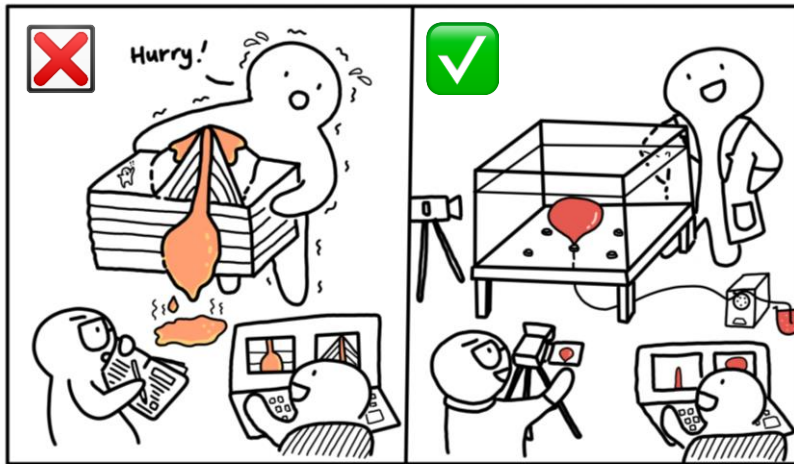


# JELLY VOLCANOES

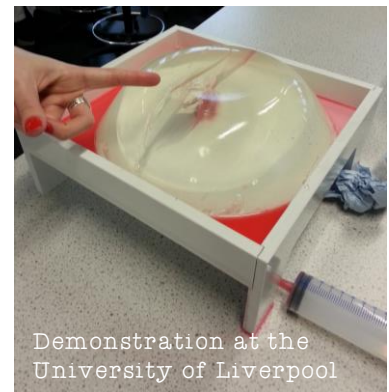
Suitable for teachers of school and college students  
(GCSE and A-Level)



Direct observation of physical processes in the Earth's crust can be challenging and comes with its own set of limitations. Laboratory modelling allows scientists to model, observe and reproduce complex processes in a safe and controlled environment.

## About jelly volcanoes:

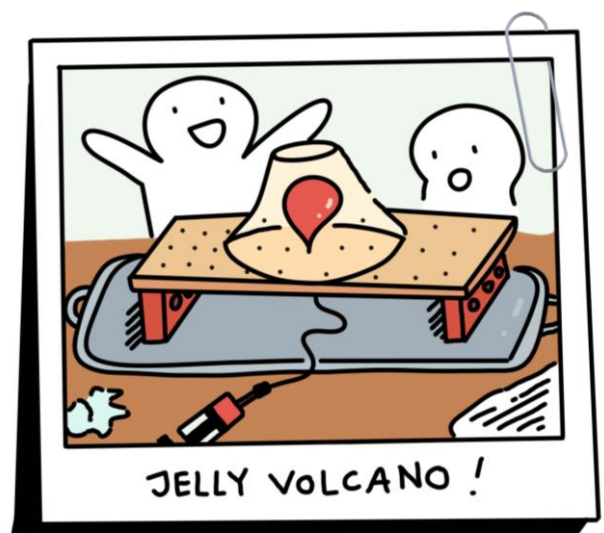
Volcanic eruptions in nature are fed by magmatic intrusions in the Earth's crust. In these experiments, we will be using jelly as an analogue for the Earth's crust and coloured water as the analogue for magma. The use of clear jelly and brightly-coloured water allows us to observe the evolution and growth of the intrusion(s) in real time.



Demonstration at the University of Liverpool

## What you will need:

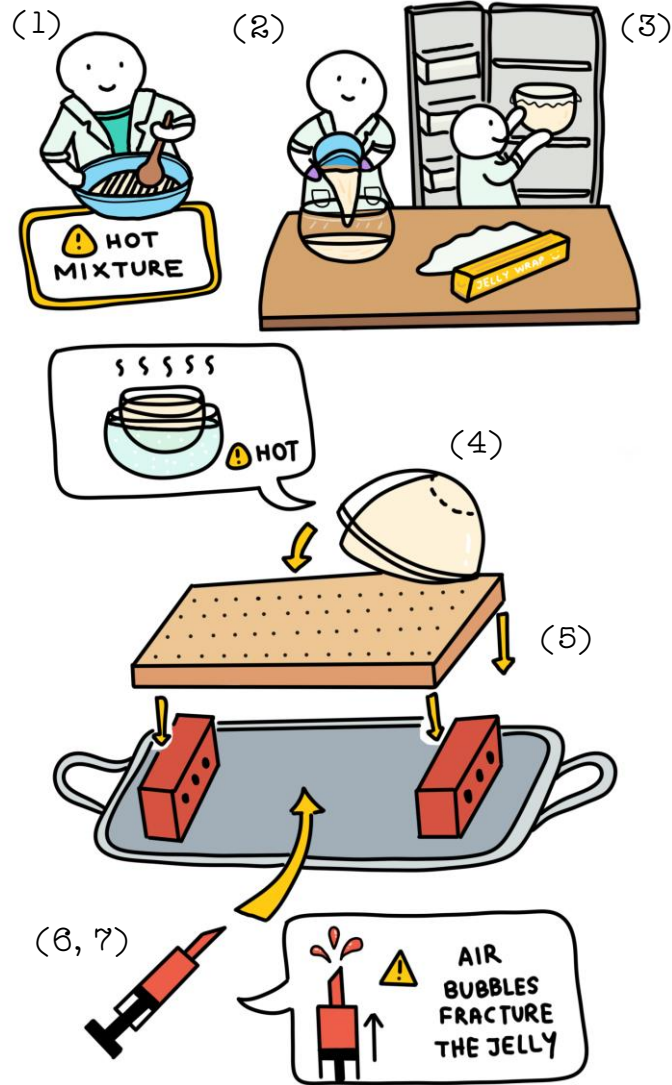
- Gelatine powder, unflavoured
- Hot water
- Mixing bowl
- 2 L clear plastic mixing bowl (to use as jelly mould)\*
- Spoons for mixing
- Cling wrap
- Syringe (pipe optional)
- 30 x 60 cm Pegboard with 5 mm holes (or large aluminium tray with holes poked in using a 2B pencil)\*
- Red food colouring
- Bricks for support
- Baking tray (to catch drips!)
- Video camera/ Mobile phone to record the experiment



\*These are suggested sizes. Just make sure your pegboard/aluminium tray is big enough to hold your jelly, with holes large enough to insert the syringe

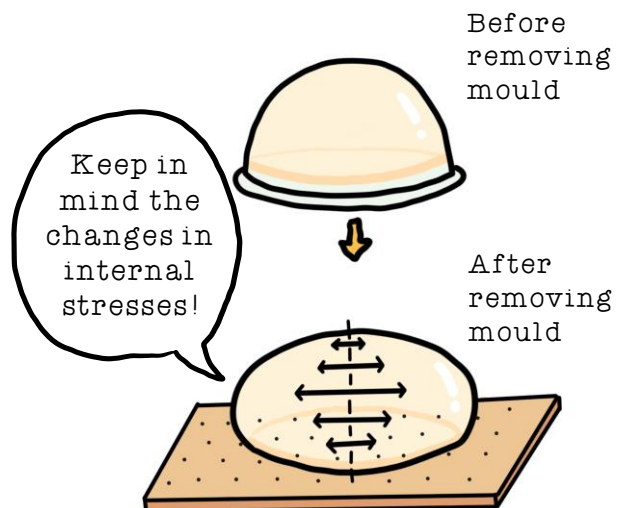
## Instructions:

- 1) Make the jelly according to packet instructions (We recommend a 2.5 wt% mixture. For a 2 L mixing bowl, this would be 50 g **Gelatine powder** and 1950 g **Hot water**)
- 2) Carefully pour the mixture into your chosen **jelly mould**. Spoon out any air bubbles for a smooth jelly surface!
- 3) Cover the mould with **cling wrap** and leave to set in the refrigerator
- 4) Once set, turn the **jelly** out onto your **pegboard** (Tip: Dip the jelly mould briefly in a **bowl** of hot water to loosen it up)
- 5) Position your **bricks** on your **baking tray** and **carefully** pick up your **pegboard** and place it on top of the bricks. Your **jelly volcano** is now in place!
- 6) Fill up your **syringe** with coloured water (**water + food colouring**) Hold the syringe upright and squirt out a bit of water to ensure it is bubble-free (Air bubbles can fracture the jelly!)
- 7) Insert the **syringe** through the **pegboard** into the centre of the **jelly volcano** and slowly inject the **coloured water**. Time to take notes!



## What to observe:

- Did the **surface** of the jelly volcano change during the experiment?
- Note the **shape** and **orientation** of the intrusion throughout the experiment
- What **type of intrusion** did you get?
- As more coloured water is injected did you see any change in the **shape** or **geometry** of the intrusion?
- Can you account for the **direction** of intrusion growth?
- Can you predict what would happen if a **different type of fluid** is injected? For example: Custard or golden syrup. (You can also try this to find out!)
- Did your jelly volcano **erupt**?
- Could you identify what **type of eruption** it was?



Date:  
Time:

Notes:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

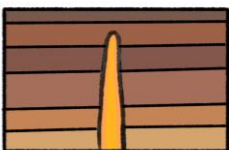
\_\_\_\_\_

\_\_\_\_\_

(Use this space to sketch or stick photos of your jelly volcano!)

Useful terms:

- MAGMA: Molten rock contained beneath the Earth's surface
- LAVA: Erupted magma
- DYKES: Magma-filled fractures in the Earth's crust that cut across the layering of the host rock
- SILLS: Magma-filled fractures in the Earth's crust that intrude along the layering of the host rock
- CONDUIT: Channel in which magma travels through
- FISSURE: A linear fracture on the Earth's surface through which lava erupts

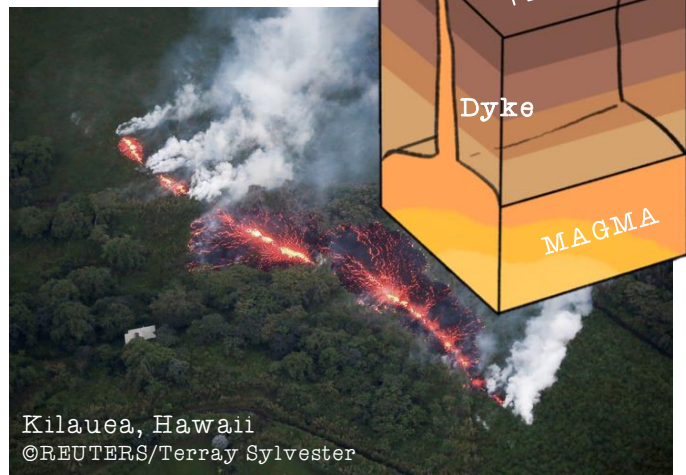


DYKE



SILL

Reykjavik, Iceland  
©REYKJAVIK HELICOPTERS



Kilauea, Hawaii  
©REUTERS/Terray Sylvester