

BEN HAWKE,

MOSGIEL'S METEOROLOGIST *by Claire Finlayson*

When thirteen-year-old Ben Hawke says things like “precipitation” and “atmospheric pressure”, his friends groan and say, “Speak English!” Ben uses technical weather terms a lot. He finds them useful, which isn't surprising given he writes his own weather forecasts. He even has a column in the *Otago Daily Times*. You could say Ben's something of a meteorological star.

SNOWBALLING

Ben's committed to the weather. Each day, before heading off to school, he posts an online forecast, and on Saturdays, he gets up at 5.30 a.m. to study satellite images so he can write a weather report for the local radio station. Ben also has a social-media page, followed by over a thousand people. (*They* all want to hear what he has to say about precipitation and atmospheric pressure.)

Ben's hobby went to a new level in year 8, when his science teacher set some basic weather-forecasting tasks as homework. Ben found the homework too easy and decided to do some extra, using his weather station at home. Then he had a brainwave: he could share his forecasts on social media. “I got around two hundred followers in one day,” he remembers.

It snowballed from there. “My page was mentioned by the Breeze radio station, and another two hundred people began to follow me,” Ben says. “Then I was interviewed for Checkpoint on Radio New Zealand. That got me three hundred followers.” There was also an article about Ben on the front page of the *Otago Daily Times*. The people kept coming!



ON THE GROUND

That winter, Ben's reputation received an extra boost when he predicted that snow around Mosgiel would fall lower than the country's national weather forecaster, MetService, had initially forecast. He was right. Ben's proud of this achievement, although he keeps it in perspective. He acknowledges the advantage of being on the ground: he can see the way different weather systems interact with local landforms. This makes it easier to forecast the weather for his suburban patch.

Mosgiel has its own distinct weather patterns, which is called a microclimate. Ben says that sometimes, this can make it tricky to produce an accurate forecast. "In Mosgiel, the cold air in the hills flows down into town because it's the lowest point. That's why this place gets so cold and foggy, even more than Dunedin."

WEATHER OBSESSION

Ben's weather obsession began at a young age. By six, he was keeping a close eye on the weather station attached to his hut in the backyard. He used this to measure air temperature, wind direction, and chill factor – to predict when there was going to be a frost. On very cold nights, he'd leave a bucket of water outside. In the morning, he'd use a ruler to measure the ice that had formed. He also caught rainwater in a measuring jug and collected hailstones. When he was eight, Ben began to read about hurricanes. "I've always liked extreme weather, and hurricanes are the epitome of extreme weather!" Ben continued to study up on them, then he started tracking hurricanes for fun.



BEN'S BACKYARD WEATHER STATION

FORECASTING WITH BEN

Each day, Ben posts two weather forecasts: one for the next twenty-four hours and one for the next few days. If there are gales, floods, or any other dramatic meteorological events, Ben writes about them separately. He uses the following checklist before he writes a forecast.

- ✓ Consult the rain maps and surface pressure maps on the MetService website. Read the isobars. (These are the lines on a weather map that connect the places where the air pressure is the same. A high-pressure weather system means warmer weather; low pressure means cooler, more unsettled weather.)
- ✓ Look at the satellite imagery on the MetService website. (Weather satellites provide a bird's-eye view of the various weather systems around Earth at any one time.)
- ✓ Check the rain gauge to see how many millimetres of water have fallen overnight.
- ✓ Take readings from the backyard weather station. (Ben's is a nifty device with solar-powered sensors that transmit data to a base station, which interprets and displays the data. This covers air temperature, wind speed, **wind chill**, wind direction, **humidity**, **dew-point**, and **barometric pressure**.)
- ✓ Finally, examine the different readings and make predictions about the way they will interact.



BEN'S BASE STATION

barometric pressure: the weight of the air as it presses down on everything below it (also called atmospheric pressure)

dew-point: the temperature at which air becomes saturated with water vapour and the water becomes liquid

humidity: the moisture content of the air

wind chill: how cold the temperature actually feels on your skin once the wind has been factored in



THE RIGHT SKILLS

It's no surprise that Ben's considering a career in meteorology. This means he needs to focus on science, physics, and maths – all subjects that help with decoding information about the weather, although simple curiosity goes a long way, too. When Ben was first confronted with the mysteries of a weather map, he was intrigued. "At first, I had to use the key to decode the blobs and squiggles. I could tell they were important, so I taught myself what they all meant."

Ben reckons there's one other subject that comes in handy for a career in meteorology: English. "It teaches you to communicate effectively." He's keen on the idea of being a weather forecaster on TV, though sometimes wonders if the job might be too serious. "Meteorology is my passion, but I also enjoy entertaining people," he says. In the meantime, Ben has plenty of time to decide about his future.

A SIMPLE MYSTERY

Ben loves the way the weather is both incredibly simple and incredibly mysterious. "It's literally just water, the air, and the sun – that's it! Water causes humidity, rain, and snow; the air causes air pressure; and the sun causes temperature. These three things interact to give us our weather."

Occasionally, the weather outsmarts meteorologists and their computers. This makes it endlessly fascinating to Ben, especially when it misbehaves. "I look forward to bad weather. I track what's happening. Sometimes I even get up in the night to do this."

MetService is always looking for ways it can improve its data collection. It has plans for a new rain radar in Dunedin. What about Ben? "I'd like a more professional weather station," he says. "And I'd love to visit the MetService one day."



METSERVICE

Forecasting the local weather, as Ben does, is one thing – but what about forecasting for an entire country? How does that work? MetService is New Zealand's national weather forecaster. It provides information about the weather twenty-four hours a day, every day of the year. This includes mountain forecasts, marine forecasts, and severe weather warnings. People rely on these forecasts for all kinds of reasons, not just so they can decide whether to bring in the washing. Sometimes, an accurate forecast really does mean the difference between life and death.

The meteorologists at MetService predict changes in the weather using a variety of tools. The first step is establishing the current state of the atmosphere – in other words, learning what's happening with the weather right now. This information is supplied from around the country via the weather network, which is made up of weather stations, aircraft, satellites, radar, ships, and buoys. Each of these sources specialises in a different kind of observation, for example, satellites observe cloud patterns, and radar measures rainfall. Weather buoys float in the ocean to collect data about the wind and the temperature of the sea.

Data from New Zealand's weather network is used in conjunction with information about global weather patterns that comes from supercomputers. Doing this allows MetService's meteorologists to refine their predictions about how weather systems will behave once they reach New Zealand. A big part of weather forecasting is about recognising patterns, something supercomputers can't do. This is why meteorologists are MetService's secret weapon!

MOSGIEL

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by Claire Finlayson

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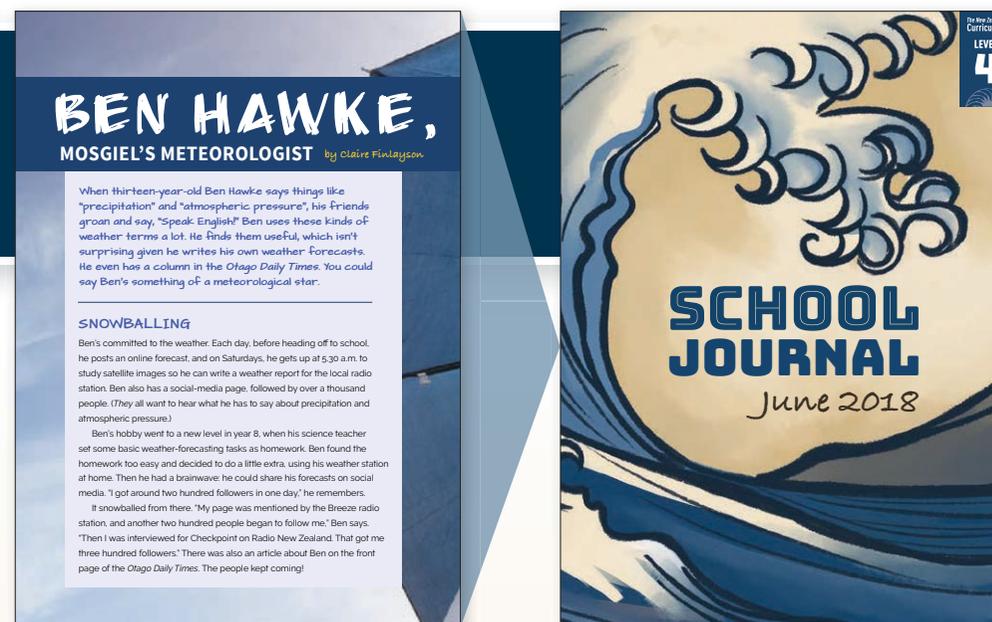
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