

# Master of Science in Meteorology

Institute of Meteorology and Climate Research



Please note that information relating courses or University services is accurate at the time of publication but remains subject to change. Therefore it is advisable to check the Study section at our webpage <http://www.imk-tro.kit.edu/english>.

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## A welcome note from Professor Peter Knippertz, Director of MSc Programme in Meteorology

The Institute of Meteorology and Climate Research (IMK) at the Karlsruhe Institute of Technology (KIT) is a dynamic institution with an excellent reputation for world-class research and high-quality education. The two-year MSc programme in Meteorology covers the whole breadth of atmospheric sciences from small-scale processes in clouds to long-term climate change, providing an excellent education closely aligned with the rich research portfolio of the institute. And in Germany, this education comes at a very low tuition, particularly for students from the EU!



In this programme you'll learn in many different ways – through lectures, paper- or computer-based exercises, practical classes in the field and lab, team activities with fellow students and in your one-year independent research project. For example, one of the practical classes allows you to conduct your own experiments with one of the largest cloud chambers worldwide. Many of our students also work as paid research assistants, bringing them even closer to the multi-faceted research activities at IMK.

At KIT you will be taught by leading experts in the field of meteorology. Being one of the largest institutions for atmospheric research in Germany, we are in the unique situation of offering a wide spectrum of topics, each taught by an active researcher in the respective area. This is possible due to the fact that KIT is at the same time a classical federal state university and a research centre funded by the German government in the framework of the Helmholtz Association.

The Atmospheric Science programme of KIT was recently reviewed as “outstanding” by a team of international experts. Professor Corinna Hoose, for example, has been awarded a prestigious Consolidator Grant from the European Research Council for her work on microphysical processes in clouds. Professor Joaquim Pinto joined IMK in 2016 as an AXA Research Fund Chair awarded due to the relevance of our work to the insurance industry. My own research takes me to Africa where we investigate the important West African monsoon system. This includes field work, too, often involving students from the MSc Meteorology programme.

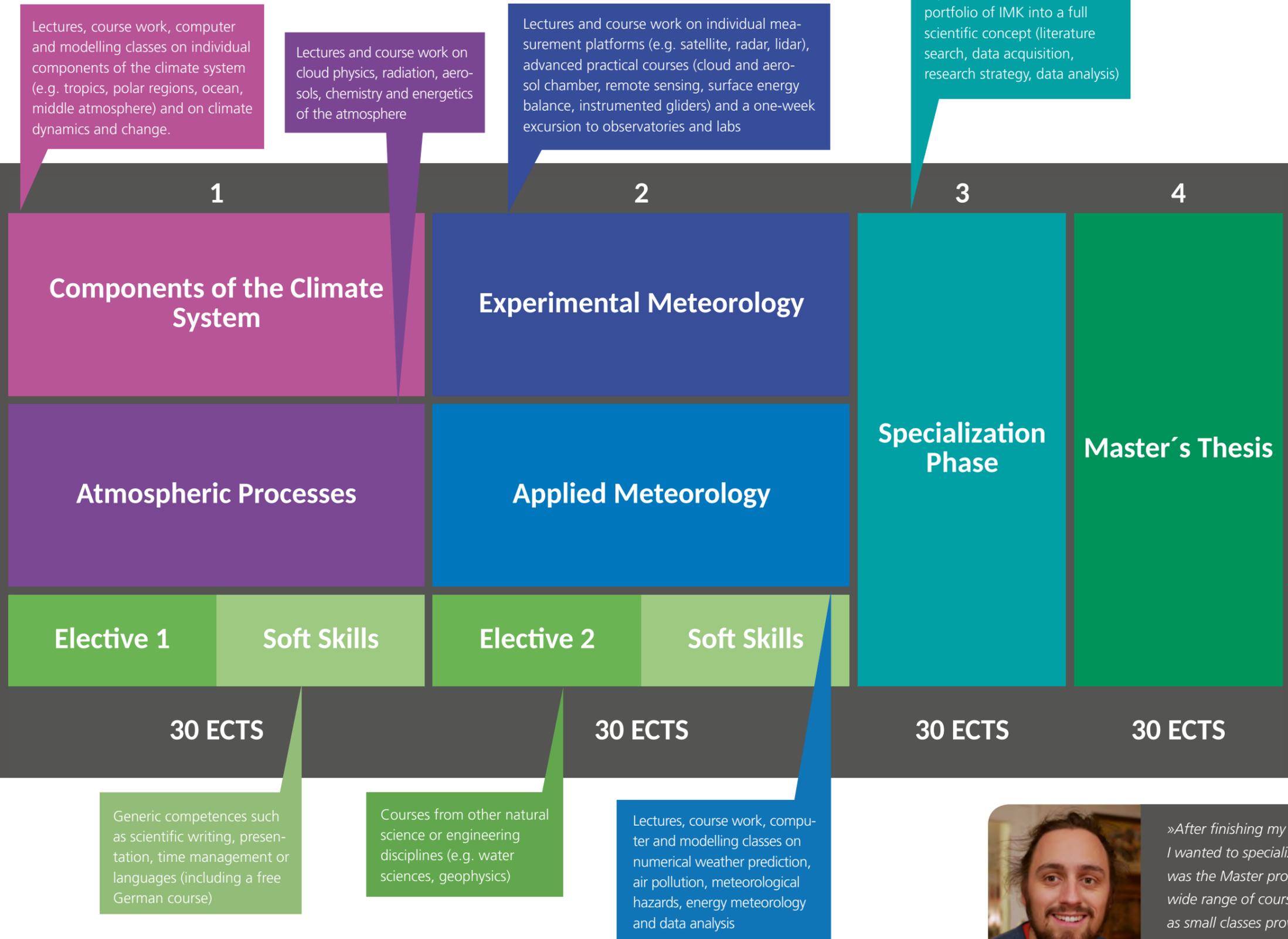
Karlsruhe is a great place to live and study. With more than 300,000 inhabitants Karlsruhe offers all cultural benefits of a city but is small enough to get everywhere by bicycle. Situated in the Upper Rhine valley, Karlsruhe is one of the sunniest and warmest places in Germany. The nearby Black and Palatinate Forests offer great daytrips for walking, cycling, skiing – and for observing the weather! Or visit the beautiful French Alsace region just across the river! Even if you cannot speak German, living in this international, welcoming and open-minded city should be no problem!

Come and join us!

Professor Peter Knippertz  
Director, MSc Programme in Meteorology

## Master of Science in Meteorology – The Degree Programme

Our **two-year** MSc degree programme contains 120 ECTS points distributed equally over **four semesters**. The first year consists of lectures, exercises and practicals (compulsory and elective) followed by an individual research project in Year 2.



## Application

### German applicants

Submit your application at <https://www.sle.kit.edu/vorstudium/bewerbung.php>  
Applications are processed by departmental commission only (typical duration 2 weeks).

### Applicants from the EU/EEA

Submit your application at <http://www.intl.kit.edu/istudies>.  
Applications are processed by International Student Office (IStO) and by departmental commission (typical duration 4–5 weeks).

### Applicants from non-EU/EEA countries

Submit your application at <http://www.intl.kit.edu/istudies>.  
Applications are processed by International Student Office (IStO) and by departmental commission (typical duration 4–5 weeks).

Please check visa regulations and keep in mind that obtaining a visa may take six to eight weeks. Note that tuition fees incur for this group.



»After finishing my BSc degree in environmental science in Tübingen I wanted to specialize in Atmospheric Physics. A perfect opportunity to do this was the Master programme in Meteorology at the KIT in Karlsruhe, with a wide range of courses on theoretical, applied and experimental topics as well as small classes providing close contact to professors and other scientists.«

Niklas Wittkamp (MSc Student)

For more information check the Degree Programme section at our webpage <http://www.imk-tro.kit.edu/english>.

## Career Perspectives

**Our MSc graduates in Meteorology have a high level of employability across a wide spectrum of interesting and challenging jobs.**

**These include:**

- Stay in research and become a PhD student, here at KIT or elsewhere. This is the next key step towards a career in academia.
- Research and development at public weather services or private weather companies
- Environmental consulting firms (e.g. building aerodynamics, air quality, wind park siting)
- Insurance sector (e.g. risk analysis, catastrophe modelling)
- Renewable energy sector (e.g. photovoltaic yield forecasting)
- Climate services, i.e. advising policymakers, businesses or the general public on climate change
- Data science

Setting up an automatic weather station at the shores of the Dead Sea.



*»Doing my PhD at the IMK-TRO institute, in the context of the transregional project "Waves to Weather", has been an amazing opportunity for me to pursue a career in meteorology. The working environment here is very nice and diverse and every day I learn something new. The quality of teaching and research at German universities is definitely top-notch!«*

*Enrico Di Muzio (PhD researcher in Atmospheric Dynamics, Italy)*



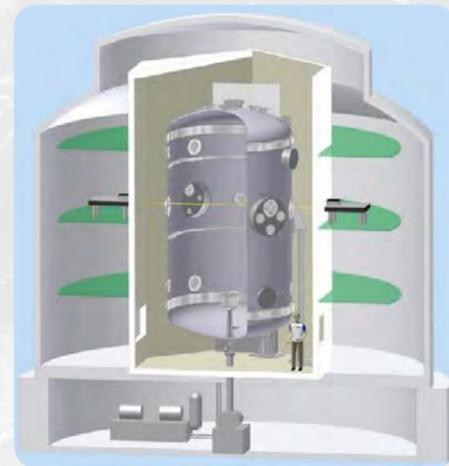
One of our MSc students launching a weather balloon in the pouring tropical rain in Africa.

## The Institute of Meteorology and Climate Research

The Institute of Meteorology and Climate Research (or short IMK) at KIT is one of the oldest and largest research institutions in atmospheric science in Germany. As such it benefits from a unique situation in the German academic system: KIT is at the same time a federal state university with a full-blown academic education programme and a national research lab as part of the Helmholtz Association that funds long-term, large, scientific infrastructures such as the 3-storey high cloud chamber AIDA that belongs to IMK. Research (and to a lesser degree teaching) activities take place at two locations: Campus South, in the heart of the city of Karlsruhe and right next to the baroque castle, and Campus North, in the forested areas ~10km north of the city, easily reachable by bicycle or shuttle bus.

IMK consists of four different Departments, all involved to varying degrees in student education. The oldest, the Department for Troposphere Research (TRO), is located at both Campuses and contributes most to the Meteorology programmes. It operates the extensive mobile KITcube facility to measure atmospheric parameters in and above the boundary layer (see top right). KITcube has been used in international field campaigns in Arizona, Corsica, Israel and tropical Africa, often involving student research assistants from our MSc programme. TRO is also active in model development in close collaboration with the German Weather Service (DWD).

Two other IMK Departments are located at Campus North: The one for Atmospheric Trace Gases and Remote Sensing (ASF) investigates the complex links and feedbacks between climate change, natural variability, dynamics and transport, and atmospheric chemistry. Accurate measurements of atmospheric trace gases from various observational platforms (including satellites) provide the data required for modelling. The Department for Atmospheric Aerosol Research (AAF) focuses on the role of aerosols in the climate system, the hydrological cycle and the environment. AAF operates the renowned AIDA aerosol and cloud simulation chamber (see right), participates in field campaigns and performs numerical modelling experiments.



The fourth IMK Department for Atmospheric Environmental Research (IFU) is curiously located in Garmisch-Partenkirchen, at the foot of Germany's highest mountain Zugspitze. Amongst many other topics, IFU conducts research on land-atmosphere exchanges, urban meteorology and renewable energy.

Students benefit from this rich research environment in many ways. The whole breadth of atmospheric sciences from small-scale processes in clouds to long-term climate change is taught by leading experts in their field. The MSc programme includes one year of free research, with students enjoying the freedom to choose their topic and supervisors from many different working groups. Many of our students also work as paid research and teaching assistants on a day-to-day basis or during specific field or lab campaigns.



Simulation of the ash plume from the Eyjafjallajökull volcano using the ICON-ART modelling system developed at KIT



Our mobile measurement system, the KITcube, in action.



»For my Dissertation I took part in a field campaign in Cyprus, where we investigated the properties of atmospheric aerosols. I studied the ice nucleation processes of aerosols after taking some samples. It was an amazing experience.«

Barbara Dietel (MSc Student)

## Living in Karlsruhe

Situated in the Upper Rhine valley between the Black and Palatinate Forests, Karlsruhe is one of the warmest cities in Germany with ca. 1800 hours of sunshine per year. More than 300,000 inhabitants, 40,000 of which are students, enjoy this virtually Mediterranean climate. It is easy to get around in this second most bike-friendly city in Germany, either on two wheels or by public transport.

Karlsruhe offers lots of opportunities for day trips and outdoor activities – from relaxing in the many green spaces in the city, including the castle gardens and a zoo, to skiing and hiking in the nearby Black Forest. Karlsruhe is also a city of culture, hosting theatres, music venues and several museums including the famous ZKM (Centre for Art and Media) and

the Kunsthalle with its ample collection of paintings. The “Fest”, one of the largest open-air music events in Germany, attracts 200,000 visitors every July. For lovers of classical music, the Händel festival in February is a must see.

Karlsruhe is also a great place for shopping and eating out. The Ettlinger Tor for example is the largest inner-city mall in southwestern Germany. The numerous markets are a wonderful source for local produce and products, some even open in the evening! If you are tired of eating at home, the city is full of cafés, restaurants and student pubs, some even brewing their own beer.

Located in the heart of a steadily growing region of technology and

industry, Karlsruhe is an ideal work and study place for national and international researchers. There are in total seven public and two private universities, mostly with foci in the natural and engineering disciplines but some also in artistic areas. As the largest of those, KIT offers students a high-quality education by leading scientists, closely aligned with its international research profile.

Karlsruhe is also an open and welcoming city offering houses of assembly for many nationalities and religious communities. In 2009 Karlsruhe was officially awarded as a “Place of Diversity”. Students from all over the world are comfortable here. Come and experience it yourself!

## How to find accomodation

### Housing department of the Studierendenwerk:

Homepage: <http://www.sw-ka.de/en/wohnen/>

Email: [wohnen@sw-ka.de](mailto:wohnen@sw-ka.de)

### Examples of popular commercial Websites:

[www.wg-gesucht.de/en/](http://www.wg-gesucht.de/en/)

<https://www.wohnungsboerse.net/Karlsruhe/wg-zimmer-provisionsfrei>  
(in German only)

### Residency Permit:

<http://www.intl.kit.edu/istudies/3371.php>

### Registration at Karlsruhe:

<http://www.intl.kit.edu/istudies/3370.php>



»There is nothing better than going to work at the IMK knowing that your job is what you wanted to do, with a beautiful atmosphere given by the colleagues you're working with. Here in Karlsruhe I found kind of a second family.«

Olimpia Bruno (PhD researcher in Cloud Physics, Italy)



## FIND MORE INFORMATION:

### International Students Office

<http://www.intl.kit.edu/istudies/3166.php>

### International Student Center from the Studierendenwerk

[http://www.sw-ka.de/en/beratung/studienberatung/international\\_student\\_center/](http://www.sw-ka.de/en/beratung/studienberatung/international_student_center/)

### AK ERASMUS

<https://www.ak-erasmus.de/>

### Center for Information and Advice (ZIB, in German only)

<https://www.sle.kit.edu/vorstudium/zib.php>

### Contact and intercultural exchange

#### Buddy Programme:

<http://www.intl.kit.edu/istudies/10402.php>

### Image sources:

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### Contact

Karlsruhe Institute of Technology (KIT)  
Institute of Meteorology and Climate Research (IMK)

Prof. Dr. Andreas Fink  
Campus South, Bldg. 30.23  
13<sup>th</sup> floor, room 13.14

Phone: +49 721 608-48711  
Email: [andreas.fink@kit.edu](mailto:andreas.fink@kit.edu)  
[www.imk.kit.edu](http://www.imk.kit.edu)

### Issued by

Karlsruhe Institute of Technology (KIT)  
President Professor Dr.-Ing. Holger Hanselka  
Kaiserstraße 12  
76131 Karlsruhe, Germany  
[www.kit.edu](http://www.kit.edu)

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