

KIC 005596440

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})
005596440-01	OBS	0648.01	10.474866	140.695907	2008.0	1.422	128.6	137.9	3.23	6526	23.33	1428.67
005596440-02	OBS	No	10.474915	140.805303	818.9	24.473	28.5	34.9	3.23	6526	17.53	1428.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005596440-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
005596440-02	OBS	FP	0.00	1	0	0	0	LPP_DV—RESIDUAL_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.

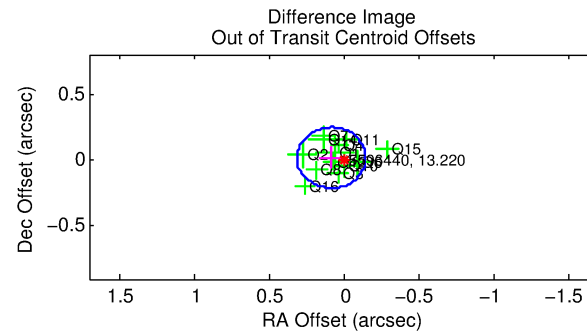
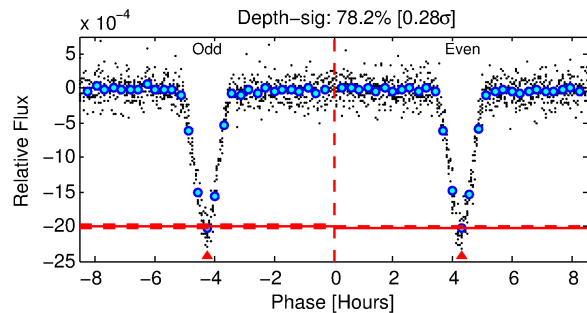
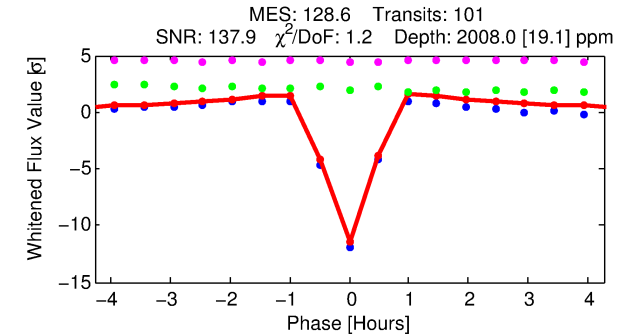
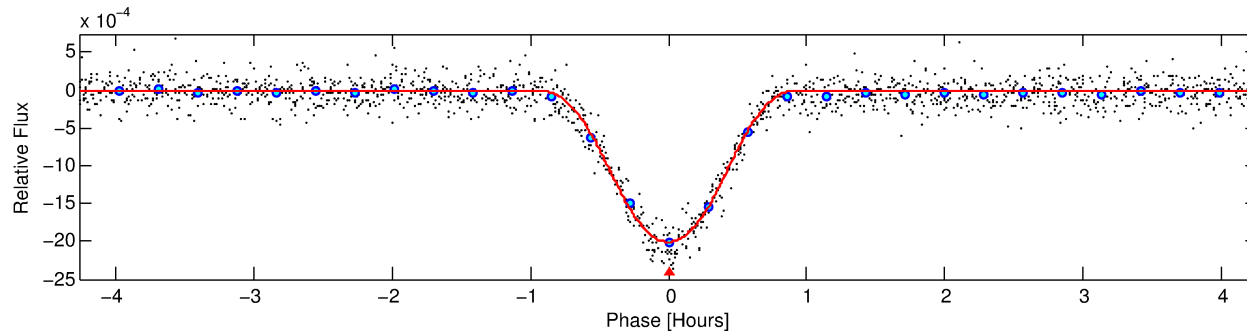
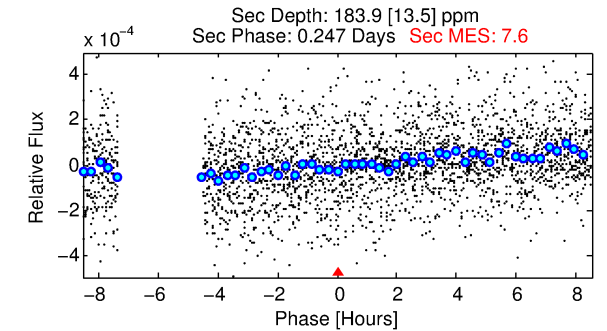
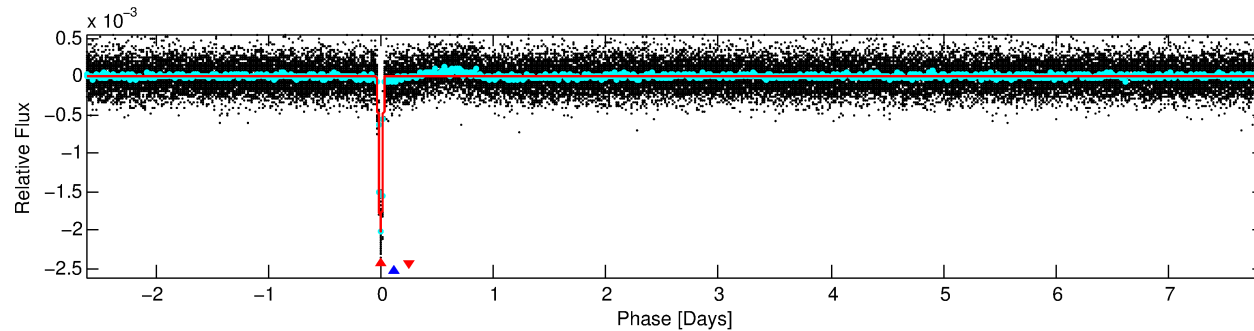
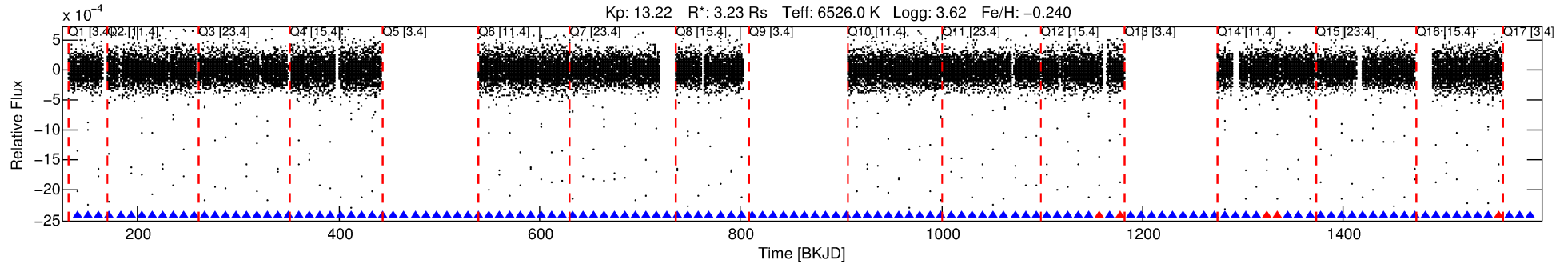
Ephemeris Match Information For 005596440-01

No Significant Match Found

DV One-Page Summary

KIC: 5596440 Candidate: 1 of 2 Period: 10.475 d

KOI: K00648.01 Corr: 0.990



DV Fit Results:

Period = 10.47487 [0.00000] d
Epoch = 140.6959 [0.0003] BKJD
Rp/R* = 0.0662 [0.0280]
a/R* = 23.45 [3.04]
b = 0.98 [0.05]
Seff = 1428.67 [886.86]
Teff = 1568 [243] K
Rp = 23.33 [13.57] Re
a = 0.1090 [0.0416] AU
Ag = 2.21 [2.31] [0.52σ]
Teffp = 2955 [635] K [2.04σ]

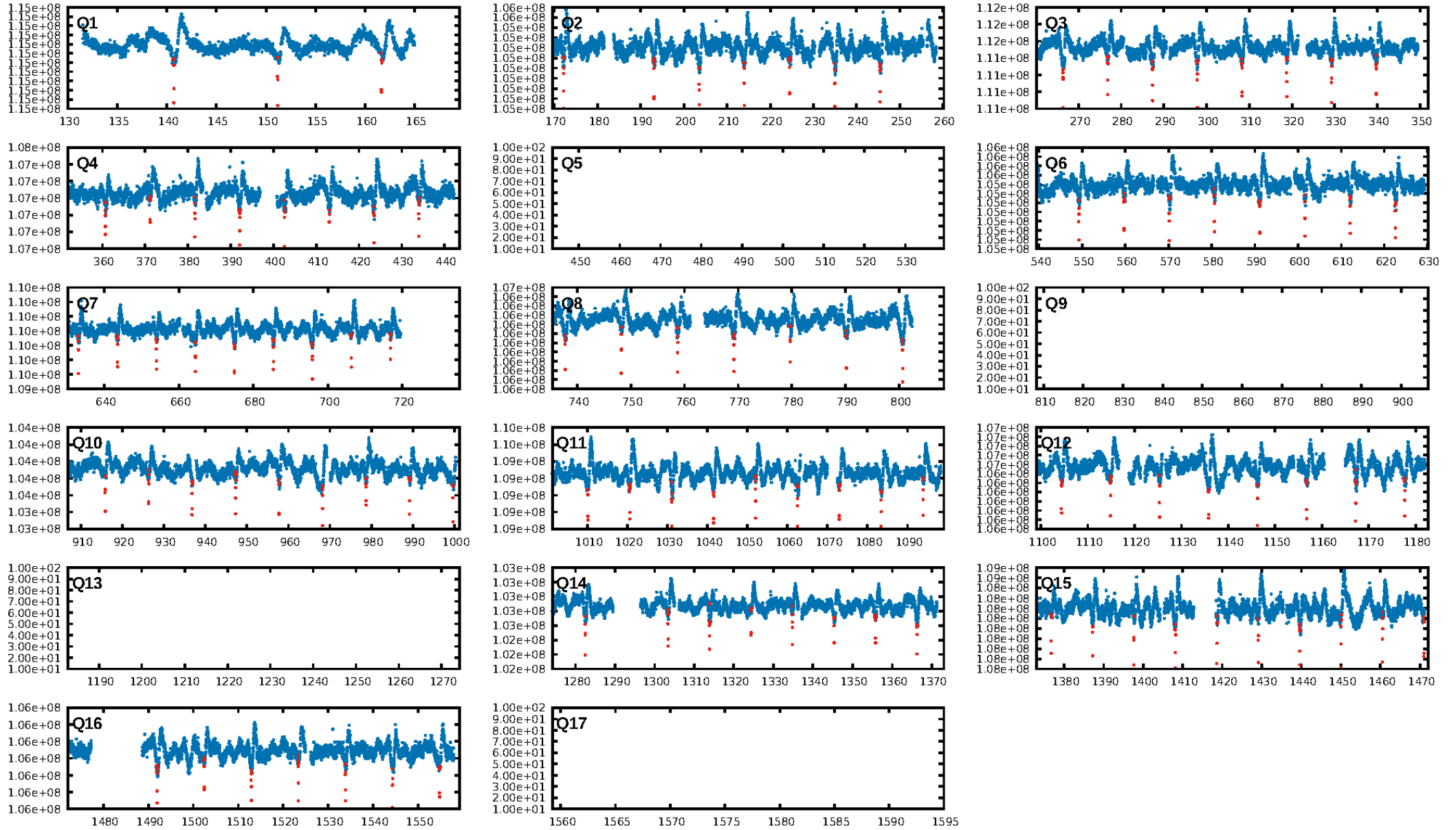
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 38.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.95 [93/98]
GhostDiagnostic-chr: 4.704
Centroid-sig: 79.8%
Centroid-so: 0.137 arcsec [1.32σ]
OotOffset-rm: 0.083 arcsec [1.08σ]
KicOffset-rm: 0.108 arcsec [1.35σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/13]

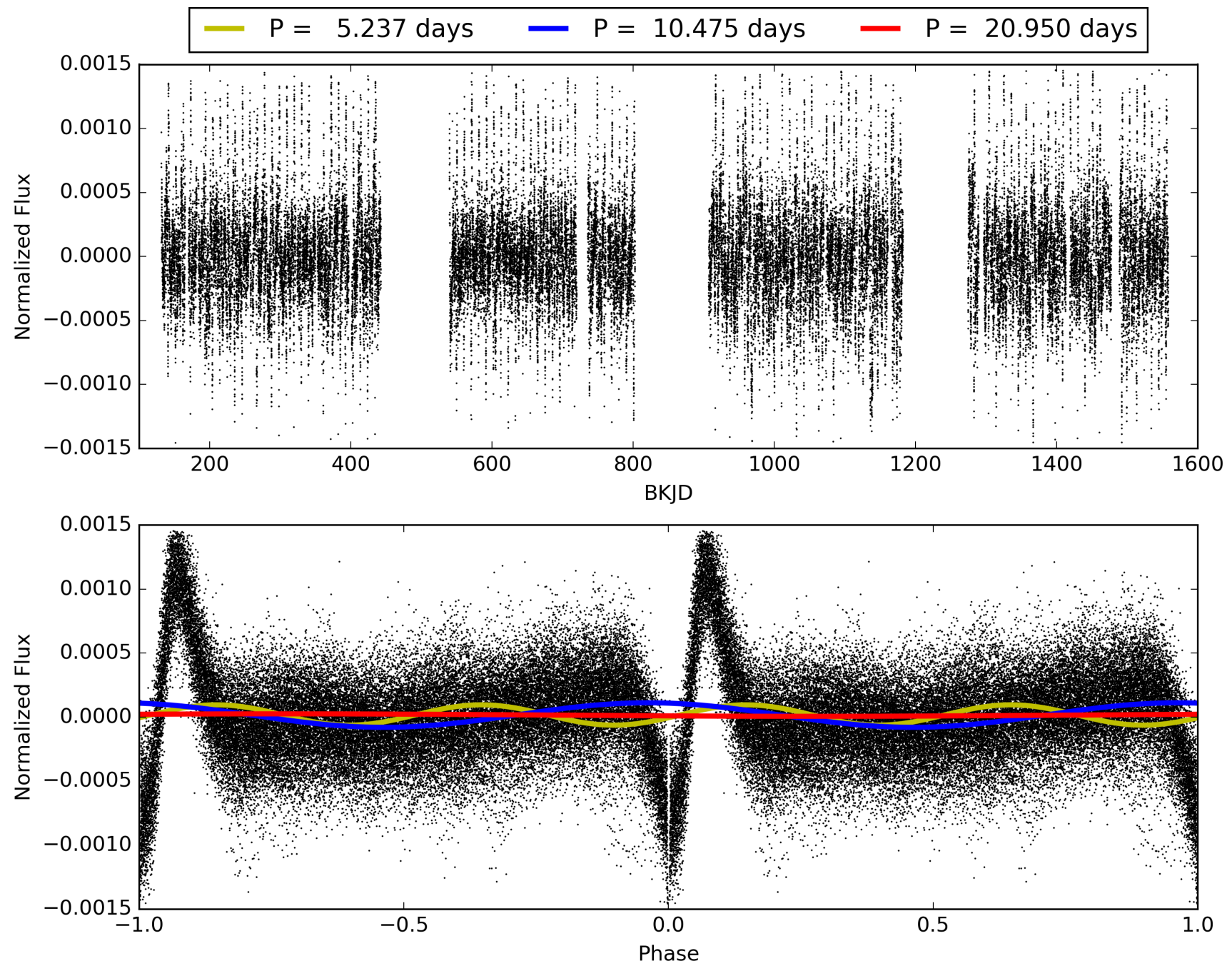
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:21:10 Z

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

TCE 005596440-01, PDC Light Curves

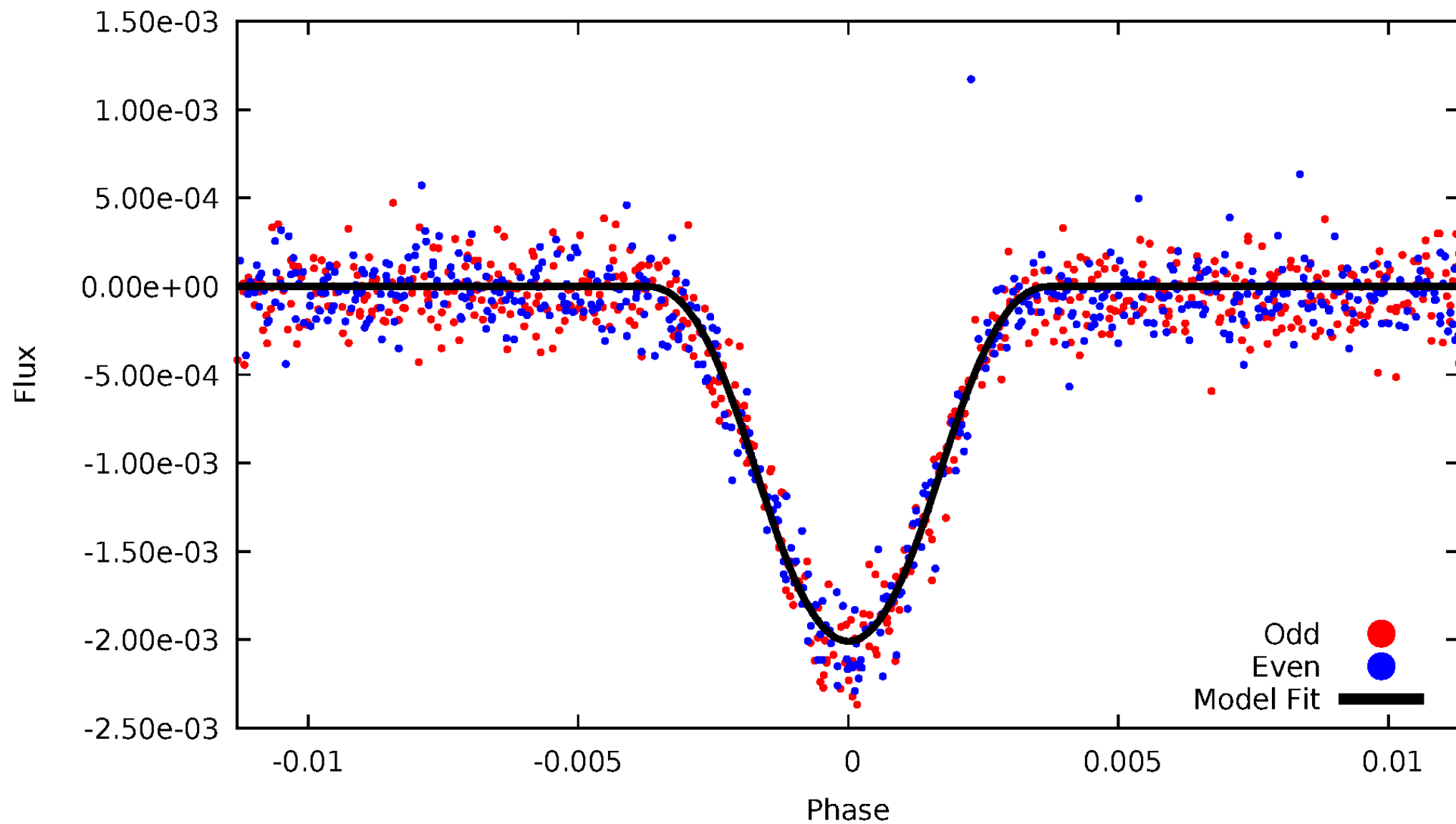


TCE 005596440-01



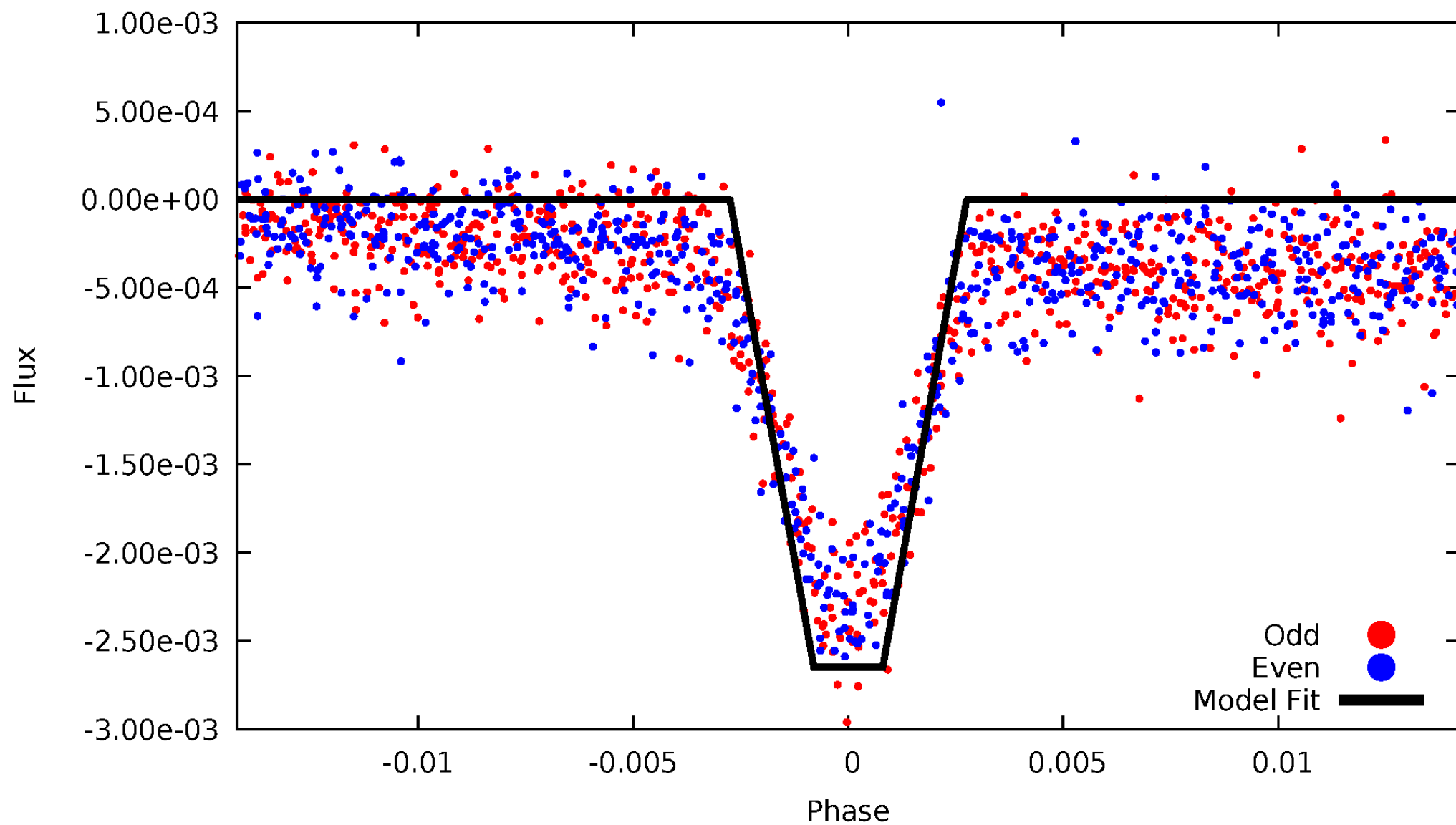
DV Odd/Even

TCE 005596440-01



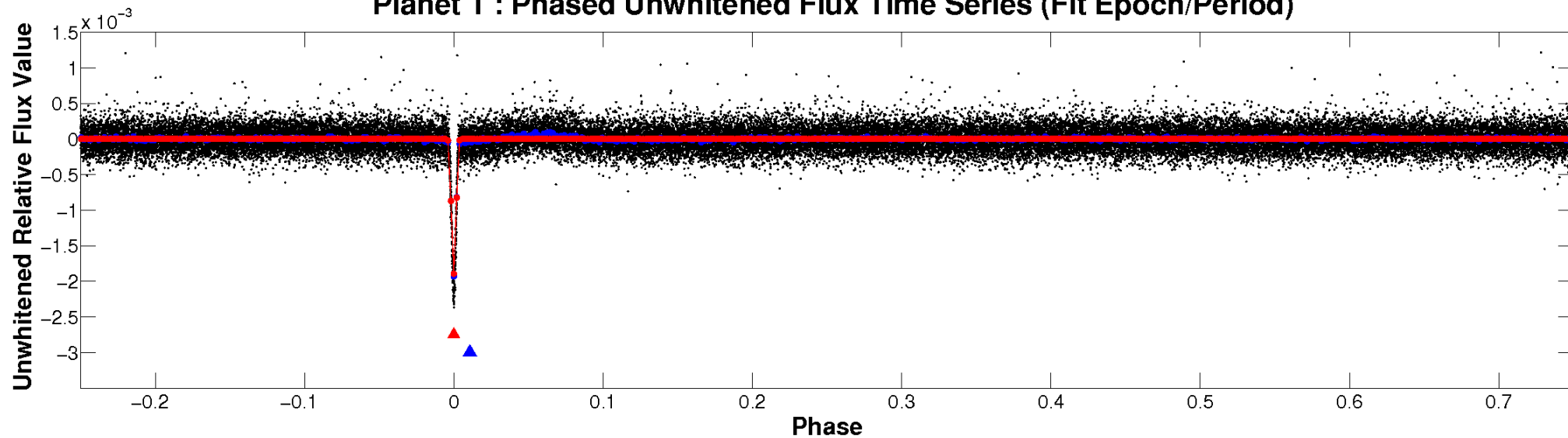
ALT Odd/Even

TCE 005596440-01

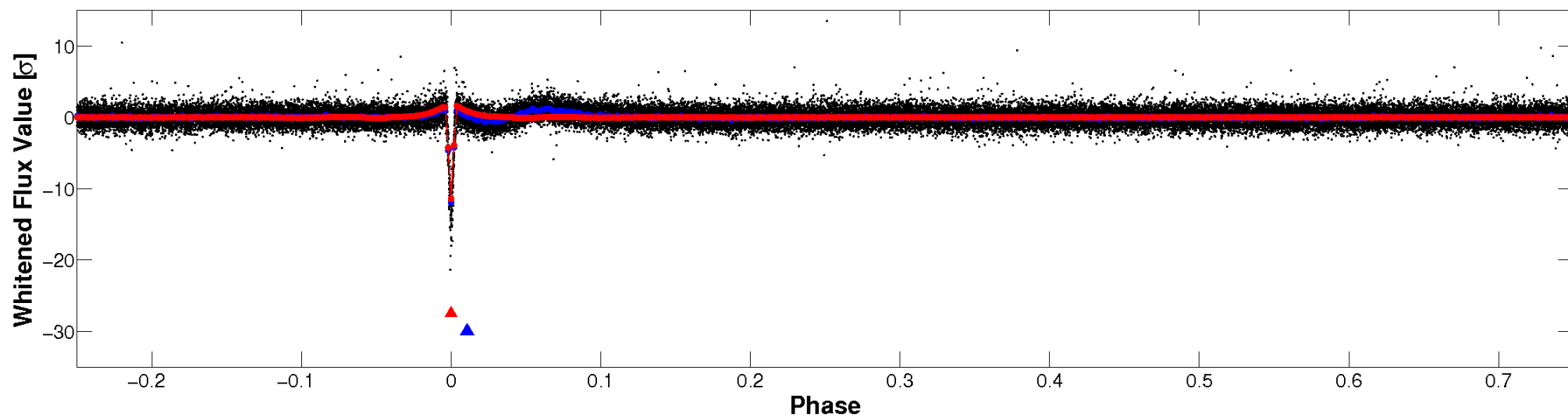


Non-Whitened Vs. Whitened Light Curve

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

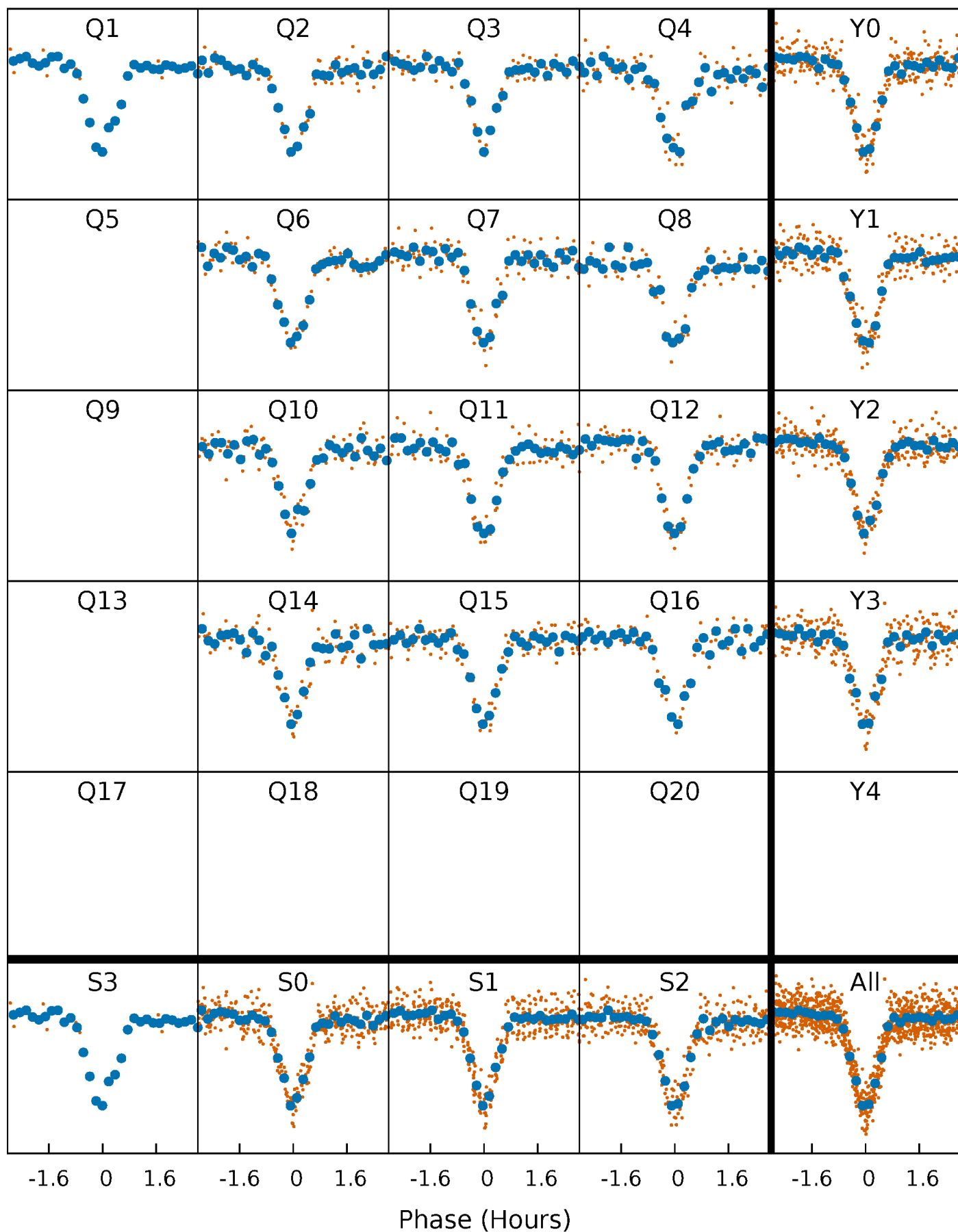


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



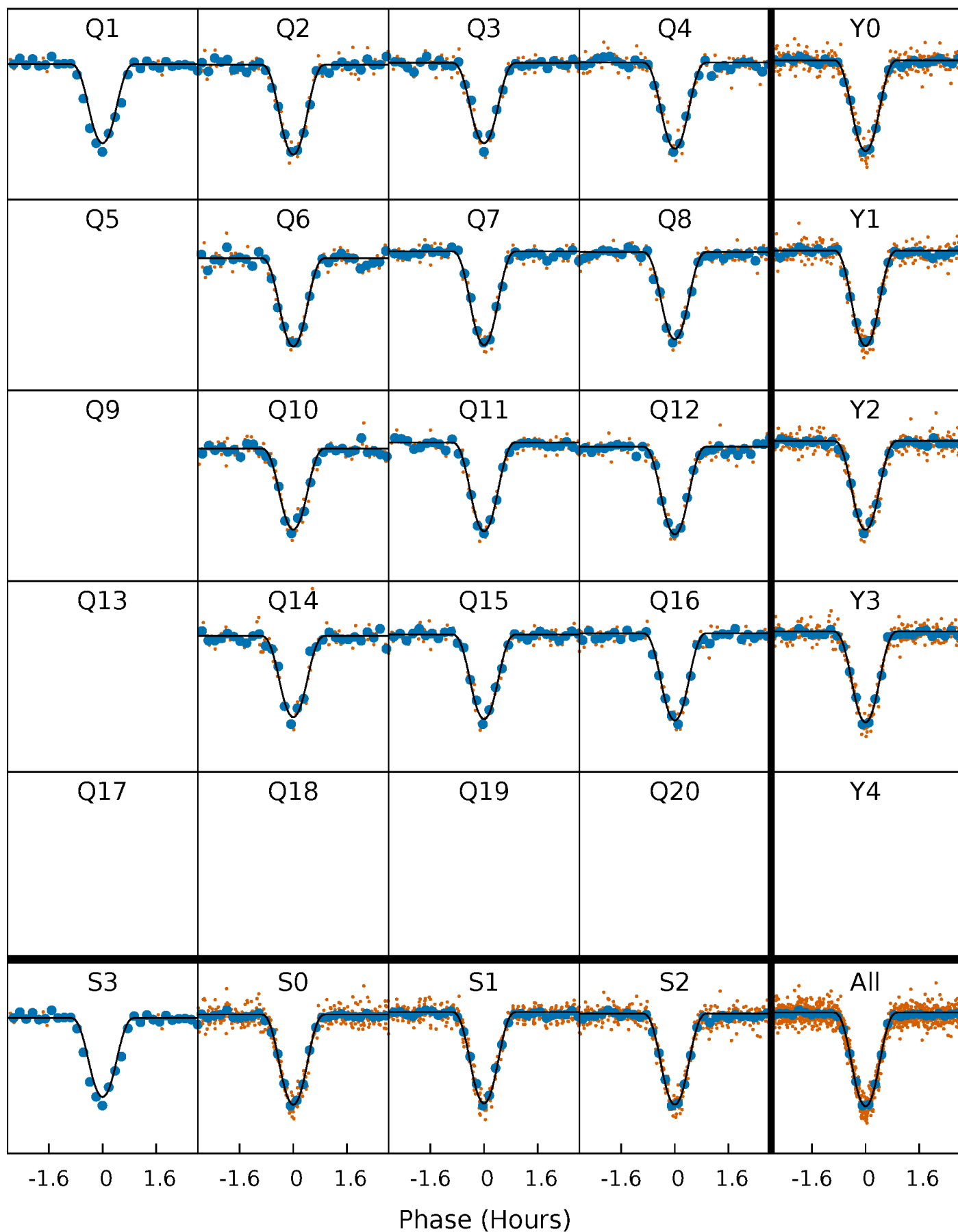
PDC Quarter-Phased Transit Curves

TCE 005596440-01 P= 10.474866 Days $T_0=140.695907$ (BKJD)



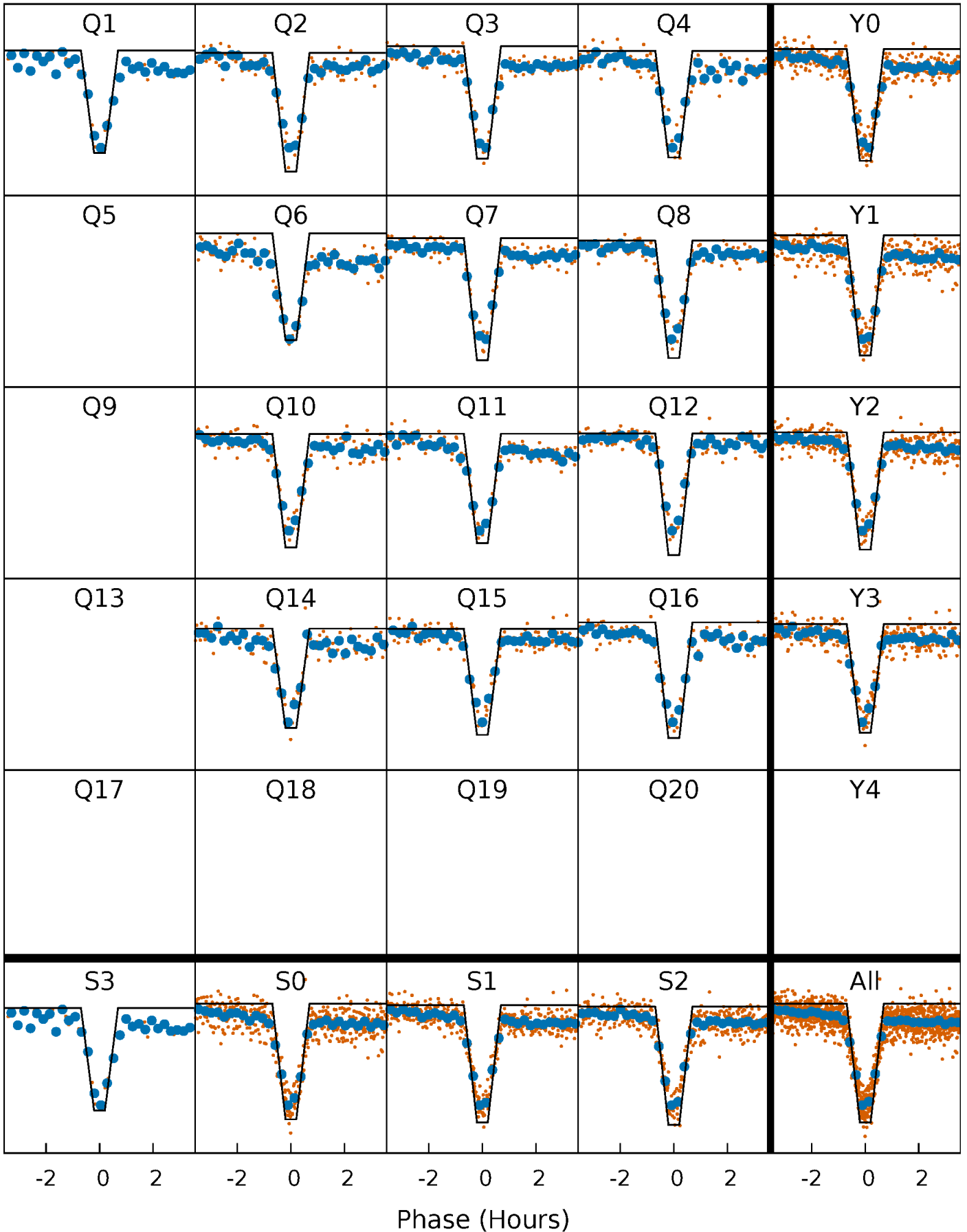
DV Quarter-Phased Transit Curves

TCE 005596440-01 P= 10.474866 Days $T_0=140.695907$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

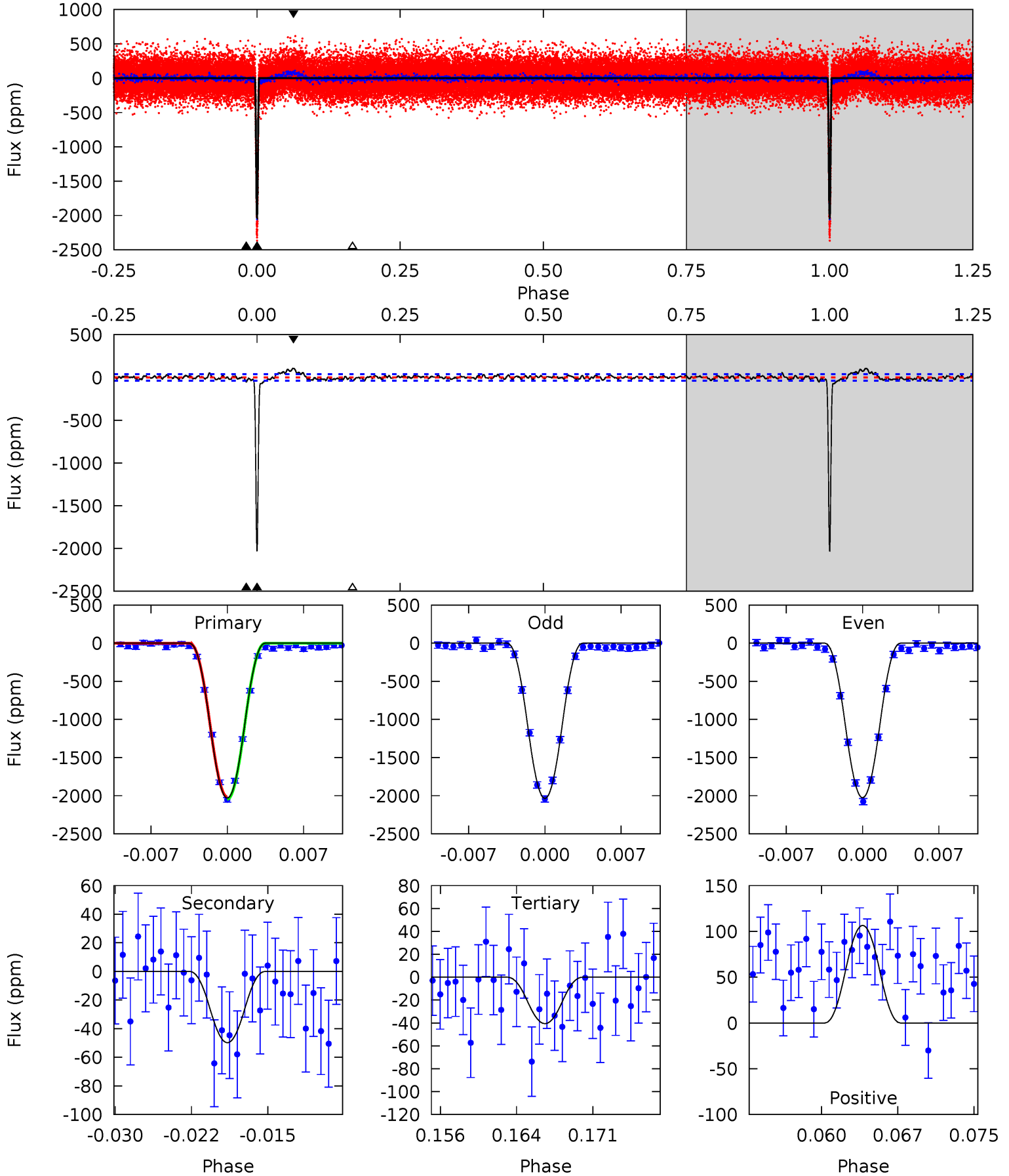
TCE 005596440-01 P= 10.474885 Days $T_0=140.694914$ (BKJD)



DV Model-Shift Uniqueness Test

005596440-01, $P = 10.474866$ Days, $E = 130.221041$ Days

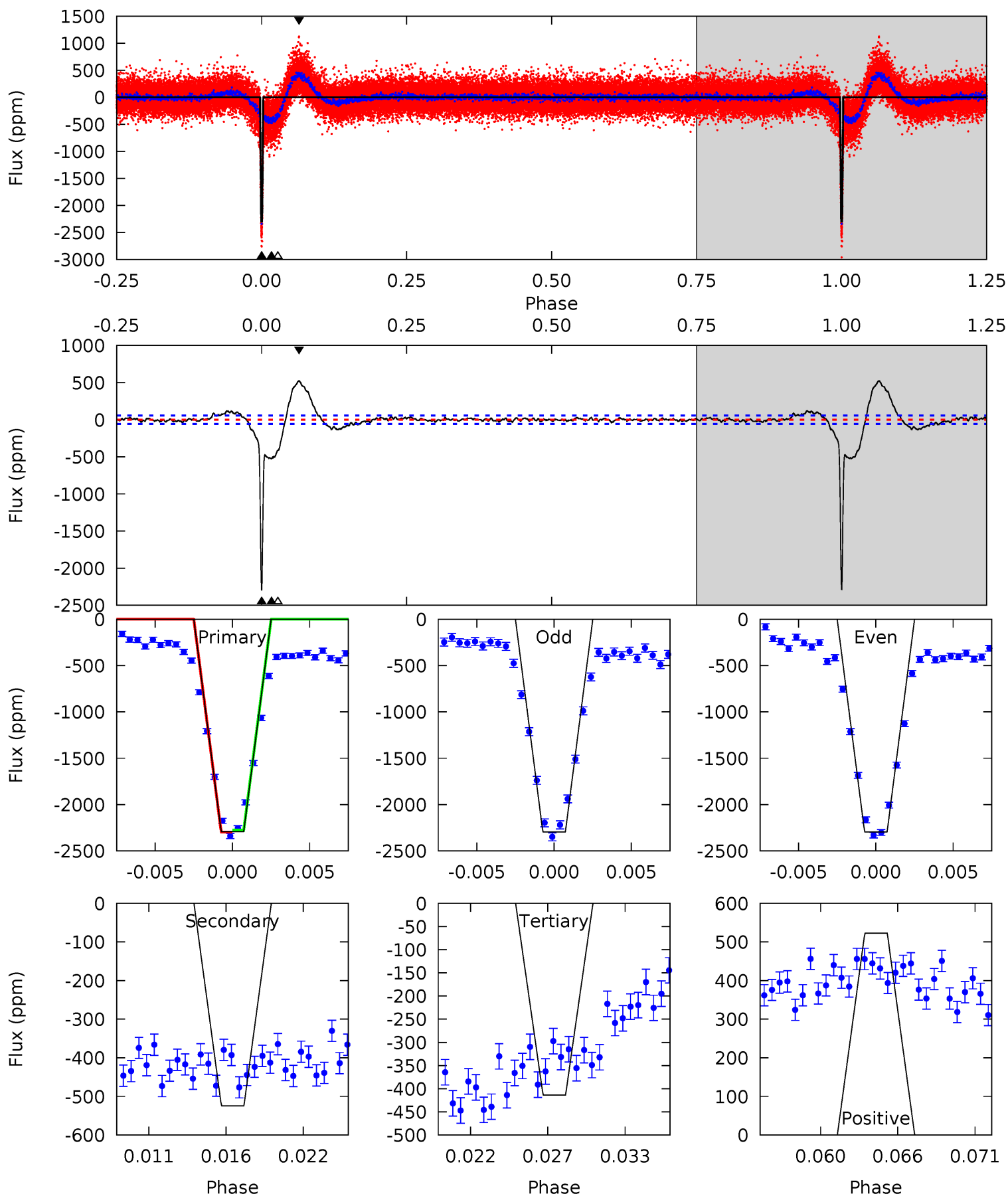
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
264.9	6.49	5.29	13.9	5.08	2.68	2.70	259.6	251.0	1.20	-7.39	0.58	1.01	0.05	1.82



Alt Model-Shift Uniqueness Test

005596440-01, P = 10.474885 Days, E = 130.220029 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
208.9	47.8	37.7	47.6	5.14	2.78	10.2	171.2	161.3	10.1	0.19	0.10	1.01	0.19	0.97



Stellar Parameters For KIC 005596440

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6526^{+177}_{-196}	$3.616^{+0.357}_{-0.084}$	$-0.240^{+0.350}_{-0.250}$	$3.232^{+0.429}_{-1.288}$	$1.573^{+0.199}_{-0.370}$	$0.066^{+0.177}_{-0.017}$
	+3%/-3%	+10%/-2%	+146%/-104%	+13%/-40%	+13%/-24%	+270%/-26%
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 005596440-01 / KOI 0648.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-50 ± 8	$21.56^{+10.80}_{-9.48}$	2145^{+128}_{-202}	2663^{+519}_{-811}	$0.708^{+1.366}_{-0.393}$
Alt.	-525 ± 11	$16.11^{+10.46}_{-8.38}$	2140^{+123}_{-200}	4571^{+1658}_{-746}	13^{+42}_{-9}

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 $A_{obs} \gg 1.0$

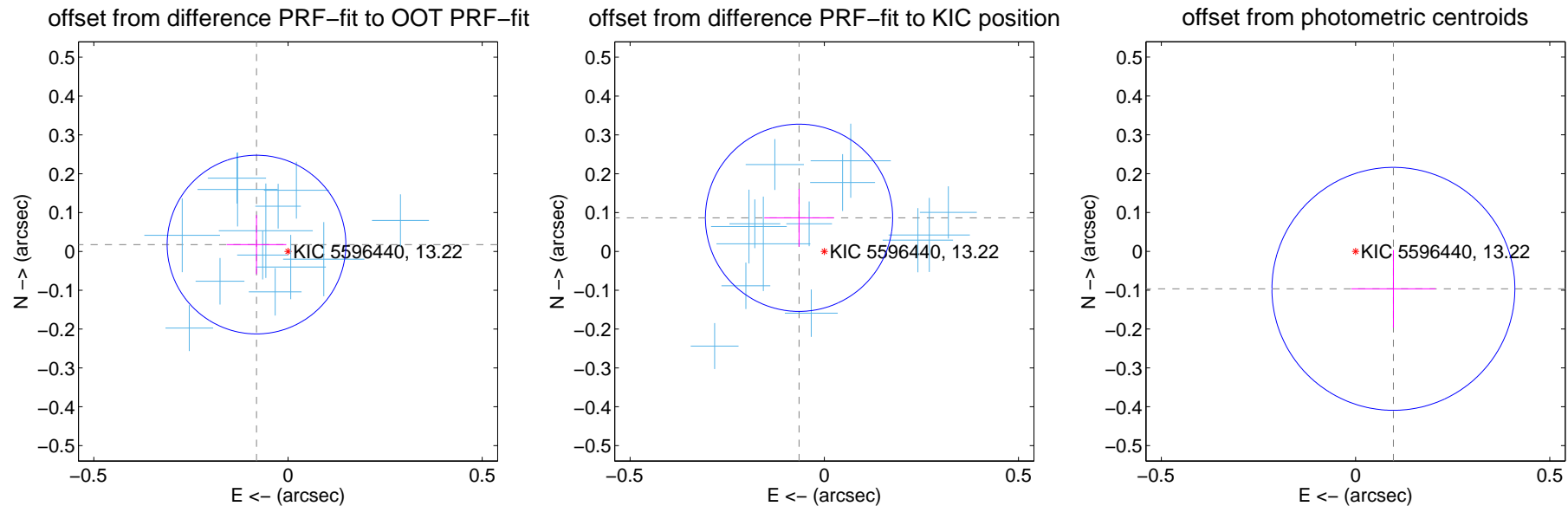
DV Centroid Data

Supplemental centroid analysis for 005596440-01. Kepler magnitude: 13.22. Transit SNR 137.86

There are 13 quarters with good PRF difference image offsets

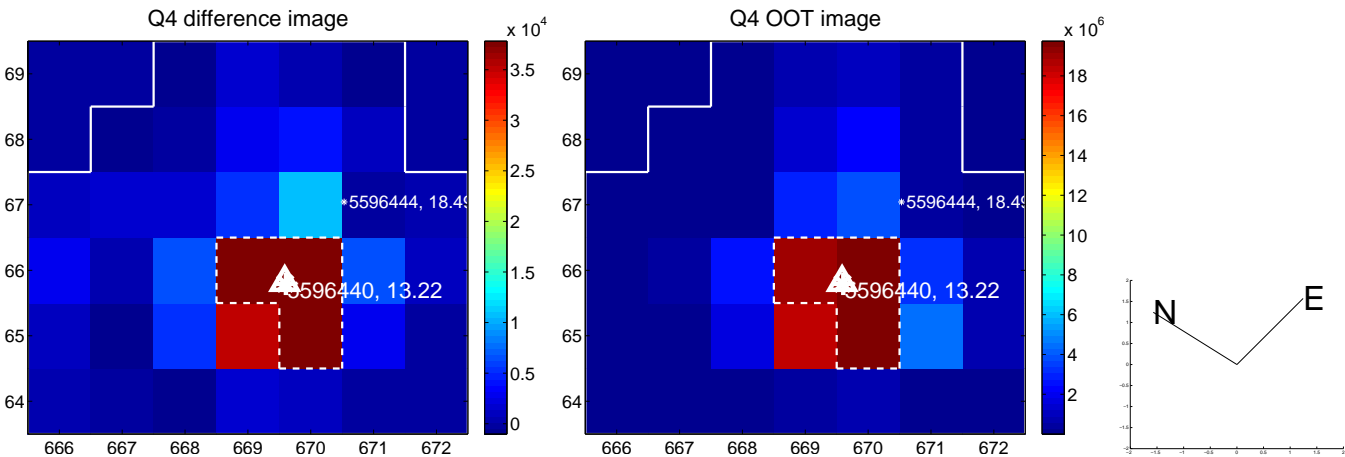
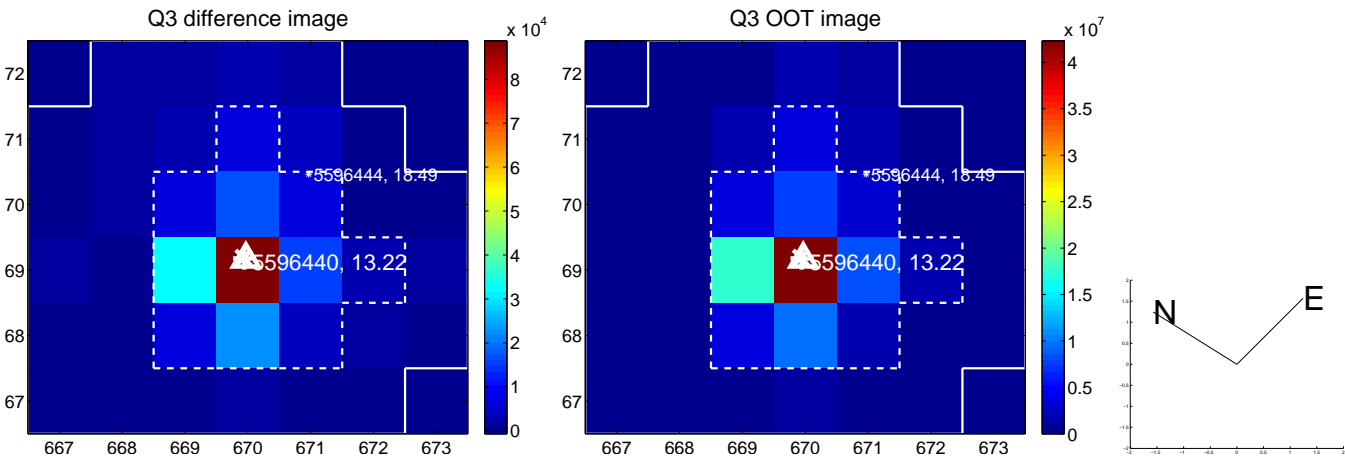
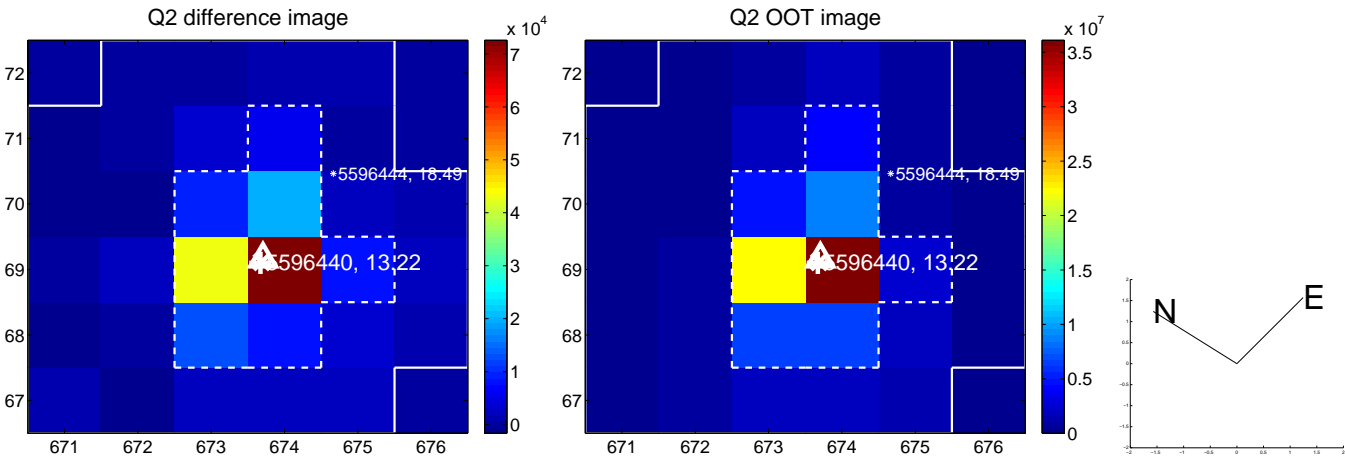
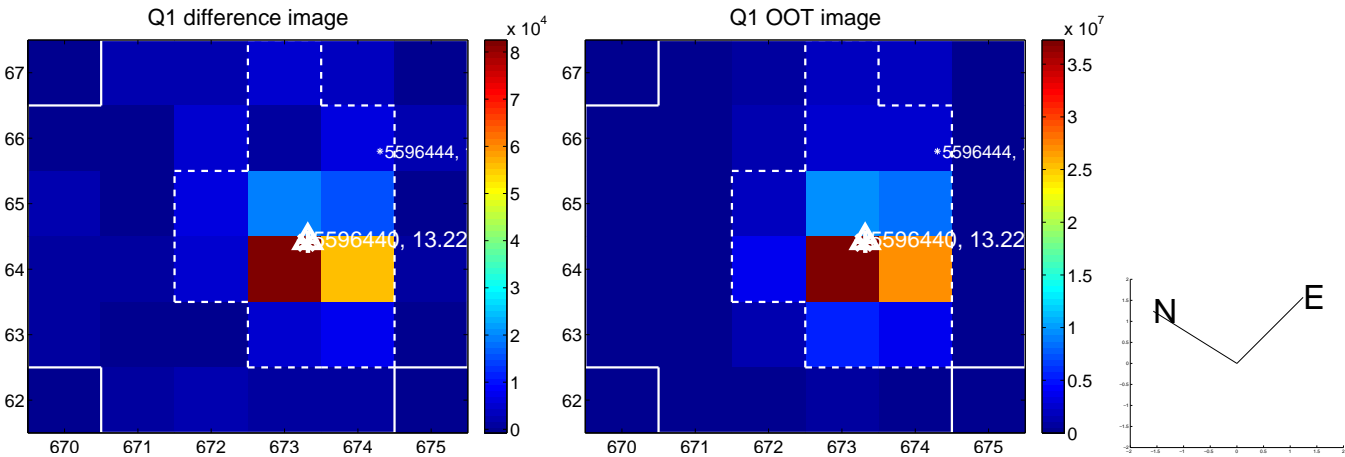
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.083 ± 0.077	1.08	0.081 ± 0.077	0.018 ± 0.076
PRF-fit source offset from KIC position	0.108 ± 0.080	1.35	0.065 ± 0.090	0.087 ± 0.075
photometric centroid source offset	0.14 ± 0.10	1.32	-0.10 ± 0.11	-0.10 ± 0.10

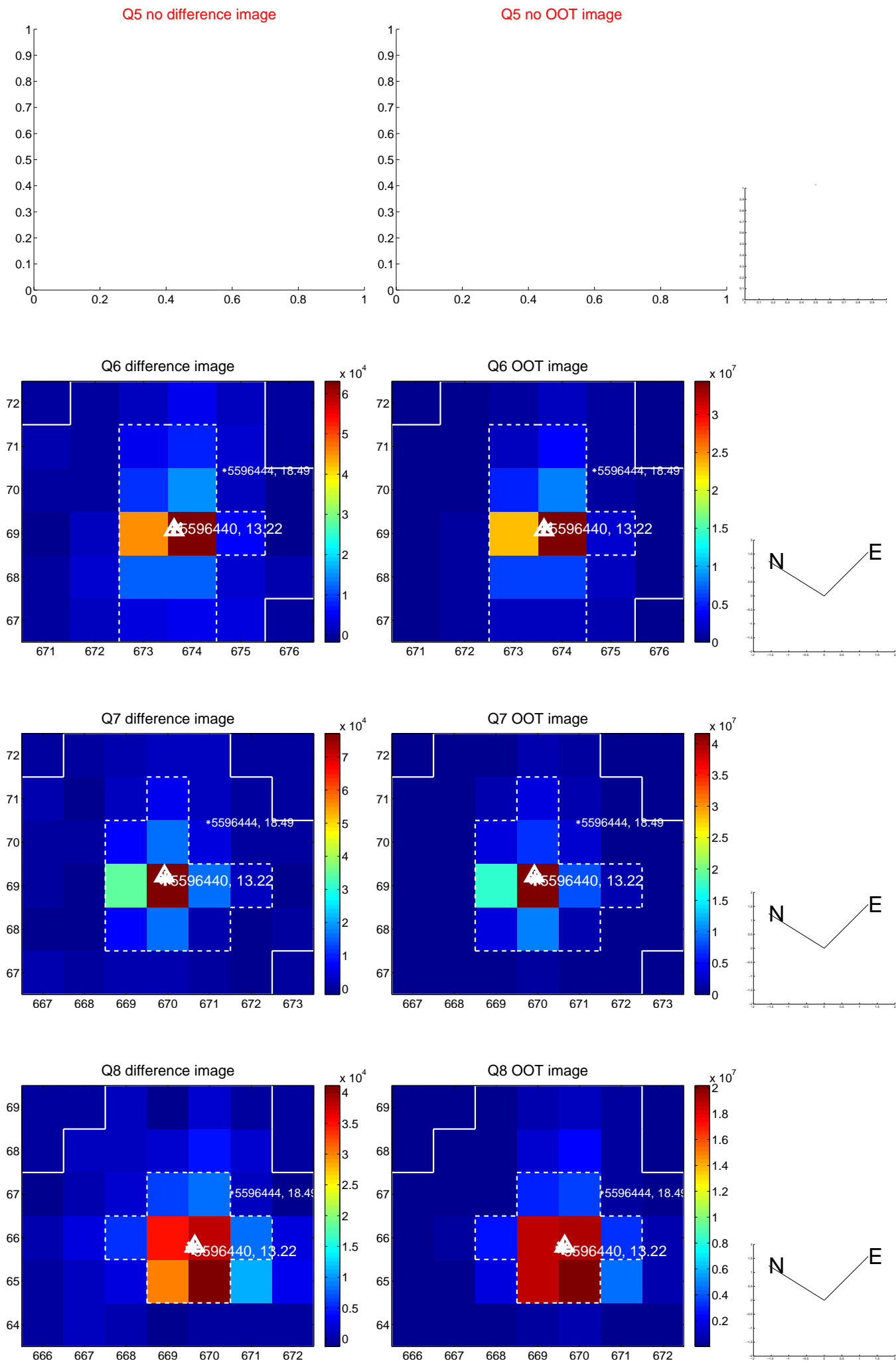


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

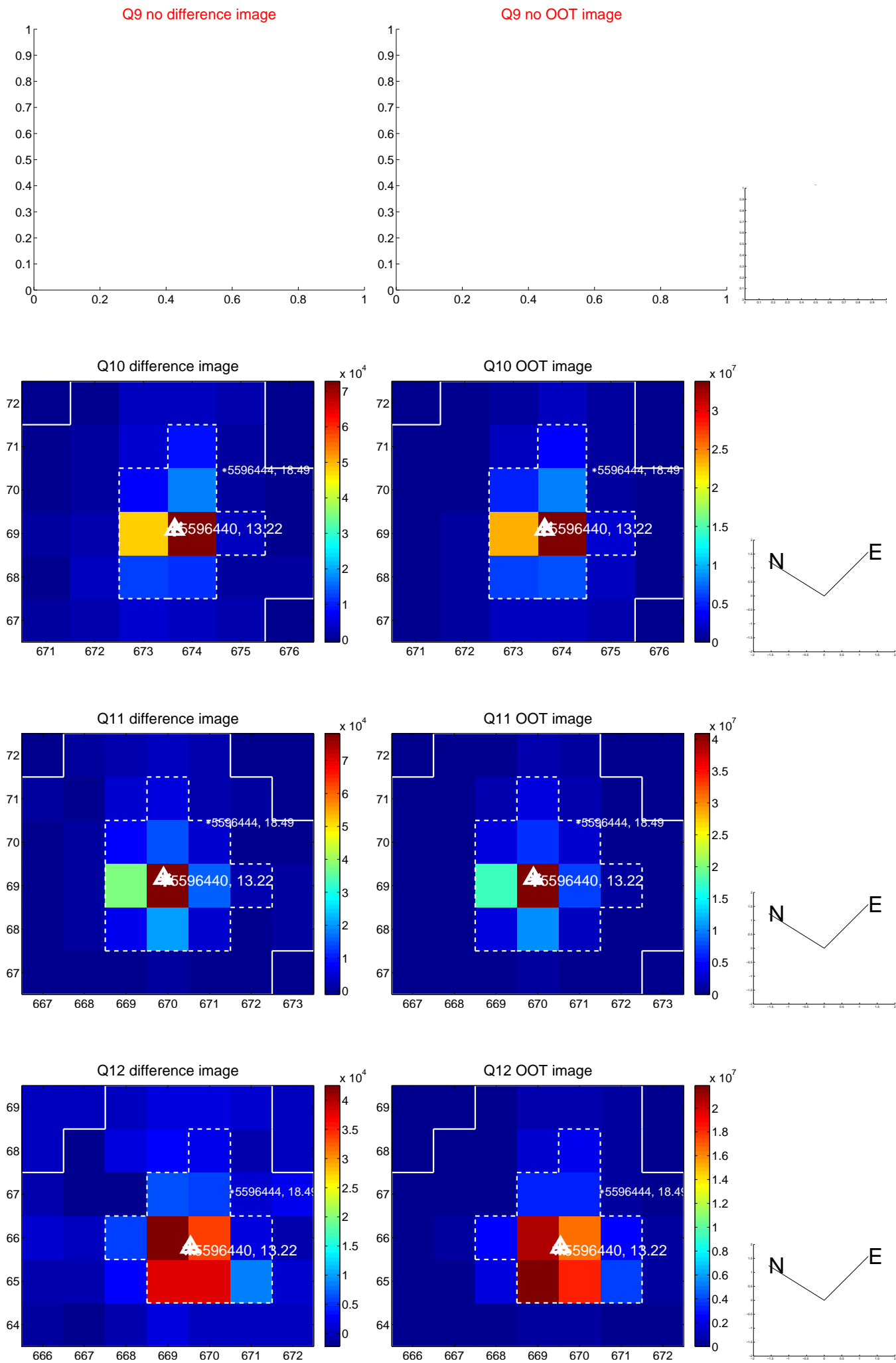
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



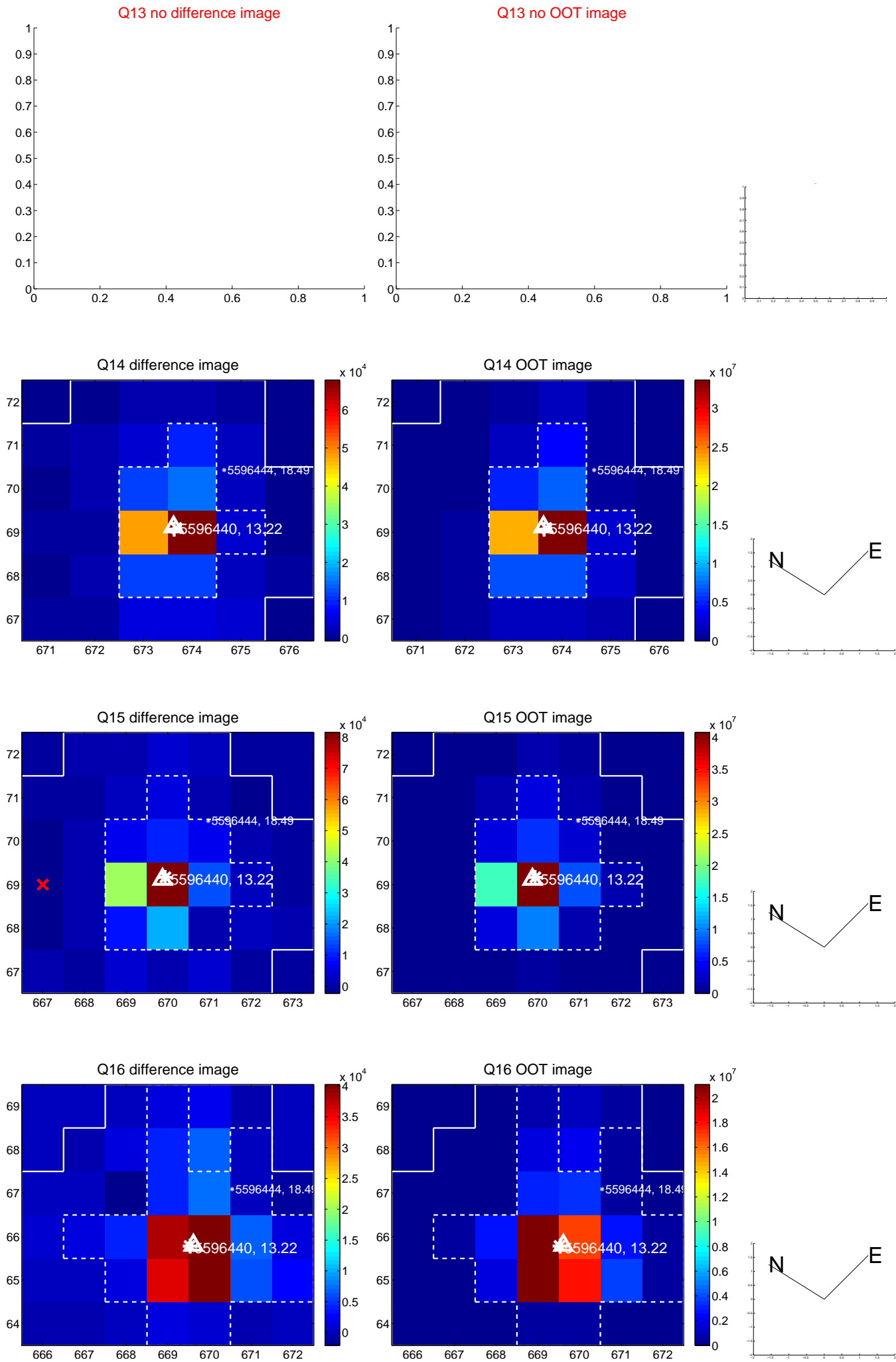
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



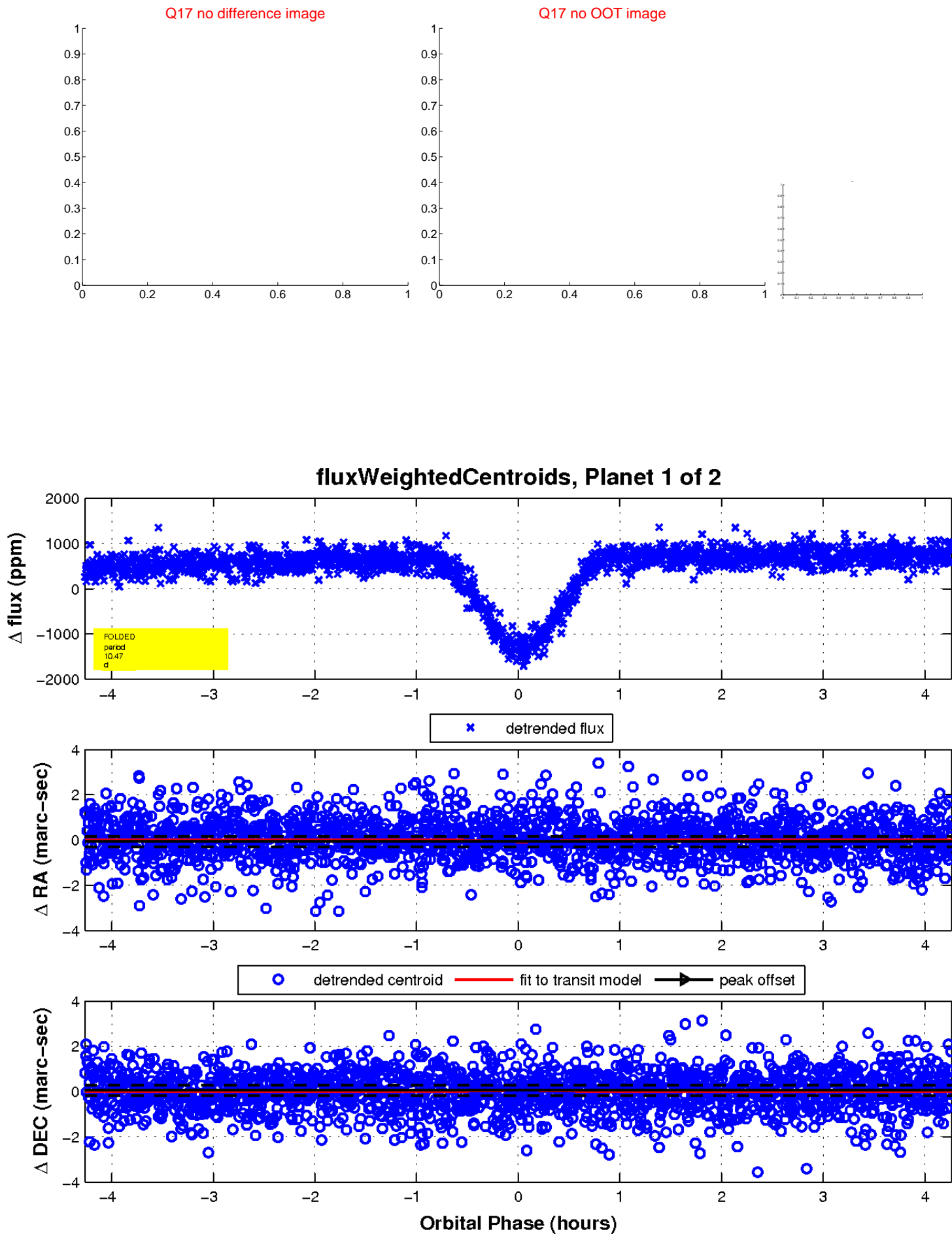
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

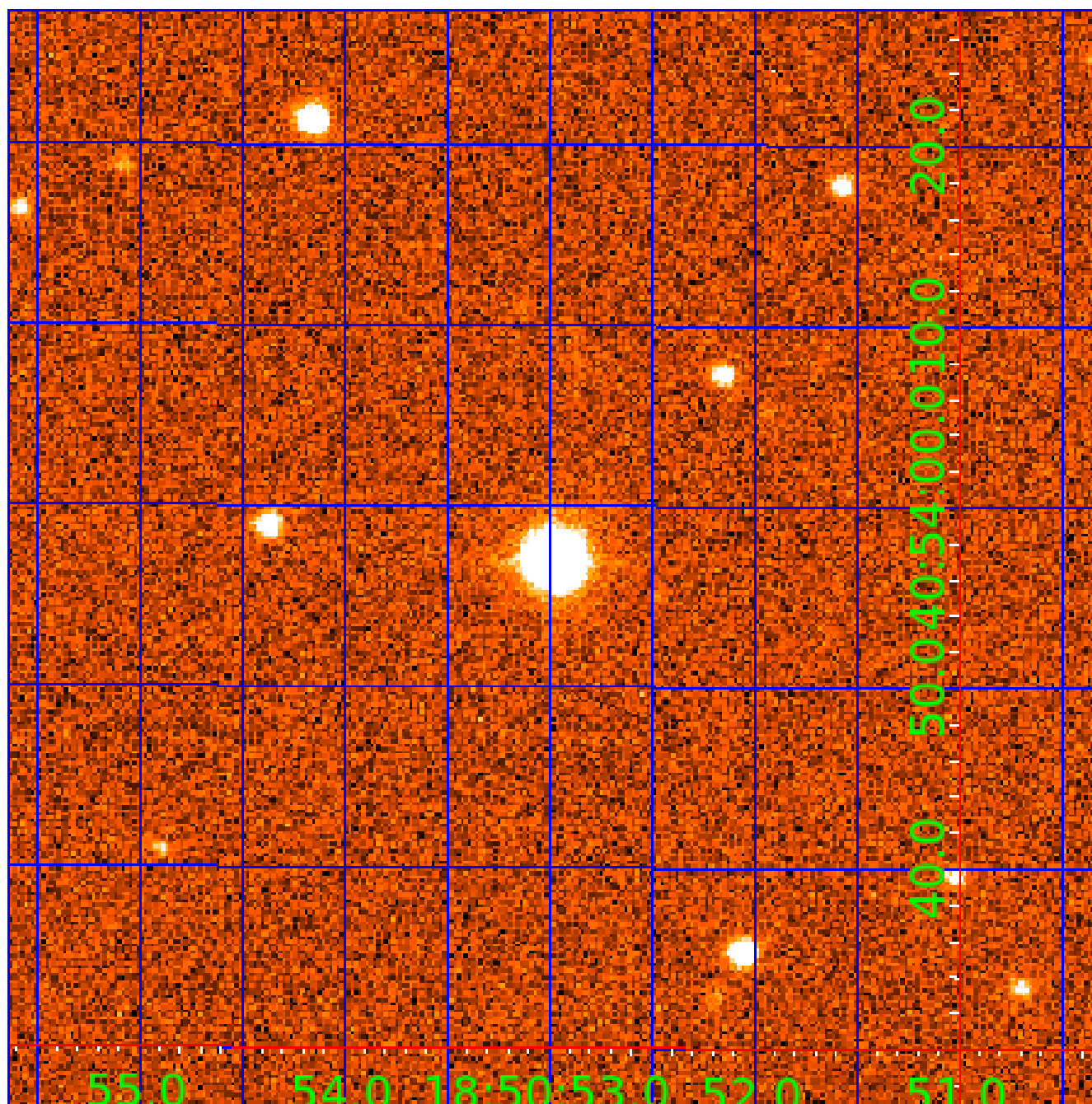


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005596440

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})
005596440-01	OBS	0648.01	10.474866	140.695907	2008.0	1.422	128.6	137.9	3.23	6526	23.33	1428.67
005596440-02	OBS	No	10.474915	140.805303	818.9	24.473	28.5	34.9	3.23	6526	17.53	1428.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005596440-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
005596440-02	OBS	FP	0.00	1	0	0	0	LPP_DV—RESIDUAL_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.

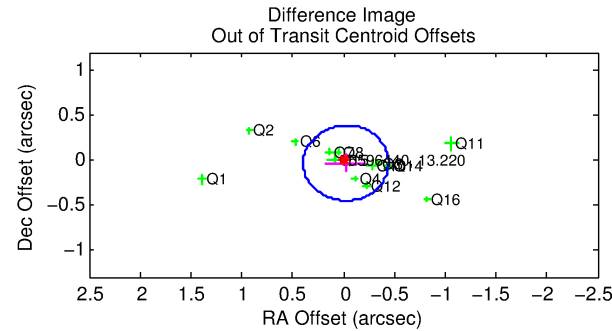
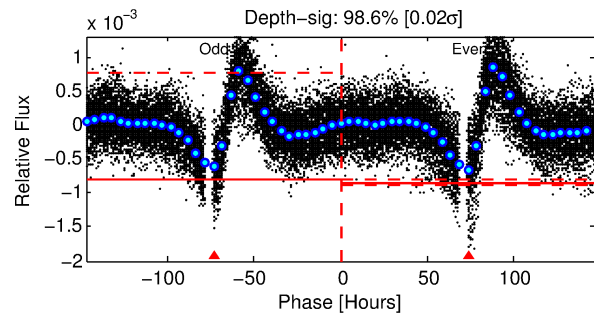
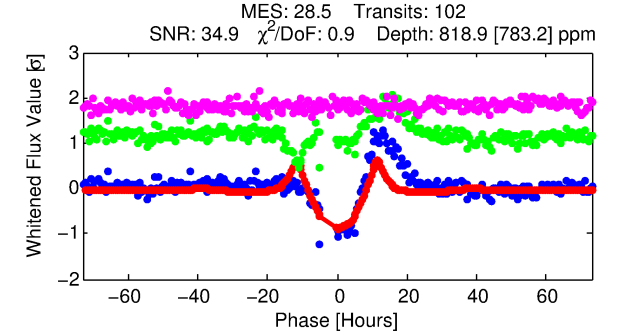
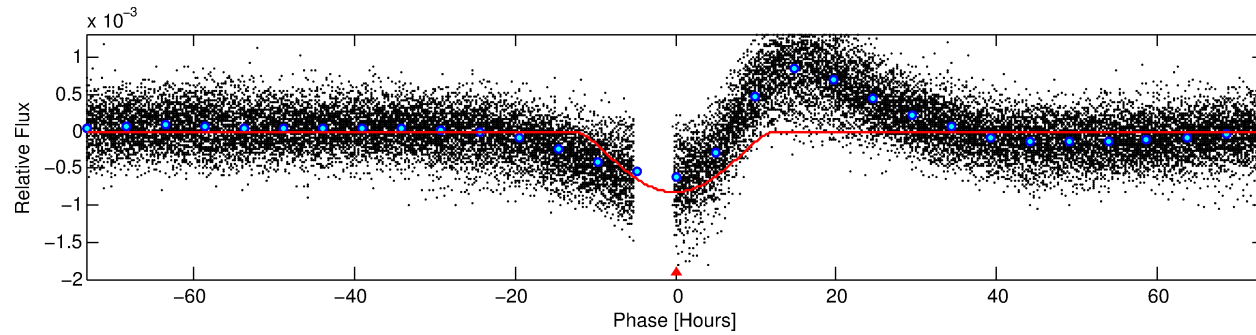
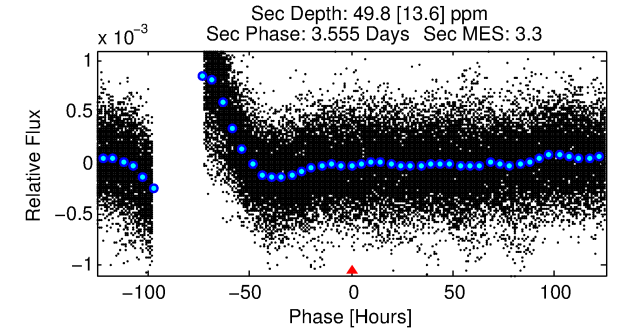
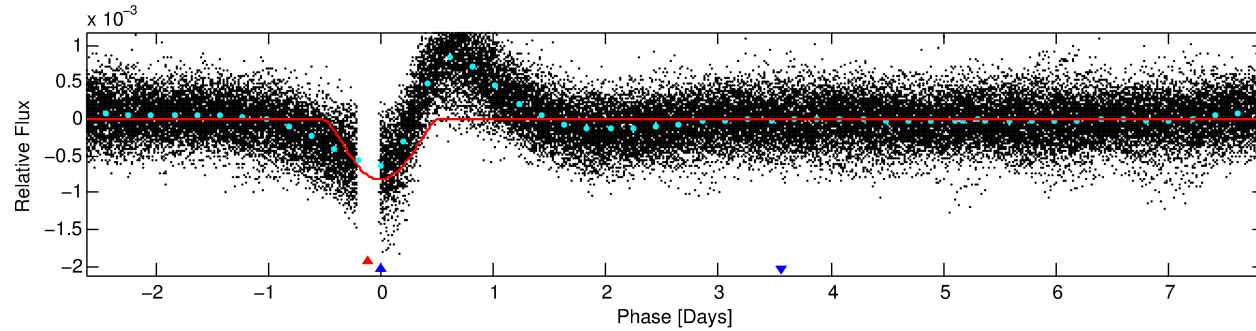
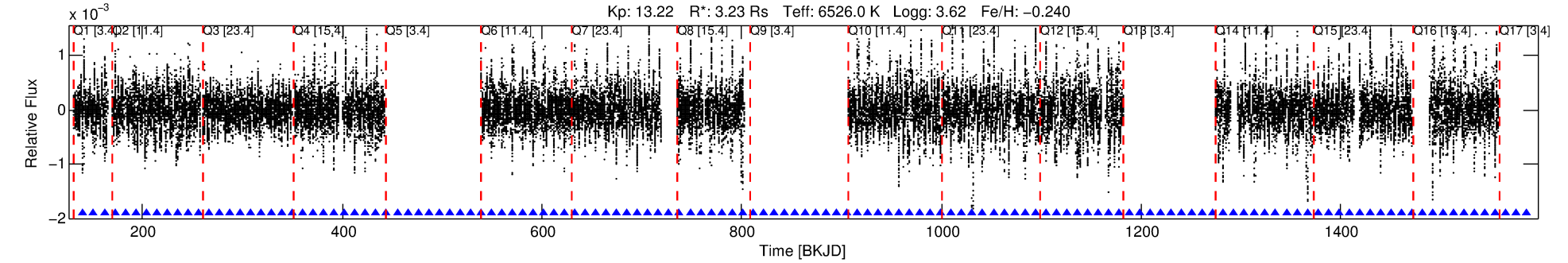
Ephemeris Match Information For 005596440-02

No Significant Match Found

DV One-Page Summary

KIC: 5596440 Candidate: 2 of 2 Period: 10.475 d

KOI: K00648 Corr: No Ephemeris Match



DV Fit Results:

Period = 10.47491 [0.00009] d
Epoch = 140.8053 [0.0071] BKJD
Rp/R* = 0.0497 [0.0120]
a/R* = 1.46 [0.03]
b = 1.00 [0.02]
Seff = 1428.66 [886.85]
Teq = 1568 [243] K
Rp = 17.53 [8.18] Re
a = 0.1090 [0.0416] AU
Ag = 1.06 [0.87] [0.07 σ]
Teffp = 2459 [350] K [2.09 σ]

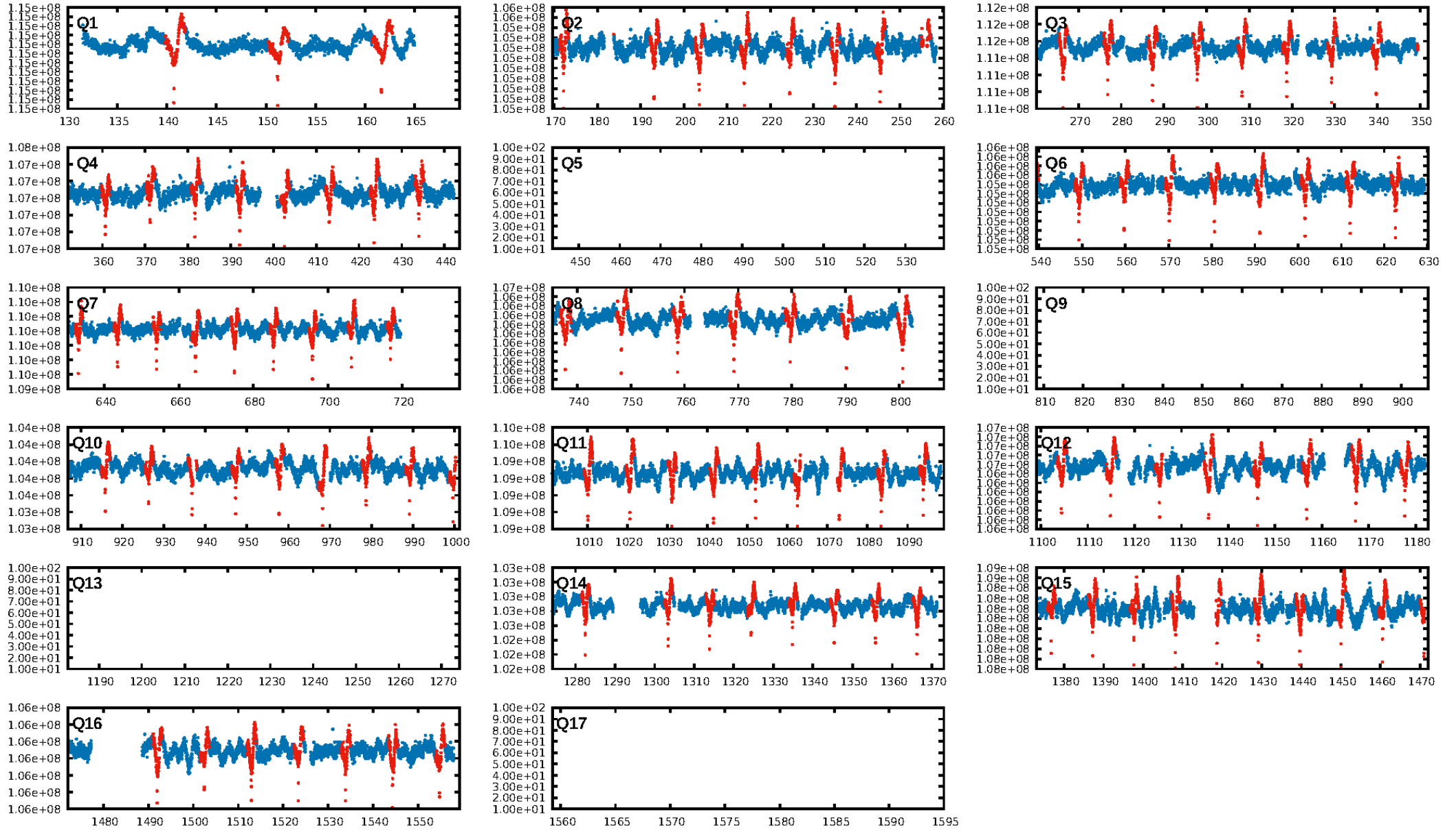
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.10e-175
RollingBand-fgt: 1.00 [99/99]
GhostDiagnostic-chr: 1.346
Centroid-sig: 8.9%
Centroid-so: 0.069 arcsec [0.86 σ]
OotOffset-rm: 0.040 arcsec [0.29 σ]
KicOffset-rm: 0.026 arcsec [0.23 σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/13]

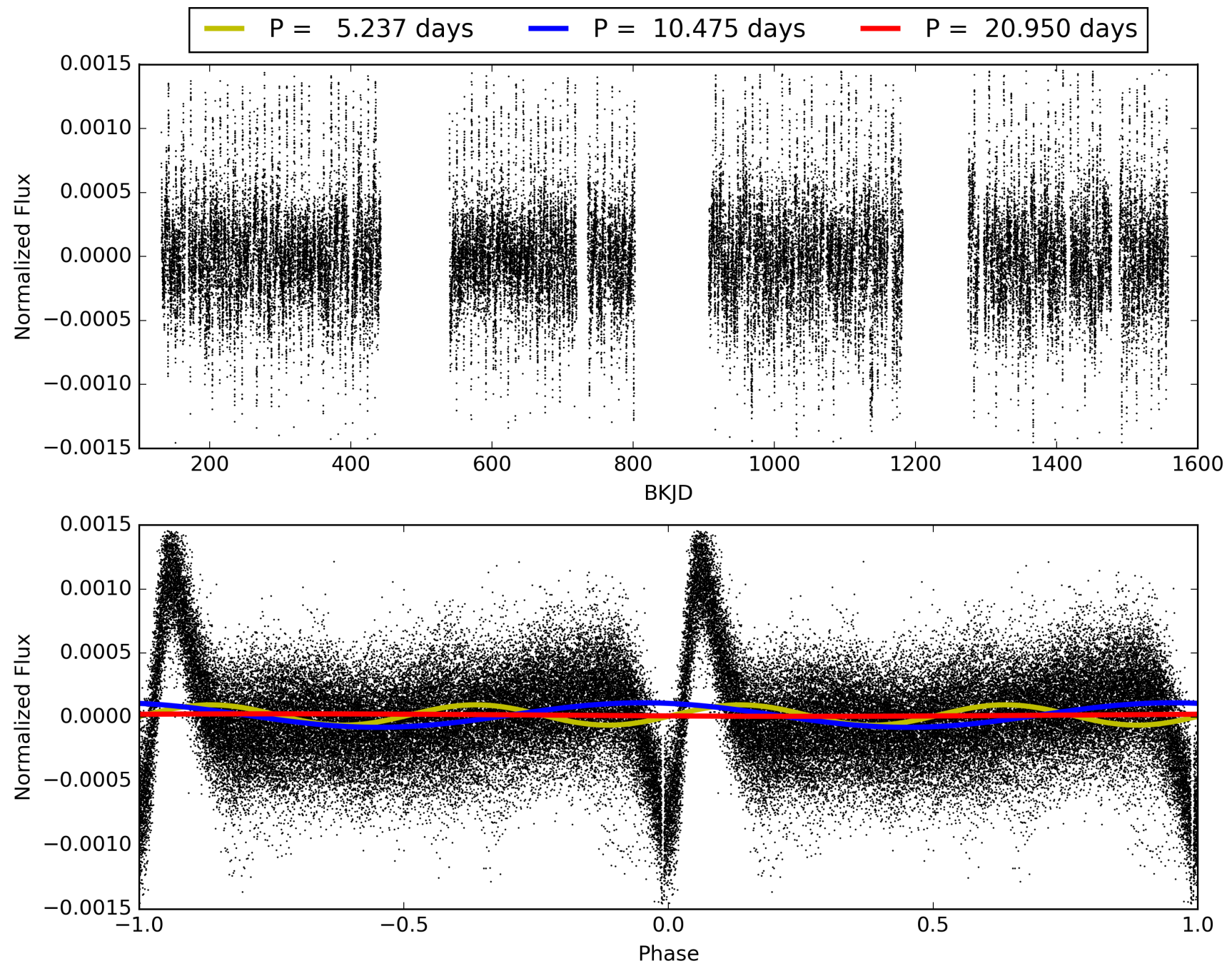
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:21:17 Z

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

TCE 005596440-02, PDC Light Curves

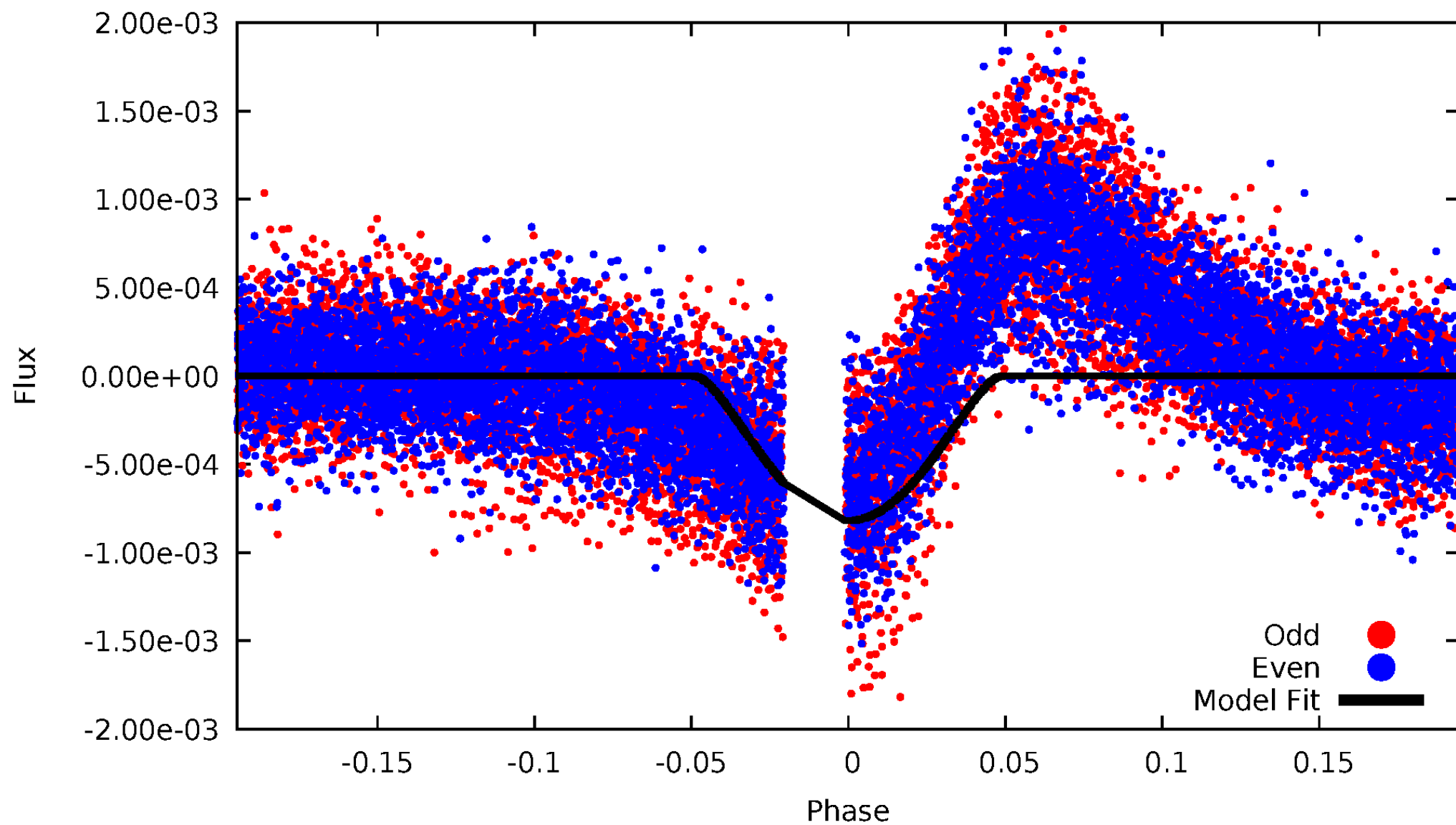


TCE 005596440-02



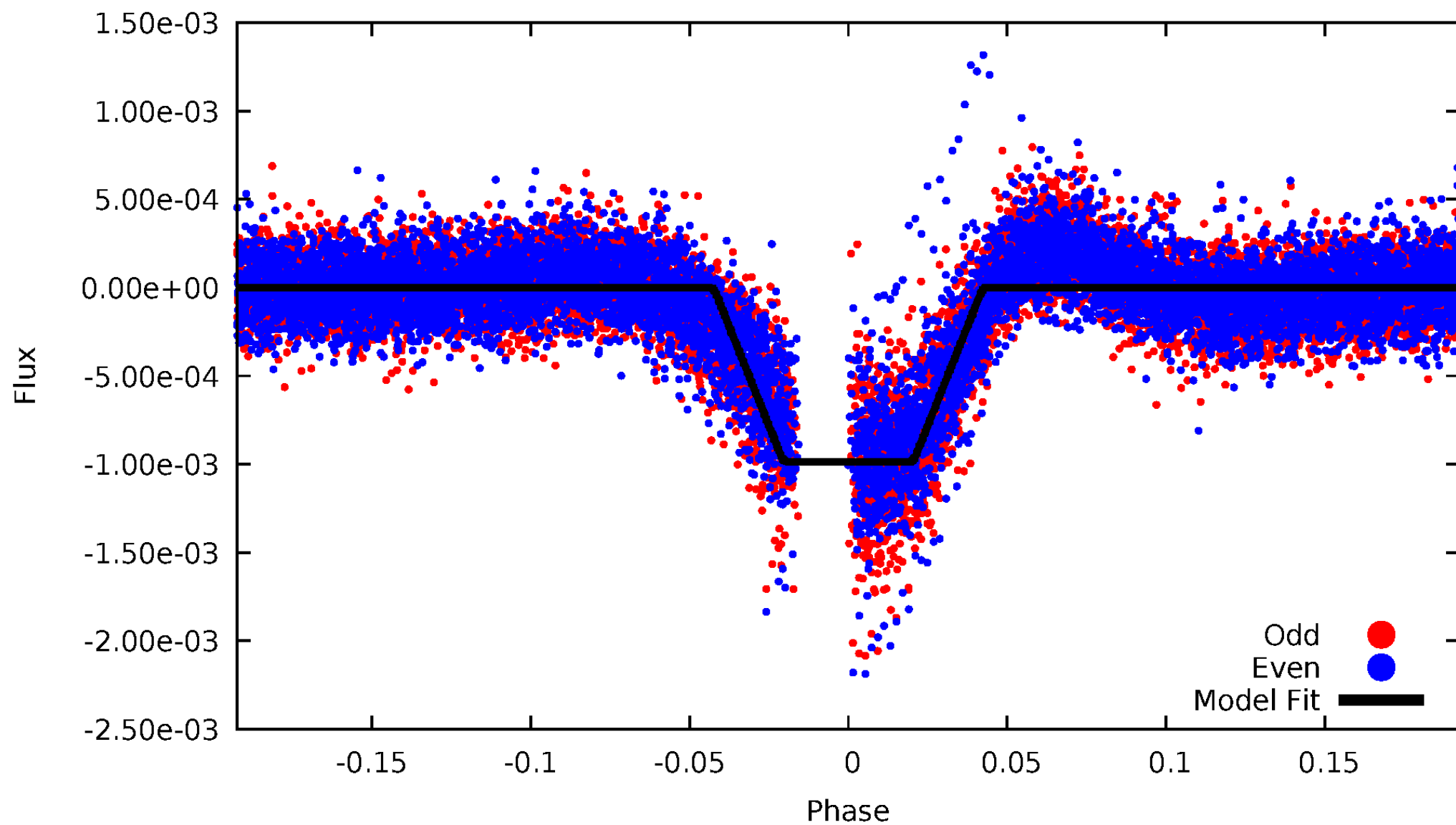
DV Odd/Even

TCE 005596440-02



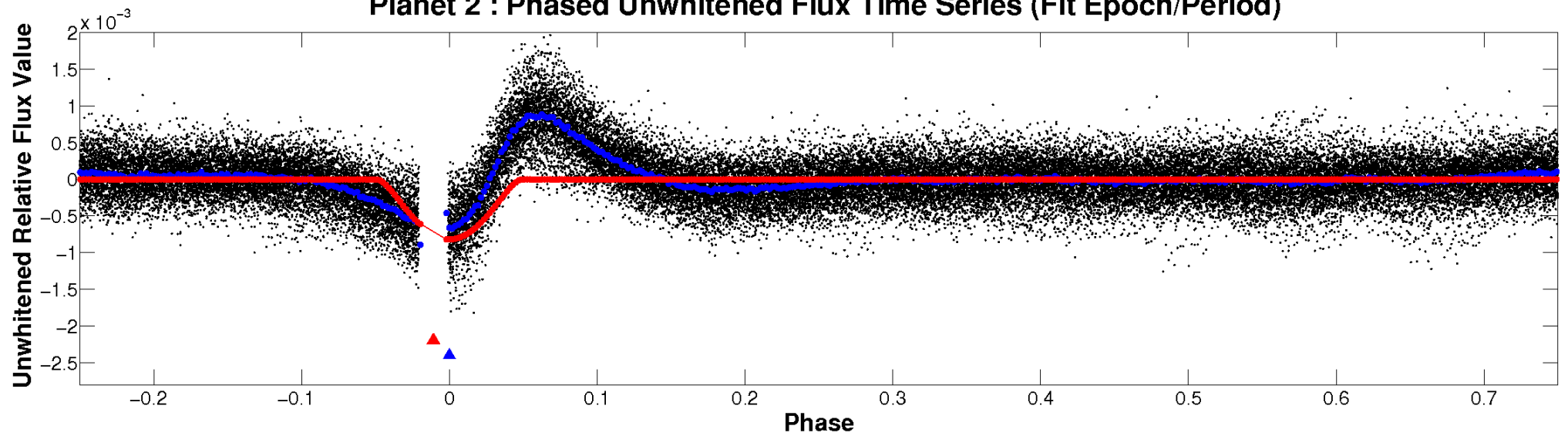
ALT Odd/Even

TCE 005596440-02

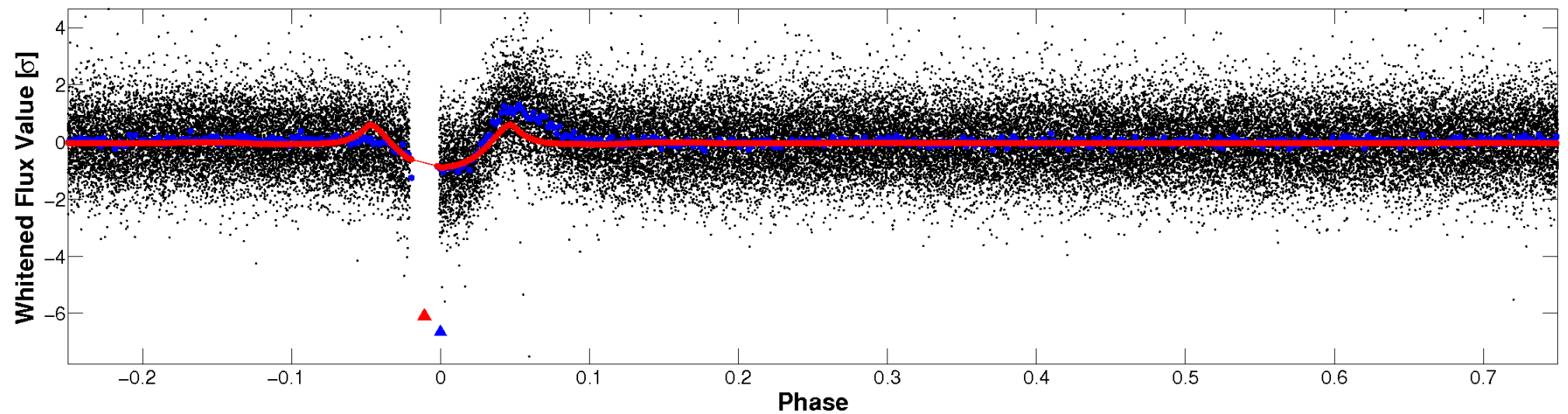


Non-Whitened Vs. Whitened Light Curve

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

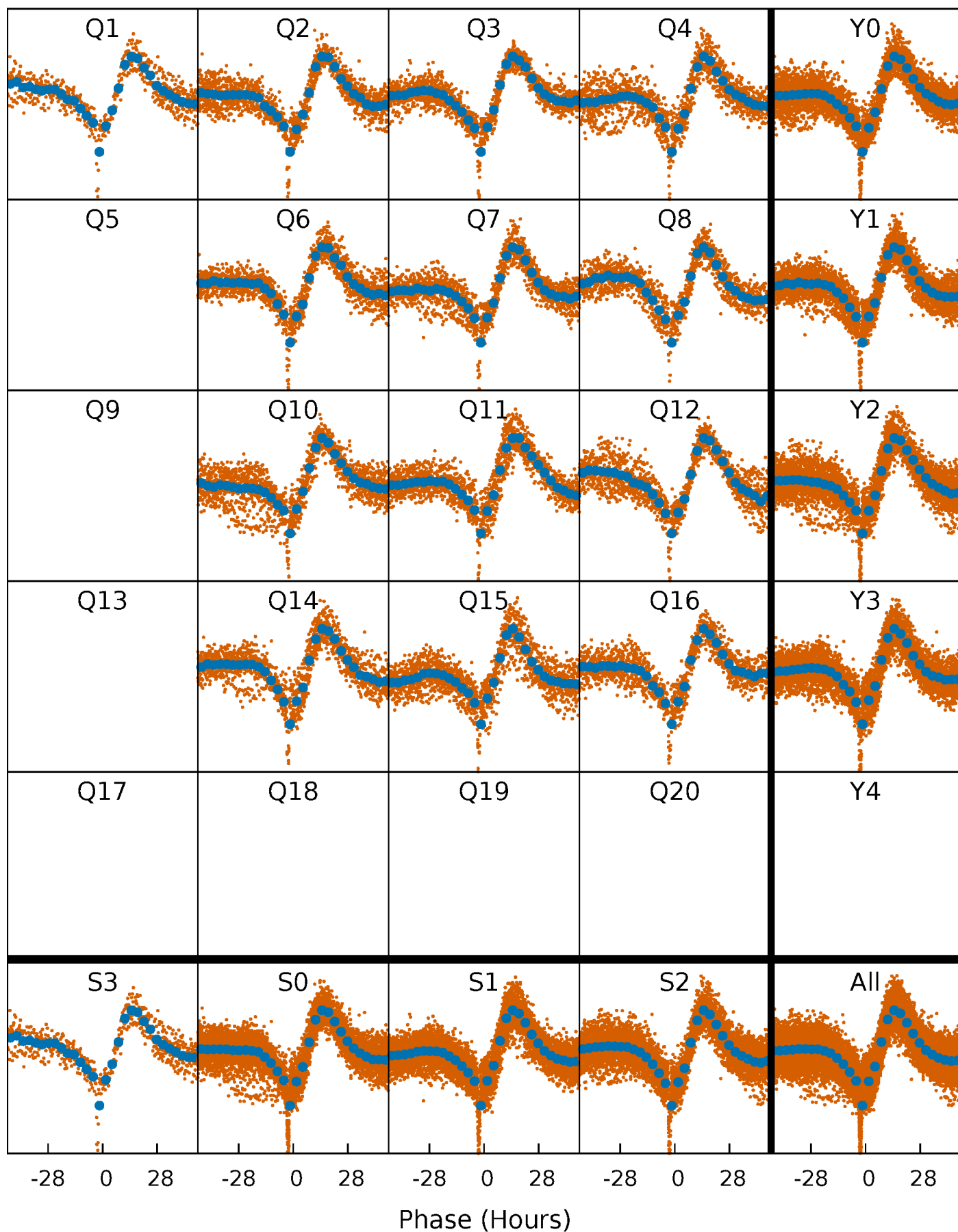


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



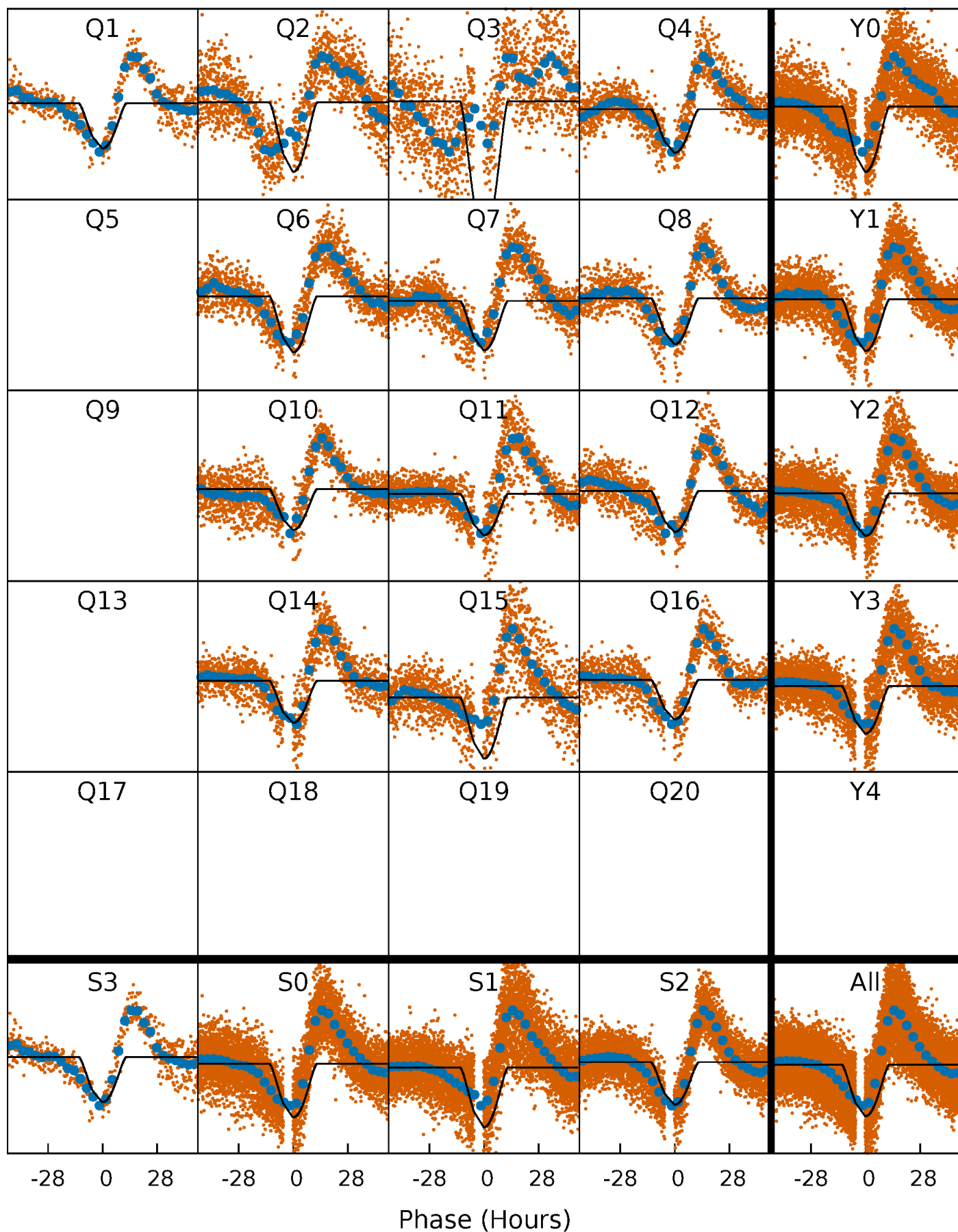
PDC Quarter-Phased Transit Curves

TCE 005596440-02 P= 10.474915 Days $T_0=140.805303$ (BKJD)



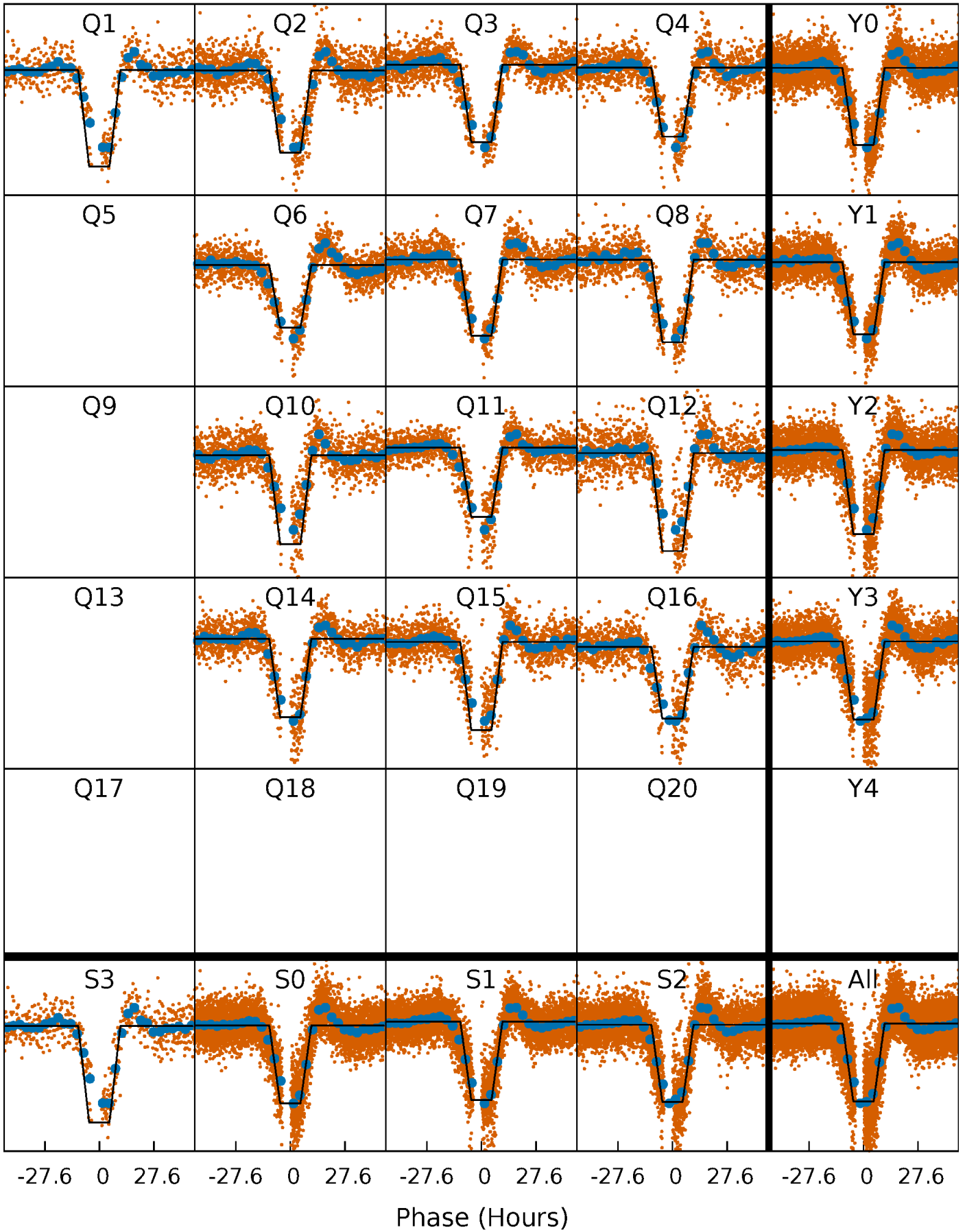
DV Quarter-Phased Transit Curves

TCE 005596440-02 P= 10.474915 Days $T_0=140.805303$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

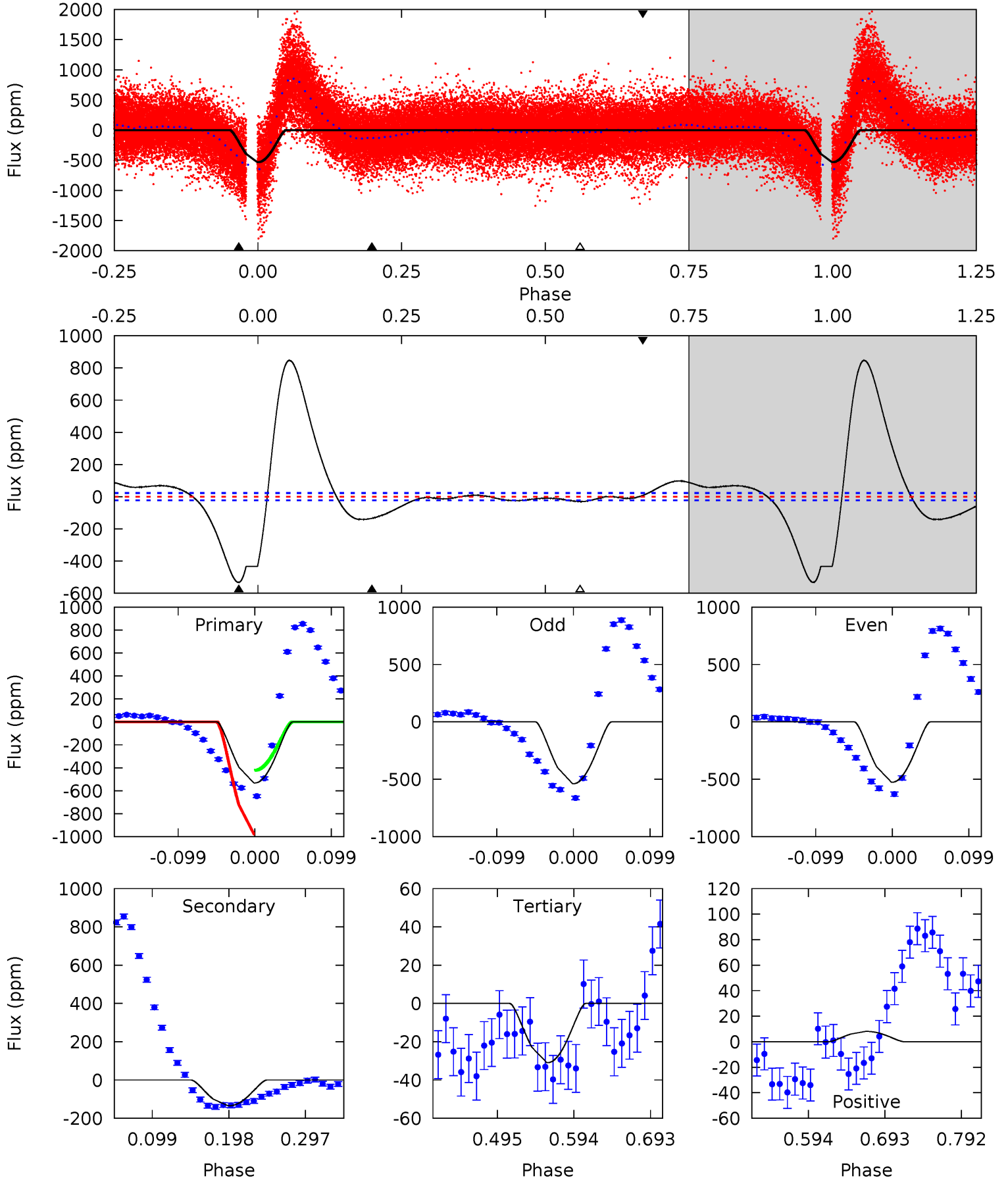
TCE 005596440-02 P= 10.475219 Days $T_0=140.753584$ (BKJD)



DV Model-Shift Uniqueness Test

005596440-02, P = 10.474915 Days, E = 130.330388 Days

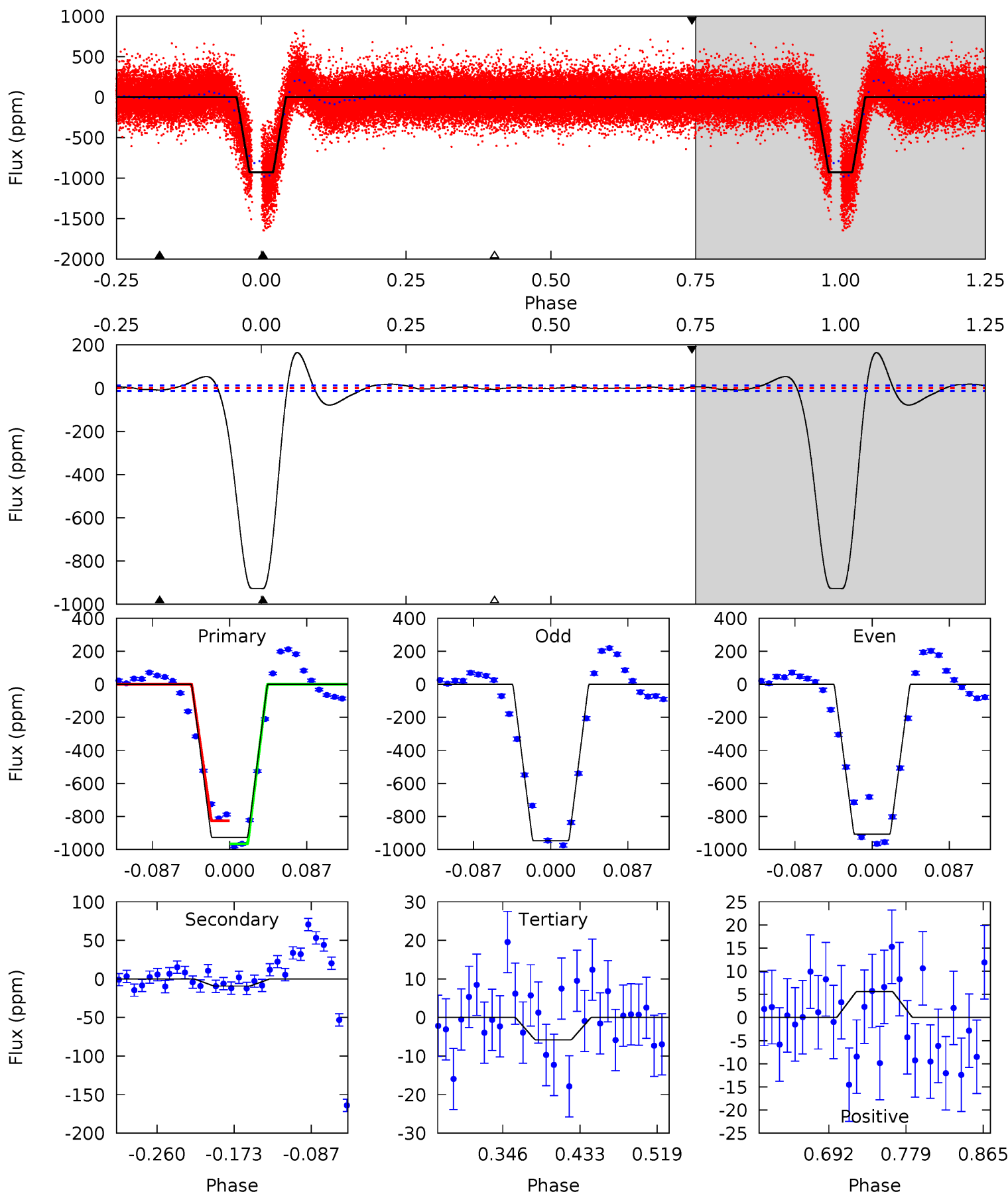
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
107.4	27.1	6.24	1.63	4.57	1.65	27.9	101.1	105.7	20.9	25.5	1.32	1.06	0.61	62.6



Alt Model-Shift Uniqueness Test

005596440-02, P = 10.475219 Days, E = 130.278365 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
337.4	3.34	2.11	2.04	4.60	1.71	7.23	335.3	335.3	1.23	1.30	7.08	1.02	0.15	24.8



Stellar Parameters For KIC 005596440

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6526^{+177}_{-196}	$3.616^{+0.357}_{-0.084}$	$-0.240^{+0.350}_{-0.250}$	$3.232^{+0.429}_{-1.288}$	$1.573^{+0.199}_{-0.370}$	$0.066^{+0.177}_{-0.017}$
	+3%/-3%	+10%/-2%	+146%/-104%	+13%/-40%	+13%/-24%	+270%/-26%
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 005596440-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-134 ± 5	$16.47^{+5.12}_{-4.80}$	2143^{+126}_{-201}	3523^{+385}_{-261}	$3.253^{+2.910}_{-1.358}$
Alt.	-9 ± 3	$10.30^{+4.51}_{-4.28}$	2139^{+126}_{-218}	2460^{+613}_{-4595}	$0.541^{+1.024}_{-0.296}$

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 $A_{\text{obs}} \gg 1.0$

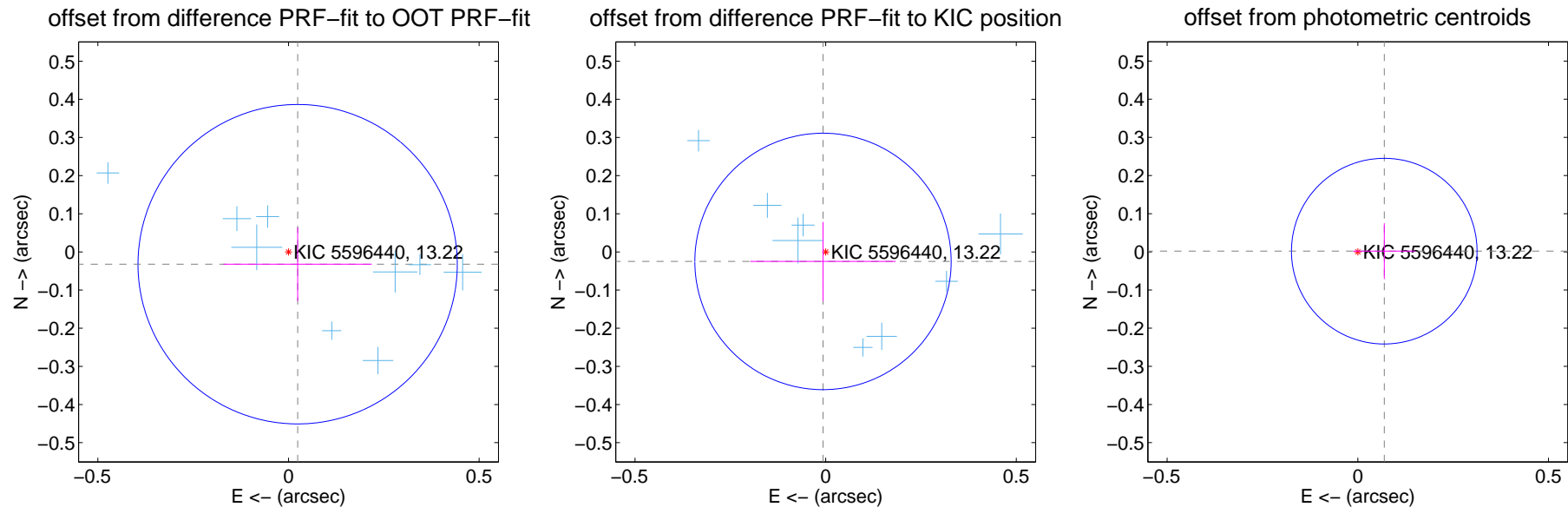
DV Centroid Data

Supplemental centroid analysis for 005596440-02. Kepler magnitude: 13.22. Transit SNR 34.89

There are 13 quarters with good PRF difference image offsets

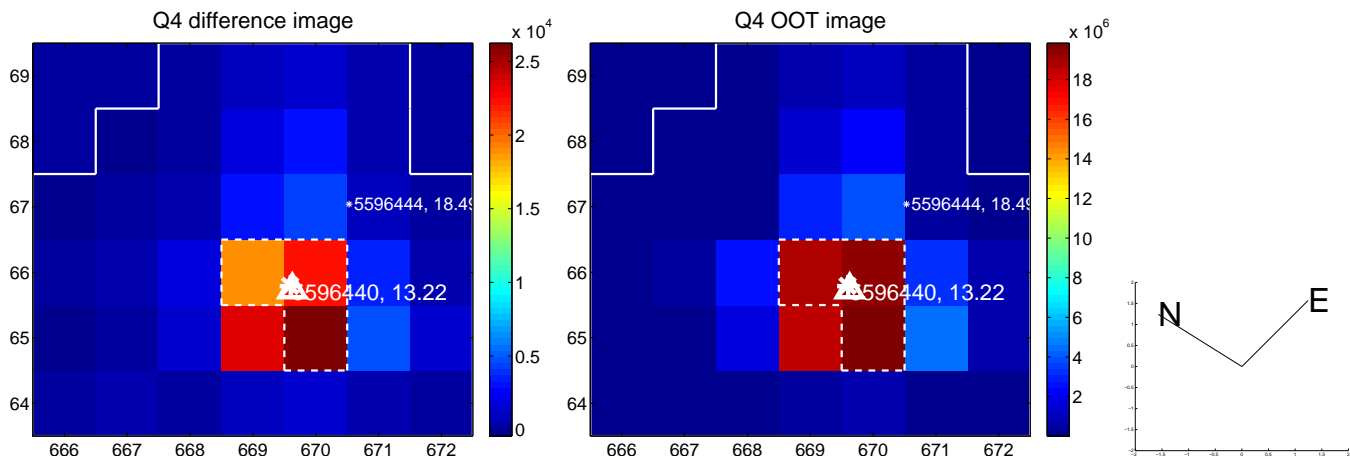
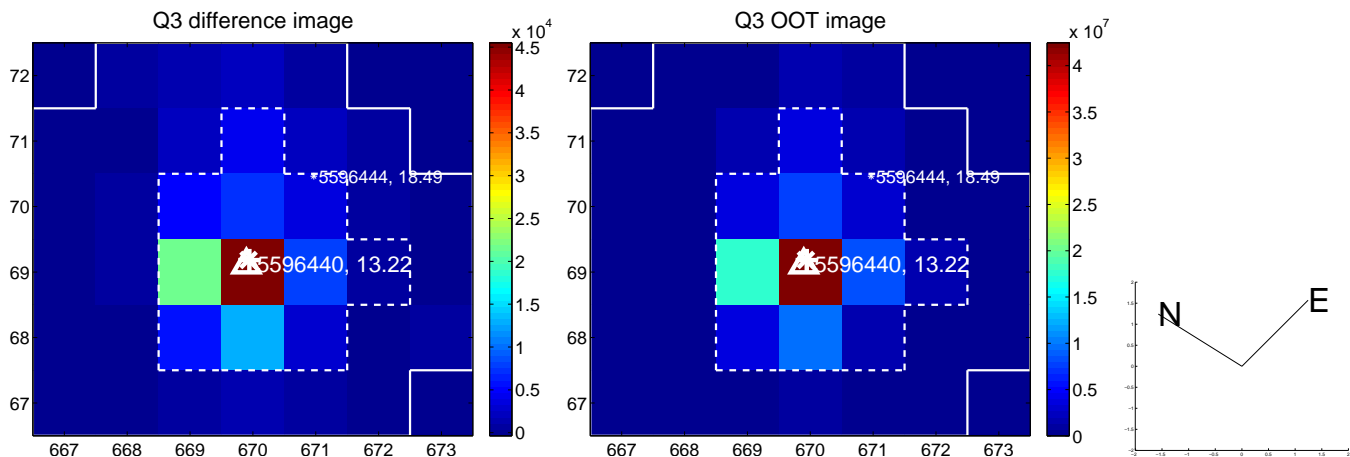
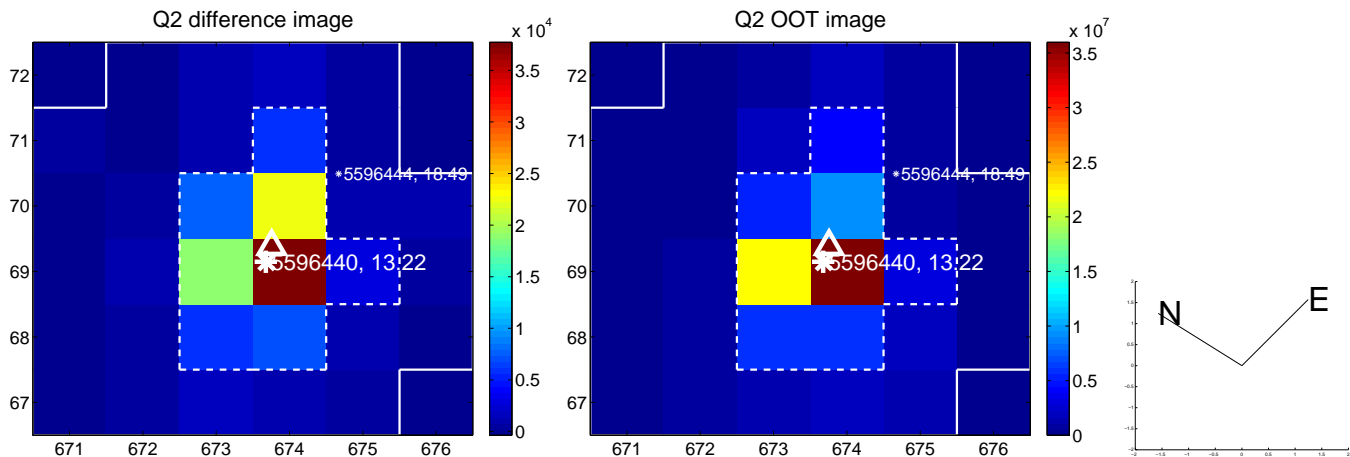
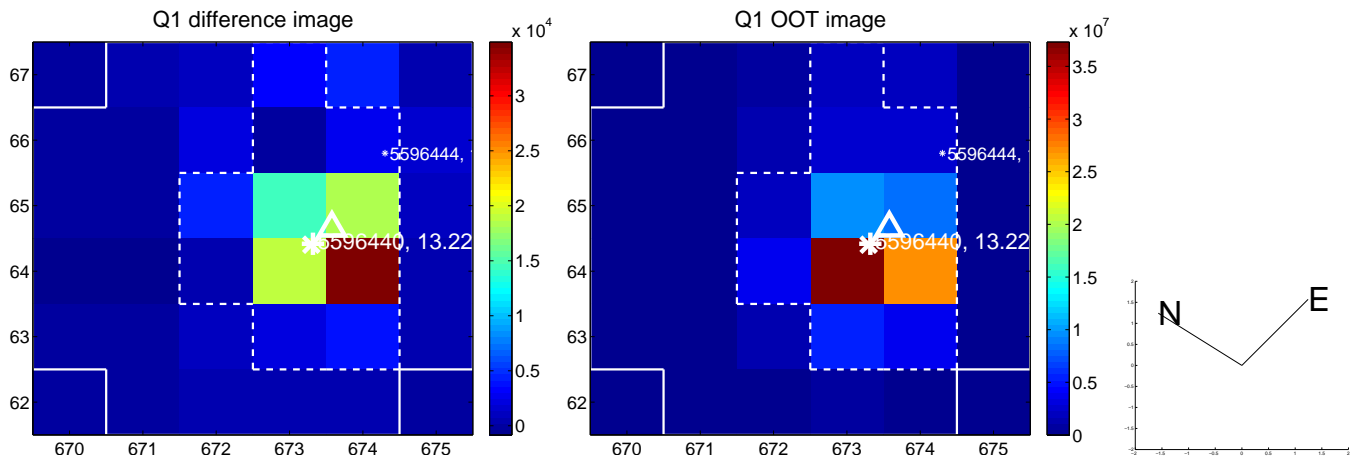
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.040 ± 0.140	0.29	-0.024 ± 0.194	-0.032 ± 0.096
PRF-fit source offset from KIC position	0.026 ± 0.112	0.23	0.007 ± 0.191	-0.025 ± 0.103
photometric centroid source offset	0.07 ± 0.08	0.86	-0.07 ± 0.08	0.00 ± 0.07

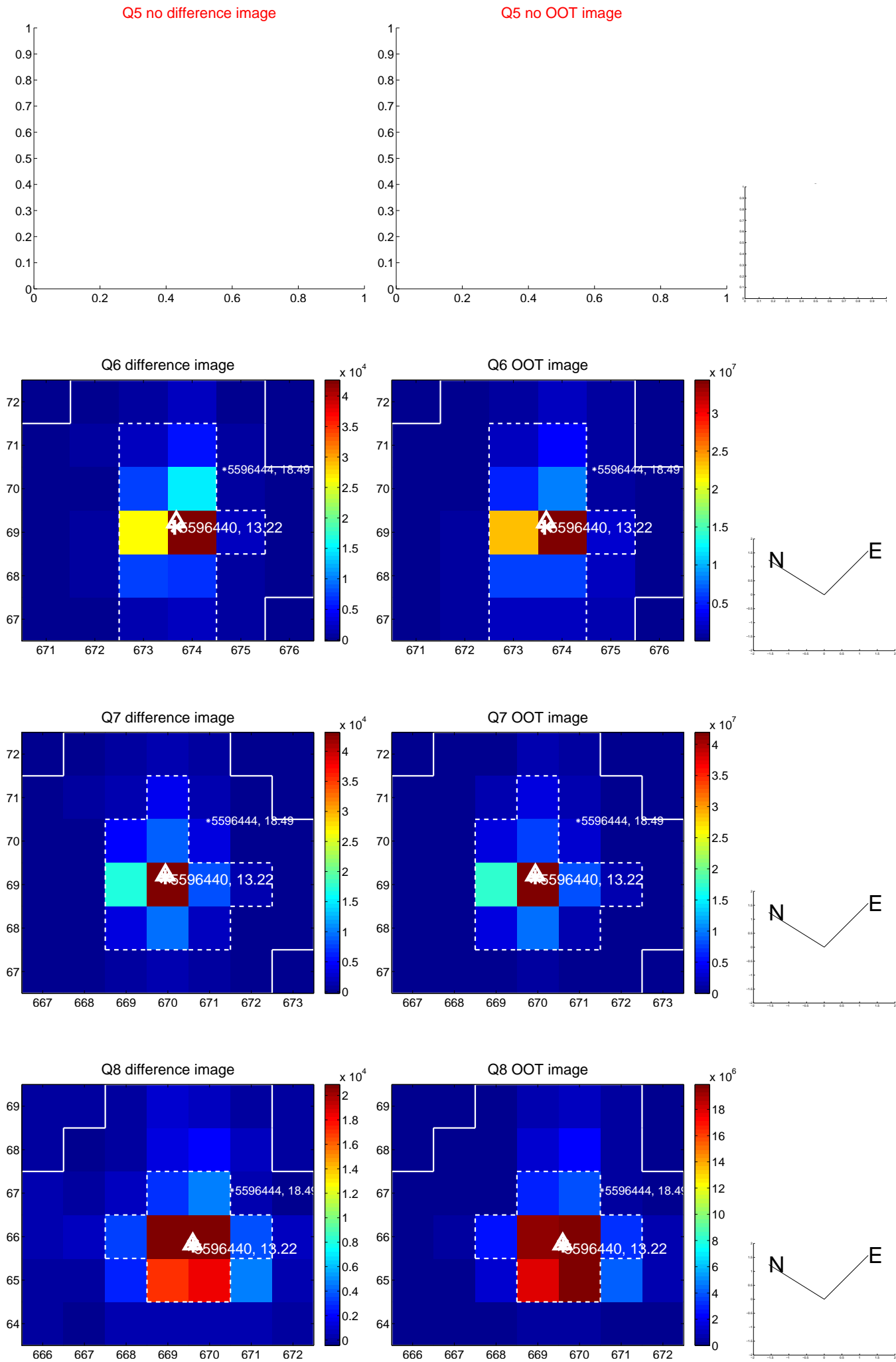


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

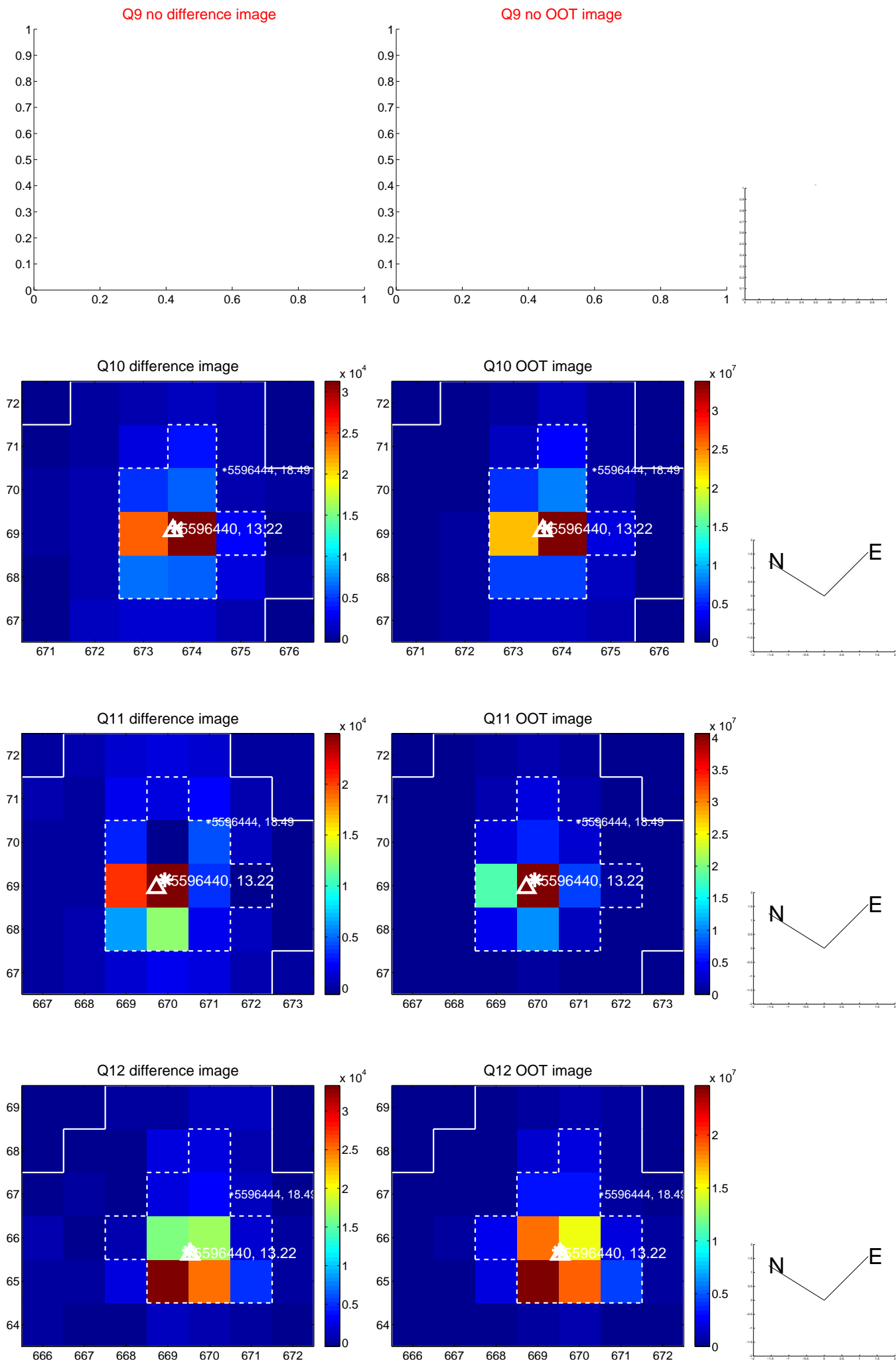
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



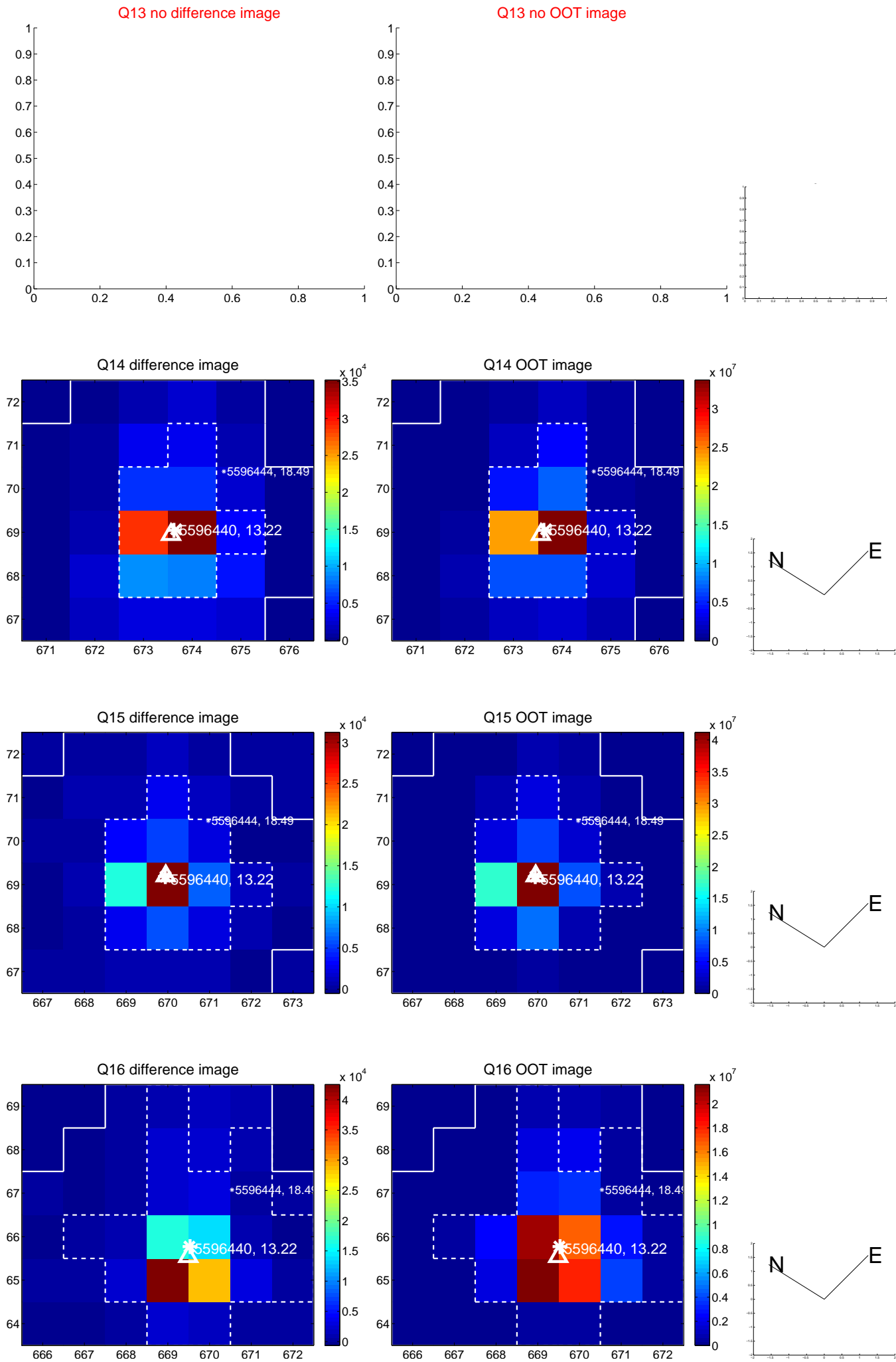
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



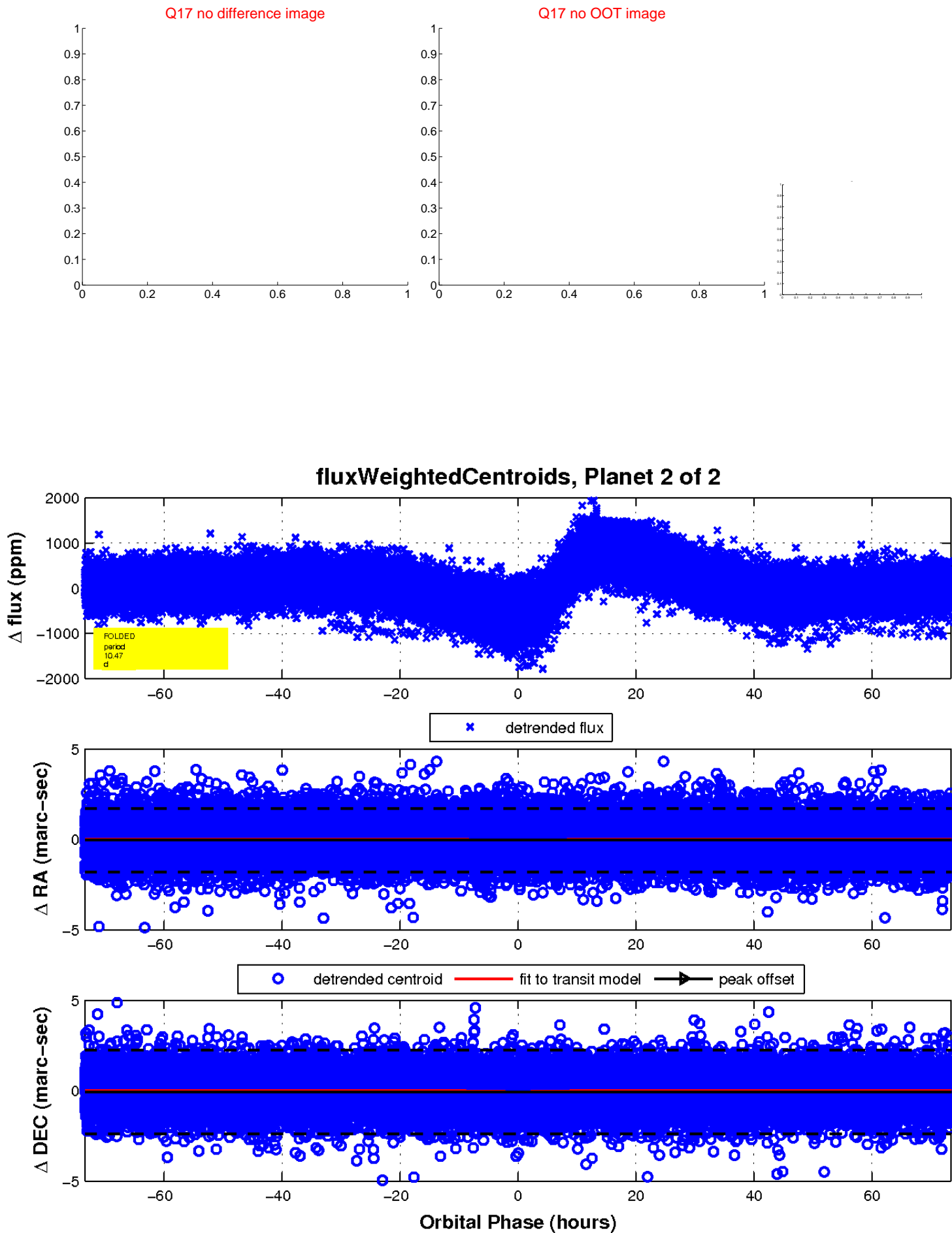
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

