



*Supplement of*

## **Quantifying the role of ozone-caused damage to vegetation in the Earth system: a new parameterization scheme for photosynthetic and stomatal responses**

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## Supplement

### List of 159 peer-reviewed literature after data quality control:

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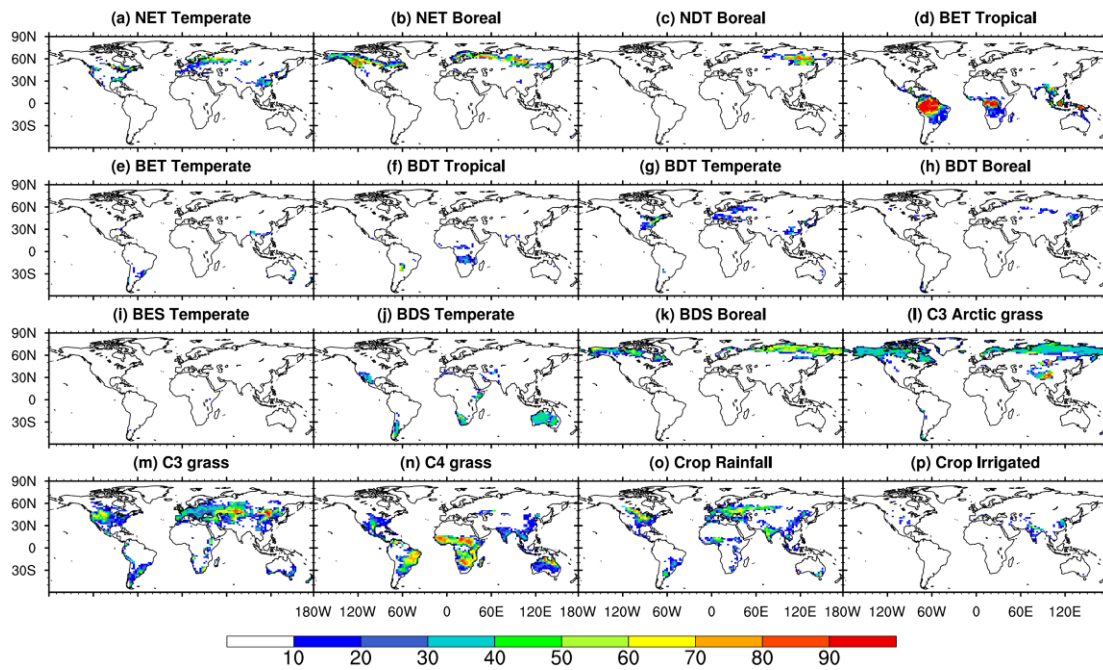
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**Table S1.** The number of paired data points corresponding to various ozone-flux thresholds  $Y$  for photosynthetic response.

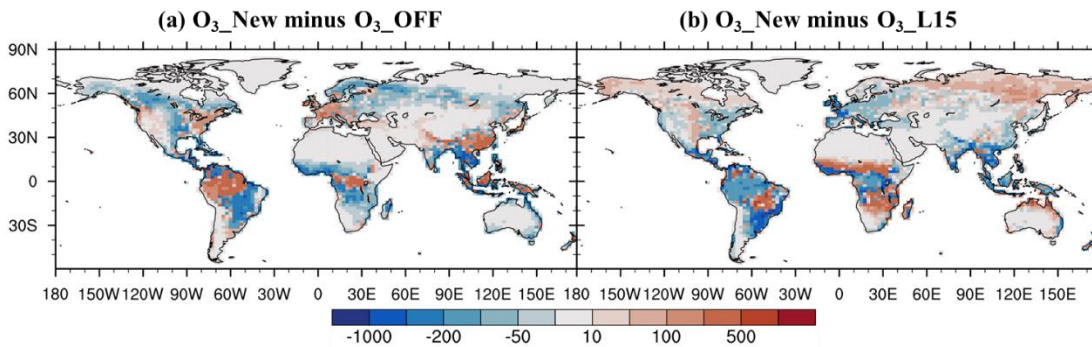
Y	BT	NT	Shrub	Grass	Crop
0.5	895	217	0	40	605
0.8	943	140	0	37	481
1	902	122	0	37	589
1.6	831	142	0	27	566
2	833	102	0	40	572
3	870	33	0	32	380
4	729	63	8	28	521
5	625	21	153	20	557
6	567	2	153	24	518

**Table S2.** Same as Table S1 but for stomatal response.

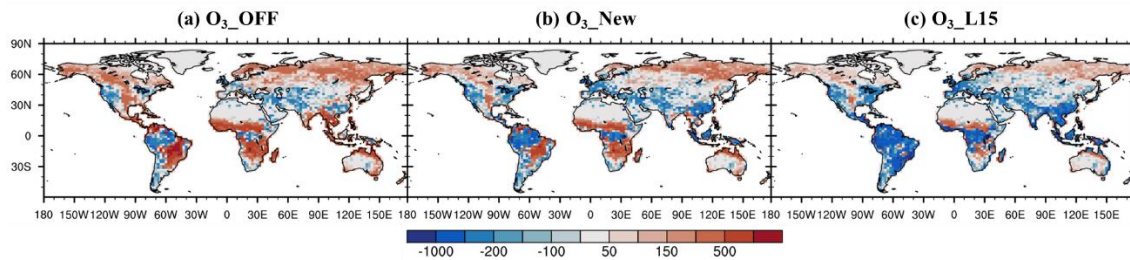
Y	BT	NT	Shrub	Grass	Crop
0.5	944	205	0	77	691
0.8	1045	186	0	77	591
1	1281	232	0	72	552
1.6	973	202	0	76	559
2	918	145	0	78	558
3	913	102	0	48	540
4	843	68	1	51	516
5	611	5	149	48	452
6	486	3	149	42	418



**Figure. S1.** Global distribution of the prescribed PFT fractional coverage (%) used by the component set I2000CIm50Sp of CESM2.2.



**Figure. S2.** Difference in Root Mean Square Error (RMSE) ( $\text{g C m}^{-2} \text{yr}^{-1}$ ) (a) between  $\text{O}_3\_New$  and  $\text{O}_3\_OFF$  and (b) between  $\text{O}_3\_New$  and  $\text{O}_3\_L15$  in simulating annual Gross primary productivity (GPP).



**Figure. S3.** Bias (simulation minus observations) in GPP ( $\text{g C m}^{-2} \text{yr}^{-1}$ ) for (a)  $\text{O}_3\_OFF$ , (b)  $\text{O}_3\_New$ , and (c)  $\text{O}_3\_L15$  simulations when compared with FLUXCOM.