

# CLIMATE SCIENCE

## Tree Rings

**Official climate records only started 100-150 years ago, so how do we know what the climate was like before that?** One way is through studying tree rings, a science known as dendrochronology. Some trees can live for hundreds to thousands of years, and the information recorded in their rings can tell us about past conditions and events.

### 1 Climate vs Weather

Which of the sentences below are examples of climate and which are examples of weather?

Tomorrow is going to be sunny.

Perth summers are hot and dry.

Last year it rained on my birthday and we had to move my party inside.

Temperatures are warmer now than when my grandparents were kids.

Last week they predicted a big storm, but it never happened.

Spring seems to be coming earlier each year.

Today it was cloudy, then it hailed, and then it was warm and sunny.

#### Climate

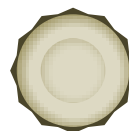
Long term averages based on weather in the past 30+ years.

#### Weather

A specific and temporary event.

### 2 Tree Rings

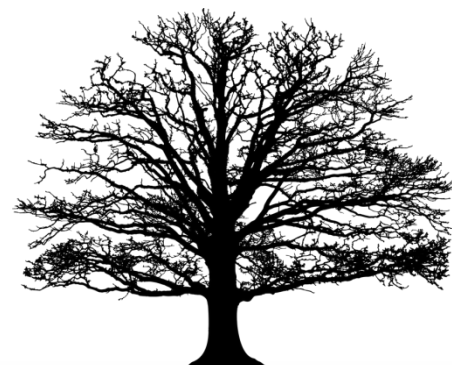
**Together, a light and dark ring equals one years worth of growth.** When growing conditions (sunlight, rain, temperature) are just right, trees make big new cells. This creates a lighter coloured wood. Towards the end of the growing season, when the conditions aren't as good, the cells are smaller. This makes a darker wood.



This tree is two years old.



This tree is four years old.



Learn more about climate and weather by visiting <https://climatekids.nasa.gov/weather-climate/>

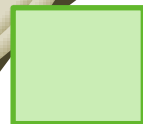
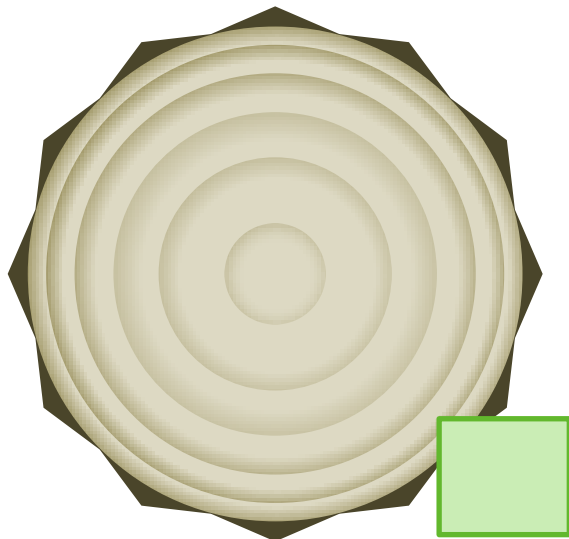
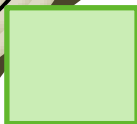
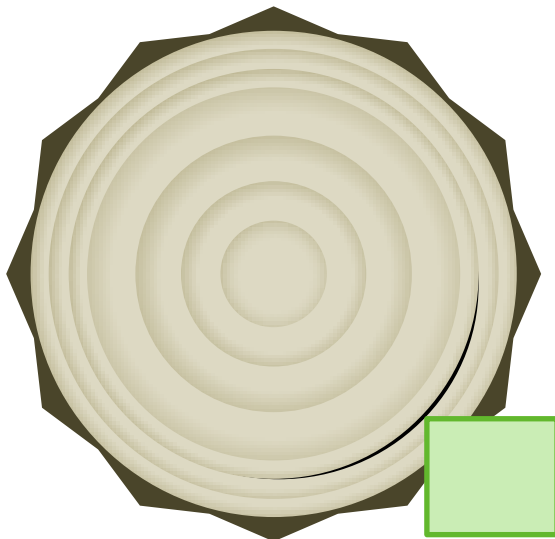
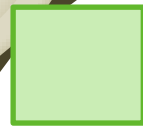
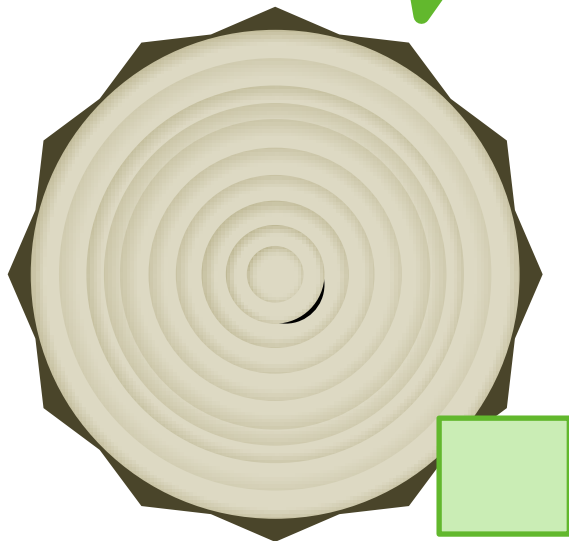
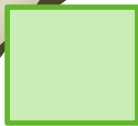
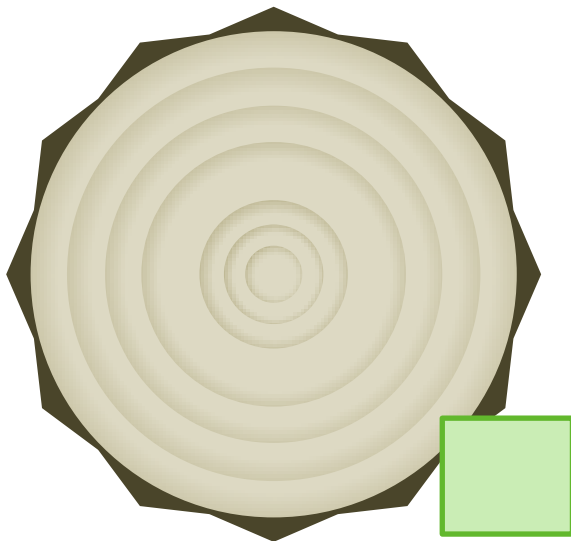


### 3 Reading the Rings

The size of rings and presence of scars can also provide information to scientists. For example, when conditions are not good for growing (eg. less rain), then the growth ring for that year will be thinner. Insect damage and fires also leave a trace.

**Can you match the tree sections to the correct description?**

Many trees in Australia are evergreen (they keep green leaves all year) and growth does not always happen in a yearly cycle. This means growth rings are not an accurate way to age all trees.



1. Ten years old, was damaged by insects when it was 2, and there was a huge volcanic eruption that blocked light during the years it was 7 and 8.
2. Is ten years old, has been having less rain each year of its life.
3. Has experience drought for the last three years and a forest fire 2-3yrs ago.
4. Seven years old. Had a good growing season when it was four.

## 4 Tree Ring Self Portrait – Art Activity

### If you were a tree, what would your rings have recorded?

Your task is to make a self portrait displaying your life in tree rings.

You can:

- 1) Take inspiration from events that have affected you. Perhaps you'd have a scar the year you broke your arm, or maybe your growth ring would have been thinner the year a pet passed away.  
or,
- 2) Look at climate data to see what the conditions have been like each year of your life. For example, in 2010 there was a big hail storm that might have caused a scar, and in 2019 rainfall was very low so the growth ring may have been thinner. (See table.)

### You will need:

1. A square piece of paper for the background
2. Something to make the coloured rings
  - Coloured pencils, textas or crayons, or
  - Coloured paper, scissors and glue, or
  - Paint

### Instructions:

1. Write down the major events (personal or climate related) in your life
2. Decide how each event would show up in a tree ring (a scar, a thinner/thicker ring)
3. Lightly draw a draft in pencil (making sure all your rings fit on your page)
4. Decide what colour each ring will be (try to do each ring and the background a different colour)
5. Create your artwork

### Tip:

- Google [Kandinsky Concentric Circles](#) for some inspiration!

Year	Temperature		Rainfall
<b>Long term average</b>	<b>12.8</b>	<b>24.7</b>	<b>844</b>
<a href="#">2009</a>	12.7	25.0	608.2
<a href="#">2010</a>	12.3	25.3	503.8
<a href="#">2011</a>	14.0	25.7	860.8
<a href="#">2012</a>	13.2	25.7	608.2
<a href="#">2013</a>	13.7	25.5	782.4
<a href="#">2014</a>	13.5	25.4	674.4
<a href="#">2015</a>	13.3	25.7	617.8
<a href="#">2016</a>	12.7	24.2	715.8
<a href="#">2017</a>	13.1	25.0	854
<a href="#">2018</a>	13.0	24.7	741.6
<a href="#">2019</a>	12.8	25.7	590.2

To search for the statistics yourself, and to see other information including significant weather events, visit [http://www.bom.gov.au/climate/current/statement\\_archives.shtml?region=wa&period=annual](http://www.bom.gov.au/climate/current/statement_archives.shtml?region=wa&period=annual)

1. Select WA PERTH > Annual
2. Select Perth > (choose desired year)

To find a quick summary of the year, scroll down to the large brown table titled "Summary Statistics for (year)". Then look at Perth Metro.

## 5 Share!

We'd love to see your work!  
Email a photo of your completed artwork to [environmental.education@melville.wa.gov.au](mailto:environmental.education@melville.wa.gov.au)