Miss Camps Model Mind Map

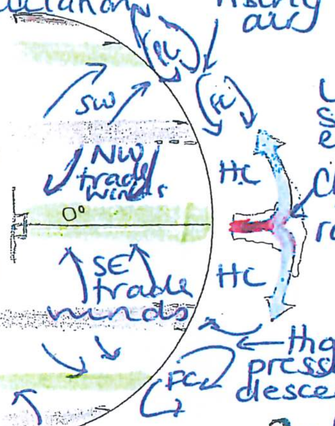
Atmospheric Weather Earth

HAZARDS → HUMAN FACTORS...

NATURAL
Hurricane, Wind
Tornado, Snow,
Drought,
Lightening.
Landslide,
Mudflow
Landslide
Volcano
Earthquake
EVENTS...

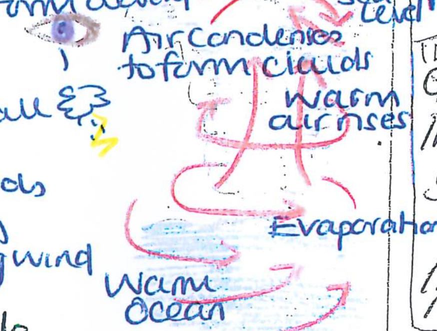
- URBANISATION: 50% in cities. Dense population at great risk.
- POVERTY: ↑ risk. Unstable houses more likely to damage. No money for protection
- BUILDING ON FLOOD PLAINS: demand for houses = less infiltration = more water.
- CLIMATE CHANGE: warmer = more intense storms. More places wetter - flooding

Global Atmospheric Circulation
low pressure rising air
SW
NW trade winds
0°
SE trade winds
Hc
Hc
Cloud + rain
High pressure descending air



T.S. FORMATION...

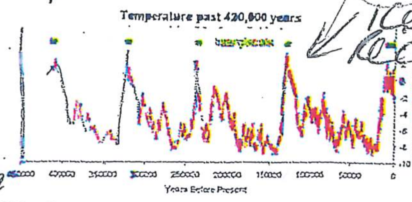
Tropical storm.
15-20 km above sea level
Storm develops
Air condenses to form clouds
Land stops energy cut off
Air condenses → small
Evap cools
Strong wind
Warm air rises
Evaporation
Warm ocean
Saffir Simpson Scale



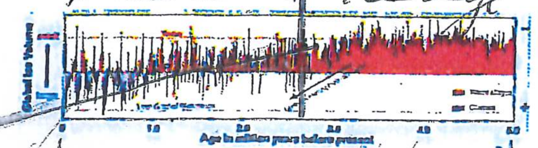
QUARTERNARY

2.6 M — Pleistocene epoch — Holocene epoch — Today

TERMS:
Glacial - period of low temp + ↑ ice coverage
Interglacial - warmer temp with ↓ ice coverage
Stadial - Coldest period of ice age
Interstadial - a relatively warm period in ice age
Ice records



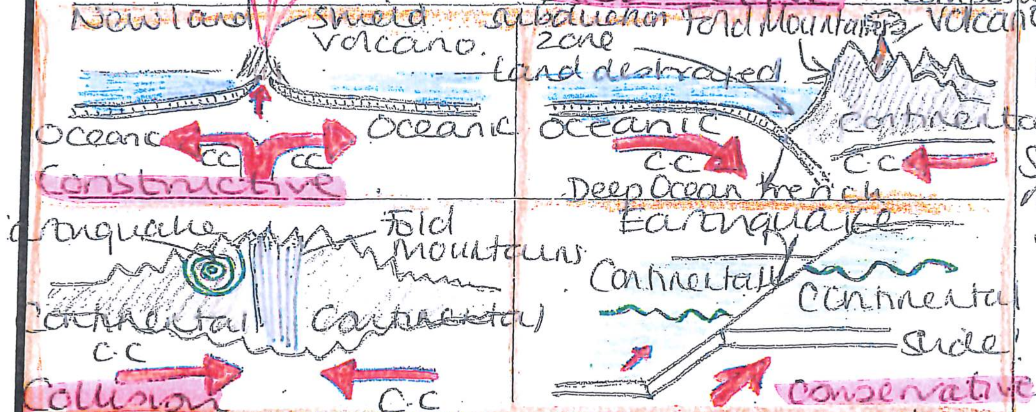
LOBF ?



(*) Cooling temperatures in the Holocene.

Plate boundaries

Destructive
Newland — shield volcano. — subduction zone — Fold Mountains — Composite Volcano
land destroyed
Oceanic CC CC Oceanic — Oceanic CC Continental CC
Constructive
Deep Ocean trench
Earthquake — Fold mountains — Earthquake
Continental C.C — Continental C.C — Continental — Continental — Slide
Collision — Conservative



CLIMATE CHANGE INFLUENCE

FREQUENCY: Six of the 10 most active since 1950 in 1990's.

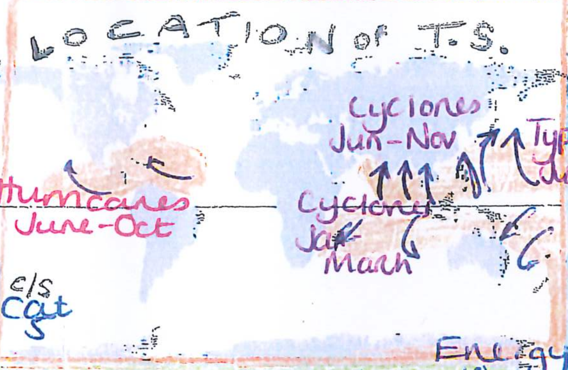
INTENSITY: Intensity rising over last 20 years. Link to sea surface temp

T.S. CAUSES...

* Oceans above 27°C
* Summer + autumn
* 5-15° N+S equator

Coriolis effect
Outwards spin

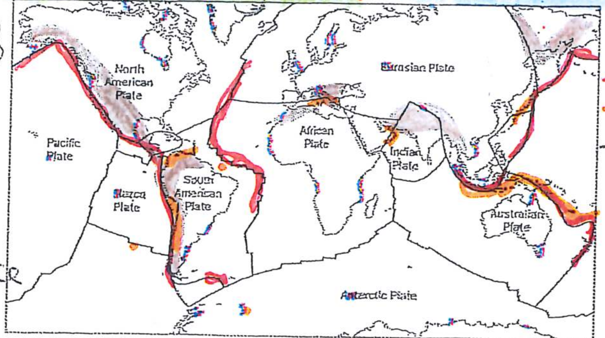
LOCATION of T.S.



Nepal vs Chile

25th April 2015 Nepal 7.9	27th Feb 2010 Chile 8.8
PRI. EFFECTS: 9000 died, 7000 sch, 20,000 injured	500 killed, 12000 injured, 4500 schools
SEC. EFFECTS: Avalanche Mt Everest 19 ppl killed	Tsunami waves; fire at chemical plants.
IMM. RESPONSE: ½ million tents emergency shelter. Mig	Emergency responses Nat appeal $60 million
LONG TERM RESP: June 2015 Conference No discuss rebuild	month after - rebuild houses. 4 years fully
KEY FACTS: Frequent Every 80 years	Frequent - biggest in 1960

Why live near tectonic hazards?
- Rare
- Coast/port
- fertile soils
- less chance
- too poor



KEY:
- Volcanoes
- Earthquakes
- fold Mountains

TYPHOON HAIYAN 2013

E/S Cat
P.E. 6300 dead, 600000 displaced, 40,000 homes destroyed
S.E. 14 million effected, 6 million no income, No power.
I.M.R. 1200 evacuation centers, Int Gov + Aid agencies
L.T.R. UN donated financial aid. Rebuild Roads.
KEY FACTS: 5m storm surge. 170mph winds. Waves 15m

KEY: Energy of 10 atom bombs per sec

SOMERSET LEVELS 2014/15

EXTREME 350mm rain in January + Feb

Social	Env	
600 homes flooded, 16 farms evac	14000 ha farm land under water. local roads. Economic	debris cleared. contaminated water	used boats to go work/sch. £20 million Flood Action Plan 2014

PHYSICAL CAUSES

Solar energy. Sun Spots. 11 year cycle from Max to Min

Volcanic Activity: Ash blocks out the sun. Fine sulphur droplets reflect like a mirror. Eg 1815 - Mount Tambora -0.4°C to 0.7°C No summer

Orbital Change
3 cycles:
- Eccentricity - orbit to sun Elliptical
- Axial tilt - Move from 21.5 to 24.5 over 41000 years = distance from sun
- Precession - Natural wobble

Regional change

HUMAN CAUSES

Cars/factories exhaust
biomass
Rice
Atmosphere thicker due to Greenhouses Gases - Methane / Carbon Dioxide / Nitrous Oxide
Infrared rays.
Long wave rad trapped
CO_2 / CH_4 / NO_x
EARTH

CONSEQUENCES?
* stronger tropical storms
* ↑ risk of floods/droughts
* low crop yields - less money

M+P×3

- Prediction — impossible
- Planning
- Protection

M Monitoring: Remote sensing, seismicity, ground deformation / Gas, change in water pressure

Pre EQ. Study historical records show some pattern. Beware Istanbul

Pla Maps to identify those most at risk. High value land can then be protected in vulnerable areas.

Pro Steel reinforced walls, Counter balance, Automatic shutters, Shock absorbers, easy access evac, Reinforced foundations

"TECTONIC HAZARDS"

Weather hazards

M Developments in tech allow to take place
- Hurricane Watch
- Hurricane Warning

Pre Advise when going to happen. Warnings issued to residents dep. on risk.

Pla Raising individual and community awareness. Understand dangers + how to respond.

Pro
- Shutters
- Strong concrete
- stilts for flood
- Sea walls for storm surges.

"WEATHER" HAZARDS

MITIGATION

Carbon Capture: catches carbon burnt by CO_2. Catch up to 90%.

Planting trees: Absorbs CO_2 faster

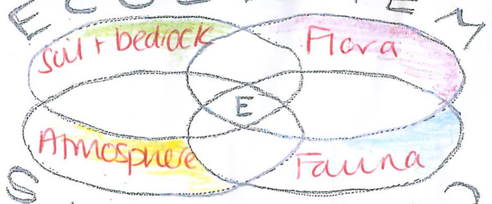
Paris Agreement 2015 - review every 5 years. US$100 billion to support

ADAPTATION

Rainfall changes, heatwaves, Droughts
Artificial glaciers. N. India. Stay frozen longer
Maldives: S.L 20cm ↑ from 1900. Erosion ↑. 1 point 2.4m, 3800 uncertain. 3m sea wall, restore Mangroves
↓ 30% Africa's Maize. New crops. Drought resist Crops. Irrigation

Mrs Lethegahn.

ECOSYSTEM

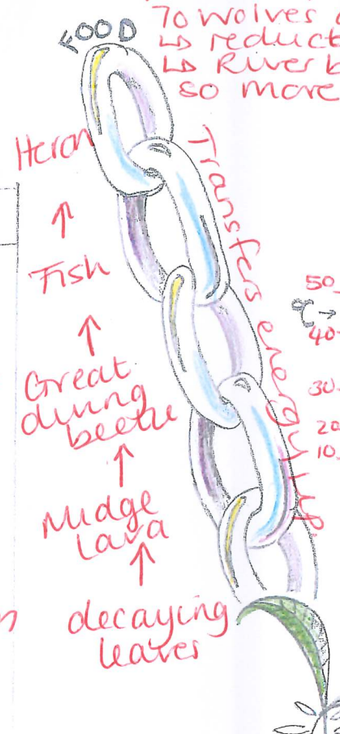


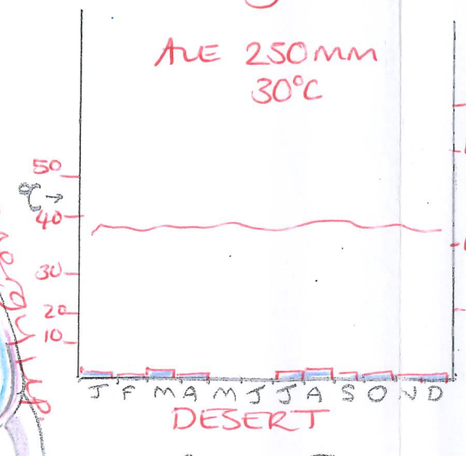
What if you change the balance of components in an ecosystem?

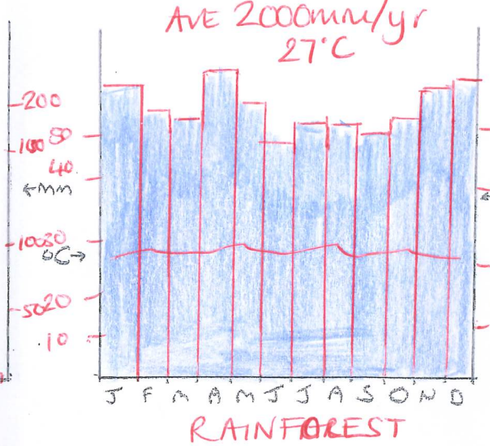
EXAMPLES

Wolves - Yellowstone National Park
↳ 70 wolves added, Elk population fell by 10,000 in 8yrs
↳ reduction in grazing pressures - Aspen regenerated
↳ River bank side stabilises. Kills increase scavengers so more bears, eagles, ravens.

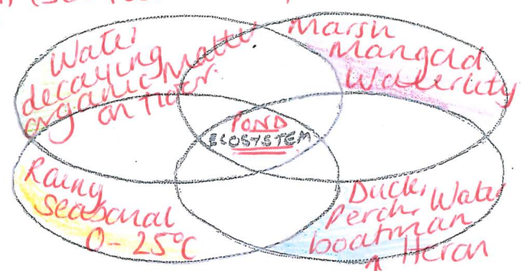
TERMS	DEFINITION:
Biotic	living thing
abiotic	Non living things.
desertification	Land turning into semi and desert conditions
Nutrient cycling	food for plants - need to be eaten + put back into the cycle.
Biome	Large scale ecosystem

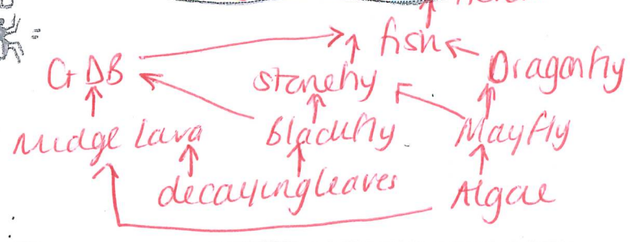




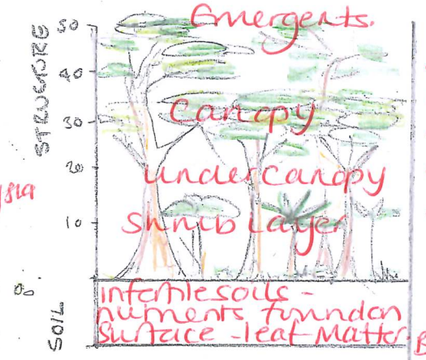


EXAMPLE
Pond, (See food Chain/ food Web)





TROPICAL RAINFOREST



Plant Adaptations:
- Drip tip leaves
- Lianas
- Buttress Roots
- Thin Bark
- Epiphytes.

Animal Adaptations:
- Poisan Dart frog Brightly covered for protection.
- Monkeys.
- Birds living in the canopy's.

DESERTIFICATION

✓ Solutions

Zai Pits
Contour Bunds } Water + Soil Management

Stove oven
Solar Pannels
Sand Dams } App technology

Afforestation + replanting trees - Africa Great Green Belt.

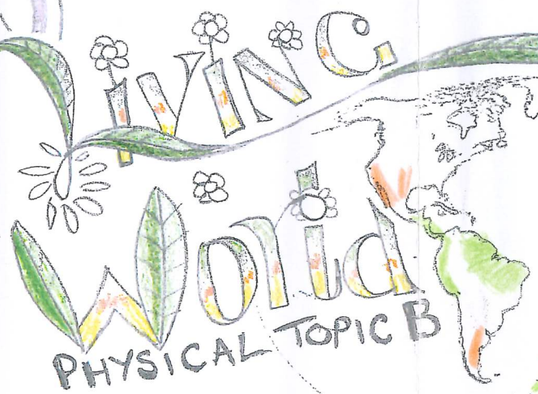
✗ Causes

Natural events eg. draught.
Poor land management eg. Over grazing
Over cultivation
Population growth

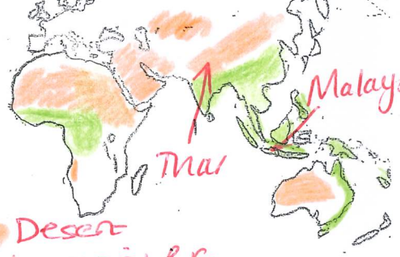
Plant Adaptations	Animal Adaptations	Soil
Xerophytes - plants which store water	Camel - Long eyelashes wide feet stores fat.	Sandy or stony with little organic matter
Empherals - lie dormant for years.	Scorpion - excellent diggers tough exo-skeleton	Dry - soak rainfall rapidly.
spikes - reduce evapotranspiration protection	can slow metabolism	white powder salty.

LIVING WORLD

PHYSICAL TOPIC B



BIOMES MAP



TROPICAL DESERT CASE STUDY = Thar where: India, Pakistan Boarder.

Mineral Extraction
↳ Gypsum / feldspar.

Tourism → Jaisalmer festival attracts people, desert safaris

Energy - Wind, solar. Wind farm in 2011. Oil found in Barmer district

Farming - Grazing / Migrating

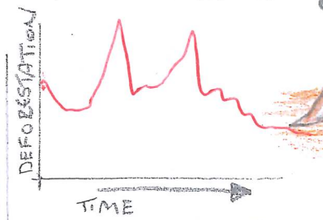
OPPORTUNITIES

Water shortages
↳ Running waters stored in tobas + johads.

Few rivers eg. River Luni
↳ Sol Indira Gandi Canal Constructed in 1958 length of 650m. Jodhpur + Jaisalmer benefit from irrigation

Accessibility a problem - high temp = tarmac melts
high wind = sand storms

CHALLENGES



CASE STUDY = Malaysia where: South East Asia

67% Covered in rainforest.

- Logging (Worlds largest exporter in 1980)
- Road building in Sarawak for access.
- Dam building - energy Bakun Dam 2011 flooded 700km2 of forests.
- Mineral Mining - tin $ Smelting. Drilling for oil in Borneo.
- Palm oil 10yr tax incentivise largest exporter of Palm oil.

CONSEQUENCES

Local
↳ Loss of local biodiversity 600 species home in Malaysia. 50,000 organtang killed.
↳ Taxes from companies imp water.

National
↳ Soil erosion - soil washed away
↳ Tourist N° decrease.

Global
↳ Contribution to climate change - Release CO_2 to atmosphere.

UK Physical Landscapes

Paper 1 Q3 and 4

Waves

CONSTRUCTIVE	DESTRUCTIVE
- Strong swash + weak back wash, sediment deposited on beach. - Crests far apart, low wave height.	Weak swash + strong back wash, sediment is removed from beach - Steep front, plunging tall, close together

Relief = height above sea level.

unsupported + gravity causes collapse

MASS MOVEMENTS

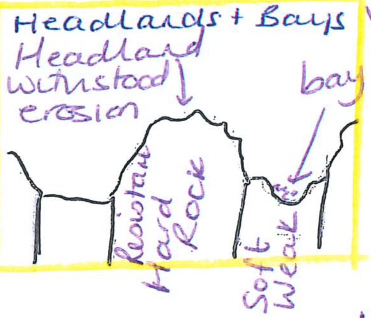
Rockfall
Rocks break away often due to freeze thaw weathering

Landslide
blocks of rock slide downhill

Rotational
Slip - slump of saturated soil + weak rock along a curved surface

Mud Flow
saturated soil + weak rock flow downhill

Headlands + Bays



Lines of weakness vulnerable to erosion

base widens.

Long Shore Drift

Swash up beach at an angle

Backwash travels straight = gravity

prevailing wind

direction of LSD.

DEPOSITION

Defn: DEPOSITION

Beach
- Sandy are found in sheltered bays by constructive waves
- high energy - pebble beaches

Sand dune
Sand trapped on obstacles, Veg.
Embro, Fore, yellow, Slack

Spit
① LSD moves sediment
② Coastline changes shape
③ Spit grows into sea → moved by wind.
④ Salt marsh

Bar
Bars form when LSD causes a spit to form across a bay.

HARD — Artificial structures to control natural process

Ex Sea Wall	Ex Groynes	Ex Rock Armour	Ex Gabions
Concrete walls curved to reflect - obtrusive - Expensive	Rock/timber - built at angle + wider beach = tourism - stop LSD knock on elsewhere	Large boulders to absorb - Cheap easy maintenance - Ugly/Exp to transport	Rock filled wire cages + Cheap, improve drainage - Last 5-10 yrs

SOFT — Methods that work with nat process

Ex Beach Nourishment	Ex Dune Regeneration	Ex Dune Fencing	Managed Retreat
Adding sand to beach + tourism, attract - constant maintenance	Marram grass to stabalise dune. + cheap, good for wildlife - easily damaged	Fence off dunes encourages formation. + protects ecosystems - Regular maintenance	Low value farmland forest or moor given a do nothing approach ↳ Allows sea to flood / erode an area

Swanage

- South Coast of England
- Contains Concordant (cliff rocks run parallel)
- discordant (alternating bands of hard + soft rock)
- Eg. Old Harry Rocks, Durdle door Arch.

Lyme Regis

- coastal town in Dorset, Europes largest landslide

Issues
- unstable cliffs
- powerful waves = rapid erosion
- damage to property

P1/2
- New sea wall
- Stabalised cliffs, wide beach, rock armour

P4 = New sea wall, cliffs stabalised.

P3 Cancelled - Cost higher than benefits

Erosion

defn: wearing away + removal of sediment

Attrition - Hitting each other + under smaller, smoother

Abrasion - pebbles thrown at bank/cliff - Sandpaper action

Hydraulic Action - Water pushes air into cracks widening them

Solution - Dissolved by reaction between rock + water

TRANSPORT

What affects transport?
- Size of pebble
- Energy in water
- Speed.

Suspension held in water column

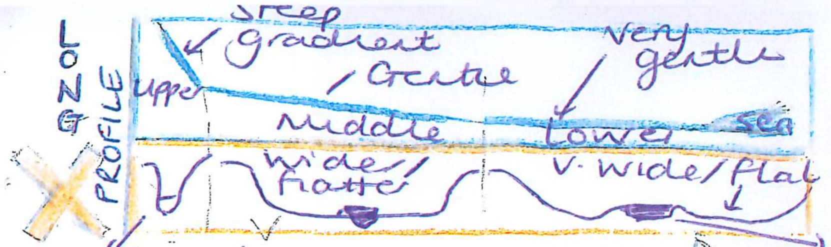
Solution = dissolved. Gone

Traction - Rolled.

Saltation = bounced

Rivers

LONG PROFILE



Steep sided V shape valley → Deposition → wide deep high sediment load

DRAINAGE BASIN

Source, Tributary, Confluence, Mouth

Edge: Watershed

WATERFALL

Hard, soft, Former position of waterfall, very turbulent water, plunge pool, undercutting of soft rock by HA + Ab.

MEANDER + OX BOW LAKE

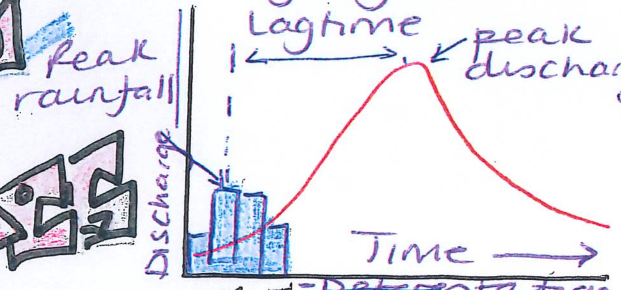
① Erosion - River cliff
② deposition - River beach
Thalweg fastest flow
takes shortest route

FLOOD PLAIN + ESTUARY

An estuary is where the river meets the sea. → affected by tides.
⇒ rivers can't flow into the sea.
↓ velocity falls, sediment is dropped.

LOWER

Hydrograph



What affects the shape?

Flash
- impermeable surfaces
- Steep slopes
- previous heavy rain - saturated soils

- trees - high interception
- flat land
- permeable rock types

Low flat

FLOOD — CAUSES

Hum.
- Deforestation
- Urbanisation increases impermeable
- Agriculture ↳ compact / exposed soil

Phys
- heavy + prolonged rainfall
- Geology - impermeable rocks
- Relief - Steep = flow fast

Managing Floods

HARD Defn: using artificial structures to prevent or control flooding

EG Embankments	EG Channel Straightening	EG Flood Relief Channel.
- Concrete levels (high walls) fit more water in the channel	- speed up flow of water - move it away from an area	Can be built to bypass an area.

SOFT Defn: working with natural process to manage flood risk

EG Afforestation	EG Floodplain zone	EG River Restoration
- trees obstruct flow of water + evaporate - Cheap + environmental	- areas close to river low value land	Restore a river to its natural course ↳ Meanders etc will slow flow

↳ if it fails flood, built

Ex. ~~Exe~~ → TEES Features + Management → BANBURY

~~Exe~~

EROSION
High force waterfall
20m drop
Hard Rock = dolerite
Soft = limestone

DEPOSITION
Levees on a OS map

BANBURY

50km north of Oxford, on the flood plain of River Cherwell

Why? 98 flooding cost £12.5million - Flood again in 2007.

What? Embankment 2.9km creating storage

A361 Raised.
Material for embankment created a reservoir