

KIC 009593759

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})
009593759-01	OBS	3800.01	2.494313	133.613795	226113.0	2.618	1831.1	1324.1	9.67	4770	451.49	0.00
009593759-02	OBS	No	2.494275	132.381140	24097.2	2.333	164.1	168.2	9.67	4770	161.54	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009593759-01	OBS	FP	0.00	0	1	0	0	PLANET_IN_STAR—MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
009593759-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

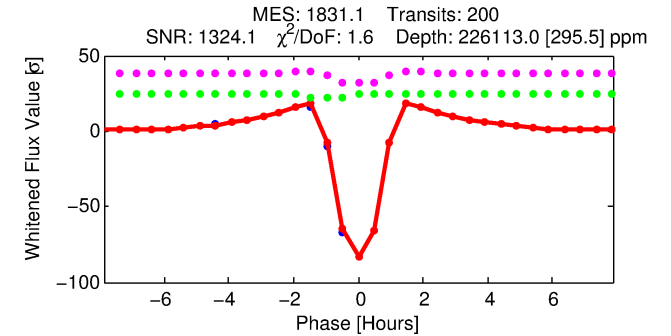
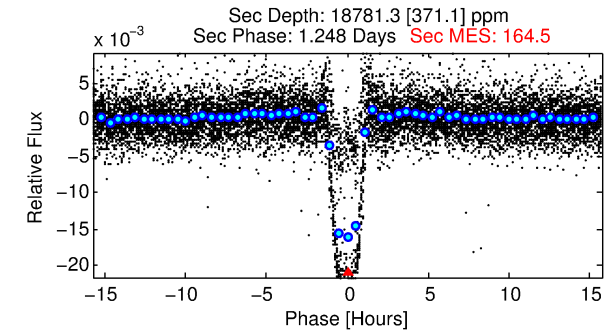
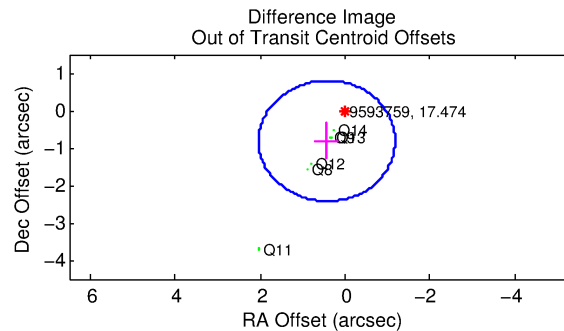
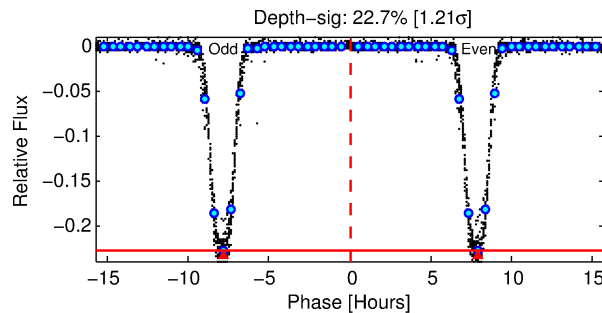
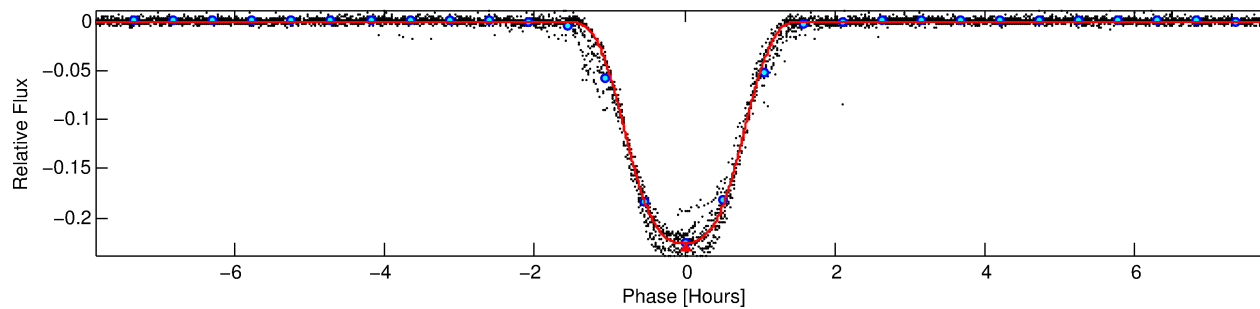
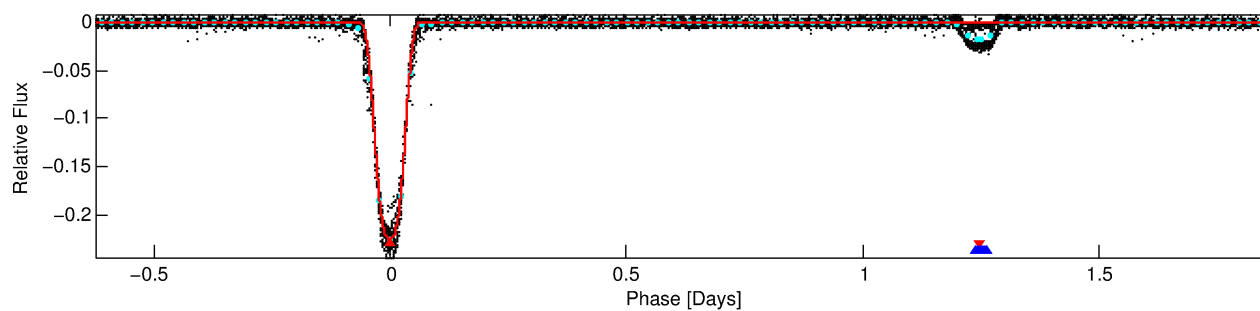
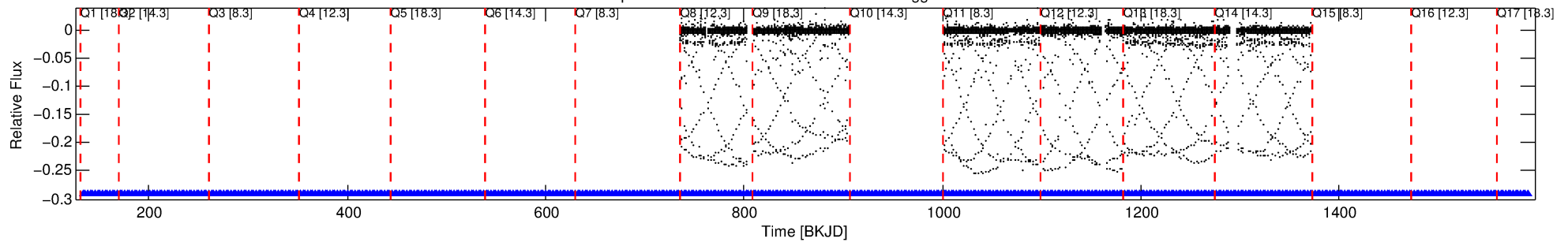
Ephemeris Match Information For 009593759-01

No Significant Match Found

DV One-Page Summary

KIC: 9593759 Candidate: 1 of 2 Period: 2.494 d
KOI: K03800 Corr: No Ephemeris Match

Kp: 17.47 R*: 9.67 Rs Teff: 4770.0 K Logg: 2.60 Fe/H: -0.240



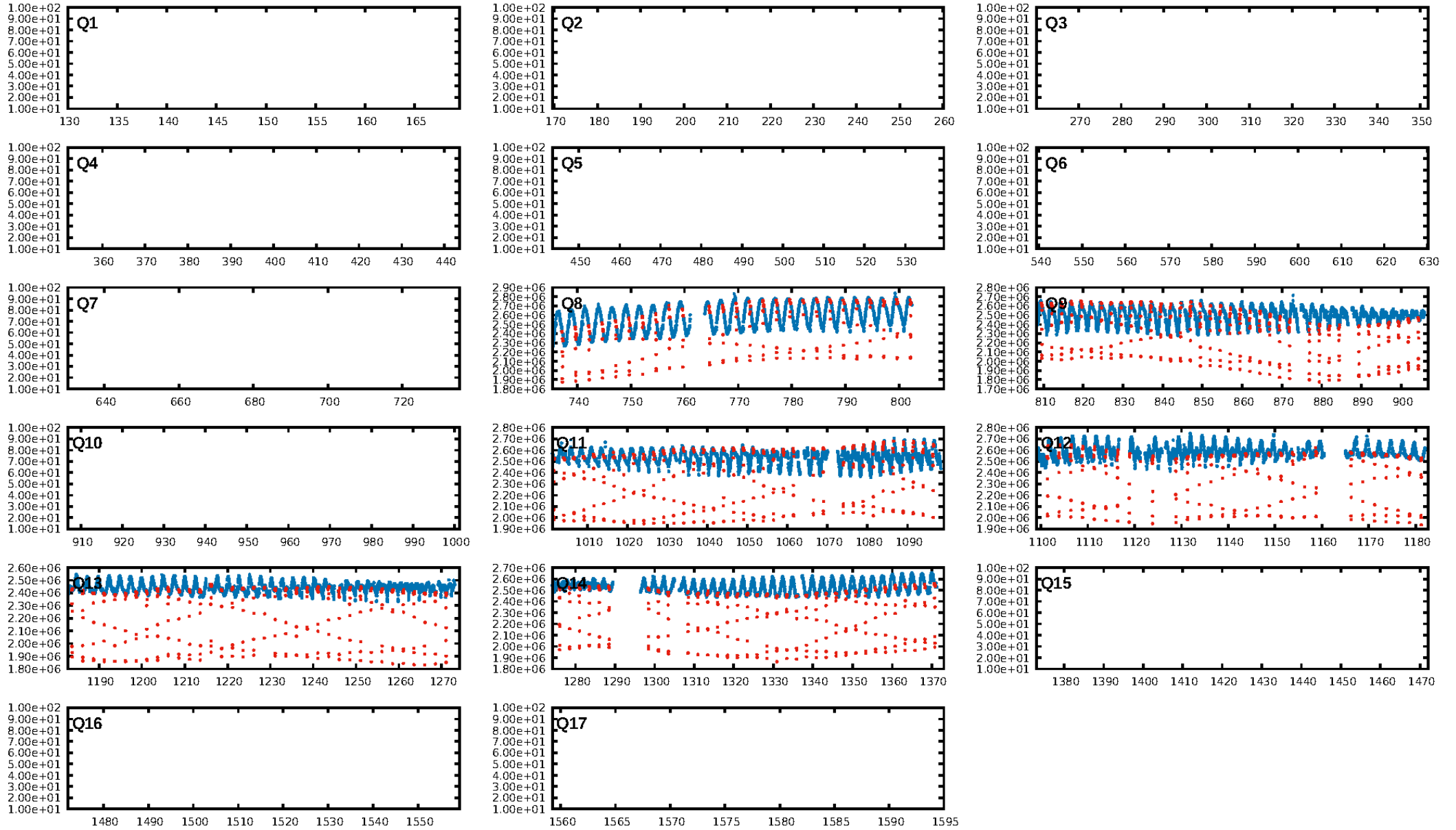
DV Fit Results:

Period = 2.49431 [0.00000] d
Epoch = 133.6138 [0.0000] BKJD
Rp/R* = 0.4279 [0.0005]
a/R* = 10.43 [0.02]
b = 0.01 [0.37]
Seff = N/A
Teq = N/A
Rp = 451.49 [200.39] Re
a = N/A
Ag = N/A
Teffp = N/A

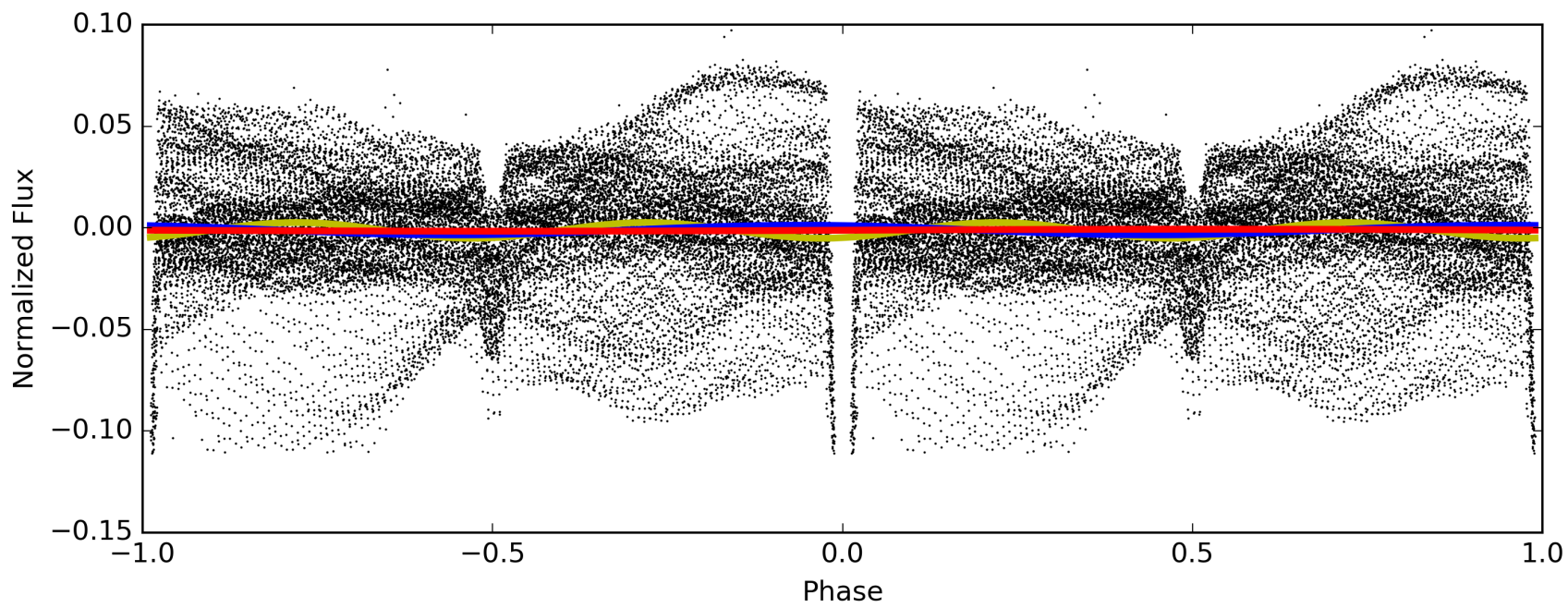
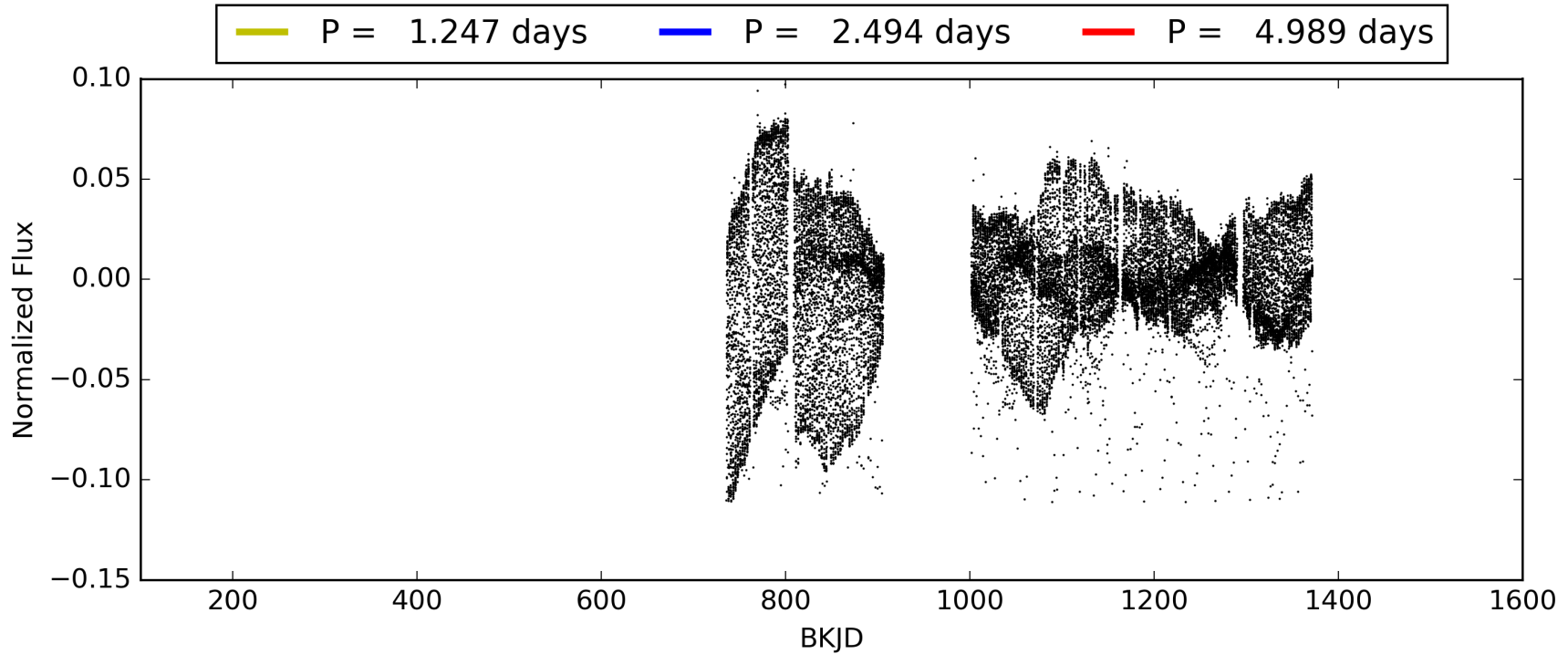
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 64.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [200/200]
GhostDiagnostic-chr: 2.968
Centroid-sig: 0.0%
Centroid-so: 0.442 arcsec [90.06σ]
OotOffset-rm: 0.916 arcsec [1.71σ]
KicOffset-rm: 0.329 arcsec [3.98σ]
OotOffset-st: 1/1/2/2 [6]
KicOffset-st: 1/1/2/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [6/6]

TCE 009593759-01, PDC Light Curves

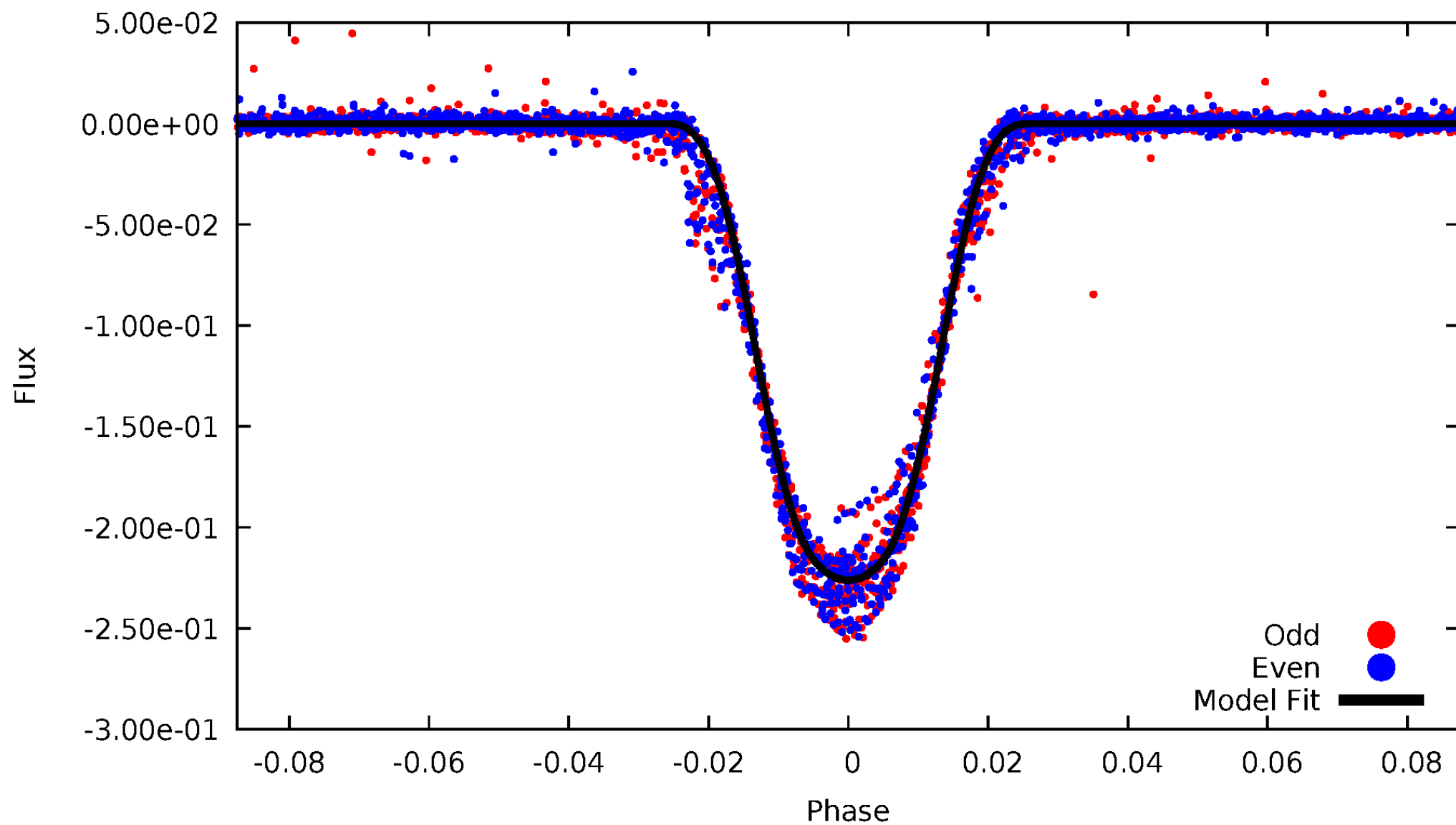


TCE 009593759-01



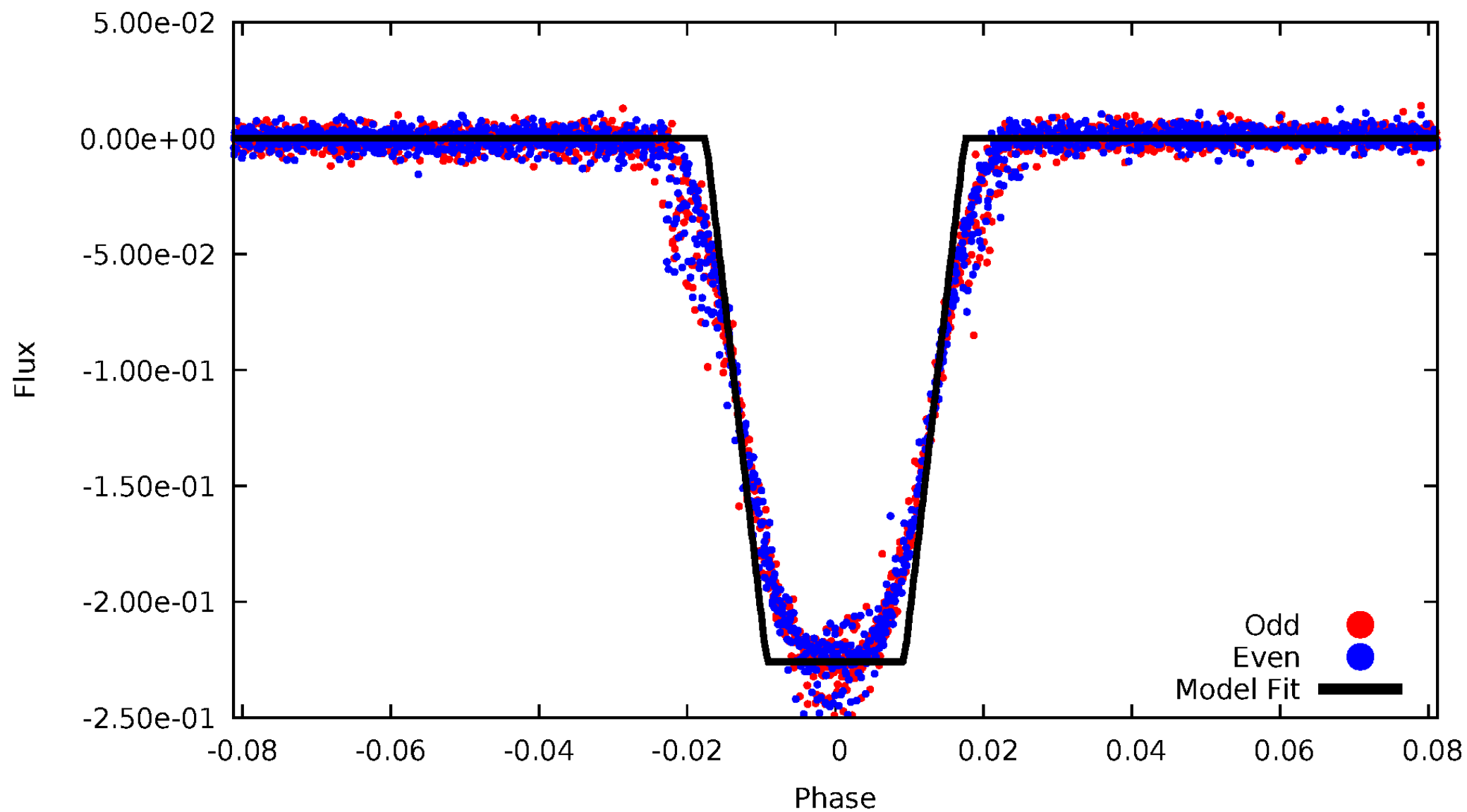
DV Odd/Even

TCE 009593759-01



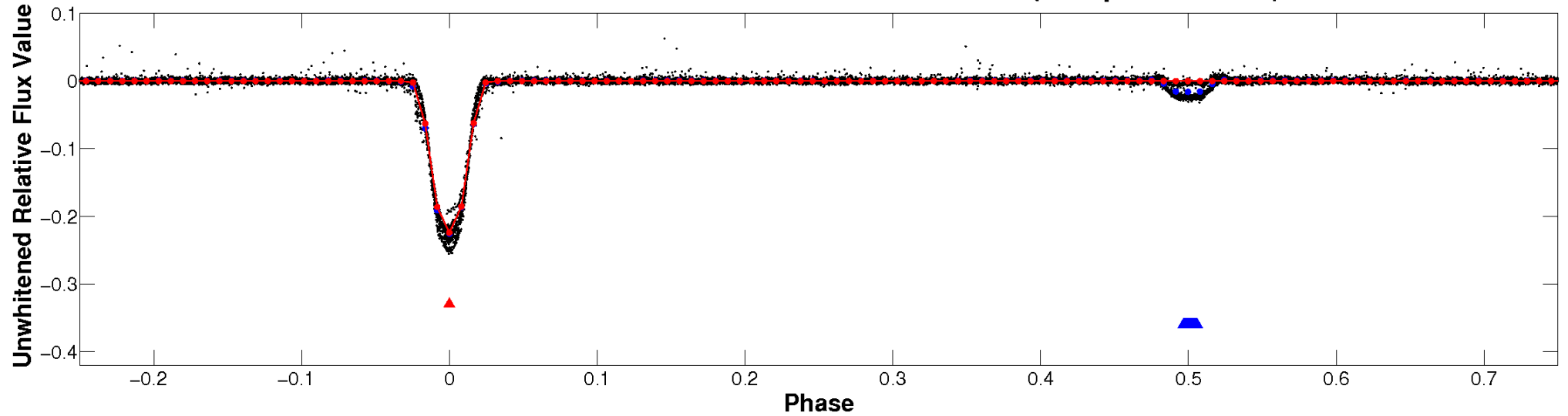
ALT Odd/Even

TCE 009593759-01

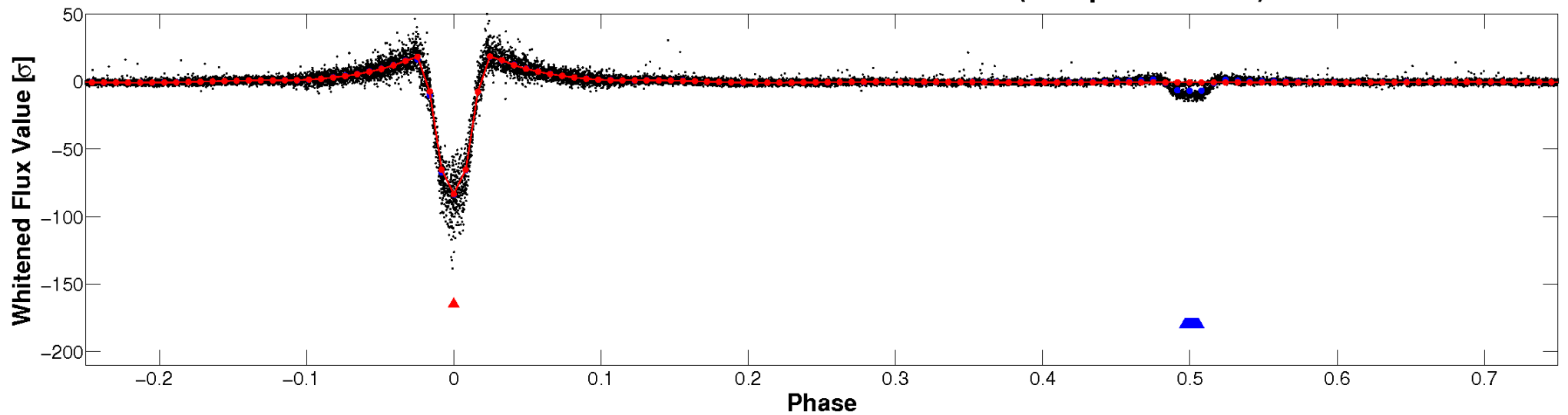


Non-Whitened Vs. Whitened Light Curve

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

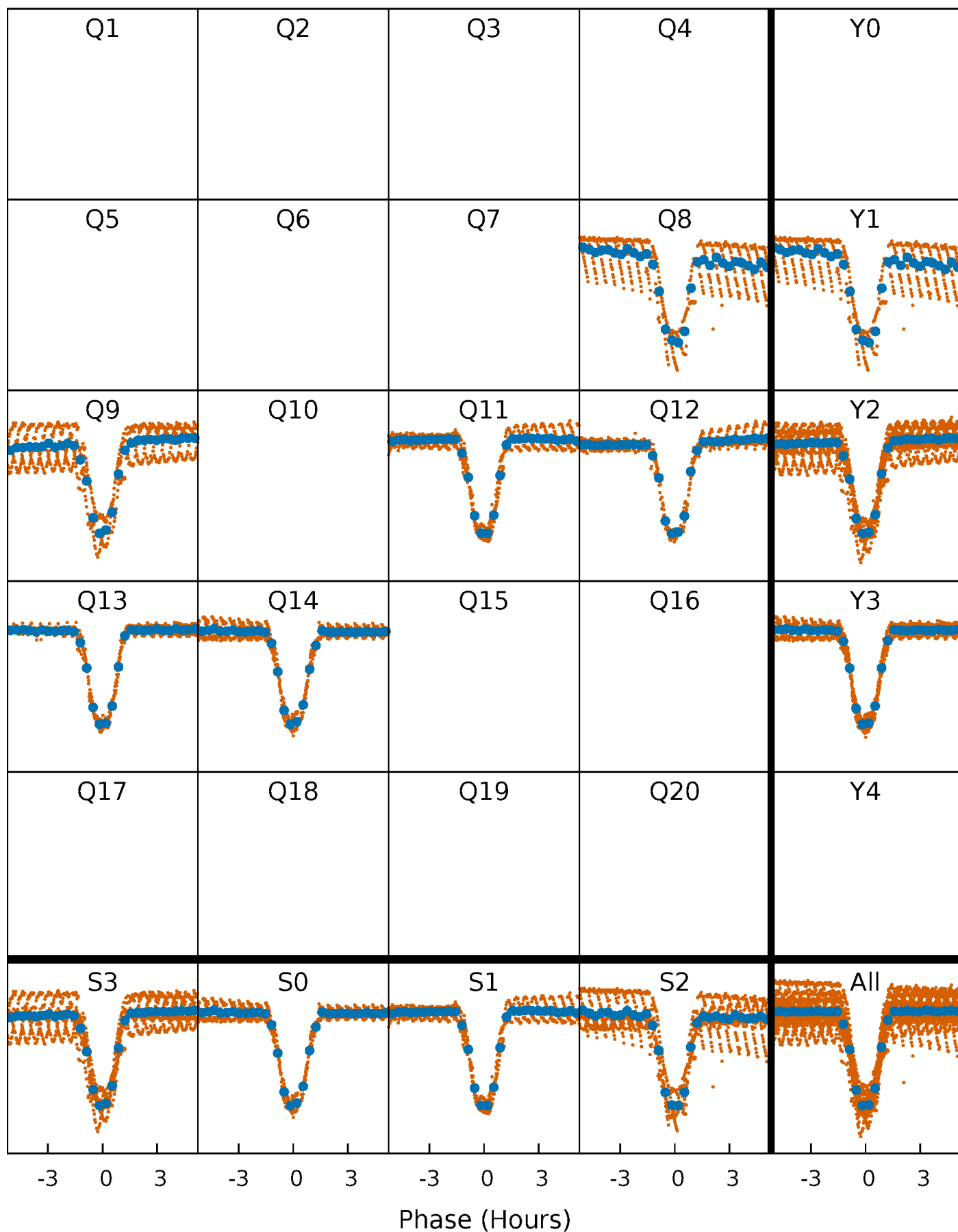


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



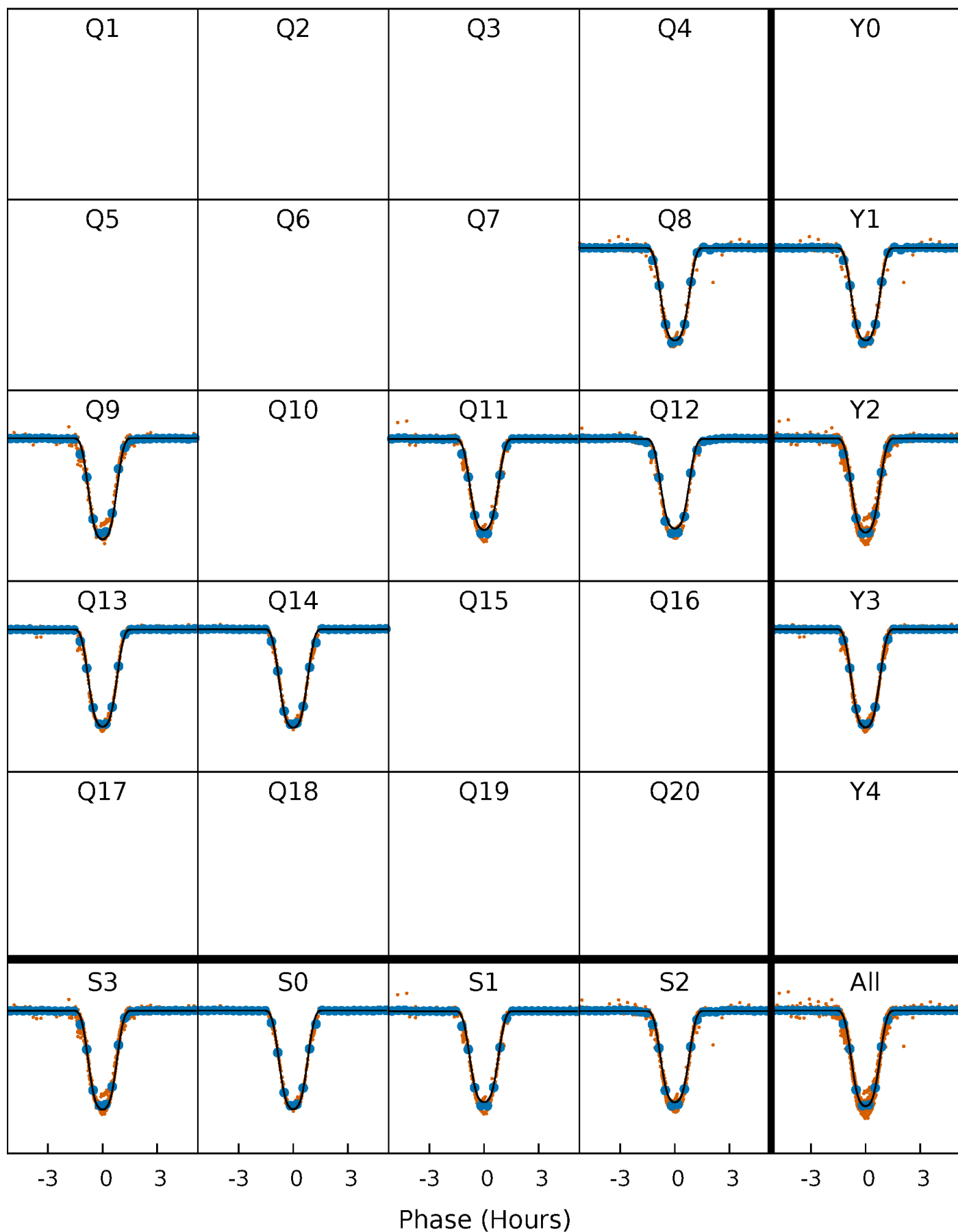
PDC Quarter-Phased Transit Curves

TCE 009593759-01 P= 2.494313 Days $T_0=133.613796$ (BKJD)



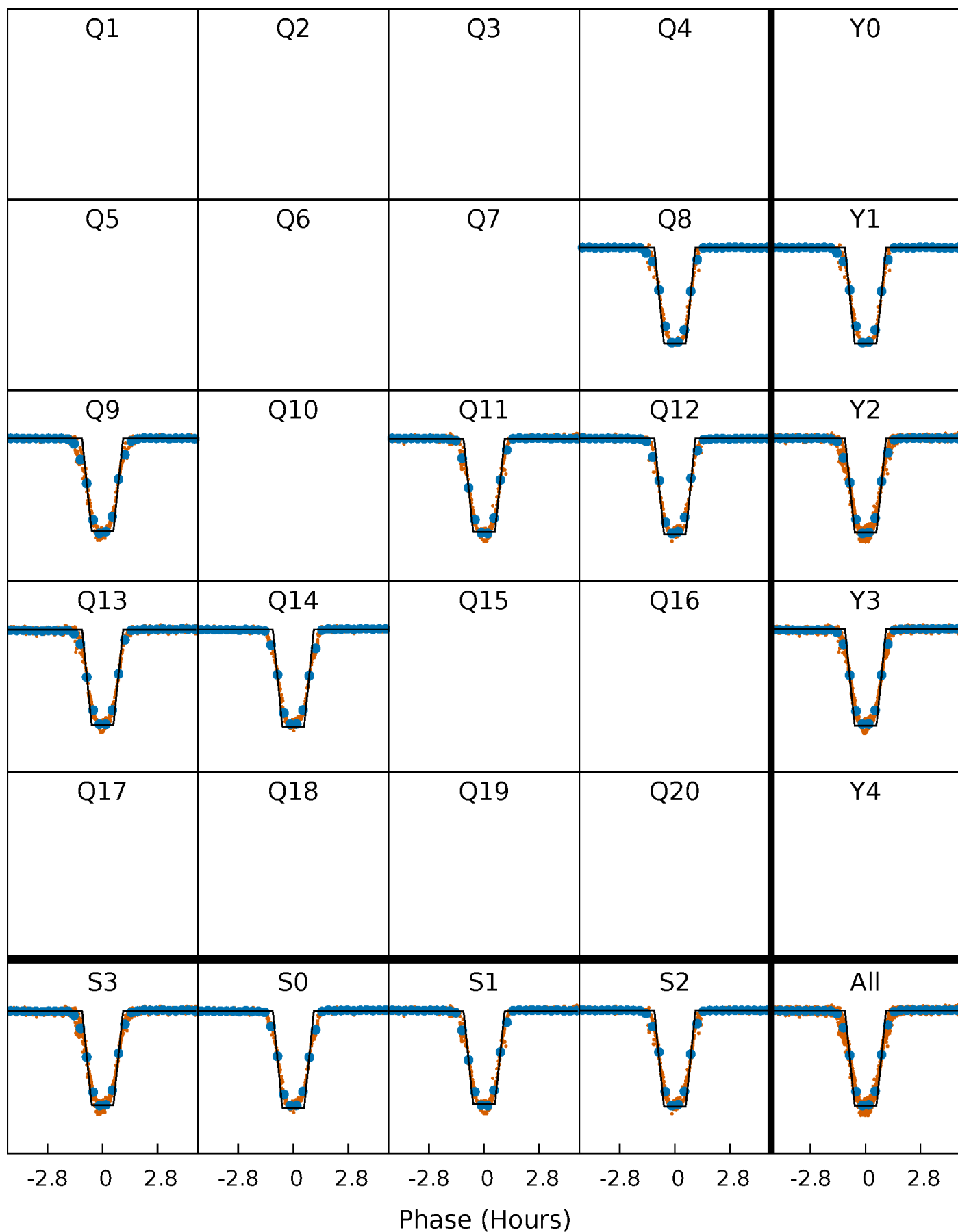
DV Quarter-Phased Transit Curves

TCE 009593759-01 P= 2.494313 Days $T_0=133.613796$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

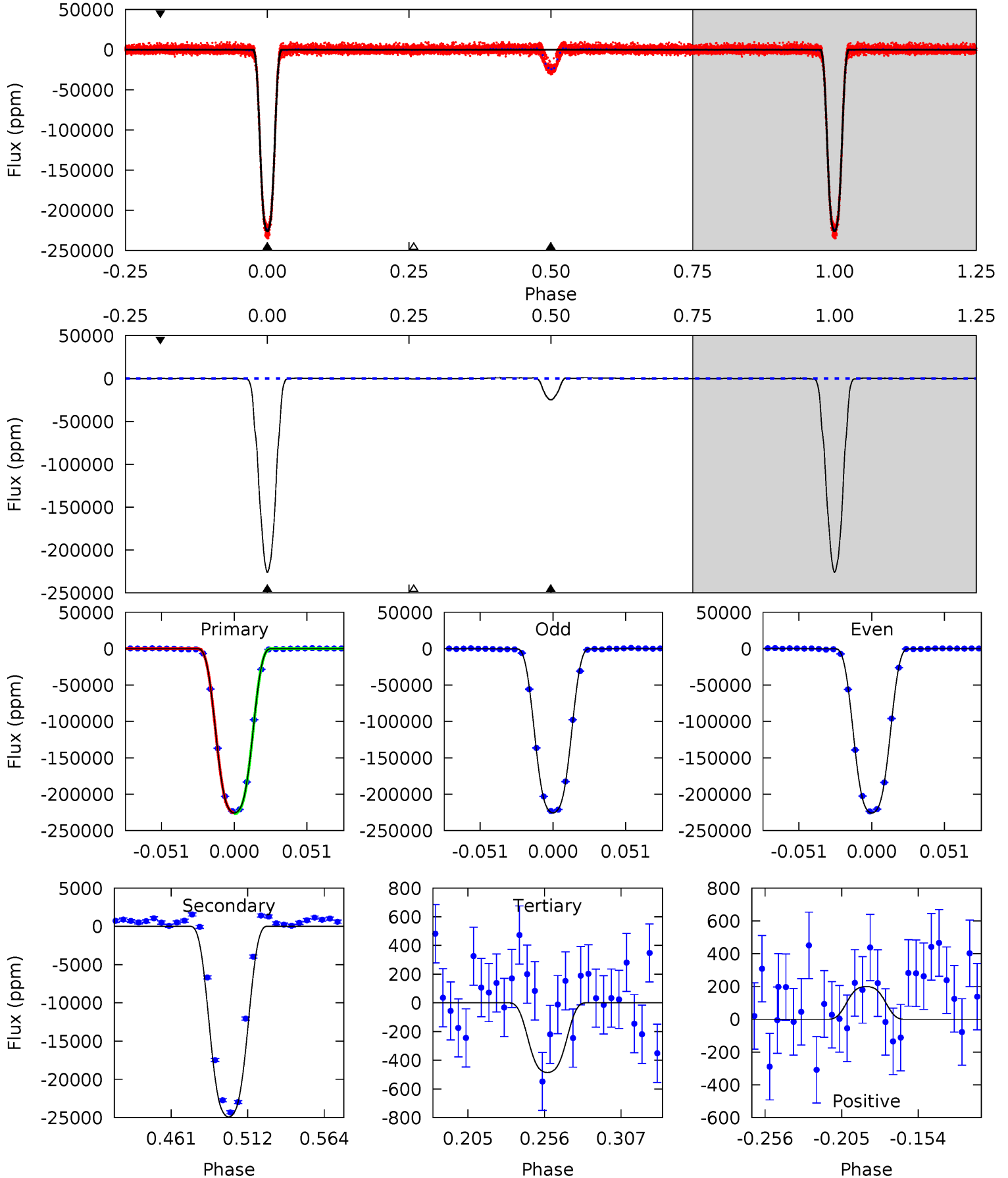
TCE 009593759-01 P= 2.494314 Days $T_0=133.613115$ (BKJD)



DV Model-Shift Uniqueness Test

009593759-01, P = 2.494313 Days, E = 133.613796 Days

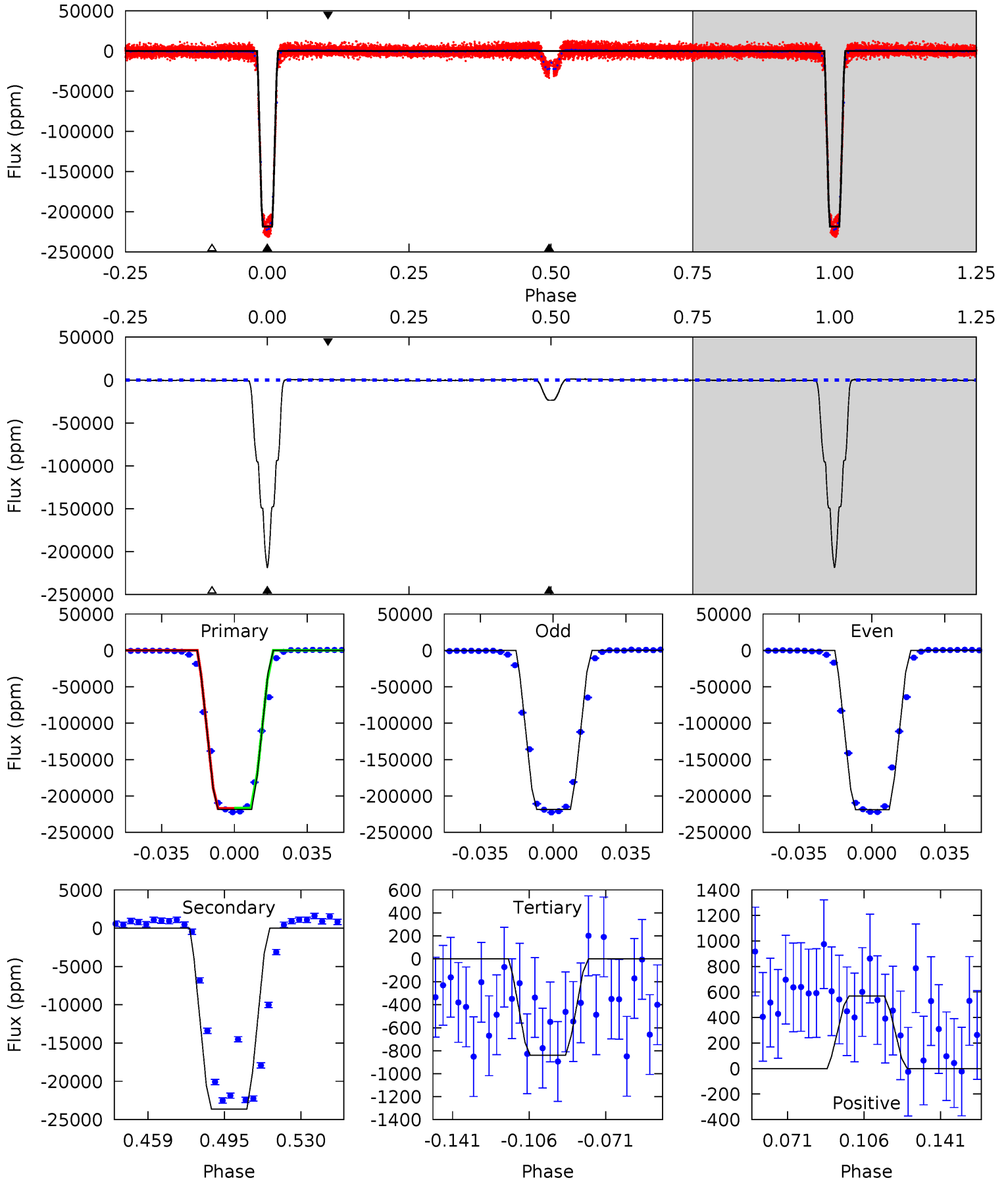
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2821	311.3	6.07	2.49	4.70	1.95	3.70	2815	2819	305.2	308.8	1.52	1.01	0.00	6.54



Alt Model-Shift Uniqueness Test

009593759-01, P = 2.494314 Days, E = 133.613115 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1476	159.8	5.67	3.84	4.78	2.10	3.13	1470	1472	154.1	156.0	0.65	1.00	0.01	0



Stellar Parameters For KIC 009593759

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4770^{+143}_{-129}	$2.605^{+0.442}_{-0.238}$	$-0.240^{+0.250}_{-0.250}$	$9.670^{+3.511}_{-4.292}$	$1.373^{+0.261}_{-0.358}$	$0.002^{+0.008}_{-0.001}$
	+3%/-3%	+17%/-9%	+104%/-104%	+36%/-44%	+19%/-26%	+364%/-55%
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 009593759-01 / KOI 3800.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-24911 ± 80	$446.85^{+96.55}_{-113.21}$	4533^{+471}_{-590}	-3643^{+586}_{-373}	$0.112^{+0.082}_{-0.035}$
Alt.	-23645 ± 148	$498.38^{+106.63}_{-122.29}$	4568^{+455}_{-575}	-3743^{+476}_{-343}	$0.086^{+0.059}_{-0.027}$

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 $A_{obs} \gg 1.0$

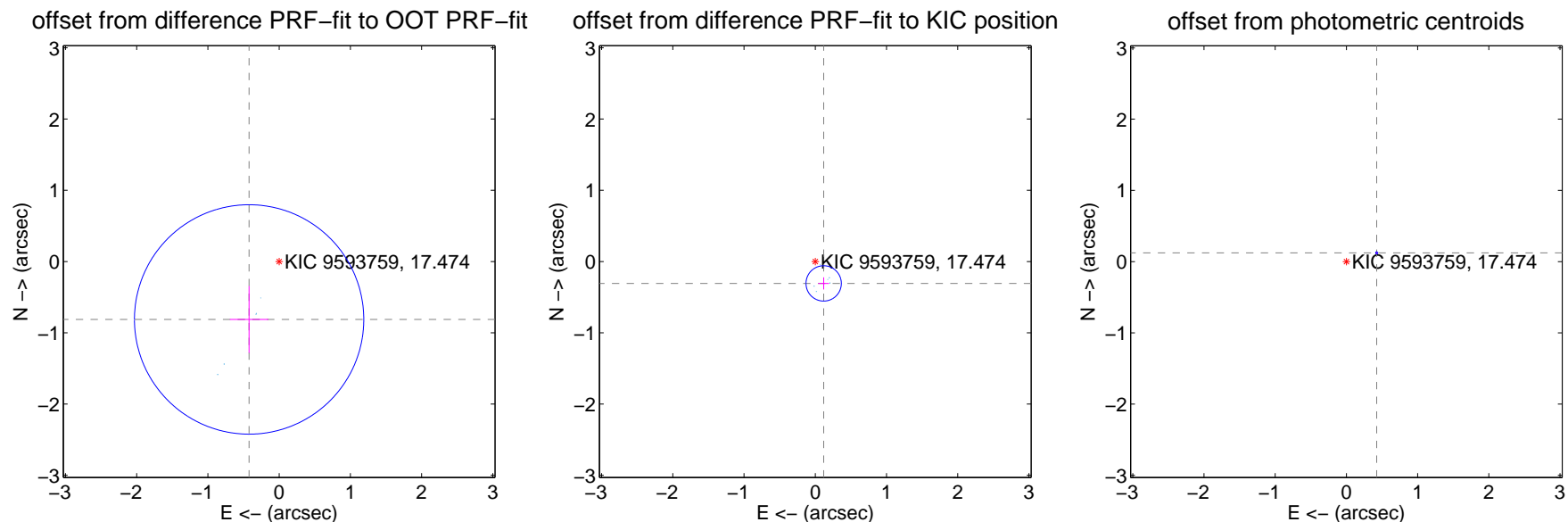
DV Centroid Data

Supplemental centroid analysis for 009593759-01. Kepler magnitude: 17.47. Transit SNR 1324.11

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.51 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.916 ± 0.537	1.71	0.422 ± 0.270	-0.813 ± 0.469
PRF-fit source offset from KIC position	0.329 ± 0.083	3.98	-0.118 ± 0.075	-0.307 ± 0.085
photometric centroid source offset	0.44 ± 0.00	90.06	-0.42 ± 0.00	0.12 ± 0.01

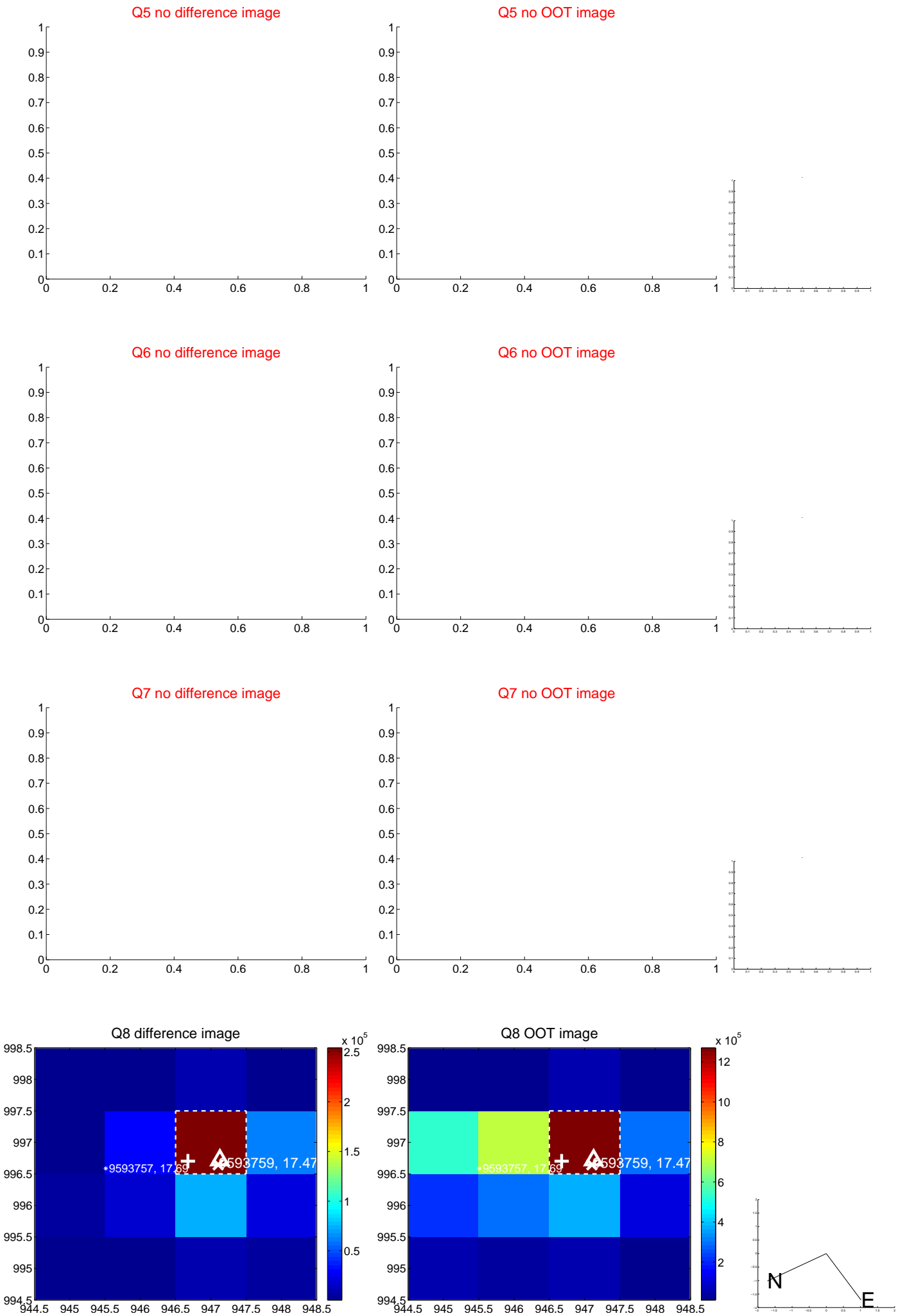


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

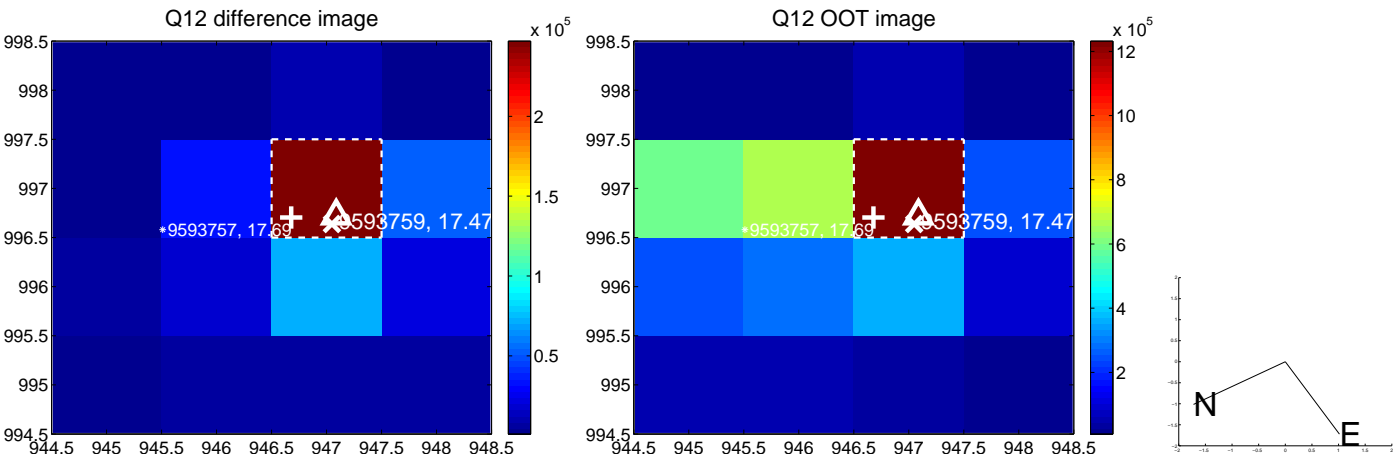
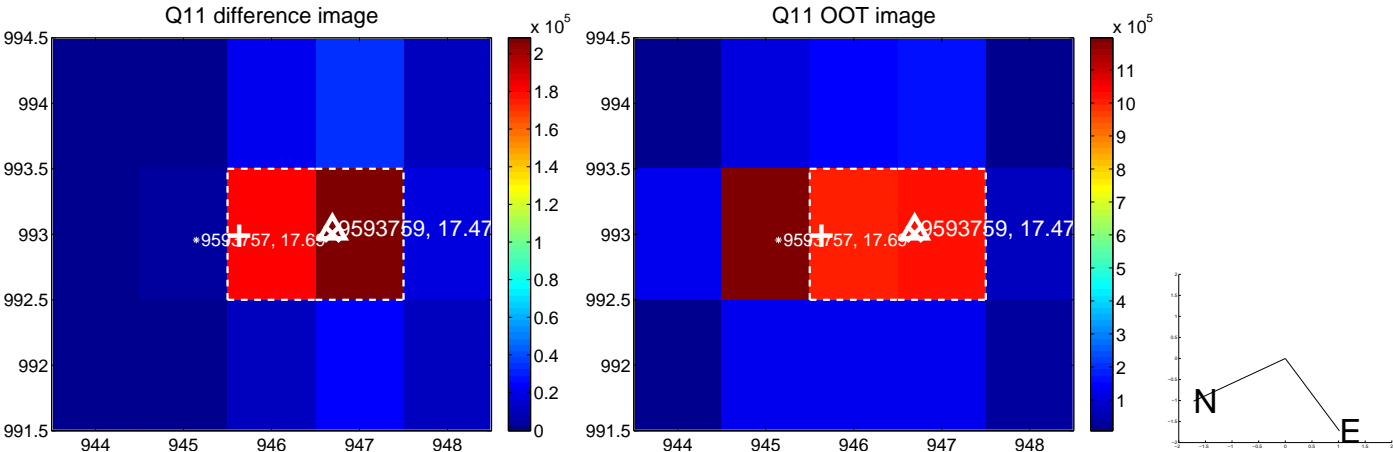
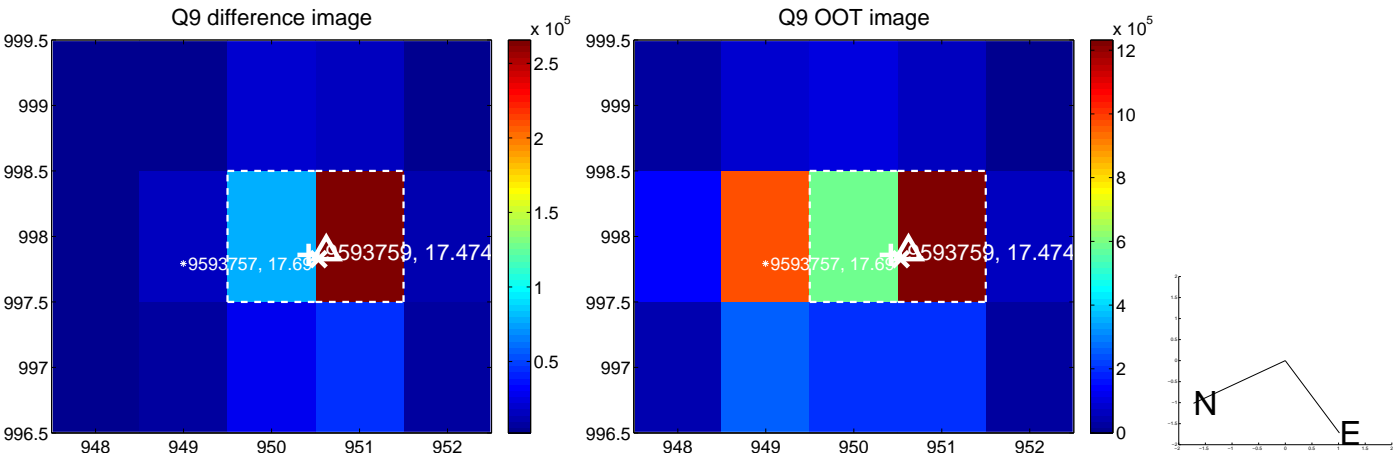
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



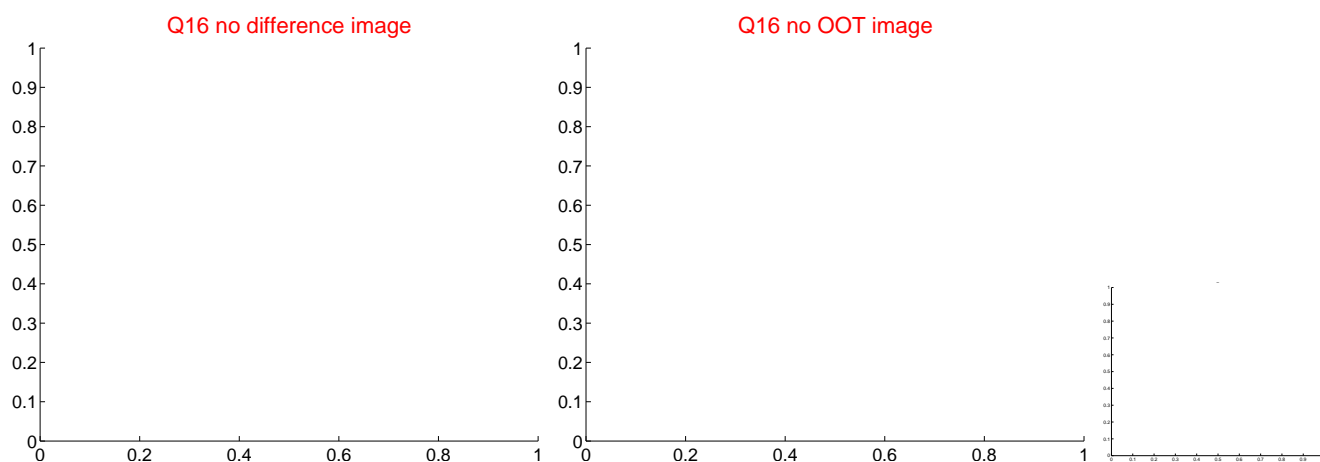
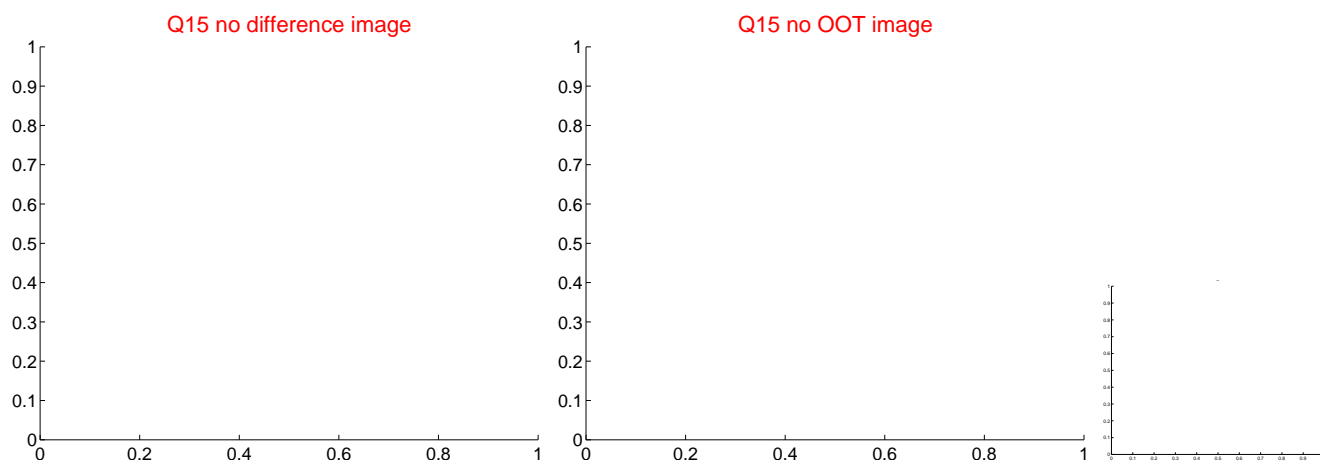
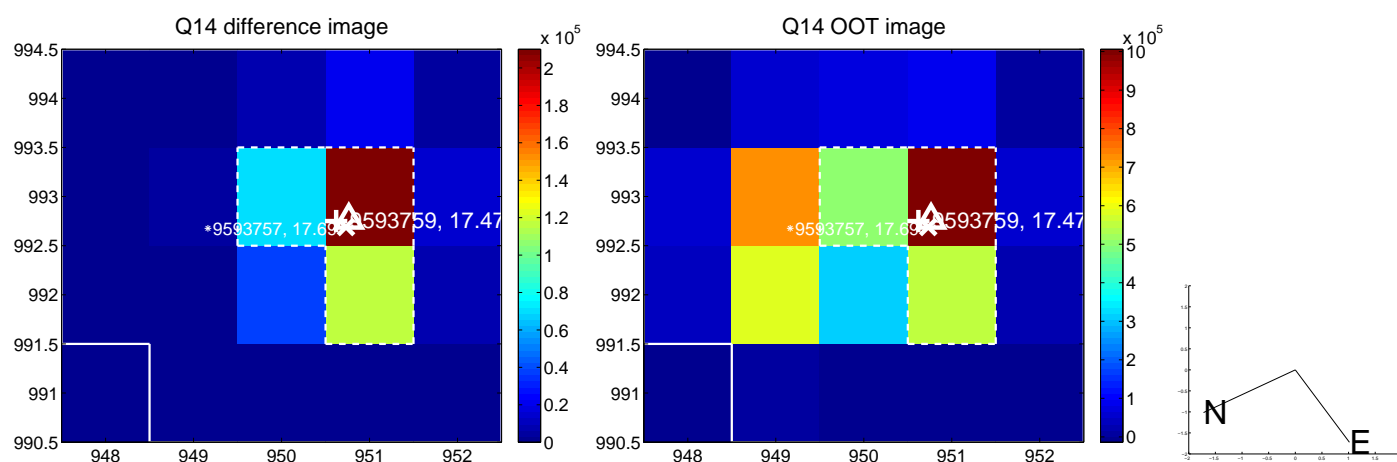
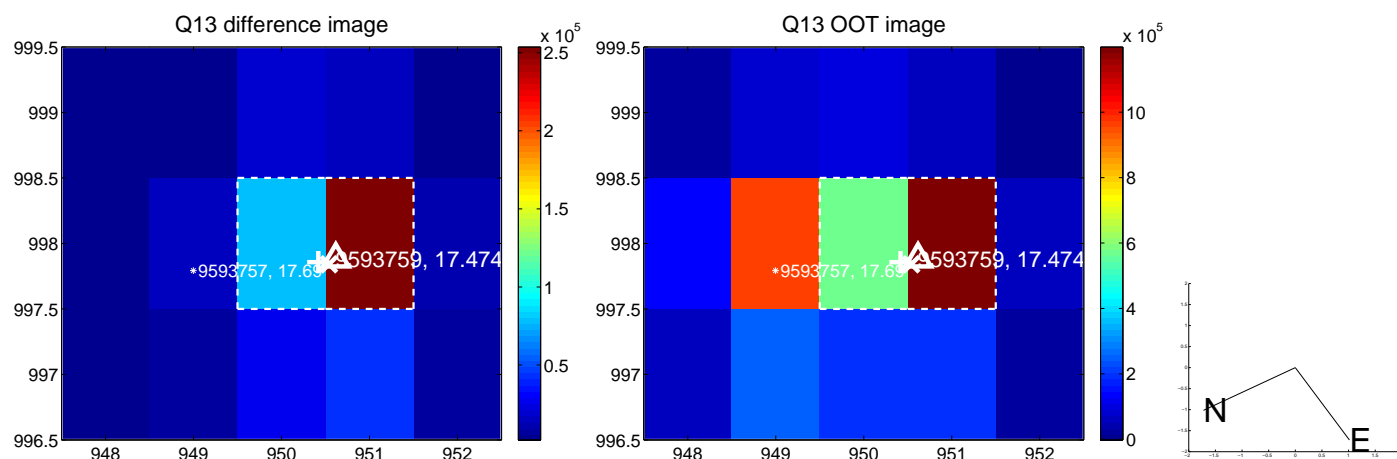
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



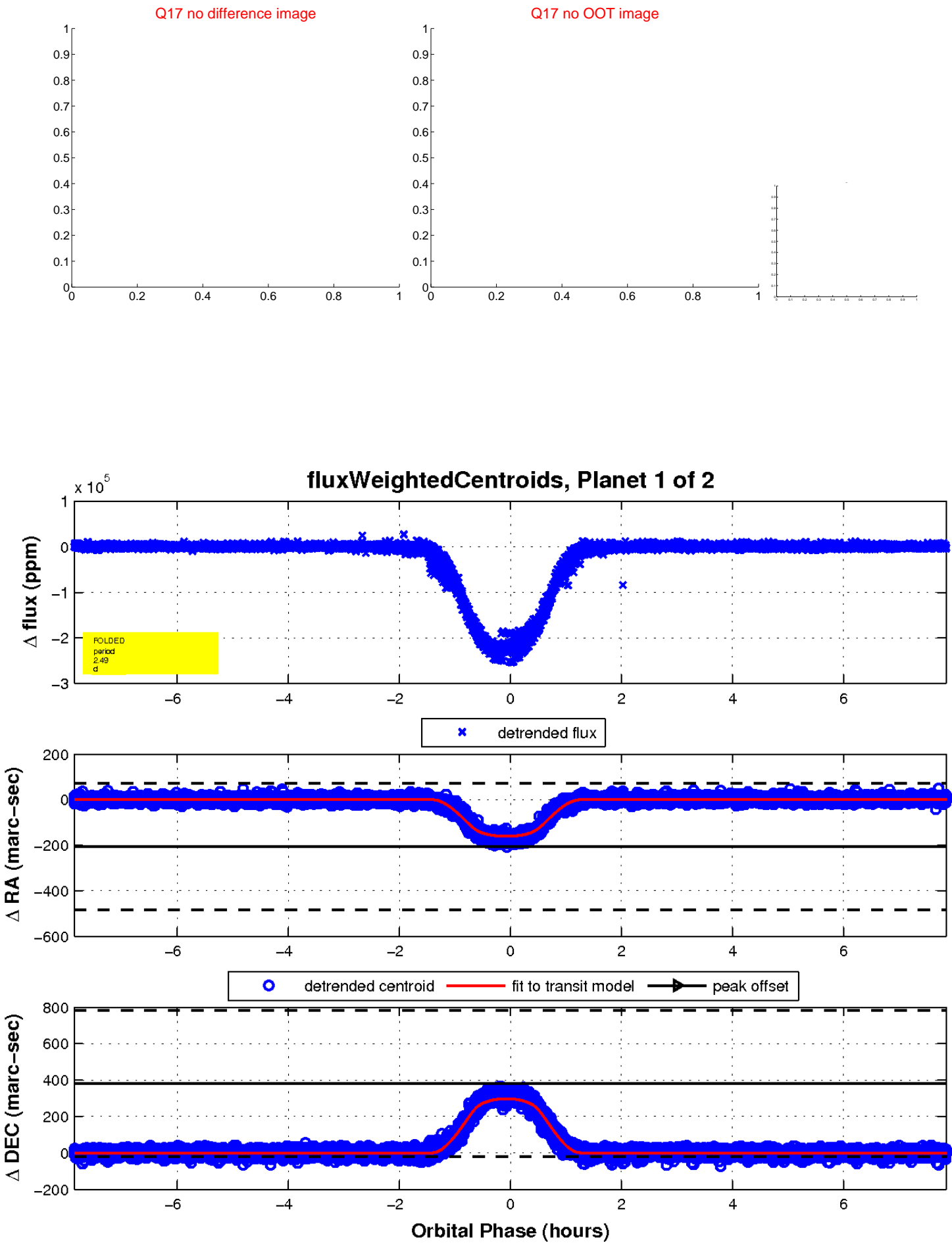
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

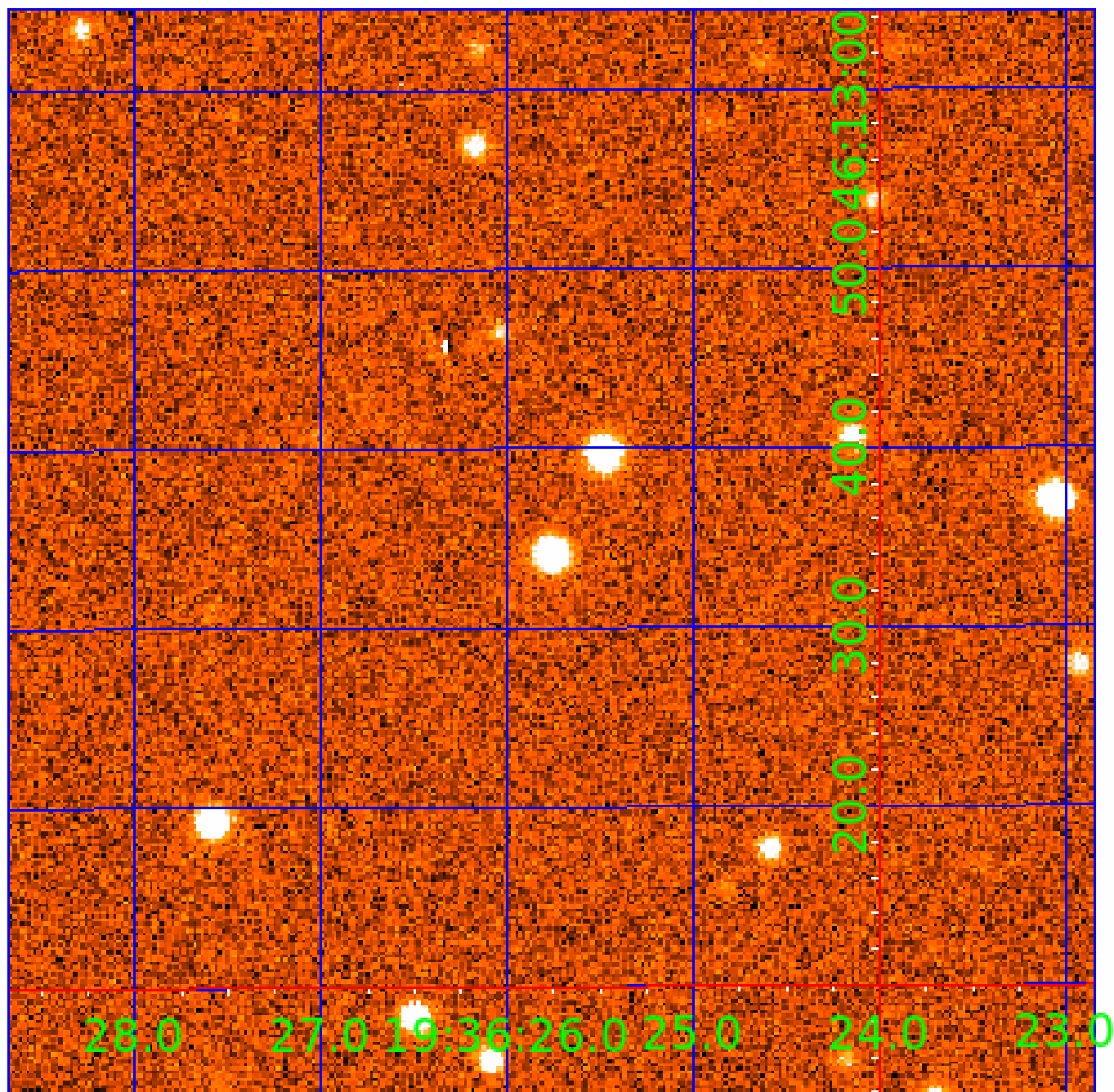


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009593759

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})
009593759-01	OBS	3800.01	2.494313	133.613795	226113.0	2.618	1831.1	1324.1	9.67	4770	451.49	0.00
009593759-02	OBS	No	2.494275	132.381140	24097.2	2.333	164.1	168.2	9.67	4770	161.54	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009593759-01	OBS	FP	0.00	0	1	0	0	PLANET_IN_STAR—MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
009593759-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

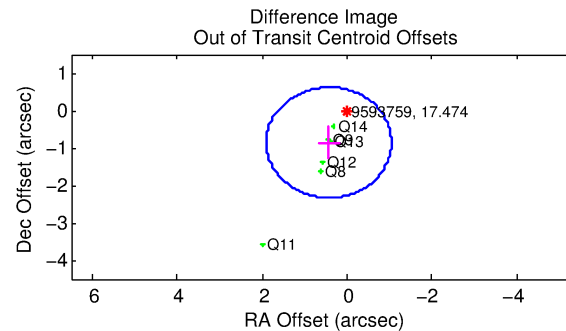
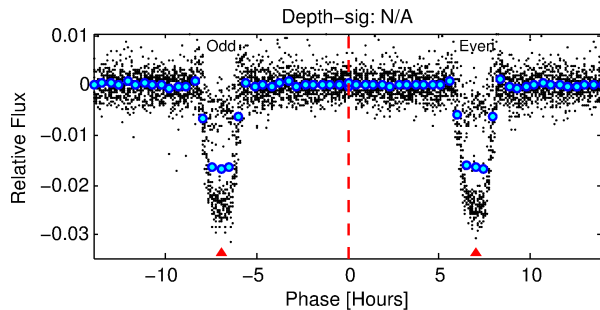
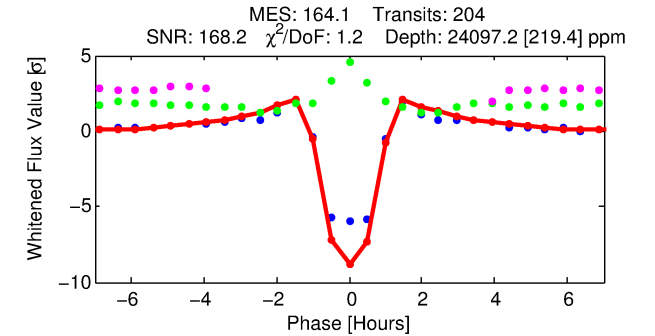
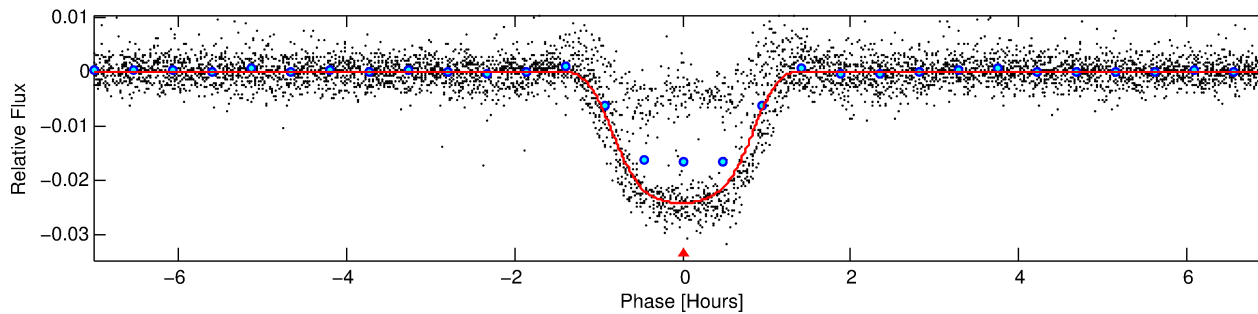
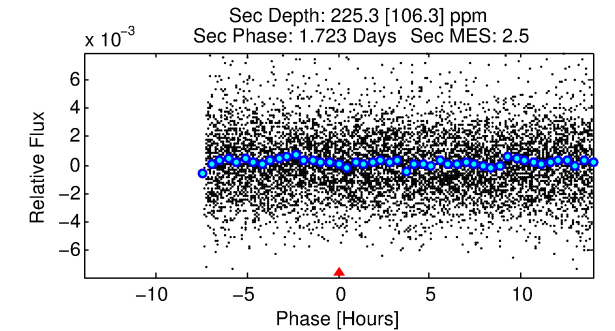
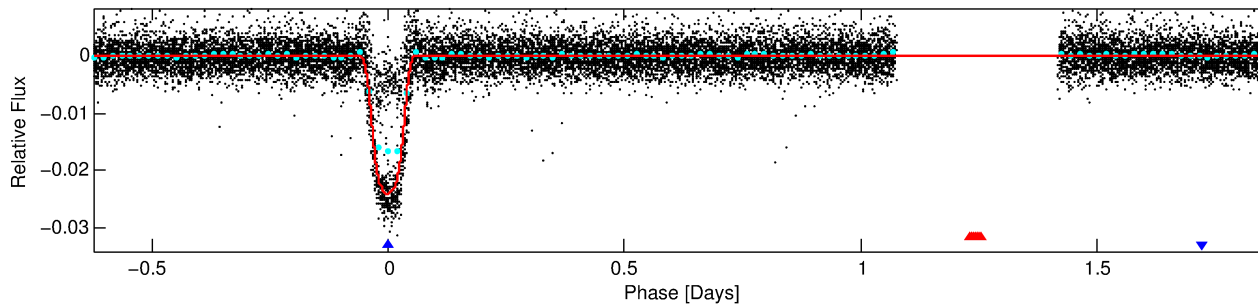
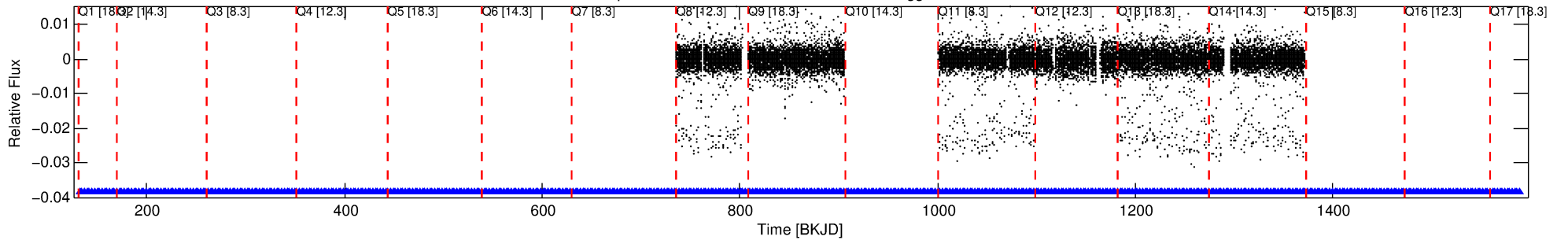
Ephemeris Match Information For 009593759-02

No Significant Match Found

DV One-Page Summary

KIC: 9593759 Candidate: 2 of 2 Period: 2.494 d
KOI: K03800 Corr: No Ephemeris Match

Kp: 17.47 R*: 9.67 Rs Teff: 4770.0 K Logg: 2.60 Fe/H: -0.240



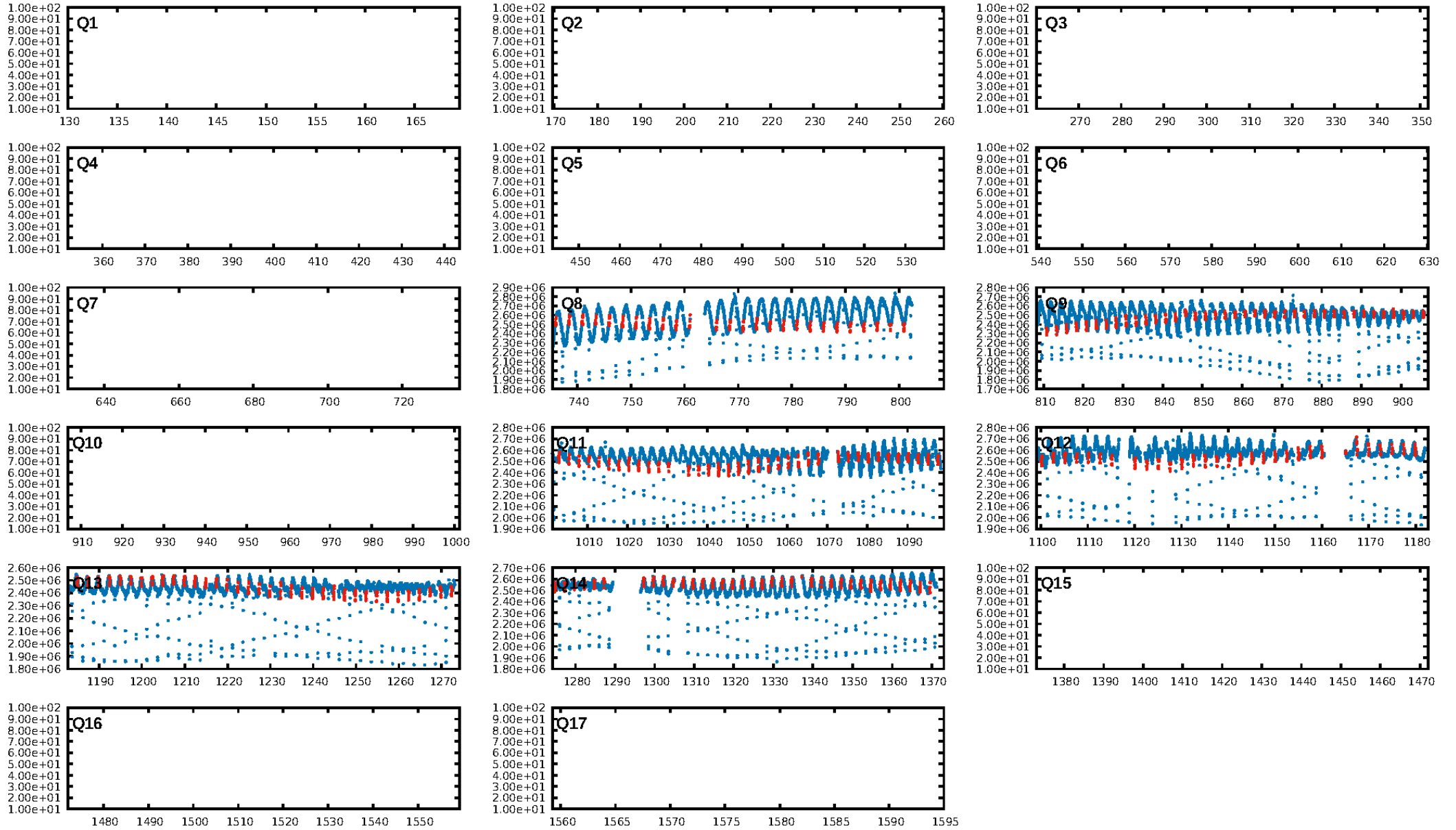
DV Fit Results:

Period = 2.49427 [0.00000] d
Epoch = 132.3811 [0.0002] BKJD
Rp/R* = 0.1531 [0.0018]
a/R* = 7.53 [0.22]
b = 0.70 [0.02]
Seff = N/A
Teq = N/A
Rp = 161.54 [71.73] Re
a = N/A
Ag = N/A
Teffp = N/A

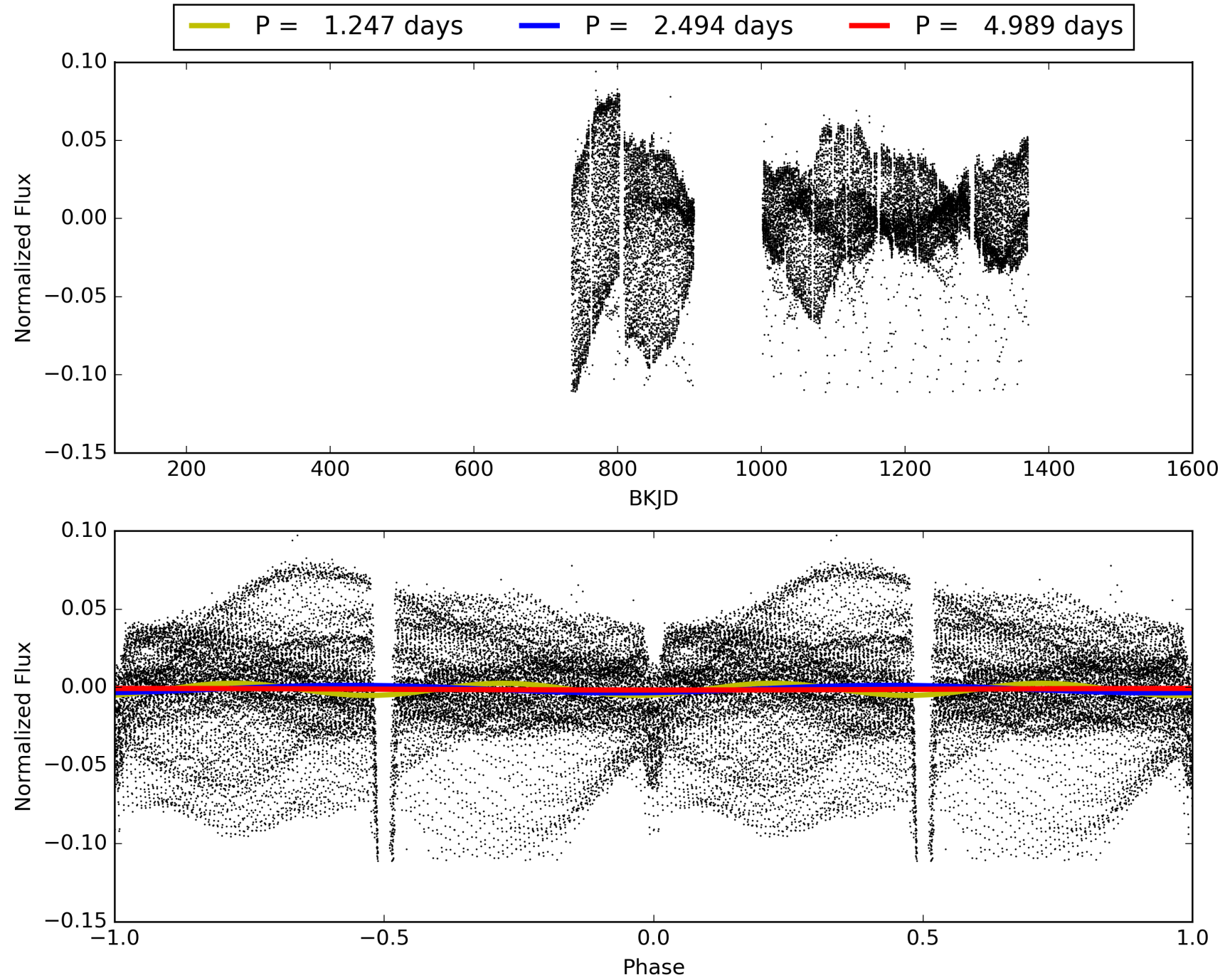
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [204/204]
GhostDiagnostic-chr: 2.287
Centroid-sig: 0.0%
Centroid-so: 1.255 arcsec [25.29σ]
OotOffset-rm: 0.957 arcsec [1.94σ]
KicOffset-rm: 0.271 arcsec [2.39σ]
OotOffset-st: 1/1/2/2 [6]
KicOffset-st: 1/1/2/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [6/6]

TCE 009593759-02, PDC Light Curves

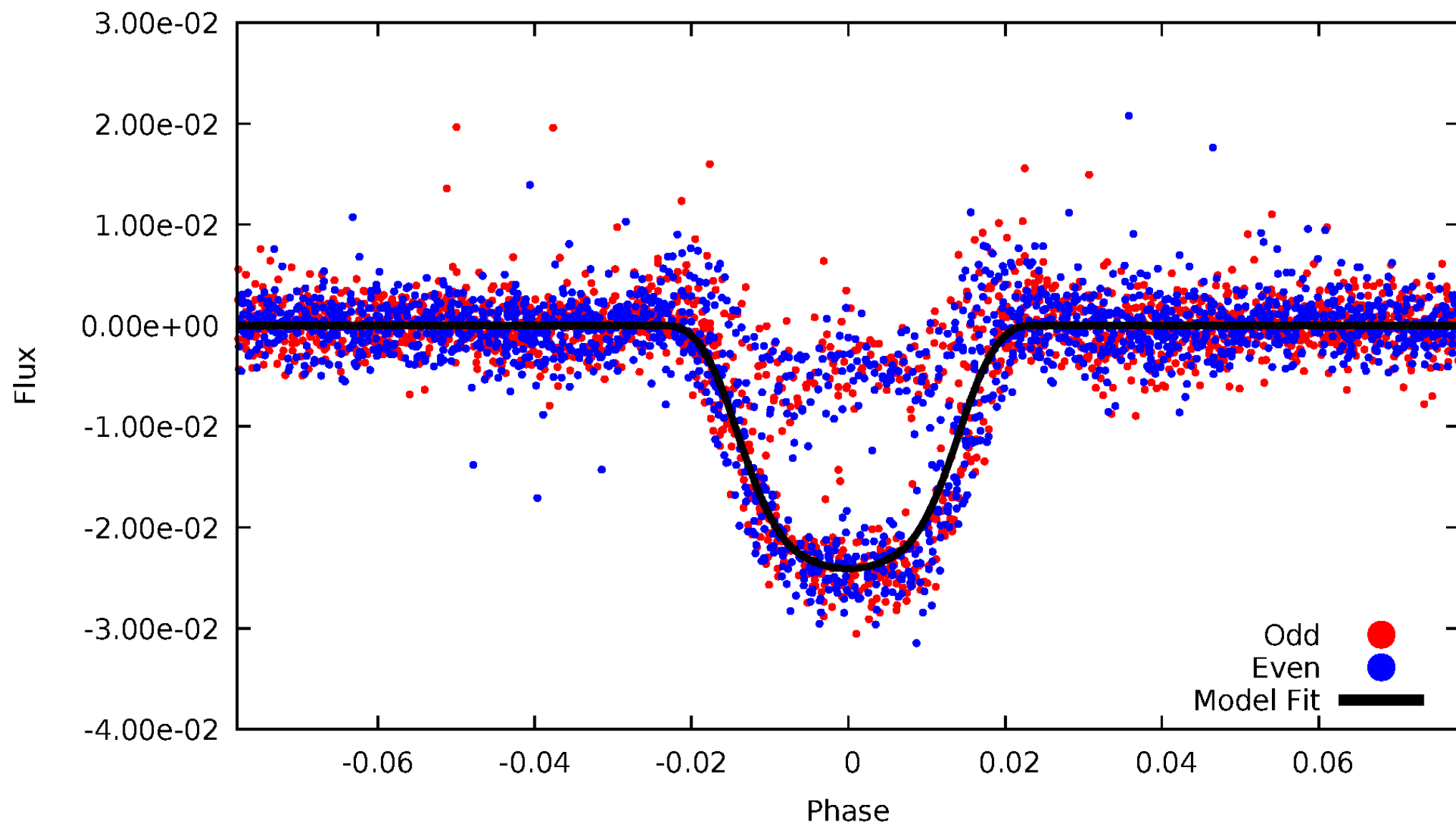


TCE 009593759-02



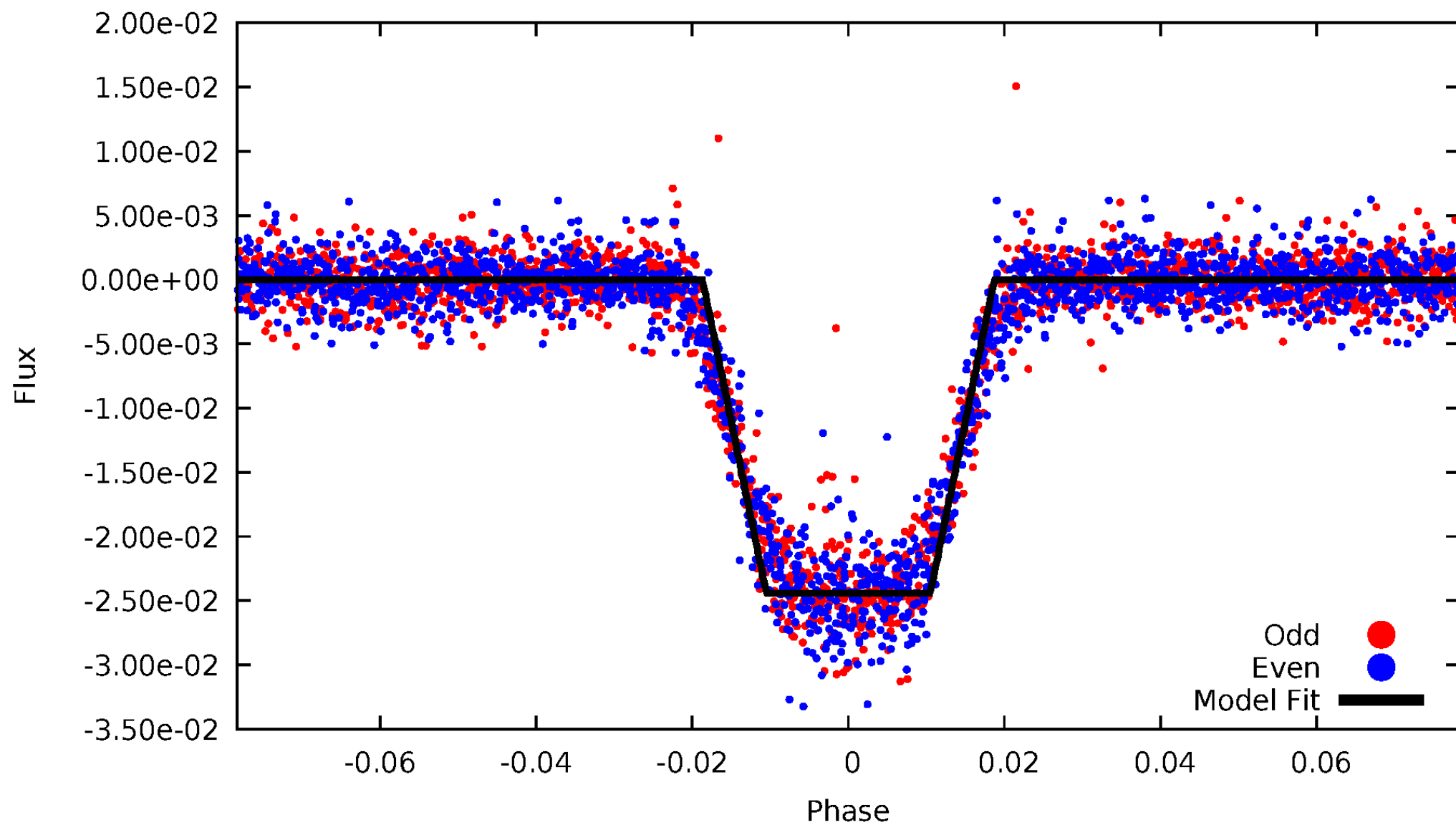
DV Odd/Even

TCE 009593759-02



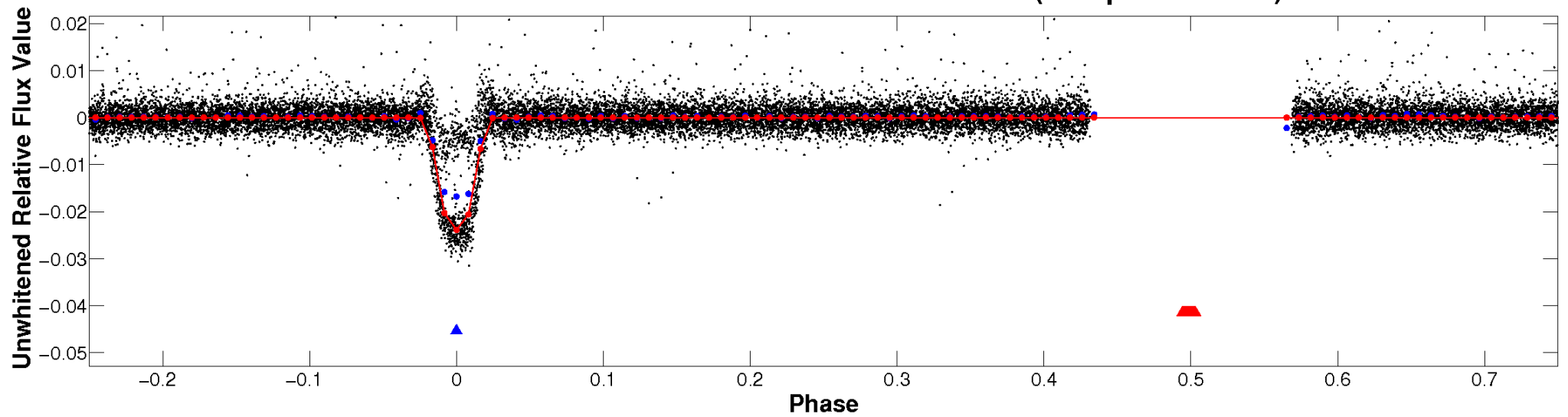
ALT Odd/Even

TCE 009593759-02

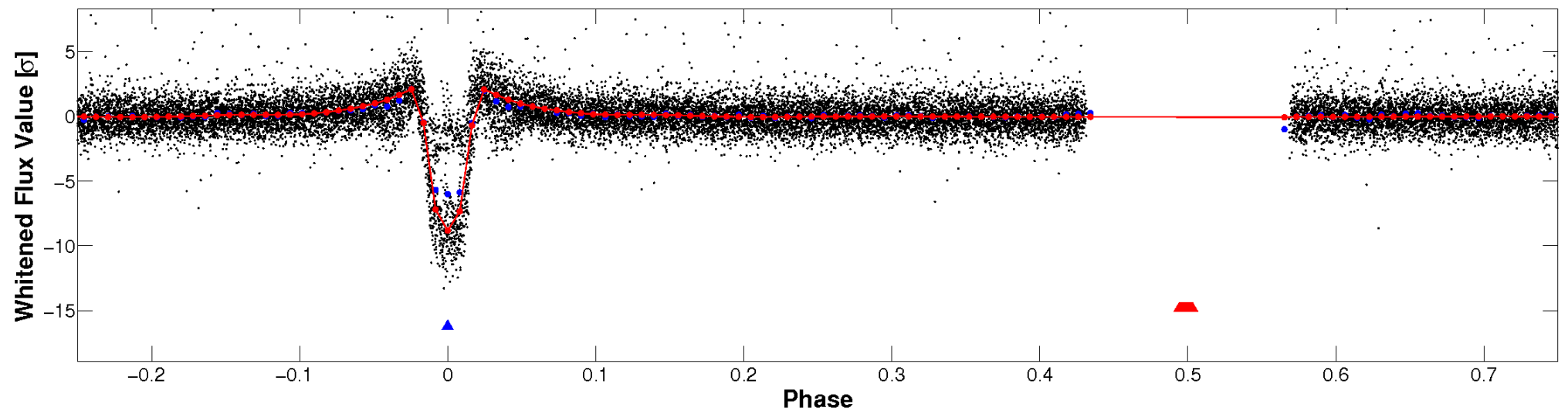


Non-Whitened Vs. Whitened Light Curve

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

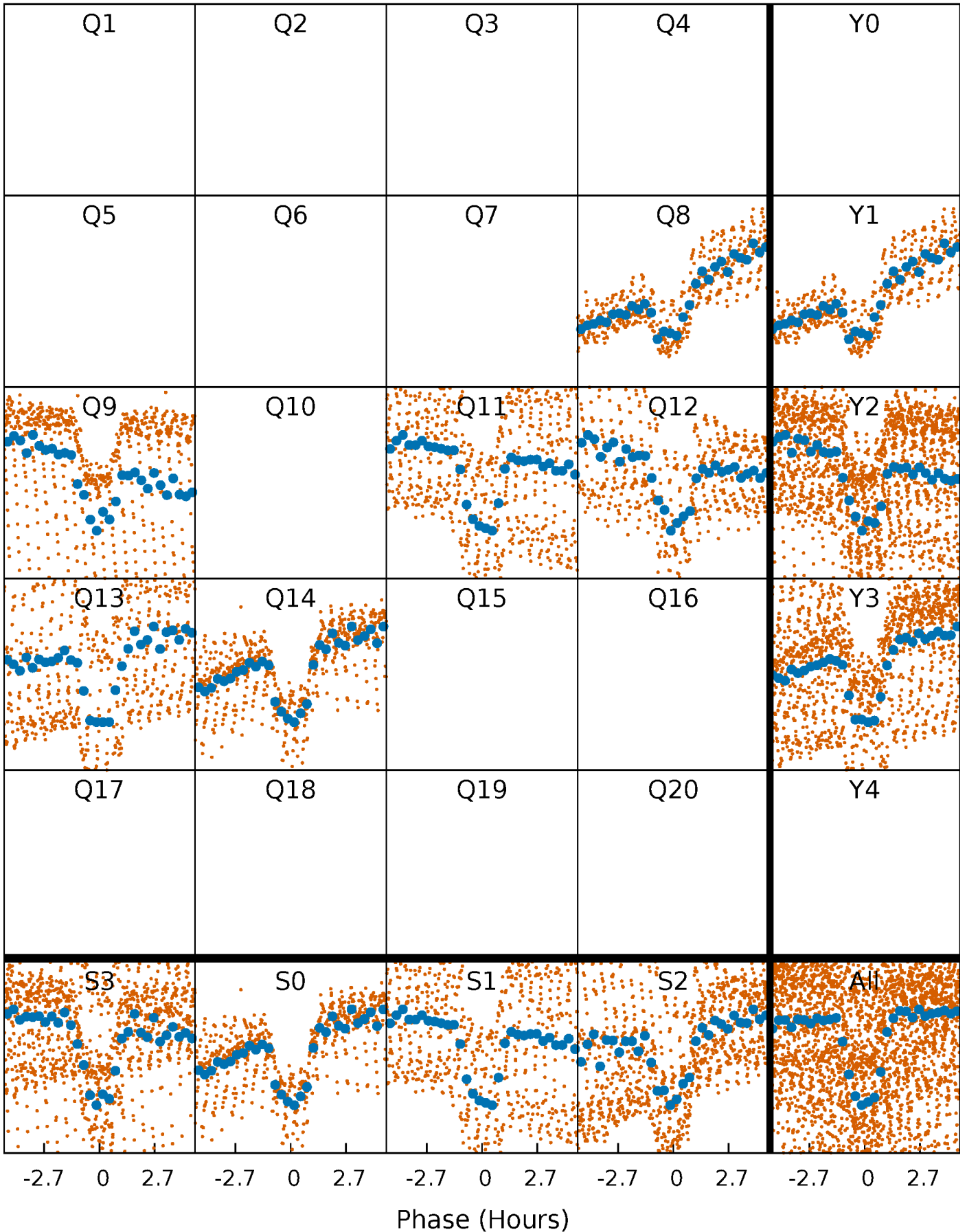


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



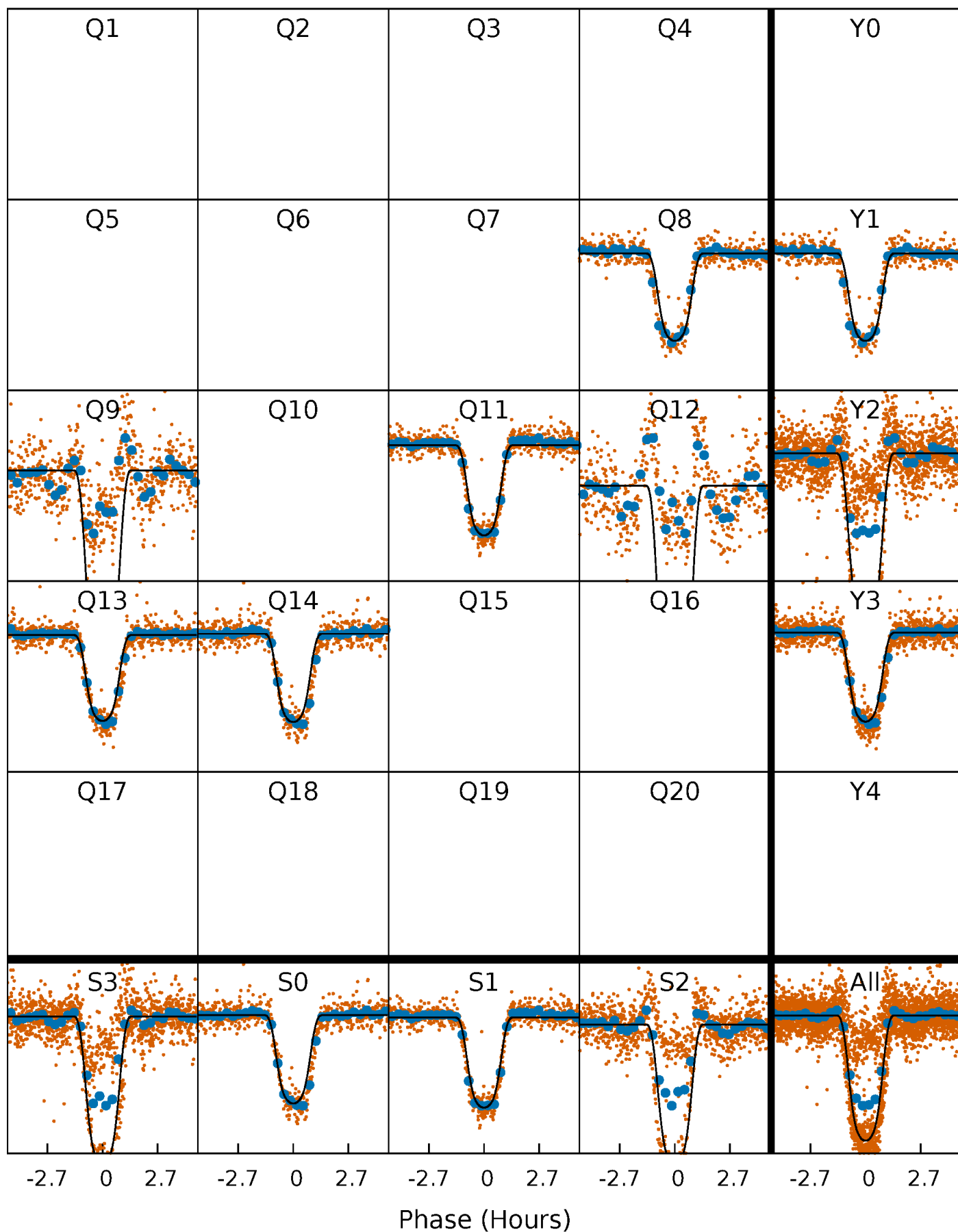
PDC Quarter-Phased Transit Curves

TCE 009593759-02 P= 2.494275 Days $T_0=132.381140$ (BKJD)



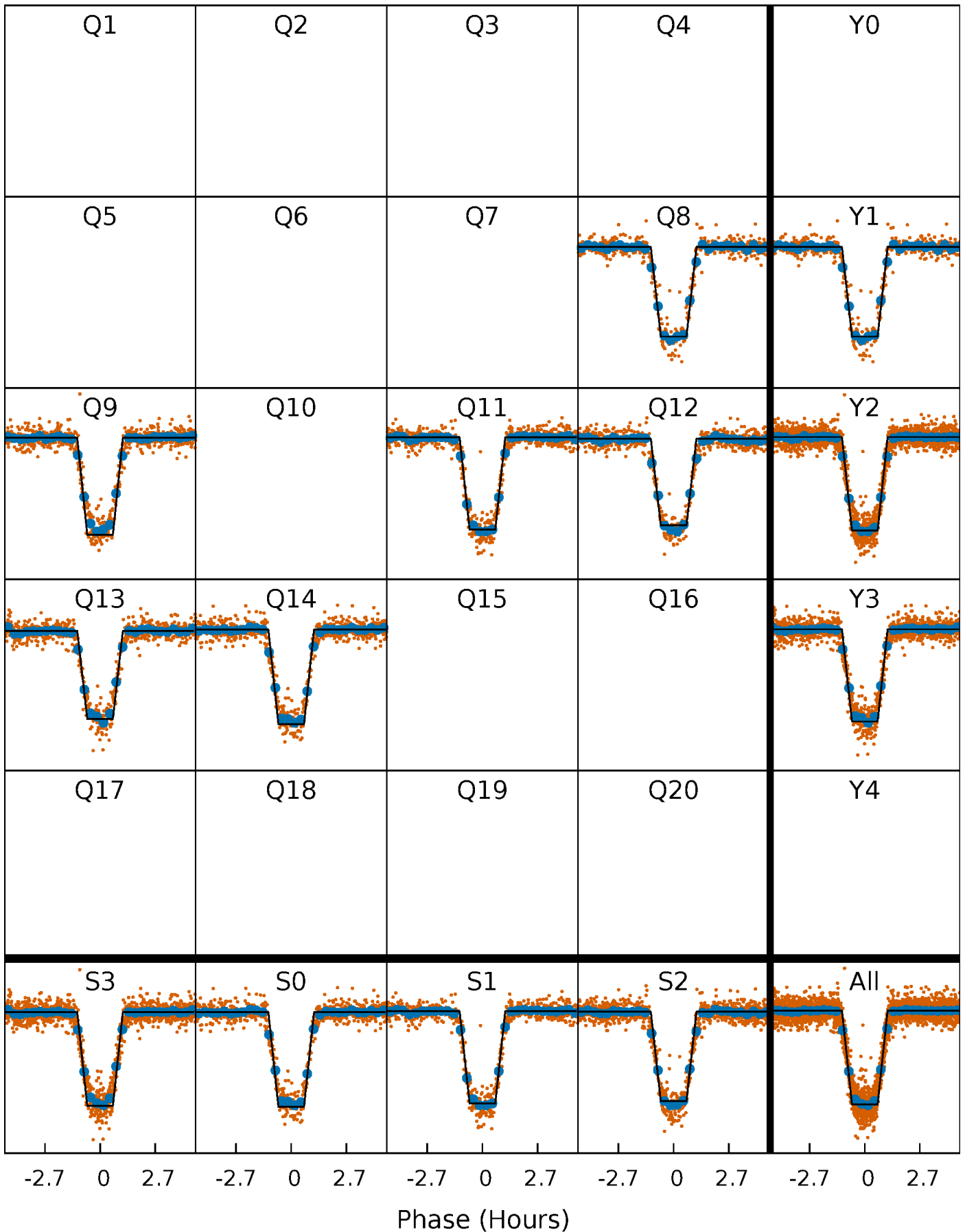
DV Quarter-Phased Transit Curves

TCE 009593759-02 P= 2.494275 Days $T_0=132.381140$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

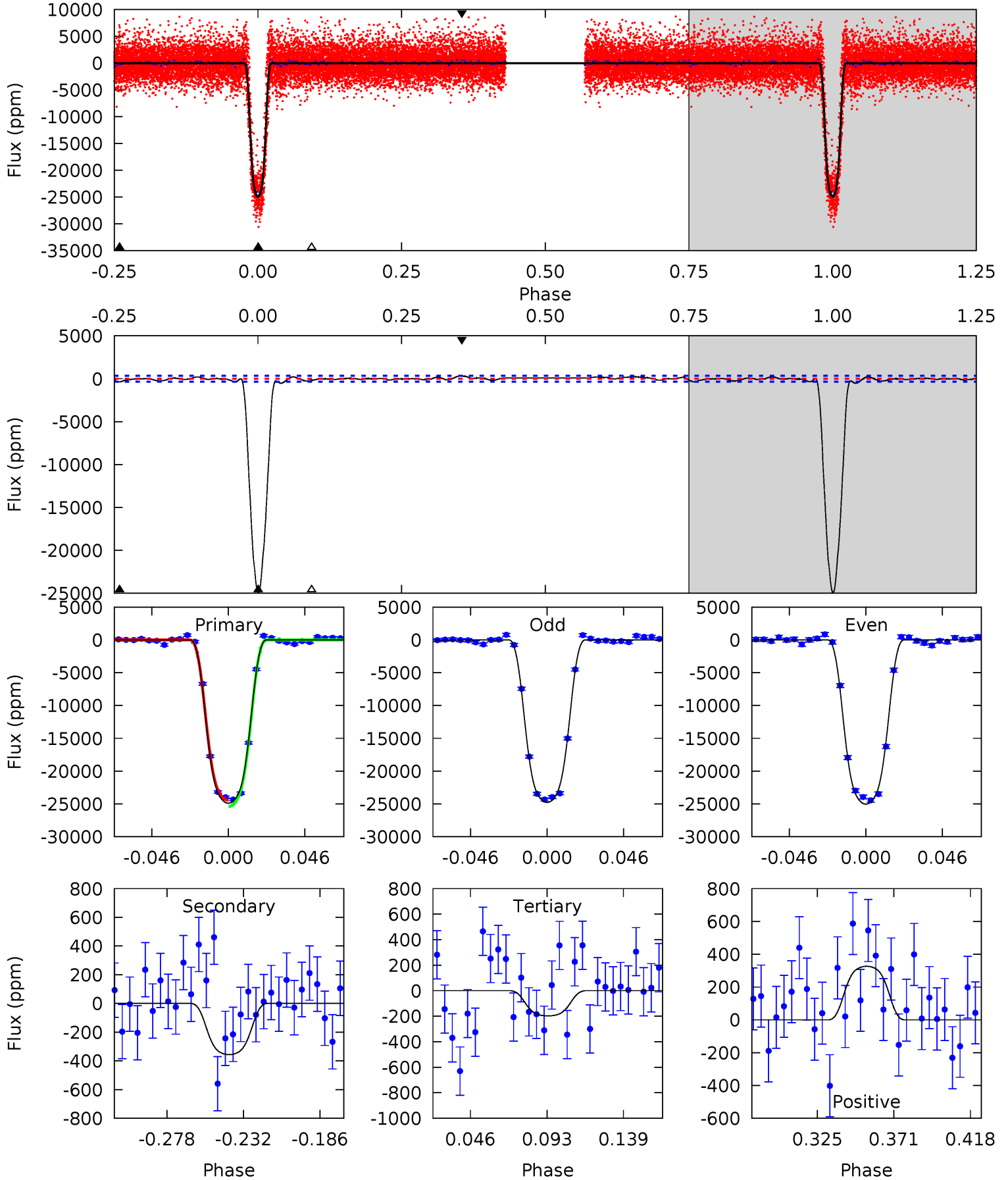
TCE 009593759-02 P= 2.494313 Days $T_0=132.366707$ (BKJD)



DV Model-Shift Uniqueness Test

009593759-02, P = 2.494275 Days, E = 132.381140 Days

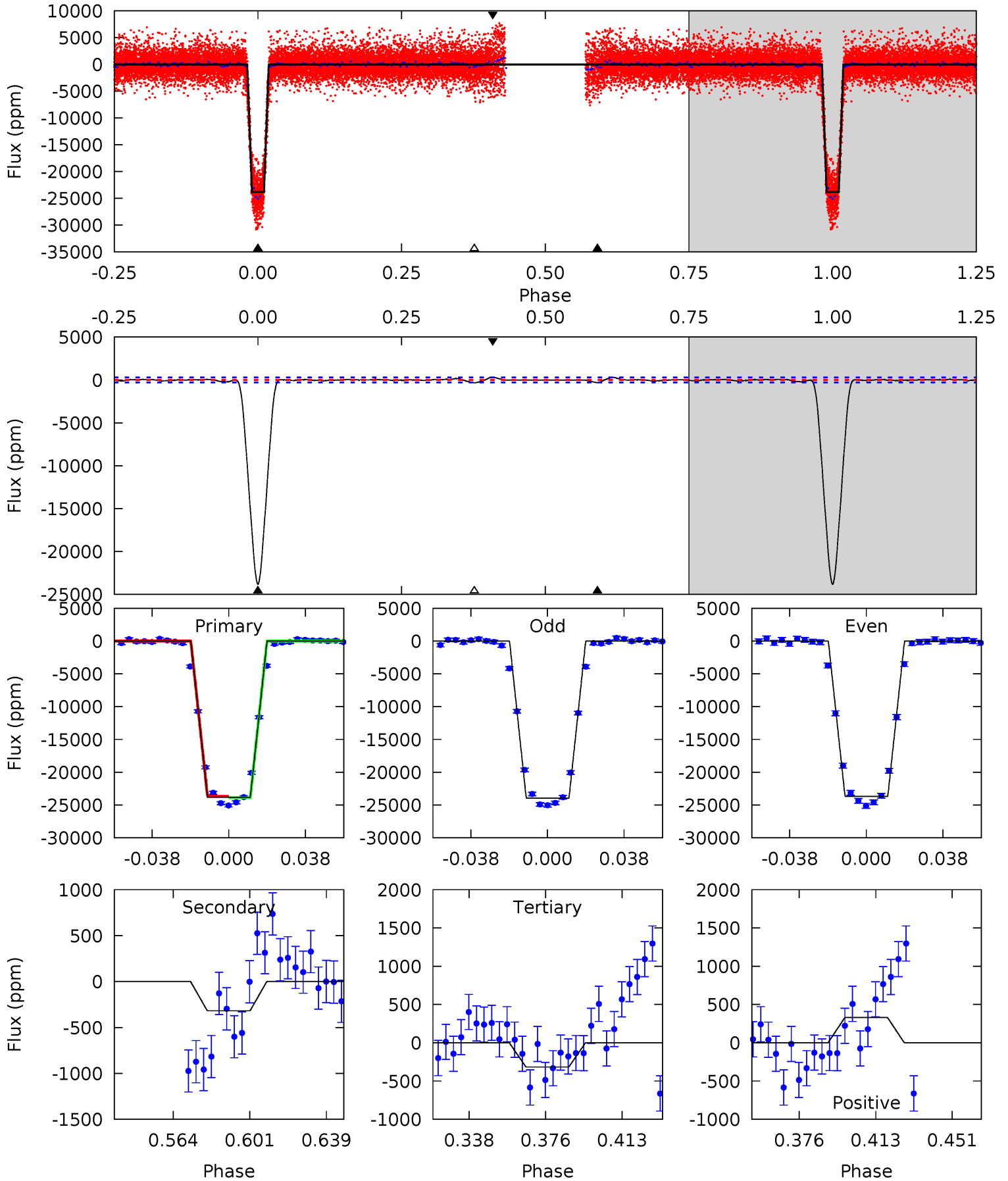
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
338.8	4.85	2.69	4.45	4.72	1.99	1.65	336.1	334.3	2.16	0.41	1.72	0.75	0.01	0



Alt Model-Shift Uniqueness Test

009593759-02, P = 2.494313 Days, E = 132.366707 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
392.7	5.25	5.23	5.43	4.77	2.08	1.41	387.5	387.3	0.02	-0.18	2.21	1.00	0.01	1.75



Stellar Parameters For KIC 009593759

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4770^{+143}_{-129}	$2.605^{+0.442}_{-0.238}$	$-0.240^{+0.250}_{-0.250}$	$9.670^{+3.511}_{-4.292}$	$1.373^{+0.261}_{-0.358}$	$0.002^{+0.008}_{-0.001}$
	+3%/-3%	+17%/-9%	+104%/-104%	+36%/-44%	+19%/-26%	+364%/-55%
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 009593759-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-357 ± 73	$160.48^{+35.24}_{-38.84}$	4562^{+490}_{-574}	-3935^{+359}_{-318}	$0.012^{+0.009}_{-0.005}$
Alt.	-318 ± 61	$161.75^{+36.12}_{-41.61}$	4544^{+498}_{-621}	-3926^{+384}_{-324}	$0.011^{+0.009}_{-0.004}$

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

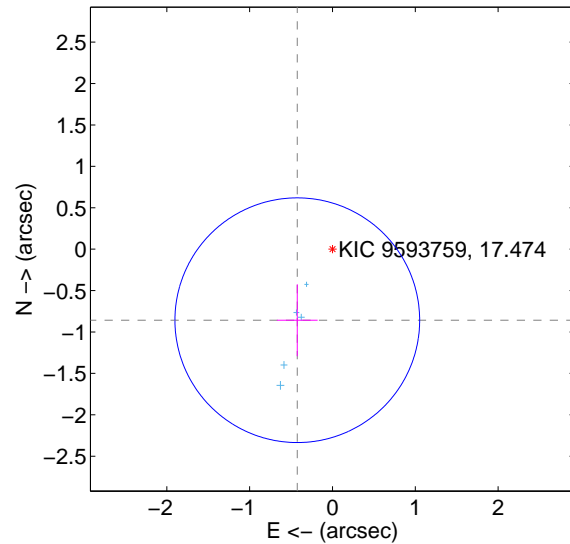
Supplemental centroid analysis for 009593759-02. Kepler magnitude: 17.47. Transit SNR 168.25

There are 6 quarters with good PRF difference image offsets

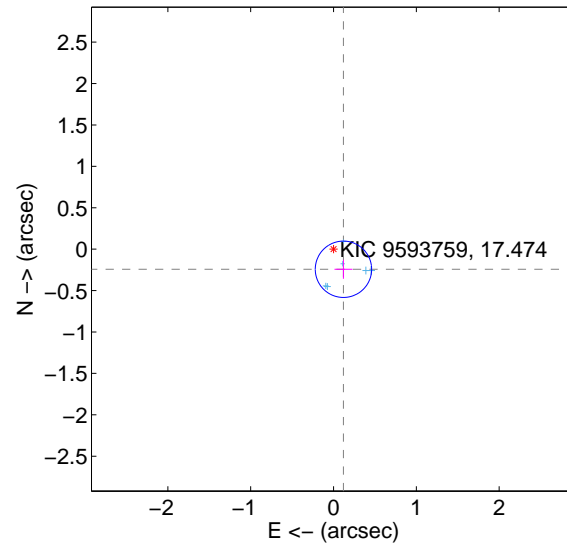
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.957 ± 0.492	1.94	0.425 ± 0.246	-0.858 ± 0.435
PRF-fit source offset from KIC position	0.271 ± 0.113	2.39	-0.120 ± 0.108	-0.243 ± 0.115
photometric centroid source offset	1.26 ± 0.05	25.29	-0.73 ± 0.04	1.02 ± 0.05

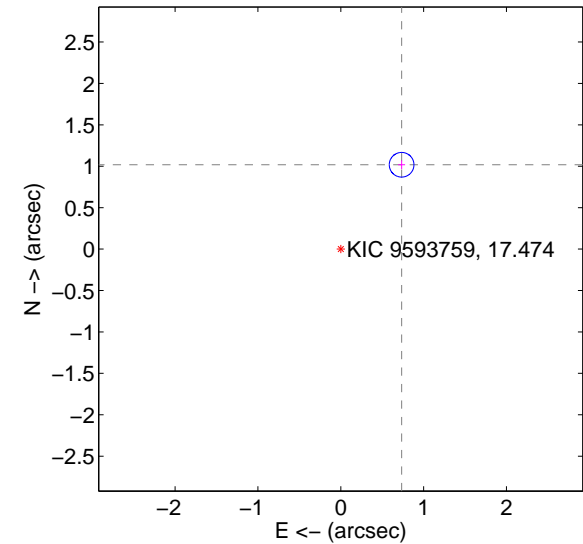
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

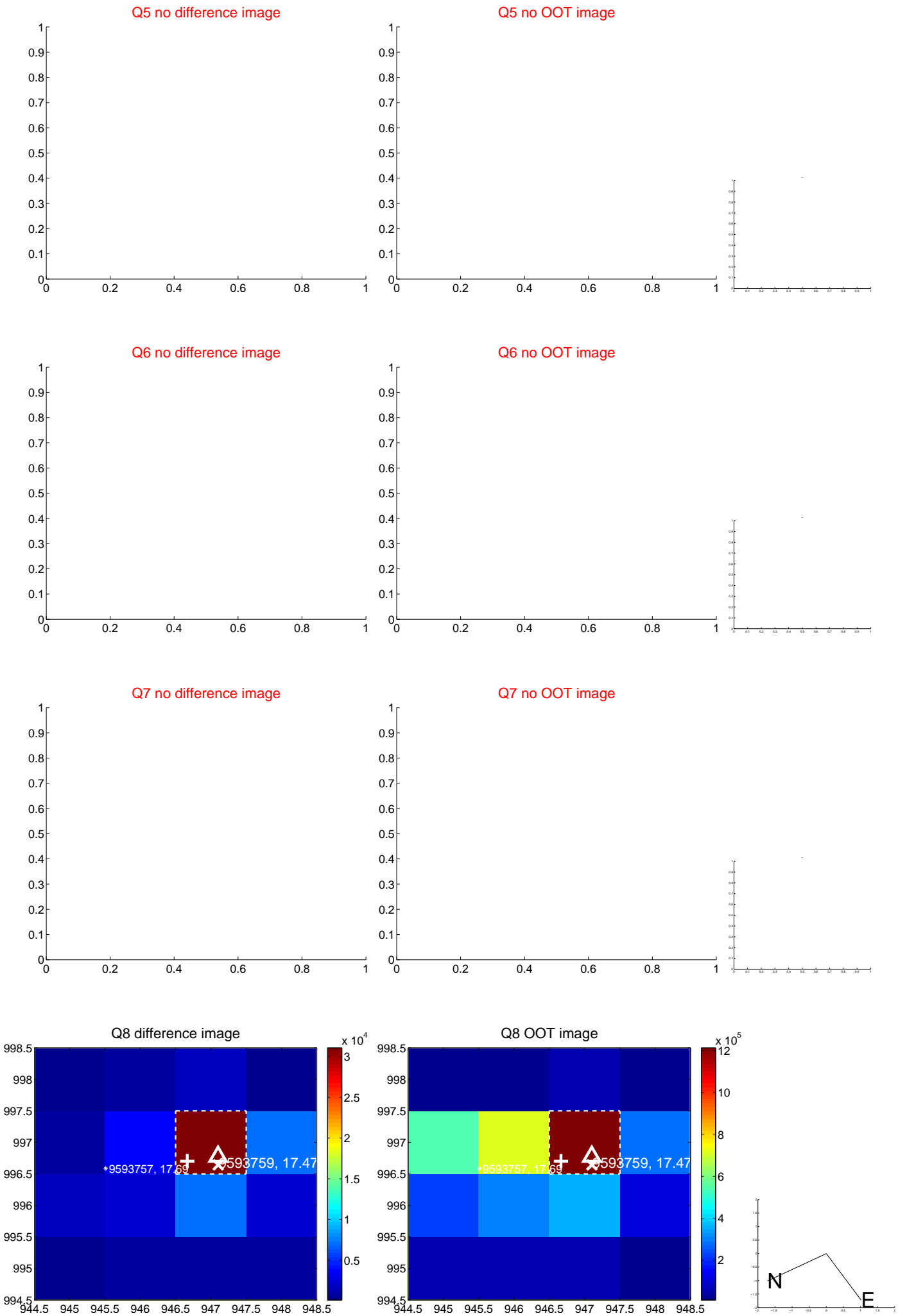


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

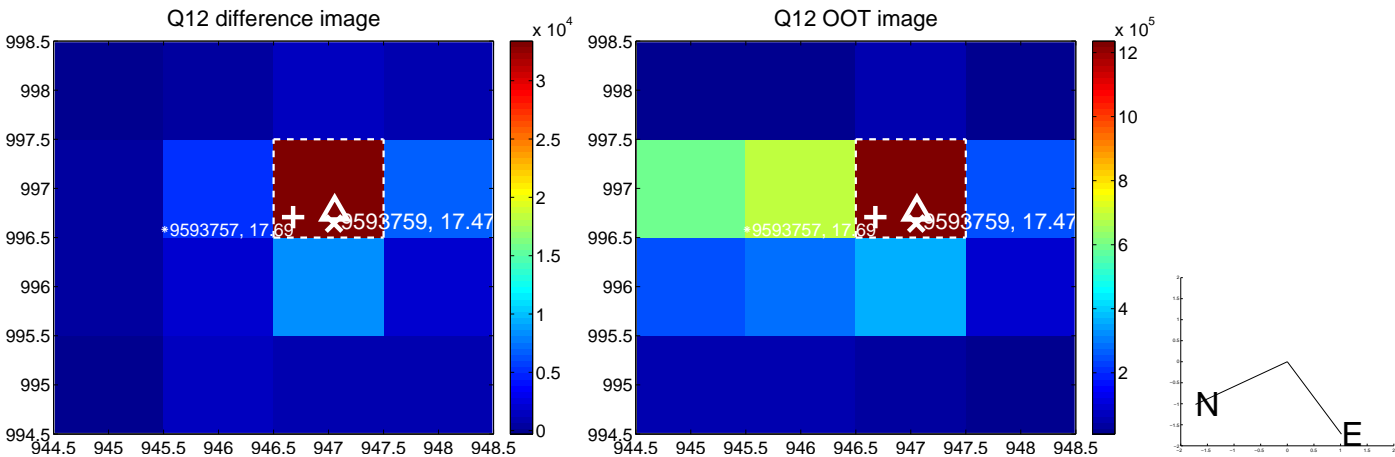
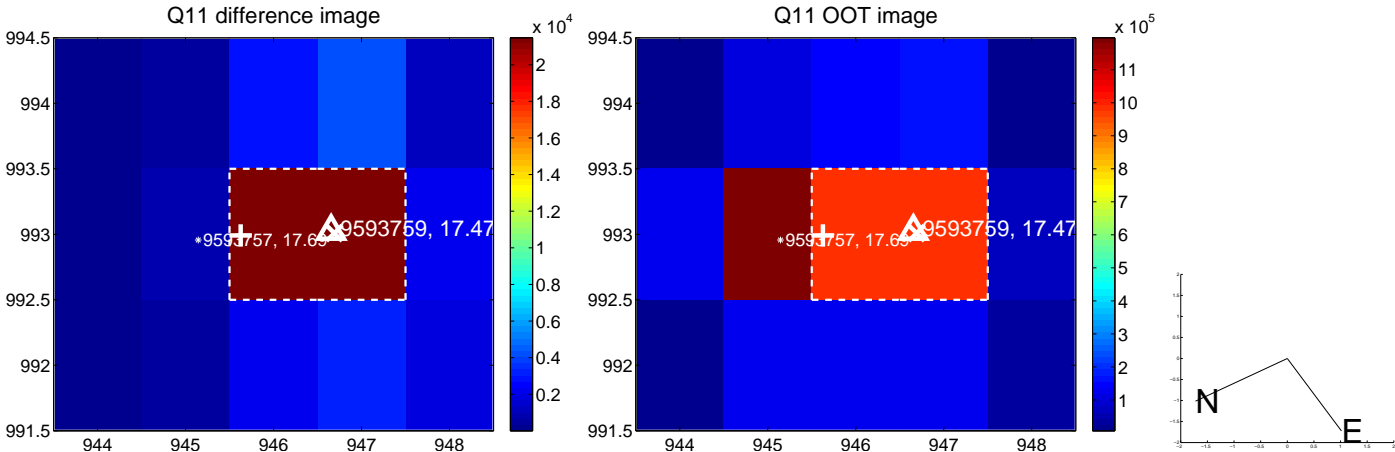
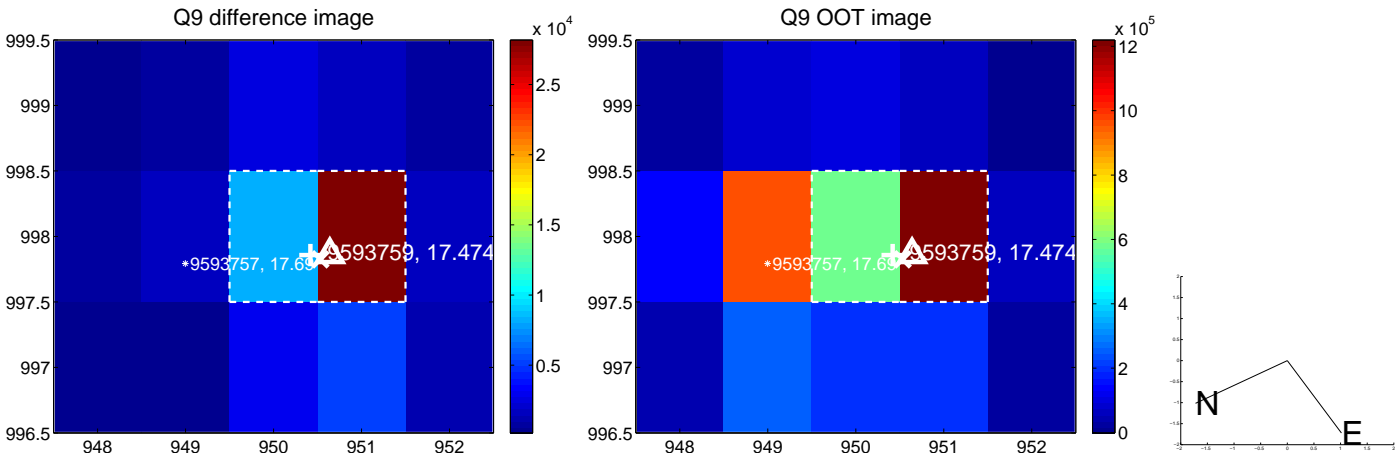
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



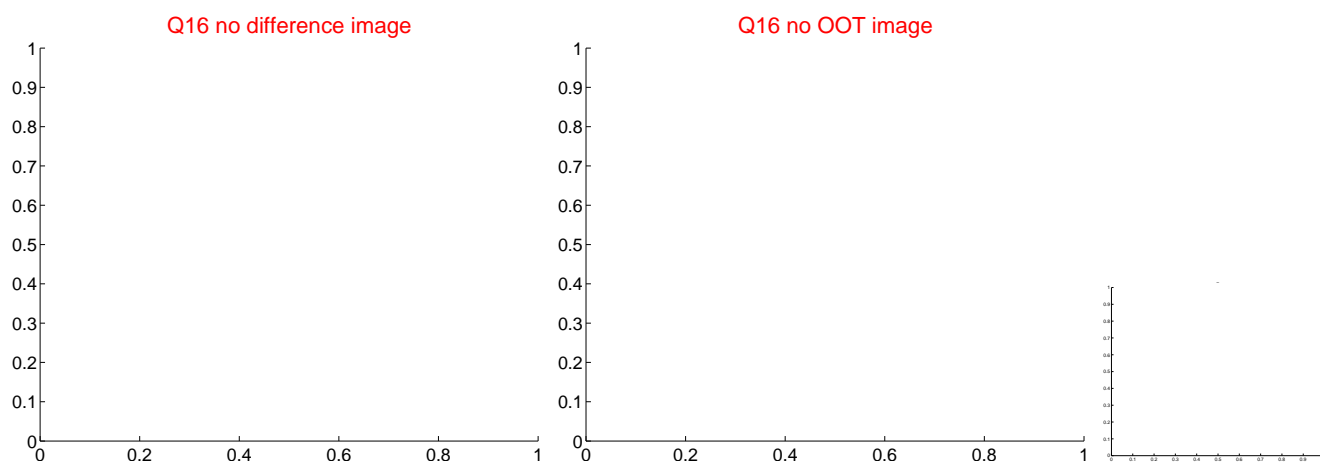
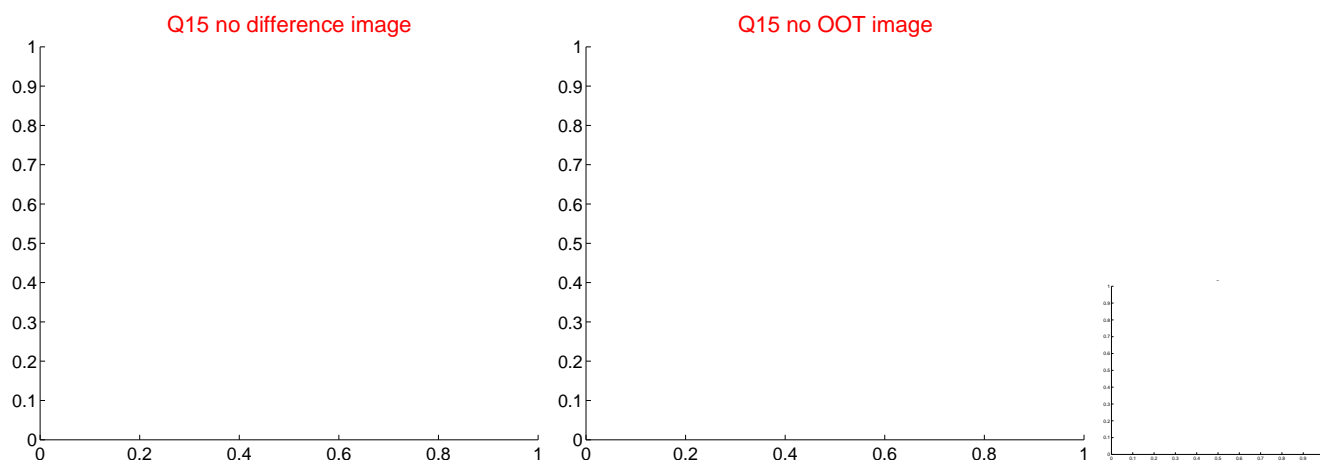
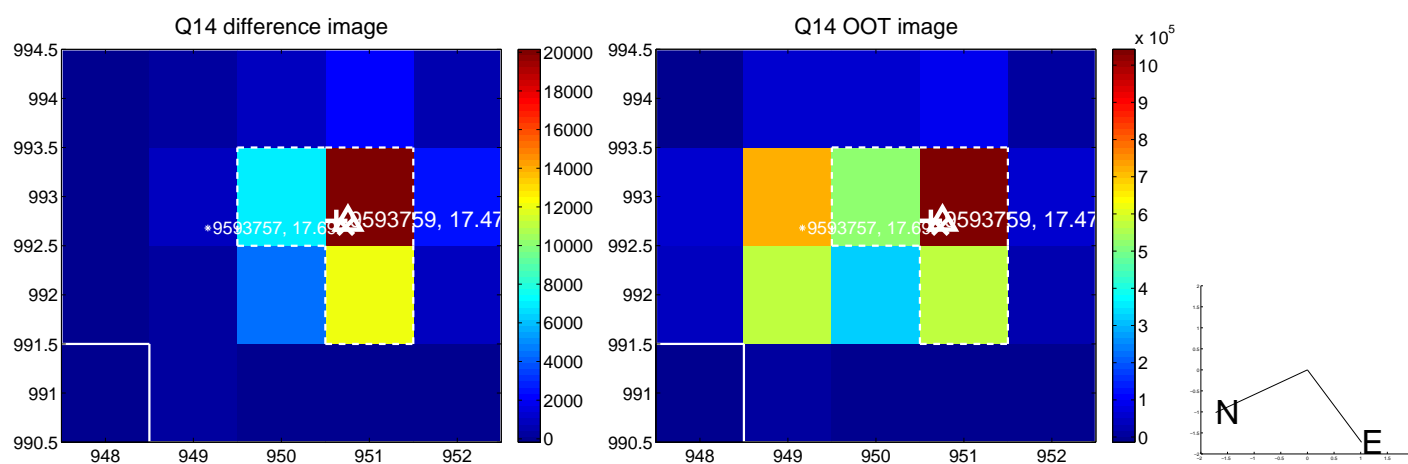
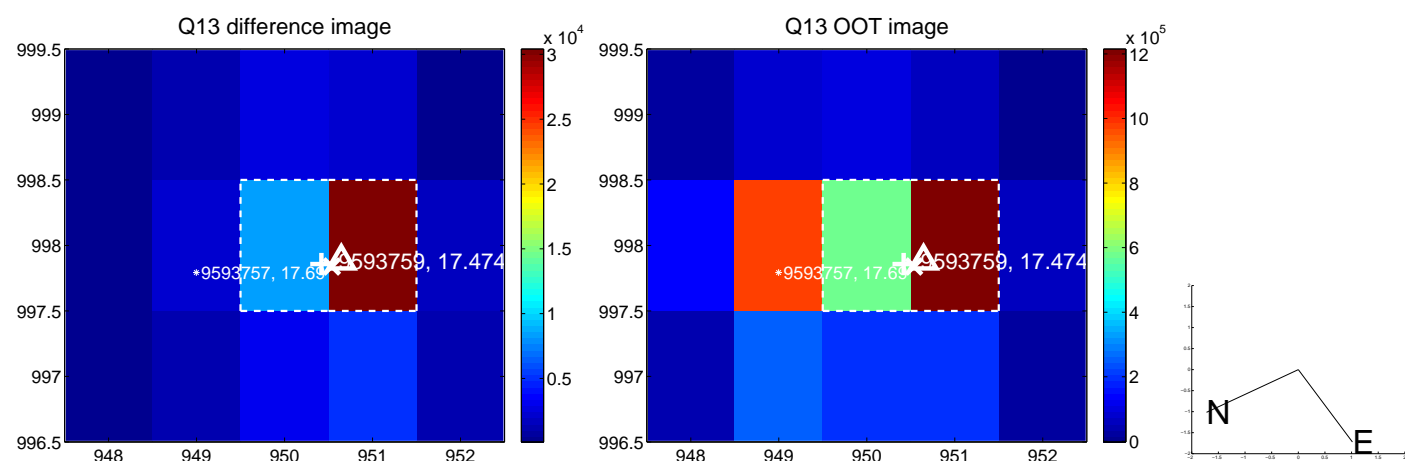
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



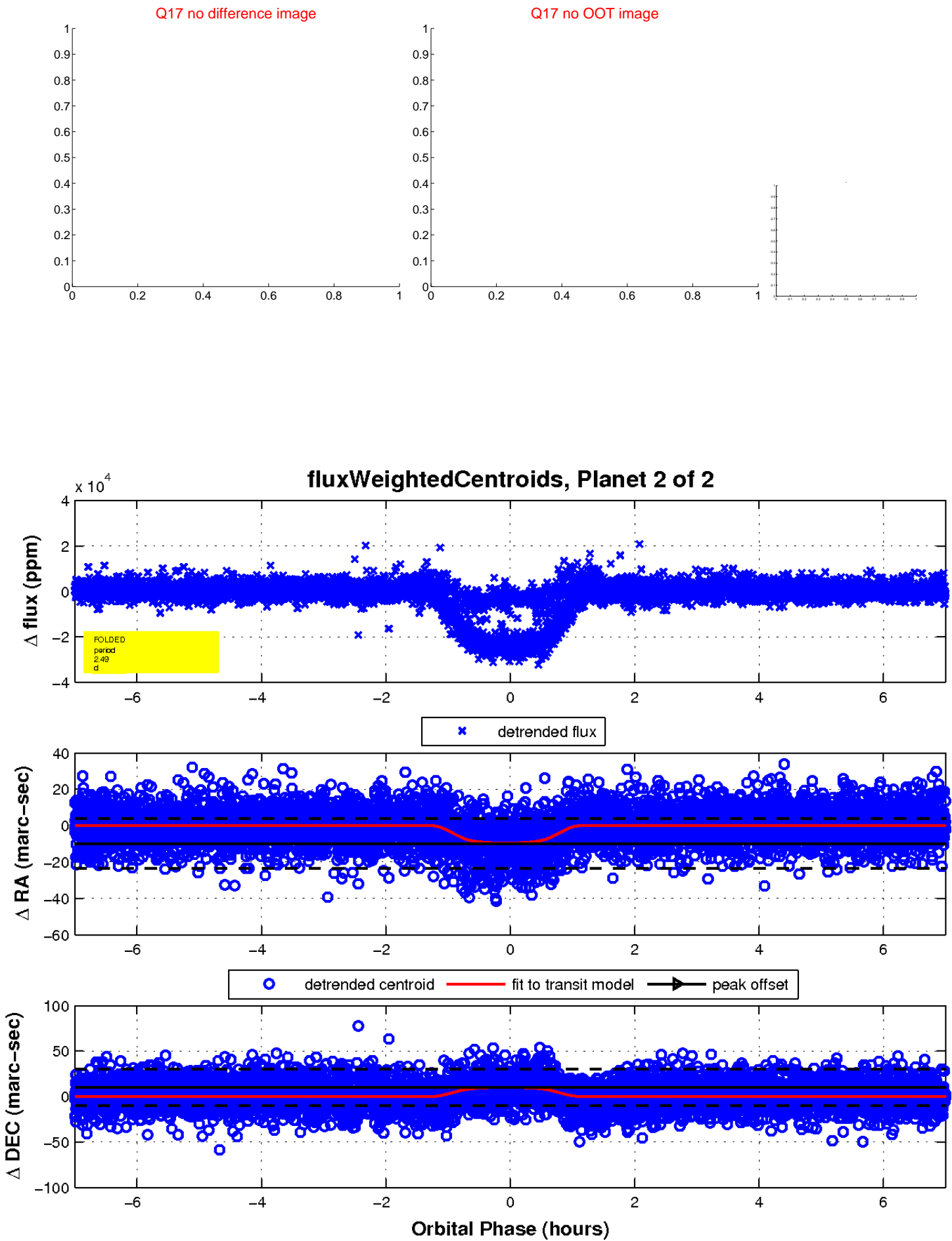
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

