

 **GEOLOGICAL MAP**

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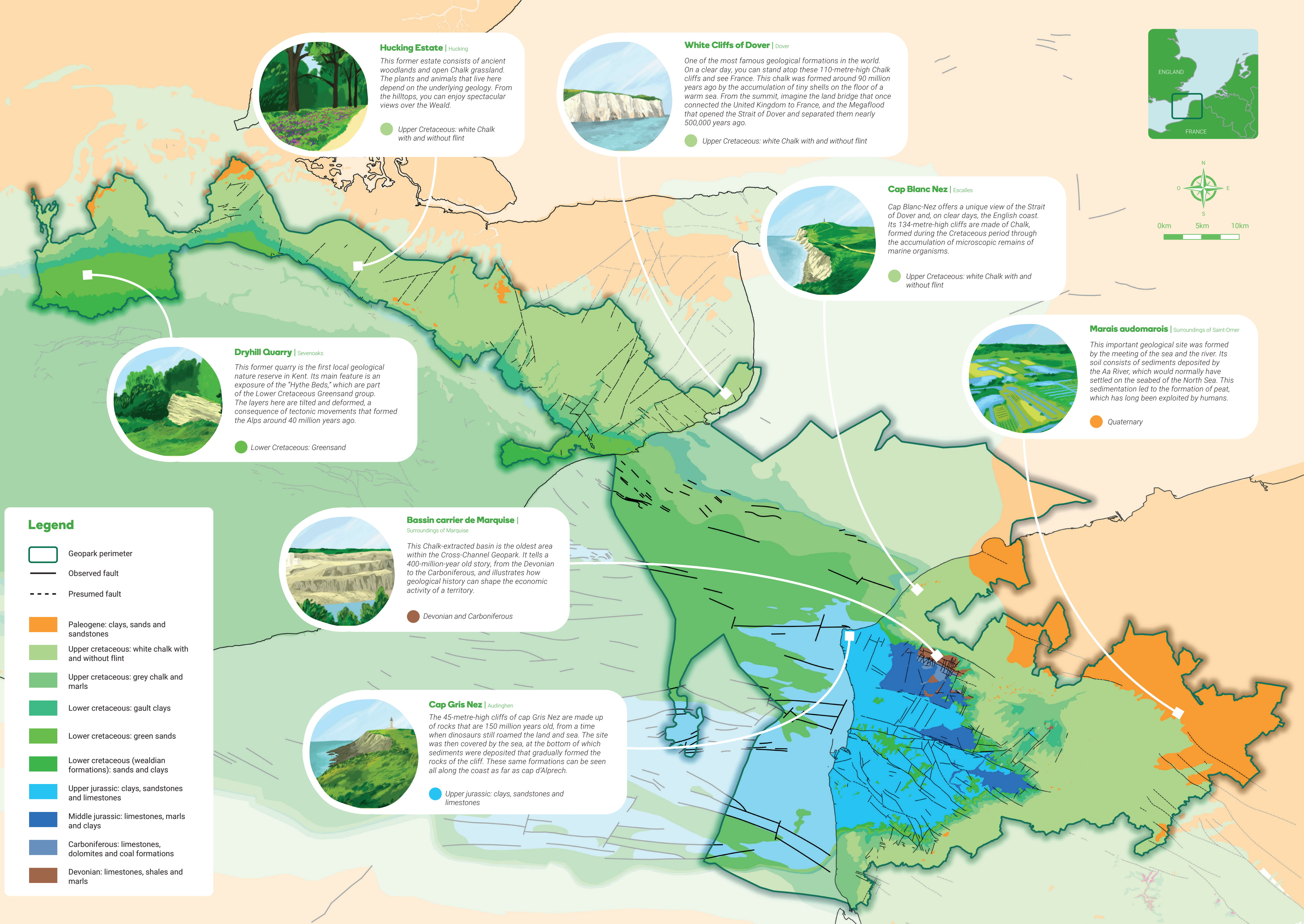


[www.geoparktransmanche.org](http://www.geoparktransmanche.org)





This map was produced as part of the Cross-Channel Geopark project with support from the Fonds Vert.

(geological map - Cross-Channel Geopark - transmanche -  
Edition: PPRC/MO, 2025.  
Editorial team: PNR des Caps et Marais d'Opale,  
Design: **CEUO** [www.geogence-confort.fr](http://www.geogence-confort.fr)  
Illustration credits : Juliette Hnon  
Parc naturel régional des Caps et Marais d'Opale  
24 rue pomplace BP 22 F-62142 Le Wast  
Tél.: 03 21 27 91 90  
[www.parc-opale.fr](http://www.parc-opale.fr) [www.kendowns.org.uk](http://www.kendowns.org.uk)



### Legend

- |                                                                                     |                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|
|  | Geopark perimeter                                        |
|  | Observed fault                                           |
|  | Presumed fault                                           |
|  | Paleogene: clays, sands and sandstones                   |
|  | Upper cretaceous: white chalk with and without flint     |
|  | Upper cretaceous: grey chalk and marls                   |
|  | Lower cretaceous: gault clays                            |
|  | Lower cretaceous: green sands                            |
|  | Lower cretaceous (wealdian formations): sands and clays  |
|  | Upper jurassic: clays, sandstones and limestones         |
|  | Middle jurassic: limestones, marls and clays             |
|  | Carboniferous: limestones, dolomites and coal formations |
|  | Devonian: limestones, shales and marls                   |



Did you know that 450,000 years ago, a Chalk ridge allowed people to walk across what is now the English Channel? Today, the waters separate the UK and France, but our landscapes, biodiversity, and shared cultural heritage connect us more than ever.



The Cross-Channel Geopark promotes sustainable tourism that respects our landscapes, while offering awareness-raising activities for both young and old. We are also committed to preserving our geological and natural heritage, while highlighting the cultural and intangible riches of our regions.



www.geoparktransmanche.org



## Devonian



Middle Devonian | -390 million years ago (Mya)

During the Devonian period (419 to 359 million years ago), the area that is now the Geopark was completely submerged. The tropical climate favoured the development of marine biodiversity. Around the middle of the Devonian, extensive reef environments formed, where fish, corals, molluscs, algae, and sponges coexisted. These organisms left fossil traces that are preserved in the limestone rocks still present today in France. These fossils allow us to reconstruct ancient marine habitats and provide evidence of the evolution of ecosystems during this period.

### An example of geosites from this period



Bassin carrier de Marquise | from the Devonian to the Carboniferous | FR

### A marker of this period?

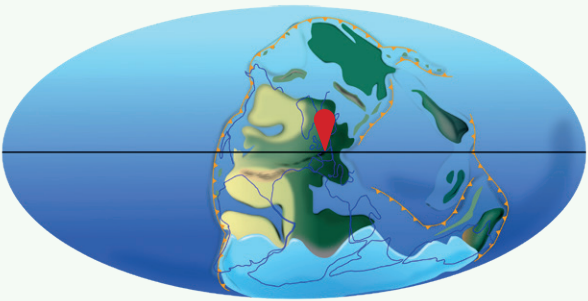


**Coral**  
A marine animal belonging to the Phylum Cnidaria.



**Asterolepis**  
An extinct species of armored fish from the Asterolepididae family.

## Carboniferous



Upper Carboniferous | -306 Mya

During the Carboniferous period (359 to 299 million years ago), the climate remained tropical. The landscape of the Cross-Channel Geopark underwent major upheaval. Initially underwater, it was gradually pushed up as part of a massive mountain-building event, forming a range comparable to the present-day Himalayas. By the end of the Carboniferous, this range was fully formed, and the Geopark region was no longer underwater. At the foot of these mountains, vast swampy forests with lush vegetation thrived, leading to the formation of coal that was later exploited in the Geopark's subsoil (at Marquise).

### An example of geosites from this period



Column of the Grande Armée | Stones from the Marquise quarry basin | FR

### A marker of this period?

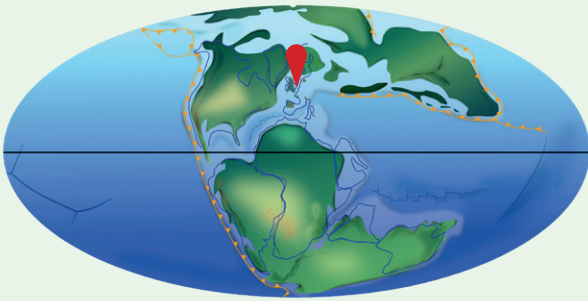


**Alethopteris**  
Fern-like plants belonging to the group Pteridospermales.



**Arthropleura**  
Literally "jointed ribs" in Ancient Greek, this is an extinct genus of large millipede-like diplopods.

## Jurassic



Lower Jurassic | -195 Mya

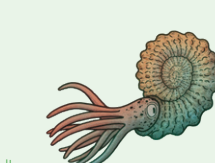
Between the end of the Carboniferous and the Jurassic period (from 199.5 to 145.5 million years ago), the mountain chain underwent intense erosion, and the territory of the Geopark became flattened. During the Jurassic, as the Atlantic Ocean began to open, the area was periodically flooded by the sea. The rocks found in the Boulonnais, in France, testify to this: sandstones, limestones, and clays, rich in marine fossils (ammonites, marine reptiles, fish, bivalve molluscs, and more). They reflect shallow environments where waves and tides left their marks (ripples, dunes, and more).

### An example of geosites from this period



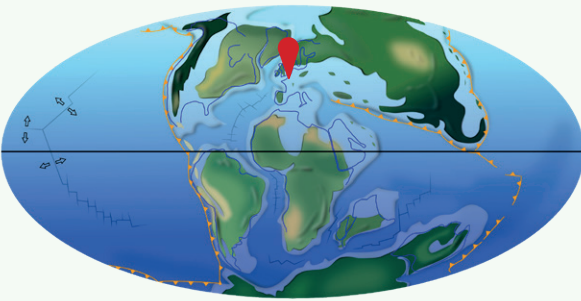
Cap Griz Nez | FR

### A marker of this period?



**Ammonite**  
Ammonites are cephalopods that first appeared in the Devonian. They survived three mass extinctions but finally disappeared during the Cretaceous–Paleogene crisis (the one that killed the dinosaurs). They are related to octopuses, cuttlefish, and squid. Their finely ornamented shells, global distribution, and long geological history make them excellent fossils for dating rock layers.

## Cretaceous



Debut of the late Cretaceous | -94 Mya

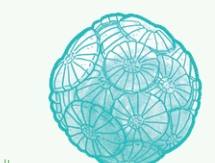
During the Early Cretaceous (145 to 100 million years ago), a significant greenhouse effect caused global temperatures to rise above present-day levels, along with a substantial increase in sea levels. In the second half (100 to 65.5 million years ago), the sea covered much of Europe. This sea is known as the Chalk Sea. Life flourished in this sea, both in the waters (mosasaurs, sharks, ammonites, nautiluses, and more) and on the seafloor (sponges, bivalves, sea urchins, and more).

### An example of geosites from this period



White Cliffs of Dover | UK

### A marker of this period?



**Coccolith**  
Coccolithophores are small, single-celled marine algae. They are protected by a shell made up of calcium carbonate plates, called coccoliths, which measure only a few micrometres in diameter. Throughout their lives, they constantly renew these plates, which then fall to the seafloor. These coccoliths accumulate and form an important part of sedimentary rocks such as Chalk.

## Quaternary



Quaternary | -18000 years ago

The Quaternary is the most recent period in Earth's history, covering the last 2.6 million years. It is marked by the emergence of the genus Homo. This period was also characterised by climatic instability, with alternating cold periods, known as glacial phases, and warmer periods, called interglacials. These climate variations strongly shaped the landscape of the Cross-Channel Geopark: the opening of the Strait of Dover, the formation of coastal landscapes, the courses of rivers and their valleys, and the settlement of humans in the region.

### An example of geosites from this period



River Darent | UK

### A marker of this period?



**Woolly Mammoth**  
The woolly mammoth is an extinct species belonging to the elephant family.



**Neanderthal**  
An extinct species of the genus Homo, which lived in Europe, the Middle East, and Central Asia until around 40,000 years ago.

## The geological map

This map shows the geological subsoil of the Geopark, with the superficial formations removed—that is, the ground beneath our feet, the land beneath the fields, and the sediments under the valley-bottom marshes—leaving only the bedrock.

Geology is not limited to this bedrock: it also shapes the hills, valleys, watercourses, soils, resources, and even the locations of villages and monuments. This map offers clues to understanding how our geodiversity has shaped this area and the rich variety of landscapes we see today.



### How was this map created?

This map was produced using both French and English geological data, which involve differences in scale. For this reason, and to make the map easier to read and understand, certain explanatory choices were made. Furthermore, knowledge of the seabed remains incomplete, which is why the data for this area are less precise than those for the land.

