

# KIC 004386059

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
004386059-01	OBS	1340.01	2.900554	133.442184	127.7	3.267	18.2	19.6	1.37	6547	2.07	1734.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004386059-01	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 004386059-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
004386059-01	4386059	3659.01	4386047	1:1	10.6	-1	-3	16.94	13.88	1708.60	Direct-PRF	0	1.27	0.97

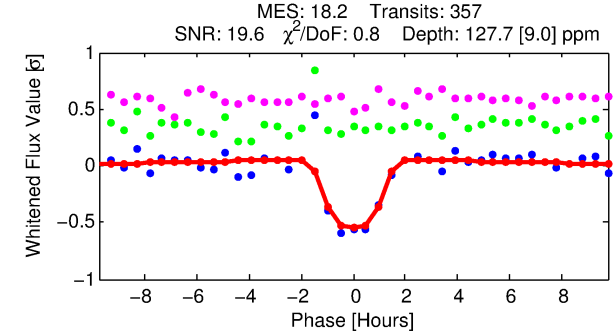
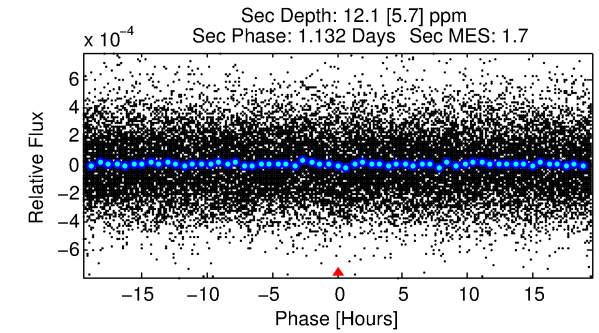
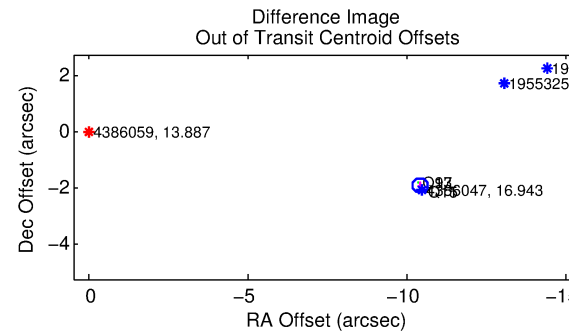
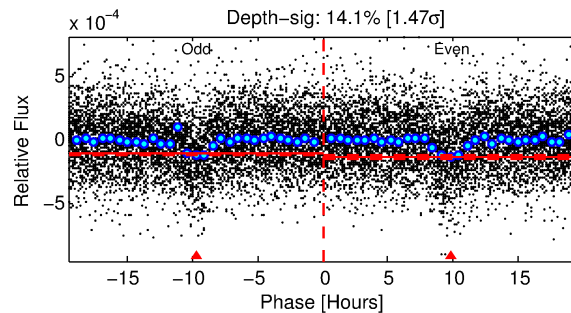
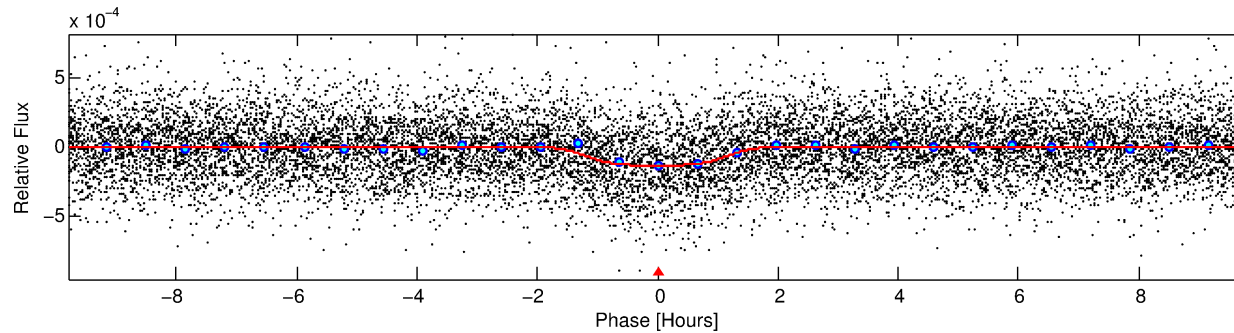
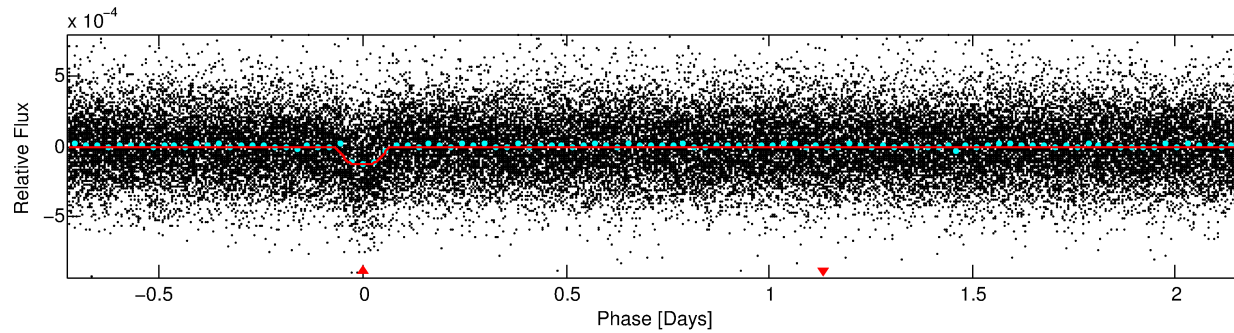
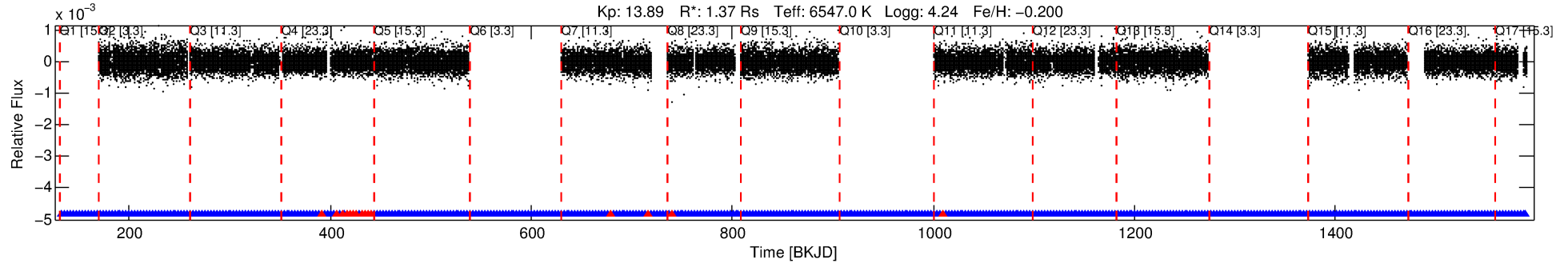
**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 4386059 Candidate: 1 of 1 Period: 2.901 d

KOI: K01340.01 Corr: 0.942

Kp: 13.89 R\*: 1.37 Rs Teff: 6547.0 K Logg: 4.24 Fe/H: -0.200



## DV Fit Results:

Period = 2.90055 [0.00001] d  
Epoch = 133.4422 [0.0028] BKJD  
Rp/R\* = 0.0138 [0.0007]  
a/R\* = 1.98 [0.22]  
b = 0.98 [0.01]  
Seff = 1734.26 [686.79]  
Teq = 1646 [163] K  
Rp = 2.07 [0.64] Re  
a = 0.0422 [0.0107] AU  
Ag = 2.78 [1.68] [1.06σ]  
Teffp = 3286 [415] K [3.68σ]

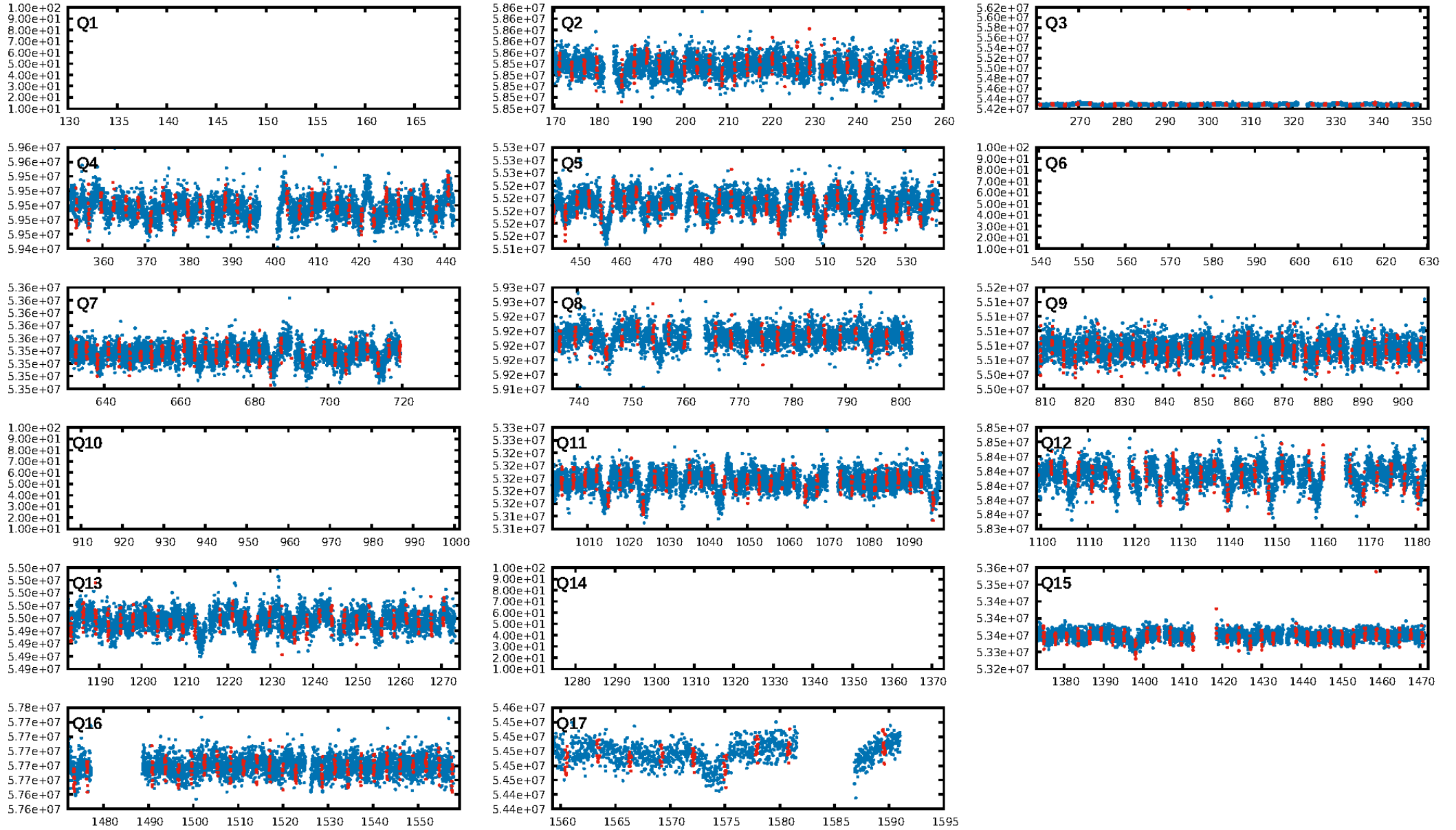
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.65e-72  
RollingBand-fgt: 0.96 [333/348]  
GhostDiagnostic-chr: -0.5417  
Centroid-sig: N/A  
Centroid-so: 58.216 arcsec [77.87σ]  
OotOffset-rm: 10.581 arcsec [125.46σ]  
KicOffset-rm: 10.703 arcsec [158.90σ]  
OotOffset-st: 0/2/0/3 [5]  
KicOffset-st: 0/2/0/3 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [13/13]

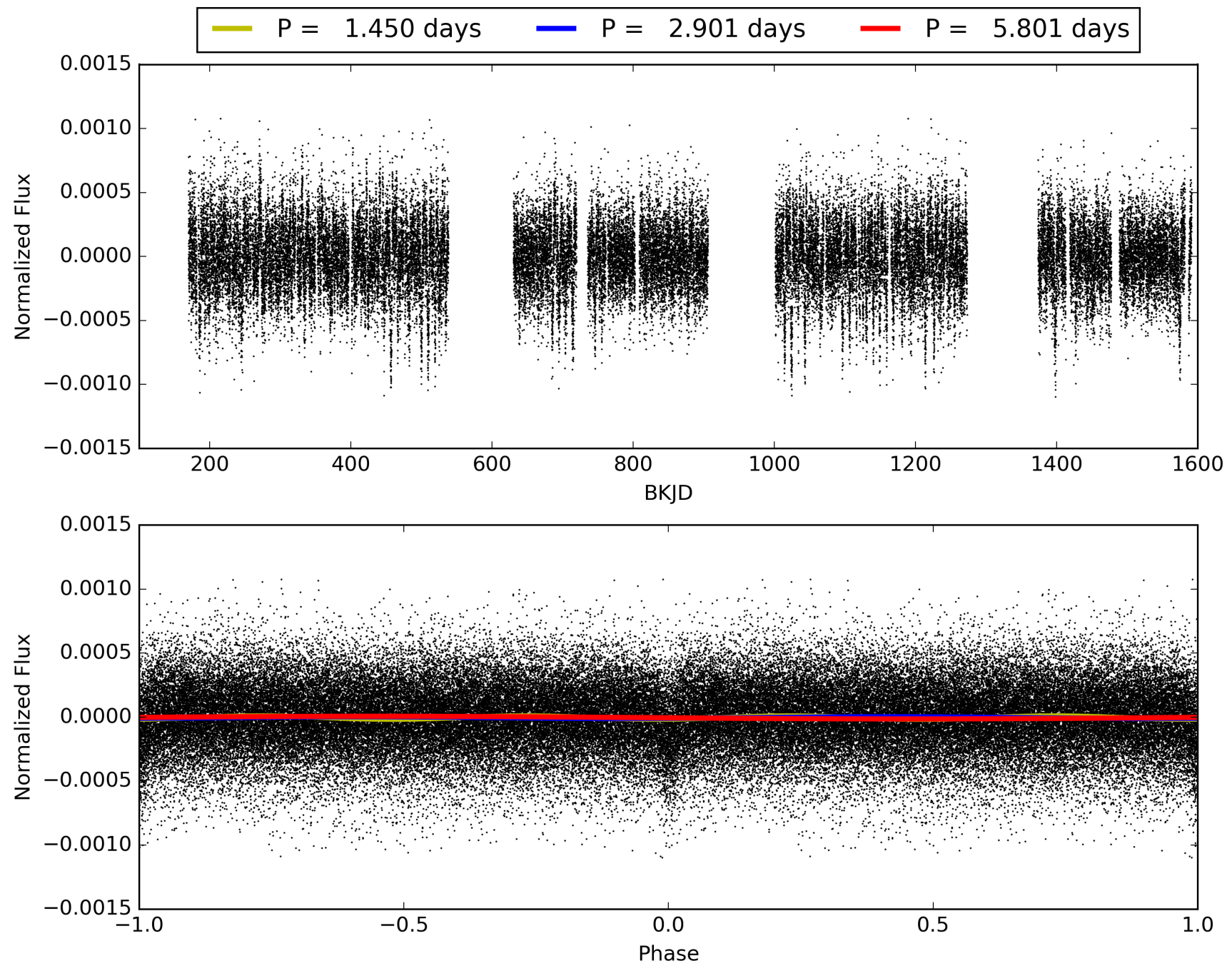
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:31:47 Z

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

# TCE 004386059-01, PDC Light Curves

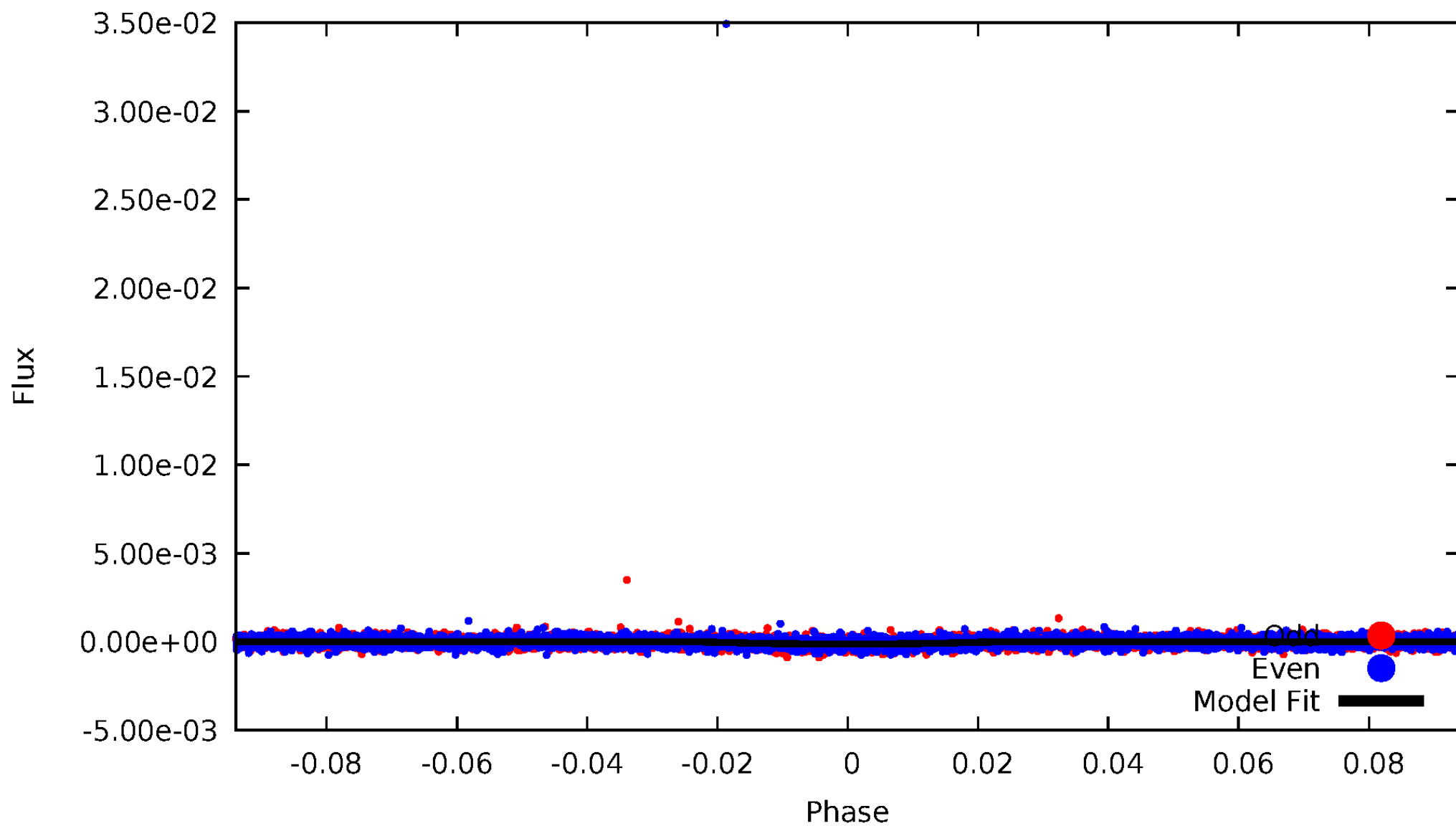


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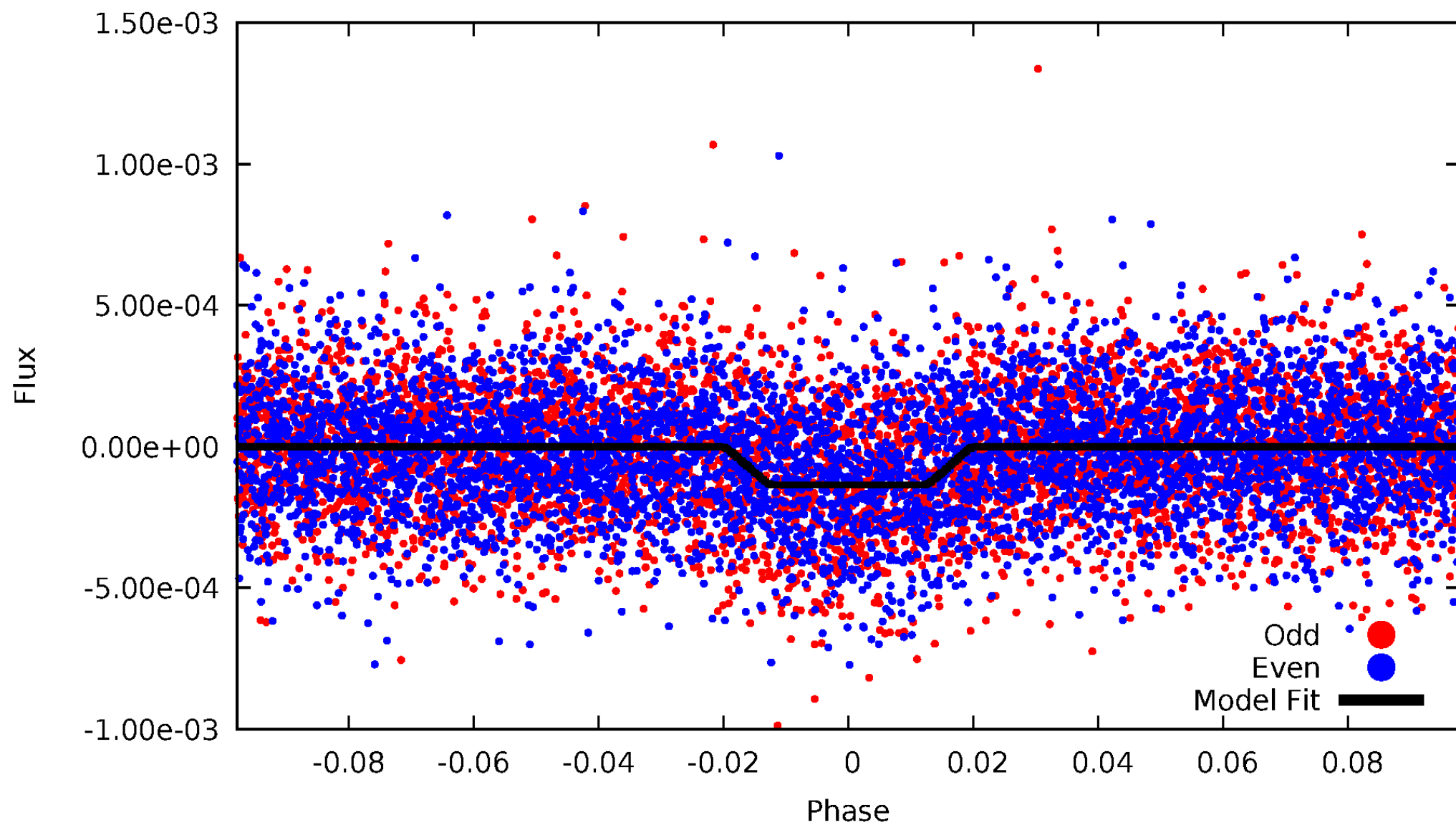
# DV Odd/Even

TCE 004386059-01



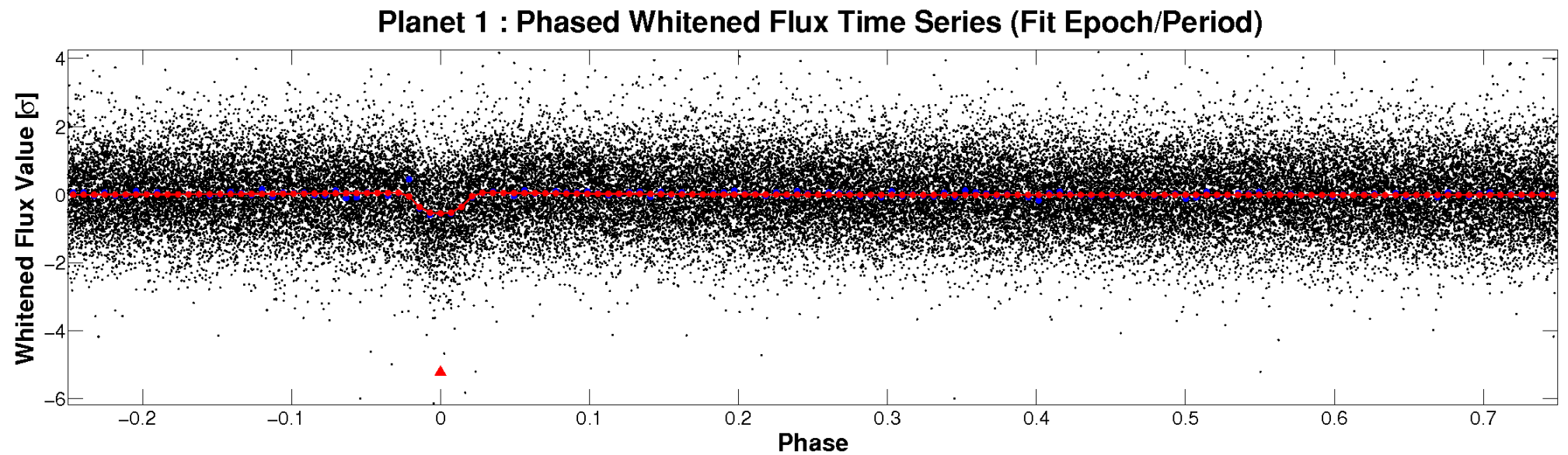
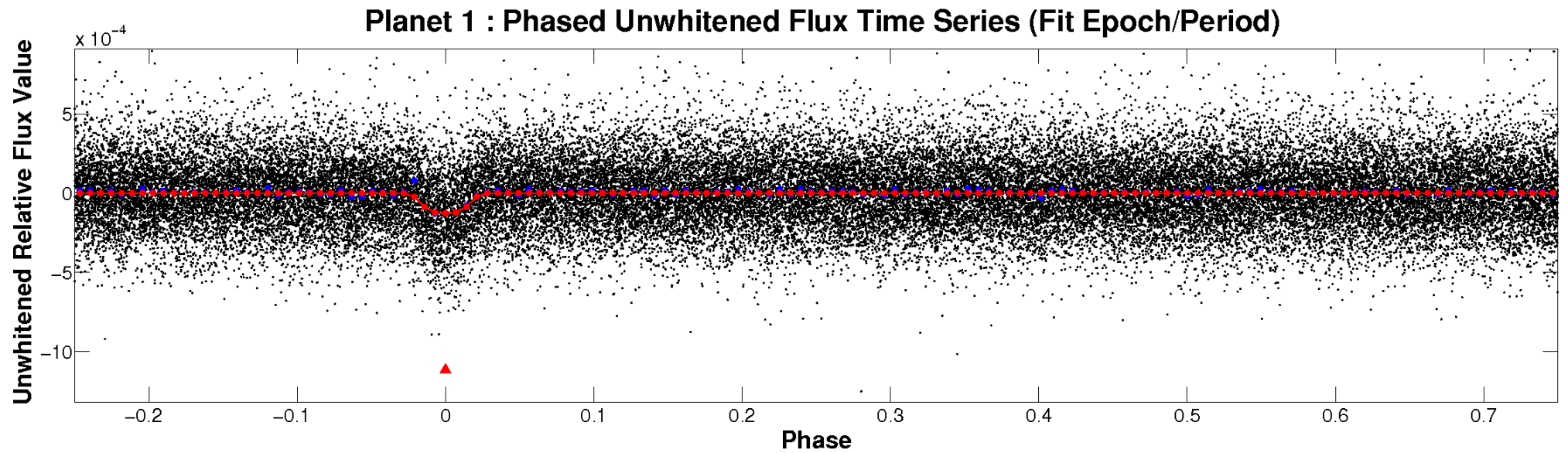
# ALT Odd/Even

TCE 004386059-01



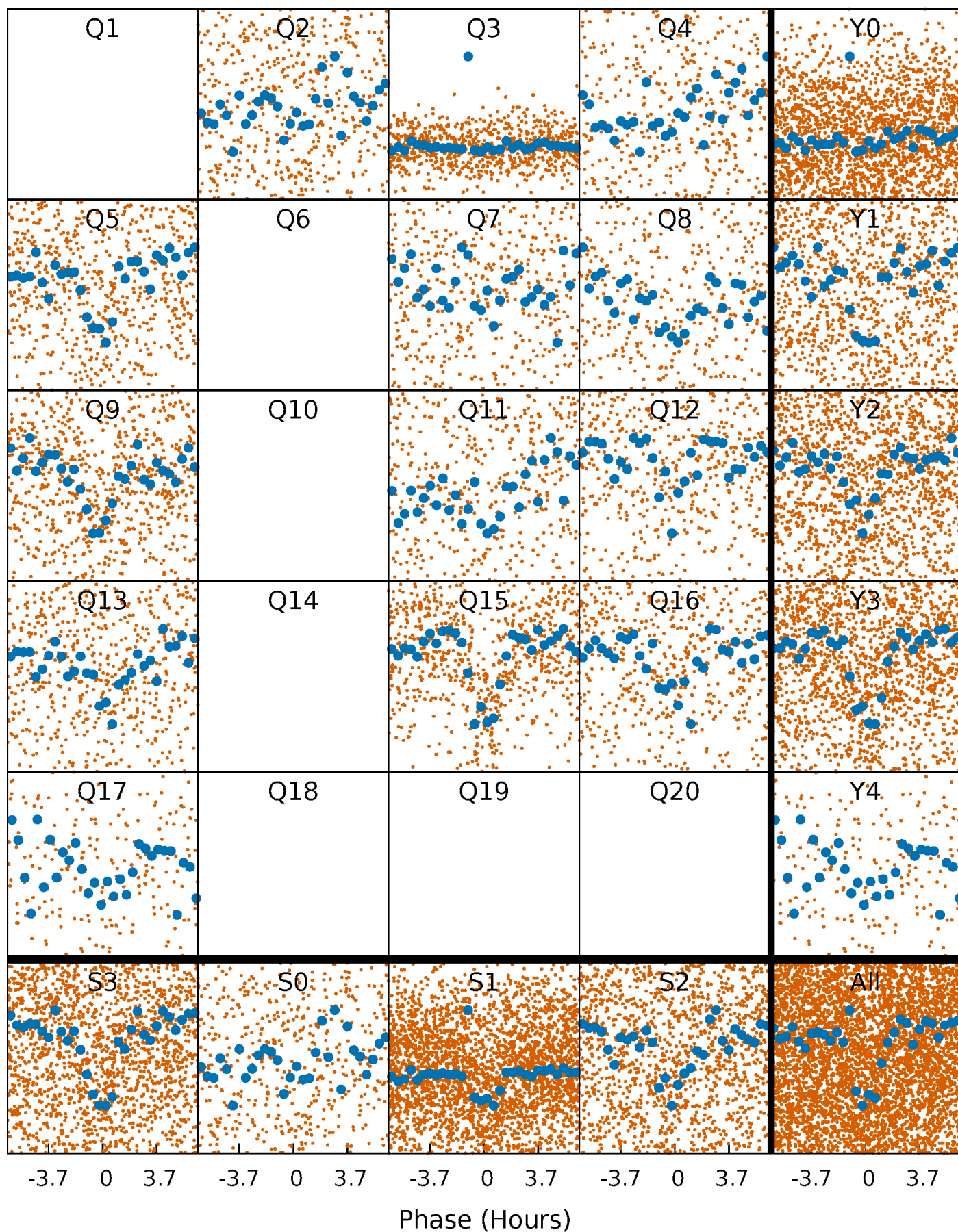


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

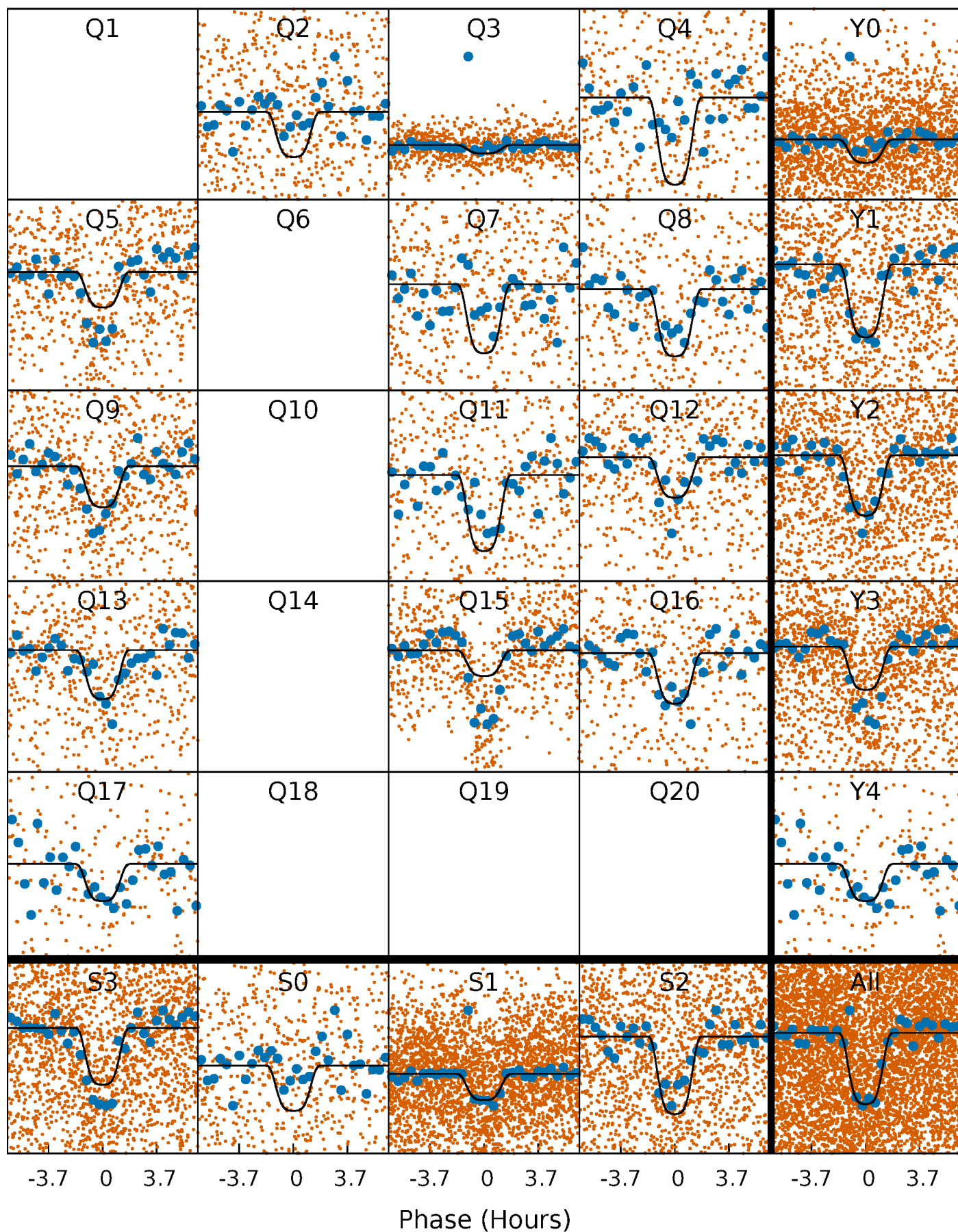
TCE 004386059-01 P= 2.900554 Days  $T_0=133.442184$  (BKJD)





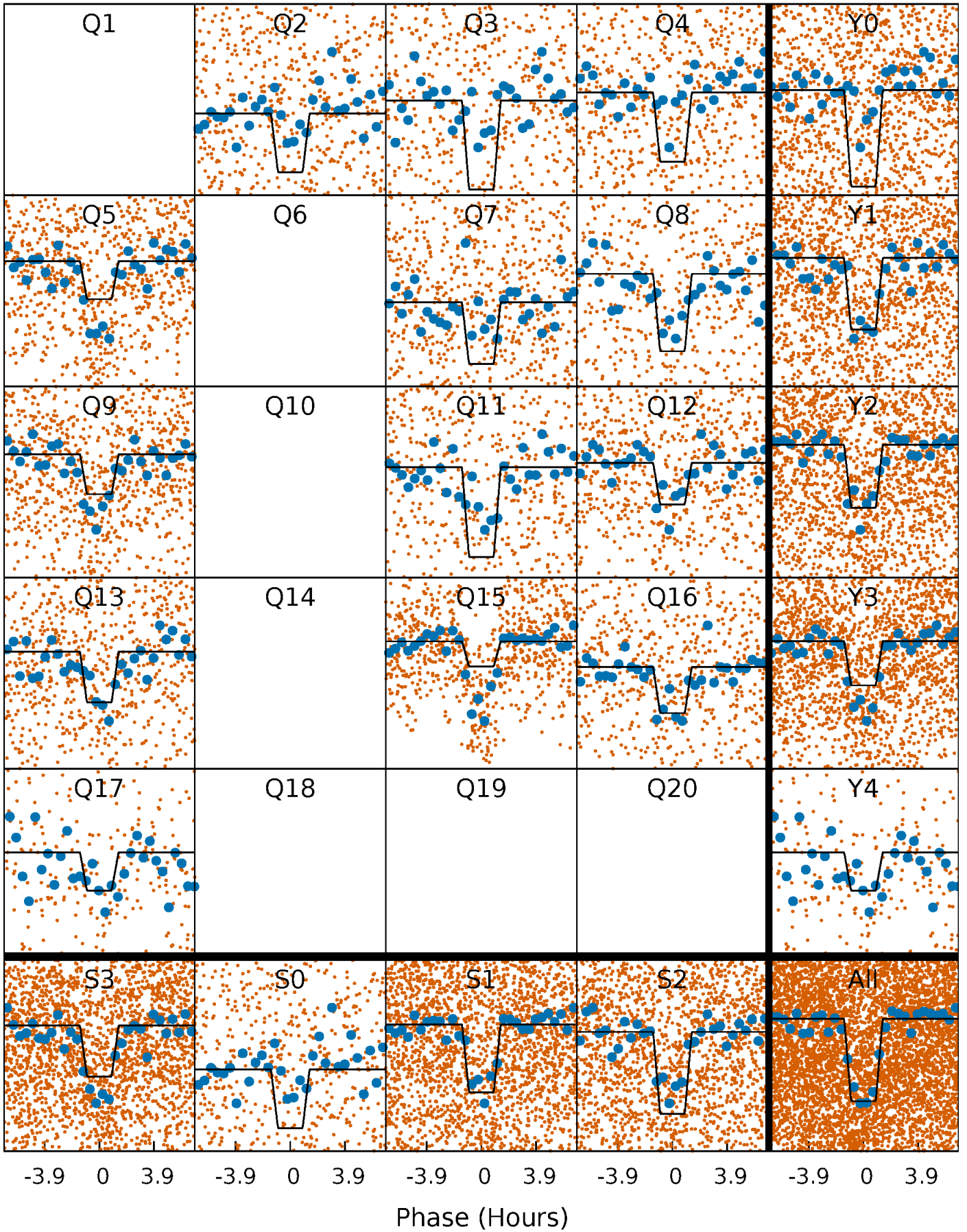
# DV Quarter-Phased Transit Curves

TCE 004386059-01 P= 2.900554 Days  $T_0=133.442184$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

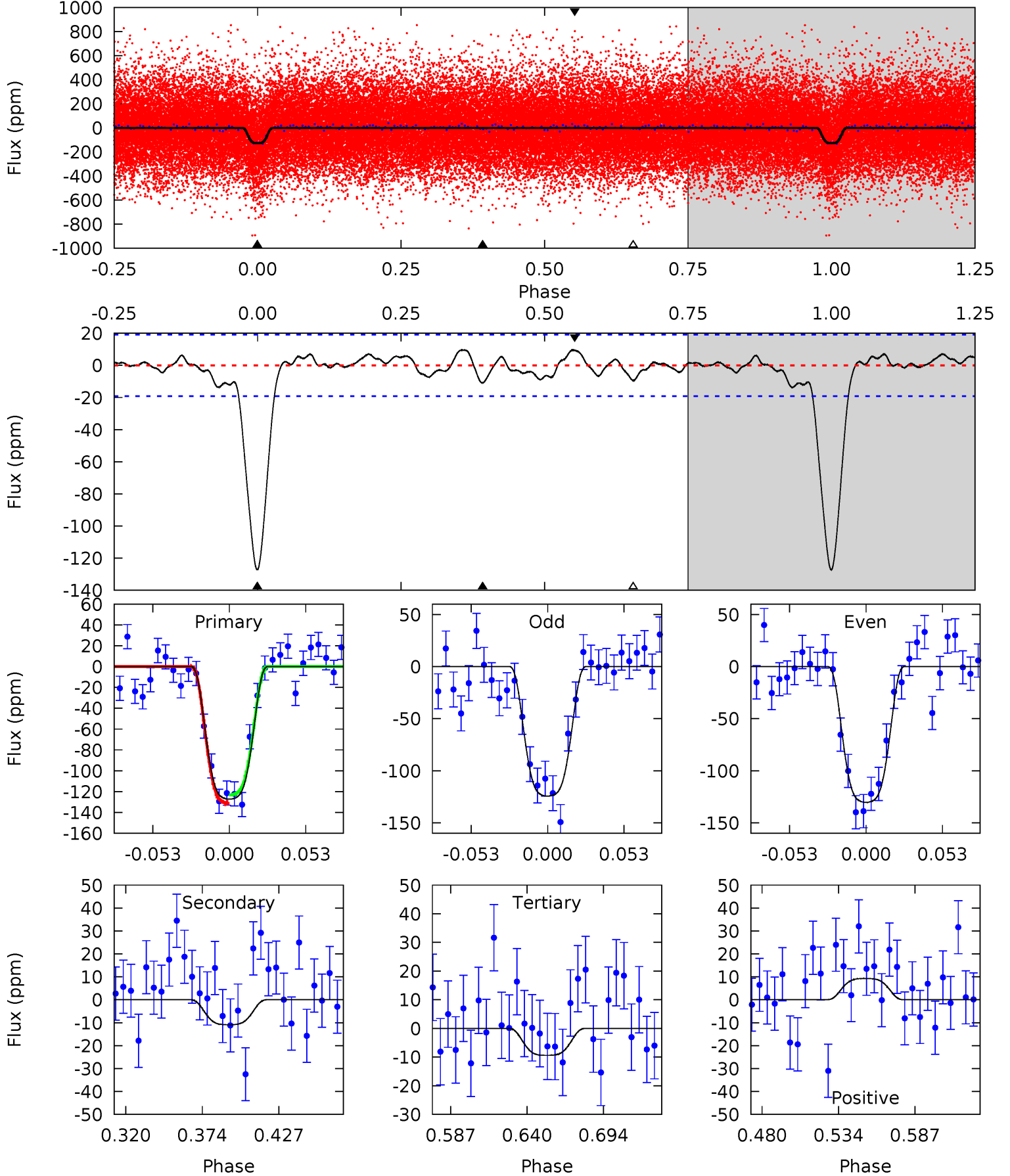
TCE 004386059-01 P= 2.900599 Days  $T_0=133.428243$  (BKJD)



# DV Model-Shift Uniqueness Test

004386059-01, P = 2.900554 Days, E = 133.442184 Days

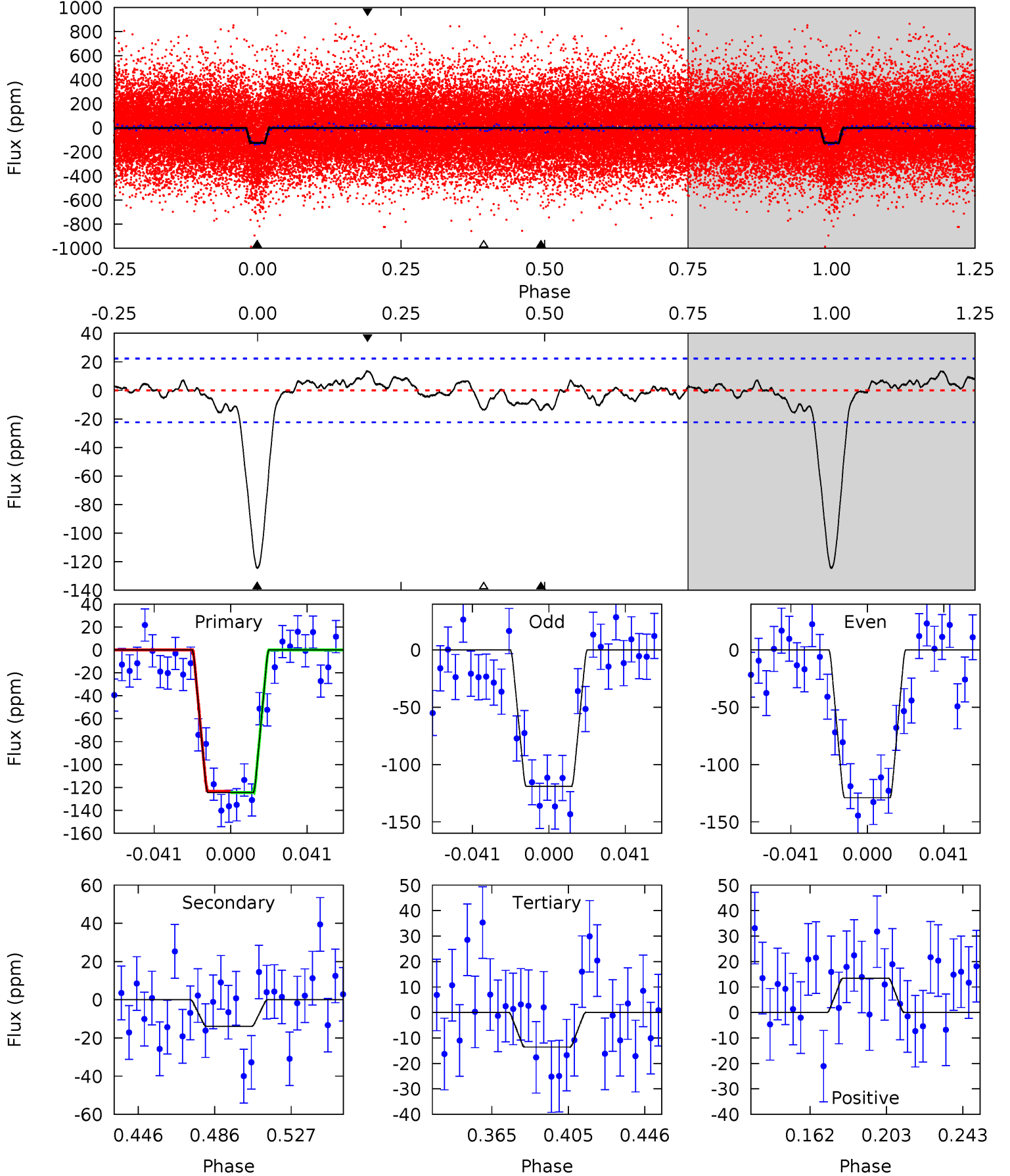
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.2	2.67	2.31	2.27	4.69	1.93	1.11	28.9	28.9	0.36	0.40	0.73	0.94	0.07	1.01



# Alt Model-Shift Uniqueness Test

004386059-01, P = 2.900599 Days, E = 133.428243 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
26.5	2.97	2.88	2.86	4.75	2.05	1.18	23.6	23.6	0.08	0.10	1.05	1.04	0.10	0.13



### Stellar Parameters For KIC 004386059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6547^{+181}_{-250}$	$4.241^{+0.132}_{-0.198}$	$-0.200^{+0.250}_{-0.300}$	$1.371^{+0.417}_{-0.278}$	$1.198^{+0.192}_{-0.192}$	$0.654^{+0.485}_{-0.320}$
	+3%/-4%	+3%/-5%	+125%/-150%	+30%/-20%	+16%/-16%	+74%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 004386059-01 / KOI 1340.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-11 \pm 4$	$2.11^{+0.35}_{-0.29}$	$2315^{+173}_{-151}$	$3540^{+229}_{-309}$	$2.314^{+1.278}_{-0.922}$
Alt.	$-14 \pm 5$	$1.75^{+0.31}_{-0.21}$	$2299^{+183}_{-148}$	$3955^{+256}_{-287}$	$4.341^{+2.104}_{-1.599}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$



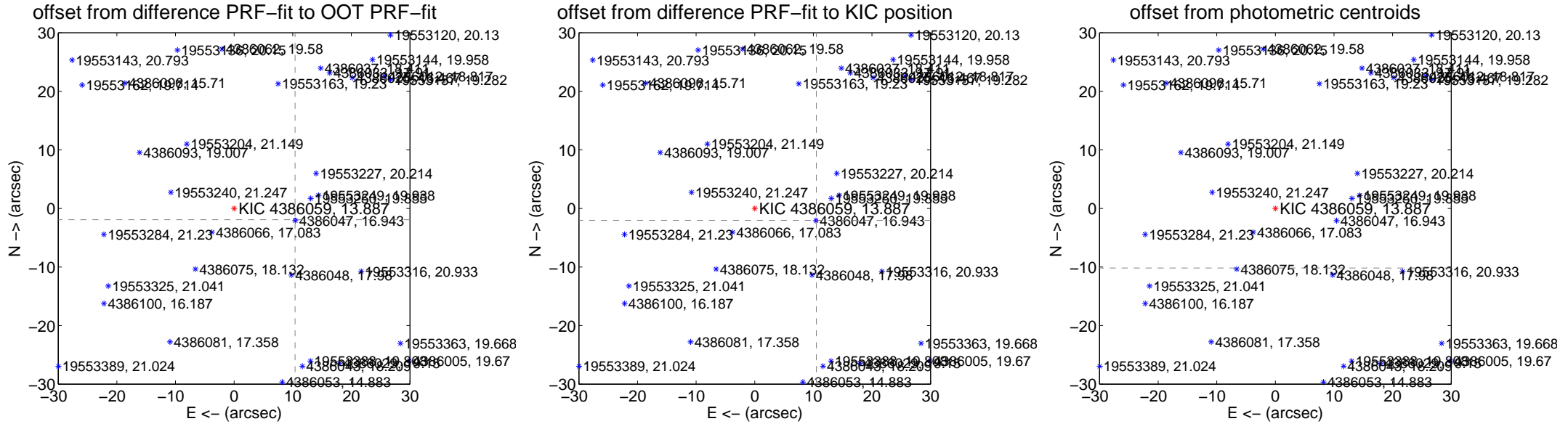
## DV Centroid Data

Supplemental centroid analysis for 004386059-01. Kepler magnitude: 13.89. Transit SNR 19.56

There are 5 quarters with good PRF difference image offsets

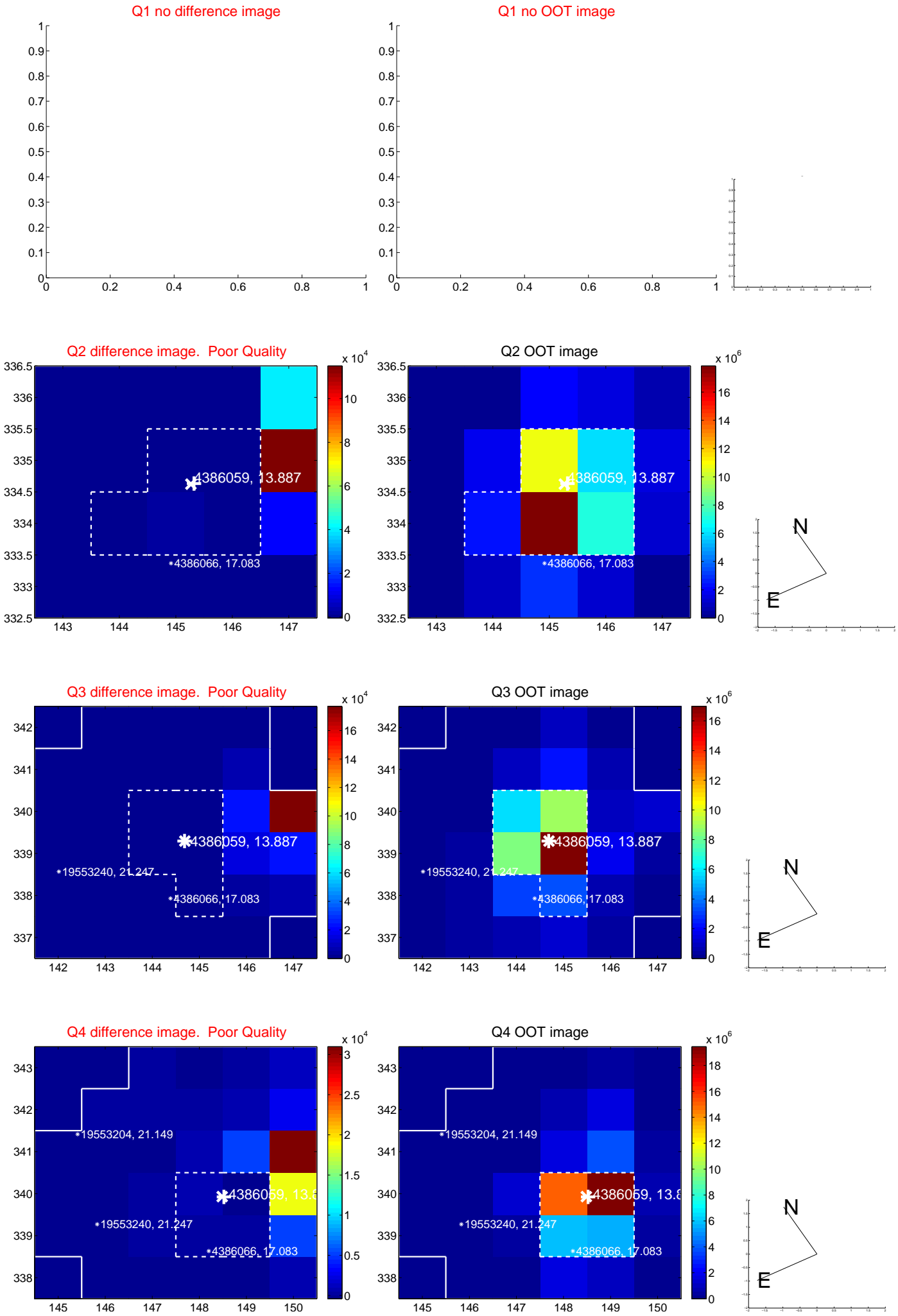
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$10.581 \pm 0.084$	125.46	$-10.404 \pm 0.078$	$-1.925 \pm 0.092$
PRF-fit source offset from KIC position	$10.703 \pm 0.067$	158.90	$-10.507 \pm 0.067$	$-2.041 \pm 0.078$
photometric centroid source offset	$58.22 \pm 0.75$	77.87	$-57.32 \pm 0.75$	$-10.18 \pm 0.70$

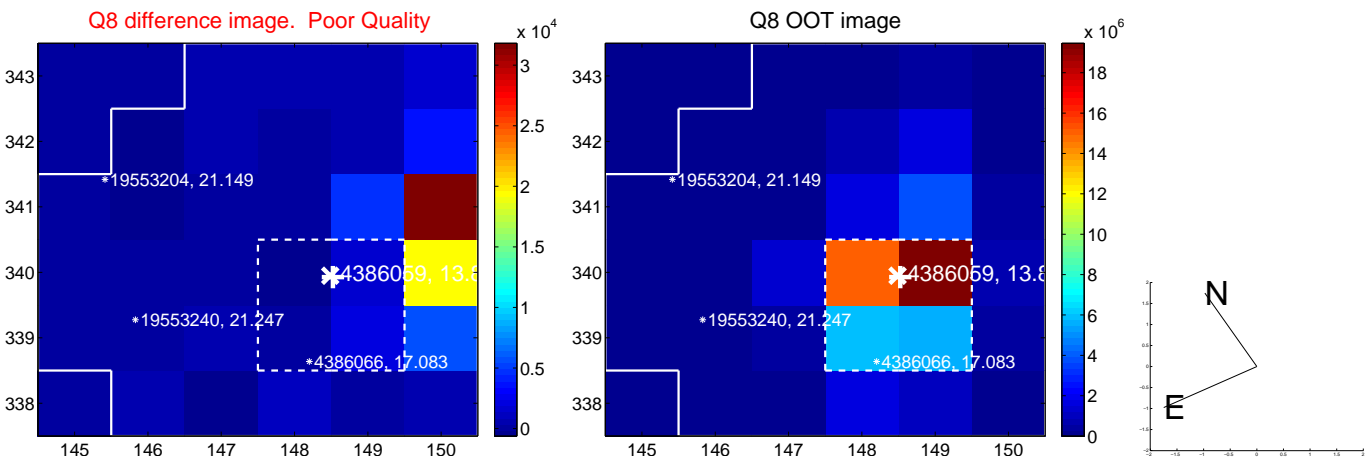
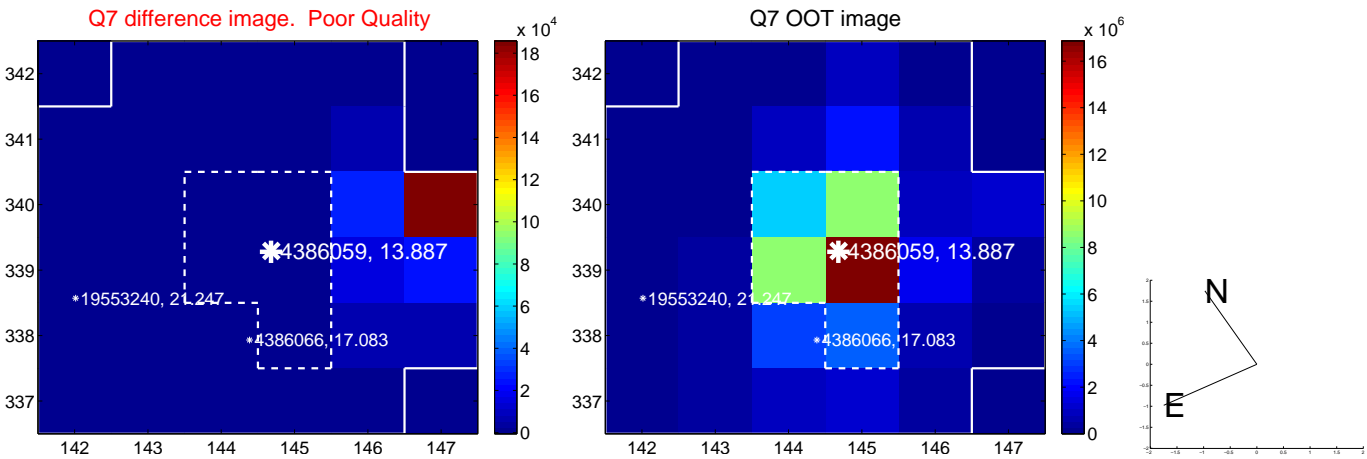
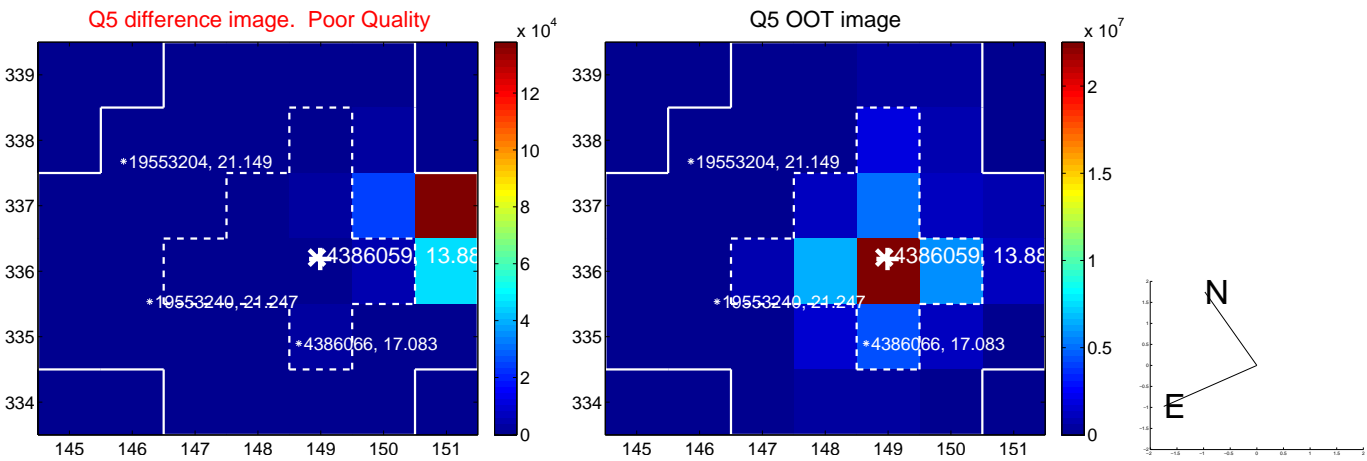


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

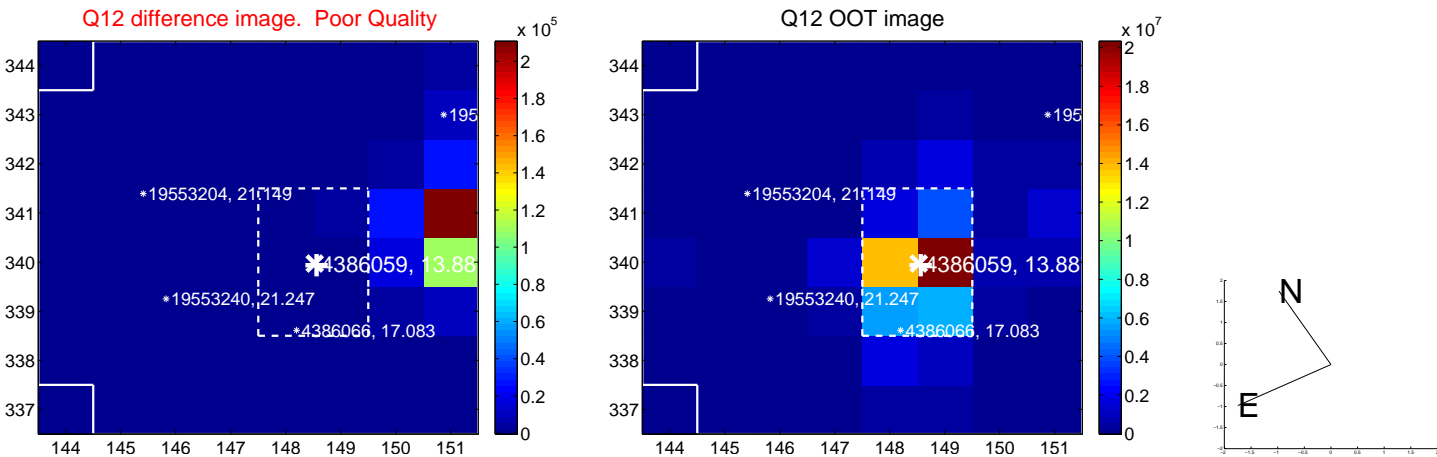
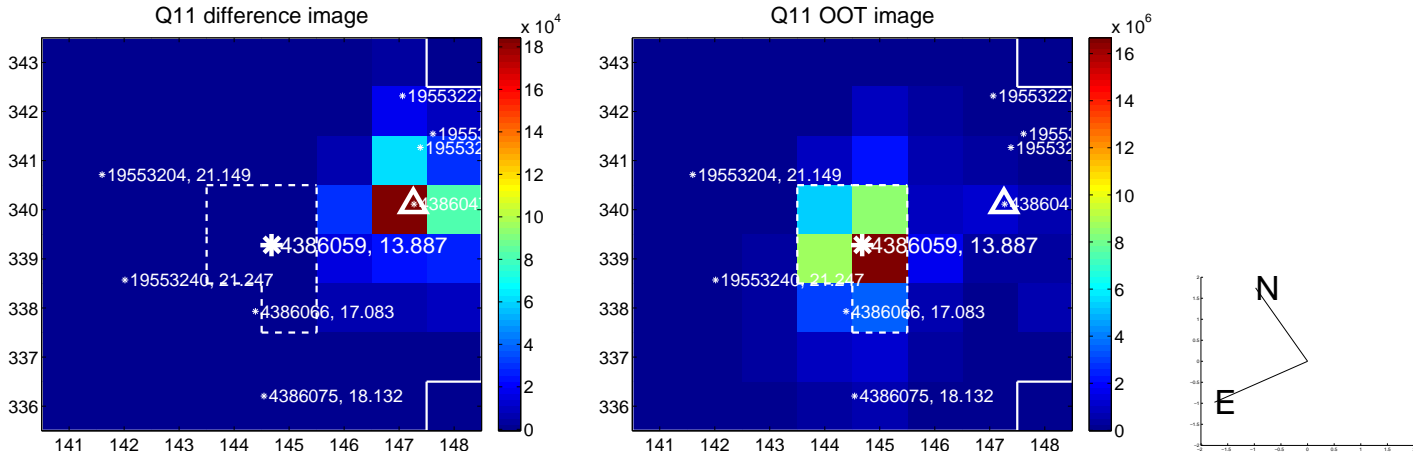
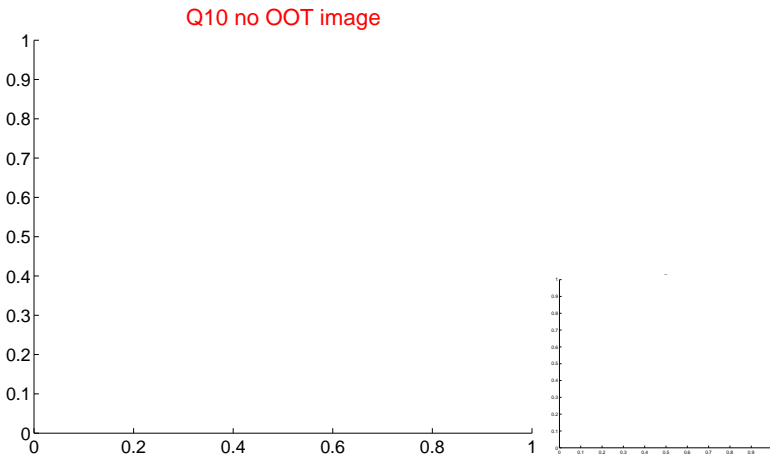
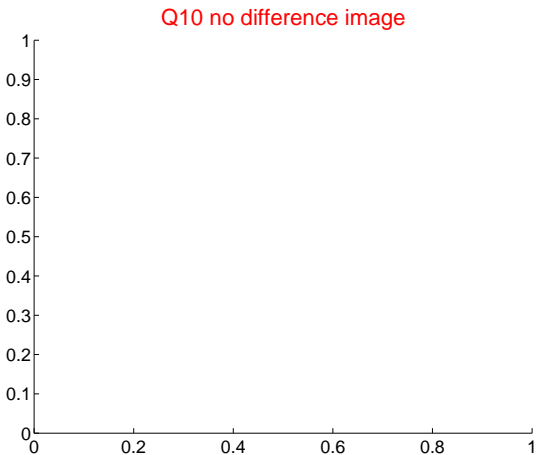
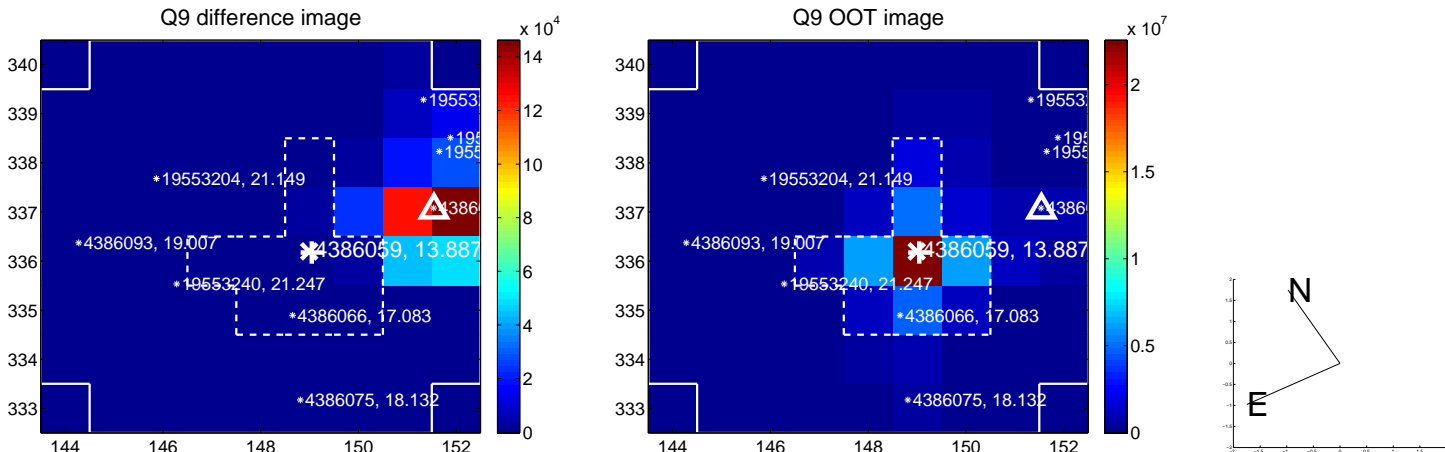
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



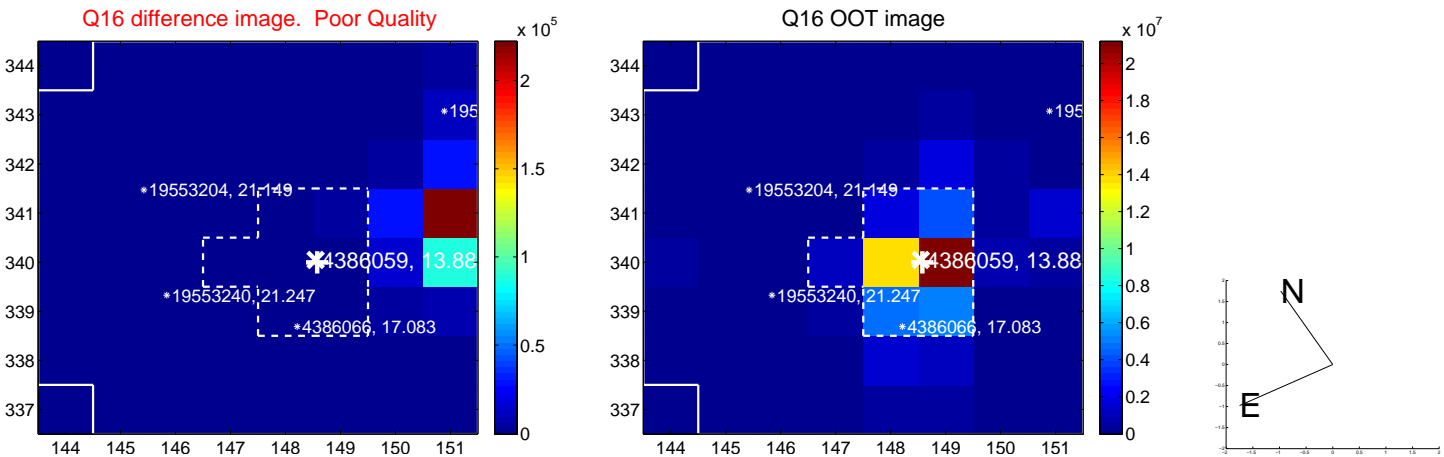
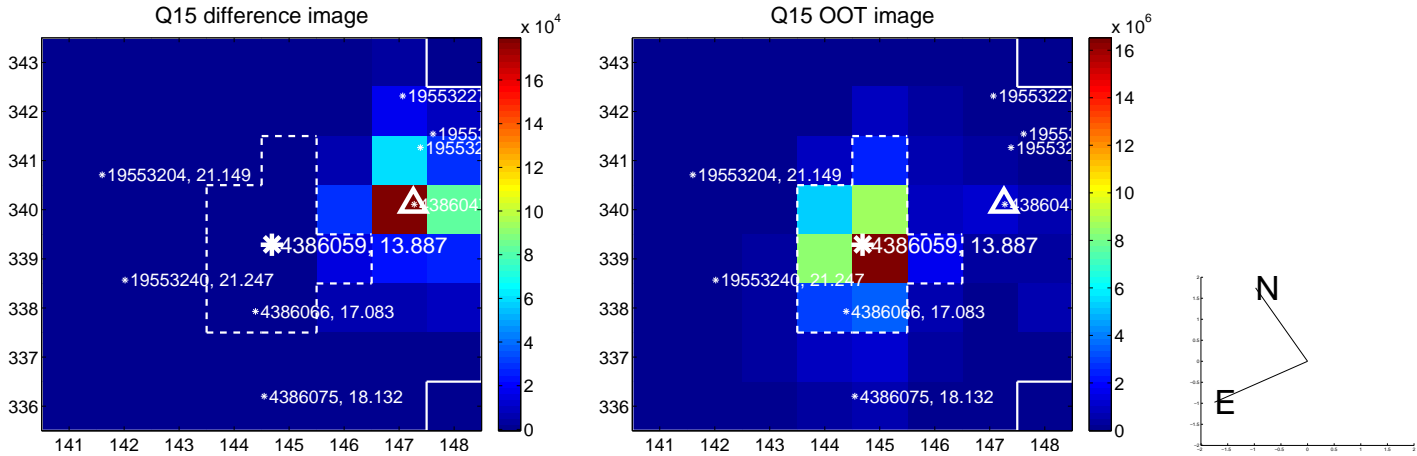
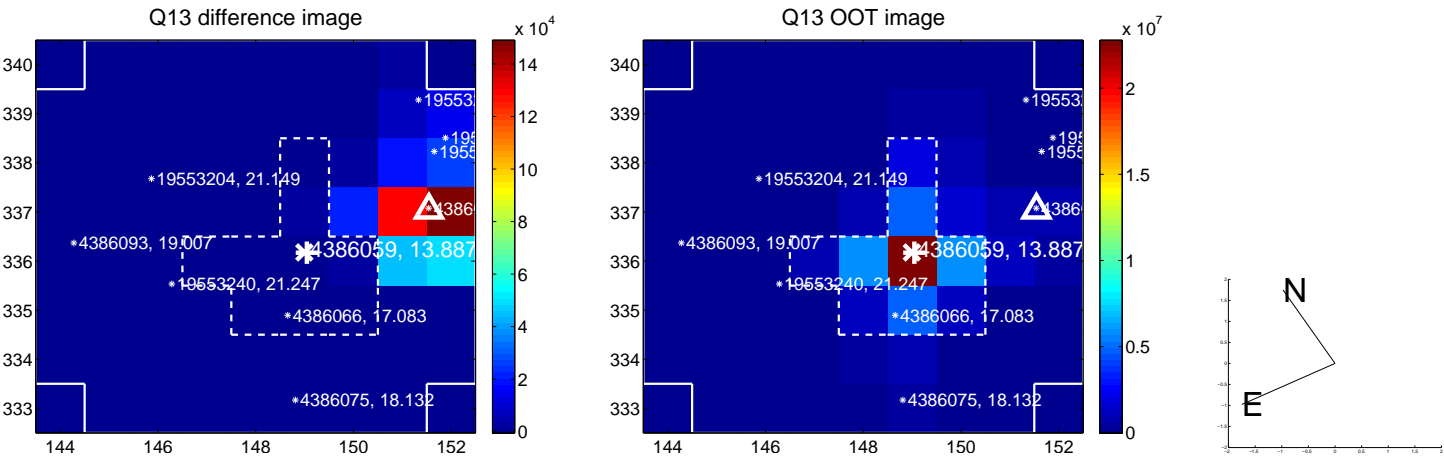
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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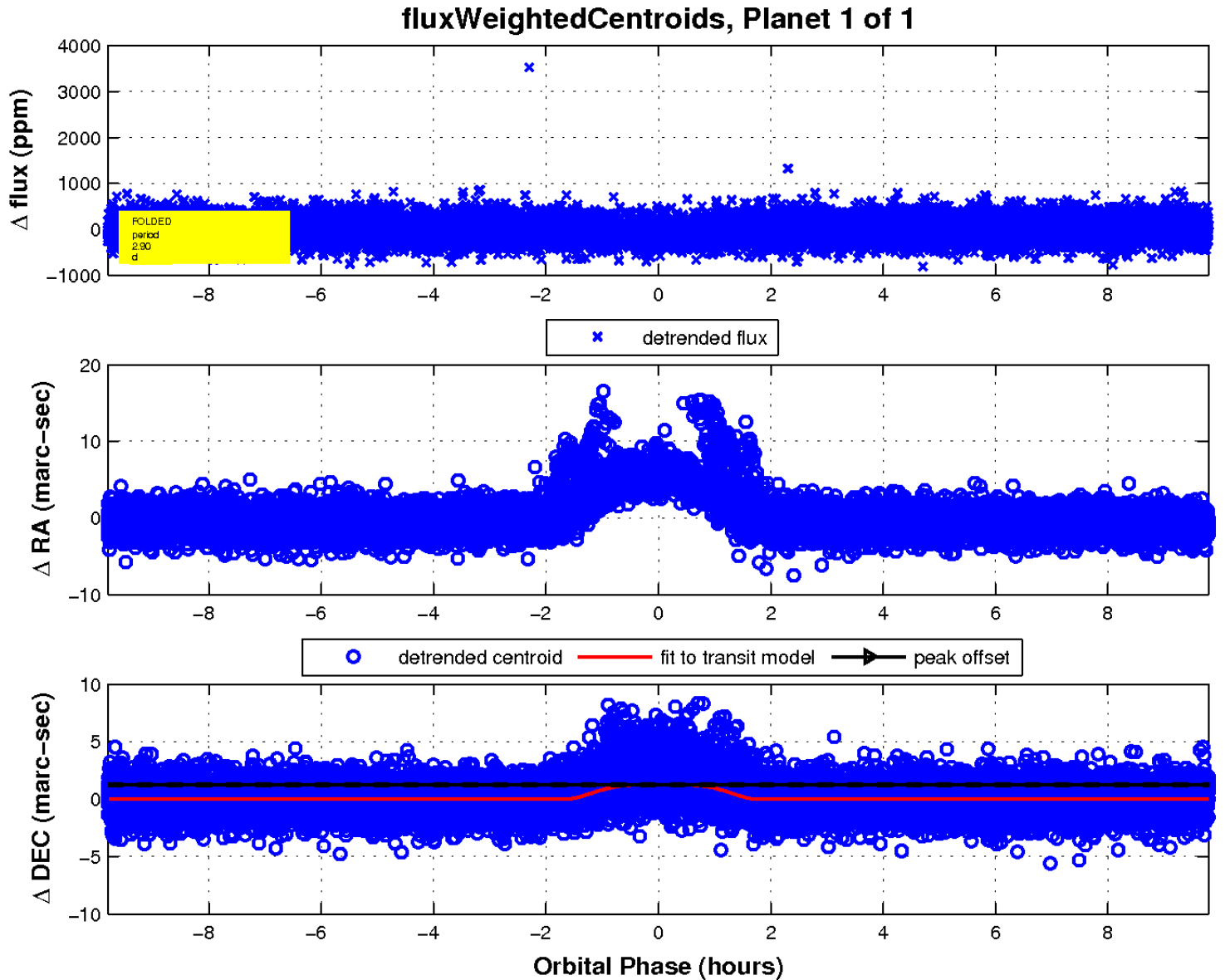
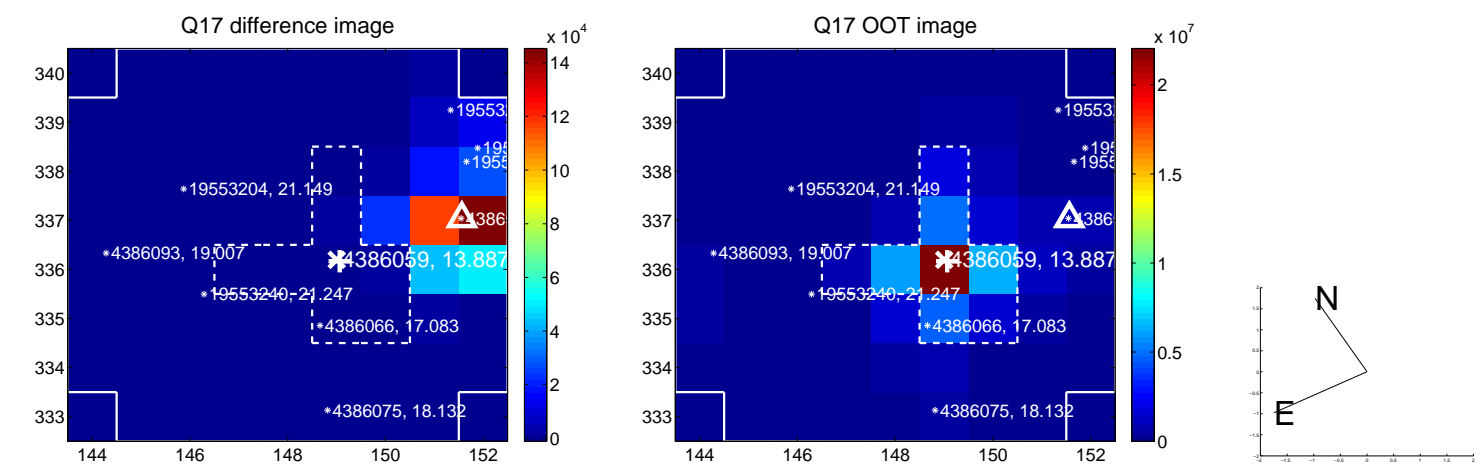


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UKIRT Image

Declination

