Supporting Information

Enhanced Natural Releases of Mercury in Response to Reduction of Anthropogenic Emissions during the COVID-19 Lockdown by Explainable Machine Learning

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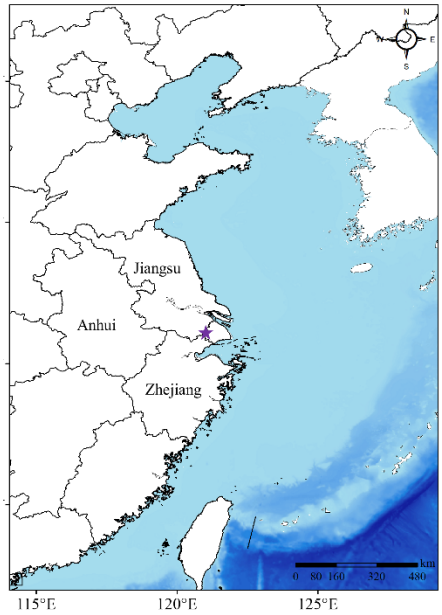

Figure S1. The location of the Dianshan Lake (DSL) site in Shanghai, China (denoted by asterisk in the map)

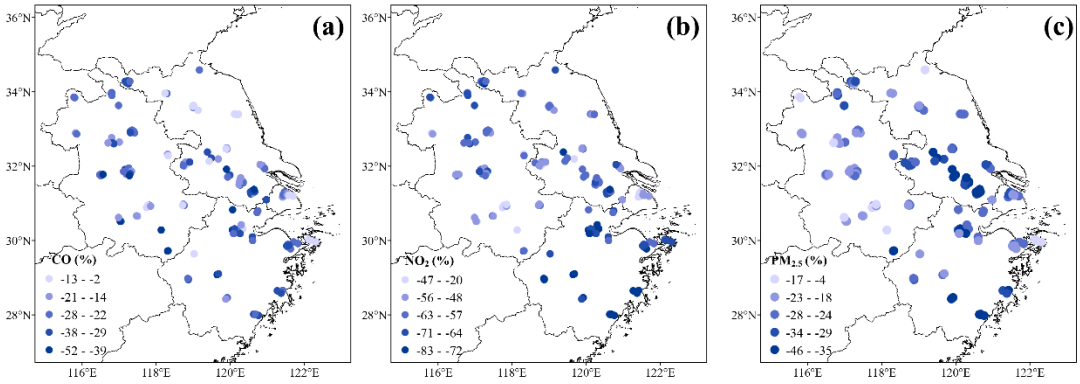

Figure S2. Differences between the average concentrations of (a) CO, (b) NO_2, and (c) $PM_{2.5}$ before and during the COVID-19 lockdown at air quality monitoring stations in the YRD region.

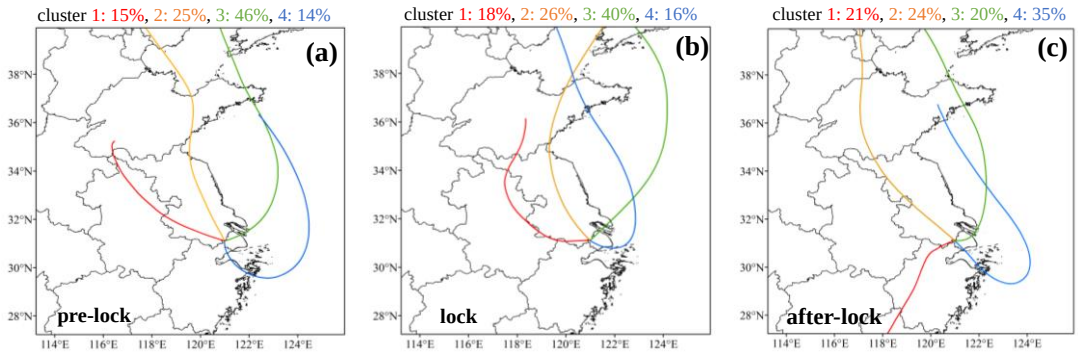

Figure S3. HYSPLIT 3-days backward trajectory cluster analysis at DSL (a) before, (b) during, and (c) after the lockdown.

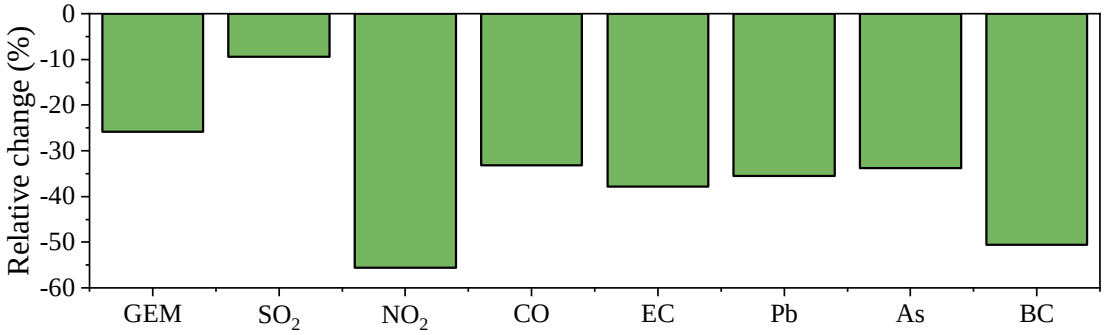

Figure S4. The reduction percentages of GEM, SO_2, NO_2, CO, EC, Pb, As, and BC during the lockdown compared to that before the lockdown.

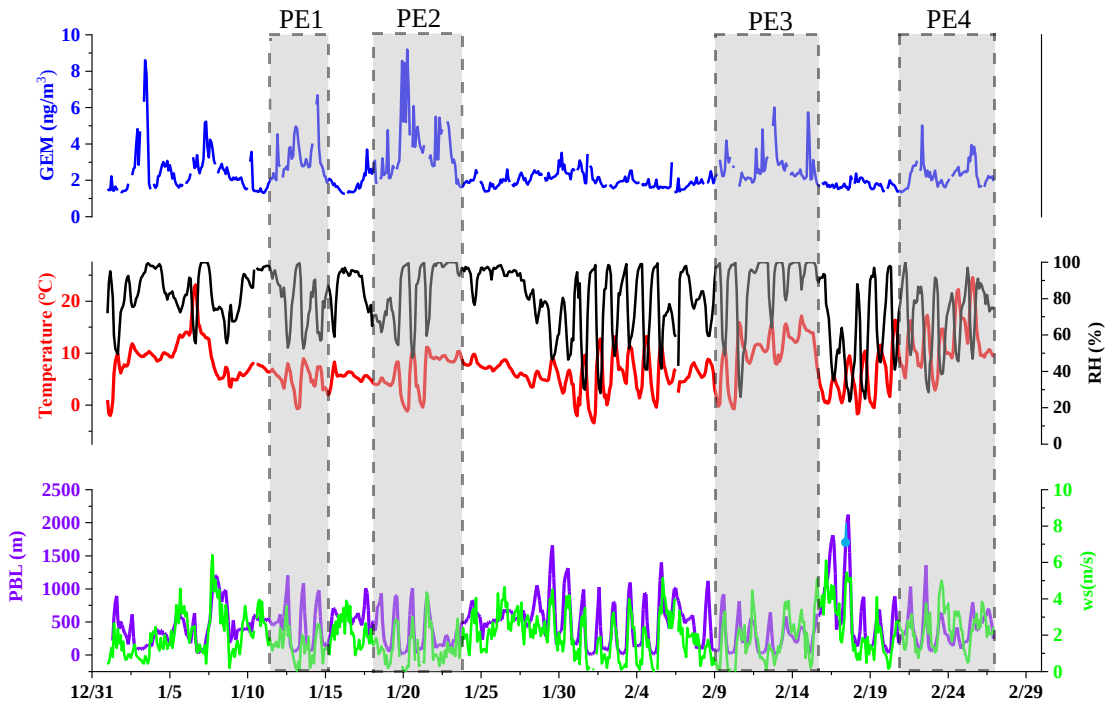

Figure S5. Time series of the observed GEM concentration and meteorological parameters (temperature, relative humidity, PBL height, and wind speed). Four mercury pollution episodes are highlighted by the gray areas.

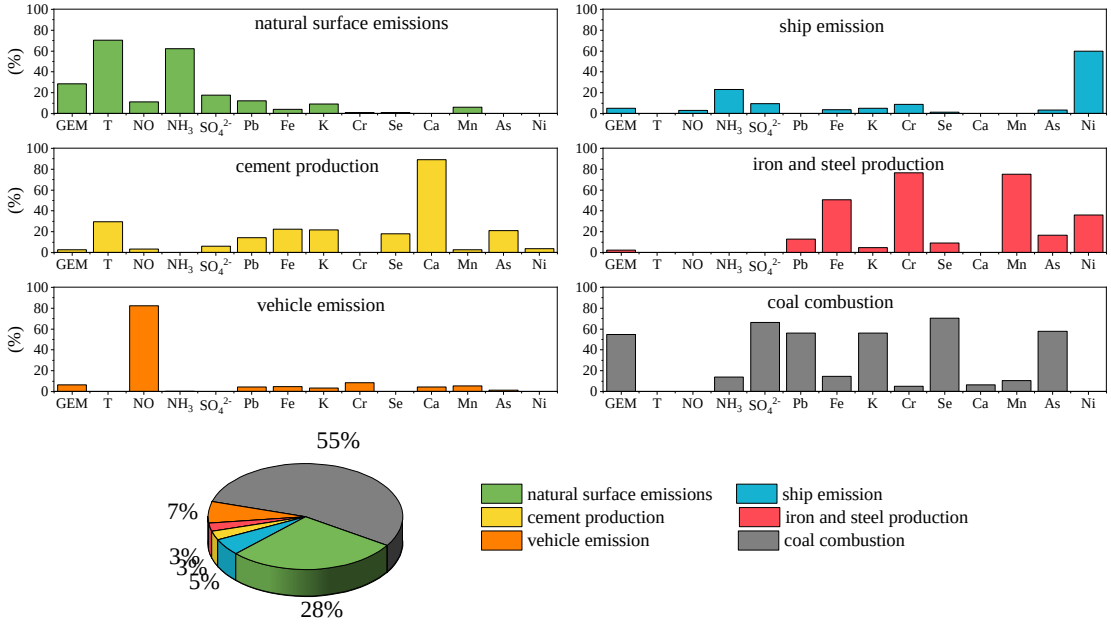

Figure S6. A six - factor source apportionment for GEM based on PMF analysis.

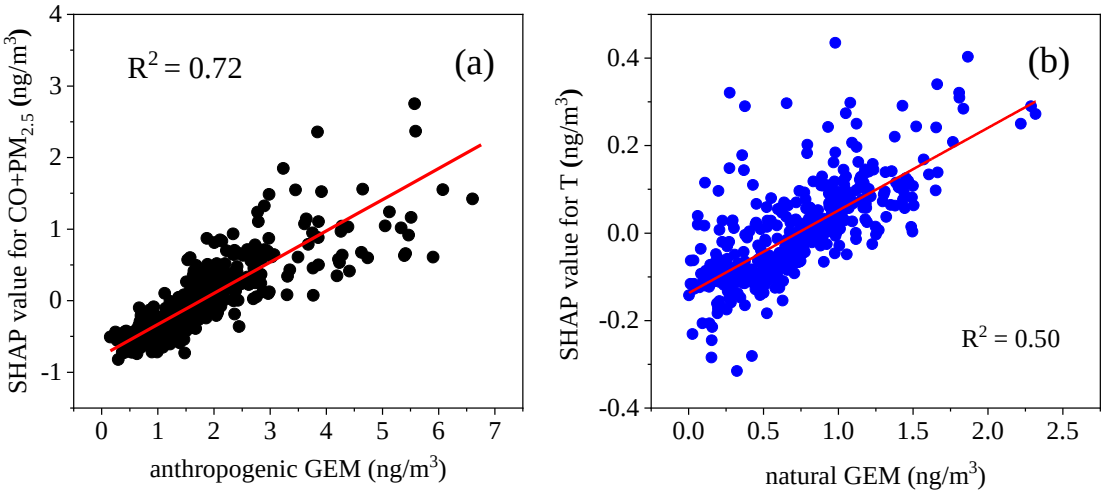

Figure S7. (a) Relationship between the sum of SHAP value for CO and $PM_{2.5}$ with the absolute GEM concentration contributed by anthropogenic sources resolved by PMF model (b) Relationship between SHAP value for temperature with the absolute GEM concentration contributed by natural releases resolved by PMF model