Modularisierung in GAMS

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Nachhaltige Lösungsstrategien

Motivation

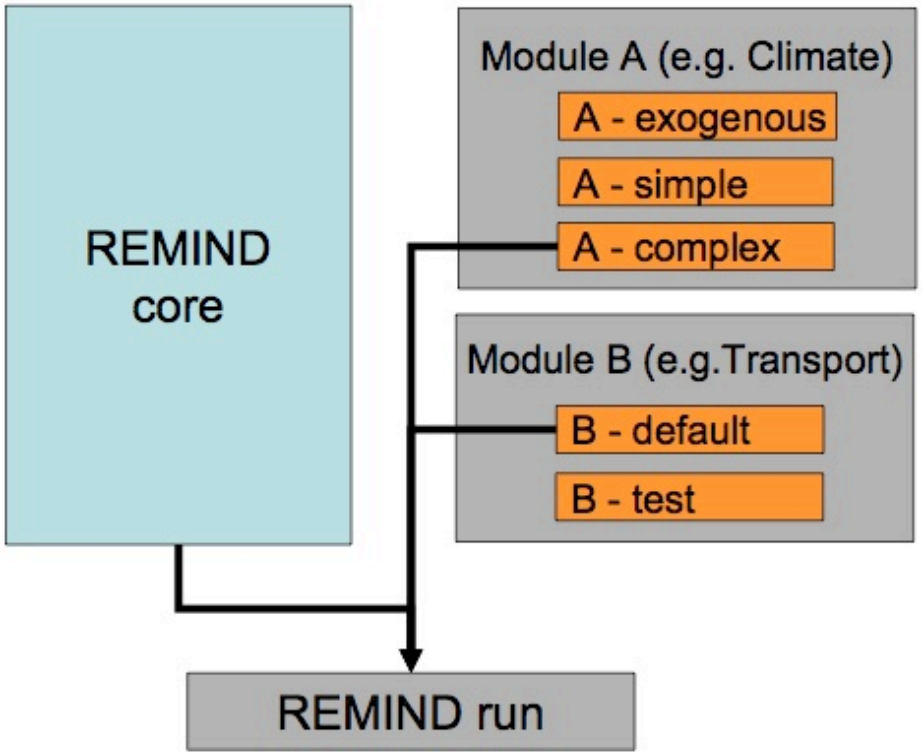
Probleme:

- Das Modell wird immer größer, komplexer
- SVN Branches für: Features, Nutzer
- Modellentwicklung führt oft zu nicht funktionierenden Versionen

Lösungen:

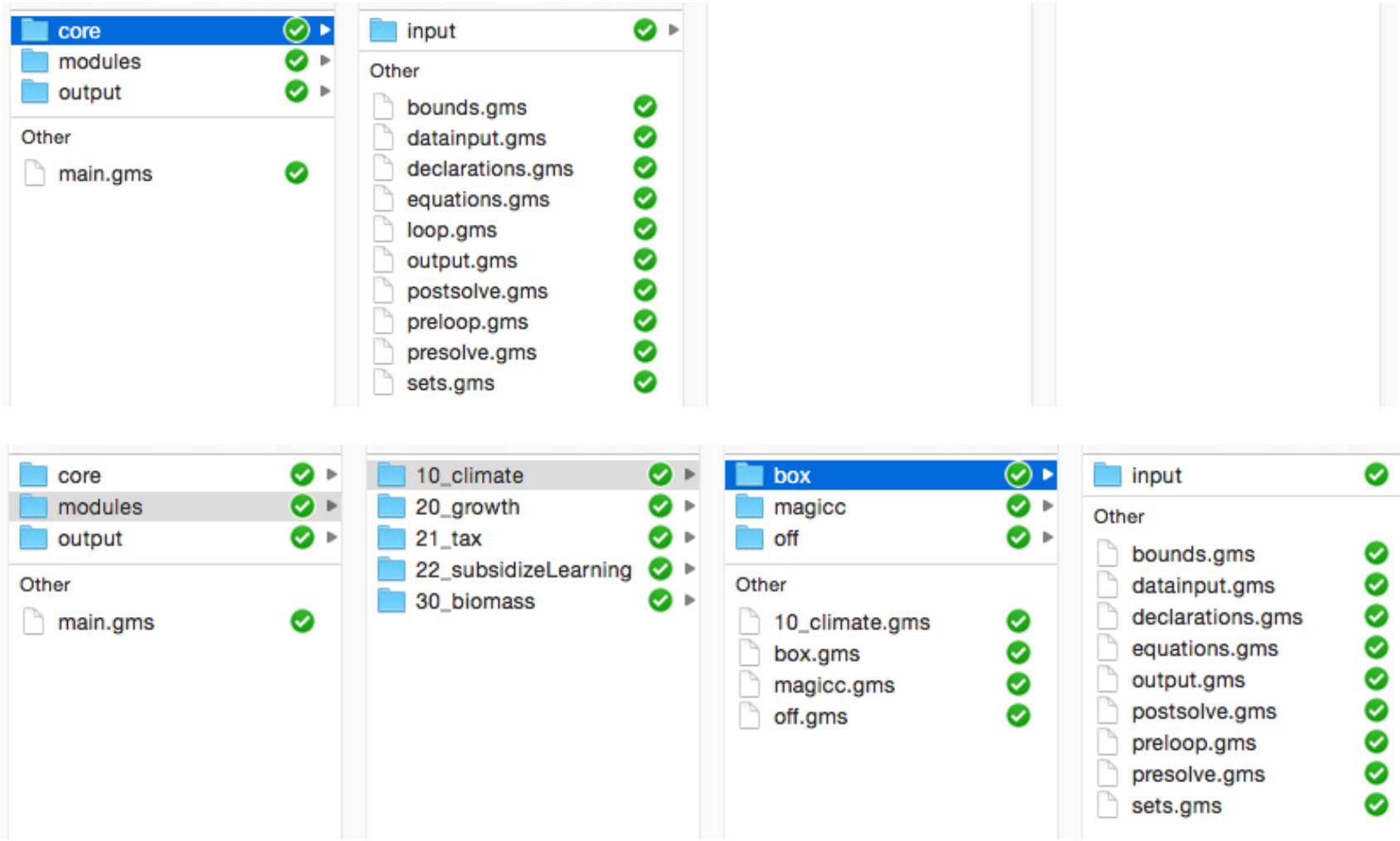
- Modell ist viel, viel, viel übersichtlicher
- Alle nutzen nur den Trunk, mit zusätzlichen Vorteilen
- Modell immer produktionsfertig, bzw. einfach zu debuggen

Darstellung 1



- main.gms
  - [571] sets.gms
  - [572] include.gms sets
    - [_5] 10_climate.gms
    - [_6] 30_biomass.gms
      - [3] exogenous.gms
      - [4] hoogwijk.gms
      - [5] magpie.gms
        - [_3] sets.gms
        - [_4] declarations.gms
        - [_5] datainput.gms
        - [_6] equations.gms
        - [_7] preloop.gms
        - [_8] bounds.gms
        - [_9] presolve.gms
        - [10] postsolve.gms
        - [11] output.gms
    - [_7] 31_fossil.gms
    - [_8] 35_transport.gms
    - [_9] 80_optimization.gms
  - [578] declarations.gms
  - [579] include.gms declarations
  - [584] datainput.gms
  - [585] include.gms datainput
  - [590] equations.gms
  - [591] include.gms equations
  - [597] preloop.gms
  - [598] include.gms preloop
  - [603] loop.gms
  - [608] output.gms
  - [609] include.gms output

Darstellung 2



Wichtige Konzepte

- Die üblichen GAMS Befehle (include, batinclude)
- Dateinamen, Ordnerstruktur, sind standardisiert
- Interfaces
- Möglichkeit gezielt eine beliebige Modelversion zu basteln
- Module Contracts
- model “all”

REMIND

Overview | Activity | Issues | New issue | Wiki | Repository | Settings

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2.11.1 10 climate

Current contract

The climate module calculates the radiative forcing, the temperature and the concentration of Greenhouse Gases in the atmosphere based on the emissions that it reads in.

Input

- `vm_emieng` global energy-related emissions of type enty [units depend on type, consistent with units of ANT]
- `vm_emineg` global non-energy-related emissions of type enty [units depend on type, consistent with units of ANT]
- `pm_emi_budget1` budget for global energy-emissions in period 1
- `pm_emi_budget1_reg` budget for regional energy-emissions in period 1

Output

- `vm_forc_os` forcing overshoot
- `v_emimac0` baseline emissions of mac options
- `vm_emieng` global energy-related emissions of type enty [units depend on type, consistent with units of ANT]
- `vm_emineg` global non-energy-related emissions of type enty [units depend on type, consistent with units of ANT]
- `pm_emi_budget1` budget for global energy-emissions in period 1
- `pm_emi_budget1_reg` budget for regional energy-emissions in period 1

Invariants

- No main-code parameters are changed in the module

Current realizations and their limitations

box (Petschel - Held)

For this realization the simple climate box-model is used.

MAGICC

This realization simply runs MAGICC (like it is run during post-processing) with the emission trajectories and feeds back the total anthropogenic radiative forcing (file `DAT_TOTAL_ANTHRO_RF.OUT`) in 2100 `pm_emi_budget1_regi`.

off

No climate coupling. One can use the REMIND emissions output to run a stand-alone mode of a climate model.

Reference

Developer(s)

- *MAGICC*: Michaja Pehl

Zusätzliche Tools

- Coding etiquette: Richtlinien für Namen und Code-Struktur
- R libraries

Vielen Dank!

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