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# Category:Palaeo-environment of the Chalk Group

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**The following account is largely based on Gale (2000)**

In the Late Cretaceous the Earth is inferred to have had a Greenhouse Climate, with rapid global warming in response to strongly elevated levels of atmospheric carbon dioxide. Volcanic eruptions connected with sea-floor spreading in the Pacific are thought to have caused carbon dioxide levels to exceed four times their current values, so that even high latitudes enjoyed relatively mild conditions. Temperatures probably peaked in the Late Cenomanian, when maximum sea-surface temperatures in southern England probably reached 28°C. Immediately prior to this, Chalk Group deposition included a significant clay component, probably derived from terrestrial run-off, but with the Late Cenomanian peak in global sea levels (probably in response to Mid Ocean Ridge spreading of the proto Atlantic Ocean) and increasing aridity of the climate, clastic sediment supply dwindled allowing deeper water chalk sedimentation to extend onto the flooded continental margins. The result is the immensely pure white carbonate that is so synonymous with the word 'chalk', and which in the Late Cretaceous blanketed much of north-west Europe, and spread as far as central Asia.

The global deposition of organic-rich black shales at the Cenomanian/Turonian boundary, coincident with a global temperature peak, reduced the amount of carbon available for oxidative recycling, and probably in turn caused a reduction in atmospheric carbon dioxide which triggered global cooling in the Late Cretaceous (Jenkyns et al., 1994).

Historically there has been much debate about the depth of the Chalk Sea, many earlier workers speculating that very deep water conditions were likely. However many lines of evidence, notably the abundance and diversity of benthonic macrofossils, suggests that this was not the case. A depth of 200–600 m seems most likely, though probably shallower over structural highs (Wood, 1996).

## References

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