Training Session on the supply model
Slides prepared for the TS in Braunschweig

Dr. Alexander Gocht

Thuenen-Institute of Farm Economics

alexander.gocht@thuenen.de

Get Prepared and install CAPRI

Please get prepared before you do the course

- Remind yourself of the topics learnt in in Seville … (JR: ask Maria, upload add copy link)
- Basic knowledge in GAMS, sets (static, dynamic), parameters (domain check), variable (marginal, level, up and lo), equations (marginal), model definition (minimizing, maximizing)
- Understand the logic and the code of the provided examples see Annex (just copy to GAMS) and answer the question given at the top of the GAMS code
  - PMP calibration
  - Estimation of a production function
- Please ensure that you have understood:
  - What is a baseline in CAPRI (we will not touch this topic but is important to understand)
  - What is an mathematical programming approach
  - What is positive mathematical programming (see example)
  - What is the difference between a linear programming and a quadratic models
  - What is the difference between variables and parameters in GAMS

Please get prepared before you do the course cnt.

- Be prepared and install on your laptop the following software (or the version from Seville)
  - CAPRI model; Code: CAPRI Trunk r7309 ; https://svn1.agp.uni-bonn.de/svn/capri/trunk
  - Results: CAPRI Results r24; https://svn1.agp.uni-bonn.de/svn/capri_out_after2016/results
  - Software needed at your own computer
  - Java Version 8
  - GAMS Version 24.9
- Editors:
  - Notepad++ Version 7.5.6 (free available)
  - Kedit (download link http://www.kedit.com/kedit.downup.installer.html)
  - GAMSIDE (in GAMS included)
  - Ultraedit (trail version)
  - Microsoft Excel, Powerpoint
- Please ensure that you have a keyboard language-setting familiar to you and that you have administrator rights on your machine.

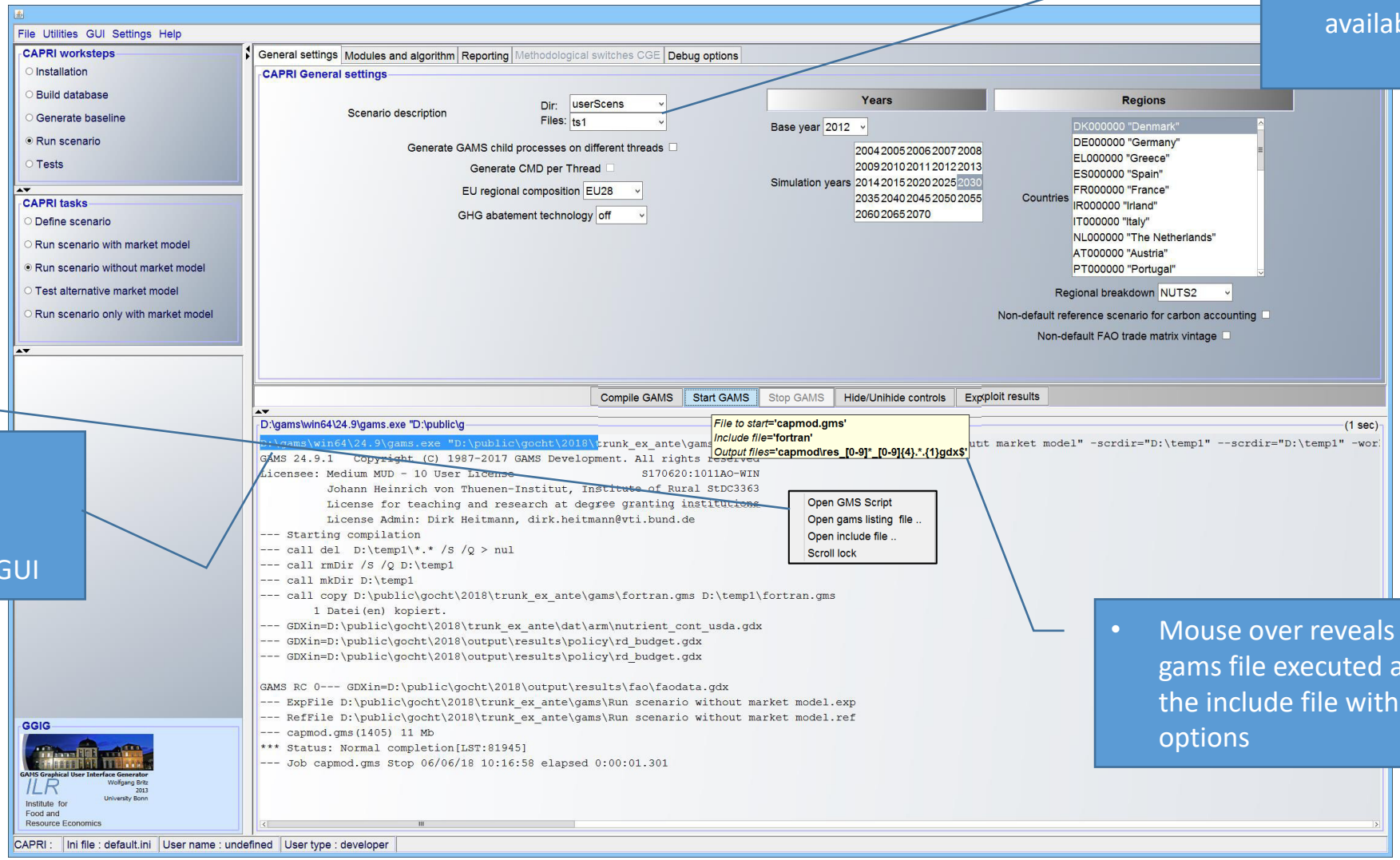
1. Introduction to the GUI

Right mouse click: console output

1. Open GAMS file with defined editor in settings
2. Open listing file
3. Open include File
4. Break of printout to console

- Compile Scenario
- First line is the command line generated by the GUI

- Scenario file is now available

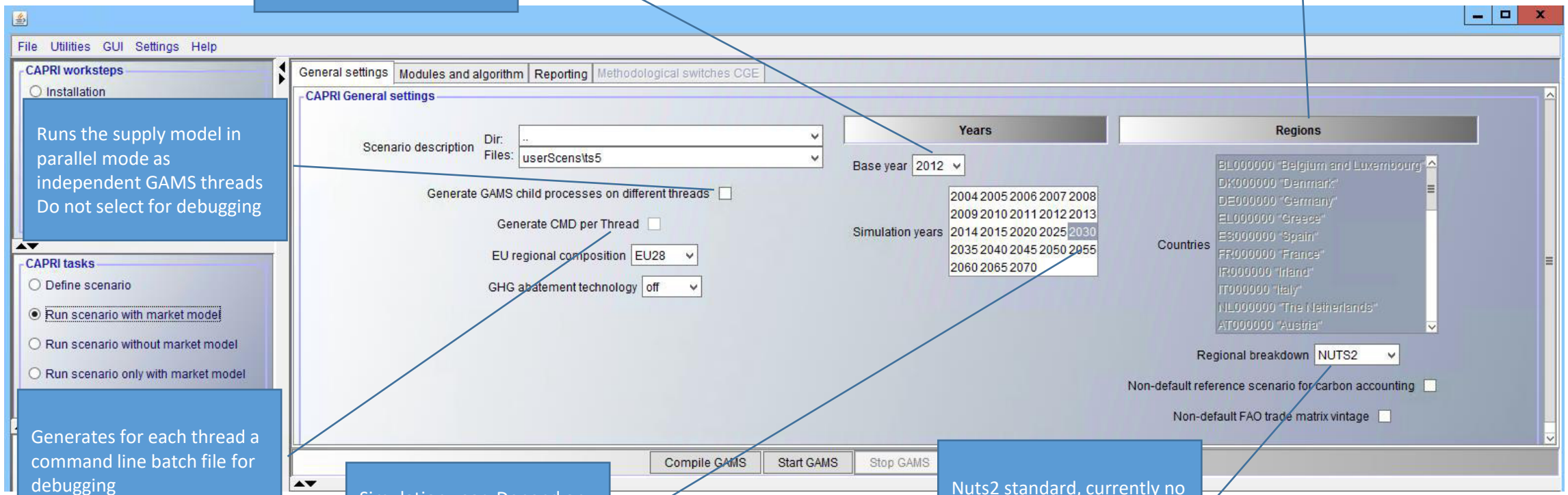


- Mouse over reveals the gams file executed and the include file with the options

Run scenario with market model

Base year: As the trends for 2030 depend on the ex-post values the base year matters. See results\capreg\ res_XX.gdx

With market module all countries in the EU needs to be selected

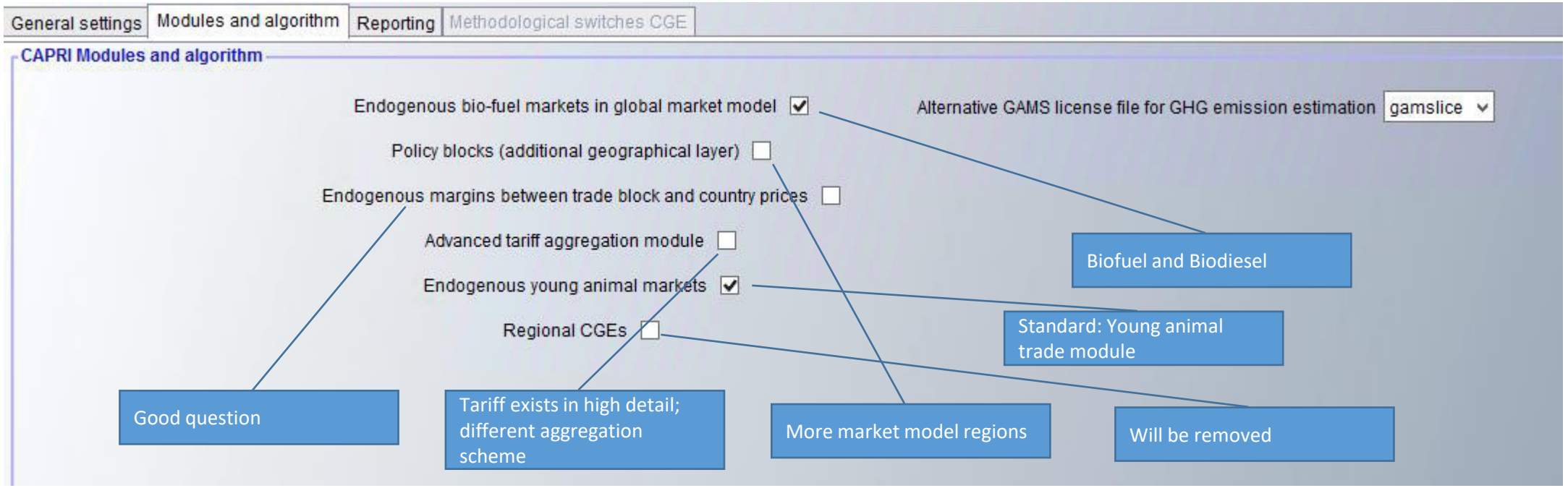


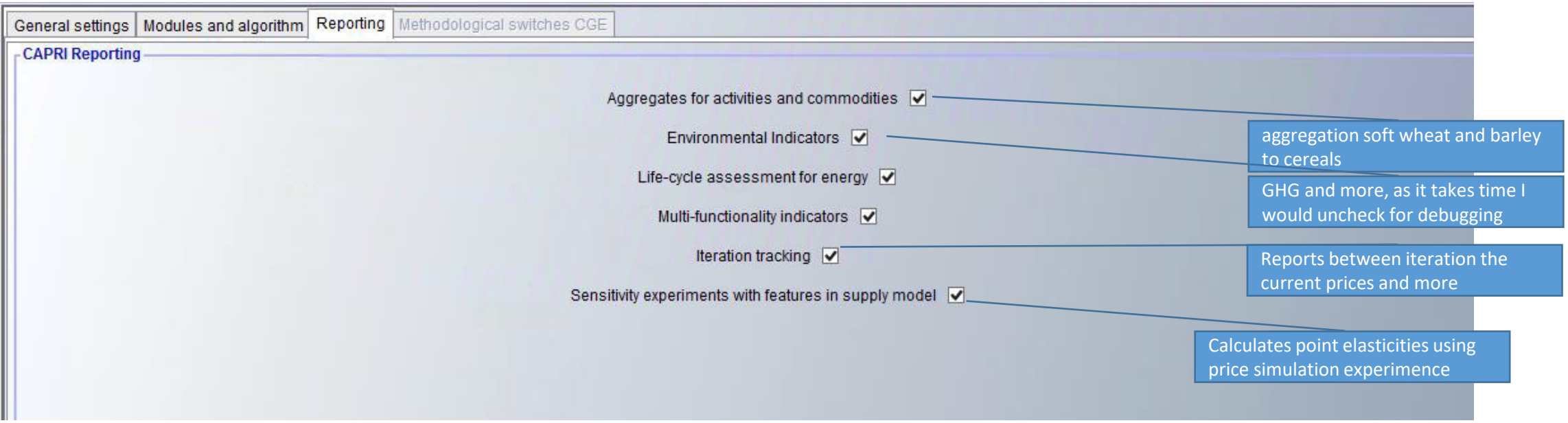
Runs the supply model in parallel mode as independent GAMS threads Do not select for debugging

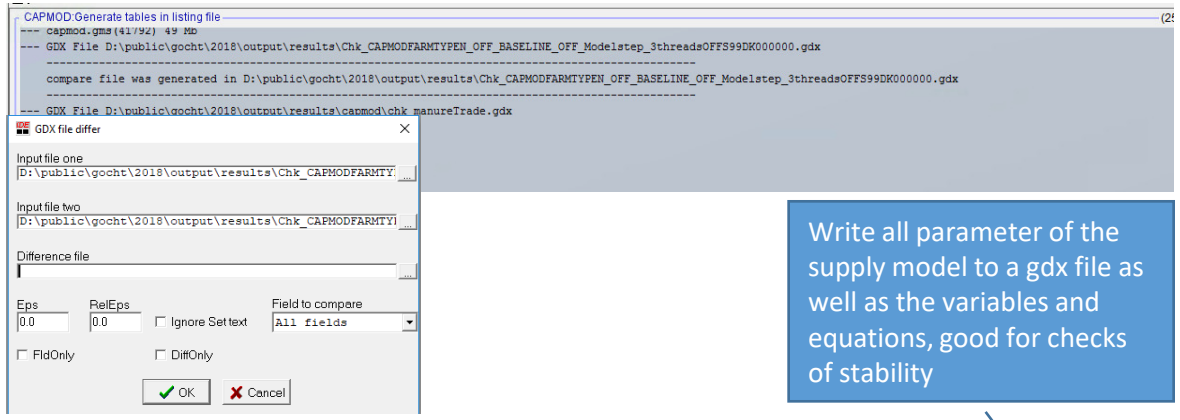
Generates for each thread a command line batch file for debugging

Simulation year: Depend on the result files for Calibration (see baseline and simini folder)

Nuts2 standard, currently no farm types, country level runs but not tested


General settings
Modules and algorithm
Reporting
Methodological switches CGE
CAPRI Modules and algorithm
Endogenous bio-fuel markets in global market model
Alternative GAMS license file for GHG emission estimation
gamslice
Policy blocks (additional geographical layer)
Endogenous margins between trade block and country prices
Advanced tariff aggregation module
Endogenous young animal markets
Regional CGEs
Biofuel and Biodiesel
Standard: Young animal trade module
Good question
Tariff exists in high detail; different aggregation scheme
More market model regions
Will be removed


General settings
Modules and algorithm
Reporting
Methodological switches CGE
CAPRI Reporting
Aggregates for activities and commodities
Environmental Indicators
Life-cycle assessment for energy
Multi-functionality indicators
Iteration tracking
Sensitivity experiments with features in supply model
aggregation soft wheat and barley to cereals
GHG and more, as it takes time I would uncheck for debugging
Reports between iteration the current prices and more
Calculates point elasticities using price simulation experimence



Switch listing of code in listing file on/off

Write all parameter of the supply model to a gdx file as well as the variables and equations, good for checks of stability

Steers the listing for the solver report

General settings | Modules and algorithm | Reporting | Methodological switches CGE | Debug options

CAPRI Debug options

Load meta information from older task ☑

Additional input data identifier

Additional result type identifier

Override results_in:

Override results_out:

Override restart_in:

Override restart_out:

Number of rows and columns to be displayed in the listing file

Supply model

Solution printing: Suppress

Determine point price elasticities ☐

generate gdx file with Values of Supply model ☐

Print gams code to listing: offListing

Solprint: On

Limrow: 0.0

Limcol: 0.0

Market model

Maximum number of pre-steps market model: 15

Solution print at preparatory solve ☐

Abort after preparatory solve ☐

Solution print for pre-steps in 1st iteration with abort ☐

Plus iterlim to zero for 1st pre-steps in 1st iteration ☐

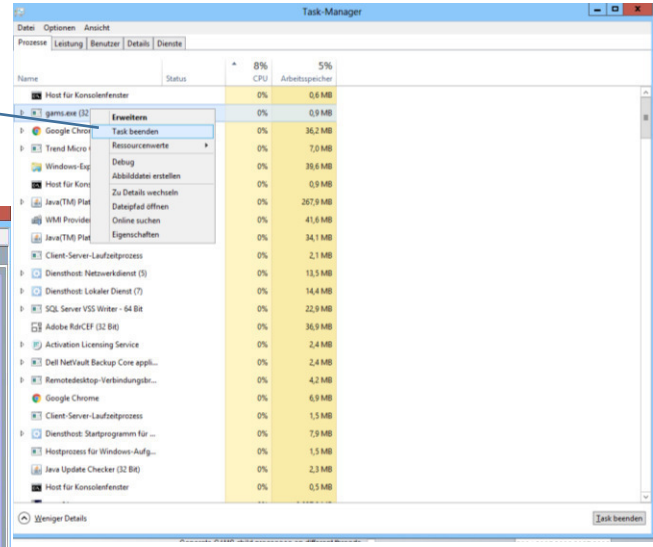
Number of presteps before abort: 1

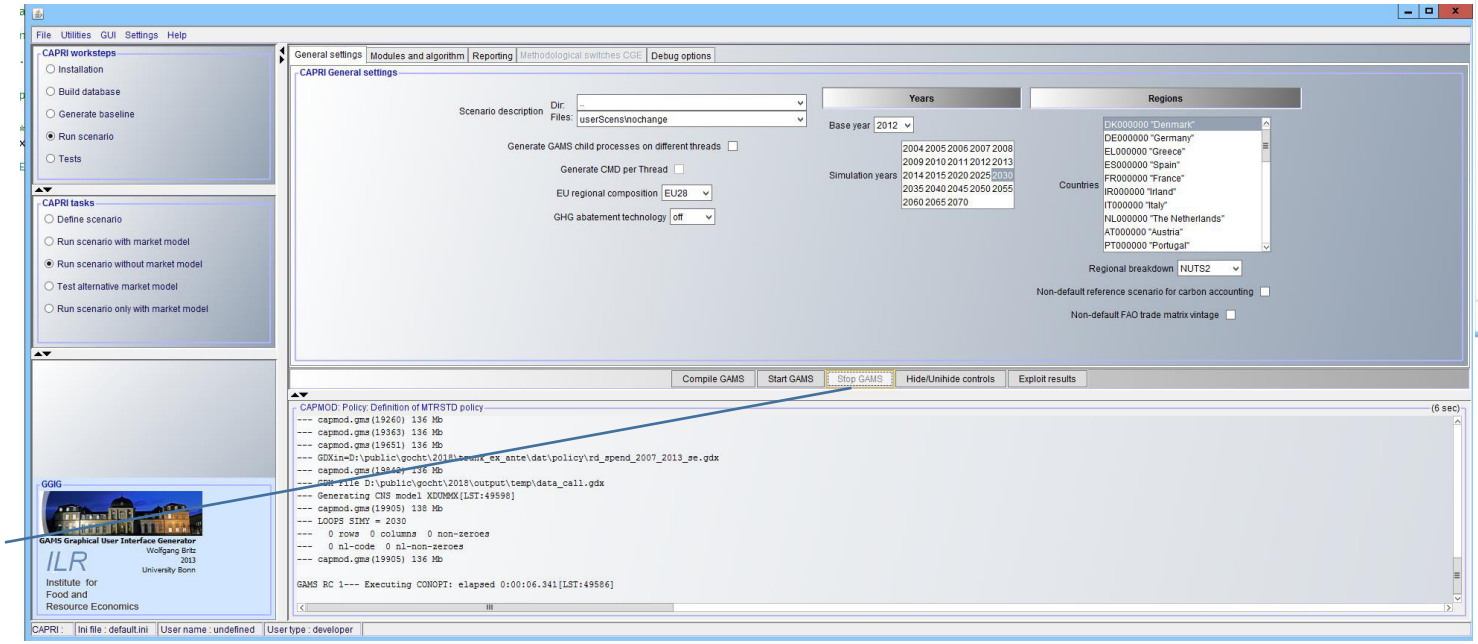
Kill simini file ☐

Compile GAMS | Start GAMS | Stop GAMS | Hide/Unihide controls | Exploit results

Stop an executed GAMS process

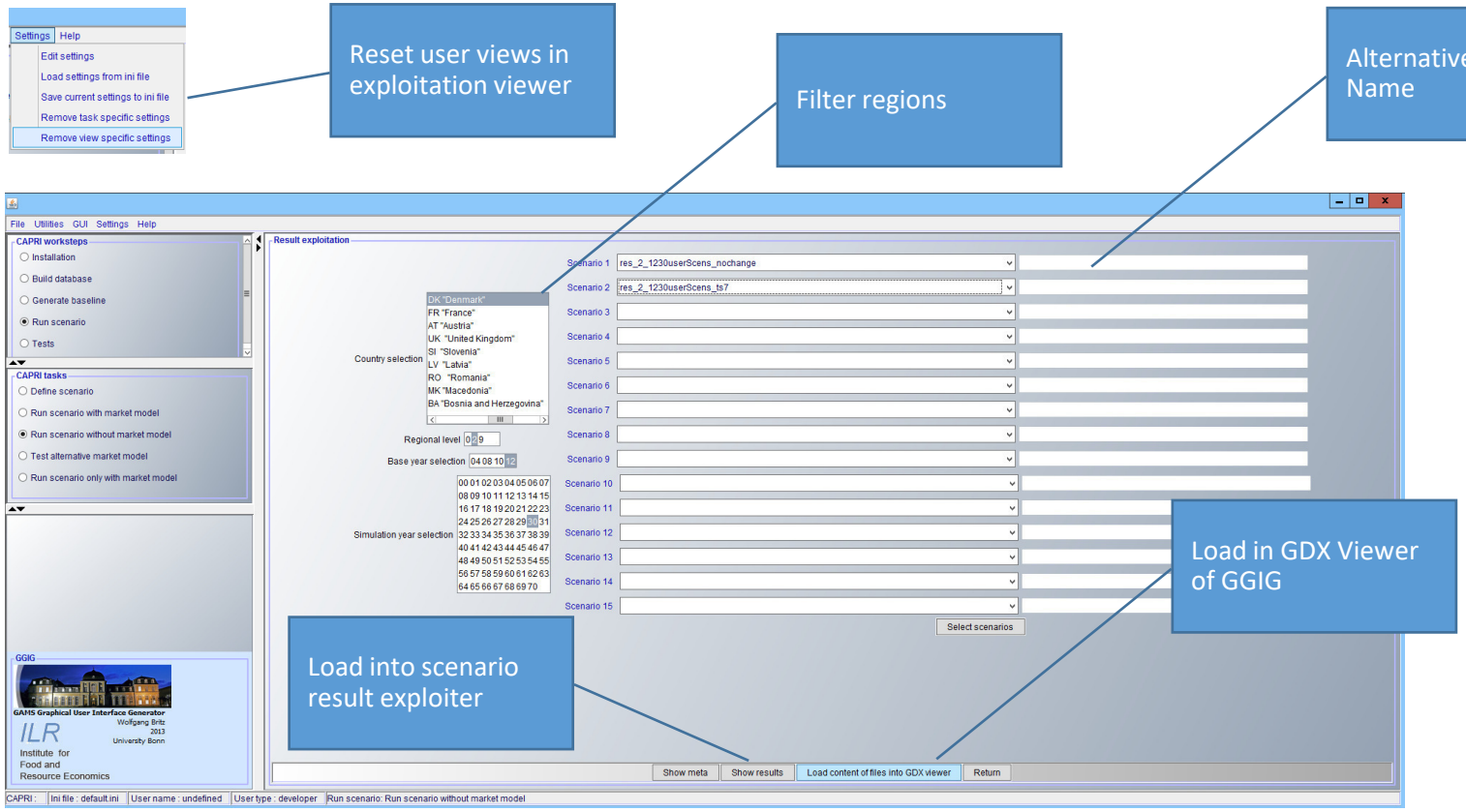
Kill by hand





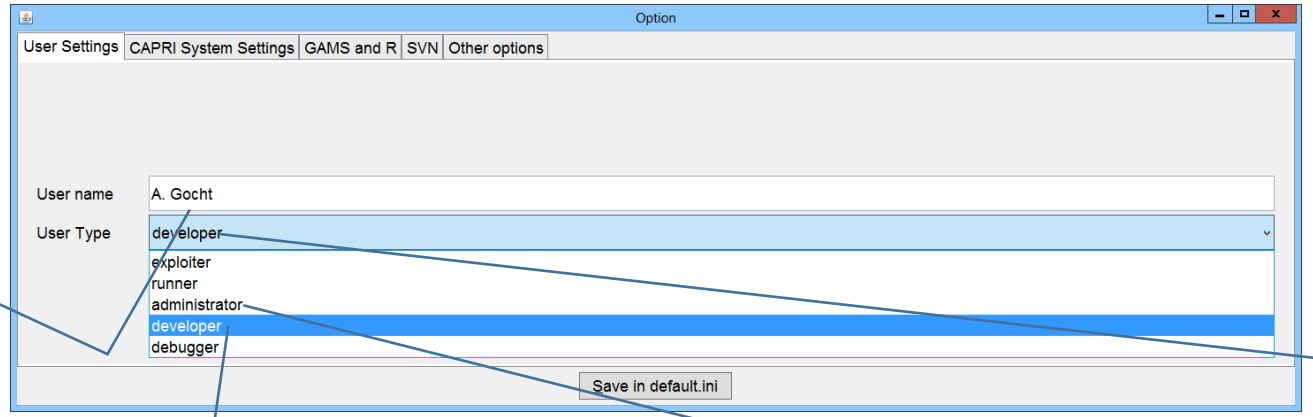
Sends stop signal to GAMS
GAMS process stops when a model is called, that can take time

Exploitation of results

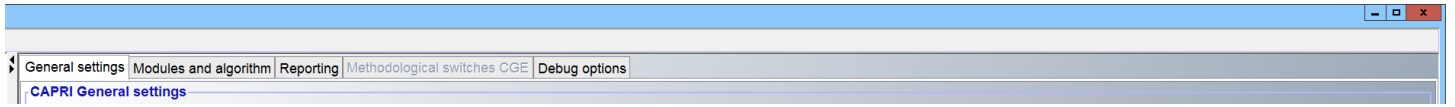


Advanced Settings in the GUI

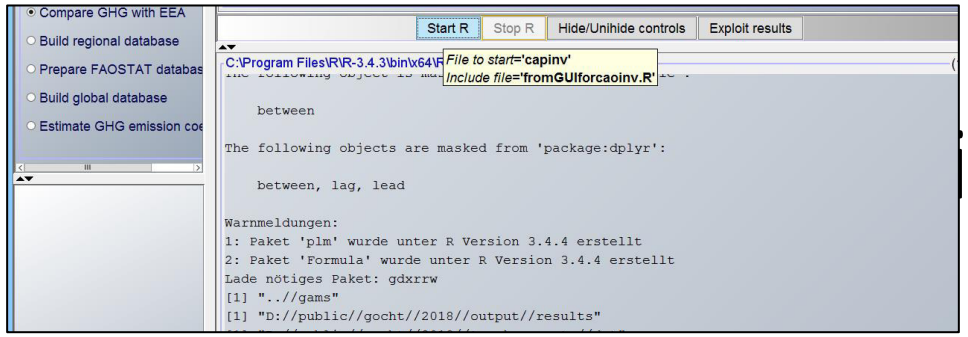
- User Name: Ends up in the meta information

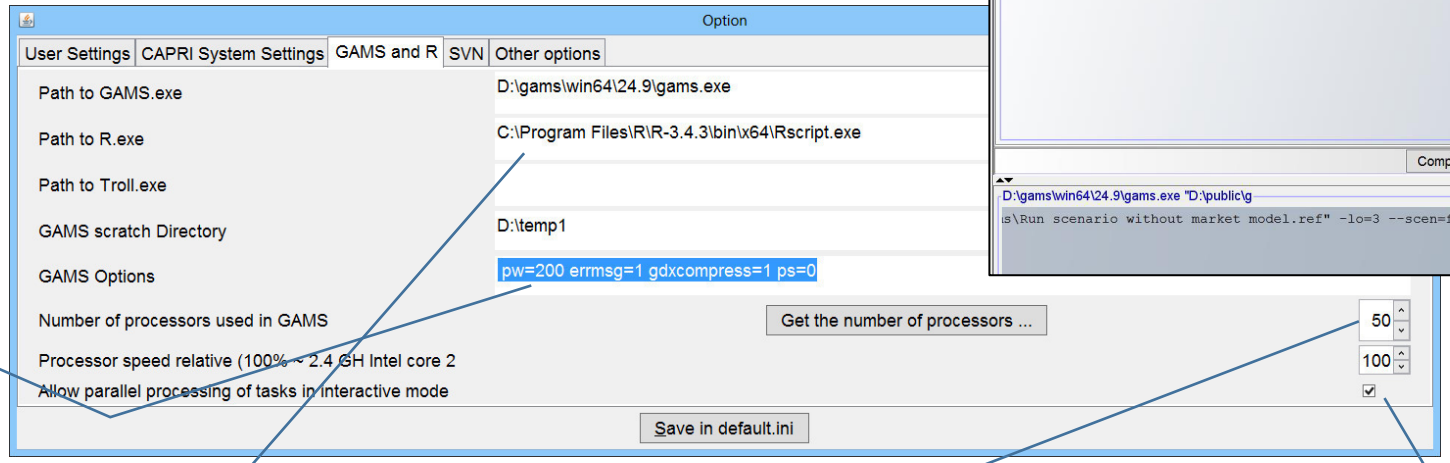


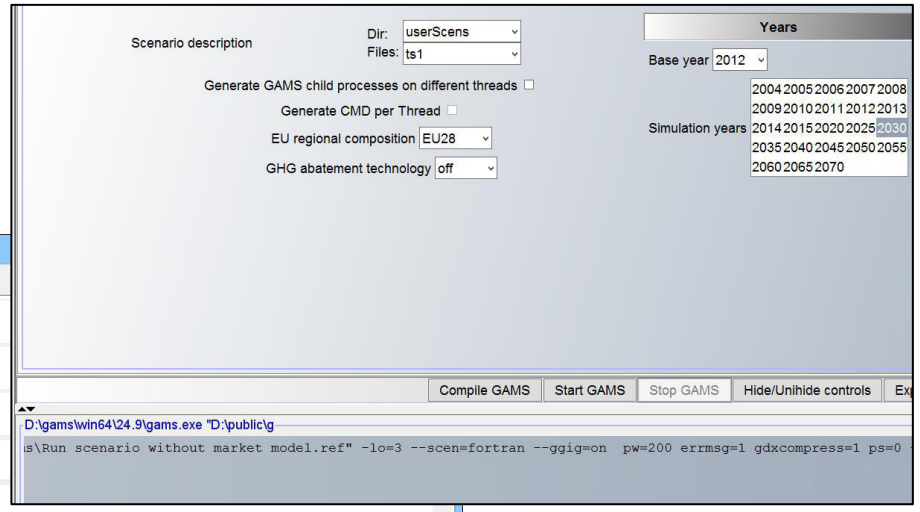
- User type: allows different views and controls
- Admin in policy editor allows to modify and save snippets
- Debugger and Developer gives tab for debugging



in the GUI







- Pass arguments to the cmd statement
- Used mainly for –r and –s or global settings --XX

- Defines R executable

- Defines how many parallel executions can be done at once
- Also ends in the include file

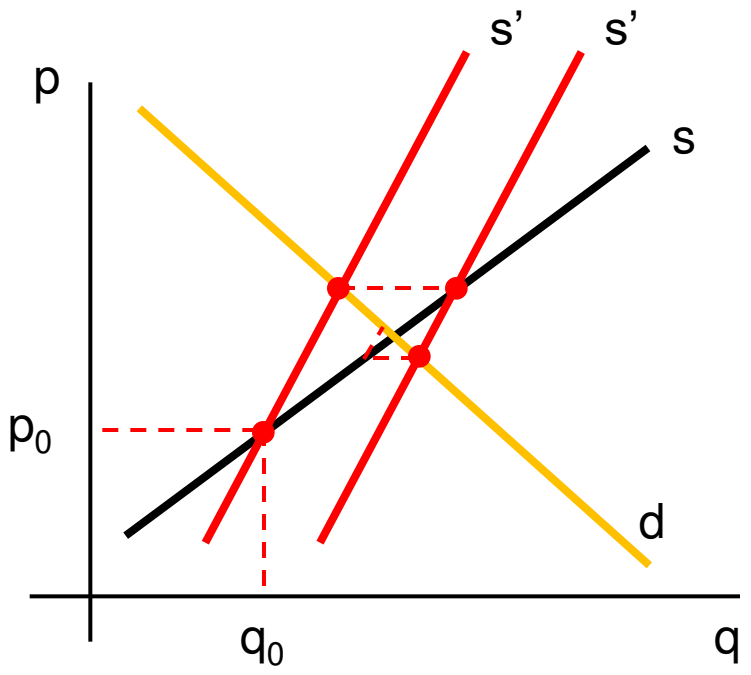
- Allows to run task in parallel over instances

Test if the system is ready for simulation

- Check the region, the base year, simulation year … other setting are correct -> No compile time error
- Ensure the listing setting is okay in debug
- Test calibration no change (calibrated policy file) within <3 iteration
- Convergence means no price change from the market model for a given supply from the market model
- When the scenario introduce a shock then the adjust happens like:

Comparative Static Equilibrium

- Sequential iteration between the supply and the market model:
- Supply function of FT models is unknown (black)
- Assume any supply function (red)
- Starting with some price, simulate supply with models
- Calibrate the assumed supply function to that point
- Solve supply + demand in market model simultaneously for new price
- Iterate until convergence…



Exercise 1a: Running with policy editor

- Policy editor is a code snippet based way to explore and define simple scenarios
- It has dynamic tag editor
- Powerful search over all predefined scenarios
- Approach to define your scenario
  - Do not run as user role “administrator”
  - Select main policy file (cap_after2014 or MTR_RD) **and** combination of code snippets
  - Modify the code snippet or the main policy file and save the changes in a new in your userScen folder
- @All Exercise 1: Create a policy scenario (yields …) and run with GUI