Retrieval sensitivity at different layers for L24
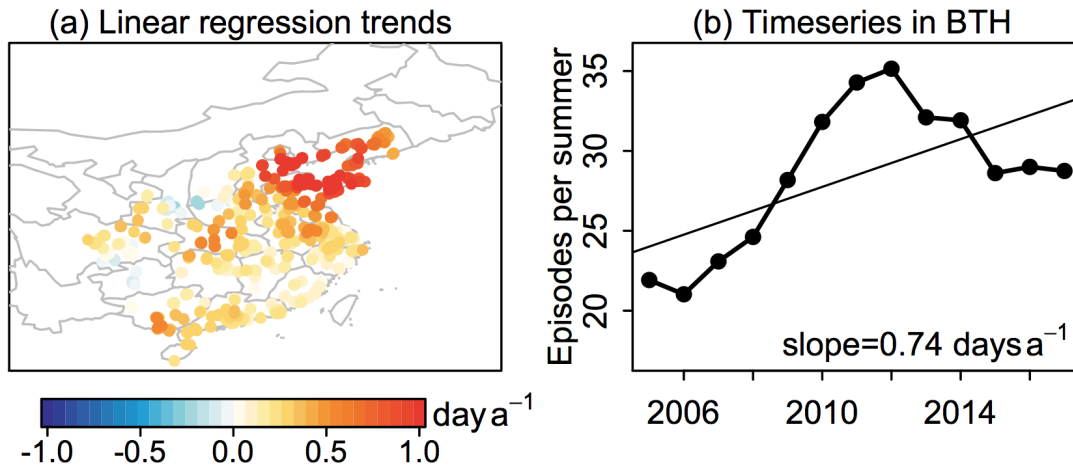
(a) L24   (b) L23   (c) L22
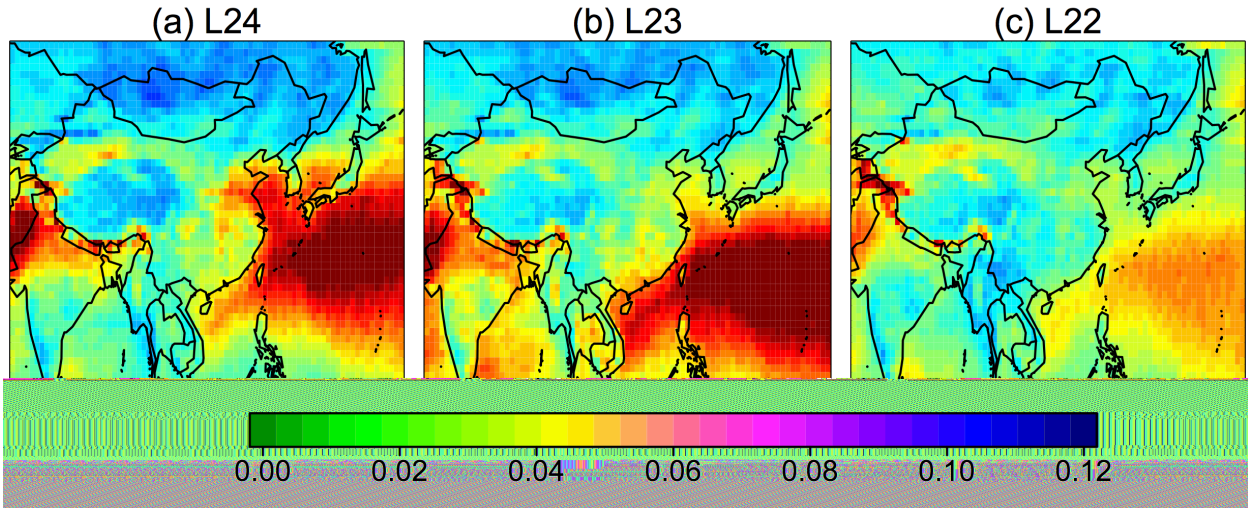
1

2 **Figure S1** The sensitivity of retrieved ozone at L22-L24 to the ozone change at L24, as denoted
3 by the columns of AK (Hayashida et al., 2015).

4

2005-2017 trends in the frequency of ozone episodes

(a) Linear regression trends   (b) Timeseries in BTH

5

6 **Figure** S2. 2005-2017 trends in the number of surface ozone episodes (>82 ppb) per summer as
7 inferred from daily OMI observations over China. Results are shown for the 2013-2017 CMEP
8 network site locations where the point process model was trained. (a) Spatial distribution of the
9 trend as expressed by linear regression on the number of ozone episodes per summer. (b)
10 Timeseries of the number of ozone episodes per year when averaged over the Beijing-Tianjin-
11 Hebei (BTH) region (Figure 1). The slope is shown inset.

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