

Geosci. Model Dev. Discuss., community comment CC2  
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## Reply on AC1

Ather Abbas

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Community comment on "KGML-ag: a modeling framework of knowledge-guided machine learning to simulate agroecosystems: a case study of estimating N<sub>2</sub>O emission using data from mesocosm experiments" by Licheng Liu et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-317-CC2>, 2021

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Dear Licheng Liu,

Thank you for your response. I have one more question. The permutation importance is considered to be not stable i.e. different (random) seeds give different results (Molnar, 2019). Did you encounter and/or solved this problem? Another question is about the method of application of permutation importance. Molnar, 2019 defines permutation importance when the values of one feature are shuffled. This is also how it is done in scikit-learn library [2]. Your methodology is slightly different. You replace the feature with Gaussian noise as you have described. Is there a reason for performing permutation importance in this way?

I appreciate you work and response.

Regards,

Ather Abbas

[1] <https://christophm.github.io/interpretable-ml-book/feature-importance.html>

[2] [https://scikit-learn.org/stable/modules/generated/sklearn.inspection.permutation\\_importance.html#sklearn.inspection.permutation\\_importance](https://scikit-learn.org/stable/modules/generated/sklearn.inspection.permutation_importance.html#sklearn.inspection.permutation_importance)