

# The soil of Europe

## The major soil types of Europe

### CRYSOLS

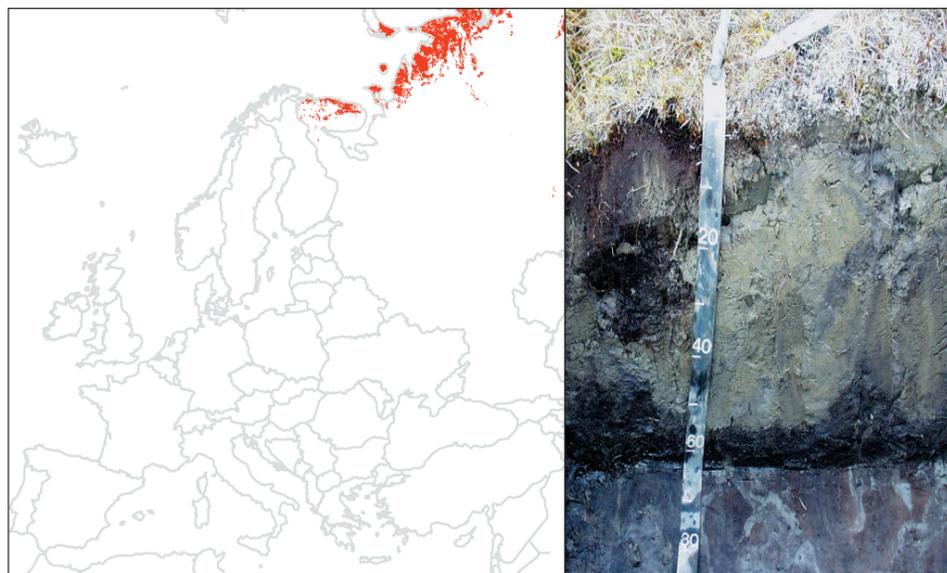
Soil of cold areas with permafrost within a depth of 1m from the surface (from the Greek *kraios*, meaning cold or ice).

Cryosols develop in arctic and mountainous regions where permanently frozen subsoil or "permafrost" is found. In this type of soil, water occurs primarily in the form of ice and cryogenic processes - such as 'freeze-thaw' sequences, 'cryo-turbation', 'frost heave', 'cryogenic sorting', 'thermal cracking' and 'ice segregation' are the dominant soil forming processes. These processes result in distorted horizons and patterned ground. These soils are widely known as Permafrost soil, Gelisols, Cryozems, Cryomorphic soils and Polar Desert soil.



*Left: patterned ground in the permafrost region of Russia, the result of sorting of soil due to freezing and thawing; Below: cryoturbated or distorted horizons above the permafrost; The map shows the location of areas in Europe where Cryosols are the dominant soil type.*

Cover 2 % of Europe.



### FLUVISOLS

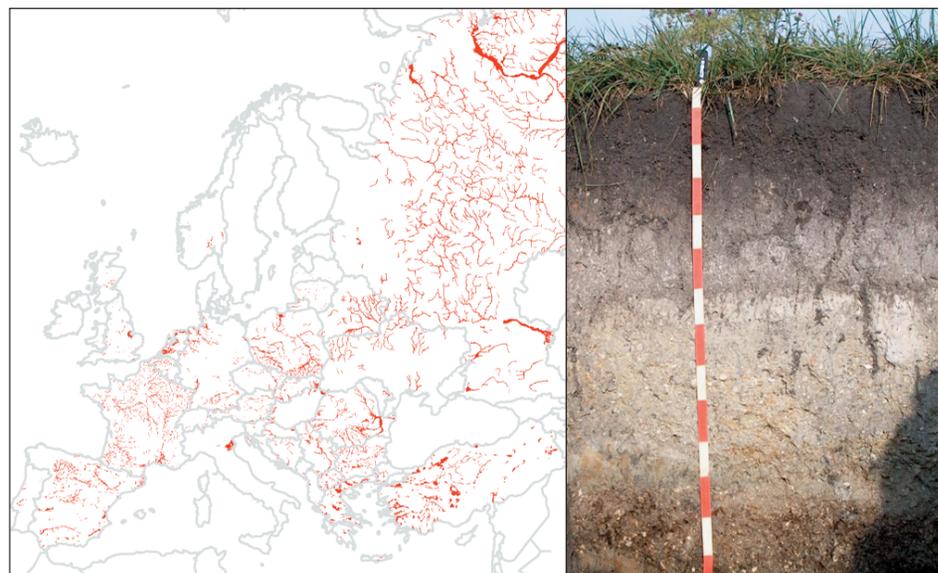
Young soil in alluvial (floodplain), lacustrine (lake) and marine deposits (from the Latin, *fluvius*, meaning river).

Fluvisols are common in periodically flooded areas such as alluvial plains, river fans, valleys and tidal marshes, on all continents and in all climate zones. Fluvisols show layering of the sediments rather than pedogenic horizons. Their characteristics and fertility depend on the nature and sequence of the sediments and length of periods of soil formation after or between flood events. Common international names are Alluvial soil, Fluvents (Soil Taxonomy) and Auenböden (Germany).



*Left: Fluvisols develop due to the deposition of sediments following flood events - the picture shows a typical flood event where the river has overflowed its banks; Below: the profiles of Fluvisols show a layering of the sediments indicating deposition by water; The map shows the location of areas in Europe where Fluvisols are the dominant soil type.*

Cover 5 % of Europe.



### GLEYSOLS

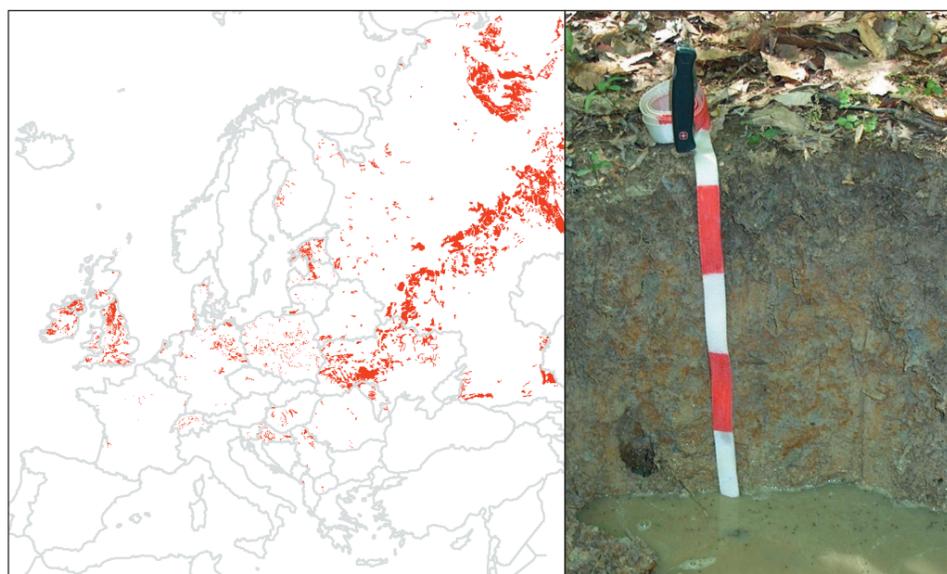
Soil saturated by groundwater near the surface for long periods (from the Russian, *gley*, meaning 'mucky mass')

Gleysols occur mainly in lowland areas where the groundwater comes close to the surface and the soil is saturated with groundwater for long periods of time. Conditioned by excessive wetness at shallow depth, this type of soil develops gleyic colour patterns made up of reddish, brownish or yellowish colours on ped surfaces or in the upper soil layers, in combination with greyish/bluish colours inside the peds or deeper in the soil profile. Common international names are Gleyzems (Russia), Gley (Germany), meadow soil, groundwater soil and hydro-morphic soil.



*Left: Gleysols are generally not well drained and need intensive management before they can be used; Below: note the characteristic red and bluish /grey mottling and the presence of water in the profile pit; The map shows the location of areas in Europe where Gleysols are the dominant soil type.*

Cover 5 % of Europe.



### GYPISISOLS

Soil of dry areas with secondary accumulation of gypsum (from the Latin, *gypsum*, meaning the evaporite calcium sulphate).

Gypsisols have substantial secondary accumulation of gypsum in the subsurface. Most areas of Gypsisols are in use for low volume extensive grazing. They occur in the driest parts of the arid climate zone, which explains why leading soil classification systems label them Desert soil (USSR), Aridisols (Soil Taxonomy), Yermosols or Xerosols (FAO).



*Left: Arid "bush" vegetation so typical of many gypsisol regions; Below: The high amount of gypsum may form a petrogypsic horizon - a hardpan that further limits the use of this soil; The map shows the location of areas in Europe where Gypsisols are the dominant soil type.*

Dominant in only very small part of Europe (less than 0.1 %)

