Coupling with the Community Land Model

Updates and plans for source code management

COSMO-CLM^2: History of developments

- 2009:
  - COSMO-CLM version 4.0 coupled to CLM3.5 (by R. Stöckli and E. Davin)
  - "subroutine coupling"
  - Evaluation: *Davin et al., Clim. Dyn. [2011]*
- 2010:
  - Upgrade to COSMO-CLM version 4.8
  - Evaluation: *Davin and Seneviratne, Biogeosciences [2012]*
- 2011/2012:
  - Switch to OASIS3 coupler (by E. Maisonnave and E. Davin)
  - Upgrade to CLM4.0 (while still compatible with CLM3.5)
  - Still not scientifically evaluated!

Variables exchanged

- Atmosphere → Land: atmospheric temperature, U and V wind components, specific water vapour content, height of first atmospheric level, surface pressure, direct shortwave downward radiation, diffuse shortwave downward radiation, longwave downward radiation, precipitation
- Land → Atmosphere: surface albedo, outgoing longwave radiation, latent and sensible heat fluxes, momentum fluxes

Coupling for turbulent fluxes

- COSMO does not use directly surface fluxes in its turbulent scheme but uses instead surface states (e.g. surface temperature) and surface transfer coefficients (e.g. TCH)
- Therefore, the surface fluxes from CLM4.0/3.5 passed to COSMO have to be inverted to recalculate “effective” transfer coefficients (and effective qv_s) that can by used by the turbulence scheme

- An option for surface flux boundary conditions will be implemented in the next revision of the turbulence scheme (M. Raschendorfer)

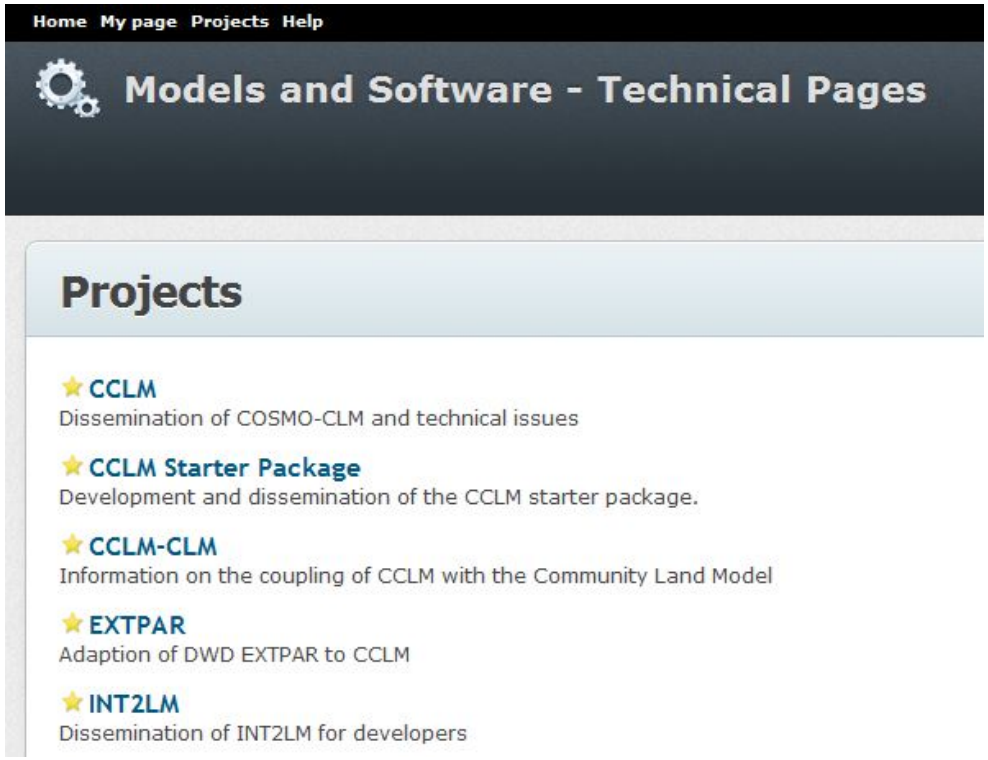
Coupling with OASIS3(-MCT)

- Well established and supported coupler
- More flexibility (use of different grids, time stepping)
- Interface compatible with CLM4.0/CLM3.5
- Potential for better performance optimization

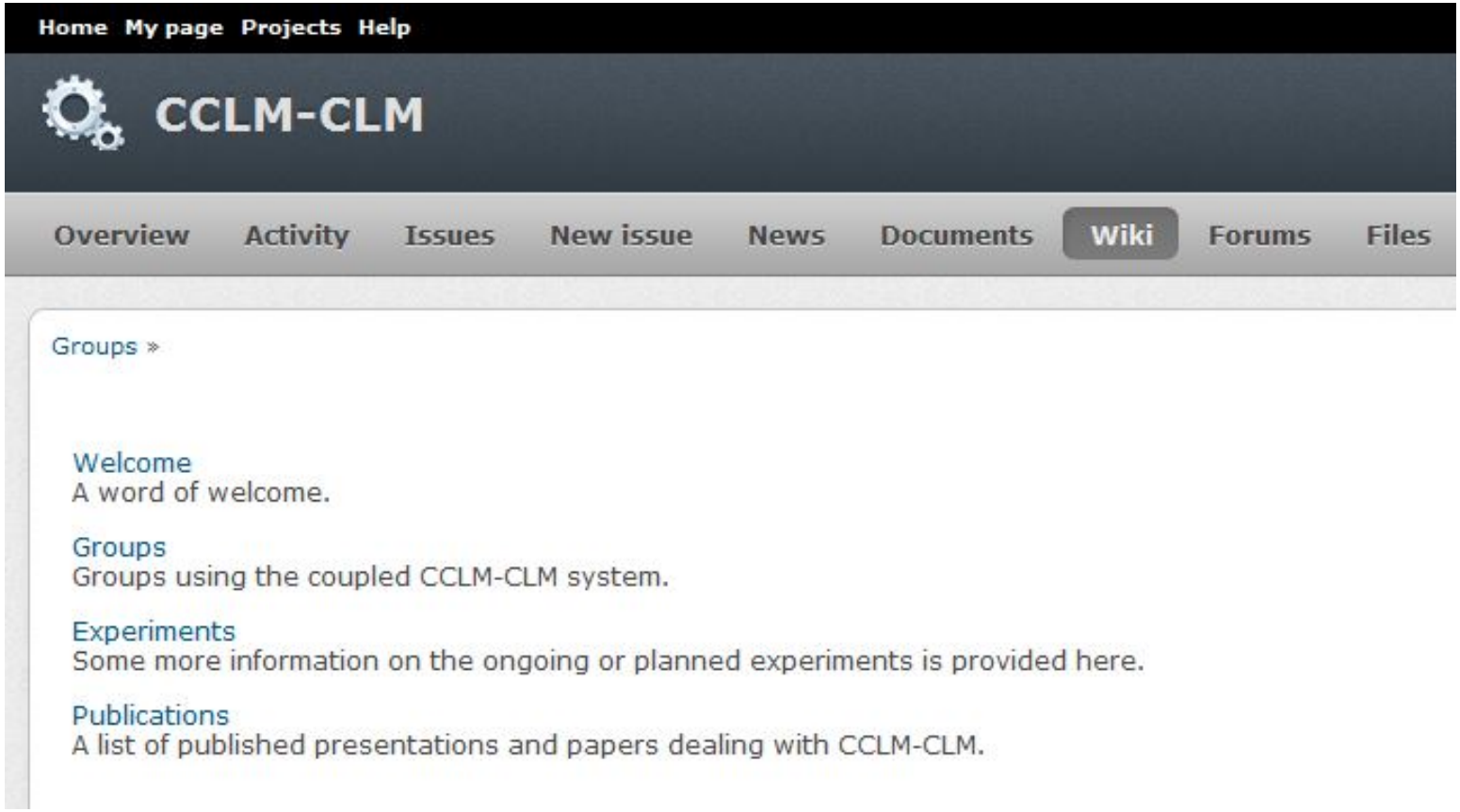
- Remaining technical issues: e.g. problem with restarts

Redmine server for code management

- http://code.hzg.de/
- Register online to get an account
- Project "CCLM-CLM" (manager E. Davin; ~10 members)
- First version of COSMO4.8-CLM19-OASIS3-CLM4.0 before this summer



Wiki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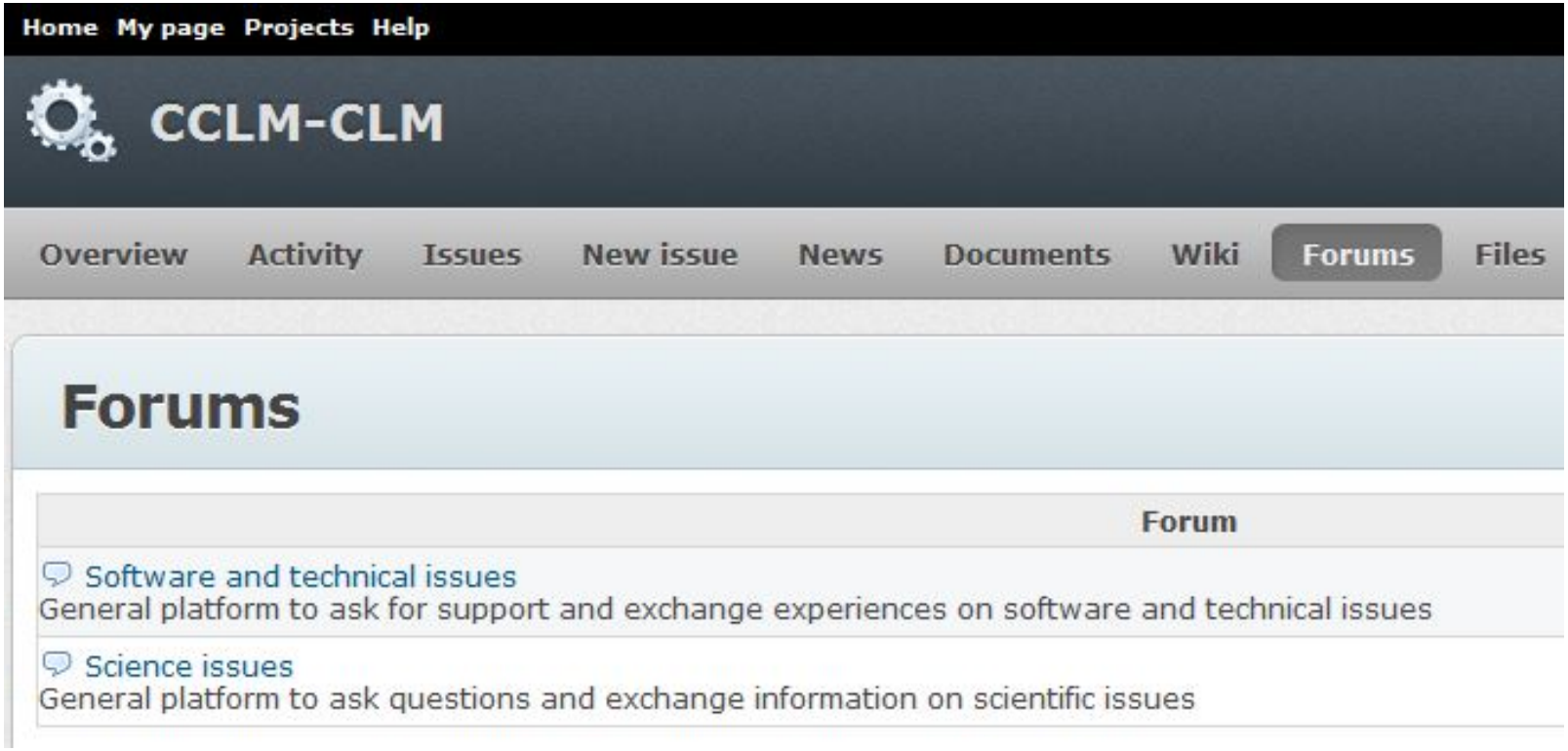
Groups »
Welcome
A word of welcome.
Groups
Groups using the coupled CCLM-CLM system.
Experiments
Some more information on the ongoing or planned experiments is provided here.
Publications
A list of published presentations and papers dealing with CCLM-CLM.

Forum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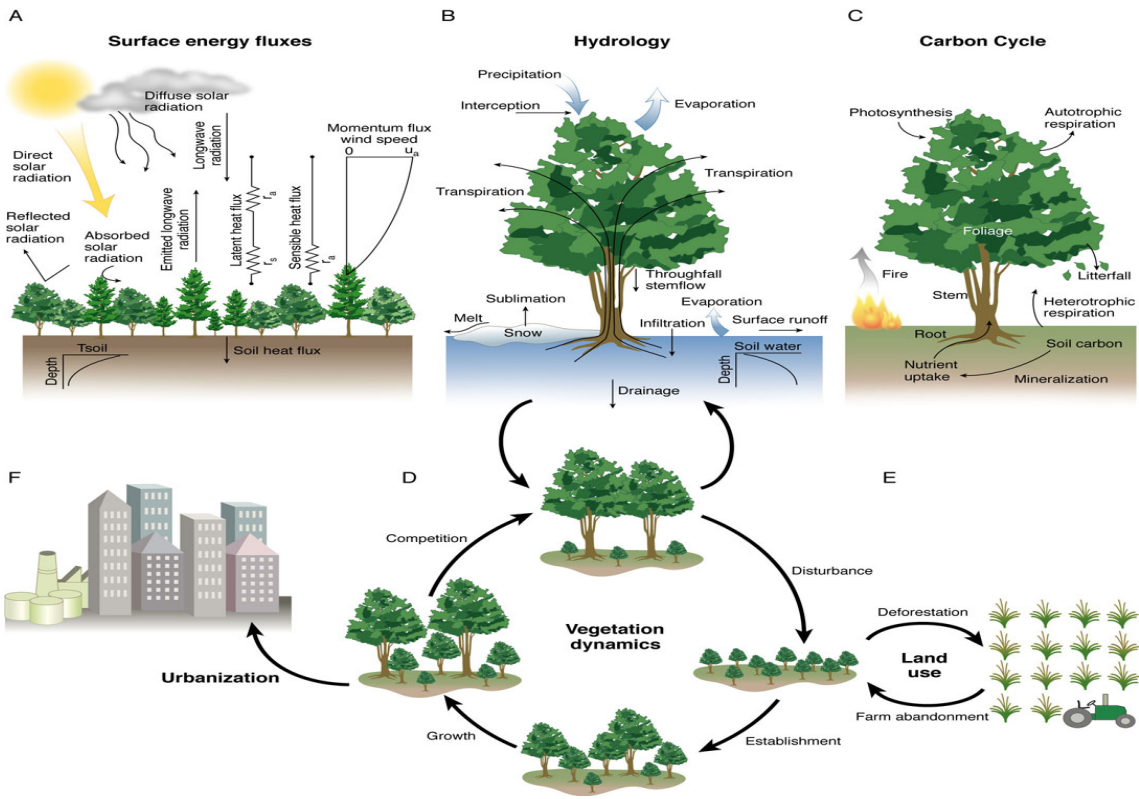
Overview Activity Issues New issue News Documents Wiki Forums Files
Forums
Forum
Software and technical issues
General platform to ask for support and exchange experiences on software and technical issues
Science issues
General platform to ask questions and exchange information on scientific issues

Community Land Model

- Open source
- Extensively documented and evaluated
- Comprehensive range of processes through a modular code structure
- Current version: CLM4, preceding version: CLM3.5



Bonan, 2008

COSMO-CLM^2: development stages

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