

Observing Report for March 16-21, 2004 – Latitude 38° South

My wife and I vacationed in New Zealand during March and April, 2004. Together we toured the southern half of the South Island for two weeks. Prior to my wife's arrival, I spent a week on the North Island of New Zealand. A New Zealand amateur astronomer in Gisborne generously allowed me to use his backyard observatory and telescopes (<http://www.possumobservatory.co.nz/>). I used his 16" f/4.5 dob the first night. Thereafter, I used the 16" f/4.5 equatorially mounted in his observatory.

Gisborne, New Zealand (178° 40' E, 38° 02' S).
Population 32,000 on the east coast of New Zealand's North Island

Gisborne is the first city in the world to see the sun of each new day (its just a little more than 1° west of the International Date Line). It is known as the "Chardonnay Capitol" of New Zealand. It is also known for its sunny beaches.

During the weeks prior to my departure, I kept an eye on the weather in New Zealand. The outlook wasn't encouraging. New Zealand, especially the North Island, had one of the wettest summers on record. Fortunately, out of the six days I was in Gisborne, I had three clear observing nights.

The first clear night was the day I arrived, Tuesday, March 16. After flying all night (16 hrs), and driving all day from Auckland to Gisborne (550 km, 9 hrs), I was tired. However, the weather forecast for the next several days was bleak. There was only one decision – I had to observe that night.

John D., my host, was in Japan during my visit. He arranged to have a couple of his local observing buddies, Dudley and John B., to set up the equipment for me. They also kept me company and shared views. These Kiwi's live up to their reputation – they were very friendly and went out of their way to make my trip enjoyable.

Selected Notes and Observations

Tuesday, 3/16/04

Although John's backyard observatory is on the outskirts of Gisborne, the skies are pretty dark. I estimate mag 5.5 – 5.8. The transparency was quite good. The dark nebula known as the Coal Sack was distinct, a large naked eye hole in the Milky Way. Seeing supported less than about 200X.

The temperature dropped to a low of 57°F. Being on the coast, the humidity climbed to 92%, but the slight breeze prevented dew from forming. Since I was tired, I was content to have John lead me on a tour of bright favorites with the 16" f/4.5 dob.

Several years ago my wife and I traveled to Australia. I had planned our trip so that our stay on Heron Island, a small island on the Great Barrier Reef, coincided with New Moon. During the one clear night, I observing the southern sky with binoculars. In particular, the Large Magellanic Cloud captured my interest. It is a rather large patch of nebulosity (approximately 11°X9°), obvious to the naked eye (integrated brightness of 0.4 mag). With the binoculars, I could see the small puff of nebulosity known as the "Tarantula Nebula" (NGC 2070). I vowed to return to the Southern Hemisphere with some real aperture. Naturally, the long-awaited "Tarantula" had to be the first target.

I was blown away.

This is a truly remarkable object. Its apparent size is 30' X 20', about half the diameter of the Great Orion Nebula, M42. It shows a lot of bright detail. A number of curved, yes, spidery, arms criss-cross the central body and extend outward. The object is even more remarkable because this kind of detail is visible in another galaxy! We are 179,000 light years away. If the Tarantula Nebula were located at the same distance as the Great Orion Nebula (1600 light years), its apparent size would be 52° X 36°! That's twice the length of the Big Dipper.

We continued observing the usual bright southern favorites. Here are a few.

Omega Centauri (NGC 5139)

Unfortunately, seeing conditions didn't allow the best views of this globular. In some respects, I was underwhelmed. At magnifications low enough to show the entire globular in context, stars were not well resolved. Higher magnifications should allow more stars to be resolved, but the entire globular doesn't fit within the f.o.v. I wonder if the most visually pleasing globular has some optimum combination of apparent size, density and apparent magnitude of stars, etc. For me, this isn't the best. No doubt my impressions were limited by the seeing.

Centaurus A (NGC 5128)

I've had pretty good views of this galaxy from up north. However, this view was the best by far. The broad dust lane bisecting the two bright domes was much darker and more distinct than I had ever seen it. Unexpectedly, I could also see wisps of faint nebulous patches within the dust lane.

47 Tucana (NGC 104)

I was far more impressed with this very large and bright globular. Star density is quite high in the small core and thins out quickly towards the edge. Some consider this globular the best.

Jewel Box Cluster (NGC 4755)

Eta Carinae (NGC 3372)

A very large sprawling nebula with lots of bright structure.

I finished the night using binoculars to re-familiarize myself with the southern sky and finally had to call it quits at 1:30AM.

Saturday, 3/20/04

Within the observatory, temperatures were a bit warmer and the humidity lower than outside. Temperatures stayed in the low 60's and high 50's. The relative humidity inside never got above 86%, although surfaces outside were dripping with dew.

The sky seemed a little brighter than on Tuesday. The Coal Sack wasn't quite as black and the transparency seemed a little worse. Seeing was better, occasionally allowing magnifications of 260X. Clouds moved in around 10PM, but fortunately cleared out about a half-hour later.

I revisited some of the bright showpieces, and then started looking for new objects. While star hopping in Tucana, I spotted a glow in the finder that I didn't see plotted on the charts. This turned out to be my first view of Comet C/2001 Q4 (NEAT). In the finder it looked like an unresolved globular – a circular diffuse glow. At 200X in the main scope, it showed a very bright core surrounded by a slightly asymmetrical halo. I estimate it was about mag 5-6.

The Small Magellanic Cloud (NGC 292) wasn't quite as visible as the LMC, but it was still a naked eye target (approx. 5.3° X 3.4°, integrated magnitude 2.3). Being at lower elevation, its light was also

attenuated by atmospheric haze. I knew little about the SMC and was unprepared to see so many easy targets within it. Below are some of the objects I observed.

NGC 361 (1.5', mag 11.8)

Globular cluster in SMC. Faint, small circular patch. No stars resolved.

NGC 346 (5.2', 10.3)

Open cluster associated with bright nebula in SMC. At 200X, it appeared as a crescent shaped nebulous patch.

NGC 371 (7.5')

Open cluster (and nebula?) in SMC appears as a nebulous patch. Smaller and fainter than NGC 346. Approximately 20' east of NGC 346.

NGC 395

Open cluster (and nebula?) in SMC. Nebulous patch slightly smaller than, and approximately 10' east of, NGC 371.

IC 1624 (0.7', 12.9)

Open cluster in SMC. Smallest and faintest nebulous patch in group. Approximately 2' south of NGC 395.

NGC 411 (1.3')

Open (or globular?) cluster in SMC. Fairly bright circular ball - easy to see, but no stars resolved.

NGC 422 (13.4)

Open cluster in SMC. Very small patch of nebulosity. Considerably smaller and fainter than, and about 7' east of, NGC 411. No stars resolved.

NGC 299 (0.7') and NGC 306 (0.8')

Close pair (5') of small open clusters approximately 20' west of NGC 346. Very small, but not stellar, moderately bright globules.

NGC 330 (1.4', 9.6)

Open (or globular?) cluster in SMC. Relatively bright small circular patch. Very bright, densely packed center. Stars resolved near edge?

As the SMC moved lower into the muck, I found some easy objects nearby.

NGC 362 (14', 6.8)

A nice bright globular cluster appearing on the northern edge of the SMC, but within our galaxy. This globular is moderately large and is quite well resolved at 230X. It has a very bright, dense core.

NGC 1947 (3.0'x2.6', 10.6)

Galaxy north of the LMC. Fuzzy oval patch with brighter central region.

I then spent most of the rest of the night hunting down objects in the LMC. Like the SMC, the LMC is chock-full of easy targets, only more so. With so little time to observe in the Southern Hemisphere, I rushed to see and identify as many objects as possible (foolish me). I took few notes. I wasn't able to unambiguously identify some objects I observed. Some were not plotted in Uranometria. More preparation, especially with photographic finder charts, would be helpful.

NGC 1868 (3.9')

Uranometria shows this globular cluster plotted outside the outlines of the LMC, but other references indicate it is part of the LMC. Small, bright, circular ball. No stars resolved.

NGC 1978 (3.9')

Rich open cluster in LMC. Nebulous and slightly oval shaped. No stars resolved.

NGC 1866 (4.5', 9.7)

Open star cluster in LMC. Rather bright and easy to see. I believe I can resolve a few stars.

NGC 1859 (2')

Open cluster in LMC. Faint nebulous patch.

NGC 1869 (14'), NGC 1873 (3.5') and NGC 1871 (2').

Line of three faint, irregular nebulous patches, oriented N-S, and approximately 12' south of theta Doradus. Nebulosity could be unresolved stars. Several faint stars visible in each.

NGC 1955 (1.8', 9.0), NGC 1968 (1.1', 9.0), NGC 1974 (1.7', 9.0)

Another extended line of irregular nebulous patches. Oriented roughly E-W. Could be one large complex with brighter knots. Each of the three bright nebulous knots shows a few resolved stars.

NGC 1929, NGC 1934, NGC 1935, NGC 1936

Four small nebulous patches almost equally spaced and oriented approximately SE-NW. NGC 1935 and NGC 1936 are the brightest. I also saw four other objects within 10' that were not identified in Uranometria.

NGC 1966 (13'x13'), NGC 1962, NGC 1965, NGC 1970

NGC 1966 is an extended, roughly circular, faint, nebulous patch approximately 8' across within the LMC. Within it are brighter knots of nebulosity or open clusters (NGC 1962, NGC 1965, and NGC 1970). I didn't take the time to unambiguously assign the appropriate designation with each knot.

NGC 1953

Globular cluster in LMC. I was pretty excited to observe this object since 1953 was the year I was born. It is a relatively bright, small, circular ball approximately 7' west of NGC 1966. No stars resolved. There appears to be some confusion about its identity. It was plotted and labeled in the old Uranometria, but the newest edition omits it entirely. It shows up clearly on DSS images and was easy to see in the telescope.

I relaxed and toured the complex swirls of the Tarantula Nebula with the 7mm Nagler T6 (260X). The higher magnification revealed considerably more detail as I leisurely followed loop after loop of nebulosity. The Tarantula Nebula is also a prodigious stellar nursery. There were numerous star clusters that I didn't stop to identify.

There are lots of other bright nebulas in the vicinity (especially south) of the Tarantula Nebula. Many have embedded star clusters. I won't bother to mention them here.

NGC's 2046 (1.3', 12.6), 2047 (0.8', 13.2), 2057 (1.8', 12.2), 2058 (1.8, 11.9), 2059 (1', 12.9), 2065 (2.6', 11.2), 2066 (0.7', 13.1), 2072 (1.3', 13.2).

This cluster of star clusters, approximately 1° south of the Tarantula Nebula, deserves mention.

These small balls reminded me of a cluster of grapes. I counted 7-9 within a diameter of about 15'.

No stars were resolved and brightness varied. Some were visible with direct vision. Others required averted vision. I made a quick sketch for identification later.

NGC 2136 (1.9', 10.5), NGC 2137 (0.8')

Close pair (2.5') of star clusters in LMC. Both circular. NGC 2136 is larger and quite a bit brighter than NGC 2137. Nice size and brightness contrast.

Some objects outside of the LMC.

NGC 2397 (2.5'x1.2', 11.8)

Moderate sized oval galaxy. Easy to see with direct vision. Very slightly brighter toward center.

NGC 2442 (5.5'x4.9', 10.4), NGC 2434 (2.5'x2.3', 11.3)

Close bright galaxy pair (20') within same f.o.v. NGC 2434 smaller, fainter, and slightly oval. No structure visible. NGC 2442 is a larger, more elongated oval. It appears to be irregular with a little hook at the north end.

NGC 2516 (22', 3.8)

Rich open cluster of bright stars.

NGC 2547 (25', 4.7)

Open cluster. Collection of bright stars. Overall shape elongated.

IC 2391, the Velorum Cluster (60', 2.6)

Large open cluster. Sparse collection of bright stars. Requires wide field.

NGC 3201 (20', 6.9)

Beautiful bright globular cluster. Stars highly resolved to the core.

NGC 3132, the Eggburst Nebula (1.5', 9.2)

Very pretty planetary nebula. Very bright central star which appears to be slightly off-center. Elongated N-S. Some darker, mottled regions/wispy structure within.

NGC 2808 (14', 6.2)

Very nice bright globular cluster with beautiful structure. Bright central area. Star density gradually tapers outward. Highly resolved stars look like fine-grained sand.

NGC 3114 (35', 4.2)

Rich bright open cluster.

NGC 3293 (5', 4.7)

Nice moderate sized cluster. Mixture of fainter stars and some very bright ones, including a few brighter bluish stars and one yellow-orange.

NGC 3372, Eta Carinae Nebula (120', approx. 1.0)

I spent quite a lot of time scanning this amazing nebula with different magnifications. Dark dust lanes divide this nebula into many segments. Larger and brighter than the Orion Nebula.

NGC 6302, the Bug Nebula (1.5', 9.6)

Equal to best views I've had from up north. To me, it looks like a tadpole. The brighter lobe is roughly circular, and forms the body. The other lobe looks like a faint, almost translucent, elongated tail.

The Bug Nebula lies within the curved tail of Scorpius. From home, during Summer Scorpius appears to claw its way out of the earth to crawl on its belly along the horizon. In NZ, he climbs vertically, high into the sky.

Packed up and in bed by 3:00 AM. (NZ switched from daylight savings time back to standard time tonight, so I got an extra hour of sleep.)

Sunday, 3/21/04

Pretty much a repeat of Saturday's conditions. Temperature was a couple of degrees warmer. I had a long drive back to Auckland tomorrow, so I planned a short night. I revisited bright favorites and bagged some new objects.

SMC

NGC 419 (2.4', 11.2)

Moderately bright rich open (or globular) cluster in SMC. Easy to see with direct vision, but I can't resolve individual stars.

NGC 456 (2')

Slightly elongated nebula with embedded stars in SMC.

NGC 465 (2', 11.5)

Open cluster in SMC, approximately 10' E from above. Also another nebulous patch between the two. This appears on the DSS image, but it isn't clear if it is NGC 460 or something else.

NGC 376 (1', 10.9)

Open or globular cluster in SMC. 20' West of NGC 419, but smaller and fainter.

NGC 416 (1.2', 12.6)

Open or globular cluster in SMC. Approximately 30' North of NGC 419. Even fainter than NGC 376, easy to see with direct vision.

Other

NGC 1511 (3.5'x1.2', 11.3)

Moderately bright, elongated galaxy. Hint of mottling (dust lane?).

NGC 1313 (9.2'x6.9', 8.7)

Quite a bit larger galaxy than above. Irregular oval with near uniform surface brightness. Slight brightening along center that appears curved.

NGC 1261 (6.8', 8.3)

Quite a nice globular cluster. Many stars resolved, but apparently seeing has deteriorated somewhat.

NGC 1566 (8.3'x6.6', 9.7)

Quite large and bright galaxy. Bright core with mag 12 star just east of center. Hint of spiral structure. Extended halo is slightly oval.

NGC 1549 (4.9'x4.1', 9.8) and NGC 1553 (4.5'x2.8', 9.4)

Bright galaxy pair approximately 12' apart, oriented N-S. NGC 1549 is nearly circular. NGC 1553 is distinctly oval. Both have bright cores.

NGC 1546 (3.0'x1.7', 10.9)

Elongated galaxy. Slightly smaller and fainter than above two.

NGC 1533 (2.8'x2.3', 10.7)

Nearly circular galaxy with faint halo and small, brighter core.

NGC 1596 (3.7'x1.0', 11.2)
Elongated galaxy.

LMC

NGC 2029, NGC 2032, NGC 2035, NGC 2040

Four closely spaced nebulas within the LMC, spanning about 8'. I dubbed this group "The Dentures". To me, they looked like a row of four incisors. Their brighter tips were similar to the blade-like crowns, and the fainter tails looked like the long slender roots. The center two are the brightest and lie closest to each other. Maybe a better name for this group is "The Incisors". The best view was with the 7mm Nagler T6 at 260X. Later I learned that three of this group (all but NGC 2040) is known as "The Seagull Nebula".

I stopped taking notes and just enjoyed scanning the LMC, tripping over scores of objects. So many objects, so little time.

Anticipating the long drive tomorrow, I packed up and was in bed by midnight.

Reflections on observing at 38° South vs. 38° North

I've been observing near latitude 38° North for approximately 15 years. From that latitude, approximately 80% of the sky is accessible, although excellent conditions are necessary to capture good views of objects that barely rise above the horizon.

Is a trip to 38° South in order to view that last 20% worth it? The answer is a resounding yes! The biggest and brightest globular clusters, the SMC and LMC, and the view of our Milky Way high overhead are just a few of the wondrous and unique sights that just can't be viewed from home.

Is the converse true? If an observer lives near 38° South, is a trip to 38° North worth it? Maybe.

Here are some objects that I'd hate to miss.

M51 – best example of a face on spiral with detailed structure.

M31 – yeah, but they have the SMC and LMC

M82

Perseus Galaxy Cluster, Abell 426.

However, if I were given the choice of observing from one or the other location, I think I'd choose 38° South. That preference might be the case of "the grass is greener, etc.", or might reflect recent excitement over the objects I observed there. Only more trips to 38° South will help me know for sure – trips I already look forward to.

For those who have observed from northern and southern hemispheres, what do you think?