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Point by Point Responses

Manuscript: Modelling monthly Boundary Layer Height maps combining radiosonde, satellite, and reanalysis over Europe

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Anonymous referee #1

Section 2.3: the regression-kriging framework is much clarified, but what regression models are used is still a bit confusing. Lines 295-312 seem to imply that the regression model is solely GLS, which is linear and estimates $\hat{\beta}_{\text{GLS}}$ as $\hat{\beta}_k$. However, three regressions are introduced as LR, RF, and GB. Is LR the same as GLS, and RF and GB are additional nonlinear, non-parametric regression models?

Replay: We agree on this matter. Please be advised that a short paragraph has been added to section 2.3 (lines: 313-328), which explains how the final predicted value is obtained when using machine learning (ML). This is because, as the reviewer points out, the method differs from that used for linear regression.

Line 387: "the additional spatial component was discard" clarify if "additional spatial component" means the residual kriging.

Replay: Done

Line 486: R2 instead of R?

Replay: Yes, we added R²

Line 632: RK is not a "rather than" with ML tools, right? The regression component of RK can be ML models.

Replay: That is right, we change the sentence to avoid confusion.

Many acronyms are defined multiple times. Consider defining at the first appearance and use abbreviations afterwards.

Replay: We reviewed the manuscript and removed several acronyms that had been defined more than once.



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