

The Australian Storm Chaser

The Journal of Australian Storm Chasing

Volume 1 Issue 1 February 2003

SEVERE STORM POUNDS BATHURST



February 8th 2003
Report by Matthew Piper

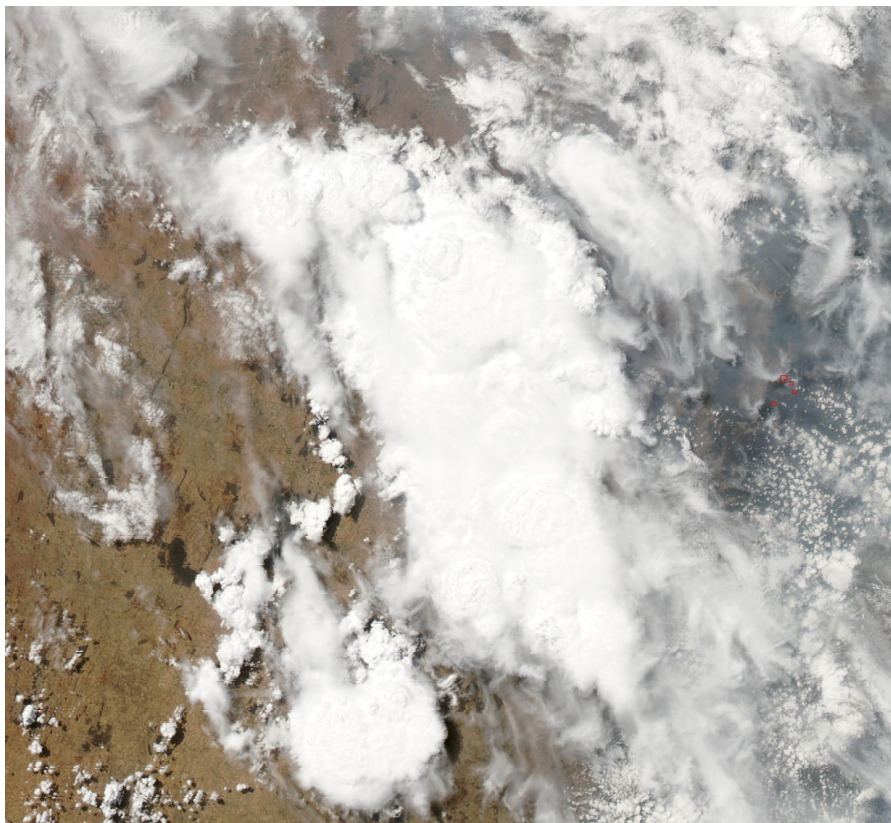
Saturday the 8th February was predicted to provide the best environment for thunderstorms on the Central Tablelands since late 2002. Jeff Brislane and myself were eager to chase this day so we headed out at around 11am to our target area of Mudgee. On the way to Mudgee we noticed a rapid build up in TCu to the south towards Bathurst. After getting an update on the situation from TWC we decided to head for Bathurst via the Sofala road. Once to the south of Sofala we encountered the first rain for the day from a weakening anvil. As we approached the northern outskirts of Bathurst we could see what appeared

to be a gust-front on a storm to our south. We decided then to head up to the top of Mount Panorama and watch the slowly approaching storms from there. A series of relatively weak storms formed to our south for about the next half hour and it soon became apparent that new storms were progressively developing closer to us. After getting a fright from a CG which dropped nearby we decided to shelter in the car. It was only a short time after this that we observed the rapid development of an intense rain shaft. The lightning activity was also picking up considerably and outflow from the storm was creating a spectacular pink tinged gust-front. The storm then before our eyes proceeded to let loose a massive wet microburst.

The rain quickly spread out a large distance from the storm and eventually we ended up receiving a fine spray of water on our windscreen. Winds gusting to 65 kts were apparently reported from Bathurst and when we core-punched the remains of the storm later on we observed a number of willow trees which had been severely damaged. The lightning display from this storm was second to none with Jeff and I being left in sheer awe by nature's awesome power. The contrast in colours from this storm were fantastic ranging from an olive green in the main rain shaft to a pink tinge in the cloud along the outflow. This storm also created widespread flash-flooding in the Bathurst area with 57 mm being recorded at the



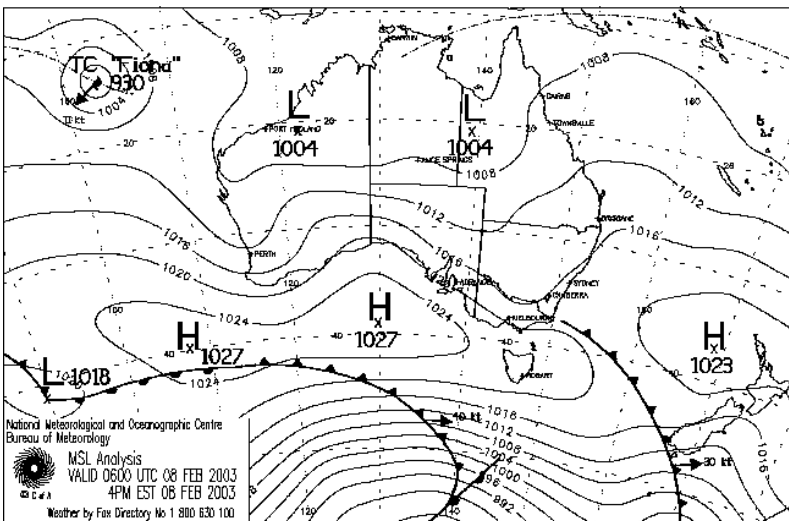
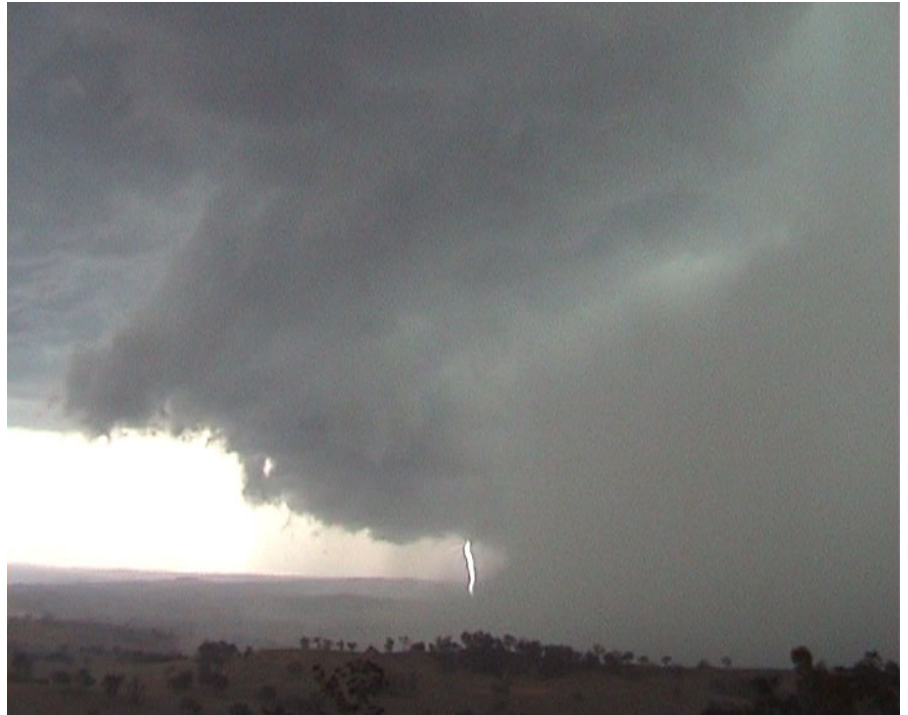
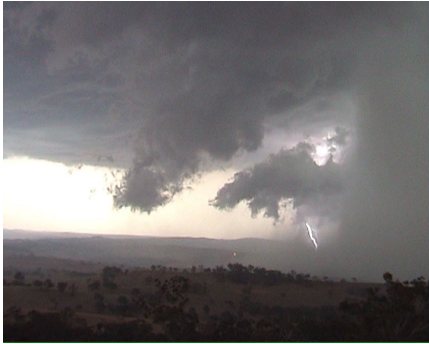
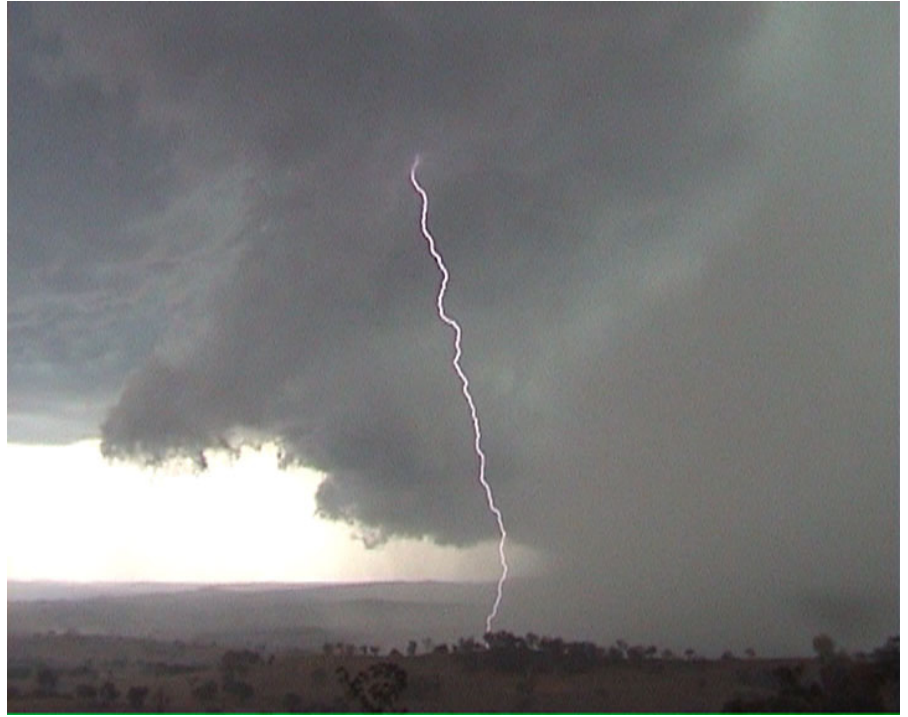
Series of 5 video stills showing the development of a wet microburst



250 metre resolution visible satellite image (1450 EDST 8th February 2003)



airport. Steering winds on this day were only around 10 kts hence the storms that developed moved along at a snails pace and were ideal for producing flash-flooding. The storms were so slow moving in fact that we were able to come back an hour or so later and the storm was almost in the exact same position we had left it in. Moisture was abundant throughout all levels of the atmosphere hence the development of hail was hindered. Brief small hail however was observed from the storm in Bathurst and I cannot discount the probability of larger hail falling during the period when the storm was at its most intense. The category of storm that I observed at Bathurst would most closely fit that of a severe multi-cell.



Editors Note

Welcome to the first ever edition of "The Australian Storm Chaser" a journal dedicated to providing the latest news from the world of Australian Storm Chasers. Each edition will showcase storm chases from both the current season and way back into the past. Reviews of websites relating to thunderstorms and photographic equipment will also be a feature. This journal will pride itself on being scientifically accurate without any bias or exaggeration. It will be a journal for all who are passionate about Thunderstorms whether that be via taking still photography, video or just sitting back and admiring the awesome power of mother nature.

I hope you enjoy the following great articles which have been submitted to me this month.

Regards,

Matthew Piper
Editor of "The Australian Storm Chaser"

Members Profile

Name: Matthew Piper
Age: 27
Location: Blaxland, NSW
Weather Interests: Supercell's, Tornadoes, Cyclones and Floods.
Portrait:



I have been interested in weather for as long as I can remember. My earliest weather memories are sitting down watching "The Wizard of Oz" and being fascinated by the tornado which blew Dorothy and Toto away to Oz. Thunderstorms have always been my favourite part of the weather but it is only since 1998 that I have been actively involved in storm chasing. My dream of a lifetime came true last year when I travelled with Jimmy Deguara to Tornado Alley in the USA. The

feelings that went through me when I saw my first Tornado simply cannot be described in words.



Video stills of a multi-vortex tornado near Quanah Texas (24th May 2002)

What's Inside the February Issue?

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Tamworth Lightning Photography

24th February 1992

by Con Marathos





Above is a sequence of six photos of an approaching storm to the south -west of Tamworth on the 24-2-1992. The camera used was a Nikon FE-2 with a 135mm lens mounted on a tripod. The camera was not moved during the sequence, as the storm is approaching the camera. A special note should be made of the topography that is being illuminated by each series of CG's in each photo. They clearly show the advancing storm front coming towards the photographer.

Film stock used was Kodachrome-64ASA slide film. I find using slide film has truer colour and picture sharpness than negative film as well as the appeal of being viewed through a projector onto a screen for others to appreciate.

Internet Site Review

by Jimmy Deguara

Supercell articles particularly LP supercells

These type of reviews are aimed at providing references to the internet or other sources of information of severe weather.

“In the clouds photography”

<http://www.inclouds.com/Wx/supercell.html>

This has some very impressive and different pictures of LP supercells from around tornado alley. It also provides information about the various types of storms, even photography tips. The quality of the images are of professional nature.

Here is another page:

<http://www.inclouds.com/Wx/2000Jun09/> if anything – perhaps this site is a little difficult to navigate.

Some LP supercell chases – Some impressive structure as one would expect.

“5-27-02 Memorial Day Chase - Crosbyton, TX”

<http://stormgasm.com/5-27-02CrosbytonTX/5-27-02CrosbytonTXpage3.htm>

Some impressive images of an LP supercell that developed behind the storm that had gone into an HP supercell phase.

“4-17-02 First chase of 2002 - LP supercells in OK & KS”

<http://www.geocities.com/mattgrzych/4-17-02.html>

“The Lamesa, Texas Low Precipitation Supercell - Images from Slides” – Sam Barricklow

<http://www.k5kj.net/950604S.htm>

“Supercells”

<http://pw1.netcom.com/~bjalas/super.html>

Some general information and pictures of excellent structured supercells

Borger-Skellyton-Pampa, TX ::: Monster Supercell (& "Skellytown Anomaly") ::: 23 May 2002

<http://www.grapevine.net/~mscheid/chase2002/may23/images2.html>

Ok this is not an LP supercell but certainly worth looking at. Definitely a supercell - monster.

Classic supercell - theoretical

Name “A Preliminary Study of the 29 June Tornadic Storm during STEPS”

http://radarmet.atmos.colostate.edu/~saraht/29June_paper.html

Detailed radar analysis of Classic tornadic supercell.

FORECASTING SUPERCELL TYPE

by Richard Thompson and Roger Edwards
From StormTrack

<http://www.stormtrack.org/library/forecast/sctype.htm>

This link describes the various parameters typically used to distinguish between LP, classic and HP supercells. More up to date information on supercells is tending to place them along the supercell spectrum and therefore use this just for some general insight.

SUPERCELLS AND TORNADOES from

A COMPREHENSIVE SEVERE WEATHER FORECAST CHECKLIST AND REFERENCE GUIDE

John D. Gordon* and Drew Albert, National Weather Service Office Springfield, Missouri

<http://www.crh.noaa.gov/techpapers/service/tsp-10/7supcel-torn.html>

This goes through the several parameters observed to be significant in determining supercell types, mesocyclones and tornadoes both cool weather and warm weather supercells.

My Favourite Storm

Western Sydney Supercell

16 February 2002

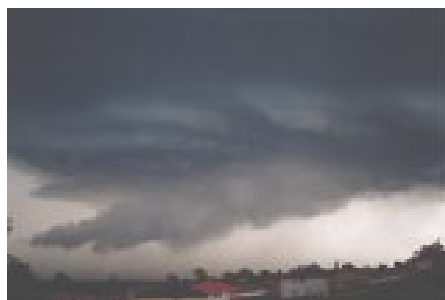
Report by Geoff Thurtell with acknowledgement to Jimmy Deguara and David Croan.

Sydney based storm chasers remember this event as the first Sydney ASWA meeting which developed into a storm chase - and what a chase it was!

The morning looked promising with plenty of atmospheric "yeast", that is, high dew points, very obvious moisture haze and strong surface heating. Jimmy Deguara had checked the models and said that conditions looked more favourable further south of Sydney. Still I was unsure, should we go to the meeting or get into position for the likely action? In the end duty called and we headed off to the meeting, which was at Burwood.

Of course, the meeting was not running all that smoothly. Too many distractions outside! We all periodically went outside to observe the towering cumulus to the south and south west. At about 4pm a cell that had developed to the south-southwest took on a structure that was difficult to ignore. The main cell was crisp in appearance and the flanking line suggested that further back building would occur.

We all jumped into the available cars (although we found out later that Mal Ninnes had been locked into the house - sorry Mal!). We headed off down the Hume Highway then the M5 towards Liverpool. As we neared the tollgates at Liverpool, the well organised base with a developing wall cloud came into view. Now, where best to view the developing beast? We headed south down the Hume Highway and just before The Crossroads, turned into a side street that promised a high vantage point.



An organised wall cloud with evident inflow and up motion was in clear view. The storm was reasonably electrically active with some quite sharp bolts, which were becoming more frequent, impressing all of the observers. As the storm closed in, there was a brief debate between Jimmy Deguara and David Croan. Jimmy wanted to stay and experience the hail that was evident in the strong down-draughts. David had observed that the outflow winds were racing along the flank of the convergence zone and aiding in a reorganisation of the storm further north with the possible development of a second mesocyclone.

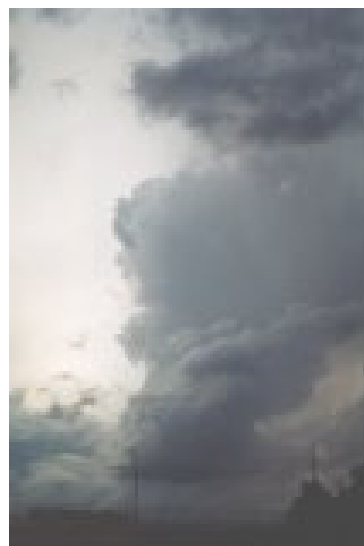
So off we went northwards, with a frustrating westwards detour when I thought that Jimmy said that he wanted to go west - although I could not understand why he would want to do that. Anyway, we finished up back on the Cumberland Highway heading north. As we travelled along, we watched a second developing wall cloud ahead of us. It was showing quite definite signs of rotation.



A series of red traffic lights frustrated our attempt to get ahead of it. At the

final slow changing lights at Woodpark we watched in amazement as the wall cloud disappeared behind a massive curtain of intense rain. On later observing the radar for this time period, we realised that the hook echo region had passed directly over us. We worked our way through Merrylands towards Wentworthville in extremely low visibility conditions. There were strong gusting winds resulting in many downed trees. The rain was being blown from directly behind past the car quicker than we were travelling. Another memorable feature of this event was the numerous blue-green flashes that we observed as power lines arced due to the strong winds and flying debris.

With Jimmy's "drive by touch" ability we managed to get through the chaos. As we made slow progress, hail began to mix in with the rain. It was mostly around 1 cm in size but there were some larger stones to around 2 cm diameter. By the time we reached Winston Hills trying to keep up with the storm was a lost cause. We saw some rather large trees blown over in the back streets of Winston Hills, demonstrating the strength of the winds associated with this storm.



We made it to the M2 and then did a loop back west along the M4, observing a small but photogenic storm which seemed to develop on the out-flow of the main storm. This cell weakened and collapsed as we watched it.

Across to the Great Western Highway and Wentworthville where the major structural damage to buildings was observed. One house roof had been blown right across the highway. It was while we were taking note of this damage that we noticed two familiar figures on the side of the road. It was Mal Ninnes and his fiancée. We soon caught up with them and described our various experiences of this event to each other (including Mal's "break out" from his unintentional prison). We went to the top of the Wentworthville Shopping Mall car park and watched the storm head out to sea over the central coast. Some lightning footage was taken but the lightning was getting more infrequent as the storm finally appeared to be weakening.

After leaving Mal and his better half, we finally returned to Burwood where we were able to compare the various observations of the same storm from different perspectives.

When we were replaying Jimmy's and David's videos, you can quite clearly hear me laughing in some parts of the footage. Everybody agreed that I must have enjoyed myself, although some of the laughter was more of the "nervous" variety. You can view some of the video footage on the following web link:

<http://australiasevereweather.com/video/movies/2002/0216jd08.wmv>

Overall, it was unintentionally an exciting and educational chase. I doubt very much if I would ever intentionally position myself in a rear flank downdraught (hook echo) region of a storm. The experience of this event will definitely go down as significant in my memory.

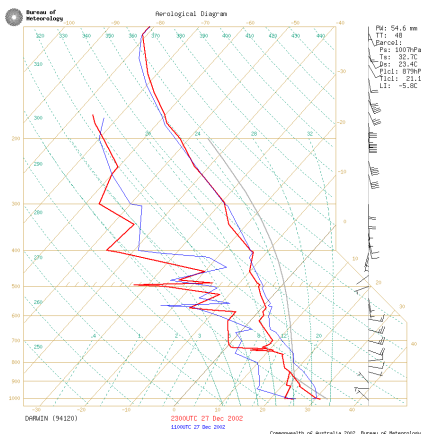
The Day of the Twister



**28th December 2002
Report by Paul Mossman**

The day started quite interestingly. There was no winds at surface level, yet at about 200m or more above ground there appeared to be a decent NW'erly flow;. Then above that at say 4000m or so, there was an E-SE flow, which was quite strong indicated by any convection sloping towards the W-NW. As I watched at around 8.30am or so convection started popping up everywhere. There was already a decent cell on the Cox Peninsula (SW of Darwin) and there was a cell building to my east almost directly over the airport.

These cells started solidifying and Co-joining in what appeared to be a classic case of sea breeze meets land breeze convergence scenario. Add to this the reasonable shear (well for Darwin ;)) at about 700mb (28 knots!) I concluded that a gusty storm may be possible. The following document is the air sounding for 0Z 28 Dec 02 (click on to enlarge).



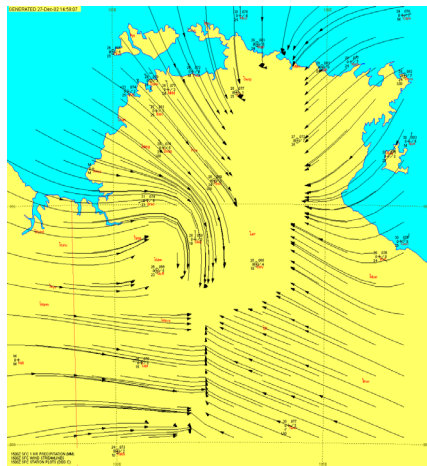
(Thanks to the BOM)

The next document is the University of Wyoming's Sounding data - in text format.

<http://weather.uwyo.edu/cgi-bin/sounding?region=pac&TYPE=TEXT%3ALIST&YEAR=2002&MONTH=12&FROM=2800&TO=2800&STNM=94120>

The thing to note about this data is:
LFC level is quite low - 877msl
CAPE is a nice 2100 KJ

This is what I believe was the "icing on the cake". Although synoptic analysis shows a NW flow into a broad low pressure area based in central Top End, I believe a small convergence zone was located just on the coastal fringes as the NW'erly flow was being established. The combination of the lower moist NW'erlies in combination with the much cooler and drier SE'erlies assisted in formation. Add to that the plentiful CAPE and low level of free convection which allowed the main updraft to form lower in the atmosphere, and viola, a Tornado!



(Click on to enlarge. Courtesy of Laurier Williams site <http://www.australianweathernews.com/charts.shtml>) I don't have any radar data as yet, but if anyone has the Darwin Local Loop for 11.45Z to 1.30Z I would appreciate it. Email it to [me please](#).

Given that the forecast was for afternoon/evening storms, I kept an eye on this growing bulge!

At about 9.30am I was heading past the RAAF base at Winnellie when I saw a decent cone-shaped "prong" descending from what appeared to be the back of this new Co-joined monster. The base was very dark and still rain-free (having been there now for 1 hr or so already). The following pics show the development.





The last 2 images I believe show a small wall cloud type structure. This storm was not a supercell. It did last for over 2 hours, but I don't believe there was a persistent rotating updraft. However, I am waiting on some BOM Doppler Radar Data that may indicate just what was going on in this cloud. Needless to say - it was about to become a special day!

In the last 2 photographs you can see the funnel cloud starting to shoot towards the ground. I then decided that a chase was in order! A quick "u"-turn on the main highway and I decided to head towards the wharf area as that is where I believed that the action would take place. The following pictures are in sequential order from my Sony Digital Video Camera.



Supercell Outbreak

8th February 2002



At one stage the Tornado started to move backwards towards the wharf. This brought a great deal of panic from the assembled crowd. In fact, I was looking at my options seeing as the car park was now crowded and jammed and I had no way to get out!. The Tornado lasted for about 25 mins or so until it was enclosed in a massive precipitation shaft and disappeared from view. Shortly thereafter the storm moved on, much weaker and decaying.

While the Tornado was on the ground, lightning was crashing down around us every second or so, as well as big, fat splats of torrential rain. After leaving the wharf (where now there was at least 50 people or more) I had to navigate through localised flooding that had cut the road.

Later, I was approached by Channel 9 Darwin for footage, which was shown on the News at 6.30pm. It was the main local story! They then followed with the same stuff in the weather segment.

Report by Jimmy Deguara

To see other photograph structure of the day in Sydney by Judy Mayo, Adam Mayo, Mario Orazem and John Grainger, click [here](#) (bottom of the page and also the [next page](#) and also Jeff Brislane:



What a season this has been and yet another dynamic system was expected. Even from a couple of days out, the AVN model was suggesting that a curved strong jet was expected to develop with the right exit region and jet maxima heading through the central parts of the NSW coast by evening.

On the morning of the outbreak, I checked carefully satellite pictures and monitored the timing of the expected trough. What was needed was a lag in the timing of the surface wind change so that there would be sufficient moisture for convection to initiate. What I had anticipated was for a squall line system to approach from the west which was already active and moving through during the morning.

Also a line of thunderstorms would develop just ahead of the wind change along the surface trough. These would have the best chances to develop into rotating supercells. If all these conditions came together, then a serious outbreak was to develop. The cap strength was weaker to the south which meant early convection such that storms would be widespread and cluttered. The cap strength increased further to the north though the maximum instability was centred around Wollongong to the Central Coast region. Cold upper air was also advancing across and with an impressive moisture profile, large hail was likely. I awoke to thick fog (due to ample dew point moisture) that persisted late into the morning but cleared rapidly once the sun heated the atmosphere. It was mostly clear though some impressive thunderstorms persisted off the coast from overnight activity. I was quite aware that off the coast was the place to be with an impressive low level jet profile persisting and feeding into major thunderstorms which would intensify during the day with more heating. There had been an impressive lightning show during the night with this activity moving up parallel to the coast.

I had planned to watch for the first signs of activity before I headed out paying particular attention to the region just northwest of Gosford which was to be my target region. Once the fog cleared, it was evident that it was not going to muck around with large cumulus already developing over the ranges. Even though all looked impressive, taking into account that the cap was stronger to the north, it would suppress convection for a little longer. Some cells aligned themselves northwest southeast well inland from the Central Coast. For me it was a matter of time to see whether these cells would break the cap and explode. Meanwhile, the line of storms to the south and southwest had rapidly approached and looked rather impressive.

About 1:00pm, I decided to head off towards the Central Coast. This was quite a bold decision knowing that

you would leave the already impressive storms behind you and head for probable development to the north. I could get the odd glimpse of the cells to the south through the side vision mirror. Traffic was not helping but within an hour I was on the F3 freeway heading north towards Gosford. The cell had taken off and showed some interesting development. This was clearly a right mover with development on the southern flank. Once I crossed the Hawkesbury River, it was obvious that I was approaching the cell fast and therefore it was also heading towards me rapidly. Taking the Calga Interchange turnoff, I parked about a few hundred metres up the road. The cell base was not that impressive but was rapidly becoming organised. The side anvil sent pulses east with each explosive updraught pulse. The storm was already becoming severe and the organisation suggested a hint of rotation. By 2:00pm, it had begun to rain large drops despite the main core being further south from my location. After 5 or so minutes, hail began to fall with most hail between 1.5 to 2 cm though some larger stones to 2.5cm were falling and this was mainly outside of the core. The storm was moving rapidly southeast and there was absolutely no way of catching it!!!

Quickly getting myself back onto the freeway, I headed for Gosford where the last few isolated stones were falling. There was a rapid change from hailstones to sunshine. But the storm was racing on. The chase of this storm was over. Some impressive structure developed as it passed over Avalon. Back onto the freeway and again heading north to get a good vantage point for viewing this storm. Stopping at Ourimbah about 2:40pm provided the best opportunity to photograph and film this storm's rear structure and make decisions for my next move. Further north, although not impressive was a cell that had made its way to the east and a clearing edge was visible (it was left mover of these split pair). Despite giving chase, again the wind-shear strength were carrying storms rapidly southeast. I did enjoy some incredible crisp explosive vertical development and was almost passing out in excitement. There was an inflow band leading into the base of the storm though trees hid it from view and prevented any video opportunities. Thinking I would be able to get

to the northern side near Newcastle was merely a joke: the storm had moved on too rapidly southeast. Further, the storm had rapidly collapsed within half an hour!!! Simultaneously, a storm complex had exploded to the north near the Bulahdelah region. This line looked impressive was the last opportunity to make something out of this outbreak. Taking into account the direction of other storms on this day so far, storms were heading southeast. This would put the target region near Nelson Bay. Knowing how many trees existed in the area, any opportunities to observe were taken. It was about 3:30pm and I stood in awe watching, photographing and video taping the whole complex with one of the most impressive corkscrew updraught on one of the cells to the north. There was definitely inflow into this system indicated by the tiered base structure. It was also evident that there were a few supercells embedded. (Radar indicated three splitting cells in this complex despite being drier).



Heading east provided some opportunities to observe the incredible contrast and beautiful structure. However, this southern most storm in the complex had begun to weaken though revealing a twisting updraught throughout the process.

Here is some video footage of the complex to the north of Nelson Bay (right click if you want to save into your computer):

- [Supercell complex developing over the Mid North Coast. \(2.78mb\)](#)
- [Supercell complex directed southeast from the Mid North Coast. \(1.89mb\)](#)
- [Supercell complex with impressive corkscrew structure observed from near Raymond Terrace. \(2.63mb\)](#)
- [Impressive contrast and structure including corkscrew. \(2.99mb\)](#)
- [Twisting updraught, new growth and a lowering observed on the way to Port Stephens. \(2.75mb\)](#)

After arriving at Port Stephens about 4pm, another cell to the north was back building south. Well it was not surprising when considering the strong northeast sea breeze. This cell exploded but I had not taken footage (bloody phone calls) waiting for a better opportunity to view the massive explosive updraught. This may have been another split or collapse phase.

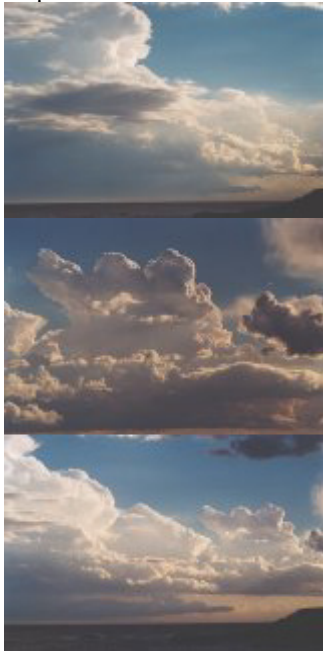


Noting that the northeast sea breeze was persisting and another cell was observed to the north, it was time to

head for a better vantage point. Yes lost time and another phone call but eventually I made myself comfortable at a lookout overlooking the Port Stephens region about 5pm. This cell to the north was leaning but still explosive. Gradually, a wall cloud came into view. Since this was a right mover, the rotation was counter-clockwise. This cell looked to be weakening. The collapse stage was again rapid with shear ripping the cell apart.

There were cells to the west with some reasonable anvils and structure. This was part of the line developing under the influence of the upper level trough. Unfortunately, I had mistakenly expected the storm to head this way. This meant critical lost time and no chance to catch the storm (luckily Matt Smith's group were near this system).

Heading to the Anna Bay area by 6pm provided some opportunity to observe the crisp cells off the coast.



It was time though to head back. Knowing Matt Smith was around Newcastle and Anthony and Terry (on his maiden chase) had joined him, I made contact to meet up. We had much to talk about concerning the rotation fest we had observed. This day was so ideal for supercell development though it was again disappointing low level windshear. It was interesting to note that cells were developing rapidly with impressive structure observed along the coast and then the cells would collapse rapidly off the coast. Yet the cell well off the coast had maintained itself for several

hours as a left mover and gradually moved further off the coast.

If you (or someone you know) have any photographs or video of this storm or any other storm such as damage, the storm structure itself or hail, please feel free to contact Jimmy De-guara. Your contributions are very welcome. Please any photographs or video footage are important so don't discount anything.

Radar

From Bureau of Meteorology.

· Sydney local scale loop 0300z to 0920z 08/02/2002 (2pm to 7.20pm local)

· Sydney medium scale loop 0100z to 0920z 08/02/2002 (11am to 7.20pm local)

Low Precipitation Electrical Storms Zap NE NSW 8th January 2003

Report by Dave Ellem and Michael Bath

As had been the case in our area for the last few possible thunderstorm setups, I didn't believe there was any great chance of storms and seemed to ignore all the variables I usually look at to help forecast. For what I had looked at, I was concerned there would be insufficient moisture for storms, and instability wasn't all that great. My only real encouragement for the day was that Anthony Cornelius was very keen to come and chase down in the Northern Rivers as he thought we could end up with a good lightning display. I was hopeful however that the approaching southerly change and associated instability would increase our chances as the evening progressed.

Most of the day was dominated by clear skies. It wasn't till around 1.30pm that I noticed Cu had begun to develop along the ranges to my SW through to the NW. Very weak and tiny cells began to develop around the Dorrigo area soon after, and I was quite encouraged to see some early activity, but these cells were only

pulsing into green on radar and then decaying rapidly. Anthony decided to head down here to chase the later activity and so set off from Brisbane. Michael and I kept an eye on radar and on the sky throughout the afternoon.

By 2.30pm things were certainly getting interesting with slightly stronger storms, that were quite pulsey, developing along the ranges, and heading generally NE. This was quite good, as we were worried storms would head more northerly and hug the ranges. I could just see a bit of anvil to my SW (trees restrict the view) and so got excited!! It felt as though storm chances were now looking good! But a bit of bad news came in, Anthony had been called back to work when he'd reached the NSW/QLD border, and had to head back to Brisbane!! Doh!

At 4pm I decided I should go for a run down into the paddock to have a look at cells and take some photos. Once in position, about 800m from my house, I had views from the west to the south, and so could see a line of activity along the ranges. One cell about 40km NW of Grafton was looking

fairly weak, but seemed to be developing a bit of an overshoot. I guess due to it's fairly low top, it didn't take much to punch through it's first anvil and go a little higher. Radar at this time showed the cell strengthening to solid pink. I took a photo of the cell and also observed some distant cells to the S which also looked promising.



I got back home and checked radar, and it confirmed the cell was strengthening, and a large line of cells were developing right up to just west of Casino. None of them were very strong however. I suggested to Michael that we head out as it may be our last opportunity to chase for a little bit due to the current weather pattern. So we decided to head out to Casino in the hope of catching the stronger cell. After meeting at his place we went to Parrots Nest and the view was....well, pretty disappointing. Very low topped and high based cells were only producing very light precipitation to our WNW, W and WSW. The only interesting feature was that the anvil was quite thick on the cell to the WSW, with a bit of mammatus.



By 5pm we were thinking we'd only hang around for another half hour and if nothing happened then we'd head home. What was interesting were the distant cells to the south, which looked to have some impressive up-drafts and a large, well defined anvil.

The sun soon disappeared behind an anvil and allowed us to have a decent view of the cells west of us. It was from this point that things got interesting! By 5.15pm we were able to see quite a nice RFB developing, which suggested the cell was beginning to do something. A quick radar update from my brother suggested that the cell was strengthening and heading towards Casino. He also mentioned that the cell S of Grafton was red on radar!



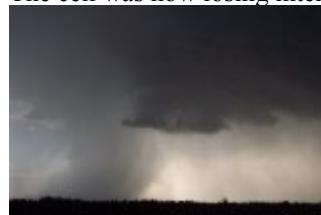
Finally, by about 5.20pm after I had suggested we should have seen some CGs with a RFB like that, I saw the first CG of the day! "It's officially a thunderstorm now" we said! We decided to head towards Casino to get a closer look at the lovely developing RFB. We headed down to Fig Tree Lane, which gave us a perfect view of the cell to our west. By 5.30pm this LP (low precipitation) cell was going off!! We were seeing several clear air CGs that looked great and the RFB was only looking better, and even had a slight green tinge in the centre. By 5.40pm we were beginning to see some heavy precipitation on either side of the cell and radar reflected this. The very small rain-shaft looked so intense, and also had beautiful curvatures in it!



By 5.45pm the cell was now producing a microburst - and it looked quite severe when seeing how quickly the rain was spreading out! What a sight it was! A massive RFB, CGs coming down all around the place, and a microburst! We speculated that there must be hail in this cell, and decided it would be fun to head into it!

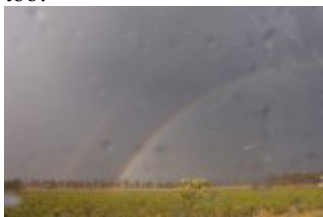


Whilst driving towards Casino we just had to stop for a photo when we saw the massive RFB had developed into a significant lowering (although still quite high based) with lovely curvature formation!! Looked great, but rapidly decayed as we took photos. The cell was now losing intensity.

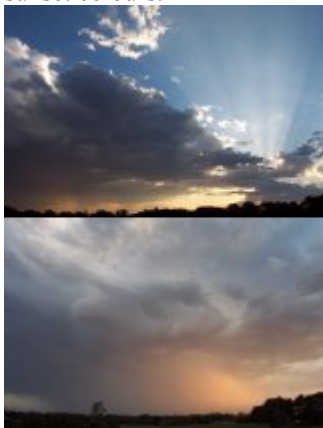


We drove into town with CGs pulsating all around. The high based of the storm meant CGs looked VERY tall when they flashed near us. We certainly had some close hits and loud

cracks!! Driving through town we began to get intense precipitation at around 6pm. We went down the road to Tenterfield hoping to get some hail where we thought the cell was most intense, however we only got very heavy rain, that caused some minor flash flooding. We turned around and headed back towards town, driving through the intense rain. Sunlight was starting to appear as the cell moved away from us, and our attempt to go up the Summerland Way to catch some more storm was stopped when we thought it was a waste of time! On top of that I was actually meant to be home for a family dinner in 10mins!! After reviewing radar, a significant patch of red developed over the town at 5.50pm. I believe that had we initially gone up the Summerland Way we may have received some hail, but at the time it looked more likely to be on the SW side of Casino. Not to worry, I'm sure we'll get some hail sometime this season!!! We saw a nice double rainbow on the way out too!



After getting home and having dinner somewhat late I was ducking outside all the time to check the cells advancing from the S. Thunder was audible and I saw a few CGs. The following photos were taken between 7.30pm and 7.45pm of the various cells and sunset colours.



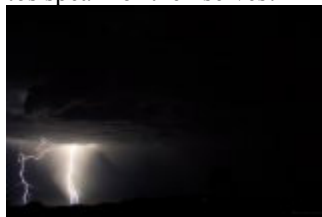
The Lightning Show

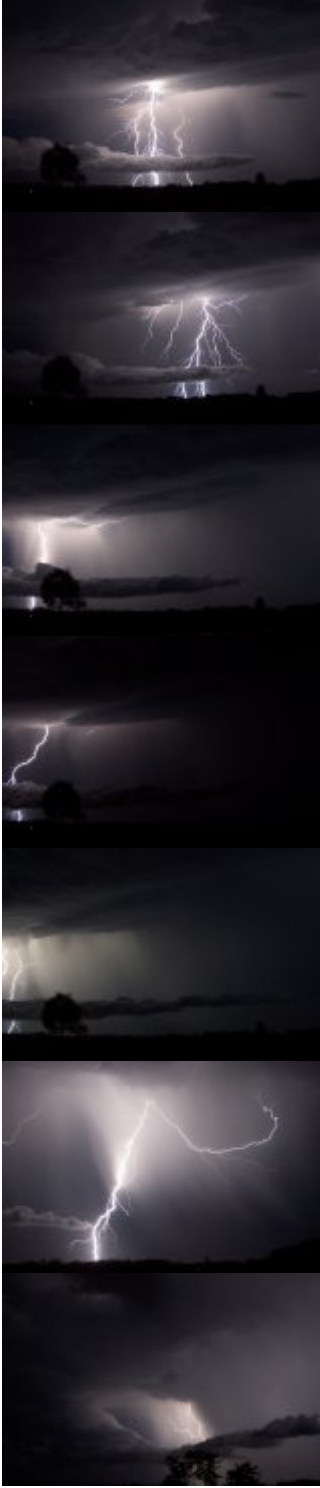
Around 8pm the lightning from a newer cell to my south was very alluring. I suggested I may head out, but mum wasn't very impressed since we had guests and she told me I was to stay home. About 15mins later my

Dad, who had been outside, came rushing in telling me we should go out and get some lightning photos!! Good old Dad! So I let Michael know that my Dad, a friend and me were going to eastern Alstonville to watch the cells. Michael joined us up there and by 8.30pm we were watching a storm with a great roll cloud structure advance NE to pass just east of us. We took quite a few photos of this activity, but we were disappointed with the lack of CGs. I ended up having to delete most of my photos from this storm as I ran out of room on my memory card when the better CG show began.



Around 9pm Dad took my friend back home while Michael and I stayed. It seemed that cell after cell was developing and moving NE to pass just to our east. While there was one cell east of us, we could see 3 other cells extending in a line right round to our SSW! we waited in anticipation of a decent cell, and were informed that distant storms east of Glen Innes were in the red. We decided to wait this out. By 10pm things were going off! Branched CGs, roll clouds and awesome cloud structure. I'll let the photos speak for themselves!





These two images are cropped from 2 photos above:



The following photographs are a selection taken by Michael Bath from the eastern outskirts of Alstonville. Click here to see all 66 lightning photographs taken: [\[Page 1\]](#) [\[Page 2\]](#) - almost all were shot at F4, 100 ASA film, 50mm lens.





The following six photographs were taken by [Ray Mullens](#) from Goonellabah.



Rodney Wallbridge captured some lightning on his video camera:



If you (or someone you know) have any photographs or video of this event, please feel free to contact [Michael Bath](#). Your contributions are very welcome.

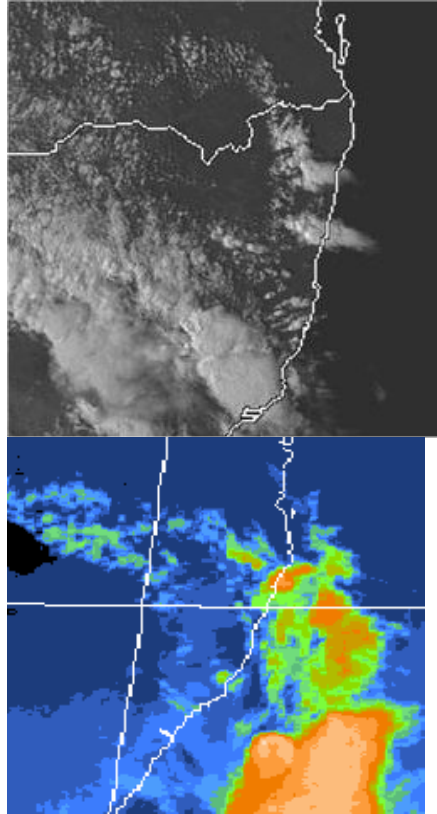
Radar

From [Bureau of Meteorology](#).

- Grafton local scale loop [0220z to 0730z 08/01/2003](#) (1.20pm to 6.30pm local)
- Grafton local scale loop [0740z to 1330z 08/01/2003](#) (6.40pm to 12.30am local)

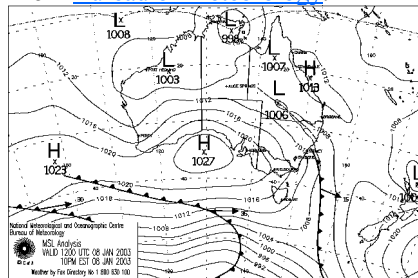
Satellite Images

From [Bureau of Meteorology](#) and [TWC Weatherzone](#) at 5pm and 11pm local.



Analysis Chart

From [Bureau of Meteorology](#).



AVN Model Analysis

From [NOAA](#) 08/01/2003 06z analysis run

- [Liftex Index](#)
- [CAPE](#)
- [Relative Humidity surface](#)
- [Relative Humidity 850 hPa](#)
- [Relative Humidity 700 hPa](#)
- [Relative Humidity 500 hPa](#)
- [Relative Humidity 300 hPa](#)
- [Temperature \(C\) 850 hPa](#)
- [Temperature \(C\) 500 hPa](#)
- [Winds \(knots\) surface](#)
- [Winds \(knots\) 925 hPa](#)
- [Winds \(knots\) 850 hPa](#)
- [Winds \(knots\) 700 hPa](#)
- [Winds \(knots\) 600 hPa](#)
- [Winds \(knots\) 500 hPa](#)
- [Winds \(knots\) 300 hPa](#)