

Coupling with the Community Land Model

Updates and plans for source code management

COSMO-CLM²: 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

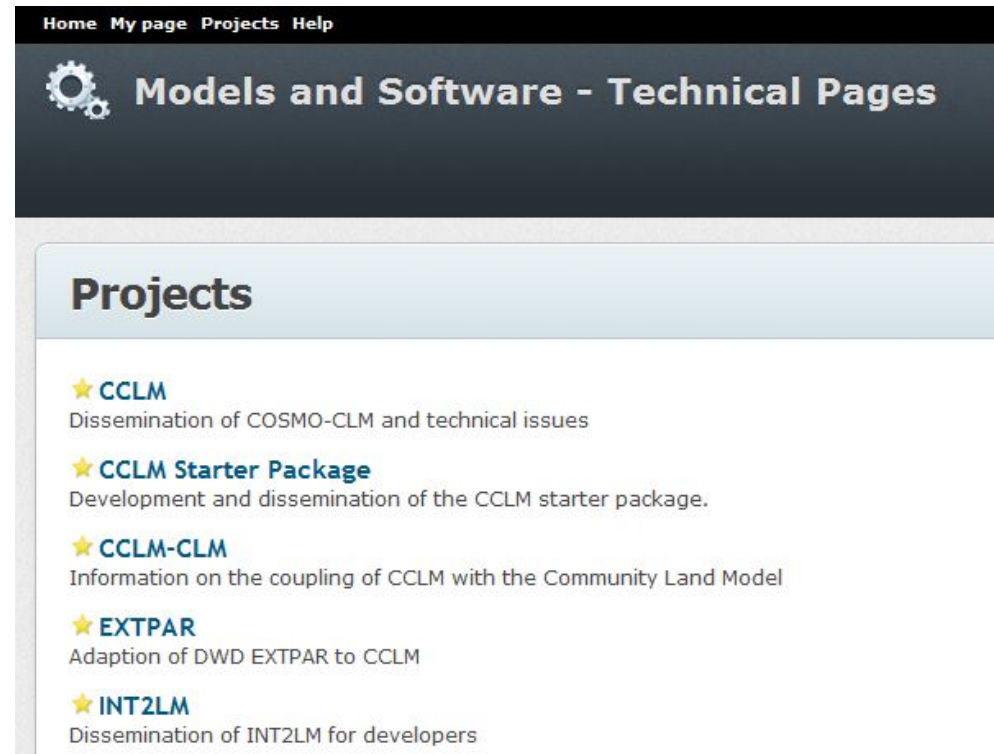
- COSMO does not use directly surface fluxes in its turbulent scheme but uses instead surface states (e.g. surface temperature) and surface transfer coefficients (e.g. TCH)
- Therefore, the surface fluxes from CLM4.0/3.5 passed to COSMO have to be inverted to recalculate “effective” transfer coefficients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

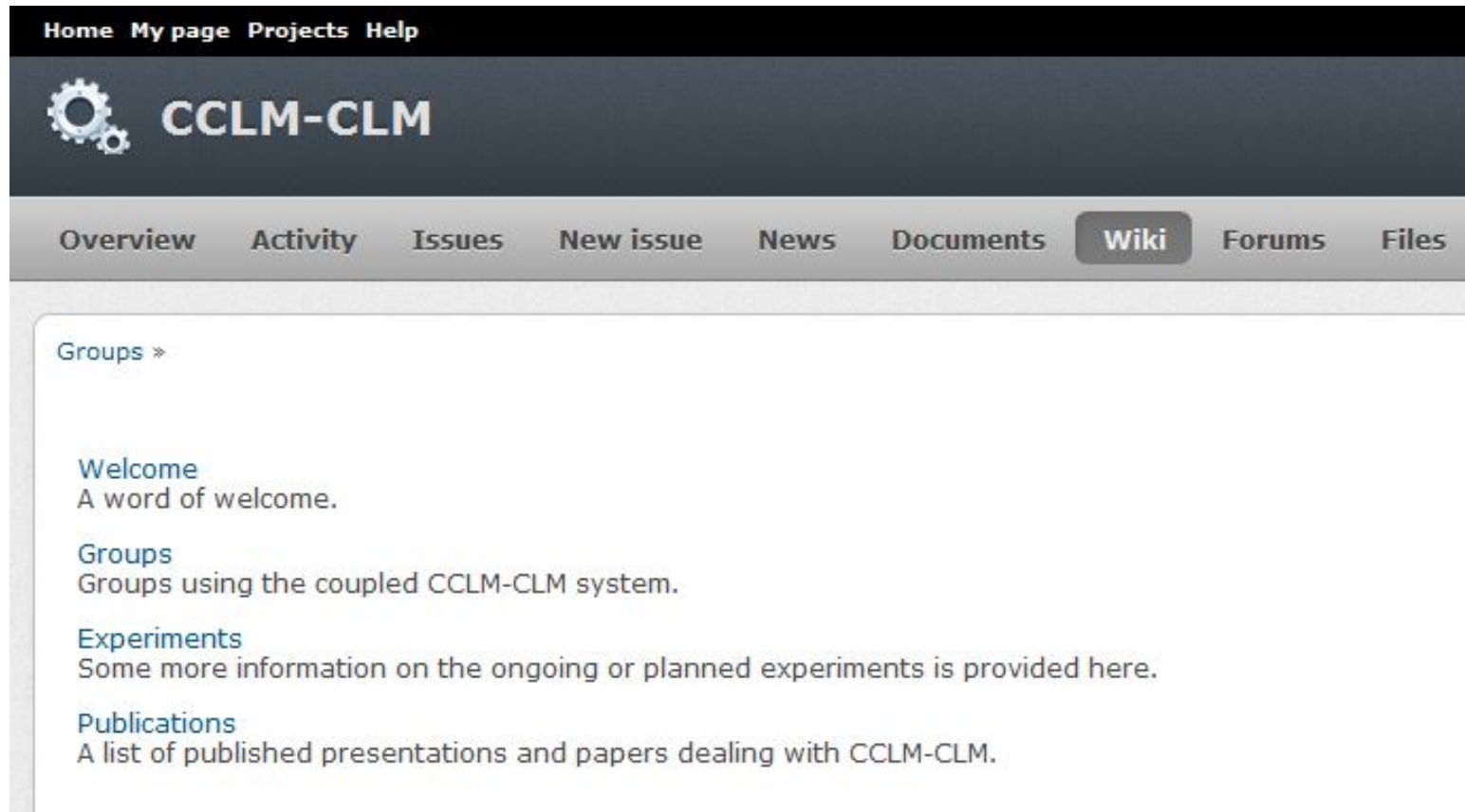
- Well established and supported coupler
- More flexibility (use of different grids, time stepping)
- Interface compatible with CLM4.0/CLM3.5
- Potential for better performance optimization
- Remaining technical issues: e.g. problem with restarts

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



The screenshot shows the CCLM-CLM Wiki homepage. At the top, there is a navigation bar with links: Home, My page, Projects, and Help. Below this is a dark header area featuring a gear icon and the text "CCLM-CLM". Underneath the header is a secondary navigation bar with links: Overview, Activity, Issues, New issue, News, Documents, Wiki (which is highlighted), Forums, and Files. The main content area is titled "Groups »" and contains four sections: "Welcome" with the text "A word of welcome.", "Groups" with the text "Groups using the coupled CCLM-CLM system.", "Experiments" with the text "Some more information on the ongoing or planned experiments is provided here.", and "Publications" with the text "A list of published presentations and papers dealing with CCLM-CLM."

Home My page Projects Help

 **CCLM-CLM**

Overview Activity Issues New issue News Documents **Wiki** Forums Files

Groups »

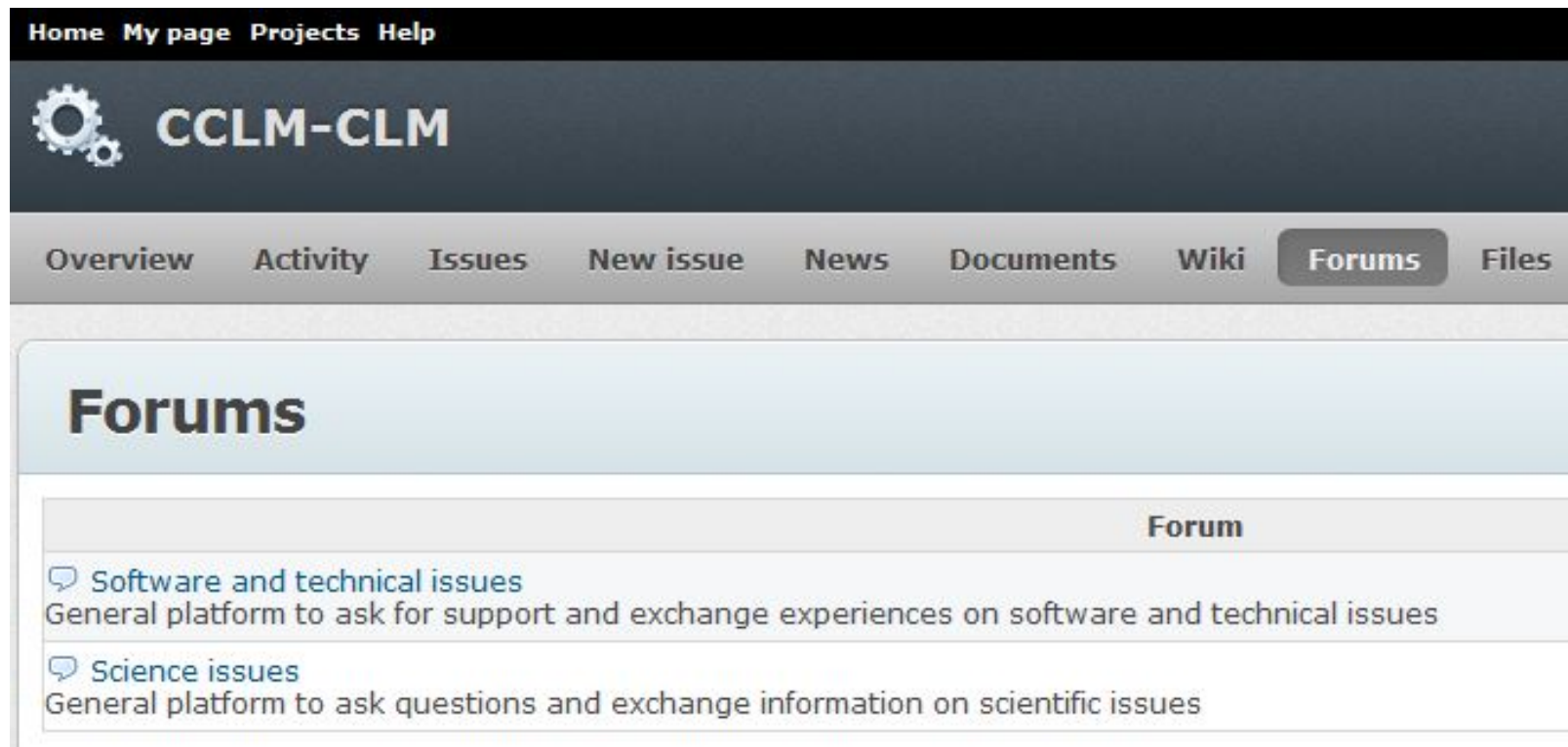
Welcome
A word of welcome.

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

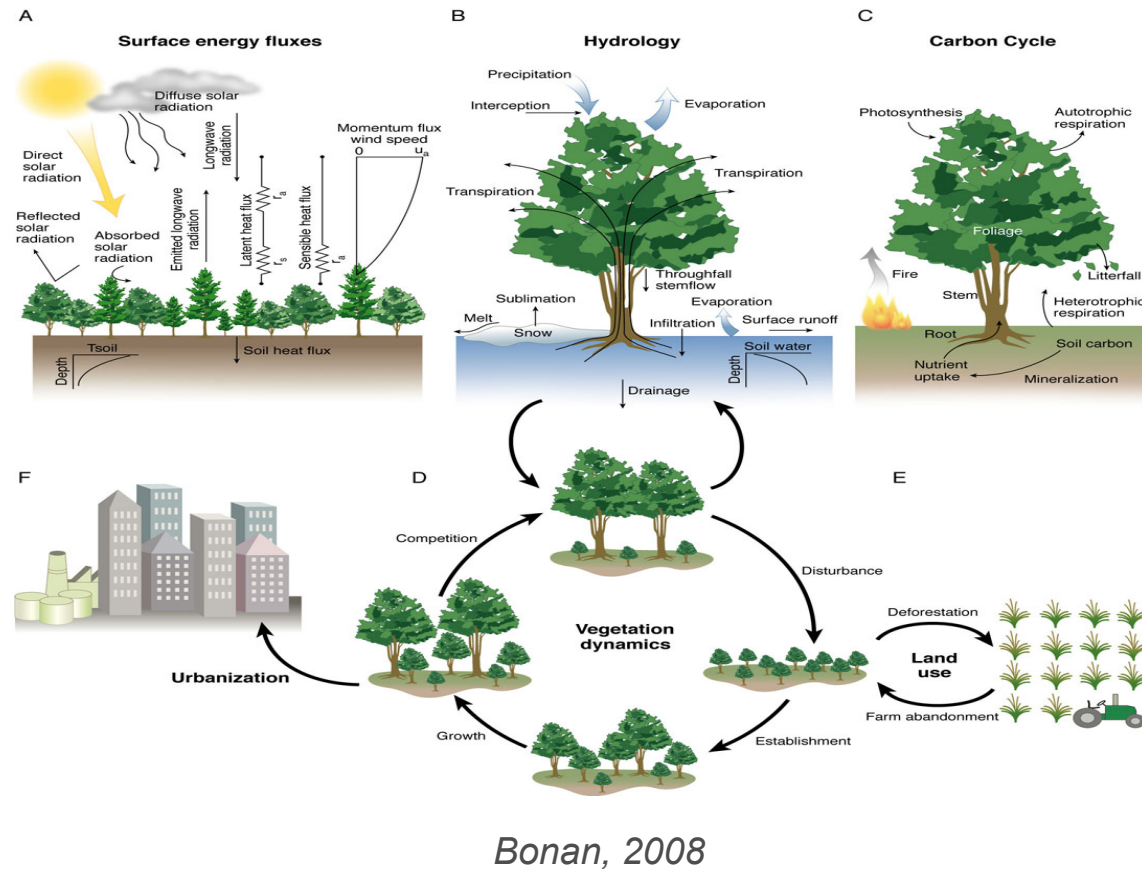


The screenshot shows the CCLM-CLM Forum interface. At the top is a navigation bar with links: Home, My page, Projects, and Help. Below this is a dark header with the CCLM-CLM logo (two interlocking gears) and the text 'CCLM-CLM'. A secondary navigation bar contains links: Overview, Activity, Issues, New issue, News, Documents, Wiki, Forums (highlighted), and Files. The main content area is titled 'Forums' and lists two categories:

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



COSMO-CLM²: development stages

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