

URANUS OPPOSITION 2013-2014

1- Abstract :

79 drawings over 28 nights this present opposition with 127-180-230-280mm apertures from August 2013 until February 2014.

Uranus exhibited on the period of observations some variability accessible visually with the help of colored filters (light yellow W8-12 and light blue W82A).

Mainly EZ appeared faint (in comparison with previous opposition) with brightenings revealed into EZ, sometimes in the bright collar near the south cap not always recorded.

The south banding boundary was studied because with evidence appeared varying.

A tentative of some "mechanism" appearing between cap occurrence, banding system and contrast of features was encountered.

§2.2 gives just a tentative of explanation because of the low data quantity and the low coverage of observations over the said period of observations.

4.09.13
SC 280mm x 400.47x 3.65" S: 21.6"

22H20UT WFR 22H35UT WFR 22H45UT WFR
400x S: 6.7/10 470x S: 6.7/10 470x S: 6.7/10
CT: 24.8° CT: 35.4° CT: 35.8°
Height: 32°

S. MAKSYMOWICZ
Equevilly - FRA.

20.09.2013
SC 280-400.47x 3.67"

22H20UT WFR 22H35UT WFR 22H45UT WFR
470x S: 6.7/10 400x S: 6.7/10 400x S: 6.7/10

S. MAKSYMOWICZ
Equevilly - FRA

T: 4.5/6

05.10.13
SC 280, 400-470 3.65" S: 23.1"
Height: 35-40 m: 5.7

21H20UT WFR 21H25UT WFR 21H30UT WFR
S: 5.6/10 400x S: 6/10 400x S: 5.6/10 400x
CT: 20° CT: 26° CT: 33°

Note: the brightening location is given as per sketch. Difficult observation due to great moisture in atmosphere and seeing. planet disk diameter than usual. Best views with 470 on calm times.

21H35UT WFR/WB S: 5.6/10 470x CT: 34°

should be MAKSYMOWICZ Equevilly - FRA. 3 satellites seen at R. limit.

18.10.13
Case 230 x 321 3.67" S: 23° m: 5.7
T: 4/6 moonlight and misty.

21H45UT WFR 21H55UT WFR 21H20UT WFR
321x S: 5.6/10 321x S: 5.6/10 321x S: 5.6/10
CT: 58° CT: 61° CT: 63°

S. MAKSYMOWICZ Equevilly - FRA. Note: EZ brightening well seen at CT.

26.10.13
Case 230 x 375-321 3.66" S: 22.5"
Height 35-42° T: (4)-5/6.

20H20UT WFR 20H35UT WFR 20H55UT WFR
375x S: 5.6/10 375x S: 5.6/10 321x S: 5.6/10
CT: 90° CT: 86° CT: 100°

Note: - all the same brightenings. - pole darker than usual.

S. MAKSYMOWICZ Equevilly - FRA.

14.1.14
Case 230x 375 T: 5/6 H: 42°
3.45" S: 22°

17H40UT WFR 17H50UT WFR 18H00UT 375x
375x S: 5.6/10 375x S: 5.6/10 S: 6/10 W 82
CT: 161° CT: 165° CT: 168°

S. MAKSYMOWICZ Equevilly - FRA.

2- **Main topics:**

2.1 Events:

South polar cap:

Not always captured, not seen until 1st week of September, then seen dark until 1st week of October, fading during October, well seen during ,November from mid-October, fading 1st week of December, well seen until last week of December, fading 2 1st weeks of January and then stronger for the last period of observation (until begin February).

The bright collar:

bordering the cap when seen was always bright, this was the more conspicuous feature over the opposition. Sometimes a brightening appeared into (20th September, 10th November, 12th December).

EZ contrast:

Was over the opposition faint level and improved from 10th November until 20th December. Was clear on 15th December then faint after until begin of February where it seems clearer.

Banding in south hemisphere:

2 bands were seen from the beginning of the opposition until 21th September (3 bands on the 04th September), then uniform (as 1 large band) on 4th October, darker on the south edge until 18th October, 2 bands until the 10th November with the south one darker near the bright collar, then 1 band with the south border darker near the bright collar until the 3rd January (2 bands on 9th December), then 1 band wide uniform with a darker south edge on 14th January.

In relation, more or less, the latitude on the planet of the south edge of the south banding system was fluctuating from 55° in average to 43°, then 50° to 40°, then 50° to 44° following the variations of the cap activity with having, may be, involvements about the brightening occurrence in EZ captured.

Banding in north hemisphere:

The contrast captured at the eyepiece was noted. All along the observation period, some fluctuations were highlighted.

Dark near EZ from the beginning to 21st September (of same density 1st week of September), then almost of same density than south hemisphere bands until 8th November (lighter on 5th October), darker improved until 8th December, more darker at EZ border after until 13th February 2014.

This seems to follow the cap activity with a drift in time, but not well quantified.

Blue color observations:

Over the period, features appeared in blue color (W82A filter) especially during the periods of stronger dark banding occurrence. Brightenings were sometimes also recorded in this channel. As this is a contrast effect due to the blue filter characteristics (not deep in all colors) as this is actual. Difficult to comment more accordingly.

2.2 Comments:

In spite of the few reports, this coverage needs to be improved in order to get a better confidence about the circulation of the atmospheric planet system assessment.

It is sustained the fact that the cap activity is in correlation with the banding structure and latitudes observed on the banding system, with the contrast levels observed among the features captured and with the brightenings also captured over the period.

In other words, we think there is a material mass transfer from south to north revealed by the contrast variation of the cap and the bands and by the south latitude variation of the bands of the south hemisphere, EZ shows brightenings in relation exhibiting an atmosphere layer covering EZ, these brightenings can be holes in the layer covering EZ (these brightening seems to be localized when plotting the CM of their boundaries).

Indeed an interpretation of the data but expectable, the main objection being the apparent absence of featuring on the bright collar located near the cap showing a transfer media (except few cases with brightening on 20th September, 10th November, 12th December).

Considering the moderate apertures in use we can consider also that this global activity reported represents the top contrasted features we have access.

However, we think this is enough to show some dynamics of the planet atmosphere, the quantify of reports will have on first approach more influence than the aperture itself on the 1st approach.

Sometimes, it was used a more moderate diameter for the confirmation of what was seen through the common scope in use.

Again, the scopes in use were duly characterized and the effective perfect diameter in correspondence was defined for ranking the scopes abilities:

- The MC 180 from Intes is 120mm (not far from the personal threshold).
- The Cass 230 is 142mm
- The SC280 is 162mm.

Hope the next opposition will occur with better seeing and sky local conditions.

I guess other observers to perform also such program in order to make confirmation of the given assessment or different.

Again a daily basis observation program is needed for better confidence.

Thanks for reading these notes.

3- Reference document:

Previous report of last 2012-2013 opposition of Uranus attached here.

Uranus report results (.xls file) attached here.

The 79 drawings: available at the BAA Director.

Stanislas Maksymowicz
Ecquevilly –France,
BAA member n°32334
Uranus section.

URANUS opposition 2013-2014 observational data,

S,Maksymowicz Ecquevilly-FRA-

Date	Dia(mm) Seeing	South polar cap	Bright colar	Banding south hemi-Latt,	EZ contras	Brightenings EZ-CM	Banding north hemi,	Sub-earth Latt,	
14.08.13	SC280 5-6/10	CLEAR	incl. cap	2 bands/ dark south/55°	faint	no	dark near EZ	24.2°-3,62"	
20.08.13	SC280 7/10	FAINT DARK	YES	2 bands/ dark south/53°	faint	no	dark near EZ	24.1°-3,63"	
30.08.13	SC280 6-7/10	CLEAR	incl. cap	2 bands/ dark south/59°	faint	1/ 10°-95°+	dark near EZ	23.8°-3,65"	
02.09.13	SC280 6/10	CLEAR	incl. cap	2 bands/ same dens./62°	faint	no	same density	23.7°-3,66"	south-ez hemi band
04.09.13	SC280 6-7/10	CLEAR	incl. cap	3 bands/ dark south/62°	faint	1/ 5°-85°+	same density	23.7°-3,66"	wider
20.09.13	SC280 6-7/10	DARK	YES	2 bands/ dark south/46°	faint	1/140°-180°+	dark near EZ	23.1°-3,67"	1 bright in collar cap
21.09.13	MC180 9/10	DARK	YES	2 bands/ same dens./43°	faint	no	dark near EZ	23.0°-3,67"	CM0°-50°
04.10.13	N514 5-6/10	DARK strong	YES strong	uniform density	not seen	no	uniform density	22.5°-3,68"	G 200x ONLY
05.10.13	SC280 6/10	FAINT DARK	YES	1 band uniform darkS/43°	faint	1/ 20°-110°	clearer than S.hemi	22.5°-3,68"	
05.10.13	SC280 6/10	FAINT DARK	YES	1 band uniform darkS/43°	faint	1/ 20°-110°		22.5°-3,68"	50min after
12.10.13	Cass230 7/10	FAINT DARK	YES	1 band uniform darkS/49°	faint	1/340°-20°	lightly darker near ez	22.2°-3,68"	
16.10.13	Cass230 5-6/10	CLEAR	incl. cap	1 band uniform/ 47°	faint	1/ 120°-200°+	uniform density	22.1°-3,67"	
18.10.13	Cass230 5-6/10	DARK	YES	1 band uniform darkS/50°	faint	1/ 30°-90°	lightly darker near ez	22.0°-3,67"	
26.10.13	Cass230 5-6/10	DARK strong	YES	2 bands uniform/ 50°	faint	2/130-180°+/0°+-50°	lightly darker near ez	21.7°-3,66"	
08.11.13	Cass230 5-6/10	DARK	YES	1 band uniform/38°	faint	1/60°+-120°	lightly darker near ez	21.3°-3,64"	
10.11.13	Cass230 5-6/10	DARK	YES	2 bands dark south/ 38°	improved	no	dark improved	21.2°-3,64"	1 bright in collar cap
15.11.13	Cass230 5-6/10	DARK	YES	1 band uniform darkS/39°	faint	1/ 70°-145°+	dark improved	21.1°-3,63"	CM20°-110°
02.12.13	Cass230 6-7/10	FAINT DARK	YES	1 band uniform darkS/38°	improved	no	dark improved	20.7°-3,59"	
02.12.13	MC180 7/10	CLEAR	incl. cap	1 band uniform darkS/39°	improved	no	dark improved	20.7°-3,59"	
08.12.13	Cass230 7-9/10	DARK	YES	1 band uniform darkS/39°	improved	no	dark improved	20.7°-3,57"	
09.12.13	Cass230 7-9/10	FAINT DARK	YES	2 bands DARK south/ 41°	improved	1/ 150°-210°	dark near EZ	20.7°-3,57"	
12.12.13	Cass230 5-6/10	DARK	YES	1 band uniform darkS/41°	improved	1/ 230°-280°+	dark near EZ	20.7°-3,55"	1 bright in collar cap
15.12.13	Cass230 6-7/10	DARK	YES	1 band uniform darkS/41°	clear	1/ 220°-150°	dark near EZ	20.7°-3,54"	CM140°-100°+
20.12.13	Cass230 8-9/10	FAINT DARK	YES	1 band uniform darkS/50°	improved	1/ 220°-150°+	dark near EZ	20.7°-3,53"	
03.01.14	Cass230 5-6/10	FAINT DARK	YES	1 band uniform darkS/51°	faint	1/ 60°-145°+	dark near EZ	20.8°-3,48"	
11.01.14	Cass230 5-6/10	CLEAR	incl. cap	1 band uniform/51°	faint	1/ 70°-190°+	dark near EZ	20.9°-3,46"	
13.01.14	Cass230 6-7/10	FAINT DARK	YES	1 band uniform/51°	faint	2/ 75°-115°/320°-290	dark near EZ	21.0°-3,46"	
14.01.14	Cass230 5-6/10	FAINT DARK	YES	1 band uniform darkS/51°	faint	2/220°-250°+/150°	dark near EZ	21.0°-3,45"	
19.01.14	Cass230 6-7/10	FAINT DARK	YES	1 band uniform/43°	faint	1/180°-240°+	dark near EZ	21.1°-3,44"	
13.02.14	Cass230 5-6/10	FAINT DARK	YES	1 band uniform/44°	improved	no	dark near EZ	22.0°-3,38"	

nights	3	4	6	3	6	5	1	28	
	aug,13	sept,13	oct,13	nov,13	dec,13	jan,14	feb,14	Total	