FIELD OF STUDY

AGRICULTURE - ENVIRONMENT

RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

CAMPUS FRANCE

Climate Studies

Climatology deals with climate and the statistical analysis of its various components. Climate is defined as "the typical succession of atmospheric conditions above a given location." Climatology is the science that provides a systematic description and explanation of the world's climate zones.

Climate research involves multiple spatial scales, each of which constitutes a field of study. For instance, agrometeorology produces forecasts useful to farmers whereas bioclimatology and biometeorology study how climate influences lifeforms.

Climatology often intersects with other disciplines such as physics, physiology, ecology, agronomy, and medicine.

Climatology students initially focus on indoor climate control systems as they relate to renewable energies and energy efficiency. Temperature and air control in industrial contexts is an example of climatology being applied to installations and manufacturing processes.

Students can later specialize in the sciences, health technologies, or marine and coastal sciences. When studying climate and the atmosphere, climate change is viewed through the lens of sustainable development and the geosciences.

- **€45.7 billion** in investment to protect the climate (2018)
- **€37 billion** in government climate spending in the 2021 finance bill
- **40%** reduction in greenhouse gas emissions targeted for 2030
- **<2°C** goal in the Paris Agreement

Sources: Ministry of Ecological Transition and Territorial Cohesion, www.ecologie.gouv.fr www.statistiques.developpement-durable.gouv.fr

International

France, a signatory to the Kyoto Protocol, hosted and led the 2015 Conference of Parties of the United Nations Framework Convention on Climate Change (COP21/CMP11). The objective was to forge a commitment by the international community to preventing the earth from warming more than 2°C.

Within the European Union, France has taken an ambitious stance. It aims to reduce greenhouse gas emissions by 40% by 2030 and by 60% by 2040 (compared to 1990 levels). France is supporting priority areas of research in light of warnings from the intergovernmental Panel on Climate Change (IPCC) and the role humankind plays in climate change.

The MISTRALS (Mediterranean Integrated Studies at Regional and Local Scales) initiative pools the research efforts of many countries of the Mediterranean basin. www.mistrals-home.org

The framework for action on climate and energy through 2030 was set by the European Commission. The framework calls for reducing greenhouse gas emissions by at least 40% (from 1990 levels), to raise the share of renewal energy to at least 32%, and to improve energy efficience by at least 32.5%.

RELATED FIELDS

• Agriculture • Earth Sciences • Energy • Environmental Sciences • Geosciences • Health • Life Sciences • Meteorology • Oceanography

SUBFIELDS

• Alternative energies • Atmosphere • Biological and Geological Sciences • Carbon footprint • Climate change • Earth • Ecology • Emissions • Environment • Food • Global warming • Greenhouse gas • Ocean • Pollution • Sustainable development

Useful links

- FRANCE, The Paris Research Consortium Climate-Environment-Society: **www.gisclimat.fr/en**
- FRANCE, 2015 Paris Climate Change Conference (COP21-CMP11): **www.gouvernement.fr/action/la-conference-de-paris-sur-le-climat**
- FRANCE, 2030 Agenda in France: **www.agenda-2030.fr**
- FRANCE, Climate plan for France: **www.gouvernement.fr/action/plan-climat**
- FRANCE, Ministry of Ecological Transition: **www.ecologie.gouv.fr/en**
- FRANCE, Ministry of Ecological Transition, Sustainable development and energy statistics: **https://www.statistiques.developpement-durable.gouv.fr/english-contents**
- ENM Météo - Ecole Nationale de la Météorologie-INP Toulouse: **www.enm-toulouse.fr**
- European Commission - The 2030 Climate and Energy Policy Framework: **https://ec.europa.eu/clima/policies/strategies/2030_fr**
- Climate Action Network - France: **https://reseauactionclimat.org**
- National Centre for Meteorological Research (CNRM) (CNRM): **www.cnrm.meteo.fr**
- Météo France: **https://meteofrance.com**
- Ademe, Resource Centre on Greenhouse Gas Emissions: **www.bilans-ges.ademe.fr**
- National Centre for Scientific Research (CNRS), Sagasciences:**www.cnrs.fr/cw/dossiers/saga.htm**
- Sustainable Development Goals (SDGs) - Ministry of Ecological Transition: **www.ecologie.gouv.fr/ODD**
- United Nations Sustainable Development Goals: **https://www.un.org/sustainabledevelopment**
- United Nations Framework Convention on Climate Change (UNFCCC): **https://unfccc.int**
- United Nations Framework Convention on Climate Change (UNFCCC), 2015 Paris Agreement: **https://unfccc.int/fr/process-and-meetings/l-accord-de-paris/qu-est-ce-que-l-accord-de-paris**

LEVEL Licence

BREVET DE TECHNICIEN SUPÉRIEUR (BTS)

NATIONAL DIPLOMA – 2 YEARS OF HIGHER EDUCATION – L2
120 ECTS credits

The BTS in **Fluids, Energies, and Home Automation** with a concentration in Indoor Climate Control Systems and Fluidics is offered by 50 schools (public and private high schools, and CFAs, or apprentice training centers) with three options:
- Climate and fluid engineering
- Cooling and air conditioning
- Home automation and contiguous buildings.

The BTS in Systems Maintenance (option in Energy and fluid Systems) covers the operation of a variety of installations for heating, cooling, climate control, sanitary protection, and renewable energy.

www.campusfrance.org >Resources center > Panorama of Higher Education and Research in France > Degrees > BTS
DE TECHNICIEN SUPÉRIEUR (BTS)

LICENCE PROFESSIONNELLE

NATIONAL DIPLOMA – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

Some 60 schools (universities and Institutes of Technology) offer a vocational Bachelor's degree (Licence Professionnelle) in **Climate Control Systems** with concentrations available in:
> Energy efficiency and expertise
> Energy management.
> Installation design
> Installation management and maintenance
> Renewable energies
> Sustainable development.

The BUT (University Bachelor of Technology) degree includes two specializations taught in IUTs (University Institutes of Technology):
- Civil engineering and sustainable construction
- Heat engineering and energy.

www.campusfrance.org > Students > Studying in France > Finding your program

LICENCE

NATIONAL DIPLOMA – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

In the broad discipline of Science, Technology, and Health, 50 schools offer a *Licence* in Earth and Environmental Sciences. This degree covers the fields of geology, geophysics, geochemistry and hydrogeology, while introducing students to glaciology and atmospheric and climate sciences. Students complete a portion of their studies in the field.

www.campusfrance.org >Students > Studying in France > Find your program

LEVEL Master

Climate

MASTER WITH CONCENTRATIONS IN ENERGETIC, THERMIC SCIENCES

NATIONAL DIPLOMA – 5 YEARS OF HIGHER EDUCATION – M2
120 ECTS credits

Three broad disciplinary areas with universities offer Master's degrees in Climate Studies. The following specialty areas are available:

Science, Technology, Health, with the following concentrations and tracks:
> **Earth and planetary sciences and environment,** tracks in Adaptation to climate change (sustainable development and environment); Atmosphere, climate, land surfaces; climate and media; Understanding climate change (past and future); Earth's climate; Geosciences, reservoirs, water, climate, land surfaces; Atmospheric and climate sciences.
> **Ocean, atmosphere, and climate sciences,** with tracks in Climate; Climate dynamics; Climate-focused meteorology and oceanography; Space observation engineering; Air quality.
> **Environmental management,** tracks in Atmospheric pollution; Climate change, health impacts; renewable energy.
> **Sciences and technologies for agriculture, food supply, and the environment,** track in climate change, agriculture, and development.
> **Sea sciences,** track in oceans, atmosphere, climate, and space observation.
> **Space sciences, environment, and ecology,** track in oceans, atmosphere, climate, and space observation.
> **Basic and applied physics,** tracks in meteorology, oceanography, climate, and space observation engineering.
> **Physics,** track in study of the earth's climates.

Sea and Coastal Sciences: Concentration in marine sciences, tracks in marine geophysics, naval hydrodynamics, ocean and climate physics.

Humanities and Social Sciences: Concentration in Geography, planning, environment, and development, tracks in Transportation, mobility, environment, climate; Adaptation to climate change (sustainable development and environment).

www.campusfrance.org Students > Studying in France > Finding your program > Master

Programs Taught in English: Agrosciences, Environment, Territory, Landscape, Forests: Climate, Land-use and Ecosystem services; Climate change and Sustainable Finance; Paleontology, Pleoclimatology, Paleoenvironment, etc. https://taughtie.campusfrance.org

TITRE D'INGÉNIEUR DIPLÔMÉ (ENGINEERING DEGREE)

MASTER LEVEL – 5 YEARS OF HIGHER EDUCATION – M2
120 ECTS credits

Engineering schools in France offer Engineering and Master's degrees accredited by the CTI (*Commission des Titres d'Ingénieur*). An accredited five-year degree in Engineering (the equivalent of a Master's degree) carries the professional title of Graduate Engineer. The following specializations related to the climate, the fight against global warming, and the energy transition are among those offered: Buildings and energy; Energy and the environment; Civil engineering; Electrical and energy engineering; Environmental engineering; Hydraulic engineering; Urban engineering; Meteorology; Thermics and energy.

Learn about programs authorized to confer the title of Graduate Engineer: www.cti-commission.fr/accreditation

LEVEL + Beyond the Master level

MASTÈRE SPÉCIALISÉ® (MS)

INSTITUTION DIPLOMA – 1 YEAR OF HIGHER EDUCATION
Labeled by the *Conférence des Grandes Écoles* (CGE), the specialized Master enables students to earn an institutional credential attesting to dual competence.
Among the available MS programs are the following: energy transition professional; public action for sustainable development of agriculture and regions; eco-engineering; eco-innovation and new energy technologies; water for all; energy and environmental efficiency; renewable energy sources; innovations and policies for a sustainable food supply.

www.campusfrance.org > Resources center > Panorama of Higher Education and Research in France > Degrees > The *Mastère spécialisé®* programs

List of MS programs:
www.cge.asso.fr/formations-labellisees/liste-formation-ms

L'ÉCOLE NATIONALE DE LA MÉTÉOROLOGIE (EMN, NATIONAL SCHOOL OF METEOROLOGY)

ENM teaches students understand the atmosphere and predict its behavior, as well as to produce, share, and use meteorological and climate data in a wide array of contexts. Not only do students learn how to analyze and perform critiques, they also learn how to lead and coordinate teamwork. EMN is the only French institution of higher learning that offers programs devoted entirely to the meteorological and climate sciences.

ENM offers degree programs geared toward research (Master's in Ocean – Atmosphere – Continental Surfaces, and MS in eco-engineering), as well as programs rooted in the practical applications of the meteorological and climate sciences. Through European and international networks, the school is involved in numerous bilateral cooperation, research, and training initiatives (Francophone Africa, Eastern Europe, Maghreb, etc.).

• INP Toulouse-ENM Météo France : **www.enm-toulouse.fr**

ECTS: European Credit Transfer System