

## **Response to the editor's comments. (*italicized*)**

### **Comments to the author:**

Dear Authors, I had a look at the tracked version, and here are some comments.

1. line 125 :Give some information about chemical and dynamical time step intervals in seconds

*I have added two sentences about the algorithm used for the model and the time steps (line 111). The diurnal model is a one-dimensional photochemical model. There is no separate dynamical time step. Species with a variety of chemical time constants make the system very stiff and we use an automatic solver designed for such systems. The maximum timestep is set at 600 seconds and the algorithm adjusts the time step to very low values (< 1 millisecond near the day/night terminator). We have added the reference to the numerical solver used by the diurnal model.*

## Figure captions should be independent and should provide detail description about the plots.

*Figure captions have been revised, where required, to provide full description of the plots.*

Some places in the manuscript sound like a cation, please edit those lines

e.g.

2. line 141: Delete - "The upper X-axis shows the corresponding SZA. It is correct to include it caption

*Deleted the sentence, as suggested.*

3. line 194 : Delete "The X-axis shows ..."-- Caption should include all the relevant information

*Revised the sentence.*

4. line 342 : The right panel

*Deleted the redundant sentence.*

5. Line 538: Do you mean O<sub>3</sub> at 64 km at lower latitudes?

*Yes. The text has been corrected.*

Figure 7 & 8 Caption: include latitude/longitude information in the caption.

*Latitude / Longitude information is provided in both the figure captions.*