



## **The mid-Pliocene climate of the southern North Sea area**

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The southern North Sea area experiences a cool-temperate climate at present. Elements of the biota of the mid-Pliocene Coralline Crag Formation (eastern England) point to warm-temperate (or even subtropical) conditions in the area then. However, oxygen-isotope sclerochronology of Coralline-Crag bivalves indicates that winter seafloor (and surface) temperatures were little different from present, and summer seafloor temperatures sometimes lower than now. The low isotopic summer temperatures were previously thought to reflect a sub-thermocline depositional setting, with summer surface temperatures significantly higher than present. New isotopic data from the approximately age-equivalent but shallower-water Lillo Formation of Belgium indicate, however, that both winter and summer surface temperatures were similar to now in the southern North Sea area. The sampled shells from the Lillo Formation probably span a wider range of mid-Pliocene time than those from the Coralline Crag Formation, suggesting that cool-temperate intervals were a significant feature of mid-Pliocene climate history in the southern North Sea area. These intervals (apparently a departure from predominant warm-temperate conditions) may be a reflection of Milankovitch cyclicity or changes in oceanic heat supply.