# METEOROLOGY

## What can I do with this major?

<table>
<thead>
<tr>
<th>AREAS</th>
<th>EMPLOYERS</th>
<th>STRATEGIES</th>
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<tbody>
<tr>
<td><strong>WEATHER FORECASTING (non-media)</strong></td>
<td>Government: National Oceanic and Atmospheric Administration (NOAA) including the National Weather Service (NWS) Military Services: Navy and Air Force National Aeronautics and Space Administration (NASA): Goddard Institute for Space Studies (GISS) Goddard Space Flight Center (GSFC) Department of Energy Department of Agriculture Department of Defense Department of Homeland Security Utility and power companies Renewable energy companies (wind and solar) Large shipping companies Private consulting firms that support: Agriculture (farmers, ranchers) Ocean shipping agencies Cruise lines Highway departments Ground shipping companies (truck and rail) Commodities traders Recreational areas and resorts Airlines Energy related companies Insurance companies Airlines Insurance industry NGOs (Red Cross, World Food Bank, etc.)</td>
<td>Build a strong theoretical background in meteorology and practical experience in forecasting. Pay attention to the specific coursework required by certain governmental organizations for employment (e.g., NOAA, NWS, etc.). Take classes in computer programing and obtain programing experience through internships and summer jobs. Be aware that weather forecasting is a 24/7 activity and some jobs will require shift work or unpredictable hours. Consider developing a portfolio by writing papers about local weather events, attending conferences and training, and completing additional college course work. Be prepared to serve as a liaison and voice to the community Plan to take classes in communication, technical writing, speaking and listening. Seek internships and summer opportunities to develop skills in real-world applications and to make connections. Network with local governmental agencies, some of which may have a presence on campus. Participate in as many on-campus forecasting activities as possible (forecasting game, forecasting for the local community, etc.).</td>
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<tr>
<td><strong>MEDIA WEATHER FORECASTING</strong></td>
<td>Networks and cable channels</td>
<td>Build a strong theoretical background in meteorology and practical experience in forecasting.</td>
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<tr>
<td>Television broadcasting</td>
<td>Small market television stations</td>
<td>Take classes in computer programming and obtain programming experience through internships and summer jobs.</td>
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<td>Radio broadcasting</td>
<td>Private weather firms that supply weather forecasts to newspapers, radio, television, cable companies, and supply forecasts and forecasting/graphic systems to broadcasters and digital media companies</td>
<td>Develop strong public speaking and presentation skills.</td>
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<tr>
<td>Internet broadcasting</td>
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<td>Be prepared to serve as a liaison and voice to the community.</td>
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<td>Forecasts for digital media</td>
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<td>Take classes in journalism and broadcasting to supplement your skills for this career path.</td>
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<td>Become familiar with computer software for forecasting and web design.</td>
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<td>Consider applying for The American Meteorological Society Certified Broadcast Meteorologist program.</td>
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<td>Actively seek internships and summer opportunities to develop skills in real-world applications and to make connections.</td>
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<td>Create a resume tape or portfolio</td>
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<td>Participate in as many on-campus forecasting activities as possible (forecasting game, forecasting</td>
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<tr>
<th>CONSULTING/INFORMATION SERVICES</th>
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<tbody>
<tr>
<td>Weather information systems</td>
<td>Private weather firms that provide services to: Military (all branches)</td>
<td>Build a strong theoretical background in meteorology and practical experience in forecasting.</td>
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<tr>
<td>Forensic meteorology</td>
<td>Disaster relief organizations</td>
<td>Take classes in computer programming and obtain programming experience through internships and summer jobs.</td>
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<tr>
<td>Weather forecasting</td>
<td>Law enforcement</td>
<td>Acquire additional skills in office applications such as Excel, Word, PowerPoint, and GIS applications.</td>
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<tr>
<td>Climatology</td>
<td>Utility and power companies</td>
<td>Seek knowledge of environmental regulations, laws and applications which may be needed for this specialization.</td>
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<tr>
<td>Risk assessment</td>
<td>Construction companies</td>
<td>Develop strong communication skills for presenting reports and meteorological analyses to clients.</td>
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<tr>
<td>Decision support</td>
<td>Financial and insurance institutions</td>
<td>Consider pursuing graduate studies to advance in this field.</td>
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<td>Fisheries</td>
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<td>Urban and regional planners</td>
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<td>Landscape companies</td>
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<td>Professional sports teams</td>
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<td>Event organizers</td>
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<td>Film production companies</td>
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<td>Vacation resorts</td>
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<td>Retail outlets</td>
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<td>Manufacturing companies</td>
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### AREAS

**CONSULTING/INFORMATION SERVICES cont'd**

**AIR AND ENVIRONMENTAL QUALITY**
- Environmental assessments and permitting
- Climatology
- Air pollution
- Risk assessment
- Ambient monitoring
- Specialized studies (photochemical modeling, acid rain, global warming)
- Wildfire mitigation
- Facilities management and sustainability

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<td>Investigate earning an MBA which may be beneficial when assisting firms with business decisions in private industry.</td>
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<tr>
<td>Consider applying for The American Meteorological Society Certified Consulting Meteorologist program.</td>
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<td>Actively seek internships and summer opportunities to develop skills in real-world applications and to make connections.</td>
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<td>Participate in as many on-campus forecasting activities as possible (forecasting game, forecasting for the local community, etc.).</td>
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**Government:**
- U.S. Environmental Protection Agency (EPA) and state environmental agencies
- Military Services:
  - Navy and Air Force
  - National Aeronautics and Space Administration (NASA):
    - Goddard Institute for Space Studies (GISS)
    - Goddard Space Flight Center (GSFC)
- Department of Energy
- Department of Agriculture
- Department of Defense
- Department of Homeland Security

**Research laboratories**
- Universities and colleges
- Private-sector consulting firms
- Non-profit environmental organizations

**CONSULTING/INFORMATION SERVICES cont'd**

**Build a strong theoretical background in meteorology and practical experience in forecasting.**
- Take classes in computer programming and obtain programming experience through internships and summer jobs.
- Develop additional skills in office applications such as Excel, Word, PowerPoint, and GIS applications.
- Conduct research with professors or scientists in the field.
- Stay abreast of current technologies, regulations, and statutes related to air quality.
- Join community groups or service organizations that focus on environmental awareness; attend public meetings.
- Actively seek internships and summer opportunities to develop skills in real-world applications and to make connections.
- Take air-pollution related electives to help build knowledge of the industry, issues, and technologies.
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| **ATMOSPHERIC INSTRUMENTATION** | National Aeronautics and Space Administration (NASA):  
  Goddard Institute for Space Studies (GISS)  
  Goddard Space Flight Center (GSFC)  
  National Oceanic and Atmospheric Administration (NOAA)  
  Manufacturers of meteorological instruments  
  Engineering firms  
  Satellite and radar manufacturers  
  Renewable energy companies | Build a strong theoretical background in meteorology and practical experience in forecasting.  
Take classes in computer programming and obtain programing experience through internships and summer jobs.  
Seek knowledge in areas such as computer science electronics, optics, or radiative transfer.  
Develop strong technical skills required for operating electronic instrumentation and meteorological observational sensors.  
Take classes in engineering and design. | |
| Meteorological software  
Monitoring parameters (temperature, wind velocity, humidity, etc.)  
Atmospheric chemistry sampling (of carbon dioxide, oxides of nitrogen, etc.)  
Remote-sensing operations  
Radar and Lidar  
Satellite imagery  
Equipment repair  
Mobile technologies | | |
| **RESEARCH** | Universities and colleges  
University affiliated research laboratories:  
  University of Wisconsin Space Science Engineering Center (SSEC)  
  MIT-Lincoln Labs  
  Cooperative Institute for Mesoscale Meteorology (CIMMS)  
  Cooperative Institute for Environmental Studies (CIRES)  
  Atmospheric research centers  
  Satellite research centers  
  Research laboratories:  
    National Center for Atmospheric Research (NCAR)  
  Government:  
    National Oceanic & Atmospheric Administration (NOAA) including the National Weather Service (NWS)  
    National Aeronautics and Space Administration (NASA):  
      Goddard Institute for Space Studies (GISS)  
      Goddard Space Flight Center (GSFC)  
      Langley Research Center  
      Marshall Space Flight Center  
  Military Services:  
    Navy and Air Force  
  Professional and technical journal publishers  
  Private weather research companies | Build a strong theoretical background in meteorology and practical experience in forecasting.  
Take classes in computer programming and obtain programing experience through internships and summer jobs.  
Develop strong analyses skills (e.g., statistics, modeling, etc.).  
Develop additional skills in office applications such as Excel, Word, PowerPoint, and GIS applications.  
Conduct research with professors or scientists in the field.  
Stay abreast of current technologies, regulations, and statutes related to air quality.  
Join community groups or service organizations that focus on environmental awareness; attend public meetings.  
Actively seek internships and summer opportunities to develop skills in real-world applications and to make connections.  
Take air-pollution related electives to help build | |
| Climate science  
Weather systems  
Air-sea interactions  
Atmospheric chemistry and aerosol transport  
Polar meteorology  
Geophysical fluids dynamics  
Boundary layer meteorology  
Heliophysics  
Geophysics  
Hydrology  
Oceanography | | |
### Areas

**Education**
- Teaching
- Research

**Employers**
- Universities and colleges
- Pre-K-12 schools
- Planetariums
- Museums
- Professional and technical journal publishers

## Employers

Build a strong theoretical background in meteorology and practical experience in forecasting.

- Take classes in computer programming and obtain programming experience through internships and summer jobs.
- Consider obtaining a higher degree which will help you advance in this field.
- Research funding options such as assistantships or fellowships to help with tuition during graduate study.
- Meteorology is rarely taught as a stand-alone subject in schools Pre-K-12. If you plan on teaching this subject at this academic level, prepare to become a physics, earth, or general sciences teacher.
- Gain experience working for students of your target population.
- Get certification/license to teach in the state in which you will live and work.
- Complete a master’s degree for community college teaching and a Ph.D. for university level teaching.

### Strategies

- Foster an inquisitive mind and imagination.
- Develop analytical skills and computer skills. An aptitude for math and science is critical.
- Consider majors such as meteorology, physics, engineering, or a science related disciplines to enter this field.
- Gain experience in computer languages such as FORTRAN, C/C++, Python, and/or IDL within a UNIX environment.
- Take part in an internship, co-op, or development program with the National Weather Service (NWS).
- Look into gaining an assistantship or fellowship to help with tuition during graduate study.
- The NWS provides opportunities to pursue graduate studies through certain programs and also work for a full salary.
- Be prepared to work around the clock on evening, weekends and even holidays.
- Expect to work independently, as many meteorologists work in isolation for long amounts of time.

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