

# KIC 003346195

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003346195-01	OBS	No	7.009524	137.147469	283.8	8.318	13.2	14.5	2.90	7749	5.21	3386.03
003346195-02	OBS	No	1.402068	132.180513	128.5	7.486	12.2	14.1	2.90	7749	3.33	28945.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003346195-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003346195-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

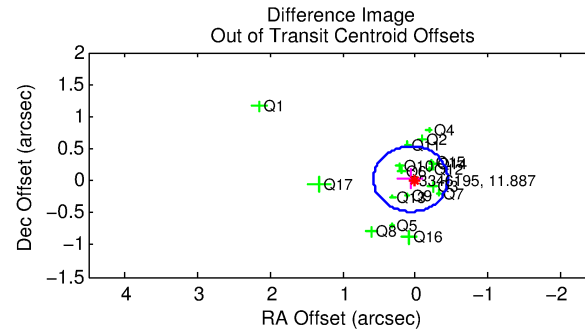
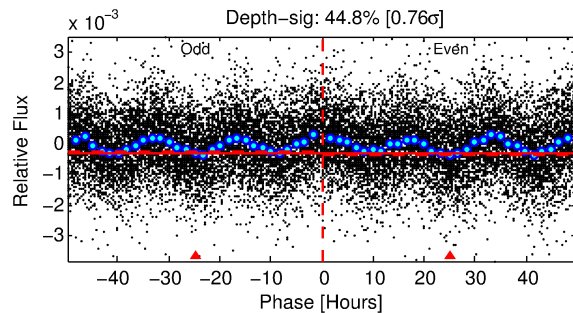
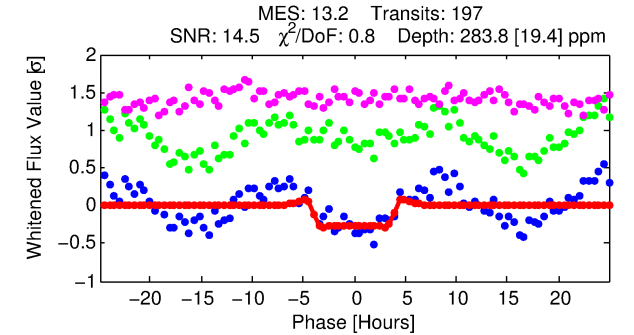
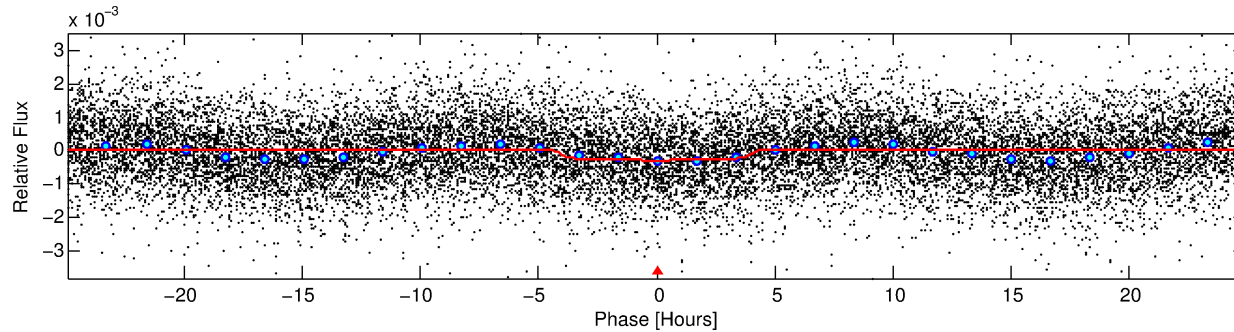
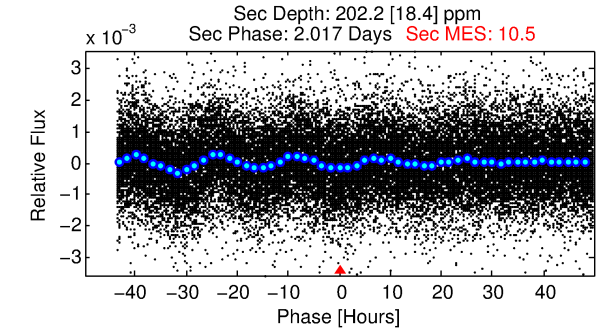
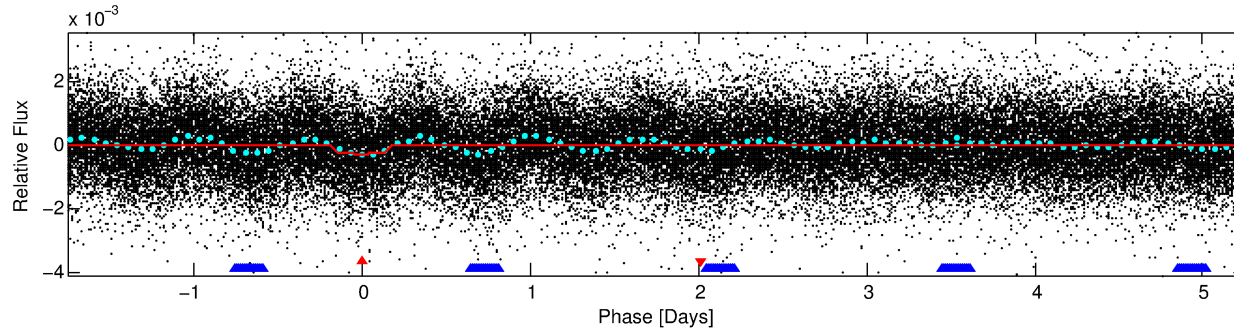
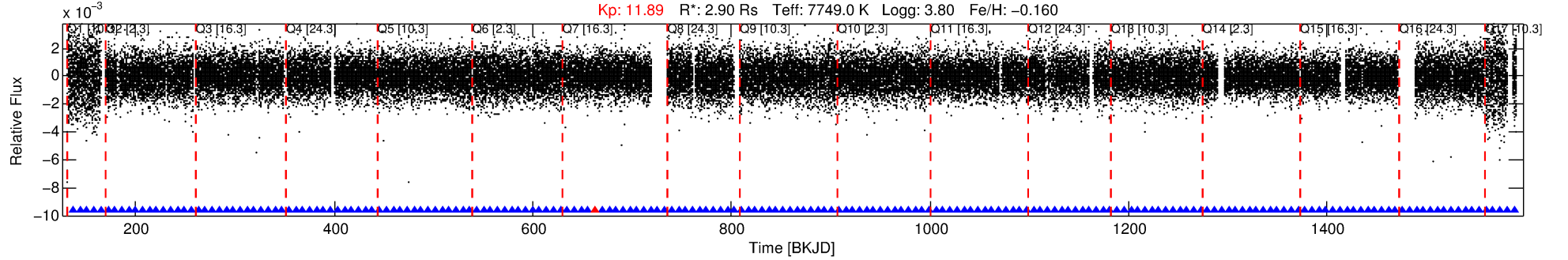
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003346195-01

No Significant Match Found

# DV One-Page Summary

KIC: 3346195 Candidate: 1 of 2 Period: 7.010 d



## DV Fit Results:

Period = 7.00952 [0.00006] d  
Epoch = 137.1475 [0.0070] BKJD  
 $R_p/R^*$  = 0.0165 [0.0064]  
 $a/R^*$  = 4.90 [10.17]  
 $b$  = 0.69 [1.69]  
 $S_{\text{eff}}$  = 3386.03 [2271.49]  
 $T_{\text{eq}}$  = 1945 [326] K  
 $R_p$  = 5.21 [3.07]  $R_e$   
 $a$  = 0.0895 [0.0370] AU  
 $A_g$  = 32.86 [33.36] [0.95σ]  
 **$T_{\text{eff}}$  = 7200 [1440] K [3.56σ]**

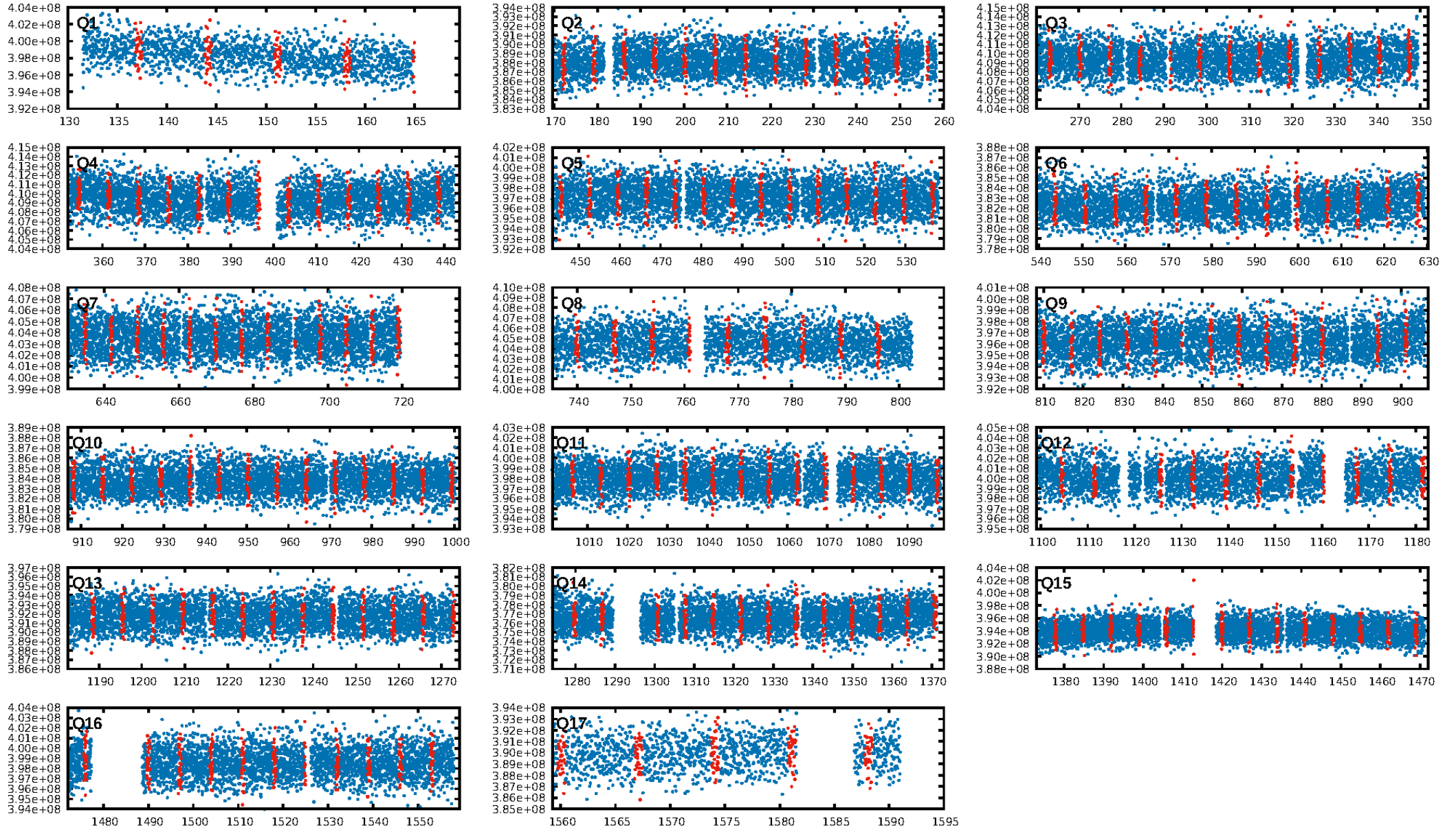
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.03σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.32e-31  
RollingBand-fgt: 0.99 [187/188]  
GhostDiagnostic-chr: 1.981  
Centroid-sig: 96.7%  
Centroid-so: 0.182 arcsec [1.80σ]  
OotOffset-rm: 0.070 arcsec [0.41σ]  
KicOffset-rm: 0.094 arcsec [0.55σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:16:17 Z

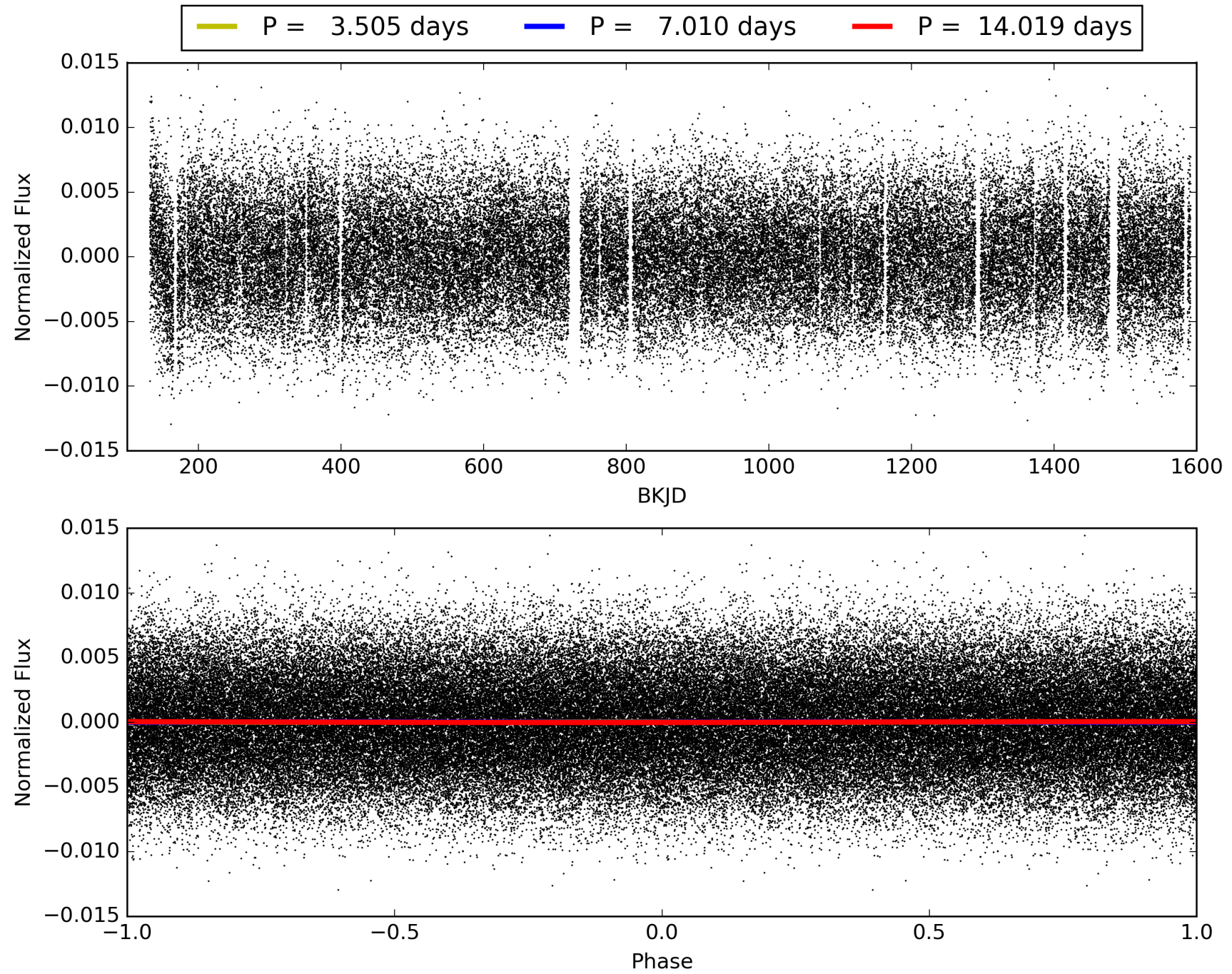
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003346195-01, PDC Light Curves



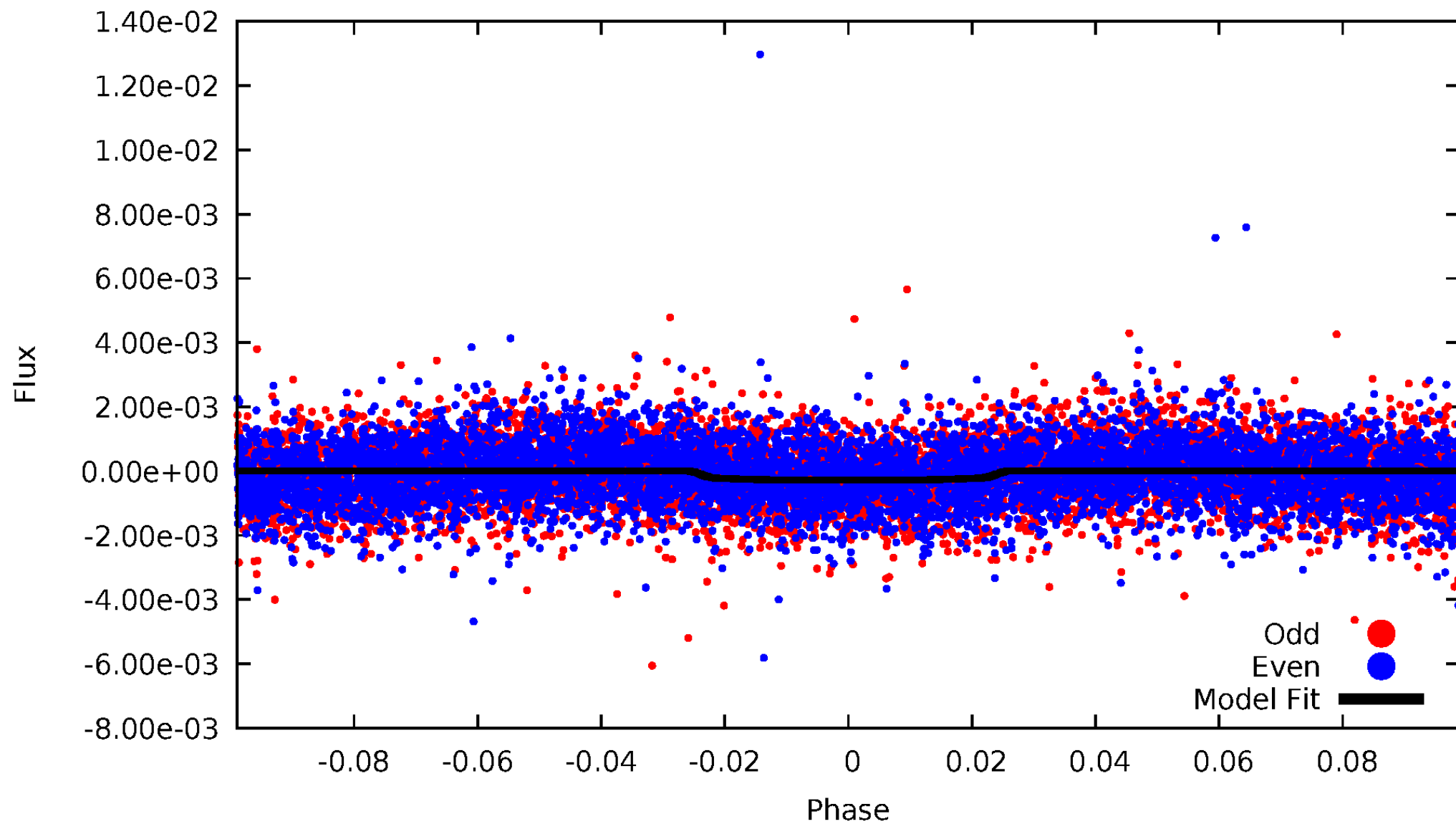


TCE 003346195-01



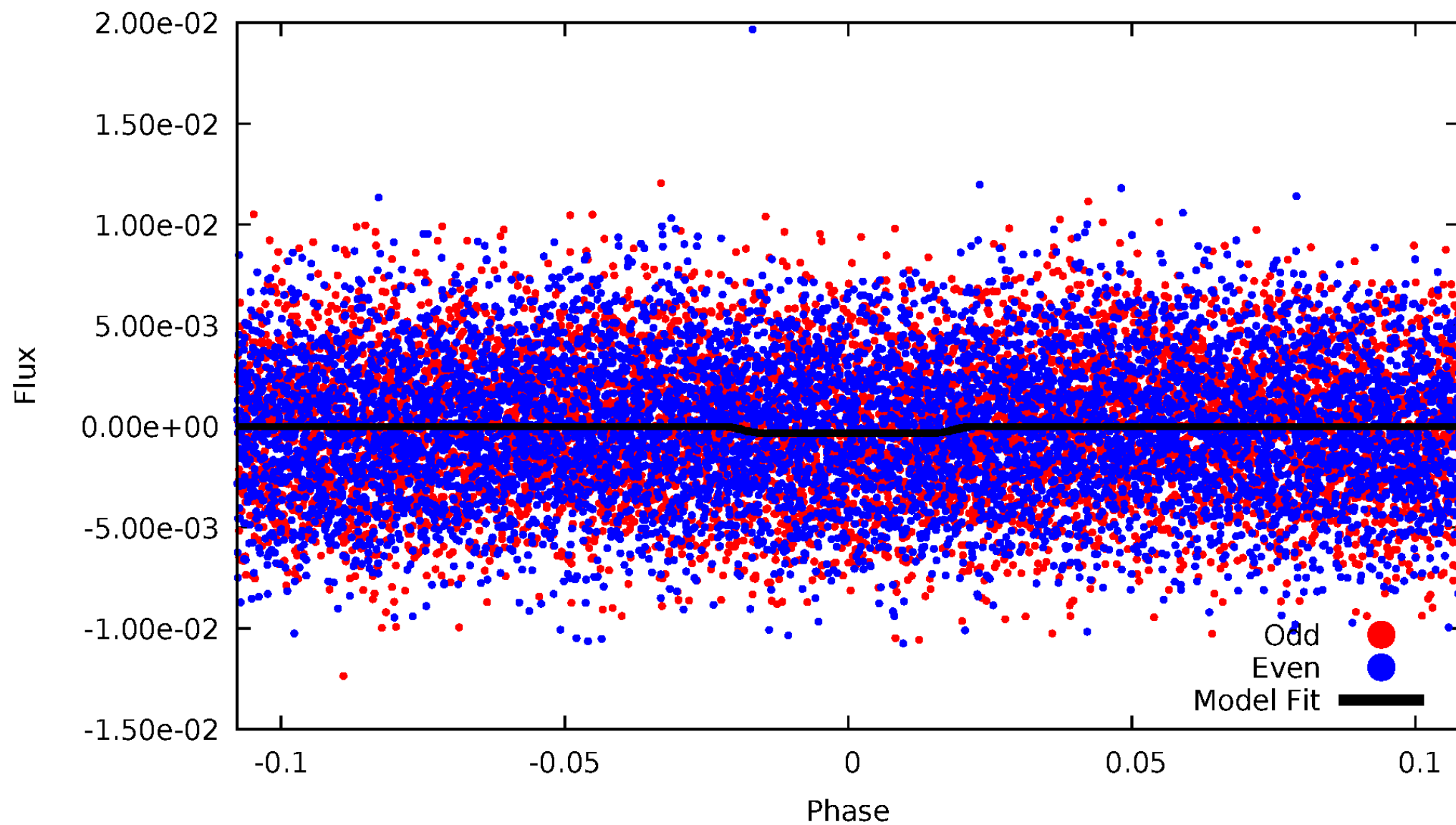
# DV Odd/Even

TCE 003346195-01

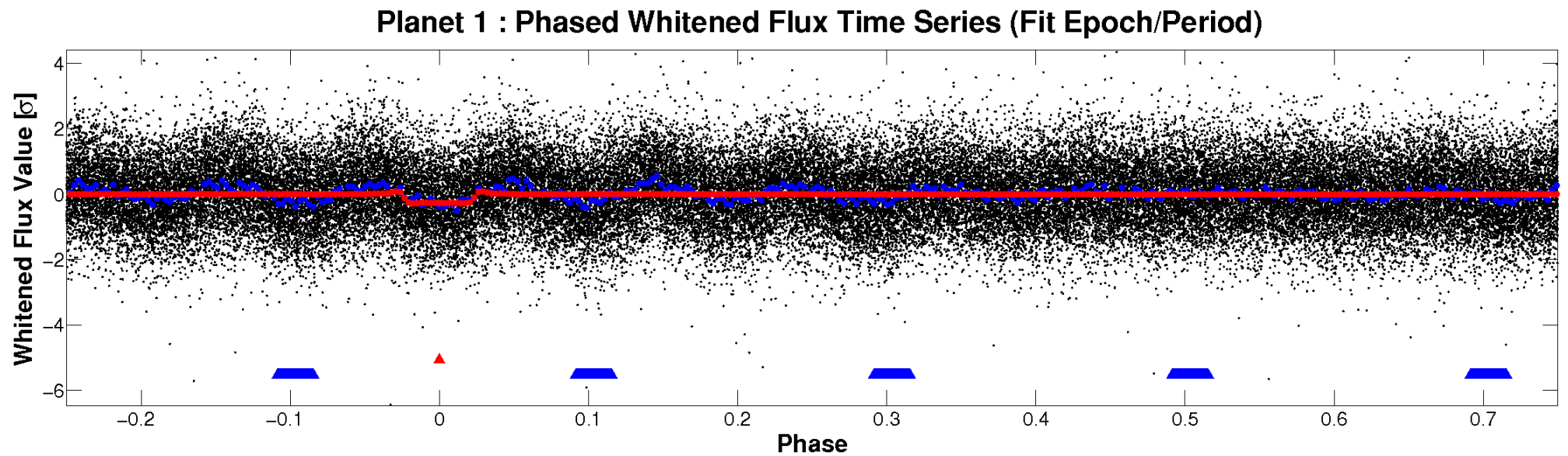
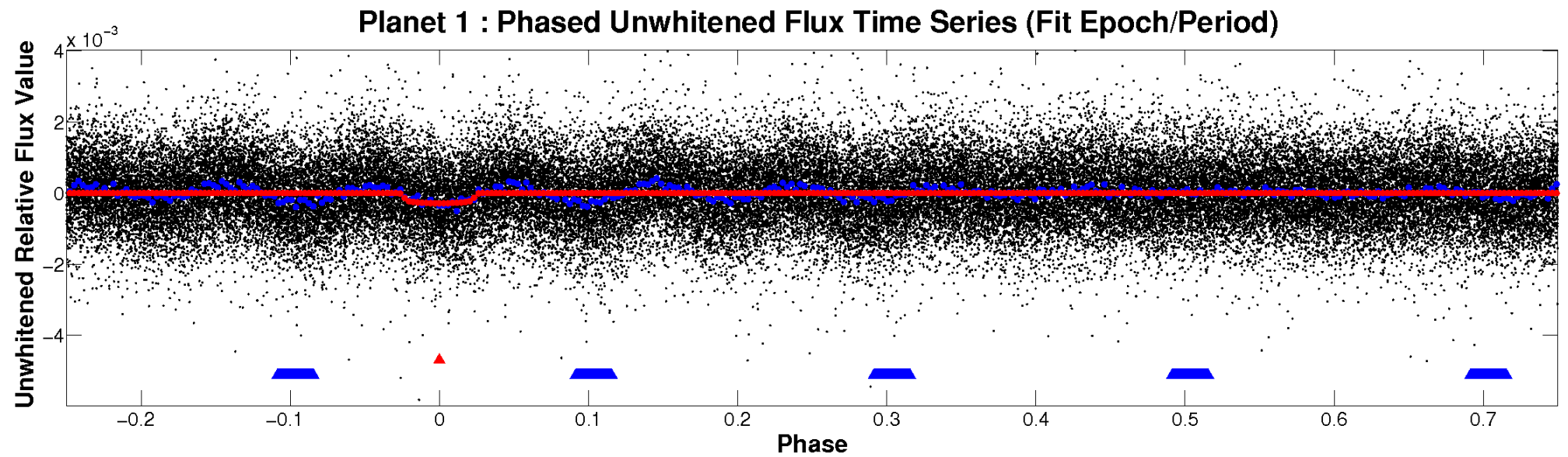


# ALT Odd/Even

TCE 003346195-01



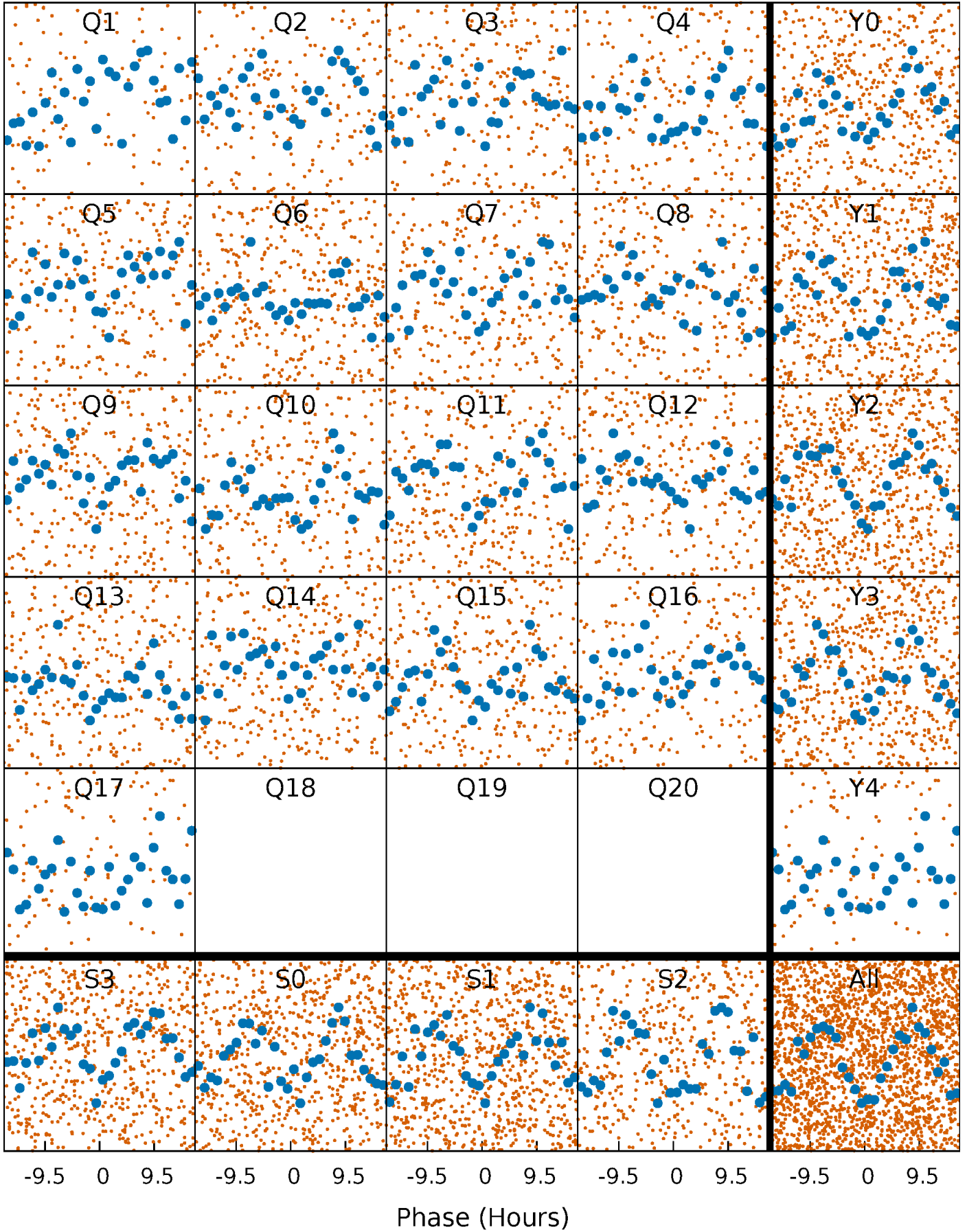
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

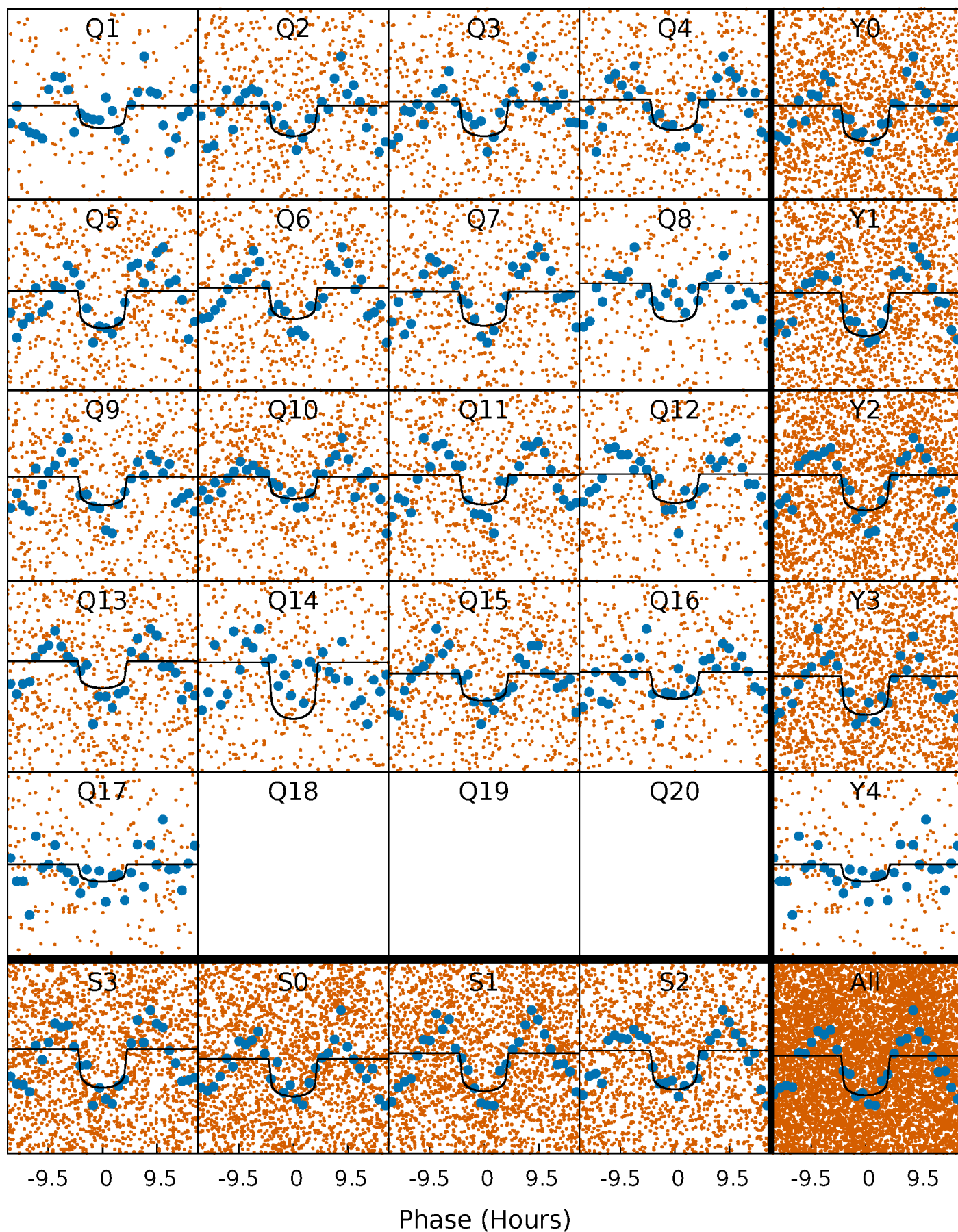
TCE 003346195-01   P= 7.009524 Days    $T_0=137.147469$  (BKJD)





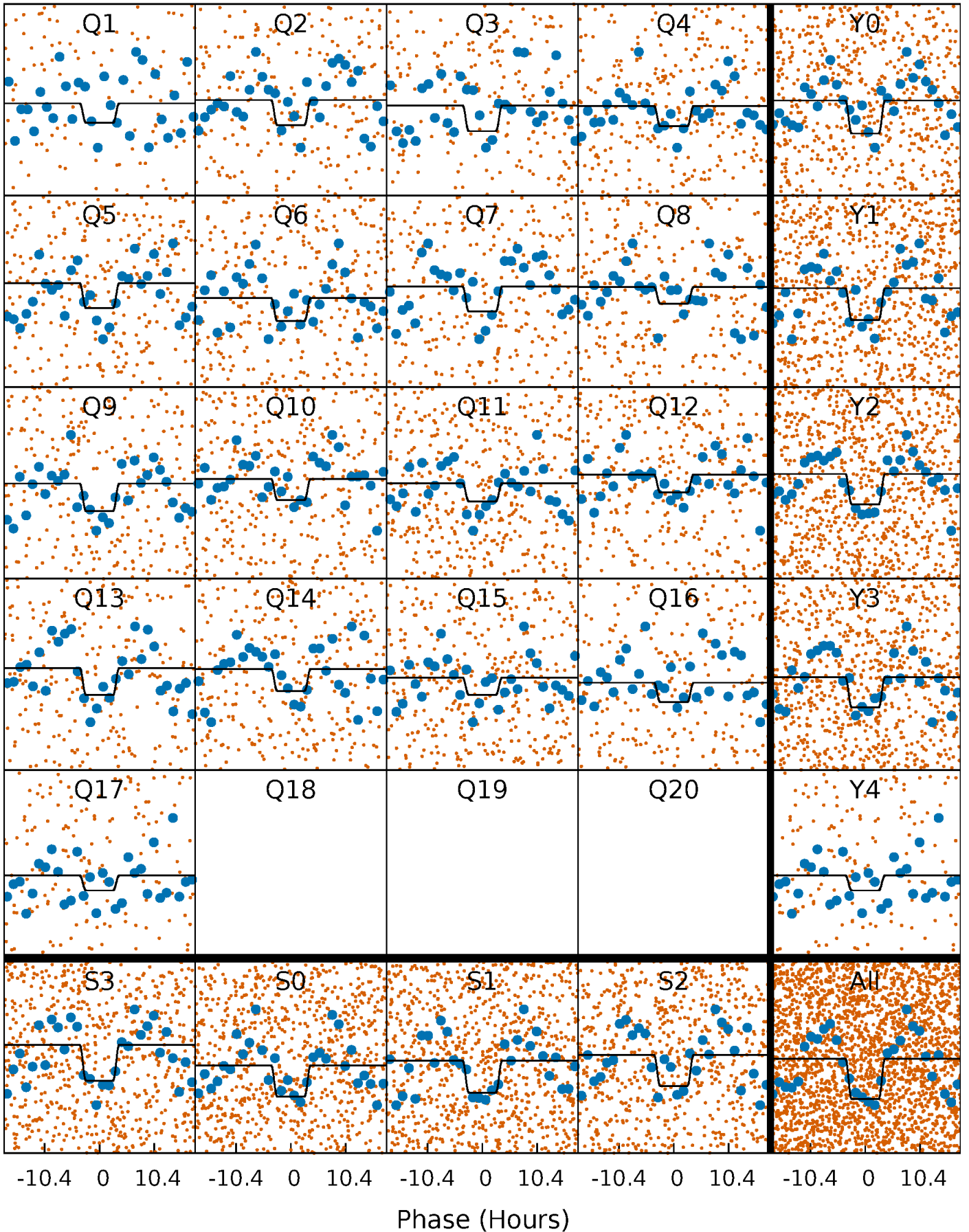
# DV Quarter-Phased Transit Curves

TCE 003346195-01 P= 7.009524 Days  $T_0=137.147469$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

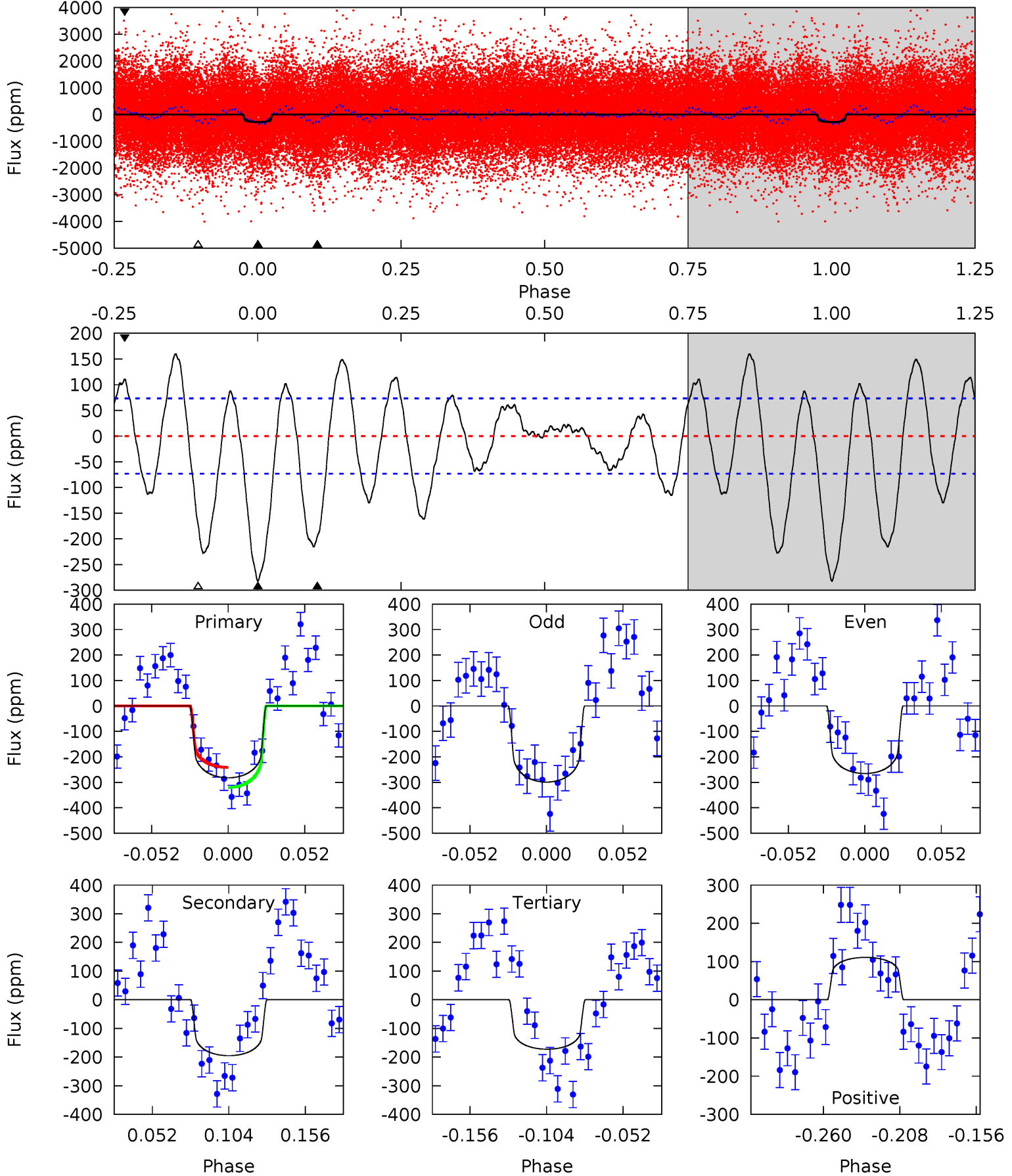
TCE 003346195-01 P= 7.009682 Days  $T_0=137.136971$  (BKJD)



# DV Model-Shift Uniqueness Test

003346195-01, P = 7.009524 Days, E = 130.137945 Days

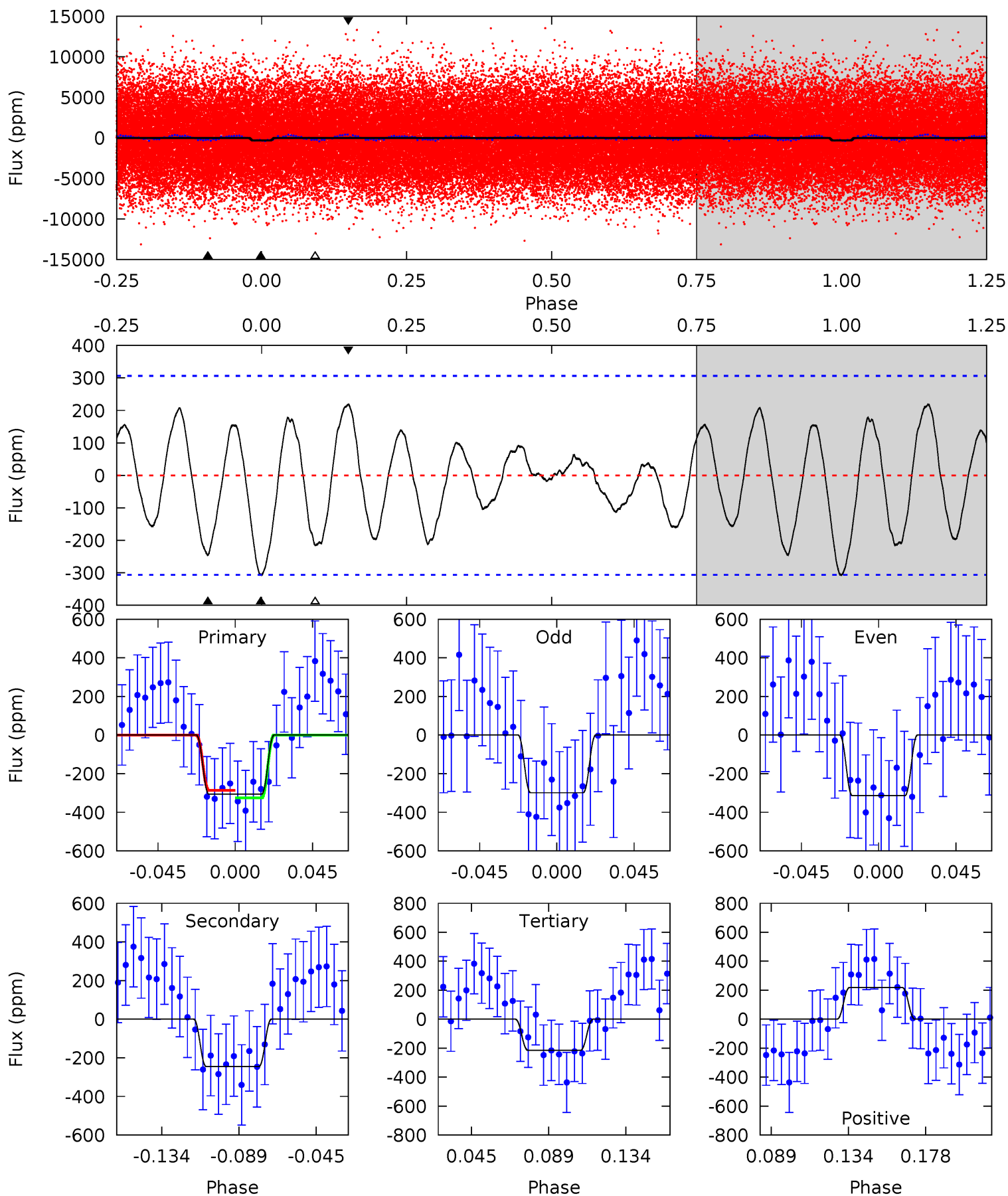
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	12.5	11.1	7.12	4.70	1.94	4.94	7.04	11.0	1.45	5.40	1.08	0.94	0.36	2.52



# Alt Model-Shift Uniqueness Test

003346195-01, P = 7.009682 Days, E = 130.127289 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
4.73	3.79	3.32	3.38	4.73	2.01	1.63	1.41	1.35	0.47	0.41	0.12	1.05	0.42	0.30





### Stellar Parameters For KIC 003346195

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7749^{+211}_{-332}$	$3.803^{+0.376}_{-0.094}$	$-0.160^{+0.200}_{-0.350}$	$2.898^{+0.322}_{-1.286}$	$1.946^{+0.088}_{-0.496}$	$0.113^{+0.376}_{-0.032}$
	+3%/-4%	+10%/-2%	+125%/-219%	+11%/-44%	+5%/-25%	+334%/-29%
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 003346195-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-195 \pm 16$	$4.68^{+2.30}_{-1.90}$	$2656^{+165}_{-262}$	$7032^{+2609}_{-1124}$	$39^{+69}_{-21}$
Alt.	$-245 \pm 65$	$5.12^{+2.46}_{-2.04}$	$2660^{+164}_{-289}$	$7024^{+2648}_{-1158}$	$39^{+75}_{-21}$

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

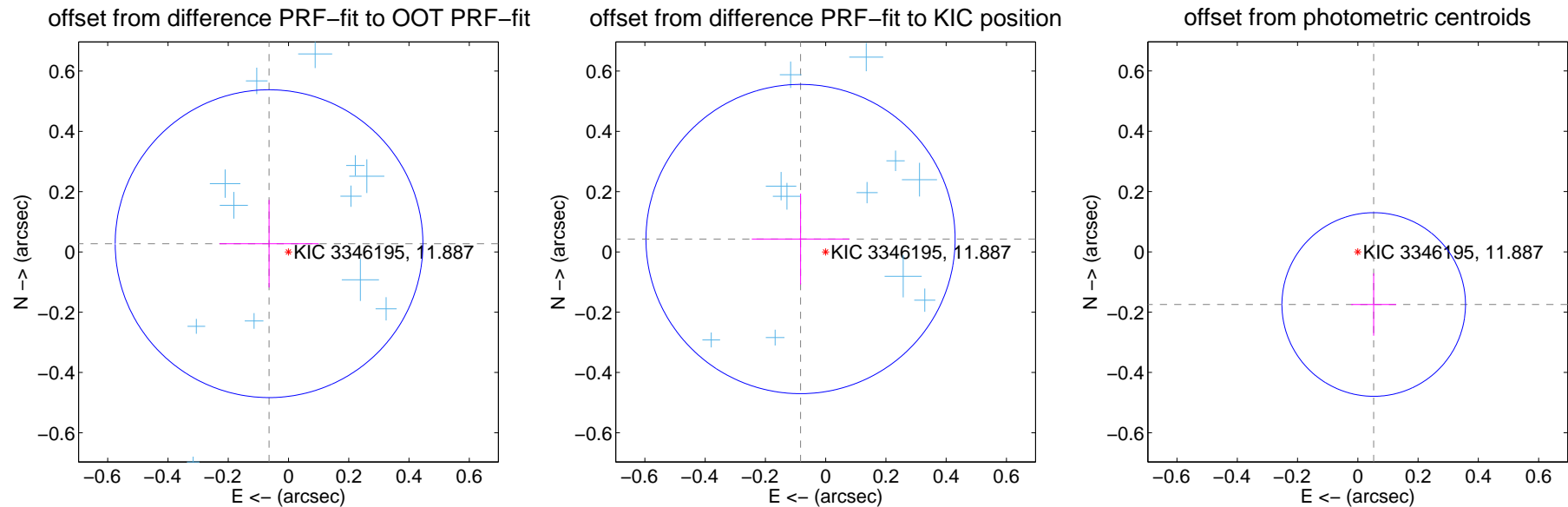
## DV Centroid Data

Supplemental centroid analysis for 003346195-01. **Kepler magnitude: 11.89.** Transit SNR 14.47

There are 16 quarters with good PRF difference image offsets

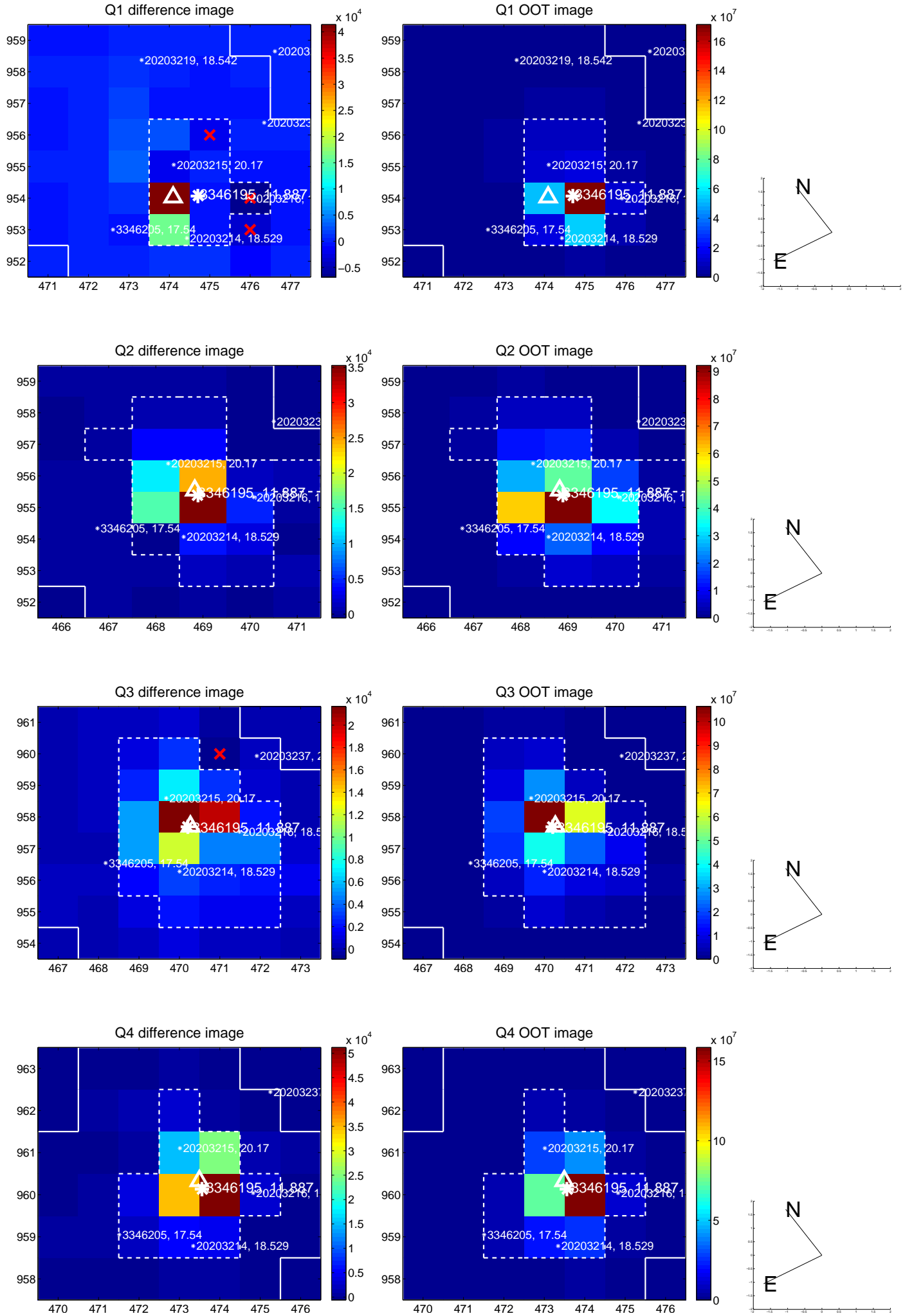
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.070 \pm 0.170$	0.41	$0.065 \pm 0.165$	$0.027 \pm 0.145$
PRF-fit source offset from KIC position	$0.094 \pm 0.171$	0.55	$0.083 \pm 0.162$	$0.043 \pm 0.151$
photometric centroid source offset	$0.18 \pm 0.10$	1.80	$-0.05 \pm 0.07$	$-0.17 \pm 0.10$

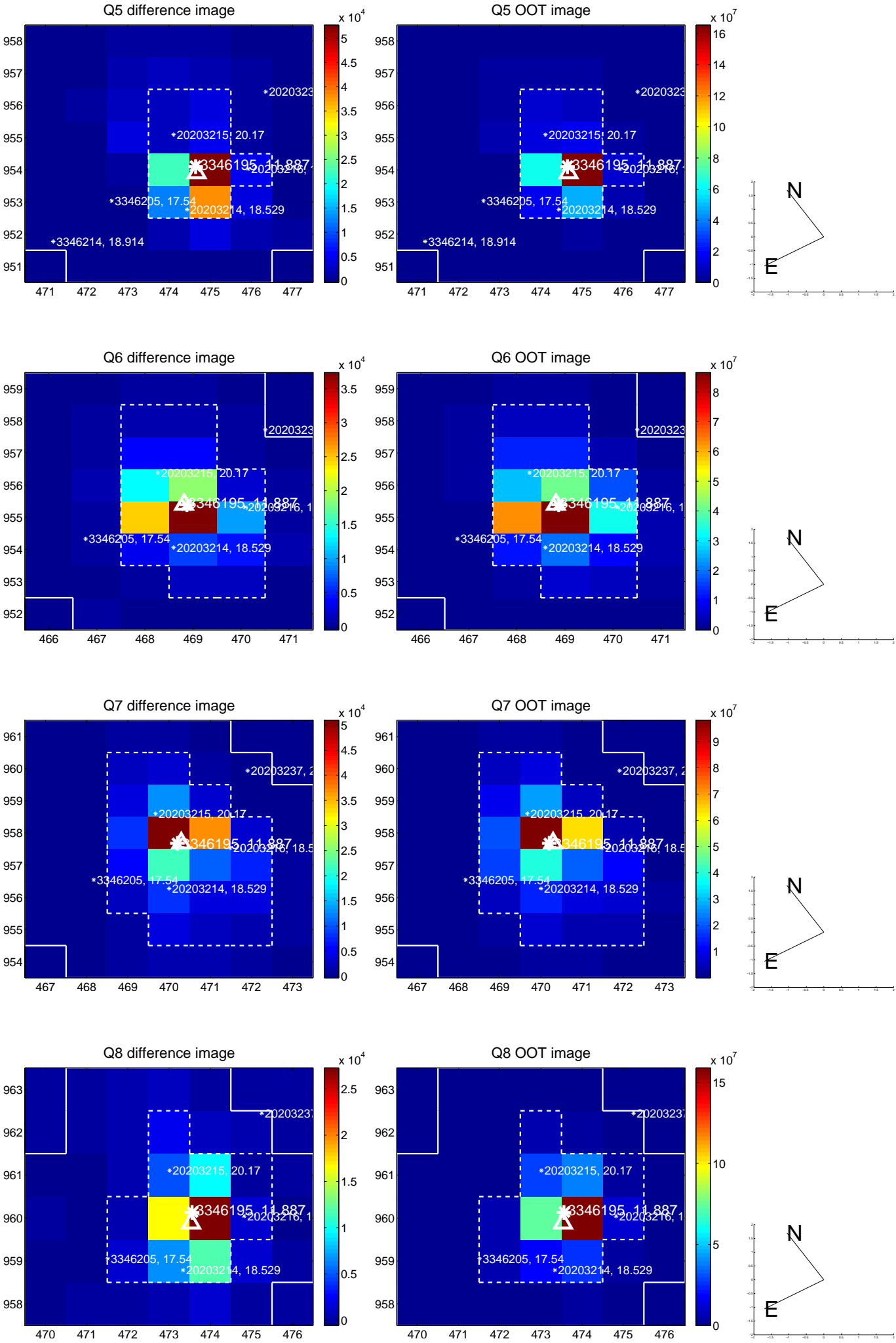


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

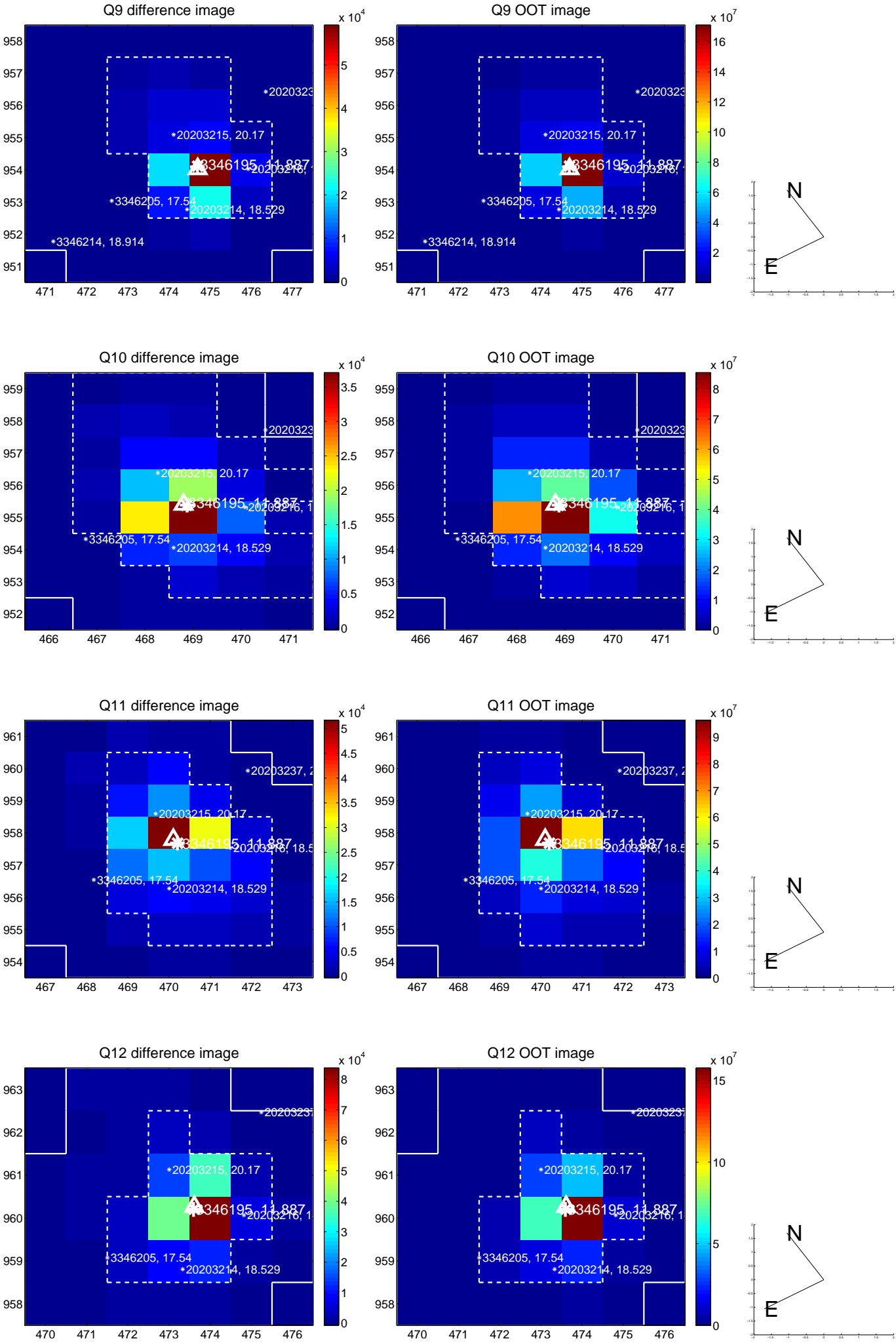


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

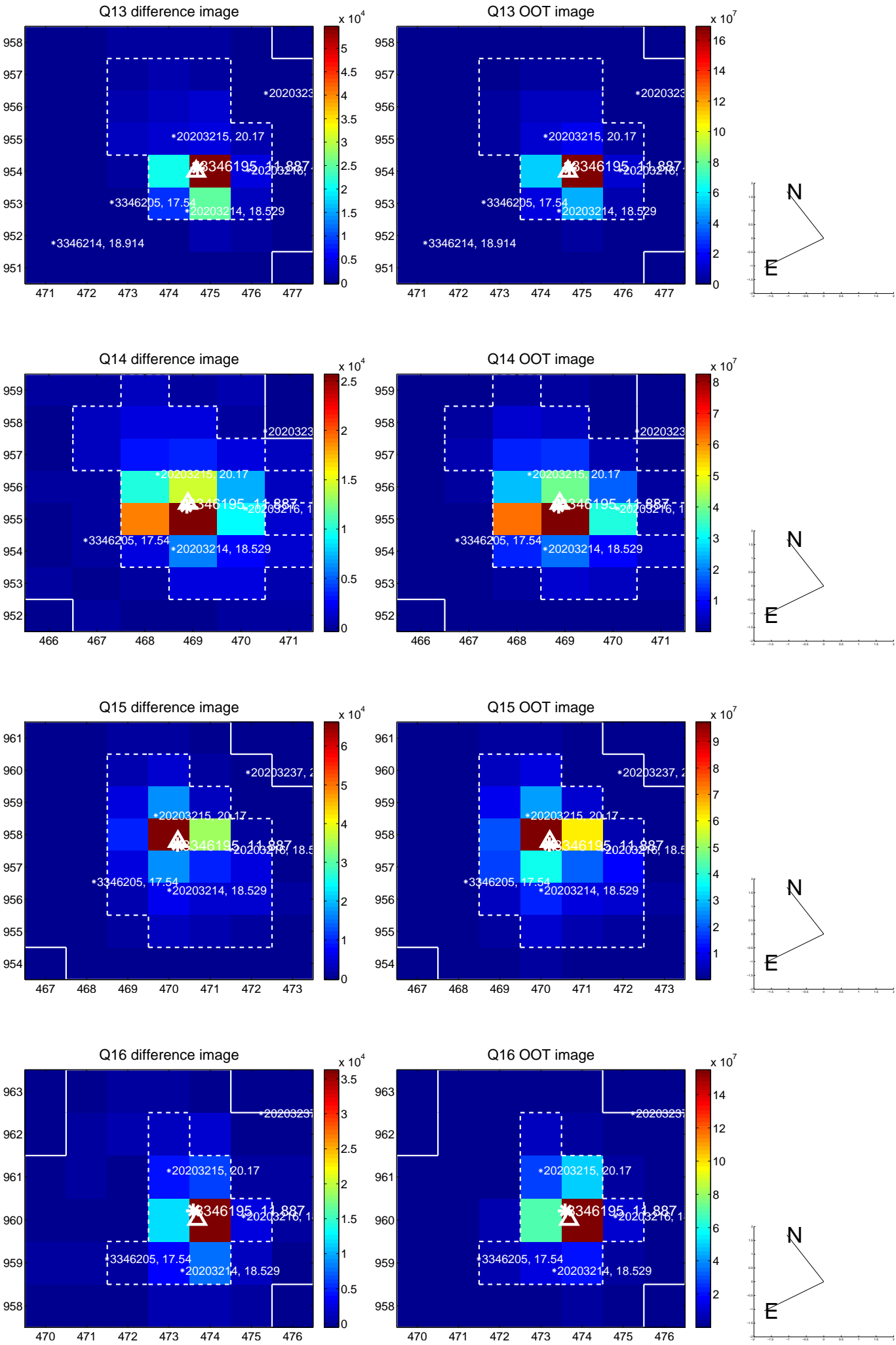




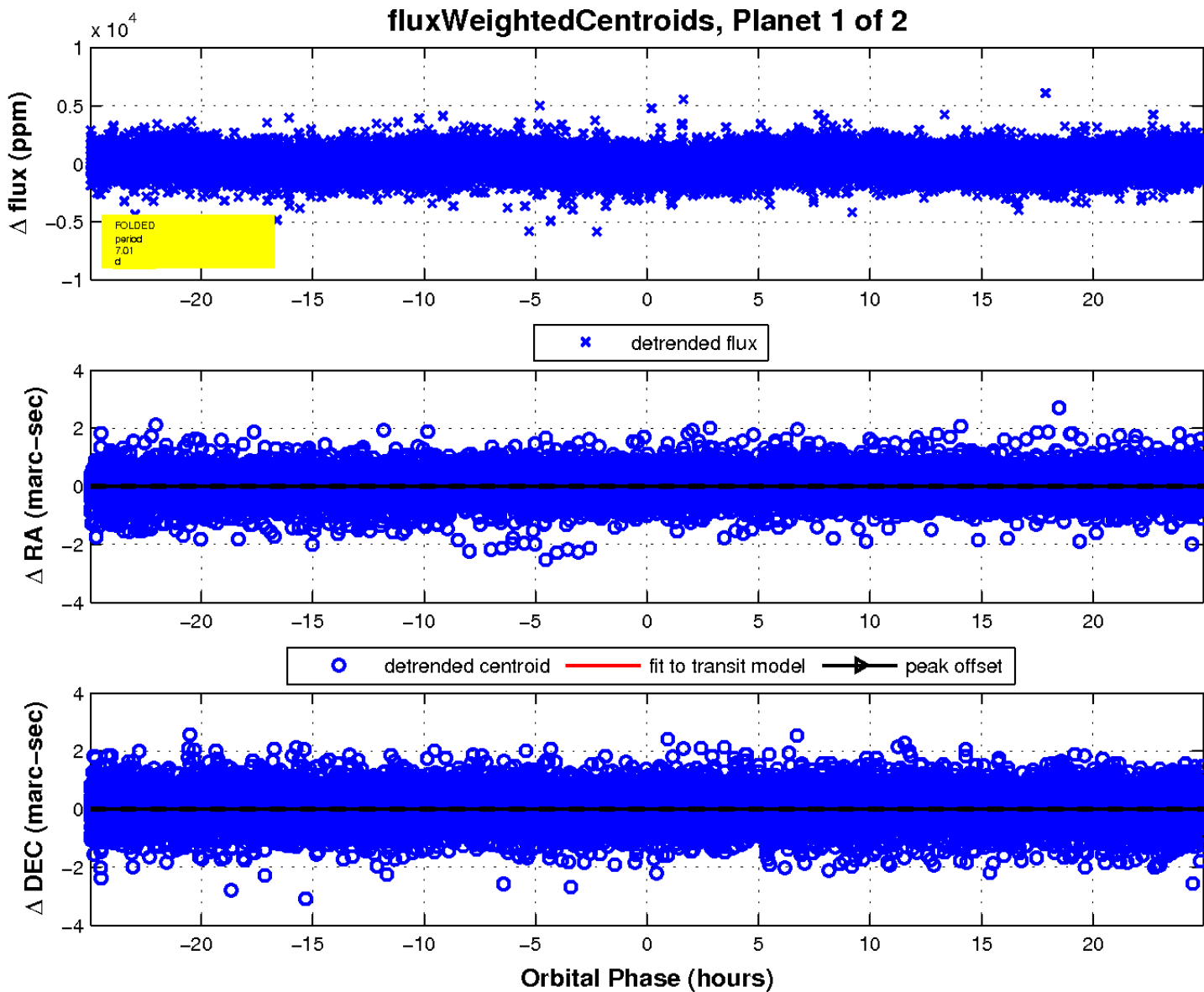
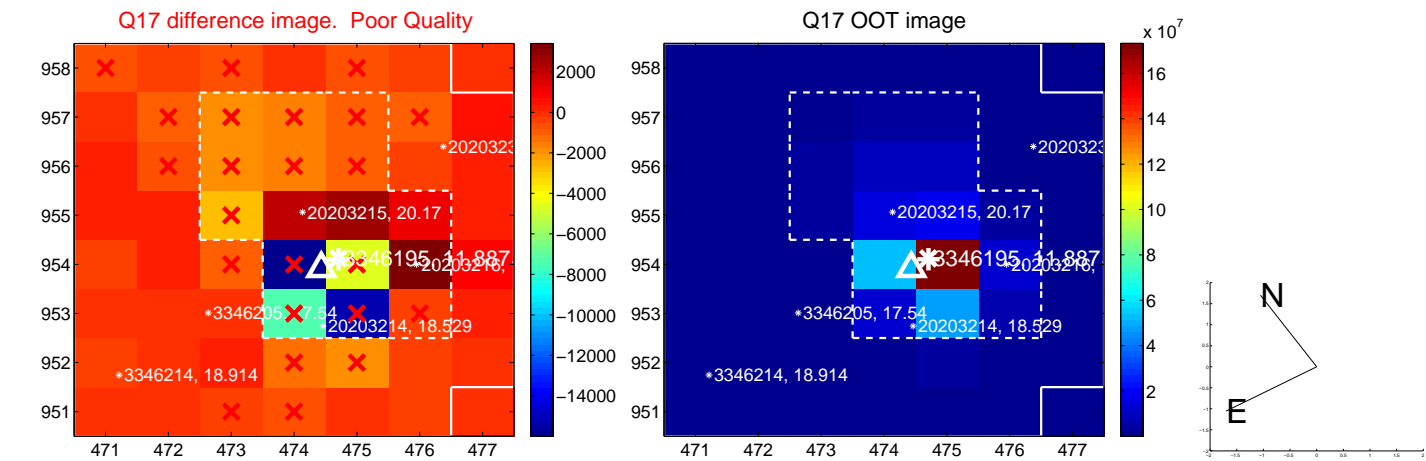
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

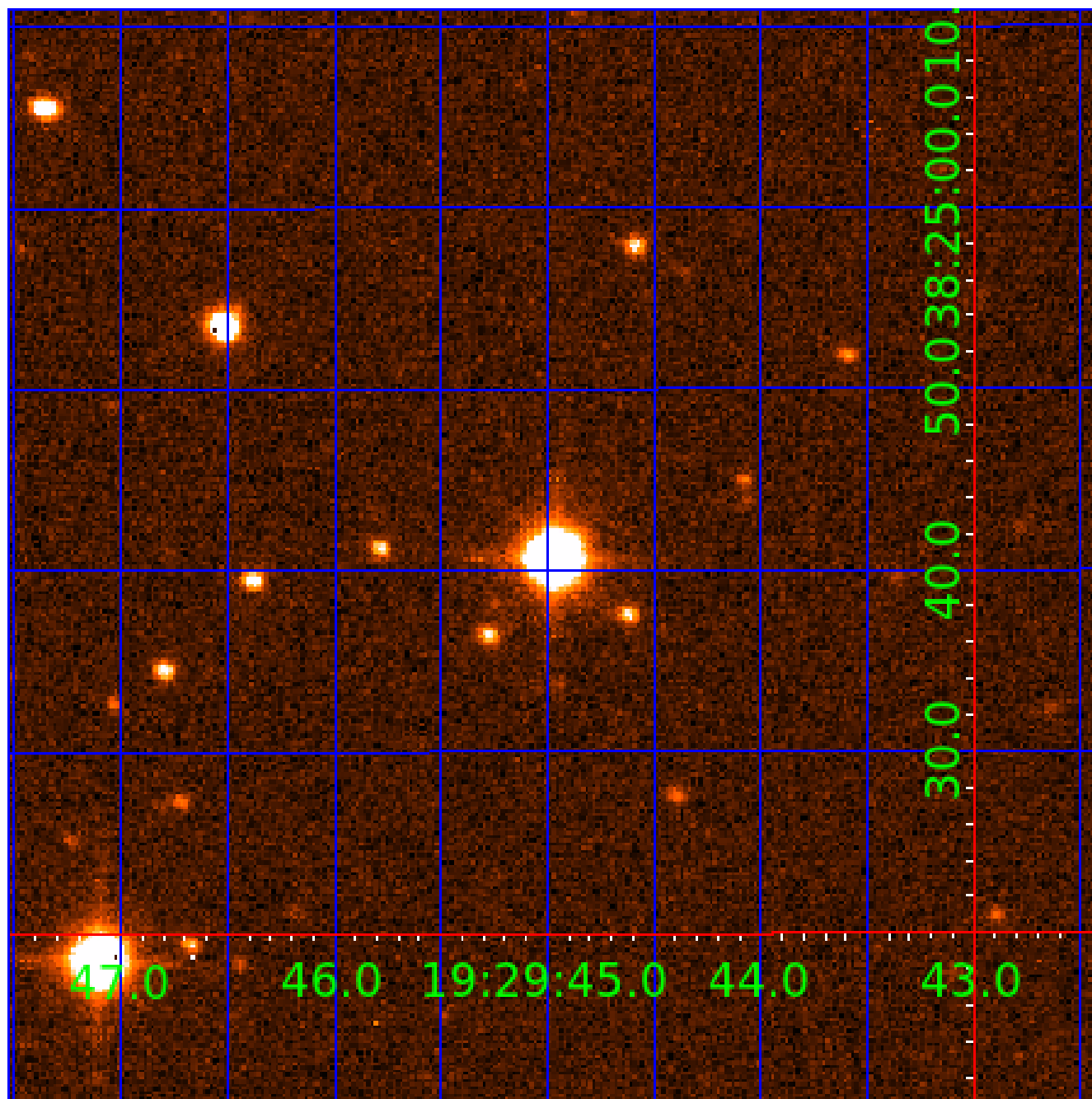


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003346195

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003346195-01	OBS	No	7.009524	137.147469	283.8	8.318	13.2	14.5	2.90	7749	5.21	3386.03
003346195-02	OBS	No	1.402068	132.180513	128.5	7.486	12.2	14.1	2.90	7749	3.33	28945.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003346195-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003346195-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

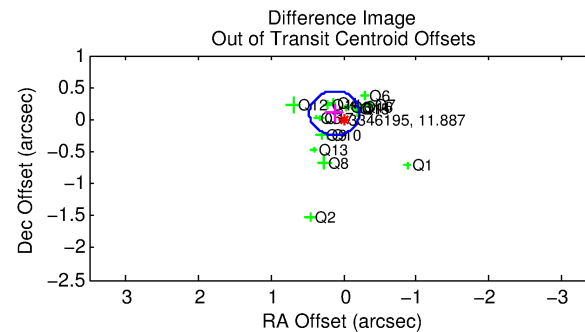
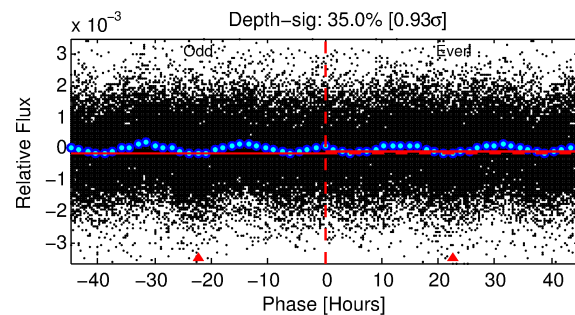
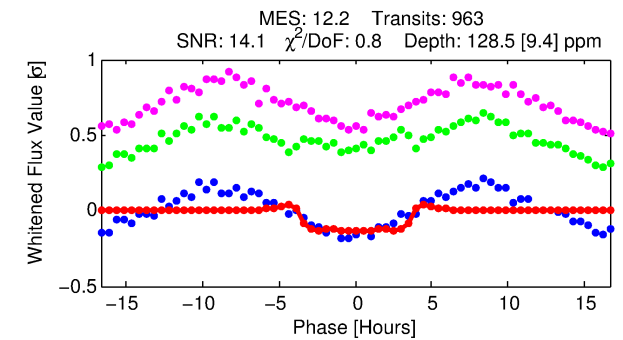
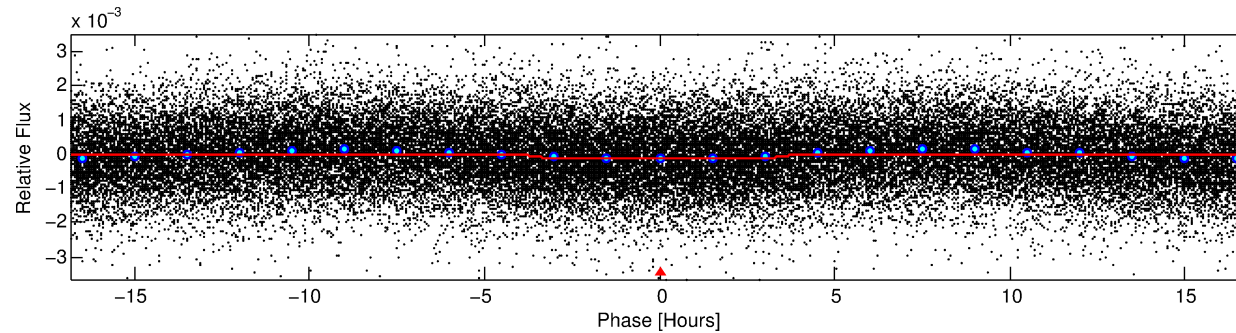
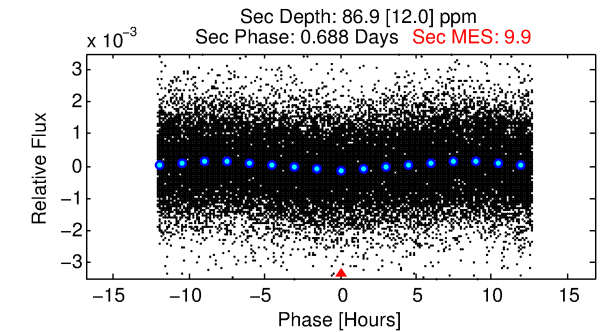
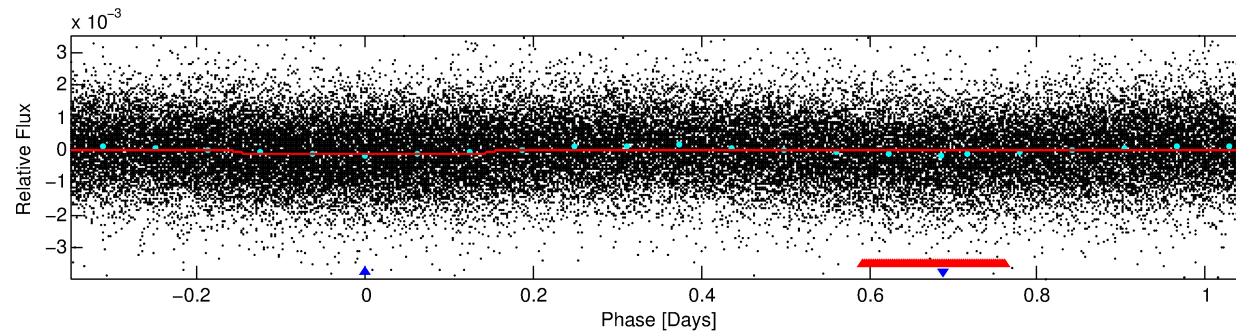
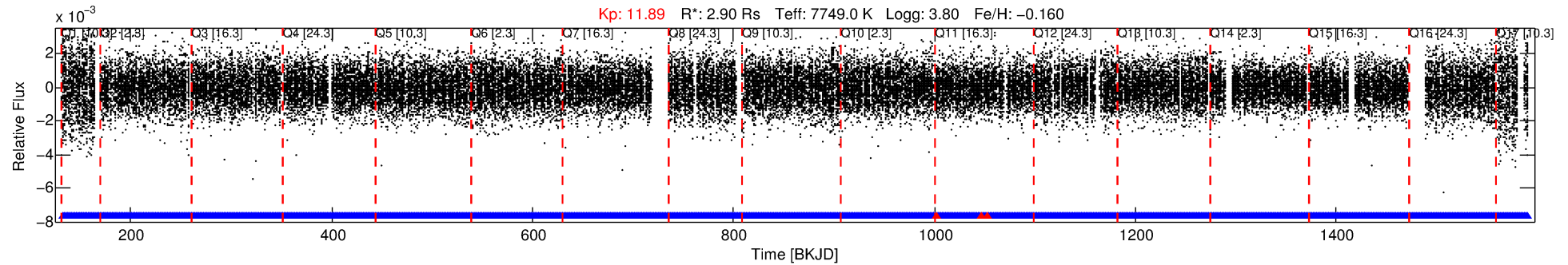
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003346195-02

No Significant Match Found

# DV One-Page Summary

KIC: 3346195 Candidate: 2 of 2 Period: 1.402 d



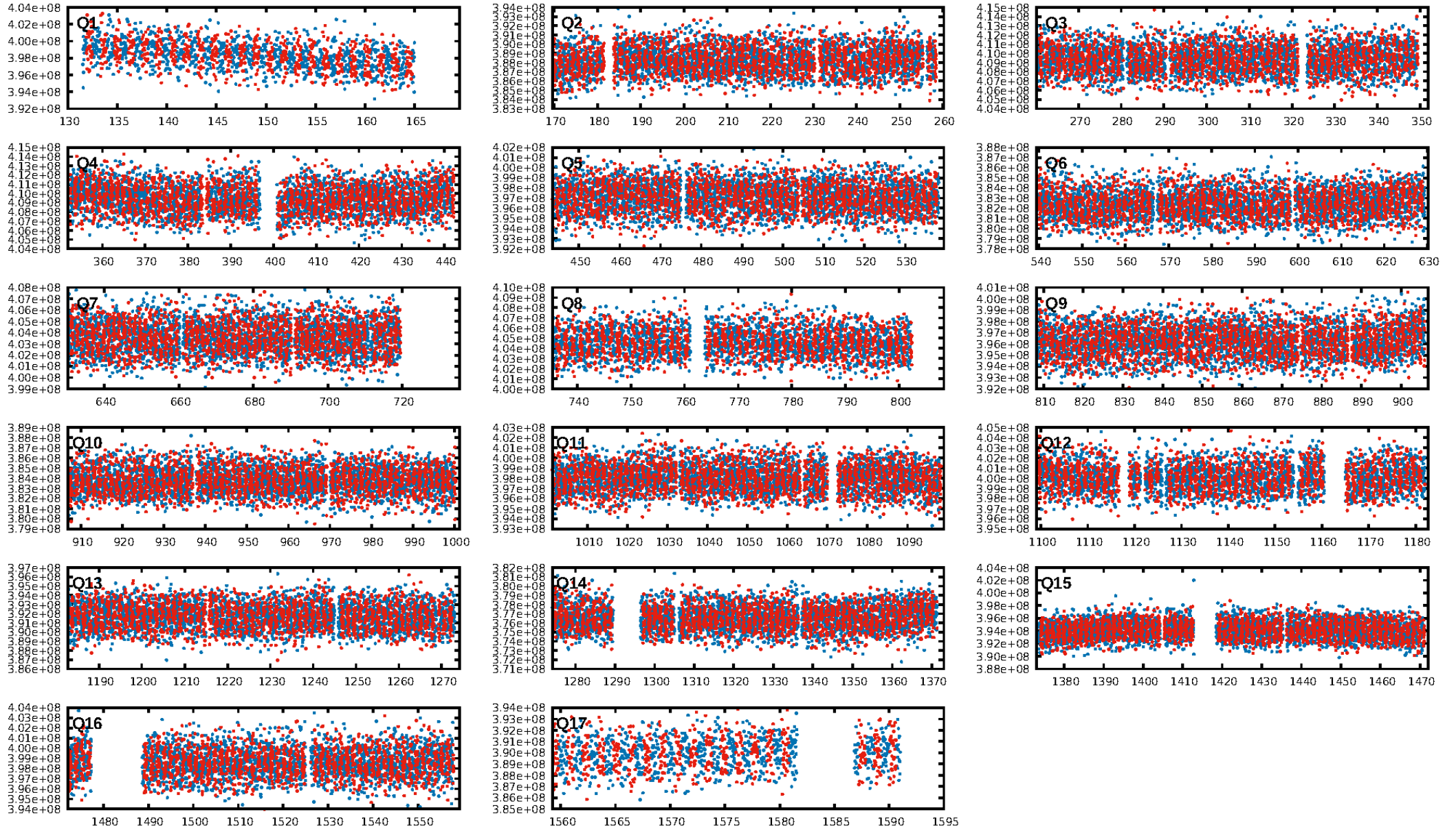
## DV Fit Results:

Period = 1.40207 [0.00001] d  
Epoch = 132.1805 [0.0045] BKJD  
 $R_p/R^* = 0.0105$  [0.0117]  
 $a/R^* = 1.55$  [5.56]  
 $b = 0.22$  [27.37]  
 $\text{Seff} = 28945.69$  [19417.95]  
 $T_{\text{eq}} = 3326$  [558] K  
 $R_p = 3.32$  [3.97]  $R_e$   
 $a = 0.0306$  [0.0127] AU  
 $A_g = 4.05$  [9.39] [0.33σ]  
 $T_{\text{effp}} = 7295$  [4069] K [0.97σ]

## DV Diagnostic Results:

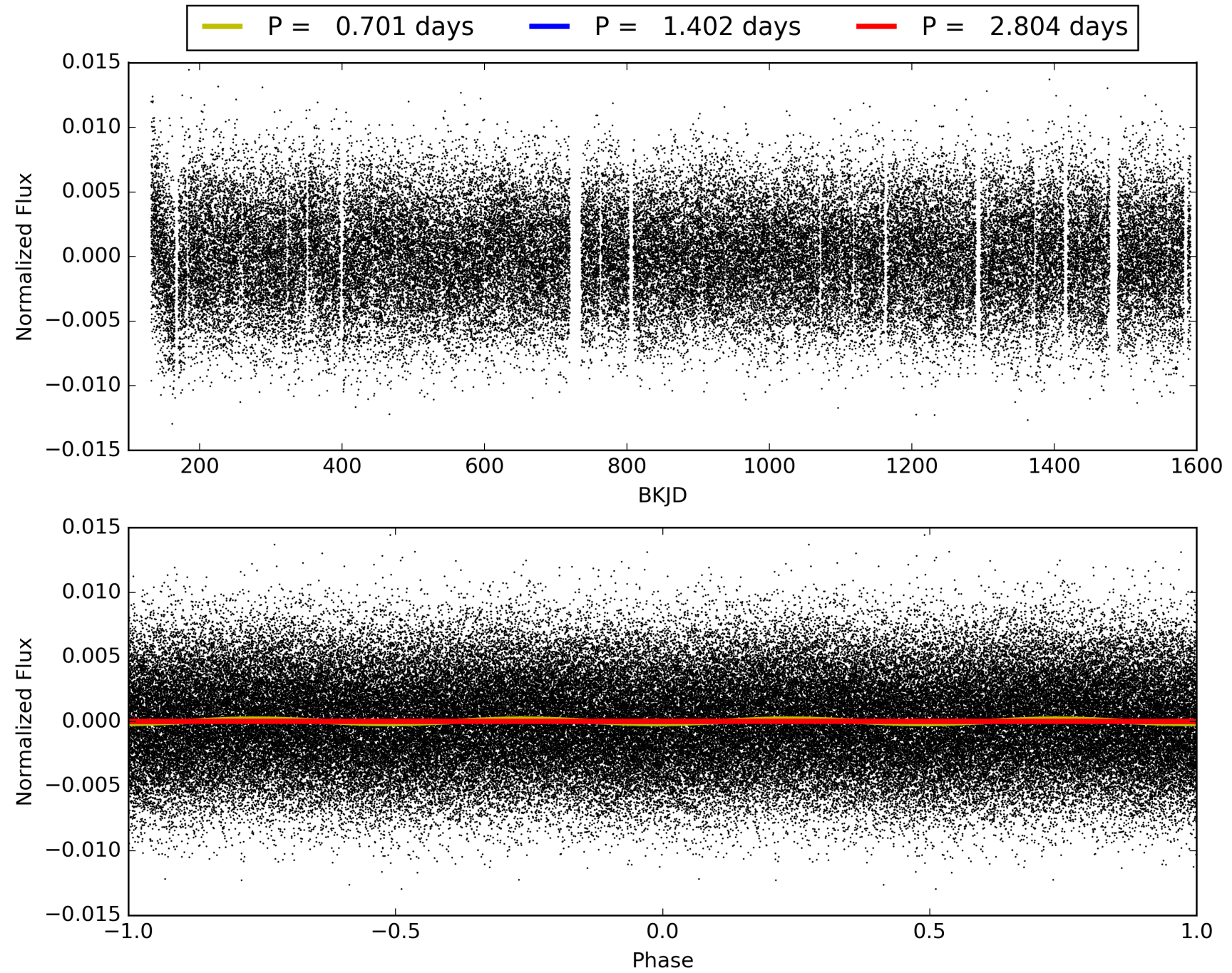
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [12.03σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.17e-26  
RollingBand-fgt: 1.00 [917/920]  
GhostDiagnostic-chr: 1.308  
Centroid-sig: 0.9%  
Centroid-so: 0.114 arcsec [1.50σ]  
OotOffset-rm: 0.162 arcsec [1.41σ]  
KicOffset-rm: 0.123 arcsec [1.04σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 003346195-02, PDC Light Curves





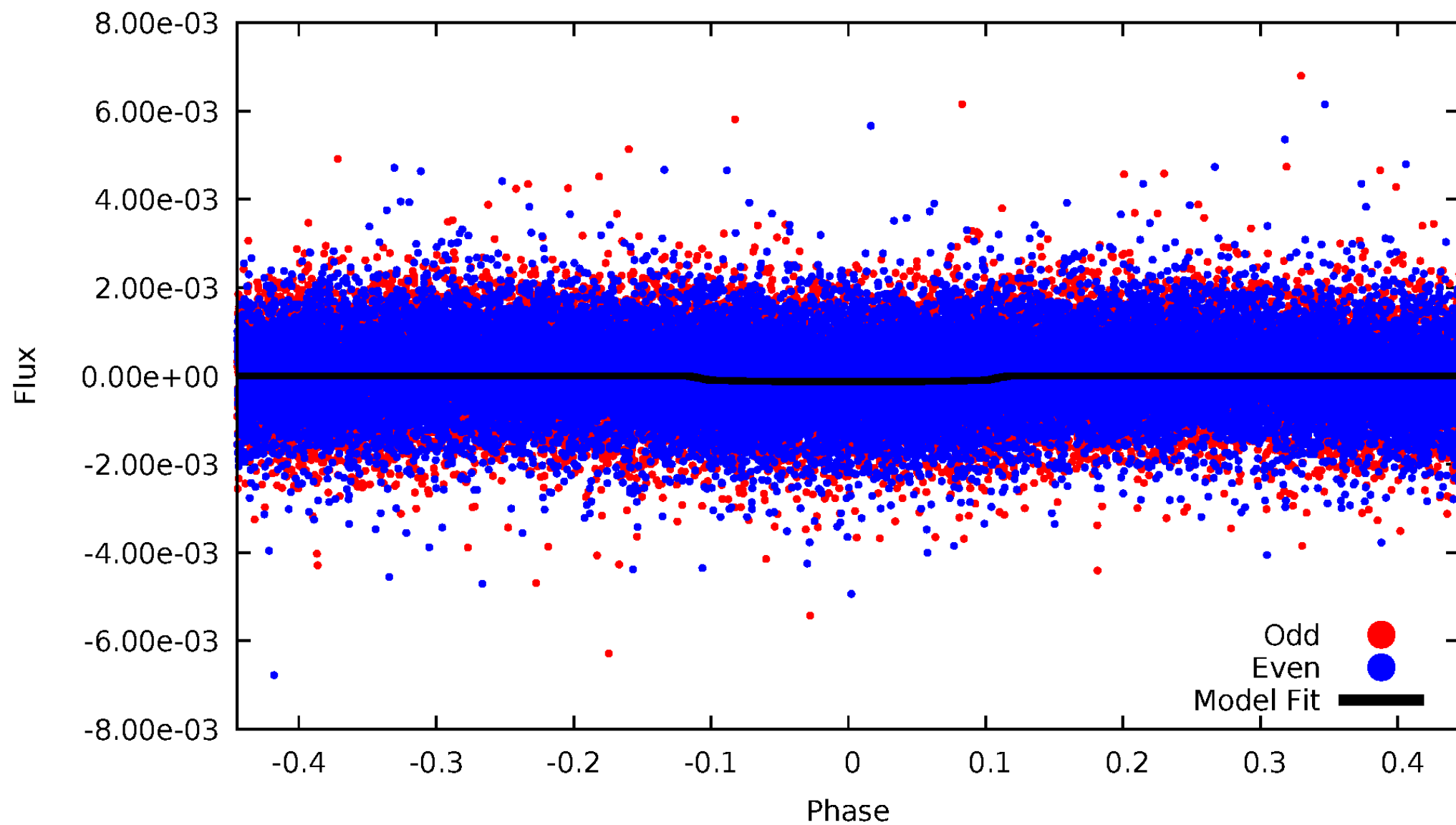
# TCE 003346195-02





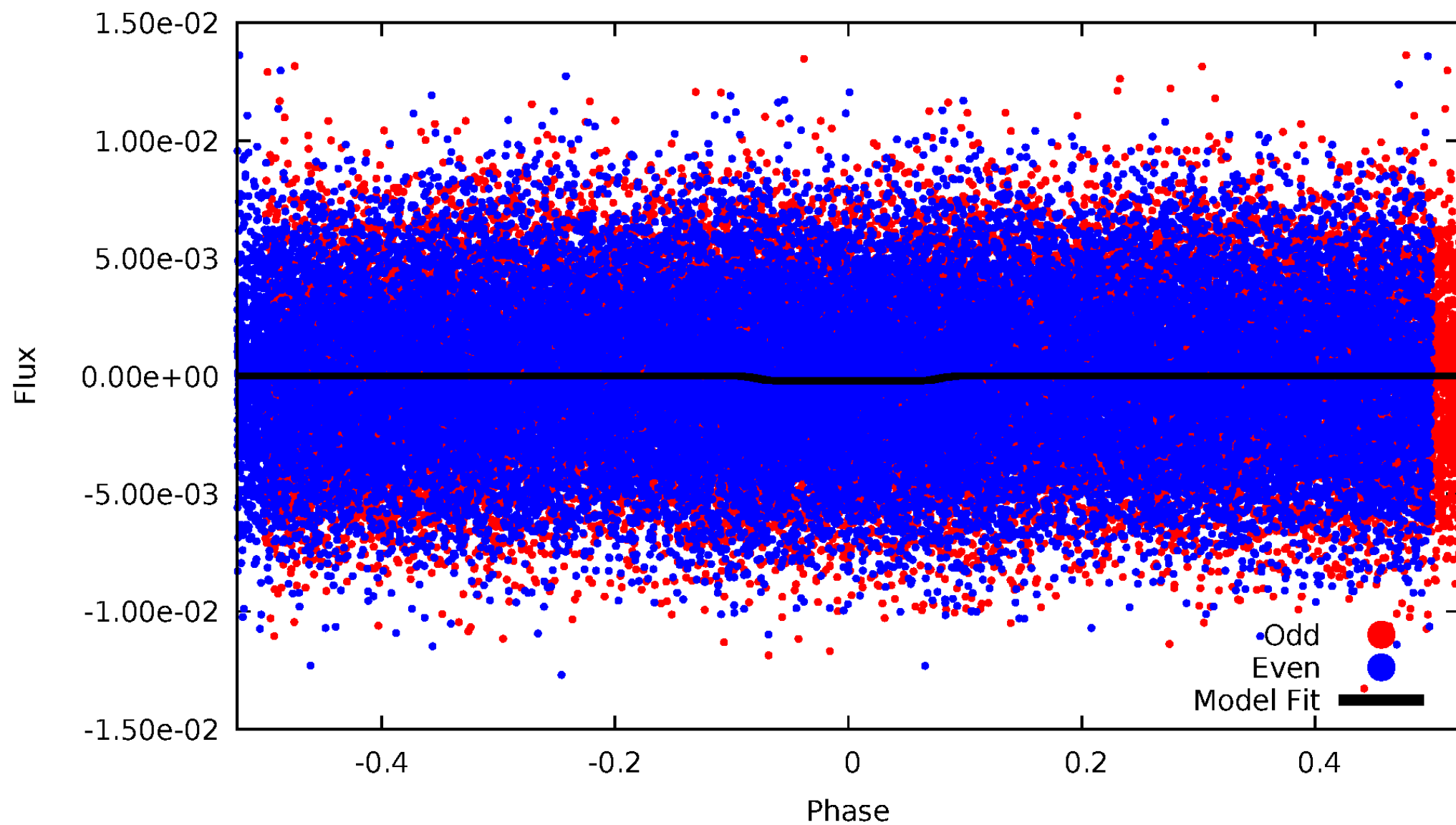
# DV Odd/Even

TCE 003346195-02



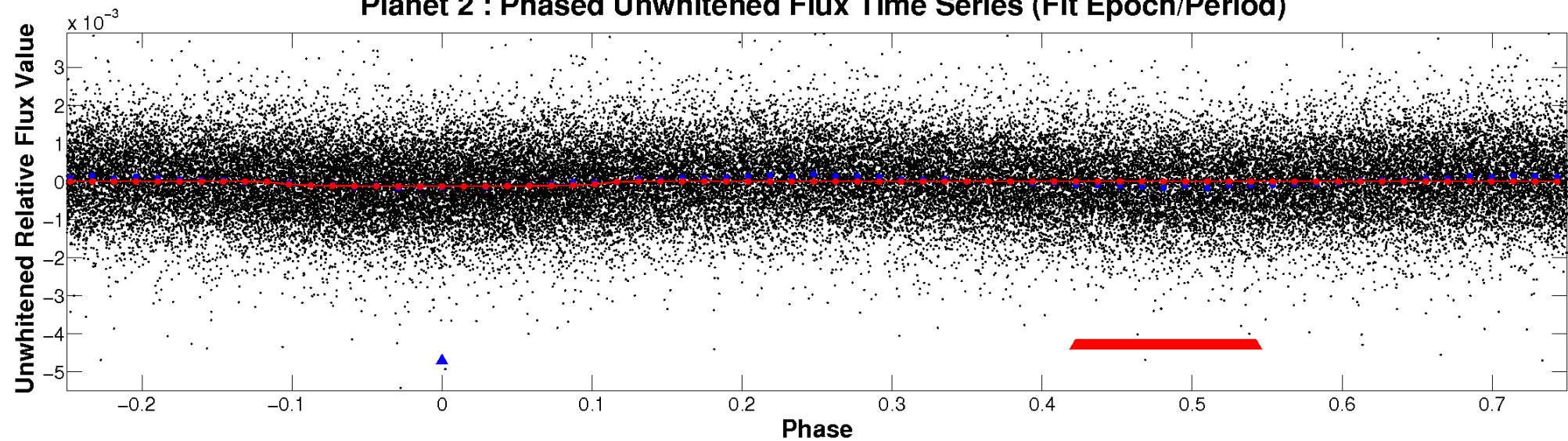
# ALT Odd/Even

TCE 003346195-02

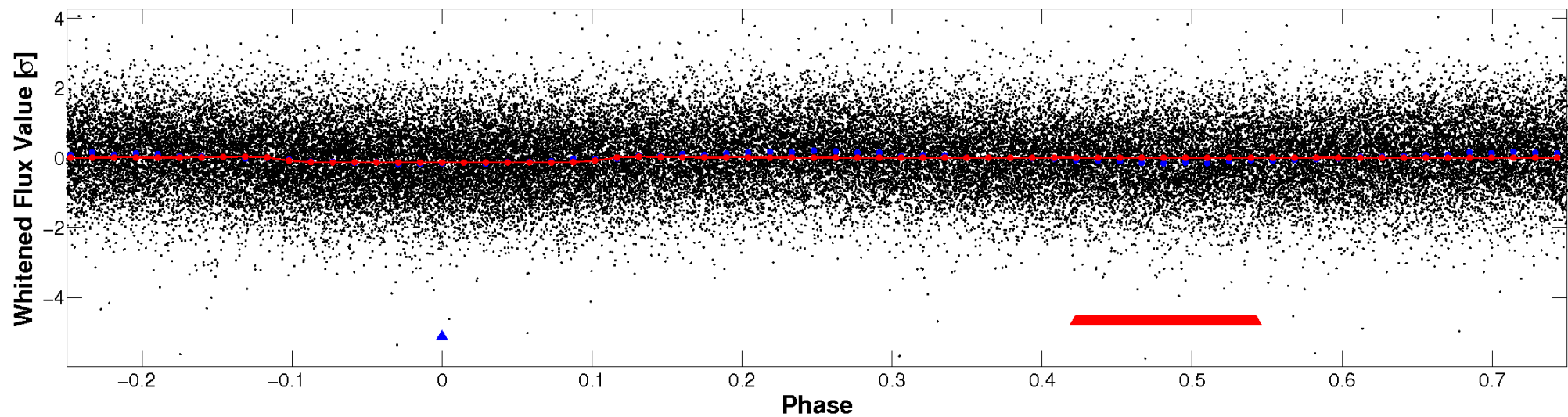


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

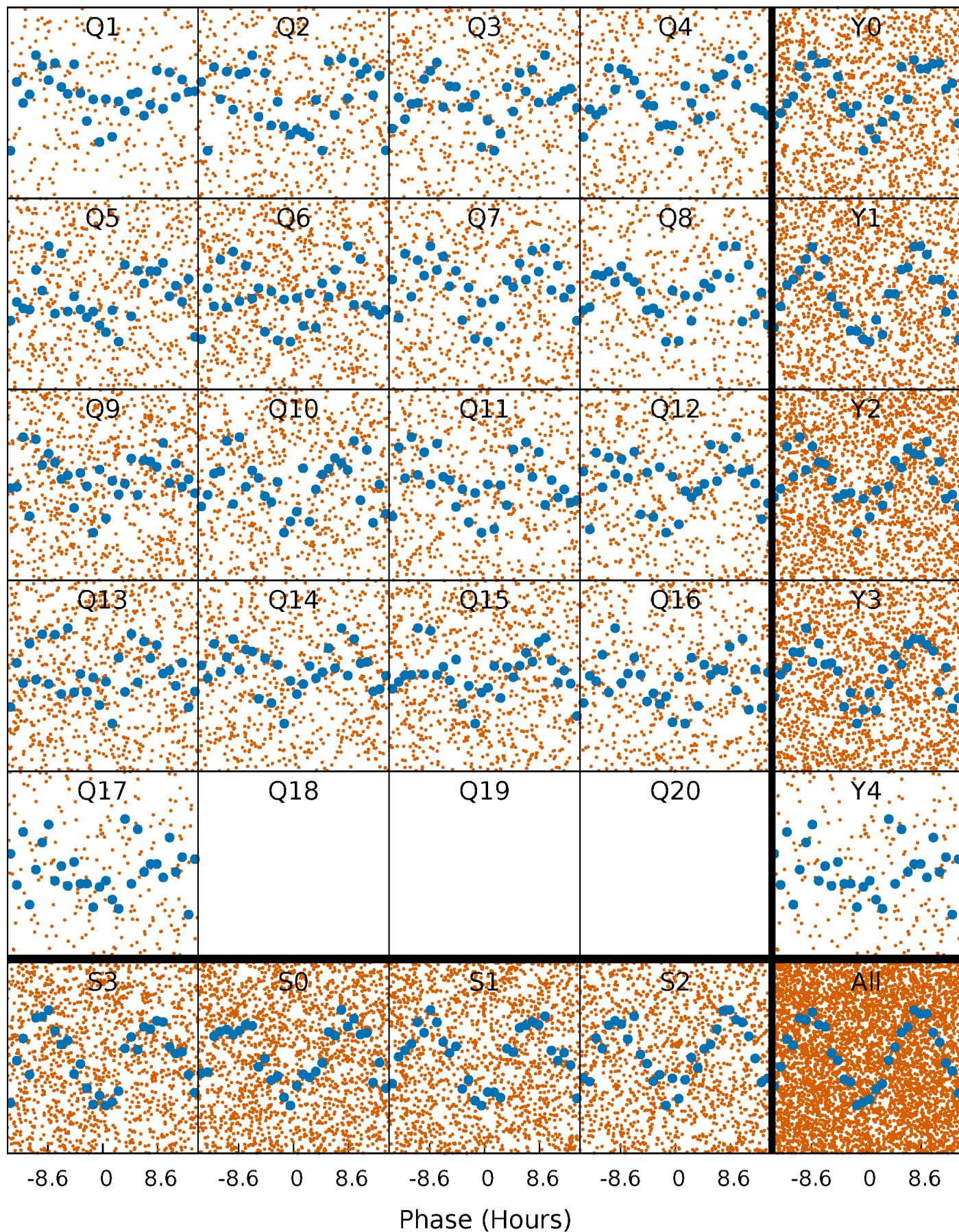


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

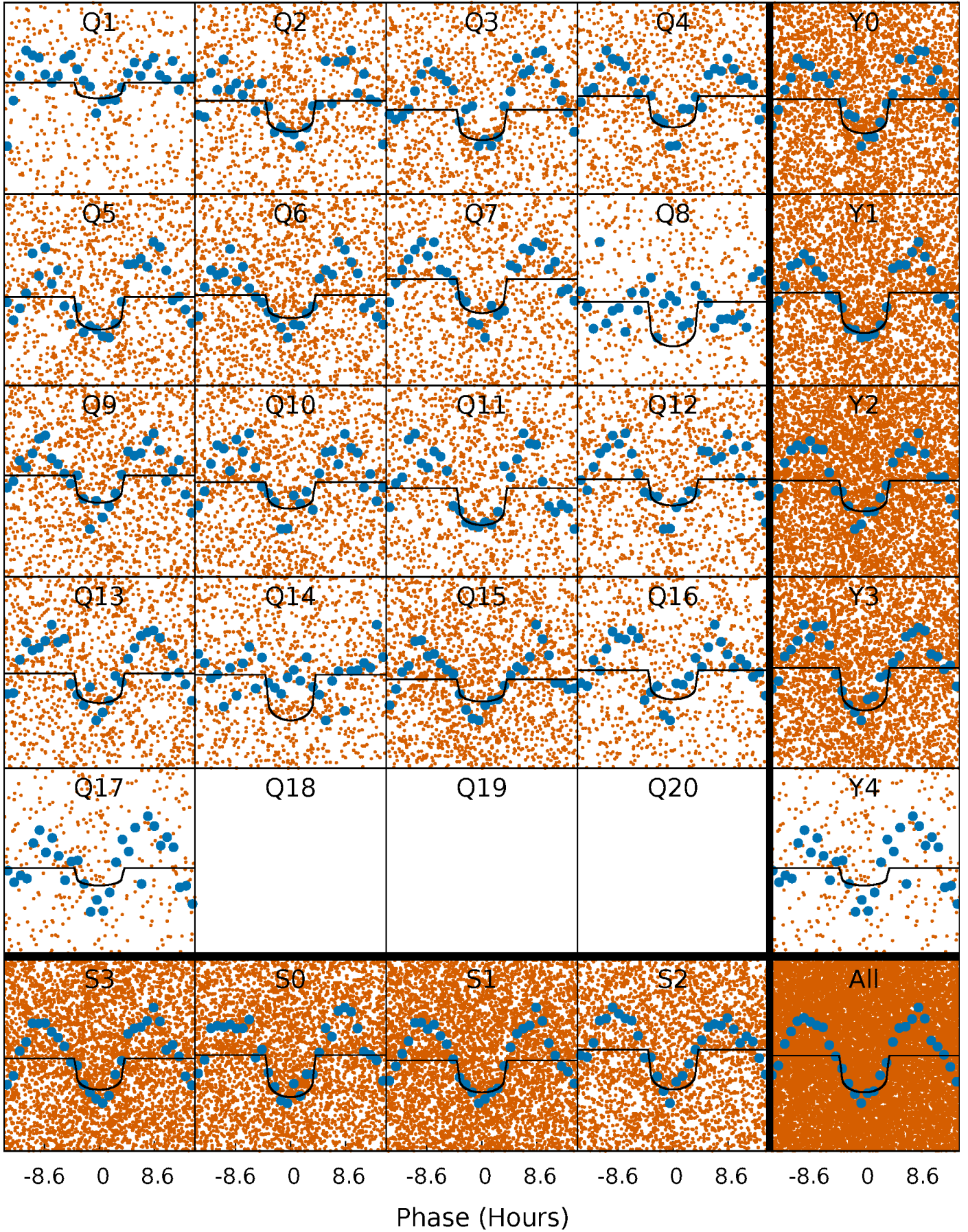
TCE 003346195-02 P= 1.402068 Days  $T_0=132.180512$  (BKJD)





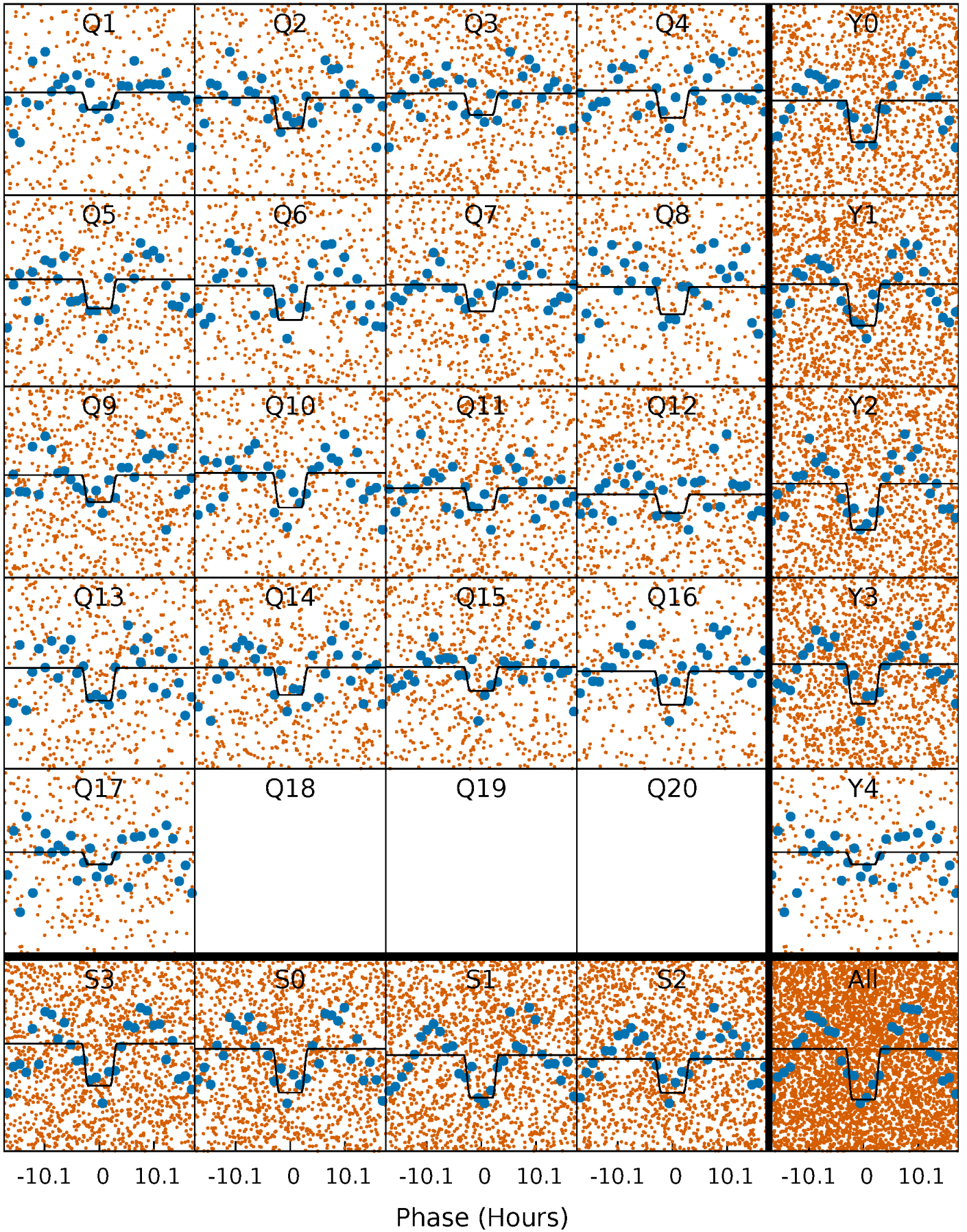
# DV Quarter-Phased Transit Curves

TCE 003346195-02   P= 1.402068 Days    $T_0=132.180512$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003346195-02 P= 1.401999 Days  $T_0=132.199802$  (BKJD)

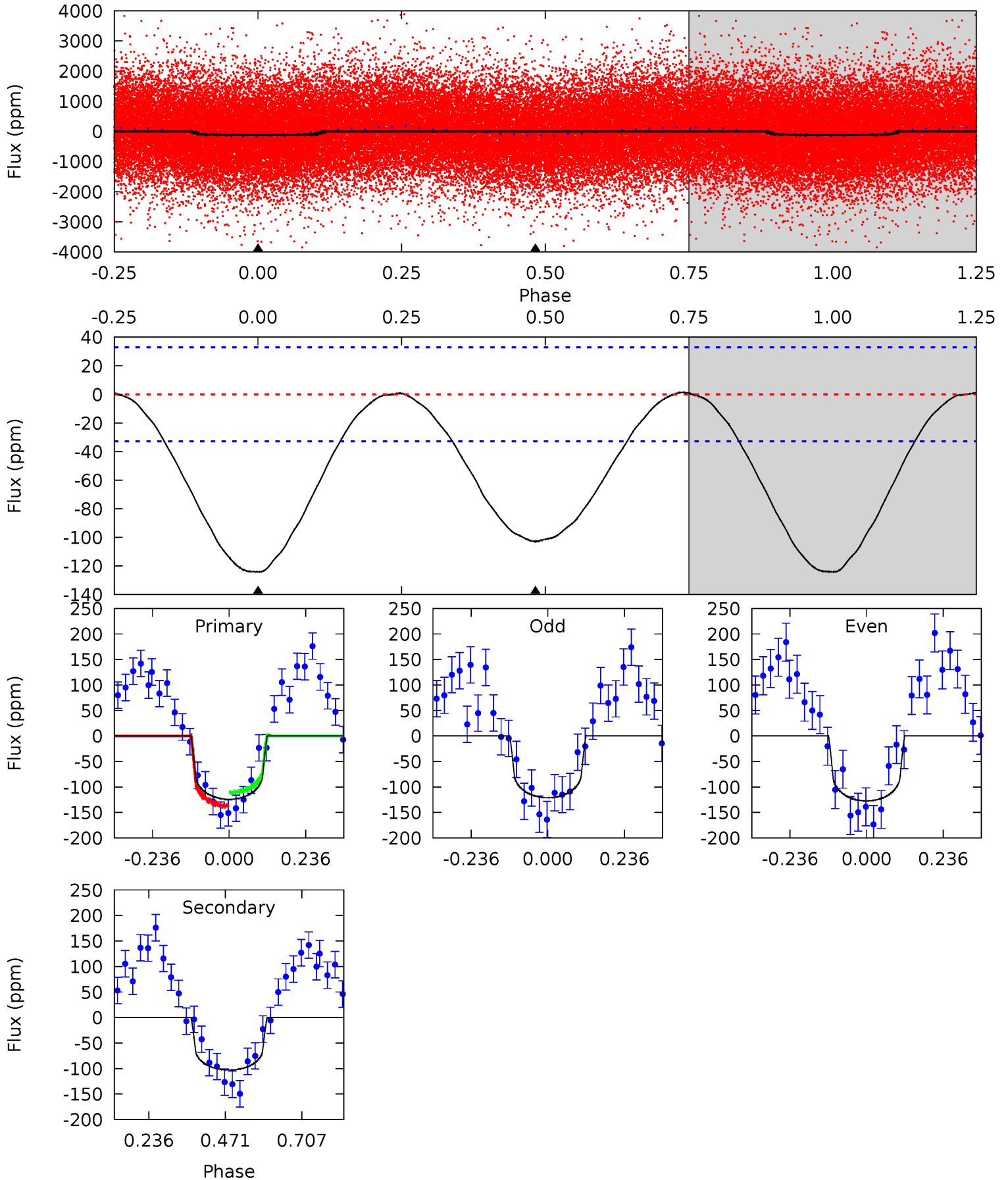




# DV Model-Shift Uniqueness Test

003346195-02, P = 1.402068 Days, E = 130.778444 Days

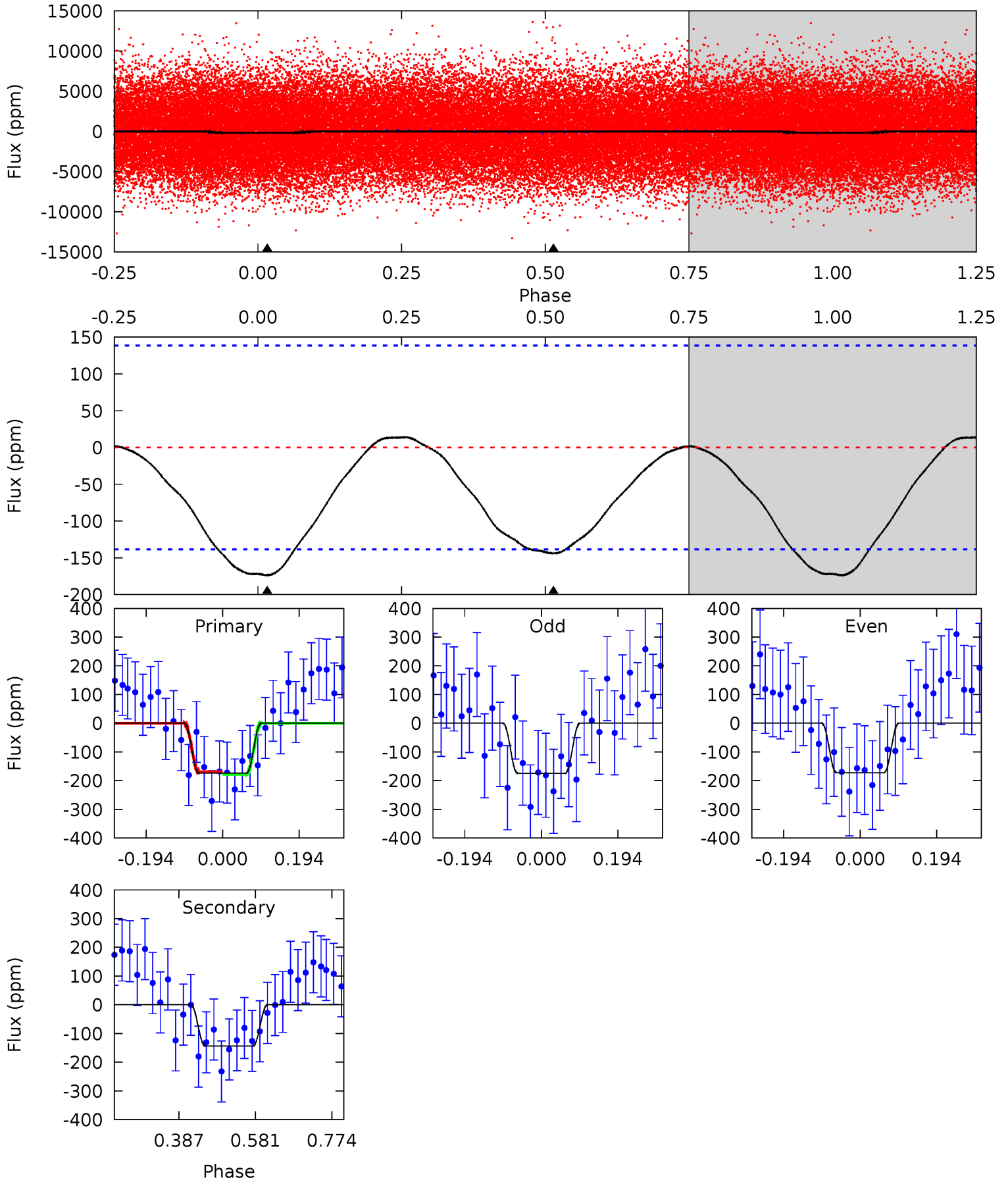
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	13.7	0	0	4.38	1.19	0.16	16.5	16.5	13.7	13.7	0.42	1.05	0.01	1.77



# Alt Model-Shift Uniqueness Test

003346195-02, P = 1.401999 Days, E = 130.797803 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
5.55	4.60	0	0	4.42	1.30	0.34	5.55	5.55	4.60	4.60	0.04	1.00	0.07	0.14



### Stellar Parameters For KIC 003346195

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7749^{+211}_{-332}$	$3.803^{+0.376}_{-0.094}$	$-0.160^{+0.200}_{-0.350}$	$2.898^{+0.322}_{-1.286}$	$1.946^{+0.088}_{-0.496}$	$0.113^{+0.376}_{-0.032}$
	+3%/-4%	+10%/-2%	+125%/-219%	+11%/-44%	+5%/-25%	+334%/-29%
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 003346195-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-103 \pm 8$	$3.96^{+3.26}_{-2.55}$	$4530^{+296}_{-517}$	$6280^{+6048}_{-1645}$	$3.204^{+22.451}_{-2.199}$
Alt.	$-144 \pm 31$	$4.69^{+3.43}_{-3.03}$	$4534^{+302}_{-475}$	$6325^{+6146}_{-1560}$	$3.345^{+20.978}_{-2.248}$

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

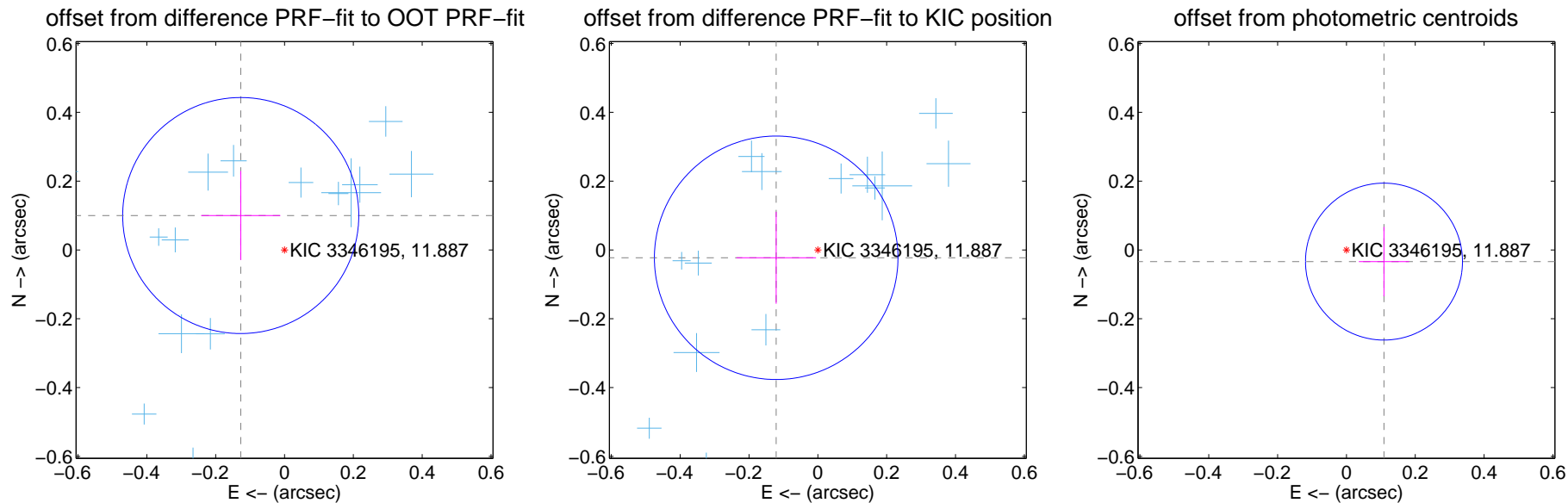
## DV Centroid Data

Supplemental centroid analysis for 003346195-02. **Kepler magnitude: 11.89.** Transit SNR 14.12

There are 17 quarters with good PRF difference image offsets

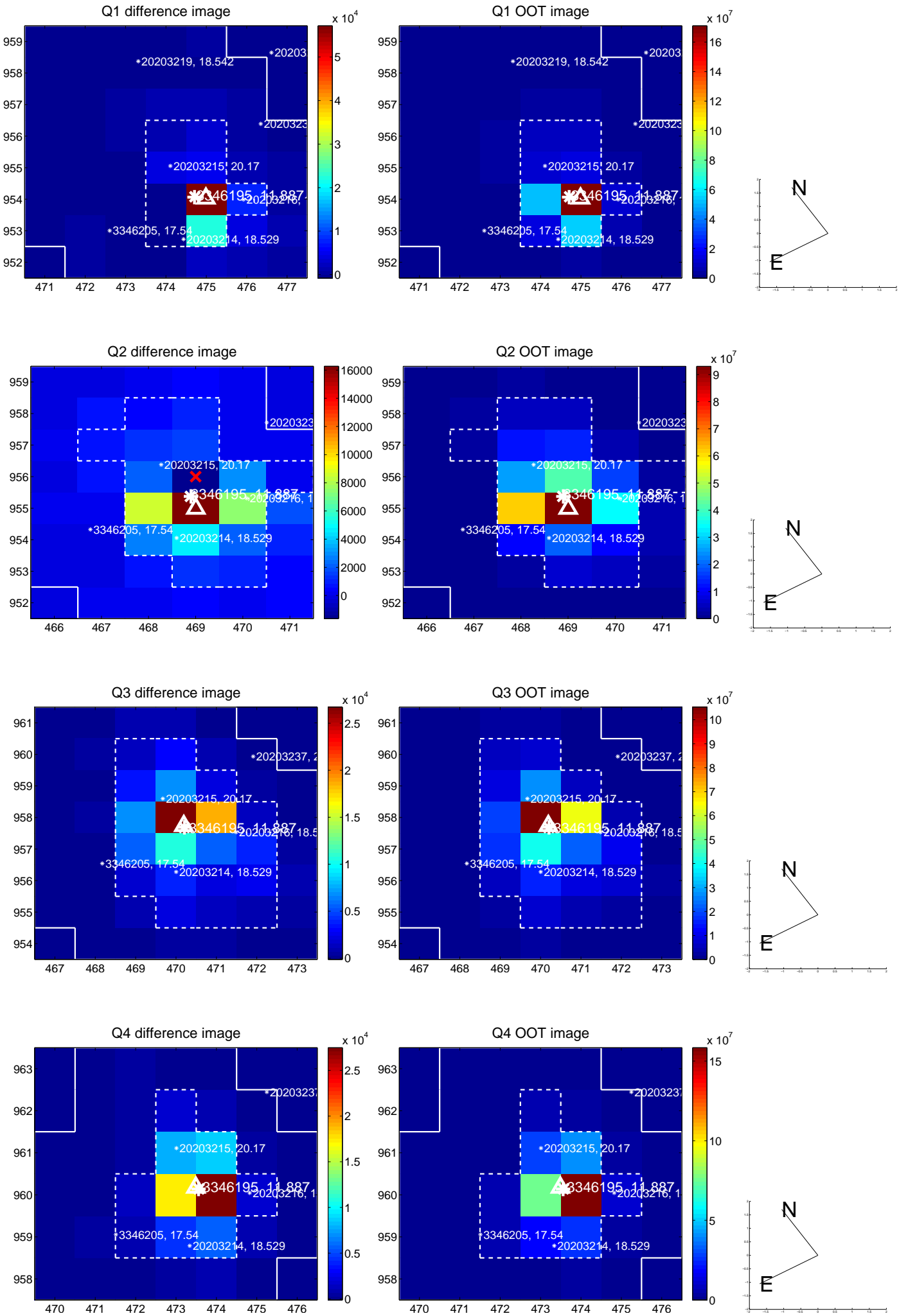
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.162 \pm 0.114$	1.41	$0.127 \pm 0.115$	$0.100 \pm 0.129$
PRF-fit source offset from KIC position	$0.123 \pm 0.118$	1.04	$0.121 \pm 0.116$	$-0.023 \pm 0.133$
photometric centroid source offset	$0.11 \pm 0.08$	1.50	$-0.11 \pm 0.07$	$-0.03 \pm 0.10$



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.

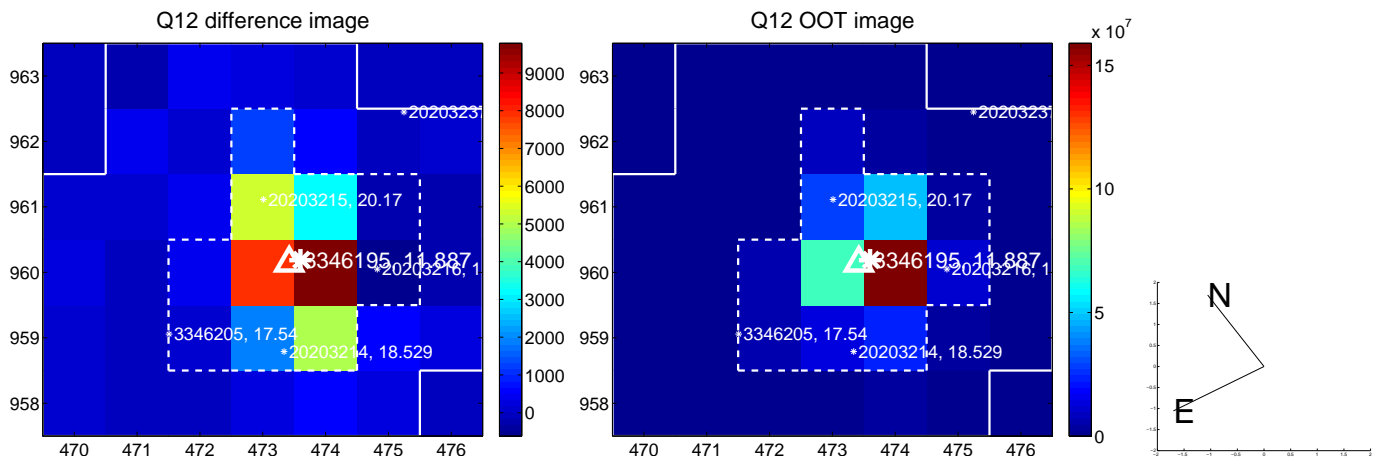
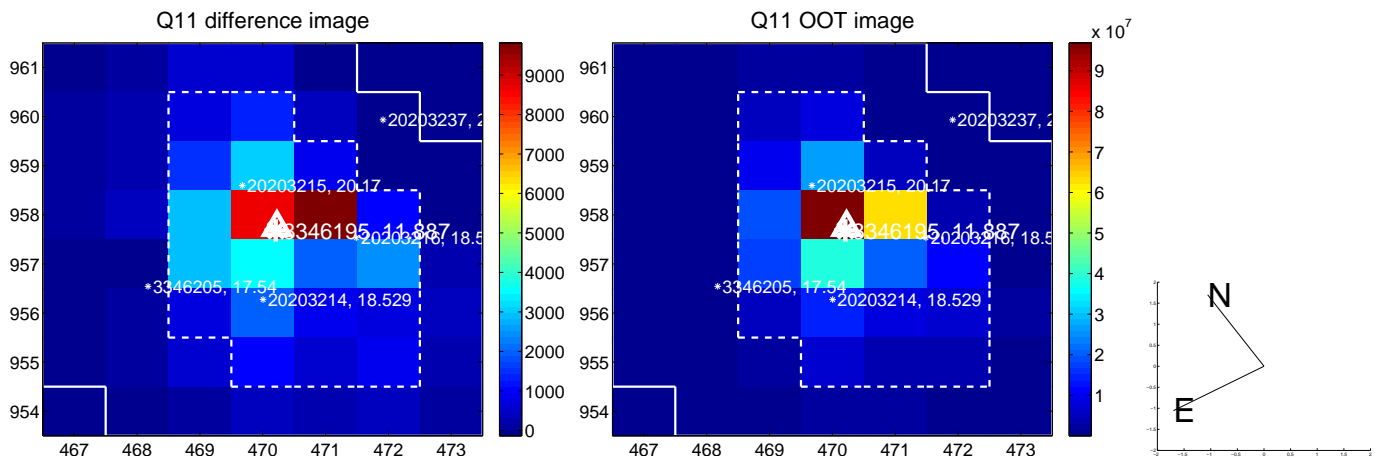
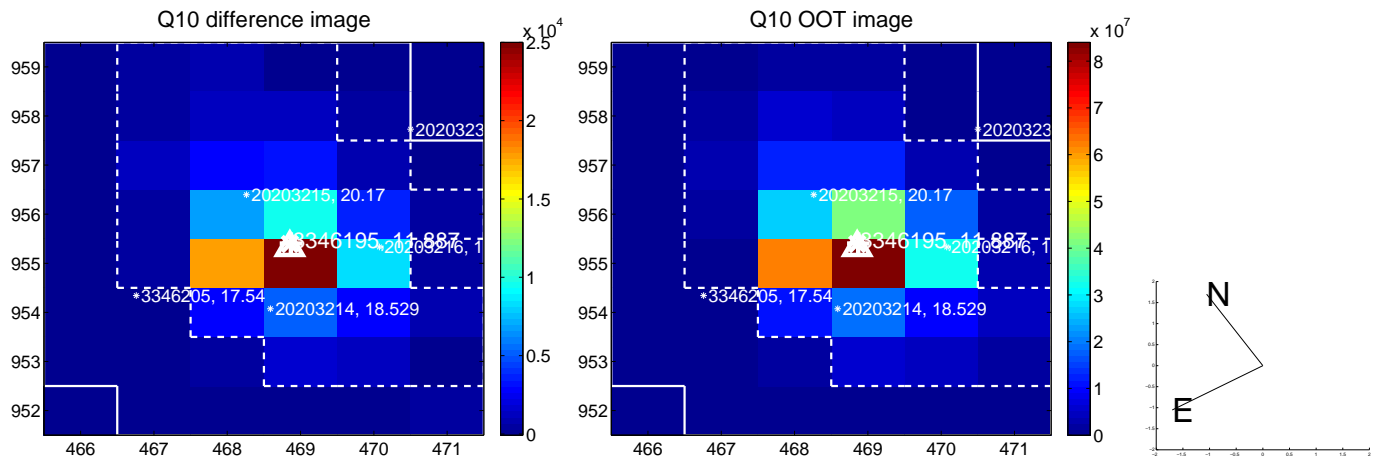
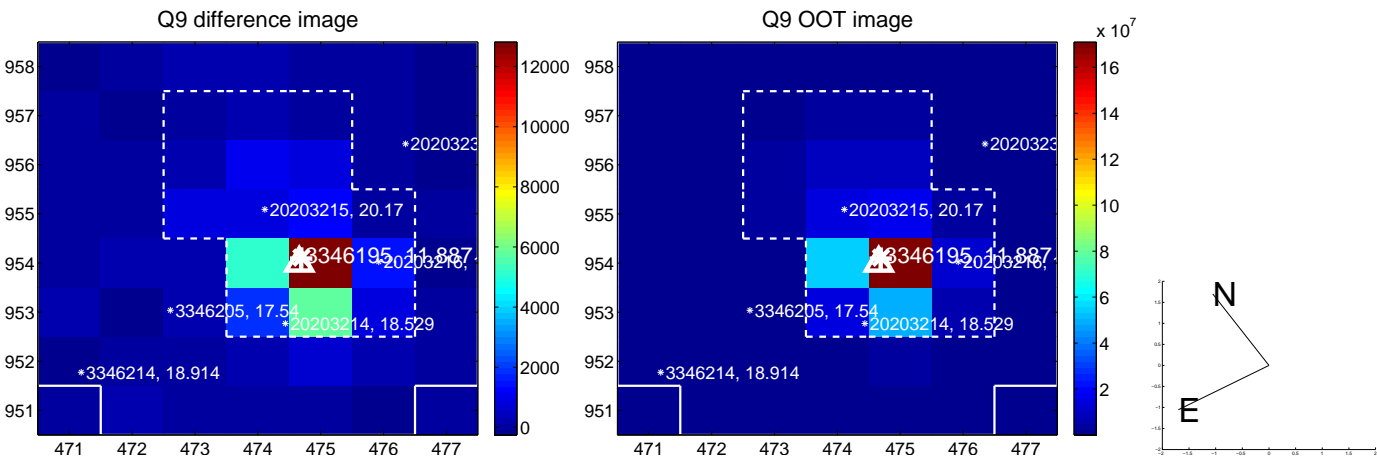
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



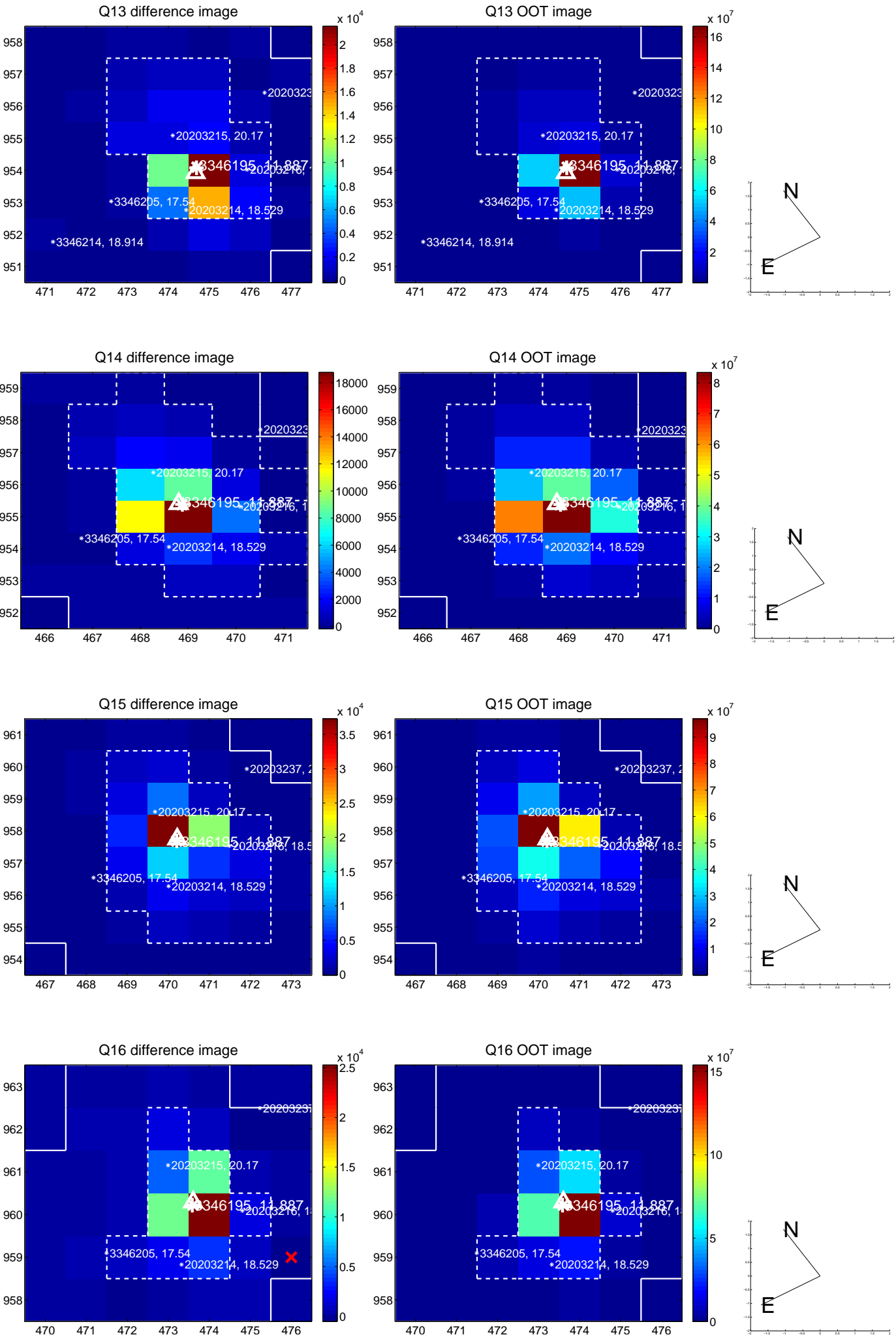




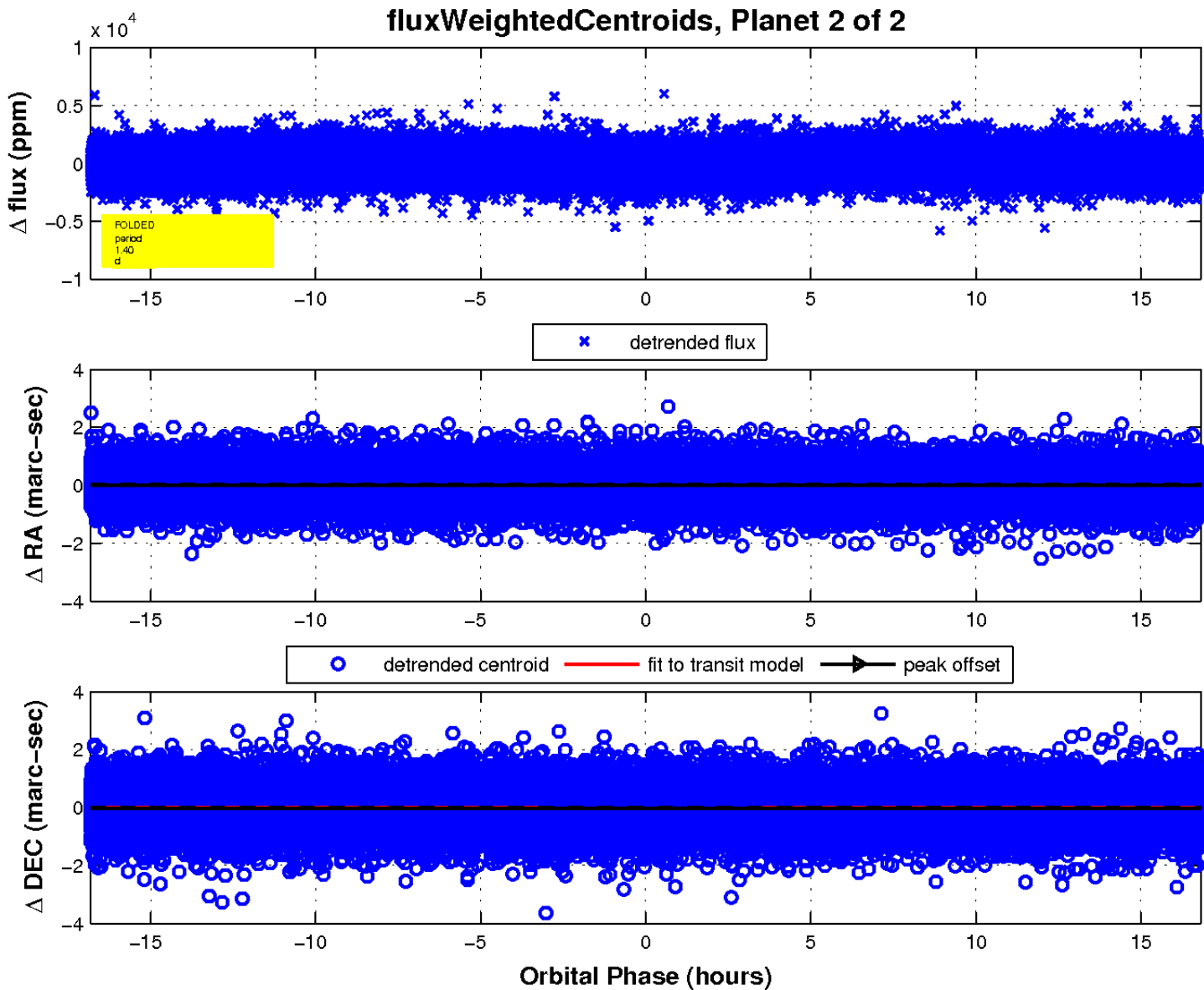
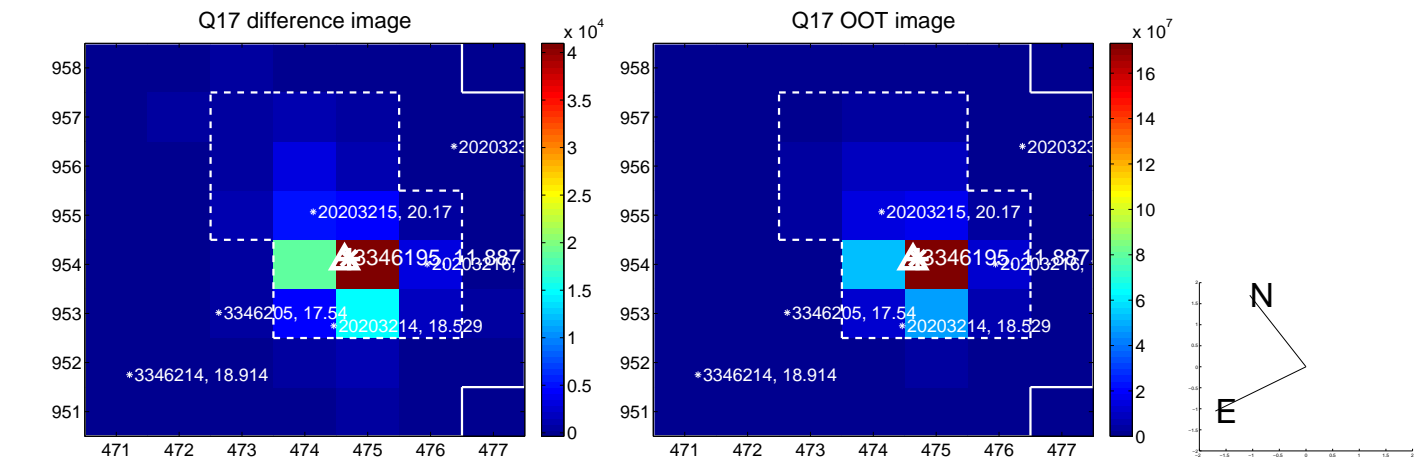
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

