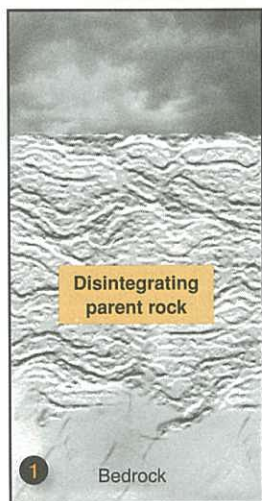


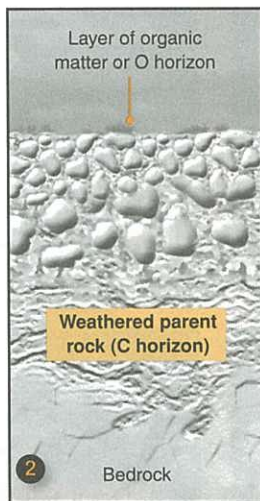
# Soil and Soil Dynamics

Soils are a complex mixture of unconsolidated weathered rock and organic material. Soils are essential to terrestrial life. Plants require soil and the microbial populations, responsible for recycling organic wastes, live in the soil and contribute to its fertility. Soils are named and classified on the basis of physical and chemical properties in their **horizons** (layers). Soils have three basic horizons (A,B,C). The A horizon is the **topsoil**, which is rich in organic matter. The B horizon is a **subsoil** containing clay and soluble minerals.

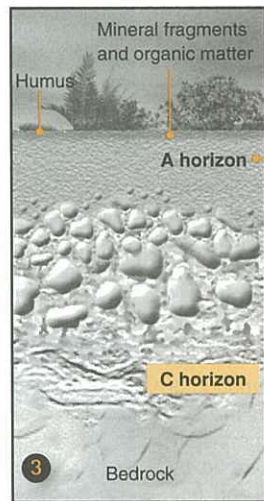
The C horizon is made up of weathered **parent material** and rock fragments. Soils and their horizons differ widely, and are grouped according to their characteristics, which are determined by the underlying parent rock, the age of the soil, and the conditions under which the soil developed. A few soils weather directly from the underlying rocks and these **residual soils** have the same general chemistry as the original rocks. More commonly, soils form in materials that have moved in from elsewhere.



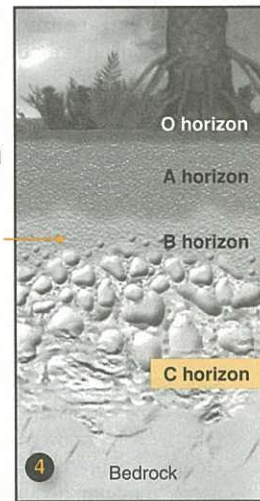
1 The parent rock is broken down by weathering to form a **regolith** which overlies the solid bedrock. The soil that forms is part of the regolith.



2 Plants establish and organic material builds up on the surface. The organic material aids the disintegration of the parent material.



3 As the mineral and organic content mix, horizons begin to form, with humus-rich layers at the surface and mineral-rich layers at the base.



4 Horizons are well developed in mature soils. The final characteristics of the soil are determined by the regional conditions and the rock type.

The Earth's Systems

## Influences on Soil Development



The character and composition of the parent material is important in determining the properties of a soil. Parent materials include volcanic deposits, and sediments deposited by wind, water or glaciers.



The occurrence of freeze-thaw and wet-dry cycles, as well as average temperature and moisture levels are important in soil development. Climate also affects vegetation, which in turn influences soil development.



Plants, animals, fungi, and bacteria help to create a soil both through their activities and by adding to the soil's organic matter when they die. Moist soils with a high organic content tend to be higher in biological activity.



The topography (hilliness) of the land influences soil development by affecting soil moisture and tendency towards erosion. Soils in steep regions are more prone to loss of the topsoil and erosion of the subsoil.

1. Explain the role of weathering in soil formation: \_\_\_\_\_  
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2. Discuss the influence of climate, rock type, and topography on the characteristics of a mature soil: \_\_\_\_\_  
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