C-Gases & Organics Working Group Report

RETRO anthropogenic VOCs

- Recommendation to implement as default, but keep GEIA as an option for some period

Task: Need a fix for GEIA to prevent emissions blowing up over S. Africa. Priority: Immediate (D. Millet, U. Minnesota)

GEIA biogenic VOCs

- Obsolete? Can these be retired?

Task: Replace with MEGAN. Priority: Medium (D. Millet, U. Minnesota)

MEGAN biogenic VOCs

- Currently 2 options for canopy representation (PCEEA and hybrid). Unnecessary?

Reactive uptake of OVOCs

- Concern that this new result needs detailed global evaluation and more indication that this is the state of science before implementing into standard model.

Task: Evaluate global impacts in GEOS-Chem of f=1. Priority: high (J. Mao, GFDL).

Acetone simulation

- Acetone simulation in GEOS-Chem is wrong with impacts on PAN and other species.

Task: Fix air-sea exchange based on methanol code from U. Minnesota; switch biogenic flux to MEGAN. Priority: immediate (E. Fischer, Harvard).

- Detailed analysis of acetone simulation with observations to better constrain sources and sinks. Priority: research (M. Fu, PKU).

Dicarbonyl simulation

- Not operational for present version of the model.

Task: Debug and migrate dicarbonyl simulation to current model release. Priority: immediate (M. Fu, PKU).

- While doing so, merge with Paulot chemistry?

Biospheric CO_2 fluxes

- CO_2 fluxes problematic; based on old casa output for one particular year (neutral biosphere).

Task: Investigate avenues for improved terrestrial CO_2 fluxes. Priority: medium (R. Nassar, Env. Canada)

Tagged CO simulation

- Secondary CO production from VOCs not well treated

Task: Modify code to read in and apply archived photochemical production rates. Priority: medium (D. Jones, U. Toronto).

HCN simulation

- Currently out of date

Task: Update based on 2009 Q. Li paper. Priority: medium (Q. Li, U. Edinburgh; D. Jones, U. Toronto).

CO_2 simulation

Task: Investigate possibilities for improved ocean fluxes (currently using Takahashi; too weak), and implement higher resolution anthropogenic CO_2 fluxes. Priority: medium (R. Nassar, U. Toronto).

CO-CO_2(-CH_4)

- Current project by U. Toronto/JPL.
- Merge into a single offline simulation for the standard model?

Read input data @ native resolution & regrid on the fly

- Important for nested simulations

Task: Add this capability. Priority: high (???).

Improved satellite diagnostic

- More flexibility for saving out XCO2 and other satellite-relevant parameters

Task: Implement diagnostic. Priority: medium (L. Feng, U. Edinburgh).

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End

Development priorities and questions

Satellite diagnostic output? Make it more generic? Useful, medium term. Who?

modularize MEGAN, make it more generic and based on PFT distributions

Biome-bgc another biospheric model is being coupled with GC at UofT. What do we do with the standard model, use CASA? Keep Biome-bgc as a research product, or have an option?

GFED2 → GFED3

- Ultimately shift entirely to GFED3, but keep GFED2 as an option temporarily for evaluation period