In this paper, the Authors propose an interesting mapping approach to the assessment of the risk related to people exposure to floods, based on a geostatistical analysis of Erlang measures.

After an introduction of the main features of floods (starting from key factors such as urbanization and climate changes, to the components, i.e. hazard, vulnerability and exposure), the Authors focus on operational aspects of empirical investigations developed in this framework. First, data sources availability: mainly distinguishing between official and crowdsource data, the paper highlights the potentialities of mobile phone data in identifying, tracing and classifying human localization. Second, dimensions and dimensionality: to provide a good managerial and recommending instrument to local, regional and national policymakers, the ability of data to provide a comprehensive and detailed overview over time and space of individuals, becomes fundamental. On the other hand, datasets with such high detail of information correspond to a huge amount of data. As well depicted by Authors, these two aspects motivate the need of a statistically robust procedure to provide reliable results about dynamic mapping of citizens.

Focusing on the interesting case-study of Brescia (Italy), the Authors classify and map individuals from July 1st 2015 to August 11th 2016, using mobile phone data. The procedure can be seen as a three-steps approach, where the first two are represented by dimensionality reduction steps via clustering, and the third is given by statistical matching of collected mobile information to census data, aiming at estimating the total amount of people in a specific area. The clustering procedure, together with the matching methodology used and proposed by Carpita and Metulini (2020), provide the possibility of exploiting exposure maps to flood risk, and specifically the temporal dynamics of exposed residents.

The originality of the data and the proposed techniques can represent a substantial contribution to the understanding of natural hazards and their consequences. The manuscript is well written, and the conclusions well summarize the main findings of the paper. Thus, I suggest the publication of the manuscript after a few minor reviews.

Minor comments for the publication of the manuscript concern the methodology. In section 2.1, the Authors refer to a specific parameter: “k is a parameter that need to be chosen”. One reference for the choice of k should be reported, especially for non-statistician readers. Moreover, the motivation for the choice of Bouveyron and Come (2015)’s procedure, among all possible functional data techniques, should be (briefly) addressed. Concerning the Carpita and Metulini (2020)'s statistical matching approach, are there any kinds of test, procedure, etc., to evaluate representativeness and reliability of the final result of the population assessment step? This aspect should be (briefly) addressed.

Further developments: Due to the richness of mobile information and the heterogenous moving behaviour of individuals during the day, several further developments can be considered for future works. For example, it would be very interesting (from a prevention perspective) to restrict the sample of investigation and focus on the intraday mapping of individuals in meaningful time periods of the year, e.g. the months with highest probability of observing floods. Also the idea of considering the movement response of residents to floods may be strongly interesting. Similarly, possible insights may be evaluated for the statistical matching procedure in future works. For example, what happens sharing population in different classes? Assuming heterogeneity in the behaviour of individuals, can you include in the procedure the propensities of different classes of residents to the use of smartphones during the day?