



Supplement of

Influence of covariance of aerosol and meteorology on co-located precipitating and non-precipitating clouds over the Indo-Gangetic Plain

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Table 1S. Decadal percentage variations in average values of AOD over the eastern part of IGP

| | Kolkata | Dhaka | Patna |
|------------------------|---------|-------|-------|
| Total number of counts | 1976 | 2018 | 2629 |
| Decadal change in AOD | 18% | 22.6% | 23.3% |

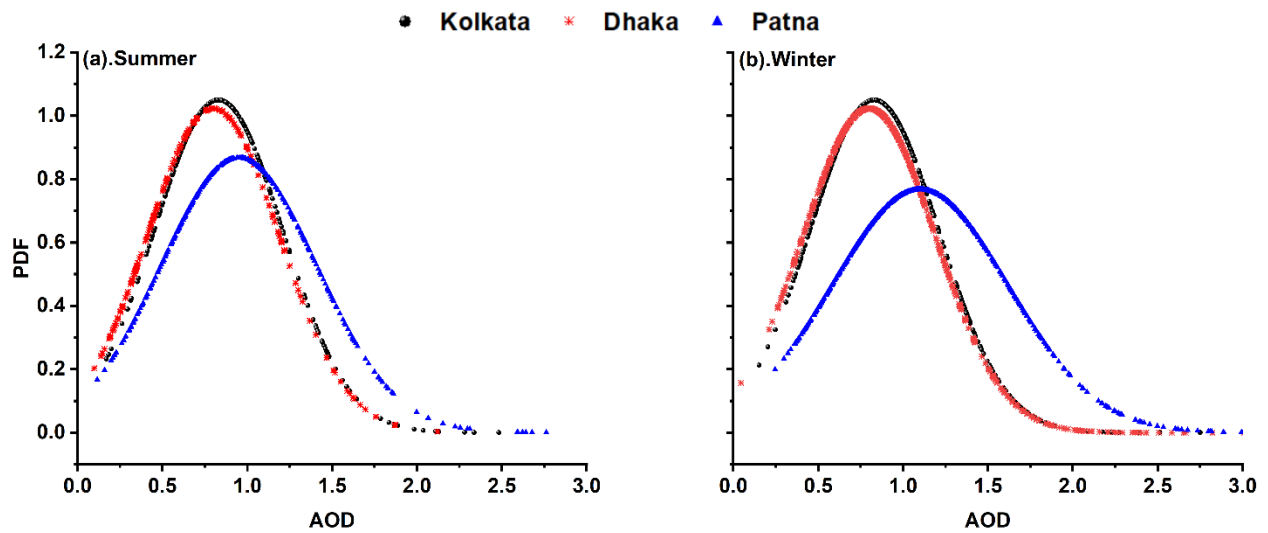


Figure 1S. The probability density function (PDF) of AOD over study sites is shown (a) and (b) for the summer and winter seasons respectively.

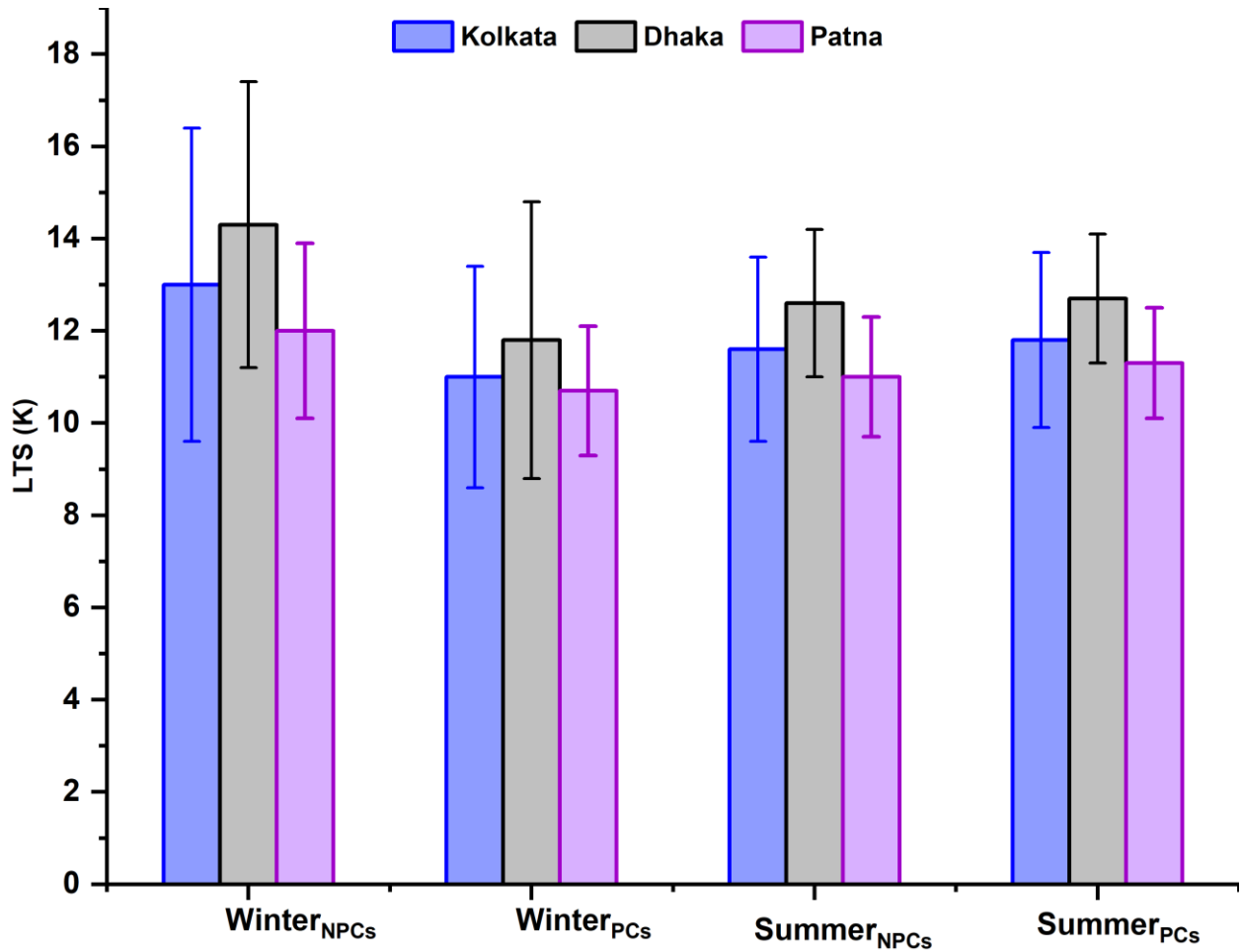


Figure 2S. Variations in lower tropospheric stability (LTS) over all study sites for PCs and NPCs in winter and summer seasons, the error bars show the standard deviation (SD) values

Table 2S. Meteorological parameters for PCs(NPCs) in summer and winter seasons. Maximum values are for both types of clouds shown in bold and minimum values are indicated in italics.

| | Winter Season | | | Summer Season | | |
|----------------|----------------------|--------------------|----------------------|----------------------|--------------------|----------------------|
| | T ₈₅₀ (K) | RH% | ω (m/s) | T ₈₅₀ (K) | RH% | ω (m/s) |
| Kolkata | 286.7 (286) | <i>47.4 (39.9)</i> | <i>-0.002 (0.08)</i> | 295.5 (295) | <i>74.8 (72.8)</i> | <i>-0.15 (-0.14)</i> |
| Dhaka | <i>285.8 (285.3)</i> | <i>48.5 (49.2)</i> | 0.04 (0.08) | <i>294.5 (294.4)</i> | <i>76.5 (74.6)</i> | <i>-0.13 (-0.10)</i> |
| Patna | <i>284.7 (284.3)</i> | 64.6 (55.8) | <i>-0.06 (0.05)</i> | 295.3 (297.3) | 88.8 (83.5) | -0.19 (-0.17) |

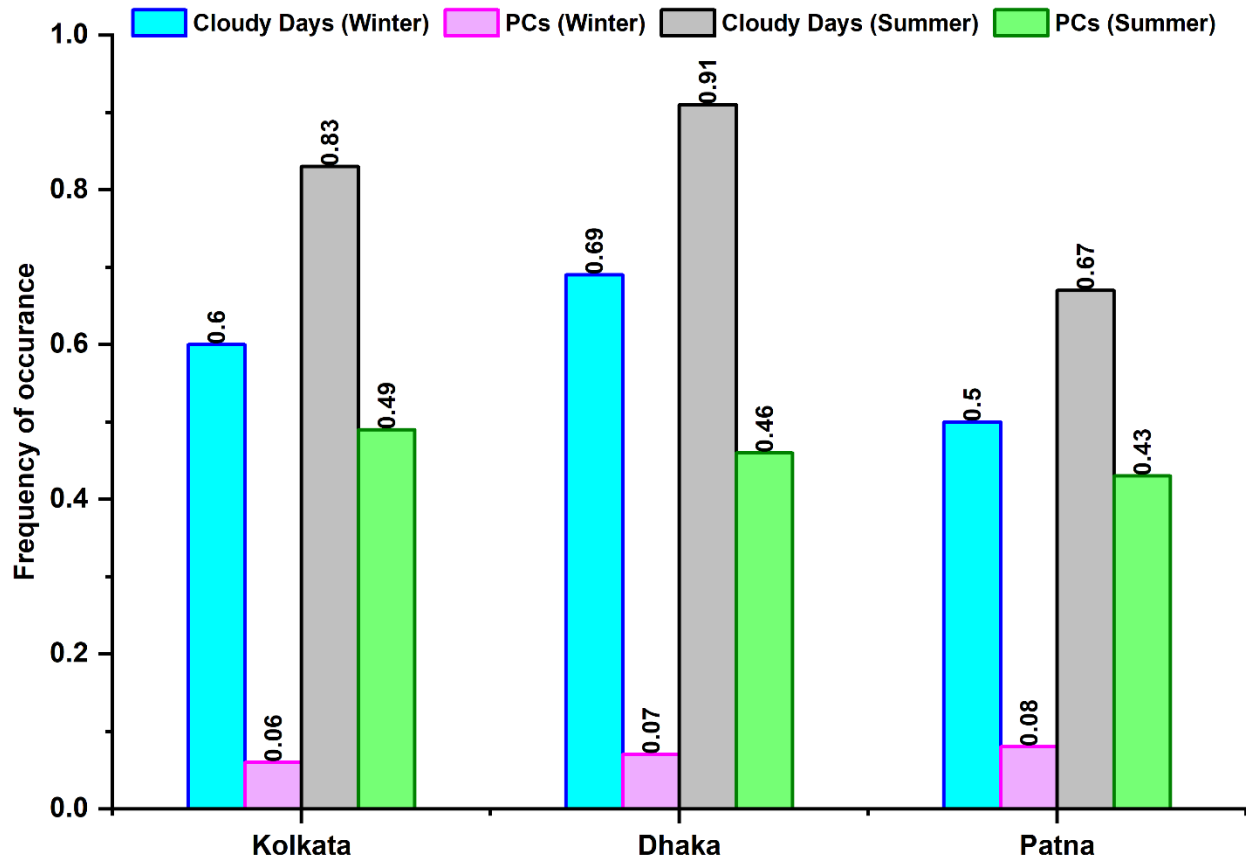


Figure 3S. The frequency of occurrence of total cloudy days (including PCs and NPCs) and only PCs is shown for both winter and summer seasons.

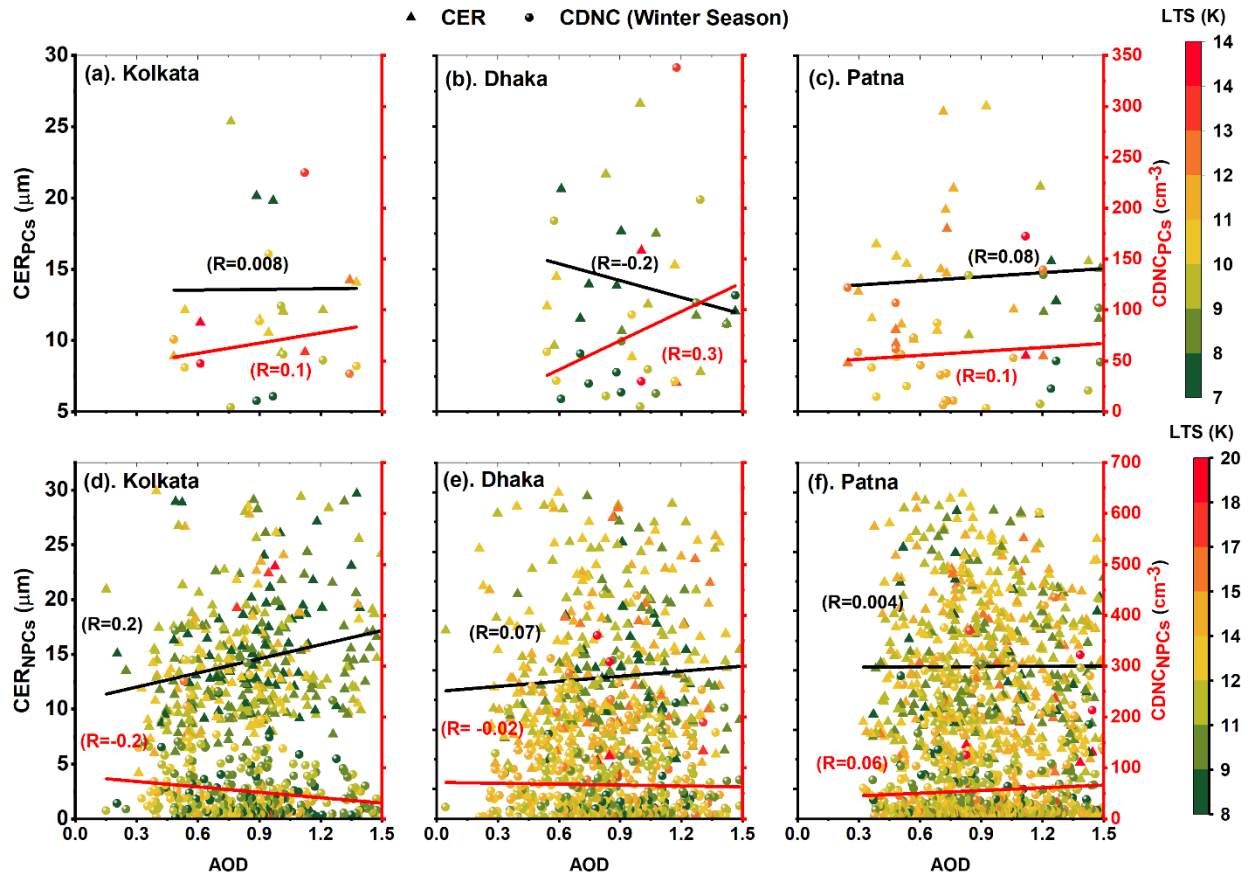


Figure 4S. AOD-CER and AOD-CDNC correlation coefficient for PCs and NPCs over all study areas in the winter season.

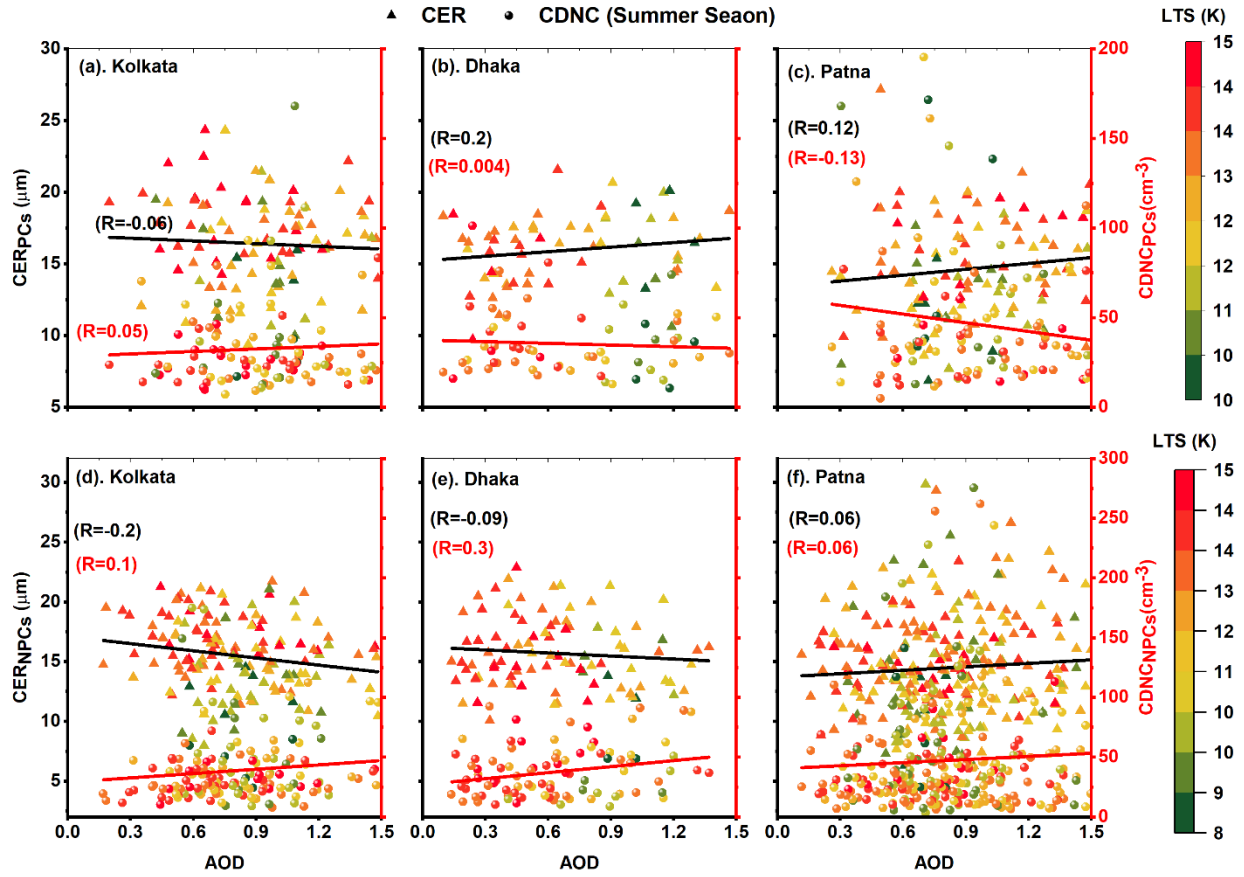


Figure 5S. Same as Figure 4S but in the summer season.

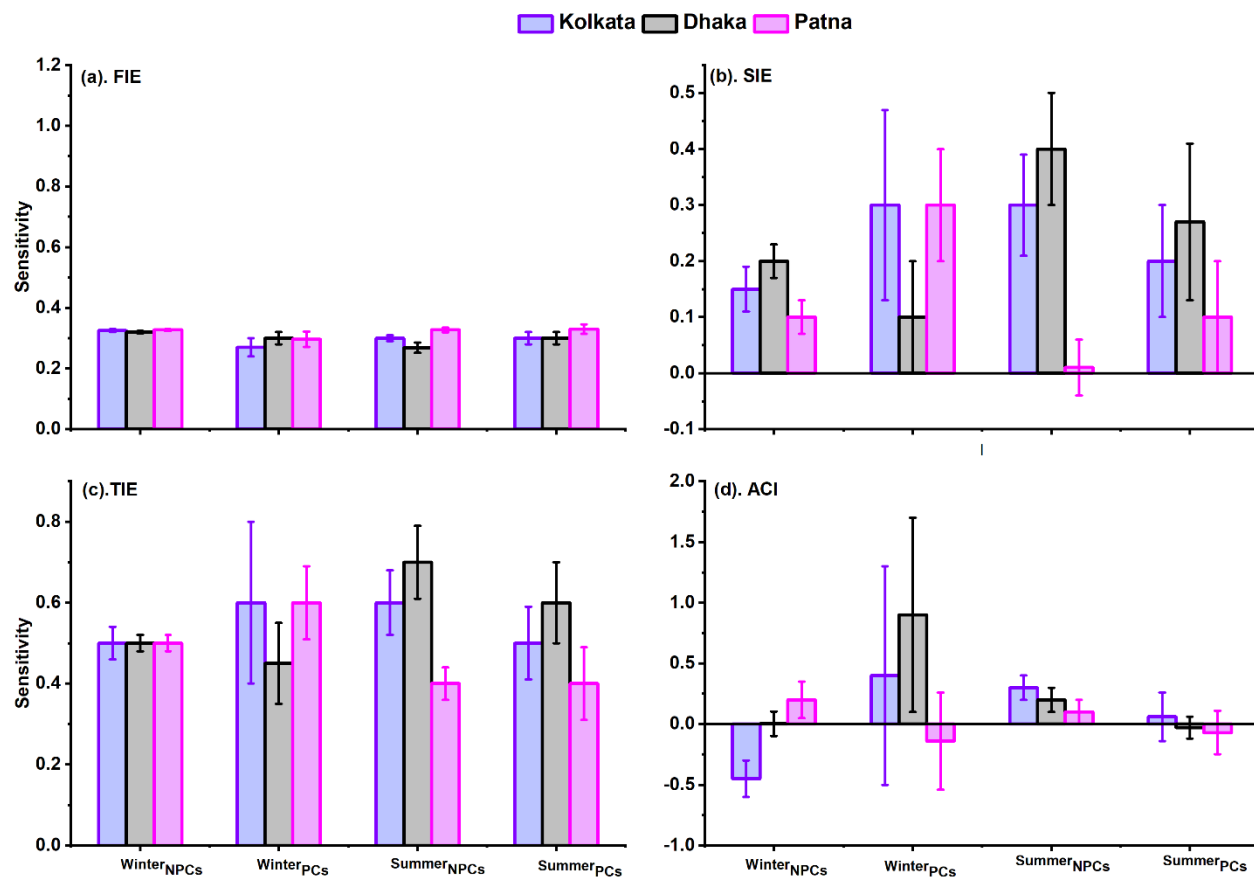


Figure 6S. The sensitivity matrices estimated for aerosol-cloud relationship using CDNC are shown in (a) FIE, (b) SIE, (c) TIE, and (d) ACI.

