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Supplement of

The influences of El Niño–Southern Oscillation on tropospheric ozone in CMIP6 models

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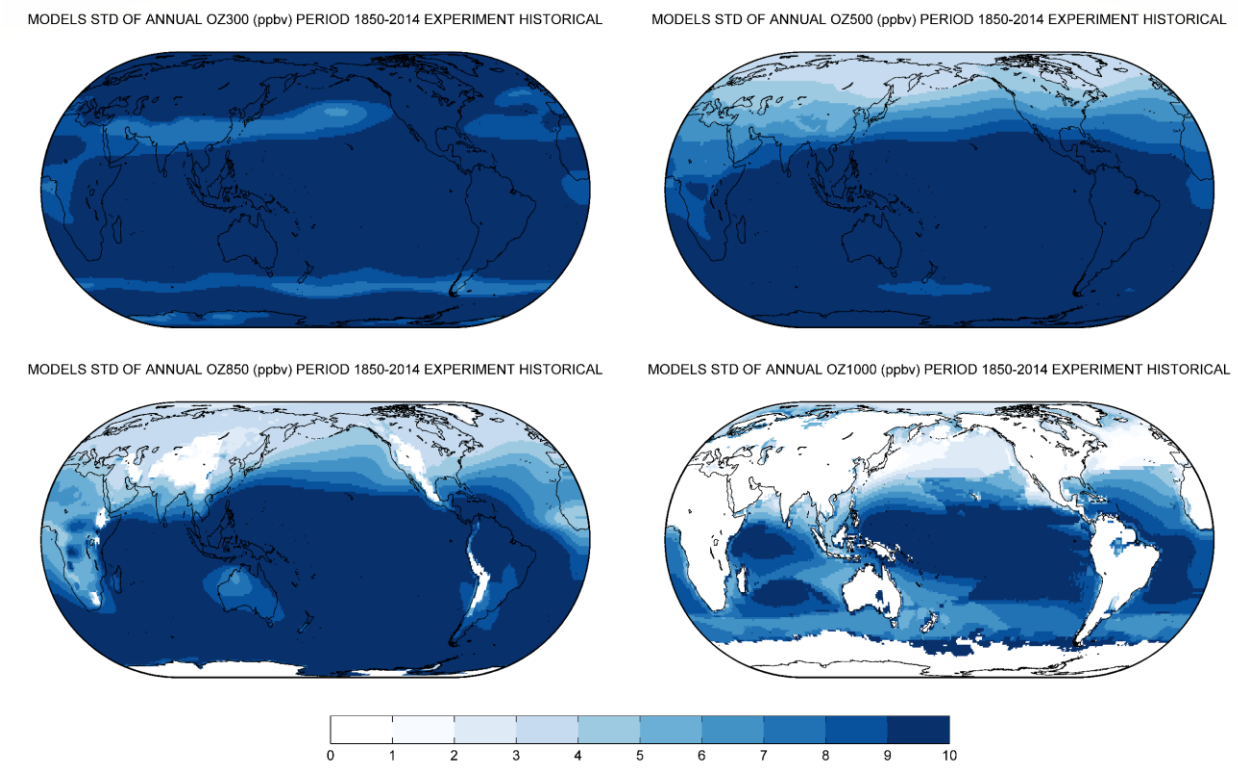

Figure S1. Multi-model mean map of standard deviation of annual ozone concentrations (ppbv) for the historical experiment over the 1850-2014 period at 300 hPa (a), 500 hPa (b), 850 hPa (c) and 1000 hPa (d) pressure levels, respectively.

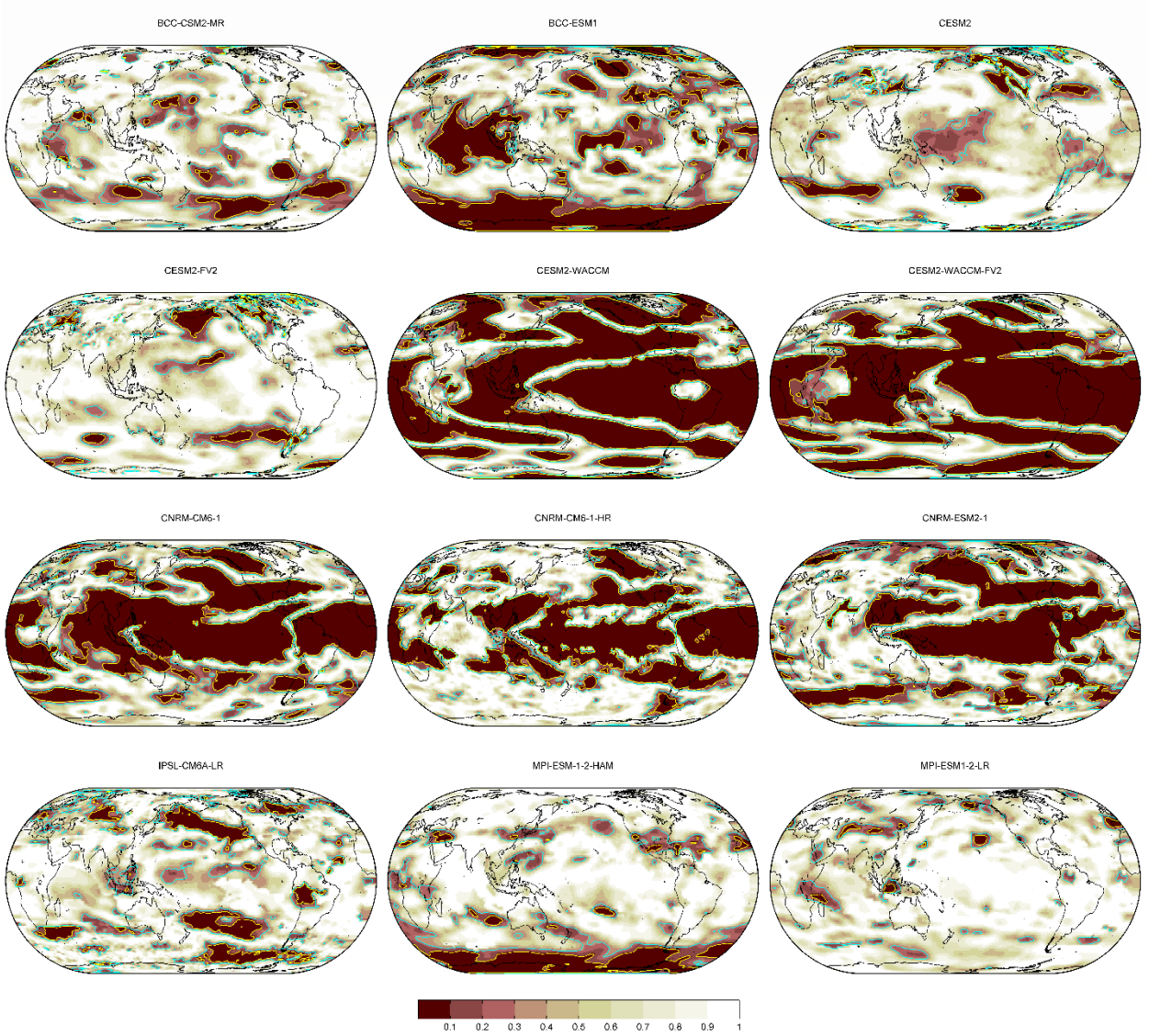

Figure S2. Probability for the absence of Granger causality from ENSO to annual ozone concentrations at 300 hPa pressure level for the historical experiment over the 1850-2014 period of 12 individual models (see Table S1). The cyan and yellow contour lines signify *p*-value = 0.33 and 0.1, respectively. Brown shades denote a low probability for the absence of Granger causality. ENSO: El Niño–Southern Oscillation.

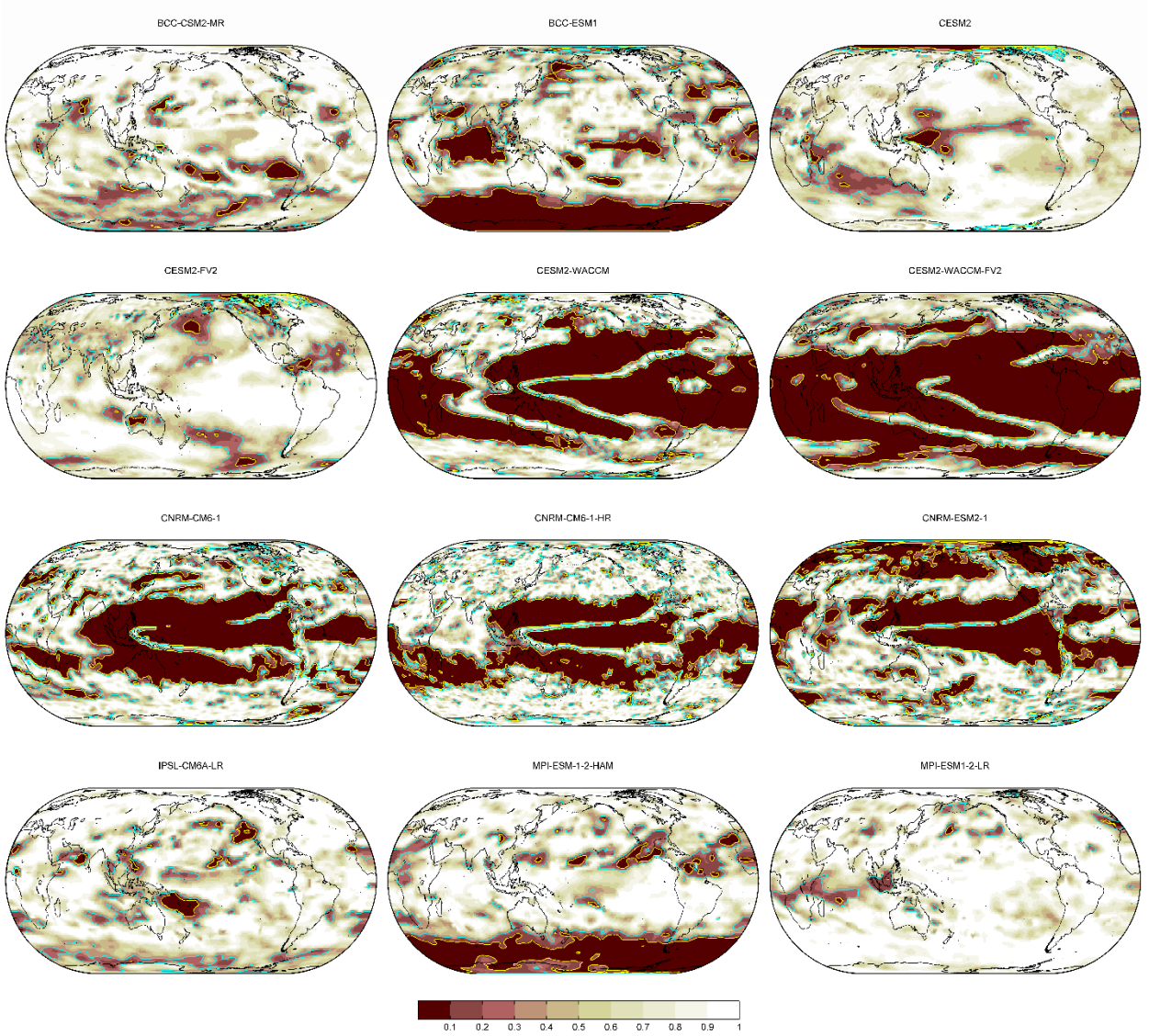

Figure S3. As in Figure S2, but for the absence of Granger causality from ENSO to annual ozone concentrations at 500 hPa pressure level. ENSO: El Niño–Southern Oscillation.

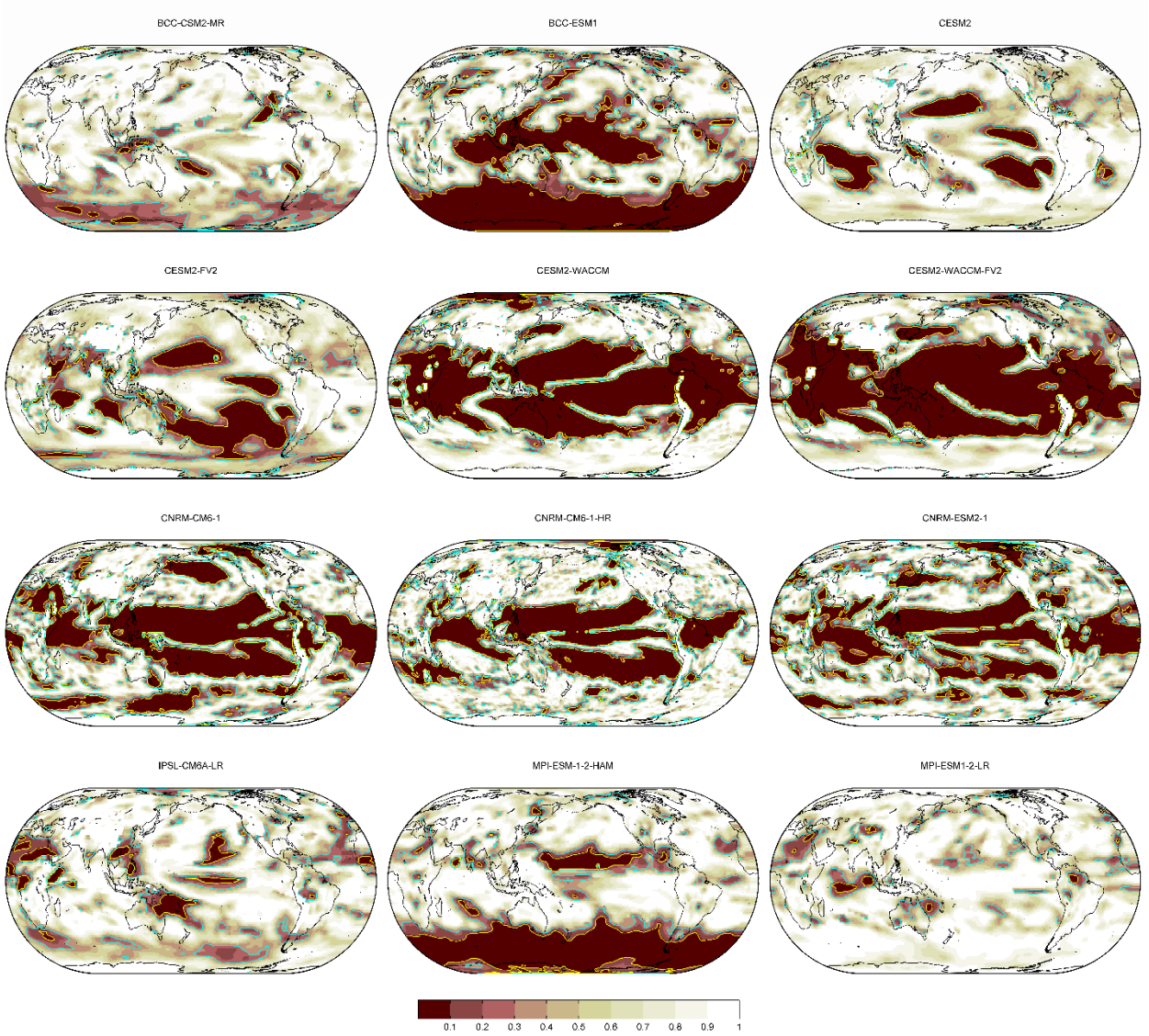

Figure S4. As in Figure S2, but for the absence of Granger causality from ENSO to annual ozone concentrations at 850 hPa pressure level. ENSO: El Niño–Southern Oscillation.

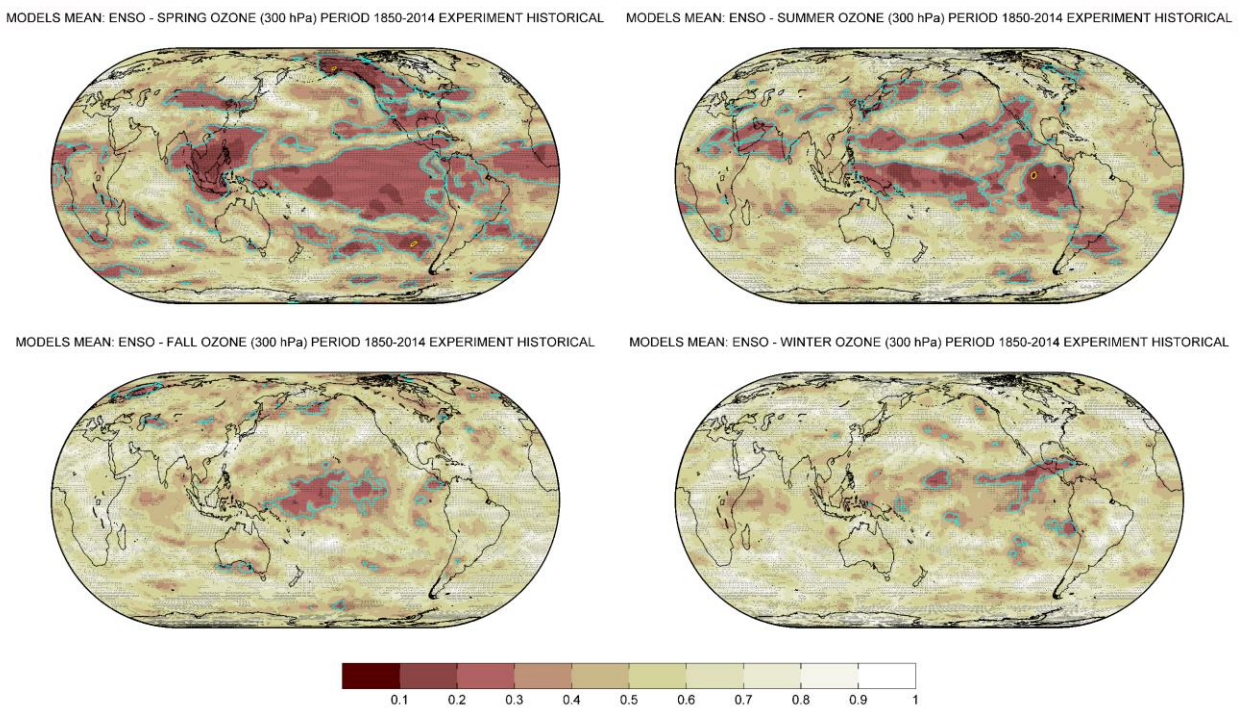

Figure S5. Multi-model mean probability map for the absence of Granger causality from ENSO during boreal winter [defined as D(*t*)JF(*t+1*); *t* denotes year *t*] to seasonal mean ozone concentrations at 300 hPa pressure level over the period 1850-2014. (a) Spring [March, April, May; MAM(*t+1*)]. (b) Summer [June, July, August; JJA(*t+1*)]. (c) Fall [September, October, November; SON(*t+1*)]. (d) Winter [December, January, February; D(*t+1*)JF(*t+2*)]. Stippling demonstrates that at least 70% of total models show agreement on the mean probability of all models at a given grid point. The yellow and cyan contour lines denote p-value = 0.1 and 0.33, respectively. Brown shades denote a low probability for the absence of Granger causality. ENSO: El Niño–Southern Oscillation.

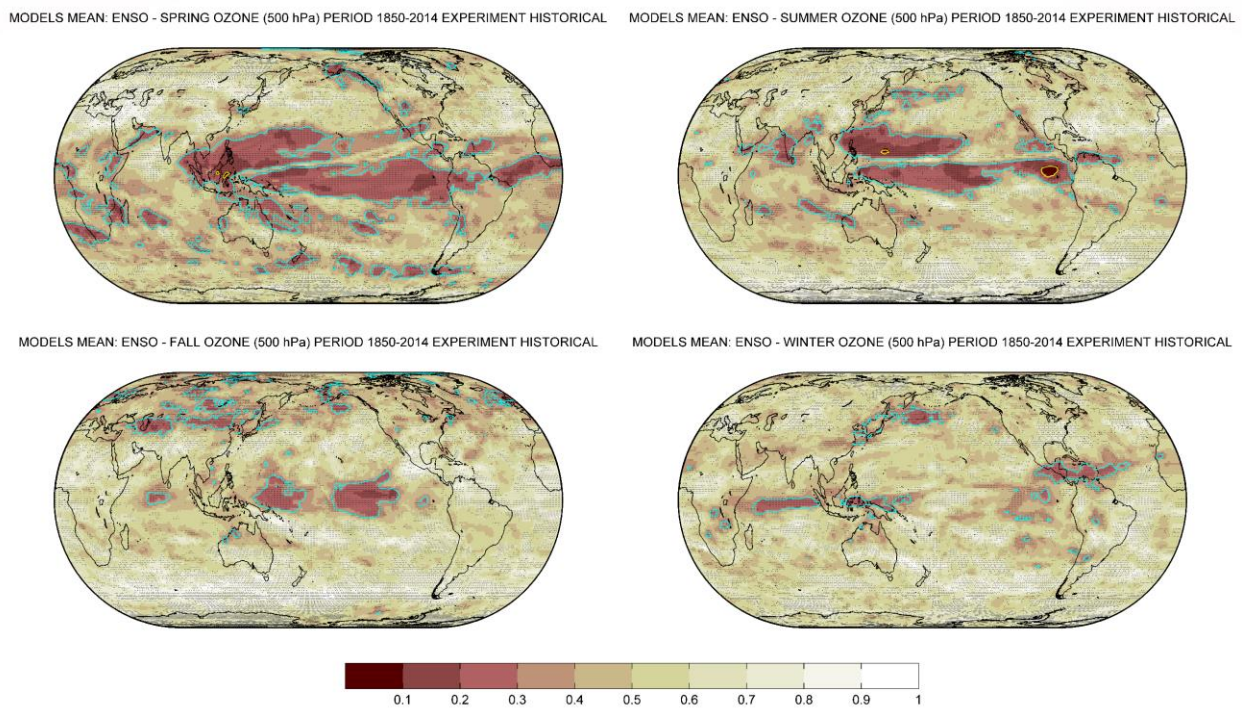

Figure S6. As in Figure S5, but for multi-model mean probability map for the absence of Granger causality from ENSO to seasonal mean ozone concentrations at 500 hPa pressure level. ENSO: El Niño–Southern Oscillation.

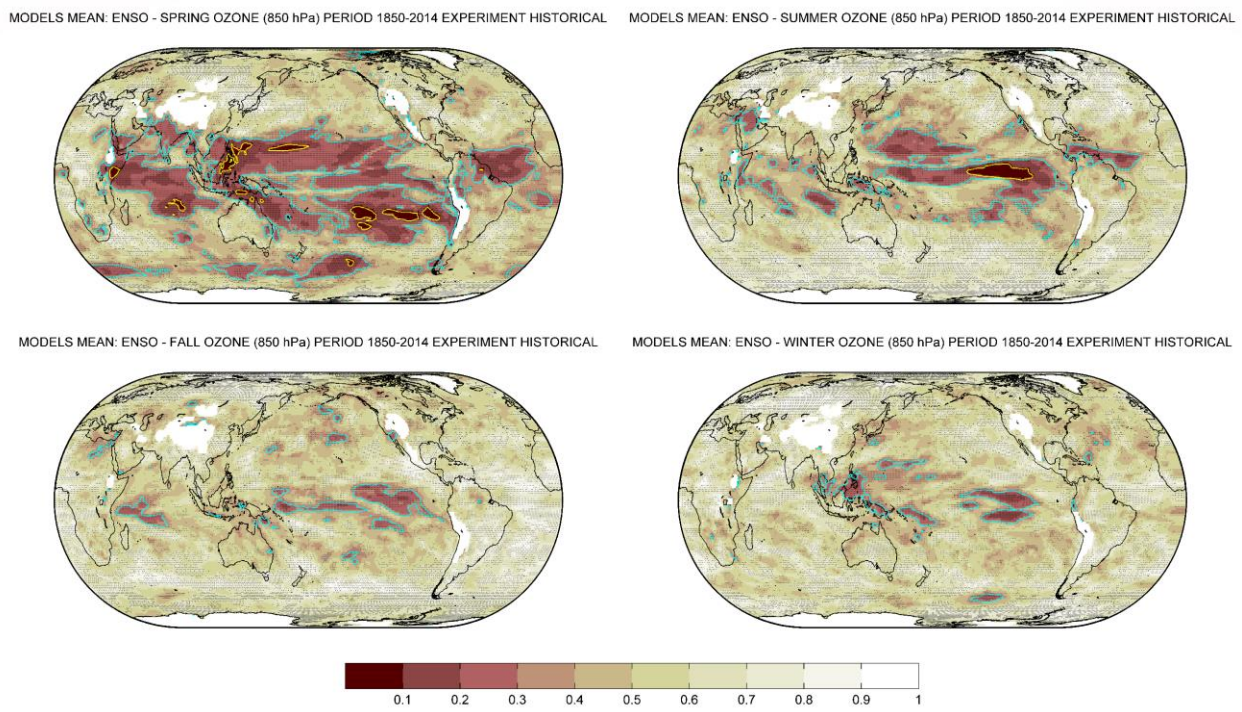

Figure S7. As in Figure S5, but for multi-model mean probability map for the absence of Granger causality from ENSO to seasonal mean ozone concentrations at 850 hPa pressure level. ENSO: El Niño–Southern Oscillation.