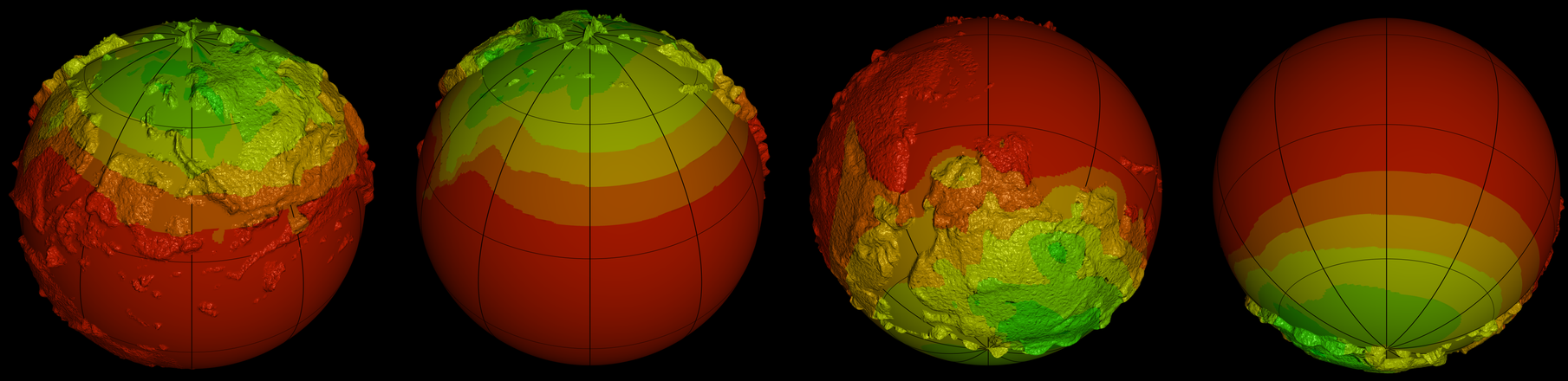
Our Changing Earth

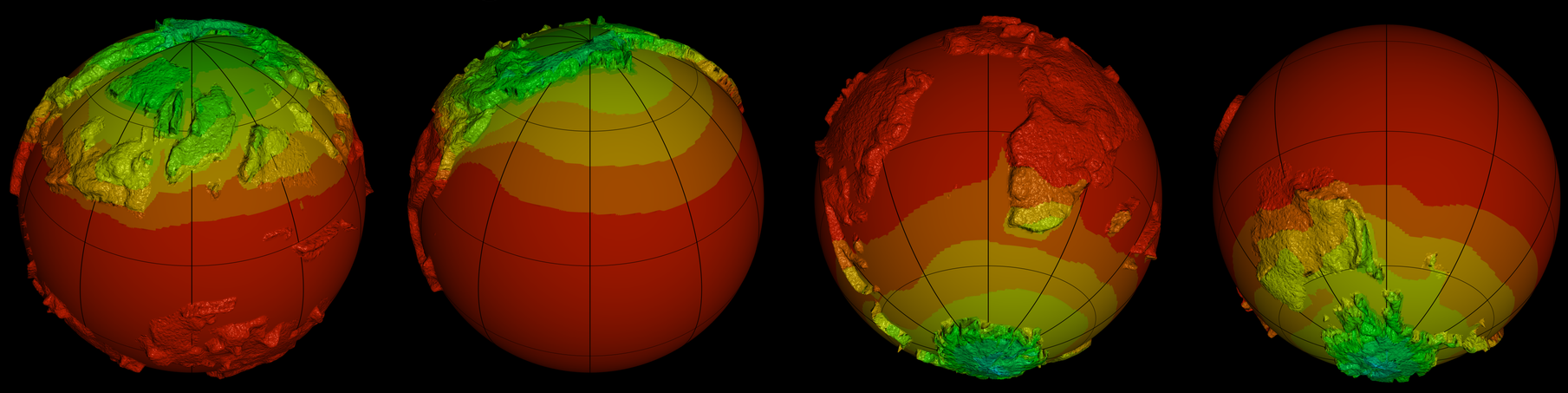
165 Million Years Ago



Earth's continents move around through time, floating on the underlying molten rock of the mantle. During the Jurassic, the continents were in very different positions than they are today, all bunched up into a single landmass called Pangaea. The climate was also very much warmer than today.

Q: Can you find where Britain was 165 million years ago? Can you imagine why geologists today find rocks in eastern Canada that are almost identical to rocks found in Scotland?

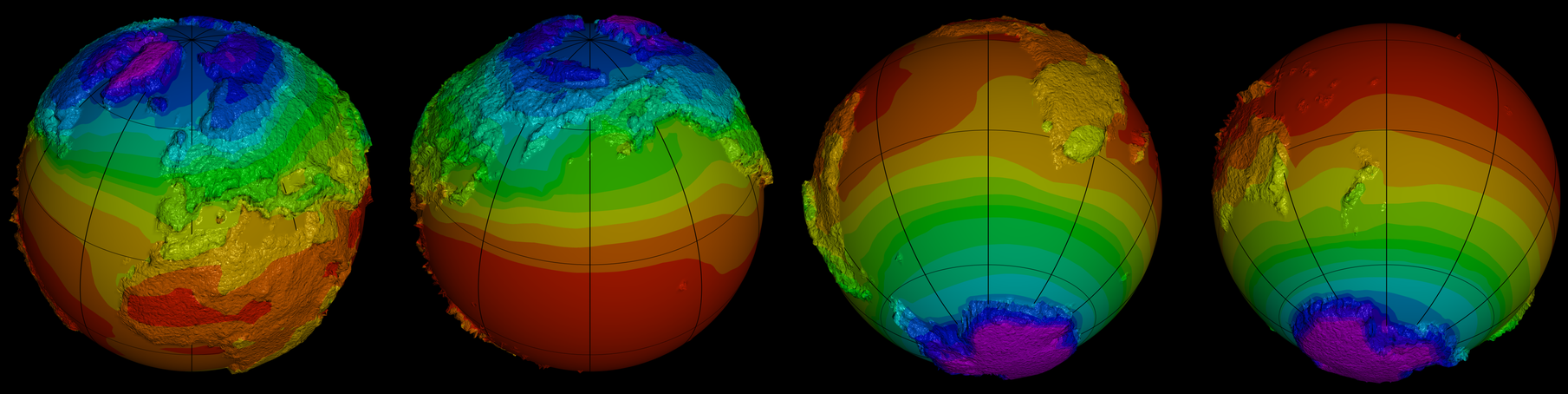
65 Million Years Ago



Around 65 million years ago, a huge meteorite smashed into Mexico, producing the Chicxulub Crater. Dust generated by the impact contributed to the extinction of the dinosaurs, along with a lot of other species. During this period, the climate was cooling from its earlier peak greenhouse conditions - scientists think that this cooling was accelerated by the dust put into the atmosphere by the meteorite impact.

Q: How do you think a meteorite impact can cool the Earth? What other sort of event, more common than meteorites, might have the same sort of effect?

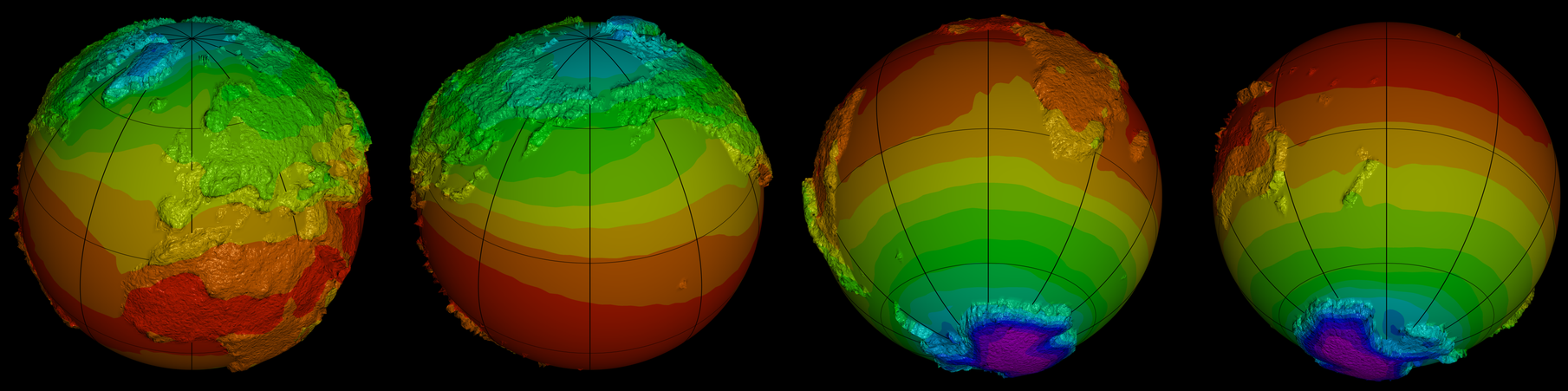
21,000 Years Ago



Periodically over the last 2.75 million years, the northern continents of America, Europe and Asia have been covered with vast ice sheets, kilometres thick. The Last Glacial Maximum, 21,000 years ago, was the last time these ice sheets were at their peak. In the U.K., the ice covered all of Scotland, much of Wales and reached as far south as Oxford in England. The scouring of the ice sheets shaped the present landscape of many regions of the country.

Q: Sea level was 120 metres lower at the Last Glacial Maximum than it is today. Can you work out why?

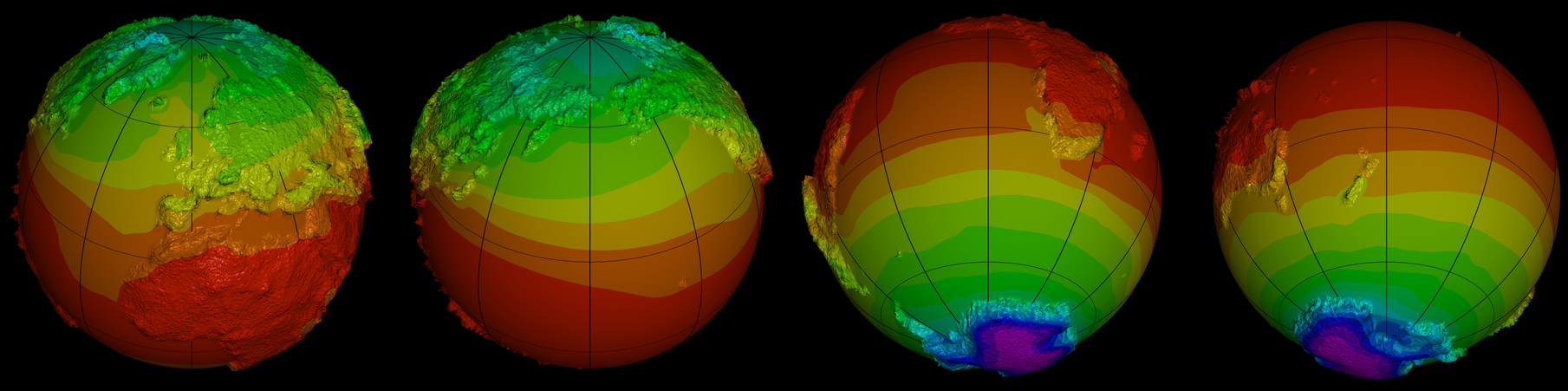
Present Day



Today, we face great uncertainty over the future of the climate. We burn huge amounts of fossil fuels, pumping carbon dioxide into the atmosphere. This acts as a blanket, warming the Earth. Carbon dioxide concentrations are now higher than they have been for over 400,000 years, and are rising quickly. Global temperatures are also rising quickly, more quickly than they have ever done in 4.6 billion year history of the Earth.

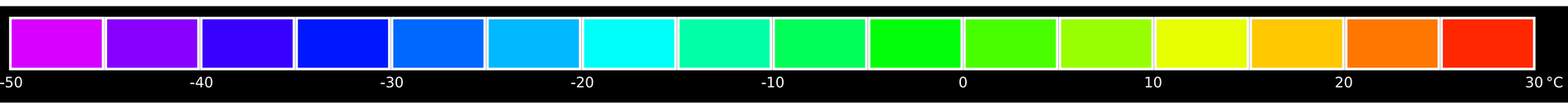
Q: Why are people so worried about global warming? Won't it be good for us here in the U.K.? We'll have warmer winters! Doesn't global warming benefit us?

A Possible Future?



Glaciologists studying the Greenland ice sheet have found that there is increased melting of the ice surface during the summer. If the ice sheet melted, the water released would raise sea levels by 6 metres. The images here show a possible future if this happens and if we continue to burn fossil fuels at the rate we are currently doing so.

Q: Imagine what would happen to Bristol and the surrounding areas if sea level rose by 6 metres.



The same colour scale is used to represent annual average temperature in each picture above.

University of BRISTOL

BRIDGE (the Bristol Research Initiative for the Dynamic Global Environment) is a research group of the School of Geographical Sciences of the University of Bristol

Climate simulations performed by Prof. Paul Valdes and Dr. Dan Lunt. Data visualisation and poster design by Ian Ross.