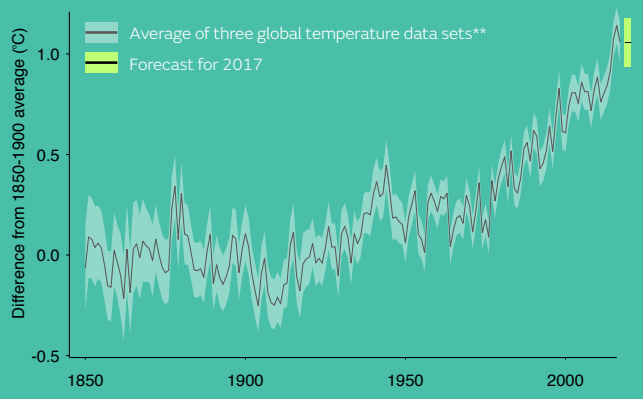
Met Office

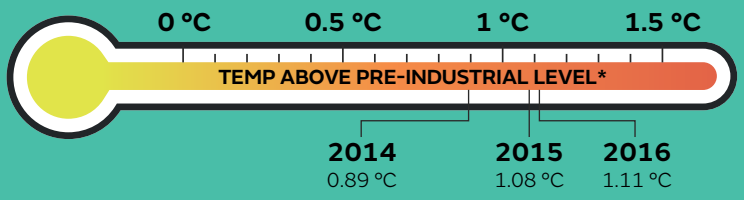
Our changing world - global indicators

Global temperature

2016 was the second year in a row where global temperature was more than 1°C above pre-industrial levels*



2014, 2015 and 2016 all saw record global temperatures.
2017 is on track to be one of the top three warmest years on record.



*Taken here as the 1850-1900 average
**GISTEMP (NASA), NOAAGlobalTemp (NOAA), HadCRUT4 (Met Office & Climatic Reasearch Unit)

15 of the 16 warmest years on record have occurred since 2000.

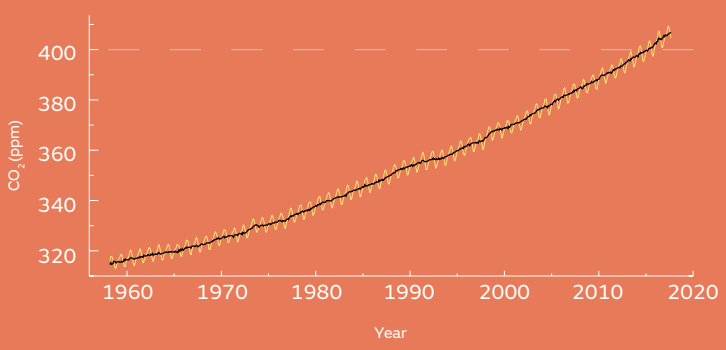
Animated chart shows years appearing from coolest to warmest, according to HadCRUT4 dataset.

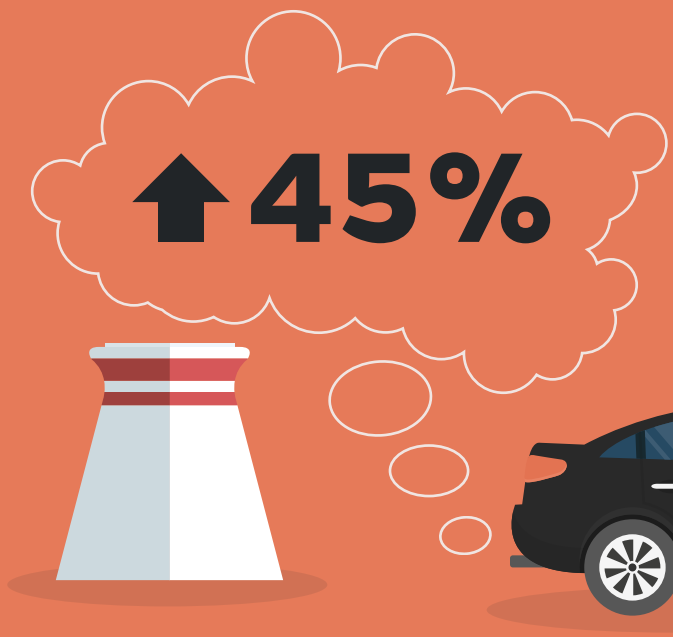
Greenhouse gases

2016 was the first year in modern records where surface CO_2 stayed above 400ppm for the entire year.

Atmospheric concentration of CO_2 has risen by about 45% since pre-industrial times***

Full Mauna Loa CO_2 record



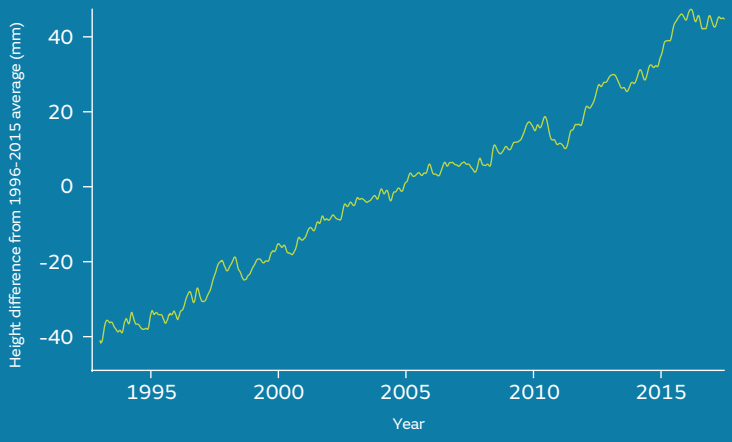


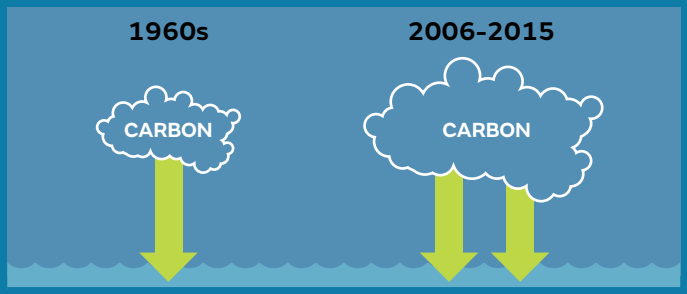
***Relative to preindustrial value of 280 ppm

Ocean

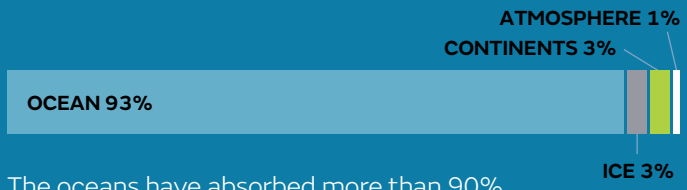
2016 annual average sea level was the highest in the satellite altimetry record (1993–present), rising to 82 mm above the 1993 average.

Global mean sea level change 1993 - Jun 2017



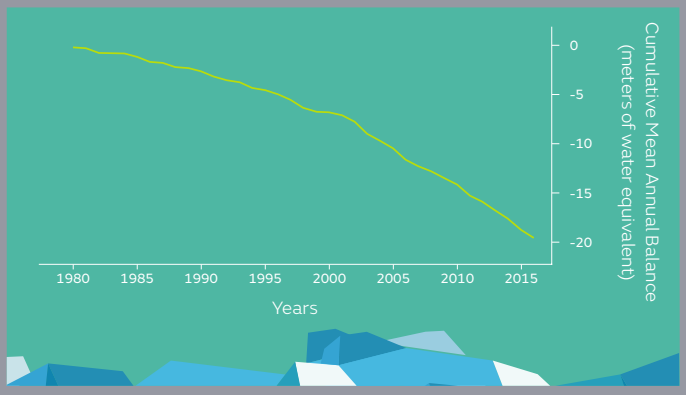


The rate of carbon uptake from the atmosphere by the ocean has more than doubled since the 1960s.



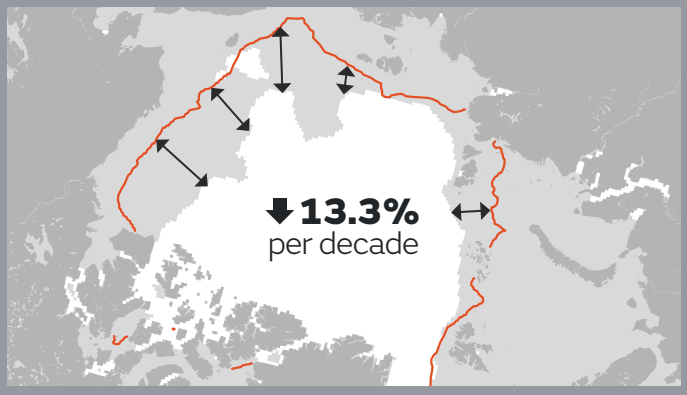
The oceans have absorbed more than 90% of the excess energy coming into the earth system due to increasing levels of greenhouse gases.

Ice



Glaciers have lost ice for the 37th successive year*

*Based on 41 reference glaciers



The summer minimum Arctic sea ice extent decreased by 13.3% per decade from 1979 to 2016*

*Relative to the 1981 to 2010 average extent of 6.38 million km2

Weather

More than 150 studies have been carried out looking at whether human influence on the climate contributed to specific extreme weather events.

Almost all studies related to extreme heat indicate human influence. This is consistent with IPCC AR5 findings that it is very likely human influence has contributed to observed global scale changes in the frequency and intensity of daily temperature extremes since the mid-20th century.

A smaller but increasing number detect a human influence in rainfall extremes. This is consistent with IPCC AR5 findings that it is likely anthropogenic influences have affected the global water cycle since 1960.

You can read more about how extremes have changed in our briefing note on extremes.