

Editorial board:

1 Title page does not follow the journal standards. The names of the authors should not be shortened; section "Corresponding author" is missing. Please edit it according to the information provided by SE: <https://www.solid-earth.net/submission.html#manuscriptcomposition> /Title page

We have included the full names of the authors, included the "Corresponding author" information and changed the format of all the manuscript to the Copernicus template

2. Please remove the supplementary material from *.pdf manuscript since it should be placed only in supplement.

We have removed the supplemental material from the manuscript

Reviewer #1

The authors have significantly modified the manuscript and extended the Introduction as well as the Discussion part. The new or modified figures and text parts now provide an improved Introduction to the local and regional geology as well as an in-depth comparison of the results that were obtained with the different approaches.

All the larger points I had raised in my review were resolved with these changes, and I believe that a lot of value has been added in the revised manuscript. I still found a few minor issues while reading, which I will list below. I thus recommend minor revisions, noting that resolving these comments should not take much time.

I. 28: the word "analysis" seems to be in the wrong place here

Corrected

I. 47: the word "stations" should be added after "accelerometric"

Done

II.56-58: Maybe add a reference for the crustal thickness? not cylindrical should read non-cylindrical

We have added a reference to Diaz et al 2016, where a crustal thickness map from controlled source profiles and RFs is presented. Attending also the Reviewer #2 comments, we have reworked the second sentence to: "However, different geophysical results have shown that the Pyrenean range does not have cylindrical symmetry (Chevrot et al., 2018) and that the eastern termination of the Pyrenees is marked by the abrupt thinning of the crust, decreasing from more than 40 km beneath the Cerdanya Basin to values close to 25 km beneath the Mediterranean shore..."

I. 79: in the hanging wall

Corrected

General comment to Section 1.1: It would be nice if the villages mentioned in the text would be shown on the map in Figure 2, so that the reader can follow what locations are being discussed

We have now included in Figure 2 the location of the main towns and other geographical references in the text

I. 257: citation should be without the bracket

Corrected

I. 263: descent

Corrected

I.308ff: I don't understand this sentence...should maybe be split into two.

As a result of a cut-and-paste problem during the previous revision, the sentence included a couple of words that made it difficult to understand. We have now rephrased to: "Following a classical approach, we split all available data, spanning over a year for the broad-band stations and 2 months for the node deployment, ~~are sliced~~ into sequences of 240 s with a 50% of overlap and windowed with a Hann taper, the parametrization providing the best results after performing several tests."

I.312: "their" refers to what here?

This was just a mistake. We have now corrected to "Similarly to Konno and Ohmachi (1998), we then smooth the spectra, applying..."

I. 468: should be Gabas et al. (2016), not 2014

Corrected

III.486/487: should be reformulated

We have reformulated the sentence to "... which are consistent with..."

I.492: do instead of does

Corrected

I. 506, 525, 573, Caption Figure 10: in these places (and maybe elsewhere), results from noise amplitudes are referred to as "from seismic noise", which is unclear since all methods used seismic noise. Amplitudes should be mentioned in all these places, to make clear which method is meant

We agree on this observation and we have now moved from "seismic noise" to "seismic noise amplitude" along the manuscript (l. 451, 475, 514, 525, 579, 583)

Figure 2: In the legend, it should say reverse fault (not inverse)

Corrected

Figure 5: The color bar label should be km/s (not m/s); in the Caption, the word "absolute" shows up twice, and T=2.0 s is subfigure c (not b)

Corrected

Reviewer #2

Dear authors,

I appreciate your efforts to improve the manuscript and address the reviewer's comments.

I only have the following minor comments, which should be quick to address.

Please note the line numbers are from the track changes manuscript.

line 85-86: grammar mistake

Attending also the Reviewer #1 comments, we have reworked the sentence to: "However, different geophysical results have shown that the Pyrenean range does not have cylindrical symmetry (Chevrot et al., 2018) and that the eastern termination of the Pyrenees is marked by the abrupt thinning of the crust, decreasing from more than 40 km beneath the Cerdanya Basin to values close to 25 km beneath the Mediterranean shore..."

line 94: rephrase "along approximately 100km". Grammatically incorrect.

We have rephrased to “..to the Segre valley, in the south of Andorra, along approximately 100 kilometers”. We think that this is grammatically correct.

line 101: below 4 what? MLv, M?. Please provide unit.

We have now stated that we refer to local magnitudes. The specific typ of magnitude do not seem to be relevant here.

line 102:"could be on the origin." this doesn't make sense. Please edit the phrase.

We have changed to “...However, the Têt Fault could have been on the origin of the large, destructive”

line 108-111: This sentence needs reframing. Its rather convoluted now.

We would prefer to keep the sentence, as we think it is clear enough

line 117-118: multiple grammatical mistakes.

We have reworked the sentence to “...which has a general NE-SW trend, but abruptly changes its trend towards an E-W direction at its SW termination”

line 213: referencing Yu et al. (2015) for modelling sedimentary layers using ambient noise method is not correct. This was pointed out to the authors in the first revision, and they said: "We have checked the reference, but we don't see nothing wrong".

Sorry to be a pedant; this is inaccurate. Yu et al. (2015) developed a method to reduce/suppress the sediment reverberation energy in the receiver functions. The resonance filter was built using the auto-correlation properties of the receiver functions. Perhaps the authors are mistaken and looking at the wrong article. Yu et al. (2015) don't use ambient noise method.

In fact, our text we were not stating that Yu et al refer to ambient noise: “Further modeling, out of the scope of this contribution centered on the use of ambient noise, can provide additional information on the properties of the basin (Yu et al., 2015). “

In order to clarify the sentence and avoid misinterpretations, we have changed the sentence to: “Further modeling of the RFs, out of the scope of this contribution centered on the use of ambient noise, can provide additional information on the properties of the basin (Yu et al., 2015).”

Figure 1:

Legend is still incomplete. What do the light grey and dark grey colors mean? Please provide a reference for the outline of Tet fault. All the geological data used should be referenced, or the source website clearly mentioned.

The legend has now been completed, explaining that the grey areas correspond to Triassic-Cretaceous domains out of the Pyrenees. We have also included a reference to the Milesi et al 2022 to document the outline of the Têt Fault. As already stated in the caption, the map is based on Verges et al. 2019.

Figure 3:

Authors have missed editing the Caption 3 (re: “..phase lag in the direct-P.”).

We have changed “delayed direct P-wave time lag” to “delayed arrival of the P-to-S converted phase at the base of the sediments” in the Figure 3 caption

Figure 8:

Please increase the font size of the legend, as reviewer 1 pointed out during the first revision.

Done

Figure 10:

please annotate x-axis as longitude in the Figure.

Done