

**Olivia Clifton**

## **Simulations**

ga1 = low soil NO

ga2 = high soil NO

### **Files with temporally averaged vertical profiles**

#### **Variables in ga1.csv and ga2.csv**

- 'height' is the vertical dimension of the model in meters from the ground to 3x canopy height
- Horizontally averaged ambient mixing ratios of all reactants in ppb
- 'std\_' – the standard deviations of ambient mixing ratios across horizontal space of all reactants in ppb
- 'flux\_' – the total vertical fluxes of all reactants in ppb m s<sup>-1</sup>
- 'flux\_sgs\_' – the sub Grid Scale (SGS) vertical fluxes of all reactants in ppb m s<sup>-1</sup>
- 'Is\_' – the intensities of segregation for each chemical reaction in percentages

#### **Variables in ga1corr.csv and ga2corr.csv**

- 'height' is the vertical dimension of the model in meters from the ground to 3x canopy height
- 'r\_' – correlation coefficients between NO and ISOPAO<sub>2</sub>, OH and NO<sub>2</sub>, & OH and NO

#### **Variables in ga1OHprod.csv and ga2OHprod.csv**

- 'height' is the vertical dimension of the model in meters from the ground to 3x canopy height
- 'prod\_from' – horizontally averaged OH production from O<sub>3</sub> photolysis, HO<sub>2</sub>+O<sub>3</sub>, HO<sub>2</sub>+NO, HO<sub>2</sub>+NO<sub>3</sub>, HALD [=HYDRALD+HPALD] photolysis, ISOP+O<sub>3</sub>, & H<sub>2</sub>O<sub>2</sub> photolysis in molecules cm<sup>-3</sup> s<sup>-1</sup>
  - Variables with suffix '\_seg' denote the contribution from segregation; variables without denote the contribution from the horizontally averaged mixing ratios

### **Files with spectra**

**Variables in spectra\_ground.csv, spectra\_above\_ground.csv, spectra\_midcanopy.csv, and spectra\_canopytop.csv**

- Azimuthally- and time-averaged two-dimensional spectra and co-spectra.
- 'k' is the horizontal wavenumber
- 'no' and 'no2' are the spectra for each species in ppb<sup>2</sup>
- 'no\_isopao2' and 'oh\_no2' are the co-spectra for the reactant pair in ppb<sup>2</sup>
- '\_ga1' or '\_ga2' on variable names indicates simulation

### **Files with time series**

#### **Variables in ts\_ga1\_pbl.csv and ts\_ga2\_pbl.csv**

- Mixing ratios for all reactants averaged throughout the atmospheric boundary layer in ppb
- Time is in seconds since the start of the simulation

### **Files with horizontal slices**

#### **Files named slice\*.dat**

These files are 2-D arrays. There are 1024 x 1024 grid points; the resolution is 2-m so the slices span 2048 m in each direction. The number after height in the file names indicates the height relative to the canopy height (i.e., height0.3 means the data is for 0.3\*canopy height). The simulation is indicated by the file name. The variable is also indicated by the file name. Vertical velocity ( $w$ ) is in  $\text{m s}^{-1}$  and reactant mixing ratios are in ppb.