iPETS Modeling Meeting
September 1-2, 2015
NCAR, Mesa Lab, Tower B, Room 680

Agenda

Note that the agenda is not intended to be a strict schedule. Rather it is a guide aimed at making sure we have enough time to cover our main topics of interest, with plenty of time for discussion. We can change it on the fly as necessary. Time slots for discussion will actually be interspersed throughout sessions; they are there to make sure the aggregate discussion time is sufficient.

Tuesday, September 1

8:30-9:00 Coffee/tea/light breakfast available

Introduction/Overview/Context

9:00-9:30 Intro, overview of iPETS, meeting goals (Brian)

For context, the IA modeling framework including PET, population modeling, CLM/THESIS tools, ISAM, household microsimulation. Previously identified priorities for PET model development and plans for model v 2.0. Meeting structure and goals.

9:30-10:00 Discussion

Fortran and GAMS versions of PET model: structures and comparison

9:55-10:00 Intro: why develop a GAMS version? Why carry out fortran/GAMS comparison?

10:00-10:30 Overview of current fortran version structure (Xiaolin)

Number/type of sectors, nesting structure, treatment of land, consumption goods, treatment of heterogeneity and income effects, etc.

10:30-10:45 Break

10:45-11:15 Overview of GAMS version (Ed)

11:15-12:00 Discussion

12:00-1:00 Lunch

1:00-1:30 Progress on comparison of fortran and GAMS versions for a common scenario (Matthias)

Comparison of solving a single scenario, including outcomes and computing time

1:30-2:30 Discussion

Does the comparison suggest anything about how we want to use the two different versions of the model? Are there implications for pre-/post- processing that can be used for both versions? What are the implications for next steps in development of GAMS model (e.g., adding land so that model can be used to test new approaches before implementing in fortran)?

Model calibration and tuning to a baseline

2:30-2:45 Overview of Ed's strategy for calibration to a baseline scenario (Ed)

2:45-3:30 Comparison of current implementation of calibration in GAMS and fortran versions (Matthias and Xiaolin)

3:30-5:00 Discussion

What are highest priority next steps for improving calibration and tuning methods?

Is it useful to pursue a calibration to a steady state growth path rather than a stationary state (no growth) in the fortran model?

Is it useful to pursue a dynamic calibration method (i.e., combining calibration and tuning to a baseline in a single step)?

Can the process be further automated?

Wednesday, September 2

8:30-9:00 Coffee/tea/light breakfast available

Model solution methods, with a focus on parallelization

9:00-9:45 Current solution method in fortran version (Matthias, Xiaolin)

Briefly: update on solution method including Newton methods for Newton A, B; testing of Newton parameters.

Main focus: Parallel solution with OpenMP

Metrics for solutions (how long a given simulation takes to complete using different solution methods, for different model configurations; whatever information we have on hand about this)

9:45-10:30 Parallelization with OpenMP and MPI (Nikolai)

Comparison of solving 1-region model with alternative approaches to parallelization

10:30-10:45 Break

10:45-12:30 Discussion

What are highest priority next steps for improving solution method?

Can we take advantage of CGD cluster for running model, and does it impose any new requirements on solution method? Is it worth trying to run on Yellowstone, particularly for the purpose of large Monte Carlo analysis, or for automated calibration?

12:30-1:30 Lunch

Priorities for development of model structure

1:30-2:15 Overview of priorities for further development of production sectors (Bas)

Energy accounting in physical units, type/number of sectors, bioenergy, CCS, consumption goods, resource constraints, …

Agricultural sectors, additional crop types (identify a minimum number for specific purposes?), treatment of land, management, consumption goods, …

2:15-3:00 Discussion

What are priorities for further development of model structure? How do these priorities relate to our research goals?

Emissions: what are priorities for adding additional emissions to PET? E.g. CO2 from land use, CH4, N2O, SO2, etc.

ISAM: how important is better linking of ISAM to PET? Version of ISAM that replicates CLM behavior? Regionally disaggregated version of ISAM terrestrial component?

3:00-3:15 Break

Wrapup

3:15-3:30 Summary of conclusions and next steps

3:30-4:30 Discussion of meeting outcomes

Include discussion of needs for model documentation

4:30 Happy hour