KARTHAUS-2025
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.

Monday 19 May

Afternoon	Arrival / check-in
19:30	DINNER

Tuesday 20 May

08:30 - 08:35	Welcome / practical announcements *(Reijmer)*
08:35 - 09:25	Introduction to Ice Sheets and Glaciers in the Climate System *(Reijmer)*
09:35 - 10:25	Rheology of ice *(Karlsson)*
10:25 - 10:40	Coffee break
10:40 - 11:30	Continuum mechanics-I *(Hewitt)*
11:40 - 12:30	Continuum mechanics-II *(Hewitt)*
12:45	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

Wednesday 21 May

08:30 - 09:20	Thermodynamics of ice *(Karlsson)*
09:30 - 10:20	Commonly used approximations in ice flow modelling *(Henry)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Analytical models of ice sheets *(Van de Berg)*
11:40 - 12:30	Climates of ice sheets and glaciers *(Van de Berg)*
12:45	LUNCH
14:00 - 15:30	Group I: exercises *(Hewitt)* / Group II: computer projects
15:30 - 16:00	Coffee break
16:00 - 17:30	Group II: exercises *(Hewitt)* / Group I: computer projects
19:30	DINNER

Thursday 22 May

08:30 - 09:20	Numerical modeling of ice sheets and ice shelves I *(Henry)*
09:30 - 10:20	Numerical modeling of ice sheets and ice shelves II *(Henry)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Modelling surface and near-surface processes: Surface energy balance *(Reijmer)*
11:40 - 12:30	Modelling surface and near-surface processes: Firn processes *(Reijmer)*
12:45	LUNCH
14:00 - 15:30	Group I & II: computer projects
15:30 - 16:00	Coffee break
16:00 - 17:30	Group I & II: computer projects
19:30	DINNER

Friday 23 May

08:30 - 09:20	Ice sheet - ocean interaction I *(Reese)*
09:30 - 10:20	Ice sheet - ocean interaction II *(Reese)*
10:20 - 10:40	Coffee break

10:40 - 11:30	Geophysical and Remote sensing methods in glaciology I *(Eisen)*
11:40 - 12:30	Geophysical and Remote-sensing methods in glaciology II *(Eisen)*
12:45	LUNCH
	FREE TIME
19:30	DINNER

Saturday 24 May

08:30 - 09:20	Sliding *(Hewitt)*
09:30 - 10:20	Glacier hydrology *(Hewitt)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Introduction to glacial geomorphology and mapping of paleo-ice sheets *(Pedersen)*
11:40 - 12:30	Basal processes and large-scale geomorphology *(Pedersen)*
12:45	LUNCH
14:00 - 15:30	Group II: exercises *(Henry)* / Group I: computer projects
15:30 - 16:00	Coffee break
16:00 - 17:30	Group I: exercises *(Henry)* / Group II: computer projects
19:30	DINNER

Sunday 25 May

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

Monday 26 May

08:30 - 09:20	Tidewater glaciers *(Reese)*
09:30 - 10:20	Tipping points in the climate systems *(Reese)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Ice cores I *(Blunier)*
11:40 - 12:30	Ice cores II *(Blunier)*
12:45	LUNCH
14:00 - 15:30	Group I: Workshop DEI *(Keisling)* / Group II: computer projects
15:30 - 16:00	Coffee break
16:00 - 17:30	Group II: Workshop DEI *(Keisling)* / Group I: computer projects
19:30	DINNER

Tuesday 27 May

08:30 - 09:20	Minimal glacier models *(Oerlemans)*
09:30 - 10:20	Geophysical and Remote-sensing methods in glaciology III *(Eisen)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Glacial isostastic adjustment (GIA) and sea level I *(Pedersen)*
11:40 - 12:30	Glacial isostastic adjustment (GIA) and sea level I *(Pedersen)*
12:45	LUNCH
14:00 - 15:30	Group II: exercises *(Reese)* / Group I: computer projects
15:30 - 16:00	Coffee break
16:00 - 17:30	Group I: exercises *(Reese)* / Group II: computer projects
19:30	DINNER
	Concert by Felix and Hans (and opportunity for students to perform)

Wednesday 28 May

08:30 - 09:20	The response of glaciers to climate change *(Oerlemans)*
09:30 - 10:20	Applied glaciology *(Keller)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Paleo ice-sheet and climate modelling I *(Keisling)*
11:40 - 12:30	Paleo ice-sheet and climate modelling II *(Keisling)*
12:45	LUNCH
14:00 - 15:30	Group I: exercises *(Pedersen)* / Group II: computer projects
15:30 - 16:00	Coffee break
16:00 - 17:30	Group II: exercises *(Pedersen)* / Group I: computer projects
19:30	DINNER

Thursday 29 May
08:30 - 09:20	The mass budget of the Greenland and Antarctic ice sheets *(Van de Berg)*
09:30 - 10:20	The history of the Antarctic ice sheet *(Keisling)*
10:20 - 10:40	Coffee break
10:40 - 11:30	Ice on Mars *(Karlsson)*
11.30 – 11.45	Large international cryospheric and geosciences organisations and the International Polar year 2032-33
11:40 - 12:30	*working on project presentations*
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

Friday 30 May   **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 net to have ties with the outside world. Practice has shown that these ties are not very fast.

GROUP I: (Groups not yet decided on, just check and send me update on the topics / titles

Project 1:   Glacial hydrology modelling *(Hewitt)*

Project 2:   Energy balance of a snow/ice surface *(Reijmer)*

Project 3:   SIA glacier model *(Van de Berg)*

Project 4:   SIA glacier model *(Van de Berg)*

Project 5:   Melting the ice on Mars *(Karlsson)*

Project 6:   Surface and snow temperatures in Greenland *(Karlsson)*

GROUP II:

Project 7:   Paleo ice sheet modelling *(Keisling)*

Project 8:   Paleo ice sheet modelling *(Keisling)*

Project 9:   What is the age-depth relationship of the GRIP ice core? *(Blunier)*

Project 10:   Finding the timing of the Bi-polar see-saw *(Blunier)*

Project 11:   Effect of anisotropy on viscosity/fluidity of ice and relation to radar measurements *(Eisen)*

Project 12:   Polarimetric radar profiling of the North-East Greenland ice stream *(Eisen)*