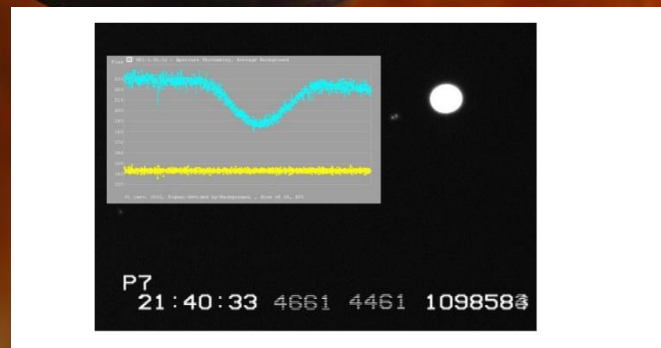
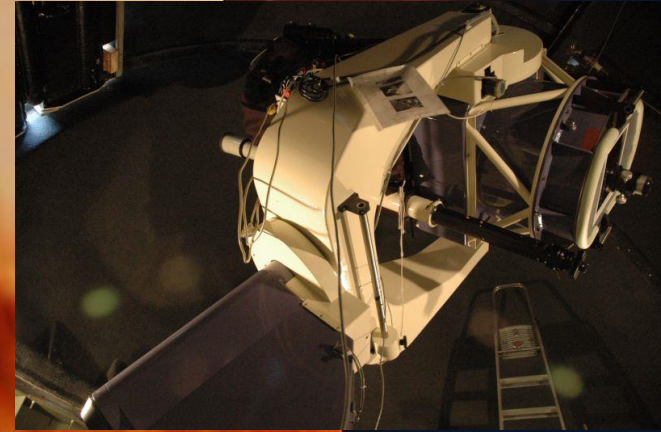


Observer les phénix au T60 du Pic du Midi et au T60 de Buthiers



Les Phémus avec les satellites Galileens au Pic du Midi (IAU 586)

v5.20.11i Planet: Jupiter
Planet
Observatory N: 586 - Pic du Midi
Timescale: UTC
Mean equator and equinox of J2000.1 CRF.

Mutual events of satellites	Time	Type	Dur(m)	Impact	m	Δm	limb(°)	dist(°)	Planet(°)	Sun(°)	Moon phase
Date begin: h m s end : h m s											
2021 1 7 16 42 14	17 6	13	2,00E+01 24.0	0.057	5.1	0.870	77.00	6.12	11.733	-0.640	0.406
2021 2 12 6 45 22	6 52	39 201	7.3	0.107	5.1	0.566	76.39		1.140	-3.496	0.045
2021 2 28 7 0 9	7 11	10	4,00E+02 11.0	0.212	5.4	0.947	80.99	40.26	11.876	3.449	0.920
2021 3 14 6 34 28	6 39	34 103	5.1	0.903	4.7	0.016	81.35		15.104	3.187	0.064
2021 3 16 4 55 7	5 1	37	2,00E+01 6.5	0.256	5.1	0.689	73.90	20.33	0.402	-14.345	0.178
2021 3 16 6 11 8	6 12	25 201	1.3	0.970	5.1	0.003	65.36		12.688	-0.445	0.181
2021 3 18 5 7 11	5 12	53 401	5.7	0.129	5.2	1.113	13.21		3.584	-11.507	0.298
2021 3 26 4 50 4	4 57	19	1,00E+04 7.3	0.481	5.2	0.295	34.08	73.37	5.259	-11.941	0.810
2021 3 28 4 37 14	4 40	29 102	3.2	0.603	5.0	0.169	35.53		4.259	-13.547	0.952
2021 4 4 5 26 21	5 31	2	1,00E+02 4.7	0.396	5.0	0.506	57.38	36.29	15.830	-2.495	0.510
2021 4 12 4 16 38	4 42	54	1,00E+04 26.3	0.098	5.1	0.483	8.43	63.36	9.411	-12.201	0.023
2021 4 17 3 9 17	3 13	26	2,00E+01 4.1	0.692	4.9	0.170	69.39	38.58	1.040	-21.194	0.307
2021 4 24 5 24 12	5 27	30	2,00E+01 3.3	0.805	4.9	0.085	68.11	42.55	25.099	2.964	0.779
2021 4 27 2 34 7	2 40	46	2,00E+03 6.7	0.696	4.6	0.162	51.73	69.46	1.046	-22.829	0.983
2021 5 4 5 50 12	5 58	9	2,00E+03 8.0	0.478	4.6	0.390	43.87	74.93	31.346	9.977	0.467
2021 5 6 3 26 34	3 32	5	1,00E+02 5.5	0.159	4.8	0.626	86.55	46.06	15.029	-13.344	0.342
2021 5 13 5 41 1	5 46	32	1,00E+02 5.5	0.285	4.8	0.609	92.74	46.95	33.162	10.052	0.091
2021 5 14 3 43 53	3 52	43	3,00E+01 8.8	0.162	4.4	0.567	56.22	67.49	21.793	-9.090	0.147
2021 5 18 5 40 16	5 47	19	1,00E+03 7.1	0.039	4.4	0.977	4.68	79.11	34.184	10.692	0.401
2021 5 21 2 36 9	2 40	23	3,00E+02 4.2	0.905	4.4	0.036	97.09	76.13	15.764	-16.909	0.596
2021 5 29 2 27 55	3 17	31	3,00E+01 49.6	0.145	4.3	0.567	36.61	42.13	19.015	-16.668	0.790
2021 6 7 1 36 22	1 41	18	1,00E+02 4.9	0.648	4.6	0.205	112.72	45.15	16.422	-20.604	0.200
2021 6 14 3 53 58	3 58	33	1,00E+02 4.6	0.736	4.5	0.130	117.69	43.07	34.348	-4.540	0.237
2021 6 18 5 25 35	5 55	23	2,00E+04 29.8	0.551	4.8	0.185	13.86	69.12	34.236	9.934	0.509
2021 7 4 0 6 19	0 10	0	3,00E+01 3.7	0.896	4.0	0.040	85.08	64.74	18.712	-24.354	0.365
2021 7 7 0 47 13	0 49	3	1,00E+03 1.8	0.970	4.0	0.005	96.70	65.92	25.800	-23.853	0.184
2021 7 9 0 5 54	0 7	19	1,00E+02 1.4	0.985	4.4	0.002	130.49	30.49	21.487	-24.868	0.064
2021 8 1 22 0 49	0 5	35 302	124.8	0.997	4.0	0.000	149.17		17.576	-23.041	0.415
2021 8 8 20 13 42	21 18	44	3,00E+02 65.0	0.635	4.0	0.205	84.22	7.68	5.193	-11.024	0.034
2021 8 9 3 37 8	4 44	41	3,00E+02 67.5	0.343	4.0	0.465	174.12	6.66	22.712	-13.796	0.050
2021 8 19 4 15 7	4 34	14	1,00E+03 19.1	0.709	3.9	0.112	3.19	2.92	10.364	-10.099	0.760
2021 8 30 19 2 52	19 15	28	3,00E+02 12.6	0.766	4.0	0.120	205.20	13.26	8.849	-5.393	0.470

Les Phémus avec les satellites internes au Pic du Midi (IAU 586)

v5.20.11i	Planet: Ju	pit	er	CALCEPH	:	(INPOP17a)								
Planet															
Observatory N: 586 -	Pi		c d			u Midi									
Timescale: UTC															
Mean equator and equino of			J2		000. l		CRF.								
Mutual events of satell	tes	:													
Date begin: h m s end	: h		m		s	Type	Dur(m)	Impact	m	Δm	limb(")	dist(")	Planet(g) Sun(g)	Moon phase
2021 1 21 16 0 13			16		3	58	1,00E+06 3.8	0.277	16.44	-	32.50	2.29	12.437	8.380	0.548
2021 1 21 17 8 47			17		11	39	2,00E+06 2.9	0.087	16.44	-	23.40	3.98	2.057	-2.405	0.551
2021 2 8 7 4 50			7		7	1	1,00E+06 2.2	0.070	16.44	-	11.63	3.11	2.199	-0.992	0.242
2021 3 3 6 19 16			6		20	57	1,00E+06 1.7	0.568	16.40	-	1.46	11.90	7.124	-3.039	0.703
2021 3 5 6 43 54			6		46	8	2,00E+06 2.2	0.074	16.39	-	4.52	17.74	11.977	2.051	0.555
2021 3 10 5 34 17			5		34	49	1,00E+08 0.5	0.971	18.18	-	5.75	11.31	3.616	-9.134	0.208
2021 3 11 5 55 38			6		0	2	3,00E+06 4.4	0.821	16.37	-	33.82	26.36	7.645	-4.894	0.141
2021 3 19 4 47 51			4		48	57	1,00E+07 1.1	0.785	19.74	-	3.19	14.64	0.885	-14.662	0.357
2021 3 26 6 51 15			7		2	31	1,00E+08 11.3	0.415	18.12	-	2.93	11.12	22.868	10.164	0.816
2021 3 30 4 29 36			4		31	50	2,00E+08 2.2	0.339	18.10	-	10.16	25.28	4.126	-14.215	0.884
2021 3 30 4 52 15			4		55	8	2,00E+07 2.9	0.481	19.70	-	13.48	23.98	7.868	-10.231	0.883
2021 3 30 5 2 54			5		4	53	2,00E+06 2.0	0.588	16.30	-	20.07	28.64	9.580	-8.330	0.883
2021 4 2 5 33 34			5		35	37	1,00E+08 2.1	0.522	18.08	-	8.13	16.36	15.857	-1.822	0.655
2021 4 4 3 54 37			4		0	2	1,00E+08 5.4	0.356	18.07	-	12.92	14.08	1.091	-18.466	0.514
2021 4 6 6 36 15			6		38	1	2,00E+08 1.8	0.473	18.06	-	5.57	29.08	25.710	10.921	0.369
2021 4 11 5 49 54			5		54	22	1,00E+08 4.5	0.246	18.04	-	13.66	15.98	22.438	3.942	0.054
2021 4 18 3 43 4			3		45	41	1,00E+08 2.6	0.261	18.00	-	10.09	19.23	7.369	-15.793	0.369
2021 4 18 4 18 50			4		27	56	1,00E+05 9.1	0.541	14.60	-	7.67	11.46	13.110	-10.002	0.371
2021 4 25 5 34 25			5		37	17	1,00E+08 2.9	0.125	17.96	-	11.07	20.18	26.671	5.044	0.855
2021 4 25 6 2 25			6		4	24	1,00E+07 2.0	0.146	19.56	-	1.75	22.95	29.449	10.096	0.856
2021 4 27 4 4 47			4		8	12	1,00E+08 3.4	0.038	17.95	-	14.64	20.02	15.879	-9.764	0.982
2021 4 30 2 27 19			2		32	54	3,00E+07 5.6	0.732	19.53	-	5.20	48.26	1.718	-22.785	0.764
2021 5 4 5 56 53			5		59	59	1,00E+08 3.1	0.132	17.90	-	14.87	21.68	31.837	11.178	0.466
2021 5 7 5 5 49			5		13	45	3,00E+07 7.9	0.548	19.48	-	14.62	54.66	28.428	2.784	0.275
2021 5 8 1 53 36			2		7	41	2,00E+05 14.1	0.256	14.48	-	19.89	27.99	0.839	-24.257	0.222
2021 5 8 2 13 54			2		15	18	2,00E+07 1.4	0.870	19.48	-	9.42	36.91	4.358	-22.172	0.221
2021 5 11 3 45 41			3		49	7	1,00E+08 3.4	0.135	17.86	-	13.41	21.72	20.515	-9.414	0.036
2021 5 13 1 43 59			1		45	50	1,00E+07 1.8	0.284	19.44	-	8.88	26.76	2.323	-23.923	0.081
2021 5 13 2 16 37			2		19	22	1,00E+08 2.8	0.255	17.84	-	15.01	23.45	7.893	-20.694	0.083
2021 5 18 5 37 54			5		41	40	1,00E+08 3.8	0.263	17.81	-	14.47	22.02	34.079	10.276	0.401
2021 5 18 5 42 59			5		45	46	1,00E+07 2.8	0.243	19.41	-	11.75	23.72	34.298	11.170	0.401
2021 5 20 4 7 56			4		10	24	1,00E+08 2.5	0.389	17.80	-	15.03	24.71	27.535	-4.414	0.531
2021 5 20 3 42 23			4		13	44	1,00E+07 31.4	1.000	19.40	-	10.88	19.61	24.524	-8.271	0.530
2021 5 20 5 8 26			5		12	35	1,00E+05 4.1	0.778	14.39	-	27.47	19.52	32.900	5.456	0.534
2021 5 27 1 59 37			2		4	4	1,00E+08 4.5	0.369	17.75	-	15.73	21.77	13.563	-19.844	0.947
2021 6 3 3 12 49			3		15	17	1,00E+06 2.5	0.057	15.90	-	19.50	29.48	27.353	-10.710	0.441
2021 6 3 3 54 15			3		59	49	1,00E+08 5.6	0.459	17.70	-	16.39	21.18	31.464	-4.927	0.439
2021 6 3 4 51 30			4		58	11	1,00E+08 6.7	0.413	17.70	-	3.47	18.11	34.922	4.006	0.437
2021 6 5 1 8 20			1		9	30	1,00E+06 1.2	0.815	15.88	-	2.96	35.97	10.771	-22.663	0.322

Les Phémus avec les satellites Galileens au TJMS (IAU 199)

v5.20.11i Planet: Ju		pit	er	CALC	EPH: (INPOP17a)							
Planet														
Observatory N: 199 -		Bu	thi	ers										
Timescale: UTC														
Mean equator and equinox of			J2	000.	ICRF.									
Mutual events of satelli		tes	:											
Date begin: h m s end		: h	m	s	Type	Dur(m)	Impact	m	Δm	limb(")	dist(")	Planet(°)	Sun(°)	Moon phase
2021 1 7 15 9 23			15	43	47 201	34.4	0.369	5.1	0.328	70.18	:	16.974	7.616	0.410
2021 1 7 16 42 14			17	6	13 2,00E+01	24.0	0.057	5.1	0.870	77.00	6.12	7.018	-4.677	0.406
2021 1 18 8 54 39			9	6	42 201	12.0	0.431	5.1	0.279	79.10	:	6.695	9.745	0.350
2021 2 12 6 45 22			6	52	39 201	7.3	0.107	5.1	0.566	76.39	:	0.221	-3.421	0.045
2021 2 28 7 0 9			7	11	10 4,00E+02	11.0	0.212	5.4	0.947	80.99	40.26	9.906	3.611	0.920
2021 3 14 6 34 28			6	39	34 103	5.1	0.903	4.7	0.016	81.35	:	12.870	4.095	0.064
2021 3 16 6 11 8			6	12	25 201	1.3	0.970	5.1	0.003	65.36	:	10.777	0.904	0.181
2021 3 18 5 7 11			5	12	53 401	5.7	0.129	5.2	1.113	13.21	:	2.721	-9.068	0.298
2021 3 26 4 50 4			4	57	19 1,00E+04	7.3	0.481	5.2	0.295	34.08	73.37	4.290	-9.084	0.810
2021 3 28 4 37 14			4	40	29 102	3.2	0.603	5.0	0.169	35.53	:	3.414	-10.457	0.952
2021 4 4 5 26 21			5	31	2 1,00E+02	4.7	0.396	5.0	0.506	57.38	36.29	13.709	-0.043	0.510
2021 4 12 4 16 38			4	42	54 1,00E+04	26.3	0.098	5.1	0.483	8.43	63.36	8.132	-8.576	0.023
2021 4 17 3 9 17			3	13	26 2,00E+01	4.1	0.692	4.9	0.170	69.39	38.58	0.690	-16.620	0.307
2021 4 24 5 24 12			5	27	30 2,00E+01	3.3	0.805	4.9	0.085	68.11	42.55	21.836	5.799	0.779
2021 4 27 2 34 7			2	40	46 2,00E+03	6.7	0.696	4.6	0.162	51.73	69.46	0.765	-17.800	0.983
2021 5 6 3 26 34			3	32	5 1,00E+02	5.5	0.159	4.8	0.626	86.55	46.06	13.266	-8.808	0.342
2021 5 14 3 43 53			3	52	43 3,00E+01	8.8	0.162	4.4	0.567	56.22	67.49	19.183	-4.681	0.147
2021 5 21 2 36 9			2	40	23 3,00E+02	4.2	0.905	4.4	0.036	97.09	76.13	13.992	-11.777	0.596
2021 5 29 2 27 55			3	17	31 3,00E+01	49.6	0.145	4.3	0.567	36.61	42.13	16.857	-11.440	0.790
2021 6 7 1 36 22			1	41	18 1,00E+02	4.9	0.648	4.6	0.205	112.72	45.15	14.620	-15.075	0.200
2021 6 14 3 53 58			3	58	33 1,00E+02	4.6	0.736	4.5	0.130	117.69	43.07	29.537	-0.028	0.237
2021 7 4 0 6 19			0	10	0 3,00E+01	3.7	0.896	4.0	0.040	85.08	64.74	16.599	-18.943	0.365
2021 7 7 0 47 13			0	49	3 1,00E+03	1.8	0.970	4.0	0.005	96.70	65.92	22.649	-18.279	0.184
2021 7 9 0 5 54			0	7	19 1,00E+02	1.4	0.985	4.4	0.002	130.49	30.49	18.977	-19.465	0.064
2021 8 1 22 0 49			0	5	35 302	124.8	0.997	4.0	0.000	149.17	:	15.461	-19.253	0.415
2021 8 8 20 13 42			21	18	44 3,00E+02	65.0	0.635	4.0	0.205	84.22	7.68	4.474	-9.236	0.034
2021 8 9 3 37 8			4	44	41 3,00E+02	67.5	0.343	4.0	0.465	174.12	6.66	17.753	-9.282	0.050
2021 8 19 4 15 7			4	34	14 1,00E+03	19.1	0.709	3.9	0.112	3.19	2.92	6.359	-6.200	0.760
2021 8 30 19 2 52			19	15	28 3,00E+02	12.6	0.766	4.0	0.120	205.20	13.26	7.589	-5.256	0.470

Les Phémus avec les satellites internes au TJMS (IAU 199)

v5.20.11i	Planet: Jupiter	CALC	EPH: (INPOP17a)									
Planet													
Observatory N: 199 - Butthiers													
Timescale: UTC													
Mean equator and equinox	of	J2	000.	ICRF.									
Mutual events of satellites													
Date begin: h m s end	: h	m	s	Type	Dur(m)	Impact	m	Δm	limb(°)	dist(°)	Planet(°)	☉ Sun(°)	Moon phase
2021 1 21 15 20 18		15	24	43	1,00E+05 4.4	0.742	14.84	-	24.76	1.98	12.548	9.039	0.546
2021 1 21 16 0 13		16	3	58	1,00E+06 3.8	0.277	16.44	-	32.50	2.29	7.741	3.911	0.548
2021 2 1 8 46 17		9	40	38	2,00E+06 54.4	0.944	16.44	-	29.54	0.66	11.562	11.408	0.743
2021 2 8 7 4 50		7	7	1	1,00E+06 2.2	0.070	16.44	-	11.63	3.11	1.134	-1.337	0.242
2021 3 3 6 19 16		6	20	57	1,00E+06 1.7	0.568	16.40	-	1.46	11.90	5.738	-2.105	0.703
2021 3 5 6 43 54		6	46	8	2,00E+06 2.2	0.074	16.39	-	4.52	17.74	10.044	2.605	0.555
2021 3 10 5 34 17		5	34	49	1,00E+08 0.5	0.971	18.18	-	5.75	11.31	2.676	-7.297	0.208
2021 3 11 5 55 38		6	0	2	3,00E+06 4.4	0.821	16.37	-	33.82	26.36	6.276	-3.391	0.141
2021 3 19 4 47 51		4	48	57	1,00E+07 1.1	0.785	19.74	-	3.19	14.64	0.311	-11.895	0.357
2021 3 26 6 51 15		7	2	31	1,00E+08 11.3	0.415	18.12	-	2.93	11.12	19.663	11.031	0.816
2021 3 30 4 29 36		4	31	50	2,00E+08 2.2	0.339	18.10	-	10.16	25.28	3.313	-10.975	0.884
2021 3 30 4 52 15		4	55	8	2,00E+07 2.9	0.481	19.70	-	13.48	23.98	6.650	-7.338	0.883
2021 3 30 5 2 54		5	4	53	2,00E+06 2.0	0.588	16.30	-	20.07	28.64	8.169	-5.602	0.883
2021 4 2 5 33 34		5	35	37	1,00E+08 2.1	0.522	18.08	-	8.13	16.36	13.714	0.480	0.655
2021 4 4 3 54 37		4	0	2	1,00E+08 5.4	0.356	18.07	-	12.92	14.08	0.634	-14.636	0.514
2021 4 11 5 49 54		5	54	22	1,00E+08 4.5	0.246	18.04	-	13.66	15.98	19.467	6.155	0.054
2021 4 18 3 43 4		3	45	41	1,00E+08 2.6	0.261	18.00	-	10.09	19.23	6.364	-11.634	0.369
2021 4 18 4 18 50		4	27	56	1,00E+05 9.1	0.541	14.60	-	7.67	11.46	11.449	-6.325	0.371
2021 4 25 5 34 25		5	37	17	1,00E+08 2.9	0.125	17.96	-	11.07	20.18	23.154	7.744	0.855
2021 4 27 4 4 47		4	8	12	1,00E+08 3.4	0.038	17.95	-	14.64	20.02	13.948	-5.785	0.982
2021 4 30 2 27 19		2	32	54	3,00E+07 5.6	0.732	19.53	-	5.20	48.26	1.390	-17.677	0.764
2021 5 7 5 5 49		5	13	45	3,00E+07 7.9	0.548	19.48	-	14.62	54.66	24.705	6.079	0.275
2021 5 8 1 53 36		2	7	41	2,00E+05 14.1	0.256	14.48	-	19.89	27.99	0.646	-18.864	0.222
2021 5 8 2 13 54		2	15	18	2,00E+07 1.4	0.870	19.48	-	9.42	36.91	3.807	-16.919	0.221
2021 5 11 3 45 41		3	49	7	1,00E+08 3.4	0.135	17.86	-	13.41	21.72	18.067	-5.052	0.036
2021 5 13 1 43 59		1	45	50	1,00E+07 1.8	0.284	19.44	-	8.88	26.76	2.008	-18.465	0.081
2021 5 13 2 16 37		2	19	22	1,00E+08 2.8	0.255	17.84	-	15.01	23.45	6.994	-15.442	0.083
2021 5 20 4 7 56		4	10	24	1,00E+08 2.5	0.389	17.80	-	15.03	24.71	24.060	-0.228	0.531
2021 5 20 3 42 23		4	13	44	1,00E+07 31.4	1.000	19.40	-	10.88	19.61	21.540	-3.794	0.530
2021 5 20 5 8 26		5	12	35	1,00E+05 4.1	0.778	14.39	-	27.47	19.52	28.355	8.888	0.534
2021 5 27 1 59 37		2	4	4	1,00E+08 4.5	0.369	17.75	-	15.73	21.77	12.082	-14.438	0.947
2021 6 3 3 12 49		3	15	17	1,00E+06 2.5	0.057	15.90	-	19.50	29.48	23.969	-5.840	0.441
2021 6 3 3 54 15		3	59	49	1,00E+08 5.6	0.459	17.70	-	16.39	21.18	27.314	-0.477	0.439
2021 6 3 4 51 30		4	58	11	1,00E+08 6.7	0.413	17.70	-	3.47	18.11	29.898	7.794	0.437
2021 6 5 1 8 20		1	9	30	1,00E+06 1.2	0.815	15.88	-	2.96	35.97	9.637	-17.075	0.322
2021 6 5 1 18 20		1	19	31	1,00E+07 1.2	0.710	19.28	-	0.37	30.41	11.075	-16.480	0.322
2021 6 5 2 18 12		2	19	58	1,00E+08 1.8	0.675	17.68	-	14.72	26.46	18.945	-11.669	0.319
2021 6 5 2 39 21		2	42	51	3,00E+08 3.5	0.294	17.68	-	8.92	65.80	21.356	-9.511	0.318
2021 6 5 2 34 58		2	58	29	1,00E+05 23.5	0.991	14.28	-	16.70	16.86	20.875	-9.976	0.318

Dispositifs d'acquisitions au T60 Pic du Midi

- Caméra WATEC 120 N + IOTA VTI pour la datation
- Caméra EMCCD Raptor Merlin 247 + datation ntp (voir si on utilise la voie video , avec le IOTA VTI)
- Filtre méthane
- Possibilité de faire un montage sur le T60 et un autre sur le Mak de 180 mm



Dispositifs d'acquisitions Télescope JM Salomon de Planète Sciences

Camera SBIG 8300 + datation avec arduino sur
horloge GPS + ntp observatoire de Paris

Possibilité de mettre en place une caméra
QHY 174M GPS (*plusieurs membres du GST
en ont d'un point de vue perso)



Prendre contact

- AT60 : arnaudastro@yahoo.fr
- TJMS : astronomie@planete-sciences.org

Planète Sciences, pôle Astronomie
16, place Jacques Brel

91130 Ris-Orangis FRANCE

tél: 01 69 02 76 10