

KIC 008463346

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})
008463346-01	OBS	2529.01	16.797223	134.040354	1021.9	3.953	18.1	18.8	0.70	4652	2.85	15.20
008463346-02	OBS	2529.02	64.002266	132.613143	1143.1	4.885	12.0	12.5	0.70	4652	2.48	2.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008463346-01	OBS	PC	0.98	0	0	0	0	CENT_KIC_POS
008463346-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

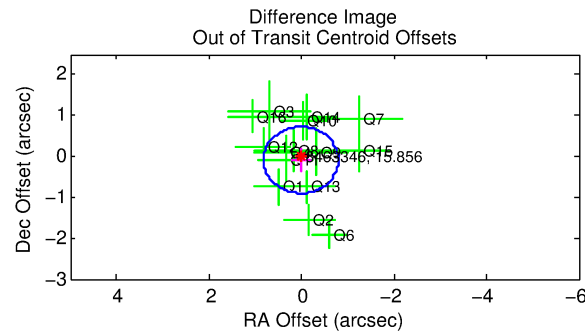
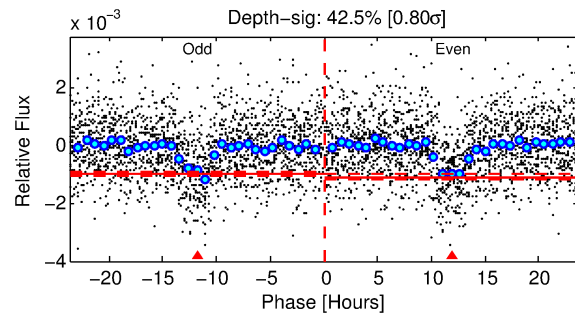
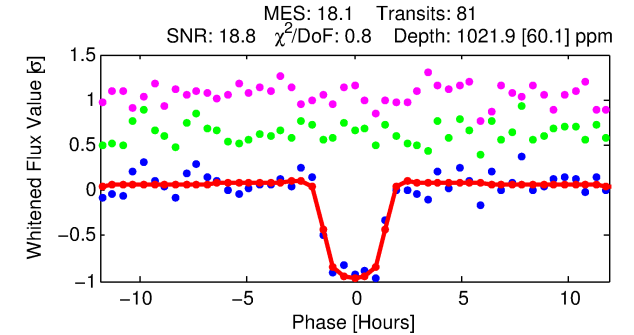
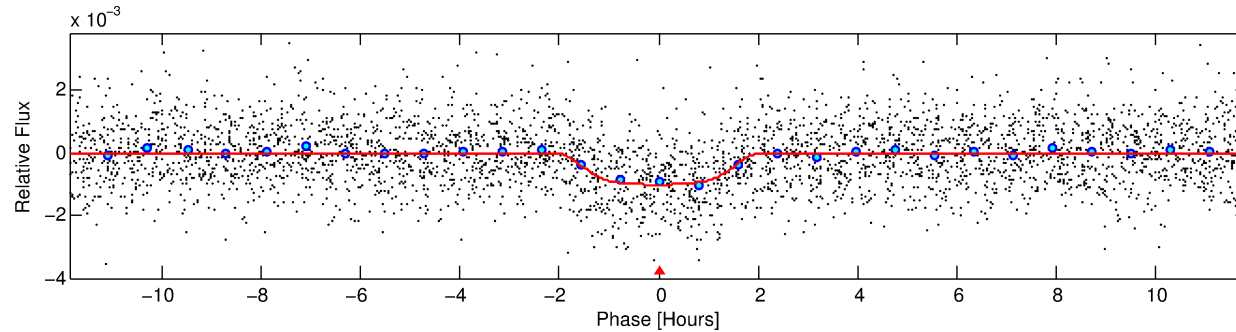
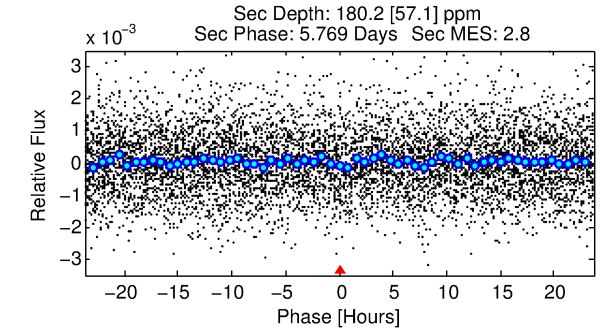
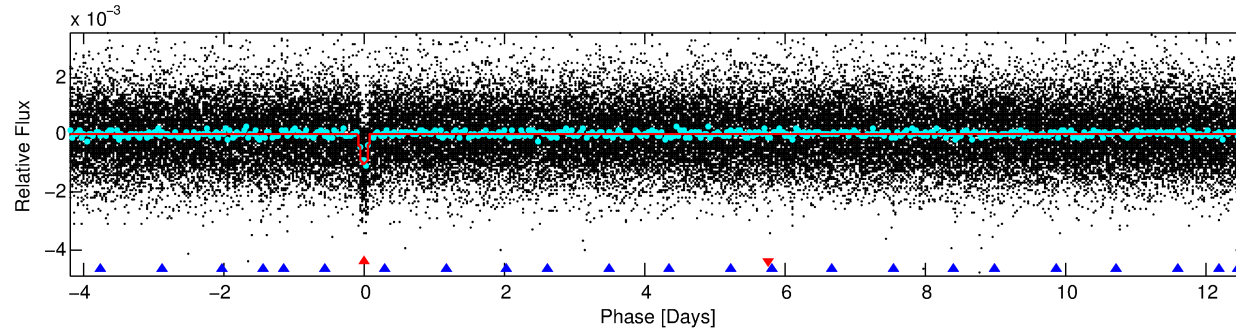
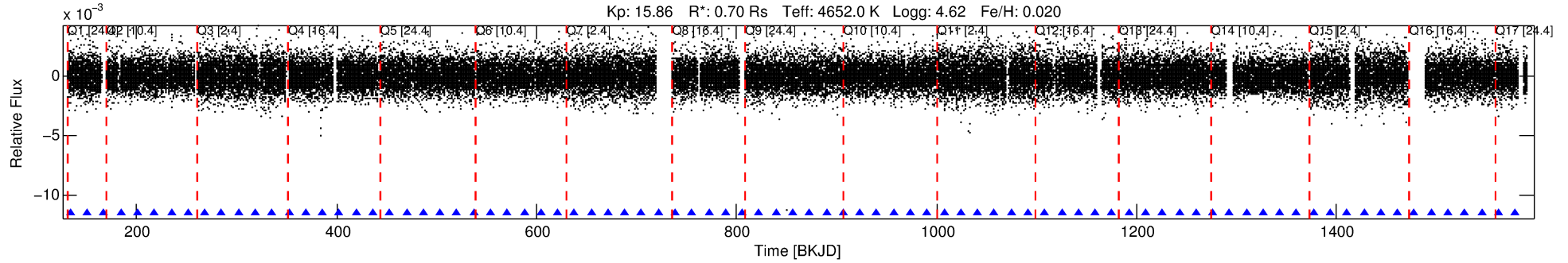
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008463346-01

No Significant Match Found

DV One-Page Summary

KIC: 8463346 Candidate: 1 of 2 Period: 16.797 d
KOI: K02529.01 Corr: 0.905



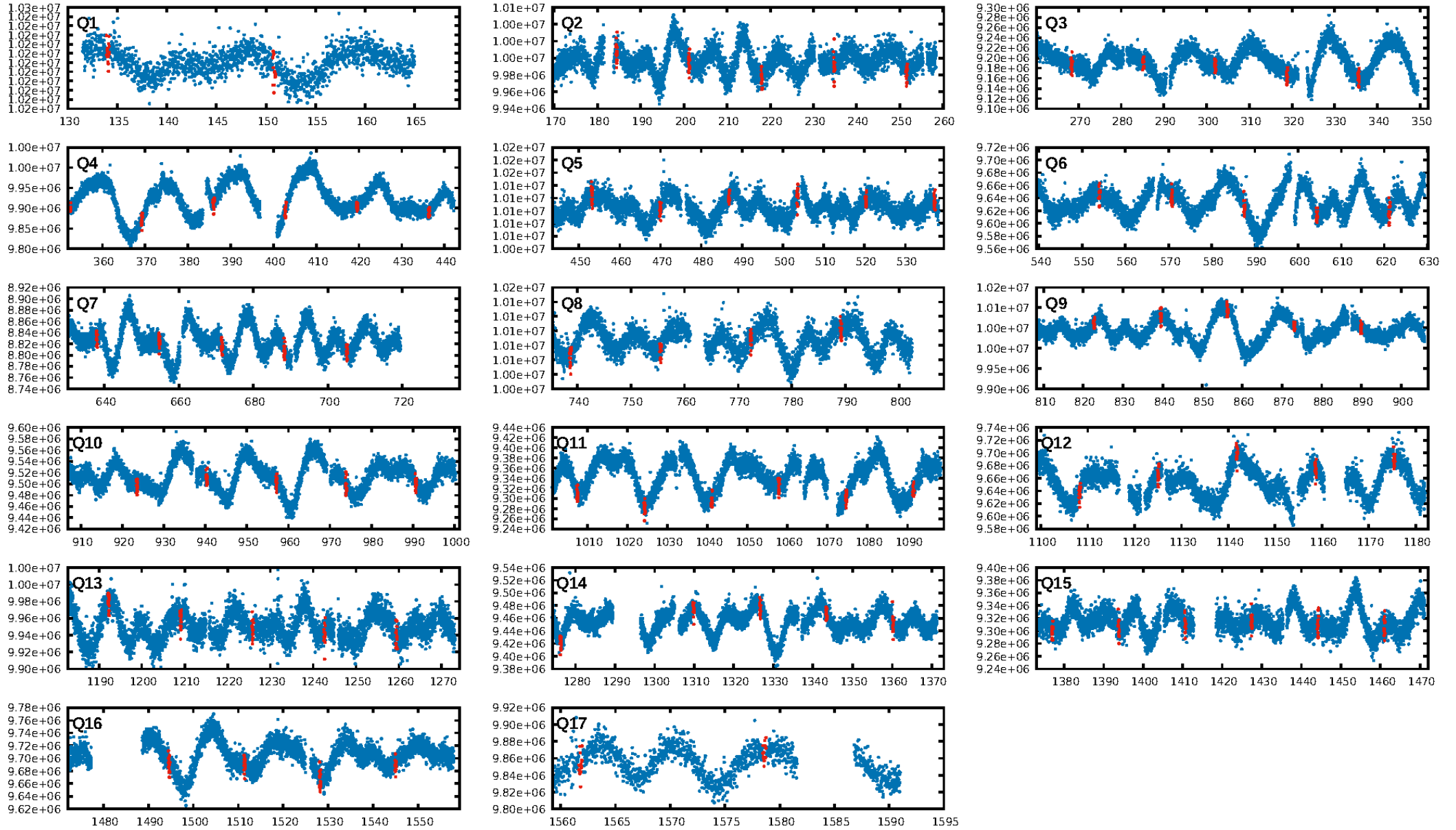
DV Fit Results:

Period = 16.79722 [0.00009] d
Epoch = 134.0404 [0.0045] BKJD
Rp/R* = 0.0375 [0.0026]
a/R* = 15.15 [3.11]
b = 0.93 [0.03]
Seff = 15.20 [1.41]
Teff = 504 [12] K
Rp = 2.85 [0.24] Re
a = 0.1158 [0.0047] AU
Ag = 163.18 [57.37] [2.83σ]
Teffp = 2782 [246] K [9.25σ]

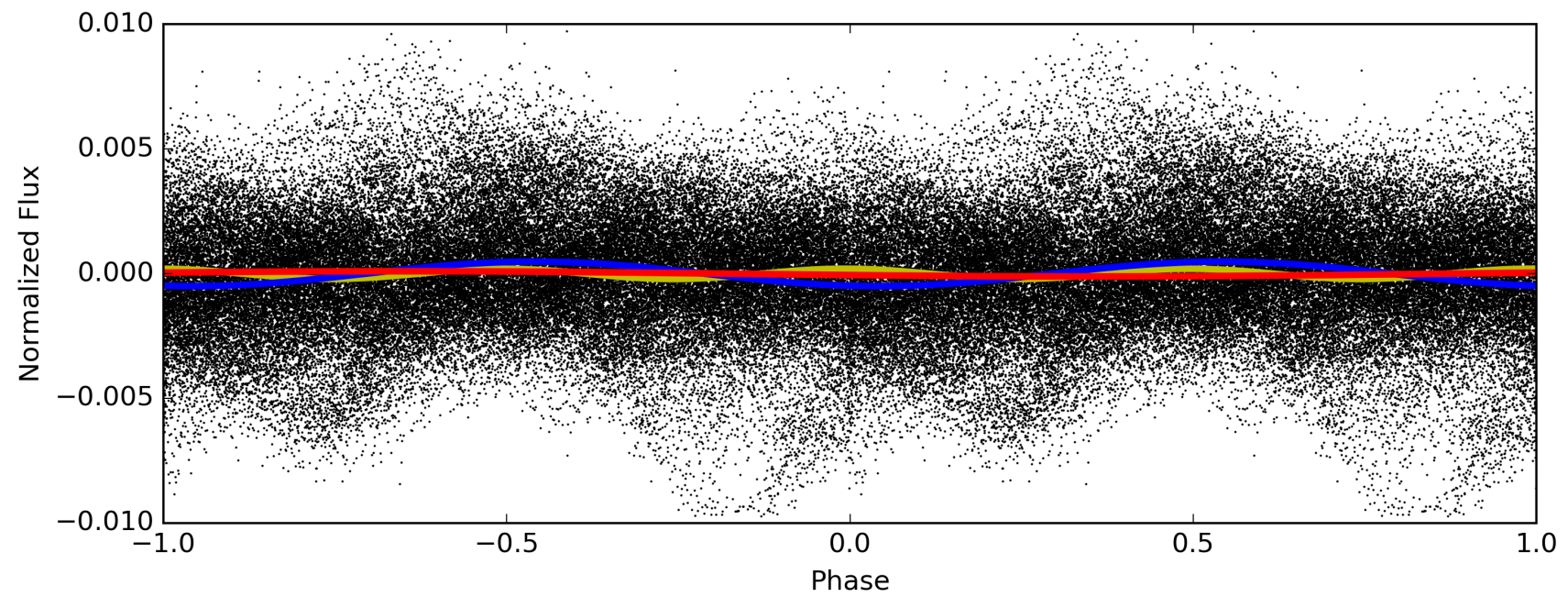
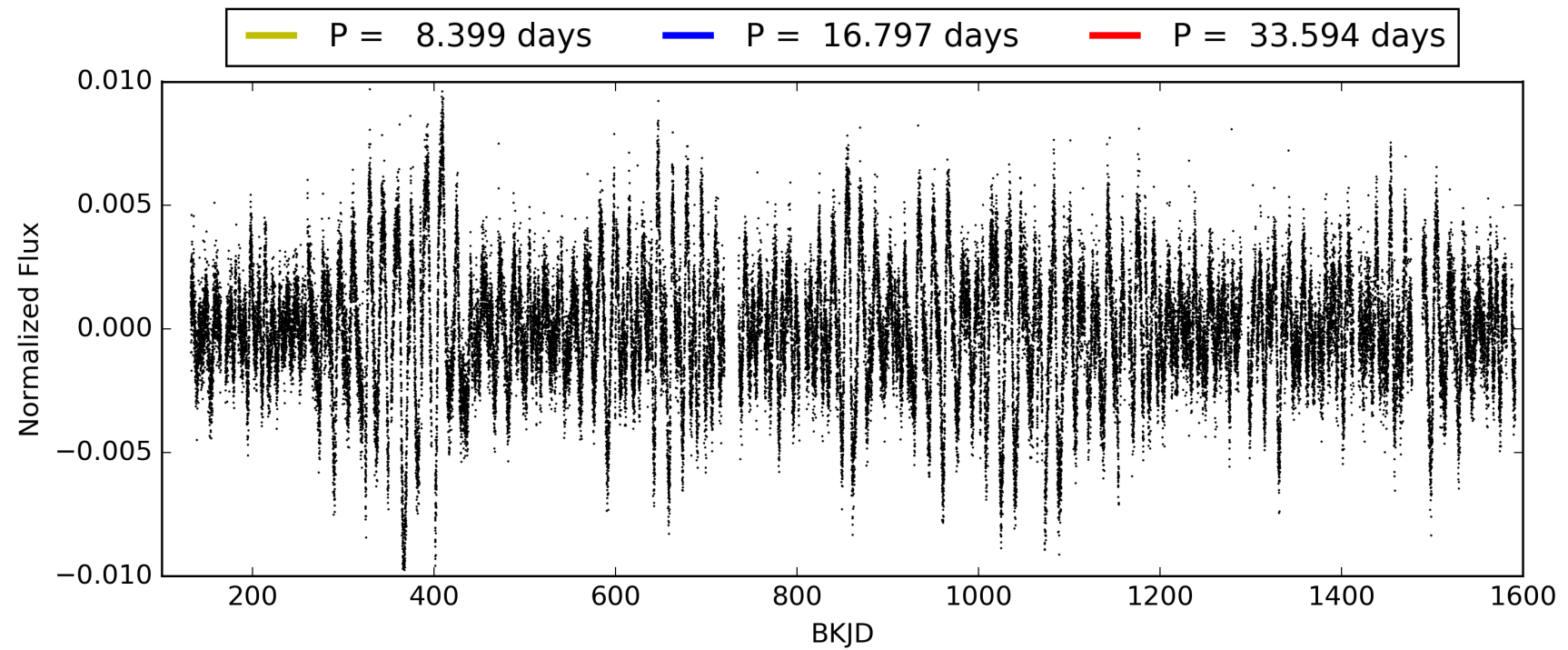
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [180.28σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.22e-68
RollingBand-fgt: 1.00 [77/77]
GhostDiagnostic-chr: 3.449
Centroid-sig: 69.6%
Centroid-so: 2.178 arcsec [3.47σ]
OotOffset-rm: 0.089 arcsec [0.33σ]
KicOffset-rm: 0.463 arcsec [2.21σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008463346-01, PDC Light Curves

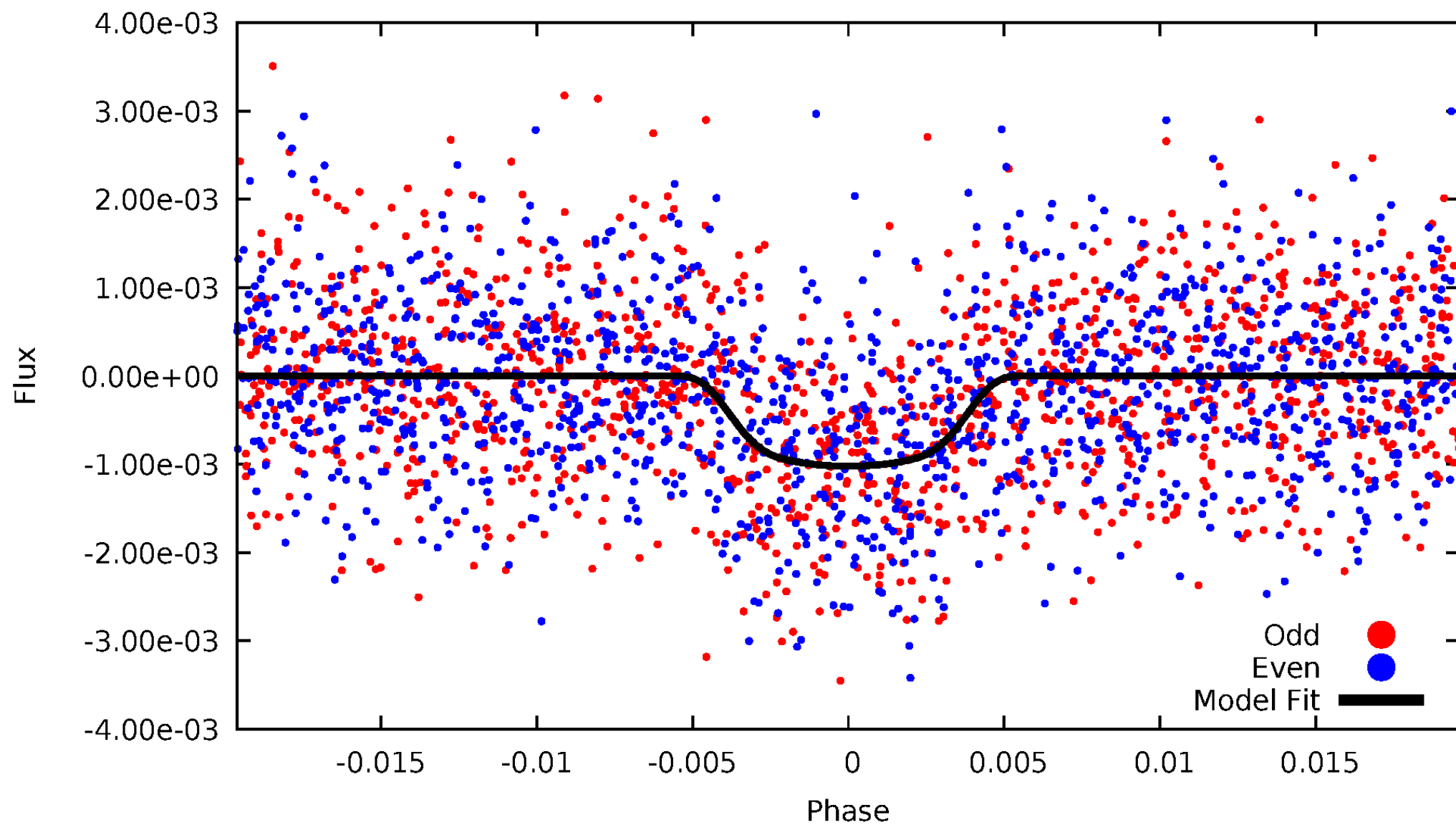


TCE 008463346-01



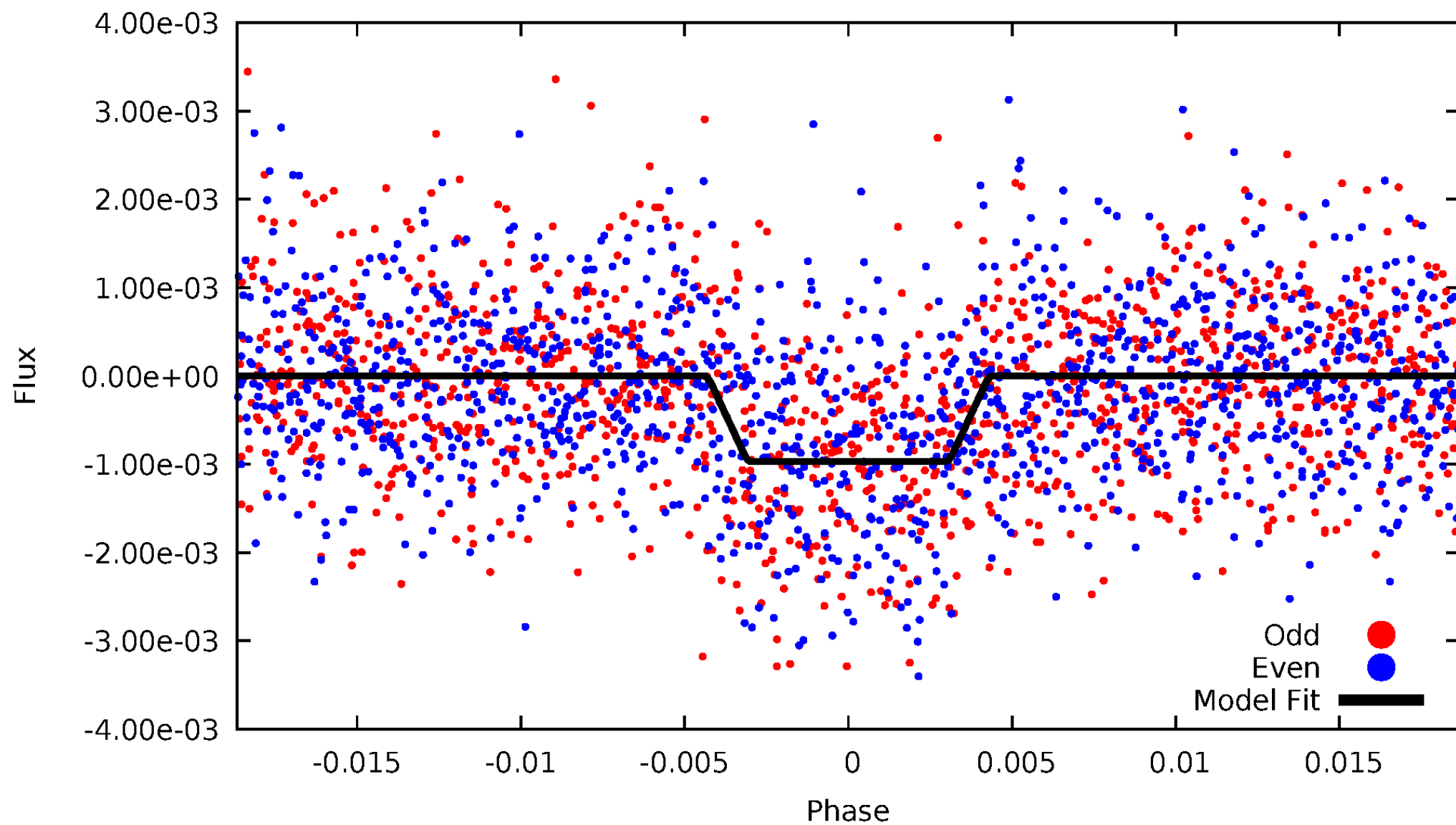
DV Odd/Even

TCE 008463346-01



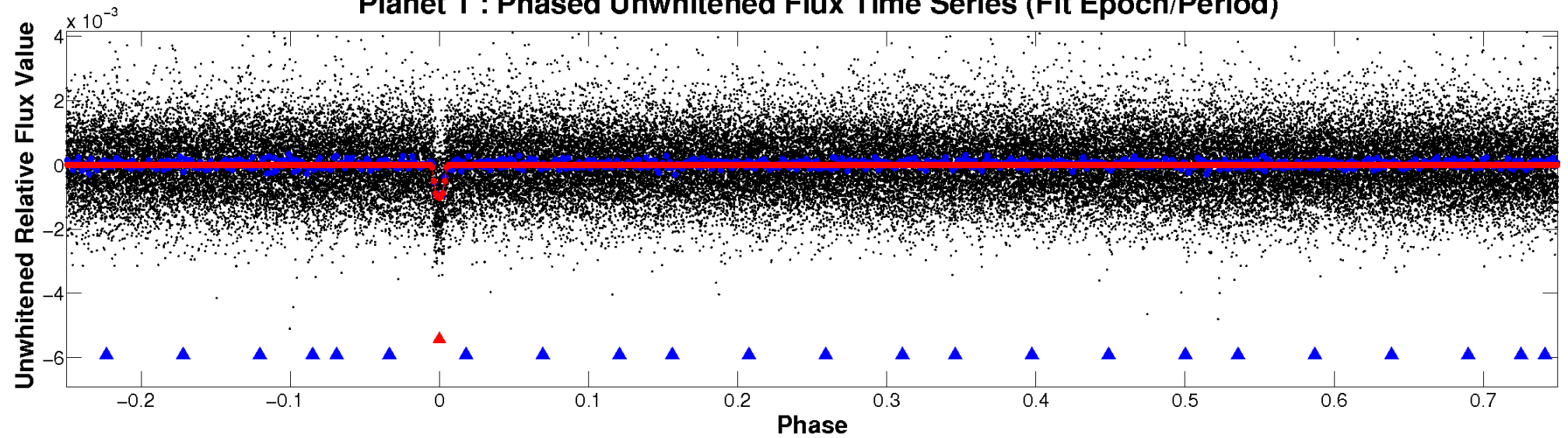
ALT Odd/Even

TCE 008463346-01

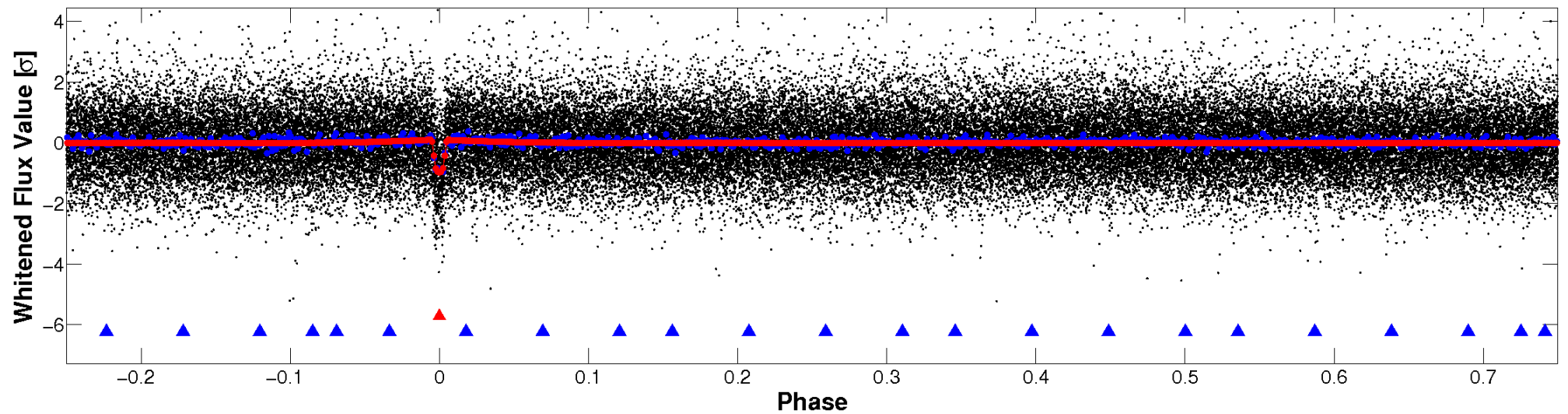


Non-Whitened Vs. Whitened Light Curve

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

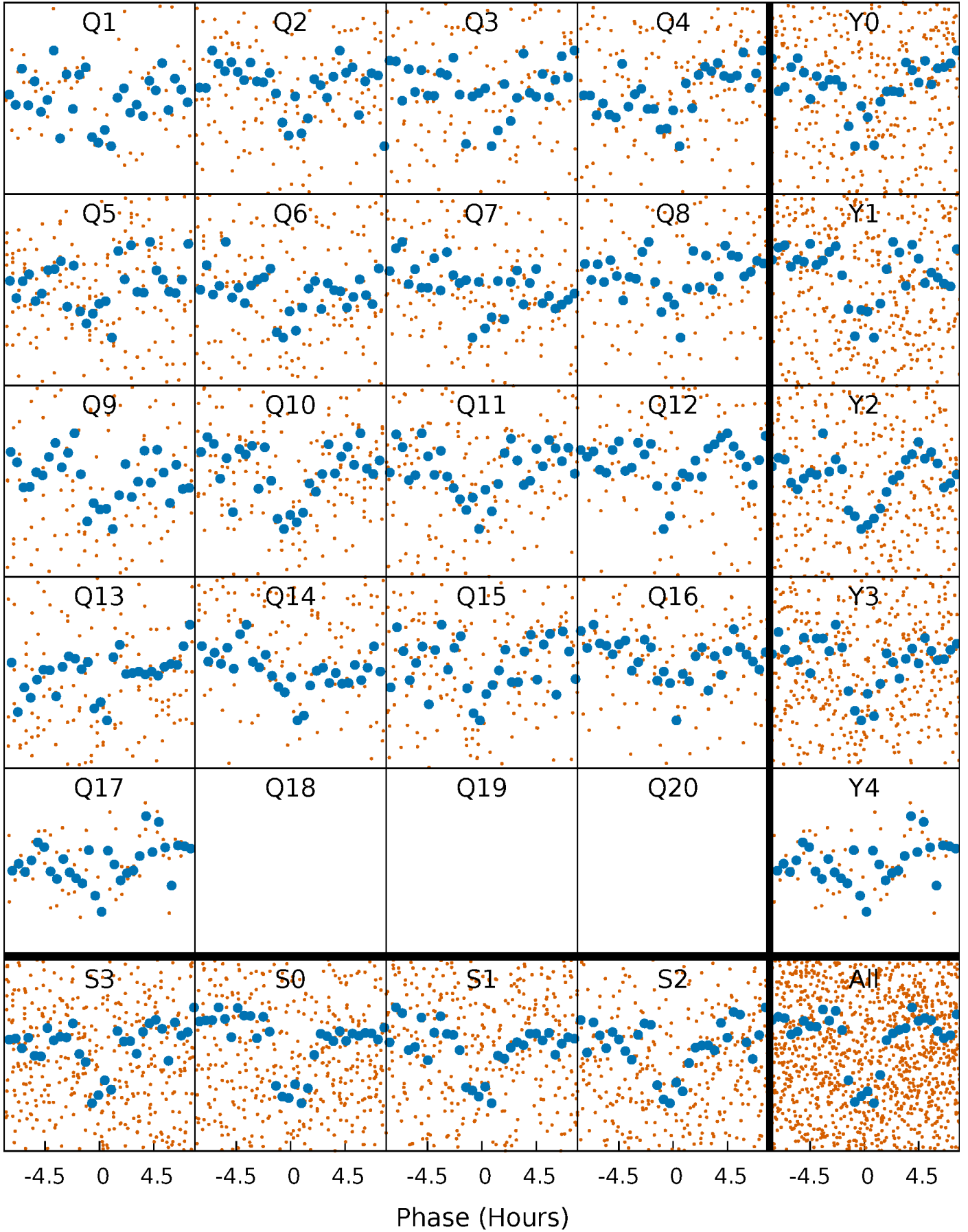


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



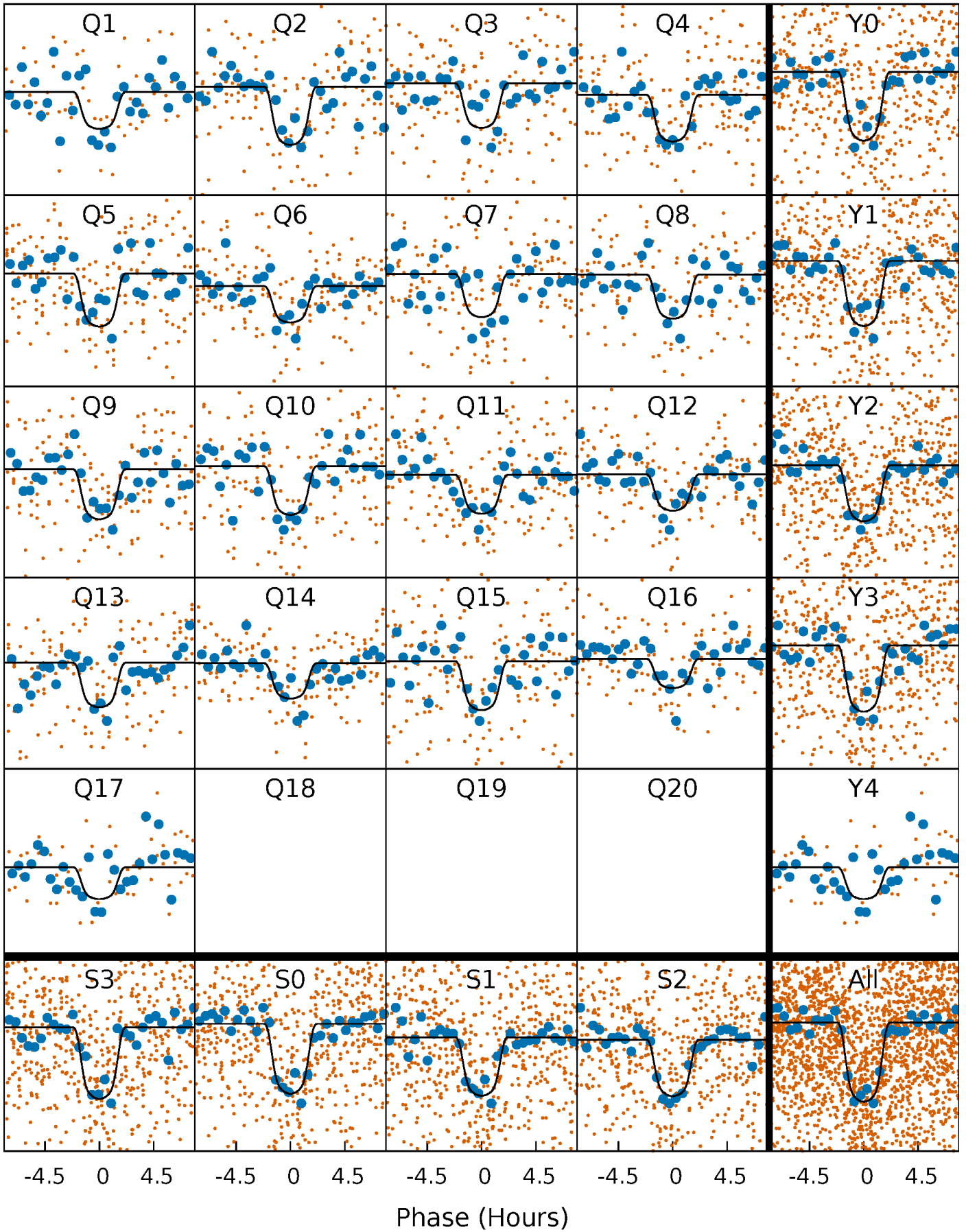
PDC Quarter-Phased Transit Curves

TCE 008463346-01 P= 16.797223 Days $T_0=134.040354$ (BKJD)



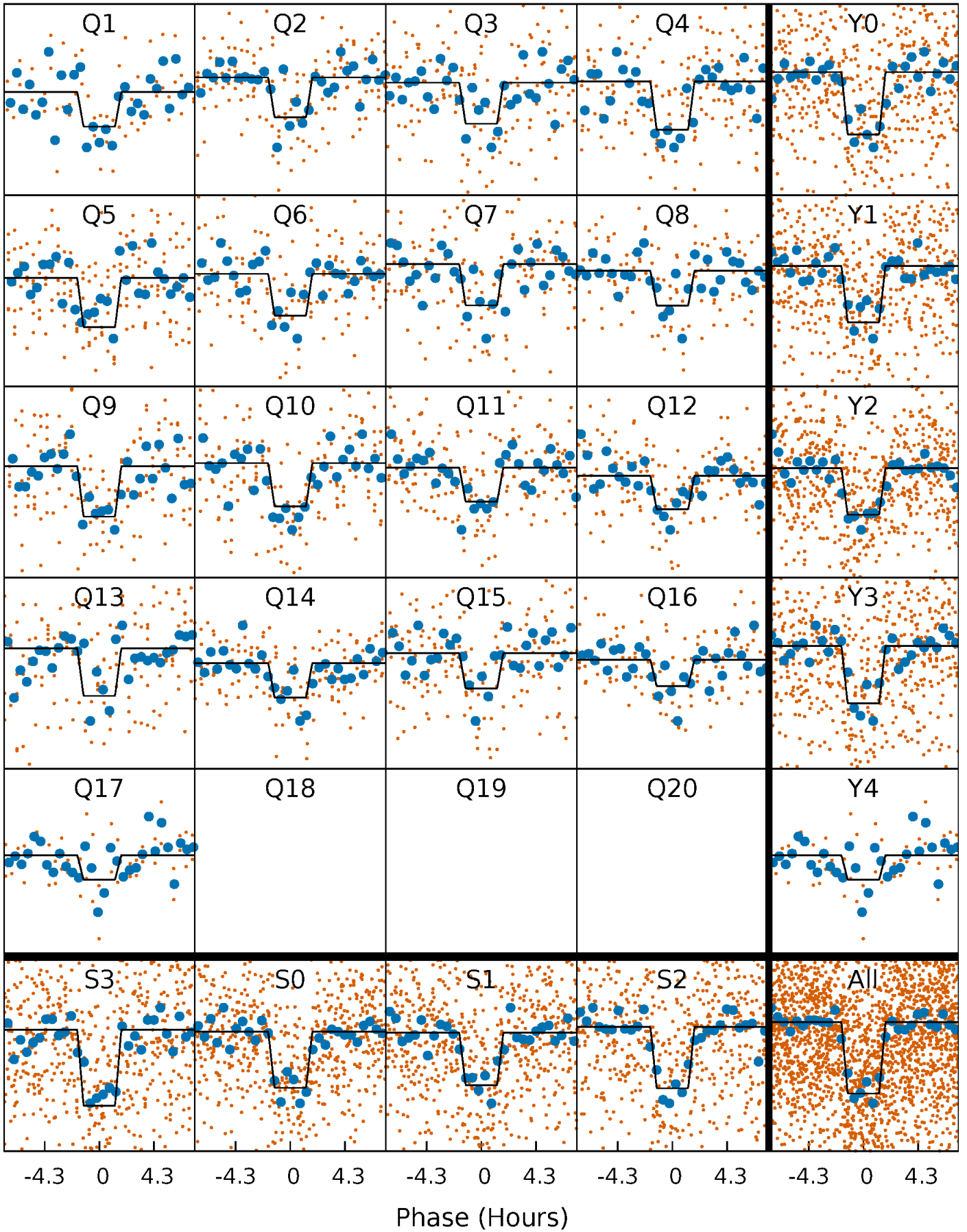
DV Quarter-Phased Transit Curves

TCE 008463346-01 P= 16.797223 Days $T_0=134.040354$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

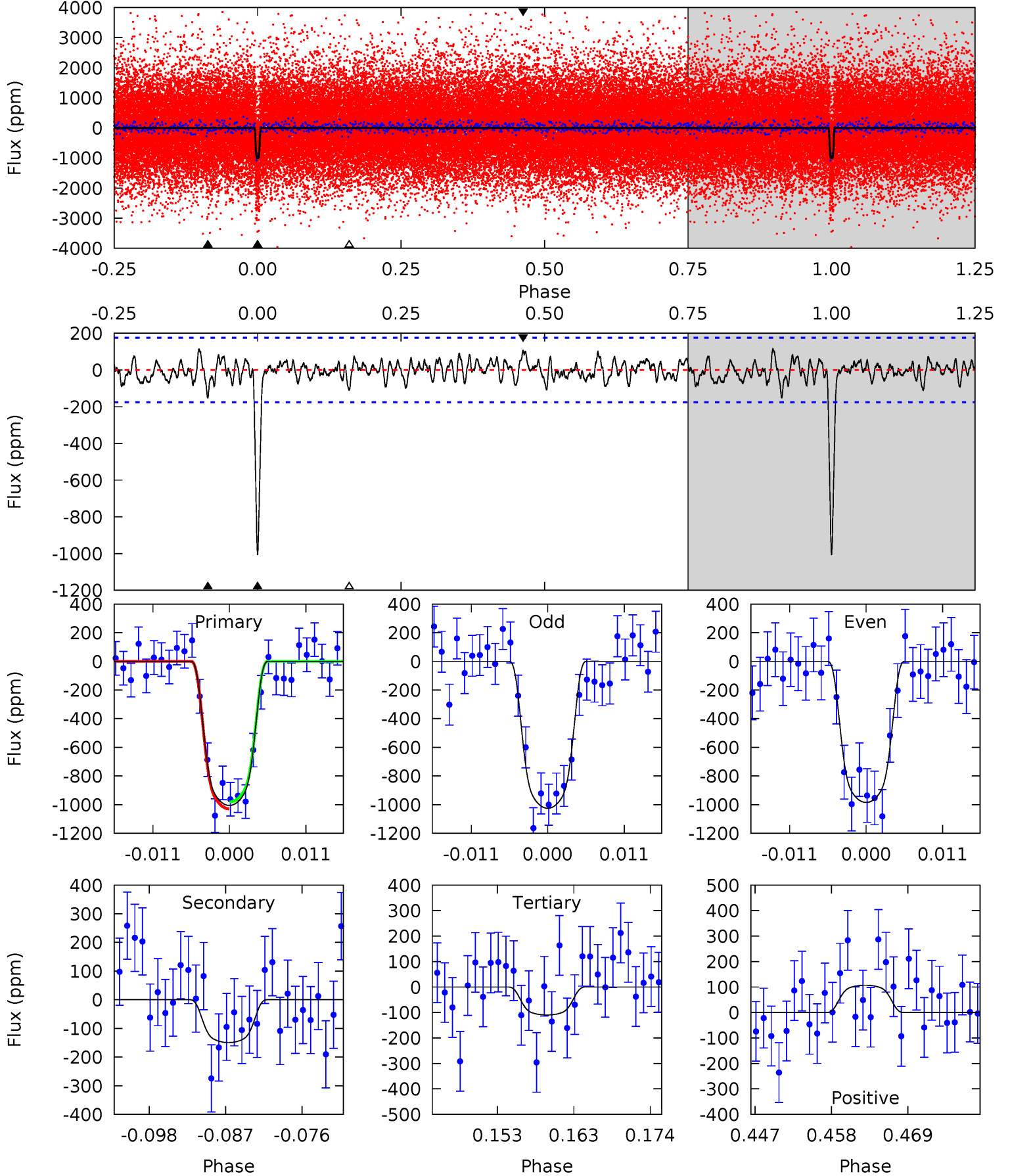
TCE 008463346-01 P= 16.797173 Days $T_0=134.041167$ (BKJD)



DV Model-Shift Uniqueness Test

008463346-01, P = 16.797223 Days, E = 117.243131 Days

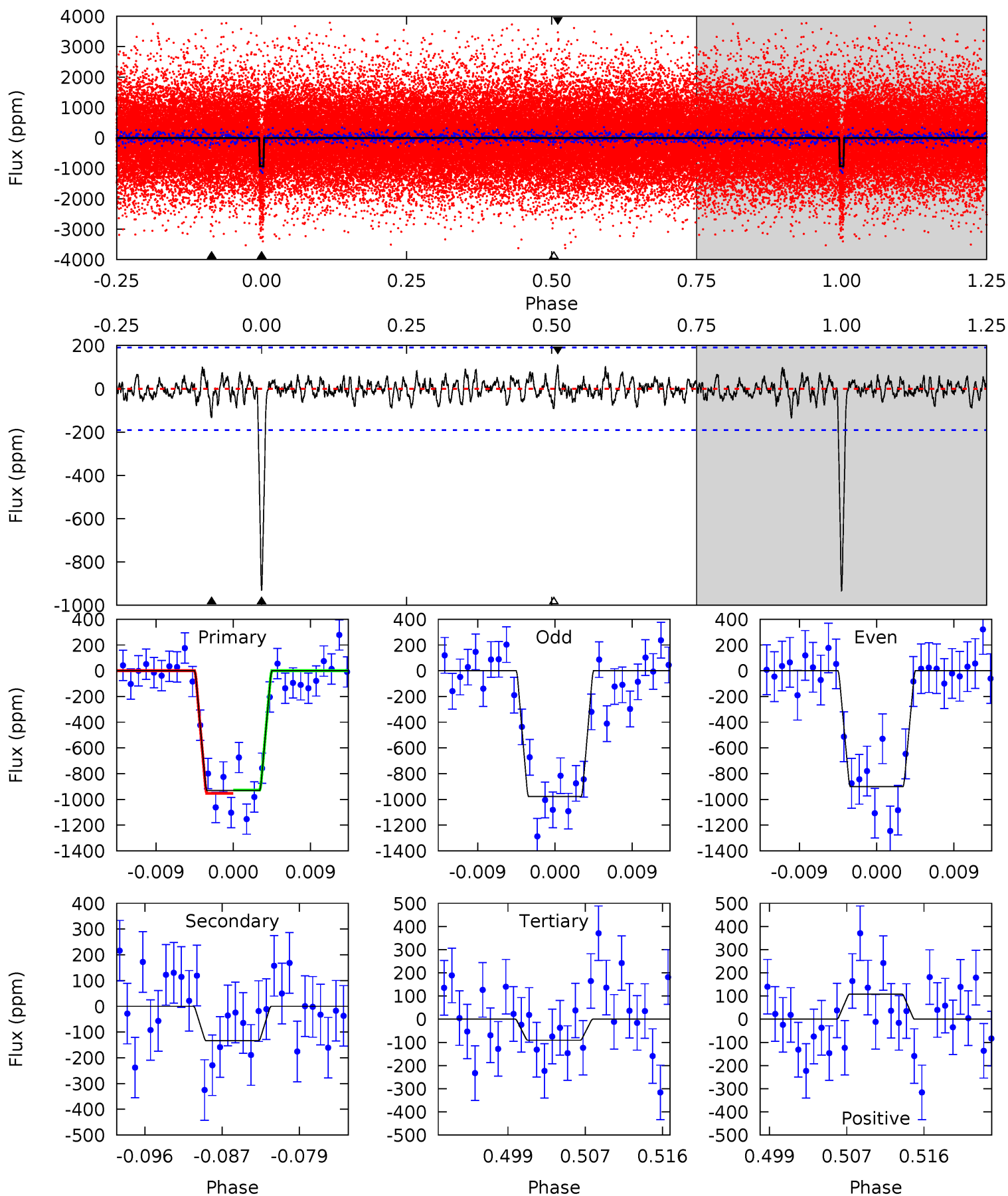
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.7	4.26	3.14	3.05	5.01	2.55	1.18	25.5	25.6	1.12	1.21	0.58	0.93	0.10	0.69



Alt Model-Shift Uniqueness Test

008463346-01, $P = 16.797173$ Days, $E = 117.243994$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.6	3.54	2.40	2.86	5.05	2.62	0.92	22.2	21.8	1.14	0.68	1.03	0.95	0.10	0.33



Stellar Parameters For KIC 008463346

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4652^{+74}_{-83}	$4.617^{+0.020}_{-0.032}$	$0.020^{+0.150}_{-0.150}$	$0.697^{+0.034}_{-0.030}$	$0.734^{+0.033}_{-0.037}$	$3.053^{+0.332}_{-0.327}$
	+2%/-2%	+0%/-1%	+750%/-750%	+5%/-4%	+4%/-5%	+11%/-11%
Source	SPE85	SPE85	SPE85	DSEP		

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

Secondary Eclipse Parameters for KIC 008463346-01 / KOI 2529.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-149 ± 35	$2.86^{+0.22}_{-0.21}$	705^{+14}_{-15}	3174^{+128}_{-153}	136^{+39}_{-37}
Alt.	-134 ± 38	$2.37^{+0.22}_{-0.20}$	706^{+14}_{-14}	3294^{+171}_{-166}	174^{+64}_{-51}

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 $A_{obs} \gg 1.0$

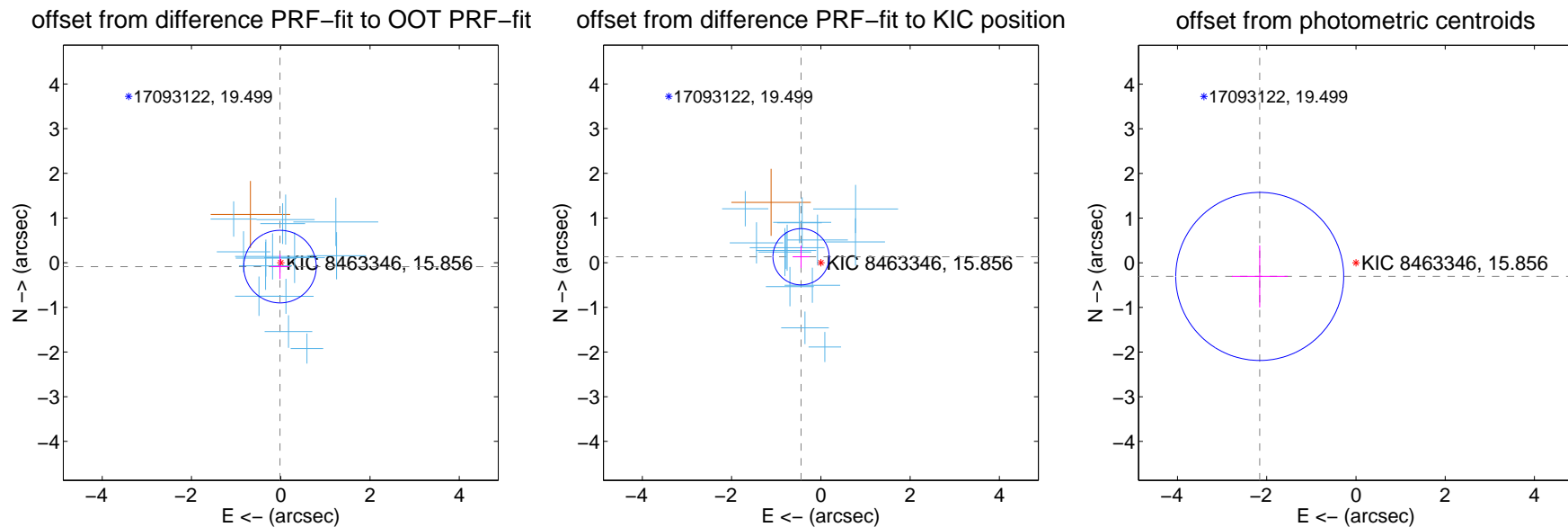
DV Centroid Data

Supplemental centroid analysis for 008463346-01. Kepler magnitude: 15.86. Transit SNR 18.85

There are 14 quarters with good PRF difference image offsets

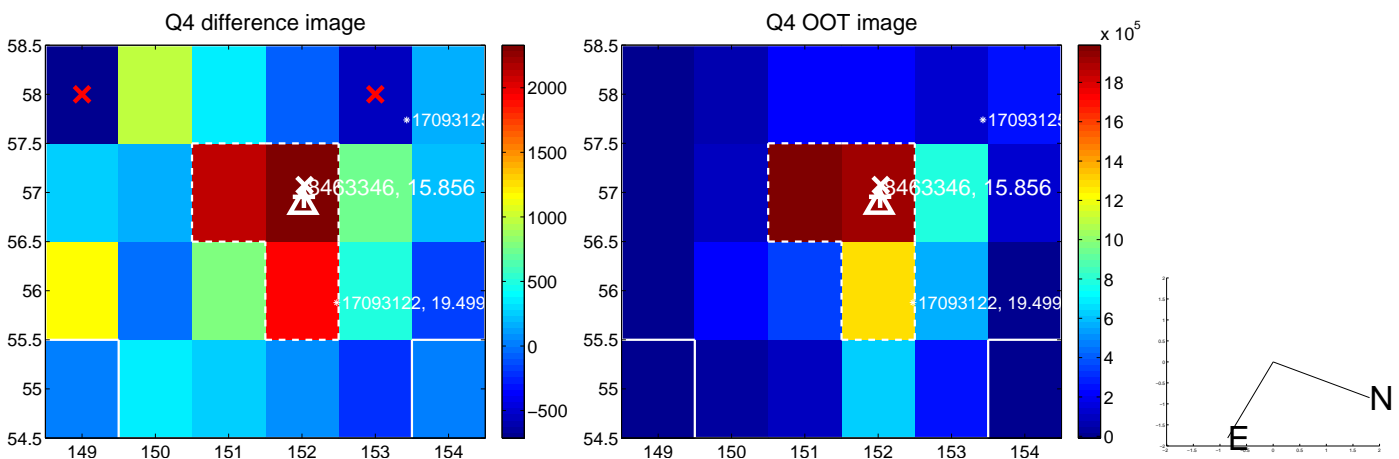
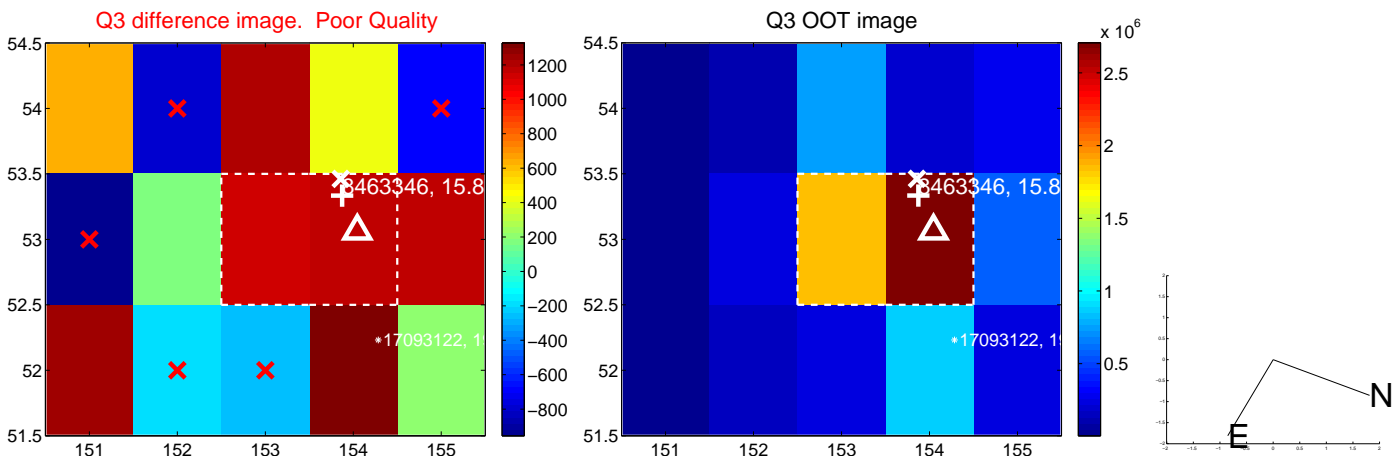
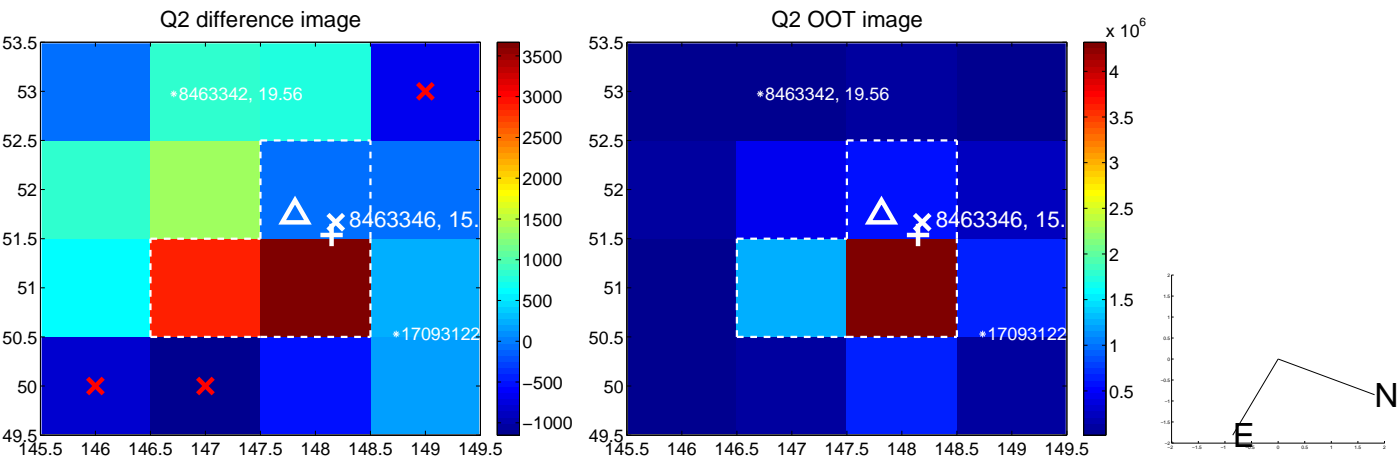
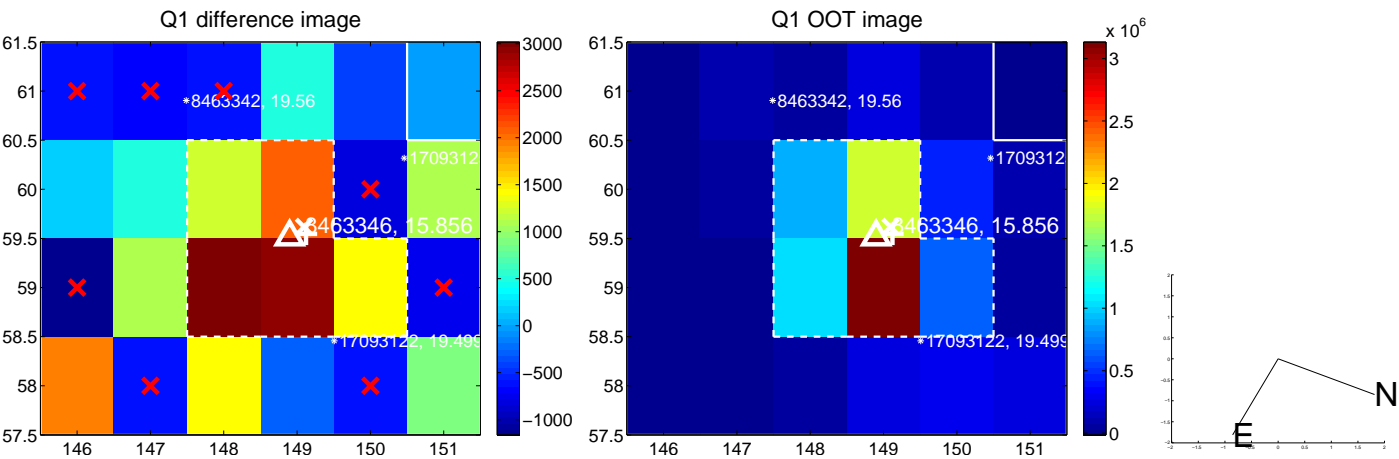
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.089 ± 0.271	0.33	0.017 ± 0.200	-0.088 ± 0.273
PRF-fit source offset from KIC position	0.463 ± 0.210	2.21	0.444 ± 0.189	0.133 ± 0.249
photometric centroid source offset	2.18 ± 0.63	3.47	2.16 ± 0.63	-0.31 ± 0.69

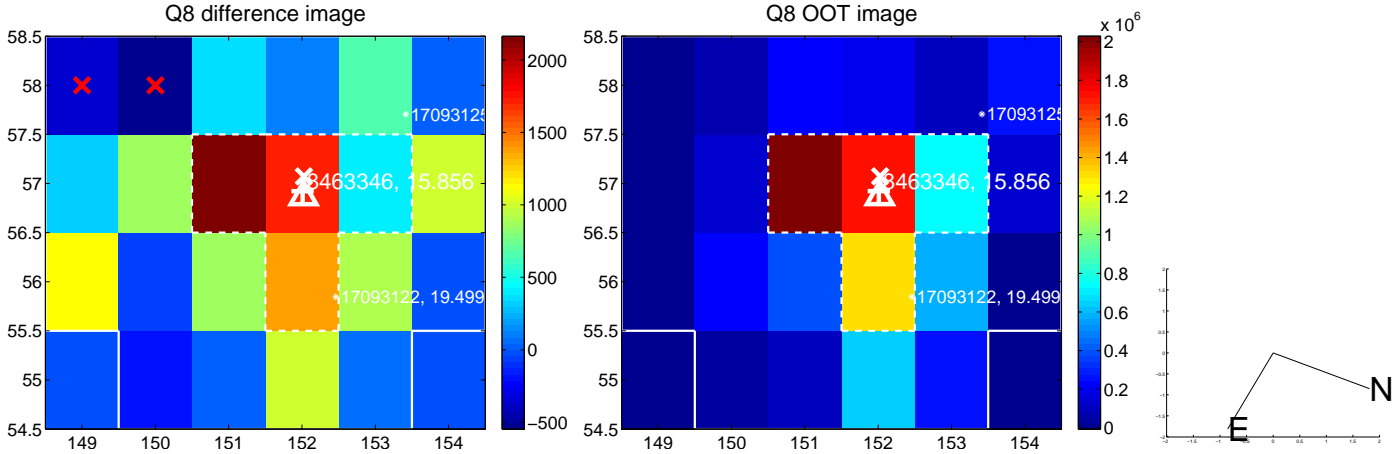
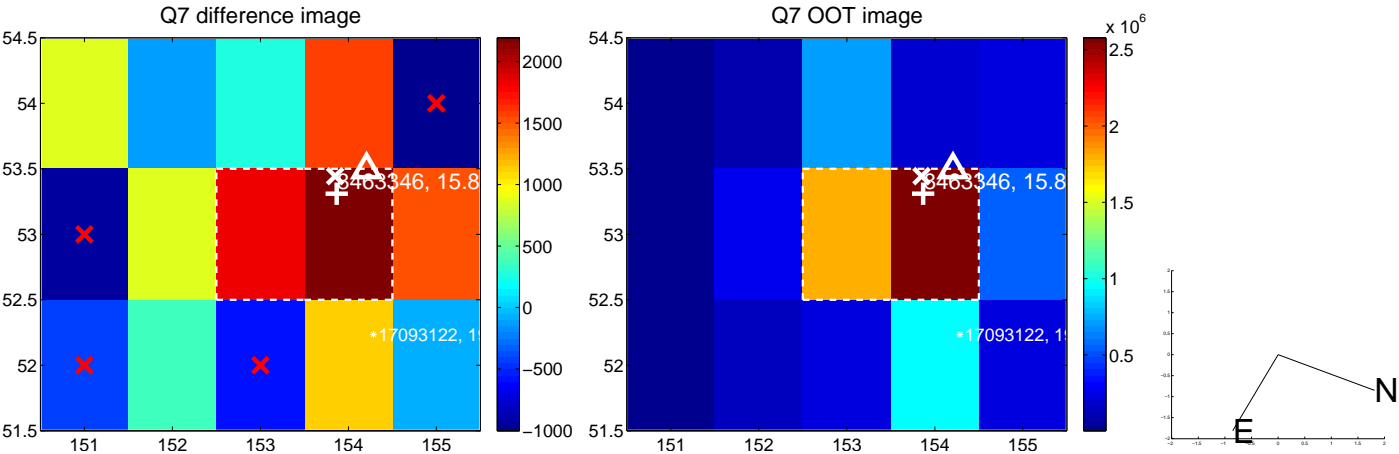
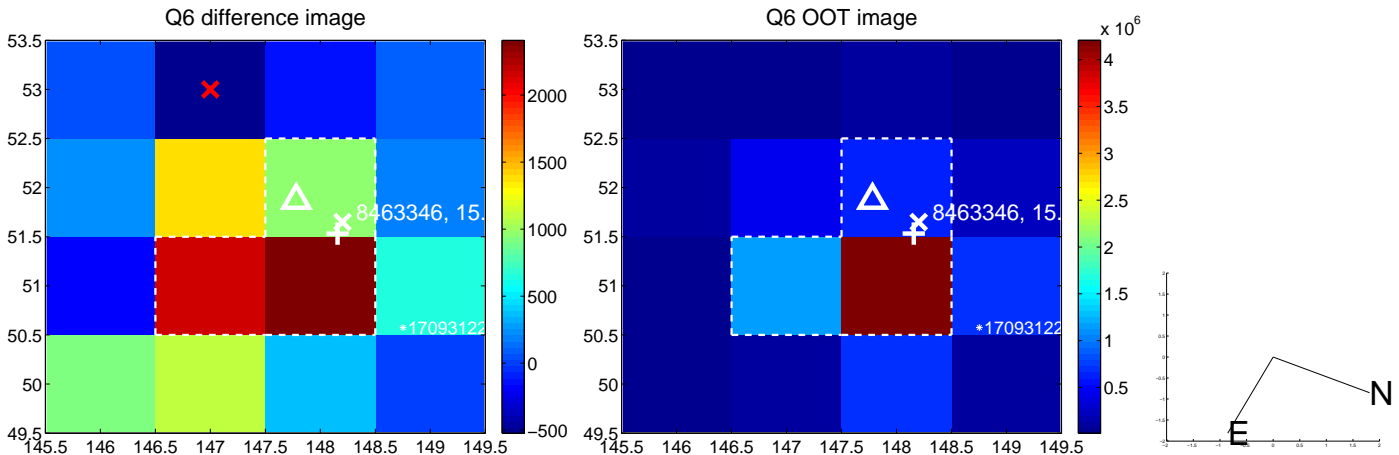
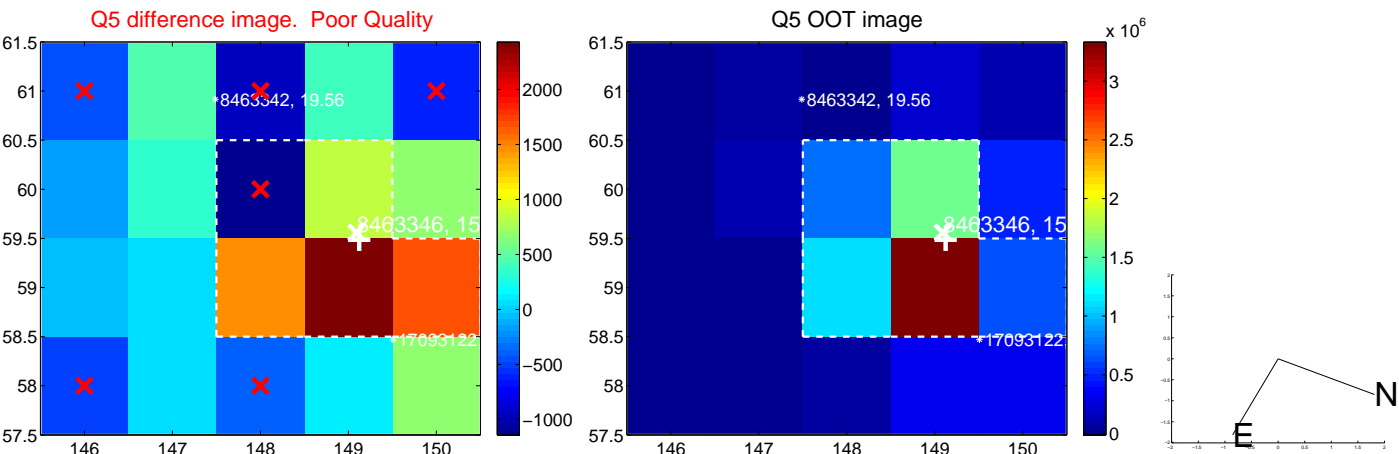


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

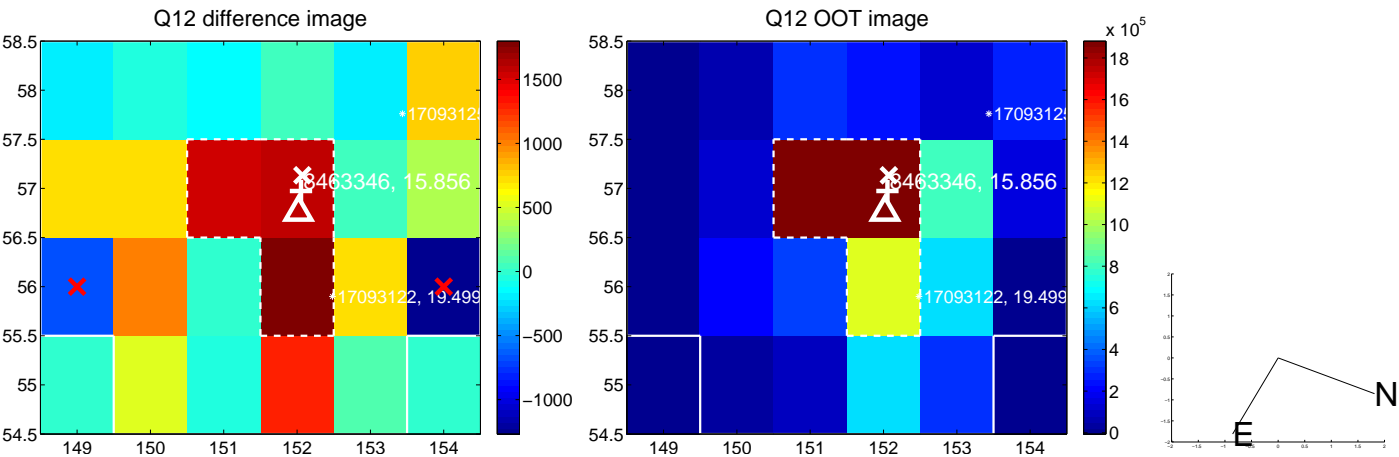
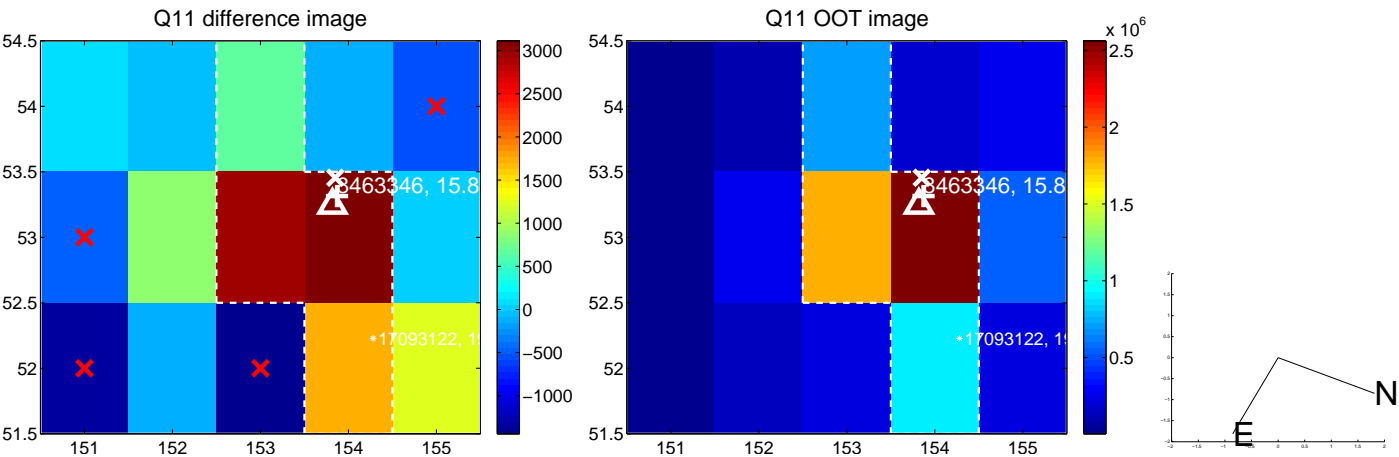
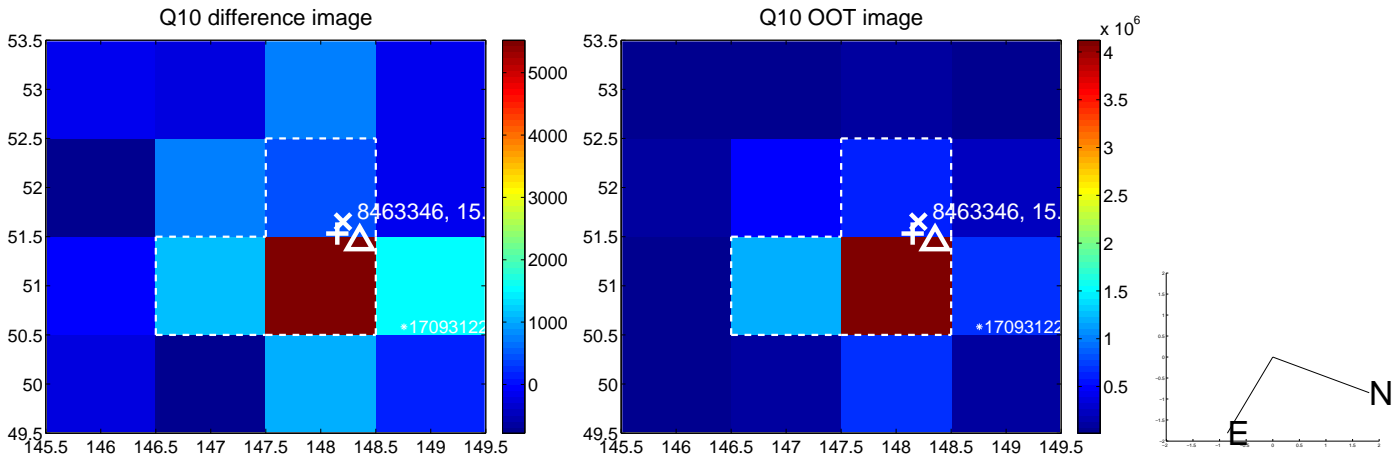
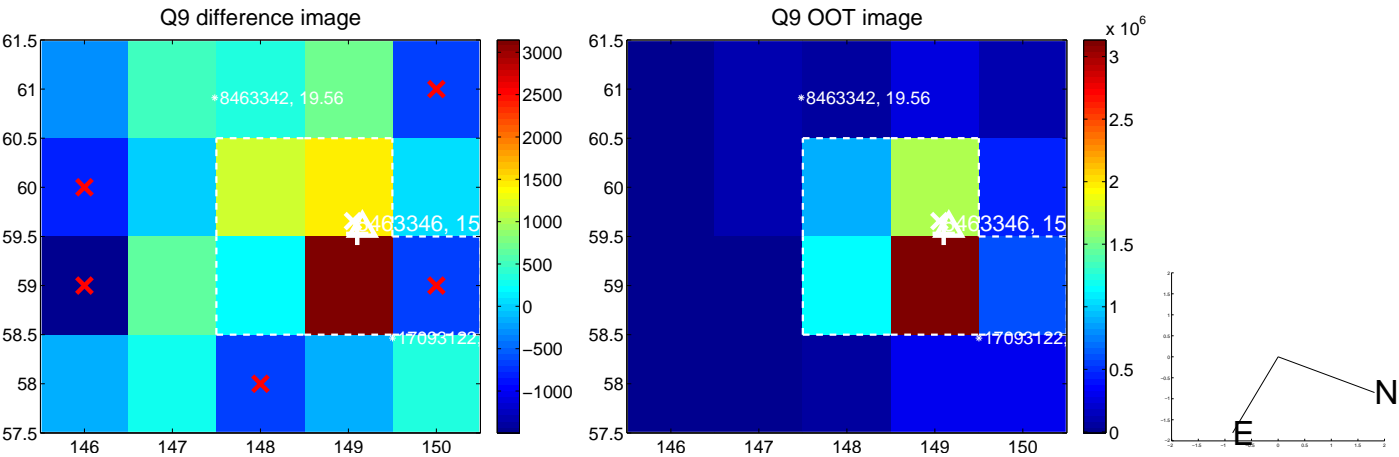
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



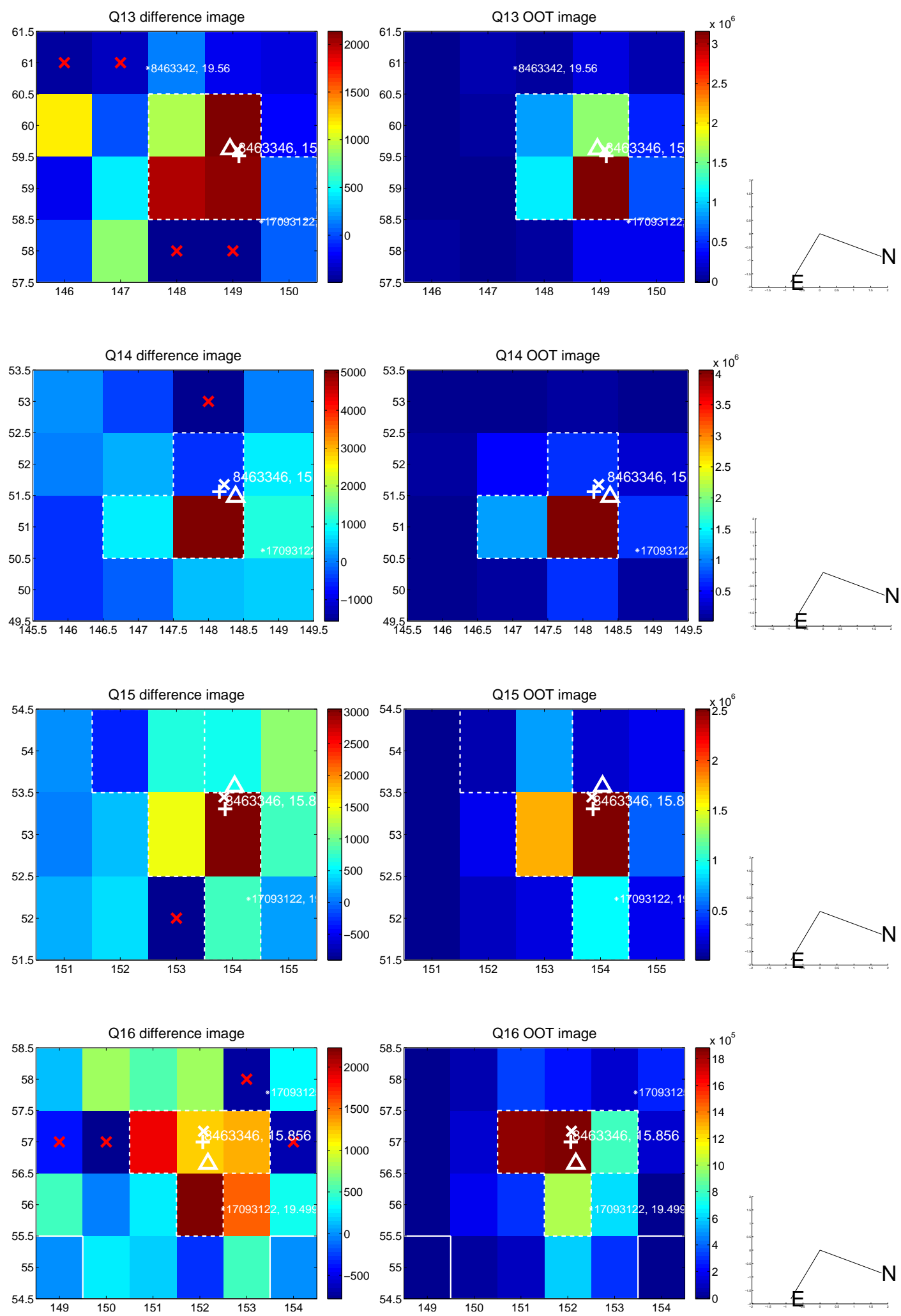
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



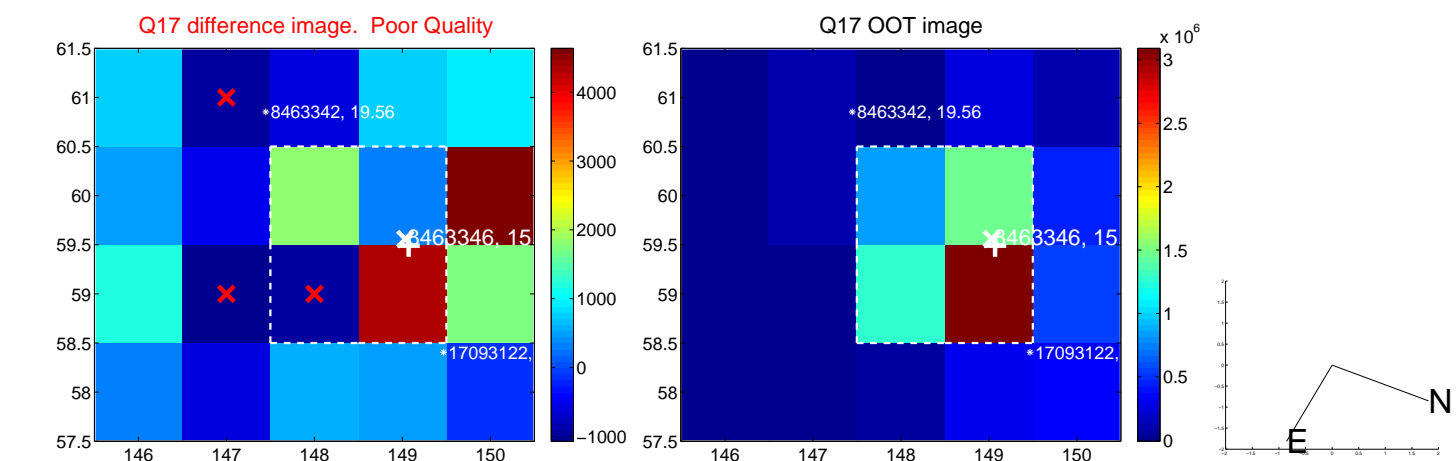
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



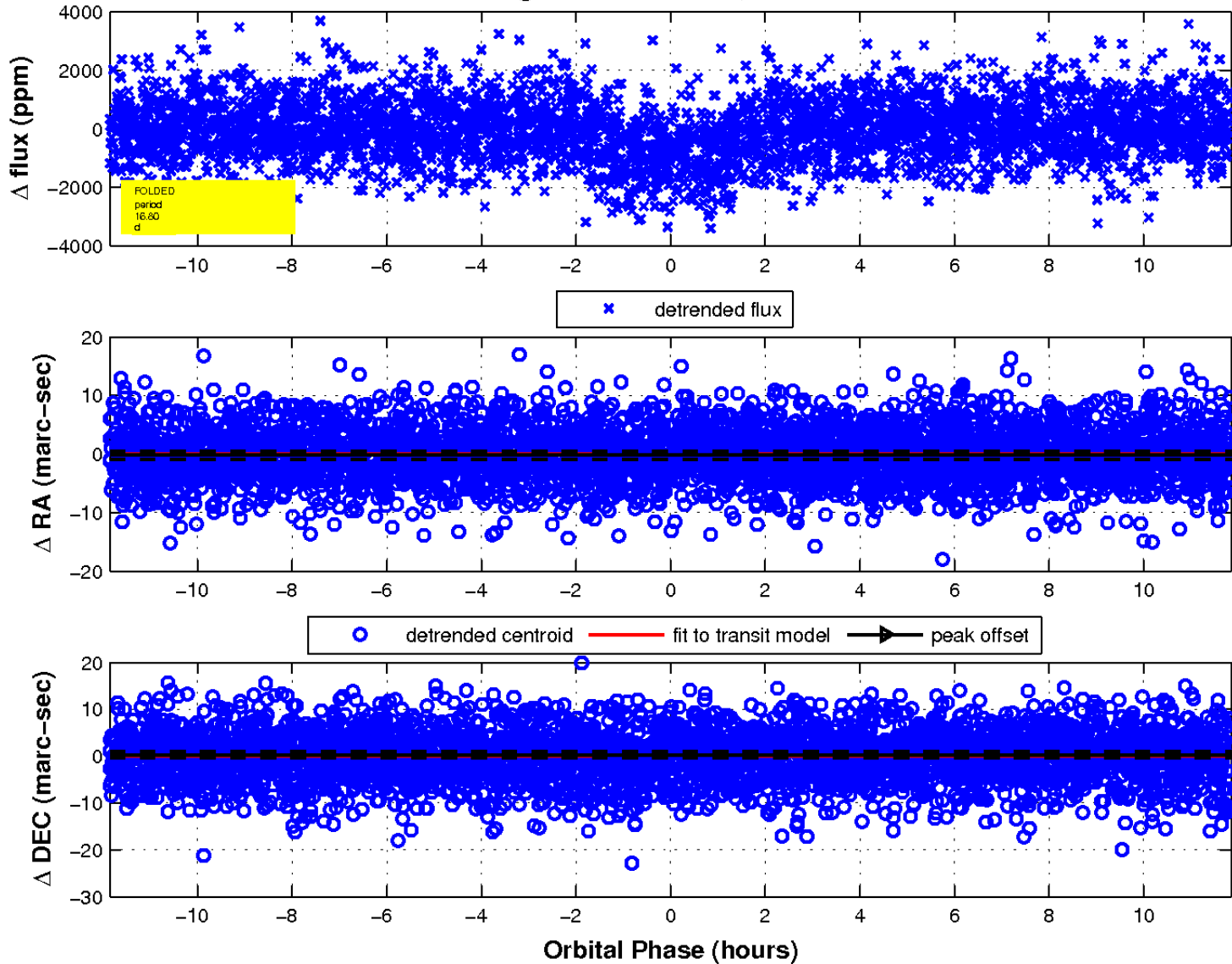
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

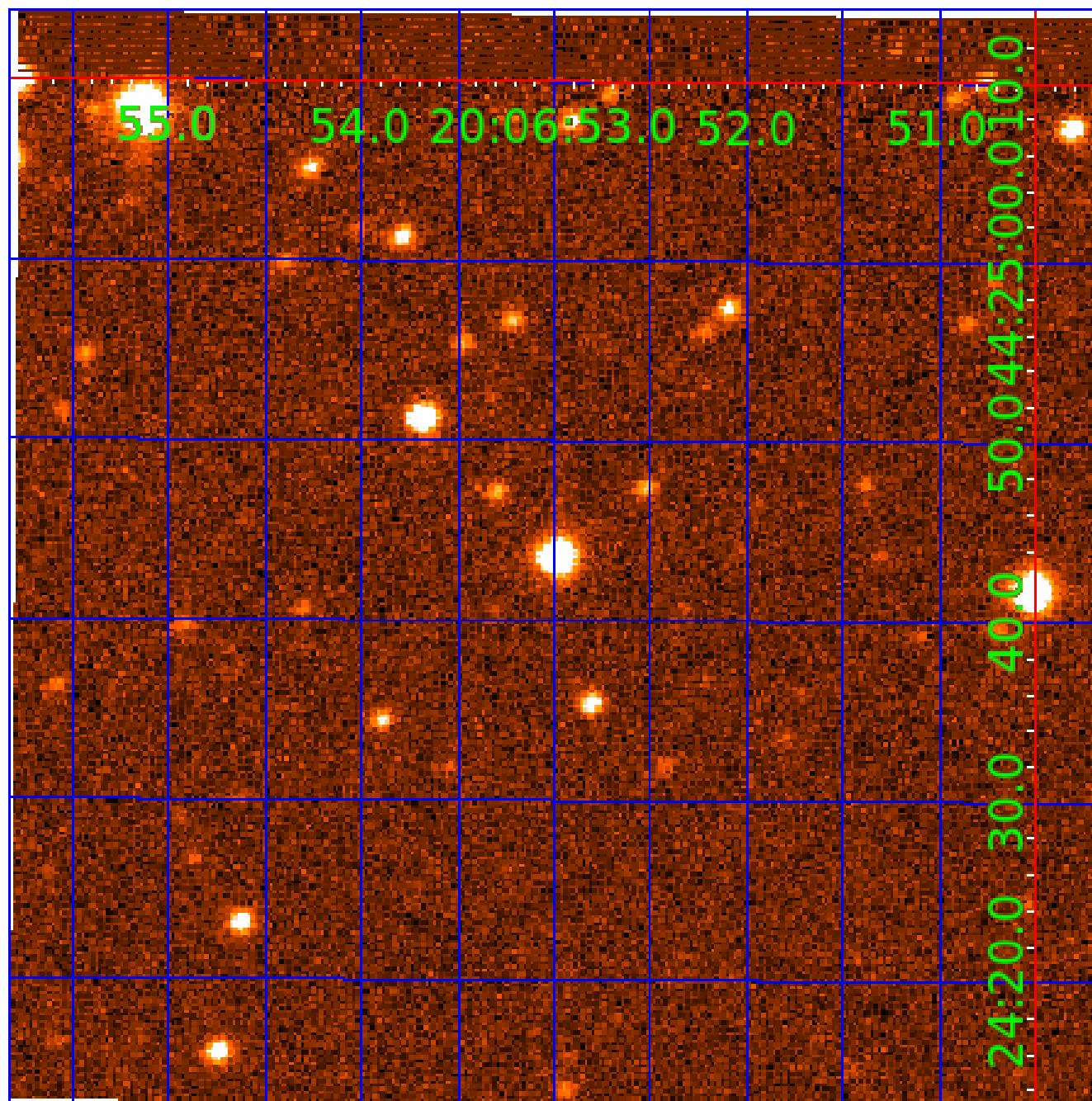


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008463346

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})
008463346-01	OBS	2529.01	16.797223	134.040354	1021.9	3.953	18.1	18.8	0.70	4652	2.85	15.20
008463346-02	OBS	2529.02	64.002266	132.613143	1143.1	4.885	12.0	12.5	0.70	4652	2.48	2.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008463346-01	OBS	PC	0.98	0	0	0	0	CENT_KIC_POS
008463346-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

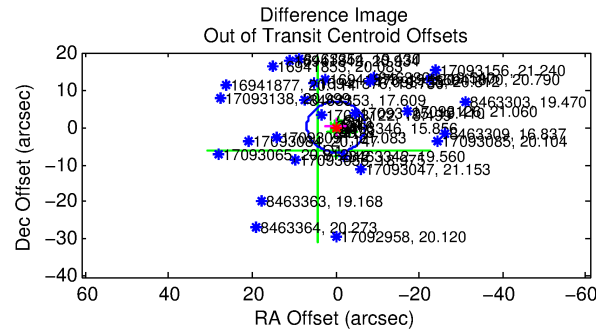
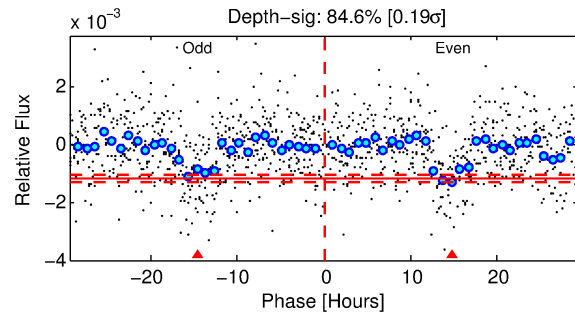
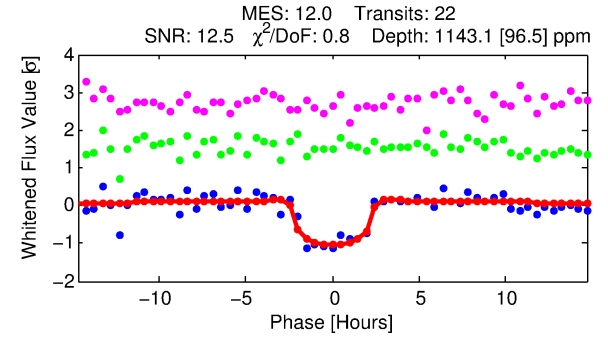
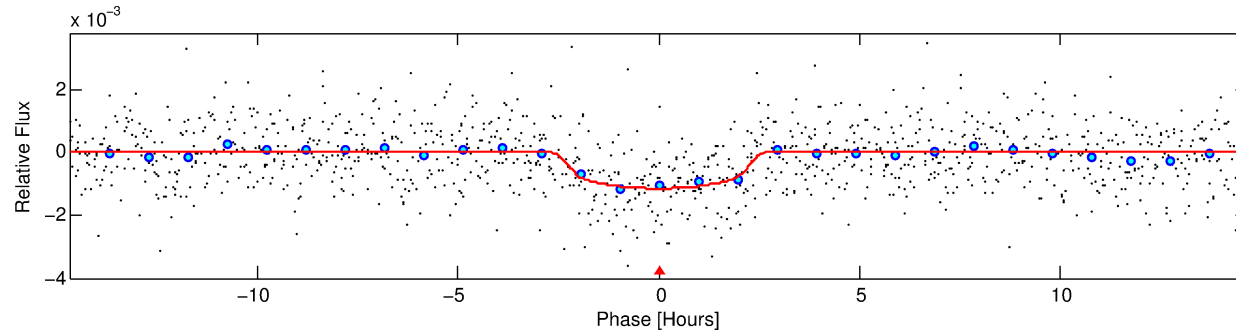
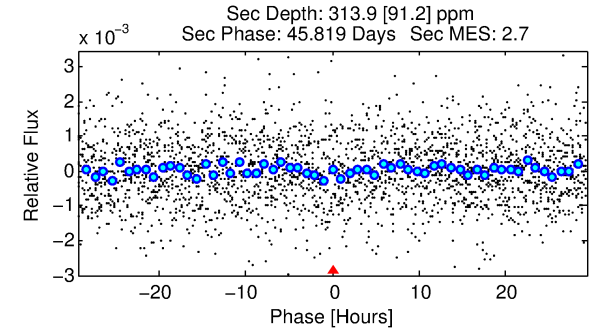
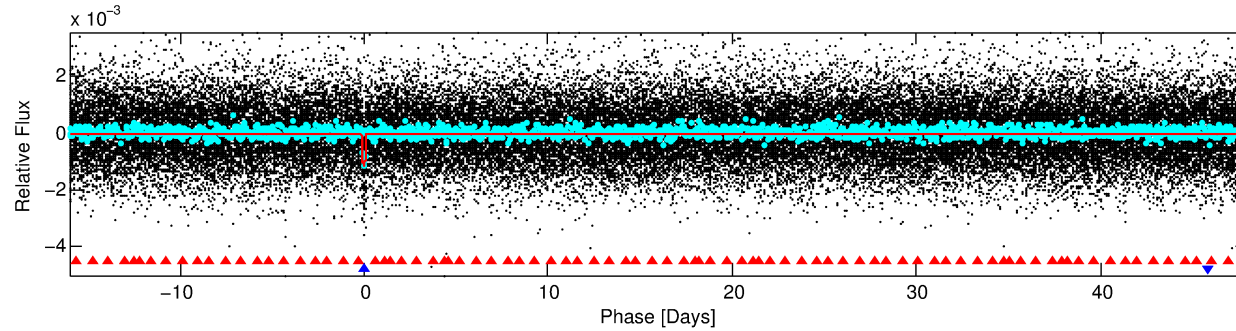
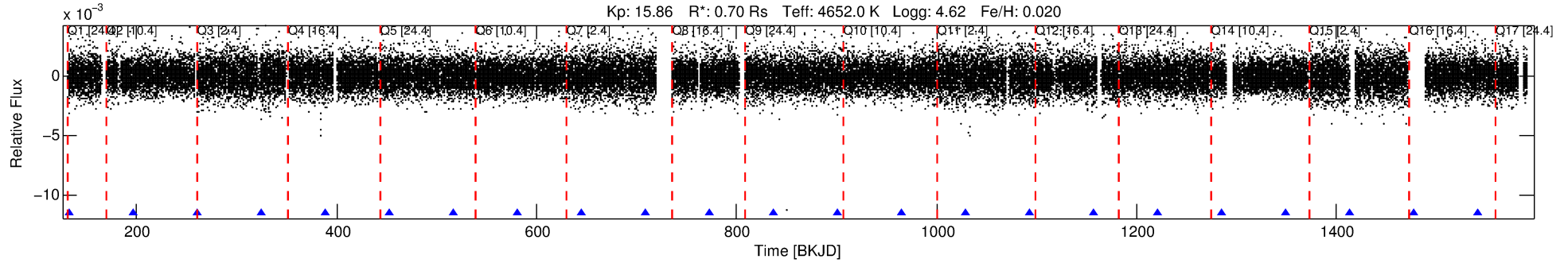
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008463346-02

No Significant Match Found

DV One-Page Summary

KIC: 8463346 Candidate: 2 of 2 Period: 64.002 d
KOI: K02529.02 Name: Kepler-436b Corr: 0.949



DV Fit Results:

Period = 64.00227 [0.00061] d
Epoch = 132.6131 [0.0074] BKJD
Rp/R* = 0.0326 [0.0253]
a/R* = 78.76 [192.56]
b = 0.67 [2.07]
Seff = 2.55 [0.24]
Teq = 322 [7] K
Rp = 2.48 [1.92] Re
a = 0.2825 [0.0115] AU
Ag = 2234.84 [3520.38] [0.63σ]
Teffp = 3427 [1350] K [2.30σ]

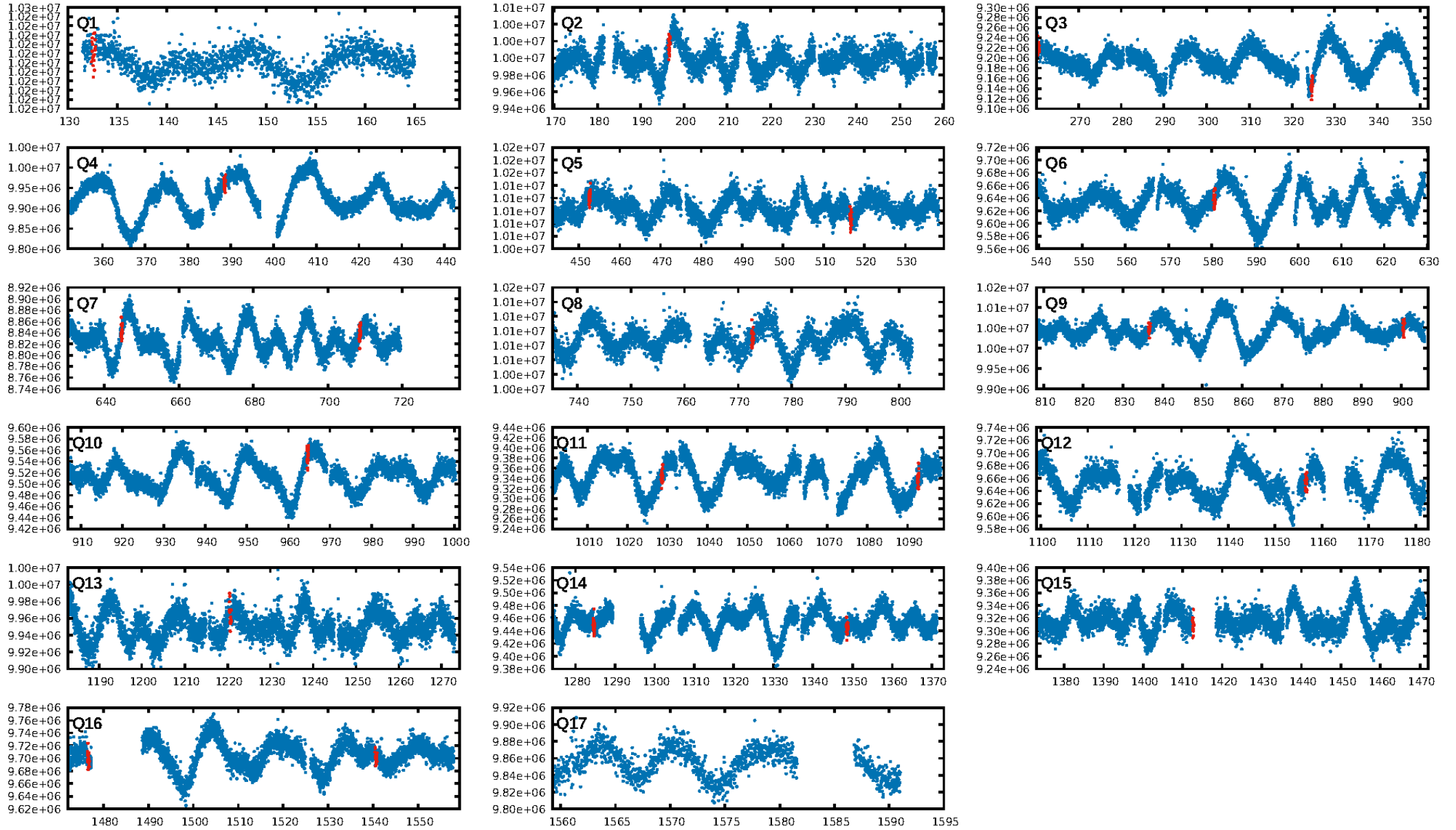
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [180.28σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 83.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.38e-28
RollingBand-fgt: 1.00 [21/21]
GhostDiagnostic-chr: -17.2
Centroid-sig: 3.4%
Centroid-so: 2.954 arcsec [3.18σ]
OotOffset-rm: 0.298 arcsec [0.13σ]
KicOffset-rm: 0.617 arcsec [0.26σ]
OotOffset-st: 3/1/4/3 [11]
KicOffset-st: 3/1/4/3 [11]
DiffImageQuality-fgm: 0.55 [6/11]
DiffImageOverlap-fno: 0.92 [12/13]

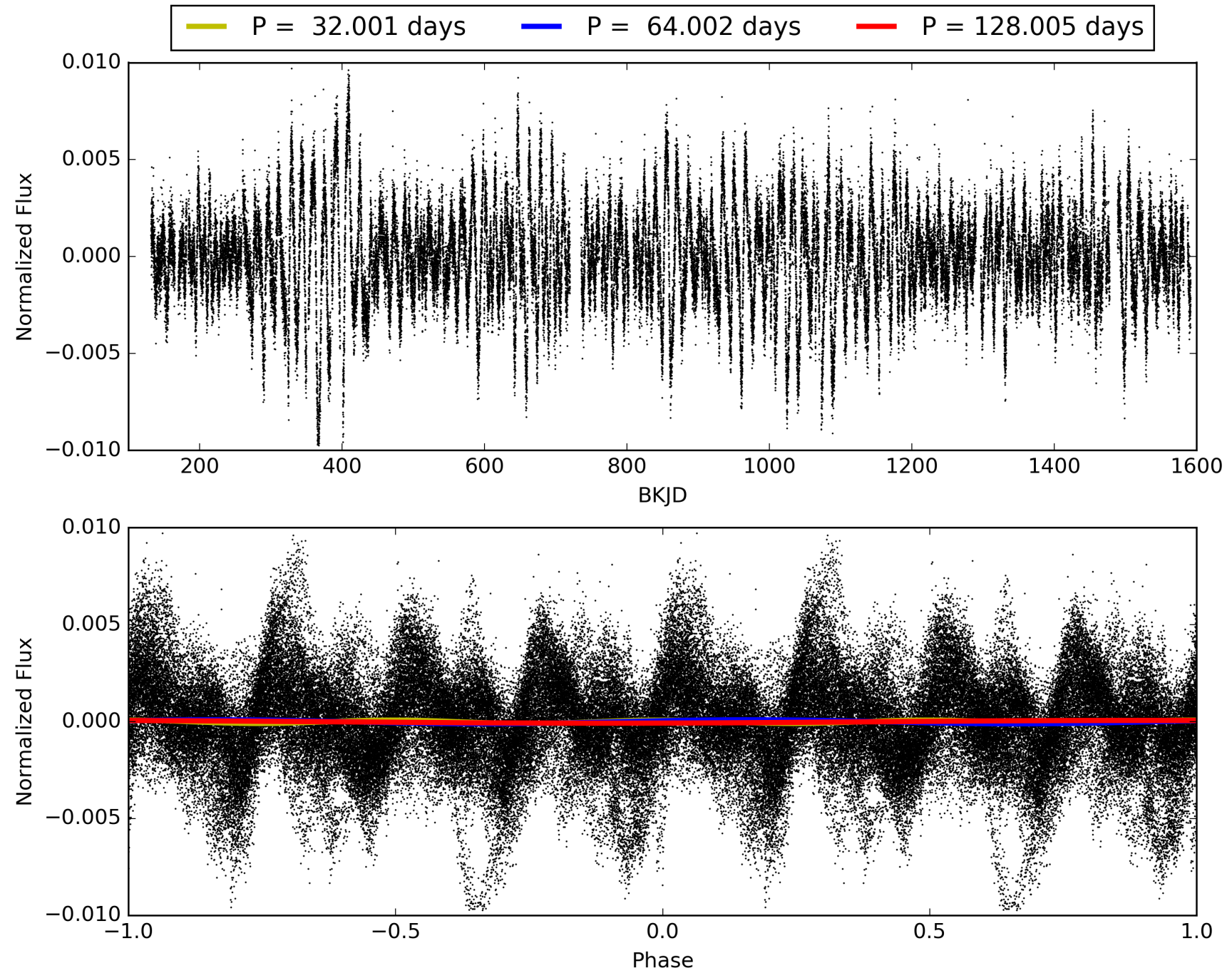
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:31:39 Z

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

TCE 008463346-02, PDC Light Curves

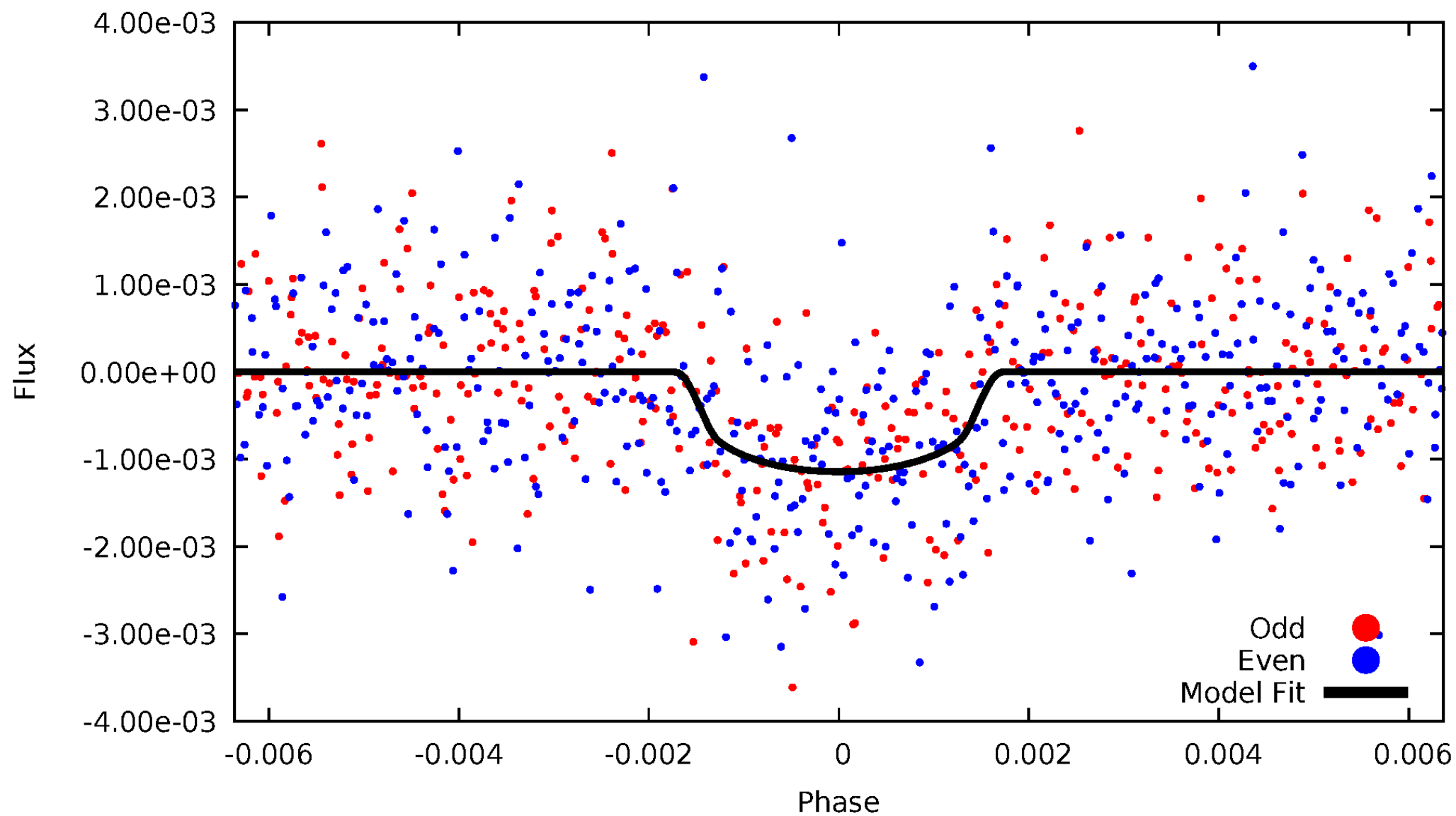


TCE 008463346-02



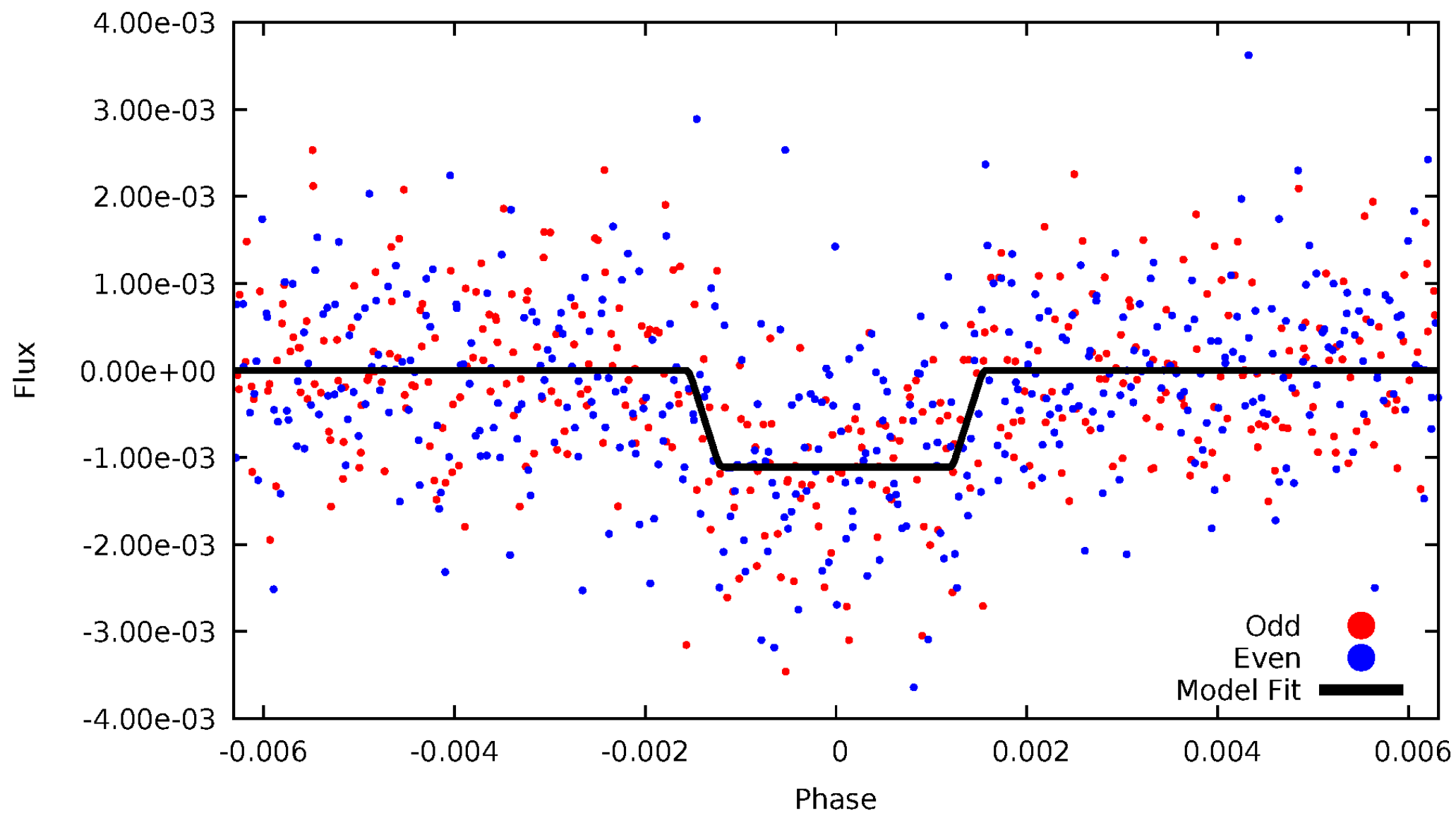
DV Odd/Even

TCE 008463346-02



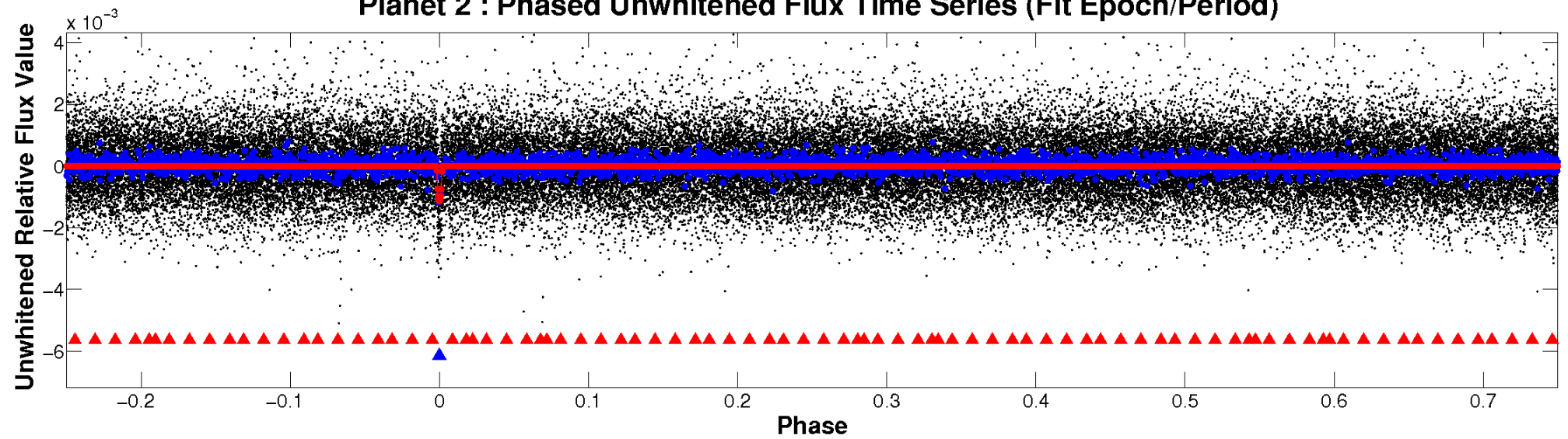
ALT Odd/Even

TCE 008463346-02

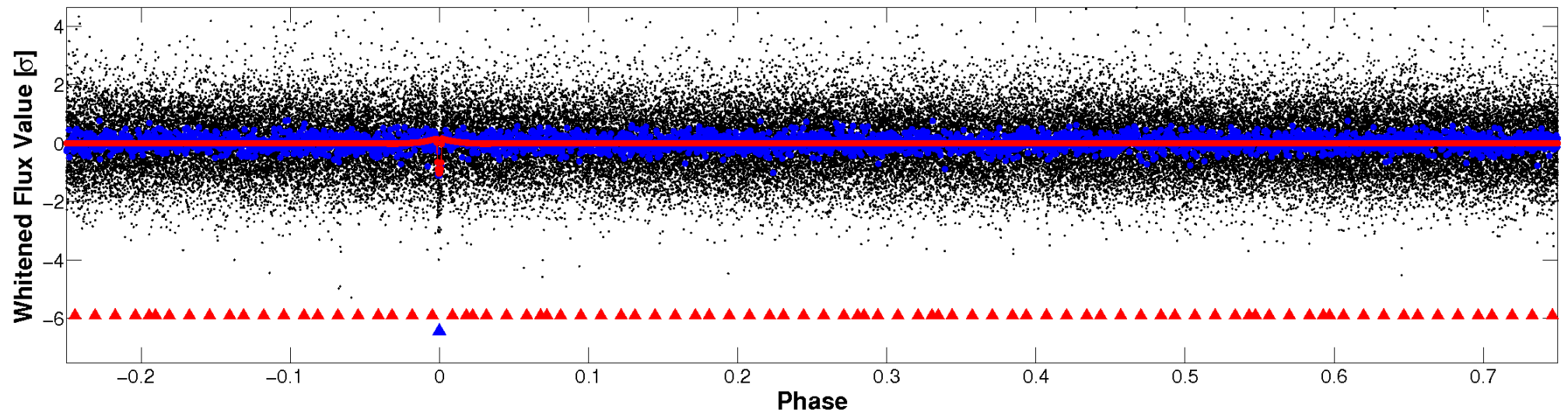


Non-Whitened Vs. Whitened Light Curve

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

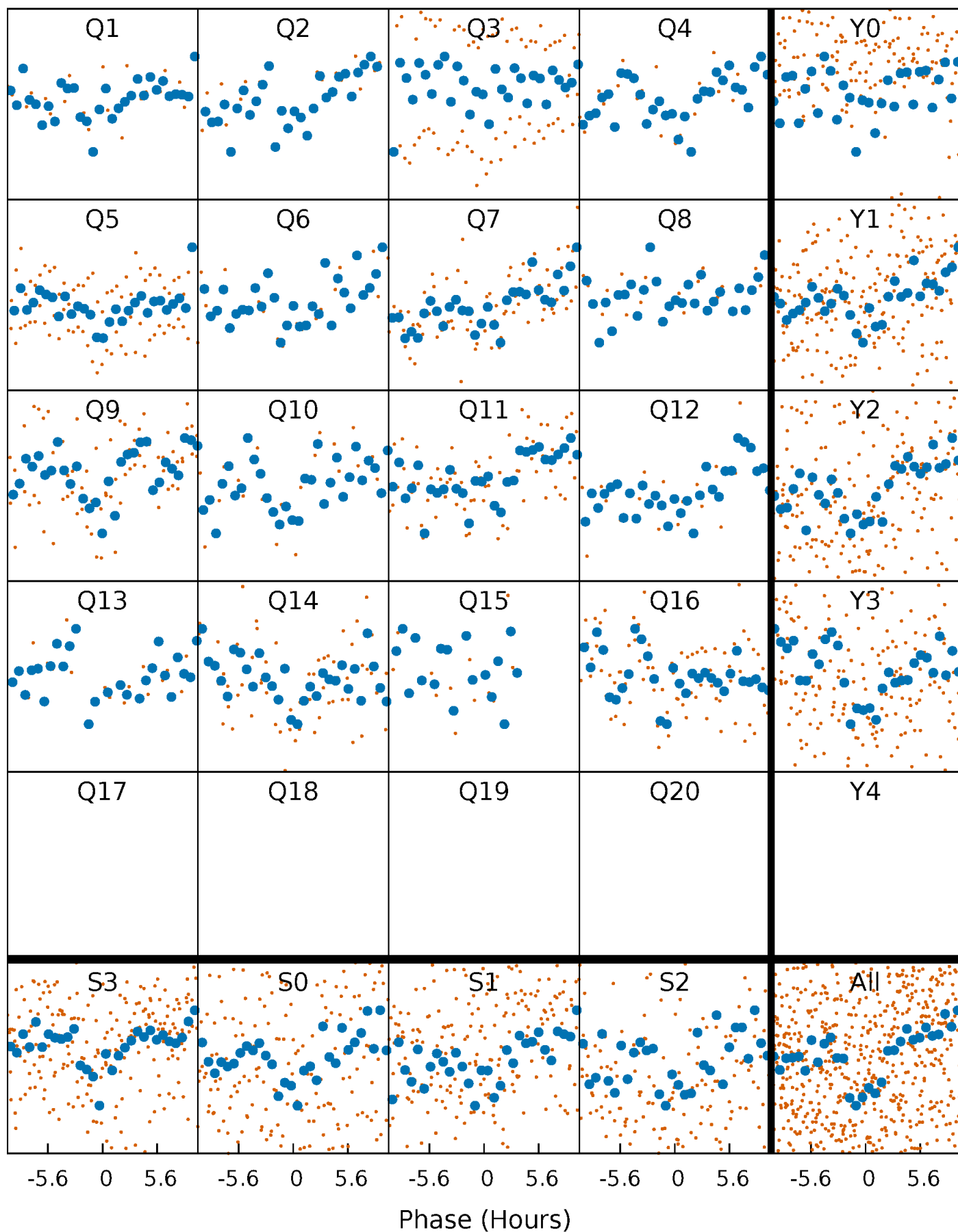


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



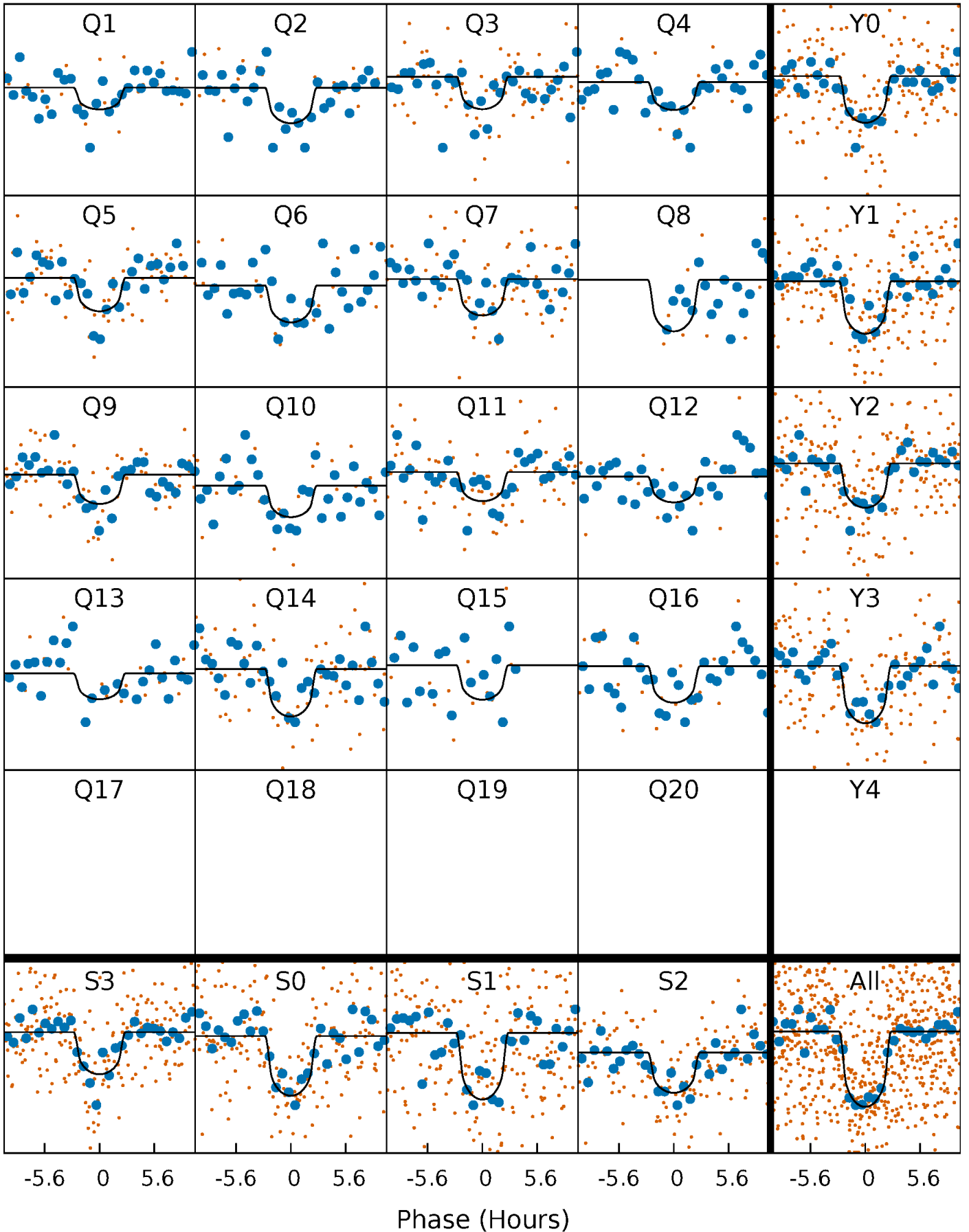
PDC Quarter-Phased Transit Curves

TCE 008463346-02 P= 64.002266 Days $T_0=132.613143$ (BKJD)



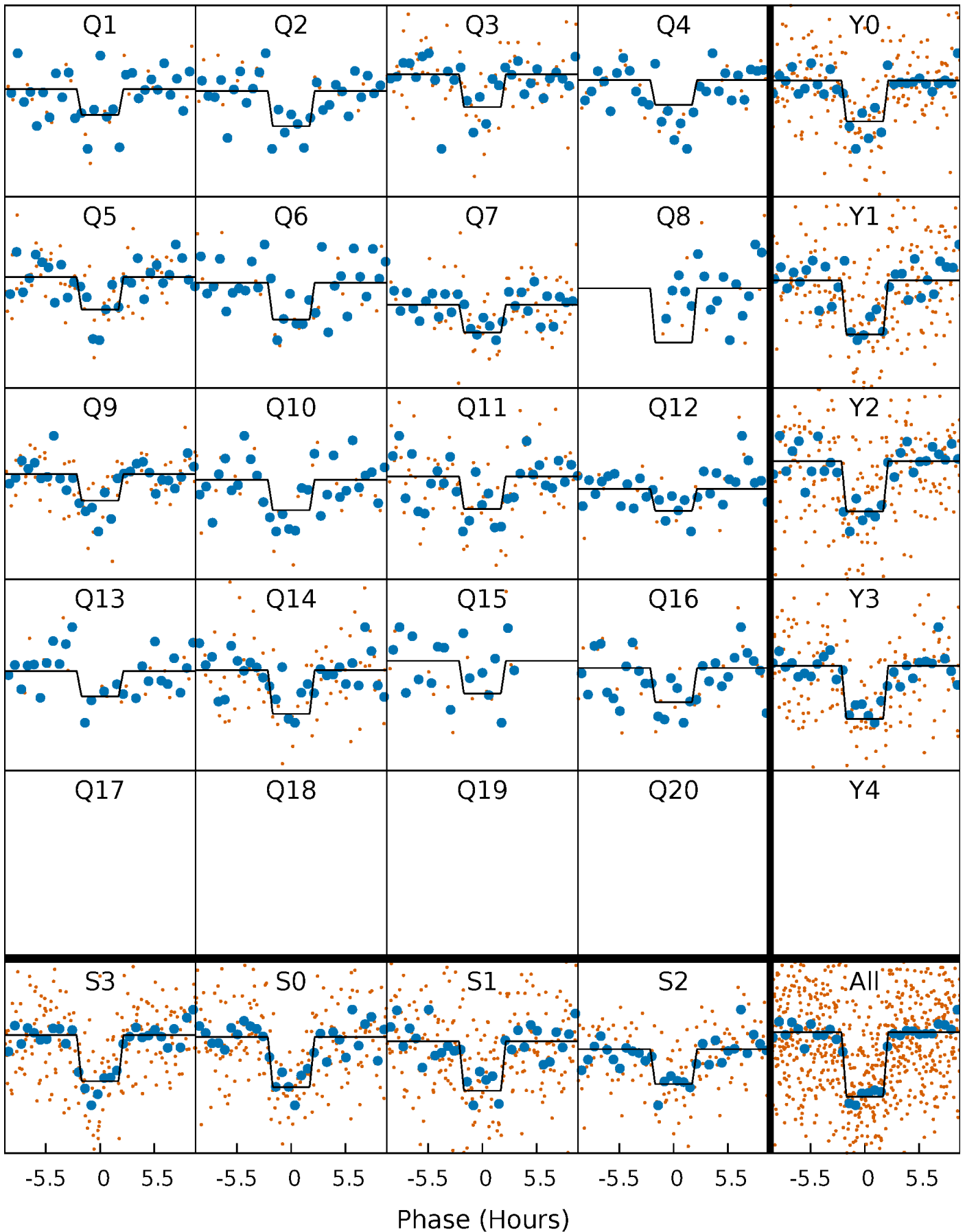
DV Quarter-Phased Transit Curves

TCE 008463346-02 P= 64.002266 Days $T_0=132.613143$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

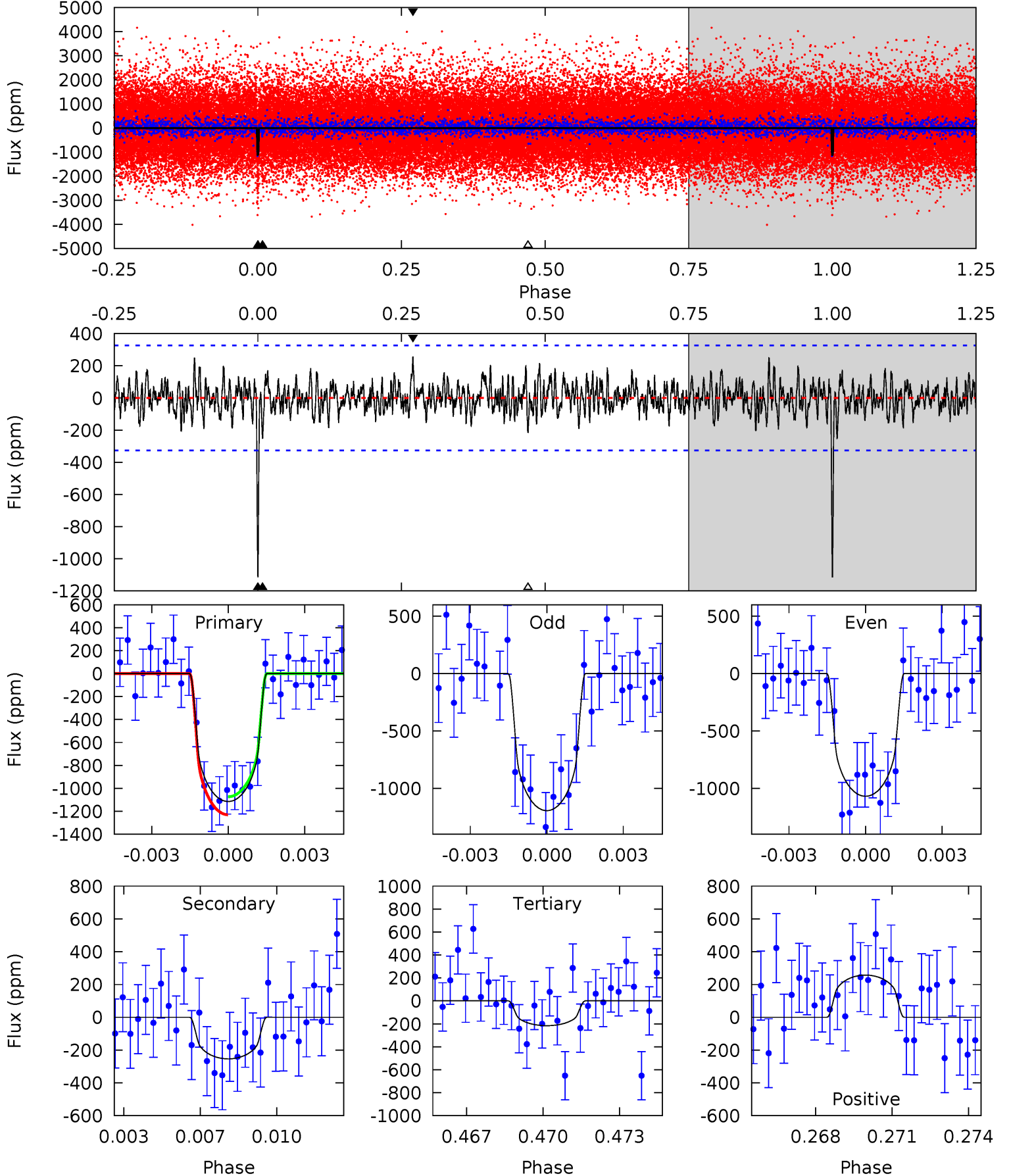
TCE 008463346-02 P= 64.002252 Days $T_0=132.615614$ (BKJD)



DV Model-Shift Uniqueness Test

008463346-02, P = 64.002266 Days, E = 68.610877 Days

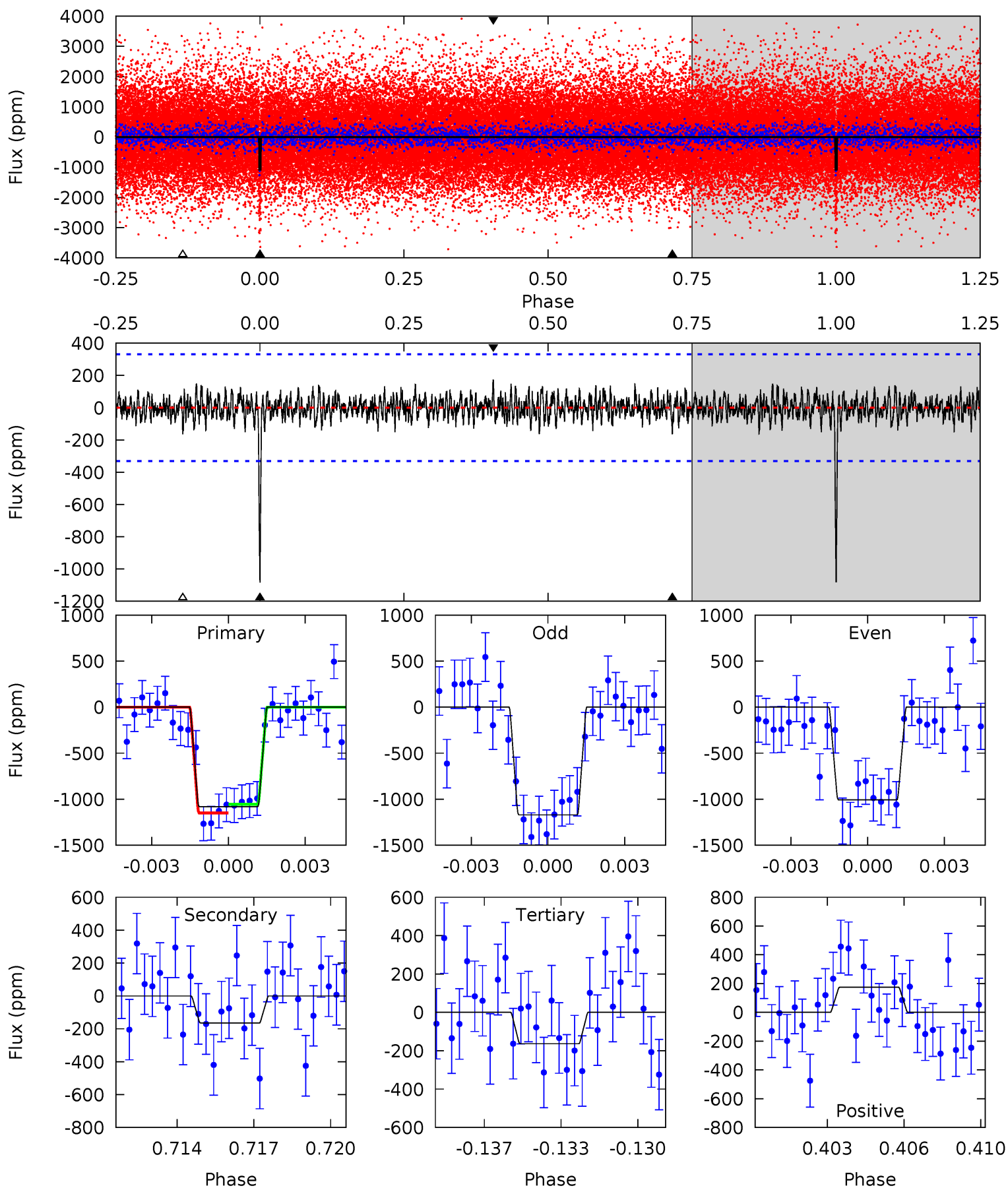
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	4.06	3.46	4.12	5.23	2.93	1.19	14.4	13.7	0.60	-0.06	1.00	0.93	0.19	1.25



Alt Model-Shift Uniqueness Test

008463346-02, P = 64.002252 Days, E = 68.613362 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	2.61	2.59	2.77	5.25	2.96	0.85	14.5	14.4	0.02	-0.16	1.29	0.97	0.14	0.75



Stellar Parameters For KIC 008463346

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4652^{+74}_{-83}	$4.617^{+0.020}_{-0.032}$	$0.020^{+0.150}_{-0.150}$	$0.697^{+0.034}_{-0.030}$	$0.734^{+0.033}_{-0.037}$	$3.053^{+0.332}_{-0.327}$
	+2%/-2%	+0%/-1%	+750%/-750%	+5%/-4%	+4%/-5%	+11%/-11%
Source	SPE85	SPE85	SPE85	DSEP		

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

Secondary Eclipse Parameters for KIC 008463346-02 / KOI 2529.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-254 ± 62	$2.70^{+1.94}_{-1.63}$	452^{+8}_{-9}	3471^{+1460}_{-511}	1459^{+8242}_{-969}
Alt.	-165 ± 63	$2.77^{+1.88}_{-1.56}$	452^{+9}_{-9}	3198^{+1105}_{-454}	857^{+3994}_{-571}

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 $A_{obs} \gg 1.0$

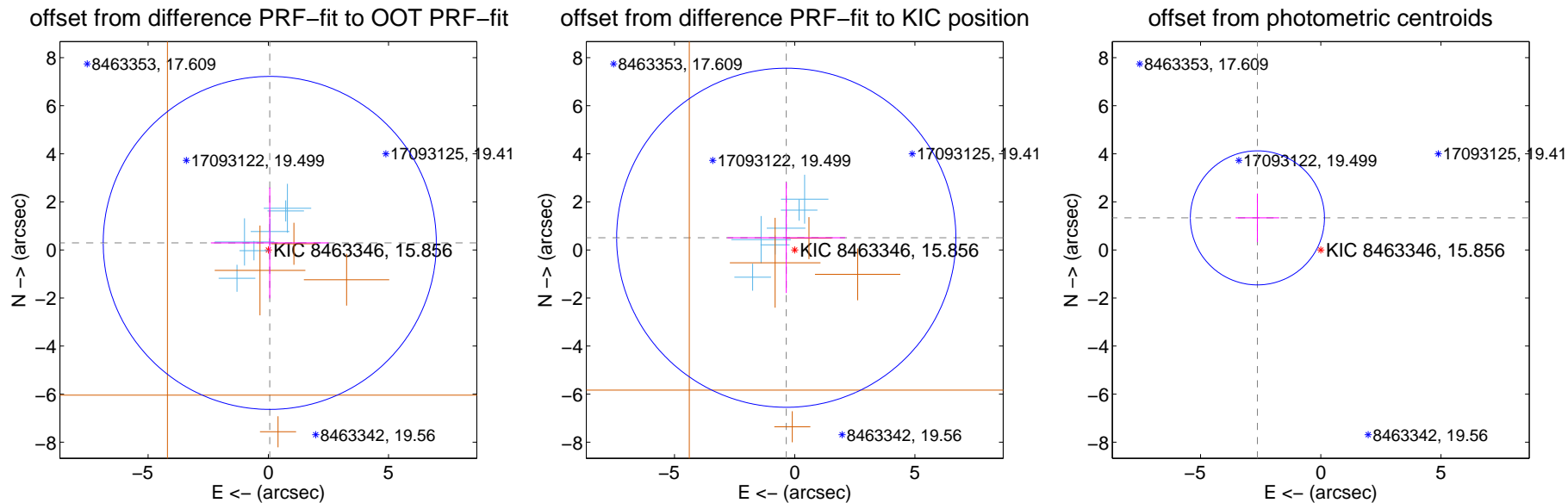
DV Centroid Data

Supplemental centroid analysis for 008463346-02. Kepler magnitude: 15.86. Transit SNR 12.49

There are 6 quarters with good PRF difference image offsets

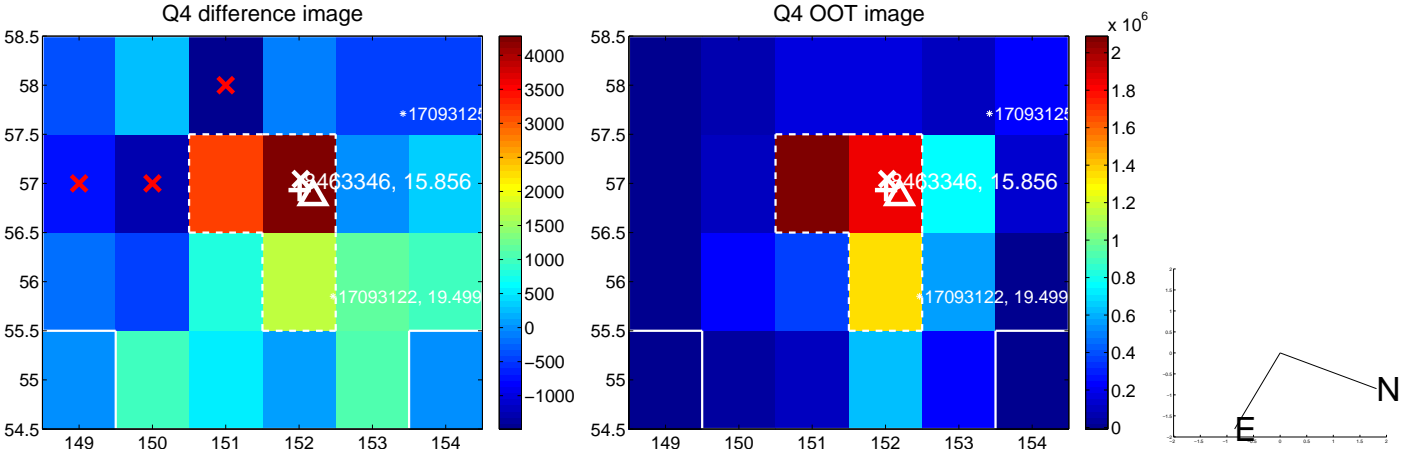
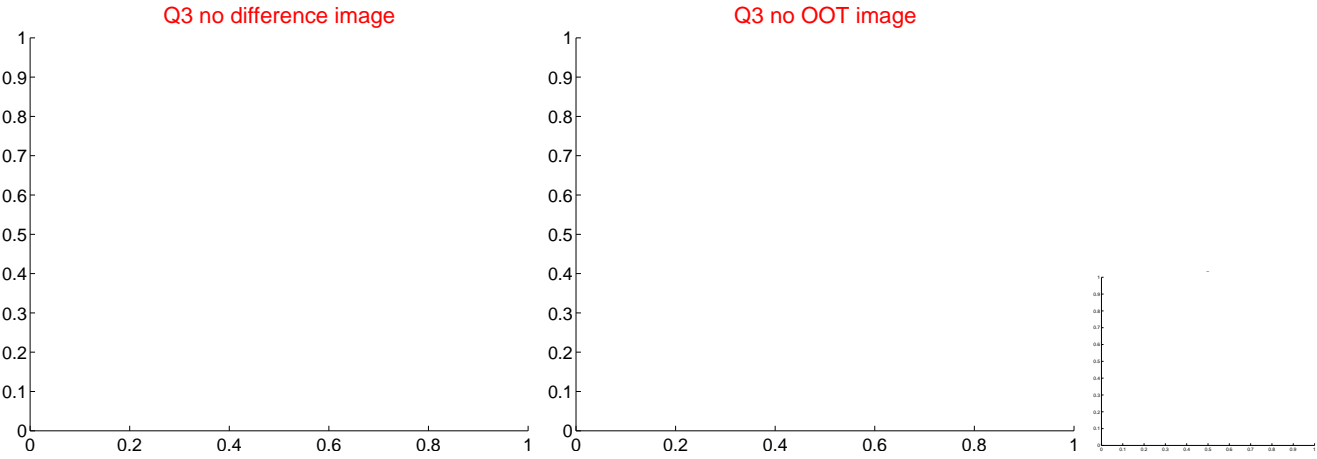
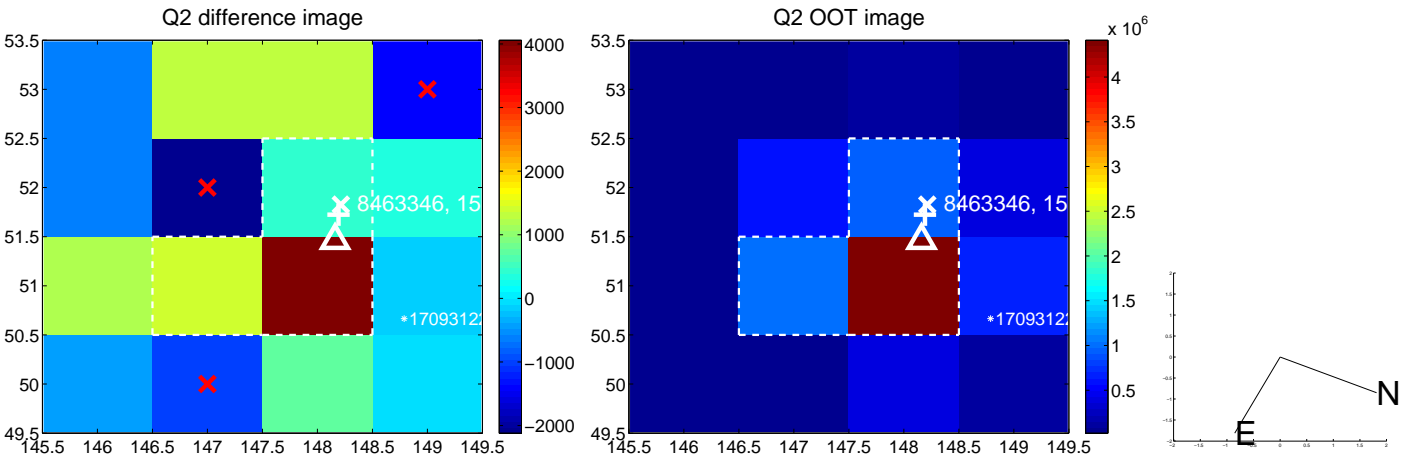
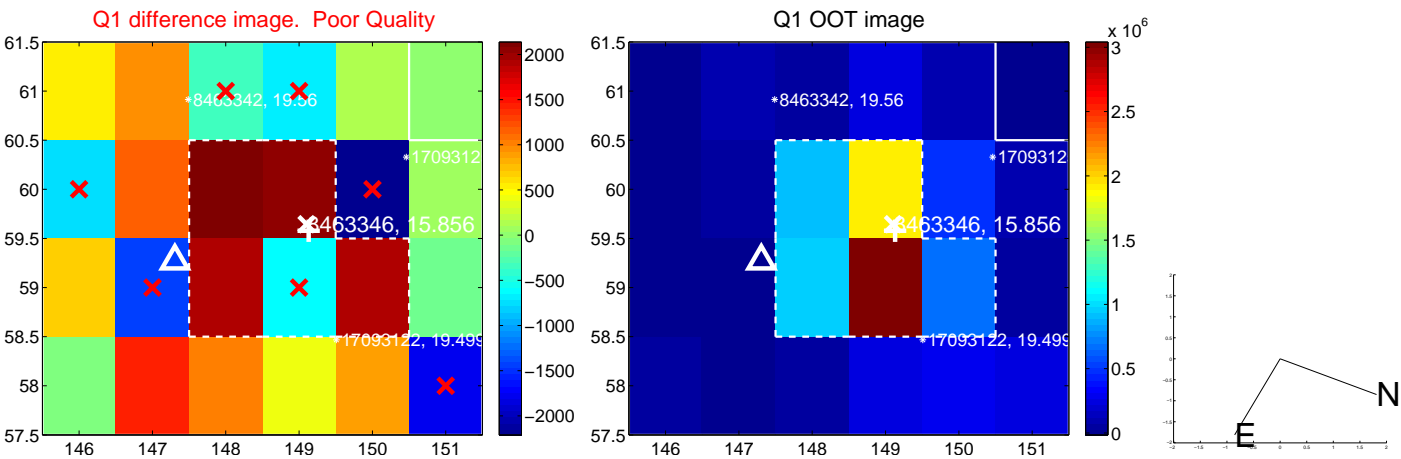
The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.298 ± 2.309	0.13	-0.060 ± 2.450	0.292 ± 2.303
PRF-fit source offset from KIC position	0.617 ± 2.351	0.26	0.351 ± 2.450	0.507 ± 2.303
photometric centroid source offset	2.95 ± 0.93	3.18	2.64 ± 0.91	1.33 ± 1.01

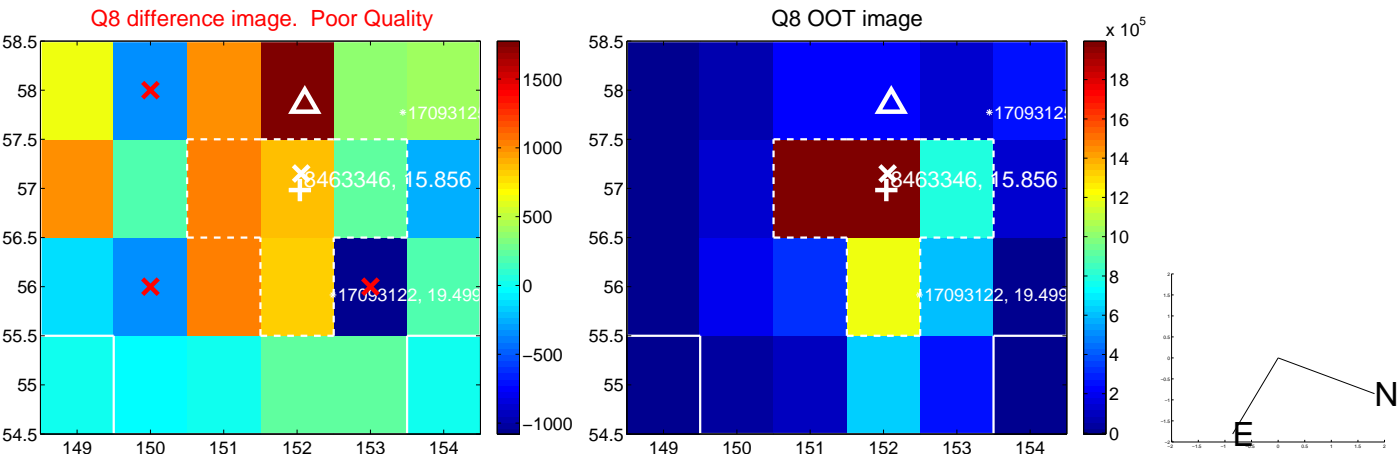
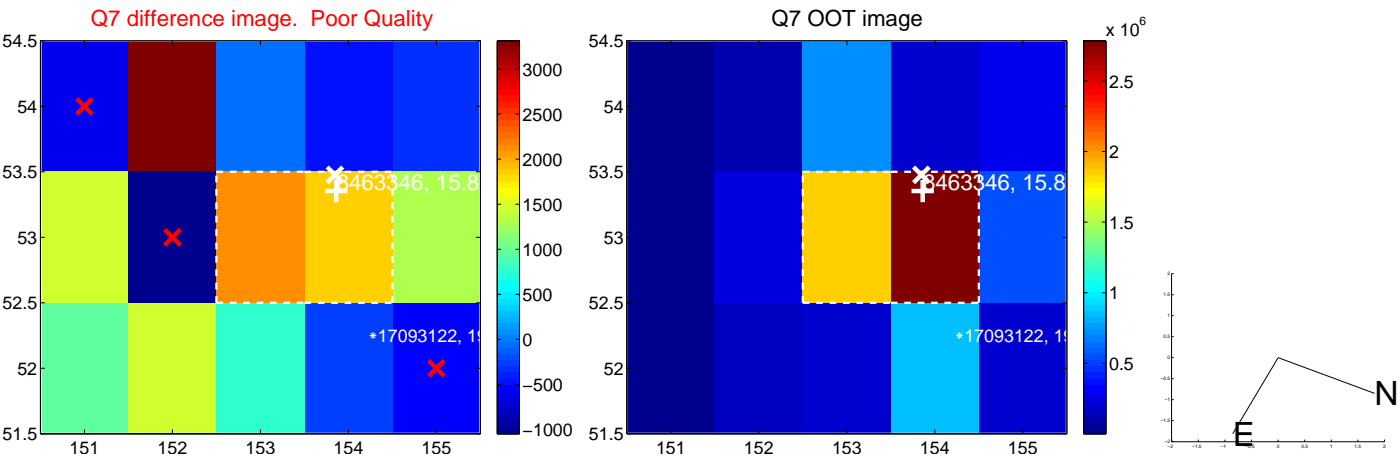
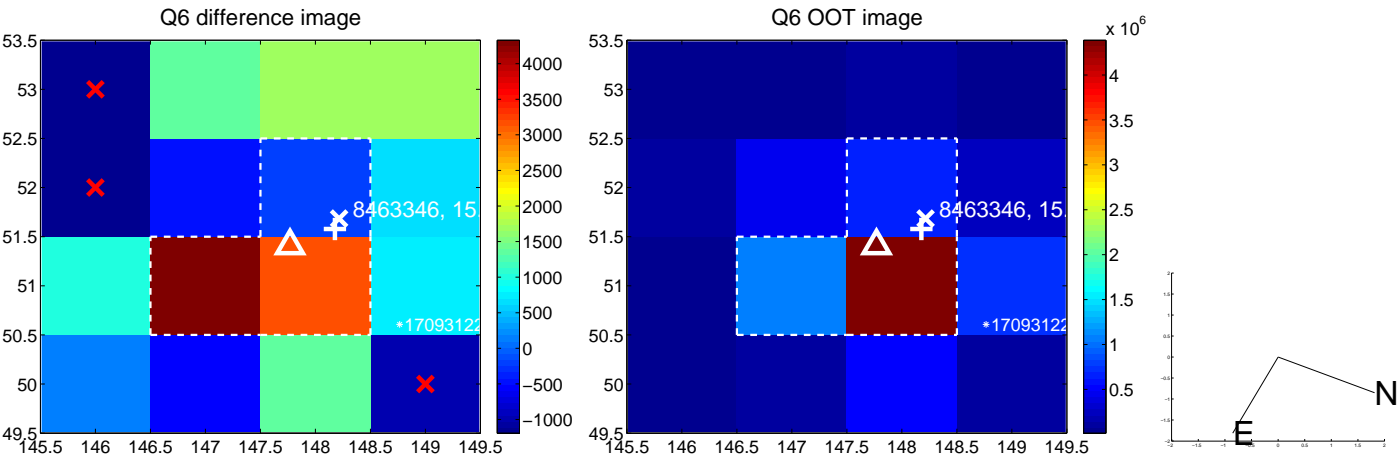
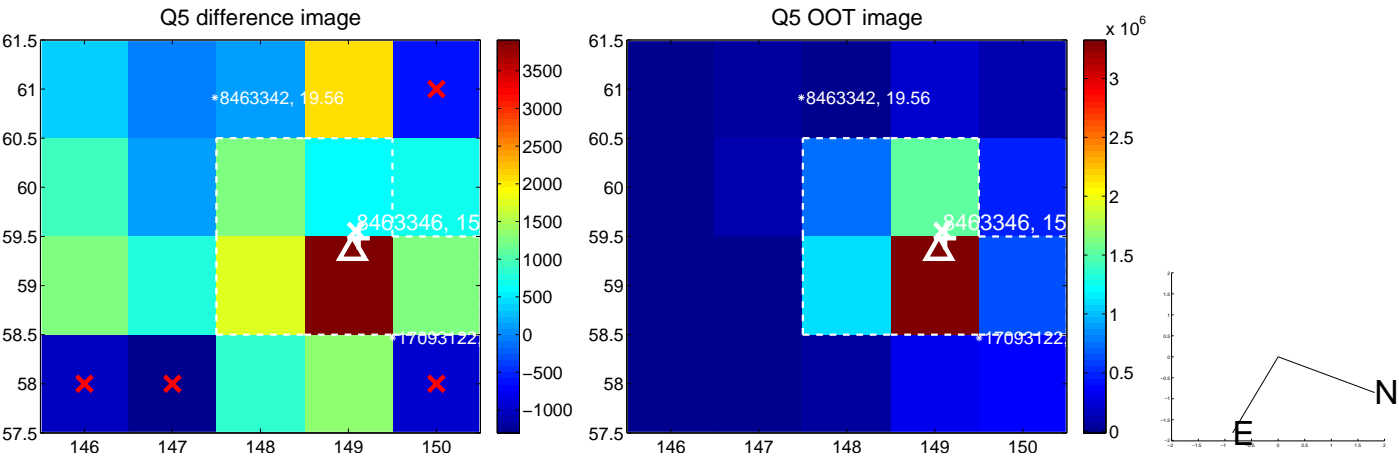


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

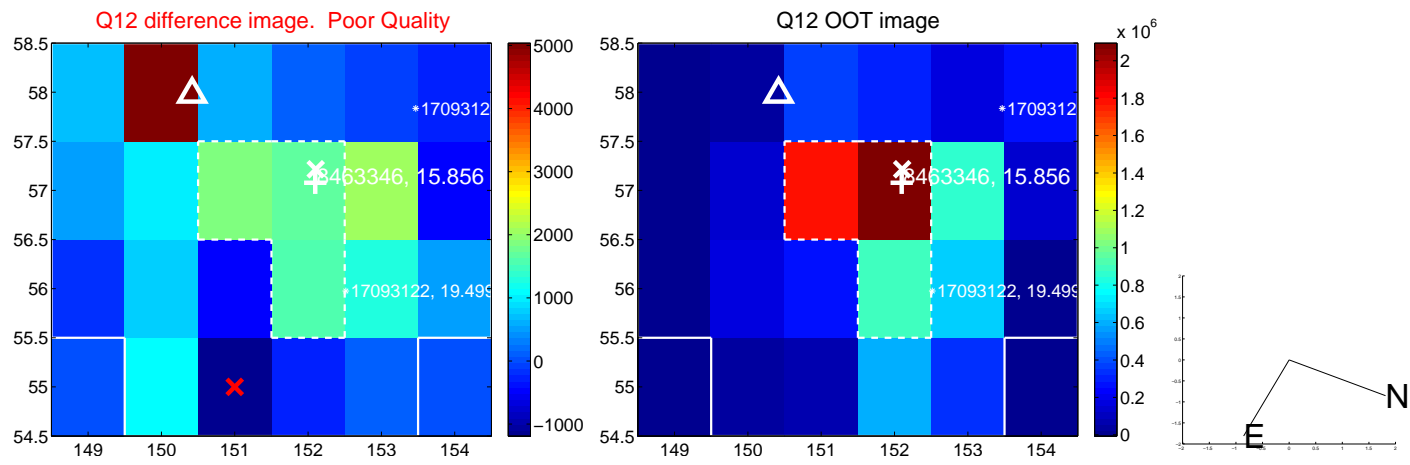
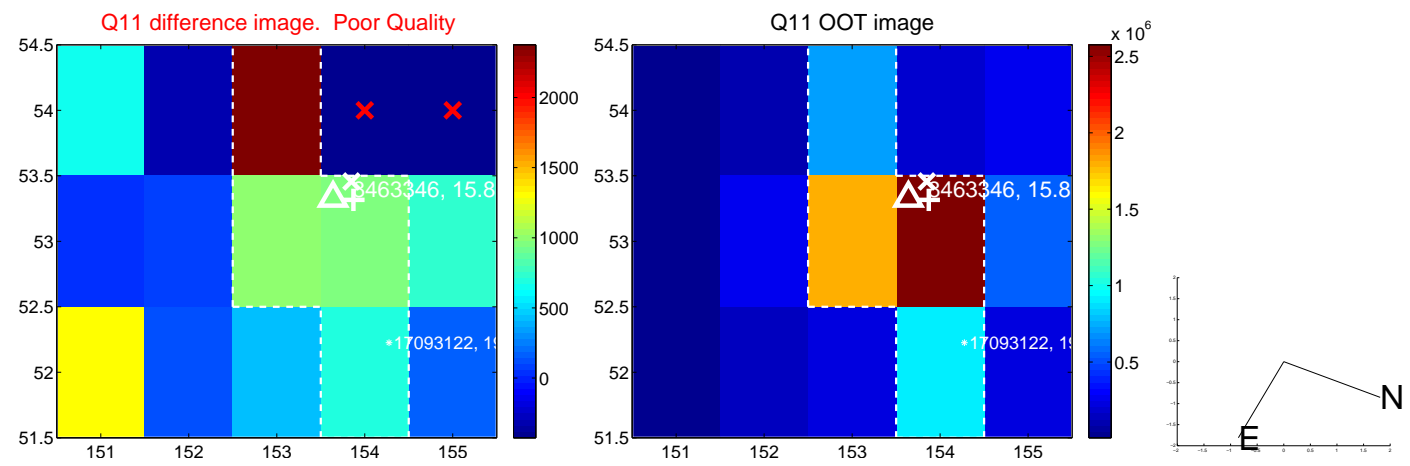
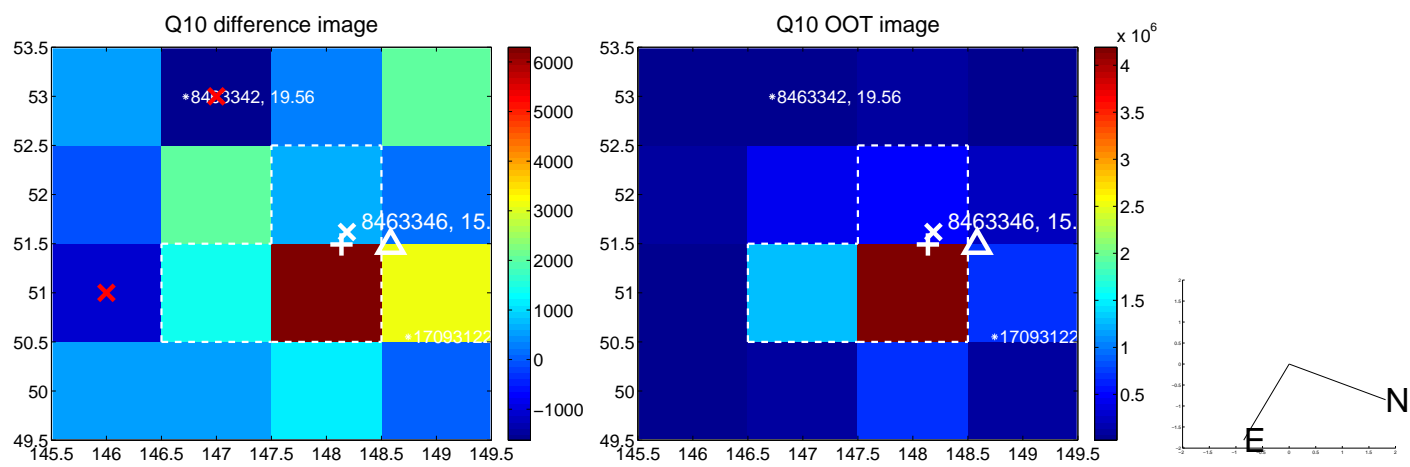
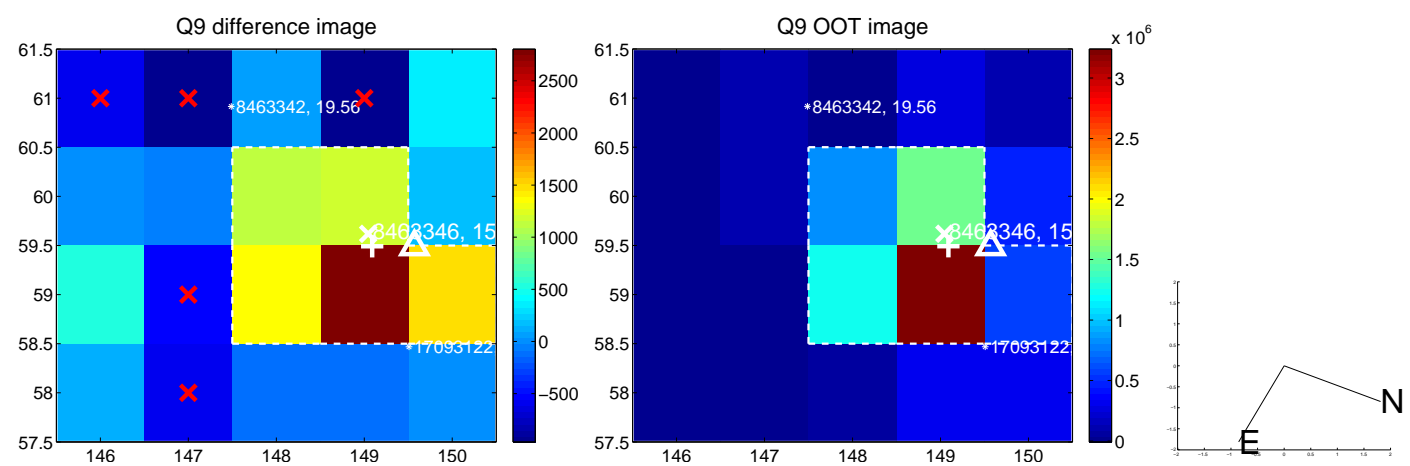
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

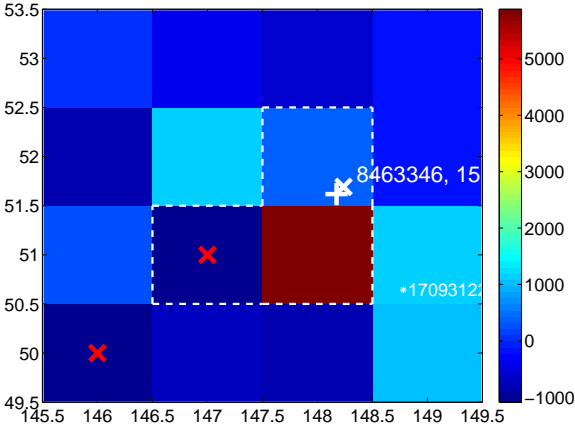
Q13 no difference image



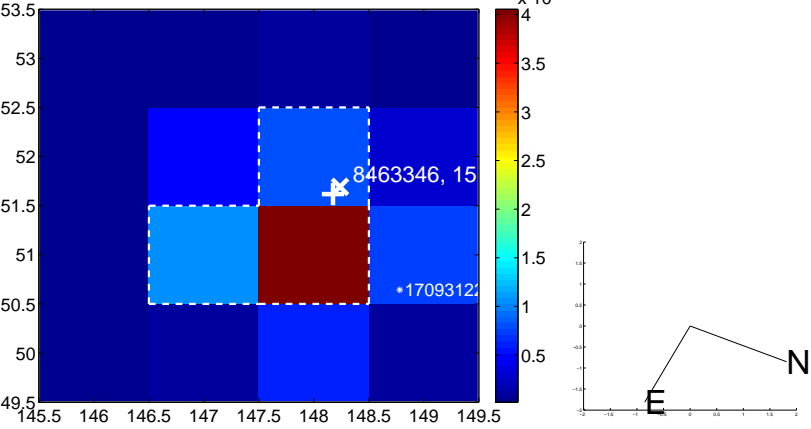
Q13 no OOT image



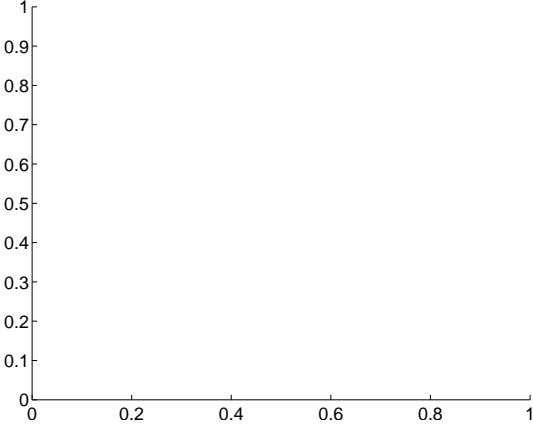
Q14 difference image. Poor Quality



Q14 OOT image



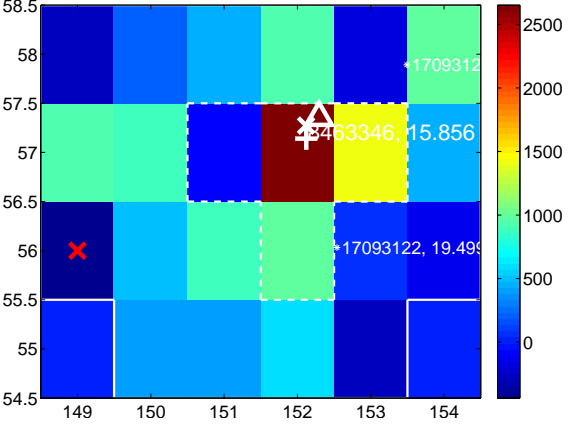
Q15 no difference image



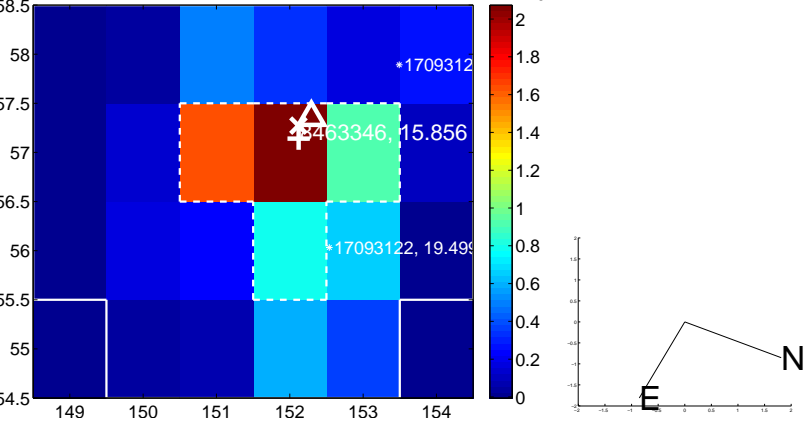
Q15 no OOT image



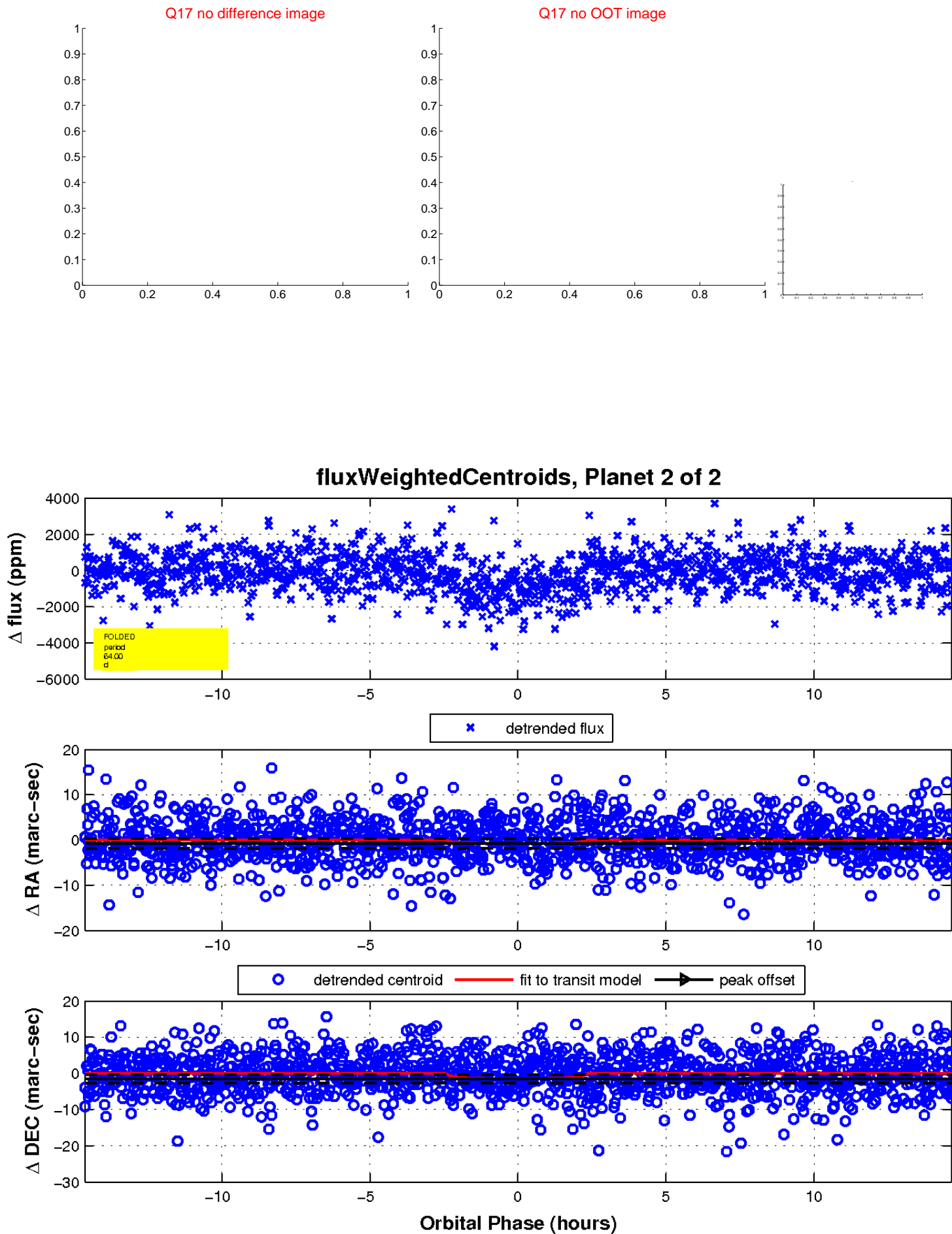
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

Declination

