

Course announcement

Formation and growth of atmospheric aerosols

Hyttiälä, Finland, August 8-19, 2022

Institute for Atmospheric and Earth System Research ([INAR](#)) of University of Helsinki is pleased to invite students to the 2022 Summer School 'Formation and growth of atmospheric aerosols'.

The course is worth 5 credits of ECTS (European Credit Transfer System).
The course is aimed at PhD students and advanced MSc students in atmospheric sciences.

Topics that will be covered are (tentative list):

1. Atmospheric aerosols
2. Atmospheric observations of aerosol formation and growth
3. Nucleation theory and computational methods
4. Aerosol dynamics: condensation, coagulation, general dynamic equation
5. Aerosols, clouds and climate
6. Large-scale modeling of atmospheric aerosols
7. Organic aerosols
8. Gaseous precursors of atmospheric aerosols and their chemistry
9. Laboratory investigations of nucleation and nanoparticle growth
10. Thermodynamics of aerosol formation
11. Observations and measurement of sub-3 nm atmospheric clusters
12. Chemical composition of atmospheric nanoparticles and clusters
13. Air quality and climate interactions

After taking the course, students should be able to

- (1) summarize the current understanding of the main aerosol dynamic and chemical processes linked to atmospheric aerosol formation,
- (2) write and solve equations describing these processes,
- (3) describe the basics of different methods used to study these processes,
- (4) identify the remaining open questions related to aerosol formation and growth.

The course consists of lectures and exercises (group work). There will be a group exam at the end of the course, on 18 August. The course includes a visit to the SMEAR II station. There will also be recreational events such as sauna and swimming, as well as an excursion.

Location

[Hyttiälä Forestry Field station in Southern Finland](#)

Time

Monday, August 8th – Friday, August 19th, 2022

Transportation schedule

Monday, August 8

16:00 Departure from Helsinki Railway Station
(16:45) Stop at Helsinki-Vantaa airport, if needed
20:30 Arrival in Hyytiälä

Friday, August 19

08:30 Departure from Hyytiälä
(12:00) Stop at Helsinki-Vantaa airport, if needed
12:45 Arrival in Helsinki Railway station

Please organize yourself the travels from your point of departure to Helsinki and back. Also note that people arriving/departing outside these times will need to arrange their own transportation to/from Hyytiälä.

Teachers

Prof. Markku Kulmala from INAR (University of Helsinki) will lead the course. There will also be several other lecturers who will be announced later.

Participation costs

The course fee is 1600 EUR, including transfers between Helsinki and Hyytiälä, accommodation in two-person rooms, full board (breakfast, lunch, afternoon coffee, dinner, and evening snack) during the course, all academic program, excursions and social program during the course. For students of University of Helsinki, the full fee is covered by Doctoral Programme in Atmospheric Sciences. For students of other Finnish and Nordic Universities, part of the fee is covered.

Applying

The application period for preliminary **registration ends on 2nd of May**.

Apply here: <https://elomake.helsinki.fi/lomakkeet/117450/lomake.html>

The students selected for the course will be informed by May 13.

COVID-19

We will follow the recommendations given by the local authorities on the special arrangements required due to the COVID-19 pandemic. The students will be informed before the course about these arrangements.

Organizing partners

The course is organized in collaboration with [Doctoral Programme in Atmospheric Sciences \(ATM-DP\)](#), [Nordic ABS network](#), [ACTRIS](#) and [Pan-Eurasian Experiment \(PEEX\)](#).

Further information

For further information, please contact: tom.kokkonen@helsinki.fi