



HARROW & HILLINGDON GEOLOGICAL SOCIETY

A Local Group of the Geologists' Association

Founded 1973

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2024 Geo-futures

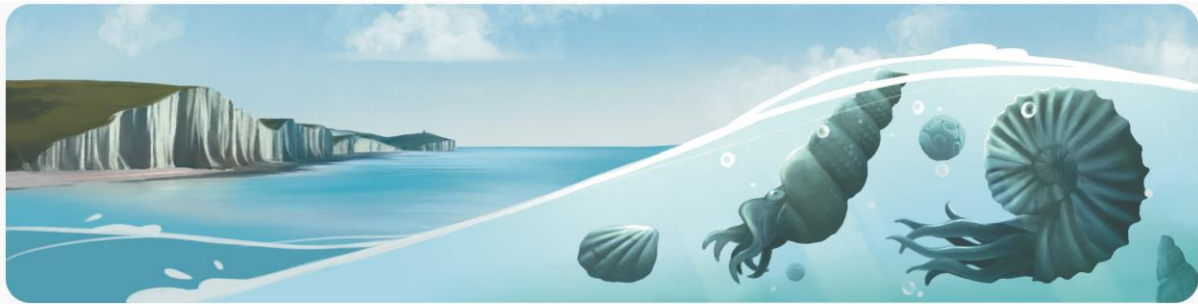
A series of talks showcasing advances in the research and practice of geology.

Non-members, please register by email: contact@hhgs.org.uk

Wednesday 13th December 2024 at 8pm on Zoom

“Chalk Seas Environment Project”

by Dr Charles Underwood (Birkbeck, University of London)



ChaSE

As our planet continues to warm, scientists are increasingly turning to the fossil record to help understand what marine ecosystems look like and how they were able to function under extreme climate change. One past warming event occurred in the Late Cretaceous about 94 million years ago and is

recorded in the British Chalk. Known as the Cenomanian-Turonian Boundary Event, it led to global extinctions and the highest sea levels of the past 250 million years.

ChaSE will investigate how marine ecosystems responded to, and were shaped by, this event in unprecedented detail, using the vast and untapped chalk fossil collections of the Natural History Museum, coupled with new fieldwork and a novel method of measuring past temperatures. Chalk pits and quarries provide a dense network of study sites, enabling us to see how Chalk Sea ecosystems changed in space and time in far more detail than for any other past warming event. Fossils from these sites have been collected for over 200 years and most are housed in the Natural History Museum.

One reason why this ‘whole ecosystem’ archive has not been studied before is that most specimens collected in the 1800s lack details of exactly which part of the chalk they came from, and whether they were alive before, during or after the warming event. We have shown recently, however, that it is possible to extract dust-sized nanofossils from the chalk rock that still adheres to the larger fossils, and to use these plankton to date the specimens. This opens up the fossil collections for study in a way that has not been possible before.

In this talk, Dr Charles Underwood will focus on what the ChaSE project can tell us about sharks in the Chalk Sea ecosystem.



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Dr Charles Underwood, Birkbeck, University of London
(ChASE Project Partner)

I grew up on the Dorset coast surrounded by fossils and was fascinated by them from an early age. After a degree in Geology at the University of Exeter, and a PhD on fossil preservation at the University of Bristol, I went to the University of Liverpool where I started exploring the Cretaceous rocks of Yorkshire for fossil sharks, and realised how poorly known these were.

Moving to Birkbeck College, London, where I have been based for over 20 years, I expanded my research into sharks and their relatives to include both modern and fossil sharks. I have continued to study sharks of the Mesozoic, both in the UK and abroad, as well as their palaeoecology and palaeoenvironments, alongside wider ranging research on the evolution and development of teeth in sharks.

