

KARTHAUS-2012 / GLACIERS AND ICE SHEETS IN THE CLIMATE SYSTEM

Programme

Exercises and computer projects

The 36 participants are divided into 12 teams. In the first part of the afternoon, 6 teams do exercises, supervised by the teacher indicated in the programme. Meanwhile, the other 6 teams work on computer projects. In the second half of the afternoon the teams switch. A particular team of 3 students works on the same project during the entire course, guided by a teacher. At the end of the course there will be 15-minute presentations on the outcome of the projects.

Tuesday 11

Afternoon	Arrival / check-in
19:30	DINNER

Wednesday 12

09:00 – 09:30	Welcome / practical announcements (<i>Oerlemans</i>)
09:30 – 10:20	Continuum mechanics-I (<i>Gudmundsson</i>)
10:20 – 10:40	coffee break
10:40 – 11:30	Continuum mechanics-II (<i>Gudmundsson</i>)
11:40 – 12:40	5-min presentations by students
13:00	LUNCH
14:00 – 16:00	Exercises for all groups (<i>Gudmundsson</i>)
16:00 – 16:30	coffee break
16:30 – 17:30	5-min presentations by students
19:30	DINNER

Thursday 13

08:30 - 09:20	Commonly used approximations in ice flow modelling (<i>Gudmundsson</i>)
09:30 - 10:20	Ice as a material, rheology (<i>Karlsson</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Thermodynamics of ice sheets (<i>Karlsson</i>)
11:40 - 12:40	Polar meteorology (<i>Reijmer</i>)
13:00	LUNCH
14:00 – 16:00	Exercises for all groups (<i>Karlsson</i>)
16:00 - 16:30	coffee break
16:30 – 17:30	5-min presentations by students
19:30	DINNER

Friday 14

08:30 - 09:20	Analytical ice-sheet models (<i>Oerlemans</i>)
09:30 - 10:20	Numerical modeling of ice sheets and ice shelves I (<i>Bueler</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Sliding (<i>Ng</i>)
11:40 - 12:30	Glacier hydrology (<i>Ng</i>)
12:45	LUNCH
14:00 - 15:30	Group II: exercises (<i>Ng</i>) / Group I: computer projects
15:30 - 16:00	coffee break
16:00 - 17:30	Group I: exercises (<i>Ng</i>) / Group II: computer projects
19:30	DINNER
21:30	<i>Evening lecture: W. Haeberli: Ice-related hazards in high-mountain regions</i>

Saturday 15

08:30 - 09:20	Numerical modeling of ice sheets and ice shelves II (<i>Bueler</i>)
09:30 - 10:20	Numerical modeling of ice sheets and ice shelves III (<i>Bueler</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Ground-penetrating radar (GPR) methods in glaciology (<i>Navarro</i>)
11:40 - 12:30	Investigating the hydrothermal structure of glaciers with GPR (<i>Navarro</i>)
12:45	LUNCH
14:00 – 14:50	Extra-terrestrial ice (<i>Karlsson</i>)
15:00 – 15:50	Introduction to glacial geomorphology (<i>Stroeven</i>)
16:00 – 16:30	History of glaciological research at Hintereisferner; Information about the excursion (<i>Kuhn</i>)
19:30	DINNER

Sunday 16

Excursion to the glaciers of the Oetztal Alps (*Grüner, Kuhn*)

Monday 17

08:30 - 09:20	Interaction of ice shelves with the ocean-I (<i>Jenkins</i>)
09:30 - 10:20	Interaction of ice shelves with the ocean-II (<i>Jenkins</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Basal processes and geomorphology (<i>Ng</i>)
11:40 - 12:30	Geomorphology and mapping of paleo-ice sheets (<i>Stroeven</i>)
12:45	LUNCH
14:00 - 15:30	Group I: exercises (<i>Jenkins</i>) / Group II: computer projects
15:30 - 16:00	coffee break
16:00 - 17:30	Group II: exercises (<i>Jenkins</i>) / Group I: computer projects
19:30	DINNER

Tuesday 18

08:30 - 09:20	Remote sensing of the cryosphere (<i>Howat</i>)
09:30 - 10:20	Mapping glaciers from space (<i>Paul</i>)
10:20 - 10:40	coffee break
10:40 - 11:10	Interaction between ice sheets and the solid earth (<i>Whitehouse</i>)
11:10 - 11:40	What can we learn from glacier rebound ? (<i>Whitehouse</i>)
12:45	LUNCH
14:00 - 15:30	Group II: exercises (<i>Whitehouse</i>) / Group I: computer projects
15:30 - 16:00	coffee break
16:00 - 17:30	Group I: exercises (<i>Whitehouse</i>) / Group II: computer projects
19:30	DINNER
21:30	<i>Evening lecture: P. Kuipers Munneke: A videoblog from the Greenland ice sheet</i>

Wednesday 19

08:30 - 09:20	Interaction of ice shelves with the ocean-III (<i>Jenkins</i>)
09:30 - 10:20	Tidewater glaciers (<i>Howat</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Ice cores I (<i>Blunier</i>)
11:40 - 12:30	Ice cores II (<i>Blunier</i>)
12:45	LUNCH
	Free afternoon
19:30	DINNER

Thursday 20

08:30 - 09:20	Ice cores III (<i>Blunier</i>)
09:30 - 10:20	The microclimate of glaciers (<i>Oerlemans</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Albedo of snow and ice (<i>Kuipers Munneke</i>)
11:40 - 12:30	The mass budget of the Greenland and Antarctic ice sheets (<i>Reijmer</i>)
12:45	LUNCH
14:00 - 15:30	Group I: exercises (<i>Blunier</i>) / Group II: computer projects
15:30 - 16:00	coffee break
16:00 - 17:30	Group II: exercises (<i>Blunier</i>) / Group I: computer projects
19:30	DINNER

Friday 21

08:30 - 09:20	Inverse modelling (<i>Gudmundsson</i>)
09:30 - 10:20	The response of glaciers to climate change (<i>Oerlemans</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Ice sheet modelling through the Cenozoic (<i>Van de Wal</i>)
11:40 - 12:30	Cryospheric inferences on paleoclimate sensitivity and feedbacks (<i>Van de Wal</i>)
12:45	LUNCH
14:00 - 15:30	Presentation of computer projects (6x)
15:30 - 16:00	coffee break
16:00 - 17:30	Presentation of computer projects (6x)
17:30 - 18:00	Discussion
19:30	DINNER

Saturday 22

Departure

Computer projects

The organizing committee will make a proposal about the distribution of students over the projects. The list will be posted on the first day of the course. Some (limited) changes can then be made before the projects start on Friday. A number of Mac's will be available in a local network. Participants may also bring their own laptops. We will have a wireless net to have ties with the outside world. Practice has shown that these ties are not very fast.

GROUP I:

- Project 1: Glacier mapping from space (*Paul*)
- Project 2: Sea level and geodynamics (*Whitehouse*)
- Project 3: Remote sensing and tidewater glaciers (*Howat*)
- Project 4: Inverse modelling (*Gudmundsson*)
- Project 5: Ice-core dating (*Karlsson*)
- Project 6: Glacial geomorphology (*Stroeven*)

GROUP II:

- Project 7: SIA glacier model (*Reijmer / Kuipers Munneke*)
- Project 8: Analysis of glacier structure from GPR records (*Navarro*)
- Project 9: Ice shelf – ocean interaction (*Jenkins*)
- Project 10: Ice-sheet model (*Bueler*)
- Project 11: AWS Hochjochferner (*Reijmer*)
- Project 12: Sliding (*Ng*)