

LESSON NOTE FOR WEEK EIGHT (8)

SUBJECT TEACHER: MR. PRINCEWILL WILSON

TOPIC: Environmental Hazard – Flooding

OBJECTIVES

In today's class, we will be talking about flooding. Enjoy the class!

Environmental Hazard – Flooding

Flood is an overflow of water that submerges land, which is usually dry. Flooding occurs mainly when a large amount of water covers a dried area of land or soil. It usually occurs aftermath of a heavy downpour of rain. A flood can also occur when a water body, such as river, lake, ocean, overflows its bank, which then results in water escaping its boundary into the environment.

Soil structure

Soil structure is the arrangement of soil aggregates in a vertically downward position. It is divided into four regions called horizons. Planes separate each horizon. The horizons are Horizon A, Horizon B, Horizon C and Horizon D.

Horizon A: Horizon A refers to the soil surface that is made up of granules and crumbs.

Horizon B: In horizon B, soil particles are glued together in square or angular shapes. This type of arrangement makes it difficult for water penetration.

Horizon C: In horizon C, soil particles form pillars and columns to make water penetration more difficult.

Horizon D: Horizon D forms the bedrock of the soil.

There is an impervious rock deep down in the soil, which does not allow water to pass through it. When it rains in an area where the impervious rock layer is close to the ground surface, a small portion of water will be able to seep into the ground while some portion will move to the surface layer thereby making the soil flooded. When the impervious rock is, however, deep down into the ground, the rainwater seeps down without causing flooding.

Drainage systems

Drainage systems are the patterns formed by the streams, rivers, and lakes in a particular drainage basin. It helps to channel water from the rainfall into the body of the water. However, a blocked drainage system in an environment can lead to flooding.

Drainage patterns

There are four major kinds of drainage patterns, they are:

1. Dendritic drainage pattern
2. Trellised drainage pattern
3. Deranged drainage pattern
4. Radial drainage pattern

Dendritic drainage pattern:

Dendritic drainage pattern looks like the branching pattern of tree roots. This drainage system has many contributing streams, which join into tributaries of the main river. It is the most common type of drainage pattern and they develop where the river channel follows the slope of the terrain.

Trellis drainage pattern:

Trellis drainage pattern is a rectangular shaped drainage pattern that is mostly found between rocks, especially sedimentary rock.

Deranged drainage pattern:

Deranged drainage pattern can be found in an area where there is no coherent pattern to the rivers and lakes. It is mostly found in areas where there has been much geological eruption such as volcanic eruption.

Radial drainage pattern:

The radial drainage pattern is a drainage system where the streams radiate outwards from a central high point. Volcanoes usually display this type of drainage pattern.

Causes of flooding

Some of the causes of flooding include:

1. **Heavy rainfall:** When there is a heavy rainfall that is much more than what the drainage system can take, there will be an overflow of water, which mostly leads to flooding.
2. **River overflow:** River overflow occurs mostly when there is a heavy downpour of water. The river water level rises which then leads to an overflow of water downstream to the adjacent low-lying areas.
3. **Dam breaking:** Dams are mostly built by the government to generate electricity. When a dam breaks, there will be an overflow of water in that area.
4. **Winds in the coastal areas:** Strong and massive winds in the coastal areas can blow and carry over water into dry coastal land and thereby leads to flooding.
5. Sand filling of water paths.

Prevention of flooding

Flooding can be prevented by:

1. Providing and maintaining a proper drainage system.
2. Proper dredging of rivers.
3. The building of walls along riverbanks.
4. Diversion of streams so that they do not cause water overflow.
5. Sand filling of lowlands.
6. The building of detention basin which serves as temporary storage for flood water
7. Mulching

Effects of flooding

1. Flooding can lead to water pollution as a result of deposition of sands and some toxic chemicals into the body of water such as rivers, streams, oceans. This may, therefore, kill living organisms (plant and animal) living in such an environment.
2. It can lead to the destruction of property, lives, etc.
3. It can disturb the natural balance of an ecosystem.
4. Flooding can destroy food crops.
5. It may cause loss of soil fertility.

ASSIGNMENT

1. What is flooding?
2. What are the effects of flooding?