Climate through time

Our rocks reveal the story of change

Earth's climate is predicted to change rapidly in ways that could have serious consequences for humanity. However, the climate has varied throughout the billions of years of Earth’s geological history. Rocks record evidence for past climates including the extreme conditions that have been linked to mass extinctions. “The present is the key to the past” is a vital principle of geology. As geological understanding improves, we are better able to forecast the impact future change may have on us — the past is the key to the future.

Many environments, and therefore the rocks formed in them, are directly influenced by climate. On this poster each environment is represented by a particular colour. Change areas on the map, for instance, show where rocks that formed in ancient deserts may now be found. On the timeline, orange represents those geological periods when the climate was hot and humid in Britain and Ireland. The same colour is used to highlight photographs of a present-day desert and examples of ancient desert conditions.

In other areas, however, rocks are formed by geological processes independent of climate. For example, granite intrusions, shown in red are formed during episodes of tectonic activity, independent of surface conditions. The formation of some rocks may influence climate. For instance, thick sequences of coal ‘laced’ with atmospheric carbon dioxide as they formed. This greenhouse gas is now being released as we burn fossil fuels such as coal and oil. As another example, ash from volcanic eruptions can block the Earth’s rays and cause global cooling.

On the map, letters in each coloured region refer to the age of the rocks, as shown in the timeline, the ancient rocks in areas marked “I” are of Jurassic age, while “T” represents rocks of Permian to Triassic age.