

- Complex organic compounds are broken down, resulting in soil organic matter called humus: complex, dark, sticky organic material, stable over time
 - Humus allows soil to feed and reproduce – the “life-force” of the soil
- Carbon in soil organic matter is a sink for atmospheric carbon
- More C in soil than atmosphere and biosphere combined

Factors Affecting Soil Formation & Soil Classification:

- Soil forming factors:
 - Parent material, climate, vegetation, time, relief
- Soil forming processes:
 - Infiltration of water, minerals form + dissolve by weathering, accumulation of organic matter, soil erosion
- Soil properties:
 - Horizons, soil composition & fertility, thickness → soil maturity
- Climate soil (rain increases)
 - Desert soil – humus + minerals, no O
 - Temperate soil – deep A horizon rich in humus
 - Tropical soil – thin topsoil (O)
- Soil classification
 - Pedocal – drier, temperate areas (Middle West)
 - Pedalfer – humid areas, deciduous forests (E, West Coast))
 - Laterite – high temp + moisture, chemical weathering (West)
- Thousands of soil types on Earth, characteristics exert influence on community of life that survives above it
- Scientists developed soil orders: general classification of soil type based on distinct physical, chemical, and environmental characteristics
 - Highest level in the taxonomic organization of soils

Soils & Plant Growth:

- CLORPT: Climate, Organisms, Relief, Parent Material, Time
 - Key factors shaping the characteristics of soil
 - Climate – Warm, wet climates form soils more quickly than cold, dry climates
 - Organisms – Vegetation affects weathering and organic matter accumulation
 - Relief/Topography – Slope position affects erosion/sedimentation and water dynamics
 - Parent Material – The original rock that soil is formed from
 - Time – The duration that has along soil forming processes to occur and transform parent materials into soil
- Successful plant growth = balance btw water, pore space, nutrients, + root space
- Tilth: structure and conditions that facilitate plant growth
- When topsoil forms faster than it erodes, it thickens + supports more plant growth, when erosion thins soil = opposite
- Plants consume water by transpiration
- Growth can be inhibited by salinization, when salts build up
- Water can carry nutrients away from plants through leaching: mineral elements moved to deeper soil layers, beyond reach of roots, carried away in groundwater