

Instruction for running the 0-dimensional gas phase mechanism box model:

Step 1: wget

http://www.caps.ou.edu/micronet/temp/forJianPing/BoxRACM_xhu_withBr_intelRosenbrockExit_pgf95Expanseworks_verifiedJun7_2024.tar

Step 2: tar xvzf

BoxRACM_xhu_withBr_intelRosenbrockExit_pgf95Expanseworks_verifiedJun7_2024.tar

cd BoxRACM_xhu_withBr_intelRosenbrockExit_pgf95Expanseworks

Step 2.1 module load gpu/0.15.4

Step 2.2 module load pgi/20.4

Step 3: make clean

Step 4: make

Step 5: ./racmr

You should see a file named TS_species.txt

With similar content as

timloc=	timin	O3=	NO=	NO2=	HCHO=	Lim=	NO3	HNO3	HBr	Brppt	Br2	HOBr	OHppt	BrOppt	PAN	HO2
5.000	5.000	10.000	0.005	0.010	0.100	0.010	0.001	0.010	0.000	0.000	0.010	0.010	0.000	0.200	0.005	0.000
6.000	6.000	9.990	0.000	0.016	0.101	0.008	0.000	0.010	0.000	0.004	0.010	0.010	0.001	0.439	0.003	0.001
7.000	7.000	9.907	0.003	0.014	0.107	0.005	0.000	0.010	0.001	0.059	0.000	0.025	0.031	3.628	0.003	0.004
8.000	8.000	9.854	0.005	0.011	0.127	0.002	0.000	0.011	0.002	0.080	0.000	0.026	0.062	2.700	0.002	0.007
9.000	9.000	9.771	0.005	0.009	0.150	0.001	0.000	0.012	0.003	0.106	0.000	0.024	0.088	2.882	0.003	0.008
10.000	10.000	9.664	0.005	0.008	0.170	0.000	0.000	0.012	0.005	0.120	0.000	0.022	0.109	2.853	0.003	0.010
11.000	11.000	9.544	0.006	0.007	0.186	0.000	0.000	0.013	0.007	0.123	0.000	0.021	0.122	2.706	0.002	0.011
12.000	12.000	9.420	0.006	0.007	0.200	0.000	0.000	0.014	0.008	0.118	0.000	0.019	0.126	2.498	0.001	0.012
13.000	13.000	9.300	0.005	0.007	0.210	0.000	0.000	0.015	0.010	0.106	0.000	0.018	0.123	2.272	0.001	0.012
14.000	14.000	9.187	0.005	0.007	0.216	0.000	0.000	0.015	0.011	0.091	0.000	0.017	0.112	2.040	0.001	0.012
15.000	15.000	9.087	0.004	0.007	0.222	0.000	0.000	0.016	0.012	0.072	0.000	0.016	0.094	1.795	0.001	0.011
16.000	16.000	9.007	0.004	0.007	0.226	0.000	0.000	0.017	0.013	0.051	0.000	0.016	0.071	1.525	0.000	0.010
17.000	17.000	8.950	0.003	0.008	0.229	0.000	0.000	0.017	0.013	0.029	0.000	0.016	0.043	1.196	0.000	0.007
18.000	18.000	8.919	0.001	0.009	0.231	0.000	0.000	0.017	0.013	0.008	0.000	0.016	0.013	0.706	0.000	0.004
19.000	19.000	8.914	0.000	0.010	0.233	0.000	0.000	0.017	0.013	0.000	0.000	0.017	0.000	0.190	0.000	0.000
20.000	20.000	8.913	0.000	0.010	0.233	0.000	0.000	0.017	0.013	0.000	0.000	0.017	0.000	0.134	0.000	0.000
21.000	21.000	8.912	0.000	0.010	0.234	0.000	0.000	0.017	0.013	0.000	0.000	0.017	0.000	0.105	0.000	0.000

Congrats, you are able to run a box model to simulation diurnal variation of O3

Please cite **Hu, X.-M.**, J. M. Sigler, J. D. Fuentes (2010), [Variability of ozone in the marine boundary layer of the equatorial Pacific Ocean](#), *J. Atmos. Chem.*, 66:117–136.

Step 6, plot:

module reset

module load cpu/0.15.4

module load gcc/10.2.0

module load openmpi/4.0.4

module load openmpi

module load ncl/6.6.2-openblas

ncl plot_TS_Box.ncl

You should produce the following figure:

