Universidad de Alcalá

April 1, 2024

Dear Dr. Armarego-Marriot:

Please consider our revised manuscript 'Phylogenetic estimates of species-level phenology improve ecological forecasting' as an Article in *Nature Climate Change*. This manuscript proposes a novel approach to incorporating phylogenetic relationships into models aimed at ecological forecasting. Results from our phenology-based case study demonstrate that this approach significantly enhances forecast accuracy.

We have edited our manuscript to acknowledge more clearly how our approach is preferable to others, emphasizing the benefits of fitting a Bayesian phylogenetic mixed model (PMM), as requested by reviewer #3. In response to reviewer #3, we have also incorporated RMSE as an additional metric for evaluating prediction accuracy in our cross-validation analysis, with results reinforcing our previously submitted conclusions. Finally, we have made minor corrections (e.g., legend of Fig. S9) and small edits to the text to meet NCC format standards. We believe these changes both strengthen the manuscript and address the reviewer's concerns.

We detail our changes, point-by-point, in the following pages (note that reviewer comments are in *italics*, while our responses are in regular text). The main text of our revised manuscript has 5,060 words including methods, it has 54 references and contains 4 figures. This manuscript is not under consideration elsewhere. We hope that you will find it suitable for publication in *Nature Climate Change*, and look forward to hearing from you.

Sincerely,

Ignacio Morales-Castilla

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