1   Supporting Information for

2   **Large Ozone Intrusions during Sudden Stratospheric Warmings Enhance**

3   **Ozone Radiative Forcing over South Asia**

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13   **Content of this file:**

14   Supplementary Figures S1-S6

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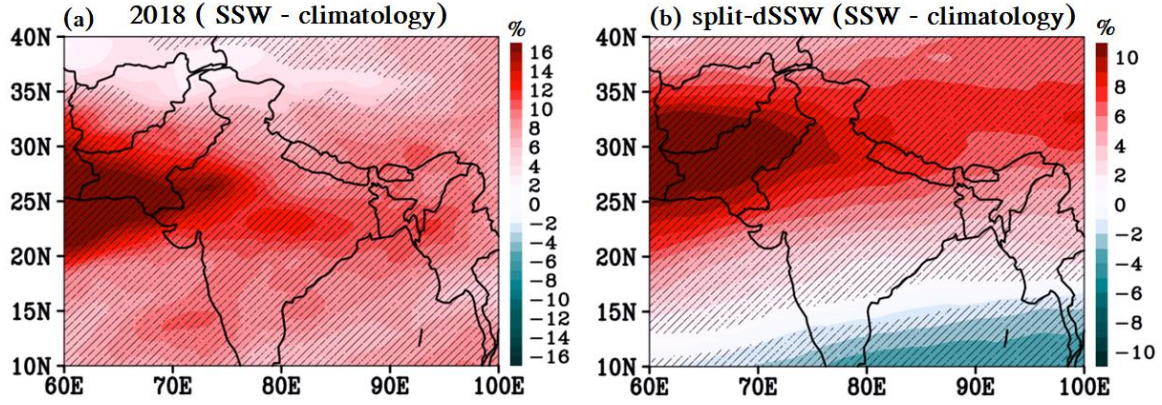
Figure S1. Composite map of ERA5 ozone anomalies obtained from climatology (1962-2018) in the UTLS (250–50 hPa) over the South Asian region, averaged from ± 30 days around the onset for the 2018 split-dSSW event, (b) all split-dSSWs (12 events) as listed in Table-1. Hatched lines in Figs. a-d indicates a region of 95% confidence level based on the student's t-test. (Figure created using the COLA/GrADS software).
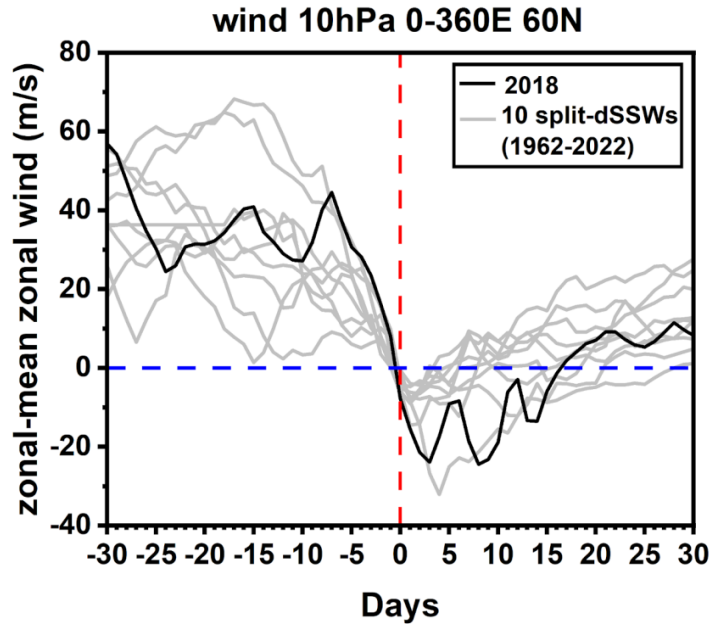
Figure S2. Temporal evolutions of the zonal-mean zonal wind at 60° N and 10 hPa, spanning 30 days before and after the onset dates of all downward propagating split SSW events during 1962-2018. The black line represents the 2018 SSW event. The vertical red dashed line indicates the onset day of the SSW events (Figure created using the Origin, OriginLab, Northampton, MA).
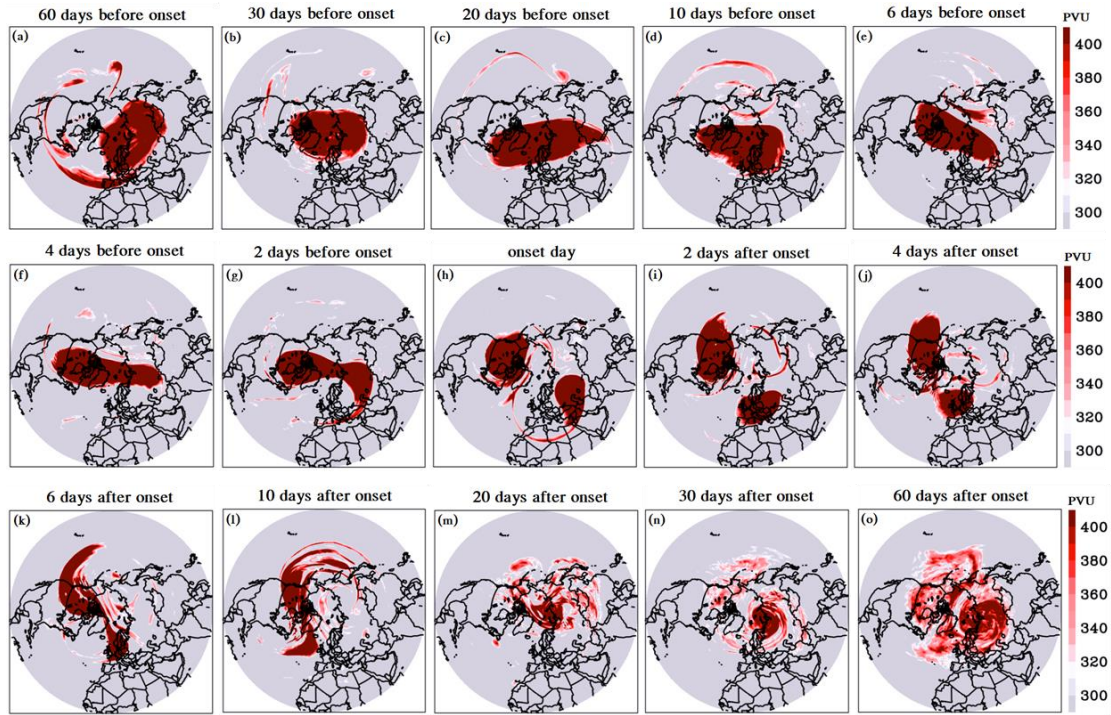
Figure S3. Time slice of the spatial distribution of potential vorticity (PV) at 10 hPa from 60 days before to 60 days after the onset of the 2018 split-dSSW event (Figure created using the COLA/GrADS software).
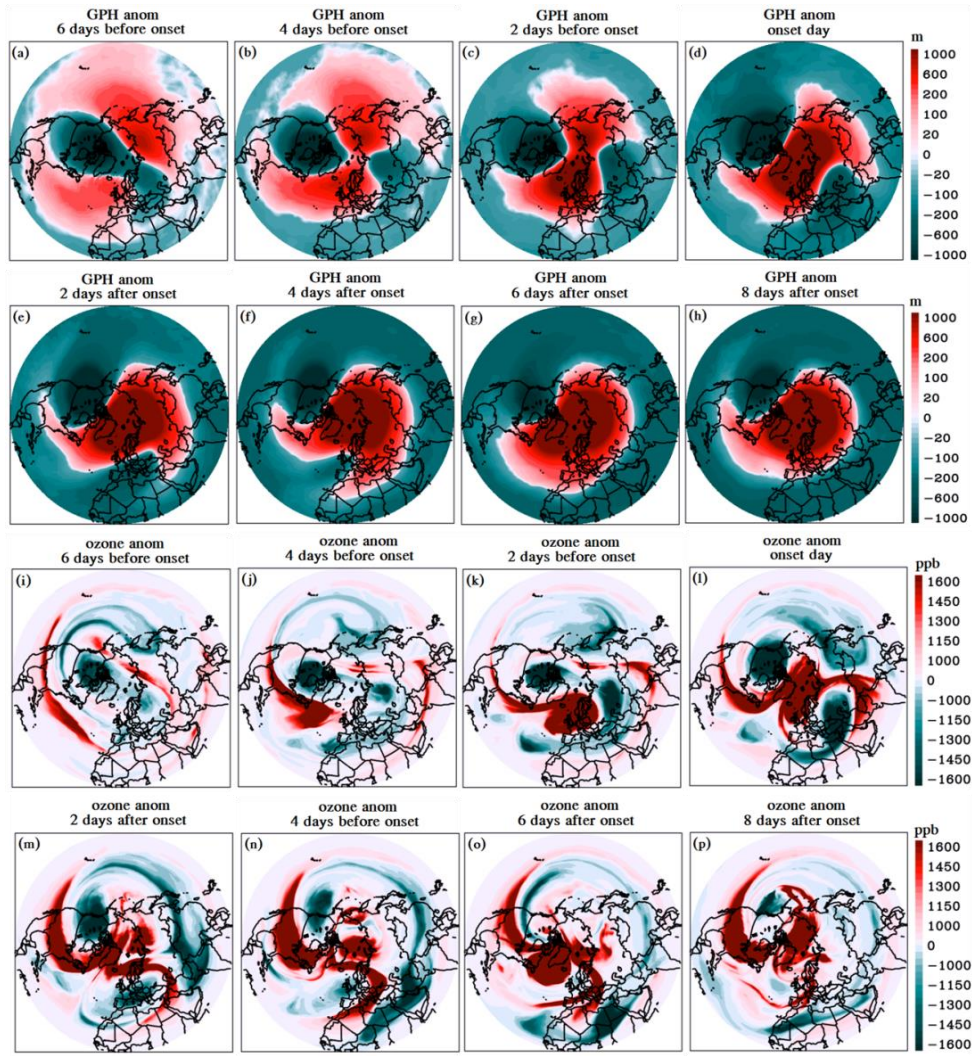
Figure S4. Time slice of the spatial distribution of (a-h) geopotential height (GPH) anomaly, and (i-p) ozone anomaly at 10 hPa from 6 days before to 6 days after the onset of the 2018 split-dSSW event, shown at 2-day intervals (Figure created using the COLA/GrADS software).
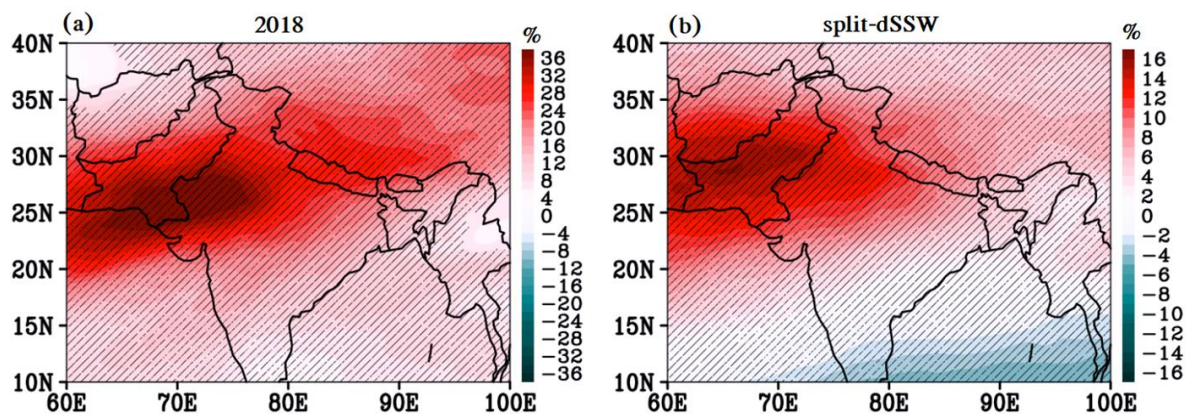
Figure S5. Composite map of ERA5 ozone anomalies in the UTLS (250–50 hPa) over the South Asian region, averaged from 5 days before to 15 days after the onset for (a) the 2018 split-dSSW event, (b) all split-dSSWs (12 events) as listed in Table-1. Hatched lines in Figs. a-d indicates a region of 95% confidence level based on the student's t-test. (Figure created using the COLA/GrADS software).
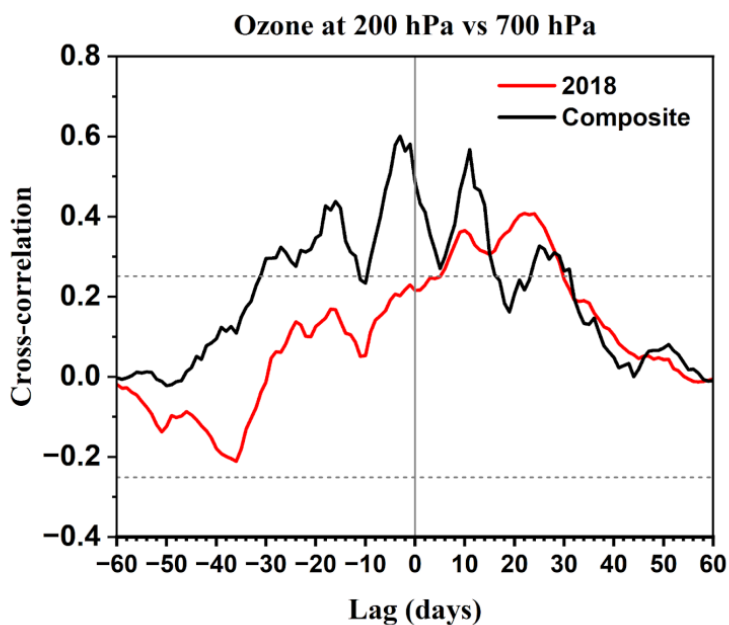
Figure S6. Lead-lag correlation between the ozone variation at 200 hPa and 700 hPa for the 2018 dSSW (red solid line), and the composite of all dSSWs (black solid line). The horizontal dashed lines represent the 95% confidence interval (Figure created using the Origin, OriginLab, Northampton, MA).