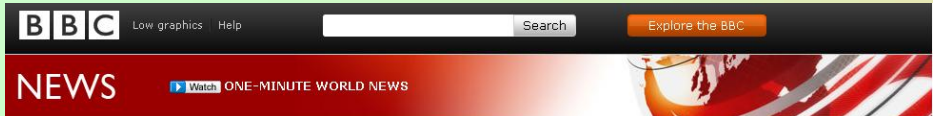
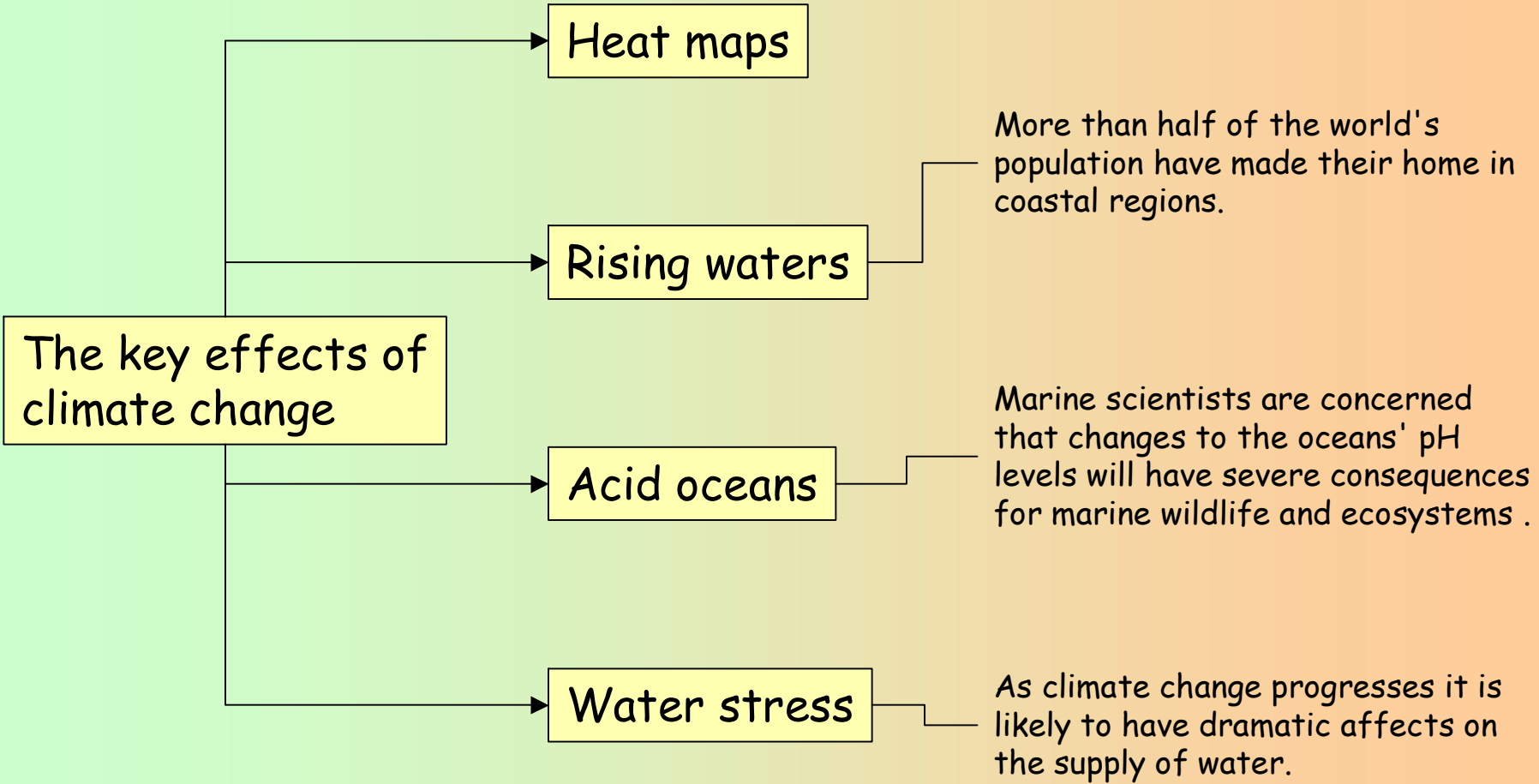


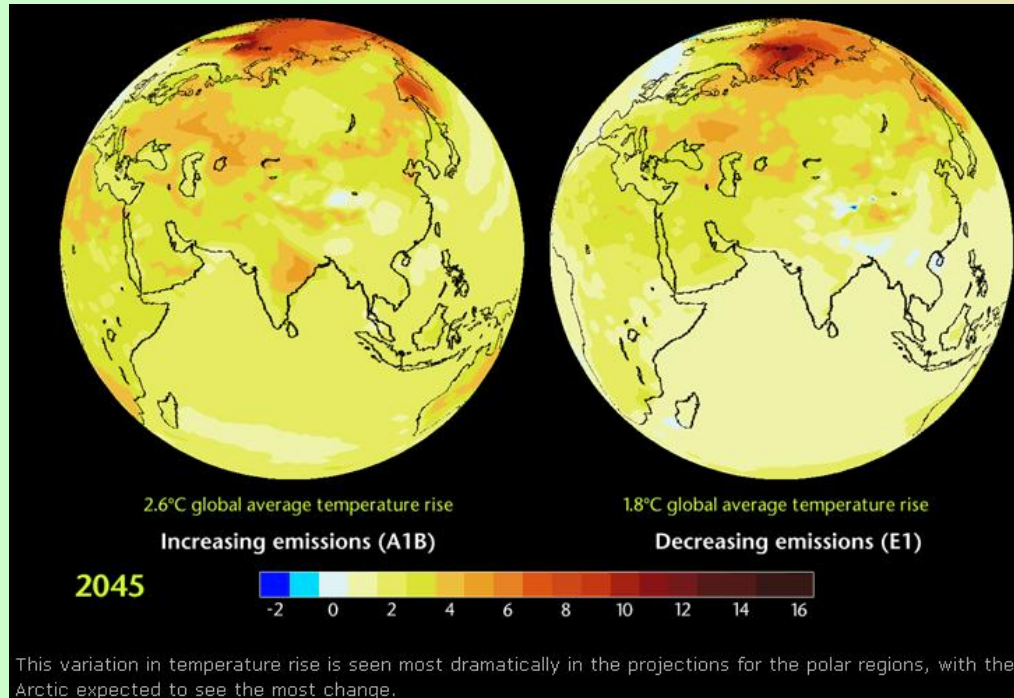
# The key effects of climate change



# The key effects of climate change

The key effects of climate change

Heat maps



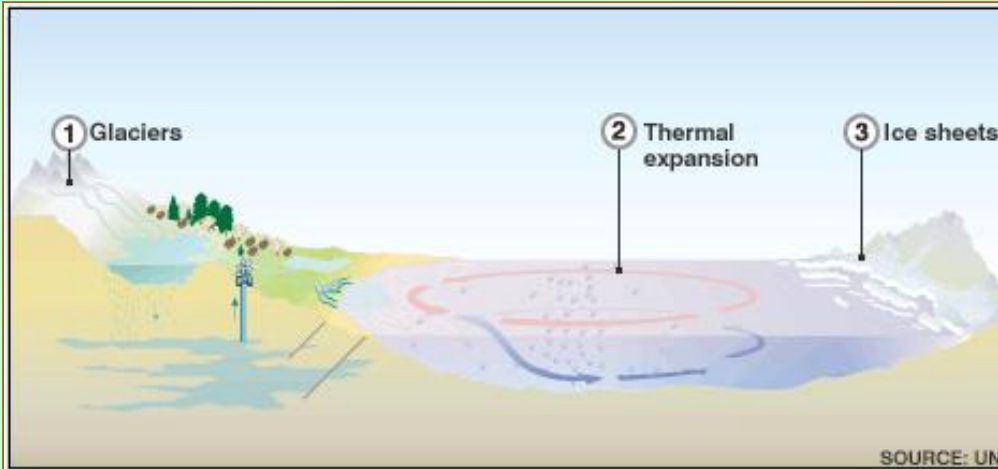
The scenario on the left assumes a bussines as usual approach to carbon dioxide emissions, with growth in the population, the economy and in fossil fuel use, leading to an approxiamte rise of 4 C by 2100.

The variation in temperature rise is seen most dramatically in the projections for the polar regions, with the Artic expected to see the most change.

# The key effects of climate change

The key effects of climate change

Rising waters



- ♦ **Glaciers:** If the world's mountain glaciers and icecaps melt, sea levels will rise by an estimated 0.5m
- ♦ **Thermal expansion:** The expansion of warming oceans was the main factor contributing to sea level rise in the 20th Century, and currently accounts for more than half of the observed rise in sea levels
- ♦ **Ice sheets:** These vast reserves contain billions of tonnes of frozen water - if the largest of them (the East Antarctic Ice Sheet) melts, the global sea level will rise by an estimated 64m

More than half of the world's population have made their home in coastal regions.

For many low-lying areas, scientists warn that the coming century is likely to see sea level rise that will change the shape of coastlines around the globe.

Many small island nations are at risk of disappearing beneath the waves.

# The key effects of climate change

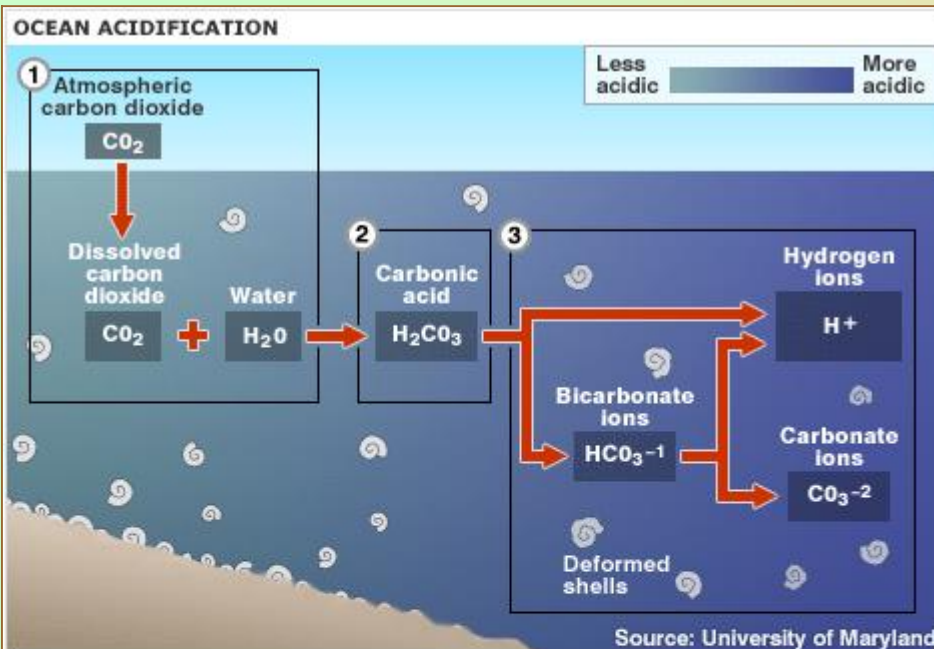
The key effects of climate change

Acid oceans

Ocean acidification is a term used to describe the changes in the chemistry of the world's seas, primarily as a result of burning fossil fuels.

Marine scientists are concerned that changes to the oceans' pH levels will have severe consequences for marine wildlife and ecosystems.

The oceans have absorbed up to half of this excess CO<sub>2</sub>, which has resulted in changes in the chemistry of surface seawater.



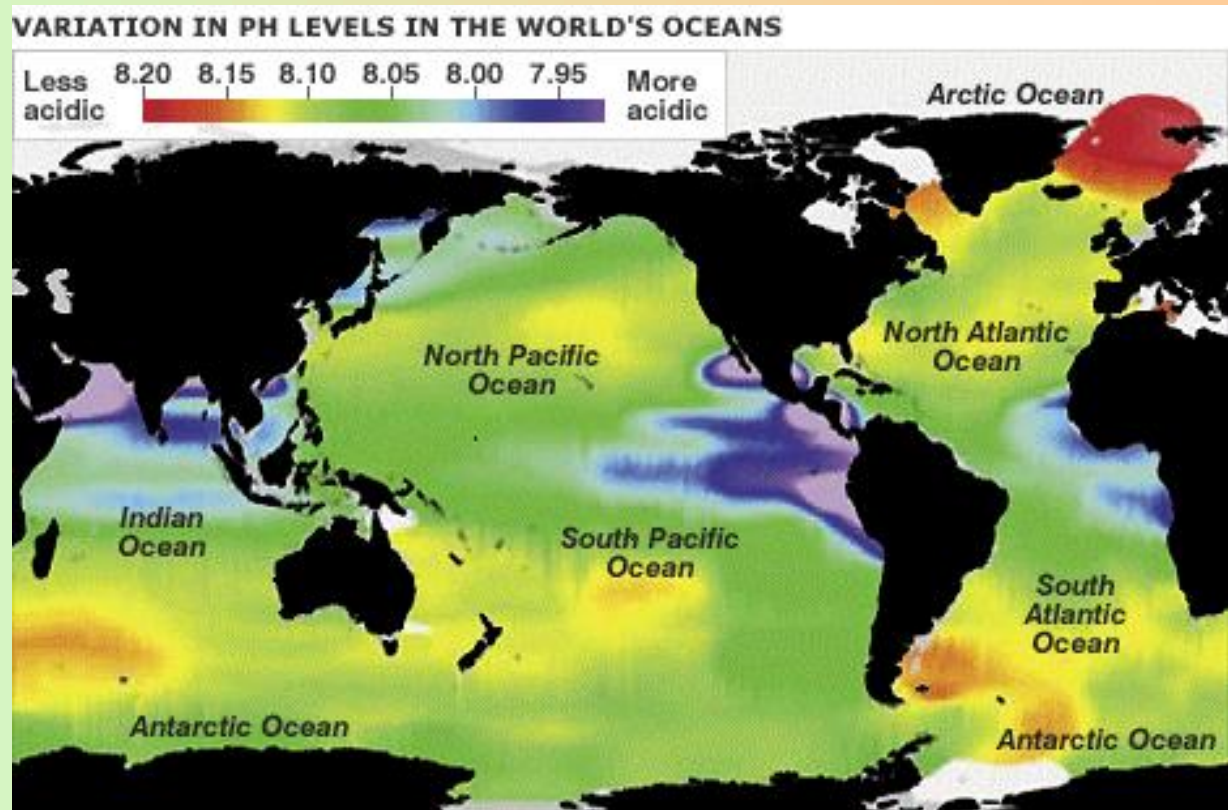
1. Up to one half of the carbon dioxide (CO<sub>2</sub>) released by burning fossil fuels over the past 200 years has been absorbed by the world's oceans.
2. Absorbed CO<sub>2</sub> in seawater (H<sub>2</sub>O) forms carbonic acid (H<sub>2</sub>CO<sub>3</sub>), lowering the water's pH level and making it more acidic.
3. This raises the hydrogen ion concentration in the water, and limits organisms' access to carbonate ions, which are needed to form hard parts.

# The key effects of climate change

The key effects of climate change

→ Acid oceans

The pH of the world's oceans is not consistent across the globe. Areas with relatively low pH (the purple areas on the map above), such as the eastern Pacific, could be the result of the upwelling of deeper, colder, CO<sub>2</sub>-richer waters.



# The key effects of climate change

The key effects of climate change

Water stress

