

A long history

A dual climate

A limestone subsoil

A landscape of rolling vineyards

A multifaceted personality

*chalk*

*appellation of origin*

# The terroir

*crus*

*vineyard slopes*

*northerly location*

*limestone*

*frosts*

*parcels*



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Verzy 'chef-lieu' (administrative centre) of the canton

Champagne has a history of vine-growing that dates back to the dawn of Christianity, and its vineyards have been delimited by **controlled appellation of origin rules since 1927**. But despite its world-famous wines, **the terroir at the heart of this region remains little known**.

With its **northern location, rugged climate, distinctive soil type and hillside vineyards**, the Champagne *terroir* is the only one of its kind – as original as the wine it produces.

Over the centuries, the people of Champagne have mastered their environment, **bringing out its unique and richly varied profile**. Major research today builds on that process, further extending our knowledge of the *terroir*.

Here – for lovers of Champagne everywhere – the natural heritage of Champagne **is revealed** in all its rich and fascinating detail.

The Champagne *terroir* is the product of a unique alliance of climate, subsoil and landforms. Generations of winegrowers have exploited these distinctions, using them to the best possible advantage. This chapter aims to describe that singular combination of features that distinguishes the Champagne *terroir* from any other viticultural area in the world.

Understanding the Champagne region as a whole is essential to appreciate the spectrum of natural and man-made factors that account for the diversity of Champagne wines.



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*twenty centuries*

*34,000 hectares*



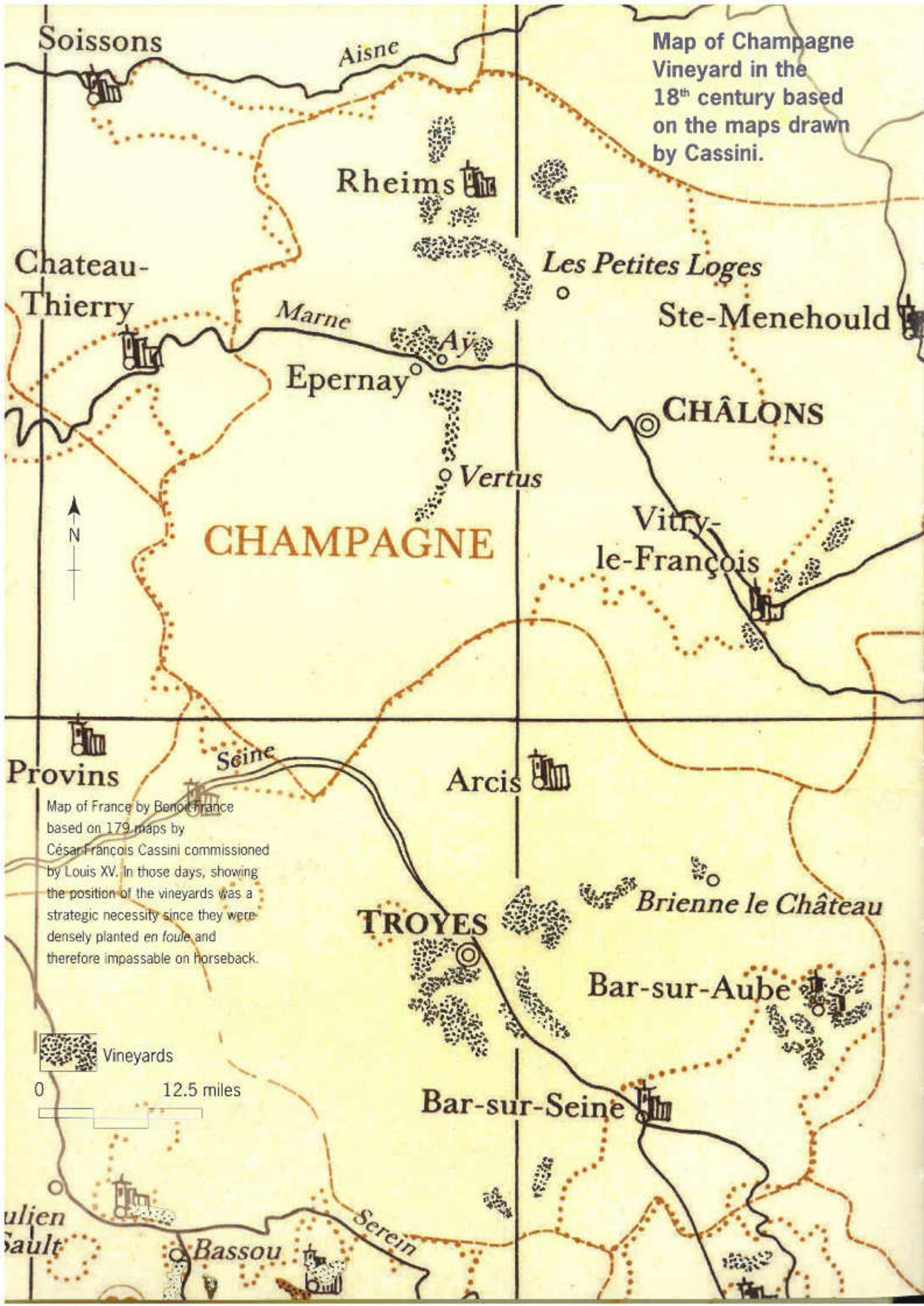
*delimitation*



*appellation of  
controlled origin*



*1927*



Map of Champagne Vineyard in the 18<sup>th</sup> century based on the maps drawn by Cassini.

Map of France by Benoit France based on 179 maps by César-François Cassini commissioned by Louis XV. In those days, showing the position of the vineyards was a strategic necessity since they were densely planted *en foule* and therefore impassable on horseback.

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Vines have been growing in Champagne since the dawn of Christianity. Now defined as a more limited area, the region was the first to win appellation of origin status in recognition of its unique natural properties.

- 1-4<sup>th</sup> c** Emergence of the **first vineyards** in Champagne.
- 9<sup>th</sup> c** The wines of Champagne become known as *Vins de la montagne* (mountain wines) and *Vins de la rivière* (river wines).
- 14-15<sup>th</sup> c** In the devastating wake of the Hundred Years War, viticulture in Champagne comes to a halt as vineyards are abandoned and pressing centres are destroyed.
- Late 15<sup>th</sup> c** Winegrowing returns to Champagne. By the end of the century, the number of wine communities has tripled to 400.
- 16<sup>th</sup> c** In addition to the mountain wines and the river wines, the wines of Aÿ start to make their name.
- Late 17<sup>th</sup> c** Wines from the Champagne *terroir* become known as "Champagne wines" (*vins de Champagne*).



Location of the vineyards on the Côte des Blancs in 1754  
Map by Cassini

A long history

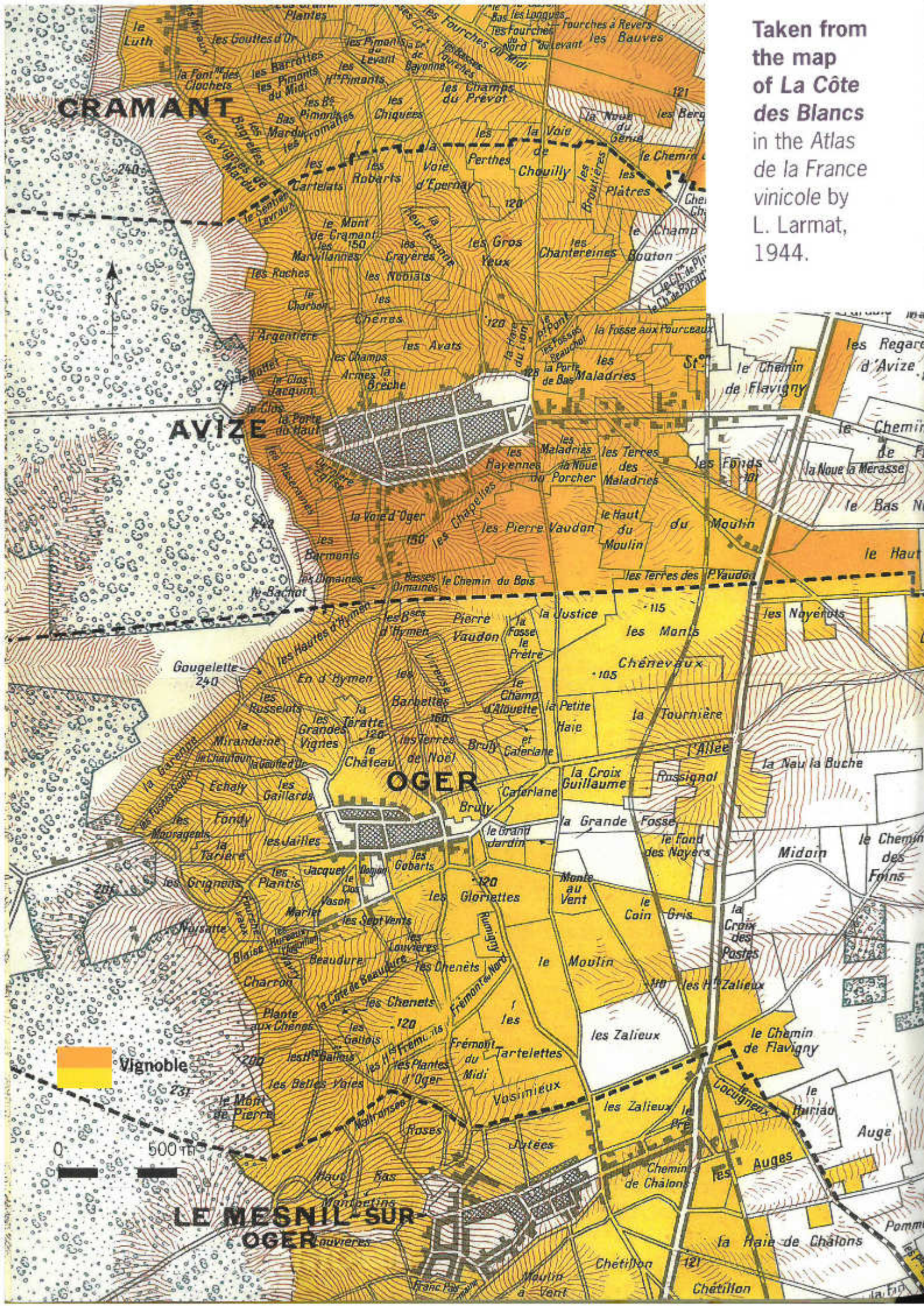
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- 1887** The Court of Appeal in Angers rules in favour of the *Syndicat du commerce des vins de Champagne* declaring that the word Champagne **shall be restricted to wines produced in the Champagne region.**
  
- 1905** The Champenois call on the Ministry of Agriculture to **delimit the precise area of the “Champagne viticultural region”** and to restrict use of the name “Champagne” to wines “exclusively harvested and produced within the Champagne viticultural region”.
  
- 1908** **First delimitation on the basis of a tradition of winegrowing:** the Marne (Reims, Epernay, Vitry-le-François) and the Aisne make up an appellation area of 15,000 hectares.
  
- 1911** Following years of civil unrest, growers agree to fix the price of grapes according to an approved **“vineyard rating”, (*échelle des crus*).**



Taken from the map of La Côte des Blancs in the Atlas de la France vinicole by L. Larmat, 1944.

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**22 July 1927** The delimitation of the Champagne viticultural area is defined by law according to principles that remain in force today. The process includes a survey of all the communes in the Champagne area deemed "suited to the production of appellation wine", including those of the Aube and various others that were omitted from the original 1908 delimitation.

**The officially delimited viticultural zone represents a 34,000 hectare area.**

**1959** Start of an INAO review of all the vineyards within the delimited zone, based on the original principal of traditional land usage together with more technical criteria, introduced in 1984, such as soil type and slope aspect.

**The Champagne AOC today**

**Area:**  
34,000 hectares, of which 32,800 hectares under vine in 2005.

In 2005 (latest available statistics) French AOC vineyards covered a total area of 475,000 hectares. The largest AOC is Bordeaux (123,000 ha) followed by the Rhône Valley, (78,000 ha), the Languedoc-Roussillon

(59,000 ha), Burgundy (29,000 ha), Beaujolais (21,700 ha) and Alsace (15,300 ha).  
  
The principles of delimitation have remained unchanged since they became law

in 1927, subject to regular revision and updating to rectify any historical inaccuracies.  
  
Planting rights for the French viticultural area as a whole are awarded by the European Union.

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*northerly location*

*frosts*

*cool*

*oceanic*

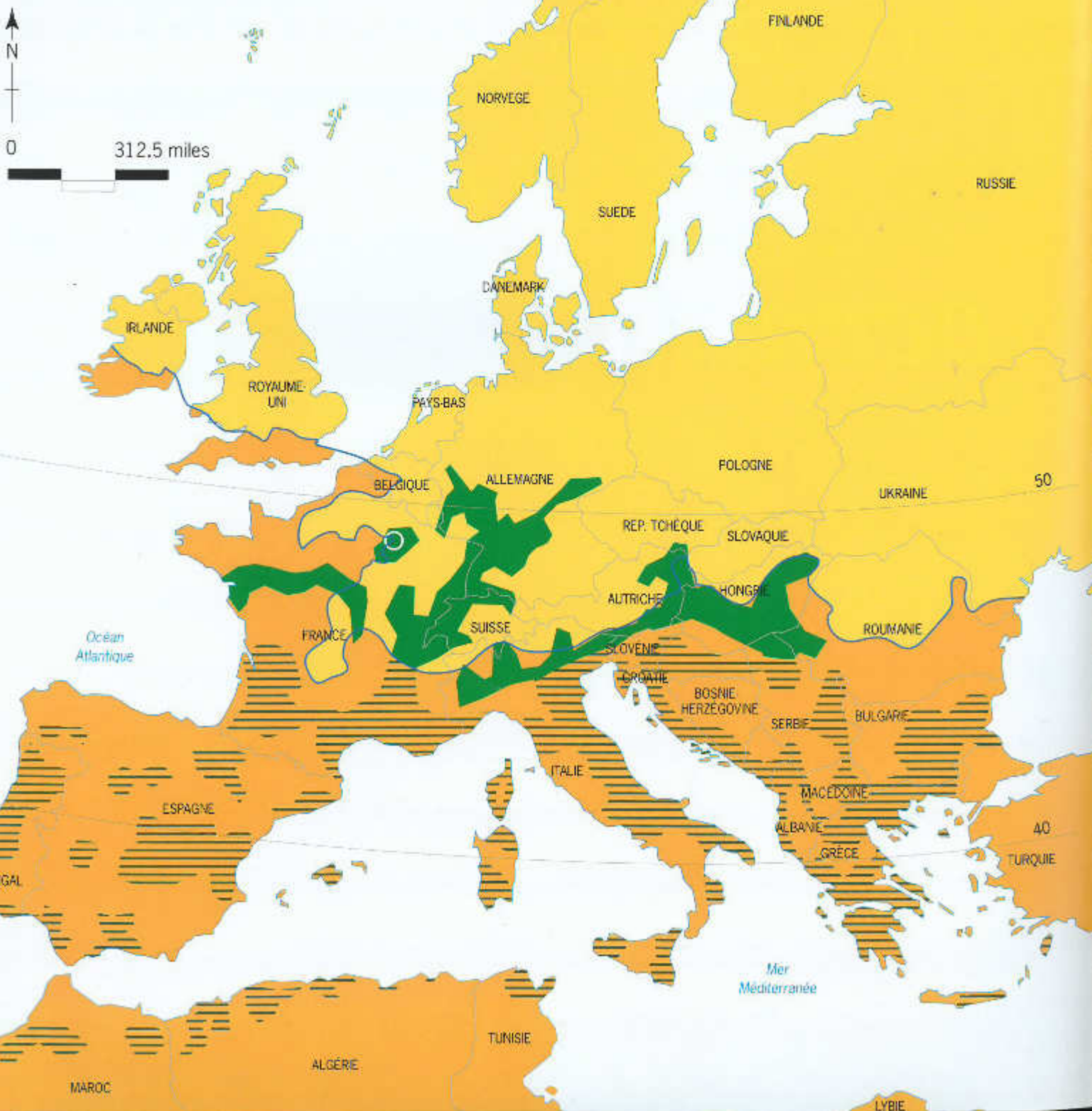
*sunshine*

*continental*

## Map of European vineyards

The Champagne viticultural zone is one of a group of colder *terroirs* known as *septentrional-océanique* (northern-oceanic) as opposed to the warmer *méridional* *terroirs* (of southern France).

-  Champagne vineyards
-  Cold *terroirs*
-  Warm *terroirs*
-  Isotherm 10°C  
(Source : Météo-France)



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The Champagne *terroir* has two major distinguishing features: northerly latitude and a dual climate that is subject to both oceanic and continental influences.

A northerly location means a cold climate and harsh weather conditions for the vines.

The oceanic influences ensure steady rainfall with little variation in temperature from one season to another.

The continental influences bring often-devastating winter frosts but also provide high levels of sunshine in the summer.

Septentrional derives from the Latin word *septentriones* (literally the seven ploughing oxen, better known as the constellation of the Great Bear) meaning northern regions or the North in Roman times. The word *meridional* (southern or the South) comes from the Latin *Meridionalis*.

Vines, like all plants, require appropriate weather conditions and in the Northern Hemisphere, rarely thrive beyond latitudes 50° North and 30° South.


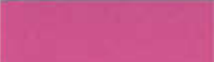


In Champagne – and this is the *terroir's* primary distinguishing feature – the vines are planted at the **northernmost limits** of their cold tolerance. Average annual temperature in Reims and Epernay (latitudes 49°5 and 49° North) is **just 10°C** (50°F).



Map of France showing major climate zones



-  **Champagne vineyards**
-  Oceanic climate: Temperate-to-mild winter, cool-to-warm summer.
-  Oceanic climate: Cool-to-cold winter, cool summer.
-  Oceanic climate: Cool-to-cold winter, warm summer.
-  Mediterranean climate: Olive-growing region, mild winter, warm-to-hot summer.
-  Mediterranean climate: Orange-growing region, mild winter, warm-to-hot summer.
-  Semi-oceanic climate: Cold winter, cool-to-warm summer.
-  Semi-continental climate: Very cold winter, warm summer.
-  Semi-continental-to-semi-oceanic climate: Cold winter, warm summer.
-  Mountainous climate: Very cold winter, cool-to-warm summer.

-  **A dual climate**
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The Champagne *terroir's* second major distinguishing feature is its **dual climate**, predominantly influenced by oceanic currents but also by continental trends.

This complex weather pattern distinguishes the Champagne viticultural zone from the other *terroirs* in the same group. Annual mean temperatures in Champagne tend to be higher with **no major fluctuations from year to year.**

That said, the oceanic influence **keeps temperatures on the low side**, with little variation from one season to another.

Variations in temperature from January to July (°C/°F)



Mean annual sunshine hours



**Champagne receives barely 1,650 average annual hours** of sunshine compared with 2,069 in Bordeaux and 1,910 in Burgundy. This limits the growth rate in Champagne, producing grapes that when ripe maintain the freshness and crispness required for Champagne production.



Due to the continental climate, the vine is at risk from **devastating frosts**.

- Spring frosts during the budding period can destroy the nascent vine leaves.

Number of years when bud destruction has been:

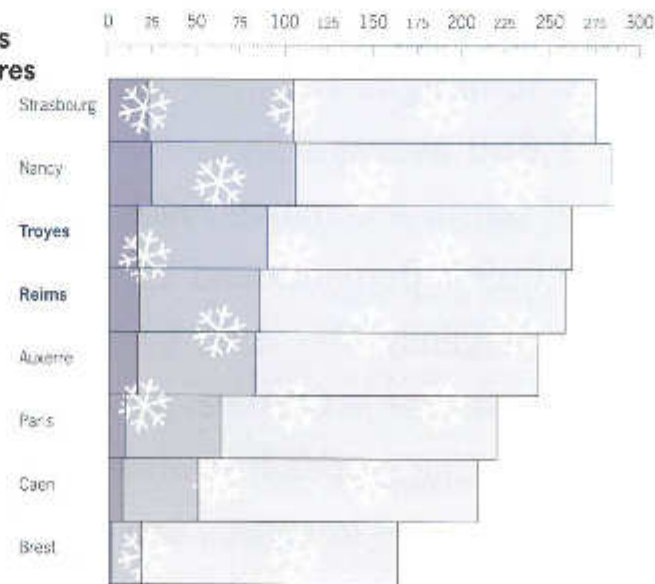


Total number of years since 1875 when frost damage has exceeded 1%: **55**

- Winter frosts, on average 3.8 days of -10°C (14°F) a year, can damage the buds and the vine plants.

Number of days with temperatures lower than:

- 10°C (50°F)
- 0°C (32°F)
- 5°C (23°F)

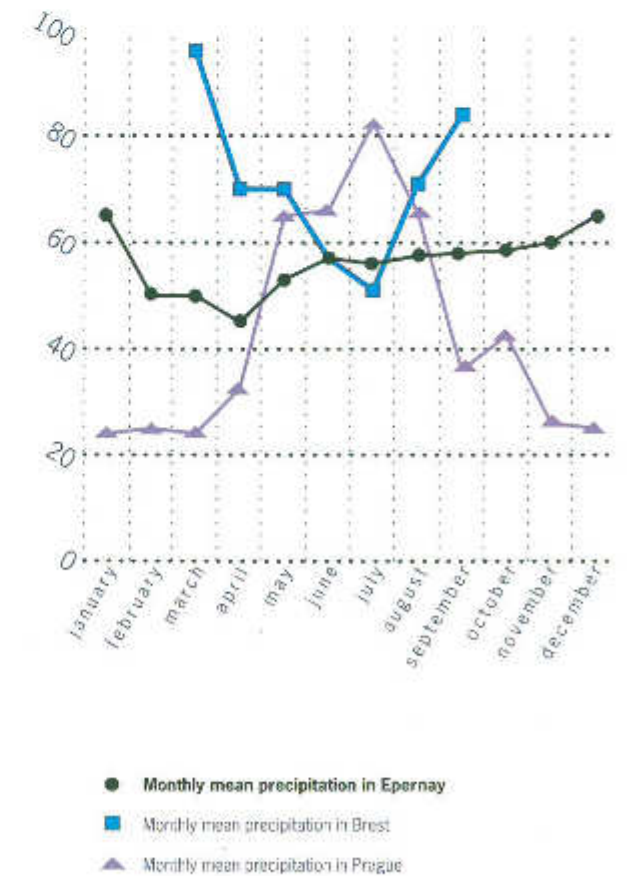


This dual climate also provides the region with near-ideal rainfall patterns. Champagne enjoys **steady** (oceanic influence) but **moderate** (continental influence) **precipitation**, which is essential for quality grape production.

Mean annual rainfall (France and abroad, in mm)



Comparative monthly rainfall (Eprenay, Brest and Prague, in mm)



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# *limestone water*

*naturally watered*

## *chalk*

*belemnite*

*marls*



A limestone subsoil

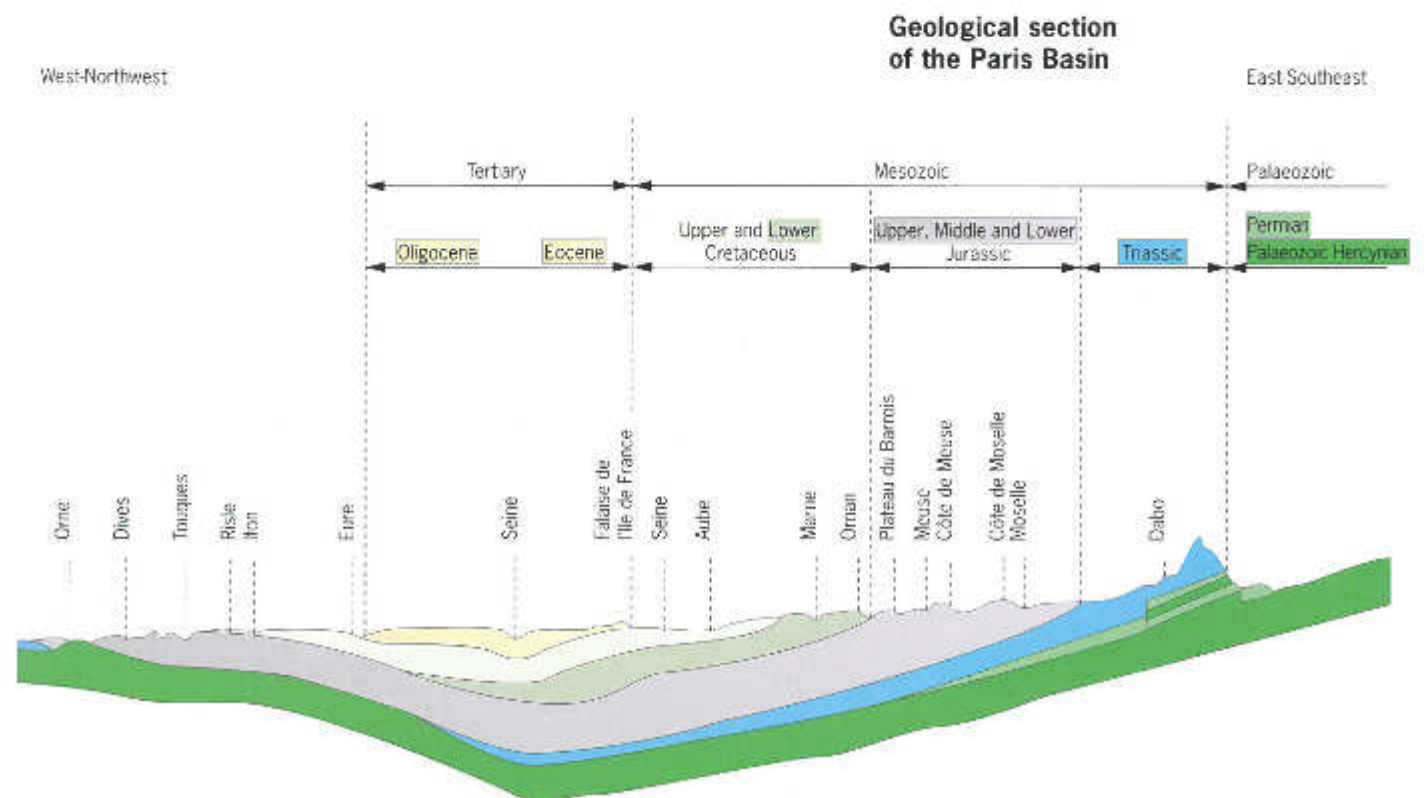
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**A**nother key feature of the Champagne *terroir* is its predominantly limestone subsoil which keeps the vines naturally watered all year round.

Approximately 90 million years ago, in the **Mesozoic era**, the earth's surface was covered by sea and the ocean beds were overlaid with sediments that could reach thicknesses of 200 metres (656 feet). The various types of rock formed in the process were revealed 70 million years later when the centre of the **Paris Basin sank**.



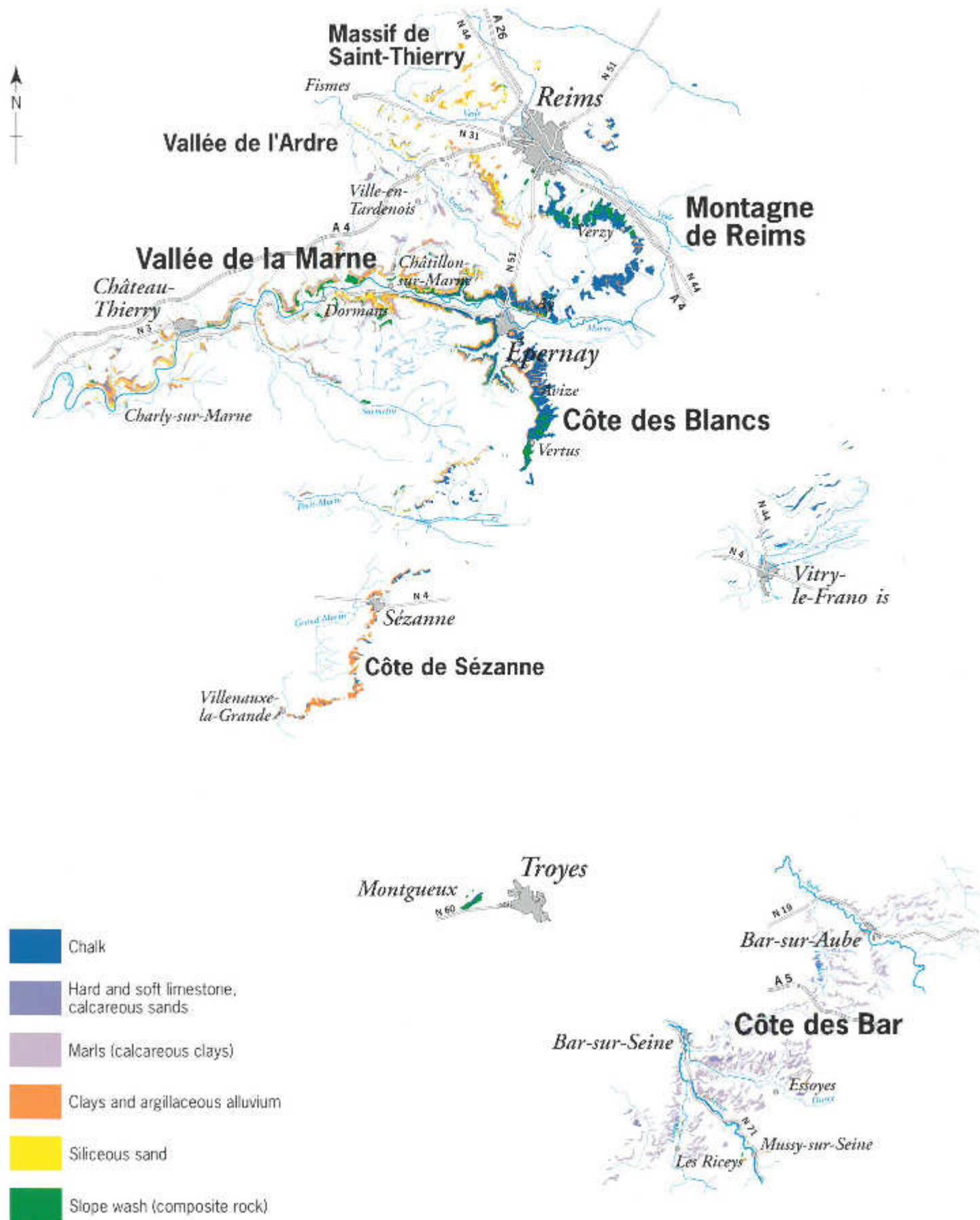
**Lithological formations of the Champagne vineyard**

Rock types

**A limestone subsoil**

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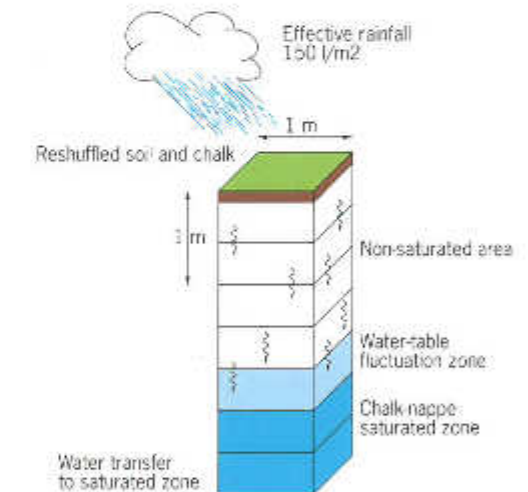
Champagne chalk is characterised by the presence of **belemnite fossils**, molluscs from the Mesozoic era. Hence the name "Belemnite chalk".

The outcropping sediments in Champagne are composed of **75% limestone** (chalk, marl and limestone proper). This naturally fissured medium provides **good drainage**, so promoting the healthy development and ripening of the vines.

Their favourite growing medium however is chalk. The chalk in Champagne consists of granules of calcite formed from the fragile shells of marine micro-organisms (mainly coccolites). Being highly porous, it acts as a reservoir (storing 300-400 litres of water per m<sup>3</sup>, or 79-105 US gallons) that provides the vines with a steady supply of water even in the driest summers.

Limestones are comparatively less porous. The marls are limestone clays rich in nutrients.

How water penetrates chalk



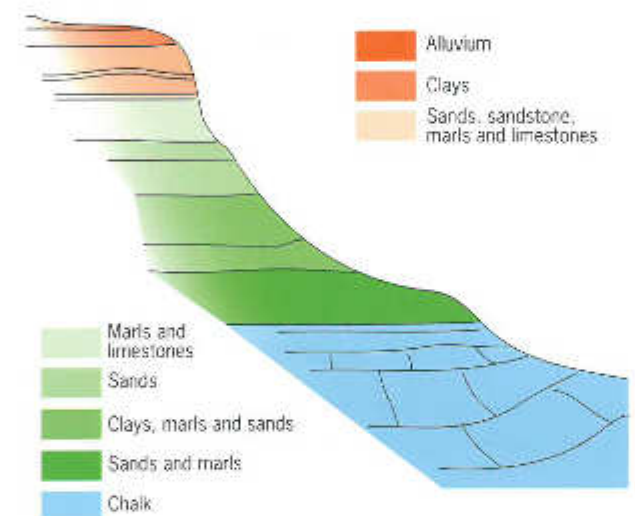
Main grape varieties by Champagne commune

A limestone subsoil  
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The nature of the Champagne subsoil determined the **choice of plantings** and led to the selection of three perfectly adapted grape varieties: **the Pinot noir, the Chardonnay and the Meunier.**

Cross-section showing the geology of the Montagne de Reims:



The *Côte des Blancs*, *Côte de Sézanne* and *Vitry-le-François* are situated on an east-facing outcrop of chalk. They are mainly planted to the *Chardonnay*, a grape variety that requires a regular water supply.

The *Montagne de Reims* is situated on a south-facing, deeper layer of chalk and is mainly planted to the *Pinot noir*.

The *Marne Valley* together with the small valleys and massifs around Reims (*Massif de St-Thierry*, the *Vallée de l'Ardre*, the *Montagne Ouest*) are located on more marly, clayey or sandy layers with variable aspects. The predominant grape variety is the *Meunier*.

The *Côte des Bar*, with its essentially marly soils, is principally planted to the *Pinot noir*.

A landscape of rolling vineyards

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*erosion*

*slopes*

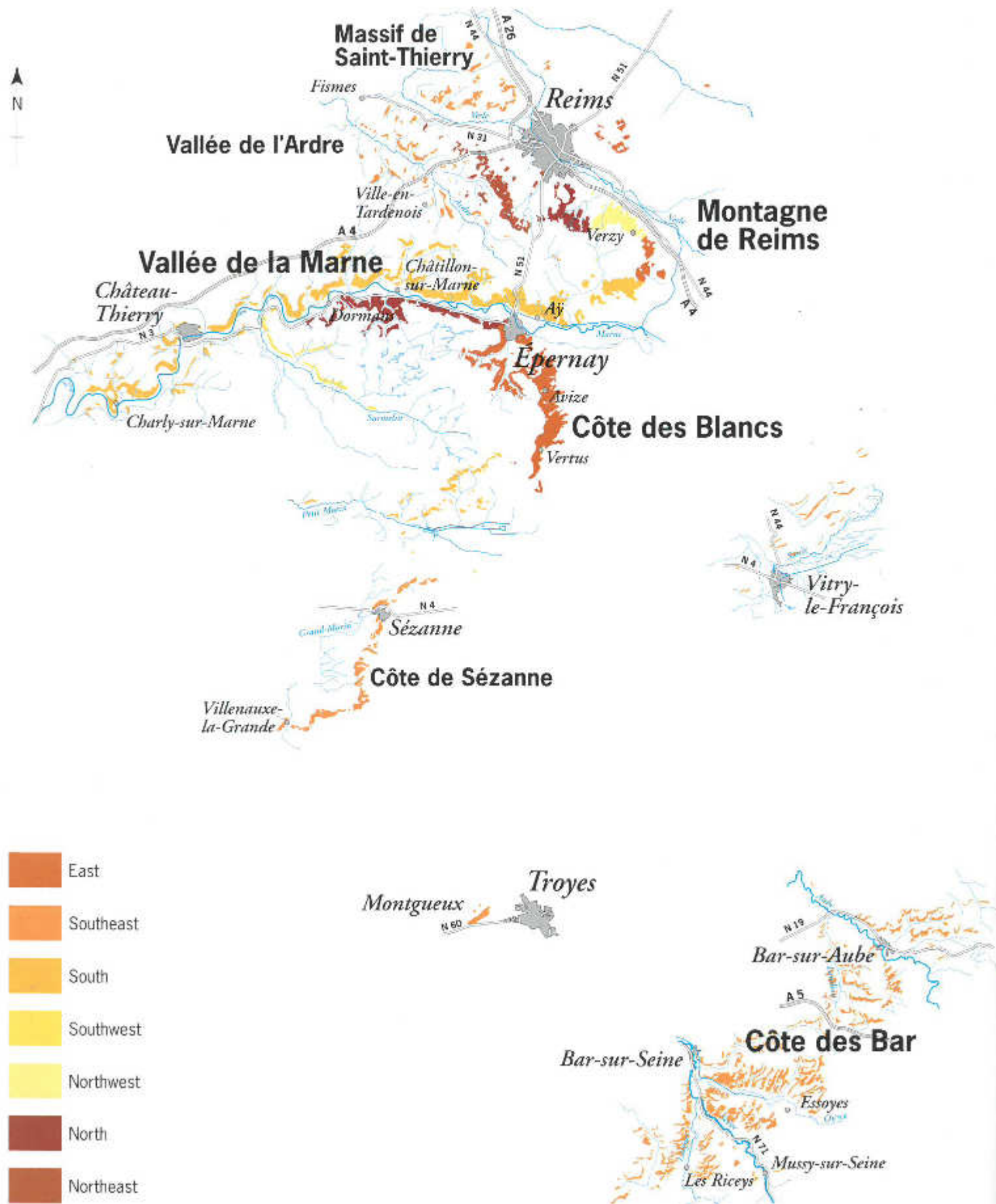
*valleys*

*uplift*

*ridges*

*sunshine*

**Principal aspects of vineyard slopes by Champagne sub-region**



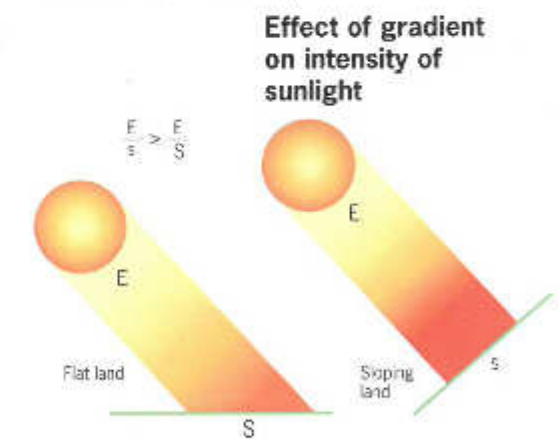
**A landscape of rolling vineyards**

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**S**loping vineyards are so much a feature of Champagne that in the 17<sup>th</sup> century its wines were known as *vin de coteaux* "wine of the slopes". The undulating to moderately steep terrain creates ideal vineyard sites that combine good drainage with excellent exposure to sunlight.

Vines carpet the slopes as far as the eye can see, extending from the wooded crests to the picturesque villages nestling in the valley beneath.

Average gradient is around 12% but some of the slopes are as steep as 59%. For centuries, the hillsides of Champagne have **favoured viticulture** because high elevations receive greater intensity of sunlight than lower elevations at the same latitude. In the Northern Hemisphere this effect is particularly marked on **south, southeast and east-facing** slopes, such as you find in Champagne.





Map showing  
the relief of the  
Champagne  
vineyards



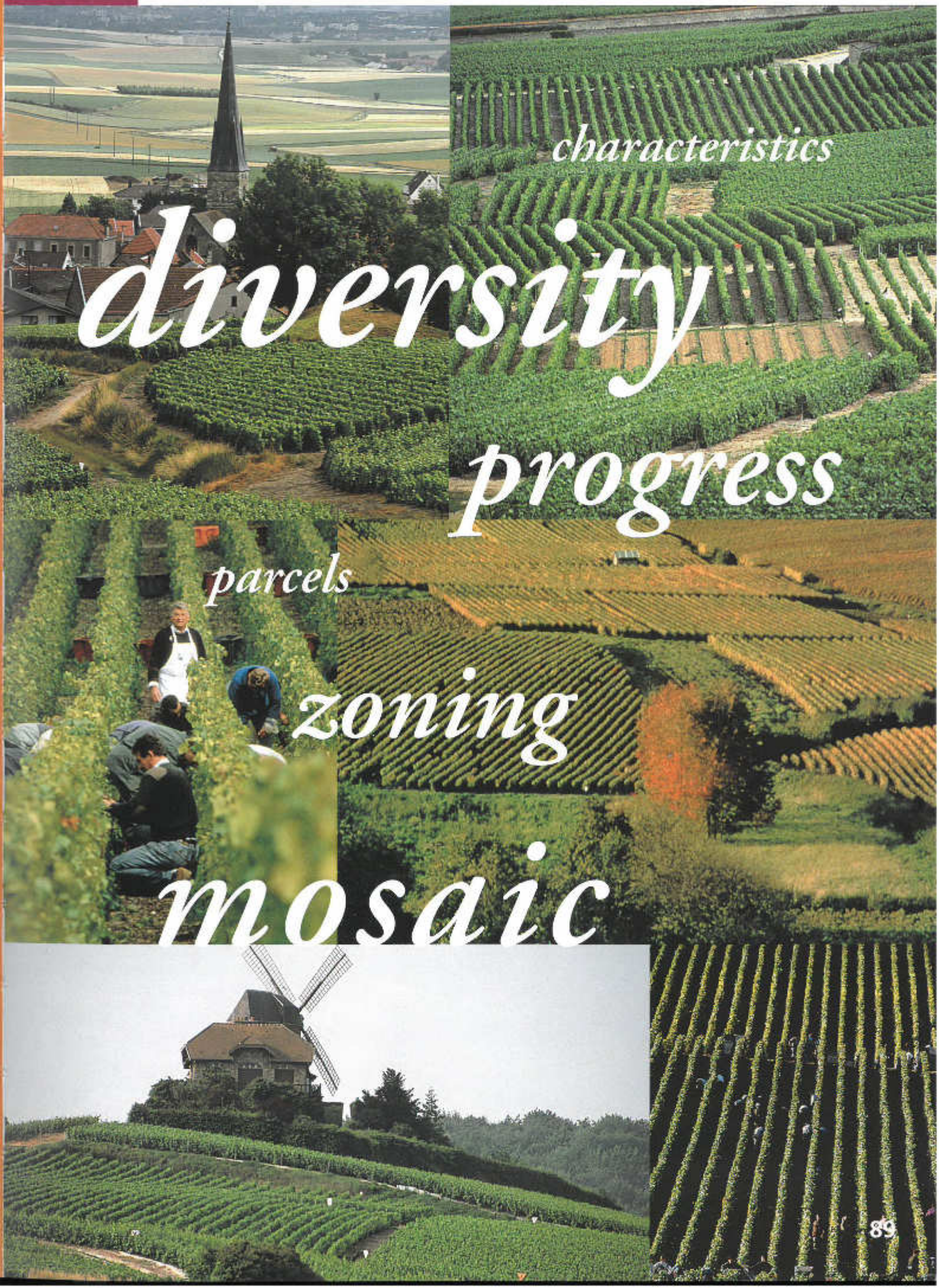
The hillsides of the Champagne region were formed as the centre of the Paris Basin gradually sank under the weight of accumulated sediments, with up-thrusting along its northern and eastern sides. The newly formed hills then came under attack from **erosion**, most notably in the Ice Age as repeated periods of freezing and thawing (glacials and interglacials) scored the limestone rocks with fissures and wore away the steepest slopes to produce the gently rolling landscape you see today.

The main hills formed in the up-thrusting of the Paris Basin were:

- **The Côte de l'Île-de-France** with vineyards in the Côte des Blancs, the Montagne de Reims and the Sézannais.
- **The Côte de la Champagne** with vineyards in Vitry-le-François and Montgueux.
- **The Côte des Bar** with vineyards in the Barséquanais region and Bar-sur-Aube.

Elsewhere, new slopes were created as the river **Marne and its tributaries** gouged out a series of valleys along the Côte de l'Île-de-France: the Vallée de la Marne, Vallée de l'Ardre, Vallée de la Vesle and Vallée du Surmelin.

Likewise in the **Aube region**, where the hills were fashioned by the river Seine and a host of others including the Aube, Ource, Landion, Arce and Laignes.



*diversity*

*characteristics*

*progress*

*parcels*

*zoning*

*mosaic*

Aerial view showing the parcelling of the Champagne vineyard.



Many of the parcels have colourful names such as *les Soupe-Tard* (late diners), *Les Gouttes d'Or* (drops of gold) and *les Froids monts* (chilly peaks) which speak volumes about the *terroir* and its origins.

Champagne is subject to natural laws that make for an infinite variety of natural environments. Winegrowers have always respected these differences, knowing that they affect the characteristic qualities of the grapes and therefore the wines. Today these variations are the target of a zoning programme aimed at identifying and qualifying different vineyard parcels.

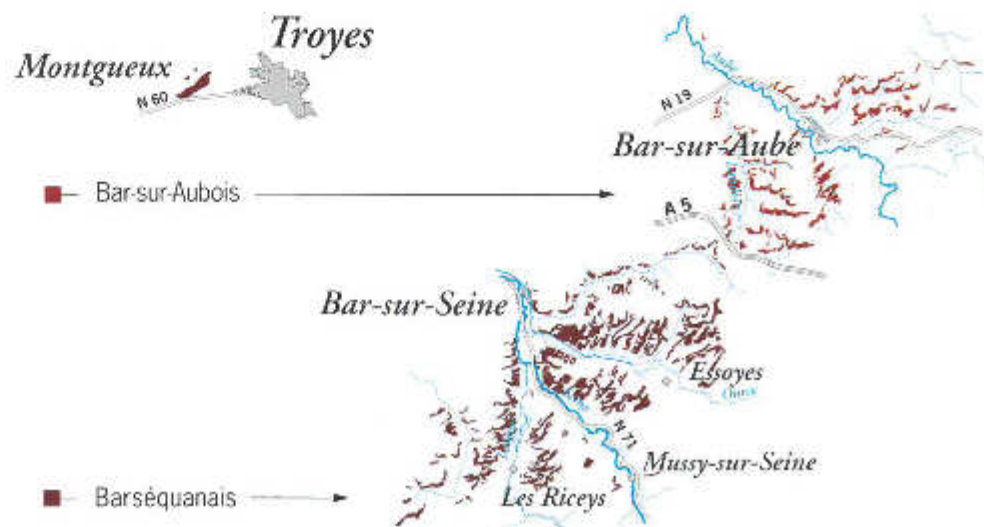
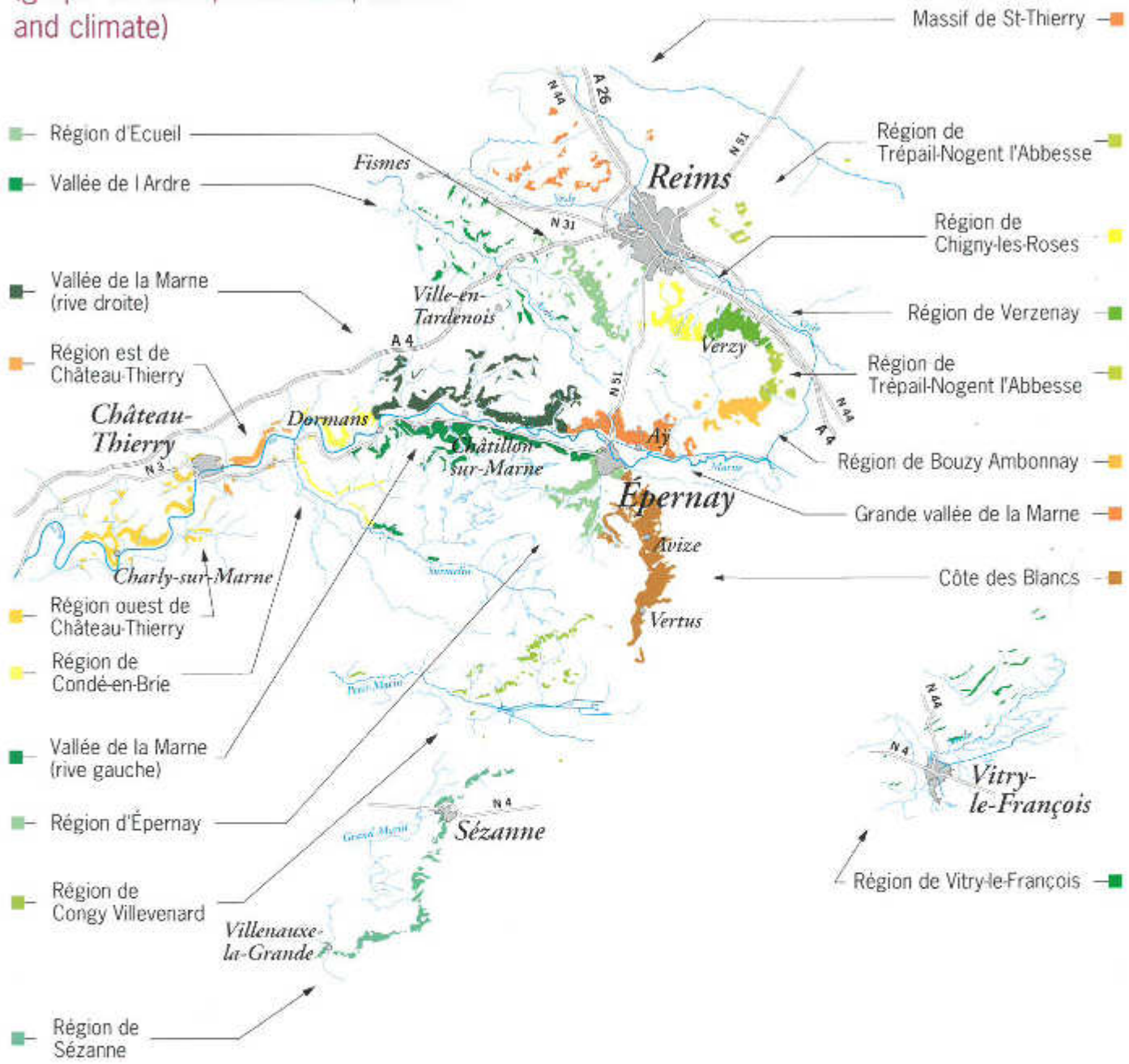
Three major features – climate, subsoil and relief – combine to create a **mosaic of micro-terroirs**. There are almost as many geographical permutations in Champagne as there are acres of vineyard.

A Champagne wine grower distinguishes not just between growths but between individual vineyard **parcels**, each one with its own name and long-established reputation.

Every parcel is worked in accordance with its own **specific profile**, creating a wine that best expresses its distinctive origins, or a range of wines with complementary characteristics for blending.

### The 20 sub-regions of the Champagne vineyards

Cross-referenced vineyard data (grape varieties, rootstock, subsoil and climate)



The **zoning programme** launched some years ago by CIVC technicians should greatly add to our empirical understanding of the *terroir*. By recording information on a scale of 1/25,000, it is hoped that this Herculean research project will shed new light on the growing environment in Champagne.

The data produced will be cross-referenced on a series of maps (some of which are included in this book) detailing factors such as geological formations, soil texture, frost zones and risk of erosion or earth movements.

The ultimate objective is to design a series of tools that will enable wine growers to make the best possible use of the available technical options, from choice of grape or rootstock to grassing-over, use of pesticides, timing of the harvest and production of the finished wine.