



## Course Information

**Duration:** 2 days

**Facilitated by:** Meteorologist from the Bureau of Meteorology Training Centre

**Pre-requisites:** Nil; limited science knowledge assumed

## Course Overview

The Introduction to Meteorology course will equip you with a broad understanding of the driving forces in our atmosphere, how it is observed and how a range of phenomena are forecast.

The first day explores the role of the sun in driving the weather via the global circulation. The big picture of meteorology (referred to as synoptic-scale meteorology) is then explained using the mean sea level pressure chart and features depicted on these charts as the basis. You will begin to develop predictive skills by relating synoptic-scale meteorology to the resulting weather phenomena. This extends to predicting wind direction and speed, temperature, cloud types and precipitation to name a few. Observation systems such as satellite, radar and surface observations are explained alongside these weather phenomena. Day one concludes with a description of the forecast process used by Bureau weather forecasters.

The second day of the course commences with a visit to the forecasting office (known at the State/Territory Forecasting Centre). You will see the operational centre and meet the manager, who will point out roughly what staff are working on. You will learn how about correctly interpreting precipitation forecasts and how they're put together. You will then learn about thunderstorms and severe weather in Australia, including what causes thunderstorms and how severe thunderstorms and severe weather warnings differ. The rest of this day will focus on specific forecasting services provided by the Bureau. You can choose from our electives which include tropical cyclones, climate outlooks and seasonal predictions, fire weather and heat waves, flood, marine, tsunami and aviation weather services. There is not enough time to cover all these topics during the day, so you are encouraged to complete the pre-course survey to indicate your elective preferences. The course will focus on the electives that are most popular.

The course will run from 9am till 4:30pm each day, leaving some time at the end of the day for questions if you wish to remain a bit longer. Morning and afternoon tea are provided each day and a 45 minute to 1 hour lunch break will allow you to grab a bite to eat near the office. If you have a tablet or laptop, feel free to bring it along so you can access our website as we cover the different topics.

Details of the topics covered and broad learning outcomes are shown over page.



## Learning Outcomes – Core Sessions

Session	Learning Outcomes
Atmospheric Characteristics <i>Our restless globe</i>	<p>Explain the role of the sun in driving the weather and seasons</p> <p>Outline the vertical structure and properties of the atmosphere</p>
Global Circulation <i>From the Tropics to the Poles</i>	<p>Describe how the atmosphere redistributes heat around the globe</p> <p>Explain how dry and wet areas of the planet are related to the global circulation</p>
Synoptic-scale Systems <i>Highs, Lows and Fronts</i>	<p>Forecast general wind direction, wind strength, rainfall and temperature conditions using the synoptic weather chart</p> <p>List the major surface and upper weather systems that influence Australia</p> <p>Describe the seasonal movement of these systems</p> <p>Explain the seasonal rainfall patterns of Australia</p>
Watching the Weather <i>Understanding today's weather to predict tomorrow's</i>	<p>Describe how wind, temperature and rain are observed</p> <p>Interpret satellite imagery using the Bureau's Himawari-8 viewer</p> <p>Interpret radar imagery and outline the limitations of radar technology</p> <p>Identify the major cloud types and their associated weather</p>
Weather Forecast Process <i>Dispelling the "crystal ball" myth</i>	<p>Describe the process meteorologists use to produce forecasts and warnings</p>
Understanding Rainfall Forecasts <i>Probabilities and Percentages</i>	<p>Develop an understanding of rainfall probabilities</p> <p>Develop an awareness of how rainfall is forecast</p> <p>Clarify understanding of rainfall amount and probability forecasts</p>
Thunderstorms and Severe Weather	<p>Describe how thunderstorms develop and evolve</p> <p>Explain thunderstorm ingredients, structures and types</p> <p>List threats posed by Severe Thunderstorms</p> <p>Outline thunderstorm forecast and warning services</p> <p>Outline Severe Weather phenomena and thresholds</p> <p>Explain the difference between severe weather warnings and severe thunderstorm warnings</p>
Bureau Services <i>Electives</i>	<p>Elective topics are covered based on preferences expressed by participants in a pre-course survey. Three to four of the following will be covered:</p> <ul style="list-style-type: none"> <li>• Climate Drivers and Outlooks</li> <li>• Fire Weather and Heatwaves</li> <li>• Tropical Cyclones</li> <li>• Marine</li> <li>• Tsunami</li> <li>• Floods</li> <li>• Aviation</li> </ul> <p>Each topic explores the basic science and forecast/warning services provided by the Bureau</p>