GEOS-Chem Steering Committee Telecon
April 12, 2013 10-11:30 Eastern

Attending: Daniel Jacob, Bob Yantosca, Loretta Mickley, Yuxuan Wang, Colette Heald, Randall Martin, Dylan Millet, Mat Evans, Jeff Pierce, Jinqui Mao, Ray Nassar, Dylan Jones, Noelle Selin, Yuxuan Wang, Jun Wang, Daven Henze, Prasad Khasibhatla, Hong Liao, Kevin Bowman, Lyatt Jaegle

Absent: Paul Palmer, Steven Pawson

1. **IGC6 Logistics (Daniel)**
   - Everything on track, no info yet on webstreaming and instructions for presenters to upload presentations, but all of this information anticipated soon
   - Losing registration from Fed employees (due to travel restrictions associated with sequester). 180 expected attendees. Still plan to have overflow room.
   - Poster presenters will be asked to provide a slide and need to put together an automatically rotating talk
   - Also need to send a reminder to oral presenters about expectations
   - Need some guidelines for WG presentations on the morning of the first day: envisioned to be like science presentation (why important, what are the issues facing WG, what are the problems we have, what are the issues we are facing ahead, but assume the audience is the broader audience not the WG)
   - Present/retiring WG chairs should give presentations and new WG chairs lead working groups
   - Suggestion for jobs board outside meeting room (Mat)

2. **IGC6 Agenda (Randall)**
   - Some attrition, some cosmetic changes, still time for last minute changes before finalizing
   - Had suggestions for prizes for best poster introduction, need someone to coordinate. Mat volunteered to organize. Prizes to be funded by NCAS
   - Reminder about expectations for presenters to go out in same email with final agenda and AV instructions. Email will also include info on jobs board, poster prizes.

3. **Progress on 9.2, GIGC (Bob)**
   - Up to v9.02g benchmarked (includes chemistry updates)
   - Grid independent model running independently in the GEOS-5 GCM. Not completely validated, and interface needs to be refined, but does work and is stable. Currently just chemistry, but will also include dry dep (inputs to dry dep scheme need to be linked to GCM). Maybe in a year will have an emissions component. No specific plan to have the stand-alone GEOS-Chem to work with MPI/ESMF parallelization (unfunded), but clearly this is a high priority for the community. Should discuss this at the upcoming IGC6 (who and what resources?). Need to identify how broader community can help support the development of a stand-alone plan.
   - Modifications for running hi-res nested grid model for updated SEACRS mission
     - Investigating working with flexible precision (Real 8 to Real 4) to save on memory
   - Mat working on replacement of SMVGEAR with KPP (see below)

- After v9.02h will merge grid independent updates
- Need to also merge in TOMAS changes after these changes
- General release philosophy: we have slowed the pace of new releases (last release of v9.1.3 last September) still working on v9.2 and it won't be finished until end of summer. We could interrupt the process and put out a public release but this would slow us down. Better to put in these updates (emissions and aerosols should go quickly) and stay the course with v9.2. Perhaps we were too ambitious about our plans for increments between versions? Daniel solicited feedback on the process. Jeff indicates that slower version releases are easier to handle. Dylan raised the concern that people could start using interim versions. Randall encourages 6-9 months releases to avoid this. Bob pointed out that the development cycle currently includes lots of code (not science) updates.   Colette raised a concern about less priority items falling off the list and diverging significantly from baseline code. Arranged the updates by areas in v9.2, thought it was a good thing at the time, but perhaps not sure. Starting with v9.3, we will implement updates in priority order and just stop every 9 months to put out a new release.

4. **Updated KPP (Mat)**
   - Chemistry scheme is currently a klutzy hybrid of KPP and SMVGEAR. Mike Long came to York and both he and Mat considered how to develop more flexible chemistry scheme with KPP. Mike making good progress, now have a version which can run with clean KPP and need to implement GEOS-Chem mechanism. Should also be faster and allow for on-the-fly chemical reduction mechanisms. Mat sees long-term plan to have the flexibility to connect with MCM .
   - Might make it in to v9.3
   - Would then retire SMVGEAR

5. **Model Adjoint Updates (Daven)**
   - Updates into the main branch of the adjoint code all listed on the wiki, including: fixing emissions issues in forward model, GFED3, calculation of non-diagonal error covariances, etc
   - Before IGC6 would like better way to output rxn rate sensivities, deposition
   - Have a telecon scheduled on April 26th
   - Community is vibrant. Seeing a lot more interest in people coupling GEOS-Chem to another model (eg. couple TEMIS adjoint to GEOS-Chem adjoint). Will face this issue of how GEOS-Chem evolves with other Earth System models in the future. Question of whether we will support interfaces between models. Is ESMF the solution? Only if people have ESMF capability. Perhaps we need to support an interface and interested parties taking responsibility for modules (eg. TOMAS). Want to be careful that the Support Team's focus doesn't shift too much to these efforts at the expense of the "core" mission/capabilities of GEOS-Chem. The model plays two roles: (1) GEOS-Chem as a tool for interpreting atmospheric chemistry observations and (2) GEOS-Chem as an element in Earth System Models. Need to manage these somewhat competing directions.

6. **Working Group Reports**
   a. Adjoint model and data Assimilation
   b. Nested Model

- Yuxuan Wang's group working with Bob & Harvard on nested 0.25 code. Have one day meteorology so can test.
- Jun Wang's group has been doing some more work on nested grid benchmark. Also developing a satellite simulator.

c. Chemistry-Climate
- Rokjin Park now driving GEOS-Chem with CESM meteorology
- Harvard group has improved interface between GISS and GEOS-Chem model (including consistent advection)
- Chris Holmes has implemented AR5 emission scenarios for GEOS-Chem (will hear more about this at IGC6)

d. Aerosols
- APM being extended for the stratosphere (David Keith and Steven Barrett's groups)
- RRTMG integrated online in GEOS-Chem at MIT, bugs shaken out, now just testing, will show results at IGC6 and hopefully code deliver shortly thereafter. David Ridley will work with Harvard group for grid independent interfaces (i.e. Netcdf files, will want to consolidate inputs for FAST-J and RRTMG))
- TOMAS news: Sal Farina working on integrating to bleeding edge code and getting parallelization working. Hopefully TOMAS will be easier and faster to use in the future

e. Chemistry
- Lots of chemistry updates in this version: Isoprene chemistry, peroxy chemistry, HO_2 uptake (one year benchmark on this last update to be available soon)

f. Carbon Gases
- Inconsistent CO photochemical production in tagged and full-chem. Jenny Fisher is working on this.
- Organic simulations developed and not yet migrated back into the standard code. Perhaps an opportunity to do this with new flexible chemistry. To discuss this at IGC6.
- Bundle of updates for CO_2 going into code (changes to anthro emissions, ocean and biosphere fluxes). Ray held off due to some question about how to integrate these changes, but will now go ahead.

g. Hg and POPs
- Developed a script for benchmarking that works well and can be shared
- Has emerging links to other groups
- Preparing for NOMADs campaign with NRT modeling
- Interested in mercury forecast fields

h. Sources and Sinks
- Chris Holmes identified a bug that affects biofuel emissions while using RETRO. Sajeev Philip will investigate.
- NEI 2008 being implemented at UMN and Harvard
- Harvard may implement 2011 too.

7. **POLMIP results (Jingqiu)**
   - Full chem intercomparison results are available.
   - Anyone who sees something interesting is welcome to be involved.
   - Jenny Fisher is writing a wiki page for a biomass burning intercomparison

8. **Recommendation of optimal time steps (Randall)**
   - Strategy to define truth using a simulation with short chemical and transport timesteps
   - Conduct simulations with longer timesteps and examine how the error increases as a function of the computational performance
   - Look for optimal timesteps
   - Ongoing effort; suggestions are welcome
   - Dylan M: include primary species (e.g. NOx) in addition to O3 and aerosols