SMASHfestUK

Earth and Sky Tour

@ Bradford Science Festival, 15–16 July 2017

Sat & Sun, 15–16 July 2017

11–5pm

Centenary Square, City Park, Bradford, BD1 1SD

About SMASHfestUK

SMASHfestUK is a narrative-driven, interactive STEM (Science, Technology, Engineering, Maths) and Arts festival with a specific mission to increase diversity and widen participation in STEM and the Arts. A free festival for all ages (but focusing on 5–12 years) it is based mainly in Deptford, South East London over the February half-term each year. Featuring interactive installations, music, variety shows, messy experiments, comedy, participatory art, film, engineering, games and theatre, it explores STEM through the arts and design.

Each year SMASHfestUK focuses on a different storyline based on a hyper-realistic natural disaster, exploring how to ***understand*** the phenomena, ***survive*** the event and ***rebuild society*** afterwards. This year's theme is 'Supervolcano'. The **compelling narrative** asks; '*What would you do if a Supervolcano erupted in YOUR local area? How would you survive it and rebuild society after the events*?' A strong storyline has been shown to be an effective model of engagement, getting young people interested and involved in science. Our 2017 main festival was a huge success – taking over Deptford Lounge and The Albany Theatre, reaching almost 10,000 people (4000 festival visitors, and 5500 pupils during schools' outreach). Together, we can use science and creativity to solve a catastrophic problem.

In Nov 2016, we won the STEM Engagement Award from the NCCPE (National Co-ordinating Centre for Public Engagement) – a prestigious award in educational public engagement!

As a small community organisation, we are incredibly grateful to our partners and sponsors. They include: the Wellcome Trust, the Arts Council, the Science & Technology Facilities Council, the Royal Society of Chemistry, The UK Space Agency, The Royal Academy of Engineering, Research Councils UK and the British Science Association. Our major partners include Middlesex University and the University of Greenwich.

Earth and Sky Tour Information

We're on a national tour! Firstly, we visited two London locations (Colindale and Woolwich) in May for mini, one-day festivals. We chose our Earth and Sky Tour locations due to continued support from both Middlesex University and the University of Greenwich, and being at the heart of the local communities. They were a huge success – vibrant, creative and engaging with local school and community groups, organisations, engineers, artists, scientists and volunteers. We were dancing, building, gaming and experimenting… in the community, for the community, and by the community!

Our "Earth and Sky" mini festival theme allows us to bring successful and popular elements from our 2015 Asteroid Impact festival and 2017's Supervolcano festival together to explore the question: **'What if the Supervolcano wreaked so much havoc, that we had to explore other planets… and space?'** Bringing in an additional focus on Space Science and Engineering, visitors will be discovering how to prepare and rebuild in the case of such a disaster.

Next up – Bradford! Taking over the Bradford Science Festival's 'Survival Zone', we hope to reach underrepresented and underserved audiences due to the accessibility of the City Park in the heart of Bradford.

About Bradford Science Festival

'Join us for a family weekend of surprising science in the city!' Discover dinosaurs, test yourself in the Survival Zone, explore the secrets of your senses and come face-to-face with a giant robot.

The **National Science and Media Museum** and partners, invites visitors to come out and play, create and experiment with science at the Bradford Science Festival 2017. An exciting new science festival designed to WOW families and young adults with exciting events, experiences and experiments. It's taking place in Bradford's stunning City Park, in the Science and Media Museum plus other accessible but familiar venues.

The Bradford Science Festival is all about engaging families and young people with the science that is everywhere, using the City of Bradford and Bradford people as inspiration. Familiar venues and attractions will be turned into an Interactive Science wonderland.

Examples of activities running at the festival:

- Robot zone – including drones and a martian rover!
- Jurassic dinosaur zone
- Water lab – interactive water activities in the Mirror Pool
- Crime Scene Investigation
- Future Zone with scientists and organisations – STEM careers
- Pedal powered inventions by Kids Invent Stuff

Plus more. Lanyards will be available on site for all participants and visitors, with festival highlights on!

What's On?

A breakdown of SMASHfestUK activities and their explanations

A broad variety of events and activities will take place, including a giant volcano teepee installation, asteroid–making, Liquid Nitrogen volcano explosion, an 'Escape the Volcano' game, storytelling, our signature Survival Village and Space Camp, den–building and roaming volcanologists. All activities are free and **drop–in,** no booking required (unless otherwise stated).

Performance Marquee

<u>Sat</u>

1.30pm: Dr Nate's Travelling Rainbow Show (Nate Adams, Sheffield University)
Thermal imaging, bubbles and fire feature in a show exploring the physics of light.

3.30pm: Dr Volcano's Guide to Eruptions (Dougal Earth)
In a journey spanning the globe, Professor Dougal Jerram AKA 'Dr. Volcano' will talk you through the Earth's volcano giants. Using his extensive first hand experience of magma monsters he'll lead you through a world of bombs, lava and pyroclastic flows, with explosive demonstrations.

<u>Sun</u>

11am: Dr Volcano's Guide to Eruptions (Dougal Earth)

1pm: Dr Nate's Travelling Rainbow Show (Nate Adams, Sheffield University)

3pm: Dr Volcano's Guide to Eruptions (Dougal Earth)

Mirror Pool

Sat & Sun

4.30pm: Liquid Nitrogen cryocano explosion

We're exploding a cryovolcano (ice volcano) trashcano (in a bin!). It's going to be erupting – shooting hundreds of ping pong balls high into the sky above the **Bradford Mirror Pool**. Using liquid nitrogen at –196 degrees, it'll be a massive explosion that will rock the festival. The trashcano demonstrates basic physical and chemical applications. Our scientist in residence, Nate Adams, will fill a 2L bottle with liquid nitrogen, seal it tightly, and place it in a bin with water and hundreds of coloured balls. Expanding and breaking the bottle, the liquid nitrogen meets the water, rapidly turning the liquid nitrogen into a gas. This creates a large expanding bubble at the bottom of the bin, pushing the water out and causing an eruption. The explosion shows how volcanoes work, and volcanoes are known to be powerful forces in nature – both explosive and hazardous. Make sure you're there!

Welcome Desk

What is it?

An area where you can find out information about SMASHfestUK – what we do and what's going on at the festival. There will also be plenty of freebies to hand out from different supporters of SMASHfestUK, and local universities, organisations and STEM businesses.

What will I be doing?

The desk will usually be manned by a SMASHfestUK team member. You may assist them with counting visitor numbers, handing out flyers, evaluation, or answering basic visitor questions.

The Centenary Square Big Screen, 9–2pm

Series of short films provided by SMASHfestUK and University of Greenwich students exploring volcanoes, Earth, space and sky. These films will create an immersive atmosphere to the festival. They'll remind visitors of the theme: 'what would you do if we had to escape a devastating natural disaster, such as a Supervolcano?' Other organisation's films will be played too, so keep an eye out!

Volcano Teepee Installation

What is it?

A large teepee tent, covered in spray paint to resemble a volcano, that acts as a signpost to the festival.

What's the story?

An evolving artwork, that develops with the creations of the public. Help our artist in residence Hannah King make epic volcano designs and patterns. On the exterior of the tent, visitors can practise their skills using spray cans, adding to the overall design. Inside the tent, visitors are invited to get involved in printmaking – creating textures of volcanic ice to take home.

What's the science?

For our main festival in Deptford, the teepee was made to look like a Supervolcano on earth. For the Earth and Sky tour, our focus on ICE comes from **cryovolcanoes** – quite simply, an icy volcano. Cryovolcanoes typically form on icy moons and erupt volatiles such as water, ammonia or methane, rather than molten rock. (We also erupted our own cryovolcano at the main festival in Deptford, using liquid nitrogen at –196 degrees c!) Rosaly Lopes, a scientist from NASA's Jet Propulsion Laboratory said: "to put them in perspective, if Mount Vesuvius had been a cryovolcano, its lava would have frozen the residents of Pompeii." The first cryovolcano was observed on Neptune's moon Triton during the Voyager 2 flyby in 1989.

What do I do?

- Act as a warm and welcoming face to the festival – proactively invite visitors to participate in the installation!

- Help visitors access and use water based spray paints (non-toxic), have a friendly chat with them about the paints and they're using, and patterns made e.g. colours, textures, shapes, form
- Help visitors choose recycled materials for printmaking e.g. cardboard, bubblewrap, styrofoam and assist Hannah in the printmaking process
- Recommend visitors to take a look at photographs of ice inside the tent, for inspiration
- Event is weather-dependent, so suggest other activities at the festival if it is temporarily closed

Escape The Volcano

What is it?

An interactive, Crystal Maze type game, where you need to answer questions, avoid the obstacles, and take dexterity challenges to escape danger.

What's the story?

If a Supervolcano was about to hit, you'd be under immense pressure to escape and survive. This game immerses you in the disaster; it forces you to make decisions under pressure (based on limited information!), complete physical challenges, and manipulate your way out of danger using the tools and equipment at hand.

What's the science?

Visitors are required to answer questions about volcanoes (e.g. what is lava? Can you name me one consequence of a volcano?) and natural disasters before they can reach the next stage.

What do I do?

You may be:

- Pro-actively approaching visitors to take part in the game, explaining the ideas behind it
- Delivering the questions (on handouts) and interacting with visitors
- Handing out objects or props
- Resetting the game, or any other assistance to key volunteer running it
- Helping with the set-up of game

Predict the Volcano

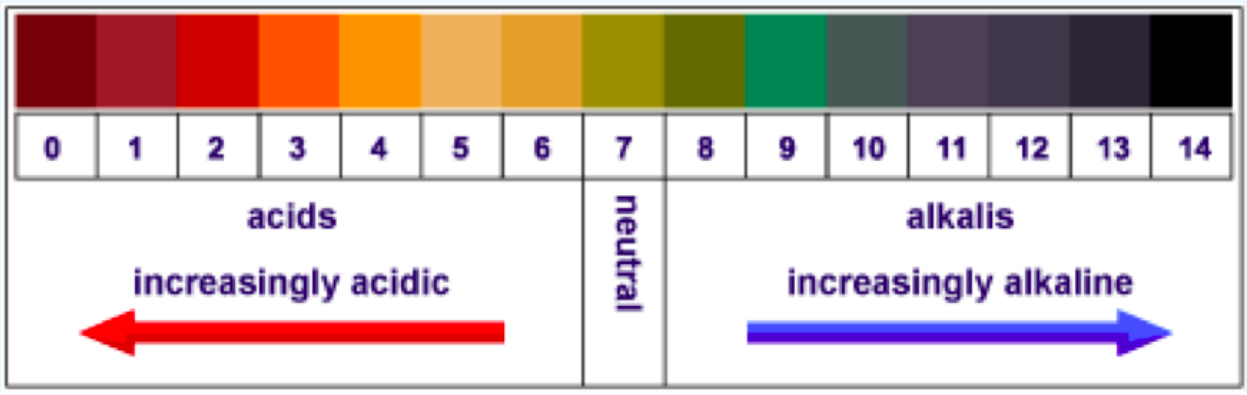
What is it?
A simple pH testing activity where you can have a go taste testing different acid and alkali liquids (orange juice, milk and coffee)! After this introduction participants can test different water samples, from around Bradford Mirror Pool, to work out which one is the most acidic. This will help them determine *where* the volcano is most likely to erupt – north, east, south or west.

What's the story?
There is a volcano about to erupt in your area! The emergency services need to know which areas they need to evacuate first. Our geologist colleagues have given SMASHfestUK some water samples that need to be tested (multiple times). You can help us identify where the volcano is going to erupt first by testing water samples from different areas of the Mirror Pool/surrounding water sources.

Local water areas – Centenary Park Square, Mirror Pool

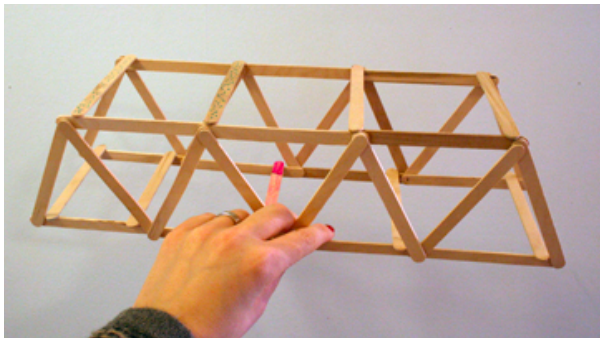
What's the science?
Sulphur Dioxide is a gas common to volcanic eruptions and is released prior and during a volcanic eruption. When volcanoes release this gas it can contaminate the local water supplies around the volcano. The sulphur content makes water around the volcano more acidic… so we need to identify the most acidic area!

Scientists came up with a way of telling how acidic or alkali substances were by assigning them number and colours on the pH scale (a scale of 14 degrees). Low pH, from 1 – 5 means acid and are coloured reds and oranges, high pH means alkali 9 – 14 and are usually coloured blues and purples.



Survival Village

These activities will all be run by our team of 'RAE Ingenious Engineers' from local universities and organisations. They will give you a run through of the activities and the engineering ideas behind them, but feel free to ask the SMASHfestUK team if you have any further questions.



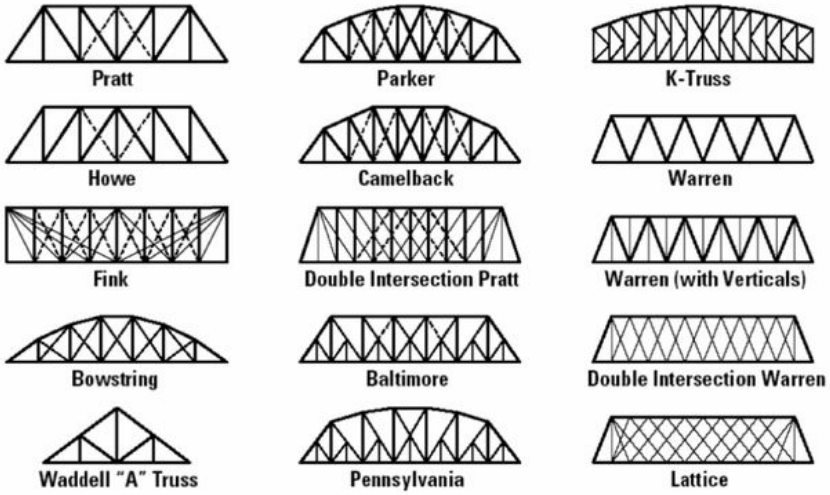
<u>Truss bridges</u>

What is it?
Ever wondered what a Civil Engineer does? With photographs of engineering marvels to hand (e.g. the Golden Gate bridge), explore how bridges are constructed with our RAE engineer Aishah Latif from Salford University. Have a go at building your own 'truss bridge' using lollipop sticks and a glue gun, then test your design with vehicles and weights. If unsuccessful, keep experimenting with different cross beams and trusses, and share your designs with others. Before you go, don't forget to contribute to the giant truss bridge which will evolve over the weekend with visitors' ideas!

What's the story?

If a Supervolcano erupted in your local area, infrastructure such as buildings, bridges and roads could be destroyed. For example in 1996, Icelandic volcanic eruptions caused a flooding of black sulphurous water and ice from a lake, damaging two long bridges. Additionally, in the 1980s at the Mount St Helens volcano, hot ash and gas destroyed forests, and mudflows of ash and water surrounded the volcano, causing flooding. This destroyed communication systems such as road and railway bridges. In scenarios like these, science and engineering skills are vital to rebuild our lives.

What's the science?



Wherever you find a large body of water in a city or town, you'll most likely find a bridge to cross it. Often made from stone, cast iron, brick, steel or plastic, the bridge needs to be strong and flexible enough to support its weight and those crossing it. A product of the Industrial Revolution, truss bridges have been around since the late 1700s. 'Truss' refers to '**a structure of connected elements, forming triangular units**', transferring the load from a single point to a much wider area. Like the lolly sticks available, historic truss bridges were first made from **wood**. This activity will allow you to experiment with the composition of the truss, discovering which patterns create the most rigid structure.

What do I do?

- Encourage visitors to join the activity, briefly explaining the task and showing them the photos of famous bridges for inspiration.
- Facilitate the designing, building and testing of truss bridges.
- Chat to visitors about their designs – why did they use that pattern? How can they test it? Can it be made stronger / lighter / bigger? Can they think of any structures like this in real life?
- Ensure health and safety of visitors (in particular, young children) using glue guns and materials.
- Help Aishah in the tidying and replenishing of materials.
- Gently encourage visitors to build bridges with ***precision*** (as bridges with imperfections don't hold as much weight as those with a consistent pattern).
- Recommending visitors also get involved in the design of the larger, evolving truss bridge!

Water filtration

What is it?
Discover how the layering of pebbles, sand, cloth and charcoal can help purify water – with no chemicals needed. With help from our engineers, contribute to our water filter using the basic materials available, and watch it remove the impurities. Experiment with how quickly you can make clean water, how much, and compare it with the original dirty water. Can you produce enough to save your friends and family in time?

What's the story?
A supervolcano has destroyed everything in your local area. Stumbling across shattered buildings and debris, you find a pool of collected water. It's unclear whether it's from a public water supply, so how can you trust it? Poisoning yourself is not a great way to start your survival journey... so you'll need to filter it using basic materials around you. What's the best way to make it safe? How much will you take?

What's the science?
Water is an essential resource across the world. When we turn the tap on, we naturally assume the water is safe to drink, because it's treated before it is supplied to our homes. The 'raw' water you discover in a natural disaster may contain dissolved salts and minerals (from dirt and rocks), microbes, pollutants, and insoluble materials like sand and stones. This activity explores the first step of water purification – **filtration** – 'removing unwanted solids from a liquid'.

Each layer in the filtration plays an important role! The pebbles allow water to pass through but trap particles, and the charcoal helps to remove some chemicals. In this real–life engineering activity, you gain an insight into how civil, environmental, material and mechanical engineers all contribute to developing ways to purify unclean water.

What will I be doing?
- Inviting visitors to the activity, explaining it as a real–life engineering process
- Helping visitors make the small filter (funnel, rock, sand, vial) and comparing it to the larger one
- Facilitating the collection, measurement, and testing of water samples
- Helping to explain the science and engineering behind the activity (see activity handout)
- Leading visitors in their learning with open questions e.g. how would you describe the water now? Can you think of any other ways to make a filter? What would you do without water?

Space Camp: Asteroid MAKING

What is it?
Helping visitors to make their own asteroids out of mod-roc (a type of plaster bandage, which after adding water, sets hard.) Visitors can decorate them how they like, covering them in glitter and paint! To ensure that you have claimed an asteroid of your own, you can decorate your own flag to stick on it, and take it home as a SMASHfestUK memoir.

What's the story?
You are a space explorer, landing on and claiming your asteroid for your own. You can even decorate your own flag to place on top. But what will you decorate it with? Can you design your own personal flag for you, your family or for Earth itself?

What's the science?
Asteroids (minor planets!) are basically large rocks full of precious and useful metals which are rare on earth, but plentiful on them. Typically an asteroid is around 80% iron and 20% a mixture of nickel, iridium, palladium, platinum, gold, magnesium and other precious and useful metals.

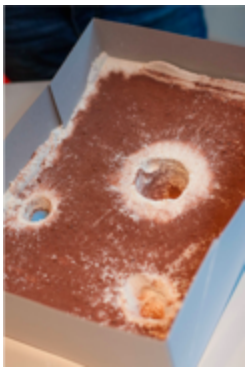
<u>What's what?</u>

Comet = a chuck of ice and rock from the outer solar system.
Asteroid = A large rock, the size of a mini-planet, left over from the formation of the Solar System. Most are found in an 'asteroid belt' in orbit around the Sun between Mars and Jupiter. Sometimes asteroids get bounced towards earth! The biggest is named Ceres, with a diameter of nearly 600 miles (950km).
Meteor = Smaller space rocks that burn up as they plummet through the Earth's atmosphere.
Meteorite = Piece of rock, smaller than an asteroid, travelling through the solar system. If a meteor doesn't entirely burn up in the earth's atmosphere, the space rock that lands on Earth is called meteorite. (When it's still travelling, it's called a meteor!)

What will you be doing?

- Helping, assisting and chatting informally with visitors as they make their asteroids
- Asking questions about why they chose certain colours, patterns or shapes
- Chatting and asking questions about what they know or like about space.
- General housekeeping, keeping things clean and tidy
- Cutting out the modrock slips for next person to use. **Make sure you keep the scissors on you and the only one who uses them. At all other time please return them to the plastic box underneath your table.**

Space Camp: Asteroid IMPACT



What is is?

A station where you can have a go making your own asteroid impacts! A layer of flour is covered with a thin layer of cocoa on top. Audience have a go at dropping different asteroids into the tray, to explore how different variables such as height, angle and size effect the size of a crater. You can try out using different objects to drop in too.

Alongside we will be using IMPACT EARTH! a website which models the effect of different asteroid impacts in your area. Visitors can have a go trying out the effects a range of asteroids in their local area.

What's the story?

If an asteroid hit your town or your country, who would it affect? You are recruiting scientists (our visitors) to have a go at modelling the effects of different kinds of asteroids. This will give you enough information to know how large an area you might need to evacuate, whether you might need to prepare for any climate change effects or whether you might have to evacuate the earth completely!

What's the science?

Most recently the closest we have got to being hit by a serious **asteroid impact** was in 2012 . Asteroid DA14 was a known as a 'fly by", narrowly missing earth on Valentine's Day 2012. It missed Earth by 17,200 miles (27,700 kilometers) and was approximately 150 feet (45 meters) across (about the size of half a football field)!

The most recent destructive **meteorite impact** exploded in Chelyabinsk, Russia, in 2013. Shattering glass and injuring 950 people, the shockwave blew out windows and rocked buildings. 20 metres wide, at its most intense, the meteor fireball glowed 30 times brighter than the sun causing skin and retinal burns, say researchers.

Any impact from an asteroid with a diameter of about half a mile (one kilometer) could temporarily change global climate and kill millions of people, if it hit a populated area.

What do I do?

- Invite visitors to the activity
- Assist with any clear up or mess that might result
- Help visitors experiment with making craters. You can lead them through ideas such as what happens if I drop the same objects from **different heights**? What happens if I drop **different objects** from the same height? The point will be to explore and experiment rather than having lots of answers to hand.
- Help reset the activities when they have finished.

Lava Slime! *Timed sessions displayed on the day*

What is it?
A short slime making workshop where visitors come along and find out about the properties of lava by making their own lava slime! They also get the chance to discuss the possible dangers of lava and are encouraged to design and build their own 'lava proof' structures which they can test out against their slime at home.

What's the story?
There's a lava flow approaching your house! But is it dangerous? Visitors are invited to explore how the lava slime behaves and ask lots of questions such as: how fast does it move? Can you stop it? Why is it dangerous? How would you protect yourself and your house from it? Would you use materials to help protect against heat? Or redirect the lava using a wall, or avoid completely by building a house on stilts?

What's the science?
Lava and slime are both special kinds of materials called 'non–newtonian fluids'. This means that the '**viscosity**' (how much something flows) of the material *changes with the amount of pressure you apply to it*. With our lava slime, if you apply a great force to it – such as hitting it with a mallet – it acts like a SOLID. However if you leave it alone or are very gentle with it, it acts like a LIQUID.

For example, if you leave slime or 'oobleck' (a mixture of cornflour and water) in your hand it will ooze and run through your fingers like honey. The long molecules in the material 'lock' together when a great force is applied, but with little force, they slide over each other and act like a liquid.

- *Viscosity is used to describe the 'lack of fluidity' of a substance. Syrup is very viscous, but water has a low viscosity, i.e. it is 'runny'.*

Made from molten rock, some types of **lava** also behave like a non–newtonian fluid. Bright red lava flows in Hawaii can get as hot as 630 degrees celsius, but the glowing orange flows can even reach above 870 degree celsius!

What will I be doing?

- Helping ensure that people are following correct health and safety procedures such as wearing gloves and keeping their slime pot closed until they get home.
- Leading children on how to make their own slime in pots.
- Informally chatting about the **similarities** between their slime and real life lava
- Discussing the **differences** between their slime and real life lava
- Helping provide materials to make engineering structures
- Chatting to visitors about how they might protect homes or divert lava flows away from their town!

Other activities

Below are some activities taking place that won't require any volunteer facilitation – but during the festival do feel free to pay them a visit and get stuck in!

Storytelling – Dougal Earth aka. Dr Volcano
20 mins duration, timed sessions displayed on the day

Award winning Earth Scientist Dougal Jerram uses his expertise and passion to bring volcanoes to life for young children. Reading from his children's book 'Victor the Volcano', discover the internal workings of a volcano with experiments, a Q&A opportunity and book signing.

Den building

What are the most important things you need when an emergency has been declared? You'll need food, water, but also shelter. Come along and use basic materials to build a shelter with Chris "The Den Man", and see if you'll survive the elements.

Heloise – Astronomy PhD student (University of Sheffield) ***Saturday only***

Did you know that there are volcanoes erupting in space? Meet Heloise, a real life astronomer, who researches volcanic activity on other planets and moons for a living. Discover the volcanoes of Io (one of Jupiter's moons, powered by the pull of Jupiter), the cryo-volcanoes of Enceladus (sixth-largest moon of Saturn) and other galactic moons, like Titan.

Jazmin – Volcanology PhD student (Hull University)

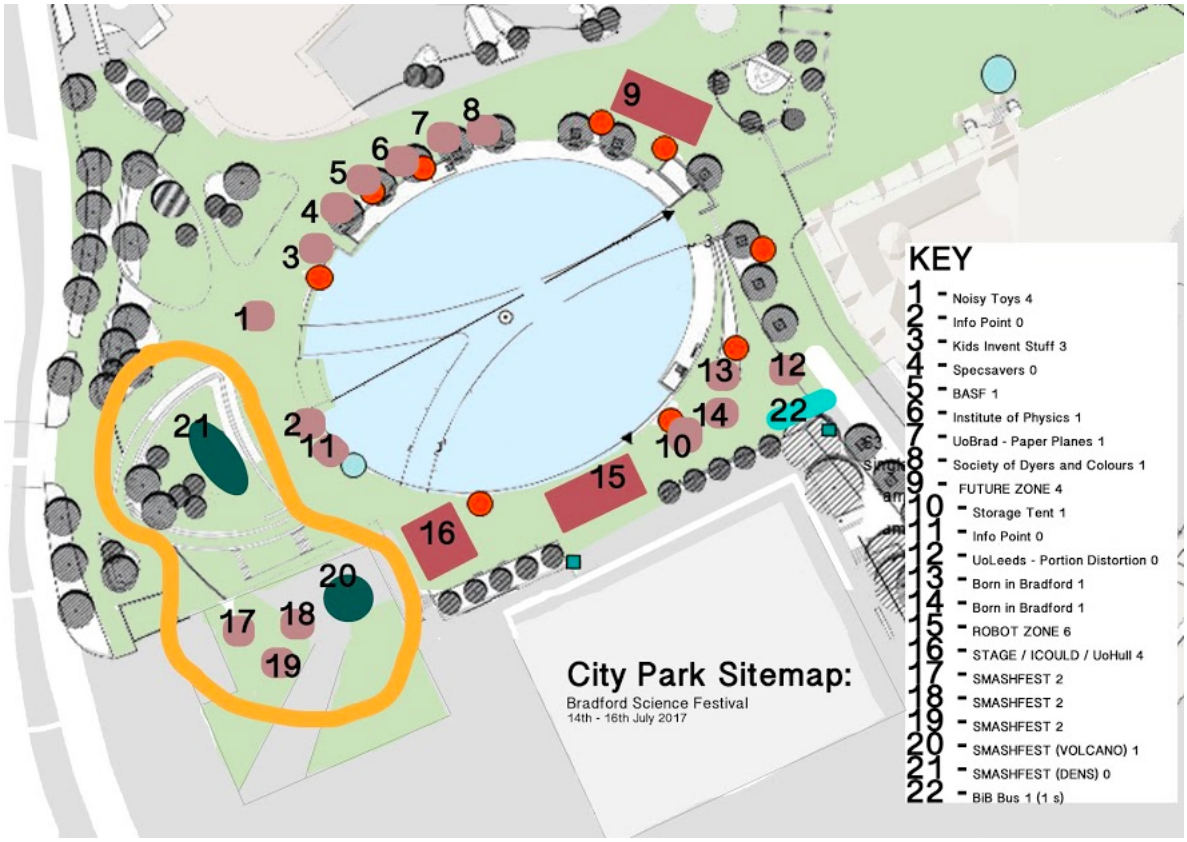
Come and meet a real life volcanologist who studies eruptions from a historical and social perspective. With articles, photographs, and samples of volcanic rock and ash, Jazmin will lead you through people's stories from the La Soufriere eruptions, dubbed the worst volcanic disaster of the 20th century. Lastly, create your own hazard map of Bradford and see if you can forecast the destruction of a local volcano!

Where should I go?

At your agreed arrival time, please come to Bradford City Park, BD1 1SD, overlooking the Mirror Pool on the south-west grassy raised area. You'll find the SMASHfestUK team in red t-shirts, by the big graffiti volcano teepee tent! It is the side of City Park with Godwin Street running alongside.

Site Map

SMASHfestUK Survival Zone circled in **orange.**



Website & Social Media

@SMASHfestUK #EarthandSky #Supervolcano #SMASHfestUK

Website: smashfestuk.com

If you use **Facebook**, please Like our festival page and check for updates: www.facebook.com/SMASHFestivalUK/

Follow us on **Twitter** @SMASHfestUK. We are using the hashtags #SuperVolcano #SMASHfestUK, so please join in!

Bradford Science Festival are using the hashtags #bradscifest and @mediamuseum

We're also on **Instagram** and **SnapChat** @smashfestuk

Please tag us in any festival related posts and photos and share our posts about the festival so your family & friends can see them!

Photography
Photography and filming will be taking place around the festival. **If you would not like to be photographed** please inform Esther Lie or Ellie Hall at the beginning of the day. Please speak to a staff member if you have any queries.

SMASHfestUK: Who's Who?

Directors

Lindsay Keith 07970963976 / lindsay@smashfestuk.co.uk

Wyn Griffiths 07976 051537 / wyn@smashfestuk.com

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Tobin May 07860478893 / tobin@smashfestuk.com

Outreach Managers

Esther Lie 07808148834 / esther@smashfestuk.com

Ellie Hall 07747116031 / ellie@smashfestuk.com

Additional Team Members

Hannah King (Volcano Teepee)

Useful things to know!

It's the middle of July, and potentially going to be warm (or cold…)! Please dress appropriately for the weather and for spending time outside. Sturdy, comfortable footwear is advised, layers, sunscreen, and a waterproof jacket and shoes would be useful. Please bring a small bag to keep your valuables on you at all times.

Please also wear the SMASHfestUK volunteer t-shirt and your name sticker.

Nearest Toilets:

City Park Public Toilets – in front of Mirror Pool
National Science & Media Museum – turn right at entrance, behind shop

Nearest transport stops:

- Train Station – Bradford Interchange 5 min (0.2 mile) via Bridge St
- Bus stop Bridge Street (stop S15) buses 640, 64, 645
- Bus stop Market St (stop M2) 611, 614, 645, 653, 656, 659, 670, 677, X11
- Plenty more bus stops and public transport routes
- Local Taxi Company
- Bradford Town Taxis 01274 740623
- 98 Morley St, Bradford BD7 1AF

Who do I go to if I have a problem?

Ellie Hall is our Volunteer Manager for the day and she will be your go to for any queries. However if you ever have a problem you can alway approach any core team member in a **RED t-shirt** and they will help with any enquiry you may have.

Nearest shops

If you are volunteering with us we will be **providing lunch expenses and snacks** and plenty of water for you throughout the day. If you would like anything additional, there are a selection of shops and cafes around the square, as well as a Tesco Express at 27-29 Sunbridge Rd, BD1 2AY.

When are my breaks?

We will give you an hour for lunch which will be rotated throughout the day. However if you would like longer for lunch do let us know! Breaks will also be rotated too to ensure you are well rested. However if you need to take a break at a specific time or need any more flexibility, just let one of our team know.

Anything else?
As a volunteer you can have your **travel expenses refunded**! Please make sure you keep a copy of your receipts. We shall send you the expenses form to reclaim your travel after the event. However if you need help with your travel upfront please contact our volunteer manager, Ellie Hall.

Example rota

	Sat	Sun
10–11	**Briefing and set up**	**Briefing and set up**
11am OPEN	**Activity 1**	**Activity 1**
12.00–2pm	**Lunch breaks – rotated**	**Lunch breaks – rotated**
2–3pm	**Activity 2**	**Activity 2**
3–4pm	**Activity 3**	**Activity 3**
4–5pm	**Activity 4**	**Activity 4**
5pm CLOSE	**Pack down**	**Pack down**

On the day

A quick overview of how the festival days will run.

7.30am – 9.45am: Set up, materials delivered on site from van

9.30am – Engineers arrive, set up Water Filtration & Truss Bridges

9.30/9.45am – Scientists arrive, set up volcano activities

10am – Volunteers arrive, 10 min set up briefing

10.15am – Bradford Science Festival Briefing – **all** – location: points 2 & 11

10.20am – Continue setting up activities, volunteer briefings for each activity (Ellie Hall)

10.45am – All activities ready to be opened, core team briefing

11am– 5.00pm: Festival open to the public!

LUNCHES WILL BE ROTATED ON THE DAY

5.05pm – Volunteer pack–down briefing

5.30 – 6pm – Litter pick by volunteers and team

6.00pm – Volunteers leave site

THANK YOU!