

# KIC 006615520

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006615520-01	OBS	No	346.256198	359.271526	268.5	10.204	7.6	7.9	0.75	5386	1.39	0.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006615520-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

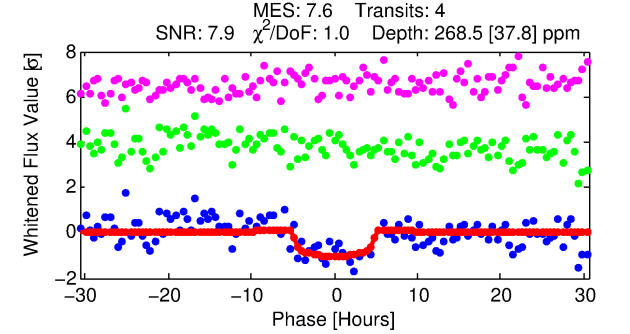
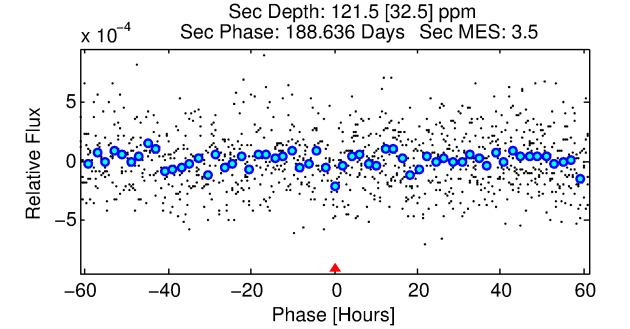
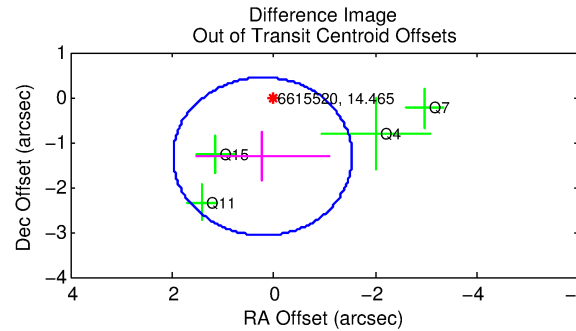
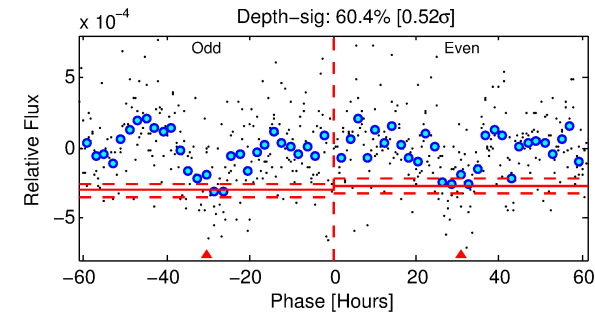
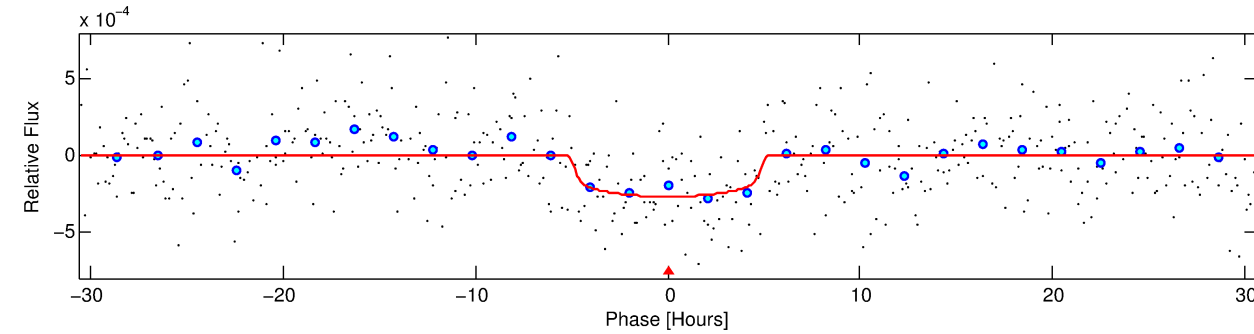
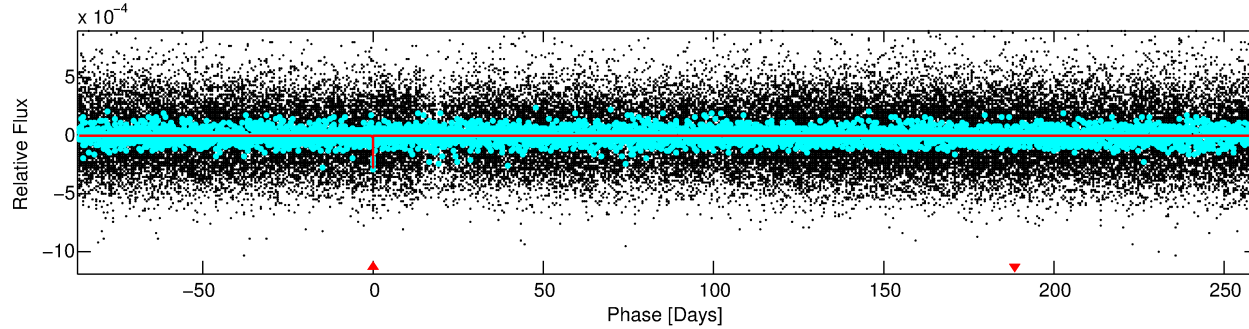
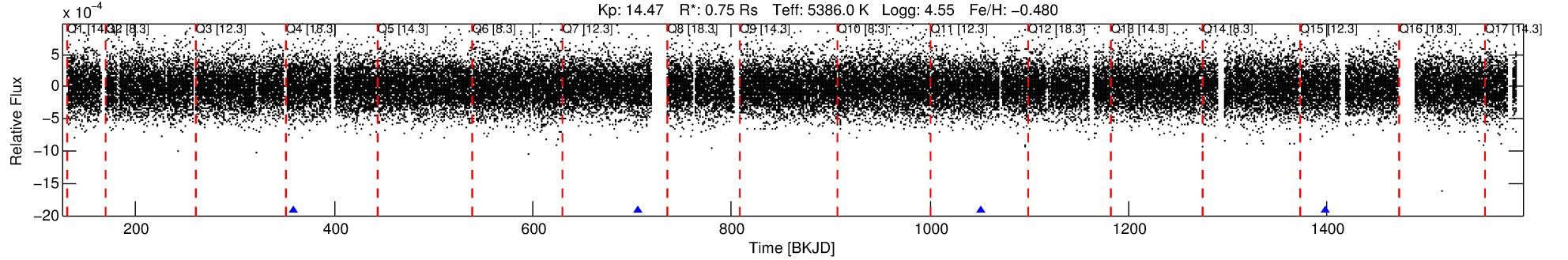
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006615520-01

No Significant Match Found

# DV One-Page Summary

KIC: 6615520 Candidate: 1 of 1 Period: 346.256 d



## DV Fit Results:

Period = 346.25620 [0.01187] d  
Epoch = 359.2715 [0.0225] BKJD  
Rp/R\* = 0.0169 [0.0078]  
a/R\* = 156.31 [311.94]  
b = 0.82 [0.81]  
Seff = 0.57 [0.11]  
Teq = 221 [11] K  
Rp = 1.38 [0.67] Re  
a = 0.8693 [0.0962] AU  
Ag = 26340.83 [25735.79] [1.02 $\sigma$ ]  
Teffp = 4356 [1059] K [3.91 $\sigma$ ]

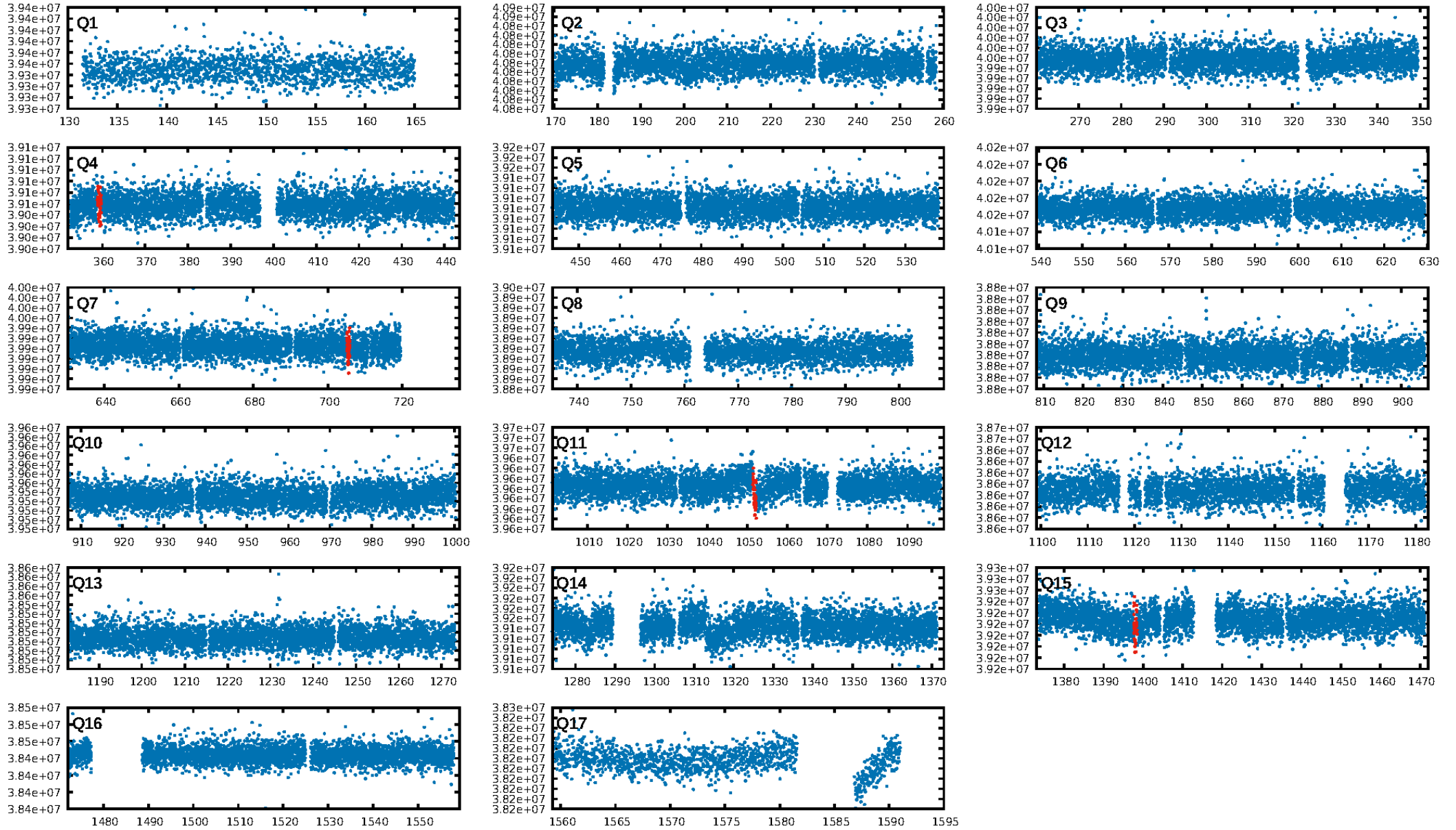
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 14.3%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: 4.21e-15  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 3.145  
Centroid-sig: 18.5%  
Centroid-so: 2.071 arcsec [1.27 $\sigma$ ]  
OotOffset-rm: 1.336 arcsec [2.28 $\sigma$ ]  
KicOffset-rm: 1.320 arcsec [2.34 $\sigma$ ]  
OotOffset-st: 0/3/1/0 [4]  
KicOffset-st: 0/3/1/0 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

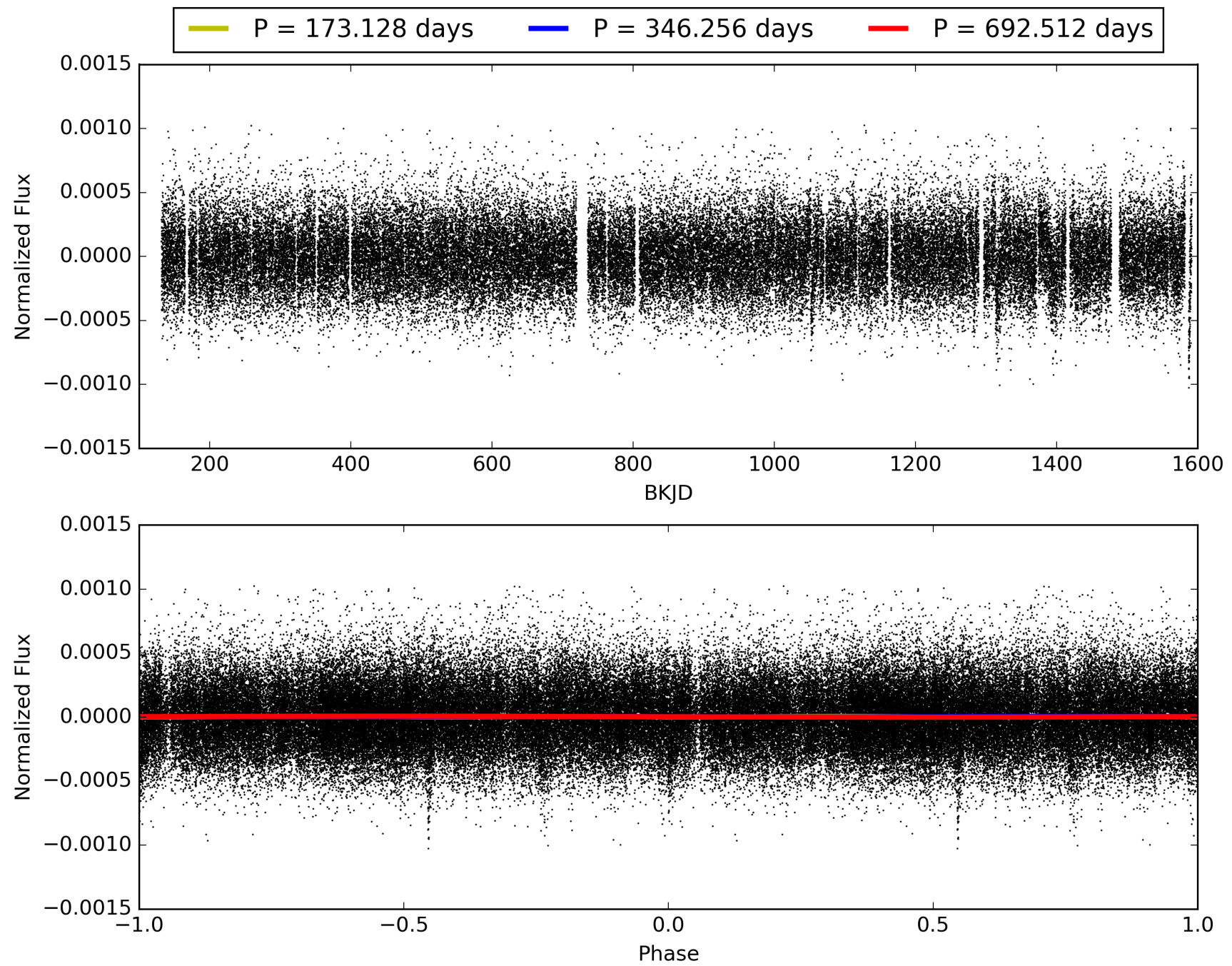
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:10:42 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006615520-01, PDC Light Curves

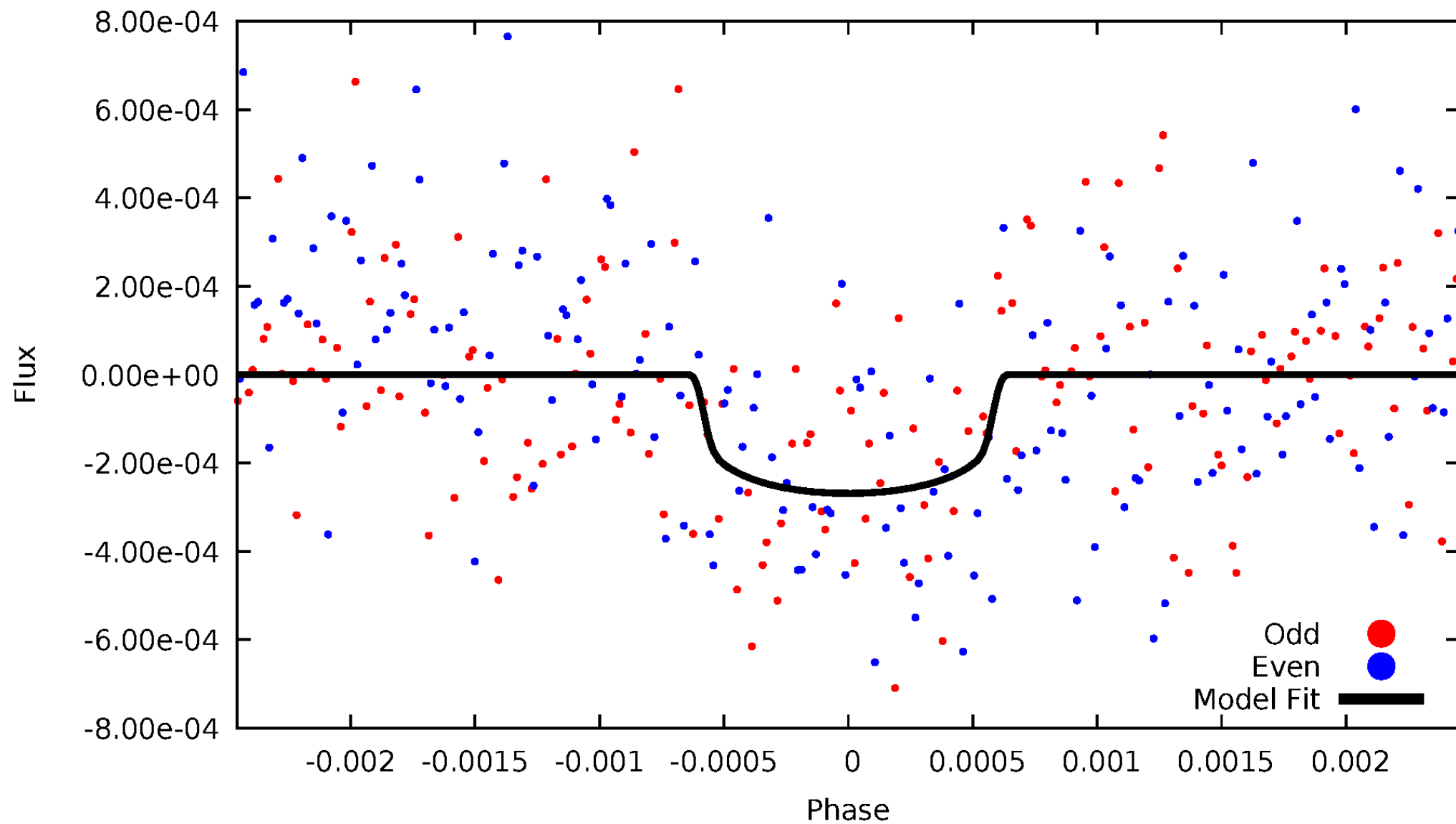


TCE 006615520-01



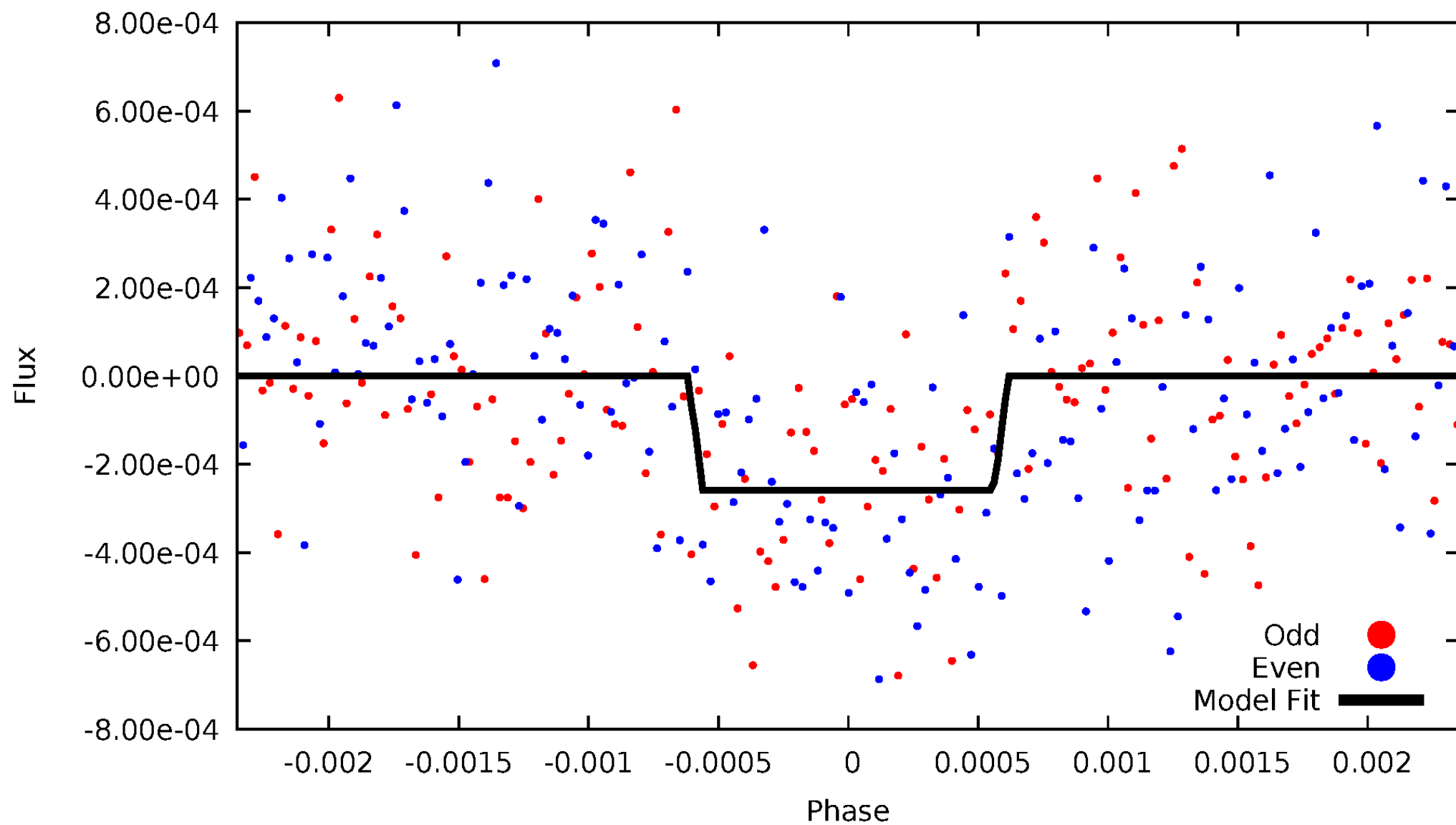
# DV Odd/Even

TCE 006615520-01



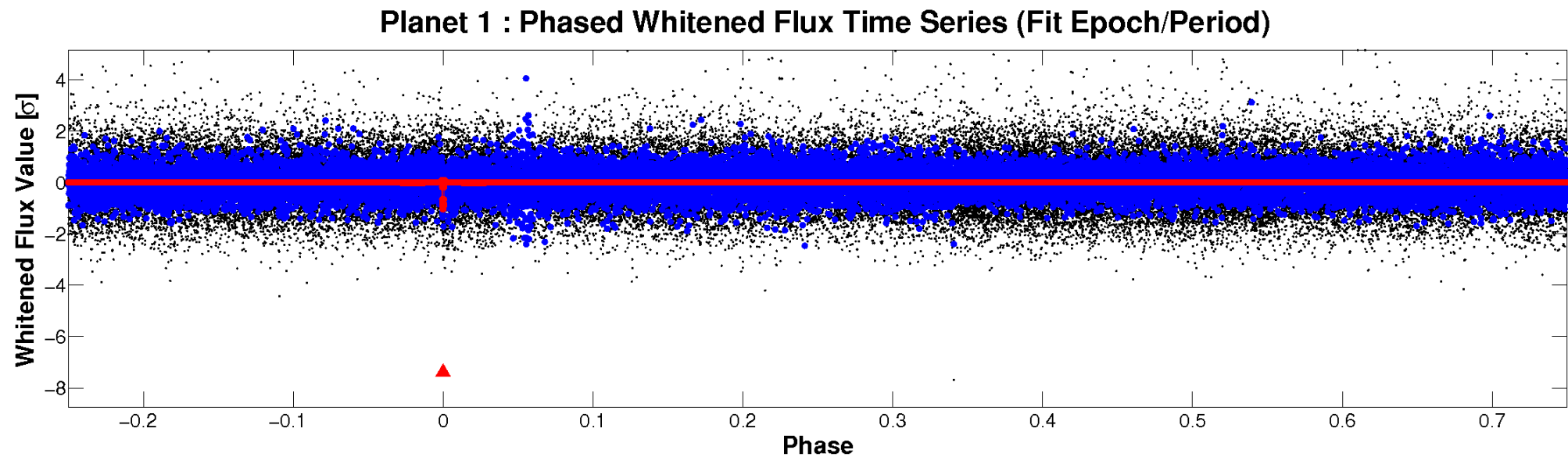
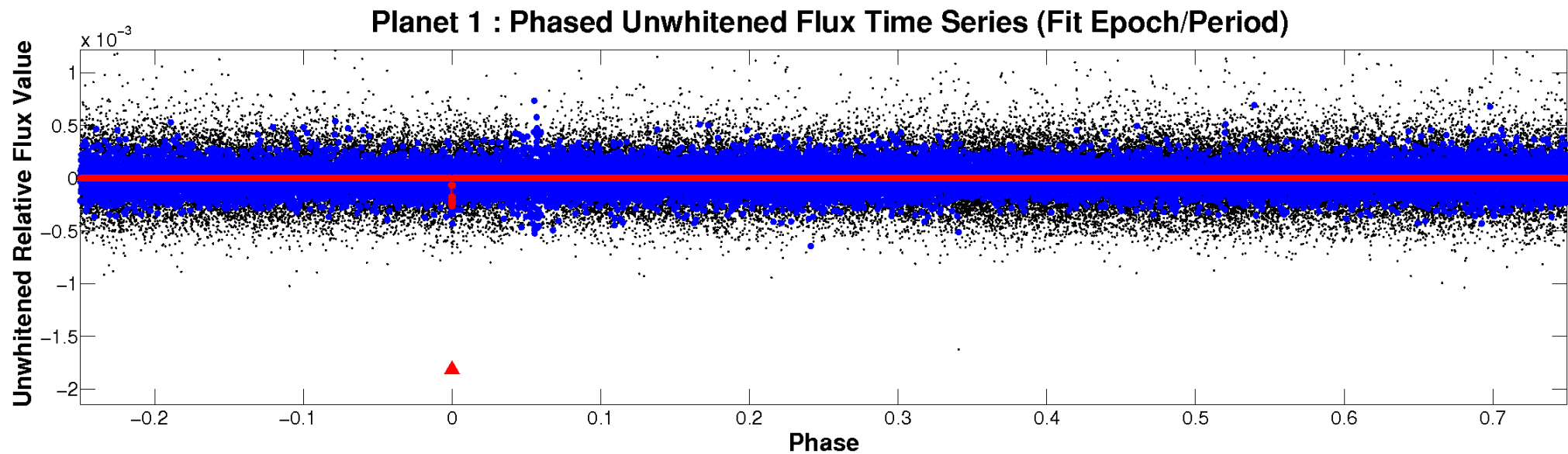
# ALT Odd/Even

TCE 006615520-01



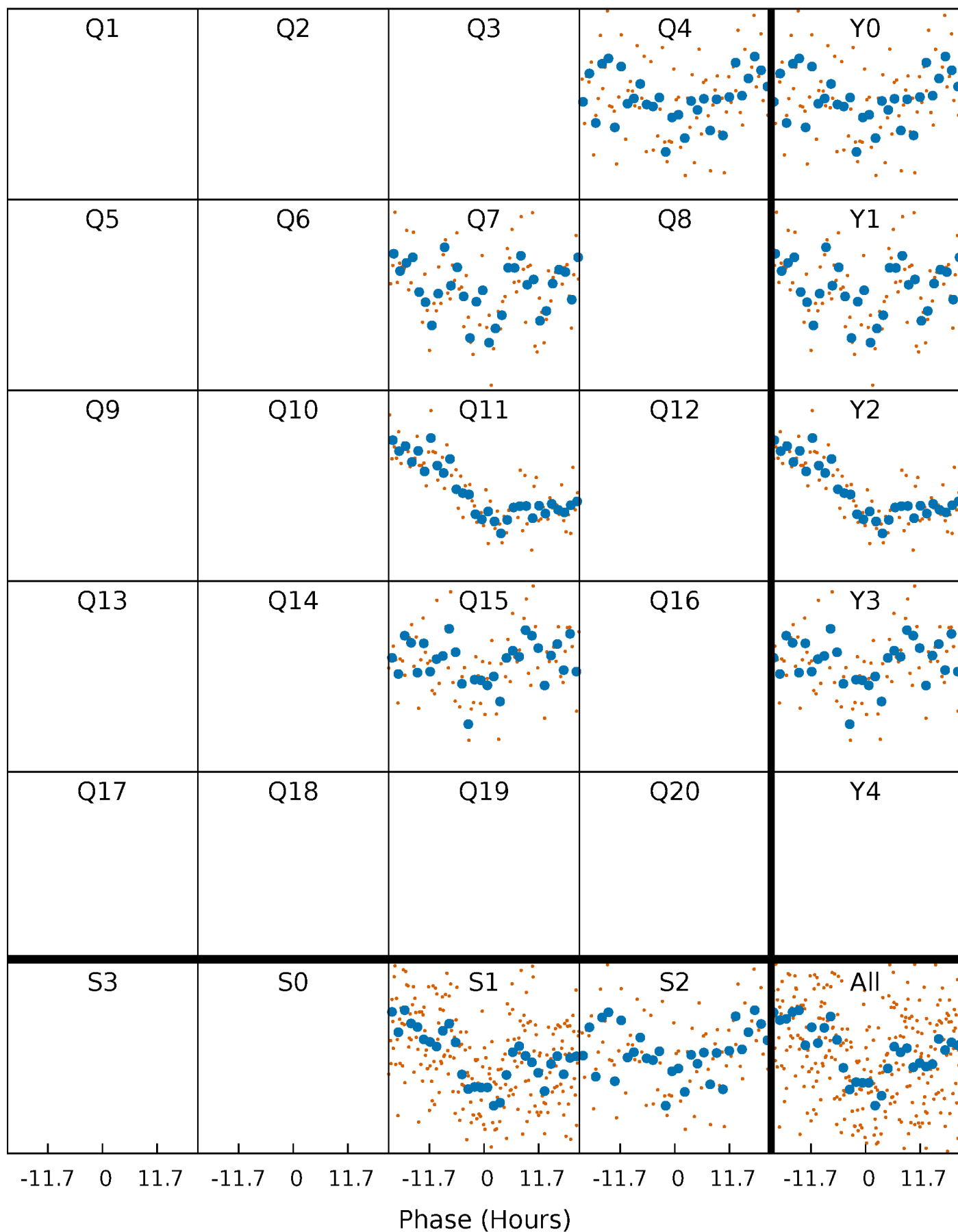


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

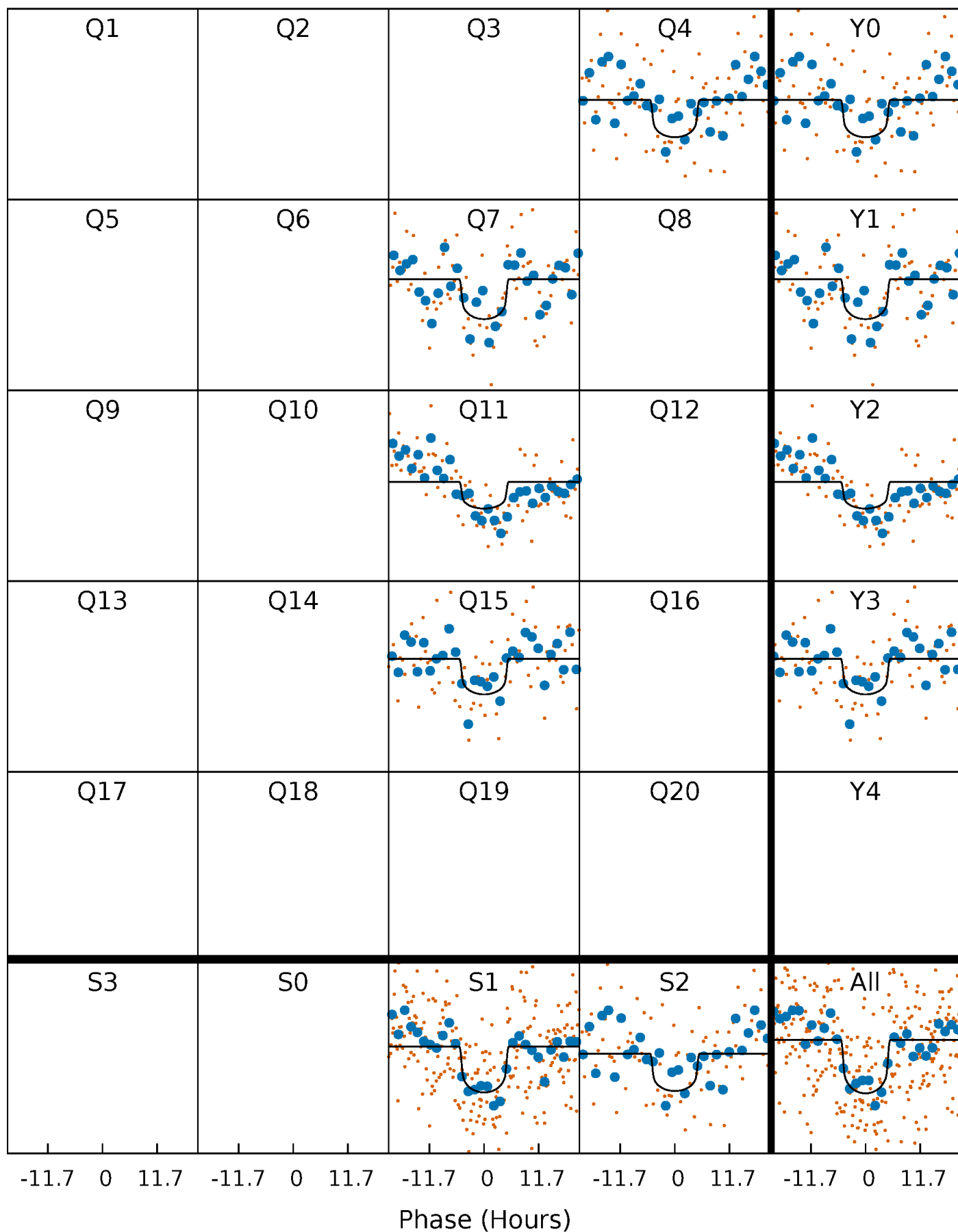
TCE 006615520-01 P=346.256198 Days  $T_0=359.271526$  (BKJD)





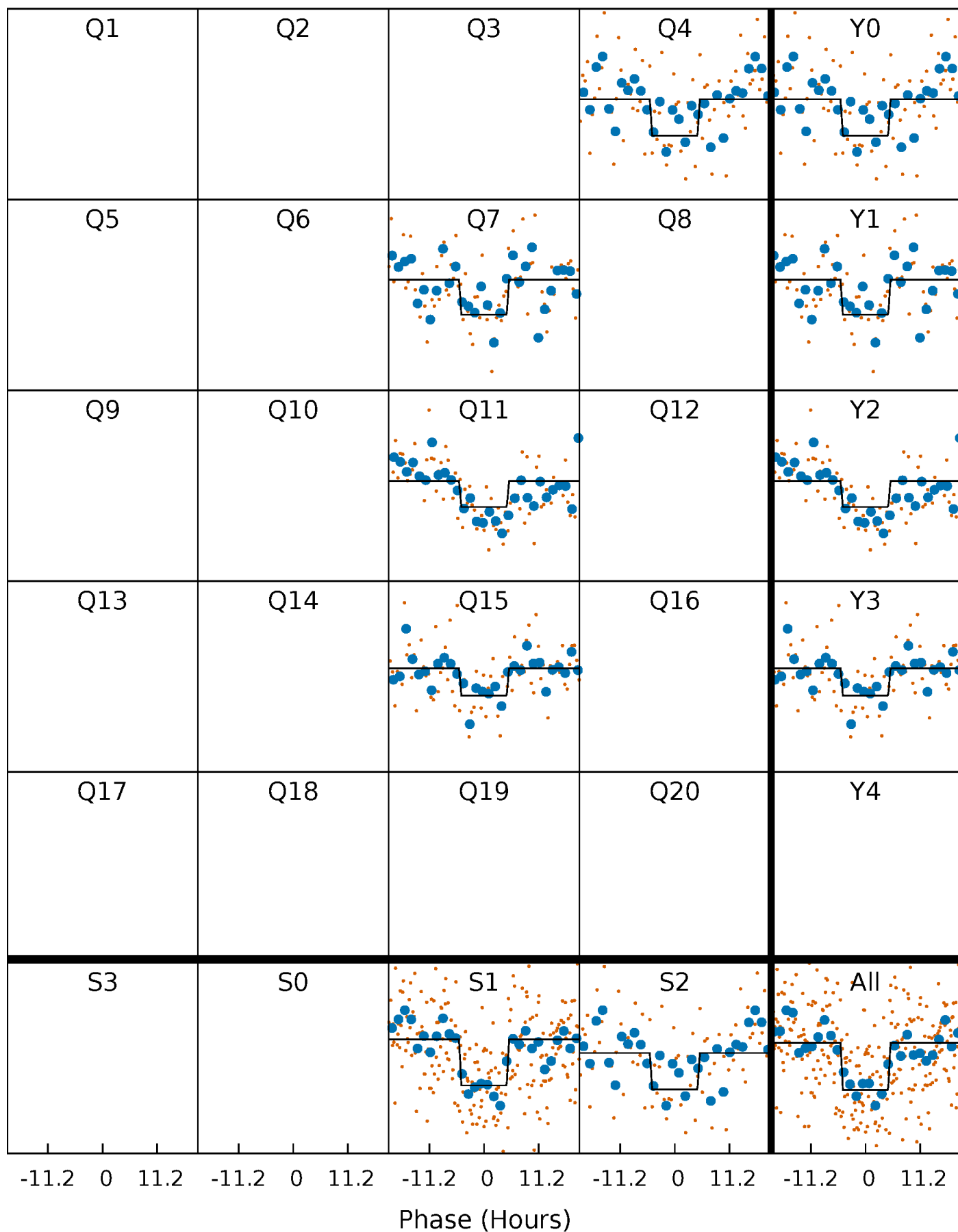
# DV Quarter-Phased Transit Curves

TCE 006615520-01 P=346.256198 Days  $T_0=359.271526$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

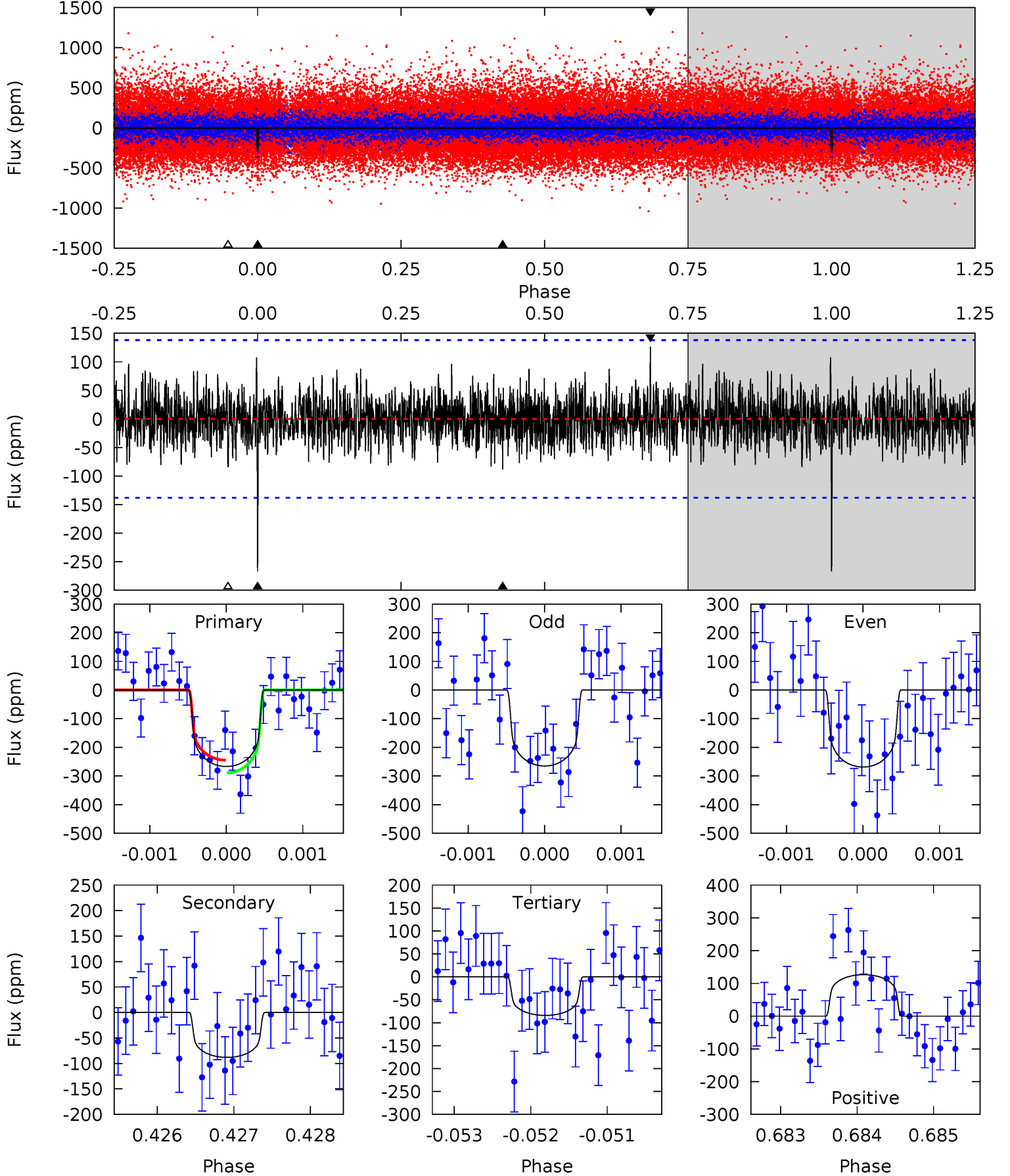
TCE 006615520-01 P=346.253485 Days  $T_0=359.272702$  (BKJD)



# DV Model-Shift Uniqueness Test

006615520-01,  $P = 346.256198$  Days,  $E = 13.015328$  Days

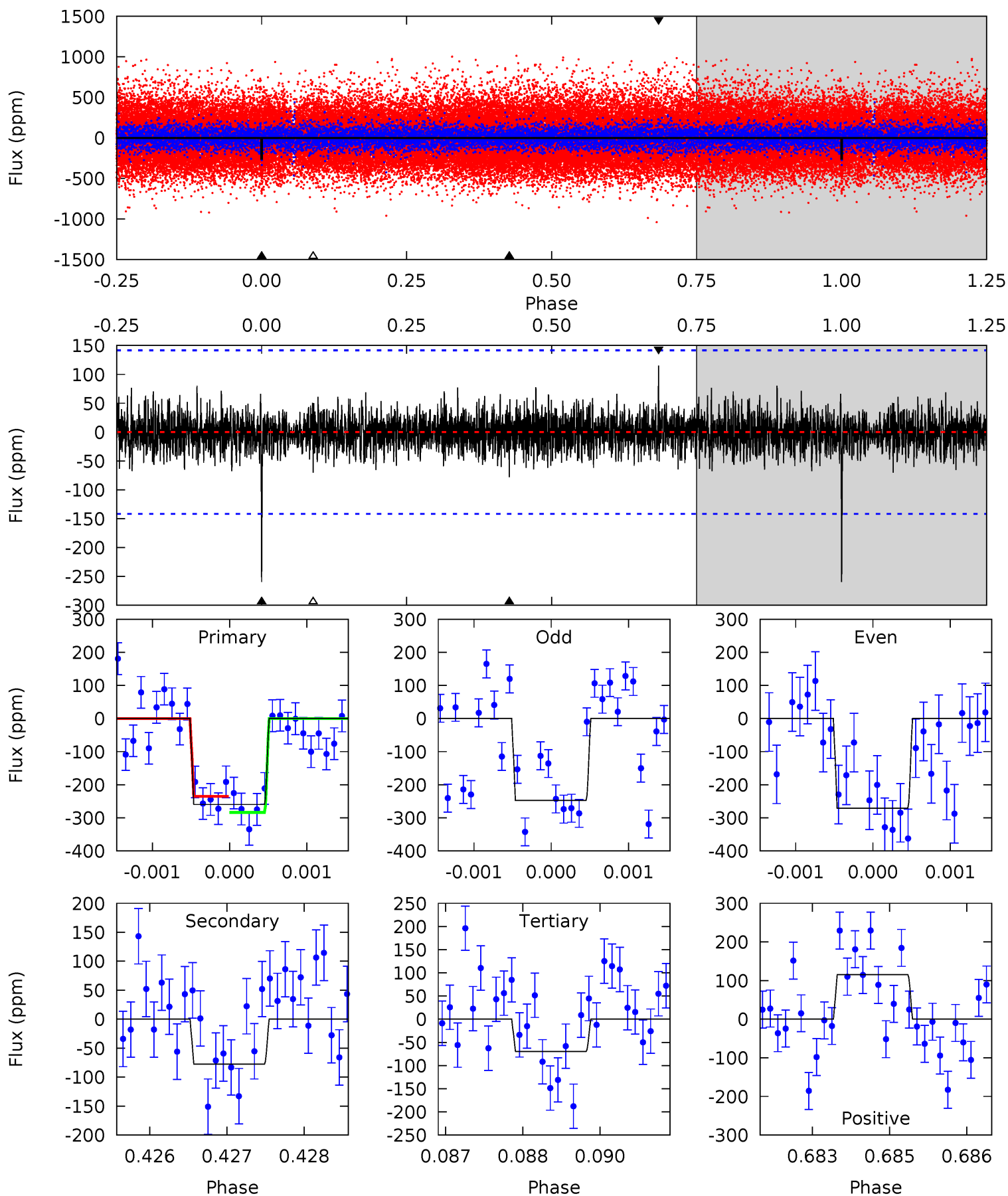
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	3.45	3.30	4.96	5.40	3.22	1.14	7.16	5.51	0.15	-1.50	0.07	1.01	0.32	0.87



# Alt Model-Shift Uniqueness Test

006615520-01, P = 346.253485 Days, E = 13.019217 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.93	2.98	2.67	4.40	5.42	3.24	0.85	7.26	5.53	0.30	-1.43	0.46	1.05	0.31	0.92



### Stellar Parameters For KIC 006615520

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5386^{+160}_{-144}$	$4.548^{+0.072}_{-0.080}$	$-0.480^{+0.300}_{-0.300}$	$0.753^{+0.104}_{-0.076}$	$0.729^{+0.099}_{-0.046}$	$2.407^{+0.797}_{-0.648}$
	+3%/-3%	+2%/-2%	+62%/-62%	+14%/-10%	+14%/-6%	+33%/-27%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006615520-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-88 \pm 26$	$1.38^{+0.69}_{-0.60}$	$309^{+13}_{-12}$	$4240^{+1131}_{-613}$	$18857^{+40950}_{-11032}$
Alt.	$-78 \pm 26$	$1.31^{+0.64}_{-0.56}$	$309^{+12}_{-13}$	$4235^{+1100}_{-634}$	$18951^{+40326}_{-11629}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

## DV Centroid Data

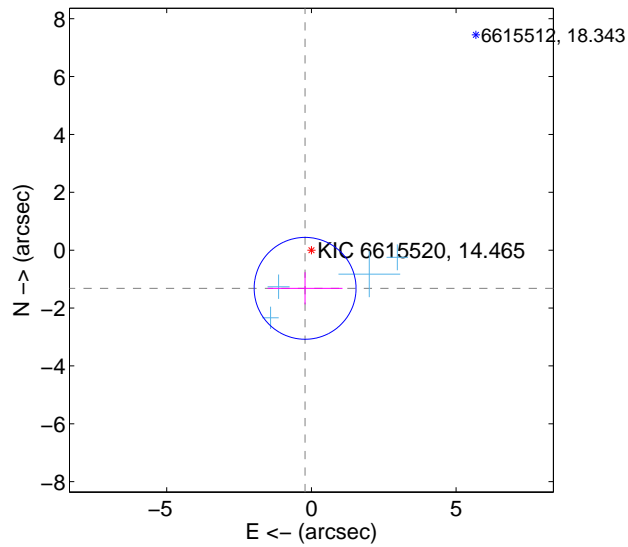
Supplemental centroid analysis for 006615520-01. Kepler magnitude: 14.46. Transit SNR 7.90

There are 4 quarters with good PRF difference image offsets

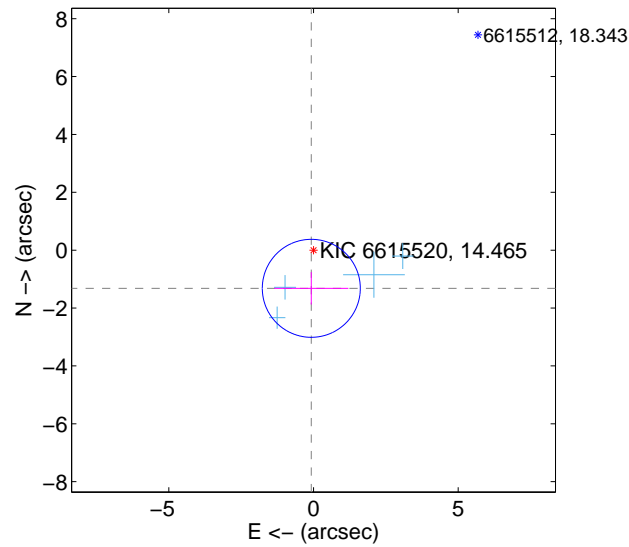
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.336 \pm 0.587$	2.28	$0.218 \pm 1.292$	$-1.318 \pm 0.555$
PRF-fit source offset from KIC position	$1.320 \pm 0.564$	2.34	$0.076 \pm 1.280$	$-1.318 \pm 0.560$
photometric centroid source offset	$2.07 \pm 1.63$	1.27	$-1.71 \pm 1.72$	$1.17 \pm 1.44$

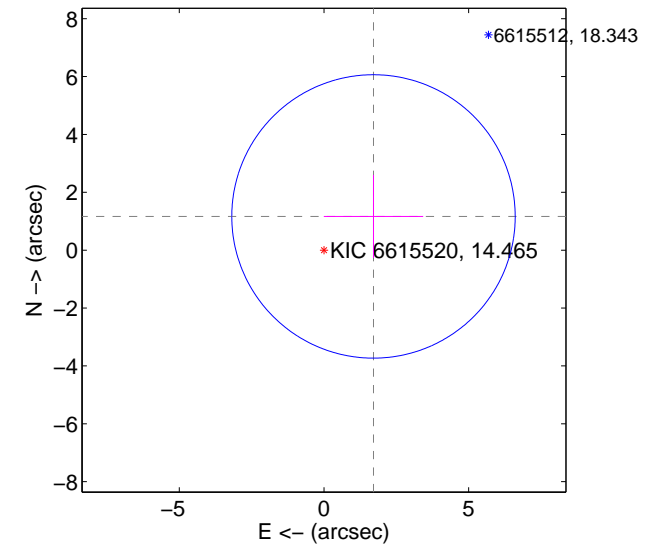
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

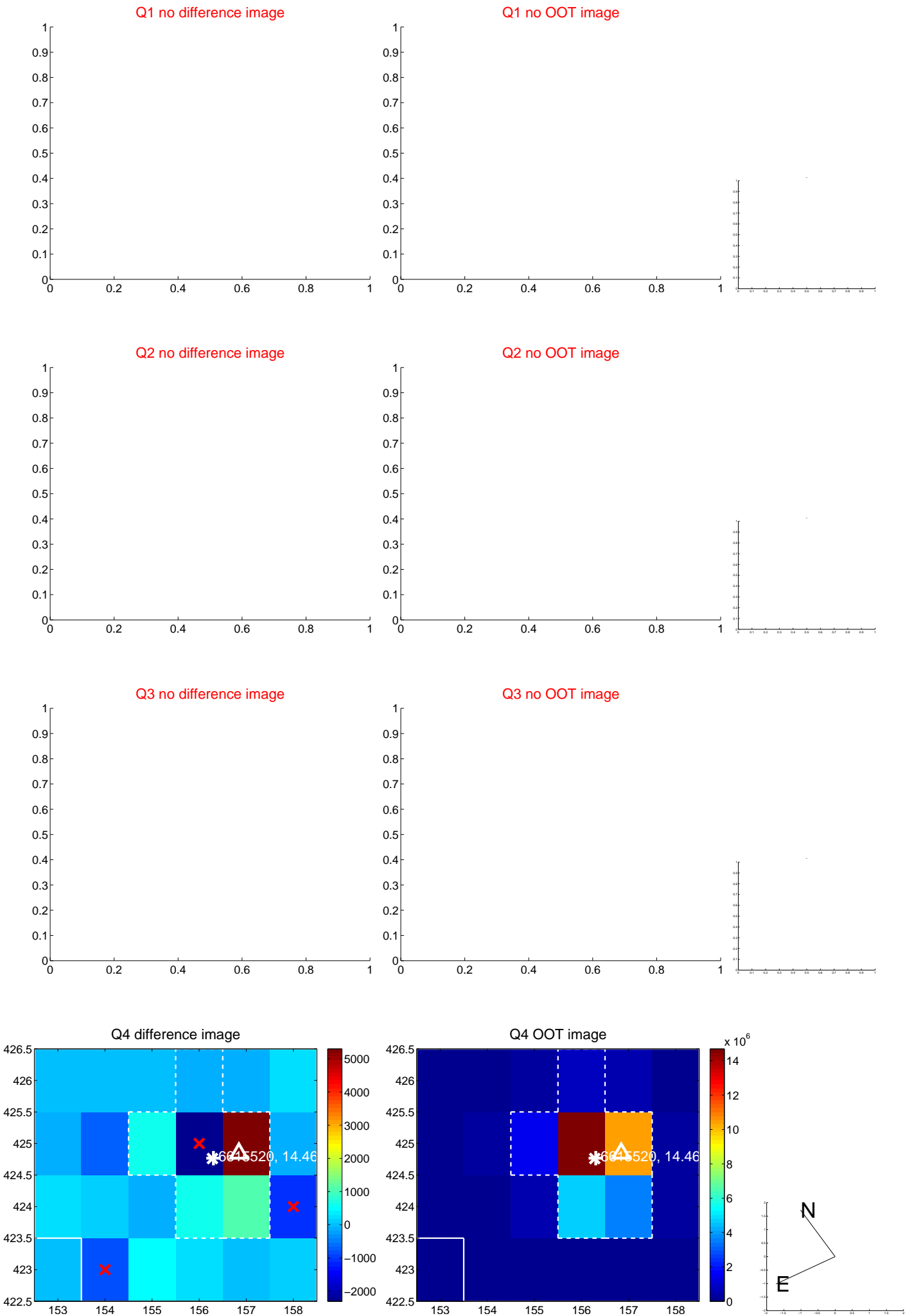


offset from photometric centroids



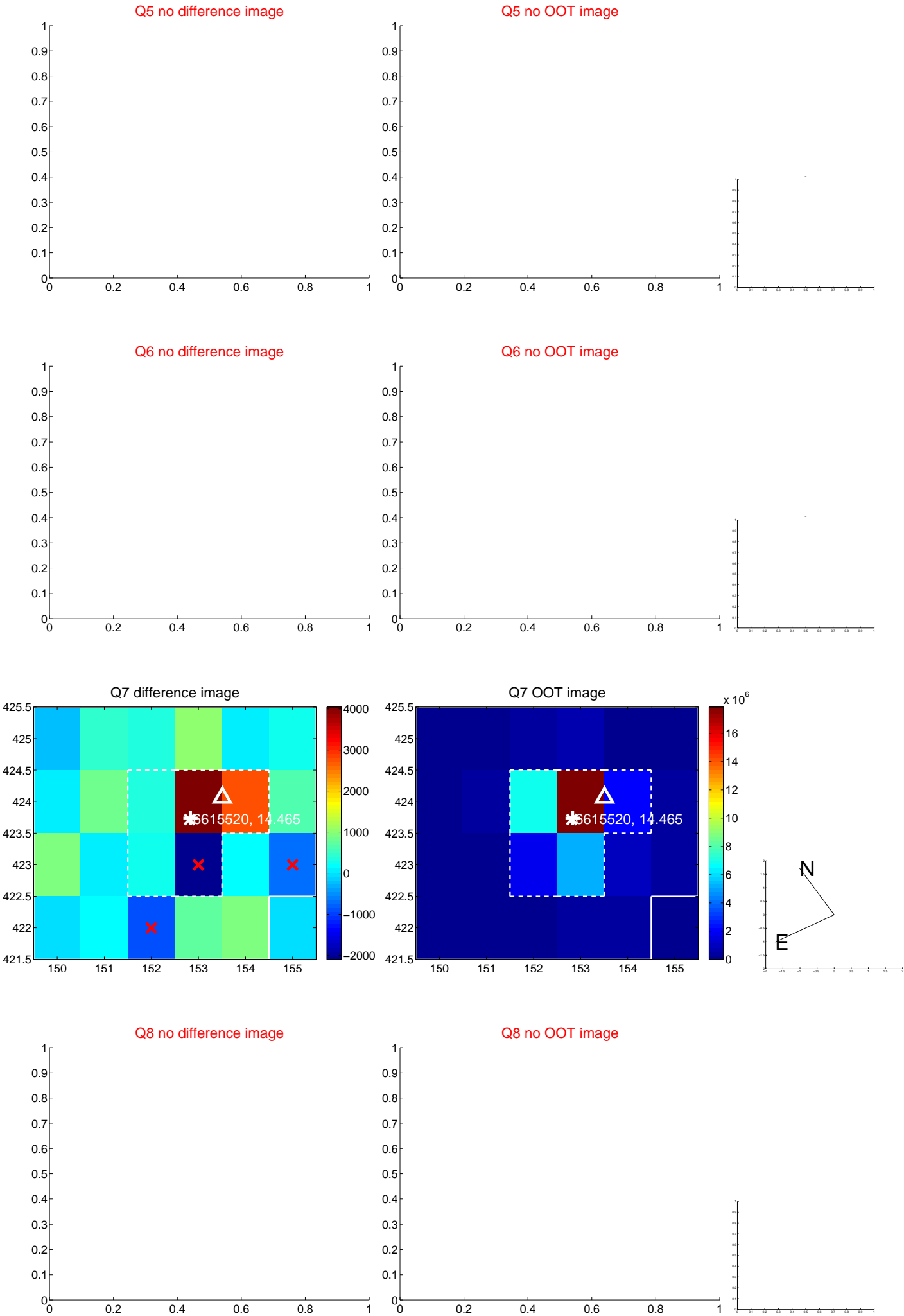
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

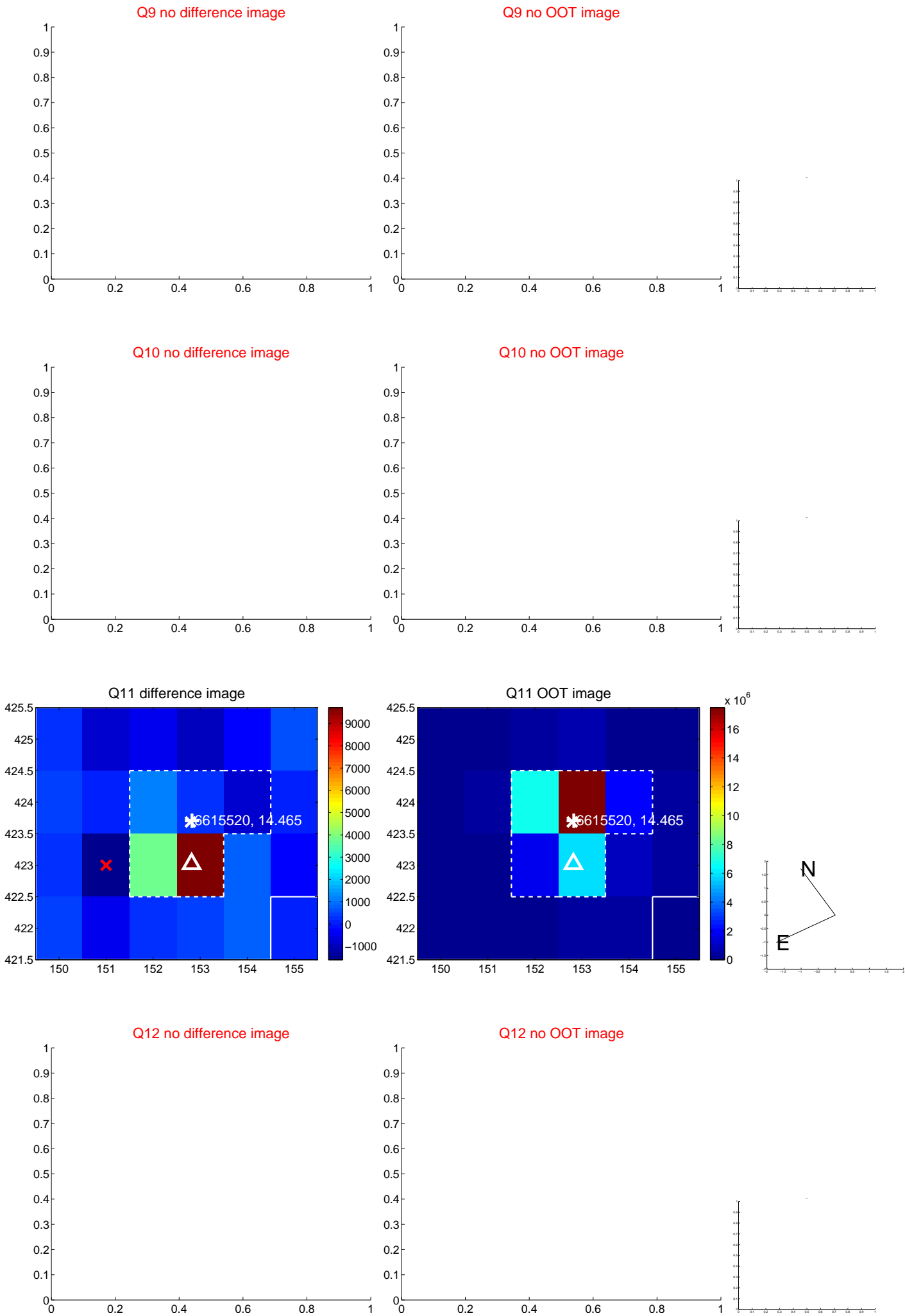




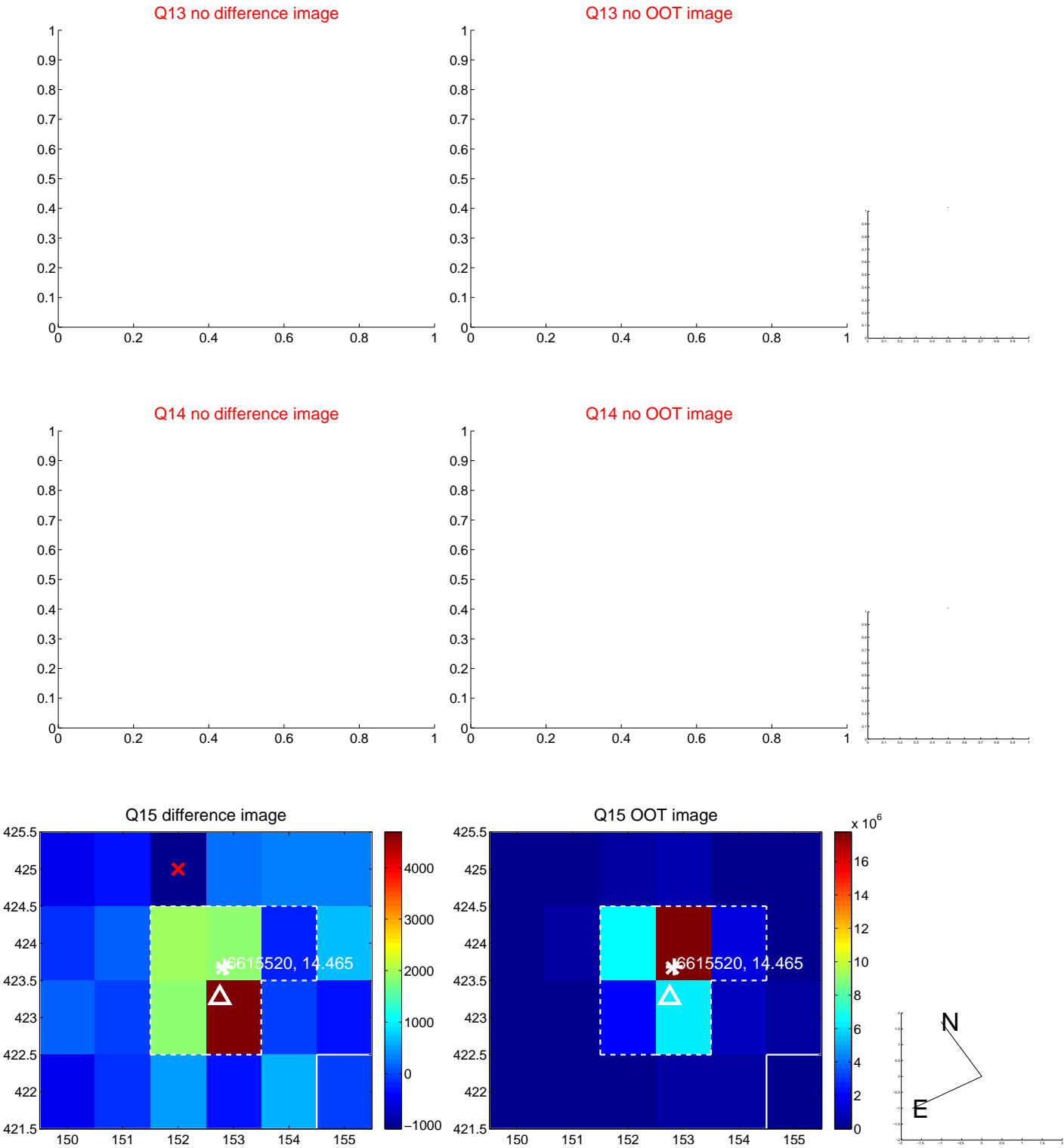
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



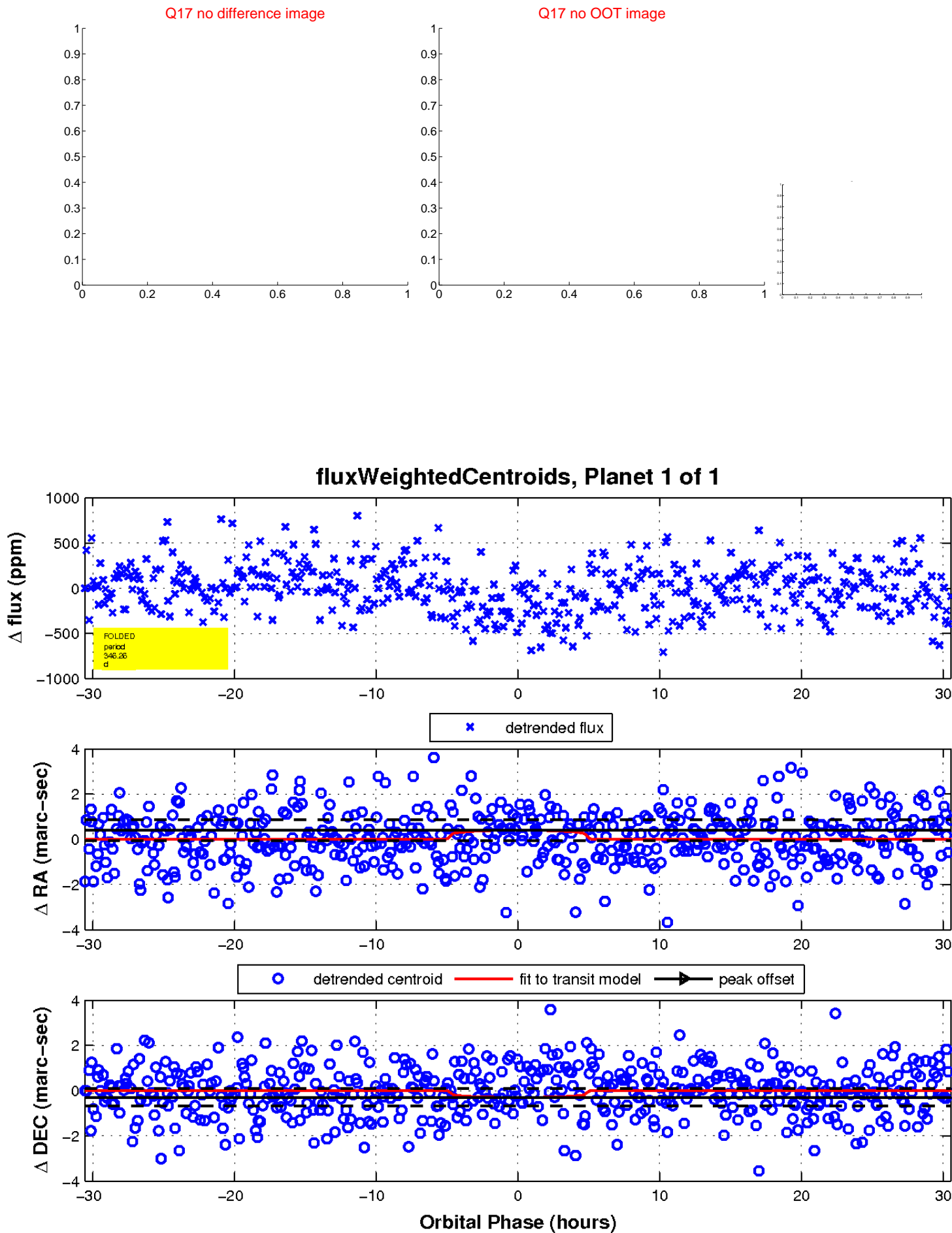
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

