



4th – 13th October
2024

2024 Speakers

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

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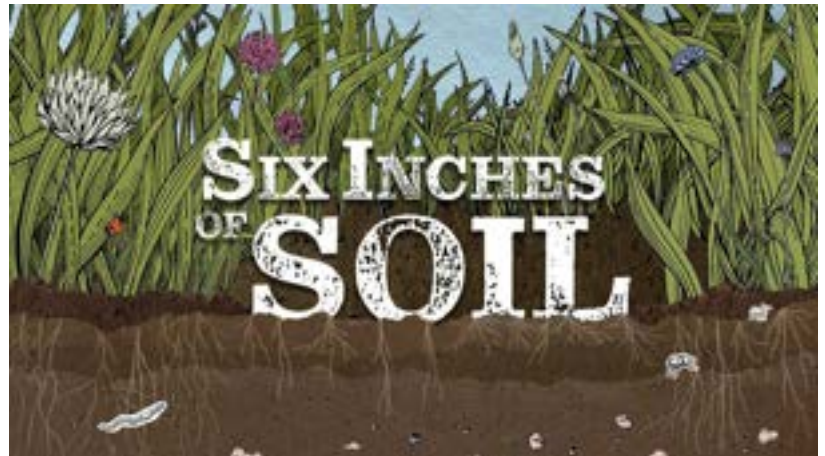
7:00pm – 9:45am Friday 4th October 2024
All Saints Hall
(Advanced booking essential via Eventbrite)



Six inches of Soil

Film screening (96 mins) and panel discussion with refreshments

Sidmouth Science Festival is pleased to host this inspiring story of young British farmers. Discover how they are standing up against the industrial food system and transforming the way they produce food - to heal the soil, our health and provide for local communities. **Bring your own cup & plate** and **join us** to enjoy locally produced food and drink. Take part in a Q& A session, chaired by ecologist Dr Emma Pilgrim, after the screening with a panel of Devon based farmers and food producers. The event is free of charge though donations are encouraged to cover costs.



Six Inches of Soil is a British independent full feature documentary shining a spotlight on soil health and regenerative farming. It tells the inspiring story of young British farmers standing up against the industrial food system and transforming the way they produce food - to heal the soil, our health and provide for local communities. The aims of the film are to sound the alarm on a broken system, but to also give hope that there is a way to fix it; to inspire farmers to adopt agroecological and regenerative farming practices; and to encourage consumers, food corporations and policymakers to support their efforts.

The Soil Association defines Agroecology as "sustainable farming that works with nature." Ecology is the study of relationships between plants, animals, people, and their environment - and the balance between these relationships. Agroecology is the application of ecological concepts and principals in farming. Regenerative farming practices, (within an agroecological system) promote healthier soils, provide healthier, affordable food, restore biodiversity and sequester carbon.

Six Inches of Soil is a story of three new farmers on the first year of their regenerative journey to heal the soil and help transform the food system - Anna Jackson, a Lincolnshire 11th generation arable and sheep farmer; Adrienne Gordon, a Cambridgeshire small-scale vegetable farmer; and Ben Thomas, who rears pasture fed beef cattle in Cornwall.

As the trio of young farmers strive to adopt regenerative practices and create viable businesses, they meet seasoned mentors John Pawsey in Suffolk, Nic Renison in Cumbria and Marina O'Connell in Devon who help them on their journey. They are joined by other experts - Henry Dumbleby, Ian Wilkinson, Mike Berners-Lee, Vicki Hird, Dee Woods, Tim Lang, Hannah Jones, Satish Kumar, Nicole Masters, Tom Pearson - providing wisdom and solutions from a growing movement of people who are dedicated to changing the trajectory for food, farming and the planet.

Dr Roger Trend

Lanzarote's geothermal energy: its geological origins and its possibilities for electricity generation

About 60% of the world's electricity comes from fossil fuels, almost all the rest coming from nuclear, hydro, solar and wind. Less than 0.3% is generated from geothermal energy, despite it being a renewable resource that is not dependent on weather or water. Geothermal is easiest in volcanic regions, as you'd expect. The Canary Islands is a chain of 8 main volcanic islands with massive geothermal heat flow and, indeed, active volcanoes. Lanzarote is the 4th largest. What is the geology underpinning Lanzarote's geothermal energy and what is the potential for clean electricity generation?



Nearly all of the world's geothermal electricity generation involves extracting hot fluids from the rocks to drive turbines, or by pumping down fluids which get heated, but that's a non-starter on Lanzarote because the island's high heat flow areas are within Timanfaya National Park. Turbines are noisy, obtrusive and polluting. Besides, the hot rocks are relatively dry anyway. It's actually a Hot Dry Rocks field, one of the best in the world for electricity generation. Current research is exploring how innovative solid-state thermoelectric generator devices can be used for electricity generation within the National Park.



Roger taught geology, geography and science in UK state schools for 20 years and then worked in university education departments for another 20 years: Sheffield, Exeter, Oxford.

As an academic he taught and undertook research, including the role of Head of Teacher Training at Exeter. Most of his teaching involved teacher training and most of his research focused on Earth science education. He has written quite a few articles, chapters and books and edited various book series and journals.

He's been a consultant for Usborne on about 50 children's Earth science books. He has written a few small books for Sidmouth Museum and also "The Island of Volcanoes: a guide to Lanzarote geology and landscape" which was published in Spain last year in English, Spanish and French.

12:00pm – 12:45pm Saturday 5th October 2024
All Saints Church



Prof James Scourse – Exeter University

Reconstructing climate from the longest-lived animals on Earth

A number of marine and terrestrial organisms contain incremental skeletal hardparts representing annual layers akin to tree rings. This enables biological longevity to be determined and, as in dendrochronology, growth increment series can be cross-matched to construct annually-resolved floating chronologies.

If these can be cross-matched with live-collected specimens in which the age of the final increment is known, cross-dating becomes possible. In this talk James will introduce this science of sclerochronology and focus on species of bivalve mollusc with exceptional longevity, notably *Glycymeris glycymeris* (dog cockle) and *Arctica islandica* (Icelandic clam, cyprine, quahog). The latter is the longest-lived non-colonial animal known to science (over 500 years) and the talk will include an account of the discovery of this specimen and the attendant media storm.



Radiocarbon determinations from known age material enable the radiocarbon reservoir effect to be constrained and interpreted in terms of hydrographic shifts across the major climate phases of the last 1000 years. Annually- and seasonally-resolved oxygen isotopes enable seawater temperatures to be reconstructed, revealing the extent of ocean warming since the Industrial Revolution. These data reveal changing lead-lag relationships between ocean and atmosphere over this period, enable changes in sea ice to be reconstructed and tipping points within the climate system to be identified.



James Scourse's research focuses on long-term marine climate and ecosystem change. He has lead groups at Bangor University (1985-2012) and the University of Exeter (since 2017) researching mechanisms and feedback responses in the Earth's climate system, in particular linked to ice-ocean interaction and the impact of changes of sea level on the carbon cycle, sediment transport and ocean circulation.

He is currently leading the European Research Council 6-year Synergy SEACHANGE Project which is establishing the impact of major human cultural transitions in marine biodiversity and ecosystem functioning. His group has pioneered the development of sclerochronology, reconstructing marine climate and ecosystem change using very long-lived annually banded molluscs. Much of his research is based at sea and he has served as Chief Scientist on 11 research cruises, including as Principal Scientific

Officer on the final cruise of the RRS James Clark Ross in the Antarctic in 2020.

He is currently Head of the Department of Earth and Environmental Sciences at the University of Exeter.

1:00pm – 1:45pm Saturday 5th October 2024
All Saints Church



Dr Richard Stockey – Southampton University

Phanerozoic oceans in 3D – what palaeontologists can learn from climate models

Much of our study of ancient extinctions is motivated by an appreciation of the threat ongoing global climate change poses to Earth's ecosystems. Earth has warmed and cooled many times before, sometimes with catastrophic impacts on biodiversity and other times not. Understanding what makes a mass extinction is critical to applying lessons from Earth's history to the challenges we face today.

Richard is particularly interested in how we can do a better job of understanding the interactions between ancient environmental change and ancient biodiversity dynamics. To do this, he combines information from the paleontological record with state-of-the-art reconstructions of ancient climates and oceans, using similar approaches to those used by modern climate modellers.

In this talk, Richard will discuss the exciting possibilities that these new approaches offer for palaeontologists as well as some new questions that we are able to test by integrating methods from across disciplines, including drivers of the Cambrian explosion, the Devonian rise of fishes and the end-Permian mass extinction.



Richard is a Lecturer in Palaeobiology in the School of Ocean and Earth Science at the University of Southampton. Something that really motivates him as a palaeontologist and geoscientist is the potential for our study of ancient environmental change to inform our approach to current and future climate change.

Much of his work is computational, using modelling approaches to better understand how (particularly marine) environments have changed through Earth history, what that might have meant for marine animals, and how the biosphere responded.

Richard is also increasingly interested in Earth's long-term future, and particularly in how geological perspectives can inform our approach to conservation and planetary stewardship. He has worked at Southampton for two years and is heavily involved in undergraduate teaching, running the first year palaeontology module. Before his current position, he was at Stanford University in California.

2:00pm – 2:45pm Saturday 5th October 2024
All Saints Church



Dr Kieran Satchell – Lyme Regis Museum

Pliosaurus: Understanding these fearsome prehistoric predators

Blown away by the incredible new discovery which was premiered on new year's day by David Attenborough? Interested in learning more about these fascinating apex predators of the prehistoric sea?

Then join me as we dive deep into our prehistoric ocean and unravel the mysteries surrounding these ginormous predatory reptiles called Pliosaurus. I'll be exploring what a pliosaur actually is, why it isn't a dinosaur and discuss what the new pliosaur from Kimmeridge bay can tell us about these incredible reptiles.



Kieran Satchell is an early career palaeontologist employed as the Education and Engagement Officer at the Lyme Regis Philpot Museum.

Kieran has an extensive background in science communication and engaging with members of the public about fossils and prehistoric life on earth.

Kieran's most recent work involves a research publication demonstrating that a bone from Ireland doesn't belong to Scelidosaurus, the 'Charmouth dinosaur'. Having worked on a dinosaur dig in Montana and most recently, an excavation of a mammoth graveyard, he has a variety of stories to inspire audiences of all ages.

2:00pm – 5:00pm Sunday 6th October 2024
Kennaway House Cellar Bar
(Advanced booking recommended via Eventbrite)



Explore Artificial Intelligence and Machine Learning

An afternoon dedicated to the revolutionary and rapidly evolving world of AI/ML and how they are shaping our future.

2:00pm – 2:45pm Sunday 6th October 2024
Kennaway House Cellar Bar

Dr. Mostapha Kalami Heris

Exploring the Basics of AI/ML Applications Artificial Intelligence/Machine Learning



In this talk, we will explore the key parts that make these technologies work. From collecting data to the smart algorithms that help machines learn, this presentation will provide a clear and simple overview for everyone.

We will start with examples you know, like how email spam filters work or how Netflix suggests shows you might like. We will explain AI and

ML in easy words, showing how they help in today's technology. By comparing these systems to the human body, we will break down the main components of intelligent systems.

Next, we will look at real-life examples of AI/ML in areas like healthcare, finance, and entertainment to show how useful these technologies are. We will also talk about important topics like ethics and the environment to give a balanced view. Come join us to learn how AI/ML is changing our world in simple and exciting ways.

Dr. Mostapha Kalami Heris is a Lecturer in Control Engineering and Intelligent Systems at Sheffield Hallam University. He has over twenty years of industry experience in Artificial Intelligence (AI), Data Science, and software development. He specializes in AI, machine learning, evolutionary computation, computer vision, and natural language processing. Mostapha has a PhD in Electrical Engineering from K. N. Toosi University of Technology, focusing on control systems and AI.



His professional experience includes developing AI and machine learning solutions, such as analysing historical building reports using NLP techniques, enhancing food safety using hyperspectral imaging and computer vision approaches, evolutionary optimal policy making for carbon emission control, and optimal therapy of HIV infection. He has also taught various courses in AI, machine learning, and control systems to thousands of students globally. His research work is widely published in prestigious journals and conferences. Mostapha is proficient in Python, C#, MATLAB, and several other programming languages, and he actively contributes to interdisciplinary research projects.

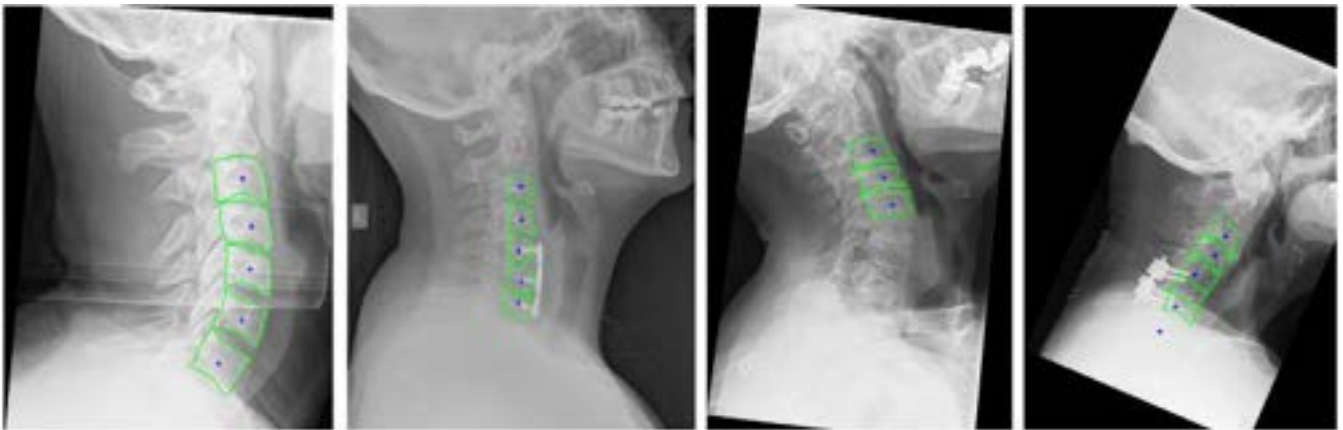
3:00pm – 3:45pm Sunday 6th October 2024
Kennaway House Cellar Bar



Professor Karen Knapp, University of Exeter

AI/ML Assisted Medical Imaging Diagnostics

In her presentation Karen will cover an overview of how artificial intelligence is used in medical imaging at the moment along with the potential for the future. Karen will use examples of some of the artificial intelligence tools which are on the market at the moment and some examples of how artificial intelligence is developed and the rigorous testing required before it can be used in routine practice. Karen will explore how AI might change experiences for both patients and the staff working within the NHS in the future. Karen will also address some of the concerns around AI which professionals and patients may have and will explore a vision for the future of how AI might support optimised imaging services.



Professor Karen Knapp is a Professor of Musculoskeletal Imaging in the Department of Health and Care Professions at the University of Exeter. Karen is a Diagnostic Radiographer who has worked clinically across a range of areas including general X-ray, Nuclear Medicine and dual energy X-ray absorptiometry scanning. Karen has spent over 20 years undertaking research into osteoporosis and new healthcare technologies including artificial intelligence. Over the last decade Karen has been involved in developing and evaluating artificial intelligence tools in medical imaging.



4:00pm – 4:45pm Sunday 6th October 2024
Kennaway House Cellar Bar



Dr Michelle Fabienne Bieger - digiLab and University of Exeter

The ethics of AI: from friendly chatbot to automated systems

“AI” has captivated the imaginations of the general public for years—most of us are familiar with characters like The Terminator or read the sci-fi stories from Ray Bradbury in school. In today’s academic landscape, it touches fields ranging from mathematics to life sciences to robotics, and is no longer the sole domain of computer sciences. We might now all be using a version of “AI” in today’s world—summarising meeting minutes with ChatGPT or generating an image for our company slideshow with Midjourney.



To reject “AI” is to name yourself a “Luddite” and to reject progress. Yet what are these algorithms, and how can we be sure what they are doing under the hood to produce text, or generate an image, or automate systems? This talk will explore the extraordinary claims made by the corporations behind these products, and investigate what we can do, if anything, to push back against the algorithms that have come to dominate everything from world geopolitics to your auto-filled LinkedIn posts.



Dr Bieger is a software engineer and researcher. Her work at digiLab is focused on productising machine learning applications. Her expertise in machine learning and AI ethics stems from her PhD background, where she used machine learning and parameter estimation tools to investigate the properties of atmospheres of planets outside of our solar system (exoplanets). Her interest in AI ethics in particular stemmed from her time teaching at the university, where students and staff were engaging with generative AI—yet hadn’t been given much guidance around how best to utilise it or knowledge on how these algorithms were shaped.

2:00pm – 3:00pm Monday 7th October 2024
Kennaway House Cellar Bar



Prof Anne Corbett –University of Exeter

The PROTECT Study: An opportunity to take part in innovative brain health research

Prof Anne Corbett and her team deliver an exciting portfolio of research into brain health and ageing at the University of Exeter. They explore the process of ageing in our brains, and what we can do to reduce our chances of developing conditions like dementia. Prof Corbett's research uses online and remote technology to engage with large numbers of people across the UK and further afield, allowing people to take part in cutting-edge research from the comfort of their homes.

This talk will explore the PROTECT study – the flagship research study in Prof Corbett's team – and what is involved in taking part. PROTECT is an online study that tracks brain health in people over 40 and investigates factors that affect this process. It also offers people the chance to take part in other exciting research like clinical trials to prevent dementia or studies into new ways to detect the early signs of dementia.

PROTECT

Prof Anne Corbett is Professor in Dementia Research at the University of Exeter and Director for Business Engagement and Innovation for the Department of Health and Community Sciences. Anne conducted her post-graduate PhD research at Imperial College in the field of molecular biology, infection and disease, giving her a grounding in molecular science and genetics. She then spent several years outside of academia working in research communications and implementation in the research team at Alzheimer's Society UK. She returned to academia in 2011, applying her combined experience in basic science, dementia and translational research to dementia and ageing research. She spent four years at King's College London where she developed a wide portfolio of dementia research ranging from online studies into risk reduction, drug discovery, clinical trials and care home research. She has particular expertise in clinical trial delivery, online research, translational research and patient and public involvement.



3:00pm – 4:00pm Monday 7th October 2024
Kennaway House Cellar Bar



Dr Ros West - University of Exeter, NHS Royal Devon University Healthcare

Faster, higher, stronger - older

People often assume that as we get older our muscles weaken and we lose strength. It is nowhere near as much as you think. Have we reached a point where a 60-year-old marathon runner is considered special and not the norm? A 70-year-old weight-lifter an outlier? or is 80 year old rowing an ocean just crazy? And do we have it in us to do more than we think?



Ros will talk through the evidence of what happens to our muscles as we age, why muscle quality rather than quantity is one of the most important aspects of maintaining independence and how the ability to build muscle never really stops. She'll talk from her experience of treating patients recovering from injury, through to running a marathon, to lifting weights and rowing across oceans and what we should all be doing to life strong happy lives.



Ros is a Specialist Musculoskeletal Physiotherapist at NHS Royal Devon University Healthcare. Her post-doctoral research focused on healthcare technology diagnostics in Parkinson's Disease. She has a PhD from the University of Exeter, 2024 with a thesis entitled: Healthcare technology and muscle physiology

She was the Safety Officer for the Talisker Whisky Atlantic Challenge, Ocean rowing. She has rowed the Atlantic and tried to ski across Greenland!

4:00pm – 5:00pm Monday 7th October 2024
Kennaway House Cellar Bar



Naabil Khan – University of Exeter

The Journey to Justice: Exploring Historical Racism in Medicine and Medical Education

Dr Khan will explore the historical aspects of racism within medical science and education, highlighting how these elements have shaped contemporary healthcare and the representation of diverse populations. She will discuss the systematic exclusion and marginalisation of minority groups in medical research and education, which has led to significant disparities in health outcomes. Historical injustices, such as the infamous Tuskegee Syphilis Study and the exploitation of Henrietta Lacks' cells without consent, are examples of unethical practices rooted in racial prejudice. These examples underscored the lack of ethical consideration for Black patients and broader implications of racism in medical institutions.

The talk will emphasise the importance of addressing these historical wrongs to improve representation and equity in medical science today. By acknowledging and understanding the legacy of racism in medicine, there is a greater opportunity to create inclusive educational curricula and research practices that respect and reflect the diversity of patient populations. Naabil will describe how the Skin for All initiative is a positive step towards this goal, offering resources and information aimed at improving dermatological care for all skin types. This initiative exemplifies how increasing awareness and education about these issues can lead to more equitable and effective healthcare solutions, ultimately fostering a more just and inclusive medical community. She will also highlight the current, lived experiences of healthcare workers today.



Naabil Khan is an accomplished and dedicated medical student. Most recently she was awarded the Racial Justice in Medicine Award by the American Medical Student Association. Other notable recognitions include the Social Prescription Studentship 2022, Exeter University Citizenship Award 2024, and the Healthcare Rising Star Award at the WeAreTheCity Awards 2024. A finalist for the Bright Network Impact Award and awarded the Posters in Parliament honour representing Exeter University. She founded the Decolonise Healthcare Society, advocating for a more inclusive medical curriculum and significantly impacting the healthcare landscape through innovative initiatives like the "Skin For All" website, aimed at

addressing racial biases in medical education.

Naabil has been a BMA Medical Students Conference Delegate, Global Leaders Delegate with UNITAR, and a member of the FLARE Advisory Board. She contributed to policy-making through motions on equality, diversity, and inclusivity.

7:00pm – 8:30pm Monday 7th October 2024
All Saints Church



Matt & Davinder Gardner

Can a good scientist believe in God? Is faith important in our modern age?

Join our interactive, family-friendly session as we discuss these questions together in a safe space. We're going to be getting stuck into some hands-on science together, examine how far it has come in explaining the world around us and how we can apply it in healthcare.



Will science one day explain everything and leave no room for faith? Can anyone have room for both?



Davinder Gardner studied physics at Leicester University and currently works as a healthcare scientist at an NHS hospital in the West Midlands. She performs equipment testing, designs radiotherapy treatments for cancer patients alongside training junior scientists and helping to bring in new treatments and technologies.

Matthew Gardner studied physics at the University of Warwick and completed an MSc in medical physics at Swansea University. Next, he trained to become a healthcare scientist working for the NHS. He currently works as a healthcare scientist and training co-ordinator in a large West Midlands hospital.



Talk in partnership with All Saints Church, Sidmouth

7:30pm – 8:30pm Monday 7th October 2024
Kennaway House Cellar Bar



**Dr Alistair Monteyne - Lecturer in Nutritional Physiology
University of Exeter**

The Fundamentals of Sports Nutrition: Eating to Optimise Performance & Recovery.

The talk will cover the pillars of contemporary sports nutrition, acting as a sports nutrition 101 for beginners and experienced athletes alike. The focus will be on how we optimally fuel for exercise and how we optimise our recovery afterwards. We will discuss practical strategies to implement this knowledge into your own training, whilst also dealing with some common myths in sports nutrition.

Firstly, we will deal with fuelling and all things carbohydrate. Exercise causes a significant increase in the energy we expend, or the ‘burning of a fuel’, and we need to replace this fuel to perform and to maintain capacity in subsequent exercise. We will cover how to properly fuel ourselves before, during, and after exercise, and the type, timing, and dose of carbohydrate to do so in a variety of situations.

Next, we will explore how we recover after exercise and how we optimise adaptations in response to an exercise stimulus. Here, we will cover all things protein, and its importance for endurance, team, and power athletes alike. We will address the amount, timing and type of protein required to optimise recovery and adaptation, alongside some useful practical strategies to meet these demands. We will also discuss the latest research on protein for those following a plant-based diet, and how protein requirements might change with ageing



Dr Monteyne graduated from Loughborough University in Sport & Exercise Science in 2015, before completing an MSc in Sport & Exercise Nutrition at the same institution. Following this, Alistair took a PhD position in the Nutritional Physiology Research Group (NPG) at the University of Exeter. Alistair was awarded his PhD in 2021, before undertaking post-doctoral training within the NPG and subsequently joining the Department of Public Health and Sport Sciences at the University of Exeter, as a Lecturer in Nutritional Physiology.

Dr. Monteyne is an internationally published scientist exploring the interplay between exercise, nutrition, and skeletal muscle physiology. His research involves conducting nutritional and exercise interventions in human volunteers, combined with detailed and invasive in vivo measurements of human physiology. Dr. Monteyne has expanded his research focus to investigate the effect of energy intake on muscle protein turnover in the context of sarcopenia and obesity, alongside investigating exogenous ketosis in Type II Diabetes.



10:00am – 12:00pm Tuesday 8th October 2024
Devon & Somerset Fire & Rescue Service HQ, Clyst St. George,
Exeter EX3 0NW
(booking essential via Eventbrite)



Visit the Urban Search and Rescue team

The Urban Search and Rescue (USAR) team are a vital part of Devon & Somerset Fire & Rescue Service's response provision. They are one of 21 teams of highly skilled and trained fire fighters, strategically located in England and Wales, who provide a response to local, regional and national incidents when required.

Together, the USAR teams ensure the UK is equipped to deal with major emergencies, such as natural disasters or terror attacks. They also have the equipment and skills to deal with more complex incidents such as road traffic collisions, water rescue, rope rescues, incidents on mud or ice, large animal rescue and confined spaces.

The event will include a talk on the background and work of the team and a tour of the specialist equipment and training facilities.



Free of charge, donations to the Fire Fighters Charity encouraged. www.firefighterscharity.org.uk

3:00pm – 4:00pm Tuesday 8th October 2024
Kennaway House Cellar Bar



Lisa Treseder – Kensa Utilities
Renewable Domestic Energy



Talk in partnership with the Institution of Mechanical Engineers

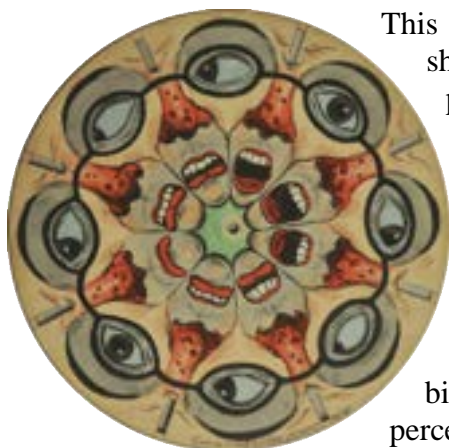
Entry £2.50 including hot drink

11:00am – 12:00pm Wednesday 9th October 2024
Sidmouth Parish Church



Tony Lidington

On Illusion and Delusion – Performance Science and Quackery



This illustrated romp through the performative nature of science and showmanship is presented by renowned performer, researcher and presenter - Tony Lidington. When asked to define his job, Tony describes himself as a showman, as it is close to the role of shaman – a portal to other perceptions of reality... or illusion.

This talk explores the ways in which popular culture and science have been fused and confused over the years: how the definitions of what is real, unreal, imaginary, fake or hallucinatory, are all woven together. Learn how pseudo-science and empirical knowledge bifurcate, blur and merge over time, to create a blended muddle of perception that we sometimes call truth, sometimes fakery, or sometimes

just a show.

Tony is a leading authority on British popular entertainment forms – well-known for his numerous BBC Radio and television programmes, as well as live performances at festivals and events throughout the country.

Tony has been a showman, researcher and teacher for more than 40 years: he has run theatre venues, companies, festivals and events for and with a wide range of diverse communities. Tony specialises in historical popular entertainment forms and their application to contemporary contexts and in 2017, he was awarded a doctorate by University of Exeter for his research into itinerant British performance forms and where he is now a part-time lecturer. He regularly broadcasts for both radio and television – most recently for David Walliams' & Lee Mack's episodes of 'Who Do You Think You Are?' However, he is perhaps best known by families throughout the country, as 'Uncle Tacko!' - ringmaster of his extraordinary flea circus and the founder of 'The Pierrotters', Britain's last professional seaside pierrot troupe.



Talk in partnership with the Art Society of Sidmouth

2:30pm – 3:30pm Wednesday 9th October 2024
All Saints Hall



Dr Valentina Marincioni, University College London

Understanding and Managing Moisture in Buildings

In this talk Valentina will explore the issues associated with the lack of moisture balance in buildings, focusing on its impact on occupant health and building durability. Moisture problems can lead to the growth of mould, which poses significant health risks, including respiratory issues and asthma. The tragic case of two-year-old Awaab Ishak highlights the severe consequences of moisture imbalance and mould in homes. In addition to health risks, excessive moisture can affect building structures, leading to costly repairs and reduced lifespan. By understanding moisture dynamics better, we can implement effective management and mitigation strategies to ensure healthier living environments and more resilient buildings. Techniques such as improved ventilation, robust insulation, and regular maintenance play a vital role in controlling moisture levels and preventing mould growth.



Dr Valentina Marincioni is a lecturer in building physics at the Bartlett School of Environment, Energy and Resources at UCL and technical director of the UK Centre for Moisture in Buildings (UKCMB). With an extensive background in studying the interactions between buildings and their environments, she has contributed significantly to advancing the understanding of moisture-related challenges in construction. Dr Marincioni holds an Engineering Doctorate from UCL and has published numerous papers on moisture control, sustainable building practices, and robustness of insulation systems. Her expertise is frequently sought after by academic institutions, industry professionals, local authorities and policy-makers who aim to develop more robust and sustainable built environments.

Dr Marincioni leads several projects aimed at improving moisture management in buildings. Her work focuses on integrating scientific research with practical applications to create effective solutions for moisture-related problems. Her role with the UKCMB involves developing standards for moisture management, transferring knowledge to the industry through workshops and publications, and participating in various committees that shape policy and best practices in building construction and maintenance. She is a passionate advocate for sustainable building practices and regularly shares her knowledge through conferences and seminars.



Talk in partnership with the Sidmouth National Trust Supports Group

Entry £4

7:00pm – 8:30pm Wednesday 9th October 2024
Kennaway House Hatton Room



Become a *Citizen Scientist*: you don't need to be an expert!

This event explores what citizen science means, discusses examples of citizen science projects and invites you to learn about how science can be a community effort. Come and meet three panel members :

Clare Wilkinson , Professor of Science Communication, University of the West of England, Bristol.

Josie-Alice Kirby, a Coastal Process Scientist with South West Coastal Monitoring and lead for the CoastSnap South West project.

Charles Sinclair, a Citizen Scientist working with the Sid Valley Biodiversity Group on various local science projects.

Clare Wilkinson, UWE Bristol

Citizen science: Is it just for scientists?

Citizen science is one of many public engagement methods now available to researchers and members of the public, and it is broadly seen to be both an opportunity for participants to contribute to the scientific process and to gain something in return. With an extensive history in fields such as natural history, archaeology, and astronomy, the tools of social and digital media have particularly increased citizen sciences expansion, though many of the methods it uses are akin to approaches used by social scientists for many years.

In this talk we will consider if citizen science is just for scientific topics? Or does it play a role in other types of research, such as that being conducted in social science and health fields. We will also explore whether citizen science is just for scientists in the sense that some raise ethical concerns as to how citizen science may or may not value and respect the input of citizens that participate in such projects. Using one or two examples from citizen science that has taken place beyond the boundaries of the natural sciences, we will explore the potential benefits but also possible pitfalls, citizen science can involve.





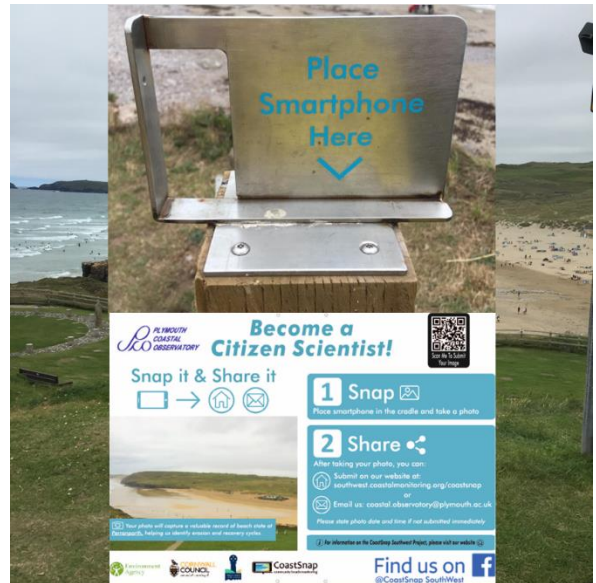
Clare Wilkinson is a Professor in Science Communication and Co-Director of the Science Communication Unit, at UWE Bristol, UK. The Science Communication Unit is a research centre that seeks to bring science and society closer together, recognised for its internationally leading research, creative approaches to practice and outstanding teaching in science engagement.

Clare is a sociologist by background and a born and bred Devonian. Her research explores media representations of science, how people engage with scientific issues and the impact of science communication activities. Clare’s work has been published in a number of international journals like PLOS ONE, Public Understanding of Science, and Journalism. She is the co-author (with Emma Weitkamp) of Creative Research Communication: Theory and Practice (Manchester University Press), which is about to be published as a second edition, and is the Series Editor for the book series, Contemporary Issues in Science Communication (Bristol University Press). Clare can be reached on social media @clarewilk4.

Josie-Alice Kirby – South West Coastal Monitoring

CoastSnap: A Community Science Data Collection Project for Southwest England

This talk will introduce the community science project CoastSnap, a fixed-point camera system that records coastal changes. The aim of a CoastSnap station is to entice local or visiting members of the public to take a photo, with their smart phone, of a beach or coastal area using the camera cradle. They can then send this photo to us online using various methods and we can analysis the changes they have captured. This is a worldwide project with over 200 sites in 21 different countries, with the SW of England hosting over 25 of them!



Josie-Alice Kirby is a Senior Coastal Process Scientist at

Southwest Coastal Monitoring, part of the National Network of Coastal Monitoring Programmes. She is responsible for coastal data collection from Portland Bill to Exmouth.

Her background is in coastal processes and geology, studying BSc Geology with Ocean Science and MSc Applied Marine Science at the University of Plymouth. She am currently undertaking a PhD in coastal management and future shoreline position along side her role at SWCM.

IJosie-Alice grew up in south Devon, moving abroad before returning to live in the South Hams with her young family.

Charles Sinclair – Sid Valley Biodiversity Group

Data collectors on the River Sid - Freshwater invertebrates, fish and water quality surveys.

The talk will cover the reasons for monitoring riverfly, fish species and water quality in the Sid, the means of recording the data, and the organisations that collate the data. It will then focus on the role of the volunteers, what it means to them to be involved, the messages learnt from the data and the wider use of the information.



Charles Sinclair is a retired Visual Arts teacher where he was Head of Art in the Axminster Community College for the majority of his career. He is a founder member of the Sid Valley Biodiversity Group and the River Sid Catchment Group. He moved to Sidmouth in 1991 from Hampshire.

2:30pm – 3:30pm Thursday 10th October 2024
SVA Headquarters, Church Street



Professor Brian Golding

Storms of Nov 1824, Nov 1924 and what they mean for Nov 2024

On 23rd November 1824, Sidmouth was devastated by one of the most destructive storms on record, the results of which probably affected subsequent development of the town down to today. In this talk I will describe the impacts on the town from the copious eye-witness reports recorded later by Peter Orlando-Hutchinson. I will then look at the meteorology of the storm, which affected the whole south-west coast, and speculate on the differences from the 1703 storm recorded by Daniel Defoe, which is regarded as probably the most extreme ever documented, yet which does not get a mention in local Sidmouth records. From there I will move forward to 1924, when the esplanade was destroyed by a sequence of storms in late December, none of which was classified as extreme. With these historical events in mind, I will then move on to the present day, with sea level now significantly higher and rising steadily, to consider the nature of the risk to the town and how it is changing.



Chit Rocks before the 1824 storm



Prof. Brian Golding OBE is a senior fellow in weather impacts at the Met Office and honorary professor at Bristol University. He was made an OBE in 2013 for services to forecasting severe weather and has recently been awarded the Mason Gold Medal, which is the premier award of the Royal Meteorological Society, for his contributions to meteorological science. His current interests are in the prediction of thunderstorms and in communicating warnings of the resulting rapid onset flooding. He has recently started a two-year term as president of the Royal Meteorological Society.



Talk in partnership with the Sid Vale Association

Entry £2.50

7:30pm – 8:30pm Thursday 10th October 2024
Blue Ball, Sidford



Science in the Pub – 3 short talks on varied topics

Dr Kirsty Matthews Nicholass - University of Plymouth

Regan Mudhar - University of Exeter

Dr Simon Ingram – University of Plymouth

Dr. Kirsty Matthews Nicholass - University of Plymouth

Why are mushrooms magic? The ecological and evolutionary role of psilocybin in nature

Magic mushrooms, characterised by the presence of psilocybin (PY, 4-phosphoryloxy-N,N-dimethyltryptamine), a serotonin analogue, is the most widespread psychedelic prodrug in nature. Psilocybin is readily dephosphorylated to active form, psilocin, upon digestion and it is this compound that is responsible for the psychotropic journey induced by the consumption of 'magic mushrooms.' Despite increasing medicinal interest for the treatment of mood-disorders, remarkably little is known about its evolutionary origin in nature.



The vast diversity of 'magic mushrooms', boasting 300 species worldwide and the structural similarity between psilocybin, and the animal neurotransmitter serotonin, raises interesting questions about its likely evolutionary origin. The widespread distribution of psilocybin-producing abilities among mushrooms, spanning vastly different evolutionary lineages yet sharing similar ecological niches and pressures led scientists to speculate that psilocybin evolved as defence compound to protect against fungivory in dung and wood-decay niches, where competition from insects is high.

Over the past three years Kirsty has been working at the University of Plymouth, trying to unravel this evolutionary puzzle. In the Leverhulme funded project, the project adopted a combination of eco-evolutionary concepts to test the hypothesis that psilocybin is maintained in nature because it acts as a defence mechanism. Blending field studies, DNA analysis and behavioural trials on invertebrate models, the research aims to provide some of the earliest empirical evidence directly probing the natural role of psilocybin.



Prior to working at Plymouth, Kirsty did a PhD in Environmental Sciences at the University of Essex. Her Thesis: “Learning from nature; Plant-microbe interactions and their application to more sustainable agri-ecosystems.” tested for host specificity of fungi and confirmed maintenance of this relationship geographically and across a gradient of aboveground diversity.

Regan Mudhar - University of Exeter

Has climate change already affected life in the UK?

This has been another year of “unprecedented” weather in the UK, with spring 2024 being the warmest on record and summer temperatures reaching as high as 35C. But we said the same in 2022, when we exceeded 40C, and in 2023, when almost every month was hotter than average, making it the second warmest year on record for the UK.



That same year, the Intergovernmental Panel on Climate Change stated that: “Human-caused climate change is already affecting many weather and climate extremes in every region across the globe.” The research that informed this conclusion is the remit of scientists who specialise in “detection and attribution”. By looking at some UK case studies, we will how such scientists study what is changing around us, as they try to pinpoint whether humans are at the root...

Regan graduated from the University of Bristol with a masters degree in physics with astrophysics, before entering the world of finance. In 2021, they returned to academia and began a PhD at the University of Exeter (UoE), studying the “stratospheric pathway” and far-flung influences on midlatitude weather and climate extremes, alongside which they currently serve as co-Editor-in-Chief of the Royal Meteorological Society (RMetS) journal *Weather*. Regan is also passionate about inclusive and accessible science. When not sat behind their laptop, you can find them sharing science with the public around the South West and beyond as a volunteer with Exeter Science Centre and Pint of Science, and co-lead of UoE’s EMPS² Network and RMetS’ *Diverse Voices* seminar series and Early Careers of Colour Network.



2:30pm – 3:30pm Friday 11th October 2024
Manor Pavilion Theatre



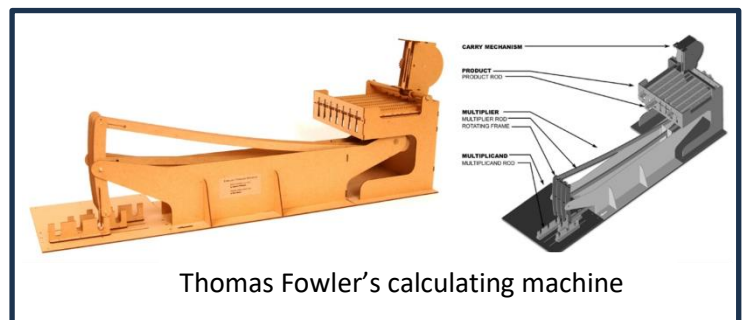
Colin White

Devon's Pioneering Technologists : A coterie of influential mathematicians and engineers.

Devon has had many scientific pioneers but some are more well known than others. In this entertaining presentation, Colin White will highlight the life and innovations of four of the less well known Devon scientists :

- George Bidder of Moretonhampstead;
- Thomas Fowler of Great Torrington;
- William Froude from Dartington and
- John Lethbridge from Newton Abbot.

Come and hear about their contribution to our scientific heritage, still impacting us today.



Thomas Fowler's calculating machine

Colin White began his career as a Senior Engineer at Standard Telephone and Cables (ITT/Nortel) in Paignton, Devon, where he worked on microwave communication equipment and the associated antenna design. He spent much of his time writing software to automatically test the products, both on the assembly line and when deployed in the field.

Later, he became an academic, working in the Physics Department of Portsmouth University. Here, his teaching focussed on microwave circuit design, while researching into the computer modelling of microwave networks and antennas. After the Physics Department was forced to close, he moved into Sport Science where he primarily taught biomechanical movement in sport. His research activities again involved computer modelling, whether it was the modelling of sport projectile trajectories, such as javelins, shuttlecocks and balls, or the movement of women's breasts while carrying out a range of sports, in order to improve bra design. Prior to retirement, as Principal Lecturer and Director of Learning, he was responsible for ensuring the quality of the learning and teaching practices throughout the Faculty of Science.

He is the author of 'Projectile Dynamics in Sport - Principles and Applications' published by Routledge. Since retirement he has worked as a STEM ambassador on outreach activities; lecturing, demonstrating and entertaining at schools, science clubs and festivals.



Talk in partnership with the Devonshire Association

Entry £3

7:30pm – 8:30pm Friday 11th October 2024
Kennaway House Cellar Bar



Martyn Tickner

Is Plastic the Enemy? - Addressing the problems of Plastic Waste

Martyn will lead an interactive discussion on the challenges of plastic waste asking such questions as:

- What is the problem we are trying to solve ?
- How is this connected to our modern lifestyle?

The unequivocal solutions are to use less, establish basic waste management in the Global South and be more carbon efficient,

striving for a Circular Economy in the Global North. Martyn will provide perspectives on the good and not so good solutions and help us understand what we individually can do in support.



Martyn is a seasoned professional with more than 40 years in the global petrochemical and plastics industry spanning engineering, manufacturing, major projects, IT, M&A and business and general management. He has a Master's Degree in Chemical Engineering from Cambridge University and has lived in 7 countries on 3 different continents.

In 2020, Martyn joined the Alliance to End Plastic Waste (AEPW) as Chief Technical Advisor, intrigued by the urgent challenge of reducing environmental pollution, protecting nature and addressing climate change. The Alliance is a non-profit organisation funded by the private sector to identify, develop and prove effective solutions to plastic waste in all regions of the world.

Now an independent consultant, Martyn continues to support the work of the Alliance and advising investors and private sector companies as well as governments negotiating the new legally binding Global Plastic Treaty on the technical and economic strategies and solutions which will bring about meaningful change.

10:00am - 11:00am Saturday 12th October 2024
SVA Headquarters, Church Street



Professor Hugh Sinclair – University of Edinburgh

How floods determine river landscape with examples from the Himalaya and Scottish Highlands

Rivers adjust their width, depth and slope to the climate (mainly rainfall), vegetation and underlying rock types in their upstream catchment, and, once adjusted, are able to support a diverse range of fauna and flora. However, when any of these factors are perturbed, such as through agriculture, damming or flood protection, adjustment can take many years to decades, and this provides a major challenge for freshwater ecosystems. Climate change is now adding another challenge for our rivers. A critical question is what determines the ability of a river to settle back to a more steady or ‘natural’ condition following a change in its environment. The key here is the ability of the river to adjust its channel through erosion and deposition of sediment, and all of this is fundamentally controlled by the magnitude and frequency of flood events.

In this talk, Prof Sinclair will first look at extreme examples from the Himalaya where devastating floods appear to be increasing and where engineered flood protection and hydropower dams are being swept away by huge, sediment laden flood waters; we will consider how flood risk can be managed in these settings. Secondly, we will explore examples from the Highlands of Scotland where rewilding and nature-based engineering solutions are attempting to return rivers to their more natural state and encourage greater numbers and diversity of insects, birds and fish. In both settings we find the ability of floods to reconfigure a river channel through erosion and sedimentation as the principal determinant of a river’s response to climatic or anthropogenic perturbations. The underlying message is that the nature of any river channel is a direct reflection of the health of its upstream catchment and its impact on flooding.



Hugh Sinclair is a geologist by training having received degrees from Aberystwyth and Oxford Universities. He has worked in numerous mountain ranges studying how their geological growth is recorded in the stratigraphic record. Having recognised the value of understanding ‘deep time’, he increasingly studied modern processes such as sand transport in rivers in order to better understand the geological record. Having been a researcher and lecturer at Durham and Birmingham, he moved to Edinburgh University in 1999. At Edinburgh, opportunities

to work in large teams enabled Hugh to consider interdisciplinary approaches to understanding the nature of modern rivers in the Himalaya and elsewhere and has focused on the extreme events that cause severe changes to the landscapes. He has recently been involved in innovative ways to monitor the transport of gravels and sand in big rivers of Scotland and the Himalaya. He currently leads the Global Change Institute at Edinburgh University and is Principal Investigator on an interdisciplinary project looking at risk sensitive planning for ‘Tomorrow’s Cities’:

Talk in partnership with the Sid Valley Biodiversity Group



11:15am – 12:15pm Saturday 12th October 2024
SVA Headquarters, Church Street



Graham Roberts

The River Sid-protecting and enhancing a lowland river catchment

Graham will provide an overview of the River Sid Catchment covering description and functionality of the river, its value to wildlife and people and the current and future challenges the river is facing.

Many river catchments have set up initiatives being driven by citizen science to safeguard these precious natural resources that are under so much threat. The talk will cover a broad range of these issues but finish on a more positive note of sharing some success stories.



Graham is a retired ecologist, having spent nearly thirty years working with the Wildlife Trust Movement in south east England. Initially he worked on otter recovery in southern England and morphed into many aspects of freshwater ecology, land management advice and habitat restoration. He has a passion for chalk rivers which he will touch on in his talk. He is involved with the River Lim Action Group in Lyme Regis.



Talk in partnership with the Sid Valley Biodiversity Group

1:30pm – 2:30pm Saturday 12th October 2023
The Knapp Orchard, Sidmouth
(Advanced booking essential via Eventbrite)



Lindsay Mahon – Devon Wildlife Trust

Introducing Lichens – Field event

Lichens are amazing! They are such beautiful, complex organisms that are so often overlooked. Their curious combination of different life forms, fungal species with photosynthesising algal cells, gives them an air of mystery.

Thanks to our clean sea air, the fruit trees in The Knapp Orchard are encrusted with several different lichens and they are at eye level to make them easily accessible. This event is aimed at complete beginners, and will give a brief introduction to lichens, their roles in nature, and their different forms, and start to look at the types of features on lichens that enable them to be identified as species. Prepare to be amazed as you peer at lichens on trees through a x10 hand lens – it's a whole new world!



Lindsay works for Devon Wildlife Trust and is the Citizen Science Officer for the [Saving Devon's Treescapes](#) project. She had a career in something completely different before moving to Devon in 2015, since when she has re-trained, and is now enjoying working in the conservation sector. Her current role means she works with Devon residents across the county monitoring different species at different times of year. All species monitored under the Saving Devon's Treescapes project have the potential to be impacted by the loss of ash trees as a result of ash dieback disease, and monitoring will help assess this impact. Lindsay coordinates the Devon Bat Survey, which is one of the largest citizen science projects in the county and helps train and coordinate citizen scientists conducting Brown Hairstreak Butterfly surveys and recording Notable Trees. Lichens have become a particular interest of Lindsay's as she has learned more about them through her work, and she loves introducing people to this fascinating world in miniature.



Talk in partnership with the Sid Valley Biodiversity Group

3:00pm – 4:00pm Saturday 12th October 2024
Muttersmoor, Peak Hill, Sidmouth
(Advanced booking essential via Eventbrite)



Fred Rumsey - Conservation Officer, British Pteridological Society

Fascinating ferns – Field event

Join Fred Rumsey, an expert on ferns, to explore and learn about ferns on a short woodland walk. He will explain the biology and conservation of ferns and identify some of the commoner species. The walk is suitable for beginners or those who wish to improve their knowledge of this fascinating group of plants. Stout shoes should be worn as the site is flat but uneven in places, with loose stony flints and exposed tree roots and also likely to be muddy in places. Dogs must be kept on a lead.



Fred is now retired but was previously Senior Curator in charge of the British Fern and Historic Plant Collections at the Natural History Museum, London. He is a past President of the British Pteridological Society and currently their Conservation Officer. He is also a General Referee for ferns for the Botanical Society of the British Isles.



Talk In partnership with the Sid Valley Biodiversity Group

2:00pm – 2:45pm Sunday 13 October 2024
Norman Lockyer Observatory



Janet Dowling

Make your own Constellation

Listen to a story of the stars then make up your own constellation with its own story!
Aimed at 7-12 years , parent responsible for supervision



Janet Dowling is the Star Gazing Storyteller, telling to audiences worldwide for over 20 years. She is a Sidmouth resident and member of the Norman Locker Observatory. Sometimes they let her tell stories under the stars! She has been resident storyteller at the Sidmouth Folkweek for 20 years. Her book "Folktales of the Cosmos" won the Storytelling World Award for Best Anthology 2024.



Session in partnership with the Norman Lockyer Observatory



Sidmouth Science Festival Partners

