



Master's programme

Meteorology, Physical Oceanography and Climate



SHORT DESCRIPTION

This Master's programme offers a unique combination of theoretical courses and practical training in all aspects of the climate. Physics, dynamics and chemistry of the atmosphere, the oceans, the cryosphere and their interactions are the core of this programme.

THE RIGHT CHOICE FOR YOU?

The research programme focuses on the fundamental physical processes that determine Earth's climate system. This demands advanced mathematical skills, a thorough understanding of classical mechanics and thermodynamics, as well as a basic knowledge of fluid mechanics, numerical methods and climate science. Climate-related research is highly relevant for society because the predictions about future trends in the climate and their implications for mankind should be as reliable as possible.

In the first year we provide courses on the theoretical aspects. This will get you in close contact with our teaching staff: leading experts from the five research fields covered by the Institute for Marine and Atmospheric research Utrecht (IMAU). These research fields are:

- Ocean Circulation and Climate,
- Physical Oceanography of the Coastal Zone,
- Atmospheric Dynamics and the Hydrological Cycle,
- Atmospheric Physics and Chemistry,
- Ice and Climate.

COURSES

Participation in a sea-going scientific expedition or spending a semester abroad are realistic options as part of your study program.

The second year is devoted to a research project of your choice, supervised by IMAU scientists. Two mandatory courses introduce you to numerical computer simulations and analysis of meteorological and oceanographical observations. These will give you the competences to successfully carry out your Master's thesis research.

PROGRAMME OUTLINE

- Duration: 2 years (fulltime)
- ECTS: 120
- Language: English
- Start: 1 September/1 February
- Admission deadlines: 1 April/1 September
- Tuition fee: 1.835 euro per year (2013/2014)
- Degree: Master of Science
- Officially registered as: Physics and Climate Science (code 60705)

- ▣ Addresses the whole climate system
- ▣ Focus on fundamental physics and dynamics
- ▣ Optional: sea-going scientific expedition

The Master's research project is carried out at IMAU but can also be done in other institutes. Projects carried out at IMAU are often directly linked to the institute's research activities, addressing, for example:

- glacier dynamics
- sea level change
- global ocean transports of heat and fresh water
- the atmospheric hydrological cycle
- sediment transport in coastal seas and estuaries
- the quantification of greenhouse gas emissions into the atmosphere.

CAREER PROSPECTS

Of the students holding this MSc title 50% work in a PhD research position at a university. Moreover, the analytical and computing skills and your critical attitude are highly valued outside the academic world. About 20% obtain a position in a research institute and about 25% of the students find a job in industry or consultancy.

ADMISSION

Applicants must hold one of the following degrees:

- a BSc with a major in Physics;
- a major in Science with a strong component in Physics.

YOUNG LEADERS LEAGUE

Do you want to get more out of your Master's programme? Check our honours course for students with leadership potential on www.uu.nl/YLL.



The ocean as kitchen for the climate

"My main interest in the MPOC programme is physical oceanography.

I have always considered the ocean as a kitchen for the climate because it determines the current state of the climate.

My two supervisors, Prof.dr Will de Ruijter and Dewi Le Bars, are fully involved in my research project. Our purpose is to simulate the dynamics of the ocean boundary layer, using a highly simplified wind forcing. I am working on the western boundary current separation in ocean models. More specific? I apply the Hallberg Isopycnal Model on the South Indian Ocean: the Agulhas, and the North East and South East Madagascar currents.

After graduation I will do PhD research at Yale University (USA), on models of ocean circulation and thermal structure with emphasis on the role of ocean mixing and eddies."

Yana Bebieva, Master's student

Courses taught in the Meteorology, Physical Oceanography and Climate programme

	COMPULSORY	OPTIONAL
YEAR 1	Dynamical Meteorology (7,5 ECTS) Dynamical Oceanography (7,5 ECTS) Atmospheric composition and Chemical processes (7,5 ECTS)	Tipping points in the Climate System (3,75 ECTS) Boundary Layer Meteorology (3,75 ECTS) Ocean Waves (7,5 ECTS) Physics of Coastal Systems (7,5 ECTS) Ice and Climate (7,5 ECTS) Current Themes in Climate Change (7,5 ECTS) Climate and the Hydrological Cycle (7,5 ECTS) Internal Waves and Wave Attractors (7,5 ECTS) Remote sensing (3,75 ECTS) Marine masters course (3,75 ECTS)
YEAR 2	Simulation of Ocean, Atmosphere and Climate (7,5 ECTS) Making, Analyzing and Interpreting Observations (7,5 ECTS) Research project (45 ECTS)	

Watch the MPOC video



www.uu.nl/programmes/mpoc

More information

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