kids Living Here

Think global, act local!

Would you like to know how to practise good science and be a great scientist?

We need scientists to monitor and test what's happening in the environment so that we know how to manage natural resources – such as air, streams, rivers and lakes, land and soil, and coastlines.

Monitor = to keep an eye on things on a regular basis.

Here's what some of Environment Canterbury's scientists do …

Vincent Salomon – Contaminated Site Scientist

Vincent identifies and records sites in the Canterbury region that could pose risks to human health and the environment so that they can be safely managed. People and animals can be exposed to hazardous substances on contaminated land in a number of ways, including direct contact with contaminated soil, drinking water from contaminated environments, breathing vapours or contaminated dust.

Dawn Davison – Hazards Analyst

Dawn investigates natural hazards such as earthquake, liquefaction and tsunami risk and their impact on the Canterbury region. Some of the recent studies she has been involved in managing are the tsunami hazard assessment for the Kaikoura District Project, and the Christchurch Liquefaction Study.

Gotta be there!

During August and September many budding young Canterbury scientists will be entering the regional Science and Technology fairs in Christchurch and Timaru.

Are you going to be one of them?

Environment Canterbury has a category in both fairs called the Environment Canterbury School Award.

To be eligible for this award, your project needs to be about Canterbury's natural environment and how you can improve and enhance it. It's all about scientifically investigating a problem and trying to find a solution.

Tips for your science project

See if you can match the descriptions.
Draw the arrows to link them. We've done the first one for you.

Choose a topic that has a problem and needs a solution	When something fails, figure out what you could have done differently and don't be afraid to try again!
Give yourself lots of time	Get your information from lots of different sources. Books, media and the internet are not enough. Talk to lots of different people, including family, friends and experts, and get varying opinions.
Research	You can never do enough testing. There are always variables that affect your results – try different days, times of the day and different places for a start.
Test, retest and then test again	To test your findings and ideas for solutions you may need months (even years in the real world!)… so get started early.
Make good records of your work	Good science is about finding out what the problems are and testing innovative ways to solve them. It's the solution that counts in the end!
Try, try again	Record everything you do in a log book, so that you can refer back to your methods. Take photos or sketches as you work.

Try these experiments out at home and put good science into practice!

What's the dirt?! *(Adapted from David Suzuki)*

Here are three little experiments that will give you a pretty good idea as to what makes up soil. Tune your eyes in… because good observation skills are essential!

You will need:

- some garden soil
- a cooking pot (clear is best if possible)
- masking tape
- a medium-sized clear jar
- felt pen
- tall glass jar with an air-tight lid
- paper and pencil for recording observations

What to do

Remember, to practise good science you'll need to think about the tips.

Experiment one

1. Put a 2.5 cm layer of soil in the pot. Put a lid on the pot and heat over a very low heat on the stove.
2. After a few minutes lift the lid and look inside. What do you see? What's happening?

Experiment two

1. Stick a piece of masking tape along the length of the glass jar (vertically).
2. Half fill the medium-sized jar with soil. Mark the level on the tape.
3. Fill the jar with water. Don't stir it and let it stand uncovered. Watch what happens.
4. After half an hour, mark the soil level on the tape. Has it changed? Why?

Experiment three

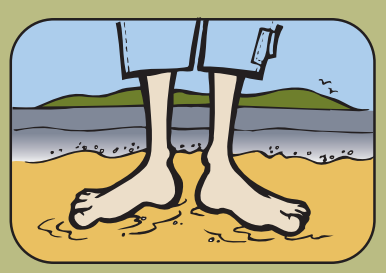
1. Quarter fill the tall jar with soil.
2. Fill the jar with water leaving about 2.5cm of air at the top.
3. Screw the lid on firmly and shake the jar really hard for one minute.
4. Leave the jar somewhere you can see it and watch it for a few days. Every day record what is happening.

Liquefaction

Liquefaction sometimes occurs during an earthquake. The small particles in soils move and mix with water in the soil as the earth shakes. The soil becomes more like a liquid than a solid. Loose, sandy and silty soils, such as those found in estuaries, coastal areas, river channels and floodplains are most affected.

Try this - liquefaction in action!

Next time you go to the beach, take a walk on the wet soft sand left behind after a wave races back to the sea. Gently put weight on your foot and wriggle it about. Watch what happens. The mixture of sand and water move under the pressure of your foot, and your foot sinks into the wet sand. Liquefaction is much like this.



Get the facts!

Soil may not seem very exciting stuff, but did you know that without it human survival would be extremely difficult if not impossible? Soil provides us with:

- **Food we eat** – meat, fruit, vegetables and grains
- **Clothes we wear** – wool, cotton, hemp and linen
- **Material we need to build houses** – wood, bricks, concrete and glass
- **Oxygen we breathe** – produced by plants that live in the soil
- **Water we drink** – stored, filtered and let go by the soil

Answers to experiments

Experiment one – the drops are water. Experiment two – the bubbles are air. The soil level went down because the air between the particles of soil escaped into the water. Experiment three – As the soil settles the layers should be: gravel on the bottom, then sand, then clay and silt and finally humus (dead plants and soil animals) on the top.