

Date: June, 2015

Known bugs in all current CESM compsets:

- LW path (Steve Ghan, see bug report on the BB)
- SO2 wet deposition bug fix for CAM4
- Wet deposition using the NEU scheme for CAM5 (without chemistry)
- MEGAN fixes
- ValMartin update in deposition velocities

Known bugs in CESM1.2.0 and CESM1.1.1 compsets with chemistry:

- Tropospheric surface area density (SAD) calculations: BC is not included in the surface area calculation. BMOZSOA, FMOZSOA, FSOA compset: SOA is also not included in SAD, this results in smaller SAD, and a reduction of CH4-lifetime
- Double-counting of aerosol uptake reactions due to consideration of tropospheric and stratospheric aerosol SAD between the tropopause and cloud top in CAM5-Chem
- Dust tuning applied to all compsets for 1.9x2.5 horizontal resolution, besides for FMOZMAM compset: dust\_emis\_fact needs to be set to 0.21D0

Known bug in CESM1.2.0:

- In tropospheric and strat-trop mechanisms (BUT NOT IN WACCM)  
Wrong reaction rate for reaction:  
[O1D\_02b]  $O1D + O2 \rightarrow O + O2$       1.65e-12, 55.  
Needs to be corrected to:  
[O1D\_02b]  $O1D + O2 \rightarrow O + O2$       3.30e-11, 55.

Known bugs in CESM1.1.1:

- All MAM compsets: tropospheric surface area calculation has a bug, leading to overestimated surface area
- Dust tuning is not applied to any compsets
- MEGAN emissions factors: CO emission factor had an error in the emission factor file going into CLM
- Two-product SOA scheme: SOA\*\_PROD units were not assigned correctly in the output, they need to be in molec/molec/s instead of kg/kg/s, but the output values are OK