

Soil classification

Many different types of soil

Soil thickness depends on soil inclination. If the land is inclined rock debris do not accumulate on the spot since, due to force of gravity, they roll down. If the land is very steep, the soil is completely absent as you can observe on mountain rocky walls.

Climate is the most active factor as far as soil origin is concerned: the most important elements are the intensity and frequency of rain, evaporation, temperature and wind.

Without rainwater chemical and biological activities are not possible. In fact, water melts a part of the mineral salts that are contained in the soil: they can react and give origin to compounds that can be assimilated by plants and animals. However, an excessive quantity of rain can filter the salts and move them away through lixiviation, impoverishing the soil. Therefore, in hot climate where precipitations are particularly intense (like in equatorial areas), many salts and nutritional elements (like nitrogen, calcium, sodium, potassium, etc.) are removed and the soil becomes less fertile. Instead, in dry climates, the poor water that is contained in the soil evaporates by making melted salts come to the surface: the soil is poorly fertile because it becomes too salty.

Temperatures can act in different ways: generally, chemical and biological activities are favoured by high temperatures, while they are hampered by cold temperatures and stop when soil water freezes. So, in tropical soils, organic and inorganic material is completely modified from the chemical point of view, while in the tundra frozen soil appears crumbled, but only mechanically: in fact water penetrates into rock cracks, transforms into ice, increases its volume and breaks.

Also wind plays an active role in the paedogenetic process: it can increase evaporation and, in dry regions without vegetation, it can lift the superficial part of the soil and transport it for long distances (wind erosion). The transported soil deposits in areas that are different from their original place.

Types of soil and classification

The soil covers approximately a third of the whole Earth's surface, with a thickness that ranges from tens of metres to a minimum of few centimetres, according to the intensity and duration of the rock changing processes. The factors that are responsible for soil formation create different types of soil in large geographic areas and inside small regions. The soil, in fact, is different in each area of the world: each area has its own climate, rocks and vegetation and, therefore, its own soil, with unique characteristics. You can find some examples on the images.

There are many methods to classify the soil. They all aim at organizing the different types of soil according to determined criteria, based either on a paedogenesis factor or on another specific characteristic of the soil.

Although there are many links between the different official classifications, it would be useful to have one international classification, which is valid for all countries. Among the main soil classifications, we can mention the American Agricultural Department classification (U.S.D.A.), F.A.O. (United Nations Organization for agriculture and food in the world), and U.N.E.S.C.O. (United Nations Organization for education, science and culture).