

# Bruce McCarl's GAMS Newsletter Number 27

Here I cover a number of items including a review of the developments in just about to be released GAMS 23.1 and mention future course offerings including a special offer on a BASIC class in one week.

## Expanded GAMS User Guide by McCarl et al.

I updated the User's Guide to reflect 23.0 with changes added here and there. This will soon be at <http://www.gams.com/dd/docs/bigdocs/gams2002/mccarlgamsuserguide.pdf> and will be resident in GAMS release 23.1. The main updates involved some minor coverage of 23.0 features plus fixing up the discussion of what model types max and main may occur in as the prior text was flawed as pointed out by Arie ten Cate and some improved discussion on environment variables in a conditional compilation context as suggested by Gideon Kruseman.

## Features coming in 23.1

The release of GAMS 23.0 was largely about solvers and internal manipulations for speed as apparently is 23.1. However a few notable new features are evolving as discussed below

### An update of profile

Several changes with the Profile statement timing capabilities in GAMS (see the speed section of the McCarl Guide) will appear with 23.1 that

- Add the GAMS command line parameter ProfileTol that is the counterpart of the Option profiletol=xxx;
- Add the GAMS command line parameter ProfileFile to cause GAMS to write the profile information to a user defined file.
- Add a summary to the IDE Process window plus the LOG and LST files that shows the 10 slowest sections discovered during profiling.
- Profileing now reports time on parameter and table plus other data statements and with GDX \$load and unload statements

### A way of managing process window/log file output

I use a lot of include files to minimize the unique code I need to write. This creates a large log file and does not work very well with the IDE and error finding as it is not programmed to index to the first error when there is one and one either has to hunt for an error line or may have it truncated out of existence by the line length limit. To reduce this problem 23.1 will contain new \$ commands \$off/onlog that will suppress line logging during compilation. This will be scoped like the \$on/off listing applying only to included files and any subsequent included files but reverting to \$onlog in the parent files i.e. when file1 includes

file 2 and file 2 contains \$offlog then subsequent lines in file 2 will not be logged but lines in file 1 will be.

## Solvers

New solver versions will be put into play in 23.1 with the it likely to include

- a new experimental Coin solver CoinCouenne that is a global optimization solver for non-convex mixed integer non-linear programs, similar to the commercial solvers BARON and LindoGlobal.
- New versions of the coin solvers CoinCbc, CoinGlpk, CoinIpopt and CoinScip
- New versions of the commercial solvers GUROBI, KNITRO, MOSEK
- Capability in EMP where disjunctive programs can be solved via the following alternative automated reformulations without changes to the model
  - Convex Hull
  - BigM
  - CPLEX indicators
- New In-core communication solver links for COINBONMIND, COINCBCD, and COINIPOPTD.

## Other features

A few other features that I have heard of are

- The default upper bound of integer variables will be changed from 100 to +Infinity
- Internally GAMS has been modified to allow faster reading of large ASCII file data statements that are not sorted
- A way of writing multiline macros will be included where a macro line terminated with a \ is assumed to continue onto the next line with an unlimited number of continuations allowed. Example:

```
*Note that the & can be used to protect a trailing blank
$macro one "just some text \
* comment is not part of a macro
second line of macro &\
third line"
```
- The default value for iterlim has been raised to +inf but note RESLIM is unaltered so users with big jobs still need to pay attention to that setting.

## Courses offered

I will be teaching

- [Basic GAMS](#) June 15-19, 2009 (3 1/2 days) in Hampton Virginia. The course is designed for those without GAMS usage experience but has also proved useful for those with years of experience. **I have a couple of slots left and will waive late registration for those registering by Thursday June 11.**
- [Advanced GAMS class](#) Aug 11-14, 2009 (3 1/2 days) in the Colorado mountains at Frisco (near Breckenridge). The course covers such diverse topics as links to other programs like macros, spreadsheets, speeding up GAMS, scaling,

debugging, improving output and advanced basis use along with many other topics.

- Further information and other courses are listed on <http://www.gams.com/courses.htm>.

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**June 4, 2009**