

KARTHAUS-2024

GLACIERS AND ICE SHEETS IN THE CLIMATE SYSTEM

Programme

Exercises, 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 21 May

Afternoon	Arrival / check-in
19:30	DINNER

Wednesday 22 May

08:30 - 08:50	Welcome / practical announcements (<i>Reijmer</i>)
08:50 - 09:30	Continuum mechanics-I (<i>Buzzard</i>)
09:40 - 10:30	Continuum mechanics-II (<i>Buzzard</i>)
10:30 - 10:50	coffee break
10:50 - 11:40	Rheology of ice (<i>Pettit</i>)
11:50 - 12:40	Thermodynamics of ice (<i>Karlsson</i>)
13:00	LUNCH
14:00 - 15:30	3-min presentations by students and teachers
15:30 - 16:00	coffee break
16:00 - 17:30	3-min presentations by students and teachers
19:30	DINNER

Thursday 23 May

08:30 - 09:20	Commonly used approximations in ice flow modelling (<i>Pattyn</i>)
09:30 - 10:20	Analytical models of ice sheets (<i>Oerlemans</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Climates of ice sheets and glaciers (<i>Reijmer</i>)
11:40 - 12:30	Modelling glacier surface and near-surface processes I (surface energy balance) (<i>Reijmer</i>)
12:45	LUNCH
14:00 - 15:30	Group I: exercises (<i>Buzzard</i>) / Group II: computer projects
15:30 - 16:00	coffee break
16:00 - 17:30	Group II: exercises (<i>Buzzard</i>) / Group I: computer projects
19:30	DINNER

Friday 24 May

08:30 - 09:20	Numerical modeling of ice sheets and ice shelves I (<i>Pattyn</i>)
09:30 - 10:20	Numerical modeling of ice sheets and ice shelves II (<i>Pattyn</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Modelling glacier surface and near-surface processes II (firn processes) (<i>Buzzard</i>)
11:40 - 12:30	Geophysical methods in glaciology I (<i>Karlsson</i>)
12:45	LUNCH
14:00 - 15:30	Group II: exercises (<i>Pattyn</i>) / Group I: computer projects
15:30 - 16:00	coffee break
16:00 - 17:30	Group I: exercises (<i>Pattyn</i>) / Group II: computer projects
19:30	DINNER

Saturday 25 May

08:30 - 09:20	Ice sheet - ocean interaction I (<i>Reese</i>)
09:30 - 10:20	Ice sheet - ocean interaction II (<i>Reese</i>)
10:20 - 10:40	coffee break
10:40 - 11:30	Glacier hydrology (<i>Hewitt</i>)
11:40 - 12:30	Sliding (<i>Hewitt</i>)

12:45 LUNCH
FREE TIME
19:30 DINNER

Sunday 26 May

08:30 - 09:20 Remote sensing methods in glaciology I (*Sørensen*)
09:30 - 10:20 Remote sensing methods in glaciology II (*Sørensen*)
10:20 - 10:40 coffee break
10:40 - 11:30 Introduction to glacial geomorphology (*Bentley*)
11:40 - 12:30 Basal processes and geomorphology (*Hewitt*)
12:45 LUNCH
14:00 - 15:30 Group II: exercises (*Oerlemans*) / Group I: computer projects
15:30 - 16:00 coffee break
16:00 - 17:30 Group I: exercises (*Oerlemans*) / Group II: computer projects
19:30 DINNER

Monday 27 May

08:30 - 09:20 Ice sheet - ocean interaction III (calving glaciers) (*Reese*)
09:30 - 10:20 Minimal glacier models (*Oerlemans*)
10:20 - 10:40 coffee break
10:40 - 11:30 Geomorphology and mapping of paleo-ice sheets (*Bentley*)
11:40 - 12:30 The response of glaciers to climate change (*Oerlemans*)
12:45 LUNCH
14:00 - 15:30 Group I: workshop diversity (*Keisling*) / Group II: computer projects
15:30 - 16:00 coffee break
16:00 - 17:30 Group II: workshop diversity (*Keisling*) / Group I: computer projects
19:30 DINNER

Tuesday 28 May

9:00 - **Excursion to the Lazaun rock glacier**
19:30 DINNER

Wednesday 29 May

08:30 - 09:20 Ice cores I (*Pettit*)
09:30 - 10:20 Ice cores II (*Pettit*)
10:20 - 10:40 coffee break
10:40 - 11:30 Introduction to Geodynamics (*Gomez*)
11:40 - 12:30 The mass budget of the Greenland and Antarctic ice sheets (*Sørensen*)
12:45 LUNCH
14:00 - 15:30 Group II: exercises (*Pettit*) / Group I: computer projects
15:30 - 16:00 coffee break
16:00 - 17:30 Group I: exercises (*Pettit*) / Group II: computer projects
19:30 DINNER

Thursday 30 May

08:30 - 09:20 Paleo ice-sheet and climate modelling I (*Keisling*)
09:30 - 10:20 Paleo ice-sheet and climate modelling I (*Keisling*)
10:20 - 10:40 coffee break
10:40 - 11:30 Geodynamics, glacial isostasy and sea level I (*Gomez*)
11:40 - 12:30 Geodynamics, glacial isostasy and sea level II (*Gomez*)
12:45 LUNCH
14:00 - 15:30 Group I: exercises (*Gomez*) / Group II: computer projects
15:30 - 16:00 coffee break
16:00 - 17:30 Group II: exercises (*Gomez*) / Group I: computer projects
19:30 DINNER

Friday 31 May

08:30 - 09:20 The History of the Antarctic ice sheet (*Bentley*)
09:30 - 10:20 Ice on Mars (*Karlsson*)
10:20 - 10:40 coffee break
10:40 - 11:30 *working on project presentations*

11:30 - 12:30	<i>working on project presentations</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 1 June **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.

A number of Mac's will be available in a local network. Participants may also bring their own laptops. We will have a wireless network to have ties with the outside world. Practice has shown that these ties are not very fast.