First, S2007 seems to calculate instantaneous (for WRF-Chem's model integration time steps or hourly) values of the undamaged fraction F, whereas L2013 calculates the ozone damage ratio for the entire growing season. So, was one constant L2013-calculated, plant-specific, O3 damage ratio applied throughout the whole simulation period, whereas S2007-calculated O3 damage ratios were time-dependent, when the schemes were coupled with WRF-Chem?

Response: As mentioned by the referee, the ozone damage calculated by the S2007 scheme is related to instantaneous excessive ozone flux (dFO_3), while the ozone damage calculated by the L2013 scheme is related to the cumulative ozone uptake flux (CUO). As shown in Figure R1, both CUO and dFO_3 vary with time. The value of CUO increases month by month, reaching a maximum in August. In contrast, dFO_3 is affected by instantaneous O_3 concentration, which peaks in July, leading to highest dFO_3 in July.

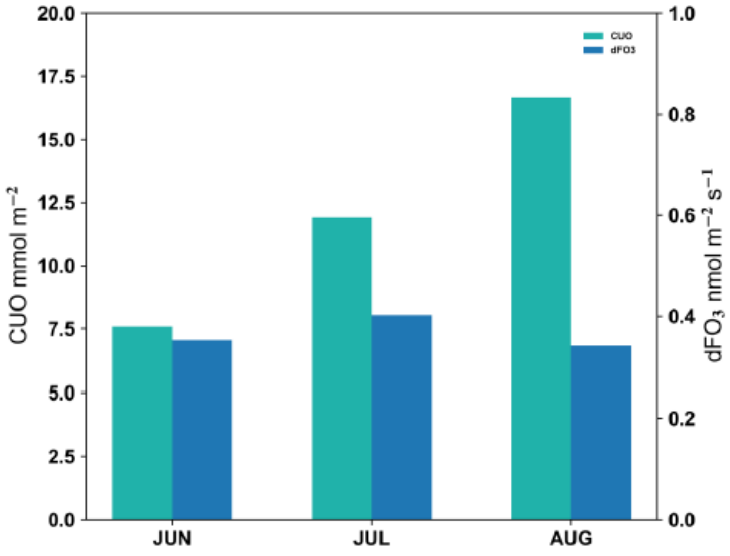

Figure R1 Monthly mean CUO and dFO_3 calculated for L2013 and S2007 schemes.

The authors did not address my question. I originally asked how the F values calculated using S2007 and L2013 were applied in their simulations. Specifically, S2007 computed instantaneous F values, which could technically be included in every time step to quantify ozone damage to vegetation. L2013-calculated F values, however, depended on CUO obtained from integration "over the growing season" (L231) using Eqs. 5, 6, & 7, meaning that there'd be only one pair of F_{PO3} and F_{CO3} for their simulation period May – August 2017. So actually, two questions involving L2013: 1. How did they obtain CUO of the growing season for their F value calculations? 2. Was one pair of constant, time-independent F_{PO3} and F_{CO3} values applied to every time step throughout the simulation period? It was not apparent to me how L2013 was coupled with the land surface model and WRF-Chem all together.

Third, isn't Eq. 5 supposed to be the integration of Eq. 4 according to its definition?
Response: By theory the accumulative flux (Eq. 5) should be the integration of instantaneous flux (Eq. 4). In practice, Eq 4 was used in the S2007 scheme while Eq. 5 was used in L2013 scheme with some differences. We maintained such differences because O_3 sensitivity parameters were derived based on the corresponding O_3 stomatal fluxes.

What I meant was that in the manuscript, Eq. 5 was not the integration form of Eq. 4 as so intended.

$$f_{O_3} = \frac{[O_3]}{r_a + k_{O_3} \cdot r_s} \quad (4)$$

$$CUO = \sum (k_{O_3}/r_s + 1/r_a) \times [O_3] \quad (5)$$

If they used Eq. 5 to calculate CUO, their L2013-calculated results and subsequently a big hunk of their analysis would be questionable. Also, what were those "some differences"?