

Lesson 2: Introduction to the natural features of the Wimmera region.

Location

The Wimmera is a large rural region in the northwest of Victoria. It contains about 10% of Victoria's land area but less than 1% of its population. The region is a farming powerhouse producing much of the state's grains, along with lamb, wool and beef. For most farmers, the biggest challenges are linked with finding a reliable supply of water because much of the region is semi-arid, especially in the north.

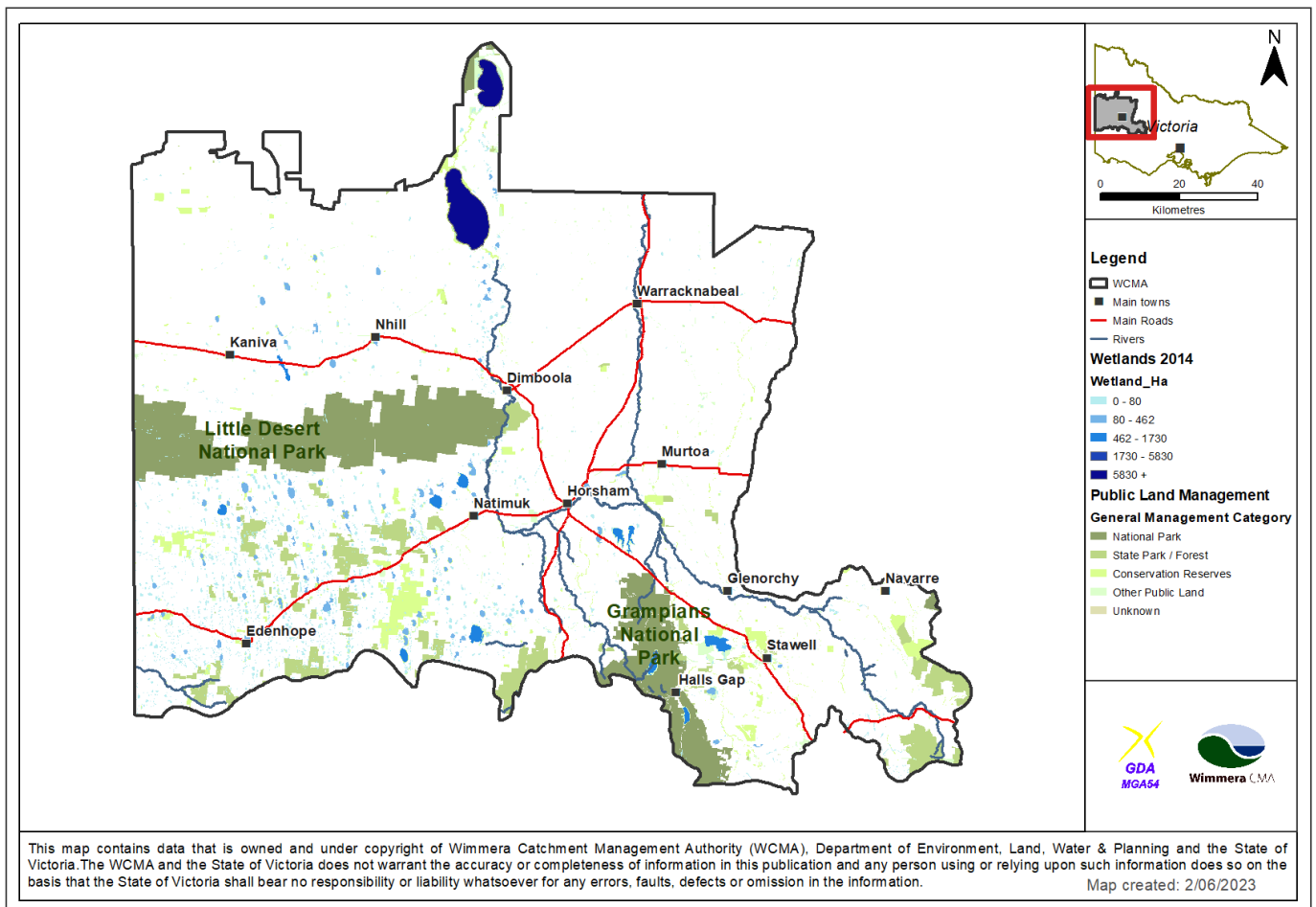


Figure 1 Map showing main roads, large towns, rivers, wetlands, national parks, and rural areas.

Landscapes

Skill: working with a GIS map

Unlike a map in an atlas that shows just one layer of information, a GIS (Geographic Information System) digital map may contain dozens of layers. These digital layers can be turned on and off depending on what the user needs to see. They are particularly useful for comparing features on maps, for example, working out if there is a link between the location of towns and the location of rivers. Follow the steps below to explore some of the landscapes of the Wimmera on a GIS map on a device.

Step 1

Open the webpage at <https://wcma.vic.gov.au/wimmera-region/>

Scroll down to the map and click anywhere on the map to open it. This map is similar to a map in Google maps: you can zoom in and out and you can click and drag the map.

Step 2

On the left-hand side of the map is a menu that contains all of the layers that can be displayed on the map.

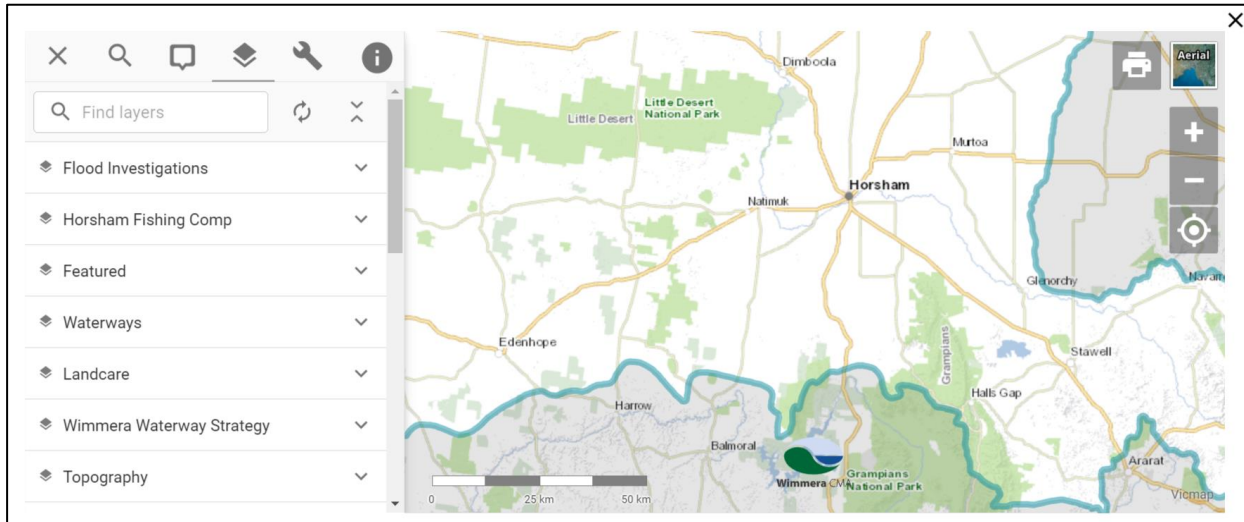


Figure 2 Screenshot of the Wimmera GIS map showing the Layers menu. Source: Screenshot from <https://wcma.vic.gov.au/wimmera-region/>]

Step 3: exploring the shape of the land

Scroll to the 'Imagery' drop-down menu and open the 'Elevation (Hillshade)' map. This allows you to see the shape of the land in the Wimmera. This is what geographers call the landscape. Zoom in and out and drag the map to explore the landscape of the whole region.

1. Describe the shape of the land in the Wimmera region. Is it mainly flat or mainly hilly? Where are the hilly parts of this region? Use compass directions to help your direction, for example, south-east, west, etc.

From the 'Topography' drop-down menu, add the 'Contours' layer. These lines join together all places in the landscape of an equal height above sea level. As you Zoom in, more lines appear, to show a 10m contour interval

2. When zoomed out to see the entire region, what link do you notice between the contour lines and the shape of the land you described in the previous question?

Click on the check boxes of the two layers you have on the map to turn them off and return to the base map.

Step 4: exploring the water features

Scroll to the 'Waterways' drop-down menu and open the 'Rivers and Streams' map. Once this has loaded you may need to zoom in and out to open this layer. Add the 'Wetlands' layer.

3. What is the name of the large river that flows through the Wimmera region?
-
4. Zoom in and follow this river from the south-east to the north of the region. Write down the name of every town and city beside this river.
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5. Is the Wimmera home to many large wetland areas or only a few?
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From the 'Planning' menu, add the 'Flood and Land Subject to Inundation Overlays'. This shows areas that are at risk from a flood (in green).

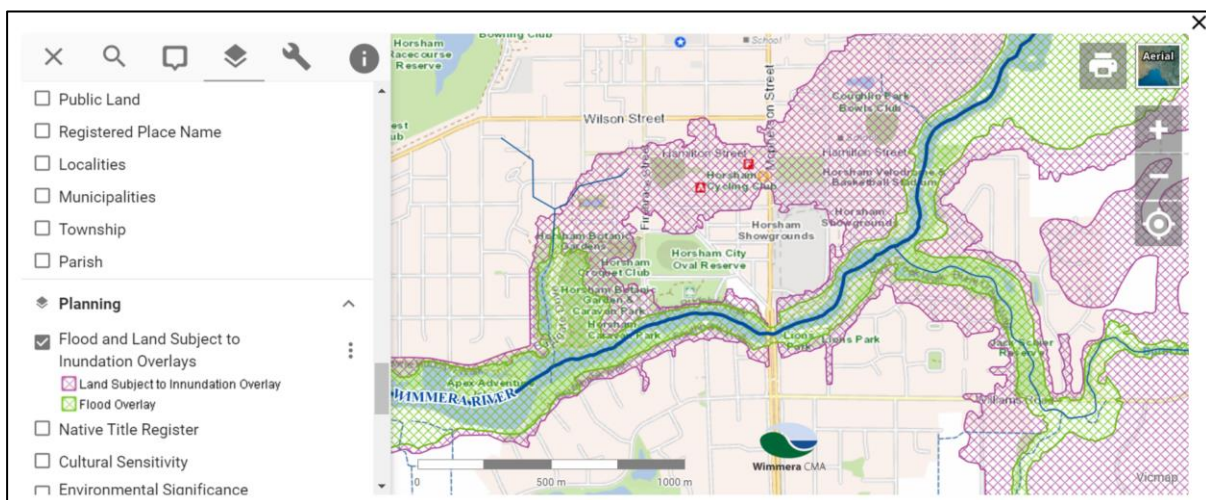


Figure 3 Screenshot of the Wimmera GIS map showing the Floods menu. Source: Screenshot from <https://wcma.vic.gov.au/wimmera-region/>

6. What link do you notice between the contours and the rivers?

7. What link do you notice between the rivers and the land that is at risk from flooding?

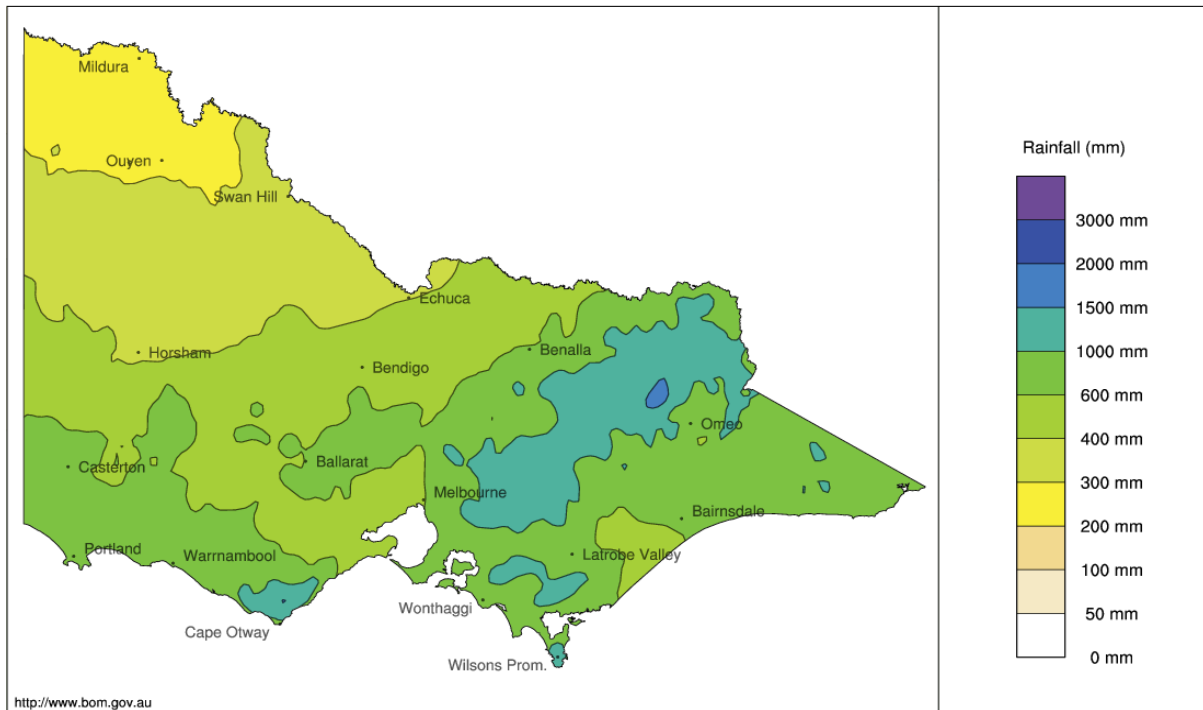
8. Zoom into the city of Horsham and describe the flood risk. What features of the city are at risk from a flood?

9. Use the other layers on the map to explore other key features of the Wimmera region.

Climate

In the introduction, the Wimmera was described as having a semi-arid climate. But what does this mean? In this activity you will learn how to access and read a climate graph in order to describe the climate at a particular place and compare this to the climate in another place. Let's begin with some averages.

Average annual rainfall 30-year climatology (1991 to 2020)
Australian Bureau of Meteorology



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Issued: 31/01/2021

Figure 4 Average annual rainfall of Victoria Source: <http://www.bom.gov.au/climate/maps/averages/rainfall/?period=an®ion=vc>]

10. What is the average annual rainfall of Horsham? _____

11. Compare this map to the small location map in figure 1. Where are the driest parts of the Wimmera region?

12. How does the average rainfall in Horsham compare to the average rainfall in Melbourne?

Skill: constructing and interpreting climate graphs

One of the best tools for exploring the climate at a particular location is a climate graph.

Step 1: accessing the data

Open the data portal at the Bureau of Meteorology at

<http://www.bom.gov.au/climate/data/index.shtml?bookmark=200>

This contains a record of rainfall and temperature at hundreds of places in Australia over many years. We now have to narrow this down to a place in the Wimmera.

In the Text Search option, select the 'Weather and Climate' option from the drop-down menu and the 'Monthly' statistics button.

Type Nhill into the search bar and click 'Find'. This will give you a range of locations close to the town of Nhill in the northern Wimmera region. Click on the Nhill Aerodrome. Finally, click on 'Get Data' in the final option.

This will then open a window with all the data collected for this location.

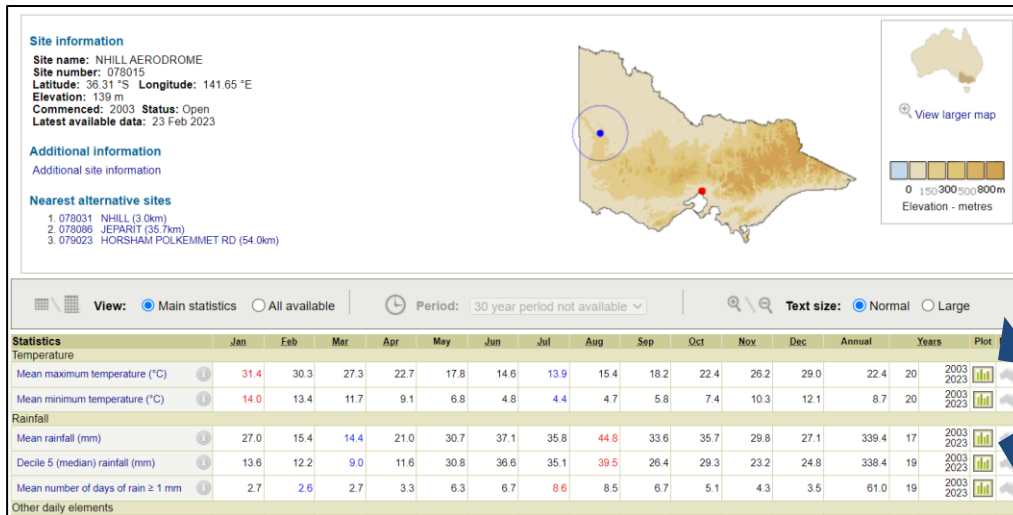
The screenshot shows a web interface for selecting climate data. It is divided into three main sections:

- 1: Selected: Monthly climate statistics**
 - 'Data about' is set to 'Weather & climate'.
 - 'Type of data' has 'Observations' and 'Statistics' tabs. Under 'Statistics', 'Daily' and 'Monthly' radio buttons are present, with 'Monthly' selected.
 - A red box on the right says: 'Monthly climate statistics and graphs for all available years.'
- 2: Select a weather station in the area of interest**
 - A search bar contains 'Nhill' and a 'Find' button.
 - 'Matching towns' list: 'Nhill, VIC, 36.33°S, 141.65°E'.
 - 'Nearest Bureau stations' list:
 - Only show open stations (may no longer report all data types)
 - 078015 Nhill Aerodrome VIC (2.3km away)
 - 078086 Jeparit VIC (36.8km away)
 - 077035 Rainbow Post Office VIC (56.9km away)
 - 079100 Horsham Aerodrome VIC (59.8km away)
 - 079028 Longerenong VIC (69.0km away)
 - 'Data available for the selected station' section: 'Summary about data collection periods not available for this data type.'
- 3: Get the data**
 - 'Station number' is '078015'.
 - 'Get Data' button with '(Opens in new window)' text.
 - Footnote: 'Don't clear this number' Note, most stations do not collect all data types. Searching will ensure relevant stations.

Figure 5 A screenshot of the Bureau of Meteorology website showing the correct option to collect data for Nhill aerodrome. Source:

<http://www.bom.gov.au/climate/data/index.shtml?bookmark=200>

Step 2 Constructing a climate graph



Plotting the temperature data

Plotting the rainfall data

Figure 6 A screenshot of the Bureau of Meteorology website showing location of the tools to plot the temperature and the rainfall. Source:

<http://www.bom.gov.au/climate/data/index.shtml?bookmark=200>

Click on the 'plot' tool at the right-hand side of the 'Mean Maximum Temperature' to create a line graph showing the average maximum temperature for each month.

Click on the 'Second Statistic' tab, select 'Rainfall' and then 'Redraw.' This will overlay a bar graph of the average rainfall in each month on your temperature line graph. Notice the labels on the vertical axes differs with temperature on the left and rainfall on the right.

13. Copy and paste the completed climate graph into your notes.

14. Describe the rainfall in Nhill. Use the names of months and the rainfall data in your answer. For example, what are the wettest and driest months?

15. Describe the temperature in Nhill. Use the names of months and the temperature data in your answer. For example, what are the warmest and coldest months?

Extension Activity

16. Follow the same method described above to construct a climate graph for the place in which you live. Use the table below to compare your climate with the climate in Nhill: what are the differences and what are the similarities?

Similarities between Nhill and _____	Differences between Nhill and _____