

Landscape Regions

I. Landforms

- A. Are the result of interaction of tectonic forces and the processes of weathering, erosion, and deposition.
- B. Features on earth's surface due to **bedrock characteristics**, such as:
 1. slope (gradient and profile of the region) and **elevation**
 2. stream drainage patterns

II. Basic landscapes

- A. **MOUNTAINS** - areas of **high elevation** and **distorted bedrock**.
- B. **PLATEAUS** - areas of **high elevation** and **undistorted bedrock**
(horizontal strata)
- C. **PLAINS** - areas of **low elevation** and **flat, undistorted bedrock**

III. Landscape regions of New York State... see map in Ref. Tables... p.2

IV. Landscape development

- A. Are **two** conflicting forces:
 1. **Uplifting** - when this is **dominant**, the area **risers**
 2. **Leveling** - due to erosion, when this is **dominant**, the area **lowers**
- B. **Stages of erosion** (over long periods of time)
 1. **Youth** - V-shaped valleys, waterfalls
 2. **Mature** - small bends, small flood plain
 3. **Old Age** - very flat, large meanders, oxbow lakes, broad flood plain
- C. **Climate** - affects the appearance of surface features:
 1. **Arid** - dry and desert-like, with steep, sharp features and thin soils
 2. **Humid** - moist climate, with rounded features like the hills of New York

V. Affects of bedrock on landscapes

- A. **Soil types** - for residual soil, is determined by the type of bedrock below
- B. **Folding and faulting** - causes mountains and valleys
- C. **Stream drainage patterns** - result from underlying bedrock structure
- D. **Resistant strata** - harder rock layers form ledges, ridges, and
ESCARPMENTS - steep cliffs
- E. **Glaciation** - causes:
 - U-shaped valleys
 - mixed (unsorted) soil
 - scratched bedrock
 - many lakes

VI. Landscapes and man

- A. As **population** in an area increases, **pollution** and **denudation** (soil erosion) tends to increase also.
1. Pollution can include:
 - a) air pollution
 - b) water pollution
 - c) ground pollution (dumps)
 - d) energy pollution (radioactive wastes)
 2. Technology can offer solutions to man's problems, but can also cause more problems... there are **trade-offs**.
 3. Population growth increases at a **sharper rate** every year.

VII. Environmental awareness

- A. Earth's systems have **internal** and **external** sources of energy, both of which create heat.
1. **Internal "heat engine"** - powered inside the earth by:
 - a) decay of radioactive materials
 - b) residual heat from the earth's formation
 2. **External "heat engine"** - powered by the sun
- B. This heat energy is converted to mechanical energy (motion) in the form of **convection**, due to density differences.
- C. Impact of technology
1. ozone hole - due to chlorofluorocarbons (CFCs) that destroy ozone
 2. greenhouse effect - increased CO₂ results in global warming
 3. deforestation - removal of trees
 4. urbanization - growth of cities

VIII. Managing resources

- A. Two types of resources:
1. **Renewable** - naturally replaced
 - a) like groundwater and trees
 2. **Nonrenewable** - not replaced by nature in a timely fashion
 - a) like coal, oil, natural gas, and mineral ores
- B. Global distribution of these resources has a political, economic, and environmental impact.

- C. In the **future**, we need to:
1. Conduct research into better ways to use and conserve resources
 - a) This will avoid misconceptions of current commonly accepted scientific knowledge.
 2. Explore alternate ways to provide for future needs
 - a) Make use of **engineering design** - an **iterative** (repeating) process involving **modeling** and **optimization** (finding the best solutions within given constraints).
 3. Educate consumers
 - a) Make use of library and electronic references
- D. The solutions to these environmental earth resources problems will have environmental and social implications.