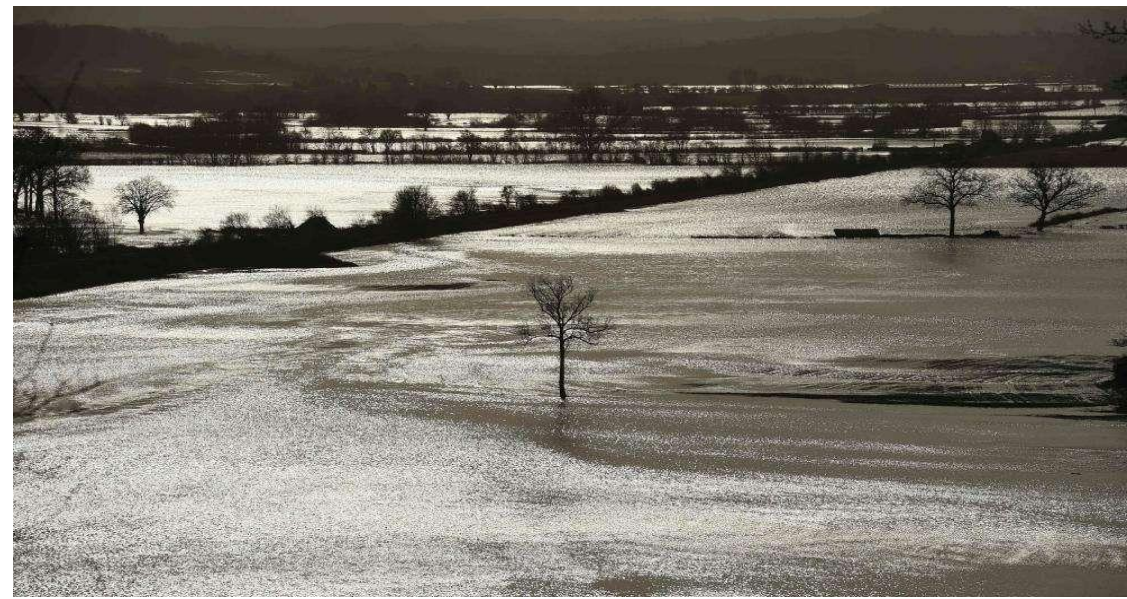


An aerial photograph showing a residential neighborhood completely inundated with muddy, brown floodwater. Several houses with grey roofs are visible, with water reaching their windows. In the foreground, a parking lot is filled with cars partially submerged in the water. A road on the left has yellow lane markings and some text, including 'ONE WAY' and 'STREET'. The water appears turbulent and carries some debris.

The Carbon Cycle and Climate Change in Environment

Carbon Dioxide

- Greenhouse gas
- Flux between ocean, land and the atmosphere:
 - Land – living biota; decaying organic material
 - Ocean – dissolved CO₂; small creatures
- Deep ocean largest reservoir:
 - 40,000 Gt C cf. 2,000 Gt C on land, 1,000 Gt C in upper ocean and 750Gt C in atmosphere



Global Carbon Cycle

1. Terrestrial Cycle

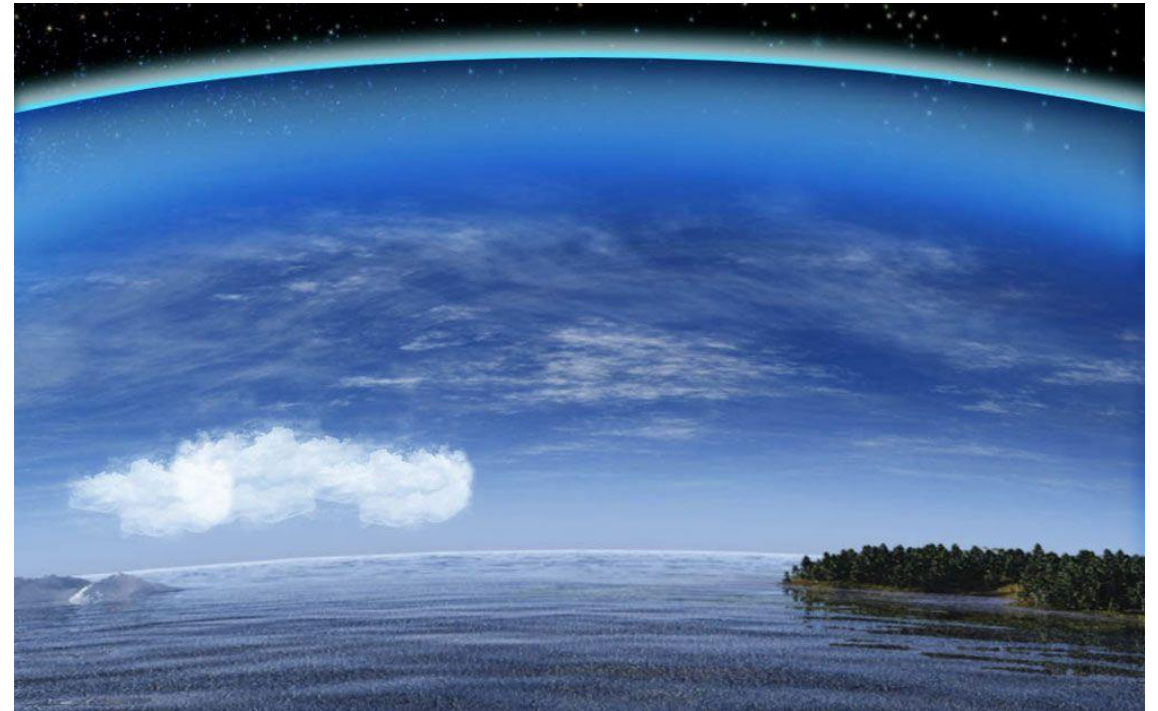
- Photosynthesis
- Soil carbon – respiration
- Varying carbon sinks
- Human activity effects
- 1950's – fossil fuel emissions exceed land use change



Natural vs man-made?

NATURAL:

- Fluctuation of internal mechanisms
 - El Nino
- Volcanic eruptions
- Solar Radiation
- Geological shifting continents/rising mountainous regions



Natural vs man-made?

- ANTHROPOGENIC:
 - Greenhouse gases (trap heat and also reflect or absorb sunlight)
 - Changes in Land-use
 - Albedo effect



What are we seeing so far?

- IPCC (Intergovernmental Panel on Climate Change) – 1°C increase since industrial age
- 0.2 °C increase per decade with increasing ghg emissions
- 90% additional heat trapped in atmosphere is absorbed by oceans
- Reduction in Arctic sea ice
- Increase in extreme weather events
- Drought/wildfires
- Break up of Antarctic ice shelf
- Sea level rise

Is there room for doubt?

Antarctica has logged its hottest temperature on record, with an Argentinian research station thermometer reading 18.3C, (Feb 2020) beating the previous record by 0.8C (Readfearn, 2020)

.... Yet still some politicians refuse to acknowledge there is a problem!



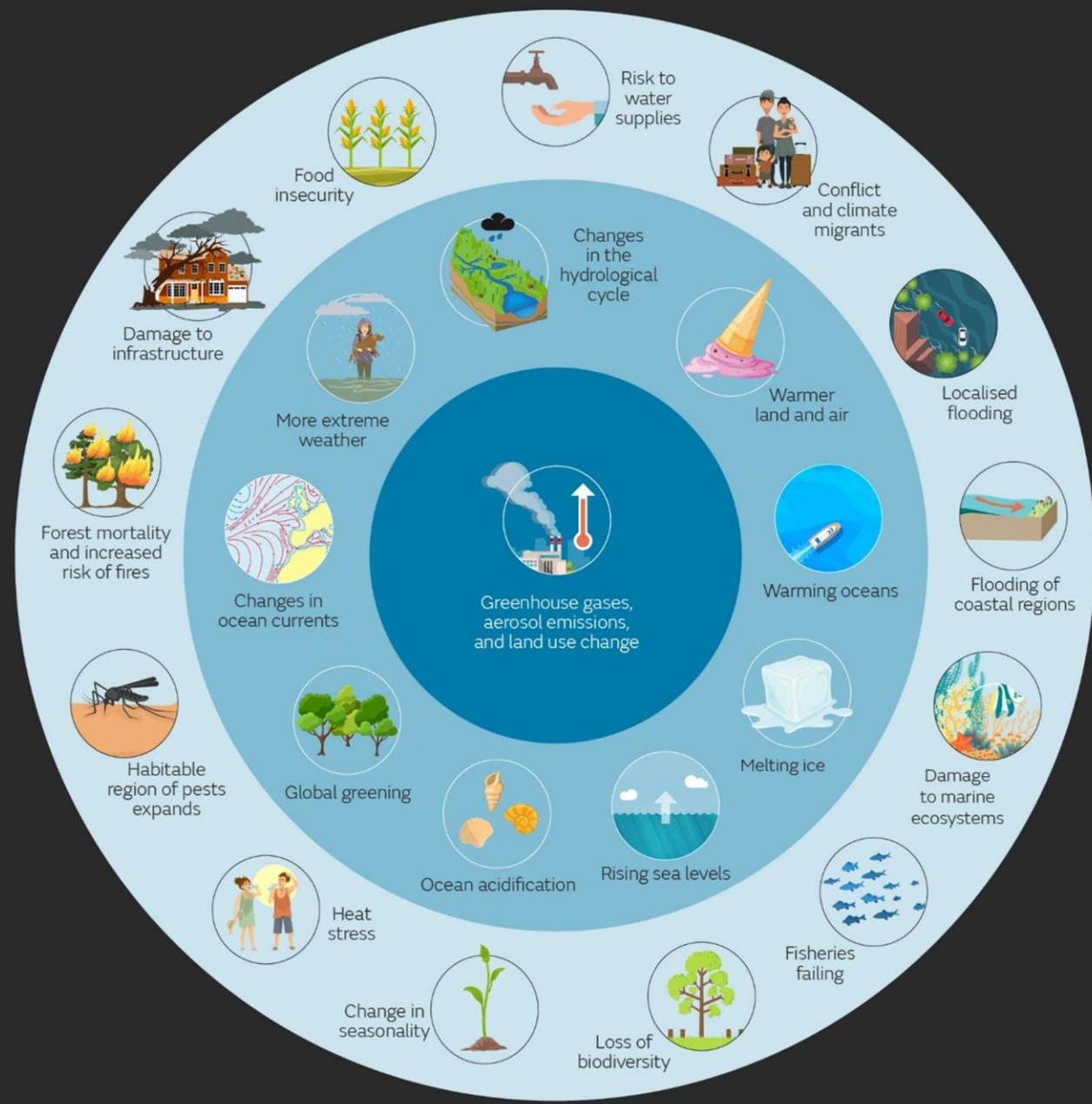
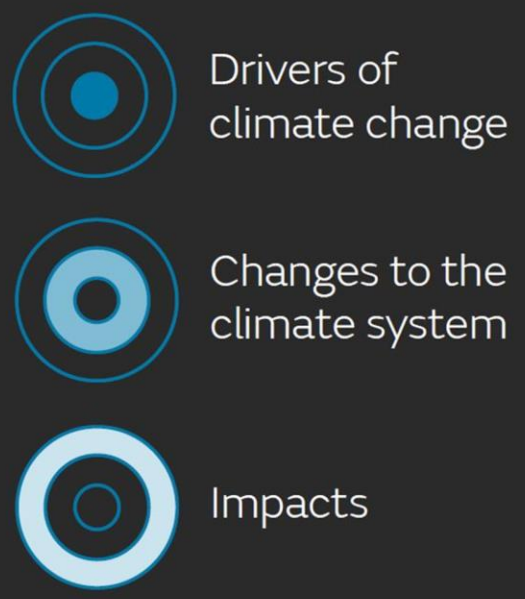
DRIVERS



CHANGES



IMPACTS



Workshop & Discussion

- To be able to construct suitable climate policies, we must first understand the science and driving forces
- Following the showing of the documentary: "Atlantic Conveyor" you will each research a separate area for discussion next week in class.
- The documentary is deliberately old (>10years old) so that you can make a judgement on how things have changed since it was produced.



His 1975 paper *Climatic Change: Are We on the Brink of a Pronounced Global Warming?* is widely credited with coining the term "global warming".

Workshop Topics

1. Sea level rise and coastal vulnerability (Dan)
2. Ecological evidence of climate change
3. Economic and community vulnerability
4. Current policies and strategies implemented in the UK
5. Climate change is not happening!
6. Evidence of terrestrial change (Becks)

Be evaluative – use published evidence to defend your argument. This will be an open discussion next week but if you want to use a presentation you may do so.

