MSc METEOROLOGY
Study within the largest meteorology department in Europe
WHY READING?

- **We are a world-class department** – Be part of an internationally renowned centre for meteorological research and teaching in atmospheric, oceanic and climate science. Our teaching staff includes many scientists recognised as world experts in their subjects.

- **We have strong links to industry** – the department has a long and established track record of working with both commercial and academic partners on a wide range of subjects.

- **We offer practical, hands-on experience** – Reading is the only UK university department to offer a full range of undergraduate and postgraduate courses in meteorology. There is a strong practical element to all courses – you can expect to take part in field courses and team-based hands-on laboratory experiments, indoors and out.

‘The Reading MSc in Applied Meteorology was a clear winner above the other options I considered. I came to Reading wanting a challenge: it’s no exaggeration to say that joining the Reading MSc has completely changed my career direction.’

Emma Hopkin, 2014 MSc graduate, now studying for her PhD at Reading

Image credit: © Stephen Burt
MSc METEOROLOGY AND CLIMATE SCIENCE AT READING

Few of us have escaped excitement and curiosity at phenomena in the atmosphere and ocean. Earth’s atmosphere and oceans set the environment in which our society develops, imposing a constant need to adapt to its changing state: at the same time, the movement of these two fluids is beautiful, fascinating and sometimes threatening. The coupled climate system is a complex chaotic structure that evolves on a wide range of scales, from extreme weather events such as tornadoes and hurricanes, through slow oscillations of phenomena like El Nino, to long term man-made changes in climate such as the warming of the atmosphere and rising sea-levels.

There is always demand for those who can understand and predict these phenomena, evaluate their impact and communicate the science to policymakers, commercial interests or to the general public. Skills in meteorology and related fields are highly sought by many employers. A Master’s degree in meteorology offers a route to many professions, from pure research to operational weather forecasting in the public and private sector, to environmental risk analysis or science writing. The programmes we offer are designed for all levels, whether you are a recent graduate or have been out of education for a long time, whether you have professional experience in a meteorology-related role or have little or no prior knowledge of the subject.

In the most recent Research Excellence Framework results (REF 2014), 86% of our research was graded as world leading or internationally excellent. Our weighted score places us third in the country in the ‘Earth Systems & Environmental Science’ category, and makes us the highest-graded department focusing on the fundamental science of weather and climate: we were rated particularly strongly on the new ‘Impact’ metric, and on ‘research environment’. Similarly, our unique and comprehensive range of undergraduate and postgraduate courses have always received the highest grade.

The Department of Meteorology was established in 1965, and is the only UK university department to offer a full range of undergraduate and postgraduate courses in meteorology. We are internationally renowned for our excellent research and teaching in atmospheric, oceanic and climate science.

Cover image credit: © Keri Nicoll
OUR PROGRAMMES

**MSc Applied Meteorology (MSc AM)**
1 year full-time or 2 years part-time

**MSc Atmosphere, Ocean and Climate (MSc AOC)**
1 year full-time or 2 years part-time

**MSc Applied Meteorology and Climate with Management (MSc AMCM)**
1 year full-time

**MSc Data Assimilation and Inverse Methods in Geosciences (MSc DAIMG)**
1 year full-time or 2 years part-time

ENTRY REQUIREMENTS

Good knowledge of physics and mathematics are required for the MSc courses in Meteorology.

- **MSc AOC** Upper second-class honours degree in a physical, mathematical or engineering science.
- **MSc AM and MSc AMCM** Upper second-class honours degree in a physical, environmental or engineering science, and A-level (or equivalent) maths and/or physics.
- **MSc DAIMG** Upper second-class honours degree in maths or a physical/environmental science with a strong mathematical content.

Candidates with different or slightly lower qualifications, or who have significant professional experience may be considered; please contact the MSc course administrator to enquire. Applicants whose first language is not English may be required to demonstrate proficiency in English with IELTs or alternative English language qualifications. Applicants will be notified as required. If you are a national of a country outside the European Economic Area (EEA) or Switzerland, you will generally need to obtain a visa to study in the UK.

HOW TO APPLY

Application is via online form – details at www.met.reading.ac.uk/pg-taught/pgtapply.html
MSc Applied Meteorology
Applied Meteorology provides thorough grounding in the understanding and interpretation of meteorological data, forecasts and observations. You will also gain experience in numerical modelling of the dynamics of the atmosphere. If you are interested in a career in forecasting, applications of meteorology or research, or if you are simply interested in weather and climate phenomena, then this is the course for you.

MSc Atmosphere, Ocean and Climate
Atmosphere, Ocean and Climate provides a deep quantitative understanding of the dynamics of the atmosphere. You will also gain experience in meteorological observation, forecasting and the interpretation of meteorological data. If you are interested in developing the next generation of weather and climate models, a career in weather and climate research, or simply interested in the dynamics of the atmosphere, then this is a course for you.

MSc Applied Meteorology and Climate with Management
This programme is designed to meet the needs of people working in National Weather Services who wish to develop further knowledge in meteorological science and management. It combines the majority of the meteorological and climate science modules of the Applied Meteorology programme with training in the management of individuals and organisations provided by Henley Business School, part of the University of Reading. Additionally, it involves an optional one week’s training in the use of the UK Met Office’s PRECIS software for climate prediction. Each year The World Meteorological Organization (WMO) provides a number of fellowships for students on the AMCM programme, although students funded by other organisations or who are self-funded are also welcome to enrol.

MSc Data Assimilation and Inverse Methods in Geosciences
This programme, run jointly with the Department of Mathematics and Statistics, provides the mathematical background to data assimilation and inverse methods, and develops the skills to apply data assimilation methods to a wide range of geoscience fields including meteorology, oceanography, hydrology, oil reservoir modelling and the cryosphere. The programme is for those interested in the fundamentals of data assimilation, their inverse methods and practical applications in the environmental sciences. It is of particular interest to those interested in research, technical, geophysics or forecasting posts in the energy, space or environmental sciences sectors.
## Modules

### MSc Applied Meteorology

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<tr>
<td>• Introduction to weather systems</td>
<td>• Experimental data exploration and visualisation</td>
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<tr>
<td>• Atmospheric physics</td>
<td>• Climate change</td>
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<tr>
<td>• Professional skills</td>
<td>• Tropical weather systems</td>
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<tr>
<td>• Experiencing the weather field course</td>
<td>• Hydrology / Flooding</td>
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<tr>
<td>• Boundary layer meteorology and micrometeorology</td>
<td>• Oceanography</td>
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<tr>
<td>• Measurements and instrumentation</td>
<td>• Hazardous weather analysis</td>
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<tr>
<td>• Introduction to computing</td>
<td>• Remote sensing</td>
</tr>
<tr>
<td>• Forecasting systems and applications</td>
<td>• Statistics for weather and climate science</td>
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<td>• Dissertation</td>
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### MSc Atmosphere, Ocean and Climate

<table>
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<tr>
<td>• Introduction to weather systems</td>
<td>• Experimental data exploration and visualisation</td>
</tr>
<tr>
<td>• Atmospheric physics</td>
<td>• Extra-tropical weather systems</td>
</tr>
<tr>
<td>• Professional skills</td>
<td>• Climate change</td>
</tr>
<tr>
<td>• Experiencing the weather field course</td>
<td>• Tropical weather systems</td>
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<tr>
<td>• Fluid dynamics of atmosphere and oceans</td>
<td>• Global circulations of the atmosphere and ocean</td>
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<tr>
<td>• Introduction to numerical modelling</td>
<td>• Oceanography</td>
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<tr>
<td>• Numerical modelling of atmosphere and oceans</td>
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<tr>
<td>• Dissertation</td>
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There’s a strong practical element to all courses – after all, weather doesn’t just happen in computer models! As well as atmospheric modelling, you can expect to take part in an weekend observational field course in Dorset and hands-on exercises in our unrivalled on-campus atmospheric observatory. We are one of only a handful of sites in the United Kingdom authorised to launch weather balloons and their scientific payloads. We also have fully-equipped fluid dynamics, instrumentation and synoptic weather/forecasting laboratories. The spring term normally includes several visits, including one to the UK Met Office HQ in Exeter, and an intensive week’s on-site weather forecasting course, run by the Met Office.
MSc Applied Meteorology and Climate with Management

Compulsory modules
- Atmospheric physics
- Professional skills
- Experiencing the weather field course
- Introduction to computing
- Forecasting systems and applications
- Managing people and organisations
- Dissertation

Optional modules
- Experimental data exploration and visualisation
- Climate change
- Tropical weather systems
- Hydrology/ Flooding
- Remote sensing
- Hazardous weather analysis
- Remote sensing
- Statistics for weather and climate science
- Leadership theory and practice

MSc Data Assimilation and Inverse Methods in Geosciences

Compulsory modules
- Professional skills
- Introduction to numerical modelling
- Experimental data exploration and visualisation
- Operational data assimilation techniques
- Monte-Carlo techniques and particle filters
- Applied stochastic processes
- Theory and techniques of data assimilation
- Dissertation

Optional modules
- Introduction to weather systems
- Atmospheric physics
- Numerical modelling of atmosphere and oceans
- Fluid dynamics of atmospheres and oceans (DAIMG)
- Global circulations of the atmosphere and ocean
- Oceanography
- Remote sensing
- Numerical solution of ordinary differential equations
- Numerical solution of partial differential equations
- Modelling week
It is our aim that you should graduate from Reading not only with a life-long interest in your subject, but also with a prestigious qualification and a range of transferable skills that will enhance your career. These include IT skills such as programming and data analysis, presentation skills both written and oral, team work, CV writing/updating and research methods and techniques.

A postgraduate qualification will certainly aid career development and distinguish you from other job applicants, but a career in ‘pure’ meteorology or weather forecasting is far from the only career option following study for a Masters degree in the subject. Employers particularly value postgraduates from the Department of Meteorology for strongly developed skills in numeracy, spatial awareness, quantitative and analytical reasoning skills, practical use of measurements and numerical modelling and application of first-class scientific and mathematical principles to real-world problems, or of course you may be undertaking the course as part of continuing professional development with your current employer. Statistics from recent MSc cohorts show that typically more than 90% of graduates are working or in further full-time study within six months of graduation.

Our graduates have gone on to work in fields as diverse as:

- Scientific research in meteorology and climate, including further study for PhD
- Weather forecasting in public weather services and private consultancies
- Financial services and risk management
- Insurance and re-insurance industry
- Transport (shipping, oil rigs, aviation, road and rail management) and infrastructure
- Government advisory roles
- Instrumentation and technology
- Utilities (energy and water)
- Armed forces
MSc dissertations

MSc dissertations can cover almost any relevant topic. Recent titles include:

- Assessing optimum hub heights for wind power forecasting
- Extreme rainfall and the relationship to summer flooding events in the UK
- Marine boundary layer turbulence analysis for use in high-performance yacht racing
- The role of Arctic sea ice in North Atlantic predictability
- Sea breezes – Origin, development and influence on localized convective genesis over western Trinidad

‘The links between the University of Reading, meteorology and the World Meteorological Organization (WMO) are exceptional: there are no similar courses available anywhere else that are particularly tailored to meteorologists working within national weather services.’

Marieta Curativo, Malaysian Meteorological Department – 2014 MSc graduate

Image credit: © Stephen Burt
As a professional sailor I decided to do the MSc in Applied Meteorology for a greater understanding of meteorology and how better to forecast weather events. The year of study was gruelling, but well worth it for the competitive advantage it will provide.

The University of Reading already counts world-class sailors and sailing-focused meteorologists as alumni: the British Olympic Sailing Team, Team New Zealand Ocean Racing and Americas’ Cup Teams all counted Reading graduates in their meteorology teams.

Shaun Pammenter – 2014 MSc graduate
Facilities

Within the Department of Meteorology you will benefit from access to the latest research, and the leading knowledge and expertise of our friendly, enthusiastic and approachable staff. We inspire an interactive, dynamic and practical approach to teaching and learning, nurturing an ambitious and supportive environment in which you can maximise your potential and achieve both your personal and academic goals.

As a Master’s student you will enjoy access to a wide-range of facilities and support services. This includes 24-hour PC use and wireless internet access around campus, access to the main university library (housing over a million items) and the departmental library and study area, as well as facilities shared with the Mathematics and Statistics Department. As well as the lecture theatre and computer labs, teaching of practical skills takes place in our fluids and instrumentation laboratories and our state of the art atmospheric observatory.
‘I felt Reading’s Meteorology MSc would provide a good foundation in the subject, and enable me to assess whether this was somewhere I wanted my career to go. For me, the best aspect of the course was the variety of modules available. The first term provided a solid background in meteorology, and the second term allowed me to explore subjects in more detail and develop my interests from there.’

Caroline Dunning
2014 MSc graduate, now studying for her PhD at Reading

METEOROLOGY AT READING

For more information, please contact:

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