April

2024

Our forecasts of astronomical observations – (generally excluding ephemeris)

Our observation forecasts for April 2024. Read everything, these forecasts are often scoops, because they are “unforeseen” in the ephemeris and sometimes great challenges. You will find there the sun, the Moon of course, but above all a very beautifulcomet:(12P/Pons-Brooks).

Topics

I wish you, if your firmament is cooperative, to observe some of the wonders that the sky offers us! It's free but... to dream of the stars you have to leave the house!

For all the observations that follow, I am in close contact with organizations bringing together “citizen scientists”.

If you want to observe *useful*, Do not hesitate to contact me.

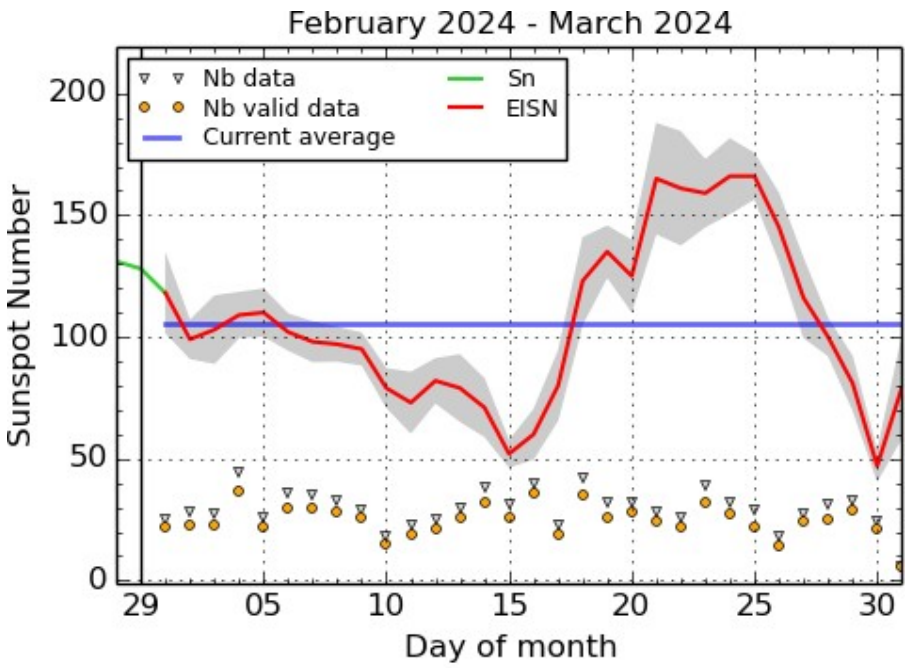
https://astro.aquarellia.com

The English translation is kindly produced by
Anilkumar Kodali – AWB India
Astronomers Without Borders

Aquarellia Observatory Forecasts

1. The Sun

The current solar cycle has the number 25, as a reminder of the first, historical, having begun in August 1755. This very first cycle corresponds to the start of regular monitoring of the observation of sunspots.



SILSO graphics (http://sidc.be/silso) Royal Observatory of Belgium, 2024 March 31

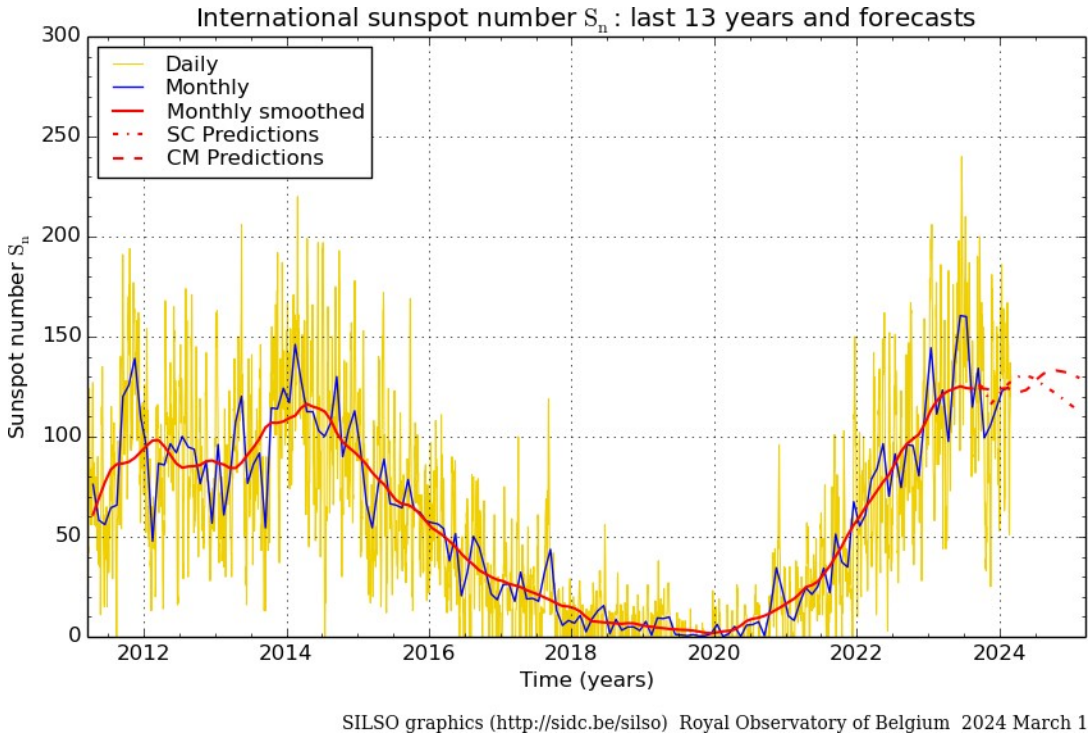
Once again, looking at this monthly graph we see that our sun is a real variable star!

Don't hesitate to try observing with eclipse glasses or approved solar filters, it's more than easy! But be careful, no DIY filter will be able to effectively protect your precious eyes. For information, the estimation of a group visible to the naked eye makes it possible to determine what is called the “number A”. This last month I was able to count two days where a task group was visible to the naked eye.

Of the 90 SILSO observation stations (see the curve above), in March 2024 we were around twenty stations with active observers spread all around the world, obviously the weather is not good everywhere especially in this period in the northern hemisphere. The small triangles indicate the number of active stations and the yellow balls the number of admitted observations: almost all of them are scientifically precise.

The curve on the following page shows the evolution of solar activity over the last 13 years. This curve, like the previous one, is based solely on visual estimates of the referenced stations.

In this graph, the yellow lines show the daily average of all SILSO referenced stations, in blue we find the monthly averages throughout the last cycle. The curve red full is the smoothed average of all solar observations.



We have clearly exceeded the maximum of the previous cycle, but the uncertainty of the current evolution in no way portends an even greater maximum for the second maximum, that of the southern hemisphere.

PS: Do not hesitate to be one of those who observe the sun in a useful way always **using professional filters, but once again never DIYfilters!**

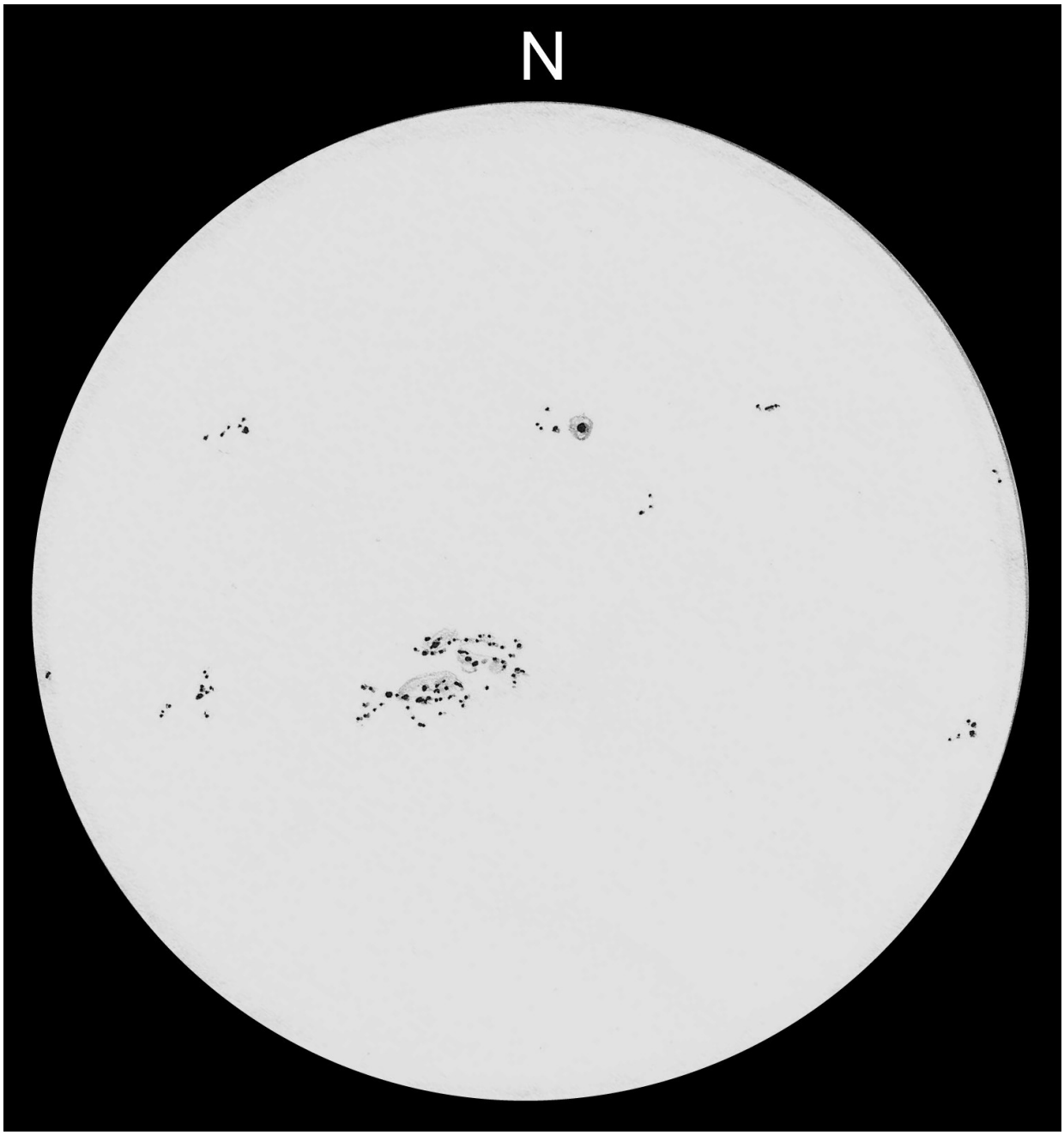
(*) Some references :

In French

- GFOES: http://www.astrosurf.com/gfoes/accueil.htm This French group takes into account the “A number”
- Observer of observers from Quebec: https://groups.google.com/g/gobserver

in English

- AAVSO: https://www.aavso.org/solar
- SILSO: https://www.sidc.be/SILSO/home



Sketch from March 22, 2024 at 3 p.m. UTC with a 152mm f8 refractor, direct vision. Our estimate of Wolf's number = 201.

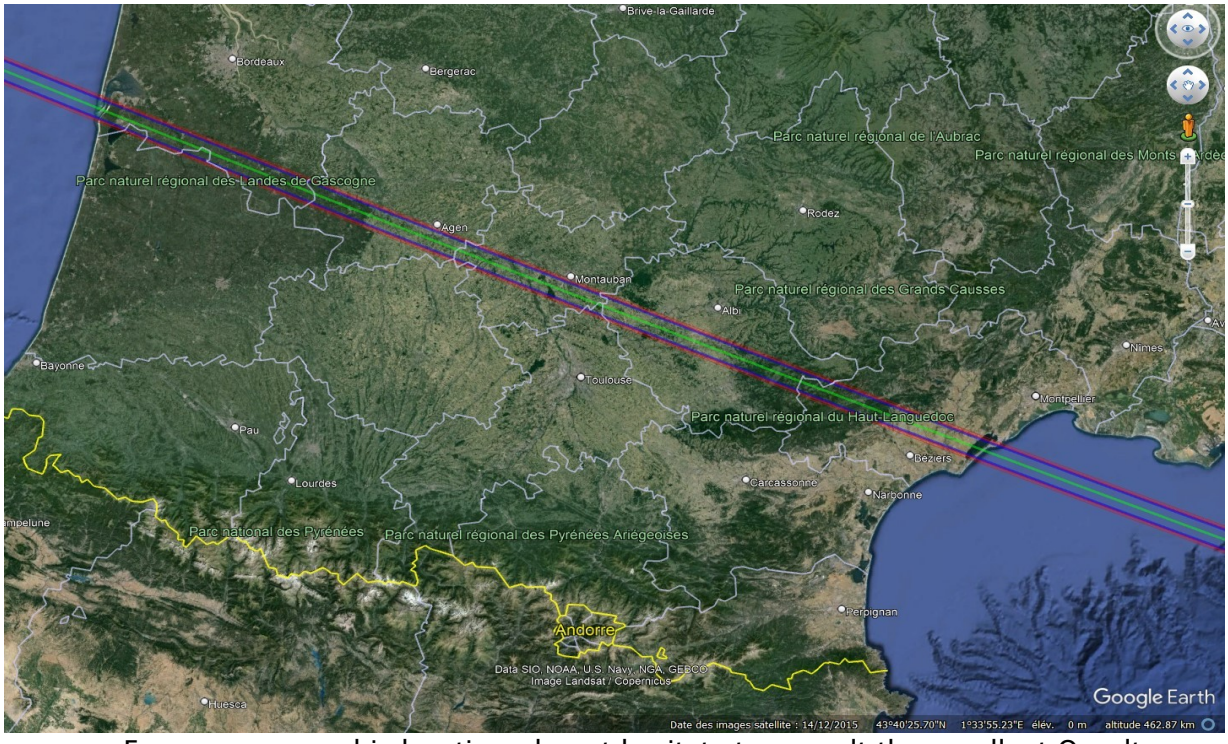
It is obvious that the double group was visible to the naked eye; I even thought I could observe two groups but not distinctly, number A = 1.

Thanks to Ludovic and Michel', both subscribers to the distribution of this document who joined the SILSO group.

2. Occultations

For this fourth month of 2024 and for the Europe region, we have only pointed out one occultation, that of (8057) Hofmannsthal which occults the star HIP 56951 on April 13,2024.

OW Event Id	20240413-8057-56951
Last update	Feb 22, 4:38 p.m. *
Flow	IOTA
Raw data format	Occelmnt
Event time (UT)	Apr 13, 2024 7:26:46 PM
Rank	100
Mag drop (mag)	10.4
Fall magnitude (R)	10.1
Combined Magnitude	7.4
Asteroid Magnitude	17.8
Max duration (sec)	1
Trajectory width (km)	9
Sigma on width (km)	10



For your geographic location, do not hesitate to consult the excellent Occult Watcher software (*). There are many other possibilities of occultation of a star by an asteroid, by a comet or by a natural satellite. To predict them, your location is important.

As already indicated in our forecasts for March 2024, Roland Boninsegna, who is part of the “Asteroidal Occultations (EAON)” group, particularly motivates us.

Indeed, we sometimes feel very alone behind our eyepieces (or our computer screens) and yet there were some 3,890 observers who contributed to the astrometric updates of the MPC database, the famous Minor Planet Center. This same MPC which allows you, for example, to update your star charts.

This retrospective file included all observations through June 2023. In addition to adding new results, it also replaced all previously reported astrometries from our occultations. For what ? Because processes have improved considerably since then and an improved reduction approach has been implemented.

The full file (huge 2275 pages) can be found here:

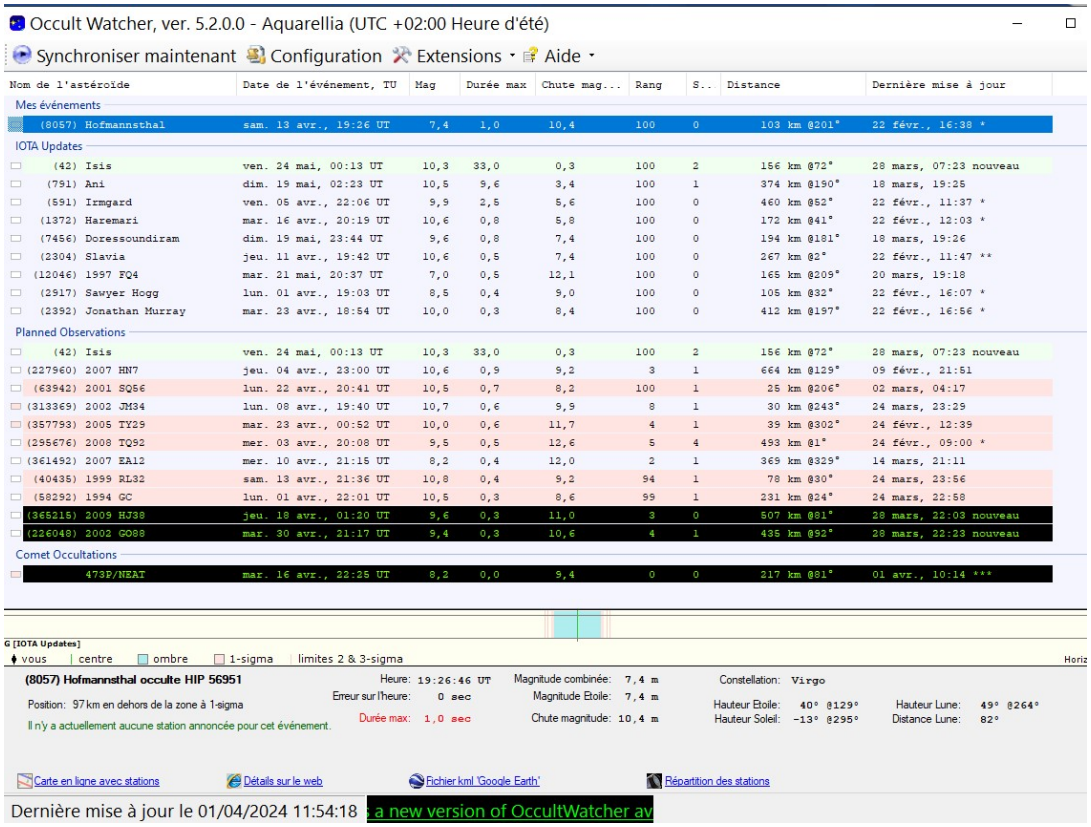
https:// minorplanetcenter.net/iau/ECS/MPCArchive/2024/MPC_20240201.pdf

The part which only includes the names of the astronomers who contributed to the updates is given here, perhaps you will find something there?

http://astro.aquarellia.com/doc/Asteroids-Occ-Observers.pdf

(*) For predictions I mainly use the Occult Watcher software which can be loaded on PC (only) via the website:

http://www.occultwatcher.net/



NB: For your information the sitehttp://www.euraster.net/ is no longer maintained, we advise you to refer to this new site:

https://sodis.iota-es.de/

which, personally, I find much more complex to understand.

3. Comets

A look back at our latest cometary observations

1- Comet 12P (Pons-Brooks) very bright magnitude, +4.5 at the end of March

This is the famous cryovolcanic comet which we have already talked about a lot here.

As a reminder, the date of perihelion is April 21, 2024 with a possible magnitude of +4.3 (?). The nearest position date will be in June 2024 but with a less bright magnitude.

The ice volcanoes of Comet 12P/Pons-Brooks have already erupted half a dozen times in 2023. We are starting to see a trend. "The latest explosions occurred every 15 days," reports Nick James of the British Astronomical Association (BAA).

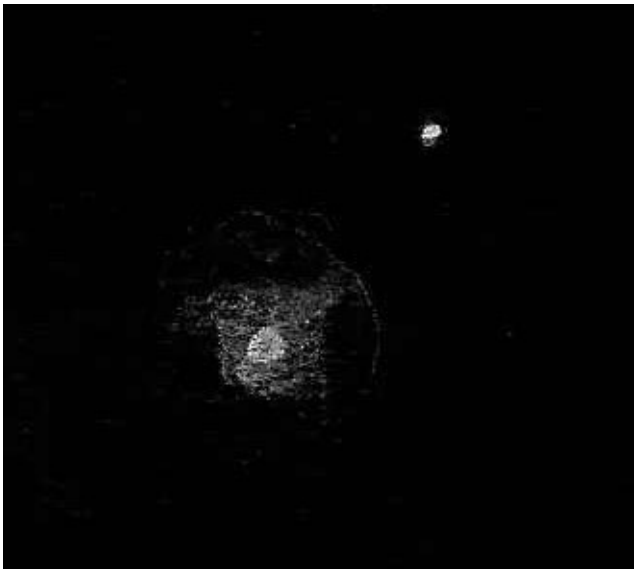
As hoped, we observed some clear and new bursts.

March 7 in the evening, observation from the heights of Sisteron

If this comet erupts every 15 days, it is precisely because the comet rotates on its axis over a period of 2 weeks.

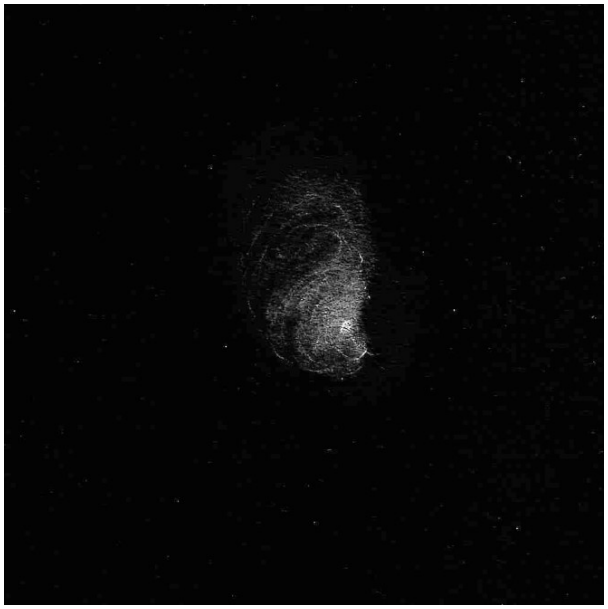
Somewhere on the surface of the comet is a cryovolcanic event that is struck by sunlight with the same rate.

Comet 12P has a super cryovolcano that erupts after sunrise at its core surface location.



Observation of the pseudonucleus, March 13 around 6:50 p.m. UT

Bino Vixen 90x



Observation of March 15 around 6:56 p.m. UT, 152mm telescope focal length 1.2m 5mm eyepiece = 240x

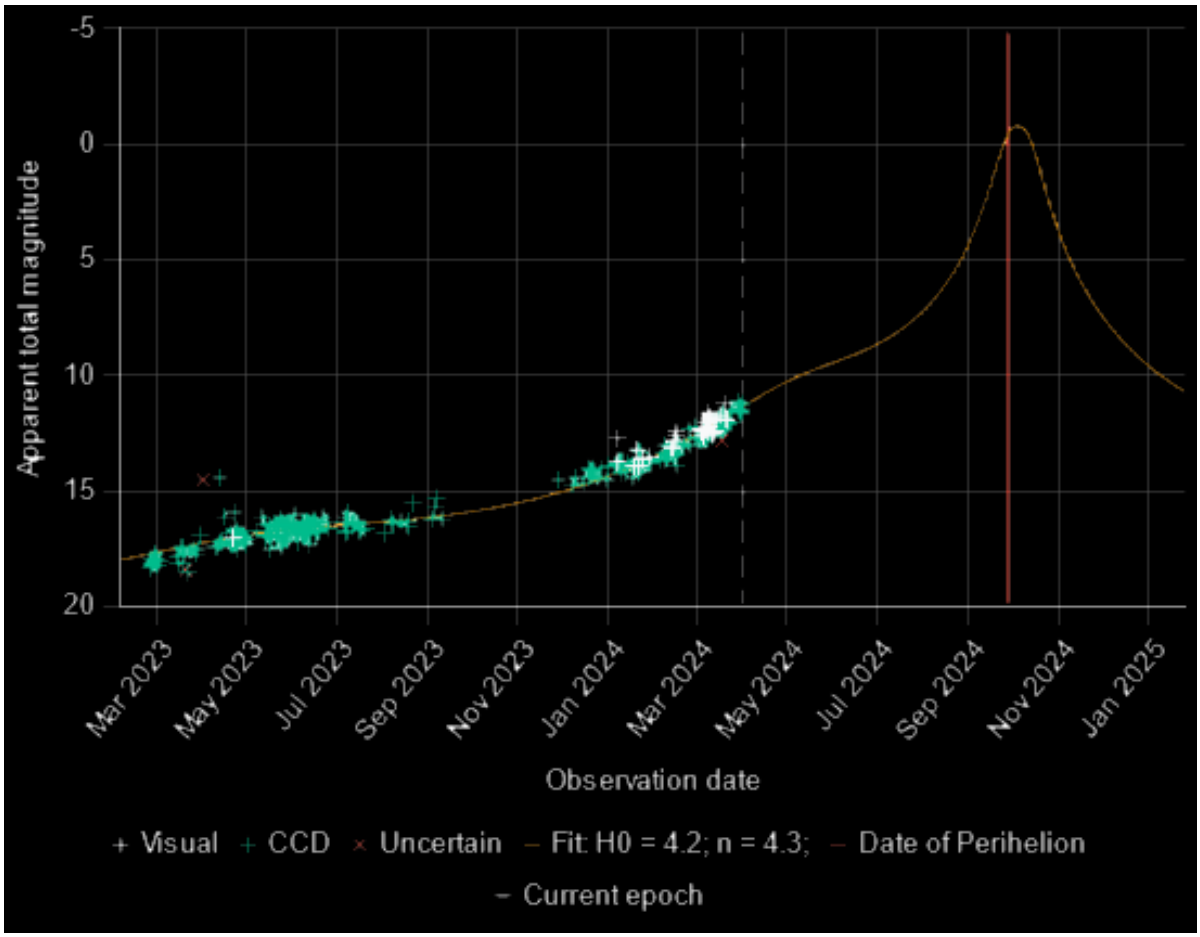
Amateur astronomers are encouraged to monitor 12P in the first nights of April.

On March 30, under a twilight and therefore moderately dark sky, I was able to observe this comet with the naked eye. We still had to know where it was located. This same day, I took a photo (yes yes) with my phone held in my hand (yes yes – yes) and without magnification you can see the tail.

Point your binoculars and telescopes towards this surprising comet! For the more optimistic among you, if you let her go, know that she will "already" come back in 2095.

2- Comet C/2023 A3 (Tsuchinshan-ATLAS) magnitude +12.5

It is starting to be detectable, but see how it promises in the second half of 2024:



I suggest you discover all the cometary images. I obviously mean only images shared for the
all over the world by amateurs and professionals. To access it follow the link below:

https://alpo-astronomy.org/gallery3/index.php/Comet-Images-and-Observations

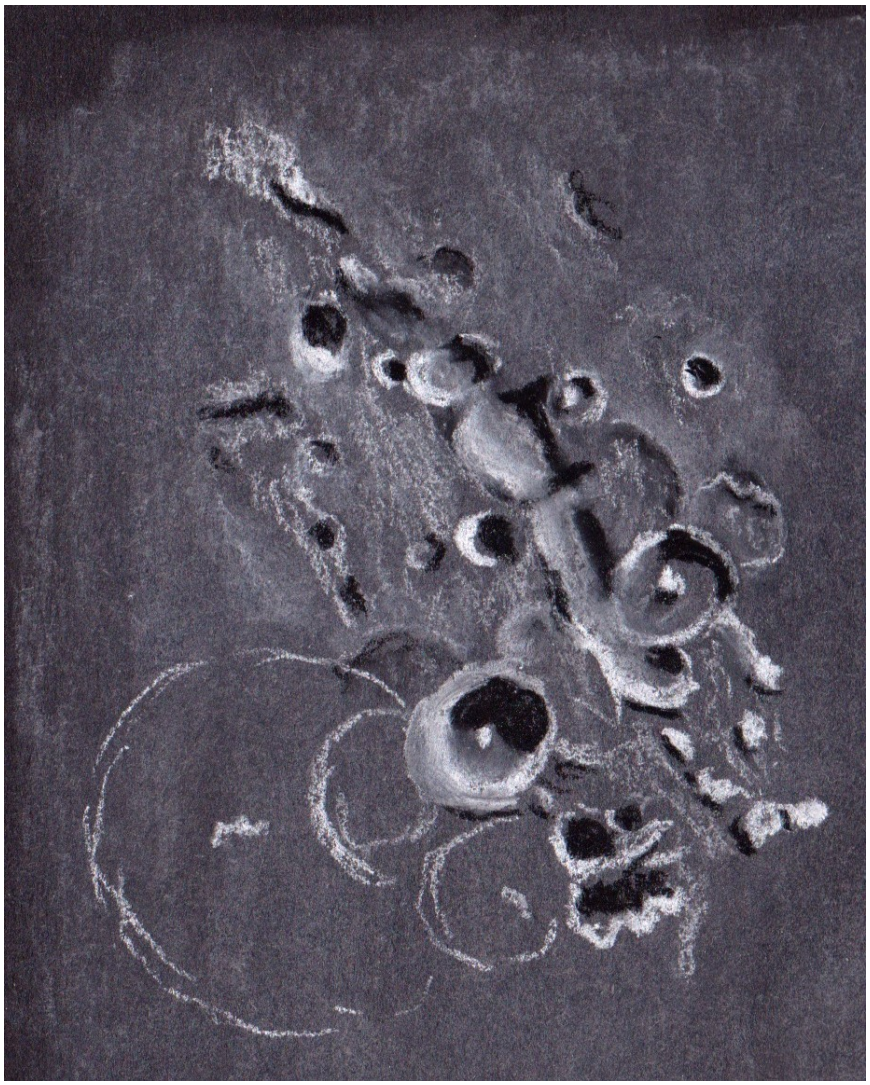
Comet hunters - Call for contributions:

As co-head of the comet section of ALPO (The International Association for the Observation of the Solar System) led by Carl Hergenrother, I await your observations, images (photo or sketch) of the comets you observe.

4. The Moon

And it is still my association ALPO which offers you the opportunity, every two months, to carry out some interesting challenges, called “Focus-On”.

Reminder - The next challenge will be the Crater Chains, maximum deadline April 20 forpublication at the beginning of May.



We now know the origin of groups of craters very close to each other, but it took years of progress in our knowledge of the Moon to know whether the craters which appear very close to each other have a common origin. and what is this origin.

We will learn more about chains of craters (or Catenae, according to the International Astronomical Union) that appear on the Moon, whether they were produced by the fragmentation of a natural impactor, by secondary impacts of a crater main or by collapses of volcanic origin.

Let's share images of crater chains from the smallest to the most massive like the Vallis Rheita region above.

Please send the articles, drawings, pictures, etc. to Alberto Anunziato (Argentina), David Teske (United States) or to myself (see Contact paragraph), so that your observations can be found in the issue of TLO "The Lunar Observer".

Ideally the email to be sent should contain the following information:

- **Name and location of observer**
- **Object name.**
- **Date and time of the observation in Universal Time (use the name of the month in English or the format "mm-dd-yyyy-hhmm" or "yyyy-mm-dd-hhmm")**
- **Filter (if used)**
- Size and type of telescope used. Magnification (for sketches)
- Camera used (for photos and electronic images)
- Image orientation: (North/South - East/West)
- Seeing: 0 to 10 (0-worst 10-best)
- Transparency: 1 to 6
- Feel free to add comments.

It is not necessary to reduce the file size, but at least the information in bold is necessary.

Files must be submitted by email to

- David Teske -david.teske @ alpo-astronomy.org
- AlbertoAnunziato-albertoanunziato @ yahoo.com.ar
- WayneBailey—wayne.bailey @alpo-astronomy.org

Do not hesitate to browse the latest TLO, the latest monthly is given here,
Only thanks to your images:
https://alpo-astronomy.org/gallery3/index.php/Lunar/The-Lunar-Observer/The-Current-The-Lunar- Observer/TheCurrentLunarObserver

(*) ALPO http://alpo-astronomy.org/index.htm

To help you get a head start, here are the next Focus-On's:

Subject	Publication date of magazine	Date of submission
Mare Nectaris	July 2024	06/20/2024
Aristoteles & Eudoxus	September 2024	08/20/2024
Archimedes, Autolycus & Aristillus	November 2024	10/20/2024

5. Small atlas of the lunar seas

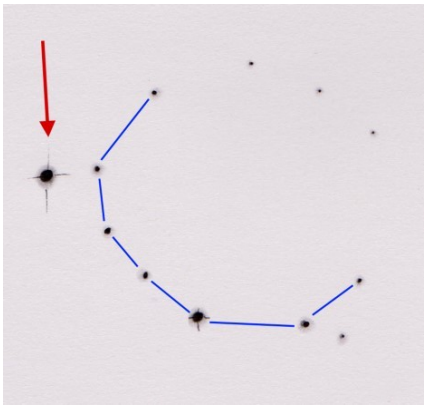
About our wonderful natural satellite, I had my first book published. This is a small atlas of the lunar seas.

It is on sale here:https://merslunaires.com/

This booklet covers the seas and ocean on the visible side of the Moon with useful information for their observations as well as some juicy anecdotes. It is interactive, in fact a table allows you to indicate your observations, even with the naked eye!

In French only

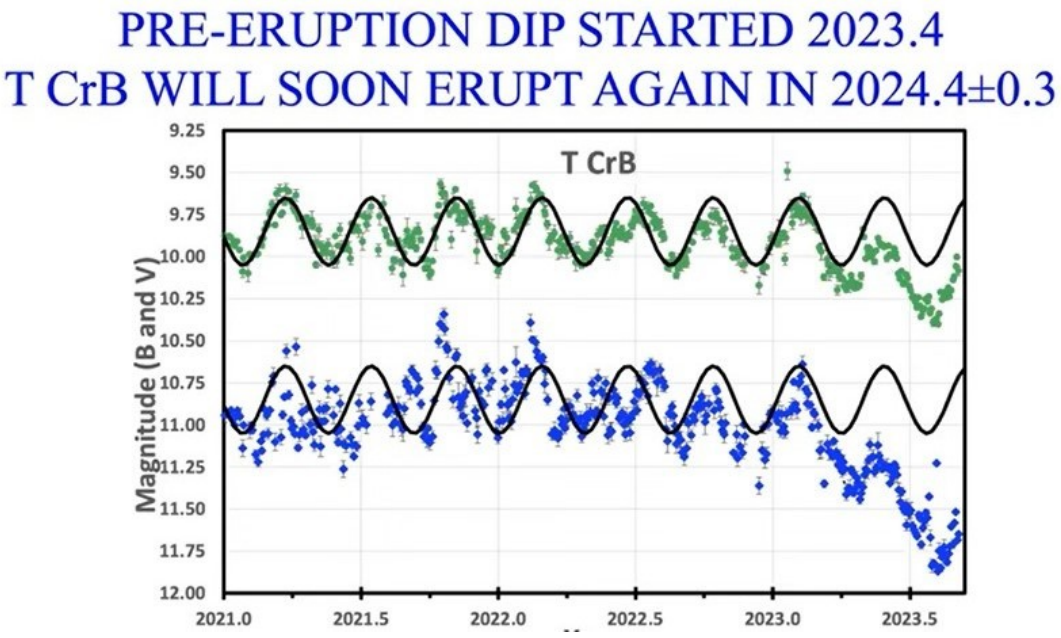
7. Event in the Corona Borealis



It's still on the agenda, a star of magnitude 10 to 11 is likely to light up much brighter in the coming months. We have already relayed this information since 2016.

This is T CrB, the English call it T Cor Bor, we also find it under the name *BlazeStar*.

In 1866 and 1946 it reached an apparent magnitude of +2. Recent studies especially at the spectroscopic level but also by variabilists, visual or not, that the show is announced by April 2024 +/-.4 months as shown in the following graph.



In addition, after finding a letter written to Herschel by an English amateur astronomer, Francis Wollaston, it would seem that another eruption would have taken placearound December 28, 1787.

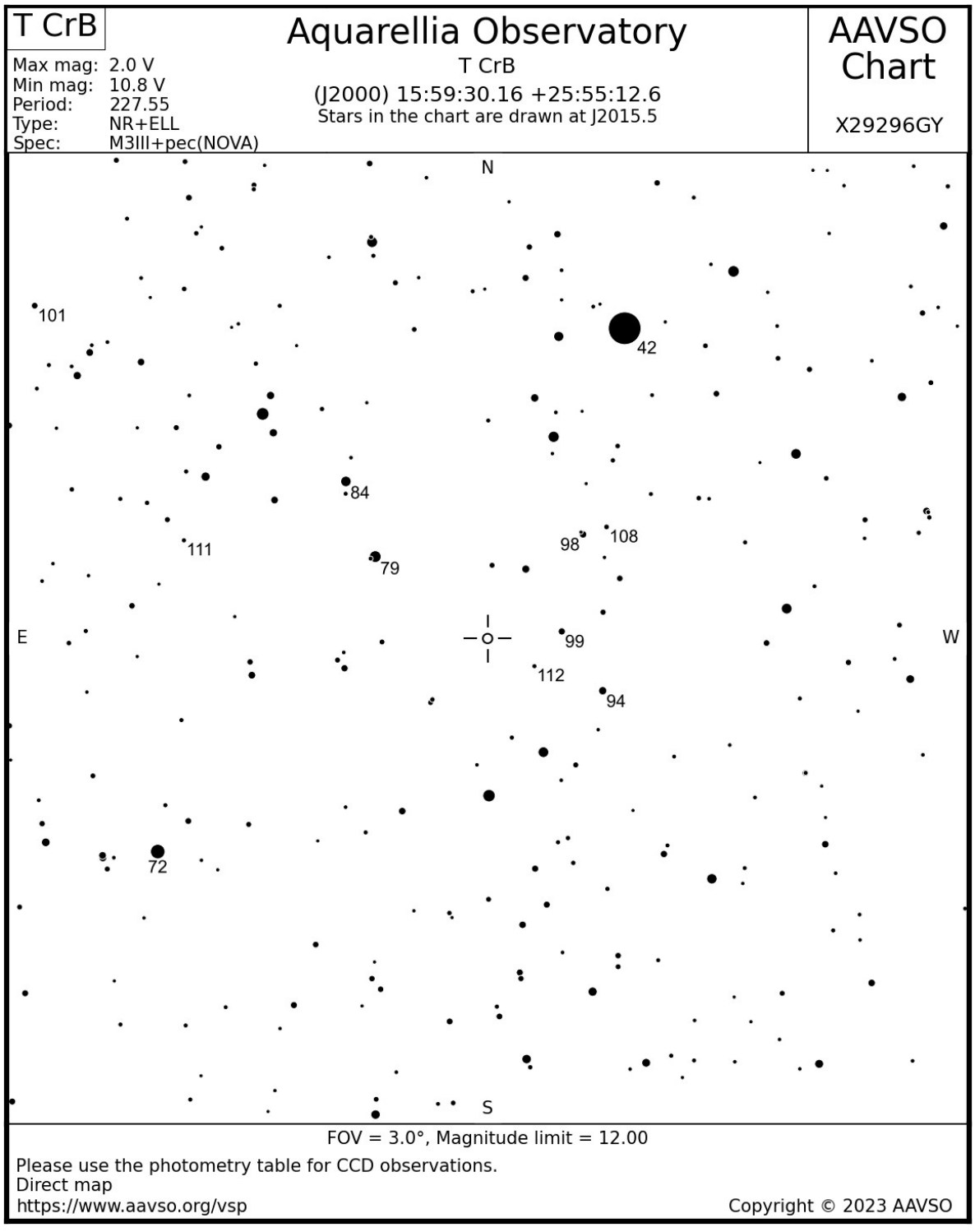
The mysteries to be solved are as follows:

- What is the physical nature of the rash?
- What will be the nature of the light received before the eruption?
- What will be the nature of the light during a secondary eruption following themain one?
- Is T CrB a candidate to become a Type Ia supernova?
- Will the period between eruptions change because of this latest eruption?
- How much mass will the star eject during the main flare?

Hence the interest in following this star very regularly.

Map of the area, numbers shown for magnitudes are multiplied by 10 is to avoid a period or comma that could be confused with a star.

For this period, it is a morning observation.



For more information I offer you a super interesting video (in English)

https://youtu.be/1Zfg67Q-szU?si=Kiy18oNus11N3WEK

(Don't hesitate to ask YouTube for French subtitles, it works well.)

8. Contact

Email: Michel Deconinck:contact @aquarellia.com
For comets:
michel.deconinck @alpo-astronomy.org

Website :
https://astro.aquarellia.com

https://youtu.be/654Owb9Mulg?si=W7IceGv32INRSRbj

April 2024 is also Astronomy Month, with lots of interesting events:

https://astronomerswithoutborders.org/programs/global-astronomy-month/gam2024-main

And,... if you like it, subscribe to our channel Youtube, it's fun and it's free. Our watercolor, travel and astro channel:
https://www.youtube.com/c/Aquarevan

Between travel, watercolor, sketching and astronomy, other videos will follow.