

**GEOS-Chem Steering Committee Telecon
June 29, 2010 14:30 GMT**

Attending: Daniel Jacob, Bob Yantosca, Randall Martin, Mat Evans, Colette Heald, Kevin Bowman, Daven Henze, Dylan Millet, Dylan Jones, Prasad Kasibhatla, Yuxuan Wang, Steven Pawson

Absent: Rokjin Park, Max Suarez

General News (D. Jacob)

- Public release of v8-03-01
- V8-03-02 will include: updated CO₂ (U of T), improved scavenging by snow (Harvard), improved Hg simulation (Harvard), APM microphysics (SUNY), perhaps also GFED3 → may not all go into same version, CO₂ is the top priority being checked by Ray Nassar
- Overall we are progressing well on the priority list for model development defined at the last users' meeting.
- Randall question: V8-03-01 default F non-local PBL mixing scheme, Bob/Daniel respond that should be T for GEOS-5 → objectively better, being used at Harvard

Regional AQ WG Report (Y. Wang)

- Code for nested grid CO₂ simulation over E Asia – based on code from Ray Nassar. Code is pretty much mature
- Developing nested grid Hg simulation over E Asia – based on code from Chris Holmes, also help from Lyatt's group who is working on nested grid for NA
- Lin Zhang has been working on nested grid for NA, based on Aaron van Donkelaar's work → some improvements & emissions updates

Adjoint & Assimilation WG report (D. Henze, K. Bowman)

- Adjoint for CO₂ simulation has been added (from Ray Nassar) – available once the CO₂ code is available in the forward model
- Methane adjoint is being developed by a couple of different groups, would like to roll into standard code
- New observation operators template being produced by the TES team
- Asian nested grid adjoint in development (Zhe Jiang)
- Looking at how to parameterize lightning NO_x in a way that makes sense for inversions
- Zhiming Ku (MIT) optimizing aircraft emissions?
- User base is growing (~24 signed up, at least a dozen have downloaded and are running code), trying to keep the wiki up to date with activities
- Porting off-diags covariances in v7 to v8, some discrepancies to be worked out.
- Some questions about evolution of code: using pre-processors, etc.
- Discussion of use of Ensemble Kalman filter with the adjoint – could work with NCAR group (Avelino Arellano) if want to wrap DART with GEOS-Chem, but seems like it would involve quite a bit of time/coding commitment

Carbon Gases & Organics WG Report (D. Millet, D. Jones)

- Dylan Millet has a student working on updating anthropogenic hydrocarbon emissions (identified as a priority from last User's Meeting)
- Ray Nassar's working on finalizing CO2 code submission with Harvard, paper describing this simulation has been submitted
- CASA fluxes: respiration fluxes implicitly accounts for annual cycle of biomass burning, so implementation of GFED currently double counts carbon fluxes. Prasad suggested taking the GFED respiration fluxes instead of CASA (available from 1997-2009).
- Discussion point: concern about the members of the community that have obtained CO2 code but have not signed up on the wiki. This was identified as a concern across user groups, particularly in order to identify future conflicts and overlap in coding/research efforts. With a large community open communication is more of a challenge.
 - Action item 1: Daniel will email the entire user community to encourage communication
 - Action item 2: WG chairs will identify user groups whose wiki info is out of date and get in contact

Emissions WG Report (R. Martin)

- Revised wiki page following aerosols wiki page
- Documentation of anthropogenic scale factors now on the wiki
- Updates on anthro VOCs, CO2, GFED2 have all been discussed
- Aircraft emissions: Lee Murray contacted Mark Jacobson's student, still waiting to hear back from them. Possibly Steven Barrett @ MIT using these updated emissions
 - Action item: Daniel will contact Steven Barrett

Aerosol WG report (C. Heald)

- V8-03-01 includes lots of new aerosol functionality. Important patch released by Harvard yesterday that corrects a major bug found in ISORROPIA by Havalala Pye → should be downloaded by all using inorganic simulation v8-03-01.
- Issue of using LWC in GEOS-5 for wet dep calculations (LWC not available in previous GEOS fields so calculated from other met fields). Appears to improve sulfate simulation over the US (Lin Zhang). Jenny Fisher will be submitting this update to the standard code.
- APM microphysics in the pipeline (v8-03-02) – currently working on interfacing with v8-03-01
- Jun Wang working on non-spherical effects of dust properties. Intention to update on the timescale of a few weeks

Chemistry & Oxidants WG Report (M. Evans)

- Steven Barrett joining MIT going to put strat chemistry code into GEOS-Chem
 - Action Item: Mat will inform Steven about previous work by Gabriele Curci
- Tropospheric bromine simulation should be implemented in the future.

GMAO Developments (S. Pawson)

- New version of GEOS-5 eventually but no official date yet
- GEOS-6 on 0.25 degree resolution: no firm target dates, likely still in 2011

Carbon flux pilot project (K. Bowman, S. Pawson)

- NASA funding to support centers to work on carbon → will be expanded to community in the medium term
- GMAO, JPL & NASA AMES together → work through a year of GOSAT retrievals (JPL), merge with model forecasts from GEOS-5, using adjoint to invert for surface fluxes
- Multi-parameter approach inversion within GEOS-5 to look at model uncertainty. Ensembles of ~40 members of forward model simulations looking at different ocean and land states (GMAO) and then sent over to JPL to use adjoint on each ensemble member, or use the ensemble to estimate forward model uncertainty.
- Possible need to streamline input met fields processing with online model for this kind of work. Perhaps needs to be post-processed at GMAO, or perhaps Bob would need to work with JPL to develop scripts.

Column Code Development Report, Software Issues (R. Yantosca)

- ESMF column code interface adapted, bugs corrected, finalizing this and will be submitted back to Arlindo @ GMAO to test within GEOS-5.
- Patches available since release v8-03-01 available through git
- Now migrated GEOS-Chem and input files to git repositories

Running the model with GISS Model E (Lee Murray & Loretta Mickley, Harvard)

- V8-03-01 includes two working versions of GISS driven GEOS-Chem
 - GCAP: standard code
 - ICECAP project: using GISS model E for LGM, Holocene, present day (now in a git branch will be available in standard code shortly)
- GISS models presently both at 4x5, model E should be 2x2.5 at the end of the summer, and then model version 3 at 2x2.5 to follow
- Code is backwards compatible, does require different flags for GISS model 3 and model E
- Further details in memo from Lee Murray

GFED3 (P. Kasibhatla)

- Available on website 1997-2009
- Issue 1: how we deal with 0.5x0.5 resolution – retain at this resolution and re-grid online
 - Action Item: Prasad will see if he can modify existing code to do this
- Issue 2: partitioning of emissions into different fire types in GFED3, what emission factors to be used? Some of these available in GFED3 but not all GEOS-Chem species are included here.
 - Action Item: Prasad will look at scaling non-GFED species to CO&NOx

Update to model credits (D. Jacob)

- Up to date now to v8-03-01
- Removed from list into model history:
 - GEOS-5 developers
 - HO₂ uptake by aerosol → check with Lyatt
- Implement a 1 year time limit on development credit (from implementation in standard version of GEOS-Chem), with potential exceptions to be reviewed by Steering Committee
- Next telecon: review older developments