

**Saturday 8 April**      **Lulworth Cove and east to Worbarrow Bay**  
*Professor Maurice Tucker, University of Bristol and  
Bath Geological Society*

Highlights include the Cove itself, Stair Hole and the Fossil Forest, before a walk along the cliffs towards Worbarrow Bay to the east. At Lulworth we will see the Upper Jurassic - Lower Cretaceous strata: tectonics, stratigraphy, sedimentology and palaeontology. Portland stone; Purbeck beds: stromatolites, collapse breccias from evaporite dissolution, lacustrine limestones with bivalves and gastropods; the Wealden: fluvial sandstones and palaeosoils; the Greensand and the Chalk. Also spectacular folds and faults.

*Travel to be advised; see website. Strong footwear and packed lunch will be needed.*

**Saturday 7 October**    **Ogmore and Southerndown**  
*Dr. Geraint Owen, Swansea University*

Mesozoic rocks unconformably overlie Upper Palaeozoic rocks in the Vale of Glamorgan. The rock units and their relationships are superbly exposed along the spectacular Glamorgan Heritage Coast. Highlights include richly fossiliferous Carboniferous Limestone and Blue Lias (early Jurassic); marginal facies of the Mesozoic that developed close to upstanding areas of Carboniferous Limestone and are preserved adjacent to unconformities in the form of wadi breccias and rocky shoreline deposits; a variety of styles of unconformity; and impressive folds and faults.

*Meet at the car park at the south end of Ogmore-by-Sea village (SS 869 734) and later move to the car park at Dunraven Bay. There is plenty of parking available but with pay-and-display fees at Ogmore and a toll at Southerndown. Strong footwear and packed lunch will be needed.*

**November**            **Festival of Geology**  
*Geologists' Association*  
For details, see [www.geologists.org.uk](http://www.geologists.org.uk)



**PROGRAMME 2017**

Lecture Meetings at Bath Royal Literary and Scientific Institution,  
16 Queen Square, Bath at 7.30 pm 01225 312084

**Latest information and details: <http://www.bathgeolsoc.org.uk>**

**LECTURE MEETINGS**

**February 2<sup>nd</sup>**    **Annual General Meeting** starts at 7.00 pm. followed by: -  
**Greenhouse to Icehouse : reconstructing temperature change  
during the Eocene**

*Dr. Gordon Inglis, University of Bristol*

The Earth's climate throughout geological time has possibly oscillated between greenhouse and icehouse climate states. The most recent occurred during the Eocene-Oligocene transition. However, it remains unclear whether CO<sub>2</sub> drawdown or some other factors were responsible for the long-term cooling during the Eocene (56 - 34 Ma). To determine the primary driving mechanisms responsible, a biomarker approach was used. Results indicate that terrestrial and marine settings were characterised by a long-term temperature maximum during the early Eocene. During the middle and late Eocene there is a gradual decline in marine temperatures, especially at high-latitudes. The magnitude of cooling provides indirect evidence that drawdown of CO<sub>2</sub> (or some, as yet unidentified, other factor/s) was the primary forcing for long-term surface water cooling during the Eocene.

**March 2<sup>nd</sup>**        **Gas, geothermal energy and gold: the Earth's crust as a percolator**  
*Professor Tom Blenkinsop, Cardiff University*

Assessment of Earth's finite natural resources becomes increasingly urgent as they are depleted and demand continues to rise. "Peak resources", the time at which production starts to decline, may occur within a few decades for some critical metals and oil. New methods of resource evaluation take advantage of the fractal geometry of geo-resources. Lode gold deposits, geothermal wells, volcanoes, conventional and unconventional gas wells form by fluid fluxes through the crust; all have fractal characteristics that can be assessed by these techniques. Their origin can be considered a consequence of percolation.

**April 6<sup>th</sup>**         **Cosmic Dust: Little Rocks from Space**  
*Dr. Matthew Genge, Imperial College, University of London*

Extraterrestrial dust falls everywhere, it is in our homes and even on our clothes. These tiny particles come from asteroids and comets and tell us about the origins of our solar system. They are also the fastest dust particles on Earth and their fiery entry into our atmosphere leaves its mark on these objects.

**May 4<sup>th</sup> The Cretaceous/Paleogene boundary debate : myths, truths and uncertainties**

*Professor Malcolm Hart, Plymouth University*

The end-Cretaceous mass extinction is one of the 'big five' events in Earth history with the demise of the non-avian dinosaurs, ammonites and a large percentage of the oceanic plankton. There is an on-going, heated debate as to whether the bolide impact at Chicxulub (Mexico) or the eruption of the Deccan Volcanics were to blame, or was it a combination of both? Using field information, the case for each possible cause will be reviewed. In some of these areas, poor field descriptions have not helped in the debate! One critical issue, based on comparisons with the present day, is the role of ocean acidification as this appears to be more important than previously thought.

**June 1<sup>st</sup> Finding new uses for old pollen : reconstructing past climate and vegetation change using pollen chemistry**

*Dr. Phillip Jardine, The Open University*

Due to their widespread and abundant fossil record, pollen and spores have become a mainstay of research into past vegetation change and floral evolution, and are widely used to infer past climates and date sedimentary sequences. However, palynology as a discipline has remained largely unchanged in its approach for the last 100 years. In this talk, Dr. Jardine will describe how a new field of research is opening up, using the chemical signature of pollen and spores to extract previously inaccessible information on past climate and vegetation change. The talk will also offer some thoughts on the future direction of chemical palynology.

**July 6<sup>th</sup> Carbon Capture and Storage – demonstrating the safety and performance of underground CO<sub>2</sub> storage by site monitoring**

*Professor Andy Chadwick, British Geological Survey*

Underground storage of carbon dioxide from fossil fuel combustion and other industrial processes offers the most credible way of achieving the deep reductions in greenhouse gas emissions, agreed at last year's COP-21 climate change conference in Paris. Under the European Directive regulatory framework there is a requirement to prove that storage sites are not leaking, their current behaviour understood, and stored CO<sub>2</sub> will continue to be contained in the long term. Time-lapse monitoring at storage sites, using geophysical and geochemical techniques provides the means by which these quite challenging objectives can be met.

**September 7<sup>th</sup> Mountains in the Sea**

*Professor Tony Watts, Oxford University*

One of the mysteries of the sea is the large number of seamounts that rise up on the seabed. A few form oceanic islands, generally circular in shape and often capped by a coral reef, their heights ranging from 0.1 to 6.7 km above the seafloor. Statistical studies suggest that there are as many as 24,000 seamounts >1 km high still to be discovered. Volcanic in origin, they are widely scattered throughout the world's ocean basins, especially in the Pacific. Seamounts are of geological interest because they record the motions of the Earth's tectonic plates and magmatic 'pulse' of its deep interior. They are also significant as ocean 'stirring rods', biodiversity 'hotspots', and hazards for megathrust earthquakes, submarine landslides, and navigation. Charting these seamounts and determining their morphology, structure, and evolution is one of the many challenges facing marine geologists in the future.

**October 5<sup>th</sup> How did the largest animals ever fly? Biomechanics and mass estimation in pterosaurs**

*Liz Martin-Silverstone, PhD Student, University of Southampton*

Pterosaurs were the first vertebrates to take to the skies, and the largest animals ever to achieve powered flight. The largest had wingspans rivalling small airplanes at 10-11m. The biggest birds today are nowhere near this size, with albatross wingspans of 3-4m. Why were pterosaurs able to reach this great size? How were they able to fly? Exactly how heavy were these animals? With unique adaptations, pterosaurs were able to dominate the sky for over 150 million years.

**November 2<sup>nd</sup> Latest research on the “so called” Indo-Pacific warm pool**

*Professor Paul Pearson, University of Cardiff*

Professor Pearson will complete his current expedition in December 2016. Details of the lecture will be posted on the BGS website in the New Year.

**December 7<sup>th</sup> ‘S-cubed’ ... .. and beyond**

*Dr. Andy King, Director & Principal Geologist, Geckoella Ltd*

Obtaining detailed information on distinctive local stones (or suitable alternatives) is often difficult because in many parts of England the extraction of building stone has long ceased and many original source quarries closed or lost. The Strategic Stone Study ('S-cubed') is the first country-wide study of England's buildings stones, their use in vernacular buildings, and the identification of historic source quarries. Initially developed by Historic England (formerly English Heritage), the study aims to provide freely accessible (on-line) data for sourcing stone for this purpose. The presentation will explain the background that led to 'S-cubed', its subsequent development, the use of data from recent field studies, and the roll out of the latest features.

**February 1<sup>st</sup> 2018 Annual General Meeting 2018**

**FIELD MEETINGS**

**Saturday 25th February Brown's Folly Nature Reserve**  
*Professor Maurice Tucker, University of Bristol and Bath Geological Society*

This is our annual clear-up of the geological sites on this SSSI reserve. Come along with gardening tools or just take the opportunity to visit the sites and talk about geology. *Meet at 10.30 a.m. at Brown's Folly Car Park (G.R. ST 798663). Strong boots, waterproofs, hard hats are required.*