

Supporting Information for

**Using an Explainable Machine Learning Approach to Characterize
Earth System Model Errors: Application of SHAP Analysis to Modeling
Lightning Flash Occurrence**

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Figures S1 to S3

Introduction

This supporting information is associated with Section 3 in the manuscript. Figures 4 through 6 have been recreated, conditional on only cases where the model prediction is correct. These figures are all very similar to the figures in the manuscript. This is consistent with little difference between SHAP analysis for all prediction cases, and only correct prediction cases.

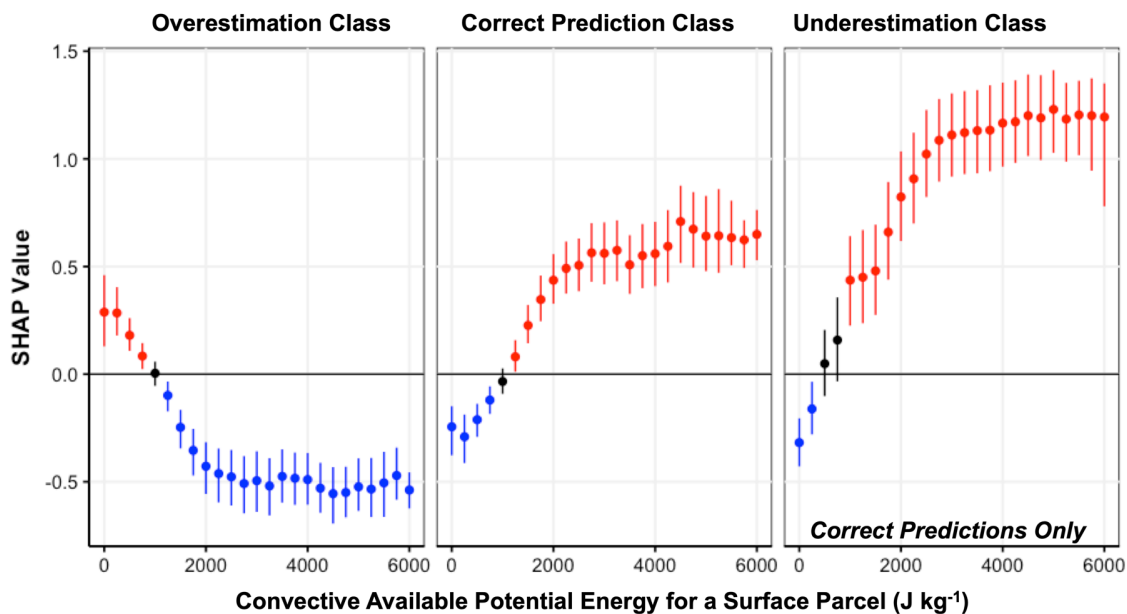


Figure S1. Same as Figure 4 in the main manuscript, but only considering correct predictions.

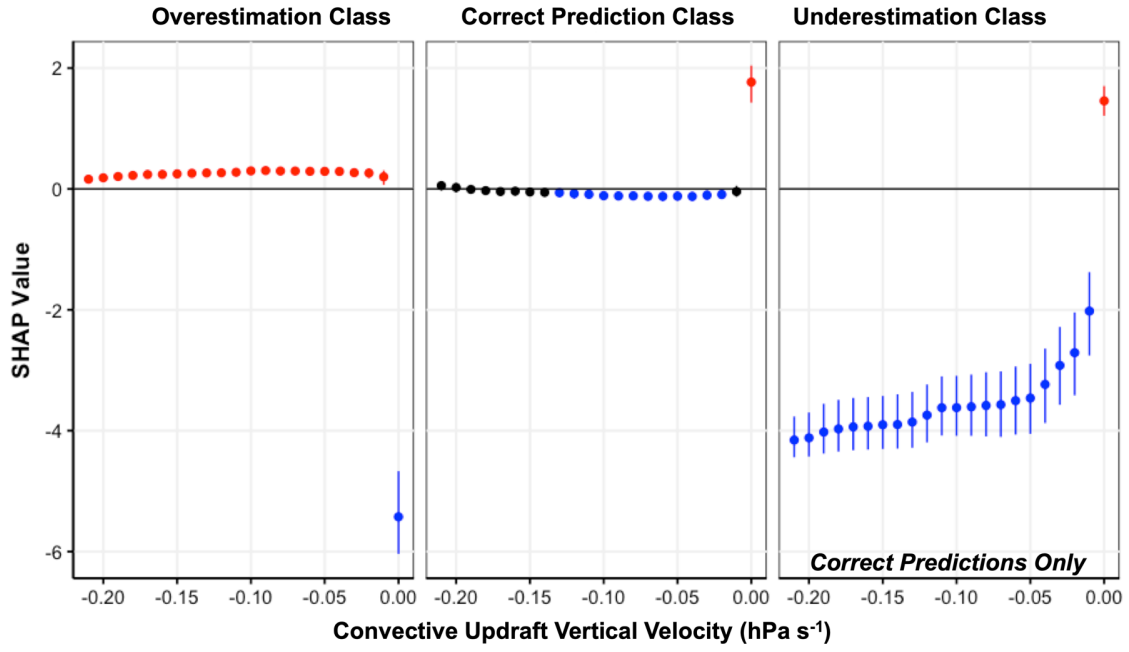


Figure S2. Same as Figure 5 in the main manuscript, but only considering correct predictions.

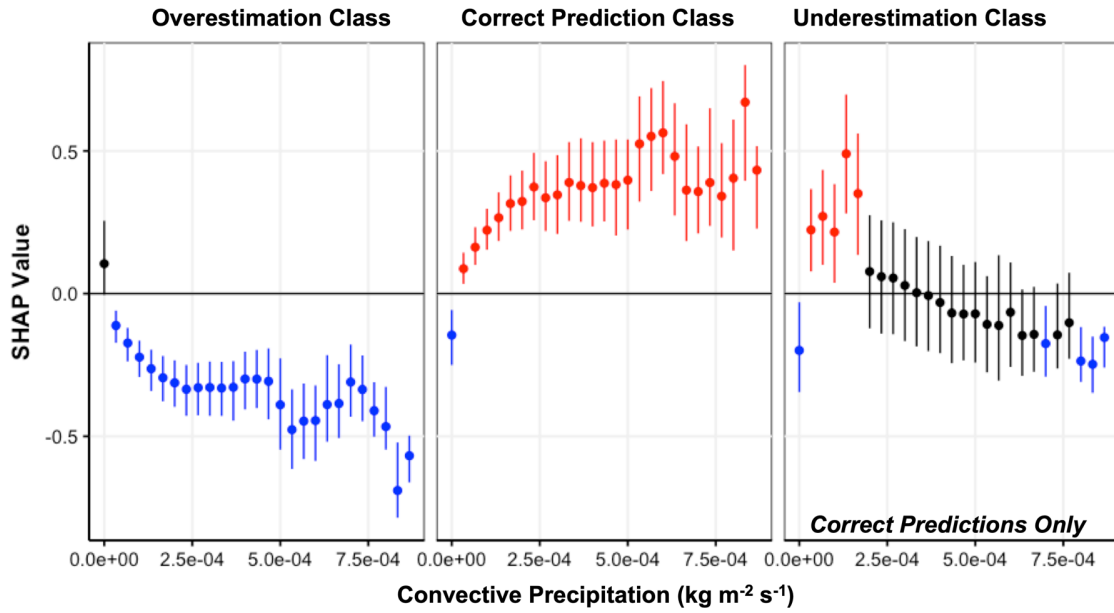


Figure S3. Same as Figure 6 in the main manuscript, but only considering correct predictions.