



# Land component with focus on “Feedback”

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# Agenda

## Round of introductions

## Presentations (10min each)

- Update on ICON-Land and biogeochemistry, Sönke Zaehle, MPI-BGC
- Upscaling plant process, Juan Baca Cabrera, FZJ
- Land disturbances - Fire, Ana Bastos, Uni Leipzig
- Groundwater in feedback simulations, Stefan Kollet, FZJ

## Group discussions based on presentations

## Panel discussion (additional feedback processes?), decisions, next steps

# Goals of Breakout Group

Group discussion -> activities  
(e.g. Working Groups)

## Working groups

Working groups can be proposed by anyone from the community who volunteers to take the lead and to serve as the contact point for others interested in attending the group.



Home / How to participate / Working Groups

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### Establishment and dissolution of a working group

1. A working group always has a **clear goal to advance natESM**.
2. A working group should **not last longer than one year**.
3. Achieving a technical development goal enables the simulation needed to pursue a scientific goal.
4. A technical development goal should be confined enough to permit rapid completion.
5. Additional technical development goals should be tackled in a future working group.
6. A proposal for a working group can be made through a brief write-up to the [process coordinator](#) summarizing the working-group goals, as well as a schedule.
7. A working group is completed through a brief retrospective describing outcomes and lessons learned.
8. Working-group proposals and retrospectives are made available on this website.

### Completed working groups

The following working groups have already completed their work on the respective challenge.

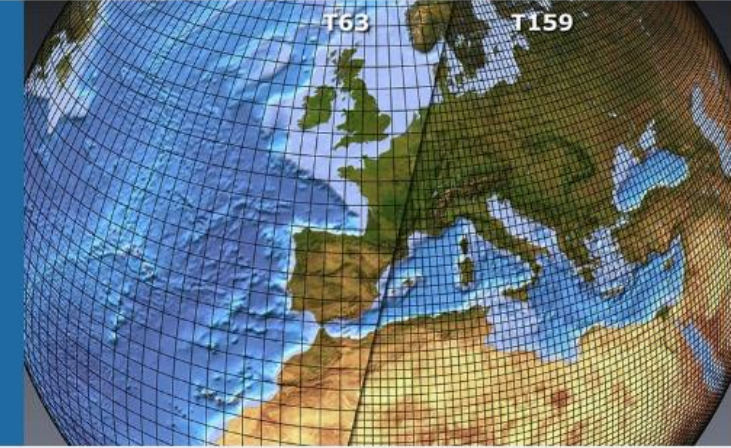
1. Establishing a community-wide communication platform - [Iris Ehlert](#) (DKRZ)
  - → original [proposal](#),
  - → final [report](#).
2. Training - [Birgit Hassler](#) (DLR)
  - → original [proposal](#),
  - → final [report](#).
3. Evaluating ice-sheet-model candidates for natESM - [Torsten Albrecht](#) (MPI-GEA)
  - → [Kick-off event](#), [Torsten's workshop presentation](#)
  - → final [report](#)

# Goals of Breakout Group

Group discussion -> activities  
(e.g. Sprints)

## Support through Sprints

Find all information to submit your application for support during sprints.



Home / What we offer / Support through sprints

### Exploring sprint opportunities with natESM

natESM maintains an open call for proposals, enabling model-development groups across Germany to become part of our Earth-system research community.

Our sprints, focused on technical objectives and tethered to natESM resources, provide a flexible program tailored to your research goals and timelines. This collaborative journey spans up to six months, fostering in-depth partnerships between you and our Research Software Engineers (RSEs).

Accepted sprints

Sprint reports

Lessons learned

### The sprint process: from sprint check to report

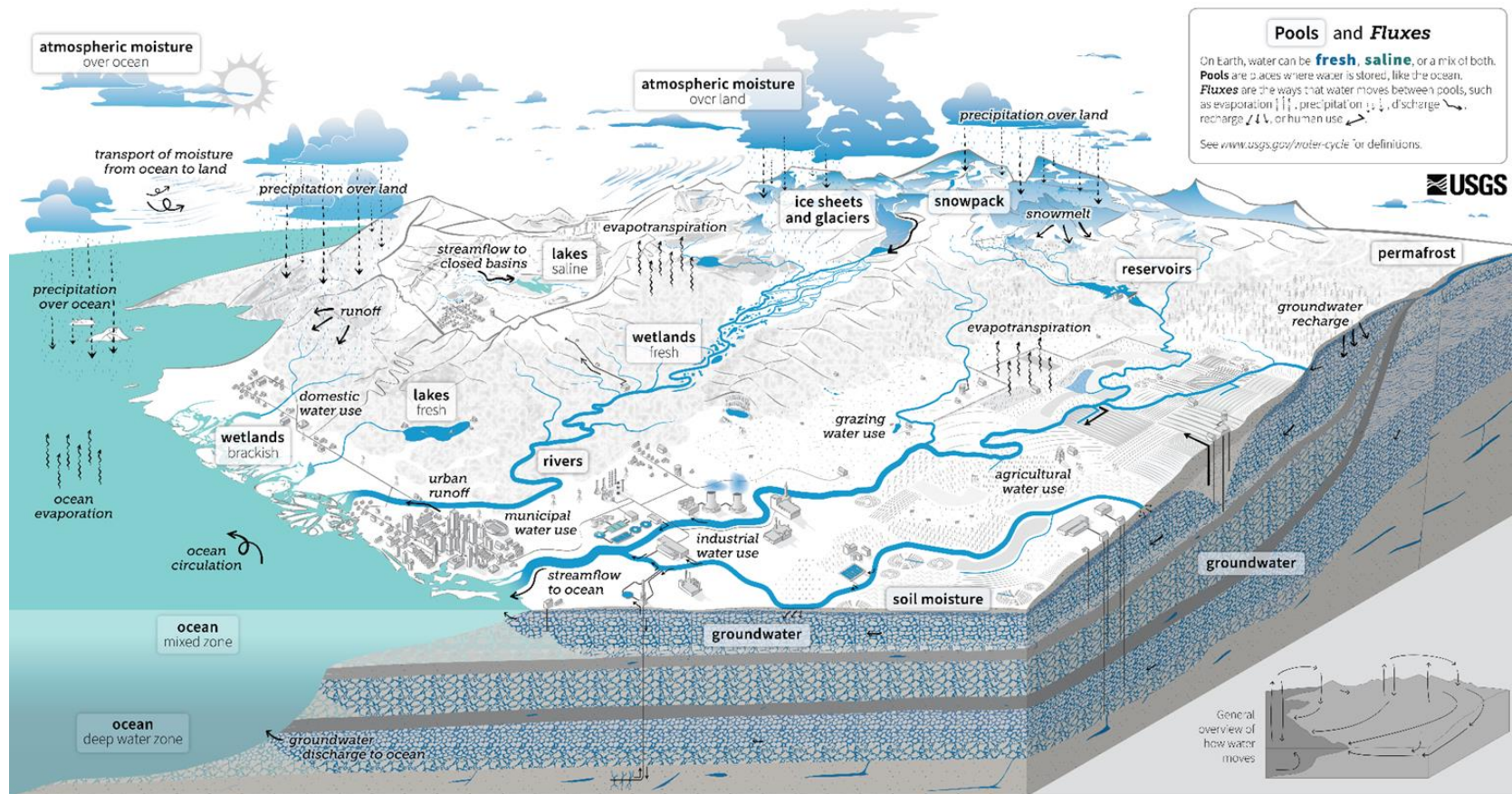
The sprint process within natESM encompasses several stages, ensuring that each sprint effectively contributes to our Earth system modeling objectives. Here is an overview of the sprint journey that you can initiate at any time. Prospective applicants are required to undergo a sprint check, serving as an accessible entry point for guidance before submitting a full sprint application.





# Goals of Breakout Group

Outreach -> engage the German Land community; groups, colleagues to contact: ...

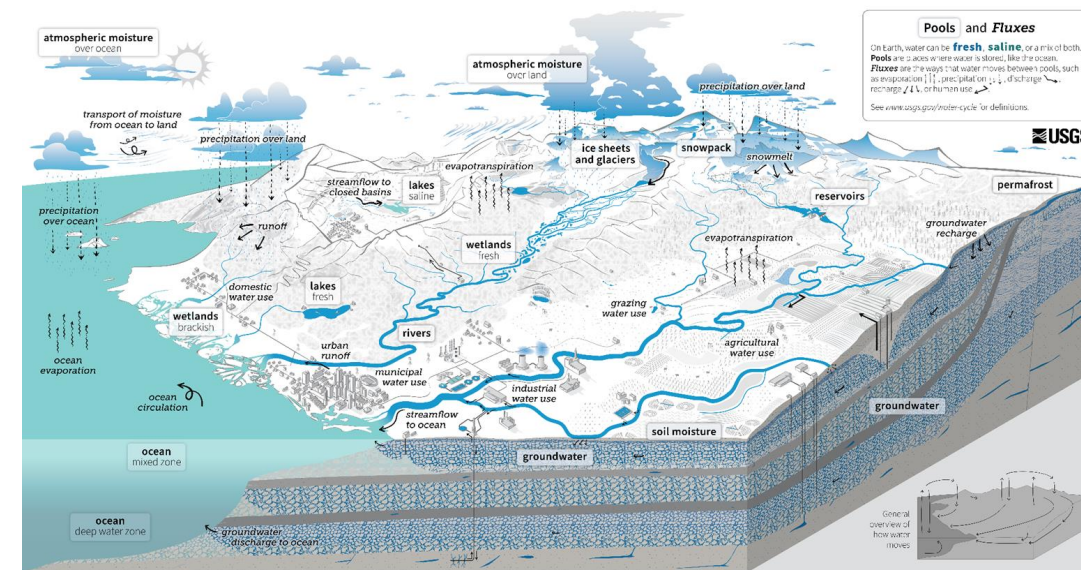


# Groundwater/hydrology discussion group

## Representation of groundwater/hydrology in feedback simulation

Continental water equilibrium from source to sink is changing; how does that influence feedbacks?  
(climate change, human interventions)

- to which extent does groundwater/terrestrial hydrology impact atmospheric processes
  - to which extent (level of complexity) does groundwater/hydrologic need to be represented in ESMs; which questions to we need to answer where groundwater might be relevant (it's a question of space and time scales)
- (Jochem: do we have crises e.g. regions where atmospheric models fail over the continent, because groundwater/hydrology is no correctly represented





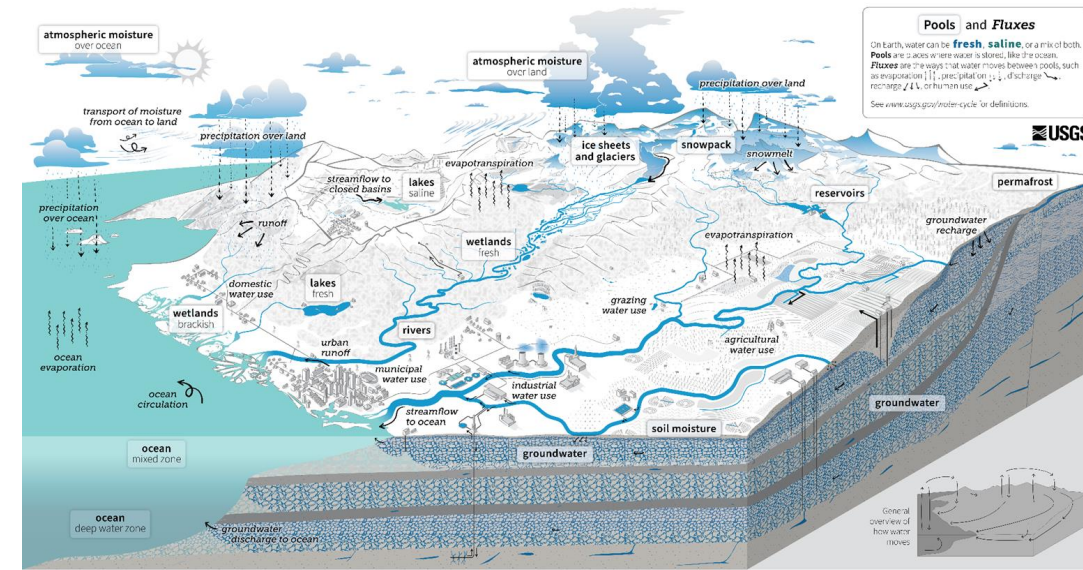
# Groundwater/hydrology discussion group

Connection of groundwater/hydrology with the atmosphere happens via shallow soil moisture and ET i.e. the coupled terrestrial water and energy cycle.

Consensus on important feedbacks with respect to land surface process, ecosystems, and also mesoscale at atmospheric processes.

No consensus on relevance of detailed groundwater/hydrology in global ESMs; which level of complexity is required for feedback simulations?

- depends on question at hand (improve realism, sensitivity studies, bias reduction)

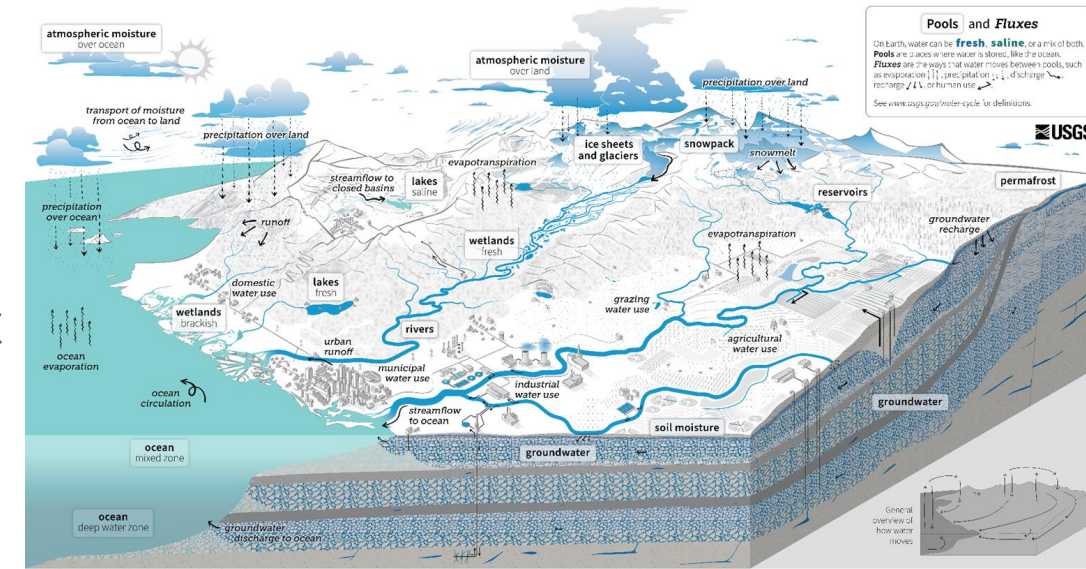




# Groundwater/hydrology discussion group

On top, major challenges:

- subsurface heterogeneity at all scales, complex soils and hydrogeology (e.g. Karst)
- never enough data (hydraulic properties, in-situ/remotely sensed observations)
- human water uses
- ....



# Groundwater/hydrology discussion group

## Conclusion

- Workshop (-> Working Group):  
Use available global groundwater/hydrologic data sets to identify relevant regions (with shallow groundwater); potentially perform sensitivity studies; tackle question of which level of complexity is needed; define a path forward for data challenge

