

---

# Setting up a „model operations“ group

Tasks, Structure, Problems, Realization

**Jan Philipp Dietrich, Lavinia Baumstark, Anastasis Giannousakis, David Klein**

# „Model Operations“? What for?

---

Models = common good of a working group

Model maintenance and technical coordination is needed

Its importance increases with increasing model size

Conflict of interest between work on scientific issues and model maintenance

→ Model Operations group

# Planning: Tasks / Goals

---

## Increase efficiency in model development

### Organizing

**Set up** commonly used platforms (e.g. Redmine)

**Introduce** guidelines and standards for code development and documentation

### Consulting

**Assist model developers in** technical questions („help desk“)

**Giving advice in** numerical optimization issues

**Having an overview about the full spectrum of** code development in RD3

### Programming

**Developing own** tools as requested by the working groups

**Implement ideas of** code optimization/run time reduction

# Planning: Potential pitfalls

---

**Group members are consumed by day-to-day business leaving no space for efficiency increases**

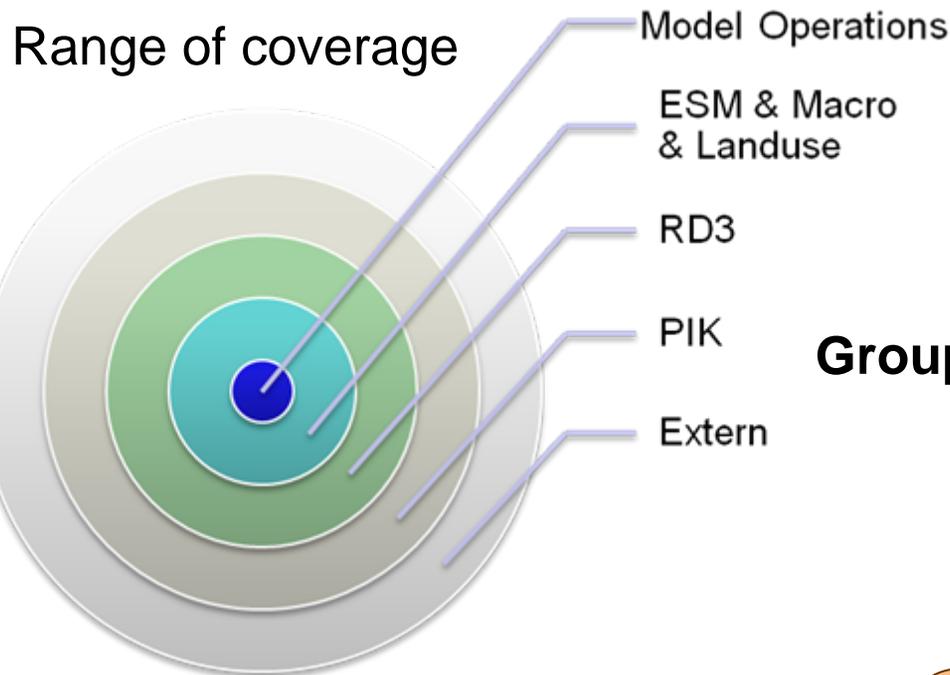
Missing connectivity **between model operations and other working groups**

## **Solutions:**

Each MO group member is associated to another working group **and is spending most of the time in this group**

MO group internally balances day-to-day business and mid- to long-term projects

# Model Operations – Status quo



Anastasis Lavinia Jan

**Group Agenda / Research Focus:**  
Increase Efficiency

**Model efficiency tools**

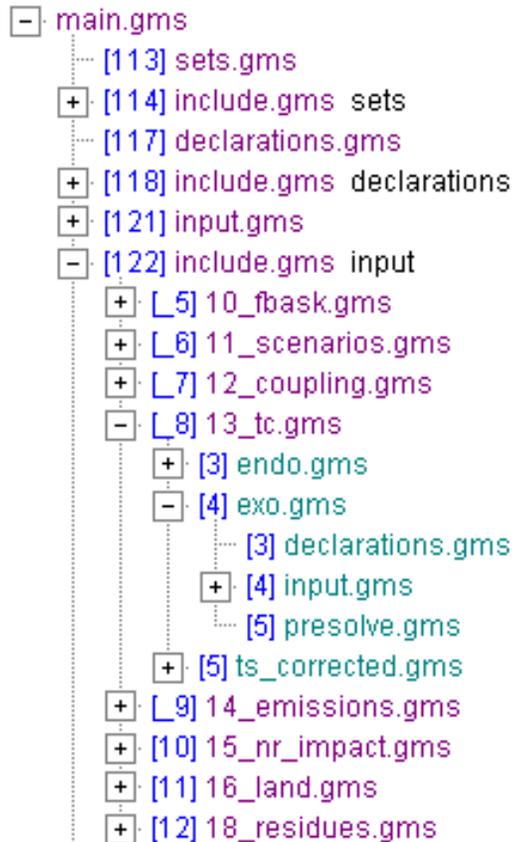
- code optimization
- modularization

**Work efficiency tools**

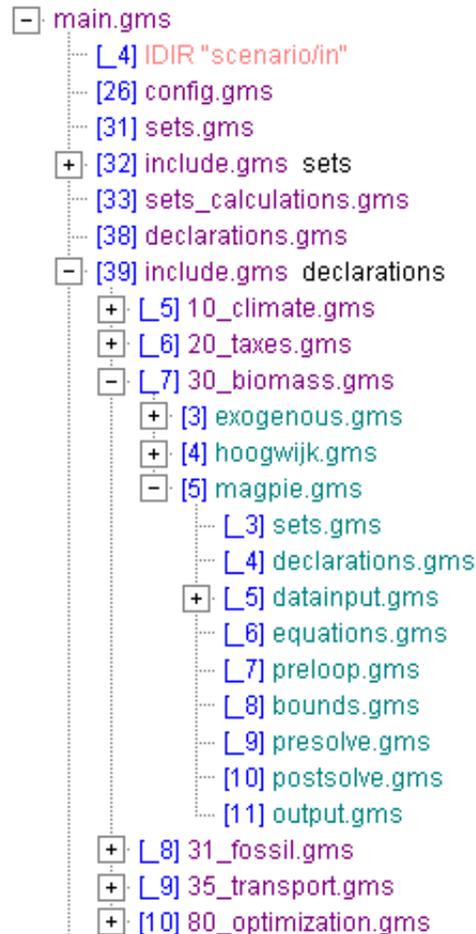
- standardization
- technical consulting
- management tools

# Achievement: Modularization

## MAgPIE



## REMIND



- common concept
- common tools
- coding etiquette

Range of coverage:

- REMIND
- MAgPIE

# Achievement: R libraries



gdx\_1.00.zip



lpjclass\_1.02.zip



lubase\_1.01.zip



lucode\_1.14.zip



ludata\_1.05.zip



luplayground\_1.00.zip



luplot\_1.15.zip



luscale\_1.10.zip



lusweave\_1.02.zip



magclass\_1.17.zip



magpie\_0.2066.zip

- gdx read/write
- output PDFs
- Plotting tools
- aggregation tools
- Model data analysis

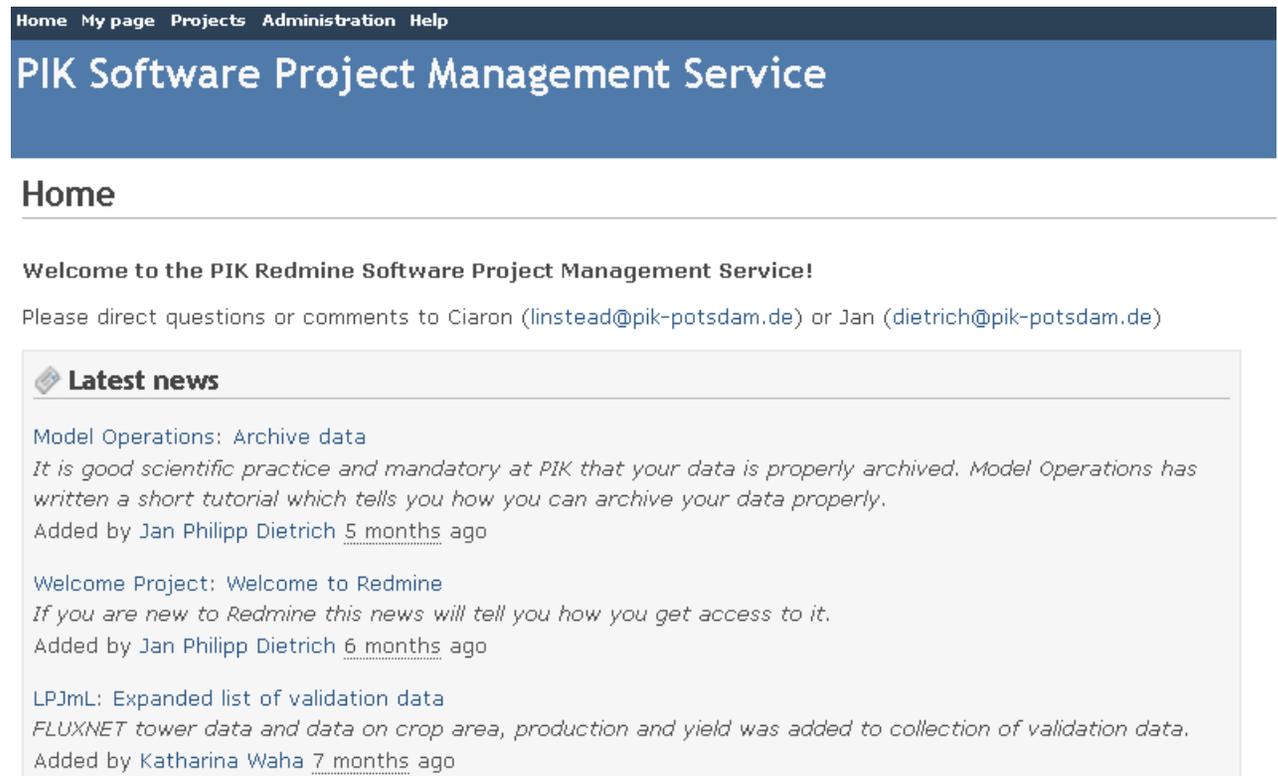
- 180 functions
- Coding / maintenance

Range of coverage: MAgPIE  
REMIND

Cooperation: Steven Dirkse (GAMS)

# Achievement: Redmine – Project Management Service

- Cooperations: Ciaron Linstead (IT)
- Range of coverage: PIK, external institutions
- stats: 140 registered users, 20 projects



The screenshot shows the Redmine interface for the PIK Software Project Management Service. At the top, there is a navigation bar with links for Home, My page, Projects, Administration, and Help. Below this is a blue header with the title "PIK Software Project Management Service". The main content area starts with a "Home" section, followed by a welcome message: "Welcome to the PIK Redmine Software Project Management Service!". Below the welcome message, there is a note: "Please direct questions or comments to Ciaron (linstead@pik-potsdam.de) or Jan (dietrich@pik-potsdam.de)". A "Latest news" section follows, containing three news items:

- Model Operations: Archive data**  
*It is good scientific practice and mandatory at PIK that your data is properly archived. Model Operations has written a short tutorial which tells you how you can archive your data properly.*  
Added by Jan Philipp Dietrich 5 months ago
- Welcome Project: Welcome to Redmine**  
*If you are new to Redmine this news will tell you how you get access to it.*  
Added by Jan Philipp Dietrich 6 months ago
- LPJmL: Expanded list of validation data**  
*FLUXNET tower data and data on crop area, production and yield was added to collection of validation data.*  
Added by Katharina Waha 7 months ago

# Achievement: Model Operations Wiki

- Tutorials
- Standards
- Meeting Reports
- Support Forum

Range of coverage:

- RD3



Home My page Projects Administration Help

## Model Operations

Overview Activity Issues New issue News Wiki

## Forums

### Forum

Thoughts & Comments

A place for general discussions related to Model Operations

Questions / Problems

Here you can ask your questions or discuss your problems in model development

Home My page Projects Administration Help

## Model Operations

Overview Activity Issues New issue News Wiki

## Wiki

- Model Operations Team
  - Profile
  - Projects
- Reports
  - Meeting Steven Dirkse GAMS 23-08-2012
- Standards
  - Coding Etiquette
  - Model Intercomparison File Format
- Tutorials
  - Archive data
  - How to kill a GAMS run on console
  - How to rename variables in a GDY
  - Installation Help
  - Installed macros
  - Needed Programs
  - PhD how to
  - PIK's Filesystems and Servers
  - Redmine access from outside PIK
  - Redmine project help



# Achievement: Linking PIK metadatabase – TSM archive

- Cooperations: Achim Glauer (IT)
- Range of coverage: PIK
- added connection to TSM archive

POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH  
PIK

Logout>Login Contact/Feedback Home

PIK Metadata

Metadata Reports   Insert and Update   About Interactive Reports   About Metadata

Reports Main Page > All entries (Interactive Report)

Reports with

All Entries

Thesaurus Report

Documents

Comments

Information

Report as interactive report

See the Actions button

1 - 15 of 539

Go Reports 1. Primary Report Rows 15 Actions

Data entry	Data Type	Contact Person	Pik Project	Entry Title	Usage Restriction	Originator	Geographical Location	Creation Date	Archived file ?
<a href="#">see dataset</a>	various	Hendrik Kienert	CLIMBER-3	Publication Kienert&Rahmstorf (2012) in Earth System Dynamics	upon request	Potsdam Institute for Climate Impact Research	Global, Atlantic	01.10.2012	n
<a href="#">see dataset</a>	model output (dynamic. model)	Kai Lessmann	various	Lessmann/Edenhofer (2011) "Research Cooperation"	upon request	Potsdam Institute for Climate Impact Research	none	12.09.2012	n
<a href="#">see dataset</a>	model output (dynamic. model)	Kai Lessmann	various	Lessmann et al. (2009) Tariffs	upon request	Potsdam Institute for Climate Impact Research	none	12.09.2012	n
<a href="#">see dataset</a>	various	Matthias Hofmann	NEXT / CLIMBER-3	Effects of different eddy parameterizations and elevated Southern Hemisphere winds on the Southern Ocean carbon sink	-	unknown	World (continents+oceans)	05.09.2012	n
<a href="#">see dataset</a>	model output (dynamic. model)	Jan Steckel	RECIPE	RECIPE data and papers	upon request	PIK; FEEM; CIRED	global and regional (OECD and non-OECD countries, different country groups)	30.08.2012	y
<a href="#">see dataset</a>	various	Michael Jakob	CREW	Signaling in International Environmental Agreements	-	Potsdam Institute for Climate Impact Research	none	16.08.2012	y
<a href="#">see dataset</a>	Statistical data	Michael Jakob	EntDekEn	Economic Convergence and Convergence of Energy Use Patterns	-	Potsdam Institute for Climate Impact Research	none	16.08.2012	y
<a href="#">see dataset</a>	various	Franziska Gaupp	none	Trade model	work group only	Potsdam Institut fuer Klimafolgenforschung	Brandenburg	15.08.2012	y

# Model Operations – Further Achievements

---

- starting MAgPIE runs in parallel
- flexible time steps in REMIND
- several bugfixes in REMIND & MAgPIE
- variable-renaming script for.gdx files
- improved UNIX environment usage
- mdb-to-csv export tool
- coding etiquette enforced
- inter-scenario-consistency in REMIND
- code cleaning
- ...

# Model Operations – What comes next?

---

- Further model improvements
- Ongoing model harmonization
- User support
-  David Klein will join MO in November
  - Financing 50% RD3 50%RD2