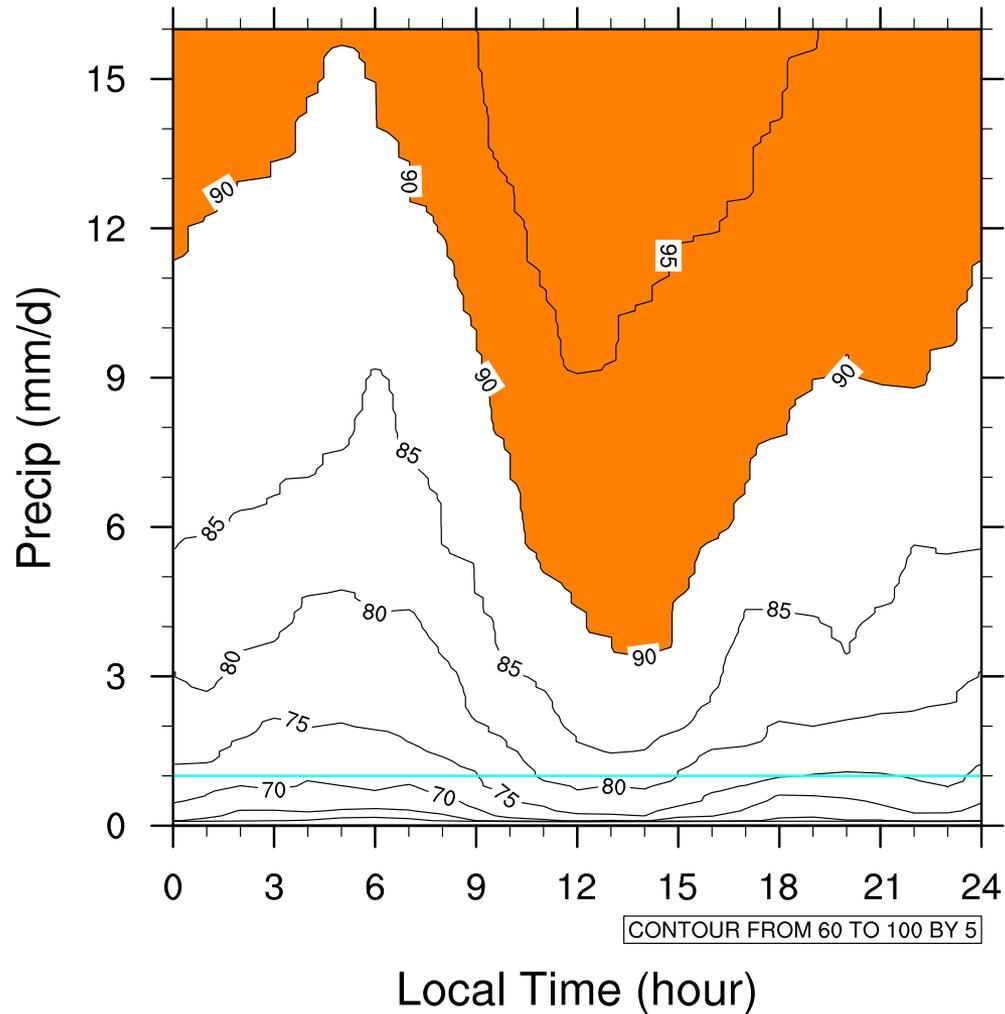


Diurnal cycle at ARM SGP

- Observational study
- Model evaluation

Precipitation Histogram

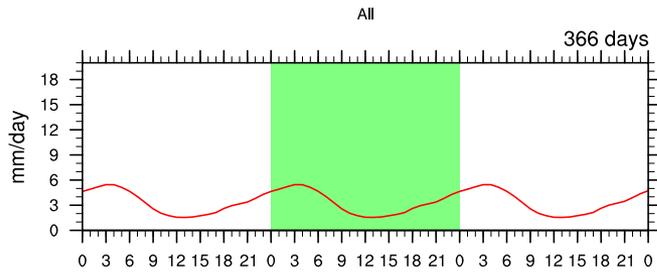
ARM SGP Warm Season May-August



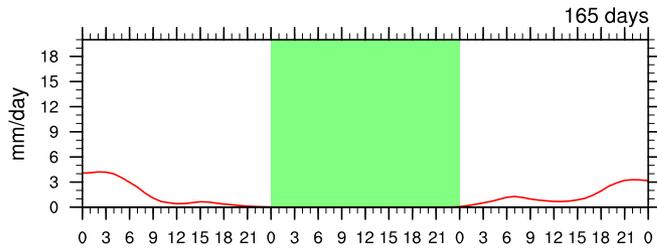
Diurnal cycle at ARM SGP

- Diurnal cycle of precipitation and clouds
 - Clear or drizzling days (<1 mm/day)
 - Nighttime precipitation (midnight to dawn)
 - Typical land late-afternoon/early-evening convection

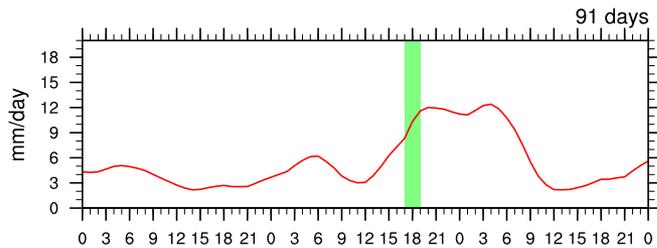
ARM SGP Observation



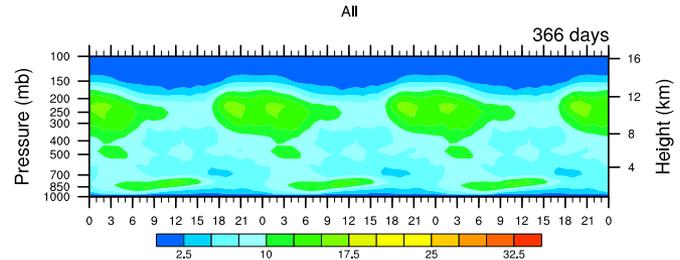
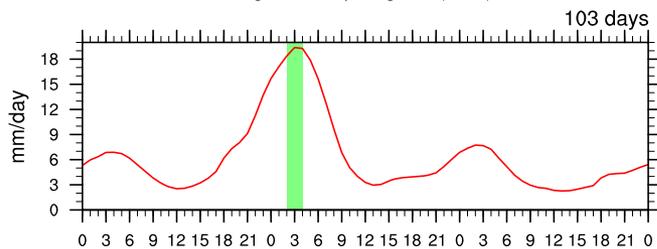
Weak Precipitating Case (< 1mm/day)



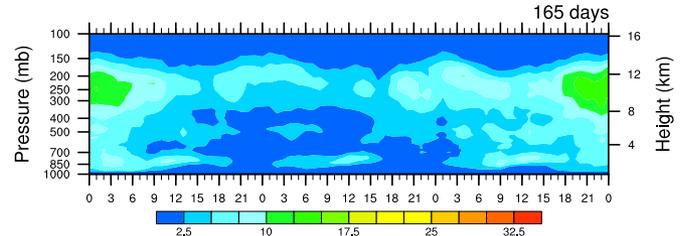
Daytime Precipitating Case (18 LST)



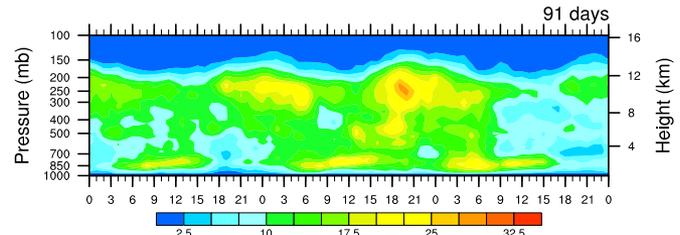
Nighttime Precipitating Case (3 LST)



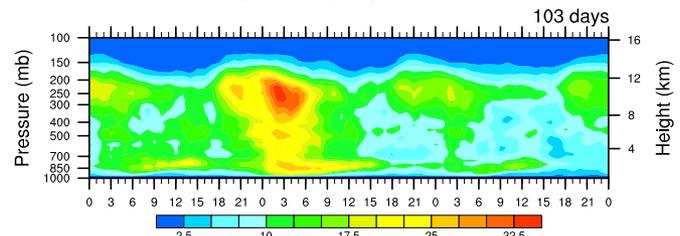
Weak Precipitating Case (< 1mm/day)



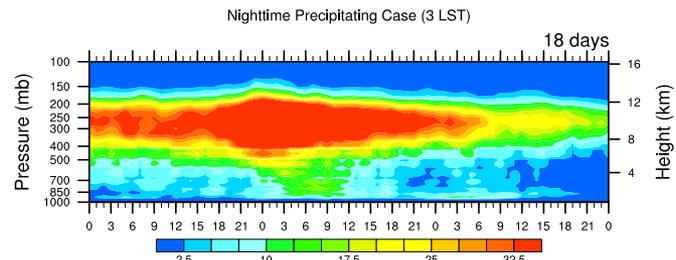
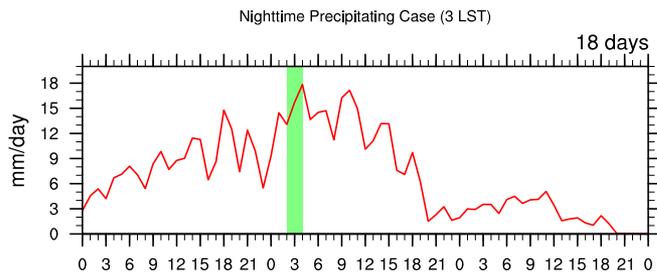
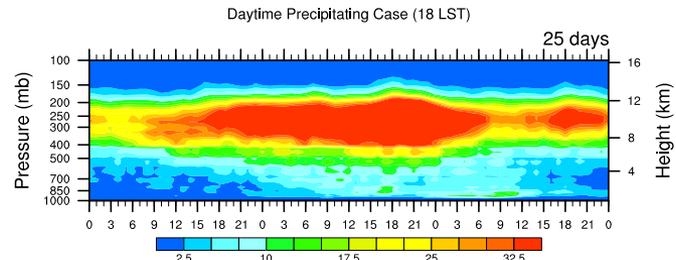
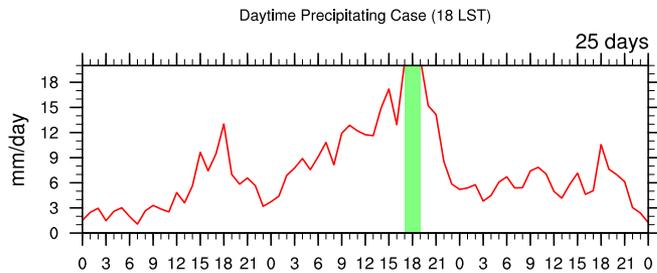
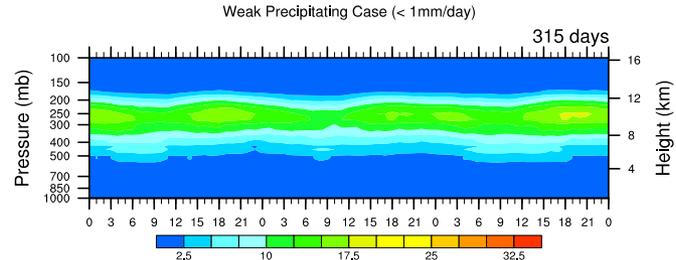
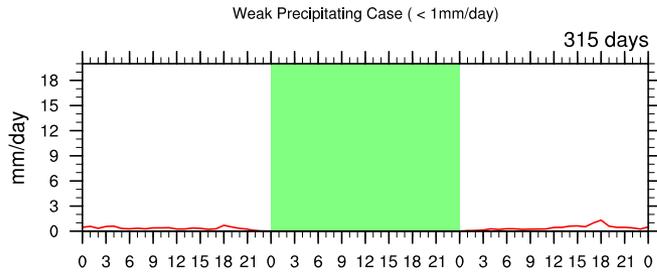
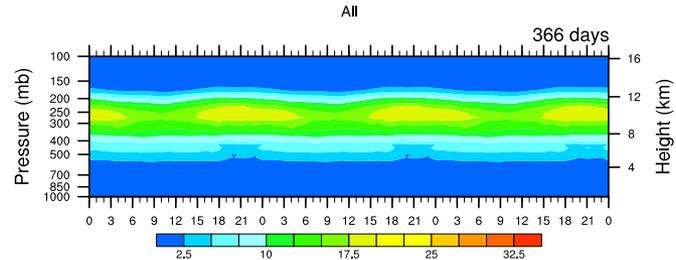
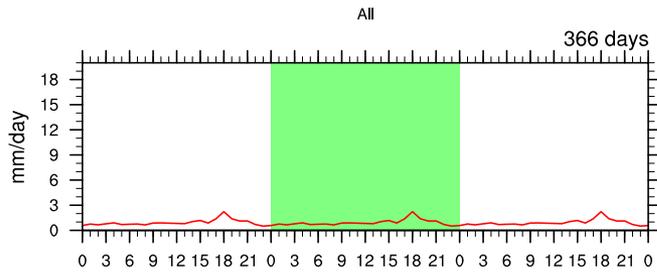
Daytime Precipitating Case (18 LST)



Nighttime Precipitating Case (3 LST)



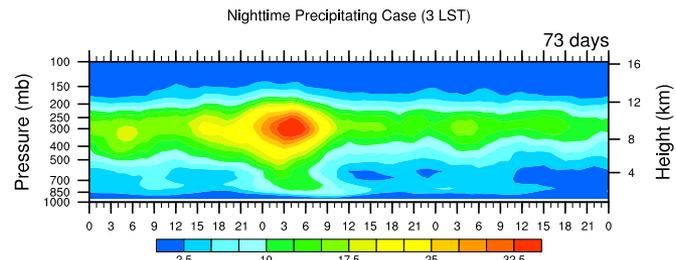
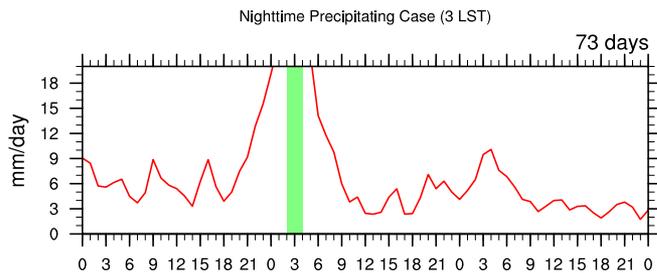
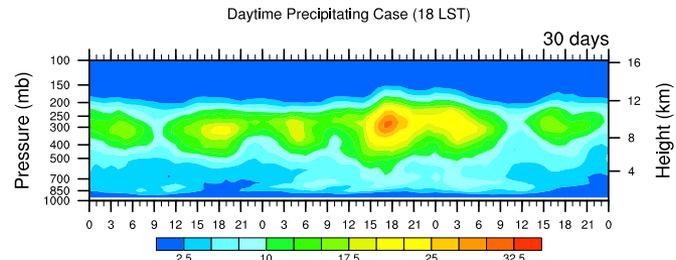
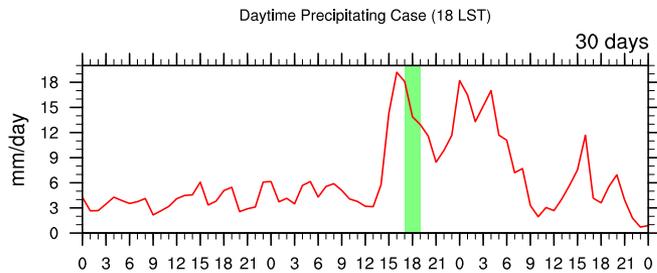
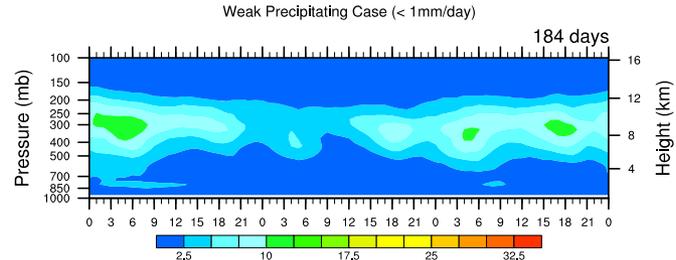
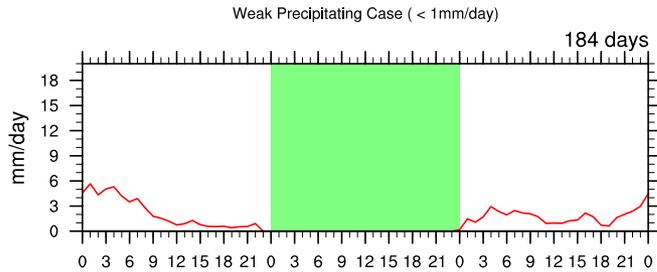
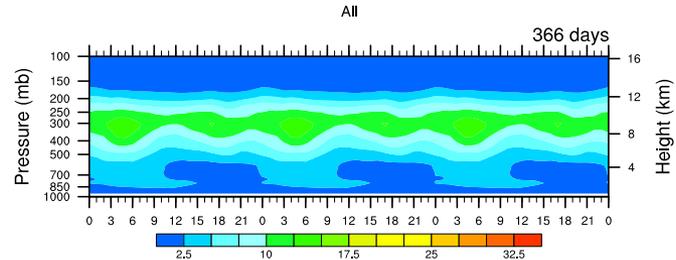
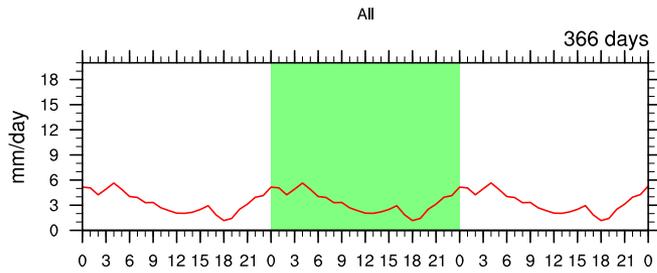
MMF Output near SGP



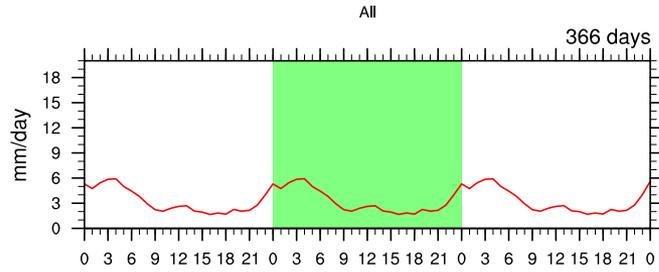
Diurnal cycle at ARM SGP

- Large-scale forcing?
- CRM deficiency?
 - Pete/Robert's SAM with continuous forcing (Xie et al, 2004)
 - Intermediately Prognostic Higher-Order turbulence Closure (IPHOC, Cheng et al, 2006)

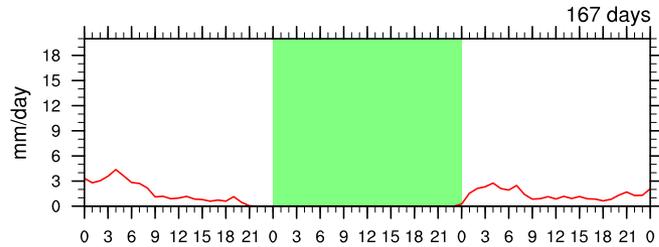
SAM with continuous forcing



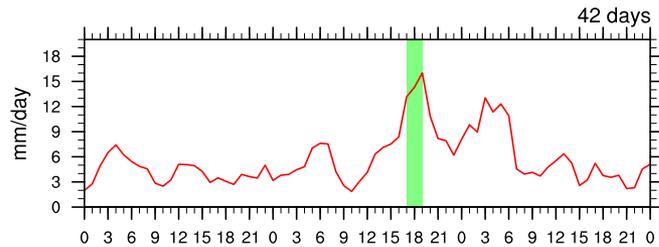
SAM+IPHOC with C.F.



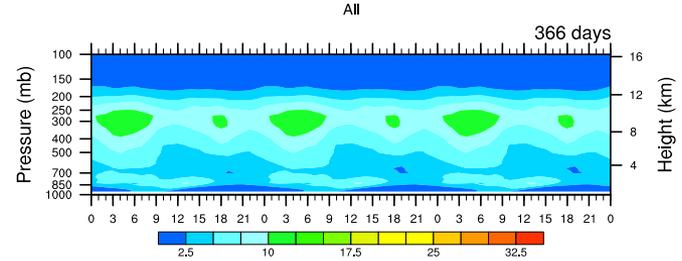
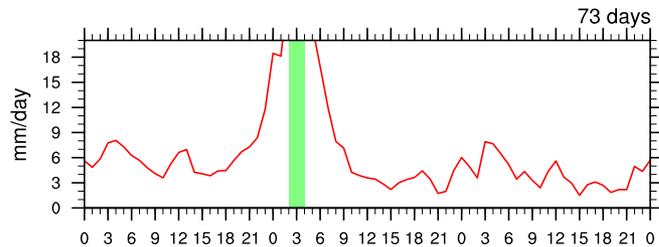
Weak Precipitating Case (< 1mm/day)



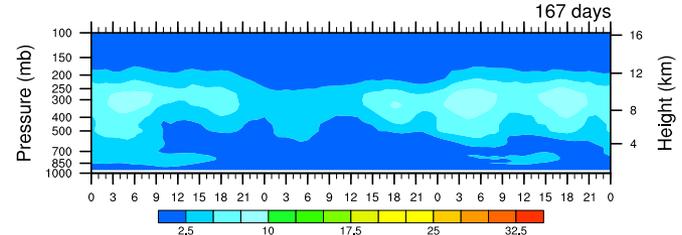
Daytime Precipitating Case (18 LST)



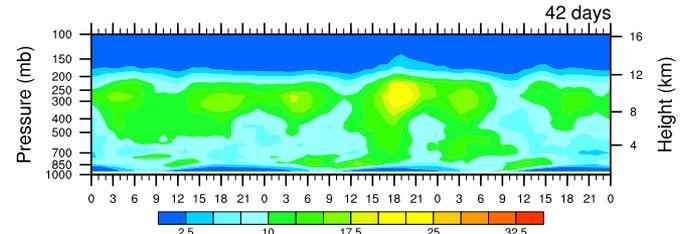
Nighttime Precipitating Case (3 LST)



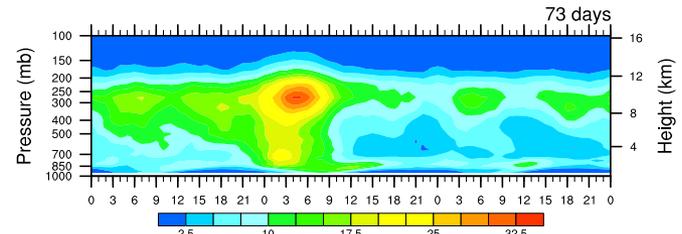
Weak Precipitating Case (< 1mm/day)



Daytime Precipitating Case (18 LST)



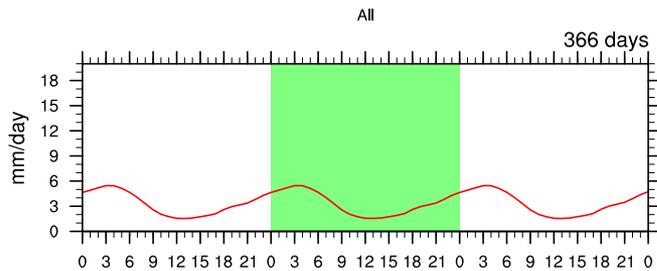
Nighttime Precipitating Case (3 LST)



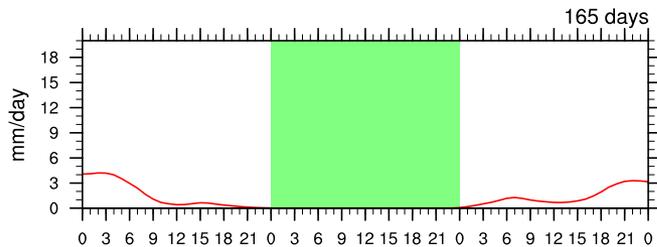
Future work

- Observations (boundary layer build-up)
 - Jay Mace data → LWP
 - Bowen Ratio (SHF/LHF)
 - Soundings (Cape/Cin)
 - 915 MHz wind profiler data (mixed-layer depth)
 - S. Kruger Meso-net data → cold pool features
- SAM sensitivity tests

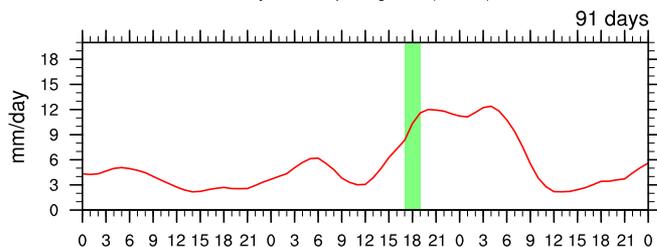
ARM SGP Observation



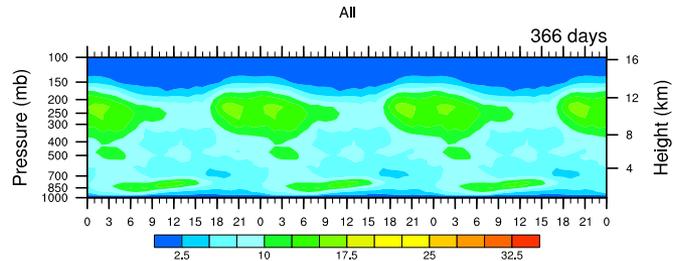
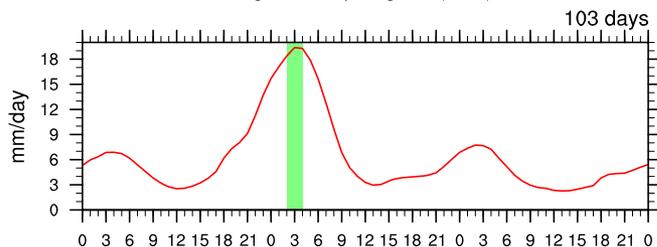
Weak Precipitating Case (< 1mm/day)



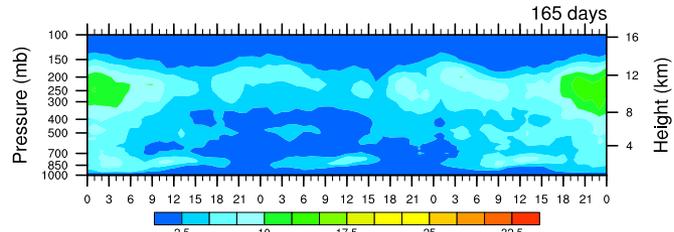
Daytime Precipitating Case (18 LST)



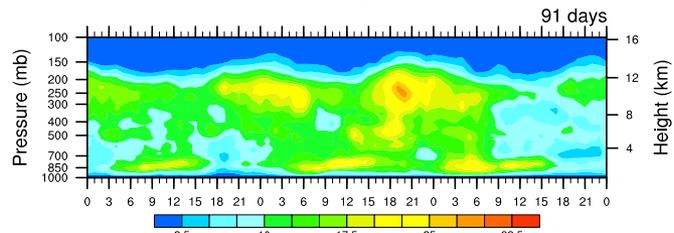
Nighttime Precipitating Case (3 LST)



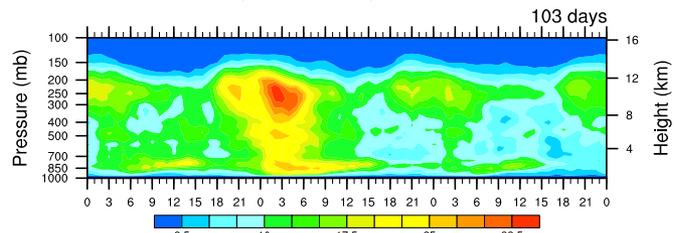
Weak Precipitating Case (< 1mm/day)



Daytime Precipitating Case (18 LST)



Nighttime Precipitating Case (3 LST)



Precipitation histogram

