Comment des paramètres peuvent influencer les mesures cométaires

(rayon d'ouverture, FWHM, SNR, Binning, fond de ciel)

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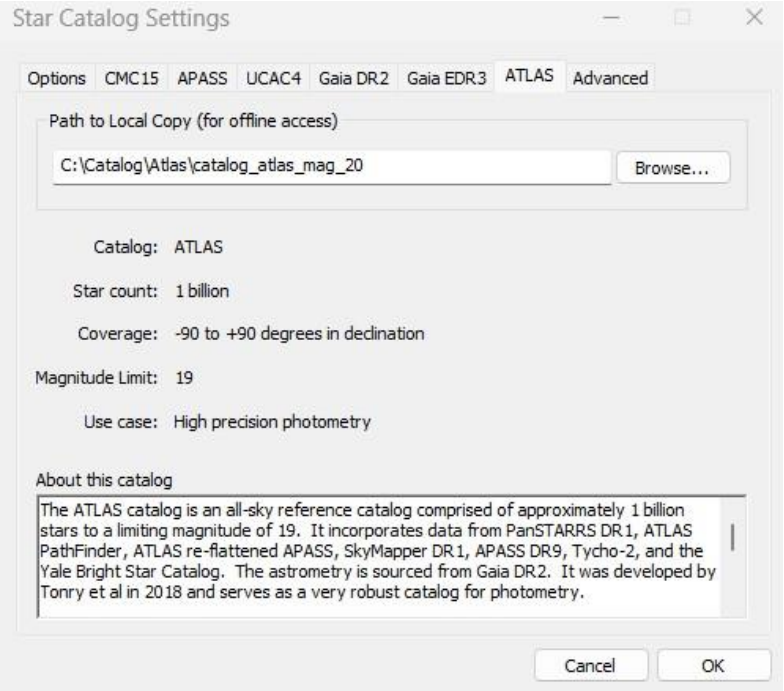
Zoom Comètes

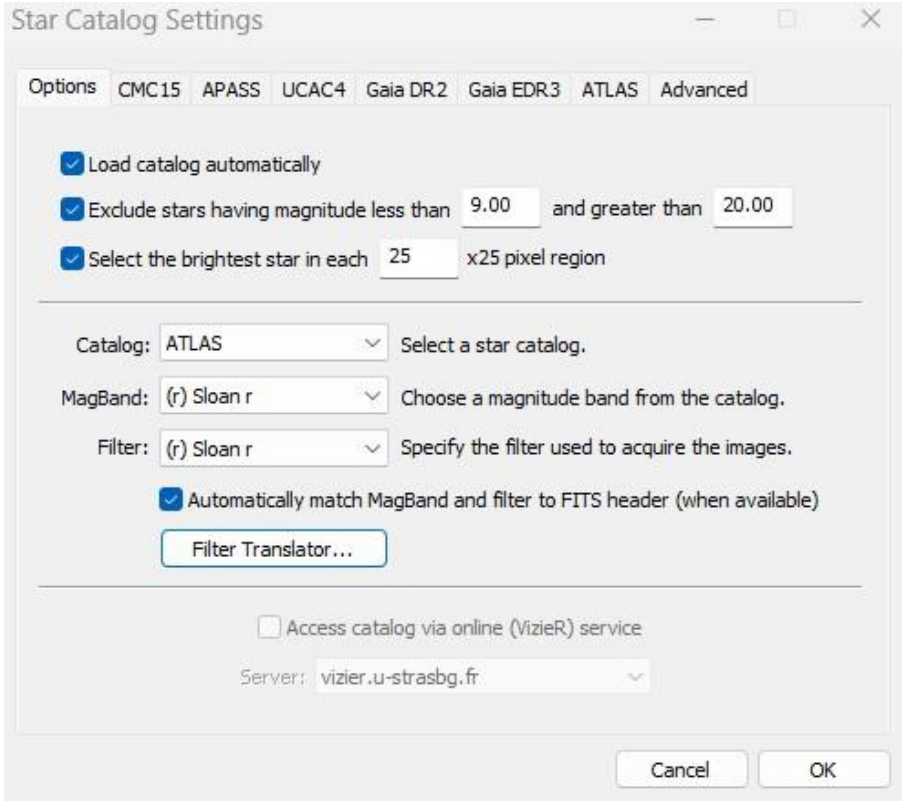
3 juin 2026

Paramètres influençant les mesures cométaires : Settings Tycho Tracker

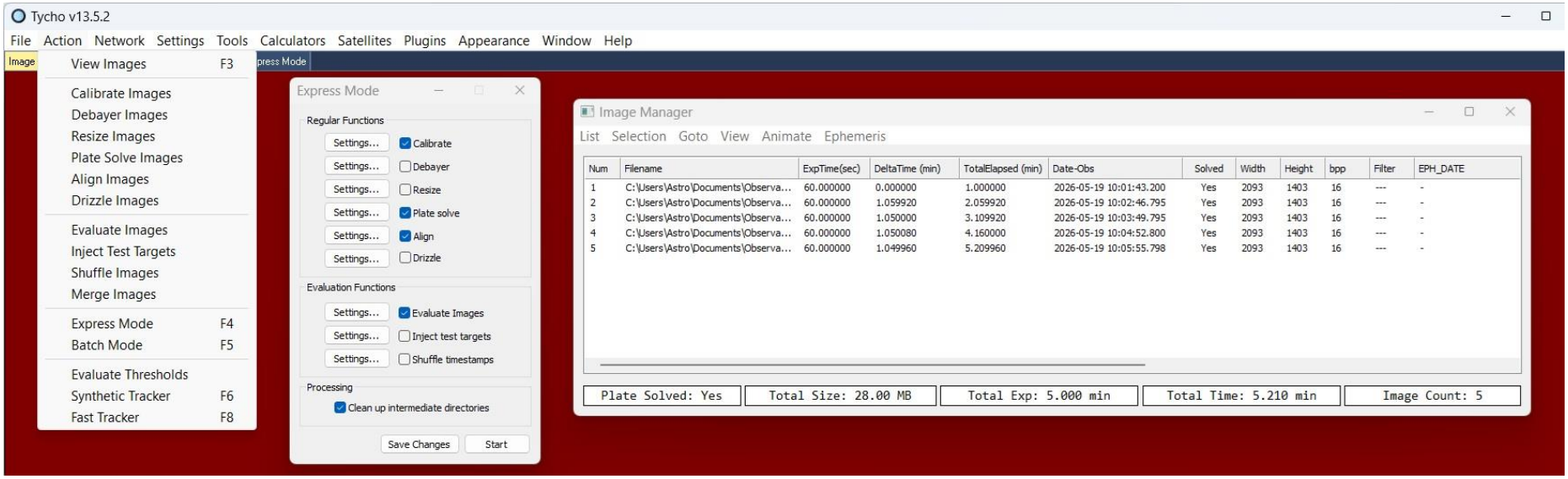
Settings dans Tycho Tracker: Star Catalog

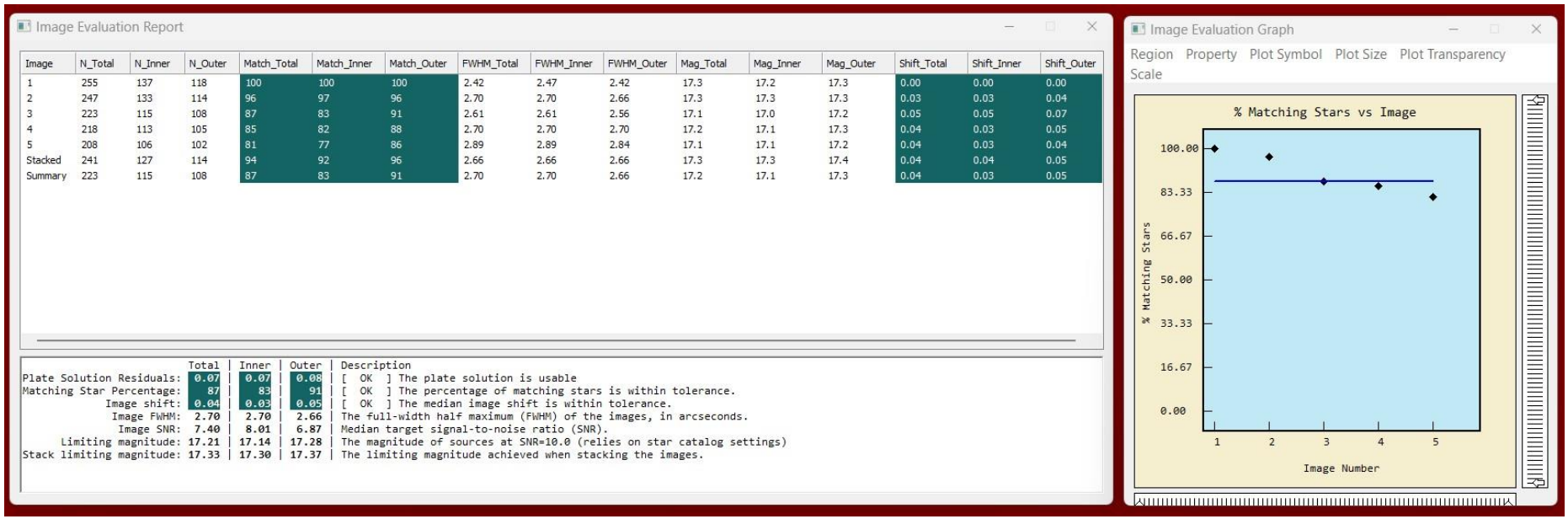
- **Choix des filtres (attention: d'une observation à l'autre, d'autres filtres peuvent être utilisés)**
- **Choix du catalogue: Par exemple ATLAS**
  Ref: Tonry, J.L. and All (2018). « The ATLAS All-Sky Stellar Reference Catalog ». Astrophys. J. 867, A105.
  - **Astrométrie utilise Gaia DR2 très haute précision (0.002 ")**
  - **Photométrie: les erreurs systématiques ne dépassent pas 0.005 magnitude rms**



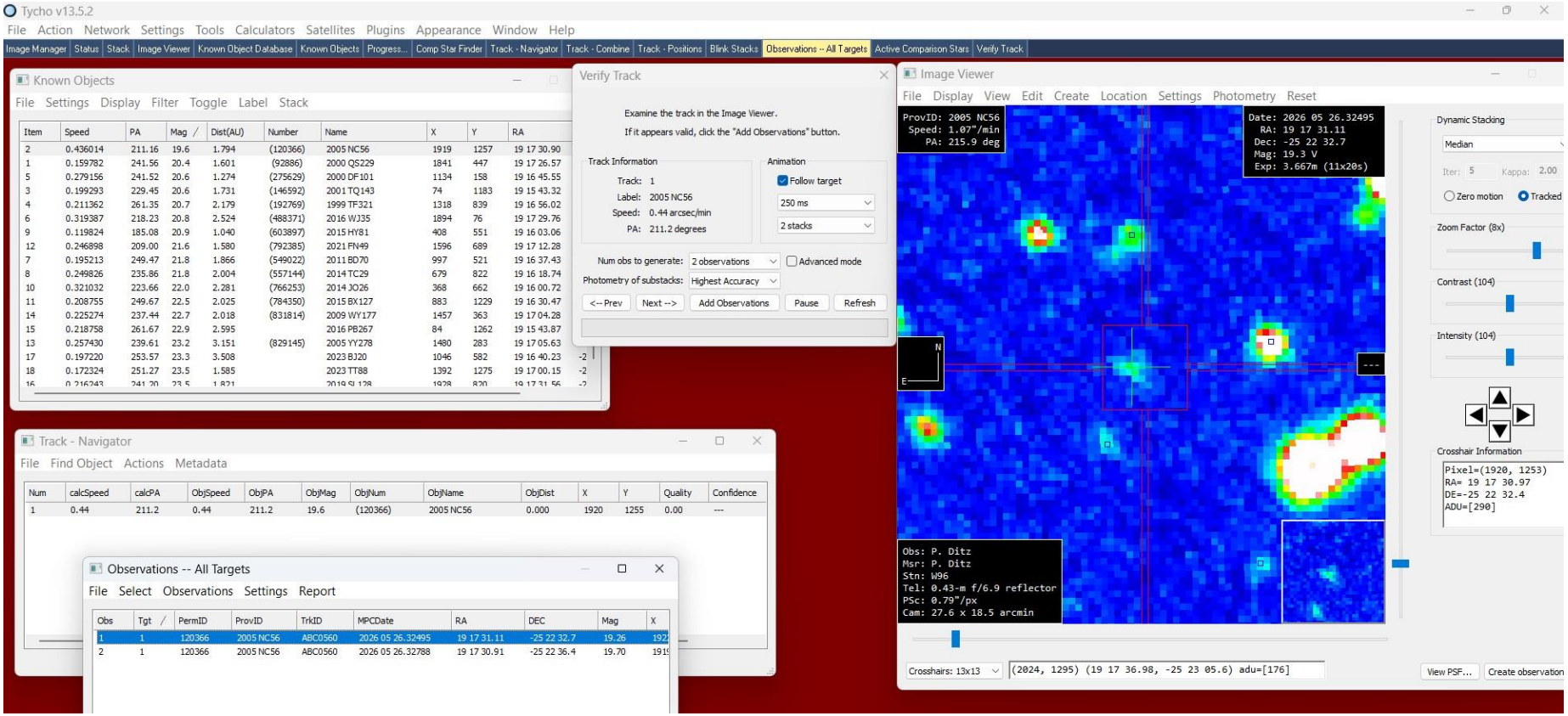


aramètres influençant les mesures cométaires : Express Mode Tycho Tracker





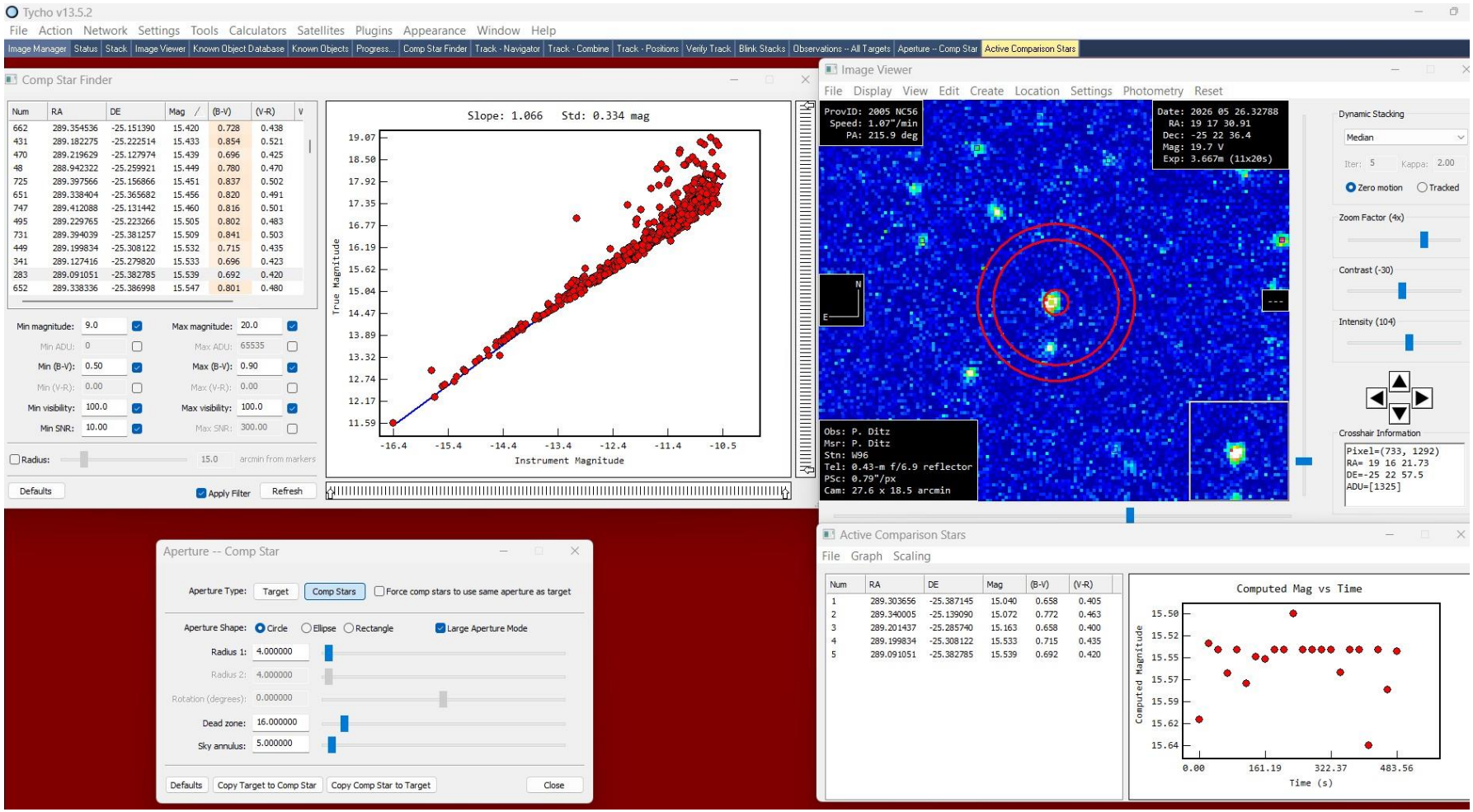
aramètres influençant les mesures cométaires : Image Viewer Tycho Tracker



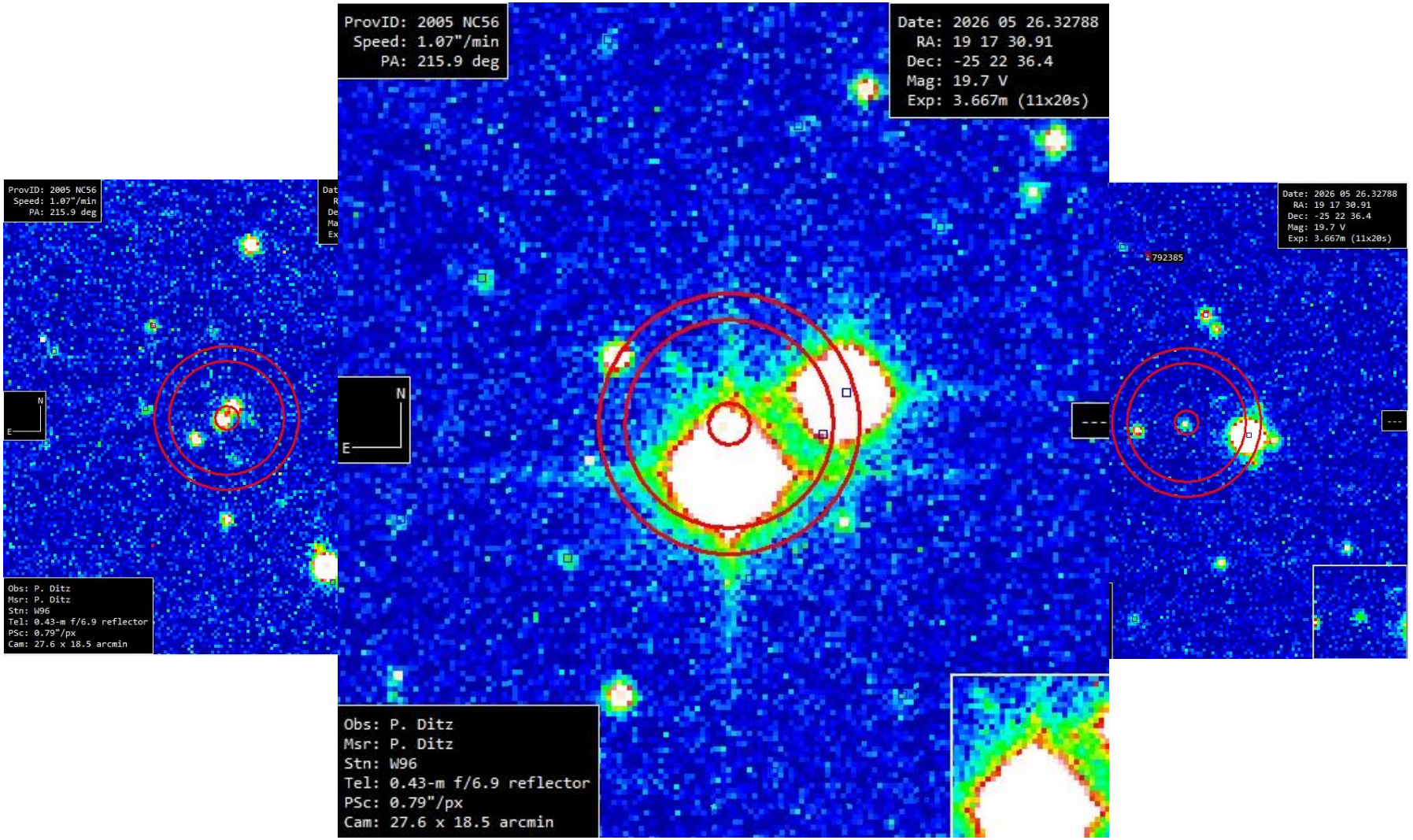
Action/ Image Viewer
Image Viewer / File/ Load Known Objects
Known Objects / Add to Track Navigator
Track Navigator / Verify Track
Verify Track /Add Observations
Observations –All Targets / View with Published Observations
Text Forms- Observations / Comput Orbit

Paramètres influençant les mesures cométaires : Comp Stars Tycho Tracker

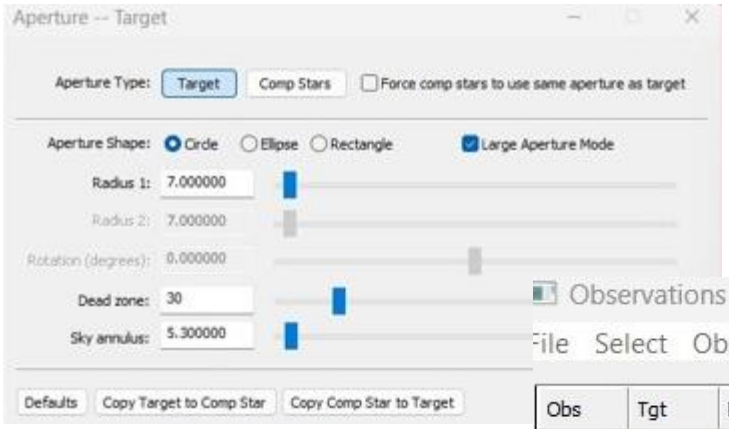
Image Viewer / Photometry/Modify Aperture Settings
Image Viewer / Photometry/Find Comp Stars
Comp Star Finder /Add to Active Comp Stars
Active Comparison Stars/Graph/ Generate Data
Active Comparison Stars/ Graph/Computed Mag vs. Time



Paramètres influençant les mesures cométaires : Comp Stars Tycho Tracker



aramètres influençant les mesures cométaires : Aperture Target Tycho Tracker

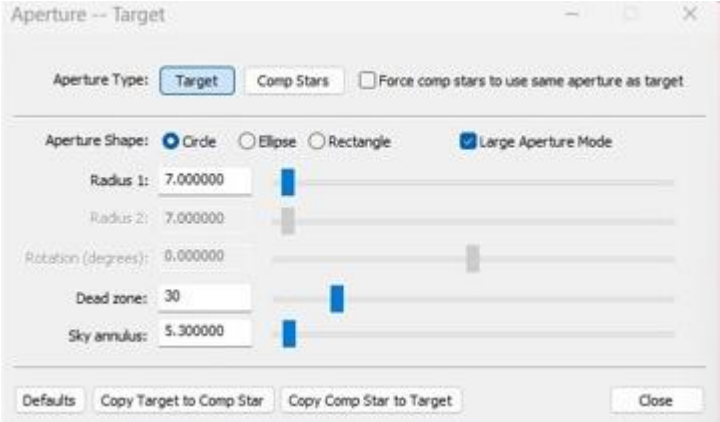


Observations -- All Targets

File Select Observations Settings Report

Obs	Tgt	PermID	R pixels "	TrkID	MPCDate	RA	DEC	Mag	X
1	1	29P		ABC0426	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.56	723.
2	1	29P	5 pix, 4"6	ABC0426	2026 04 23.88390	11 00 59.37	-01 17 37.3	15.57	726.
3	1	29P		ABC0426	2026 04 23.89819	11 00 59.19	-01 17 35.8	15.58	729.
4	2	29P		ABC0427	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.39	723.
5	2	29P	5.5 pix, 5"1	ABC0427	2026 04 23.88390	11 00 59.37	-01 17 37.3	15.40	726.
6	2	29P		ABC0427	2026 04 23.89819	11 00 59.19	-01 17 35.8	15.41	729.
7	3	29P		ABC0428	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.26	723.
8	3	29P	6 pix, 5"6	ABC0428	2026 04 23.88390	11 00 59.37	-01 17 37.3	15.27	726.
9	3	29P		ABC0428	2026 04 23.89819	11 00 59.19	-01 17 35.8	15.28	729.
10	4	29P		ABC0429	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.14	723.
11	4	29P	6.5 pix, 6"0	ABC0429	2026 04 23.88390	11 00 59.37	-01 17 37.3	15.15	726.
12	4	29P		ABC0429	2026 04 23.89819	11 00 59.19	-01 17 35.8	15.16	729.
13	5	29P		ABC0430	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.03	723.
14	5	29P	7 pix, 6"5	ABC0430	2026 04 23.88390	11 00 59.37	-01 17 37.3	15.04	726.
15	5	29P		ABC0430	2026 04 23.89819	11 00 59.19	-01 17 35.8	15.05	729.
16	6	29P		ABC0431	2026 04 23.86847	11 00 59.55	-01 17 38.7	14.93	723.
17	6	29P	7.5 pix, 7"0	ABC0431	2026 04 23.88390	11 00 59.37	-01 17 37.3	14.94	726.
18	6	29P		ABC0431	2026 04 23.89819	11 00 59.19	-01 17 35.8	14.95	729
19	7	29P		ABC0432	2026 04 23.86847	11 00 59.55	-01 17 38.7	14.84	723
20	7	29P	8 pix, 7"4	ABC0432	2026 04 23.88390	11 00 59.37	-01 17 37.3	14.85	726
21	7	29P		ABC0432	2026 04 23.89819	11 00 59.19	-01 17 35.8	14.85	729

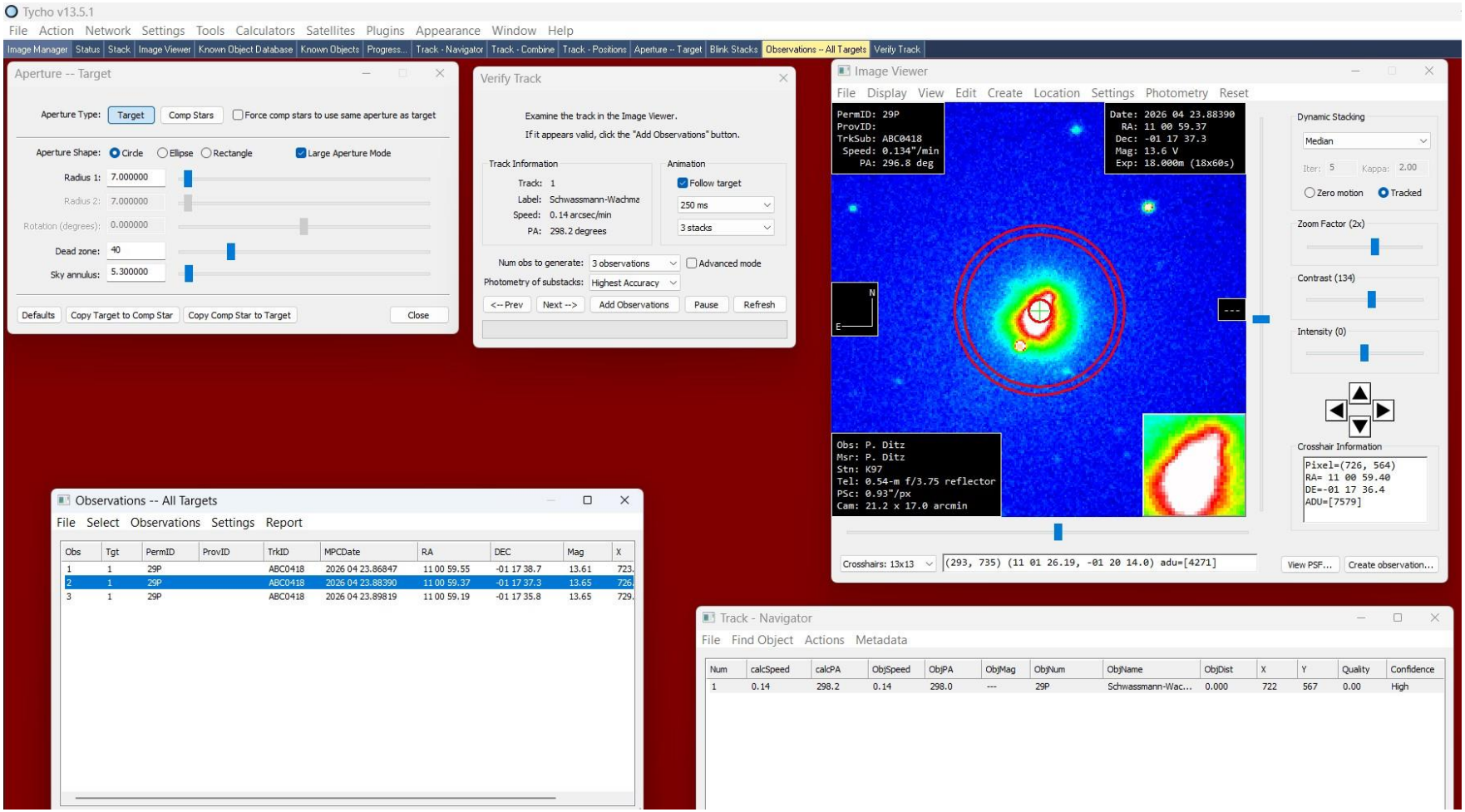
ramètres influençant les mesures cométaires : Aperture Target Tycho Tracker



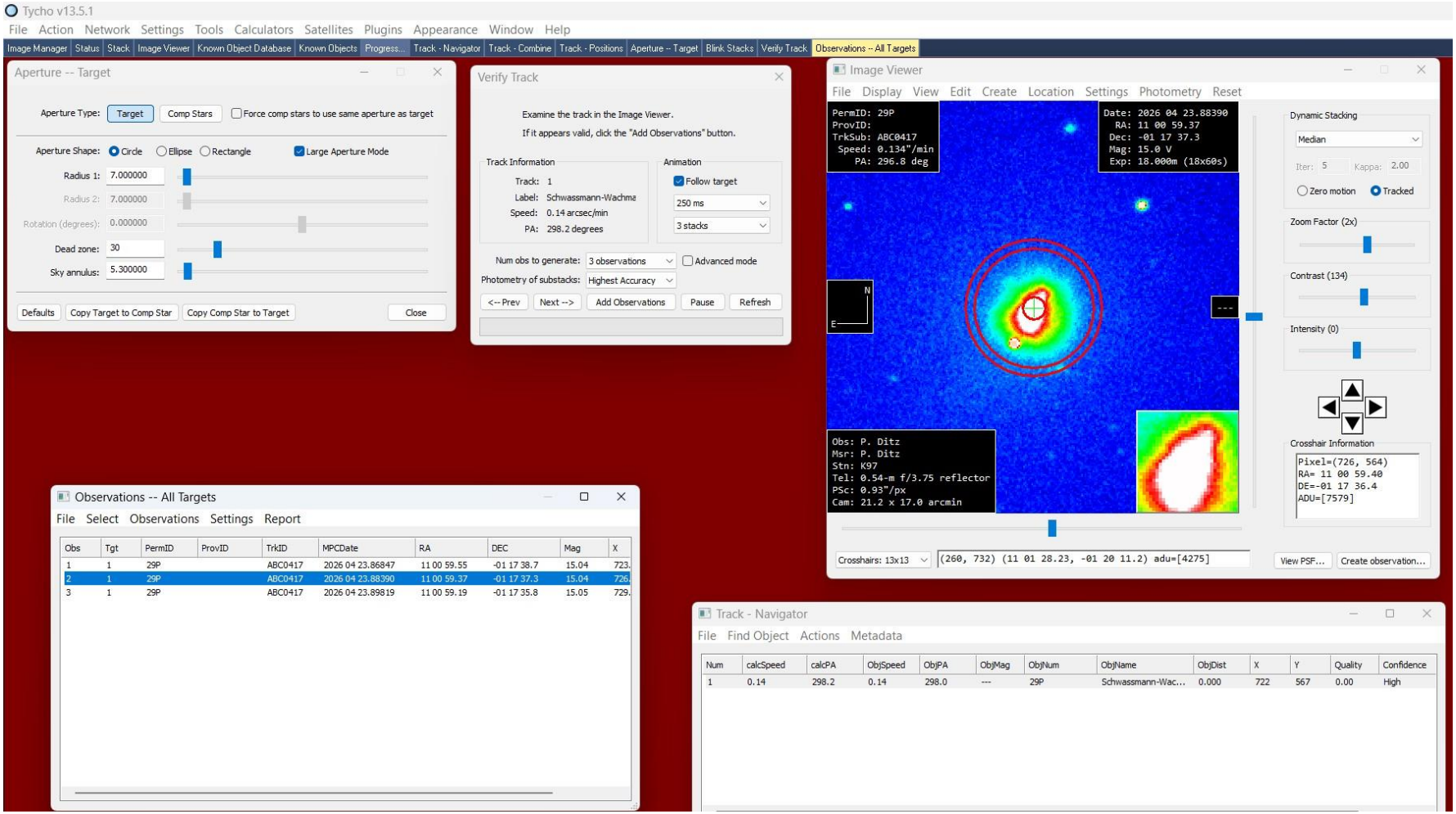
Num	Date [TU]	Julian day -2400000	Comet/Object Name	r (/Sun) [AU]	d (/Earth) [AU]	Pict	Spec	Coma Total mag (m1)	Nuclear mag (m2)	Coma diameter [']	Coma condensation	Tail length [°]	Tail position angle [°]	Afrho [cm]	Instr diameter [mm]	Instr	m1 aperture radius [']	m2 aperture radius ["]	Obs MPC code	Who
31410	2026 04 29.8	61161.33006	29P/Schwassmann-Wachmann	6.314	5.644	Pict	-	-	15.9	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31407	2026 04 27.8	61159.3268	29P/Schwassmann-Wachmann	6.314	5.620	Pict	-	-	16.2	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31404	2026 04 26.8	61158.32573	29P/Schwassmann-Wachmann	6.314	5.608	Pict	-	-	16.3	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31400	2026 04 25.8	61157.32449	29P/Schwassmann-Wachmann	6.314	5.596	Pict	-	-	16.1	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31396	2026 04 24.8	61156.327	29P/Schwassmann-Wachmann	6.314	5.584	Pict	-	-	15.9	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31395	2026 04 23.8	61155.36847	29P/Schwassmann-Wachmann	6.314	5.573	Pict	-	-	15	-	-	-	-	-	540	L	-	6.5	K97	pditz
31390	2026 04 23.8	61155.34198	29P/Schwassmann-Wachmann	6.314	5.573	Pict	-	-	15.7	-	-	-	-	-	300	L	-	6.97	C10	jfsoulier
31377	2026 04 22.8	61154.36701	29P/Schwassmann-Wachmann	6.314	5.562	Pict	-	-	13.7	-	-	-	-	-	540	L	-	6.5	K97	pditz
31379	2026 04 22.8	61154.35763	29P/Schwassmann-Wachmann	6.314	5.562	Pict	-	-	14.9	-	-	-	-	-	203	T	-	-	247	jvilhem
31372	2026 04 22.8	61154.35325	29P/Schwassmann-Wachmann	6.314	5.562	Pict	-	-	15	-	-	-	-	-	250	L	-	6.4	Y87	jgbosch
31371	2026 04 22.8	61154.33765	29P/Schwassmann-Wachmann	6.314	5.562	Pict	-	-	15.4	-	-	-	-	-	300	L	-	6.97	C10	jfsoulier
31370	2026 04 21.8	61153.31935	29P/Schwassmann-Wachmann	6.314	5.551	Pict	-	-	15.1	7.24	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31366	2026 04 21.2	61152.70455	29P/Schwassmann-Wachmann	6.314	5.551	Pict	-	-	14.2	-	-	-	-	-	430	C	-	5.5	W96	pditz
31365	2026 04 20.8	61152.36096	29P/Schwassmann-Wachmann	6.313	5.540	Pict	-	-	13.8	-	-	-	-	-	540	L	-	6.5	K97	pditz
31364	2026 04 20.8	61152.33687	29P/Schwassmann-Wachmann	6.313	5.540	Pict	-	-	14.5	-	-	-	-	-	400	L	-	5.95	A77	fkugel
31363	2026 04 20.8	61152.31786	29P/Schwassmann-Wachmann	6.313	5.540	Pict	-	-	14.9	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31360	2026 04 20.0	61151.51683	29P/Schwassmann-Wachmann	6.313	5.540	Pict	-	-	14.5	-	-	-	-	-	250	L	-	6.4	Y87	jgbosch
31356	2026 04 19.8	61151.33394	29P/Schwassmann-Wachmann	6.313	5.530	Pict	-	-	14.6	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31355	2026 04 18.8	61150.3501	29P/Schwassmann-Wachmann	6.313	5.520	Pict	-	10.8	13.4	8	-	-	-	-	540	L	0.775	6.5	K97	pditz
31354	2026 04 18.8	61150.31478	29P/Schwassmann-Wachmann	6.313	5.520	Pict	-	-	14.1	7.30	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31346	2026 04 17.8	61149.31358	29P/Schwassmann-Wachmann	6.313	5.509	Pict	-	-	13.6	-	-	-	-	-	250	L	-	6.75	L27	jfsoulier
31336	2026 04 16.8	61148.36613	29P/Schwassmann-Wachmann	6.313	5.500	Pict	-	-	13.5	-	-	-	-	-	250	L	-	6.4	Y87	jgbosch

aramètres influençant les mesures cométaires : Aperture Target Tycho Tracker

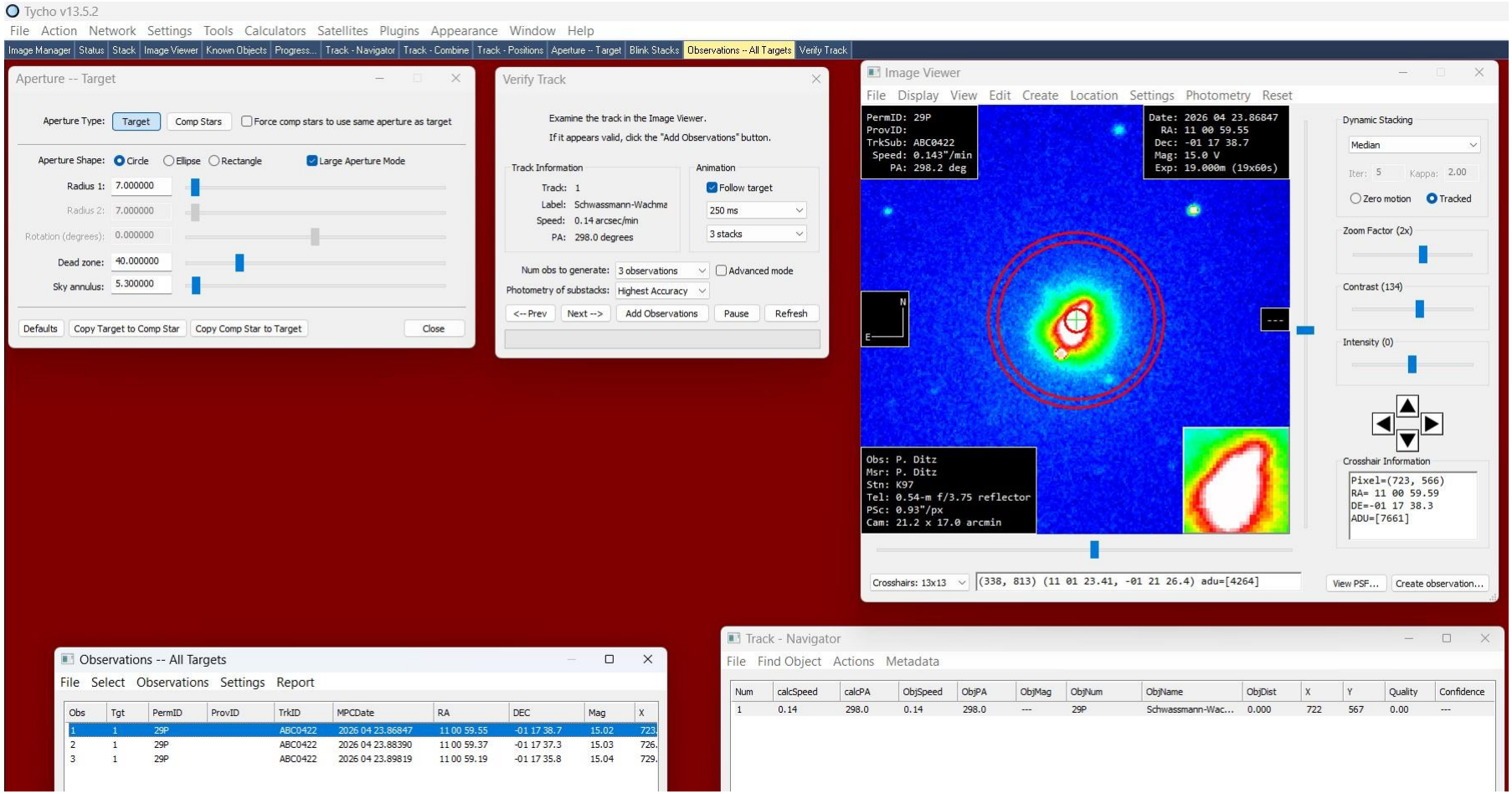
aramètres influençant les mesures cométaires : Aperture Target Tycho Tracker



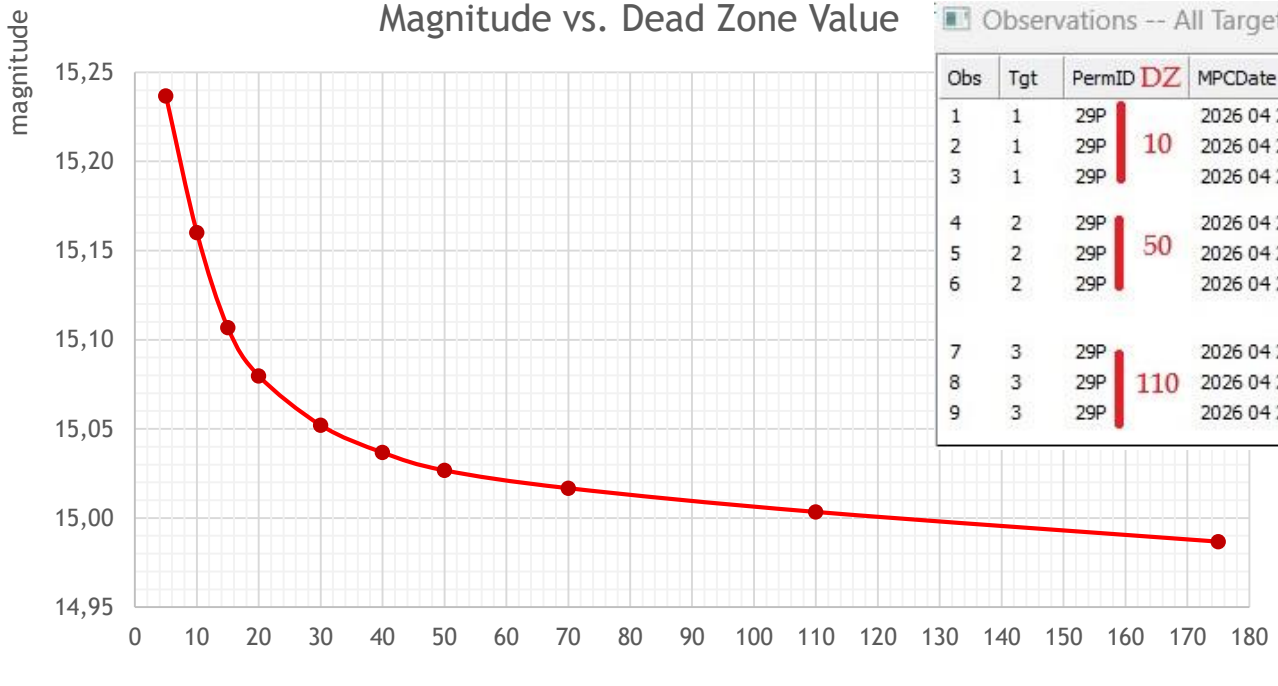
aramètres influençant les mesures cométaires : Aperture Target Tycho Tracker



aramètres influençant les mesures cométaires : Aperture Target Tycho Tracker

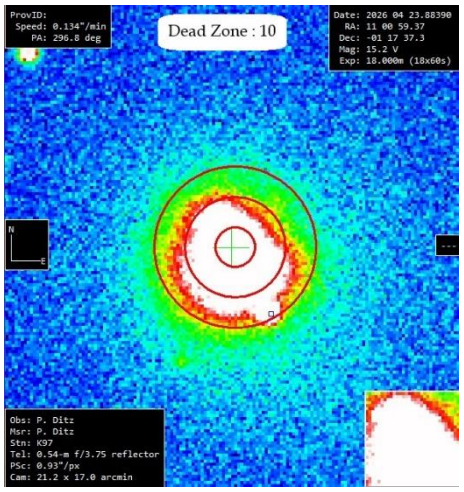


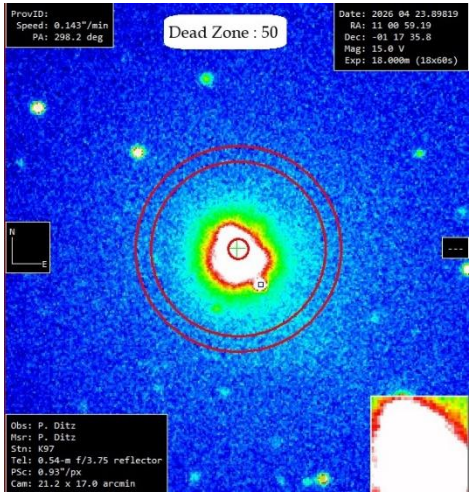
ramètres influençant les mesures cométaires : Aperture Target Tycho Tracker

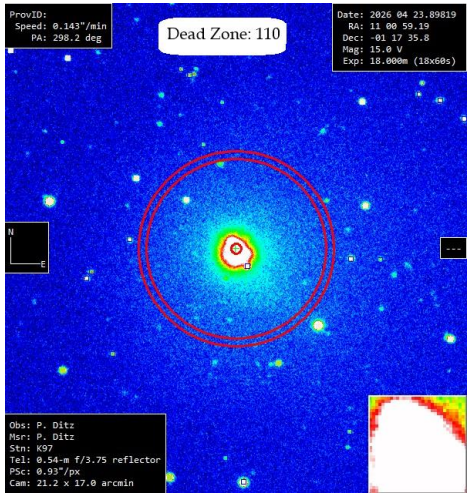


Observations -- All Targets

Obs	Tgt	PermID	DZ	MPCDate	RA	DEC	Mag
1	1	29P	10	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.15
2	1	29P		2026 04 23.88390	11 00 59.37	-01 17 37.3	15.14
3	1	29P		2026 04 23.89819	11 00 59.19	-01 17 35.8	15.15
4	2	29P	50	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.02
5	2	29P		2026 04 23.88390	11 00 59.37	-01 17 37.3	15.02
6	2	29P		2026 04 23.89819	11 00 59.19	-01 17 35.8	15.01
7	3	29P	110	2026 04 23.86847	11 00 59.55	-01 17 38.7	15.00
8	3	29P		2026 04 23.88390	11 00 59.37	-01 17 37.3	15.00
9	3	29P		2026 04 23.89819	11 00 59.19	-01 17 35.8	14.99







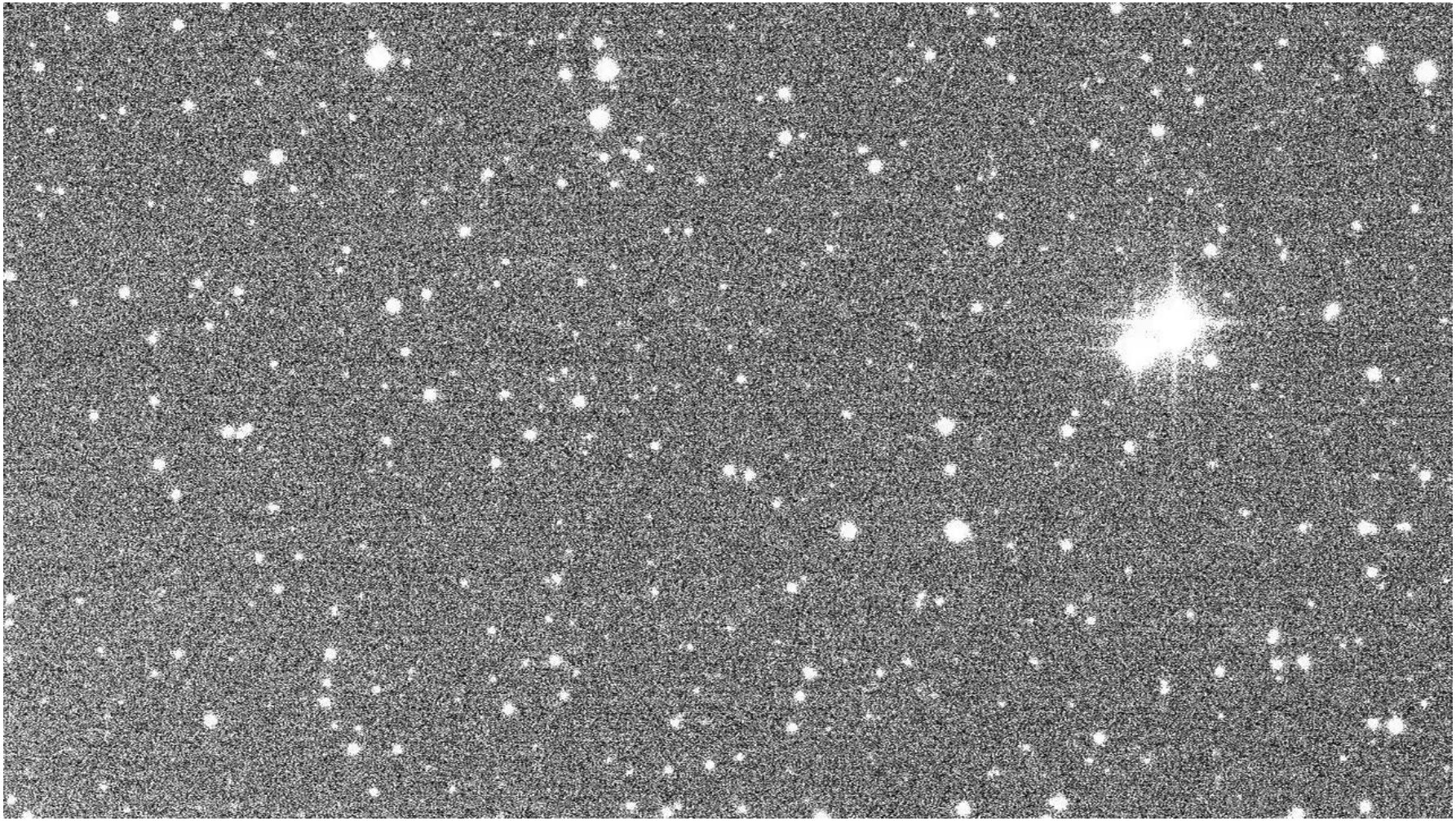
aramètres influençant les mesures cométaires : Temps de pose Tycho Tracker

Dans la mesure où l'on a affaire à des objets mobiles, le temps de pose est forcément limité:

- **L'astrométrie ne doit pas être dégradée par une image cométaire présentant une trainée,**
- **Cela va dépendre de:**
  - **la vitesse de déplacement de la comète,**
  - **du seeing,**
  - **De la taille des pixels**
- **Pour ma part, je limite le temps d'exposition à un déplacement cométaire inférieur ou égal à 1'' d'arc**

Paramètres influençant les mesures cométaires : Bruit Tycho Tracker

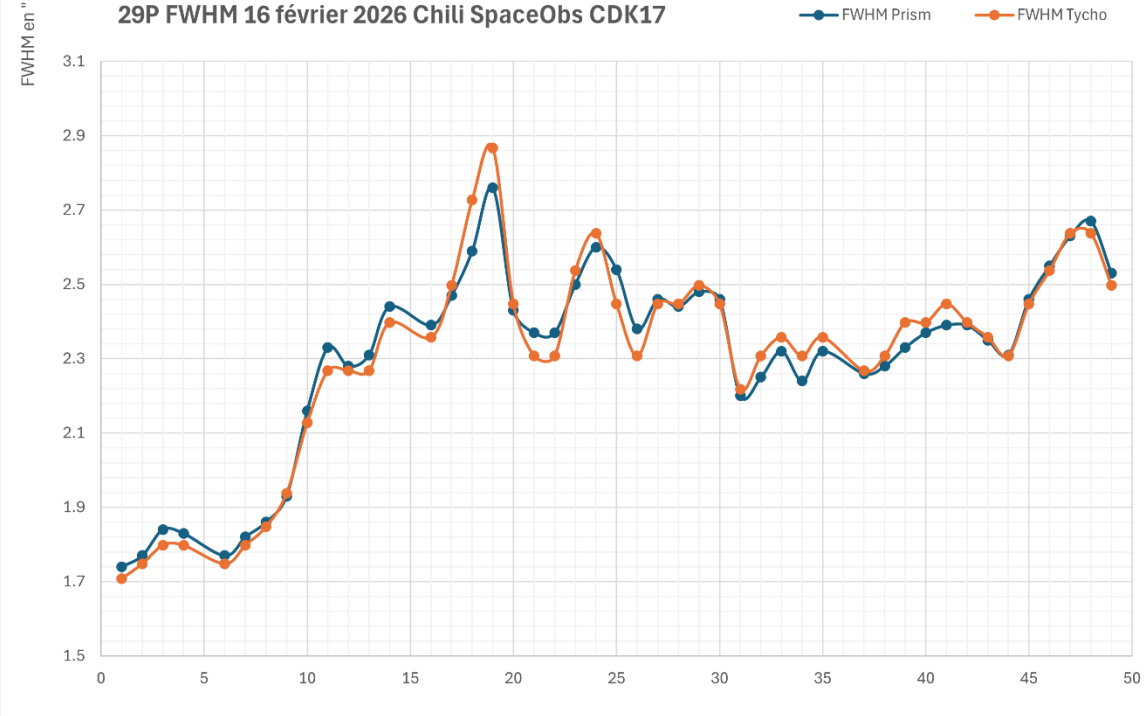
Bruit et seeing



Paramètres influençant les mesures cométaires : Bruit Tycho Tracker

Des processus aléatoires (stochastiques) sont en jeu:

- **Le bruit présent dans chaque image (due au bruit de photons, bruit de lecture, bruit thermique, etc…)**
- **Le seeing qui va faire déplacer aléatoirement les objets célestes et/ou les faire s'étaler ou s'empâter**

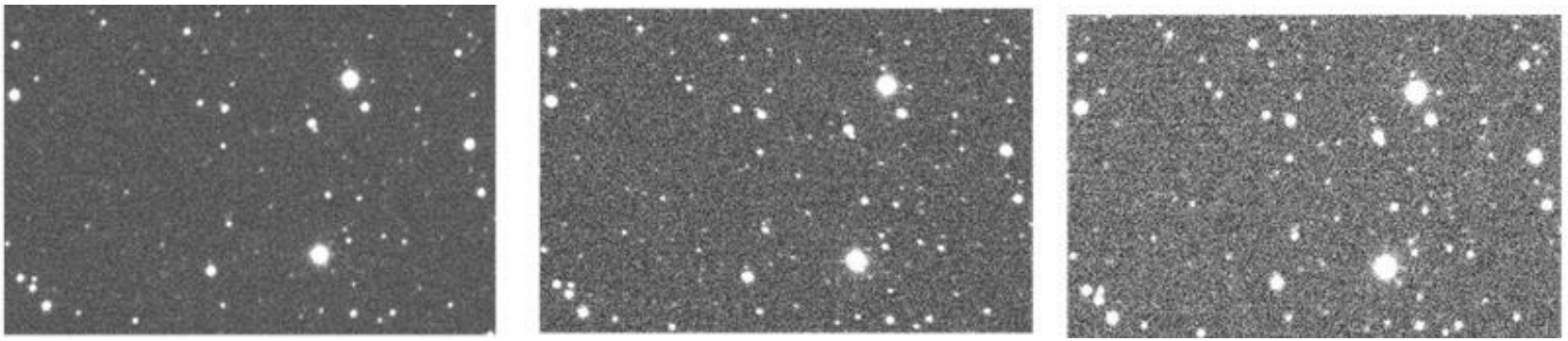


Paramètres influençant les mesures cométaires : Bruit Tycho Tracker

Conséquence sur les étoiles de faible luminosité (grande magnitude):

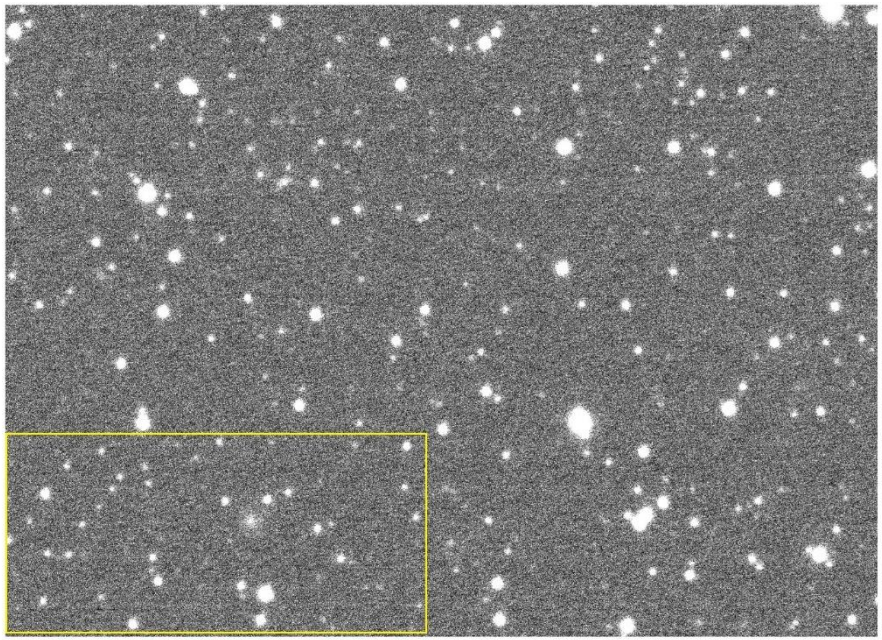
- **Le bruit et le seeing vont faire « danser » ces étoiles .**
- **L'astrométrie sur des objets célestes de faible luminosité va être entaché d'erreurs**
- **Remèdes:**
  - **Augmenter le temps de pose (mais pas forcément possible)**
  - **Avoir recourt au «stacking » que Tycho Tracker sait très bien faire qui va augmenter le SNR (signal sur bruit)**

Influence de la résolution des images ou choix du binning



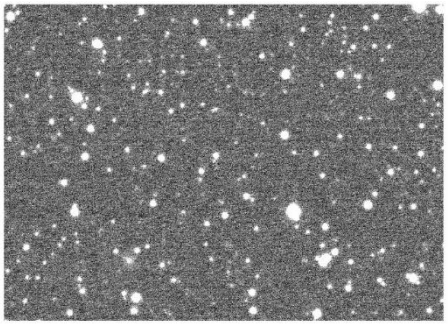
Paramètres influençant les mesures cométaires : Binning Tycho Tracker

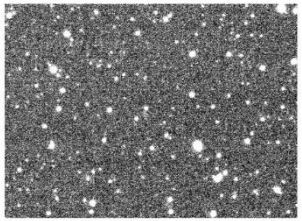
SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

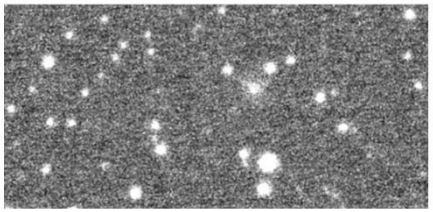


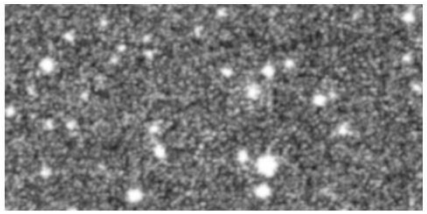
Bin1

26/05/2026 8:33 TU
H: 76° Seeing: 1"98 Elong: 7%









Bin2

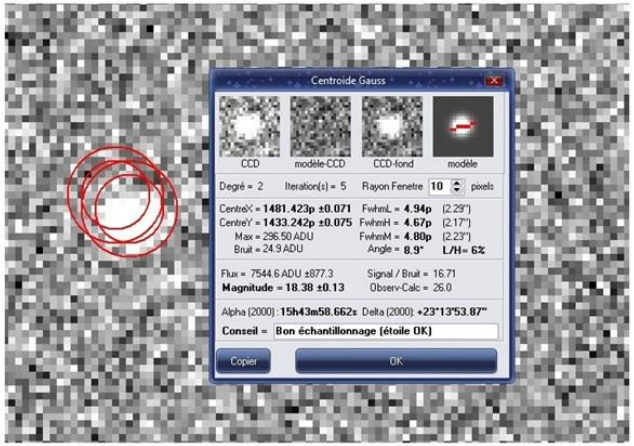
26/05/2026 8:11 TU
H: 81° Seeing: 1"94 Elong: 23%

Bin3

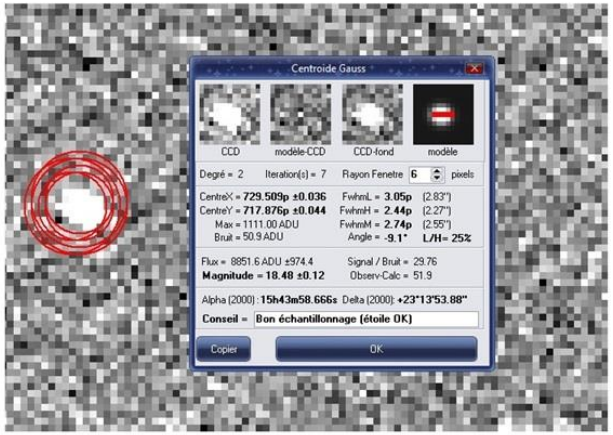
26/05/2026 7:49 TU
H: 85° Seeing: 2"62 Elong: 11%

Paramètres influençant les mesures cométaires : Binning Tycho Tracker

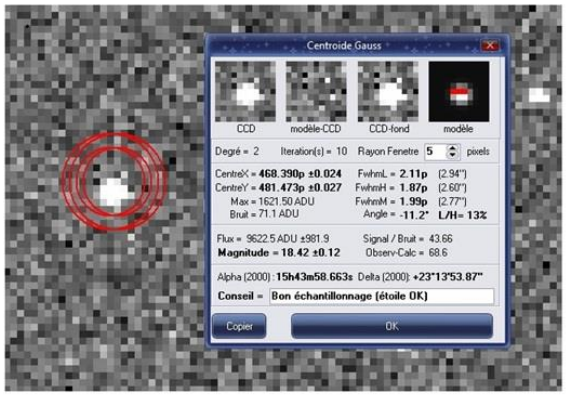
Freconrupt K97 T540 F/3.75 focale: 2 m Atik 460EX



Bin1



Bin2



Bin3

Prism :

- **Analyse:**
  - **Astrométrie/Etalonnage automatique**
  - **Photométrie/Etalonnage automatique**
- **Sur Image:**
  - **choisir une étoile en positionnant le curseur sur elle**
  - **Click droit: choisir Centroïde évolué**

Paramètres influençant les mesures cométaires : Binning Tycho Tracker

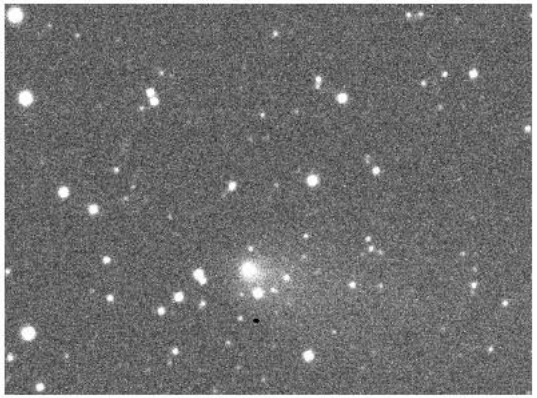
SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

235P
19/05/2026 08:16 TU

QHY268M Bin1
0"27/pix. 60s

Masse air: 1.25 H: 53°

Seeing: 2"3
Elongation: 11%

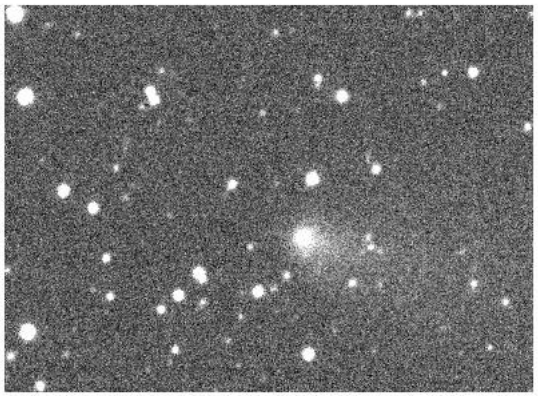


235P
19/05/2026 07:40 TU

QHY268M Bin2
0"53/pix. 60s

Masse air: 1.14 H: 61°

Seeing: 2"16
Elongation: 7%



235P
19/05/2026 08:53 TU

QHY268M Bin3
0"80/pix. 60s

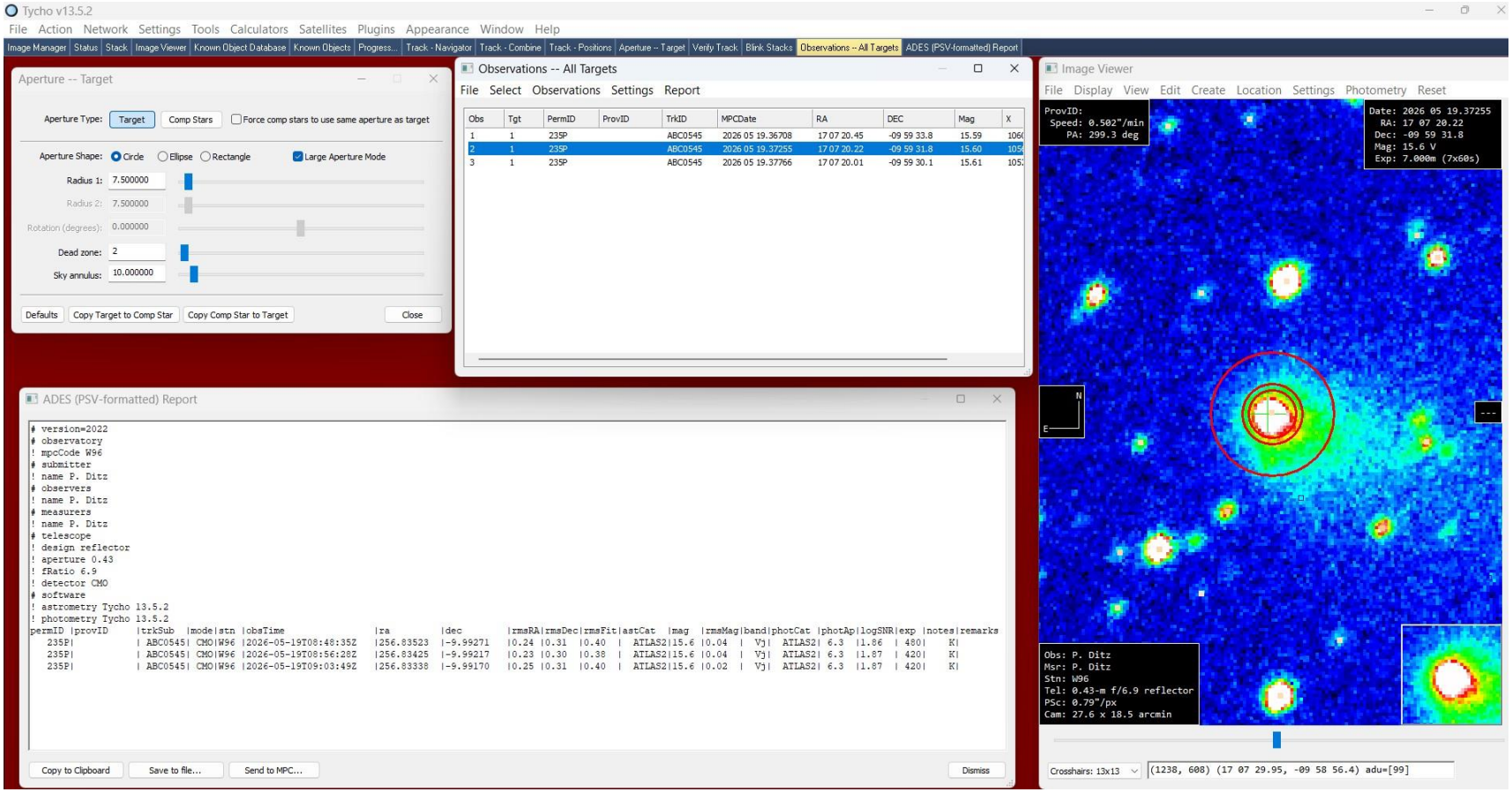
Masse air: 1.41 H: 45°

Seeing: 3"12
Elongation 12%

Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

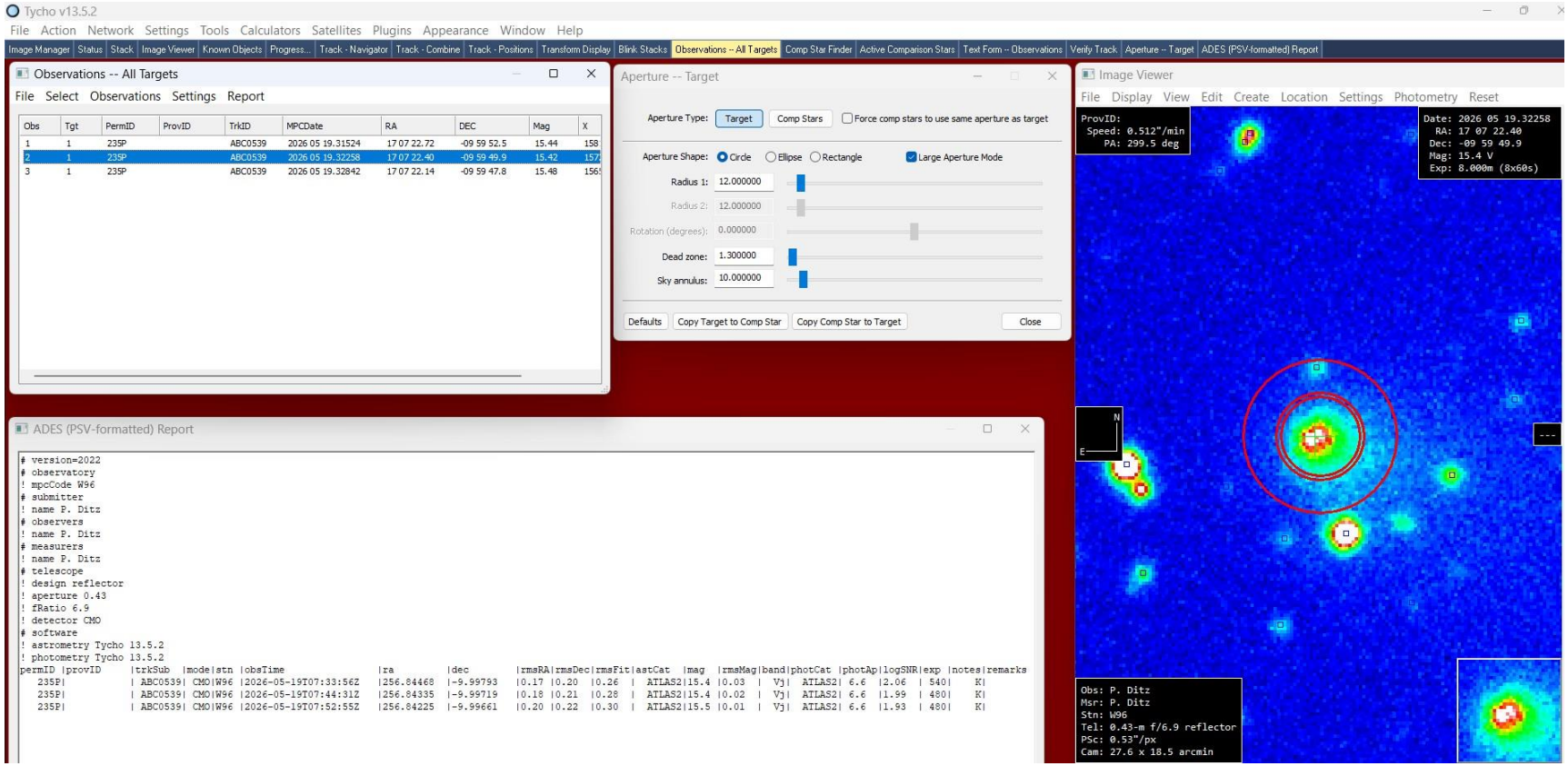
Comète 235P en Bin3



Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

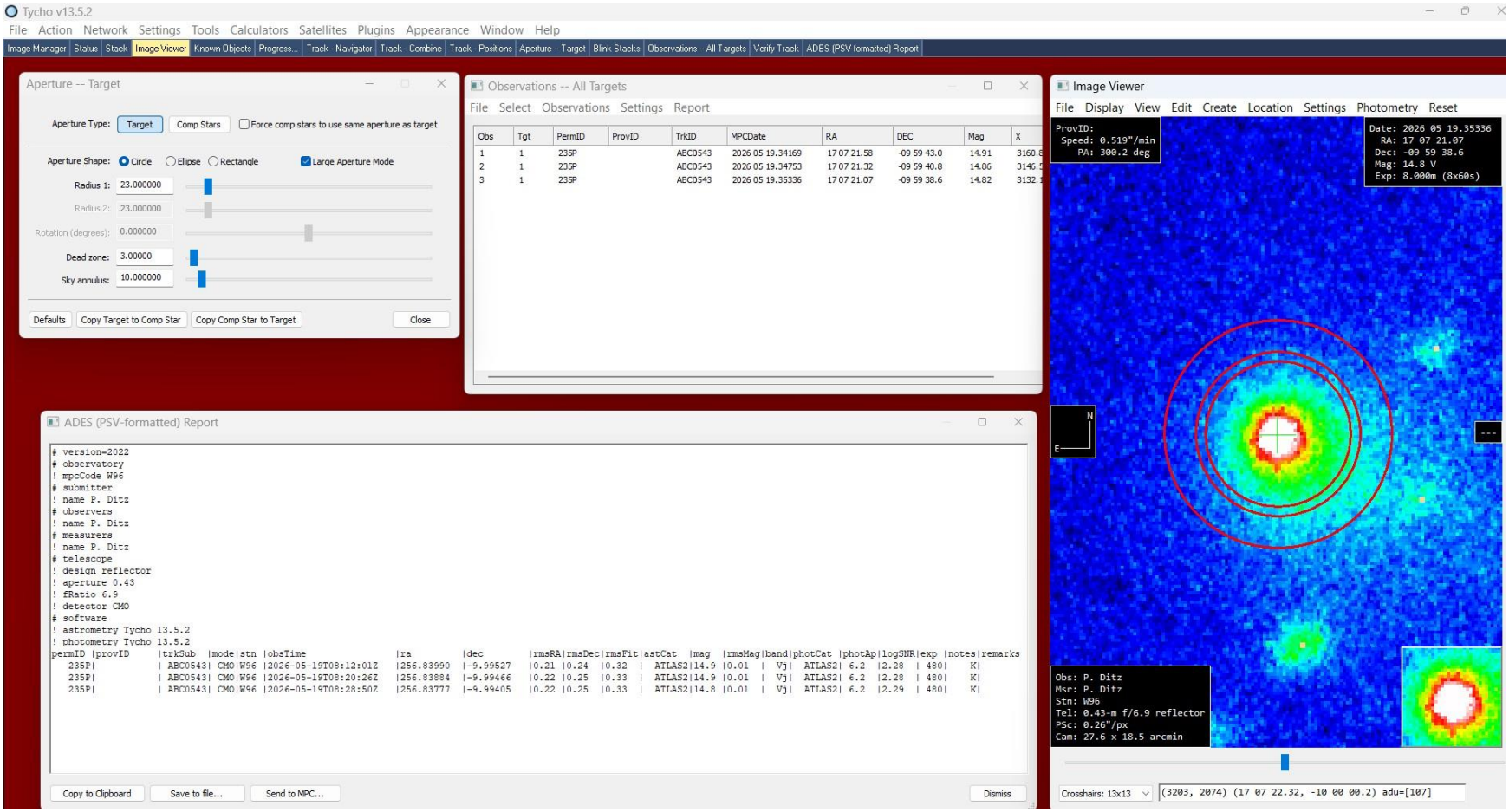
Comète 235P en Bin2



Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

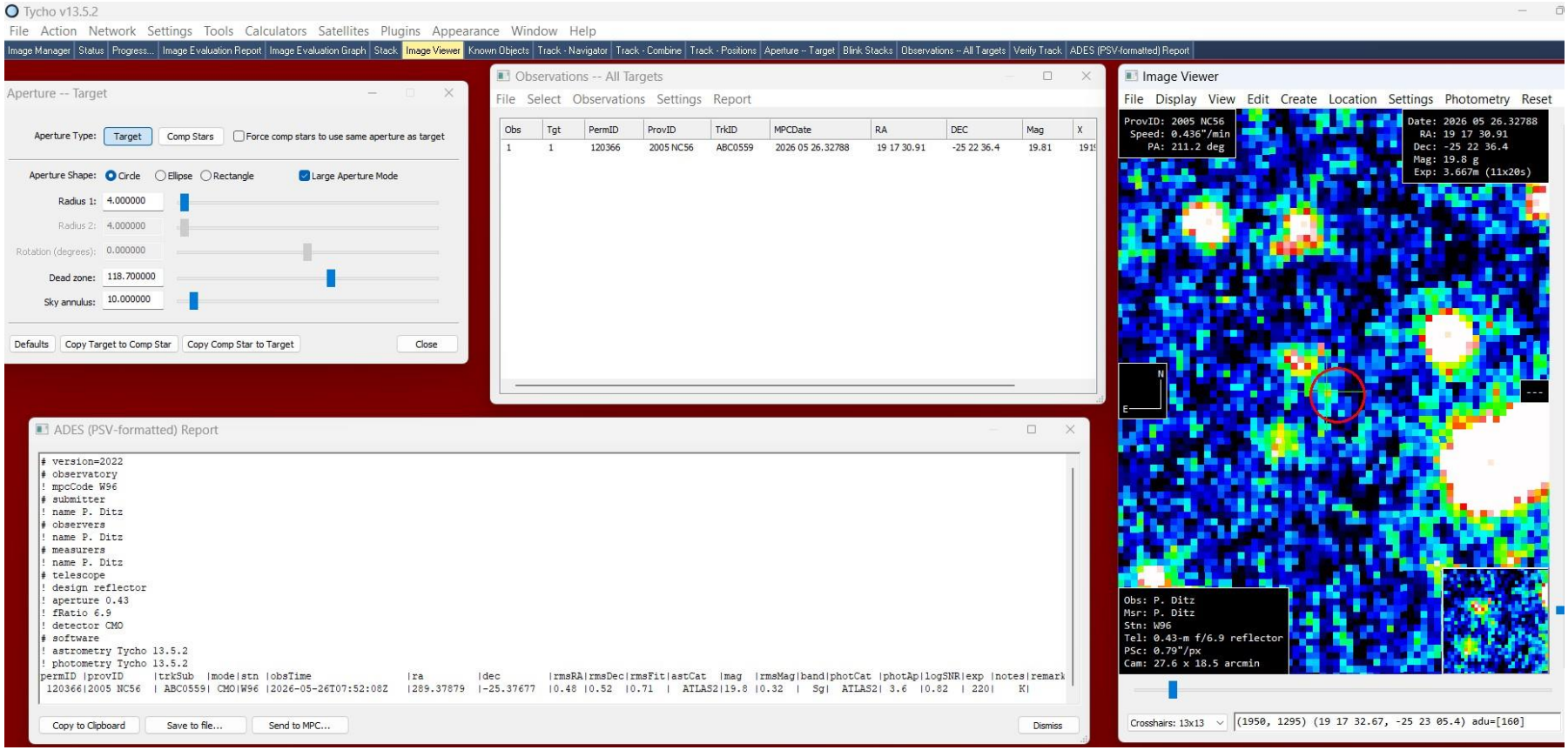
Comète 235P en Bin1



Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

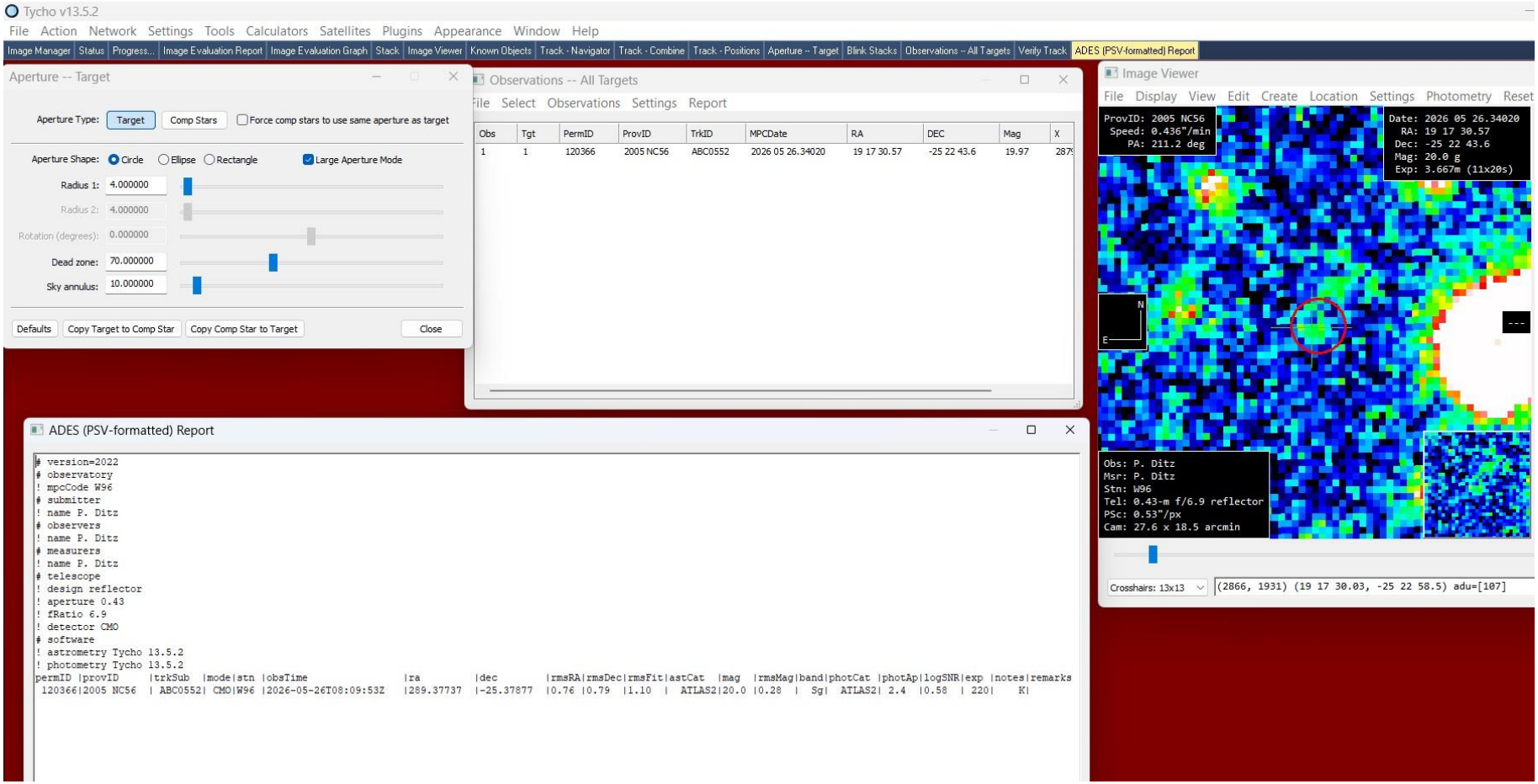
Astéroïde 2005 NC56 en Bin3



Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

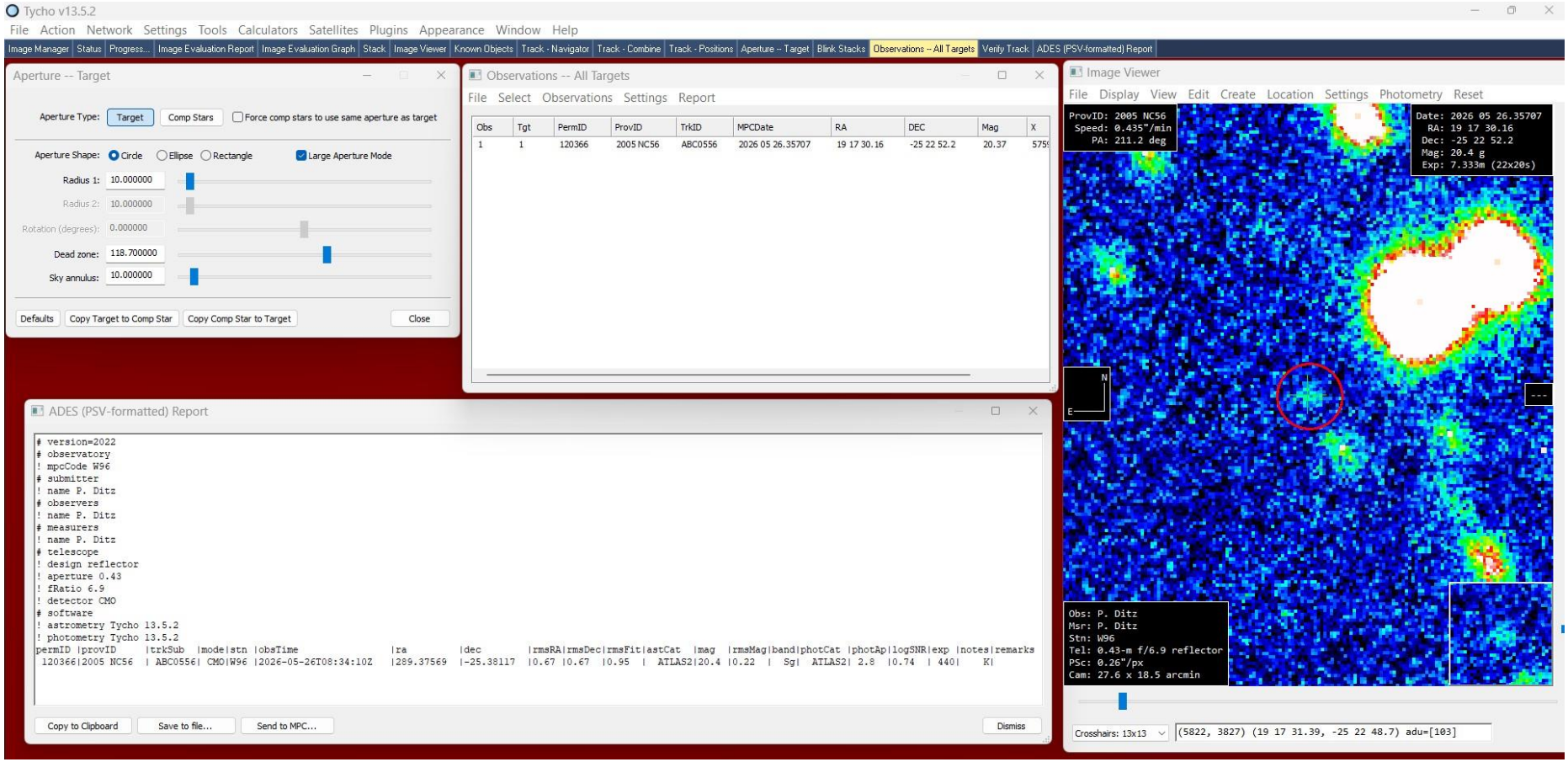
Astéroïde 2005 NC56 en Bin2



Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

Astéroïde 2005 NC56 en Bin1



Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

Synthèse

Comète 235P

	Rms Fit	log SNR	H (°)	Seeing (")	Magnitude
Bin3	0.4	1.87	45	3.12	15.6
Bin2	0.28	1.99	61	2.16	15.44
Bin1	0.33	2.28	53	2.3	14.86

Astéroïde 2005 NC56

	Rms Fit	log SNR	H (°)	Seeing (")	Magnitude
Bin3	0.71	0.82	85	2.62	19.81
Bin2	1.1	0.58	81	1.94	19.97
Bin1	0.95	0.74	76	1.98	20.37

Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

Image evaluation Bin3

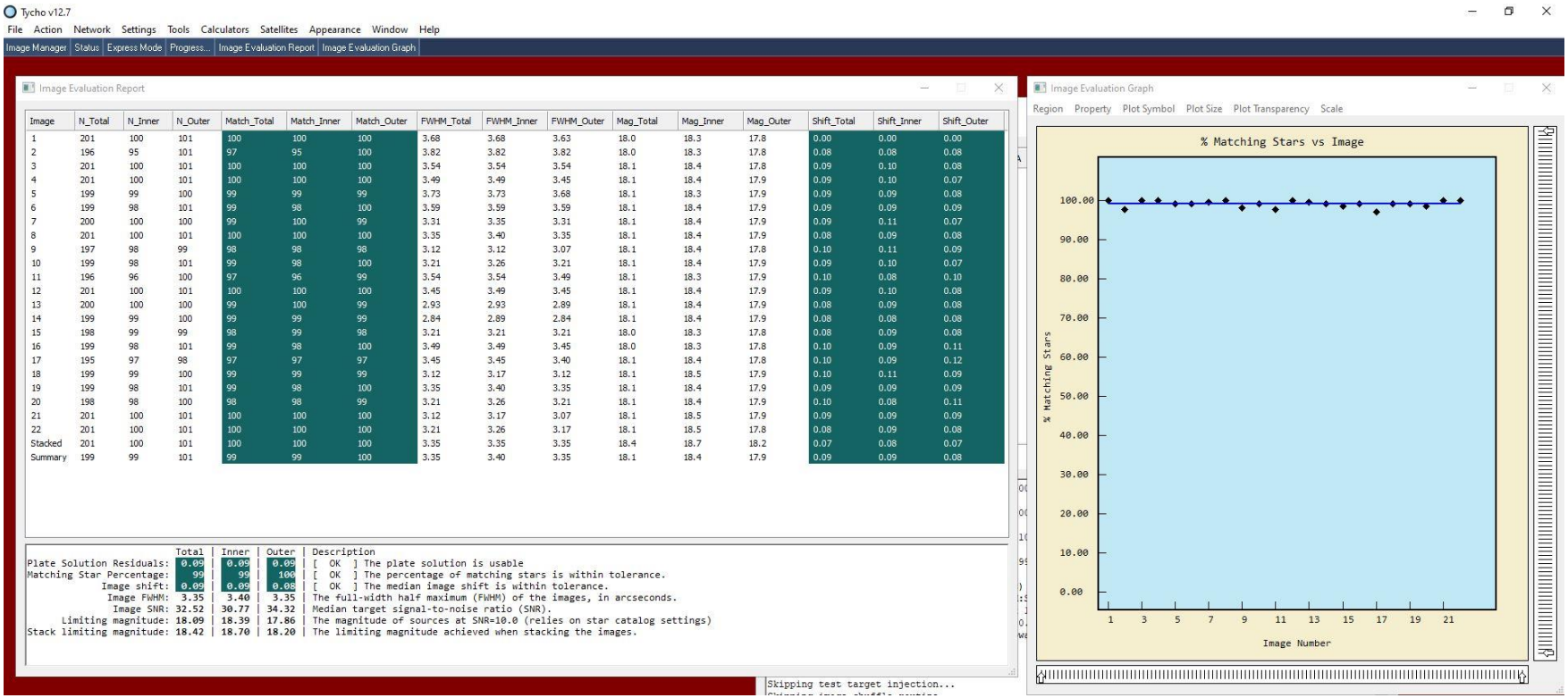


Image	N_Total	N_Inner	N_Outer	Match_Total	Match_Inner	Match_Outer	FWHM_Total	FWHM_Inner	FWHM_Outer	Mag_Total	Mag_Inner	Mag_Outer	Shift_Total	Shift_Inner	Shift_Outer
1	201	100	101	100	100	100	3.68	3.68	3.63	18.0	18.3	17.8	0.00	0.00	0.00
2	196	95	101	97	95	100	3.82	3.82	3.82	18.0	18.3	17.8	0.08	0.08	0.08
3	201	100	101	100	100	100	3.54	3.54	3.54	18.1	18.4	17.8	0.09	0.10	0.08
4	201	100	101	100	100	100	3.49	3.49	3.45	18.1	18.4	17.9	0.09	0.10	0.07
5	199	99	100	99	99	99	3.73	3.73	3.68	18.1	18.3	17.9	0.09	0.09	0.08
6	199	98	101	99	98	100	3.59	3.59	3.59	18.1	18.4	17.9	0.09	0.09	0.09
7	200	100	100	99	100	99	3.31	3.35	3.31	18.1	18.4	17.9	0.09	0.11	0.07
8	201	100	101	100	100	100	3.35	3.40	3.35	18.1	18.4	17.9	0.08	0.09	0.08
9	197	98	99	98	98	98	3.12	3.12	3.07	18.1	18.4	17.8	0.10	0.11	0.09
10	199	98	101	99	98	100	3.21	3.26	3.21	18.1	18.4	17.9	0.09	0.10	0.07
11	196	96	100	97	96	99	3.54	3.54	3.49	18.1	18.3	17.9	0.10	0.08	0.10
12	201	100	101	100	100	100	3.45	3.49	3.45	18.1	18.4	17.9	0.09	0.10	0.08
13	200	100	100	99	100	99	2.93	2.93	2.89	18.1	18.4	17.9	0.08	0.09	0.08
14	199	99	100	99	99	99	2.84	2.89	2.84	18.1	18.4	17.9	0.08	0.08	0.08
15	198	99	99	98	99	98	3.21	3.21	3.21	18.0	18.3	17.8	0.08	0.09	0.08
16	199	98	101	99	98	100	3.49	3.49	3.45	18.0	18.3	17.8	0.10	0.09	0.11
17	195	97	98	97	97	97	3.45	3.45	3.40	18.1	18.4	17.8	0.10	0.09	0.12
18	199	99	100	99	99	99	3.12	3.17	3.12	18.1	18.5	17.9	0.10	0.11	0.09
19	199	98	101	99	98	100	3.35	3.40	3.35	18.1	18.4	17.9	0.09	0.09	0.09
20	198	98	100	98	98	99	3.21	3.26	3.21	18.1	18.4	17.9	0.10	0.08	0.11
21	201	100	101	100	100	100	3.12	3.17	3.07	18.1	18.5	17.9	0.09	0.09	0.09
22	201	100	101	100	100	100	3.21	3.26	3.17	18.1	18.5	17.8	0.08	0.09	0.08
Stacked	201	100	101	100	100	100	3.35	3.35	3.35	18.4	18.7	18.2	0.07	0.08	0.07
Summary	199	99	101	99	99	100	3.35	3.40	3.35	18.1	18.4	17.9	0.09	0.09	0.08

	Total	Inner	Outer	Description
Plate Solution Residuals:	0.09	0.09	0.09	[OK] The plate solution is usable
Matching Star Percentage:	99	99	100	[OK] The percentage of matching stars is within tolerance.
Image shift:	0.09	0.09	0.08	[OK] The median image shift is within tolerance.
Image FWHM:	3.35	3.40	3.35	The full-width half maximum (FWHM) of the images, in arcseconds.
Image SNR:	32.52	30.77	34.32	Median target signal-to-noise ratio (SNR).
Limiting magnitude:	18.09	18.39	17.86	The magnitude of sources at SNR=10.0 (relies on star catalog settings)
Stack limiting magnitude:	18.42	18.70	18.20	The limiting magnitude achieved when stacking the images.

Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

Image evaluation Bin2

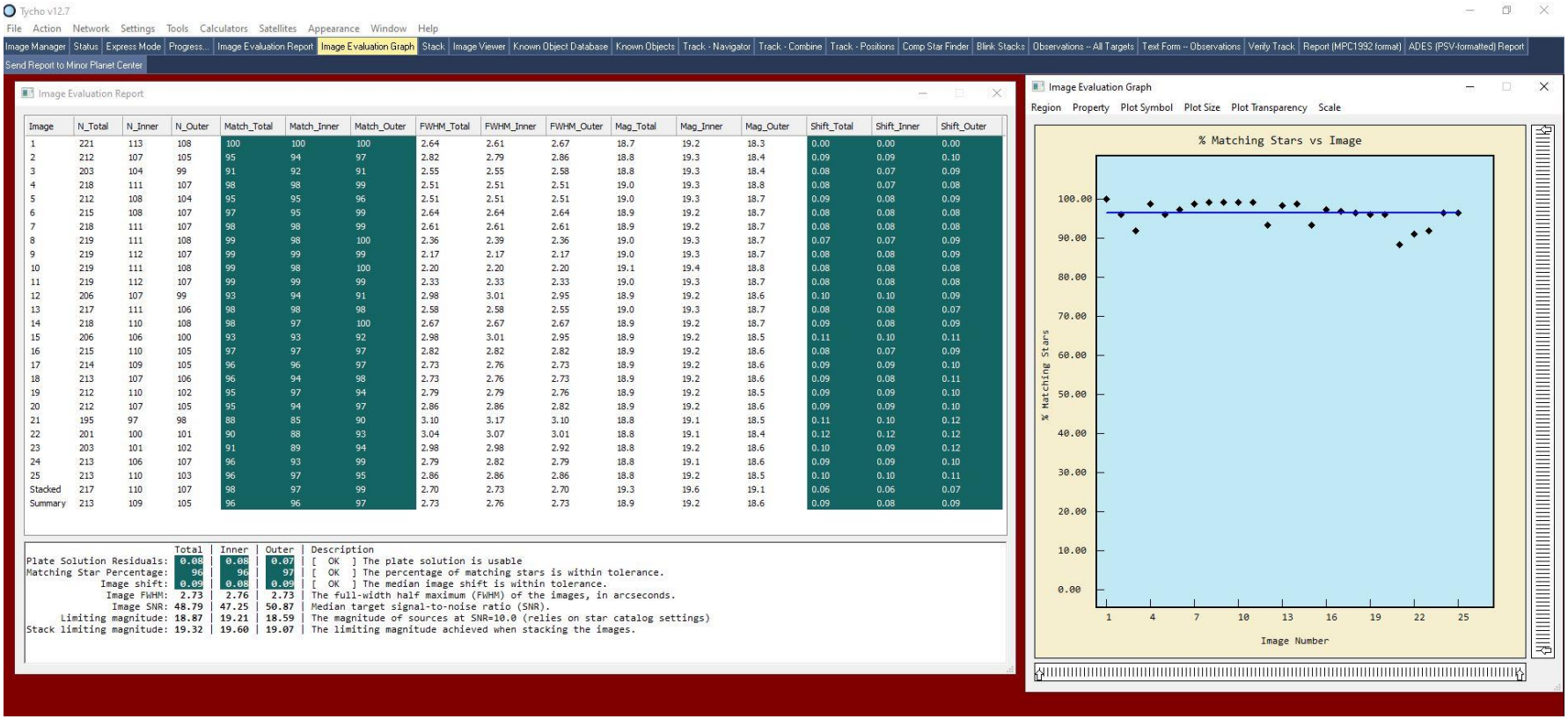


Image	N_Total	N_Inner	N_Outer	Match_Total	Match_Inner	Match_Outer	FWHM_Total	FWHM_Inner	FWHM_Outer	Mag_Total	Mag_Inner	Mag_Outer	Shift_Total	Shift_Inner	Shift_Outer
1	221	113	108	100	100	100	2.64	2.61	2.67	18.7	19.2	18.3	0.00	0.00	0.00
2	212	107	105	95	94	97	2.82	2.79	2.86	18.8	19.3	18.4	0.09	0.09	0.10
3	203	104	99	91	92	91	2.55	2.55	2.58	18.8	19.3	18.4	0.08	0.07	0.09
4	218	111	107	98	98	99	2.51	2.51	2.51	19.0	19.3	18.8	0.08	0.07	0.08
5	212	108	104	95	95	96	2.51	2.51	2.51	19.0	19.3	18.7	0.09	0.08	0.09
6	215	108	107	97	95	99	2.64	2.64	2.64	18.9	19.2	18.7	0.08	0.08	0.08
7	218	111	107	98	98	99	2.61	2.61	2.61	18.9	19.2	18.7	0.08	0.08	0.08
8	219	111	108	99	98	100	2.36	2.39	2.36	19.0	19.3	18.7	0.07	0.07	0.09
9	219	112	107	99	99	99	2.17	2.17	2.17	19.0	19.3	18.7	0.08	0.08	0.09
10	219	111	108	99	98	100	2.20	2.20	2.20	19.1	19.4	18.8	0.08	0.08	0.08
11	219	112	107	99	99	99	2.33	2.33	2.33	19.0	19.3	18.7	0.08	0.08	0.08
12	206	107	99	93	94	91	2.98	3.01	2.95	18.9	19.2	18.6	0.10	0.10	0.09
13	217	111	106	98	98	98	2.58	2.58	2.55	19.0	19.3	18.7	0.08	0.08	0.07
14	218	110	108	98	97	100	2.67	2.67	2.67	18.9	19.2	18.7	0.09	0.08	0.09
15	206	106	100	93	93	92	2.98	3.01	2.95	18.9	19.2	18.5	0.11	0.10	0.11
16	215	110	105	97	97	97	2.82	2.82	2.82	18.9	19.2	18.6	0.08	0.07	0.09
17	214	109	105	96	96	97	2.73	2.76	2.73	18.9	19.2	18.6	0.09	0.09	0.10
18	213	107	106	96	94	98	2.73	2.76	2.73	18.9	19.2	18.6	0.09	0.08	0.11
19	212	110	102	95	97	94	2.79	2.79	2.76	18.9	19.2	18.5	0.09	0.09	0.10
20	212	107	105	95	94	97	2.86	2.86	2.82	18.9	19.2	18.6	0.09	0.09	0.10
21	195	97	98	88	85	90	3.10	3.17	3.10	18.8	19.1	18.5	0.11	0.10	0.12
22	201	100	101	90	88	93	3.04	3.07	3.01	18.8	19.1	18.4	0.12	0.12	0.12
23	203	101	102	91	89	94	2.98	2.98	2.92	18.8	19.2	18.6	0.10	0.09	0.12
24	213	106	107	96	93	99	2.79	2.82	2.79	18.8	19.1	18.6	0.09	0.09	0.10
25	213	110	103	96	97	95	2.86	2.86	2.86	18.8	19.2	18.5	0.10	0.10	0.11
Stacked	217	110	107	98	97	99	2.70	2.73	2.70	19.3	19.6	19.1	0.06	0.06	0.07
Summary	213	109	105	96	96	97	2.73	2.76	2.73	18.9	19.2	18.6	0.09	0.08	0.09

	Total	Inner	Outer	Description
Plate Solution Residuals:	0.08	0.08	0.07	[OK] The plate solution is usable
Matching Star Percentage:	96	96	97	[OK] The percentage of matching stars is within tolerance.
Image shift:	0.09	0.08	0.09	[OK] The median image shift is within tolerance.
Image FWHM:	2.73	2.76	2.73	The full-width half maximum (FWHM) of the images, in arcseconds.
Image SNR:	48.79	47.25	50.87	Median target signal-to-noise ratio (SNR).
Limiting magnitude:	18.87	19.21	18.59	The magnitude of sources at SNR=10.0 (relies on star catalog settings)
Stack limiting magnitude:	19.32	19.60	19.07	The limiting magnitude achieved when stacking the images.

Paramètres influençant les mesures cométaires : Binning Tycho Tracker

SpaceObs Chili W96 PlaneWave CDK17 F/6.9 focale: 3 m environ

Image evaluation Bin1

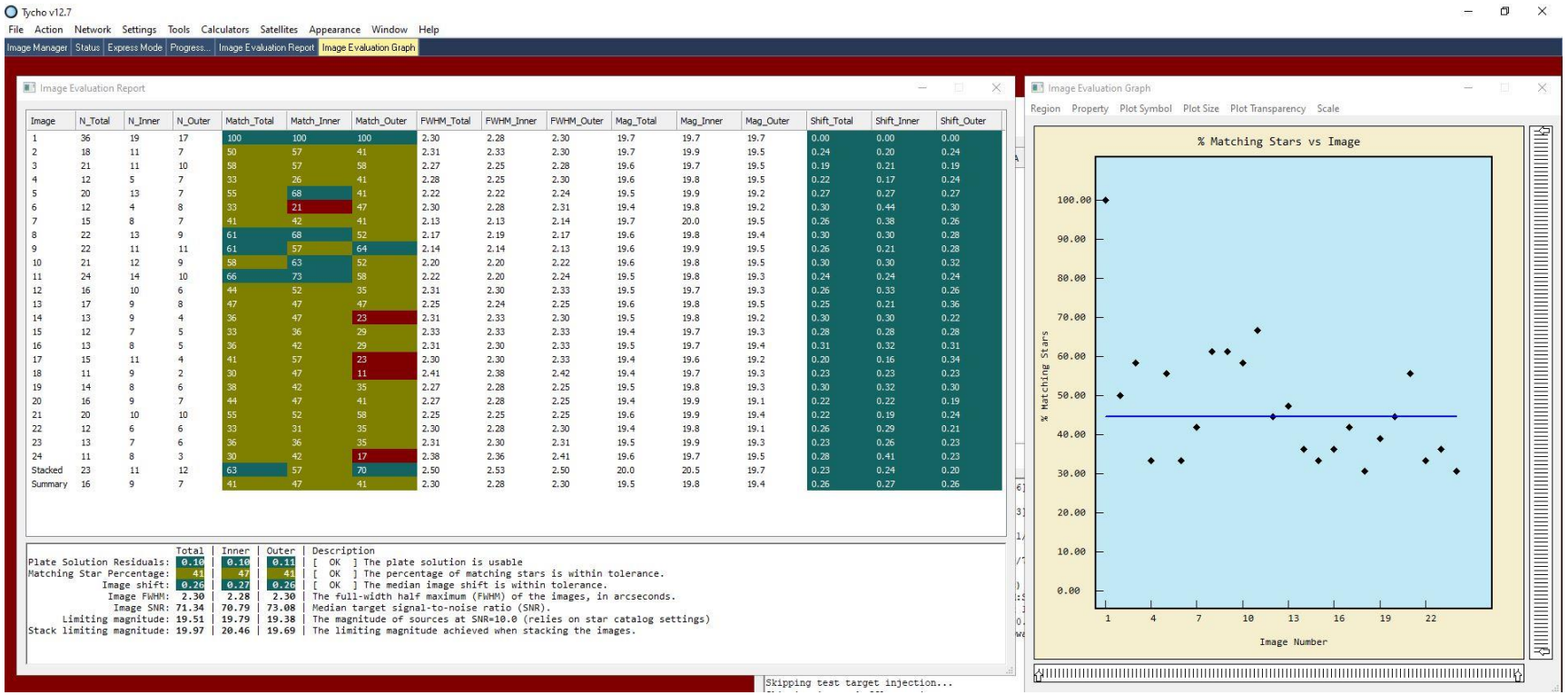


Image	N_Total	N_Inner	N_Outer	Match_Total	Match_Inner	Match_Outer	FWHM_Total	FWHM_Inner	FWHM_Outer	Mag_Total	Mag_Inner	Mag_Outer	Shift_Total	Shift_Inner	Shift_Outer
1	36	19	17	100	100	100	2.30	2.28	2.30	19.7	19.7	19.7	0.00	0.00	0.00
2	18	11	7	50	57	41	2.31	2.33	2.30	19.7	19.9	19.5	0.24	0.20	0.24
3	21	11	10	58	57	58	2.27	2.25	2.28	19.6	19.7	19.5	0.19	0.21	0.19
4	12	5	7	33	26	41	2.28	2.25	2.30	19.6	19.8	19.5	0.22	0.17	0.24
5	20	13	7	55	68	41	2.22	2.22	2.24	19.5	19.9	19.2	0.27	0.27	0.27
6	12	4	8	33	21	47	2.30	2.28	2.31	19.4	19.8	19.2	0.30	0.44	0.30
7	15	8	7	41	42	41	2.13	2.13	2.14	19.7	20.0	19.5	0.26	0.38	0.26
8	22	13	9	61	68	52	2.17	2.19	2.17	19.6	19.8	19.4	0.30	0.30	0.28
9	22	11	11	61	57	64	2.14	2.14	2.13	19.6	19.9	19.5	0.26	0.21	0.28
10	21	12	9	58	63	52	2.20	2.20	2.22	19.6	19.8	19.5	0.30	0.30	0.32
11	24	14	10	66	73	58	2.22	2.20	2.24	19.5	19.8	19.3	0.24	0.24	0.24
12	16	10	6	44	52	35	2.31	2.30	2.33	19.5	19.7	19.3	0.26	0.33	0.26
13	17	9	8	47	47	47	2.25	2.24	2.25	19.6	19.8	19.5	0.25	0.21	0.36
14	13	9	4	36	47	23	2.31	2.33	2.30	19.5	19.8	19.2	0.30	0.30	0.22
15	12	7	5	33	36	29	2.33	2.33	2.33	19.4	19.7	19.3	0.28	0.28	0.28
16	13	8	5	36	42	29	2.31	2.30	2.33	19.5	19.7	19.4	0.31	0.32	0.31
17	15	11	4	41	57	23	2.30	2.30	2.33	19.4	19.6	19.2	0.20	0.16	0.34
18	11	9	2	30	47	11	2.41	2.38	2.42	19.4	19.7	19.3	0.23	0.23	0.23
19	14	8	6	38	42	35	2.27	2.28	2.25	19.5	19.8	19.3	0.30	0.32	0.30
20	16	9	7	44	47	41	2.27	2.28	2.25	19.4	19.9	19.1	0.22	0.22	0.19
21	20	10	10	55	52	58	2.25	2.25	2.25	19.6	19.9	19.4	0.22	0.19	0.24
22	12	6	6	33	31	35	2.30	2.28	2.30	19.4	19.8	19.1	0.26	0.29	0.21
23	13	7	6	36	36	35	2.31	2.30	2.31	19.5	19.9	19.3	0.23	0.26	0.23
24	11	8	3	30	42	17	2.38	2.36	2.41	19.6	19.7	19.5	0.28	0.41	0.23
Stacked	23	11	12	63	57	70	2.50	2.53	2.50	20.0	20.5	19.7	0.23	0.24	0.20
Summary	16	9	7	41	47	41	2.30	2.28	2.30	19.5	19.8	19.4	0.26	0.27	0.26

	Total	Inner	Outer	Description
Plate Solution Residuals:	0.10	0.10	0.11	[OK] The plate solution is usable
Matching Star Percentage:	41	47	41	[OK] The percentage of matching stars is within tolerance.
Image shift:	0.26	0.27	0.26	[OK] The median image shift is within tolerance.
Image FWHM:	2.30	2.28	2.30	The full-width half maximum (FWHM) of the images, in arcseconds.
Image SNR:	71.34	70.79	73.08	Median target signal-to-noise ratio (SNR).
Limiting magnitude:	19.51	19.79	19.38	The magnitude of sources at SNR=10.0 (relies on star catalog settings)
Stack limiting magnitude:	19.97	20.46	19.69	The limiting magnitude achieved when stacking the images.

Dans Prism:

- **Addition- recalage / Addition objets mobiles ne fonctionne pas**
- **Addition- recalage / Recalage +Addition sur série d'images peut fonctionner mais uniquement avec Manuel par pointage du curseur**

FIN