Weather Hazards FLOODS

Keywords - the water cycle

- Hydrology - the study of water.
- Hydrological/water cycle - the circulation of water between stores (oceans and lakes), the atmosphere and the land.
- Channel flow - movement of water in streams and rivers.
- Condensation - water vapour turning into water droplets.
- Evaporation - water turning into water vapour.
- Groundwater flow - movement of water underground
- through rocks.
- Infiltration - seeping of water into the soil.
- Interception - collection of water by vegetation (plants).
- Overland flow - flow of water over the earth's surface.
- Precipitation - rain, hail, sleet or snow.
- Throughflow- movement of water through the soil.
- Transpiration - loss of moisture from plants.

Lynmouth, Devon,1952 - a flood in an MEDC

Human causes	Physical (natural) causes
• Bridges built over river	• heavy rain
• River channel narrowed	• ground became saturated
• Tarmacing	• steep sided valley
• Deforestation	• impermeable rock
• No early warning system to warn people	

Effects: houses, buildings, hotels, boats and cars destroyed. 34dead.
After flood: local flood action plan put into place so area could cope with heavy floods in the future.

Flood control

All the methods below have used to prevent flooding along the Mississippi River in the USA.

- over 300 dams built,
- levees built.
- storage reservoirs built to hold excess water.
- River straightened so water can pass through more quickly.
- Aforestation (planting trees)

For 20 years these schemes appeared to have been effective in reducing the flood risk - until 1993!

In 1993 there was a lot of rain. Environmentalists believe that by using the methods above it actually made the flood worse.

In the 1993 flood 48 people were killed, 70 000 people were evacuated from their homes, $2 billion worth of crops were lost. Some towns never recovered. They were abandoned and rebuilt on higher ground.

Why do some rivers flood?

- Lack of vegetation cover e.g.. if an area has no trees water will reach he rivers more quickly.
- Types of rock-permeable rocks e.g.. chalk, allow water to soak in slowly. Impermeable rock such as clay allows water to flow quickly over the surface.
- Saturated - if the ground is already saturated.

Bangladesh, 1998 - a flood in an LEDC

Two types of flood affect Bangladesh:

- River floods - which happen every year, depositing millions of tonnes of fine silt at the mouth of the rivers and creating large areas of fertile farmland. The floods are caused by heavy rainfall and melting snow in the Himalayas.
- Coastal floods - created by cyclones. Water is funnelled towards Bangladesh and a storm surge (rapid rise in sea level) develops, flooding large areas of land.

Although physical factors increase the risk or flooding, there are also a number of human influences:

Human causes of the flood	Physical causes of the flood
• Deforestation in the Himalayas	• Melting snow in the Himalayas
• Eroded soil has led to river levels being higher	• Heavy monsoon rain causes summer flooding
• Some water has been diverted	• Cyclones create a storm surge
• Trees cleared for fuel and grazing	• 2 big rivers meet

Effects of flooding: thousands dead, animals dead, rice crops destroyed - leading to people starving, disease spreading through the dirty flood water, lack of clean drinking water, bridges washed away.

Why do MEDCs cope better than LEDCs with floods?

- Better communications (phone, radio and TV warnings. More people can read information
- leaflets).
- Better river monitoring systems to see if rivers are getting dangerously high.
- More money to spend on flood defences - dams etc..
- Better emergency services
- People's homes, businesses etc.. are insured.

How can urbanisation cause flooding?

- Vegetation is replaced with tarmac and concrete
- Artificial drains are put in, replacing natural streams.
- Streams are made to flow through pipes underground.
- Rivers are narrowed and changed course.

This module looks at the problems caused by floods. It also examines how floods can be controlled. Remember to revise how MEDCs cope differently to LEDCs before, during and after floods.