<u>Author Reply</u>

Authors Name: Xian-QiongCheng , Qi-He Liu, Ping-Ping Li , Yuan Liu
Paper Name: Inverting Rayleigh surface wave velocities for crustal thickness in eastern Tibet and the western Yangtze craton based on deep learning neural networks

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Summary of Responses:

We thank Dr Richard Gloaguen for his workings for this paper, who have given many good suggestions, which we are incorporated in this revised work.

Below are the responses of work we have done.

For Dr Harry Matchette-Downes:

Comments and Suggestions	Response
1) 1- the PDF I received had very bad quality. Figures were all over the place and I could not see labels.	This time I have uploaded the pdf file and corresponding word file.
2- the conclusions need to be rewritten	The conclusions have been to be rewritten in the revised manuscript
2.a (1) a belief is not scientific. reformulate	We conclude deep learing outperform traditional shallow neural network and Monte Carlo inversion in rewritten conclusions (2) and (3)
2.b (1) state how you determine the parameters accurately	In the rewritten conclusion (1), key parameters for neural network are given.
2.c (2) "different networks produced different results" Those statements are not acceptable. Be precise.	This statement is replaced by precise value of key parameters for neural network in rewritten conclusion (1)
2.d (2) there are ways to estimate overfitting.	Overfitting is a relatively complex problem of neural network inversion, and we have not discussed this issue in the rewritten conclusions.
2.e (3) what is the added value of your model. Does it contradict previous models?	In conclusion (4) we conclude that our model has the overall agreement with previous models and our result reveals more details somewhere
2.f (4) "Geophysical inversion is very complex, so it is necessary to analyze and enhance neural network to adapt to these complicated problems." This is not a conclusion. It's a biased statement	In the rewritten conclusions we delete this statement