

For each of the following cases, a different executable was run:

Mode 1 standard case: directory LOI6.CTRL.m1 executable: gcm\_CTRL\_Mode1.e  
Mode 2 standard case: directory LOI6.CTRL.m2 executable: gcm\_CTRL.e  
Mode 3 standard case: directory LOI6.CTRL.m3 executable: gcm\_CTRL\_Mode3.e  
Mode 4 standard case: directory LOI6.CTRL.m4 executable: gcm\_CTRL\_Mode4.e

Mode 1 max lw ref index: directory LOI6.mode1lwmax executable: gcm\_Mode1lwmax.e  
Mode 1 min lw ref index: directory LOI6.mode1lwmin executable: gcm\_Mode1lwmin.e  
Mode 1 ref ind lw from Volz: directory :LOI6.mode1lwVolz, executable:gcm\_Mode1lwVolz.e

Mode 2 max lw ref index: directory LOI6.mode2lwmax executable: gcm\_Mode2lwmax.e  
Mode 2 min lw ref index: directory LOI6.mode2lwmin executable: gcm\_Mode2lwmin.e  
Mode 2 ref ind lw from Volz: directory :LOI6.mode2lwVolz, executable:gcm\_Mode2lwVolz.e

Mode 3 max lw ref index: directory LOI6.mode3lwmax executable: gcm\_Mode3lwmax.e  
Mode 3 min lw ref index: directory LOI6.mode3lwmin executable: gcm\_Mode3lwmin.e  
Mode 3 ref ind lw from Volz: directory :LOI6.mode3lwVolz, executable:gcm\_Mode3lwVolz.e

Mode 4 max lw ref index: directory LOI6.mode4lwmax executable: gcm\_Mode4lwmax.e  
Mode 4min lw ref index: directory LOI6.mode4lwmin executable: gcm\_Mode4lwmin.e  
Mode 4 ref ind lw from Volz: directory :LOI6.mode4lwVolz, executable:gcm\_Mode4lwVolz.e

NETcdf diagnostic variables for each run are included in the following files :

Mode 1 standard case: LOI6.mode1\_mean\_2011.nc  
Mode 2 standard case: LOI6.mode2\_mean\_2011.nc  
Mode 3 standard case: LOI6.mode3\_mean\_2011.nc  
Mode 4 standard case: LOI6.mode4\_mean\_2011.nc  
Multimodal standard case : LOI6.multimodal\_mean\_2011.nc

Mode 1 max lw ref index: LOI6.mode1lwmax\_2011\_LW.nc  
Mode 1 min lw ref index: LOI6.mode1lwmin\_2011\_LW.nc  
Mode 1 ref ind lw from Volz: LOI6.mode1lwVolz\_2011\_LW.nc

Mode 2 max lw ref index: LOI6.mode2lwmax\_2011\_LW.nc  
Mode 2 min lw ref index: LOI6.mode2lwmin\_2011\_LW.nc  
Mode 2 ref ind lw from Volz: LOI6.mode2lwVolz\_2011\_LW.nc

Mode 3 max lw ref index: LOI6.mode3lwmax\_2011\_LW.nc  
Mode 3 min lw ref index: LOI6.mode3lwmin\_2011\_LW.nc  
Mode 3 ref ind lw from Volz: LOI6.mode3lwVolz\_2011\_LW.nc

Mode 4 max lw ref index: LOI6.mode4lwmax\_2011\_LW.nc  
Mode 4 min lw ref index: LOI6.mode4lwmin\_2011\_LW.nc  
Mode 4 ref ind lw from Volz: LOI6.mode4lwVolz\_2011\_LW.nc

Modes Properties :

Mode 1 : lognormal distribution with MMD =1.0 um, sigma=1.8

Mode 2 : lognormal distribution with MMD=2.5 um, sigma = 2.0

Mode 3 : lognormal distribution with MMD=7.0 um, sigma = 1.9

Mode 4: lognormal distribution with MMD=22.0 um, sigma = 2.0

Spectral optical properties used as input to the model are stored in the respective files:

1MODE\_1um\_dust\_optical\_data\_1.5dielectric\_mixture.txt

1MODE\_2.5um\_dust\_optical\_data\_1.5dielectric\_mixture

1MODE\_7um\_dust\_optical\_data\_1.5dielectric\_mixture

1MODE\_22um\_dust\_optical\_data\_1.5dielectric\_mixture