How Snowy 2.0 unearthed an ancient mystery

Core sampling practical activity - Student guide

Part 1: Building an underground landscape

Mark your container

1. Go to your group's assigned bench. Your container already has a base soil layer and a labelled coordinate grid.
2. Write your group name clearly on your container.
3. Write your group name on the back of your printed deposit map.
4. Keep your deposit map safe - don't attach it to the container. You'll use it later.

Create the deposits

1. Choose one of the five deposit maps your teacher has provided.
2. Your map shows a top-down (2D) view of where the deposits should go.
   Remember: Your model is 3D, so the deposits can be placed at any depth, not just in one layer
3. Make your four playdough deposits. Try to match the shapes on your map (like crescents, donuts, blobs or semicircles) and place them in the rough position and size shown.
   Remember: Close is good enough. They don't need to be perfect!

Add your deposits within the Earth's layers

1. Place 1 or 2 of your playdough deposits directly onto the base layer of soil in your container.
2. Add a layer of soil or sand (about 1.5 - 2 cm) to cover them.
3. Pat down the sand or soil layer so that it is quite compact. Remember, we're making rocks!
4. Place the remaining deposits on top of that soil layer.
5. Add a final topsoil layer (~2 cm) to hide everything.
6. Remember to pat down the top layer to make it firm
7. Make sure there are at least 3 distinct layers, and that none of the deposits are visible from the top.

Finalise your underground landscape:

1. Check that both your container and deposit map have your group name on them.
2. Put your map somewhere safe (like inside your science book cover) until the end of the lesson.
3. Check if your teacher wants you to place a lid or piece of paper over your container.

Part 2: Core sampling investigation

Now it's time to investigate whether you can unearth the landscape of another group!

Swap and plan

Move to another group's bench and get ready to explore their container.
Your goal: create a map that's as close to the true deposit layout as possible using a method called *core sampling*.

Core sampling rules

- You will start with 5 core samples.
- For each deposit you hit, your group earns 1 extra core sample that your group can decide to place anywhere!
- Take 2 minutes to plan your strategy:
  You might like to think about
  - Should you spread your samples out or group them close together?
  - Where do you think the deposits are likely to be?
  - Will your plan change after each core?

How to core sample

1. Choose a grid square (e.g. C3) on the container.
2. Push a straw straight down into the soil - this is your core.
3. Gently pull the straw out and inspect the contents. Sometimes putting your thumb over the end of the straw helps to pull out a core more easily
   - Look for a playdough deposit in your core
4. Record your result on your group's mapping sheet. Remember you are mapping the deposits in 2D, viewing them from the top.
   - **If you found nothing**, mark that core location with an **X**.
   - **If you found a deposit**, use a coloured pencil to **lightly shade where you found it.** Make sure you *only* shade the area you are sure has the deposit!
5. Repeat this process for each core
6. Don't forget to take bonus cores if you earn them by finding a deposit.

Map the underground landscape

After you've taken **all** of your core samples:

1. Use a different coloured pencil to shade in where you think the rest of the deposits are.
   - Try to match their shape, size, and position as best you can.
   - You might not know what shape the deposits actually are, but from your core sampling, make an estimate.
2. Use the coordinate grid to help you be as accurate as you can.
3. Your drawing should be a top-down (aerial) view, just like the deposit map.
4. When you're finished, your teacher will give you the original deposit map made by the other group.
5. Compare your map to the original group's deposit map. How close did you get?