

# KIC 005303551

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005303551-01	OBS	0553.01	2.399064	133.070717	303.8	4.235	32.5	35.8	1.00	5654	2.51	795.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005303551-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—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 005303551-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta\text{Row}$	$\Delta\text{Col}$	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
005303551-01	5303551	3982.01	5303557	1:1	4.8	1	0	16.49	14.88	23.28	Direct-PRF	0	0.33	0.23

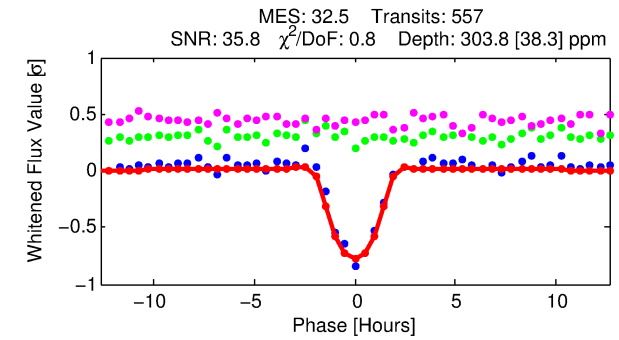
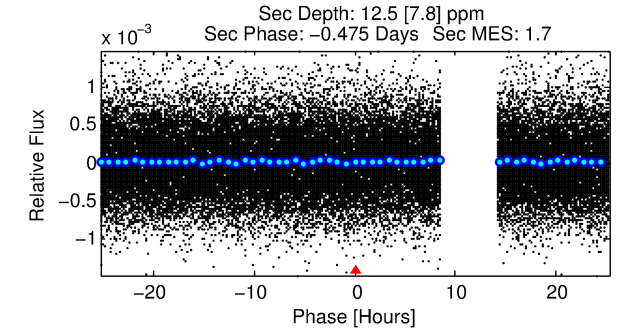
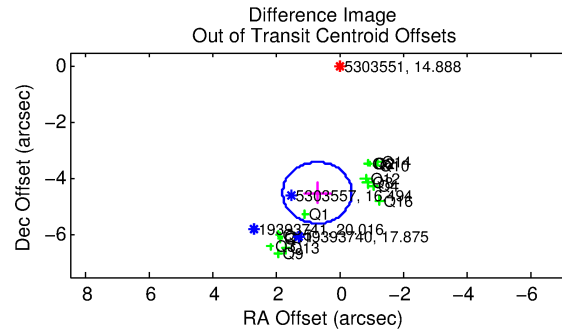
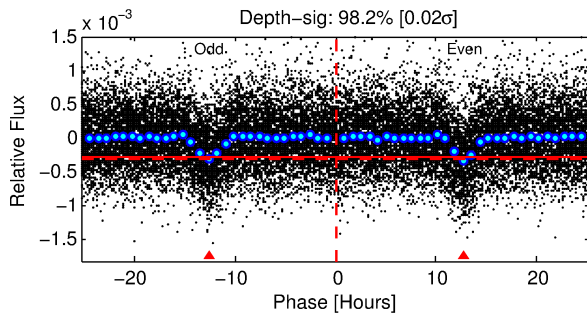
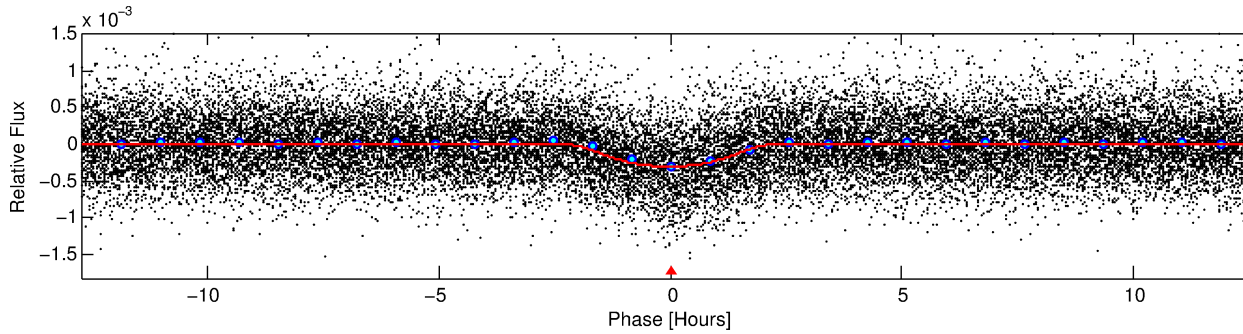
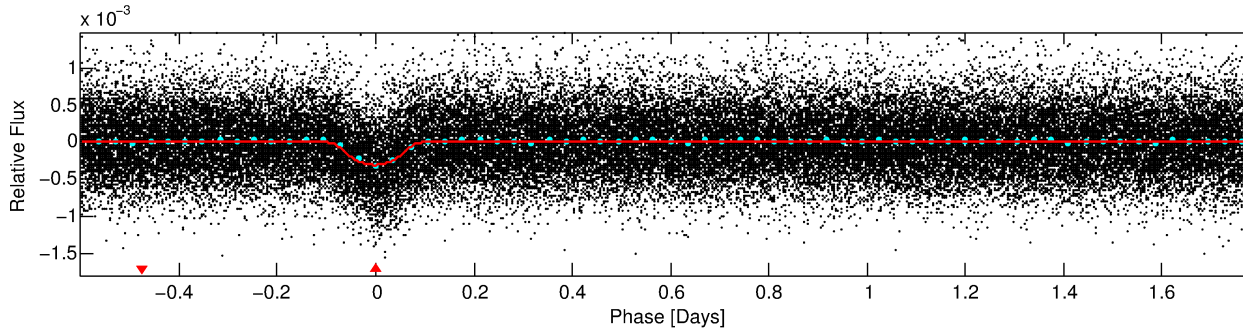
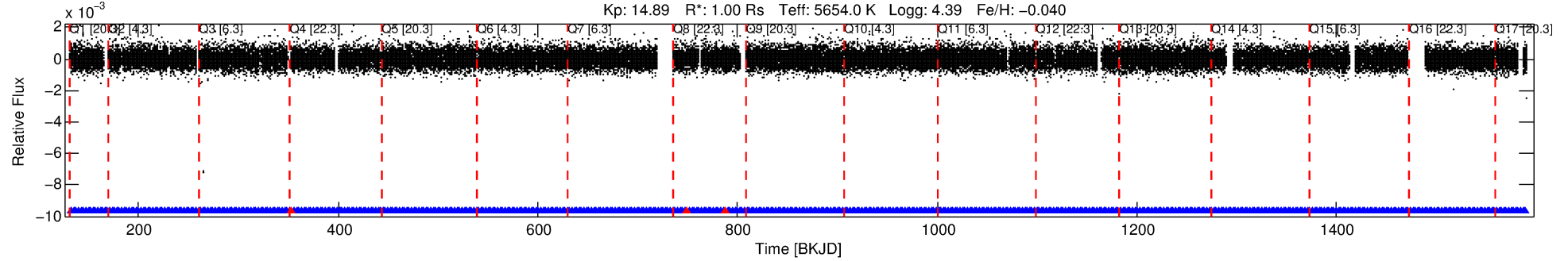
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta\text{Row}$  and  $\Delta\text{Col}$  are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  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: 5303551 Candidate: 1 of 1 Period: 2.399 d

KOI: K00553.01 Corr: 0.898

Kp: 14.89 R\*: 1.00 Rs Teff: 5654.0 K Logg: 4.39 Fe/H: -0.040



## DV Fit Results:

Period = 2.39906 [0.00001] d  
Epoch = 133.0707 [0.0023] BKJD  
Rp/R\* = 0.0230 [0.0035]  
a/R\* = 1.59 [0.11]  
b = 0.98 [0.01]  
Seff = 795.34 [293.24]  
Teq = 1354 [125] K  
Rp = 2.51 [0.80] Re  
a = 0.0340 [0.0081] AU  
Ag = 1.26 [0.98] [0.27σ]  
Teffp = 2218 [392] K [2.10σ]

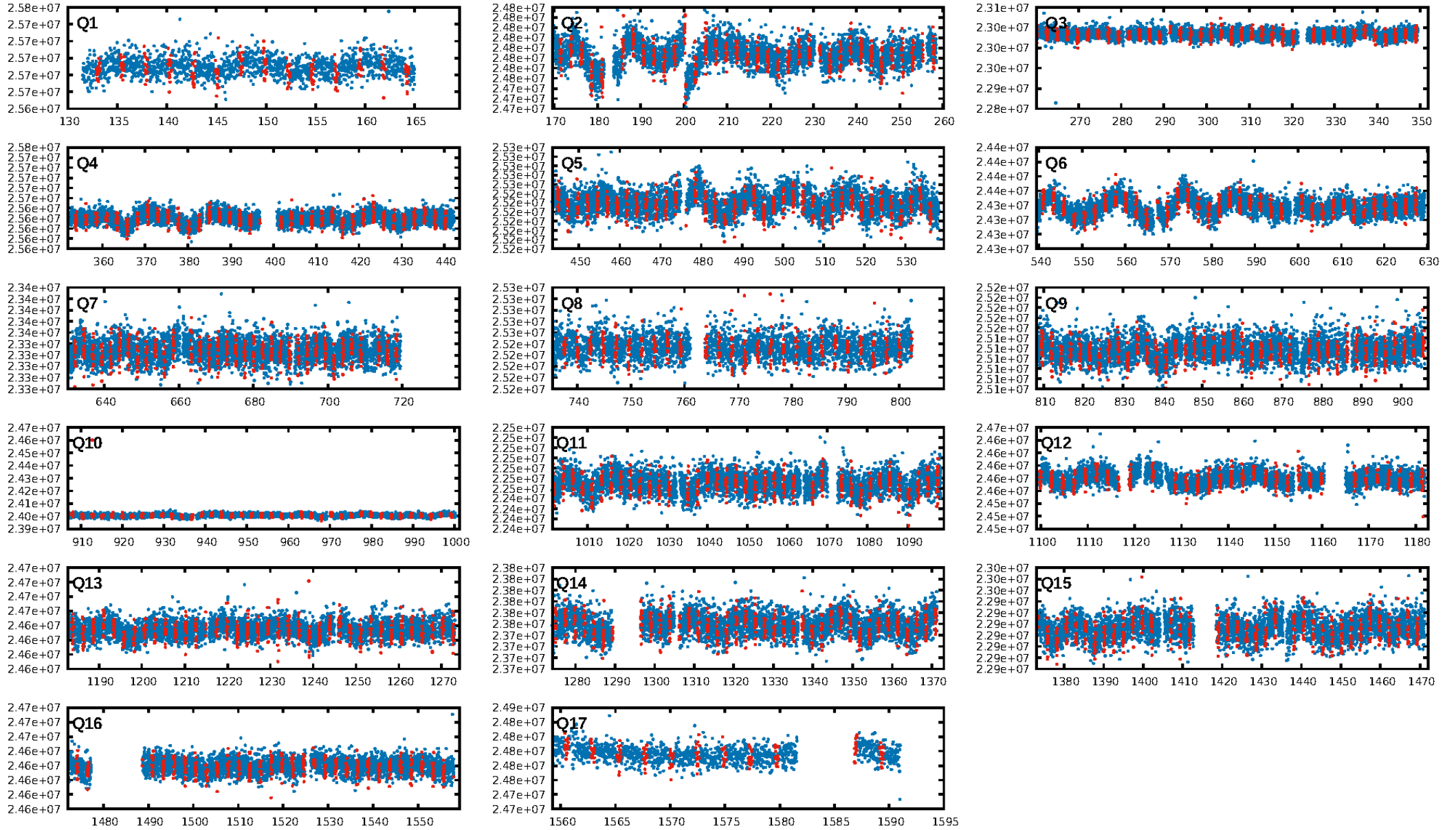
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.73e-221  
RollingBand-fgt: 0.99 [529/532]  
GhostDiagnostic-chr: -0.05046  
Centroid-sig: 0.0%  
Centroid-so: 7.433 arcsec [18.97σ]  
OotOffset-rm: 4.558 arcsec [12.54σ]  
KicOffset-rm: 4.827 arcsec [13.98σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [17/17]

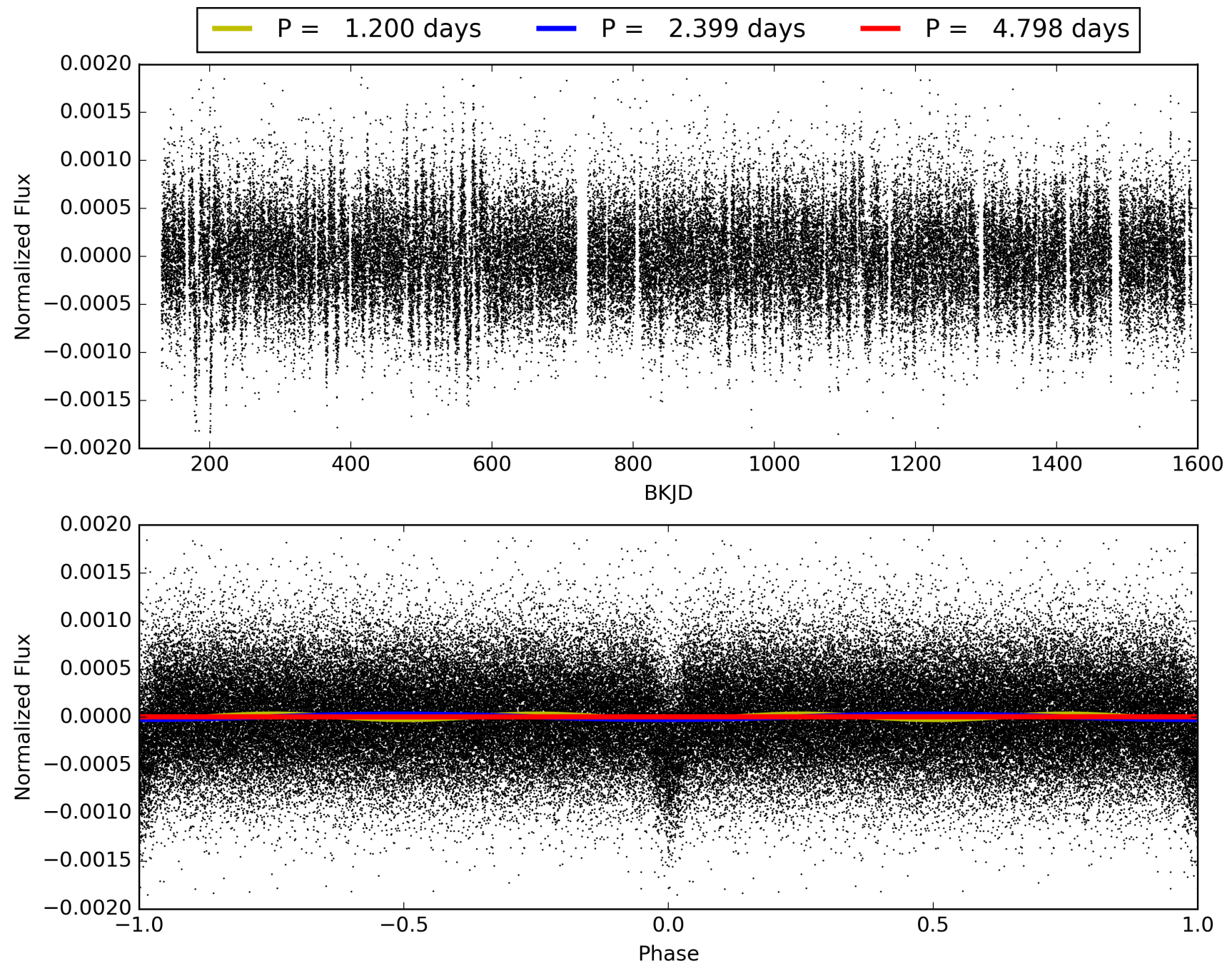
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:39:46 Z

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

# TCE 005303551-01, PDC Light Curves



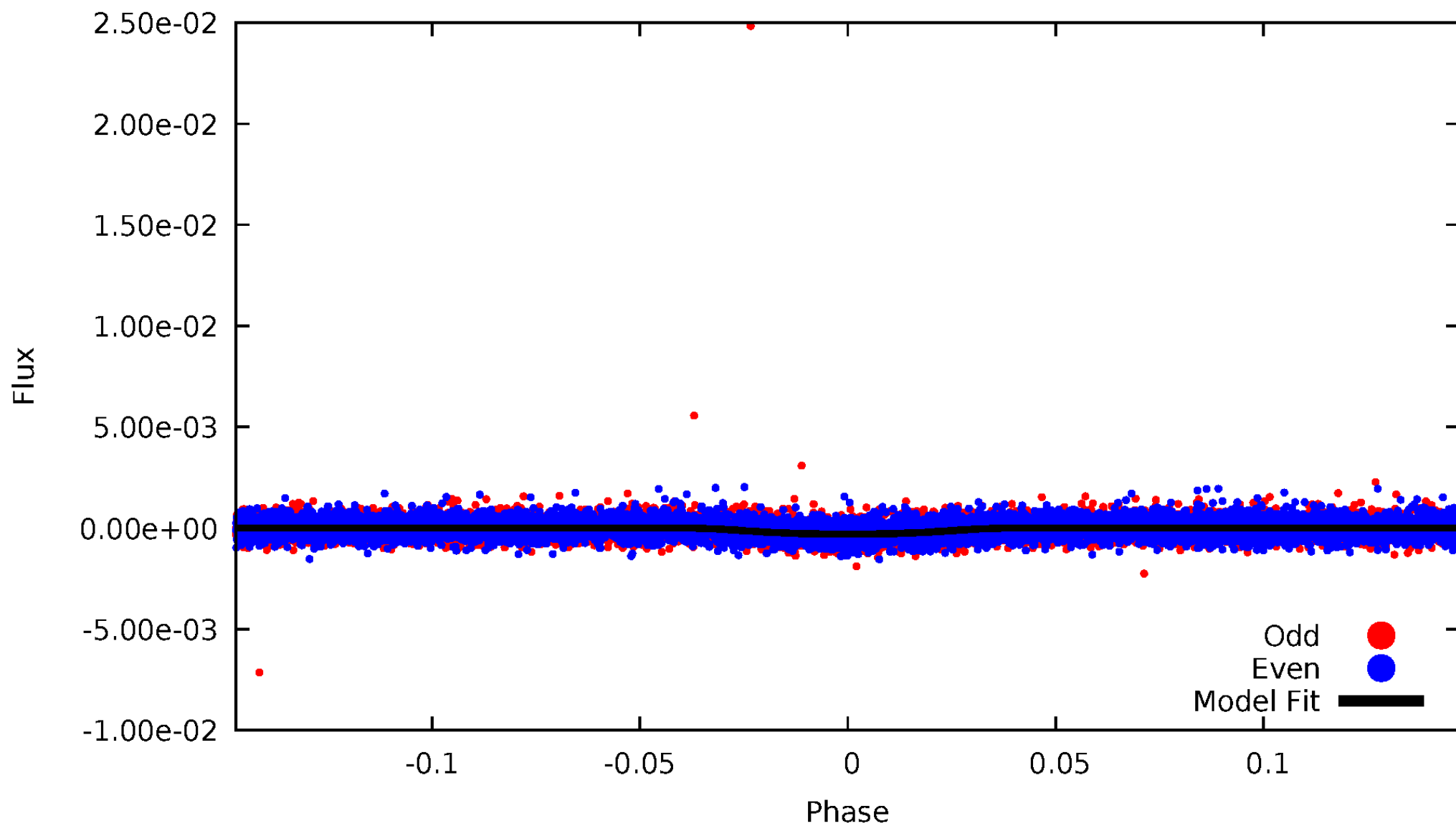
TCE 005303551-01





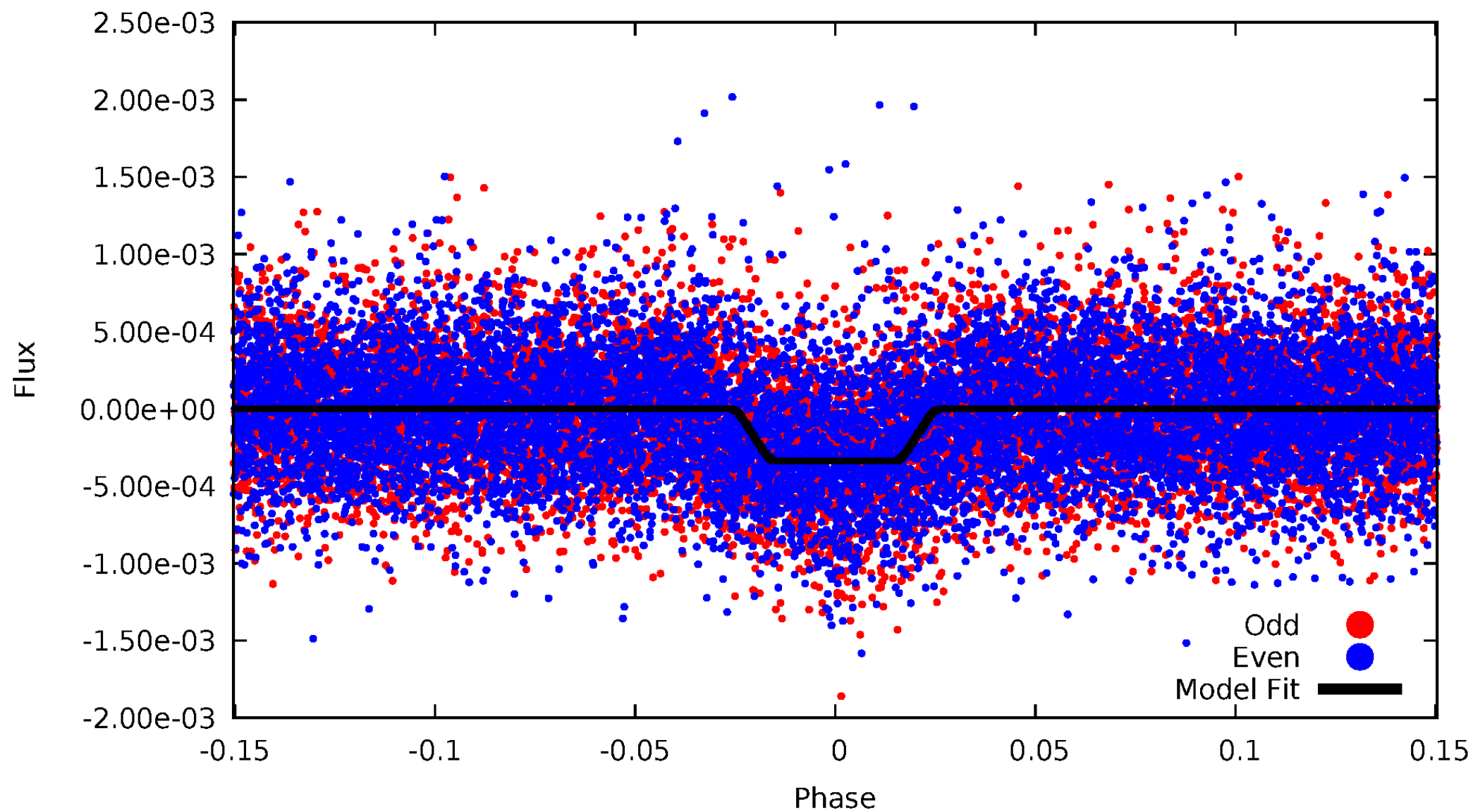
# DV Odd/Even

TCE 005303551-01

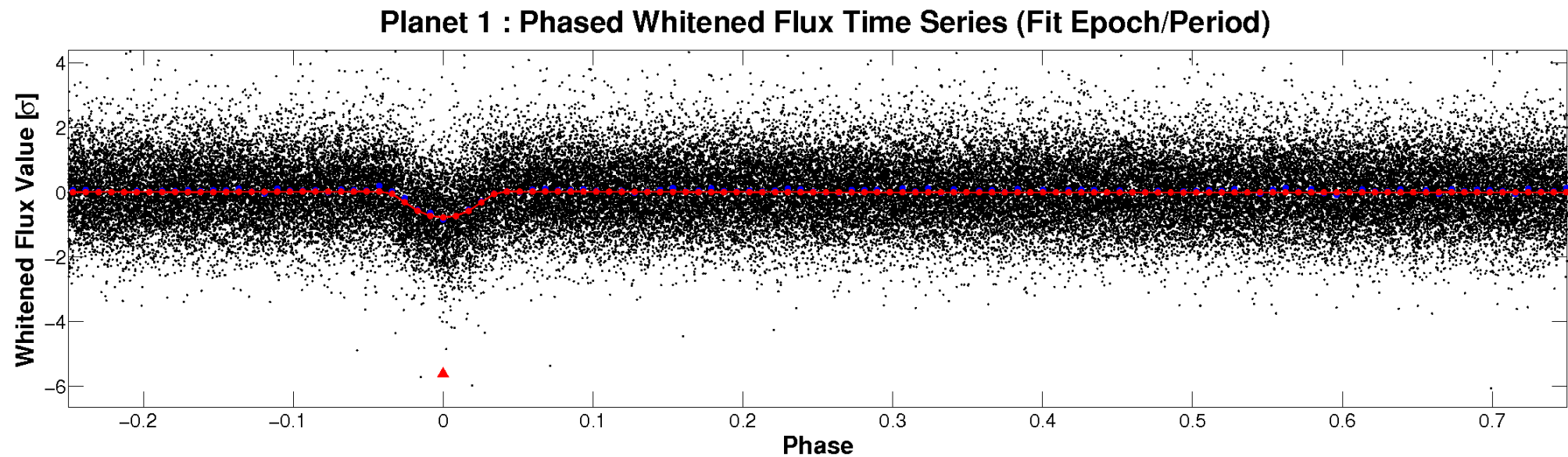
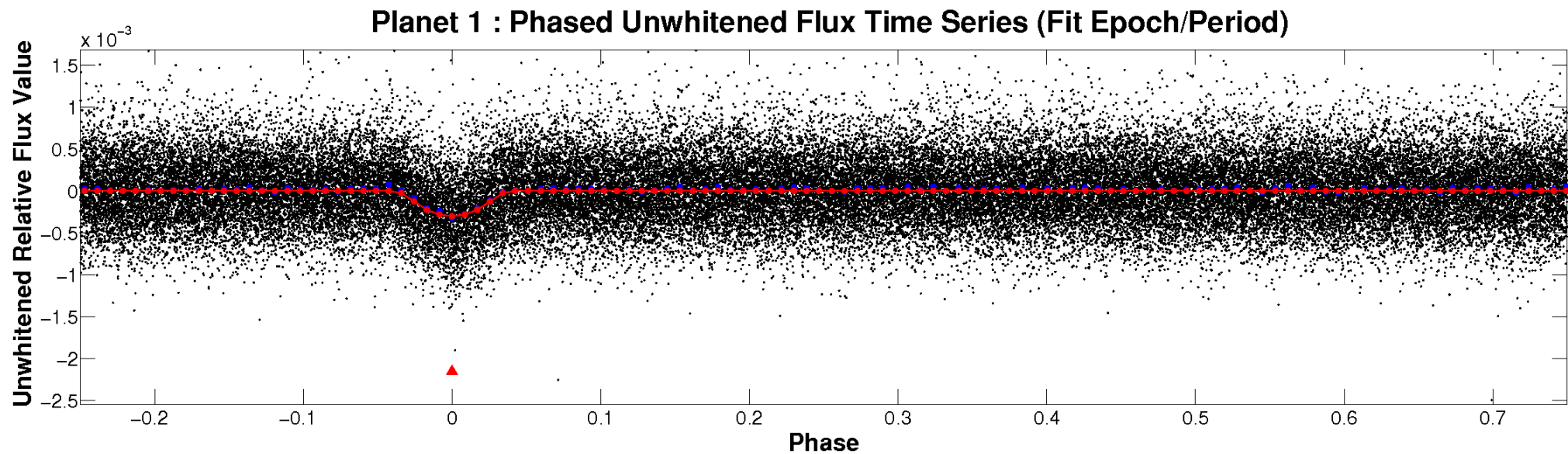


# ALT Odd/Even

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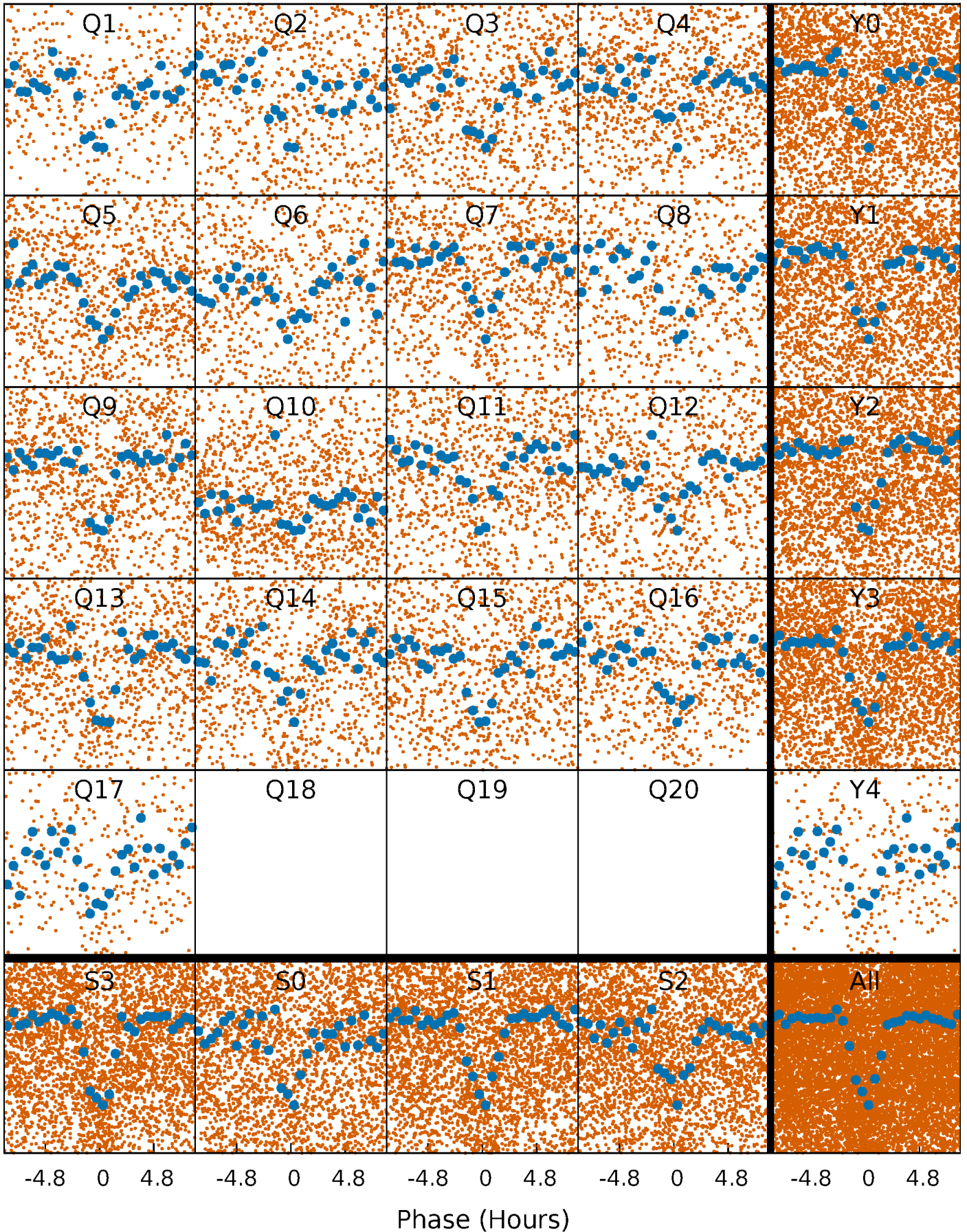


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

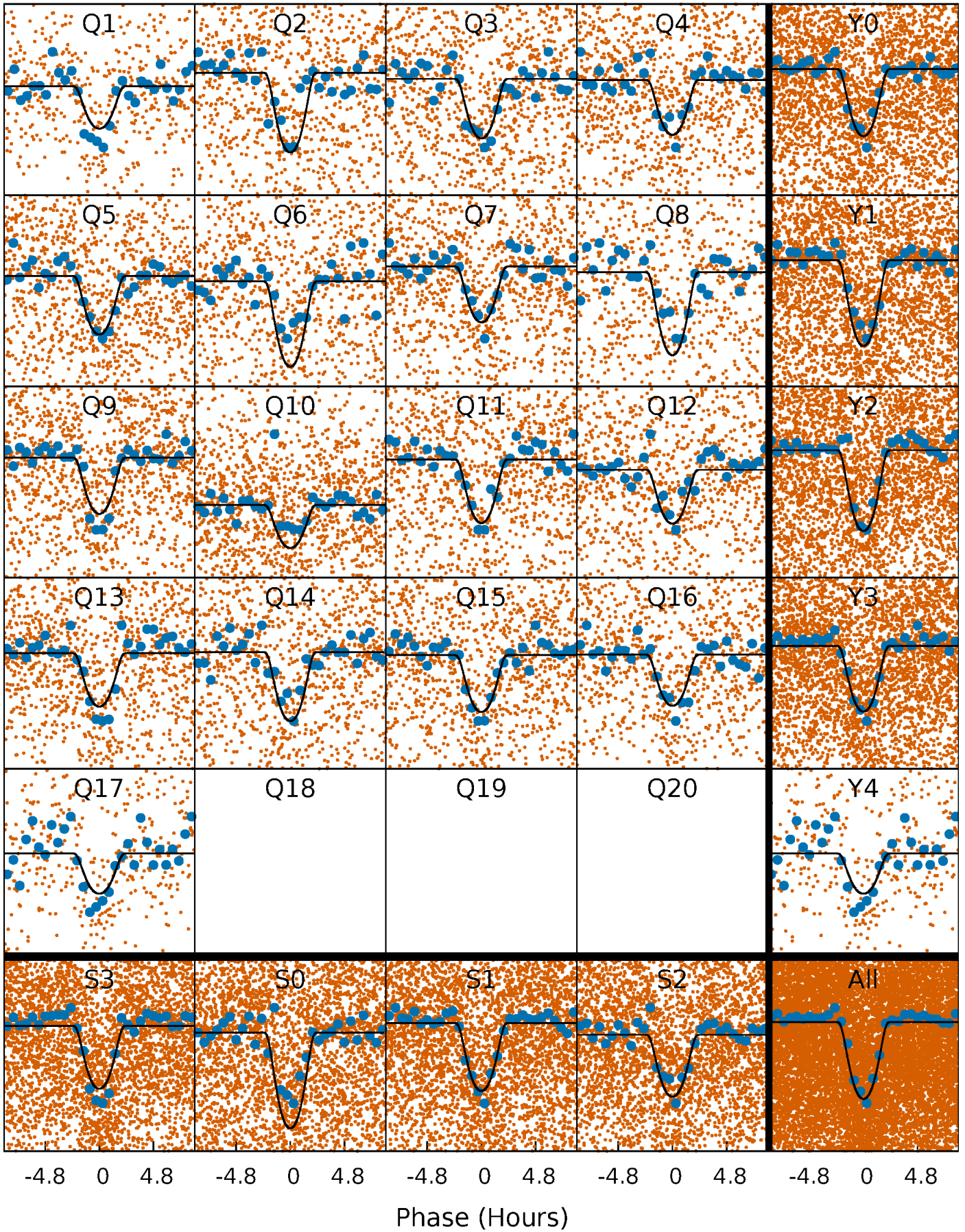
TCE 005303551-01 P= 2.399064 Days  $T_0=133.070717$  (BKJD)





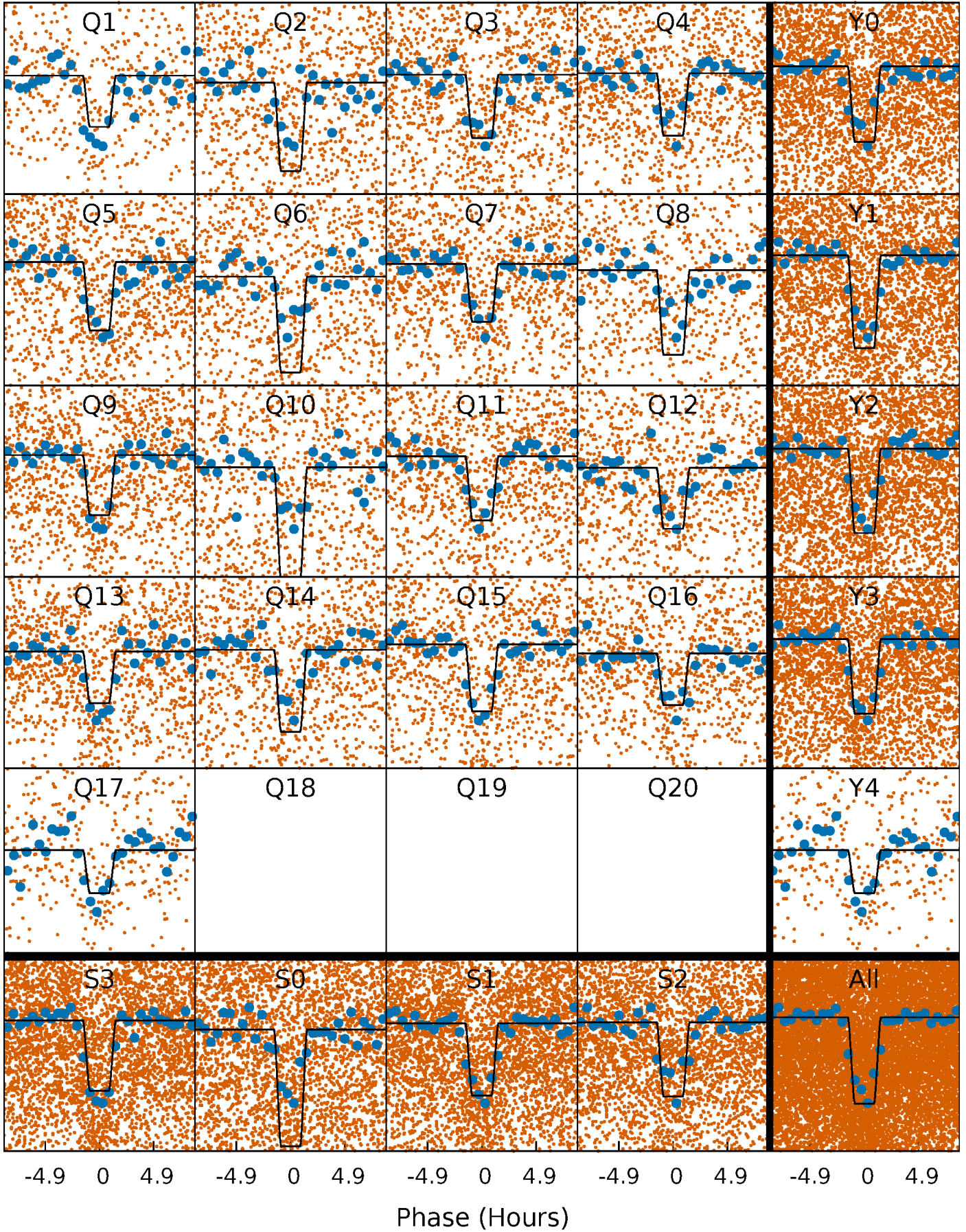
# DV Quarter-Phased Transit Curves

TCE 005303551-01 P= 2.399064 Days  $T_0=133.070717$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005303551-01 P= 2.399062 Days  $T_0=133.073276$  (BKJD)

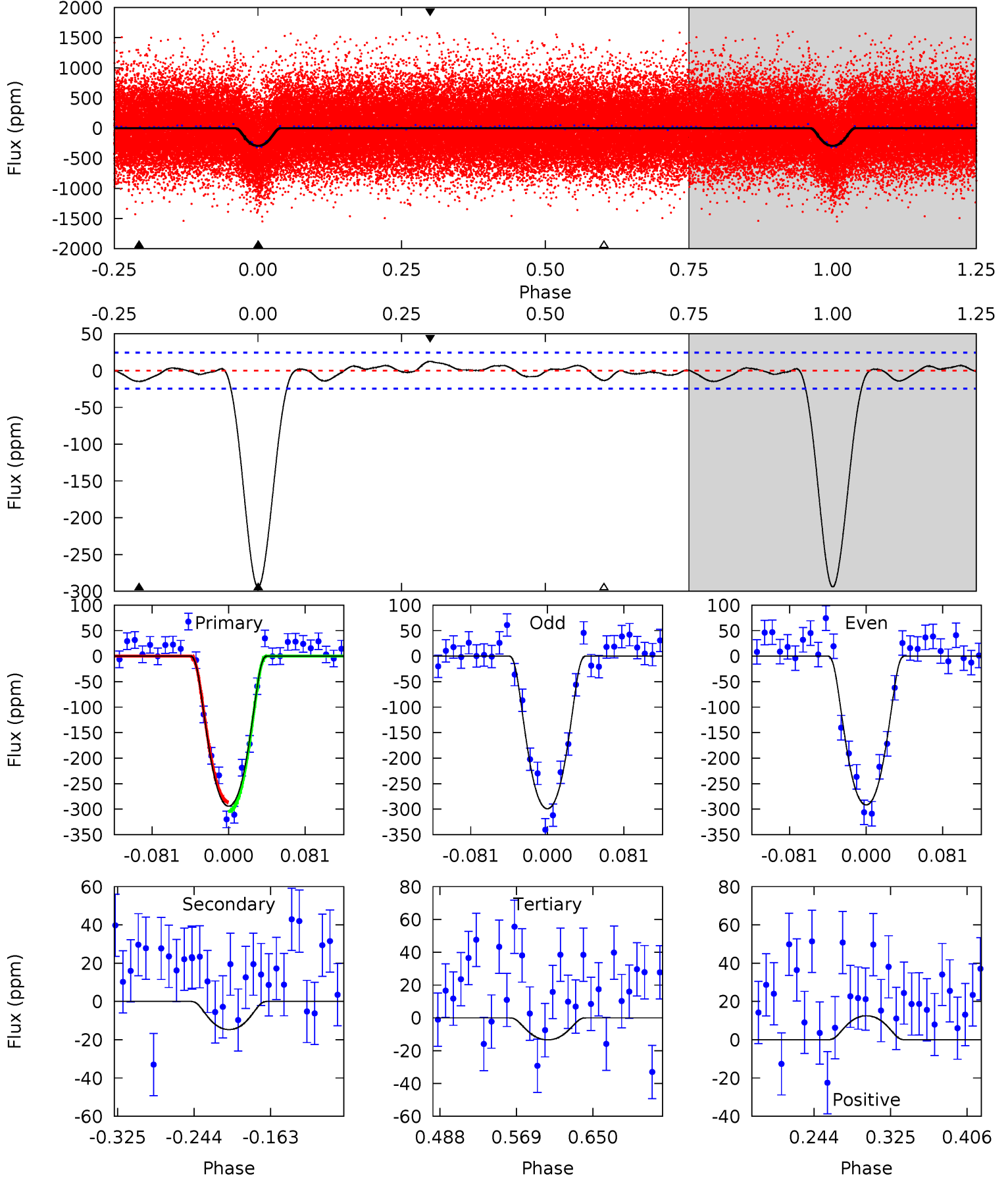




# DV Model-Shift Uniqueness Test

005303551-01, P = 2.399064 Days, E = 130.671653 Days

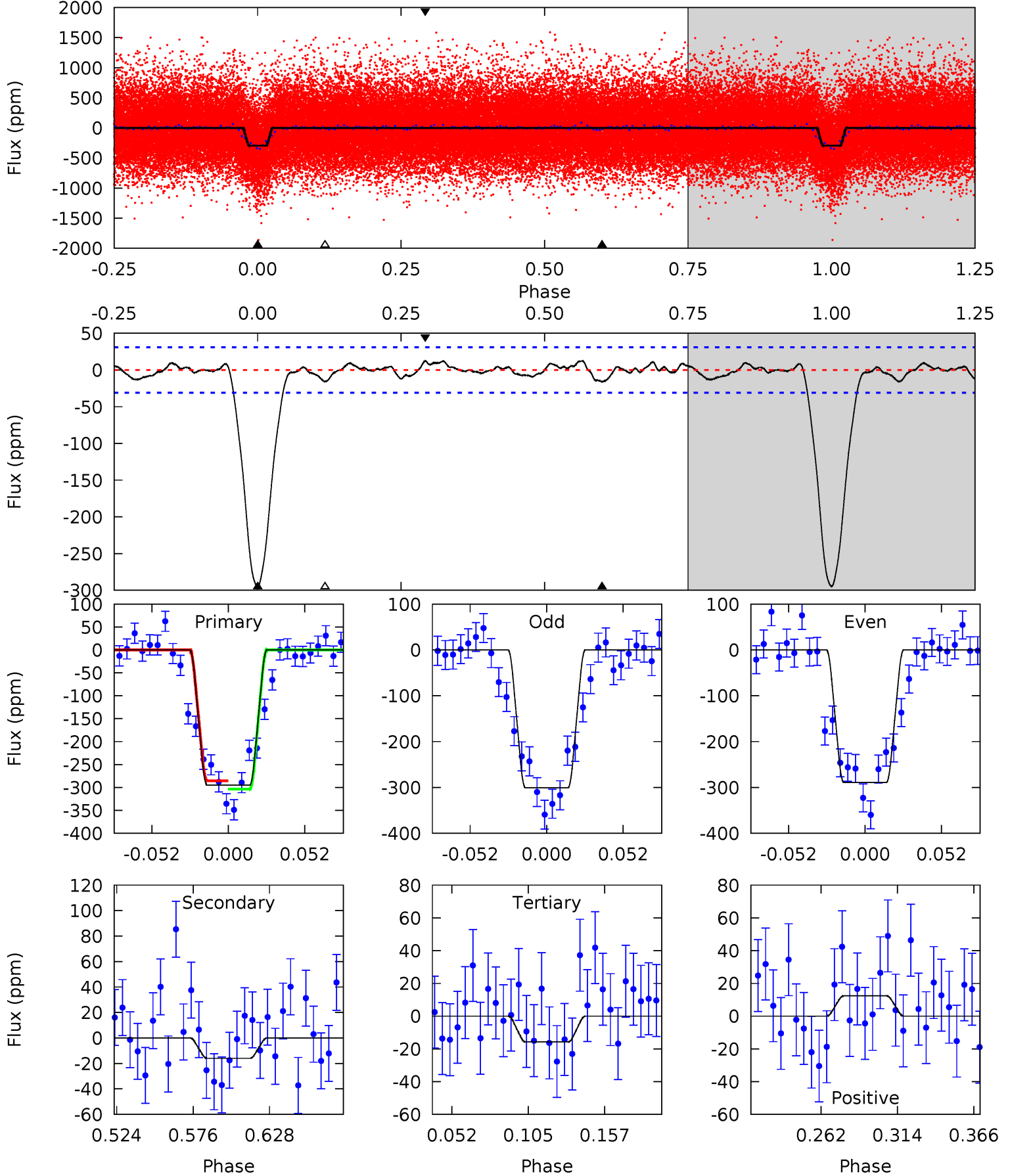
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.4	2.77	2.52	2.36	4.61	1.74	1.10	52.9	53.0	0.24	0.41	0.71	1.02	0.04	1.74



# Alt Model-Shift Uniqueness Test

005303551-01, P = 2.399062 Days, E = 130.674214 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
44.8	2.43	2.39	1.88	4.70	1.94	0.89	42.4	42.9	0.04	0.56	0.88	1.01	0.04	1.36





### Stellar Parameters For KIC 005303551

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5654^{+169}_{-169}$	$4.395^{+0.128}_{-0.192}$	$-0.040^{+0.300}_{-0.300}$	$1.001^{+0.280}_{-0.151}$	$0.908^{+0.114}_{-0.085}$	$1.275^{+0.716}_{-0.618}$
	+3%/-3%	+3%/-4%	+750%/-750%	+28%/-15%	+13%/-9%	+56%/-48%
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 005303551-01 / KOI 0553.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-15 \pm 5$	$2.55^{+0.51}_{-0.47}$	$1900^{+143}_{-107}$	$2863^{+235}_{-283}$	$1.371^{+0.894}_{-0.636}$
Alt.	$-16 \pm 7$	$2.05^{+0.49}_{-0.45}$	$1910^{+131}_{-114}$	$3154^{+309}_{-329}$	$2.387^{+1.856}_{-1.172}$

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

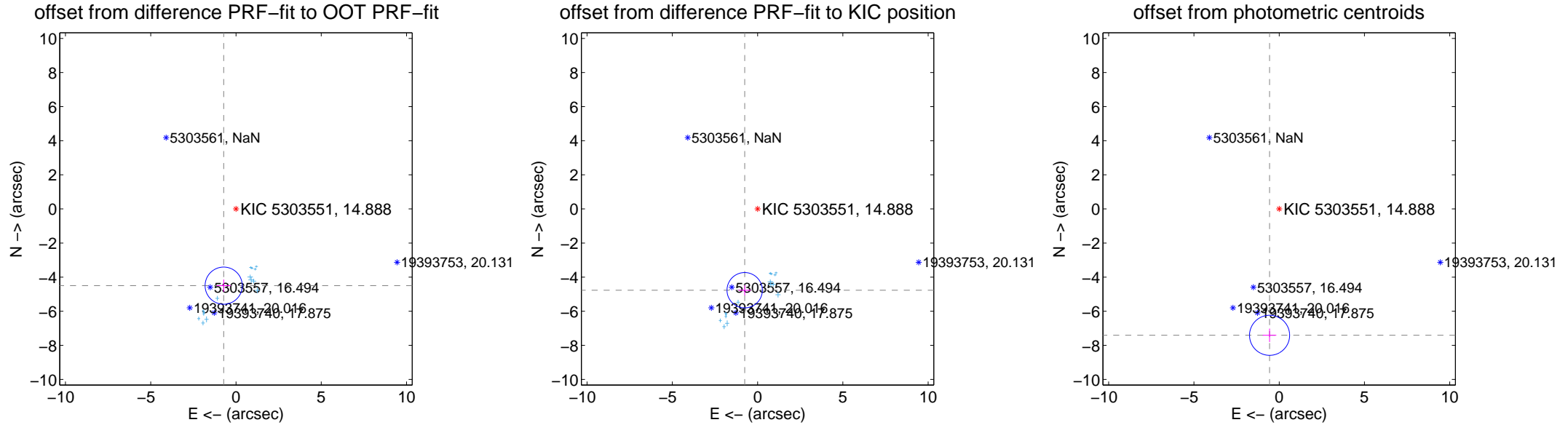
## DV Centroid Data

Supplemental centroid analysis for 005303551-01. Kepler magnitude: 14.89. Transit SNR 35.79

There are 15 quarters with good PRF difference image offsets

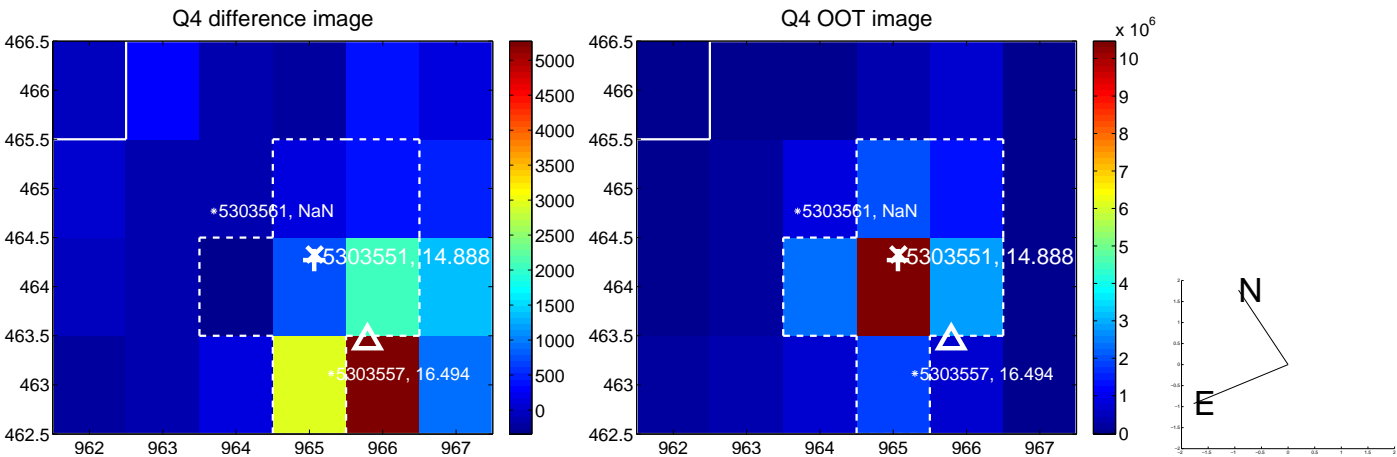
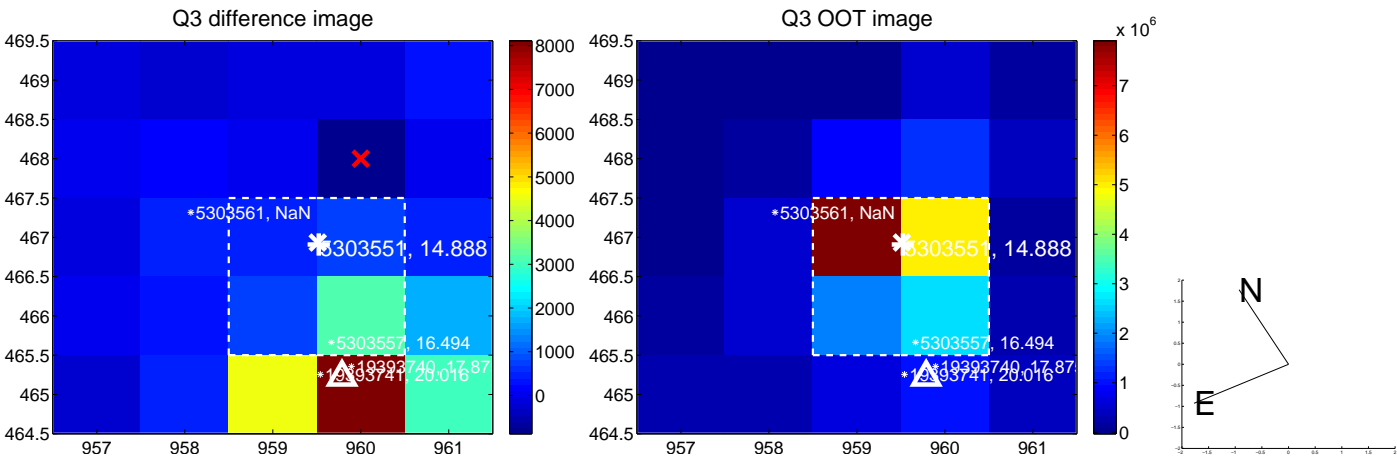
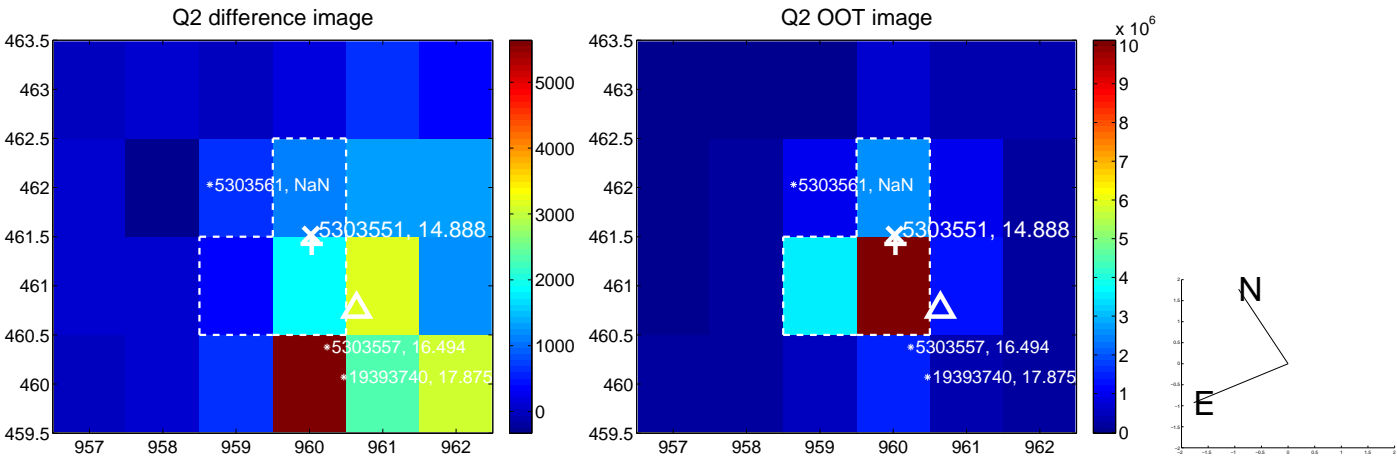
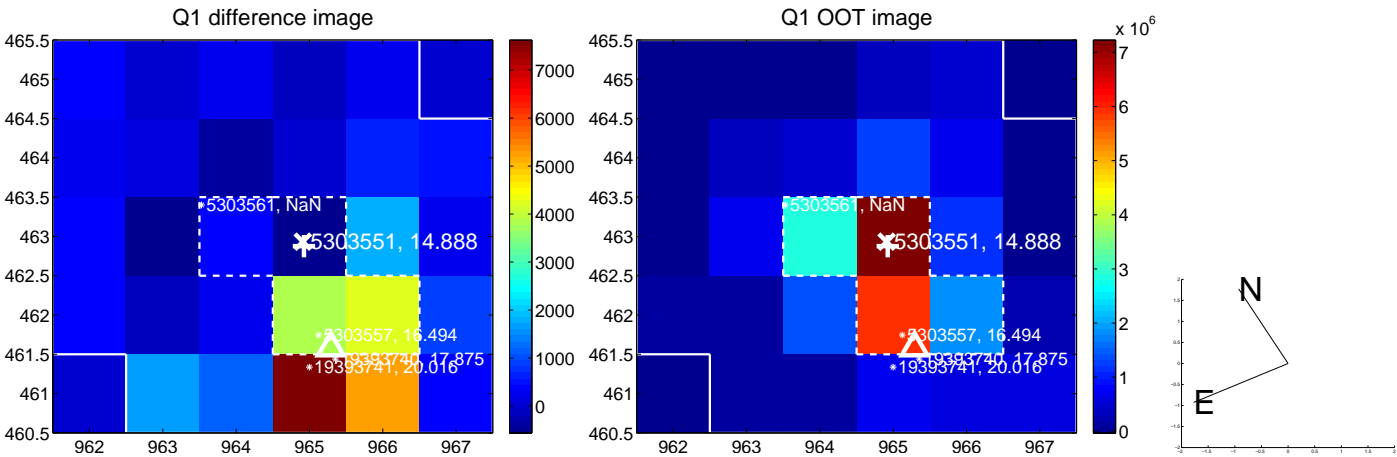
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.558 \pm 0.363$	12.54	$0.721 \pm 0.416$	$-4.500 \pm 0.362$
PRF-fit source offset from KIC position	$4.827 \pm 0.345$	13.98	$0.758 \pm 0.359$	$-4.767 \pm 0.298$
photometric centroid source offset	$7.43 \pm 0.39$	18.97	$0.56 \pm 0.40$	$-7.41 \pm 0.39$

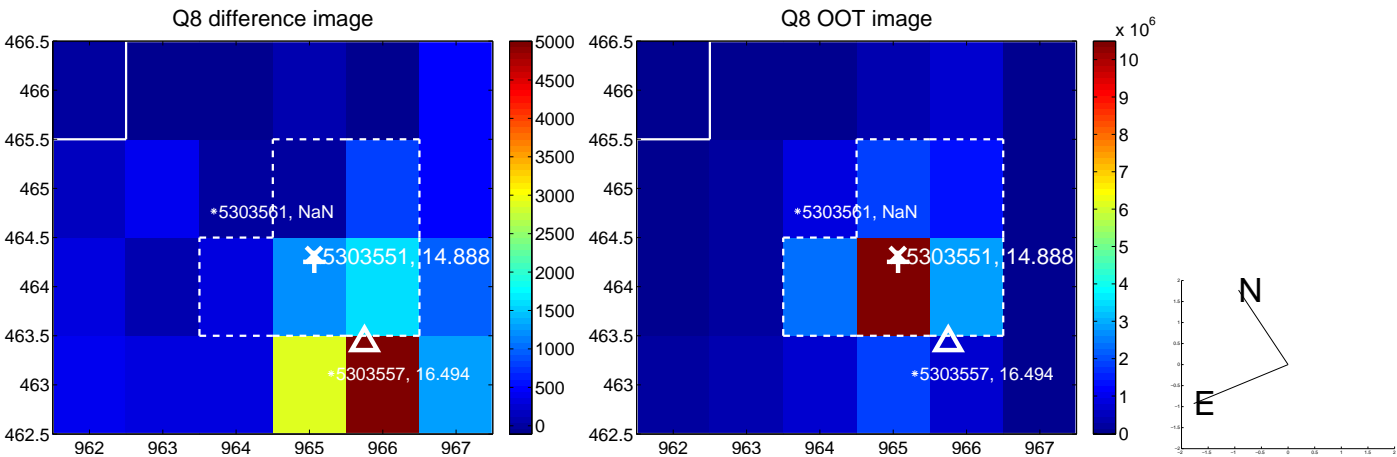
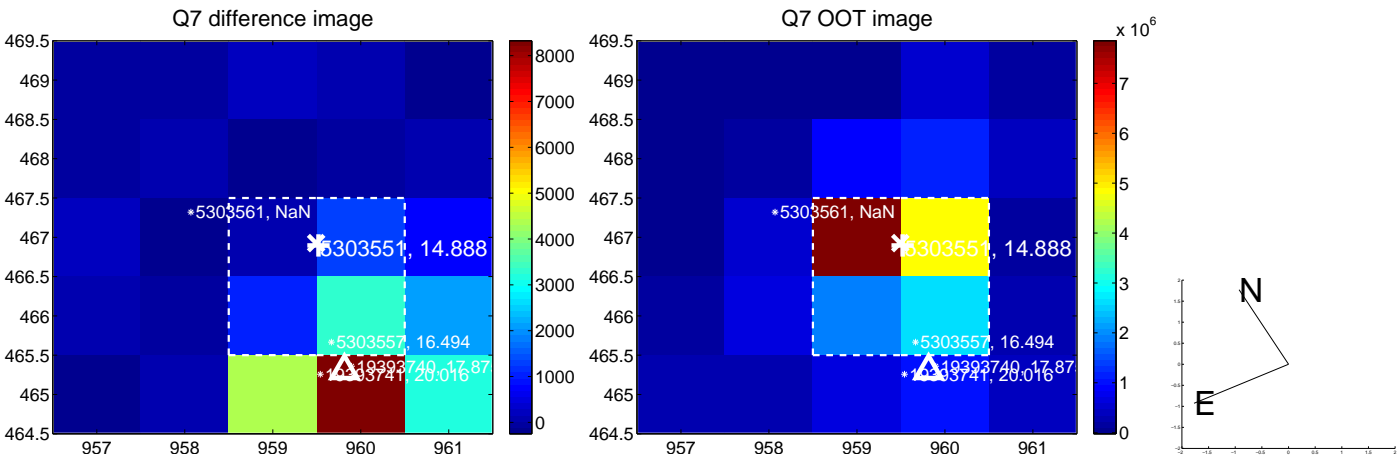
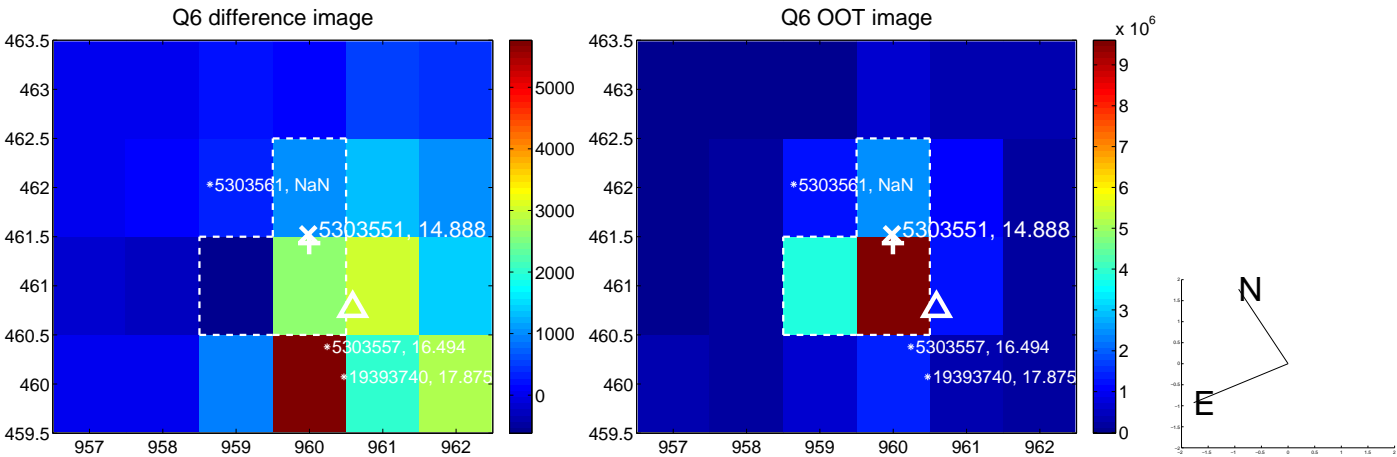
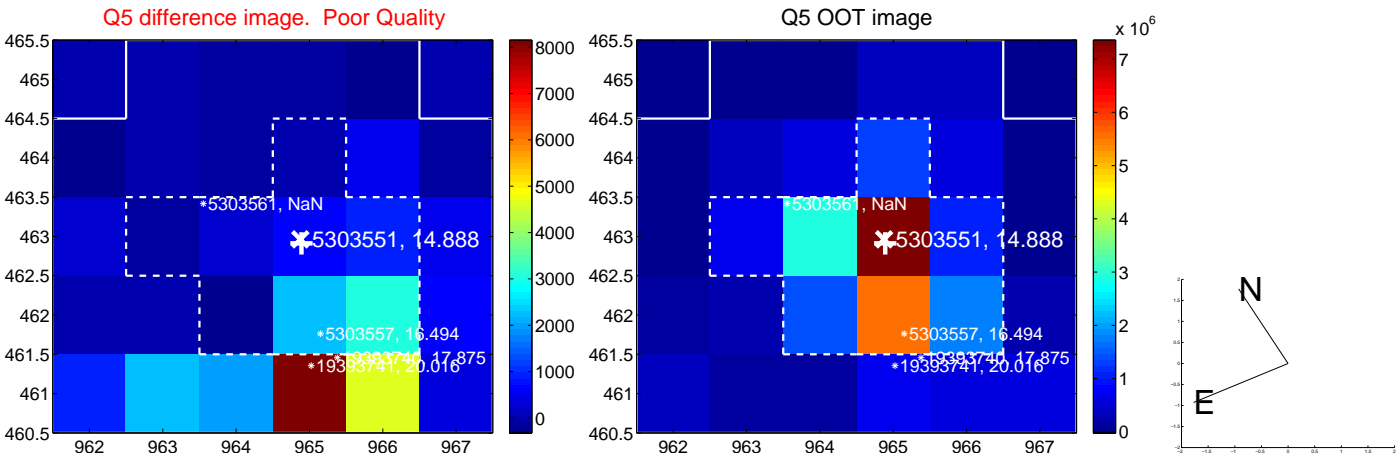


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

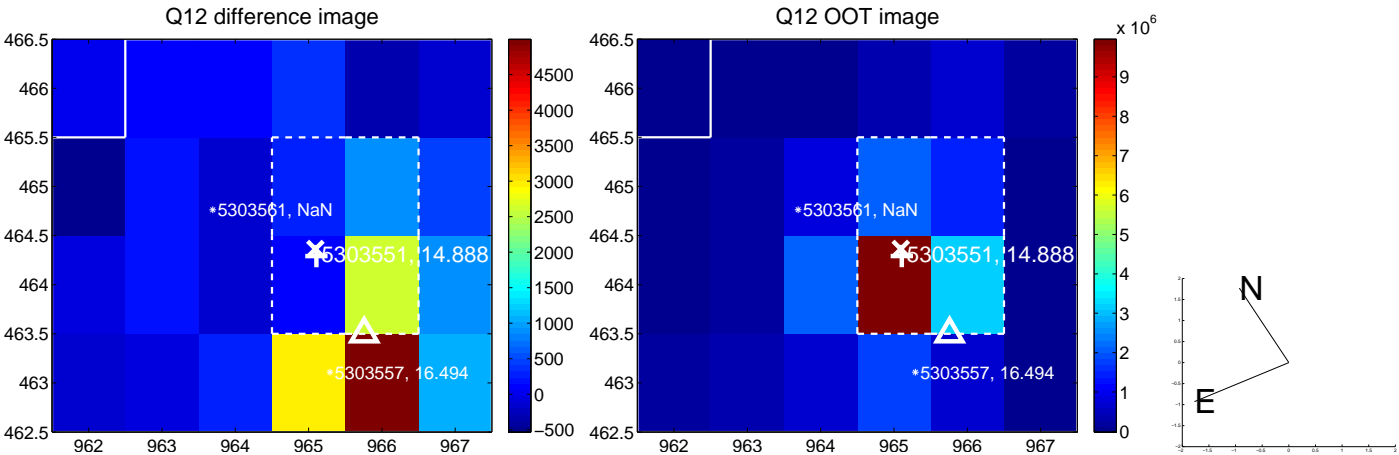
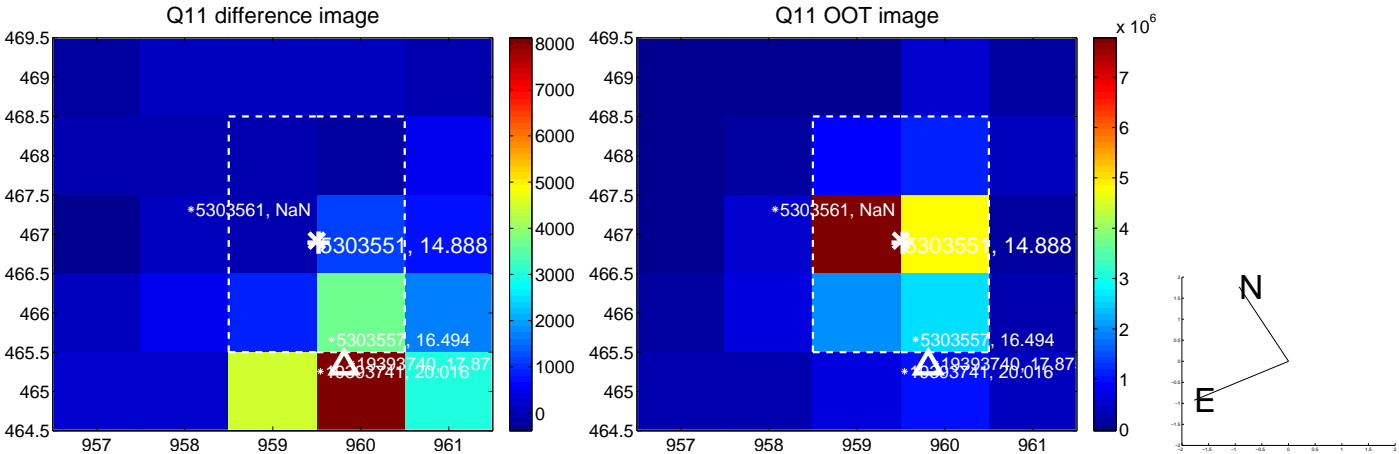
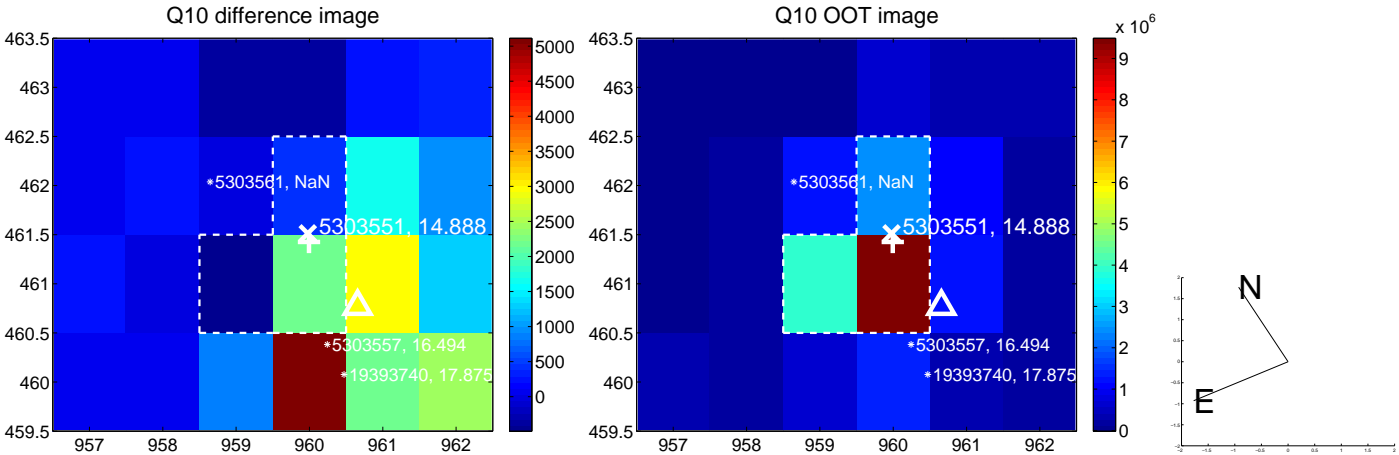
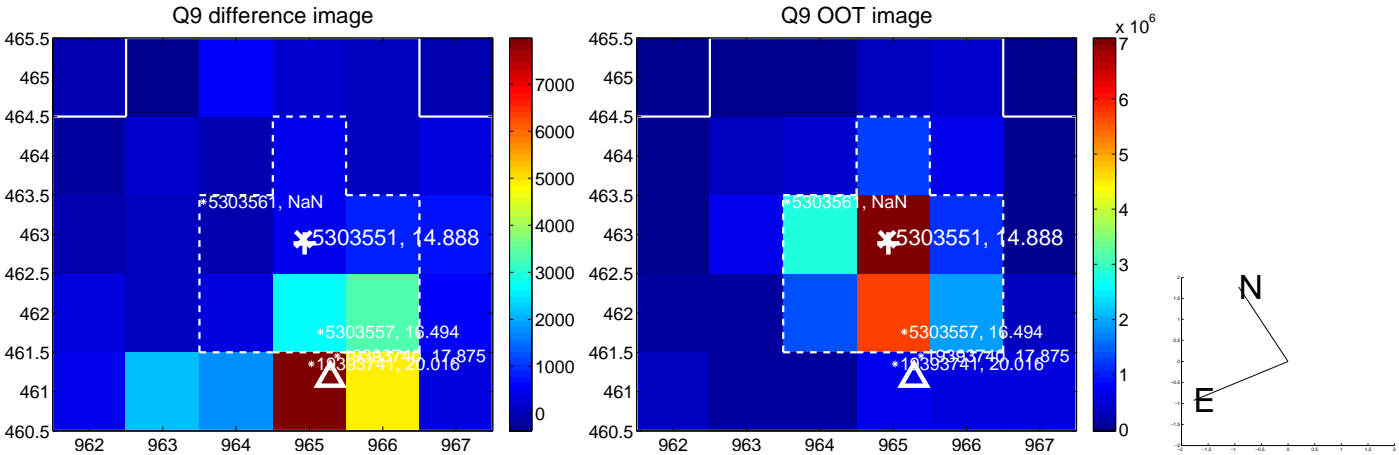


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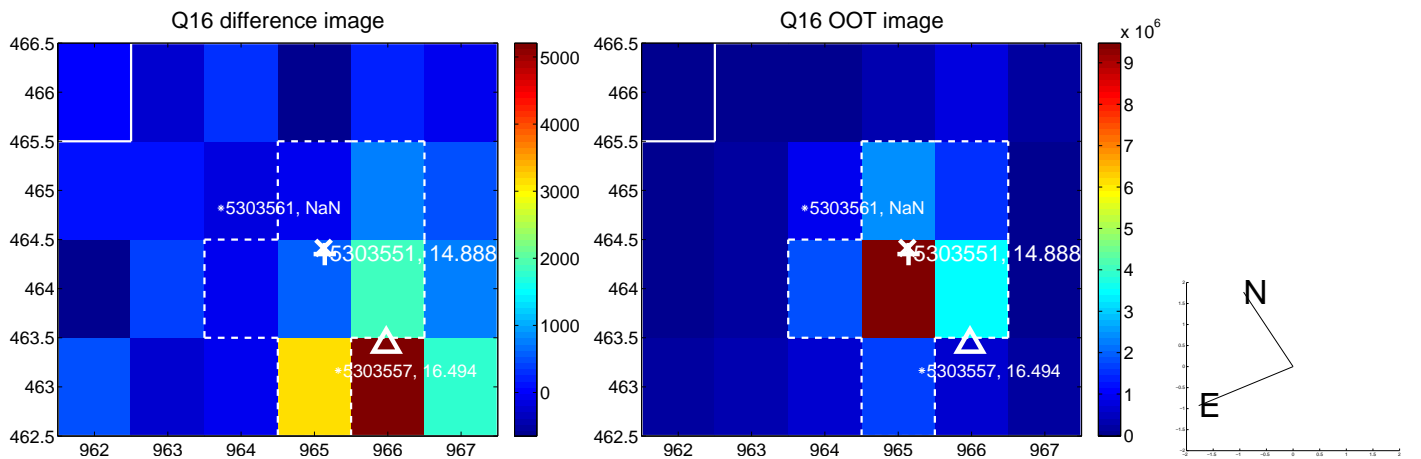
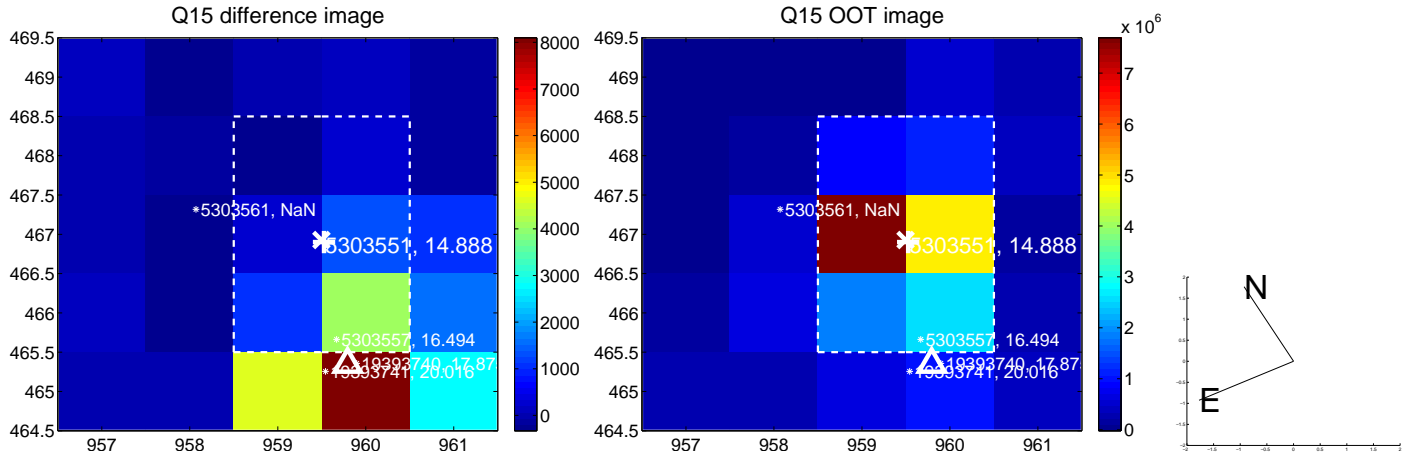
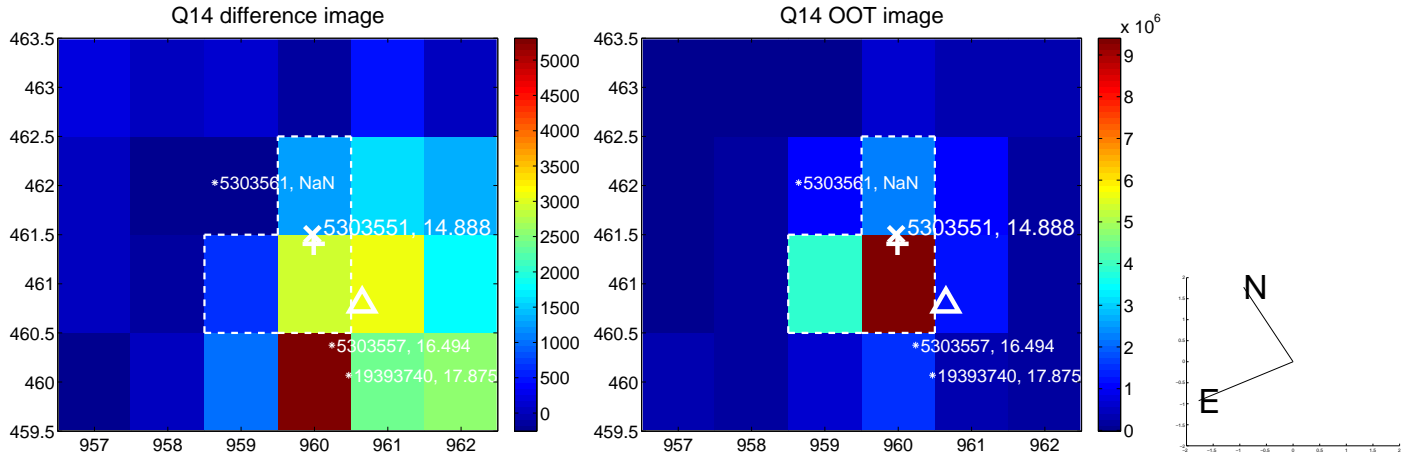
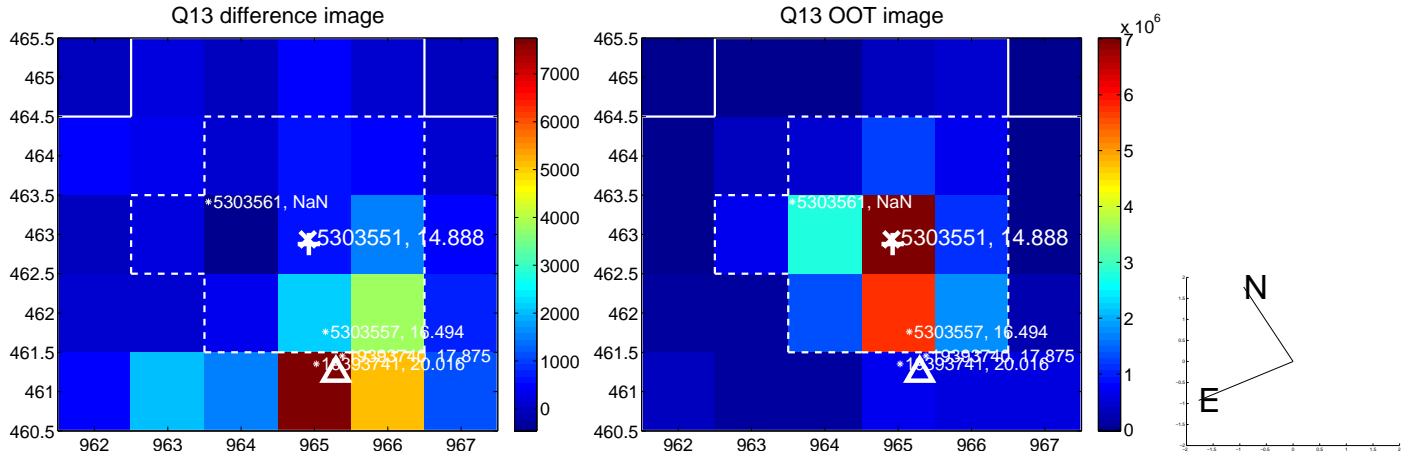




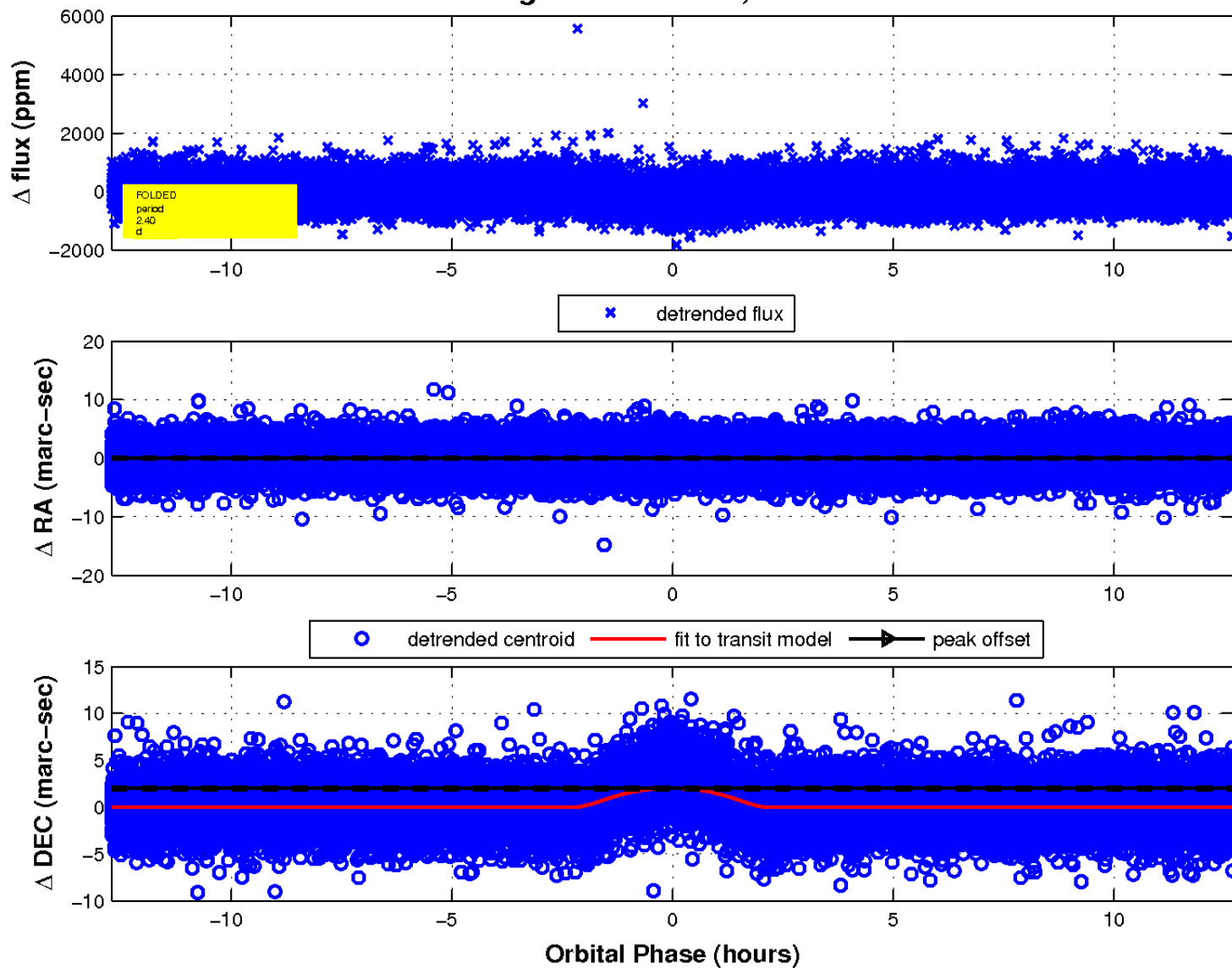
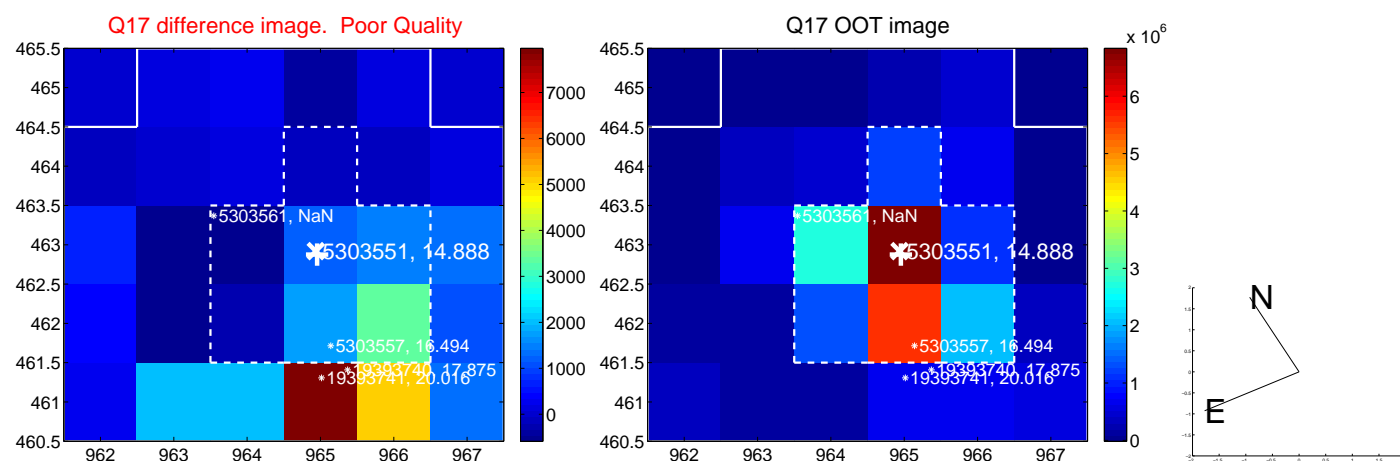
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

