Dear referee,

We would like to thank you for your careful reading of our manuscript and for your constructive questions and comments.

Please find below our answers to your comments. You'll also find all modifications performed according to your more specific comments you made throughout the text in the "track-changes" version of the text. Figures have been modified according to your suggestions; one figure and one table have been also added to the manuscript.

General comments:

The manuscript is rather well organized and clearly understandable. Nevertheless, a careful reading from an English mother tongue is necessary. I have found several errors and some sentences should be written in a more formal way.

Thank you, we carefully checked and re-wrote many parts of the text to improve both English and style of writing

Segmentation – In earthquake geology, the term "segment" often has a behavioural meaning (i.e., earthquake segment). In this paper the faults are divided in (fault) "segments" exclusively on the basis of static geologic criteria (structural, geometric) defined a priori. It is quite clear to me, but I suggest to state this concept more clearly in the manuscript.

This is absolutely true, we mentioned this in part 3.1*: "In any case, whether the retained geometries derive from publications or maps, fault segments are always defined on the basis of static geologic criteria or at least long term morphological evidences of deformations. This is mainly due to the fact that, in metropolitan France, dynamic criteria (surface ruptures, fault source models etc.) cannot be derived from the analyses of major earthquakes, the last surface-rupturing event being probably the Lambesc earthquake, in 1909 (Chardon et al., 2005)."*

In section 4, the fault segments correspond to individual seismogenic sources. Therefore, it is assumed that the static geologic discontinuities used for segmenting the faults correspond to earthquake segment boundaries. Also this assumption should be clearly stated.

Again, we added *"In addition, we assume that the static geologic discontinuities used to define the considered fault segments correspond to earthquake segment boundaries. In other words, we didn't consider the possibility of multiple segment rupture scenarios in the PSHA exercise, which must be tested in future calculations*" Thank you for your remark

I also suggest to add an explicative figure in subsection 3.1 illustrating schematically your segmentation criteria and defining the different typologies of fault sections belonging to a segment (M, P, OB, OX).

We added Figure 2 to illustrate the typology criteria:

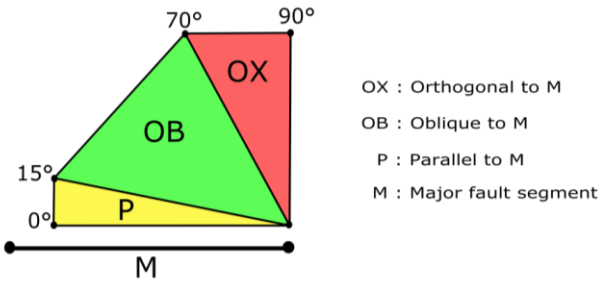


Figure 2: Segmentation typologies (TYP) used to define the identity code of each segment (UID).

I suggest the use of the term "typology" (as within the table and .kmz file) rather than family.

Family was unclear, thank you for your comment. We homogenized using typology.

The term "fault system" is used only in the main text. In the electronic supplement it is used simply "fault". I suggest to use simply "fault", if possible. In general, please avoid different terms between main text and electronic supplements. I see this problem also with other terms/parameters (e.g., parameters entering in the RI calculation), please check throughout.

We finally use "faults", which is clearer, thank you. We modified the terms used for RI calculation in order to be homogeneous all along the text and supplementary materials. We also modified clarified for example the use of Miocene/Syn-Late Miocene as proposed in another comment.

Angular variations and segmentation: variations of 15_ are quite small. I have no instruments to objectively criticize your choice, but I feel that this variation might be too small for justifying segmentation. Moreover, I suspect that you did not respect this criterion rigorously for all the faults. For example, in the Rhine Graben, there are faults having bends larger than 15_ without internal segmentations (Faille des Vosges", "Faille de la Forêt Noire 2", "Rampe de Ferrette", . . .). Tip distance: did you use the same criterion also for step overs? In step overs, the tip distance should be considered together with fault separation. In fact, tip distance might be large, but separation very short, making segmentation questionable. Moreover, I have found several fault segments that do not respect the 1 km-distance criterion (segment tips closer than 1 km).

We would like to apologize because we made a mistake in describing these segmentation rules that were in fact adopted to perform a test aiming at building a fault source model automatically derived from the database. We modified the text accordingly.

Apart from our mistake, it is true that faults were treated differently depending on the available literature. In the Rhine graben for example, segmentation is based on relatively abundant publications. On the other hand, segmentation in Western France mostly rely on geological maps that have been drawn at different epochs, different scales, by different geologists etc.

We tried to expose this point in our modified part 3.1

…*"* While building-up the BDFA, we basically mapped fault traces and associated segmentations directly as they were defined in the literature. Where several references were available for a single fault or fault segment, we decided to report the traces proposed from the most recent or reliable references. These principles have largely been applied for faults in eastern, northern and southern France, because most of them have been studied for many years. However, the age of some publications led us to precise the mapping in the light of more recent cartographic documents (see the 2nd point below).

In parallel, few active or potentially active faults have been studied in detail in central, and north-eastern France. It may also happen, in particular for long faults (e.g. the south Armorican shear zone is longer than 500 km), that only one or a few segments of a fault have been studied because of the occurrence of a particular local seismic crisis or the exposure of local neotectonic evidences. Consequently, precise mapping are often missing or not reliable due to coarse drawings. In this context, we complemented the available fault traces with a new mapping including fault segmentation based on the following *"…*

2) Active vs inactive faults, age and slip rates – The choice of the database is to consider as potentially active all the faults with evidence of activity since Late Miocene. This choice is motivated by the intracontinental, low-strain rate seismotectonic context, the poor knowledge of active faults and the high criticality of the exposed facilities. Please, be sure that the "syn to post Late Miocene" criterion is respected consistently throughout the paper and, most importantly, in the database. In places, the authors write Miocene (e.g., key to figure 1; .kmz file), in places the entire Neogene or even Paleogene are mentioned (Age parameter in RI calculation at pag. 7).

As said before, we homogenized the use of Miocene/ syn to post Late Miocene throughout the text and figures/tables.

I see that often Late Miocene faults are not isolated, but occur within systems, together with neighbor or aligned faults of younger age (Pliocene or Quaternary), suggesting that the Late Miocene evidence is due to the impossibility of documenting younger activity, for several reasons (lack of sediments, lack of dating, etc). If this is one of the reasons to extend the time window so far back in time (ca. 11 Ma), I suggest to discuss this point in the manuscript.

The attribution of an age to a fault segment depends on the age of the last deformed unit. It may then happen, because of lacking sediments, that nearby segments of a same fault present different ages. When no evidence of deformed Syn to post Miocene sediments is found along a fault segment, we attribute an undetermined age. We added in part 3.2 *"As a consequence, it may happen, because of missing sediments or datings along specific fault segments, that different ages are attributed to segments of a single fault. In this case, it is up to the user to decide whether the considered fault is active or not*"

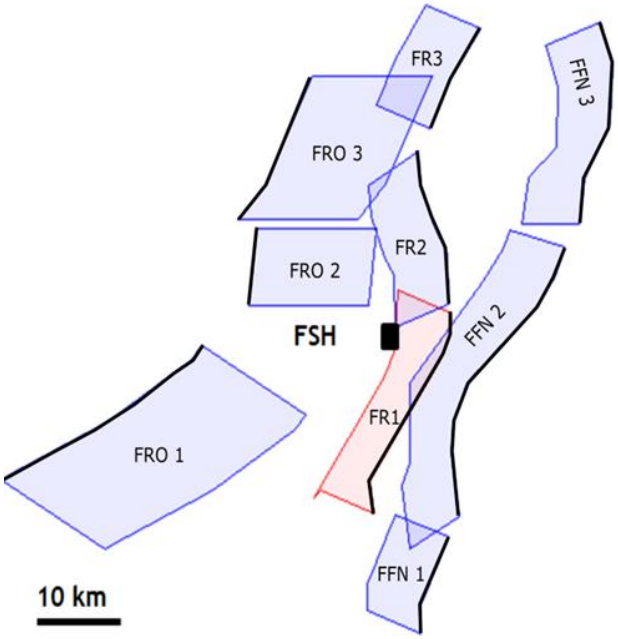
"UCHR: Undeformed CHronostratigraphic Unit. Local terminology indicating the most recent chronostratigraphic units not involved by faulting" – In order to bracket the age of the tectonic event, you should give the age of the oldest unfaulted/undeformed unit, not the youngest.

You're right, thank you. We modified both figure and text accordingly

3) Source model for the Upper Rhine Graben – The source model in Fig. 4 b appears to me very coarse. For example, the width of the FR and FFN sources is not constant, and the lower tip line is not parallel to the fault trace.

The source model is coarse. At the surface, it is of the same order in comparison to the fault segment traces drawn in the database. At depth, it is controlled by geometry rules of the CRISIS2014 engine from which the figure has been directly extracted.

Here is for example an extraction performed for a lower dip angle, showing artifacts that are different from the ones in the paper. A possibility would be to draw something geometrically correct, but we think it's better to keep the real scenario.



Their width is too narrow, also for a dip of 70_ (should be 5.5 to 7.3 km-wide, for 15 to 20 km-thick seismogenic layer, respectively). Perhaps, it is only a graphical problem, but must be solved.

Width are derived from a depth of 15km and the maximum dip angle, which are 80° for FR and FFN (-> 2,6km wide) and 60° for FRO (-> 8,6km). With these parameters, the figure in the paper should be ok.

Moreover, I do not understand why the true (?) dip of the faults is not considered, and a 70_ dip is assumed. I cannot see the geometrical problems described at page 10, lines 5-9. According to my calculations, the width of FR and FFN should vary between 13-17 km (50_ dip; considering that 40_ dip could be restricted to only the shallowest pat, as suggested) and 9-12 km (60_ dip). FR and FFN should not intersect. Possible geometrical "problems" between FR and FRO depend on the choice of the dip and depth, but do not seem too serious.

We modified the text in order to be clearer why we choosed an equivalent dip angle for FR and FFN : *"we mainly relied on the BDFA values, except for the Black Forest fault for which a higher angle equal to the Rhine River fault was preferred (70±10°), in line with what is proposed in Nivière et al. (2008). The hypothesis that these faults are structurally related, as proposed by Behrmann et al., (2003) and Rotstein et al., (2005) from reprocessed seismic data, should be tested in future studies"*

4) Conclusions – I suggest to add a few sentences on future directions

We added:

"*This first release of the BDFA results from a four years endeavor in defining and compiling the database. Beside problems related to the completeness of some fields and the complete translation in English of the database (in progress), homogenizing the database is our first objective for the next release. This last point is largely explained by strong regional heterogeneities in data availability. In parallel, a website is currently under construction and will help us gathering more users' feedback to improve the database*"

COMMENTS/SUGGESTIONS ON THE ELECTRONIC SUPPLEMENTS:

5) Please, add a Readme file explaining the content of the supplementary material.

We added a readme file

6) References on the faults are missing. You must add the reference key on the .kmz file and provide a complete reference list in a separate file.

The reference key to link the reference table is the Id-Fault. We provided an excel spreadsheet containing the reference list. This list is complete for faults implemented after 2013 and sometime incomplete for the ones implemented before. A complete reference list will be produced for next updating

7) In the .kmz file, there are several white fault traces that are neither characterized nor described. Please, describe or remove.

White fault traces come from the Grellet et al., 1993 neotectonic map. We do think it is informative for readers to understand what our starting point was, and what we still need to implement.

8) I strongly recommend to translate all the information in English (including observations and Tectonic_geomorphology), or at least start doing this for the next updating.

We are aware of this problem, but we clearly do not have time to translate everything. However, it also needs to be homogenized before making this effort. Of course it will be translated in next updates, as well as the written forms. A possibility is to remove these descriptions, but it could probably be of interest for people working in France.

9) In the .kmz file, there are several points. What are those? Punctual data acquired by the authors? Please explain in the main text and add to the legend, or remove.

These points correspond to neotectonic and paleoseismologic evidences reported in the french NEOPAL database and in the publication by Baize et al., 2002