On-going/planned simulations

International model intercomparisons

- AEROCOM: on-going (Andrew Gettelman): indirect effect of aerosols
- HTAP: on-going (Peter Hess): transport of pollution
- CCMval: now (JF Lamarque): stratospheric trends (1960-2100)
- AC&C hindcast: start 2009 (Peter Hess): tropospheric trends 1980-2008
- AC&C future: start 2009 (JF Lamarque): (mostly) trop. trends 1850-2300
- AR5 decadal: start 2010 (JF Lamarque): air quality in 2030
- AR5 long-term: start 2009-2010 (P. Cameron-Smith and JF Lamarque): role of interactive chemistry in 20th century simulations

Discussion on model developments and plans

Model developments

More user-friendly

- Finalize CAM4
- Complete merge with WACCM
- Fix all the remaining issues with specified dynamics
- Representation of aerosol processes in chemical mechanism

- Interaction with vegetation (CO_2 on isoprene, ozone on stomatal conductance, deposition and emission)
- Methane from wetlands/permafrost/clathrates
- Integration with RRTM photolysis; paleo applications

- 2-way coupling with WRF-chem
- Canopy/urban chemistry
- Sub-column representation (cloudy vs non-cloudy)

Science plans

- Role of land-use on atmospheric chemistry (biogenic emissions; deposition)
- Aerosols: role of biogenics/interaction with clouds
- Impact of short-term climate/air quality policies (coupling with economic model; use of IPCC emissions; megacities)
- Last Glacial Maximum methane-isoprene puzzle
- Identification and quantification of the role of chemistry in observed trends of climate and composition
- Methane emissions from permafrost (isotopes) : climate feedback
- Sea-ice disappearance and polar chemistry
- Ocean boundary-layer chemistry
- Global chemical weather and data assimilation