

# KIC 009304857

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009304857-01	OBS	No	0.934841	132.213391	114.7	8.187	7.9	10.0	0.82	5681	0.87	1964.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009304857-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET

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

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

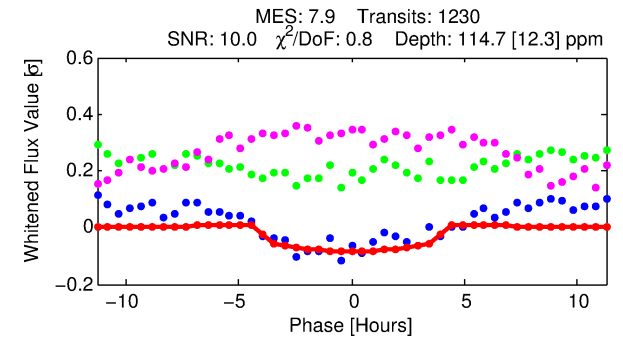
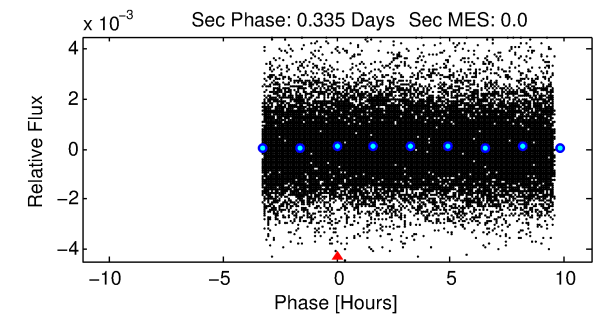
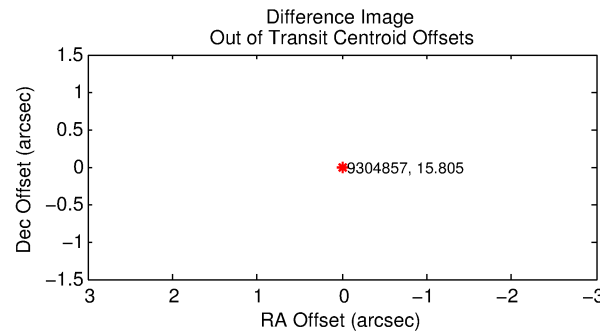
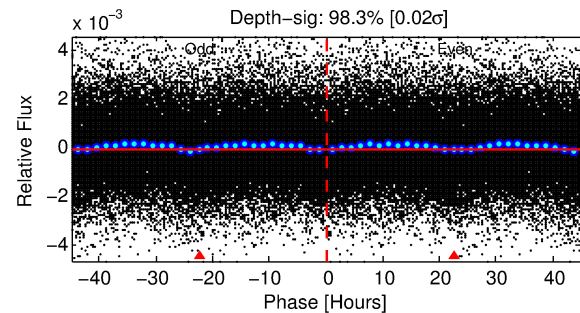
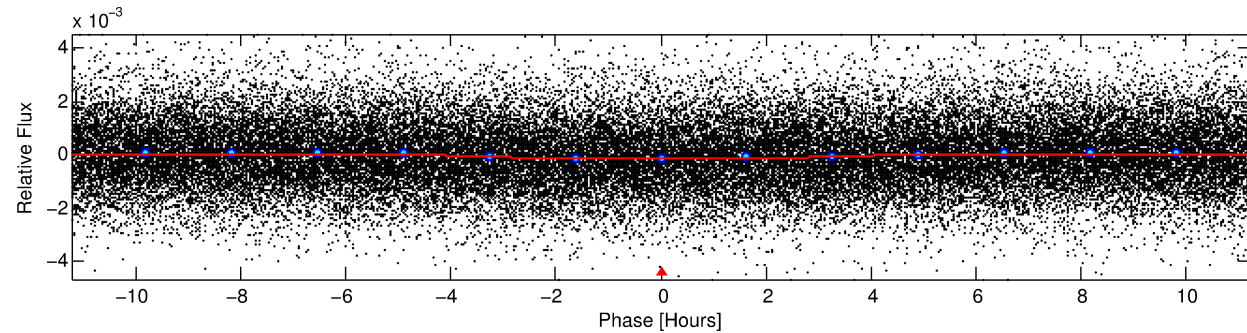
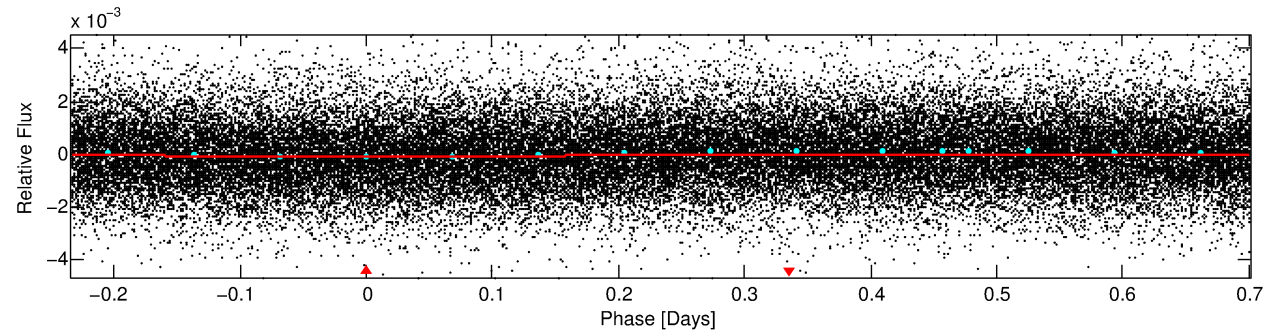
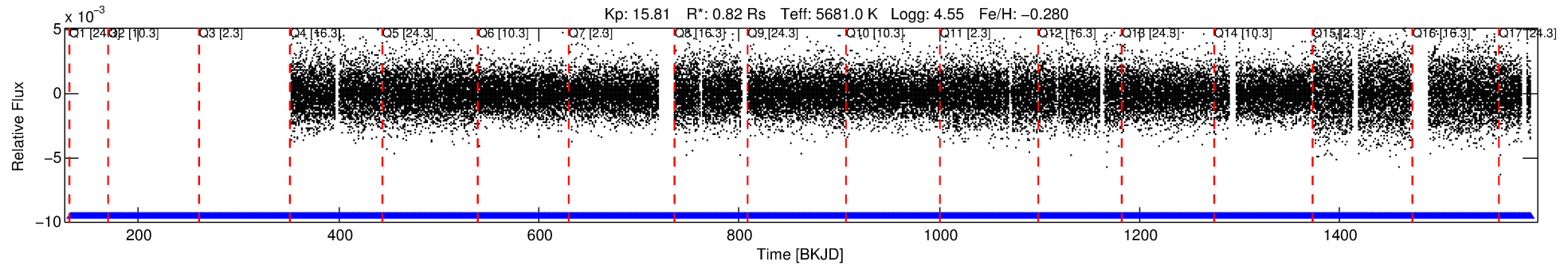
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009304857-01

No Significant Match Found

# DV One-Page Summary

KIC: 9304857 Candidate: 1 of 1 Period: 0.935 d



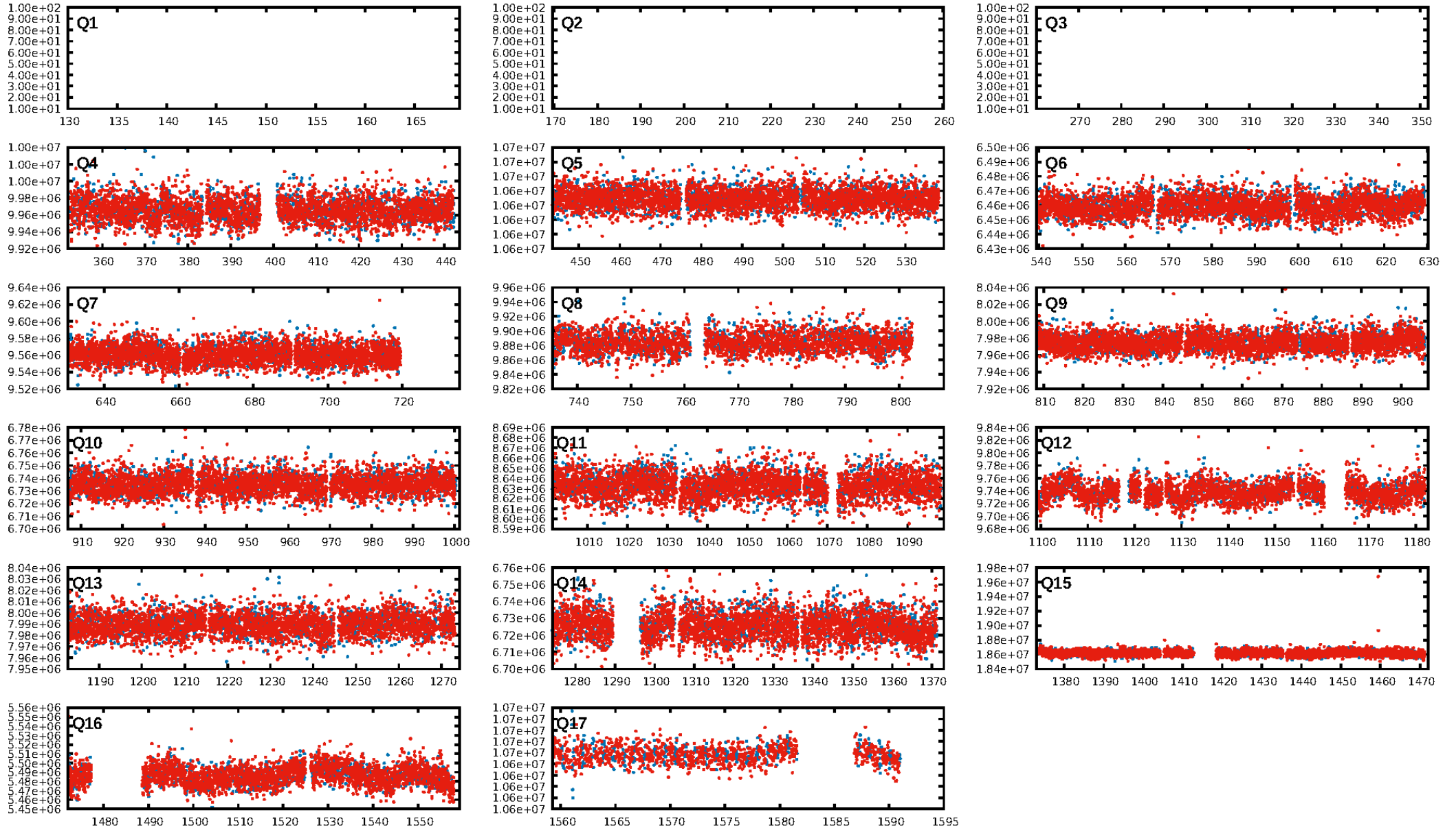
## DV Fit Results:

Period = 0.93484 [0.00002] d  
Epoch = 132.2134 [0.0082] BKJD  
Rp/R\* = 0.0097 [0.0160]  
a/R\* = 1.11 [1.48]  
b = 0.08 [97.81]  
Seff = 1964.14 [659.20]  
Teq = 1698 [142] K  
Rp = 0.87 [1.45] Re  
a = 0.0179 [0.0039] AU  
Ag = N/A  
Teffp = N/A

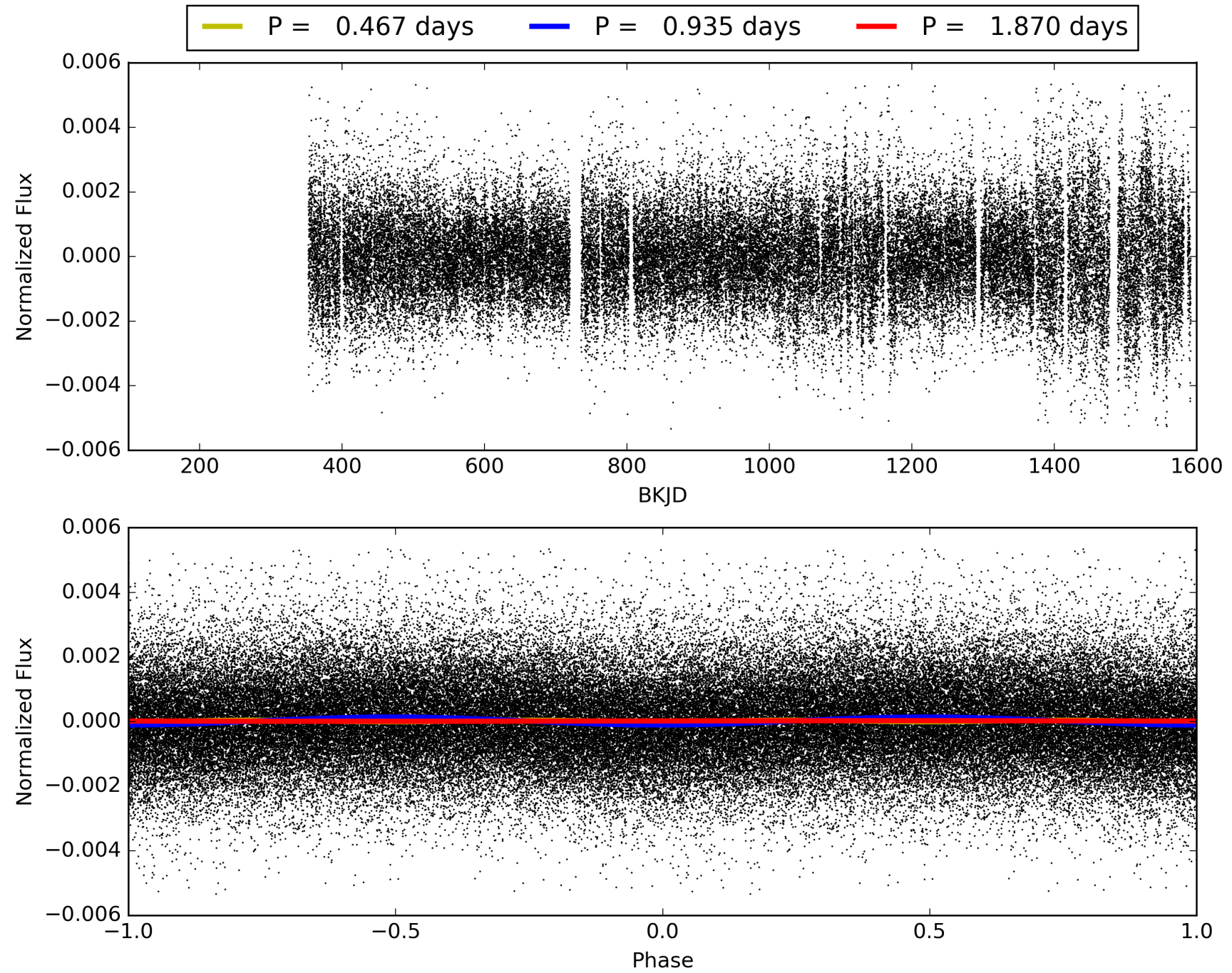
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1201/1201]  
GhostDiagnostic-chr: 7.438  
Centroid-sig: 0.0%  
Centroid-so: 1.497 arcsec [3.04σ]  
OotOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-rm: 11.321 arcsec [6.58σ]  
KicOffset-st: 0/0/1/3 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009304857-01, PDC Light Curves

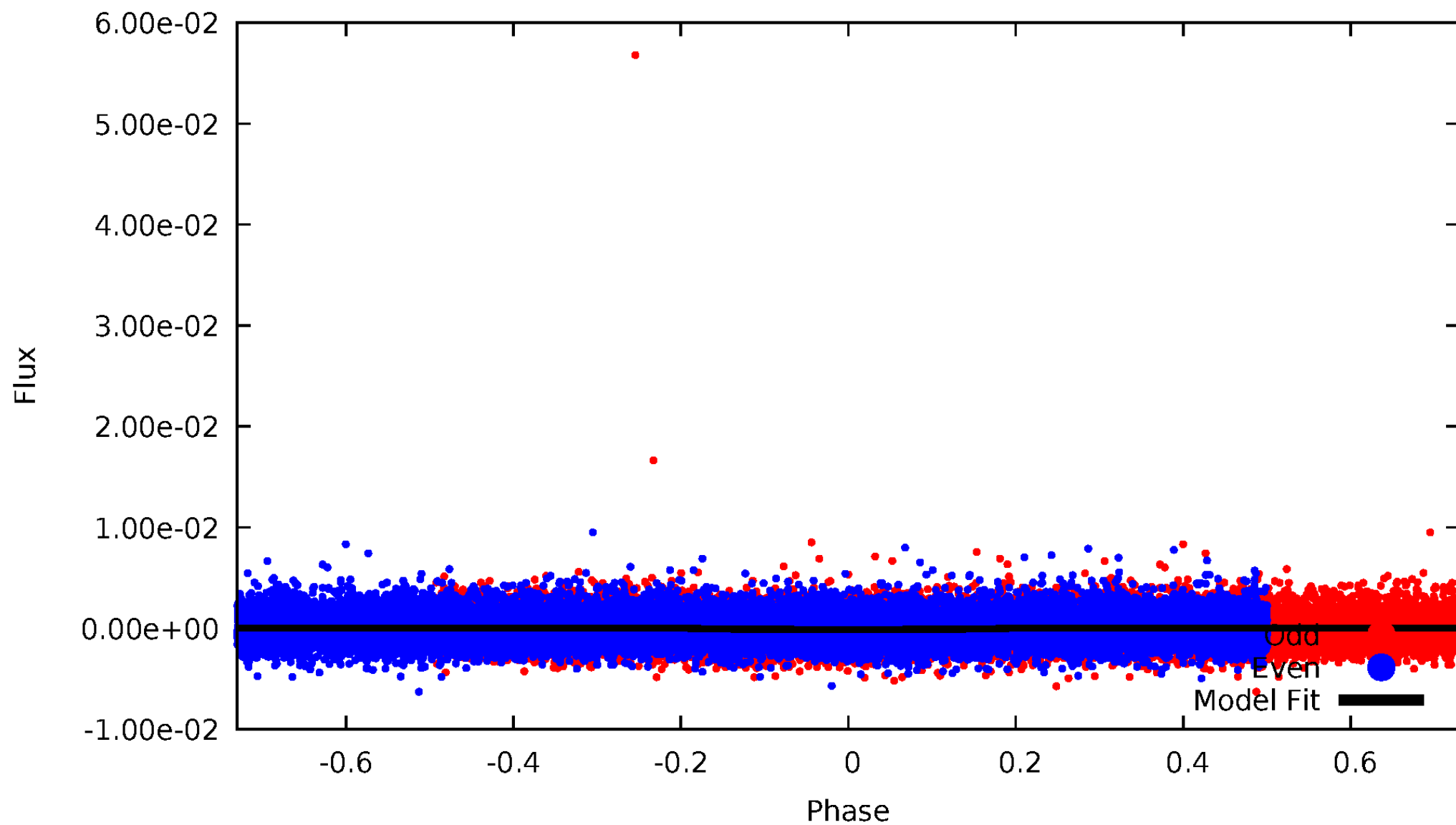


TCE 009304857-01



# DV Odd/Even

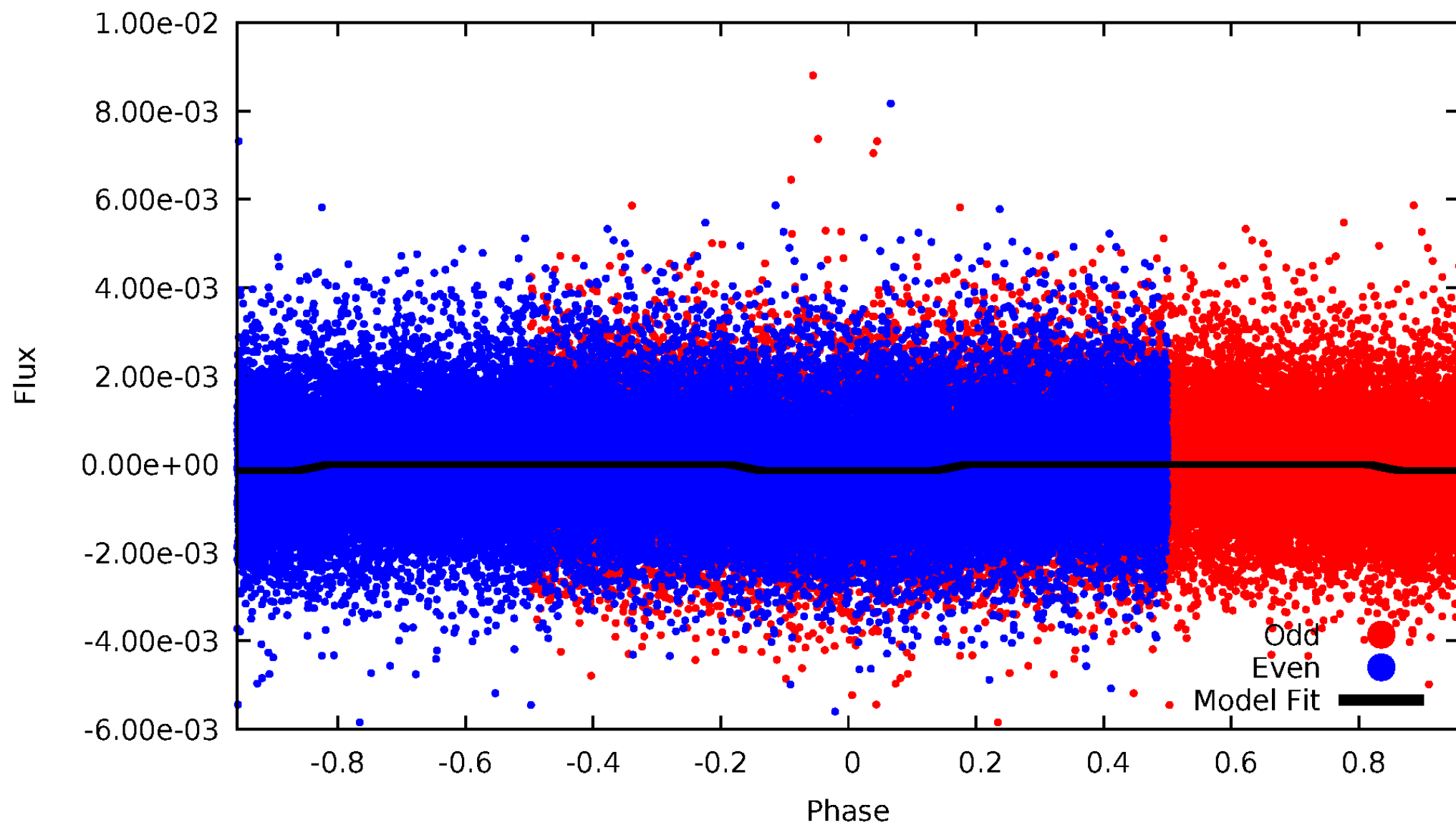
TCE 009304857-01



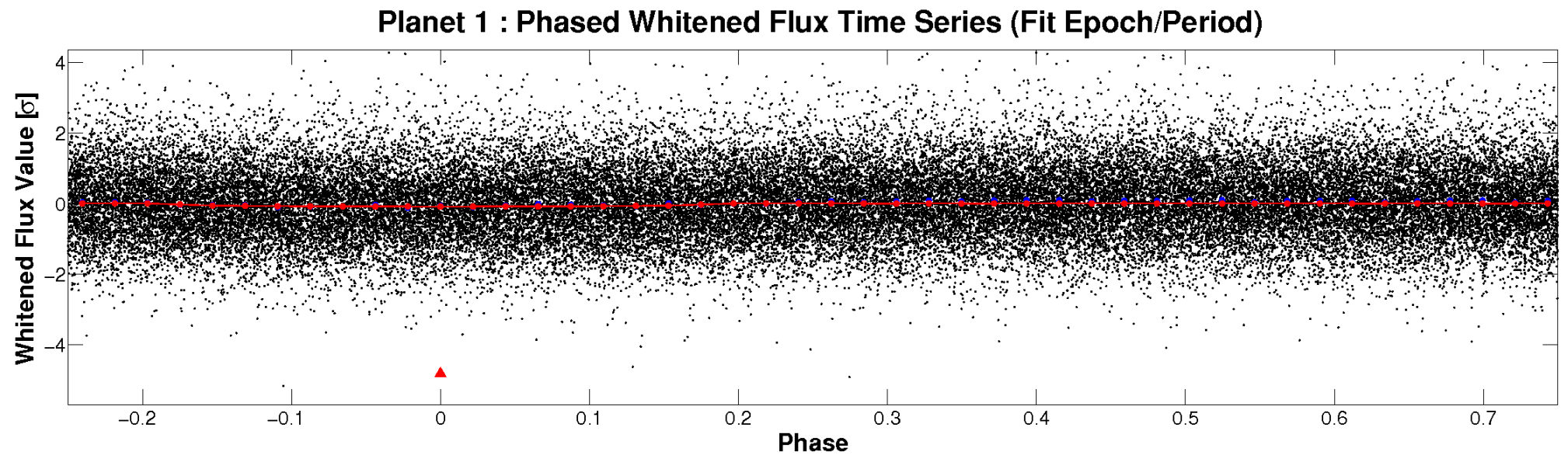
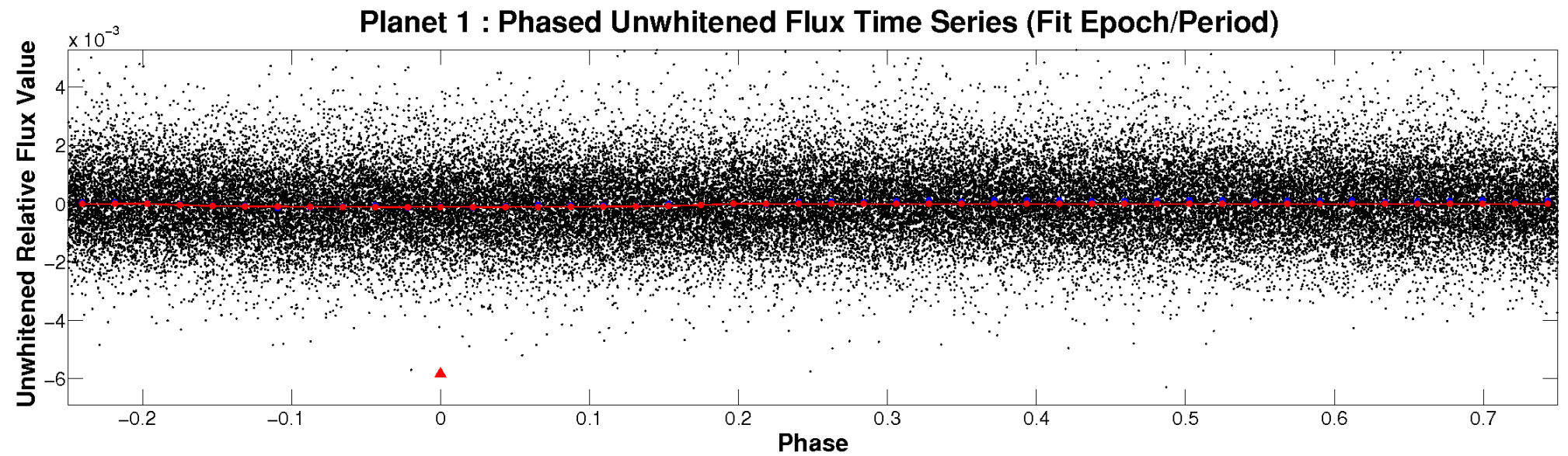


# ALT Odd/Even

TCE 009304857-01

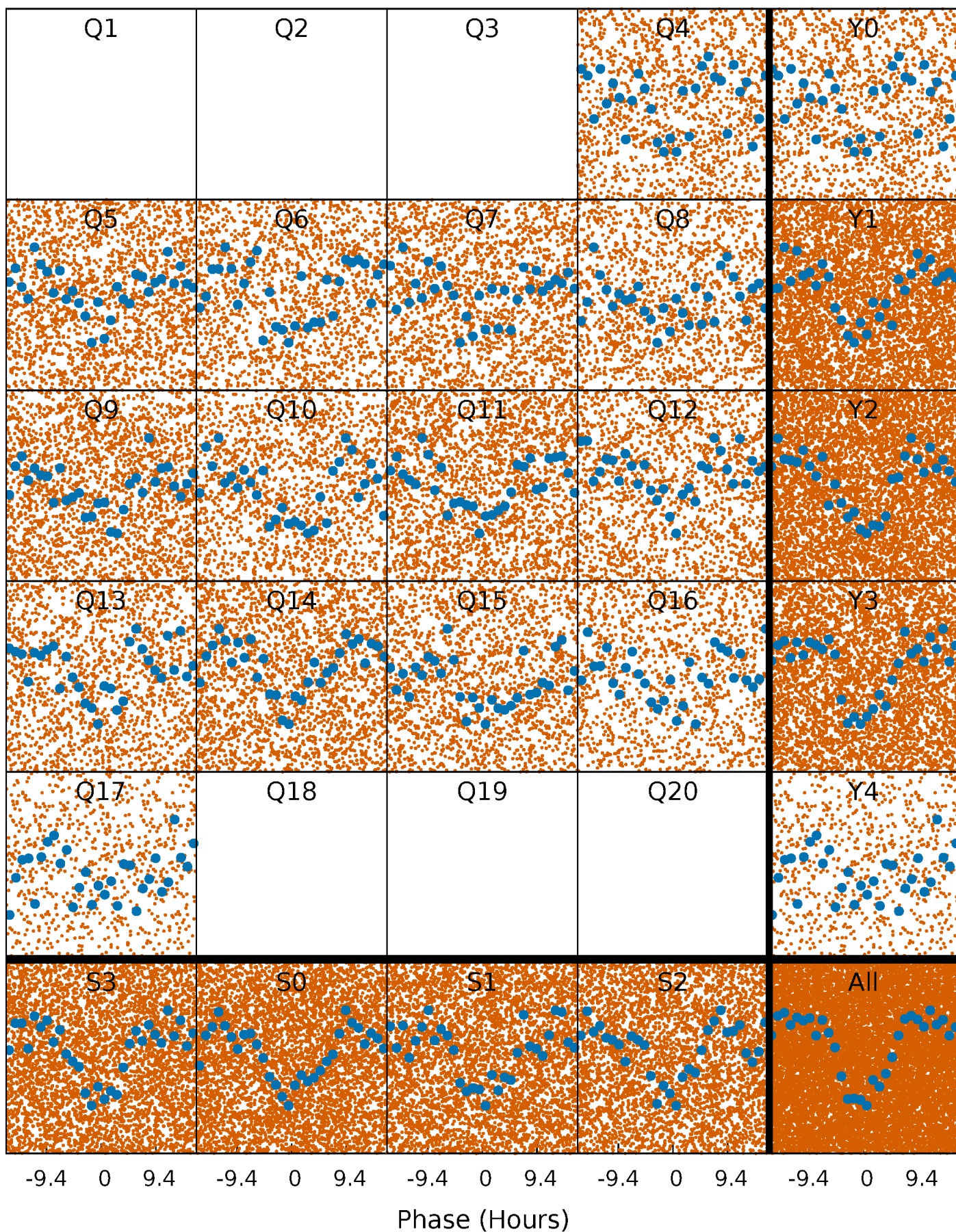


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

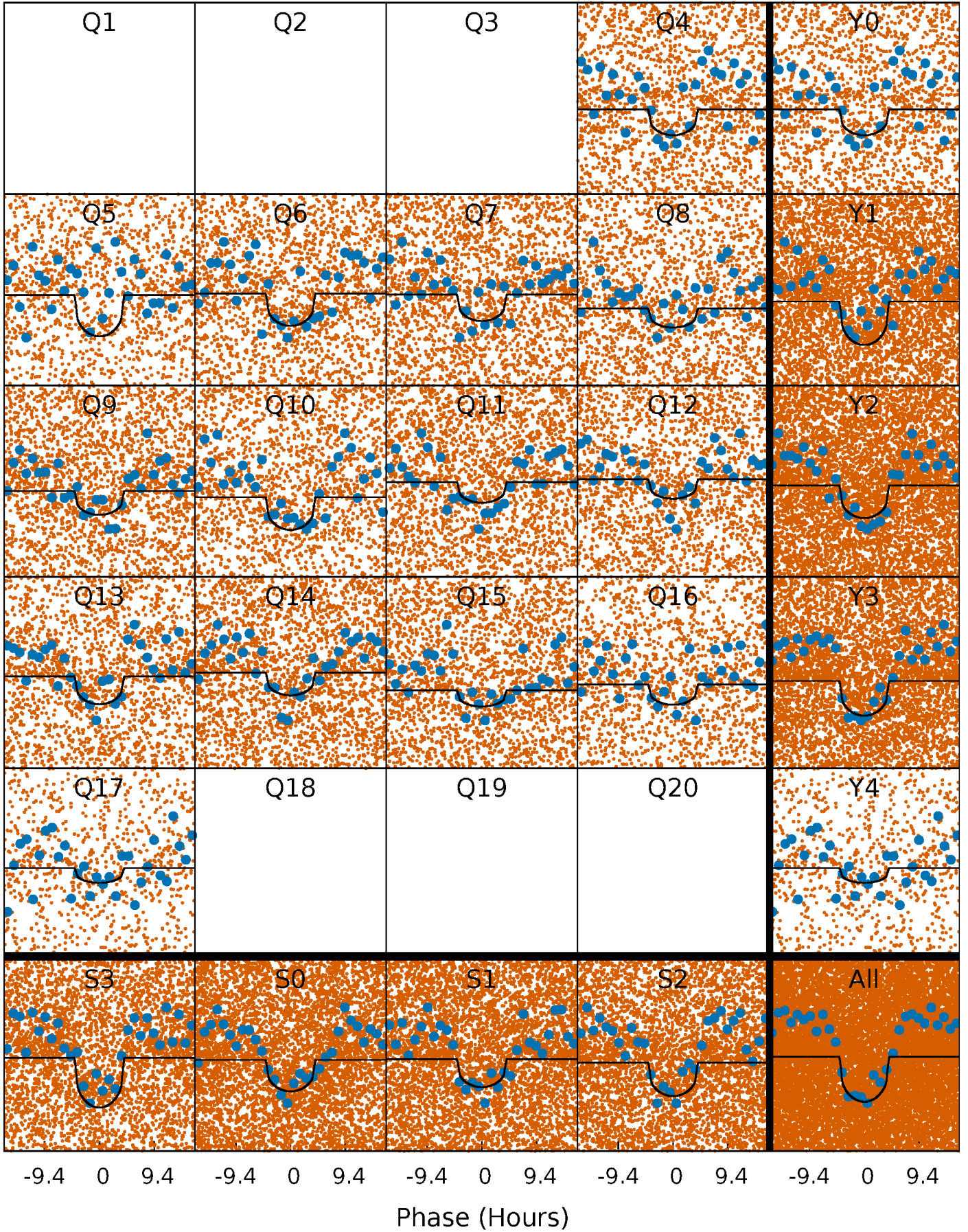
TCE 009304857-01 P= 0.934841 Days  $T_0=132.213391$  (BKJD)





# DV Quarter-Phased Transit Curves

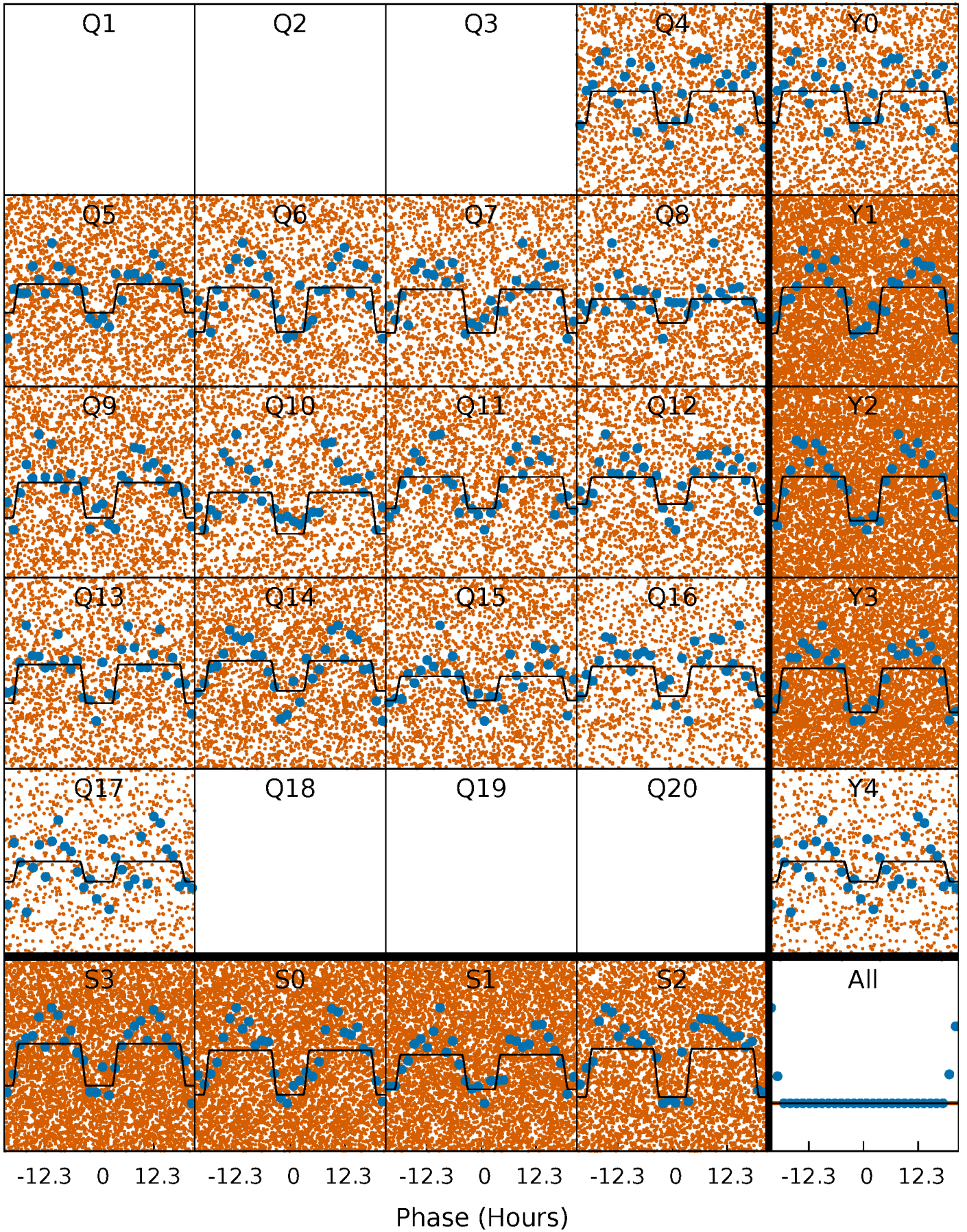
TCE 009304857-01   P= 0.934841 Days    $T_0=132.213391$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

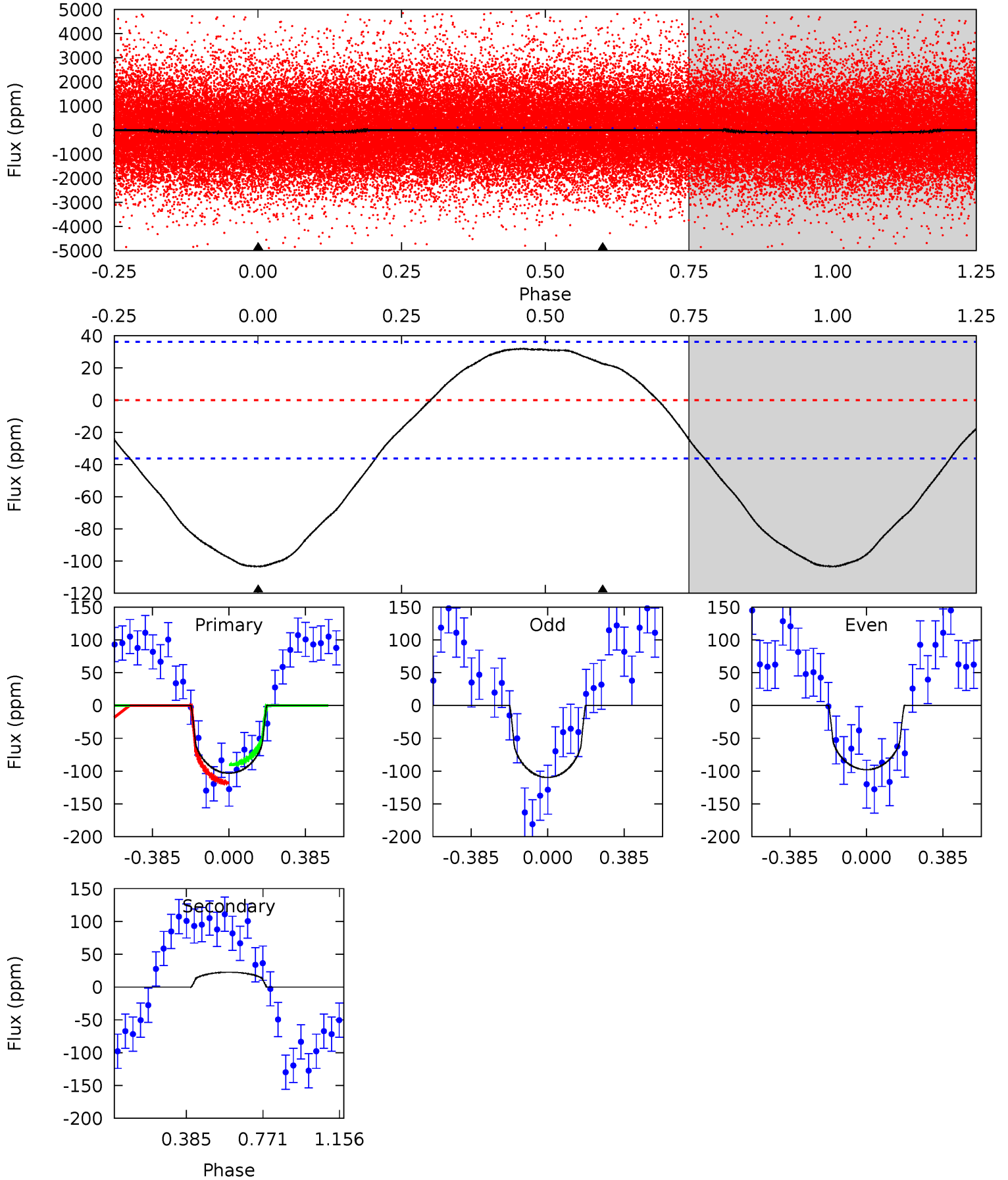
TCE 009304857-01 P= 0.934879 Days  $T_0=132.171962$  (BKJD)



# DV Model-Shift Uniqueness Test

009304857-01, P = 0.934841 Days, E = 132.213391 Days

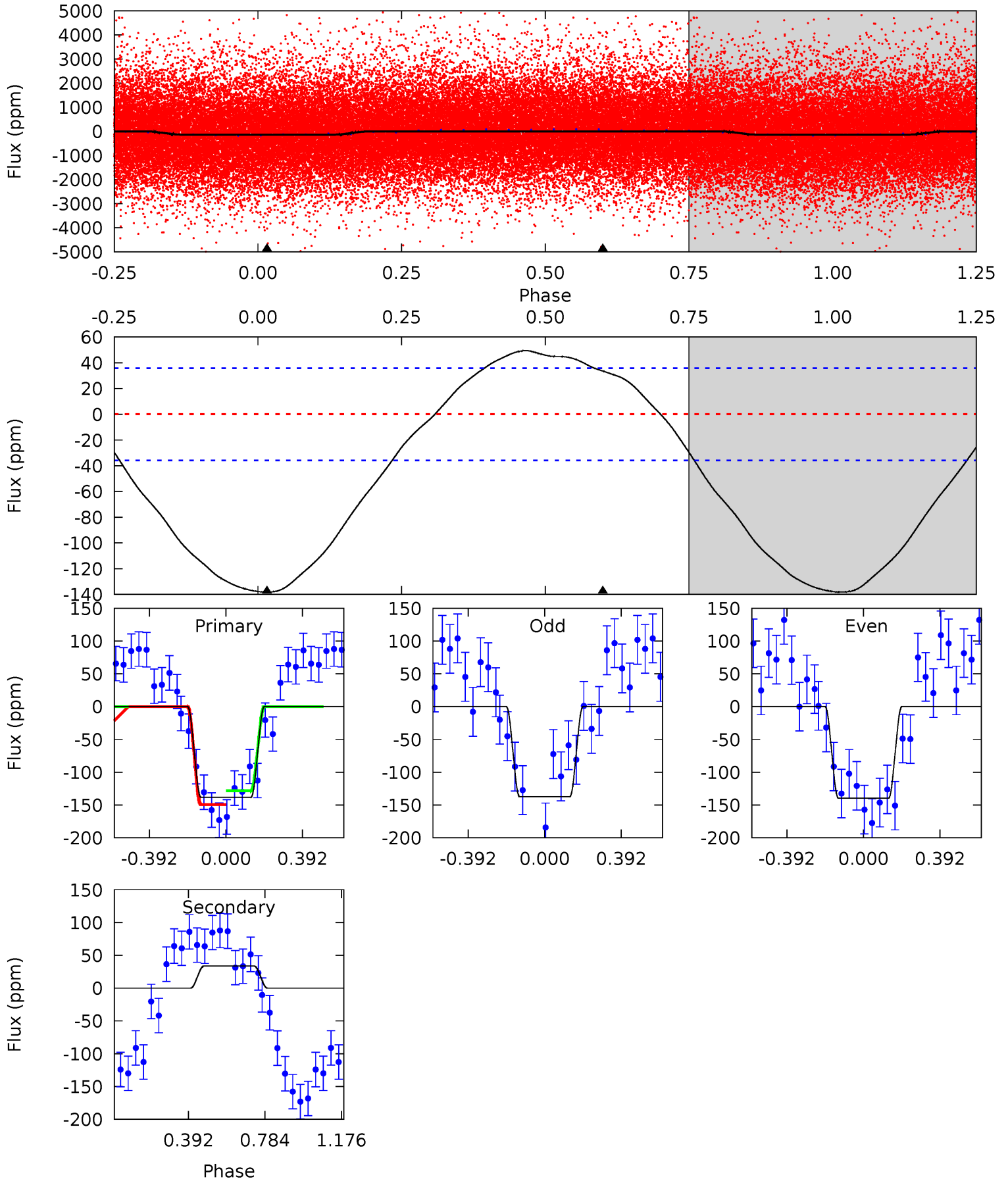
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	-2.67	0	0	4.27	0.87	1.22	12.2	12.2	-2.67	-2.67	0.71	0.91	0.24	1.64



# Alt Model-Shift Uniqueness Test

009304857-01, P = 0.934879 Days, E = 132.171962 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
16.5	-4.01	0	0	4.27	0.86	1.59	16.5	16.5	-4.01	-4.01	0.13	0.91	0.26	1.25





### Stellar Parameters For KIC 009304857

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5681^{+186}_{-186}$	$4.551^{+0.044}_{-0.165}$	$-0.280^{+0.300}_{-0.300}$	$0.821^{+0.218}_{-0.087}$	$0.875^{+0.097}_{-0.097}$	$2.227^{+0.519}_{-1.043}$
	+3%/-3%	+1%/-4%	+107%/-107%	+27%/-11%	+11%/-11%	+23%/-47%
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 009304857-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$23 \pm 8$	$1.33^{+1.30}_{-0.89}$	$2415^{+152}_{-114}$	$-3731^{+592}_{-1917}$	$-2.059^{+1.577}_{-16.569}$
Alt.	$34 \pm 8$	$1.55^{+1.29}_{-0.98}$	$2420^{+140}_{-119}$	$-3821^{+560}_{-1794}$	$-2.387^{+1.695}_{-15.474}$

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

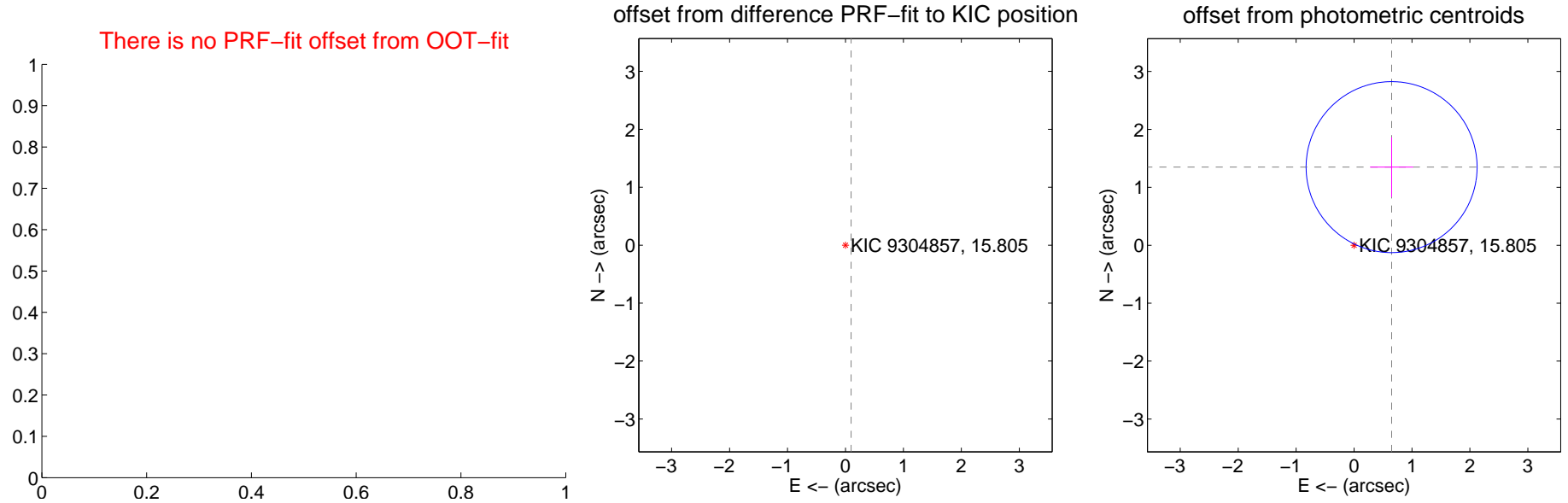
## DV Centroid Data

Supplemental centroid analysis for 009304857-01. Kepler magnitude: 15.80. Transit SNR 10.00

There are 4 quarters with good PRF difference image offsets

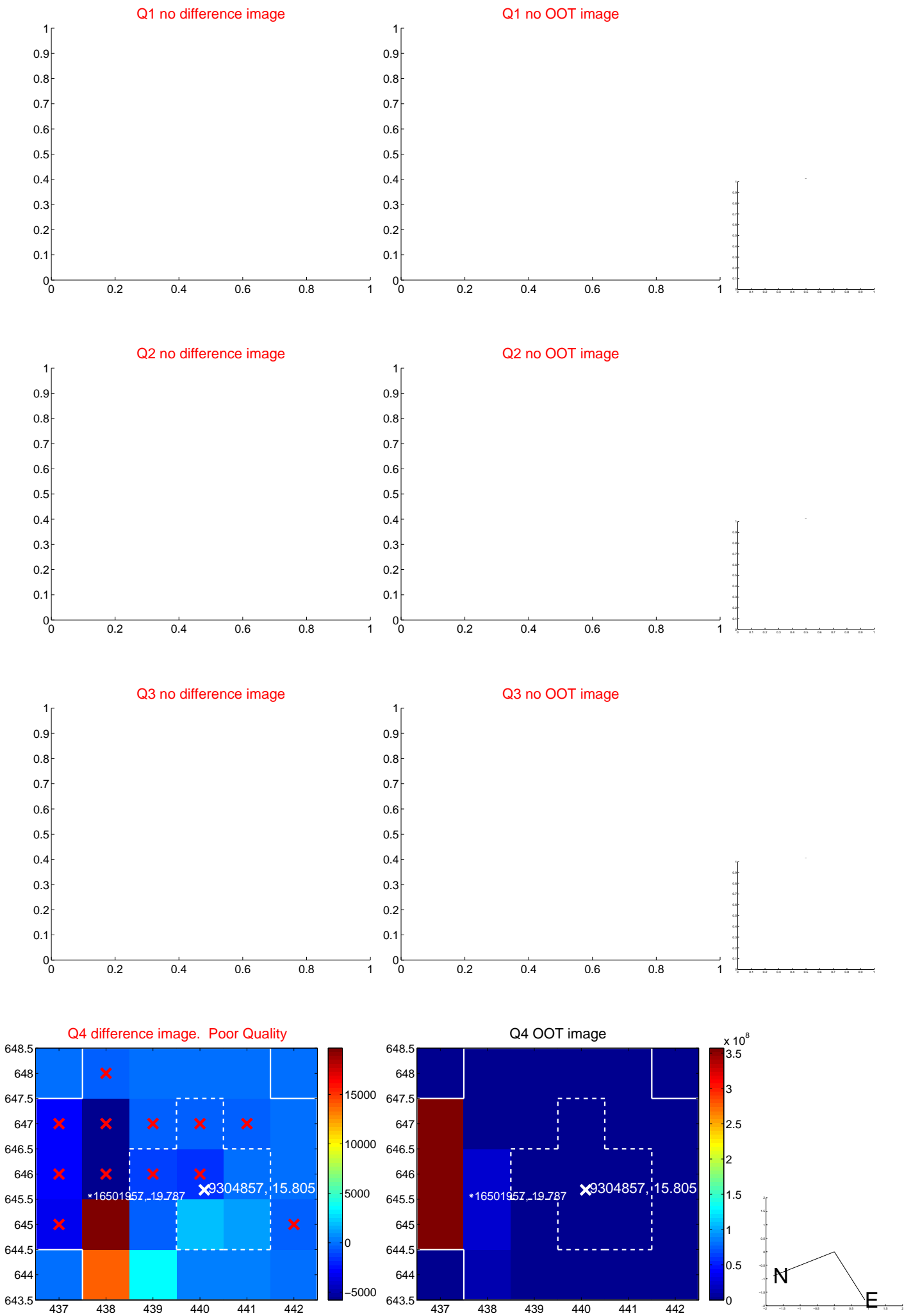
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$11.321 \pm 1.720$	$6.58$	$-0.097 \pm 1.600$	$11.321 \pm 1.733$
photometric centroid source offset	$1.50 \pm 0.49$	$3.04$	$-0.65 \pm 0.37$	$1.35 \pm 0.52$

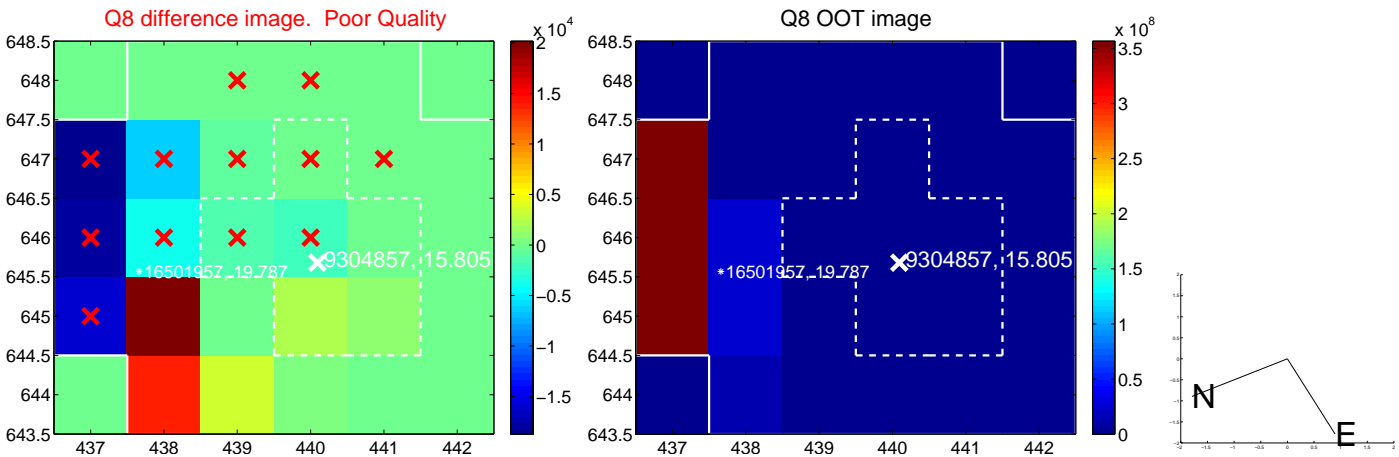
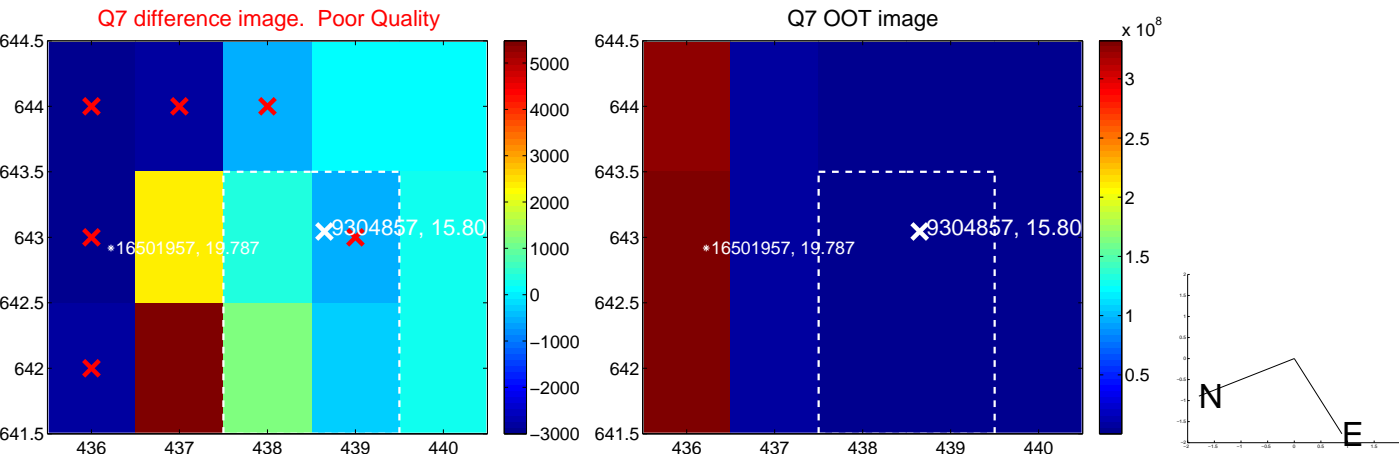
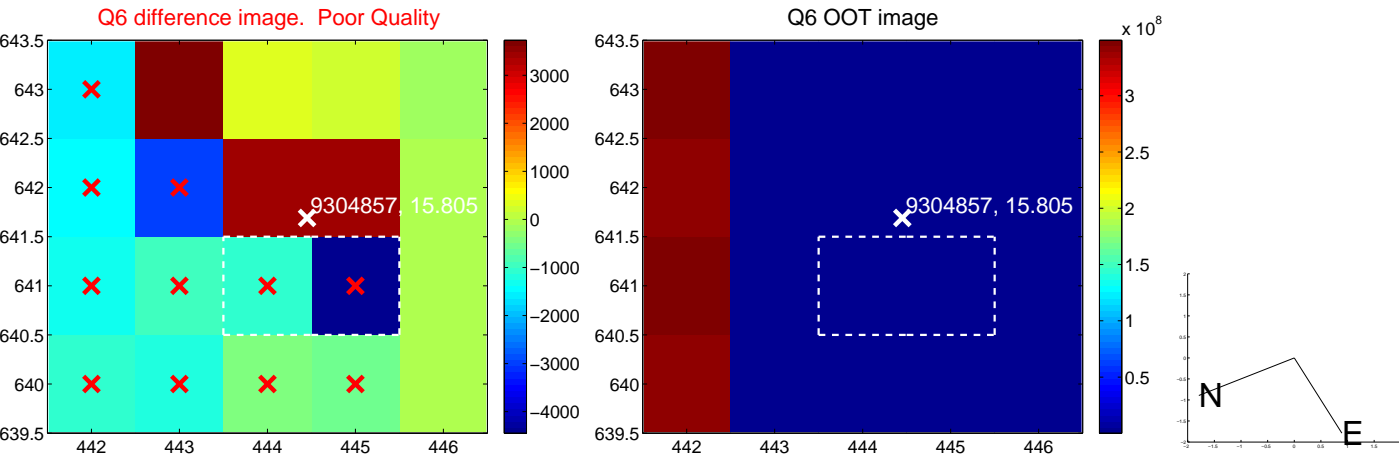
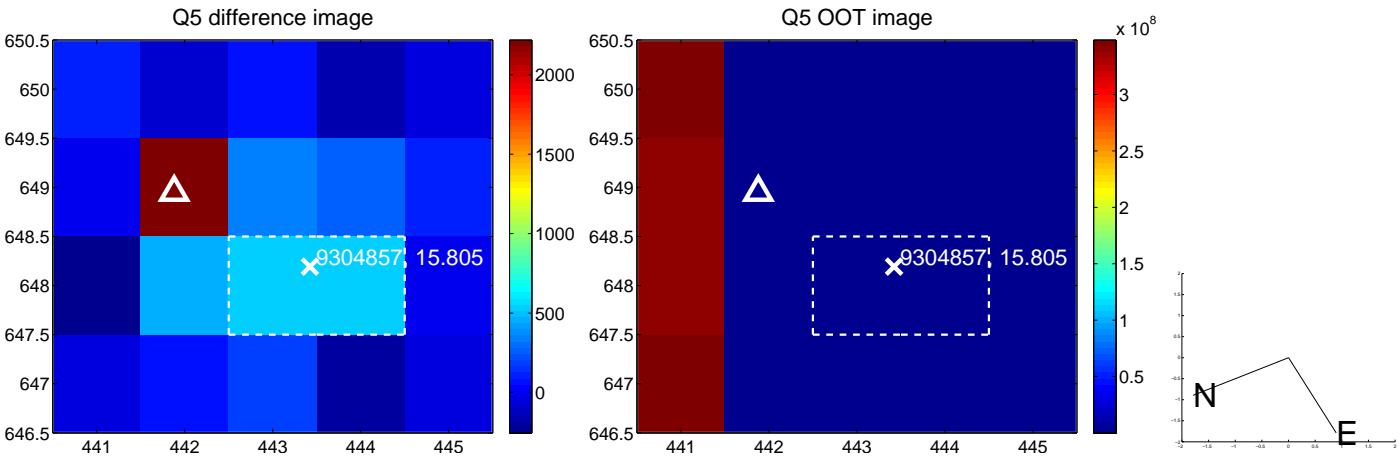


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

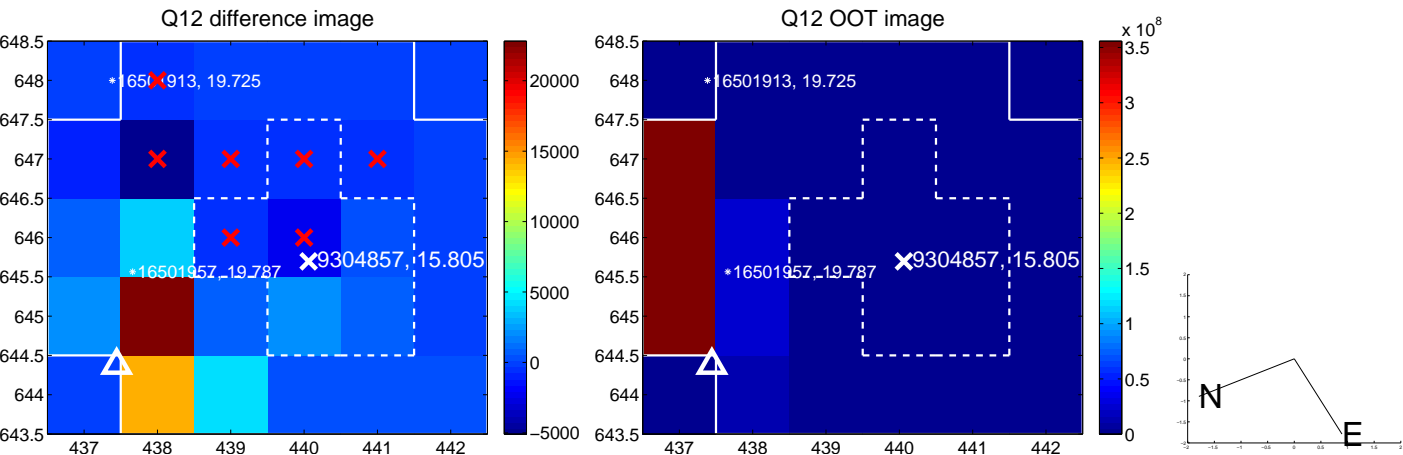
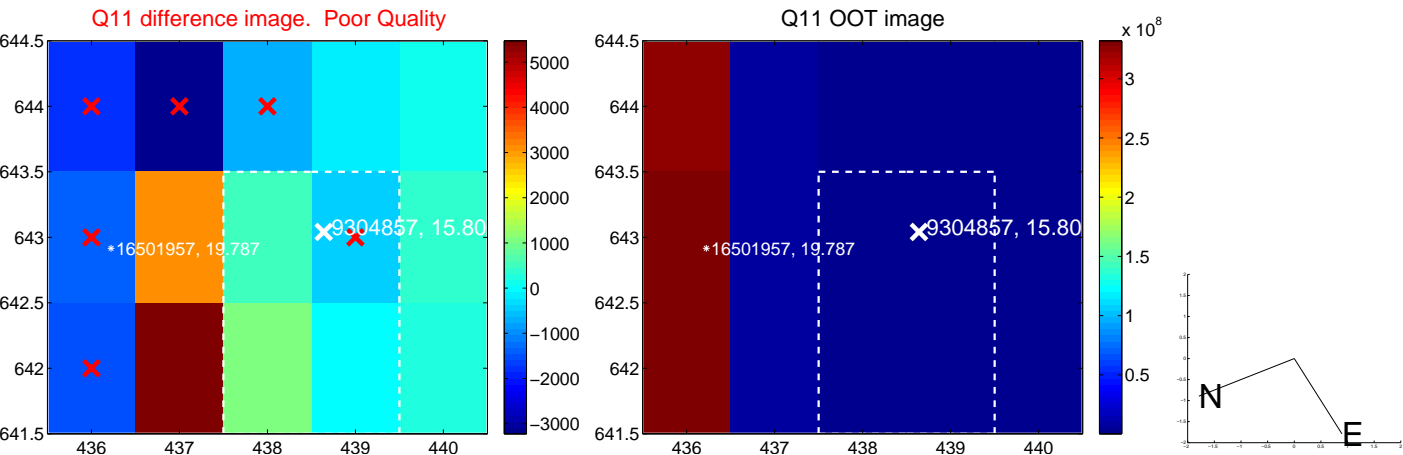
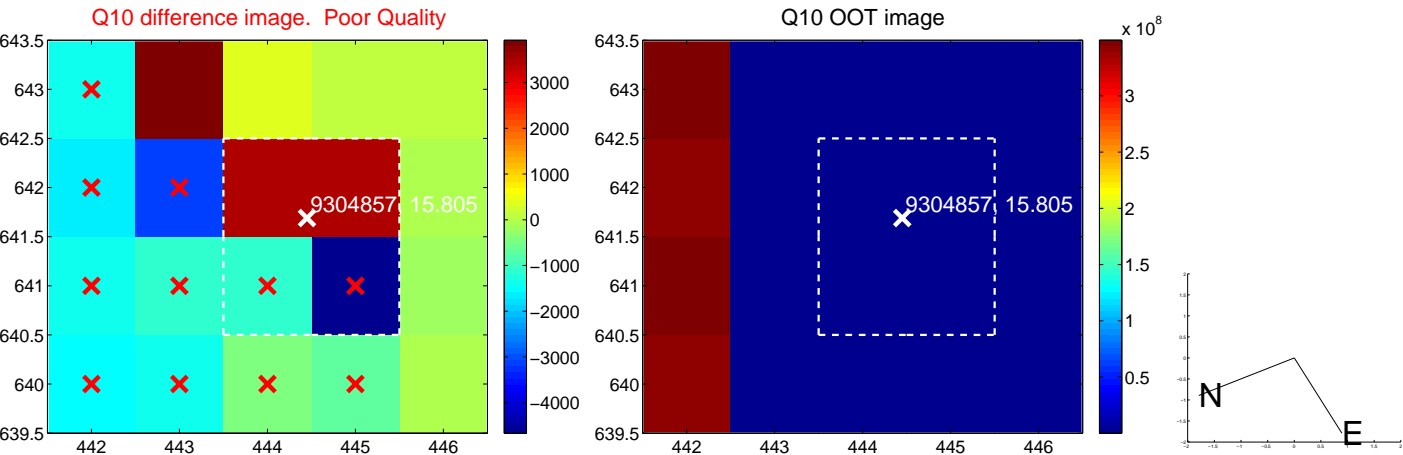
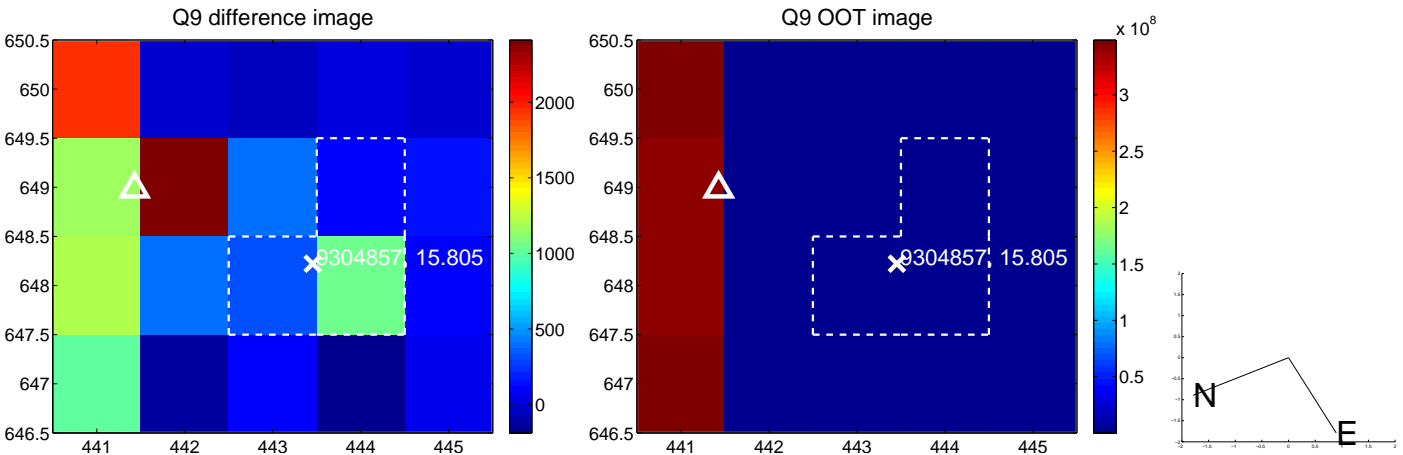


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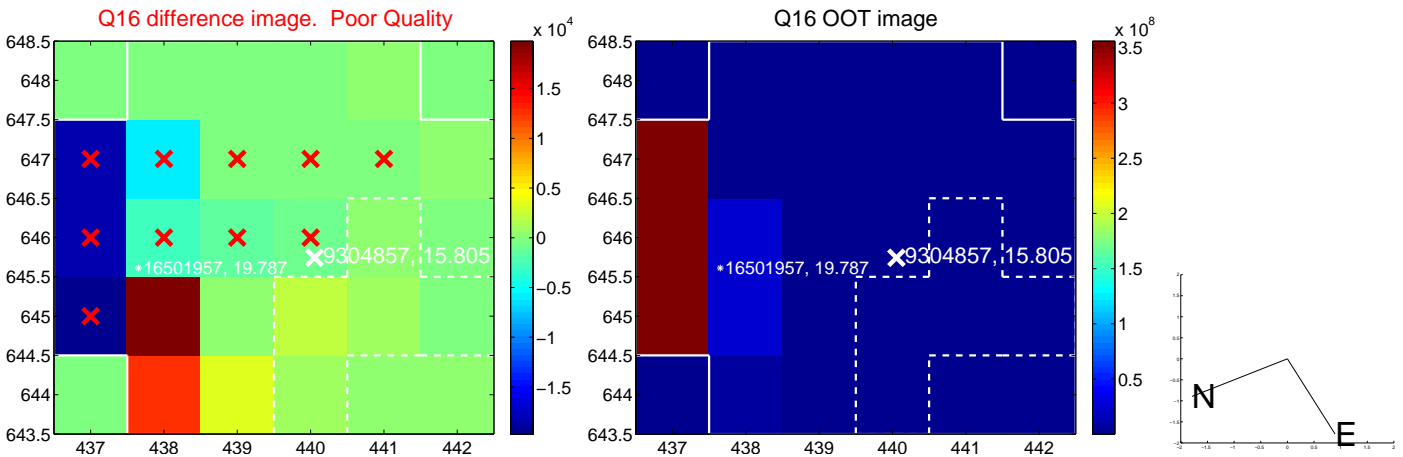
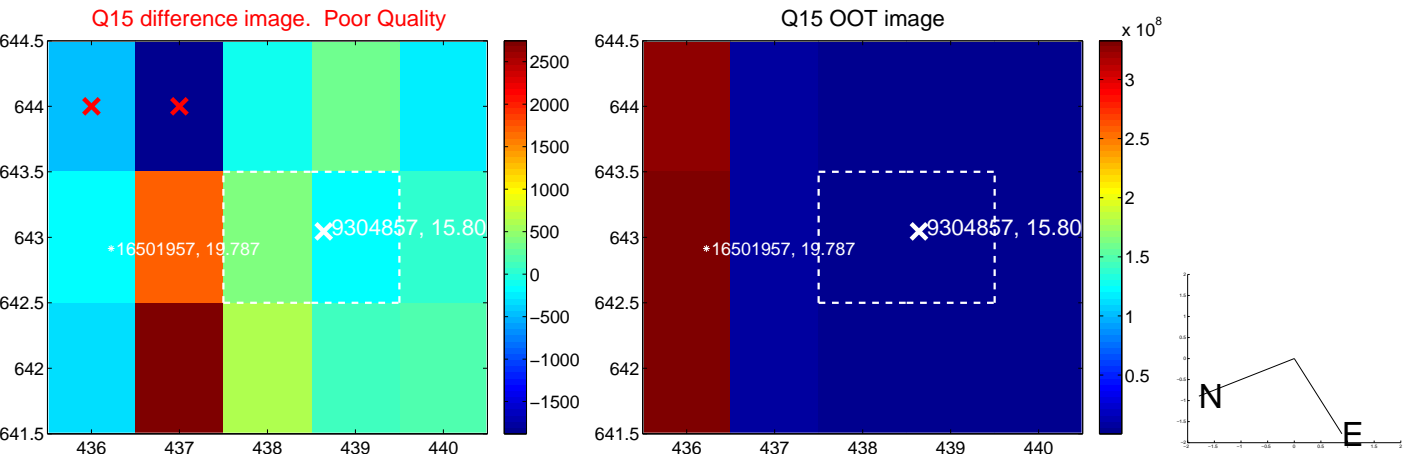
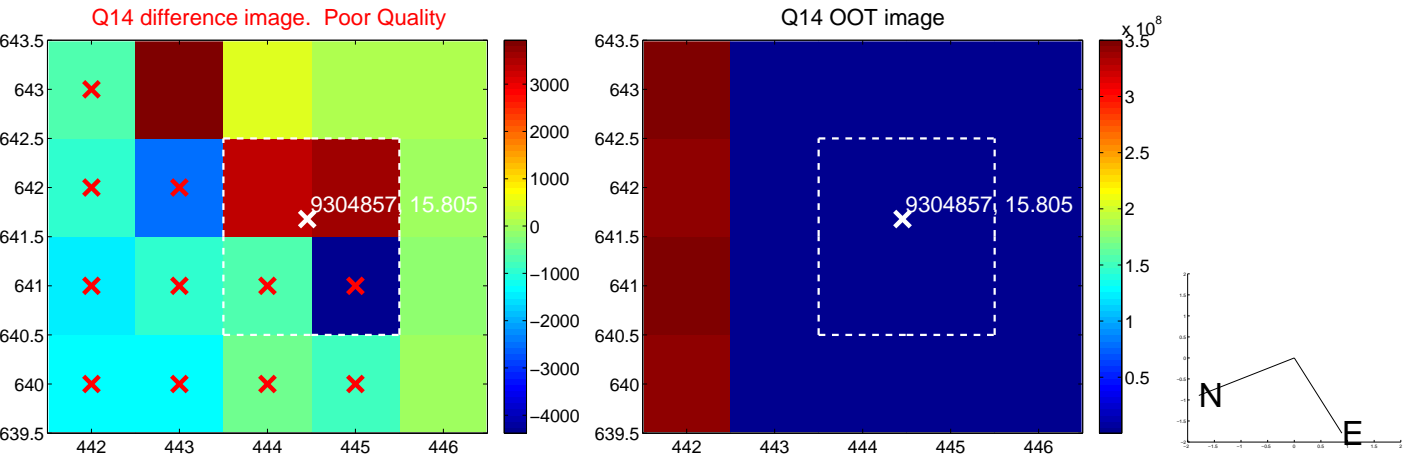
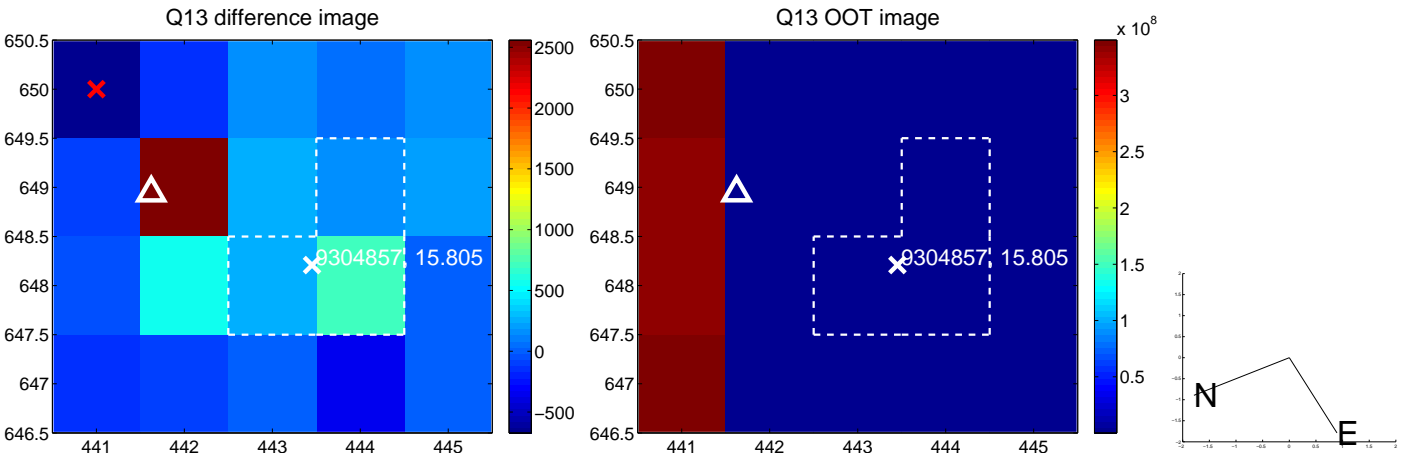




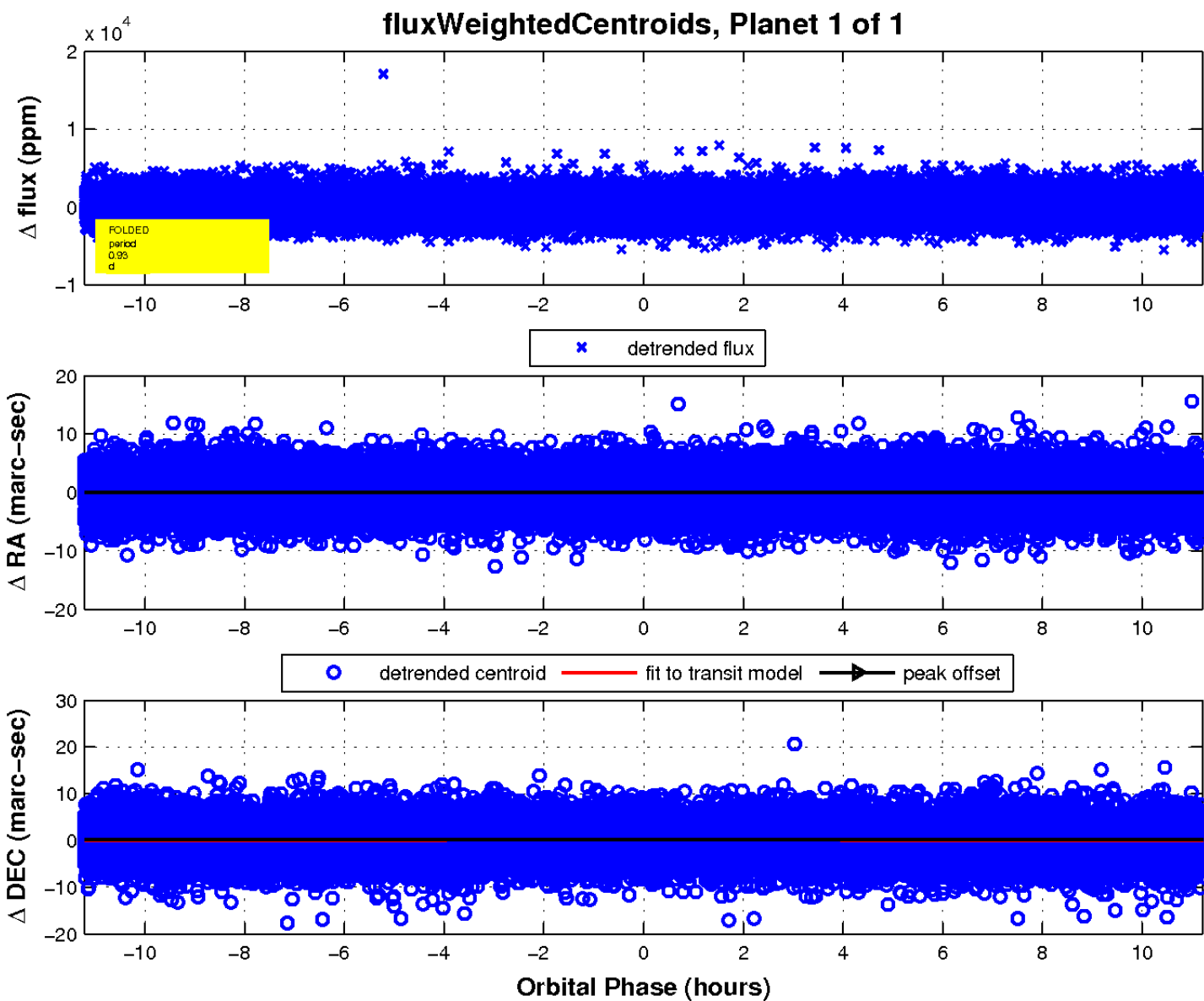
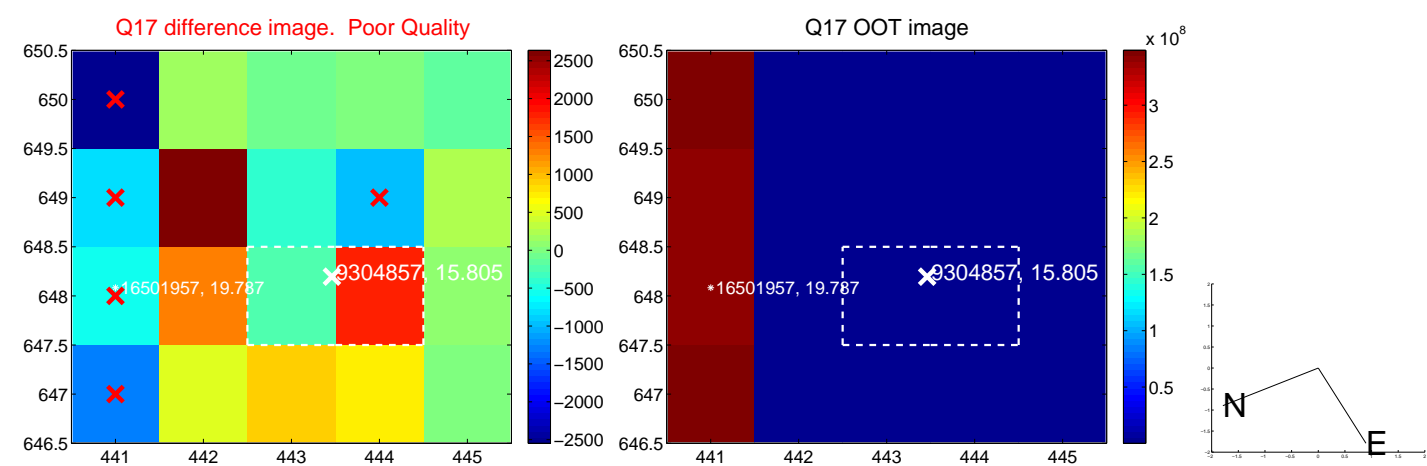
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

Declination

