

**STA\_SF (#0002):** Total of **1032** orbits.  $\lambda_o = 221.5^\circ$ ,  $\lambda_g - \lambda_o = 190.7^\circ$ ,  $\beta_g = -5.0^\circ$ ,  $\Delta r = 2^\circ$ ,  $\Delta \lambda_o = 5^\circ$ . ‘Southern Taurids’ are very complex but we can clearly distinct the two activities STA\_SE and STA\_SF. The former represents the early and regular activity of STA and the latter is main and periodic.

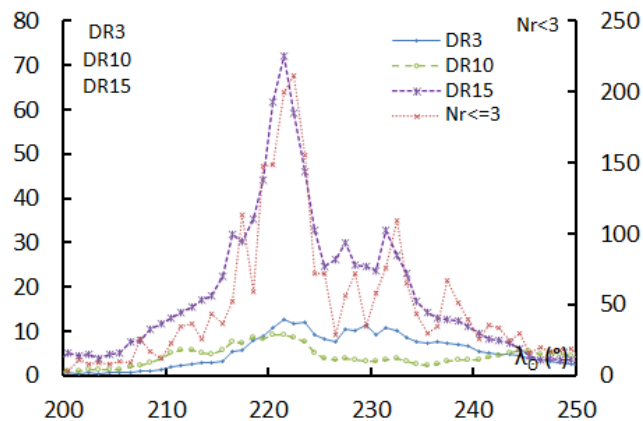
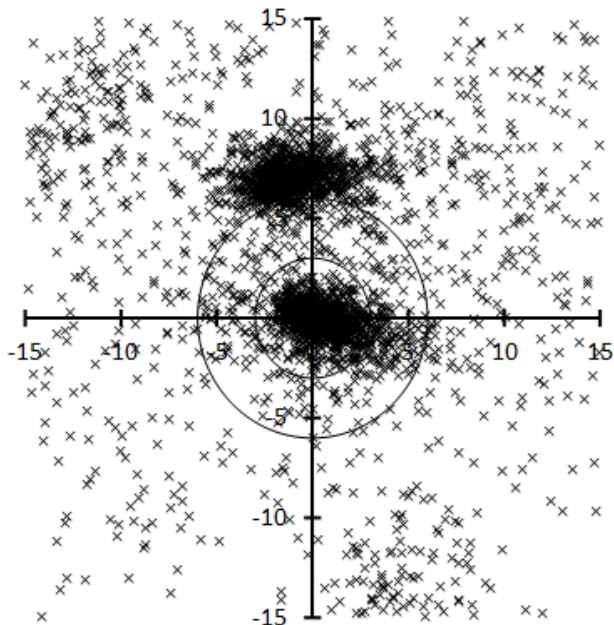


Table 1 – Number per year.

Year	N	Year	N
2007	17	2013	31
2008	170	2014	12
2009	43	2015	359
2010	40	2016	31
2011	27	2017	48
2012	160	2018	94

Table 2 – Activity profiles.

	$\lambda_o$	Max
Nr<=3	222.5	212
DR3	221.5	12.5
DR10	221.5	9.3
DR15	221.5	72.2

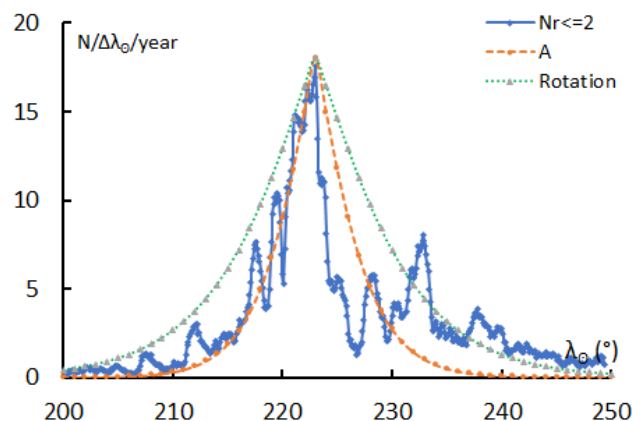


Table 3 – Evolution of the orbital parameters during the activity period.

$\lambda_o$	$\lambda_g - \lambda_o$	$\beta_g$	$\alpha_g$	$\delta_g$	$v_g$	$e$	$q$	$i$	$\omega$	$\Omega$	$\lambda_{\Pi}$	$\beta_{\Pi}$	$a$
200	202.5	-3.0	41.0	12.7	34.1	0.911	0.169	6.1	138.0	20.0	158.2	4.1	1.89
201	202.0	-3.1	41.5	12.8	33.8	0.907	0.176	6.1	137.0	21.0	158.1	4.2	1.90
202	201.6	-3.2	42.1	12.9	33.5	0.904	0.184	6.1	135.9	22.0	158.1	4.2	1.91
203	201.1	-3.3	42.6	13.0	33.3	0.900	0.192	6.0	134.8	23.0	158.0	4.3	1.92
204	200.6	-3.3	43.2	13.0	33.0	0.896	0.200	6.0	133.8	24.0	157.9	4.3	1.92
205	200.2	-3.4	43.7	13.1	32.7	0.892	0.208	6.0	132.7	25.0	157.9	4.4	1.93
206	199.7	-3.5	44.3	13.2	32.4	0.889	0.216	5.9	131.6	26.0	157.8	4.4	1.94
207	199.2	-3.6	44.8	13.3	32.2	0.885	0.224	5.9	130.6	27.0	157.7	4.5	1.95
208	198.8	-3.6	45.4	13.4	31.9	0.881	0.232	5.9	129.5	28.0	157.7	4.5	1.96
209	198.3	-3.7	45.9	13.5	31.6	0.877	0.241	5.8	128.5	29.0	157.6	4.6	1.96
210	197.9	-3.8	46.5	13.5	31.3	0.873	0.249	5.8	127.4	30.0	157.5	4.6	1.97
211	197.4	-3.8	47.0	13.6	31.0	0.870	0.258	5.8	126.3	31.0	157.5	4.6	1.98
212	196.9	-3.9	47.6	13.7	30.8	0.866	0.267	5.7	125.3	32.0	157.4	4.7	1.98
213	196.5	-4.0	48.1	13.8	30.5	0.862	0.275	5.7	124.2	33.0	157.3	4.7	1.99
214	196.0	-4.1	48.7	13.8	30.2	0.858	0.284	5.6	123.2	34.0	157.3	4.7	2.00
215	195.6	-4.1	49.3	13.9	29.9	0.854	0.293	5.6	122.1	35.0	157.2	4.8	2.00
216	195.1	-4.2	49.8	14.0	29.7	0.850	0.302	5.6	121.0	36.0	157.2	4.8	2.01
217	194.6	-4.3	50.4	14.0	29.4	0.846	0.310	5.5	120.0	37.0	157.1	4.8	2.01
218	194.2	-4.3	50.9	14.1	29.1	0.842	0.319	5.5	118.9	38.0	157.1	4.8	2.02
219	193.7	-4.4	51.5	14.2	28.8	0.838	0.328	5.5	117.9	39.0	157.0	4.8	2.02

Table 3 – Continued, evolution of the orbital parameters during the activity period.

$\lambda_{\theta}$	$\lambda_g - \lambda_{\theta}$	$\beta_g$	$\alpha_g$	$\delta_g$	$\nu_g$	$e$	$q$	$i$	$\omega$	$\Omega$	$\lambda_{\Pi}$	$\beta_{\Pi}$	$a$
220	193.3	-4.5	52.0	14.2	28.6	0.834	0.337	5.4	116.8	40.0	157.0	4.8	2.03
221	192.8	-4.6	52.6	14.3	28.3	0.830	0.346	5.4	115.8	41.0	156.9	4.9	2.03
222	192.3	-4.6	53.1	14.4	28.0	0.825	0.355	5.4	114.8	42.0	156.9	4.9	2.04
223	191.9	-4.7	53.7	14.4	27.7	0.821	0.365	5.3	113.7	43.0	156.8	4.9	2.04
224	191.4	-4.8	54.2	14.5	27.4	0.817	0.374	5.3	112.7	44.0	156.8	4.9	2.04
225	190.9	-4.8	54.8	14.5	27.2	0.813	0.383	5.2	111.7	45.0	156.7	4.9	2.04
226	190.5	-4.9	55.4	14.6	26.9	0.809	0.392	5.2	110.6	46.0	156.7	4.9	2.05
227	190.0	-5.0	55.9	14.7	26.6	0.804	0.401	5.2	109.6	47.0	156.7	4.9	2.05
228	189.6	-5.0	56.5	14.7	26.3	0.800	0.410	5.1	108.6	48.0	156.6	4.9	2.05
229	189.1	-5.1	57.0	14.8	26.1	0.796	0.419	5.1	107.5	49.0	156.6	4.9	2.05
230	188.6	-5.2	57.6	14.8	25.8	0.791	0.428	5.1	106.5	50.0	156.6	4.9	2.05
231	188.2	-5.2	58.1	14.9	25.5	0.787	0.437	5.0	105.5	51.0	156.6	4.8	2.05
232	187.7	-5.3	58.7	14.9	25.2	0.782	0.446	5.0	104.5	52.0	156.5	4.8	2.05
233	187.2	-5.4	59.2	14.9	24.9	0.778	0.455	4.9	103.5	53.0	156.5	4.8	2.05
234	186.8	-5.4	59.8	15.0	24.7	0.773	0.464	4.9	102.5	54.0	156.5	4.8	2.05
235	186.3	-5.5	60.3	15.0	24.4	0.769	0.473	4.9	101.5	55.0	156.5	4.8	2.05
236	185.9	-5.6	60.9	15.1	24.1	0.764	0.482	4.8	100.5	56.0	156.5	4.7	2.04
237	185.4	-5.6	61.5	15.1	23.8	0.759	0.491	4.8	99.5	57.0	156.5	4.7	2.04
238	184.9	-5.7	62.0	15.2	23.6	0.755	0.500	4.8	98.5	58.0	156.5	4.7	2.04
239	184.5	-5.8	62.6	15.2	23.3	0.750	0.509	4.7	97.5	59.0	156.5	4.7	2.04
240	184.0	-5.8	63.1	15.2	23.0	0.745	0.518	4.7	96.5	60.0	156.6	4.6	2.03
241	183.5	-5.9	63.7	15.3	22.7	0.740	0.527	4.6	95.6	61.0	156.6	4.6	2.03
242	183.1	-5.9	64.2	15.3	22.5	0.735	0.535	4.6	94.6	62.0	156.6	4.6	2.02
243	182.6	-6.0	64.8	15.3	22.2	0.730	0.544	4.6	93.6	63.0	156.6	4.5	2.02
244	182.1	-6.1	65.3	15.4	21.9	0.725	0.553	4.5	92.7	64.0	156.7	4.5	2.01
245	181.7	-6.1	65.9	15.4	21.6	0.720	0.561	4.5	91.7	65.0	156.7	4.5	2.00
246	181.2	-6.2	66.5	15.4	21.3	0.715	0.570	4.4	90.8	66.0	156.8	4.4	2.00
247	180.7	-6.3	67.0	15.4	21.1	0.709	0.578	4.4	89.8	67.0	156.8	4.4	1.99
248	180.3	-6.3	67.6	15.5	20.8	0.704	0.587	4.3	88.9	68.0	156.9	4.3	1.98
249	179.8	-6.4	68.1	15.5	20.5	0.699	0.595	4.3	87.9	69.0	156.9	4.3	1.97
250	179.4	-6.4	68.7	15.5	20.2	0.693	0.603	4.3	87.0	70.0	157.0	4.3	1.97