

Telling Earth's Story Conference

Thursday 22 April 2021



Summary and Resources

This free online conference was organised by the Scottish Geology Trust to share ideas and inspiring initiatives from Orkney to France that have successfully engaged different audiences in geology and how the Earth works. The event focussed on why it's important to tell Earth's story, drawing on case studies that show great examples of engaging audiences in geological sites, landscapes and climate change.

This document was prepared by volunteer Emily Brown to summarise the event and share links to further resources. The presentations were recorded and are available on the SGT YouTube channel

www.scottishgeologytrust.org/telling-earths-story-conference-22-april-2021/

Introduction to the Scottish Geology Trust from Trustee Elsa Panciroli, explaining our aims and the themes that the Trust is working towards: To inspire people to love, care for and engage with their local geology, to support Scotland's geoparks, to highlight and encourage geological education and to campaign for geology at the governmental level. Elsa then introduced the theme of the event and introduced the three speakers.

Become a member or learn more about the work of the Trust: www.scottishgeologytrust.org

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Lemptégy – Opening the heart of a volcano to all

Professor Benjamin van Wyk de Vries, Université Clermont Auvergne, France

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Lemptégy site www.auvergne-volcan.com

Summary Lemptégy is an extinct volcano in Auvergne, France which has been quarried out and was later developed into a visitor attraction. The centre is privately owned, visits began in 1992 and receives over 100,000 visitors per year.

People are the key to why Lemptégy is important and successful. The centre is a family-owned business and the majority of the guides and scientists are locals. The centre caters mainly to families, schools and retired groups, majority local. The attraction aims to tell a local story to reach the local people.

Communication between different workforces at the centre has been important to developing the site, guides and scientists worked together to develop new exhibitions – once the guides knew the science they were able to from experience how to communicate this best to the public in small easy chunks.

The aesthetics of the site is a draw for many people, it's why they come, but while people are there, they can learn in small easy chunks that are not too challenging for anyone and have easy fun for all ages.

The development of the site has been slow and steady, new exhibitions have been tactile, educational and fun (nothing too difficult, easy chunks). A new feature/attraction/exhibit has been added every 3 years to maintain novelty and drive return visits. This also makes it easy to move with the times and adapt quickly.

Features of the site include a personalised guided tour, a 4D film, a virtual train ride through the rifting and eruption of the volcano, and educational exhibits that tell both the human story of the quarry and the geology.

This is a model which can be applied anywhere, so long as you have the mix of scientists and local people to tell the story. The emotive hook of a Volcano helps. Active research being conducted on the site inspires people to ask questions, but if no one is there to answer those questions then it is pointless. The guides

make the rocks interesting. People make the attraction worth a visit, the geology seeps in after.

Q&A Any quarry has the potential to be developed this way, so long as you have the human aspect. Slate is boring, slate MINES are fascinating, especially to the non-geological public. People go for the history and will pick up the geology along the way.

Beauty is in the eye of the beholder. The layperson is able to appreciate geological beauty without any knowledge of the geology and that is a great place to start and then slip in some geology.

Being a small privately owned venture has been a challenge but has encouraged creative thinking and innovation to maximise the money available. This links back to people again, enthusiastic people make small amounts of money go a long way.

From the Chat There was lots of discussion in the chat about sites within Scotland that could have potential to be developed in the same way as Lemptégy. These included Spireslack coal mine, Ravelrig Quarry, Holyrood Park and the Slate mines of Luing/Easdale. Siccar Point was brought up as a site for development and Angus noted that discussions were already taking place.

Examples were also given of sites where visitor centres already exist, or where tours were already conducted, both within the UK and wider Europe.

“Could this [Lemptégy] model be applied to comparable Scottish sites i.e. the Spireslack abandoned coal mines in east Ayrshire?” Info: www.geolsoc.org.uk/Geoscientist/Archive/August-2016/SCARP-a-Scottish-Carboniferous-research-park

“Or Ravelrig Quarry in W Lothian?” Info: www.edinburghgeolsoc.org/geological-site/ravelrig-quarry/

“Slate mines on Easdale/Luing used to be bigger than Wales” slateislands.org.uk

“There's already a train inside Ben Cruachan!” – Info on Ben Cruachan and the current power station tour at: www.visitcruachan.co.uk/the-experience/

“There is a collectors quarry in southern Germany where you pay and have free reign to collect within. You can hire hammers and chisels, and buy drinks or order food for lunch. Also info boards etc. When I was there, kids were there with their parents searching and finding fossils in a safe environment. The quarry does not seem to have a website, but this the name and details and guy who runs it. Hopefully still up to date. Besuchersteinbruch Mühlheim bei Mörsheim Roland Pöschlkrautworst.fossils@t-online.de fossil-poeschl@t-online.de”

Hobby Quarry, Solnhofen: www.naturpark-altmuehltal.de/freizeit/a-z/hobby-steinbruch_solnhofen-19262/, paired with the Solnhofen Museum www.museum-solnhofen.de/Oeffnungszeiten-und-Preise.n84.html

Hobby Quarry associated with Bergér Museum www.museum-berger.de/steinbruch

“There are precedents in the UK e.g tours of mines in Snowdonia, tours of caves in the Peak district and the Giant's Causeway in NI. We could do the same in our geo parks.”

Examples of mine tours:

Wales www.visitwales.com/things-to-do/attractions/cave-mining-attractions

England www.visitengland.com/things-to-do/going-underground
www.ncm.org.uk/the-experience/opening-later/underground-tours
clearwellcaves.com/

“There is already Wanlockhead (www.leadminingmuseum.co.uk/) and also Ecton Copper mine in the Peak District - see www.ectonhillfsa.org.uk/EHFSA/EHFSA.html”

“As for Siccar Point why not access the site by boat? Boat trips already leave from St Abbs, Eyemouth for bird watching: www.ribridesstabbs.co.uk”

“Cornwall has a couple of good mine tours. Geevor on the Tin Coast is good, wit a short underground visit. geevor.com/ "Poldark" Mine in Wendron (just north of Helston) does a really good underground tour.

www.poldarkmine.org.uk”

“There’s a museum in East Lothian, regarding coal mining”

www.visitscotland.com/info/see-do/prestongrange-museum-p251071,
www.facebook.com/PrestongrangeMuseum/ nationalminingmuseum.com/

“We visited a defunct coal mine in Wales some years ago. The story was that it was bought out by the workforce who were able to keep it working and support the community. Can’t remember which it was, may be The Big Pit now” museum.wales/bigpit/

“Almond Valley museum for the shale oil industry” www.almondvalley.co.uk/

“What a great place - educational and promoting tourism. Rubislaw Quarry Aberdeen instead of proposed housing development. Would be good for new cruise port too” – for context

www.scottishconstructionnow.com/article/tribunal-rules-aberdeen-quarry-visitor-centre-plans

An Island Story: Engaging the local community

Katy Firth, Stromness Museum, Orkney

www.stromnessmuseum.org.uk/

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Summary Stromness Museum is one of the oldest independent museums in Scotland. It has a varied collection, including geological specimens, and has ties to the voyages of James Cook (250 year anniversary in 2020). To tie in to an exhibition themed around exploration which marked the 250 year anniversary, an interdisciplinary excursion was planned to the Island of Graemsay. This could not go ahead due to lack of funding and the COVID-19 pandemic. Instead, a 360° virtual tour of Graemsay was developed as part of Orkney International Science Festival.

As part of planning the virtual tour, many groups of people were invited to be involved. This included Graemsay residents, Graemsay expats and descendants, Orkney residents, various local experts and wider technical support. To get the local community involved, Katy spoke to residents, who then put her in contact with other residents or connected people, forming a network of contributors.

The tour involved 360° photospheres as well as embedded content. The form this additional content took was driven by the locals who were contributing and what information they wanted to share. Formats included artwork, photographs, audio recordings and videos. Young people were specifically asked to contribute to the project.

Oral histories, childhood memories and folklore were a focus of the project. Stories and legends about rock formations or curiosity about where people played as children are ways people engage with the landscape and are what initially draws people in, the geology can come after that. Legends can demonstrate how the local geology has been interpreted by people. The tour was able to tell the legends in the same space as a simple description of the geology and formation history of the formations. The oral histories also highlighted how people engage with and live around the geology of the island, an example being children daring each other to climb atop the Hattie Man O’ Ree seastack.

The tour is hosted on RoundMe, which is a free hosting service for virtual tours. As part of the science festival, Katy delivered an online launch event and talk, featuring a panel of locals who contributed and other Graemsay residents.

Engaging the community was challenging, especially during the pandemic. Gentle encouragement and letting people choose what stories to tell was important. Building a local network was also important, finding the right people to talk to who could help expand the network of contributors while being respectful to the wishes of the community.

The legacy of the project was also a consideration, how would the work be archived and used to benefit the local community. In this case it will likely be used in helping people decide if they wish to visit the island.

The camera that was used. There are many on 360° cameras on the market at different price points.
www.insta360.com/product/insta360-onex2

The CUPIDO programme www.openvirtualworlds.org/cupido-2/ provided the 360° photogrammetry training, partnered with xponorth.co.uk/ and www.hie.co.uk/

Orkney International Science Festival oisf.org/

Tom Muir's website, Author, Folklorist and Exhibitions Officer at Orkney Museum www.orkneyology.com/

Host of 360° VR tours roundme.com/

The Graemsay Tour roundme.com/tour/611892/view/1951031/

The recording of the talk Katy gave on the project at the Orkney Science Festival
www.youtube.com/watch?v=sp6nwnfm52s

Q&A The project focused on asking people what they found interesting rather than explaining what people should find interesting from a geological perspective. This is a great approach to community engagement. People can be resistant to contributing to projects like this for various reasons, but in this case, being part of the wider local community helped connect with people, and then a persistent, direct approach was necessary. Asking people one-on-one was more fruitful than blanket calls for contributions.

From the Chat Discussion in the chat was very positive towards the project, especially in how it centred people. It was also brought up that involving the local community in this way was a great way to include "indigenous knowledge" and should be adopted more widely. It was also suggested that this type of VR tour could be implemented at Rhynie. Other similar projects were also linked in the chat, see below.

"Relating to connecting people to landscape, I am part of an AHRC funded project looking at how we can use art to express how people feel about their landscapes and the futures of their landscapes - Landscapes of the Mind www.bgs.ac.uk/geology-projects/volcanoes/landscapes-of-the-mind We are always keen to make new connections and see how we can work with others to promote our landscapes" - Carol Cotterill

"The Bunnet State is another example of a similar geofact" en.wikipedia.org/wiki/Bunnet_State

"I created an online platform for online travel courses. The goal is to encourage people to enroll before they travel to a destination to connect to it on a deeper level. My overall goal is to inspire people to care more about the planet, so they make better decisions for the planet. I plan to do a course about Scotland in the future and very happy to work with geologist and other geo science experts.

earthyuniversity.thinkific.com/ or www.earthyme.de/" - Daniela Dägele

Engaging people in climate change

Dr Hermione Cockburn, Scientific Director in Public Engagement at Dynamic Earth

www.dynamicearth.co.uk www.dynamicearthonline.co.uk

Contact: Hermione.cockburn@dynamicearth.co.uk

Summary Dynamic Earth is a dedicated Earth Science centre and educational charity in Edinburgh. Over time there has been a natural evolution towards including climate science and programming geared towards the climate crisis.

The Scottish government has recently conducted a public consultation regarding engaging the public with climate related policies (Net Zero Nation) but what is needed for the public to engage with these policies is a high degree of science literacy and to understand to some degree the science that is driving these policies. The upcoming COP26 UN climate change conference, held in Glasgow, is driving a surge of interest in the climate crisis and is a key opportunity for engaging the public in climate change and climate science.

Dynamic Earth and the Science Centre network are broadly aiming to 1) Raise science capital and 2) Inspire the next generation. Science capital is a conceptual framework based on Social capital; the more science capital a person has, the more likely they are to be engaged in science. This includes science literacy,

knowledge of the transferability of science, participation in science activities and knowledge of scientific qualifications. More information can be found in the links below. Many people find science fun, but they don't necessarily see how science is relevant to their lives. Helping young people understand what science can offer them and what they can contribute to scientific understanding is very important.

Examples of how these aims were met are

- Operation Earth was a national engagement program aimed at school age children and families to connect them to “stories, science and people” and highlight the relevance of current environmental science research to daily life and our future. Research shows that researchers themselves are the most trusted source to get the message across to the public, this project ensured opportunities for people to meet active environmental scientists. More information can be found below.
- Dynamic Earth Online is a new website created in response to COVID-19. Material was adapted to fit an online format and learning resources, activities, scientist profiles and information packs are freely available. The website is updated regularly and linked to social media channels. Climate and sustainability are highlighted as part of the website, not just the mechanisms of climate change but also information about climate justice and nature-based solutions.
- Climatehub.co.uk is another website of resources, bringing together resources, activities and events from a wide range of organisations.
- Atlantic Adventures with ATLAS was the outreach program associated with the ATLAS marine research project. The research focused on deepwater ecosystems in the North Atlantic and Dynamic Earth produced a suite of learning resources and activities for use across the research consortium with diverse audiences. Hands on activities were a focus as this is a great way to get people involved directly. The learning activities were marine focused, and this provided an opportunity to discuss changing environments in response to climate change. Geology and climate change do not necessarily have to be the focus.
- The same applies to redesigning the Discovering the Deep exhibition. It will tell the human story of discovering and surveying the deepwater ecosystems of the North Atlantic, while also explaining those ecosystems and the threats to them. The aim is to draw people in through the historical heritage while telling the story of the natural heritage that is just off the coast. Again, it's not directly about climate change, but it is as it will discuss threats and changing ocean conditions.

Net Zero Nation Documents www.gov.scot/publications/net-zero-nation-draft-public-engagement-strategy-climate-change/

The Royal Society of Edinburgh's response to the Net Zero Nation consultation www.rse.org.uk/wp-content/uploads/2021/04/Draft-Public-Engagement-Strategy-for-Climate-Change-RSE-response.pdf

UN Climate Change Conference, UK 2026; Glasgow ukcop26.org/

Science Capital: www.sciencecentres.org.uk/projects/science-capital-practice/
www.stem.org.uk/news-and-views/opinions/science-capital-making-science-relevant
www.ucl.ac.uk/ioe/departments-and-centres/departments/education-practice-and-society/stem-participation-social-justice-research/enterprising-science

Homepage for the Operation Earth engagement project www.operationearth.co.uk

“Climate hub with a range of resources activities and carbon cutting ideas, so everyone can share resources and knowledge” created by association of science discovery centres www.climatehub.co.uk

Homepage for the ATLAS project. Deepwater ecosystems in the North Atlantic
www.eu-atlas.org/index.html

Education specific resources from the ATLAS project www.eu-atlas.org/education/intro.html

ATLAS augmented reality colouring pages www.eu-atlas.org/education/spectacular-colouring-pages.html

Discovering the Deep info page www.dynamicearth.co.uk/support-us/redevelopment-projects/discovering-the-deep

Q&A Everything ties to climate change. Something to consider is how to create meaning with outreach, to encourage people to care and incorporate science into their lives. It's important to remember that science engagement is a two way process, and it's important to listen to and involve people. Understand and build on prior knowledge, meet people where they are. Knowing your audience is key, what do they know and what is meaningful to them. Use and adapt existing resources (especially the ones linked in the talk), you don't have to reinvent the wheel.

From the Chat People agreed that there was significant scope to connect Scottish geology and climate change and the idea of introducing geology as part of or related to a more accessible subject was well received. "Our job is to give them what they want (awesome experiences), but to really give them what they need (science knowledge)"

Augmented reality colouring garnered a lot of interest, with a few people wanting to give it a try. www.cherishproject.eu/en/ - "A big project re Climate Change going on in Wales and Ireland is the Cherish Project, looking at the effects of coastal erosion."

www.dynamicearthonline.co.uk/planet-earth - for geology specific resources

What are we already doing in Scotland?

Angus Miller, Engagement Lead, SGT

Angus presented a brief summary of the huge range of existing resources that exist for Scotland, for a range of audiences. The key point is that there is a lot out there that can demonstrate and inspire, and also a lot of skill and enthusiasm that can be tapped into. Not everything needs to be developed from scratch.

www.scottishgeology.com

is run by SGT, as a hub for all information about Scottish geology. Can be used to host material, and the Where to Go map tries to include links to everything relevant - www.scottishgeology.com/where-to-go/

Participants are encouraged to get involved in the Scottish Geology Festival which runs from 1 September to 17 October 2021 - www.scottishgeologytrust.org/festival/

From the chat The point was made that the public does have an interest in the landscape and the fact that amateur geology groups being relatively common is evidence of this. The basic principles of geology are easy for people with little geological knowledge to understand. There was lots of positive sentiment towards the information boards and geowalls, however it was suggested that annotated geological diagrams could feature more heavily. There was also a discussion about local stone, and about how it is low carbon. The concept of "stone miles" was mentioned. It was pointed out that there are obstacles to re-opening local quarries such as ownership disputes and economic factors, that some local quarries were re-opened in fife but they were very short lived.

Gary Eisenhauer wanted to know if the list of the "best 51 places to see Scotland's Geology" (www.scottishgeology.com/best-places/) could be available for use with GIS software, for people to make maps with them.

Conversations in Stone, a Celebration of Hugh Miller's Legacy; Larissa Reid and Elsa Panciroli (eds) <https://www.edinburghgeolsoc.org/publications/geological-excursion-guides/#conversations-in-stone>

Consilience and ConsiliARTE online journal specialises in poetry and arts surrounding geoscience www.consilience-journal.com/