

AS Geography 1.3 Coastal Environments *Student Notes*

The impact of rising sea levels on the human use of the coastline.

You need to be aware of both actual and potential impact, illustrated by a range of examples, emphasising development issues.

The future of the Dorset Coast

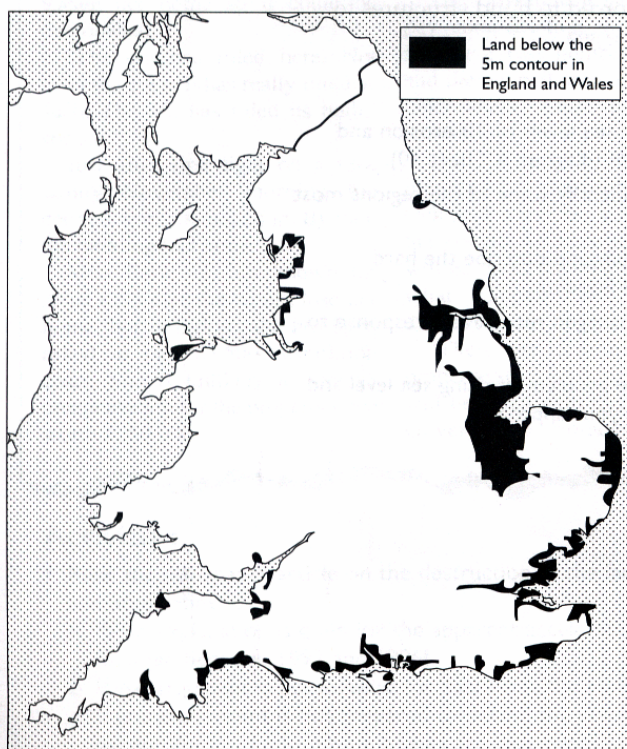
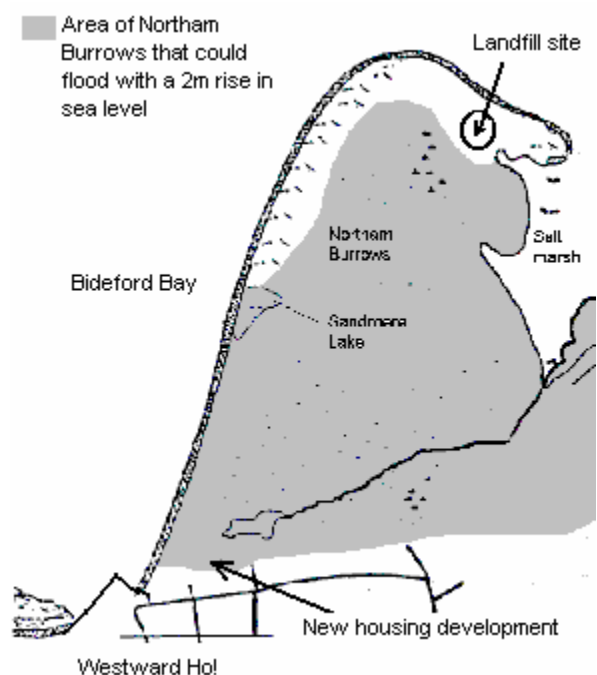
In places, the Dorset coast is also vulnerable to sea level rise. The cliffs at West Bay and Lyme Regis will be much more vulnerable to wave attack and Chesil Beach will be more prone to breaching. Widespread flooding could occur in Chichester Harbour and valuable shallow water and salt marsh wildlife habitats could be lost in Poole harbour, particularly on the northern side of Brownsea Island. However the local authority is more concerned about the effect of predicted increases in storm activity and there is already evidence of an increase in mean wave height.

The future of The North Devon Coast

Several parts of the North Devon coast are low lying and relatively unprotected from rising sea levels. This includes the extensive sand dune system at Braunton Burrows and Northam Burrows in the lee of the Pebble Ridge Spit.

In both cases, endangered plants, such as the water germander could be lost. In the case of Northam Burrows, the flooding would threaten recreational land (golf, walking, and horse-riding) and a new housing developments (the planning permission was given before the flood risk was clearly understood). An additional problem is a disused landfill site at the distal end of the spit, which could erode into the sea if coastal protection (mainly rip-rap) is not maintained.

The council is considering a policy of **managed retreat** in which the tip will be excavated and removed to an inland site. This will be costly, but less so than continued coastal protection.



In the late 1990's sea walls along the North Devon coast were raised by a minimum of 1m to protect against future flooding. Cliff erosion will also increase as protective wave-cut platforms are drowned.

The Impact on Coastal Lowlands across the UK

The map shows coastal lowland areas in Britain that will need additional flood protection as sea levels rise.

In the ecologically important Essex marshes, salt marshes have already been lost (23% between 1973 and 1990) and are concerns that marsh will be replaced by sand and gravel. Inland fresh water

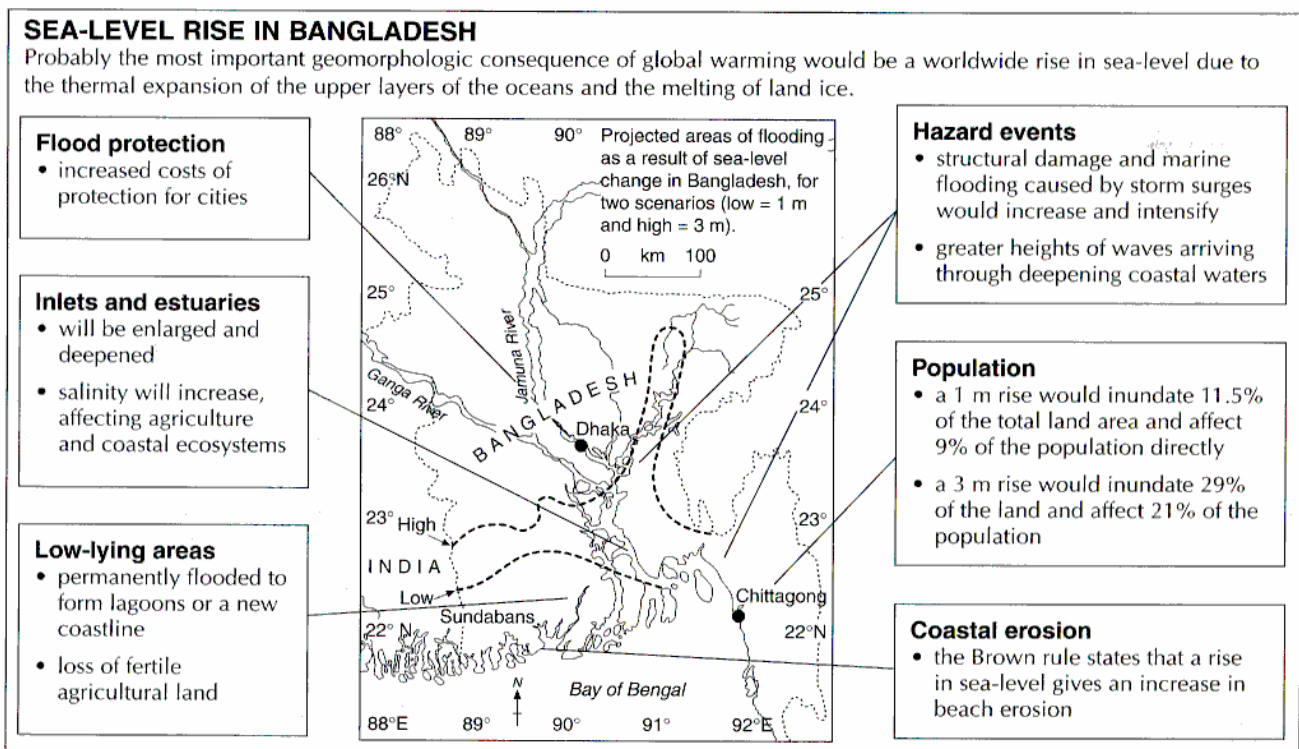
marshes may become more brackish as saltwater penetrates inland.

At Nothery Island, near Maldon, in the Blackwater estuary, an experiment in **managed retreat** is being tried in which the sea wall has been removed, allowing the sea to reclaim former marshland (once drained for farmland), creating a new natural protection. The general retreat of all flood embankments is under consideration, rather than attempting to maintain and raise sea walls at great expense.

It is also likely that coastal erosion around Britain will increase as the protective wave-cut platforms sink below the rising water at high and low tides. Wave activity will have greater access to the base cliffs. This will be made worse by the predicted increases in storm activity. The rapidly eroding Holderness coast of Yorkshire is showing an accelerated rate of erosion from 1-2 m per year in the 1970's to up to 5m per year in the 1990's. The greater frequency of major coastal landslides, such as that at Beachy Head in January 1999 is also blamed on global warming. In this one event, a slab of cliff 15m wide and 200m and 150m high, fell into the sea. This was aided to the increased weight of the cliff blamed on heavy winter rain: another symptom of global warming.

The Impact of Future Sea Level Rise on Bangladesh

The problems associated with global warming in a low lying country like Bangladesh are complex and potentially widespread as much of the country is only 8m above sea level.



The Impact of Sea Level Rise on the Maldives

The Maldives is a group of about 1200 islands formed into an archipelago in the Indian Ocean. 200 islands are inhabited. The population is about 270,000 and the main sources of employment are tourism and fishing. Most land is within 2m of sea level. Even a 0.5m rise in sea level, predicted this century will cause major problems for the inhabitants, particularly in tropical cyclones, which create huge storm waves accompanied by 4-5m storm surges. Not only would the delicate ecological balance of the islands be threatened but also the islands could be "wiped-out", according to their president Maumoon Abdul Gayoom. The 270,000 inhabitants could become "global warming refugees".

It is worth noting that the traditional lifestyle of the people of the Maldives makes a negligible contribution to global warming.