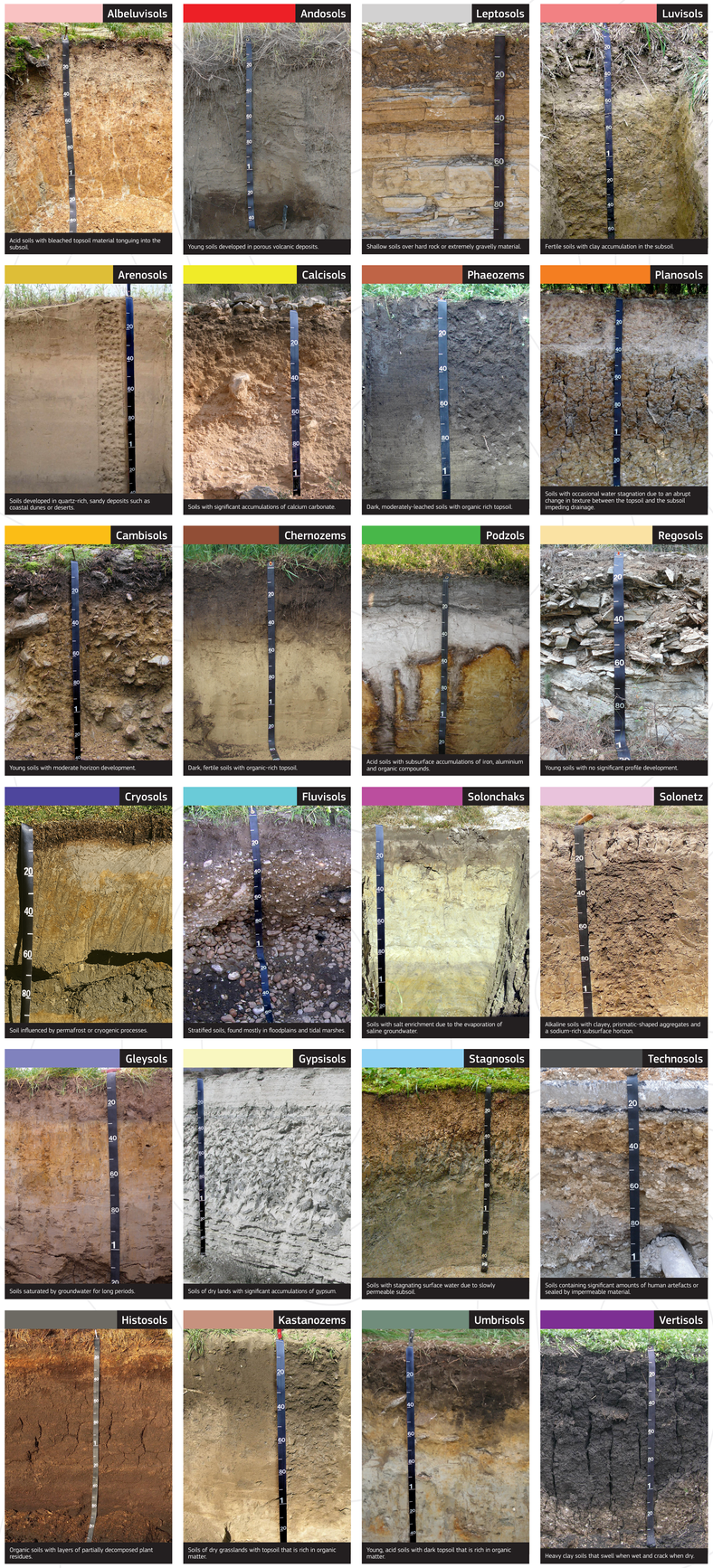
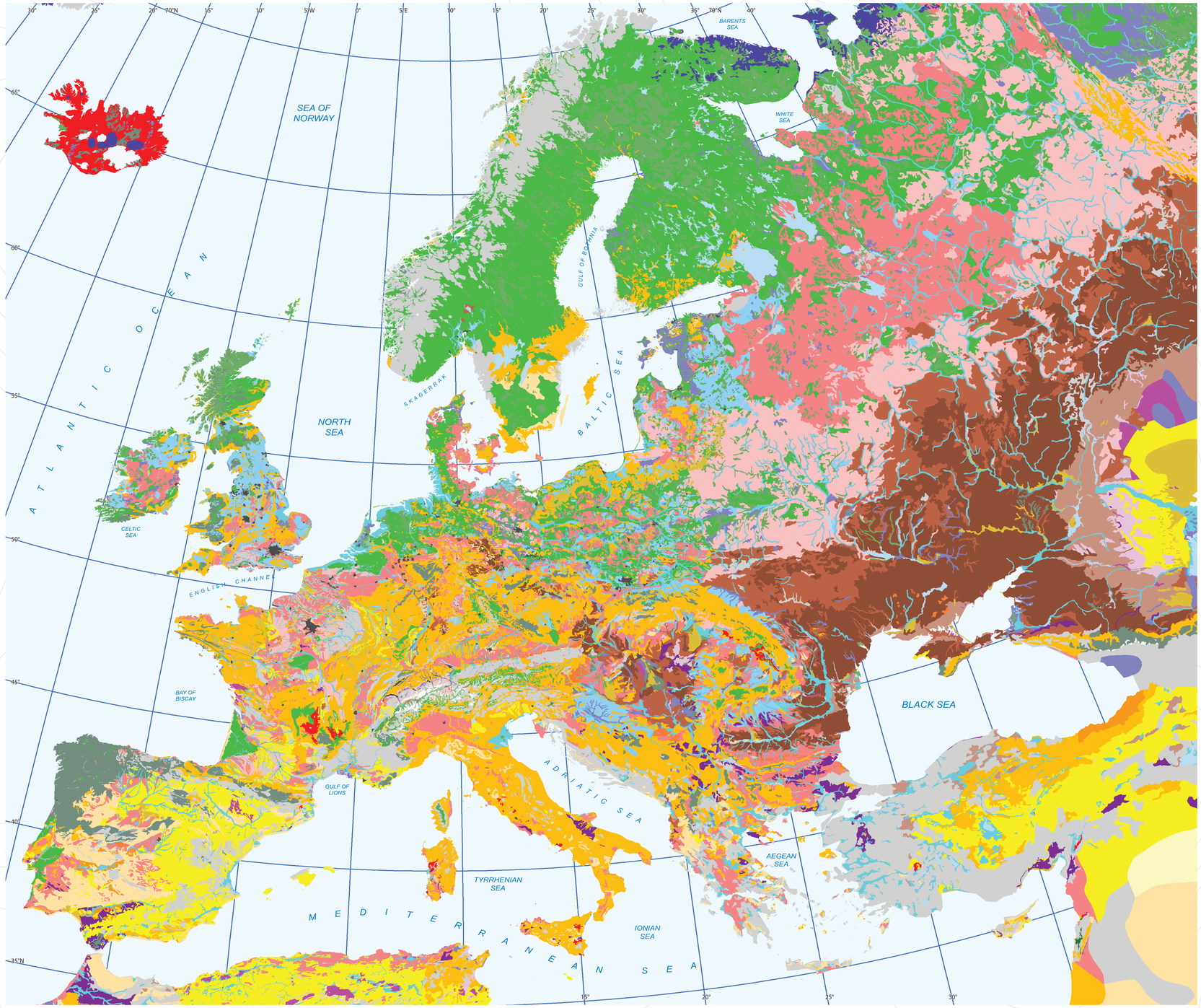
European Commission

Joint Research Centre

The Soils of Europe





What Is Soil?

Soil is composed of mineral particles, organic matter, water, air and living organisms. It is a variable and living medium, reflecting the result of six soil-forming factors: parent material (rocks and sediments), climate, position in the landscape, vegetation, time and the effect of living creatures. The patterns shown on the map reflect variations in the intensity of these factors from one region to another. This explains why there are so many different types of soils in Europe. From the photographs on this chart, it is clear that soils have distinct colours, which are due to the varying proportions of organic and mineral matter. Soils that are rich in organic matter tend to be dark, and vice versa. If the soil is rich in a specific mineral, such as iron oxide (red) or calcium carbonate (white), then the soil will reflect that colour.

Soil Functions

Soil is defined as the uppermost layer of the Earth's crust and is the interface between the ground, air and water. Soils perform many vital functions: food and other biomass production, storage, filtration and transformation of many substances including water, carbon and nitrogen. Soils are a habitat and gene pool, while serving as a platform for human activities, landscape and heritage. They are a provider of raw materials, for certain pharmaceuticals such as antibiotics, cancer treatments and cholesterol reduction. Given the slow rate of soil forming processes, soil must be considered as a non-renewable resource in human timeframes that are highly susceptible to land degradation processes. Given the life-critical, socio-economic and environmental importance of soil functions, the European Commission has adopted EU Soil Strategy 2030, with the objective to achieve healthy soils across the EU by 2050.

The Soil Map of Europe

The map shown on the right of this poster is derived from the 1:1,000,000 scale Soil Geographical Database of Eurasia. The database is the result of a collaborative project involving all the European Union Member States and neighbouring countries through participation in the European Commission Joint Research Centre's European Soil Bureau Network (ESBN). The map shows a simplified representation of the diversity and geographical variability of the soil cover across Europe. The underlying database has been processed to extract the most dominant soil type for a specific landscape unit. Each colour represents a distinct type of soil (also known as WRB Reference Groups – see next paragraph), examples of which are presented on this poster.

For more information on this map and how to find more information about the soils in your area, please visit the EU Soil Observatory website (QR code).

WRB Reference Soil Groups

The World Reference Base for Soil Resources (WRB) uses objective criteria derived from both field inspections and laboratory analysis to systematically classify different soil types into one of thirty-two reference groups.

Specific characteristics are denoted through the use of prefixes and suffixes. The WRB system is meant to serve as a common denominator through which national soil classification systems can be compared and correlated.

Jones, A.; Montanarella, L.; Micheli, E.; Spaargaren, O. and Jones, R.J.A., 2010. Major soil types of Europe. European Commission Joint Research Centre. Published by the European Union Publications Office, Luxembourg.

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