**Data sets and Scripts used to create the plots in the manuscript** “Representing the effects of stratosphere-troposphere exchange on 3D O3 distributions in chemistry transport models using a potential vorticity based parameterization”

**Note**: The illustrations shown in this manuscript are based on analysis of relatively large data files that them-self cannot be uploaded to ScienceHub due to size restrictions. Typically, the NCAR Command Language (NCL) is used to process data in netcdf files to create the graphics. Summarized below are the locations of both the NCL scripts and the data files used in creation of these figures. *These are currently located on the computer system Sol*. Data files resident on the /work system often get transferred to a longer archival file system /asm – however, for data management files on /asm are subject to expiry depending on the template of the project. Files not requested for extension after the expiry date are deleted permanently from the system.

**Figure 1:**

script: /work/MOD3DEV/jae/woudc/src/select.ncl

data: /work/MOD3DEV/jae/woudc/src/selected\_sites.txt

**Figure 2:**

script: /work/MOD3DEV/jae/woudc/src/plot\_spatial\_overlay.ncl

data: /work/MOD3DEV/jae/woudc/src/woudc.nc

**Figure 3:**

script: /work/MOD3DEV/jae/woudc/src/040815/acpd/plot\_temporal2.ncl

data: /work/MOD3DEV/jae/woudc/src/woudc.nc

**Figure 4:**

script: /work/MOD3DEV/jae/woudc/src/halogen/plot\_spatial\_compare.ncl

data:

/work/MOD3DEV/jae/woudc/src/halogen/woudc\_pv.nc

/work/MOD3DEV/jae/woudc/src/halogen2/woudc\_pv.nc

**Figure 5:**

script: /work/MOD3DEV/jae/woudc/src/halogen/acpd/plot\_contour\_lat2.ncl

data:

/work/MOD3DEV/jae/woudc/src/halogen/woudc\_pv.nc

/work/MOD3DEV/jae/woudc/src/halogen2/woudc\_pv.nc

**Figure 6:**

script: /work/MOD3DEV/jae/woudc/src/halogen/plot\_seasonal.compare.ncl

data:

/work/MOD3DEV/jae/woudc/src/halogen/woudc\_pv.nc

/work/MOD3DEV/jae/woudc/src/halogen2/woudc\_pv.nc

**Figure 7:**

script: /asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_pv20/4.compare\_emepO3\_spatial.ncl

data:

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/column/emep/o3/emepO3.nc

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_pv20/combine\_S\_CCTM\_ACONC\_2006\_O3.nc

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_func/combine\_S\_CCTM\_ACONC\_2006\_O3.nc

**Figure 8:**

script: /asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_pv20/5.compare\_castnetO3\_spatial.ncl

data:

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/column/castnet/castnetO3.nc

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_pv20/combine\_S\_CCTM\_ACONC\_2006\_O3.nc

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_func/combine\_S\_CCTM\_ACONC\_2006\_O3.nc

**Figure 9:**

script:

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_nopv/plot.nh108km\_sim.ncl

data:

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_func/avg\_combine\_S\_CCTM\_CONC\_2006.nc

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_nopv/avg\_combine\_S\_CCTM\_CONC\_2006.nc

**Figure S1:**

script: /home/jae/work/woudc/src/plot\_spatial.ncl

data: /work/MOD3DEV/jae/woudc/src/woudc.nc

excel file: XJ\_Destop/PV/Book1.xlsx Sheet4

**Figure S2:**

excel file: XJ\_Destop/PV/Book1.xlsx Sheet4

**Figure S3-S5:**

script: /asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_pv20/9.compare\_woudc\_spatial.ncl

data:

/work/MOD3DEV/jae/woudc/src/pv20/woudc\_pv.nc

/work/MOD3DEV/jae/woudc/src/func/woudc\_pv.nc

**Figure S6:**

script: /work/MOD3DEV/jae/woudc/src/halogen/acpd/plot\_contour\_lat3.ncl

data:

/work/MOD3DEV/jae/woudc/src/halogen/woudc\_pv.nc

/work/MOD3DEV/jae/woudc/src/halogen2/woudc\_pv.nc

**Figure S7:**

script: /asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/output\_hemi\_nf\_rrtmg\_20\_5\_1\_v3450\_2006\_halogen\_pv20/6.compare\_wdcggO3\_spatial.ncl

data:

/asm2/xjxing/output/hemi\_on/work.old/wrfcmaq/column/wdcgg/o3/wdcgg.nc

**Figure S8:**

script: /work/MOD3DEV/jae/woudc/src/040815/acpd/plot\_spatial.ncl

data: /work/MOD3DEV/jae/woudc/src/woudc.nc

excel file: XJ\_Destop/PV/Book1.xlsx Sheet4