



**PROGRAM
CEZHRANIČNEJ
SPOLUPRÁCE**
SLOVENSKÁ REPUBLIKA
ČESKÁ REPUBLIKA



**EURÓPSKA ÚNIA
EURÓPSKY FOND
REGIONÁLNEHO ROZVOJA**
SPOLOČNE BEZ HRANÍČ



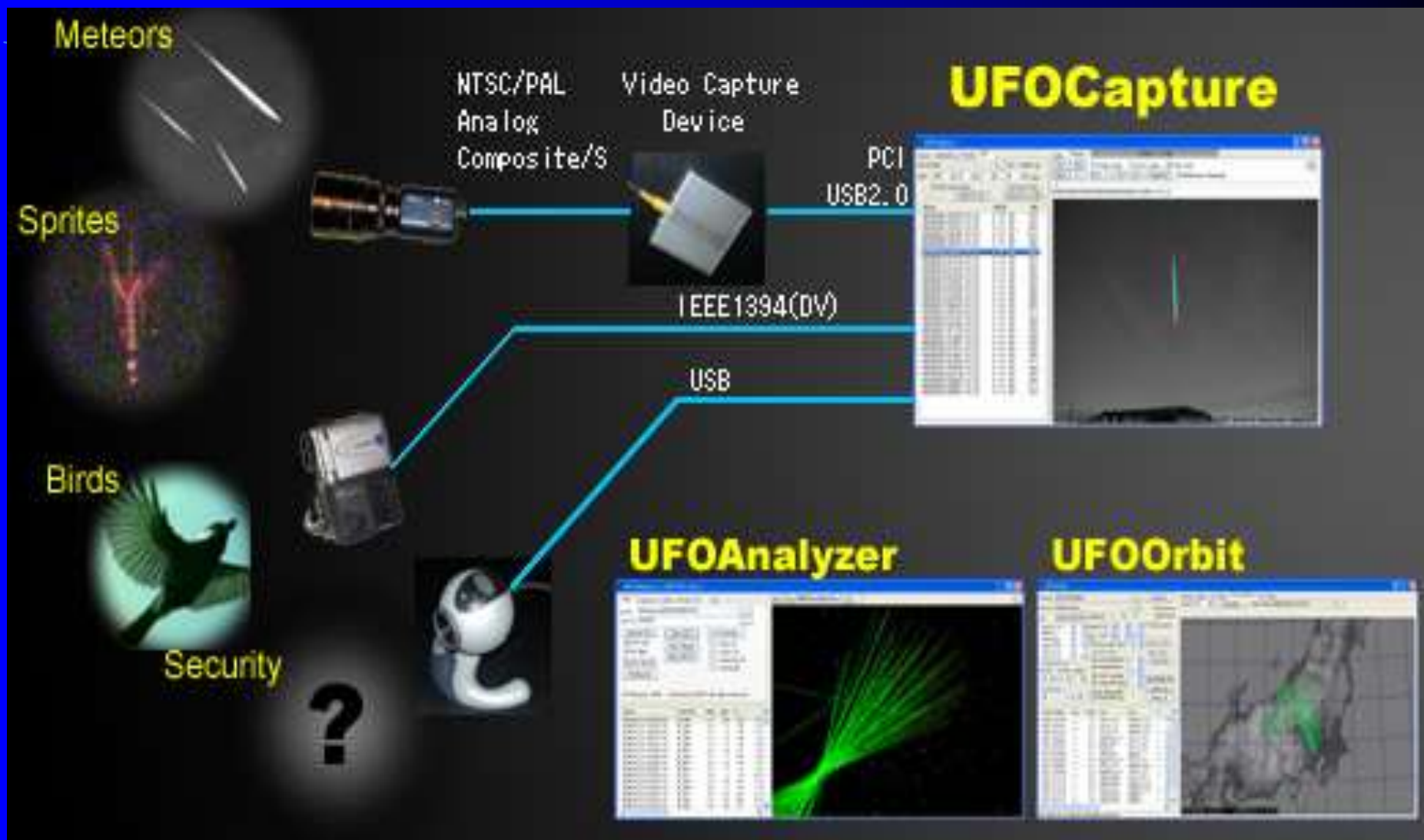
FOND MIKROPROJEKTŮ



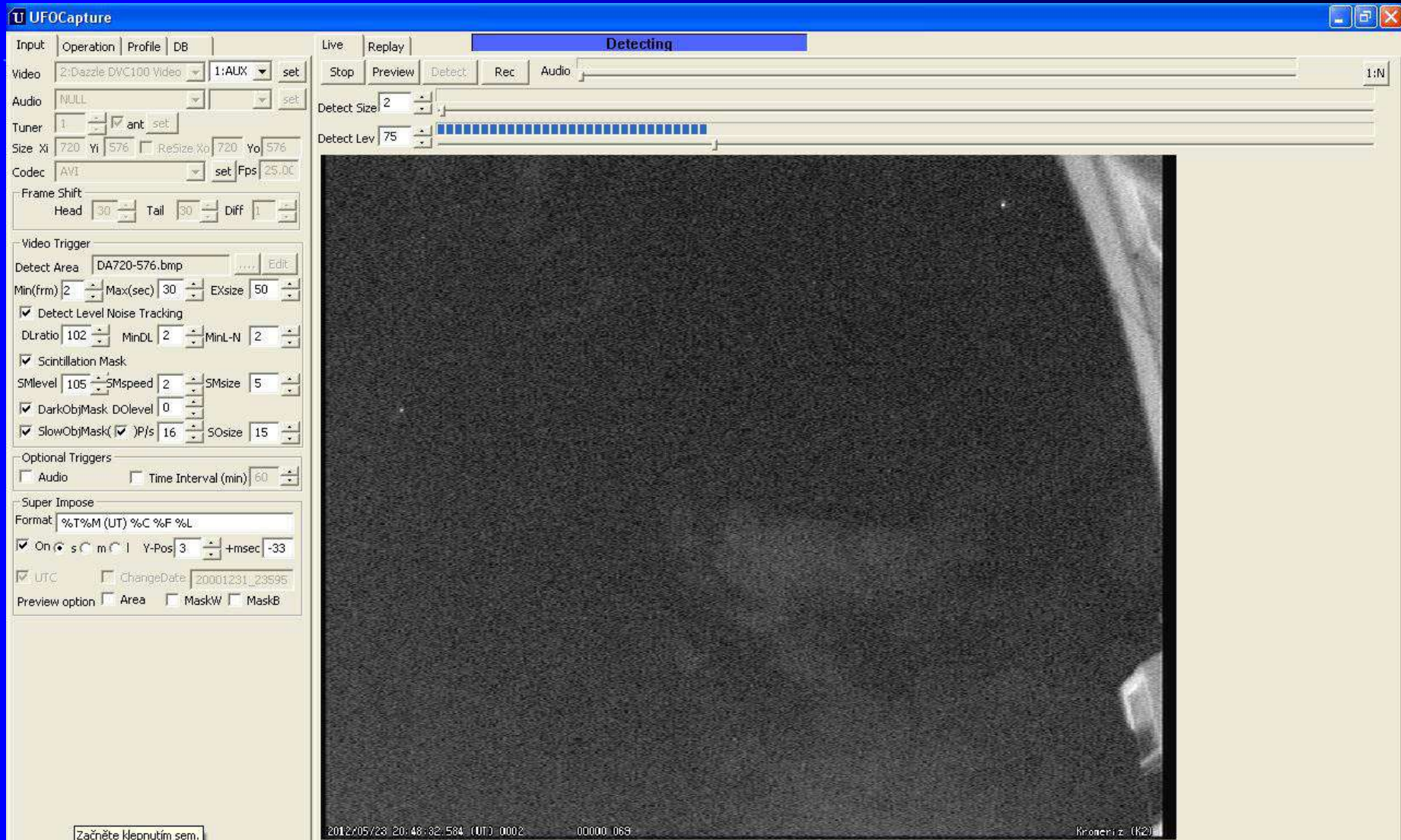
SOFTWARE PRO VIDEOPOZOROVÁNÍ METEORICKÝCH ROJŮ UFO TOOLS

Jakub Koukal

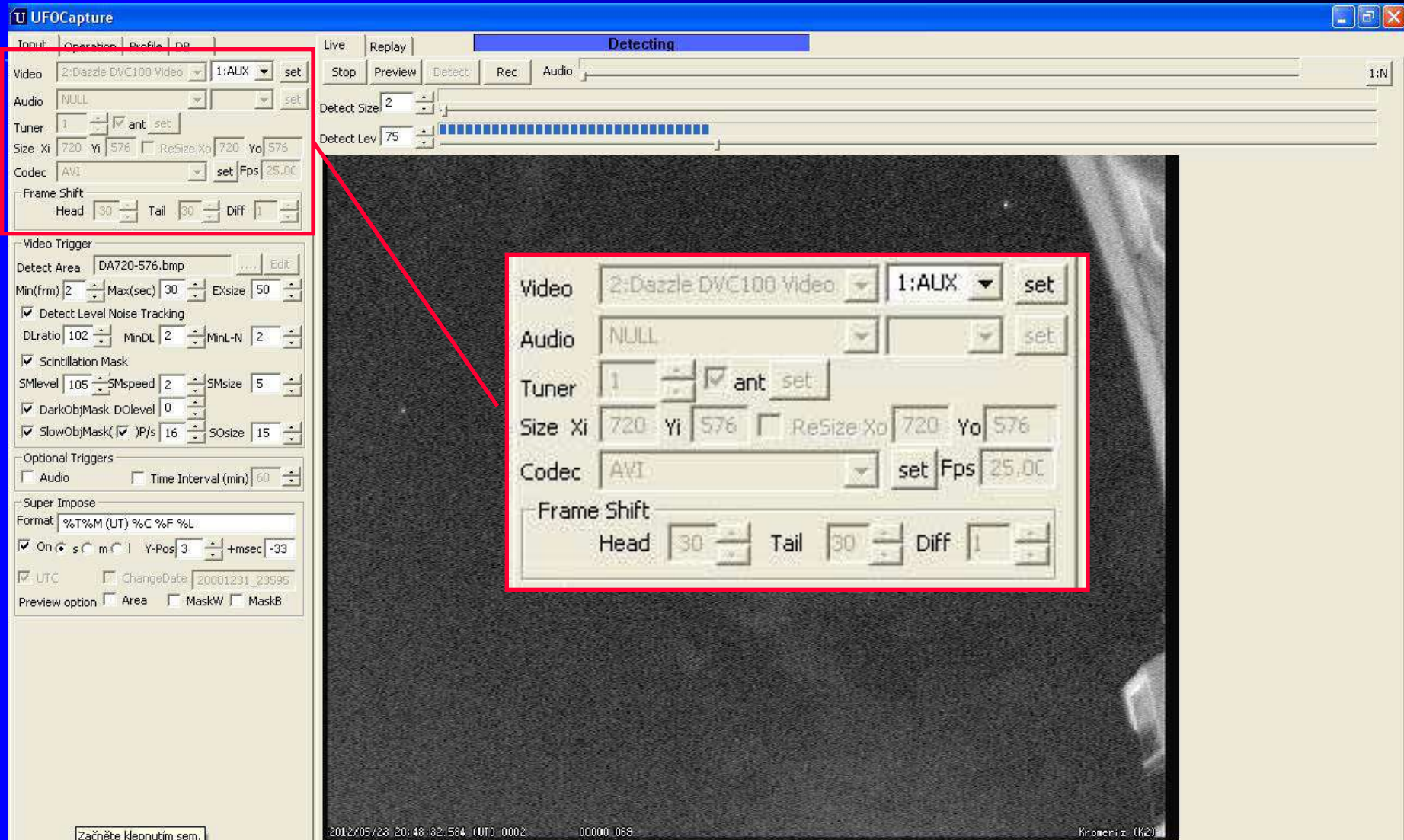
BALÍK PROGRAMŮ UFO



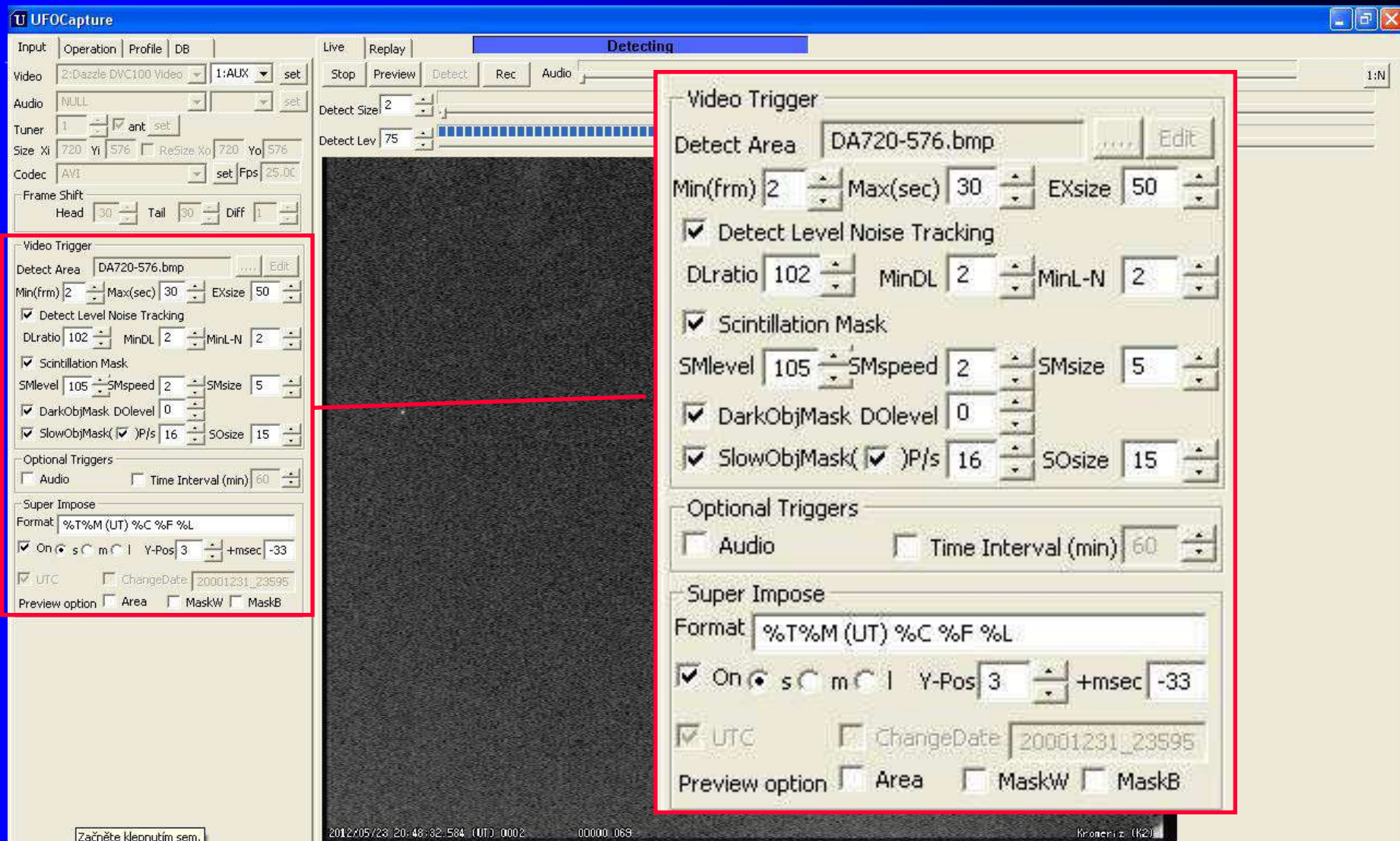
UFO CAPTURE



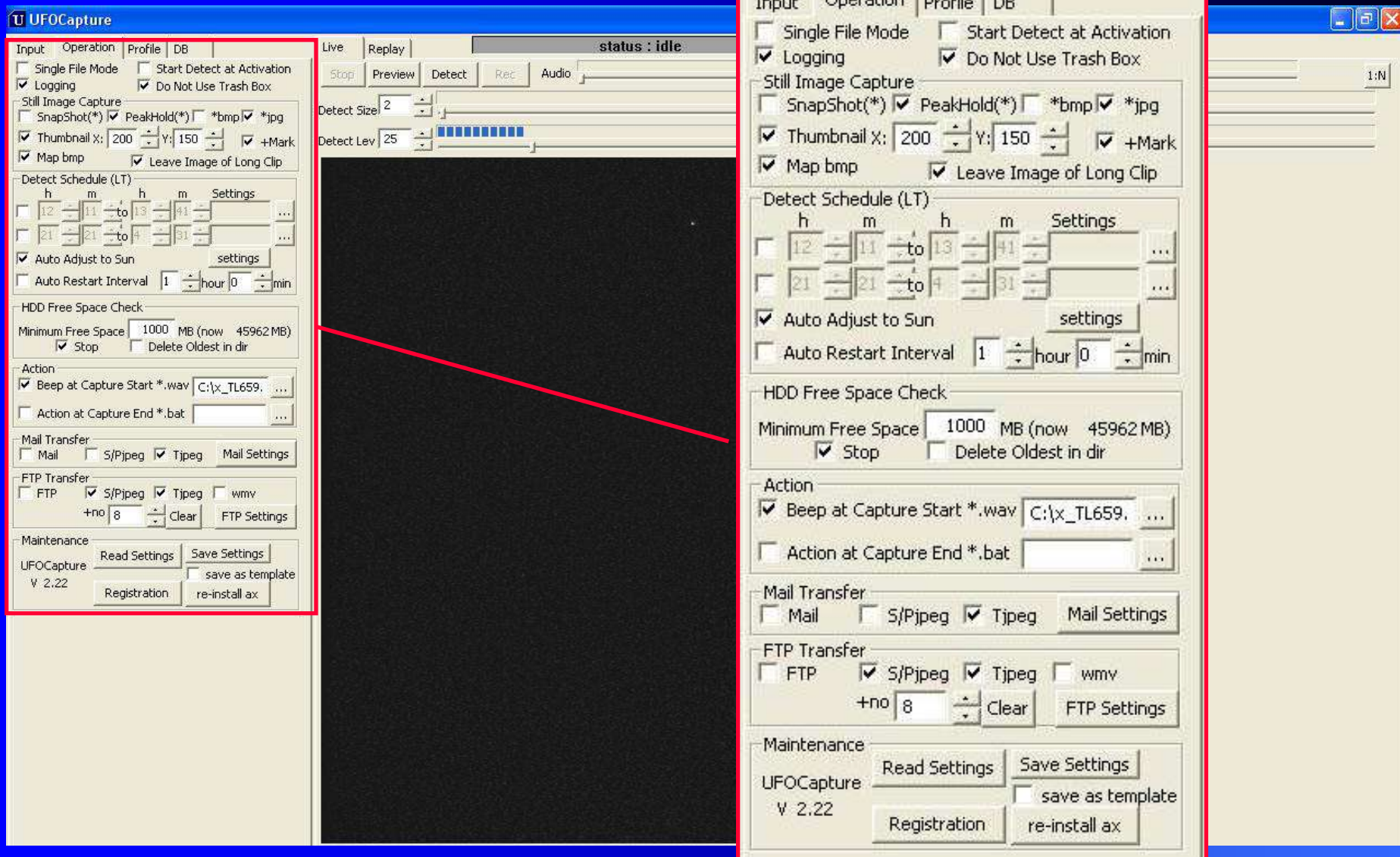
UFO CAPTURE - PARAMETRY



UFO CAPTURE - PARAMETRY



UFO CAPTURE - PARAMETRY



UFO CAPTURE - PARAMETRY

The screenshot displays the UFOCapture application window. The 'Input' tab is selected, showing a form for configuring capture parameters. A red box highlights the 'Input' tab and its associated fields. A red arrow points from the 'Input' tab to a larger, detailed view of the same form on the right.

UFOCapture

status : idle

Input | Operation | Profile | DB

Serial ID

Observer name: XOUJA

Location ID (max12AN): Kromeriz

Longitude(E+): 17.3960

Latitude(N+): 49.3040

Altitude(m): 219.0

Camera ID (max2AN): JK

Camera name: Watec

Lens name: GADN

Capture eq. name:

☒ Interlace ☐ Bottom Field First

Comment:

Input | Operation | Profile | DB

Serial ID

Observer name: XOUJA

Location ID (max12AN): Kromeriz

Longitude(E+): 17.3960

Latitude(N+): 49.3040

Altitude(m): 219.0

Camera ID (max2AN): JK

Camera name: Watec

Lens name: GADN

Capture eq. name:

☒ Interlace ☐ Bottom Field First

Comment:

UFO ANALYZER

UFOAnalyzerV2 E:\Uložiska\K_1120120518W20120519_010656_KM_Zach_2_K1

Main Profile/Analyze Class Plot Uty

M20120519_010656_KM_Zach_2 read P save P save A

lid M_Zach_2 sid K1 observer KOUJA ☒ intlc

can c902H2U lens GADN cap ☐ bbf

lng 17.3831 lat 49.2893 alt 222 tz 0

tme 1.0 memo step 000.10C

☒ fovr 84.1466 ☒ yx 0.9181 atc 58.3

☐ k4 0.0530 ☒ k3 -0.1433 ☒ k2 0.0579

☒ dx -21.60 ☒ dy -16.26 ☒ rot 1.6501

☒ az 45.1895 ☒ ev 40.4446 move

adj pos all ddpix lrr mask 188 link 96

A pos 0.00001(dpx avr 0.253 max 0.536

D 3 ddeg avr 0.030 max 0.062

J (2012/05/19 01:06:536870912)

U levH 255 magL 0.9485

S mag levL 15 magL 4.0000 bvf 0.50

T analyze

n=46 m=-2.50*log(L)+6.96 (+/-1.98)

☒ retry ddl 10 leap 50 f1 -1 f2 -1

View Mask Editor Trail Map Ground Map

prev edit auto link clear link lim 7

next auto < SD L- 5 R- 5

link manual link U- 5 D- 5 qm



Main Profile/Analyze Class Plot Uty

M20120519_010656_KM_Zach_2 read P save P save A

lid M_Zach_2 sid K1 observer KOUJA ☒ intlc

can c902H2U lens GADN cap ☐ bbf

lng 17.3831 lat 49.2893 alt 222 tz 0

tme 1.0 memo step 000.10C

☒ fovr 84.1466 ☒ yx 0.9181 atc 58.3

☐ k4 0.0530 ☒ k3 -0.1433 ☒ k2 0.0579

☒ dx -21.60 ☒ dy -16.26 ☒ rot 1.6501

☒ az 45.1895 ☒ ev 40.4446 move

adj pos all ddpix lrr mask 188 link 96

A pos 0.00001(dpx avr 0.253 max 0.536

D 3 ddeg avr 0.030 max 0.062

J (2012/05/19 01:06:536870912)

U levH 255 magL 0.9485

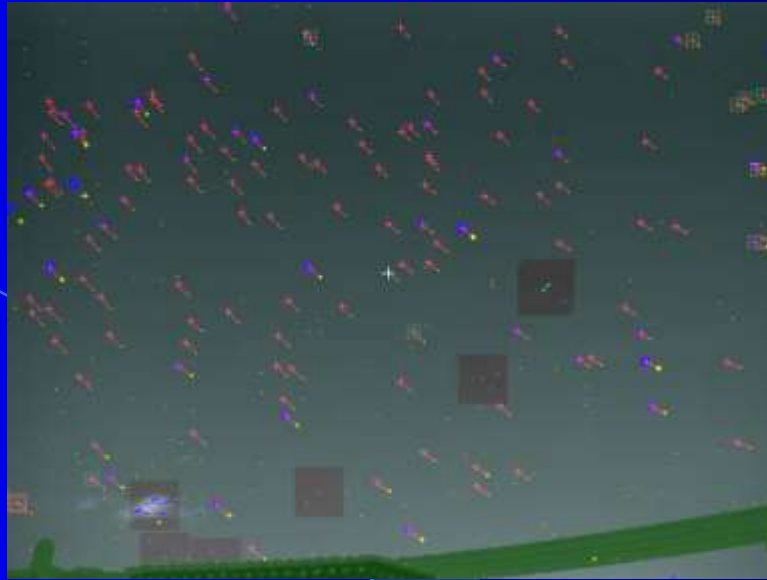
S mag levL 15 magL 4.0000 bvf 0.50

T analyze

n=46 m=-2.50*log(L)+6.96 (+/-1.98)

☒ retry ddl 10 leap 50 f1 -1 f2 -1

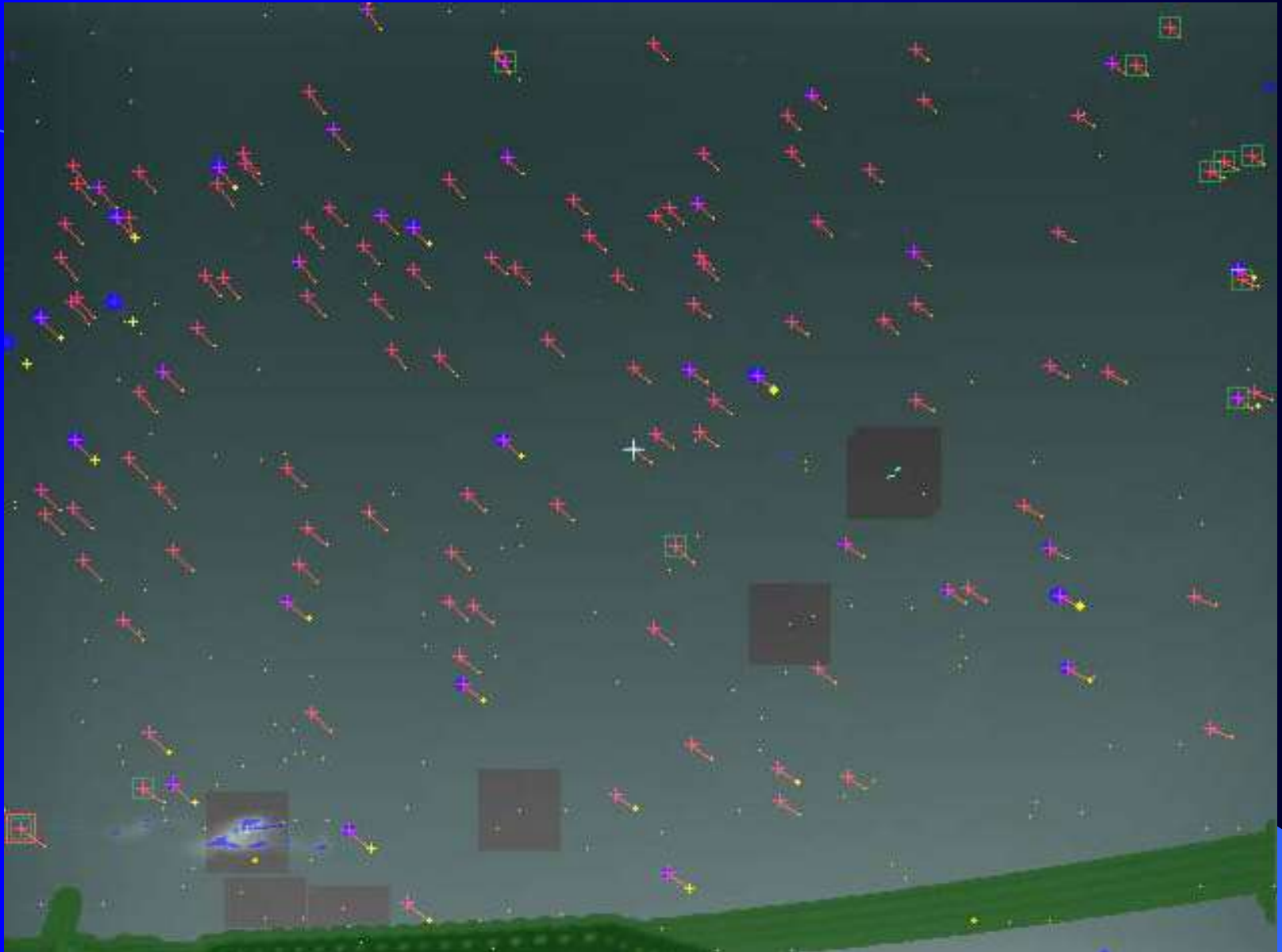
UFO ANALYZER – TVORBA MASKY



UFO ANALYZER – TVORBA MASKY



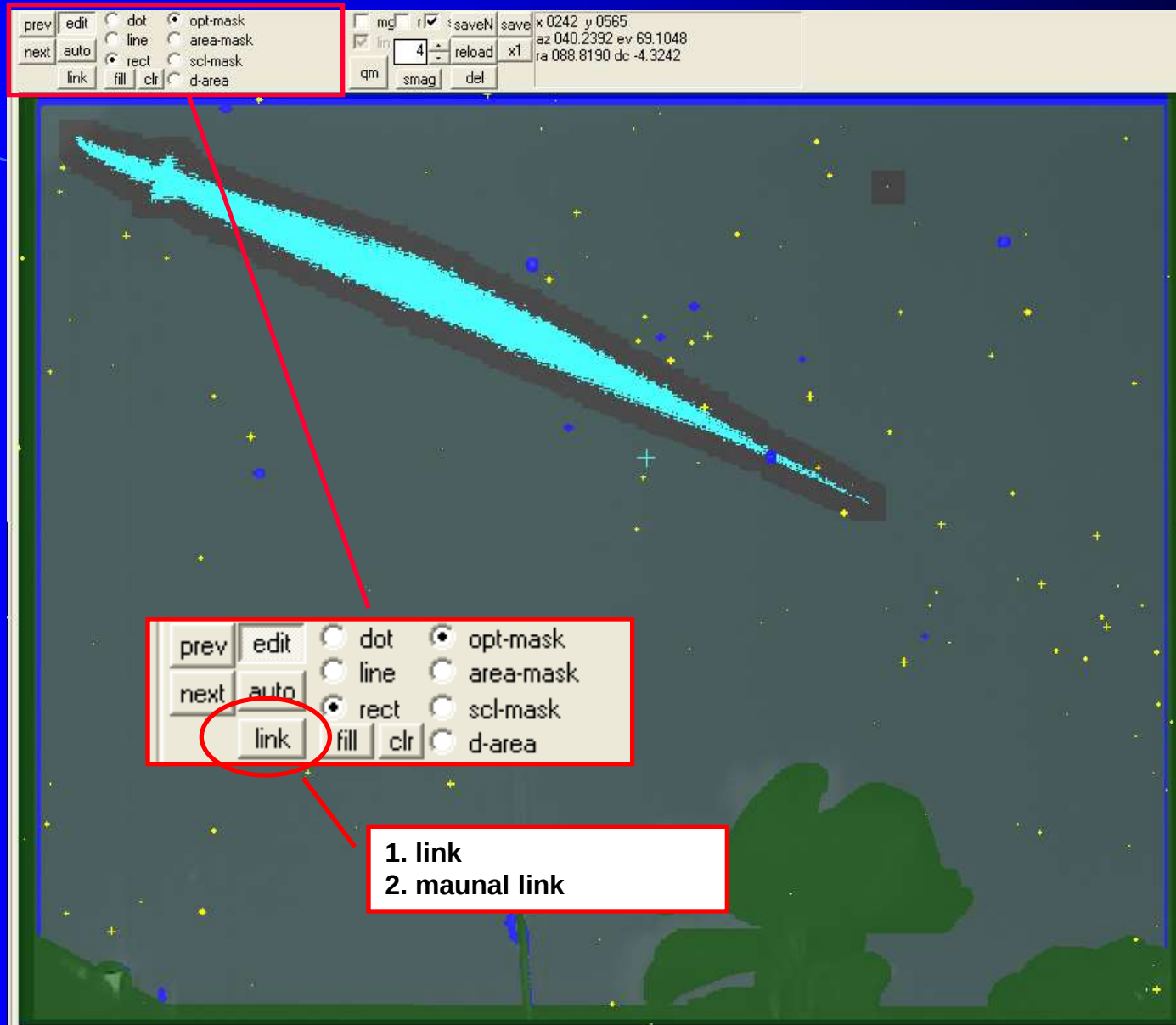
UFO ANALYZER – TVORBA MASKY



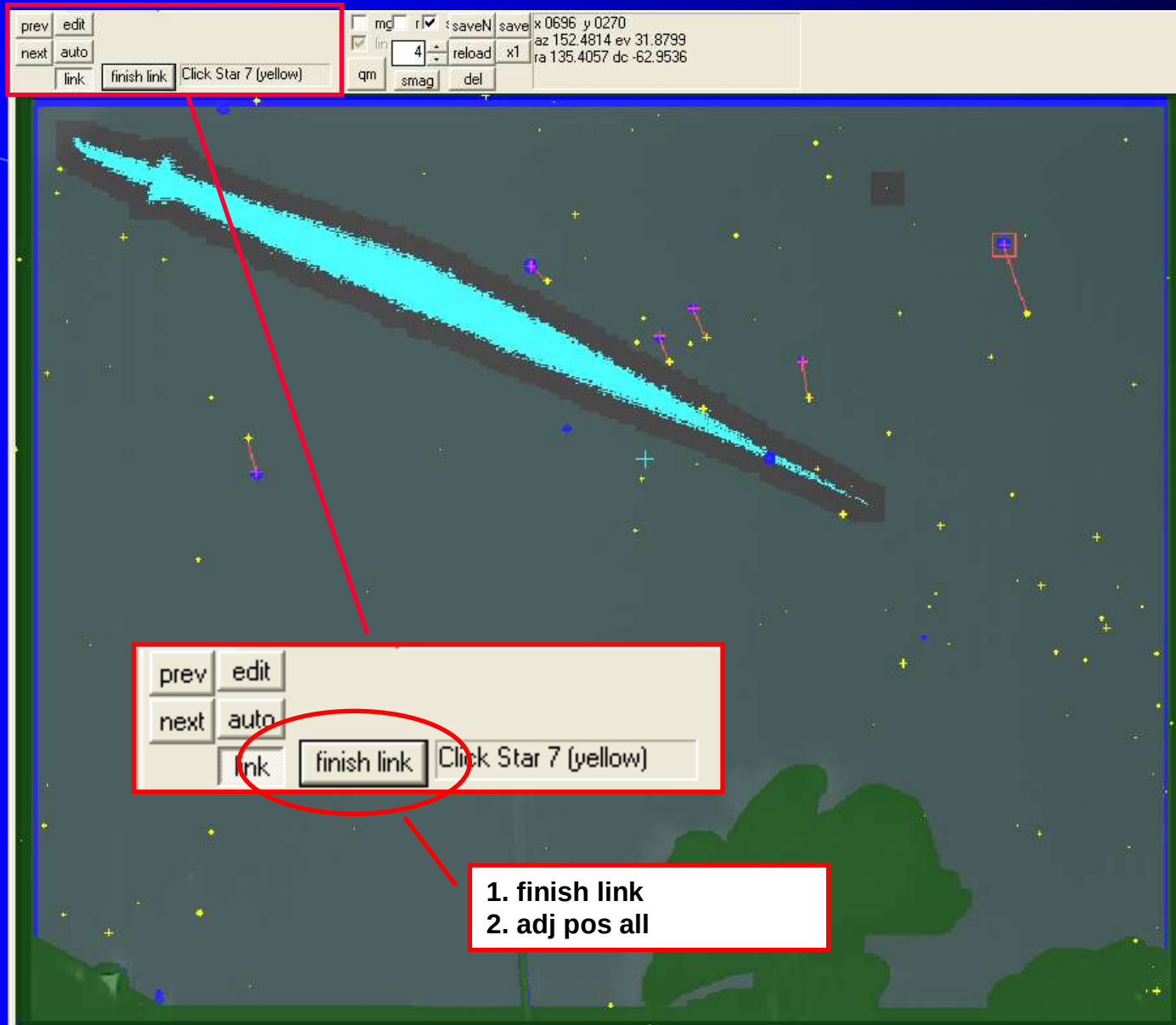
UFO ANALYZER – TVORBA MASKY



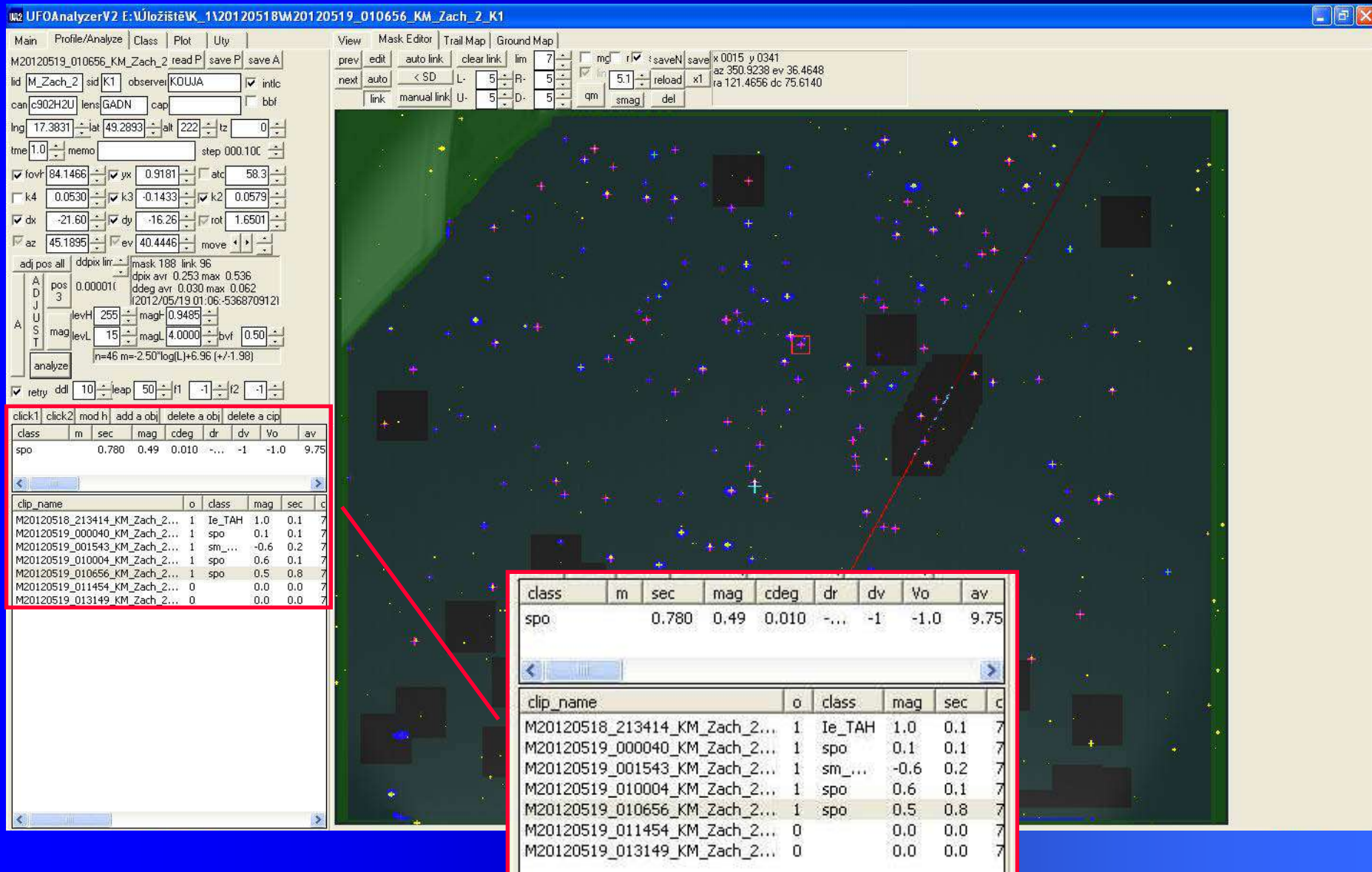
UFO ANALYZER – TVORBA MASKY



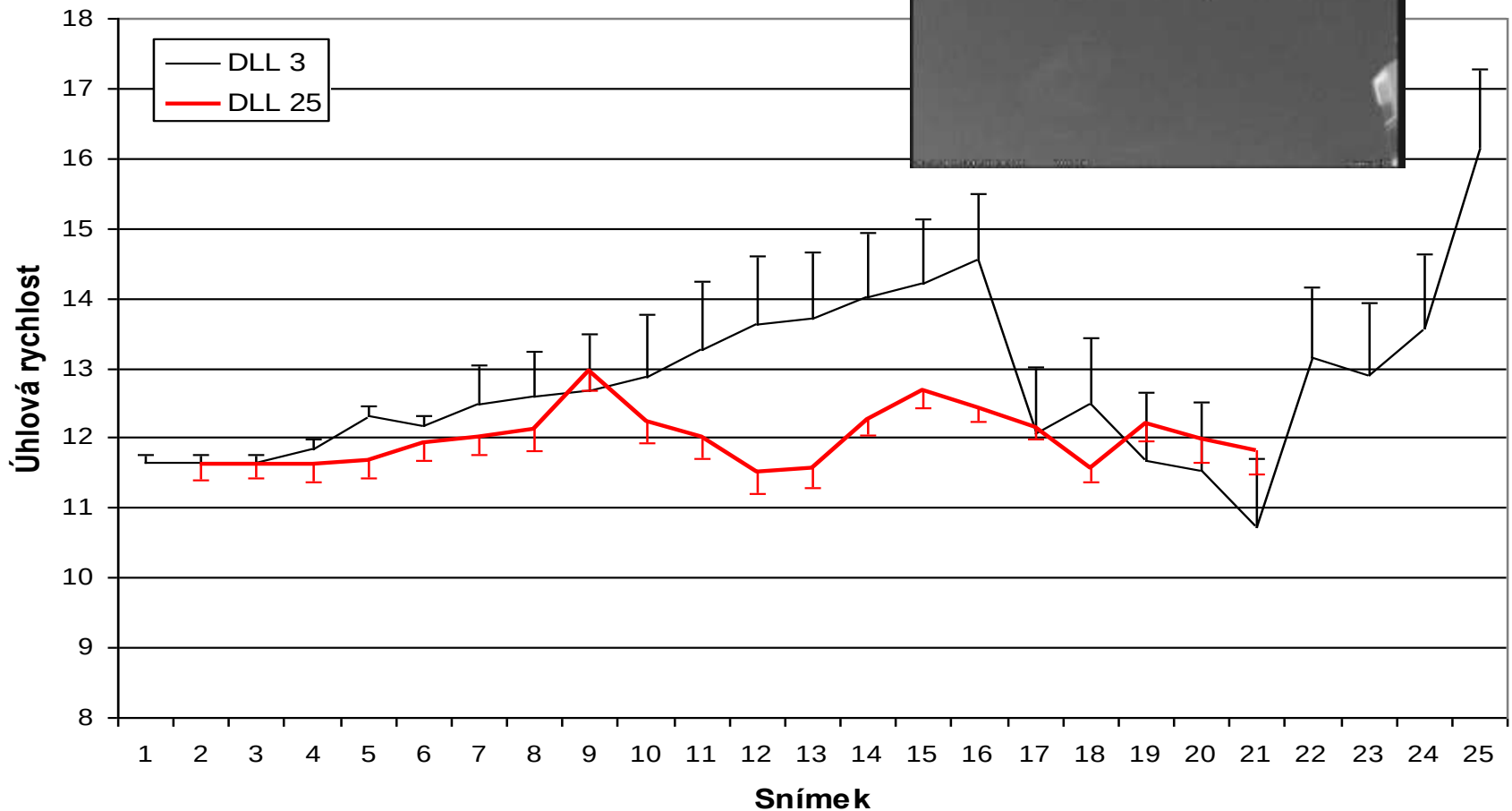
UFO ANALYZER – TVORBA MASKY



UFO ANALYZER – ANALÝZA METEORU



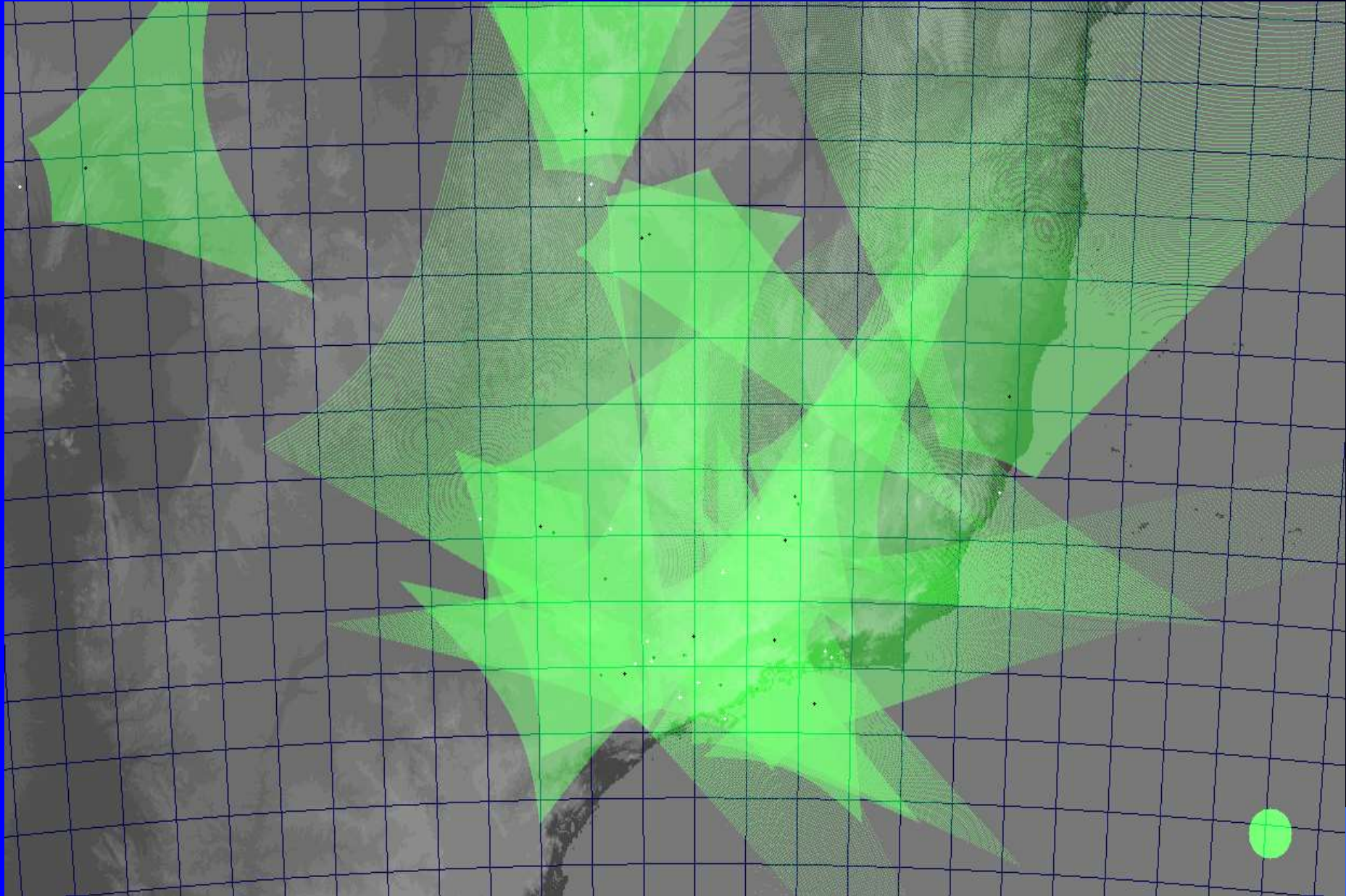
UFO ANALYZER – ANALÝZA METEORU



UFO ANALYZER – ANALÝZA METEORU

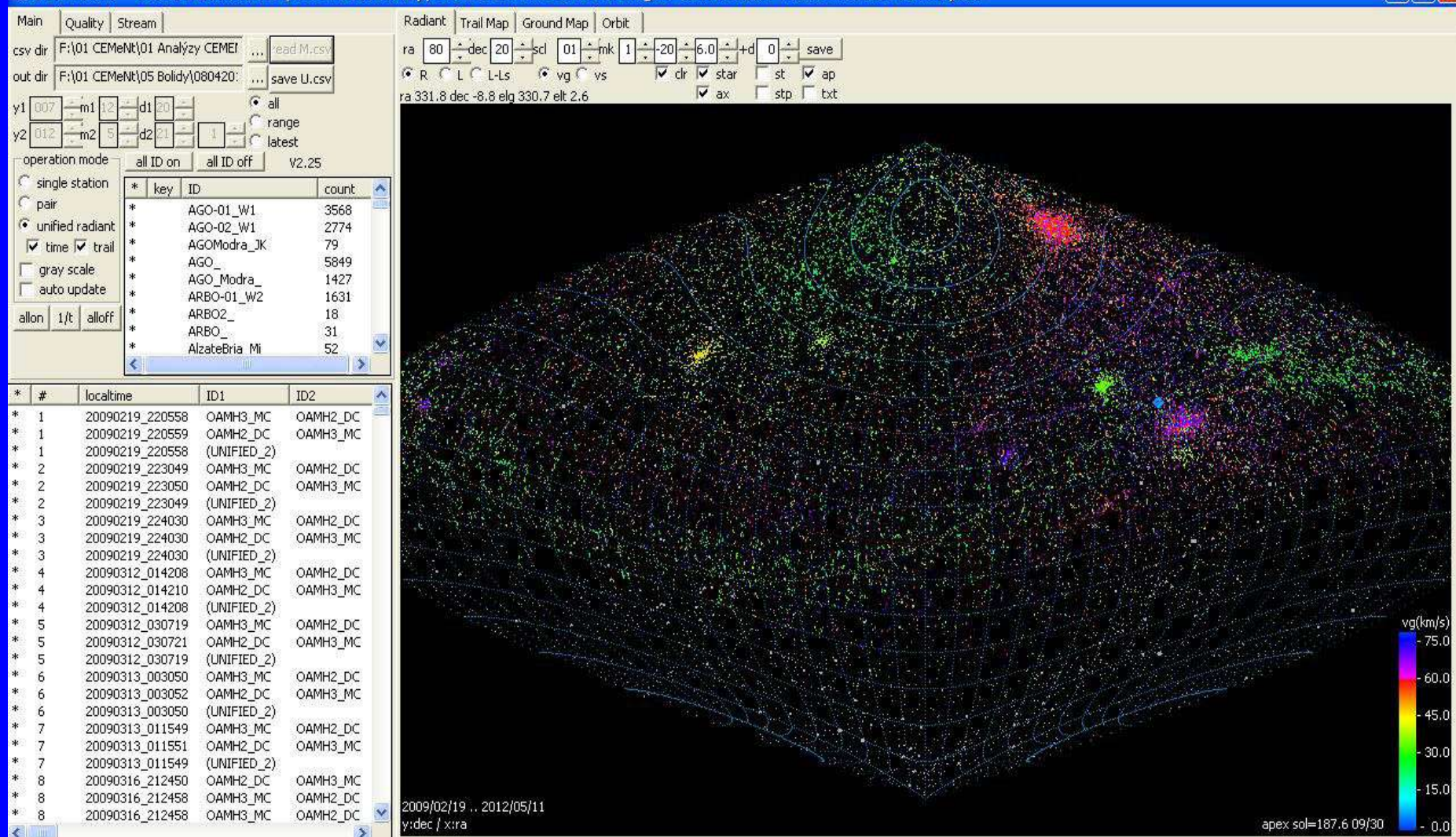
```
[ M20141101_232355_Maruska_SE_K4 ] DL=33 (+5) total 41 pixel, obj=1
ua2_refstars count=0 ddeg_ave=-1.0000 ddeg_max=0.0000
-- trail #0 len=8 count=37 bmax=101 bmaxpixs=0 lsum= 689.5 interlace=1 bbf=0
Average Pole 1 alpha=307.8433 delta=73.6906 D3=-0.003178
fno=057 b=074 bm=000 lsum= 248.4 xc=425.7 yc=366.3 az=158.5668 ev= 46.3076 ra 64.5248-> 64.5119 dec 7.4324-> 7.4816 err=0.0509 av= 0.0 mag= 1.65
fno=058 b=095 bm=000 lsum= 452.9 xc=427.3 yc=367.0 az=158.8490 ev= 46.3402 ra 64.3261-> 64.3221 dec 7.4173-> 7.4328 err=0.0161 av= 9.9 mag= 1.00
fno=059 b=101 bm=000 lsum= 404.5 xc=430.3 yc=368.0 az=159.3652 ev= 46.3725 ra 63.9693-> 63.9750 dec 7.3648-> 7.3433 err=0.0222 av= 17.9 mag= 1.12
fno=060 b=084 bm=000 lsum= 534.9 xc=432.8 yc=368.4 az=159.8020 ev= 46.3528 ra 63.6781-> 63.6805 dec 7.2762-> 7.2671 err=0.0095 av= 15.1 mag= 0.82
fno=061 b=086 bm=000 lsum= 689.5 xc=436.0 yc=368.8 az=160.3276 ev= 46.3131 ra 63.3307-> 63.3257 dec 7.1558-> 7.1750 err=0.0198 av= 18.3 mag= 0.55
fno=062 b=080 bm=000 lsum= 450.4 xc=438.3 yc=369.5 az=160.7359 ev= 46.3263 ra 63.0506-> 63.0514 dec 7.1067-> 7.1035 err=0.0032 av= 14.1 mag= 1.01
fno=063 b=071 bm=000 lsum= 397.6 xc=441.3 yc=370.1 az=161.2485 ev= 46.3097 ra 62.7057-> 62.7060 dec 7.0143-> 7.0134 err=0.0010 av= 17.7 mag= 1.14
fno=064 b=062 bm=000 lsum= 202.9 xc=444.6 yc=370.6 az=161.8020 ev= 46.2721 ra 62.3369-> 62.3321 dec 6.8975-> 6.9154 err=0.0185 av= 19.2 mag= 1.87
---- trail 1 end f= 8 pixs=37 b=101 bm= 0 lsum= 689.5 ddeg_ave=0.0176, max=0.0509
---- peak mag 0.55 at 61, (57..64,8 sample) peak_pos_ratio = 0.57
.... ra is major move
Angular Velocity (Average pole correction)
fno= 57- 58 time=1.150 ra= 64.6279 dec= 7.5114 av= 16.34
fno= 58- 59 time=1.170 ra= 64.3089 dec= 7.4294 av= 16.34
fno= 59- 60 time=1.190 ra= 63.9899 dec= 7.3471 av= 16.35
*fno= 60- 61 time=1.210 ra= 63.6710 dec= 7.2646 av= 16.62 *
fno= 61- 62 time=1.230 ra= 63.3469 dec= 7.1805 av= 16.18
fno= 62- 63 time=1.250 ra= 63.0314 dec= 7.0983 av= 16.16
fno= 63- 64 time=1.270 ra= 62.7165 dec= 7.0161 av= 18.25
Angular Velocity (Minimum Square Method)
fno= 57 time=1.140 av= 16.52 (n=5 sd=0.145)
fno= 58 time=1.160 av= 16.46 (n=5 sd=0.145)
fno= 59 time=1.180 av= 16.41 (n=5 sd=0.145)
*fno= 60 time=1.200 av= 16.36 (n=5 sd=0.145) *
fno= 61 time=1.220 av= 16.30 (n=5 sd=0.145)
fno= 62 time=1.240 av= 16.25 (n=5 sd=0.145)
fno= 63 time=1.260 av= 16.19 (n=5 sd=0.145)
==== Angular velocity measured at fno=60 : ra=63.6710, dec=7.2646, ev=46.3431 av=16.3560 ====
meteor_classification at sol=210.2
05_Hyd dsol=-33.6 ref ra= 106.8 dec= 6.4 (D= 41.9) az= 112.0 ev= 25.9 r= 8.8 .. r too big
05_Leo dsol=-16.2 ref ra= 144.7 dec= 27.6 (D= 77.7) az= 67.9 ev= 17.5 r= 11.9 .. r too big
05_noo dsol=-30.0 ref ra= 76.8 dec= 15.3 (D= 14.2) az= 137.6 ev= 49.5 r= 4.8 .. r too big
05_oEr dsol=-15.5 ref ra= 50.6 dec= -3.3 (D= 17.7) az= 178.9 ev= 37.3 r= 6.8 .. r too big
05_Ori dsol= 11.3 ref ra= 102.7 dec= 15.3 (D= 38.1) az= 109.3 ev= 35.3 r= 0.4 H1= 117km v0= 74.2km/s dv= 11% ... passed
05_sTa dsol= -0.5 ref ra= 49.7 dec= 11.8 (D= 15.3) az= 180.1 ev= 52.5 r= 8.0 .. r too big
05_EGE dsol= 13.3 ref ra= 101.9 dec= 26.5 (D= 40.1) az= 100.2 ev= 44.1 r= 11.7 .. r too big
05_BCN dsol= 6.3 ref ra= 122.1 dec= 4.4 (D= 57.2) az= 100.7 ev= 14.8 r= 11.8 .. r too big
05_ZCN dsol= -5.7 ref ra= 120.9 dec= 13.9 (D= 55.5) az= 95.1 ev= 22.7 r= 2.3 H1= 105km v0= 49.7km/s dv= -23% ... passed
05_Ors dsol= 19.3 ref ra= 145.0 dec= 27.9 (D= 78.0) az= 67.5 ev= 17.6 r= 12.3 .. r too big
-->05_Ori r=0.4deg lngl=18.37 latl=48.46 H=117km
[ vo matching estimation ] T=0.040sec, PathAngle=0.7deg, vs=16.36deg/s ve=16.25deg/sec search Hs in(86.0..116.5km)
D = 106.3deg,Hs= 100.3km,dvo= 0.00
***** rao=172.1, deco=11.8 voo= 40.7km/s, *****
***** rat=173.9, dect=9.6 *****
```


UFO ANALYZER – GROUNDMAP FOV



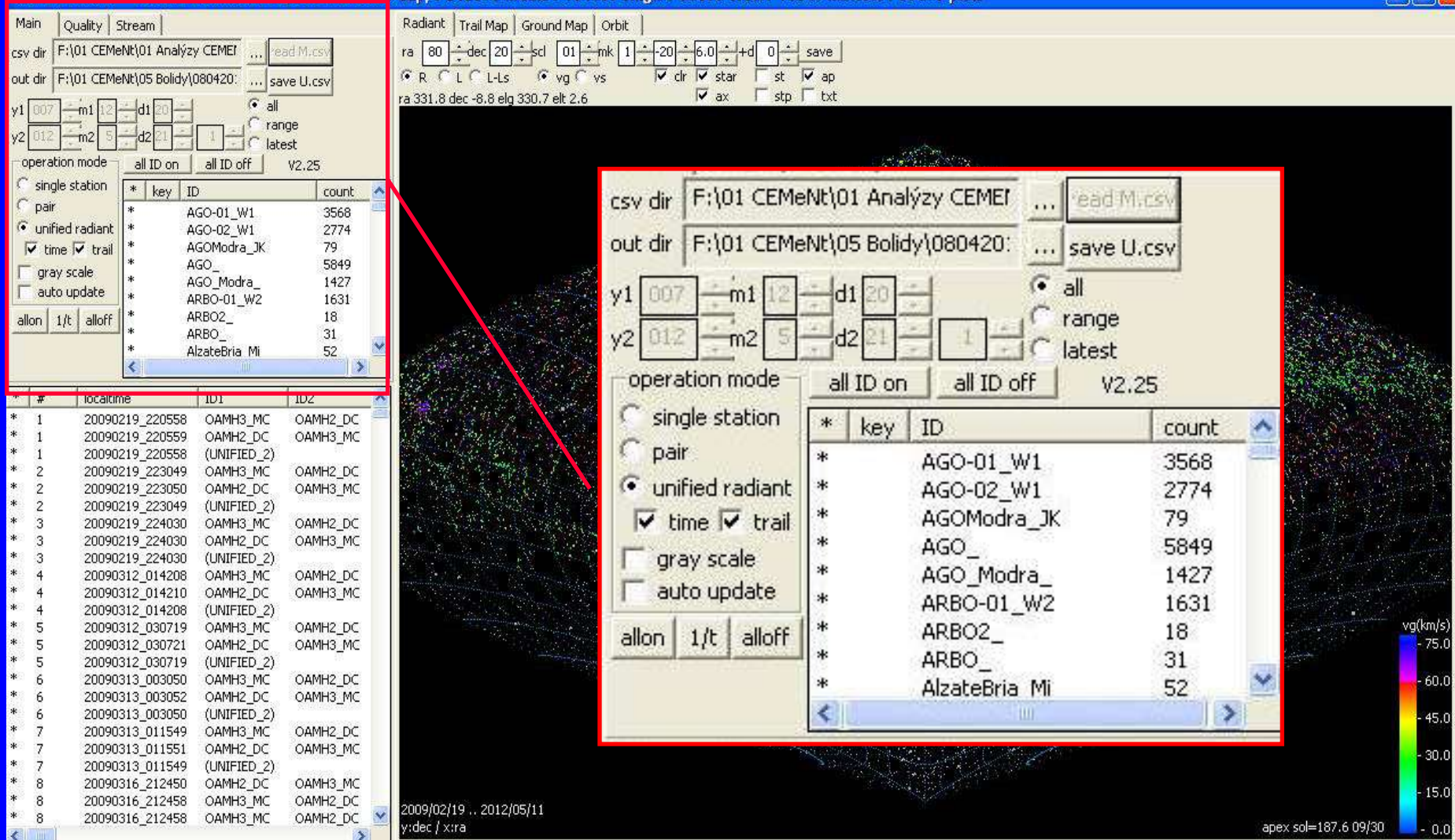
UFO ORBITER

UFOOrbitV2 -- 189 ID / 266638 rec (558 err 23938 dup) / 242698 indate / 154107 single / 50870 orbit / 16549 meteors / 50870 plots

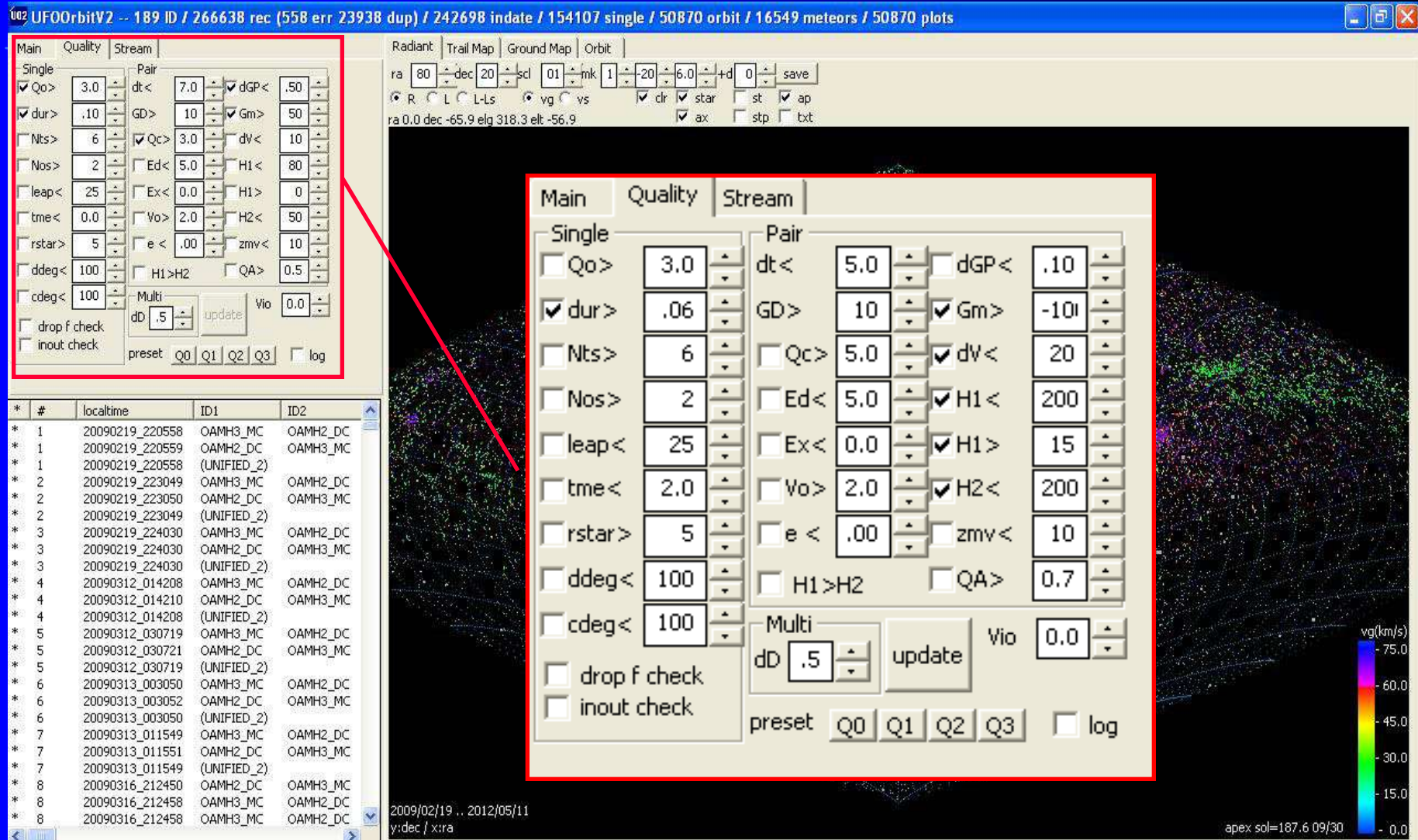


UFO ORBITER

UFOOrbitV2 -- 189 ID / 266638 rec (558 err 23938 dup) / 242698 indate / 154107 single / 50870 orbit / 16549 meteors / 50870 plots

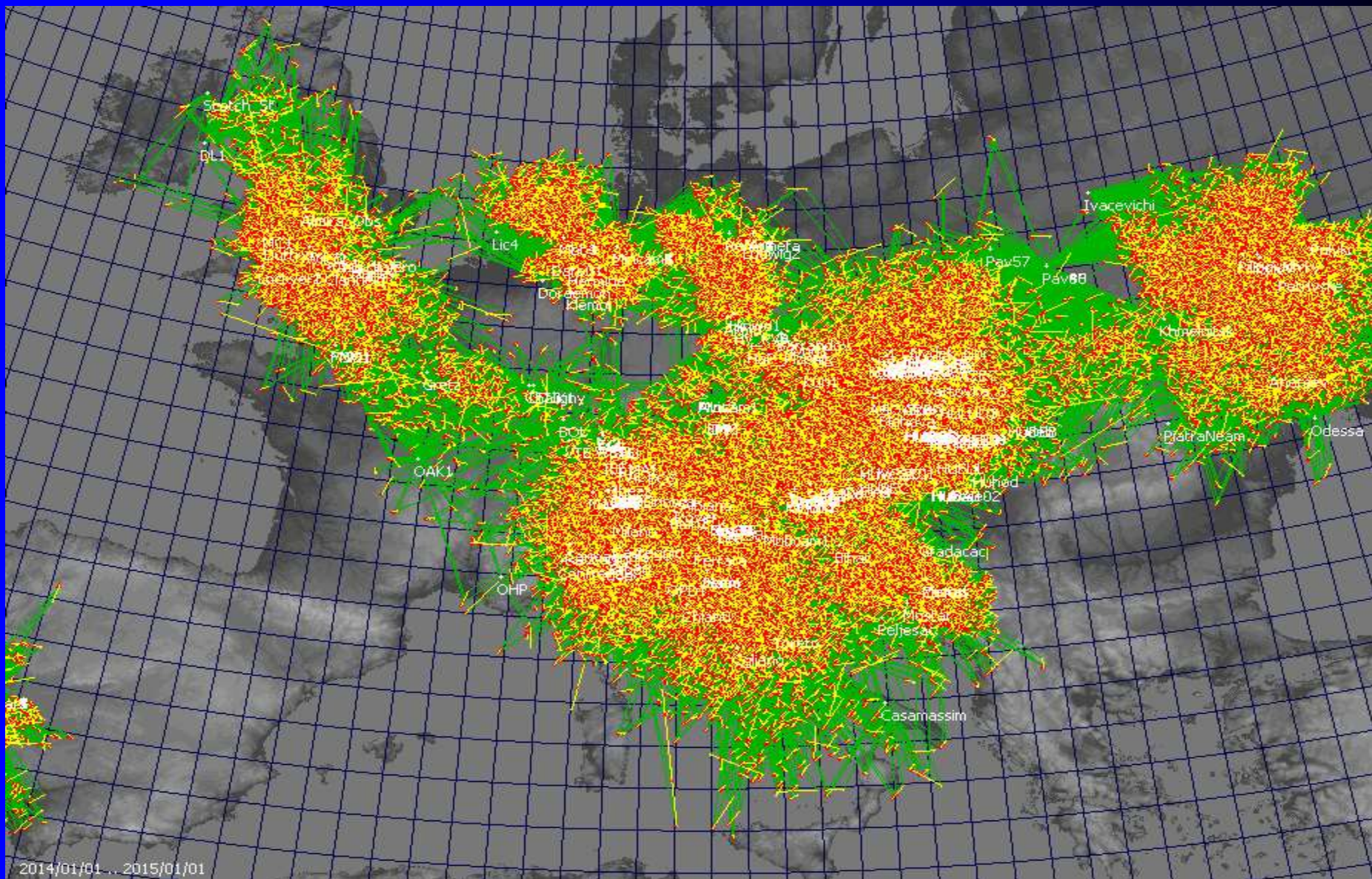


UFO ORBITER – PARAMETRY



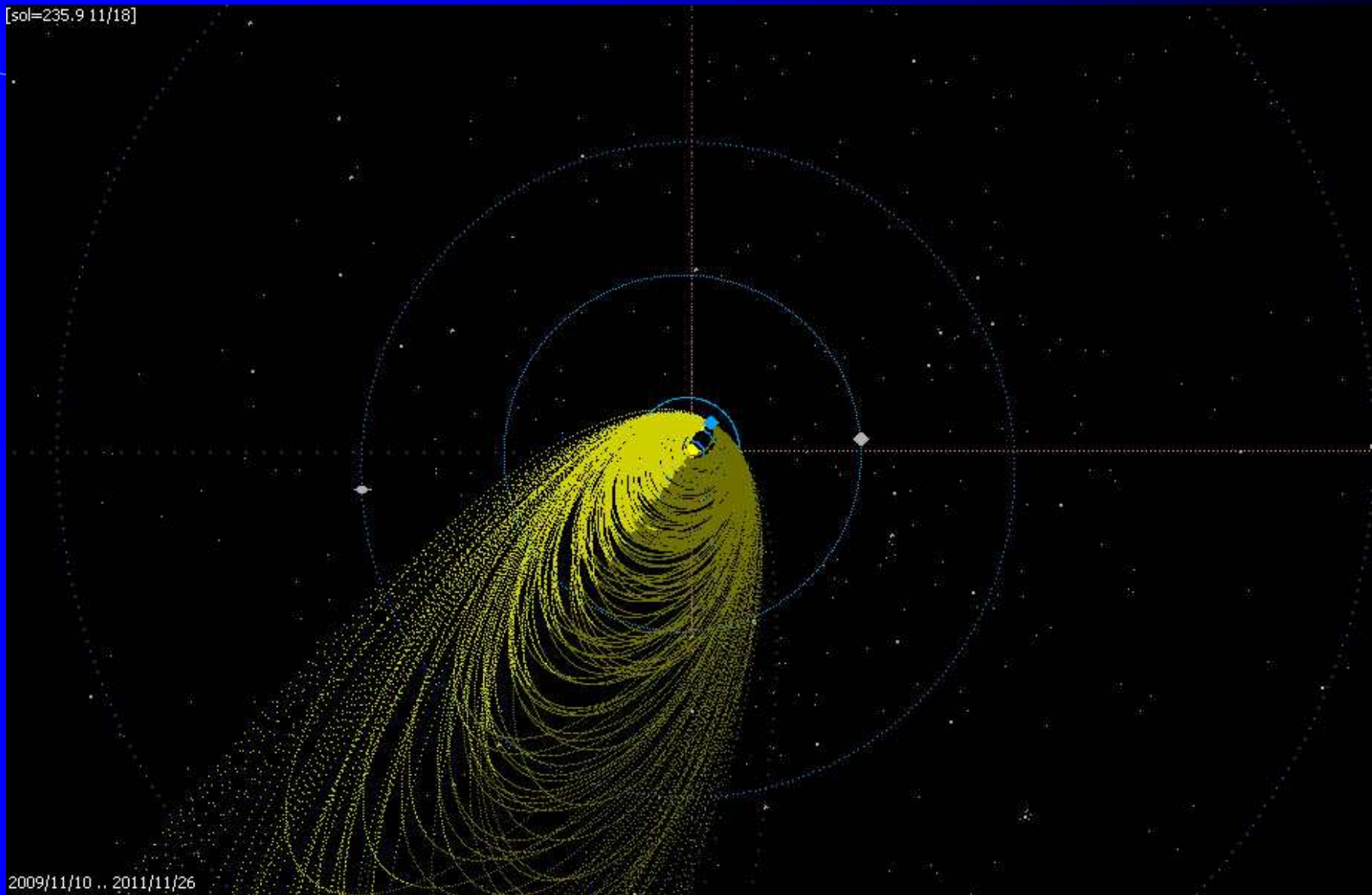
UFO ORBITER – VÝSTUPY

GROUNDMAP



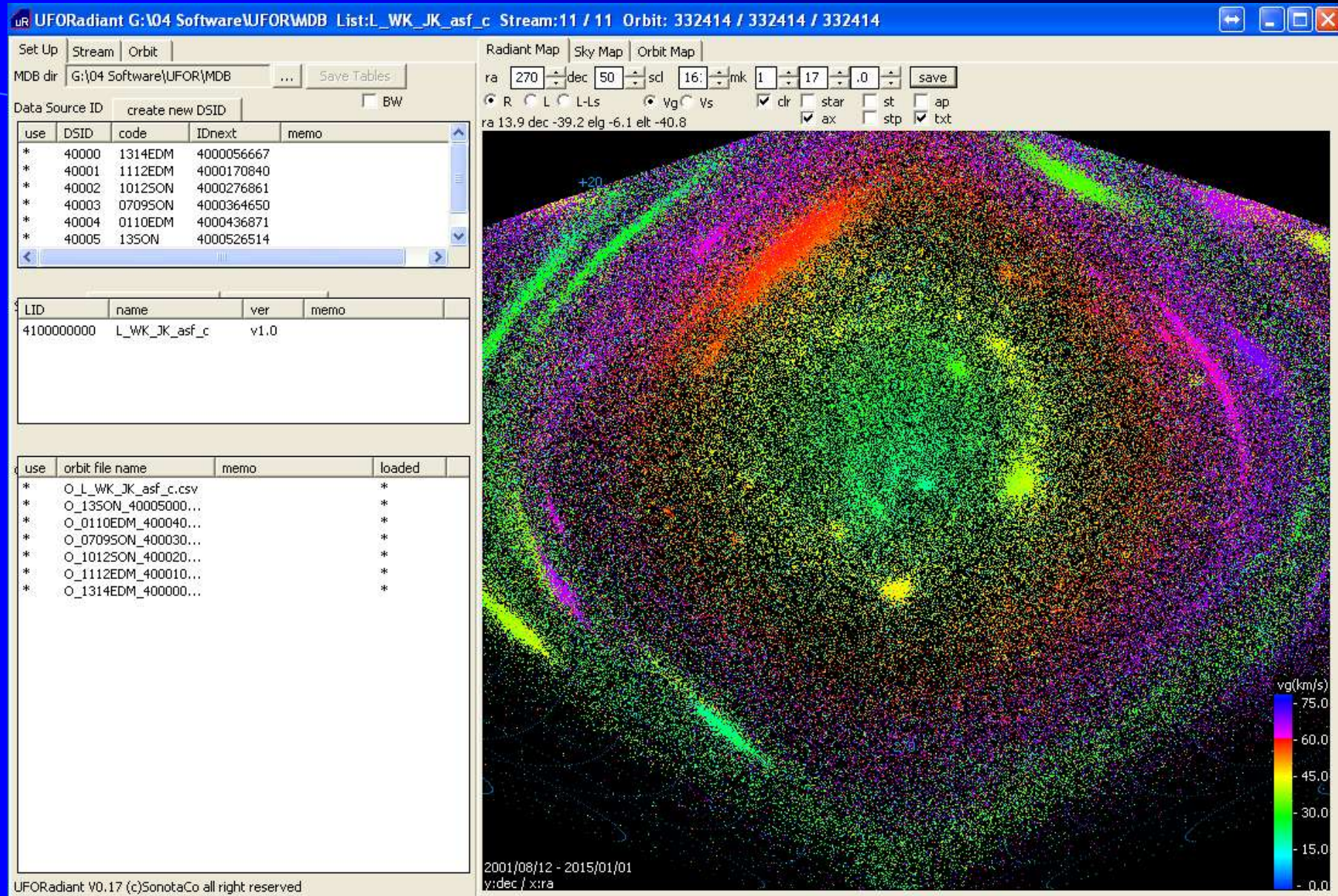
UFO ORBITER – VÝSTUPY DRÁHY

[sol=235.9 11/18]



2009/11/10 .. 2011/11/26

UFO RADIANT



UFO RADIANT – VSTUPY

UFORadiant G:\04 Software\UFOR\MDB List:L_WK_JK_asf_c Stream:11 / 11 Orbit: 332414 / 332414 / 332414

Set Up Stream Orbit

MDB dir G:\04 Software\UFOR\MDB ... Save Tables

Data Source ID create new DSID ☐ BW

use	DSID	code	IDnext	memo
*	40000	1314EDM	4000056667	
*	40001	1112EDM	4000170840	
*	40002	1012SON	4000276861	
*	40003	0709SON	4000364650	
*	40004	0110EDM	4000436871	
*	40005	13SON	4000526514	

LID name ver memo

4100000000 L_WK_JK_asf_c v1.0

use orbit file name memo loaded

*	O_L_WK_JK_asf_c.csv	*
*	O_13SON_40005000...	*
*	O_0110EDM_400040...	*
*	O_0709SON_400030...	*
*	O_1012SON_400020...	*
*	O_1112EDM_400010...	*
*	O_1314EDM_400000...	*

Radiant Map

ra 270

ra 13.9 dec -39

Set Up Stream Orbit

MDB dir G:\04 Software\UFOR\MDB ... Save Tables

Data Source ID create new DSID ☐ BW

use	DSID	code	IDnext	memo
*	40000	1314EDM	4000056667	
*	40001	1112EDM	4000170840	
*	40002	1012SON	4000276861	
*	40003	0709SON	4000364650	
*	40004	0110EDM	4000436871	
*	40005	13SON	4000526514	

LID name ver memo

4100000000 L_WK_JK_asf_c v1.0

use orbit file name memo loaded

*	O_L_WK_JK_asf_c.csv	*
*	O_13SON_40005000...	*
*	O_0110EDM_400040...	*
*	O_0709SON_400030...	*
*	O_1012SON_400020...	*
*	O_1112EDM_400010...	*
*	O_1314EDM_400000...	*

2001/08/12 - 2015/01/01

y:dec / x:ra

UFORadiant V0.17 (c)SonotaCo all right reserved

vg(km/s)

- 75.0

- 60.0

- 45.0

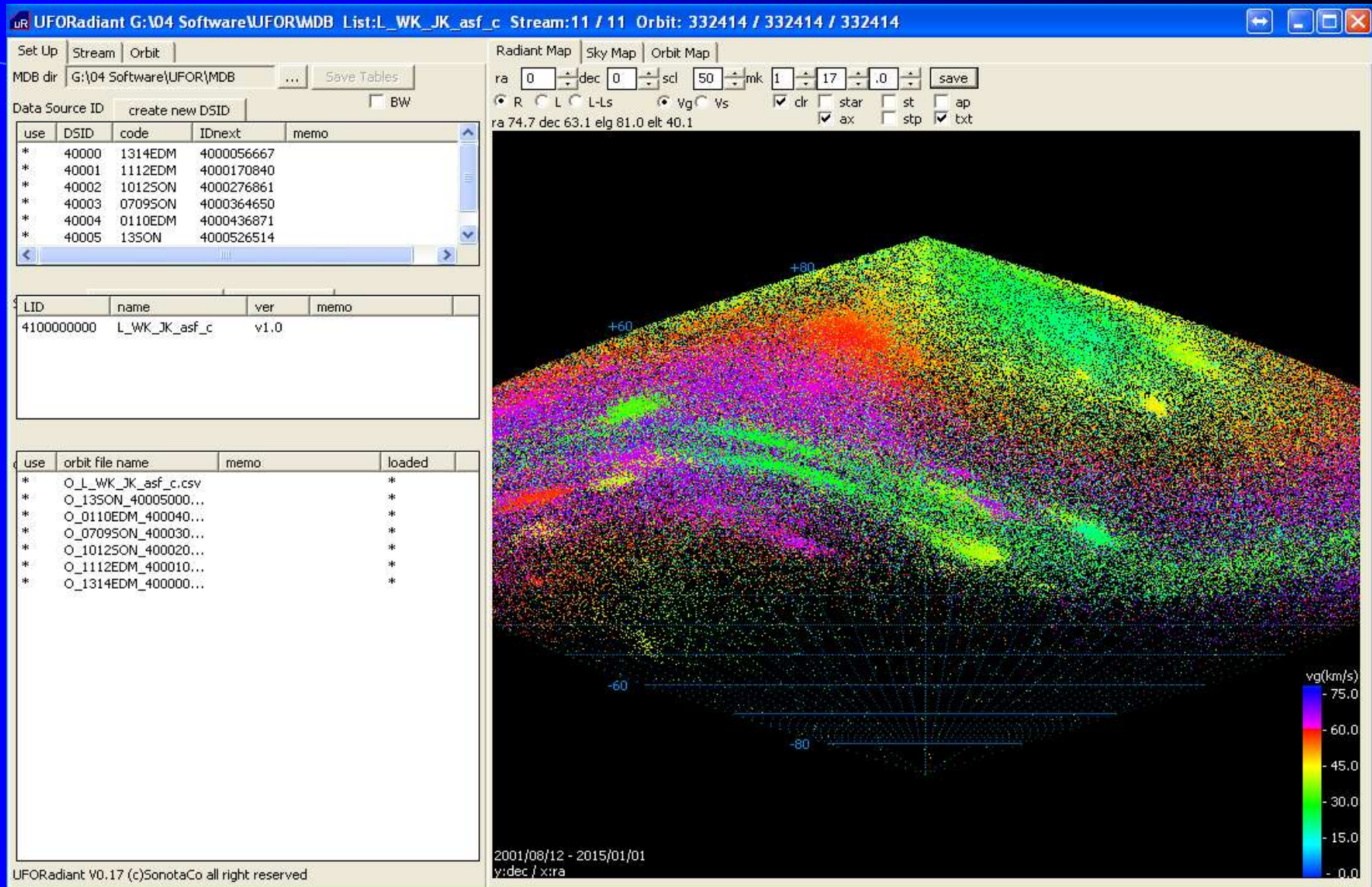
- 30.0

- 15.0

- 0.0

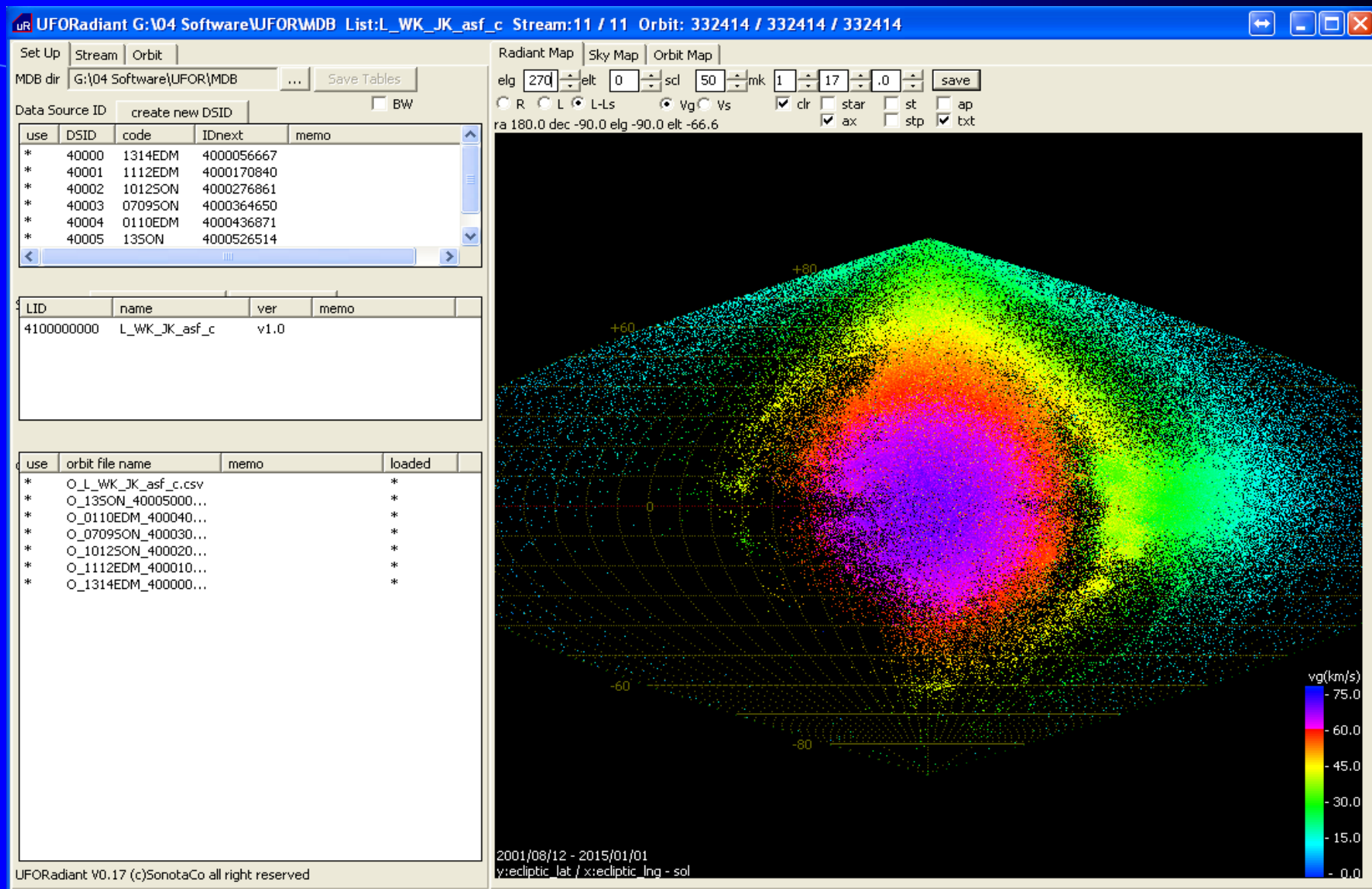
UFO RADIANT

ROVNÍKOVÉ SOUŘADNICE



UFO RADIANT

EKLIPTIKÁLNÍ SOUŘADNICE



UFO RADIANT – ROJE A ASOCIACE

UFORadiant G:\04 Software\UFORMDB List:L_WK_JK_asf_c Stream:11 / 11 Orbit: 332414 / 332414 / 332414

Set Up Stream Orbit

Stream List L_WK_JK_asf_c new stream delete all export

L..	u..	SID	code	n..	S-O	M/D1	M/D2	M/Dp
*	*	410000...	WK_as1	161	08/03	08/30	08/16	
*	*	410000...	WK_as2	49	08/11	09/07	08/26	
*	*	410000...	WK_as3	111	08/08	09/04	08/22	
*	*	410000...	WK_as4	14	07/25	08/14	08/03	
*	*	410000...	WK_as5	9	06/22	07/11	07/01	
*	*	410000...	WK_as6	329	09/25	10/12	10/08	
*	*	410000...	WK_as7	9	06/11	07/02	06/21	
*	*	410000...	WK_as8	34	09/29	10/23	10/12	
*	*	410000...	WK_as9	22	11/02	11/26	11/15	
*	*	410000...	WK_as10	20	09/18	10/06	09/26	
*	*	410000...	WK_as11	16	07/06	07/28	07/17	

Radiant Map Sky Map Orbit Map

ra 0 dec 0 scl 50 mk 1 17 .0 save

☒ R ☐ L ☐ L-Ls ☐ Vg ☐ Vs ☒ cl ☐ star ☐ st ☐ ap ☒ ax ☐ stp ☒ txt

ra 180.0 dec 90.0 elg 90.0 elt 66.6

Set Up Stream Orbit

Stream List L_WK_JK_asf_c new stream delete all export

L..	u..	SID	code	n..	S-O	M/D1	M/D2	M/Dp
*	*	410000...	WK_as1	161	08/03	08/30	08/16	
*	*	410000...	WK_as2	49	08/11	09/07	08/26	
*	*	410000...	WK_as3	111	08/08	09/04	08/22	
*	*	410000...	WK_as4	14	07/25	08/14	08/03	
*	*	410000...	WK_as5	9	06/22	07/11	07/01	
*	*	410000...	WK_as6	329	09/25	10/12	10/08	
*	*	410000...	WK_as7	9	06/11	07/02	06/21	
*	*	410000...	WK_as8	34	09/29	10/23	10/12	
*	*	410000...	WK_as9	22	11/02	11/26	11/15	
*	*	410000...	WK_as10	20	09/18	10/06	09/26	
*	*	410000...	WK_as11	16	07/06	07/28	07/17	

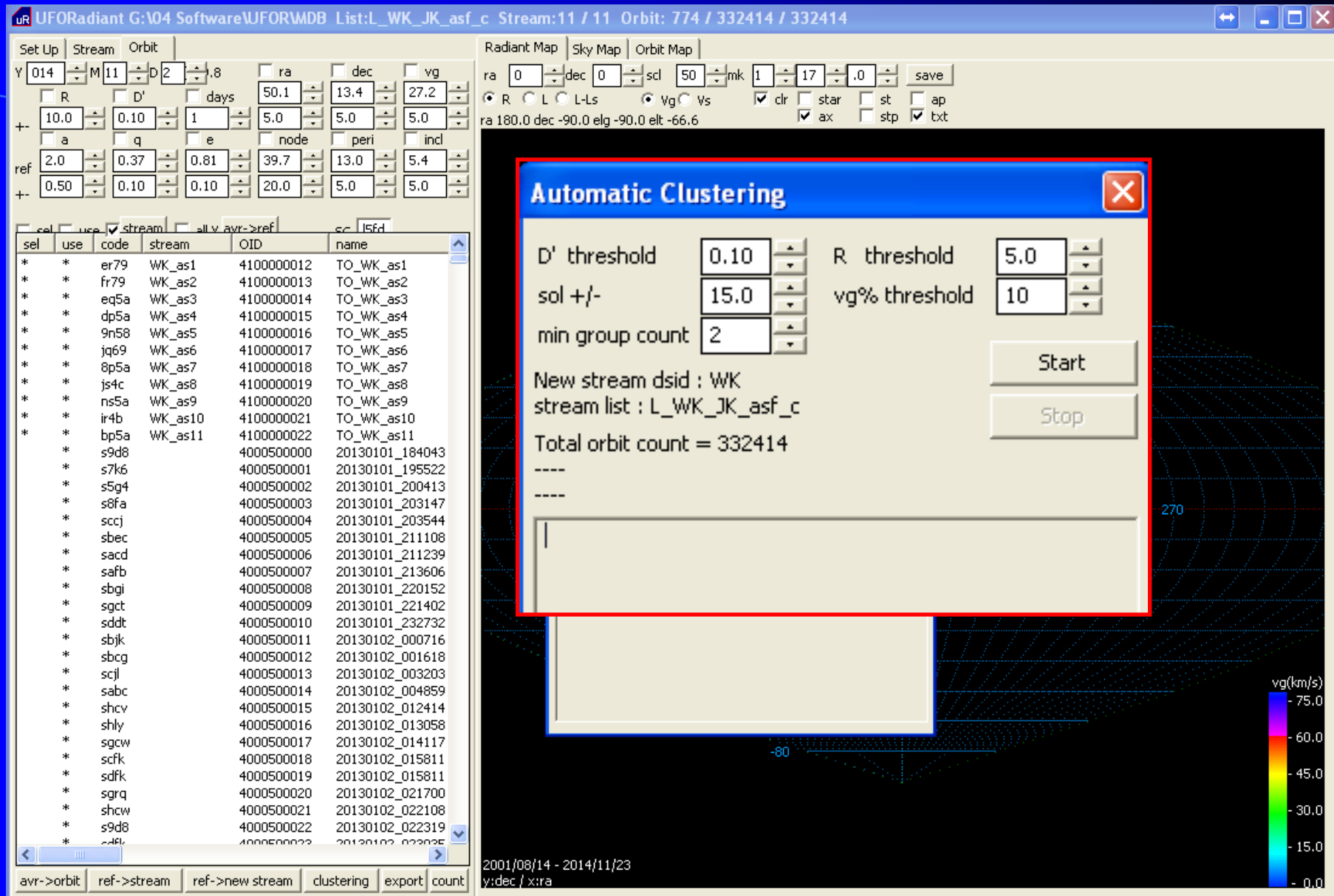
R-vg grouping R*(%) 100 dv*(%) 100 ☒ pri erase grouping

D' grouping D'*(%) 100 ☒ D' & R ☒ exclusive

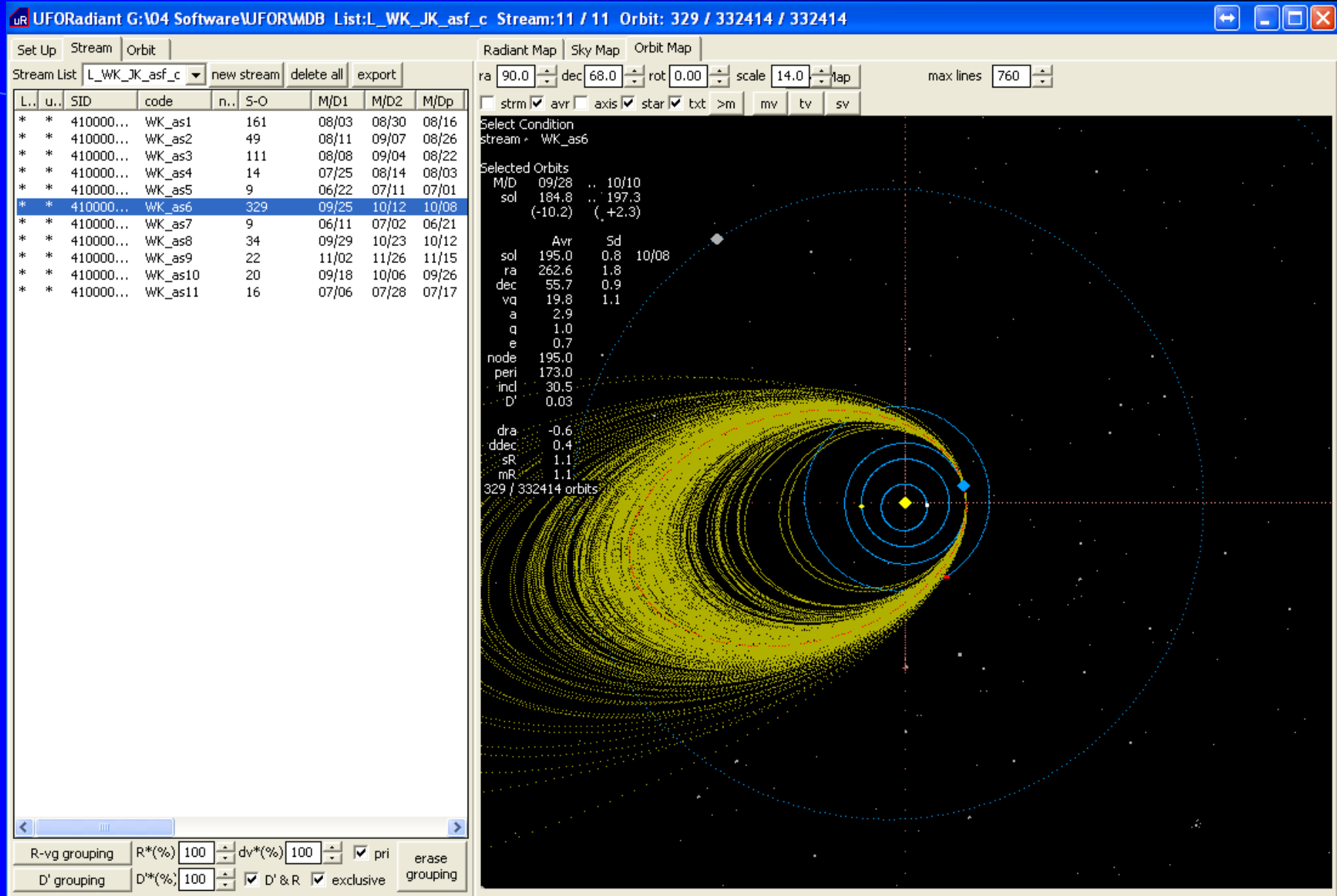
2001/08/12 - 2015/01/01
y:dec / x:ra

vg(km/s)
-75.0
0.0
15.0
75.0

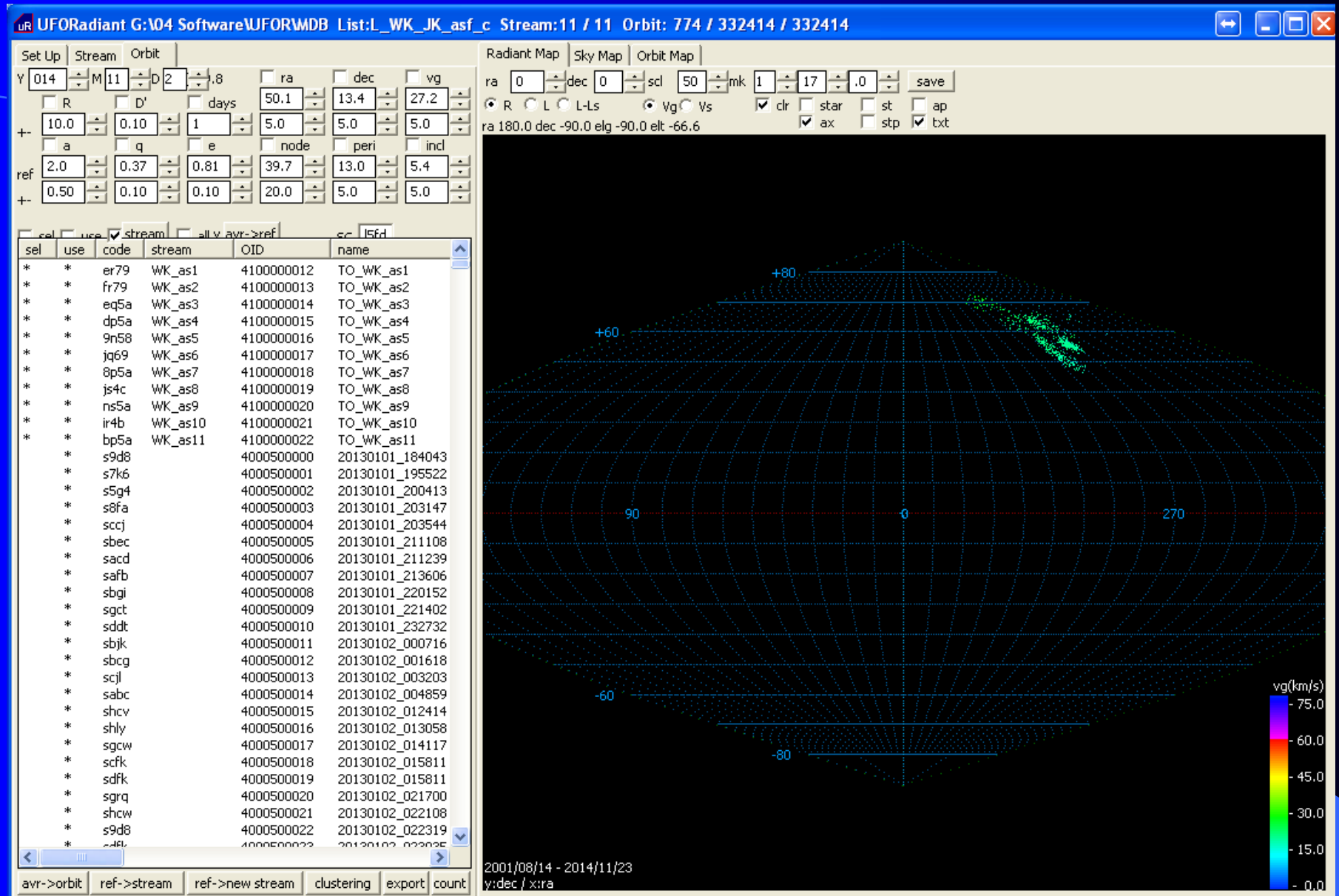
UFO RADIANT – ROJE A ASOCIACE



UFO RADIANT – ROJE A ASOCIACE



UFO RADIANT – ROJE A ASOCIACE





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**EURÓPSKA ÚNIA
EURÓPSKY FOND
REGIONÁLNEHO ROZVOJA**
SPOLOČNE BEZ HRANÍC



FOND MIKROPROJEKTŮ

**DĚKUJI
ZA VAŠI POZORNOST !**