Response to referee 2: The manuscript “Estimation of path attenuation and site characteristics in the northwest Himalaya and its adjoining area using generalized inversion method” by Hareeshkumar and Kumar is a study concerning the estimate of attenuation and seismic site response considering three components accelerogram recordings. The topic is interesting since the studied area is considered one of the most hazardous in the world for seismicity. However, major revisions are necessary before the publication of the submitted material. In particular, what is new compared to other studies on the same topic? I think that more effort should be done in description of results. Some comments: The manuscript contains several type mistakes and some sentences are unclear. Therefore, during the revision phase, the authors should pay attention to correct these grammatical errors.

Response: The authors express their extended gratitude to the reviewers for reviewing the manuscript and giving their useful comments. Detailed descriptions explaining the findings form present work have been added throughout the manuscript. In addition, the entire manuscript has been checked for any possible mistake or any kind and corrected. Further, all the comments of the author have been addressed in the revised manuscript in blue colour.

Comment 1: What is the meaning of PESMOS acronym?

Response: PESMOS stands for “Program for Excellence in Strong Motion Studies”. PESMOS maintains ground motion records from recording stations installed in various regions within India, by the Government of India, to monitor the ongoing seismicity. Earthquake records since 2004 are available in PESMOS database. A brief description of PESMOS database has been added in Line 50 – 64 in the revised manuscript.

Comment 2: In the introduction the authors refer to several geographic places, but no map is shown in the text to help an international reader.

Response: As per reviewer’s suggestion, map incorporating details mentioned in the introduction section related to geographic details has been added (Figure 1) in the revised manuscript.

Comment 3: Moreover, the authors underline the high level of seismic hazard of the region, but no tectonic setting is described in the text. Probably, an overview of the geologic setting of the area could help the reader.

Response: As per reviewer’s suggestion, an overview of the geologic setting of the area has been added in Line 136-137 in the revised manuscript

Comment 4: As concern the recordings, did the authors used some criteria to check the quality of the traces (e.g. signal-to-noise)?

Response: Authors want to highlight that signal to pre-event noise (all of equal window length) ratio (SNR) for all the records were computed and records with SNR greater than 5(similar to work by Ameri et al., 2011) are considered for analysis. Needful discussion on SNR has been incorporated in Line 136-137 in the revised manuscript.

Comment 5: In the Methodology section, there is a considerable amount of extraneous material regarding the theory of the adopted procedures to process the data. These sentences are not central to the results of the paper. Therefore, some formulae and matrix could be deleted or moved in an appendix.

Response: As per reviewer's suggestion some formulae and matrices in Methodology section has been moved to Appendix as can be observed in the revised manuscript.

Comment 6: As concerning Figure 3 more details should be given about the "kink". This result seems to be interesting. Is at the same frequency observed by other authors? What is the Moho depth? Etc. . . Try to better explain.

Response: Bindi et al., (2004) and Oth et al., (2011) observed kinks in the attenuation curves for the Umbria Marche and Japan regions respectively. Bindi et al., (2004) observed a kink in attenuation curves for frequencies less than 2.24Hz, beyond 40km hypocentral distance. Similarly, Oth et al., (2011) observed a kink in attenuation curves for frequencies less than 2Hz, beyond 90km hypocentral distance. In the present study, a similar kink in the attenuation curves is observed beyond 105km at frequencies less than 5.5Hz.

Oth et al., (2011) attributed the above kink in the attenuation curves to the presence of Moho discontinuity in the region. Following Oth et al., (2011), a similar conclusion has been made regarding the kink in the attenuation curves observed in the present study. Studied on crustal imaging of north-west Himalaya by Saikia et al., (2015) also suggests the depth of Moho varying in the range 37km to 52km.

Authors want to highlight here that based on the nature of attenuation curves developed in the present study, no conclusion regarding the Moho depth can be made.

Comment 7: In site response analysis the authors describe classical HVSR based on Fourier spectra, but starting from line 280 they introduced the ratio of response spectra. In this case it is important to describe the differences. H/V in Fourier domain are different from H/V in response spectra.

Response: Authors want to clarify that HVSR calculations in the present study are carried based on response spectra and not based on Fourier spectra. The line 280 ("Calculate the

FAS for the three components [north-south, east-west and vertical] of ground motion records) from original manuscript has been corrected to "**Calculate the response spectra considering 5% damping** for the three components (north-south, east-west and vertical) of ground motion records" in Line 302 in the revised manuscript.

.**Comment 8:** The authors should explain why 6.75 Hz is used to discriminate soil and rock sites. In the paper D'Alessandro et al. (2012) there is a classification of the H/V as a function of peak. The method adopted to relate the frequency and depth with V_{s30} is less clear and speculative. For a frequency the bedrock could be at different depth as a function of thickness and velocity.

Response: Authors want to highlight that one of the objective of the present work is to classify recording station as either rock site or soil site based on the predominant frequency (f_{peak}) obtained from generalized inversion and HVSR analyses. D'Alessandro et al. (2012) attempted to classify recording stations based on HVSR results. Based on the work, D'Alessandro et al. (2012) gave possible ranges of f_{peak} for rock sites as greater than 5Hz and for soil sites to be less than 5Hz respectively. Further, the range of f_{peak} obtained using Eq. (1) (in accordance with Kramer, 1996) in the present is: $f_{peak} \geq 6.35$Hz for rock site and $f_{peak} <$ 6.35Hz for soil sites. Thus, possible ranges of f_{peak} for rock sites and soil sites given by D'Alessandro et al. (2012), are closely matching with f_{peak} range obtained based on equation below, as adopted in the present work.

$$f_{peak} = {}^{V_z}/_{4H} \qquad (1)$$

Comment 9: Geographic distribution of amplitudes and frequencies of the spectral ratios are not scientifically relevant considering the dimensions of the studied area. Probably distribution charts of frequencies and amplitudes observed at the investigated stations could be more interesting to subdivide these.

Response: The authors thank the reviewer for this useful comment. As per reviewer's suggestion, discussion on spatial distribution of predominant frequencies and amplification functions and corresponding figures has been removed while revising the manuscript.

Comment 10: Check the reference list, is incomplete (e.g. Alessandro et al. 2012, is D'Alessandro et al. 2012?).

Response: As per reviewer's suggestion, the above reference has been corrected in Line 293 in the revised manuscript. Further, the reference list is also checked for any other incompleteness.