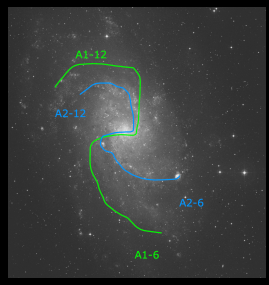
Data of the sky region at the time of the observation ..... **SQM-L 21.7 IR -7,5° Temperature 15°**
Data of the night ..... **Sun alt: -43,9° Moon alt: -24,4°**
Data of the object ..... **Alt: 48.7° Az: 91,1°**
Telescope ..... **Stargate 18"**

Nagler 31mm (70x - 1° 10' - 6.6mm)

Despite the low magnification I am surprised by the details I see and once again I confirm that I had never seen the galaxy M33 like this, I never tire of repeating myself that it has been a great idea to review these well-known objects with the 18".

The general shape of the galaxy is oval, with an inclination of about 70°, say, it is lying slightly towards space. From the position in which I am viewing it, the 12-6 axis is twice as long as the 9-3 axis, i.e. it is much longer than wide. I clearly appreciate the nucleus as the central region slightly brighter than the rest of the galaxy and then two arms in each of its hemispheres forming an inverted S (as if we were seeing the S in a mirror, with the area of the 'hook' of the 12 o'clock to the left instead of to the right). To facilitate the description I will name A1 arm as the outermost (with its zones at 12 o'clock and 6 o'clock, as A1-12 and A1-6) and A2 arm, the innermost (with its respective zones A2-12 and A2-6). Based on this nomenclature, I try to describe the main differences between them.

The A1 arm is, in general, more extensive, fainter (and therefore less defined), and more 'open' in its end zone than the A2 arm. There are also differences in the 12 and 6 zones of both arms, A1-6 versus A1-12 is more extended and seems to divide in its final zone into two parts, one that curves towards the galaxy and the other that follows its path towards 6 o'clock until it blurs. A1-12 is more uniform and its curve is better appreciated.



I try to make a general description of the galaxy going from bottom to top. First we find the arm A1-6, extensive in its final zone, with little brightness blurring towards the end, it seems to be divided into two zones, one that returns on the galaxy and another that extends more towards 6 o'clock. Then comes a fainter zone below the arm A1-6, to make way to the arm A2-6, more

Then we reach the core of the galaxy and if we look above it from right to left, we find that the source of the arms are well differentiated in the right zone, but in the left zone both are united. I mean, the arm A1-6 when it descends towards the nucleus meets the arm A2-6 and it is impossible for me to say where one ends and the other begins, and both already united approach the nucleus of the galaxy, being created from that point. I focus then at the nucleus, which is not very bright, although it has slightly more brightness than the arms (especially the A1 arm), its shape is not pointed but rather elongated. Leaving this slightly brighter area of the nucleus by its right region (the opposite of the one we have 'entered'), we leave again an area a little fainter than the nucleus but brighter than the rest of the galaxy, which is the beginning of the arms A2-12 and A1-12. In this hemisphere the A2 arm 'separates' before the A1 arm, clearly showing the dim zone that divides them even when the arms run parallel. The A2-12 arm rotates sharply over the nucleus of the galaxy and blurs when it reaches the height of the nucleus and passes it. The A1-12 arm takes longer to turn toward the galaxy and when it does, I practically stop seeing it.

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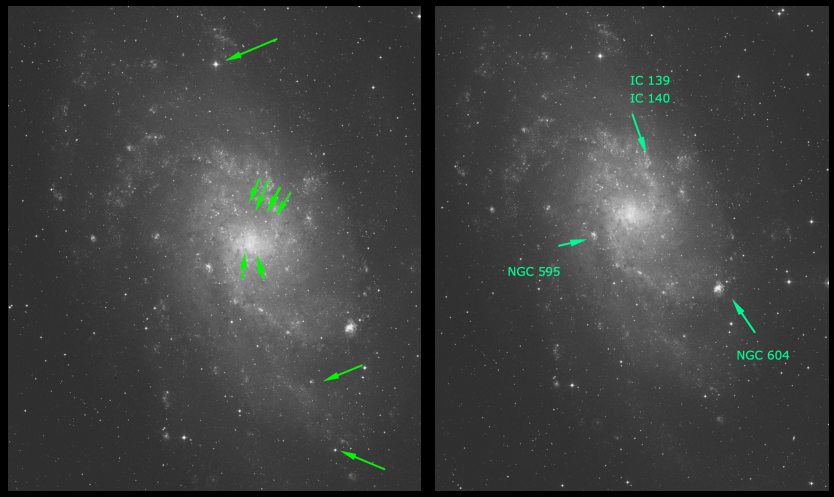
Telescope ..... **Stargate 18"**

In addition to this general description I appreciate some details worth mentioning. On the one hand the stars of our own galaxy that are displayed above M33, to emphasize the stars that delimit the nucleus, there are two stars in the region at 6 o'clock of the nucleus at the junction point of the arms A1-6 and A2-6, as well as four other stars in the area at 12 o'clock of the nucleus forming a line, just before visualizing the arm A2-12 in its turn towards the galaxy. Thanks to these stars it is easy to enclose the nucleus in its region. In addition, at the end of the A1-6 arm there are a pair of stars, one at 12 o'clock and one at 6 o'clock, which helps me to establish the end of this arm. In the highest region of the galaxy, at 12 o'clock, there is a very bright star that allows me to know where the galaxy has already ended.

Regarding the details of the galaxy itself, undoubtedly the most striking as soon as we put the eye in the eyepiece is **NGC 604**, clearly visible as the final part of the A2-6 arm. A large, bright, oval-shaped area following the development of the arm itself. I am not able to distinguish any internal structure of the nebula beyond this large region of superior brightness, impossible to confuse with any star, and very easy to distinguish from the arm. That is the first differential fact of the galaxy, then I distinguish different "lumps" in the junction area of the arms A1-6 and A2-6, it must be **NGC 595** and the surrounding areas. At the beginning of the arms A2-12 and A1-12, new clumps are drawn at the beginning of the arm in its exit towards the region at 6 o'clock from the nucleus, these are **IC 139** and **IC 140**. I find it difficult to distinguish between the two, with these magnifications I see them as a single object. But they serve very well as a guide to follow the A2-12 arm, since it is at that moment when the arm turns on the galaxy separating from A1-12. Without anything else to highlight I am impressed with the amazing image of the galaxy, both for its extension and for its details, even if they are small.



Messier 33

Triangulum 1h 33m +30º 39' *Triangulum Galaxy*

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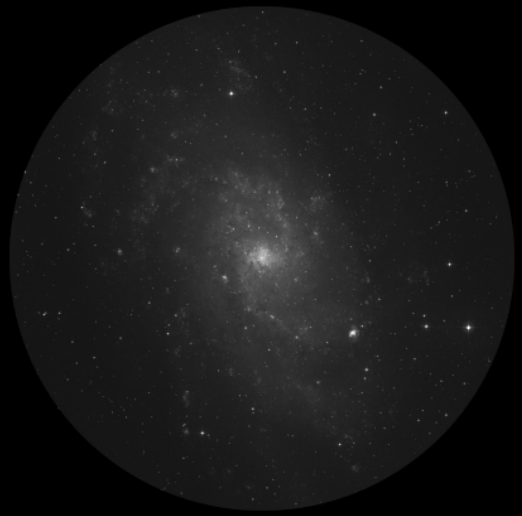
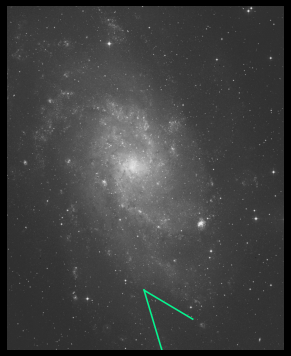
Telescope ..... **Stargate 18"**



Nagler 22mm (98x - 50' - 4.7mm)

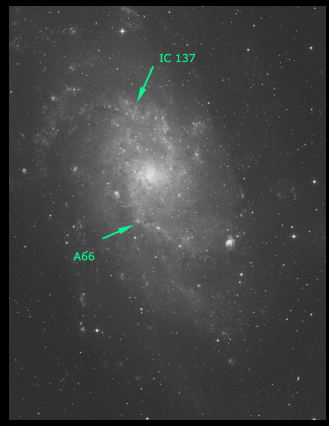
Incredible!!!! The galaxy has gained a lot with this eyepiece. Right now it occupies almost 100% of the field of the eyepiece and I appreciate everything with much more detail.

The first thing that strikes me is A1-6, which is very wide, and clearly opens up at its end zone, like a kind of V, one continuing downward and the other turning toward the galaxy slightly. If I go along A1-6, I end up arriving at its junction with A2-6 as indicated above, but I clearly see a star of our galaxy that points me to NGC 595. Looking at the maps I bring I am able to identify **A 66**, as a small lumpy region brighter than the rest of the arm, but not remotely similar to NGC 604 (very bright) and fainter than NGC 595.



In the A2-6 arm, in its area "parallel" to the nucleus, when it has already made the turn towards the galaxy, I distinguish **IC 137** as a new brighter clump in the path of this arm. I can't make out more details although I have to start using the telescope's motors if I want to place some regions in the center of the eyepiece.

A magnificent view.



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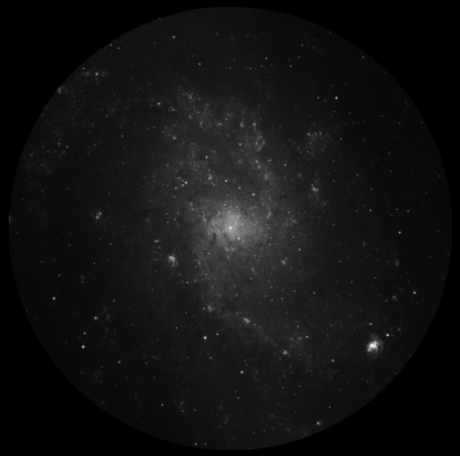
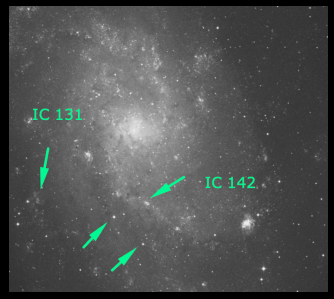


Delos 14mm (154x - 28' - 3mm)

Wooooooow, the galaxy is gaining more and more with each new magnification I place on it. Now I see it much more contrasted with the areas of different brightness easier to distinguish and delimit. The shape of the galaxy has not changed significantly, I can still see all the regions and structures, only that I cannot do it at a glance and I need to move from bottom to top and from right to left to see the whole galaxy. For this reason it is more complicated for me to identify new regions since the maps I have brought with me are smaller and I can't really identify what object I am seeing. I go to 6 o'clock in the galaxy and start observing the arm A1-6, and this time I think I can distinguish an area of more accumulation of brightness before the junction of the arm with A2-6, I would say that it is **IC 131**, although I say that I can not confirm it completely. I continue observing the areas that I had already discovered and now I am able to differentiate between IC 139 and IC 140, and I enjoy better the view of IC 137. In NGC 604 I think I see some difference, I seem to see a "Pac-Man" shape, but it is quite difficult to confirm it. I also think I can identify IC 142 as a bright but fuzzy area, forming a triangle with a couple of stars in our galaxy, these stars are outside the A2-6 arm, while IC 142 is in the A2-6 arm itself. **IC 142** lies between NGC 604 and A66, closer to the latter. I try to look for some more objects but without success at these magnifications. They are C39, A110, A112, A85, but no matter how much I pass by the area I am not able to find them.



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Triangulum 1h 33m +30º 39' *Triangulum Galaxy*

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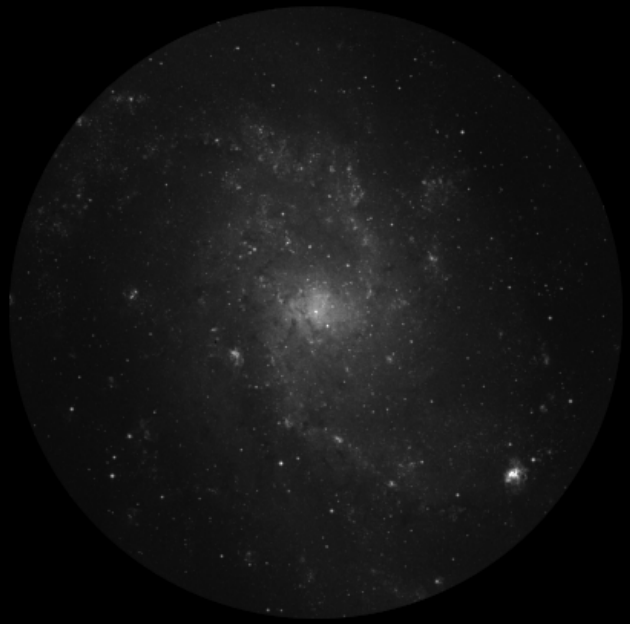

Ethos 10mm (216x - 27' - 2.1mm)

I can't believe I'm seeing the galaxy with this view. With every eyepiece jump I get more impressed. The first thing I said in my voice notes is: HOLY COW!!!! The sense of magnitude is a brutal difference between this eyepiece and the previous one. The 100º of apparent field is a marvel, and, in spite of having the same real field, the gain in magnification makes everything much more beautiful. If before the galaxy seemed contrasted, now it seems 'EVIDENT', that's just the word I use. In the first vision of the galaxy, with the 31mm, the different zones were like small clusters that I guessed as differentiated parts of the galaxy, zones in which I had to play with the lateral vision and a little attention to deduce that there was something *different* or something *strange* that did not fit in the uniform brightness of the galaxy. Now I don't have to use that trick, but the brighter regions are clearly distinguishable, and the side view I use to try to get more detail but not to distinguish them. In addition the brighter areas even appear with *volume*, i.e. they look like *mountains* of brightness overlaying the fainter background area. With this new vision, I go through the galaxy from bottom to top, stopping again in each of the parts that compose it, discovering new surprises that I did not expect due to my sloppiness.

I start by the arm A1-6 in which its outermost area I discover a new accumulation of brightness that I identify as **IC 133**, and is that the galaxy is bigger than I had seen before. For example the arm A1-6, before I saw it much wider than A2-6, but now it is huge. Going up towards 12 o'clock by A1-6 arm reaching the area where it joins A2-6, I see again IC 131, and I confirm it and here comes one of the surprises of the night that I had skipped stupidly. Due to the fact that I have to move with the engines, I went past it and besides, seeing the object moving makes you highlight the areas with different brightness. So I went past the junction of the arm and the nucleus and continued up a little higher to discover **NGC 592** and **NGC 588**. The second object is brighter than the first and is much more distant from the center of the galaxy, both are slightly above the nucleus and as bright as NGC 595. They are round nebulae as opposed to NGC 604 and NGC 595 which I see as more elongated. Of uniform brightness and without more structure, they stand out because they are brighter than the background. Also I would like to indicate that now the nucleus is more detailed, with two levels of brightness clearly distinguished, being the central area more spherical than I saw before. Also the number of stars of our galaxy has increased to my previous view. There are no longer two stars in the 6 o'clock zone but up to four, and in the line of four stars in the 12 o'clock zone there are six or seven. With a more beautiful and complex image of the nucleus of the galaxy (those two levels of brightness in the central part seems to me a marvel), I go back down A2-6 and the first thing I find is NGC 595, clearly distinguishable, elongated following the shape of the arm to find another similar zone, it is A66, in brightness and size.

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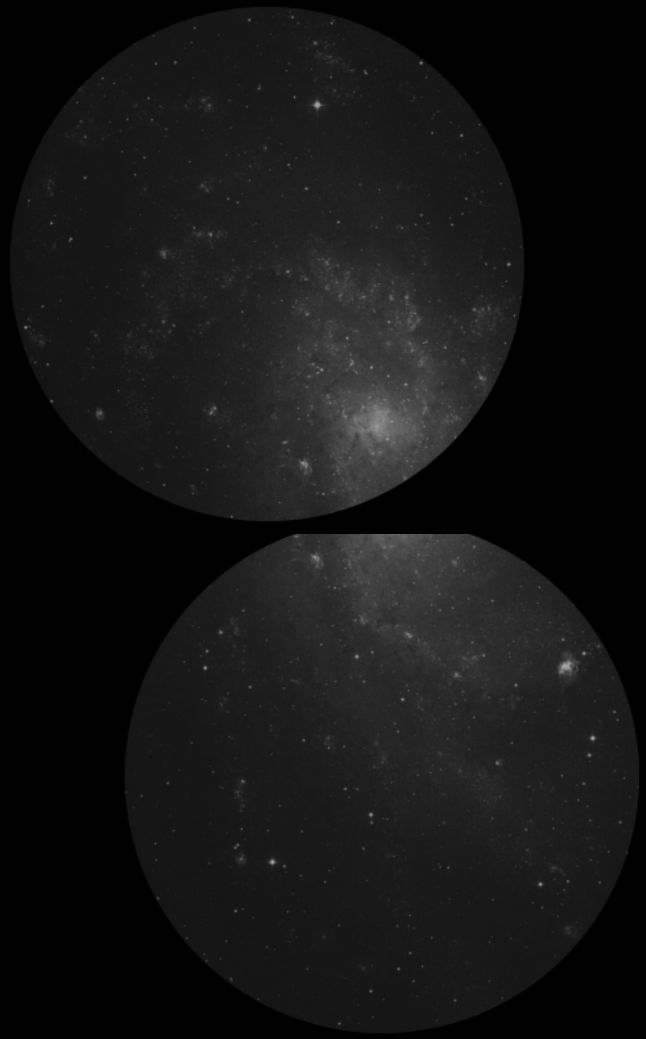
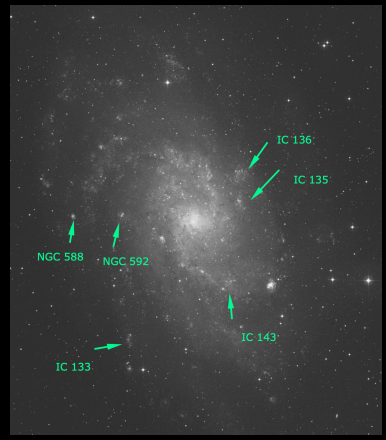
Telescope ..... **Stargate 18"**



I pass by IC 142, as a bright point that makes the famous triangle with stars of our galaxy and continue along the arm to find a new area slightly brighter than the rest of the arm, it is **IC 143**. I continue advancing without seeing any other region to NGC 604, which confirms the shape of 'eater', ie it has a kind of mouth at the end of the arm, a small entrance into the nebula. I followed that area trying to locate A85 and A87 without any success.

I make the reverse path to reach the nucleus again, surprised by the sensation of volume that continuously accompanies me in this vision, because I am able to see fainter areas surrounding these *bright* areas and my mind draws them as elevations, in the arms. As I leave the core and begin the A2-12 arm birth zone I stop at IC 139 and IC 140, because the separation is now much more apparent. I describe it as an elongated zone that seems to *break* into distinct zones of equal brightness, moving up towards 12 o'clock along the arm. It is complex but beautiful, with a multitude of brightness variation details. Then the arm turns towards 9 o'clock and I reach IC 137, a region again bright and parallel to the nucleus as I mentioned before. Now is when following that arm and going down slightly I meet again NGC 592 and NGC 588, so I say to myself, when I was with Delos 14mm I stopped looking at that area too soon. I intuit that between them (NGC 592 and 588) still runs the A2-12 arm but it is difficult to differentiate it. What is clear is that NGC 588 is practically outside the galaxy, with a darker background around it than NGC 592, in which the pale surface brightness of an arm of the galaxy is seen in the background. Perhaps this also leads me to see NGC 588 as being brighter than NGC 592. But the difference in brightness clearly exists, plus NGC 592 seems more concentrated, although both of similar size.

I go back through the nucleus looking for the beginning of the A2-12 arm, but again I overshoot and then I discover **IC 135** and **IC 136**. They appear as two new patches of brightness a little higher than the background of the galaxy which, in this area, is really faint. Both zones are quite far apart and easy to identify. IC 135 is more elongated and narrower and IC 136 is wider. I try again to look for C39 and A110, A112, without any success. But the amount of details that I am getting from the galaxy seems to me simply wonderful. I also keep that dreamy image of 'mountains' of nebulae towering above the galaxy in the brightest parts with that differentiated nucleus in two levels.



Messier 33

Triangulum 1h 33m +30º 39' *Triangulum Galaxy*

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Telescope ..... **Stargate 18"**

Ethos 8mm (270x - 22' - 1.7mm)

I think this eyepiece is too much for the galaxy. The magnifications are such that I have trouble even defining where the galaxy ends and the sky background begins. I can't see much more detail than with the previous eyepiece, and I'm starting to get exhausted from straining my eyes so I jump to the last eyepiece to try to extract as much as I can before concluding the M33 session.

Messier 33

Triangulum 1h 33m +30º 39' *Triangulum Galaxy*

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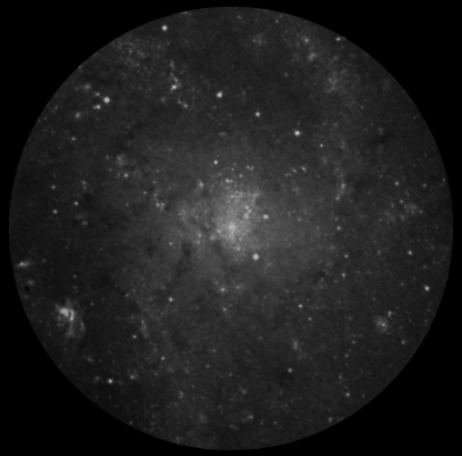
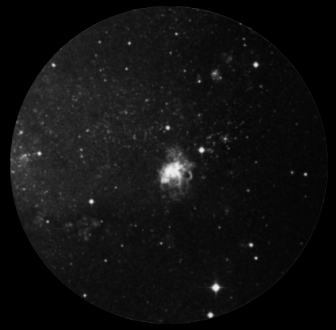


Delos 4.5mm (480x - 9' - 1mm)

As with the previous eyepiece, I think I've gone too far here. The galaxy has blurred a lot, I have a hard time seeing it as a whole and not as individual areas. Before (with the 10mm eyepiece and above) I always saw a background cloudiness that showed that I was looking at a galaxy over which I was gliding, now, these areas of less brightness, have disappeared and the arms appear isolated and some are blurred without being able to distinguish them clearly. However, I can focus on very bright regions and try to bring out some detail because their size has increased a lot. That is what happens with NGC 604, which I see as a *squashed* shape. That is to say, the opening it has, is neither very long nor very large, quite the contrary, it reminds me a lot of the logo of the company of the building in the movie Gremlings 2, the one that appeared crushing the world as if it were a pair of pincers and inside it the Earth rotated totally flattened. If you have seen the movie I think you know what I mean, and it is curious the similarities that the mind looks for. A narrow opening separating the right side of this region, with a brighter rear bulb. It is the only detail I managed to get out of it and the truth is that it cost me quite a bit.

I think I also saw **A85**, I was very surprised by its size because it is really small, I would almost say it is a star but, as I wrote, the surface brightness of the arm disappears and only the brightest areas remain, then it is possible to distinguish it (also it is identified because I can not focus it with the rest of the stars that are totally punctual, that is the point to try to look for that bright area in my maps and identify it as A85).



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Telescope ..... **Stargate 18"**

Likewise **A112** or **A110** happened to me, I managed to see it, but I don't know which one, by leaving the bright star out of the field. That is, I have focused on the bright star that is beyond the galaxy (in its region at 12 o'clock, very bright and easy to identify) and I have continued going up leaving the star out of the eyepiece field. At that precise moment, when the star disappears, I distinguish a hazy, faint area, different from the rest of the eyepiece background, very faint and elongated, oval-shaped, almost glued to the star. I have assumed that this should be A110 or A112 or both at the same time. It is very faint. I have repeated the operation several times, leaving the star on one side and the other of the eyepiece and I only see it when the star disappeared through zone 7 of the eyepiece.

Finally I tried one more time C39, I can't say that I really saw it. Maybe it was there because I saw a star that might resemble it, but I was so exhausted and it was so hard to strain my eyes that I can't confirm it. To complete the session, I went through the A2 arm again in its regions 12 and 6 with the 4.5mm and I can assure you that it is AMAZING.