JGR Atmosphere

Supporting Information for

The Evolutions and Large-scale Mechanisms of Summer Stratospheric Ozone Intrusion across Global Hotspots

J. Lee[1], Y. Wu[1], and X. Wang[2]

[1]Lamont-Doherty Earth Observatory of Columbia University, New York, NY

[2]National Center for Atmospheric Research, Boulder, CO

Contents of this file

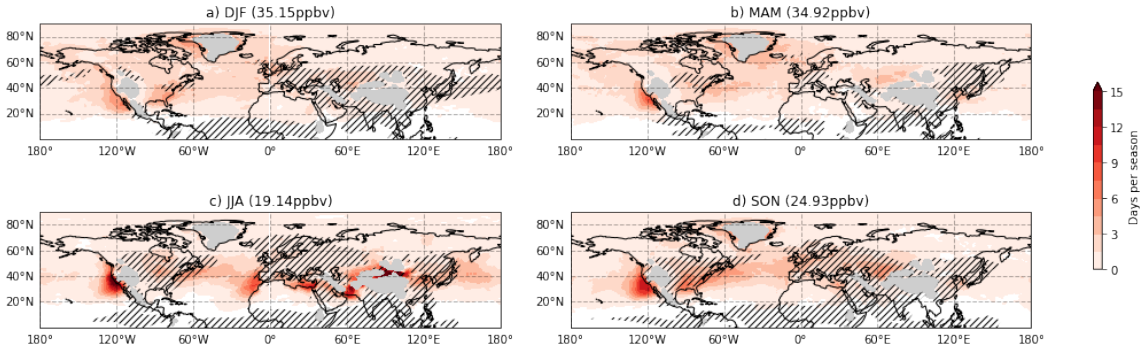

Figure S1. The average days per season when 850 hPa O_3S exceeds 99% of NH O_3S each season. The 99% O_3S threshold across the entire NH for each season is written in parentheses. Red shadings are days per season, and gray shadings are masked topography. Regions where R-squared values between anomalous O_3 and O_3S below 0.5 are hatched.

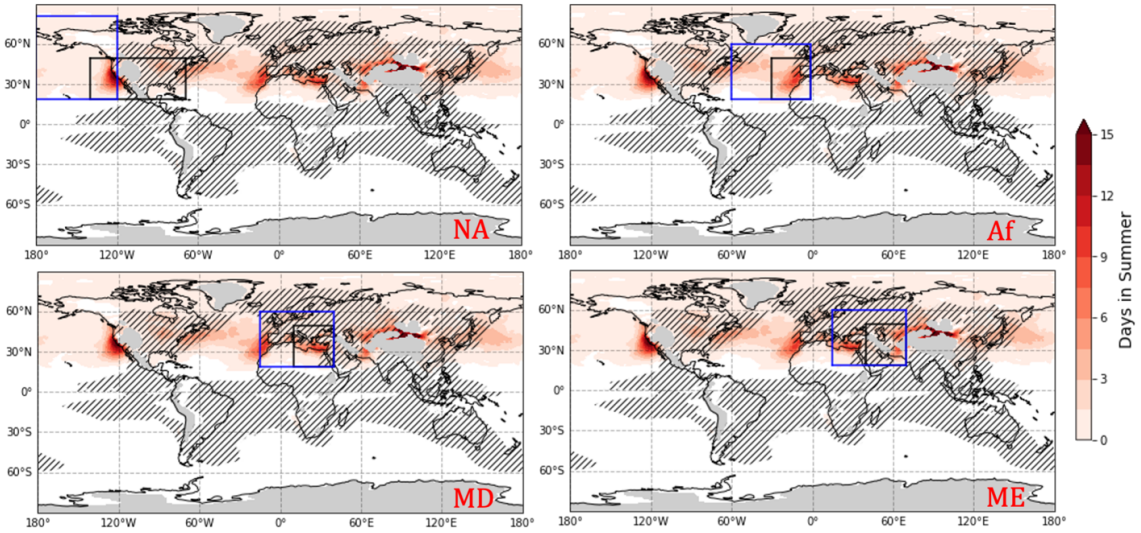

Figure S2. Boxes are drawn on top of Fig. 1 for MCA and composite analysis. Black boxes show where MCA is conducted for each hotspot. They all have the same latitude range of 20º-50ºN. The ranges of longitude for each hotspot are NA (140º-70ºW), Af (30ºW-0º), MD (10º-40ºE), and ME (40º-70ºE). Blue boxes show where stratospheric ozone intrusion speed has been estimated from box-averaged O_3S anomaly. The latitude range for NA is 20º-80ºN, while others all have the same latitude range of 20º-60ºN. The ranges of longitude for each hotspot are NA (180º-120ºW), Af (60ºW-0º), MD (15ºW-40ºE), and ME (15º-70ºE).

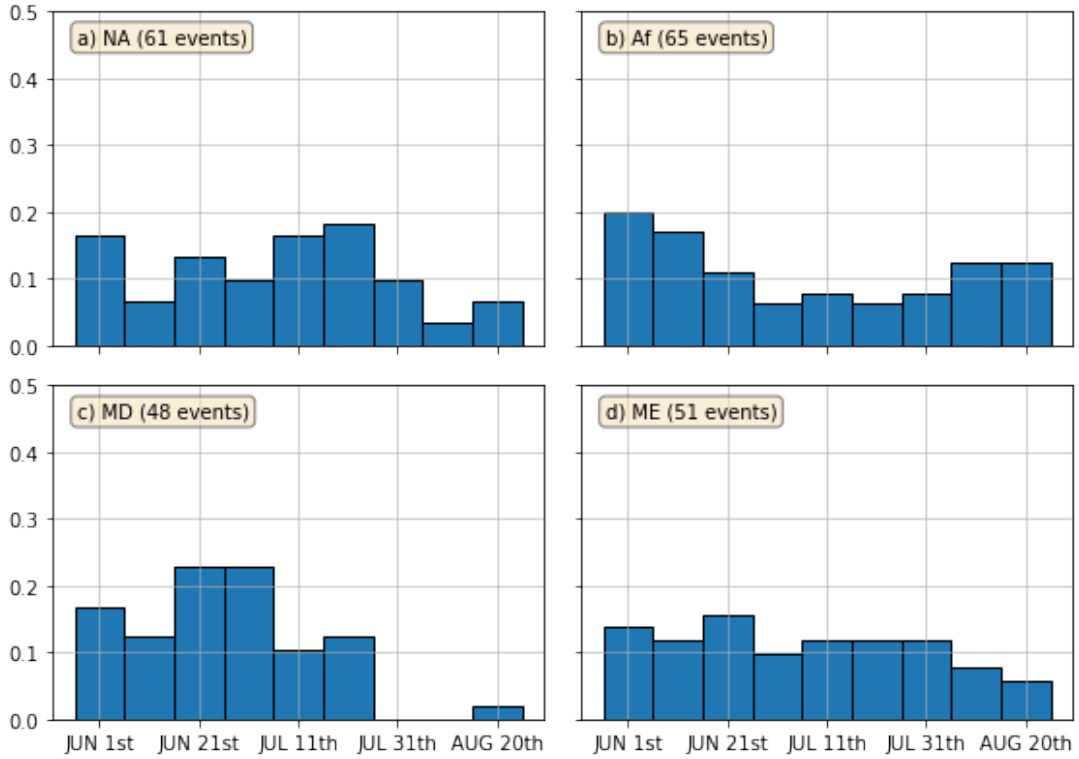

Figure S3. The density histogram of the start date of extreme events for every global hotspot. The extreme events are defined following section 3.2 and calculated for the MCA's leading mode. Each bin is 10 days long except for the last bin, which is 12 days. Each hotspot's total number of events is written in the parenthesis next to the hotspot name.