Sidmouth Science Festival

8th – 17th October 2021

2021 Speakers

Further details and most up to date information can be found on the website:
https://www.sidmouthsciencefestival.org/

2:30pm – 4:00pm **Friday 8th October** 2021
Manor Pavilion

Sidmouth Science Festival

Dr Kate Schofield
University of Plymouth

Soil: A cornerstone of life

Did you know that in one teaspoon of soil there are more microorganisms than there are people on Earth?

Although often dismissed as dirt, mud, or muck, soils are vital to our lives in so many ways, from the food we eat and the clothes we wear to the fuels we burn, soils are a cornerstone of life. Without our soils, we would be lost.

In this talk Kate will introduce you to the extraordinary, vast, and intricate world of soils, highlight some of the most pressing issues facing soil health and discuss some of the steps that are being taken to tackle them.

Dr Kate Schofield is a biogeochemist and soil scientist at the University of Plymouth. Kate studies the biology and chemistry of soils, searching for ways to sustainably improve the health of our natural soils, as well as working to sustainably create soils using waste materials.

.

Talk in conjunction with the Devonshire Association

11:00am – 11:30am **Saturday 9th October** 2021
All Saints Church

Sidmouth Science Festival

Dr Jenny Bennett
Devonshire Association

The Geology of the River Exe

How the geology has shaped the river and what the sediments can tell us about its past. The photo is at Brampford Speke.

I discovered geology through the Open University whilst I was working in local government. After my degree I tutored part-time for the OU in geology: then changed career and became a student again, completing a PhD at the University of Exeter on the evolution of the Exe valley in 2006, and after that continued to teach at both Exeter and the OU. I was very happy when the South West group of the Geological Society awarded me their Frederick Sherrell career recognition award in 2018. At present I am Chair of the Devonshire Association's Geology Section and continue my interest in the evolution of rivers and the recent geology of Devon and Cornwall.

11:45am – 12:15pm **Saturday 10th October** 2021
All Saints Church

Sidmouth Science Festival

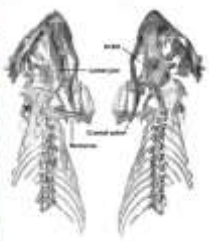
Dr Rob Coram

British Fossils

New Fossil Discoveries - What the latest discoveries can tell us about Sidmouth in ancient times.

The red cliffs either side of Sidmouth display rocks known as the Otter Sandstone, which were laid down by rivers almost a quarter of a billion years ago during the Triassic Period. These rivers brought life to what was otherwise a barren desert landscape and occasionally buried and preserved the remains of local creatures. Known for over 150 years, these are mostly broken portions of reptiles and amphibians that lived before the appearance of dinosaurs. In recent years, additional types of fossils have been found which fill in more details about life in these ancient times. These include fossil shells, a variety of fish and footprints of large predatory ancestors of crocodiles. Of most interest are superbly preserved skeletons of small lizard-like creatures that can only be properly revealed through CT scanning of the rocks they lie in. These new finds have now made Sidmouth one of the most important sites of this age worldwide, and this talk will introduce some of the fossil characters involved.




Rob Coram has been interested in the fossils of the Jurassic Coast since a young boy, in particular the rare remains of land-living creatures rather than the marine fossils that these rocks are most famous for. After obtaining a PhD on dinosaur-age fossil insects, he turned his attention to looking for insects in the much older ‘red rocks’ of the East Devon coast. Several years of searching have failed to turn up a single insect scrap, but instead interesting remains of other creatures that lived at that time and are now being studied in conjunction with the University of Bristol.

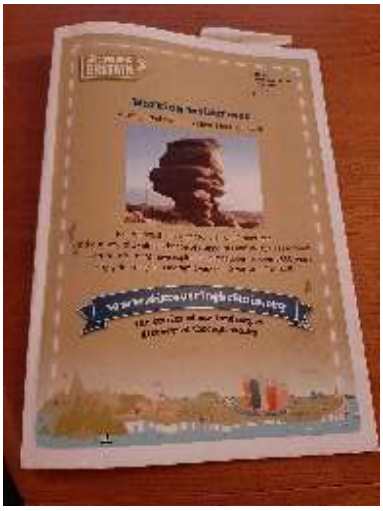
12:30pm – 1:00pm **Saturday 9th October** 2021
All Saints Church

Sidmouth Science Festival

Derry Corey

Royal Geographical Society

Five Millennia of Human Activity on Bodmin Moor



Bodmin moor is designated both as An Area of Outstanding Beauty (ANOB) and also a UNESCO World Heritage Site. Following the route of the Working Wilderness Walk this talk will look at the physical landscape and see how it was formed and shaped by natural processes highlighting the underlying geology. It will also highlight how people have made their homes over thousands of years and see evidence of settlements and ritual sites. It will also show how humans have adapted and made a living from the landscape over time through farming, quarrying and mining and how these activities have changed the landscape. Finally we shall how the landscape is adapting to recent tourism and leisure.

Derry Corey is a Human Geography graduate but has co-led human and physical geography field days in the south west region for undergraduate students at Marjon University. She is the Chair of the South West Region of the Royal Geographical Society, and along with the committee organises approximately 16 lectures and 2 field days annually for fellows and visitors at a number of different venues throughout the south west. She lives on the north edge of Plymouth and enjoys walking on Dartmoor but during the summer months spends w eekends in Cornwall and enjoys walking the Cornish coastal path

1:15pm – 1:45pm **Saturday 9th October** 2021
All Saints Church

Sidmouth Science Festival

Richard Edmonds

Jurassic Coast; the greatest story on Earth

The Dorset and Devon coast may display the most complete sequence of rocks recording the Mesozoic or middle era of life on Earth, but you cannot describe the Earth through that time based on this place alone. Therefore, the talk explores our coast in a global context looking at plate tectonics as the driver for climate change, extinction and evolution in order to make sense of the story contained within our coast.

Richard Edmonds 'got' geology during a stroll along Charmouth Beach in 1971 where he picked up a little fool's gold ammonite by chance and the rest, as they say, is history. Geology degree at the University of Hull, a short stint on the North Sea oil rigs, volunteer ranger with the National Trust for Scotland before, in 1986 the opportunity to become the first warden at the new Charmouth Heritage Coast Centre brought him back to Dorset. 1997, moved to the Jurassic Coast Project based in the then Dorset County Council, ending up as Earth Science Manager with the World Heritage Site. Left that in 2015 on the grounds that it was largely a waste of time and is now a freelance geologist and guide to this wonderful coast.

2:00pm – 2:30pm **Saturday 9th October** 2021
All Saints Church

Sidmouth Science Festival

Dr Chris Reedham

The Future of the Jurassic Coast Collection

The Jurassic Coast Collection is intended to create a more secure future for fossils from the World Heritage Site, facilitating research and learning and enabling more people, wherever they are, to be inspired by the Jurassic Coast's fossil heritage. This talk will present a brief description of the project so far, its importance and outline the next stages for the development of the Jurassic Coast Collection.

Chris is the Jurassic Coast Trust's Palaeontology Conservation Officer. Chris recently completed his PhD on taphonomy and biodiversity in the Jurassic mudrocks of Dorset. This research explored the process of fossilisation – to investigate the exceptional preservation of fossils found on the coast. He quickly developed an intrigue for the process of pyritisation and the geochemical influence of burial and fossilisation. This shaped his scientific research, investigating the pyritic ammonite moulds, often found in abundance, between Lyme Regis and Charmouth. Many of the fossils that Chris studied have been registered for the Jurassic Coast Collection.

"I've been interested in fossils for as long as I can remember! My mother was always interested in fossils when I was young and so my parents would take us fossil collecting most weekends. I have many fond memories of cold winter days on the coast, collecting fossils and getting very muddy!"

2:45pm – 3:15pm **Saturday 9th October** 2021
All Saints Church

Clive Mitchell

Pebble Spotting

Where can you find evidence of extreme environments from hot arid deserts and continent spanning oceans to even hotter magma deep under the earth and volcanoes spewing lava over vast areas? In a beach pebble! This talk will set you up for pebble spotting with advice on how to collect pebbles and help you identify the rocks they are made of.



Clive Mitchell is the classic British geologist with check shirt and beard, a beer drinker and passionate about rocks. Born in Bristol, he grew up in the village of Congresbury on the northern edge of the Mendips in North Somerset. Family holidays in Cornwall and Devon were spent collecting pebbles on the beach, his first introduction to geology. Scroll forward fifty years, Clive lives with his family in Nottingham and is an industrial minerals geologist at the British Geological Survey. He has been lucky enough to travel all over the planet especially Africa and the Middle East working on mineral resources. Clive is an enthusiastic geoscience communicator and can often be found online, especially on Twitter and Facebook, helping to identify rocks for keen amateur geologists.

1:00pm – 2:00pm **Sunday 10th October** 2021
Parish Church

Sidmouth Science Festival

Rupert Bannister

Science in the garden: stories from a traveling gardener!

With a core theme of science in the garden Rupert's presentation will look at plants and associated issues from his travels around the world and how they relate to our own gardens here in east Devon. He will look at some key subjects including composting, climate change and the concept of 'right plant, right place' in relation to sustainability and future trends in gardening.

Rupert is a horticulturalist with over thirty years' experience in gardens, lecture theatres and laboratories in the UK and overseas. His work has taken him from the Eden Project in Cornwall to the gardens of Japan and from the Royal Botanic Garden in Edinburgh to volcanic plateaus of New Zealand. He currently manages and develops gardens in the southwest with occasional work in Europe. He is passionate about connecting people with plants, gardens and the wider environment through his work as gardener and planting designer. Rupert has a degree in Botany and Master's Degree in Sustainability Education.

2:00pm – 3:00pm **Sunday 10th October** 2021
Parish Church

Rachel de Thample

Fermenting for Flavour and Health

Join award-winning author Rachel de Thample for her animated talk on the joys of fermentation where she'll take you step-by-step on how to make your own ferments at home whilst talking about the science of the process, the health benefits as well as how the chemical changes during the fermentation process create the most astounding flavours. By the end of the session, you'll be instilled with confidence to make you own lacto-ferments including sauerkraut and salt-brined pickles.

Rachel De Thample has worked in food, health and sustainability for more than 20 years. She is the Course Director of the College of Naturopathic Medicine's Natural Chef diploma course, and she currently teaches fermentation and wild food courses at River Cottage in Devon. She's worked as Head of Food for the organic retailer Abel & Cole and was Commissioning Editor of Waitrose Food Illustrated. She's written six books including the award-winning River Cottage Fermentation Handbook, Less Meat, More Veg, Teas & Tonics and Five: 150 Effortless Ways to Eat 5+ Fruit and Veg a Day. She's also studied sustainable food systems at University College London and was instrumental in setting up the award-winning Crystal Palace Food Market in London. She's a regular contributor to The Simple Things magazine and sits on the board of Garden Organic.

3:00pm – 4:00 **Sunday 10th October** 2021
Live streamed to Parish Church from USA and on Zoom

Sidmouth Science Festival

Prof. Simon Gilroy

University of Wisconsin-Madison, USA

Plants in Space

Plants don't need much to thrive: sunlight, water and some soil, but how do you garden on the International Space Station where even the air has to be shipped from the Earth and a watering can simply doesn't work? We will discuss the challenges of growing plants in space and how this environment offers unique insight into both how plants work and how they serve to promote well-being, even when traveling at 17,500 miles per hour and growing at 250 miles straight up.

Dr Simon Gilroy is a professor in the Botany Department at the University of Wisconsin-Madison. His research is on how plants sense and respond to their environment. He works extensively with NASA on understanding how plants grow on the International Space Station and plans for using plants in life support on planetary bases.

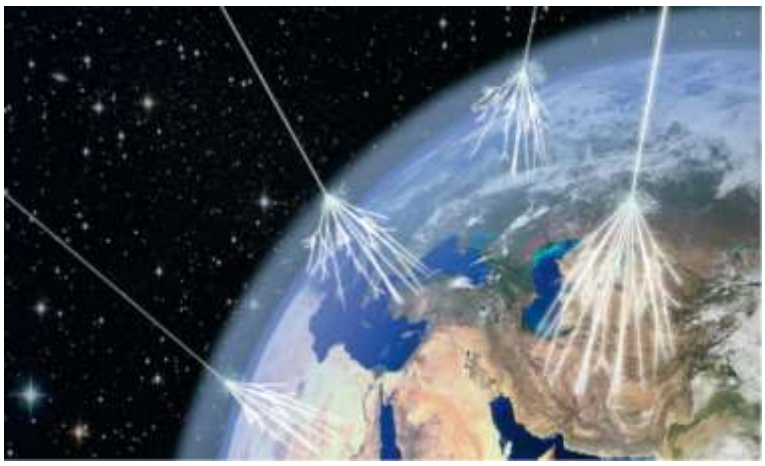
Simon likes getting his hands dirty in the garden and making people laugh. Simon recently spend a year on sabbatical at the Kennedy Space Center. Simon regularly designs spaceflight experiments with NASA and loves sharing his passion for science with the general public with organisations including local National Public Radio (NPR), Science, National Geographic, the NewYork times, the British Broadcasting Company (BBC) and was recently interviewed for Japanese television.

7:30pm – 8:30pm **Monday 11th October** 2021
Parish Church

Sidmouth Science Festival

Prof. Glenn Patrick
School of Mathematics and Physics, University of Portsmouth

Cosmic Particles – Messengers of the Universe



Over 100 years ago, it was discovered that the Earth is continually bombarded by sub-atomic particles from outer space. Some of these cosmic particles have energies that far exceed those that can be produced in the Large Hadron Collider at CERN. High energy gamma rays and enigmatic "ghost" particles called neutrinos have also been detected from the deep cosmos. These have been recently joined by the discovery of gravitational waves - the ripples in space-time predicted by Einstein. This talk will trace the quest to reveal the secrets of these mysterious messengers and where they originate in the Universe.

Professor Glenn Patrick CPhys, FInstP, FRAS is a particle physicist who has spent most of his career working on the massive particle accelerators at the CERN Laboratory in Geneva. Until recently, he was studying the subtle differences between matter and anti-matter deep underground at the Large Hadron Collider (LHC) – the biggest machine on the planet! He is now an Honorary Scientist at the Rutherford Appleton Laboratory near to Oxford and is a Fellow of both the Institute of Physics and the Royal Astronomical Society.

A Visiting Professor at the University of Portsmouth and a lecturer for the Open University, Glenn is also well established as a science communicator engaging both students and the public with the beauty of the natural world and the mysteries of the physical universe.

7:00pm – 8:30pm **Monday 11th October** 2021
All Saints Church

Sidmouth Science Festival

Steph Bevan

Development Officer, Christians in Science

Science disproves God, right? - An interactive event for the entire family

Steph Bevan graduated in Physics and Music at Cardiff University and then trained to be a Physics Teacher at the Institute of Education, London. After teaching for four years in both London and then Cardiff she began working for the Institute of Physics as a Gender Balance Coach for Wales. She continues working part-time for the Institute of Physics, now as the Public Engagement Manager in Cardiff.

3:00pm – 4:00pm **Tuesday 12th October** 2021
Zoom

Sidmouth Science Festival

Mrs Chris Brockley-Blatt
Institute of Mechanical Engineers

Solar orbiter – Building an Instrument to Study the Sun

Solar Orbiter will address big questions in Solar System science to help us understand how our star creates and controls the giant bubble of plasma that surrounds the whole Solar System and influences the planets within it.
Launched in February 2020, Solar Orbiter carries six remote sensing instruments, or telescopes, that image the Sun and its surroundings, and four in-situ instruments that measure properties of the environment around the spacecraft. By comparing the data from both sets of instruments, scientists will gain insights into the generation of the solar wind, the stream of charged particles from the Sun that influences the entire Solar System.

For the past 13 years, Chris has been the Project Manager of one of the in-situ instruments board, the Solar Wind Analyser (SWA). Made up of three sensors and an onboard data processing unit, the SWA will measure the ion and electron bulk properties (including, density, velocity, and temperature) of the solar wind, thereby characterising the solar wind between 0.28 and 1.4 AU from the Sun.
In this presentation, Chris will outline the science behind Solar Orbiter, describe more of the mission and the spacecraft, present the SWA and describe the engineering behind building a space science instrument.

.

After leaving School, Chris took a year out to work as a Student Apprentice with Dowty Aerospace, who sponsored her through university. Upon leaving university with a BEng in Mechanical Engineering, Chris worked for Ricardo Consulting Engineers, as a design analyst and thermal engineer. After 6 years there, she made the move to Mullard Space Science Laboratory as a Mechanical and Thermal Design Engineer and Project Manager, where she continues to work. She was chartered in 1998 and became a Fellow in 2009.

7:30pm – 9:00pm **Tuesday 12th October** 2021
Anchor Inn

Sidmouth Science Festival

Simon Rundle

Ivybridge Brewing Company

How to build a beer and a brewery

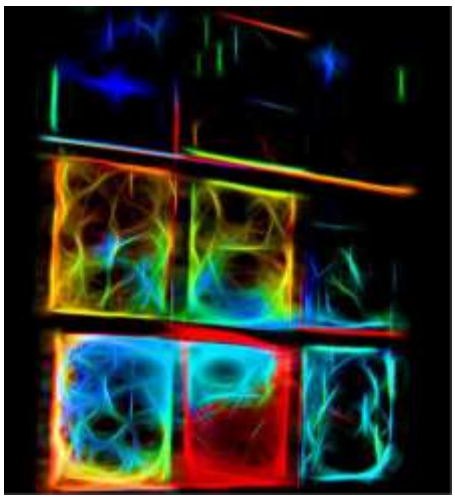
This year, Simon left the world of academia and a career as an Aquatic Biologist to take up the full-time task of running a social enterprise brewery that employs people with learning difficulties. In this talk he'll talk about how his background as a scientist has helped him grapple with the task of 'building' and brewing beers, including how understanding the science of the four beers' cornerstone ingredients (grain, hops, yeast and water) has been key to the success of his project.

11:00am – 12:00pm **Wednesday 13th October** 2021
Zoom

Sidmouth Science Festival

Jacky Klein

ART AND TECHNOLOGY TODAY: The New Frontiers



This lecture explores the very latest intersections of art and science, looking at how the new technologies of Artificial Intelligence, Virtual and Augmented Reality, 3D printing and Big Data, wearable tech, location-tracking and more are changing the way art is made and experienced. We explore where technology will take artists and the art world in the next decade as these technologies – currently seen as futuristic and experimental – are set to become ever-more integral to our daily lives. Along the way, we'll discover some of the most powerful examples of immersive tech art, from virtual reality firework displays over China's Forbidden City to 3D mappings of a Pharoah's tomb, and reveal how technology is transforming the ways in which art is promoted and discovered, bought and sold, archived, experienced and understood.

Jacky Klein is an art historian, writer and broadcaster. She worked as a curator at the Tate, Courtauld and Hayward galleries before moving into art publishing, at Thames & Hudson, Tate Publishing and HENI Books. She is the author of a bestselling monograph on Grayson Perry and co-author of a number of other books including Body of Art and What is Contemporary Art?, a children's guide to the Museum of Modern Art, New York. She has presented and contributed to television programmes for the BBC, Channel 5 and Bloomberg TV, and is a regular contributor to Radio 4's arts review show, 'Front Row', and is currently Associate Lecturer at the Courtauld Institute on the MA, 'Curating the Art Museum'.

Talk in conjunction with Art Society of Sidmouth

2:00pm – 3:00pm **Wednesday 13th October** 2021
Parish Church

Sidmouth Science Festival

Deborah Pierce

The Science of Sleep

A good night's sleep is vital to our mental and physical well-being. It's as important to our health as good quality air, fresh water, a nutritious diet and regular exercise.

But why is sleep so important? What happens to our brains and bodies while we're in the Land of Nod? How much sleep do we need?

In this talk we'll explore the mechanisms that trigger sleep, what happens during different phases of sleep and the consequences of not getting enough sleep.

Finally, we'll look at ways of getting a better night's sleep.

Deborah graduated with a BSc Honours degree in Physics from UCL in 1981.

After careers in the IT industry and the charity sector, she qualified as a clinical hypnotherapist in 2008, having gained a Diploma in Hypnotherapy and Psychotherapy.

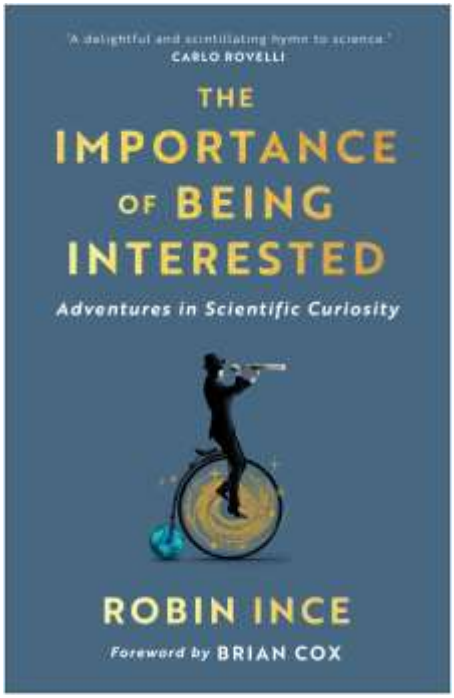
She has a hypnotherapy practice in East Devon and is a hypnotherapy supervisor and former trainer.

3:00pm – 4:00pm **Wednesday 13th October** 2021
Parish Church

Sidmouth Science Festival

Robin Ince

The Importance of Being Interested



Comedian Robin Ince quickly abandoned science at school, bored by a fog of dull lessons and intimidated by the barrage of equations. But, twenty years later, he fell in love and he now presents one of the world's most popular science podcasts. Every year he meets hundreds of the world's greatest thinkers.

In this erudite and witty book, Robin reveals why scientific wonder isn't just for the professionals. Filled with interviews featuring astronauts, comedians, teachers, quantum physicists, neuroscientists and more - as well as charting Robin's own journey with science - The Importance of Being Interested explores why many wrongly think of the discipline as distant and difficult. From the glorious appeal of the stars above to why scientific curiosity can encourage much needed intellectual humility; this optimistic and profound book will leave you filled with a thirst for intellectual adventure.

Robin Ince is the co-creator and presenter of the BBC Radio 4 show The Infinite Monkey Cage, which has won multiple awards including the Sony Gold and Rose d'Or. In 2019 he played to over a quarter of a million people with Brian Cox on their world tour which has put them in the Guinness for the most tickets sold for a science show. He is author of I'm a Joke and So Are You and also won Celebrity Mastermind but forgot that calcium was the dominant element of chalk. He is currently trying to invent an effective satnav for people who believe the world is flat.

7:30pm – 8:30pm **Wednesday 13th October** 2020
Manor Pavilion

Sidmouth Science Festival

Professor Richard Thompson

University of Plymouth

Marine Litter: are there solutions to this global environmental challenge?

Plastic debris is widely distributed at the sea surface, on the sea bed and on shorelines. Nearly 700 species are known to encounter marine litter, with many reports of physical harm resulting from entanglement in and ingestion of plastic. At the same time it is very clear that plastic items bring many societal benefits. Can these benefits be achieved without emissions of waste to the environment? Progress requires systemic changes in the way we produce, use and dispose of plastic. Key solutions to two major environmental problems, our non-sustainable use of fossil carbon (to produce plastics) and the accumulation waste, lie in reducing useage and recycling end-of-life plastics into new products.

Richard Thompson OBE FRS, is Professor of Marine Biology and Director of the Marine Institute, University of Plymouth.

He is a Marine Biologist and one of the world's foremost experts on plastic pollution. In 2004, he published the first paper describing the long-term accumulation of microscopic fragments of plastic in the environment, naming them 'microplastics'. He and his team have been at the forefront of microplastics research and have shown their global distribution, the potential for transfer from the gut to the circulatory system, and their role in the transport of chemical contaminants. This pioneering early work was pivotal in recognition of microplastic contamination in policy, such as Marine Strategy Framework Directive.

Richard has an extensive track record of collaboration across the disciplines, with an emphasis on identifying ways to use plastics more sustainably. His recent work has guided policy on the release of microplastics from cosmetic products and textiles. His team at the Marine Litter Research Unit won the NERC Impact Award (2018) and based on their work the University of Plymouth received the Queen's Anniversary Prize for Higher and Further Education in 2020.

Talk in conjunction with the Sid Vale Association

3:00pm – 4:00pm **Thursday 14th October** 2020
Parish Church

Sidmouth Science Festival

Scott Gudrich
Plover Rovers

The impact Coastal Erosion
And
Communicating science issues using art

Coastal erosion & ABR (Arts-based research): Sidmouth's crumbling cliffs at East Beach and Pennington Point are among areas that new research by Plymouth University on coastal change has predicted will see more erosion than expected while other areas seem to be eroding more slowly than previously thought. But what causes coastal erosion and is there anything we can do about it? While the current period of rapid cliff recession and low beach levels is broadly coincident with construction of the offshore breakwaters and rock groynes on Sidmouth beach, comparable historic pre-groynes periods of low beach and rapid cliff loss suggest that the cause of cliff recession seen in recent years is likely a function of low beach levels (due to persistent South Westerly storms), particularly wet weather since 2000, erosion along the more vulnerable bedrock joints, erosion of a greater thickness of weak sediments capping the cliffs at Pennington Point, and, in the early 1990s at least, erosion of a tunnel excavated along the base of the cliffs. Over the longer term, erosion rates are expected to return to the lower historic rate but given the large uncertainties over the geology as well as future storms and climate conditions it is very difficult to predict when this might be.

Arts-based research encompasses a range of research approaches and strategies that utilise one or more of the arts in investigation. Such approaches have evolved from understandings that life and experiences of the world are multifaceted, and that art offers ways of knowing the world that involve sensory perceptions and emotion as well as intellectual responses. ABR is a relatively new approach to be considered in environmental and sustainability sciences. It's more widely used in social sciences and psychology.

Background: Scott holds a BSc in Environmental and Sustainability Studies as well as an MSc in Marine Environmental Protection, with my thesis focussing on the carbon storage capacity of UK salt marshes and how it may be affected by future sea level rise. My research interest is in coastal ecosystems and coastal management, especially human-nature interactions and participatory methods in stakeholder engagement, as well as ABR (arts-based research). I am a former professional musician and am still active making "Music for the Planet" with my band The Lürxx. I also hold a MA in Classics and am passionate about Latin and Ancient History as well as about nature conservation and science communication. I founded the Plover Rovers in 2020 while being on furlough from my job as a marine biologist to combine my passion for science communication and outreach with my love for the coast and hiking. We are 100% volunteer-run and open to everyone who loves the our seas and coasts. Currently, we are around 50 active volunteers all across England.

7:30pm – 8:30pm **Thursday 14th October** 2020
Blue Ball Pub, Sidford

Science in the Pub

Scott Gudrich
Plover Rovers

Carbon capture in UK salt marshes

Natural wetlands, including salt marshes, can help offset climate change by storing carbon in their soils. At the same time wetland soils respire methane, carbon dioxide and nitrous oxide which are all major greenhouse gases. It was thought that because salt marshes are frequently covered by the tide, the salt in the sea water would reduce the activity of methane producing bacteria and the decomposition of organic matter and therefore the production of greenhouse gases, and methane in particular.

……

Jonathan Clark:
King's College, London

Can we, and should we grow human brains in a dish?

Many labs world wide are making advances in growing mini brains from human stem cells. I'll discuss what they are doing, how far they have advanced and why they are doing it. The audience may have views on whether this is a good idea.

……

Connor J Sproston:
King's College, London

How a fly, that can't fly, is teaching us about the evolution of nervous systems

Insects have conquered almost every corner of our planet and with that evolved to be a massively diverse group of organisms. I'll be talking about how we are taking a comparative approach and using this diversity to help reveal something fundamental about how all insects build their nervous systems. Asking the questions 'how have insects brains changed during evolution?' and 'What processes are changing them?'

……

7:30pm – 8:30pm **Friday 15th October** 2021
Parish Church

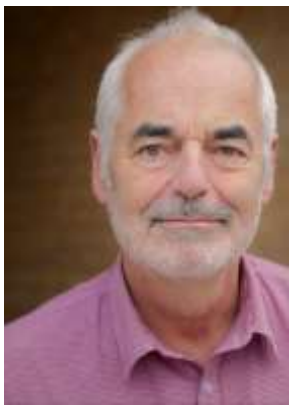
Sidmouth Science Festival

Professor Sir David Spiegelhalter

University of Cambridge

Communicating statistics to the media: highs and lows during the pandemic (so far)

The pandemic has been notable for the vast traffic in official and unofficial information and claims. I will offer some personal insights into the challenges of working with the media to try to bring some illumination to all the statistics, illustrated with some examples things that have gone fairly well, but also the many disasters in communication.



Professor Sir David Spiegelhalter FRS OBE is Chair of the Winton Centre for Risk and Evidence Communication in the Centre for Mathematical Sciences at the University of Cambridge, which aims to improve the way that statistical evidence is used by health professionals, patients, lawyers and judges, media and policy-makers. He has been very busy over the COVID crisis. He presented the BBC4 documentaries “Tails you Win: the Science of Chance”, the award-winning “Climate Change by Numbers”, and in 2011 came 7th in an episode of BBC1’s Winter Wipeout. His bestselling book, The Art of Statistics, was published in March 2019. He was knighted in 2014 for services to medical statistics, was President of the Royal Statistical Society (2017-2018), and became a Non-Executive Director of the UK Statistics Authority in 2020. He is @d_spiegel on Twitter, and his home page is http://www.statslab.cam.ac.uk/~david

11:30am – 12:15pm **Saturday 16th October** 2021
Youth Centre

Dr Mark Lewney

Rock Guitar in 11 Dimensions

What causes the revolutionary, history-changing sound of rock guitar, and how does it help us to understand the nature of the stuff we're made of? Famelab winner Mark Lewney explains the physics of rock using riffs from Vivaldi to AC/DC, explains the secret of the Stradivarius, and shows how string vibrations might lie at the heart of the Big Questions about the universe.

In this entertaining and mind-expanding lecture, acoustics expert Dr. Lewney explains the physics of vibrations with the help of props as diverse as an air-bazooka, a bullwhip and his custom Ibanez electric guitar through a Marshall amp, turned up loud, with live demonstrations of expert rock guitar playing throughout. Then Dr. Lewney shows how the vibrations of guitar strings might be applied to the particles we're all made of, but with a twist: the strings vibrate in extra dimensions! Charming stories and mind-bending animations are used to try to get the audience to think in 4-, 5- or even 11-D. This introduction to Superstring Theory shares the wonder and excitement of such grand scale, cutting edge physics and maths.

Dr Mark Lewney, the Rock Doctor, winner of the first ever FameLab competition and guitar physicist blows your ears with rock guitar and blows your mind by Superstring Theory.

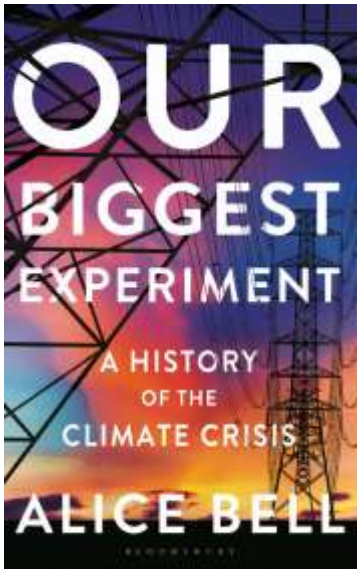
Mark has appeared on Radio 4's Material World as a guitar expert, on BBC's Newsnight as a "physics evangelist" (click WATCH and skip to 4 min 50 s), and on CBBC's Xchange! as the 'Rock Doctor', being introduced as a cross between Einstein and Jimi Hendrix.

3:30pm – 5:00pm **Saturday 16th October** 2021
Parish Church

Sidmouth Science Festival

Dr Alice Bell

Our Biggest Experiment - A History of the Climate Crisis



Our Biggest Experiment tells the story of Eunice Newton Foote, an American scientist and woman's rights campaigner living in Seneca Falls, New York, who first warned the world that an atmosphere heavy with carbon dioxide could send temperatures here on Earth soaring.,The book also includes stories of the many other scientists who helped to build our modern understanding of climate change. It also tells the story of our energy system, from whale oil to kerosene and beyond, the first steamships, wind turbines, electric cars, oil tankers and fridges. Alice Bell takes us back to climate change science's earliest steps in the 18th and 19th centuries, the advancing realisation that global warming was a significant problem in the 1950s and right up to today, where we have seen the growth of the environmental movement, climate skepticism and political systems like the UN climate talks.

As citizens of the 21st century, it can feel like history has dealt us a rather bad hand with the climate crisis. In many ways, this is true. Our ancestors have left us an almighty mess. But they left us tools for survival too, and Our Biggest Experiment tells both sides of the story. The message of the book is ultimately hopeful; harnessing the ingenuity and intelligence that has driven the history of climate change research can mean a more sustainable and bearable future for humanity.

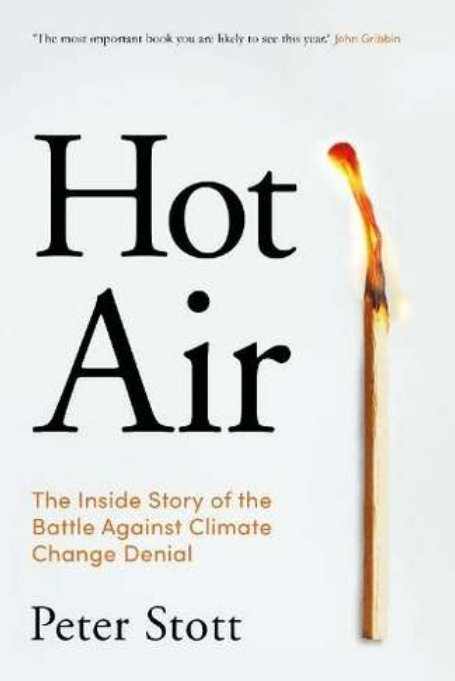
Alice Bell is a climate campaigner and writer based in London. She co-runs the climate change charity Possible, working on a range of projects from community tree planting events to solar powered railways, heat pumps in urban parks, or using nail salons to talk about climate change research. She previously worked in academia and journalism, specialising in the politics of science and technology. She was a lecturer in science communication at Imperial College, where she also completed a PhD and launched a college-wide interdisciplinary course on climate change. As an academic, Alice has also worked at Sussex's Science Policy Research Unit, City University Journalism School and the Science and Technology Studies Department at UCL. She's written for a host of publications including the Times, Observer and New Humanist, researched the 1970s radical science movement for Mosaic magazine, co-founded the Guardian's science policy blog and edited the "magazine for the future", How We Get to Next.

3:30pm – 5:00pm **Saturday 16th October** 2021
Parish Church

Sidmouth Science Festival

Dr Peter Stott

Hot Air: The Inside Story of the Battle against Climate Change Denial



The shocking inside story of the fight to halt climate change over the past twenty-five years by a world-renowned scientist.

Ours is the age of global warming. Rising sea levels, extreme weather, forest fires. Dire warnings are everywhere, so why has it taken so long for the crisis to be recognised?

Here, for the first time, climate scientist Peter Stott reveals the bitter fight to get international recognition for what, among scientists, has been known for decades: human activity causes climate change. Across continents and against the efforts of sceptical governments, prominent climate change deniers and shadowy lobbyists, Hot Air is the urgent story of how the science was developed, how it has been repeatedly sabotaged and why humanity hasn't a second to spare in the fight to halt climate change.

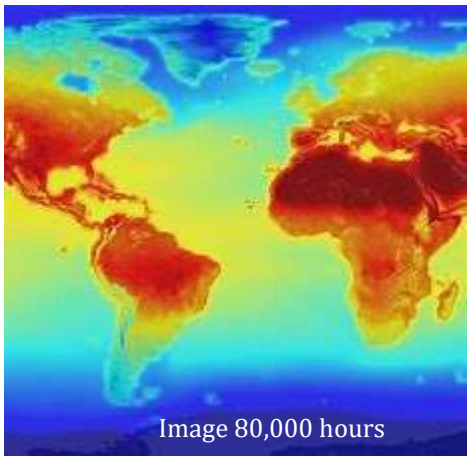
Peter Stott is a Science Fellow at the Met Office Hadley Centre for Climate Science and Services, and Professor of Detection and Attribution at the University of Exeter. He has played leading roles for the Intergovernmental Panel on Climate Change which was awarded the Nobel Peace Prize in 2007 and has published papers in Nature and Science and many other journals. He was named by Foreign Policy magazine as one of its leading global thinkers for his work linking extreme weather with global warming, and was the recipient of the Climate Science Communications Prize of the Royal Meteorological Society for 2018. In 2019 he appeared in the landmark BBC documentary narrated by David Attenborough, Climate Change: The Facts. Hot Air: The Inside Story of the Battle Against Climate Change is his first book.

7:00pm – 7:30pm **Saturday 16th October** 2021
Parish Church

Sidmouth Science Festival

Dame Julia Slingo

Update on the Science of Climate Change



With the recent publications of the UK's 3rd Climate Change Risk Assessment and the IPCC 6th Assessment Report, Dame Julia will provide a brief summary of our latest understanding of the potential severity of future climate change, and where the science gaps still exist that have a bearing on our mitigation and adaptation actions.

Dame Julia Slingo served as Chief Scientist of the UK Met Office from 2009 to 2016 when she retired. At the Met Office, she led a team of more than 500 scientists working on a broad portfolio of research that underpins weather forecasting, climate predictions and climate change projections. Through her career, she has worked at the European Centre for Medium-range Weather Forecasts (ECMWF), the US National Center for Atmospheric Research (NCAR) and Reading University.

Dame Julia was elected a Fellow of the Royal Society in 2015 and Foreign Member of the US National Academy of Engineering in 2016. She is also an Honorary Fellow of the Royal Society of Chemistry, the Institute of Physics and the Royal Meteorological Society, and has been awarded Honorary Doctorates from 8 UK universities.

In her retirement, she has taken on a number of advisory roles, including chairing Network Rail's Weather Advisory Task Force. She holds an honorary professorship at the Cabot Institute of the University of Bristol, where she chairs the Advisory Board, and at the University of Exeter where she is a lead author on the third UK's Climate Change Risk Assessment (CCRA3).

7:45pm – 8:15pm **Saturday 16th October** 2021
Parish Church

Sidmouth Science Festival

Doug Eltham

Devon Council

Devon Carbon Plan

In 2019, Devon County Council declared a climate emergency, in response to which, the Devon Climate Emergency Response Group of 25 organisations, including the District Councils, was formed to provide strategic leadership in the County. A Net Zero expert task force was charged with putting together a Devon Carbon Plan for achieving carbon neutrality in the county. They published an interim plan for consultation in early 2021, aspects of which have been considered by representative Citizen's Assemblies through the summer. Work is currently in progress to update the Plan in the light of the consultation responses and the Assemblies. Doug will describe the key aspects of this Plan and how achieving it will affect people living here. He will also talk about the Devon, Cornwall and Isles of Scilly Adaptation Plan.

Doug Eltham has an MSc in Environmental Sustainability and has developed a track record in local government preparing environmental performance policies and strategies, devising and implementing carbon, energy and waste management plans, undertaking strategic environmental assessment and providing expert advice to enhance community and organisational sustainability, improve resilience and generate local economic benefit.