

# KIC 002438517

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002438517-01	OBS	6272.01	3.315799	131.528508	195.4	3.609	9.9	10.2	0.88	5385	1.75	343.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002438517-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—EPHEM_MATCH

**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 002438517-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
002438517-01	2438517	3699.01	2438490	1:1	12.5	-1	3	17.77	15.54	641.13	Direct-PRF	0	0.35	0.48

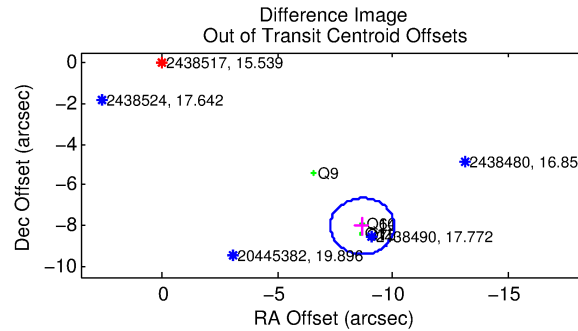
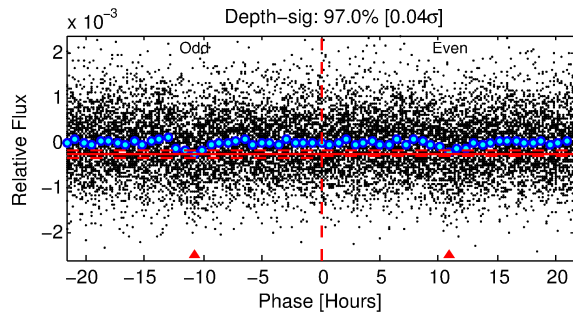
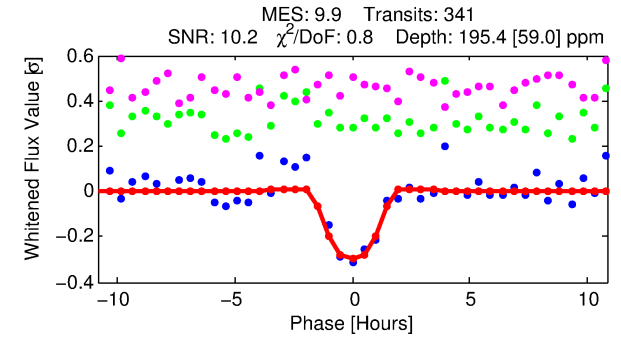
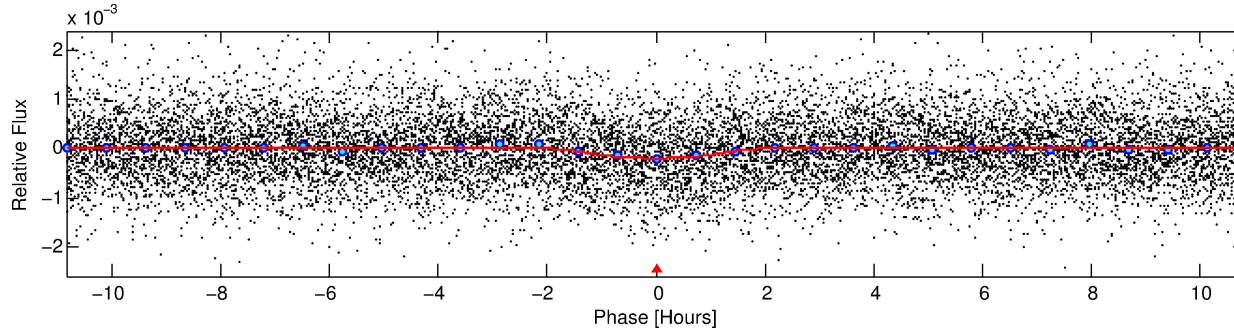
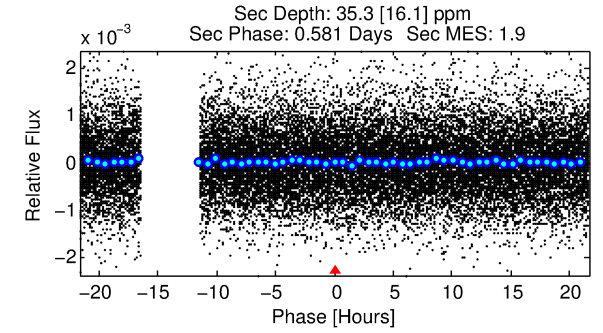
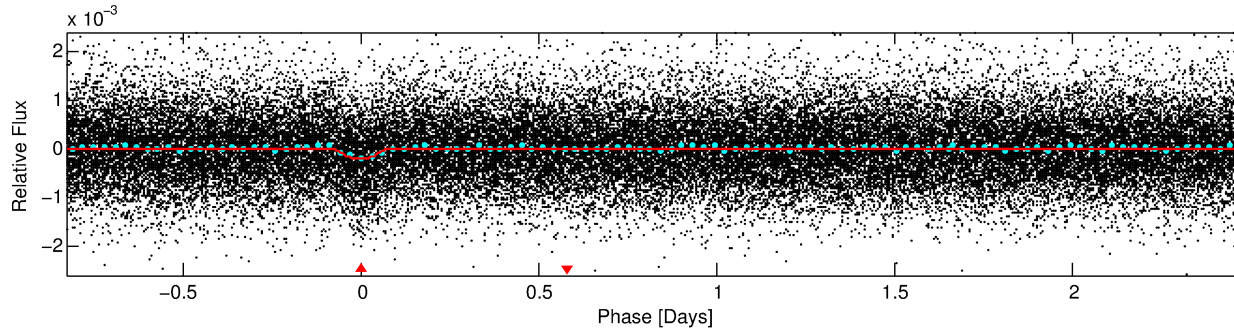
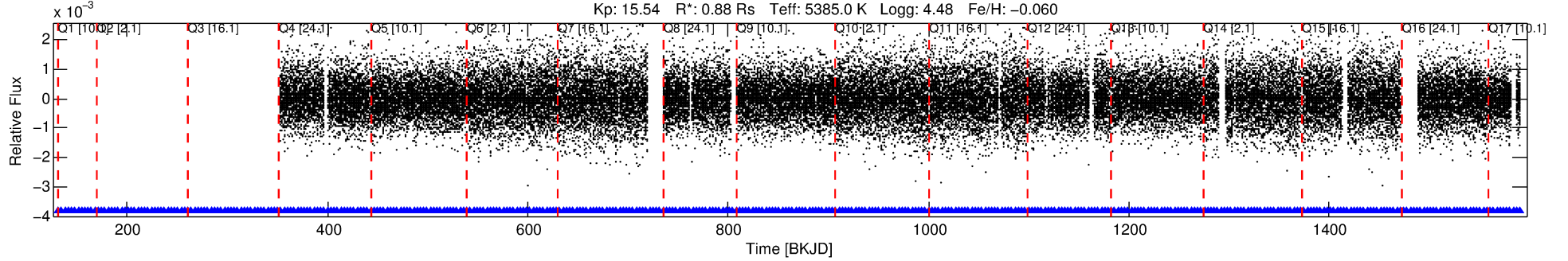
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 2438517 Candidate: 1 of 1 Period: 3.316 d

KOI: K06272.01 Corr: 0.908

Kp: 15.54 R\*: 0.88 Rs Teff: 5385.0 K Logg: 4.48 Fe/H: -0.060



## DV Fit Results:

Period = 3.31580 [0.00003] d  
Epoch = 131.5285 [0.0081] BKJD  
Rp/R\* = 0.0183 [0.0047]  
a/R\* = 2.13 [0.52]  
b = 0.98 [0.02]  
Seff = 343.18 [99.12]  
Teq = 1098 [79] K  
Rp = 1.75 [0.58] Re  
a = 0.0410 [0.0072] AU  
Ag = 10.63 [7.77] [1.24σ]  
Teff = 3064 [536] K [3.63σ]

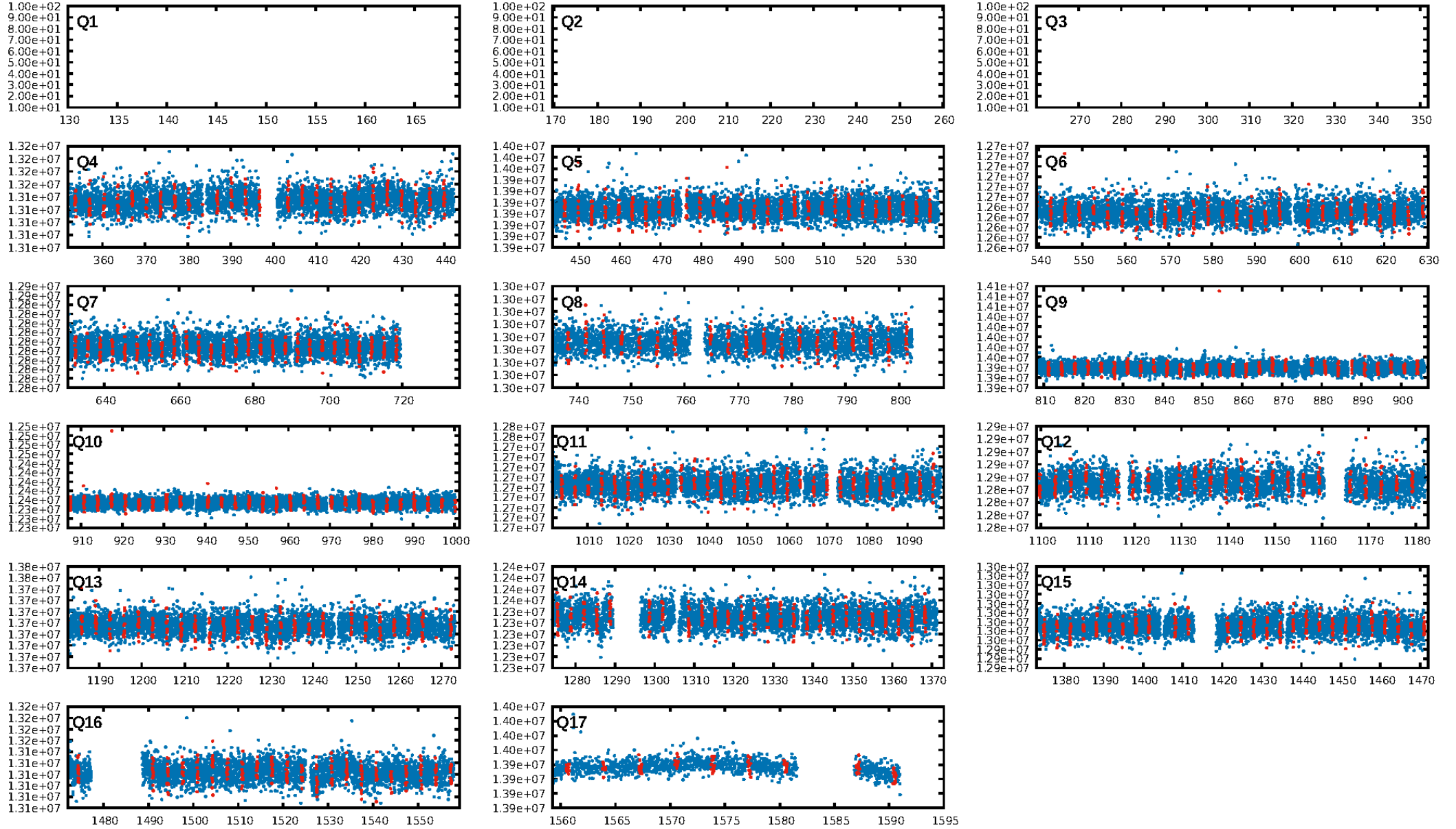
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 1.00e-22  
RollingBand-fgt: 1.00 [332/332]  
GhostDiagnostic-chr: -0.2514  
Centroid-sig: 0.0%  
Centroid-so: 24.929 arcsec [19.86σ]  
OotOffset-rm: 11.807 arcsec [25.72σ]  
KicOffset-rm: 12.192 arcsec [22.98σ]  
OotOffset-st: 3/3/0/1 [7]  
KicOffset-st: 3/3/0/1 [7]  
DiffImageQuality-fgm: 1.00 [7/7]  
DiffImageOverlap-fno: 1.00 [14/14]

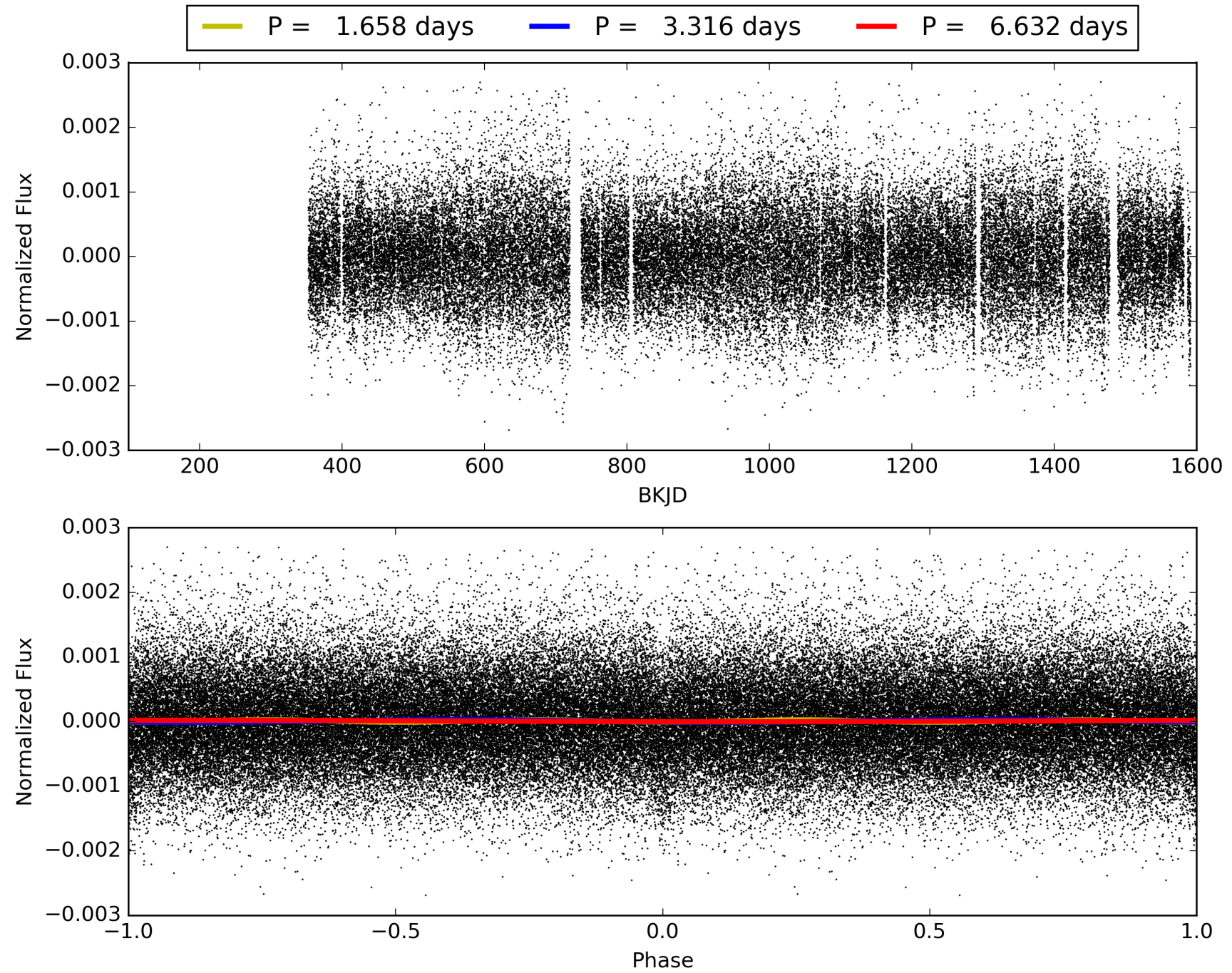
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:29:26 Z

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

# TCE 002438517-01, PDC Light Curves



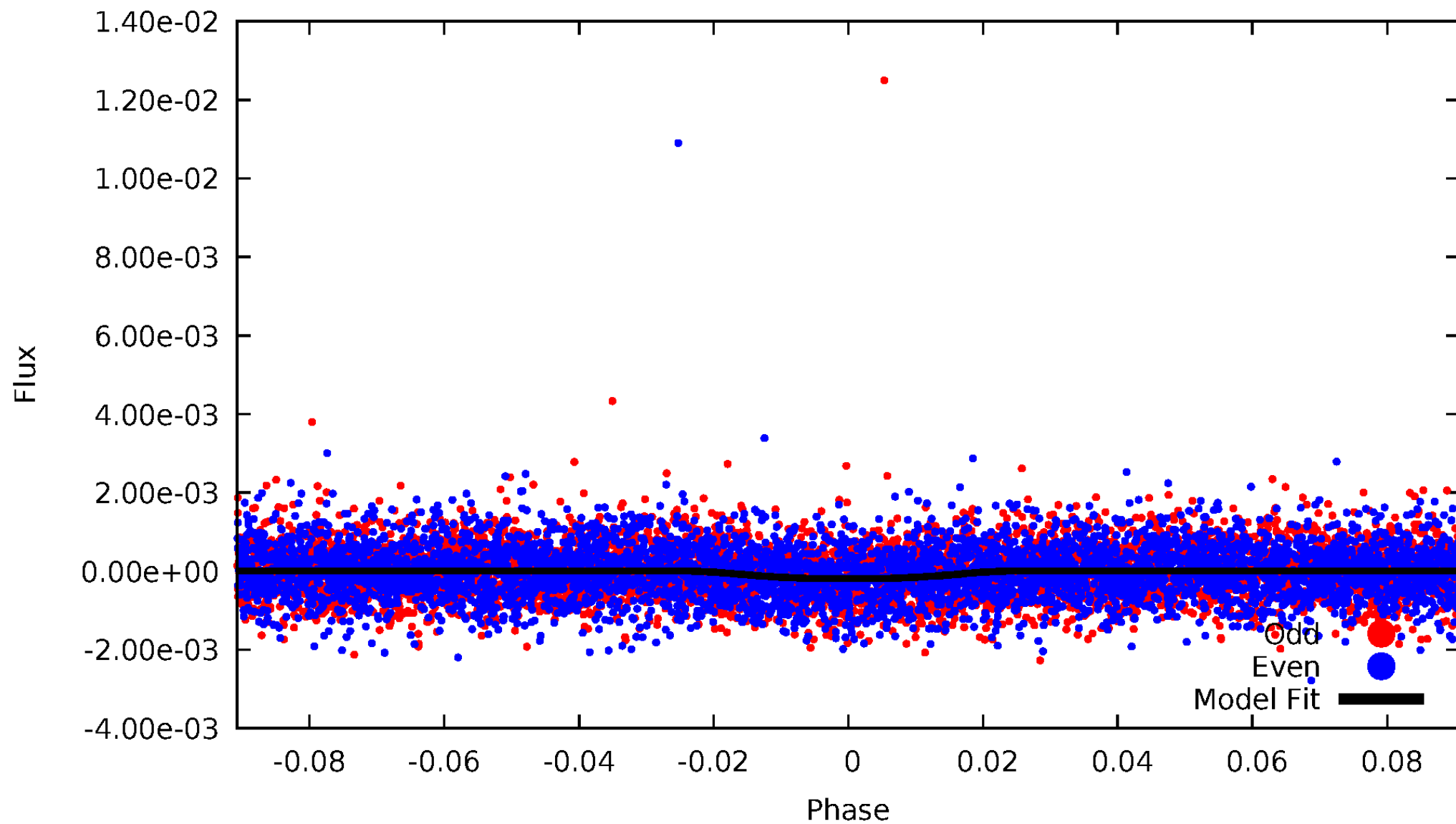
TCE 002438517-01





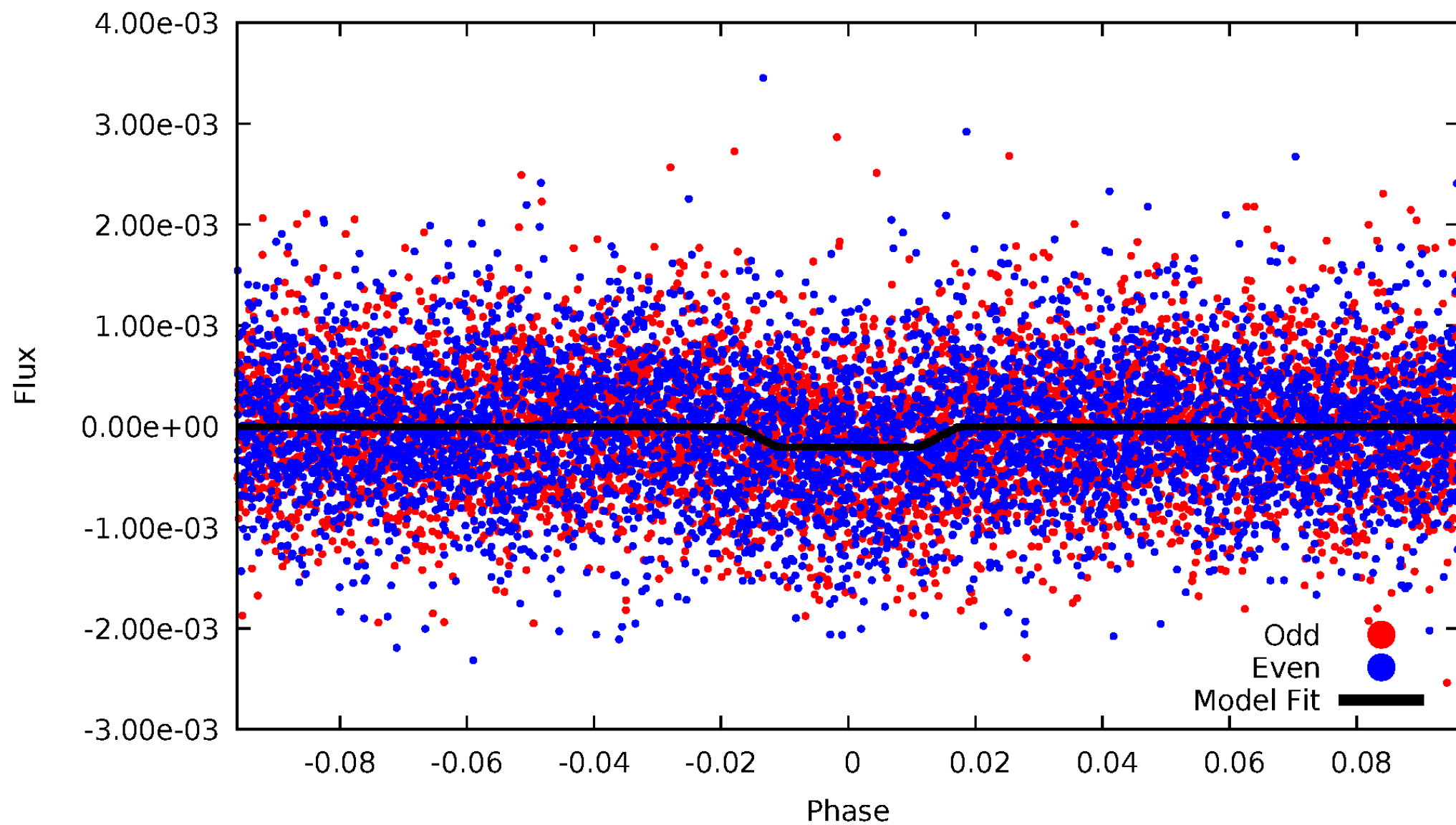
# DV Odd/Even

TCE 002438517-01



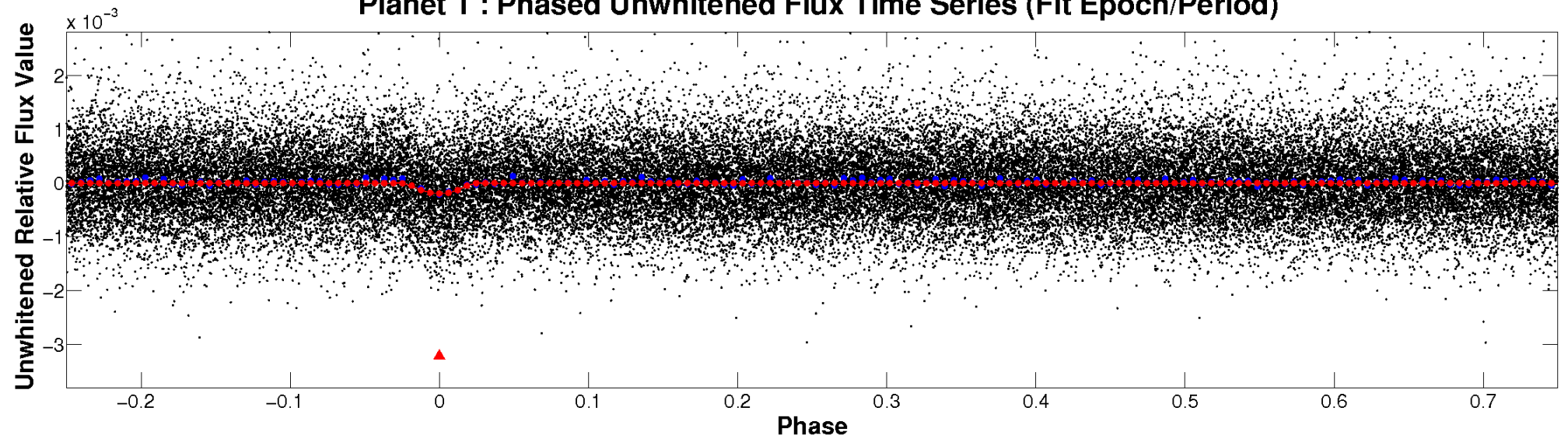
# ALT Odd/Even

TCE 002438517-01

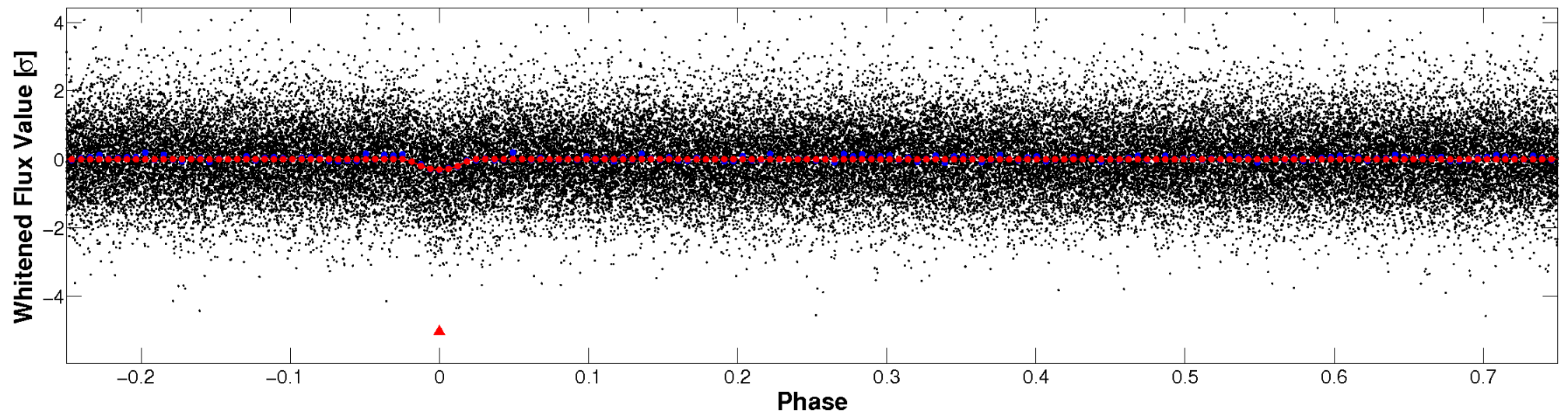


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

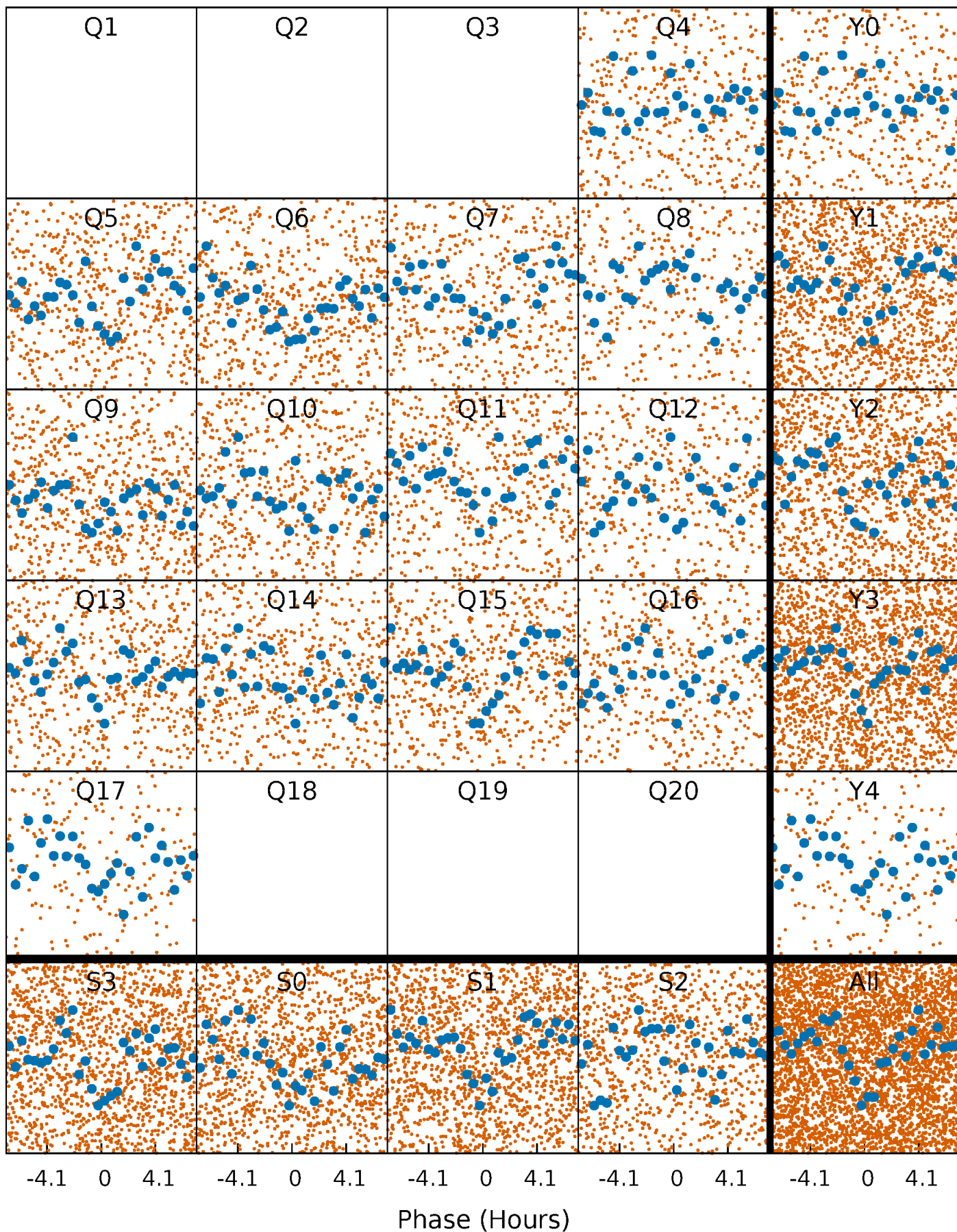


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

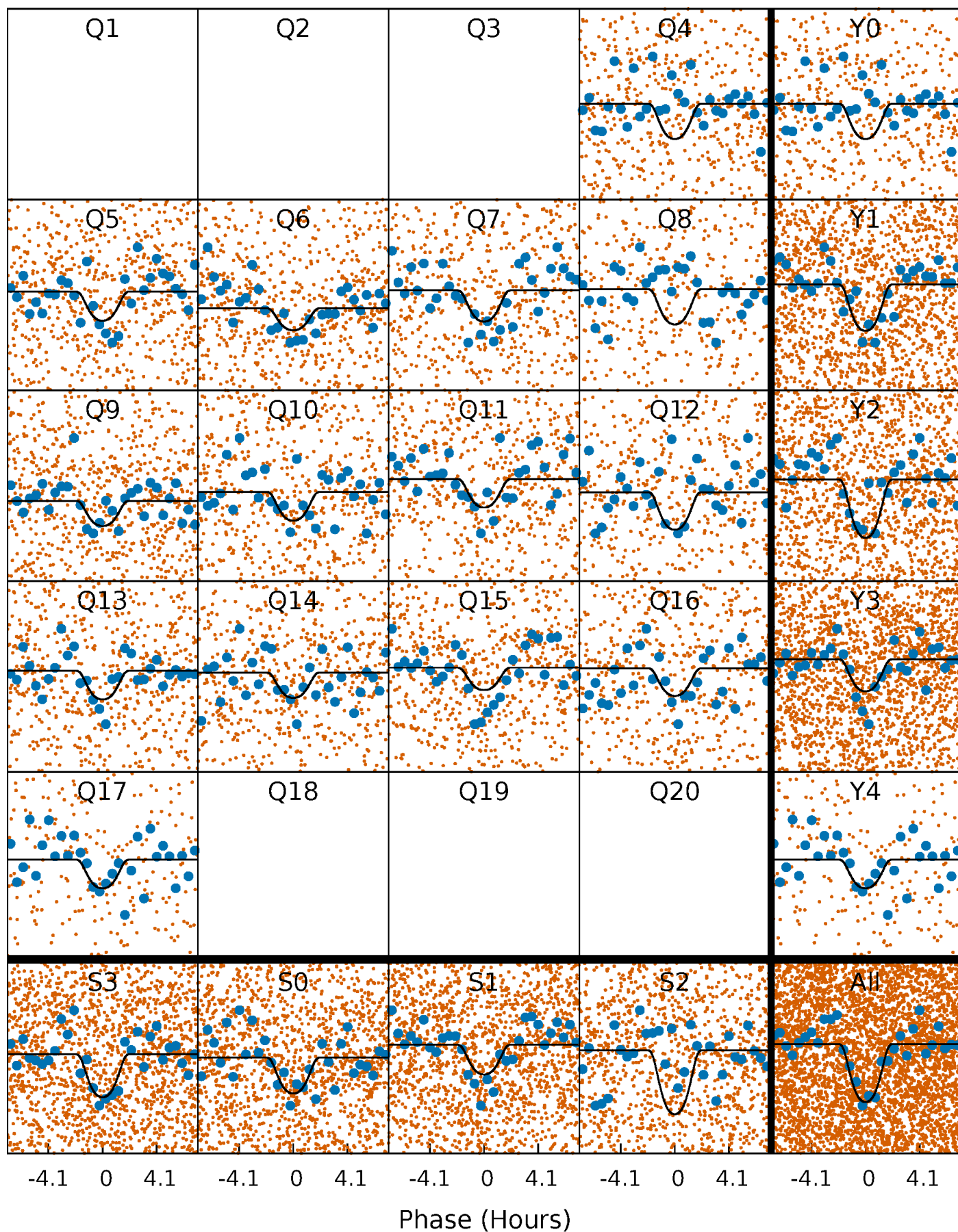
TCE 002438517-01 P= 3.315799 Days  $T_0=131.528508$  (BKJD)





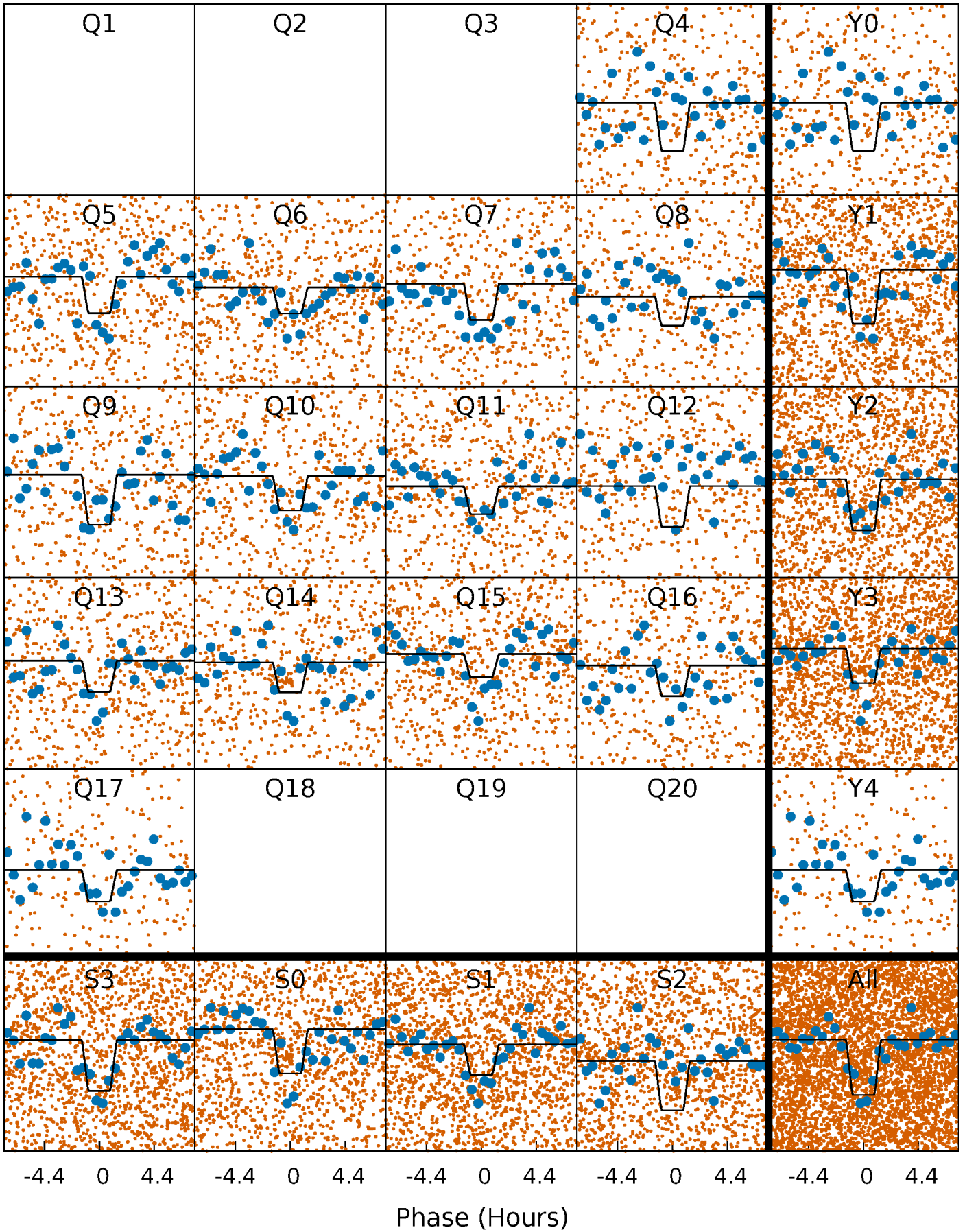
# DV Quarter-Phased Transit Curves

TCE 002438517-01 P= 3.315799 Days  $T_0=131.528508$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

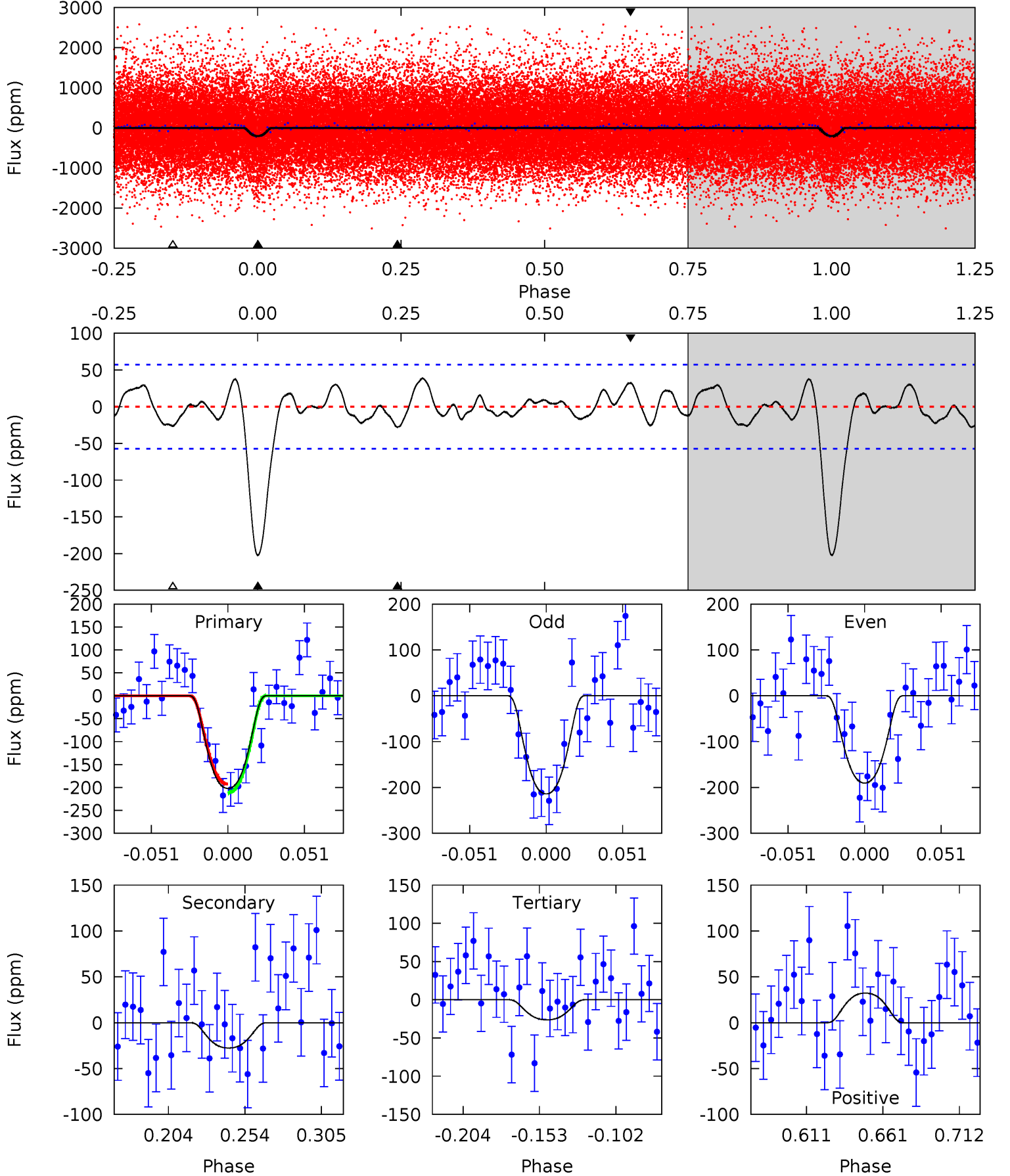
TCE 002438517-01 P= 3.315823 Days  $T_0=131.525869$  (BKJD)



# DV Model-Shift Uniqueness Test

002438517-01, P = 3.315799 Days, E = 131.528508 Days

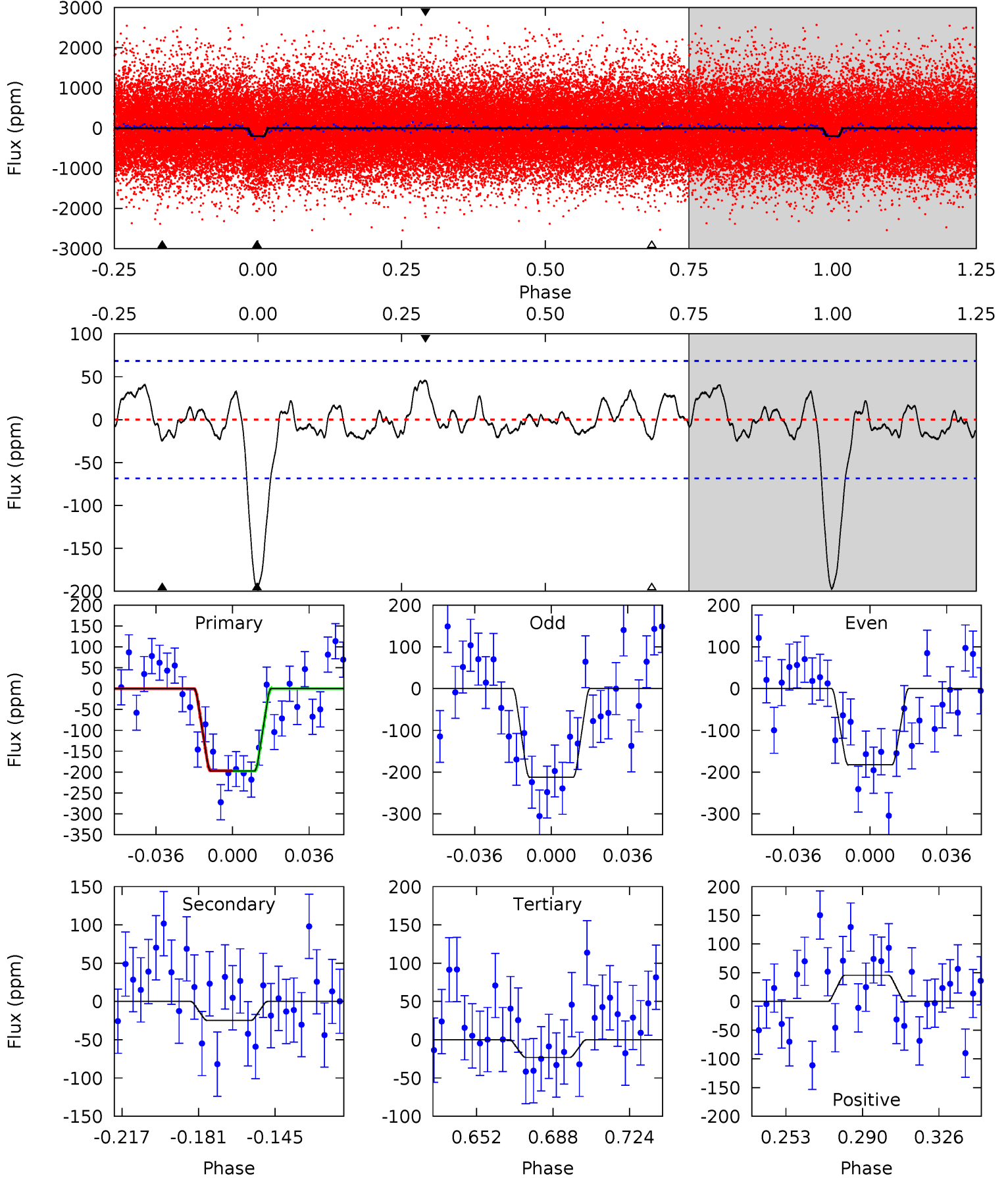
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	2.28	2.17	2.66	4.70	1.95	1.18	14.5	14.0	0.11	-0.38	0.98	1.06	0.16	0.78



# Alt Model-Shift Uniqueness Test

002438517-01, P = 3.315823 Days, E = 131.525869 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
13.8	1.72	1.62	3.18	4.77	2.09	1.10	12.1	10.6	0.11	-1.45	1.03	1.06	0.19	0.03





### Stellar Parameters For KIC 002438517

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5385^{+185}_{-185}$	$4.476^{+0.092}_{-0.138}$	$-0.060^{+0.300}_{-0.300}$	$0.875^{+0.184}_{-0.113}$	$0.835^{+0.104}_{-0.070}$	$1.755^{+0.715}_{-0.704}$
	+3%/-3%	+2%/-3%	+500%/-500%	+21%/-13%	+12%/-8%	+41%/-40%
Source	KIC0	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 002438517-01 / KOI 6272.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-28 \pm 12$	$1.77^{+0.53}_{-0.45}$	$1541^{+96}_{-77}$	$3358^{+413}_{-388}$	$7.938^{+8.563}_{-4.325}$
Alt.	$-25 \pm 14$	$1.40^{+0.47}_{-0.47}$	$1546^{+92}_{-88}$	$3570^{+639}_{-547}$	$12^{+19}_{-8}$

$T_{max}$  = Theoretical Maximum Planetary Temperature  
 $T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

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

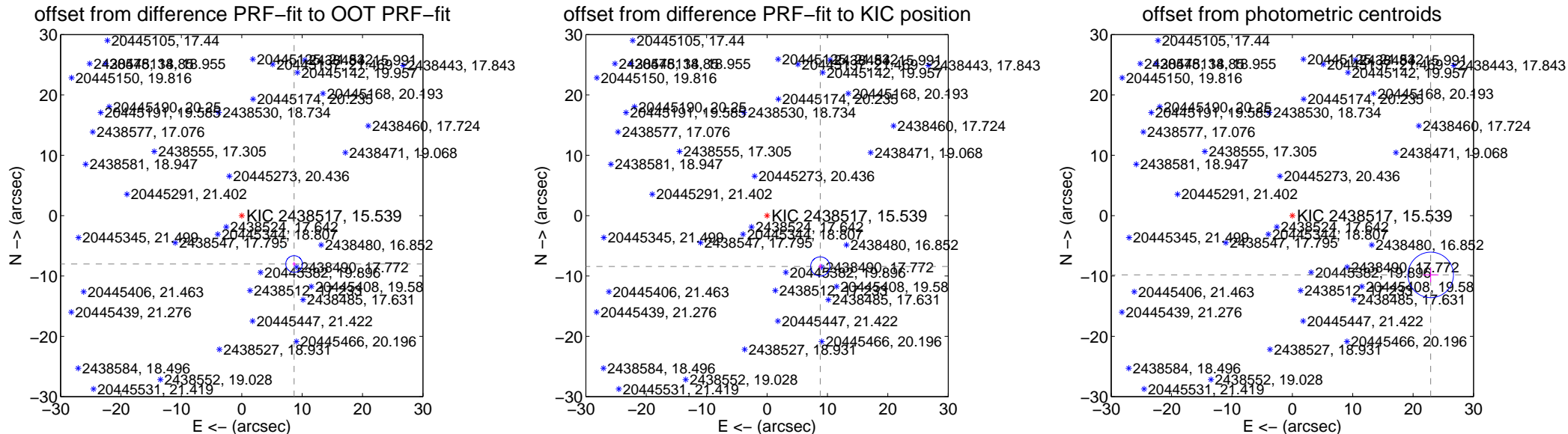
## DV Centroid Data

Supplemental centroid analysis for 002438517-01. Kepler magnitude: 15.54. Transit SNR 10.22

There are 7 quarters with good PRF difference image offsets

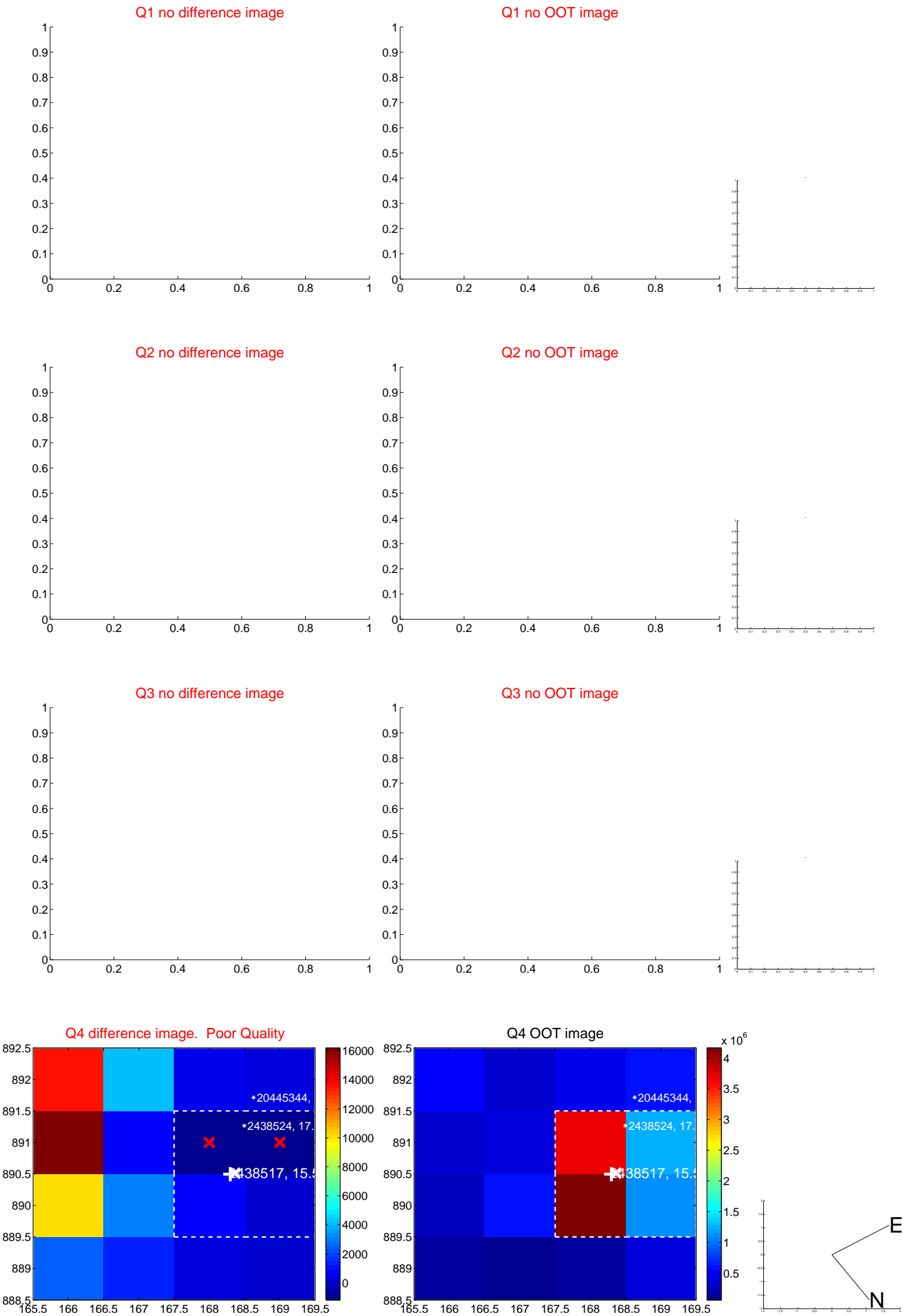
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>11.807 <math>\pm</math> 0.459</b>	<b>25.72</b>	-8.666 $\pm$ 0.288	-8.019 $\pm$ 0.378
PRF-fit source offset from KIC position	<b>12.192 <math>\pm</math> 0.530</b>	<b>22.98</b>	-8.811 $\pm$ 0.305	-8.427 $\pm$ 0.456
photometric centroid source offset	<b>24.93 <math>\pm</math> 1.26</b>	<b>19.86</b>	-22.91 $\pm$ 1.27	-9.82 $\pm$ 1.20

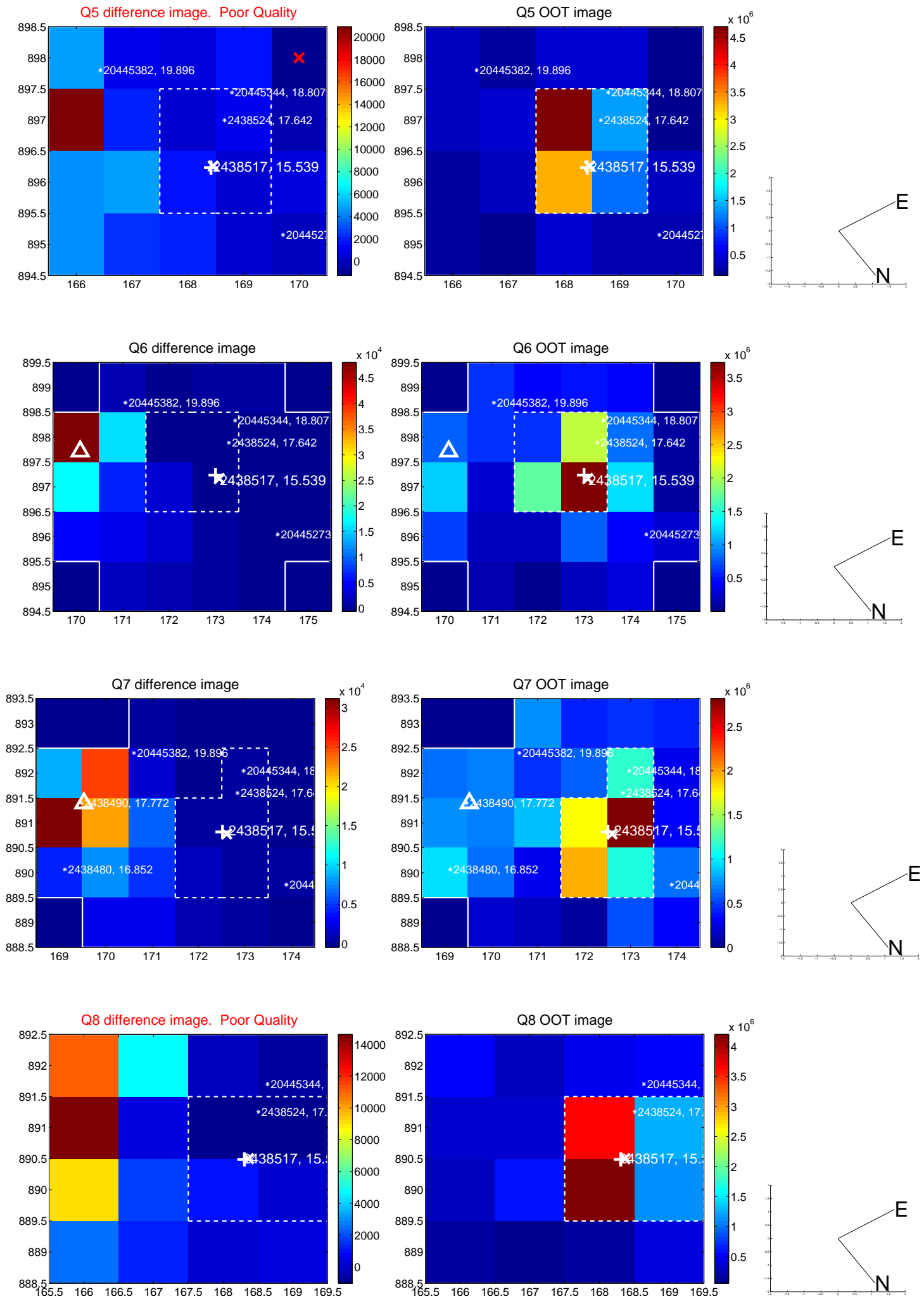


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

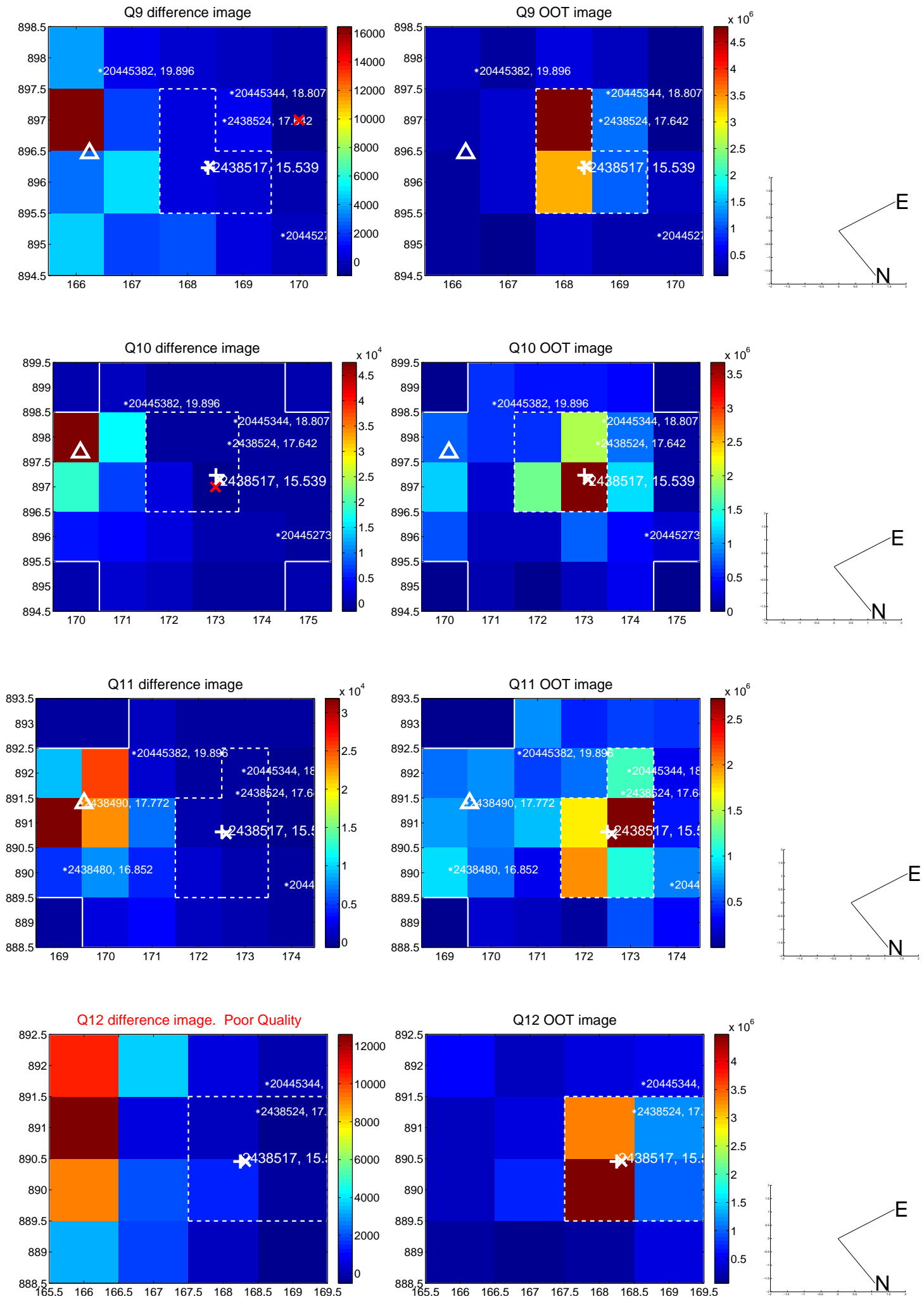


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

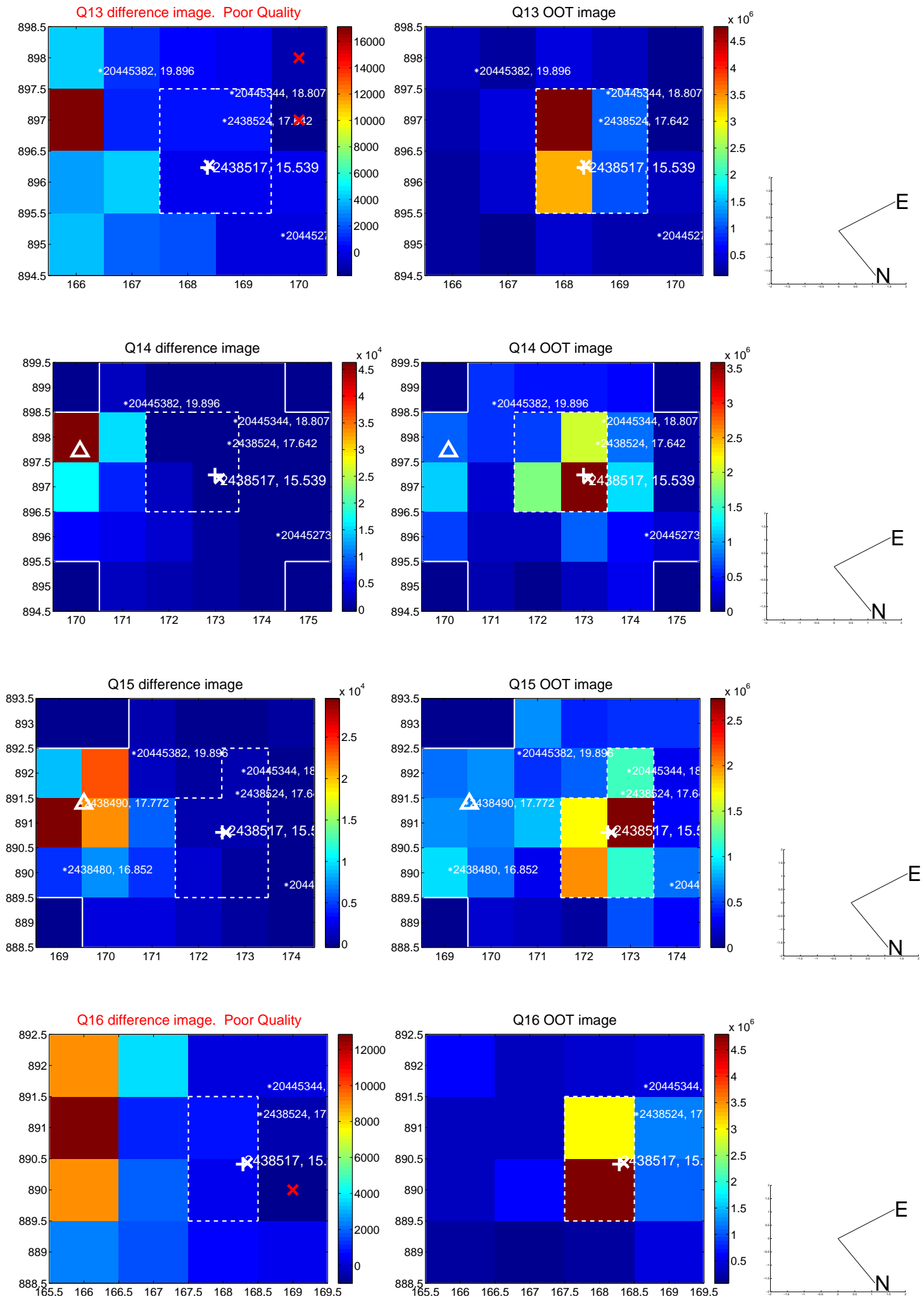




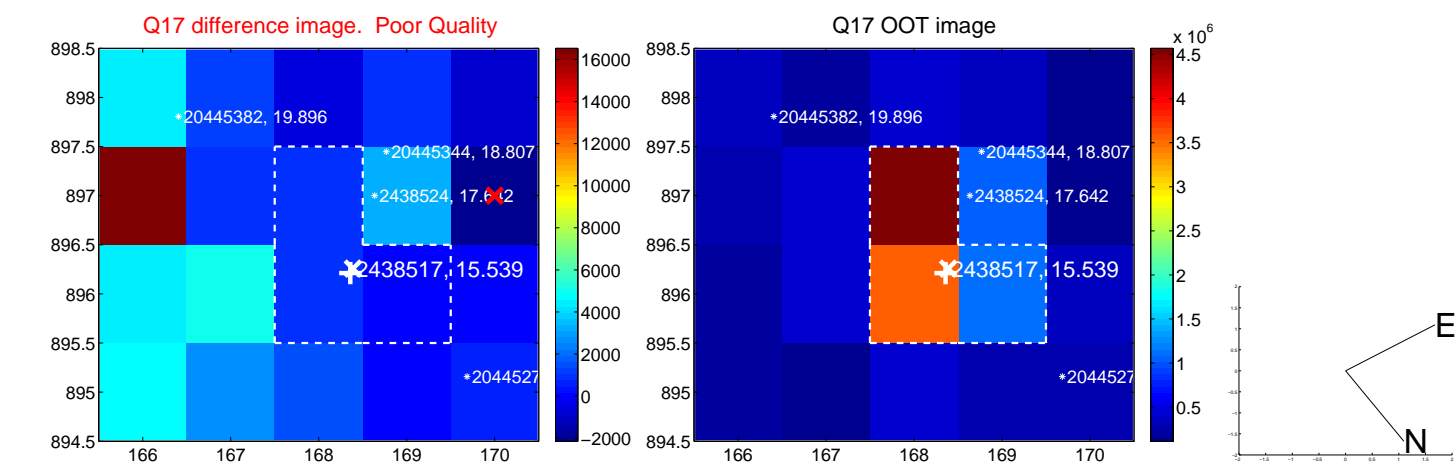
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



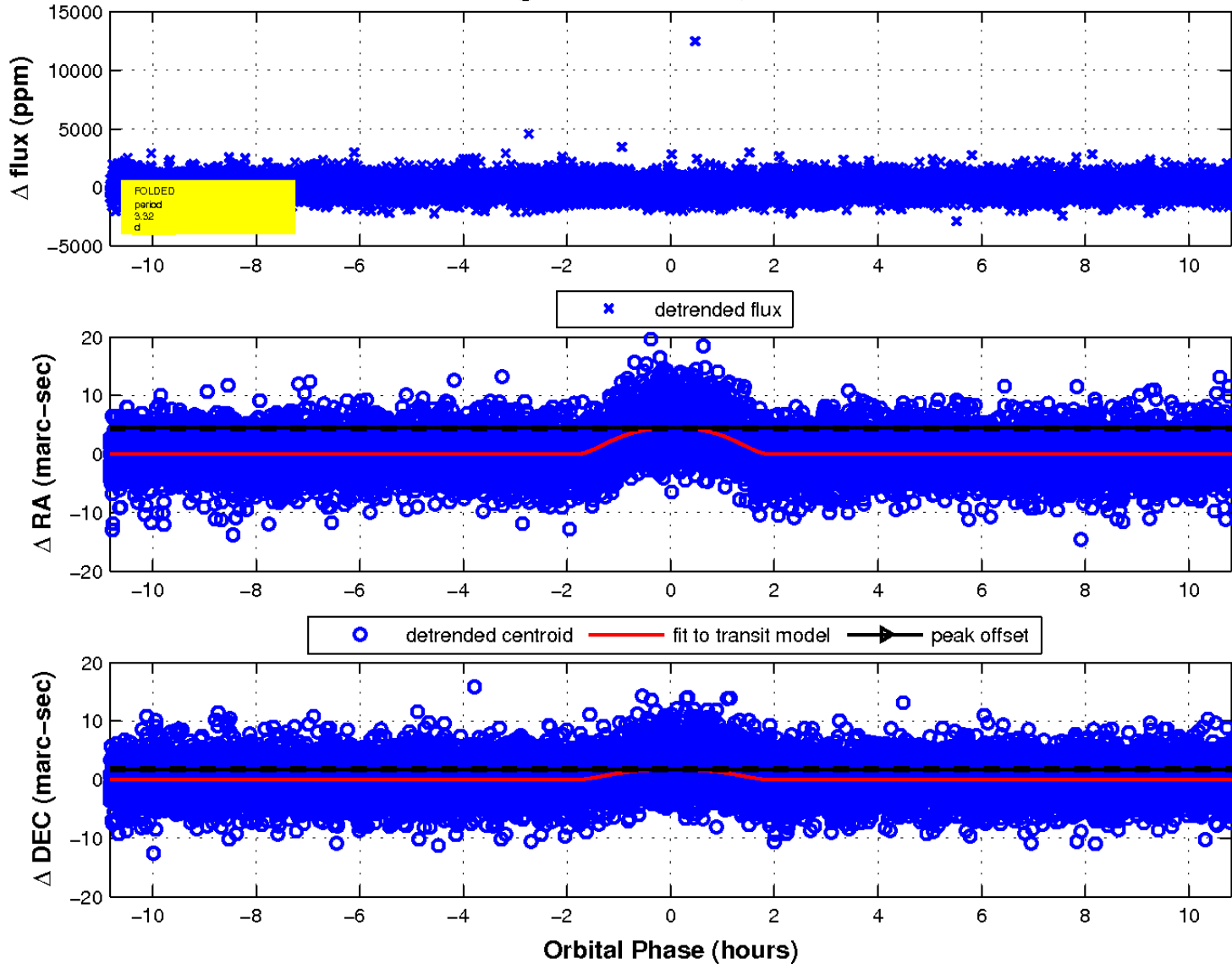
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

