Ozone-vegetation feedbacks through dry deposition and isoprene emissions in a global chemistry-carbon-climate model

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Plant functional types (PFTs) are tundra (TDA), C3 grassland (GRAC3), shrubland (SHR), savanna (SAV), deciduous broadleaf forest (DBF), evergreen needleleaf forest (ENF), evergreen broadleaf forest (EBF), C3 cropland (CROC3) and C4 grassland/cropland (GRAC4/CROC4).

| PFTs     | m   | b (mmol m⁻² s⁻¹) | a_high (mmol m⁻³) | a_low (mmol m⁻³) | F_{O₃,crit} (nmol m⁻² s⁻¹) |
|----------|-----|------------------|-------------------|-----------------|--------------------------|
| TDA      | 9.0 | 2                | 0.1               | 0.03            | 1.6                      |
| GRAC3    | 11.0| 8                | 1.4               | 0.25            | 5.0                      |
| SHRUB    | 9.0 | 2                | 0.1               | 0.03            | 1.6                      |
| SAV      | 9.0 | 2                | 1.4               | 0.25            | 5.0                      |
| DBF      | 9.0 | 2                | 0.15              | 0.04            | 1.6                      |
| ENF      | 9.0 | 2                | 0.075             | 0.02            | 1.6                      |
| EBF      | 9.0 | 2                | 0.15              | 0.04            | 1.6                      |
| CROC3    | 11.0| 8                | 1.4               | 0.25            | 5.0                      |
| GRAC4/CROC4 | 5.0 | 2                | 0.735             | 0.13            | 5.0                      |
Figure S1. Evaluations of simulated summer surface O₃ concentrations performed by six model members of ACCMIP in present day with ground-level O₃ observations from AQMN-MEE in China, CASTNET in U.S. and EMEP in Europe. The red line shows the linear regression between the observed and simulated O₃ concentrations. The black dashed line shows the 1:1 lines.
Figure S2. Monthly mean IPE in the CTRL simulation averaged over eastern China, eastern U.S. and western Europe, respectively.
Figure S3: Effects of O₃ damage to stomatal conductance on summertime O₃ dry deposition velocity (cm s⁻¹) with (a) high and (b) low damaging sensitivities. Dotted grids indicate significant changes at 95% confidence. Three box regions are denoted for eastern China, eastern U.S., and western Europe.
Figure S4. Same as Fig. S2 but for the latent heat flux (W m$^{-2}$).
**Figure S5.** Changes of LAI due to O₃ damages to photosynthesis in summer for (a) high and (b) low sensitivity. Dotted grids indicate significant changes at 95% confidence.
Figure S6. Same as Fig.S4 but for meteorological feedback to IPE.