

KIC 008559863

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})
008559863-01	OBS	7058.01	22.470496	143.284851	45927.7	7.386	4153.3	3758.0	0.70	5315	19.22	17.07
008559863-02	OBS	No	22.470485	131.550978	38110.8	7.444	3404.3	3304.4	0.70	5315	23.07	17.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008559863-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008559863-02	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.

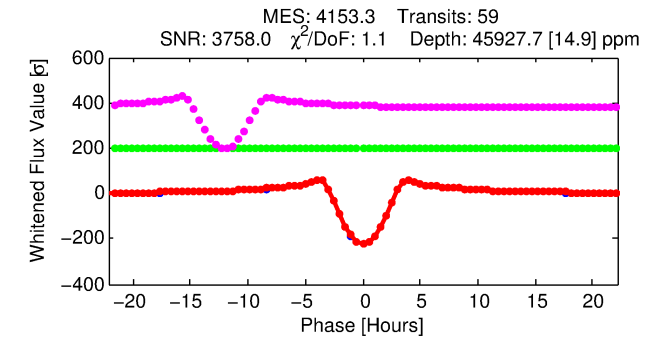
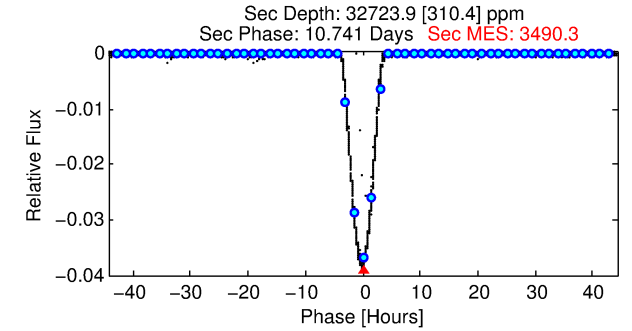
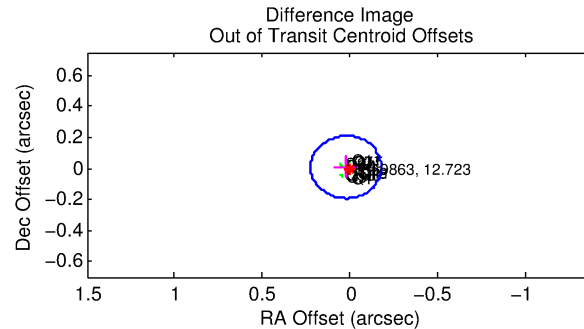
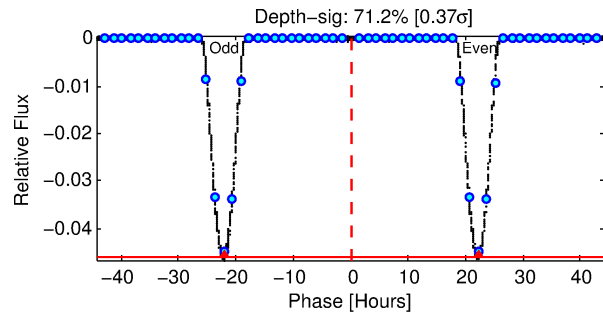
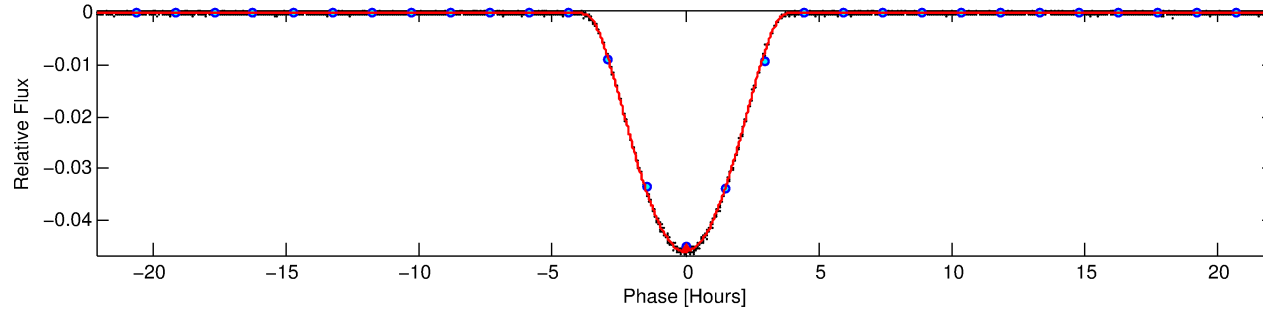
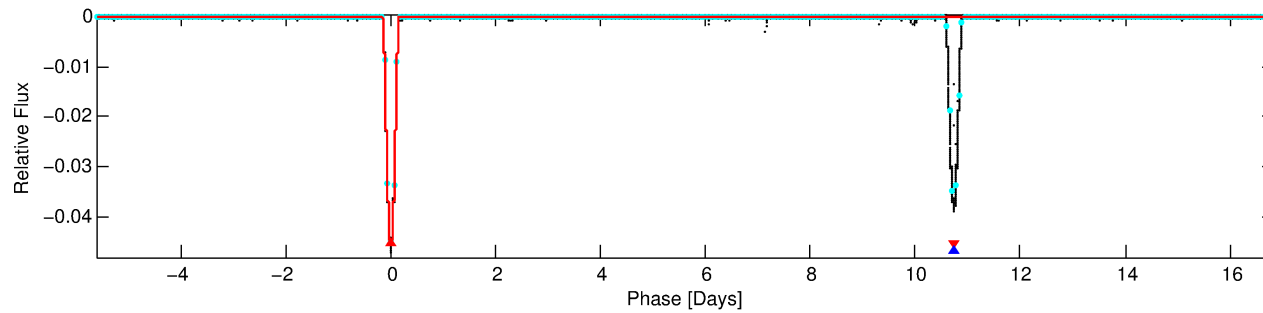
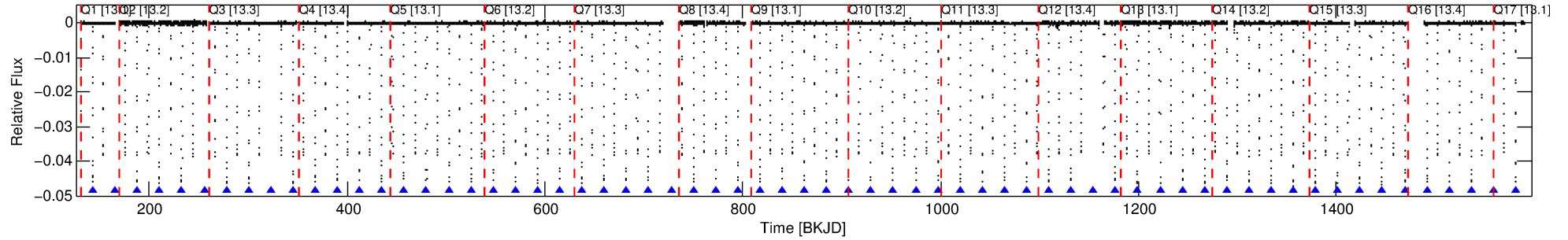
Ephemeris Match Information For 008559863-01

No Significant Match Found

DV One-Page Summary

KIC: 8559863 Candidate: 1 of 2 Period: 22.470 d
KOI: K07058.01 Corr: 1.000

Kp: 12.72 R*: 0.70 Rs Teff: 5315.0 K Logg: 4.64 Fe/H: -0.440



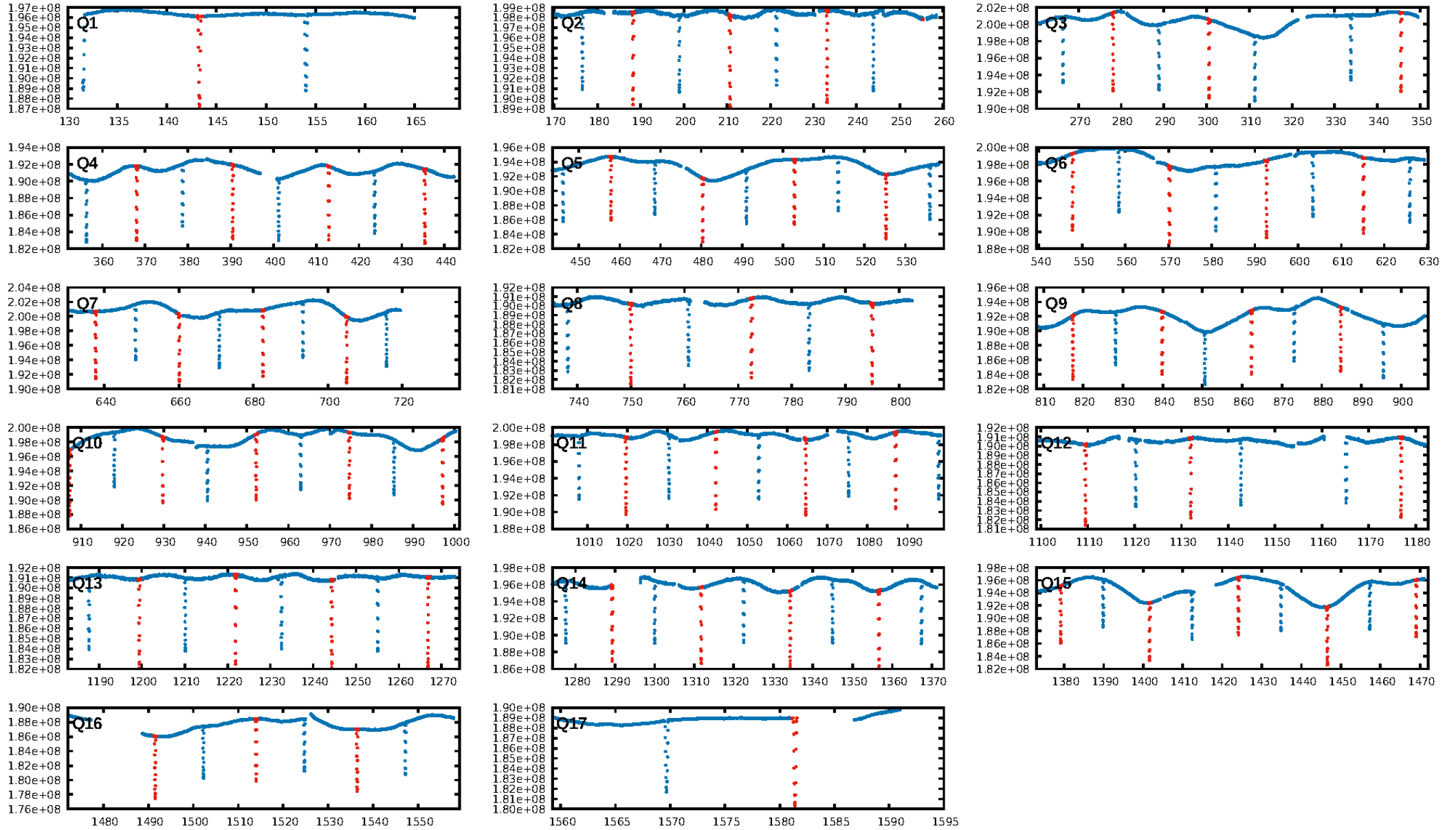
DV Fit Results:

Period = 22.47050 [0.00000] d
Epoch = 143.2849 [0.0000] BKJD
Rp/R* = 0.2527 [0.0008]
a/R* = 21.13 [0.01]
b = 0.86 [0.00]
Seff = 17.07 [3.54]
Teff = 518 [27] K
Rp = 19.22 [2.81] Re
a = 0.1426 [0.0171] AU
Ag = 991.92 [168.14] [5.89σ]
Teffp = 4497 [135] K [28.88σ]

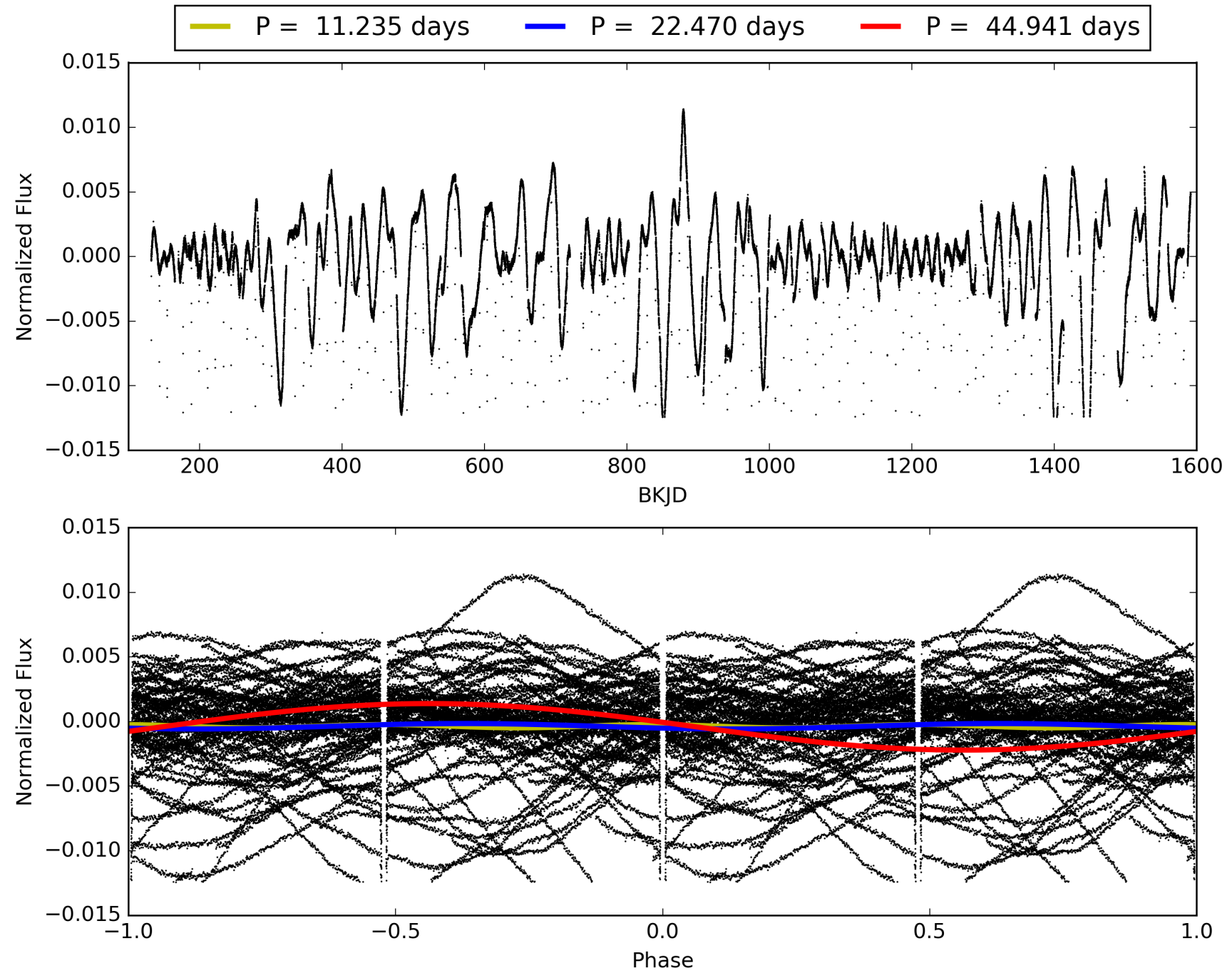
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [57/57]
GhostDiagnostic-chr: 3.077
Centroid-sig: N/A
Centroid-so: 0.213 arcsec [129.30σ]
OotOffset-rm: 0.025 arcsec [0.38σ]
KicOffset-rm: 0.274 arcsec [4.05σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 008559863-01, PDC Light Curves

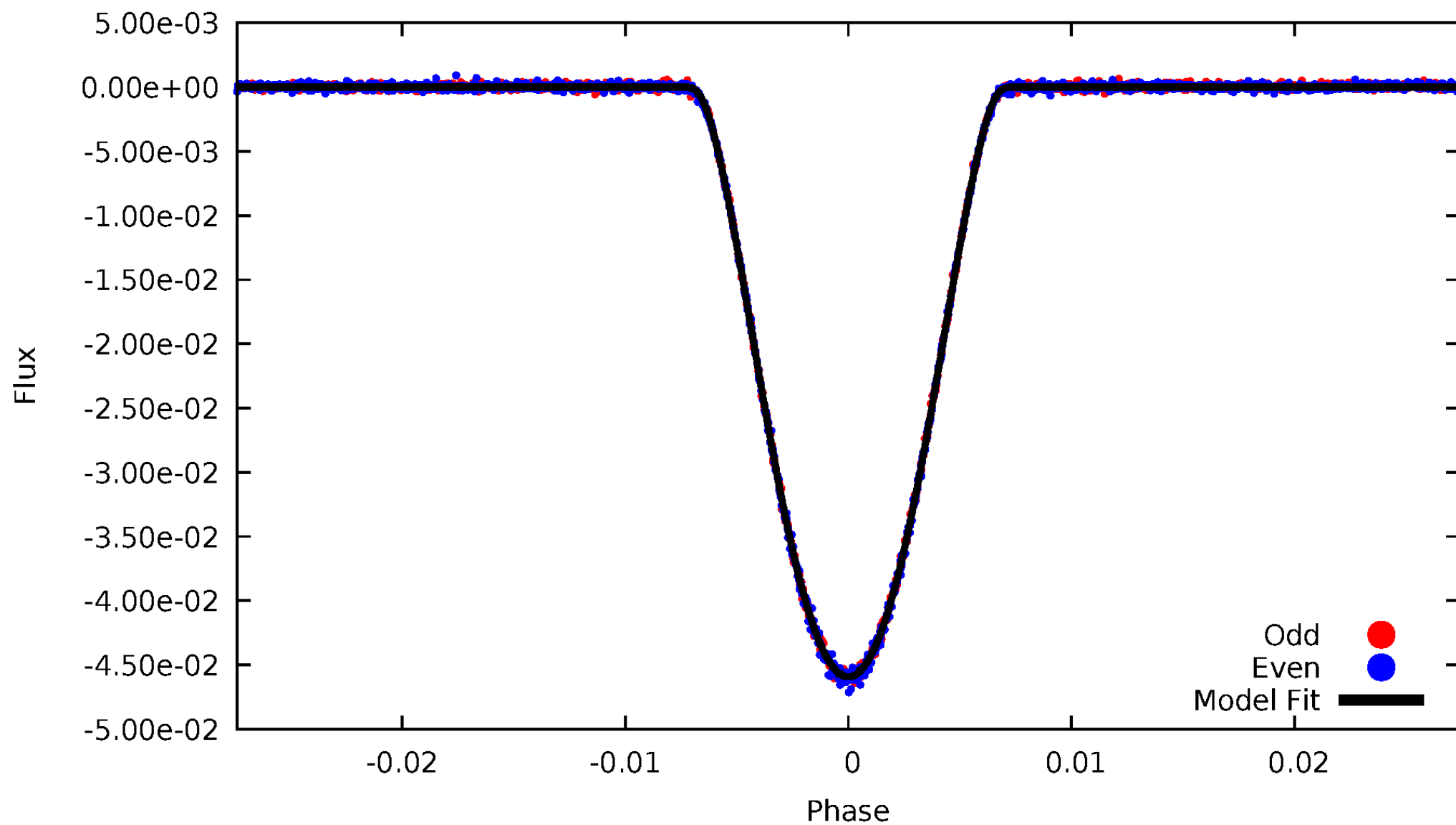


TCE 008559863-01



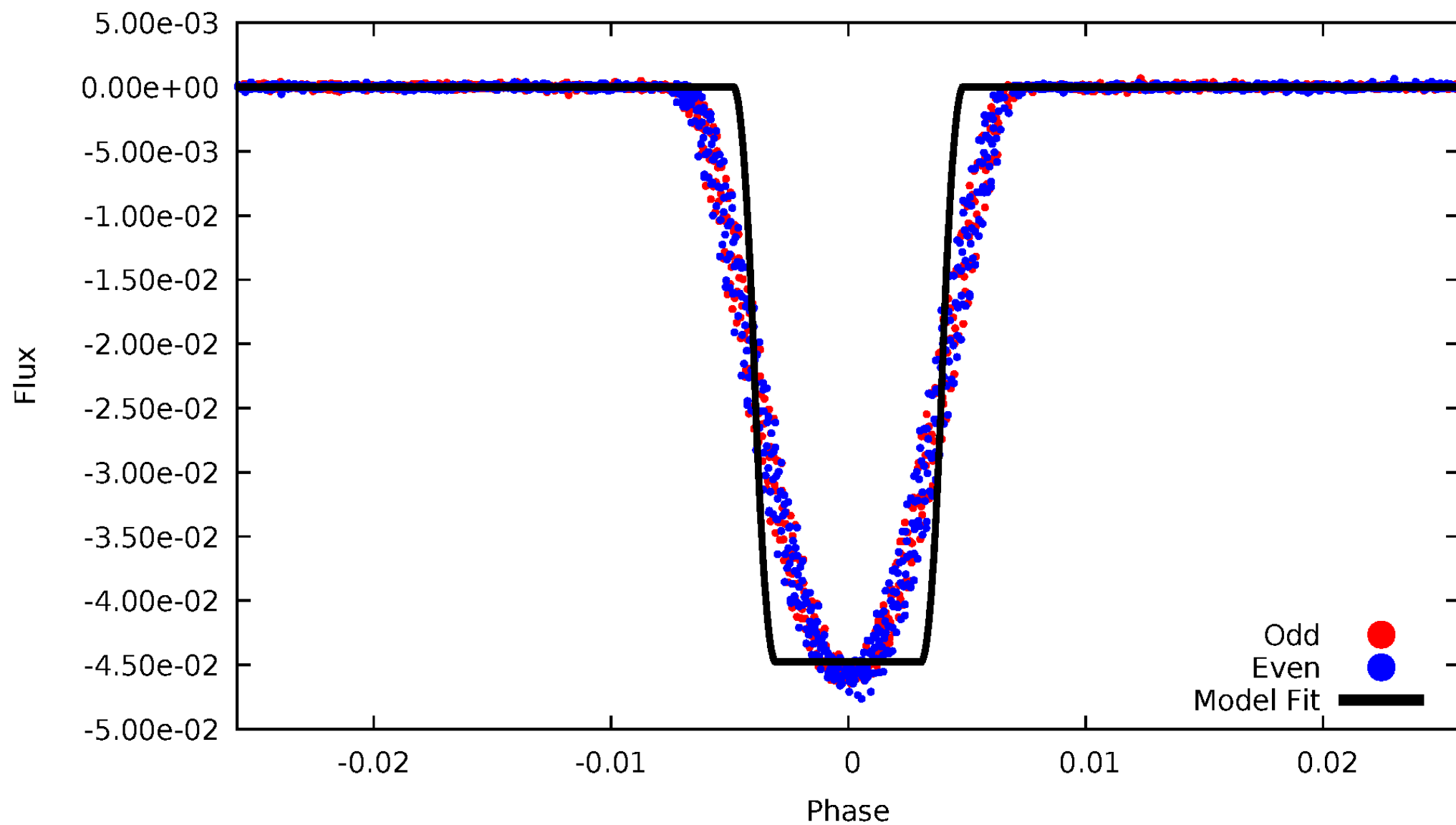
DV Odd/Even

TCE 008559863-01



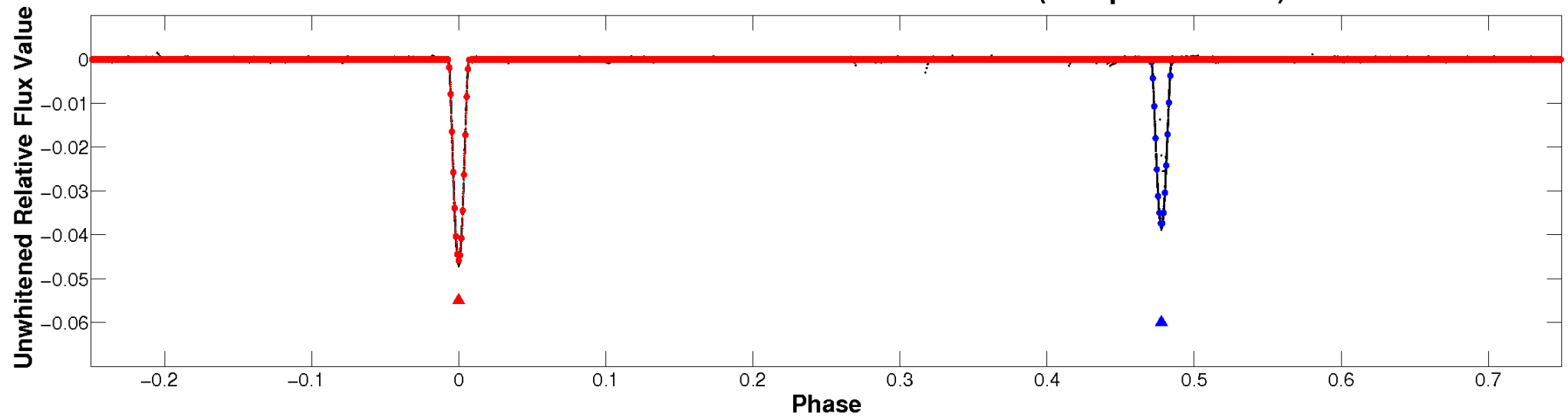
ALT Odd/Even

TCE 008559863-01

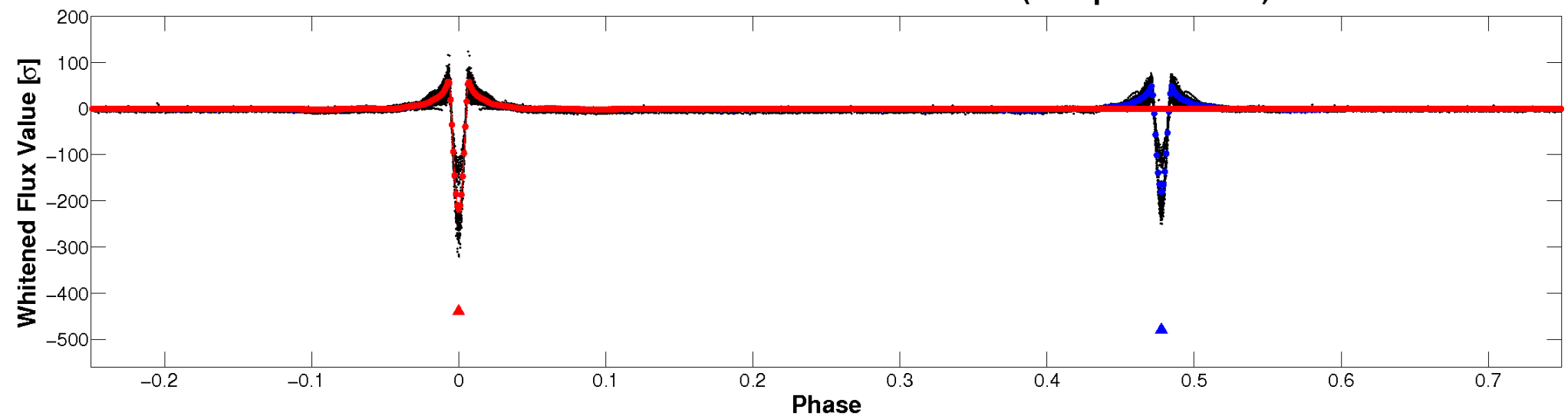


Non-Whitened Vs. Whitened Light Curve

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

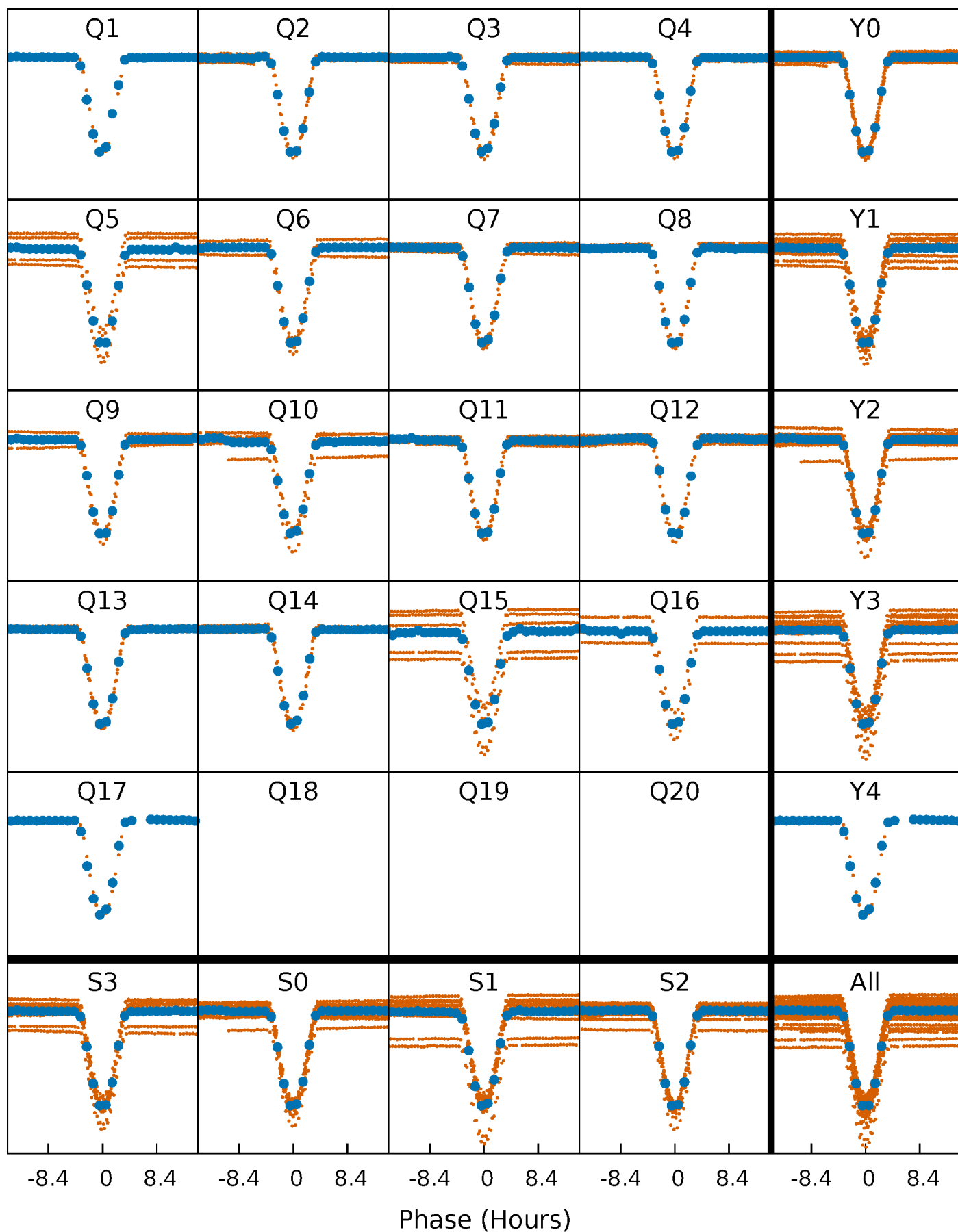


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



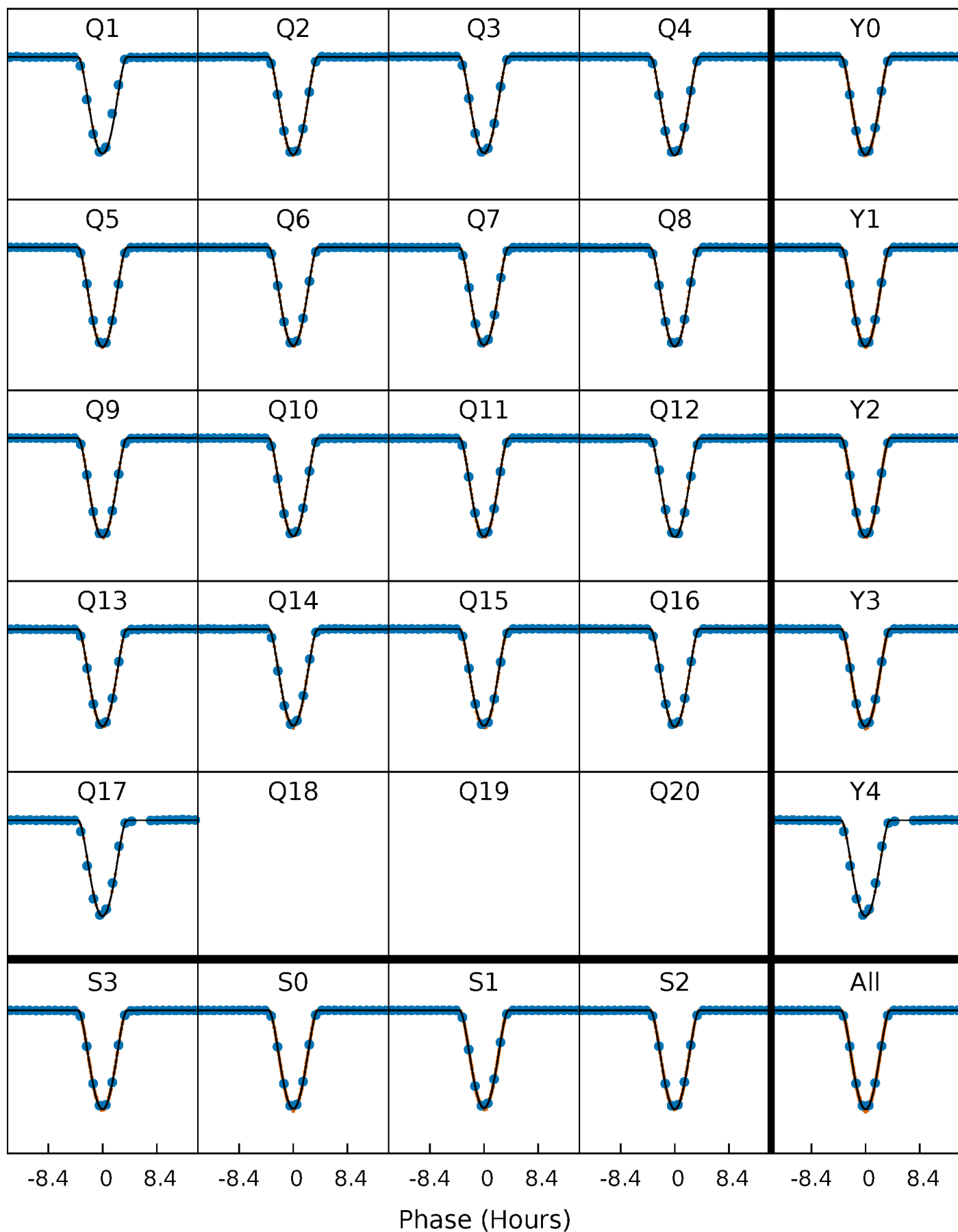
PDC Quarter-Phased Transit Curves

TCE 008559863-01 P= 22.470496 Days $T_0=143.284851$ (BKJD)



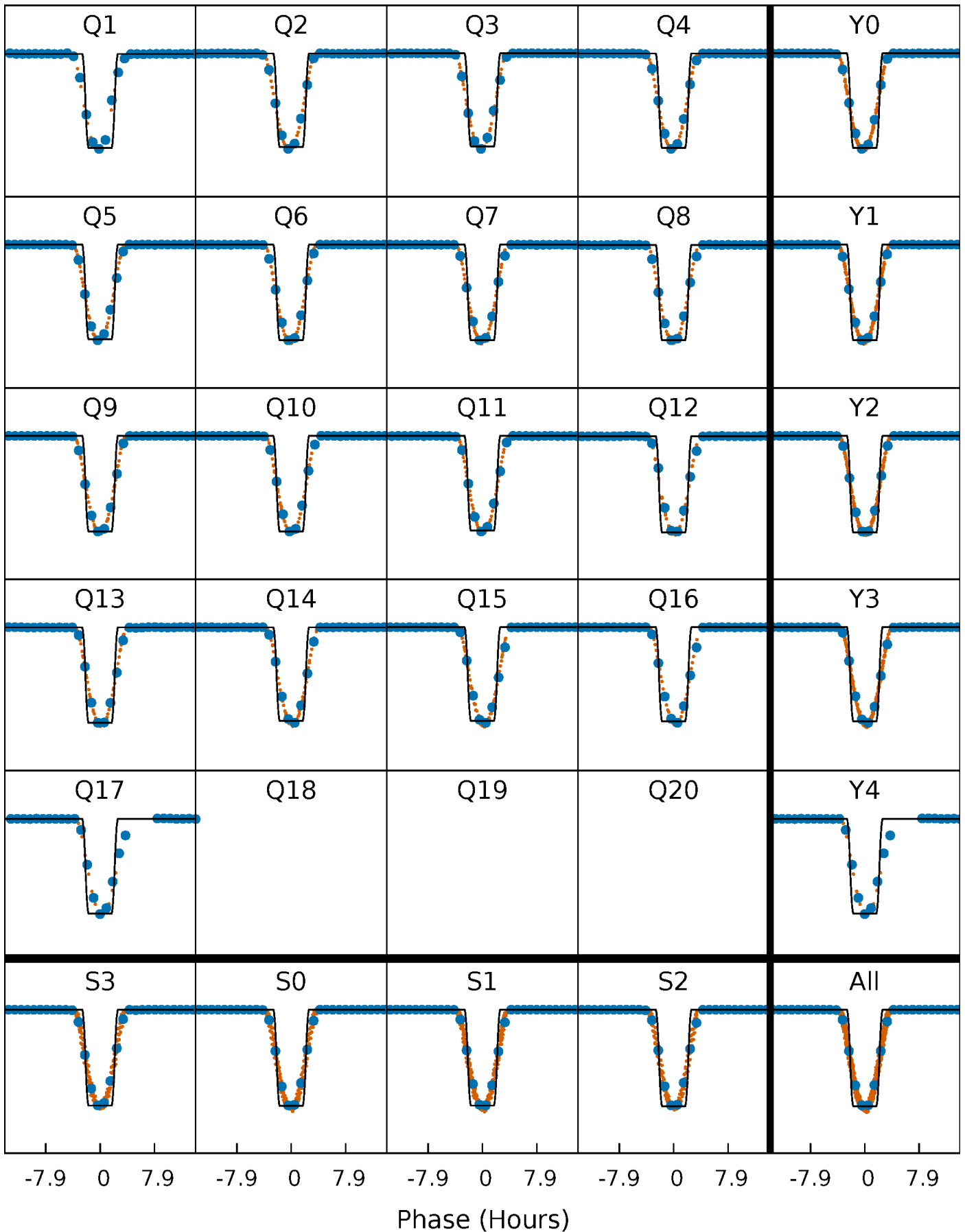
DV Quarter-Phased Transit Curves

TCE 008559863-01 P= 22.470496 Days $T_0=143.284851$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

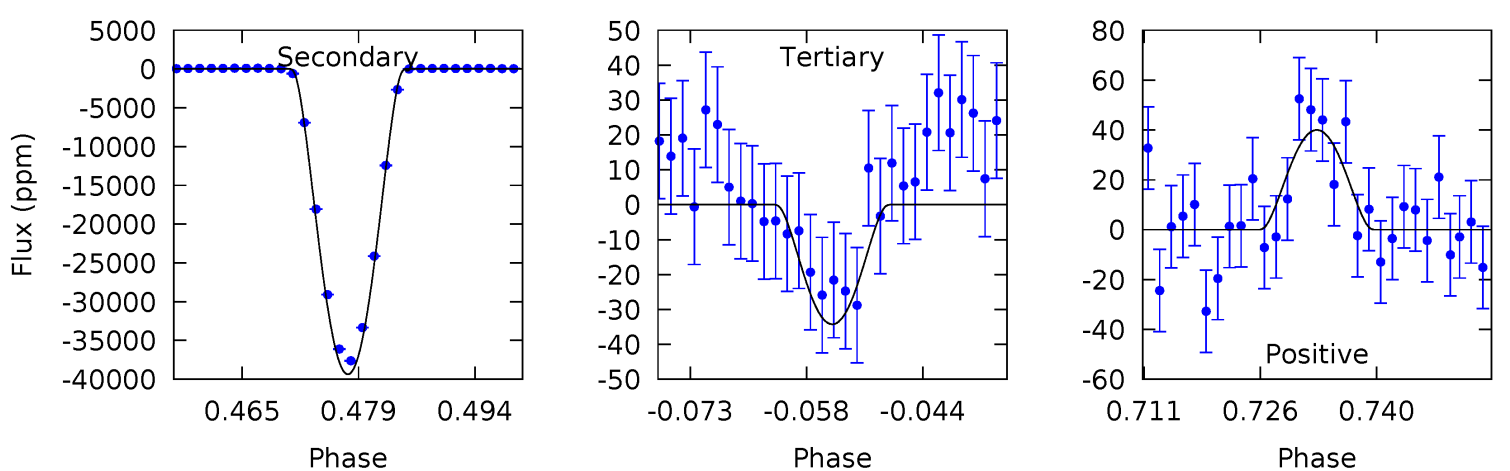
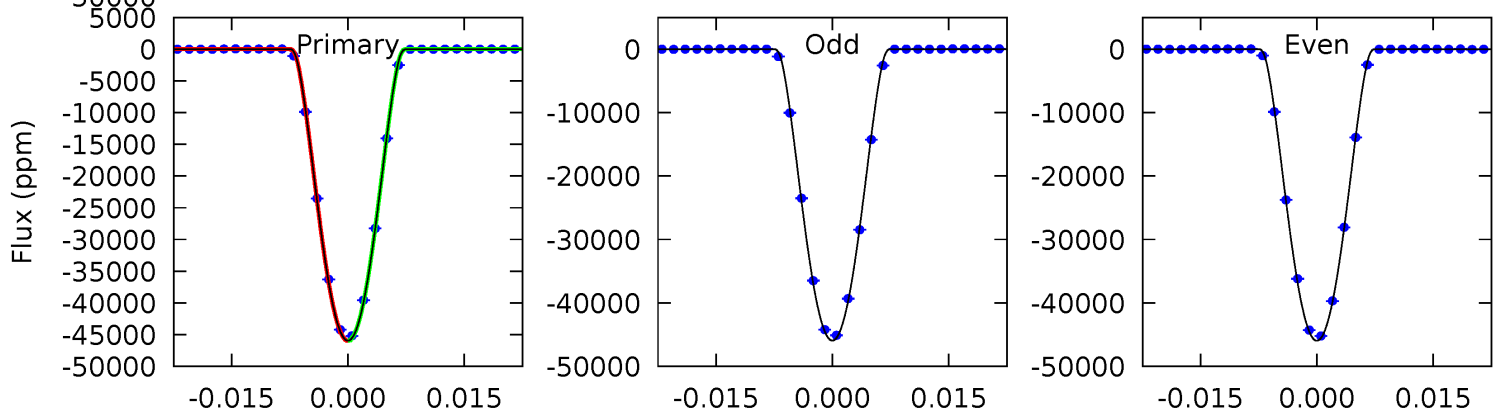
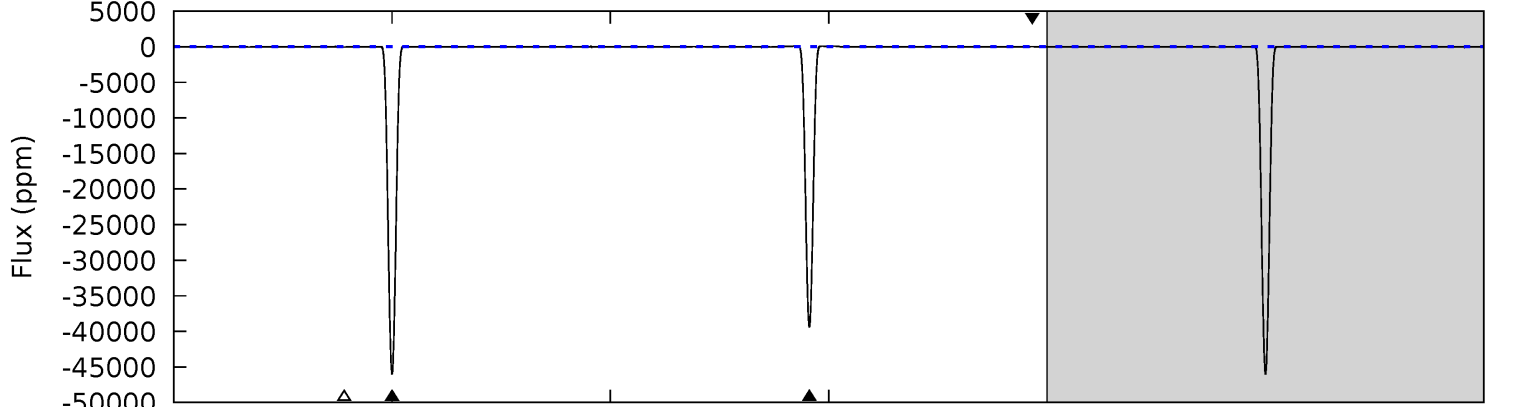
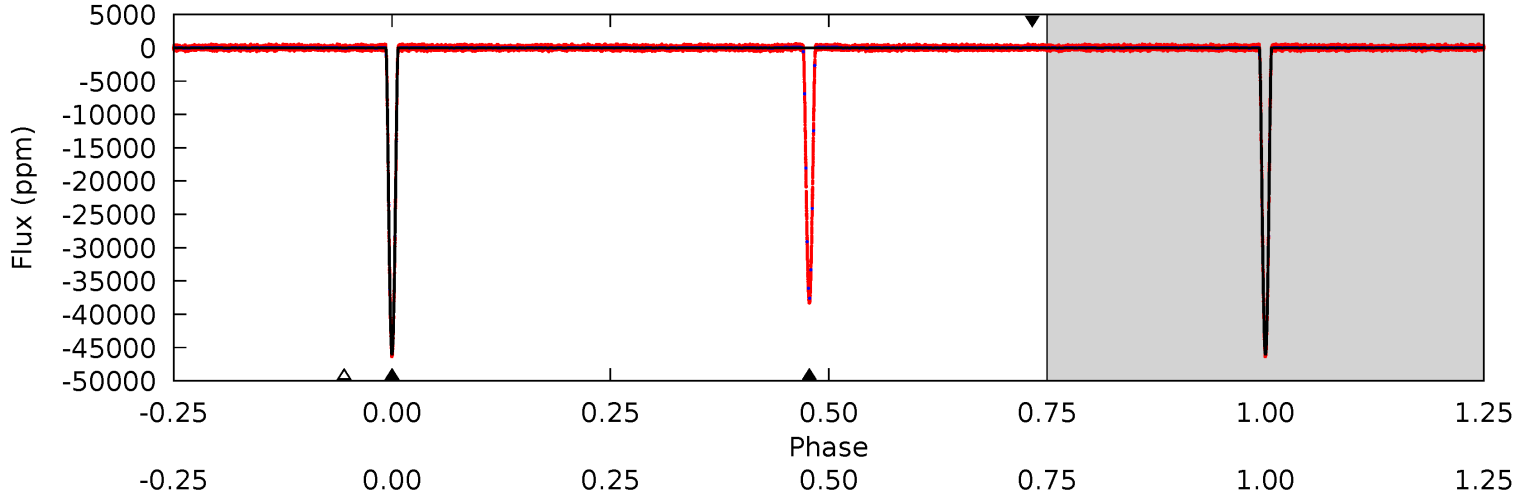
TCE 008559863-01 P= 22.470126 Days $T_0=143.296445$ (BKJD)



DV Model-Shift Uniqueness Test

008559863-01, P = 22.470496 Days, E = 120.814355 Days

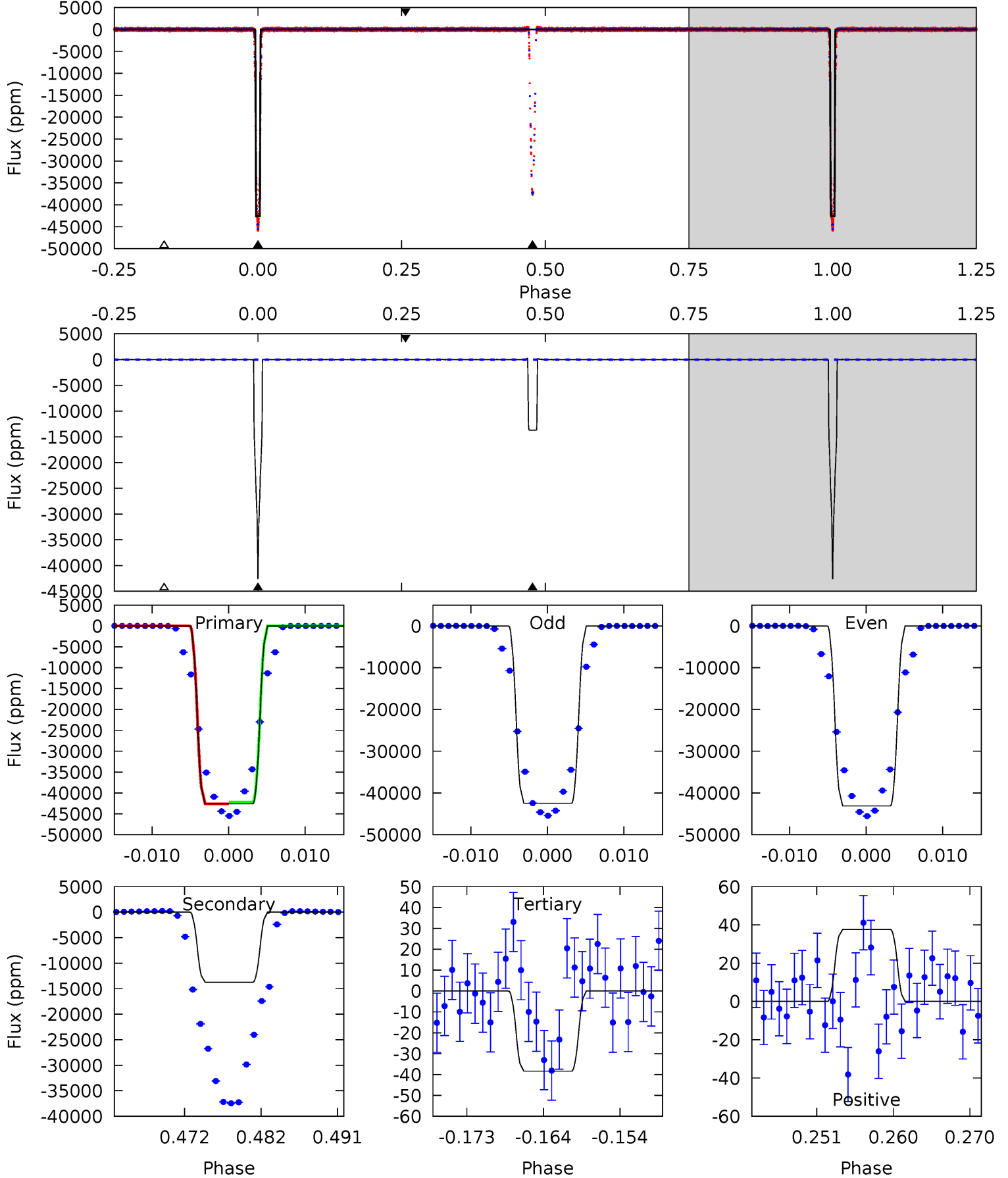
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9775	8371	7.28	8.51	4.95	2.44	4.07	9768	9767	8363	8362	2.66	1.00	0.00	0.40



Alt Model-Shift Uniqueness Test

008559863-01, P = 22.470126 Days, E = 120.826319 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4293	1383	3.87	3.79	5.03	2.59	1.44	4290	4290	1379	1379	31.8	1.00	0.00	2.41



Stellar Parameters For KIC 008559863

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5315^{+159}_{-143}	$4.636^{+0.030}_{-0.090}$	$-0.440^{+0.300}_{-0.300}$	$0.697^{+0.102}_{-0.047}$	$0.772^{+0.074}_{-0.074}$	$3.213^{+0.496}_{-0.912}$
	+3%/-3%	+1%/-2%	+68%/-68%	+15%/-7%	+10%/-10%	+15%/-28%
Source	PHO1	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 008559863-01 / KOI 7058.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-39358 ± 5	$19.44^{+1.64}_{-0.93}$	734^{+30}_{-27}	4832^{+146}_{-121}	1196^{+101}_{-131}
Alt.	-13731 ± 10	$16.23^{+1.39}_{-0.73}$	733^{+30}_{-25}	4199^{+101}_{-95}	582^{+42}_{-69}

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 $A_{obs} \gg 1.0$

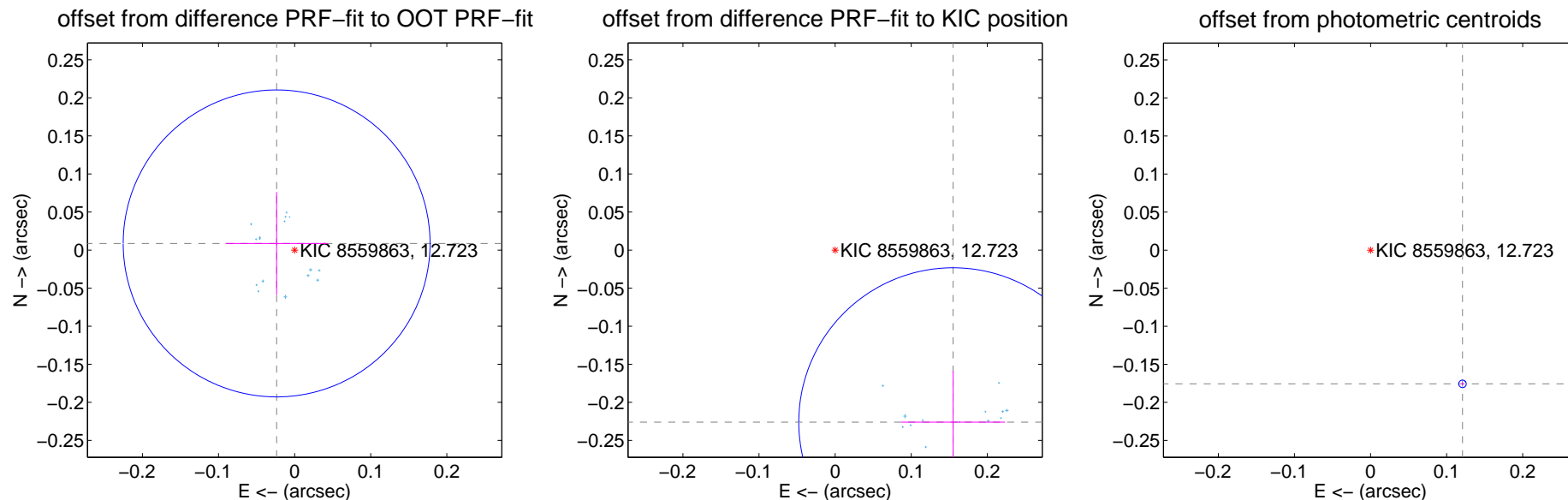
DV Centroid Data

Supplemental centroid analysis for 008559863-01. Kepler magnitude: 12.72. Transit SNR 3757.98

There are 16 quarters with good PRF difference image offsets

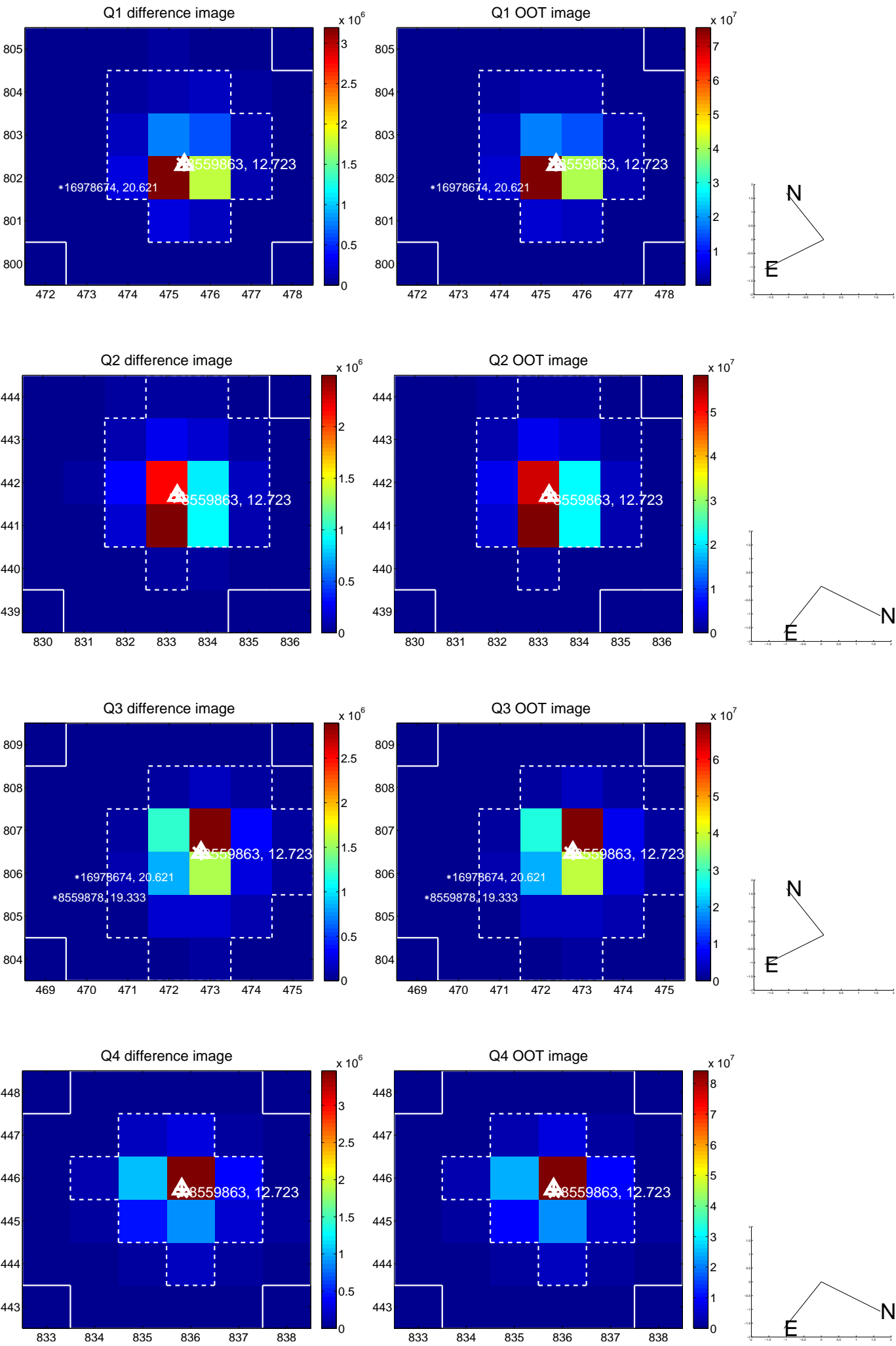
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.025 ± 0.067	0.38	0.024 ± 0.067	0.009 ± 0.067
PRF-fit source offset from KIC position	0.274 ± 0.068	4.05	-0.155 ± 0.068	-0.226 ± 0.067
photometric centroid source offset	0.21 ± 0.00	129.30	-0.12 ± 0.00	-0.18 ± 0.00

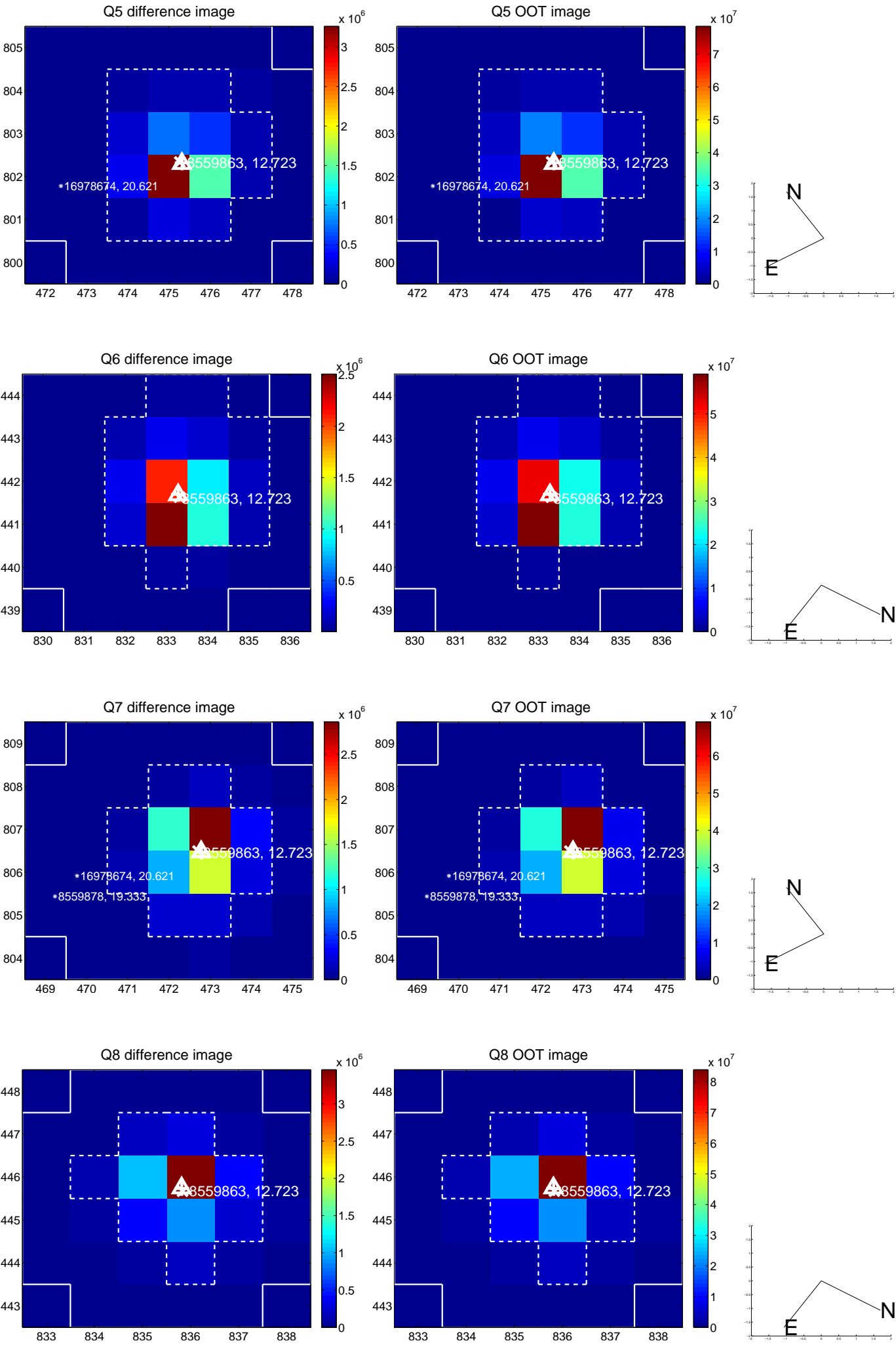


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

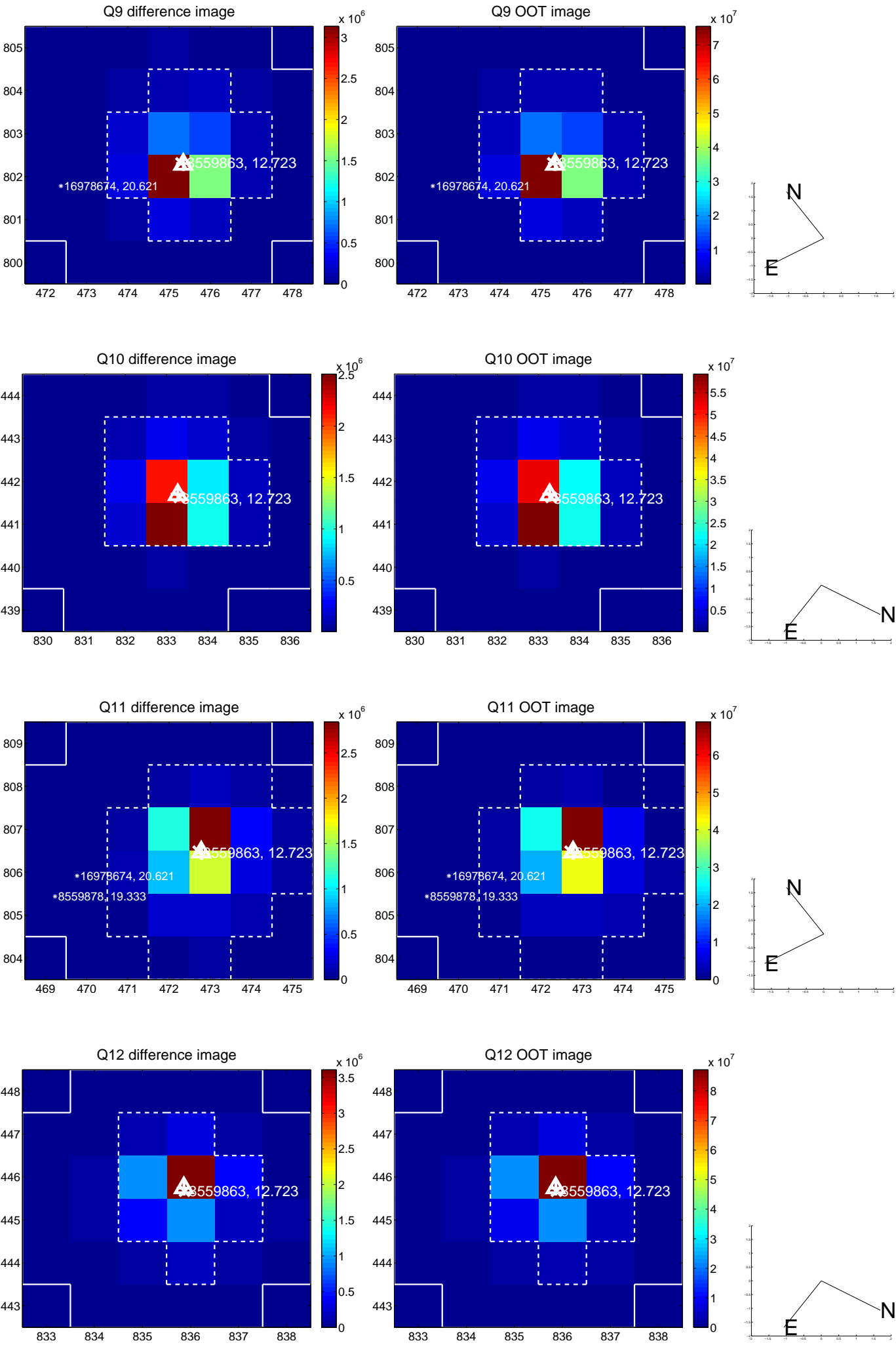
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



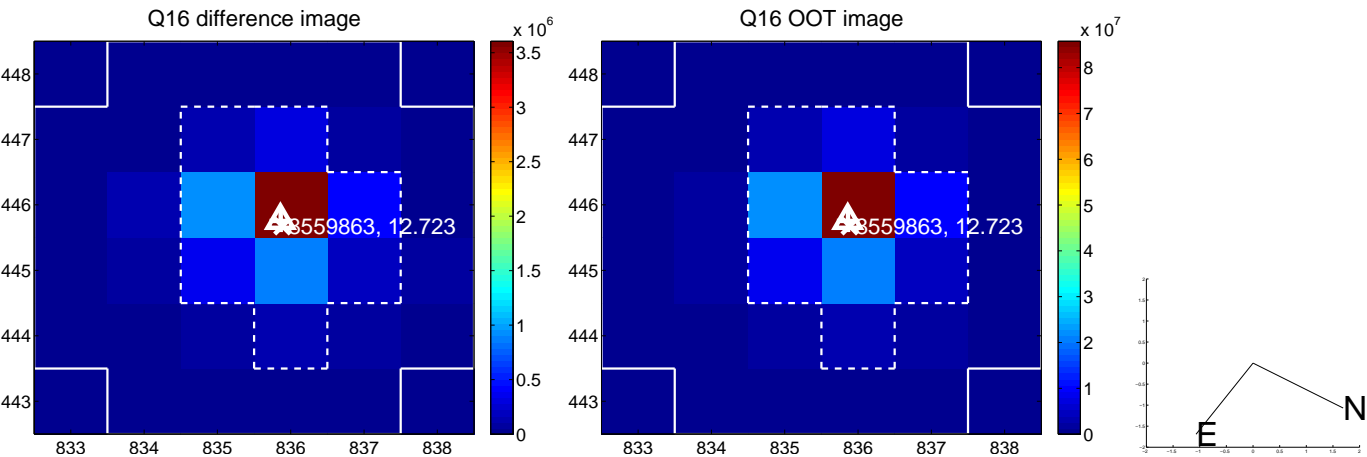
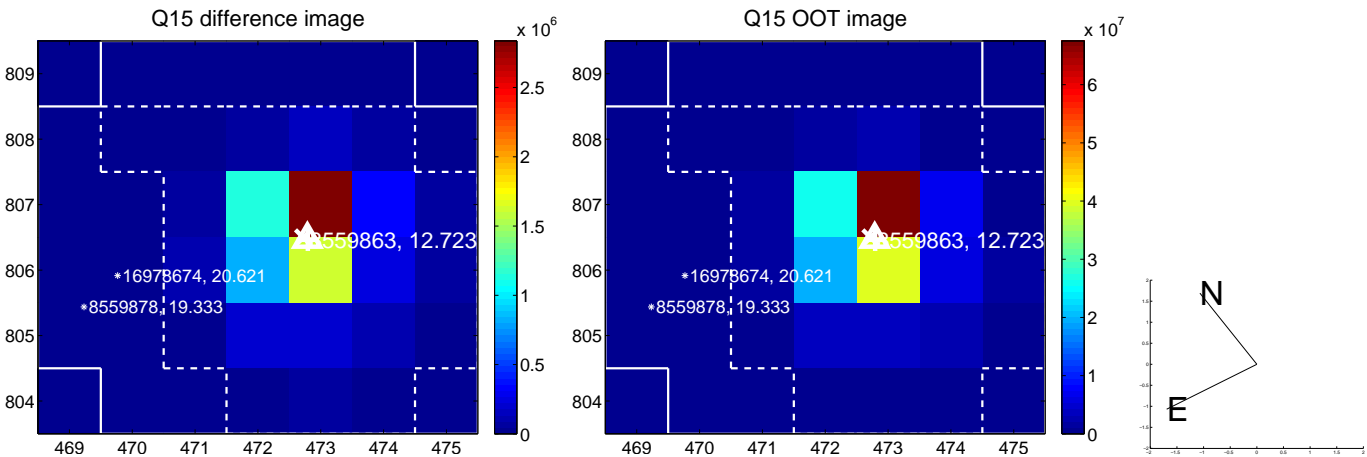
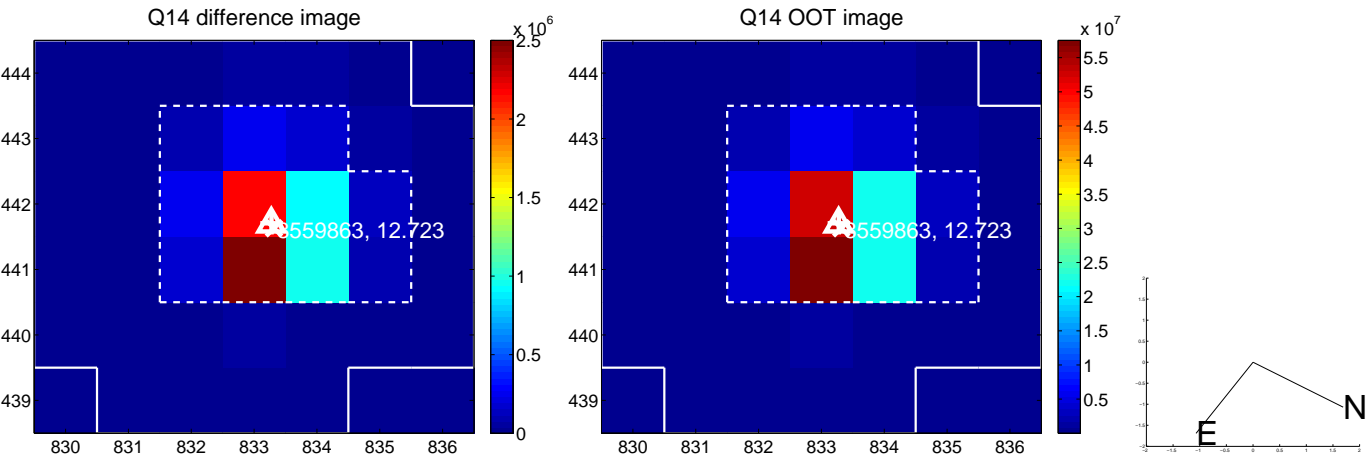
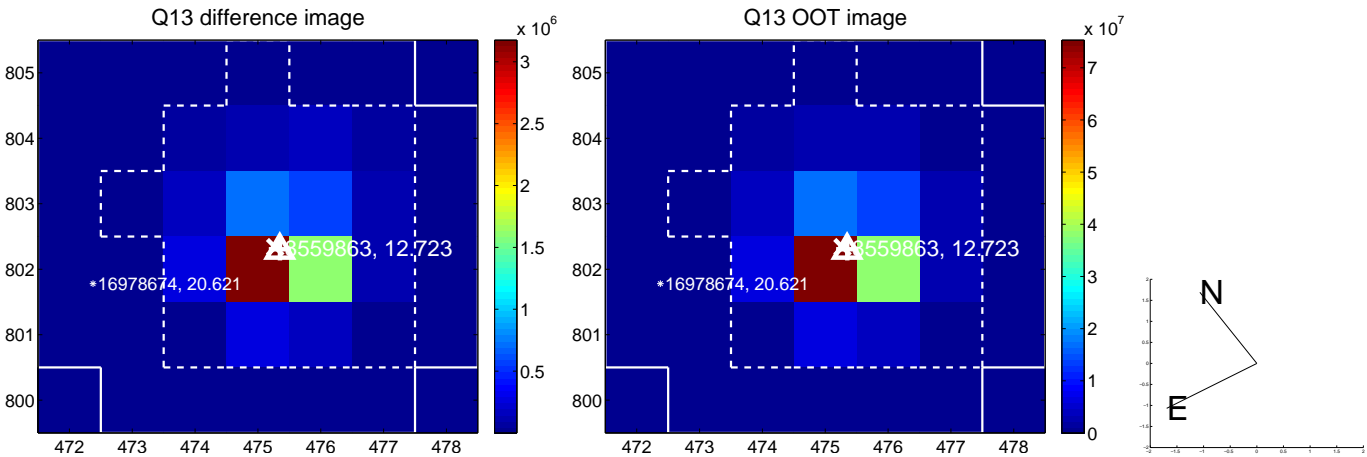
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



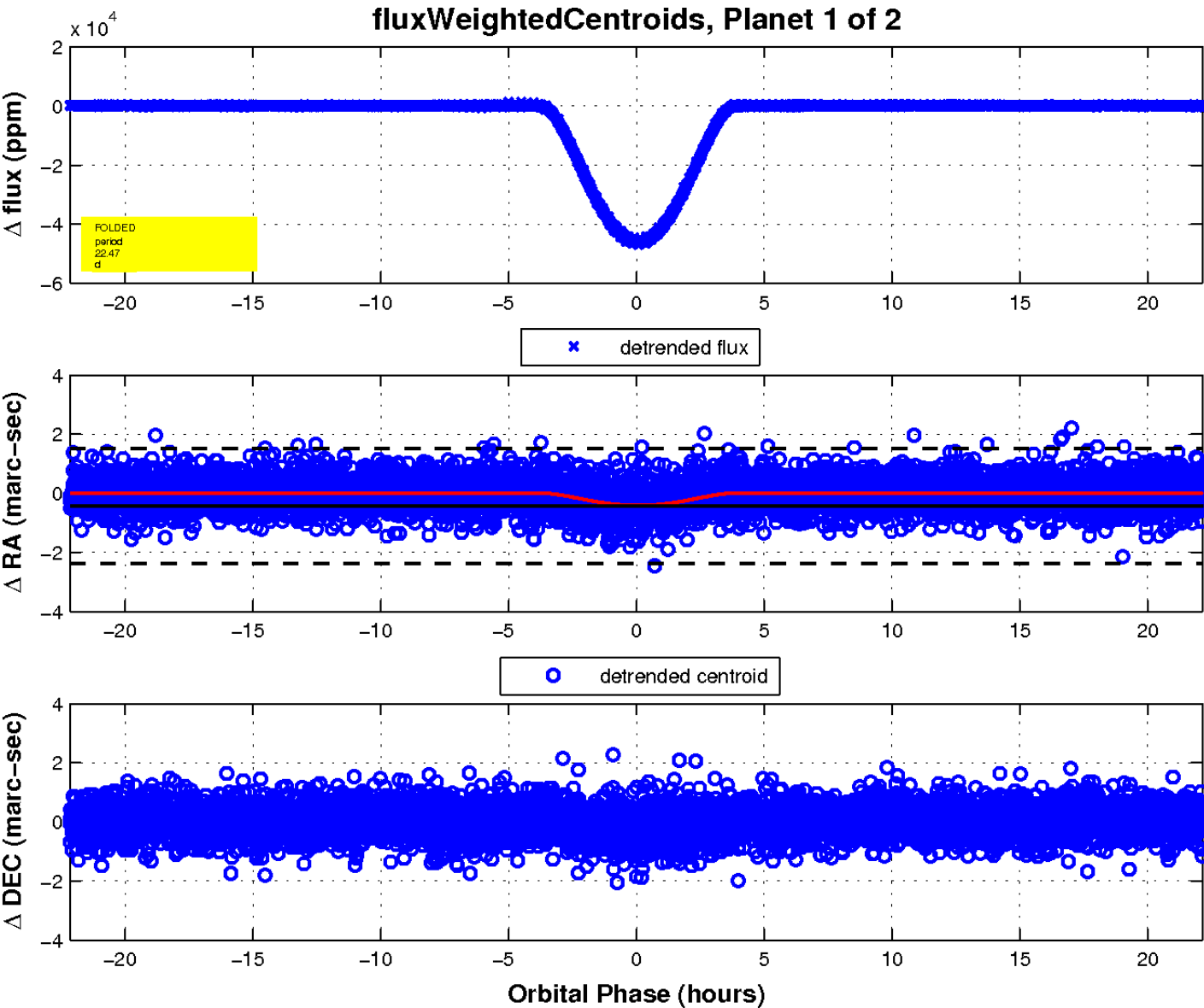
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

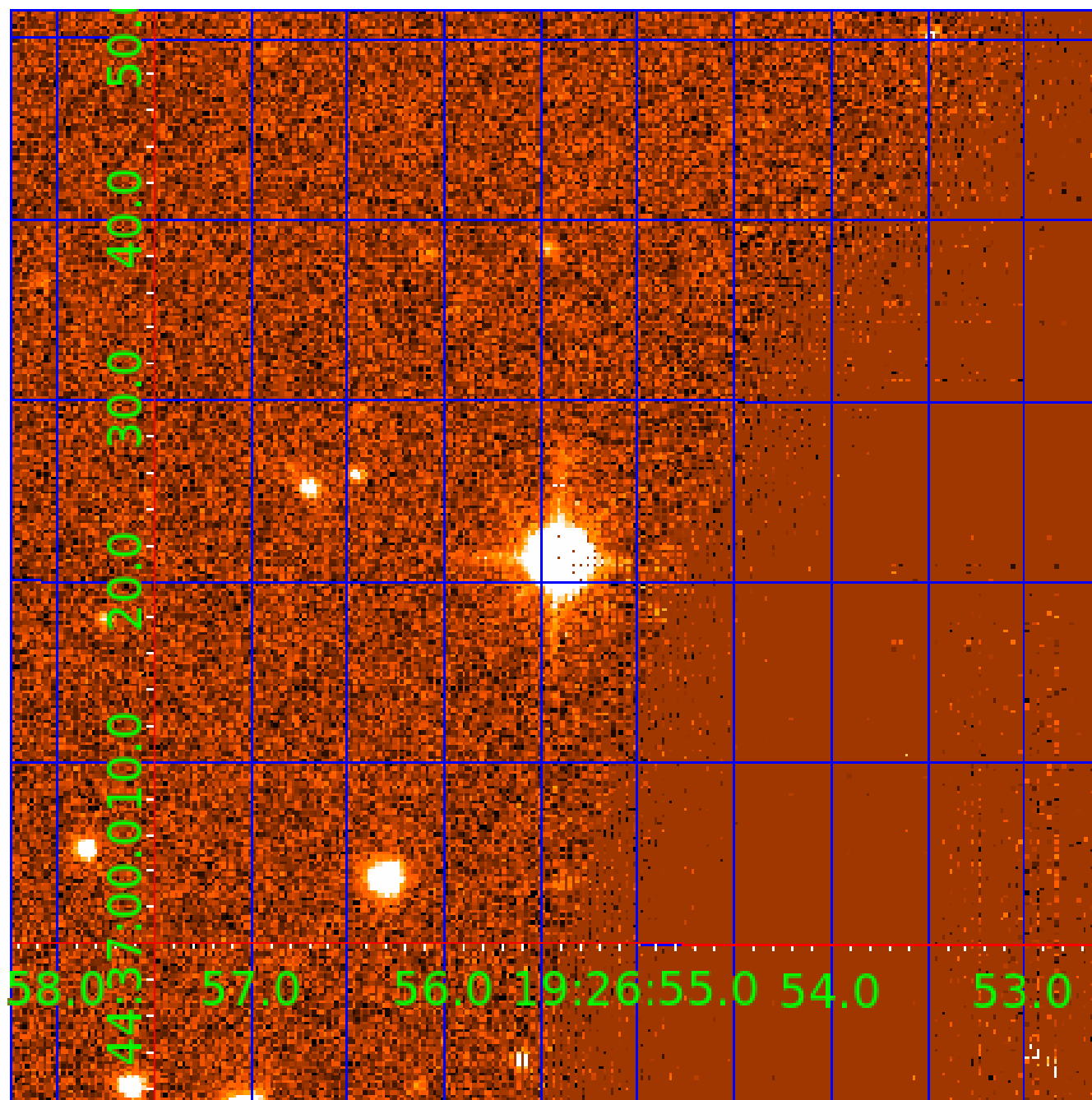


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008559863

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})
008559863-01	OBS	7058.01	22.470496	143.284851	45927.7	7.386	4153.3	3758.0	0.70	5315	19.22	17.07
008559863-02	OBS	No	22.470485	131.550978	38110.8	7.444	3404.3	3304.4	0.70	5315	23.07	17.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008559863-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008559863-02	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.

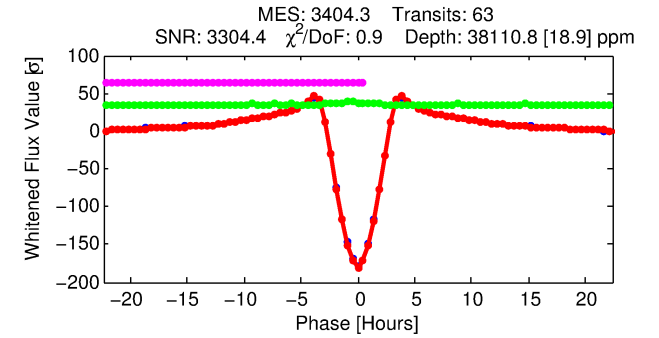
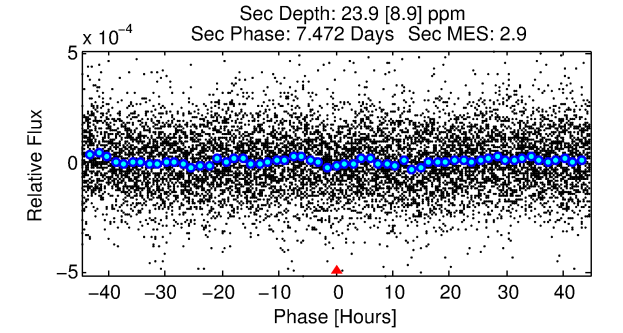
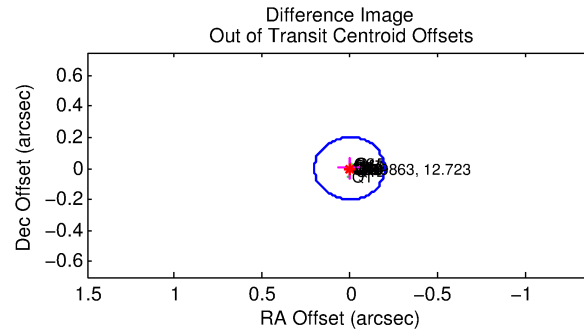
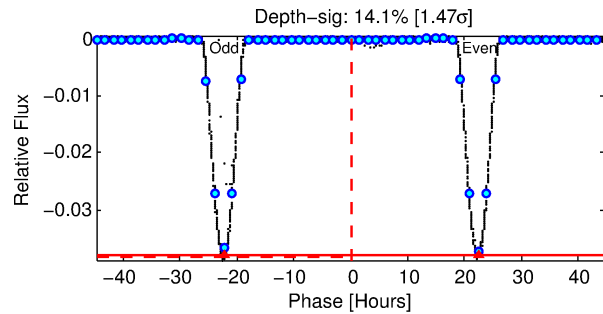
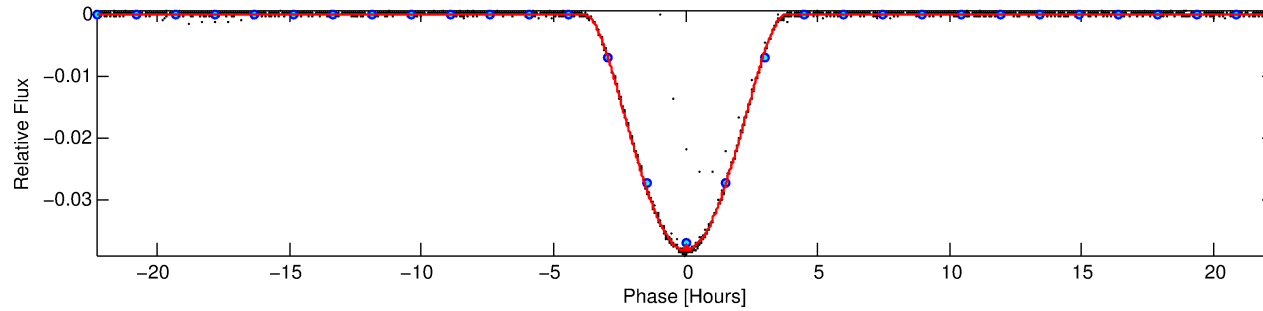
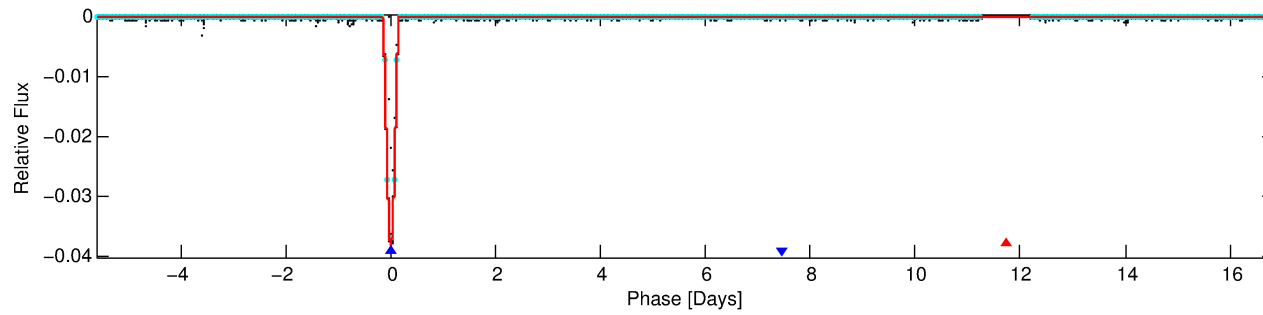
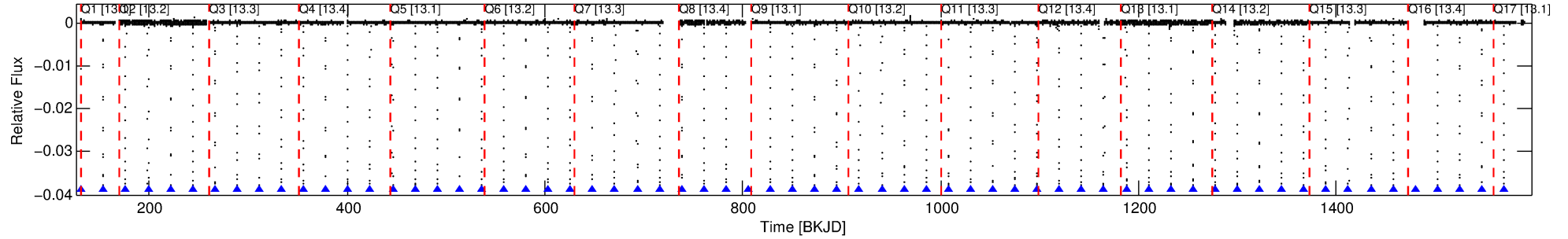
Ephemeris Match Information For 008559863-02

No Significant Match Found

DV One-Page Summary

KIC: 8559863 Candidate: 2 of 2 Period: 22.470 d
KOI: K07058 Corr: No Ephemeris Match

Kp: 12.72 R*: 0.70 Rs Teff: 5315.0 K Logg: 4.64 Fe/H: -0.440



DV Fit Results:

Period = 22.47049 [0.00000] d
Epoch = 131.5510 [0.0000] BKJD
Rp/R* = 0.3033 [0.0053]
a/R* = 19.64 [0.02]
b = 0.99 [0.01]
Seff = 17.07 [3.54]
Teq = 518 [27] K
Rp = 23.07 [3.40] Re
a = 0.1426 [0.0171] AU
Ag = 0.50 [0.21] [-2.42σ]
Teffp = 675 [66] K [2.20σ]

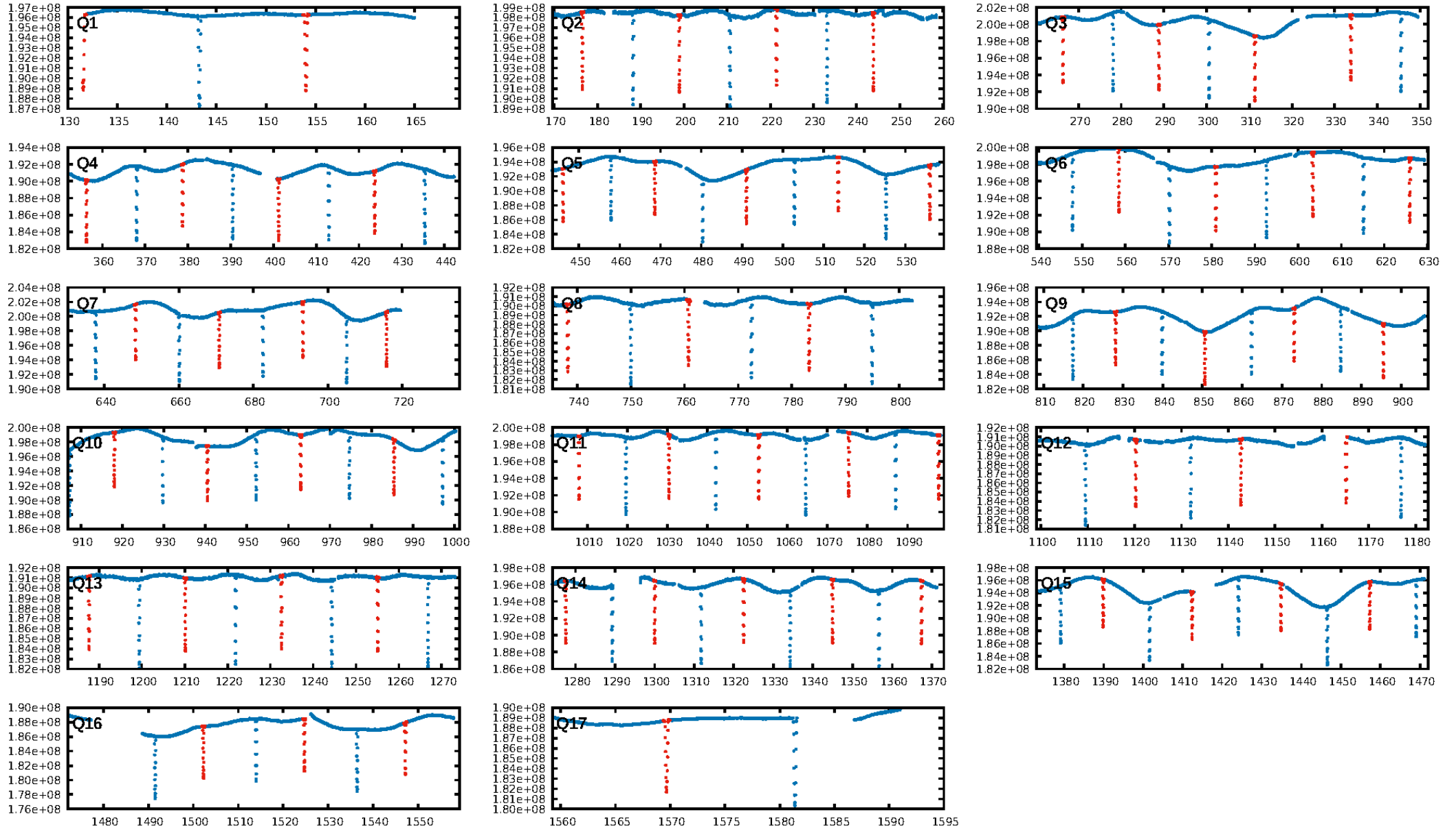
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [60/60]
GhostDiagnostic-chr: 3.639
Centroid-sig: N/A
Centroid-so: 0.219 arcsec [113.17σ]
OotOffset-rm: 0.003 arcsec [0.05σ]
KicOffset-rm: 0.287 arcsec [4.26σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

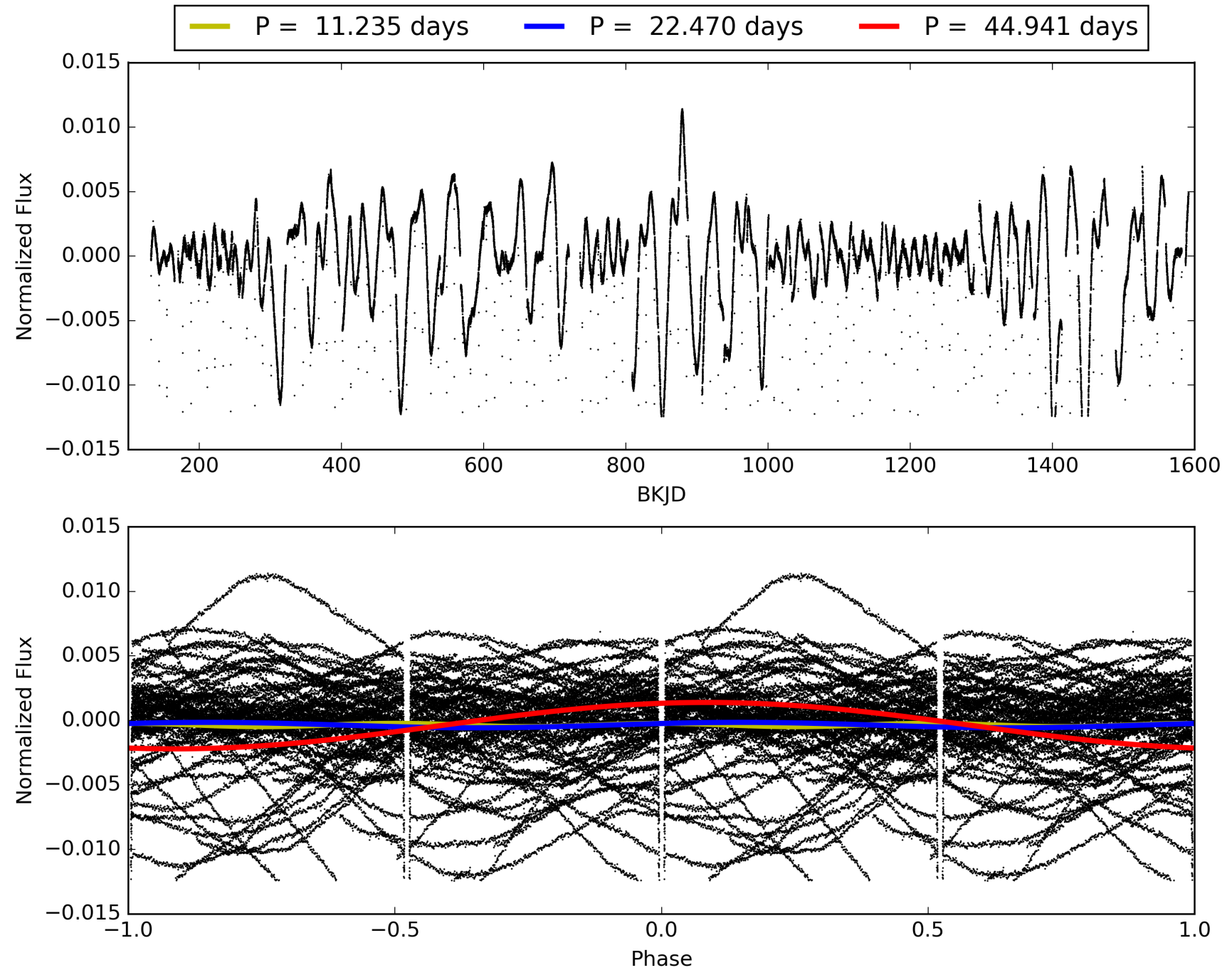
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:42:14 Z

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

TCE 008559863-02, PDC Light Curves

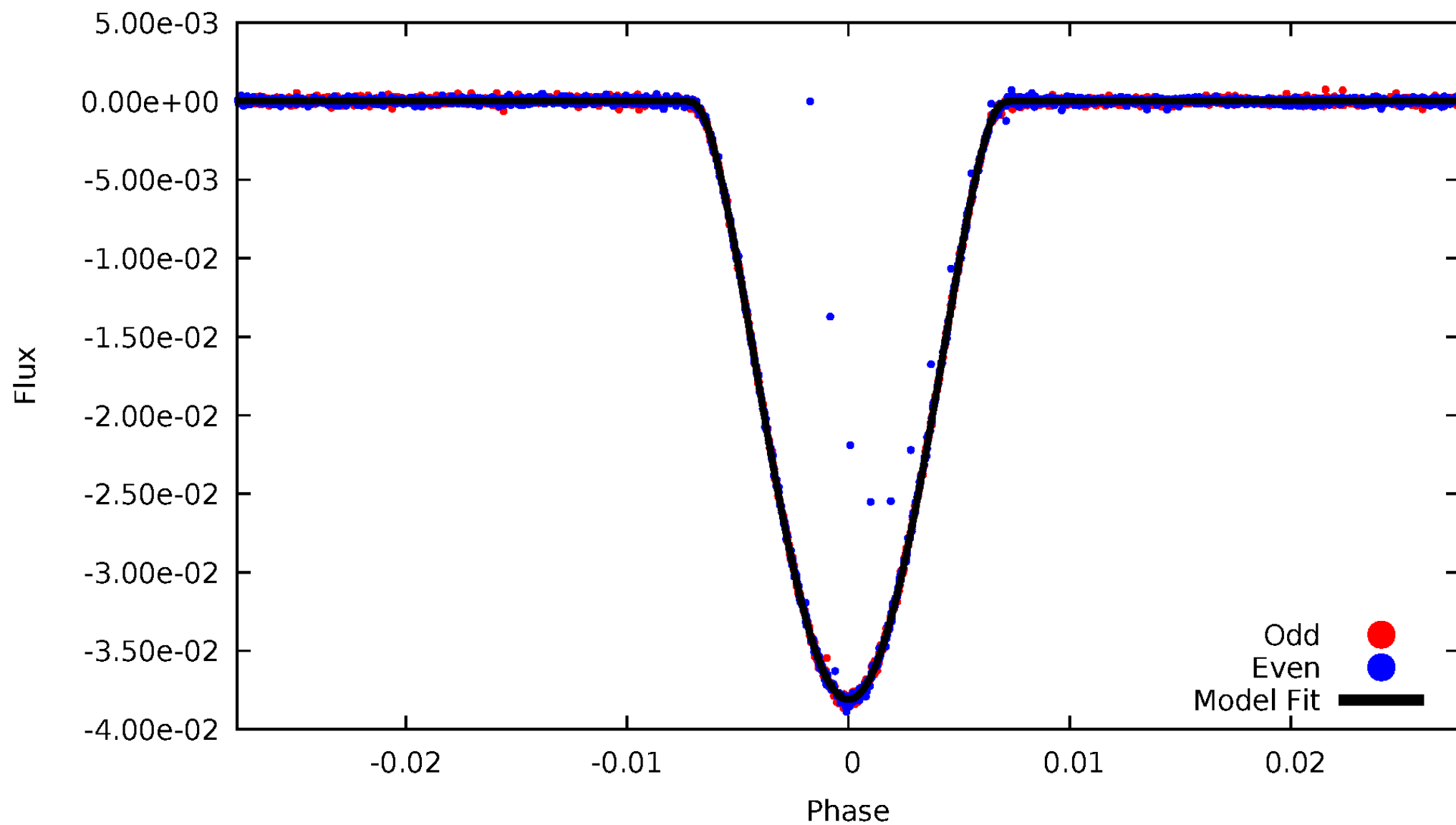


TCE 008559863-02



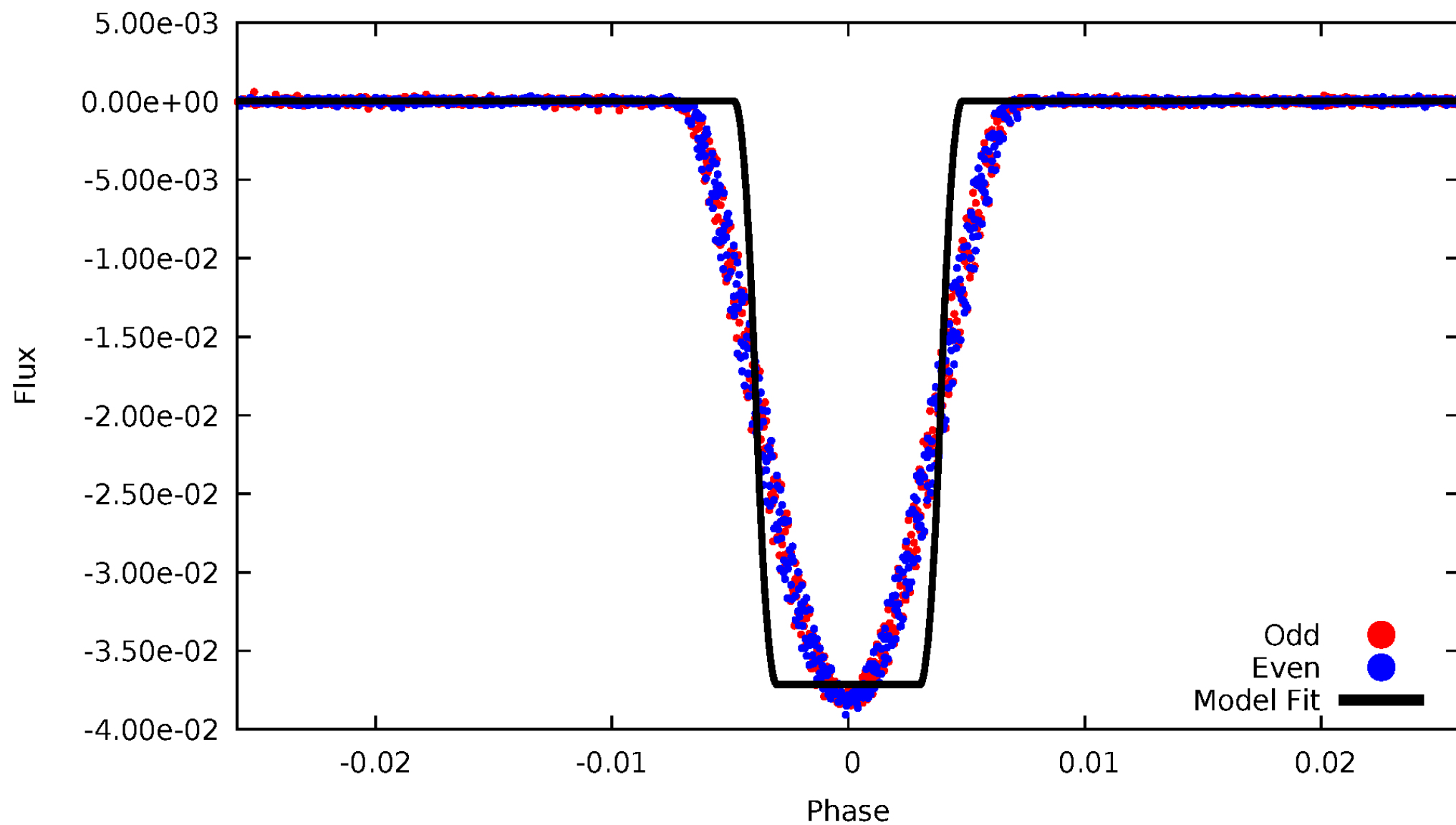
DV Odd/Even

TCE 008559863-02



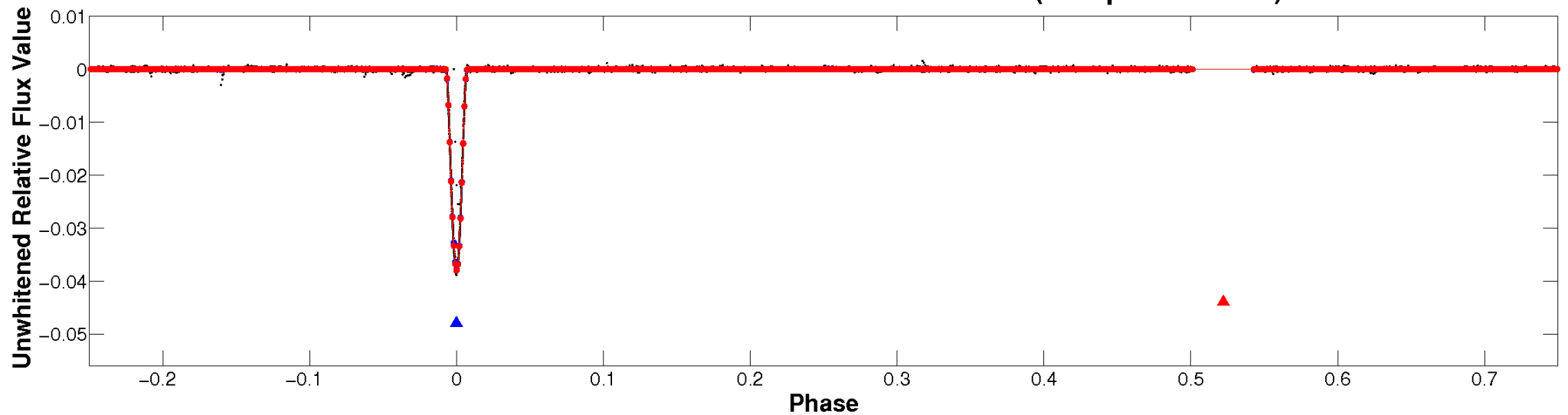
ALT Odd/Even

TCE 008559863-02

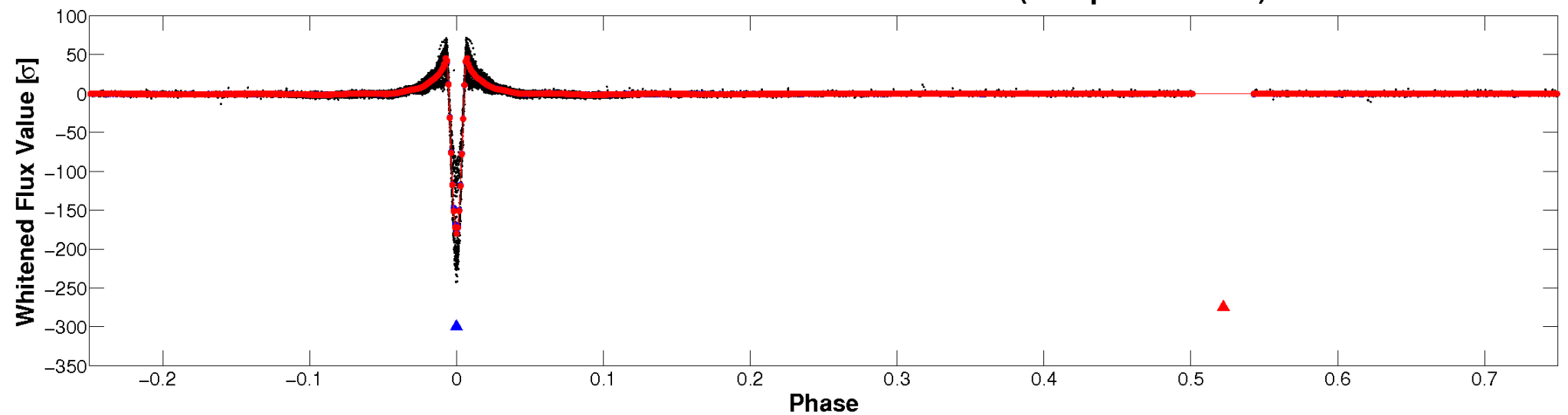


Non-Whitened Vs. Whitened Light Curve

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

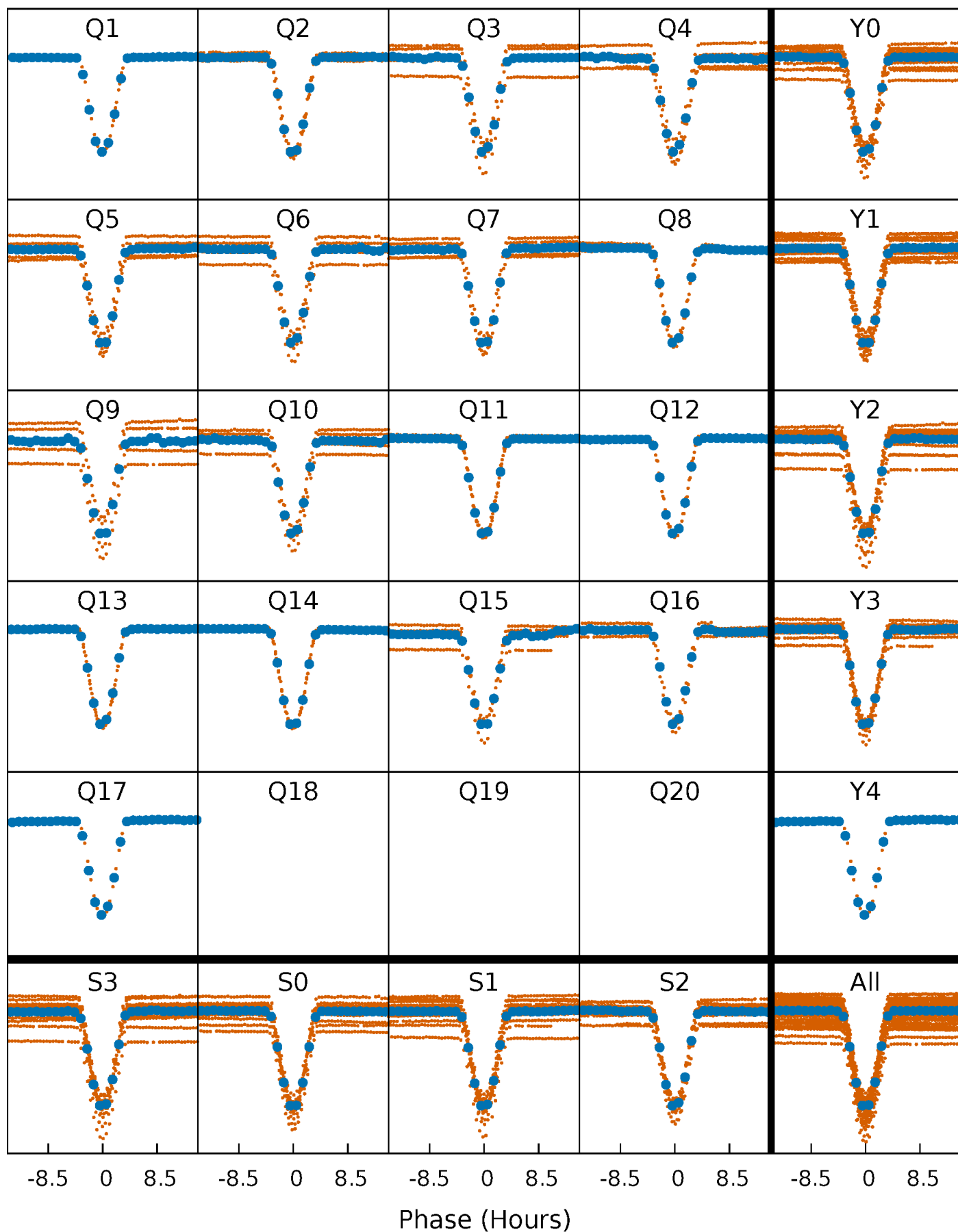


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



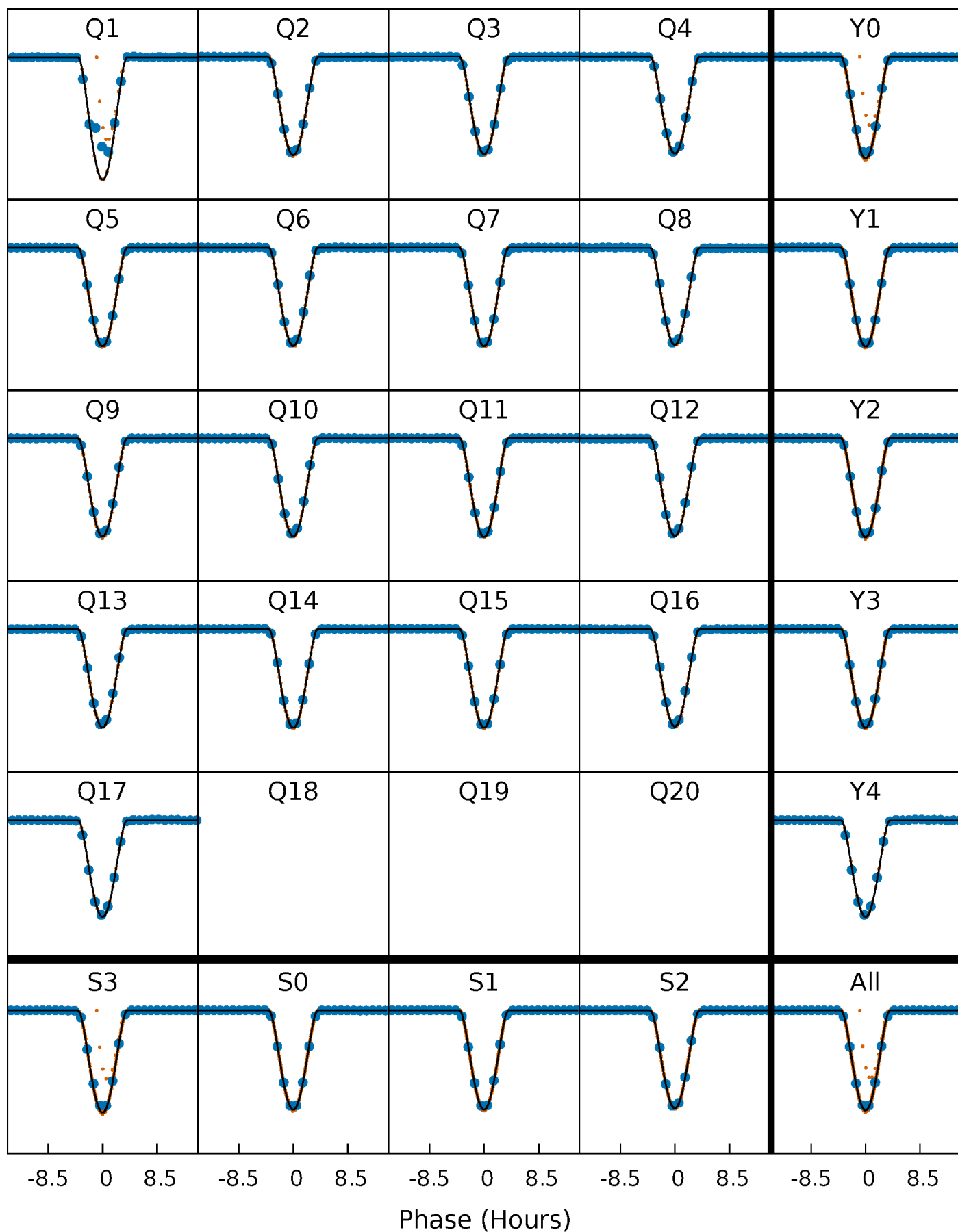
PDC Quarter-Phased Transit Curves

TCE 008559863-02 $P = 22.470485$ Days $T_0 = 131.550978$ (BKJD)



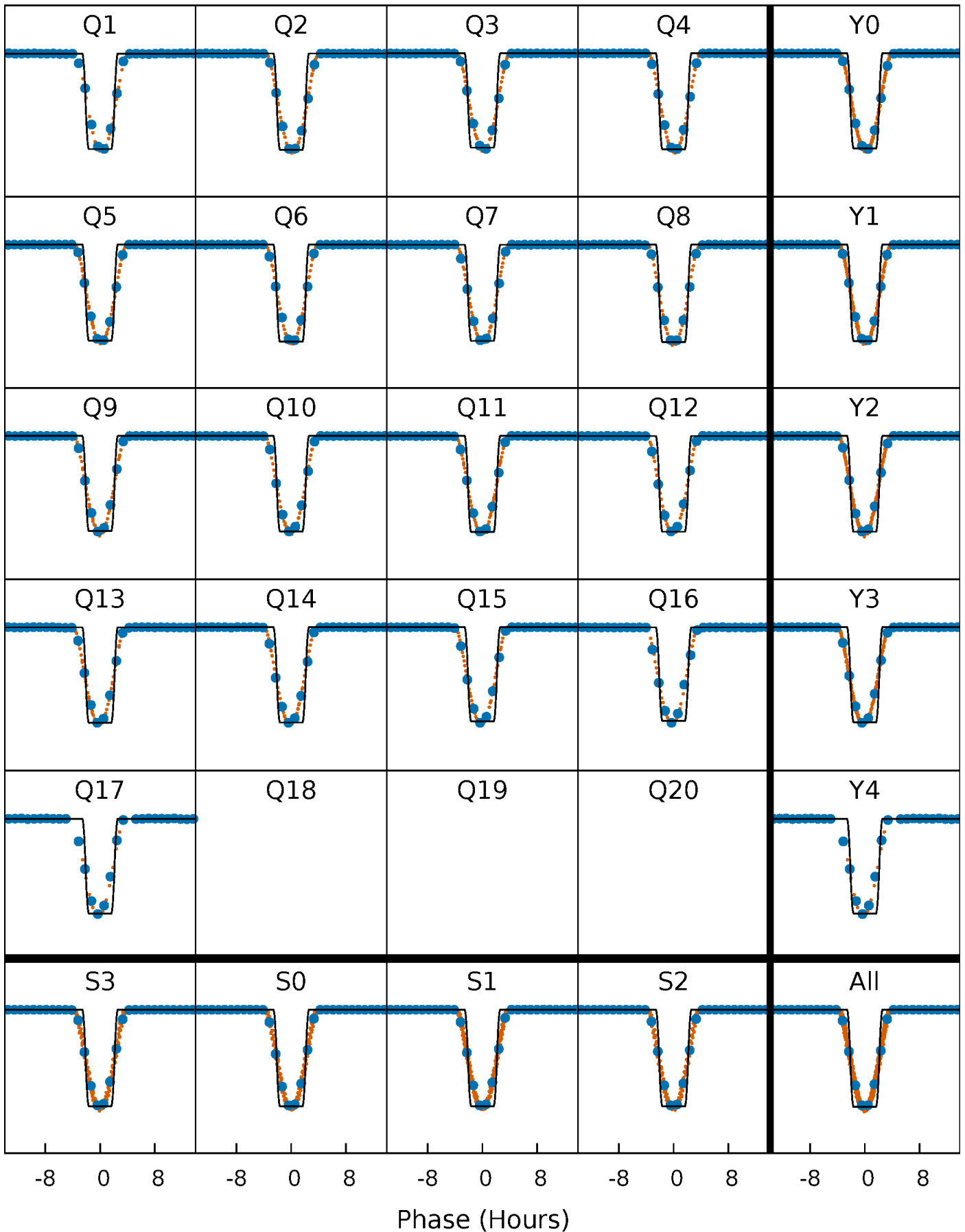
DV Quarter-Phased Transit Curves

TCE 008559863-02 P= 22.470485 Days $T_0=131.550978$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

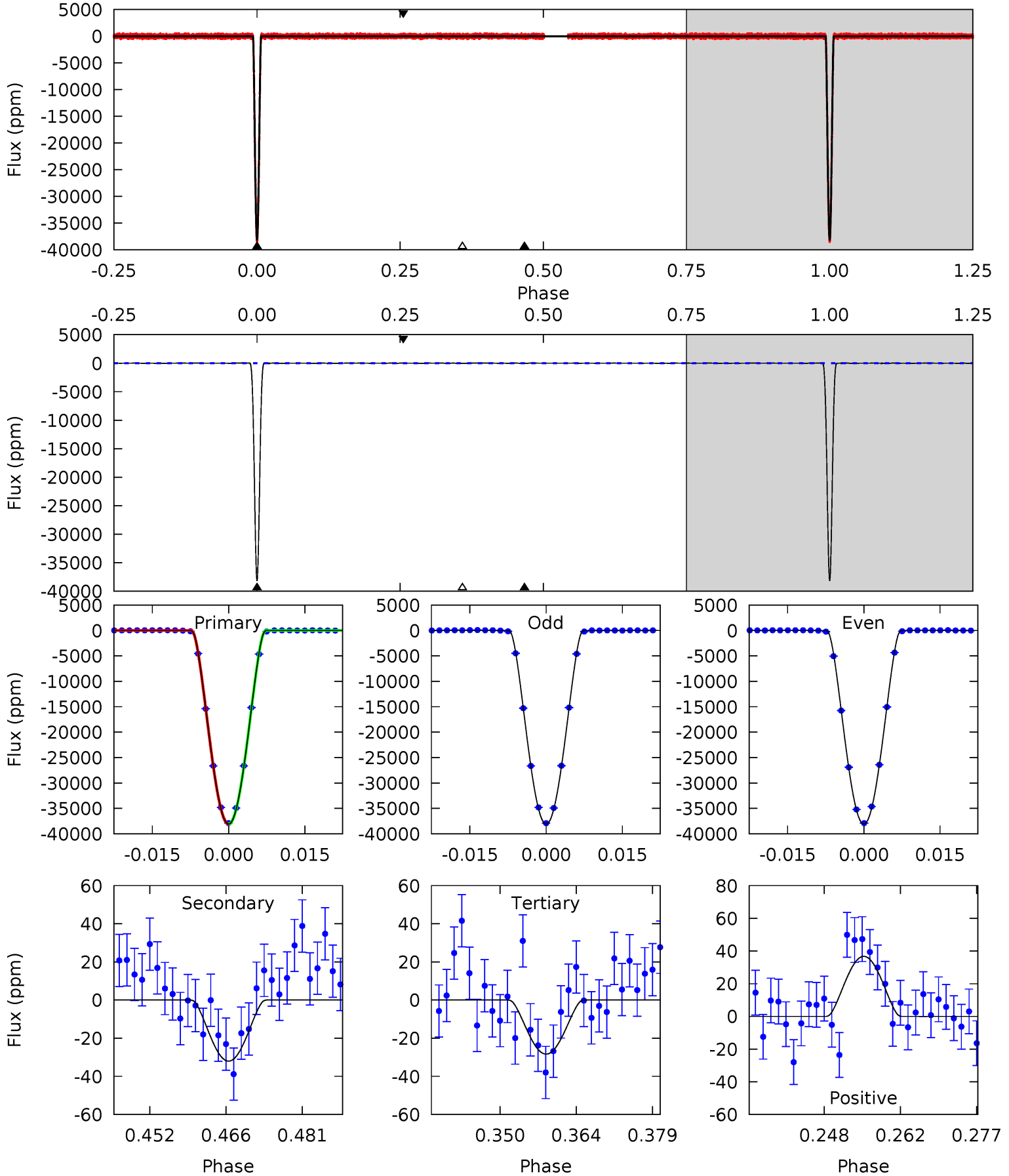
TCE 008559863-02 P= 22.470767 Days $T_0=131.542269$ (BKJD)



DV Model-Shift Uniqueness Test

008559863-02, P = 22.470485 Days, E = 109.080493 Days

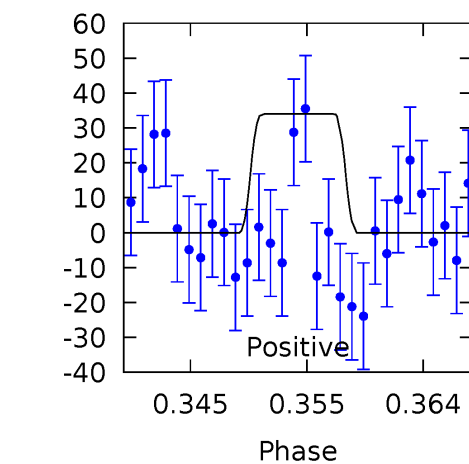
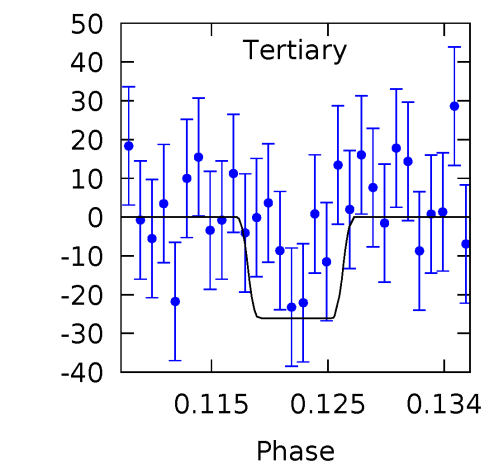
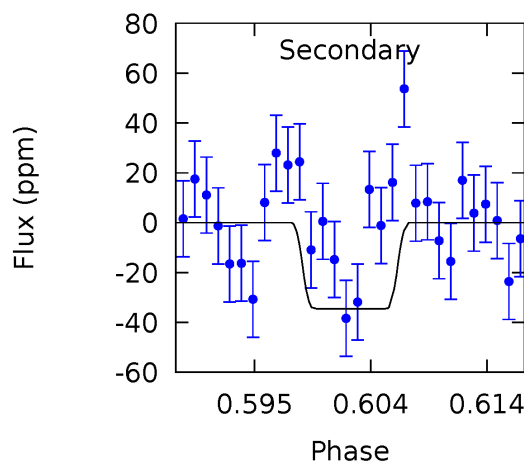
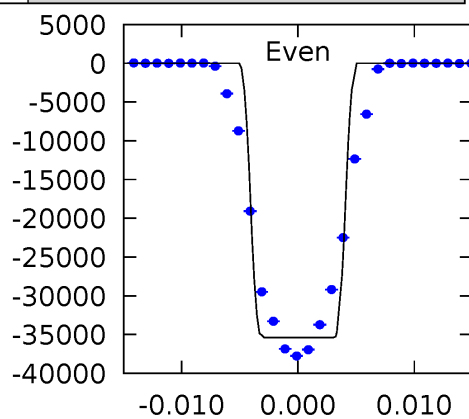
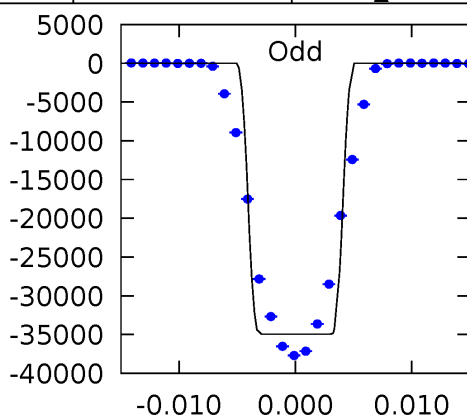
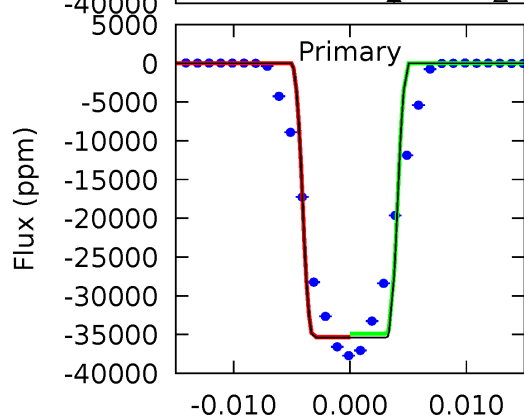
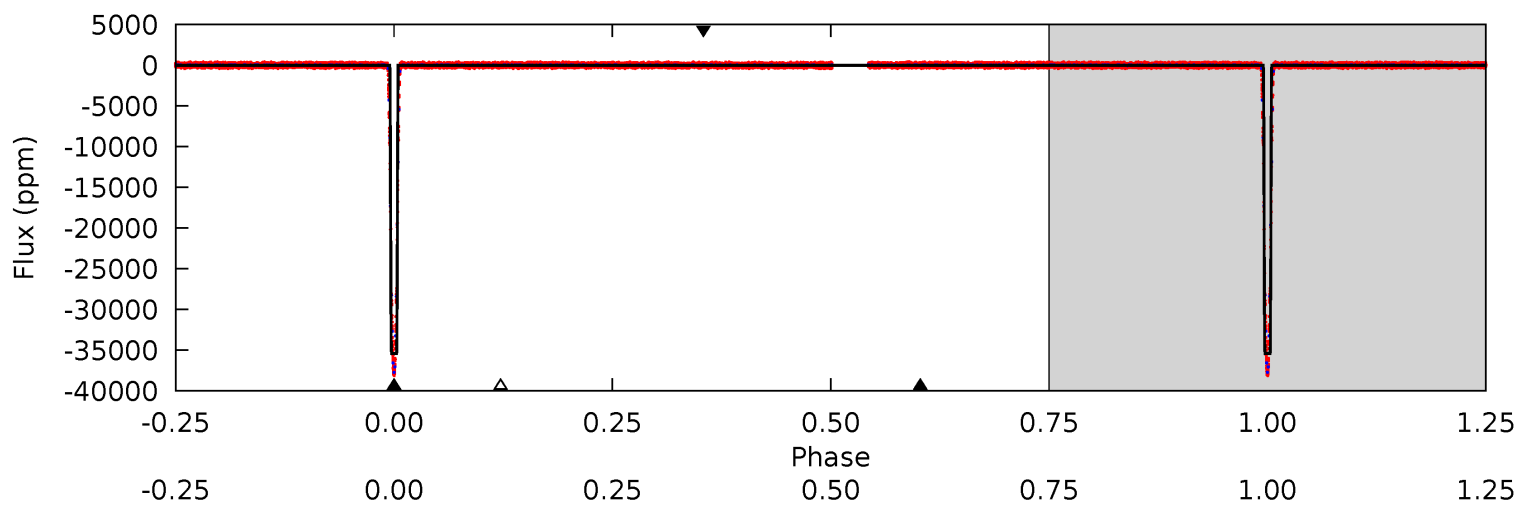
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8614	7.24	6.41	8.30	4.95	2.44	2.46	8607	8606	0.83	-1.06	0.14	0.99	0.00	0.55



Alt Model-Shift Uniqueness Test

008559863-02, $P = 22.470767$ Days, $E = 109.071502$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4129	4.02	3.04	3.96	5.03	2.59	1.08	4126	4125	0.98	0.06	25.3	1.00	0.00	25.2



Stellar Parameters For KIC 008559863

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5315^{+159}_{-143}	$4.636^{+0.030}_{-0.090}$	$-0.440^{+0.300}_{-0.300}$	$0.697^{+0.102}_{-0.047}$	$0.772^{+0.074}_{-0.074}$	$3.213^{+0.496}_{-0.912}$
	+3%/-3%	+1%/-2%	+68%/-68%	+15%/-7%	+10%/-10%	+15%/-28%
Source	PHO1	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 008559863-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-32 ± 4	$23.48^{+1.84}_{-1.28}$	733^{+30}_{-25}	1663^{+43}_{-53}	$0.640^{+0.114}_{-0.110}$
Alt.	-34 ± 9	$15.03^{+1.10}_{-1.00}$	734^{+28}_{-27}	1896^{+60}_{-67}	$1.699^{+0.468}_{-0.461}$

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 $A_{obs} \gg 1.0$

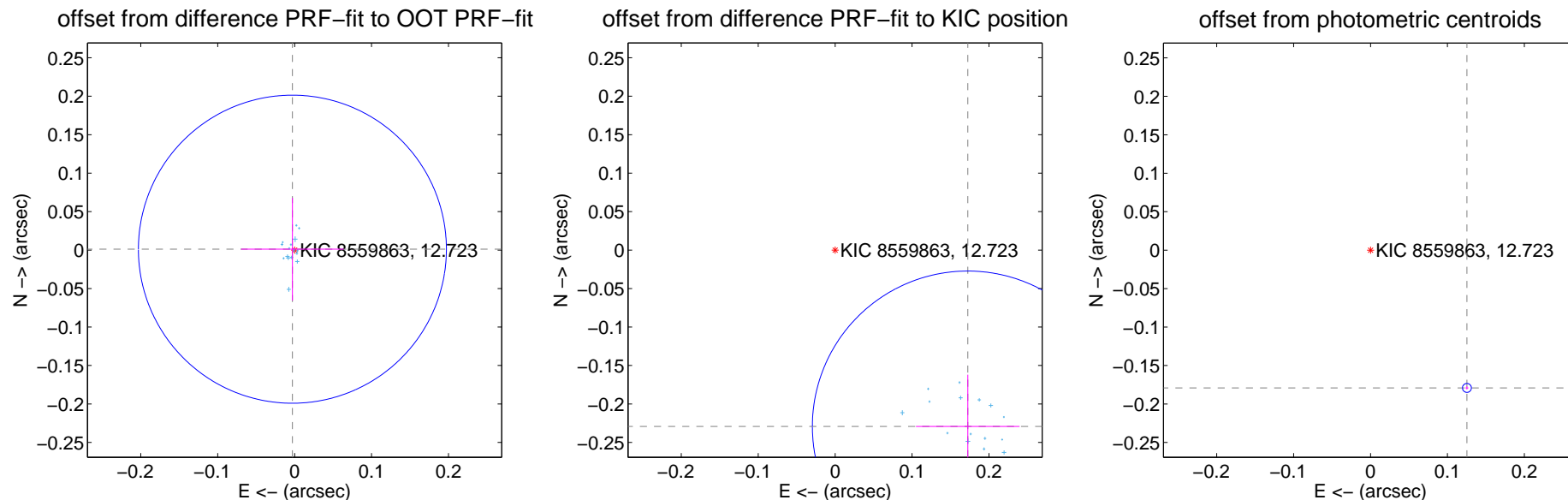
DV Centroid Data

Supplemental centroid analysis for 008559863-02. Kepler magnitude: 12.72. Transit SNR 3304.37

There are 17 quarters with good PRF difference image offsets

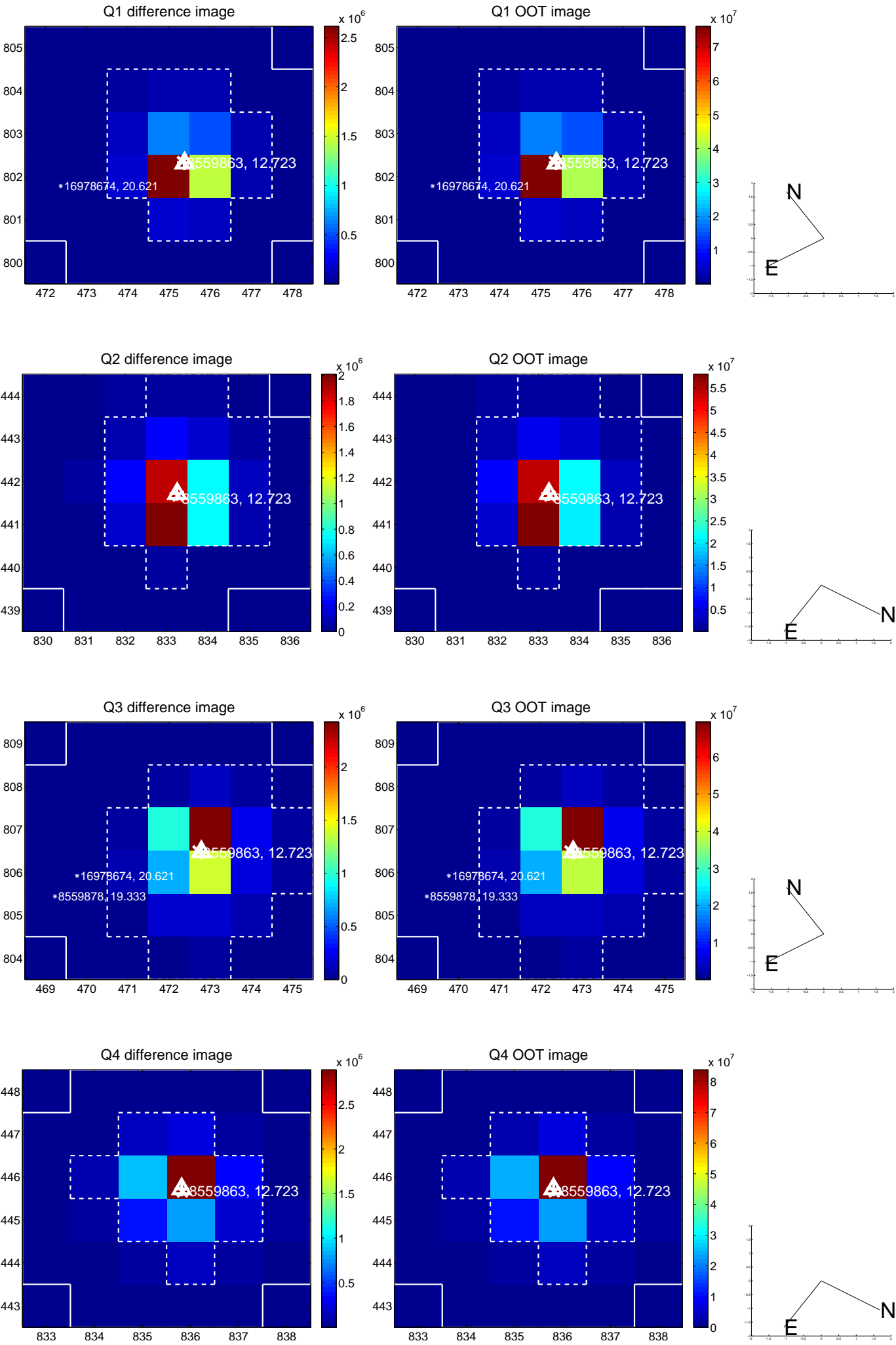
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.003 ± 0.067	0.05	0.003 ± 0.067	0.001 ± 0.067
PRF-fit source offset from KIC position	0.287 ± 0.067	4.26	-0.172 ± 0.067	-0.229 ± 0.067
photometric centroid source offset	0.22 ± 0.00	113.17	-0.13 ± 0.00	-0.18 ± 0.00

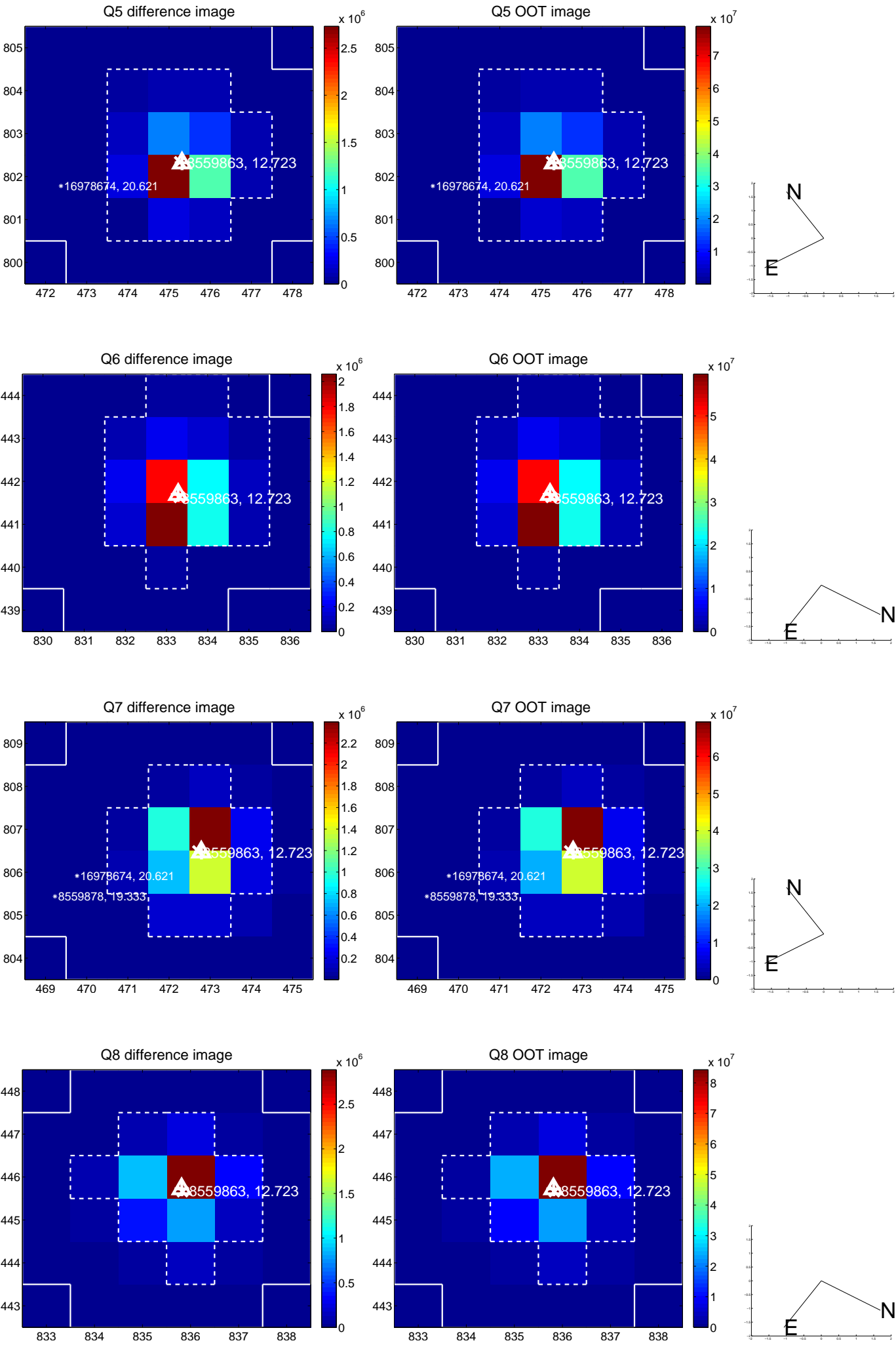


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

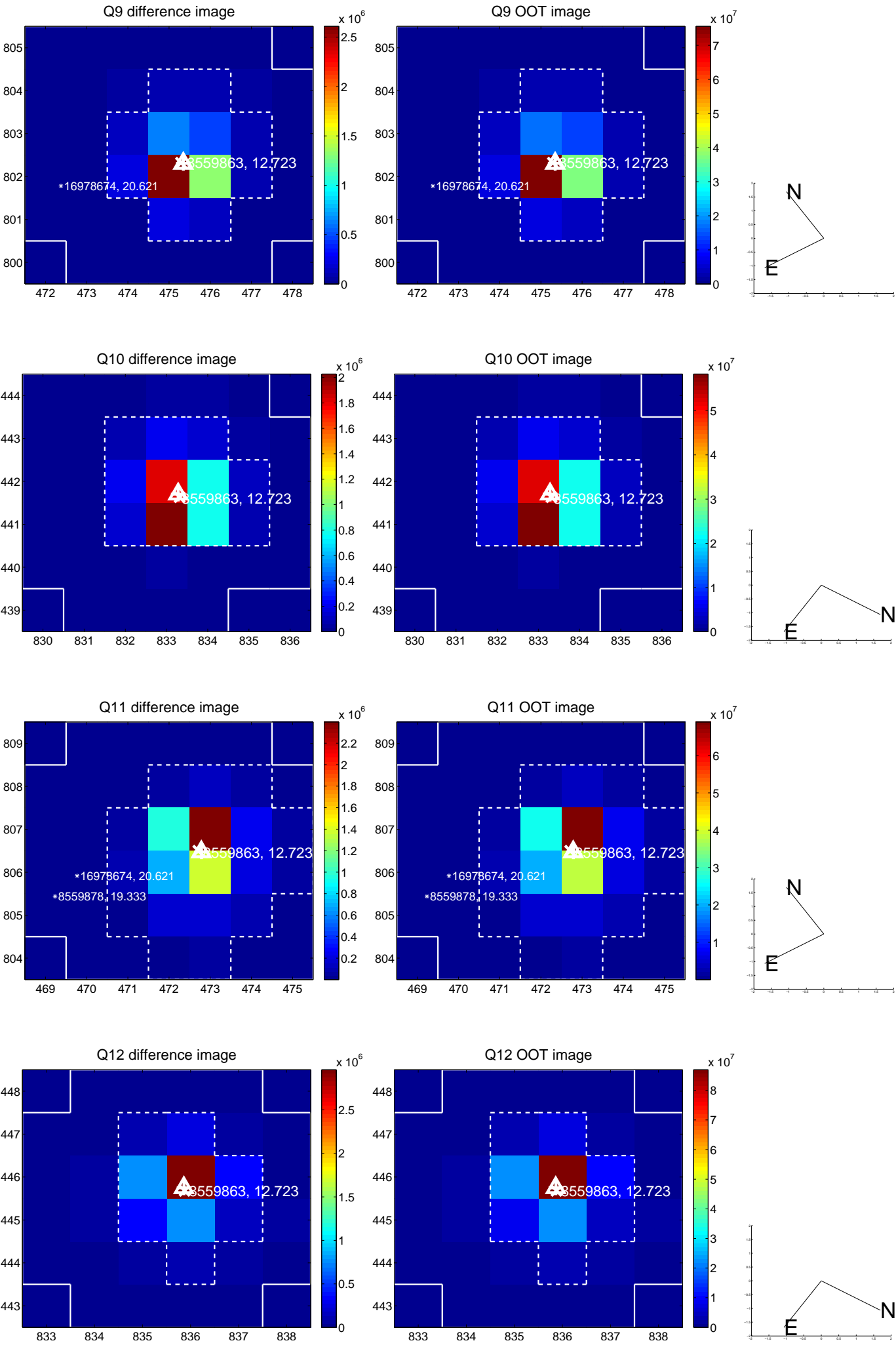
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



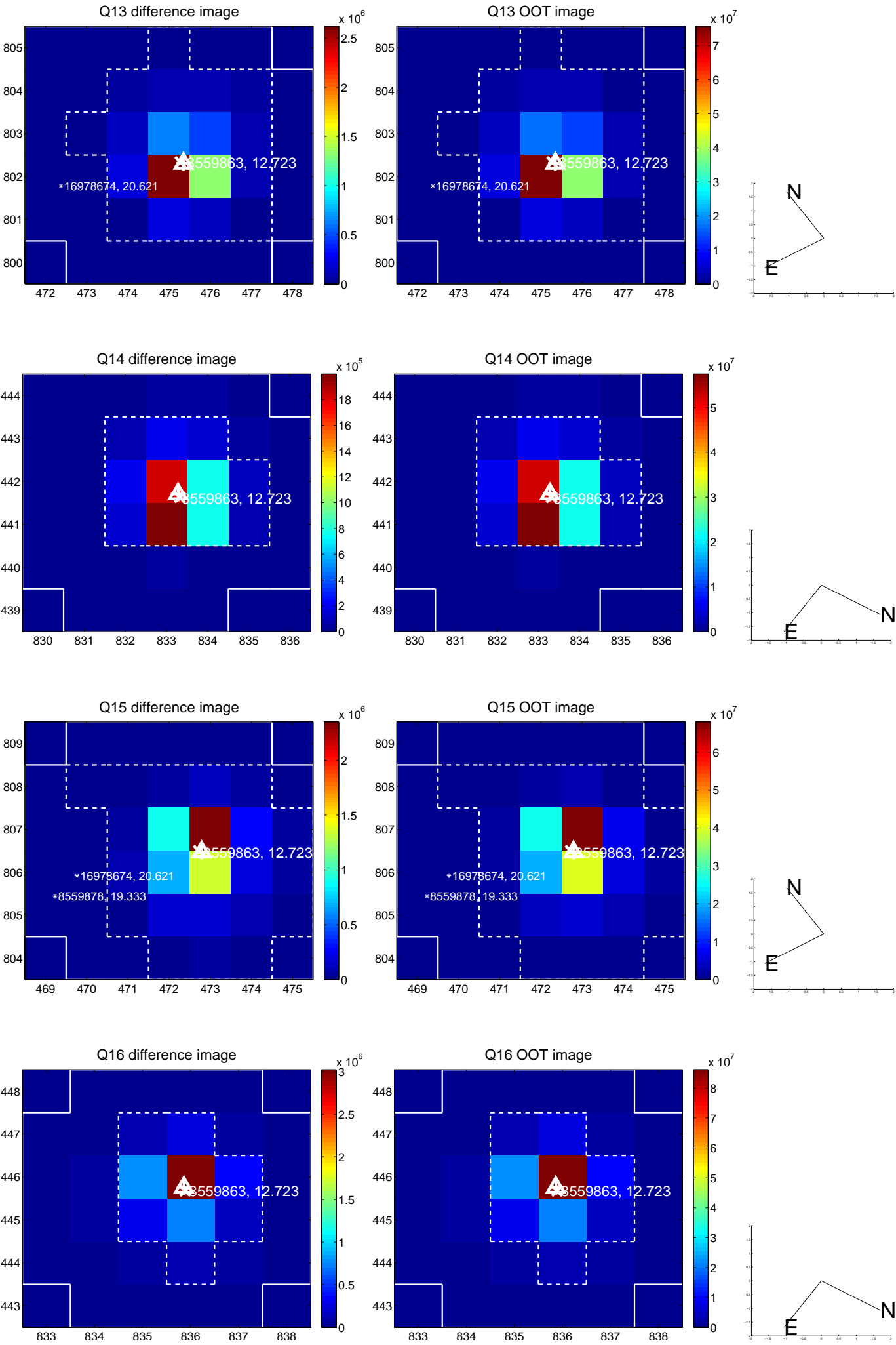
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



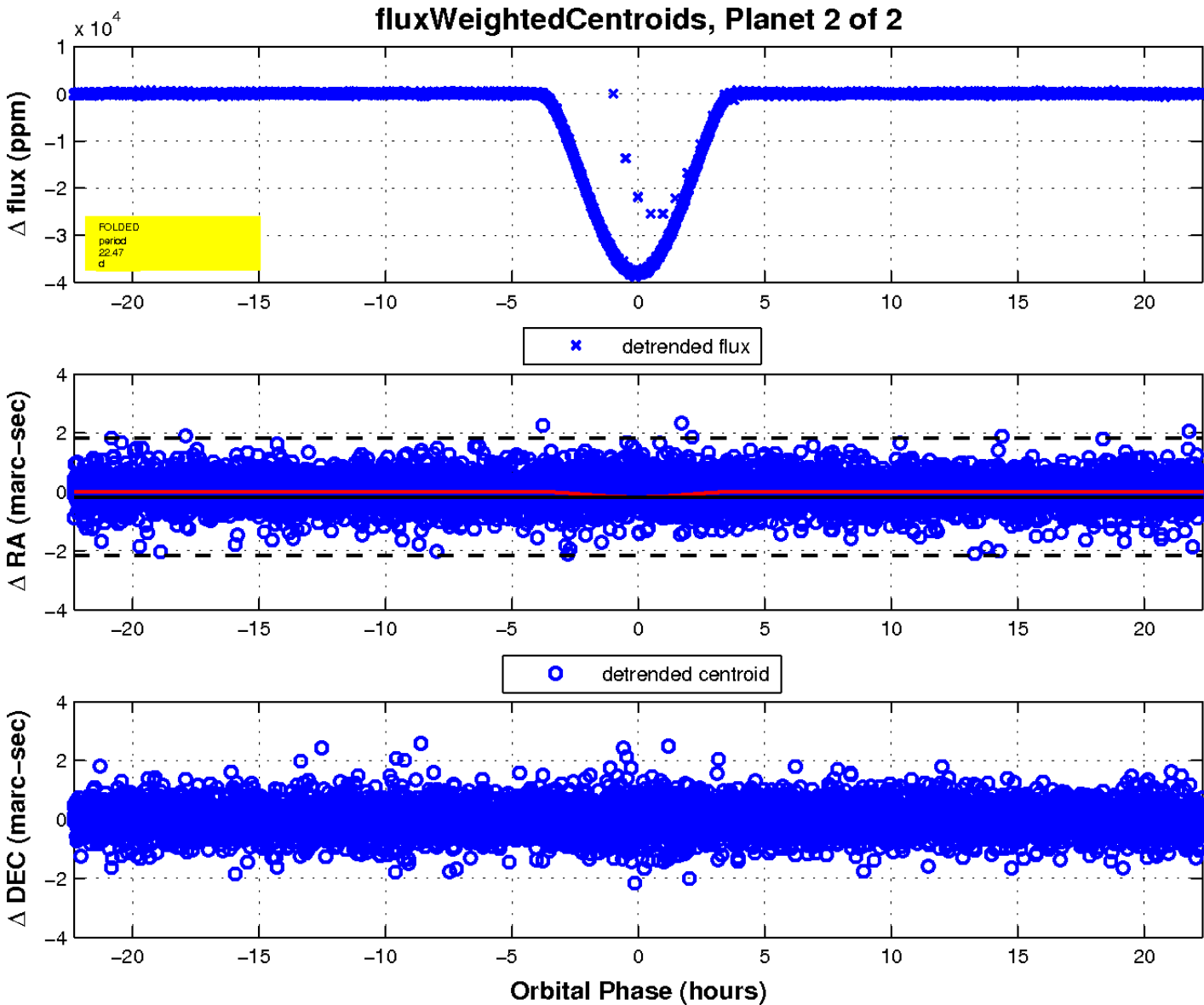
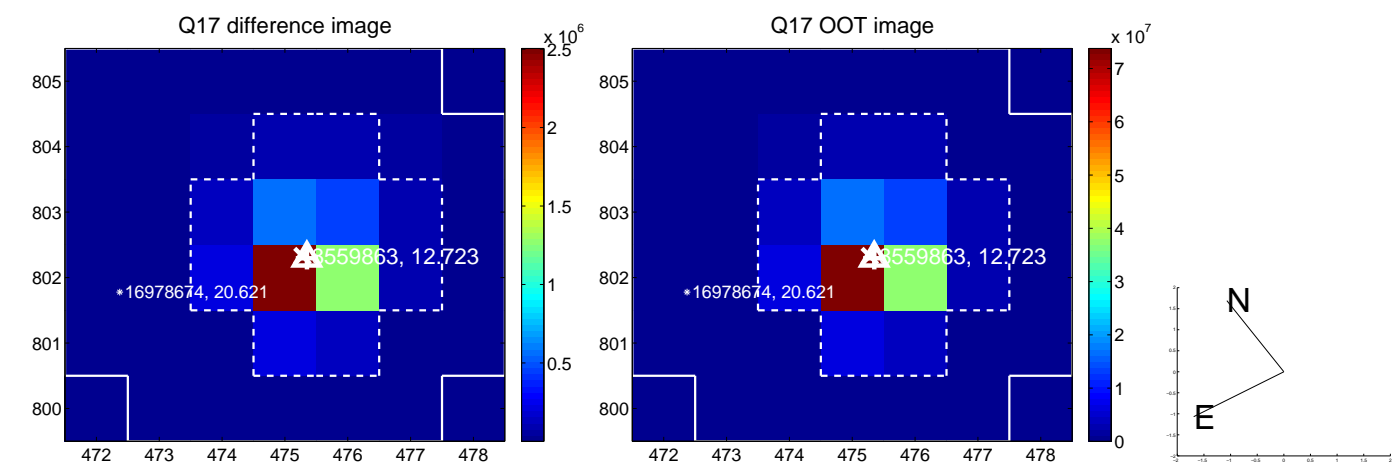
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

