5.3. Data of the supply model

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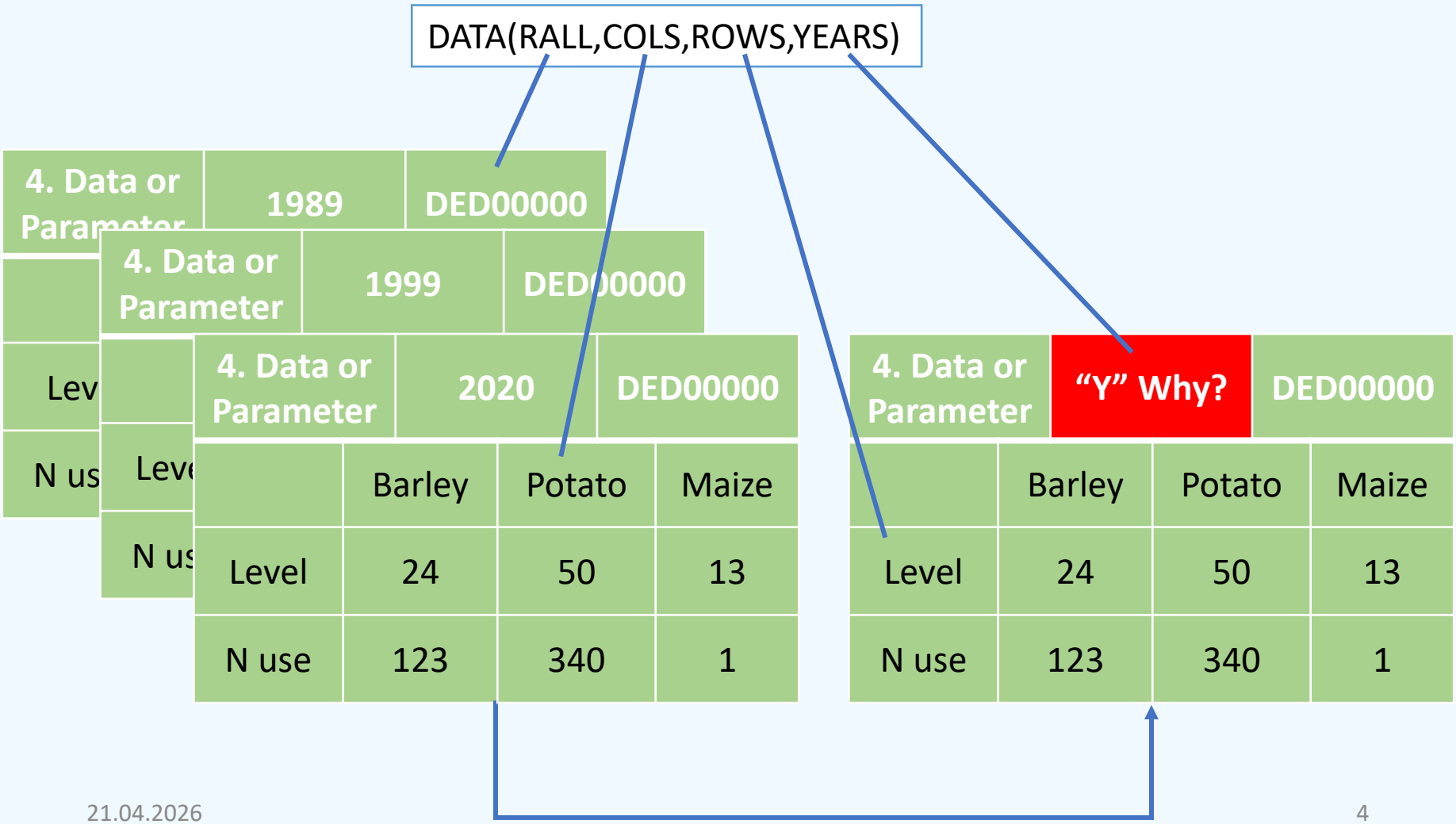
Overview

- The structure of the data cube
- Loading in Data in CAPMOD (Exercise)
- Overview Data Cube

Didactic structure of the supply module

3. Decision Variable	Wheat	Barley	Potato	Maize			
GVA	1200	800	1300	1300		1. Object function	
	4. Data or Parameter					2. Constraints	
	1	1	1		<	10	Quota
	20	24	50	13	<	2000	Labour
	1	1	1	1	<	100	Land

Structure of the data cube



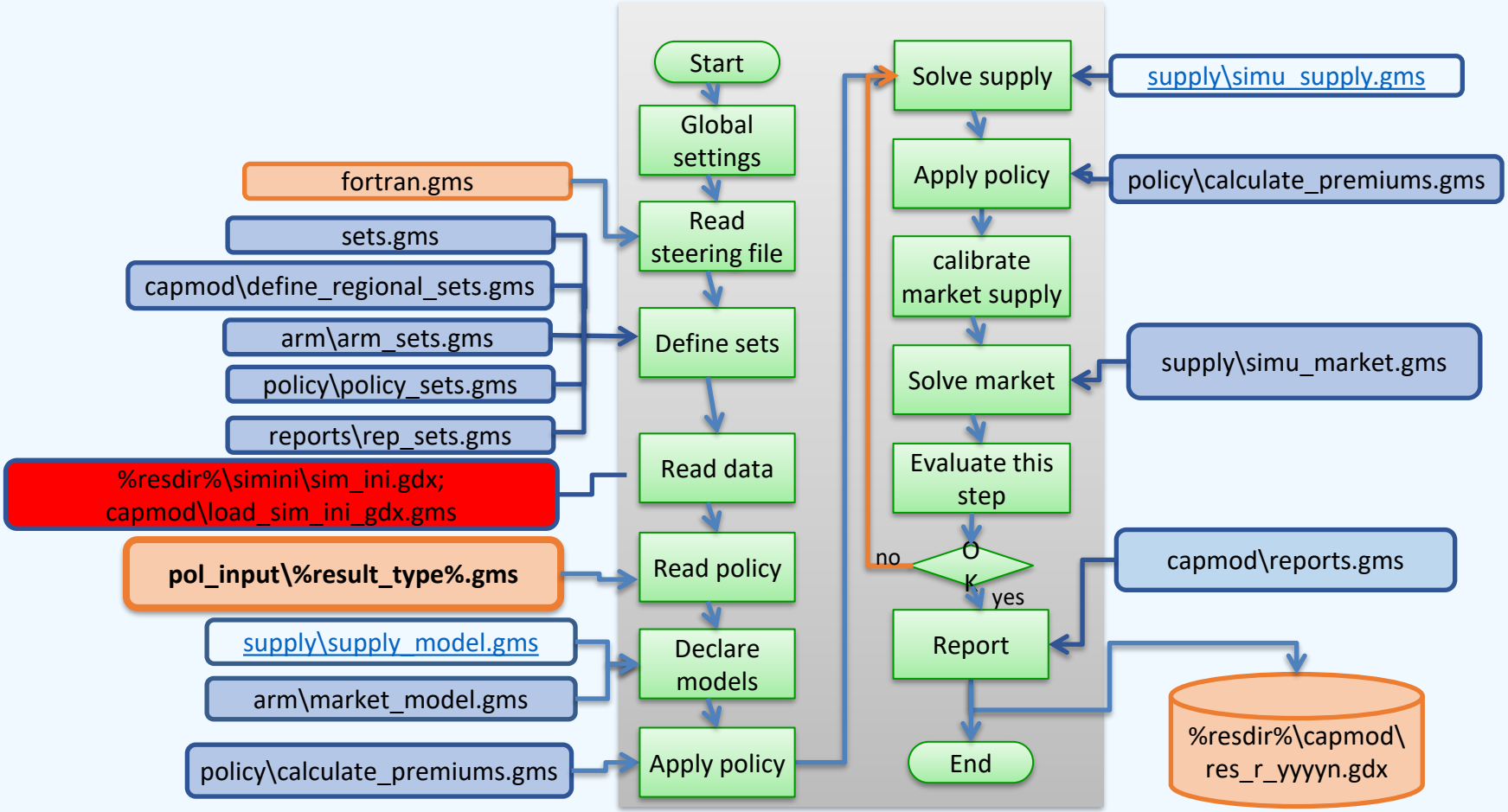
That’s why! Equation in supply model

```
Supply_model.gms
*
* ---------- adding up use of young animals ------------------------------------------------
*
   INPANI_(RUNR,IYANI) ..
*
*                                      --- young animals needed by
*                                      --- region RUNR
*
     SUM ( O_TO_YANI(OMYANI,IYANI), v_youngAnimUse(RUNR,OMYANI) )
*
           =E=
*                                      --- total need added over activities
*                                      --- and alternatives
*
     0.001 * SUM( MAACT $ (p_technFact(RUNR,MAACT,"LEVL","T") $ PACT_TO_I(MAACT,IYANI)),
*
                  v_actLevl(RUNR,MAACT,"T") * %data%(RUNR,MAACT,IYANI,"Y") * (p_technFact(RUNR,MAACT,IYANI,"T")+1.)
);
```

Overview data matrix

	Activities	Farm- and market balances	Prices	Positions from the EAA
Outputs	Output coefficients	Production, seed and feed use, other internal use, losses, stock changes, exports and imports, human consumption, processing	Unit value prices from the EAA with and without subsidies and taxes	Value of outputs with or without subsidies and taxes linked to production
Inputs	Input coefficients	Purchases, internal deliveries	Unit value prices from the EAA with and without subsidies and taxes	Value of inputs with or without subsidies and taxes link to input use
Income indicators	Revenues, costs, Gross Value Added, premiums			Total revenues, costs, gross value added, subsidies, taxes
Activity levels	Hectares, slaughtered heads or herd sizes			
Secondary products		Marketable production, losses, stock changes, exports and imports, human consumption, processing	Consumer prices	

Technical implementation: CAPMOD load data



Exercise 5.3.1 Load data file

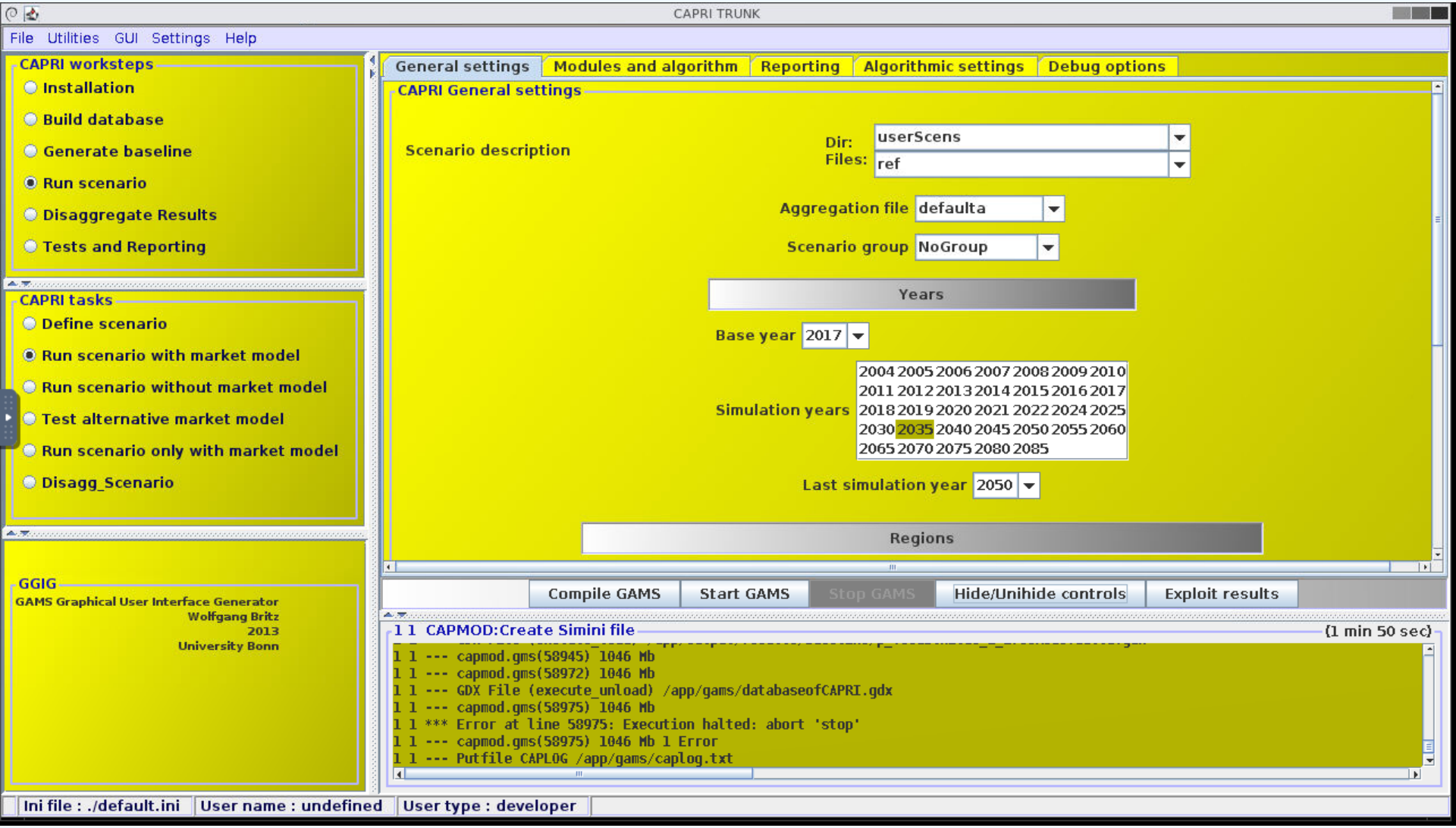
- Steps to do:
  - Open file capmod.gms in VS Studio Code (main CAPRI file)

Exercise 5.3.1 in CAPMOD (2 min)

- The “data” parameter is defined in line ___
- The file load_sim_ini_gdx.gms is included in line __
- Add after load_simi_ini_gdx.gms the following code to unload the database into a single GDX file as follows:

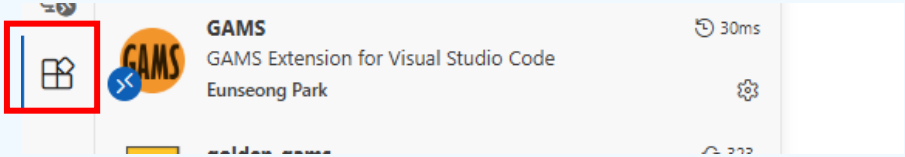
```
* unload the parameter data (database of CAPRI)
execute_unload "databaseofCAPRI.gdx" data;

* stop the program (please don’t forget to delete the lines after the
exercise)
abort "stop";
```

- Run CAPRI with the GUI “Run Scenario”

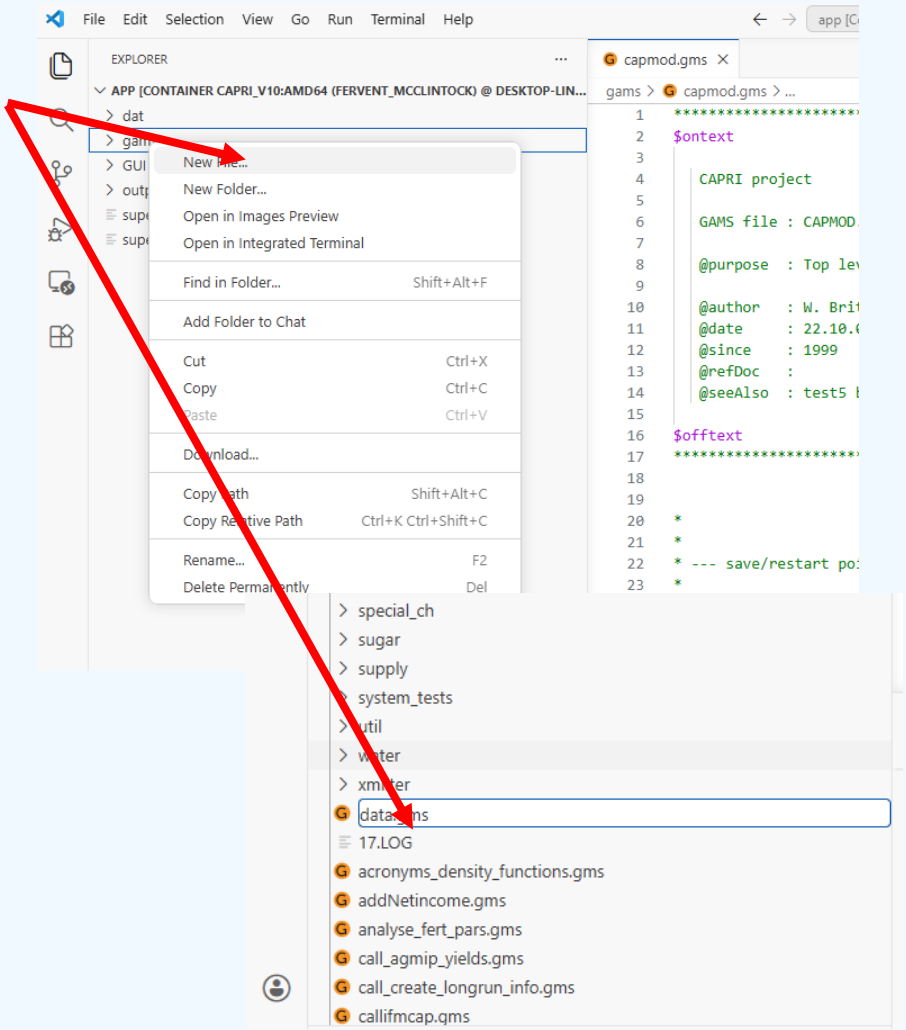

CAPRI TRUNK
File Utilities GUI Settings Help
CAPRI worksteps
Installation
Build database
Generate baseline
Run scenario
Disaggregate Results
Tests and Reporting
CAPRI tasks
Define scenario
Run scenario with market model
Run scenario without market model
Test alternative market model
Run scenario only with market model
Disagg_Scenario
GGIG
GAMS Graphical User Interface Generator
Wolfgang Britz
2013
University Bonn
General settings
Modules and algorithm
Reporting
Algorithmic settings
Debug options
CAPRI General settings
Scenario description
Dir: userScens
Files: ref
Aggregation file defaulta
Scenario group NoGroup
Years
Base year 2017
Simulation years
2004 2005 2006 2007 2008 2009 2010
2011 2012 2013 2014 2015 2016 2017
2018 2019 2020 2021 2022 2024 2025
2030 2035 2040 2045 2050 2055 2060
2065 2070 2075 2080 2085
Last simulation year 2050
Regions
Compile GAMS
Start GAMS
Stop GAMS
Hide/Unihide controls
Exploit results
1 1 CAPMOD:Create Simini file
(1 min 50 sec)
1 1 --- capmod.gms(58945) 1046 Mb
1 1 --- capmod.gms(58972) 1046 Mb
1 1 --- GDX File (execute_unload) /app/gams/databaseofCAPRI.gdx
1 1 --- capmod.gms(58975) 1046 Mb
1 1 *** Error at line 58975: Execution halted: abort 'stop'
1 1 --- capmod.gms(58975) 1046 Mb 1 Error
1 1 --- Putfile CAPLOG /app/gams/caplog.txt
Ini file : ./default.ini
User name : undefined
User type : developer

Exercise 5.3.2 Load data file

- Steps to do:
  - Create a new gams file like data.gms
  - Copy in the Code
  - Add the following GAMS extension in you VS Studio Code

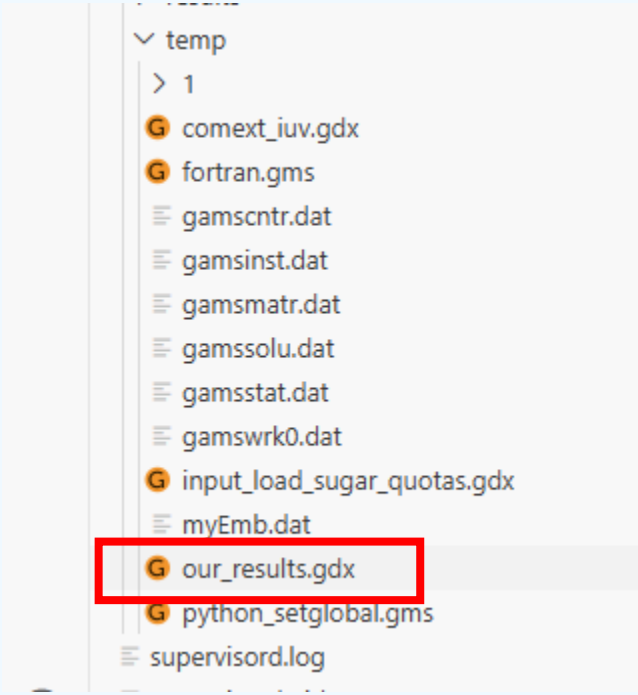


  - Run the code by pressing F9
- Fill out the quiz



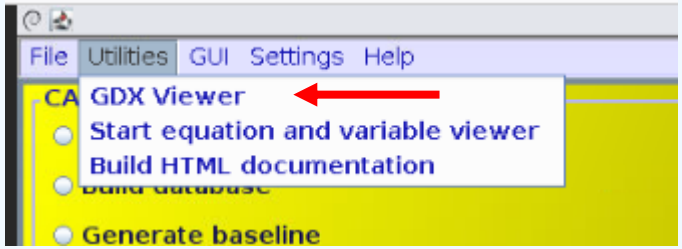
Code for exercise 5.3.2

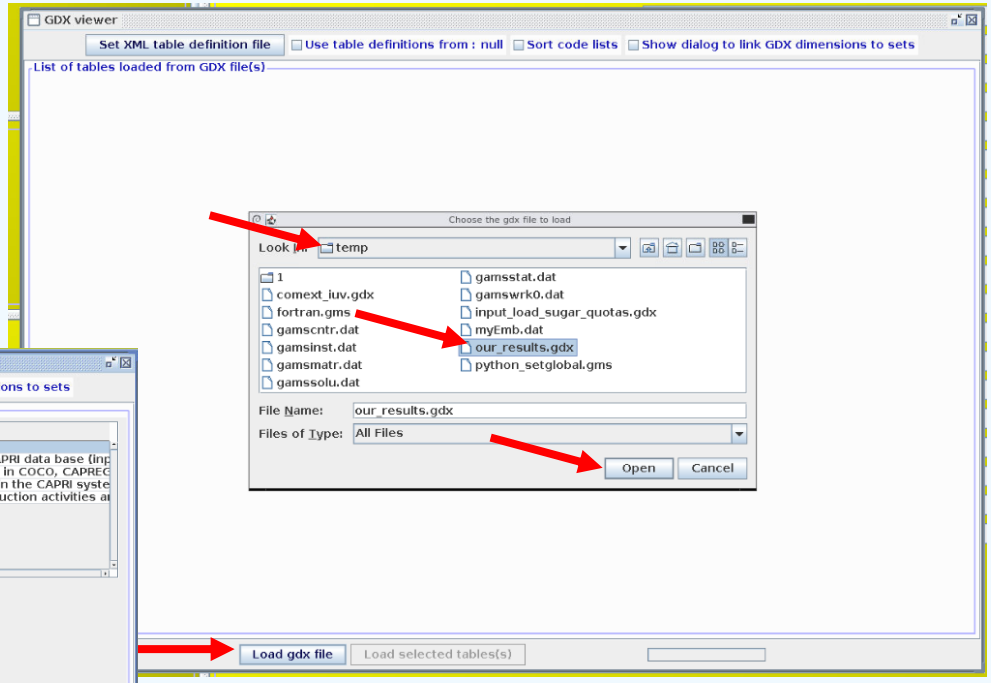
```
* specify a scratch dir required in sets.gms
$setglobal scrdir  "../output/temp"
$setglobal curDir  "../gams"
$setglobal reg_agg "defaulta"

* include set definition in CAPRI
$include sets.gms

* define the sub set to filter the loaded data below
set Ourregion(RALL) /"DED00000"/;
set Time /"Y"/;

* define a parameter to which the data is loaded
parameter Data(OurRegion,COLS,ROWS,Time);

* load the data from CAPRI database
execute_load "databaseofCAPRI.gdx" data;
```

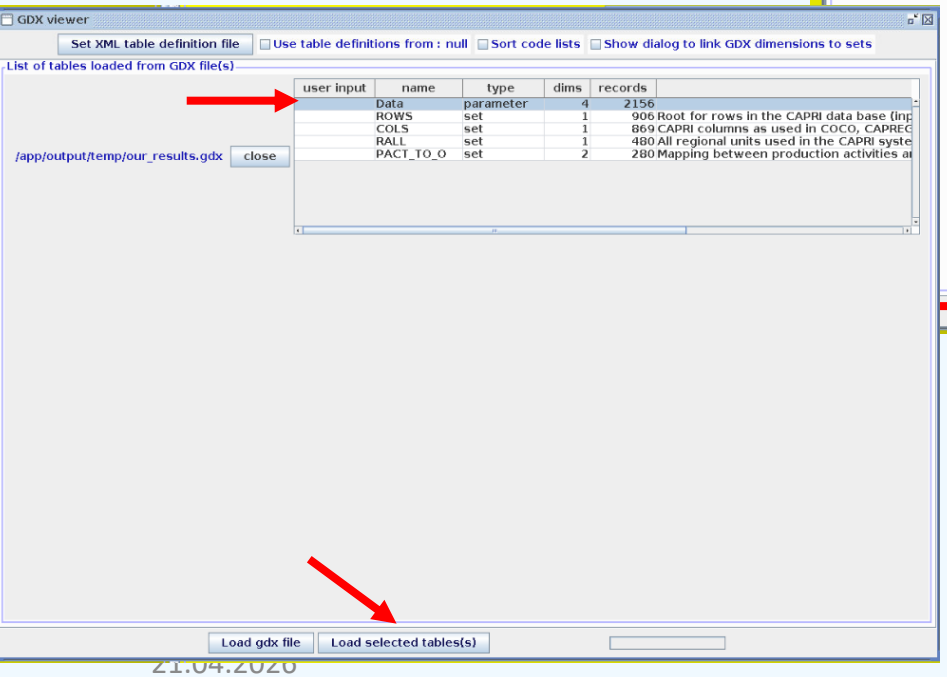



```
* make some didactic calculation for gross production at region
data(OurRegion,"GROF",O,"Y") =
                SUM(PACT_TO_O(MPACT,O), data(OurRegion,MPACT,"LEVL","Y")*
                                data(OurRegion,MPACT,O,"Y"))*0.001;

* store result to inspect it
execute_unload "%scrdir%/our_results.gdx" data, rows, cols, RALL,
PACT_TO_O;
```

Load in the .gdx file in GUI GDX viewer







Exercise 5.3.2

- The yield of rapeseed in DED00000 is kg. It needs kg of nitrate (NITF). 2.3 kg per hectare for (PESTOTAL) for rapeseed.
- For dairy cow (technology high yield) “DCOH” the milk yield (COMI) is kg. There are k high and k low yielding cows (LEVL).
- The gross production on farm (GROF) for cow milk (COMI) in DED00000 is k tonne.
- On average the cows produces calves (YCAF) per year and requires young cows (ICOW). The no. of days to produce a pigs (PIGF) is .