

The image features a composite background. On the left, a portion of the Earth is visible, showing blue oceans, white clouds, and brownish-green continents. In the center and right, two asteroids are depicted against a dark, star-filled space. The larger asteroid in the foreground is irregularly shaped with a prominent crater. A smaller, more spherical asteroid is visible in the distance to the right. The text is overlaid on the left side of the image.

ESA's SSA-NEO Segment

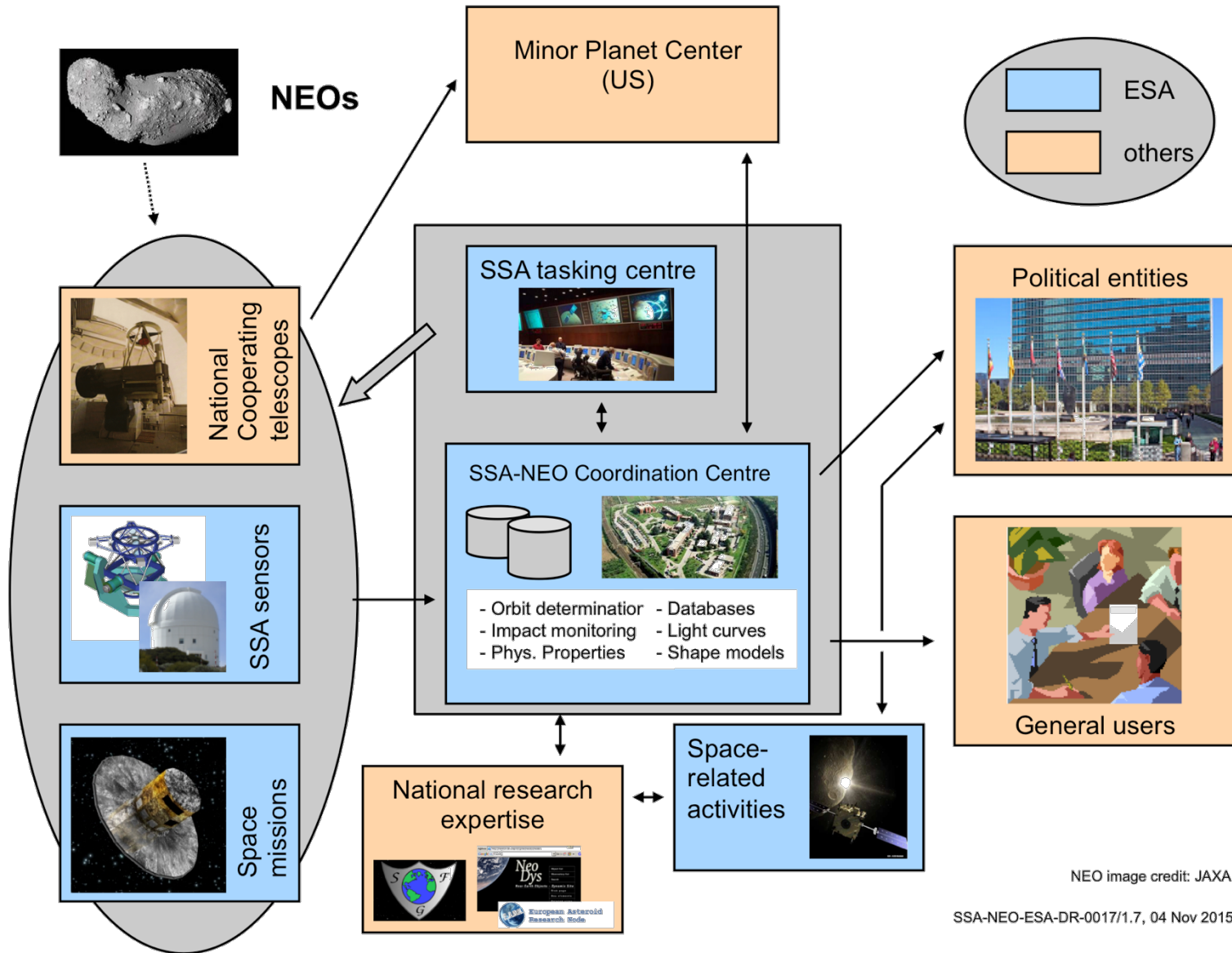
Status 2015 Nov

Gerhard Drolshagen, Detlef Koschny (ESA)
SSA-NEO Segment Managers



- **ESA's SSA-NEO segment shall be aware of the situation in space related to natural solar system objects. In particular, it shall provide warnings of potentially impacting objects. It shall prepare for mitigation of the resulting risk.**

SSA-NEO setup - context



NEO image credit: JAXA

NEO Coordination Centre – ESRIN, Italy



Image: ESA



SSA-NEO
Coordination Centre—
Inauguration
22 May 2013

Image: Google Earth

Image © 2011 GeoEye
© 2011 Tele Atlas
Image © 2011 DigitalGlobe
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
41°50'27.031"N 12°35'09.14"E elev. 771 m

Google

Eye alt. 65.98 km

- **Optical Ground Station (OGS)**
 - 1 m f/4.4
 - 0.7 deg x 0.7 deg FoV
 - 4-6 nights per month
- **Klet observatory**
 - 1 m f/4
 - 0.8 deg x 0.8 deg FoV
 - Only used for NEOs
- **Very Large Telescope**
 - ESO 8 m telescope
 - 11 hours per semester
 - Used for follow-up of faint NEOs on risk list
- **Precovery searches**



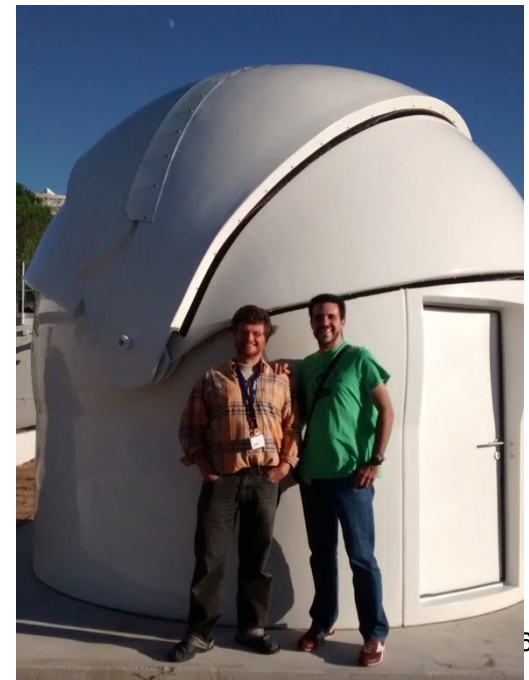
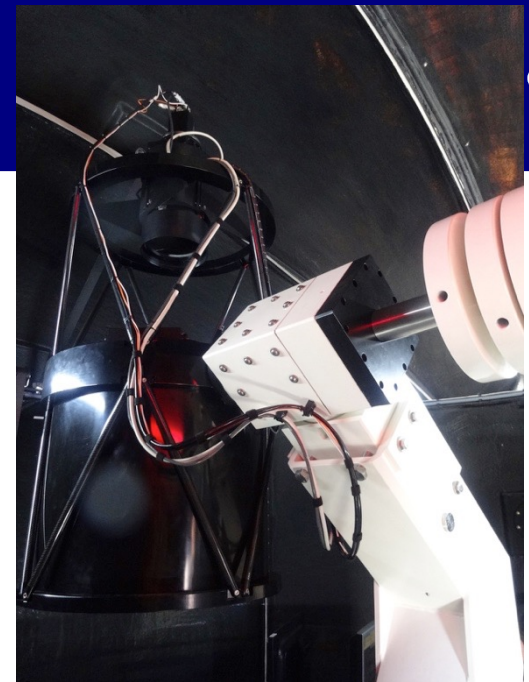
Observations – main assets

■ Test-Bed Telescope

- 56 cm aperture
- 2.2 deg x 2.2 deg field of view
- For testing scheduling/tasking and data processing
- 1st telescope being commissioned in Spain
- 2nd telescope should start in 2016 in Chile

■ Fly-Eye Telescope

- 1 m effective aperture
- 6.7 deg x 6.7 deg field of view
- Prototype with two optical channels under development
- 1st telescope 2017



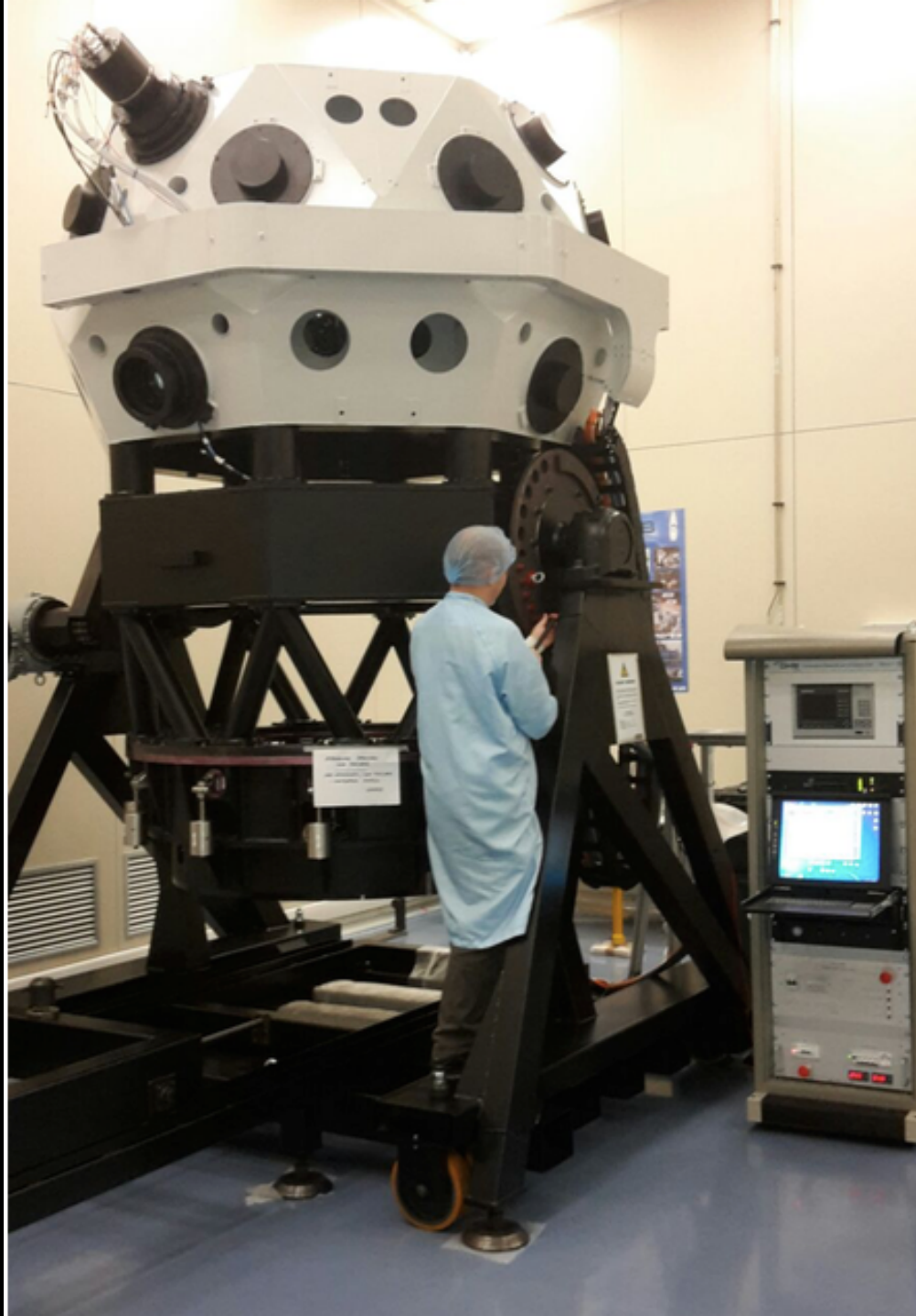
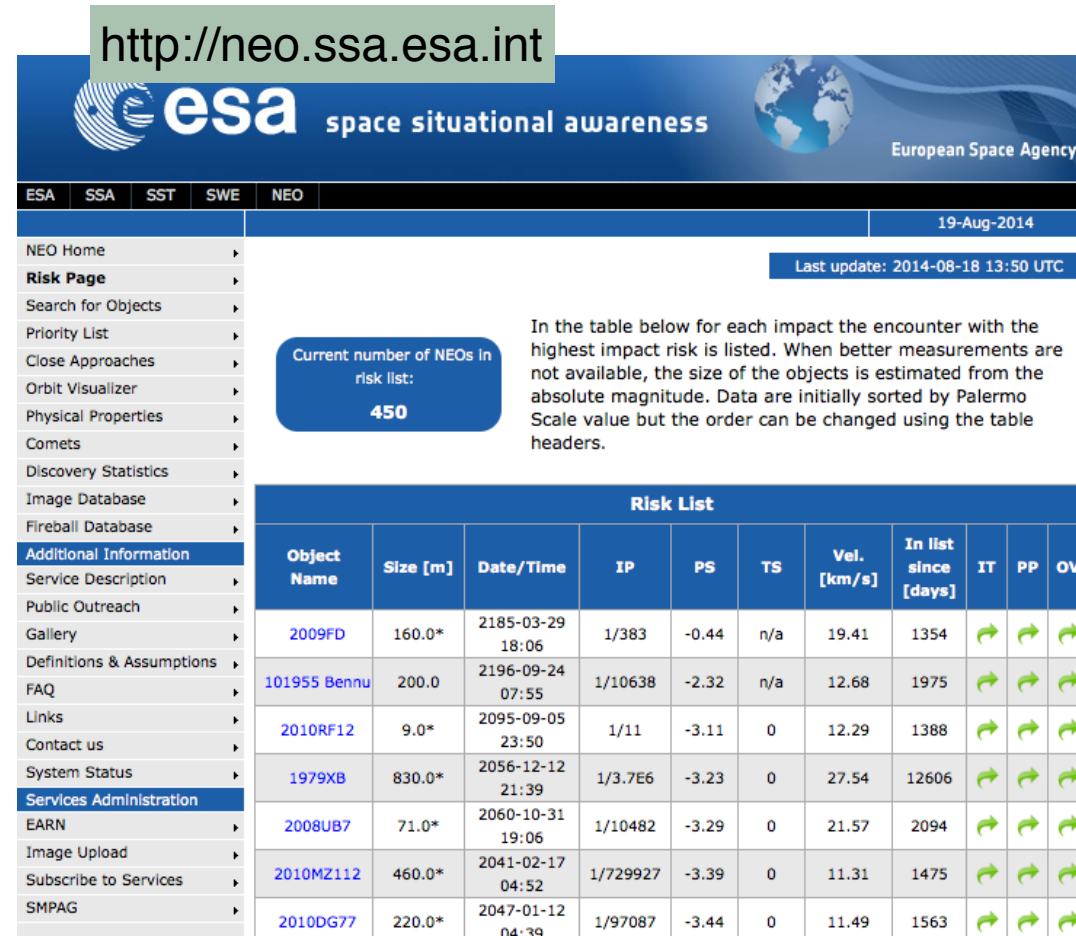


Image CGS/Cibin

- NEOCC maintains 'risk list'

- NEODyS is one of the 'federated' assets of the NEOCC
- Computes precise orbits including co-variances
- Makes impact prediction
- In the process of establishing long-term support, integrate more into NEOCC

<http://neo.ssa.esa.int>



Current number of NEOs In risk list: **450**



In the table below for each impact the encounter with the highest impact risk is listed. When better measurements are not available, the size of the objects is estimated from the absolute magnitude. Data are initially sorted by Palermo Scale value but the order can be changed using the table headers.

Risk List										
Object Name	Size [m]	Date/Time	IP	PS	TS	Vel. [km/s]	In list since [days]	IT	PP	OV
2009FD	160.0*	2185-03-29 18:06	1/383	-0.44	n/a	19.41	1354	↻	↻	↻
101955 Benu	200.0	2196-09-24 07:55	1/10638	-2.32	n/a	12.68	1975	↻	↻	↻
2010RF12	9.0*	2095-09-05 23:50	1/11	-3.11	0	12.29	1388	↻	↻	↻
1979XB	830.0*	2056-12-12 21:39	1/3.7E6	-3.23	0	27.54	12606	↻	↻	↻
2008UB7	71.0*	2060-10-31 19:06	1/10482	-3.29	0	21.57	2094	↻	↻	↻
2010MZ112	460.0*	2041-02-17 04:52	1/729927	-3.39	0	11.31	1475	↻	↻	↻
2010DG77	220.0*	2047-01-12 04:39	1/97087	-3.44	0	11.49	1563	↻	↻	↻

The 'risk list' showing all NEOs having an impact probability >0 within the next 100 years

- Orbit visualization tool
- NEO chronology by IAU
- Physical properties database
- Image database under development
- NEODyS is being moved to ESRIN

http://neo.ssa.esa.int


space situational awareness


European Space Agency

ESA SSA SST SWE NEO
19-Aug-2014

Last update: 2014-08-18 13:50 UTC

- NEO Home >
- Risk Page** >
- Search for Objects >
- Priority List >
- Close Approaches >
- Orbit Visualizer >
- Physical Properties >
- Comets >
- Discovery Statistics >
- Image Database >
- Fireball Database >
- Additional Information**
- Service Description >
- Public Outreach >
- Gallery >
- Definitions & Assumptions >
- FAQ >
- Links >
- Contact us >
- System Status >
- Services Administration**
- EARN >
- Image Upload >
- Subscribe to Services >
- SMPAG >

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- Workshops to collect input, training, raise awareness
- 'NEO Information Plan' describes information distribution
- Presented to SSA Delegate body in Dec 2015

ESA Unclassified – For official use

ESA/PB-SSA(01)
Paris, xx Septe
(Original: Eng

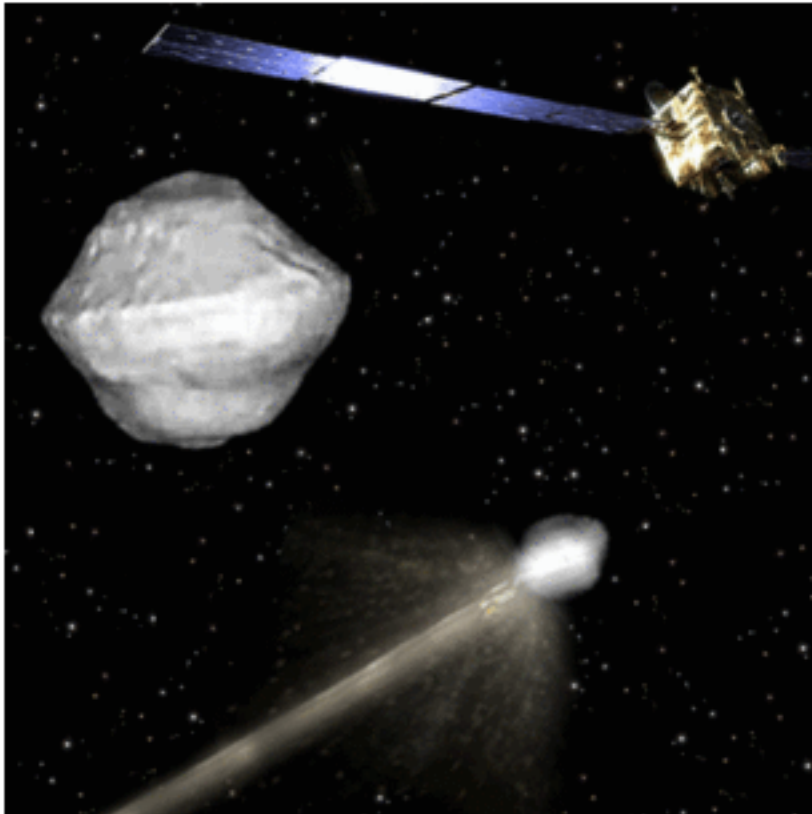
EUROPEAN SPACE AGENCY

SPACE SITUATIONAL AWARENESS PROGRAMME BOA

Outcome of the second workshop on NEO impact hazards
for national civil protection authorities



ASTEROID IMPACT & DEFLECTION ASSESSMENT (AIDA) STUDY



AIDA mission concept

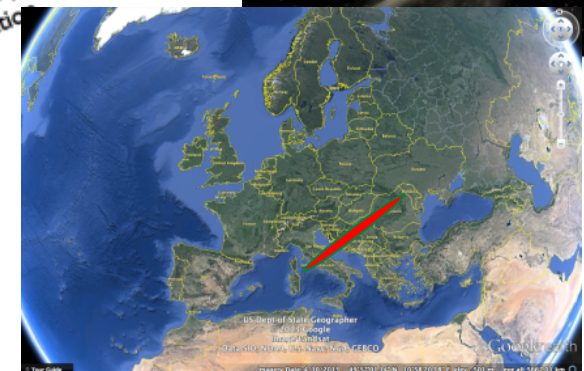
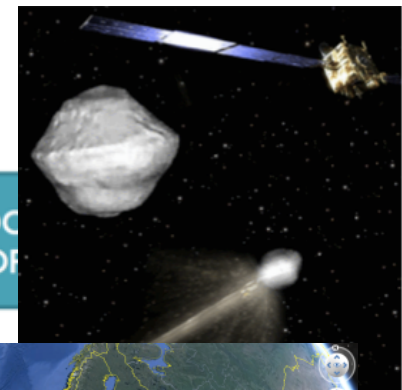
The Asteroid Impact & Deflection Assessment

Phase A study of AIM ongoing (within ESA's 'General Studies Programme')

Using star trackers as test-bed for space-based asteroid observations

Studies for NEO cameras in L1 or L4, L5

- **2016 Dec: ESA council meeting on ministerial level**
- **New funding will be requested for 2017-2020**
- **Coordination with IAWN needs to be enforced**



Space situational awareness
European Space Agency
17-Feb-2013
Last update: 2013-02-17 09:01 UTC

Number of NEOs in risk list: 361

In the table below for each impact the encounter with the highest impact risk is listed. When better measurements are not available, the size of the objects is estimated from the absolute magnitude. Data are initially sorted by Palermo Scale value but the order can be changed using the table headers.

Object Name	Size [m]	Date/Time	IP	PS	TS	Vel. [km/s]	In list since [days]	IT	PP	OV
2012Y25	200.0	2182-06-24 22:20	1/3623	-1.52	n/a	12.86	1484	🟢	🟢	🟢
1999C36	170.0*	2048-06-03 02:08	1/1801	-1.81	1	19.21	1919	🟢	🟢	🟢
2007KK184	170.0*	2209-09-29 18:06	1/1894	-1.9	n/a	19.39	814	🟢	🟢	🟢
2009FD	160.0*	2093-12-11 12:58	1/104493	-2.85	0	23.51	16	🟢	🟢	🟢
2013BF73	390.0*	2030-02-14 15:56	1/2762	-3.07	0	18.94	1830	🟢	🟢	🟢
2008CK70	98.0*	2095-09-05 23:50	1/11	-3.11	0	12.29	892	🟢	🟢	🟢
2010FR12	9.0*	2096-12-12 21:39	1/3.766	-3.23	0	27.54	12115	🟢	🟢	🟢
197608	830.0*	2041-02-17 04:52	1/552486	-3.27	0	11.31	951	🟢	🟢	🟢
2010M2112	470.0*							🟢	🟢	🟢