

# KIC 006497146

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006497146-01	OBS	3284.01	35.233217	135.360364	369.1	3.848	11.9	13.1	0.52	3749	1.15	1.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006497146-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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.

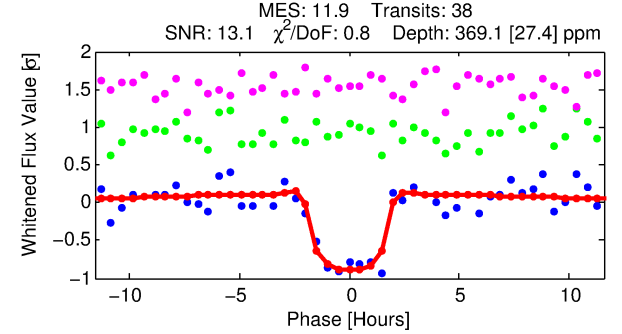
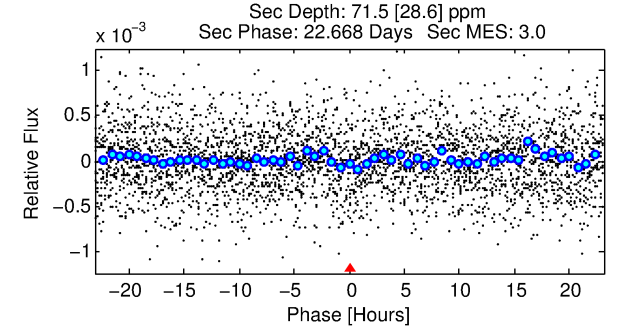
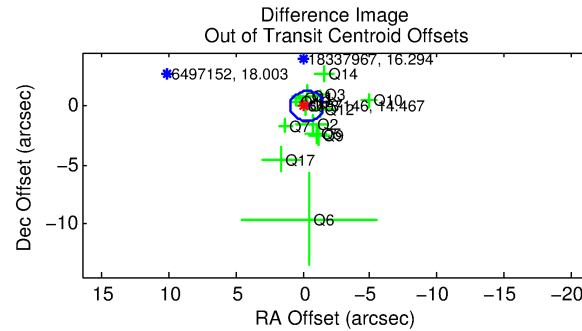
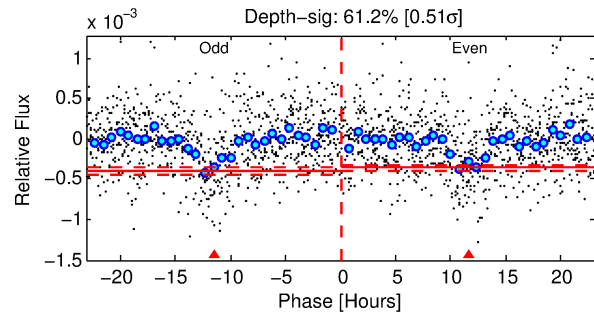
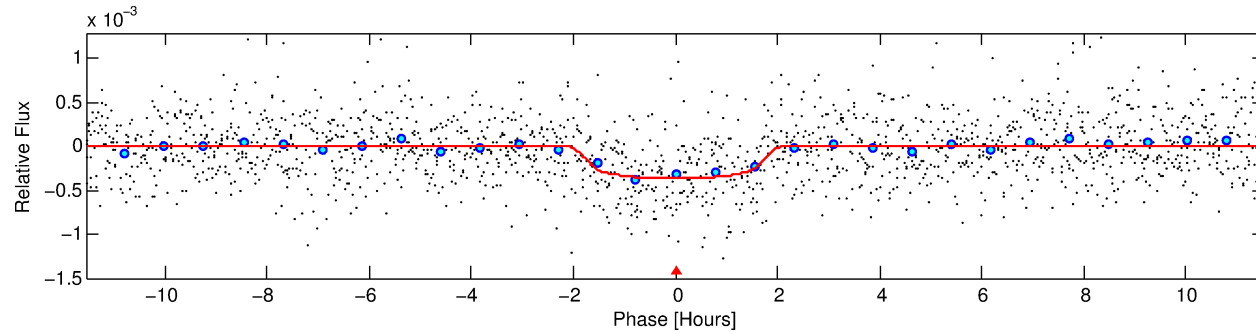
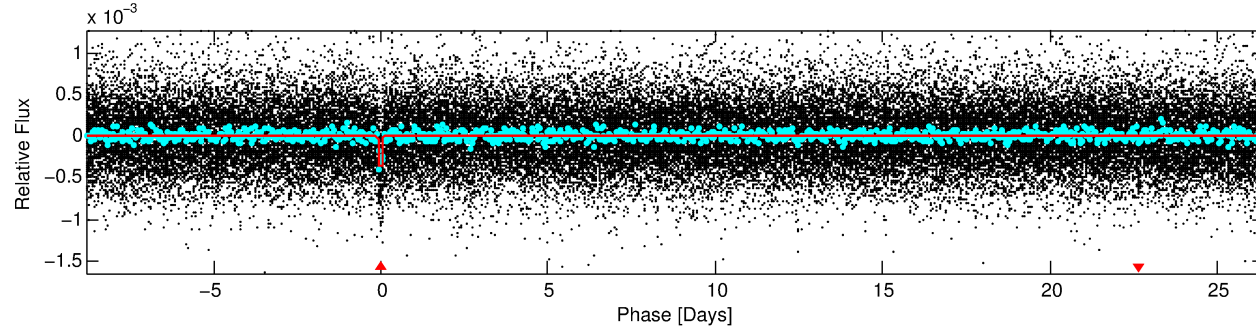
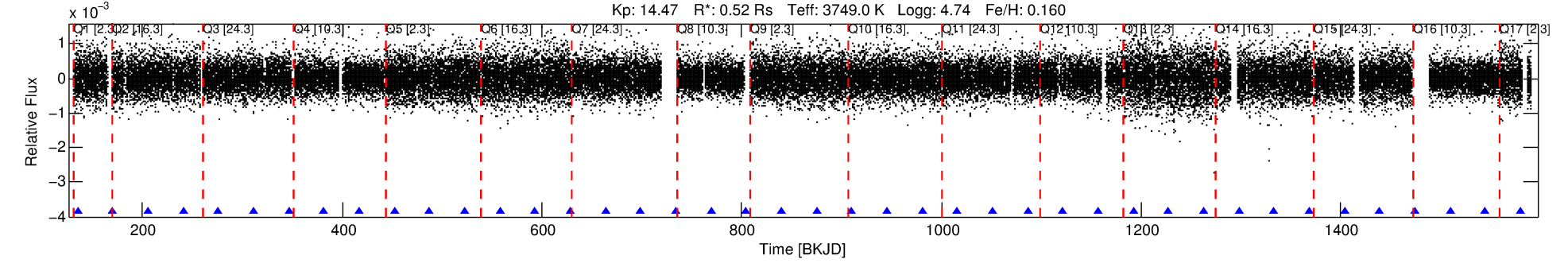
## Ephemeris Match Information For 006497146-01

No Significant Match Found

# DV One-Page Summary

KIC: 6497146 Candidate: 1 of 1 Period: 35.233 d  
KOI: K03284.01 Name: Kepler-438b Corr: 0.988

Kp: 14.47 R\*: 0.52 Rs Teff: 3749.0 K Logg: 4.74 Fe/H: 0.160



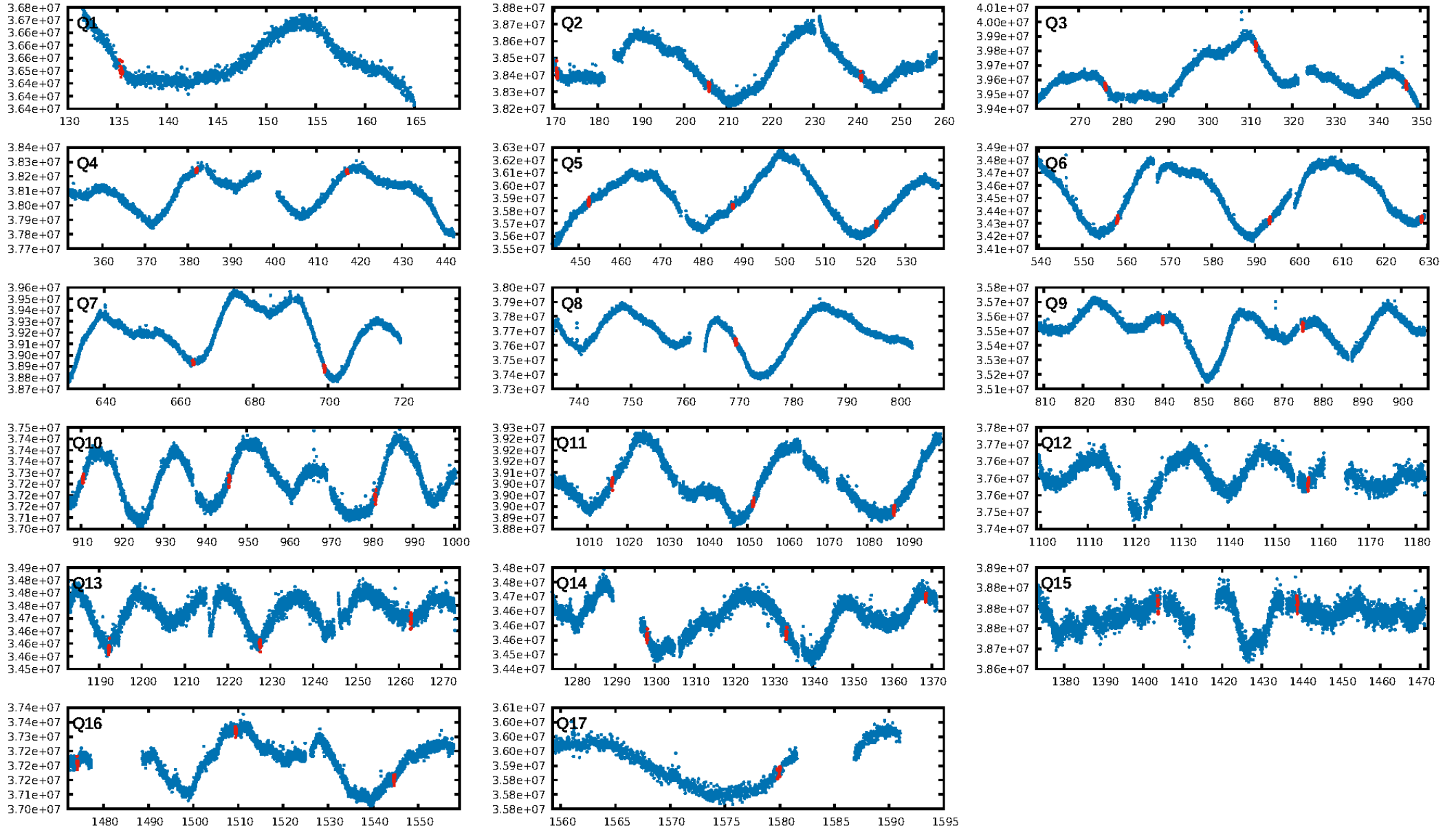
## DV Fit Results:

Period = 35.23322 [0.00023] d  
Epoch = 135.3604 [0.0056] BKJD  
Rp/R\* = 0.0201 [0.0101]  
a/R\* = 40.54 [83.09]  
b = 0.84 [0.73]  
Seff = 1.63 [0.18]  
Teq = 288 [8] K  
Rp = 1.15 [0.58] Re  
a = 0.1728 [0.0092] AU  
Ag = 890.43 [965.44] [0.92σ]  
Teffp = 2432 [660] K [3.25σ]

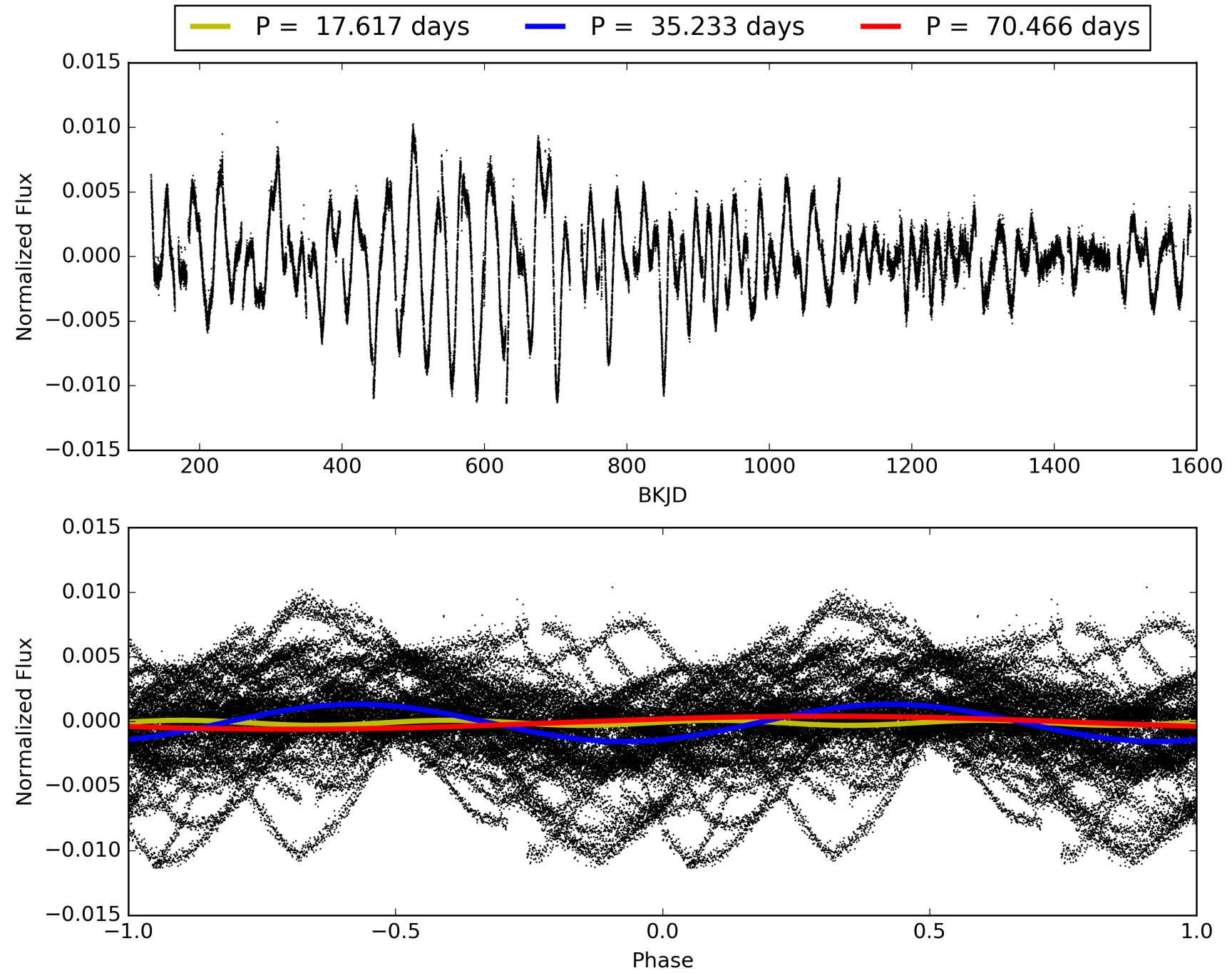
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 87.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.04e-32  
RollingBand-fgt: 1.00 [36/36]  
GhostDiagnostic-chr: 2.458  
Centroid-sig: 0.2%  
Centroid-so: 2.834 arcsec [3.29σ]  
OotOffset-rm: 0.281 arcsec [0.67σ]  
KicOffset-rm: 0.480 arcsec [1.14σ]  
OotOffset-st: 4/3/2/5 [14]  
KicOffset-st: 4/3/2/5 [14]  
DiffImageQuality-fgm: 0.43 [6/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006497146-01, PDC Light Curves

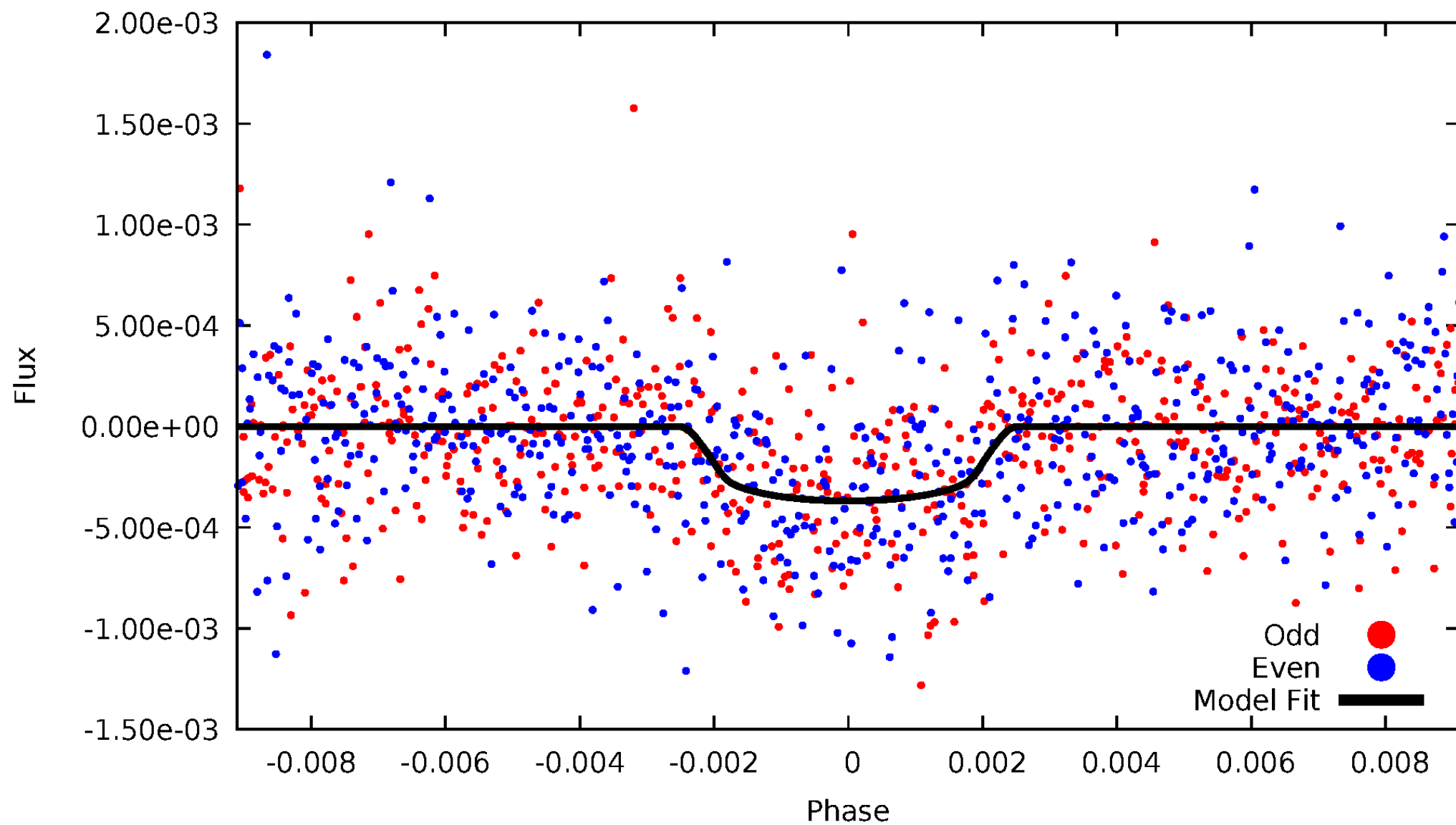


TCE 006497146-01



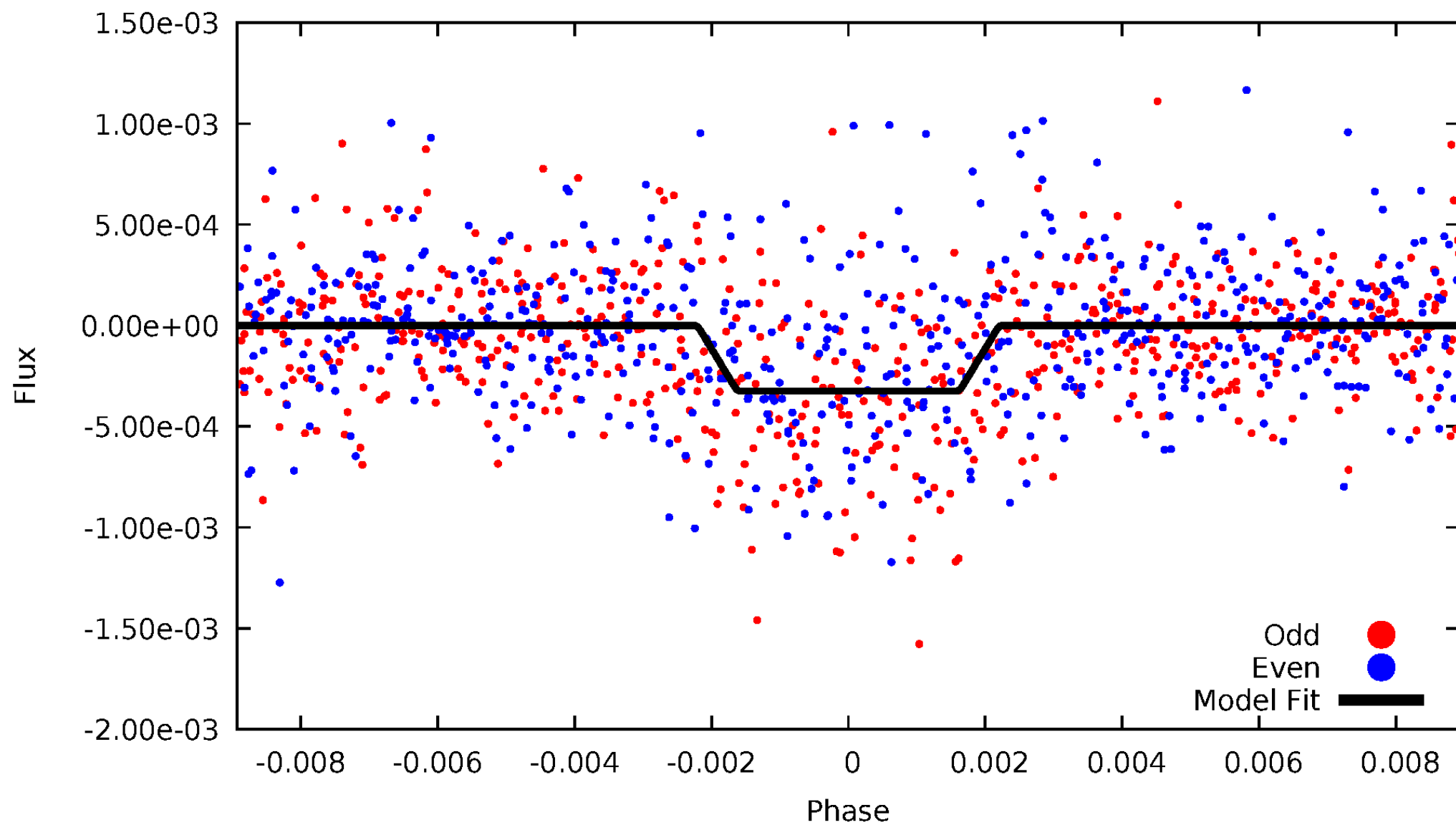
# DV Odd/Even

TCE 006497146-01



# ALT Odd/Even

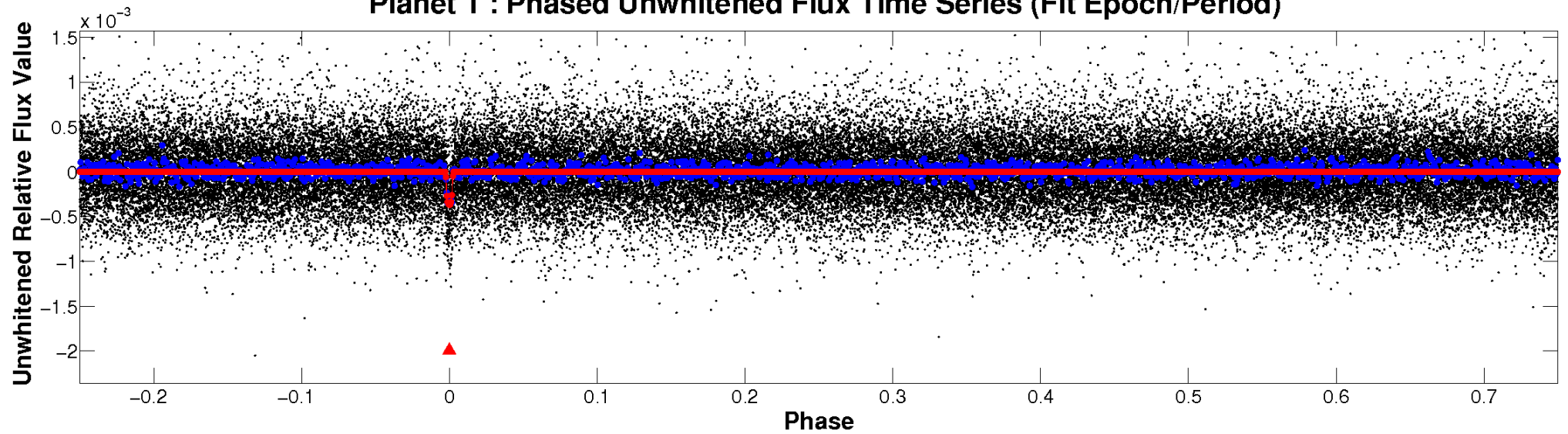
TCE 006497146-01



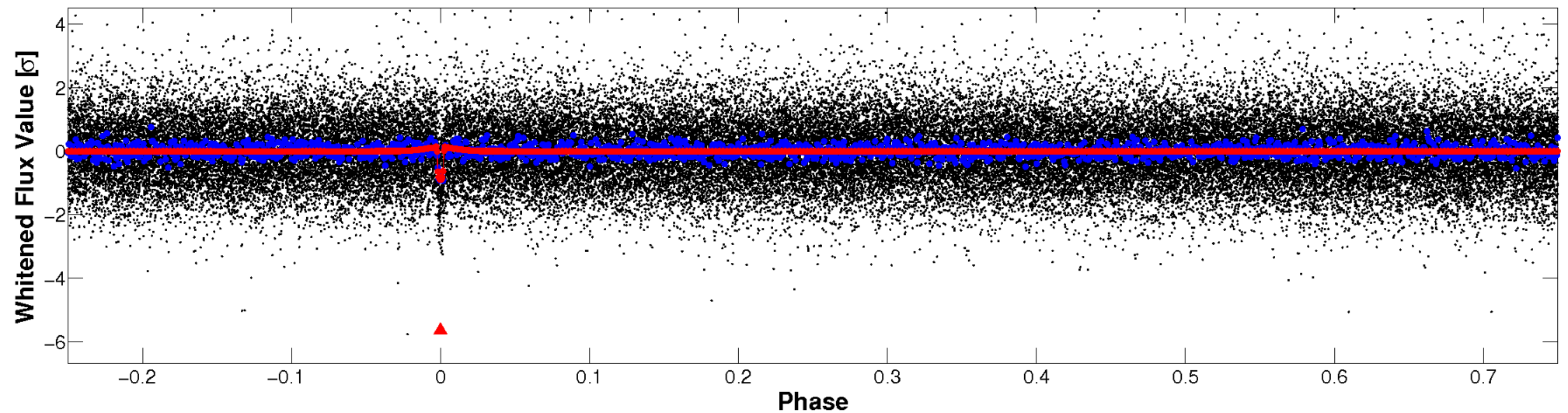


# Non-Whitened Vs. Whitened Light Curve

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

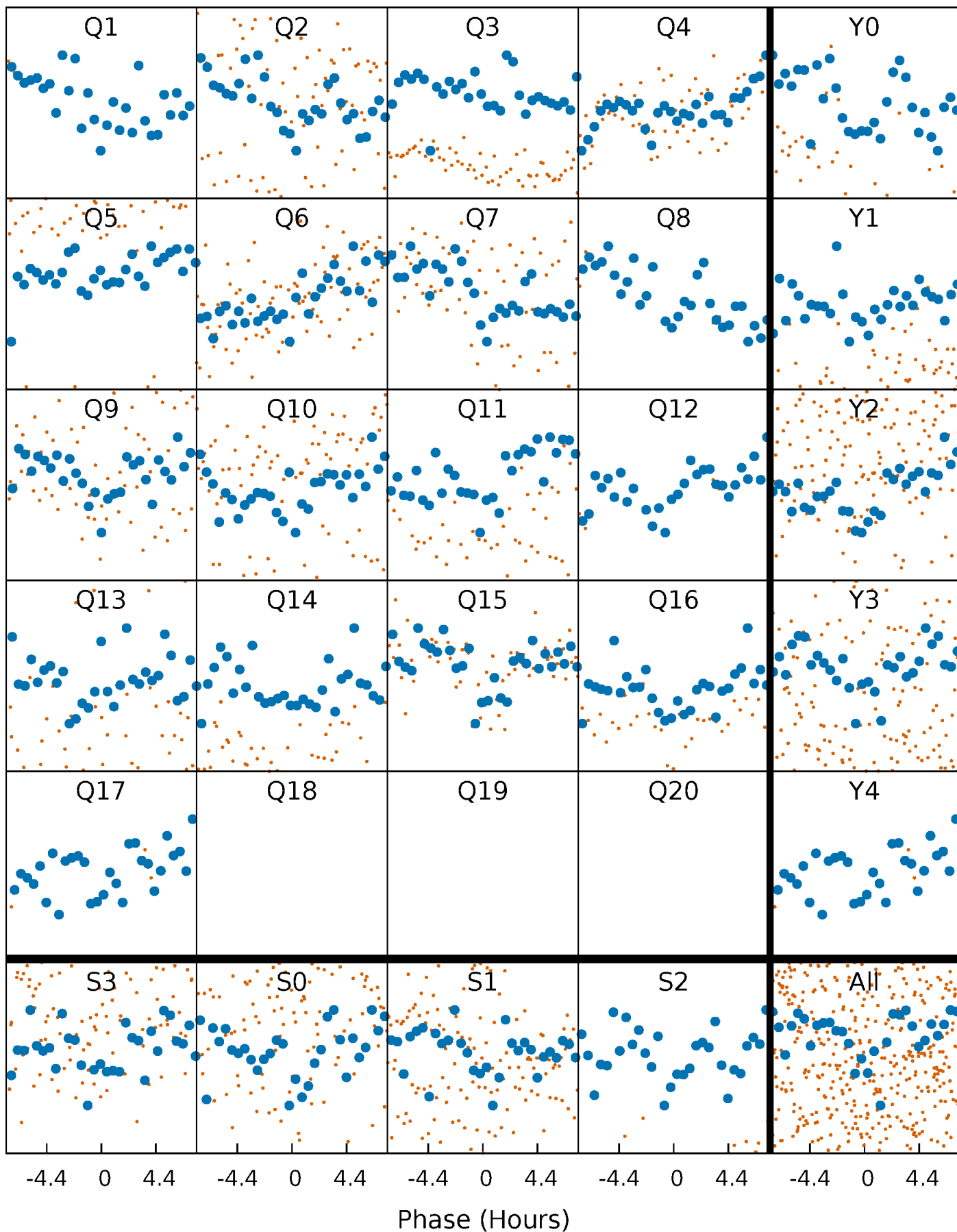


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

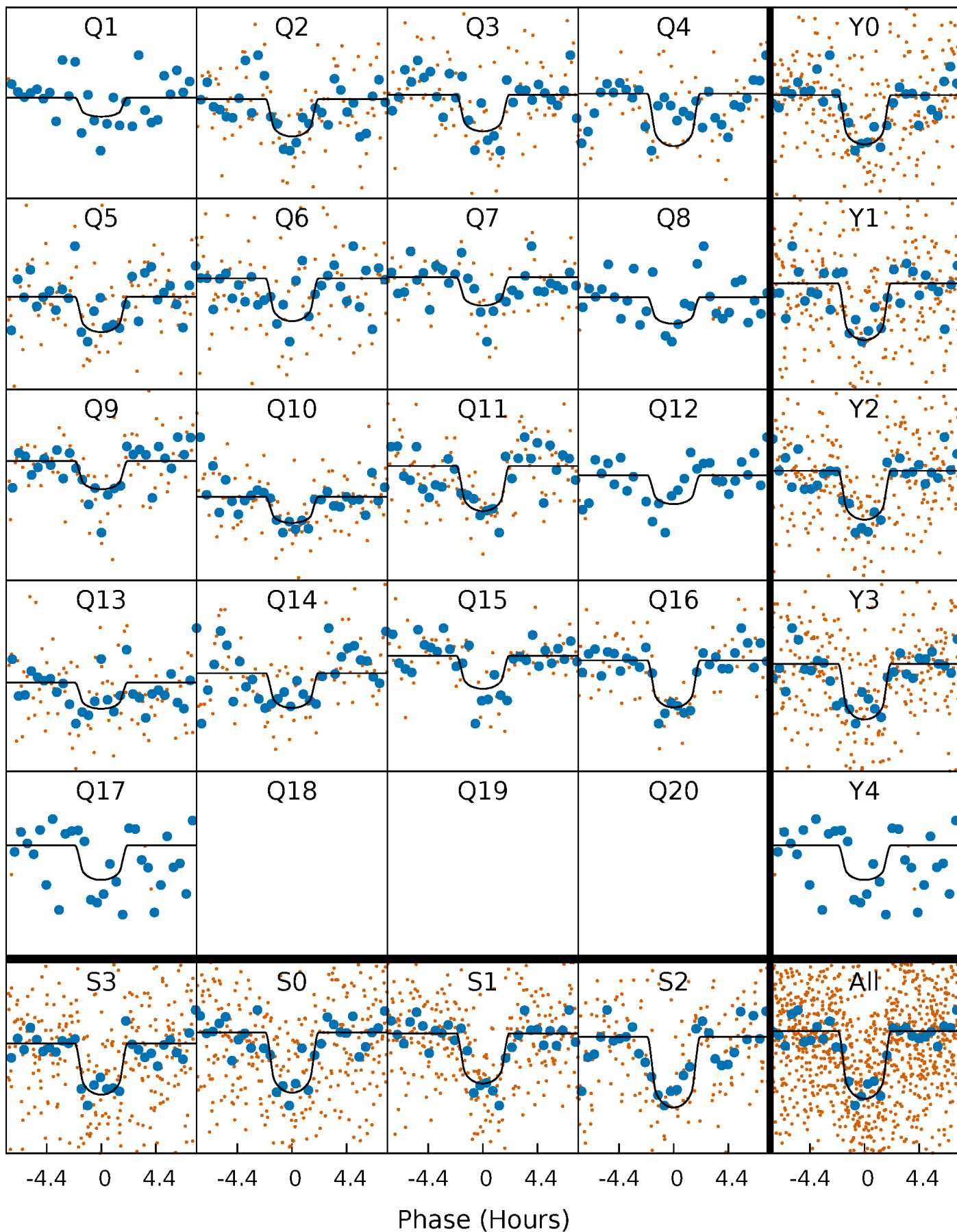
TCE 006497146-01 P= 35.233217 Days  $T_0=135.360364$  (BKJD)





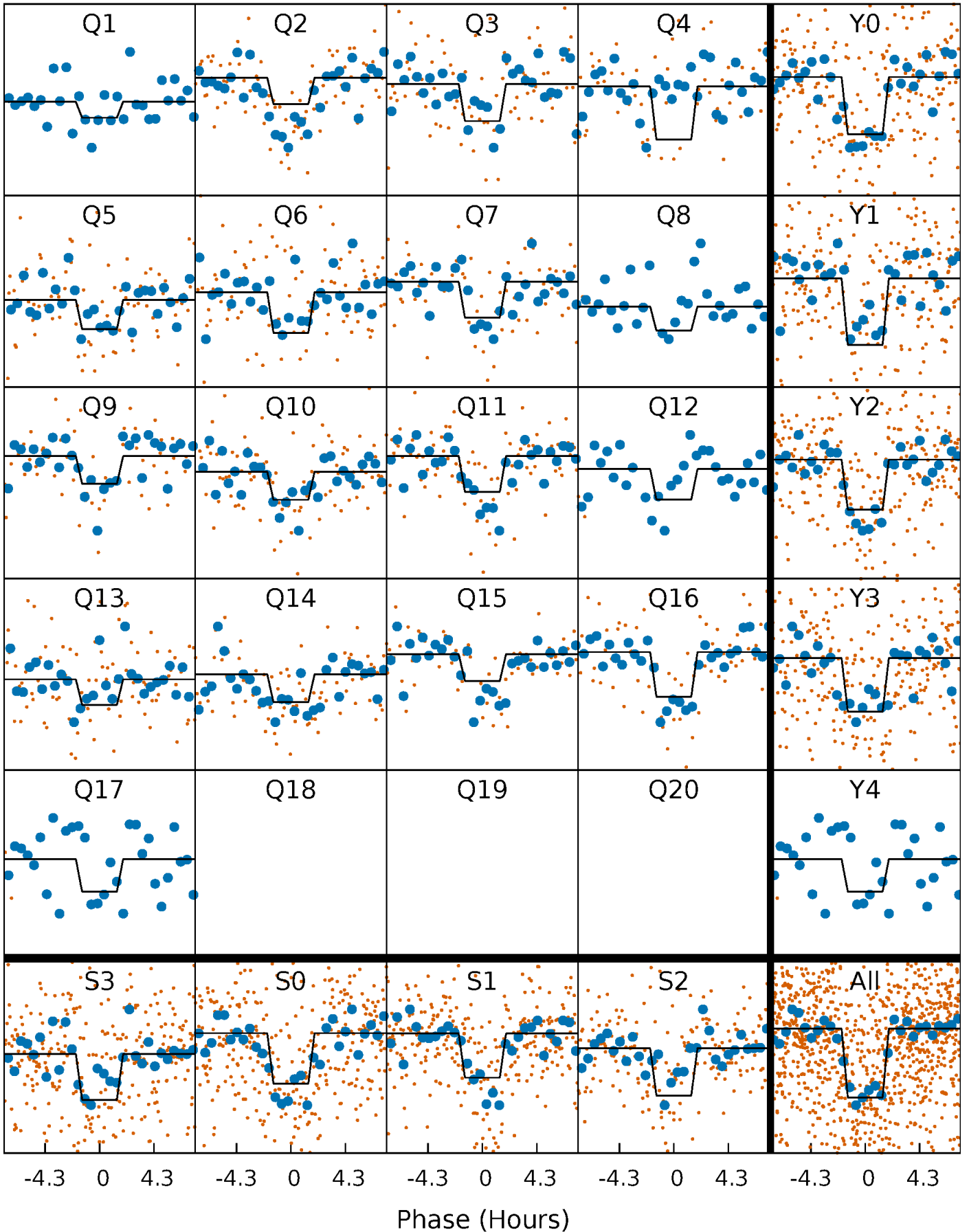
# DV Quarter-Phased Transit Curves

TCE 006497146-01 P= 35.233217 Days  $T_0=135.360364$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

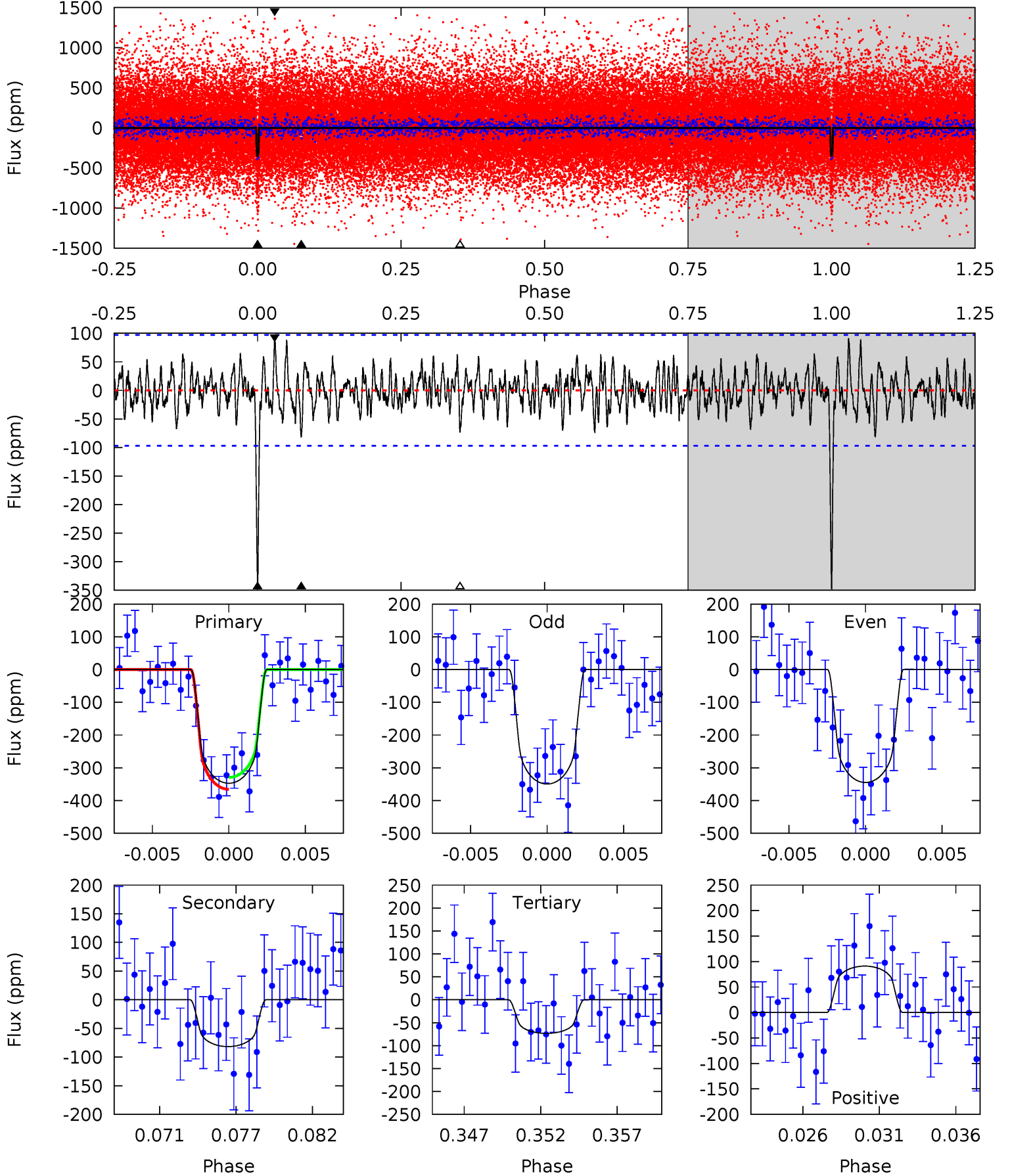
TCE 006497146-01 P= 35.232498 Days  $T_0=135.377157$  (BKJD)



# DV Model-Shift Uniqueness Test

006497146-01, P = 35.233217 Days, E = 100.127147 Days

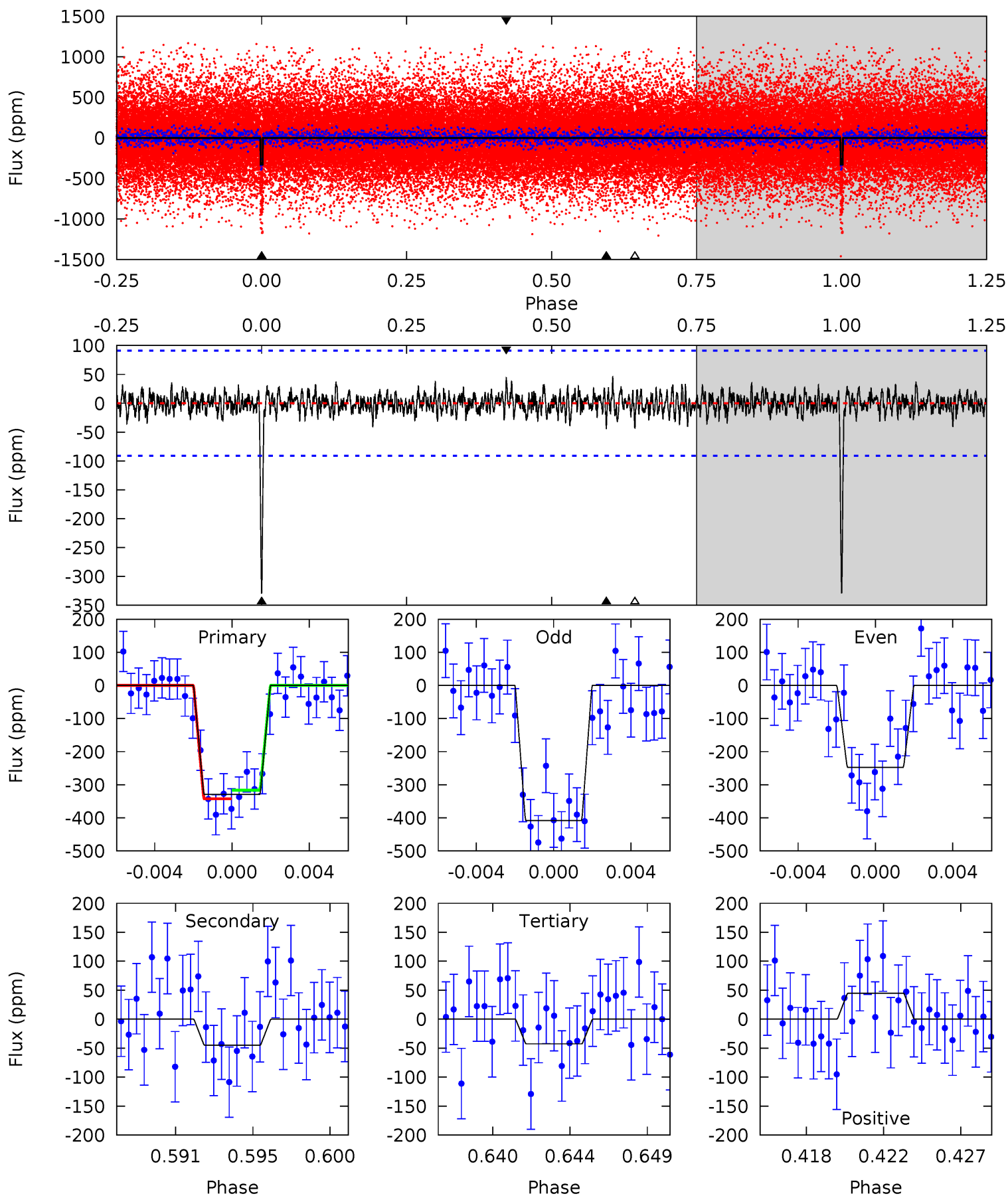
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.4	4.34	3.89	4.83	5.15	2.80	1.40	14.5	13.6	0.44	-0.50	0.12	0.96	0.21	0.96



# Alt Model-Shift Uniqueness Test

006497146-01,  $P = 35.232498$  Days,  $E = 100.144659$  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
18.7	2.56	2.42	2.55	5.18	2.84	0.76	16.3	16.2	0.13	0.01	4.59	1.06	0.12	0.73



### Stellar Parameters For KIC 006497146

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3749^{+75}_{-84}$	$4.743^{+0.033}_{-0.033}$	$0.160^{+0.150}_{-0.150}$	$0.524^{+0.033}_{-0.037}$	$0.554^{+0.028}_{-0.043}$	$5.413^{+0.875}_{-0.683}$
	+2%/-2%	+1%/-1%	+94%/-94%	+6%/-7%	+5%/-8%	+16%/-13%
Source	SPE85	SPE85	SPE85	DSEP		

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

### Secondary Eclipse Parameters for KIC 006497146-01 / KOI 3284.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-82 \pm 19$	$1.19^{+0.55}_{-0.60}$	$403^{+10}_{-11}$	$2916^{+644}_{-307}$	$952^{+2664}_{-543}$
Alt.	$-45 \pm 18$	$1.08^{+0.60}_{-0.53}$	$402^{+10}_{-10}$	$2727^{+636}_{-316}$	$589^{+1991}_{-369}$

$T_{max}$  = 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

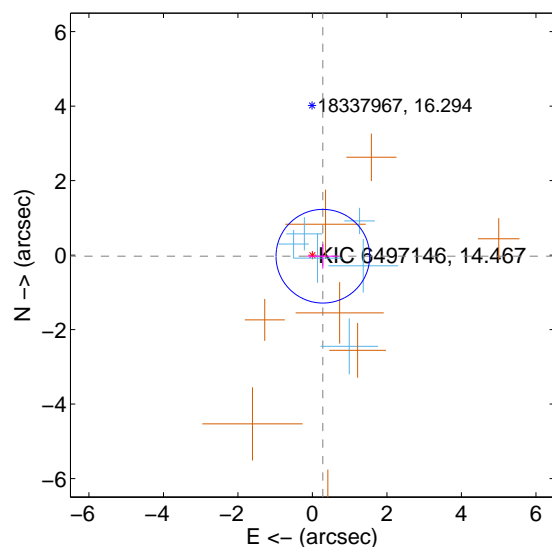
Supplemental centroid analysis for 006497146-01. Kepler magnitude: 14.47. Transit SNR 13.13

There are 6 quarters with good PRF difference image offsets

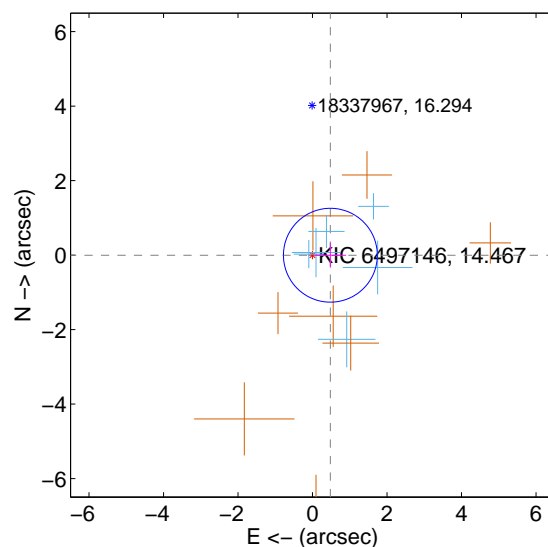
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.281 \pm 0.419$	0.67	$-0.280 \pm 0.420$	$-0.030 \pm 0.334$
PRF-fit source offset from KIC position	$0.480 \pm 0.420$	1.14	$-0.480 \pm 0.420$	$-0.003 \pm 0.334$
photometric centroid source offset	$2.83 \pm 0.86$	3.29	$-2.47 \pm 0.86$	$-1.39 \pm 0.87$

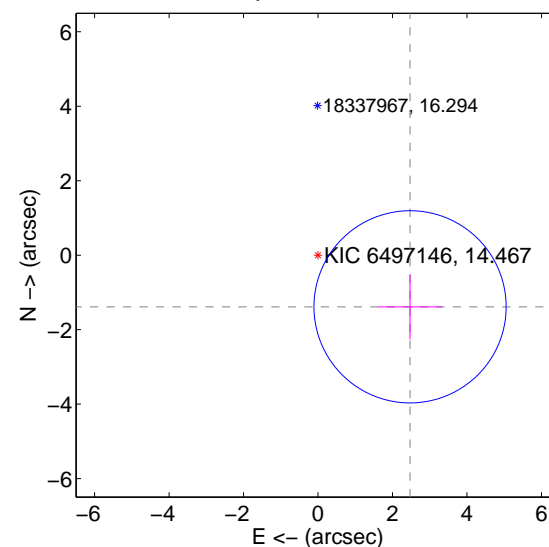
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

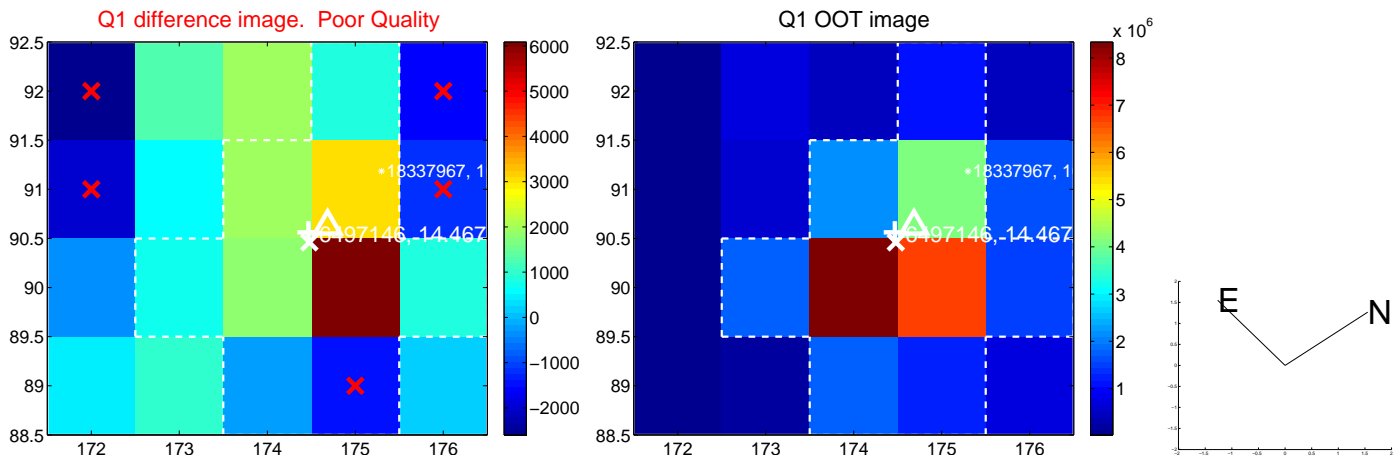


offset from photometric centroids



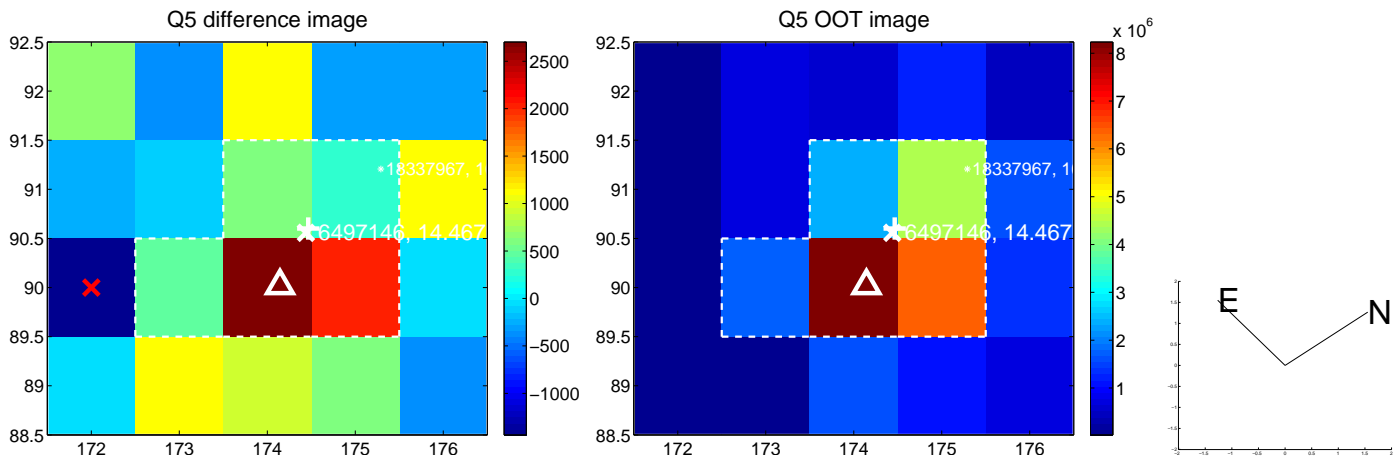
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

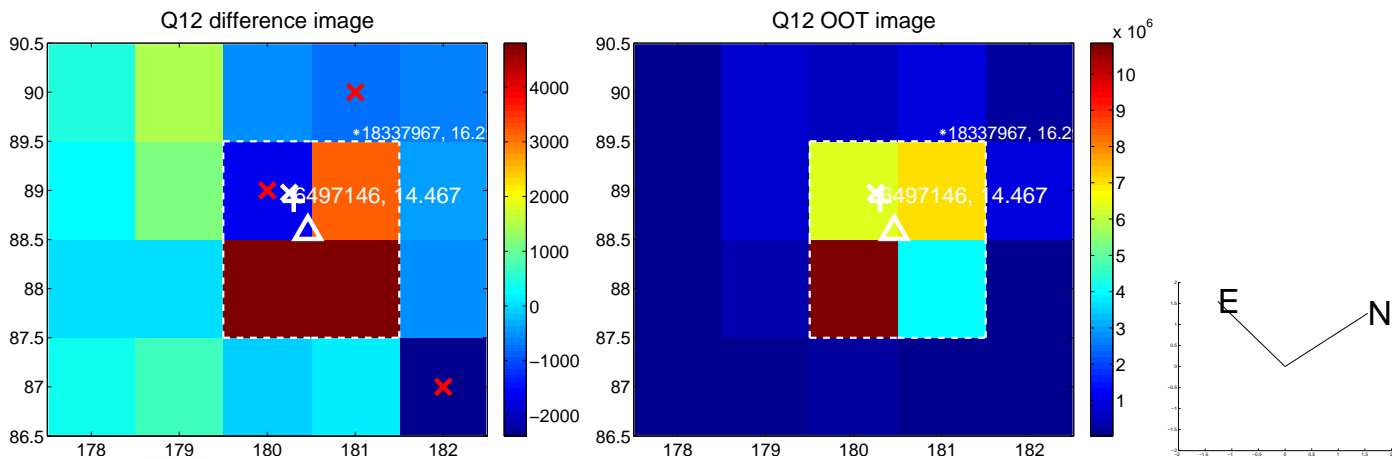
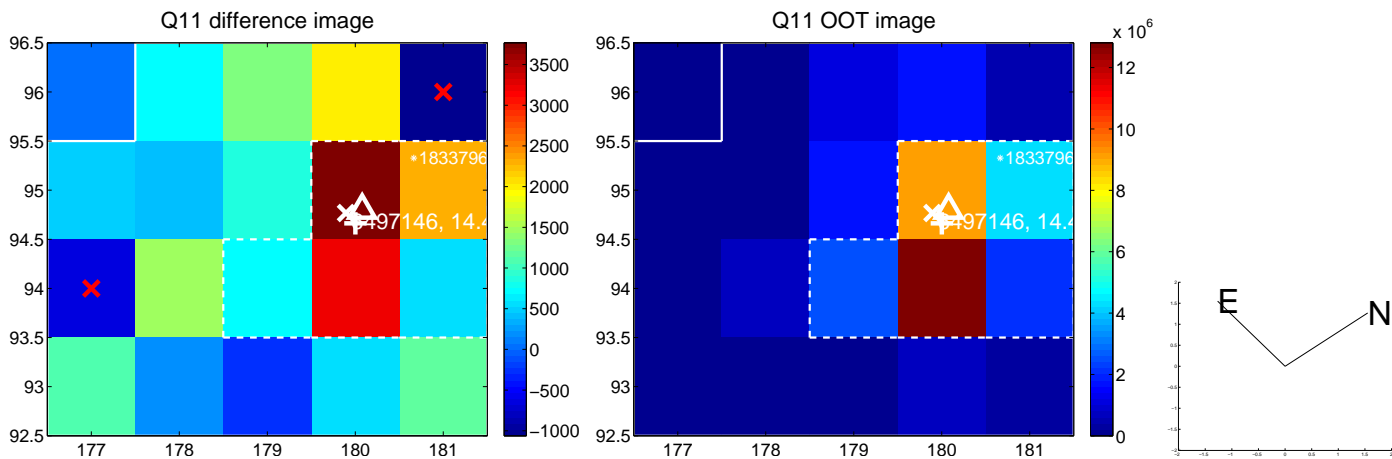
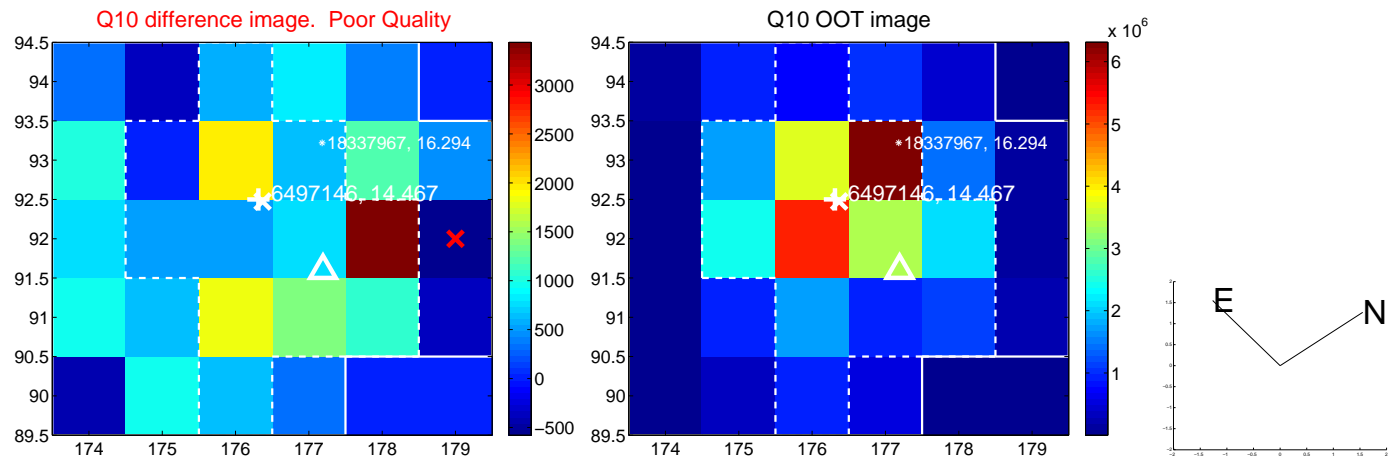
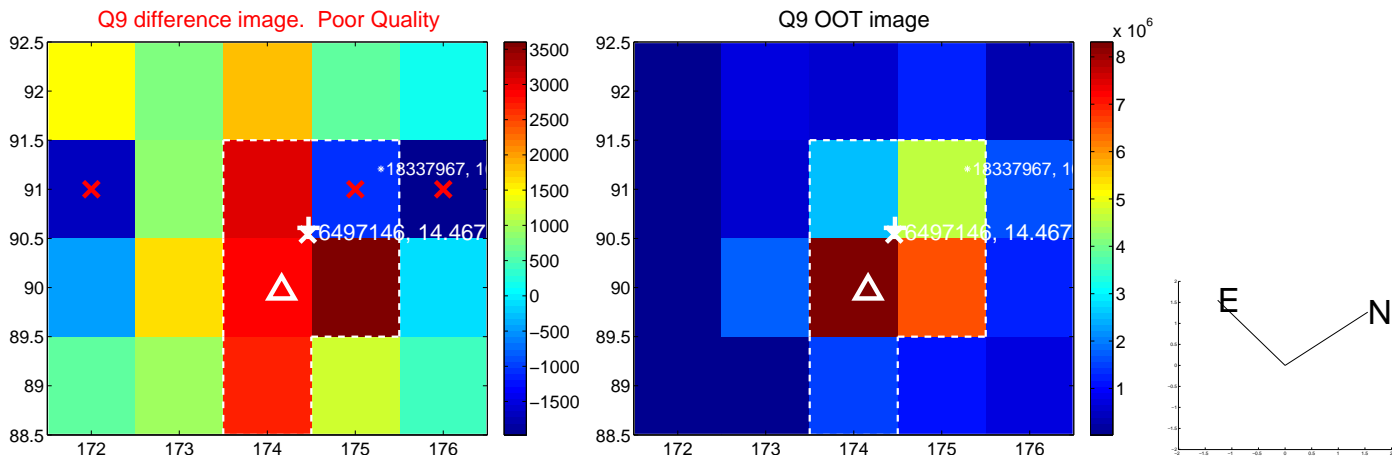




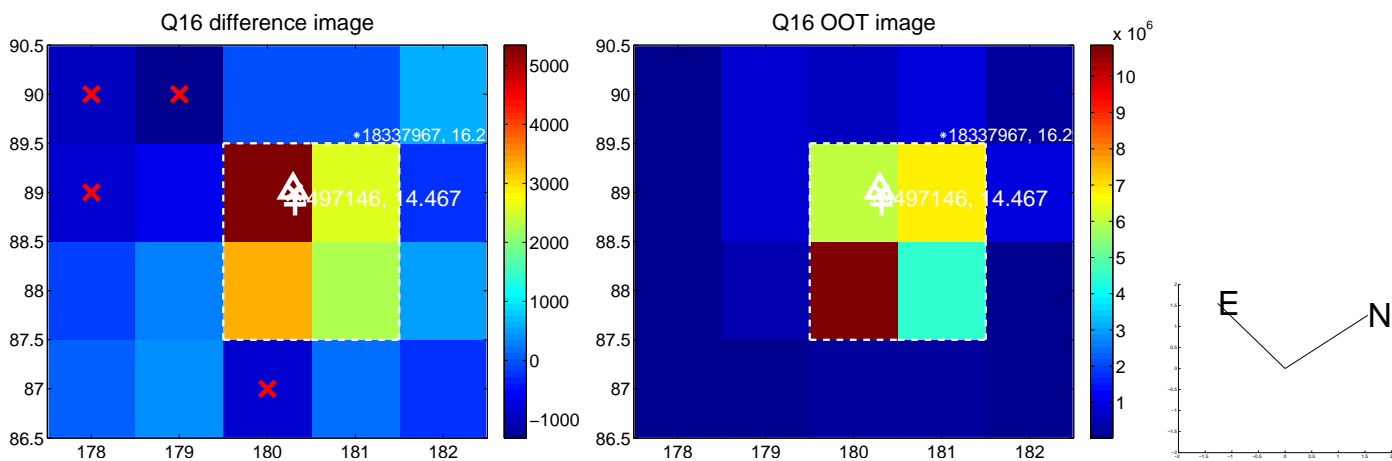
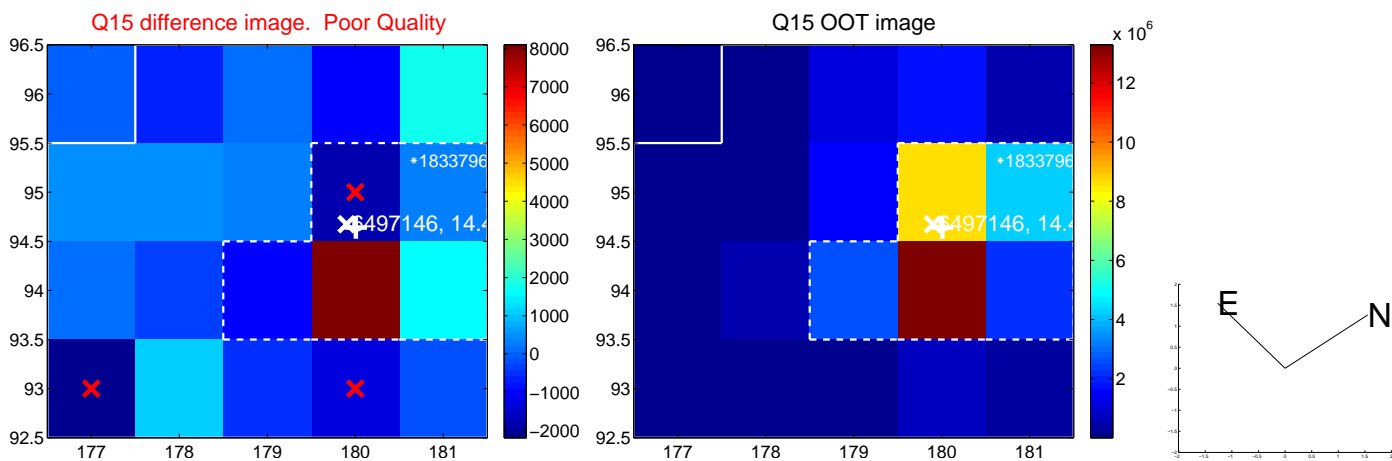
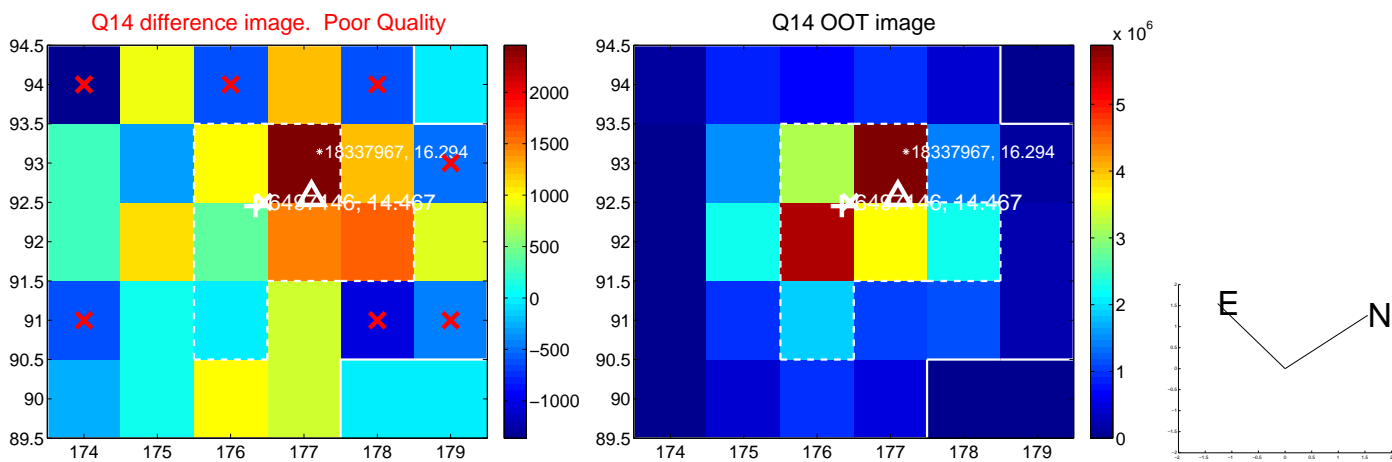
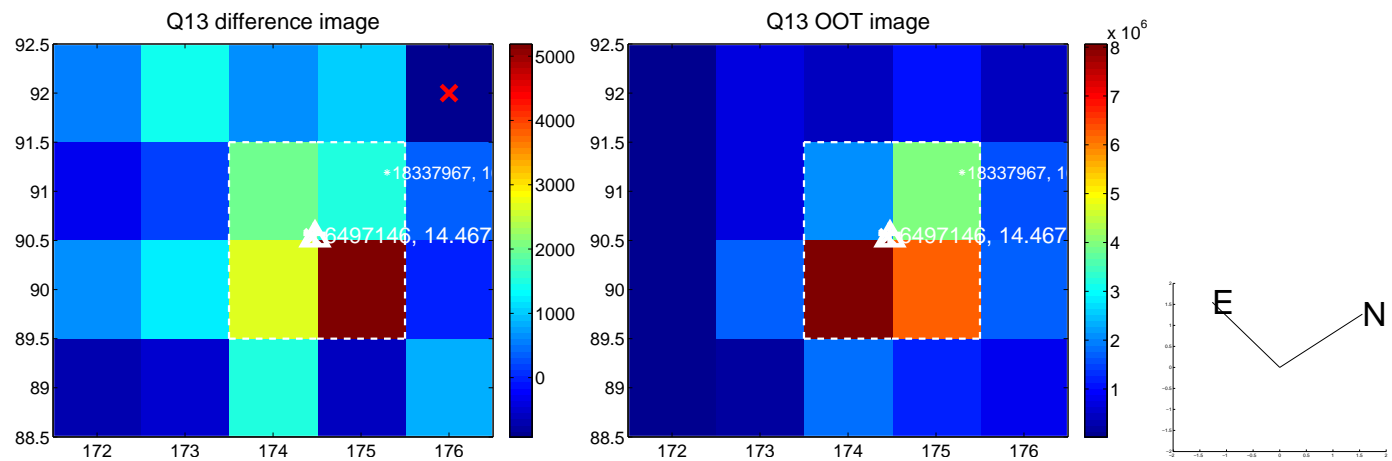
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



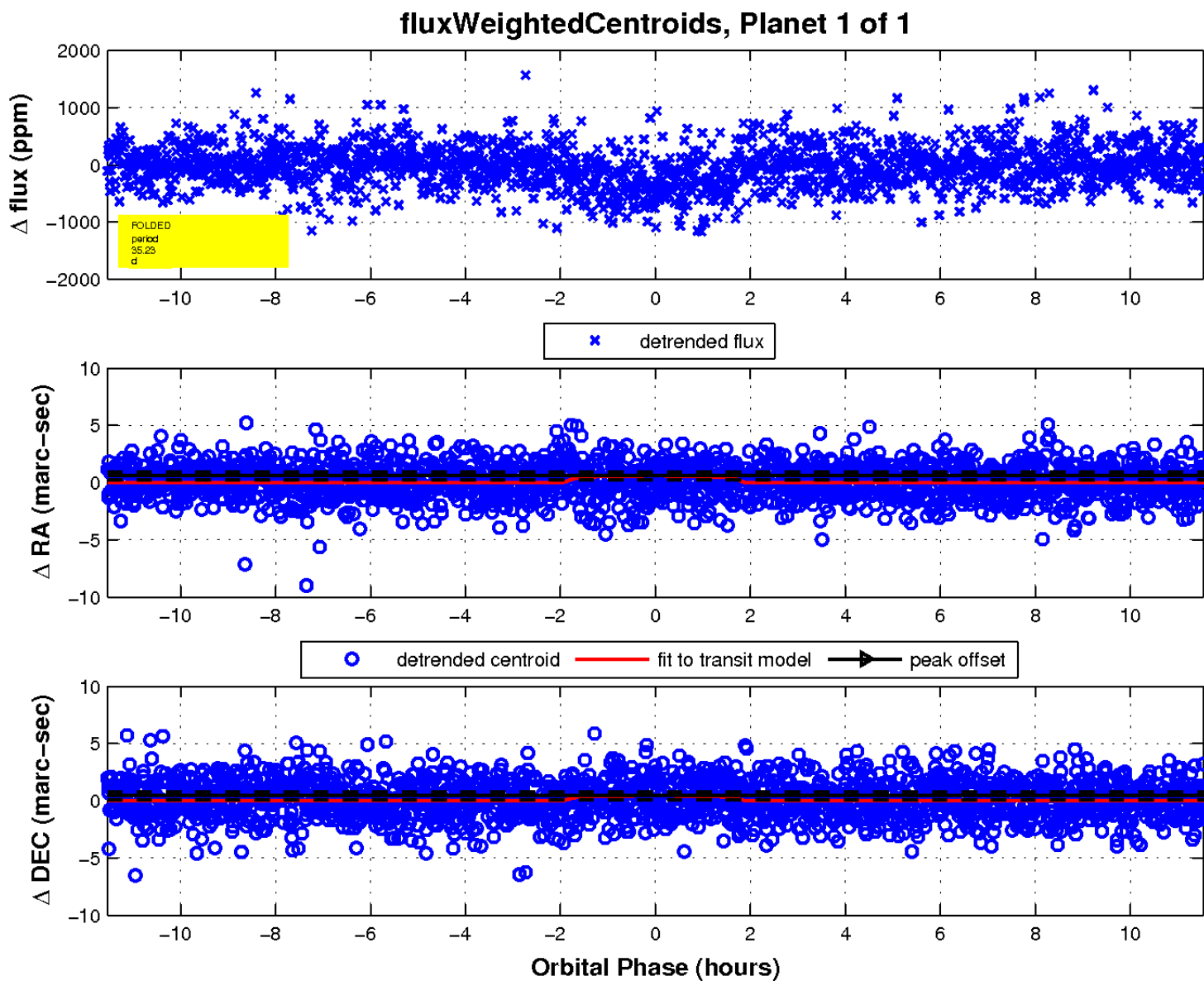
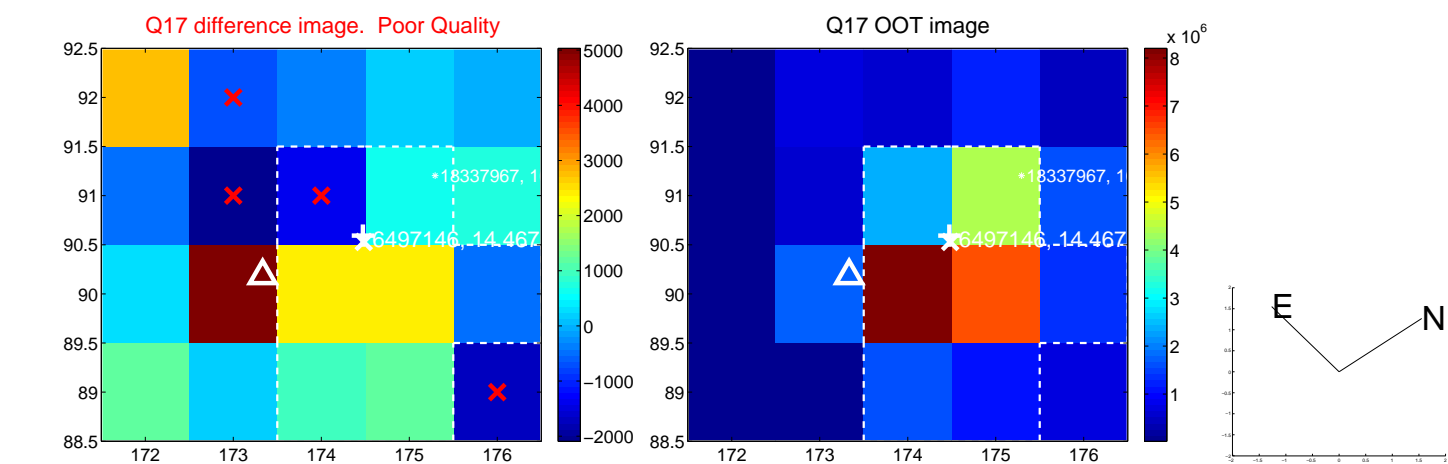
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UKIRT Image

Declination

