

# KIC 009838761

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009838761-01	OBS	7967.01	1.332476	132.093292	80.1	2.799	9.4	8.2	0.73	5460	0.78	981.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009838761-01	OBS	FP	0.00	0	0	0	1	CENT_FEW_DIFFS—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.

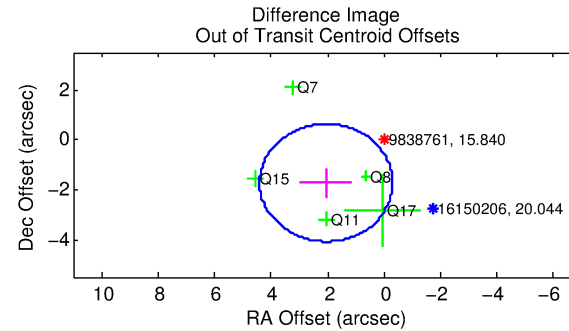
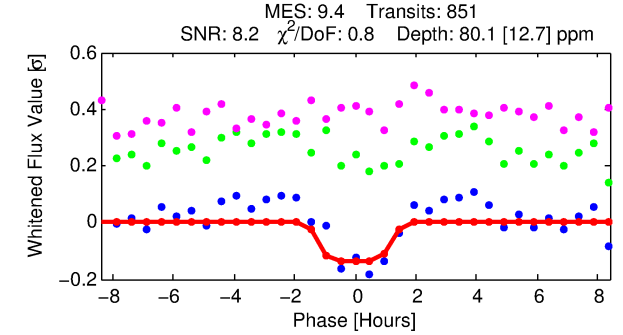
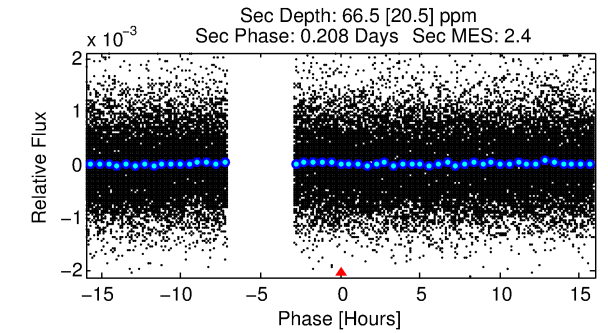
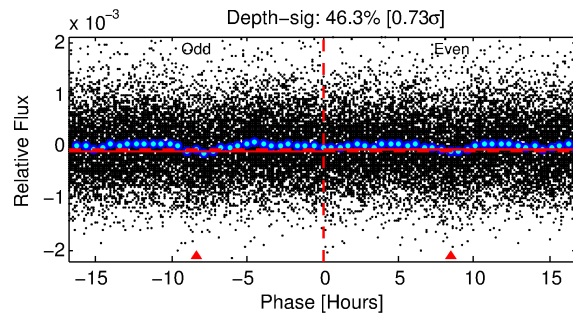
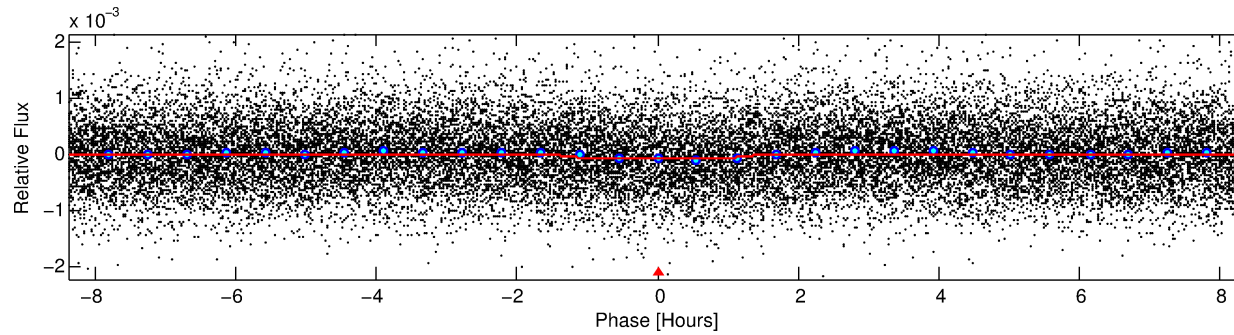
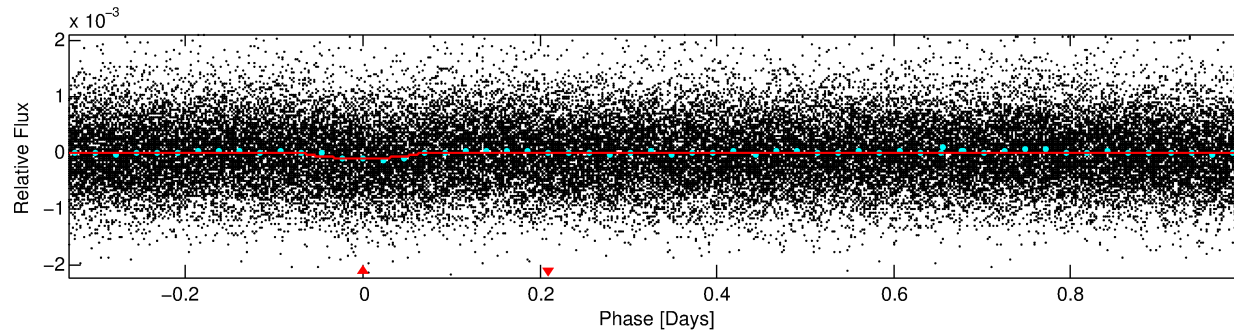
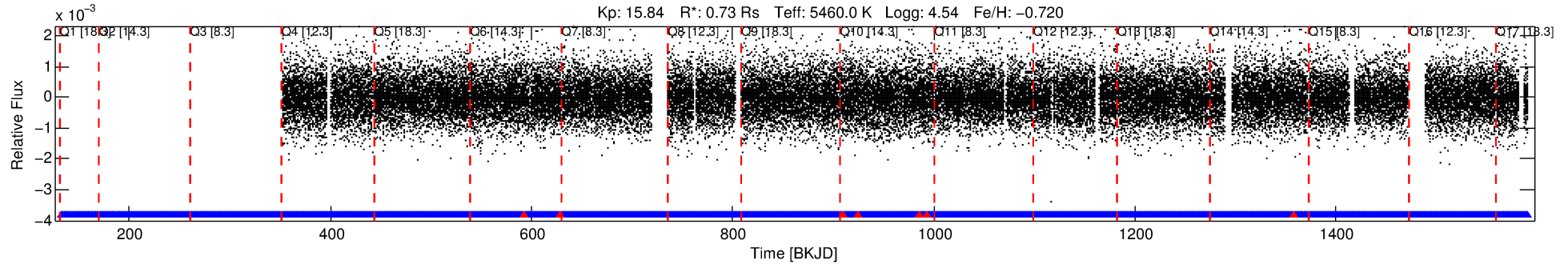
## Ephemeris Match Information For 009838761-01

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	$\sigma_P$	$\sigma_T$
009838761-01	9838761	BR-Cyg-pri	9899416	1:1	802.4	201	2	10.03	15.84	7836.20	Col-Anomaly	0	4.89	2.89

**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: 9838761 Candidate: 1 of 1 Period: 1.332 d



## DV Fit Results:

Period = 1.33248 [0.00001] d  
Epoch = 132.0933 [0.0048] BKJD  
Rp/R\* = 0.0097 [0.0082]  
a/R\* = 1.92 [5.72]  
b = 0.90 [0.90]  
Seff = 981.56 [221.50]  
Teq = 1427 [81] K  
Rp = 0.78 [0.66] Re  
a = 0.0209 [0.0025] AU  
Ag = 26.40 [45.49] [0.56 $\sigma$ ]  
Teffp = 5002 [2151] K [1.66 $\sigma$ ]

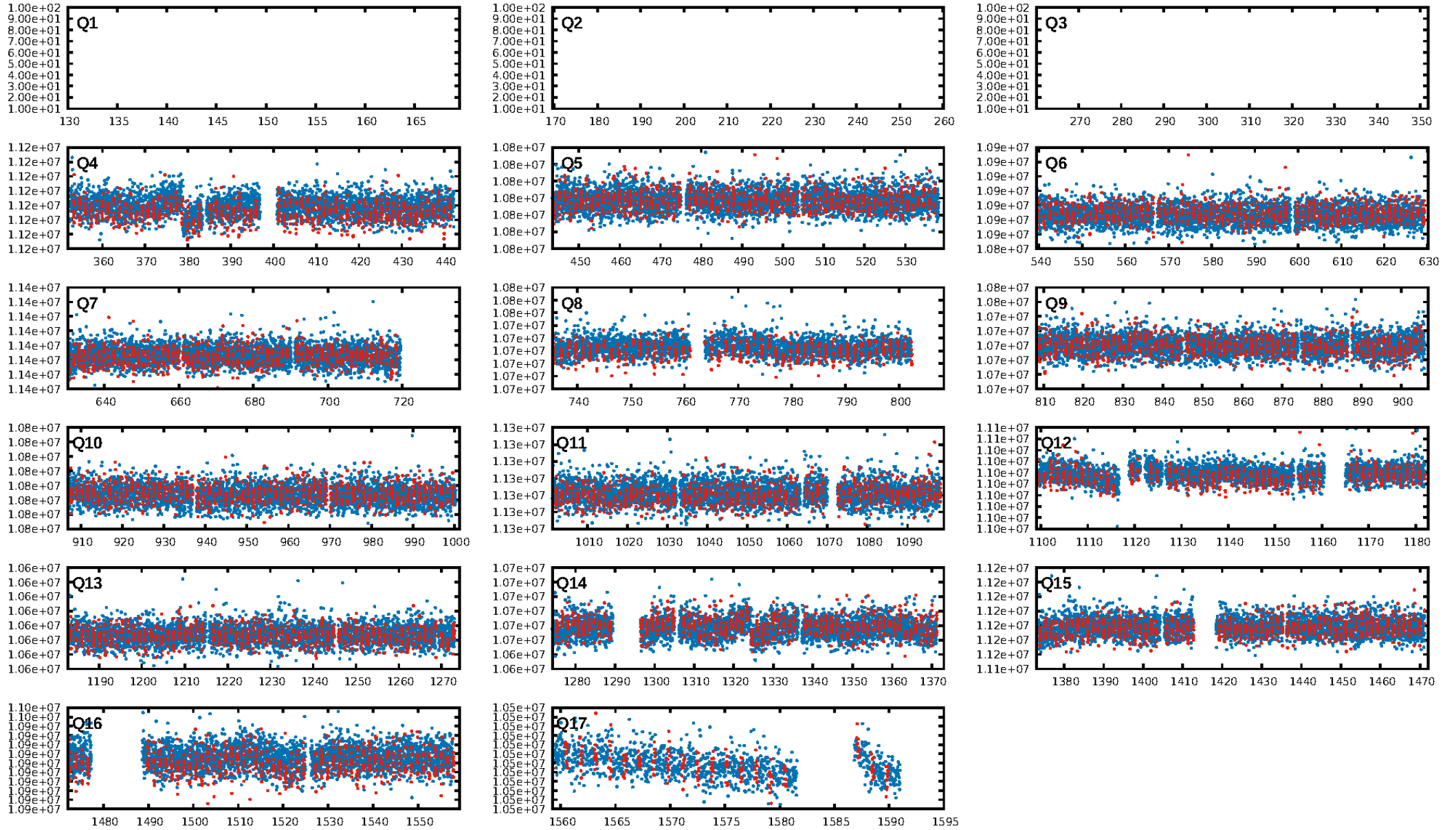
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.03e-21  
RollingBand-fgt: 0.99 [825/832]  
**GhostDiagnostic-chr: 0.278**  
Centroid-sig: 0.0%  
Centroid-so: 5.590 arcsec [2.87 $\sigma$ ]  
**OotOffset-rm: 2.683 arcsec [3.42 $\sigma$ ]**  
**KicOffset-rm: 2.386 arcsec [3.21 $\sigma$ ]**  
OotOffset-st: 0/3/1/1 [5]  
KicOffset-st: 0/3/1/1 [5]  
DiffImageQuality-fgm: 0.00 [0/5]  
DiffImageOverlap-fno: 1.00 [14/14]

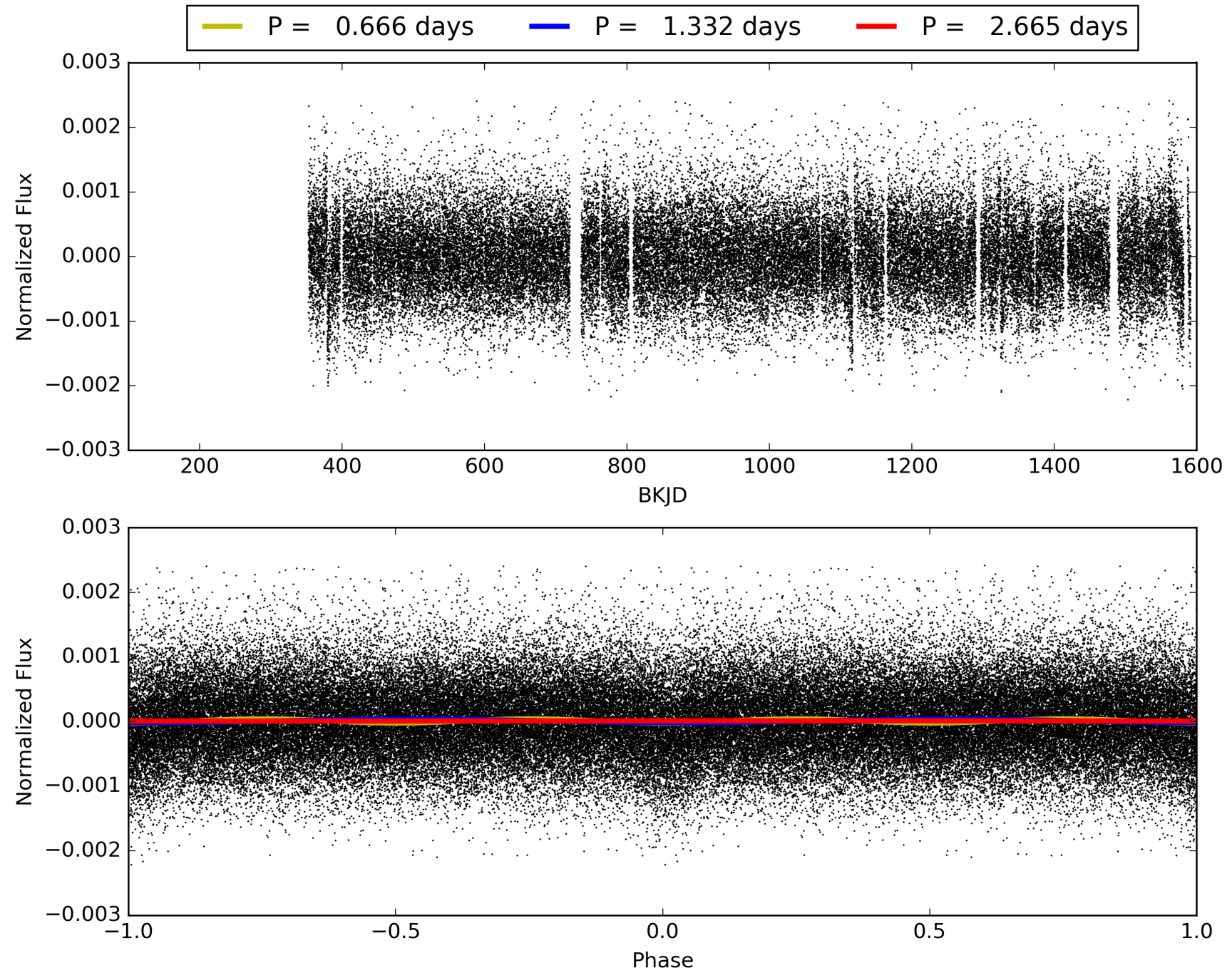
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:20:45 Z

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

# TCE 009838761-01, PDC Light Curves



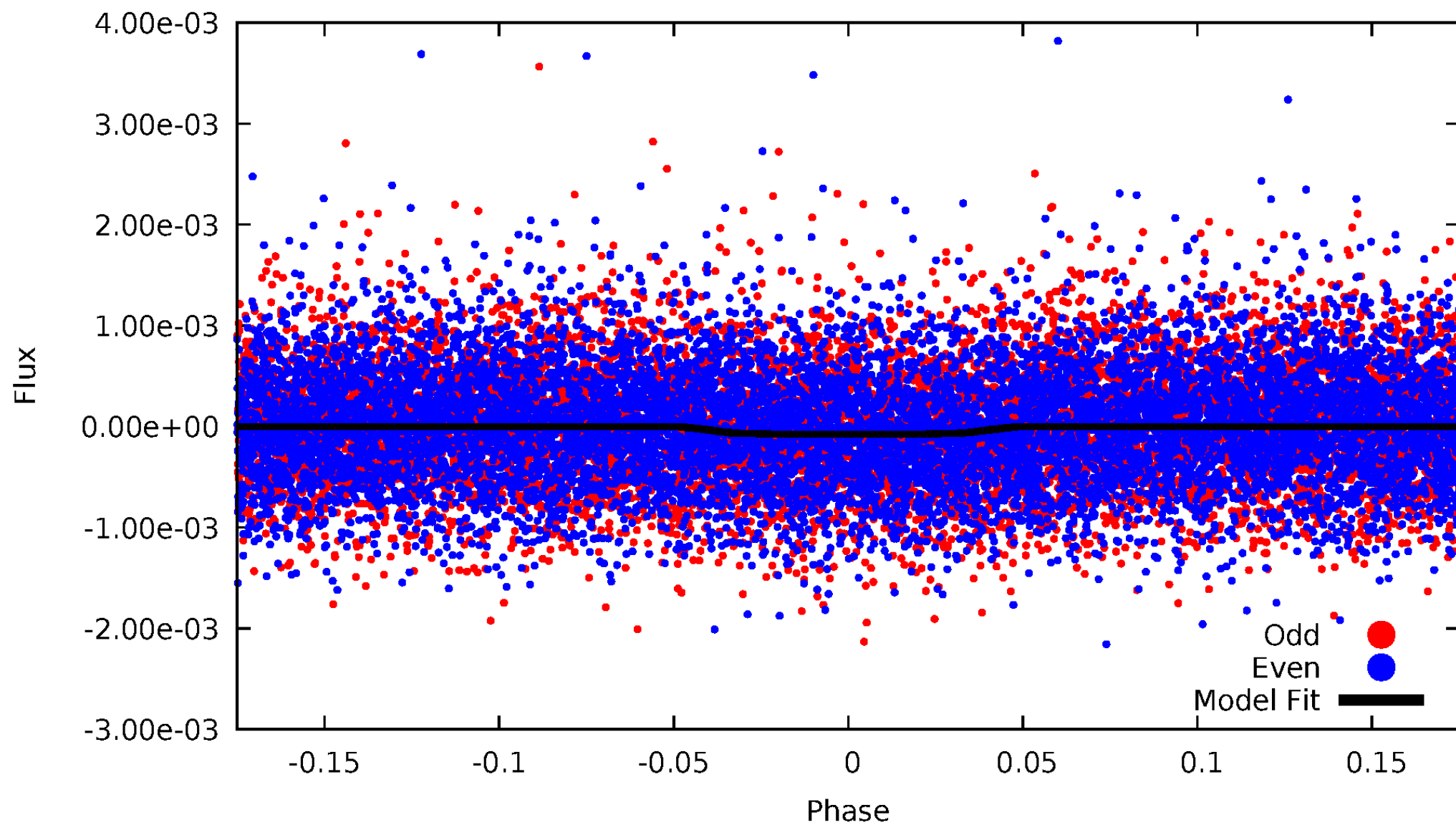
TCE 009838761-01





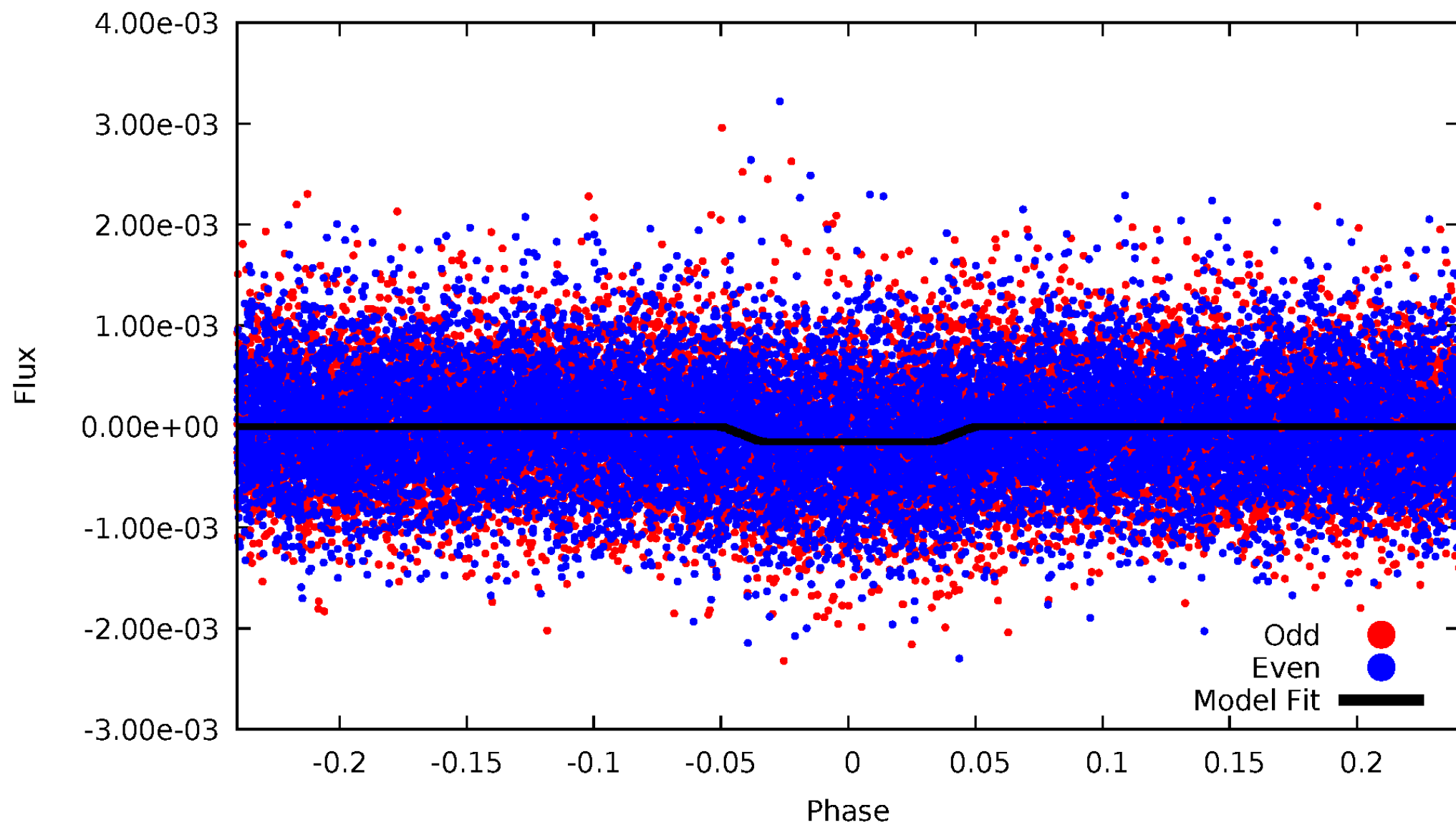
# DV Odd/Even

TCE 009838761-01



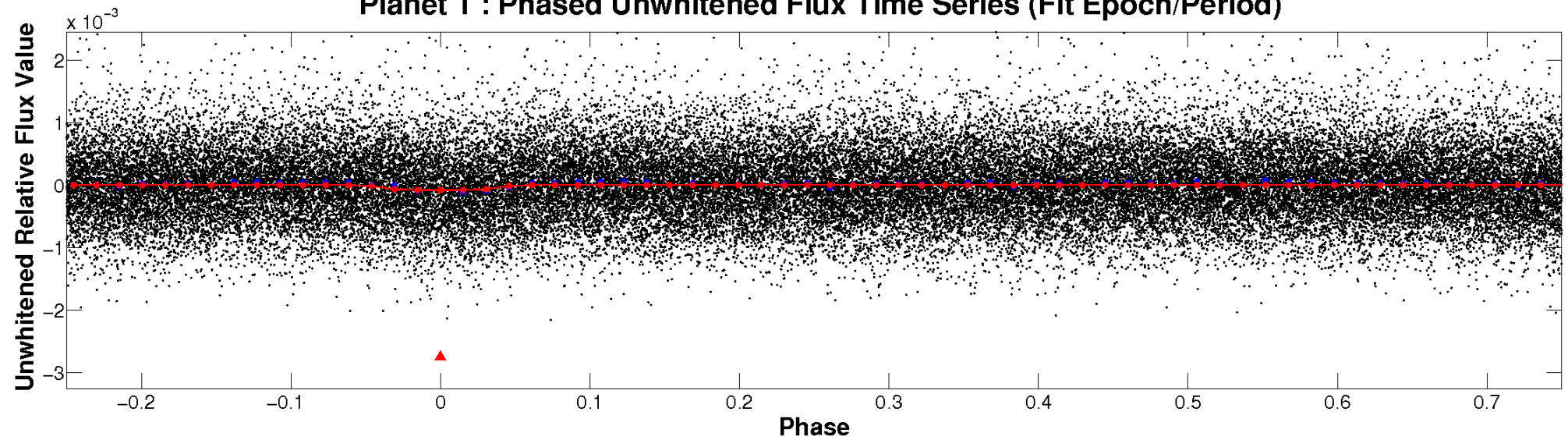
# ALT Odd/Even

TCE 009838761-01

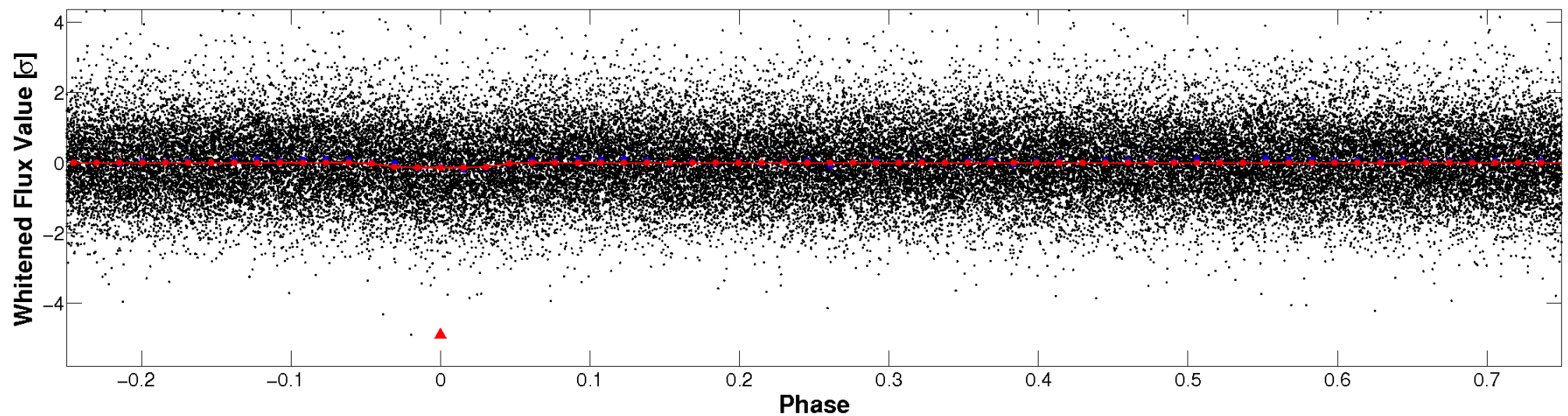


# Non-Whitened Vs. Whitened Light Curve

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

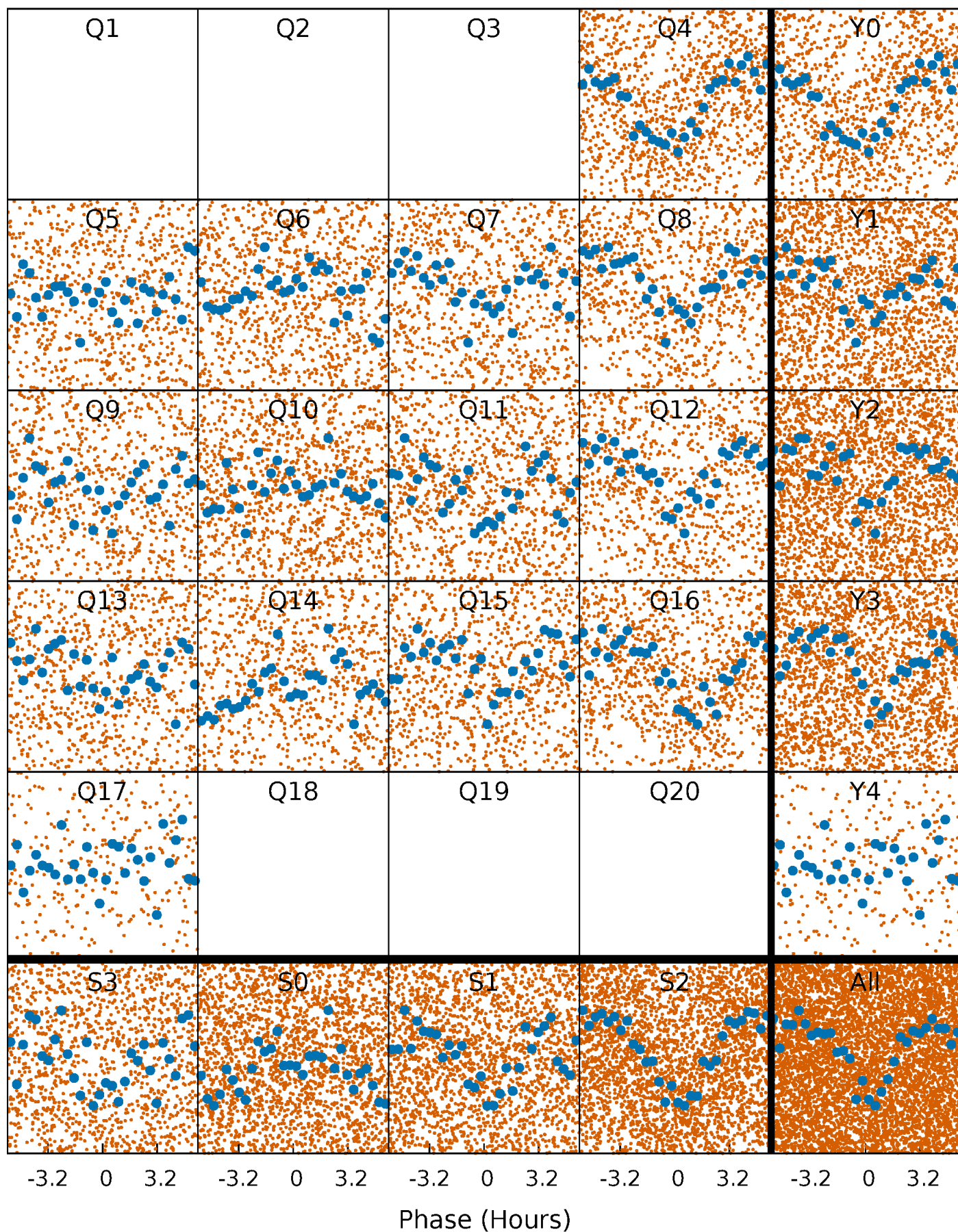


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

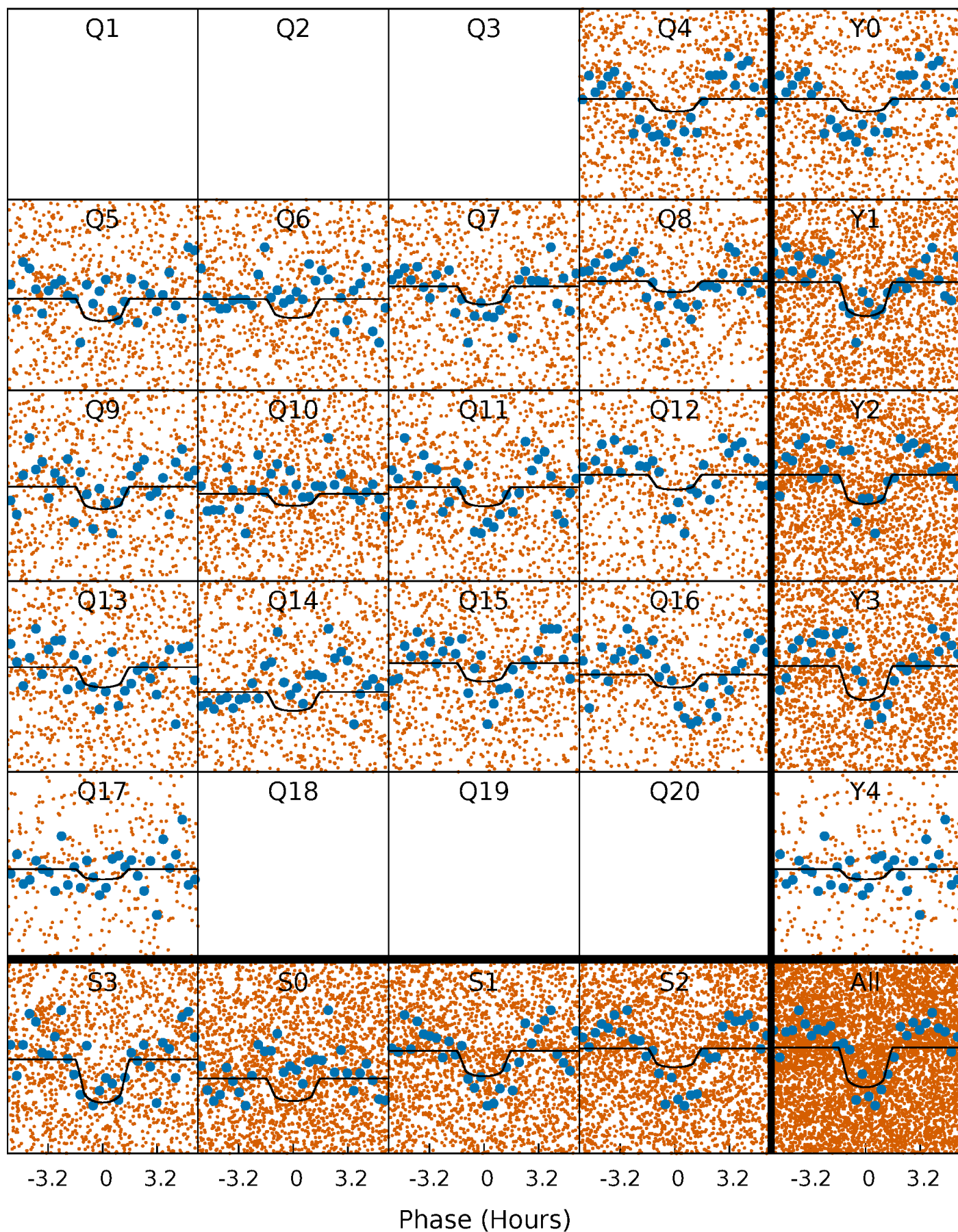
TCE 009838761-01 P= 1.332476 Days  $T_0=132.093292$  (BKJD)





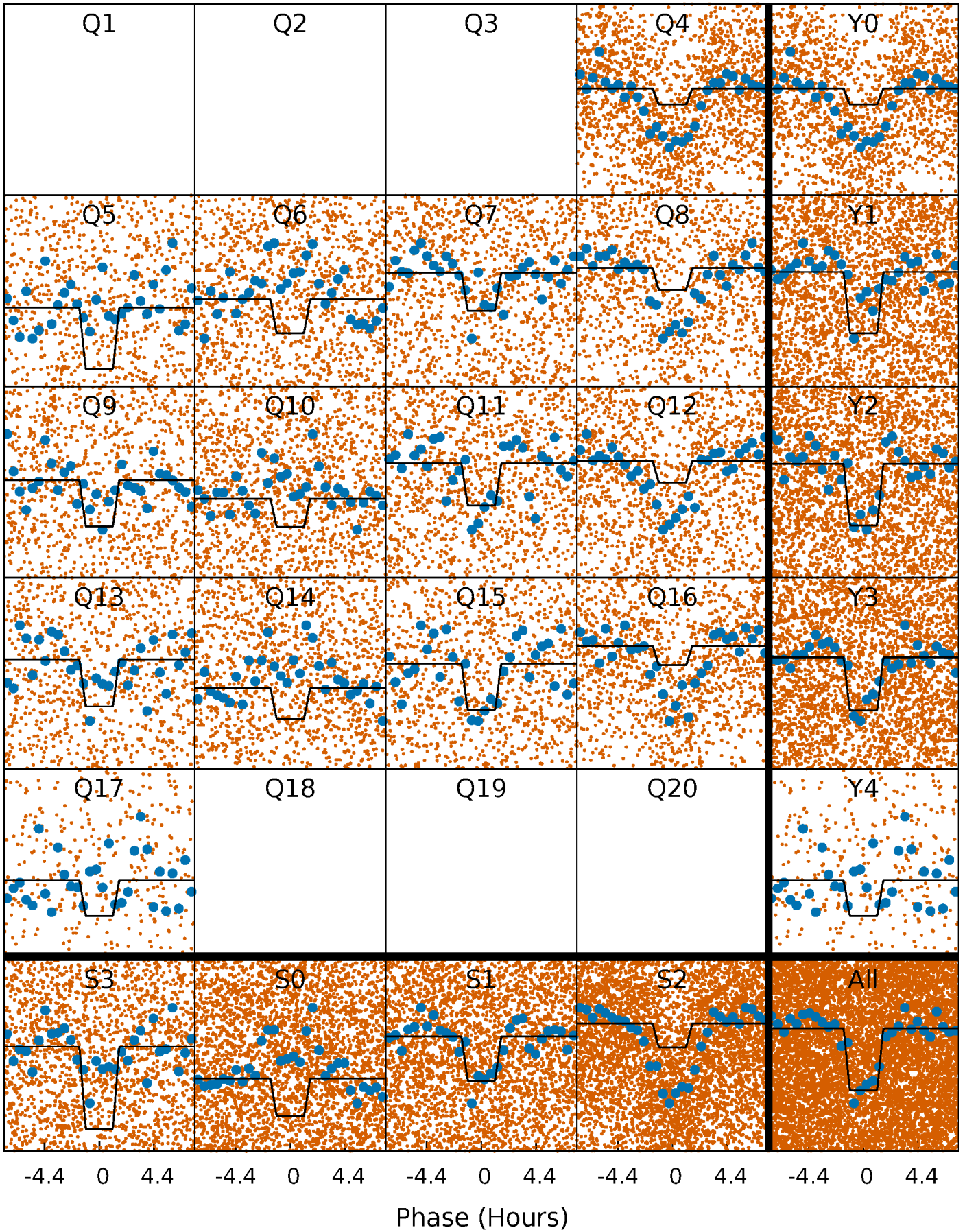
# DV Quarter-Phased Transit Curves

TCE 009838761-01   P= 1.332476 Days    $T_0=132.093292$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

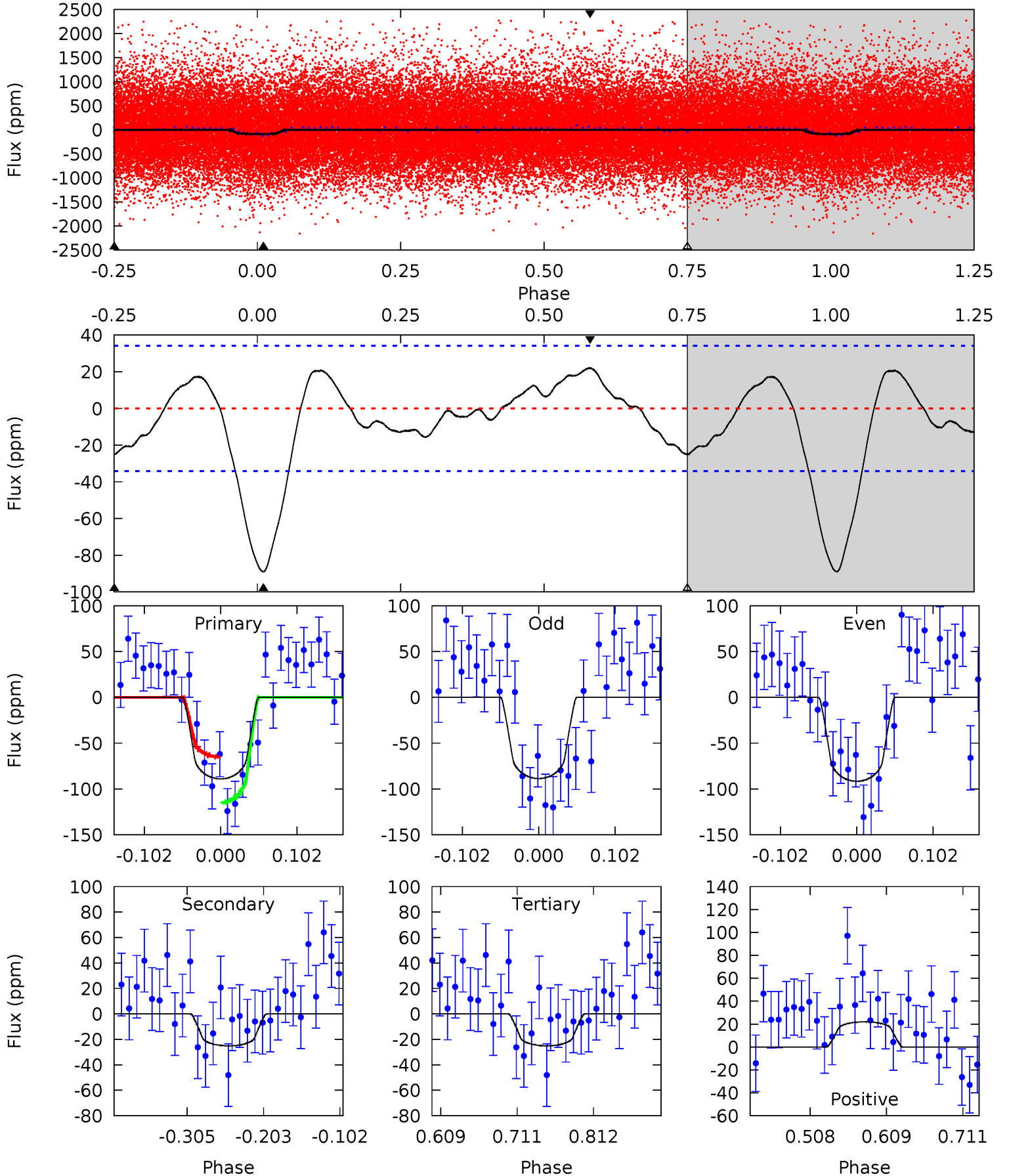
TCE 009838761-01 P= 1.332547 Days  $T_0=132.060275$  (BKJD)



# DV Model-Shift Uniqueness Test

009838761-01, P = 1.332476 Days, E = 132.093292 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
11.9	3.35	3.35	2.93	4.56	1.64	1.60	8.53	8.94	0.00	0.42	0.20	1.08	0.20	3.32

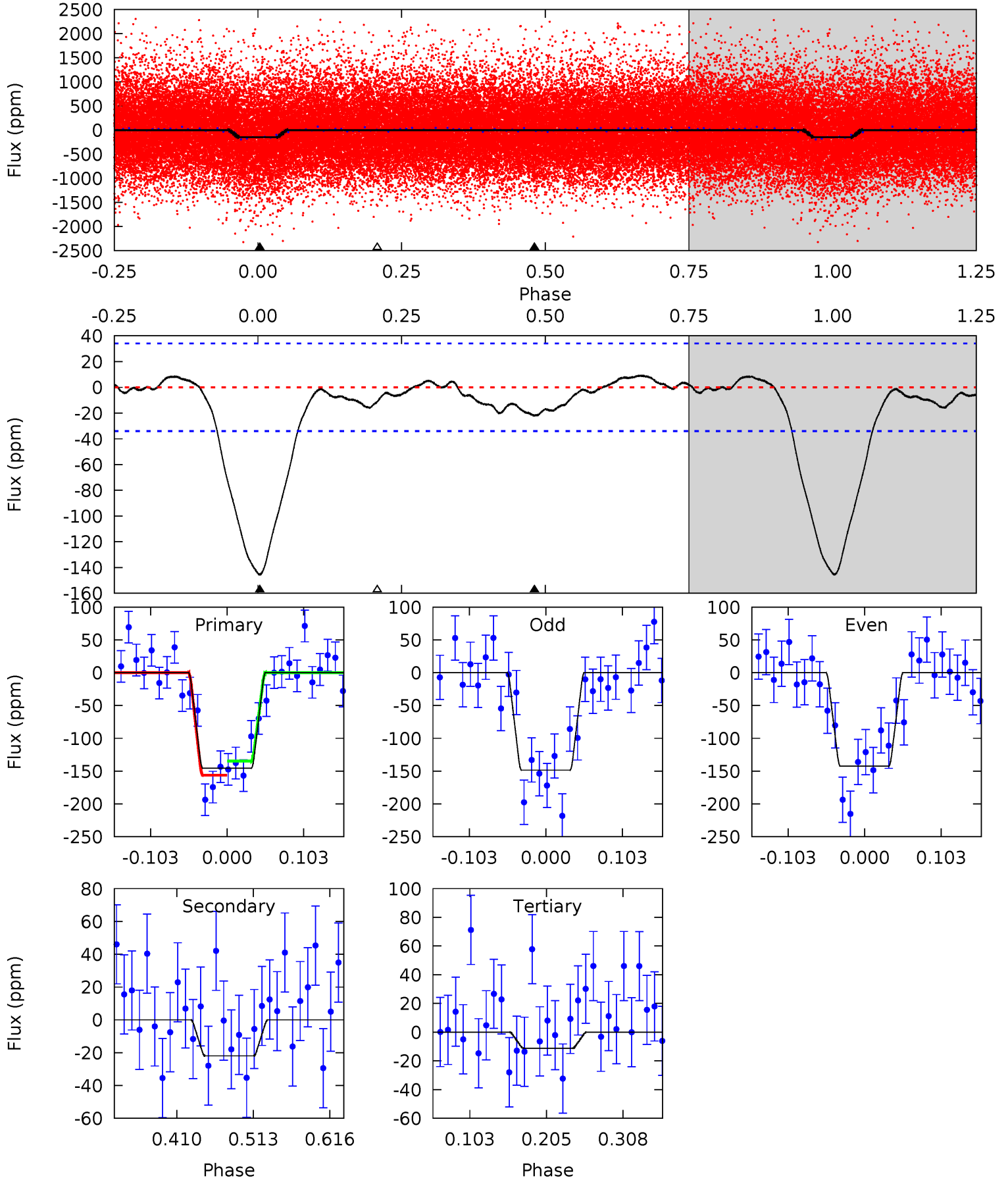




# Alt Model-Shift Uniqueness Test

009838761-01, P = 1.332547 Days, E = 132.060275 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
19.5	2.94	1.51	0	4.56	1.63	0.80	18.0	19.5	1.43	2.94	0.41	1.05	0.06	1.44





### Stellar Parameters For KIC 009838761

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5460^{+191}_{-191}$	$4.543^{+0.099}_{-0.081}$	$-0.720^{+0.300}_{-0.300}$	$0.734^{+0.100}_{-0.082}$	$0.686^{+0.088}_{-0.035}$	$2.441^{+1.025}_{-0.664}$
	+3%/-3%	+2%/-2%	+42%/-42%	+14%/-11%	+13%/-5%	+42%/-27%
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 009838761-01 / KOI 7967.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-25 \pm 7$	$0.83^{+0.66}_{-0.46}$	$1985^{+97}_{-94}$	$4012^{+1728}_{-746}$	$8.826^{+37.810}_{-6.190}$
Alt.	$-22 \pm 7$	$1.06^{+0.60}_{-0.61}$	$1984^{+98}_{-86}$	$3610^{+1340}_{-572}$	$4.715^{+19.448}_{-2.993}$

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

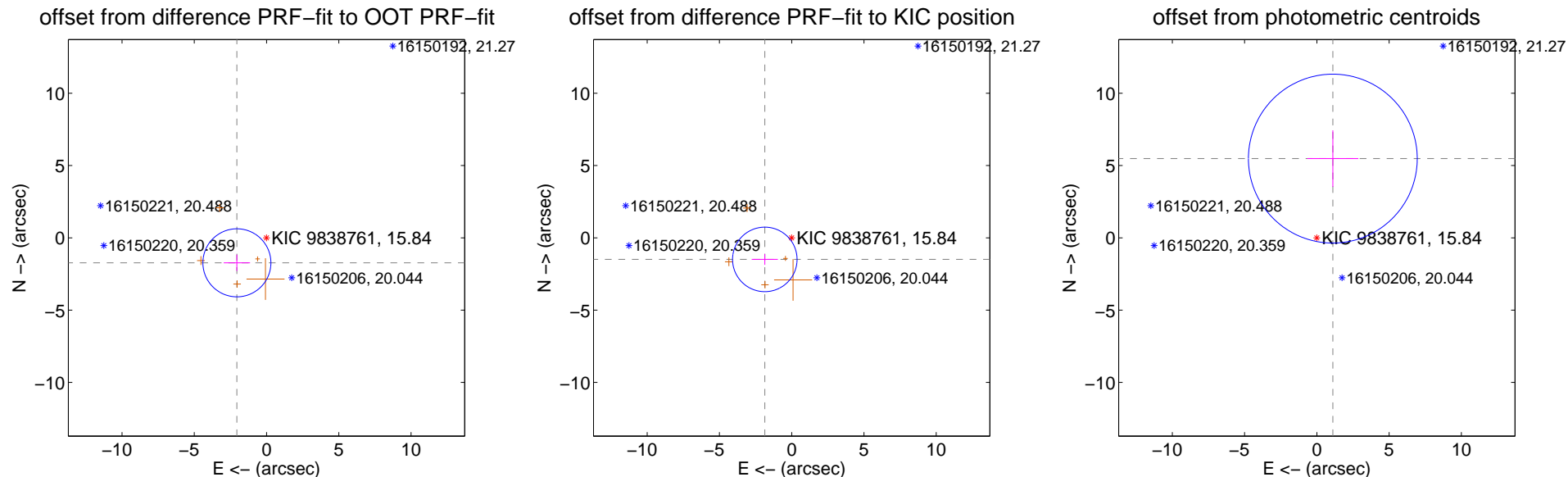
## DV Centroid Data

Supplemental centroid analysis for 009838761-01. Kepler magnitude: 15.84. Transit SNR 8.16

There are 0 quarters with good PRF difference image offsets

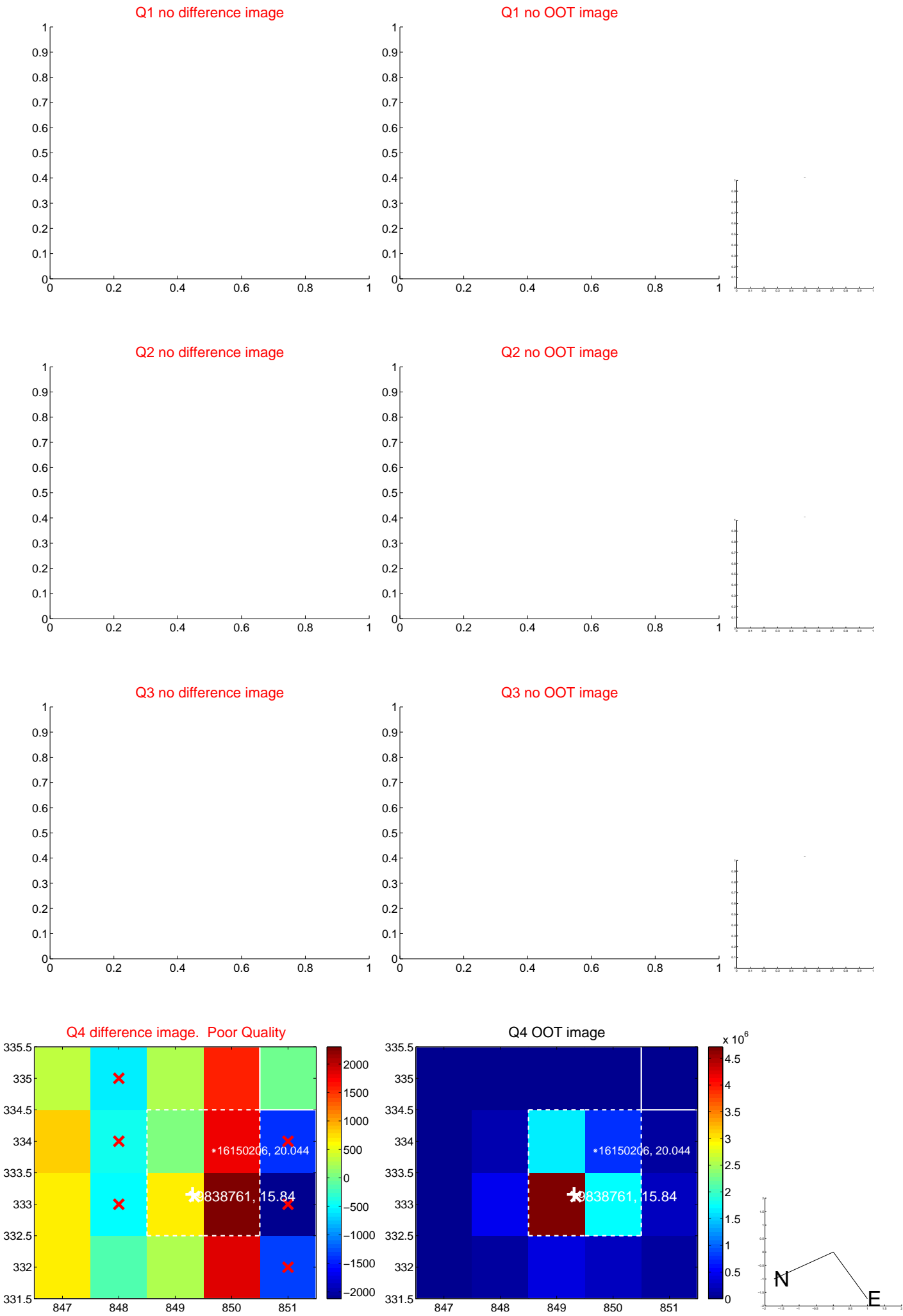
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.683 \pm 0.785$	3.42	$2.052 \pm 0.911$	$-1.729 \pm 0.560$
PRF-fit source offset from KIC position	$2.386 \pm 0.744$	3.21	$1.861 \pm 0.906$	$-1.493 \pm 0.373$
photometric centroid source offset	$5.59 \pm 1.95$	2.87	$-1.11 \pm 1.77$	$5.48 \pm 1.95$

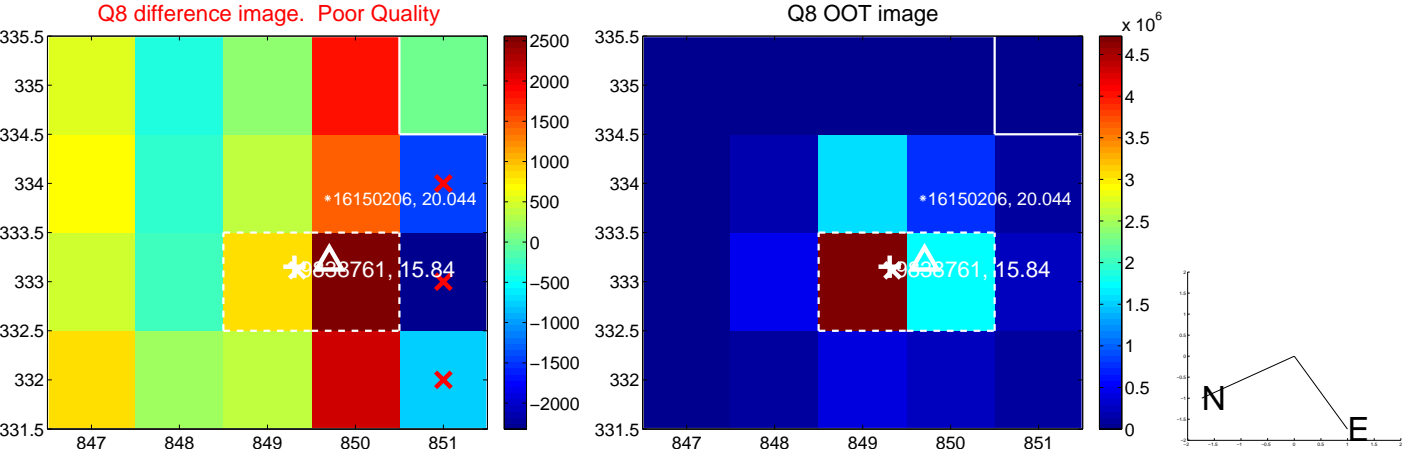
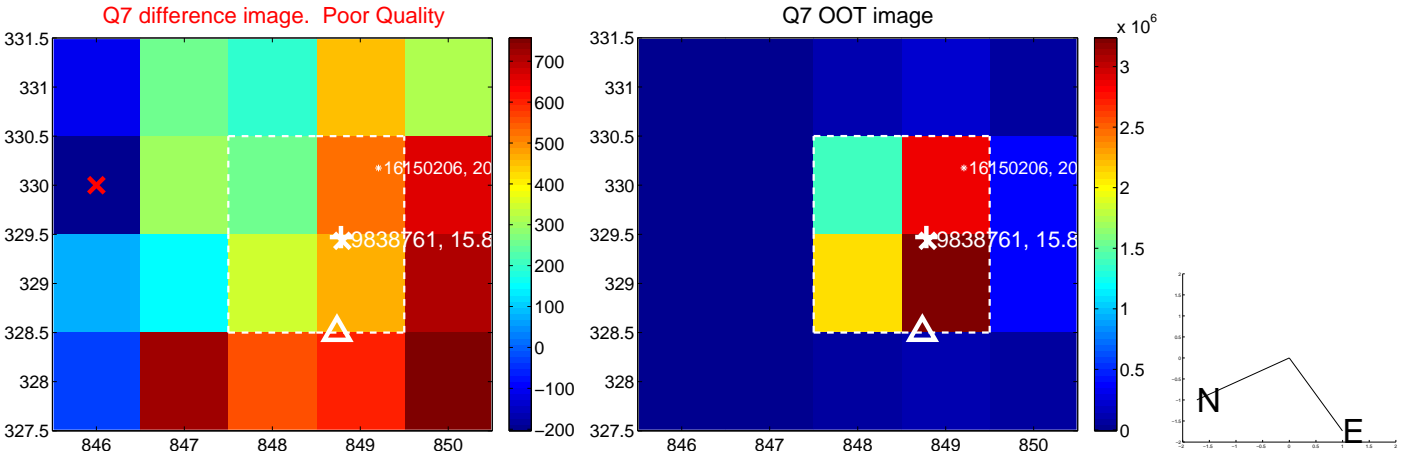
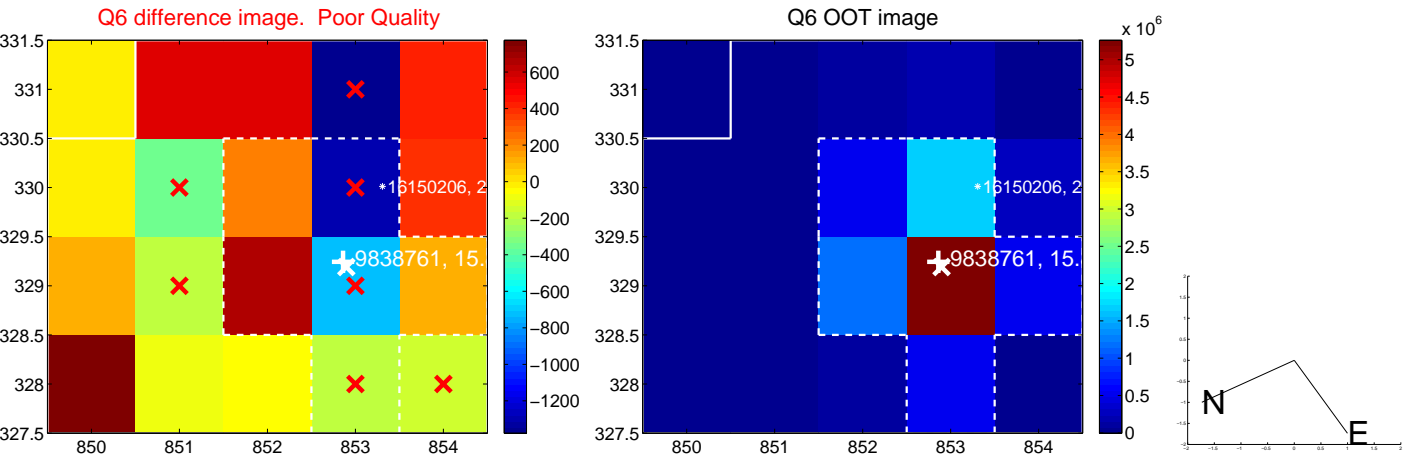
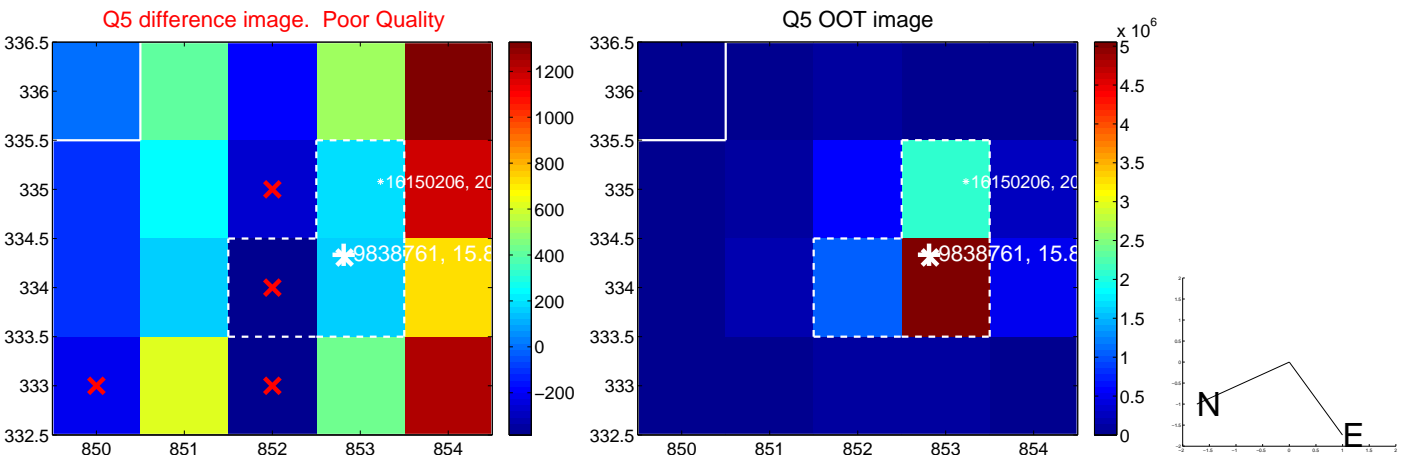


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

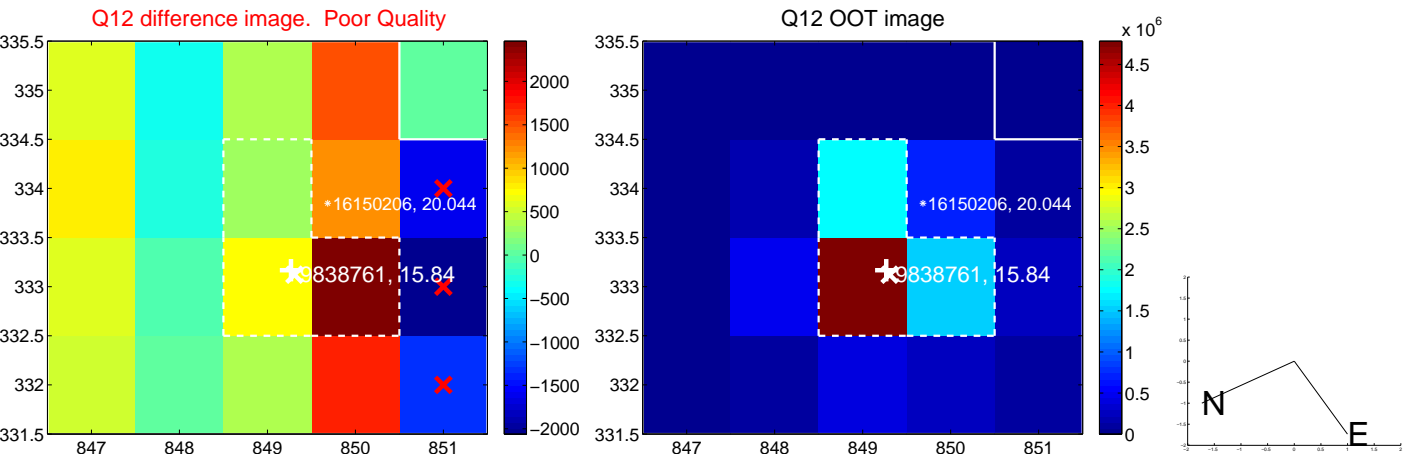
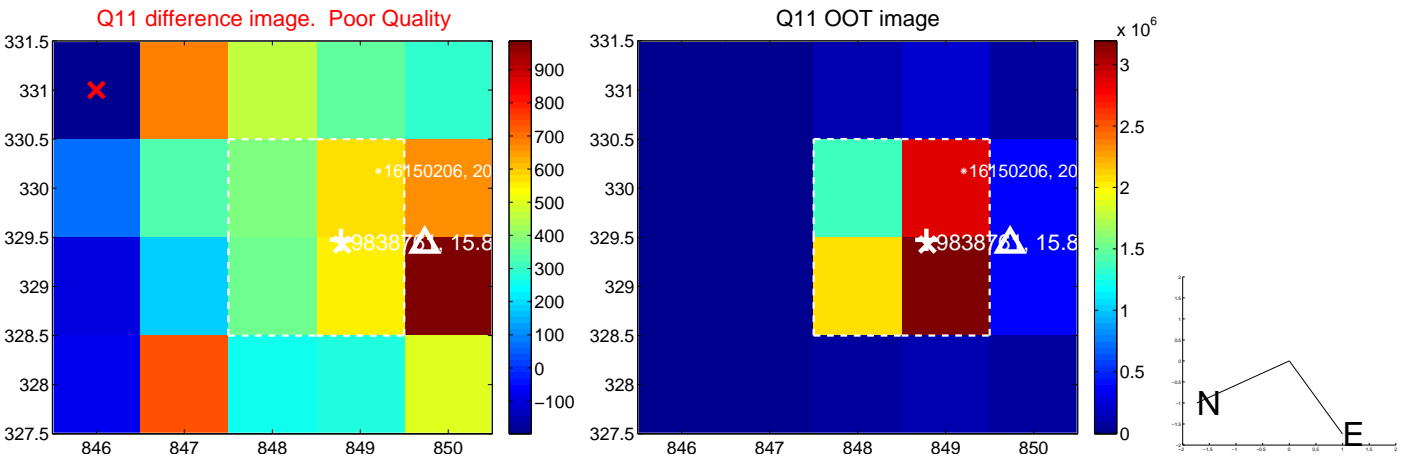
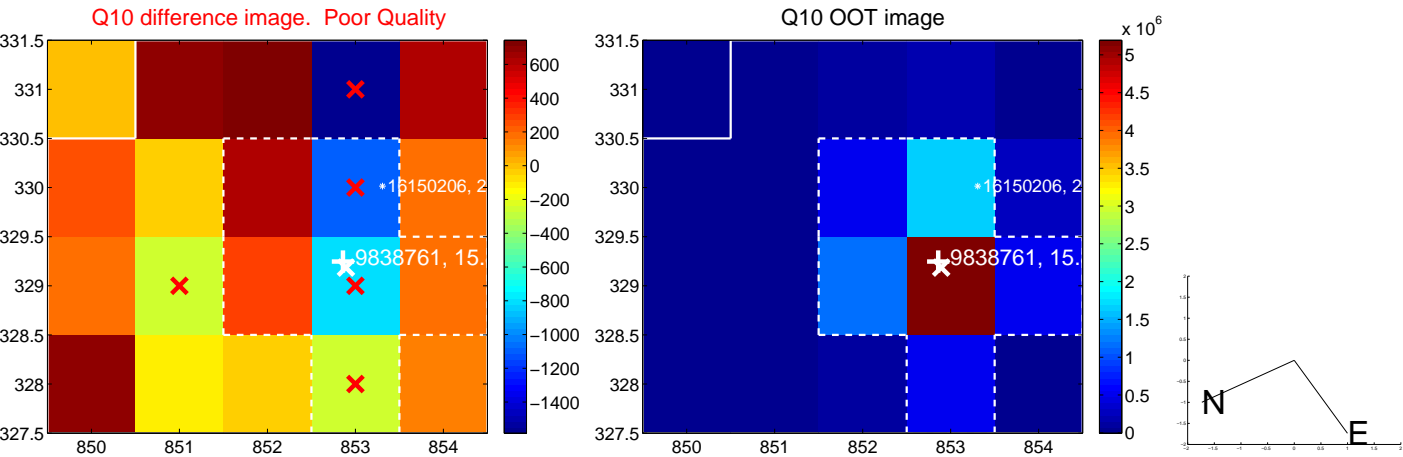
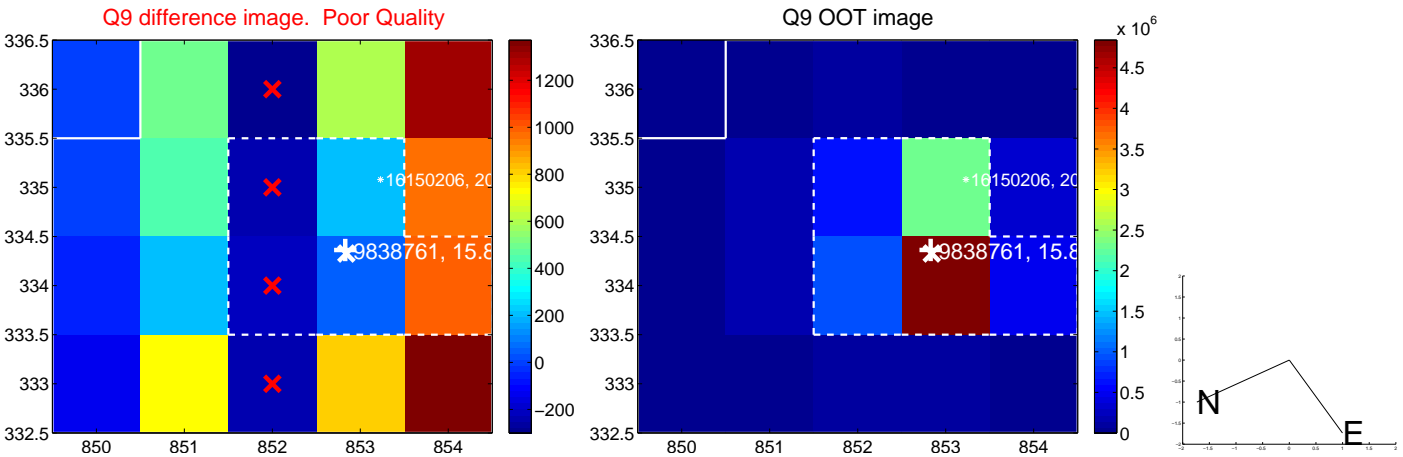


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

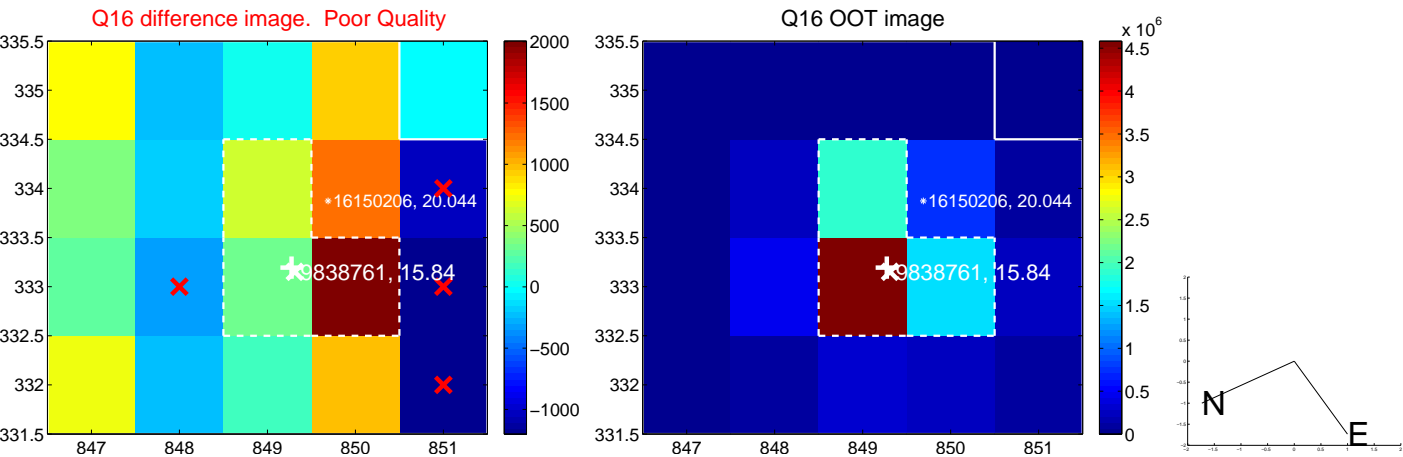
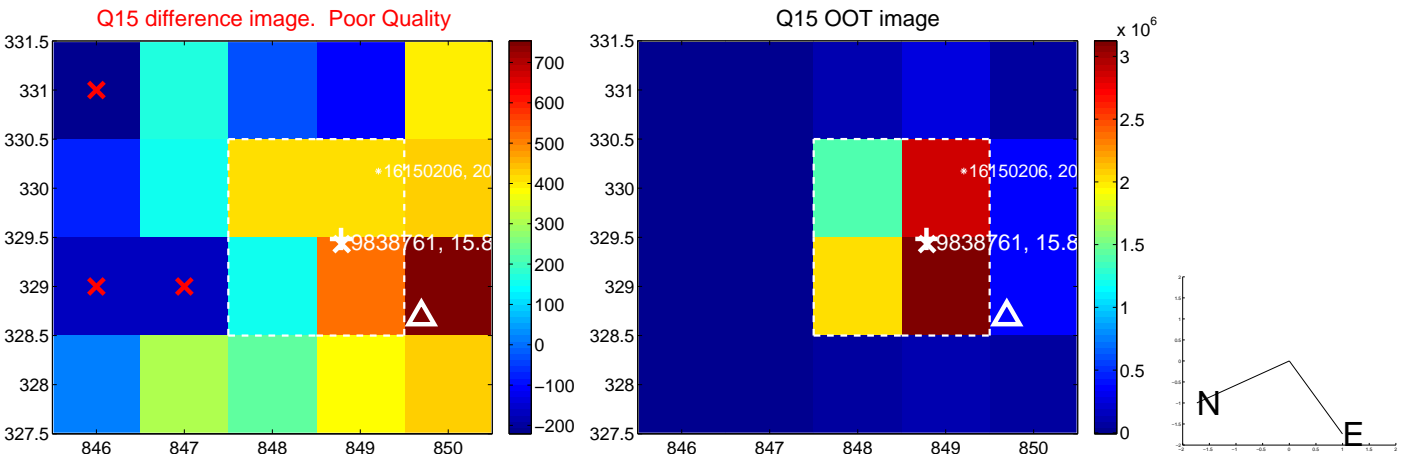
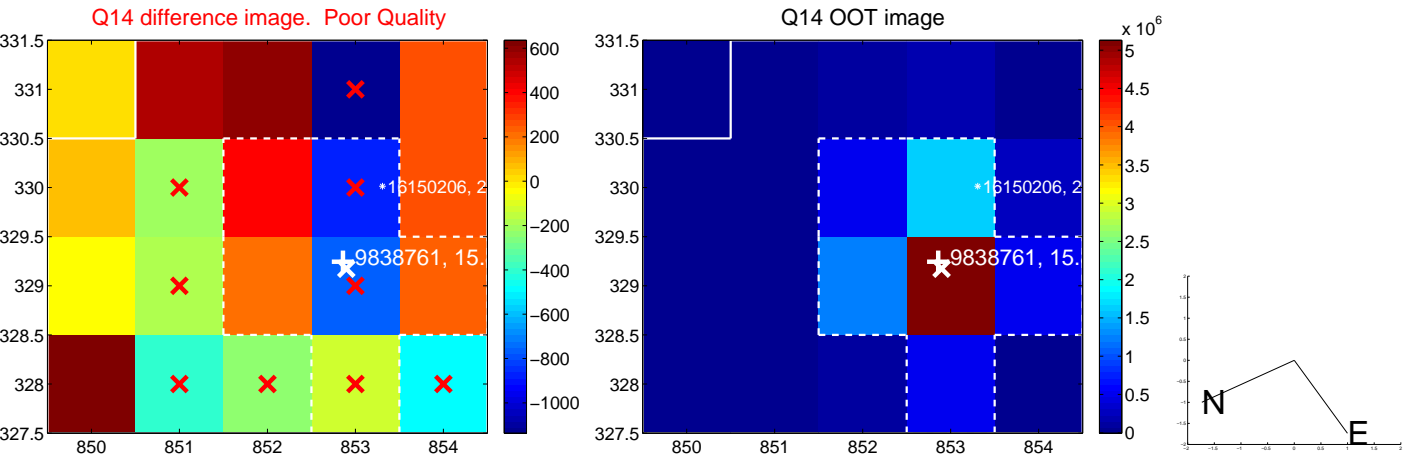
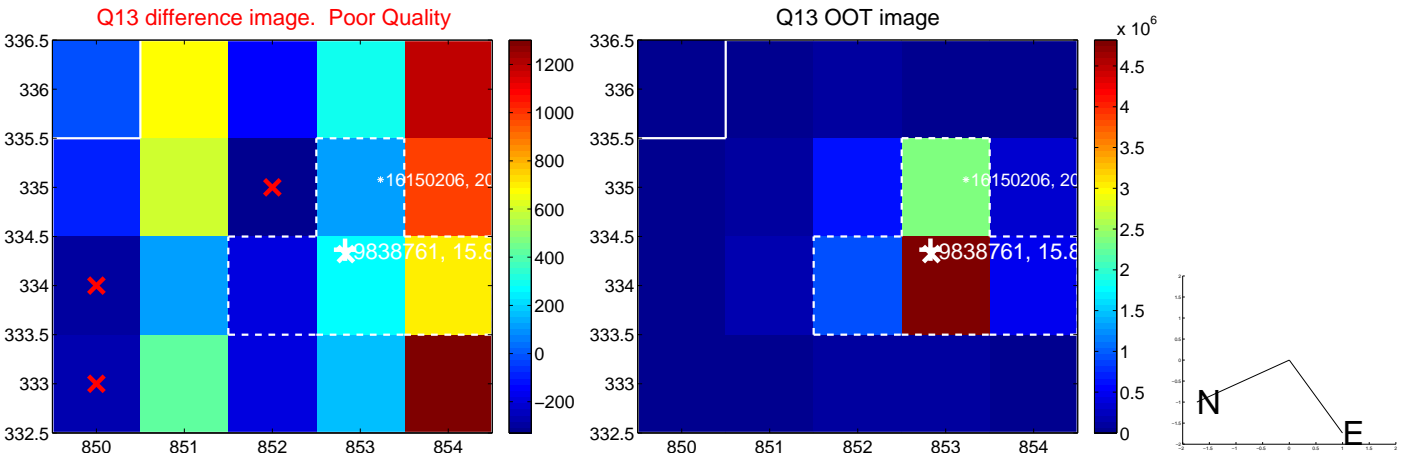




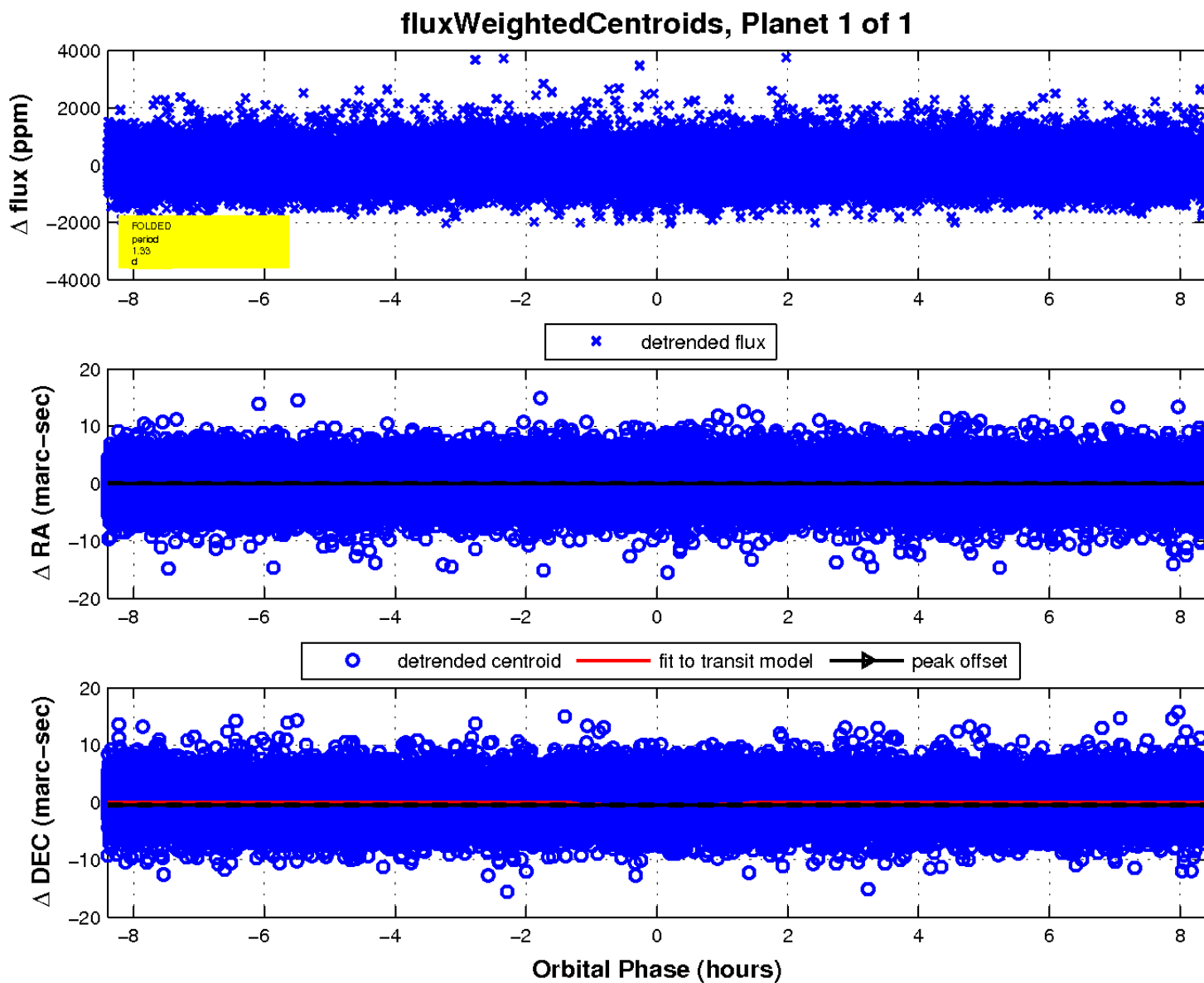
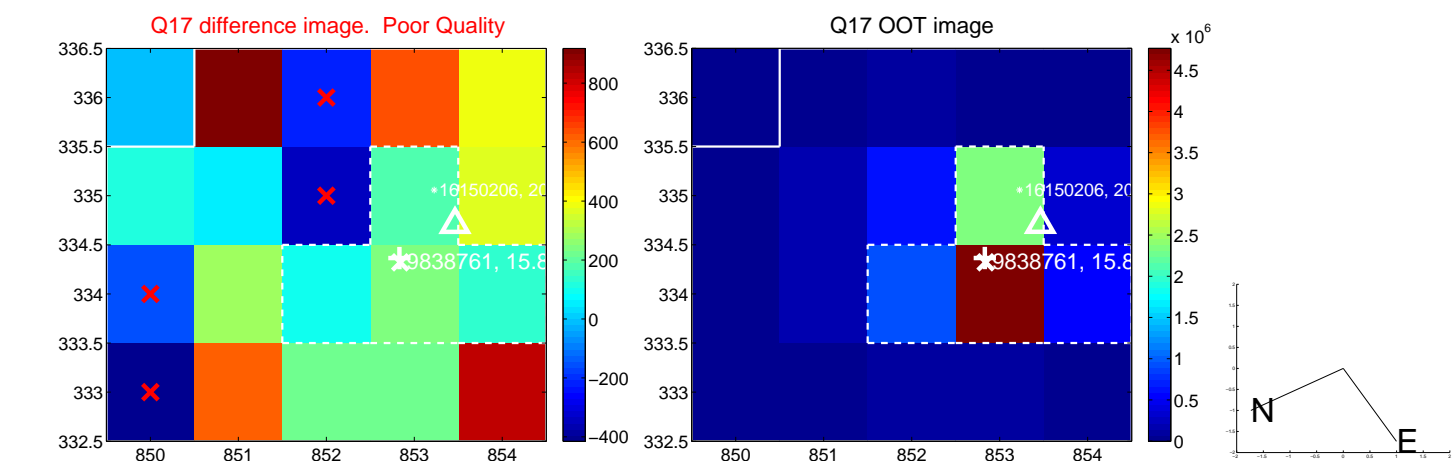
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

Declination

