HARROW & HILLINGDON GEOLOGICAL SOCIETY

A Local Group of the Geologists' Association *Founded 1973*

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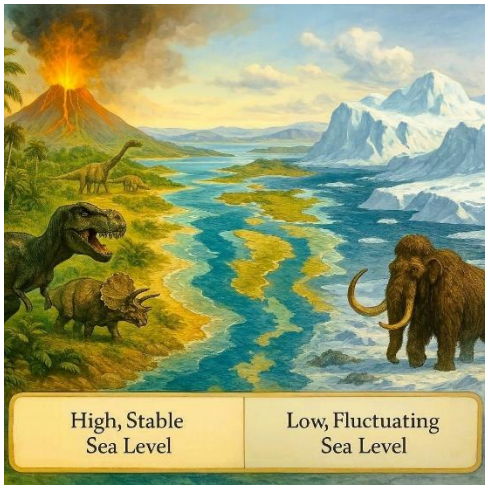
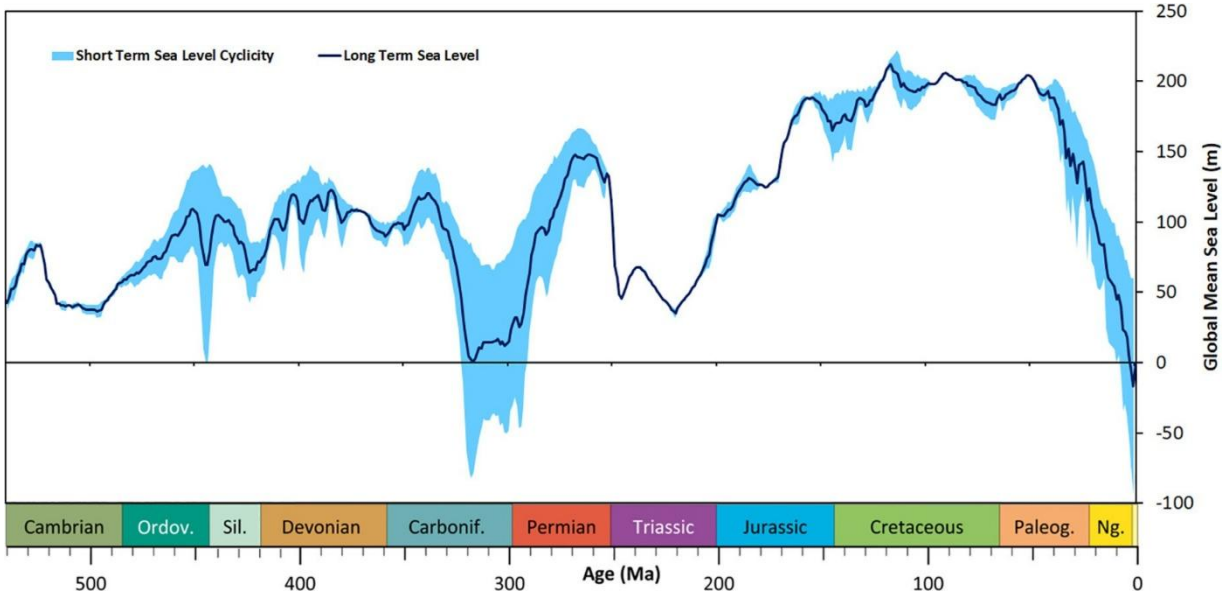
Wednesday 11th February 2026 at 8pm on Zoom

"A billion years of sea level change due to changes in plate tectonics and ice caps."

By Dr Douwe van der Meer (Harrow & Hillingdon Geological Society)



Traditionally, long-term global mean sea-level curves were derived from stratigraphic analyses. However, these methods have proven unreliable due to the significant influence of local and regional processes. An alternative approach based on strontium and oxygen isotopes has been developed, thereby estimating mid-ocean ridge spreading and land ice volumes. This resulted in a combined sea level reconstruction, a.k.a. the Tectono-Glacio-Eustatic (TGE) curve. At first the TGE curve was defined only for long-term (>1 Myr) timescales, but most recently also maximum amplitudes of short-term variations (Milankovitch-cyclicity, <<1 Myr) were derived.



The TGE curve is subsequently tested on the Scotian basin, the oldest Atlantic passive margin, and it if found that eustasy can explain the observed stratigraphic mega-sequences as being the dominant driving force on sedimentation. In addition, inferences are made further back in time into the Neoproterozoic, and Snowball Earth.

Dr Douwe van der Meer

Douwe van der Meer obtained his MSc in Geophysics from Utrecht University in 2002. He continued research in plate tectonics and mantle dynamics part-time whilst being employed as an explorer in the oil and gas industry. His research specialties covers mantle structure interpretation, Earth systems history, and their correlations with stratigraphy of basins. Douwe was granted a PhD cum laude in 2017, and more recently in 2023 a Best paper award and medal for his research on paleo-sea level.

Douwe van der Meer at Harefield Pit SSSI Geoconservation Day, 21 March 2025