

KIC 003858804

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})
003858804-01	OBS	0391.01	25.951819	154.887937	585.7	14.272	37.1	39.5	2.72	5211	13.42	132.69
003858804-02	OBS	No	25.952011	148.919057	475.2	20.231	36.7	41.3	2.72	5211	11.34	132.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003858804-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003858804-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST—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 for comment definitions.

Ephemeris Match Information For 003858804-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003858804-01	3858804	003858884-01	3858884	1:1	65.2	11	-12	9.28	13.78	680.13	Direct-PRF	0	0.24	0.06

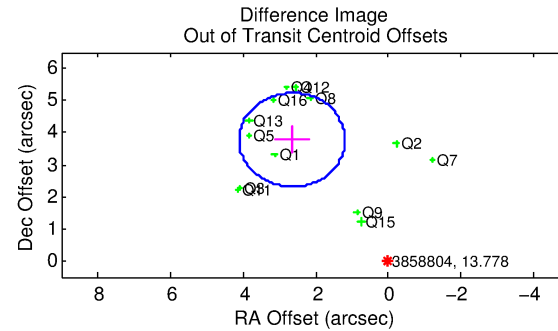
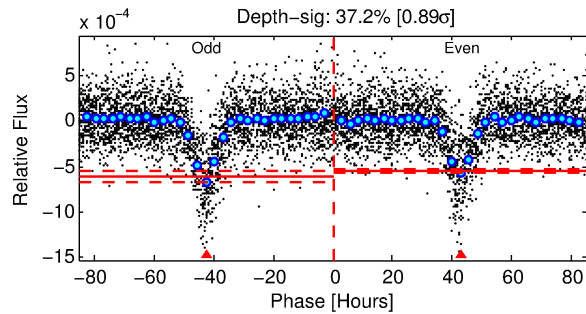
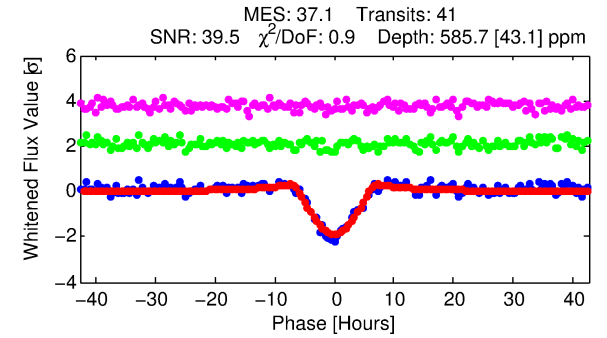
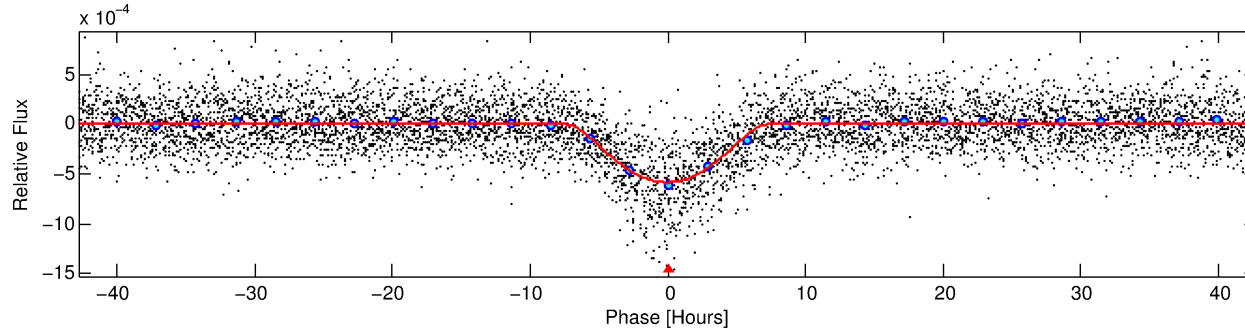
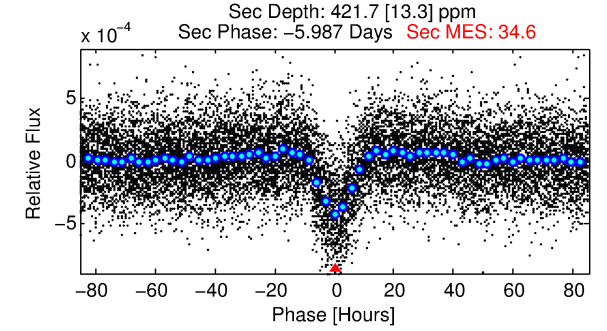
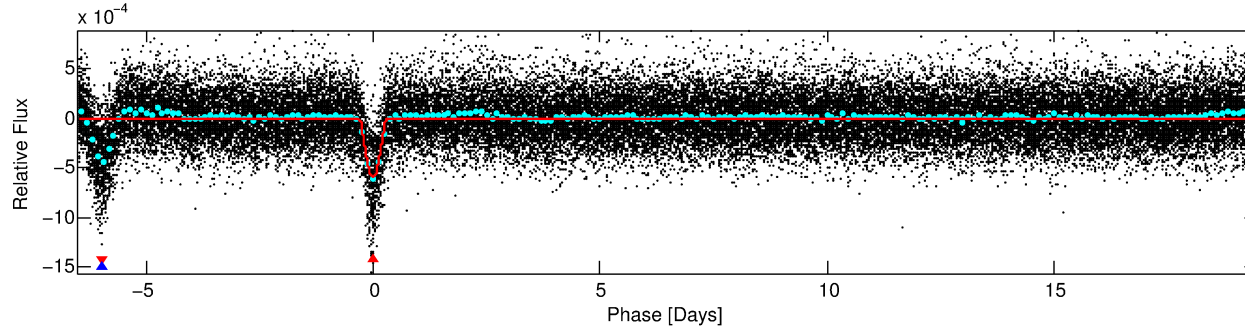
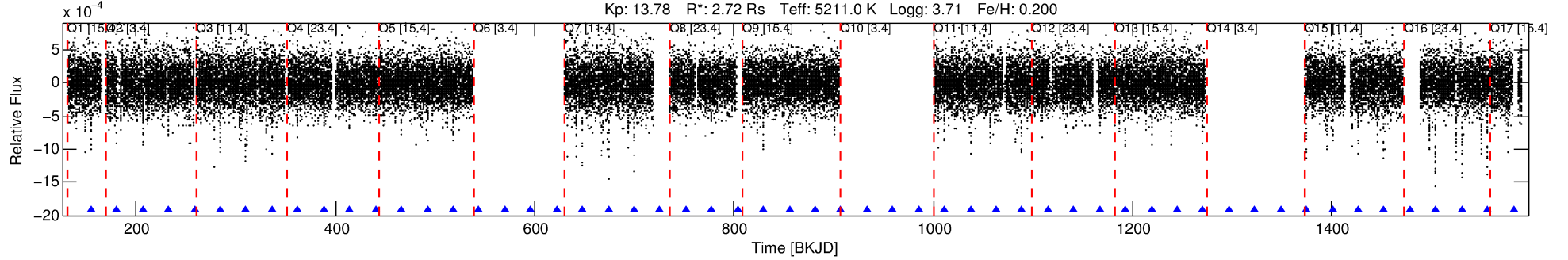
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 3858804 Candidate: 1 of 2 Period: 25.952 d

KOI: K00391 Corr: No Ephemeris Match

Kp: 13.78 R*: 2.72 Rs Teff: 5211.0 K Logg: 3.71 Fe/H: 0.200



DV Fit Results:

Period = 25.95182 [0.00023] d
Epoch = 154.8879 [0.0070] BKJD
Rp/R* = 0.0452 [0.0352]
a/R* = 4.37 [0.78]
b = 1.00 [0.05]
Seff = 132.69 [46.96]
Teq = 865 [77] K
Rp = 13.42 [11.15] Re
a = 0.1920 [0.0455] AU
Ag = 47.47 [75.74] [0.61σ]
Teffp = 3512 [1372] K [1.93σ]

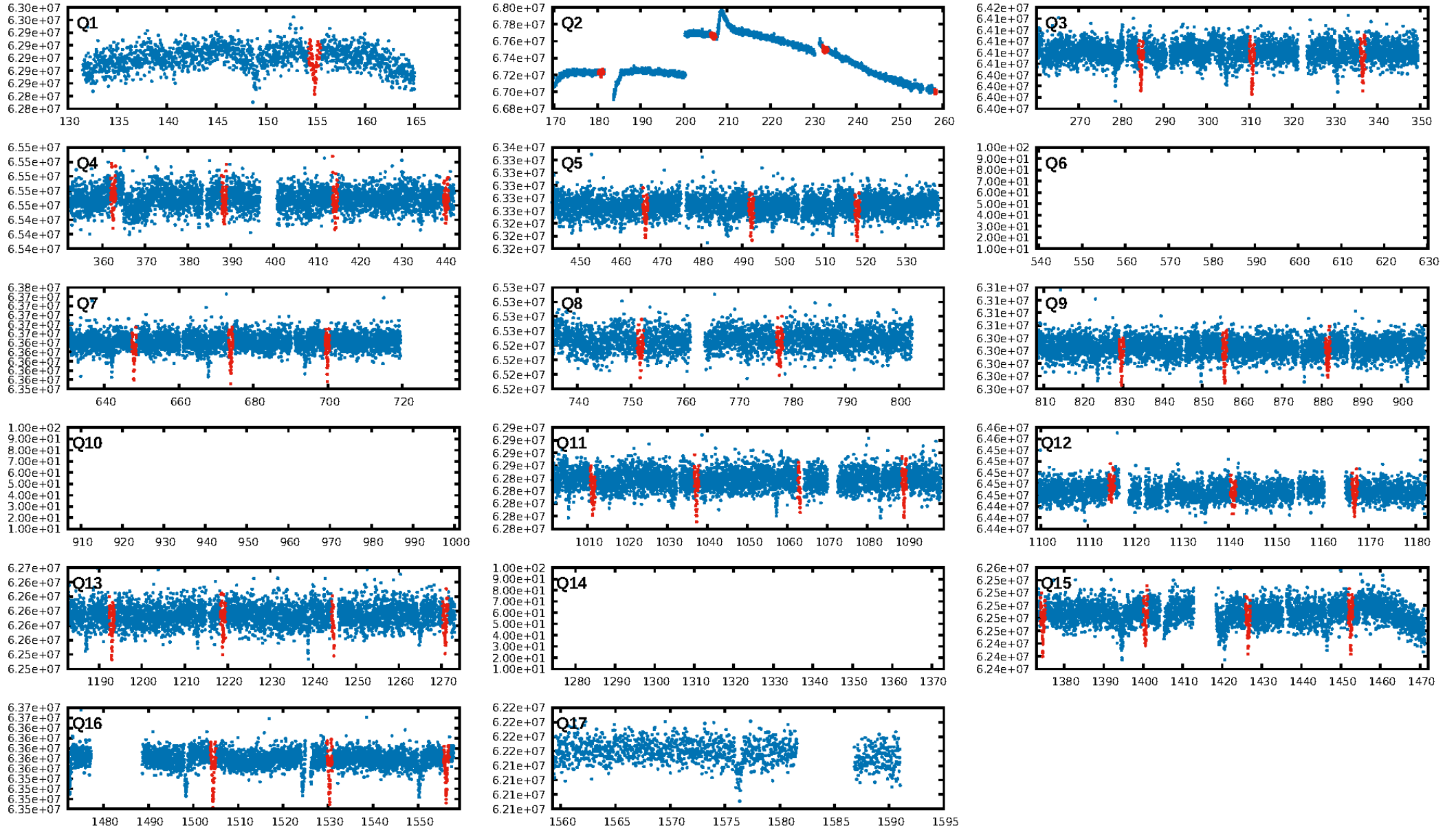
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.40e-259
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: -0.04912
Centroid-sig: 0.0%
Centroid-so: 3.819 arcsec [14.36σ]
OotOffset-rm: 4.609 arcsec [9.47σ]
KicOffset-rm: 4.528 arcsec [9.84σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.00 [0/13]
DiffImageOverlap-fno: 1.00 [13/13]

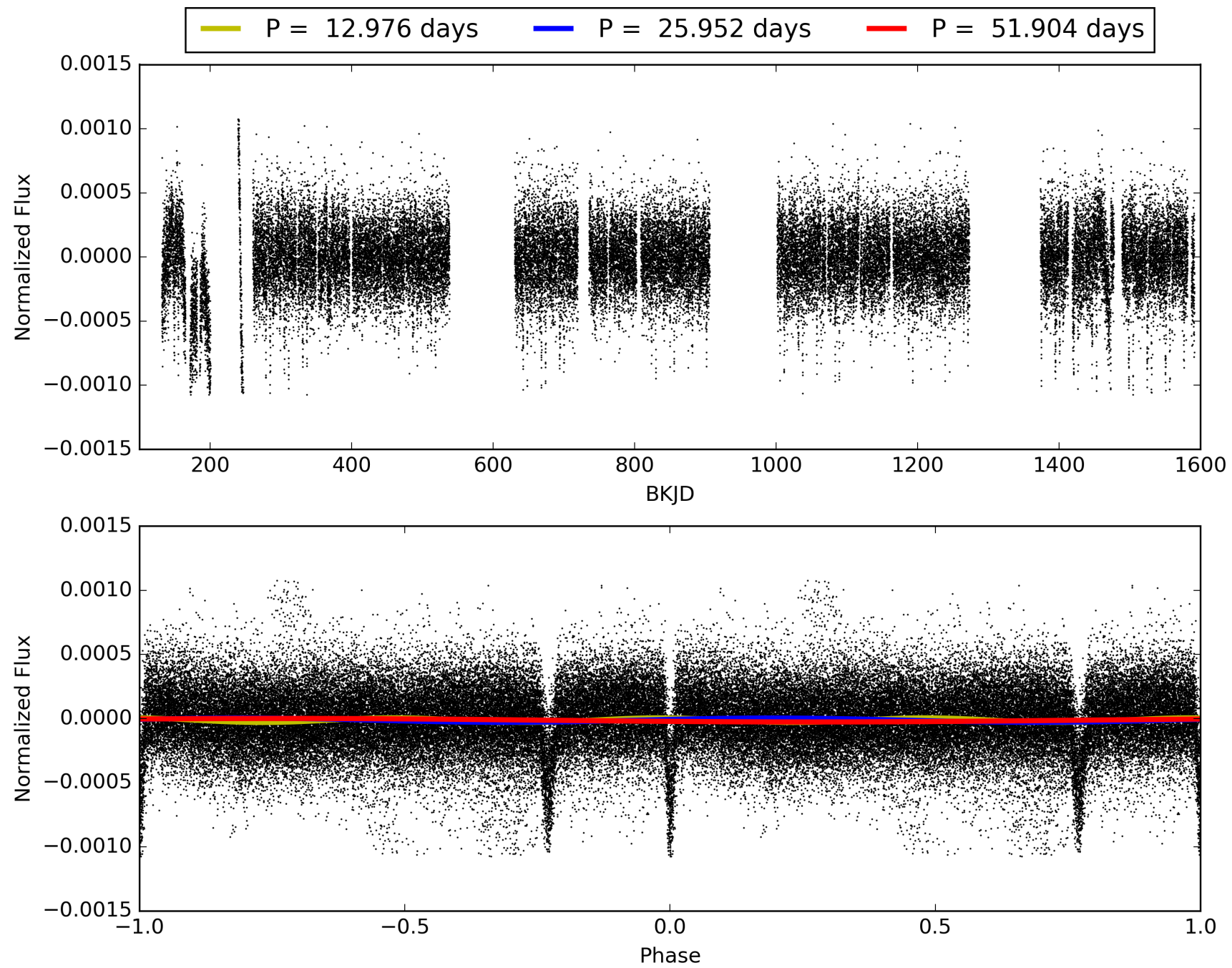
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:14:39 Z

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

TCE 003858804-01, PDC Light Curves

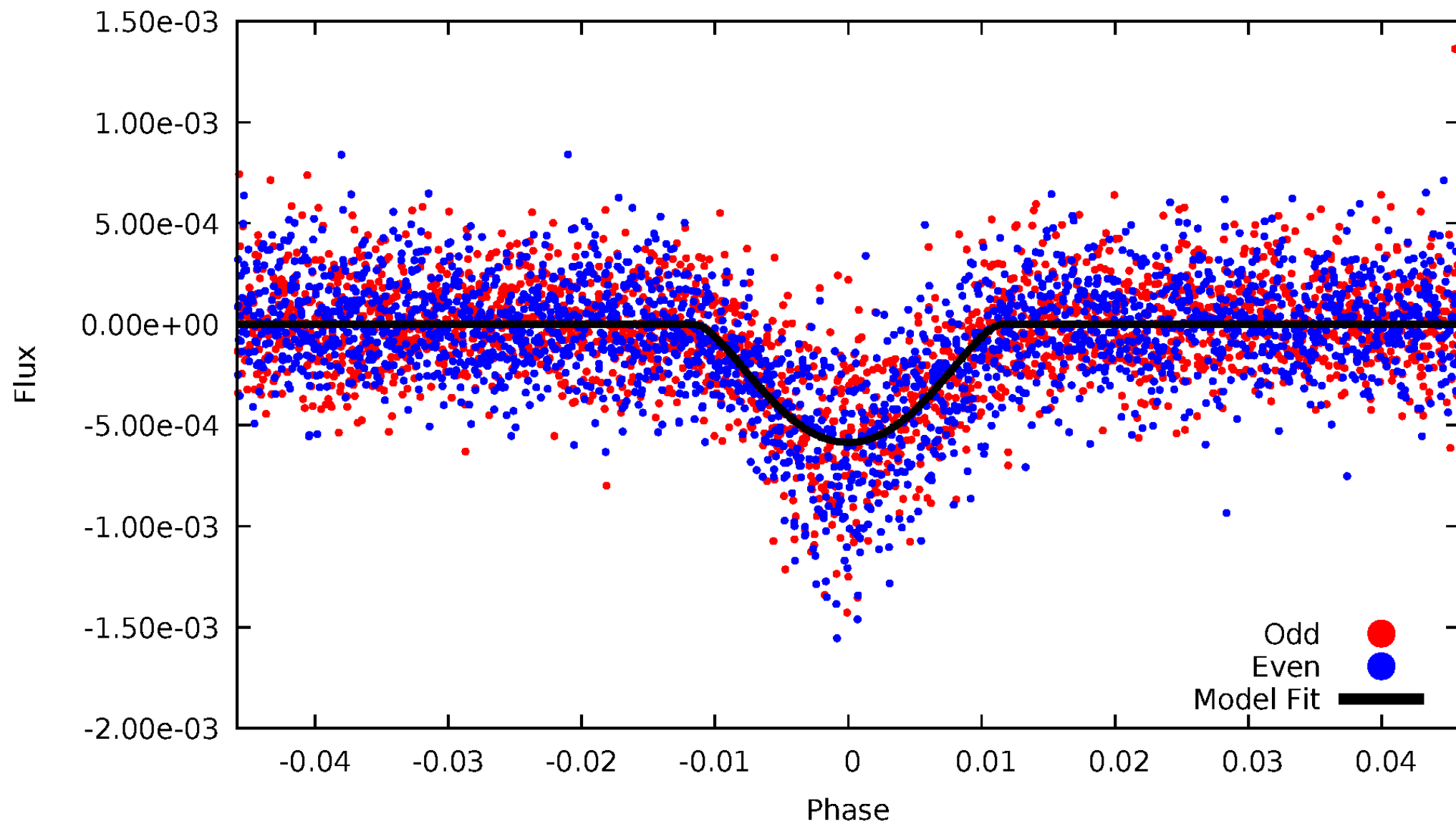


TCE 003858804-01



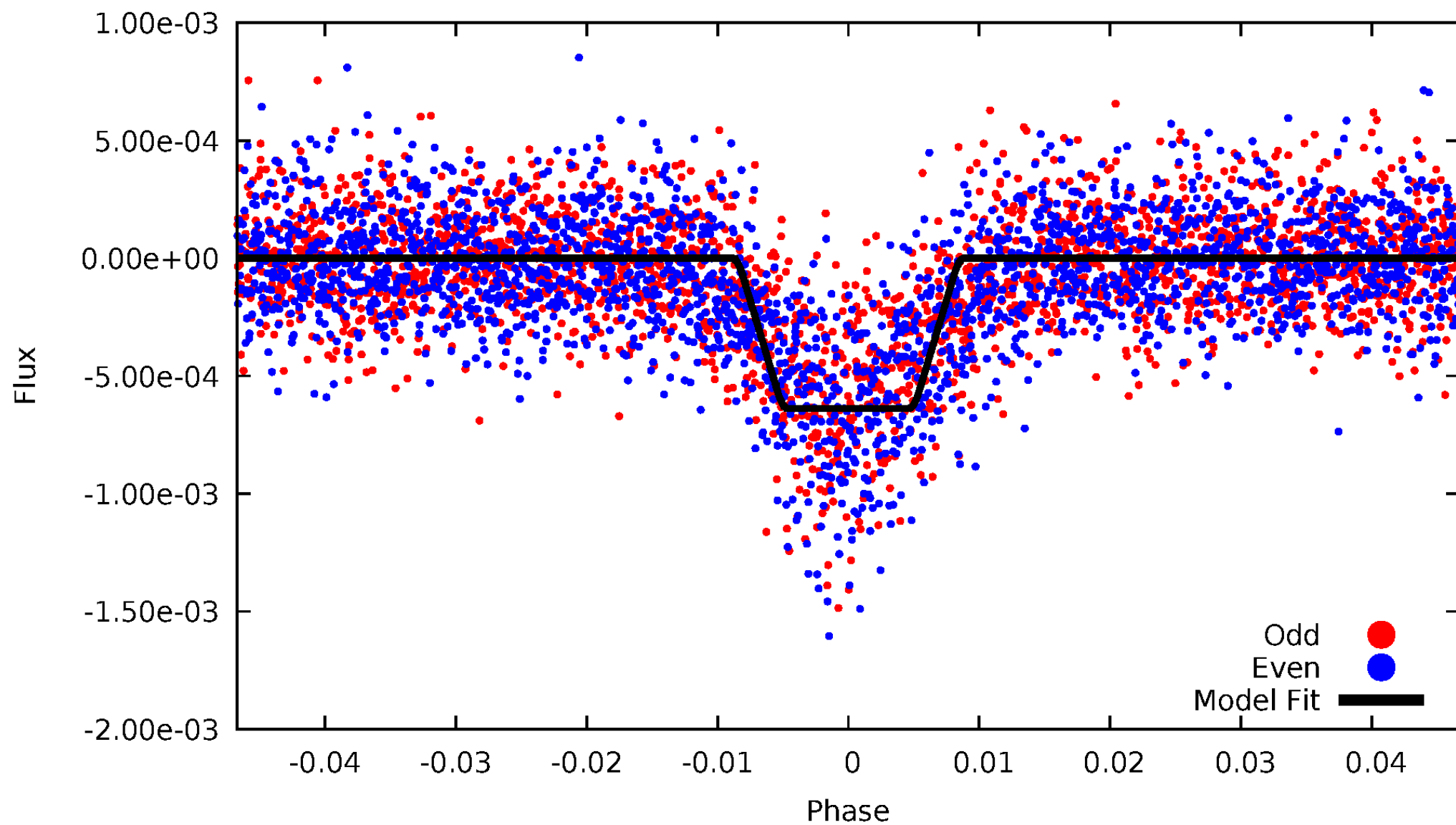
DV Odd/Even

TCE 003858804-01



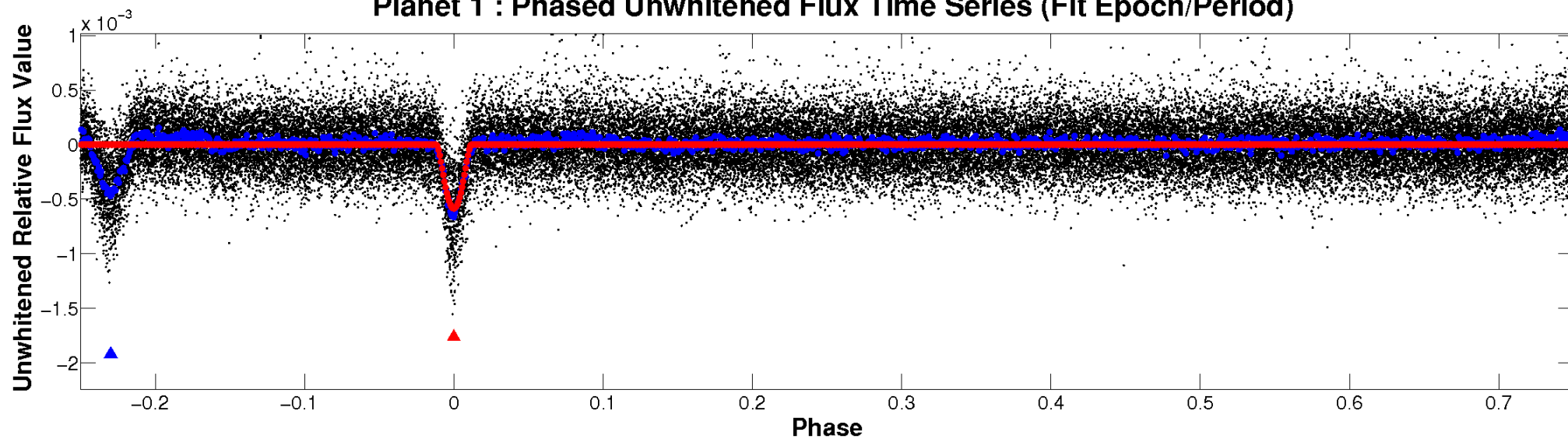
ALT Odd/Even

TCE 003858804-01

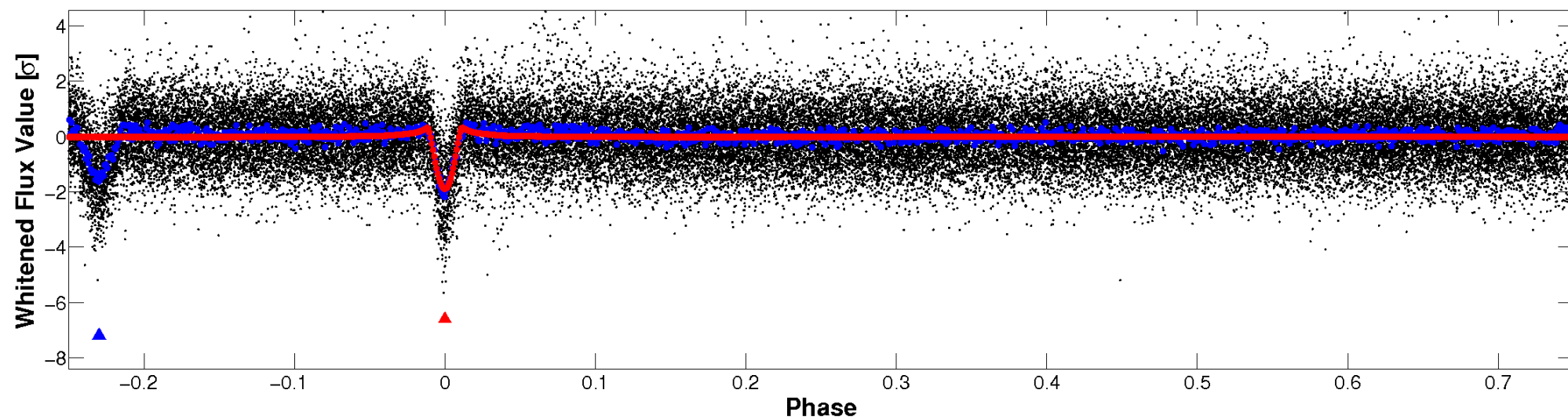


Non-Whitened Vs. Whitened Light Curve

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

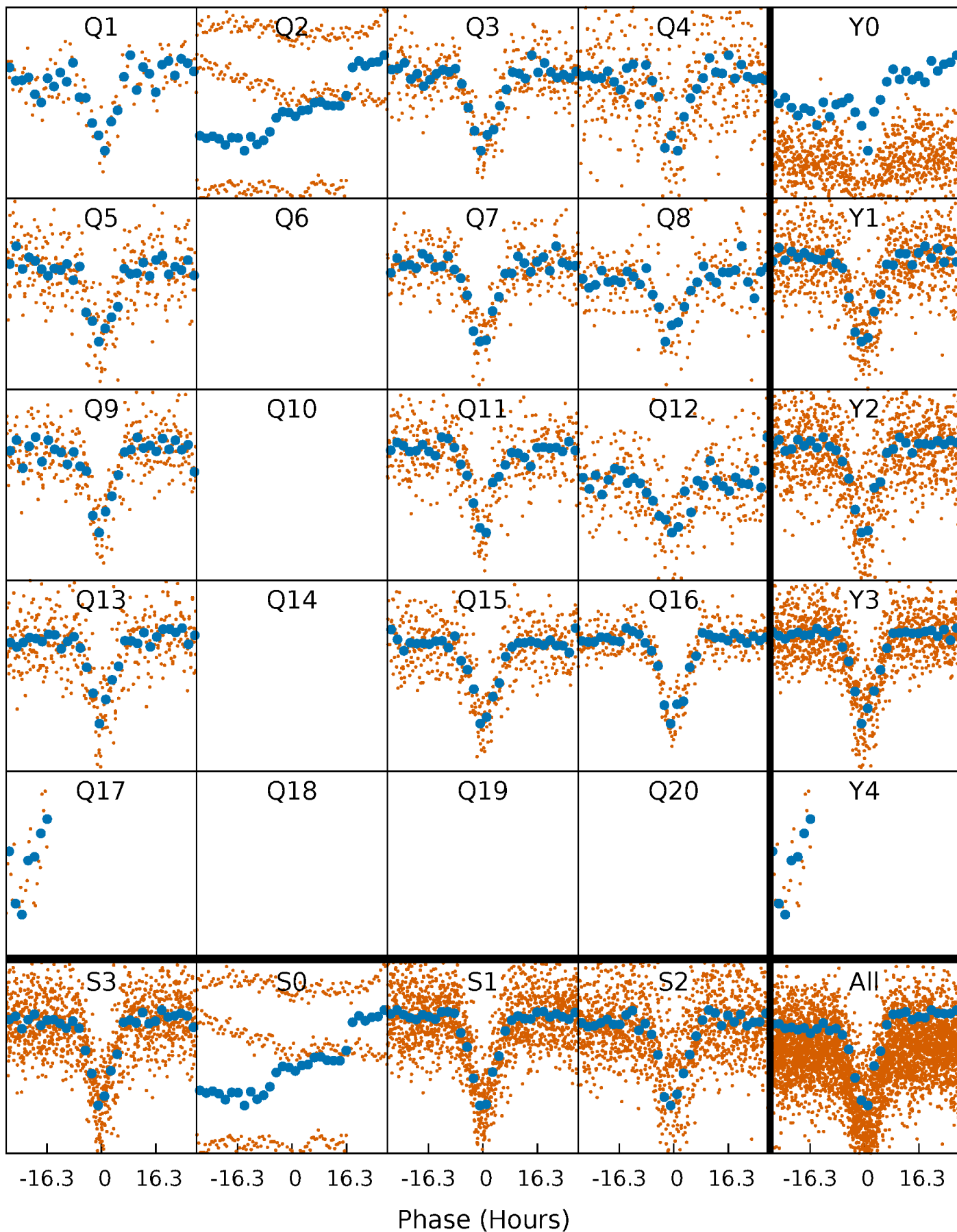


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



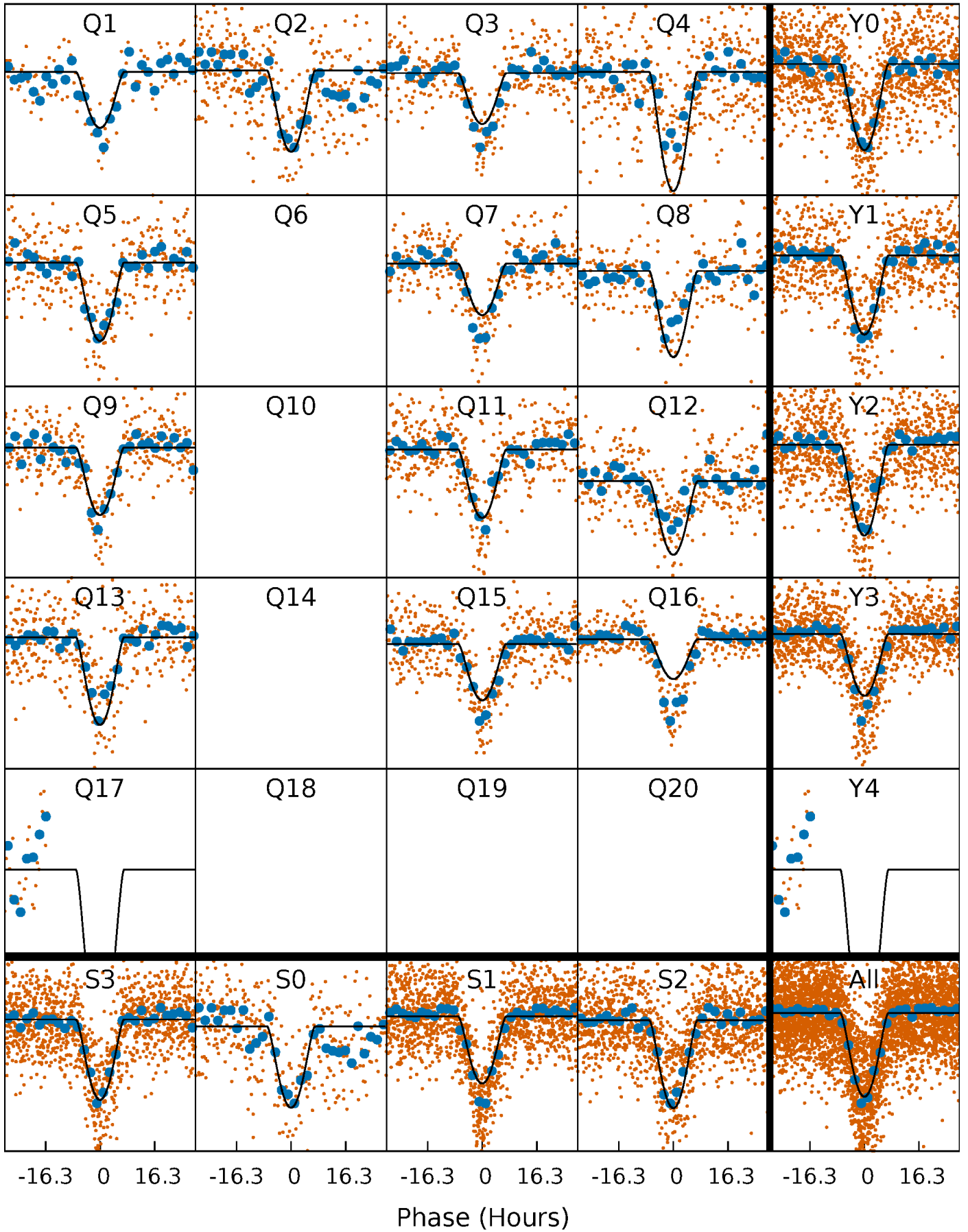
PDC Quarter-Phased Transit Curves

TCE 003858804-01 P= 25.951819 Days $T_0=154.887937$ (BKJD)



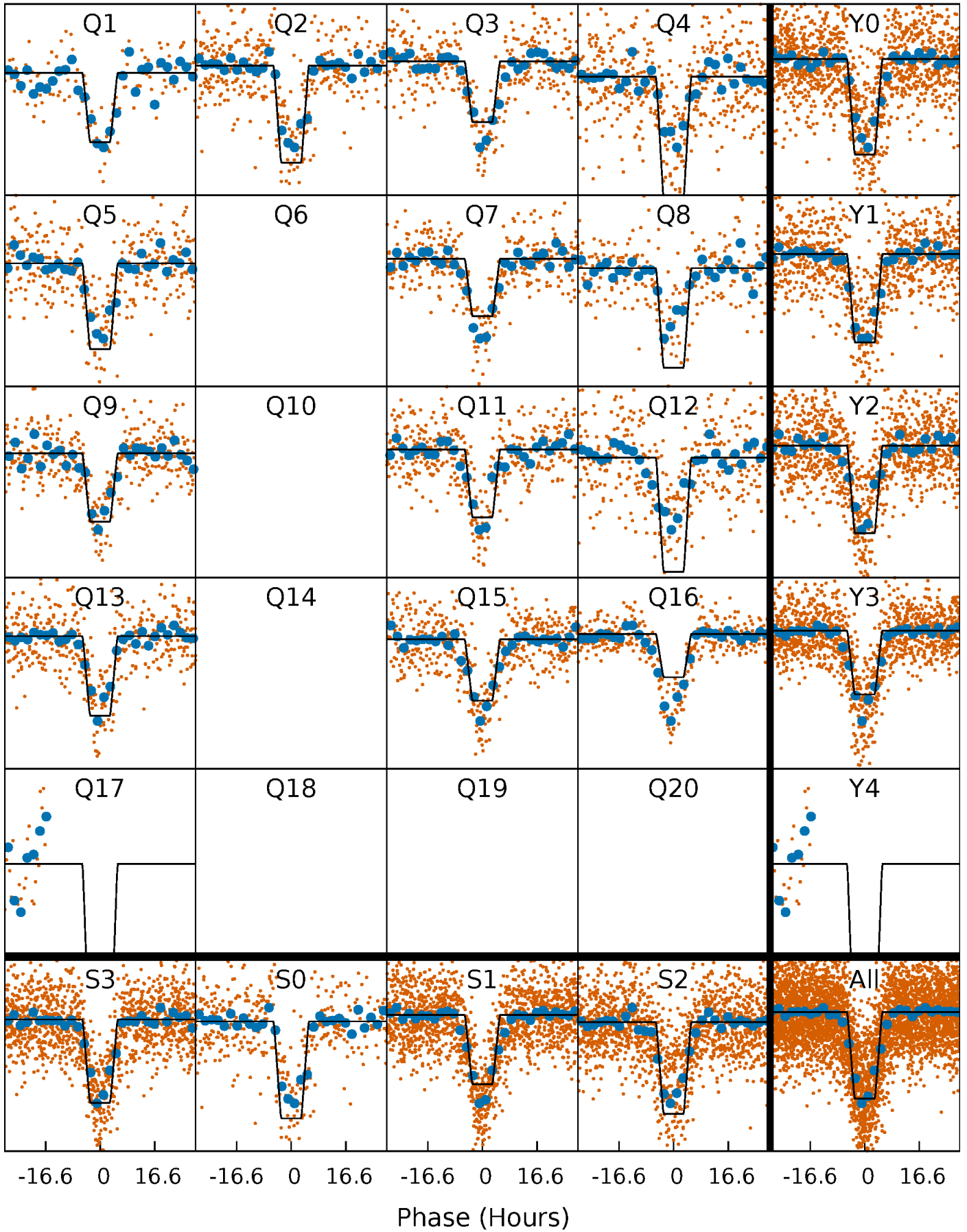
DV Quarter-Phased Transit Curves

TCE 003858804-01 P= 25.951819 Days $T_0=154.887937$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

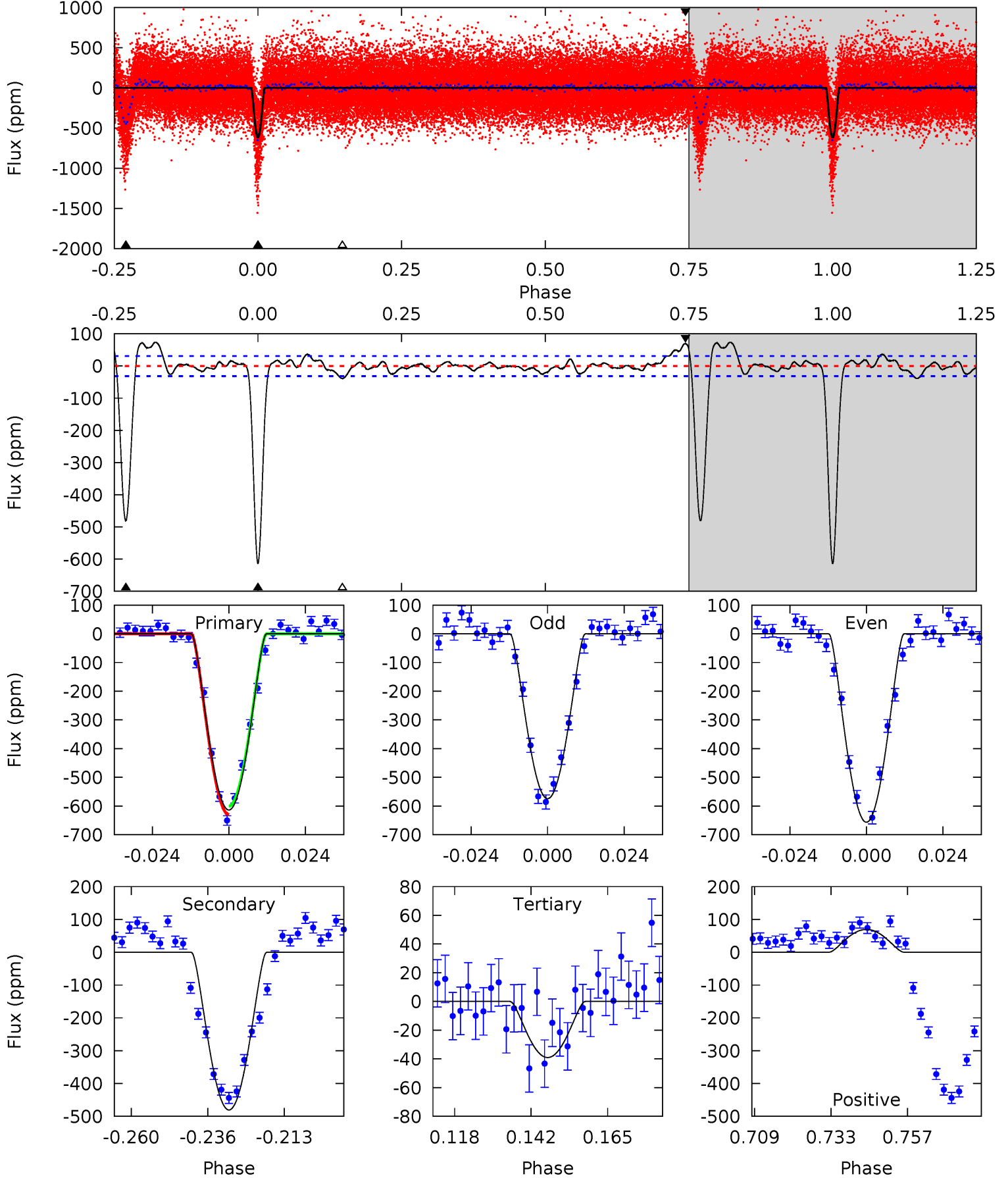
TCE 003858804-01 P= 25.952485 Days $T_0=154.869752$ (BKJD)



DV Model-Shift Uniqueness Test

003858804-01, P = 25.951819 Days, E = 128.936118 Days

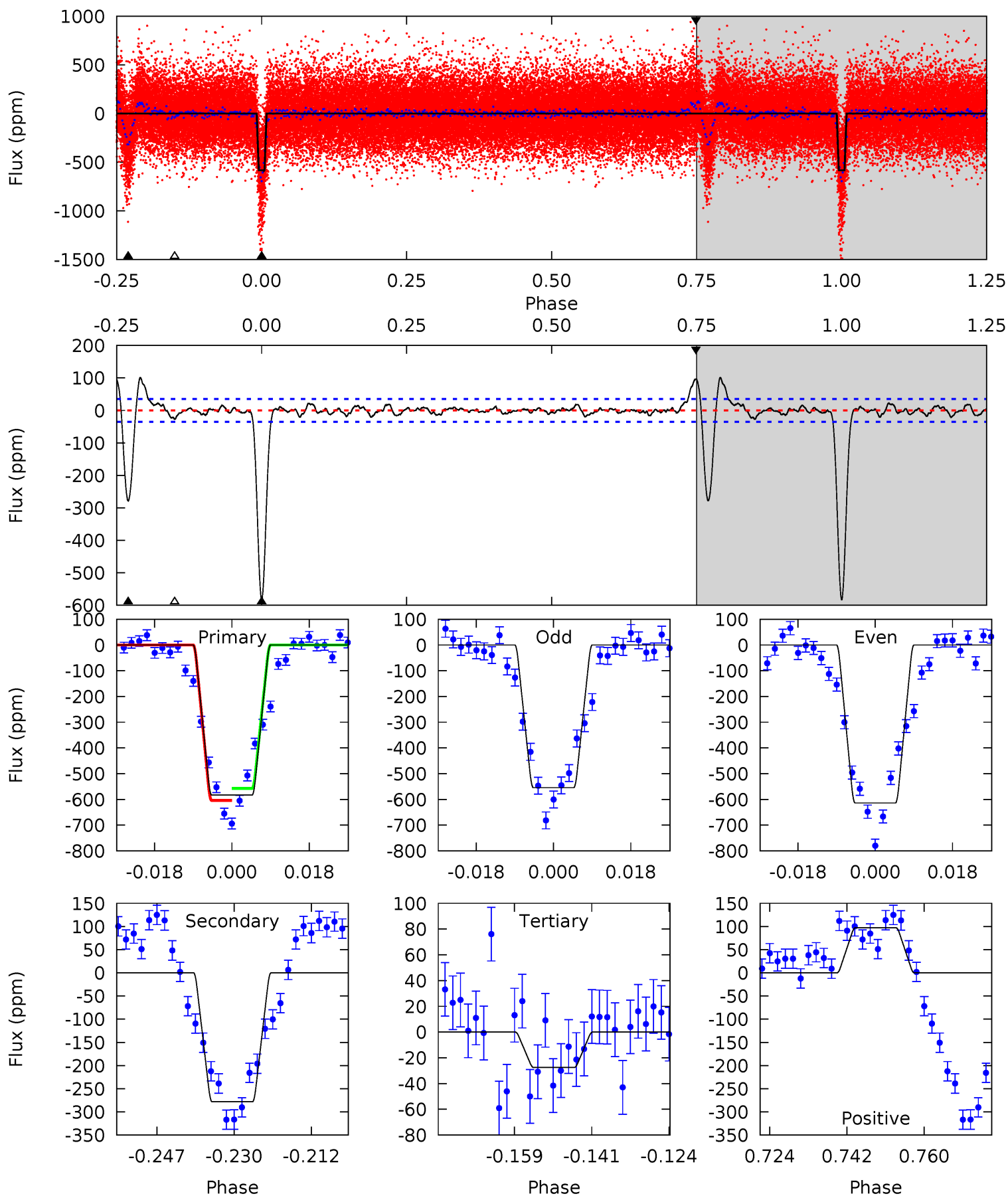
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.5	74.8	6.08	10.8	4.86	2.26	3.19	89.5	84.7	68.8	64.0	6.39	0.99	0.11	2.23



Alt Model-Shift Uniqueness Test

003858804-01, P = 25.952485 Days, E = 128.917267 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.4	38.9	3.85	13.6	4.92	2.37	2.46	77.6	67.8	35.0	25.3	4.14	1.01	0.15	3.23



Stellar Parameters For KIC 003858804

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5211^{+93}_{-134}	$3.715^{+0.182}_{-0.098}$	$0.200^{+0.150}_{-0.200}$	$2.721^{+0.421}_{-0.781}$	$1.401^{+0.141}_{-0.328}$	$0.098^{+0.104}_{-0.032}$
	+2%/-3%	+5%/-3%	+75%/-100%	+15%/-29%	+10%/-23%	+106%/-32%
Source	SPE18	SPE18	SPE18	DSEP		

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

Secondary Eclipse Parameters for KIC 003858804-01 / KOI 0391.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-481 ± 6	$14.10^{+9.26}_{-8.47}$	1195^{+61}_{-66}	3788^{+1704}_{-519}	48^{+243}_{-30}
Alt.	-278 ± 7	$10.16^{+9.16}_{-6.19}$	1198^{+57}_{-73}	3872^{+1718}_{-715}	54^{+302}_{-39}

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 $A_{obs} \gg 1.0$

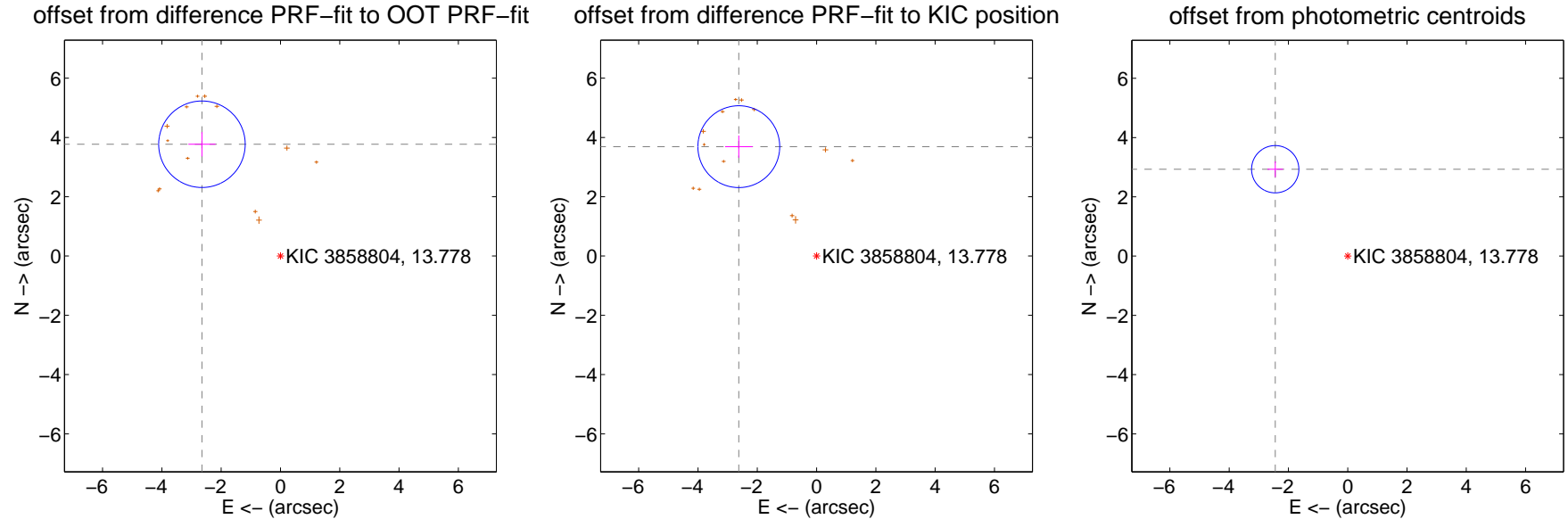
DV Centroid Data

Supplemental centroid analysis for 003858804-01. Kepler magnitude: 13.78. Transit SNR 39.47

There are 0 quarters with good PRF difference image offsets

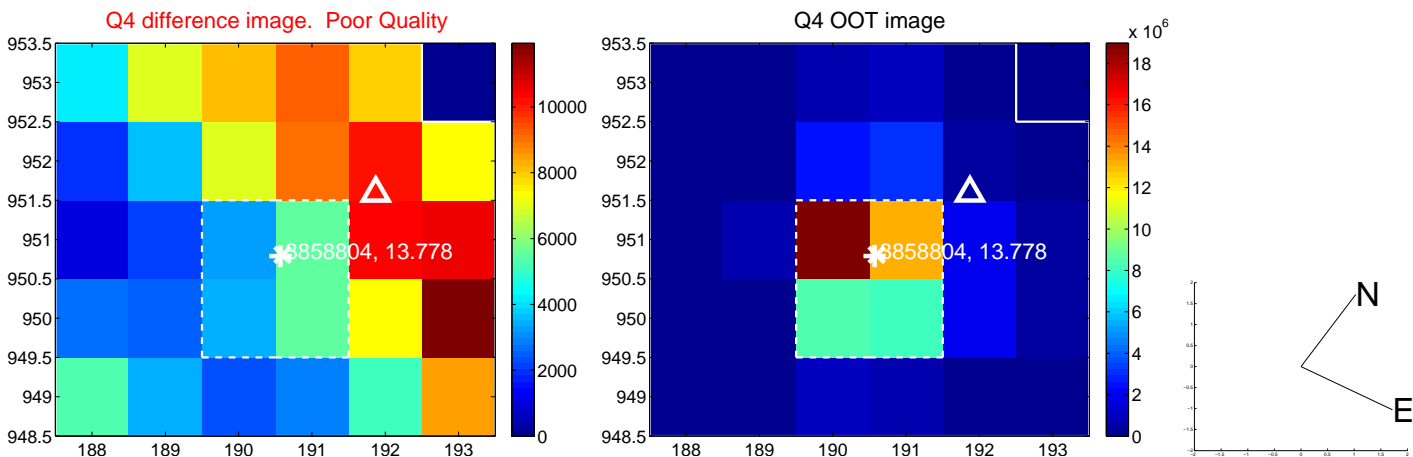
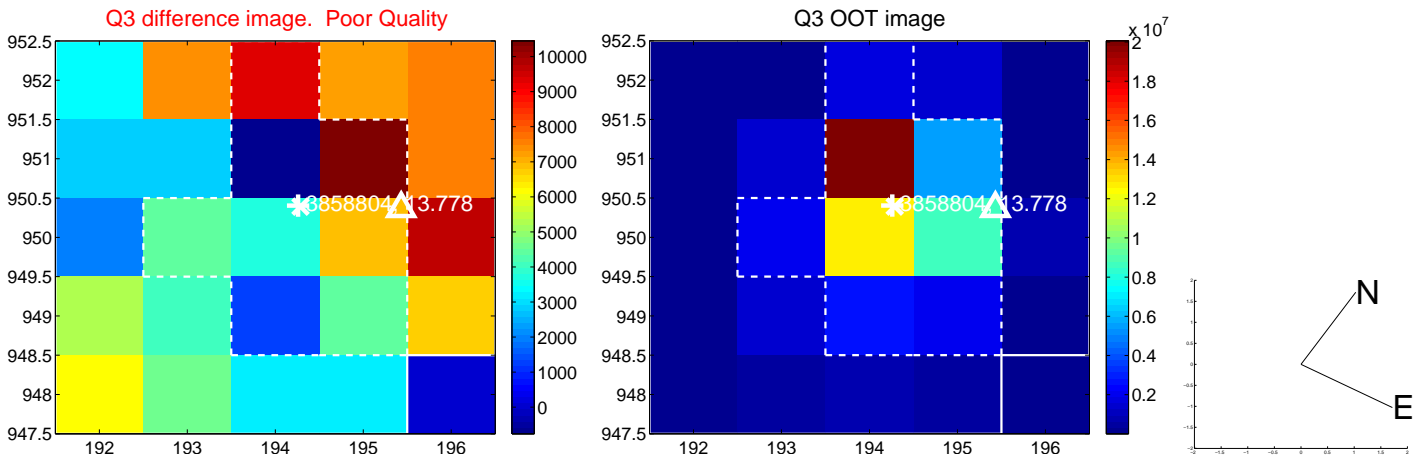
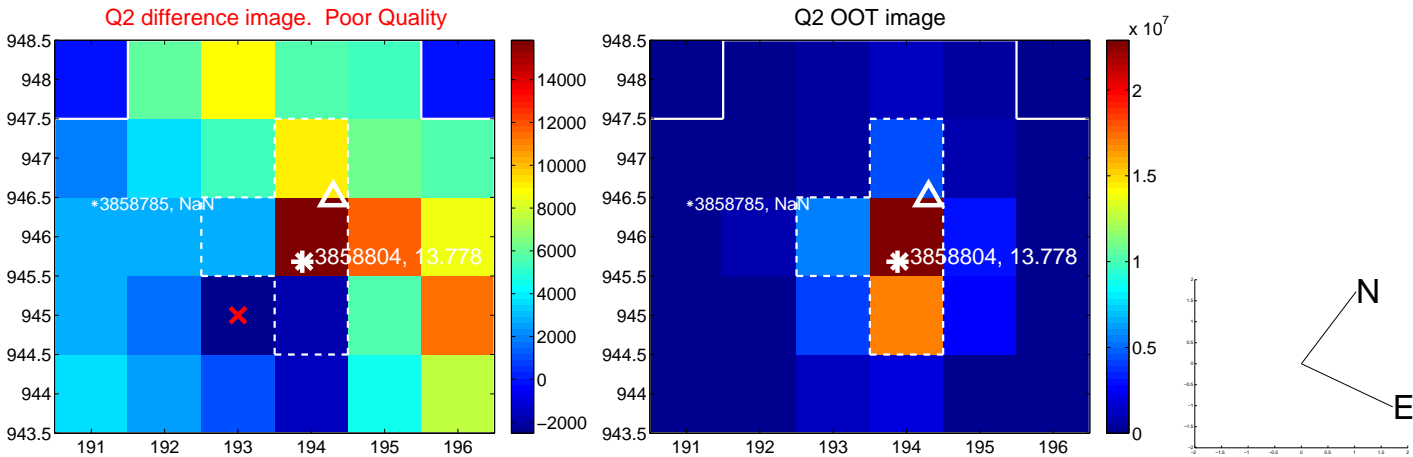
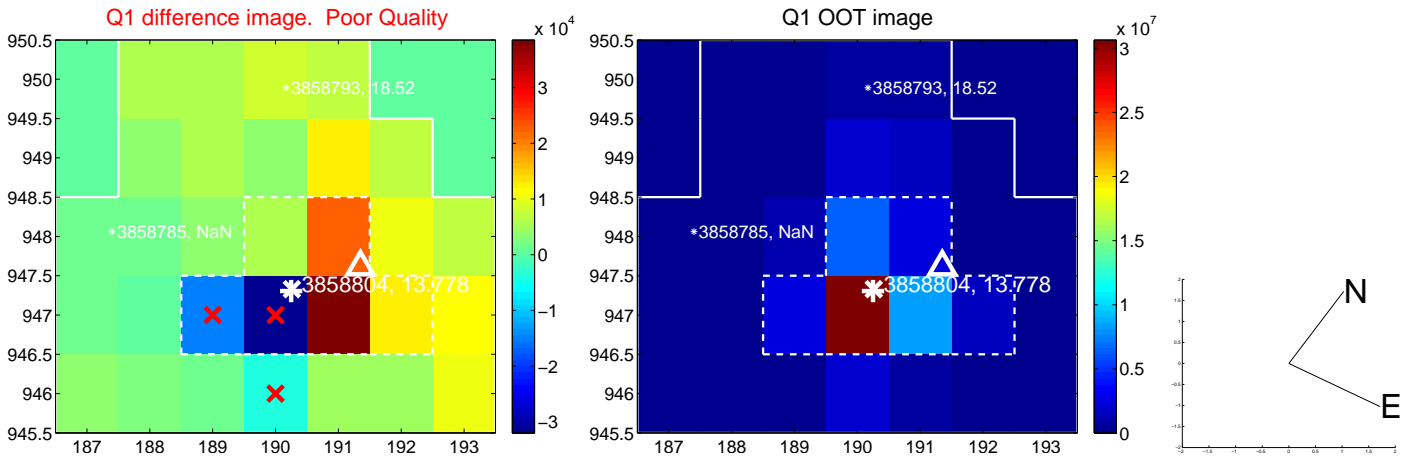
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.609 ± 0.486	9.47	2.649 ± 0.458	3.772 ± 0.409
PRF-fit source offset from KIC position	4.528 ± 0.460	9.84	2.624 ± 0.462	3.690 ± 0.374
photometric centroid source offset	3.82 ± 0.27	14.36	2.45 ± 0.26	2.93 ± 0.27

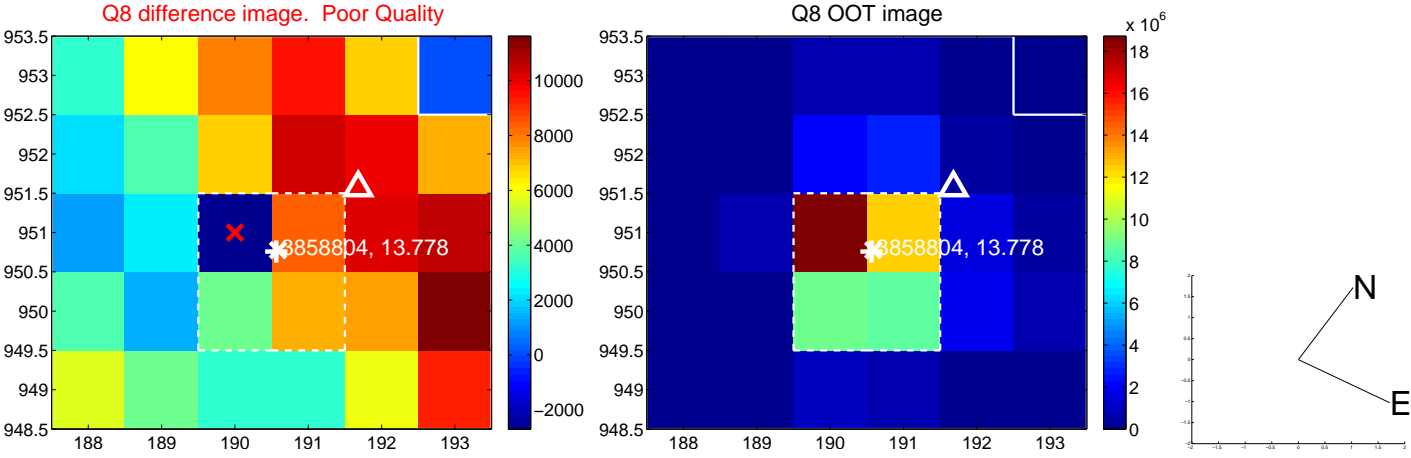
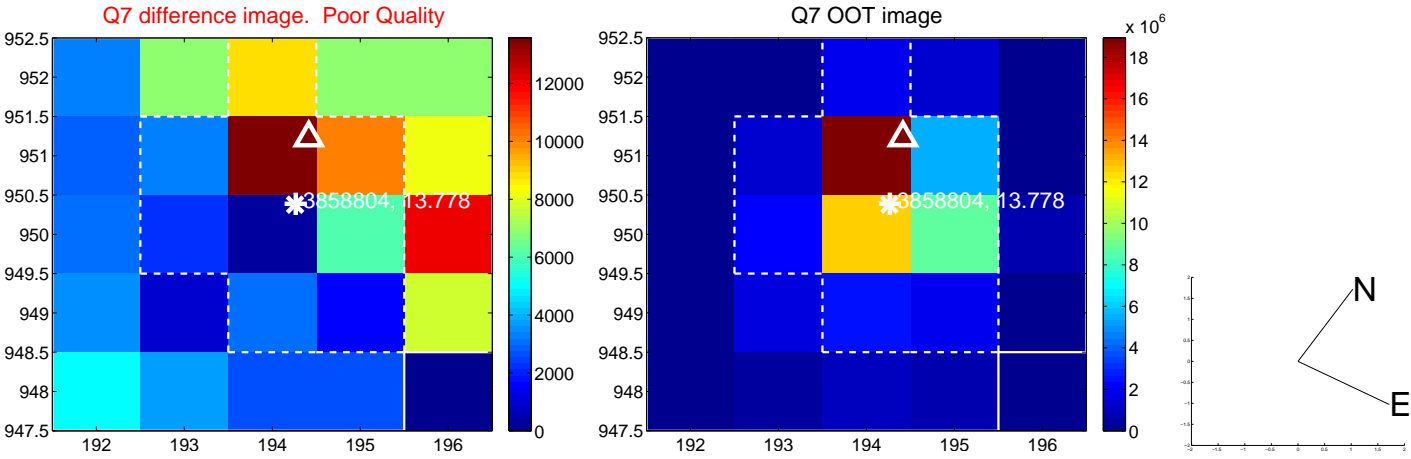
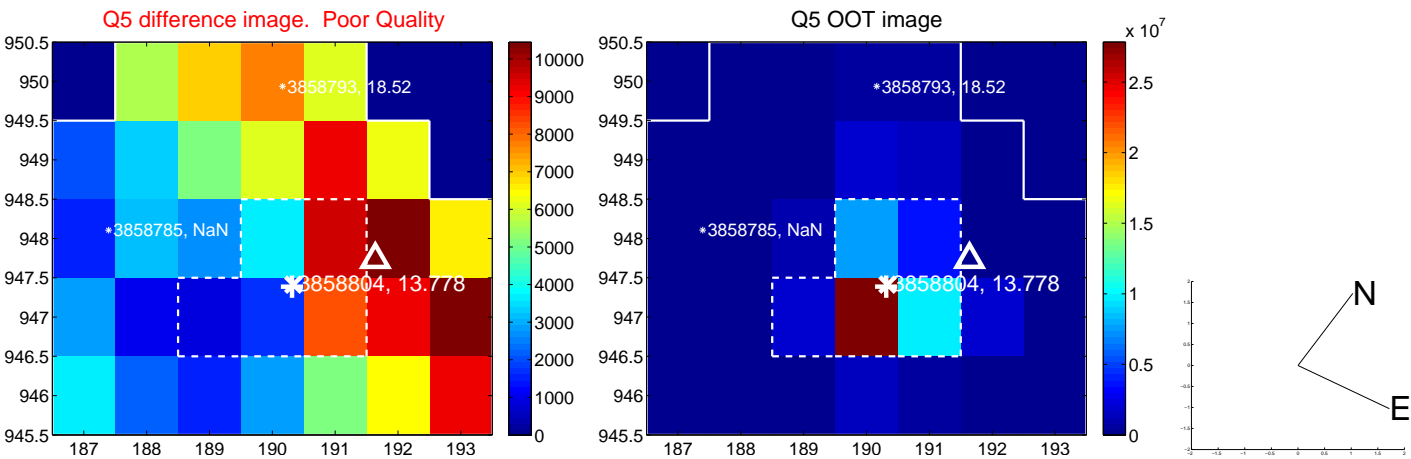


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

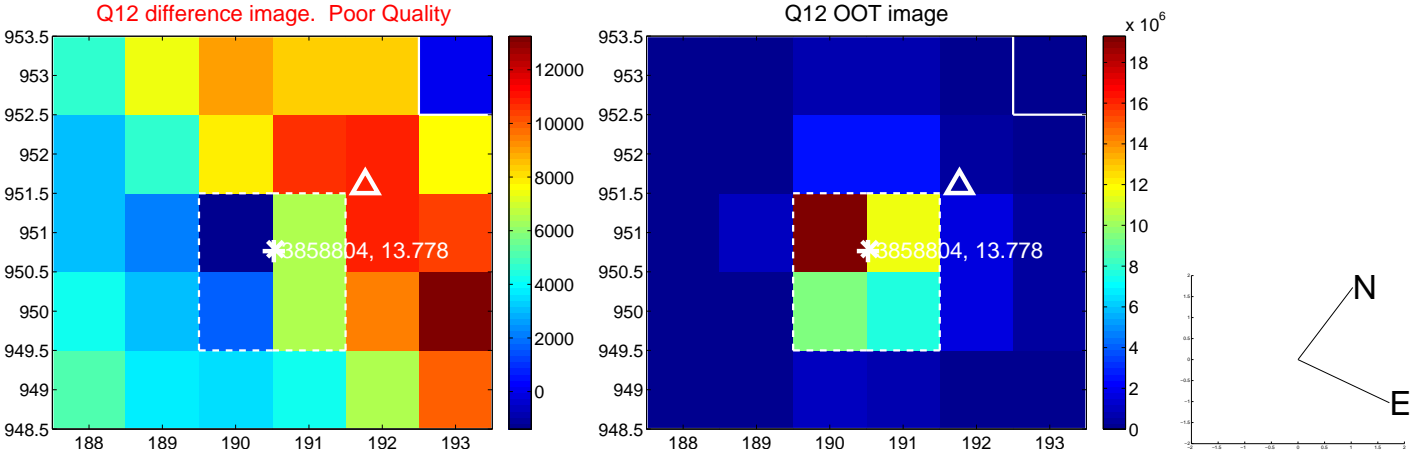
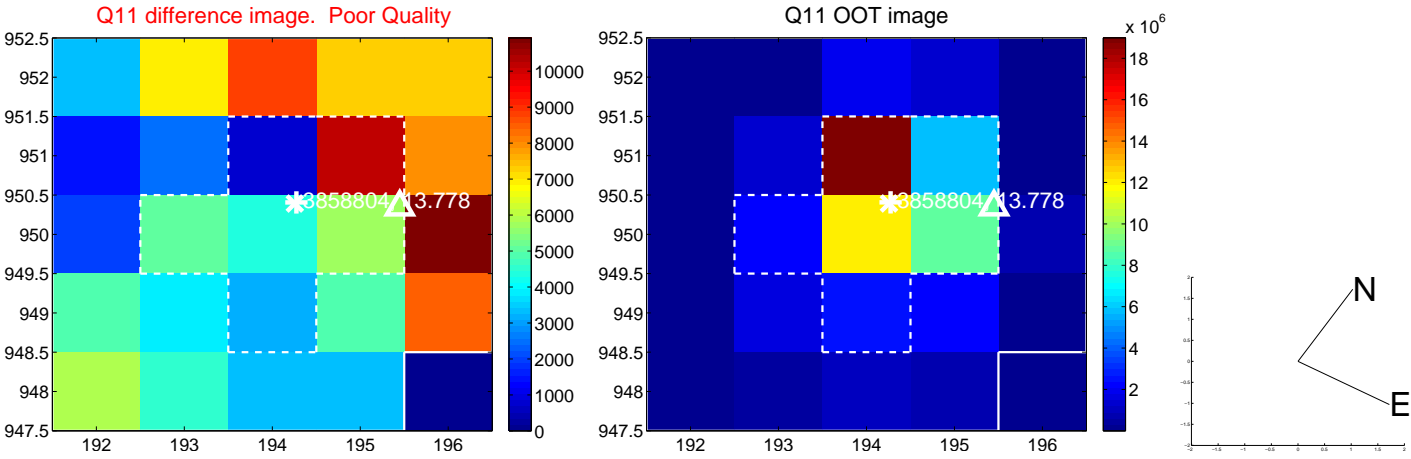
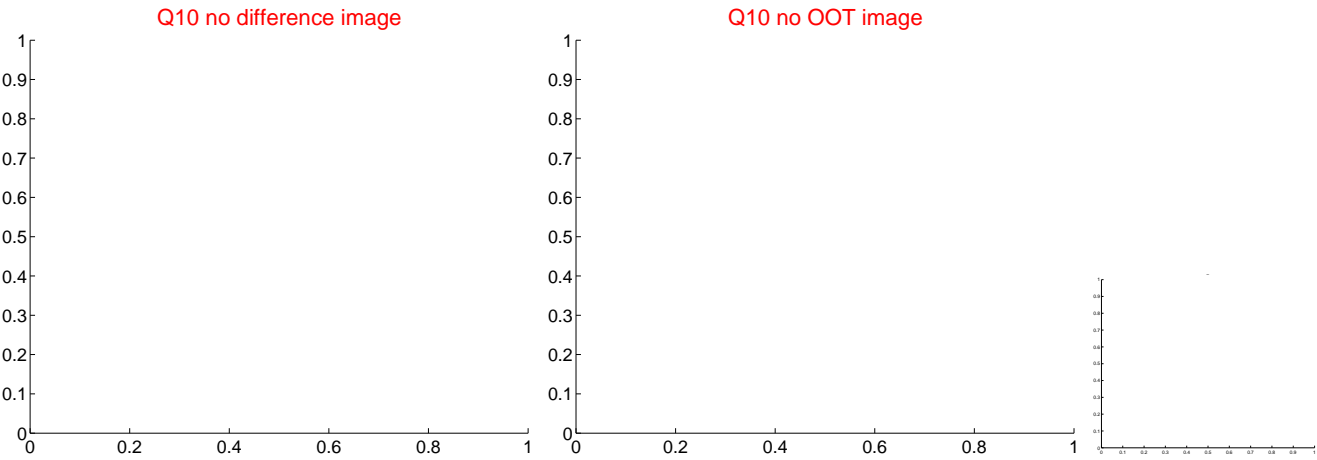
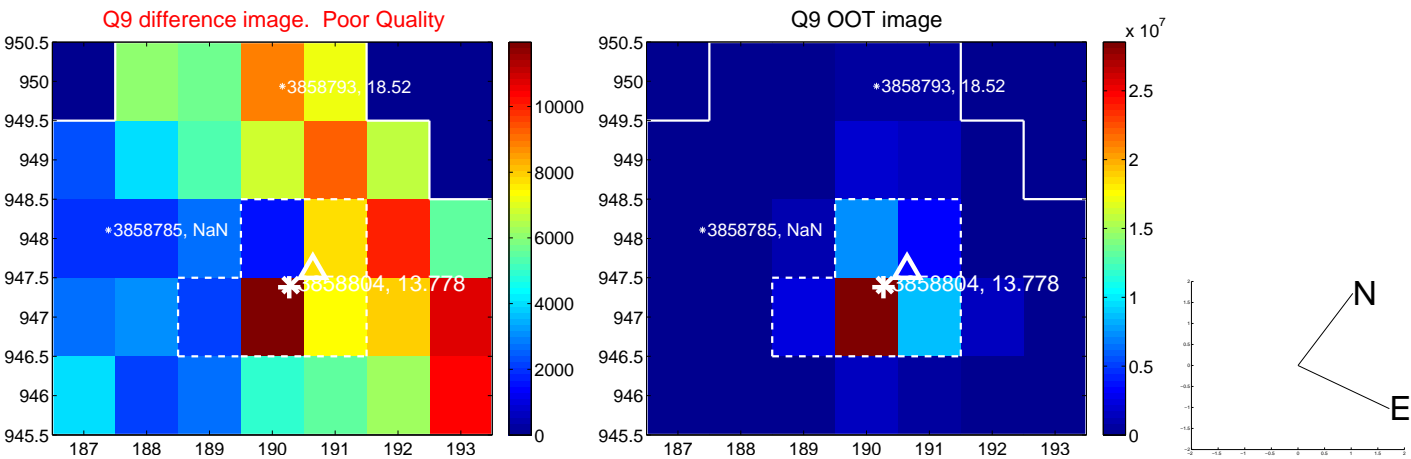
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



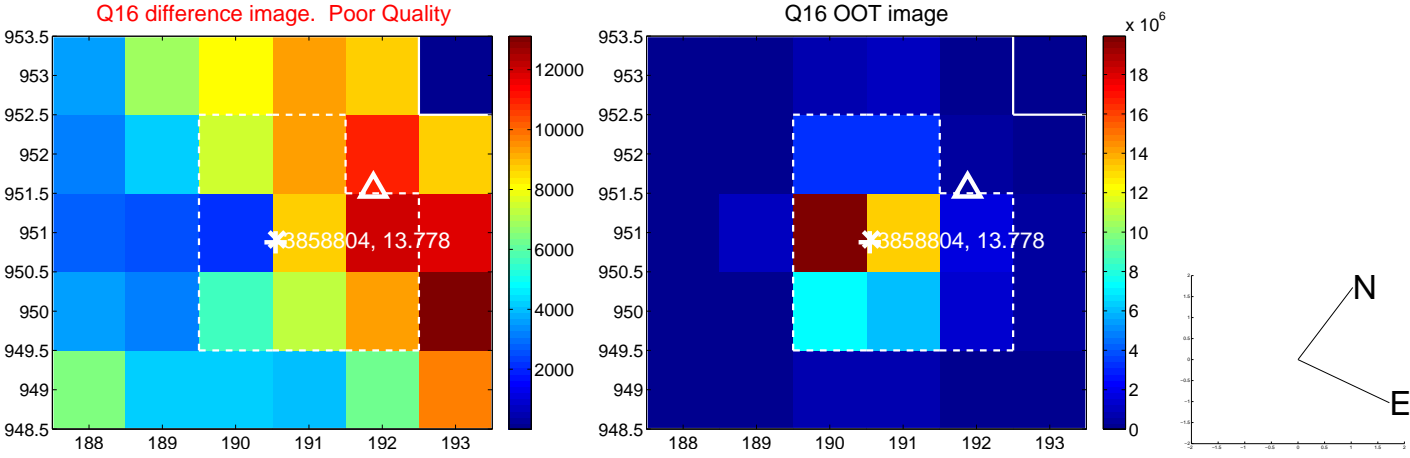
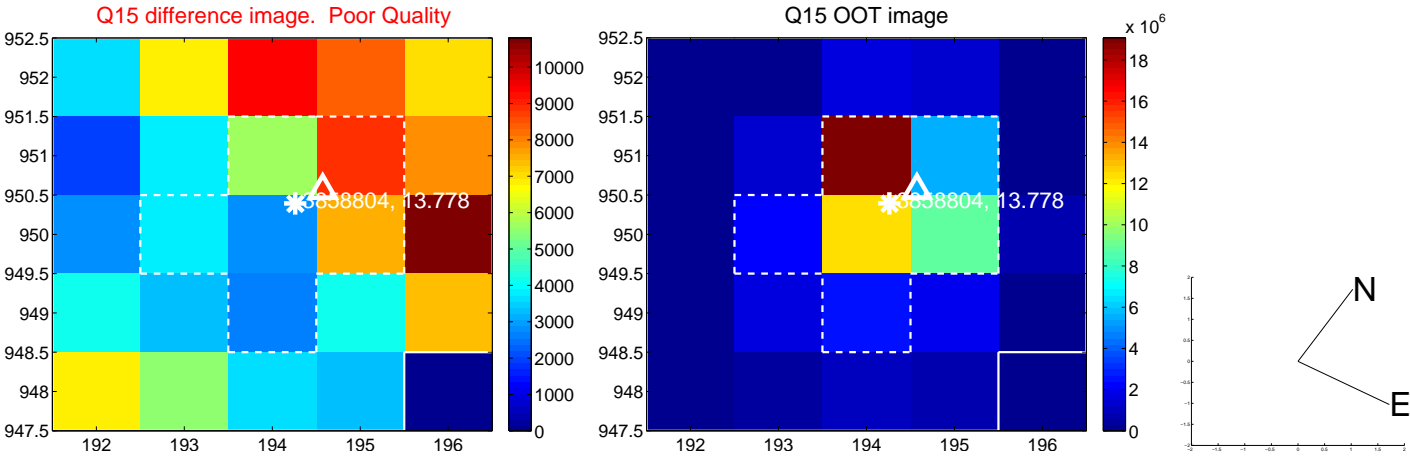
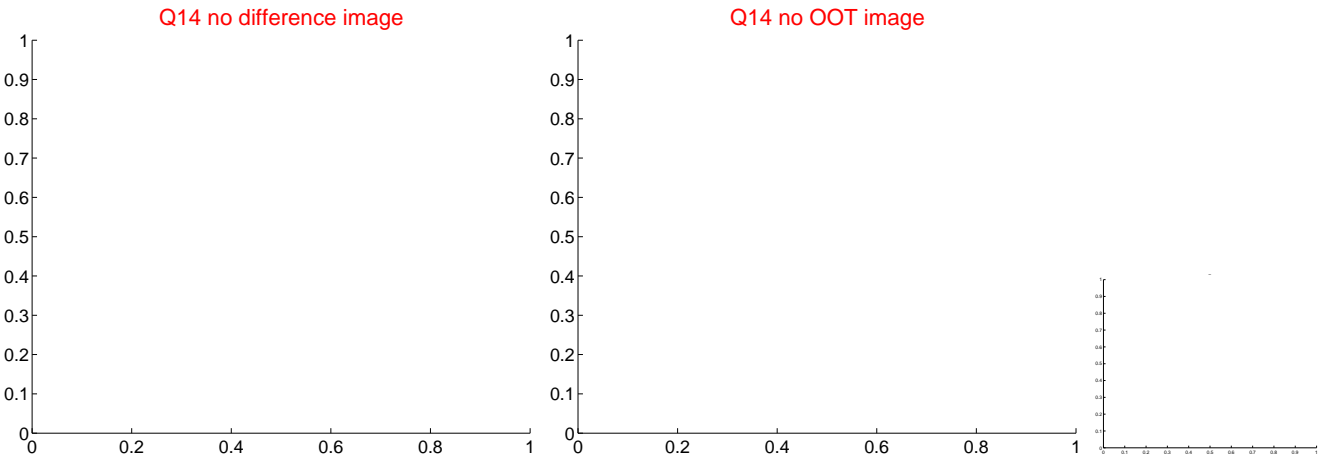
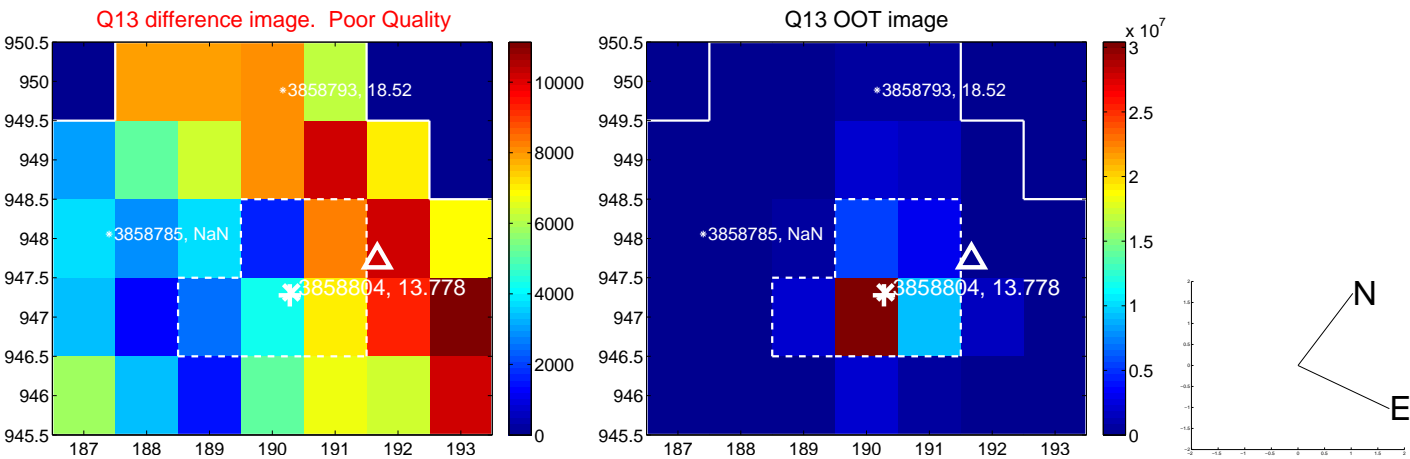
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



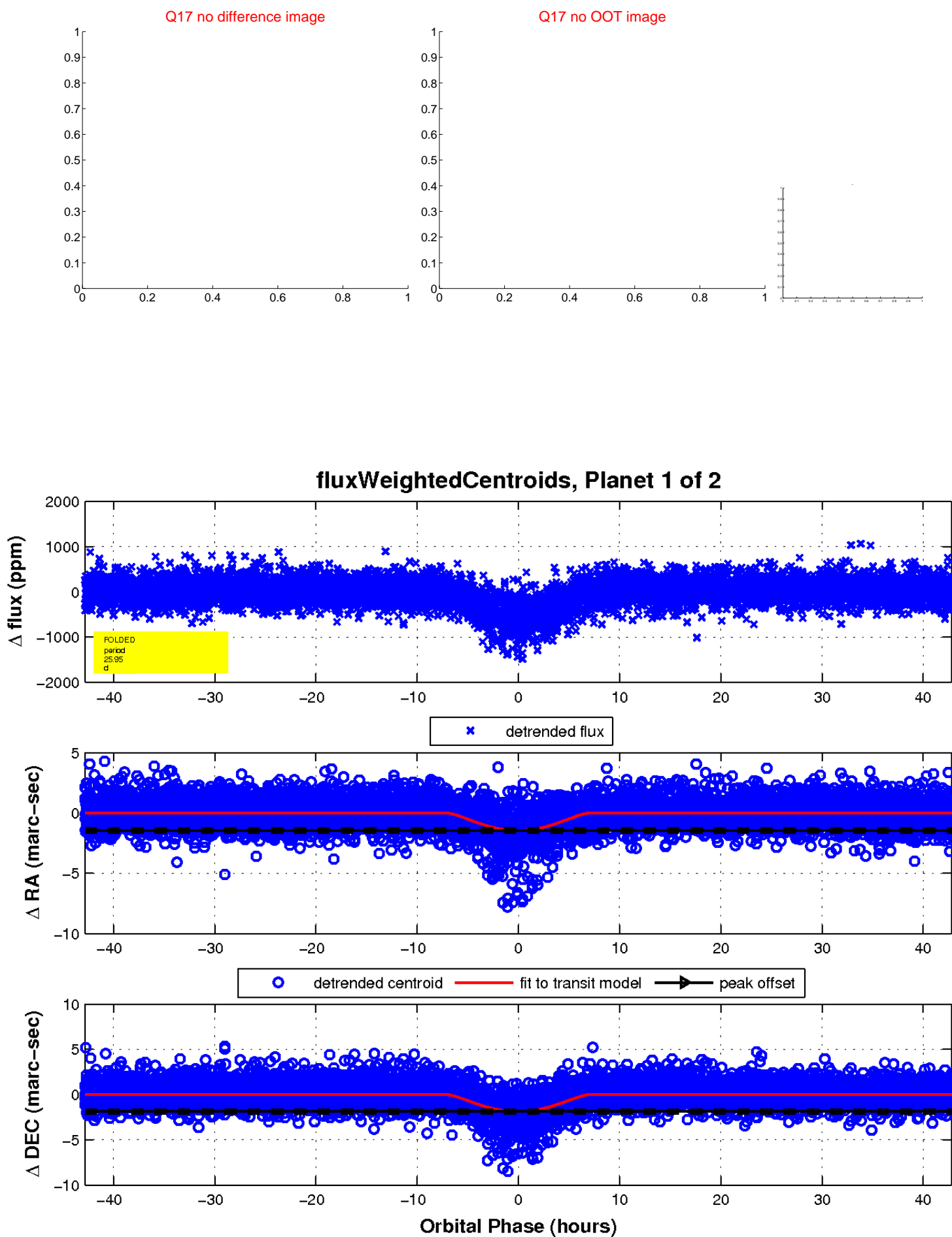
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

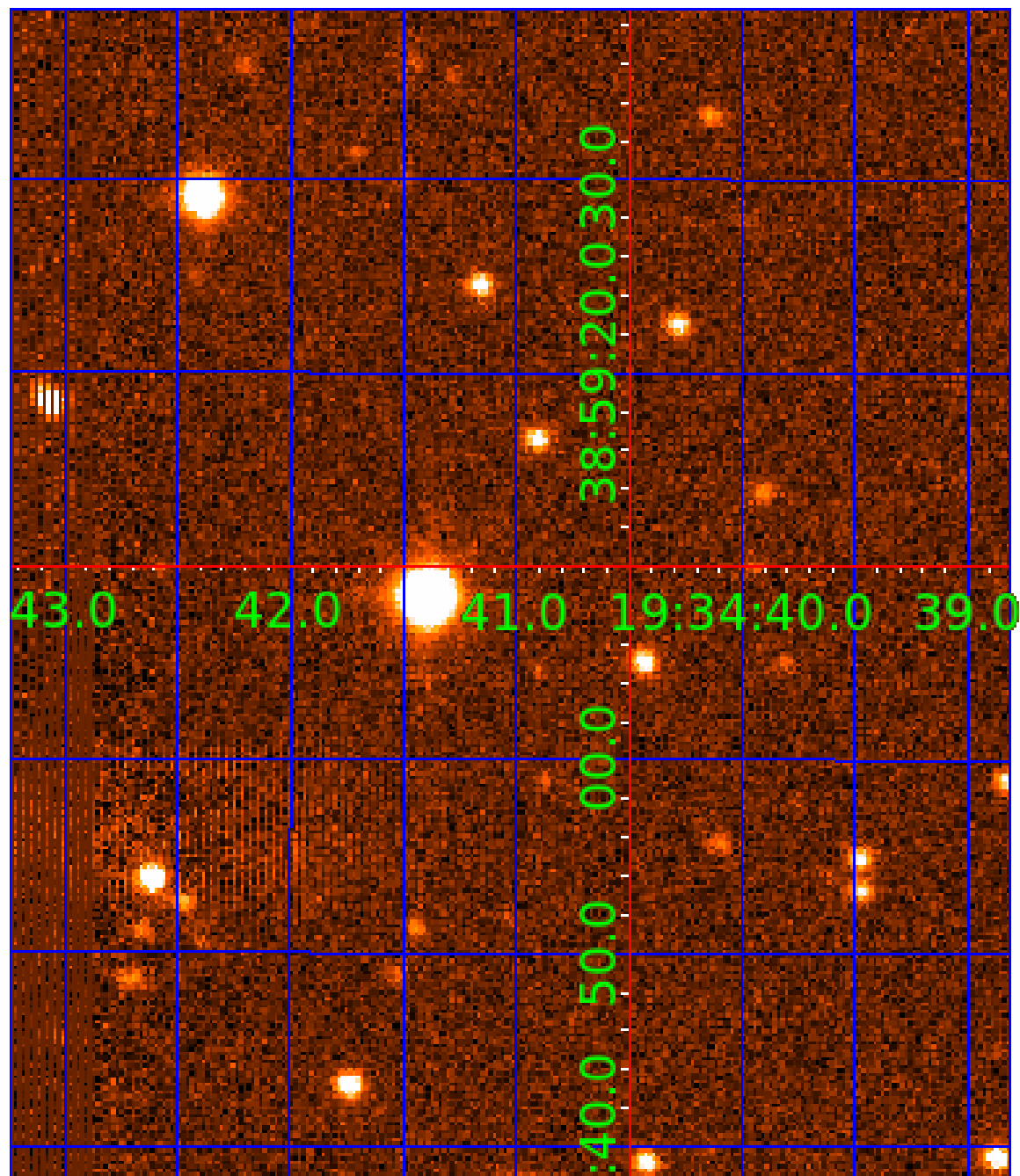


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003858804

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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003858804-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST—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 for comment definitions.

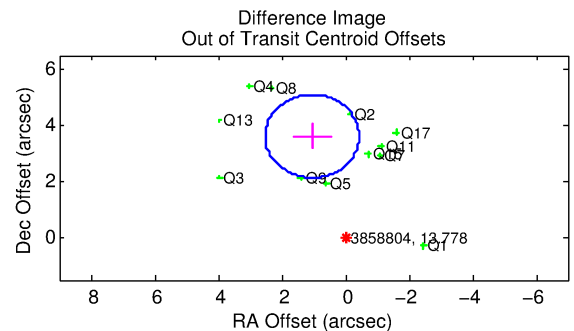
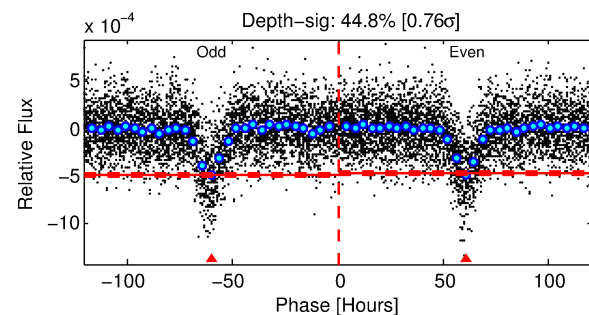
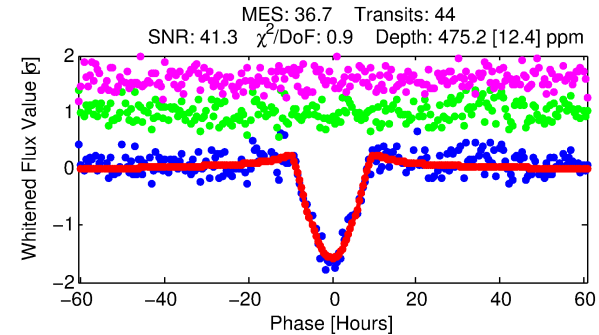
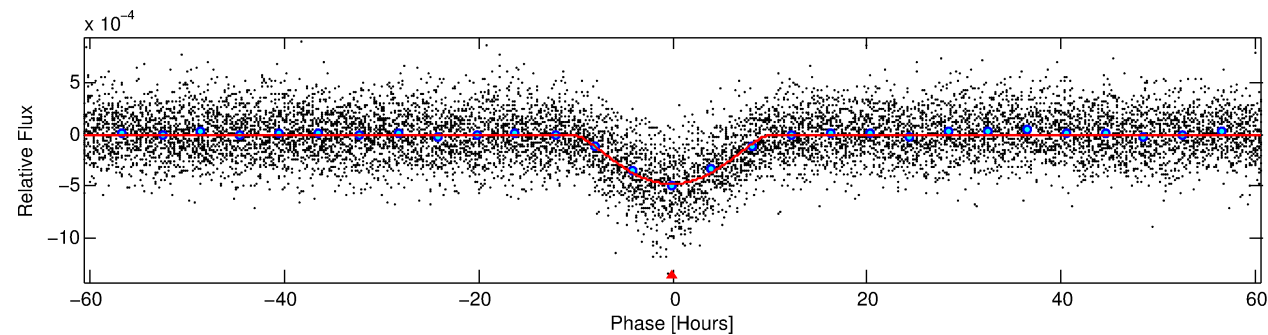
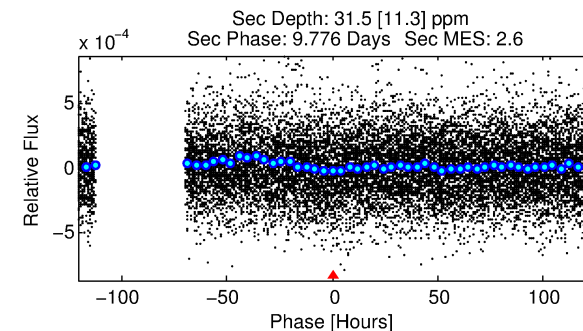
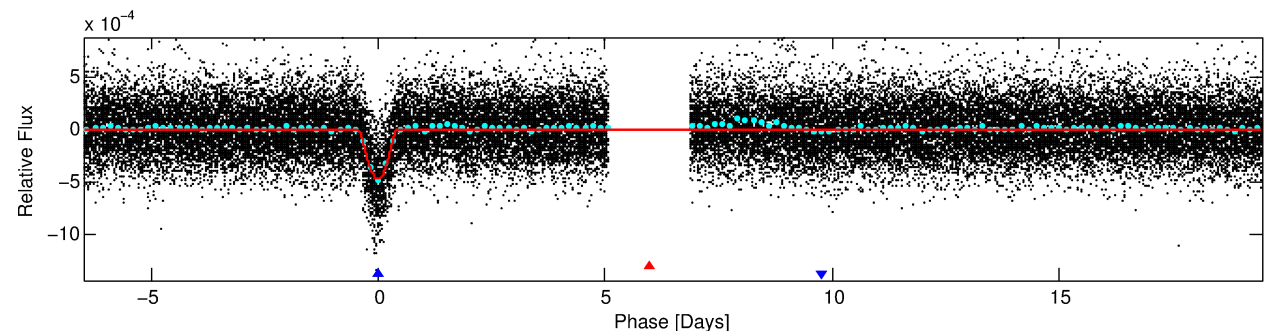
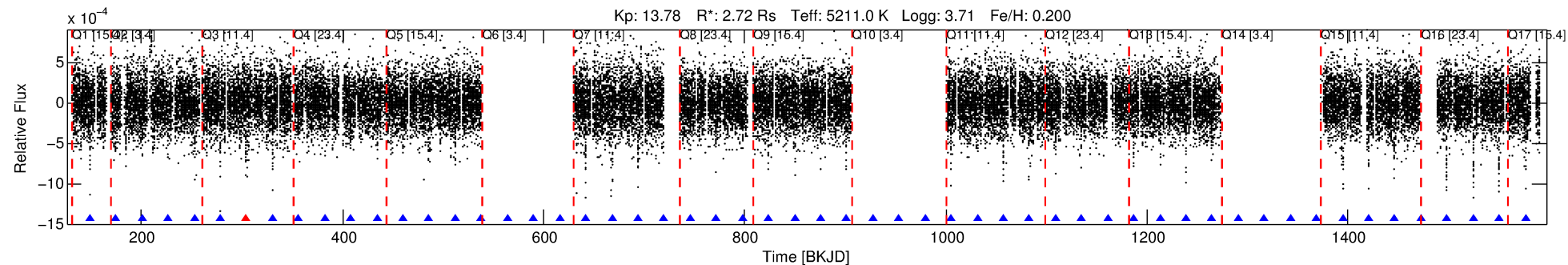
Ephemeris Match Information For 003858804-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003858804-02	3858804	003858884-02	3858884	1:1	65.2	11	-12	9.28	13.78	709.75	Direct-PRF	0	0.36	0.26

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ 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. σ_P and σ_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 σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 3858804 Candidate: 2 of 2 Period: 25.952 d
KOI: K00391.01 Corr: 0.996



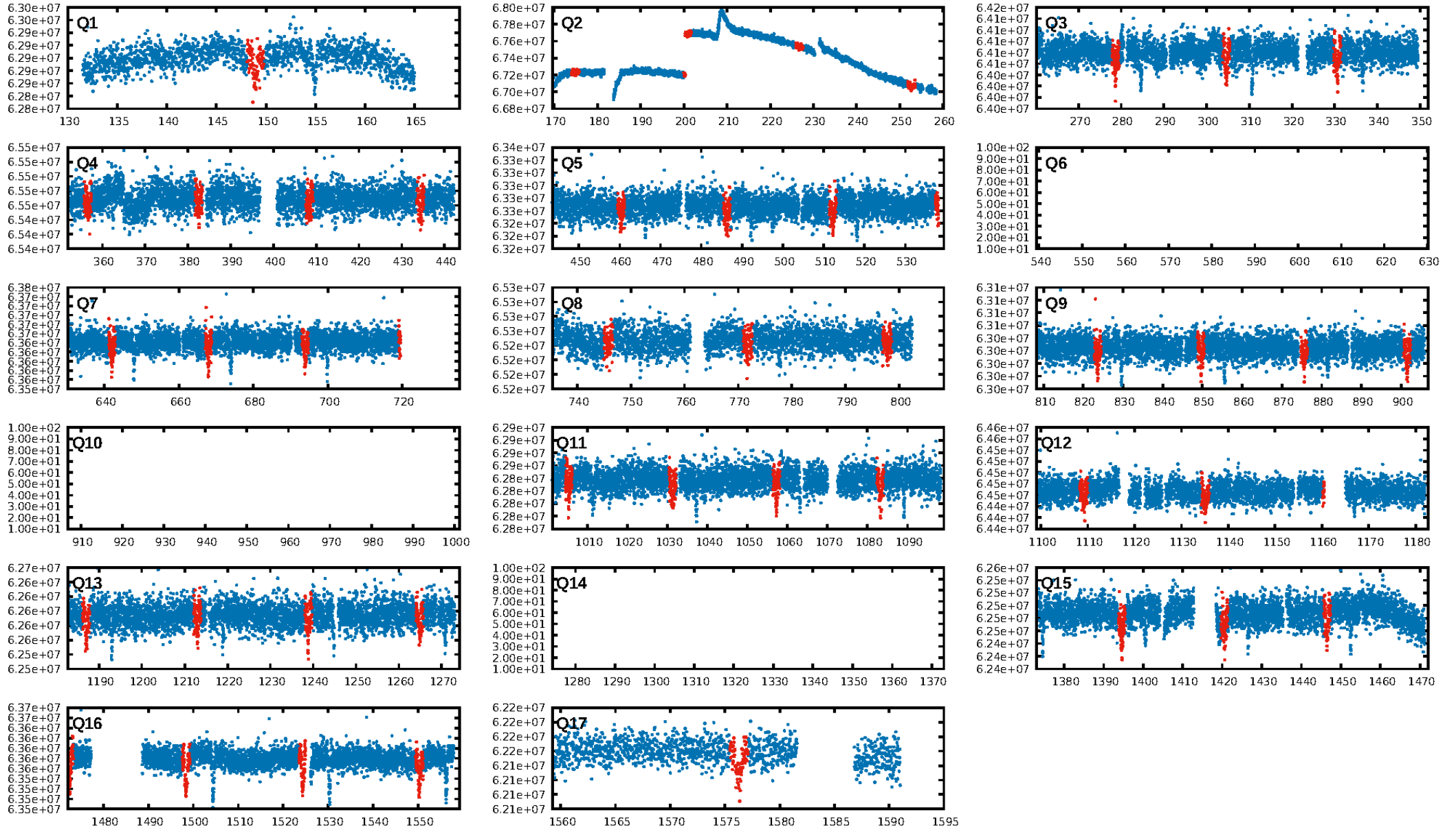
DV Fit Results:

Period = 25.95201 [0.00032] d
Epoch = 148.9191 [0.0099] BKJD
Rp/R* = 0.0382 [0.0219]
a/R* = 3.07 [0.42]
b = 1.00 [0.03]
Seff = 132.69 [46.96]
Teq = 865 [77] K
Rp = 11.34 [7.27] Re
a = 0.1920 [0.0455] AU
Ag = 4.97 [6.19] [0.64σ]
Teffp = 1998 [601] K [1.87σ]

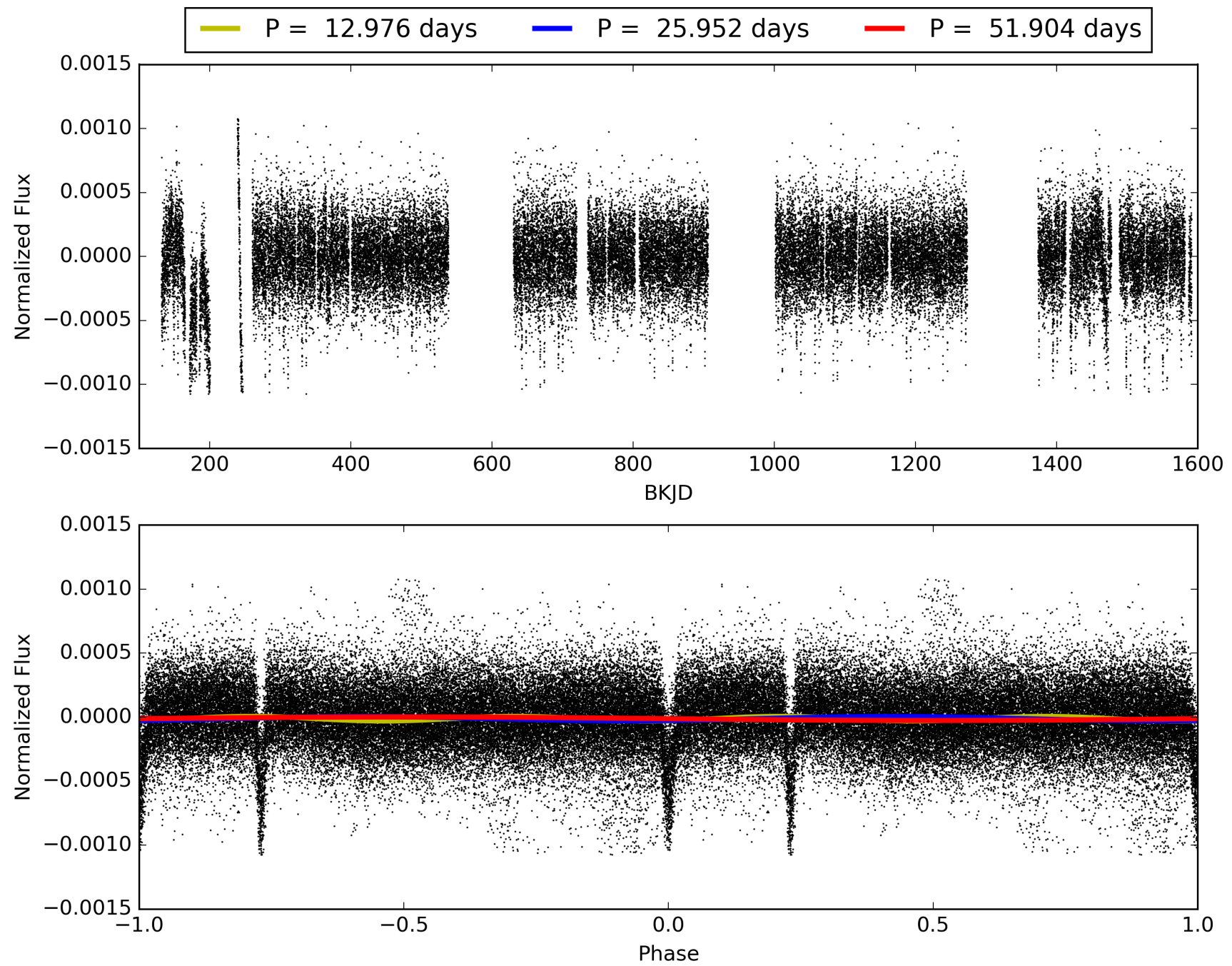
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.20e-251
RollingBand-fgt: 0.98 [41/42]
GhostDiagnostic-chr: 0.0181
Centroid-sig: 0.0%
Centroid-so: 4.580 arcsec [16.11σ]
OotOffset-rm: 3.768 arcsec [7.65σ]
KicOffset-rm: 3.666 arcsec [6.95σ]
OotOffset-st: 1/4/2/5 [12]
KicOffset-st: 1/4/2/5 [12]
DiffImageQuality-fgm: 0.08 [1/12]
DiffImageOverlap-fno: 1.00 [12/12]

TCE 003858804-02, PDC Light Curves

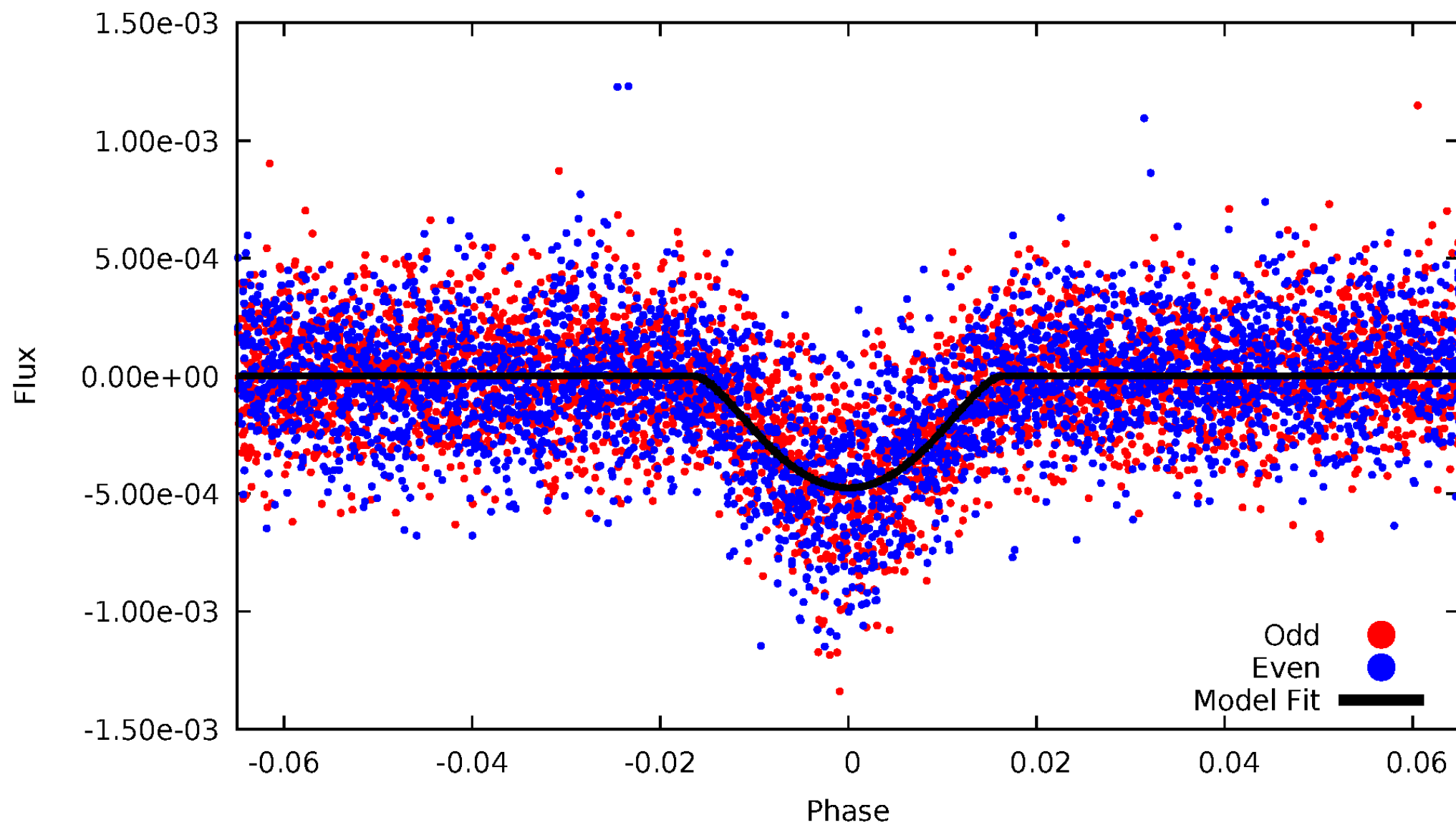


TCE 003858804-02



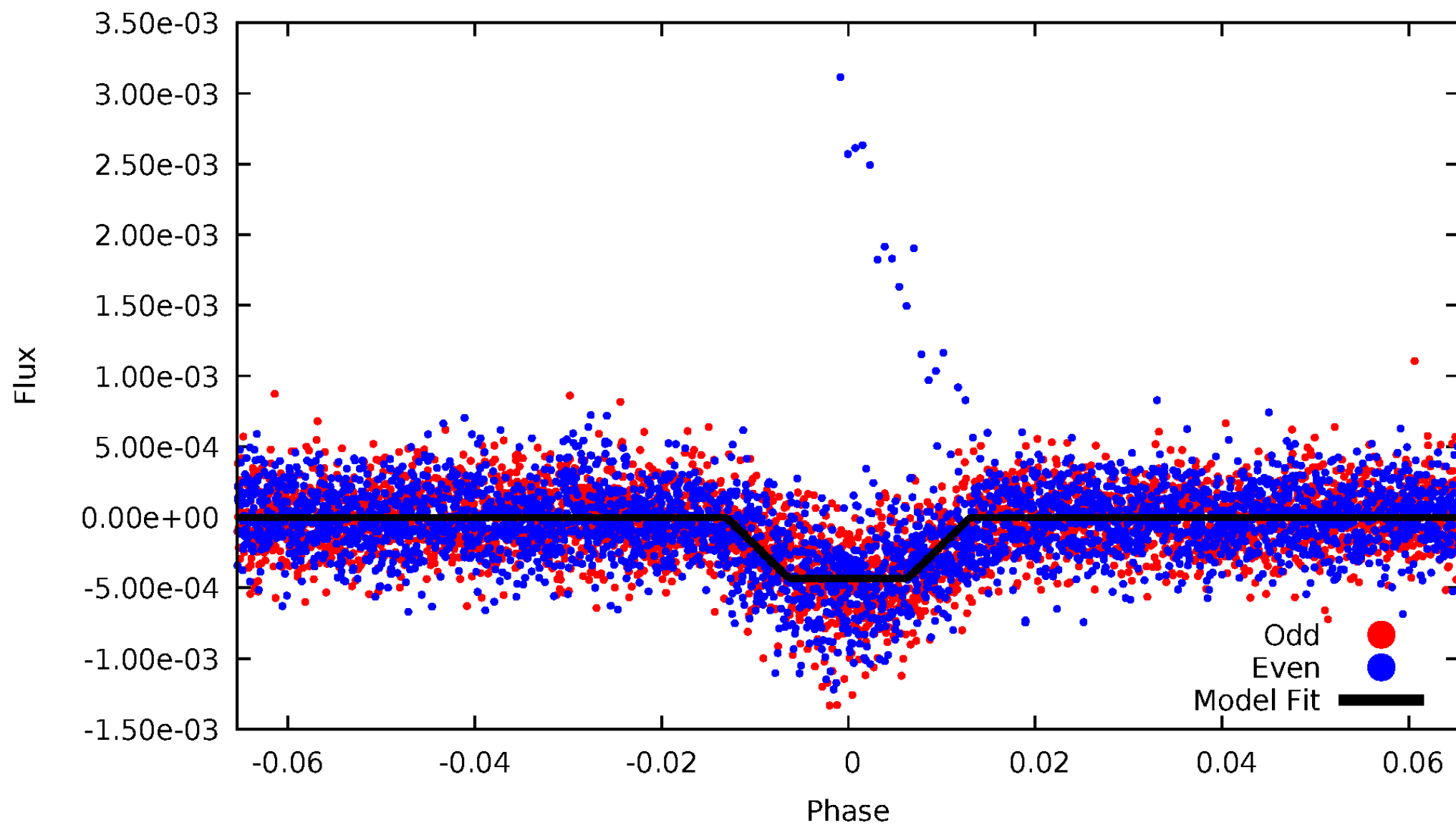
DV Odd/Even

TCE 003858804-02



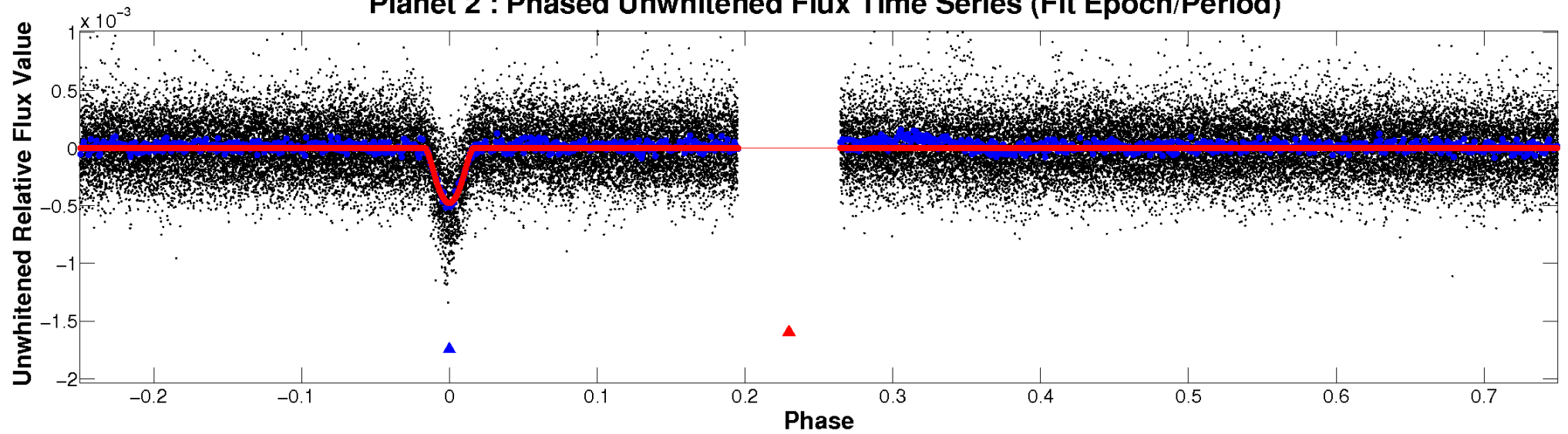
ALT Odd/Even

TCE 003858804-02

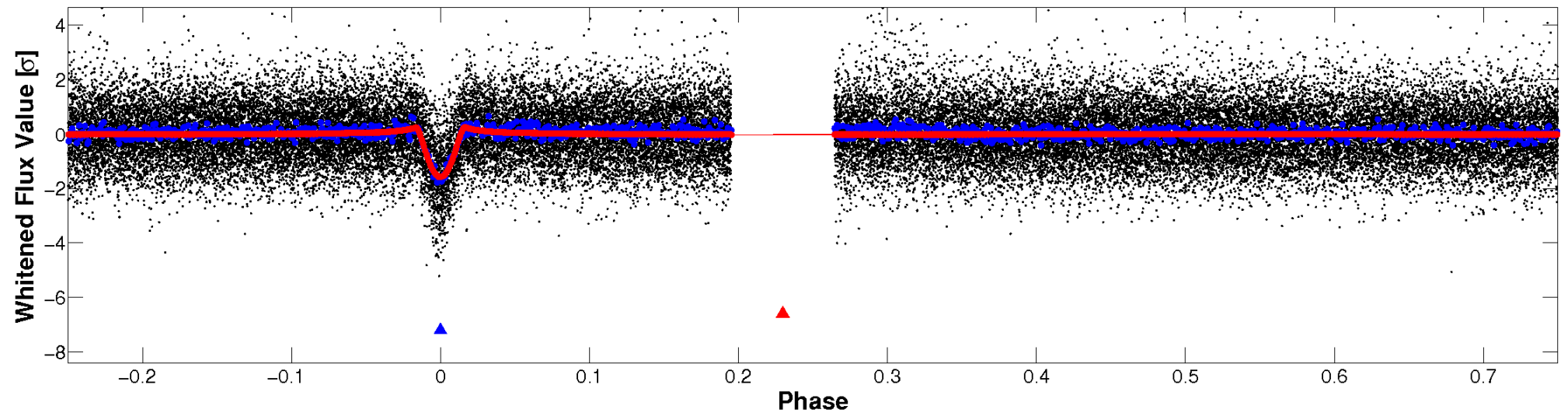


Non-Whitened Vs. Whitened Light Curve

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

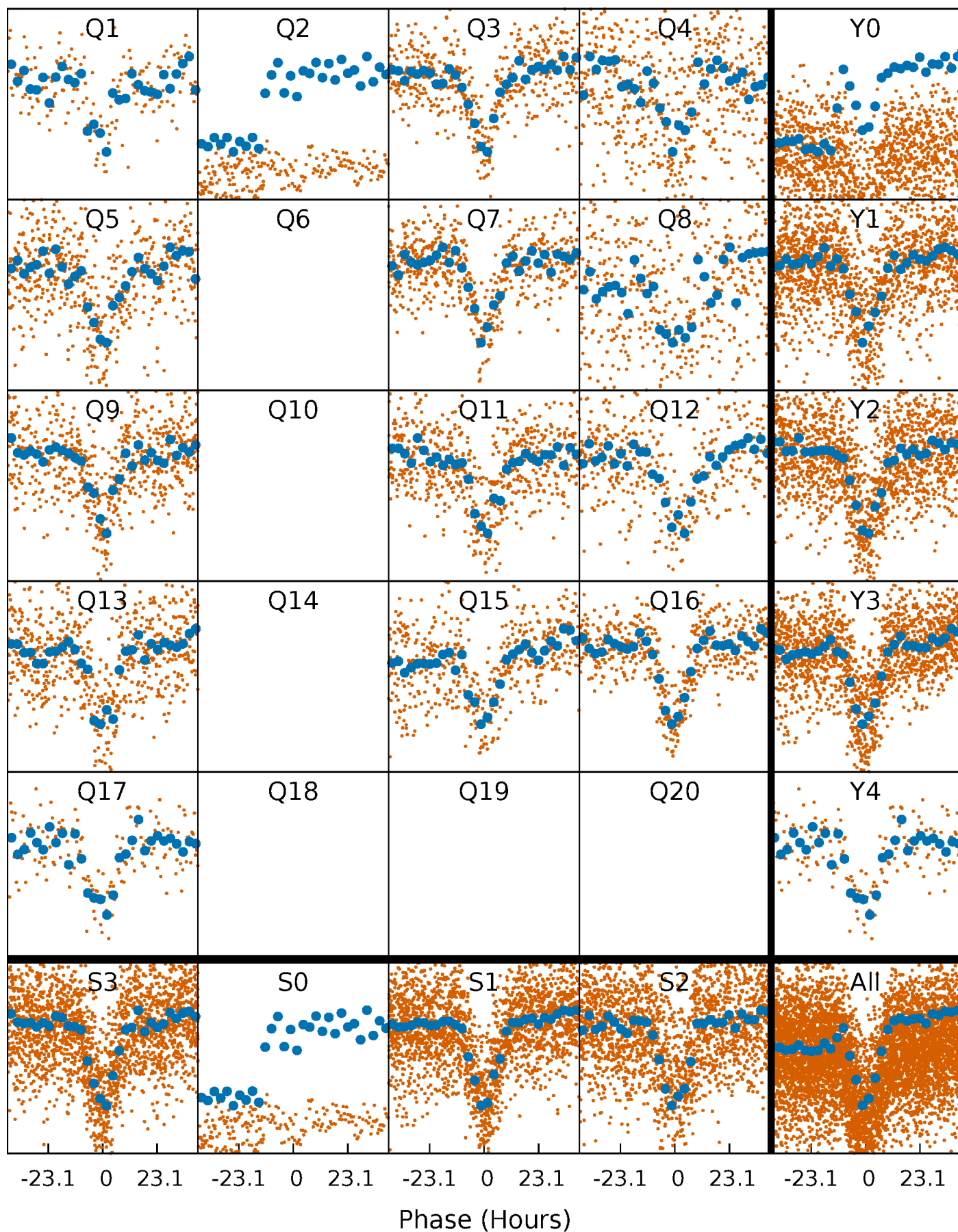


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



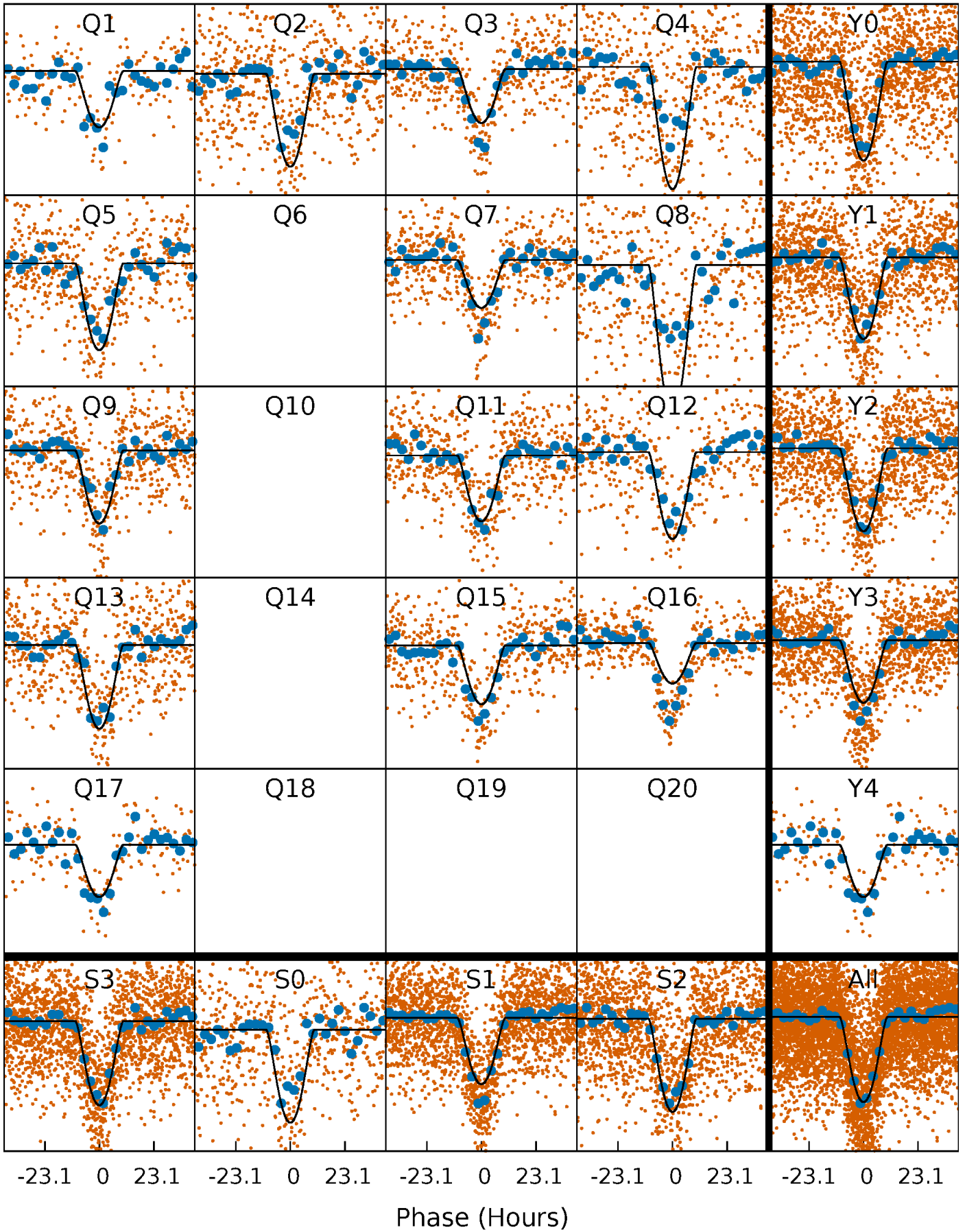
PDC Quarter-Phased Transit Curves

TCE 003858804-02 P= 25.952011 Days $T_0=148.919057$ (BKJD)



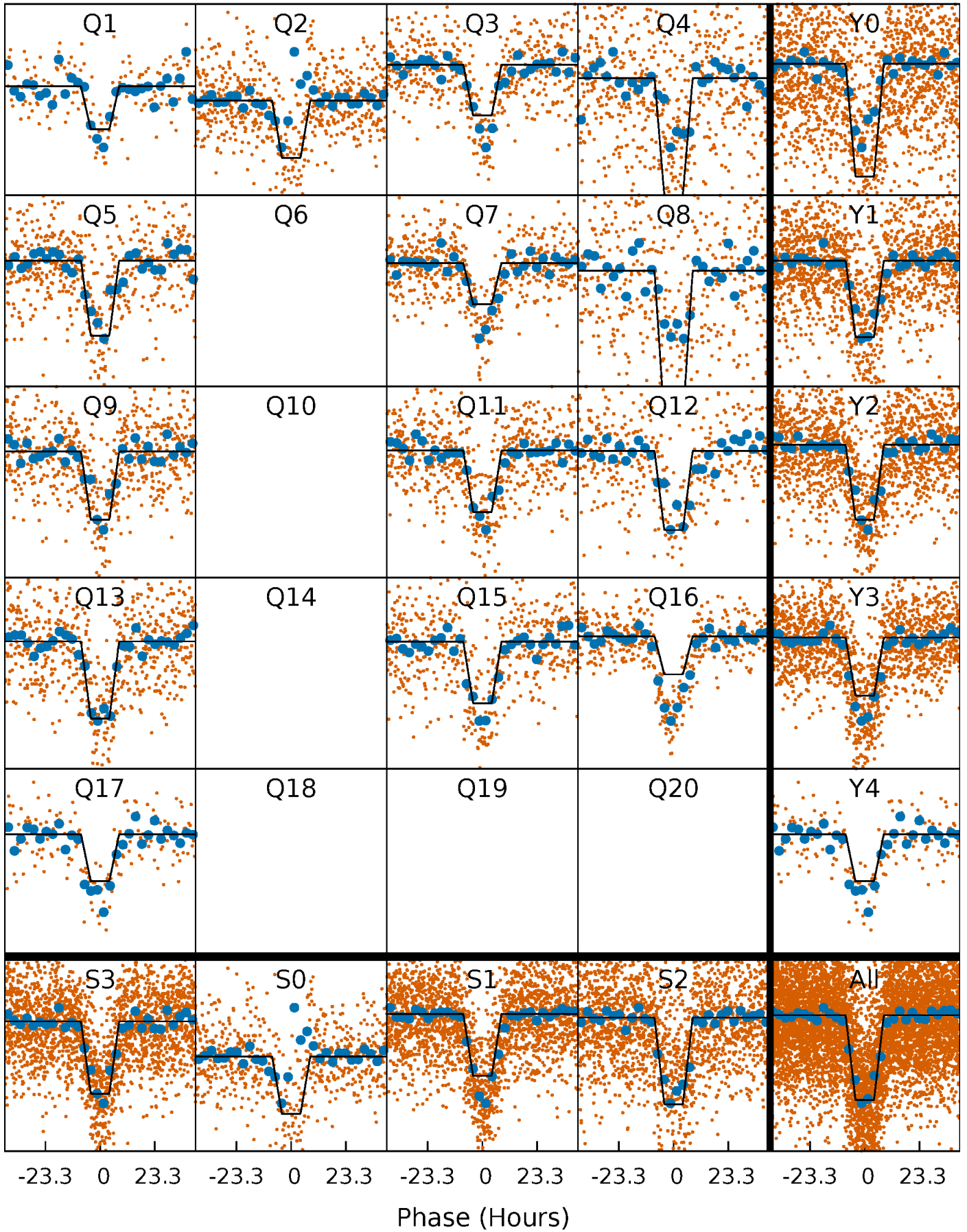
DV Quarter-Phased Transit Curves

TCE 003858804-02 P= 25.952011 Days $T_0=148.919057$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

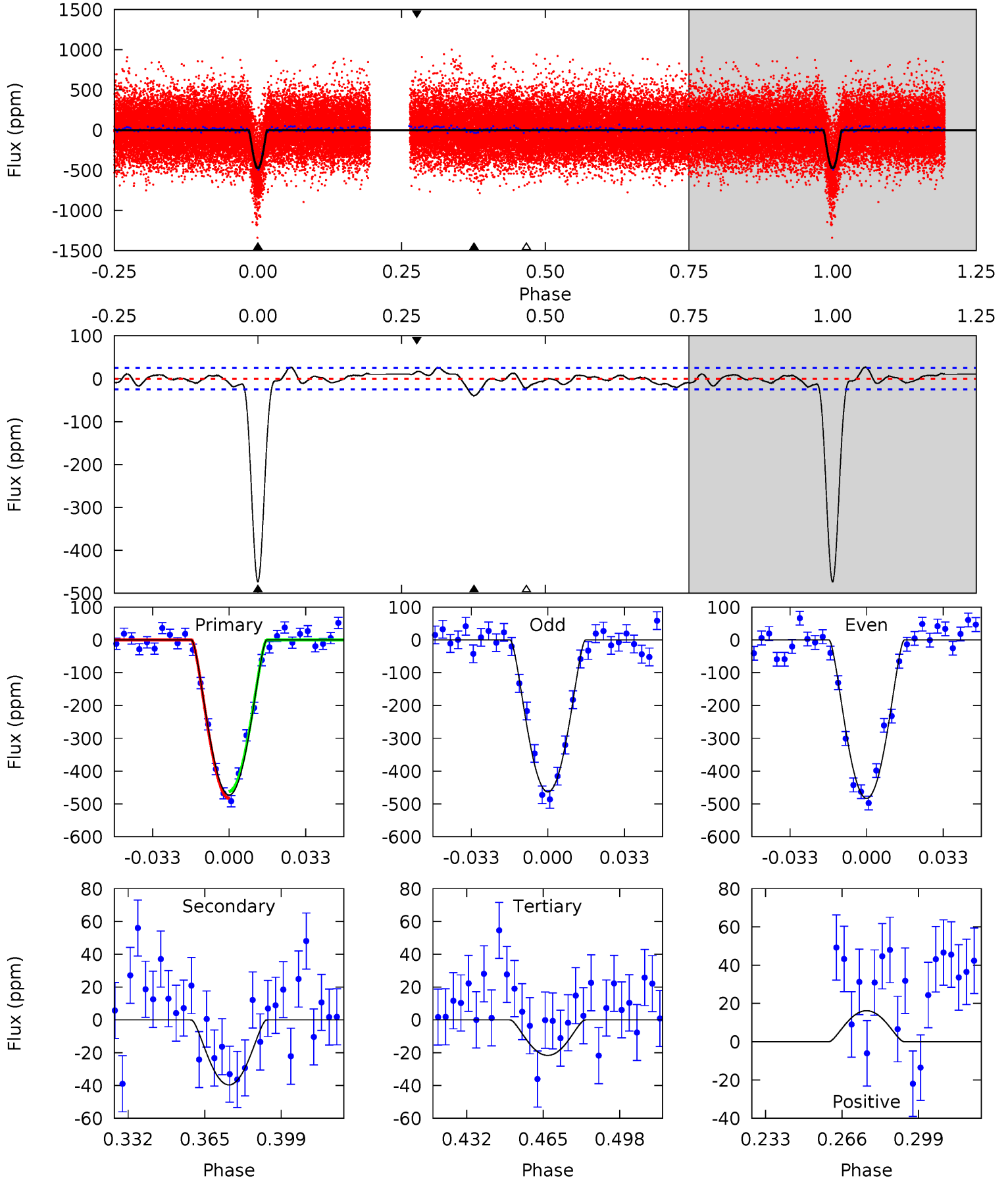
TCE 003858804-02 P= 25.952751 Days $T_0=148.880453$ (BKJD)



DV Model-Shift Uniqueness Test

003858804-02, P = 25.952011 Days, E = 122.967046 Days

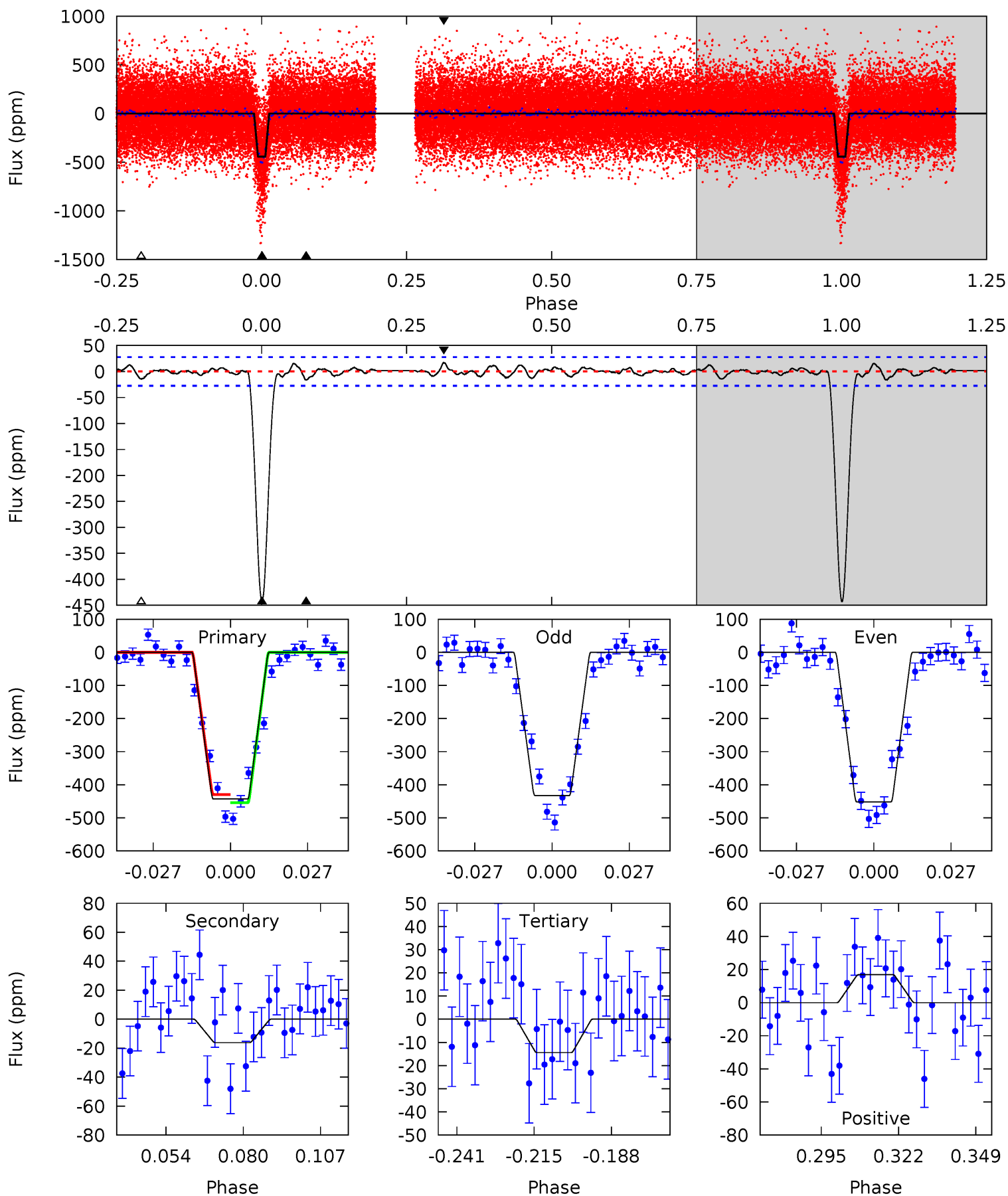
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.8	7.62	4.16	3.11	4.79	2.13	1.85	86.7	87.7	3.46	4.50	1.87	1.09	0.05	2.03



Alt Model-Shift Uniqueness Test

003858804-02, $P = 25.952751$ Days, $E = 122.927702$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.9	2.85	2.53	2.97	4.83	2.21	0.96	75.3	74.9	0.32	-0.12	1.68	1.02	0.04	2.19



Stellar Parameters For KIC 003858804

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5211^{+93}_{-134}	$3.715^{+0.182}_{-0.098}$	$0.200^{+0.150}_{-0.200}$	$2.721^{+0.421}_{-0.781}$	$1.401^{+0.141}_{-0.328}$	$0.098^{+0.104}_{-0.032}$
	+2%/-3%	+5%/-3%	+75%/-100%	+15%/-29%	+10%/-23%	+106%/-32%
Source	SPE18	SPE18	SPE18	DSEP		

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

Secondary Eclipse Parameters for KIC 003858804-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-40 ± 5	$11.39^{+6.79}_{-6.24}$	1202^{+59}_{-78}	2771^{+731}_{-308}	$6.169^{+24.491}_{-3.770}$
Alt.	-16 ± 6	$7.35^{+5.56}_{-4.56}$	1197^{+60}_{-74}	2755^{+971}_{-410}	$5.891^{+35.439}_{-4.092}$

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

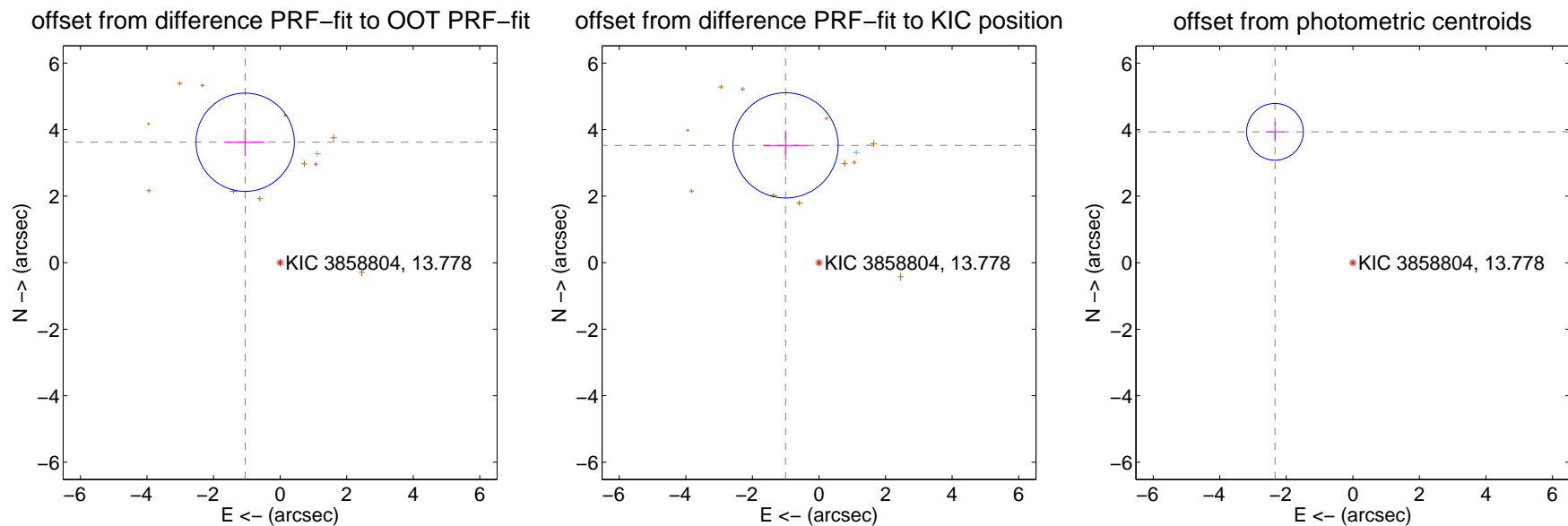
DV Centroid Data

Supplemental centroid analysis for 003858804-02. Kepler magnitude: 13.78. Transit SNR 41.33

There are 1 quarters with good PRF difference image offsets

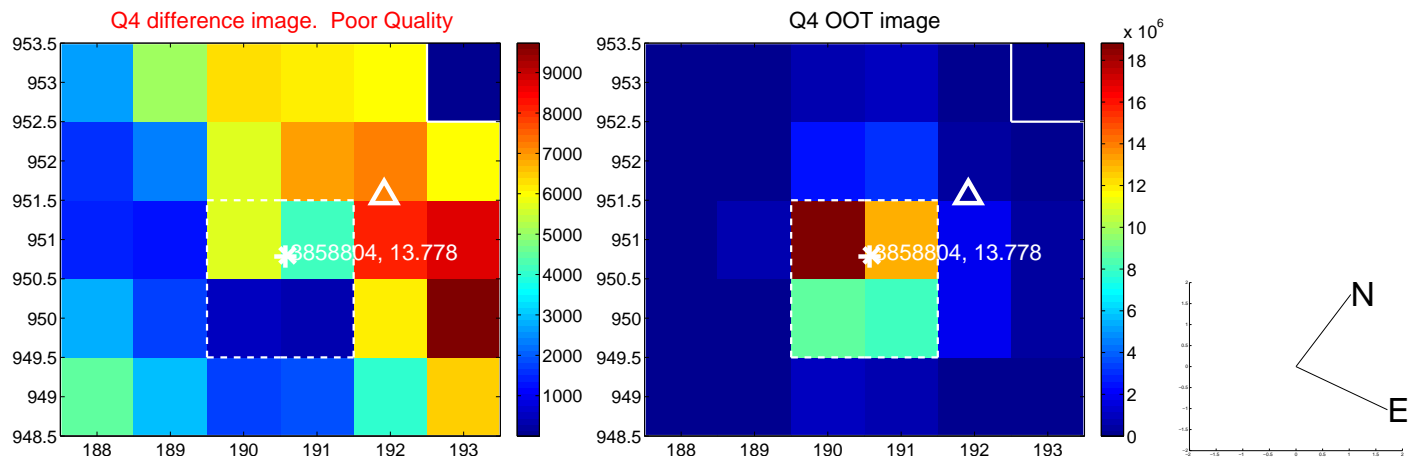
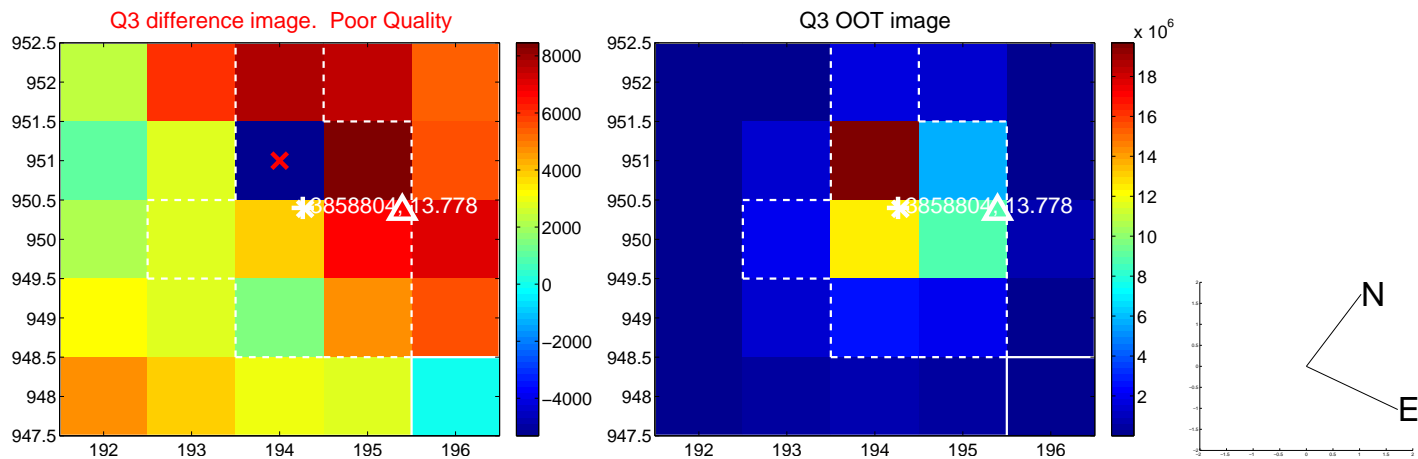
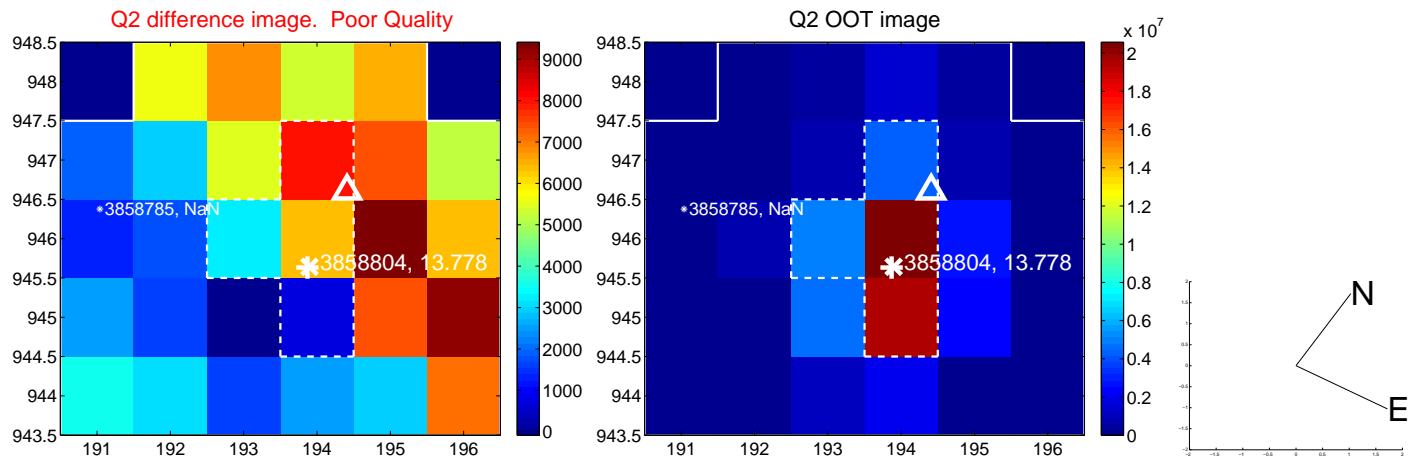
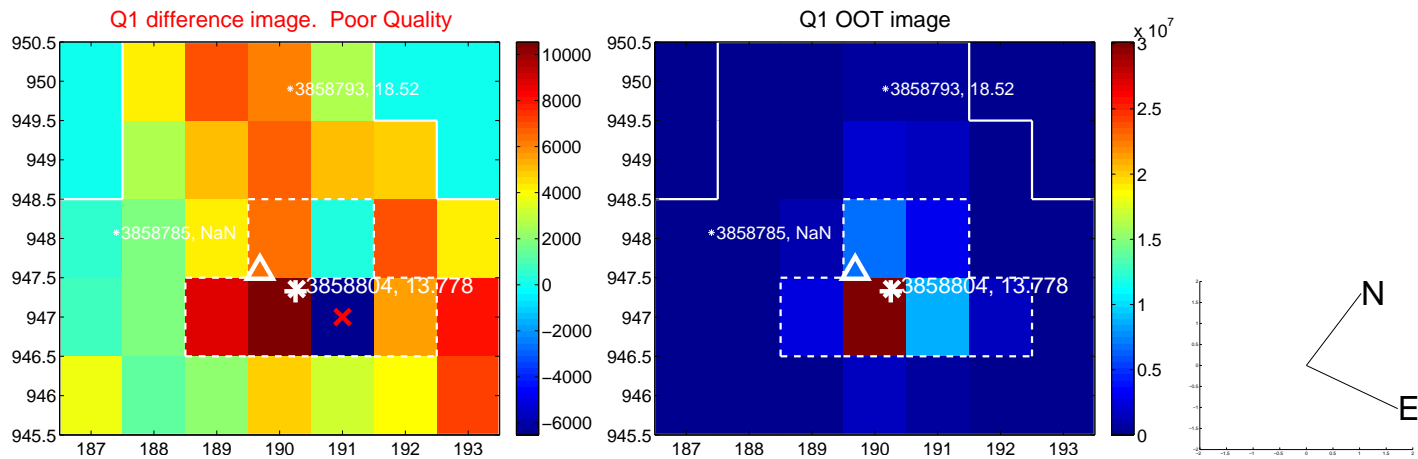
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.768 ± 0.492	7.65	1.050 ± 0.589	3.619 ± 0.415
PRF-fit source offset from KIC position	3.666 ± 0.527	6.95	1.005 ± 0.656	3.526 ± 0.444
photometric centroid source offset	4.58 ± 0.28	16.11	2.34 ± 0.27	3.94 ± 0.29

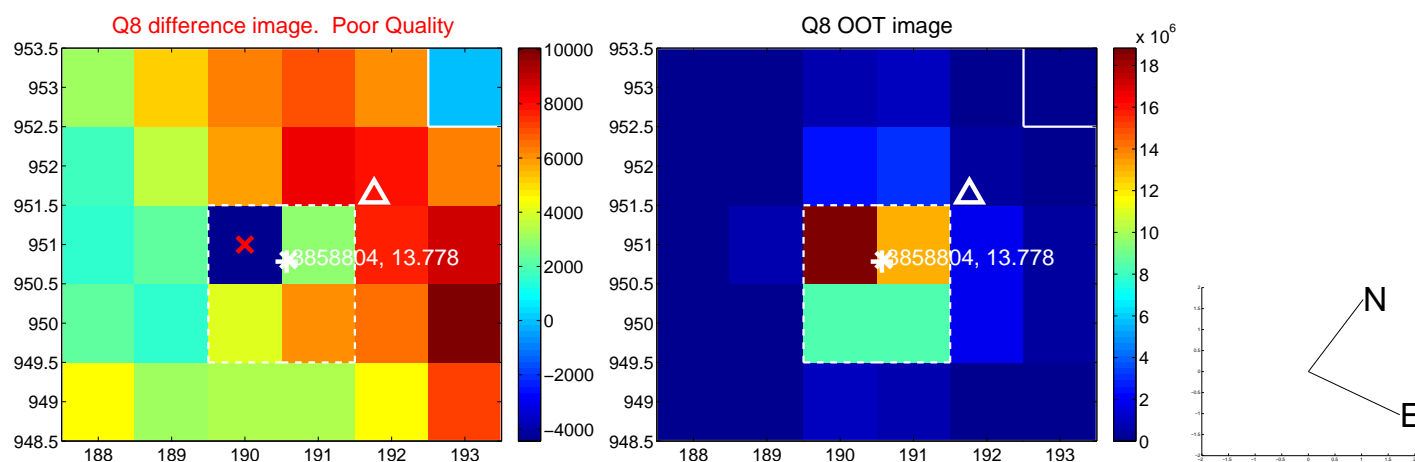
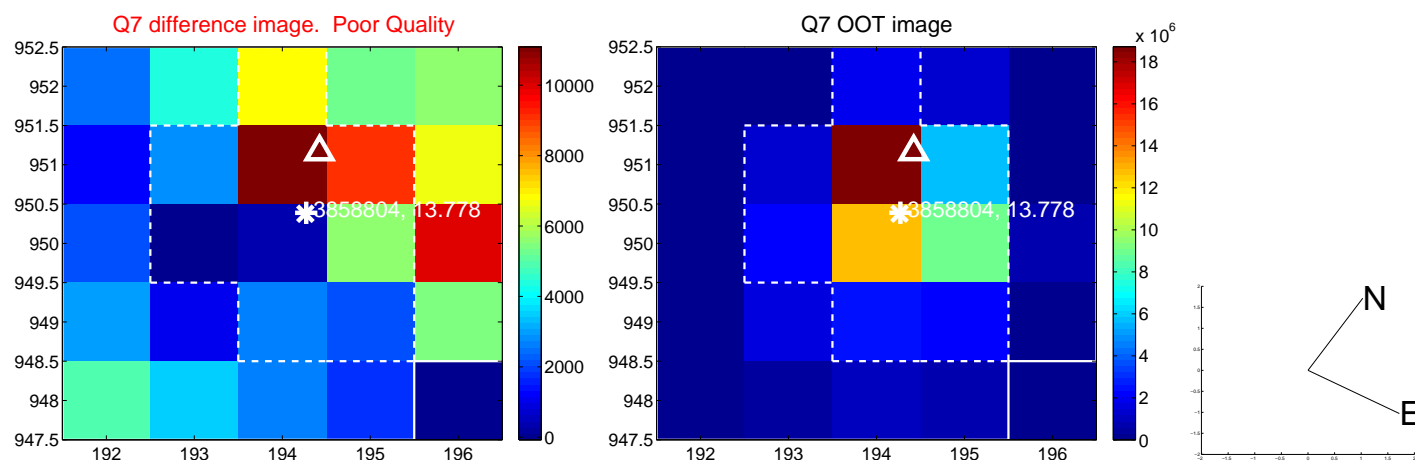
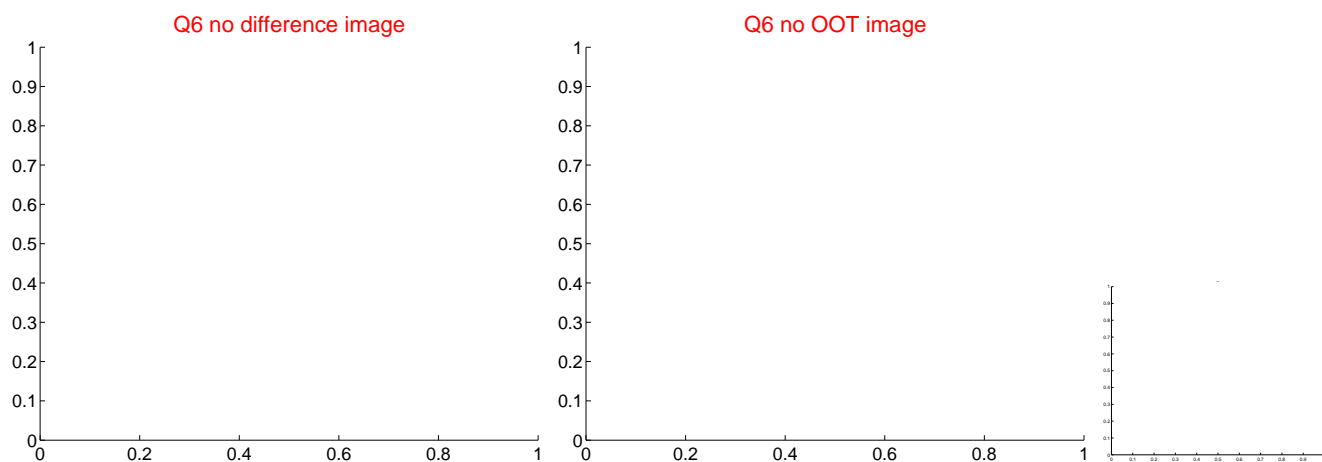
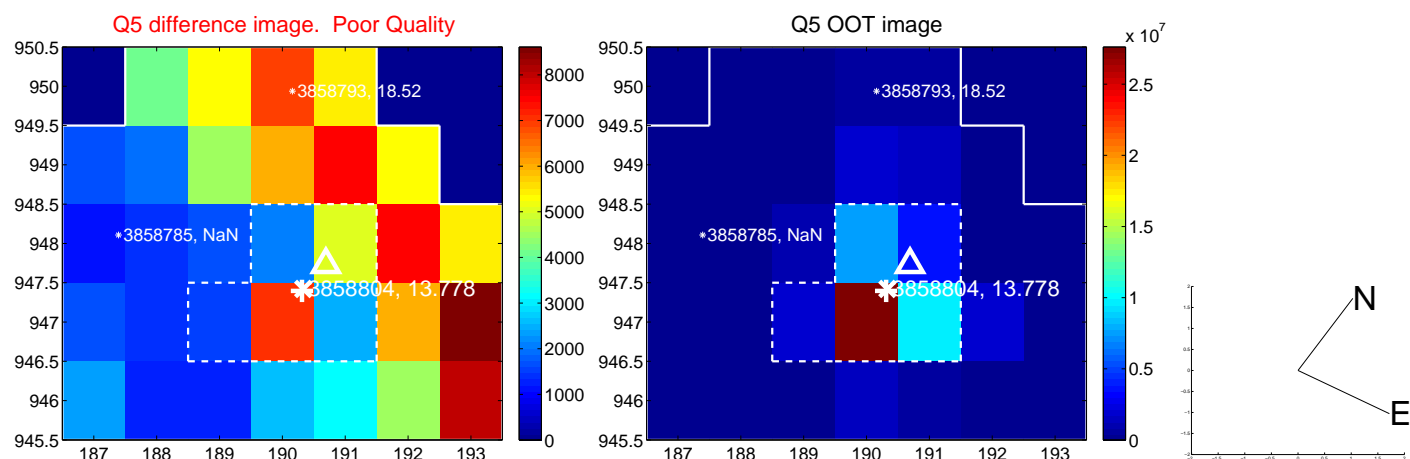


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

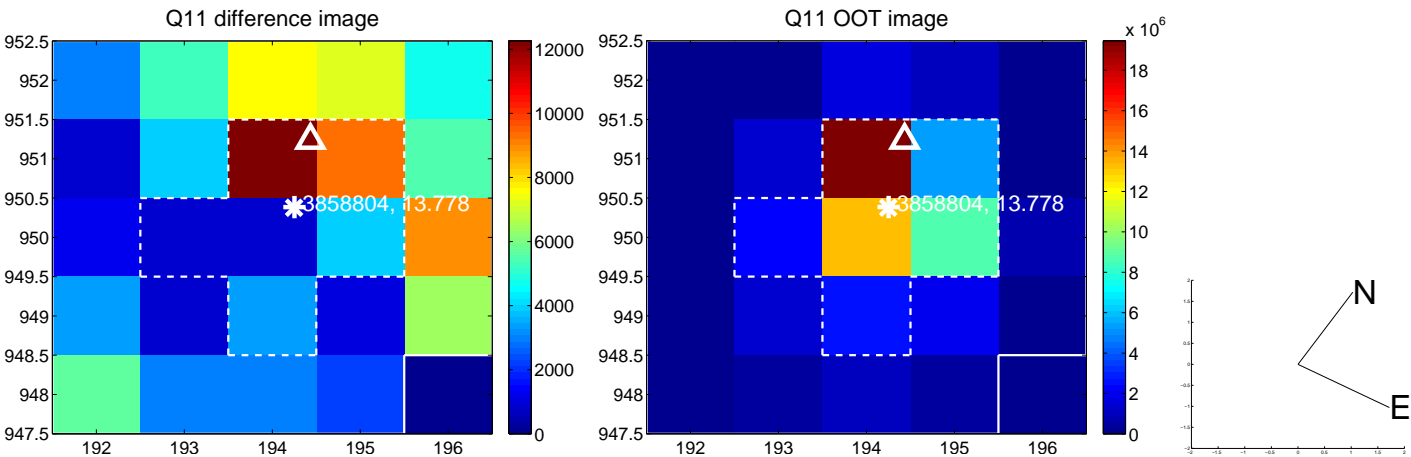
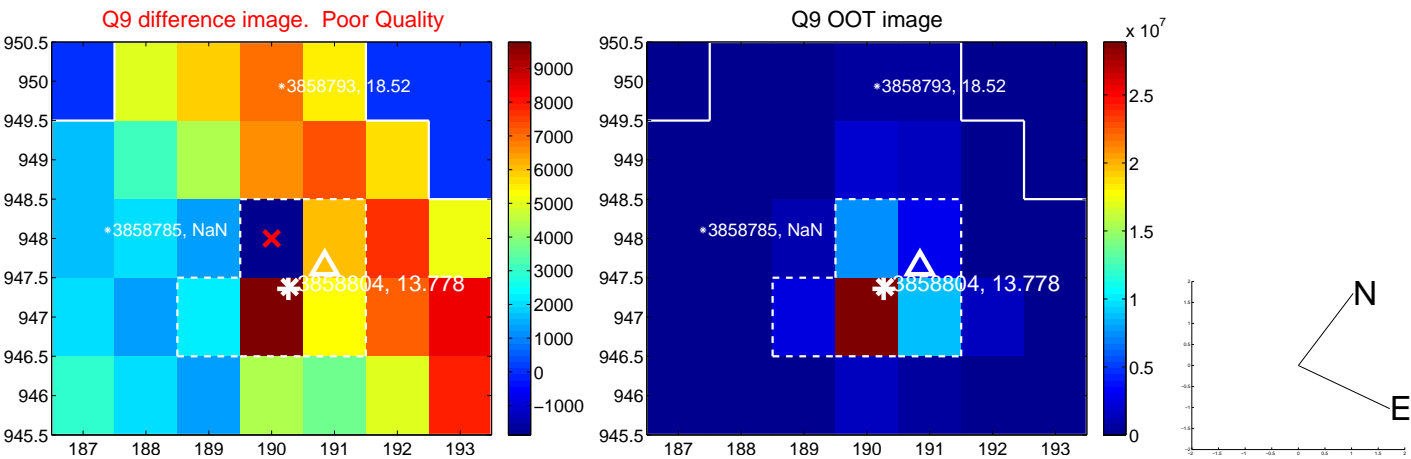
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



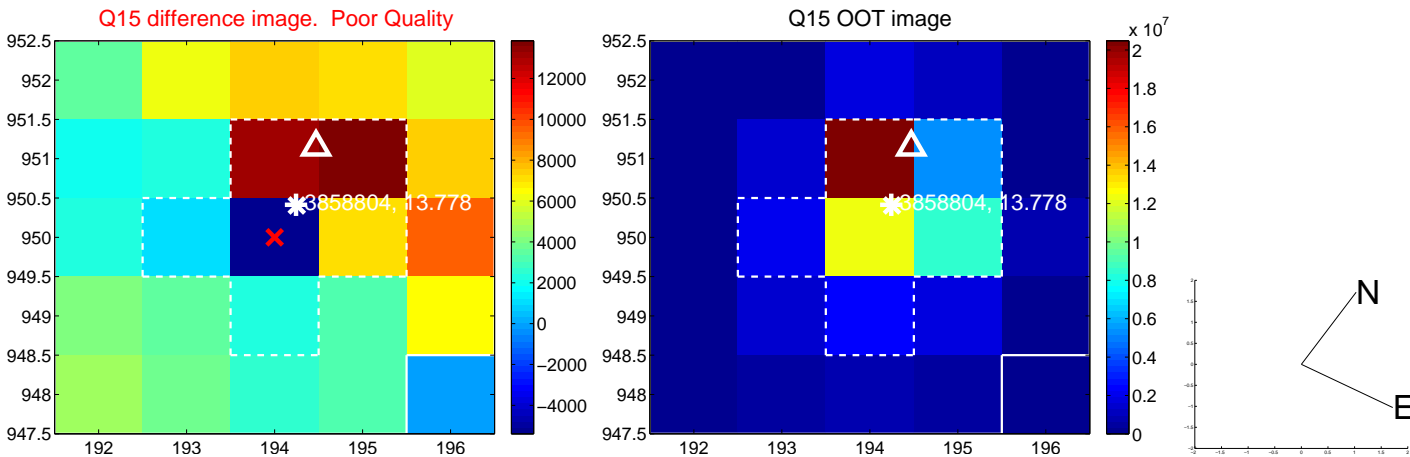
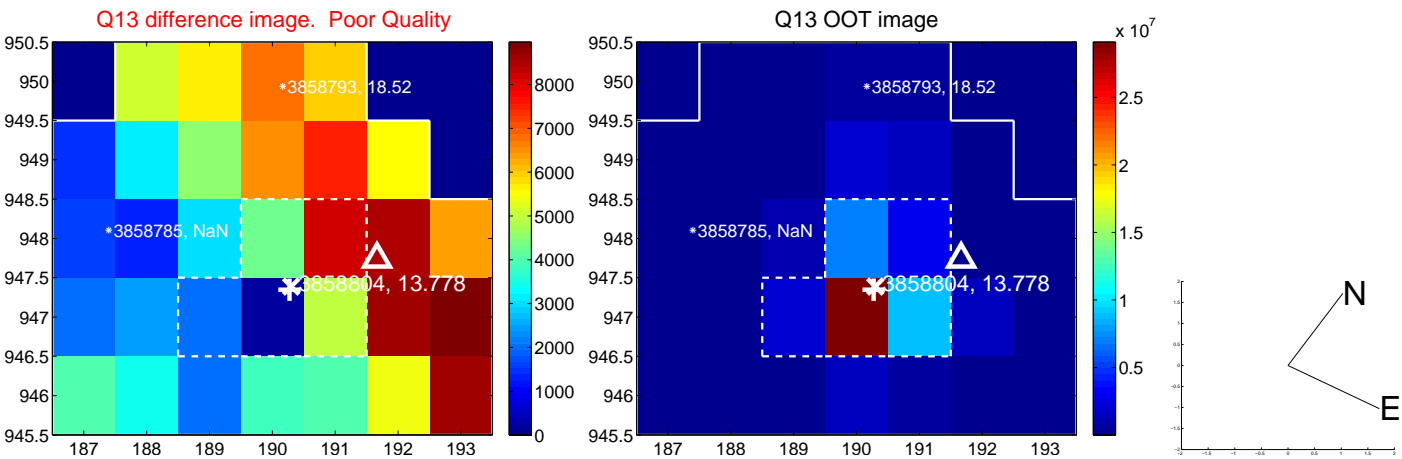
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



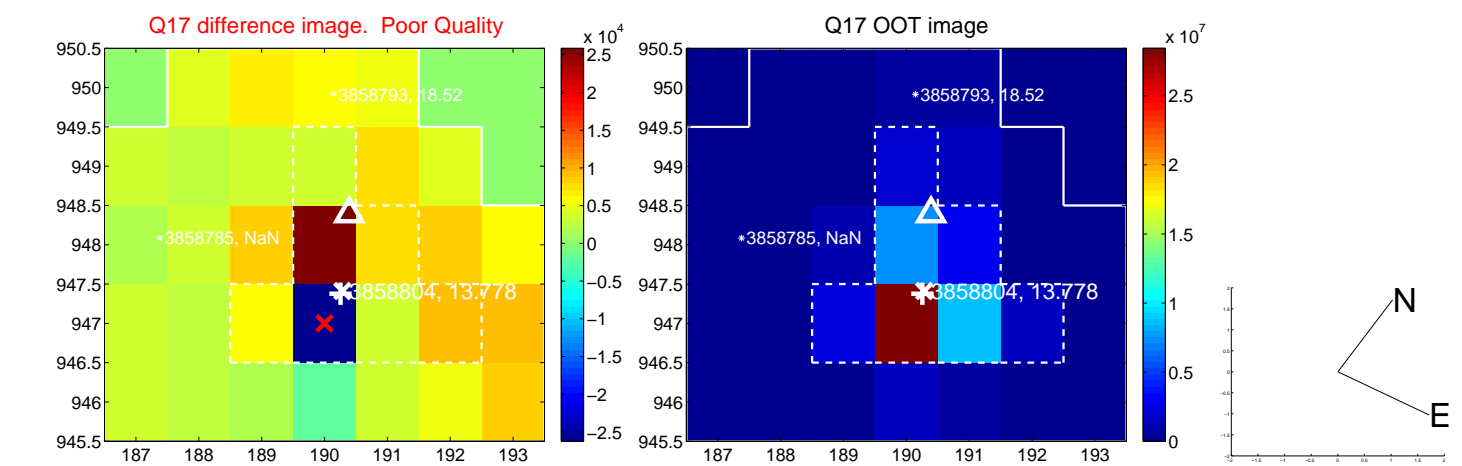
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



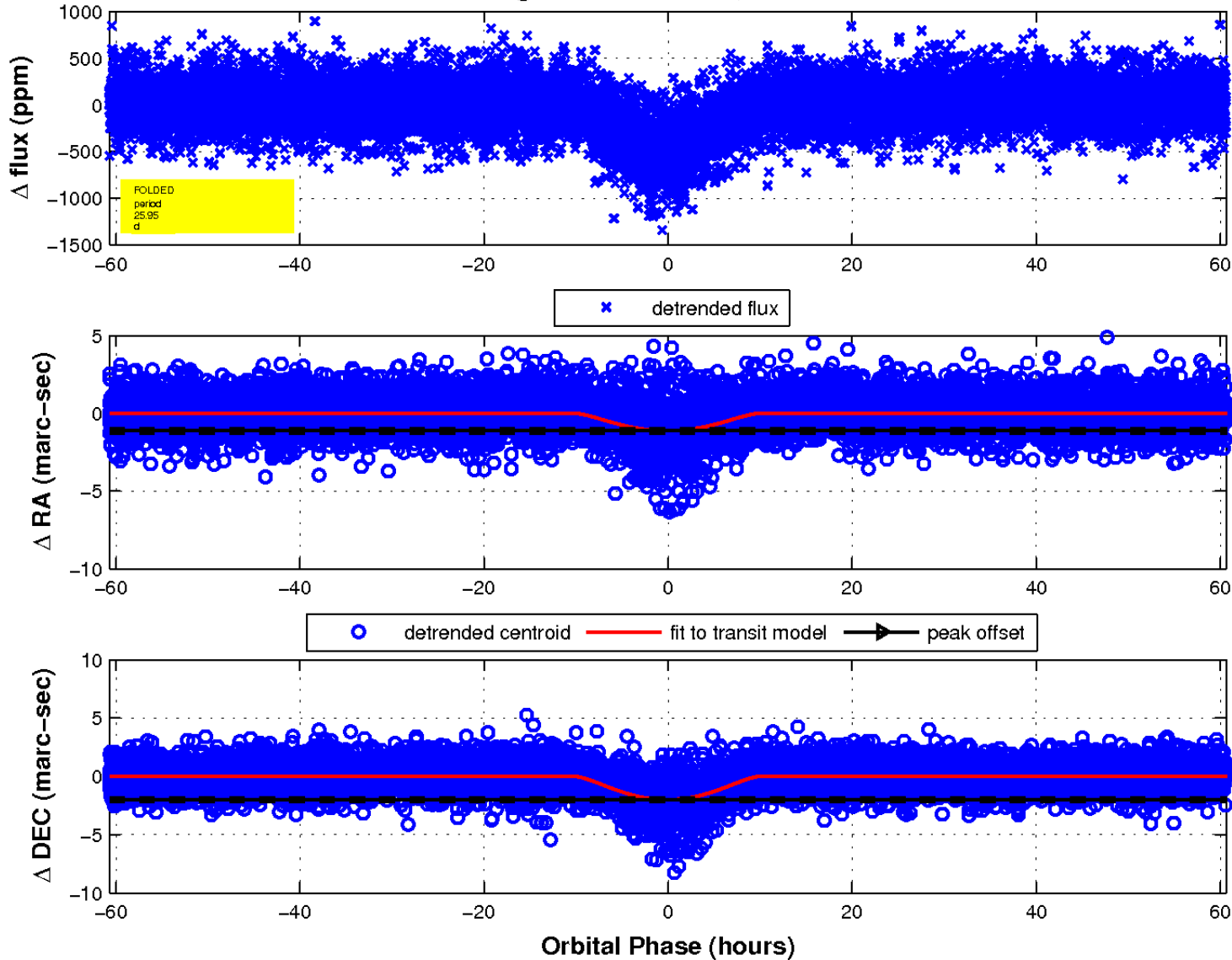
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

