

## The Great Comet of 2007

With comet McNaught now just a vague memory for casual observers, it is perhaps a good time to reflect on one of the best comets in more than 40 years, deservedly given "Great Comet" status. This public spectacle resulted in huge traffic jams and chaotic, crowded lookout spots. On a clear night in Cape Town a 15 km long "parking lot" stretching from Sea Point past Llandudno and similarly up the coast from Bloubergstrand, became a common sight. Being an easy target for the simplest aim-and-shoot cameras, even cellphone cameras, it was well photographed. Readers invented some of the most imaginative descriptions for it; a child's drawing in fine white crayon, a distant velt fire, a burning plummeting aeroplane, great ghostly water spout, giant celestial porcupine and others. There's even a fisherman's story associated with comet McNaught as you will soon see!

### Background

C/2006 P1 was a routine discovery on 7 August 2006, with the Uppsala Schmidt telescope at Siding Spring Observatory, Australia. It was one of 29 comets discovered by this telescope since early 2004 in a project to systematically search the southern skies for asteroids or comets that it would pass close to the Earth. For Robert McNaught, a professional astronomer conducting this survey, his 31<sup>st</sup> comet discovery initially seemed nothing

special. The comet was then at magnitude 17 and situated 3 astronomical units (AU) from the Sun. As the orbit got refined, it became apparent that it would pass very close to the Sun (0.17AU, which is inside the orbit of Mercury), reaching perihelion on 12 January 2007 and closest approach to earth on 15 January (0.82AU).

By late December 2006, upon recovery from the glare of the Sun, it became apparent that the comet was brightening rapidly. By early January 2007, several amateurs from the northern hemisphere were reporting that the comet was visible to the naked eye in bright twilight just a few degrees above the horizon. This was good news for us in the south – at last there was a comet best placed for post-perihelion visibility for us. As always with comets, particularly for



**The first ever image of C/2006 P1 (indicated by the two lines) here at mag 17. This picture shows a tiny 13.2 x 10.0 arcmin section from the original 20 sec CCD exposure, taken with the Uppsala Schmidt telescope on 7 August 2006.**

a first time visitor to the inner solar system, the big unknown remained – what will happen to it as it rounds the Sun?

This time, however, we were very fortunate because we could follow the comet as it passed inside the eight degree field of view of SOHO's LASCO C3 camera. Prospects looked great when no fragmentation was seen as it saturated SOHO's instruments, far outshining Mercury in the same view. Comet C/2006 P1 (McNaught) was the very first target for another space mission – the recent STEREO launch (see *MNASSA* Vol 65, 11&12, 190), also overwhelming its instruments.

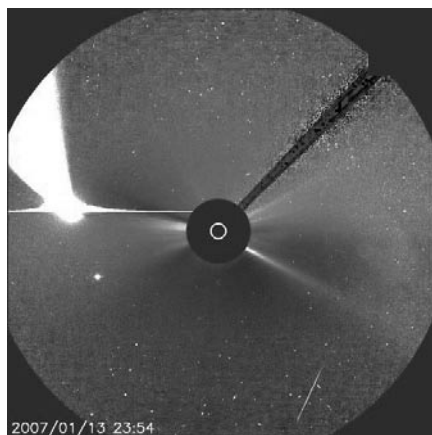
Although the early signs suggested that we may be in for a treat, nothing could have prepared us for what we were about to experience! People who could still remember recent famous comets like Bennett, West,

Halley, Hyakutake, Hale-Bopp, etc at most anticipated a similar show. Nobody expected it to rival the spectacular brightness of comet Ikeya-Seki in 1965.

### Observations

As far as we are aware, Mauritz Geyser and Frikkie le Roux from Pretoria were the first to see the comet from Southern Africa. Around 10h00 on Sunday, 14 January they both saw their first daytime comet! Mauritz writes: "After looking for quite some time, being careful not to get the Sun in the binocular view, I eventually managed to spot the comet in broad daylight using my 7x42 binoculars. The comet was only about 5.4 degrees from the Sun." Knowing where to look, they then viewed it through Frikkie's telescope.

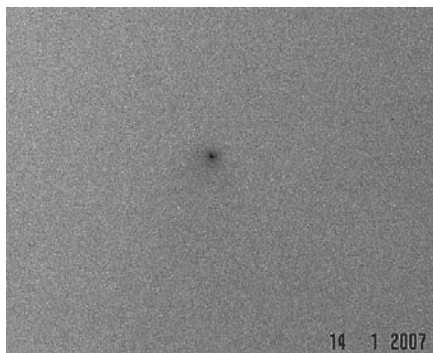
Oleg Toumilovitch from Johannesburg shortly afterwards repeated this dangerous



**Bright McNaught saturated both the cameras of SOHO (left) and STEREO-B (right). People were able to follow the comet rounding the Sun, live via the internet, on the SOHO website, outshining Mercury just below it.**



**First South African observation:** Mauritz Geyser (left) and Frikkie le Roux at the 6-inch Newtonian telescope they used to observe comet McNaught in broad daylight.



**First South African picture:** Oleg Toumilovitch took this picture through a 4-inch refractor in daytime on 13 January. (Picture inverted to improve clarity.)

observation and even managed to take some pictures: "It started for me on Saturday 13 January, when our family were on our way out of town for the weekend. We stopped at a local garage to buy the *Saturday Star*. And there it was – an article titled "Move over Halley, here's McNaught" with an

image of the comet taken from Italy. On arrival back home on Sunday I checked my e-mail and there was a message from Auke Slotegraaf about M. Geyser's daytime observation. Using my 4-inch refractor, at first I couldn't find the comet until I installed a neutral density filter (moon filter) on the 40 mm eyepiece. The first thing that came to mind was: 'Am I really seeing it?' With the telescope tracking, I took a series of images between 17h37 and 17h42."

That night, with the comet still right up in the Sun's glare, a few people managed to see it! Tim Cooper received reports from Wayne Mitchell, Barbara Cunow and Neville Young (Port Elizabeth) of binocular and brief naked eye sightings and a short tail. Capetonians were clouded out although Lia Labuschagne briefly saw it from Bloubergstrand. From Wellington, Willie Koorts, Anton Marais and three others also managed to spot the comet through a gap in cloud. Anton was the first to see it. Willie's SMS to Auke read: "Comet seen! Incredibly bright, couldn't even see Mercury nearby at -1.1 mag, yet comet was visible! Has a short tail. Briefly naked eye".

Terrible viewing conditions then seemed to have plagued the whole country, but on Wednesday, 17 January, Capetonians had their first clear night. By this time word had reached the newspapers and radio stations, alerting people of this spectacle. It was an amazing sight to see cars parked along the roadside on every bit of high ground with a westerly view. Auke headed for a prime spot – the Signal Hill viewing site on Li-

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on's Head. Here he found some 200 people camping out on the grass or standing on the viewing deck. Instead of enjoying the usual sundowners, these people were actually comet hunters, bracing themselves against the strong wind!

Auke's exhilaration after first spotting the comet, blew his cover: "My excited comments to Basil as I handed him the binoculars caused a murmur amongst the fellow cometeers: What? Can he see it? Where? ... What I had thought would be a quiet comet-gazing evening turned into an impromptu star-party. Questions, about

planets, the Sun, comets, orbits, how far away it is, its size, the curved tail, will we see it tomorrow, how fast its going, where it came from, and where its going..."

Not even Llandudno was safe, as Lisa Crause found out: "My first sighting of comet McNaught was from Victoria Road near Llandudno on the evening of 17 January. As I edged my way up Kloof Street, I wondered what all the traffic was about – surely not related to the comet? It turned out that it was! Cape Town had come out in full force on the first clear night of the week to witness the Great



(above) Part of the 200 strong turnout, after being alerted to the spectacle by the media, that Auke encountered on Signal Hill on 17 January.

(right) Excitement clearly showing on people's faces as they spot the comet for the first time and anxious pointing for those who are still struggling to see it.



Public interest was equally high in Pretoria where Oleg found the Union Buildings an ideal viewing spot (right) and Gerrit found Bloemfontein's Signal Hill (both images below), particularly popular after some media exposure.

(bottom right) Even cellphone cameras were able to capture McNaught, although Christopher Tonks from Graaff-Reinet "cheated" by holding it up to a telescope eyepiece.



been able to enjoy photographing this amazing spectacle – although it did seem awfully flippant to be planting said acquisition in the sand on Clifton's 2<sup>nd</sup> beach two nights later! That was a great evening too; the wind was howling everywhere else,

but Clifton was magically calm and the view of the comet was brilliant."

Comet of 2007. It was spectacular! Having seen Hyakutake and Hale-Bopp in the past decade, I expected McNaught to be impressive, but I was not prepared for what I saw! I could not have felt more vindicated for having decided to spend a small fortune on a tripod in December! Without this new toy I would not have

The next day (18 January) Francois Nortje reported from Johannesburg: "Until about 17h00 the weather was threatening and it seemed that another thunderstorm was on the way. Then, amazingly, the western

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Not even the bright city lights bothered viewing during the first week of McNaught's glorious show.

Comet-filled skies of the major South African cities featured here are; Cape Town by Steve Potter (top left), Bloemfontein by Hannes Pieterse (top right), Pretoria by Oleg Toumilovitch (left) and Johannesburg by Francois Nortje (below).



skies cleared. Lerika was the quickest one on the draw and phoned around and a group of us headed out to the Observatory in Johannesburg. The sight of the comet over the Johannesburg skyline was absolutely awesome and something I will treasure for a long time."



**Mary Fanner took this breathtaking picture on 21 January from Dolphin Beach looking across Table Bay, against Cape Town's city glow and a floodlit Table Mountain.**

**Roy van der Westhuizen ensured he had no trouble with crowds, traffic jams, etc. when he took this picture 10 km north of Fouriesburg, Free State at 20h10 on 19 January.**



## Hairy star

McNaught reminded us where the meaning "hairy star" for a comet came from! As the comet started to pull away from the Sun, putting it against darker skies, the extent of its majestic tail became apparent, by far its most unique feature. Mary Fanner from Cape Town, who could remember

what comet Ikeya-Seki looked like, could compare them well: "This comet may not be as bright or as large as Ikeya-Seki, but it is far prettier." She aptly described McNaught's serrated fanned tail as a "giant celestial porcupine".

This phenomena was better seen from a dark site as Fiona Hobson found: "I made arrangements to go to Graaff-Reinet to help my high school Astronomy Club kids see this wonderful comet. Thursday 18th January dawned bright and clear and remained so. At 19h30 a dozen of us set off for a place a few kilometers out of town with a clear view out west. As the sky got darker the comet got bigger and brighter. By 20h30 it was truly magnificent. As the comet's head neared the horizon and the sky got still darker, we could see more and more



**Hannes Pieterse's famous picture showing McNaught's most magnificent tail in all its glory. It is a 30 second exposure taken on 19 January at 20h39 from a dark site about 25km outside Bloemfontein.**

of its amazing tail. At first I thought I was imagining things. It seemed that near its end, the tail broadened, fanned out and broke into what looked like faint puffs of smoke. How could a comet's tail do that? After it's head had set and only the enormous tail could be seen, it looked like smoke from a huge and distant veld fire. Amazing!"

Hannes Pieterse managed to secure a fantastic picture of just that! When the city lights of Bloemfontein started to become a problem, Hannes was forced to go searching for darker skies. On the night of 19 January he drove west on the Jagersfontein road, ending up on an ideal spot some 25km out of Bloemfontein. This was one of the best moves he could have made: "At 20h39 I took the picture

that later had people talking all around the globe. Just before the coma disappeared over the horizon, it showed its fanned tail stretching past the position where Venus went to bed!" Not only was this picture chosen as "photo of the week" on *Sky & Telescope's* webpage, but Hannes was invited to appear on an Australian radio show and it was shown on one of Japan's biggest TV networks. A church in Jakarta, Indonesia, even asked his permission to use it in their Sunday service Power Point presentation.

Ironically none of the SAAO staff who are into photography, had been in Sutherland at the time when the comet put on its best show. Luckily Paul Kotze and Ewald Zietsman, both NASSP MSc students from UCT, were observing there and Paul had



his camera with him. He experimented with his camera's low-light modes and managed some unique pictures with domes in the foreground. Paul writes: "From the plateau we had the most amazing view of the comet. It got brighter during the week and was at its best just after sunset on the 19<sup>th</sup>. At first we could not see the extent of the tail, but as it got darker one could see how big in the sky the tail was. I'm so privileged to have been in Sutherland while to comet visited us – no city lights and no people fighting for the best view made viewing the comet a special experience. It was so quiet and clear, you could almost hear the comet flying past. Truly amazing..."

Fiona Hobson also had the advantage of dark skies: "On Monday evening, 22 January, I travelled home late after a day in Graaff-Reinet, admiring the comet all the way. Once I got off the main road and onto the dirt I stopped quite often, switching off my lights and standing in the pitch dark just drinking in the awesome sight. The crescent Moon was there, growing ominously. The comet was fainter now, but not smaller. It loomed up like a great white phantom in the dark. It was higher in the sky now, further from the horizon, so appeared whiter than before. The broad fan at the end of its tail was still there but could mostly only be seen with



**Richard Ball was most fortunate - his house overlooks Hout Bay which enabled him to take this picture from his balcony with the comet framed against *The Sentinel*. "The combination of a lovely sunset, a stunning view, and a unique and dramatic astronomical event, suitably celebrated with a bottle of Veuve Clicquot, made for a truly unforgettable experience."**



**Taken by Paul Kotze on 19 January 2007 at Sutherland with the IRSF dome (left) and the 1m (40-inch) telescope in the foreground. "This was the most spectacular view of the comet tail during the week when the comet was visible."**

averted vision. So now, instead of looking like something burning up in the sky in a great plume of smoke, the comet resembled a great ghostly water spout, huge and softly white against the black Karoo sky. Just beautiful.”

### Now you see it, now you don’t

With all eyes focused to the west at sunset, people got to know their way around that part of the sky in order to spot the comet



Reinderd Visser writes: “This is a straightforward picture of McNaught, taken on the evening of Monday, 22 January 2007 at a farm close to Oudtshoorn in the Little Karoo. It appeared on the front page of one of the local news papers (*Hoorn*) and with Auke Slotegraaf’s article in the Eastern Cape *Buite Burger* edition.”

early. Willie writes: “The group of people who gathered at the Berg-en-dal water tower hilltop overlooking Wellington every evening, grew steadily in size. We started a little competition to see who could spot the comet first. It was amazing that during the first week, one could pick it up in binoculars just 15 minutes after sunset!”

Venus, and later the crescent Moon, were good guides where to look. However, this did not always work! Reinderd Visser described his experience of Saturday, 20 January: “Living in Oudtshoorn, I am one of a few that shows some interest in what goes on in our night sky. When I was asked if I could show where the comet is, I answered ‘yes’, with confidence. In the beginning, during early evening, I usually used Venus as a point of reference to find the comet. At about the right time I took the group out and started looking for Venus .... But where was it? There was the Moon and a smallish cloud in the area, but no Venus! Will you believe it, in the end one of the group found McNaught first! A day or so later I read that there was a Moon/Venus occultation and the mystery was solved!”

Mary Fanner was also caught off guard: “I was so absorbed by the comet that I was caught completely flatfooted. The comet and the occultation were easy to capture together on a photograph, but I managed to get only one decent shot of the occultation after Venus had popped out from behind the thin crescent moon.”

**Georg Mayer took the picture (below) of the Venus occultation from Cape Town and Willie Koorts the one on the right, overlooking Wellington.**



Those who studied the *Sky Guide* anticipated this event. Deeper inland, the disappearance was easier to see. Fiona observed it from Graaff-Reinet: "Saturday evening, 20 January, was wonderful. First, low in the west, Venus was just above the thin crescent Moon, sitting there almost within the bowl of the crescent. What a beautiful sight! At about 20h00, the bright planet suddenly began to fade and soon was gone, leaving the Moon there alone. The sky was too bright for the dark side of the Moon to be seen at all, so the disappearance of Venus looked quite mysterious. One of our neighbours saw it by chance and wondered what had happened."

From Tygerberg hill, near Bellville, Carol Botha was all set for this event. From the Cape, the disappearance happened at about sunset so, although Carol could see it in her 8-inch telescope, she was unable to photograph it. She described the re-appearance

as a scene from a fairy tale, the climax to an already highly exciting week!

Willie, in Wellington also anticipated it and took a telescope along to his usual spot. "By now many people had discovered this ideal comet viewpoint and being a Saturday night, a fair crowd gathered, also attracted by the telescope. Venus' disappearance was washed out by the bright twilight sky but the re-appearance was great. It was greeted with a loud cheer and the pimple on the Moon's cheek amazed many, particularly the children. One little girl literally had to be torn away from my tripod mounted binoculars to allow others a look as well. The amazing picture of this special event combined with a bright comet nearby was wonderful to share with other people." Another impromptu star-party! "Long after the Moon and the comet had set, I was still busy showing them interesting objects through the telescope."



**Carol Botha had an excellent view of the occultation from Tygerberg Hill from where the Moon set behind Signal Hill. “Here is my shot of the occasion when the lion got a twinkle in its tail!”**

### **Crowds and conditions**

The nice pictures we see do not always tell us under what conditions they were taken. Lisa writes: “On Sunday 21 January we chose Dunes restaurant in Hout Bay as our vantage point. Again we were surrounded by crowds of enthusiastic comet-watchers of all ages, but as the wind approached blow-the-crazy-photographer-off-the-deck speeds, my companions abandoned me to enjoy their meal without the layer of sand that was rapidly building up on the outside tables. Unpleasant as the conditions were, that night yielded some of my favourite shots of the comet. The next night I tried my luck from Llandudno beach, only to be pelted by yet more high-velocity sand! The situation was even more hopeless up on Victoria Road where I could hardly open my car door, let alone set up any equipment.”

In Bloemfontein public interest was just as high. Gerrit Penning writes: “When a photo of the comet appeared prominently in a local newspaper on 18 January 2007

(taken by club member Hannes Pieterse), Bloemfonteiners made it a personal goal to see the comet. The next few evenings saw people gathering at “natural vantage points” all over the city to have a look at McNaught. Members of ASSA Bloemfontein went to some of these hotspots, shared binoculars, set up telescopes and talked to passers-by. For the first two nights after the appearance of the photo in the newspaper, Signal Hill was awash with people and apparently Naval Hill saw chaos. People stopped along roads leading out of the city to have a look at this strange object in the sky.”

Johannesburg saw similar interest as Oleg experienced: “The last beautiful viewing was on the 23 January, from Northcliff Hill, which, on every clear evening had to accommodate up to 200 cars in the streets leading to the water tower!”

### **The story behind the story**

Some amazing stories came out during the week or so while McNaught was blazing

away, proving that Comet McNaught was truly a people's comet.

At the end of that busy night on Signal Hill, Auke muses: "As we pack up, I notice Table Mountain for the first time. Lit up, crevices and contours etched in bright light. Above the flat top sits Crux, with Beta Centauri just cresting. Extreme! I think of Lacaille who gave us Mons Mensa, the only constellation named after

a place on Earth and how he must have seen Crux rising over the mountain often. I stick out a mental tongue at the good father – he never got to see a comet setting over Table Bay."

Oleg Toumilovitch writes: "On the 18th of January the clouds cleared up just about half of an hour before sunset. I dragged my wife and daughter out to join me and we went to Northcliff Hill where we found a small street with beautiful views over the West Rand. There were about 20 people already. As the noise from the crowd increased, a lady from a near-by house came out and asked what was going on. Once she heard the answer, she kindly invited everybody to her home for a better view. And suddenly a crowd of strangers found themselves on the third floor on a construction site of an unfinished castle – the highest point in Northcliff Hill! Unbelievable! The rest of the evening was very emotional with Amarula Cream offered by some well-prepared family – lovely people."



**Lisa Crause and a few others were watching the comet from Clifton's 2<sup>nd</sup> beach on 19 January when they decided to try something different! Liviu Ivanescu, a Romanian scientist visiting from Montreal, had to freeze for the full 10 second exposure, taken with Lisa's Nikon D50 digital SLR, set to ISO 1600.**

A good fisherman's story was told to Mary Fanner while she was busy photographing the comet from Dolphin Beach on 20 January: "A woman onlooker, after standing there quietly for a while, asked a few questions about the comet and then she told me this story; Her son was on a boat returning to the harbour a few nights before. When he looked up he saw this great big ball of fire falling down from the sky. He got a terrible fright and so did all the other fishermen in the boat, until they

realized it was not going to fall on top of them.”

Fiona writes: “On Wednesday, 24 January I went to teach my weekly adult literacy class in Klipplaat, our nearest little town. They asked me about the comet: “Wat was dit?” [What was it?] Apparently most people in town had seen it – the street lighting is gentle there. But almost uniformly they had been afraid. “Ek het gebid,” [I prayed,] said one woman, with emphasis. I tried to explain. I told them that the comet is very far away, that its head is a lump of dust and ice as big as a mountain and that when it got near the Sun, some of the ice formed “steam”. They liked the idea of the tail being “stoom en stof” [steam and dust]. The next week we had a whole lesson on the comet and their drawings were beautiful. It is interesting how our view of comets has evolved – from fear, to comfortable complacency, and more recently back to a qualified fear.”

But comet hunting and fear can actually be real as Hannes Pieterse will tell you. After getting safely home the night he took that fantastic picture, he could not help to heave a sigh of relief when thinking back on previous comet expeditions. After photographing Halley in 1986 from Kimberley, he was stopped and searched by the police because the secluded spot where he stopped, happened to be on a known drug trafficking route! And with Hale-Bopp in 1997, while busy photographing the



**A sketch of the comet made by Esther Desha from Fiona’s literacy class, a lady in her seventies, very proud of her success in learning to read at her age.**

comet, he was paid a visit by the farmer, armed with a big gun, investigating the car parked at the spot where his sheep often got stolen.

One cannot help but agree with Gerrit Penning when he concludes: “The Great Comet of 2007 came and went. It was an absolutely stunning sight, so I’m glad it came. It gave us a lot of work, so to be honest, I’m also glad it finally went!”

Hope you all had a good look because this comet will never return. And that you did not stop observing after it faded from naked eye visibility, but applied your skills learnt from the previous issue’s *How to Observe ...* series and that you will be sending in your observing reports to Tim Cooper. ☆