

Snow Chaser's Guide to The Granite Belt and Southern Downs **By Nicholas Oughton**

*Nothing is quite so quiet and clean
As snow that falls in the night,
And isn't it jolly to jump from bed
And find the whole world white.*

*And while we are having breakfast
Papa says 'Isn't it light?
And all because of the thousands of Geese
The Old Woman plucked last night'.
(From 'Snow in Town' by Richard Mark)*

The Magic of Snow

An enduring childhood memory for those that live in colder climes is to wake on a winter's morning to a world made white with snow. The first sensation is the enveloping silence (snow absorbs sound like an acoustic tile), the second, is the lasting impression of countryside transformed, morphed into a Christmas card – the sorcery of winter – the magic of snow.



The British ideal of a snow-bound village

An old-time explanation suggests that snow is caused by an old woman plucking a Goose, or shaking her feather bed. The Goose down magically transforms into snowflakes as it falls gently to Earth. No doubt the residents of the Bunya Mountains, waking up on the morning of the 13th July 1960 to 15cms of snow had a more scientific explanation. The same may be said of Granite belt residents who had a similar experience on the Monday morning of 17th August 1953.

Snow generally results from the conversion of water vapor into solid crystals of ice at temperatures below freezing. If these snow crystals descend through warmer layers of air, their edges become wet, cling together to form snowflakes.

For those of us who live in the sub-tropics, snow is an elusive yet exciting phenomenon, and when it does visit higher ground within a few-hours-drive from where we live – or even closer – many of us indulge in an activity known as 'Snow Chasing'.

Predicting a Snow Event for a Snow Chase.

For Queenslanders, the nearest potential snow fields are found in the Granite Belt and Southern Downs. Rising to over 1000 meters, this country is occasionally transformed by a blanket of snow. Forecasting such events in order to plan a snow chase is tricky, but possible given that the right information is used.

Snowfall in this region relies on a coalition of cold air and precipitation arriving together, usually at night or in the early morning over ground over 800 meters. Daytime snow is certainly possible, and has occurred on many occasions. However, warmer daytime temperatures generally melt snow cover quickly.

In most cases precipitation will fall as snow when the air temperature is at or below 2 degrees centigrade. When icy precipitation falls through warmer air it absorbs a great deal of heat (Latent Heat) as it changes state (melts) from ice to water, thus cooling the surrounding air. Paradoxically, therefore, snow can fall when the general air temperature is some degrees above freezing.

Some other factors to consider when planning a snow chase are:

- Ground Temperature: has there been a recent period of frosty weather to cool surfaces. Snow settles best on cool and dry ground;
- Wind direction: In most cases a Southwesterly or Westerly wind brings snow to Queensland.

A further consideration is to ensure that you, your family and friends stay safe during the excitement of a snow chase.

Reading Weather Maps

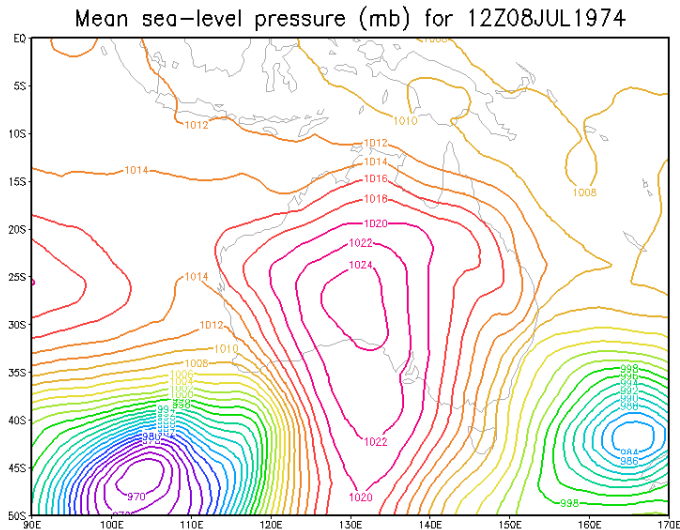
Timing is important when attempting to catch snow falling in South East Queensland's high country. Arrive too early and you will beat the snow, too late and melting snow with only patches remaining in gutters and shaded areas will welcome you. To get your timing right, a good place to start is by observing weather maps produced by the Bureau of Meteorology (BOM). The Medium Sea Level (MSL) pressure chart can show a developing snow scenario some days before the actual event occurs.



Early morning is a good time to catch snow on the Granite Belt or Southern Downs

Snow Falls on the Granite Belt, July 8th, 1974

Heavy snow fell on the Granite Belt in the early morning of the 8th July 1974. The following mean sea-level pressure map (see chart 1) shows the set up in the early morning of that day, which delivered this exciting event. Note the strong Southerly fetch of cold wind (from the Antarctic) indicated by the north south line of the isobars. Isobars are lines that join areas of equal pressure. A deep Low sit over the Tasman Sea, while a high-pressure system lingers over central Australia – a classic scenario for snow from Tasmania to Southern Queensland.



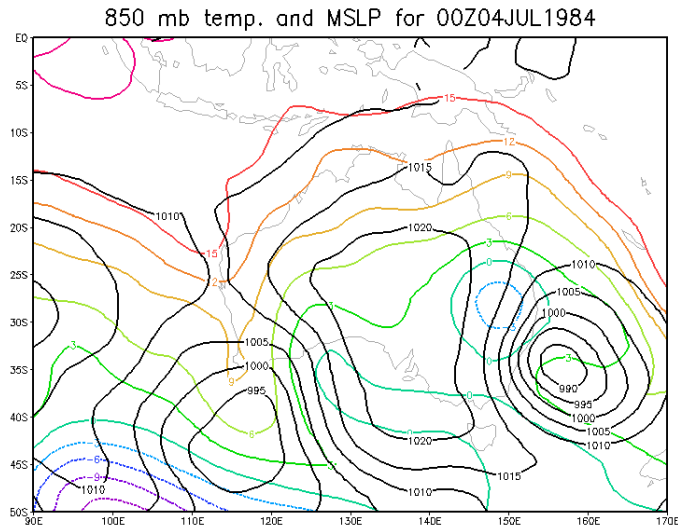


Chart 3.

The Blue circles over South-east Queensland denote the Cold pool of air at -3C that hovered over the area for some days. An 850mb temp indicates (very approximately), the air temperature at 1500meters above sea level. This temperature will be found at lower levels at night.

A Cold Outbreak with Heavy Snow in Queensland, 16-17 July 2015

From the 11th July, a sequence of strong cold fronts passed across South-eastern Australia bringing widespread snow to non-Alpine region of South-eastern Australia. These falls extending along the Great Dividing Range from west of Sydney to the Granite Belt where snow showers and sleet were experienced. This event culminated in Queensland, with the stunning snowfalls of the 16th-17th July.

The MSLP Chart for 10.00 EST on the 15th July, (see chart 4) issued a day and a half before flakes began falling late on the 16th shows a classic set-up for South-east Queensland snow. Note the High pressure ridging to the South of the Low-pressure system, holding it back from a Southerly retreat.

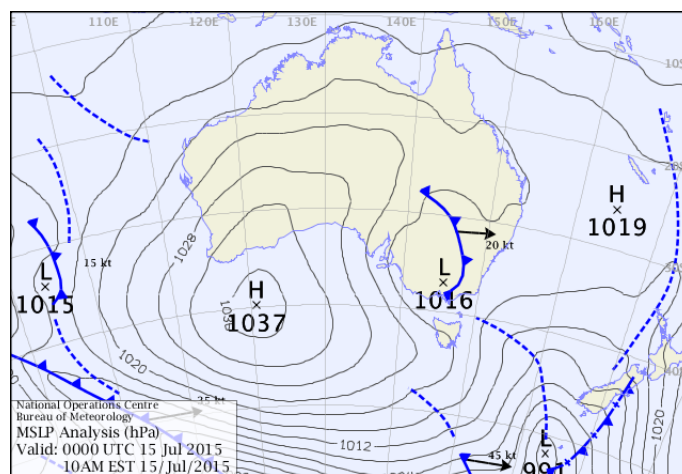


Chart 4. Courtesy of the BOM

Some 13-hours before snow commenced falling (see chart 5), the set-up is confirmed and cold front passes through South-east Queensland dragging cold air behind it. This chart shows the classic pincushion effect of the high-pressure system centered over the Bight and the low-pressure area located in the Tasman Sea.

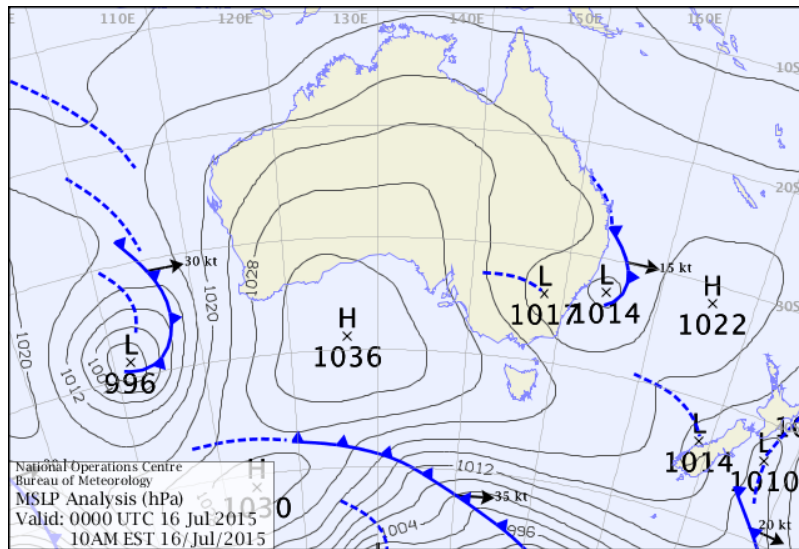


Chart 5. Courtesy of the BOM

Chart 6, shows a number of factors, which can help predict the possibility of snowfall in Queensland. This chart indicates the prevailing weather situation at 10 pm on the night of 16th July, just prior to the snowfall. The chart shows:

- A cold and strong, south-westerly airflow sweeping across South-east Queensland emanating from well south of Australia;
- A pool of cold air (the black circle) at freezing point (850 hPa Temperature) over South-east Queensland and;
- Moisture, indicated by the green area on the chart associated with the cold pool

Each of these factors indicates a possibility for sleet or snow to fall over the Granite Belt and Southern Downs.

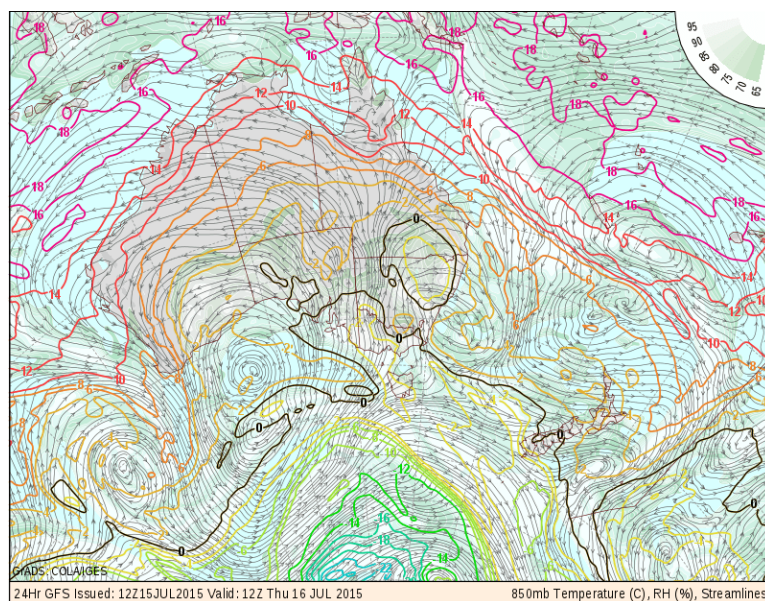


Chart 6. Courtesy of Australian Weather News

Australian Weather News is one of the most comprehensive weather sites focusing on Australian weather available.

The Cold pool

Pools of cold air commonly drift over South East Queensland in winter. Chart 7 below clearly shows a cold air pool (outlined in blue) sitting over the western edge of the Granite Belt on Thursday night the 11th October 2012. This event brought non-settling morning snow showers to the Granite Belt in an unusual late season event. Note the green-orange areas on the chart that indicate moisture associated with the cold air.

The High (once again displaying the pin cushion effect) is centered over the Australian Bight, while the Low sits on the coast of NSW. This is a classic set-up for snowfall on the Northern Tablelands. The town of Guyra, situated five and a half hours drive South from Brisbane received heavy snow in this event.

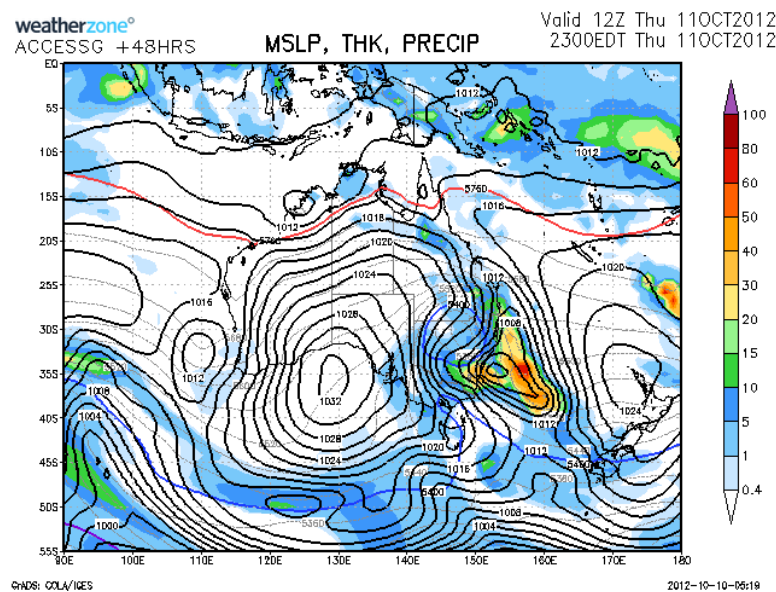


Chart 7. Courtesy of Weatherzone

Cold Fronts

When significant cold fronts sweep across Australia's Southeast, they can produce snowfalls that spread from the Southern Tablelands to Queensland. However, accompanying moisture can be depleted by the time these fronts reach their northern extremity. A high-pressure system normally follows the passage of a cold front and this itself will lift the freezing level.

These setups are easier to forecast, but generally produce light snowfalls if at all. Orographic effect (the lifting and cooling of moisture laden air while passing over mountain ranges) plays a role in where the snow will fall. Thus, as the predominant snow bearing winds that pass over the Granite Belt and Southern Downs come from the South West, it is the South-Western slopes that should receive the most snow.

Some experienced snow chasers believe that cold fronts are becoming less frequent over South East Australia, and in addition, those that do often fail to reach South East Queensland.

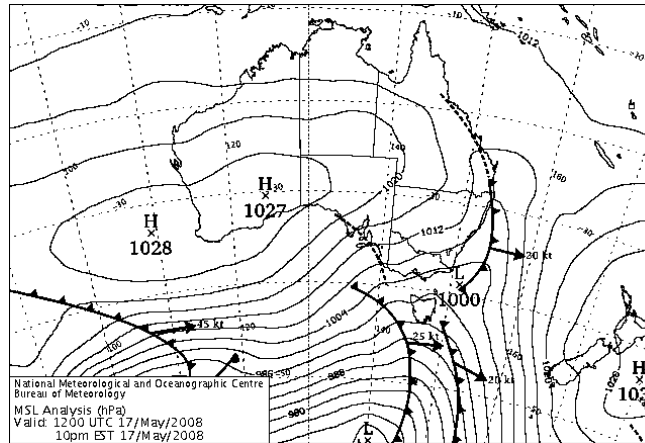


Chart 8. Courtesy of the BOM

A strong cold front and associated pre-frontal trough did scrape by the Queensland border on the 17th May 2008. Snowfalls commenced between Armidale and Glencoe about 9.30pm on the 17th May with heavy falls occurring between Black Mountain and Ben Lomond from 10pm to midnight. Six to seven centimeters of dry powder snow covered all the higher terrain within that two-hour period.

Applethorpe (near Stanthorpe) received rain showers with a temp of 2.9 C. at 1.00am on Sunday 18th. With a moist adiabatic lapse rate, this implies a temp of 0.6C for the highest parts of the Queensland border – cold enough for sleet and snow, but neither was reported. Mount McKenzie 35 Ks south of the border did have snowfalls.

Snowfall Prediction Maps

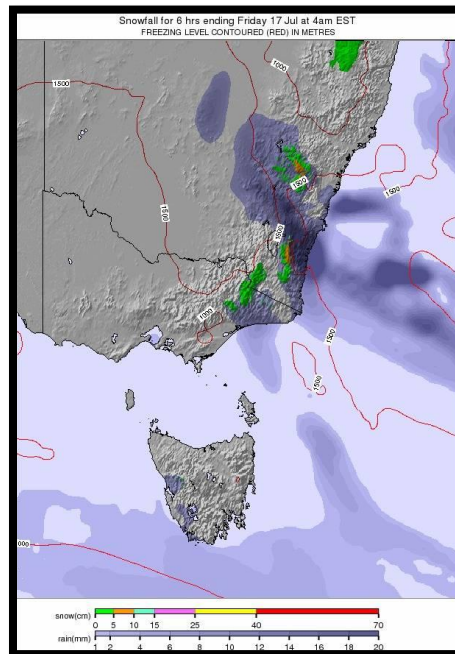


Chart 9. Courtesy of Snow Forecast. Com

Snow predictions such as that shown in chart 9 can be useful predictors of coming snow events. This map gave a strong indication of snowfall (the area in green) in Northern NSW and Southeast Queensland from 10.00pm on the 16th July 2015.

The Snow Chasing Season

Chart 10 shows historical snow and sleet days that have occurred in South East Queensland over 10-day periods from 1878. The 6-week period from 20th June to 30th July (periods 7-10 on the chart) is when most falls can be expected. This is a key time to check weather charts for the possibility of an unfolding snow event, but be on guard as surprises can happen with early or late season falls sneaking in under the radar.

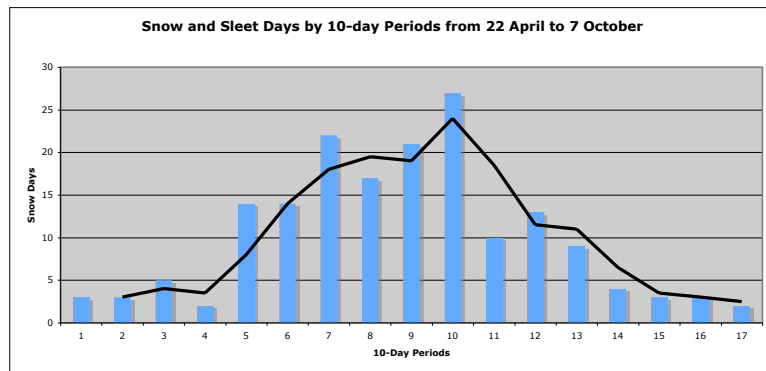


Chart 10.

Picking a Location for a Queensland Snow Chase.

Location is another factor to consider. Whereas snow cover may occur over a wide area in extreme events, for example in 1949, 1959, 1960, 1974, 1984 and 2015, in more marginal events, picking the spot where snow is most likely to fall is critical. Historical records, height of terrain, prevailing wind, snow shadow and orographic factors can assist this choice. My own preference when snow chasing on the Granite Belt is to the South of the Eukey/Glen Aplin road where the ground rises to 1113 meters.

However, study local topographical maps look at the weather charts and make your own selection, you may find the perfect place to chase snow. Also take and share pictures with you friends, they will most likely also be excited by the prospects of snow chasing in Queensland. Drive safely and Enjoy!



The Magic of Snow, Queensland Style. A Granite Belt Garden magically transformed by snow 17th July, 2015. Twisted Gum Winery, home of some great Queensland wines

Let it Snow!

Contact Nicholas Oughton at: najoughton@gmail.com