



Continental climate and oceanic climate

Climate

time

45 minutes.

learning outcomes

To:

- know that in the summer it is cooler by the sea than on the land
- discover that water cools off more slowly than soil

end product

- an experiment on continental climate and oceanic climate

materials needed

- 2 clear plastic cups
- 2 thermometers
- water
- soil
- sunlight
- red, yellow, green, and blue colouring pencils

Preparation

For the activity **Sea and land** make sure the water and the soil are the same temperature. You can do this by measuring the temperature of the soil and bringing the water to the same temperature. For this activity you will also need to draw a table on the board. This should be as follows:

	measurement 1 (before the Sun)	measurement 2 (after the Sun)	measurement 3 (15 min. after the Sun)
cup of soil (land)			
cup of water (sea)			



Summer and winter 10 min.

Read the children the story from [Task 1](#) on the worksheet or get them to read it themselves.

Ask the children what the story was about. Where did Ella, Alex and their Dad go? How did the sand feel? And the water? Explain that it is warmer in the middle of the country in the summer than on the coast.

In the winter it is warmer on the coast.



The children investigate why it is warmer inland in the summer than on the coast.



Ask the children why they think it is warmer inland in the summer than on the coast.

Tip. Ensure that the children know how to read a thermometer before beginning the activity Sea and land.



Sea and land 25 min.

Explain that you are going to do an experiment. Ask one of the children to help you. Give this child two identical plastic cups. The child half fills one cup with soil and the other with water. Explain that the cup with soil represents the climate inland and the cup with water represents the climate on the coast. Put a thermometer into each cup (do not stick it too deeply into the soil). Remove the thermometers after one minute and read the temperatures together. Explain how if necessary. Write the temperature readings in the table on the board. For Task 2a the children draw a red circle around the cup that they think will be warmer after the cups have been standing in the direct sunlight.

Now stand the cups in the direct sunlight for five minutes. Put a thermometer in each cup. After one minute, help the children to read the temperature on each thermometer. Take the cups out of the sun. After 15 minutes measure the temperatures of the contents of the cups again.



Write the temperatures for the soil and the water in the table. Look at the answers together. Which cup became warmer in the sun? The children use a yellow pencil for Task 2b on the worksheet. After 15 minutes the children complete Task 2c. Did the children draw a circle around the same cup for Tasks 2a, 2b, and 2c? Encourage the children to explain their choices.



Warm soil, cold soil 10 min.


Discuss why the cup of soil became warmer than the cup of water. Why do the children think this is? Explain that this is because the rays of the Sun penetrate deeper into the water than into the land. Therefore, they warm a much larger volume of water. The rays of sunshine on the land do not penetrate much below the surface. This means only the surface of the land is warm. The surface of the land is warmer than the water as a whole, however, and since a smaller volume of land is heated, the land also cools down more quickly.

Explain the results of the experiment to the children again by asking them if they have ever dug a deep hole when they were on the beach. What did they notice? Come to the conclusion that the deeper you dig, the colder the sand is. That is because the sunlight is unable to penetrate beyond the top layer of sand, so the surface gets very hot, but below this it stays cool. Explain that the soil (the land) warms up very quickly, but also cools down quickly. The water (the sea) warms up more slowly, and takes longer to cool down. That is why in summer it is cooler on the coast than inland, and in winter it is warmer on the coast.

For Task 3 on the worksheet the children colour the areas where it is warmest and coldest.



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1	<i>Summer and winter</i>
	Ella is excited.
	The Sun is shining. What a beautiful day!
	It's summer.
	Today her Dad is taking her and her brother Alex to the seaside.
	Ella grabs her swimsuit and her spade.
	When they get to the beach they quickly take off their shoes.
	They run across the sand.
	Ouch! The sand is hot!
	Here comes Dad with their things.
	Ella and Alex quickly stand on a towel.
	Dad reads a magazine.
	Ella and Alex build a big sandcastle.
	They fill the bucket with sand near the water.
	It's a really good castle.
	Phew, they are getting very hot!
	Dad takes them into the sea to cool off.
	The water is very cold!
	Brrrr, they run out again quickly.
	It's time to go home.
	It's very hot sitting in the car.
	They would be glad of some cool water now!

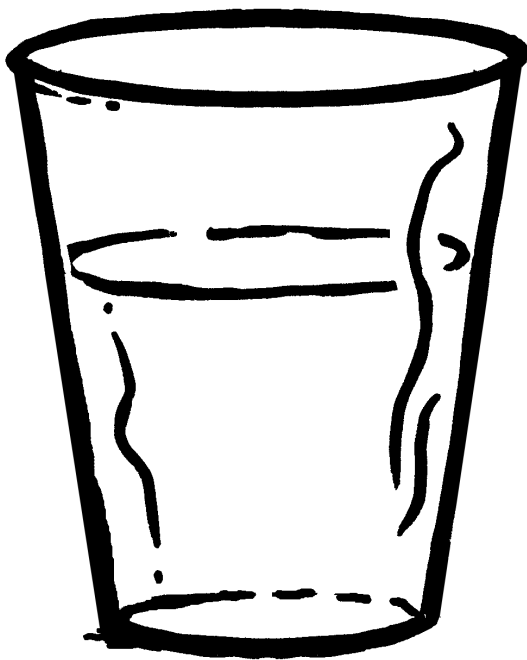
2 *Sea and land*

a What do you think?



The contents of which cup will get hotter in the sun?

Draw a red ring around it.



b Measure the temperature of the contents of each cup.

Which cup is warmer?

Draw a yellow ring around it.

c Measure the temperature again after 15 minutes.

Which cup is warmer now?

Draw a green ring around it.

DRAW A RING
around the
cups, using the
right colour

3 Warm sea, cold air



1 Colour the water and the sand in the drawing below.

a Where is it hot? Colour this red.

b Where is it cold? Colour this blue.

