

Interactive comment on “The R package “eseis” – a comprehensive software toolbox for environmental seismology” by Michael Dietze

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Response to referee comments

[The R package 'eseis' – a software toolbox for environmental seismology]
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I would like to thank the referee for the encouraging and helpful comments, all of them

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obviously devoted to improve the quality and impact of the manuscript.

Referee 1.1: *do you include readings of other formats like SE2 or SEGY?*

Reply: Currently, the only supported formats are SAC and miniseed. I explicitly mention this now earlier (p. 6, l. 7-8) than just in the dedicated section 5.1 and indicate that if required by users, import of additional data formats can be coherently implemented.

Referee 1.2: *do you provide a user manual?*

Reply: Yes, a user manual (reference manual) is automatically generated when building the R package. This is now mentioned in chapter 3 (p. 6, l. 1-2).

Referee 1.3: *when processing data from different stations, how do you handle heterogeneous lacks of samples and sample redatings?*

Reply: Like in most other approaches, such challenges must be handled individually. However, the object philosophy of the package always allows direct access to the data set. Thus, one can “easily” handle missing data, NA values or develop methods for redating in R. I mention this issue now section 3.1 (p. 5, l. 23-25).

Referee 1.4: *In general, the package does not currently process ambient noise xcorr, which is a major field of environmental seismology. Maybe you should change the title*

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accordingly, like “The R package ”eseis“ – a comprehensive software toolbox for source analysis and active environmental process” and restrain the current paper to studying active source process?

Reply: In fact, ambient noise cross correlation is currently being implemented to the package as indicated in section 5.1. Thus, in one of the upcoming versions of the package (in a few months probably), this feature will be included. However, I understand the concern and removed the word “comprehensive” from the title, as it is clear that the package in its current form does not include all major avenues of (environmental) seismology.

Referee 1.5: *you pretend that R will be stable on the long term. How can you make sure of this? many other languages pretended the same years ago, some are still maintained, others have retired...*

Reply: Ha, very good point indeed. One may only use the past to predict something about the future but nothing is certain for sure. I added this topic and refer to the code of conduct of the R foundation (the consortium that has formed some years ago to cover exactly this topic) in section 2 (p. 3, l. 8-11).

Referee 1.6: *how will you handle file format for correlations data (from ambient noise for instance)?*

Reply: Just similar to point 1.3, the user can do with the data (in this case the signal vector part) whatever she or he wants to do. It is, at least within R, even possible to store e.g., complex values in the signal vector. So no problems in that respect. From

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my perspective a good format to save correlation data would be as compressed R data (*.rda) objects. Anyhow, since ambient noise cross correlation analysis is not yet part of the package I would prefer not to explicitly mention this. I did however insert a short general sentence in section 3.1 (p.5, l. 25) highlighting that any derivatives of the input data can be handled and stored as R objects.

Referee 1.7: *tools proposed for Centaurs and Cubes stations. Why those ones and not others? If this is just a choice due to hardware availability at the authors’ home, please mention it.*

Reply: I do now provide the reason for the support of these two loggers (predominantly because these are the ones I have used in my projects so far and therefore can rely on ample benchmark and test data sets) but also refer to the option of additional logger/data structure incorporations in future package versions if users of the R package express their need for that. I am happy to develop such extra functionalities, at best in cooperation with the future users.

Referee 1.8: *higher order of $2n = ?$ please explain literally that it’s the total number of samples, with n a positive integer...*

Reply: Done as suggested.

Referee 1.9: *fig. 4 verb tenses?*

Reply: Corrected.

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Referee 1.10: *make sure the example dataset is an actual rockfall and not a base-jump crash!*

Reply: Indeed, I checked for that cause of a seismic source (<http://base-jumping.eu/base-jumping-fatality-list/>) but could not link the two possible cases to any of the locations in the original Lauterbrunnen rockfall study.

Referee 1.11: *please specify clearly from the beginning that the source location is obtained for surface waves (and not P-wave migration)*

Reply: Done as suggested, mentioned now on p. 17, l. 20.

Referee 1.12: *curves (b) are not labeled/commented; the figure is overall impossible to understand. What is what?*

Reply: Figure has been reworked. A legend is now present in the figure and the two PSD are linked to the time series plot.

Referee 1.13: *5.2 please recall an active url*

Reply: Done as suggested.

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Referee 1.14: *change ref SensSchoenfelder and Larose Earthquake Science 2010 by C. Sens-Schönfelder and E. Larose: Temporal changes in the lunar soil from correlation of diffuse vibrations, Phys. Rev E 78, 045601 (2008).*

Reply: Done as suggested.

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