Short Term

- Constant need to keep the scheme up to date scheme. IUPAC06, JPL06
- Updates to photolysis cross sections and calculations
- We will have a set of updates of the inorganic chemistry and some changes to the organic schemes
  - O_3 and Acetone photolysis, inorganic chemistry
  - Some corrections to the chemistry of isoprene
  - Corrections to acetaldehyde
  - Gyloxial chemistry will be included soon.
  - SOA precursor oxidation

Short Term

- ‘Complete’ restart file

- Things to think about

  $CH_2O + HO_2 \rightarrow CH_2O.HO_2 \rightarrow$

  $IsopO_2 + NO \rightarrow HNO_3 / ISOPNO_2$

- In-cloud scavenging by ice: need to add an explicit switch

Medium Term

- As new observations (lab and field) are made need to ensure that our tracers and lumped species are compatible – 'de-lumping'

- The 'opportunities'/ 'horror' of isoprene.
  Fate of isoprenal nitrates – deposition / return of NO_x
  OH recycling
  New lab / chamber / observational constraints
  Need to ensure that the chemistry reflects best real understanding

- Look at HO_2 uptake – two different schemes

- O_3 columns for photolysis

Medium Term

- OH fields from benchmark runs will be archived
- Need to check on the interaction between chemistry and met parameters (clouds!!!)
- Need to ensure that the chemistry provides what other groups (aerosols) need

Long Term

- Fundamental changes?
  Halogen chemistry in standard runs?

- Chemistry scheme is ‘old’/‘experienced.’ Been updated piecemeal but we may need to consider a whole sale re-fit

- Within the ESMF framework new integrators we will gain flexibility. May want to change from SMVGear to KPP.

Issues

- Old favourites:
  - NO_x / HNO_3
  - Global OH
  - Impact of changing GEOS versions on ‘chemistry’