns refer to some points (which most of them are in the line with the other three reviewers).

No 1 refer to the abstract: I wouldn't focus so much to the results of this paper, but also mention your used method.

We will re-write the abstract accordingly.

No 2 page 2422, line 5: after 'on the local scale as a result of individual case studies':
Here, I would like to suggest to add some references (similar to reviewer 2). However, there is no need of a full comparison with other papers, such as reviewer 2 suggested; that's not the key purpose of this paper.

We agree and will provide a clearer and more accessible introduction in the revised version.

> Focusing on exposure, the effectiveness of natural hazard risk management depends on the availability of data and in particular an accurate assessment of elements at risk (Jongman et al., 2014), which also requires a temporal and spatial assessment of their dynamics. It has been repeatedly claimed with respect to flood hazards in Europe that the main driver of increases in observed losses over the past decades is increased physical and economic exposure (Bouwer, 2013; Hallegatte et al., 2013; Jongman et al., 2014). Until now, however, in mountain regions of Europe such conclusions remain fragmentary since property data has only been available on the local scale as a result of individual case studies. These – often conceptual – studies related to the temporal dynamics of exposure to mountain hazards include both the long-term and the short-term evolution. Long-term changes were found to be a result from the significant increase in numbers and values of properties endangered by natural hazard processes, and can be observed in both rural and urban mountain areas of Europe (Keiler, 2004; Fuchs et al., 2005; Keiler et al., 2006a; Shnyparkov et al., 2012). Short-term fluctuations in elements at risk supplemented the underlying long-term trend, in particular with respect to temporary variations of people in endangered areas and of vehicles on the road network (Fuchs and Bründl, 2005; Keiler et al., 2005; Zischg et al., 2005). These results suggest that the spatial occurrence of losses is not so much dependent on the occurrence of specifically large events with high hazard magnitudes but more a result of an increased amount of elements at risk in endangered areas (Fuchs et al., 2012). Most of the recent works, however, rely on local object-based studies (Zischg et al., 2004; Fuchs et al., 2012) or aggregated land use data (Bouwer et al., 2010; de Moel et al., 2011; Cammerer et al., 2013), leading to substantial uncertainties if up-scaled to a larger spatial entity (de Moel and Aerts, 2011; Jongman et al., 2012a). Because of the limited data availability, comprehensive object-based and therefore spatially explicit analyses have thus not been extended beyond the local level (Kienberger et al., 2009; Huttenlau et al., 2010; Zischg et al., 2013),

and studies focusing on the national level in mountain regions using such data remain fragmentary (Fuchs et al., 2013).

No 3page 2423: please, clarify more your research question. However, the paper clearly address the question how property level data can be used in natural hazards research and risk management.

We agree and will provide a clearer and more accessible introduction to the research gap in the revised version.

To contribute to this gap, we show how detailed property level data can be used to improve the understanding of trends in hazard exposure on a national level. We will explicitly focus on dynamics in elements at risk, neglecting (a) any changes in the natural process dynamics due to underlying changes in the natural system including the effects of climate change, (b) any shifts in exposure due to the implementation of technical mitigation measures, and (c) any changes in vulnerability. This allows for the assessment of dynamics in property exposure, and will provide insights in the impact elements at risk may have on changing risk in mountain environments leaving other risk-contributing factors constant.

No 4 page 2424, line 5: I don't agree with this statement, that eHORA is unique in Europe (see also reviewer 3), see also the work done by the Environment Agency or Scottish Environment Agency as a requirement of the EU-Floods directive.

We will change the wording to avoid confusion. The uniqueness is related to the fact that Austria was one of the first countries to provide online information on river flooding exposure, based on a public-private partnership between the administration and the Austrian Insurance Association. Due to the implementation of the European Floods Directive, however, other European countries meanwhile have similar information available (e.g., ZÜRS in Germany and the assessment of the UK Environment Agency).

> For river flooding data from the digital eHORA platform (http://www.hochwasserrisiko.at/) was used. This platform provides information on the exposure to river flooding using web-GIS techniques, and has been jointly implemented by the Federal Ministry of Agriculture, Forestry, Environment and Water Management and the Austrian Insurance Association in terms of a public-private partnership on more than 25,000 of a total of 39,300 river kilometres (Stiefelmeyer and Hlatky, 2008). By using a hydrological model probabilistic runoff data for a 1 in 30, 100, and 300 year event was computed and converted into water levels and flood zones based on a nation-wide DEM and a digital slope model. Following an ongoing discussion on the harmonisation of hazard mapping in Austria (Rudolf-Miklau and Sereinig, 2009), the 1 in 100 year event was provided by the Austrian Insurance Association in terms of a vector representation of flood plain boundaries and taken for our analysis.

No 5: Discussion and results has to revised: some aspect were repeated, some aspect weren't fully explained; please, re-think carefully these two sections. One point, I would like to mention is the annual growth between 1919-1944. That's somehow obvious that these period show a very low growth rate, because of (1) economic and financial crises, (2) World War II and (3) lack of tourism activities (which started after 1960s/1970s). Further, the key explanation of growth rate after the 1960s/1970s can be observed from the national economic and housing policy.

We will revise the results, discussion and conclusion sections in order to be more concise. Moreover, we will add some information on implications and limitations (see beow).

Finally, I would suggest to include more aspects of the limitations of the data (see also reviewer 1 and following paper: Husby et al. (2015): What if Dutch investors started worrying about flood risk? Implications for disaster risk reduction. Regional Environmental Change.