

KIC 010858803

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})
010858803-01	OBS	4130.01	0.952354	132.337555	91.4	2.869	14.5	13.2	0.82	4754	0.97	1003.76
010858803-02	OBS	No	0.952349	131.871439	82.4	2.726	14.4	12.6	0.82	4754	0.92	1003.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010858803-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010858803-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—CENT_FEW_DIFFS—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 010858803-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010858803-01	10858803	010858720-pri	10858720	1:1	91.1	9	21	10.97	15.61	5262.60	Direct-PRF	0	2.37	0.20

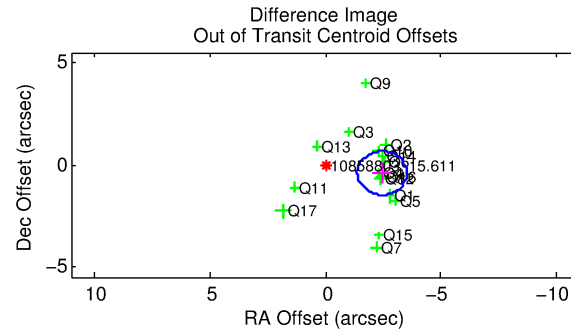
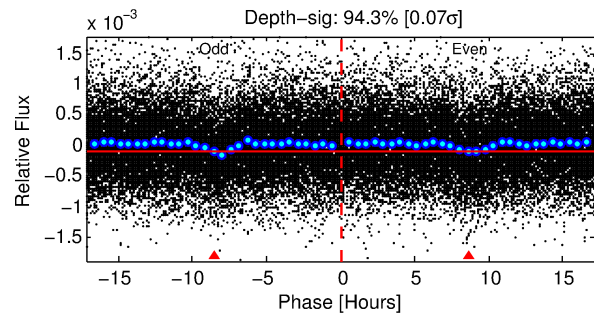
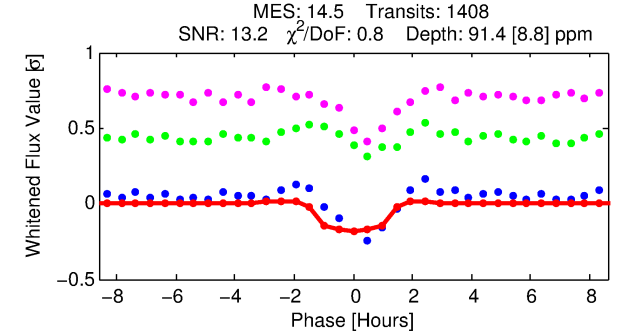
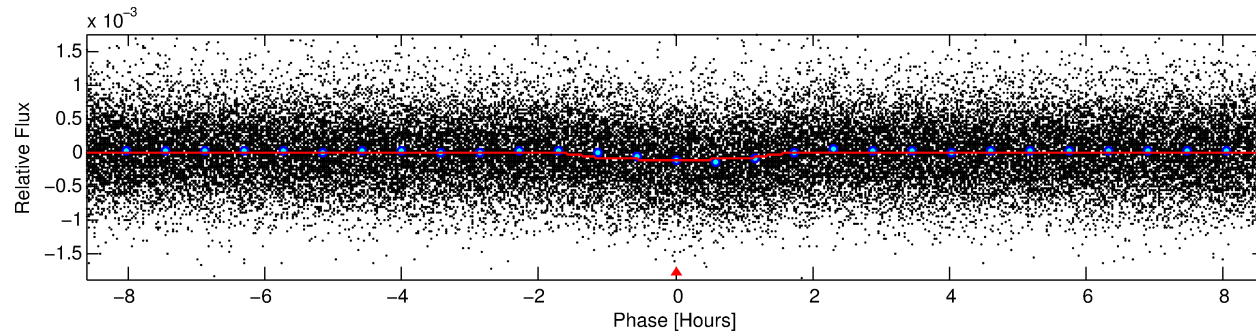
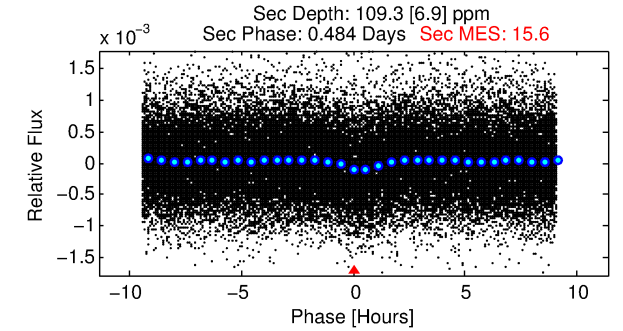
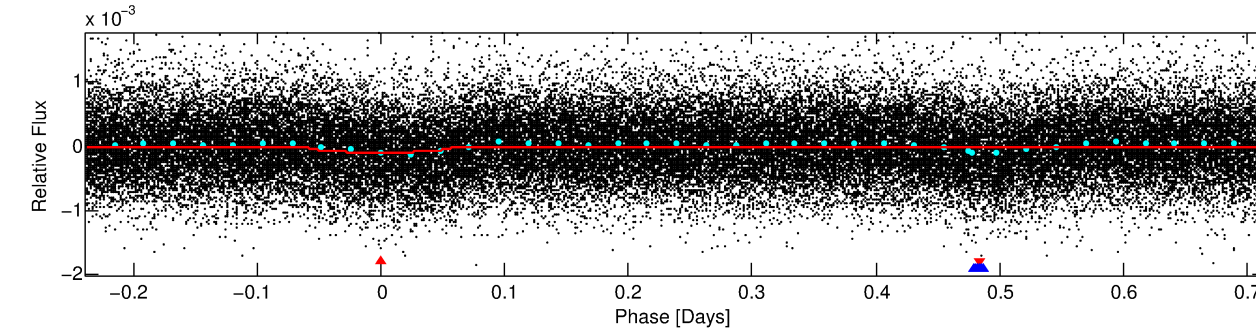
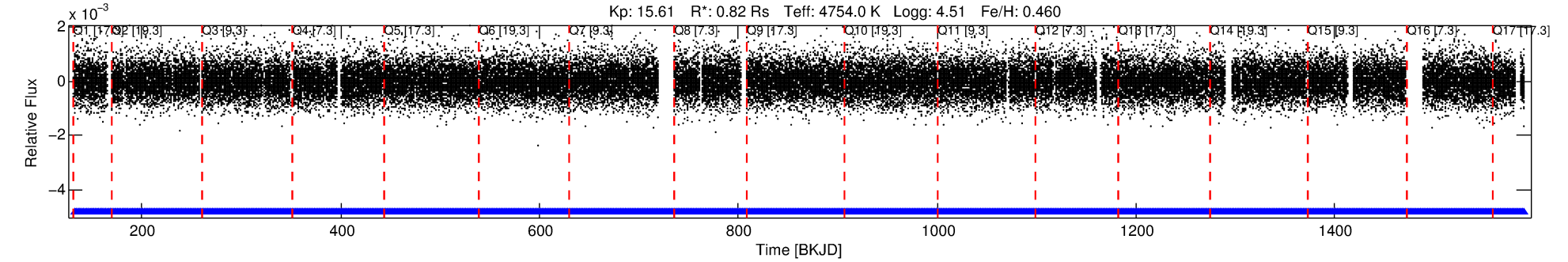
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 10858803 Candidate: 1 of 2 Period: 0.952 d

KOI: K04130.01 Corr: 0.844

Kp: 15.61 R*: 0.82 Rs Teff: 4754.0 K Logg: 4.51 Fe/H: 0.460



DV Fit Results:

Period = 0.95235 [0.00001] d
Epoch = 132.3376 [0.0027] BKJD
Rp/R* = 0.0108 [0.0066]
a/R* = 1.49 [1.90]
b = 0.90 [0.49]
Seff = 1003.76 [189.51]
Teq = 1435 [68] K
Rp = 0.97 [0.60] Re
a = 0.0175 [0.0016] AU
Ag = 19.63 [24.05] [0.77σ]
Teffp = 4671 [1428] K [2.26σ]

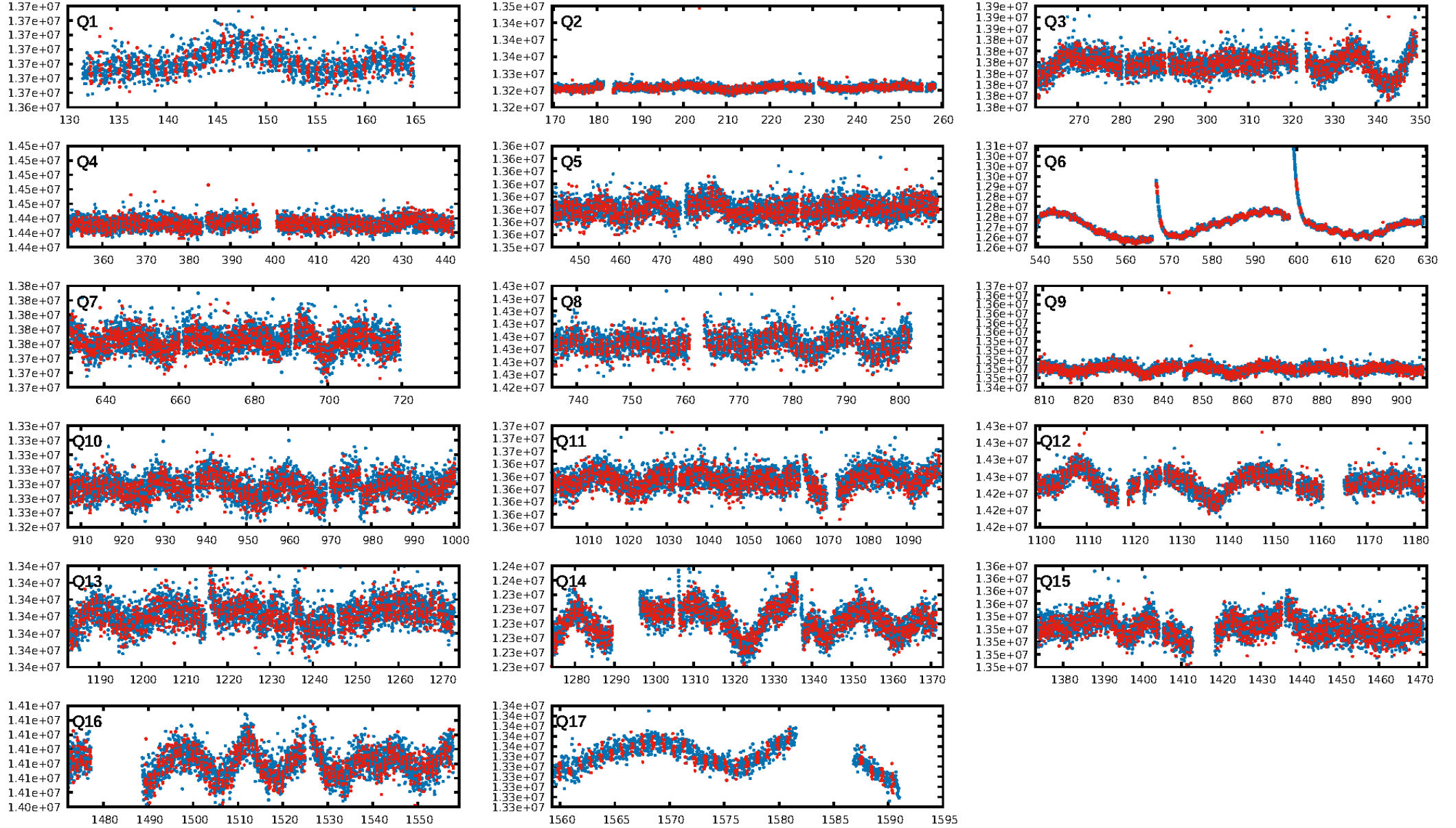
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.38e-50
RollingBand-fgt: 1.00 [1346/1346]
GhostDiagnostic-chr: 0.3304
Centroid-sig: 20.6%
Centroid-so: 1.383 arcsec [1.50σ]
OotOffset-rm: 2.475 arcsec [6.92σ]
KicOffset-rm: 2.379 arcsec [6.50σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

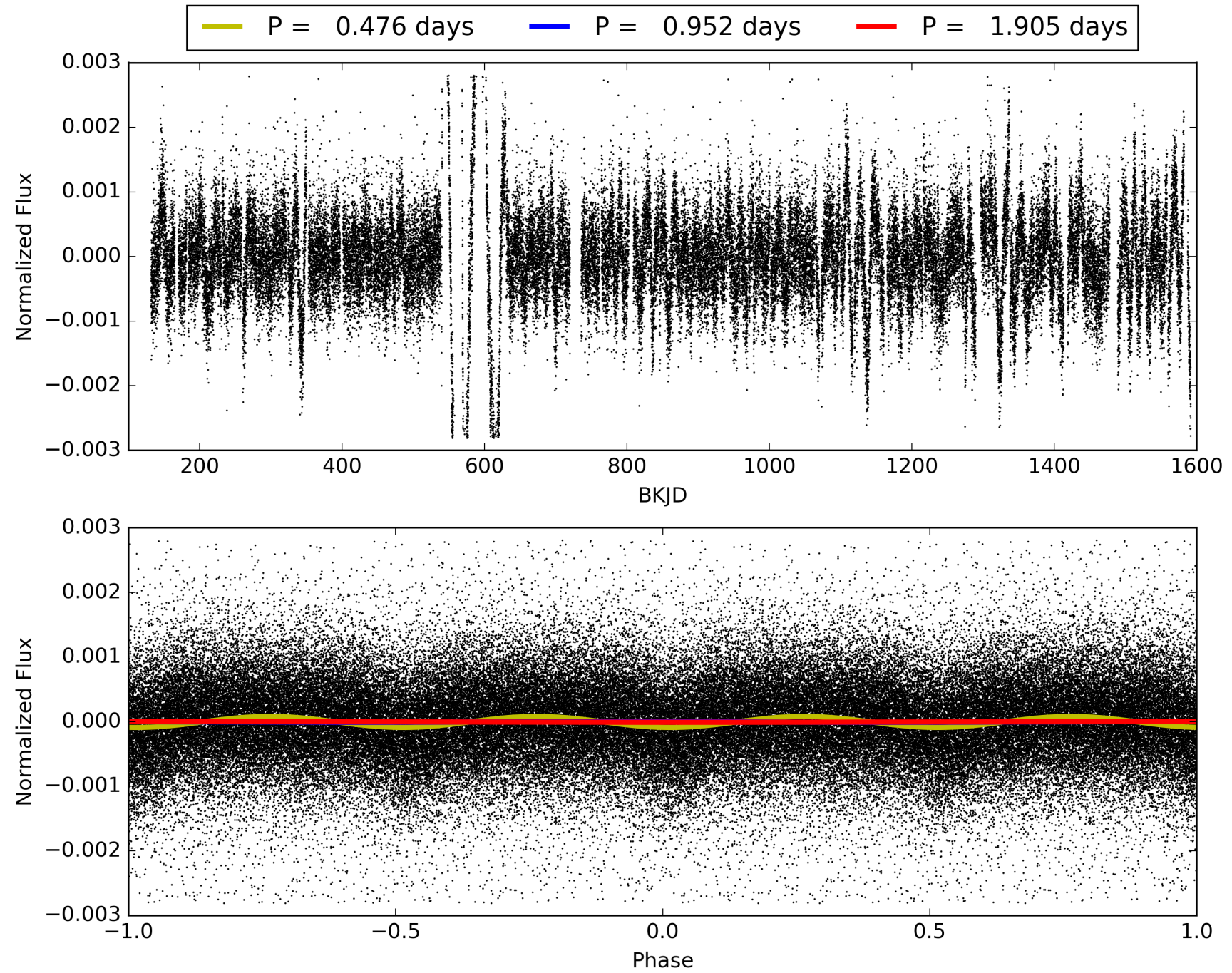
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:35:51 Z

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

TCE 010858803-01, PDC Light Curves

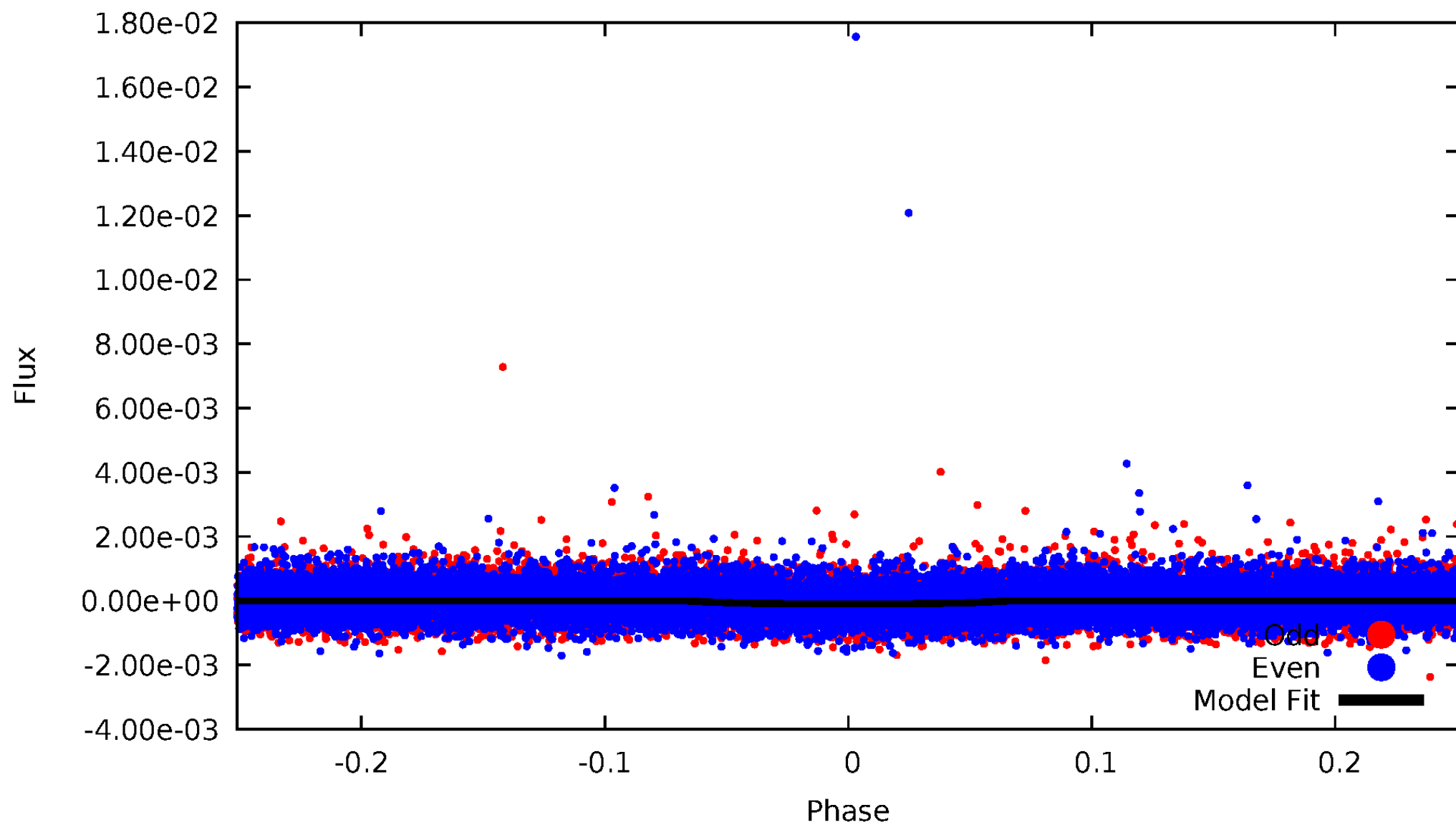


TCE 010858803-01



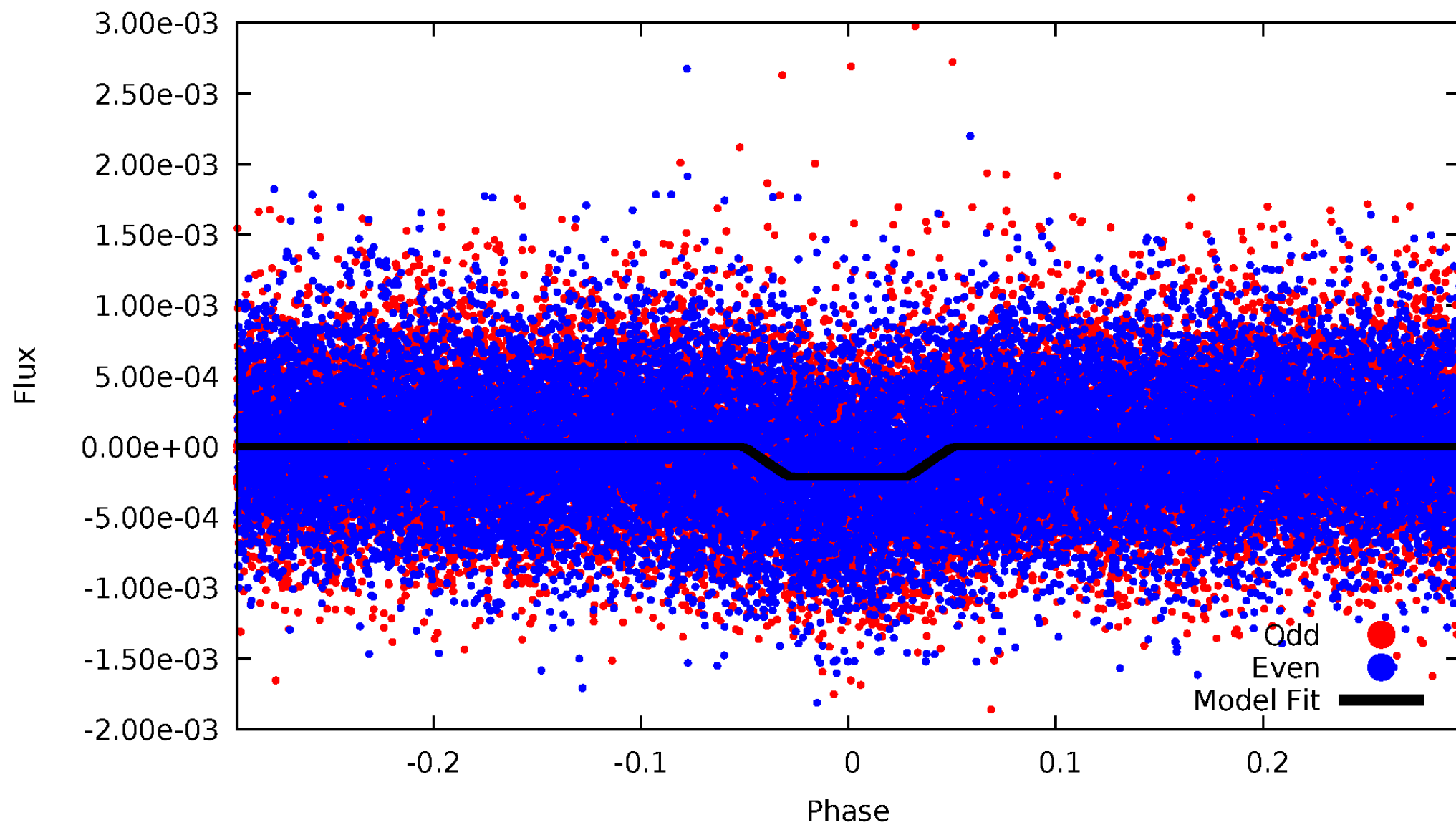
DV Odd/Even

TCE 010858803-01



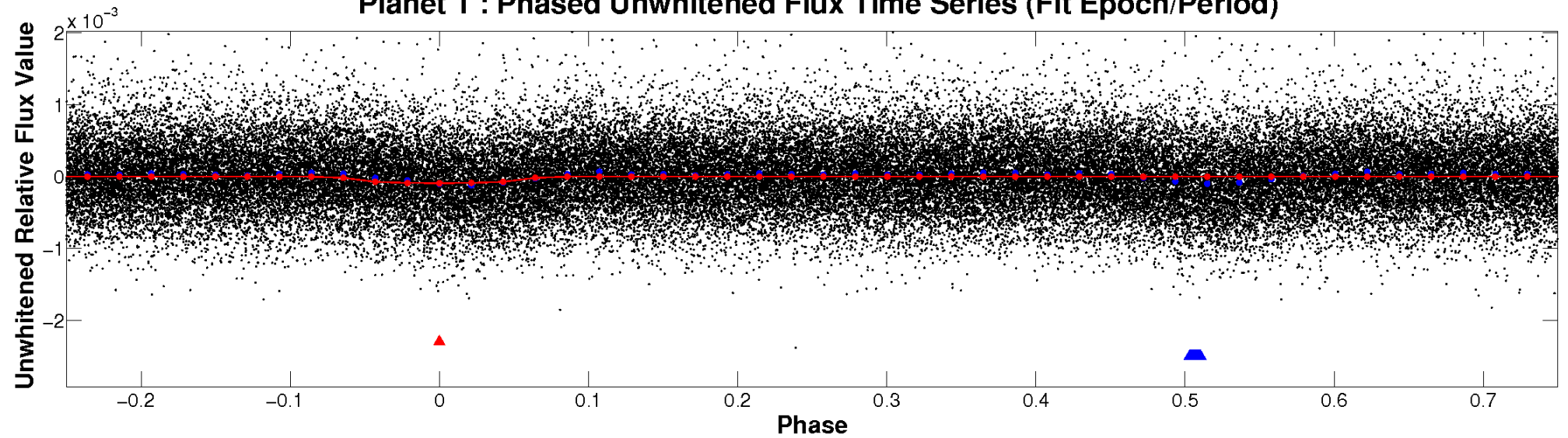
ALT Odd/Even

TCE 010858803-01

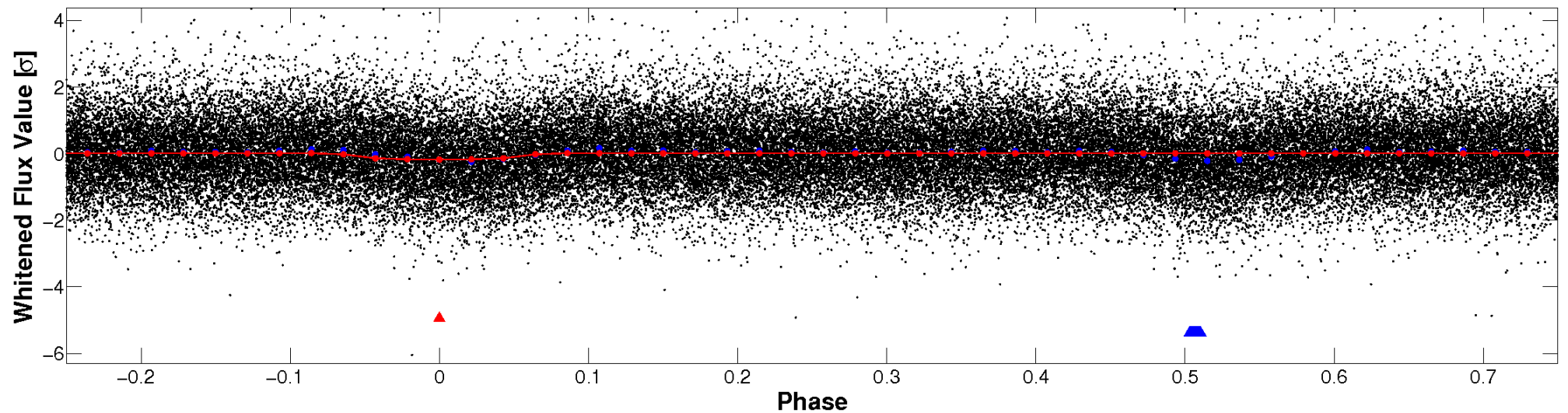


Non-Whitened Vs. Whitened Light Curve

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

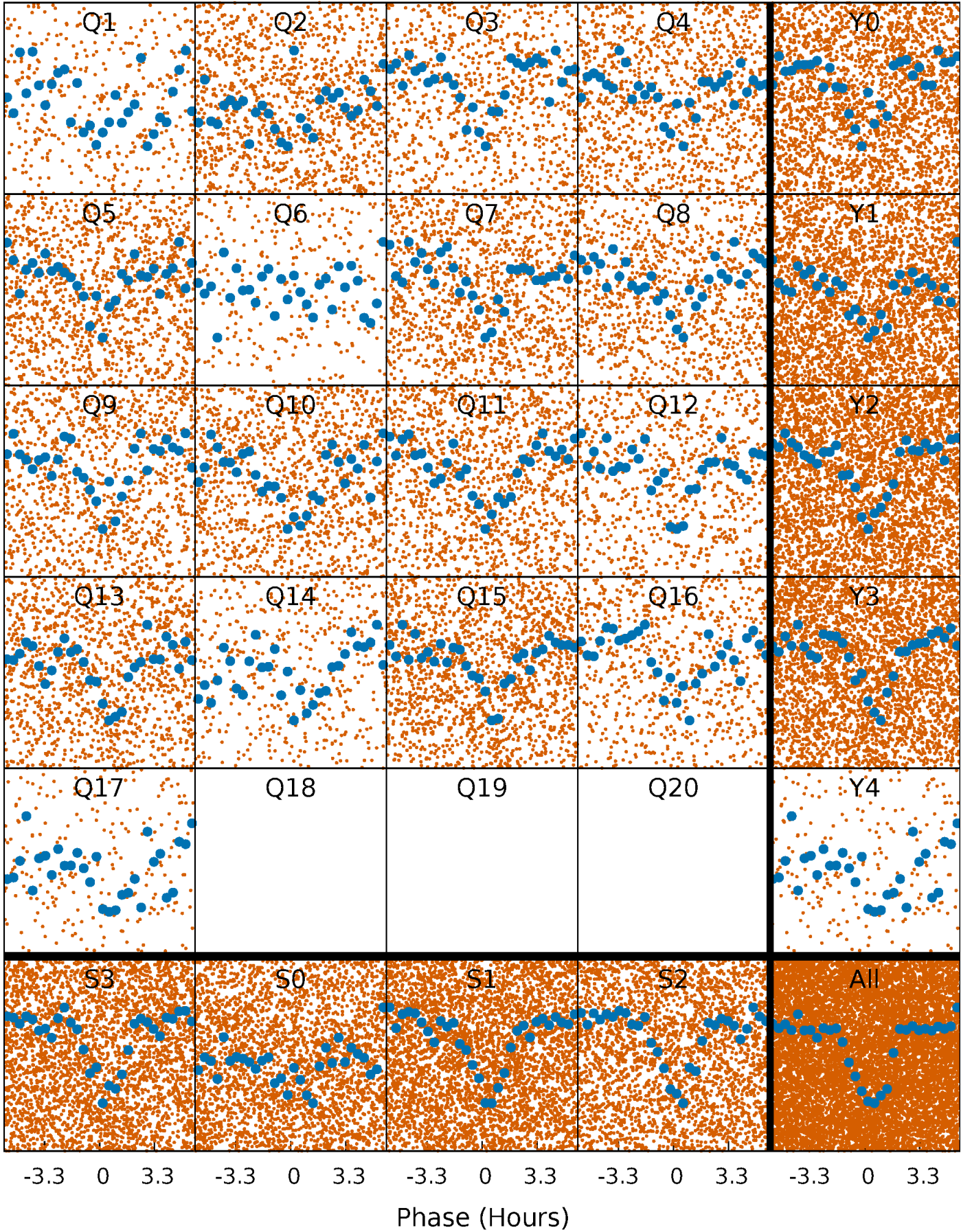


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



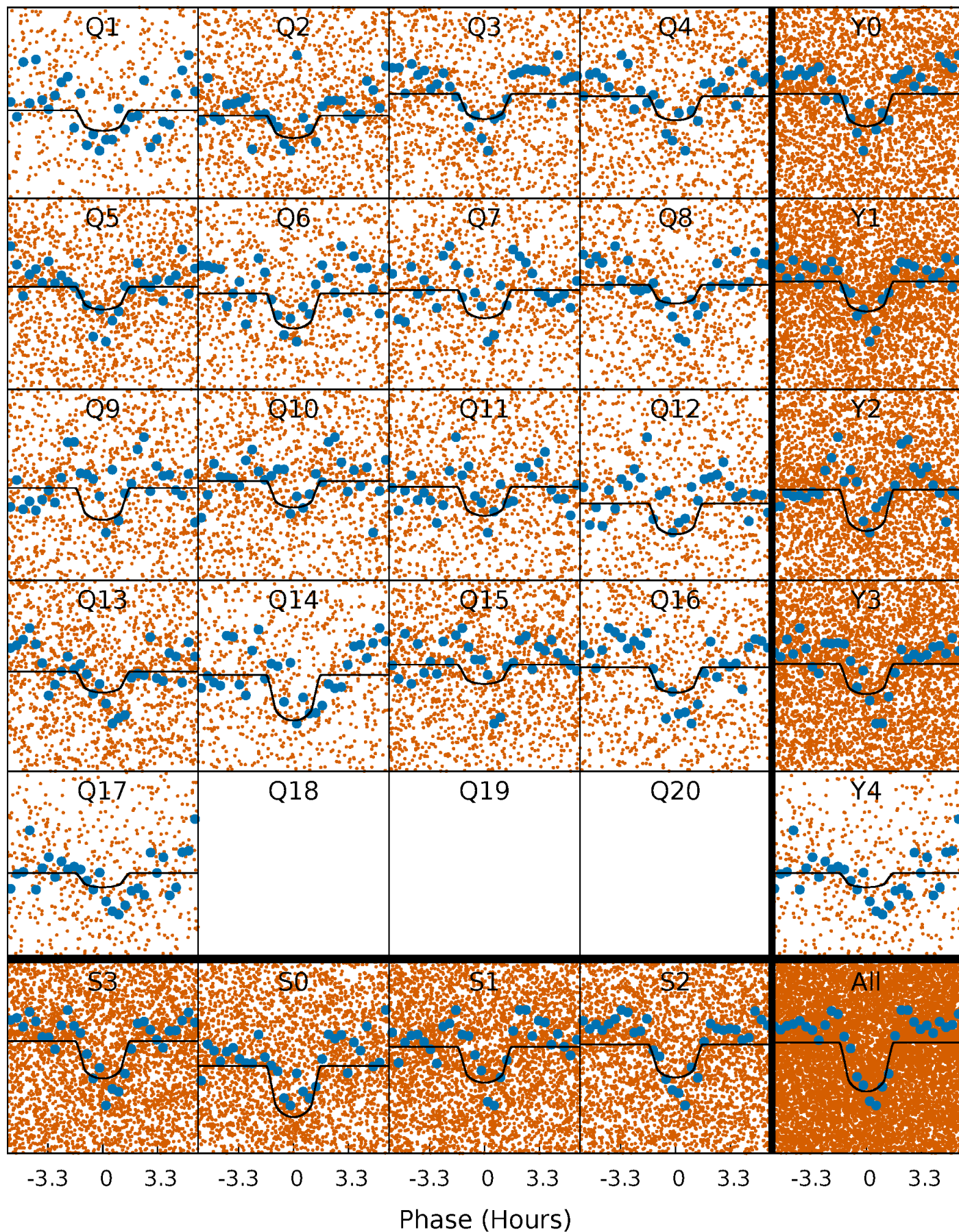
PDC Quarter-Phased Transit Curves

TCE 010858803-01 P= 0.952354 Days $T_0=132.337555$ (BKJD)



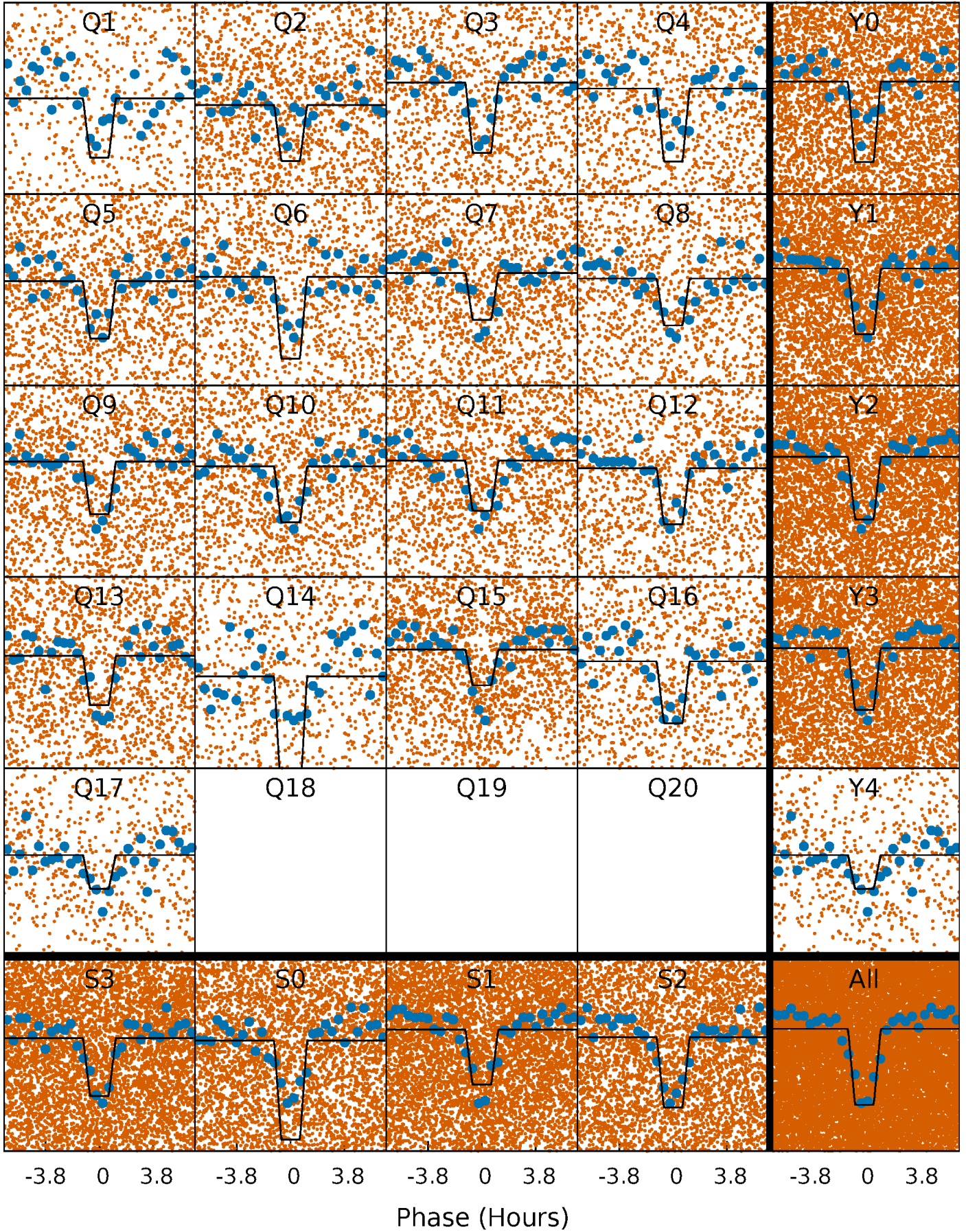
DV Quarter-Phased Transit Curves

TCE 010858803-01 P= 0.952354 Days $T_0=132.337555$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

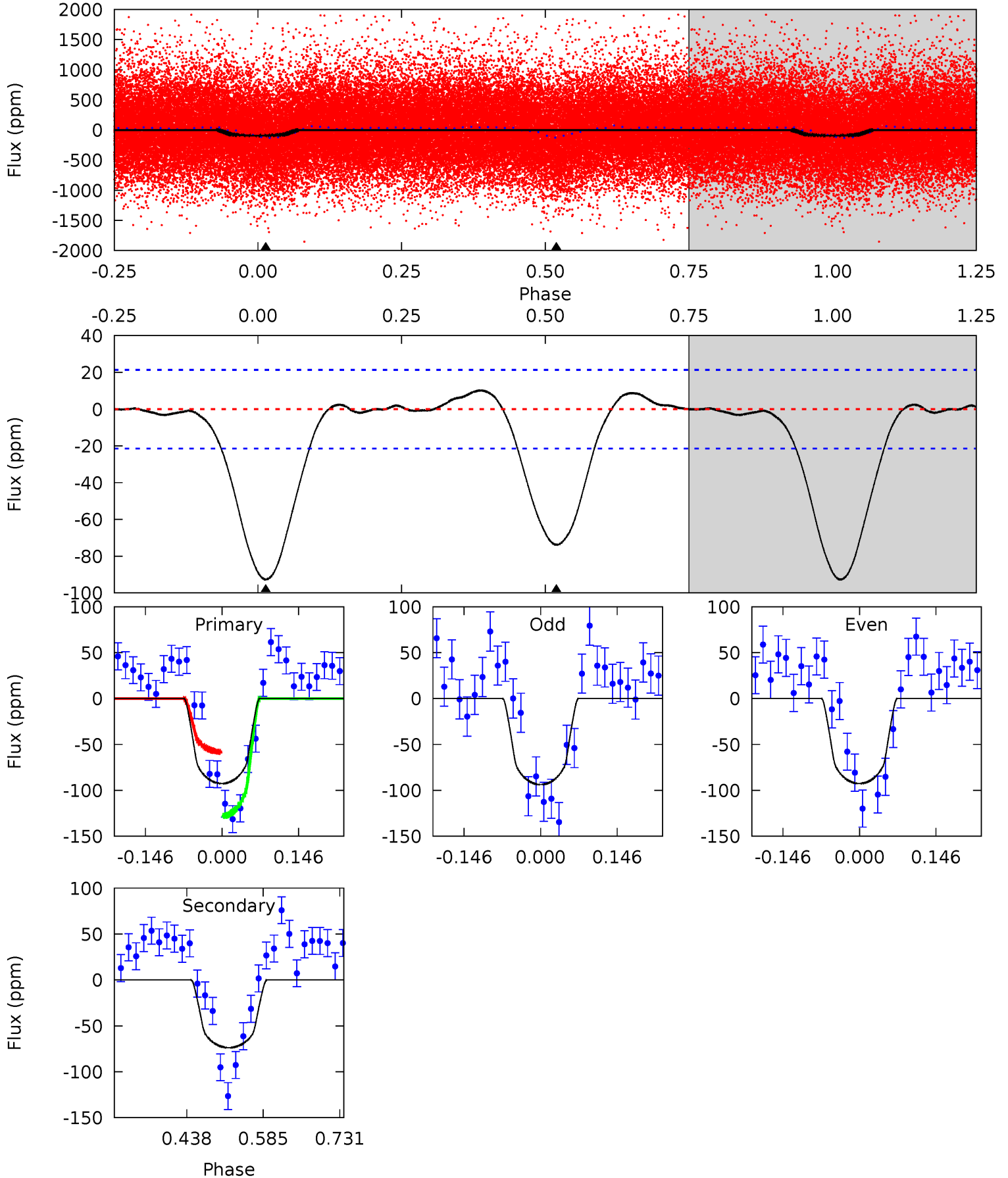
TCE 010858803-01 P= 0.952377 Days $T_0=132.332973$ (BKJD)



DV Model-Shift Uniqueness Test

010858803-01, P = 0.952354 Days, E = 131.385201 Days

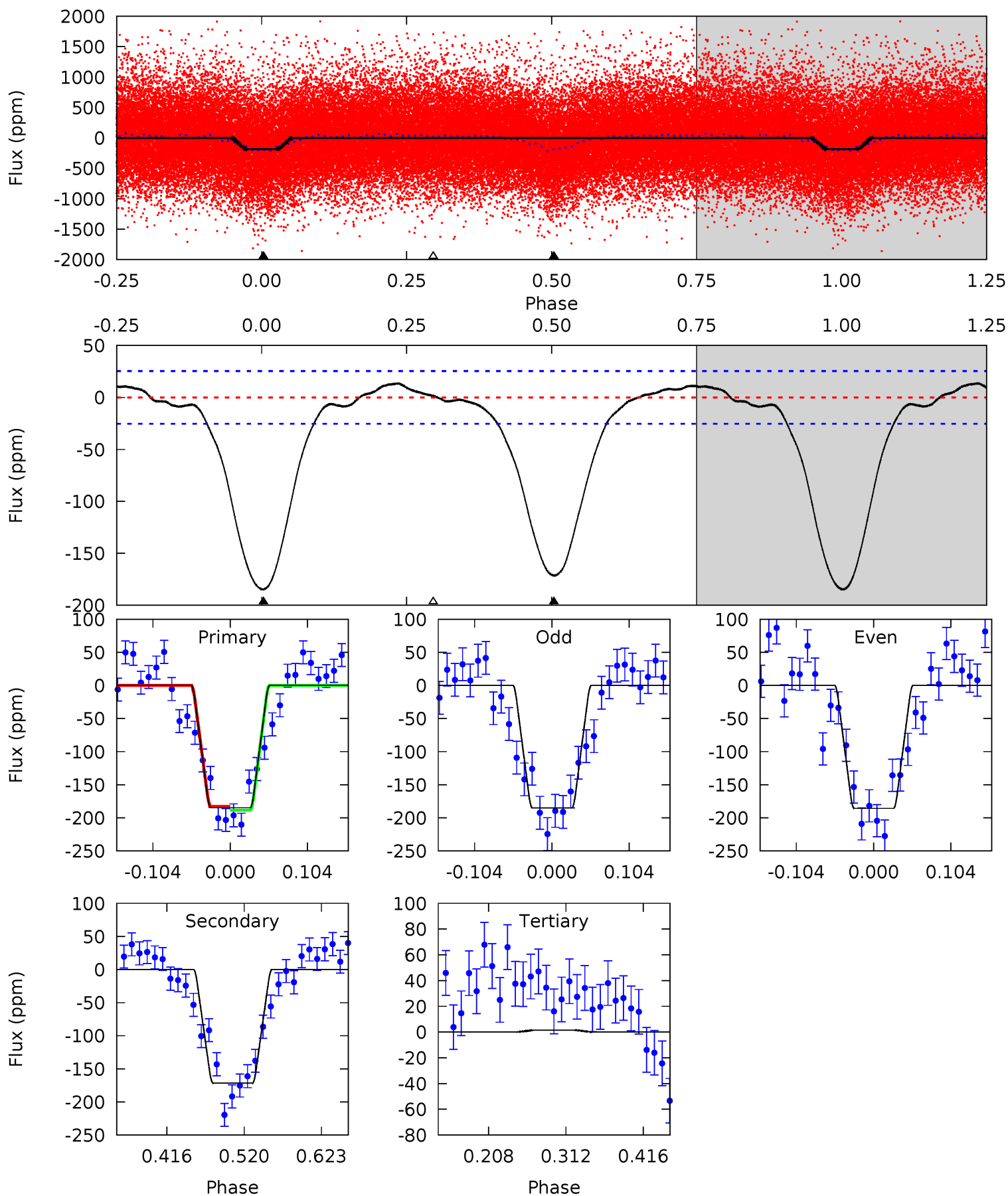
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.4	15.5	0	0	4.48	1.45	0.58	19.4	19.4	15.5	15.5	0.11	0.86	0.10	7.35



Alt Model-Shift Uniqueness Test

010858803-01, P = 0.952377 Days, E = 131.380596 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.2	30.8	-0.26	0	4.56	1.63	1.39	33.5	33.2	31.1	30.8	0.04	0.94	0.07	0.52



Stellar Parameters For KIC 010858803

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4754^{+143}_{-143}	$4.508^{+0.084}_{-0.036}$	$0.460^{+0.050}_{-0.300}$	$0.821^{+0.041}_{-0.083}$	$0.791^{+0.046}_{-0.046}$	$2.015^{+0.663}_{-0.248}$
	+3%/-3%	+2%/-1%	+11%/-65%	+5%/-10%	+6%/-6%	+33%/-12%
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 010858803-01 / KOI 4130.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-74 ± 5	$1.01^{+0.58}_{-0.55}$	1993^{+72}_{-73}	4227^{+1692}_{-651}	12^{+47}_{-7}
Alt.	-171 ± 6	$1.29^{+0.60}_{-0.52}$	1999^{+74}_{-79}	4556^{+1126}_{-608}	17^{+33}_{-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 $A_{obs} \gg 1.0$

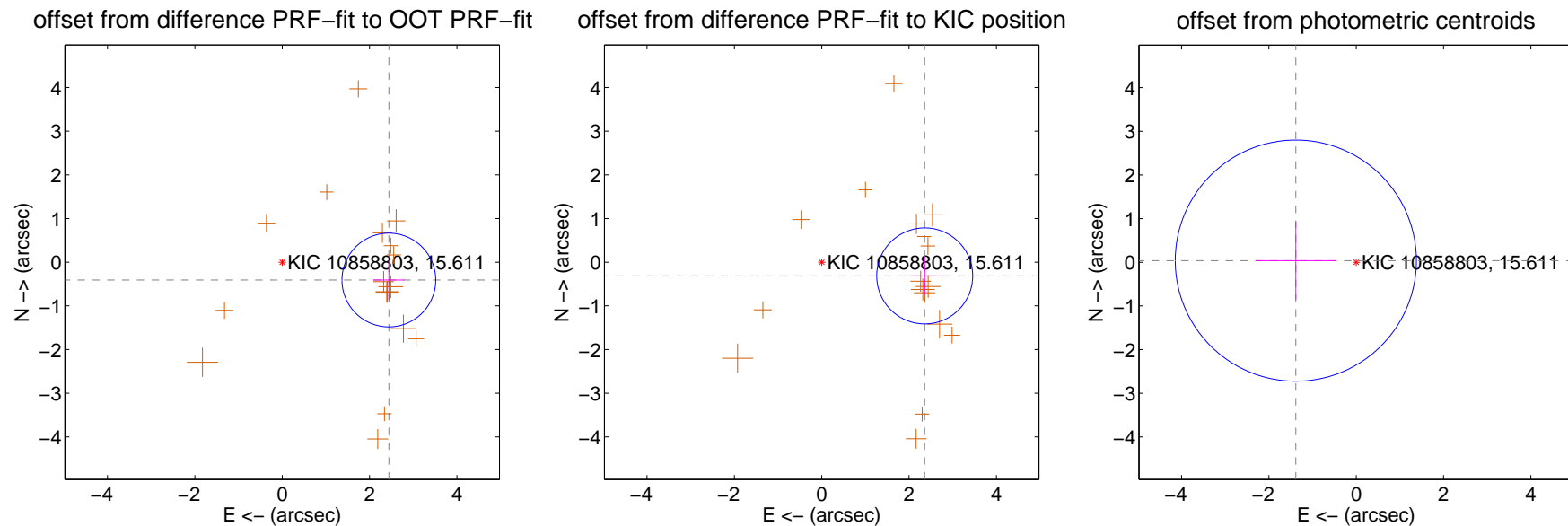
DV Centroid Data

Supplemental centroid analysis for 010858803-01. Kepler magnitude: 15.61. Transit SNR 13.25

There are 0 quarters with good PRF difference image offsets

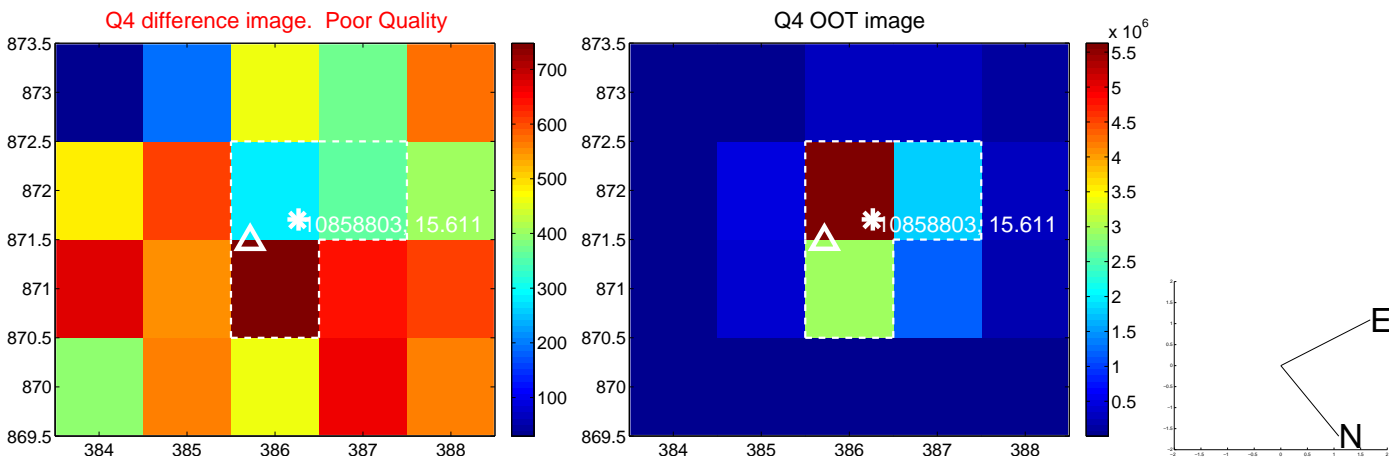
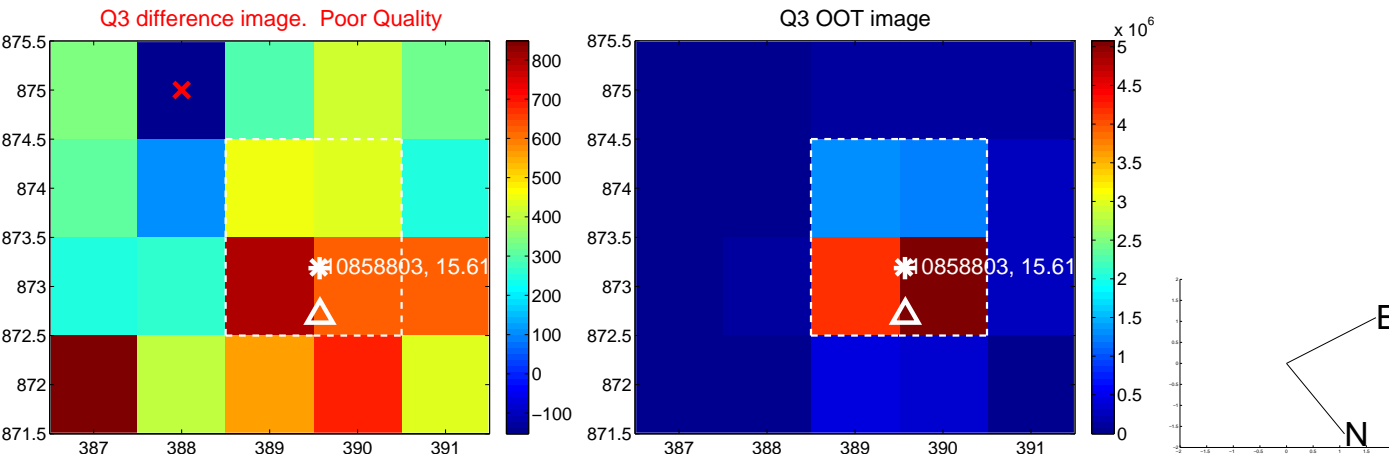
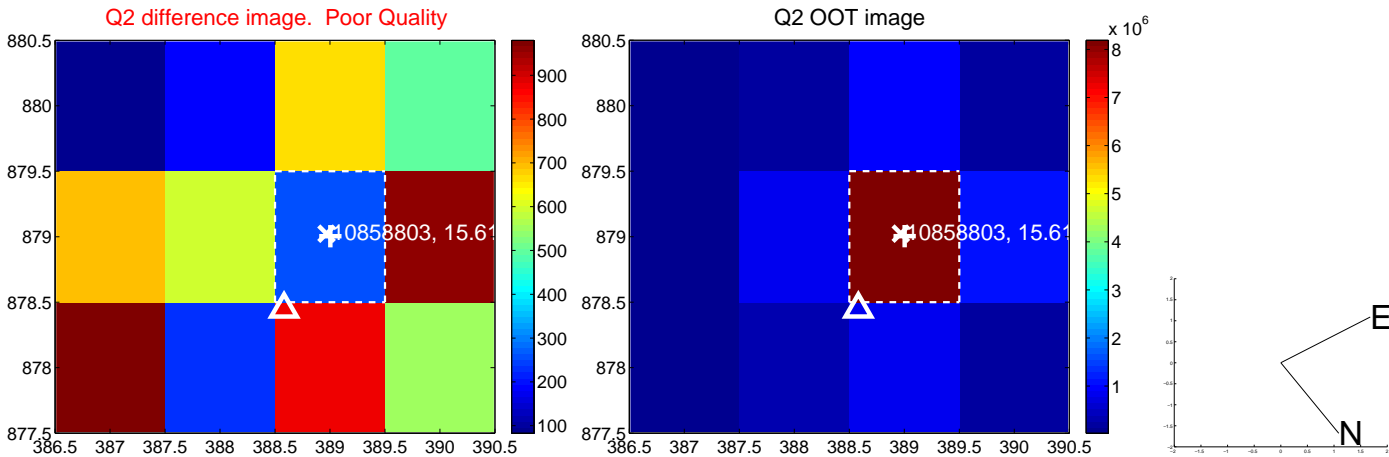
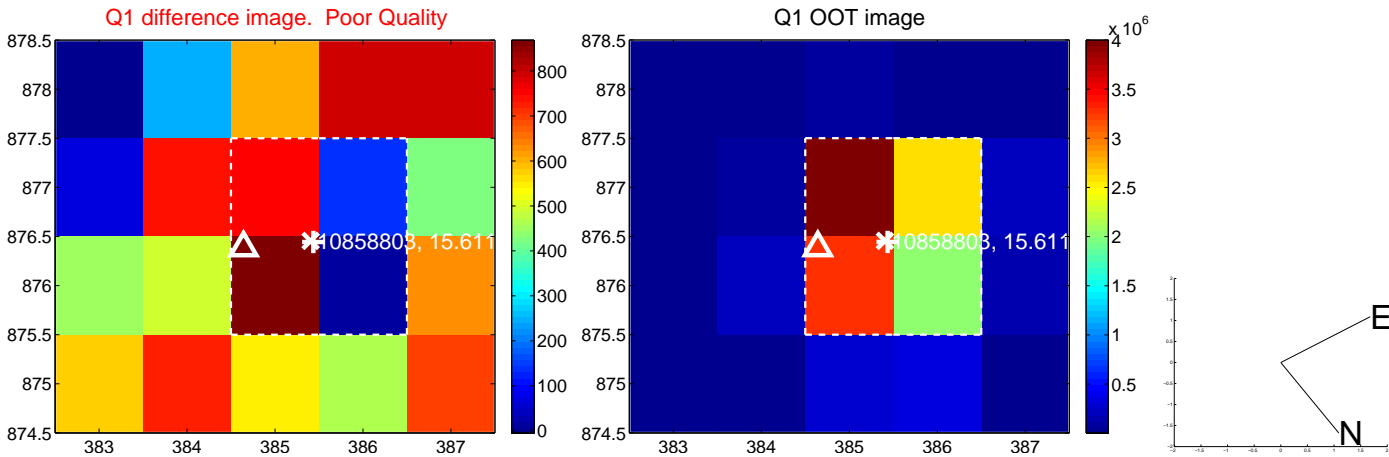
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.475 ± 0.358	6.92	-2.441 ± 0.354	-0.409 ± 0.458
PRF-fit source offset from KIC position	2.379 ± 0.366	6.50	-2.358 ± 0.369	-0.314 ± 0.430
photometric centroid source offset	1.38 ± 0.92	1.50	1.38 ± 0.92	0.04 ± 0.89

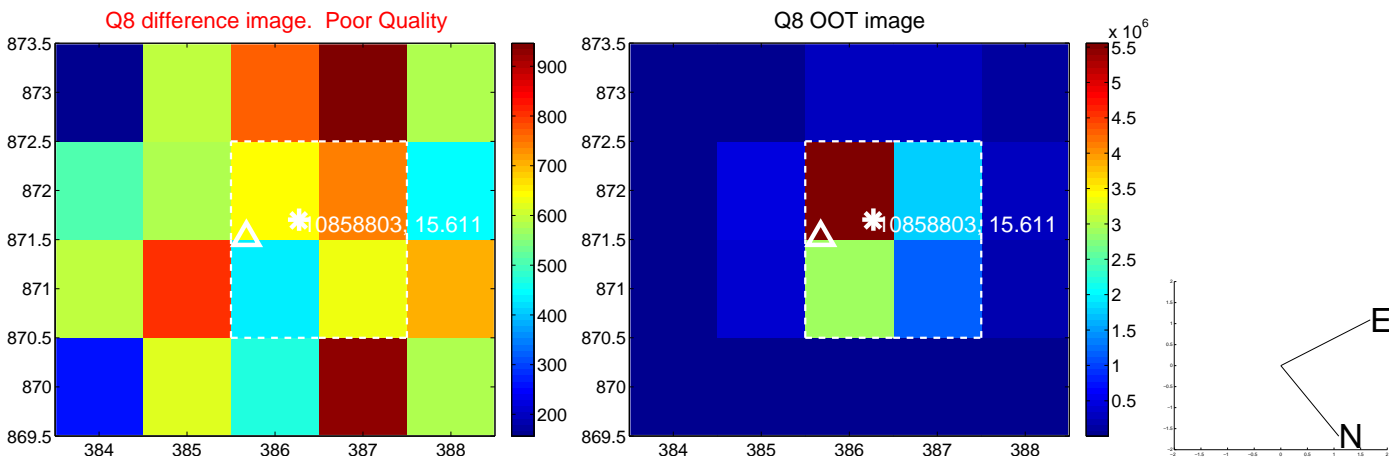
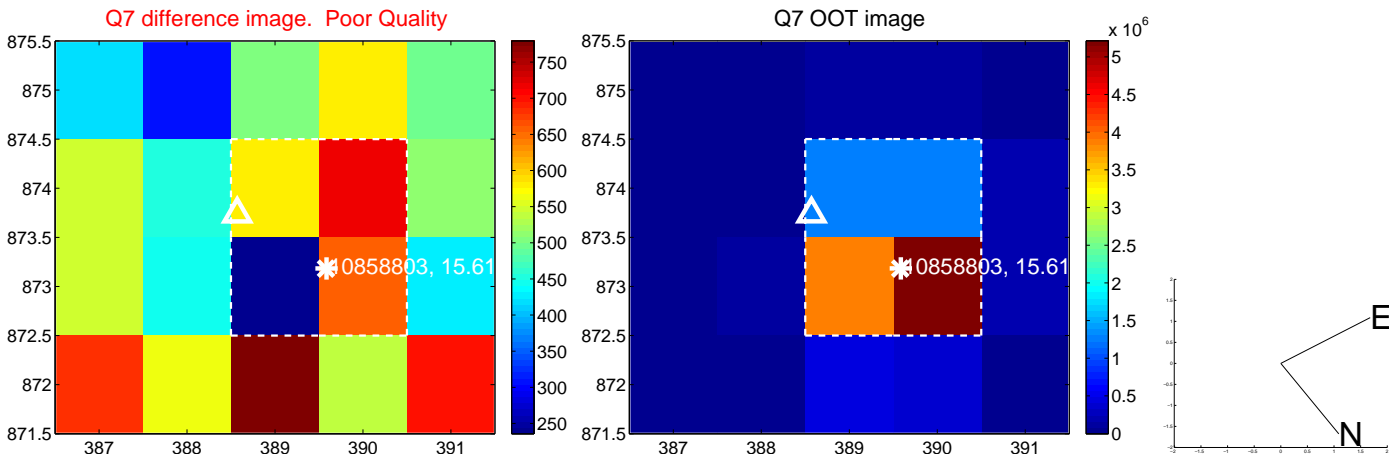
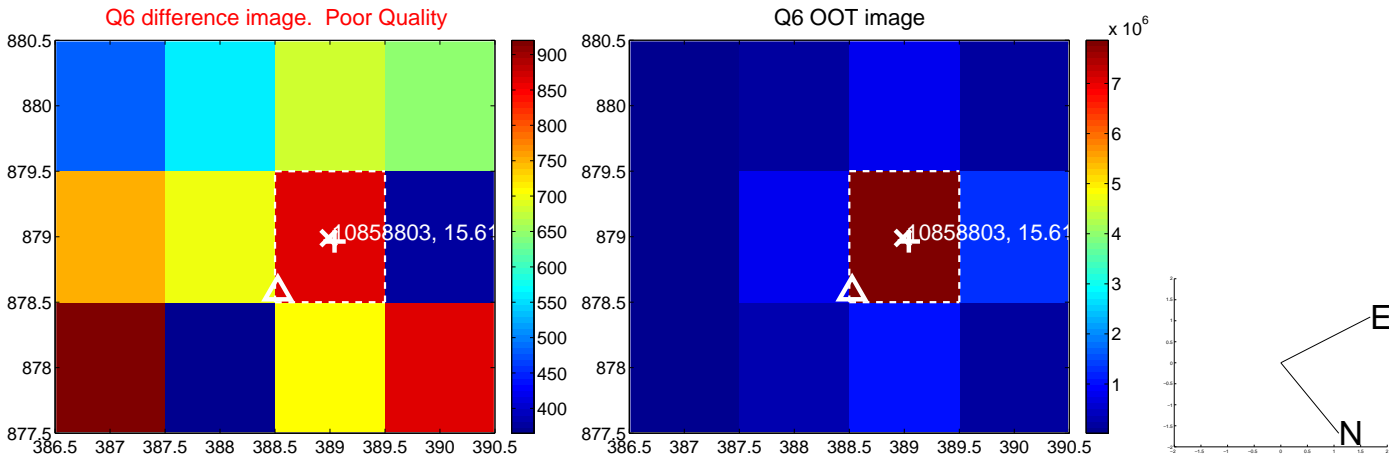
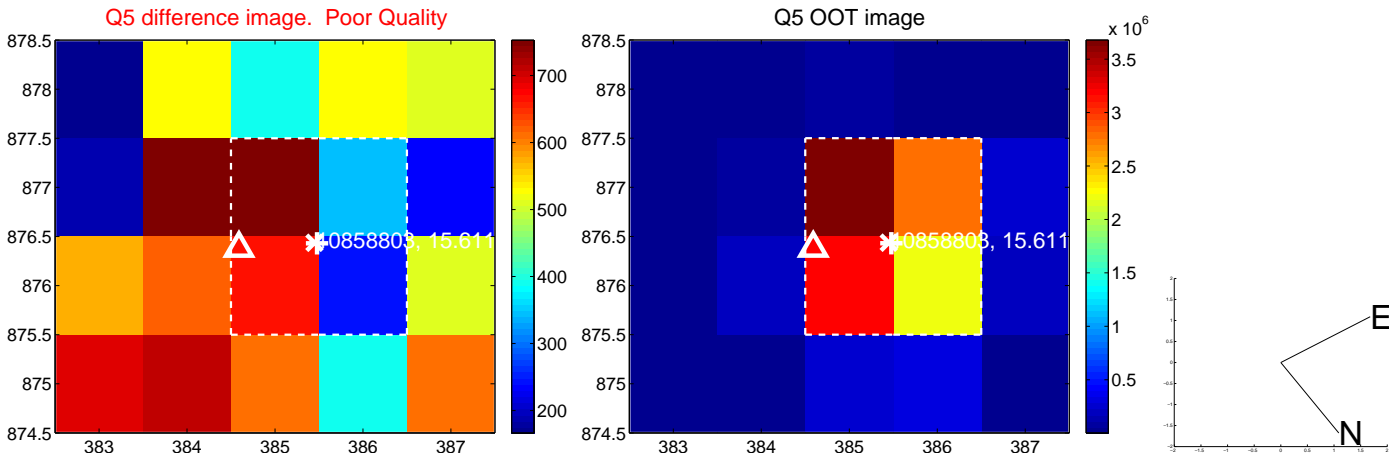


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

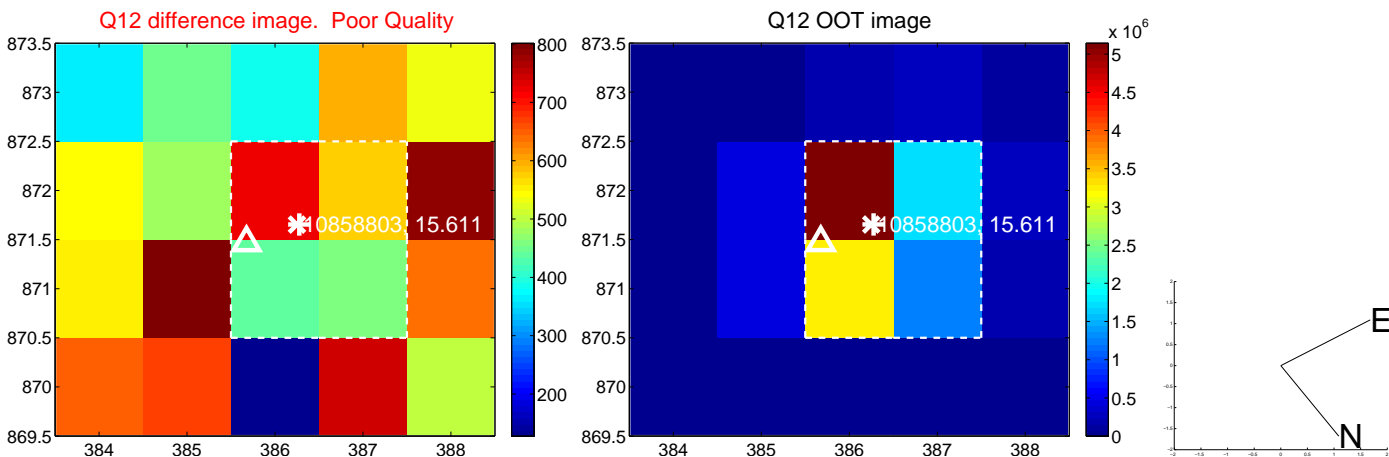
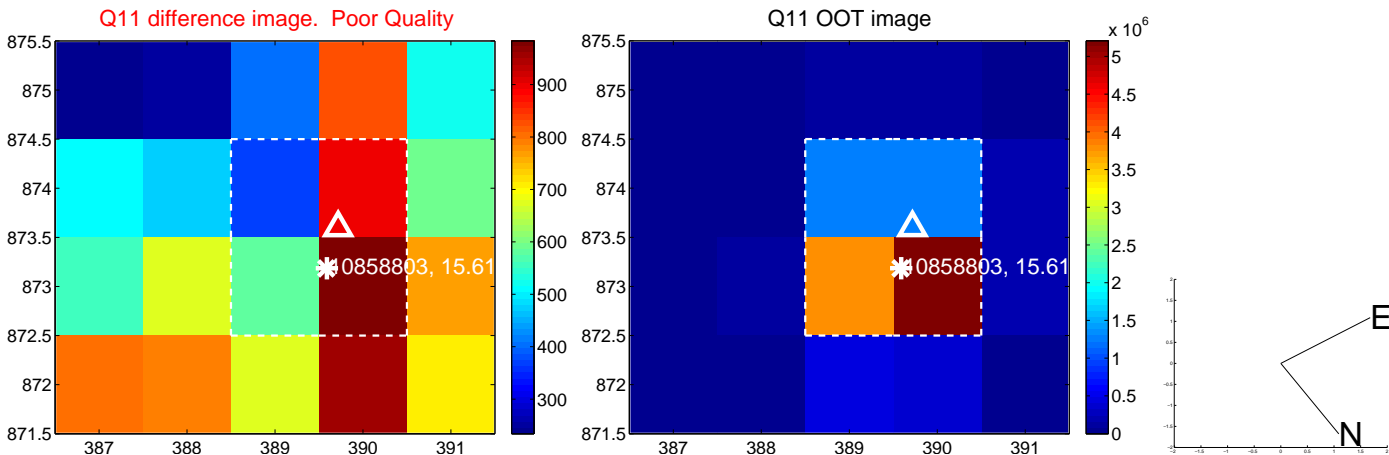
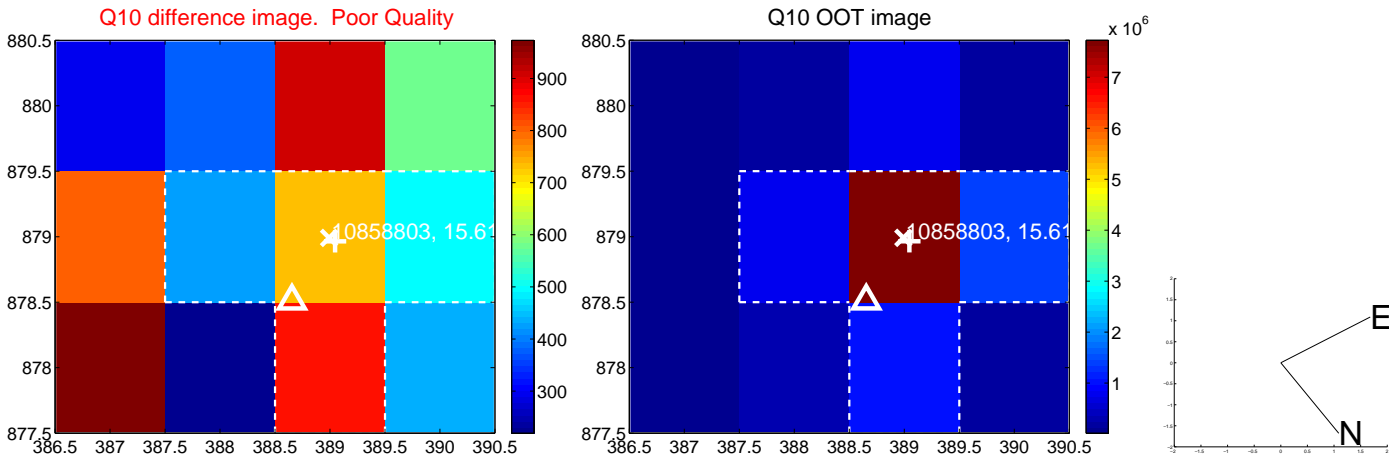
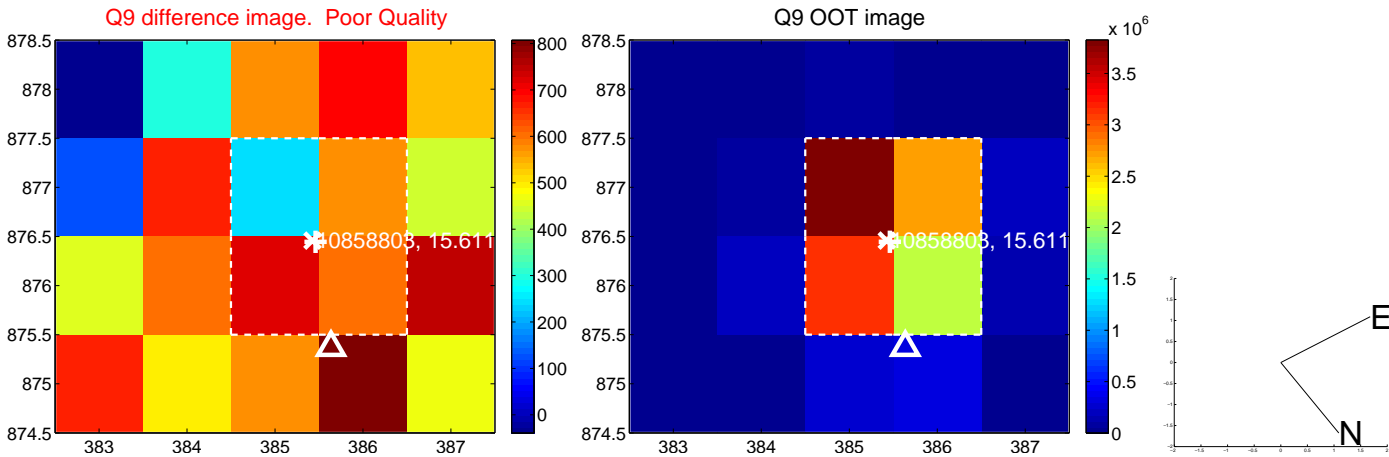
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



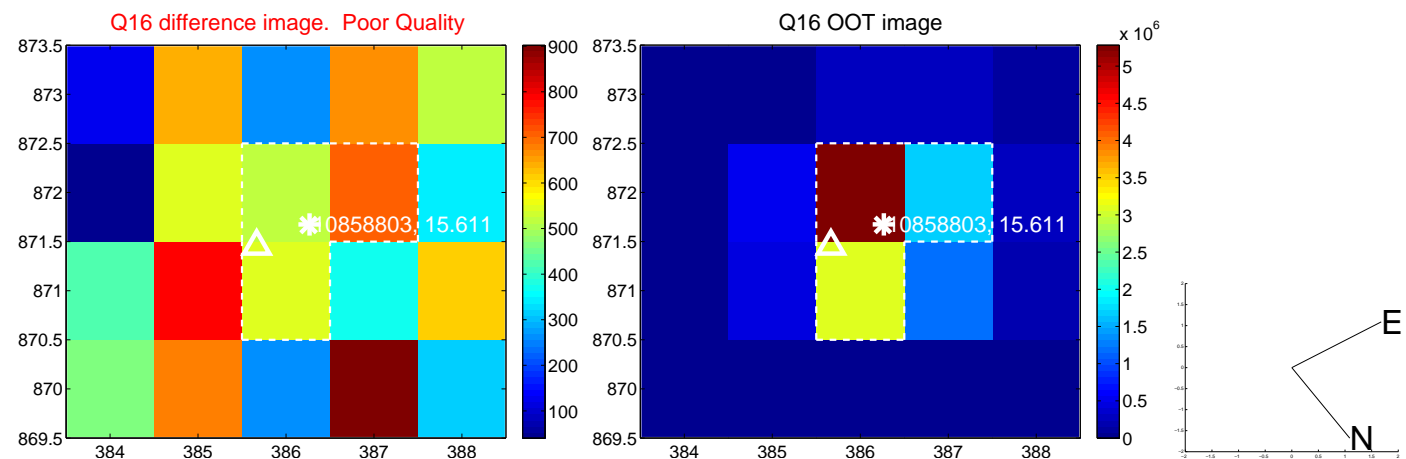
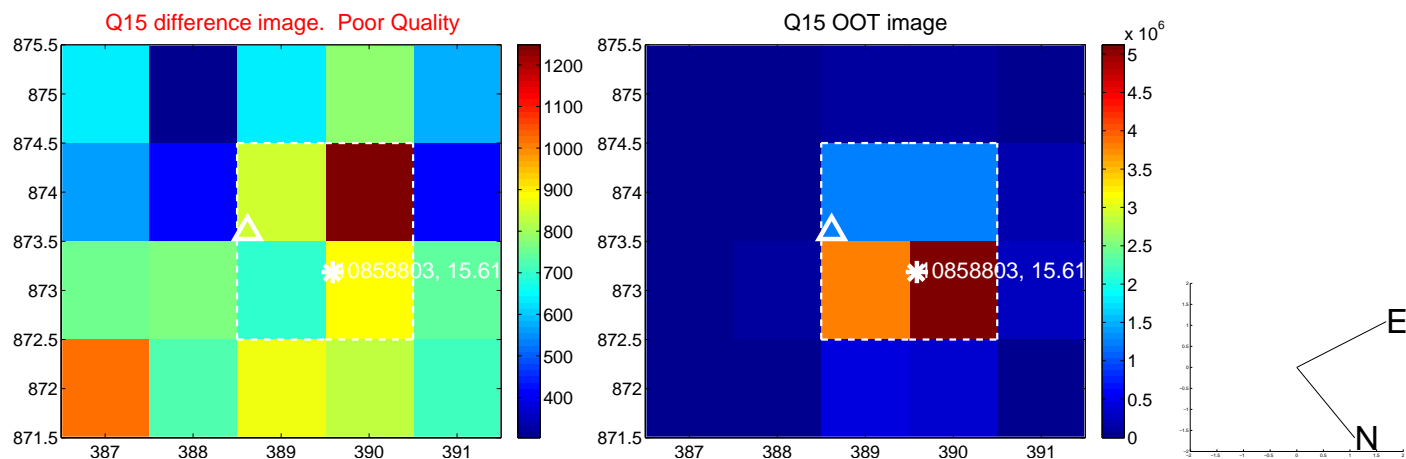
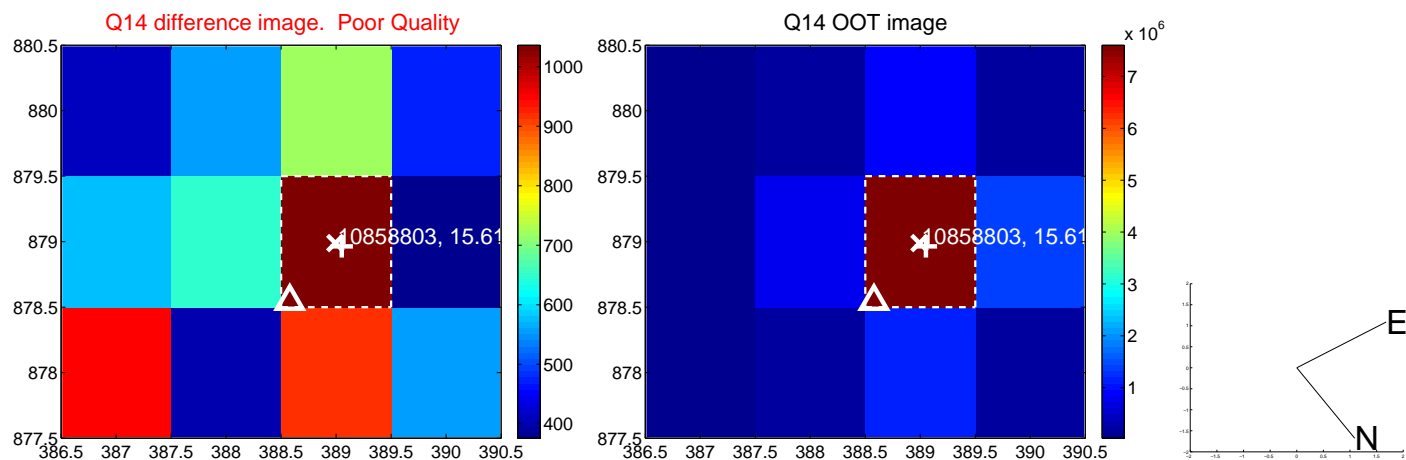
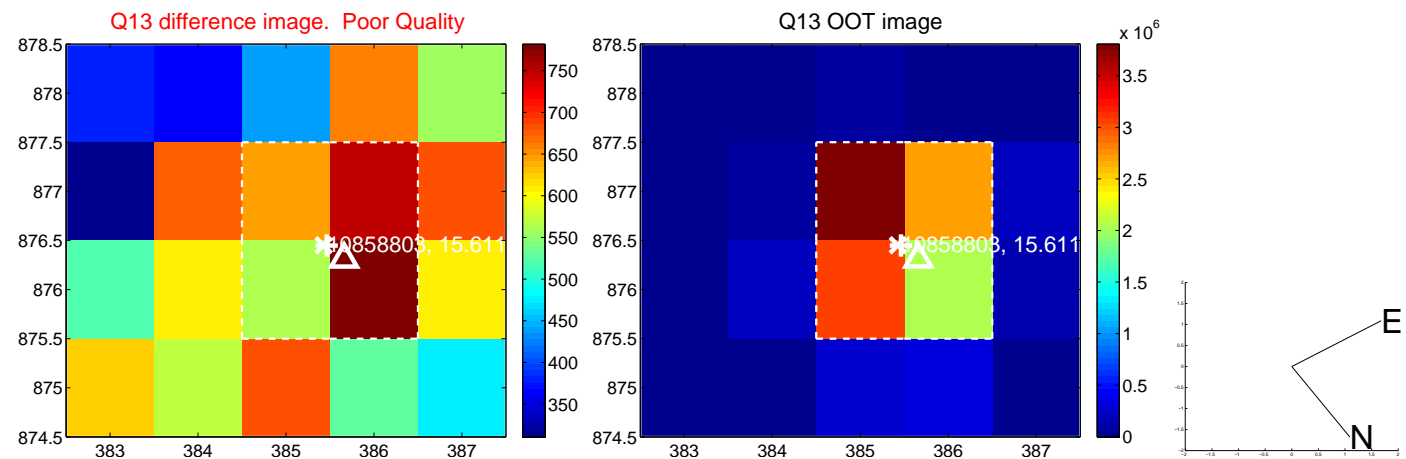
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



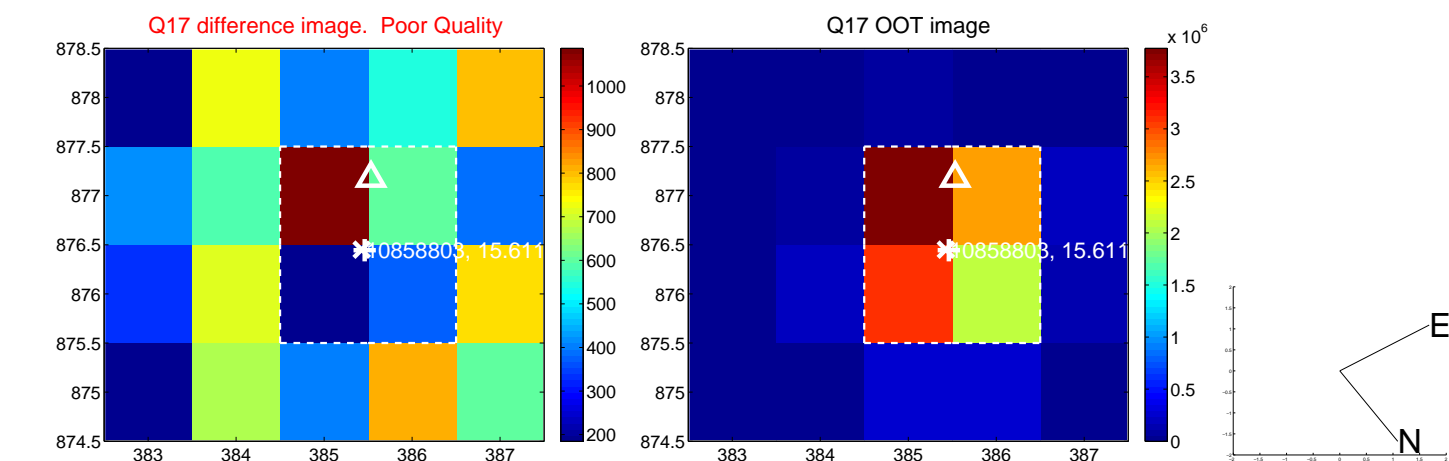
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



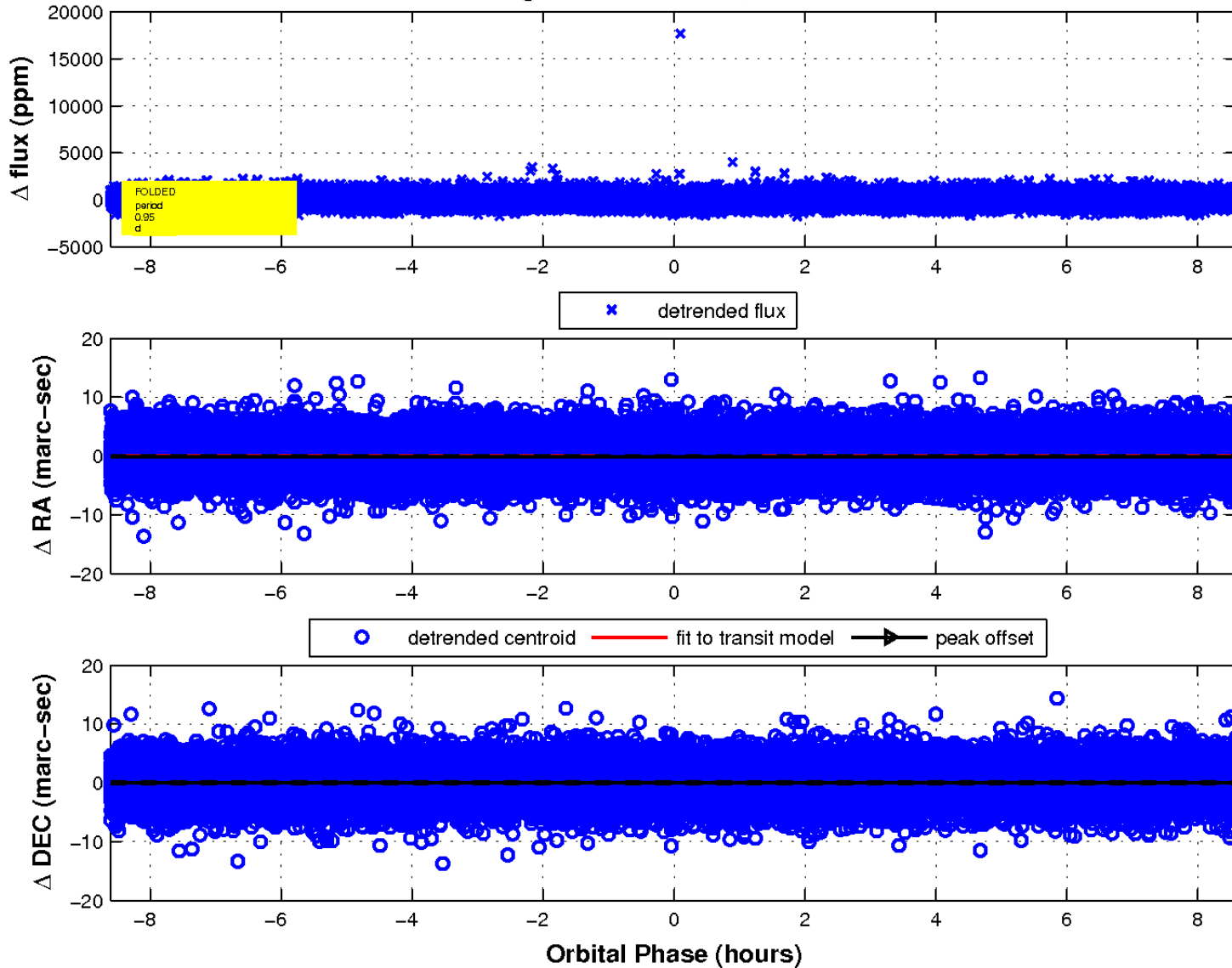
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



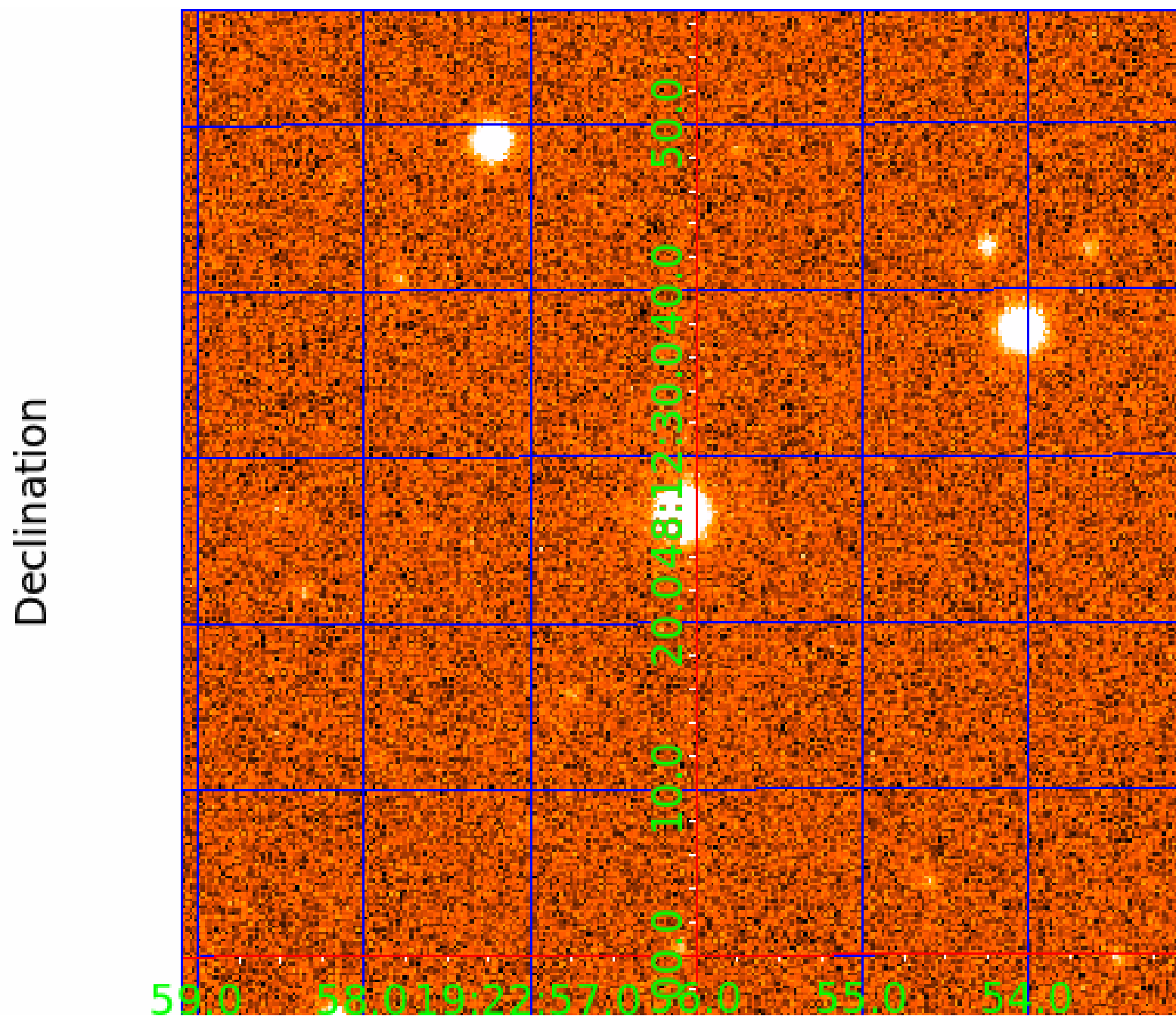
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 010858803

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})
010858803-01	OBS	4130.01	0.952354	132.337555	91.4	2.869	14.5	13.2	0.82	4754	0.97	1003.76
010858803-02	OBS	No	0.952349	131.871439	82.4	2.726	14.4	12.6	0.82	4754	0.92	1003.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010858803-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010858803-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—CENT_FEW_DIFFS—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 010858803-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010858803-02	10858803	010858720-sec	10858720	1:1	91.1	9	21	10.97	15.61	5608.50	Direct-PRF	0	2.83	0.95

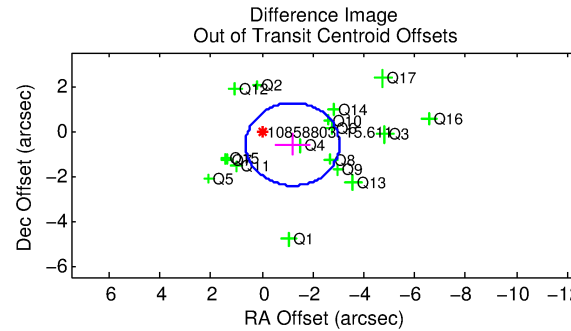
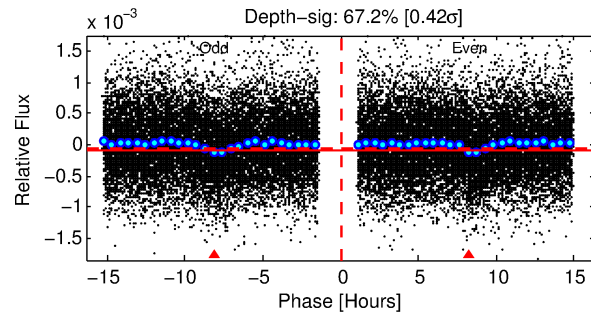
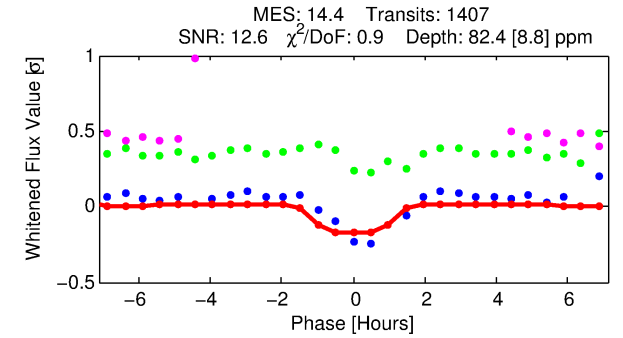
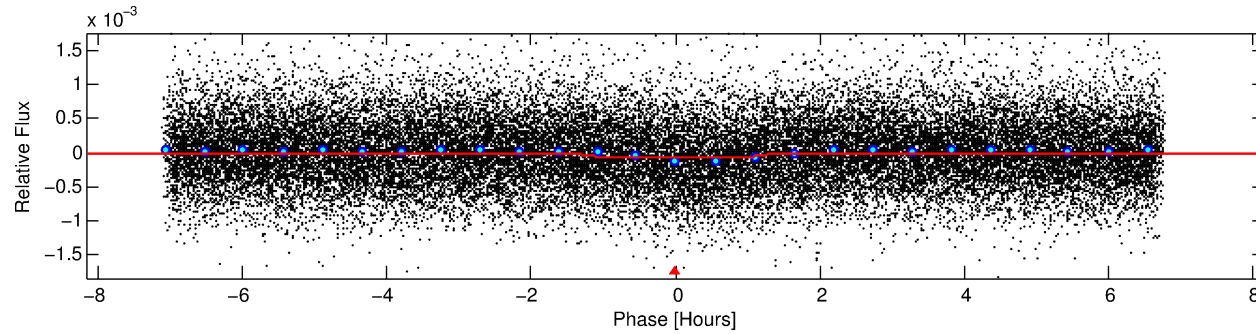
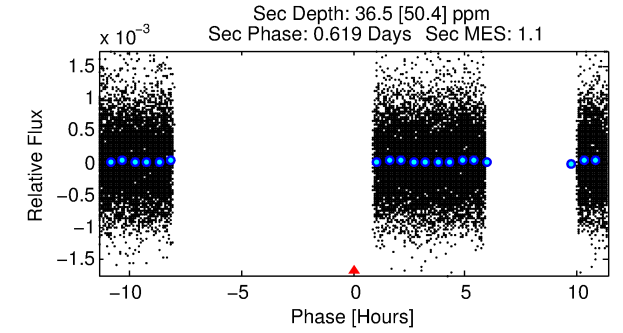
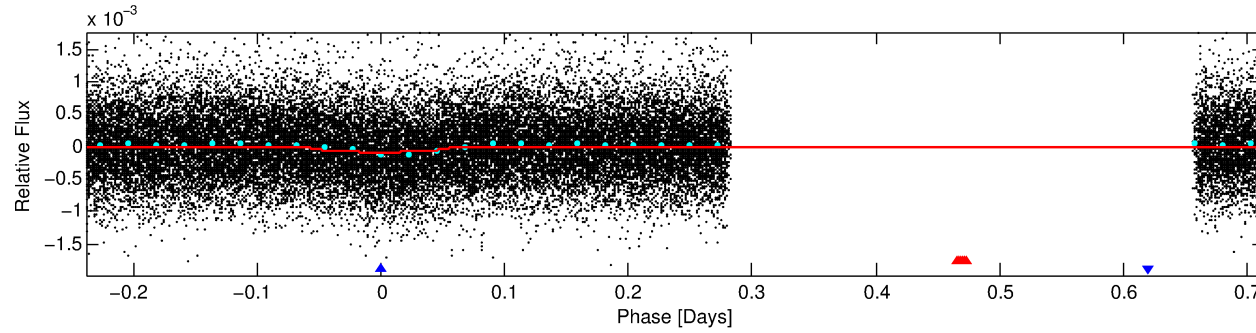
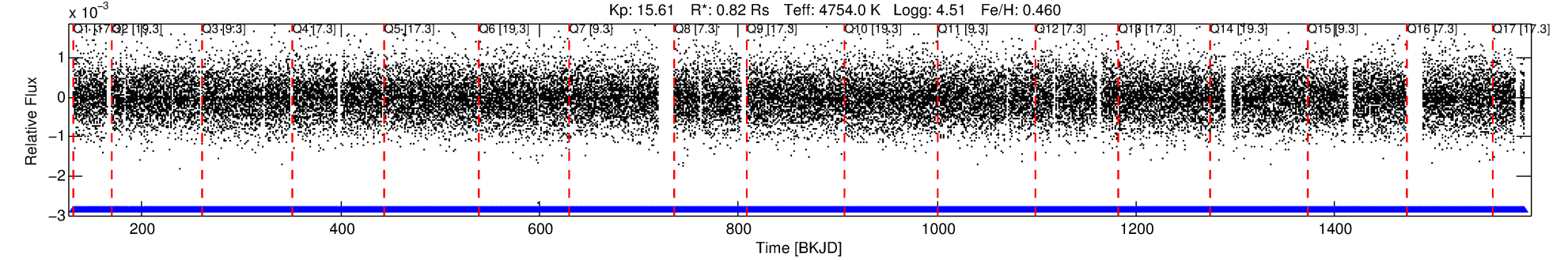
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 10858803 Candidate: 2 of 2 Period: 0.952 d

KOI: K04130 Corr: No Ephemeris Match

Kp: 15.61 R*: 0.82 Rs Teff: 4754.0 K Logg: 4.51 Fe/H: 0.460



DV Fit Results:

Period = 0.95235 [0.00001] d
Epoch = 131.8714 [0.0029] BKJD
Rp/R* = 0.0103 [0.0073]
a/R* = 1.53 [2.36]
b = 0.90 [0.56]
Seff = 1003.76 [189.51]
Teff = 1435 [68] K
Rp = 0.92 [0.66] Re
a = 0.0175 [0.0016] AU
Ag = 7.23 [14.31] [0.44σ]
Teffp = 3638 [1800] K [1.22σ]

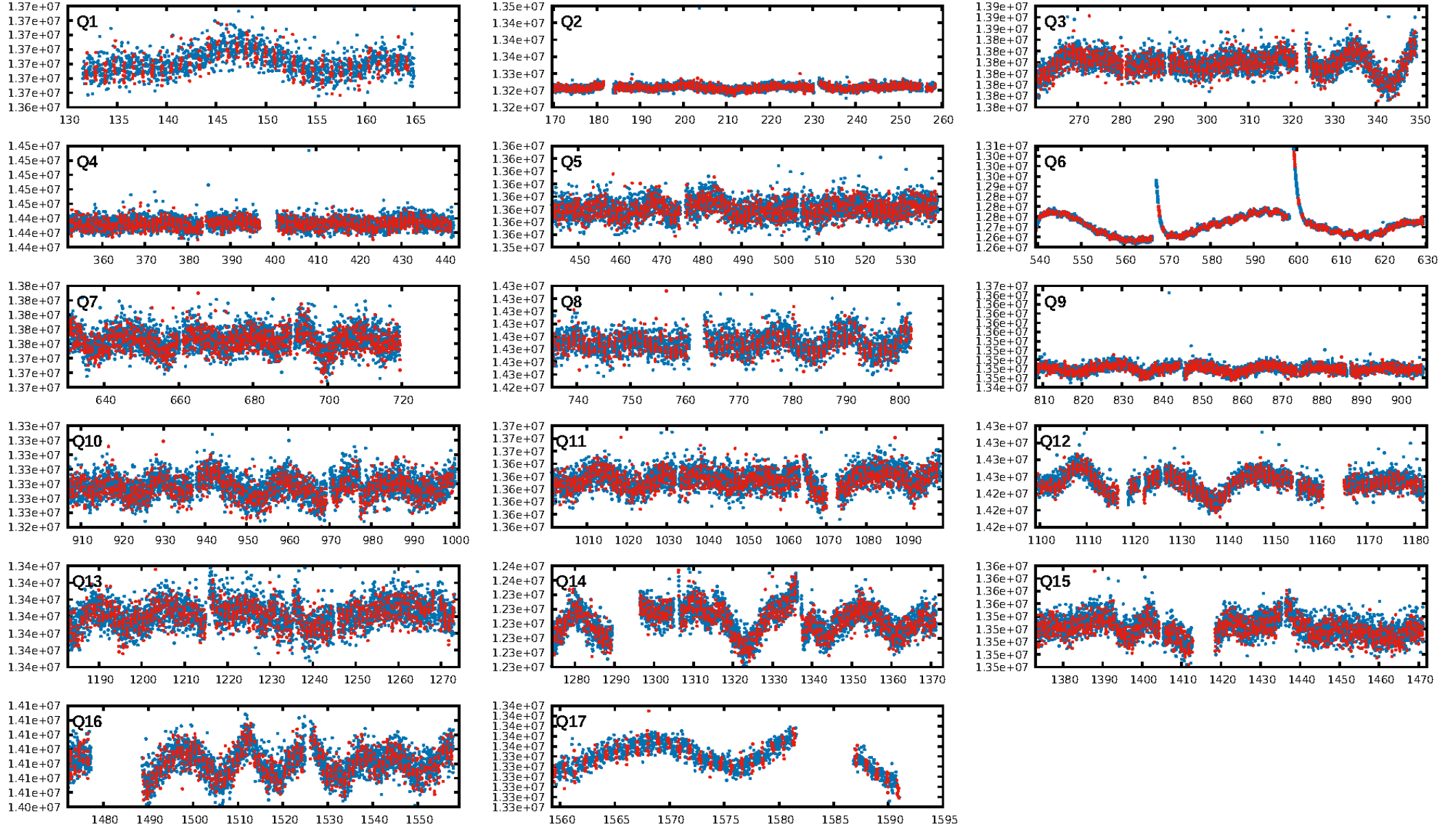
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.14e-51
RollingBand-fgt: 1.00 [1343/1343]
GhostDiagnostic-chr: 0.6526
Centroid-sig: 0.0%
Centroid-so: 3.275 arcsec [3.20σ]
OotOffset-rm: 1.343 arcsec [2.19σ]
KicOffset-rm: 1.242 arcsec [2.03σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.06 [1/17]
DiffImageOverlap-fno: 1.00 [17/17]

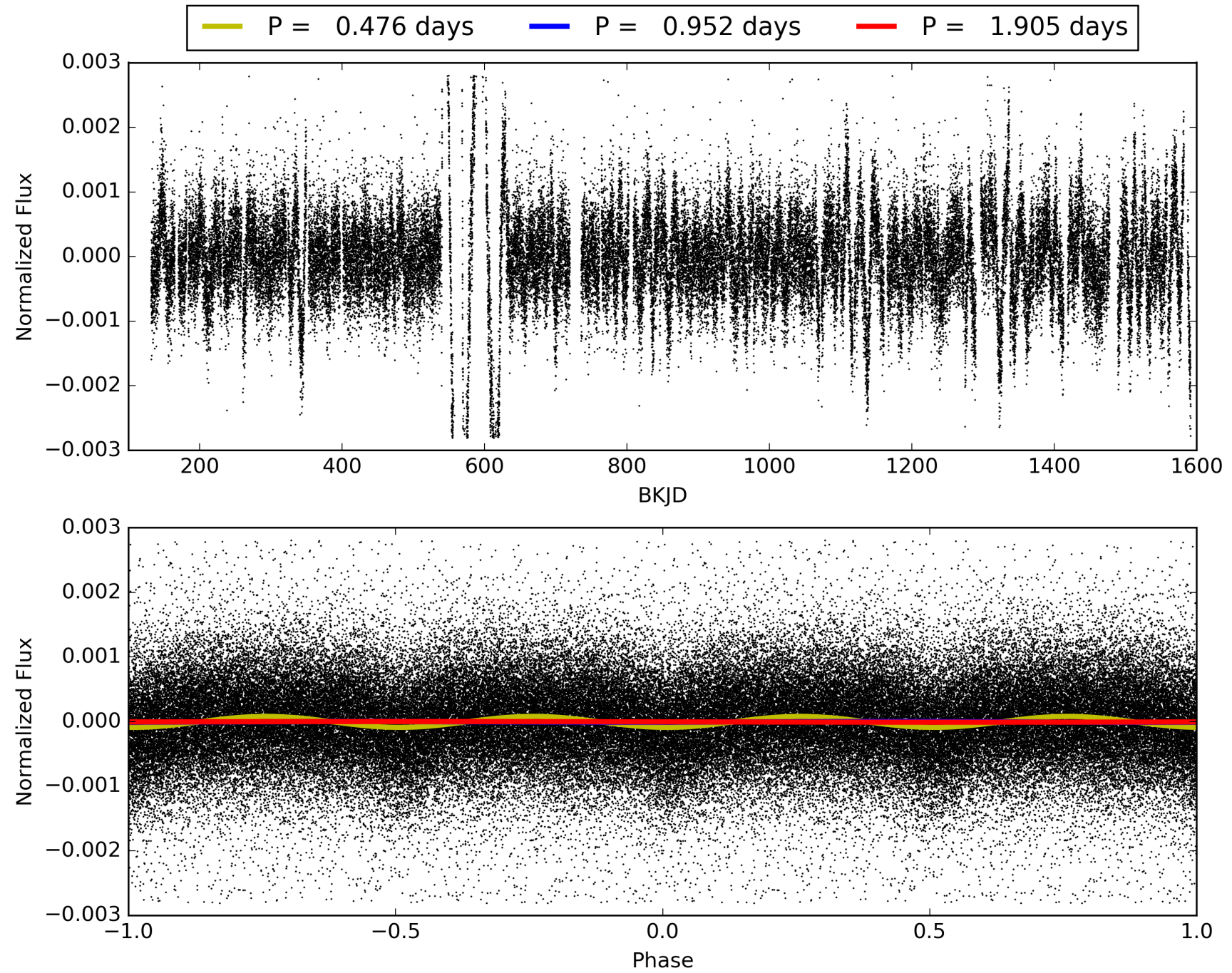
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:36:02 Z

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

TCE 010858803-02, PDC Light Curves

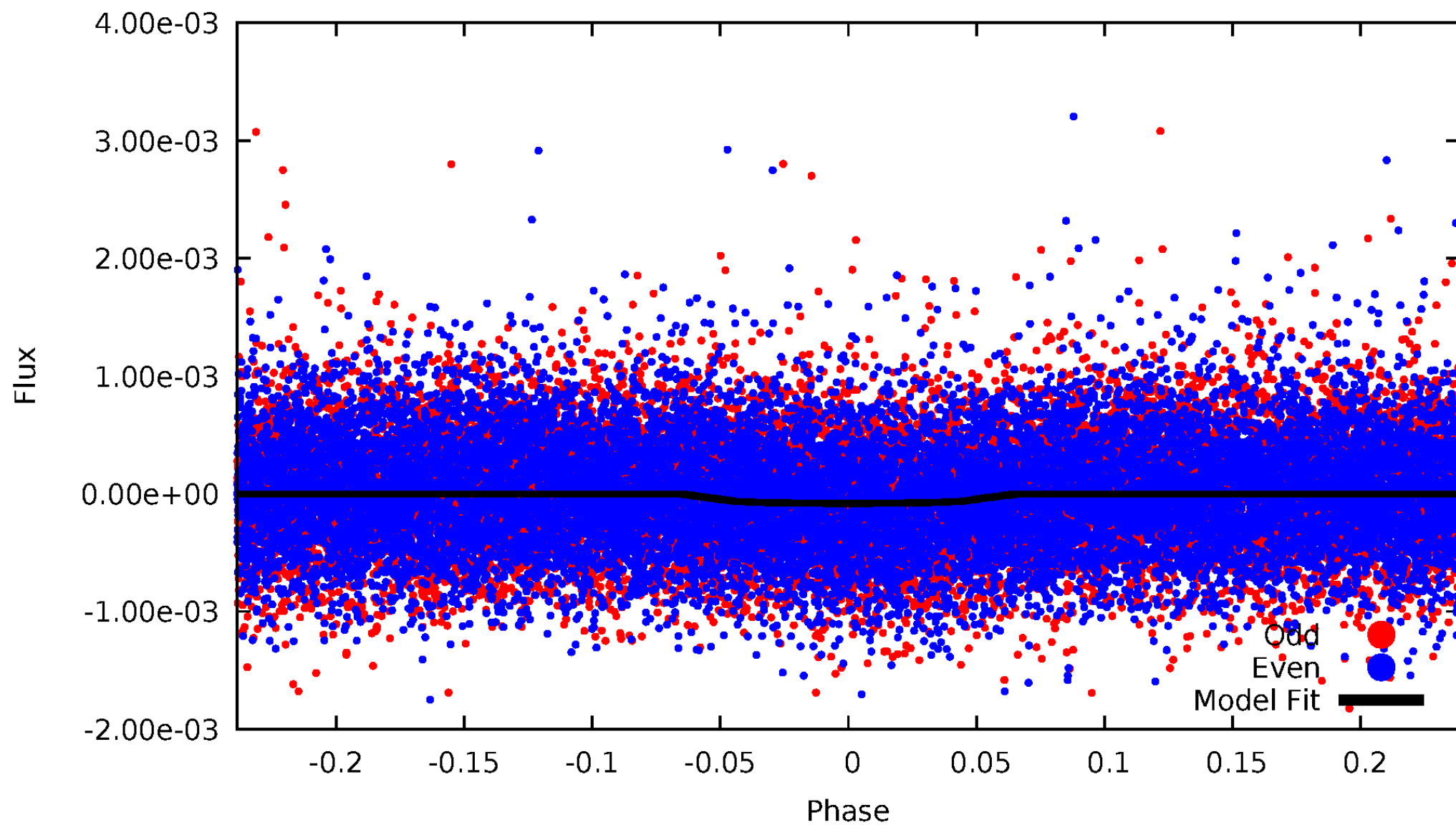


TCE 010858803-02



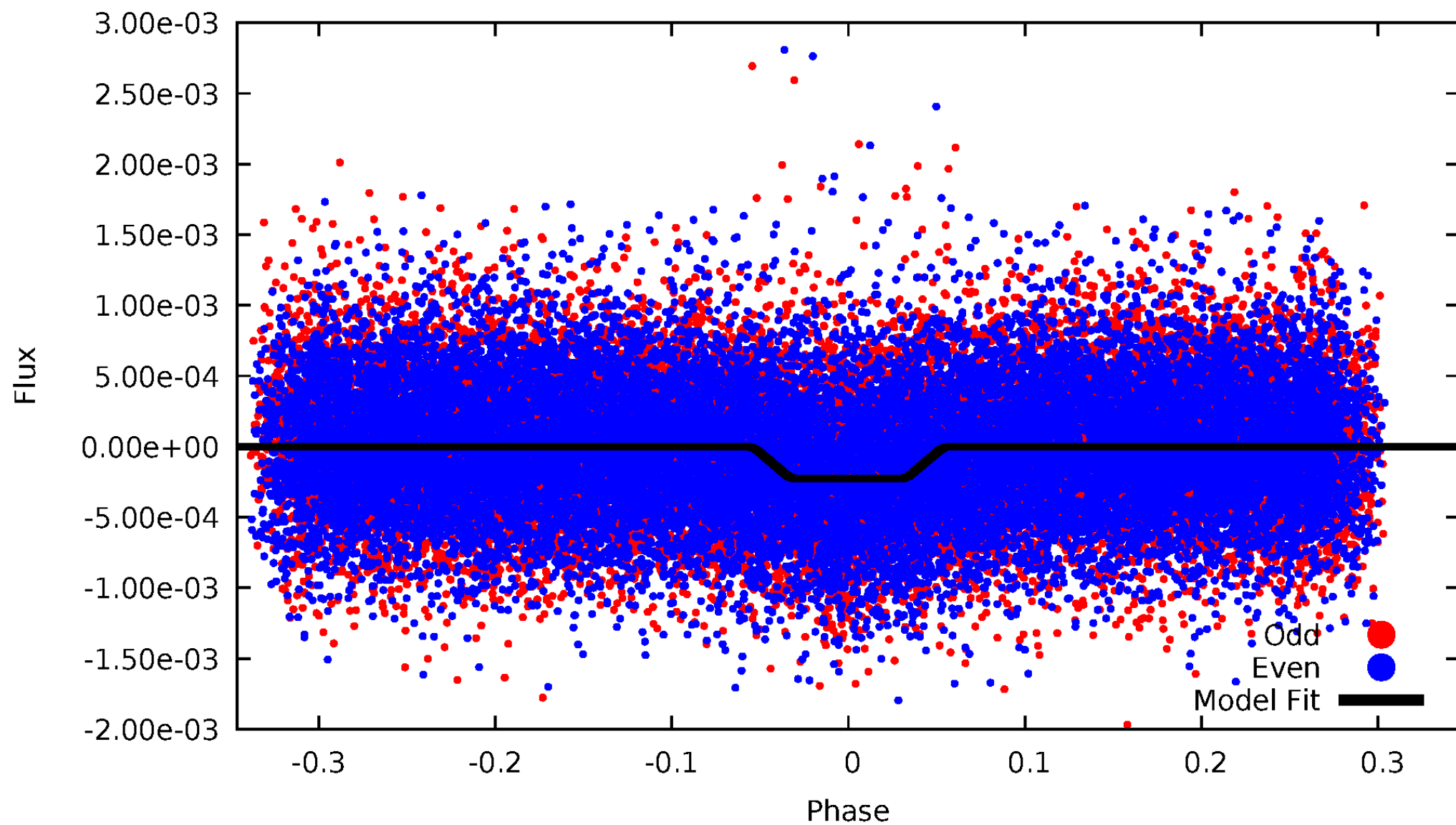
DV Odd/Even

TCE 010858803-02



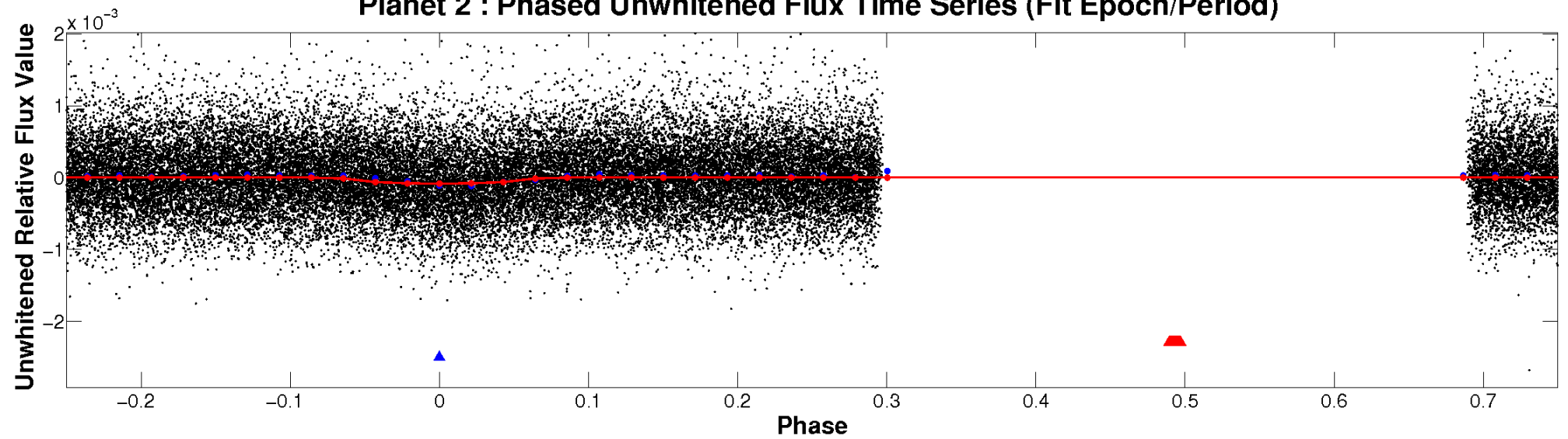
ALT Odd/Even

TCE 010858803-02

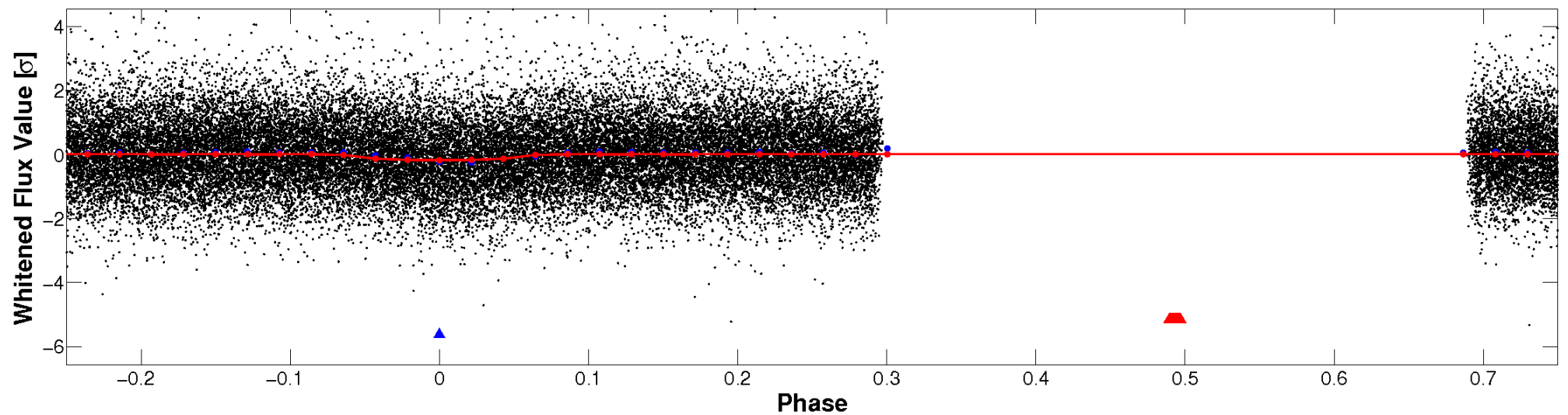


Non-Whitened Vs. Whitened Light Curve

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

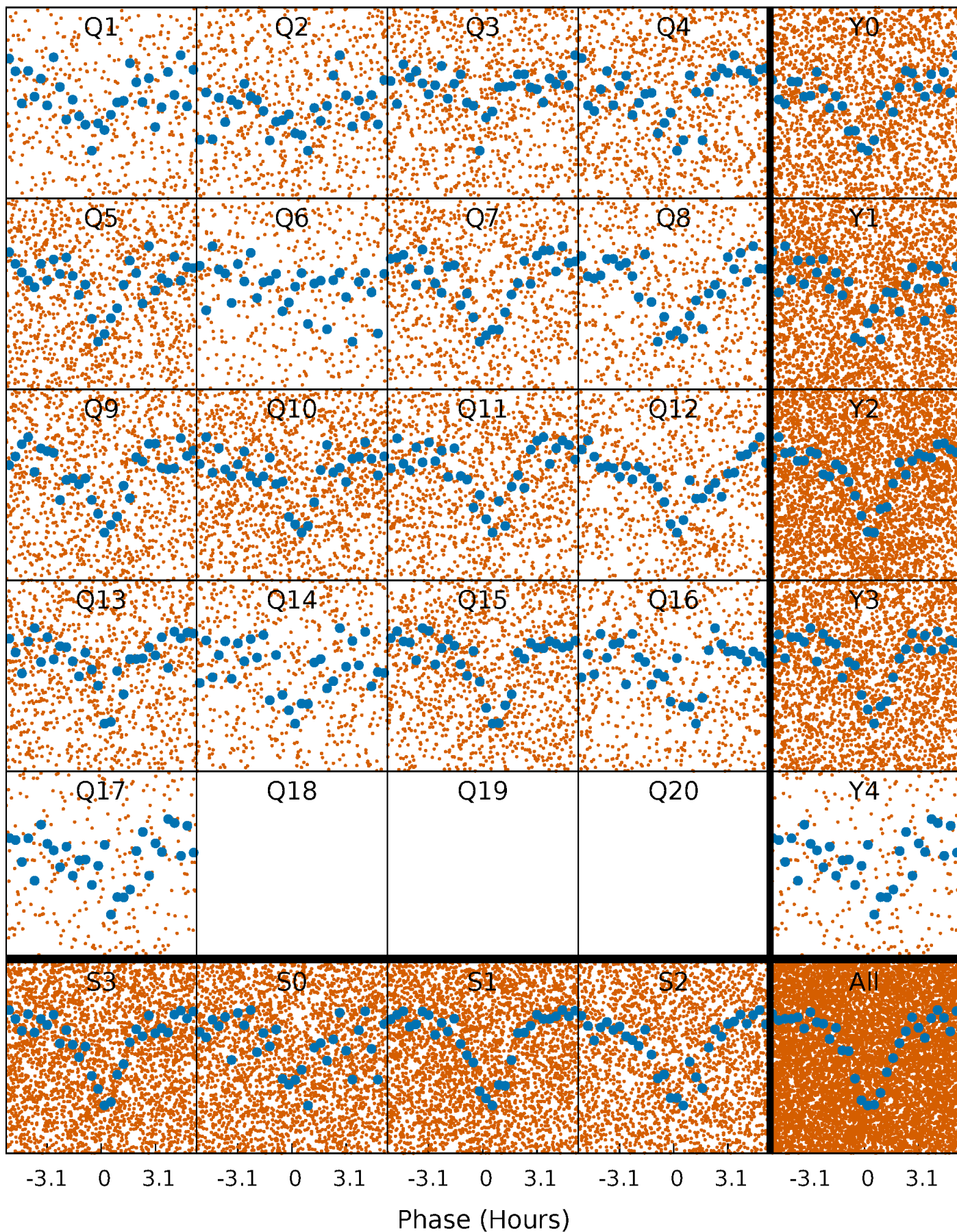


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



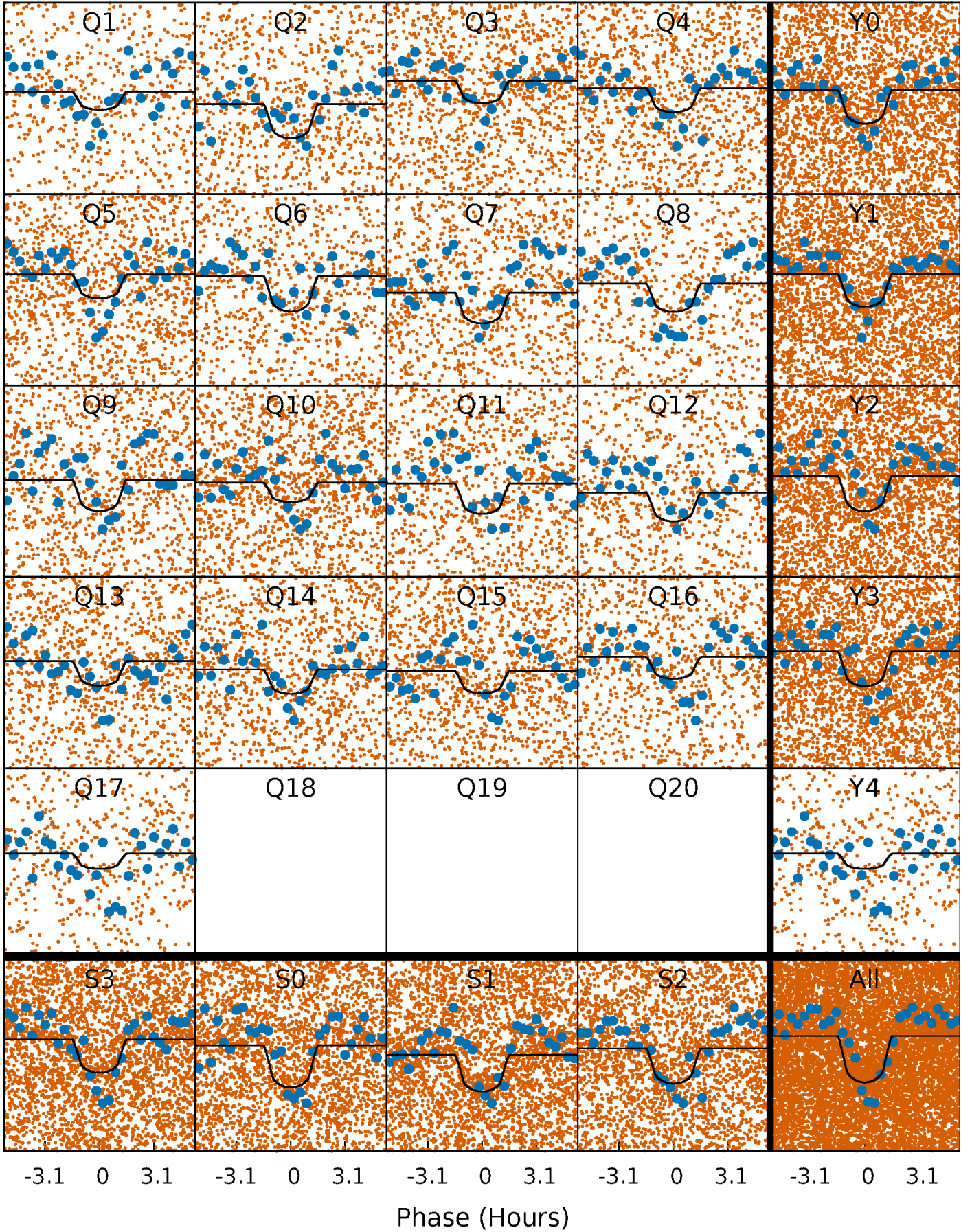
PDC Quarter-Phased Transit Curves

TCE 010858803-02 P= 0.952349 Days $T_0=131.871439$ (BKJD)



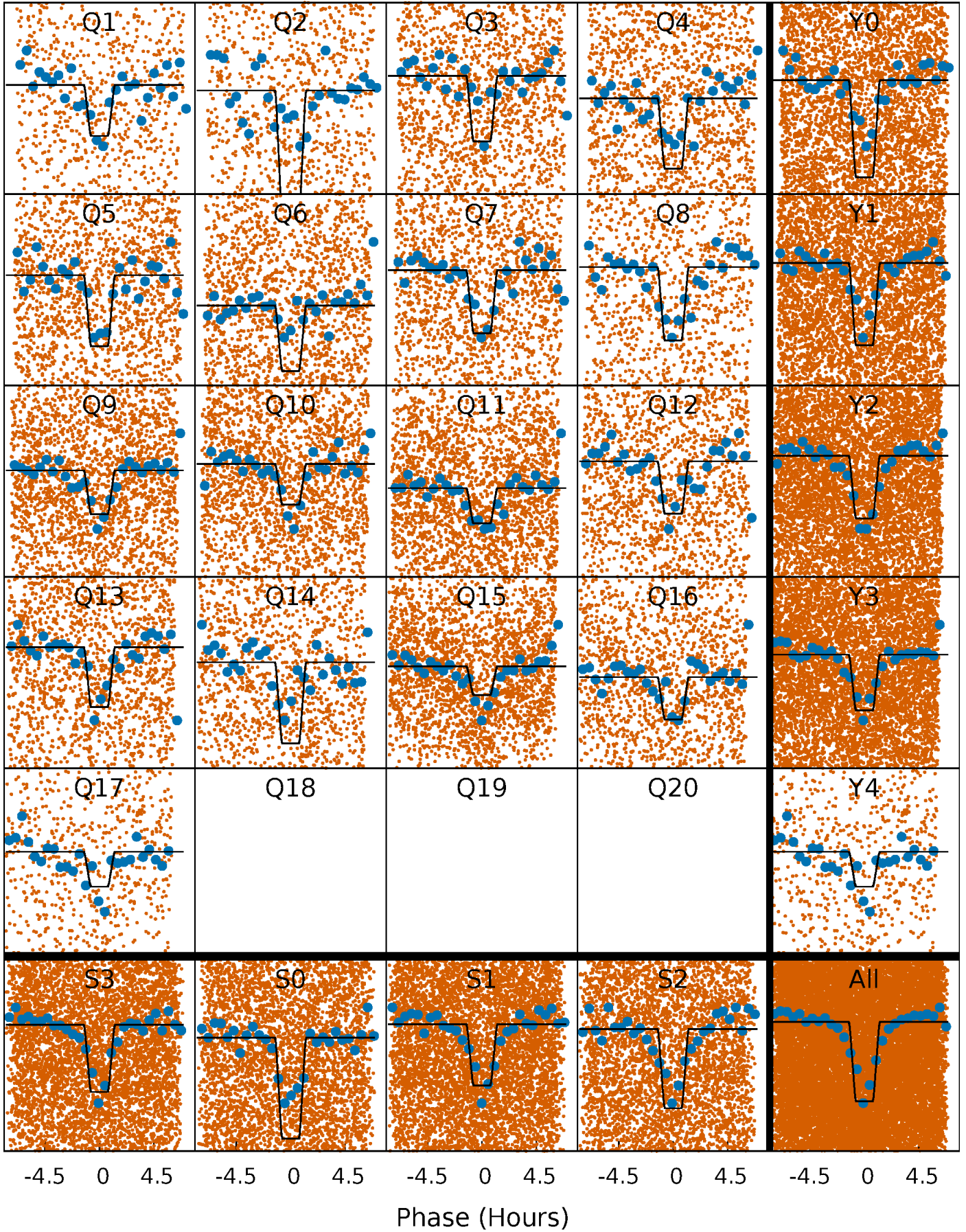
DV Quarter-Phased Transit Curves

TCE 010858803-02 P= 0.952349 Days $T_0=131.871439$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

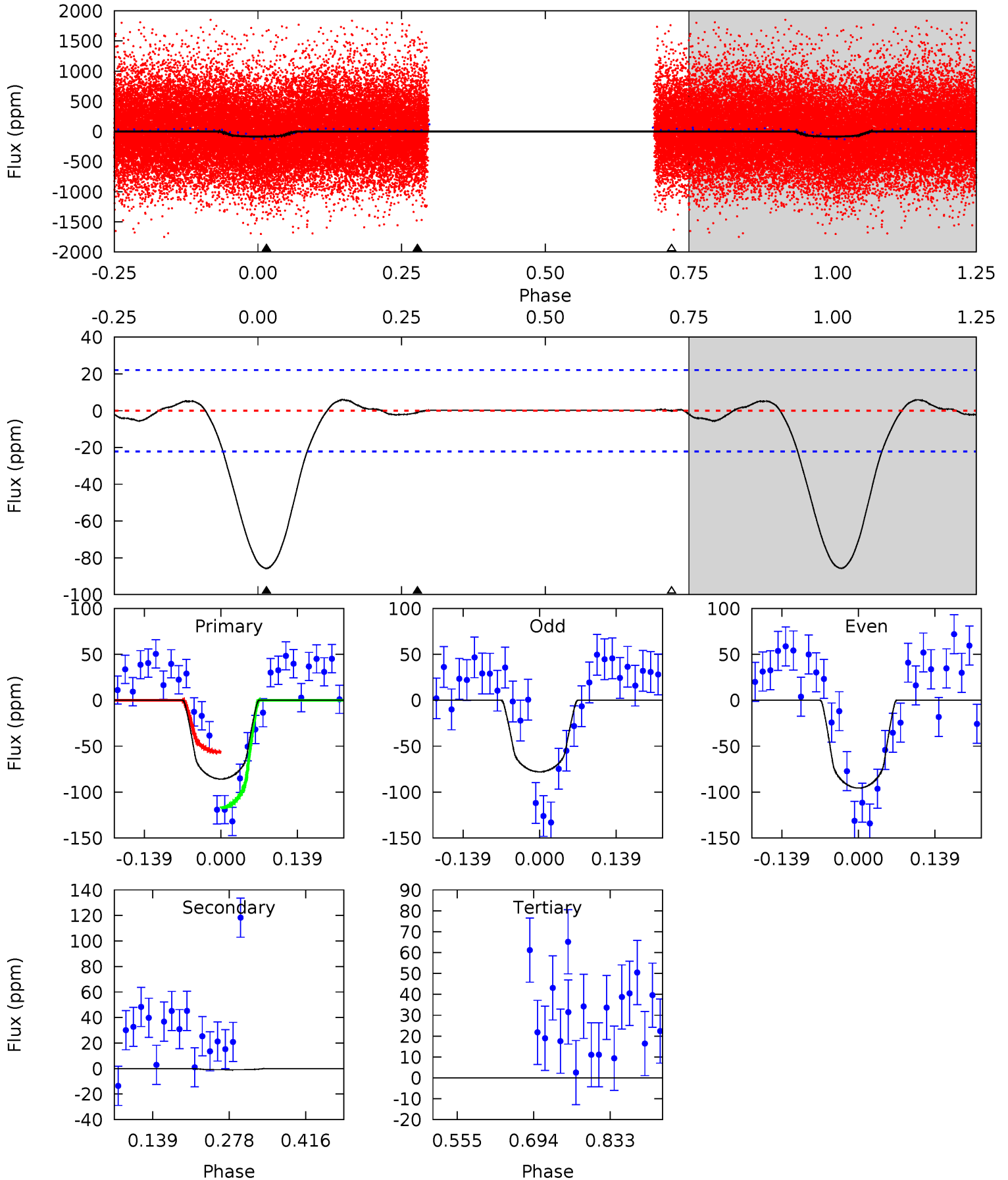
TCE 010858803-02 P= 0.952380 Days $T_0=131.857885$ (BKJD)



DV Model-Shift Uniqueness Test

010858803-02, P = 0.952349 Days, E = 130.919090 Days

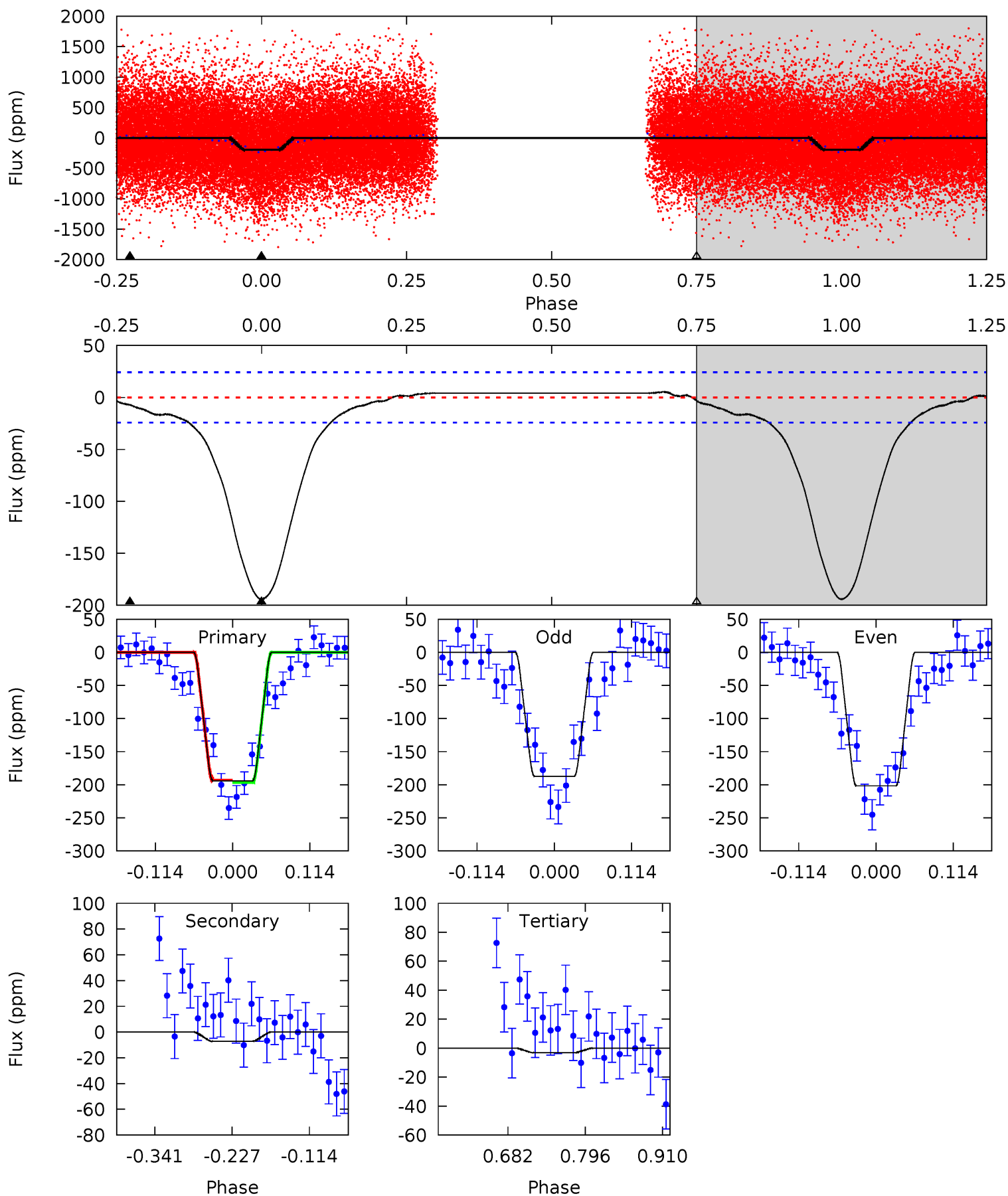
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	0.18	0.01	0	4.50	1.48	0.60	17.4	17.4	0.17	0.18	1.81	0.91	0.06	6.16



Alt Model-Shift Uniqueness Test

010858803-02, P = 0.952380 Days, E = 130.905505 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.4	1.35	0.60	0	4.54	1.58	1.48	35.8	36.4	0.75	1.35	1.33	0.95	0.03	0.32



Stellar Parameters For KIC 010858803

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4754^{+143}_{-143}	$4.508^{+0.084}_{-0.036}$	$0.460^{+0.050}_{-0.300}$	$0.821^{+0.041}_{-0.083}$	$0.791^{+0.046}_{-0.046}$	$2.015^{+0.663}_{-0.248}$
	+3%/-3%	+2%/-1%	+11%/-65%	+5%/-10%	+6%/-6%	+33%/-12%
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 010858803-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1 ± 5	$0.97^{+0.64}_{-0.50}$	1990^{+72}_{-74}	-2289^{+5323}_{-627}	$0.123^{+1.749}_{-0.934}$
Alt.	-7 ± 5	$1.33^{+0.66}_{-0.65}$	1999^{+66}_{-82}	2491^{+779}_{-4756}	$0.634^{+2.122}_{-0.479}$

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

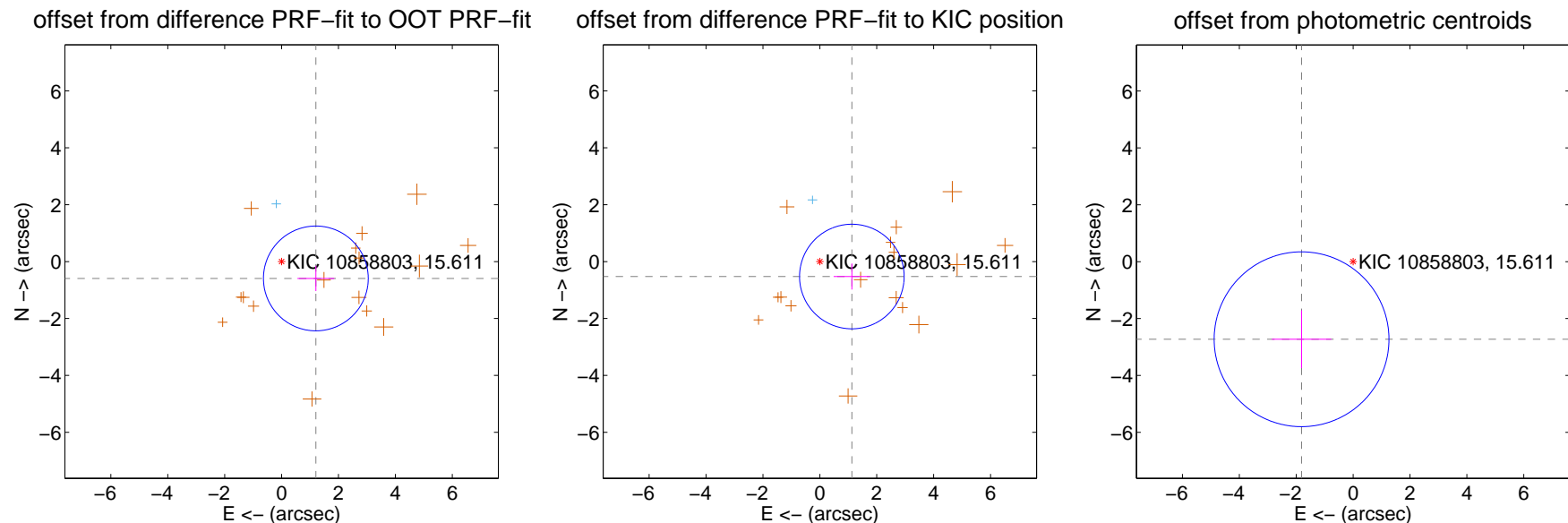
DV Centroid Data

Supplemental centroid analysis for 010858803-02. Kepler magnitude: 15.61. Transit SNR 12.56

There are 1 quarters with good PRF difference image offsets

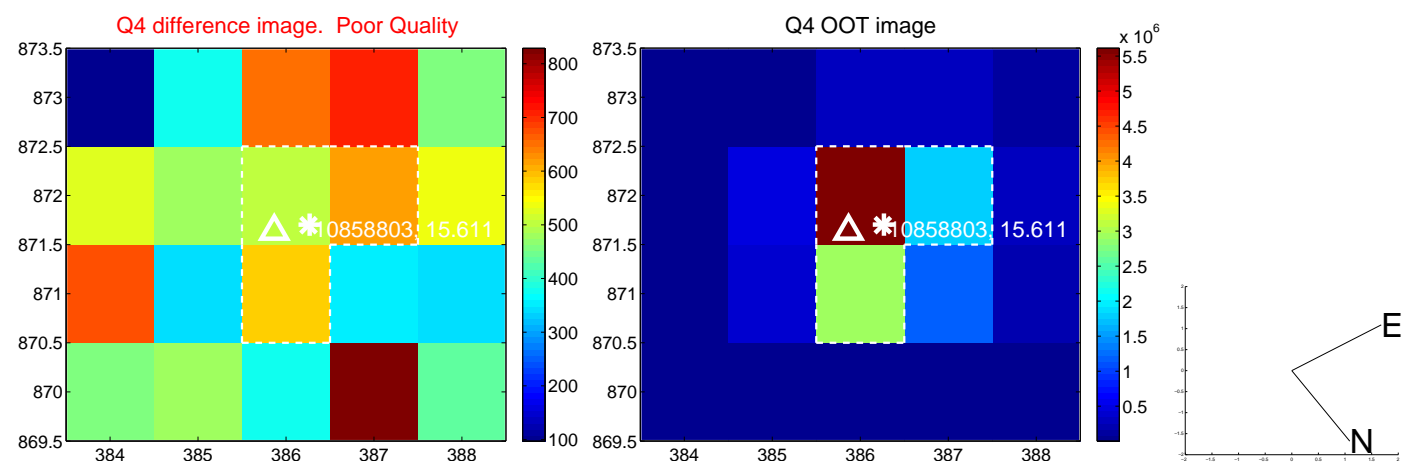
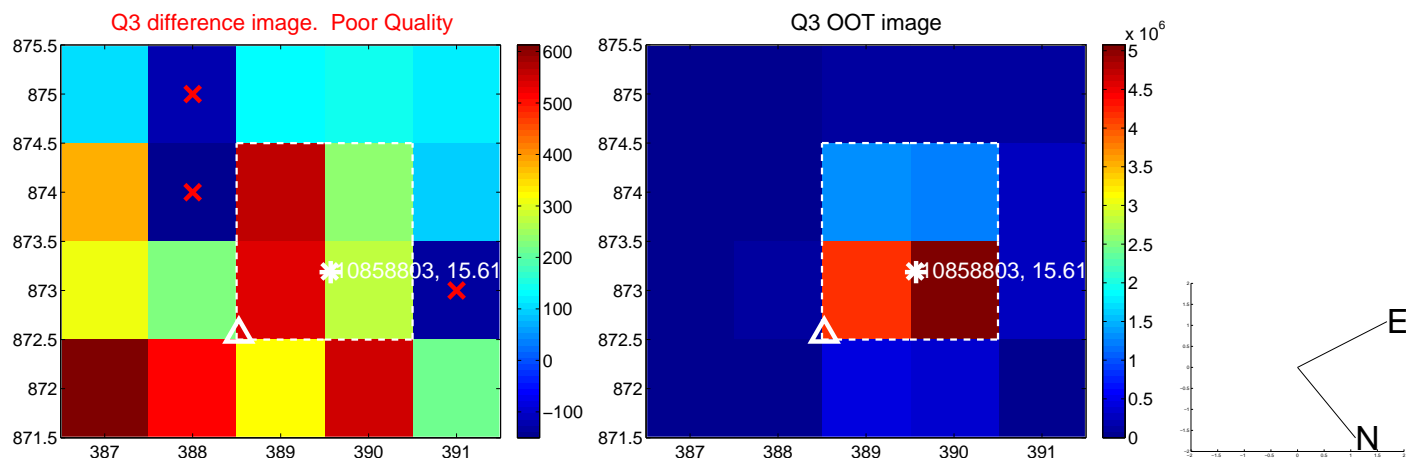
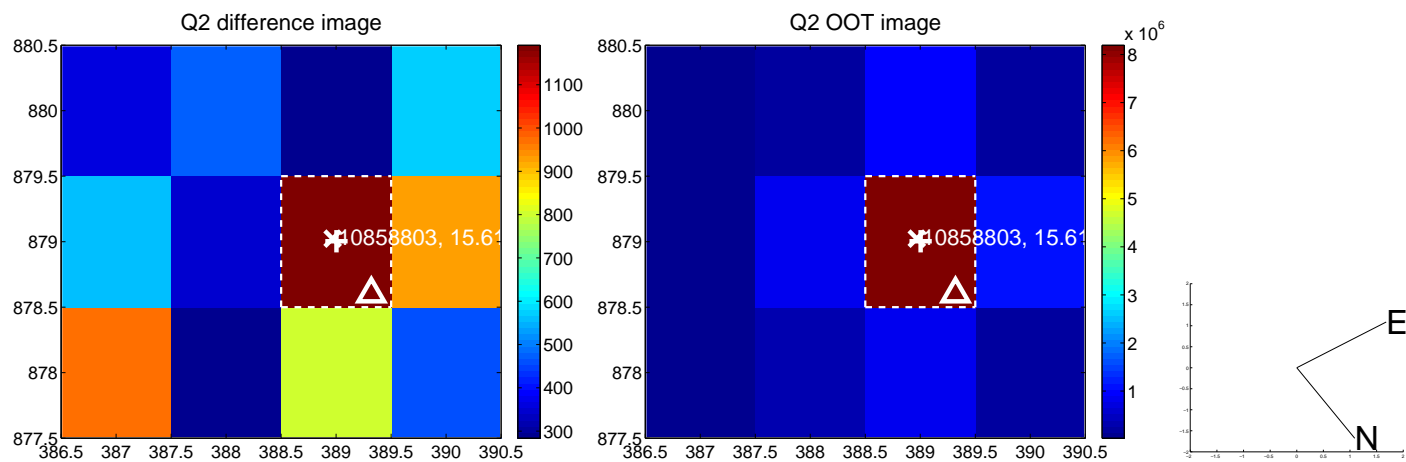
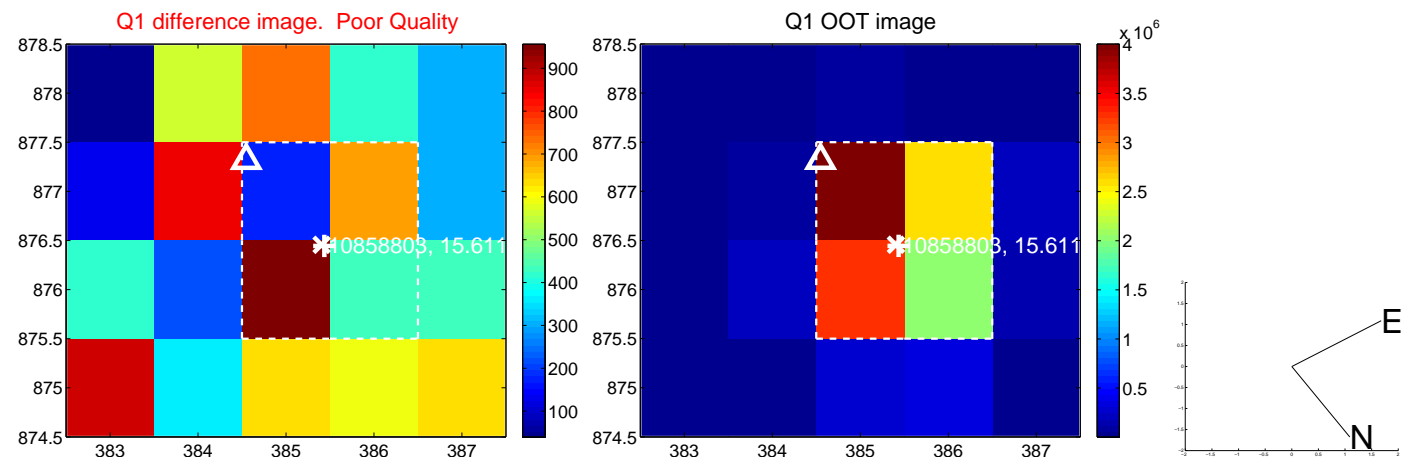
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.343 ± 0.614	2.19	-1.205 ± 0.648	-0.592 ± 0.446
PRF-fit source offset from KIC position	1.242 ± 0.613	2.03	-1.125 ± 0.642	-0.525 ± 0.458
photometric centroid source offset	3.28 ± 1.02	3.20	1.81 ± 1.05	-2.73 ± 1.01

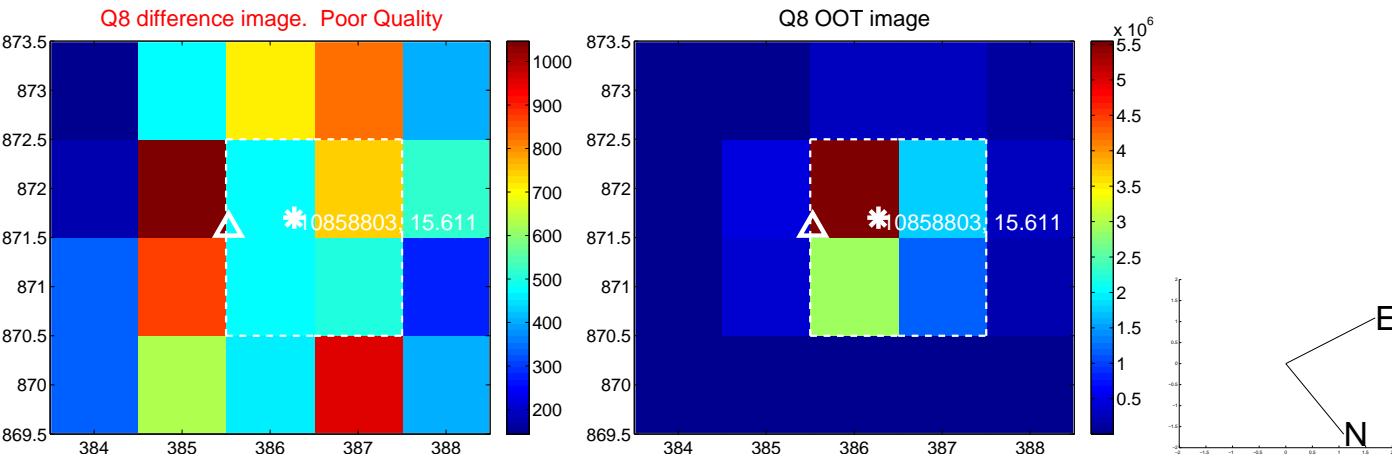
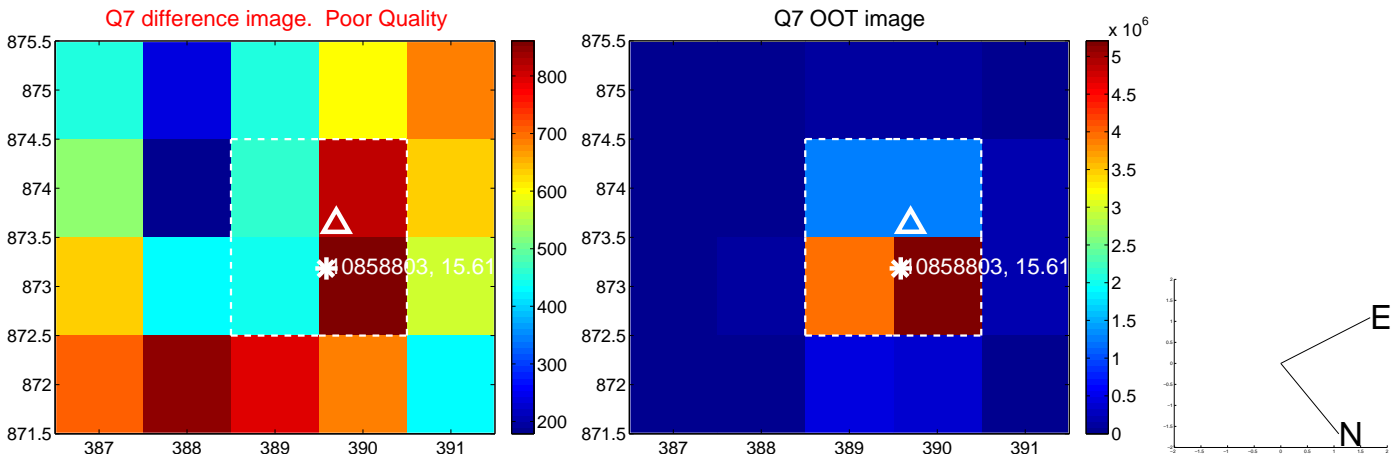
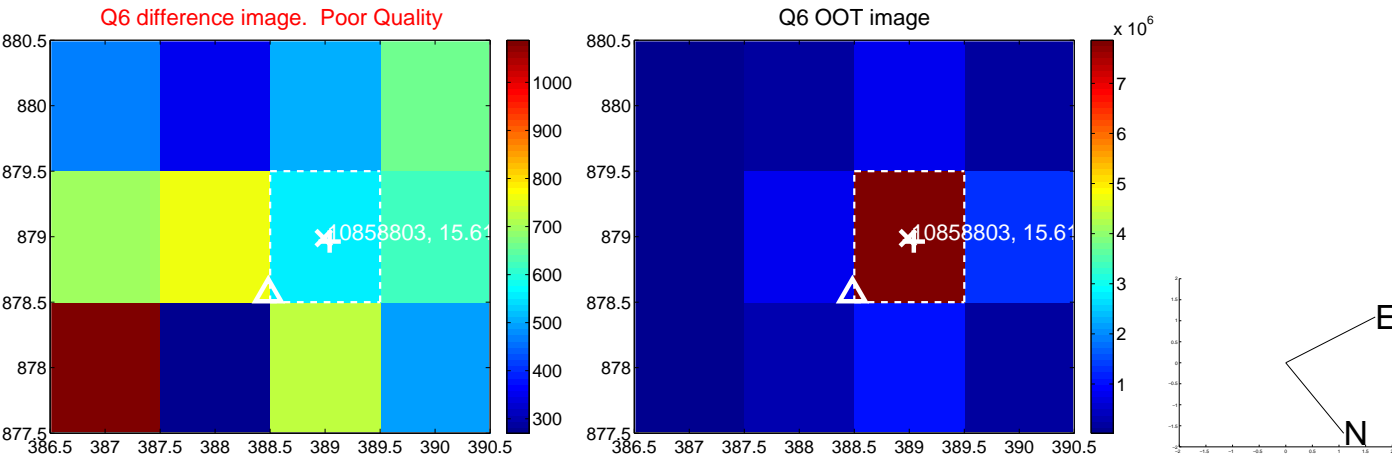
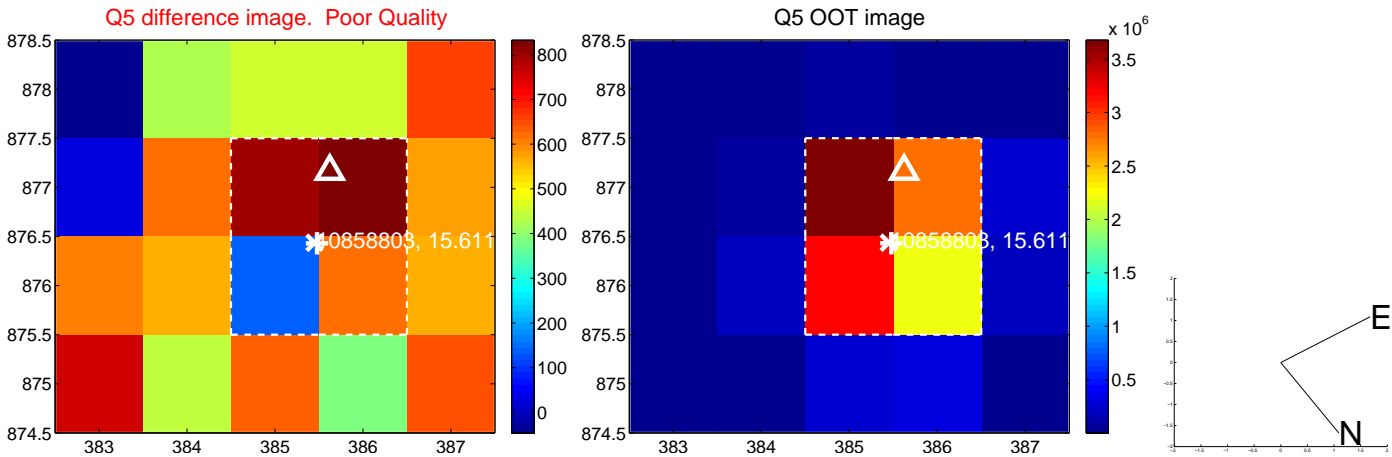


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

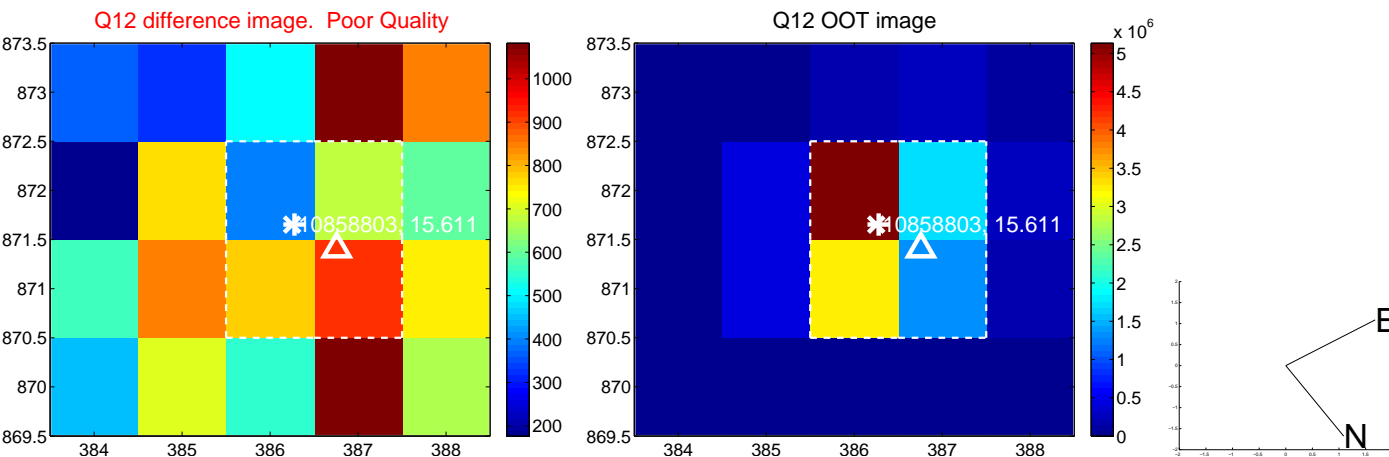
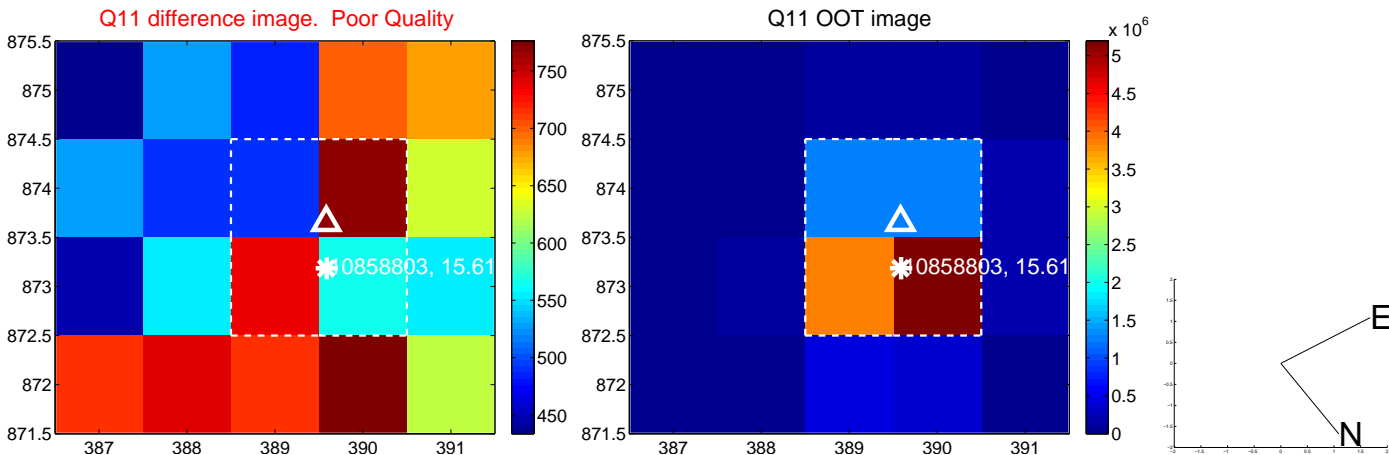
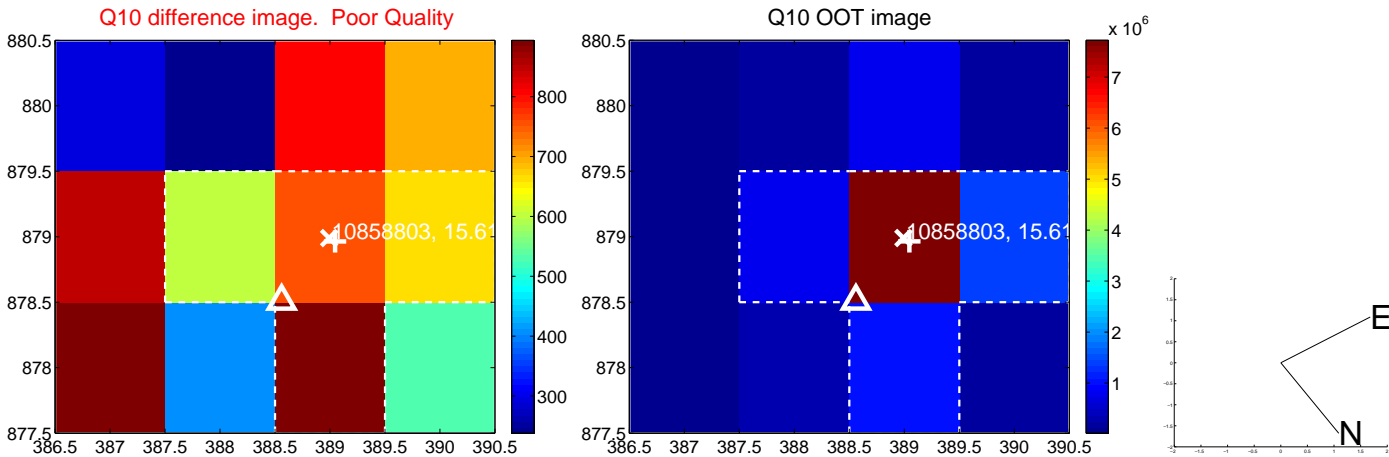
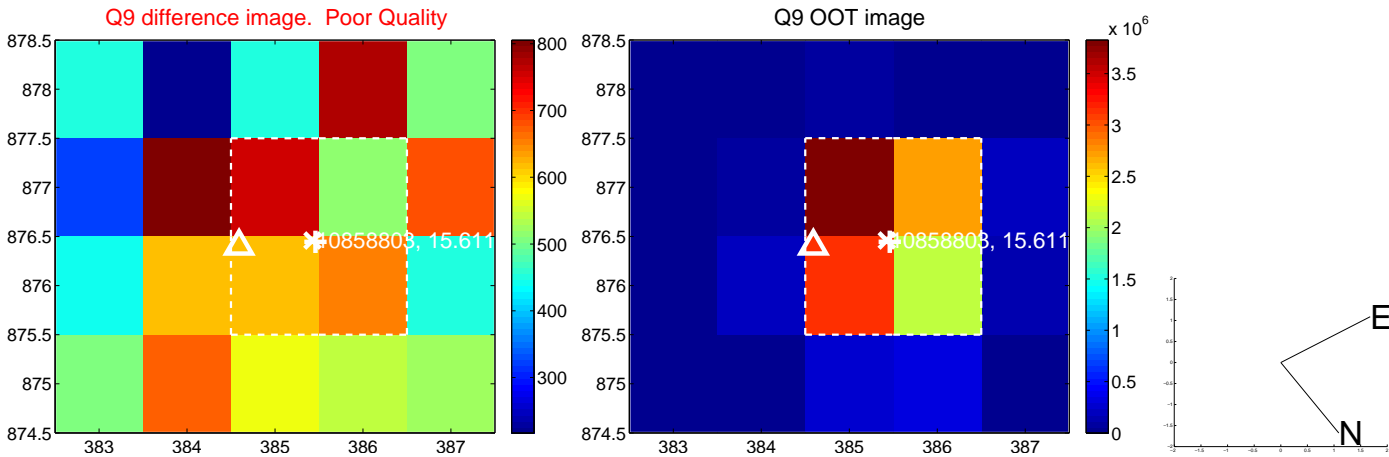
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



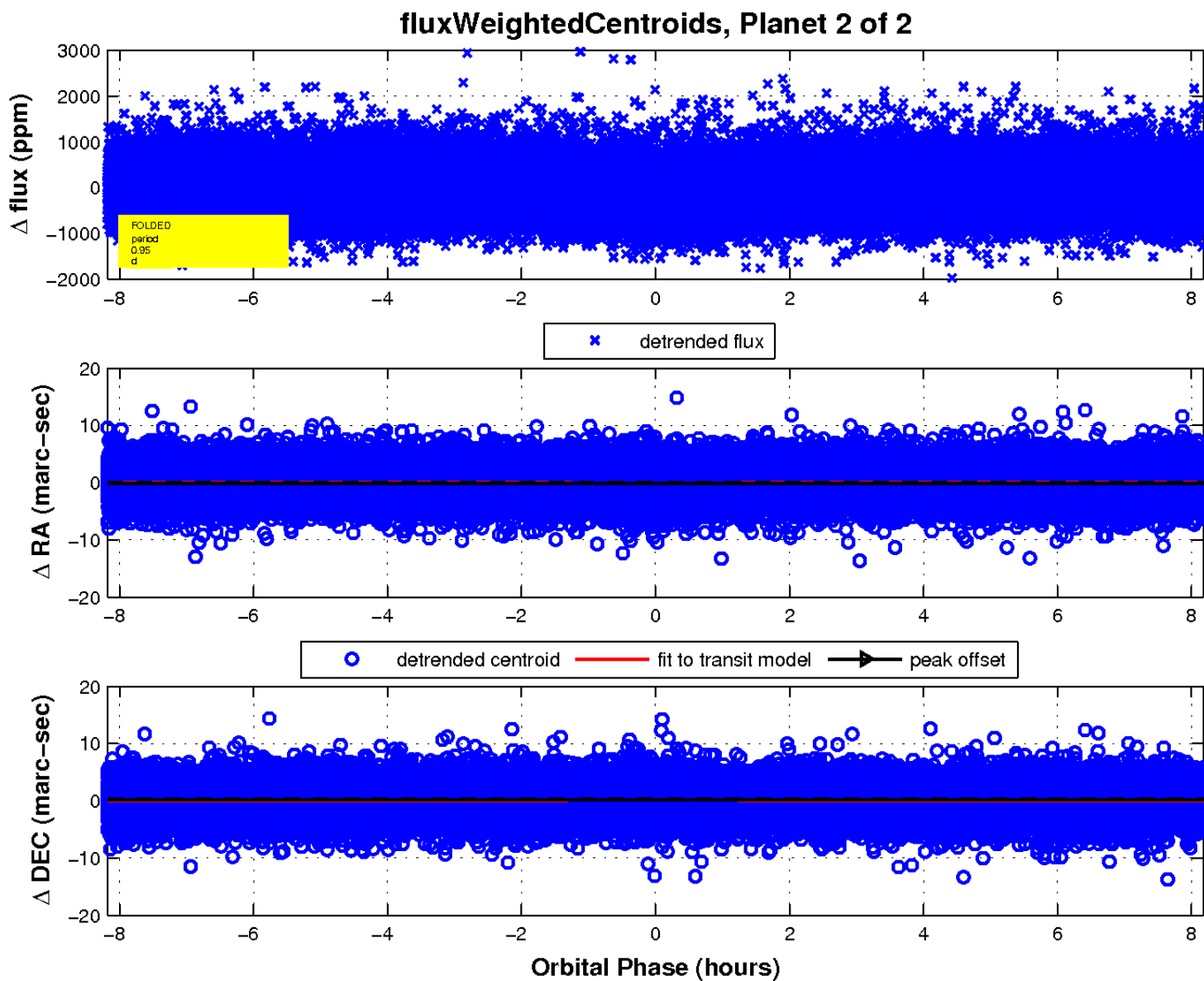
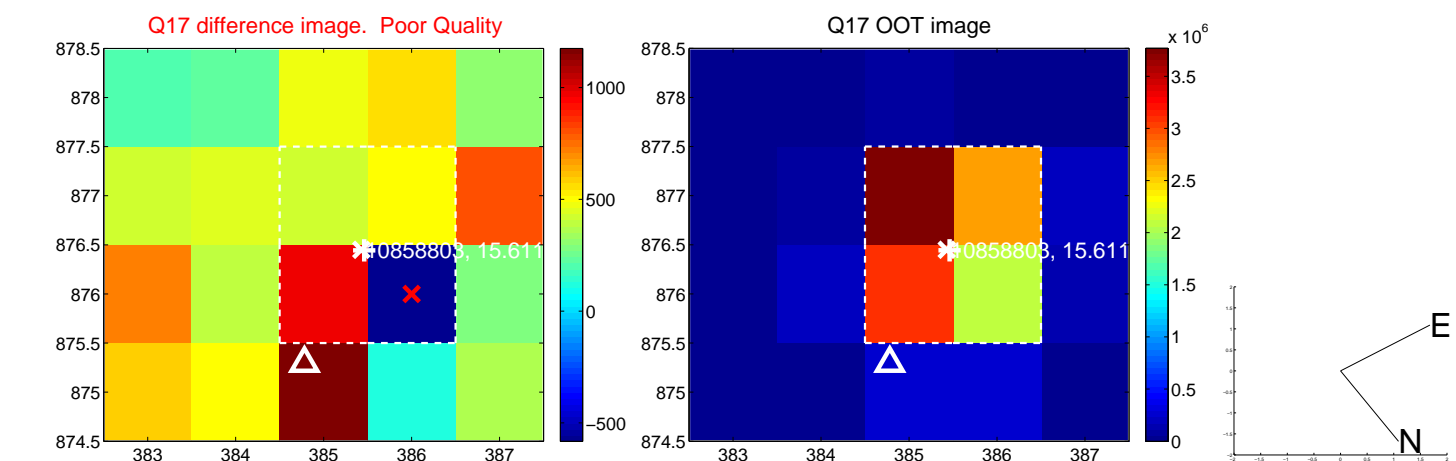
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

