

# KIC 005385838

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005385838-01	OBS	No	12.425611	141.255628	329.2	10.159	20.2	24.5	2.65	6541	9.36	790.85
005385838-02	OBS	No	12.425067	134.008035	136.2	26.392	15.4	13.3	2.65	6541	3.90	790.90
005385838-03	OBS	No	4.143775	133.711449	45.8	16.800	15.5	7.0	2.65	6541	2.10	3419.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005385838-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_CROWDED—HALO_GHOST—EPHEM_MATCH
005385838-02	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_CROWDED—HALO_GHOST—EPHEM_MATCH
005385838-03	OBS	FP	0.00	1	0	0	1	SWEET_NTL—LPP_DV—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.

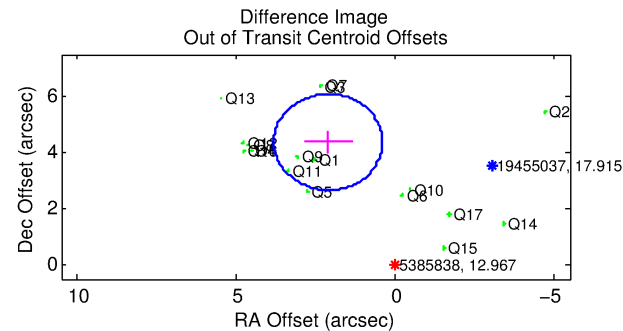
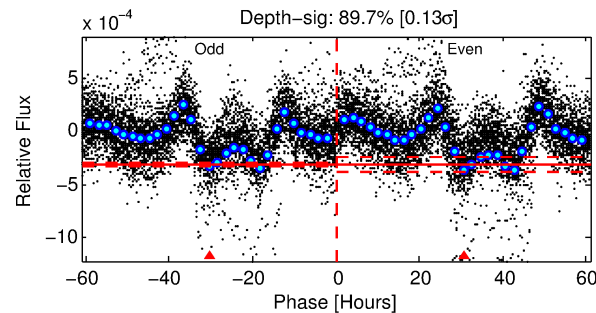
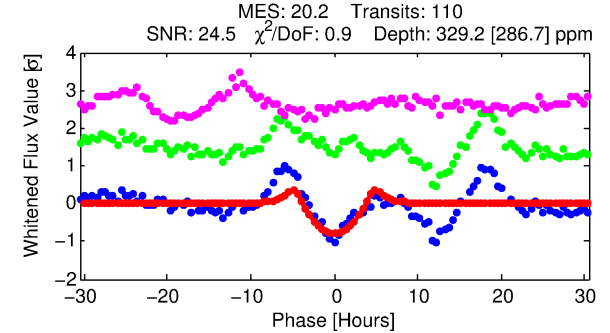
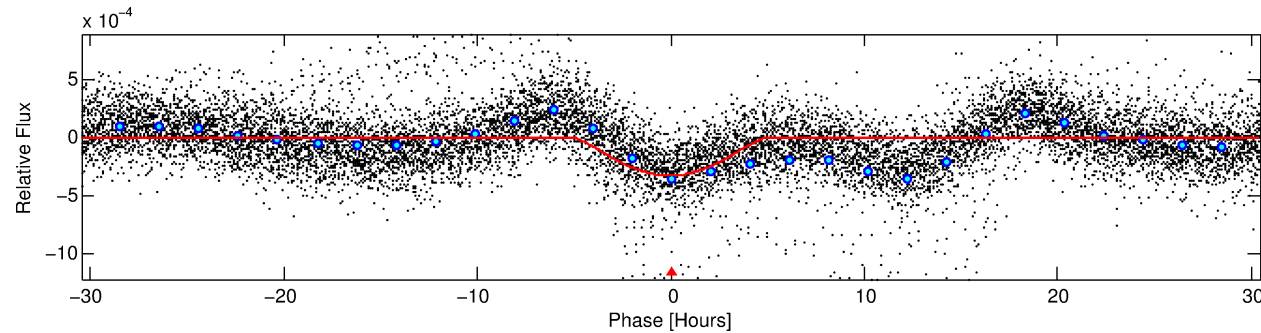
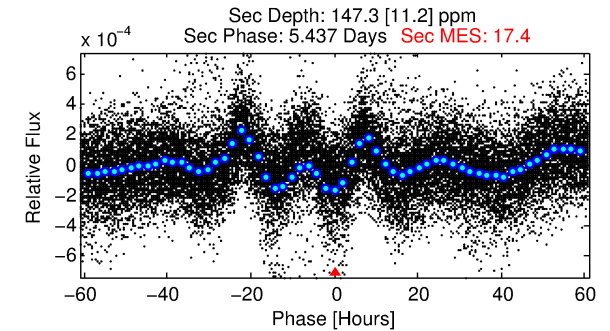
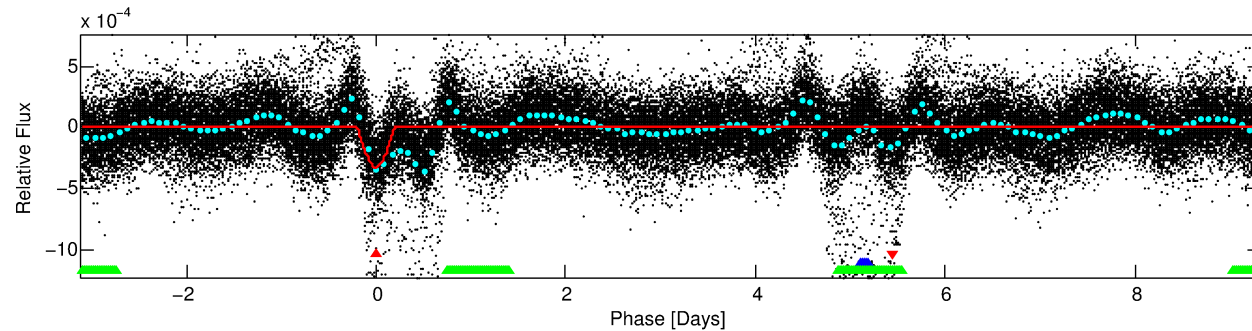
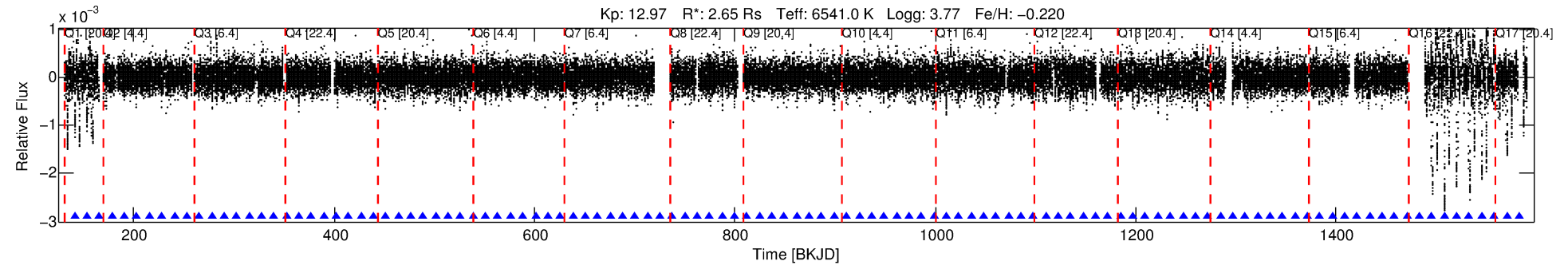
## Ephemeris Match Information For 005385838-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
005385838-01	5385838	6129.01	5385778	1:1	63.8	5	16	12.70	12.97	16.98	Direct-PRF	1	2.90	4.05

**Notes:** P<sub>1</sub>:P<sub>2</sub> 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<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> 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: 5385838 Candidate: 1 of 3 Period: 12.426 d



## DV Fit Results:

Period = 12.42561 [0.00010] d  
Epoch = 141.2556 [0.0066] BKJD  
Rp/R\* = 0.0324 [0.0194]  
a/R\* = 2.60 [0.33]  
b = 1.00 [0.05]  
Seff = 790.85 [435.12]  
Teq = 1352 [186] K  
Rp = 9.36 [6.52] Re  
a = 0.1208 [0.0406] AU  
Ag = 13.48 [17.73] [0.70σ]  
Teffp = 4006 [1211] K [2.17σ]

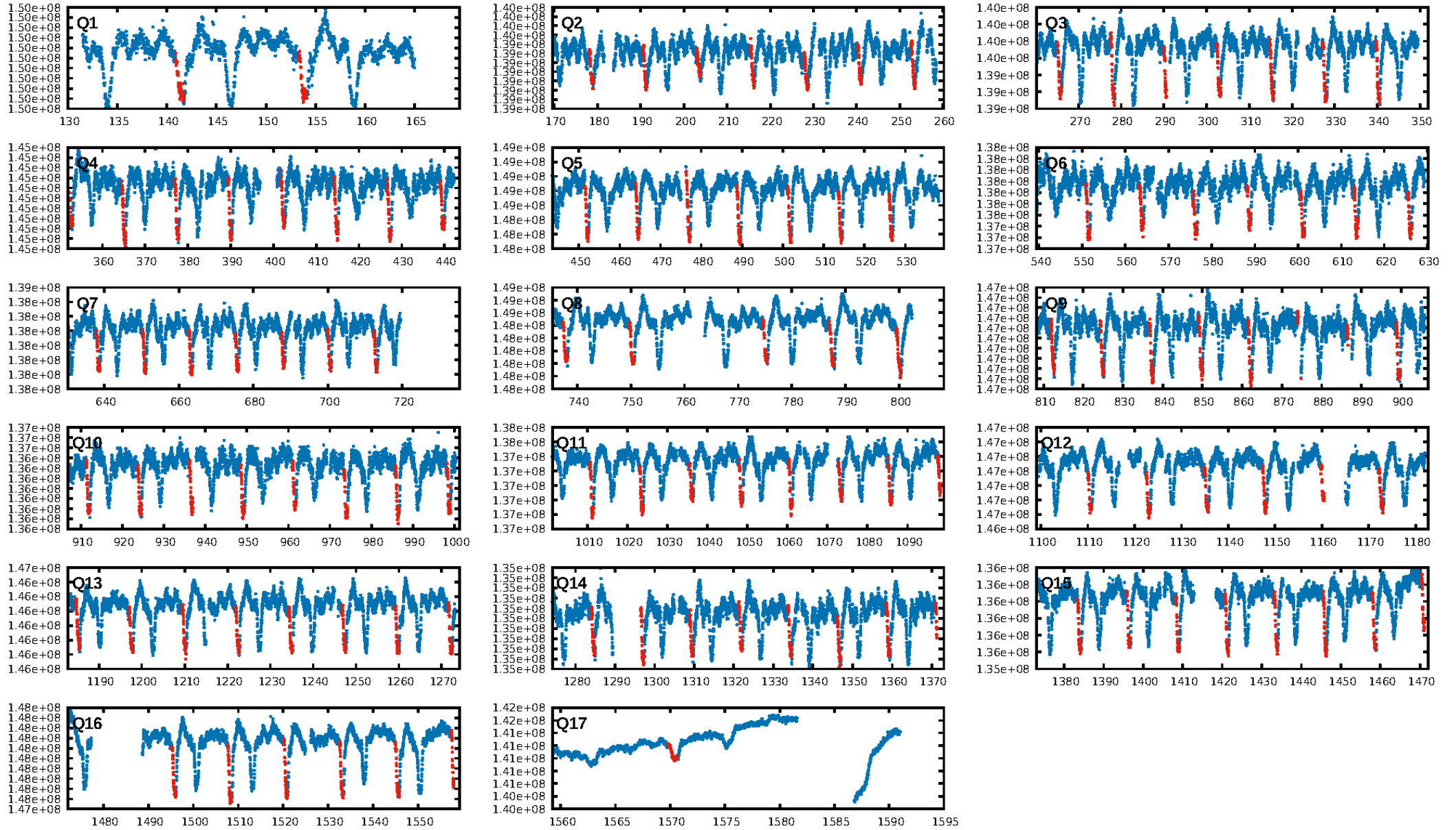
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 97.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.43e-41  
RollingBand-fgt: 1.00 [107/107]  
GhostDiagnostic-chr: 0.05658  
Centroid-sig: 0.0%  
Centroid-so: 5.957 arcsec [14.81σ]  
OotOffset-rm: 4.854 arcsec [8.52σ]  
KicOffset-rm: 5.081 arcsec [9.29σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.47 [8/17]

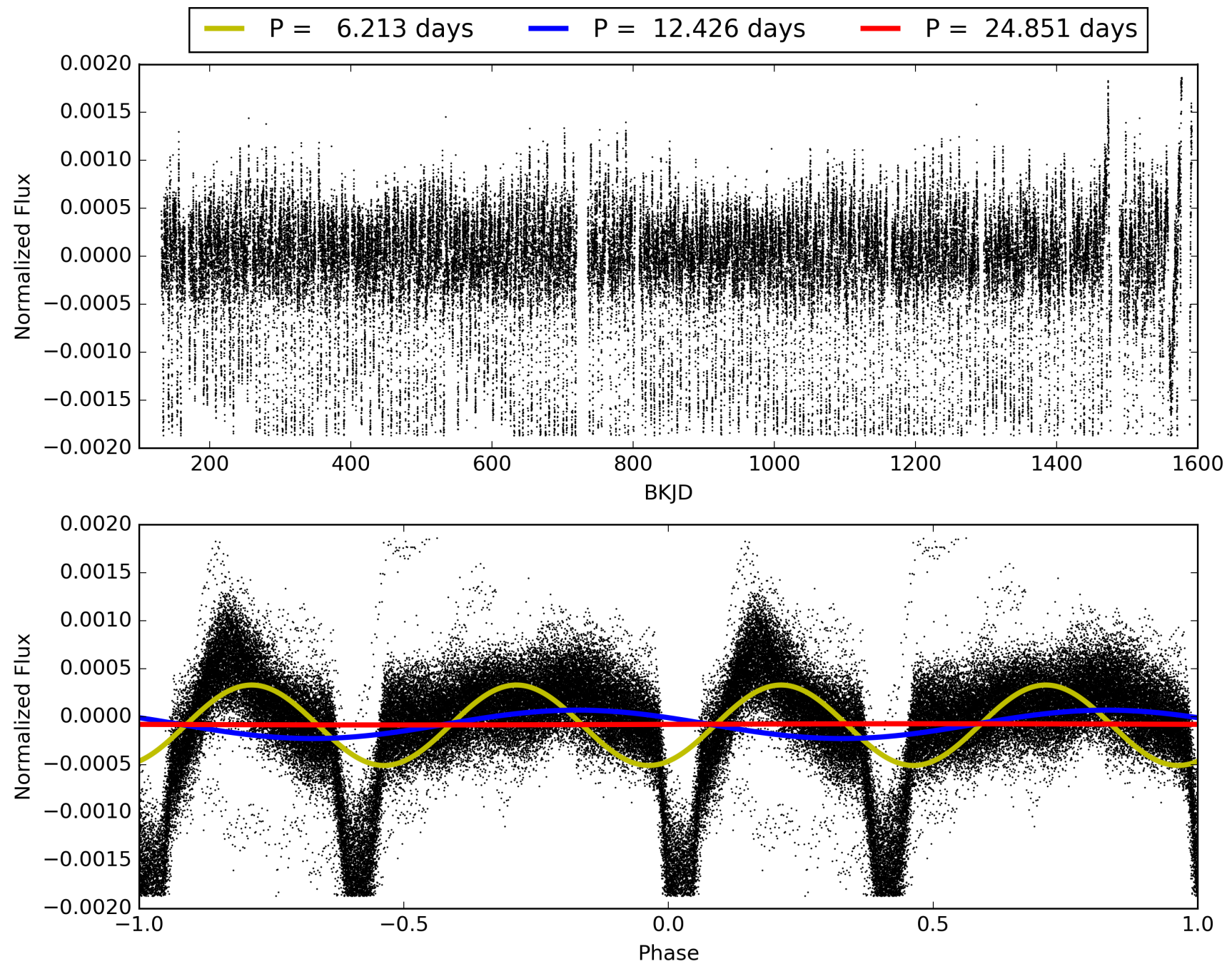
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:36:40 Z

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

# TCE 005385838-01, PDC Light Curves



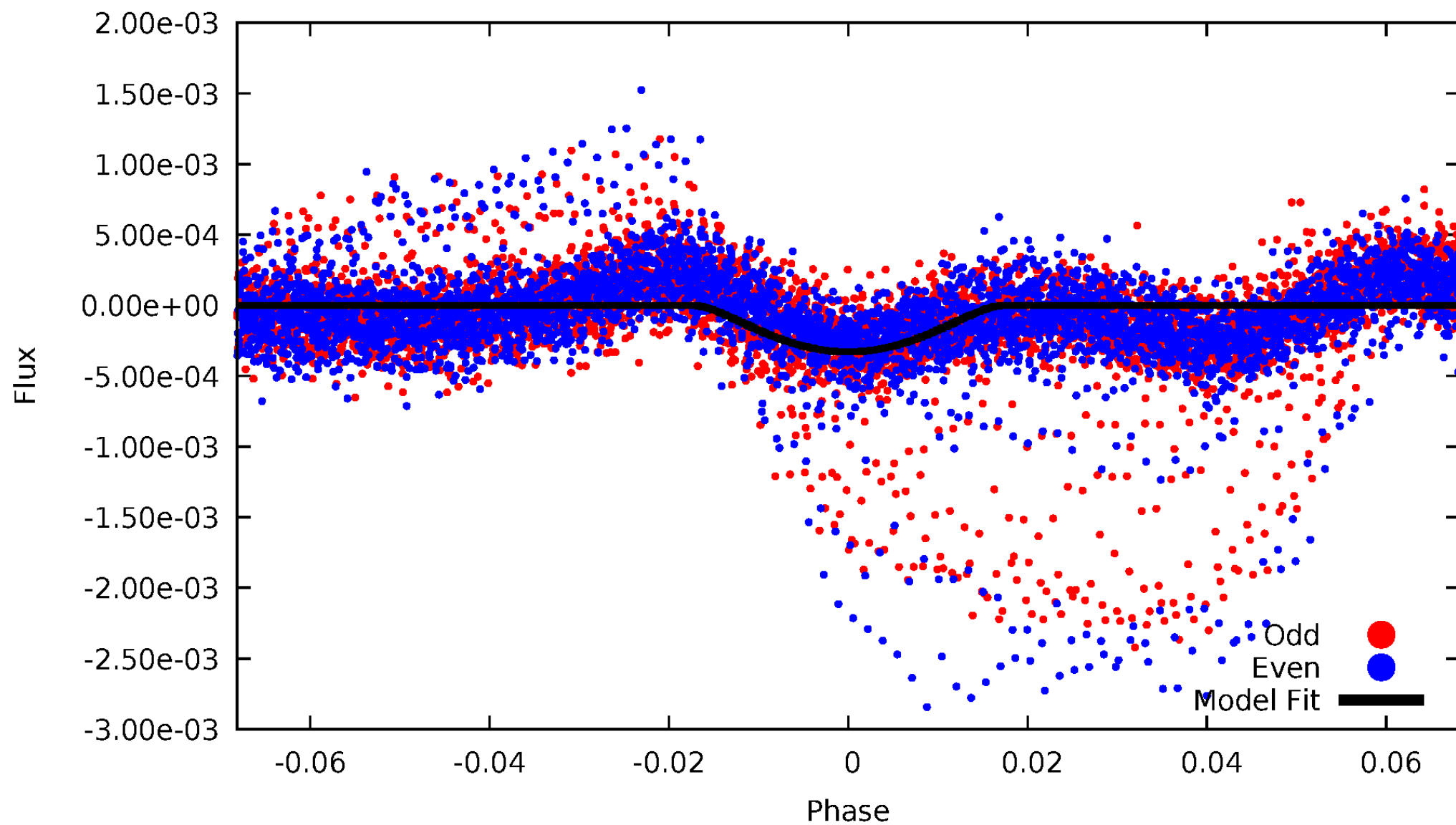
TCE 005385838-01





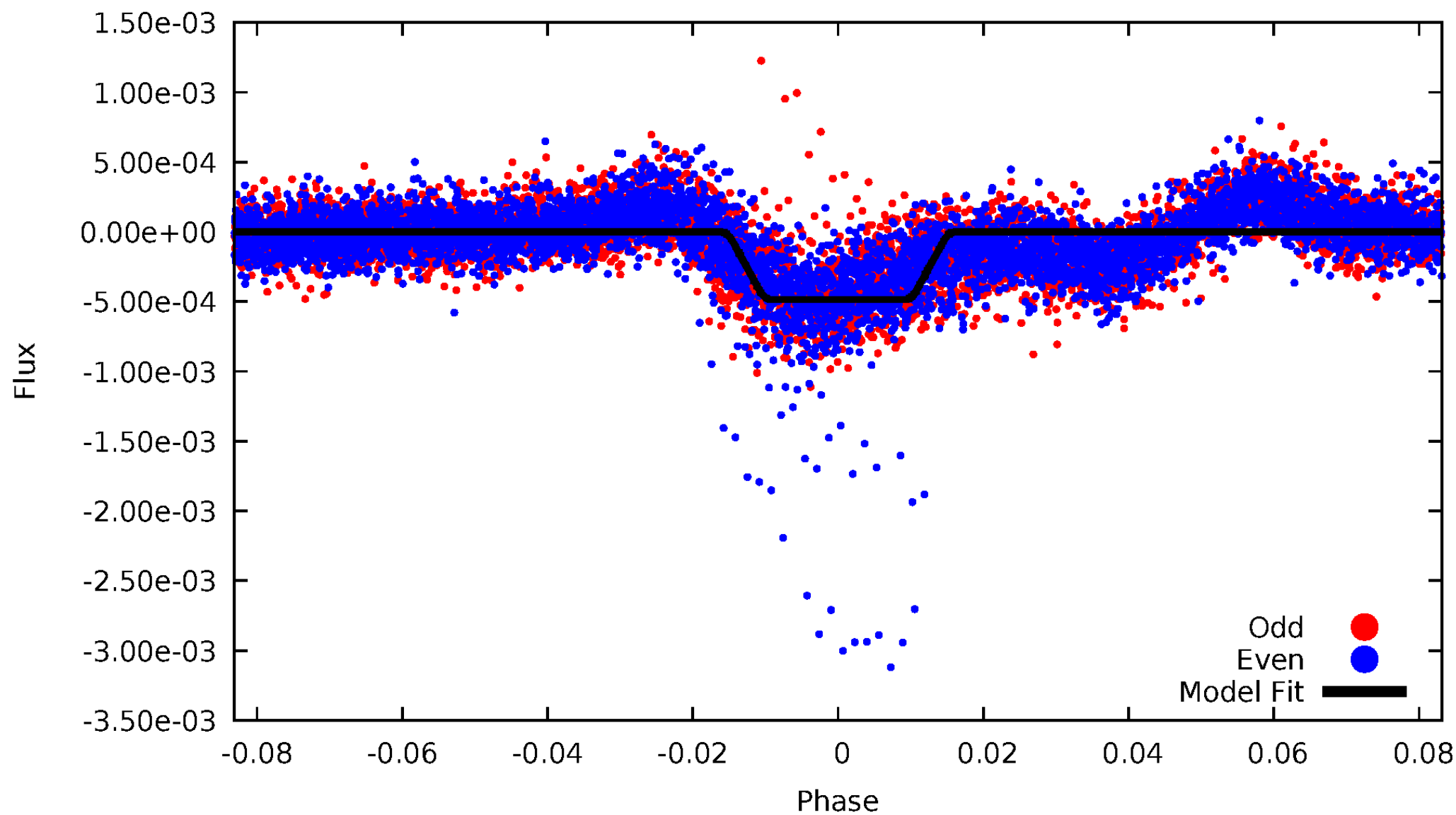
# DV Odd/Even

TCE 005385838-01



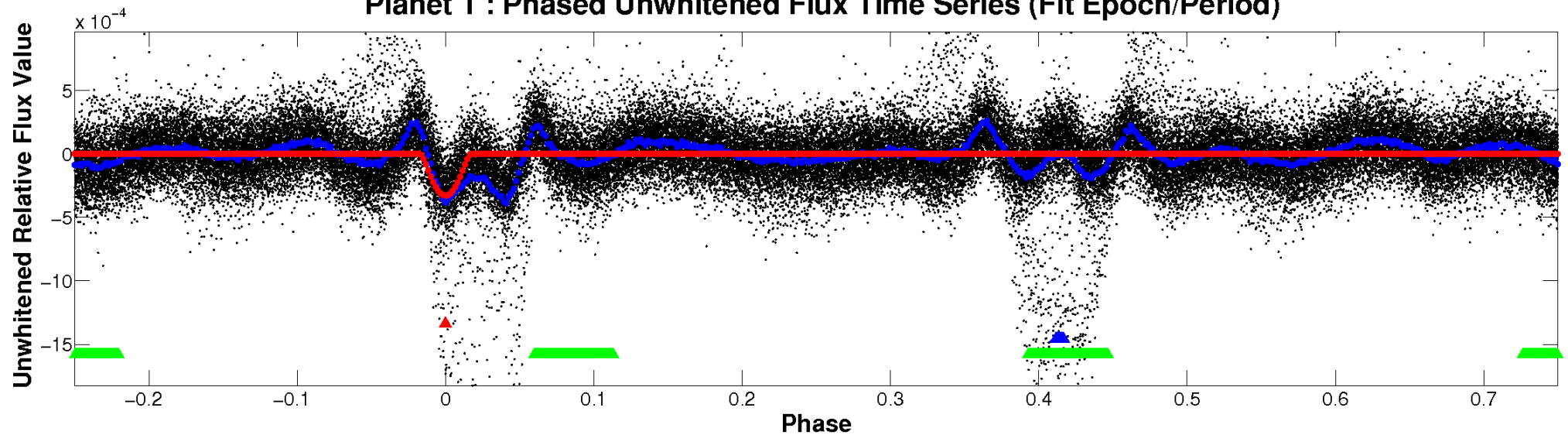
# ALT Odd/Even

TCE 005385838-01

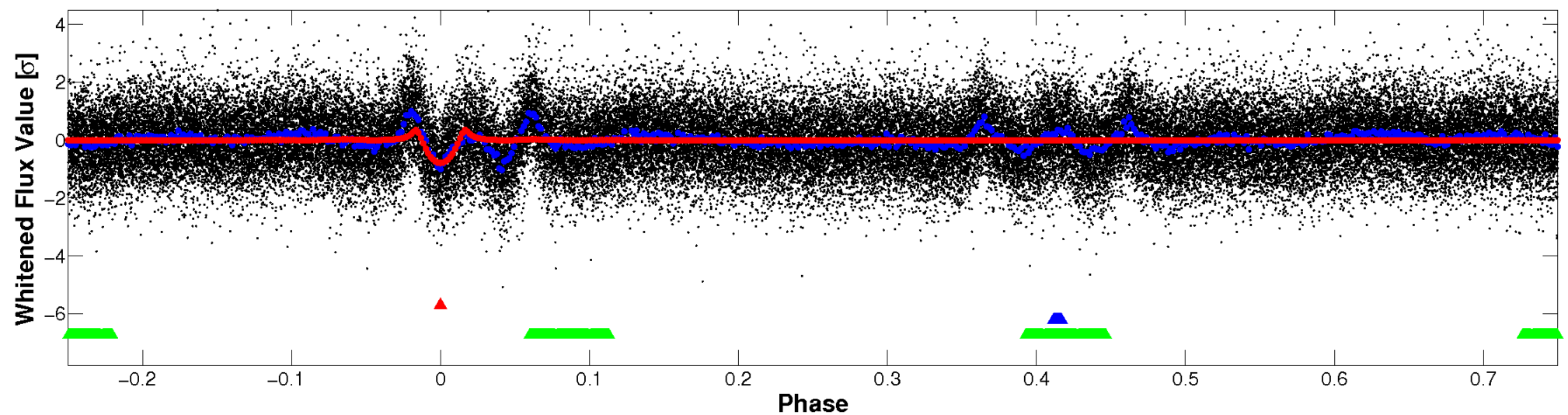


# Non-Whitened Vs. Whitened Light Curve

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

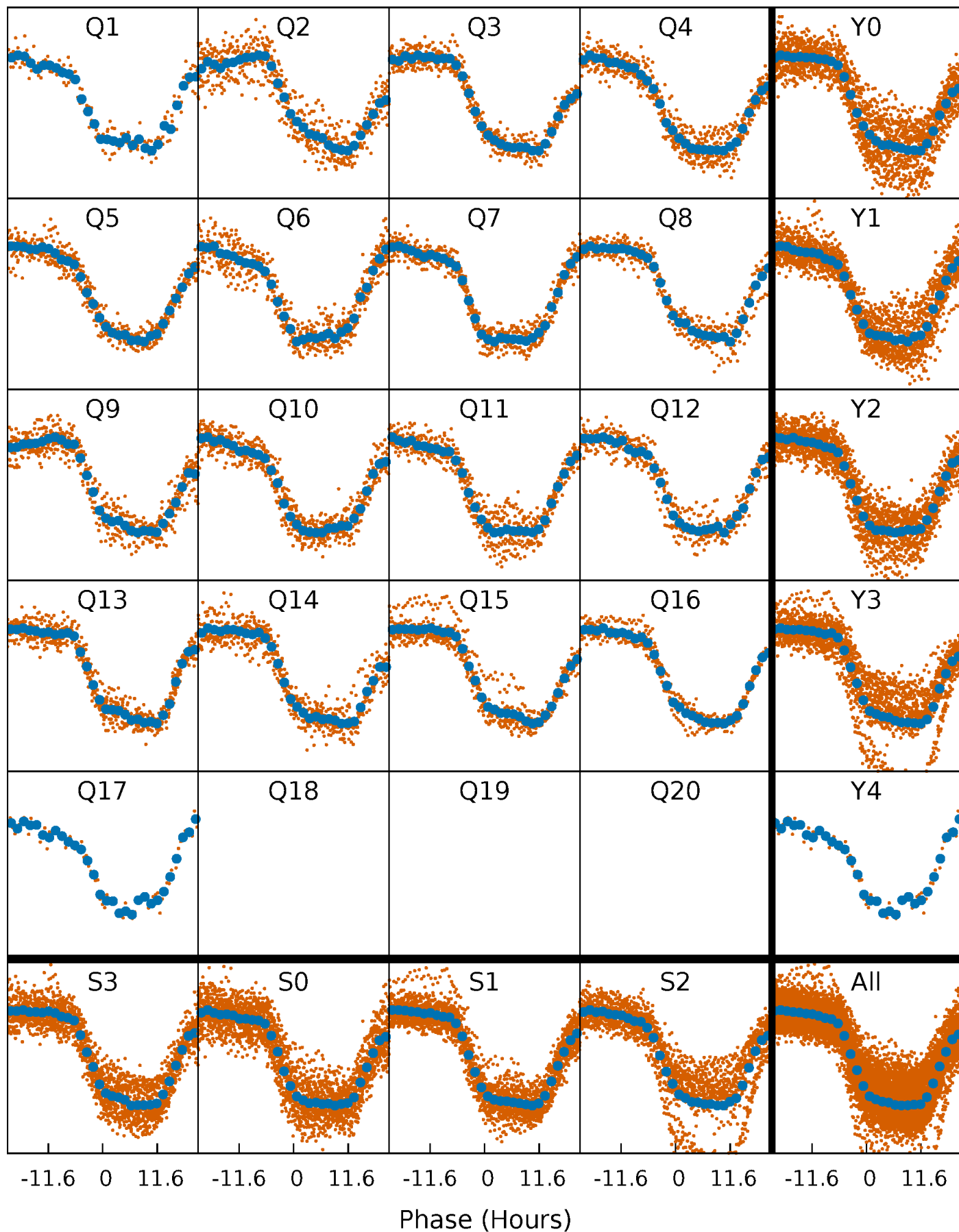


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

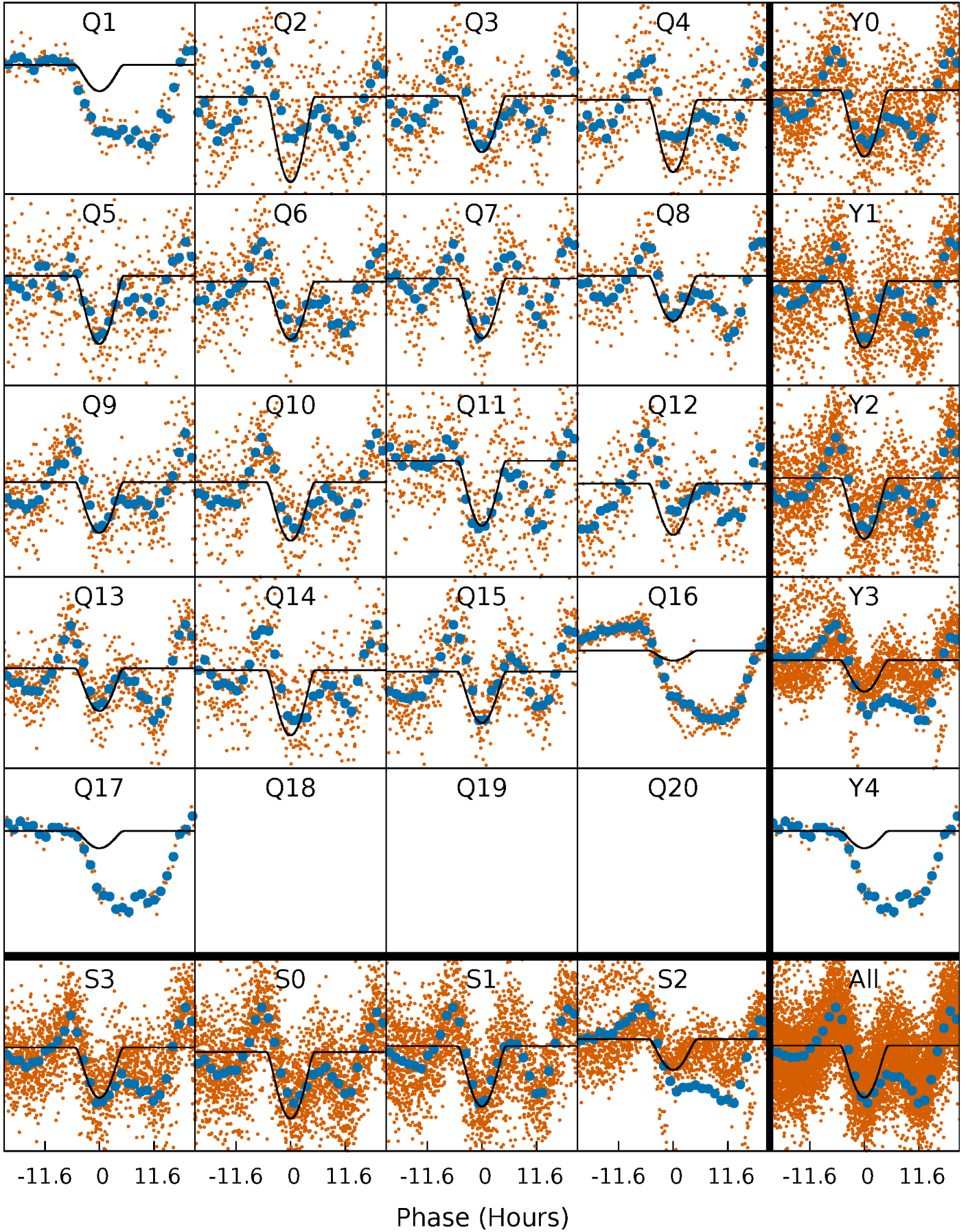
TCE 005385838-01 P= 12.425611 Days  $T_0=141.255628$  (BKJD)





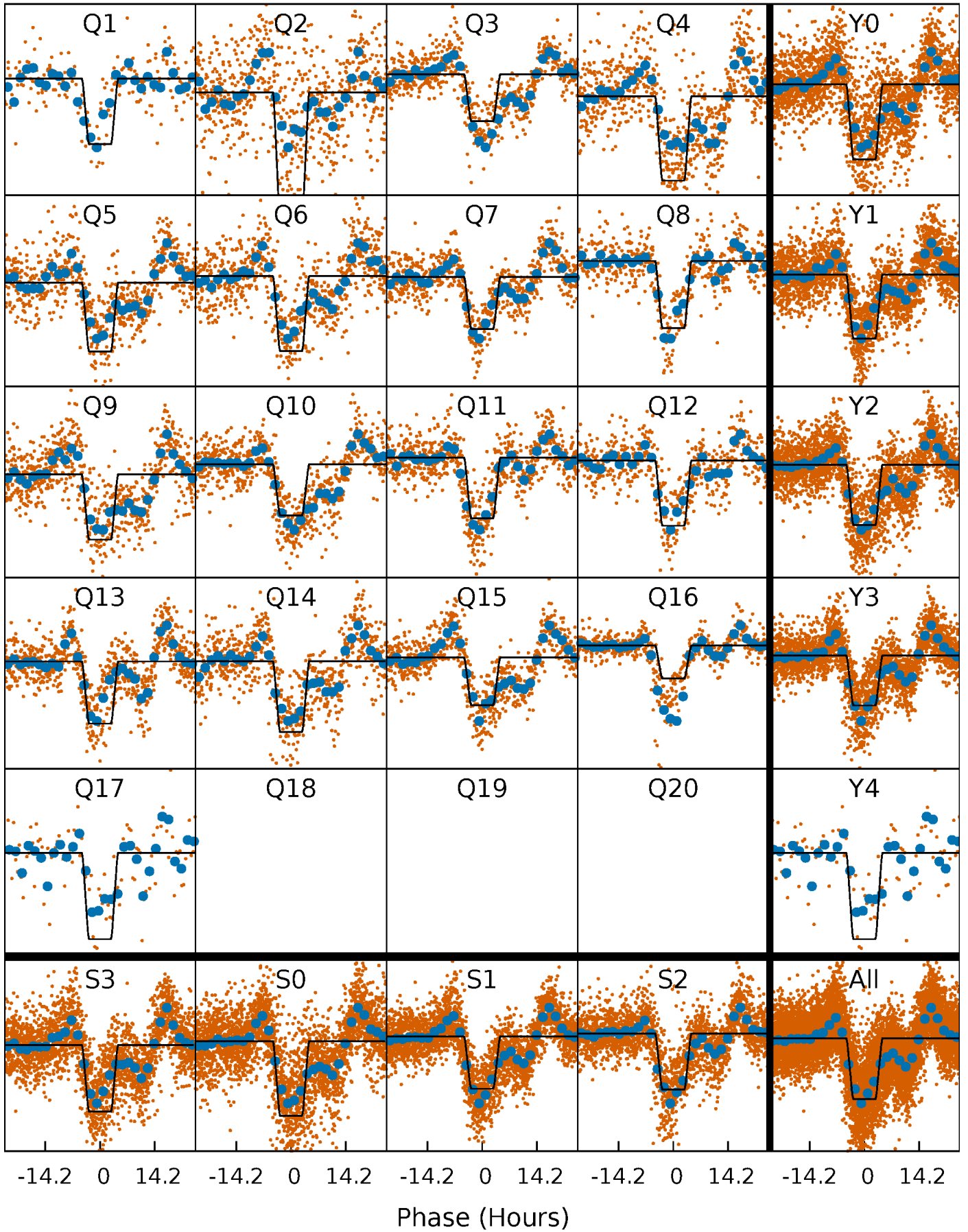
# DV Quarter-Phased Transit Curves

TCE 005385838-01 P= 12.425611 Days  $T_0=141.255628$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

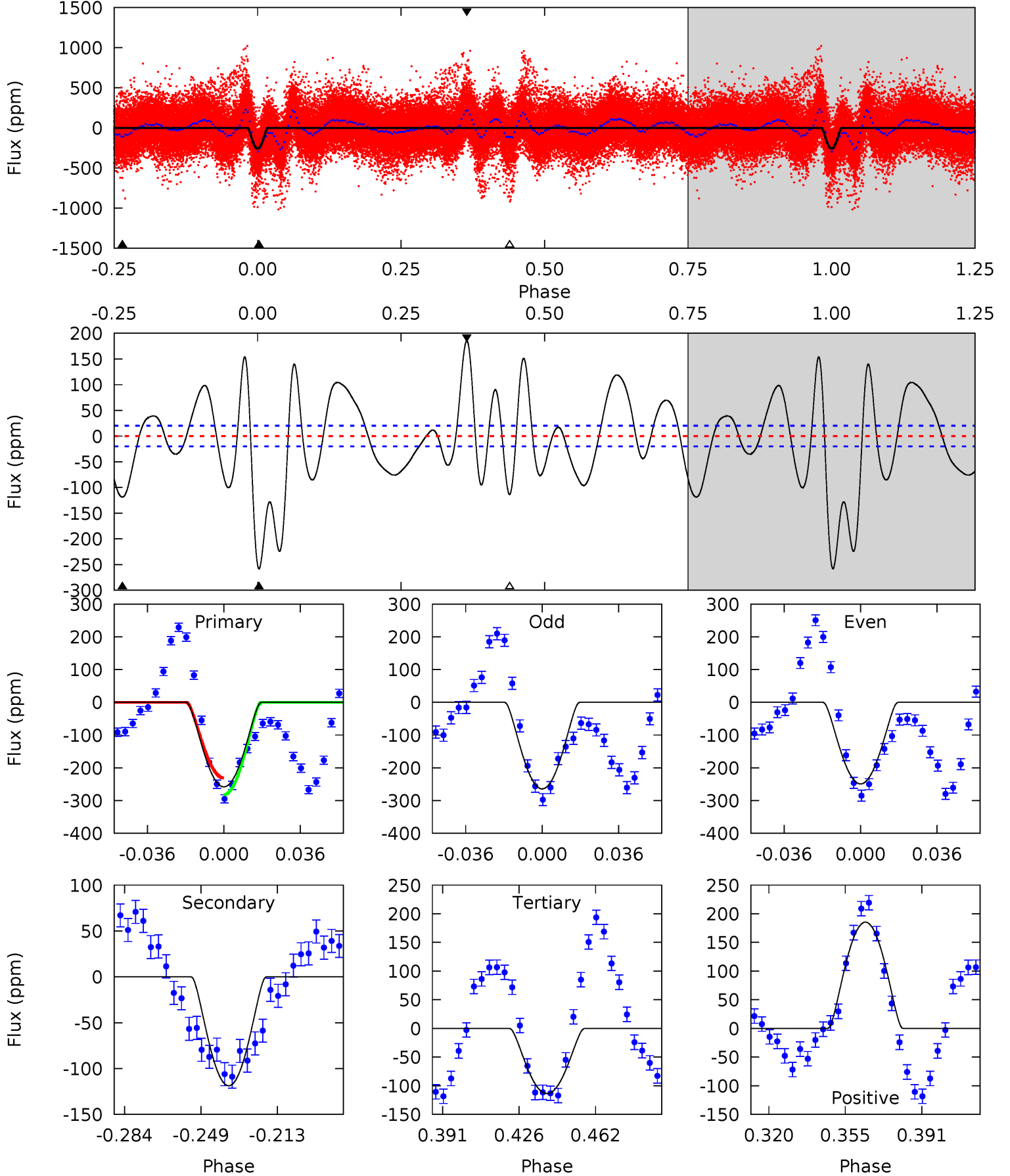
TCE 005385838-01 P= 12.425761 Days  $T_0=141.290751$  (BKJD)



# DV Model-Shift Uniqueness Test

005385838-01, P = 12.425611 Days, E = 128.830017 Days

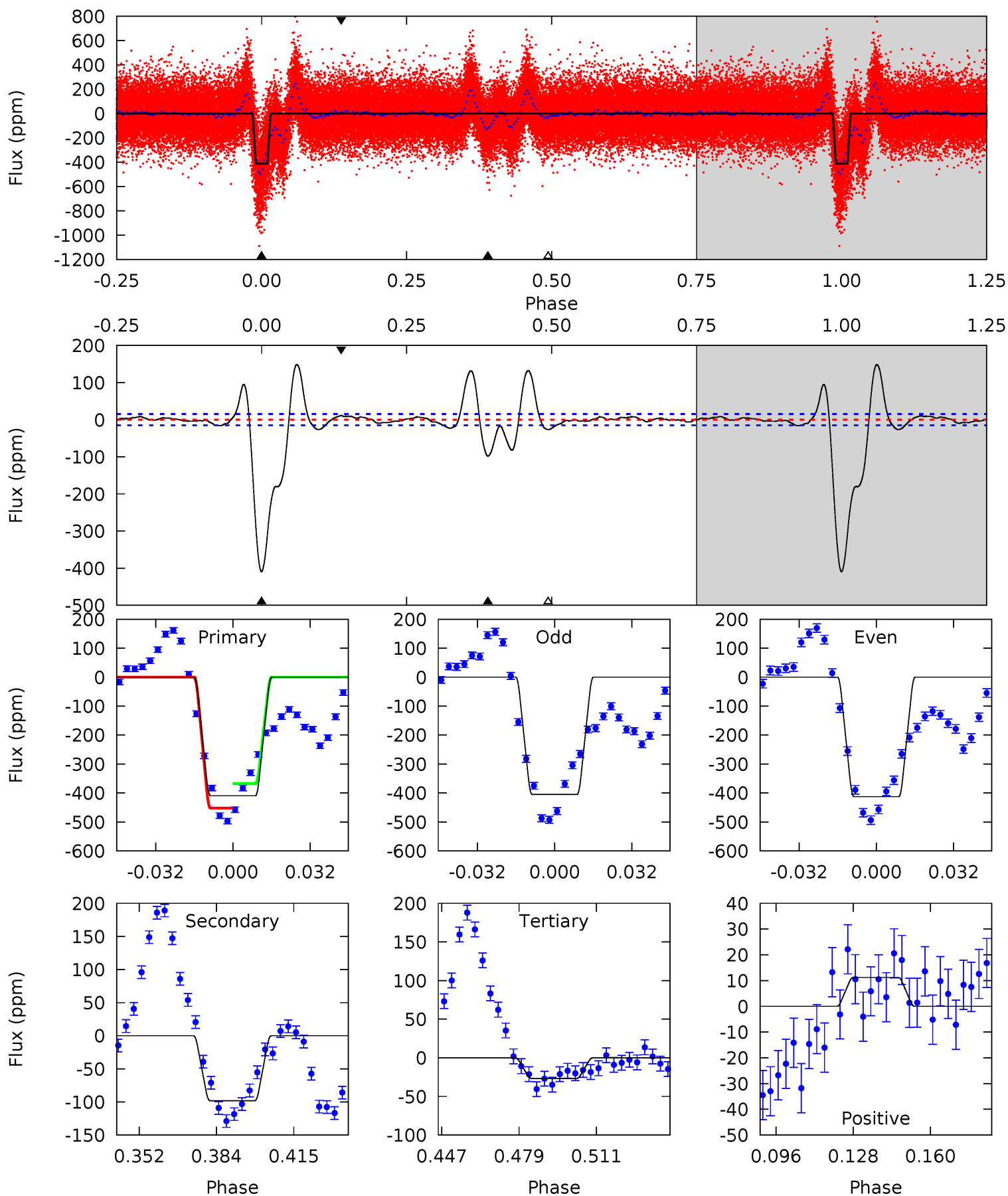
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
61.7	28.4	27.2	44.3	4.78	2.10	16.6	34.5	17.4	1.19	-15.9	1.81	1.33	0.42	6.26



# Alt Model-Shift Uniqueness Test

005385838-01, P = 12.425761 Days, E = 128.864990 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
129.5	31.0	8.48	3.54	4.80	2.14	11.6	121.0	126.0	22.5	27.5	1.23	1.10	0.27	13.2





### Stellar Parameters For KIC 005385838

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6541^{+197}_{-217}$	$3.773^{+0.312}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$2.652^{+0.433}_{-0.939}$	$1.519^{+0.215}_{-0.350}$	$0.115^{+0.240}_{-0.036}$
	+3%/-3%	+8%/-2%	+136%/-114%	+16%/-35%	+14%/-23%	+209%/-32%
Source	PHO1	FLK73	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 005385838-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-119 \pm 4$	$8.72^{+5.53}_{-5.10}$	$1841^{+111}_{-146}$	$4042^{+1851}_{-600}$	$12^{+60}_{-7}$
Alt.	$-98 \pm 3$	$6.50^{+5.30}_{-3.99}$	$1841^{+115}_{-174}$	$4339^{+2179}_{-778}$	$19^{+97}_{-13}$

$T_{\text{max}}$  = 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

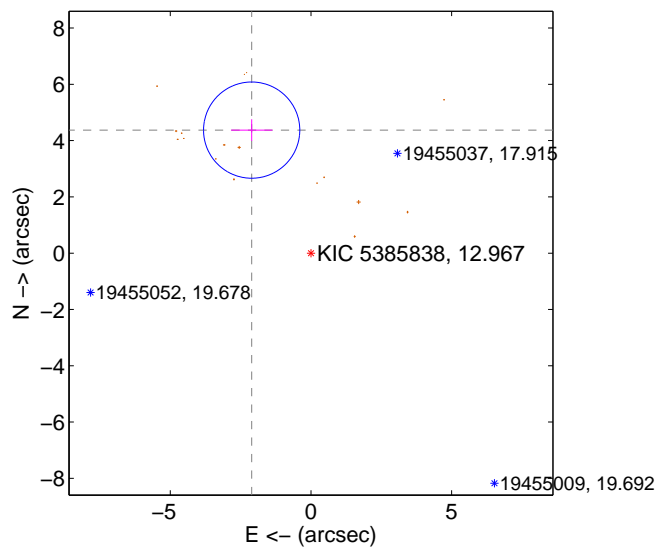
Supplemental centroid analysis for 005385838-01. Kepler magnitude: 12.97. Transit SNR 24.55

There are 0 quarters with good PRF difference image offsets

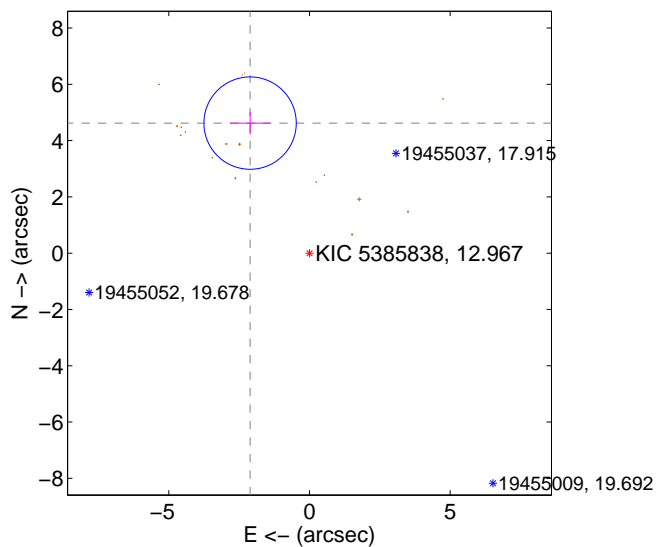
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.854 \pm 0.570$	8.52	$2.107 \pm 0.736$	$4.373 \pm 0.386$
PRF-fit source offset from KIC position	$5.081 \pm 0.547$	9.29	$2.110 \pm 0.720$	$4.622 \pm 0.400$
photometric centroid source offset	$5.96 \pm 0.40$	14.81	$-0.06 \pm 0.29$	$5.96 \pm 0.40$

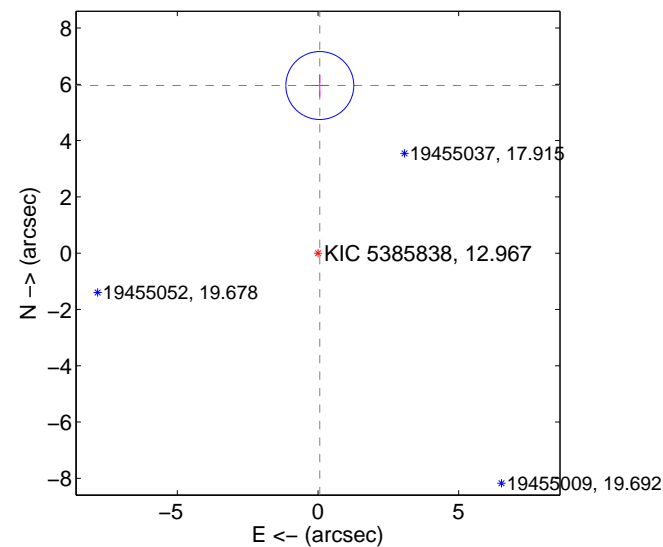
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

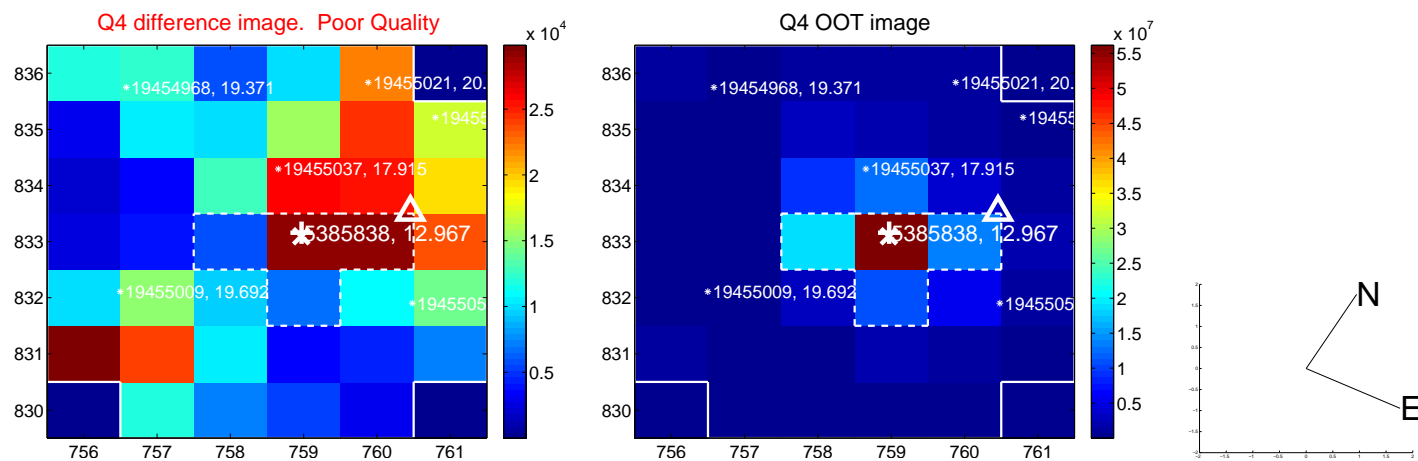
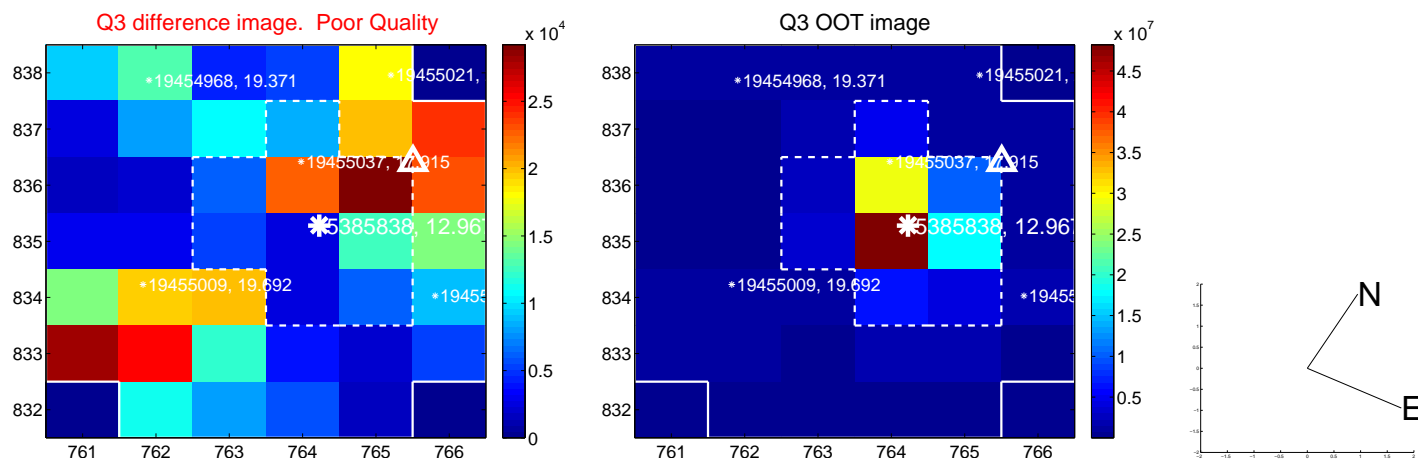
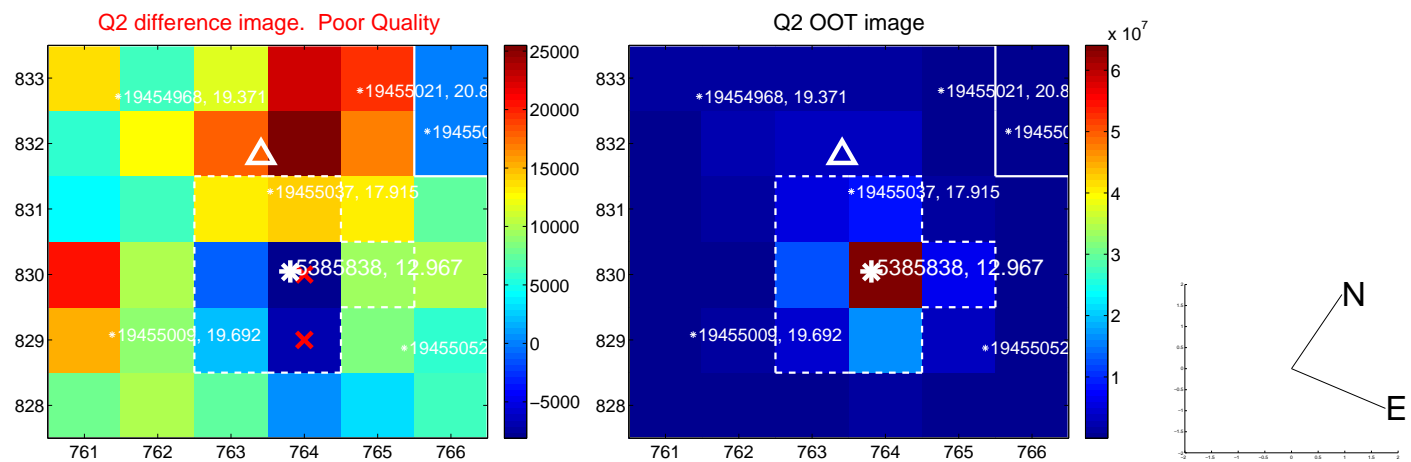
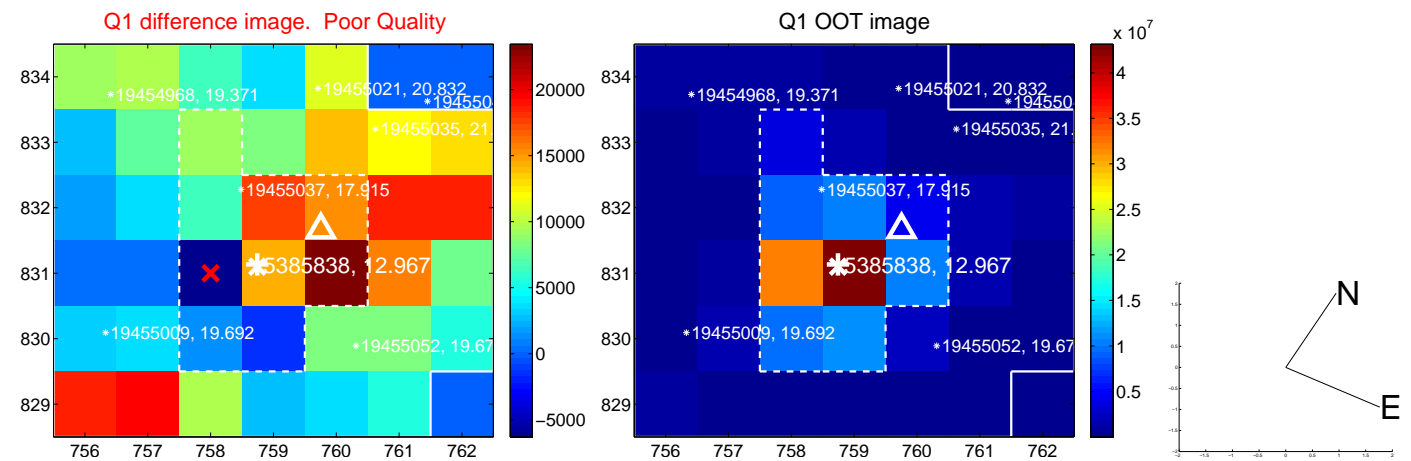


offset from photometric centroids

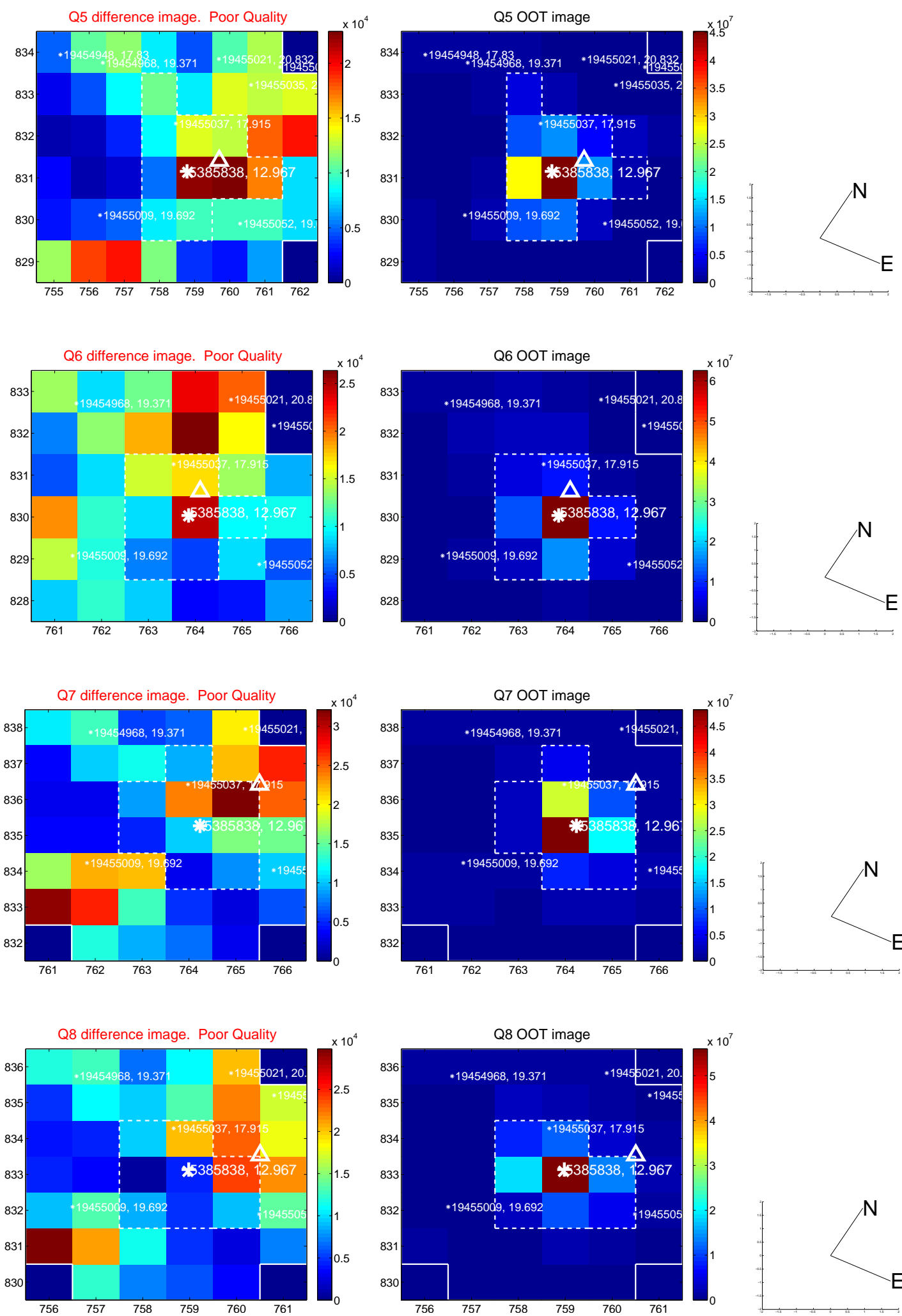


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

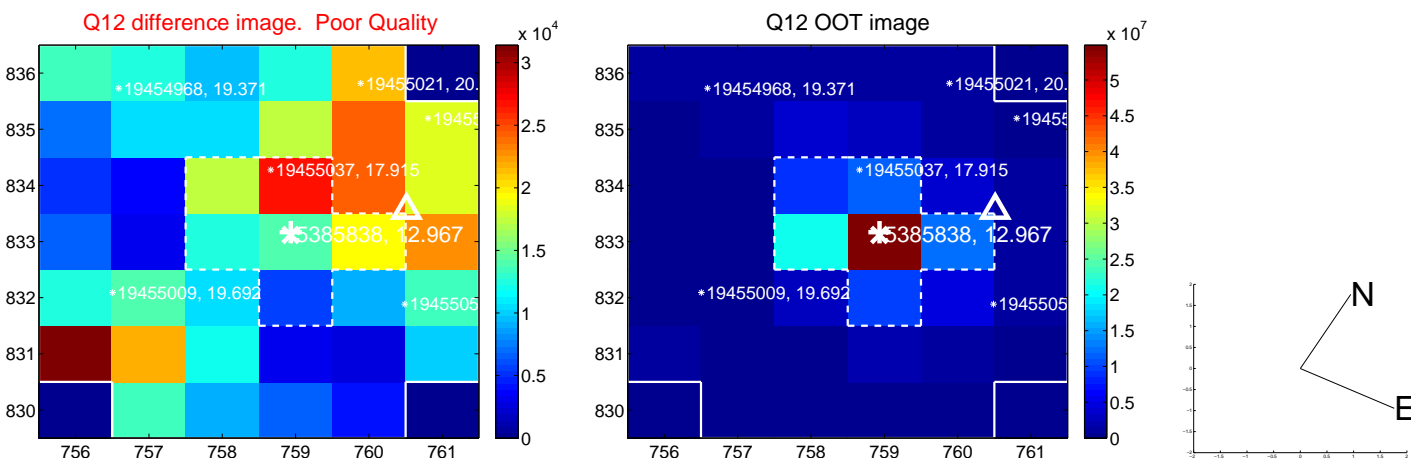
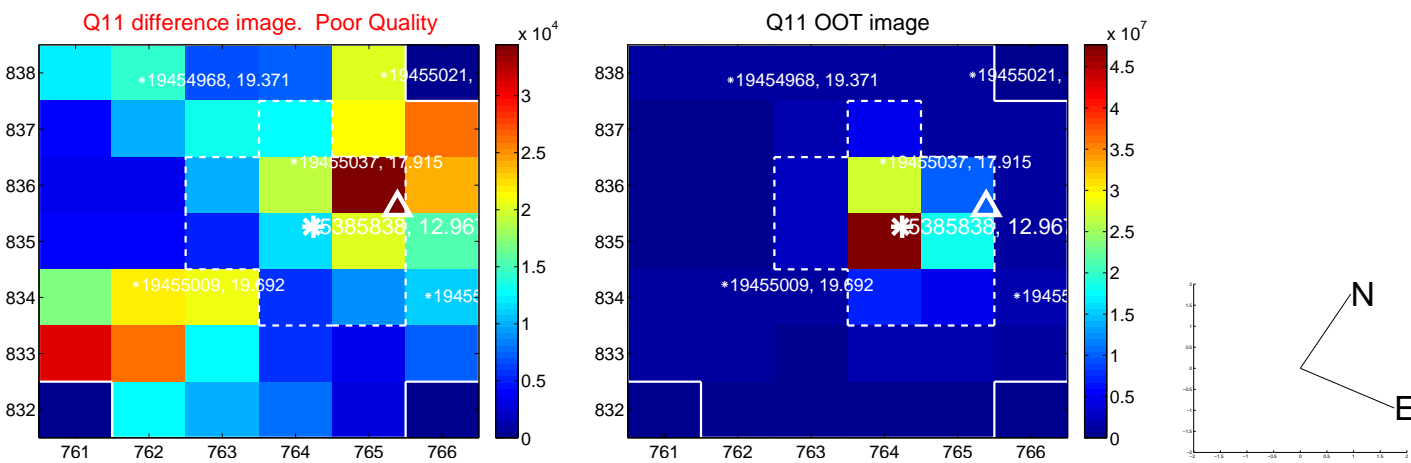
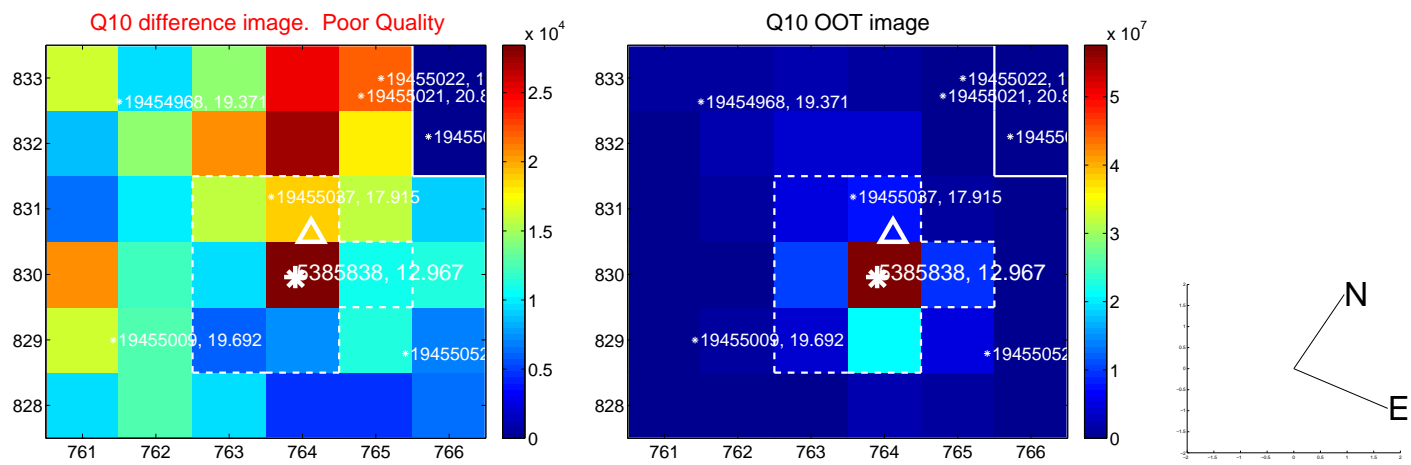
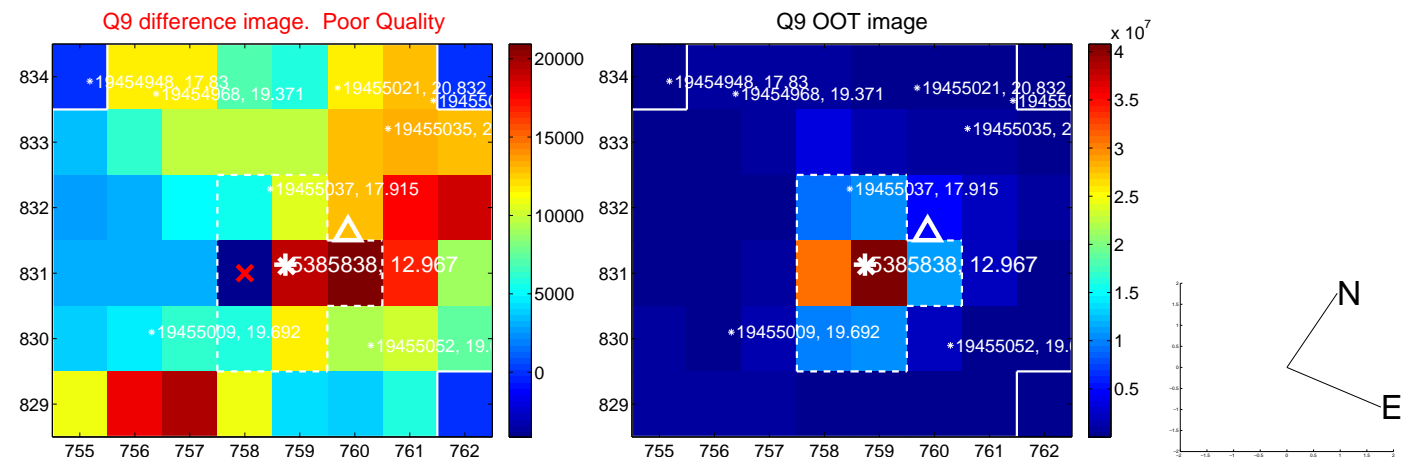


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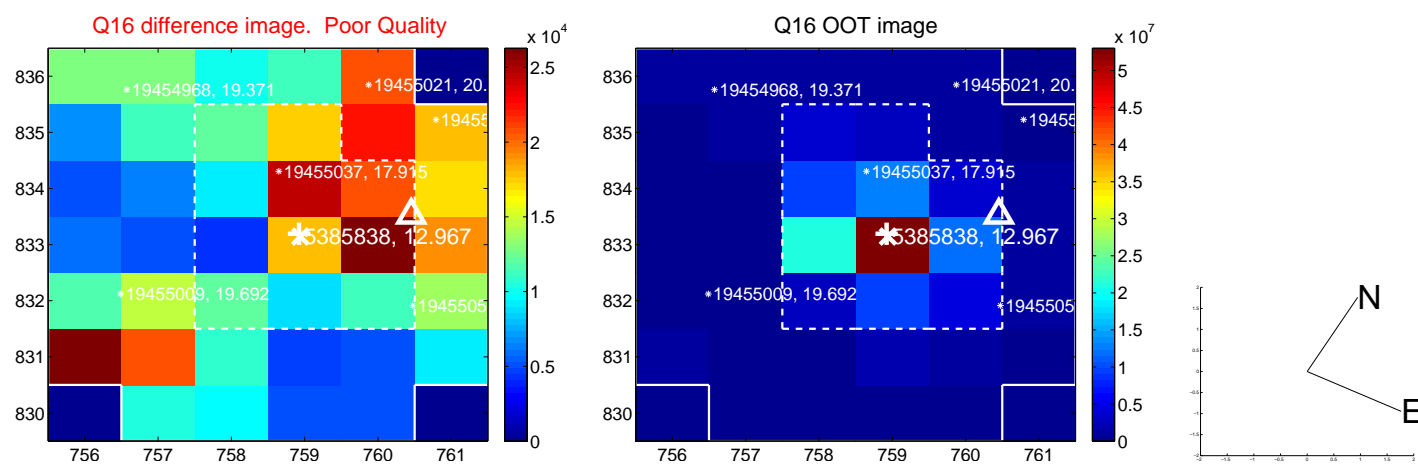
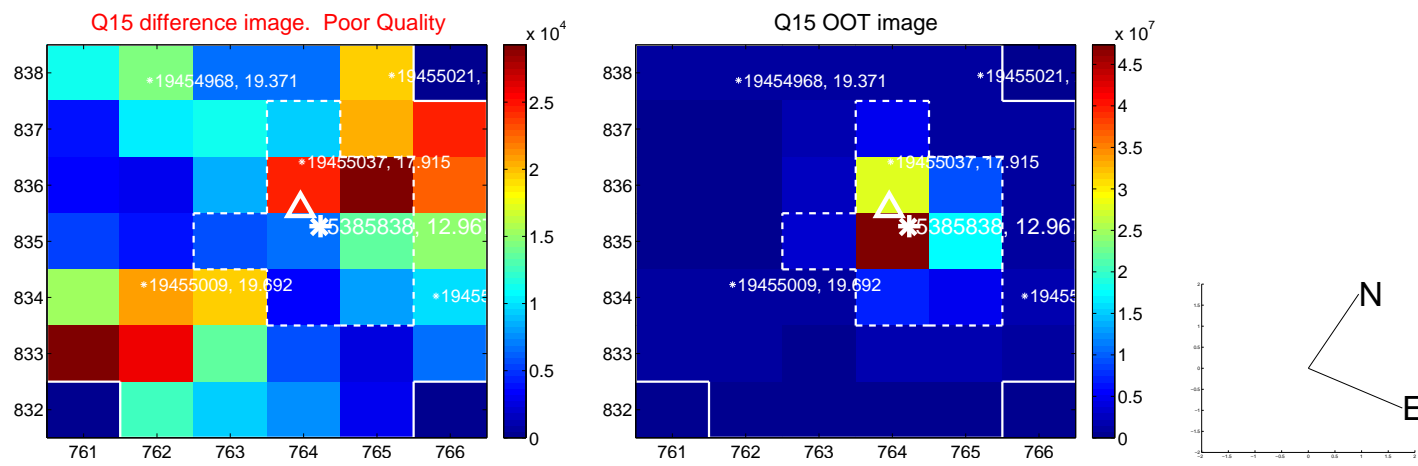
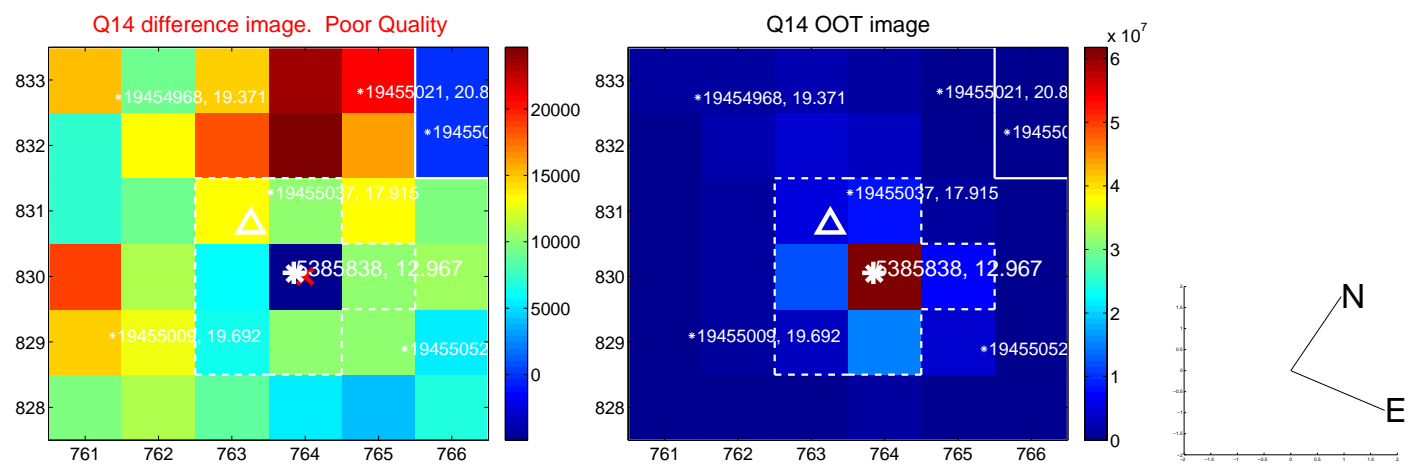
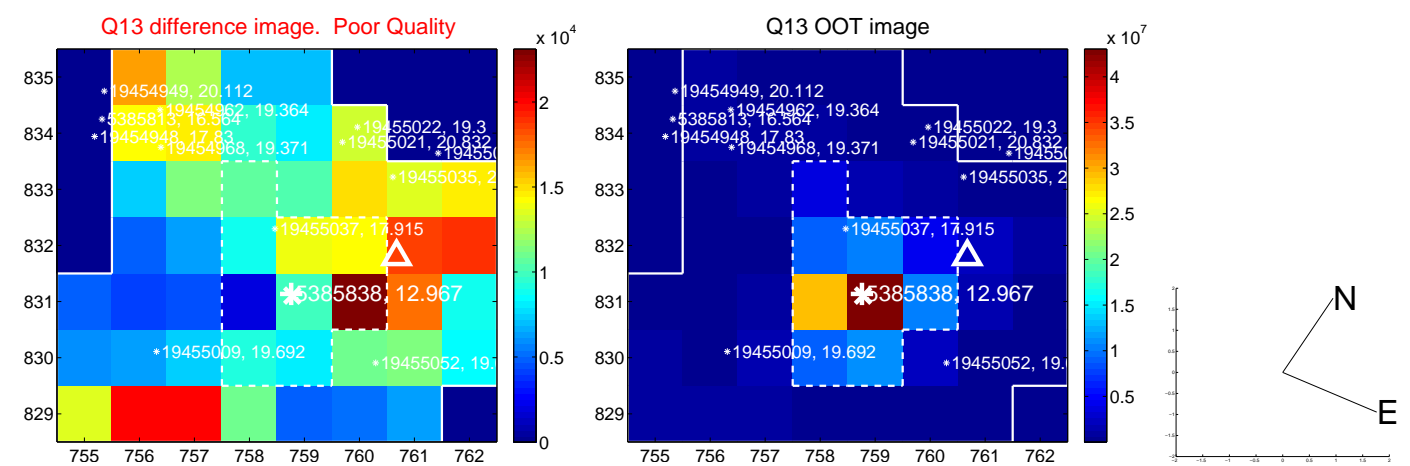




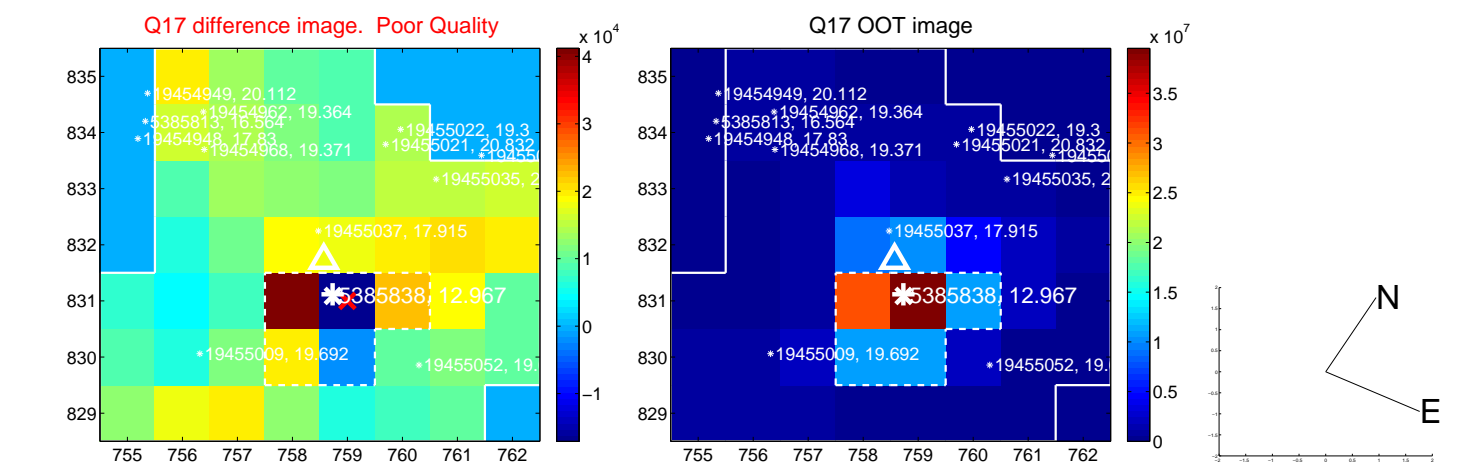
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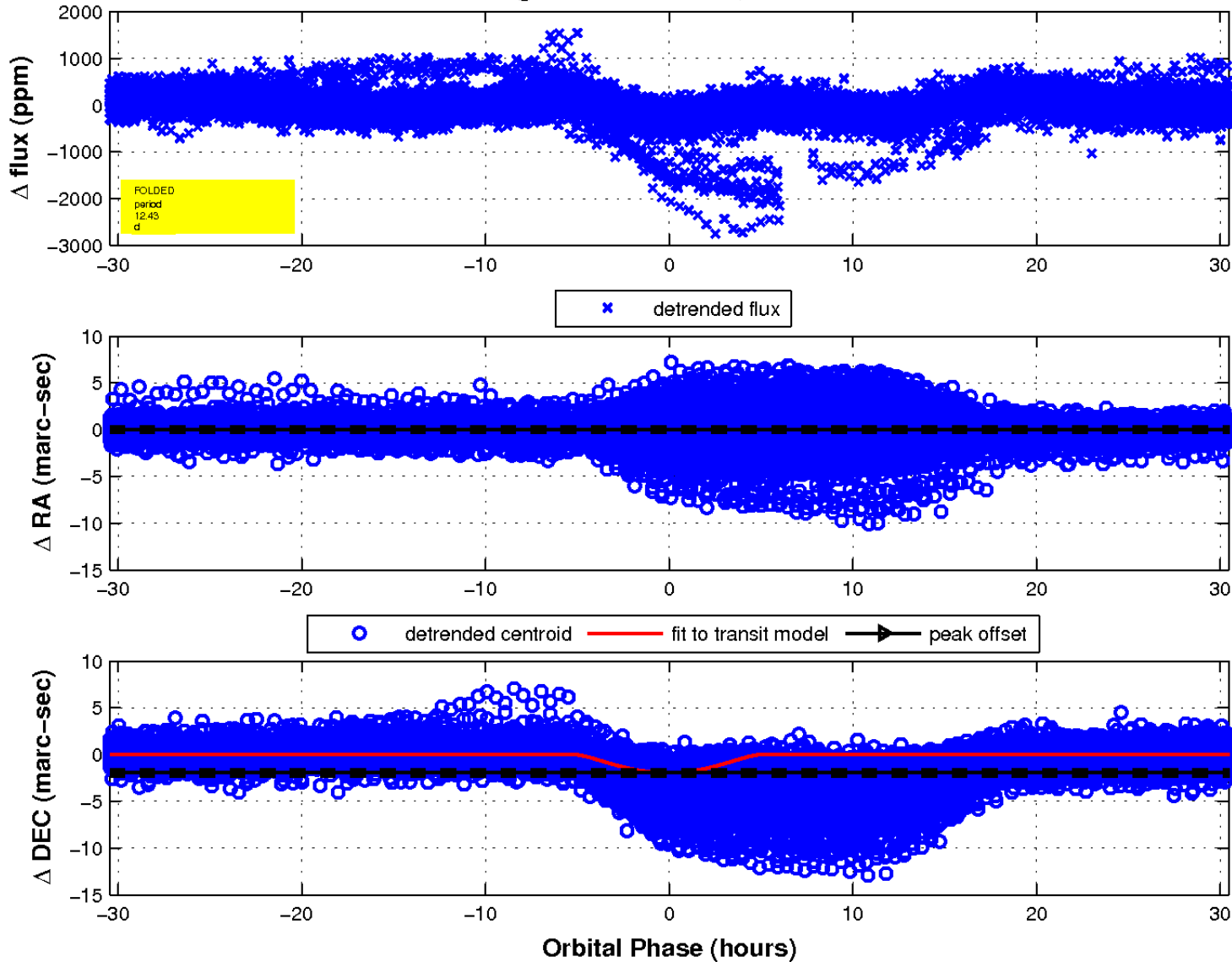
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

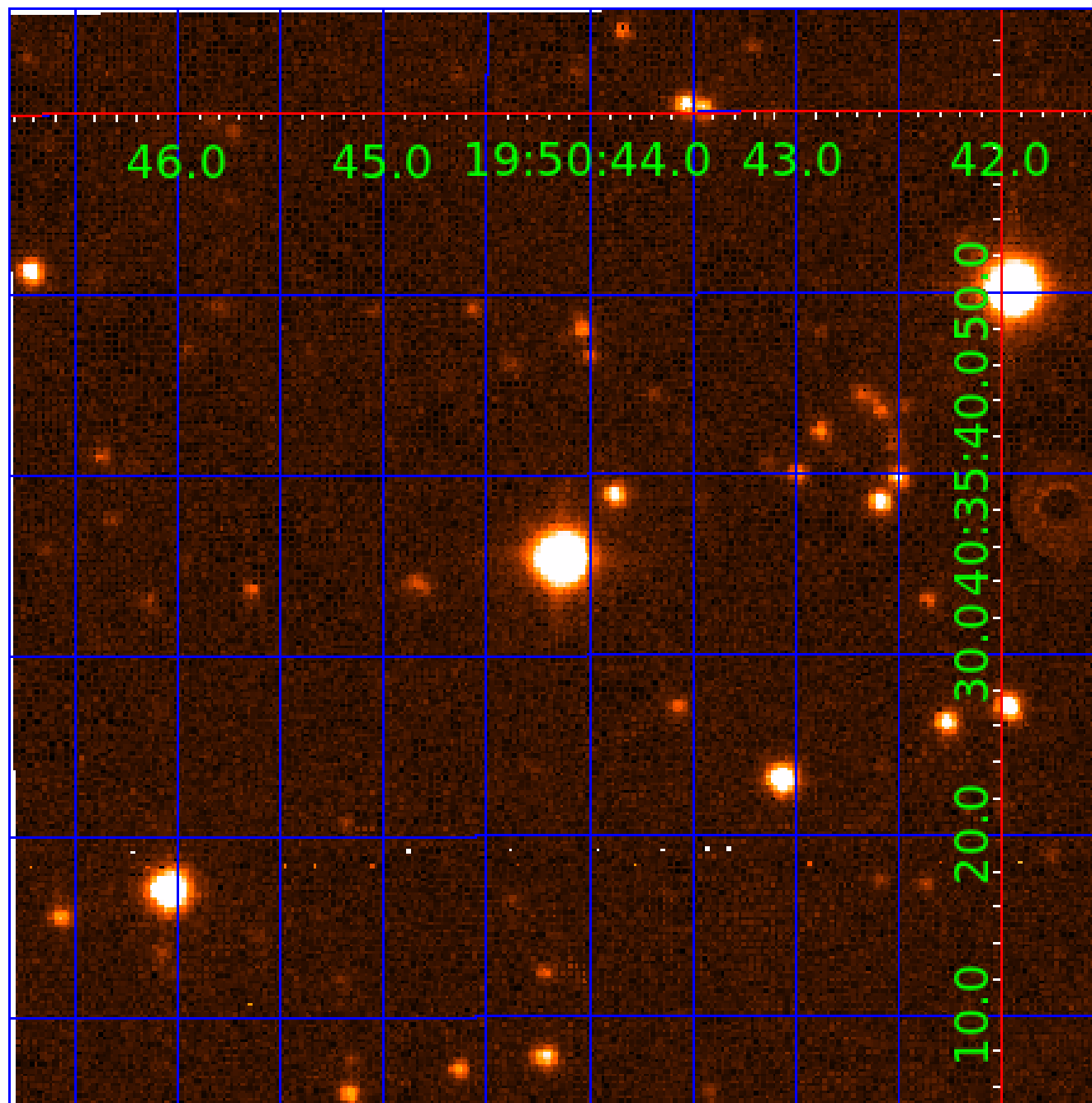


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 005385838

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005385838-01	OBS	No	12.425611	141.255628	329.2	10.159	20.2	24.5	2.65	6541	9.36	790.85
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005385838-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_CROWDED—HALO_GHOST—EPHEM_MATCH
005385838-02	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_CROWDED—HALO_GHOST—EPHEM_MATCH
005385838-03	OBS	FP	0.00	1	0	0	1	SWEET_NTL—LPP_DV—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.

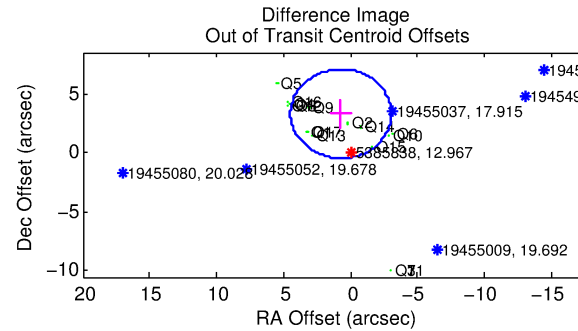
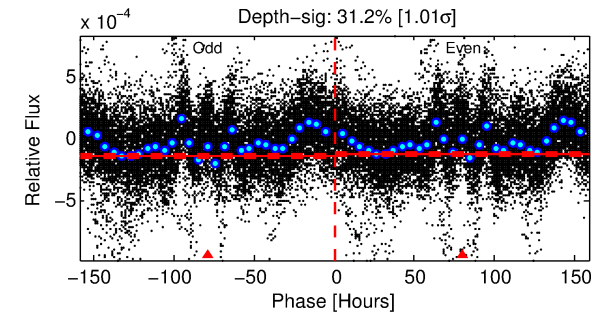
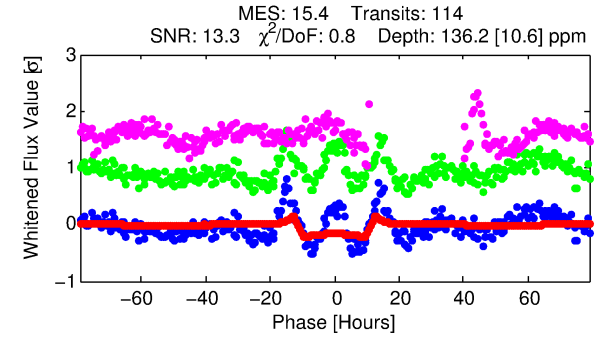
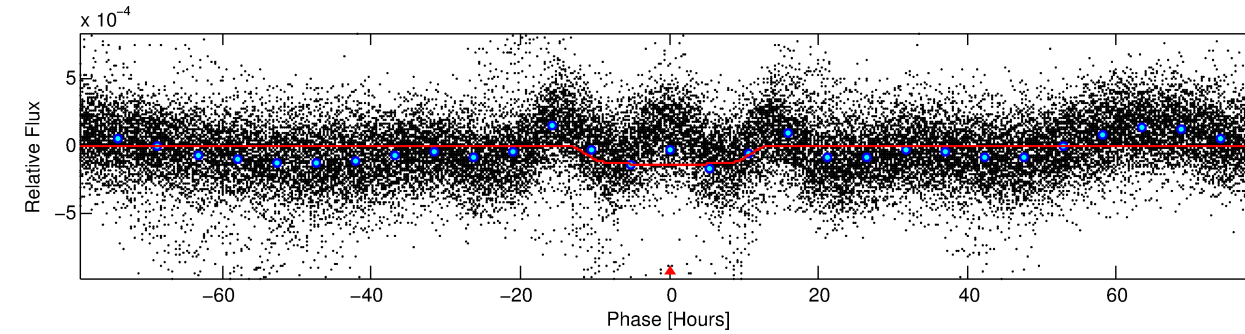
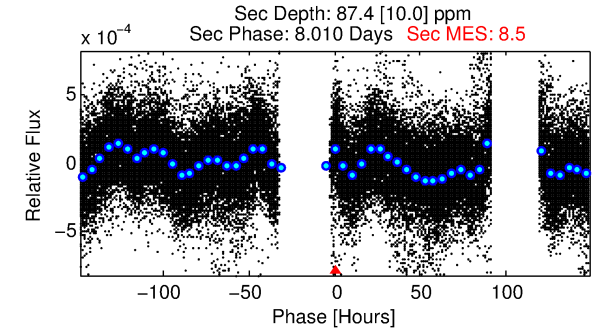
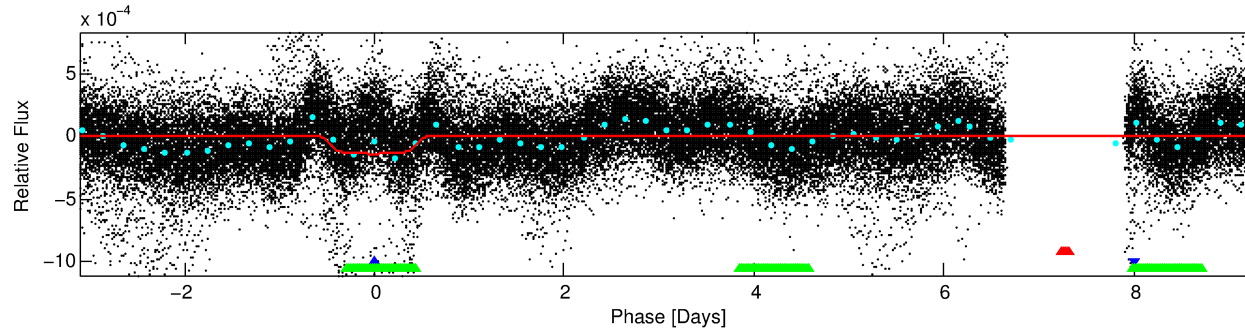
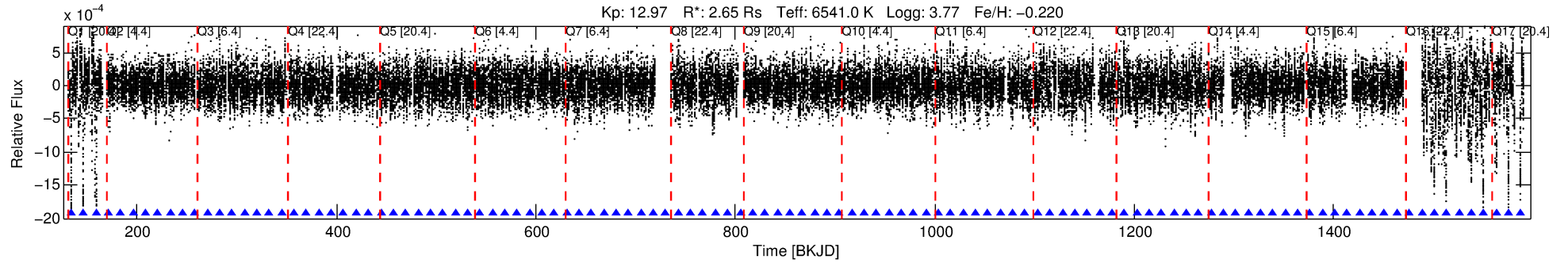
## Ephemeris Match Information For 005385838-02

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	$\sigma_P$	$\sigma_T$
005385838-02	5385838	V380-Cyg-sec	5385723	1:1	81.2	-15	15	5.77	12.97	948.79	Direct-PRF	0	1.19	1.85

**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: 5385838 Candidate: 2 of 3 Period: 12.425 d



## DV Fit Results:

Period = 12.42507 [0.00028] d  
Epoch = 134.0080 [0.0181] BKJD  
a/R\* = 0.0135 [0.0006]  
a/R\* = 1.50 [0.06]  
b = 0.96 [0.01]  
Seff = 790.90 [435.15]  
Teq = 1352 [186] K  
Rp = 3.90 [1.39] Re  
a = 0.1208 [0.0406] AU  
Ag = 46.03 [25.43] [1.77σ]  
**Teff = 5446 [265] K [12.66σ]**

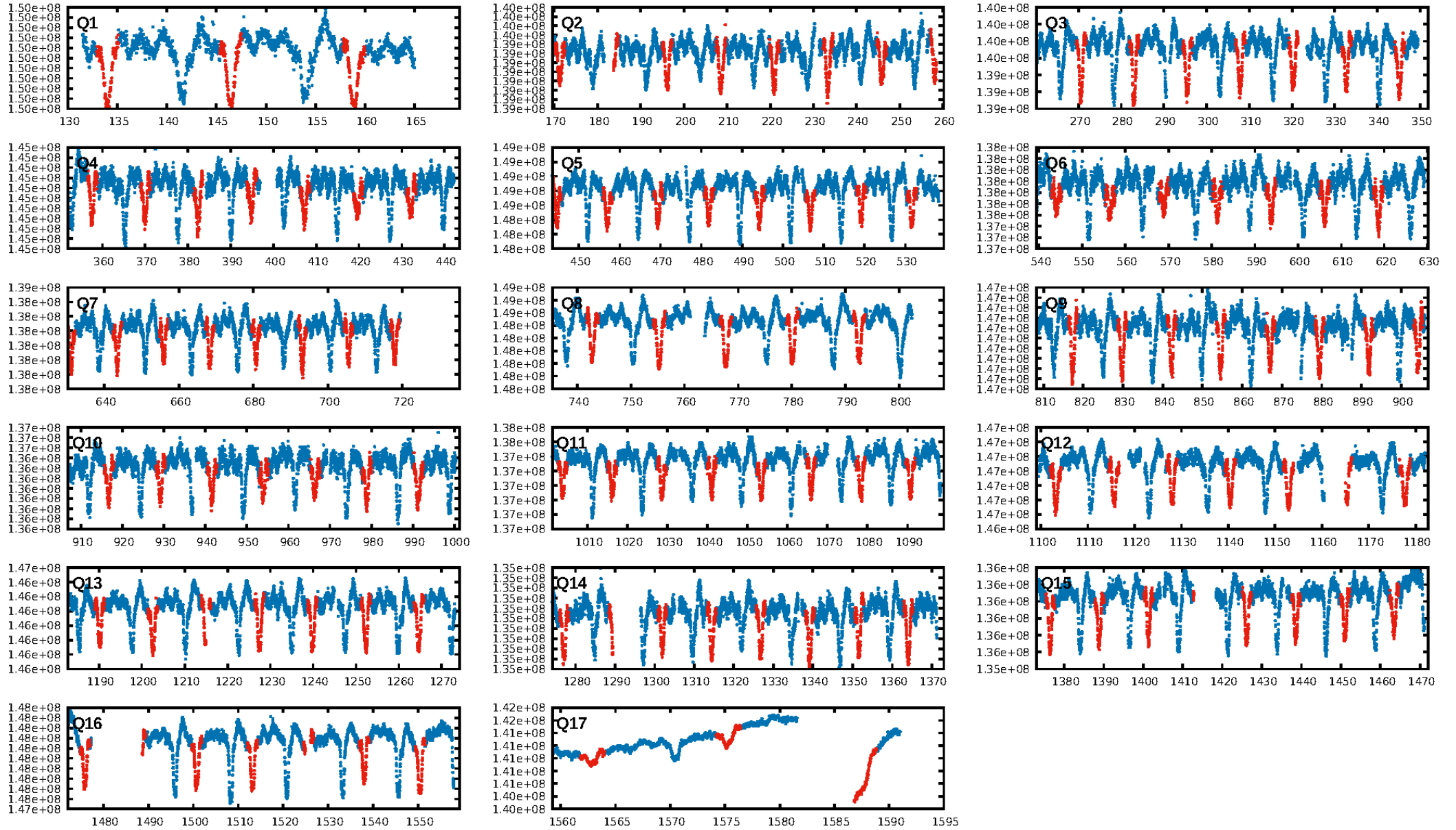
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.35σ]  
**LongPeriod-sig: 0.0% [0.00σ]**  
**ModelChiSquare2-sig: 0.1%**  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.40e-25  
RollingBand-fgt: 1.00 [108/108]  
**GhostDiagnostic-chr: -0.03927**  
  
Centroid-sig: 0.0%  
**Centroid-so: 20.401 arcsec [19.63σ]**  
OotOffset-rm: 3.389 arcsec [2.70σ]  
KicOffset-rm: 3.505 arcsec [2.68σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.00 [0/17]

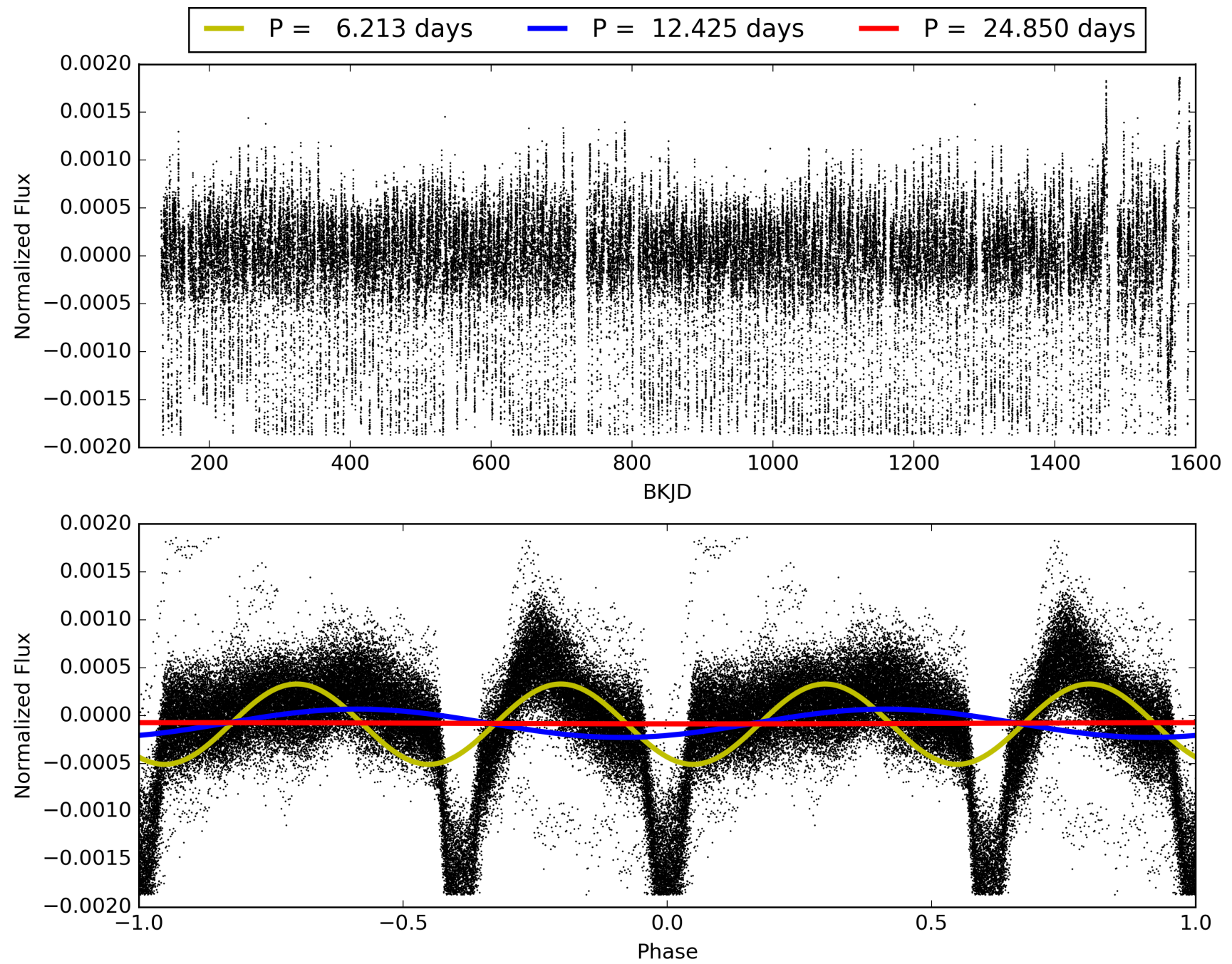
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:36:49 Z

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

# TCE 005385838-02, PDC Light Curves



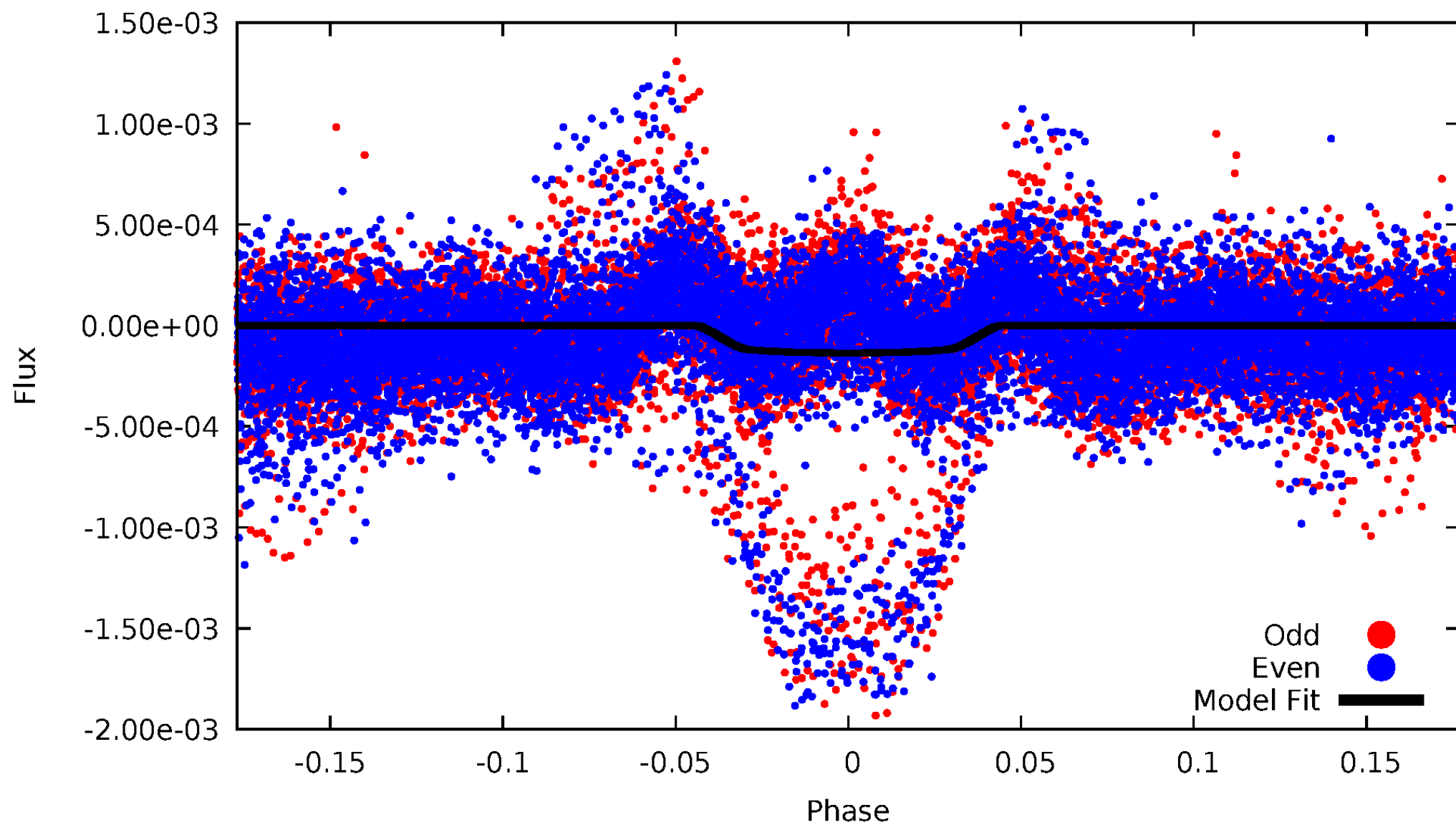
TCE 005385838-02





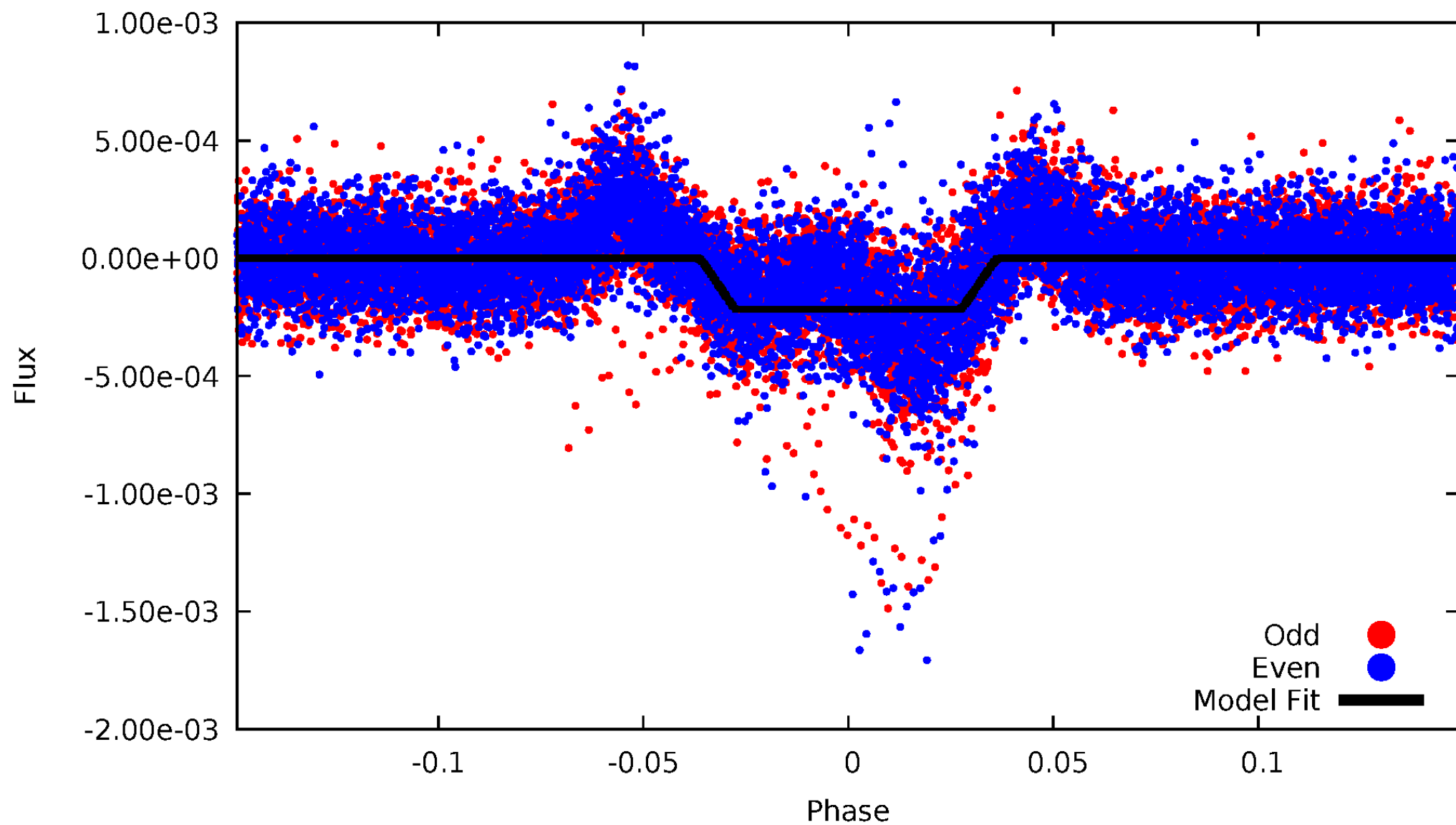
# DV Odd/Even

TCE 005385838-02



# ALT Odd/Even

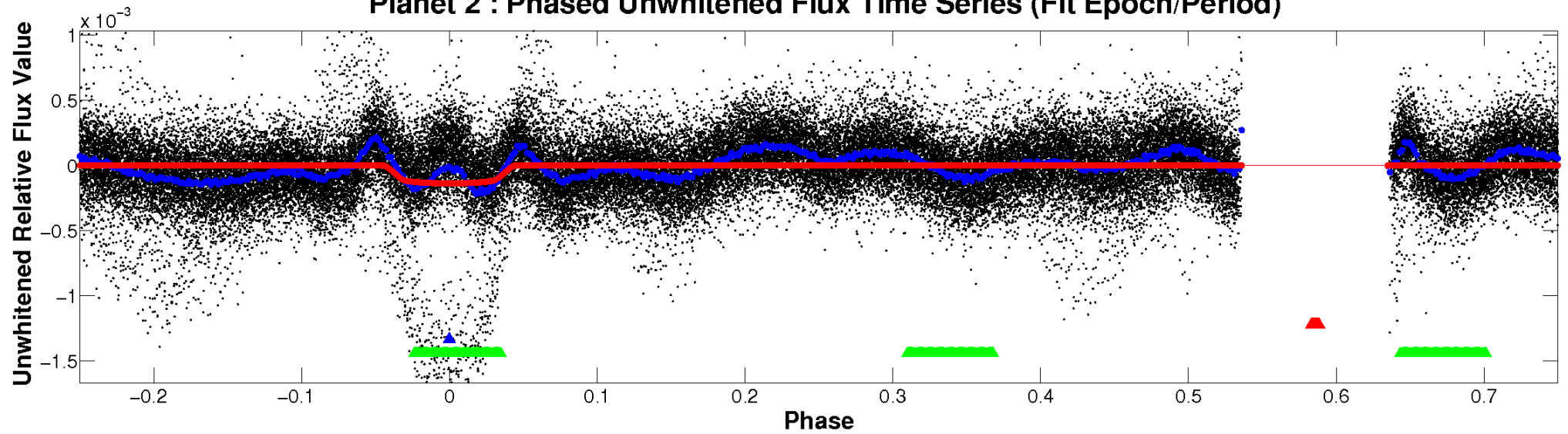
TCE 005385838-02



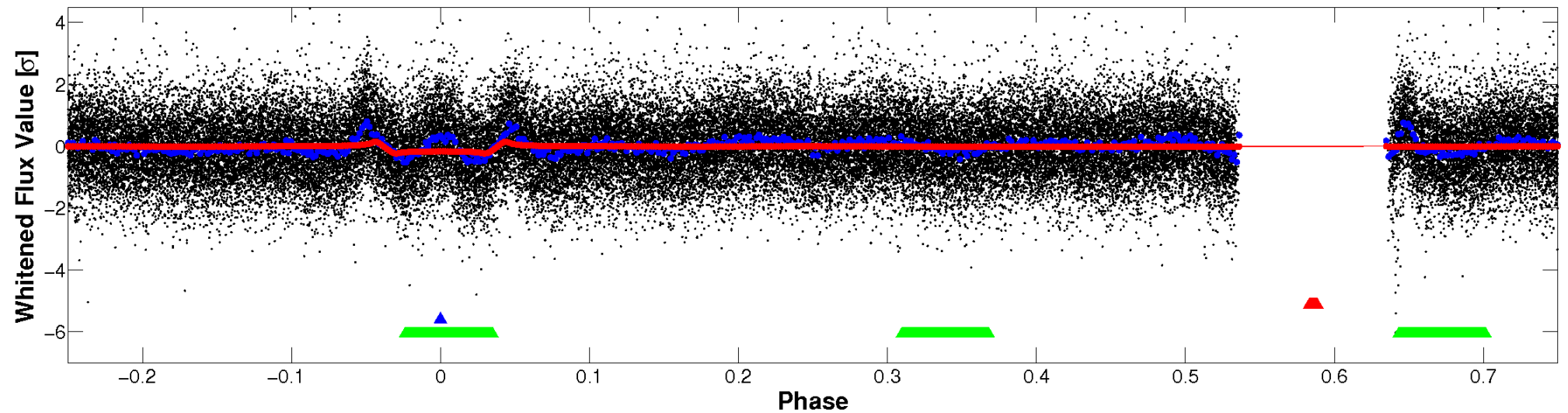


# Non-Whitened Vs. Whitened Light Curve

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

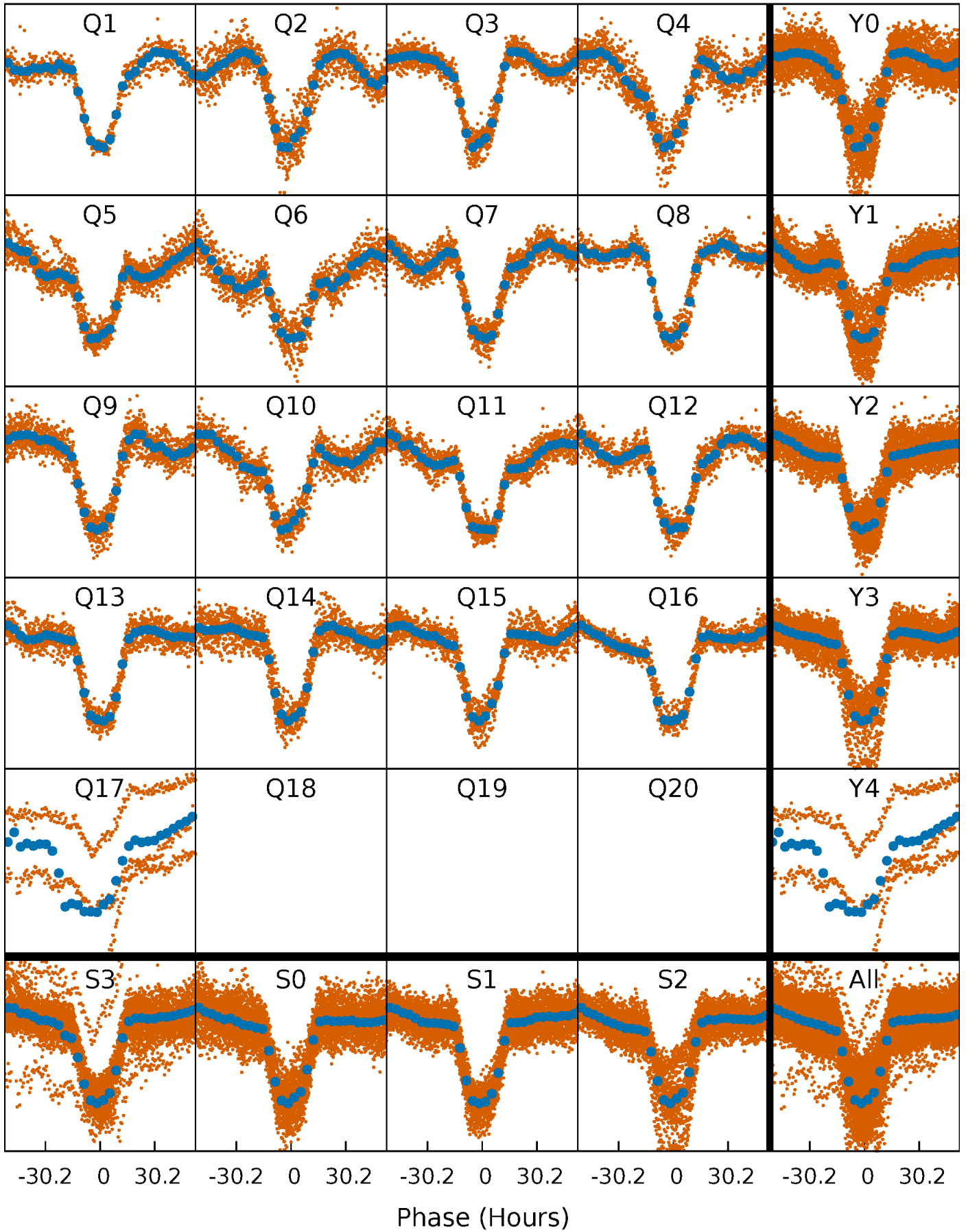


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



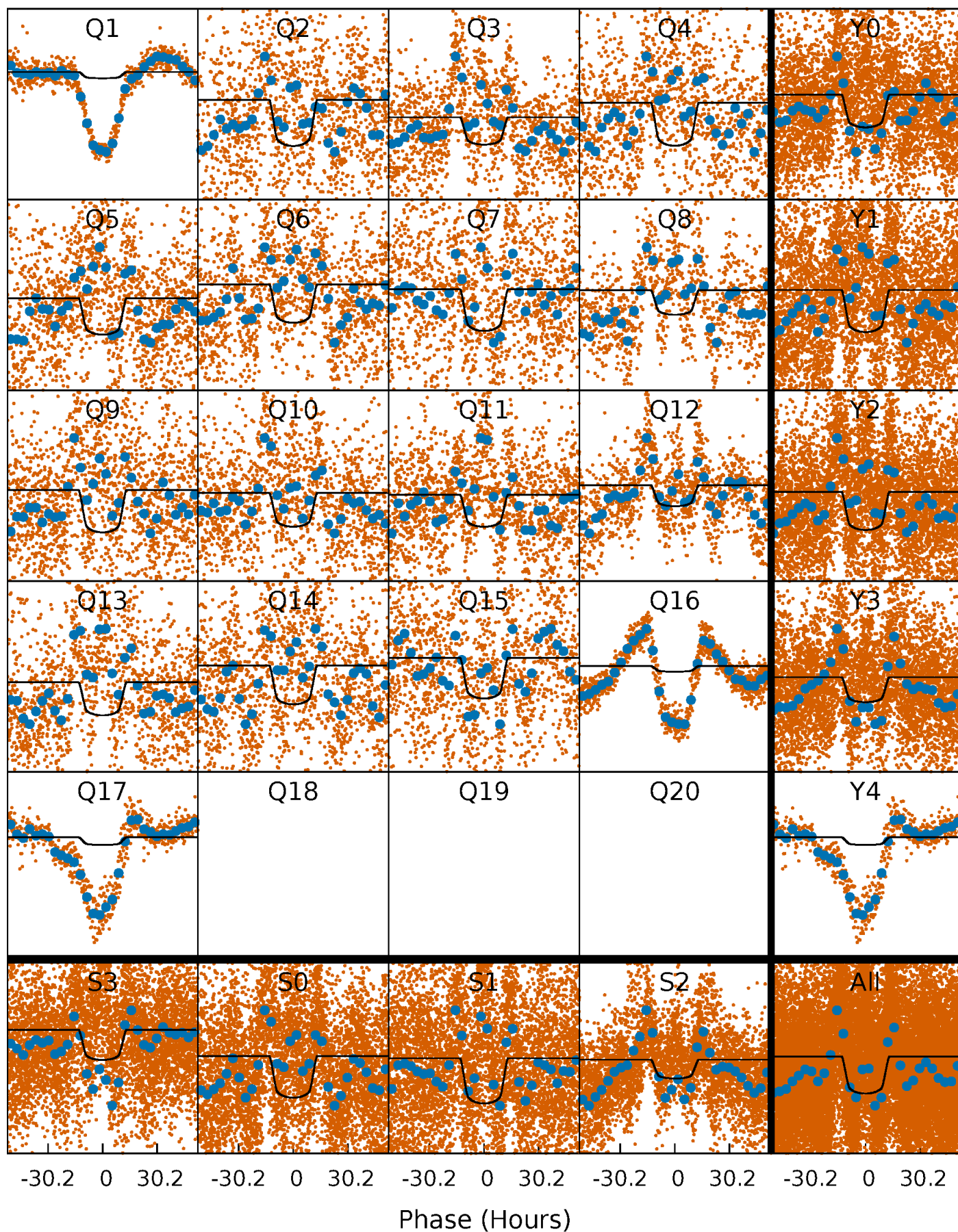
# PDC Quarter-Phased Transit Curves

TCE 005385838-02   P= 12.425067 Days    $T_0=134.008035$  (BKJD)



# DV Quarter-Phased Transit Curves

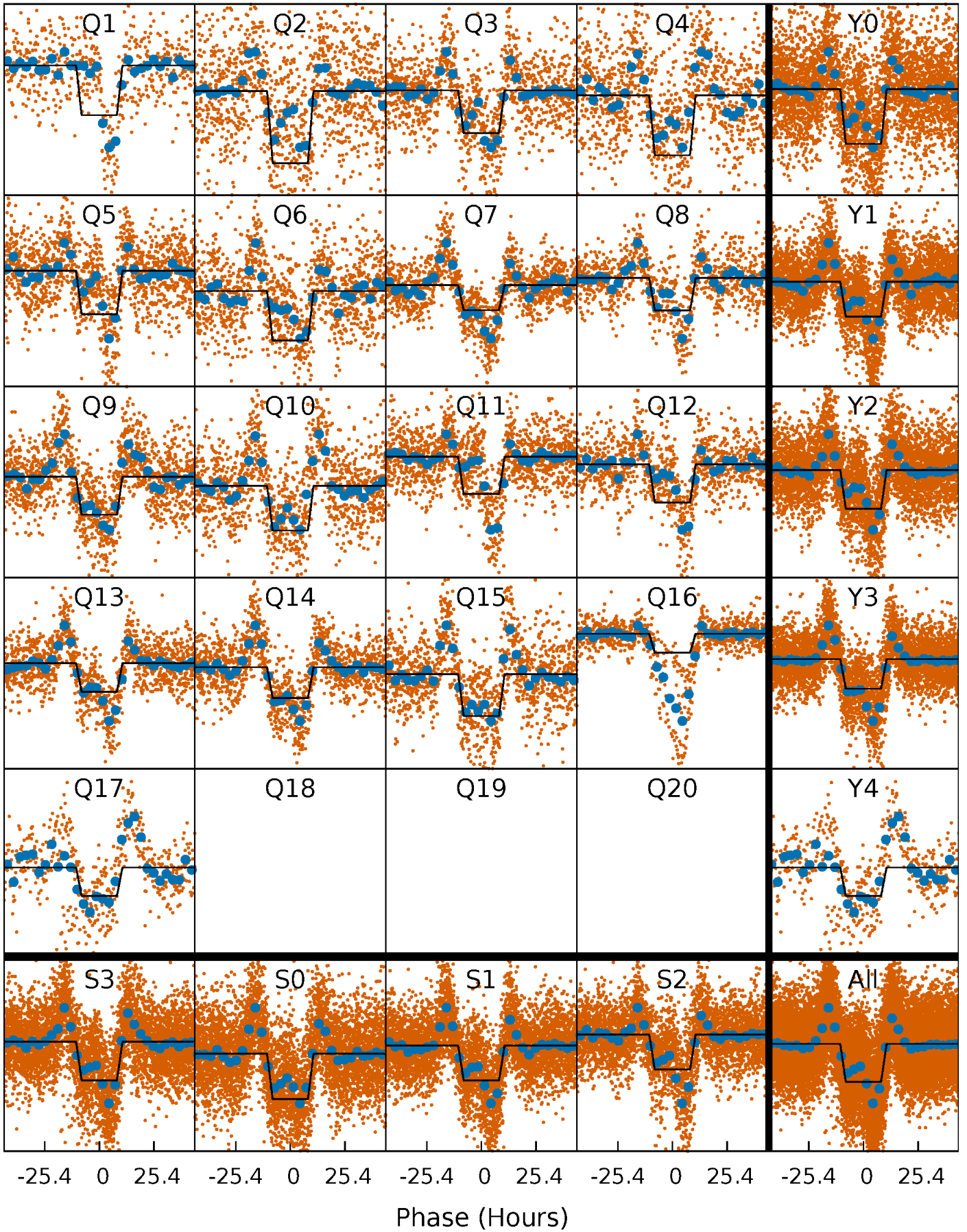
TCE 005385838-02 P= 12.425067 Days  $T_0=134.008035$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

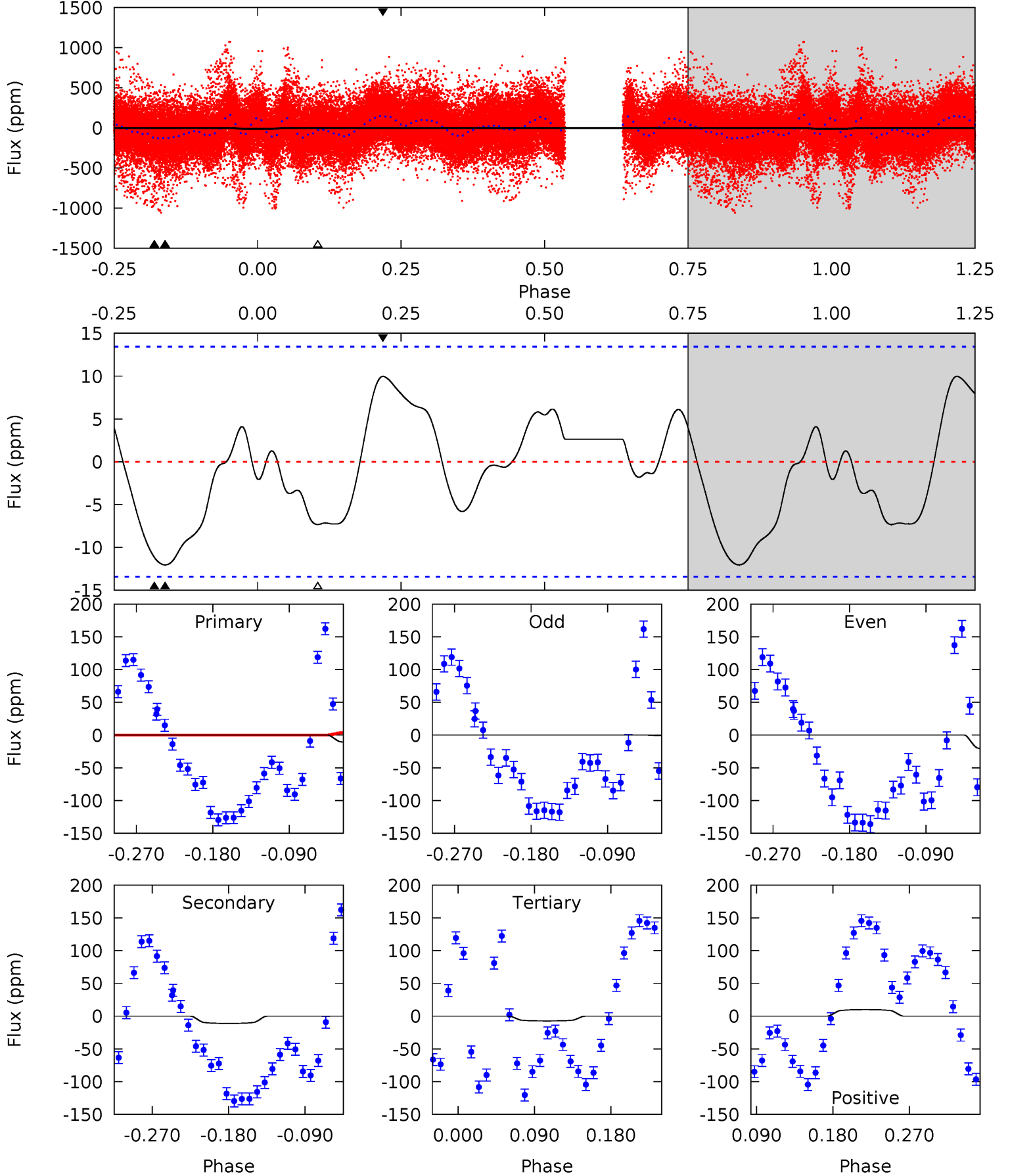
TCE 005385838-02 P= 12.425231 Days  $T_0=134.050923$  (BKJD)



# DV Model-Shift Uniqueness Test

005385838-02,  $P = 12.425067$  Days,  $E = 121.582968$  Days

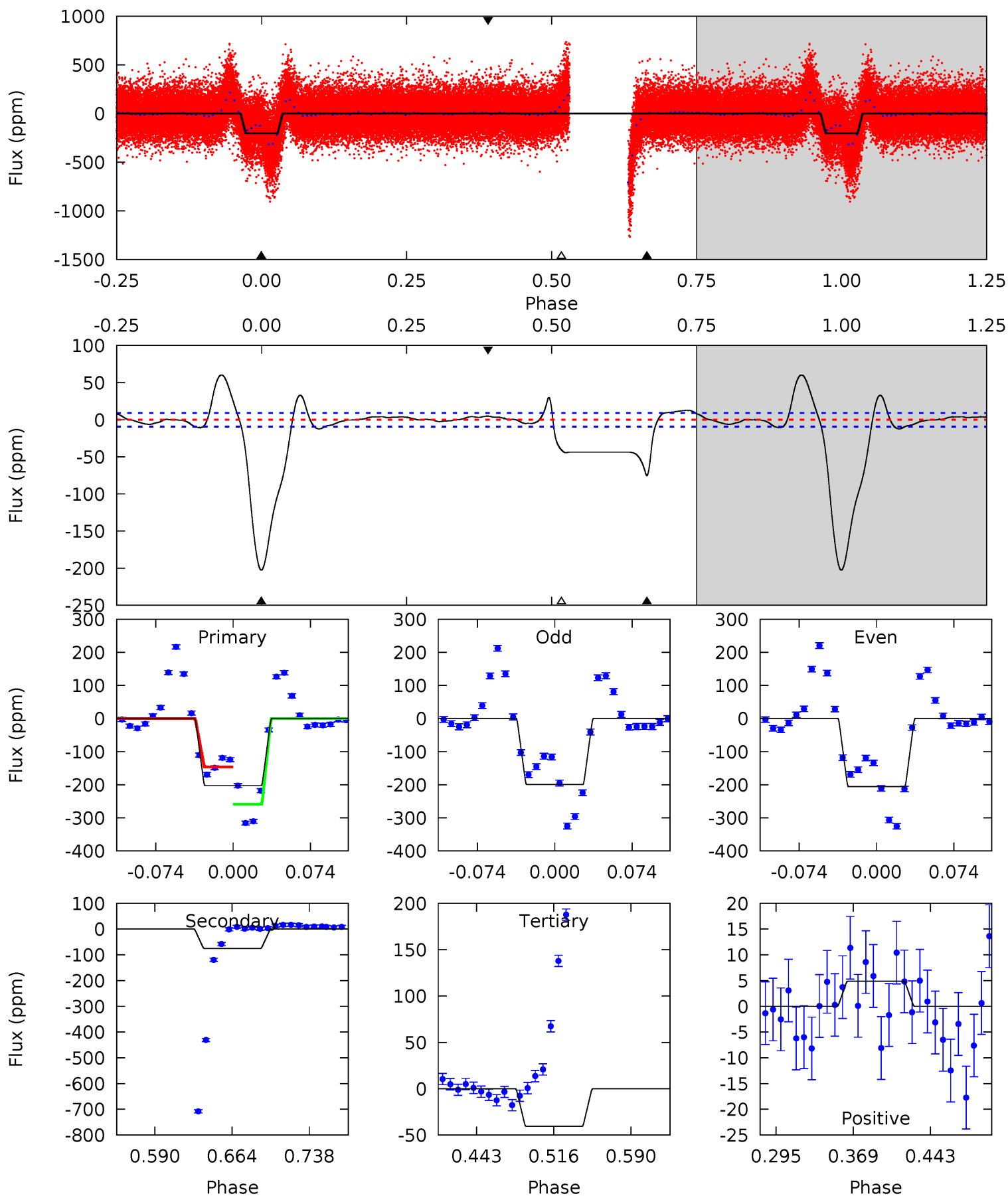
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.11	3.81	2.50	3.41	4.59	1.70	1.61	1.61	0.71	1.30	0.40	3.82	15.1	0.45	3.70



# Alt Model-Shift Uniqueness Test

005385838-02, P = 12.425231 Days, E = 121.625692 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
101.8	37.8	20.4	2.45	4.63	1.79	5.72	81.5	99.4	17.5	35.4	1.58	1.12	0.23	27.9



### Stellar Parameters For KIC 005385838

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6541^{+197}_{-217}$	$3.773^{+0.312}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$2.652^{+0.433}_{-0.939}$	$1.519^{+0.215}_{-0.350}$	$0.115^{+0.240}_{-0.036}$
	+3%/-3%	+8%/-2%	+136%/-114%	+16%/-35%	+14%/-23%	+209%/-32%
Source	PHO1	FLK73	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 005385838-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-11 \pm 3$	$3.78^{+0.45}_{-0.78}$	$1842^{+117}_{-173}$	$3640^{+177}_{-191}$	$6.602^{+3.243}_{-2.227}$
Alt.	$-75 \pm 2$	$4.12^{+0.56}_{-0.80}$	$1847^{+112}_{-161}$	$5069^{+169}_{-162}$	$36^{+16}_{-7}$

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



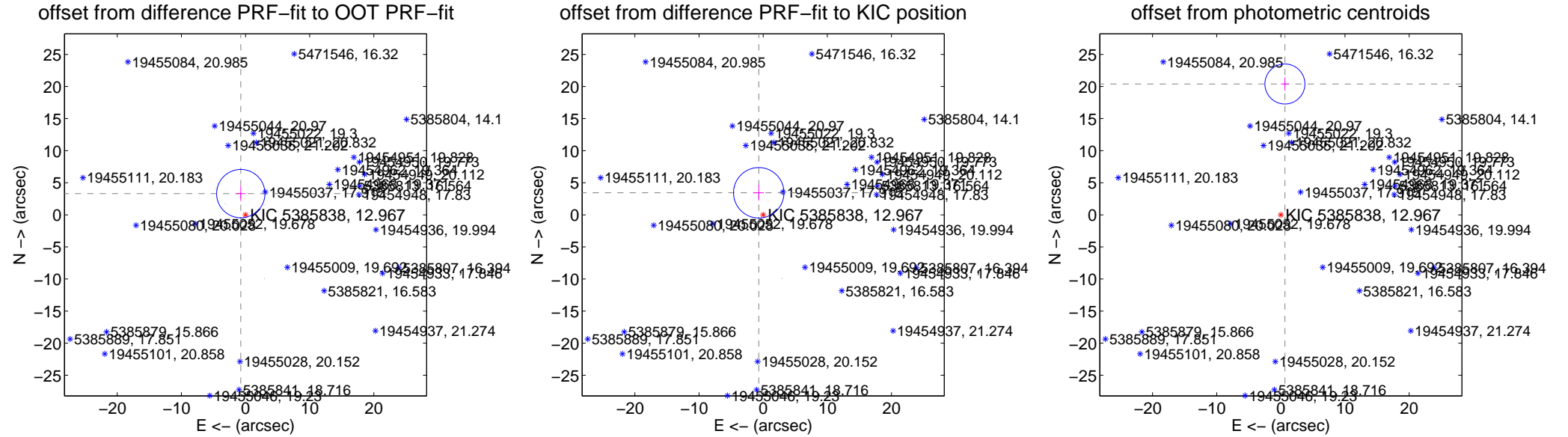
## DV Centroid Data

Supplemental centroid analysis for 005385838-02. Kepler magnitude: 12.97. Transit SNR 13.32

There are 0 quarters with good PRF difference image offsets

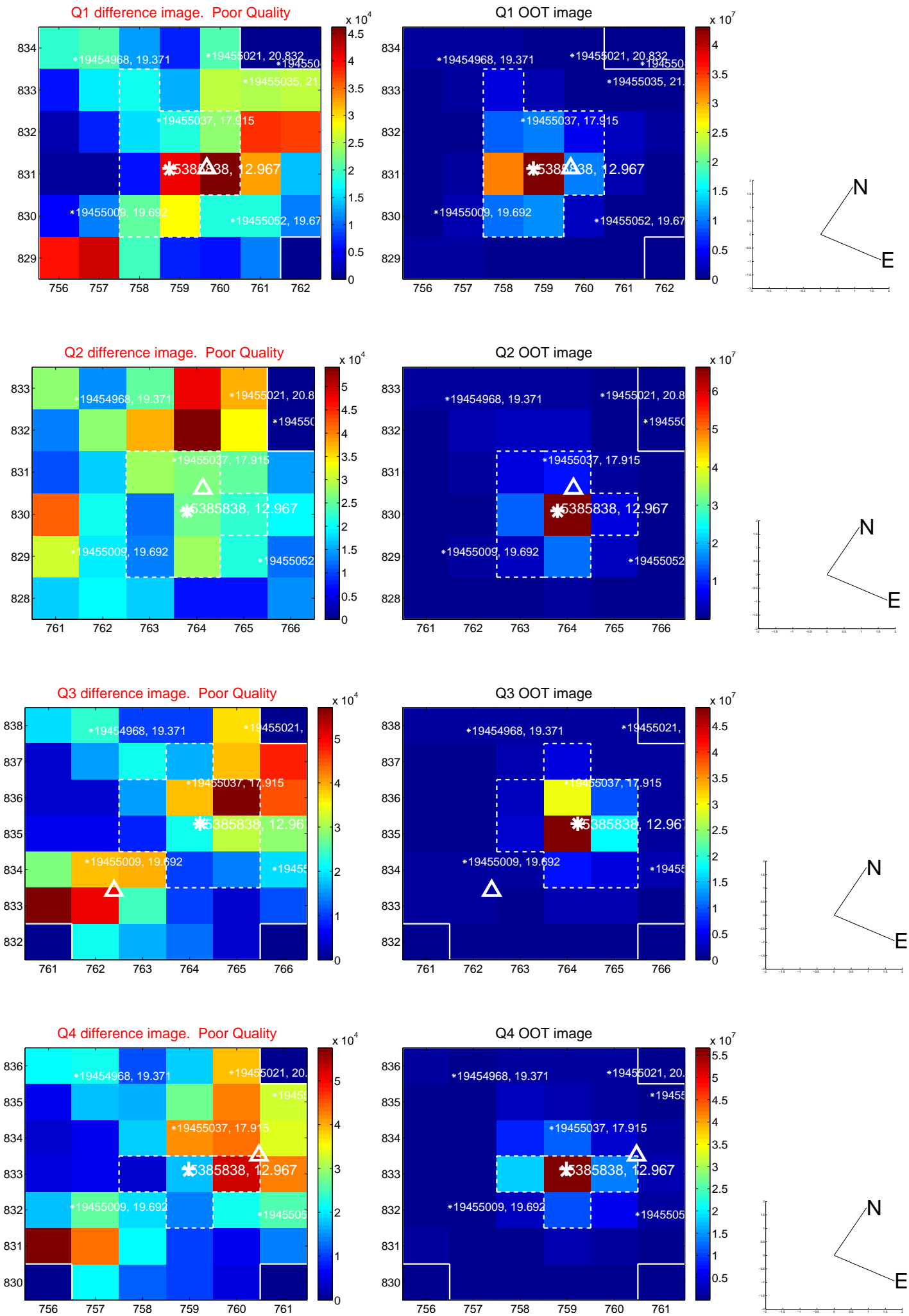
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.389 \pm 1.255$	2.70	$0.741 \pm 0.750$	$3.307 \pm 1.165$
PRF-fit source offset from KIC position	$3.505 \pm 1.310$	2.68	$0.690 \pm 0.810$	$3.436 \pm 1.211$
photometric centroid source offset	$20.40 \pm 1.04$	19.63	$-0.63 \pm 0.63$	$20.39 \pm 1.04$

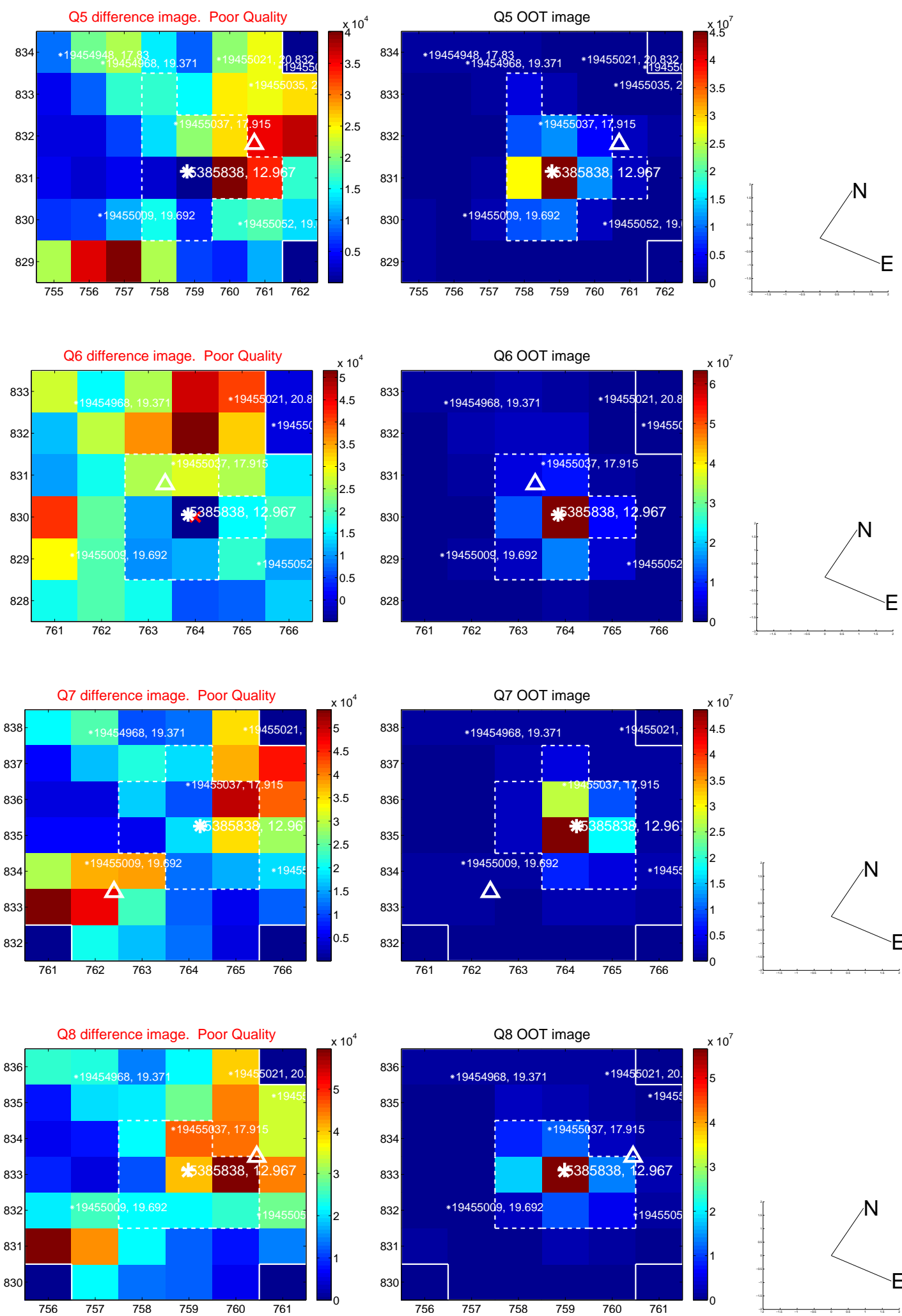


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

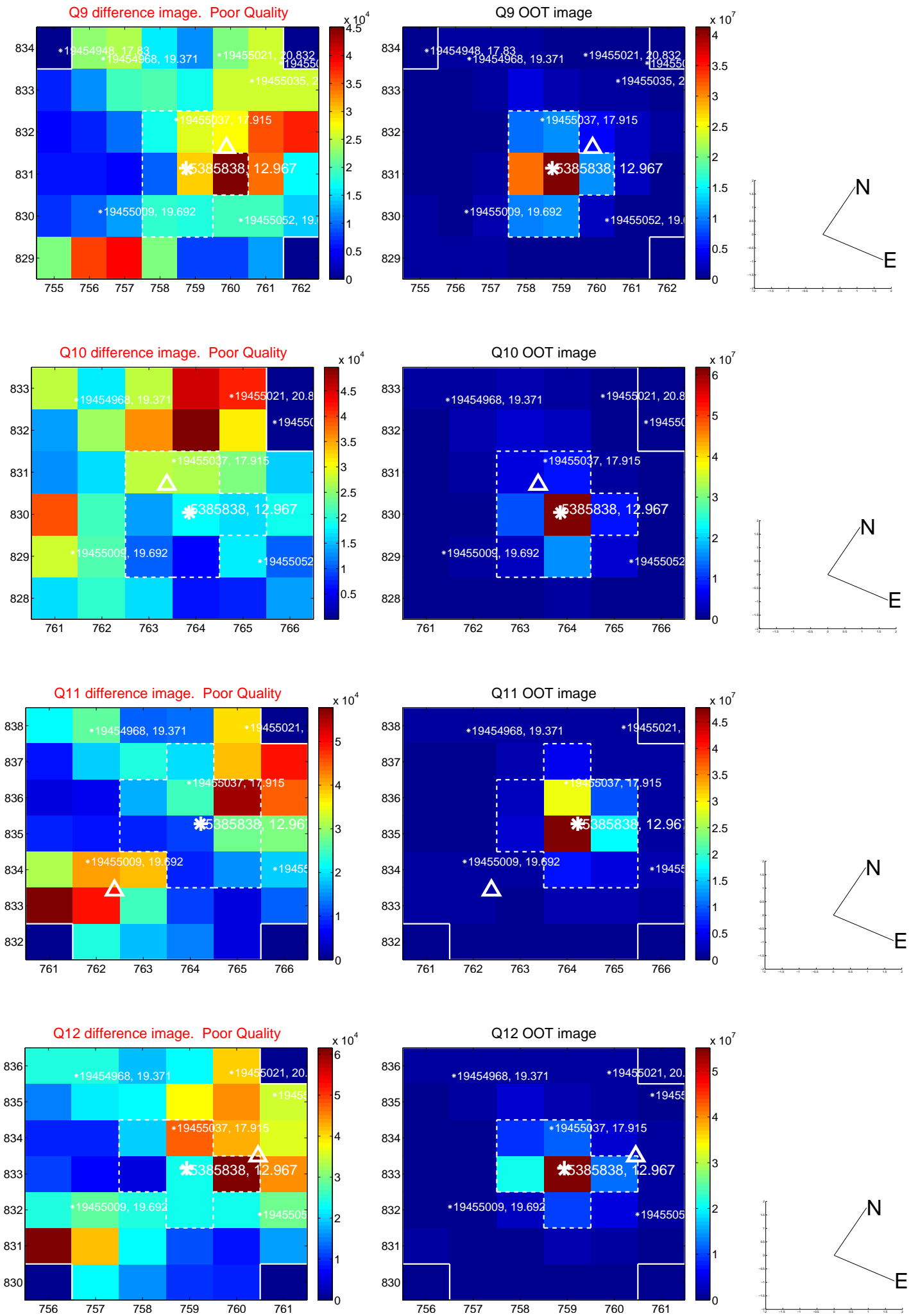
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



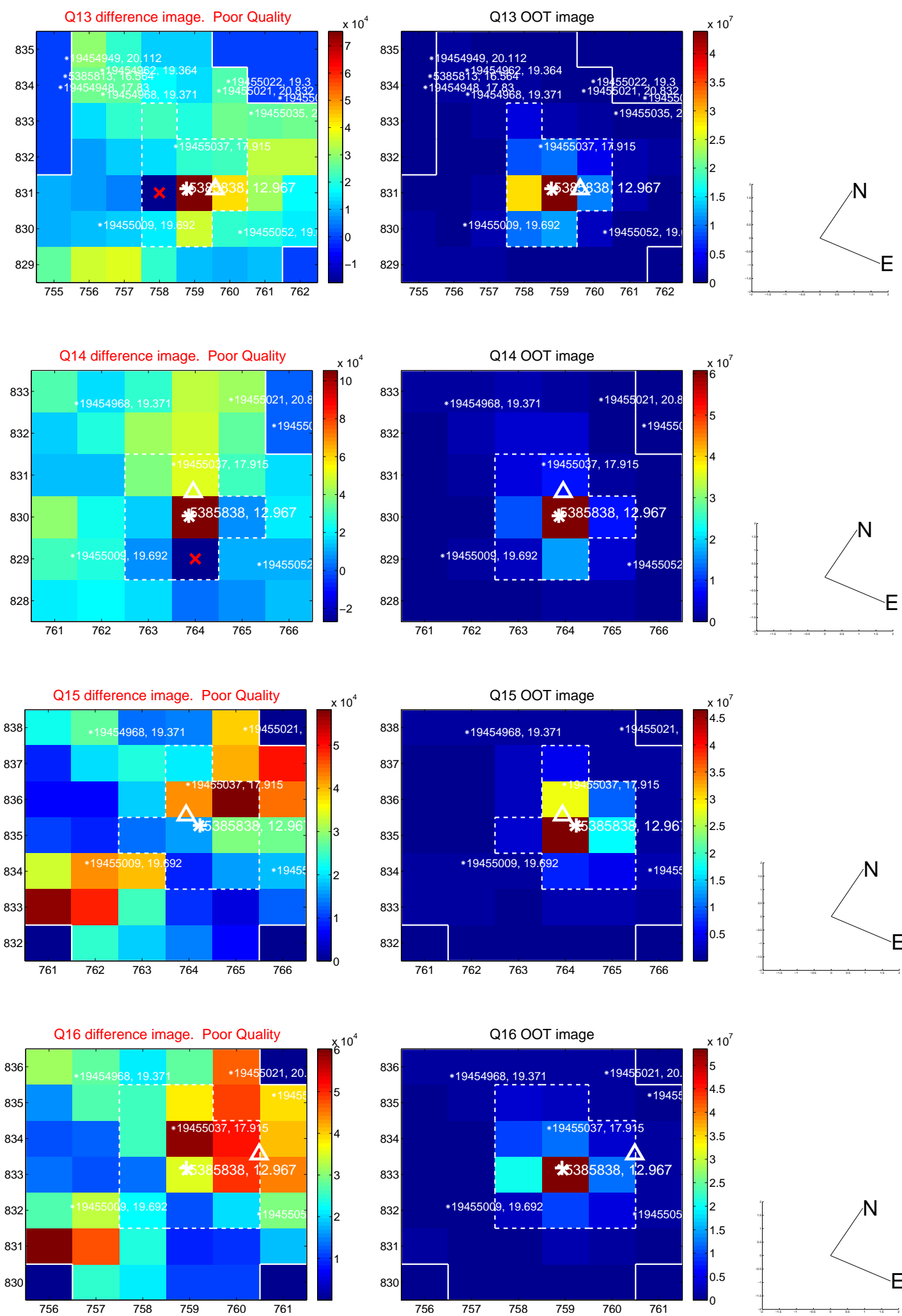
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



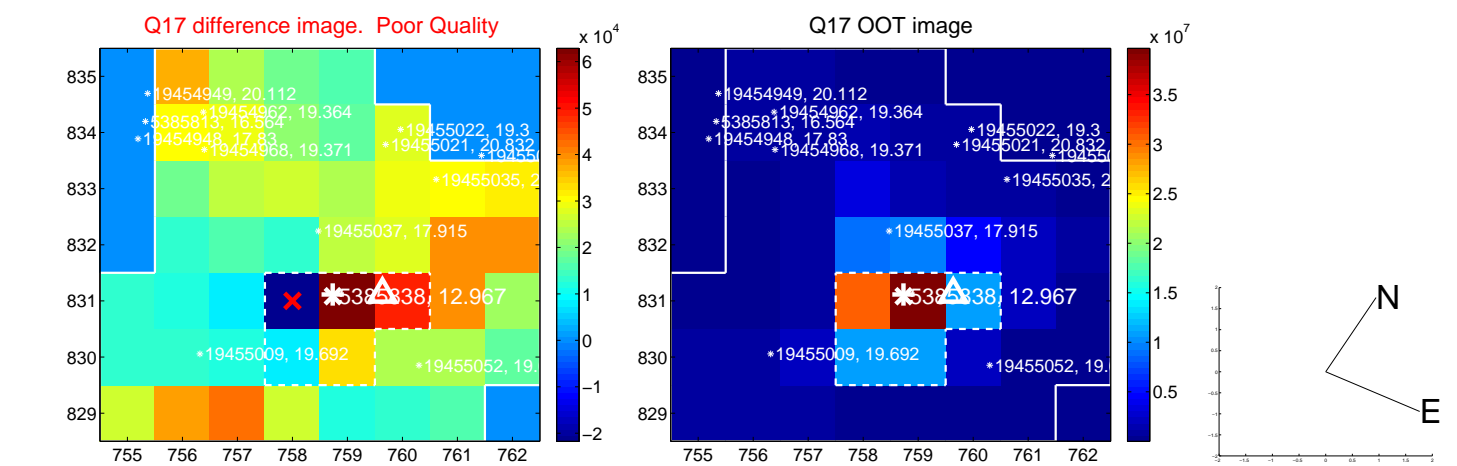
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



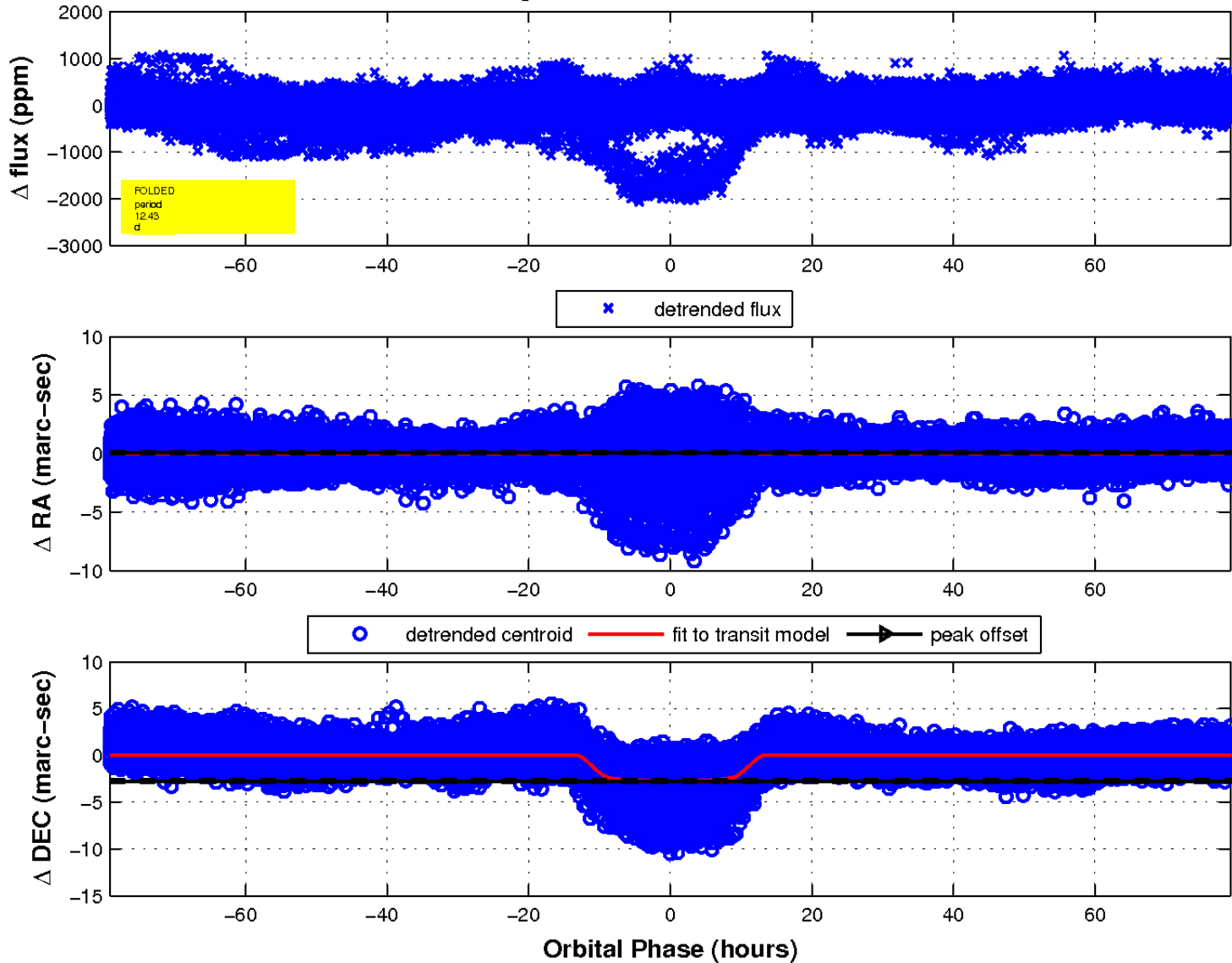
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



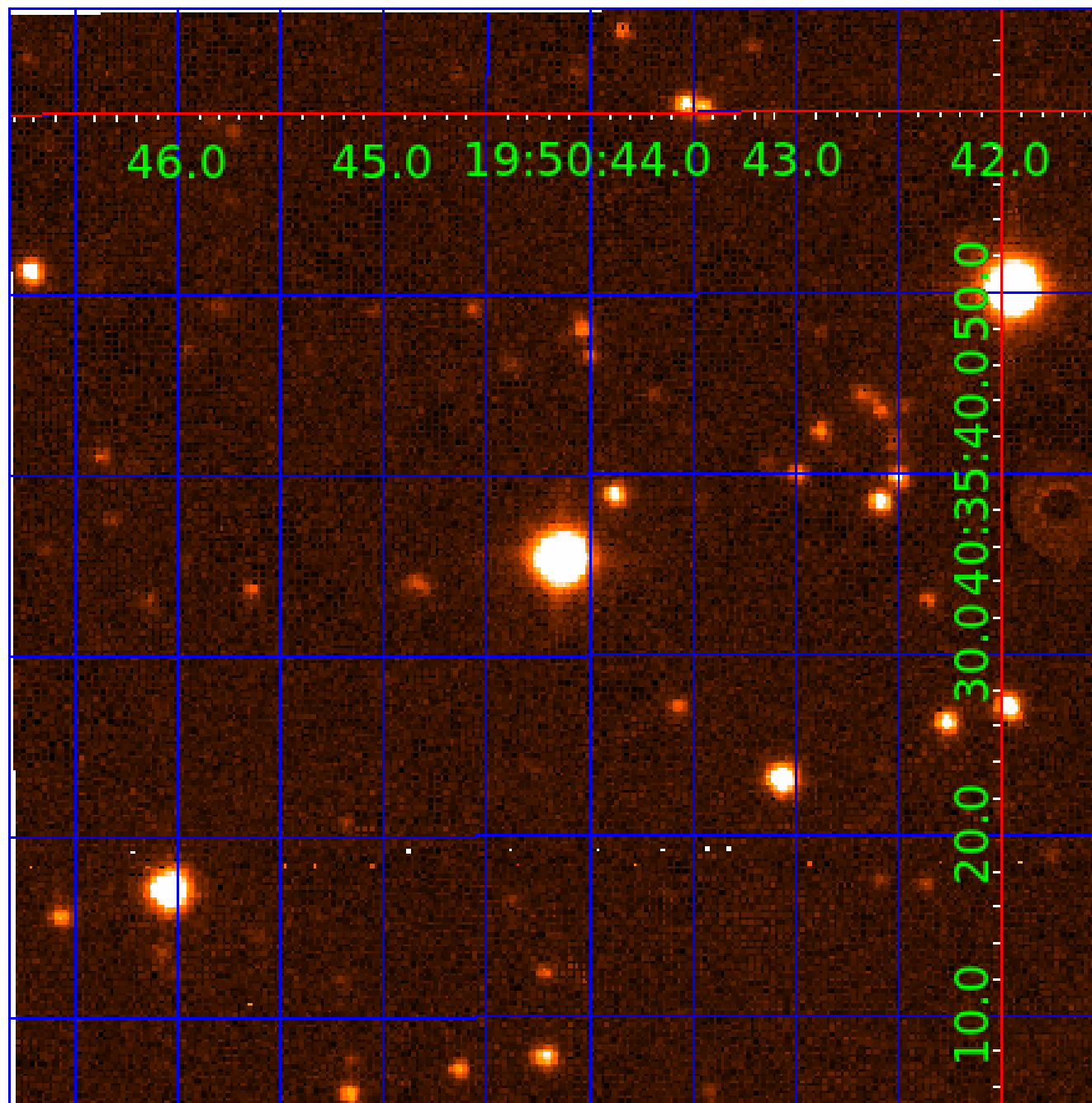
fluxWeightedCentroids, Planet 2 of 3





# UKIRT Image

Declination



# KIC 005385838

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005385838-01	OBS	No	12.425611	141.255628	329.2	10.159	20.2	24.5	2.65	6541	9.36	790.85
005385838-02	OBS	No	12.425067	134.008035	136.2	26.392	15.4	13.3	2.65	6541	3.90	790.90
005385838-03	OBS	No	4.143775	133.711449	45.8	16.800	15.5	7.0	2.65	6541	2.10	3419.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005385838-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_CROWDED—HALO_GHOST—EPHEM_MATCH
005385838-02	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_CROWDED—HALO_GHOST—EPHEM_MATCH
005385838-03	OBS	FP	0.00	1	0	0	1	SWEET_NTL—LPP_DV—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.

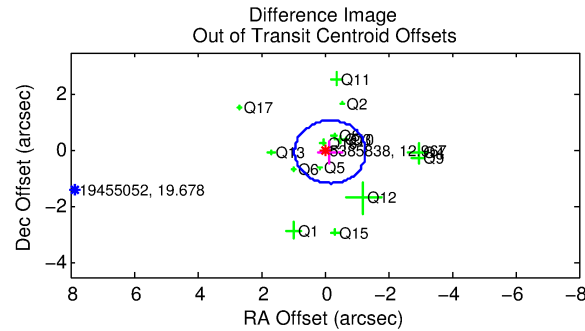
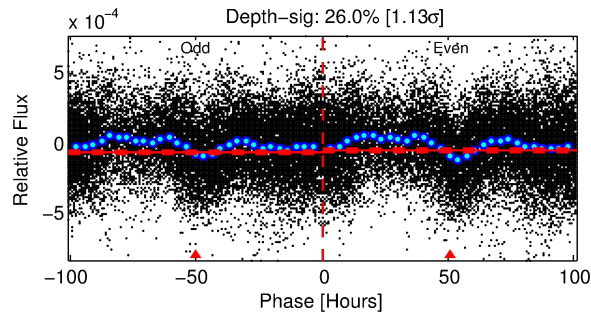
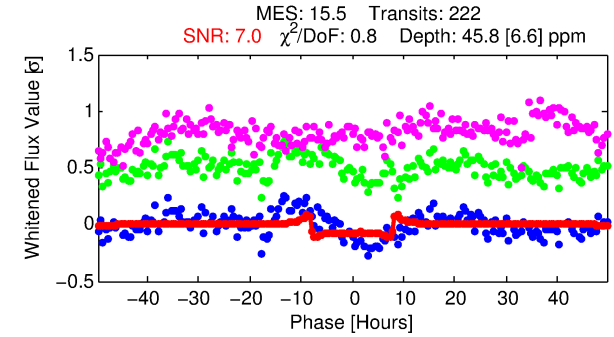
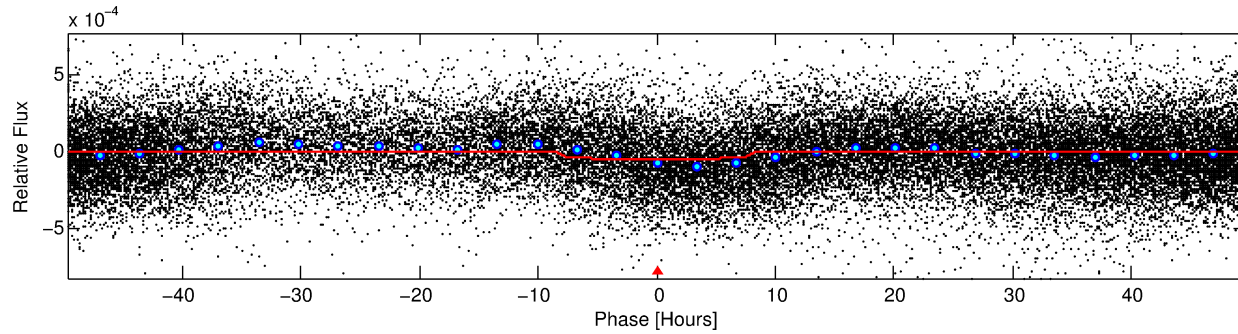
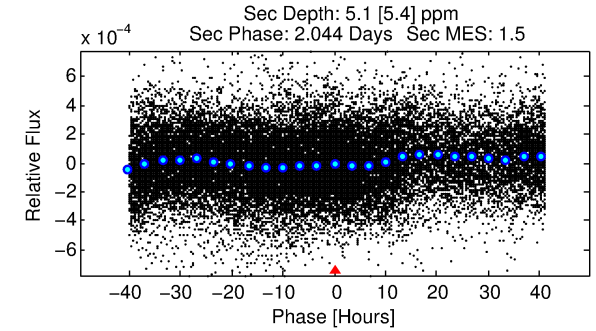
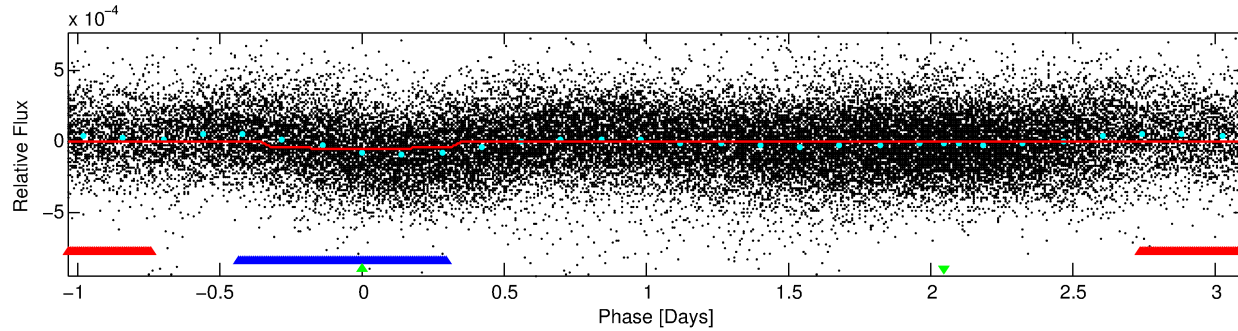
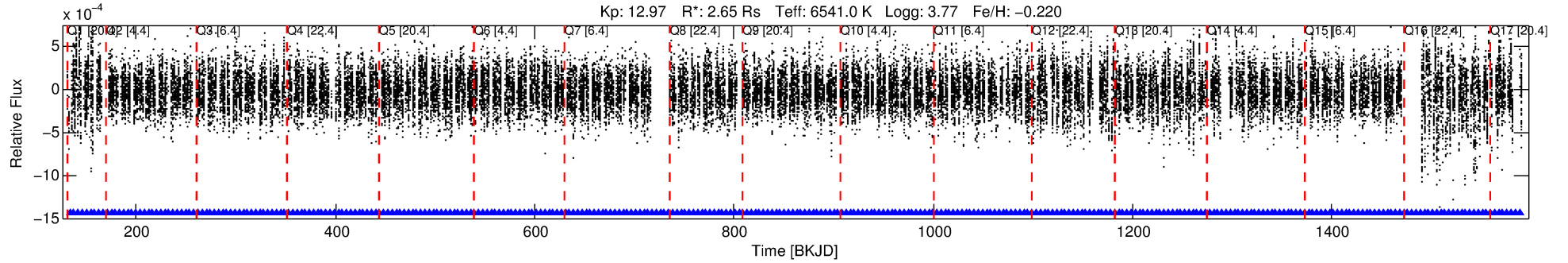
## Ephemeris Match Information For 005385838-03

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
005385838-03	5385838	005385750-02	5385750	1:3	89.4	6	22	14.48	12.96	10.94	Direct-PRF	1	1.42	2.87

**Notes:** P<sub>1</sub>:P<sub>2</sub> 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<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> 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: 5385838 Candidate: 3 of 3 Period: 4.144 d



## DV Fit Results:

Period = 4.14377 [0.00006] d  
Epoch = 133.7114 [0.0093] BKJD  
Rp/R\* = 0.0072 [0.0008]  
a/R\* = 1.27 [0.22]  
b = 0.90 [0.10]  
Seff = 3419.73 [1881.50]  
Teq = 1950 [268] K  
Rp = 2.10 [0.78] Re  
a = 0.0581 [0.0195] AU  
Ag = 2.17 [2.60] [0.45 $\sigma$ ]  
Teffp = 3660 [985] K [1.68 $\sigma$ ]

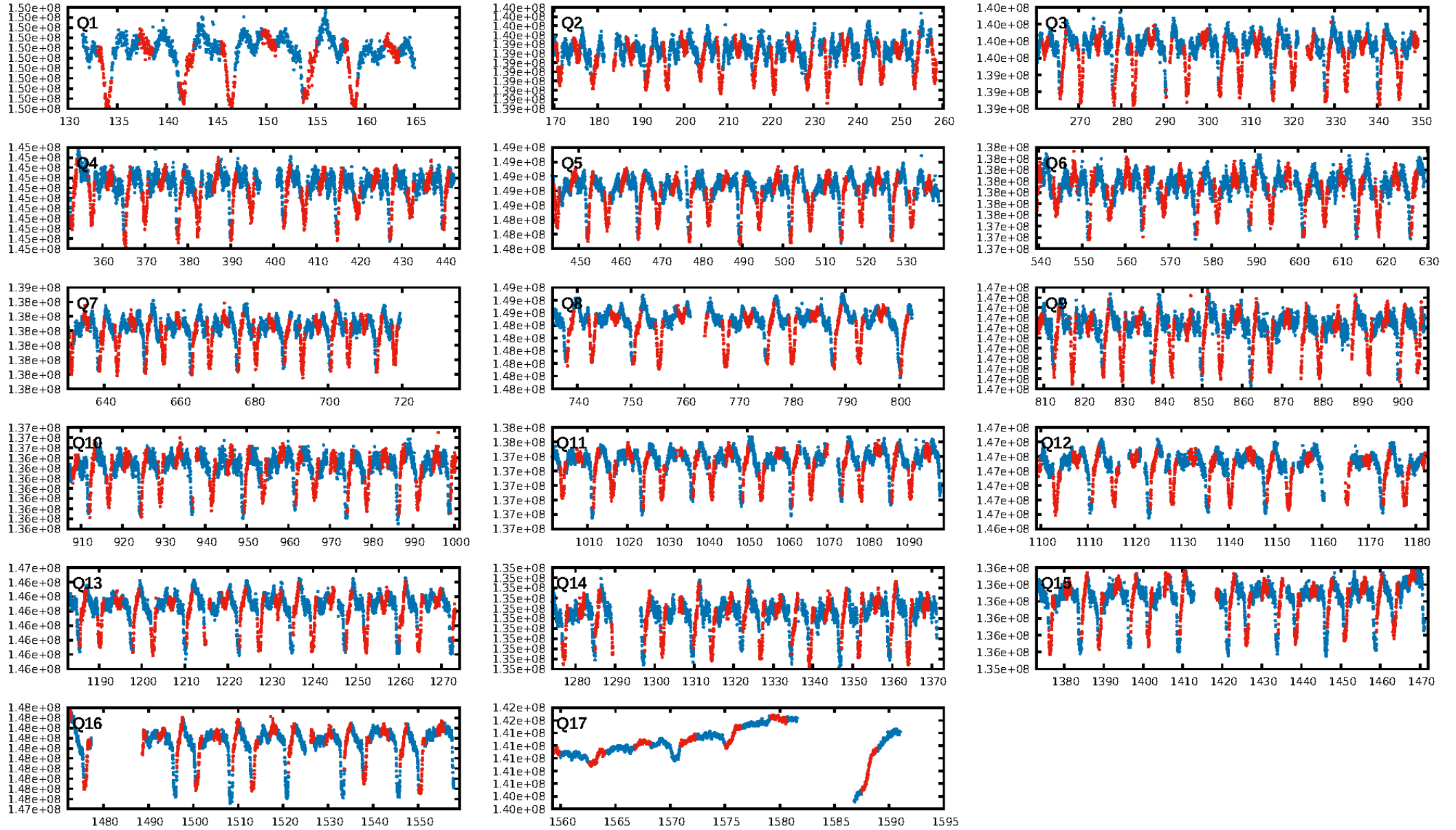
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.35 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.57e-27  
RollingBand-fgt: 1.00 [213/213]  
GhostDiagnostic-chr: 1.085  
Centroid-sig: 0.2%  
Centroid-so: 2.508 arcsec [1.76 $\sigma$ ]  
OotOffset-rm: 0.177 arcsec [0.47 $\sigma$ ]  
KicOffset-rm: 0.253 arcsec [0.63 $\sigma$ ]  
OotOffset-st: 3/3/4/5 [15]  
KicOffset-st: 3/3/4/5 [15]  
DiffImageQuality-fgm: 0.33 [5/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:37:00 Z

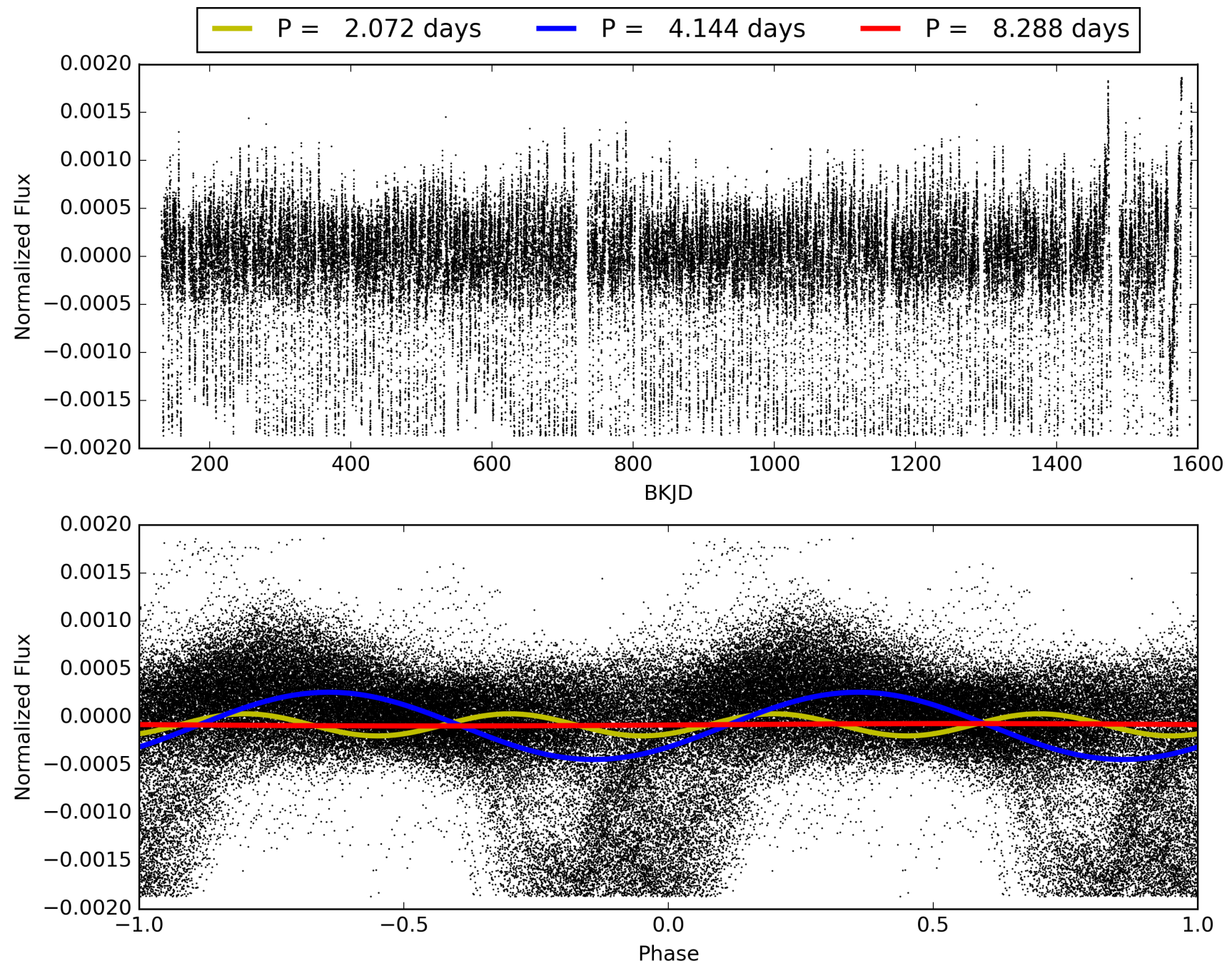
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005385838-03, PDC Light Curves



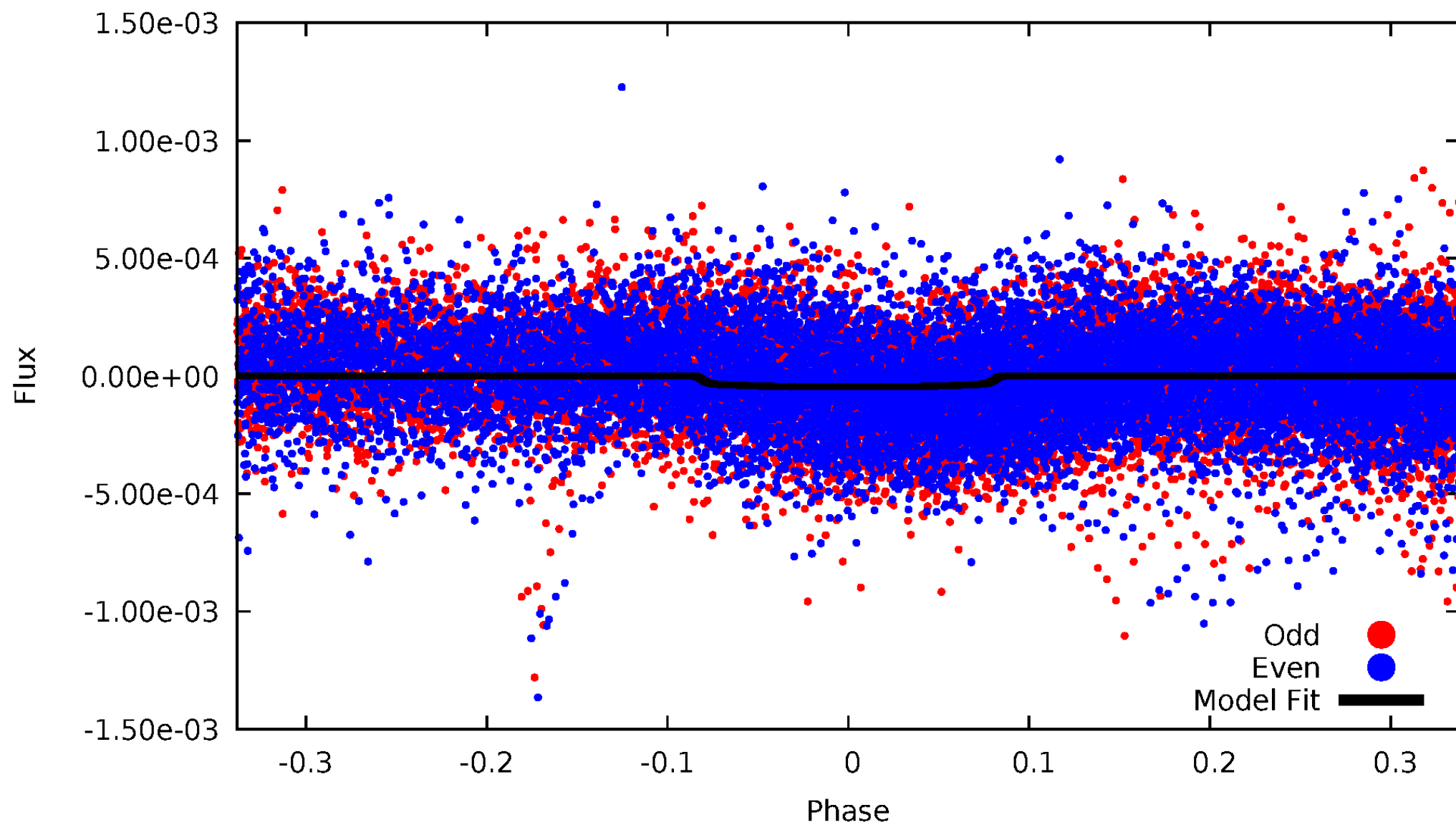


TCE 005385838-03



# DV Odd/Even

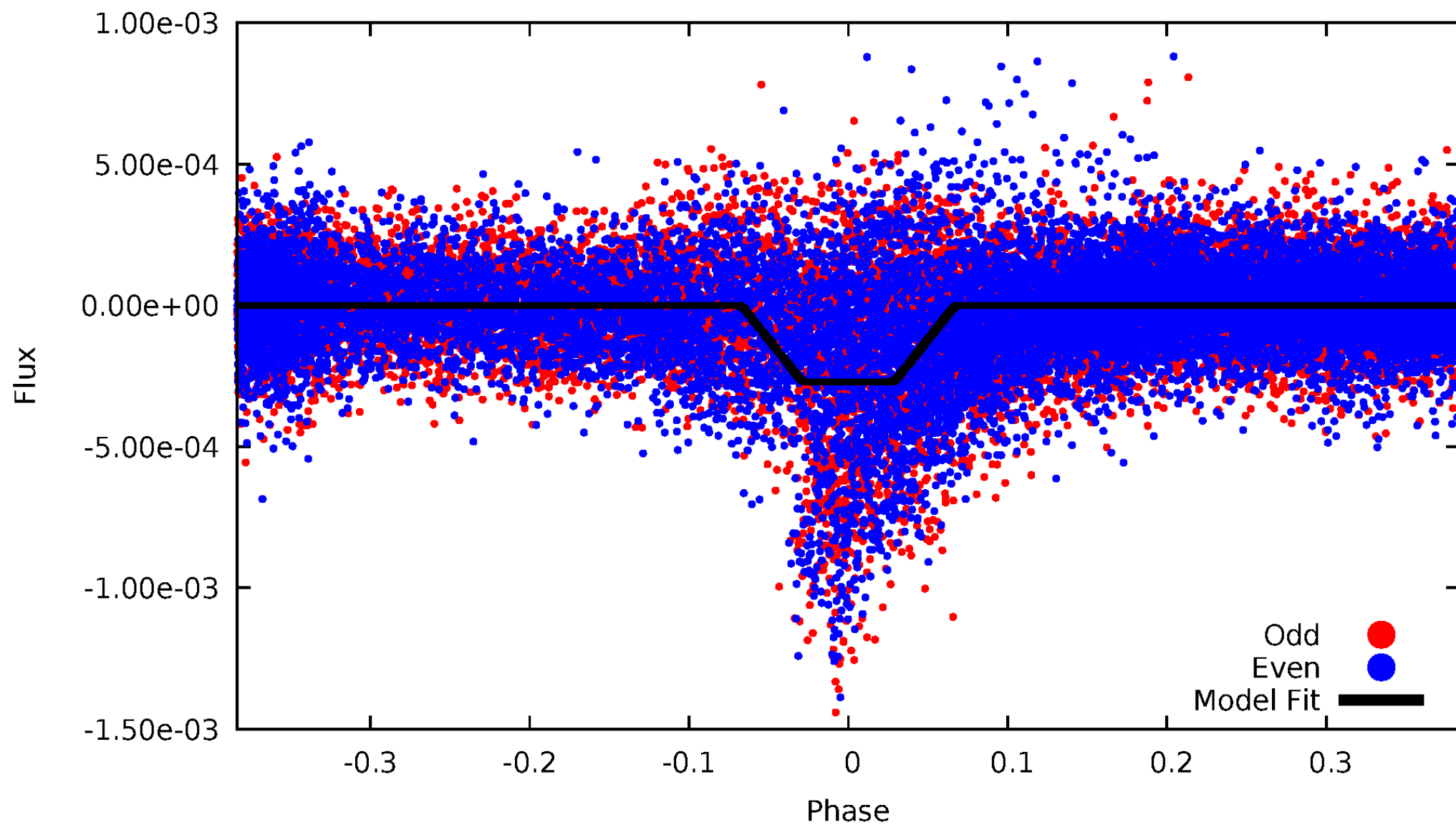
TCE 005385838-03





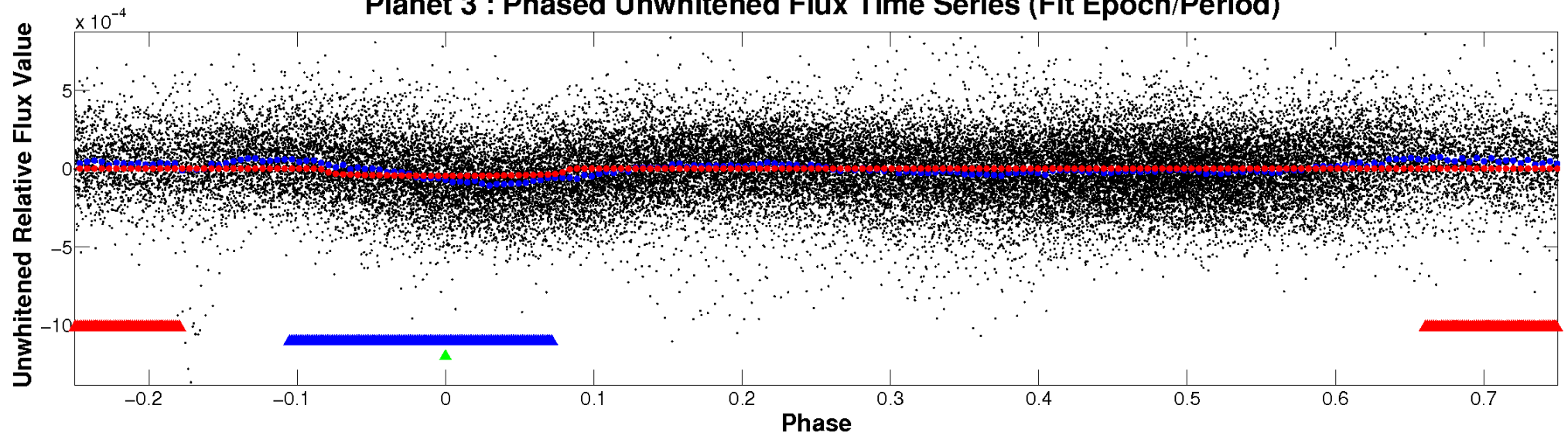
# ALT Odd/Even

TCE 005385838-03

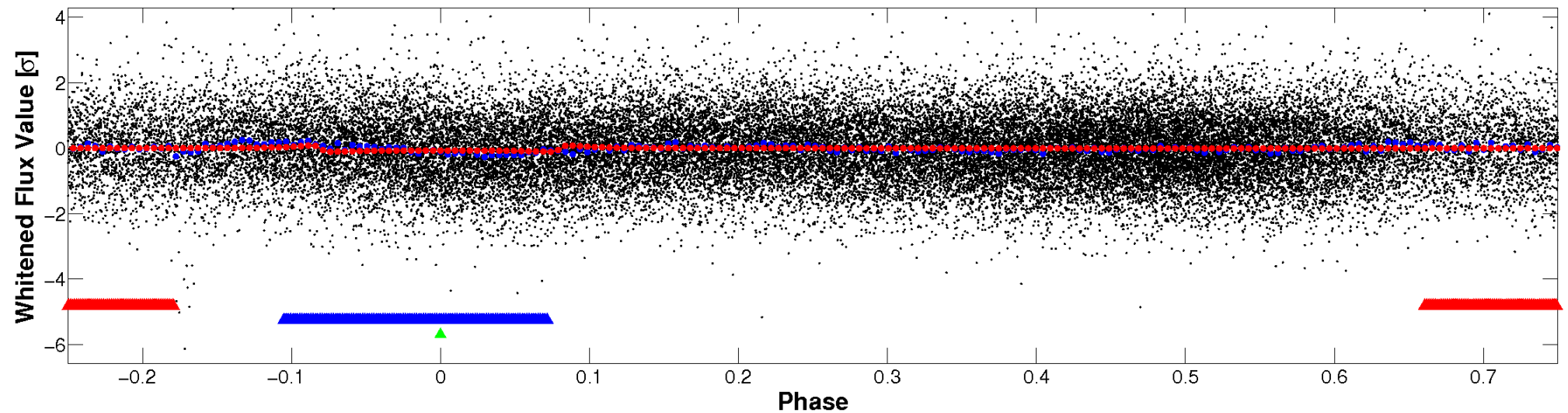


# Non-Whitened Vs. Whitened Light Curve

**Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

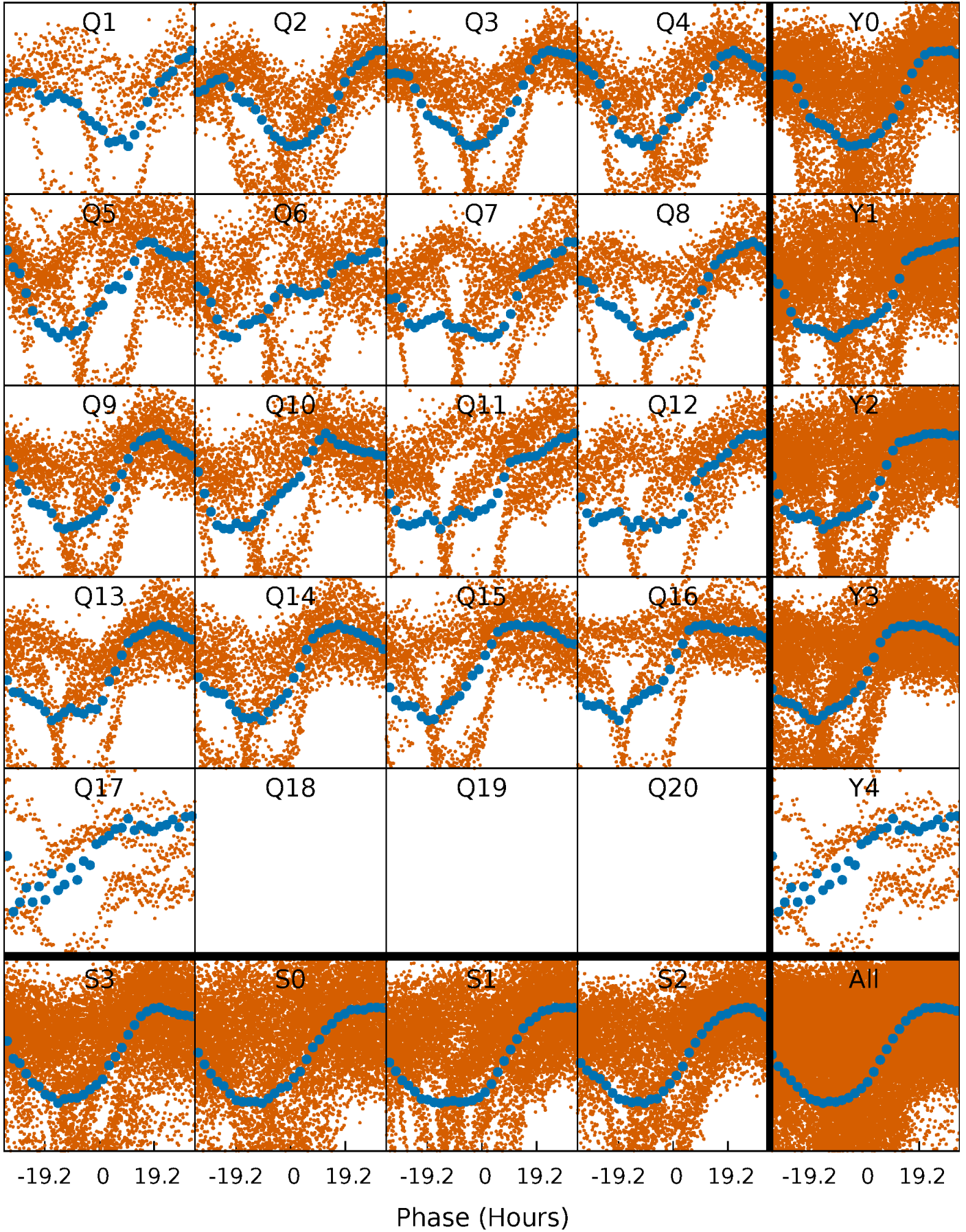


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

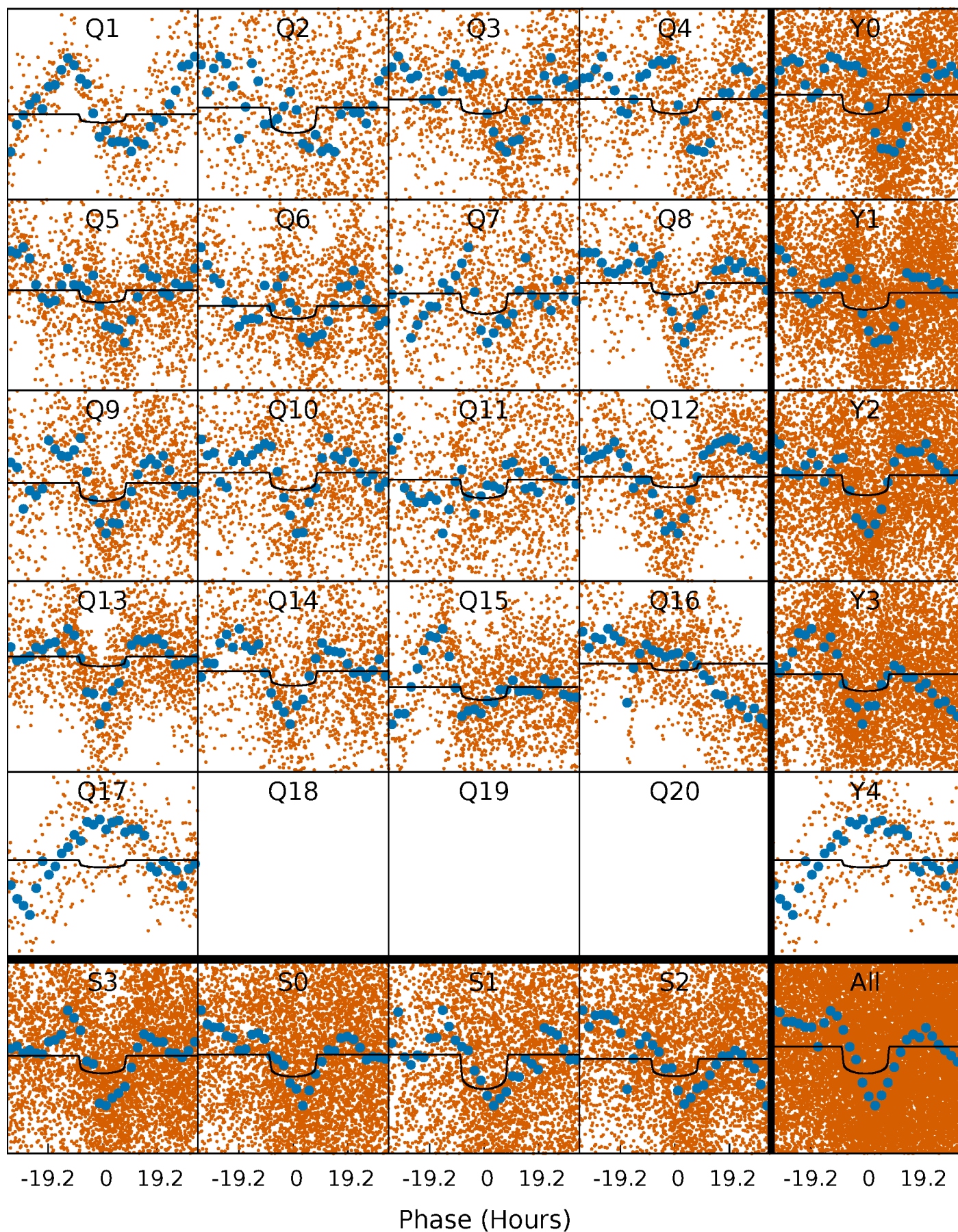
TCE 005385838-03   P= 4.143775 Days    $T_0=133.711449$  (BKJD)





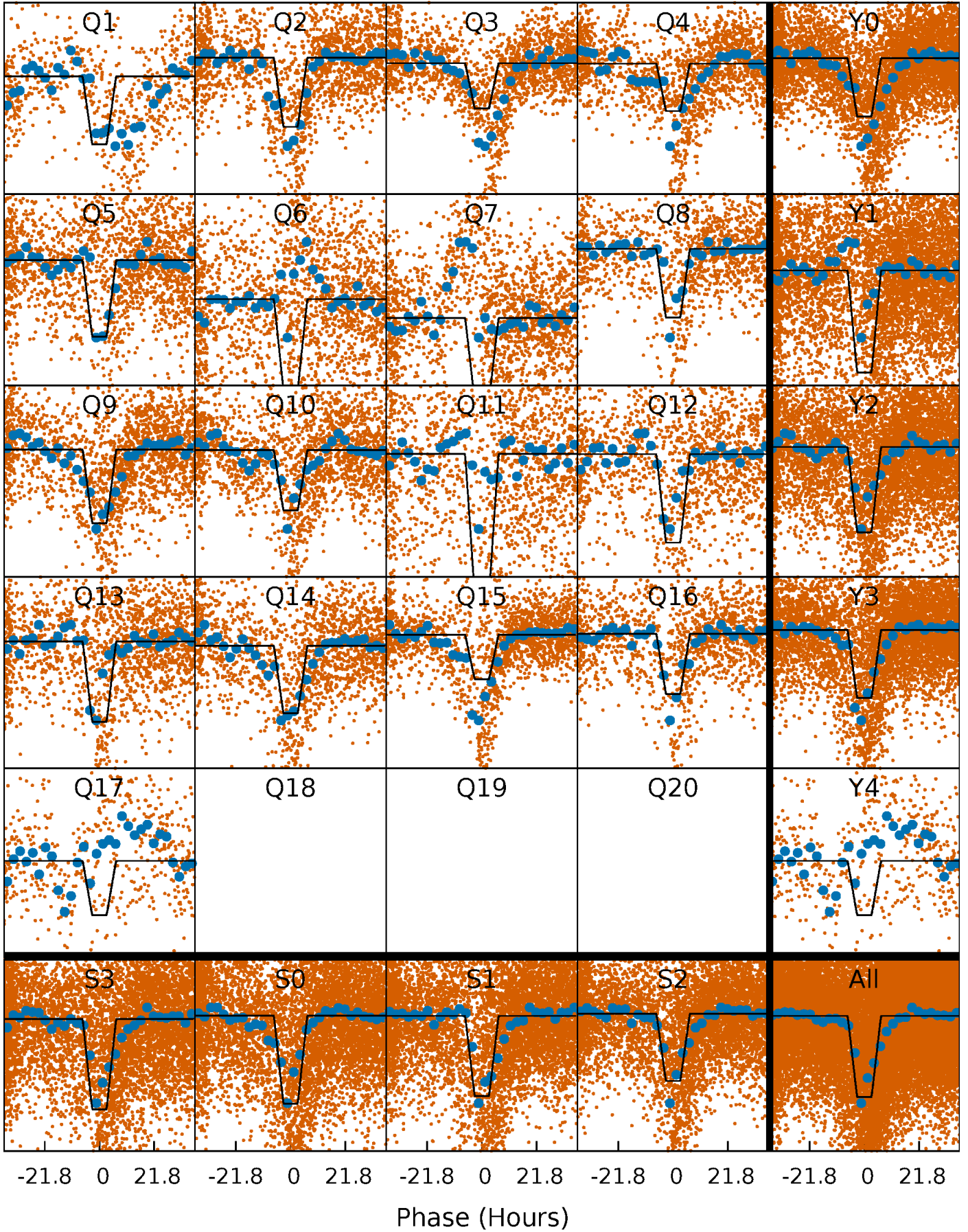
# DV Quarter-Phased Transit Curves

TCE 005385838-03   P= 4.143775 Days    $T_0=133.711449$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

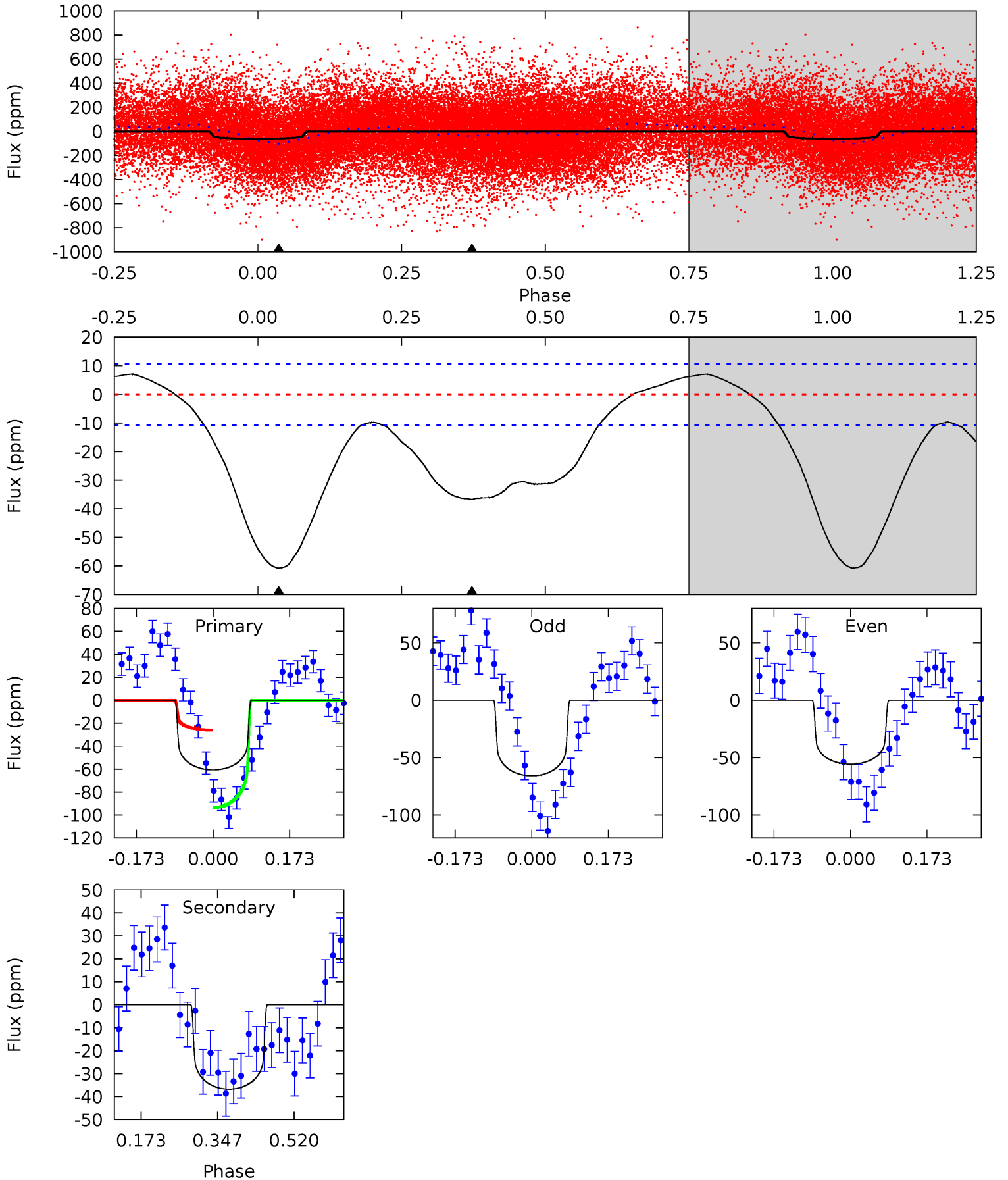
TCE 005385838-03 P= 4.142283 Days  $T_0=133.660417$  (BKJD)



# DV Model-Shift Uniqueness Test

005385838-03, P = 4.143775 Days, E = 129.567674 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
25.3	15.3	0	0	4.45	1.36	4.20	25.3	25.3	15.3	15.3	2.14	1.31	0.10	14.6

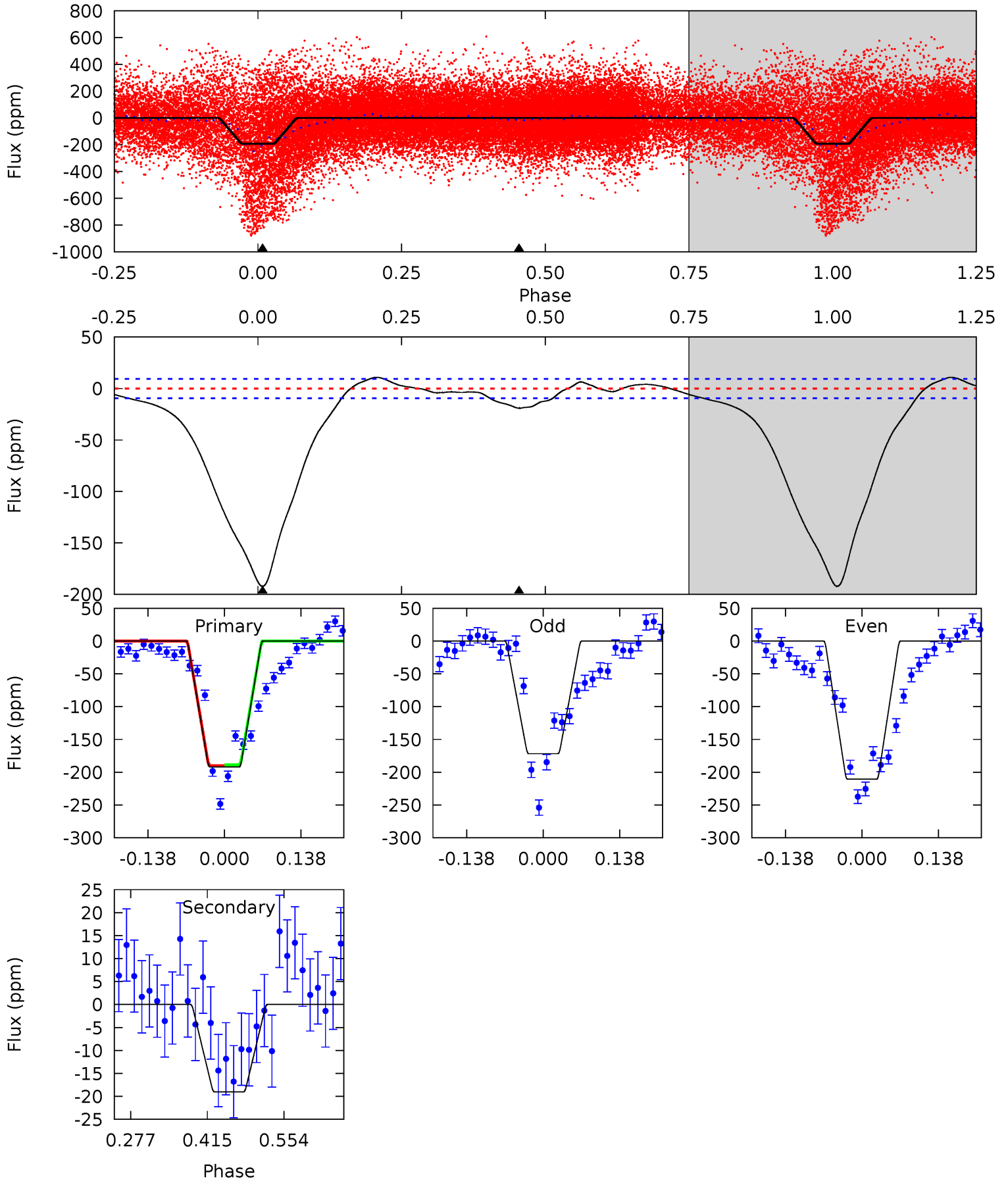




# Alt Model-Shift Uniqueness Test

005385838-03, P = 4.142283 Days, E = 129.518134 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
92.1	9.11	0	0	4.50	1.48	3.89	92.1	92.1	9.11	9.11	9.25	1.11	0.05	0.23



### Stellar Parameters For KIC 005385838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6541^{+197}_{-217}$	$3.773^{+0.312}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$2.652^{+0.433}_{-0.939}$	$1.519^{+0.215}_{-0.350}$	$0.115^{+0.240}_{-0.036}$
	+3%/-3%	+8%/-2%	+136%/-114%	+16%/-35%	+14%/-23%	+209%/-32%
Source	PHO1	FLK73	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 005385838-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-37 \pm 2$	$1.98^{+0.37}_{-0.40}$	$2655^{+166}_{-256}$	$5950^{+401}_{-353}$	$18^{+9}_{-5}$
Alt.	$-19 \pm 2$	$4.53^{+0.65}_{-0.88}$	$2644^{+176}_{-224}$	$3643^{+130}_{-134}$	$1.737^{+0.855}_{-0.398}$

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

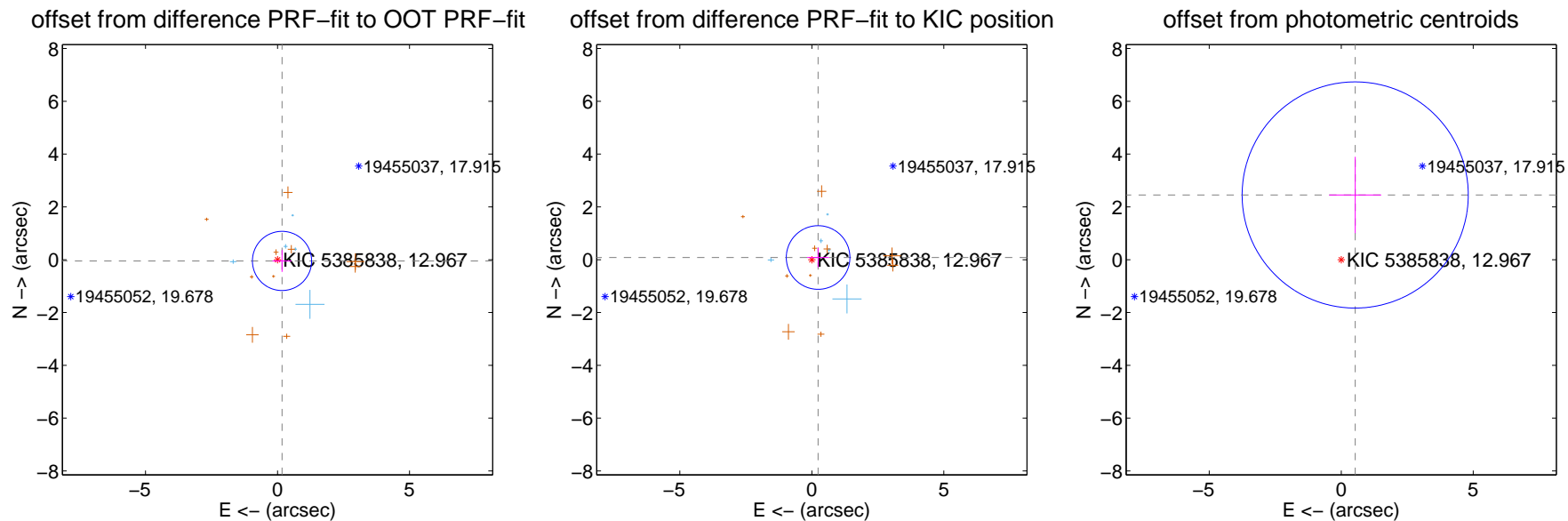
## DV Centroid Data

Supplemental centroid analysis for 005385838-03. Kepler magnitude: 12.97. Transit SNR 7.02

There are 5 quarters with good PRF difference image offsets

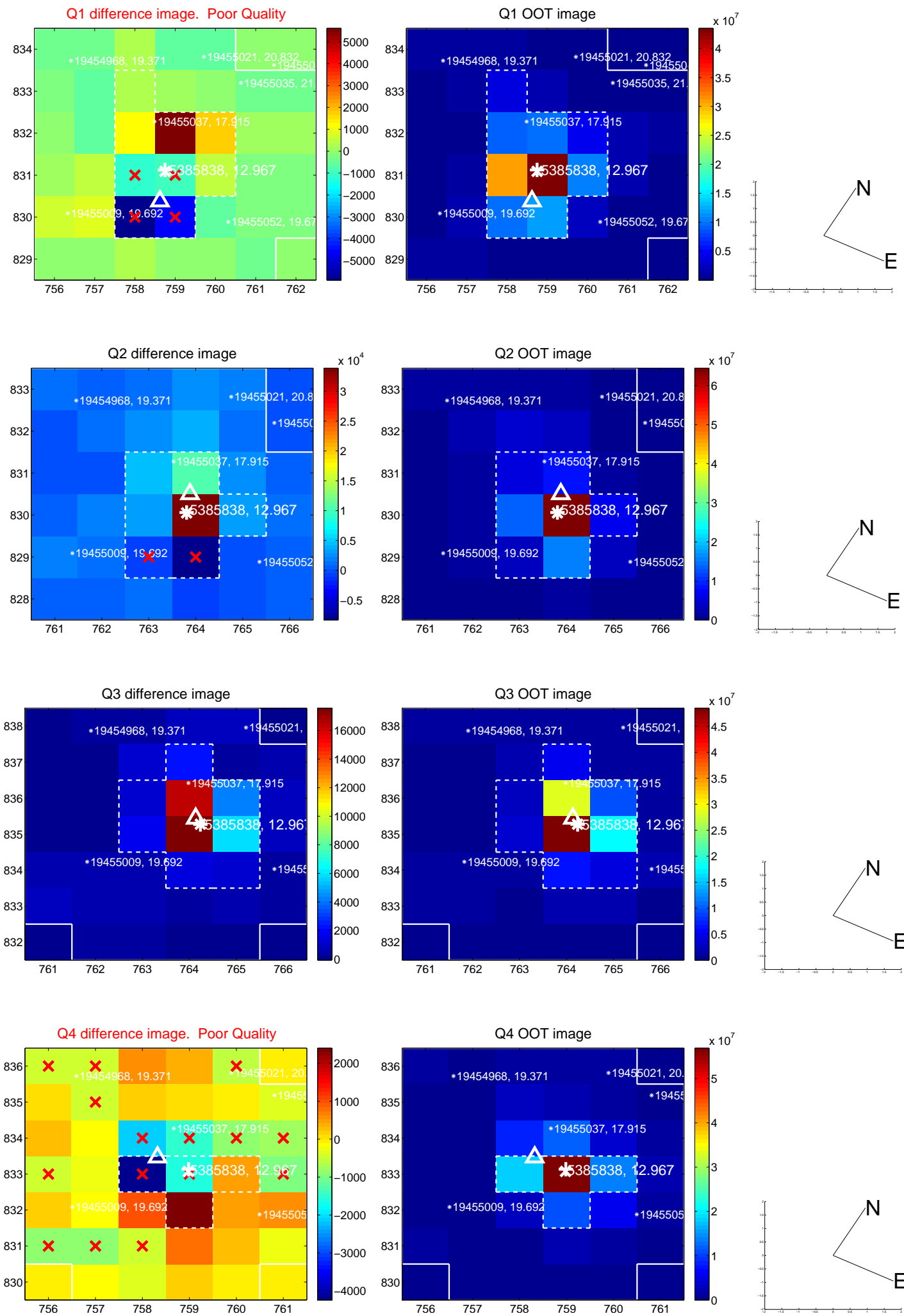
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.177 \pm 0.374$	0.47	$-0.170 \pm 0.362$	$-0.047 \pm 0.413$
PRF-fit source offset from KIC position	$0.253 \pm 0.402$	0.63	$-0.238 \pm 0.416$	$0.083 \pm 0.374$
photometric centroid source offset	$2.51 \pm 1.43$	1.76	$-0.53 \pm 0.98$	$2.45 \pm 1.44$

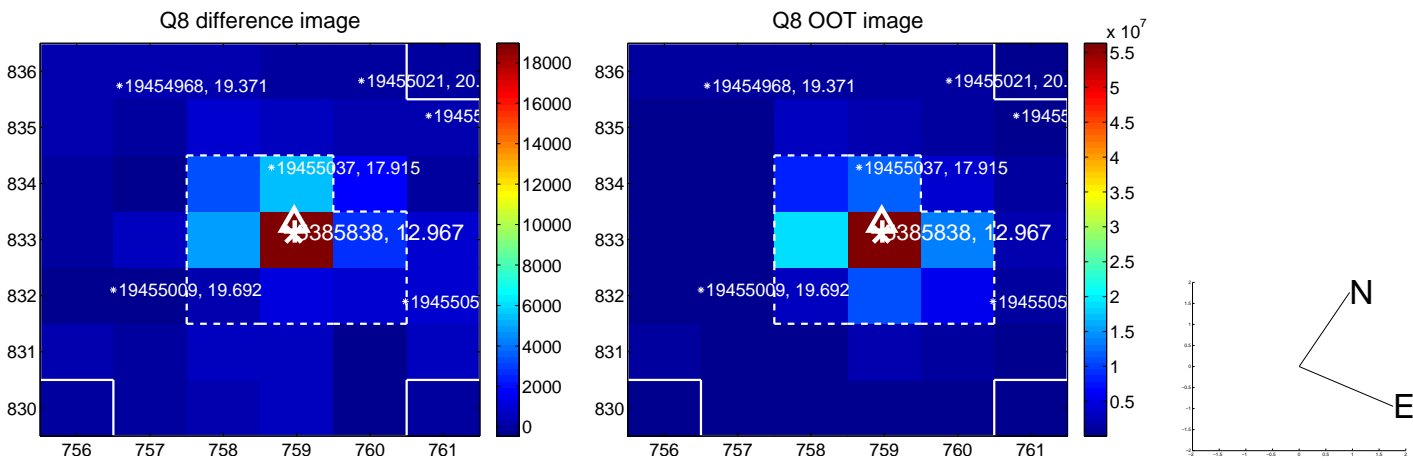
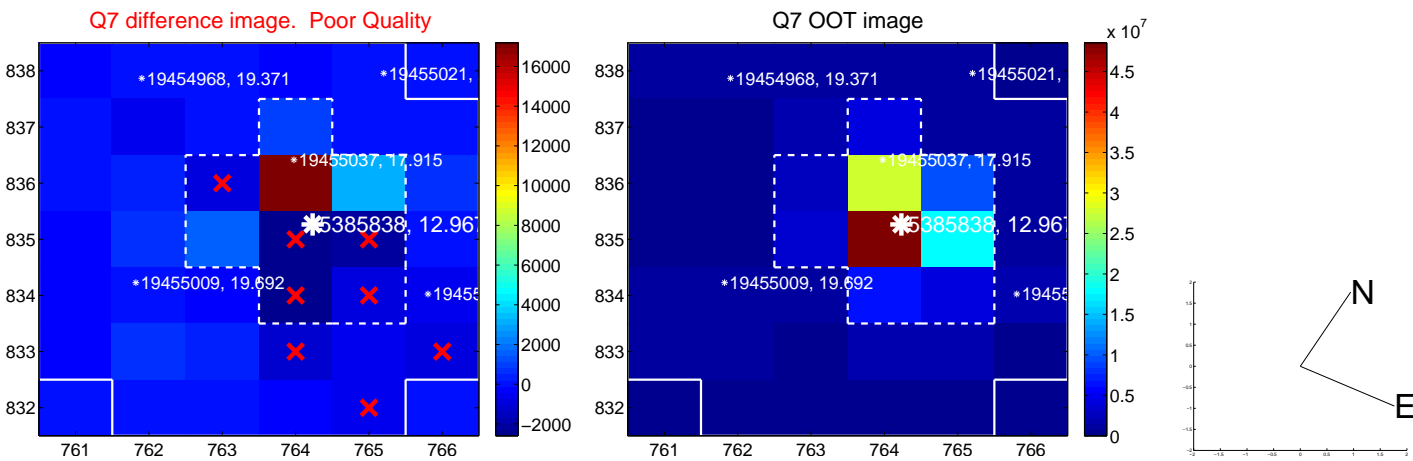
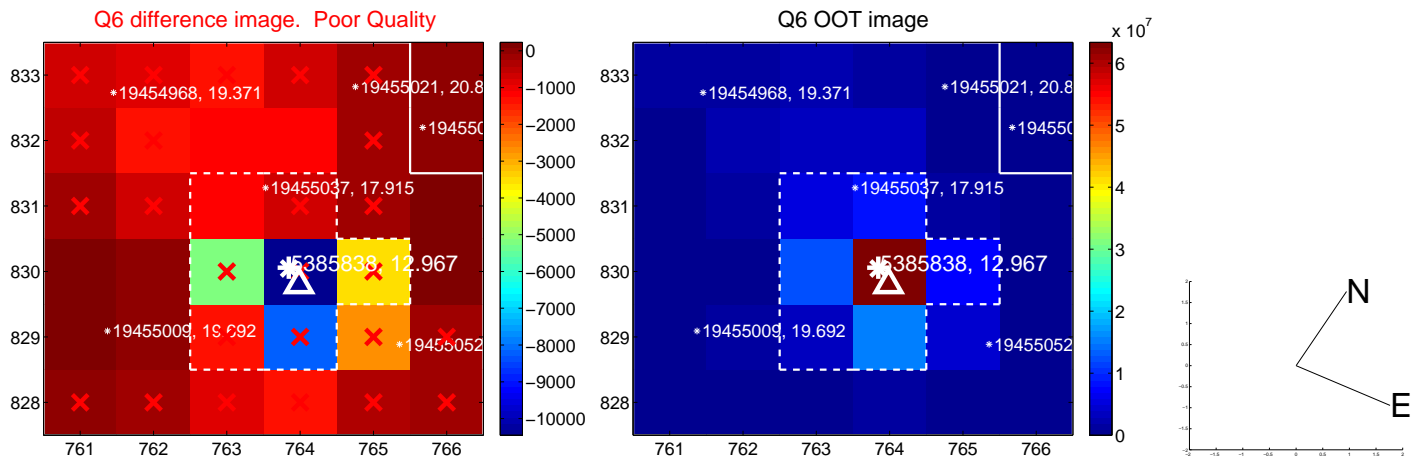
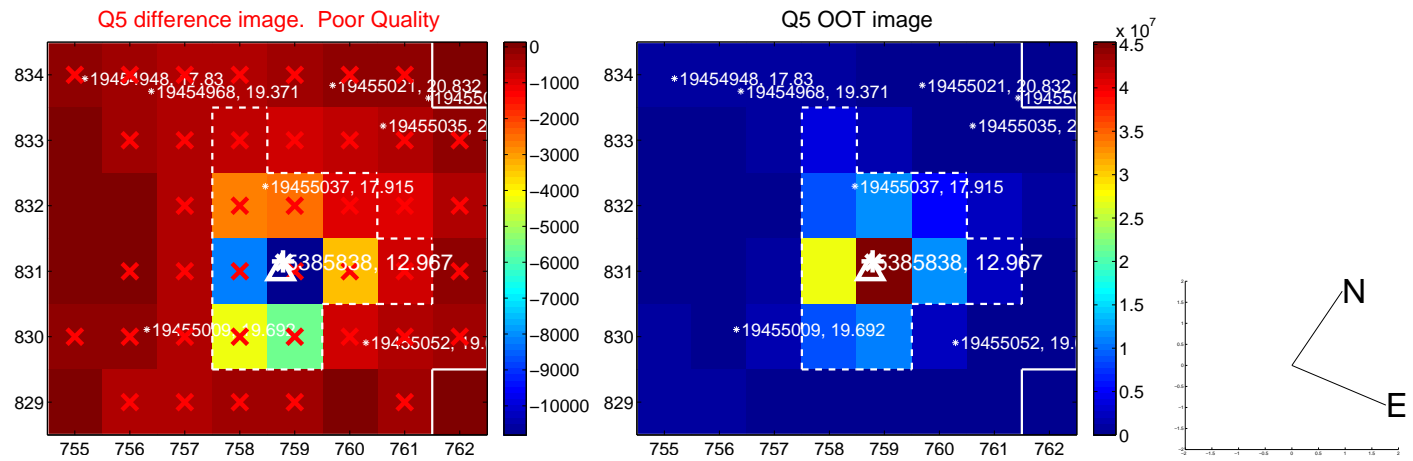


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

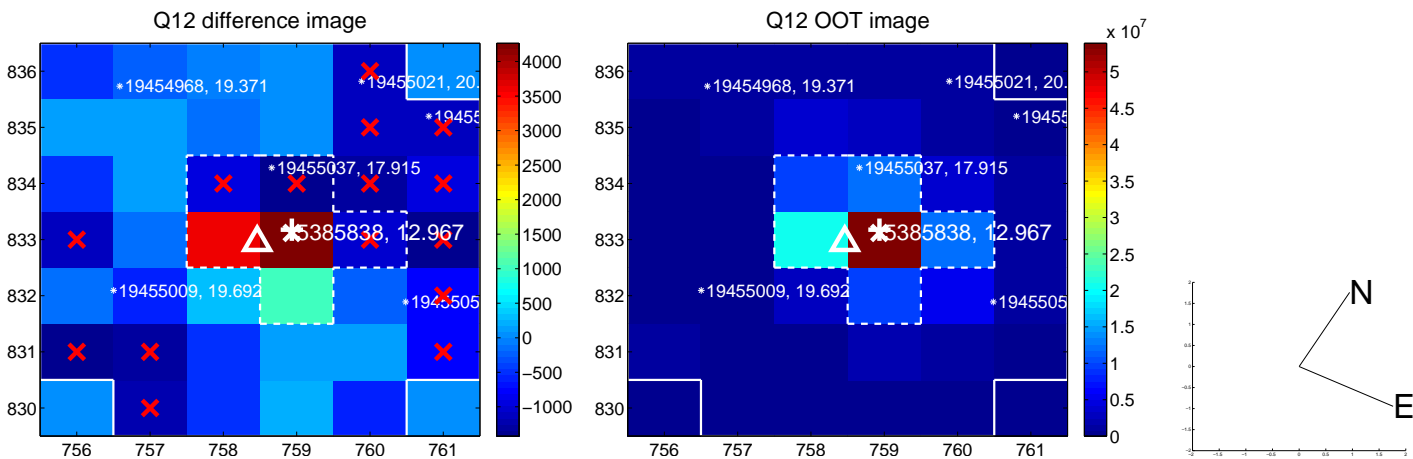
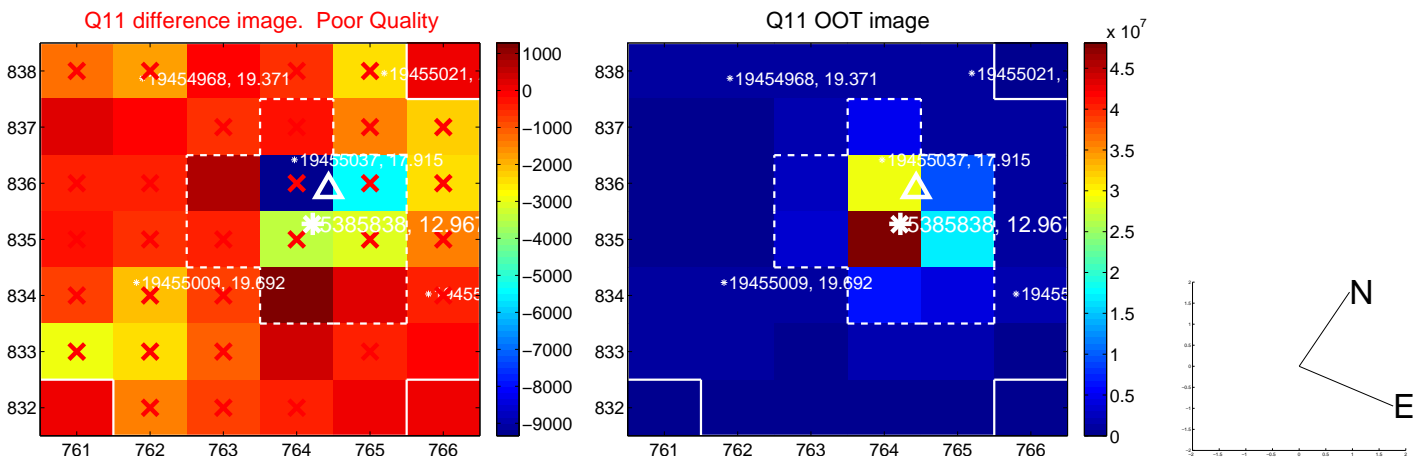
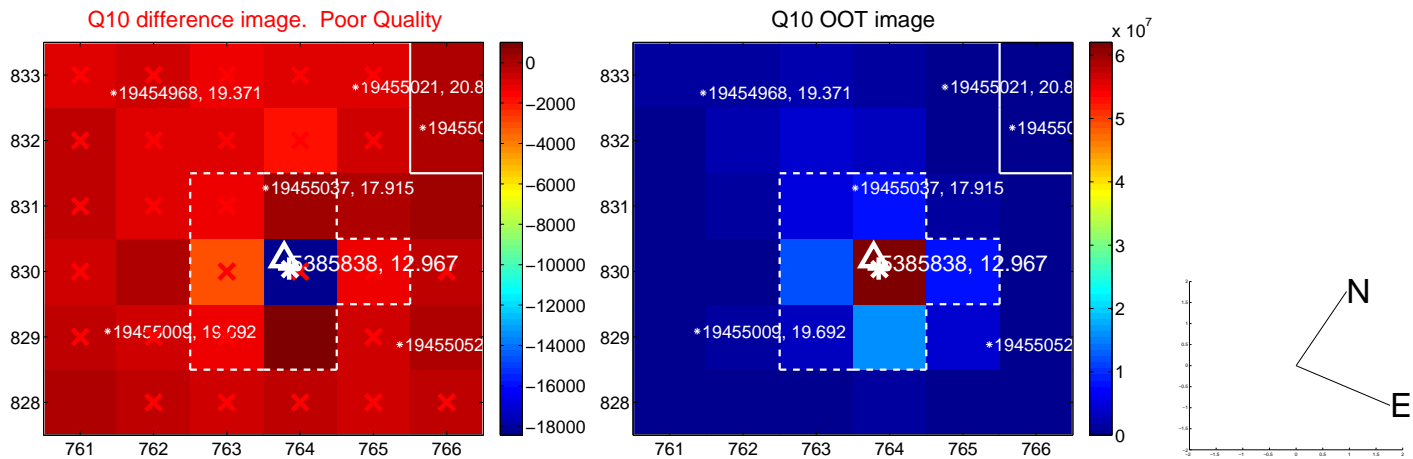
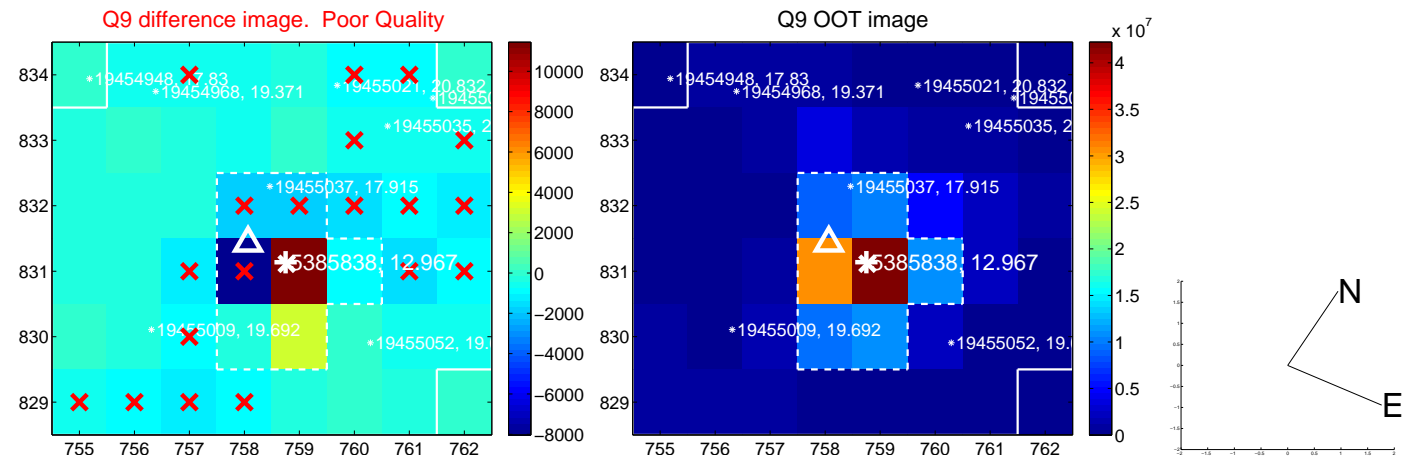
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



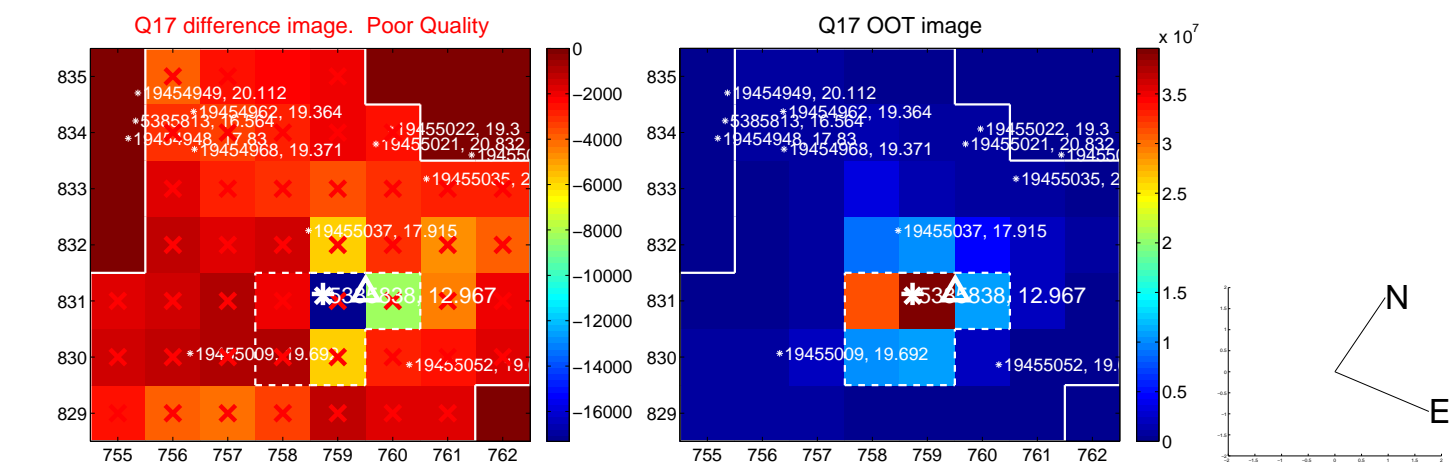
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



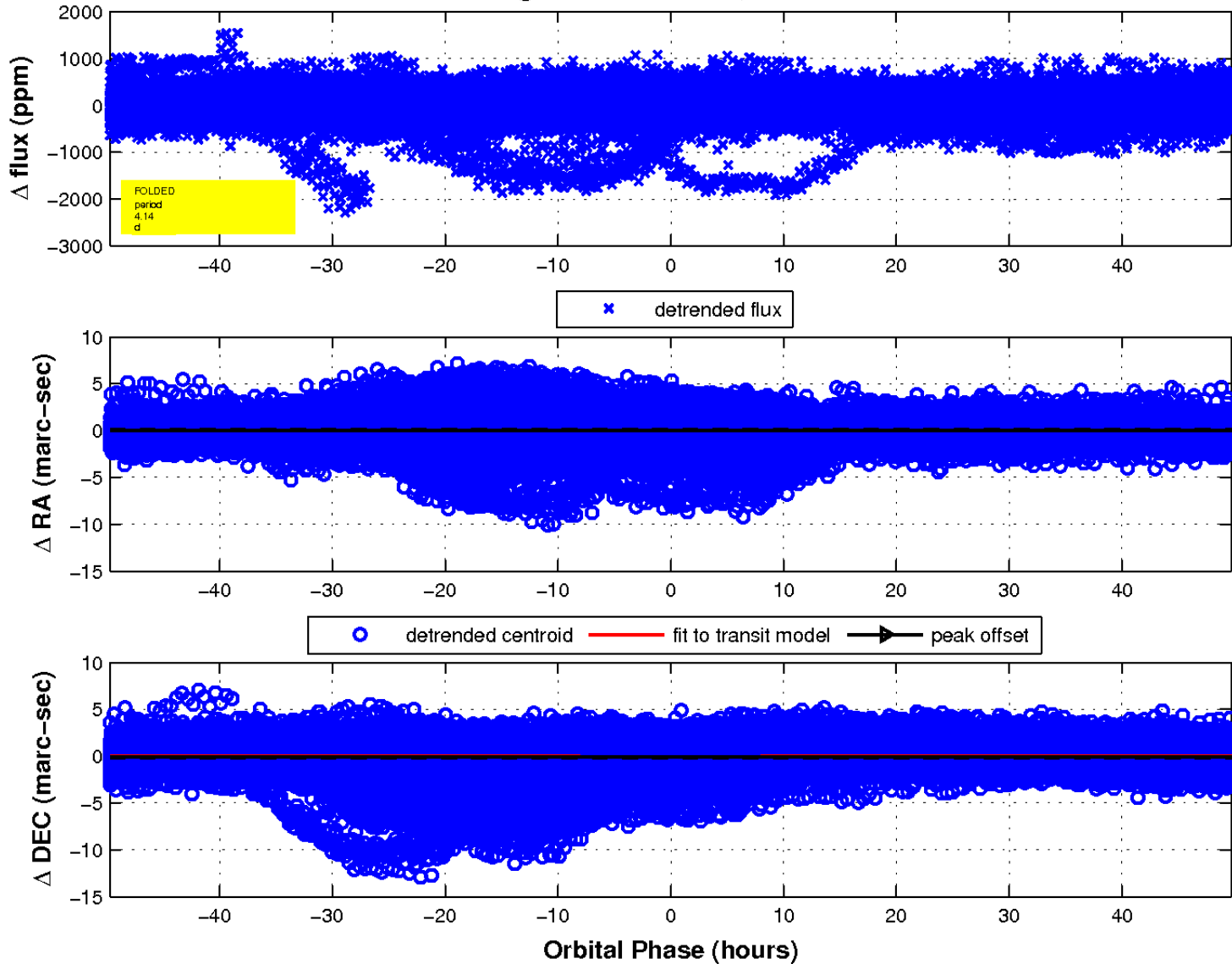




white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



fluxWeightedCentroids, Planet 3 of 3



# UKIRT Image

Declination

