

KIC 003858988

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})
003858988-01	OBS	3388.01	25.952277	154.871295	1578.8	14.599	42.1	46.3	1.08	5753	8.09	41.05
003858988-02	OBS	No	25.951954	148.915290	1357.1	20.467	41.5	50.6	1.08	5753	7.58	41.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003858988-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003858988-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

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

Ephemeris Match Information For 003858988-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003858988-01	3858988	003858884-01	3858884	1:1	90.4	-20	11	9.28	15.00	252.41	Direct-PRF	0	0.71	0.43

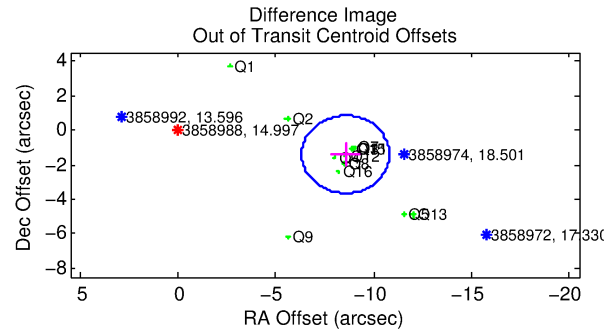
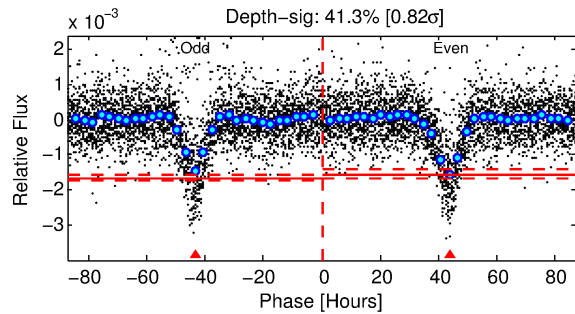
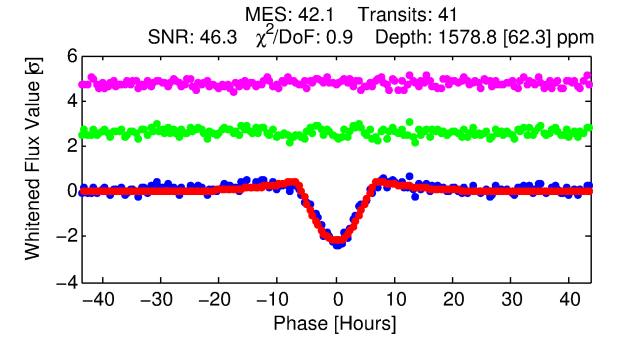
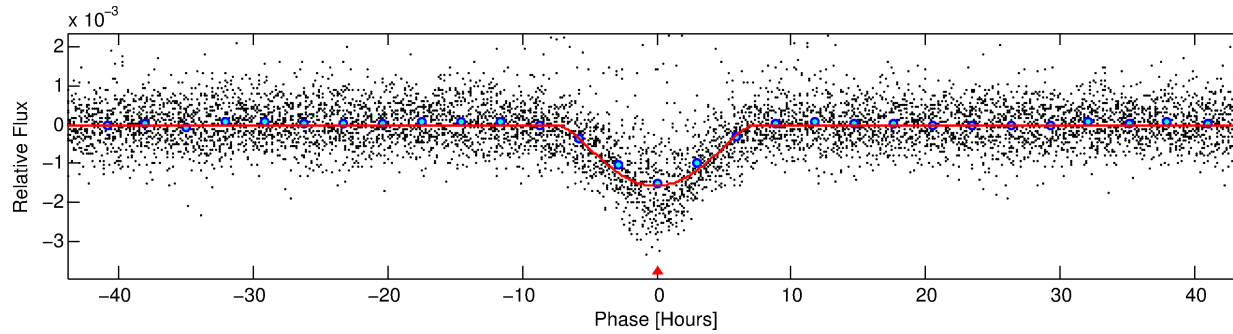
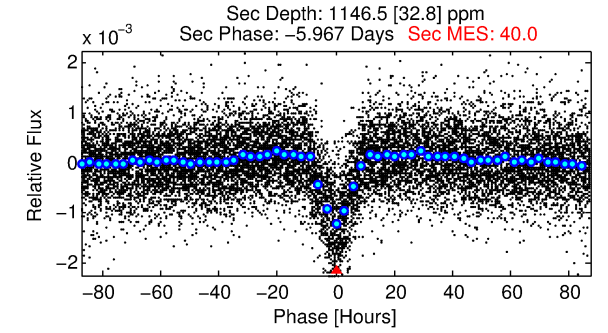
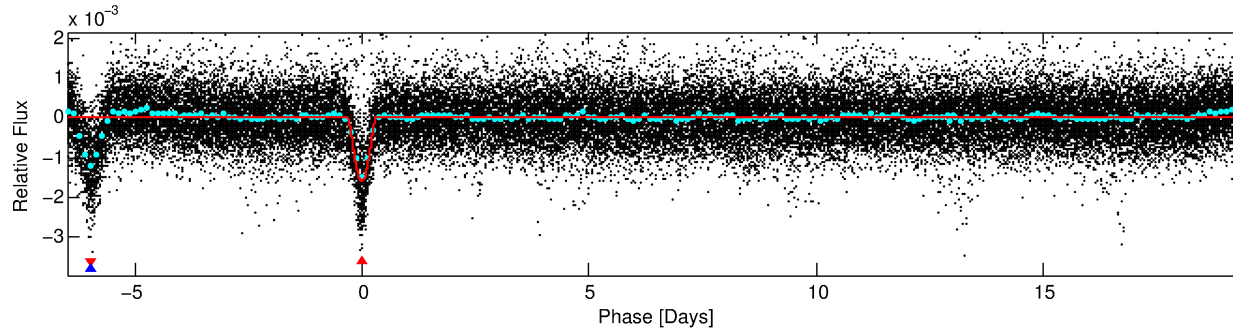
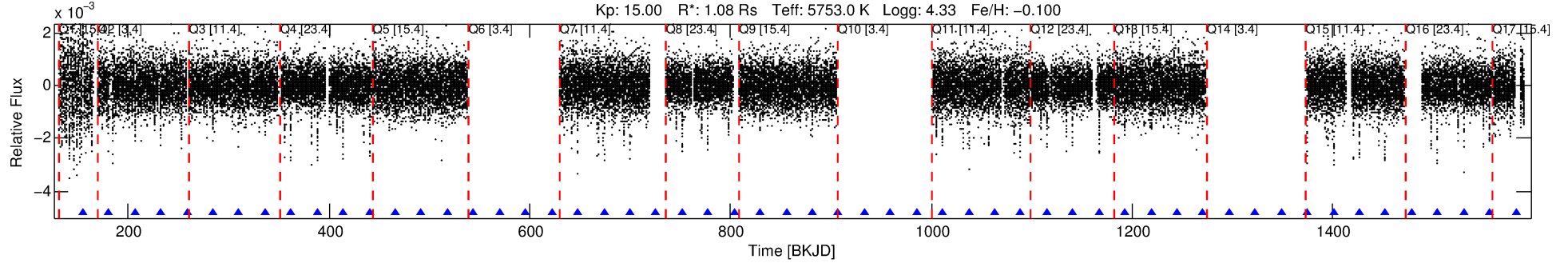
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match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

DV One-Page Summary

KIC: 3858988 Candidate: 1 of 2 Period: 25.952 d

KOI: K03388 Corr: No Ephemeris Match

Kp: 15.00 R*: 1.08 Rs Teff: 5753.0 K Logg: 4.33 Fe/H: -0.100



DV Fit Results:

Period = 25.95228 [0.00019] d
Epoch = 154.8713 [0.0062] BKJD
Rp/R* = 0.0687 [0.0439]
a/R* = 5.28 [0.73]
b = 1.00 [0.07]
Seff = 41.05 [15.30]
Teq = 645 [60] K
Rp = 8.09 [5.67] Re
a = 0.1667 [0.0404] AU
Ag = 267.95 [355.39] [0.75σ]
Teff = 4037 [1296] K [2.61σ]

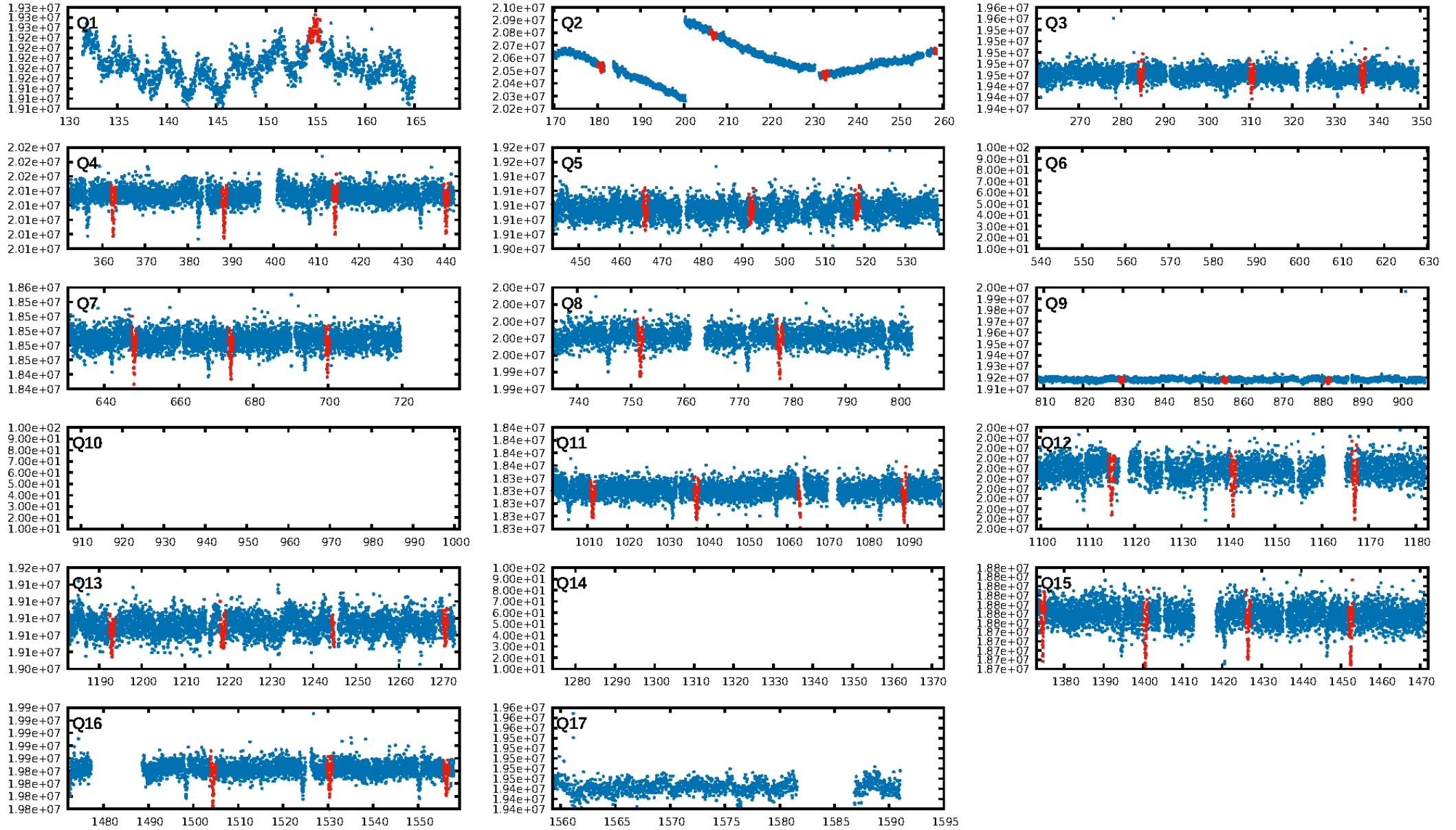
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: 0.06521
Centroid-sig: 0.0%
Centroid-so: 2.270 arcsec [15.35σ]
OotOffset-rm: 8.675 arcsec [11.59σ]
KicOffset-rm: 4.493 arcsec [6.04σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.00 [0/13]
DiffImageOverlap-fno: 1.00 [13/13]

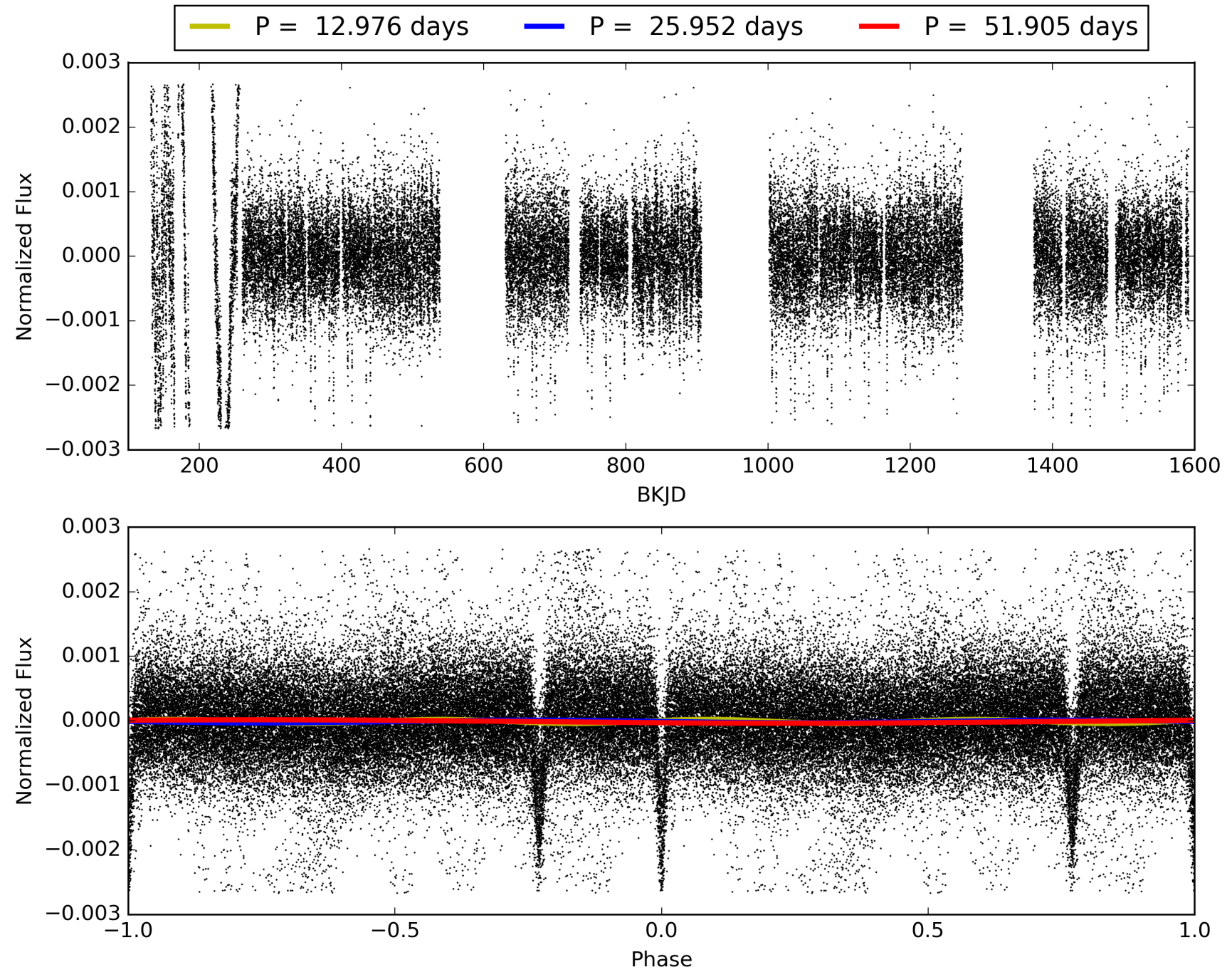
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 003858988-01, PDC Light Curves

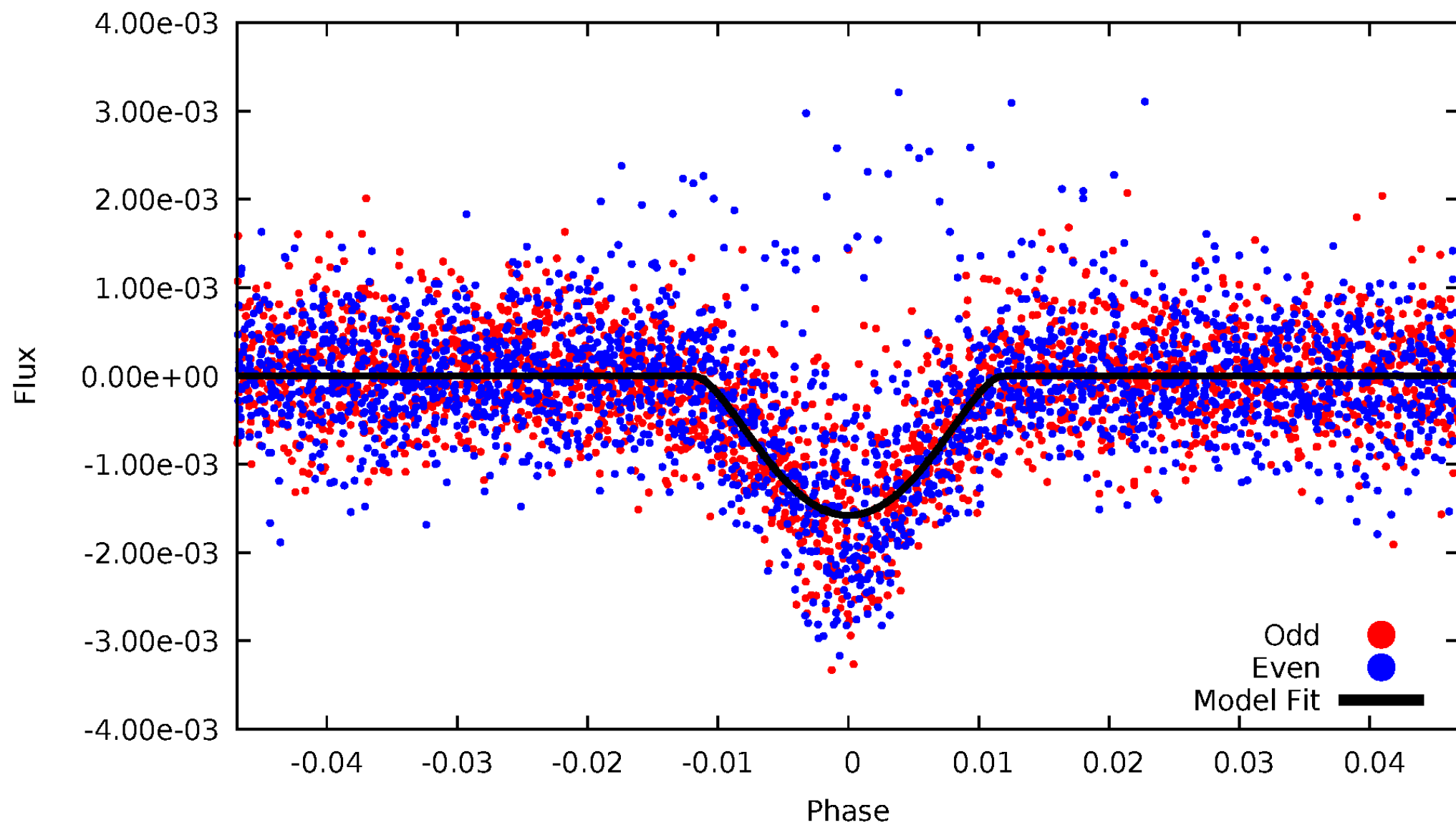


TCE 003858988-01



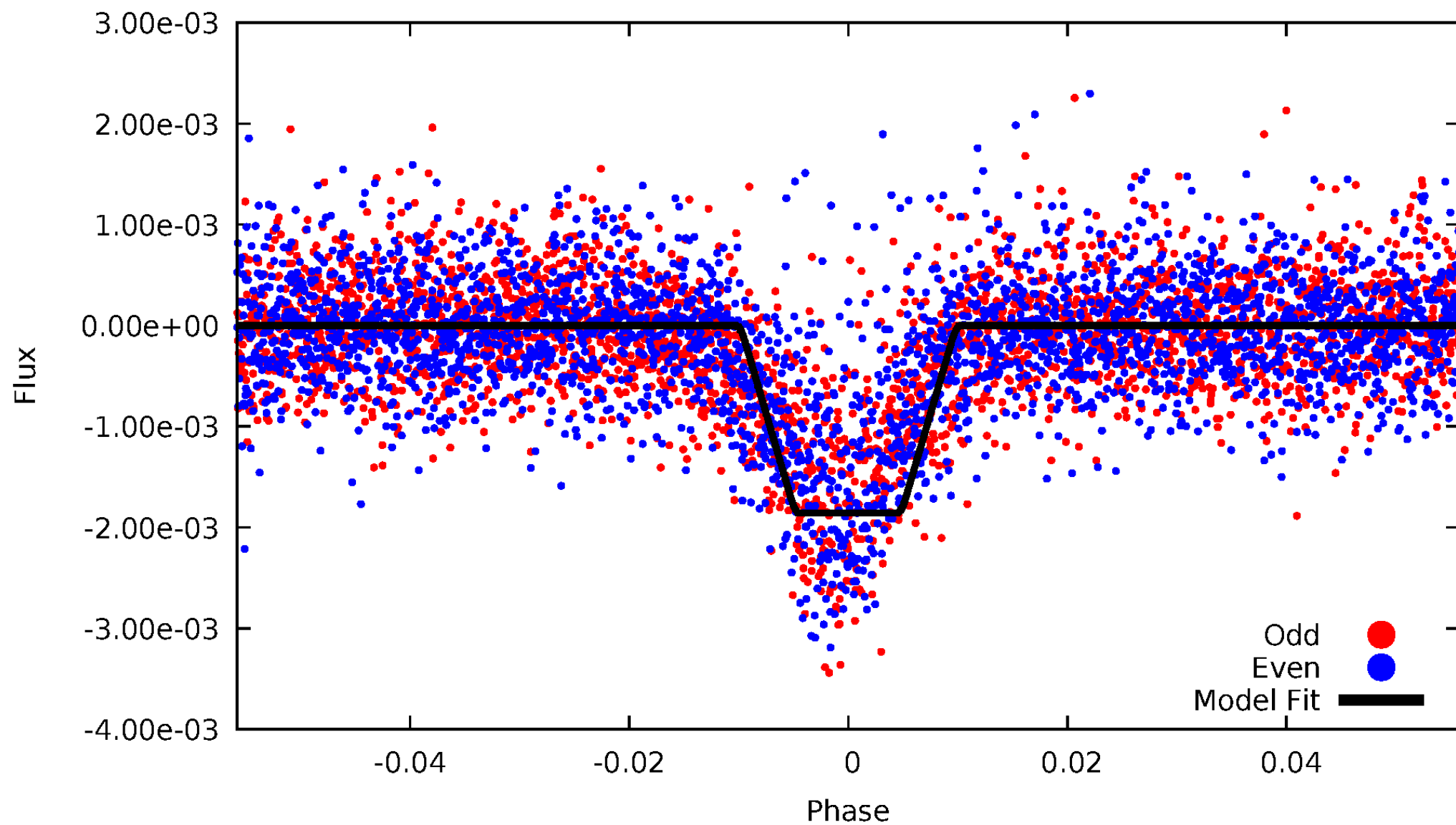
DV Odd/Even

TCE 003858988-01



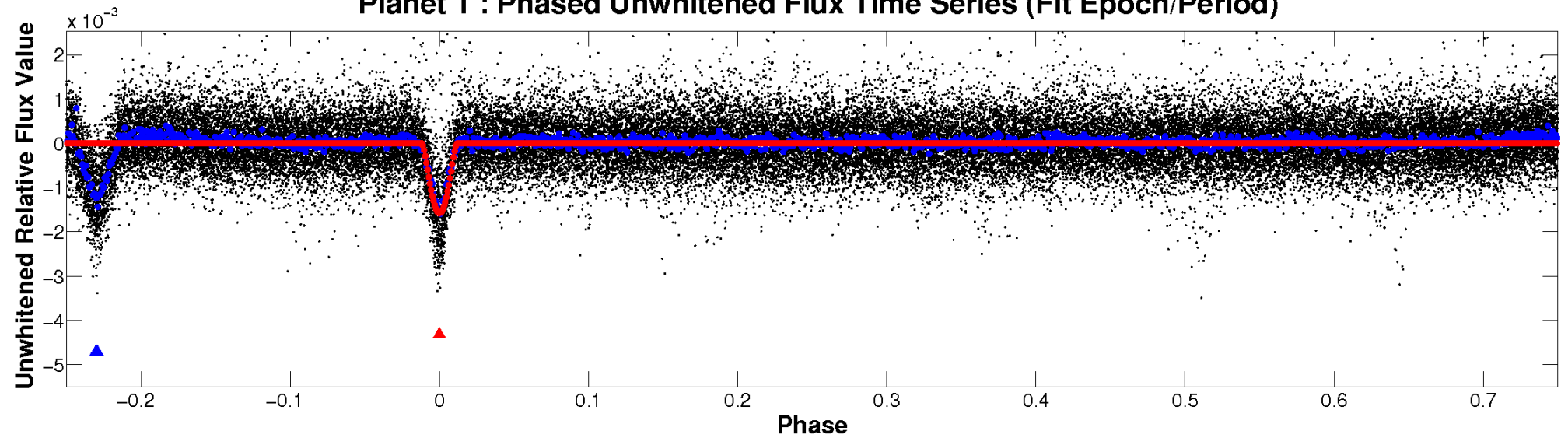
ALT Odd/Even

TCE 003858988-01

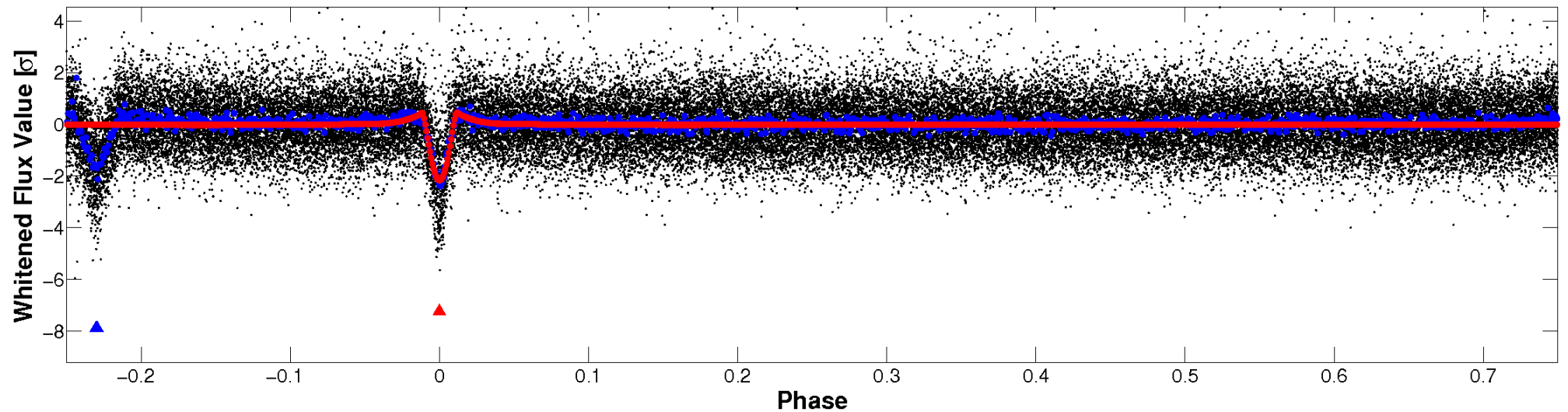


Non-Whitened Vs. Whitened Light Curve

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

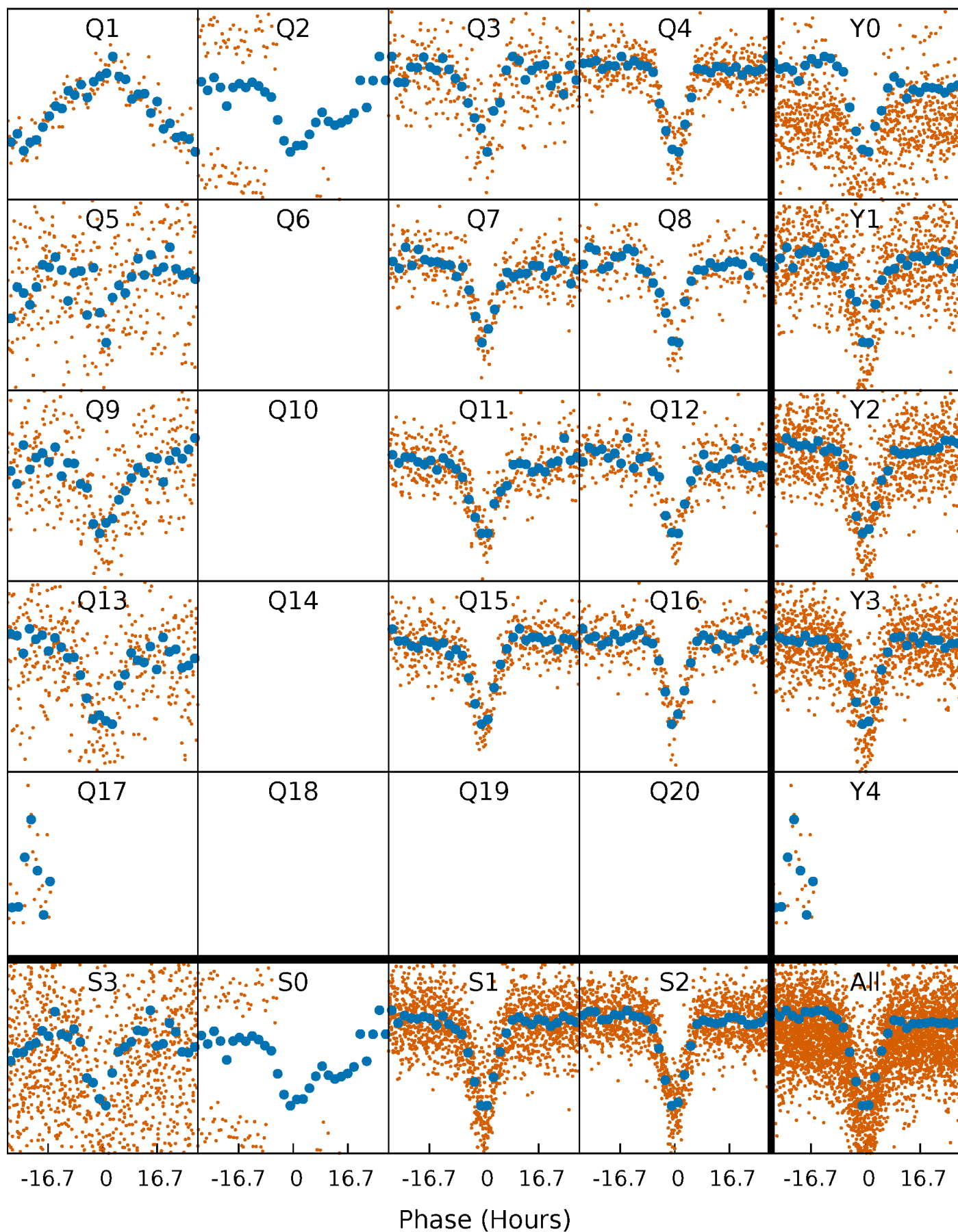


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



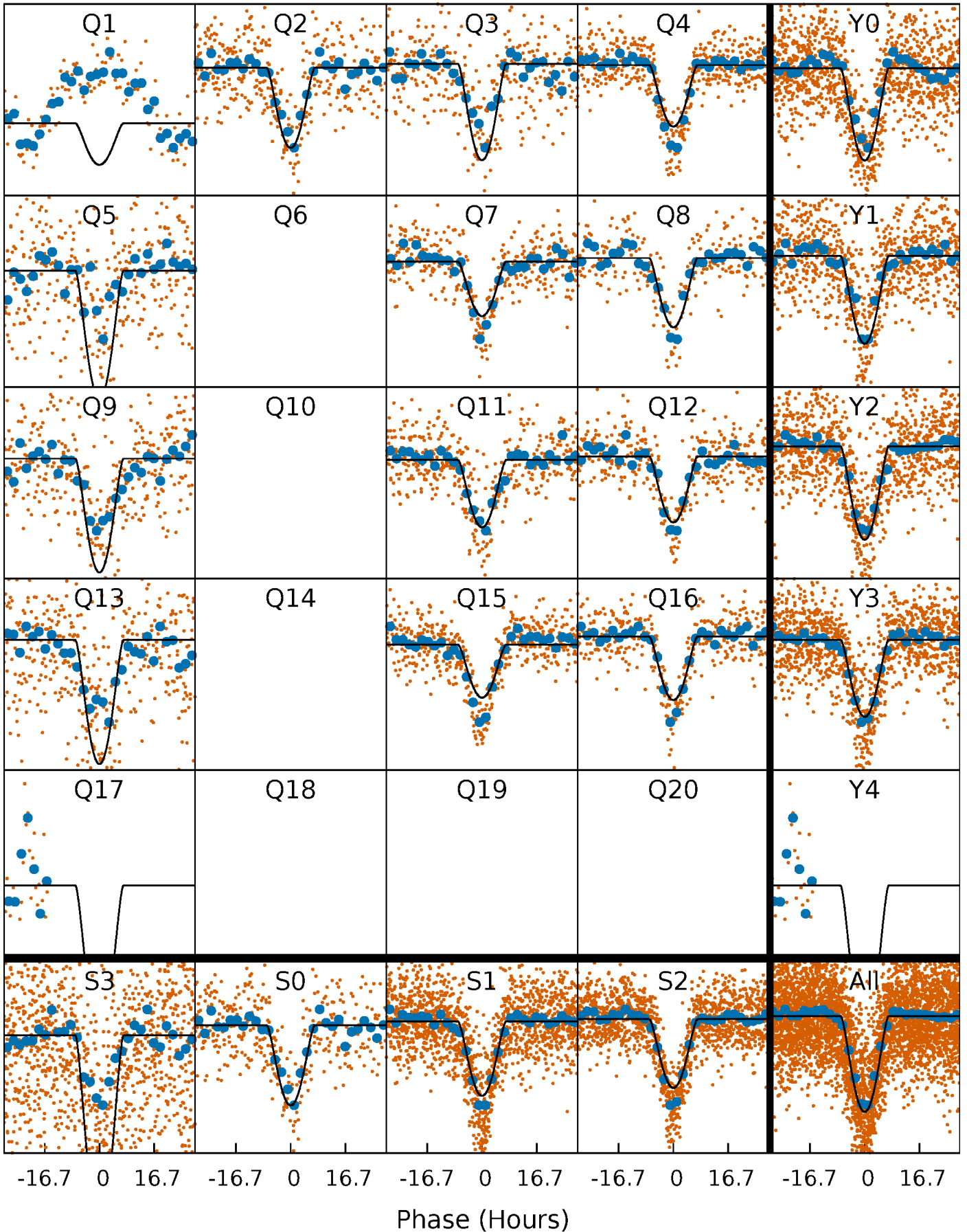
PDC Quarter-Phased Transit Curves

TCE 003858988-01 P= 25.952277 Days $T_0=154.871295$ (BKJD)



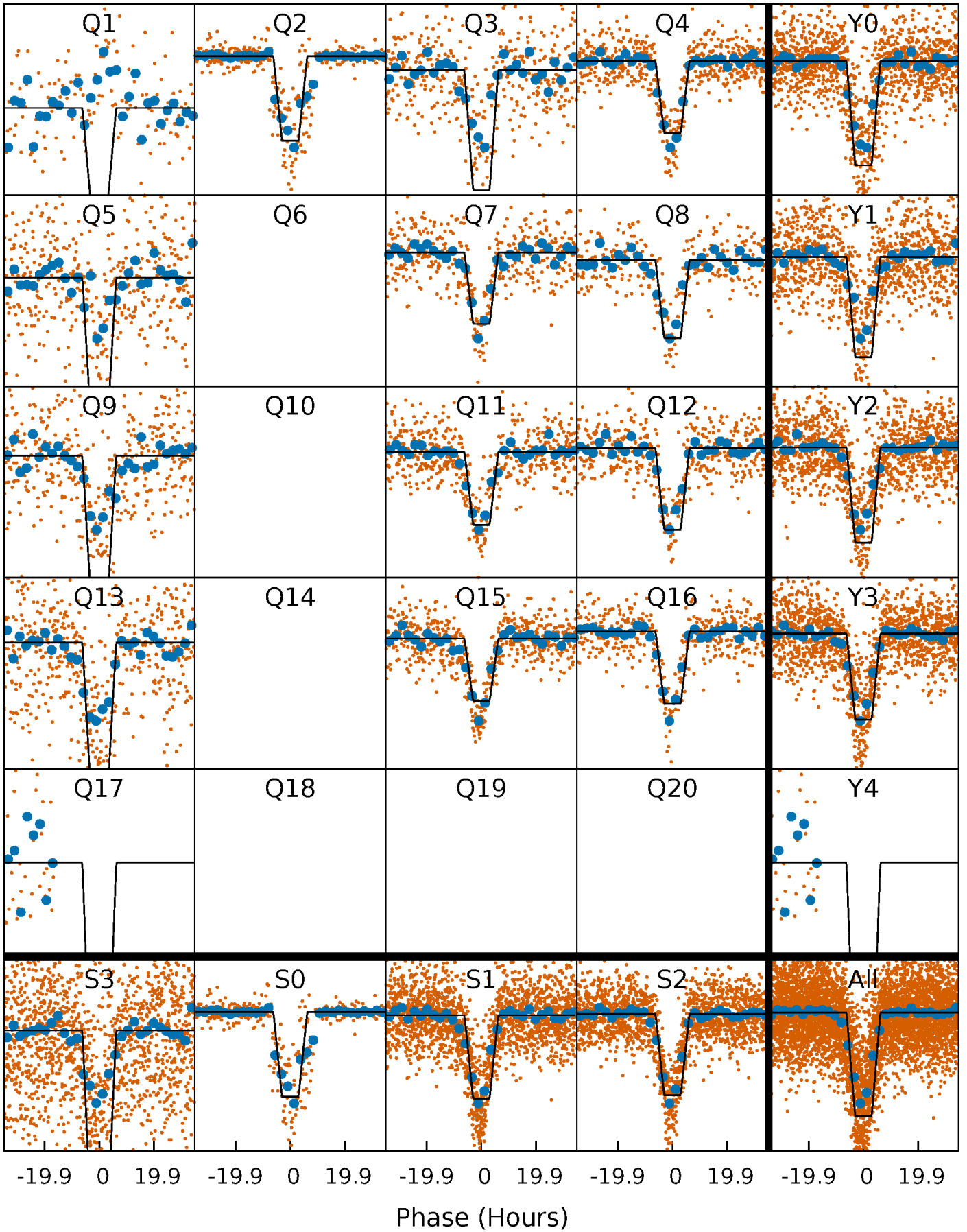
DV Quarter-Phased Transit Curves

TCE 003858988-01 P= 25.952277 Days $T_0=154.871295$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

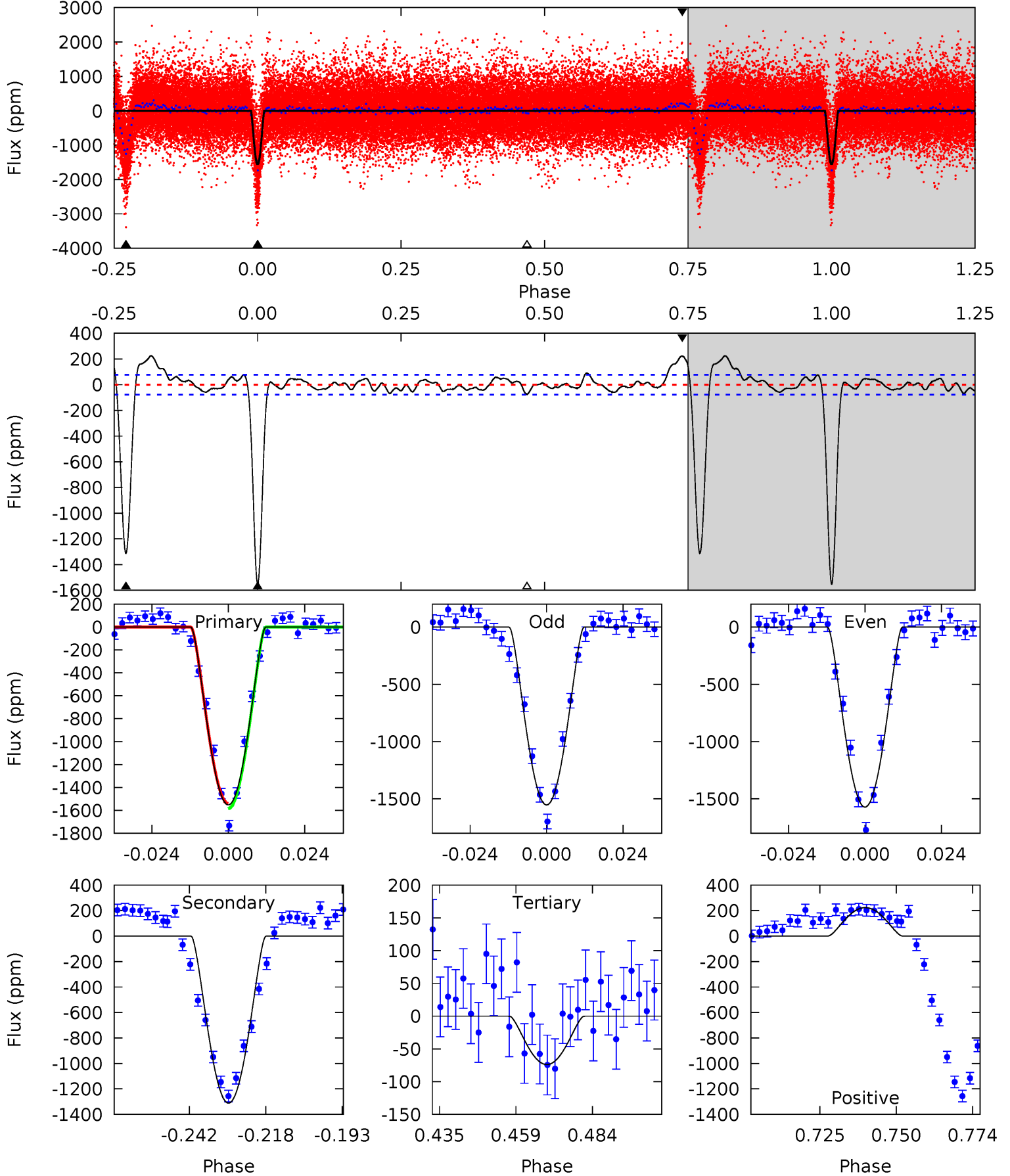
TCE 003858988-01 P= 25.952485 Days $T_0=154.889479$ (BKJD)



DV Model-Shift Uniqueness Test

003858988-01, P = 25.952277 Days, E = 128.919018 Days

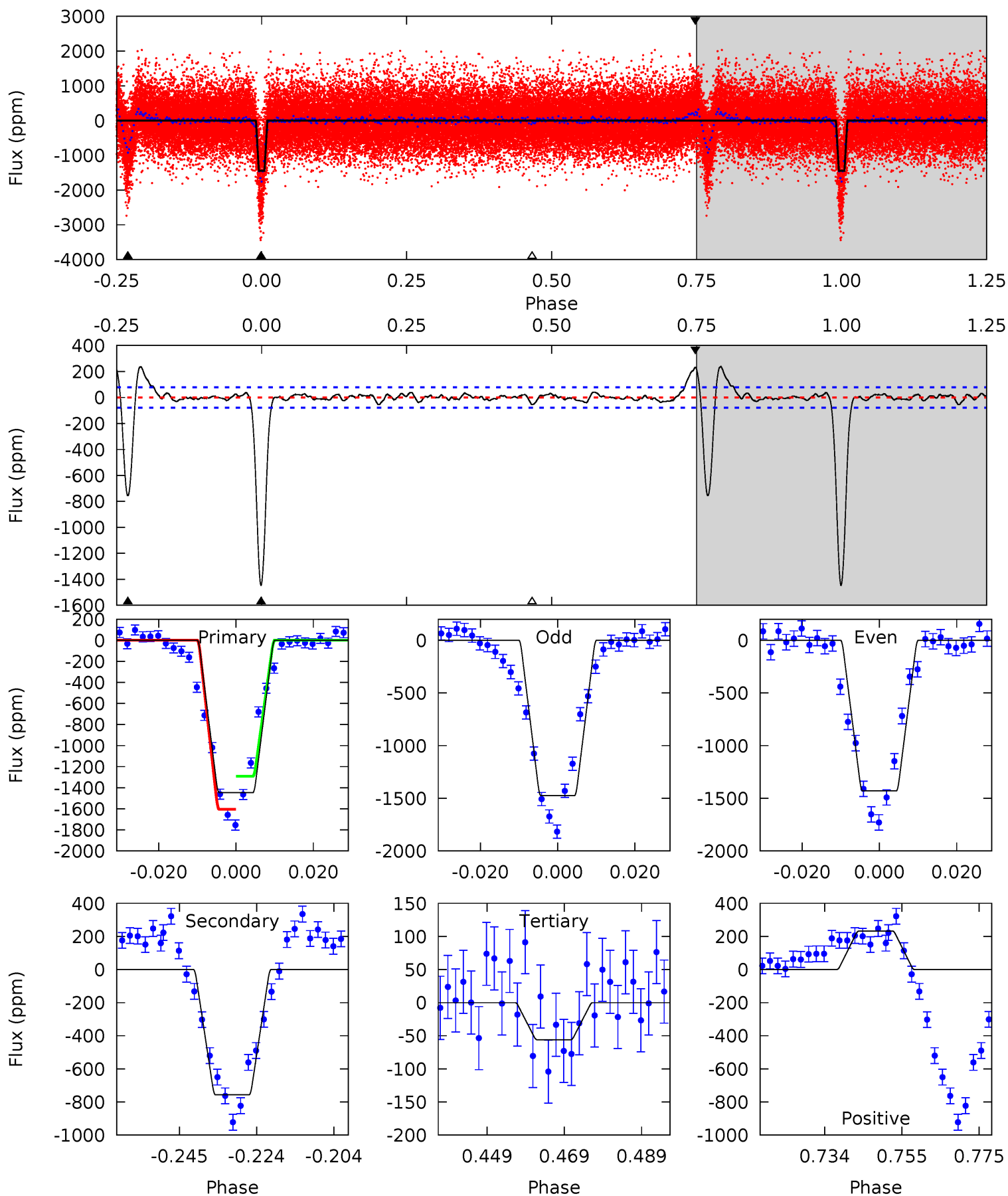
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
96.7	81.7	4.60	13.9	4.85	2.25	3.75	92.1	82.8	77.1	67.8	0.58	0.90	0.13	1.33



Alt Model-Shift Uniqueness Test

003858988-01, P = 25.952485 Days, E = 128.936994 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.2	47.2	3.50	14.5	4.89	2.32	2.62	86.8	75.8	43.7	32.8	1.36	0.94	0.14	9.60



Stellar Parameters For KIC 003858988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5753^{+156}_{-173}	$4.335^{+0.175}_{-0.193}$	$-0.100^{+0.300}_{-0.300}$	$1.078^{+0.310}_{-0.207}$	$0.918^{+0.124}_{-0.093}$	$1.030^{+0.881}_{-0.506}$
	+3%/-3%	+4%/-4%	+300%/-300%	+29%/-19%	+14%/-10%	+86%/-49%
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 003858988-01 / KOI 3388.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1311 ± 16	$8.67^{+5.17}_{-4.64}$	907^{+70}_{-61}	4269^{+1670}_{-605}	267^{+1003}_{-161}
Alt.	-757 ± 16	$6.15^{+4.59}_{-3.72}$	900^{+70}_{-55}	4385^{+2086}_{-797}	311^{+1538}_{-210}

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 $A_{obs} \gg 1.0$

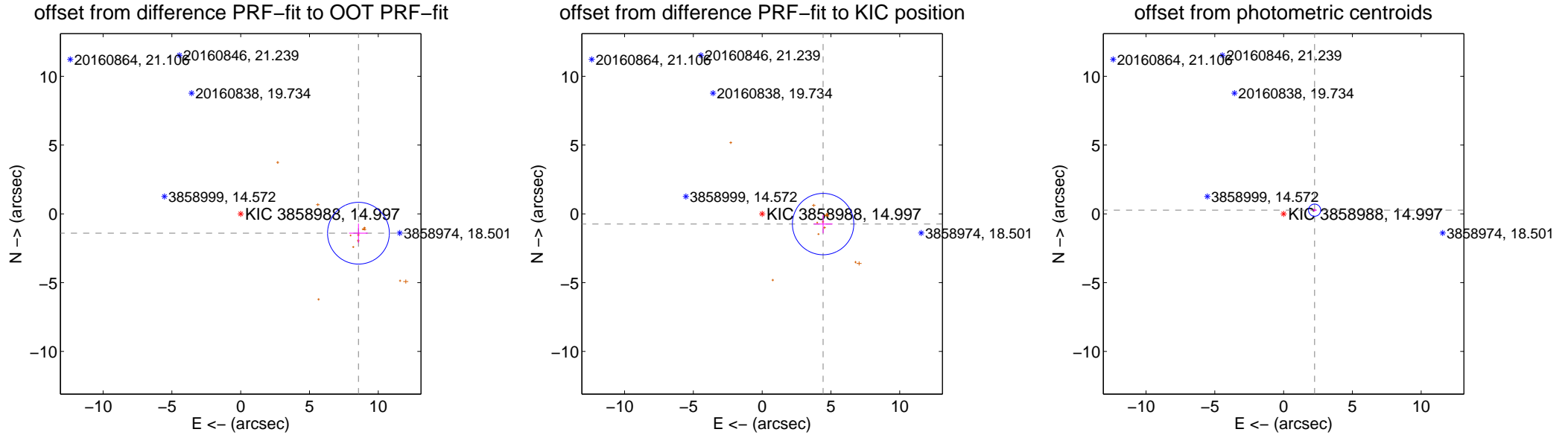
DV Centroid Data

Supplemental centroid analysis for 003858988-01. Kepler magnitude: 15.00. Transit SNR 46.33

There are 0 quarters with good PRF difference image offsets

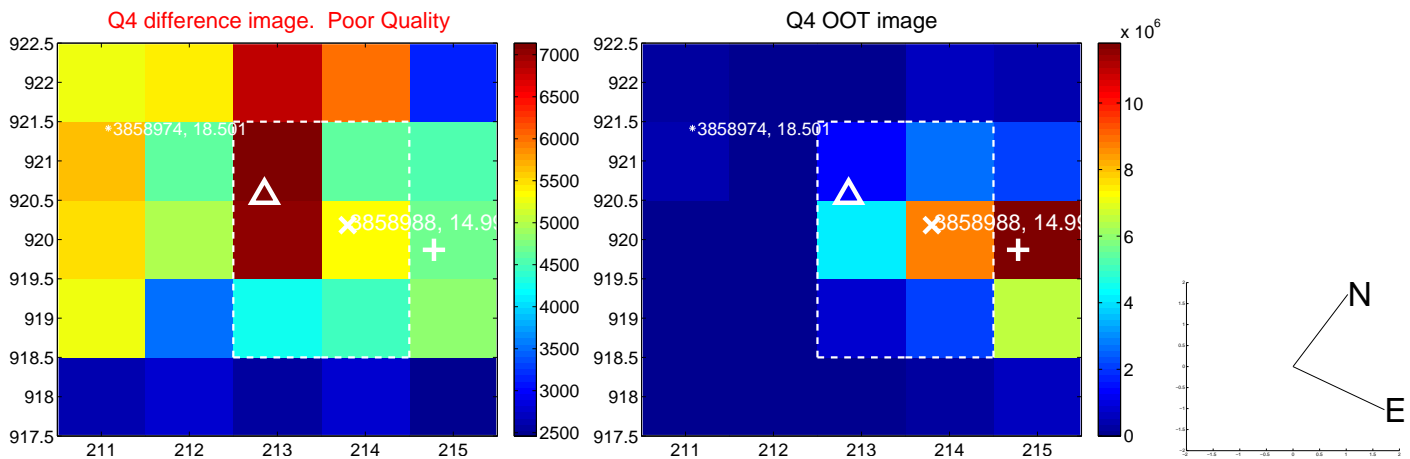
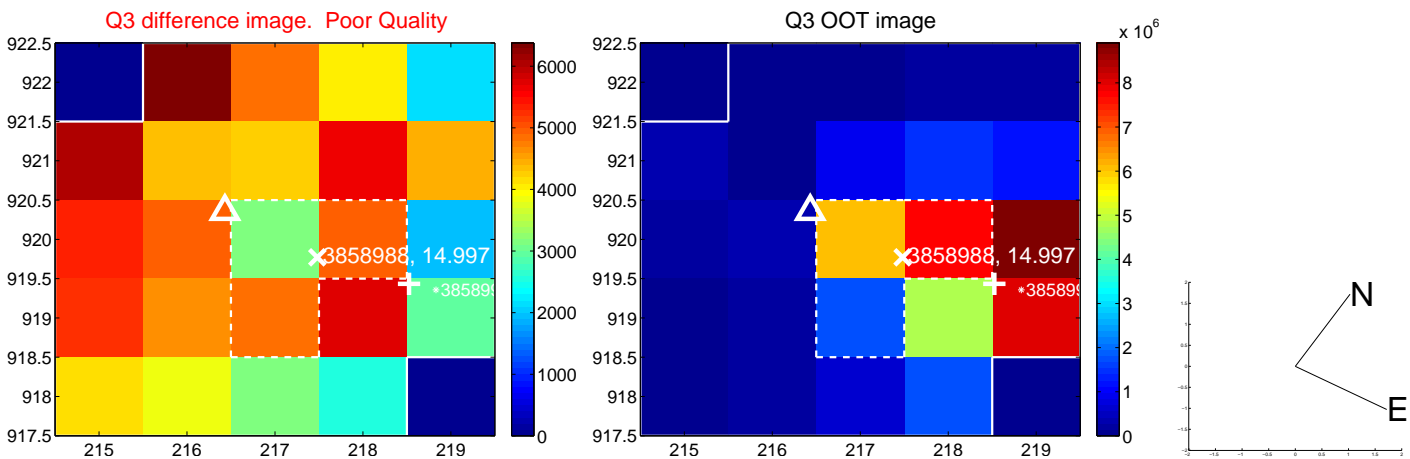
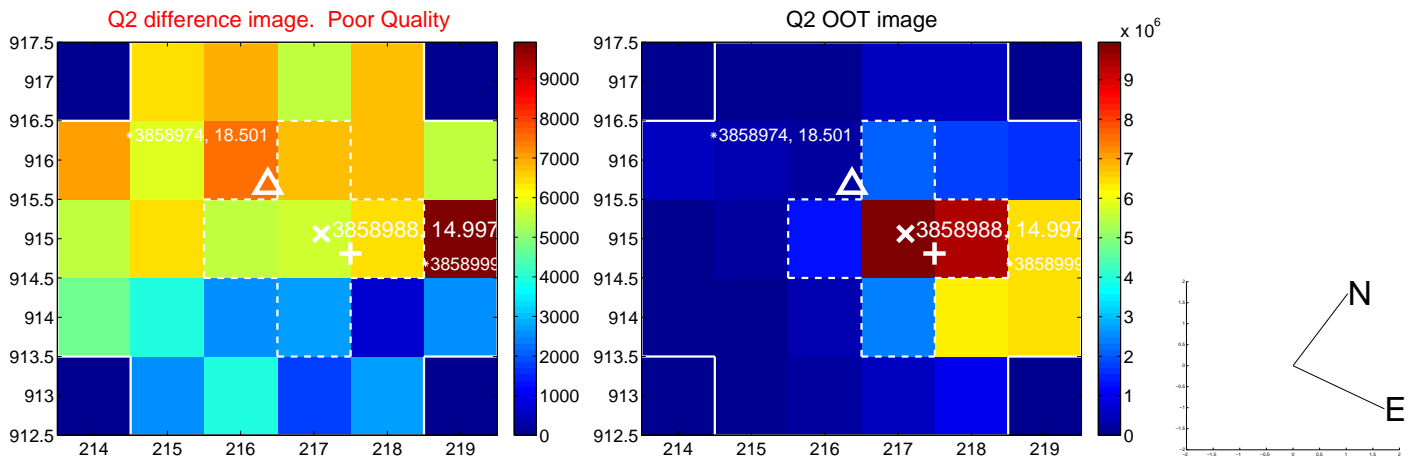
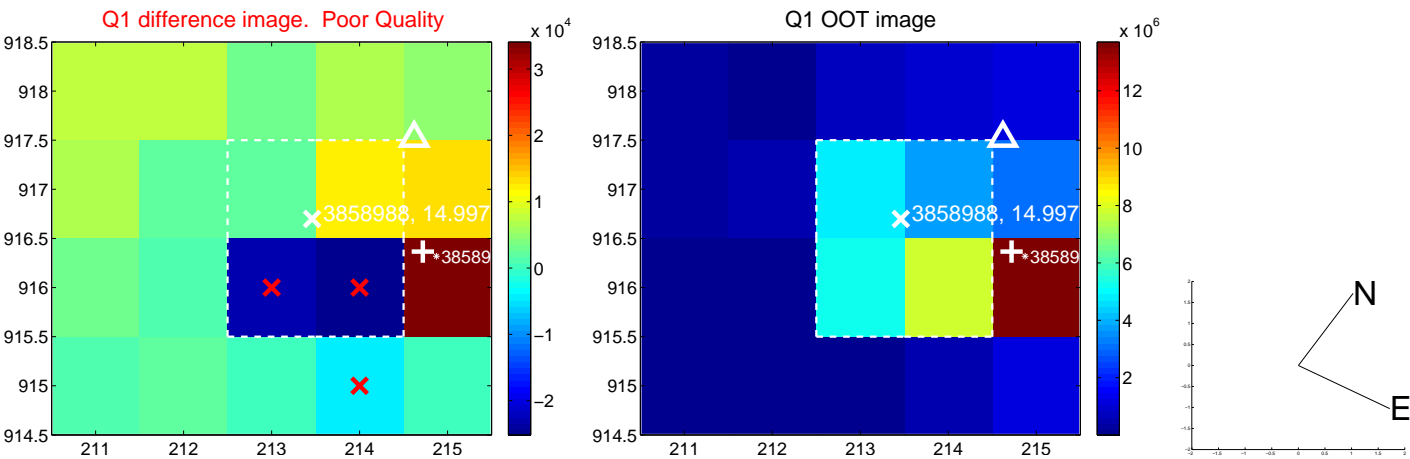
The OOT PRF centroid is offset from the target star catalog position by about 4.20 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.675 ± 0.748	11.59	-8.560 ± 0.678	-1.407 ± 0.697
PRF-fit source offset from KIC position	4.493 ± 0.744	6.04	-4.431 ± 0.688	-0.743 ± 0.664
photometric centroid source offset	2.27 ± 0.15	15.35	-2.25 ± 0.15	0.27 ± 0.11

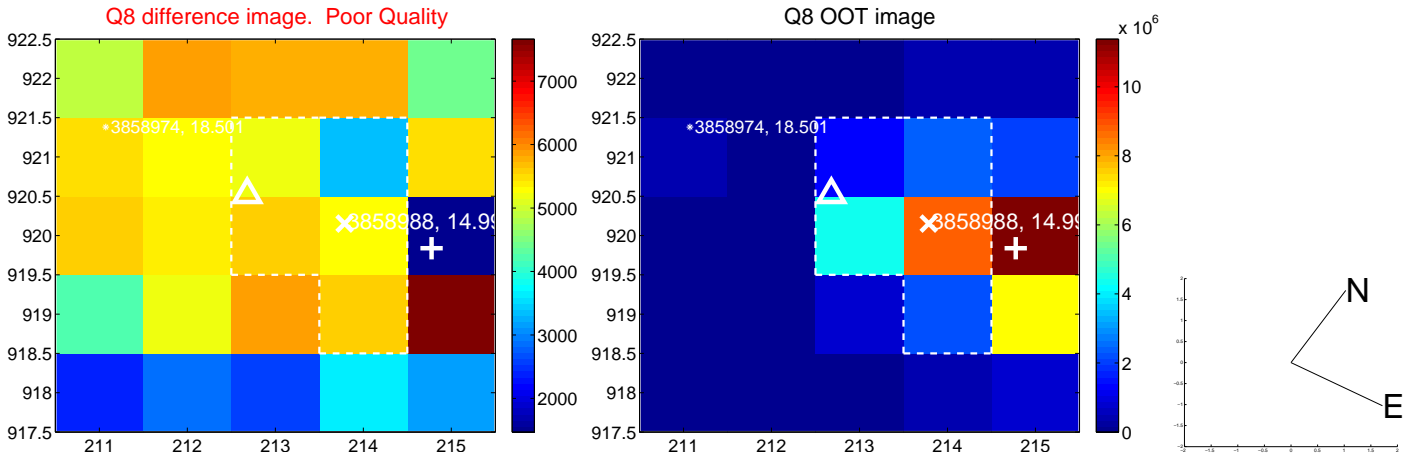
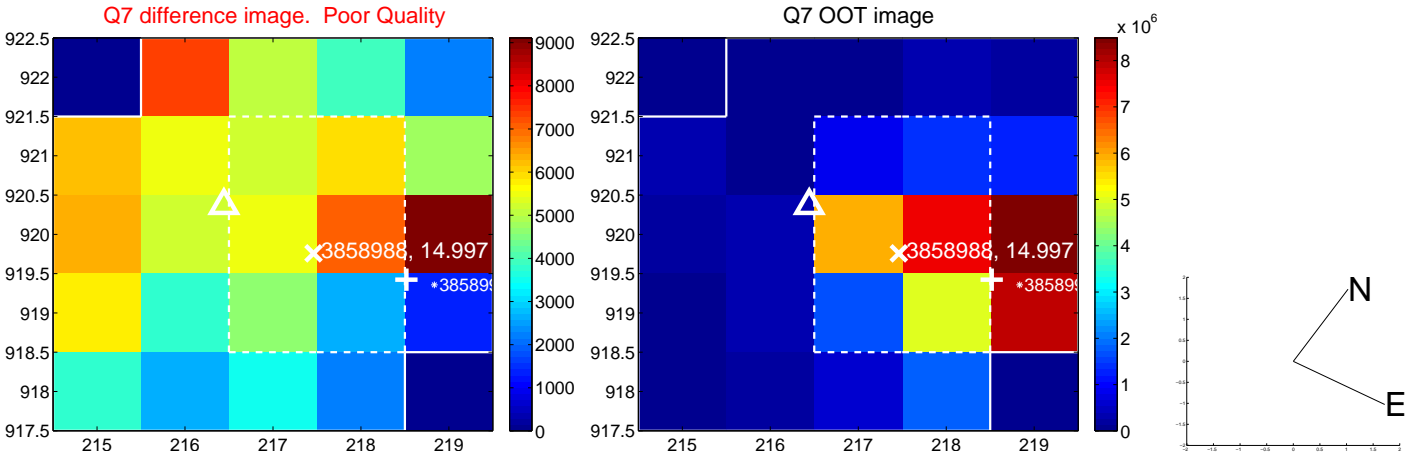
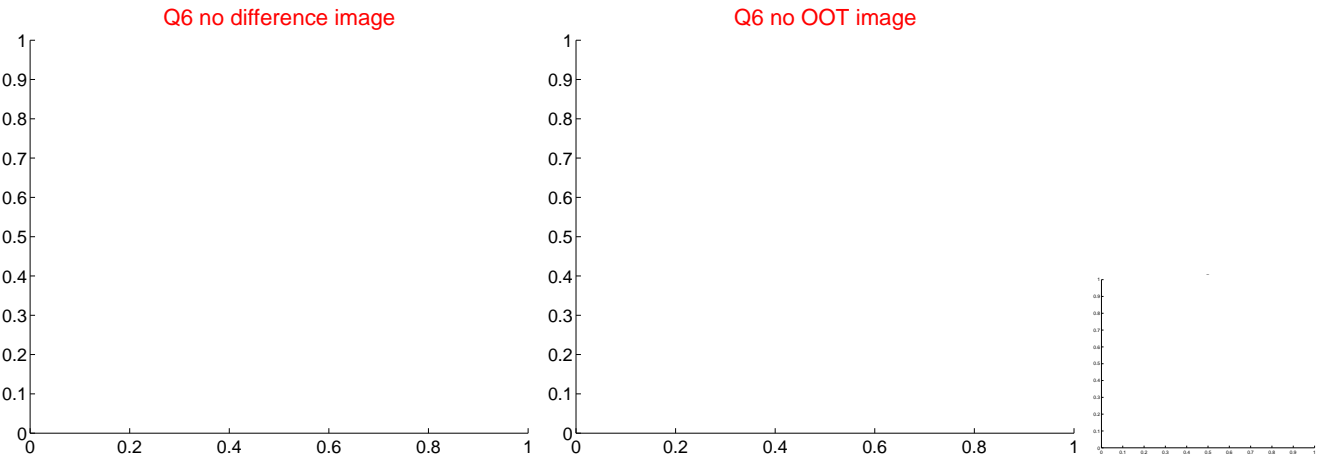
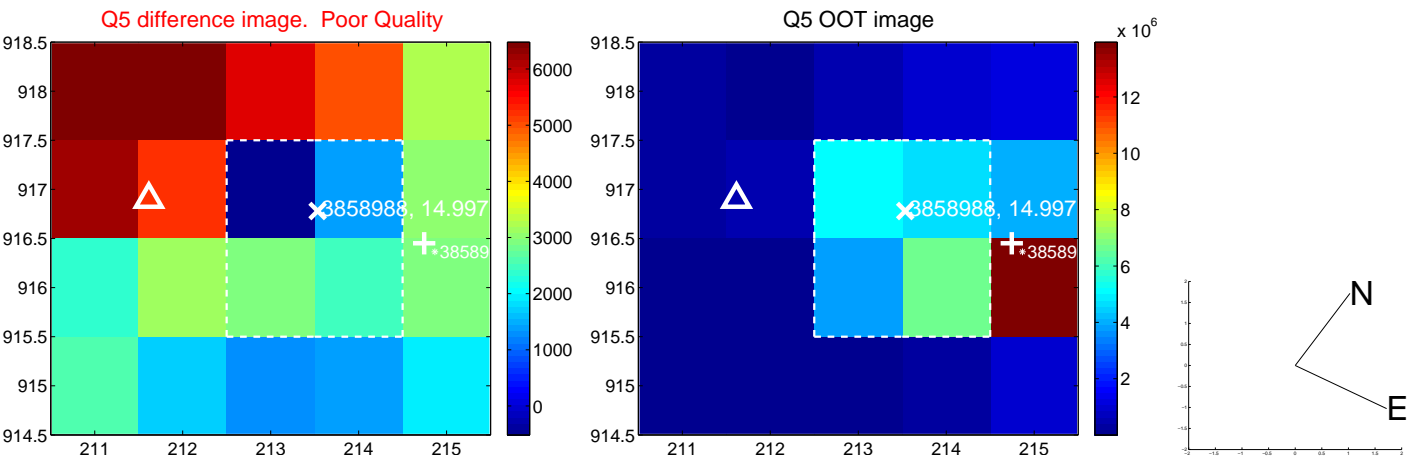


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

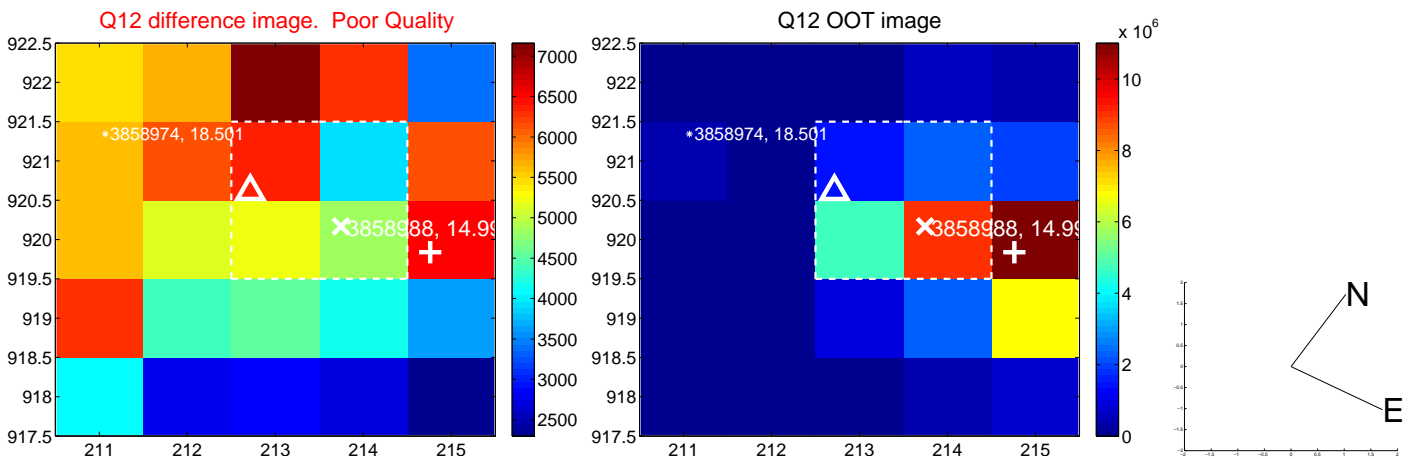
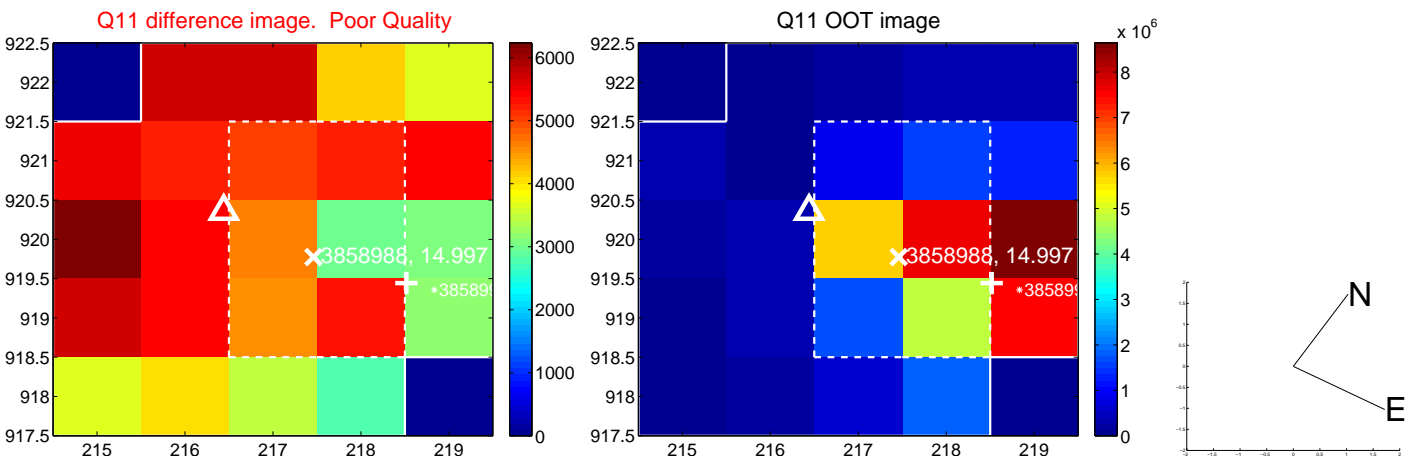
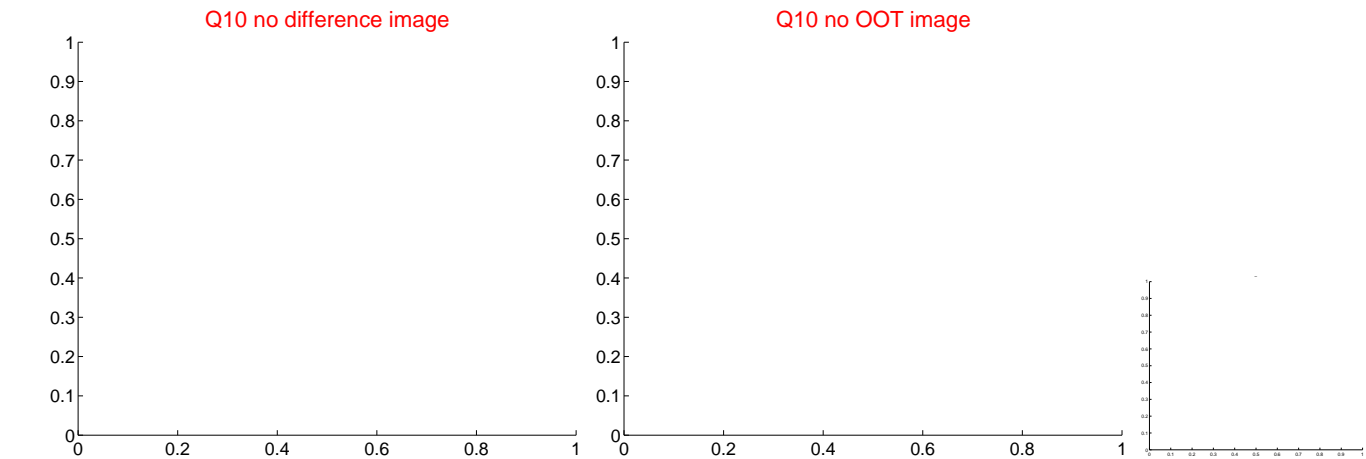
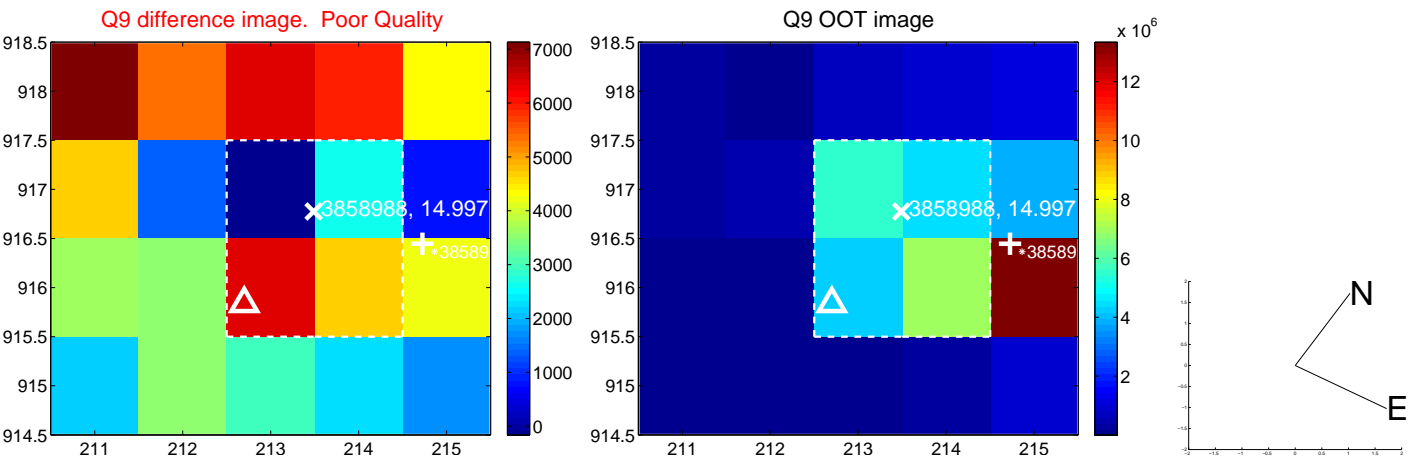
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



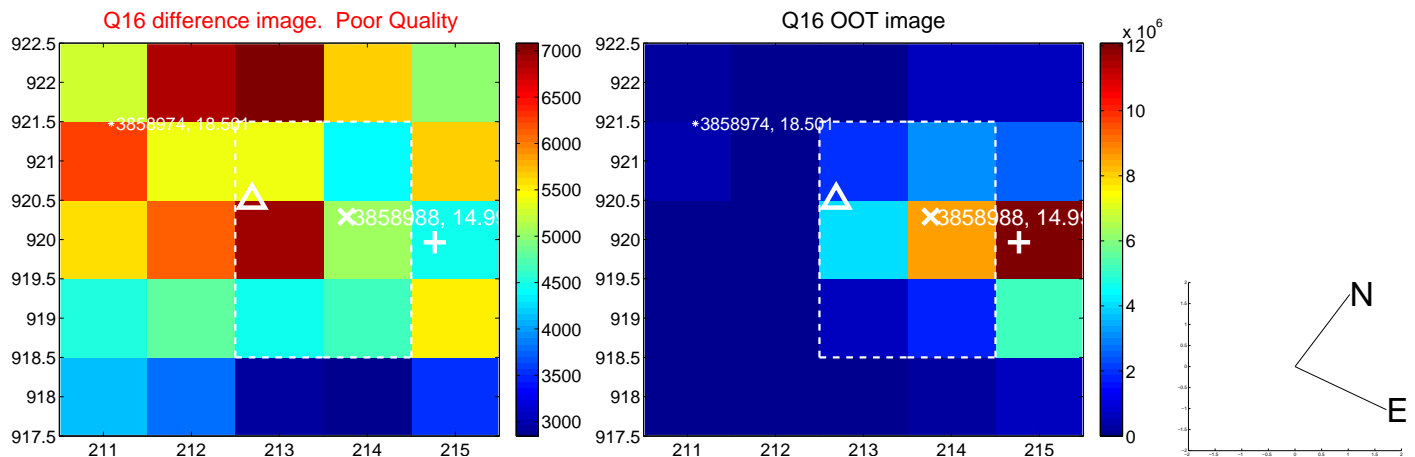
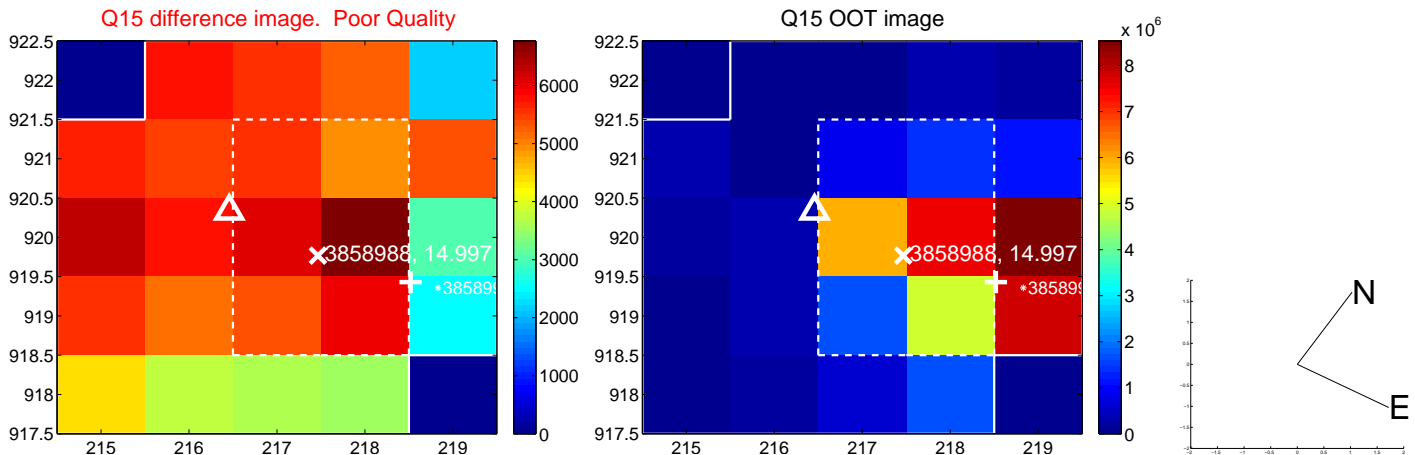
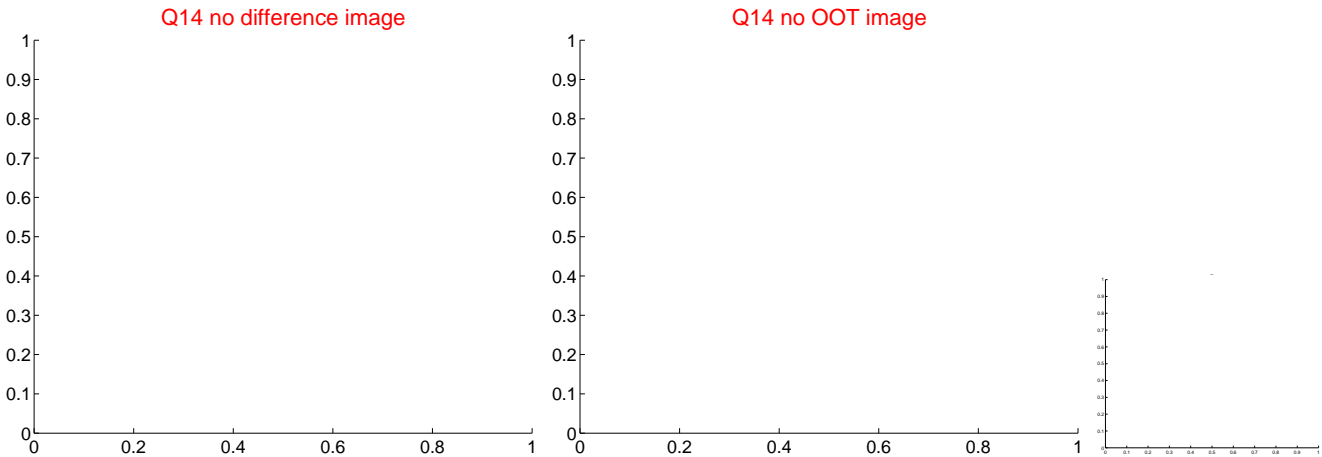
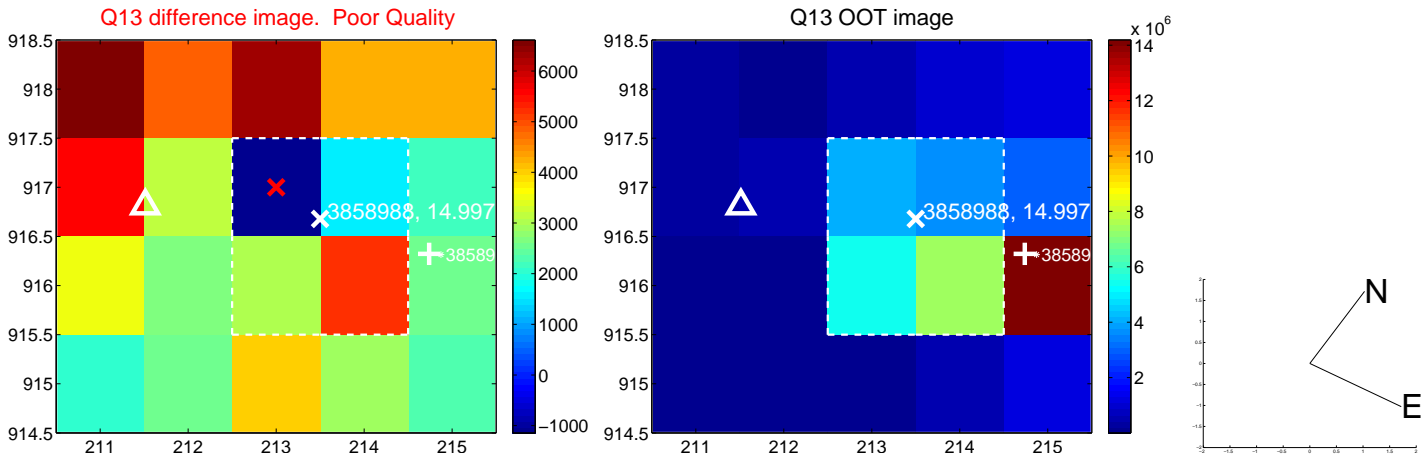
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



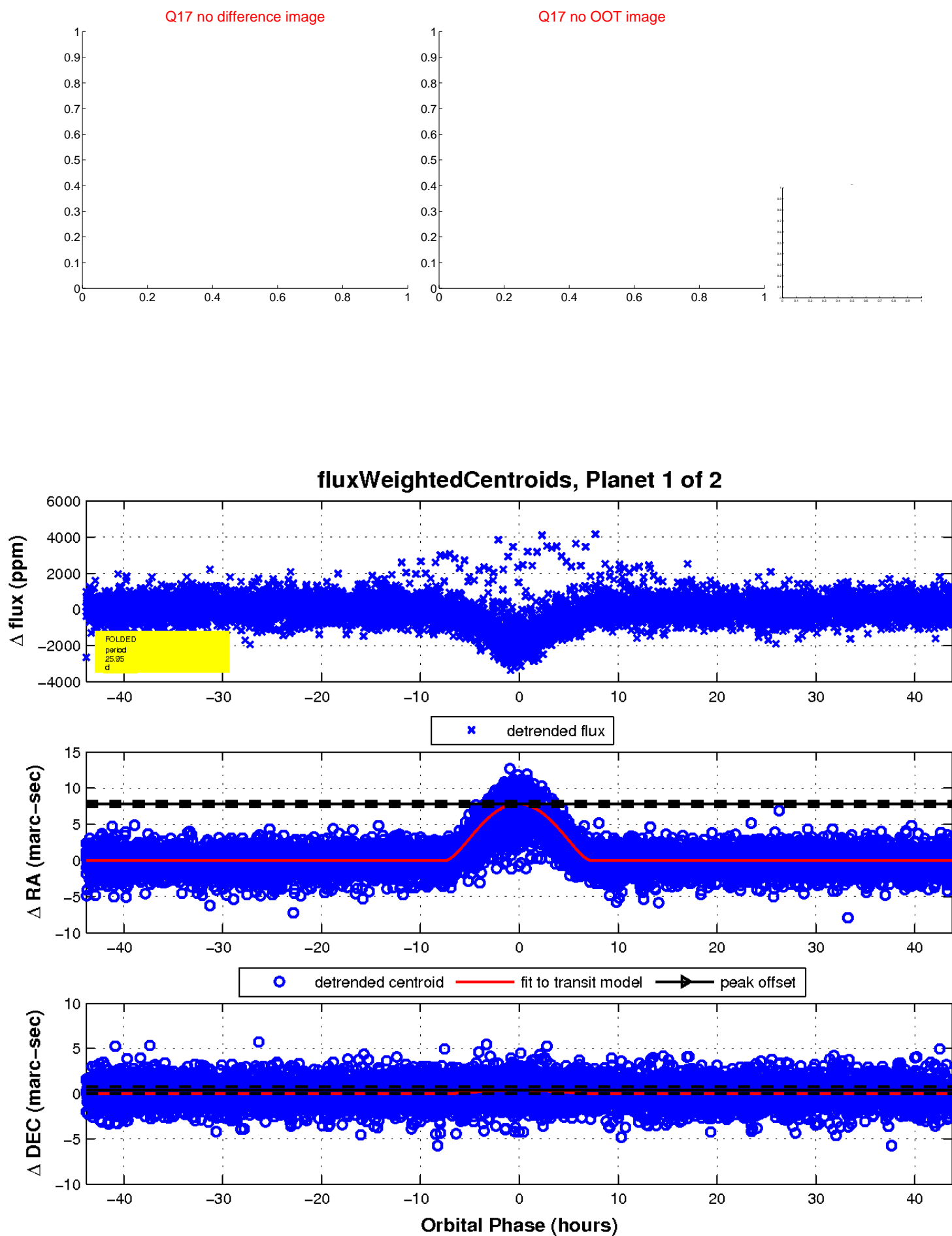
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

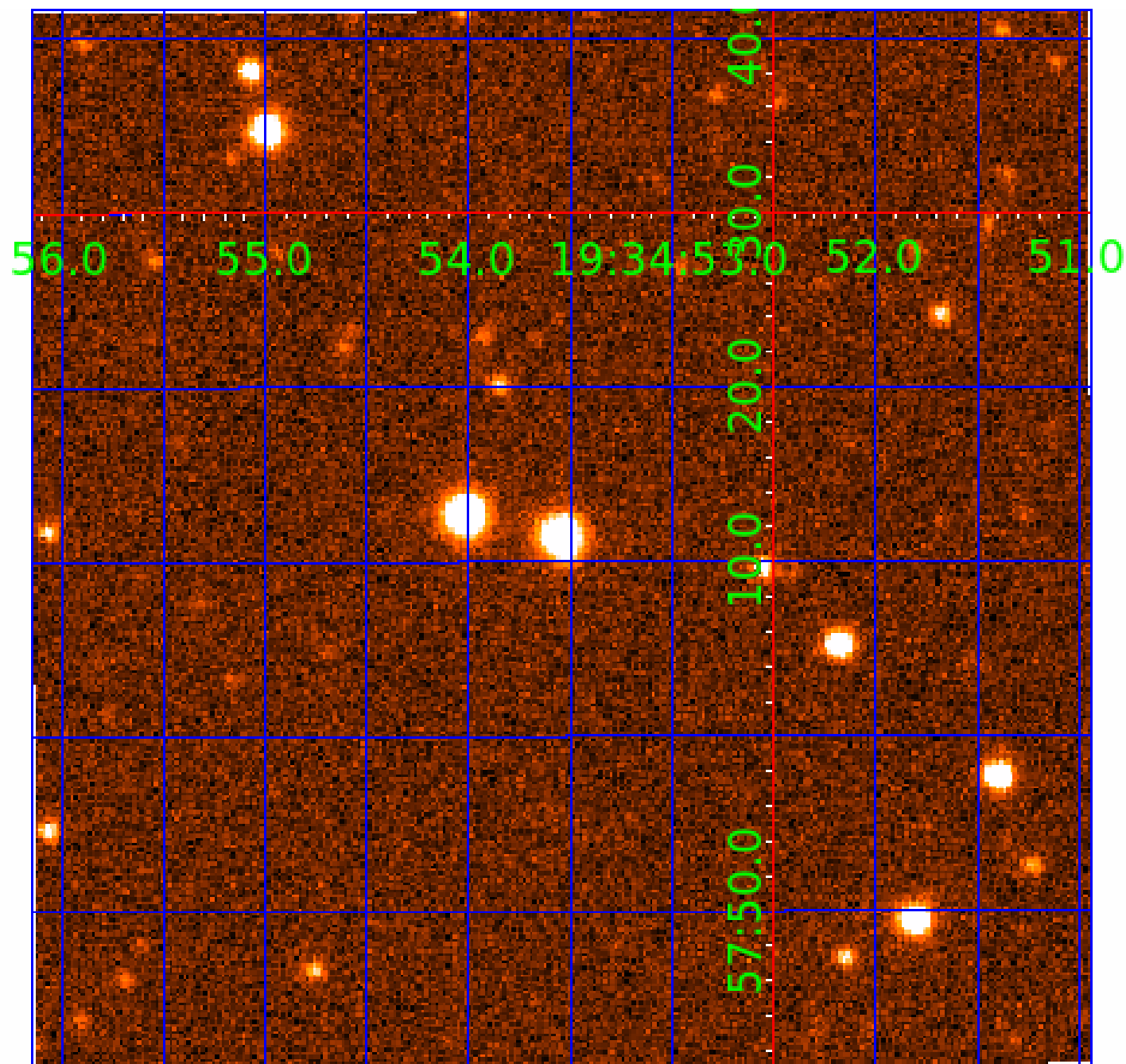


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003858988

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})
003858988-01	OBS	3388.01	25.952277	154.871295	1578.8	14.599	42.1	46.3	1.08	5753	8.09	41.05
003858988-02	OBS	No	25.951954	148.915290	1357.1	20.467	41.5	50.6	1.08	5753	7.58	41.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003858988-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003858988-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

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

Ephemeris Match Information For 003858988-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003858988-02	3858988	003858884-02	3858884	1:1	90.4	-20	11	9.28	15.00	248.44	Direct-PRF	0	0.30	0.34

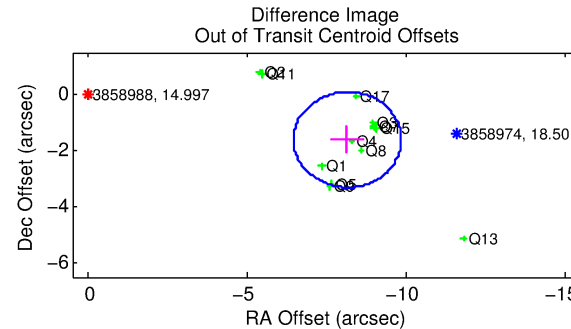
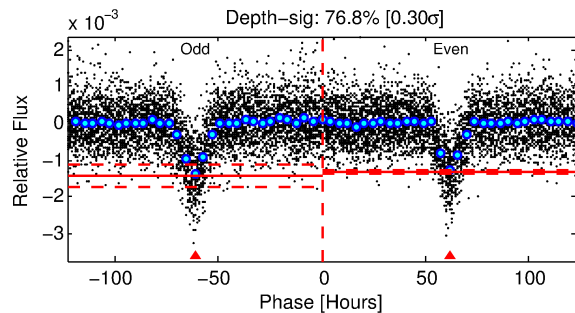
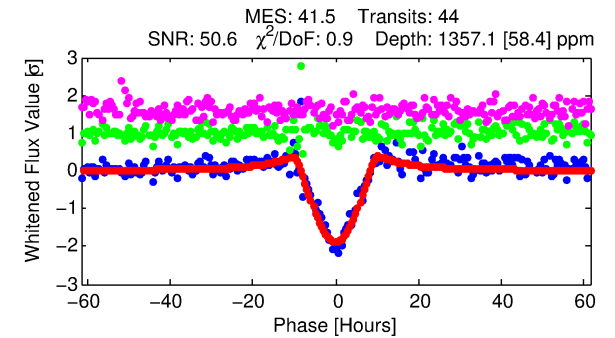
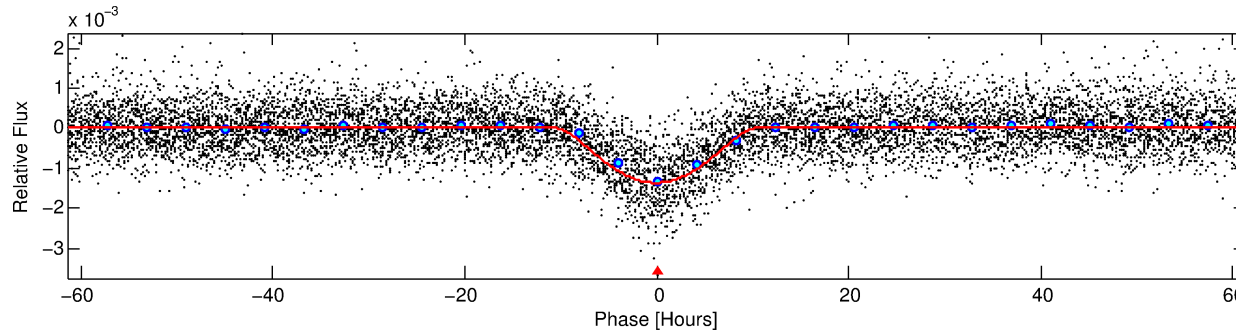
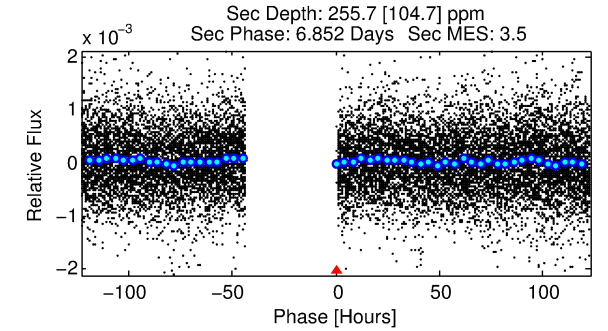
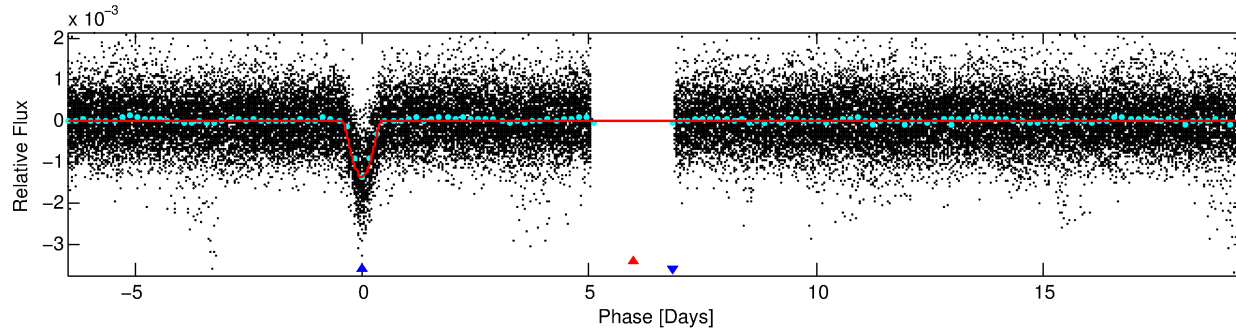
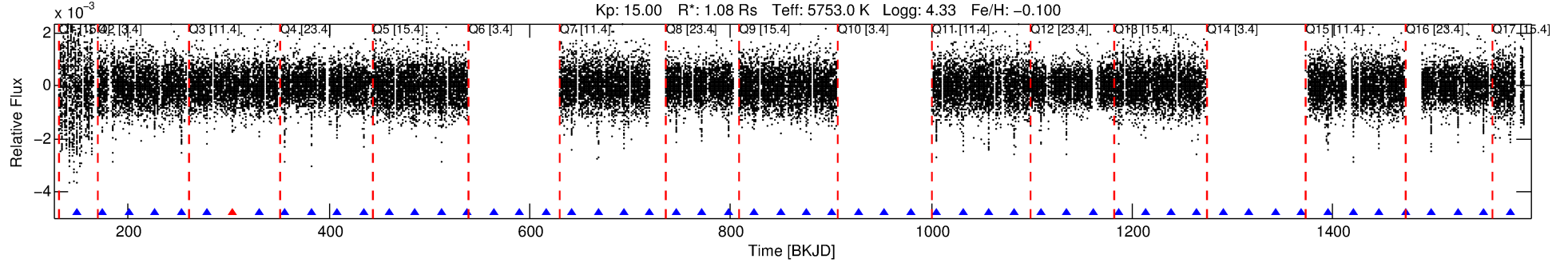
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match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

DV One-Page Summary

KIC: 3858988 Candidate: 2 of 2 Period: 25.952 d

KOI: K03388.01 Corr: 0.900

Kp: 15.00 R*: 1.08 Rs Teff: 5753.0 K Logg: 4.33 Fe/H: -0.100



DV Fit Results:

Period = 25.95195 [0.00026] d
Epoch = 148.9153 [0.0081] BKJD
Rp/R* = 0.0644 [0.0387]
a/R* = 3.70 [0.46]
b = 1.00 [0.06]
Seff = 41.05 [15.30]
Teff = 645 [60] K
Rp = 7.58 [5.04] Re
a = 0.1667 [0.0404] AU
Ag = 68.05 [89.58] [0.75σ]
Teffp = 2866 [913] K [2.43σ]

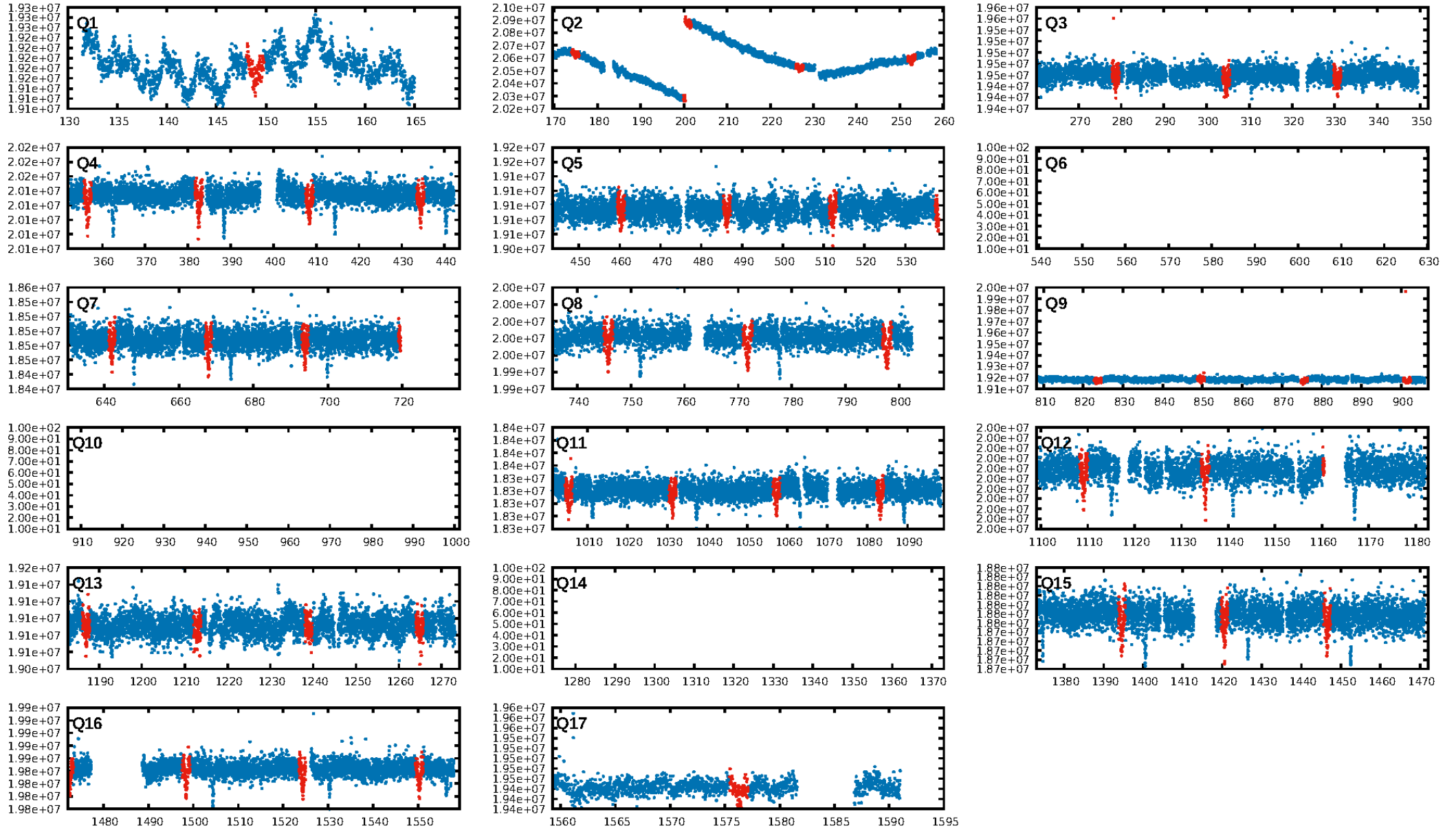
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [41/42]
GhostDiagnostic-chr: -0.005492
Centroid-sig: 0.0%
Centroid-so: 1.593 arcsec [10.67σ]
OotOffset-rm: 8.303 arcsec [14.67σ]
KicOffset-rm: 3.901 arcsec [8.17σ]
OotOffset-st: 1/4/2/5 [12]
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DiffImageQuality-fgm: 0.00 [0/12]
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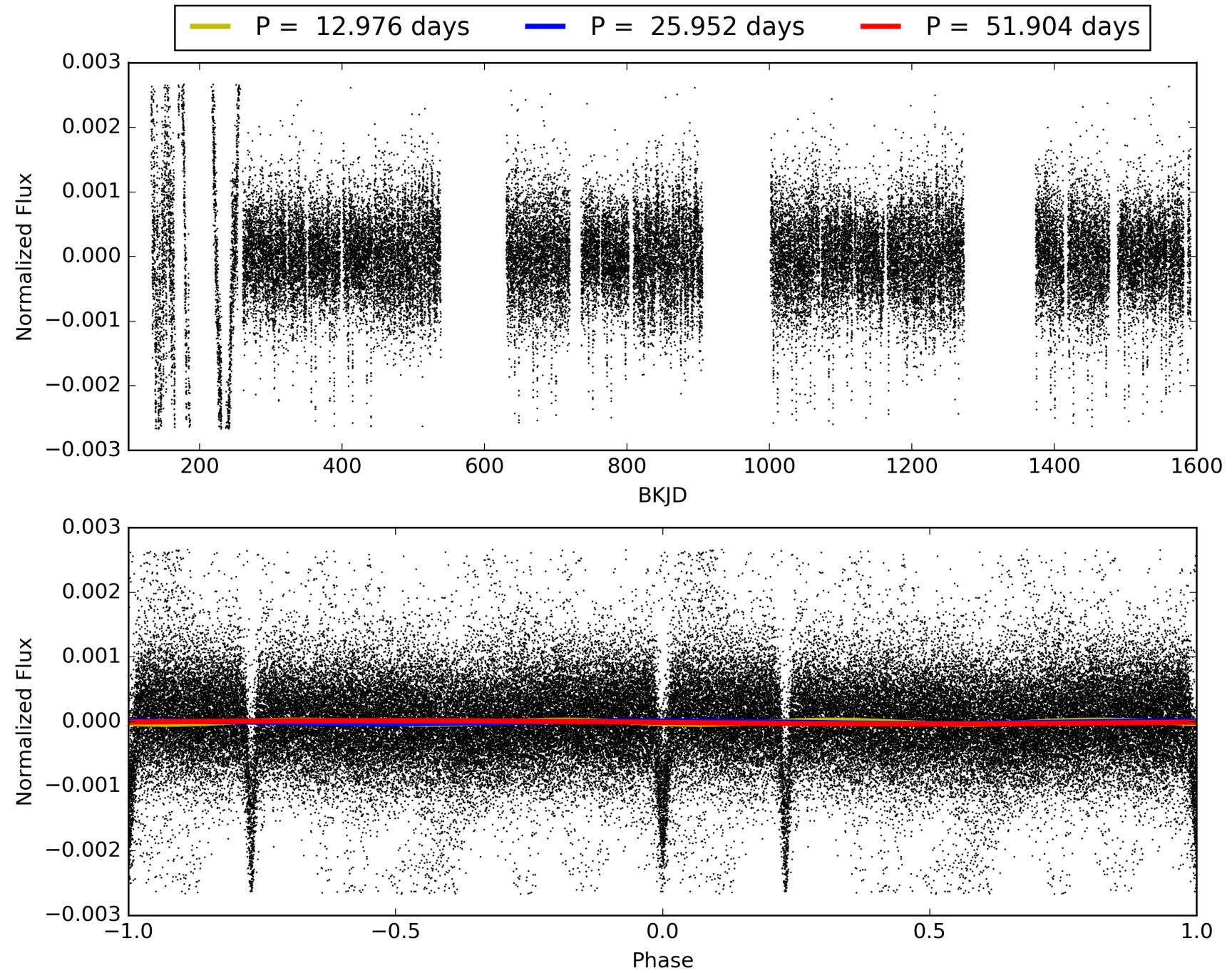
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 003858988-02, PDC Light Curves

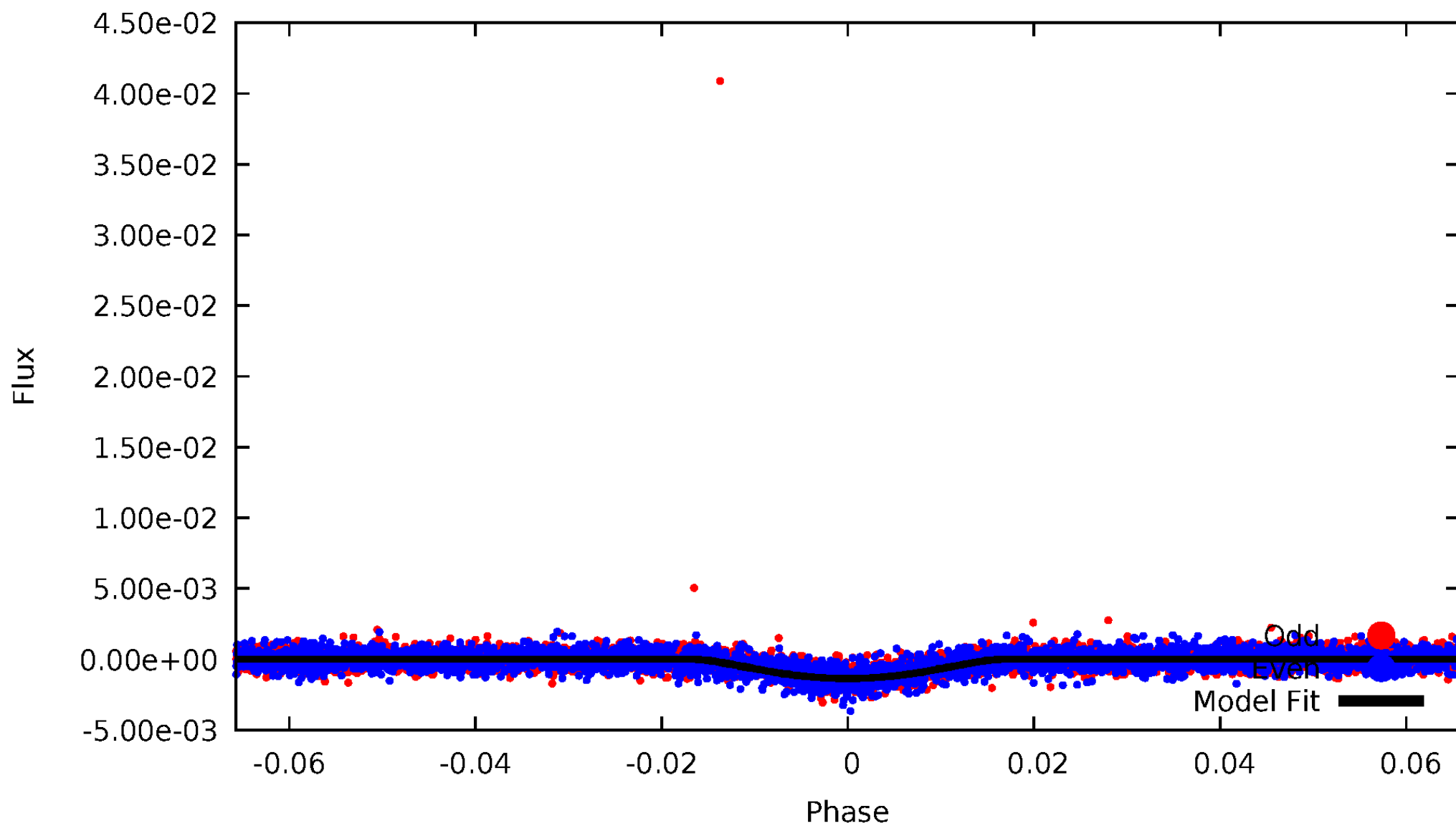


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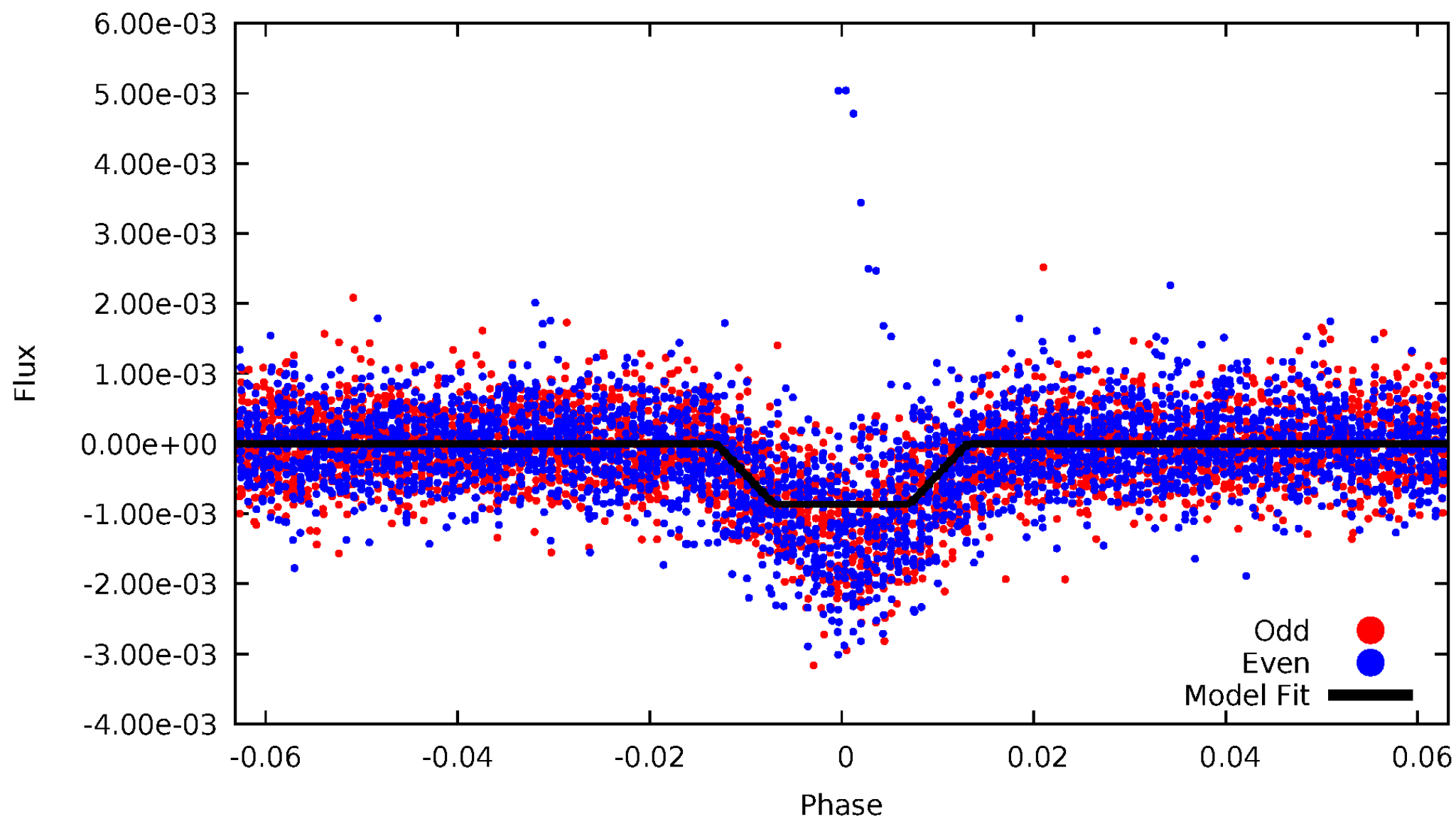
DV Odd/Even

TCE 003858988-02



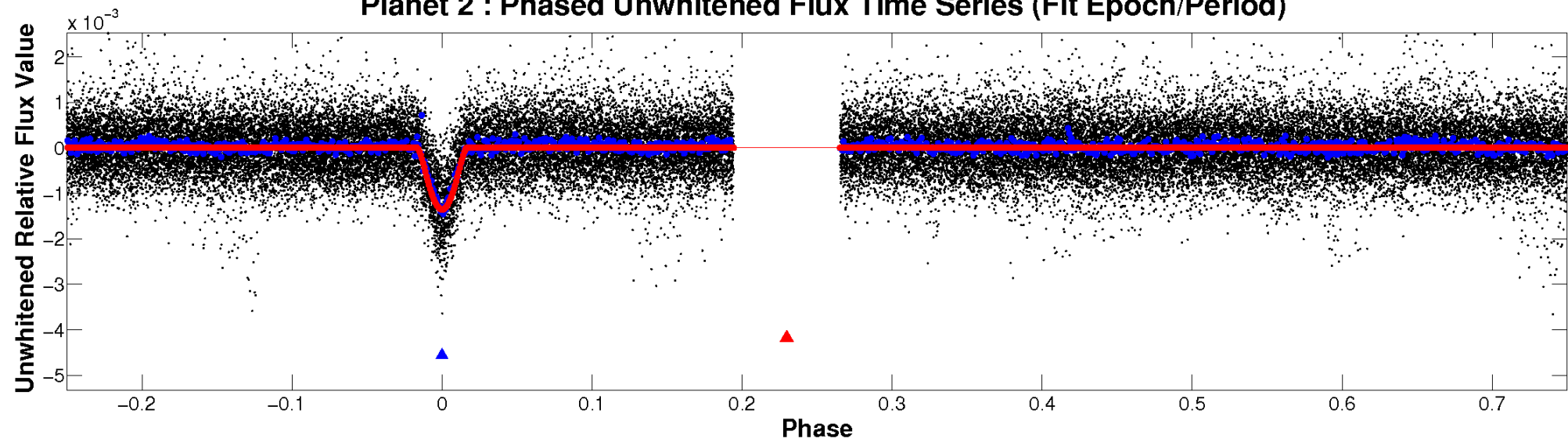
ALT Odd/Even

TCE 003858988-02

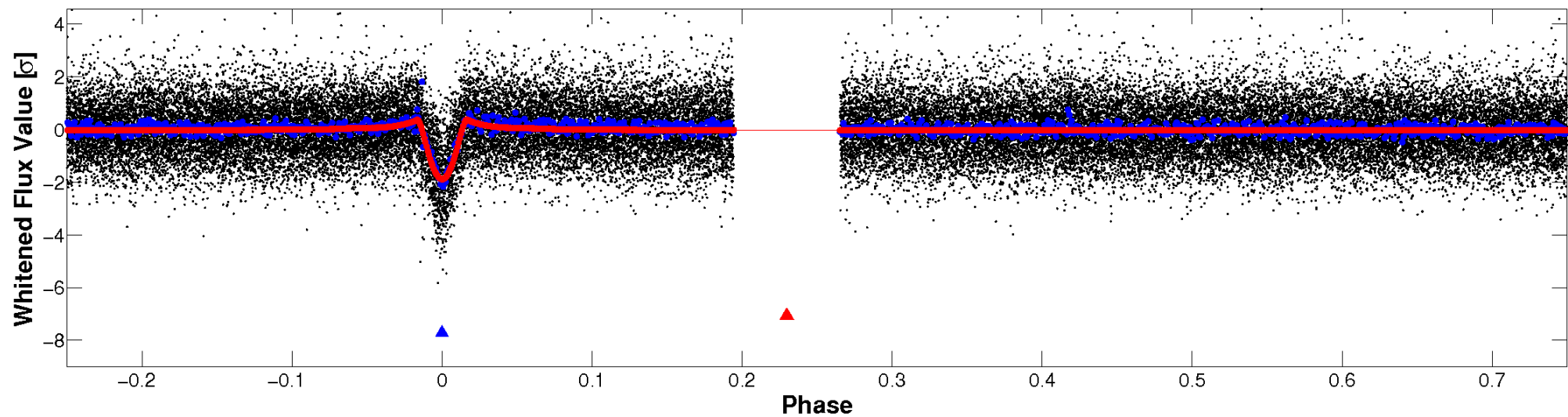


Non-Whitened Vs. Whitened Light Curve

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

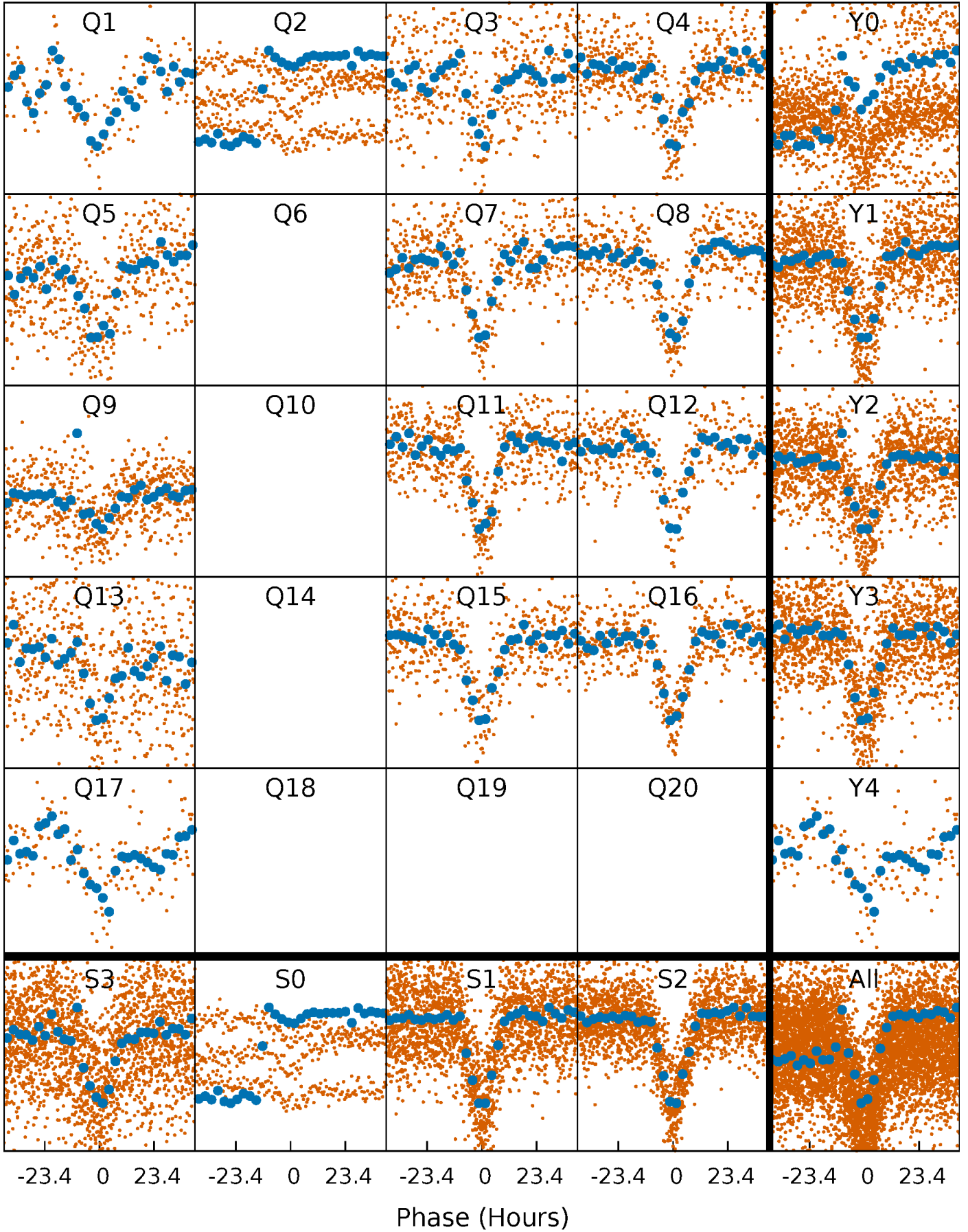


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



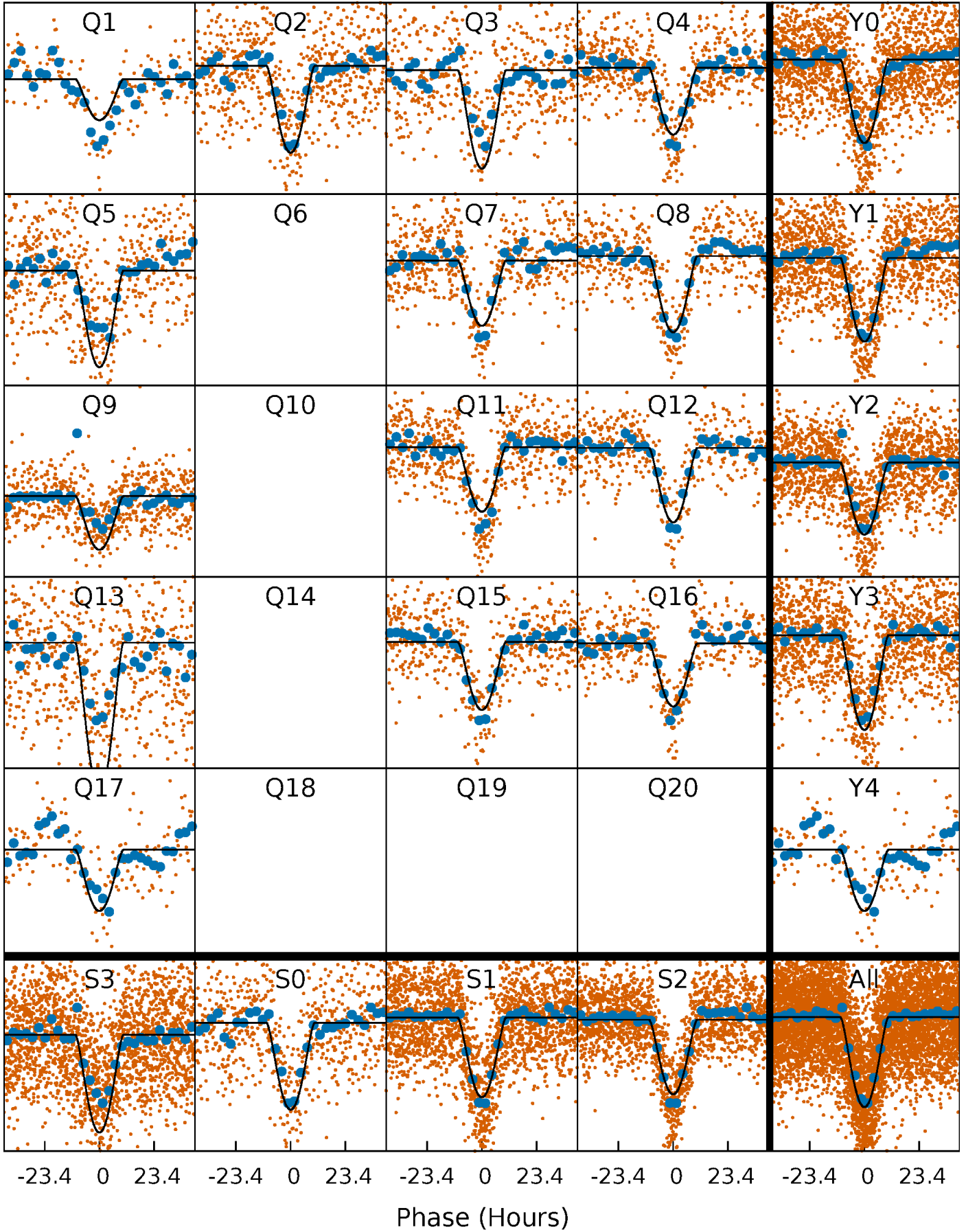
PDC Quarter-Phased Transit Curves

TCE 003858988-02 P= 25.951954 Days $T_0=148.915290$ (BKJD)



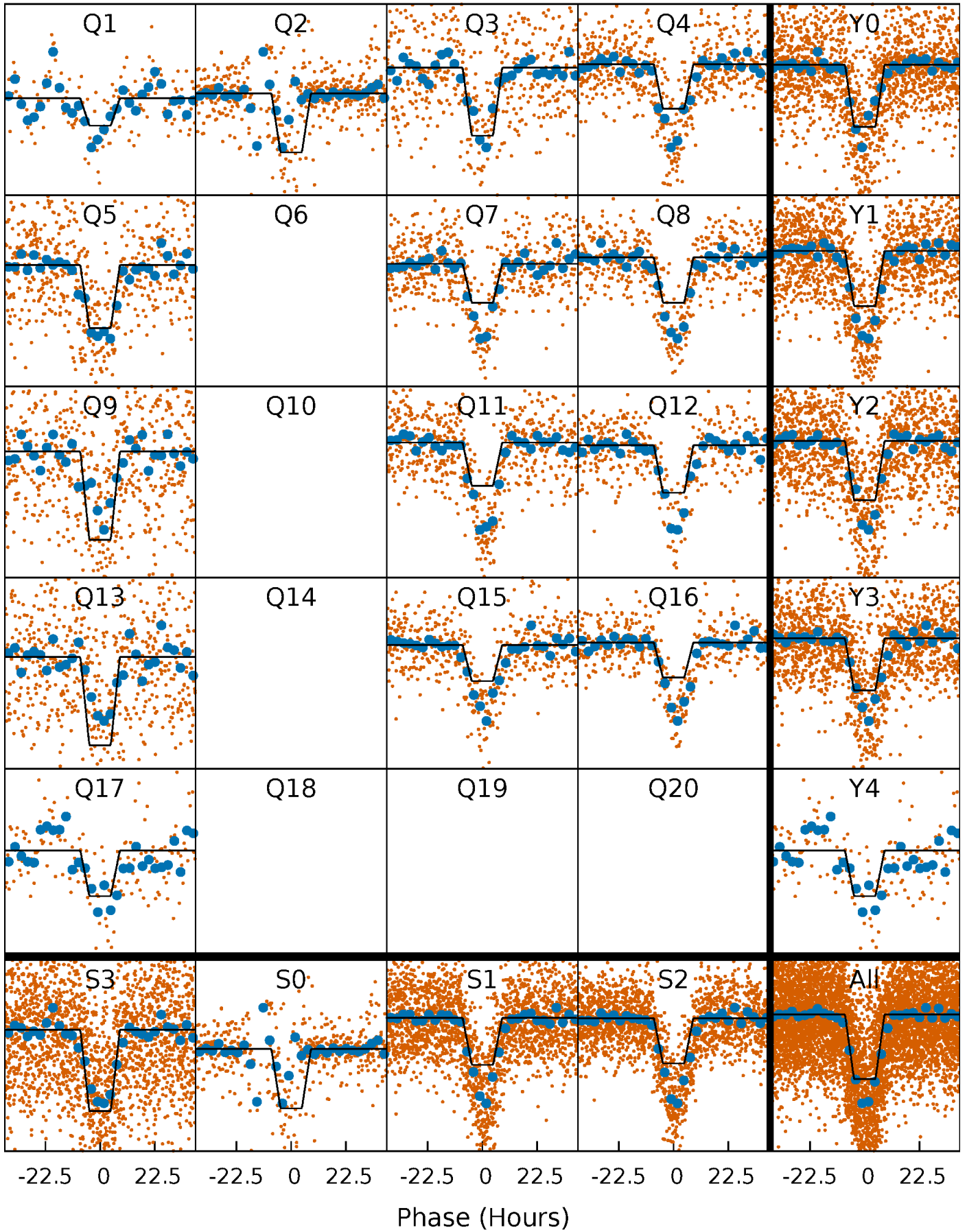
DV Quarter-Phased Transit Curves

TCE 003858988-02 P= 25.951954 Days $T_0=148.915290$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

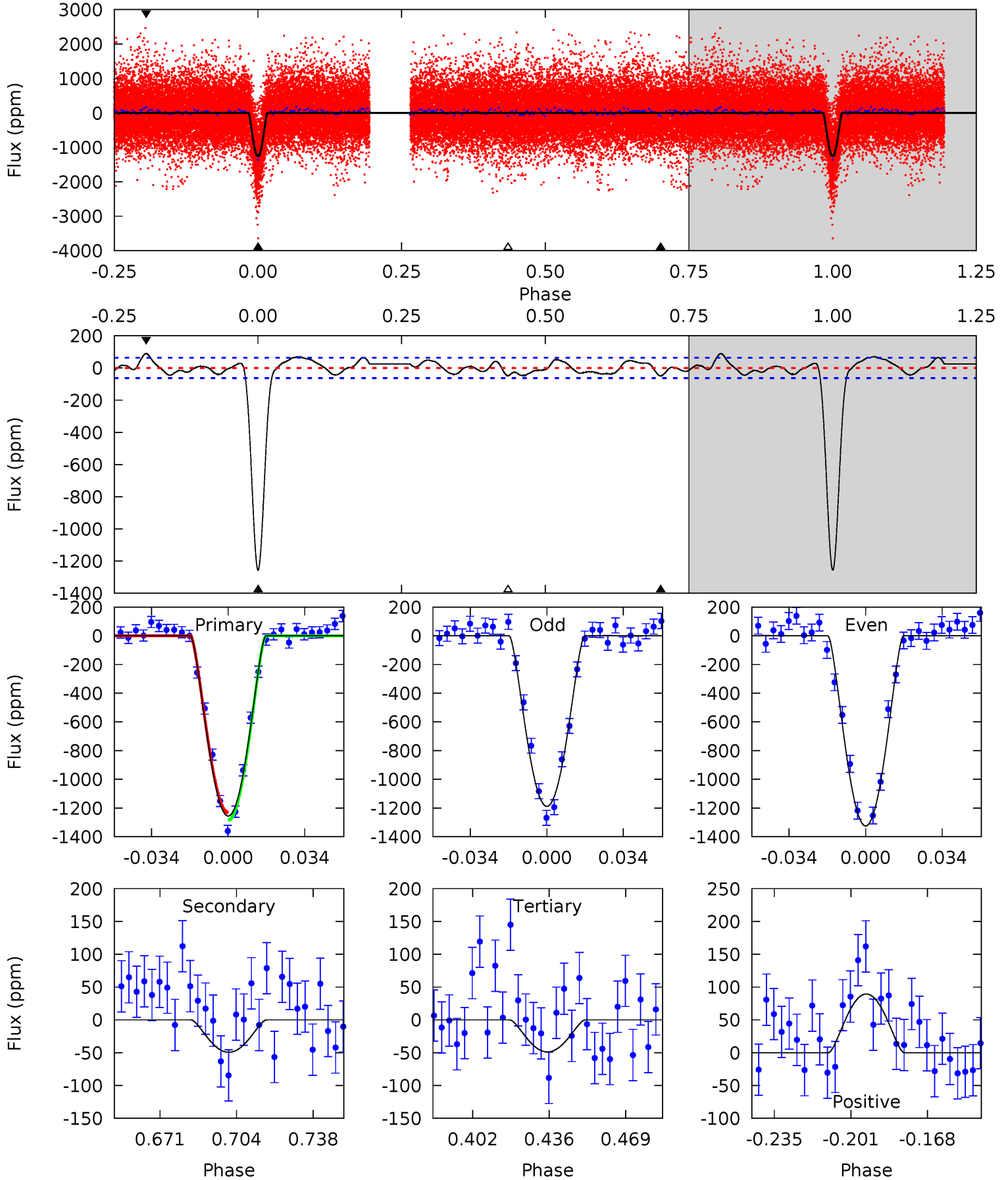
TCE 003858988-02 P= 25.950558 Days $T_0=148.933619$ (BKJD)



DV Model-Shift Uniqueness Test

003858988-02, P = 25.951954 Days, E = 122.963336 Days

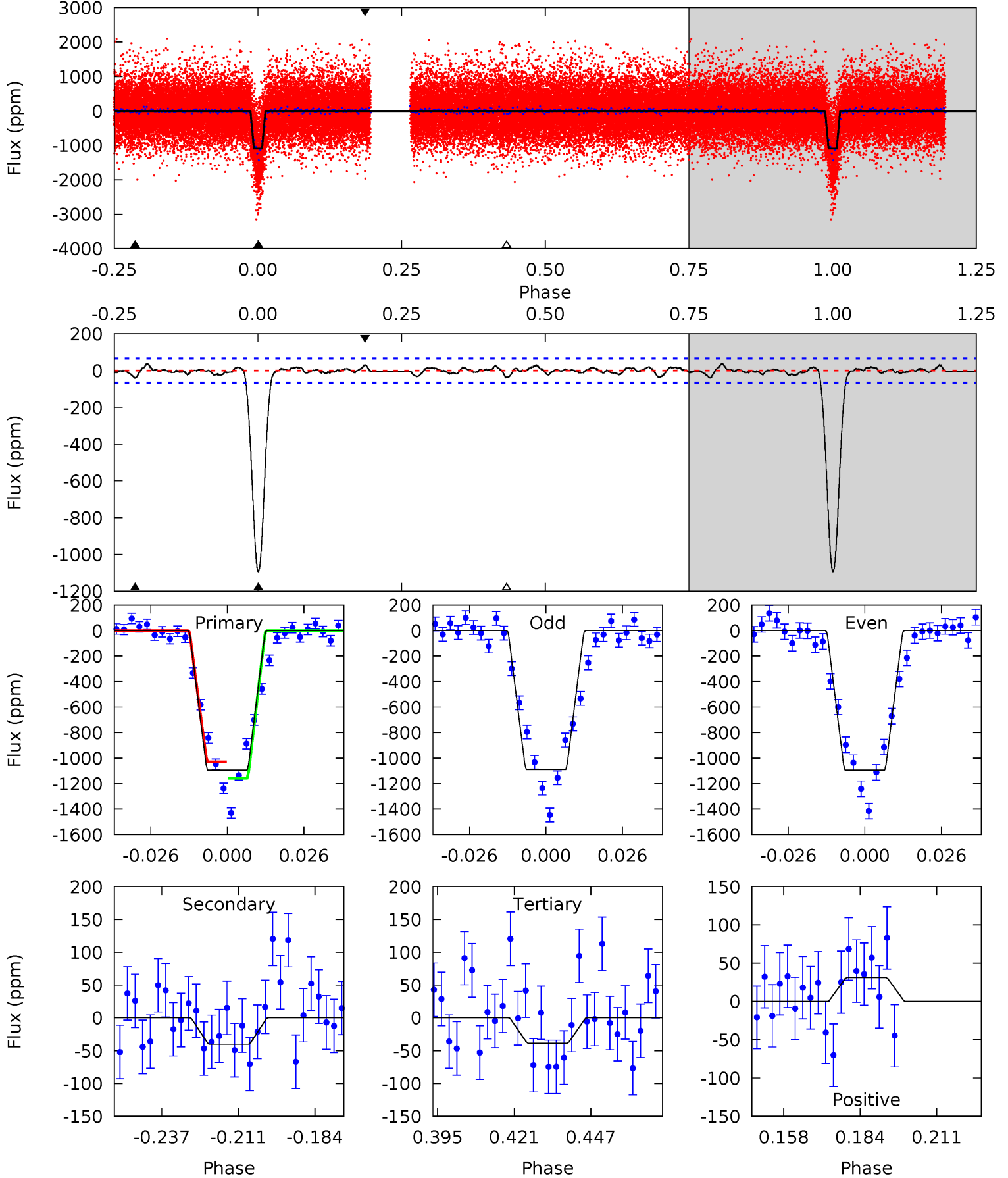
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.1	3.74	3.70	6.77	4.79	2.13	2.47	91.4	88.3	0.04	-3.02	5.20	0.95	0.07	2.02



Alt Model-Shift Uniqueness Test

003858988-02, P = 25.950558 Days, E = 122.983061 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
80.6	2.97	2.84	2.29	4.84	2.22	0.93	77.7	78.3	0.13	0.68	0.18	0.91	0.03	4.75



Stellar Parameters For KIC 003858988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5753^{+156}_{-173}	$4.335^{+0.175}_{-0.193}$	$-0.100^{+0.300}_{-0.300}$	$1.078^{+0.310}_{-0.207}$	$0.918^{+0.124}_{-0.093}$	$1.030^{+0.881}_{-0.506}$
	+3%/-3%	+4%/-4%	+300%/-300%	+29%/-19%	+14%/-10%	+86%/-49%
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 003858988-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-49 ± 13	$7.97^{+4.69}_{-4.17}$	902^{+77}_{-60}	2626^{+591}_{-275}	11^{+40}_{-7}
Alt.	-40 ± 14	$5.00^{+4.17}_{-3.30}$	902^{+68}_{-54}	2898^{+1177}_{-425}	23^{+184}_{-16}

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

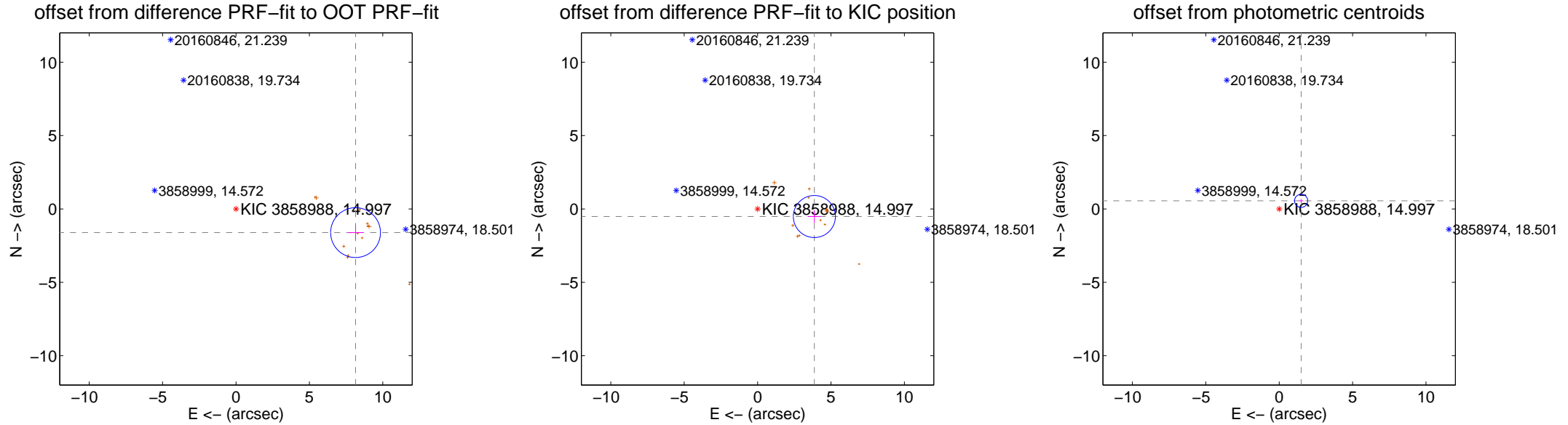
DV Centroid Data

Supplemental centroid analysis for 003858988-02. Kepler magnitude: 15.00. Transit SNR 50.64

There are 0 quarters with good PRF difference image offsets

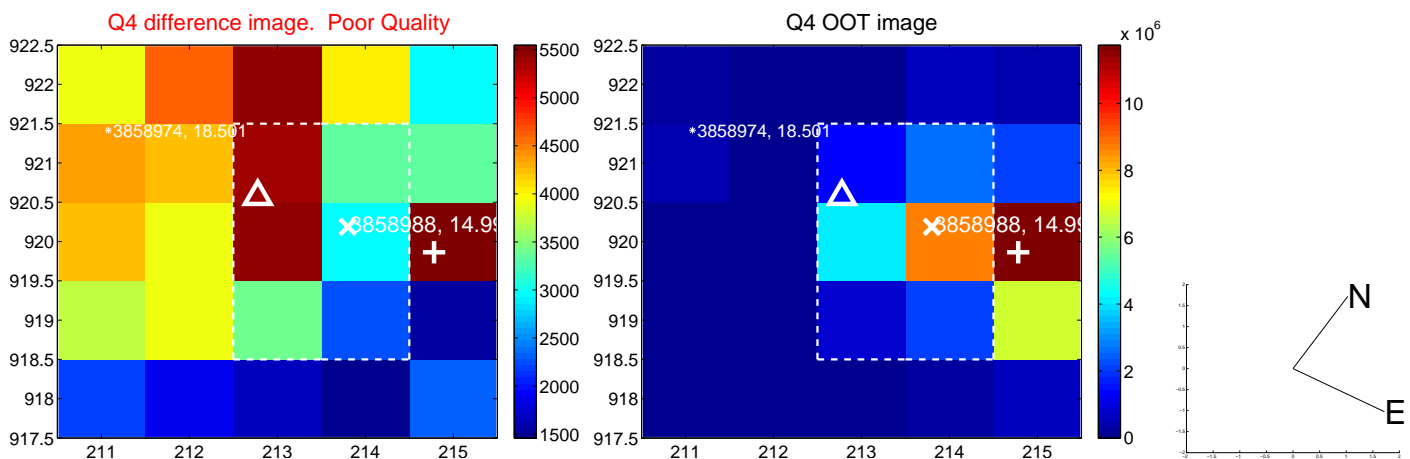
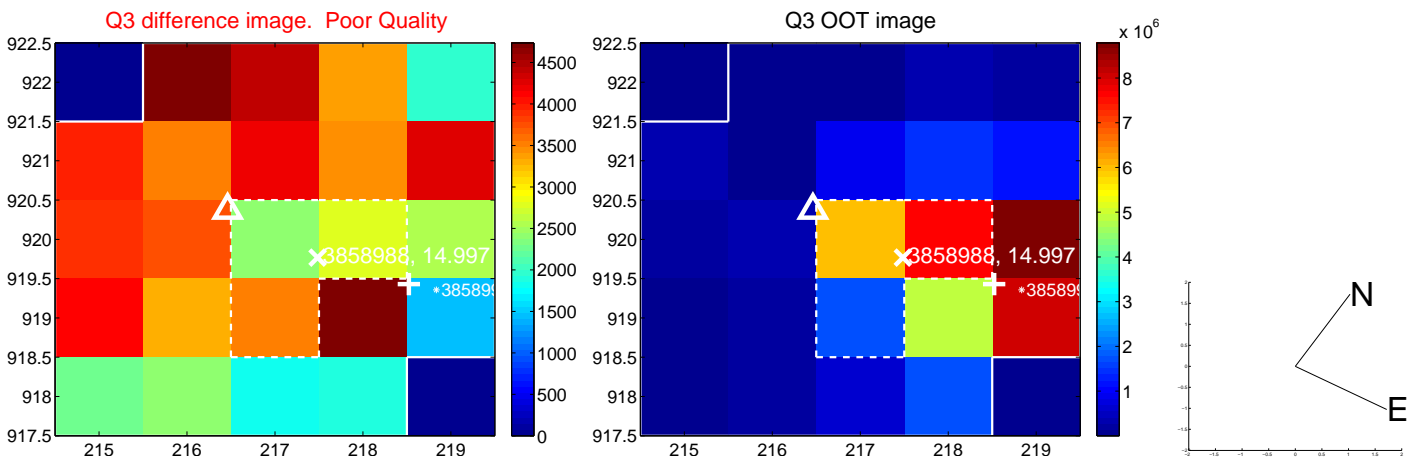
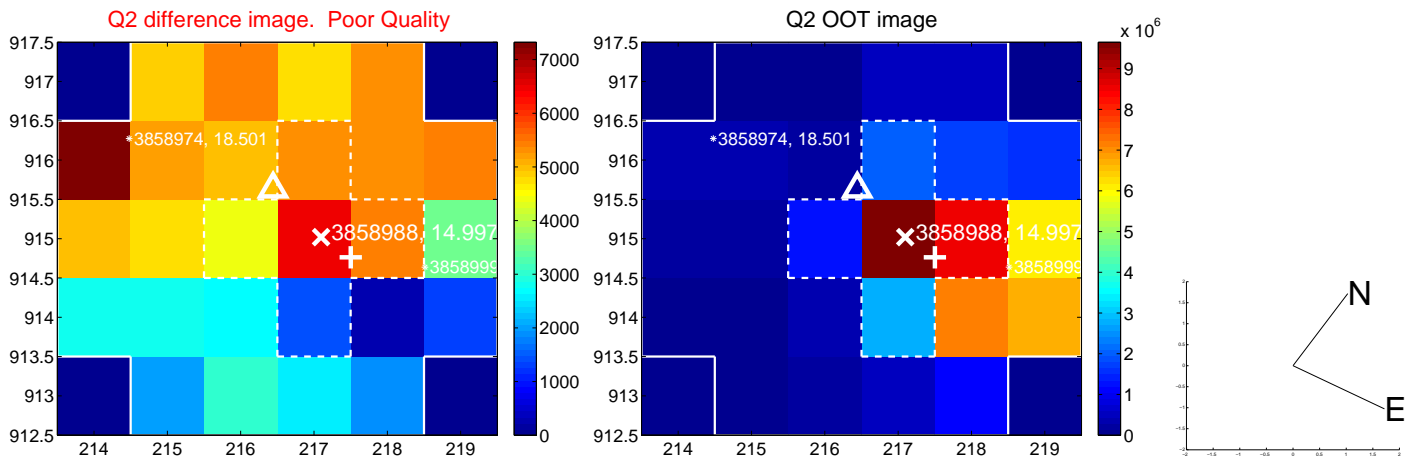
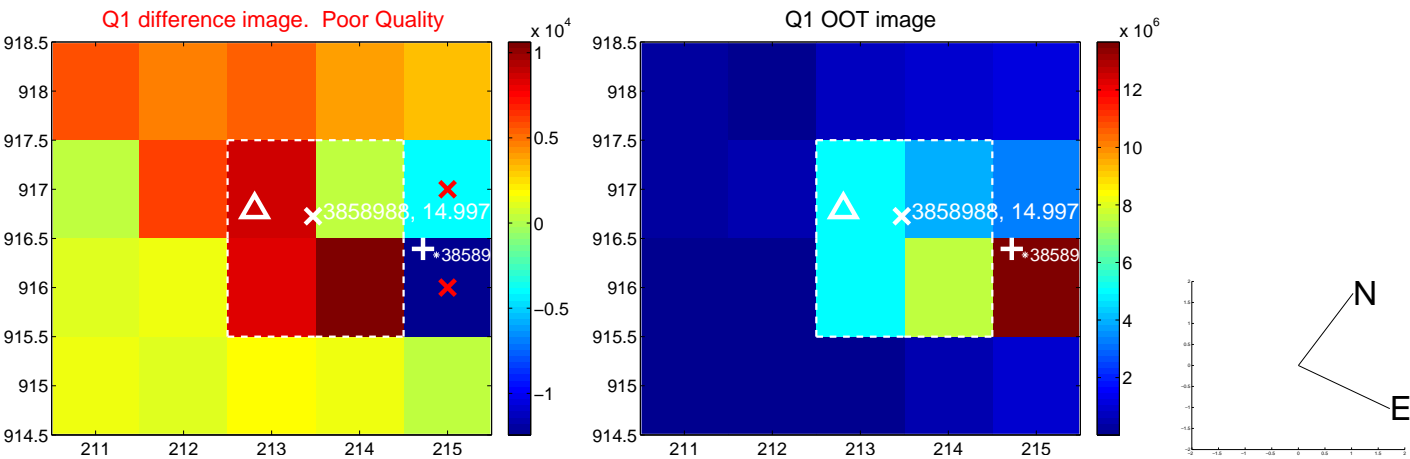
The OOT PRF centroid is offset from the target star catalog position by about 5.10 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.303 ± 0.566	14.67	-8.145 ± 0.512	-1.613 ± 0.485
PRF-fit source offset from KIC position	3.901 ± 0.477	8.17	-3.867 ± 0.445	-0.517 ± 0.443
photometric centroid source offset	1.59 ± 0.15	10.67	-1.49 ± 0.15	0.55 ± 0.11

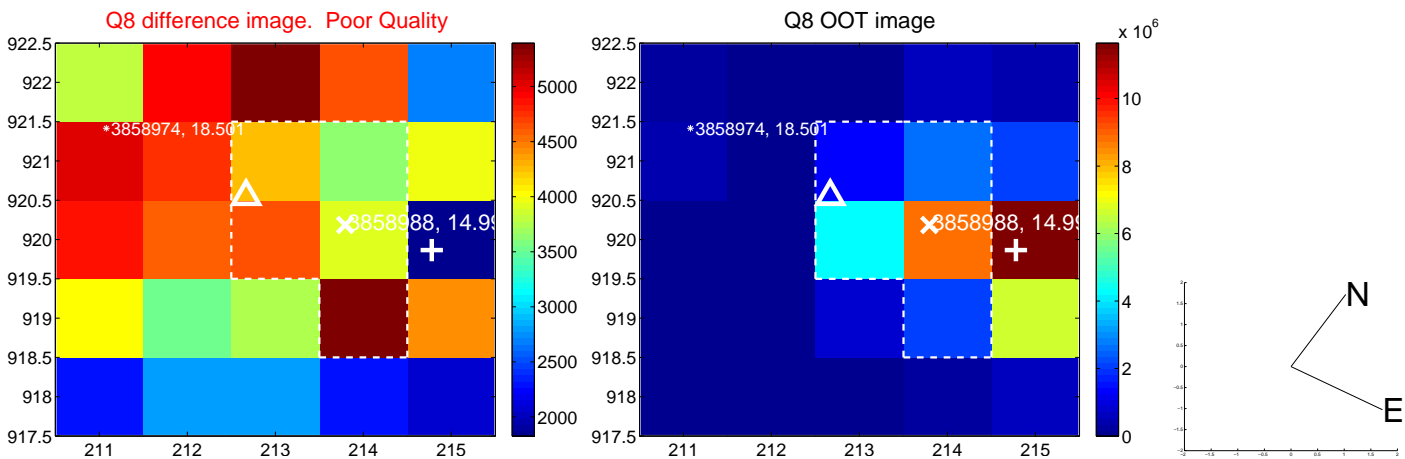
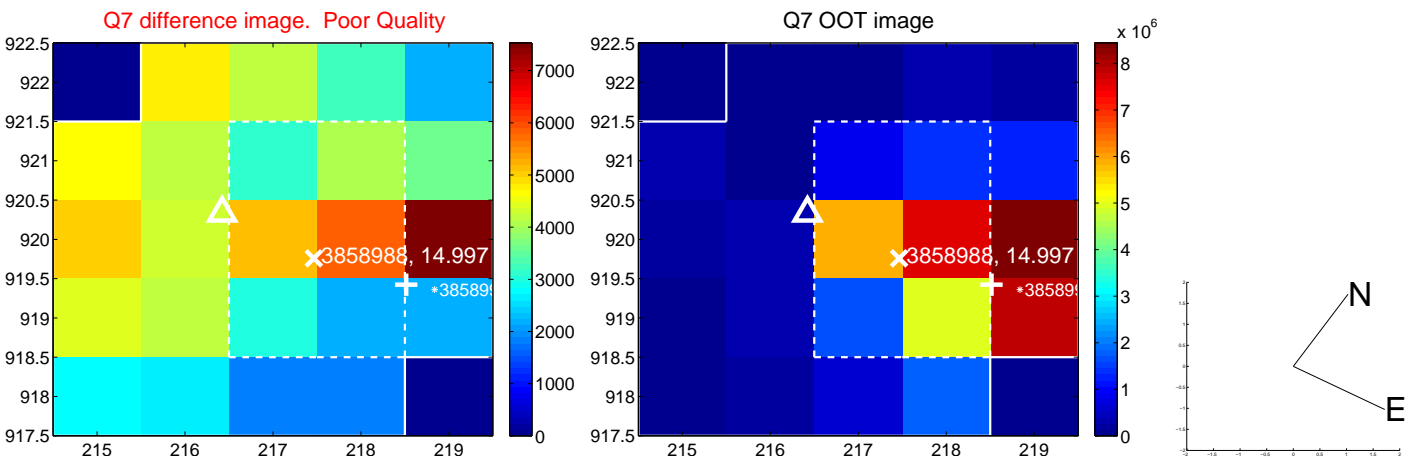
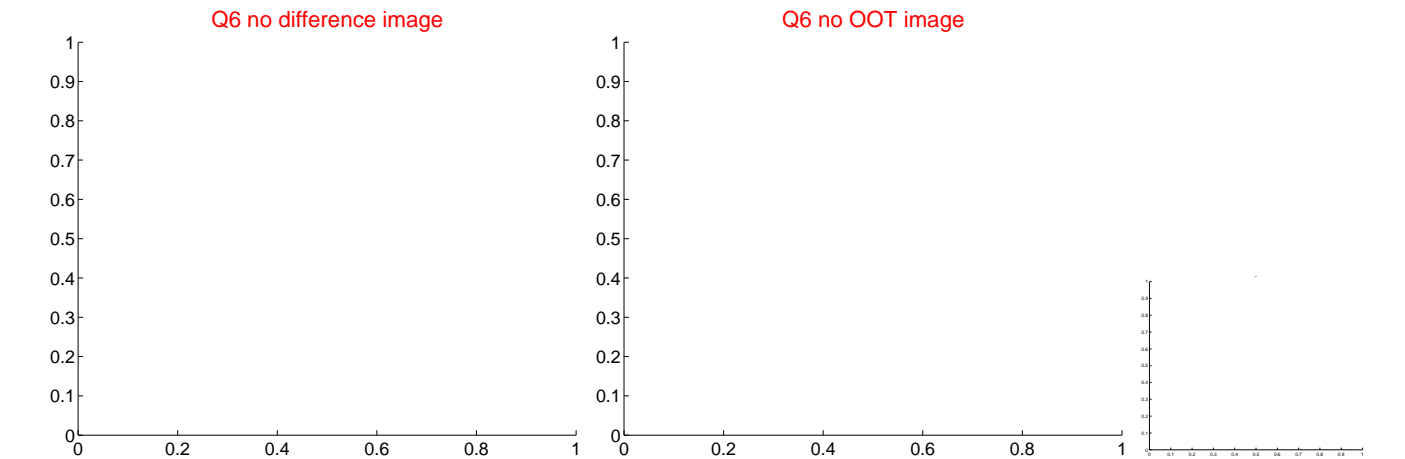
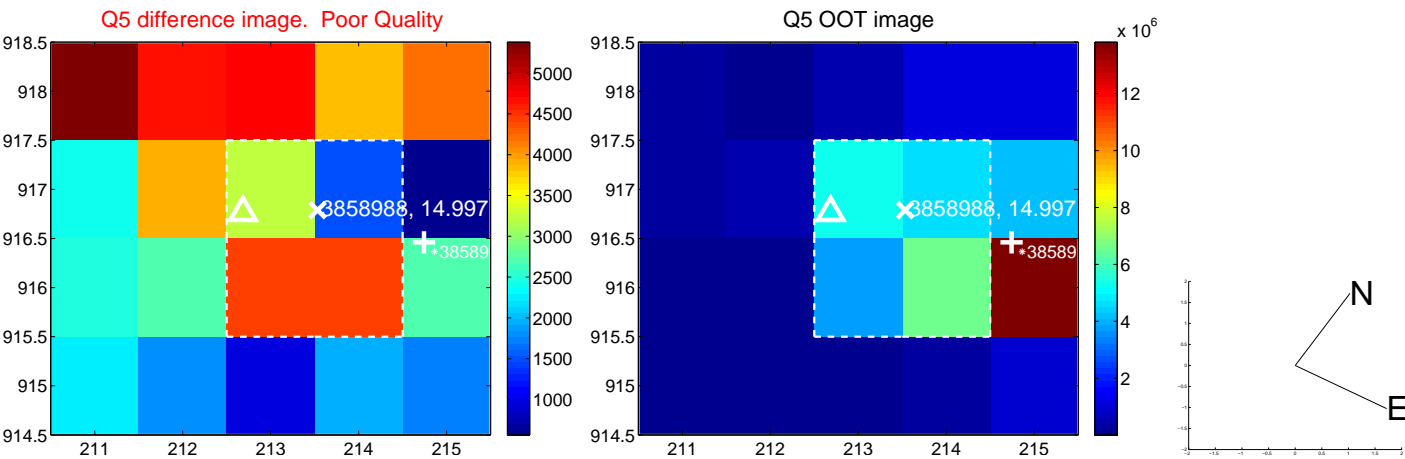


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

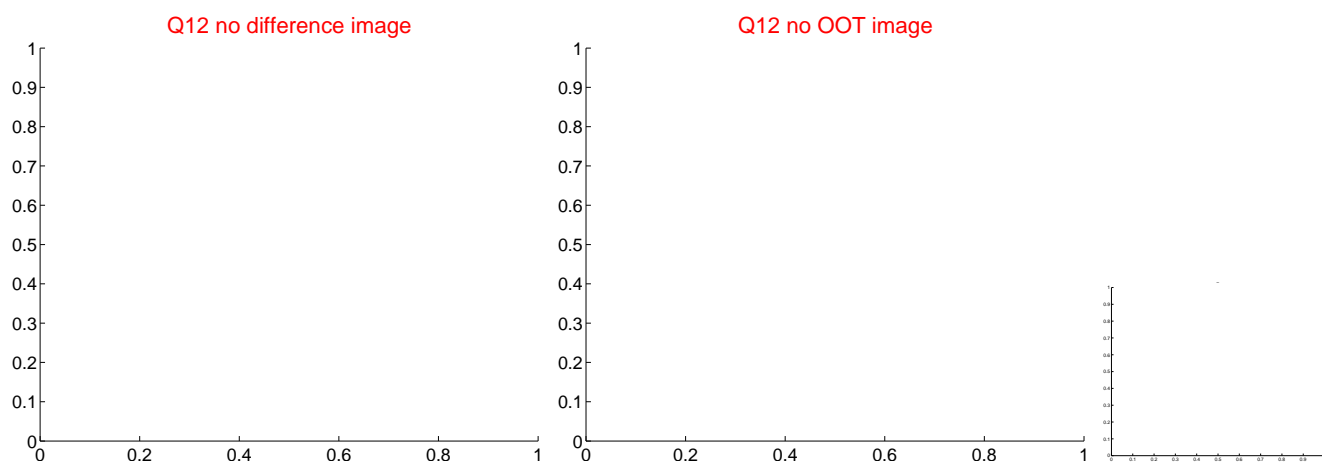
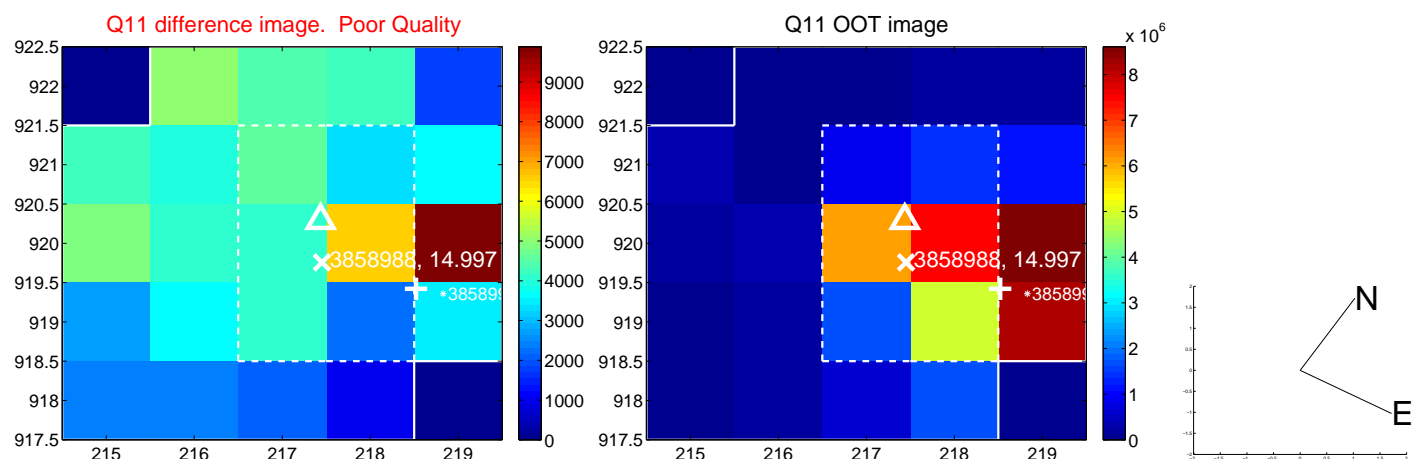
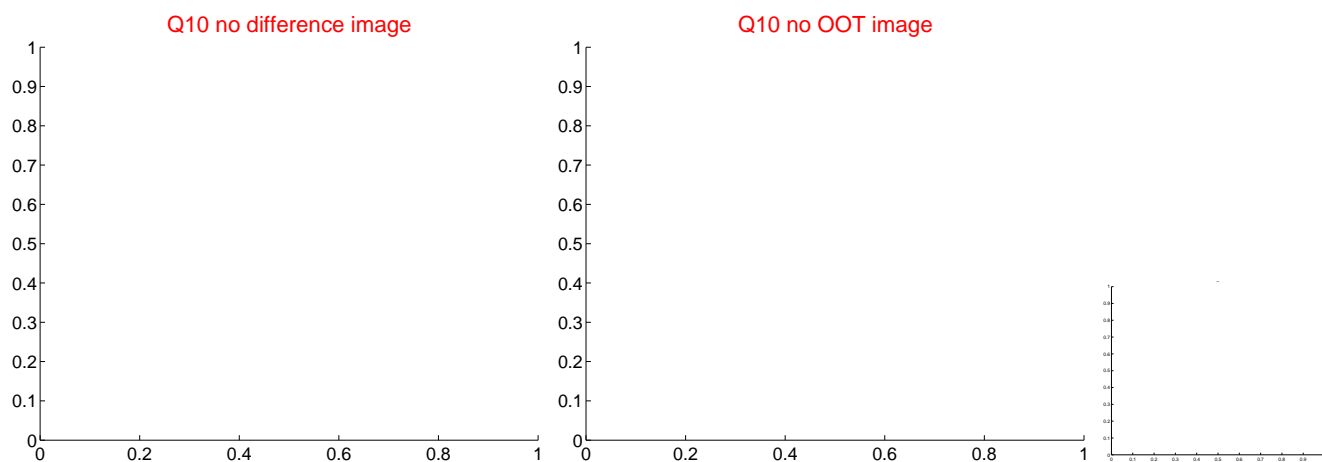
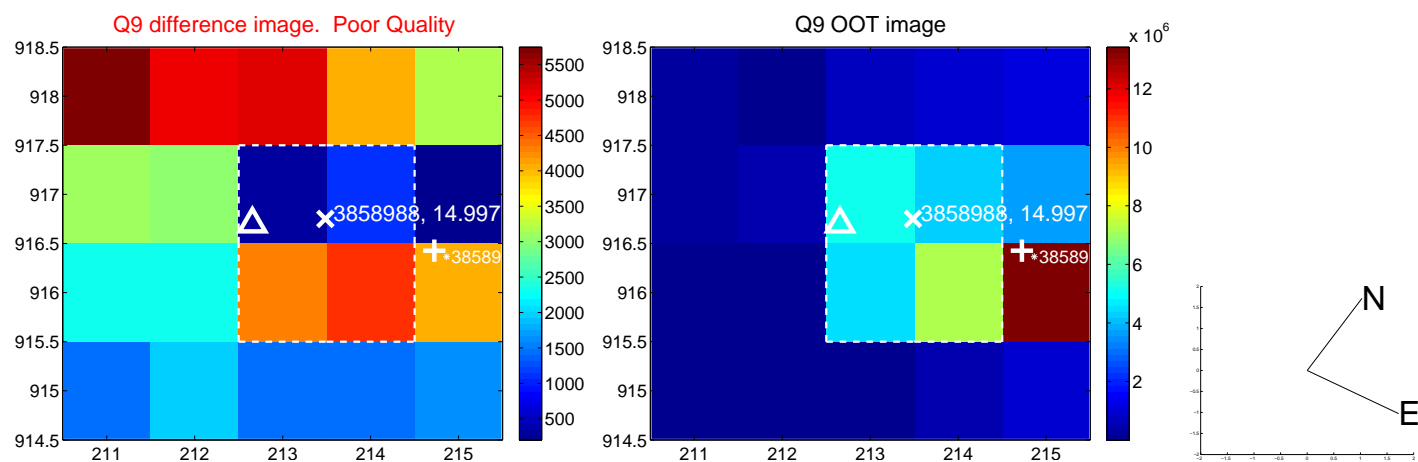
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



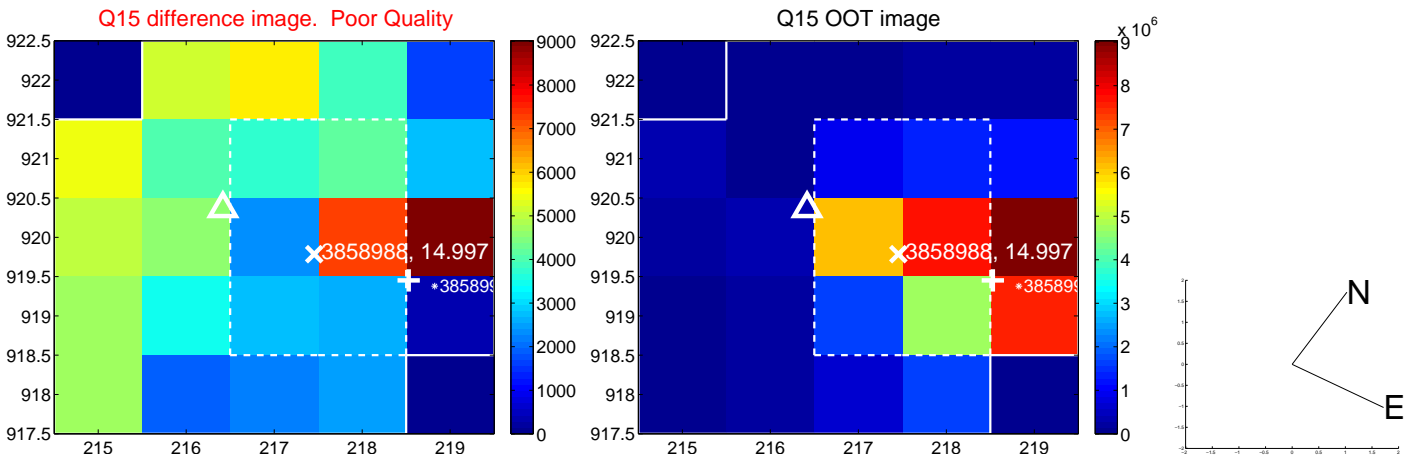
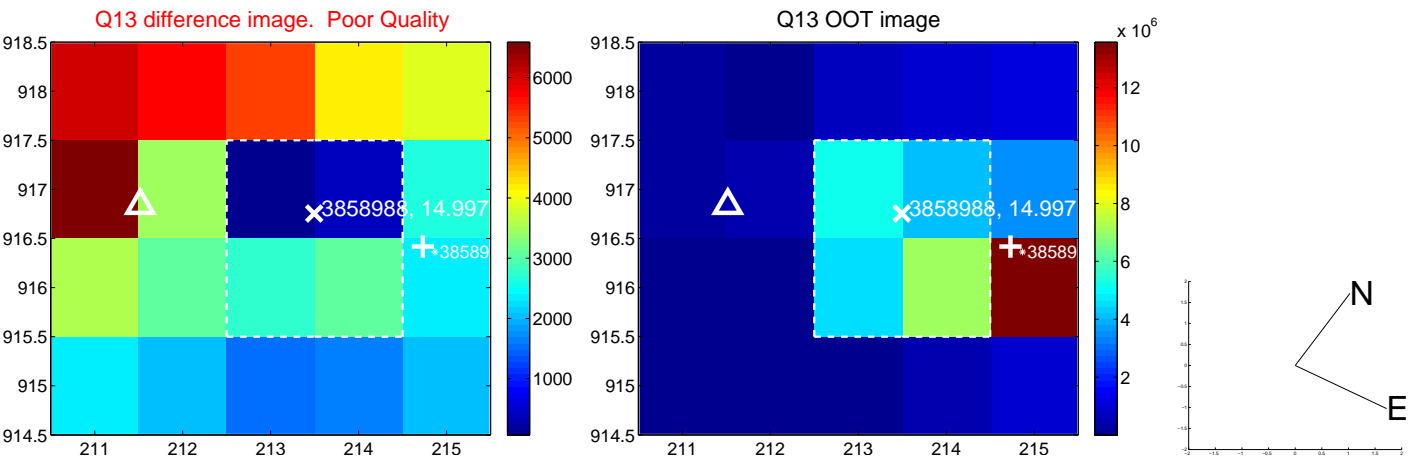
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



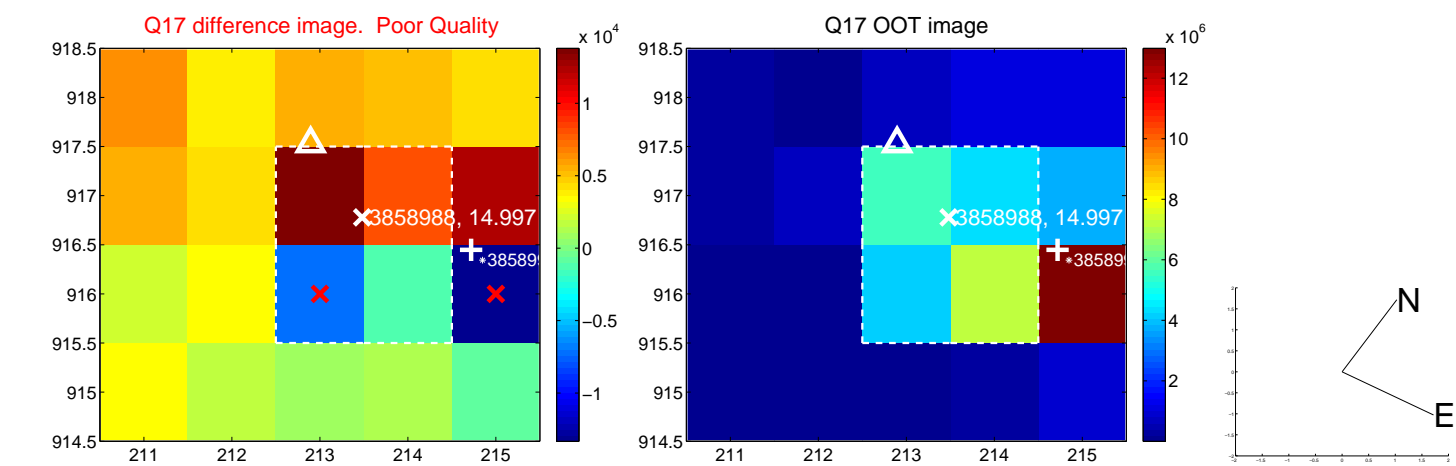
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



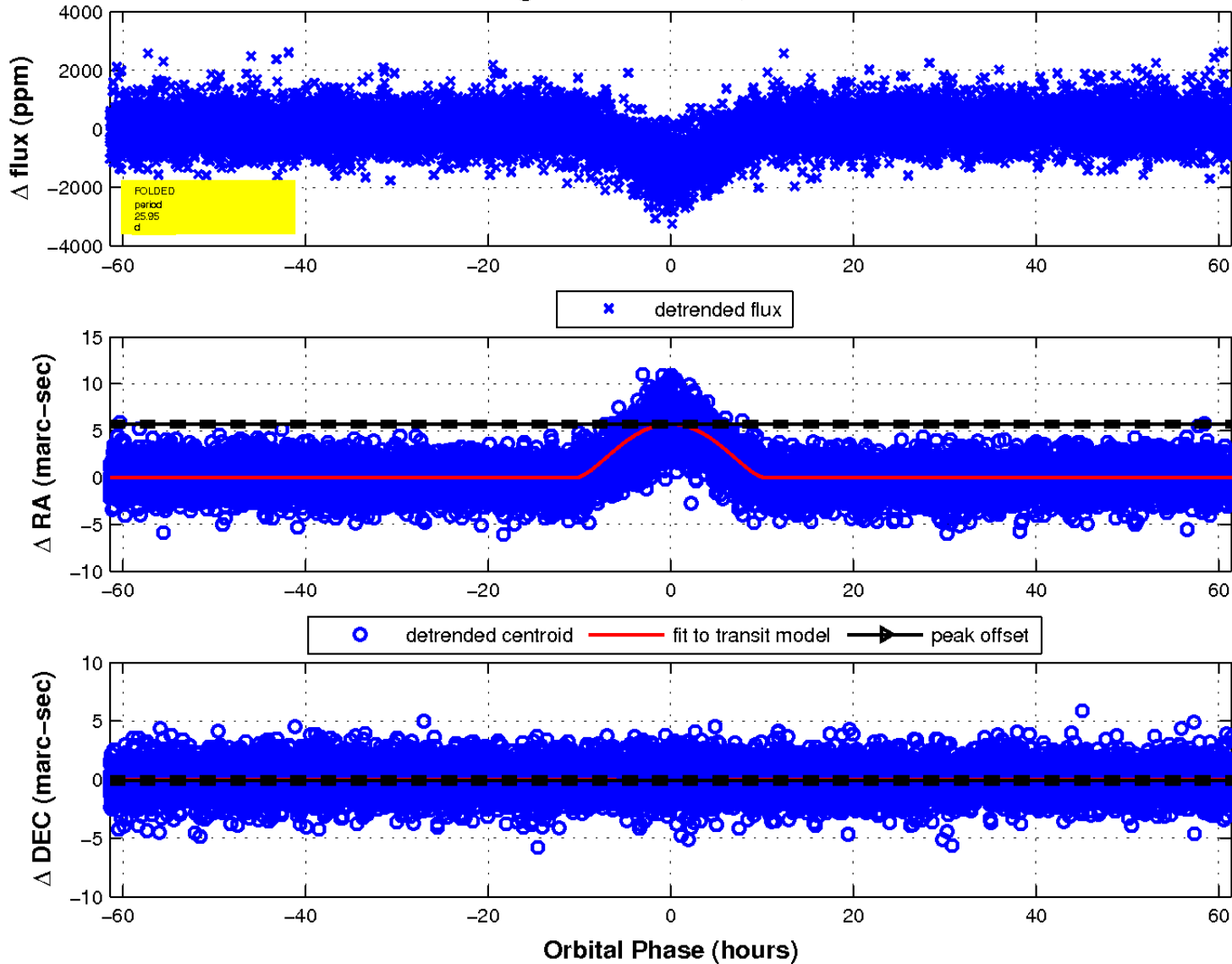
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

