

## **Response to Comments on the Manuscript:**

**“An optimized semi-empirical physical approach for satellite-based PM<sub>2.5</sub> retrieval: embedding machine learning to simulate complex physical parameters”**

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### **Response to Comments of Reviewer #1:**

#### **Comments:**

The paper presents an optimized ML approach to estimate complex physical parameters using remote sensing data. The ML method and results are described well, and I recommend acceptance.

#### **Response:**

Thank the reviewer for acknowledging our work, we will further explore the combination of atmospheric mechanism and machine learning on the PM<sub>2.5</sub> retrieval methods.