

**ETH** zürich

# STUDYING Atmosphere and Climate

Master in Environmental Sciences

## A perfect match

Have you ever been staring at the clouds, wondering where all that water comes from? Have you ever been involved in a discussion on climate change, wishing you had a solid scientific understanding of the physical background? Would you like to know how a computer model can predict tomorrow's weather?

We're looking for you – fascinated by weather phenomena and aiming to understand the atmosphere and climate system. You want to move from reading newspaper articles on climate change and looking at fascinating pictures of tornadoes and hurricanes to investigating and understanding them to become an expert. You would like to gain a quantitative understanding of climate processes and their interactions – ranging from the molecular to the global scale and from short-lived phenomena to changes over millions of years, and you are interested in the broader view of how climate change links to society and policy. You have a bachelor's degree in science and a solid scientific background in mathematics, physics, chemistry and biology. Interested? Consider applying for the → Major in Atmosphere and Climate.



**Heini Wernli**  
Professor for Atmospheric Dynamics

"In our lecture courses students learn about the variability of weather systems, their prediction with numerical models and the physical fundamentals that govern their dynamics."



**Daniela Schmuki**  
Meteorologist, SRF Meteo

"As a meteorologist I put into practice the atmospheric science that I learned at ETH. I love the directness of my job: at the end of my shift I find out immediately whether I got things right."

## We offer

We offer a 4-semester program bringing together a group of outstanding students with world leading scientists in the field of atmospheric and climate science. You will be part of an international group of students with diverse backgrounds but sharing a common passion for atmospheric and climate science.

You will gain a quantitative understanding of atmospheric dynamics, climate processes and feedbacks, biogeochemical cycles, and paleoclimatology. You will receive in-depth training in numerical modelling of weather and climate, have the opportunity to work in the atmospheric chemistry and physics lab, participate in field courses and discuss the current weather in a weekly weather discussion.

## Your career

We educate outstanding young scientists for careers in academia, public administration and the private sector. The range of positions of our graduates is very diverse and ranges from experts in the emerging field of renewable energy, to risk modelers in the insurance business. Graduates of our MSc program hold leading positions in companies such as energy providers, climate and weather services, in the reinsurance and financial sector, or in media, business and policy consulting. Others work as statisticians, programmers, consultants, project managers or teachers in a wide variety of positions in the private sector, public administration and academia. Finally, many of our graduates successfully pursue an academic career and rank among the world-leading scientists in atmospheric and climate science.

## Embedded in the MSc in Environmental Science

The Major in Atmosphere and Climate is a specialization of the MSc program in Environmental Sciences. Environmental sciences are first and foremost natural sciences, but they have numerous links to the humanities, social sciences and engineering. Your profile will be similar to other graduates in physics, chemistry or biology – with an added scope for thinking and acting in an interdisciplinary way, analyzing complex systems and processes and developing concrete solutions to specific environmental problems. In short, environmental sciences are ideal for those with a wide range of interests and an ability to see the bigger picture.

“Our students learn about the latest advancements in climate research, are able to critically assess climate and weather science, becoming experts in a quickly developing field.”



**Sonia Seneviratne**

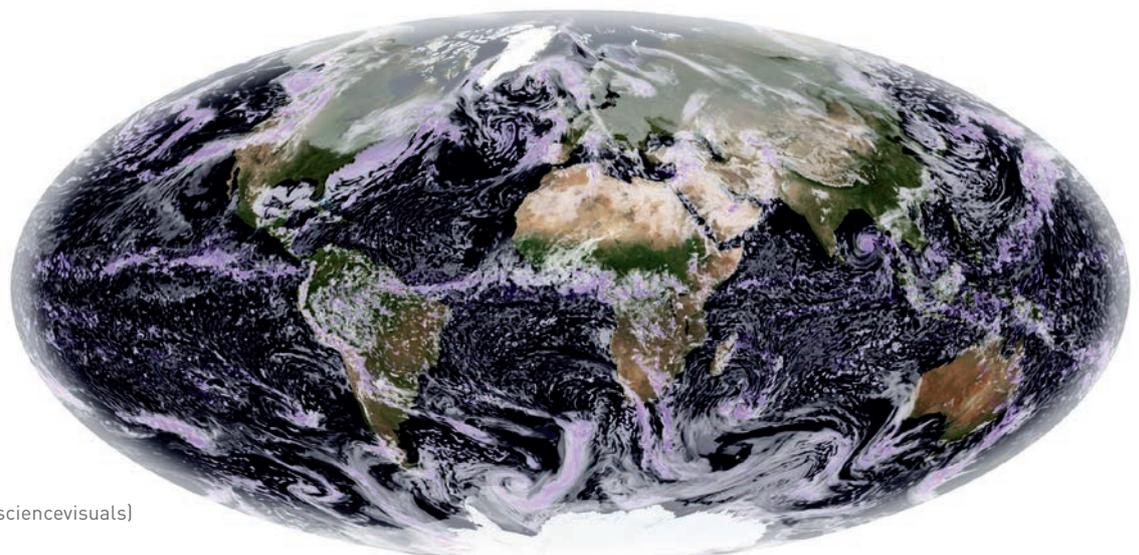
Professor for Land-Climate Dynamics

“My time at ETH was a profound learning experience, academic and otherwise. It greatly changed my outlook on life, and is one of the main reasons I chose to go into research.”



**Pushkar Kopparla**

PhD Student, California Institute of Technology, Caltech, Pasadena



ETH / NASA  
([vimeo.com/climatesciencevisuals](https://vimeo.com/climatesciencevisuals))

## Major in Atmosphere and Climate – Structure

The Major in Atmosphere and Climate is a 2-year program that combines theory, tutorials and labs, an internship, seminars and field courses, adding up to 120 ECTS credits. The program provides you with flexibility to tailor your own profile.

### Core courses (40 ECTS)

#### Module courses (24 ECTS)

You choose lectures from three of the five following modules:

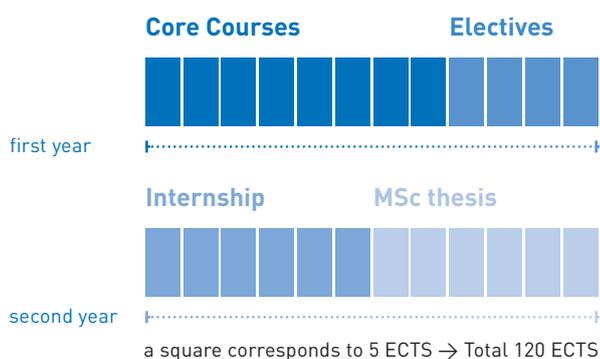
- Weather systems and atmospheric dynamics
- Climate processes and feedbacks
- Atmospheric composition and cycles
- Climate history and paleoclimatology
- Hydrology and water cycle

### Labs, practical courses, field work and seminars (16 ECTS)

You gain professional expertise in weekly weather discussions, atmospheric chemistry labs, atmospheric physics labs or a climatological and hydrological field course. You are trained in scientific writing, presentation and communication skills and project management in seminars. You meet international scientists and professionals from prospective work fields.

### Electives (20 ECTS)

You either delve into specialized courses in Atmosphere and Climate or broaden your profile by taking e.g. a minor in Sustainable Energy Use, Physical Glaciology, Environmental, Resource and Food Economics. Alternatively you can take courses from other Majors in Biogeochemistry and Pollutant Dynamics, Ecology and Evolution, Forest and Landscape Management, or Health, Food and Environment. You are free to choose from basically any MSc course offered at ETH Zurich.



“Climate change is not solved by just predicting how much rain will fall in the future. In our programme you also get exposed to quantification of climate risks, how science feeds into UN IPCC reports, and into decisions on mitigation and adaptation.”



**Reto Knutti**

Professor for Climate Physics

“The studies in atmospheric sciences guided me from wind turbines and energy industry to today’s position at the interdisciplinary interface of research, consulting and practice – quite the thing!”



**Christian Vogler**

Project Manager Energy & Climate,  
Econcept AG





**Niki Gruber**  
Professor for Environmental Physics

“The global carbon cycle and climate are closely linked to each other. In this program, you will learn about how processes in the ocean and land control the atmospheric CO<sub>2</sub> and thus climate, and in turn, how climate affects these two reservoirs.”



**Pamela Köllner Heck**  
PhD, Senior Scientific Officer,  
Swiss Federal Office for the Environment, BAFU

“Studying climate sciences offered me the possibility to turn my passion for nature into my profession. Thanks to the knowledge I gained, I am able now to find solutions to our actual environmental challenges.”

### Master's thesis (30 ECTS)

During your Master's thesis you are fully integrated in an international research team and work on your 6-month research project with strong support from your supervisors. You have access to leading-edge supercomputing and lab infrastructure and get a flavor of the vibrant work environment of research.

### Internship (30 ECTS)

The internship in a private company or public administration provides you valuable insight into potential career fields and enables you to gain work experience, an extremely valuable asset to find your first position after graduation.

### Exchange with University of Bern

The Major in Atmosphere and Climate has a vital exchange with the University of Bern and their graduate school at Oeschger Centre for Climate Change Research. We encourage and support students to take complementary courses at the University of Bern.



## Your mentors

Your lecturers, teachers and supervisors rank among the world-leading scientists in atmospheric and climate research, lead international research programs and author assessment reports of the Intergovernmental Panel on Climate Change. Find a list of your future mentors at [www.usys.ethz.ch/en/people/professors](http://www.usys.ethz.ch/en/people/professors)



## Studying at ETH Zurich

Study programmes at ETH Zurich are intensive and demanding. Nevertheless, students find time to enjoy an active student life.

### Get involved

Many students are involved in the Environmental and Forestry Studies Association (UFO) ([www.ufo.ethz.ch](http://www.ufo.ethz.ch)) or the Union of Students at ETH (VSETH) ([www.vseth.ethz.ch](http://www.vseth.ethz.ch)). As a member, you can contribute actively to the development of academic life.

### Balancing your studies

The Zurich Academic Sport Association (ASVZ), one of the biggest sport associations in Europe, provides ETH students with a choice of more than 70 different sports, taught by 600 instructors. Students registered for academic studies are entitled to participate in the vast majority of these: see [www.asvz.ch](http://www.asvz.ch)

## Living in Zurich

Zurich is a fascinating city, offering a high quality of life and diverse recreational and cultural activities. Its proximity to lakes and mountains makes it a popular spot for water sports and alpine leisure activities.

Zurich is beautiful, but expensive. The approximate monthly fixed costs for a single person are at least CHF 1790.00. Personal expenses such as clothes, telephone calls, leisure activities etc. are not included in this amount. You may well spend CHF 2000.00 a month without living in the lap of luxury. This means probable costs of at least CHF 24,000.00 per year.

### Accommodation

ETH Zurich is building student accommodation facilities which will be ready for occupancy in September 2016: see [www.livingscience.ch](http://www.livingscience.ch).



It is possible to find accommodation (rooms, studio apartments, etc) by contacting one of the institutions working with ETH Zurich and the University of Zurich.

- 1 ETH Zurich provides a limited number of furnished single rooms for international Master's (MSc) and exchange students. These rooms can only be rented for one or two semesters: International Student Support, [international@sts.ethz.ch](mailto:international@sts.ethz.ch)
- 2 The Housing Office of the University of Zurich and ETH Zurich provides an index on privately run student residences in the "Wohnbulletin": see [www.wohnen.ethz.ch](http://www.wohnen.ethz.ch).
- 3 The Student Housing Cooperative (Woko) rents out 2000 furnished rooms in student residences, student houses or flats throughout the city: see [www.woko.ch](http://www.woko.ch).
- 4 On the following websites you can check out other student accommodation ads and create your own room request for free: [www.marktplatz.ethz.ch](http://www.marktplatz.ethz.ch), [www.wgzimmer.ch](http://www.wgzimmer.ch).

**Further information:**

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[master@ethz.ch](mailto:master@ethz.ch)

Financial Aid Office (Scholarship):  
[studienfinanzierung@sts.ethz.ch](mailto:studienfinanzierung@sts.ethz.ch)

**Zurich Tourist Office:**  
[www.zuerich.com](http://www.zuerich.com)

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