



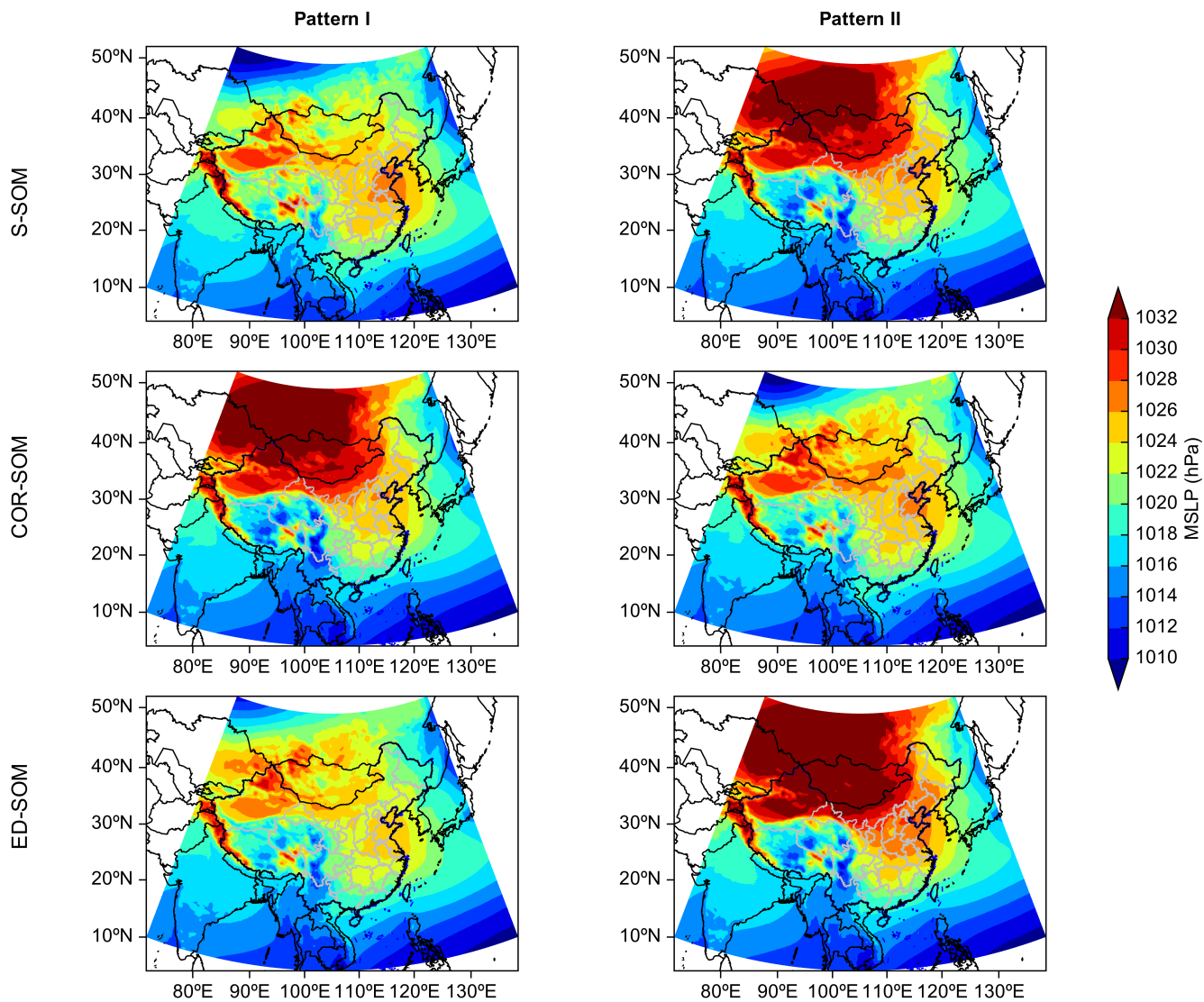
*Supplement of*

## **Impact of weather patterns and meteorological factors on PM<sub>2.5</sub> and O<sub>3</sub> responses to the COVID-19 lockdown in China**

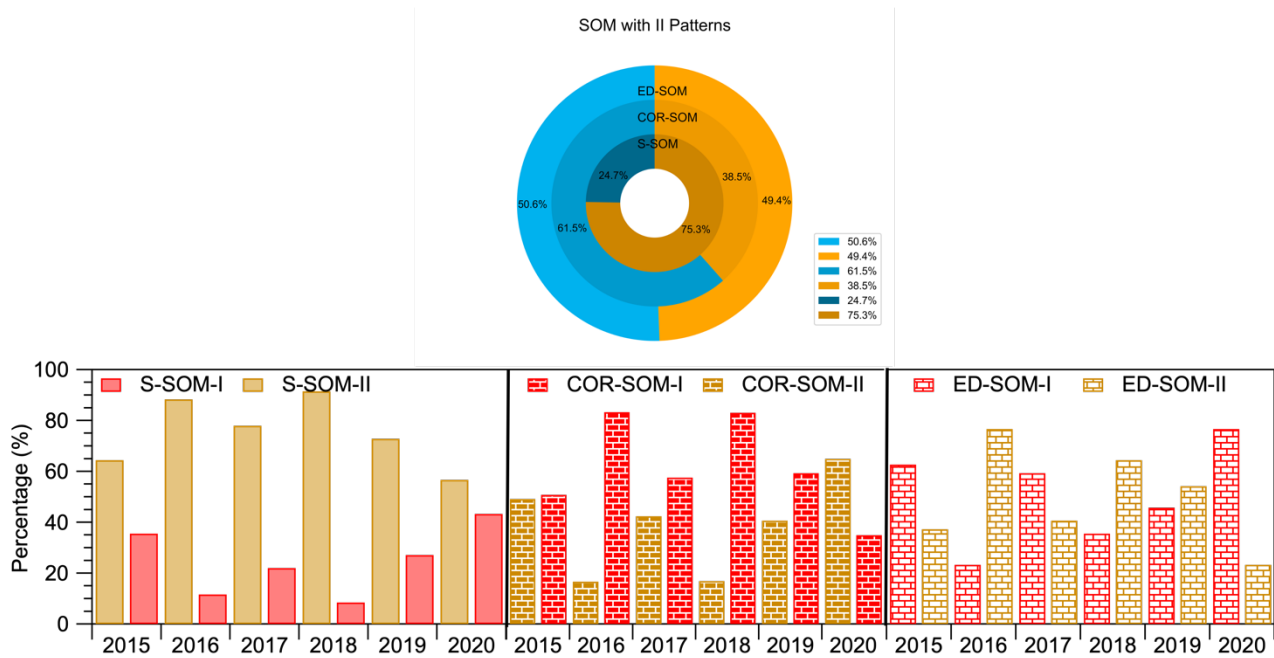
**Fuzhen Shen et al.**

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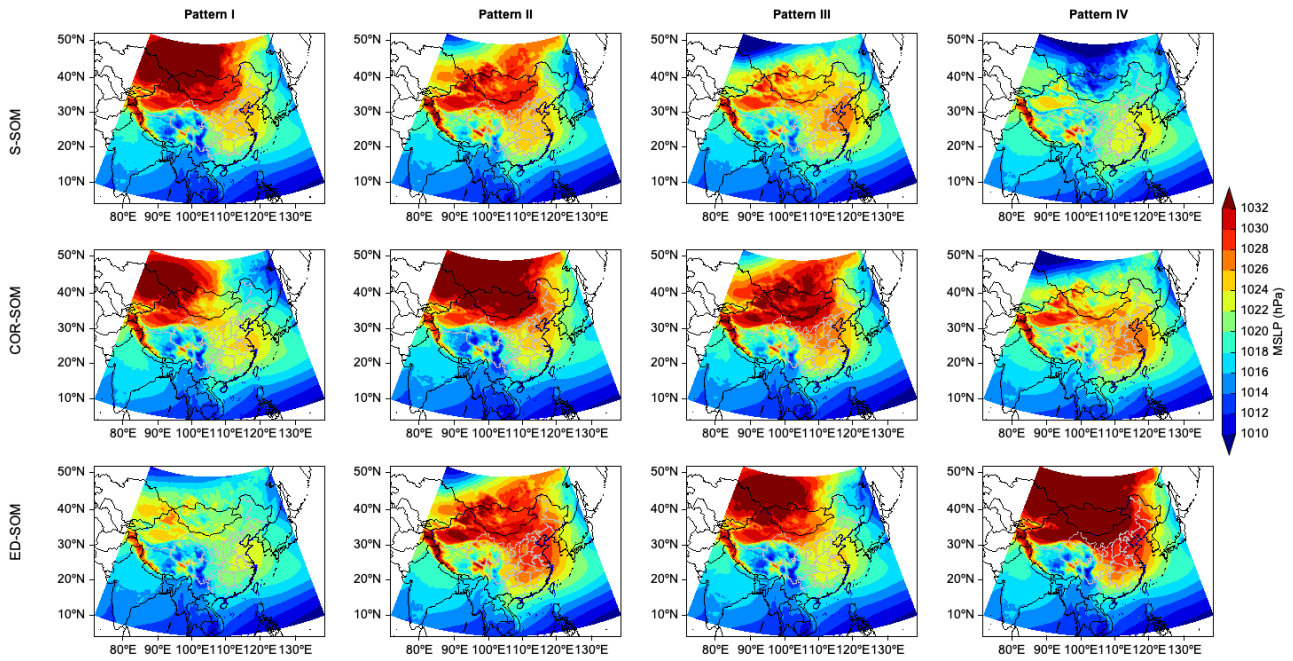
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15 **Figure S1: Spatial distributions of two weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM over 2015-2020, respectively.**

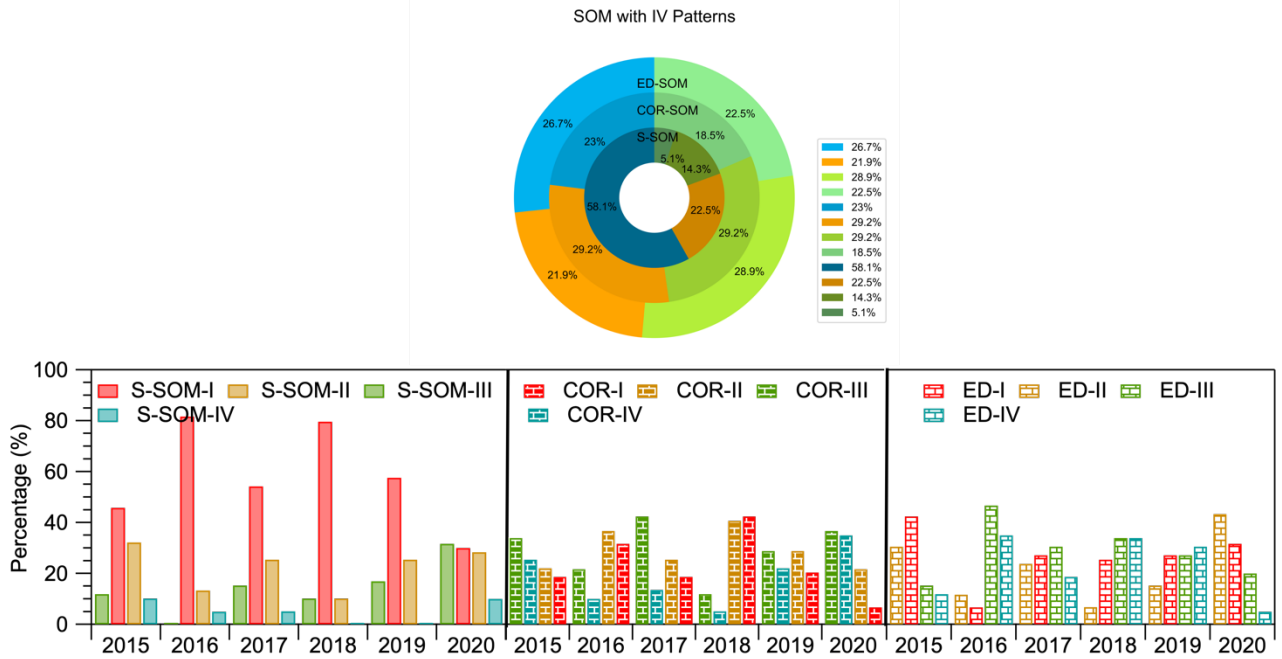


**Figure S2: Cluster size distributions of two weather patterns identified by S-SOM (inner ring), COR-SOM (middle ring) and ED-SOM (outer ring) over the years of 2015-2020 and days in each year (bar plot).**

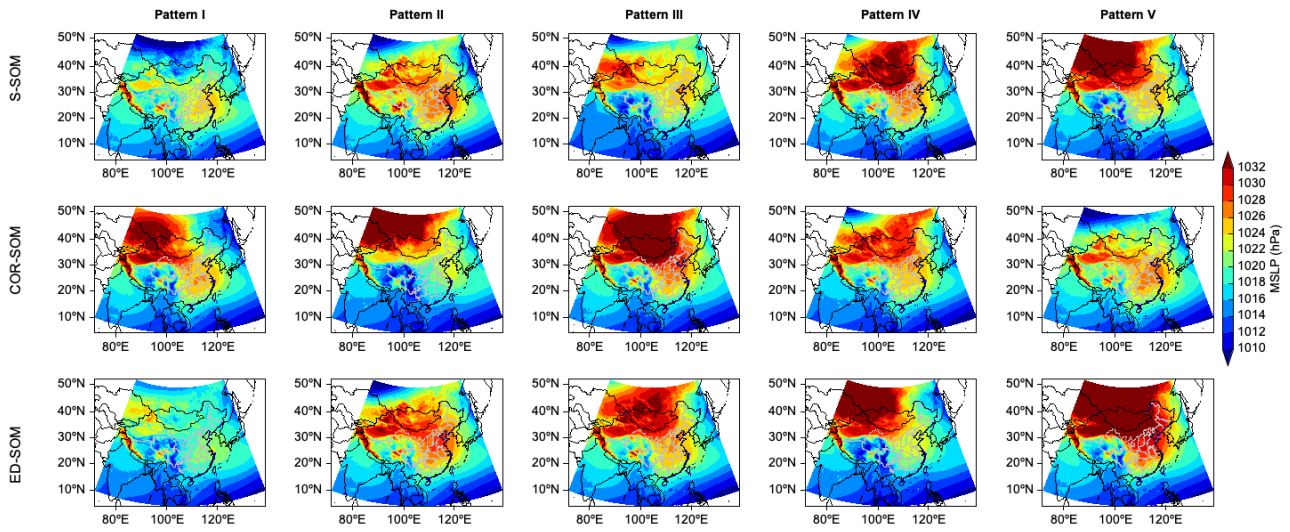


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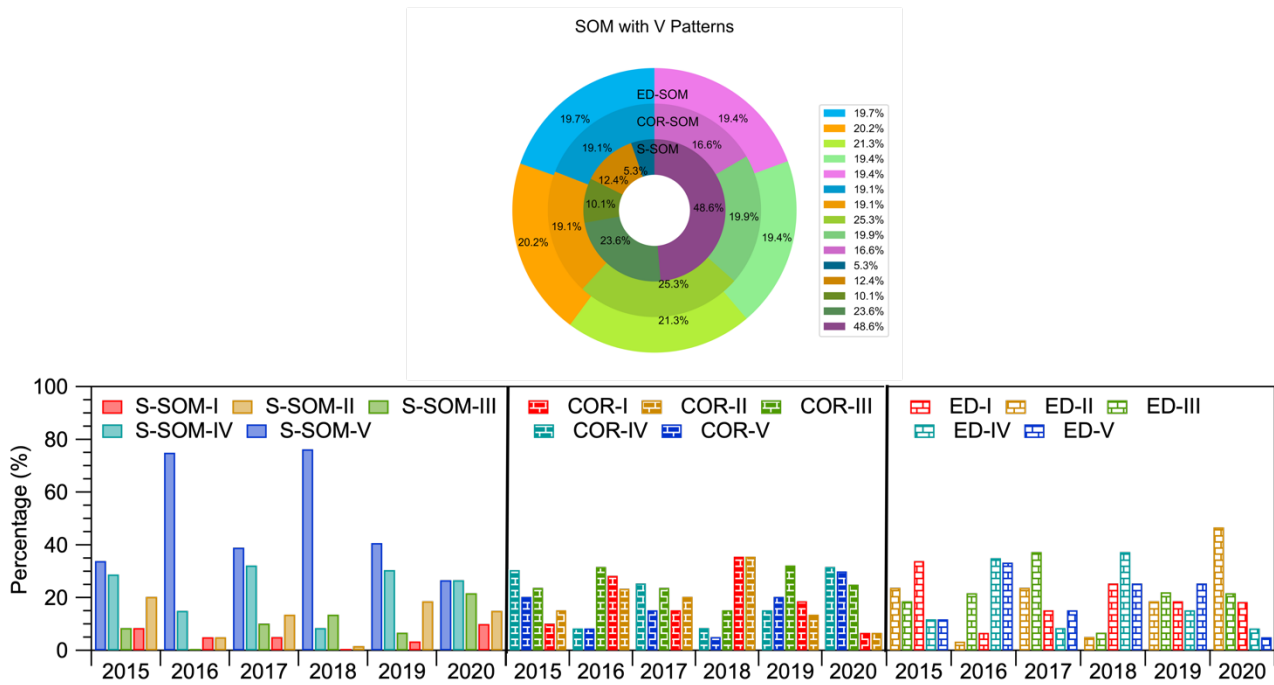
**Figure S3: Spatial distributions of four weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM over 2015-2020, respectively.**



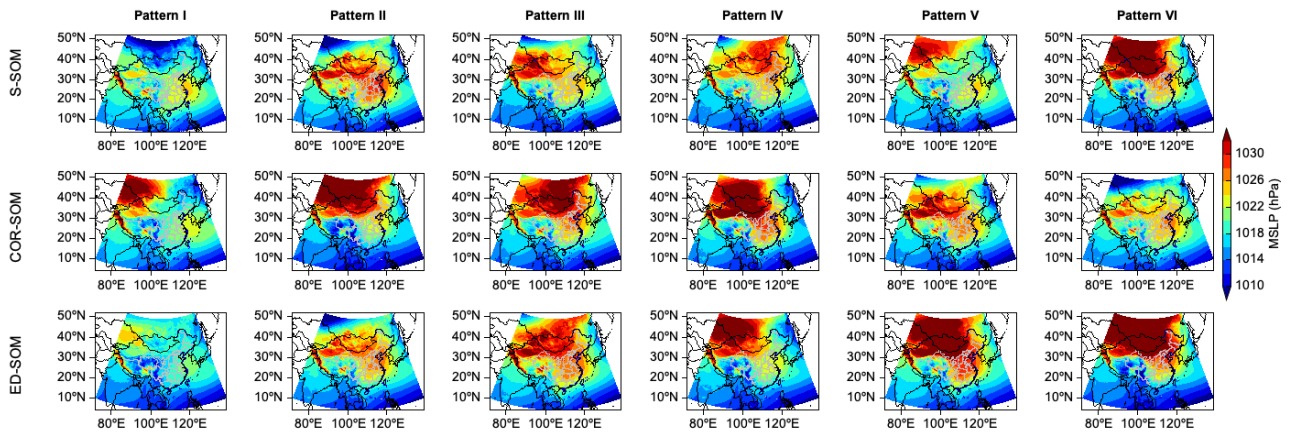
25 **Figure S4: Cluster size distributions of four weather patterns identified by S-SOM (inner ring), COR-SOM (middle ring) and ED-SOM (outer ring) over the years of 2015-2020 and days in each year (bar plot).**



30 **Figure S5: Spatial distributions of five weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM over 2015-2020, respectively.**



**Figure S6: Cluster size distributions of five weather patterns identified by S-SOM (inner ring), COR-SOM (middle ring) and ED-SOM (outer ring) over the years of 2015-2020 and days in each year (bar plot).**

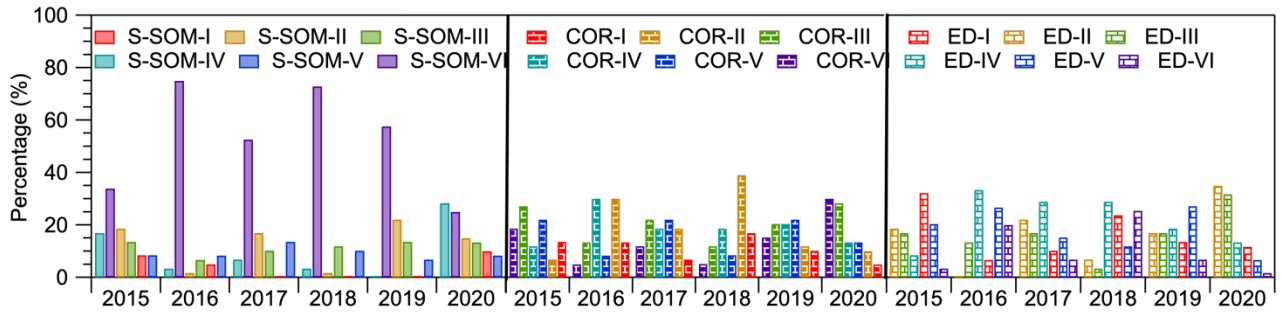
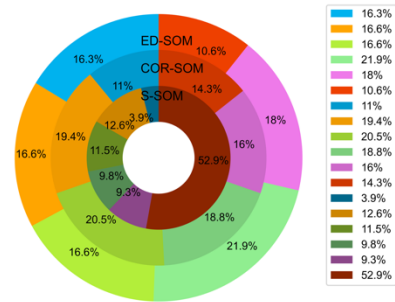


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**Figure S7: Spatial distributions of six weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM over 2015-2020, respectively.**

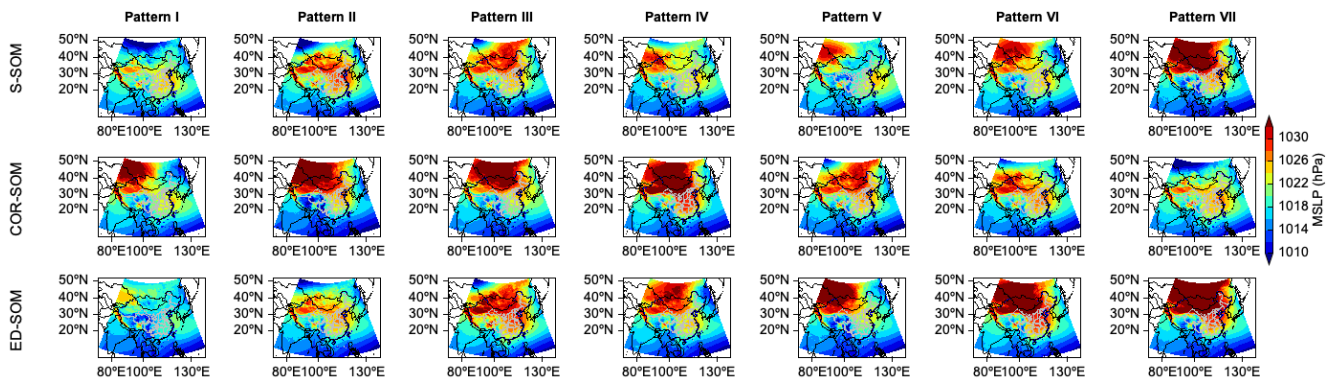


SOM with VI Patterns



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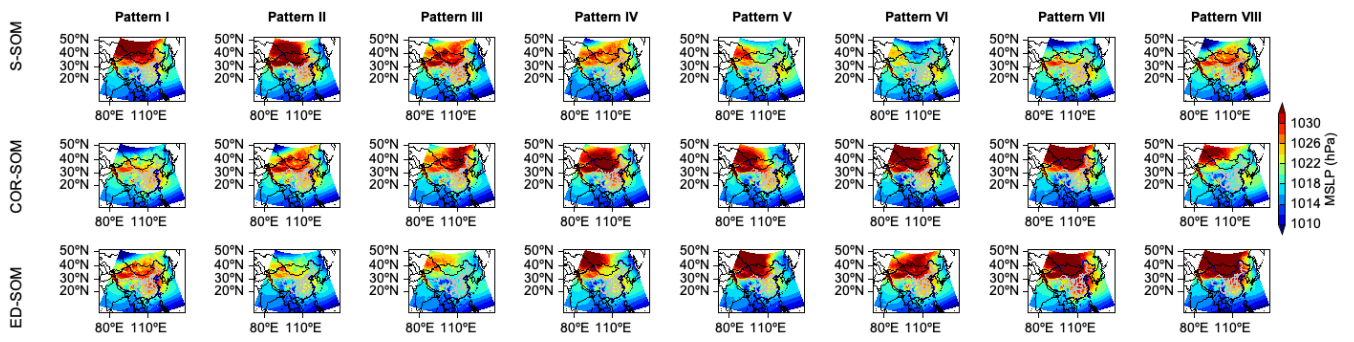
Figure S8: Cluster size distributions of six weather patterns identified by S-SOM (inner ring), COR-SOM (middle ring) and ED-SOM (outer ring) over the years of 2015-2020 and days in each year (bar plot).



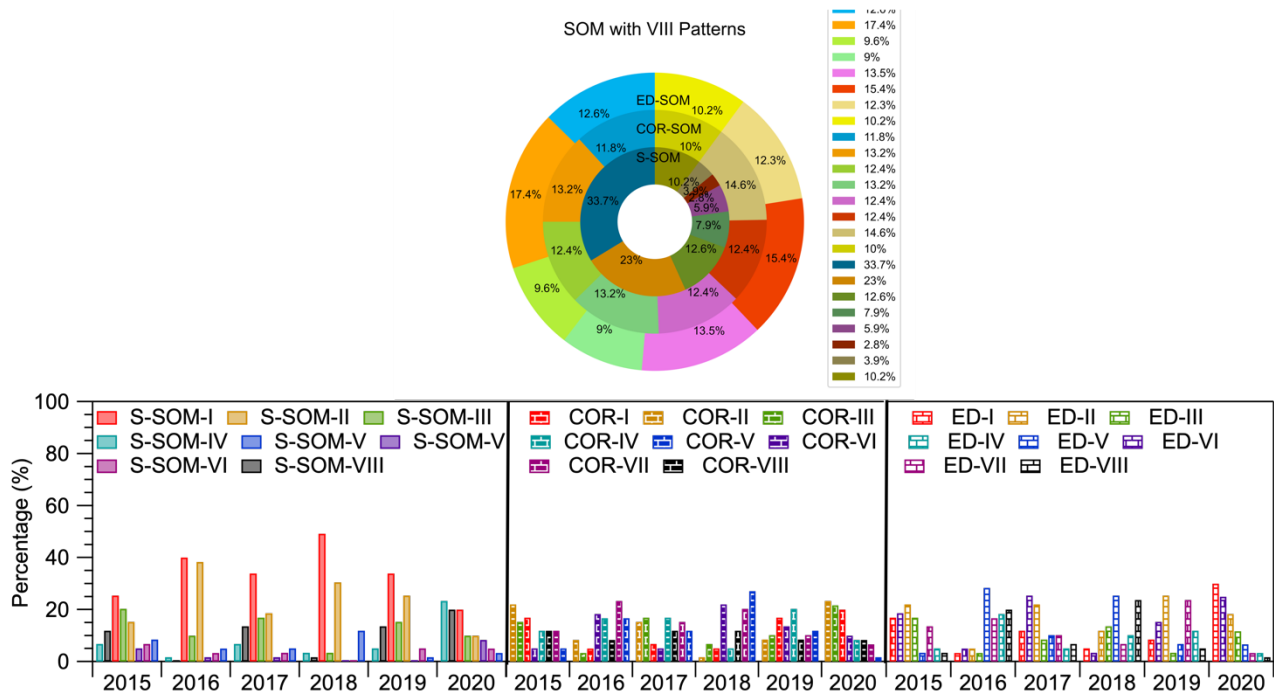
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**Figure S9: Spatial distributions of seven weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM over 2015-2020, respectively.**





55 **Figure S11: Spatial distributions of eight weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM over 2015-2020, respectively.**



**Figure S12: Cluster size distributions of eight weather patterns identified by S-SOM (inner ring), COR-SOM (middle ring) and ED-SOM (outer ring) over the years of 2015-2020 and days in each year (bar plot).**

### VII Weather Patterns 2015-2020

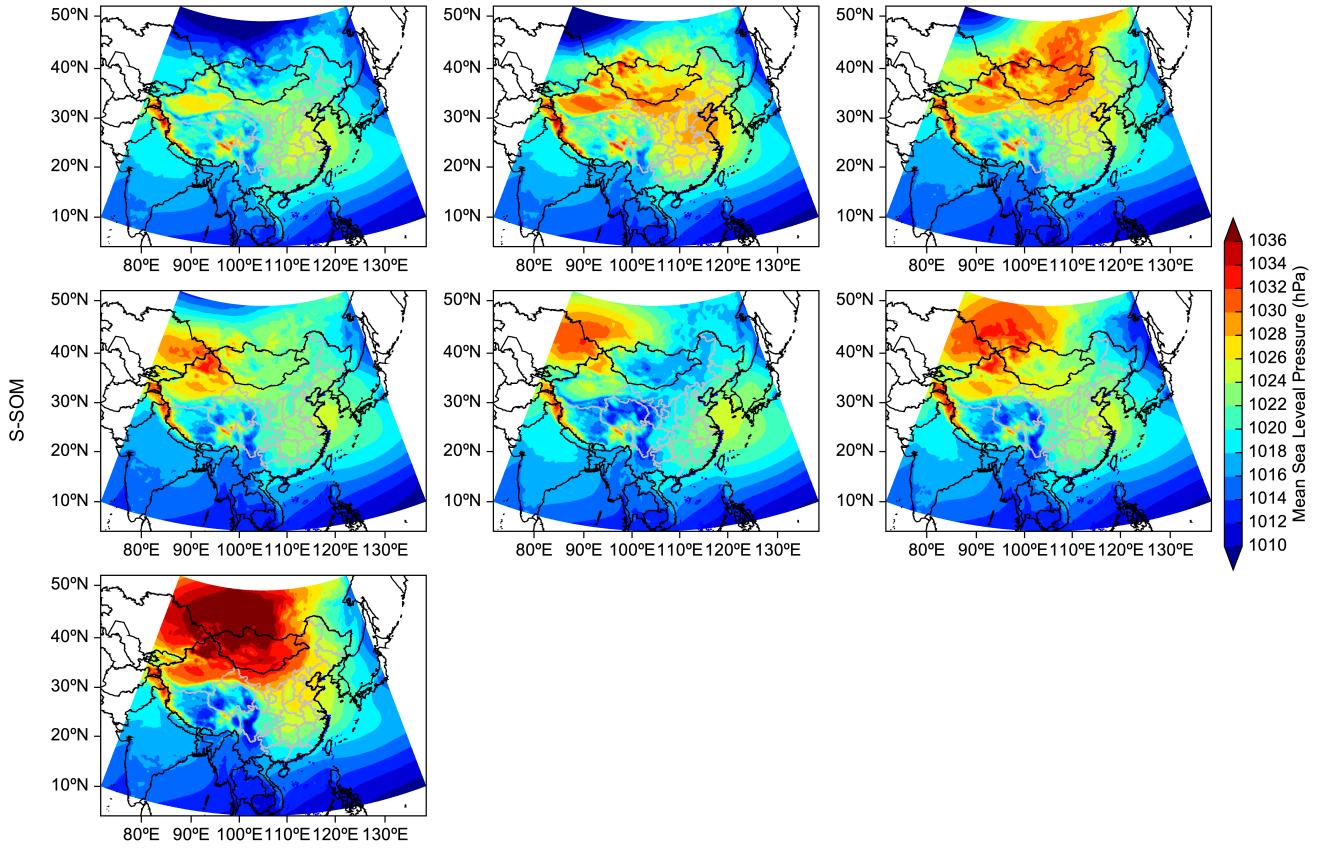
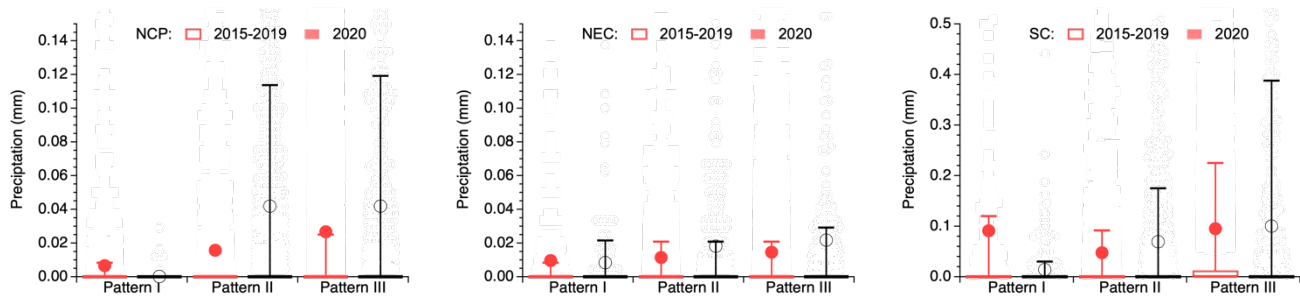


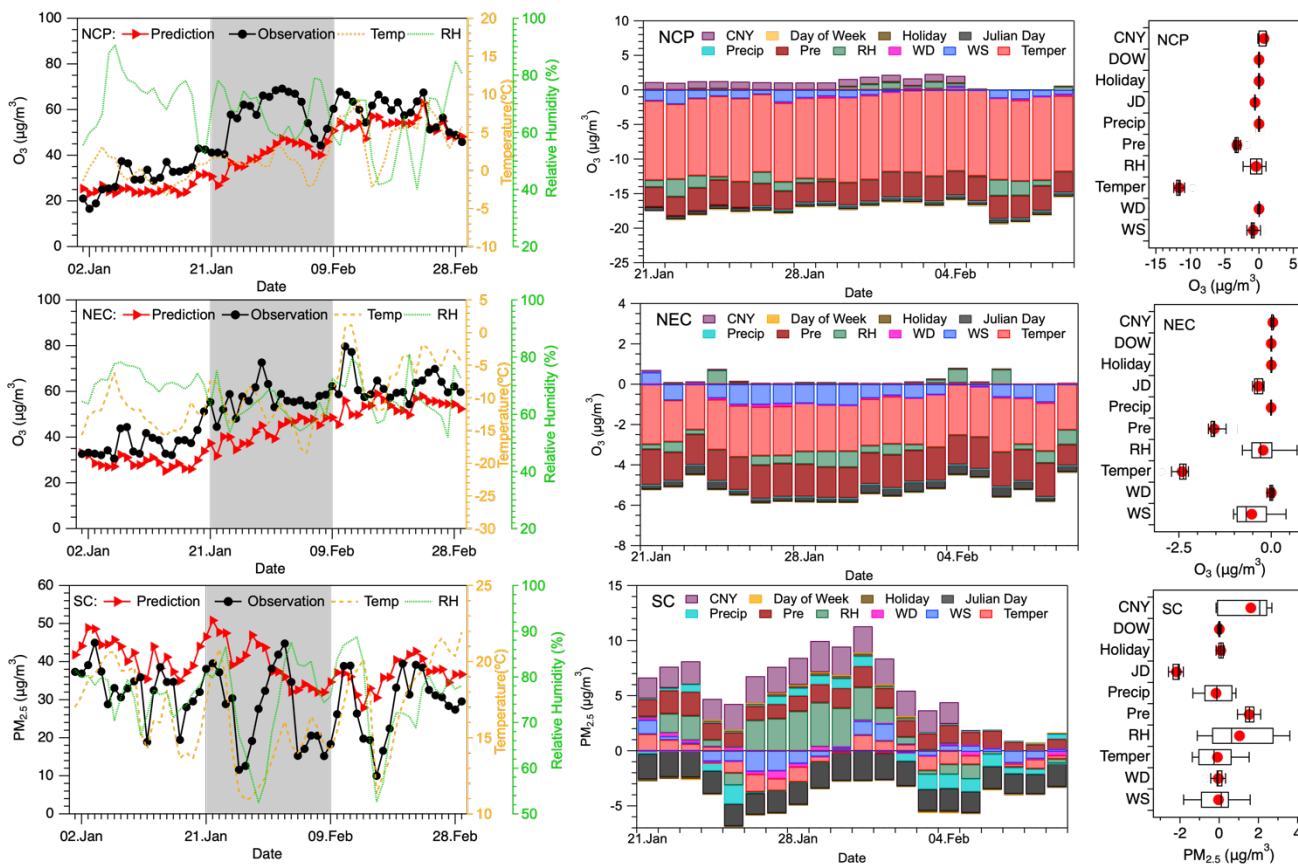
Figure S13: Spatial distributions of seven weather patterns for MSLP (Mean Sea Level Pressure) identified over 2015-2020.



65 **Figure S14: Comparisons of Precipitation between days in 2020 (red rings and solid whisker-box) and in 2015-2019 (black rings and hollow whisker-box) in three weather patterns in NCP, NEC, and SC respectively.**

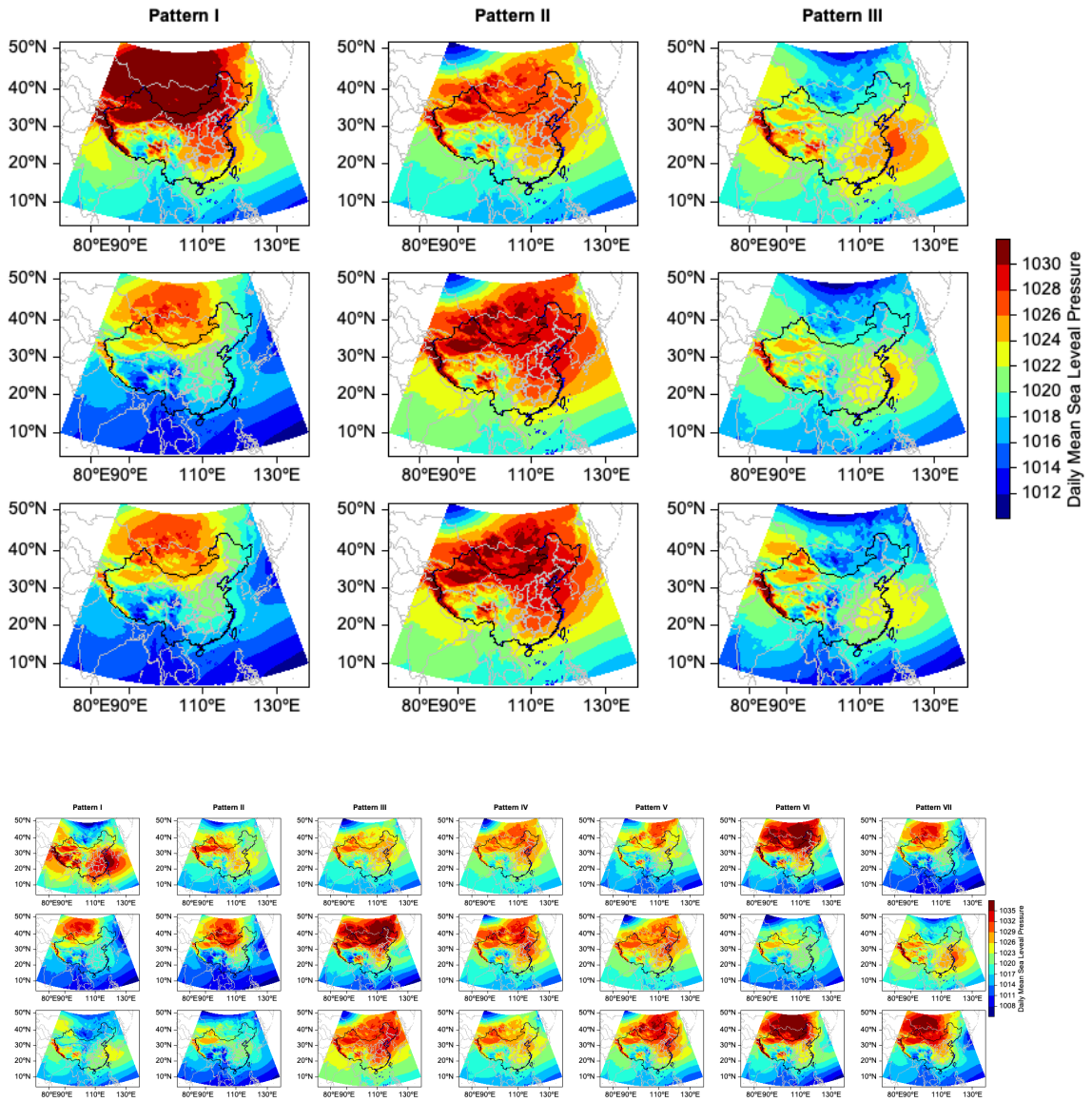






**Figure S16: Time series comparisons between observations (black dot line) and predictions (red triangle line) combined with the contributions from the input variables (colourful bar) to the O<sub>3</sub> and PM<sub>2.5</sub> change in NCP, NEC, and SC respectively. Note that the whisker-box plots represent the mean importance of the input variables during the prediction in NCP, NEC, and respectively.**

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80 **Figure S17: Spatial distributions of 3 and 7 weather patterns for MSLP (Mean Sea Level Pressure) identified by S-SOM, COR-SOM, and ED-SOM in 2020, respectively.**