

# KIC 010933306

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010933306-01	OBS	5842.01	57.774253	154.282969	281.4	5.823	8.9	9.4	1.10	6277	2.06	17.85

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010933306-01	OBS	PC	0.99	0	0	0	0	CENT_FEW_MEAS

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

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

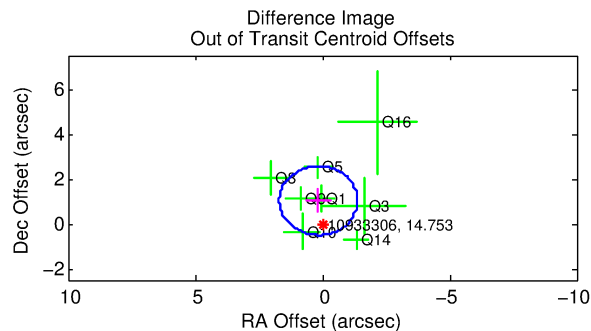
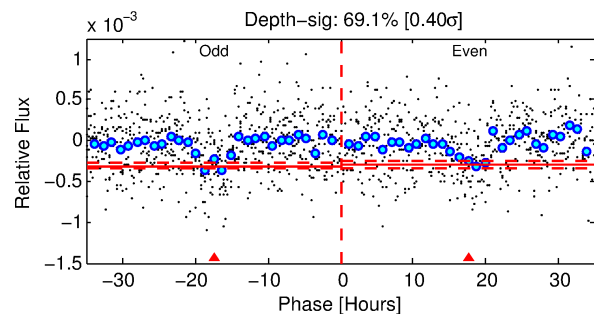
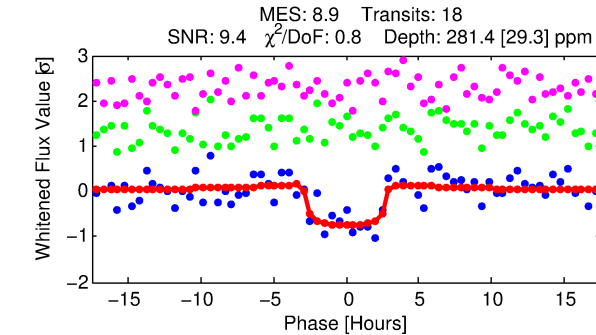
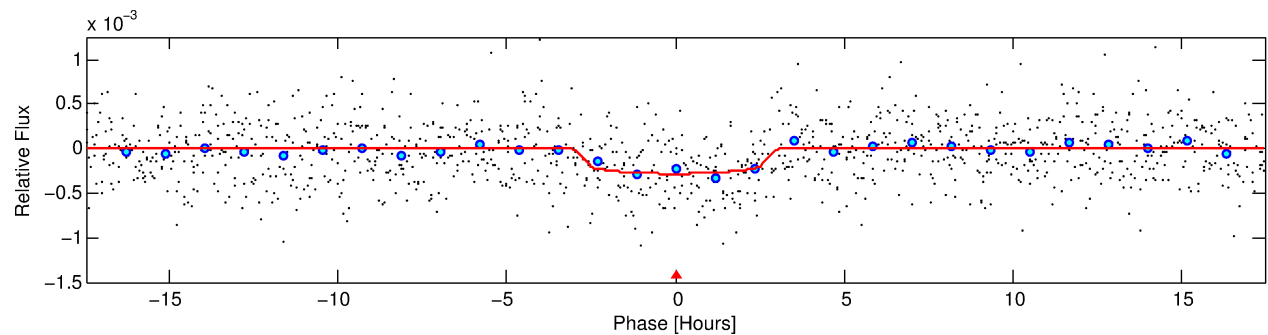
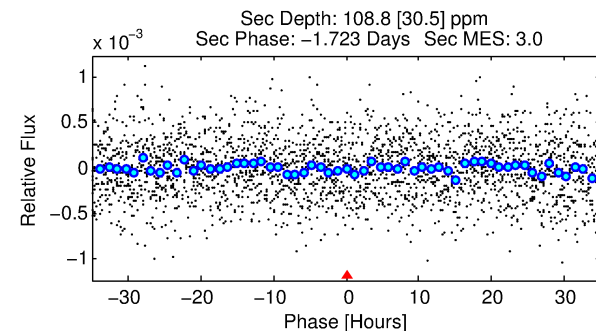
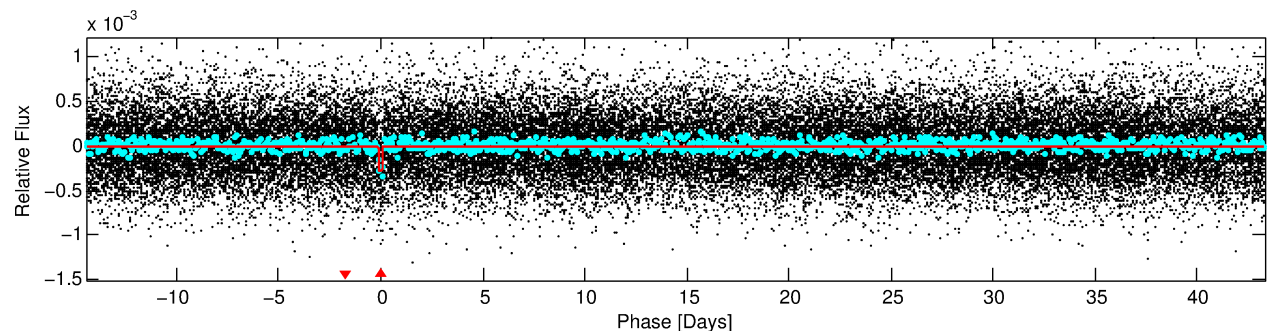
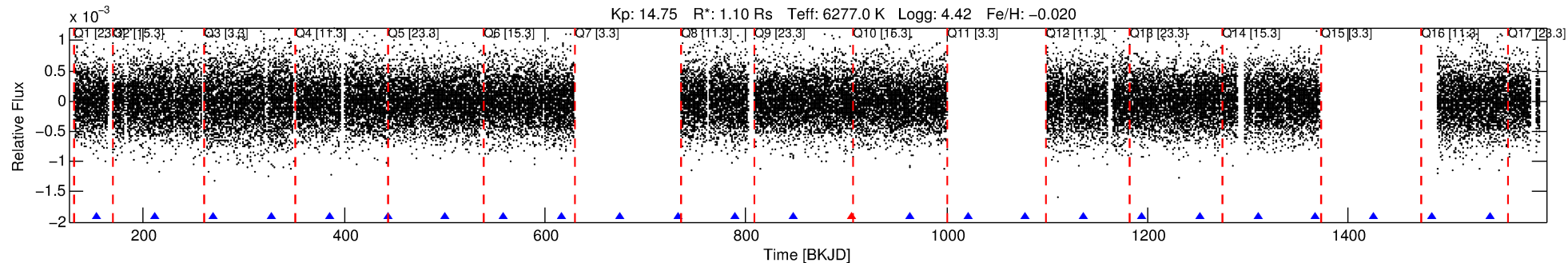
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010933306-01

No Significant Match Found

# DV One-Page Summary

KIC: 10933306 Candidate: 1 of 1 Period: 57.774 d  
KOI: K05842.01 Corr: 0.946



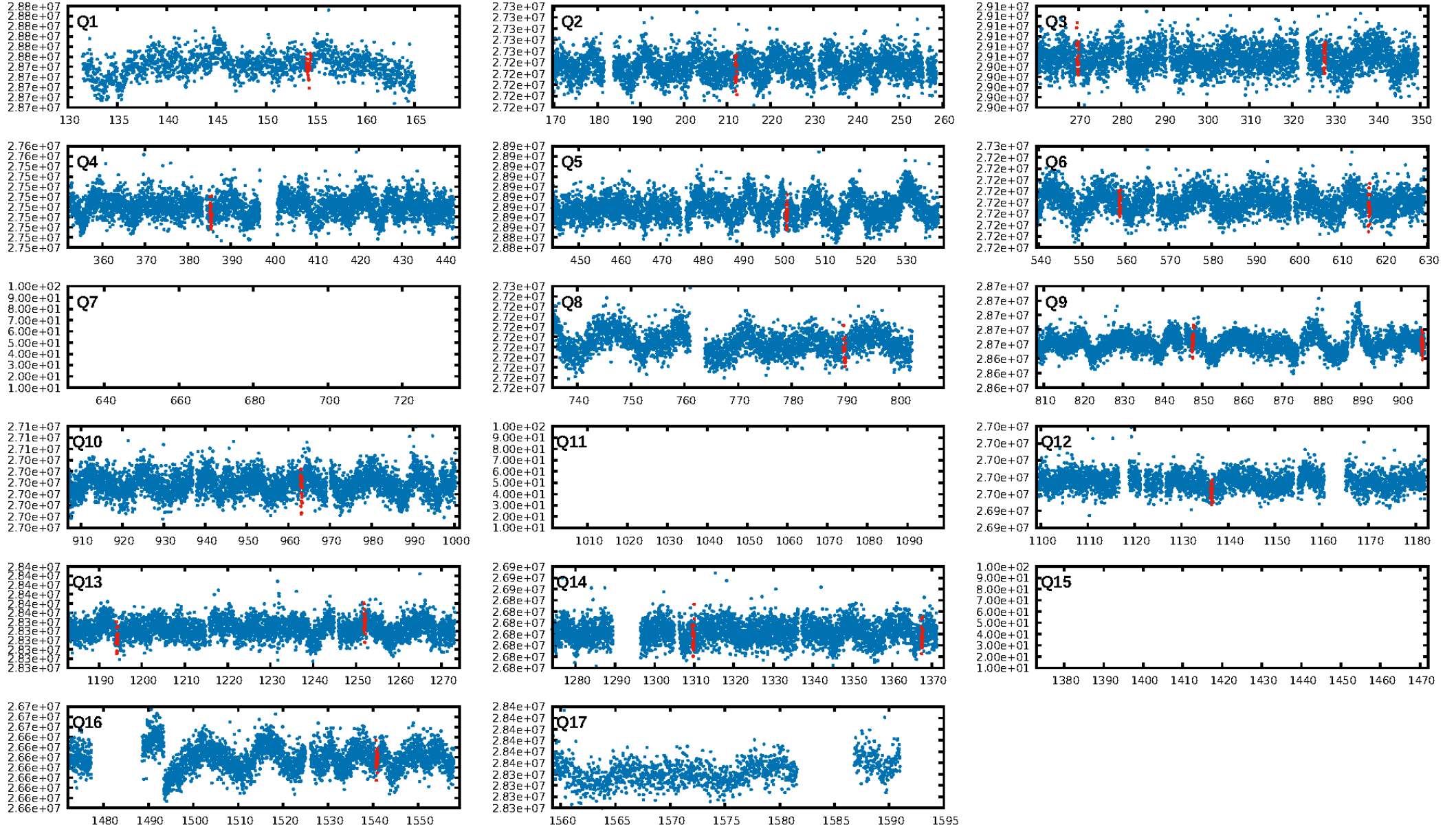
## DV Fit Results:

Period = 57.77425 [0.00073] d  
Epoch = 154.2830 [0.0100] BKJD  
Rp/R\* = 0.0172 [0.0079]  
a/R\* = 45.33 [107.94]  
b = 0.82 [0.95]  
Seff = 17.85 [7.35]  
Teff = 524 [54] K  
Rp = 2.06 [1.15] Re  
a = 0.3062 [0.0808] AU  
Ag = 1327.08 [1376.01] [0.96 $\sigma$ ]  
Teffp = 4891 [1193] K [3.66 $\sigma$ ]

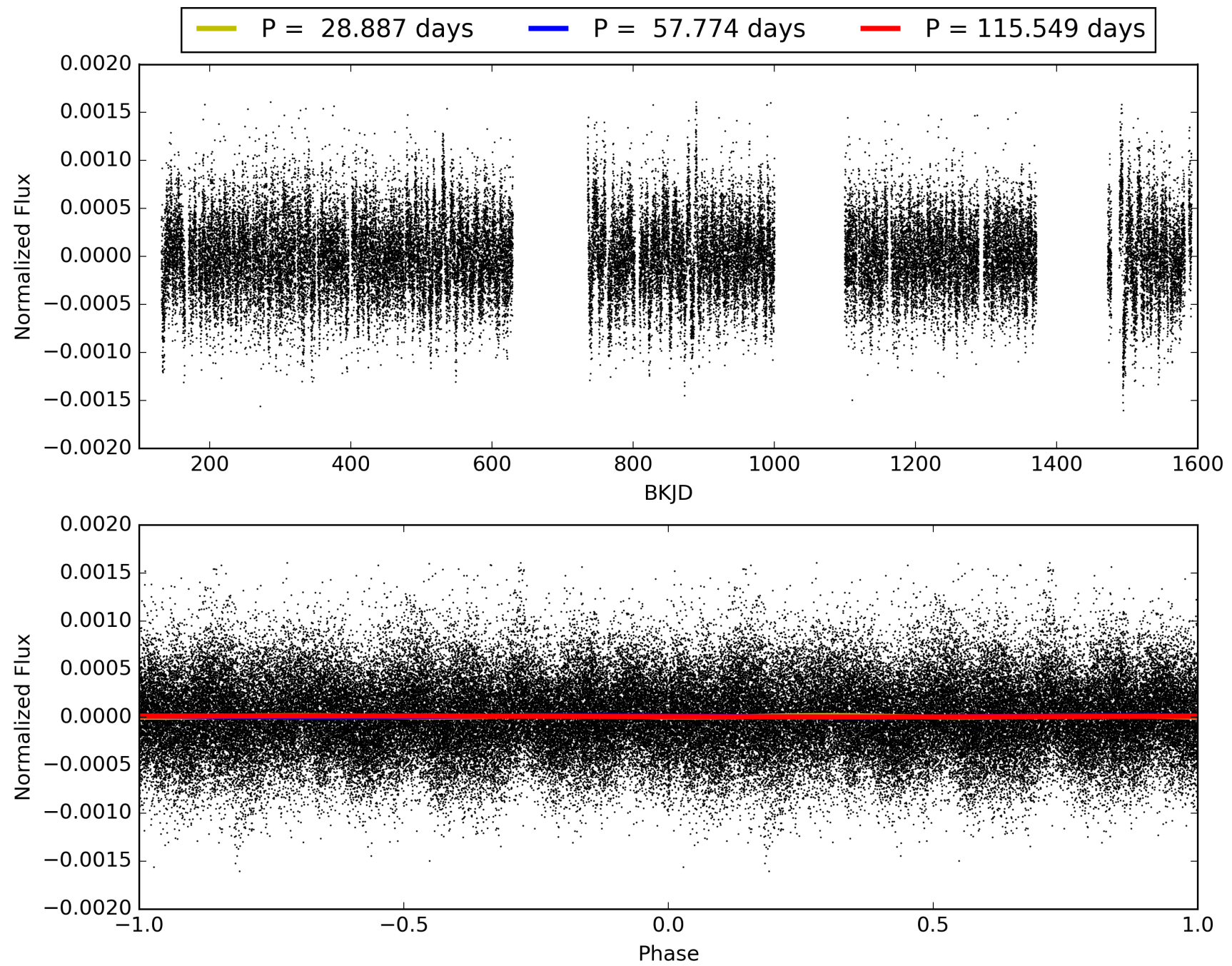
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 70.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.62e-19  
RollingBand-fgt: 0.94 [16/17]  
GhostDiagnostic-chr: 3.072  
Centroid-sig: 1.6%  
Centroid-so: 2.187 arcsec [1.60 $\sigma$ ]  
OotOffset-rm: 1.044 arcsec [2.04 $\sigma$ ]  
KicOffset-rm: 0.995 arcsec [1.91 $\sigma$ ]  
OotOffset-st: 2/1/2/3 [8]  
KicOffset-st: 2/1/2/3 [8]  
DiffImageQuality-fgm: 0.50 [4/8]  
DiffImageOverlap-fno: 1.00 [12/12]

# TCE 010933306-01, PDC Light Curves

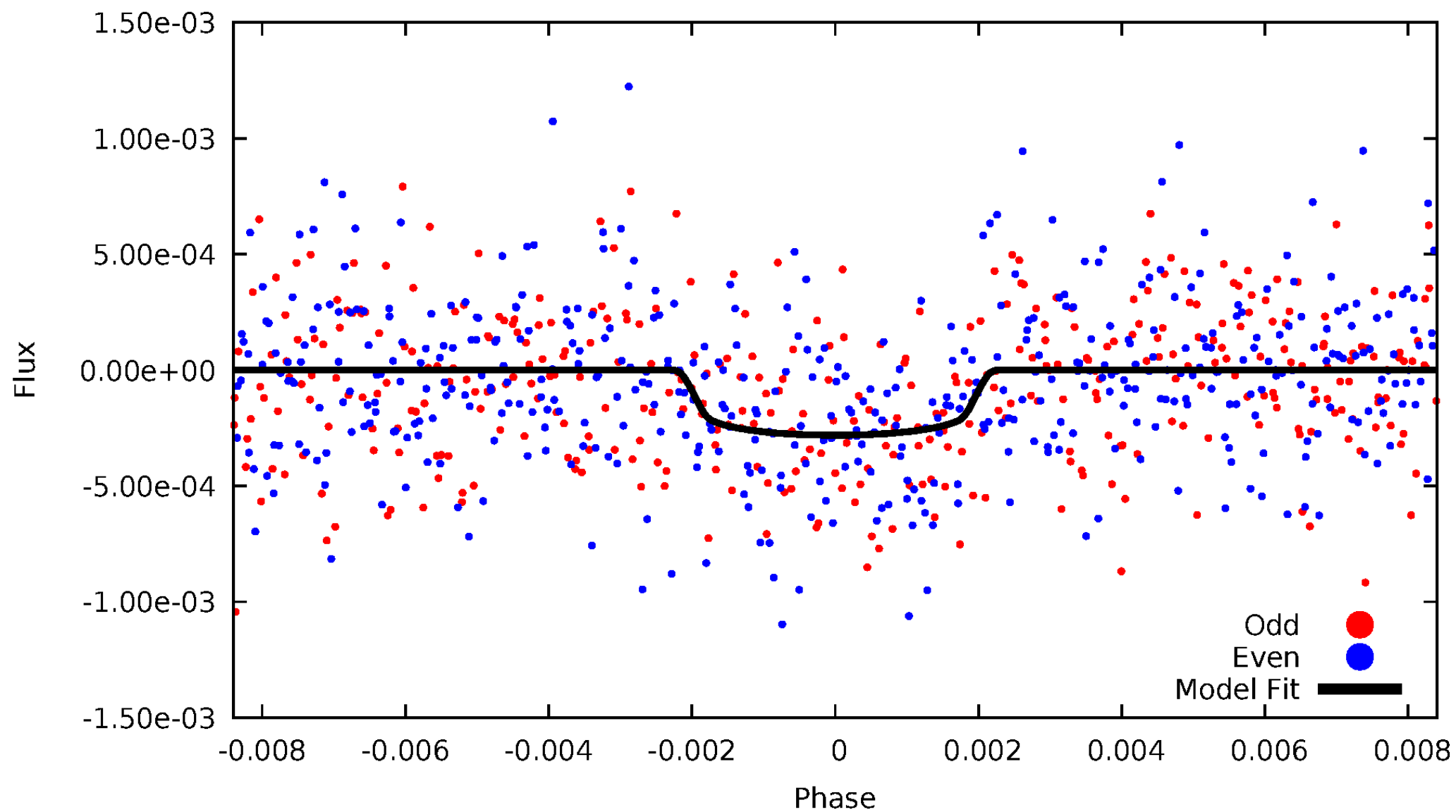


TCE 010933306-01



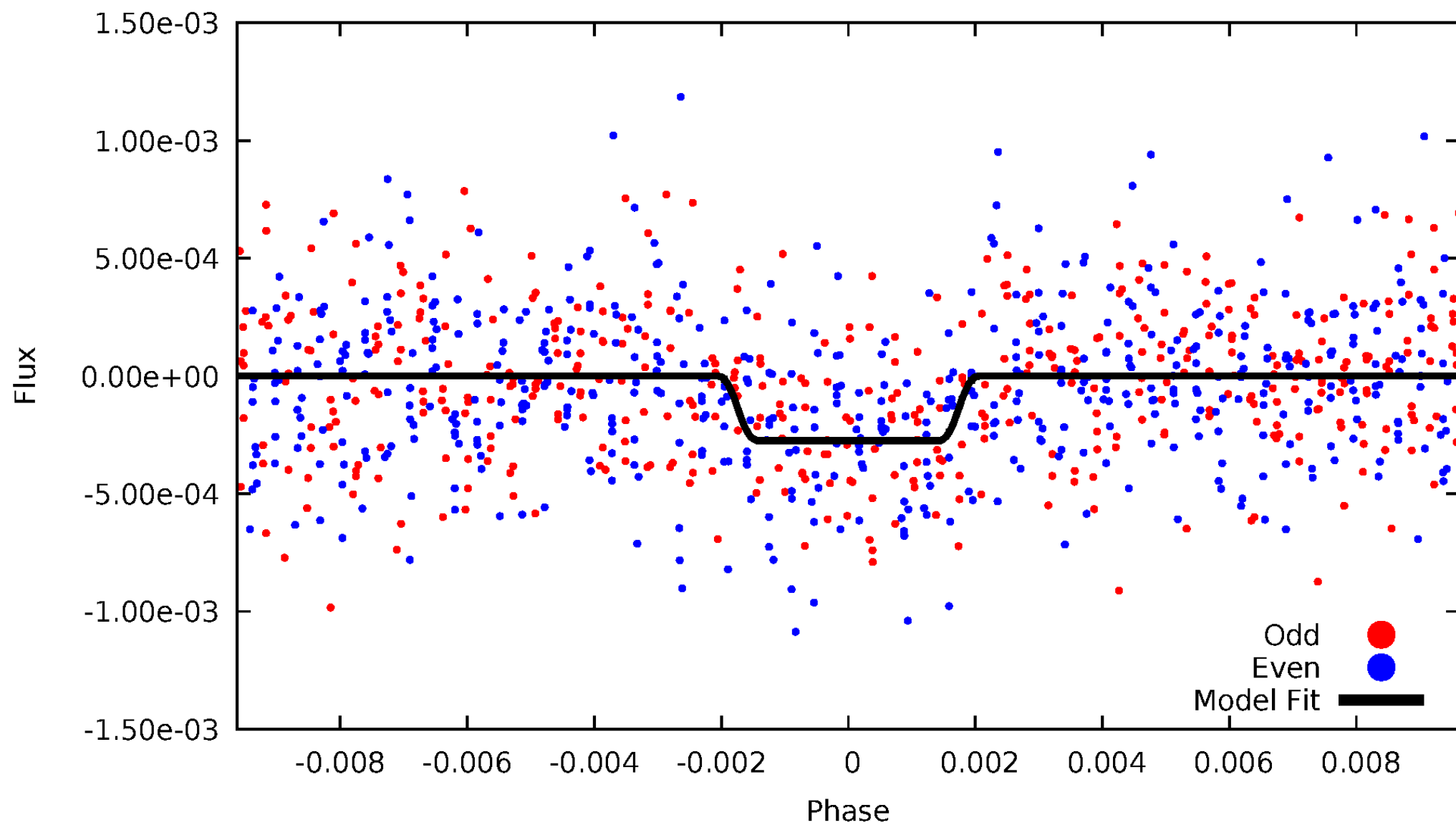
# DV Odd/Even

TCE 010933306-01



# ALT Odd/Even

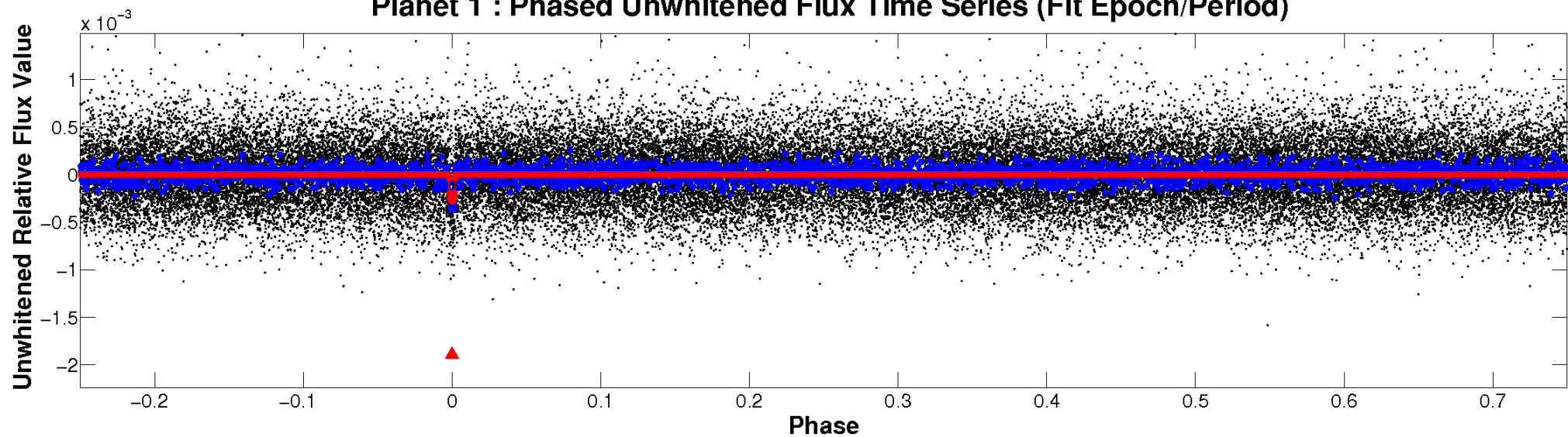
TCE 010933306-01



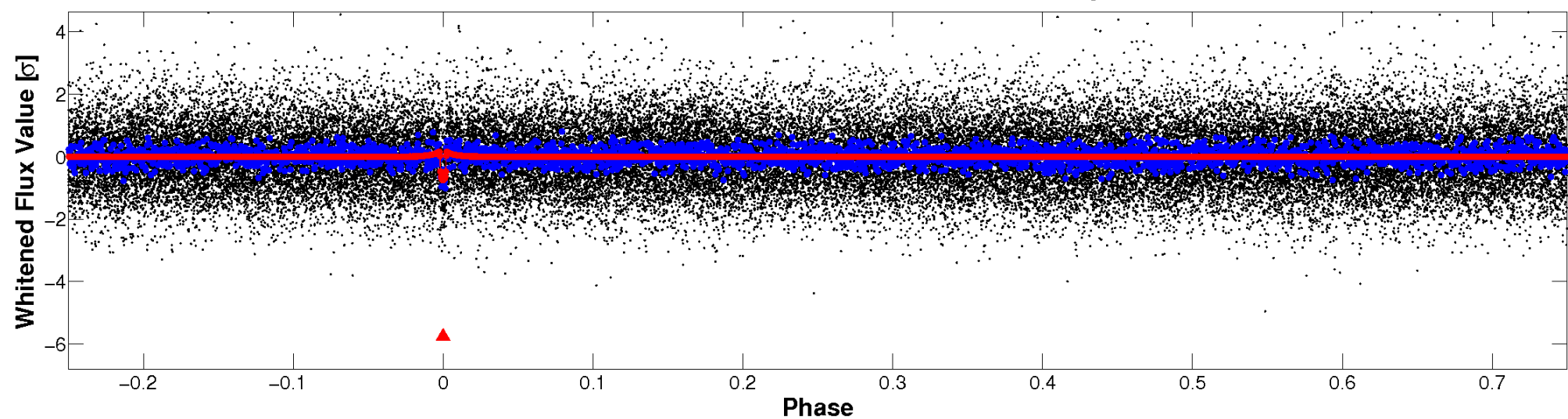


# Non-Whitened Vs. Whitened Light Curve

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

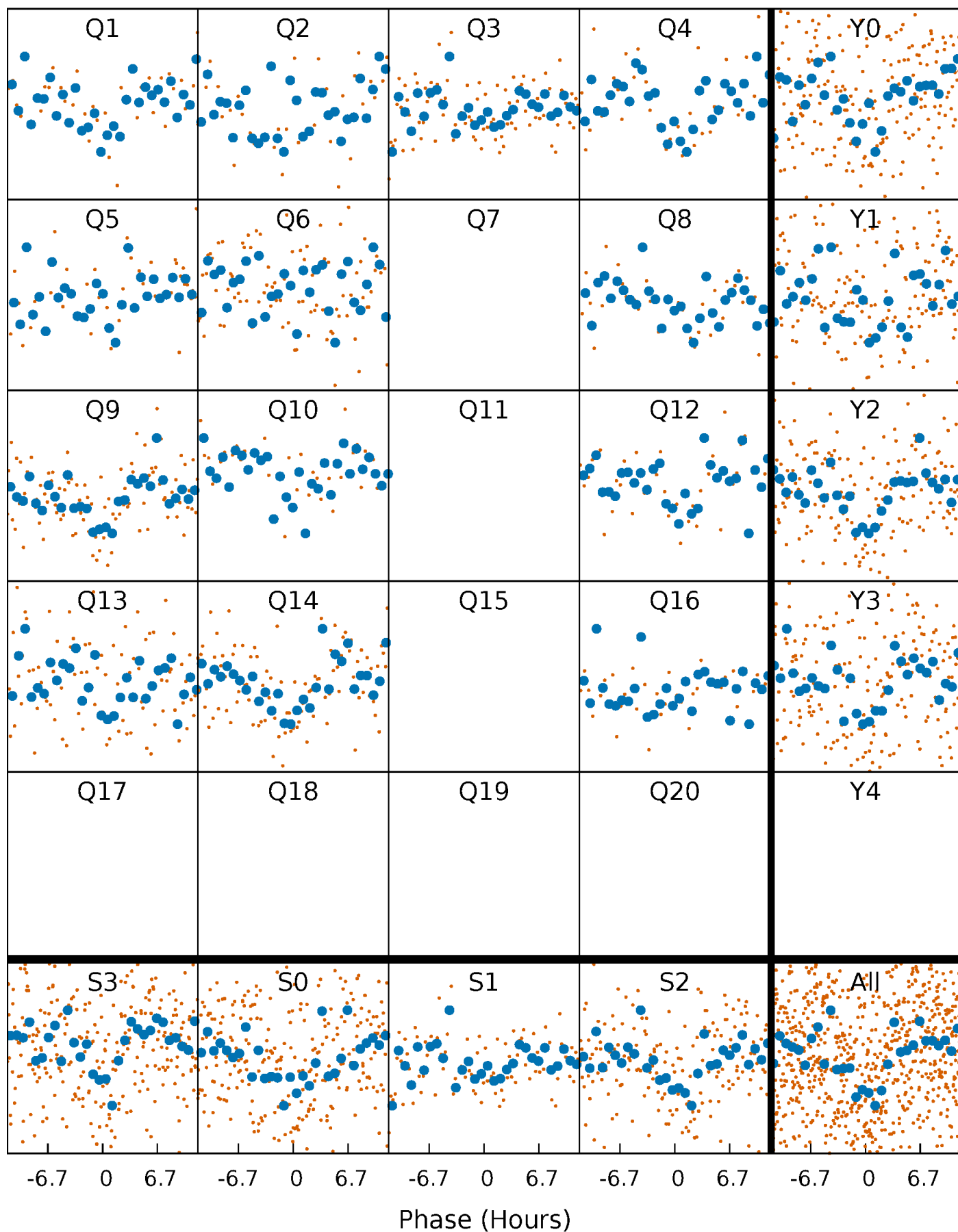


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

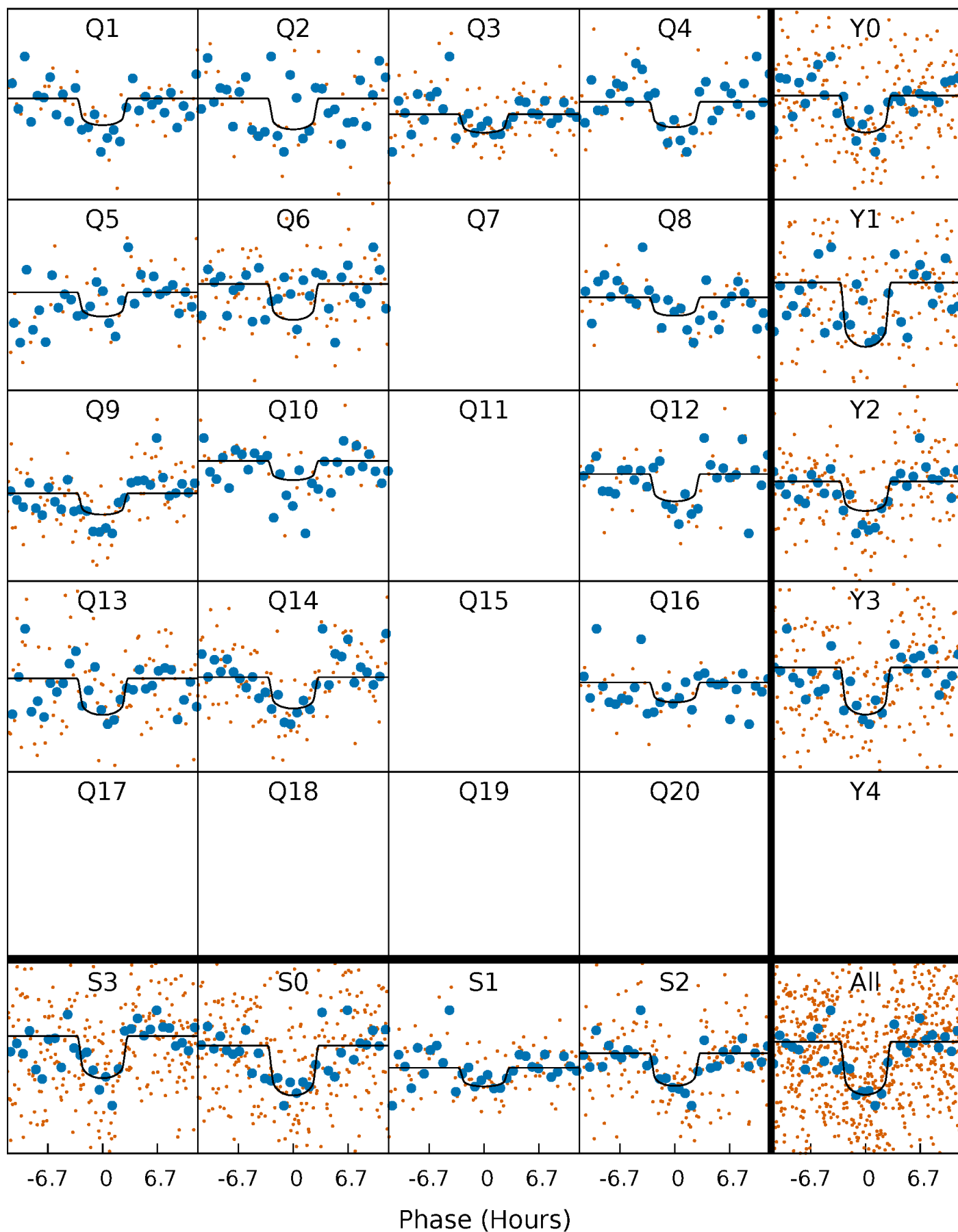
TCE 010933306-01 P= 57.774253 Days  $T_0=154.282969$  (BKJD)





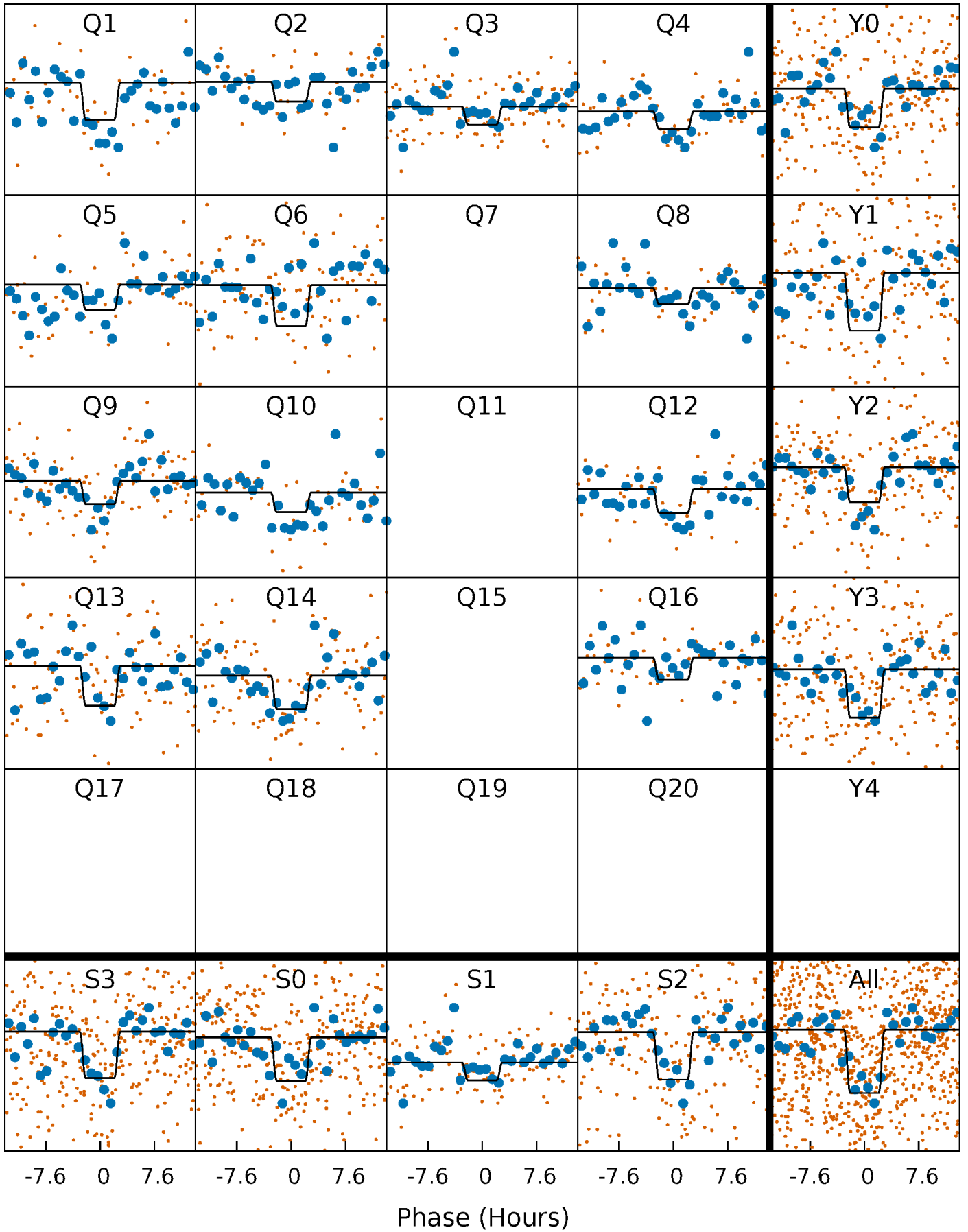
# DV Quarter-Phased Transit Curves

TCE 010933306-01 P= 57.774253 Days  $T_0=154.282969$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

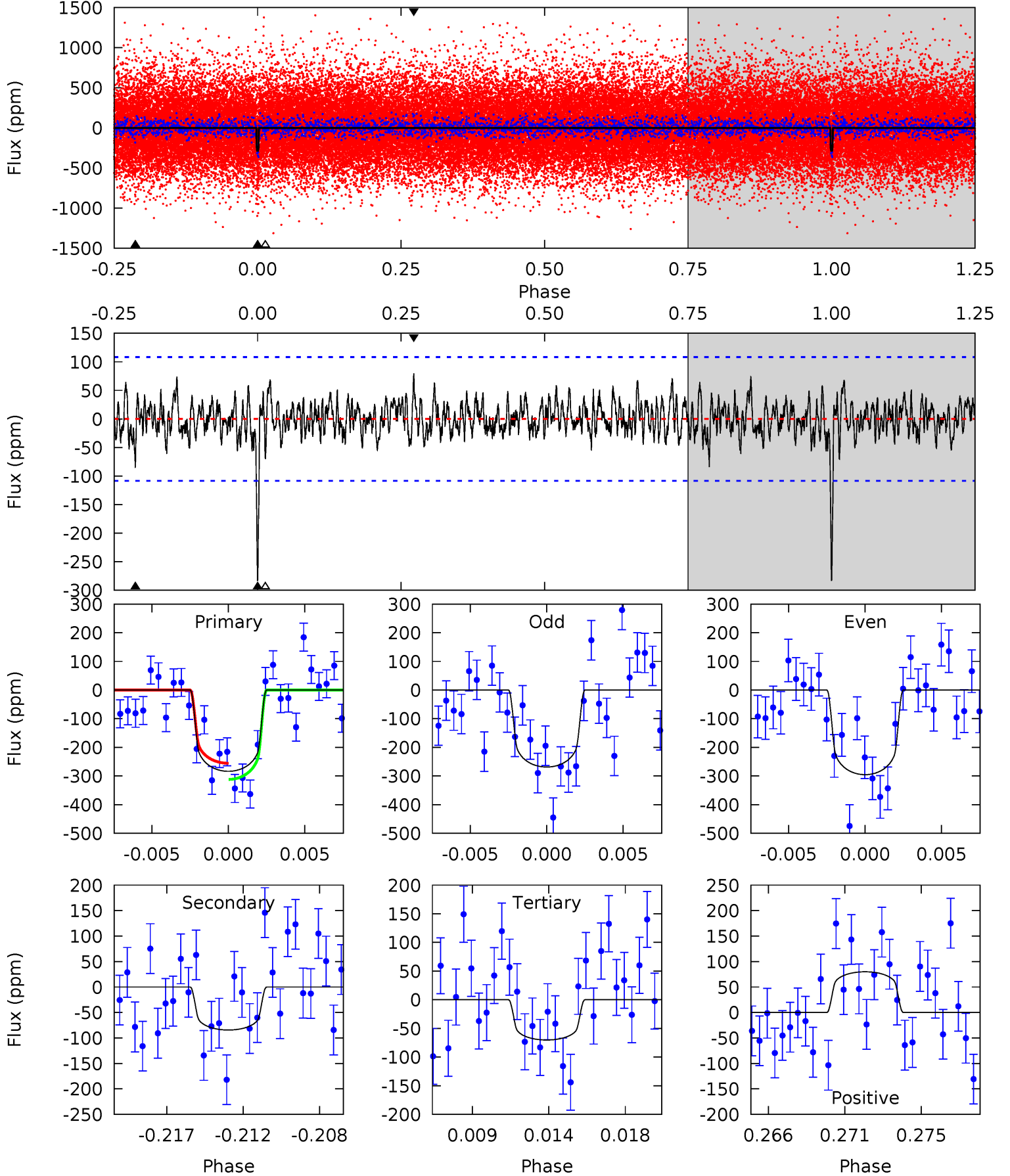
TCE 010933306-01 P= 57.775871 Days  $T_0=154.265689$  (BKJD)



# DV Model-Shift Uniqueness Test

010933306-01, P = 57.774253 Days, E = 96.508716 Days

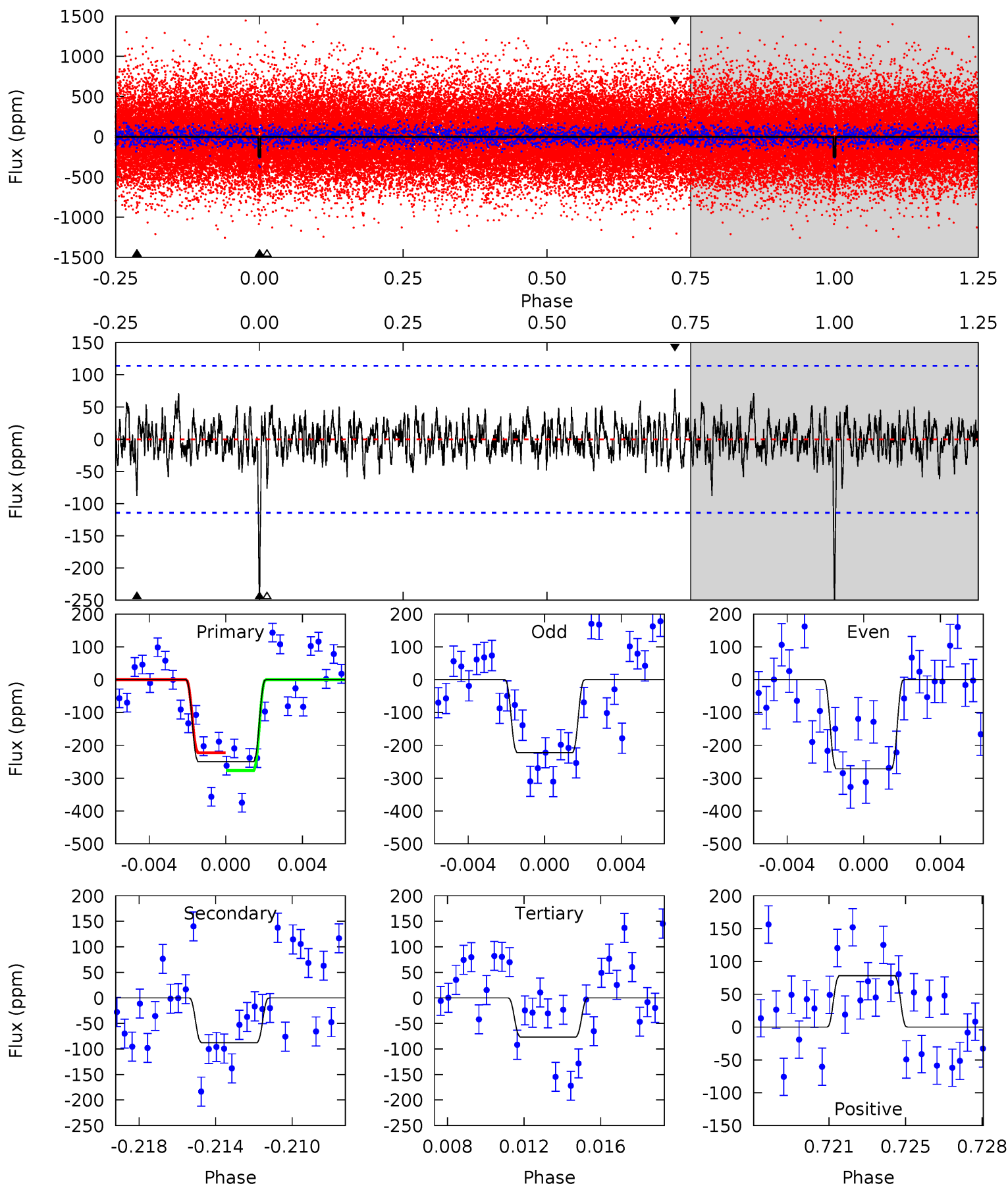
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	4.03	3.35	3.82	5.18	2.84	1.15	10.2	9.74	0.68	0.21	0.63	0.96	0.22	1.35



# Alt Model-Shift Uniqueness Test

010933306-01, P = 57.775871 Days, E = 96.489818 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
11.4	4.00	3.49	3.57	5.20	2.88	1.00	7.91	7.82	0.51	0.43	1.11	0.92	0.24	1.23



### Stellar Parameters For KIC 010933306

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6277^{+174}_{-239}$	$4.417^{+0.065}_{-0.208}$	$-0.020^{+0.250}_{-0.300}$	$1.097^{+0.346}_{-0.123}$	$1.148^{+0.159}_{-0.159}$	$1.223^{+0.357}_{-0.659}$
	+3%/-4%	+1%/-5%	+1250%/-1500%	+32%/-11%	+14%/-14%	+29%/-54%
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 010933306-01 / KOI 5842.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-84 \pm 21$	$2.13^{+1.02}_{-0.90}$	$742^{+52}_{-37}$	$4711^{+1407}_{-684}$	$926^{+2016}_{-537}$
Alt.	$-88 \pm 22$	$2.02^{+1.09}_{-0.86}$	$745^{+52}_{-38}$	$4840^{+1430}_{-730}$	$1077^{+2084}_{-648}$

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

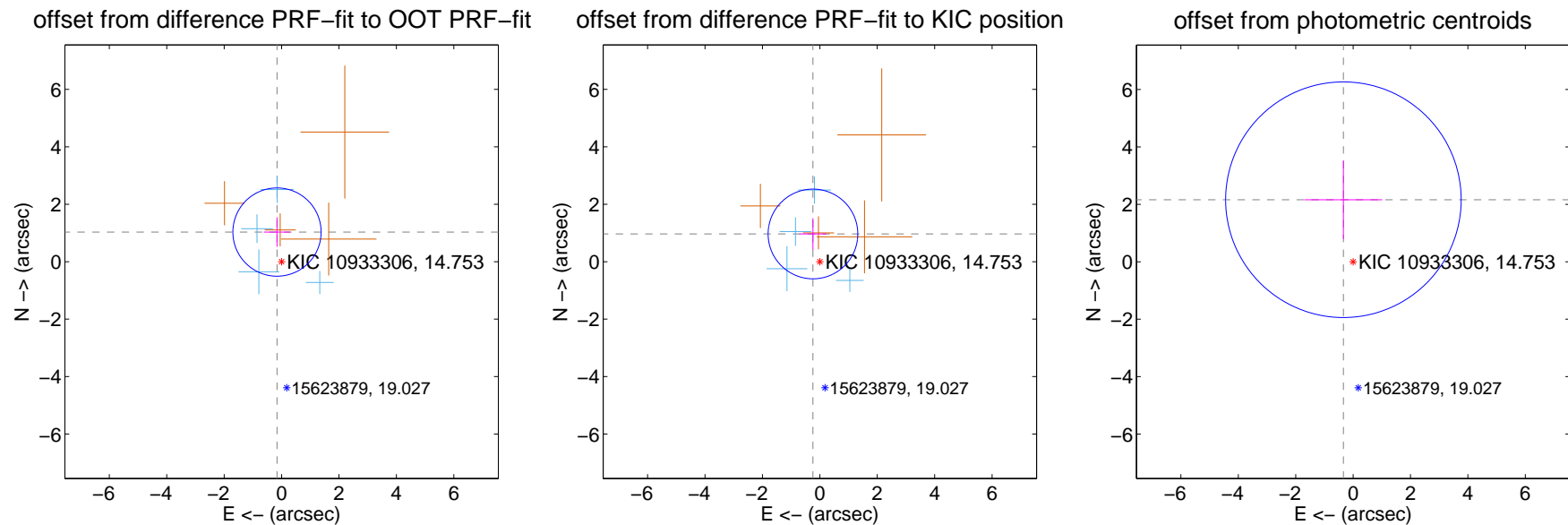
## DV Centroid Data

Supplemental centroid analysis for 010933306-01. Kepler magnitude: 14.75. Transit SNR 9.41

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

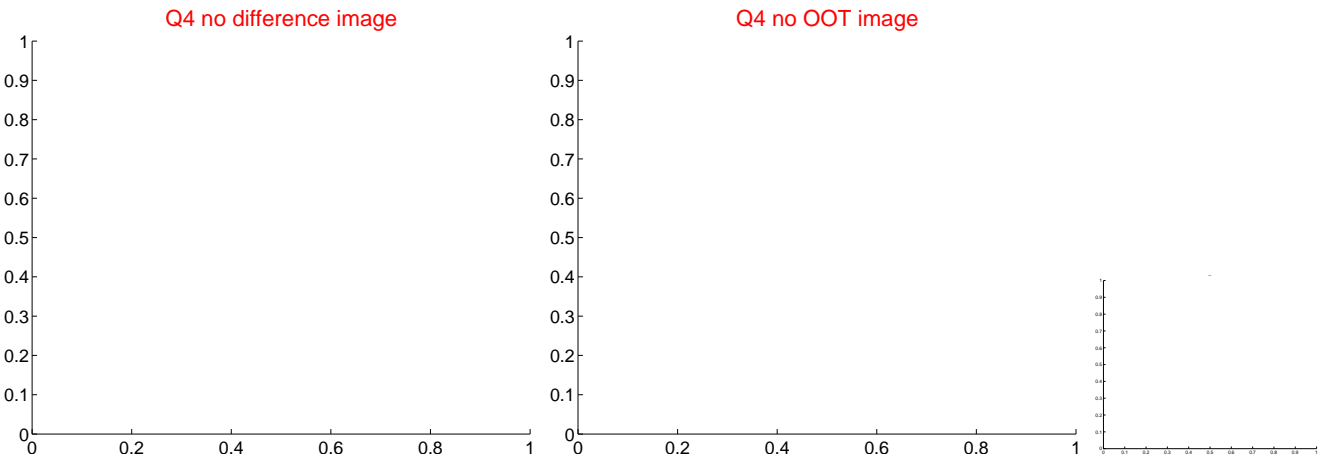
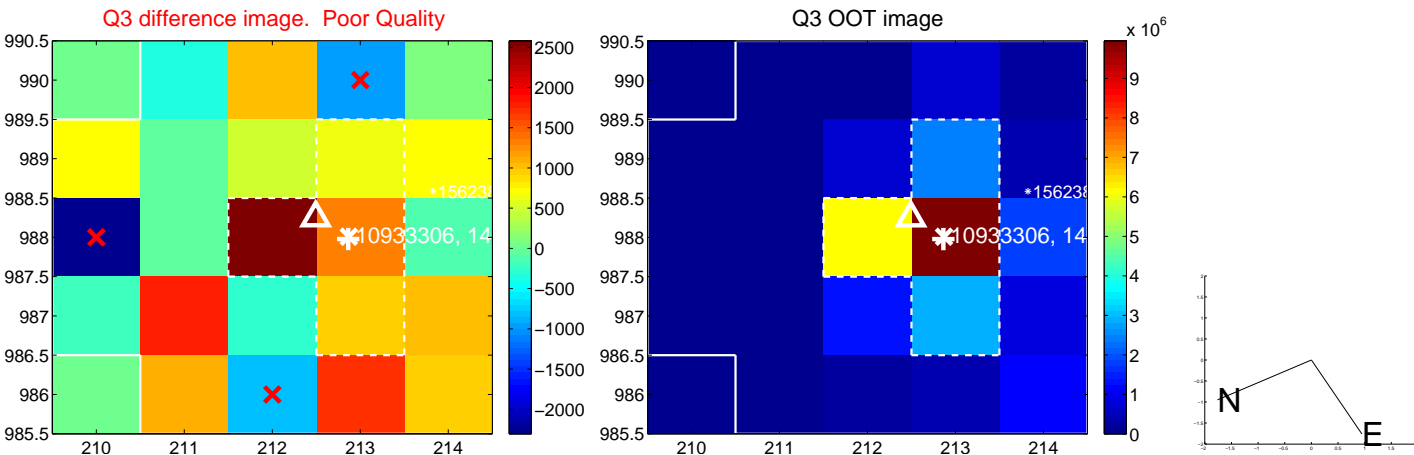
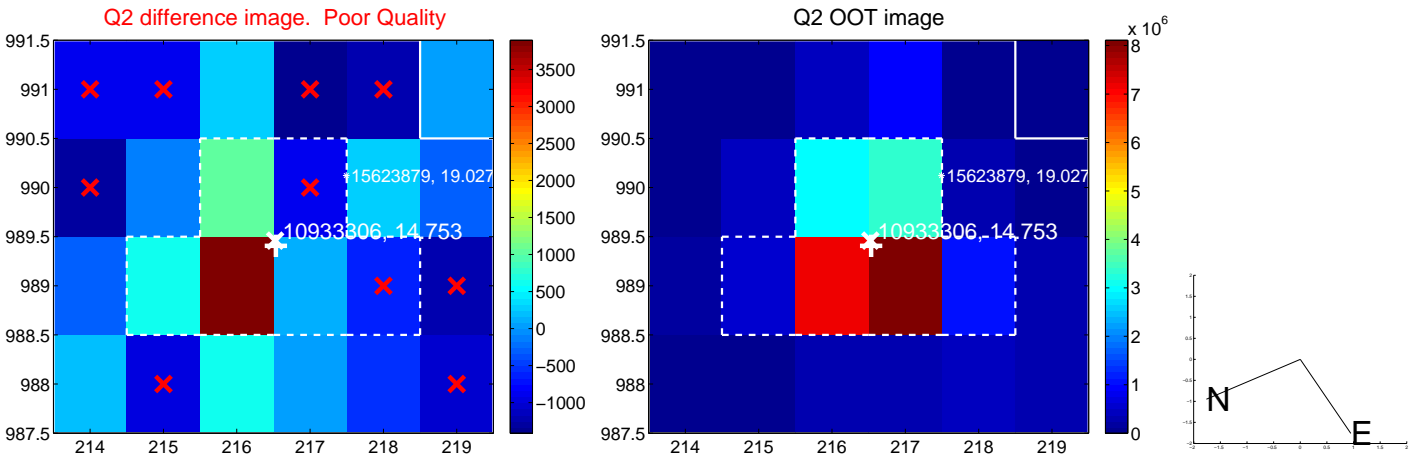
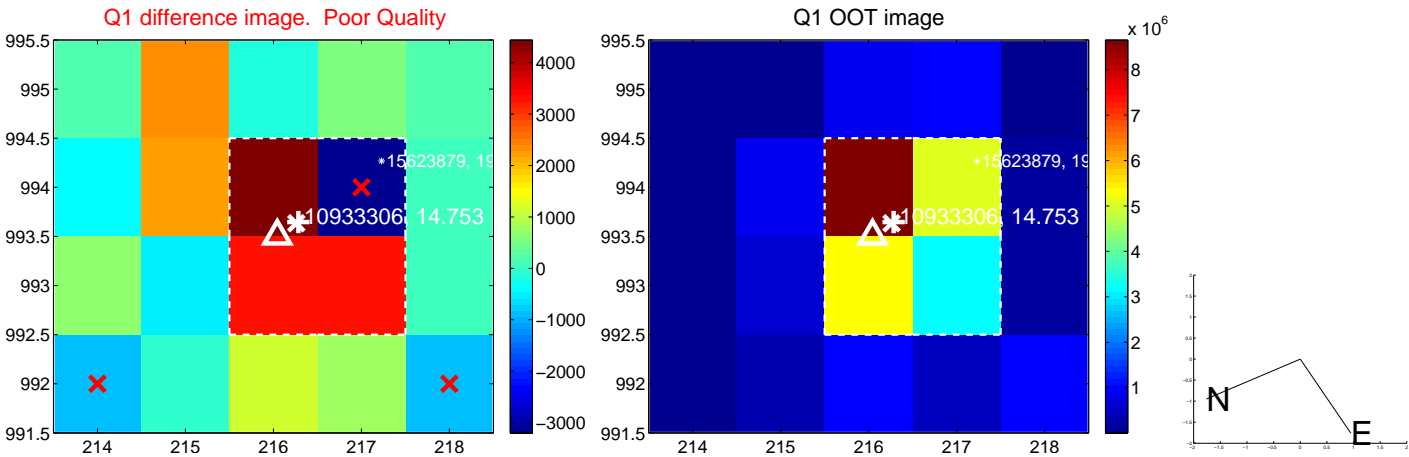
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.044 \pm 0.512$	2.04	$0.160 \pm 0.458$	$1.031 \pm 0.513$
PRF-fit source offset from KIC position	$0.995 \pm 0.521$	1.91	$0.240 \pm 0.471$	$0.965 \pm 0.549$
photometric centroid source offset	$2.19 \pm 1.37$	1.60	$0.34 \pm 1.36$	$2.16 \pm 1.37$



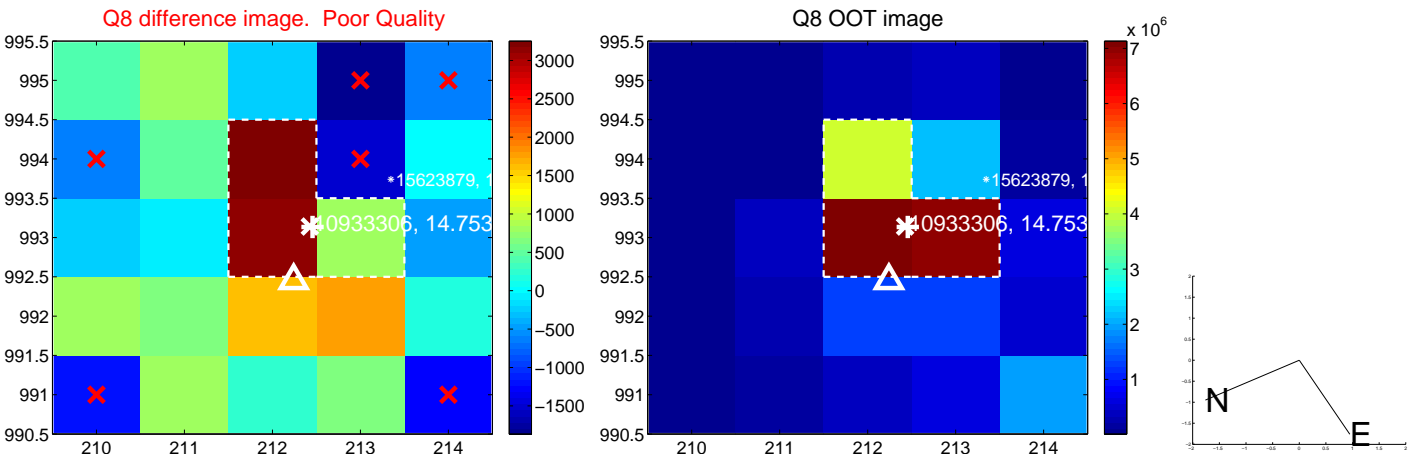
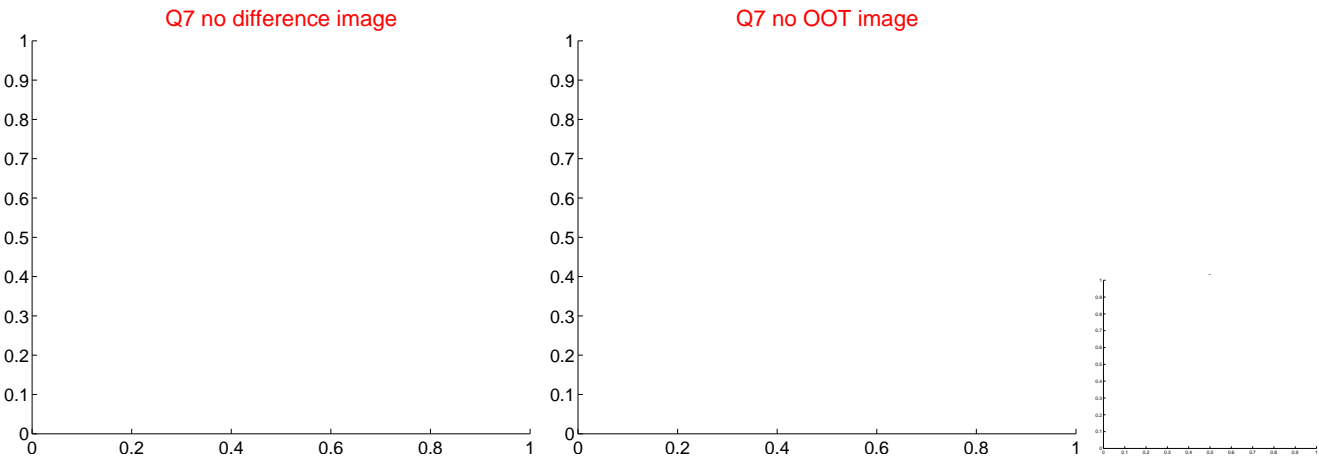
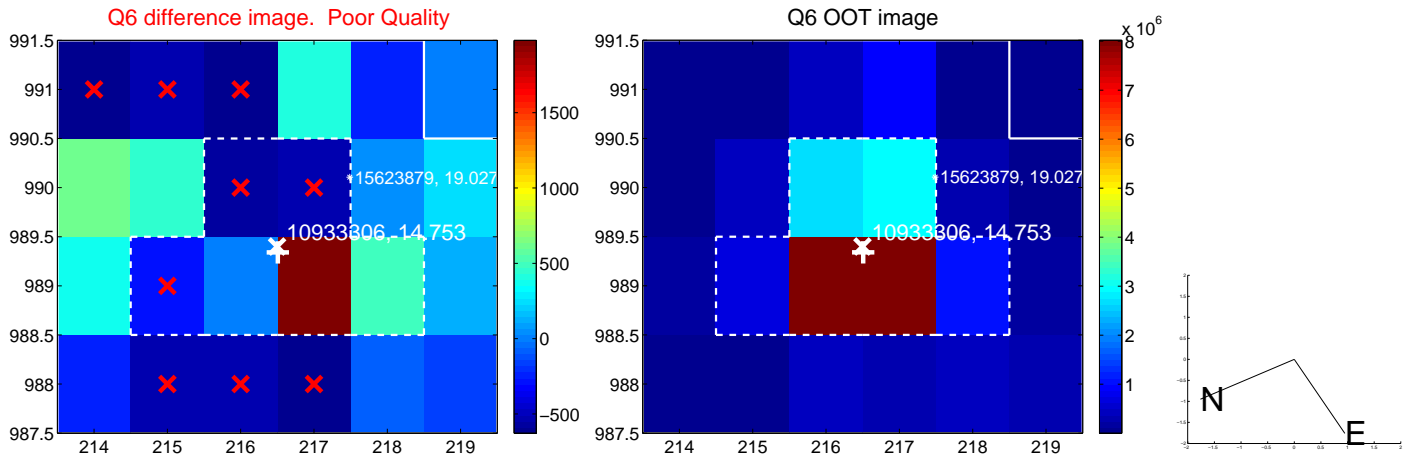
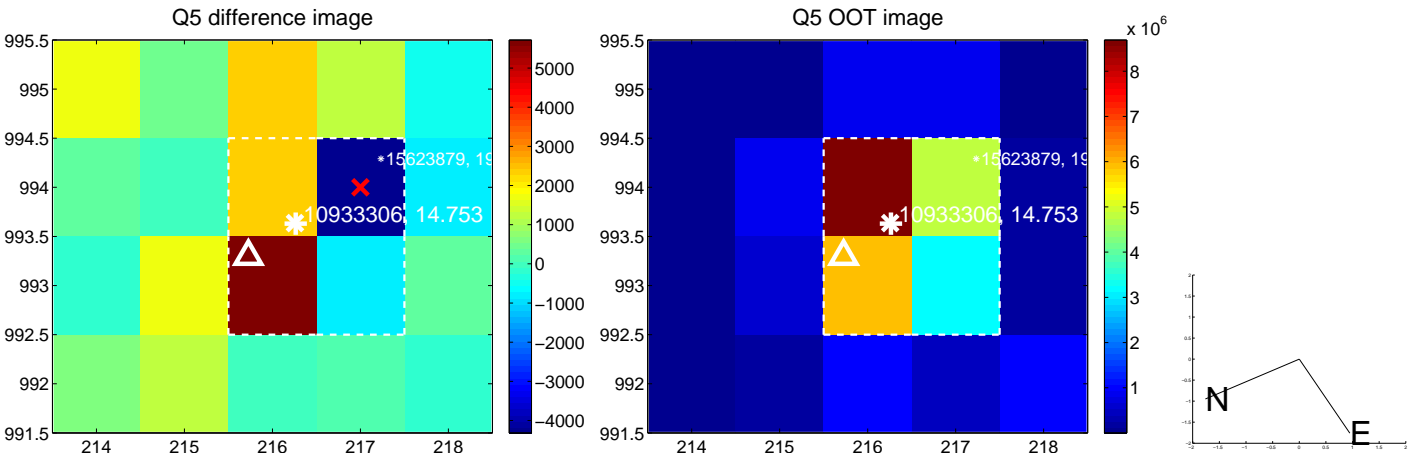
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



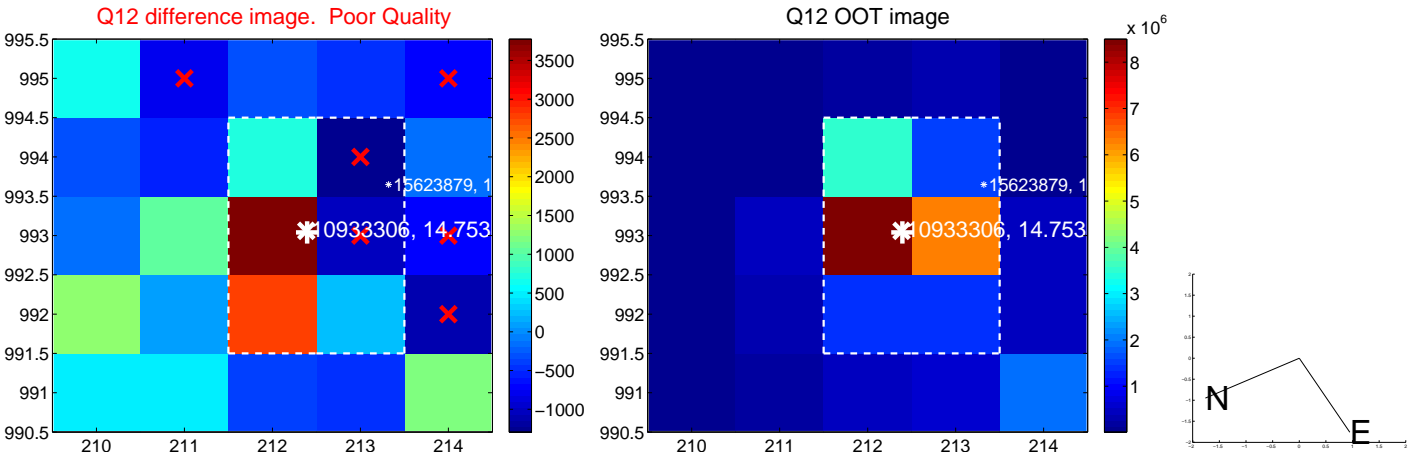
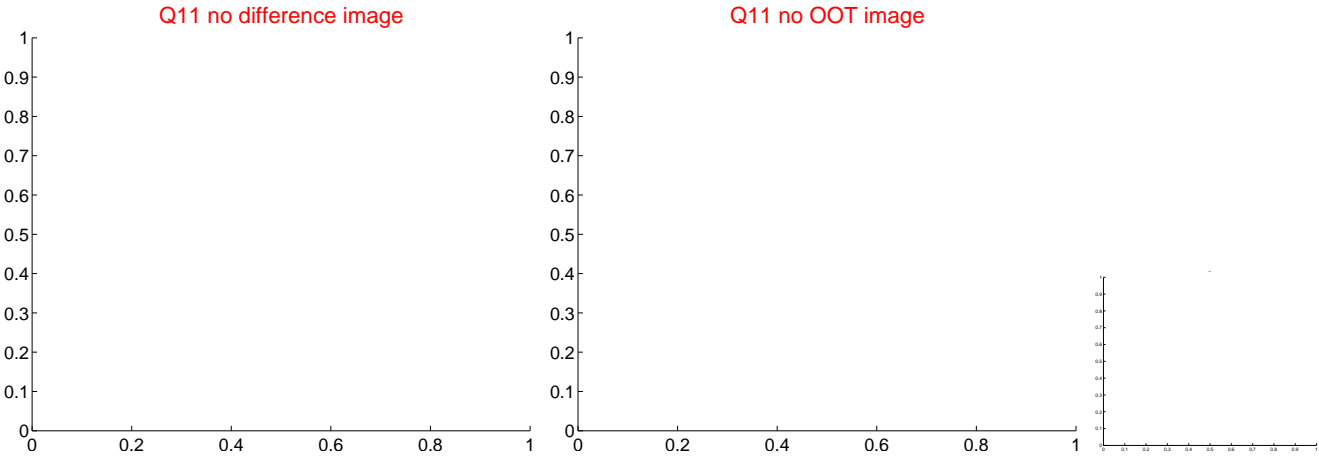
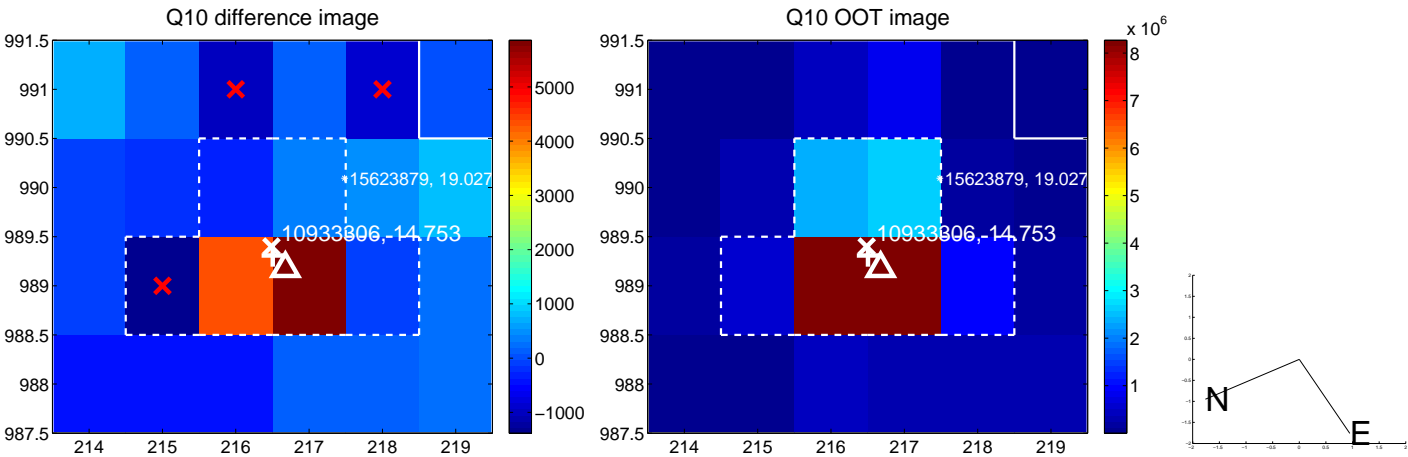
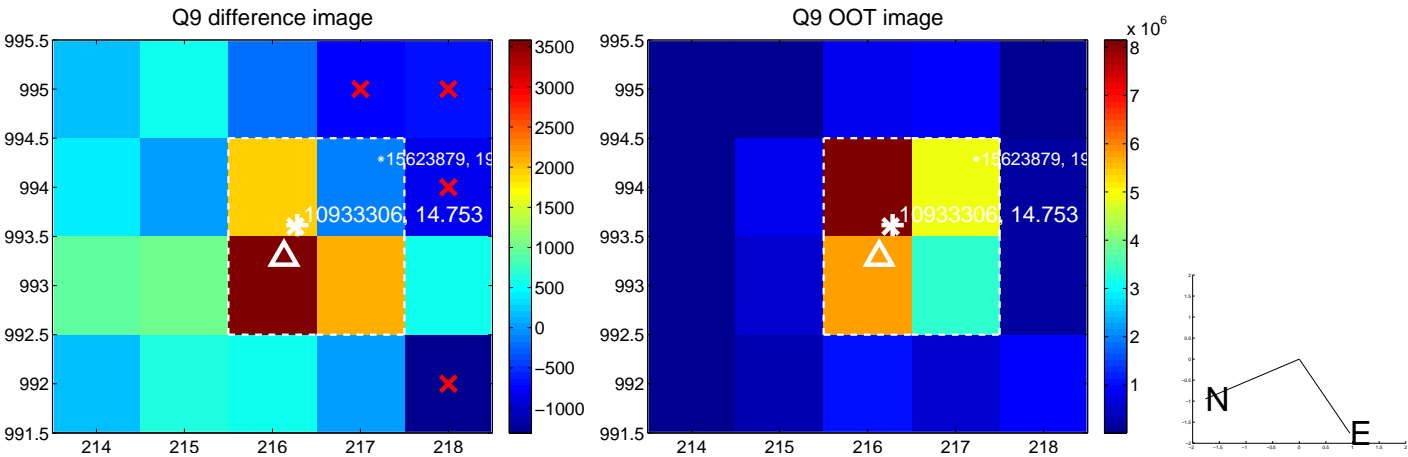
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



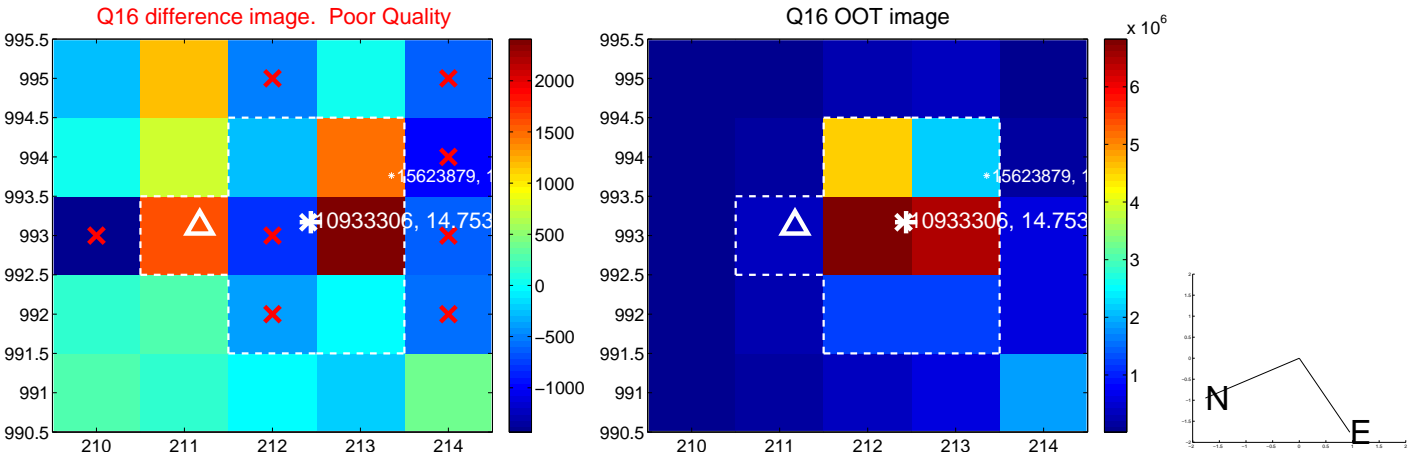
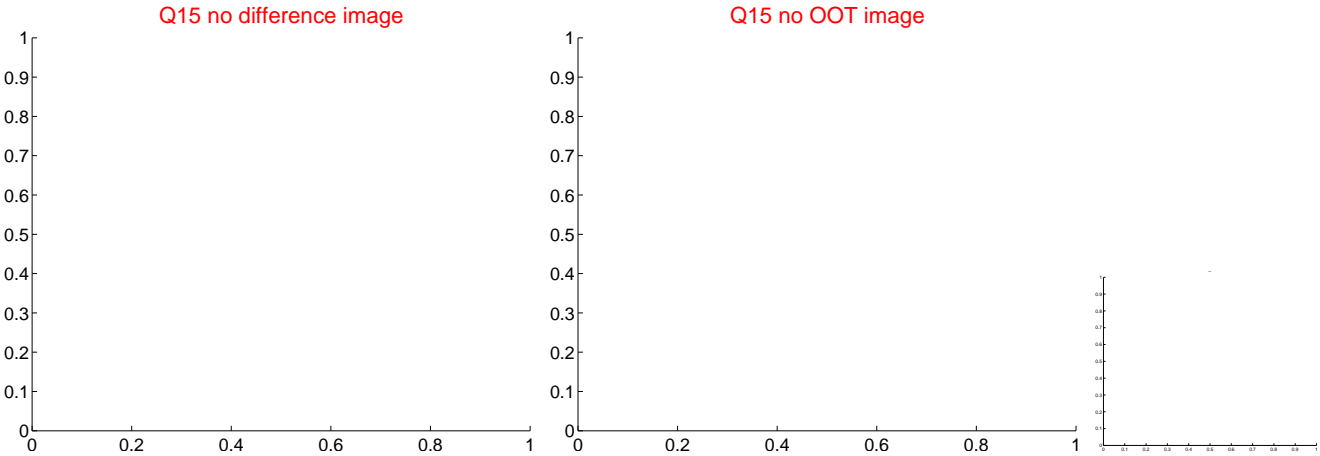
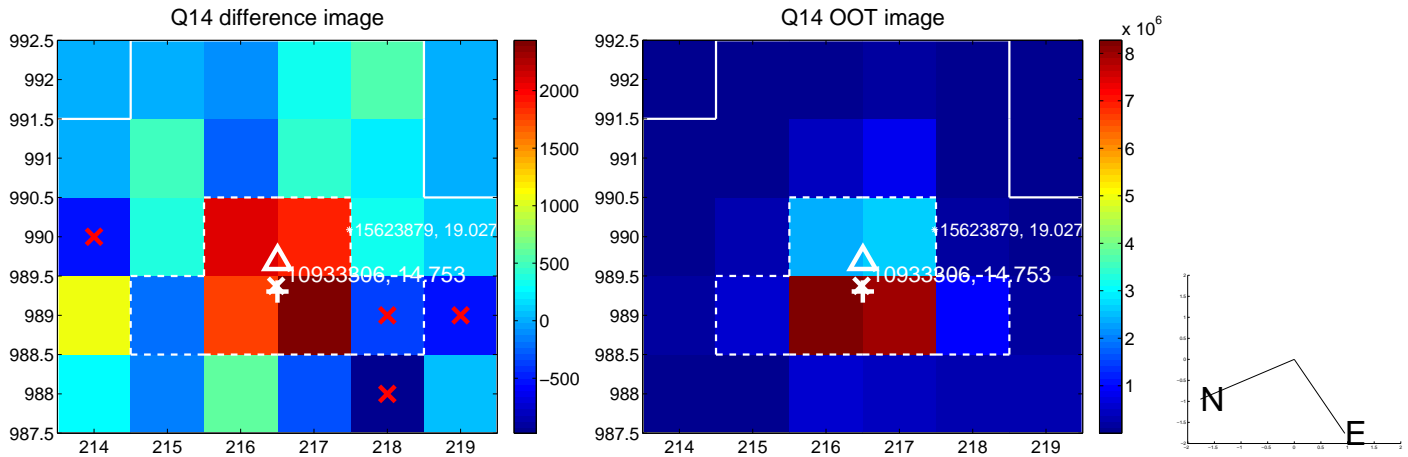
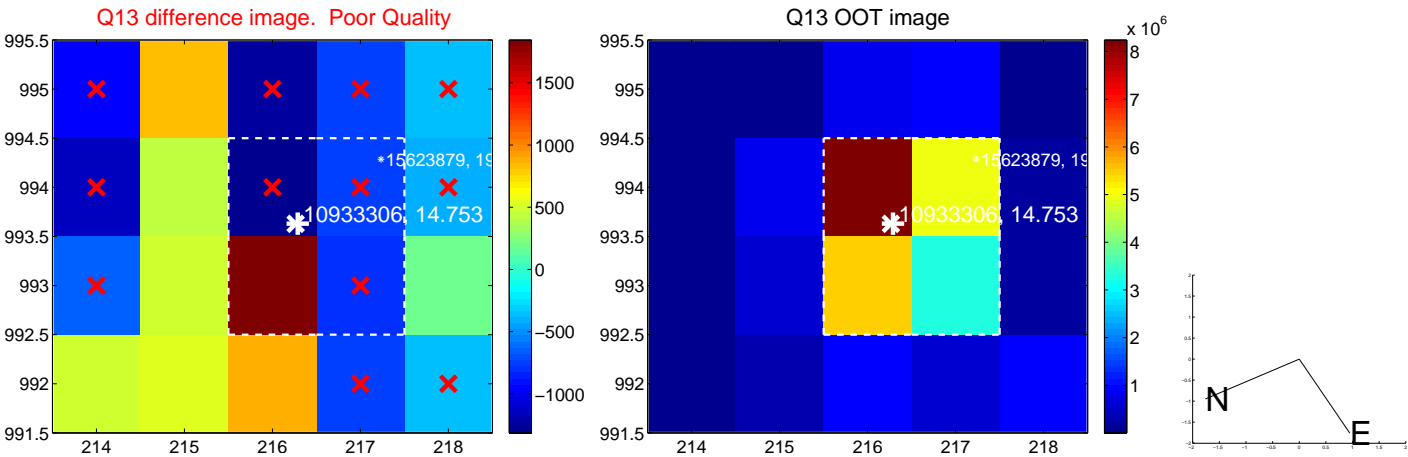
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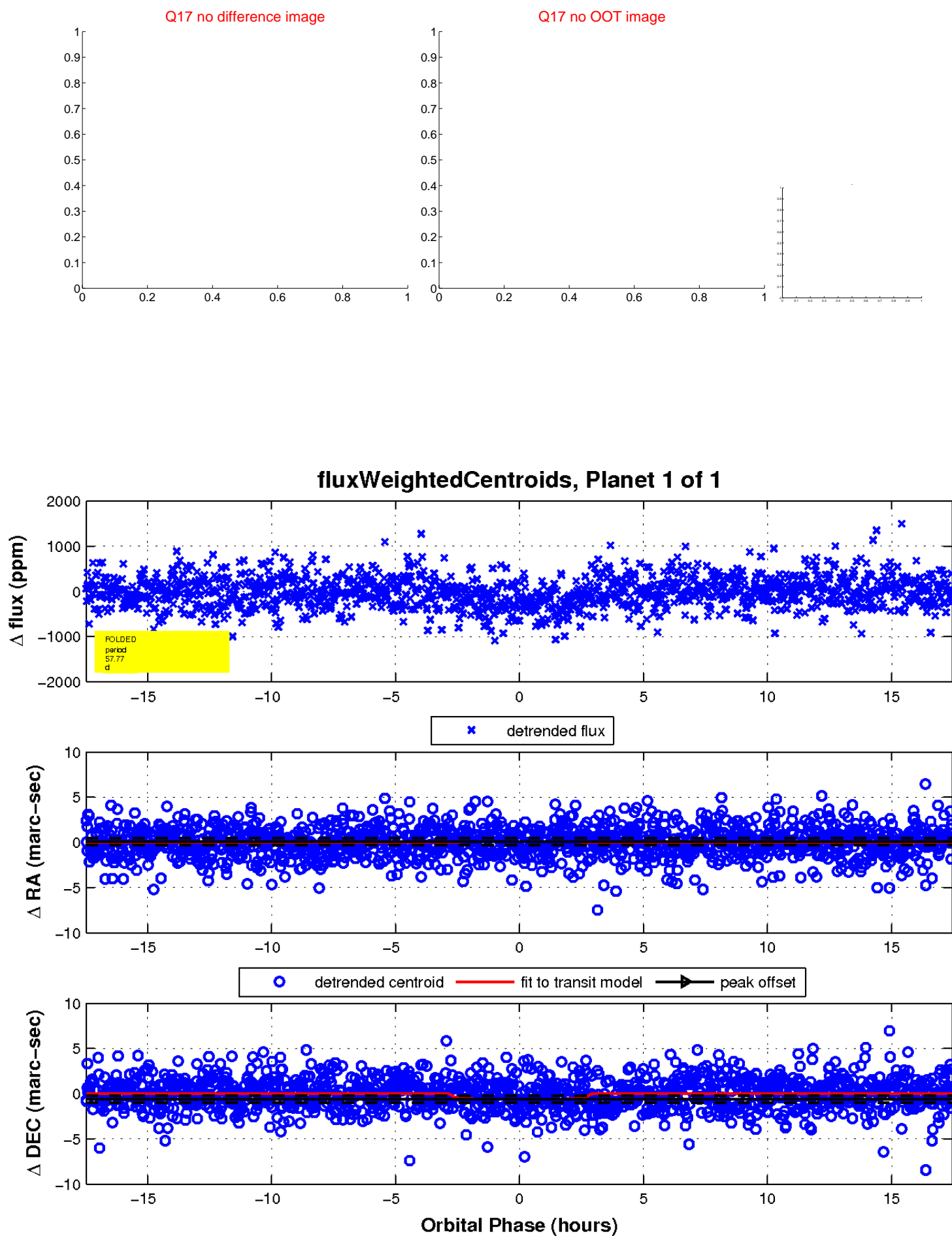
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

