LA ROCHELLE, France

+ A beautiful thousand years old city

with a mild and very sunny climate

A GREAT PLACE TO STUDY!
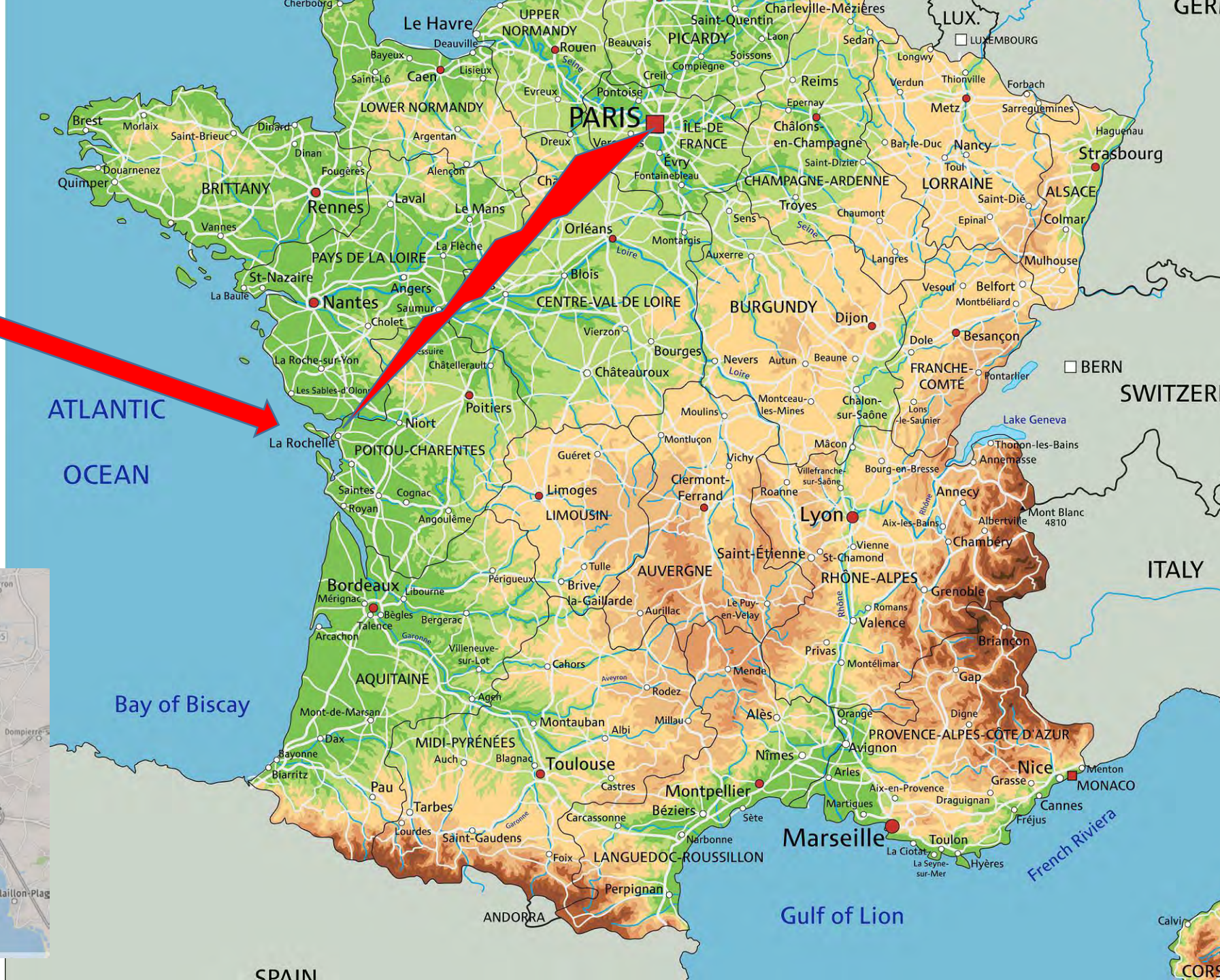
Photo : Thierry Guyot

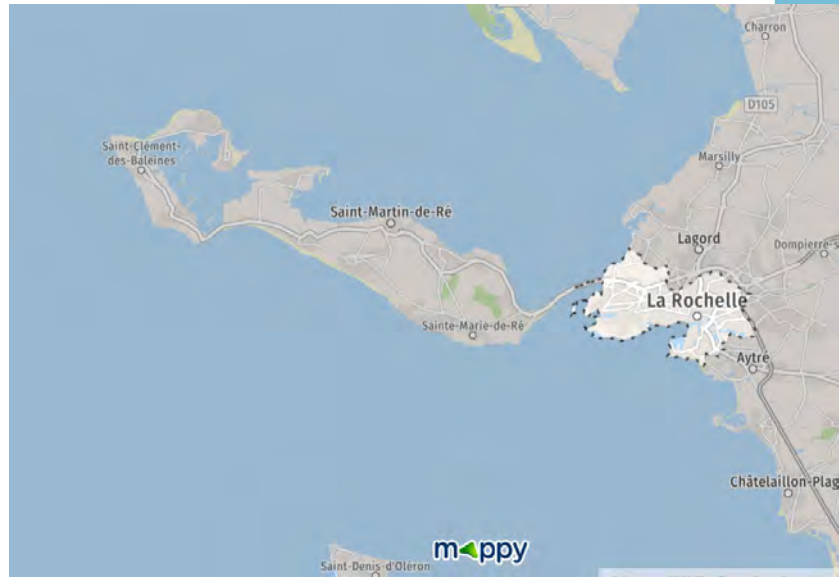La Rochelle
Université

La Rochelle

2.5 hours from Paris by TGV

near the beautiful Ré island

Photo : Clément Mauduit

Historical fact: La Rochelle proclaimed its independence in 1621, which led to the terrible siege of the city, recounted in the famous novel and movie "The 3 Musketeers".

La Rochelle

A city of art and history which offers many cultural events (Francofolies, film festivals, boat show...).
A city known for its quality of life.

La Rochelle University

A young and friendly university

8820 students
+80 diplomas offered

10 research laboratories
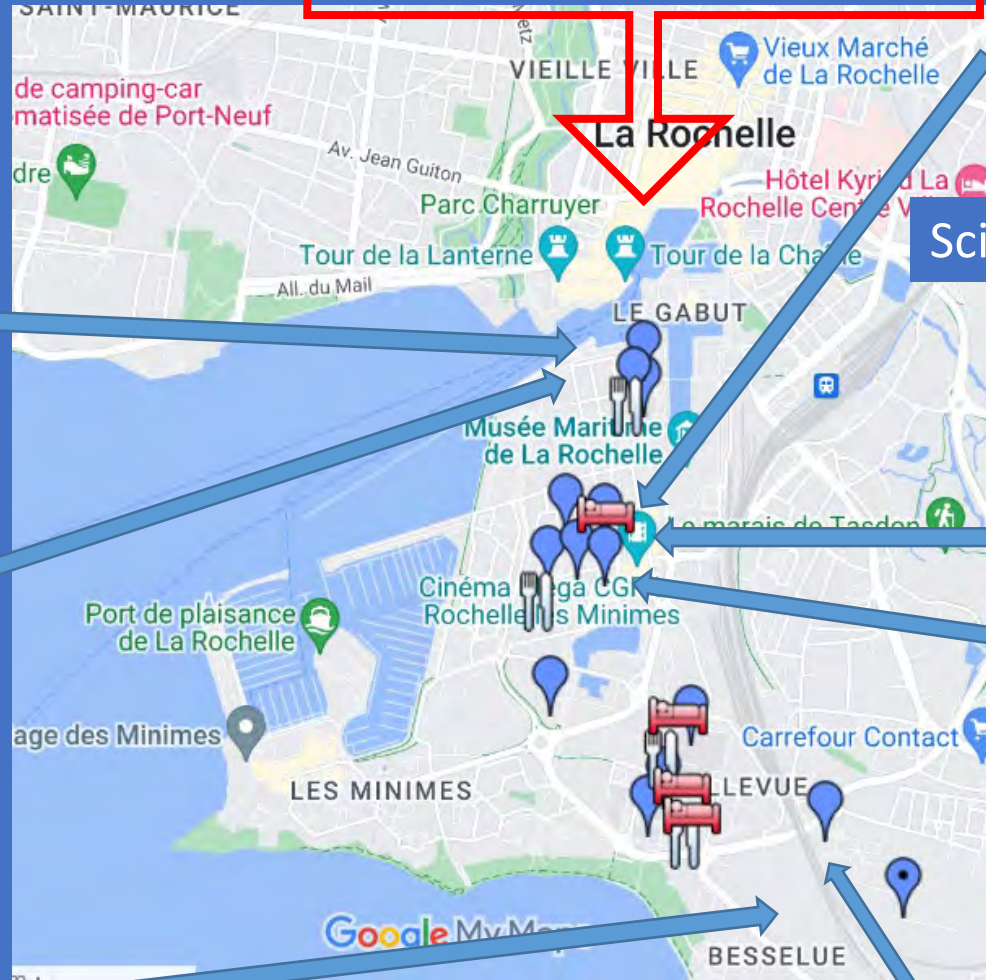1 doctoral school

Photo : Thierry Guyot

A campus in the city, near the old harbour

Photo : Thierry Guyot

University Library

Science and Engineering Institute

Student house
Cultural activities

Photo : Thierry Guyot

Photo : Thierry Guyot

Law and management
Institute

Sport : 40 activities

Photo : Thierry Guyot

La Rochelle Université

For Master's students in Geosciences and Coastal Geophysics:

Full Autumn Semester with courses taught in English, at the graduate Level,
in the field of Geosciences and Coastal Geophysics:

- Coastal hydrodynamics & morphodynamics (6 ECTS)
- Data analysis for geosciences (6 ECTS)
- Marine geology and oceanography (6 ECTS)
- Modelling in hydrodynamics & morphodynamics (6 ECTS)
- Sea level variations, extremes & coastal risks (6 ECTS)
- Instrumentation in geophysics 3 (6 ECTS)

- This can be completed with:

6 ECTS French Language (level A2, B1, B2 or C1)

6 ECTS Research methodology and data analysis (Code 222-1-02)

For Master's students in Geosciences and Coastal Geophysics:

Syllabus:

- **Coastal hydrodynamics & morphodynamics (6 ECTS) –** Code 273-1-31
    Lectures: 18h, supervised: 18h, practical work: 7.5h, supervised self study: 6h
    Content:
The aim is to explain the principles of numerical modelling in hydrodynamics, sedimentary dynamics and morphodynamics; to familiarise students with the basics of numerical schemes (precision, convergence, stability, dissipation and numerical dispersion) by illustrating them with applications to problems of morphodynamics, wave propagation and the transport of tracers in the coastal environment.
Required knowledge:
Programming in Python, basic maths and physics, basic knowledge in oceanography is a plus but not mandatory.

- **Data analysis for geosciences (6 ECTS)** – Code 273-1-21
    Lectures: 16.5h, tutored courses: 19.5h, practical work: 28h, supervised self study: 4.5h
    Content:
Programming with Python: the aim is to give students the basics of algorithmics. They will have to implement these principles for simple problem solving in geosciences. They will learn the basics of the syntax of the Python language in order to perform scientific computing.
Signal processing: this course aims at understanding and implementing the basics of signal processing which will be necessary, among others, for the instrumentation courses.
Geographical Information System: this course aims at understanding and implementing the basics of geographic information systems.
    Required knowledge:
Fundamentals of mathematics (analysis and algebra), basics of algorithmics would help but are not mandatory.

For Master's students in Geosciences and Coastal Geophysics:

- **Marine geology and oceanography (6 ECTS) –** Code 273-1-11

  Lectures: 18h, tutored courses: 18h, practical work: 12h, supervised self study: 12h

  Content:

The aim is to provide students with the practical and theoretical bases for carrying out measurements in marine geology (positioning, bathymetry, lateral scanning sonar, seismic reflection) and coastal oceanography (current flow, measurements of agitation, sediment transport and turbidity).

The practical work takes place at sea, during an oceanographic campaign, aboard a vessel of the National Institute for Earth Sciences and Astronomy (INSU - CNRS): the Côtes de la Manche.

  Required knowledge:

Basic knowledge of geophysics/physics

- **Modelling in hydrodynamics & morphodynamics (6 ECTS) –** Code 273-3-31

  Lectures: 22.5h, tutored courses: 7.5h, practical work: 16.5h, supervised self study: 9h

  Content:

The aim is to understand the physical processes controlling the hydro-sedimentary dynamics of beaches (wave-induced circulation, infragravity waves, etc.) and coasts subjected to the influence of waves and tides (estuaries, sandy spits, etc.). Students will learn how to use modern software (TELEMAC and BlueKenue) to simulate tides, waves and coastal transport from bathymetric data and atmospheric and tidal forcings.

  Required knowledge:

Basics of physical oceanography, fluid dynamics and assumed knowledge of general numerical methods for solving differential equations arising in physical oceanography.

For Master's students in Geosciences and Coastal Geophysics:

- **Sea level variations, extremes & coastal risks (6 ECTS)** – Code 273-3-21

    Lectures: 34.5h, tutored courses: 19.5h, practical work: 3h, supervised self study: 7.5h

    Content:

The aim is to provide theoretical and practical elements to understand the origin of hazards related to sea level variations, their development in coastal areas, their observation, their description, but also their modeling, forecasting and simulation.

    Required knowledge:

Programming in Python, basic math and physics skills, basics in oceanography is a plus but not mandatory.

- **Instrumentation in geophysics 3 (6 ECTS)**– Code 273-3-11

    Lectures: 22.5h, tutored courses: 18h, practical work: 6h, supervised self study: 18h

    Content:

The aim is to provide knowledge of measurement techniques in marine, terrestrial and space geodesy: tide gauges, satellite altimetry, GNSS (GPS), gravimetry; as well as methods for carrying out and processing measurements, and for analyzing and interpreting the results.

Required knowledge:

Basic math and physics skills, basic knowledge of oceanography is a plus but not mandatory.

For Master's students in Geosciences and Coastal Geophysics:

Full Spring Semester with courses taught in English, at the graduate Level,
in the field of Geosciences and Coastal Geophysics**:**

- Coastal sedimentology, geomorphology and stratigraphy (2 ECTS)
- Earth's surface deformation & coastal impacts (2 ECTS)
- Instrumentation in geophysics 2 (4 ECTS)
- Data analysis for geosciences 2 (4 ECTS)
- Internship (6 ECTS)

- This can be completed with:

6 ECTS French Language (level A2, B1, B2 or C1)

2 ECTS Climate Change and Resilience Challenges (World energy situation) (Code 256-2-81)

2 ECTS Energy and climate (Code 256-2-82)

2 ECTS Quantitative research (Code 225-2-31)

Syllabus:

- **Coastal sedimentology, geomorphology and stratigraphy (2 ECTS) – Code 273-2-31**
    Lectures: 13.5h, tutored courses: 9h, practical work: 3h, supervised self study: 12h
    Content:
The aim is to understand, to be able to analyse and synthesise knowledge of sedimentology, geomorphology and stratigraphy of silico-clastic littoral sedimentary processes. A focus is made on the large coastal sedimentary accumulations which are protections or resources for human activities: incised valleys, sandbanks, coastal barriers.
    Required knowledge:
Basic knowledge of sedimentology and stratigraphy.

- **Earth's surface deformation & coastal impacts (2 ECTS)** – Code 273-2-32
    Lectures: 12h, tutored courses: 7.5h, supervised self study: 7.5h
    Content:
Students will learn and understand the sources of the deformation of the Earth's surface at different scales of space and time (tectonics, isostasy, loading effect, deformation of anthropic origin…). Particular emphasis will be placed on deformations representing a hazard for the coastal environment and the processes that generate these deformations.
    Required knowledge:
Basic knowledge of geosciences.

For Master's students in Geosciences and Coastal Geophysics:

- **Instrumentation in geophysics 2 (4 ECTS) –** Code 273-2-11
  Lectures: 28.5h, tutored courses: 3h, practical work: 12h, supervised self study: 21h
  Content:
The aim is to become familiar with physical measurement, to master the limits of a sensor, to adapt spatial sampling to the resolution of the information sought.
Examples of application in prospecting, logging and analysis on sample in coastal area of magnetic, radar, electromagnetic and electrical methods.
  Required knowledge:
Basics of electricity (voltage, amperage), programming knowledge (Python), data processing, interpolation, merging, and georeferencing
Maps and time series

- **Data analysis for geosciences 2 (4 ECTS) –** Code 273-2-21
  Lectures: 13.5h, practical work: 19.5h, supervised self study: 21h
  Content:
The aim is to provide a basis for least-squares estimation methods, statistics, and non-parametric methods.
  Required knowledge:
Fundamental knowledge of mathematics (analysis and algebra), algorithmics and python syntax.

For Master's students in Geosciences and Coastal Geophysics:

Autumn or Spring semester

in the field of Geosciences and Coastal Geophysics:

➢ It is also possible to apply for an internship in the following laboratories of La Rochelle University for a few weeks to a few months:

➢ Laboratory of Littoral, Environment and Societies (LIENSs)
➢ Laboratory of Engineering Sciences for the Environment (LaSiE)

FOR EXCHANGE STUDENTS

- ESN Erasmus Student Network: office in La Rochelle
- University accommodation offer
- Buddy scheme
- Free student "pass culture"
- And an international office to help you

La Rochelle Université

Photo : Thierry Guyot

LEARNING FRENCH

Free access to 6 ECTS credits per semester in French language for exchange students

Photo : Clément Mauduit

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Welcome to La Rochelle University !

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Photo : Thierry Guyot