

+ = Task Accomplished X = Task Not Accomplished

Combo Model Working Group Summary

GMI Science Team Meeting, **10/13/06**

HIGH PRIORITY: Provide Support for Aura scientific community:

- Need GEOS4-DAS model output for Aura time period **+**
- Needs to be easily accessible: **+**
- Needs to be easy to read.
 - Construct IDL reader to read data sets. **+**
- Needs to be appropriate data **+**
 - Daily output of Aura variables - special MLS, HIRDLS, TES, and OMI subsets
 - Needs to include ancillary data - T, Potential Temp, Theta, PV - anything else?
- Needs to be advertised. **+ *** Advertise to AURA**
- Needs to be done soon. **+**
- Personnel - Douglass, Joiner, Strahan, Schoeberl

Combo Model Near-Term Development Goals – October 2006

Goal	Description	Personnel
Water X	Develop transported water field for stratosphere; modify PSC parameterization to utilize. Pending: needs to work in CCM first.	Considine, (Douglass, Stolarski)
Emissions +	Revise emissions inventories; check LWI index in GEOS4-DAS; fix soil NO _x problem in GEOS4-DAS 2x2.5 model.	Logan, Duncan
Rn transport X?	Understand differences between Rn transport in GMI vs GEOS-CHEM NO OVERSHOOT PARAMETERS IN GMI	Hongyu Liu
Lightning +	Update lightning parameterization in Combo model	Pickering
CO bias +	Fix/understand tropospheric CO bias - see tropospheric working group discussion – Seasonality of Chinese Emissions	Duncan, Logan
Met fields -1 +	Continue GEOS4-DAS met field processing to facilitate Aura data analysis.	Steenrod, core team
Met fields - 2 +	Get GEOS-4 forecast met fields generated - test runs Undergoing evaluation! ANOTHER YEAR? STE?	Duncan, Strahan
H2 +	Set H2 field to a constant 0.5 ppmv throughout model to fix its currently unconstrained treatment (very easy fix).	Considine, core team
JPL-06 +	Implement JPL-06 reaction-rates (put in KMG database and regenerate setkin files - do not hand-code this in!!)	Duncan

Combo Model Longer-term Development Goals – October 2006

Goal	Description	Personnel
Met Fields - 3 X	Obtain and process other met fields (ECMWF?) <i>Isn't GEOS-5 a higher priority now? And we have more model runs available, but not enough people looking at them.</i>	Steenrod, Prather, Newman, Nash (Eric)
Chemical Efficiency Xhold	Streamline chemistry - turn off species in stratosphere, etc. (Need to check to make sure no adverse impact).	Rodriguez?
Resolution issues X?hold	Investigate need for increasing model vertical resolution	Strahan?? David
Kernels X	<i>Implement averaging kernels and sampling techniques to facilitate satellite data analysis.</i>	<i>Duncan/Yoshida doing offline already</i>
Larccombo X?	Add LaRC combined chemical mechanism as a standard option - incorporate into revision control system	Considine, core team
Fastj-x X	Update ??? IMPORTANT AND MESOSPHERE	???
Aerosols X	Interactive aerosols in combo model IMPORTANT	Bian?
Wet scavenging X?	Solutions for low Pb-210 concentrations in GEOS4-GCM simulations	Liu, Considine
Tagged CO +	Separate CO tracers for each emissions source. <i>Also added dynamical tracer with 25-day lifetime.</i>	Duncan, Steenrod

+ = submitted, in press, or published

+/- = stalled

? = ?

PUBLICATIONS – October 2006

- PRETTY SOLID -
 - COMPARISON OF OZONE NEAR TROPOPAUSE (SONDES) – Considine +/-
 - Maybe need 5-Year 4X5 94-98 daily O3 and T
 - Within 6 months.
 - COMPARISON OF CHEMICAL MECHANISMS – Considine +/-
 - Some additional sensitivity runs needed
 - Within 9 months.
 - EVALUATION OF FVGCM UT/LS – Strahan +
 - BIOMASS BURNING IMPACT ON UT/LS - Duncan +
- NOT AS MUCH ...
 - AURA-RELATED PAPERS
 - VALIDATE DAS CALCULATIONS*
 - NON-VALIDATION ANNE, RICH, JENNIFER (**“Poised” to begin.**)
 - STUFF SHOWN BY RICH (Rich passed the buck to Jennifer.)
 - COMPARISONS BY JENNIFER (RESOLUTION, ...)
 - VALIDATION ISSUE? ?
 - HRDLS VS. MLS (ANNE) **HRDLS not ready yet.**
 - TROPOSPHERIC OZONE COLUMN (MARK) +
 - NO2 COMPARISONS – BRING SATELLITE AND AIRCRAFT, (**Yasuko + Jose**) REPRESENTATIVENESS ?
 - N2O BLOB ?

*Planned in several publications, not one paper per se.
See June 2007 Publications slide.

Combo Model Near-Term Development Goals – June 2007

Goal	Description	Personnel
Aerosols* *	Interactive aerosols in combo model	Bian, Duncan
Fastj-x* *	Update	Duncan, Rodriguez
Water	Develop transported water field for stratosphere; modify PSC parameterization to utilize.	Considine, (Douglass, Stolarski)
New Isoprene Emiss.	Implement new scheme from Harvard once validated.	
emissions	a) Implement new seasonality of Chinese emissions b) 2006 biomass burning emissions c) Diurnal variation : BB afternoon peak : FF rushhour overpass time issues – e.g., NO2 QINBIN	Duncan, Logan
HO2 uptake	Turn back on HO2 uptake on aerosols/Redo Aura runs	Duncan
Aerosol-cloud interaction	Incorporate GIT code into main trunk	///
GEOS-CCM v3 (GMI Combo + GEOS-5)* *	Get Combo to run in GEOS-5.	Eric N., Jules, etc.

Combo Model Long-Term Development Goals – June 2007

Goal	Description	Personnel
Met Fields - 3	Obtain and process other met fields (ECMWF?)	Steenrod, Prather, Newman, Nash (Eric)
Chemical Efficiency	Streamline chemistry - turn off species in stratosphere, etc. (Need to check to make sure no adverse impact).	Rodriguez?
Resolution issues	Investigate need for increasing model vertical resolution	Strahan??
Hindcast Runs	How Combo participate?	Logan
Larccombo	Add LaRC combined chemical mechanism as a standard option - incorporate into revision control system	Considine, core team
Nested Grid	Fine resolution for specified region. (Ken P., Mian, Jim G., Bryan)	Duncan, etc.???
Trop/Strat tracer	Identify STE and TST events more easily.	Logan
Wet scavenging	Solutions for low Pb-210 concentrations in GEOS4-GCM simulations	Liu, Considine

PUBLICATIONS – June 2007

- PRETTY SOLID
 - Impact of European pollution on N. Africa & Middle East (Duncan & Yoshida)
 - DAS vs Forecasts : Boreal fires of 2004 – Impact on US air quality (Yoshida, Duncan, Joiner)
 - Lightning?
- NOT AS MUCH ...
 - DAS vs Forecasts : UT/LS, Strat, Trop, ??? – Lots of model runs to evaluate and do science with!

Need to compare 3-D CO, O₃ for 2004-2005 (model to model).