

ETD – Exoplanet Transit Database

in
past, present and future

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Variable Star and Exoplanet Section of Czech Astronomical Society



Pro-Am Exoplanet Observations Workshop 2019
25.-28.4.2019, Helsinki Finland

Known transitters:

- CoRoT-1 b
- CoRoT-10 b
- CoRoT-11 b
- CoRoT-12 b
- CoRoT-13 b
- CoRoT-17 b
- CoRoT-18 b
- CoRoT-19 b
- CoRoT-2 b
- CoRoT-20 b
- CoRoT-3 b
- CoRoT-4 b
- CoRoT-5 b
- CoRoT-6 b
- CoRoT-8 b
- CoRoT-9 b
- EPIC 218916923 b
- EPIC 228735255 b
- EPIC-203771098 b
- EPIC-203771098 c
- EPIC-210957318 b
- EPIC-211089792 b
- EPIC-212110888 b
- GJ1214 b
- GJ3470 b
- GJ436 b
- HAT-P-1 b

OBJECT	CONST	# OF DATA	TIME SPAN FROM - TILL	LAST CHANGES (DAYS) <small>Red if less than 1 week ago</small>
1	HAT-P-37 b			

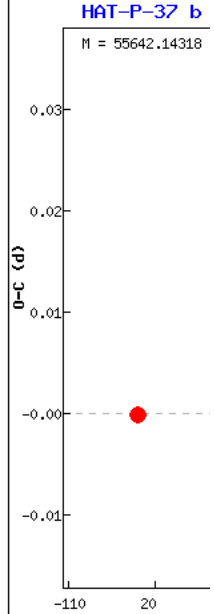
Transit observations (TRESCA database)

> [BACK to list of transits](#)

RA	DE
18 57 11.16	+51 16 08

> [Show transit pred](#)

[Plot user data ...](#)



Exoplanet: **WASP-12 b**

observer:

Post address:

E-mail:

Station:

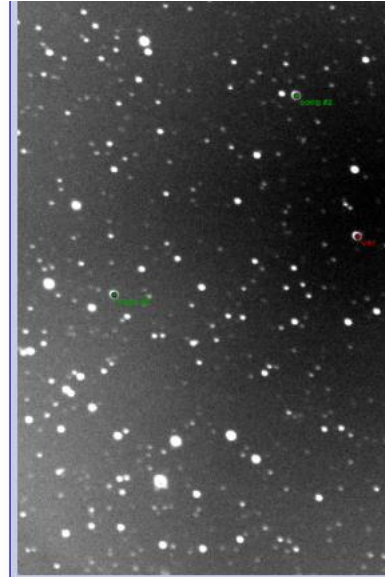
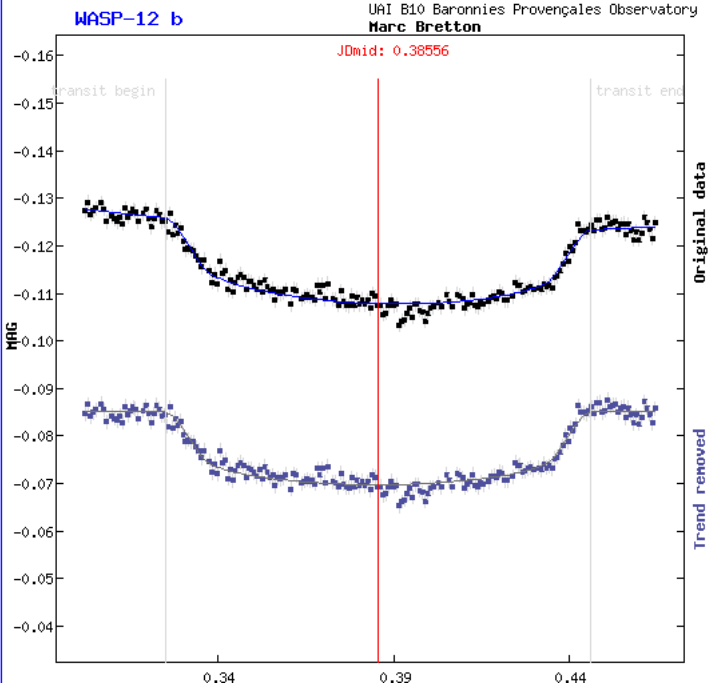
Geographic location: east longitude: 5° | north latitude: 44°

Instrument:

Photometric filter: U B V R I Clear

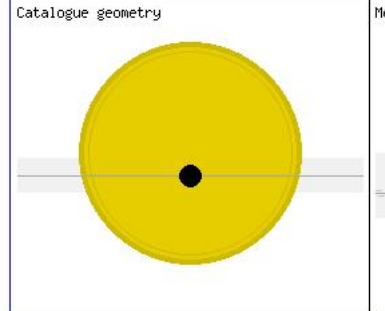
Notes / conditions:

Already published in:



[Show in ETD](#)

R_p : 1.736 +/- 0.092 R_{Jup}	1.846 -0.055 +0.0
R_* : 1.599 +/- 0.071 R_{Sun}	fixed, errors inclu
A : 0.02293 +/- 0.00078 AU	fixed, errors inclu
Per: 1.0914222 days	fixed
i : 86 +/- 3 °	82.77 -0.46 4.15 +1



HAT-P-37 b (Dra)
 RA (J2000): 18 57 11.16, DE (J2000): +51 16 08.9,
 $V = 13.23$ mag, $dV = 0.0204$ mag, duration = 139.8 minutes
 Per = d, T0(HJD) =



15' x 15' image from the Digitized Sky Survey at the STScI Archive.

Your ELONGITUDE (in deg): 0° - 360°

Your LATITUDE (in deg): 90° - 0° - -90°

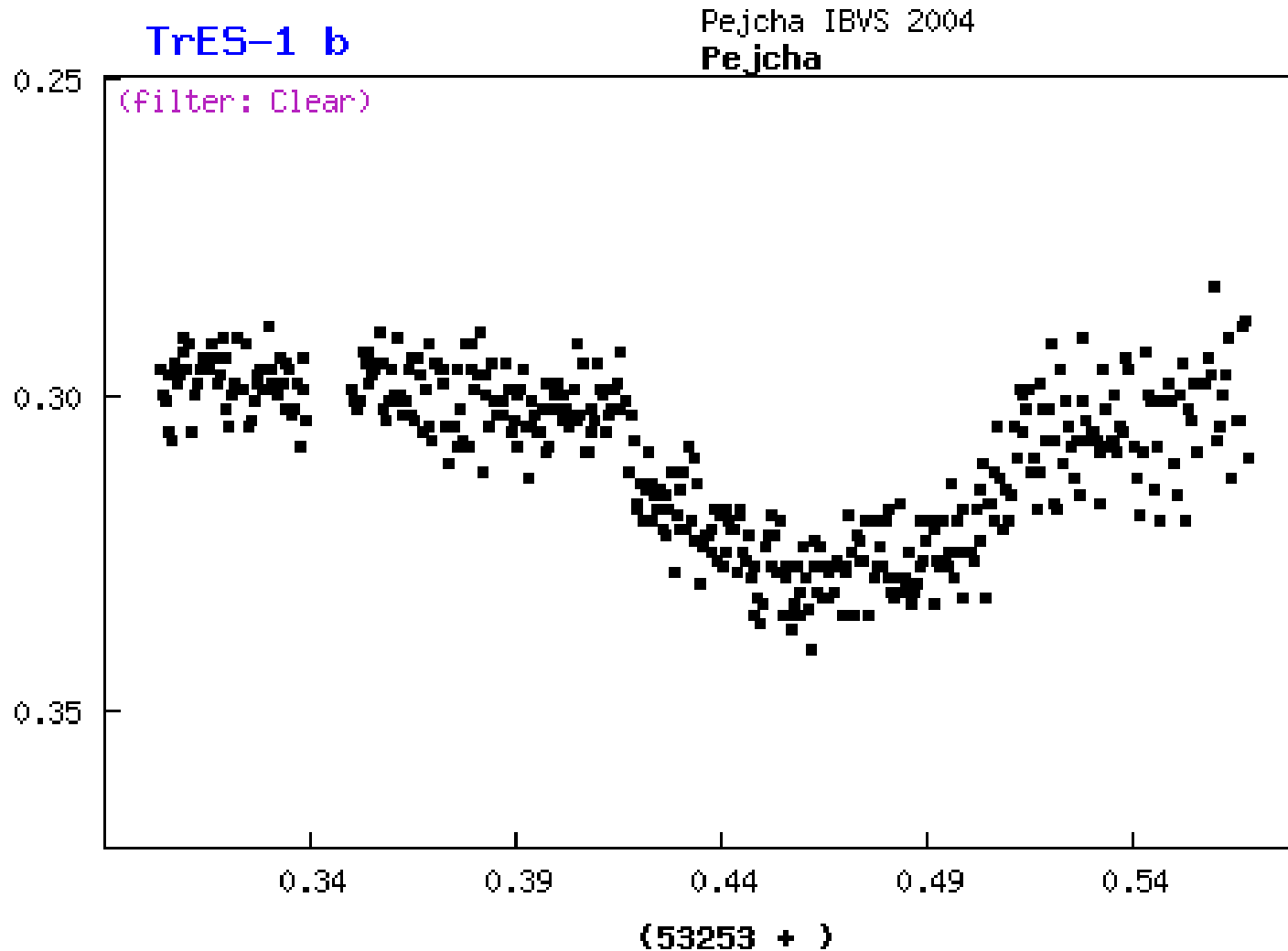
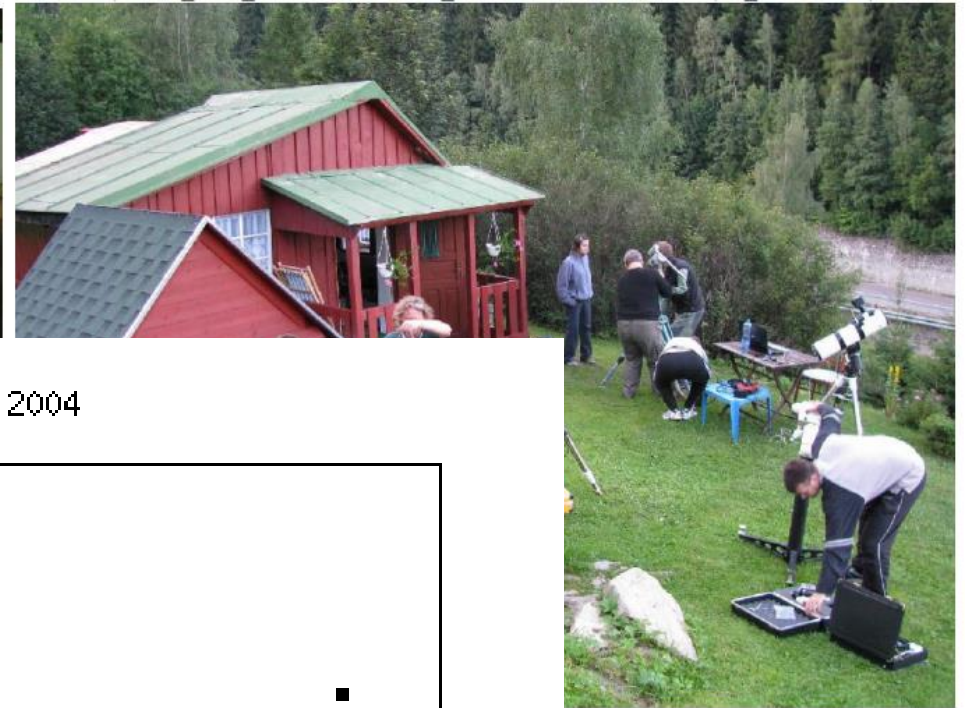
Transits predictions for NEXT 365 days.
 ELONGITUDE: 15° and LATITUDE: 50°

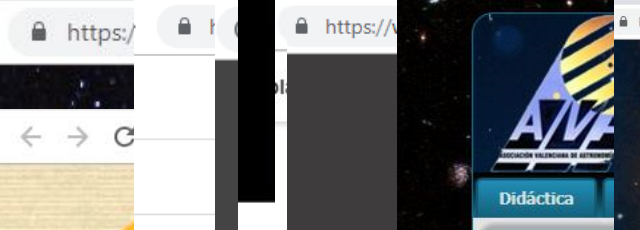
Transit occurs below 20° in the sky. | **During the daylight.** | Observable.

Tmid (HJD)	BEGIN (UT/h,A)	CENTER (DD.MM. UT/h,A)	END (UT/h,A)
2458587.843	14.04 7:04 (66°,W)	14.04. 8:14 (56°,NW)	14.04 9:24 (46°,NW)
2458590.641	17.04 2:12 (71°,E)	17.04. 3:22 (82°,E)	17.04 4:32 (88°,NW)
2458593.438	19.04 21:21 (32°,NE)	19.04. 22:30 (41°,NE)	19.04 23:40 (50°,NE)
22.04 16:29 (17°,N)	22.04. 17:39 (14°,N)	22.04 18:49 (19°,NF)	

ETD

- 2004
- 2006
- 2008
 - Au
 - we
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- 2009
infor

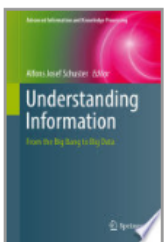




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edited by Alfons Josef Schuster

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- 65
- 64
- 63
- 62
- 61



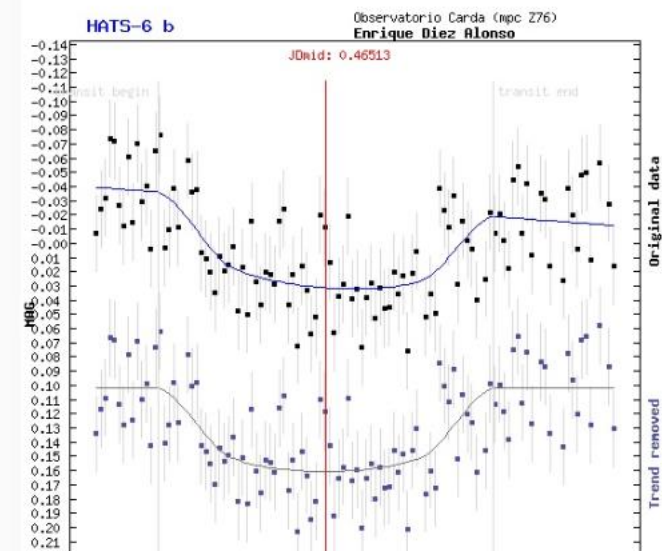
Observaciones de Exoplanetas

Exoplaneta HATS 6b

Viernes, 20 Febrero 2015 12:24

Observación del tránsito del exoplaneta *HATS 6b* realizada en la noche del 06/01/15 desde el Observatorio Carda (mpc Z76).

Se trata de un exoplaneta con 0'32 masas jovianas y radio 0'998 veces el joviano, que orbita cada 3'32 días una estrella de tipo espectral M1V, con 0'57 masas solares y temperatura efectiva 3700 kelvin (magnitud aparente 15'16).



¿Quieres saber Astronomía?

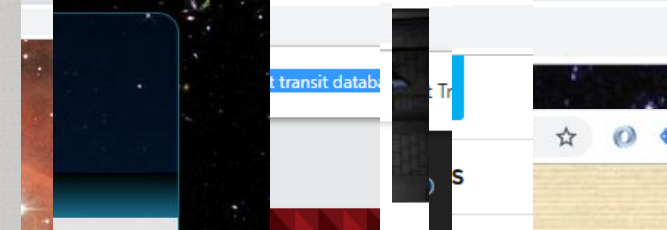
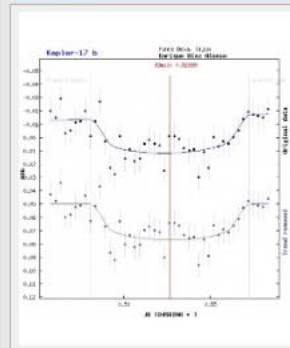
Curso on line de
Astronomía

Lista de correo
de noticias
astronómicas

Próximas Actividades

Sin eventos

Galería



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olar planets, along with their host
d since 2011 by carefully examin-
web sites such as Anglo-Australian
P,¹¹ or Southern Sky extrasolar
1). Physical characteristics such
, eccentricity, and inclination of
ar of discovery and the detection
ed by Professor Jason T. Wright
atabase and includes the data of
The Exoplanet Transit Database¹⁴
r and Exoplanet Section of the
des a list of discovered transiting
f transit observations (TRESCA

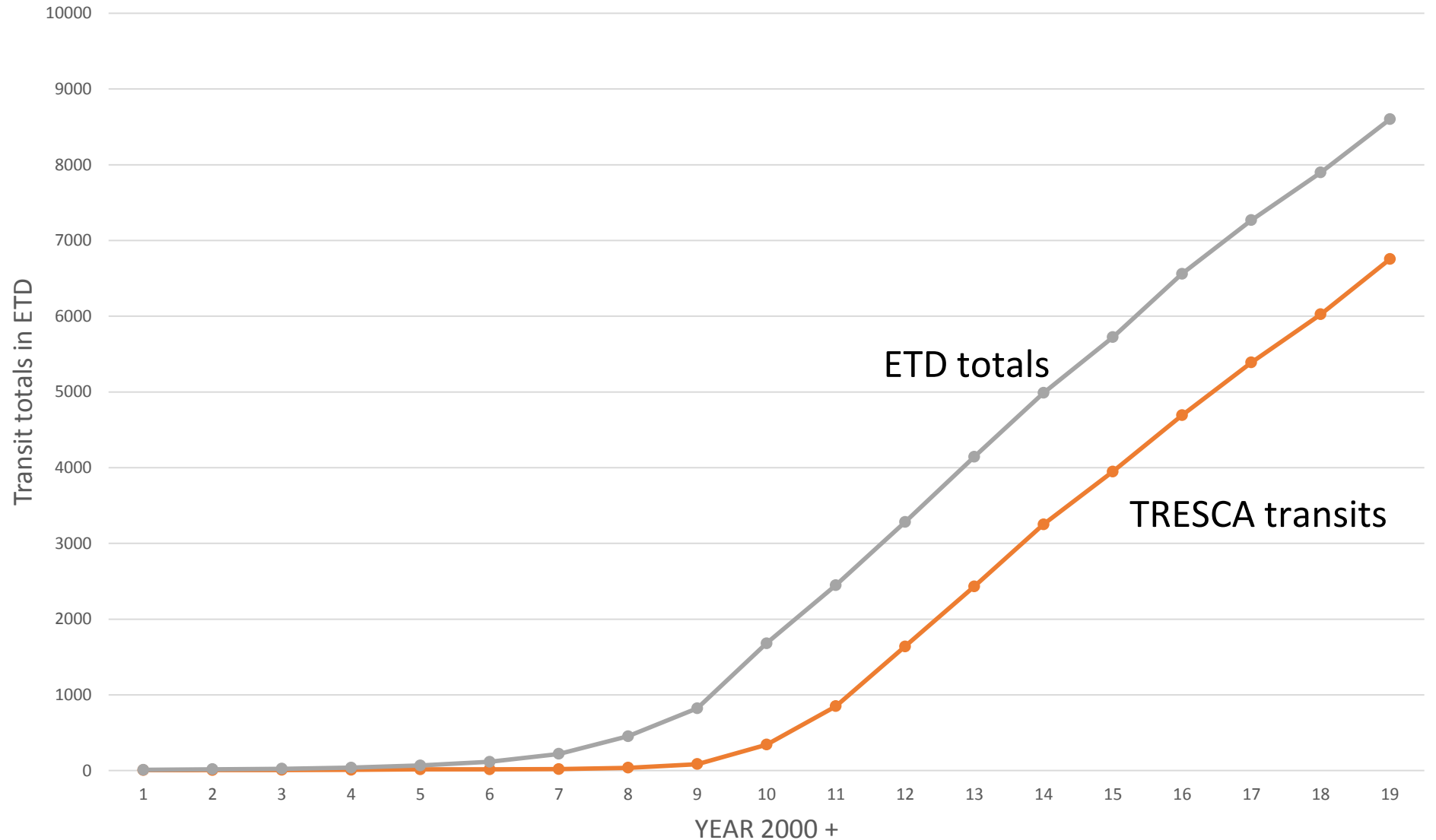


ETD in present

- Data sta
 - **11 ye**
 - **1500**
 - **9000**
 - **225 e**
- Citation
 - 2010
 - 72 cit**
- Data wc
 - Transi
 - Transi



ETD statistics 2001 - 2019

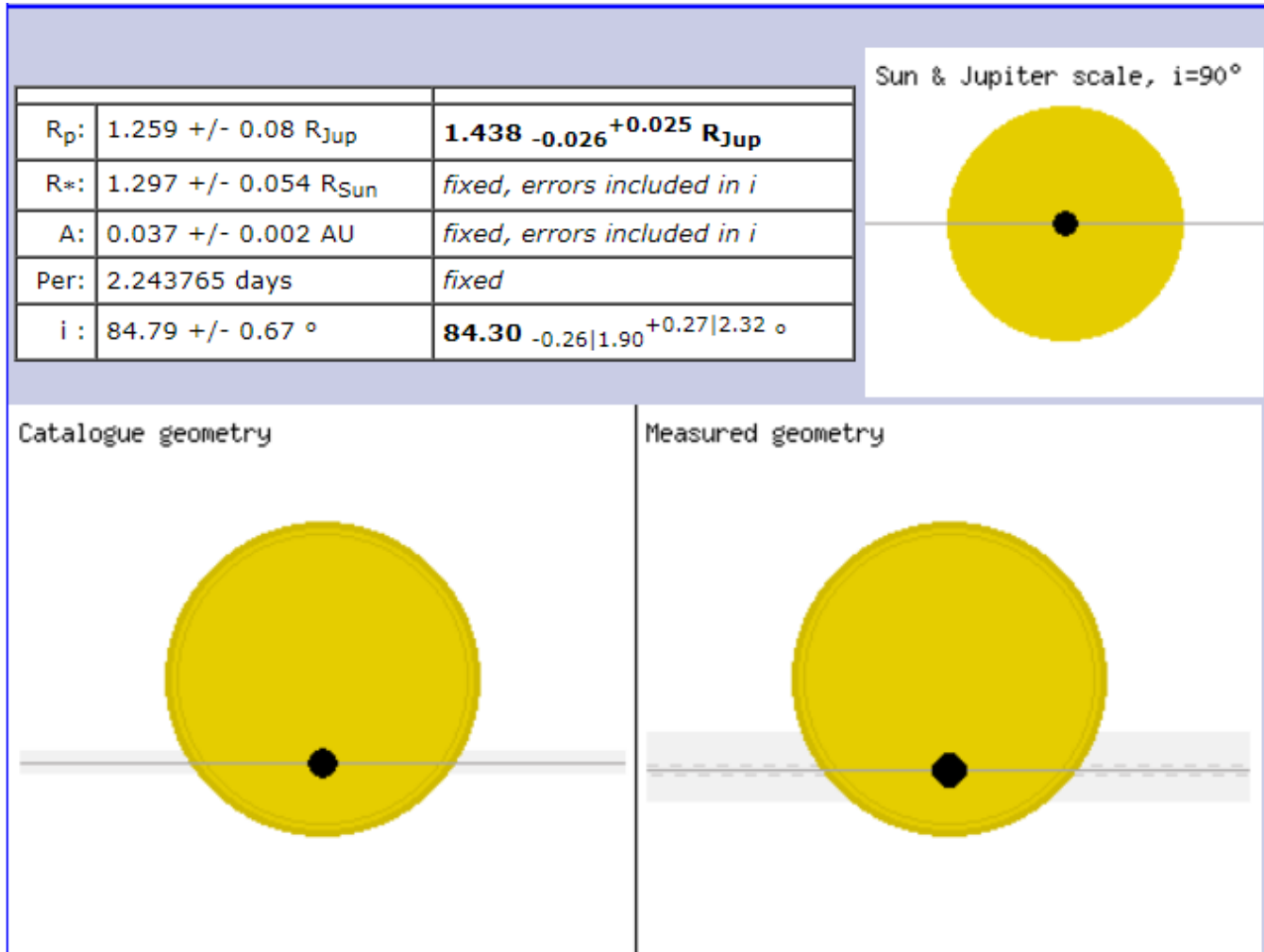


ETD technological background

- Technical solution (2008, PHP, MySQL, Apache web server, FreeBSD os)
- Internal databases (table of transits, table of transiting exoplanets – both confirmed and candidates)
- Transit light curve processing
 - C++ application called from web, input: parameters from database and data
 - Error bars are rescaled to real poisson scatter
 - $m(t_i) = A - 2.5 \log F(z[t_i, t_o, D, b], p, c_1) + B(t_i - t_{mean}) + C(t_i - t_{mean})^2$
 - Where $F(z,p,c)$ is computed artificial light curve using Mandel & Agol (2002) occultsmall routing
 - Levenberg-Marquardt non-linear least squares fit from Price et al. (1992)

ETD technological background

- Automatical data-quality rating
 - 1 (best) – 5 (worst), depends on absolute deviation S , $\alpha = \frac{\delta}{S} \sqrt{t}$
- Modeling of host star – exoplanet geometry



ETD in (near) future

- ETD v 2.0 – technical solution (ASP.NET Core, C#, REST API)
- New design
- TTV plots in list of exoplanets
- Interactive plots and grids
- DateTimes both in UTC and LOCAL TIME
- Storing user settings (coordinates, time zone, grids filters and sorts)
- UI better works with a large number of exoplanets
- Interesting exoplanets TIPS

ETD in (near) future

- Client independent approach
 - REST API could be used by any web application, Windows / Linux / MacOS desktop application, Android & iOS mobile app
- ETD REST API functions
 - GET exoplanets, GET transits for some exoplanet, GET transit, GET data
 - POST new transit, POST new transiting exoplanet
 - GET predictions
 - GET model fit of transit observation
 - Public interface for developers (Swagger)
- Expected release: 2020
- Far future: AI searching for TTV and wrong data points in TTV plots

ETD call for cooperation

1. Become **ETD editor**

- Adding new transits from literature and other sources

2. Become **ETD donator**

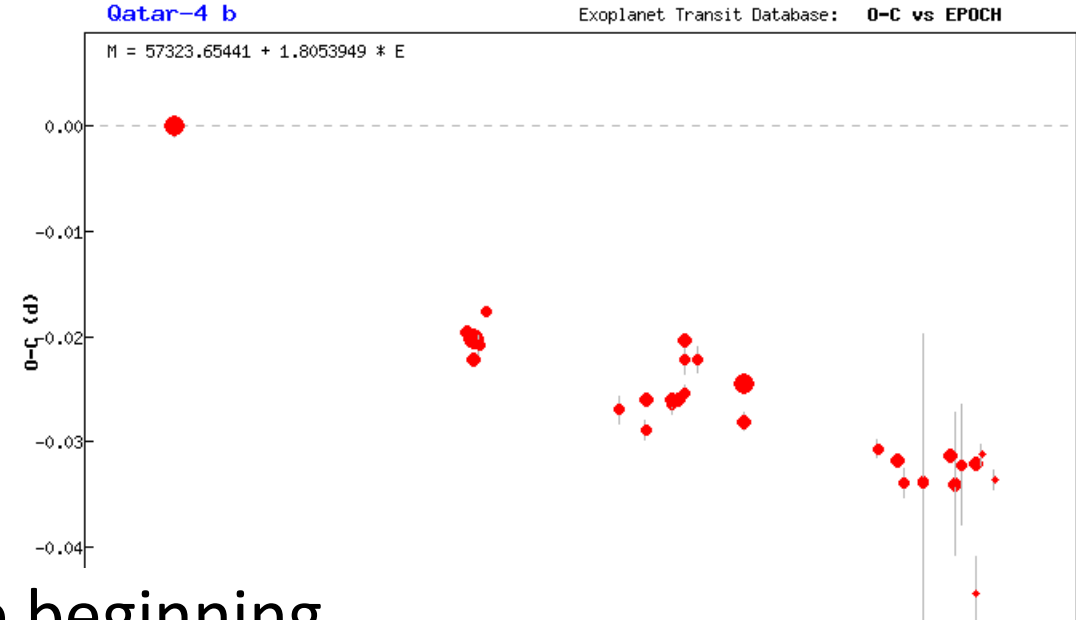
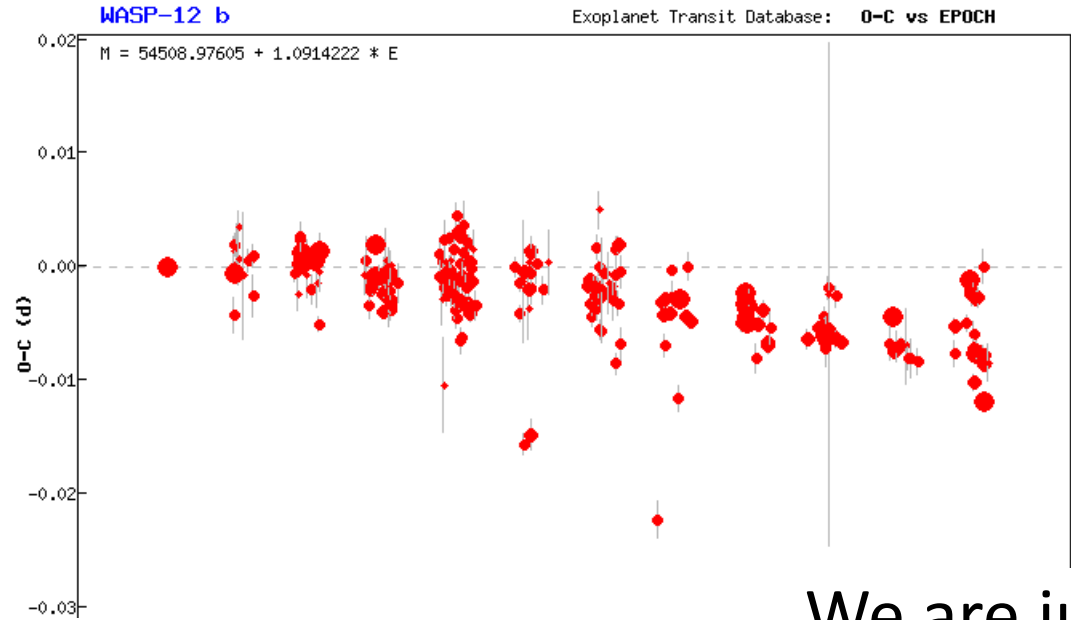
- Send a voluntary financial contribution to support ETD further development

3. Become **ETD developer**

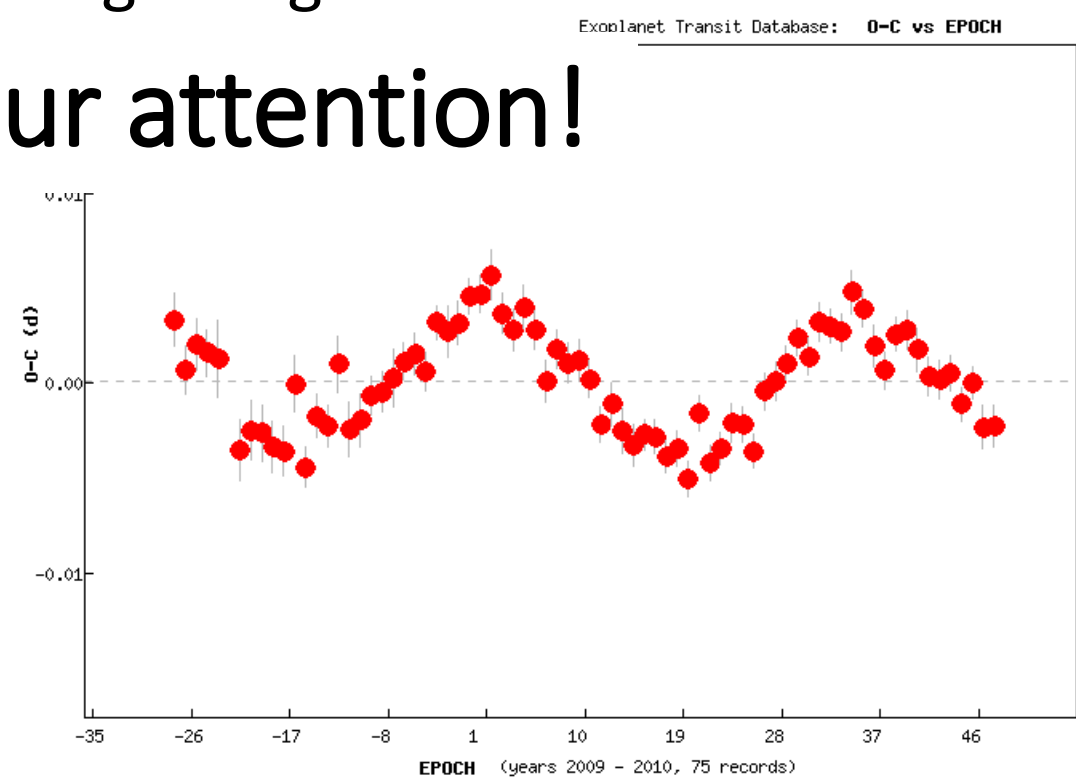
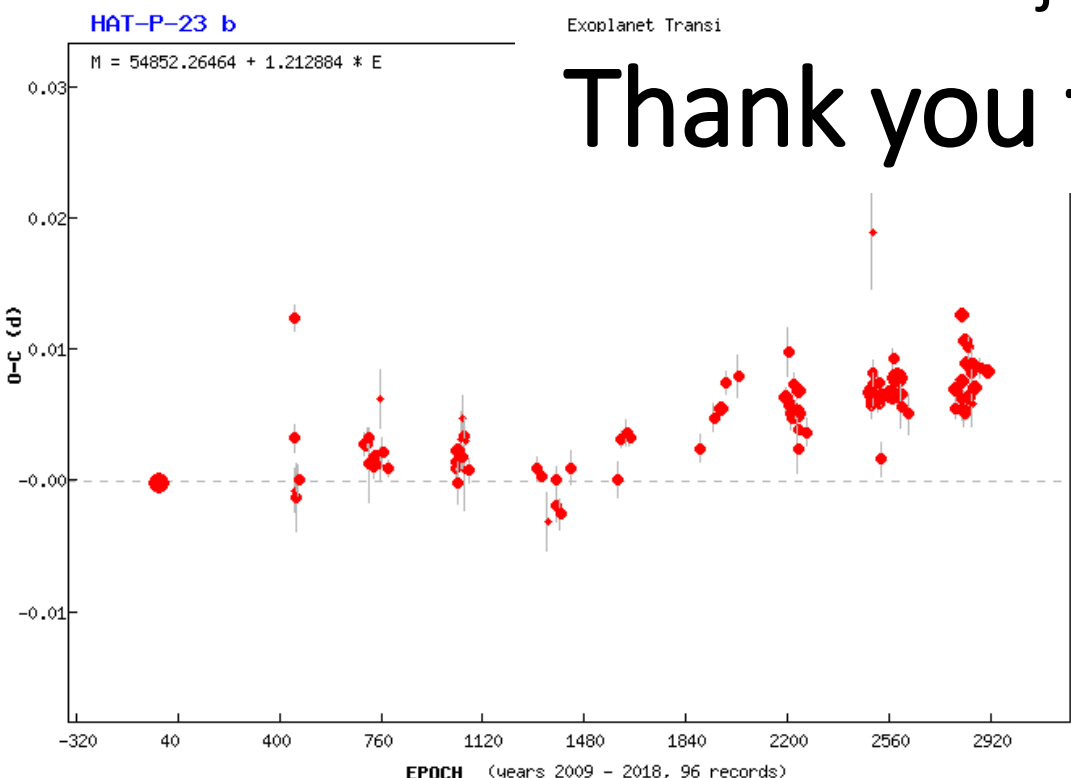
- Join the .NET development team and work on new features and bug fixes

4. Give **ETD your feedback**

- Tell us your needs / expectations / complains and help us improve ETD



We are just in the beginning...



Thank you for your attention!