

KIC 005385509

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})
005385509-01	OBS	6003.01	12.425918	141.501439	315.0	22.441	12.6	16.0	0.69	4873	1.55	28.59
005385509-02	OBS	No	12.423495	134.141263	255.7	24.635	10.5	13.5	0.69	4873	1.10	28.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005385509-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
005385509-02	OBS	FP	0.00	1	0	0	1	LPP_DV—SAME_NTL_PERIOD—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 005385509-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	ΔRow	ΔCol	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005385509-01	5385509	V380-Cyg-pri	5385723	1:1	278.5	-37	-59	5.77	15.71	460.10	Direct-PRF	0	0.57	1.22

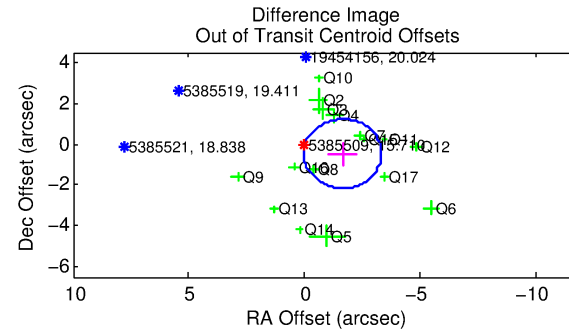
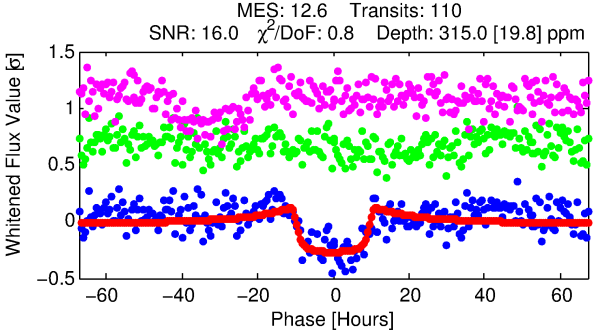
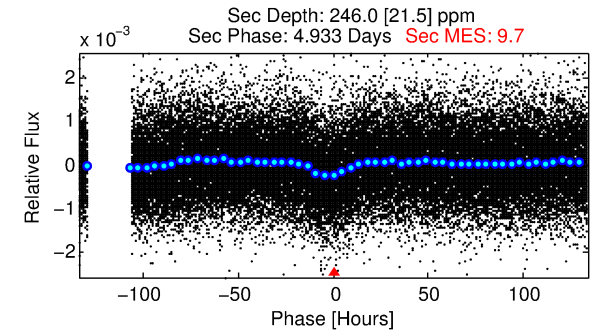
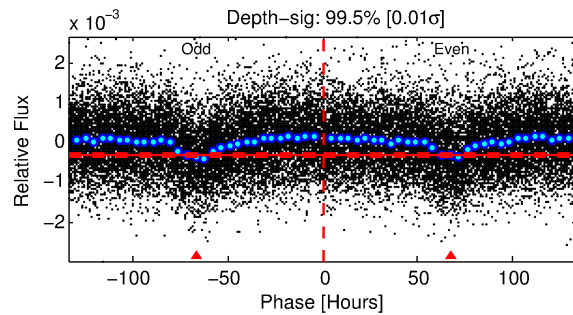
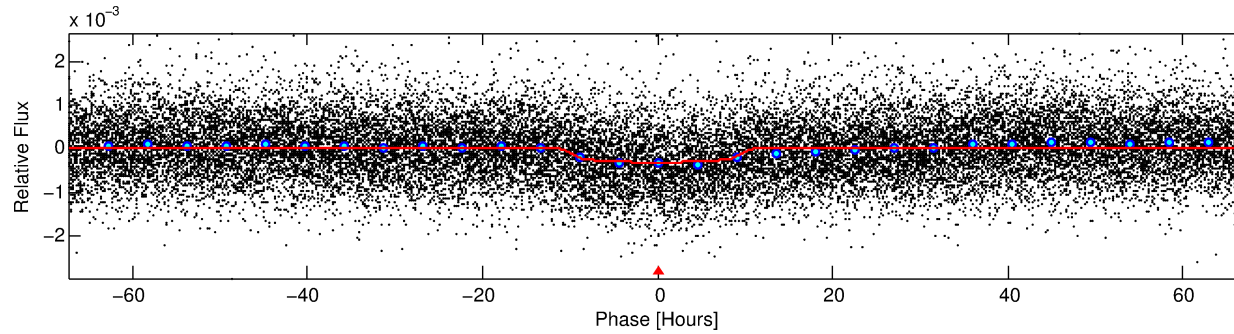
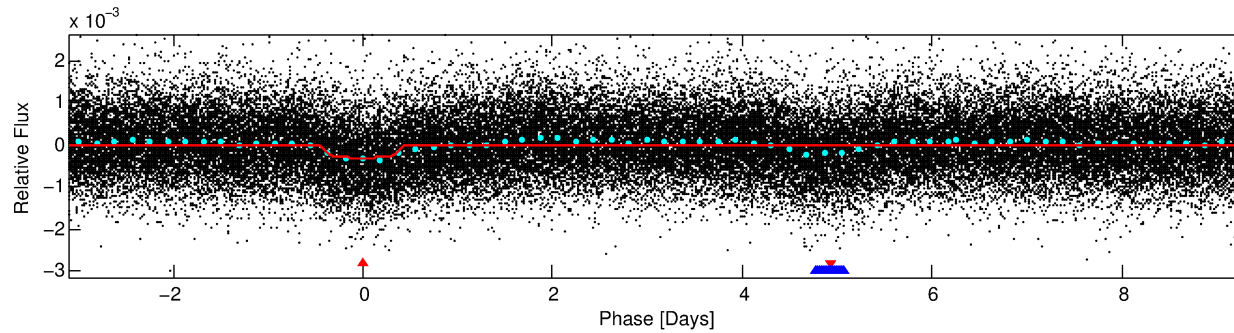
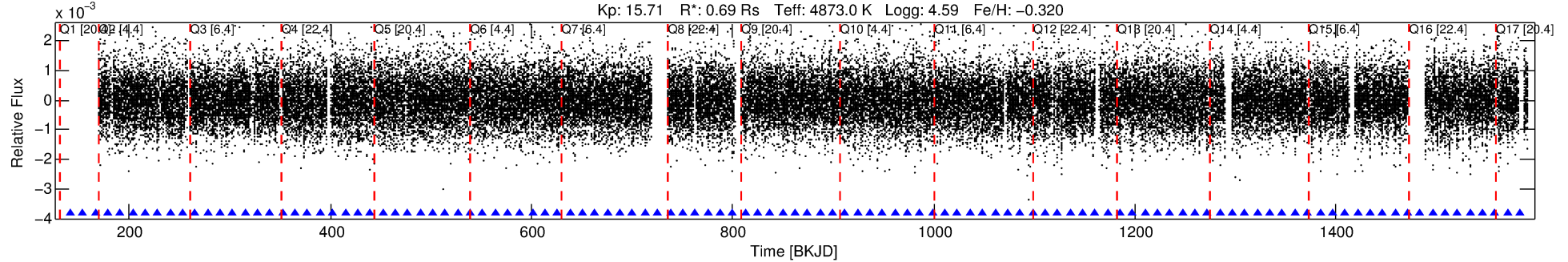
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 5385509 Candidate: 1 of 2 Period: 12.426 d

KOI: K06003.01 Corr: 0.974

Kp: 15.71 R*: 0.69 Rs Teff: 4873.0 K Logg: 4.59 Fe/H: -0.320



DV Fit Results:

Period = 12.42592 [0.00031] d
Epoch = 141.5014 [0.0211] BKJD
Rp/R* = 0.0206 [0.0012]
a/R* = 2.04 [0.30]
b = 0.93 [0.03]
Seff = 28.58 [4.72]
Teq = 590 [24] K
Rp = 1.56 [0.18] Re
a = 0.0921 [0.0074] AU
Ag = 474.85 [87.94] [5.39σ]
Teffp = 4255 [201] K [18.09σ]

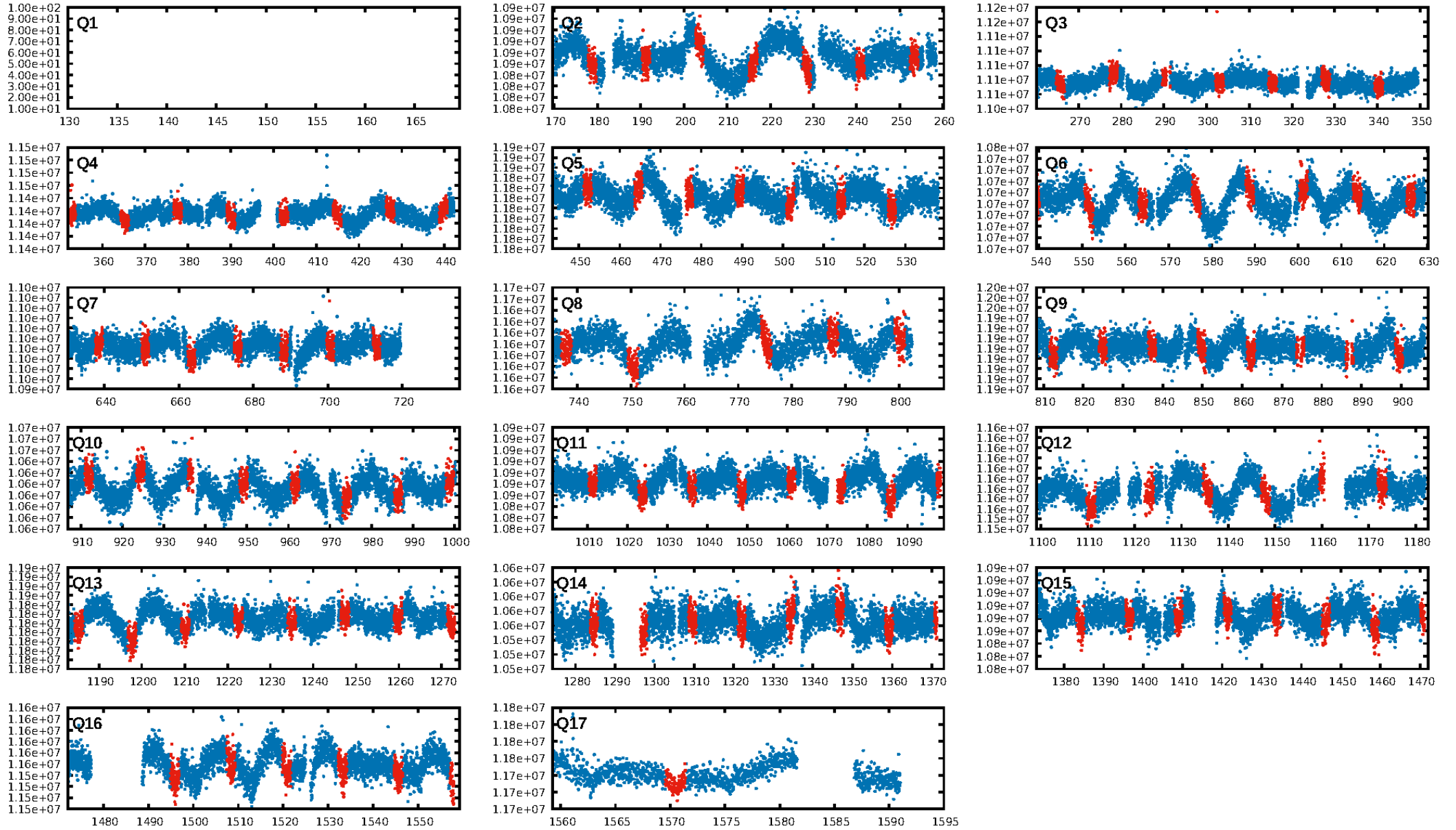
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 43.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.07e-38
RollingBand-fgt: 1.00 [109/109]
GhostDiagnostic-chr: 0.1015
Centroid-sig: 0.0%
Centroid-so: 1.518 arcsec [2.55σ]
OotOffset-rm: 1.713 arcsec [3.04σ]
KicOffset-rm: 1.600 arcsec [3.05σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.25 [4/16]
DiffImageOverlap-fno: 1.00 [16/16]

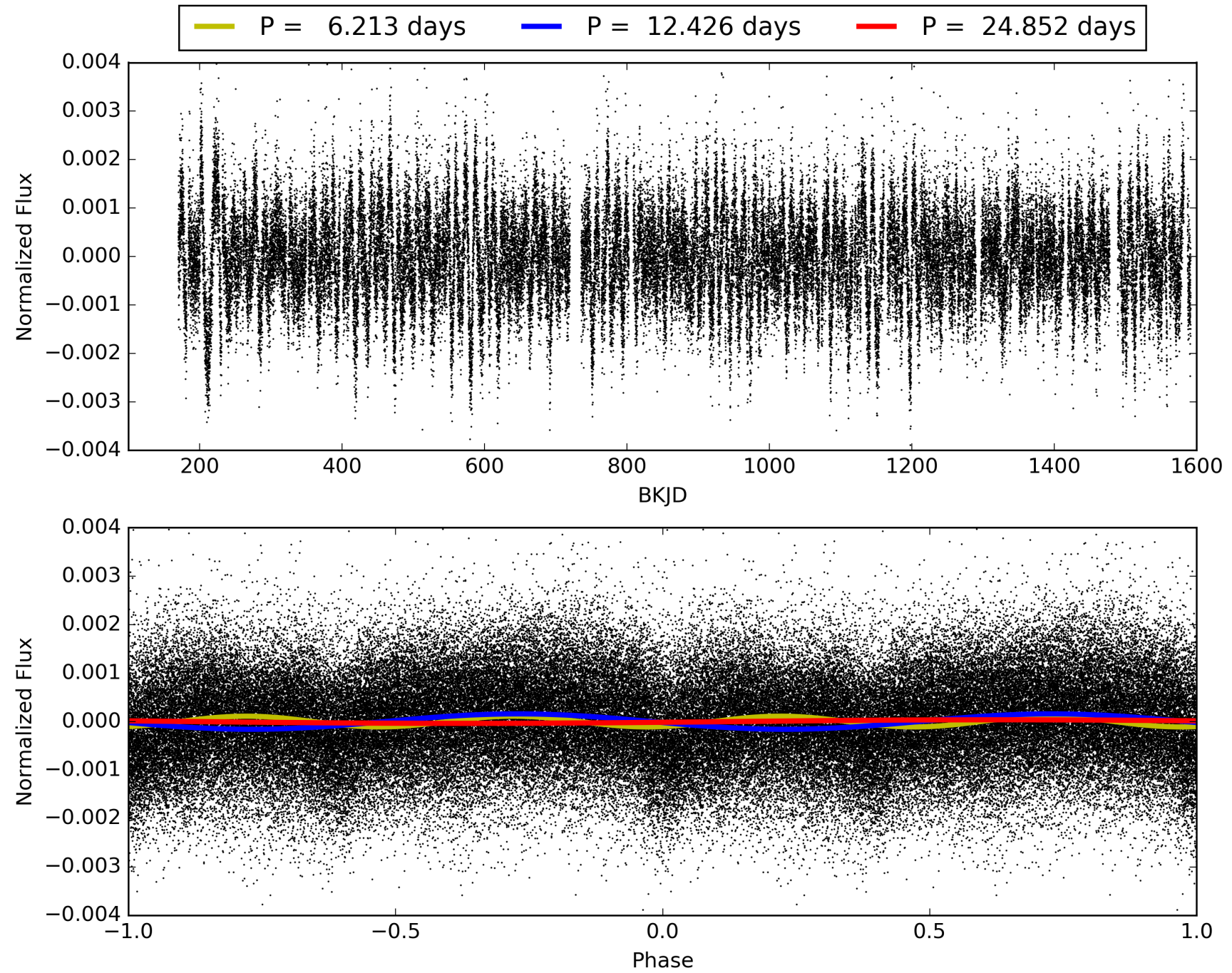
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:50:01 Z

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

TCE 005385509-01, PDC Light Curves

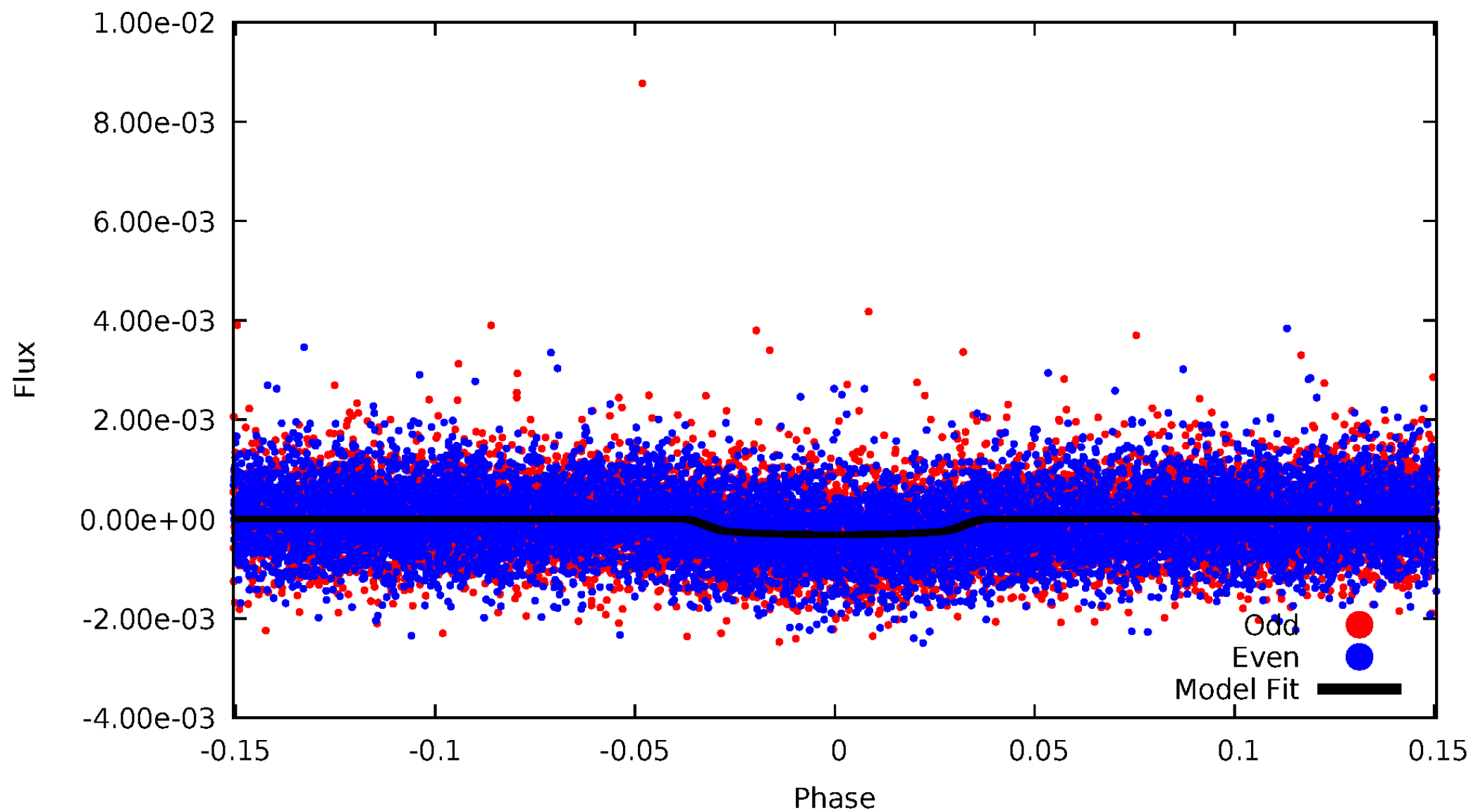


TCE 005385509-01



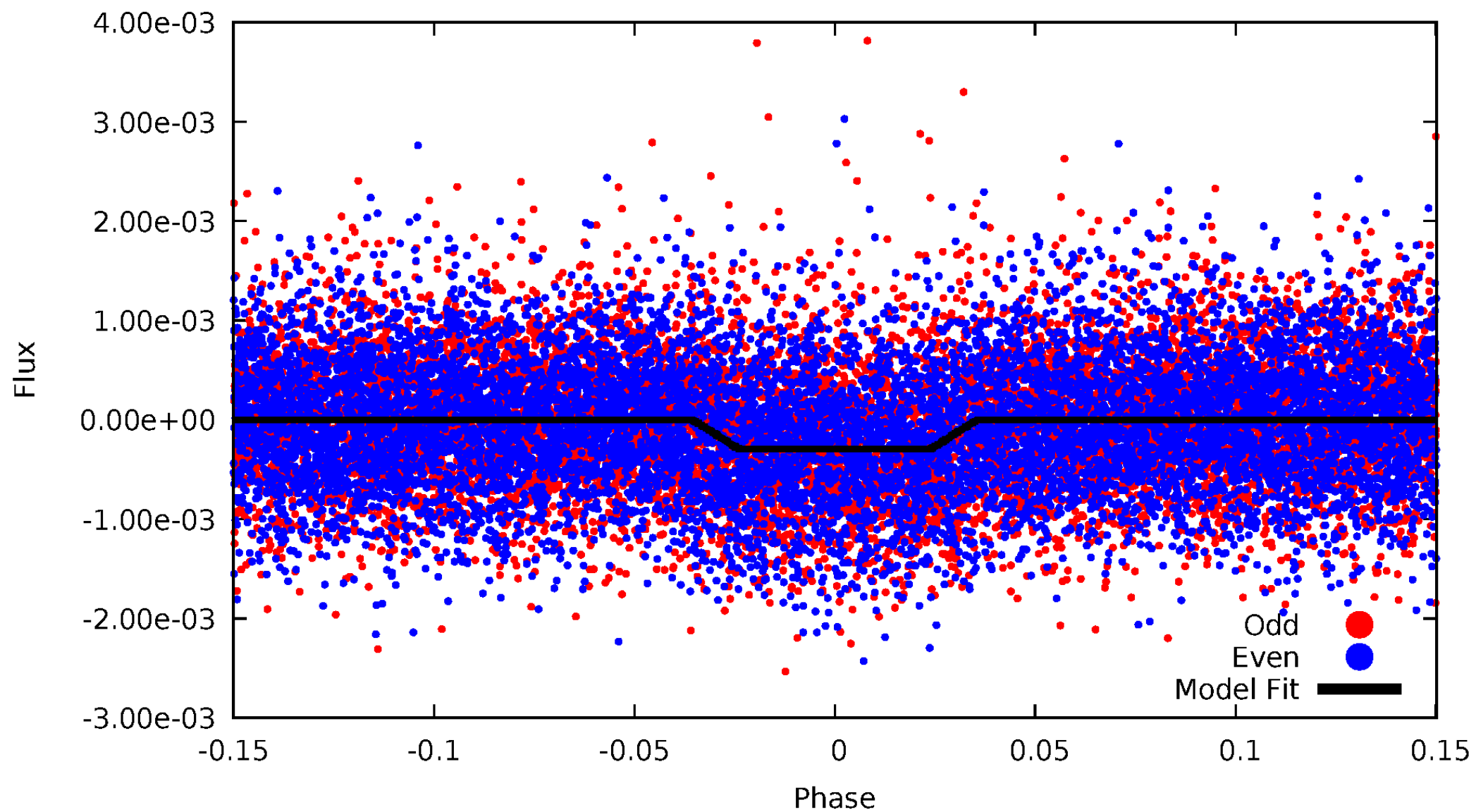
DV Odd/Even

TCE 005385509-01



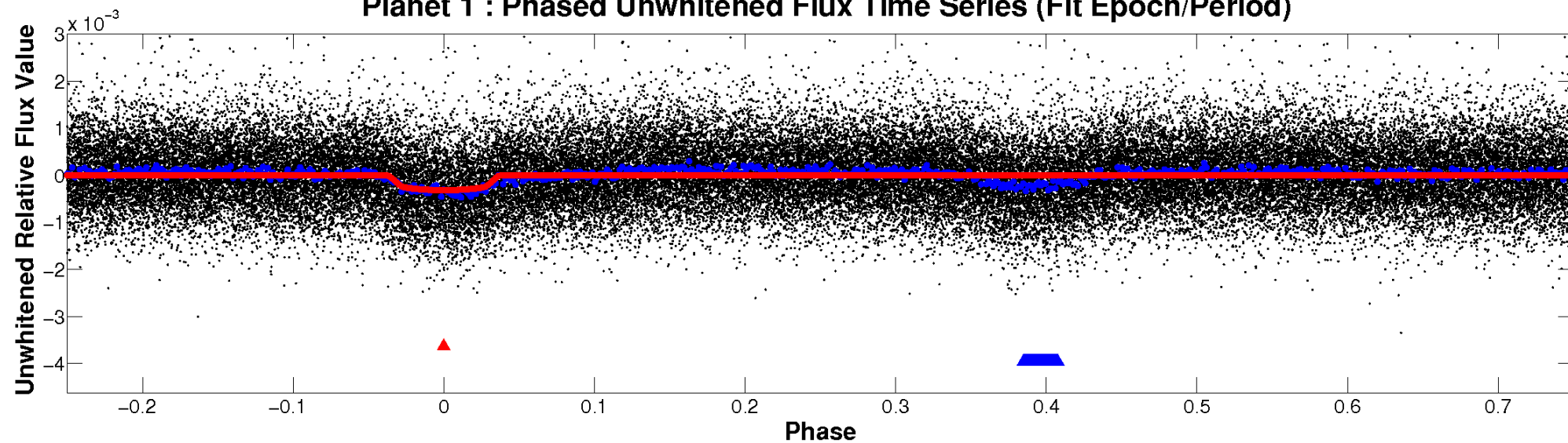
ALT Odd/Even

TCE 005385509-01

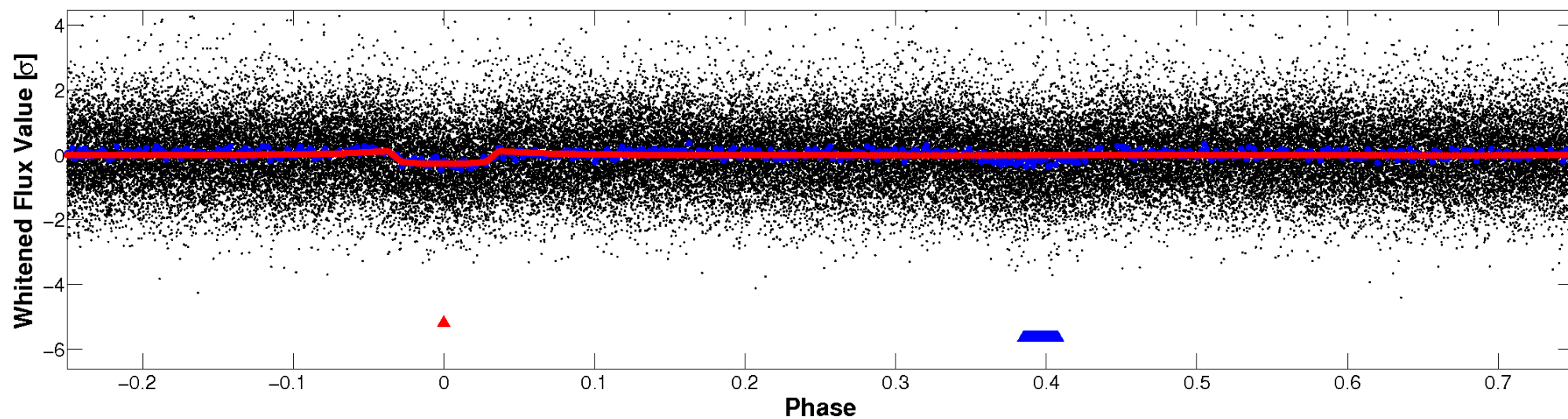


Non-Whitened Vs. Whitened Light Curve

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

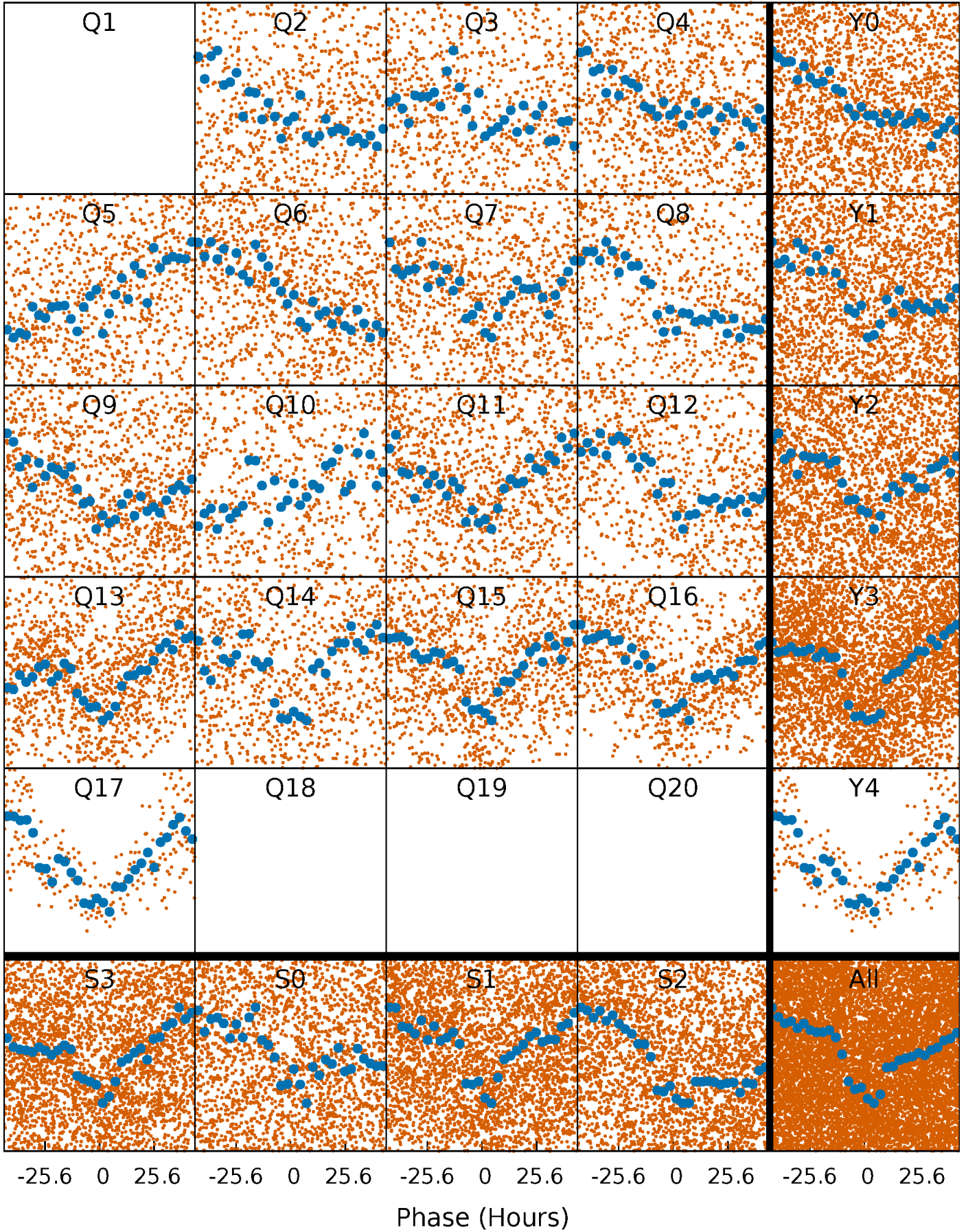


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



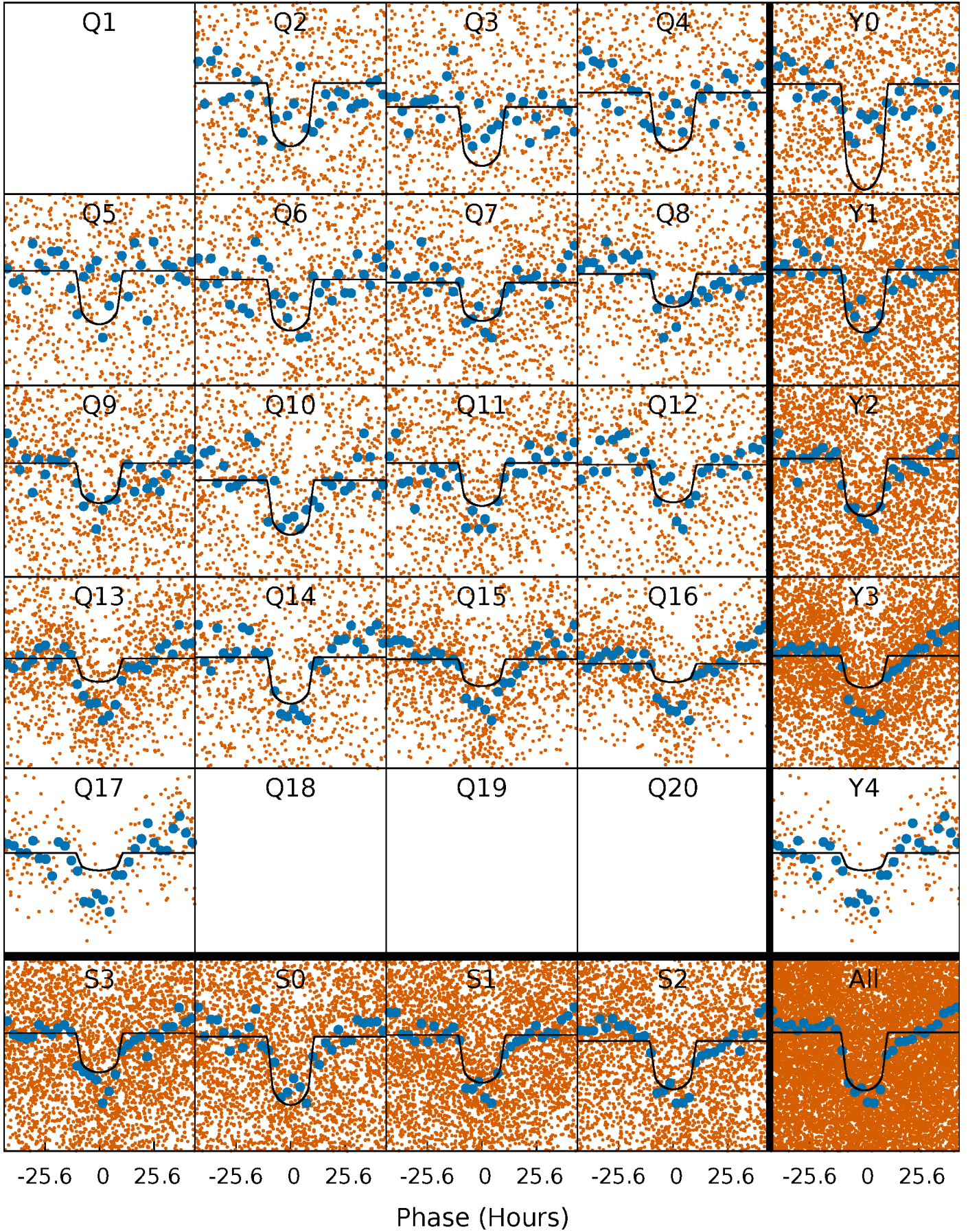
PDC Quarter-Phased Transit Curves

TCE 005385509-01 P= 12.425918 Days $T_0=141.501439$ (BKJD)



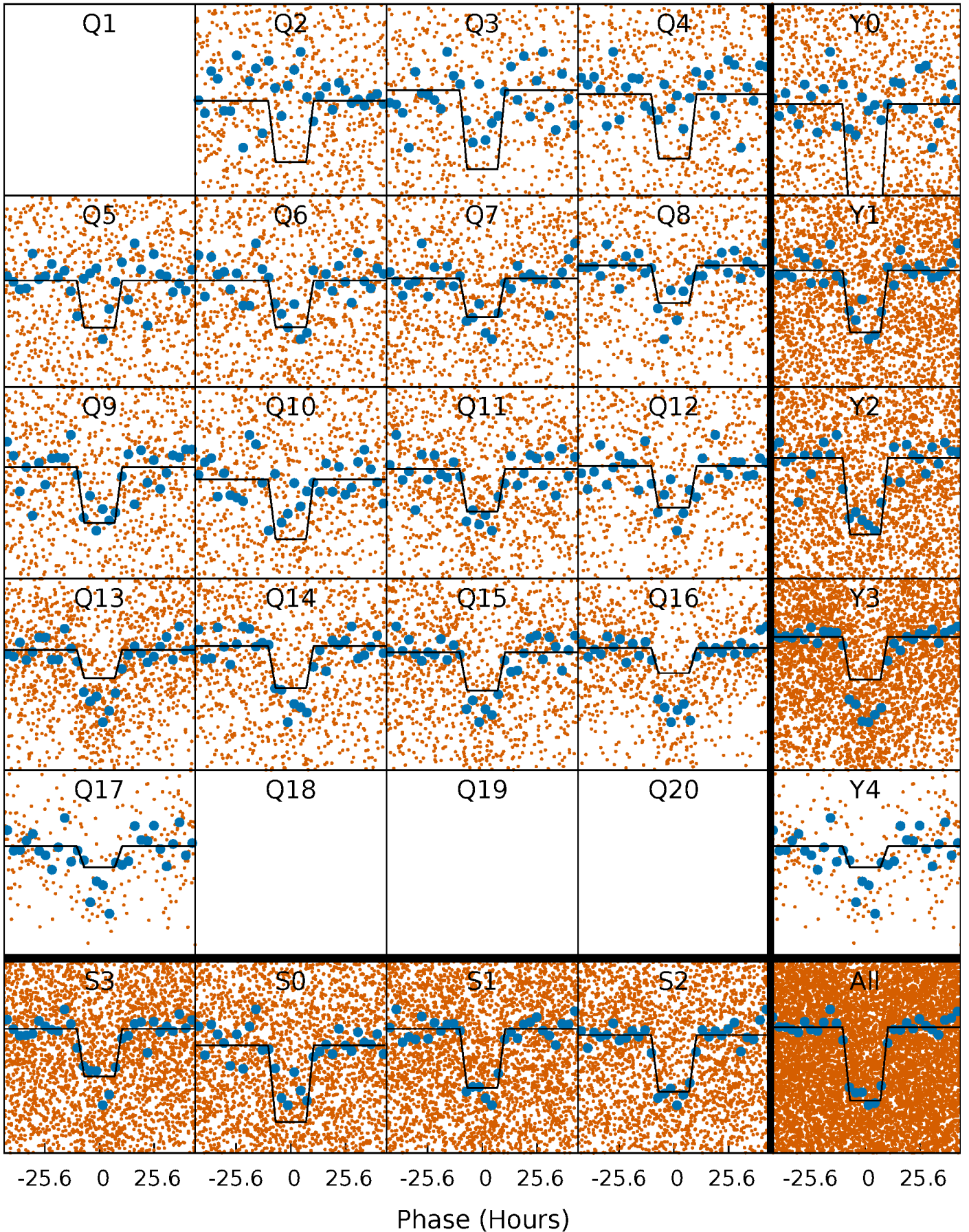
DV Quarter-Phased Transit Curves

TCE 005385509-01 P= 12.425918 Days $T_0=141.501439$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

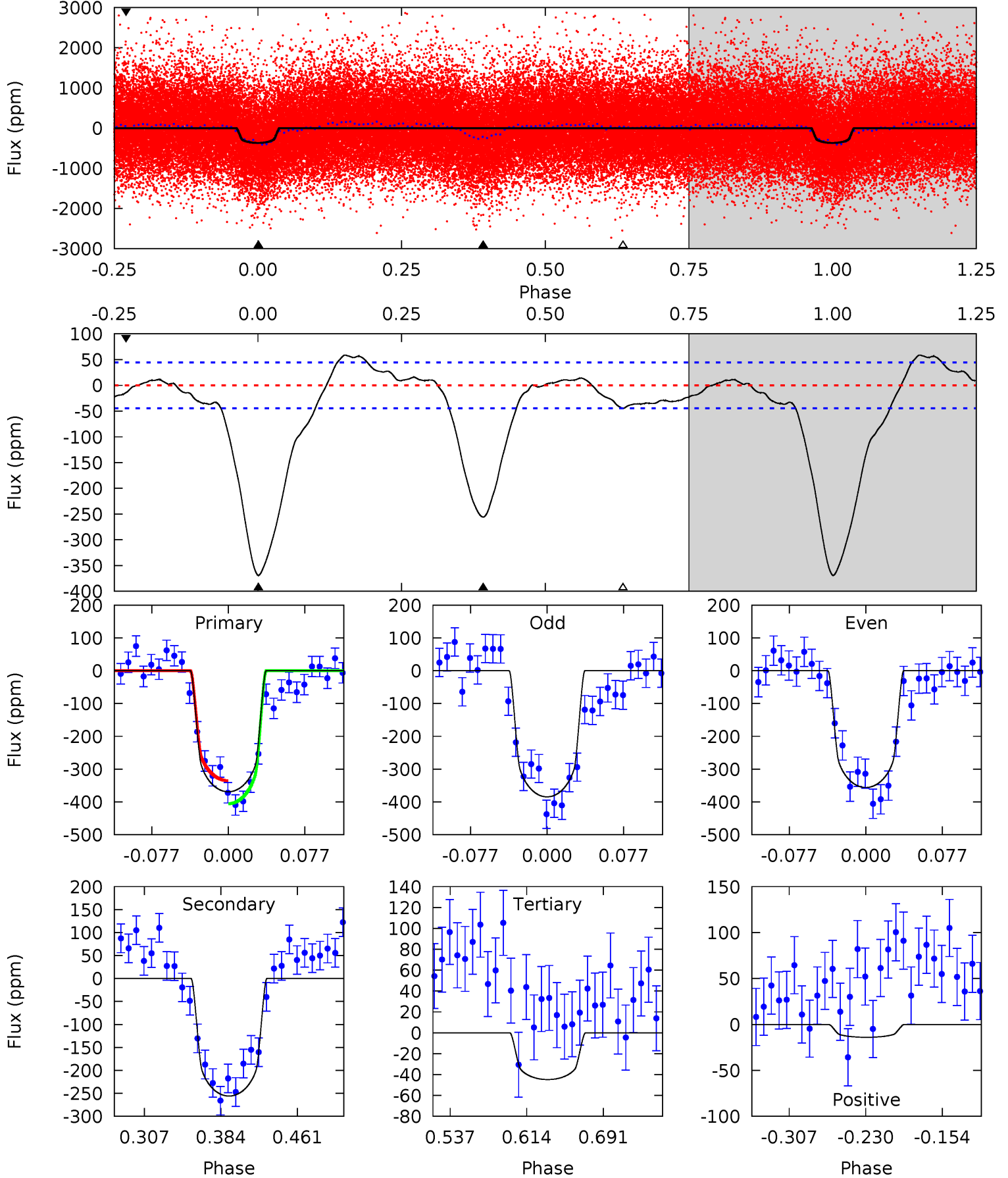
TCE 005385509-01 P= 12.425672 Days $T_0=141.509619$ (BKJD)



DV Model-Shift Uniqueness Test

005385509-01, P = 12.425918 Days, E = 141.501439 Days

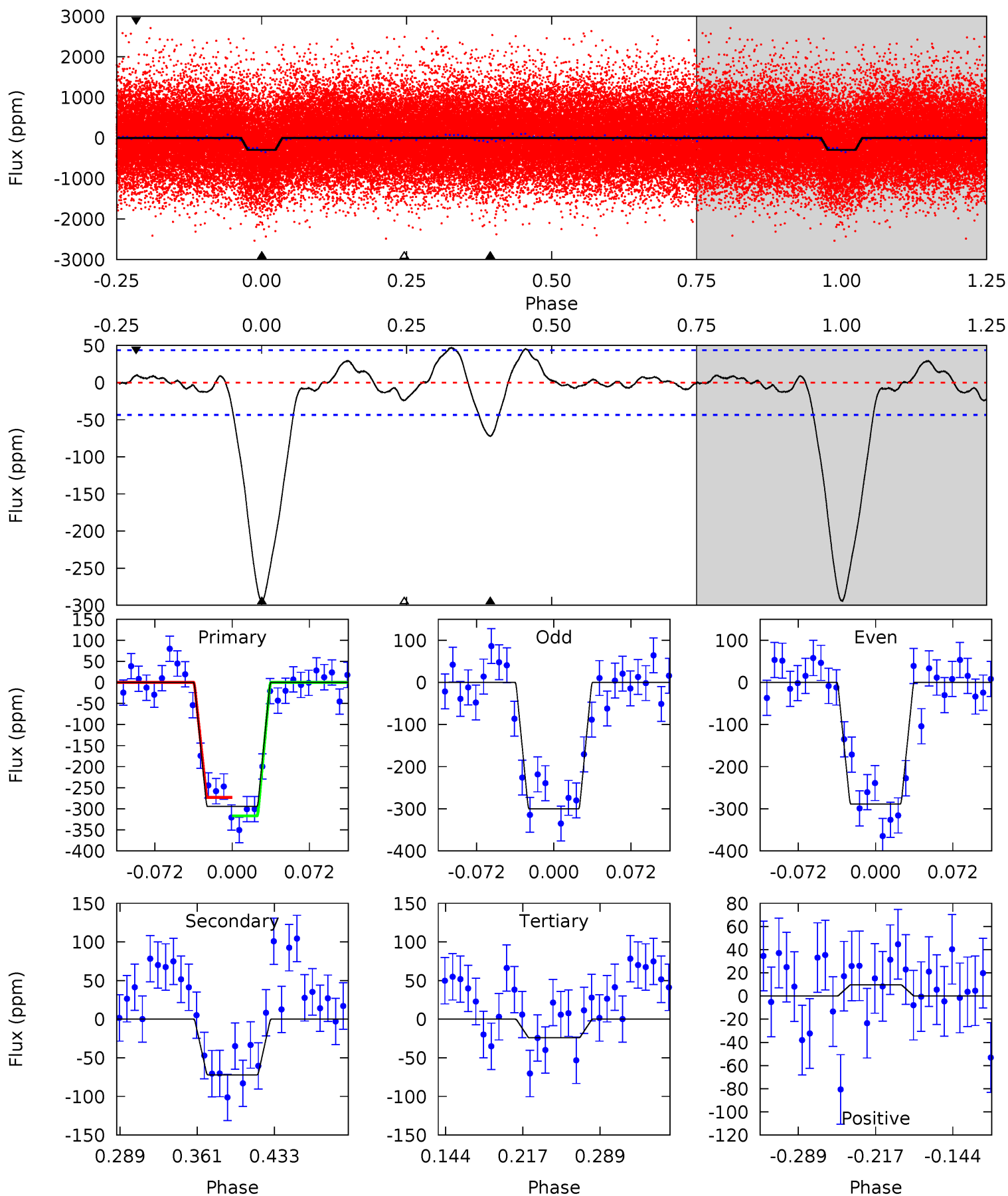
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.3	26.6	4.66	-1.45	4.62	1.77	2.94	33.7	39.8	21.9	28.0	1.48	1.00	0.14	3.63



Alt Model-Shift Uniqueness Test

005385509-01, $P = 12.425672$ Days, $E = 141.509619$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.2	7.65	2.56	1.03	4.63	1.80	1.27	28.7	30.2	5.09	6.62	0.61	0.91	0.14	2.30



Stellar Parameters For KIC 005385509

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4873^{+146}_{-146}	$4.586^{+0.060}_{-0.035}$	$-0.320^{+0.300}_{-0.300}$	$0.693^{+0.062}_{-0.069}$	$0.676^{+0.088}_{-0.047}$	$2.857^{+0.760}_{-0.464}$
	+3%/-3%	+1%/-1%	+94%/-94%	+9%/-10%	+13%/-7%	+27%/-16%
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 005385509-01 / KOI 6003.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-256 ± 10	$1.55^{+0.13}_{-0.13}$	818^{+31}_{-26}	4403^{+173}_{-152}	501^{+86}_{-68}
Alt.	-72 ± 9	$1.29^{+0.11}_{-0.11}$	819^{+30}_{-30}	3752^{+145}_{-159}	203^{+47}_{-38}

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

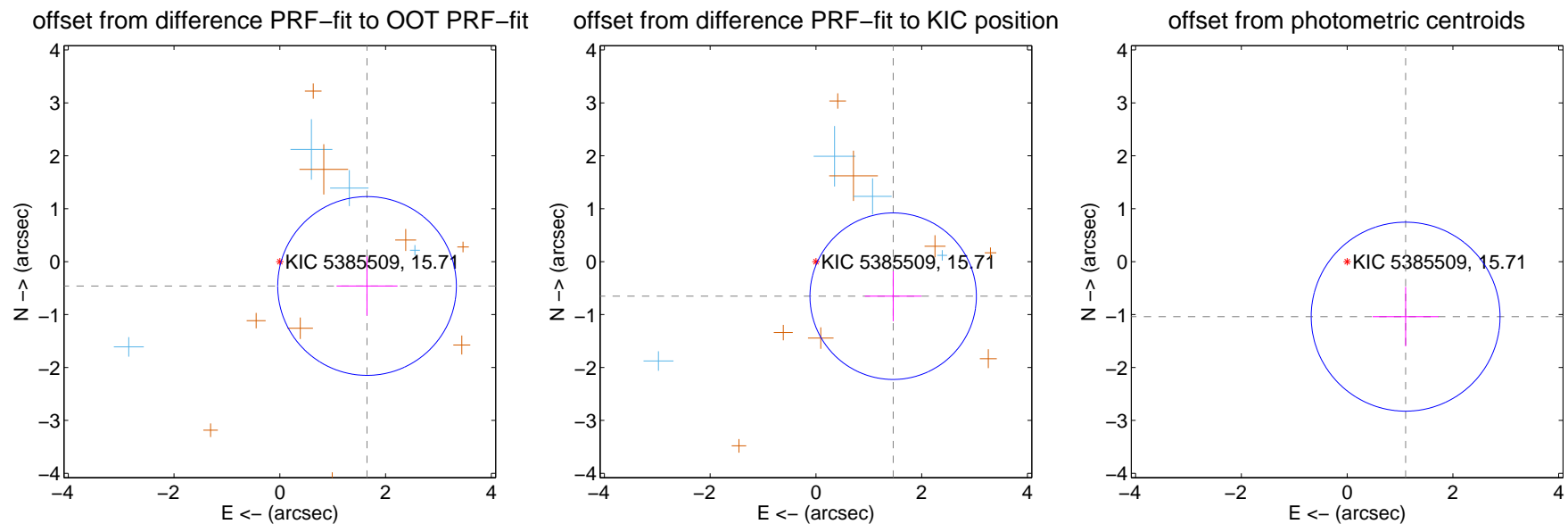
DV Centroid Data

Supplemental centroid analysis for 005385509-01. Kepler magnitude: 15.71. Transit SNR 16.00

There are 4 quarters with good PRF difference image offsets

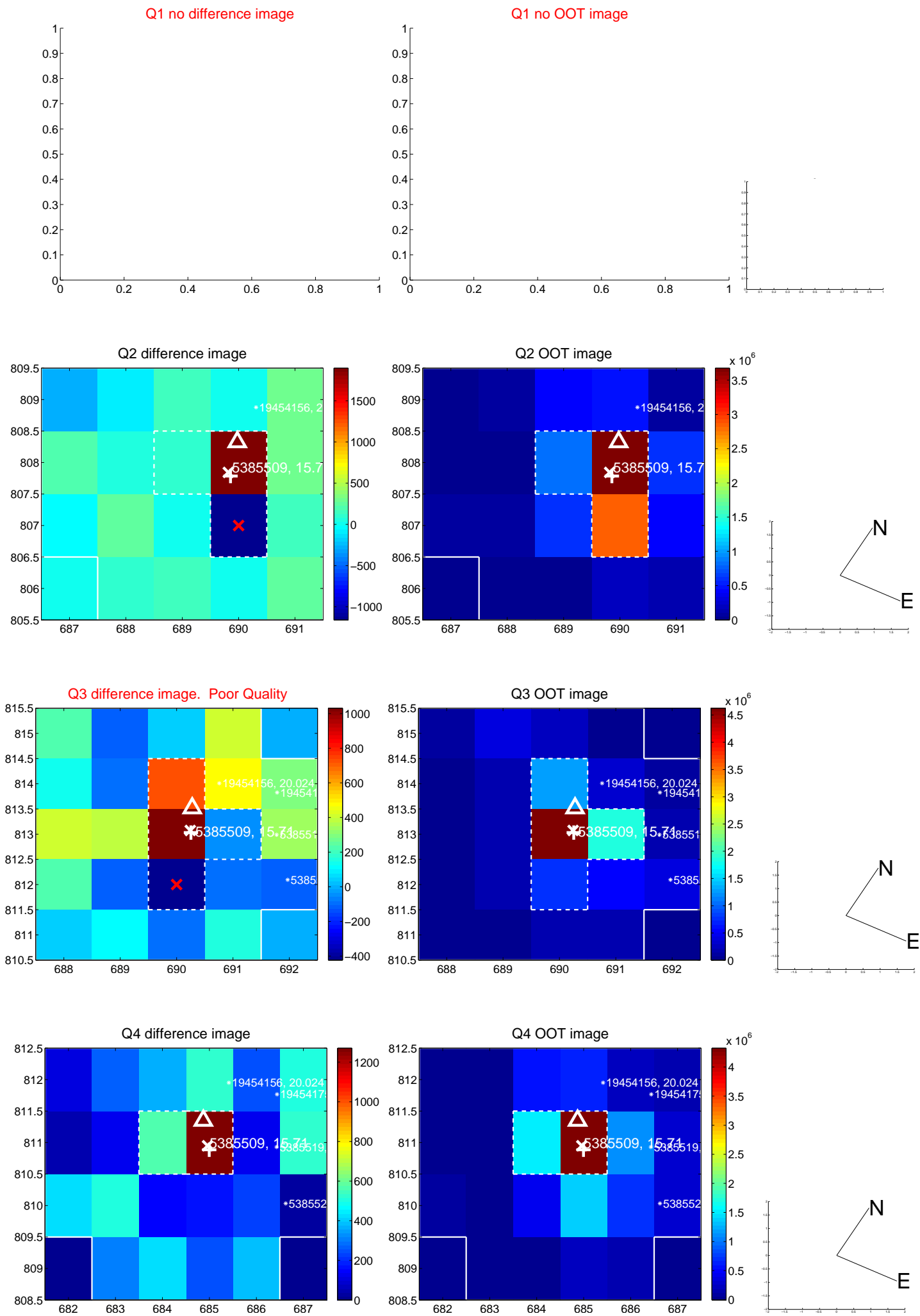
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.713 ± 0.563	3.04	-1.650 ± 0.577	-0.460 ± 0.559
PRF-fit source offset from KIC position	1.600 ± 0.525	3.05	-1.461 ± 0.534	-0.653 ± 0.473
photometric centroid source offset	1.52 ± 0.60	2.55	-1.11 ± 0.62	-1.04 ± 0.56

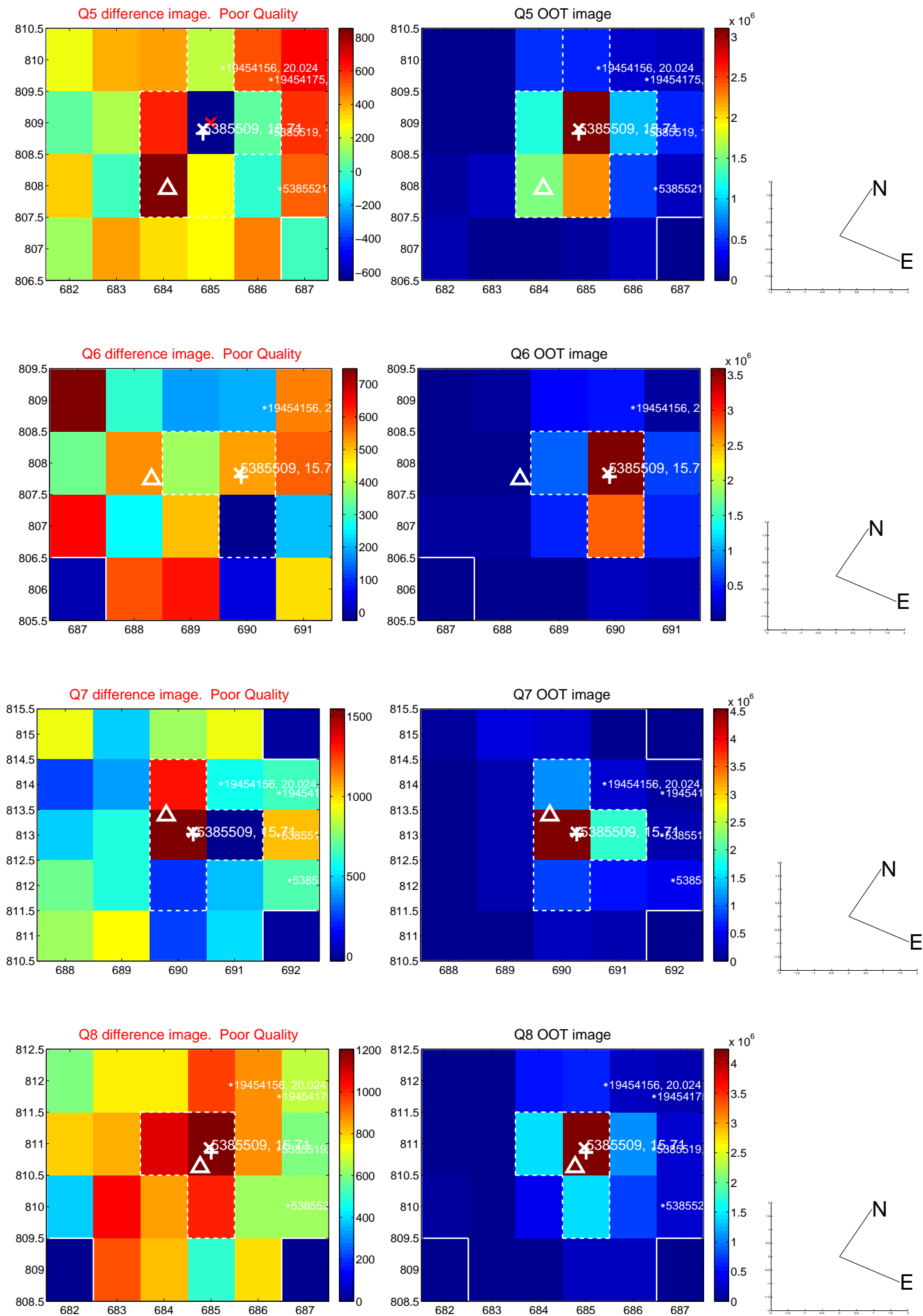


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

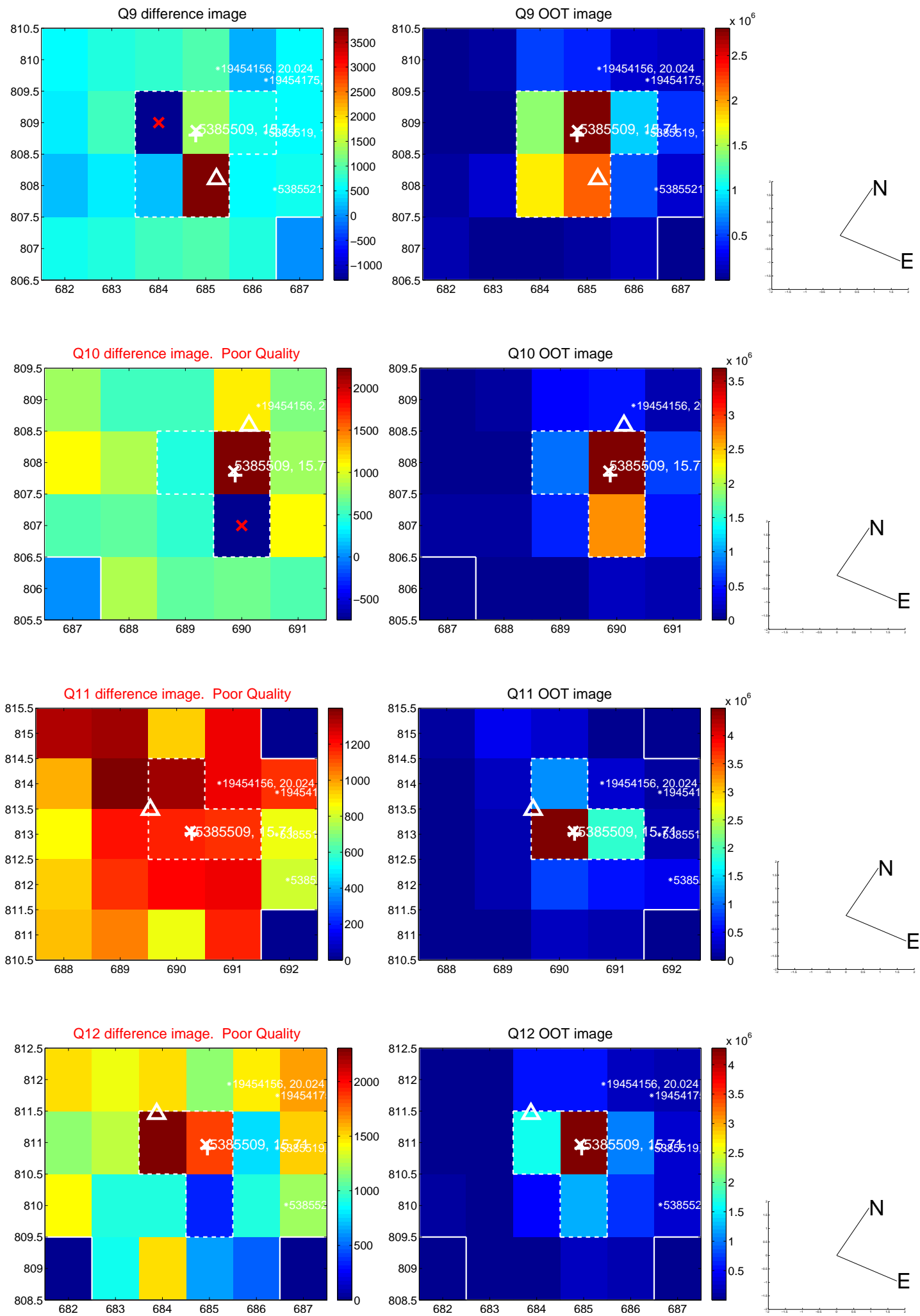
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



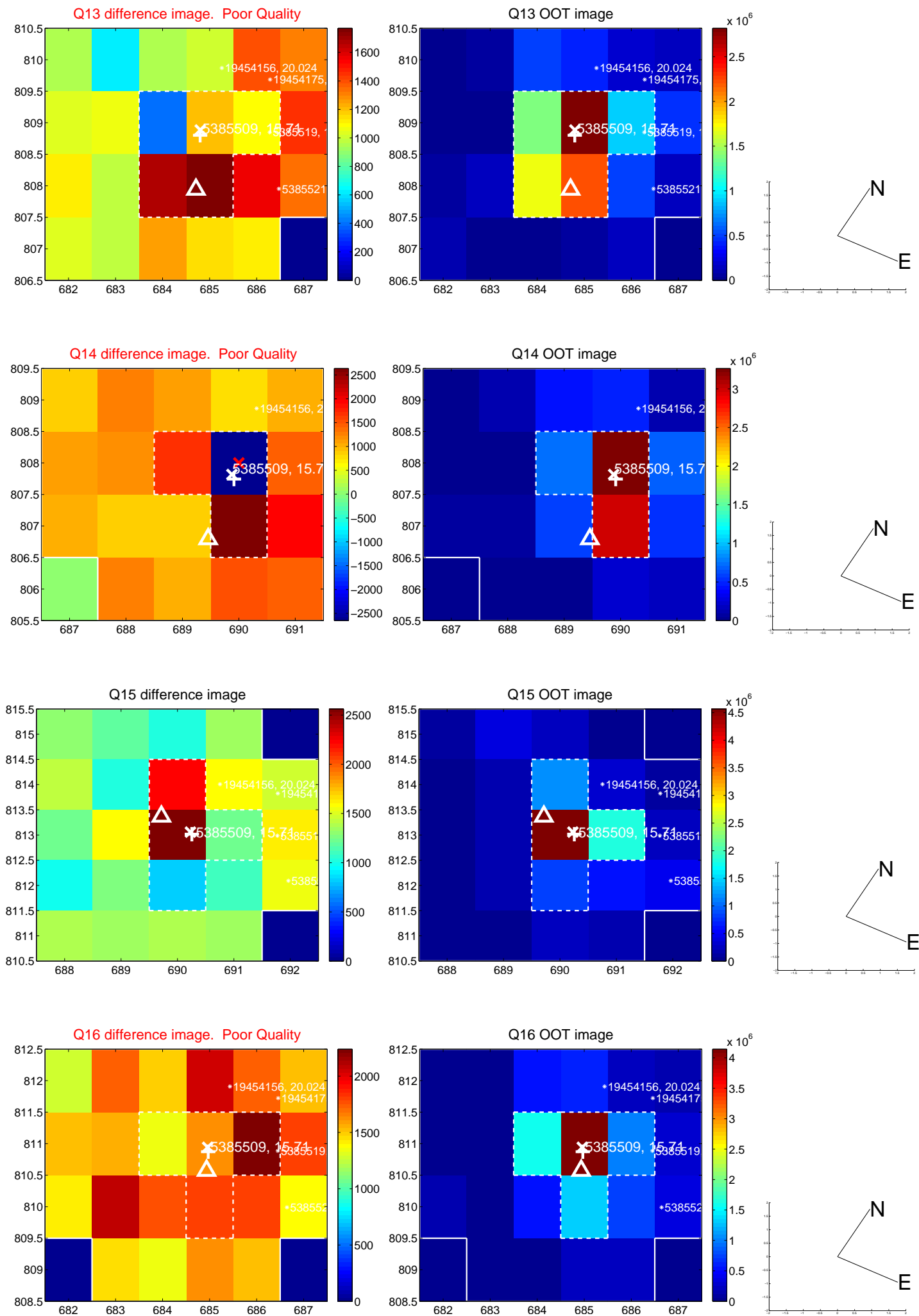
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



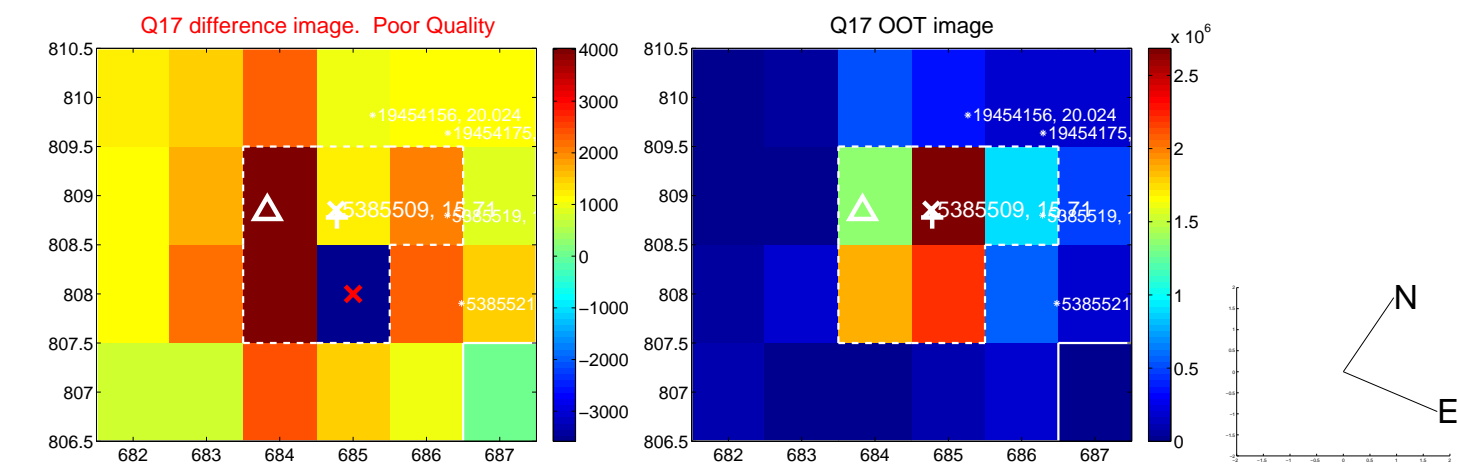
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



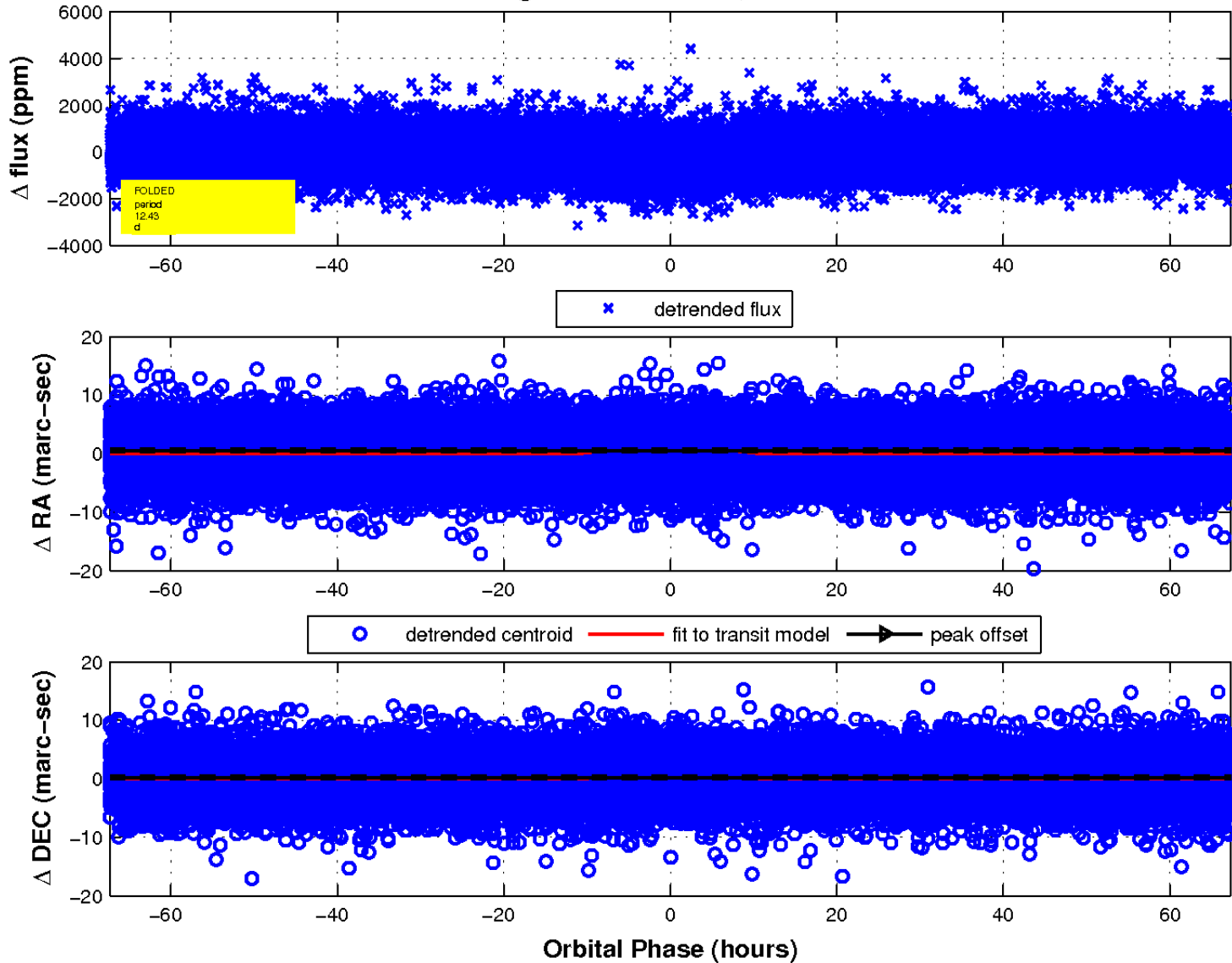
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

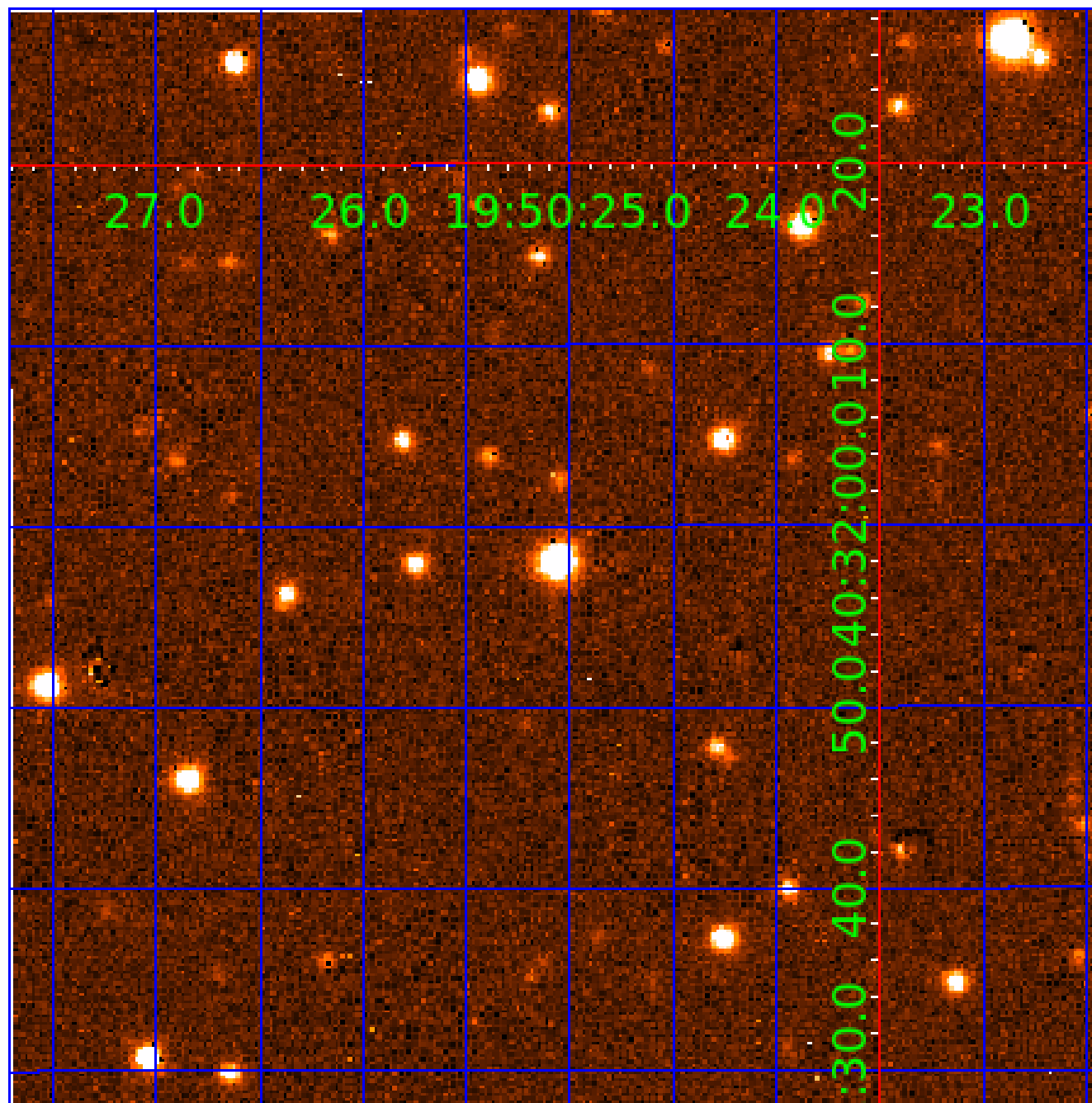


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005385509

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})
005385509-01	OBS	6003.01	12.425918	141.501439	315.0	22.441	12.6	16.0	0.69	4873	1.55	28.59
005385509-02	OBS	No	12.423495	134.141263	255.7	24.635	10.5	13.5	0.69	4873	1.10	28.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005385509-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
005385509-02	OBS	FP	0.00	1	0	0	1	LPP_DV—SAME_NTL_PERIOD—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 005385509-02

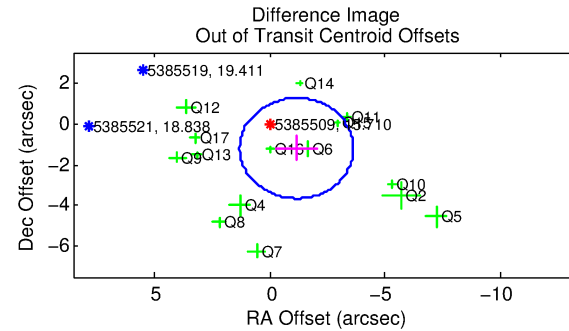
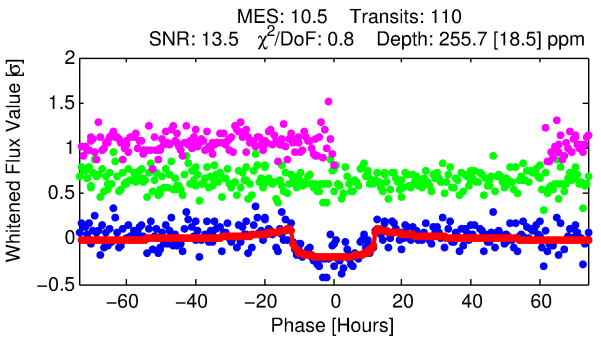
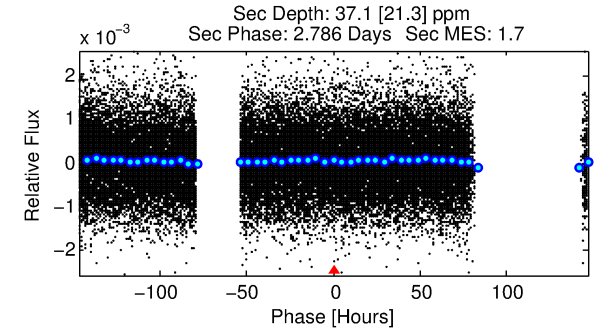
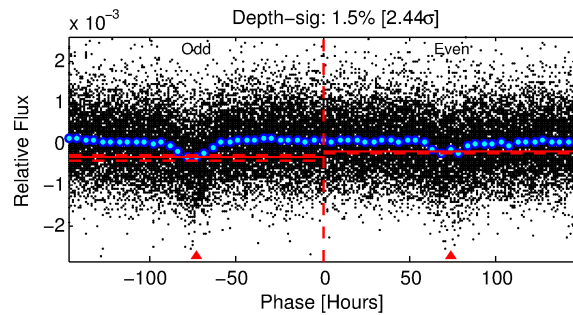
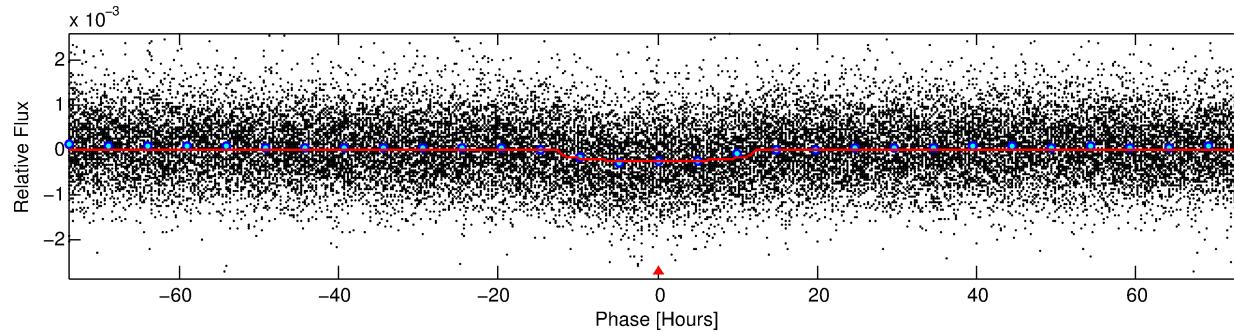
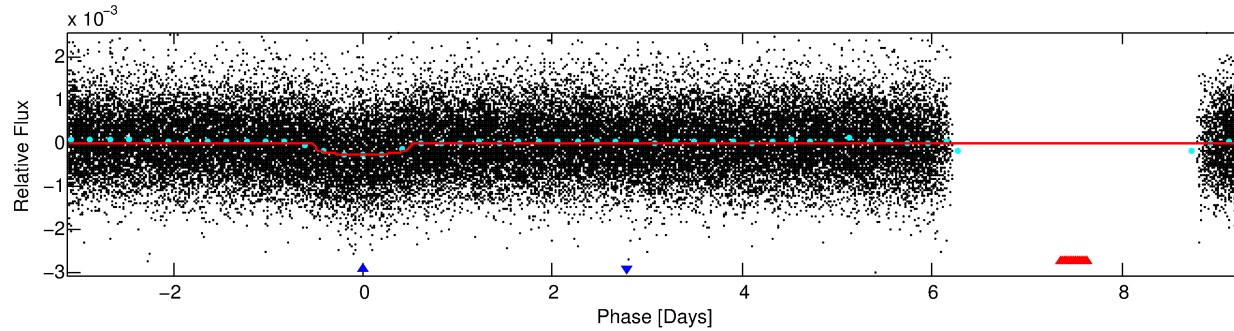
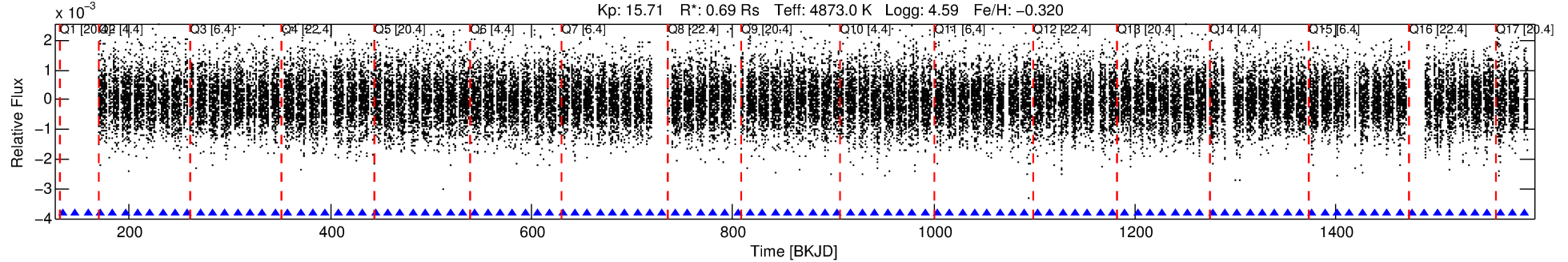
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005385509-02	5385509	005471010-02	5471010	1:1	337.1	-85	-1	15.64	15.71	0.89	Col-Anomaly	1	0.87	0.10

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: 5385509 Candidate: 2 of 2 Period: 12.423 d
KOI: K06003 Corr: No Ephemeris Match

Kp: 15.71 R*: 0.69 Rs Teff: 4873.0 K Logg: 4.59 Fe/H: -0.320



DV Fit Results:

Period = 12.42350 [0.00024] d
Epoch = 134.1413 [0.0162] BKJD
Rp/R* = 0.0145 [0.0064]
a/R* = 3.68 [5.17]
b = 0.38 [3.40]
Seff = 28.59 [4.72]
Teq = 590 [24] K
Rp = 1.10 [0.50] Re
a = 0.0921 [0.0074] AU
Ag = 144.16 [153.11] [0.94σ]
Teffp = 3159 [839] K [3.06σ]

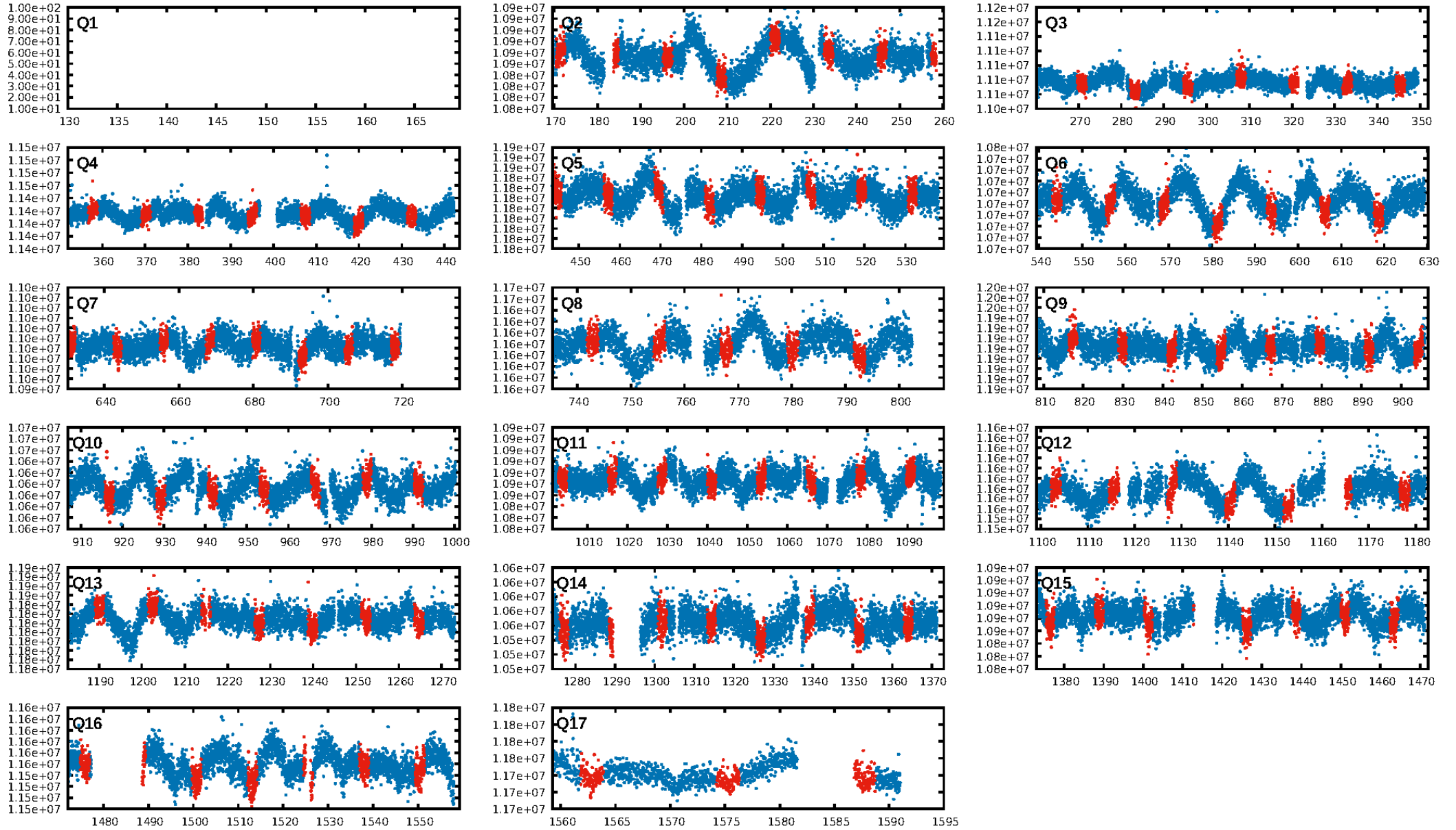
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 60.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.83e-28
RollingBand-fgt: 1.00 [107/107]
GhostDiagnostic-chr: 0.2522
Centroid-sig: 0.0%
Centroid-so: 1.960 arcsec [2.97σ]
OotOffset-rm: 1.665 arcsec [2.03σ]
KicOffset-rm: 1.679 arcsec [2.17σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.20 [3/15]
DiffImageOverlap-fno: 1.00 [16/16]

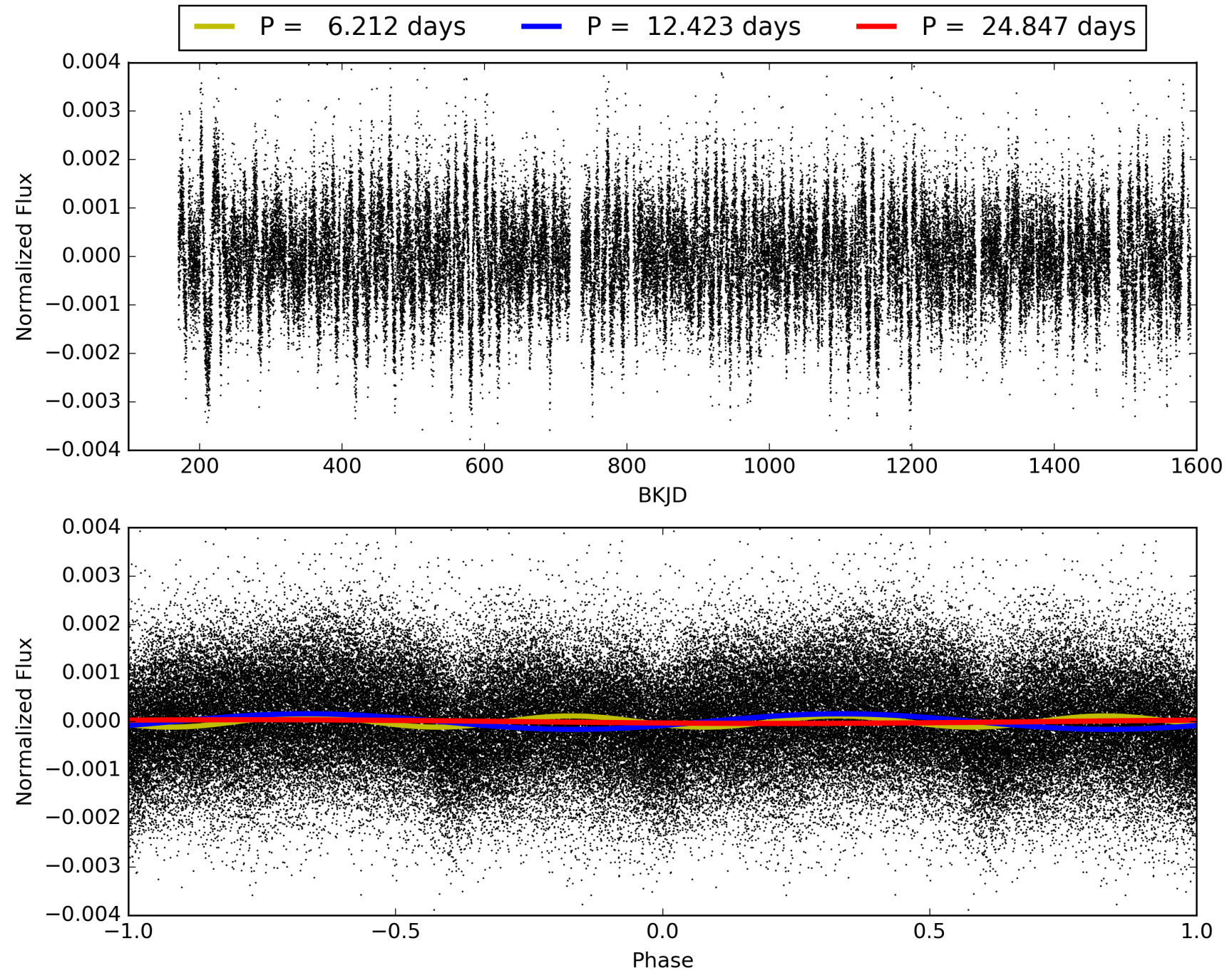
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:50:11 Z

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

TCE 005385509-02, PDC Light Curves

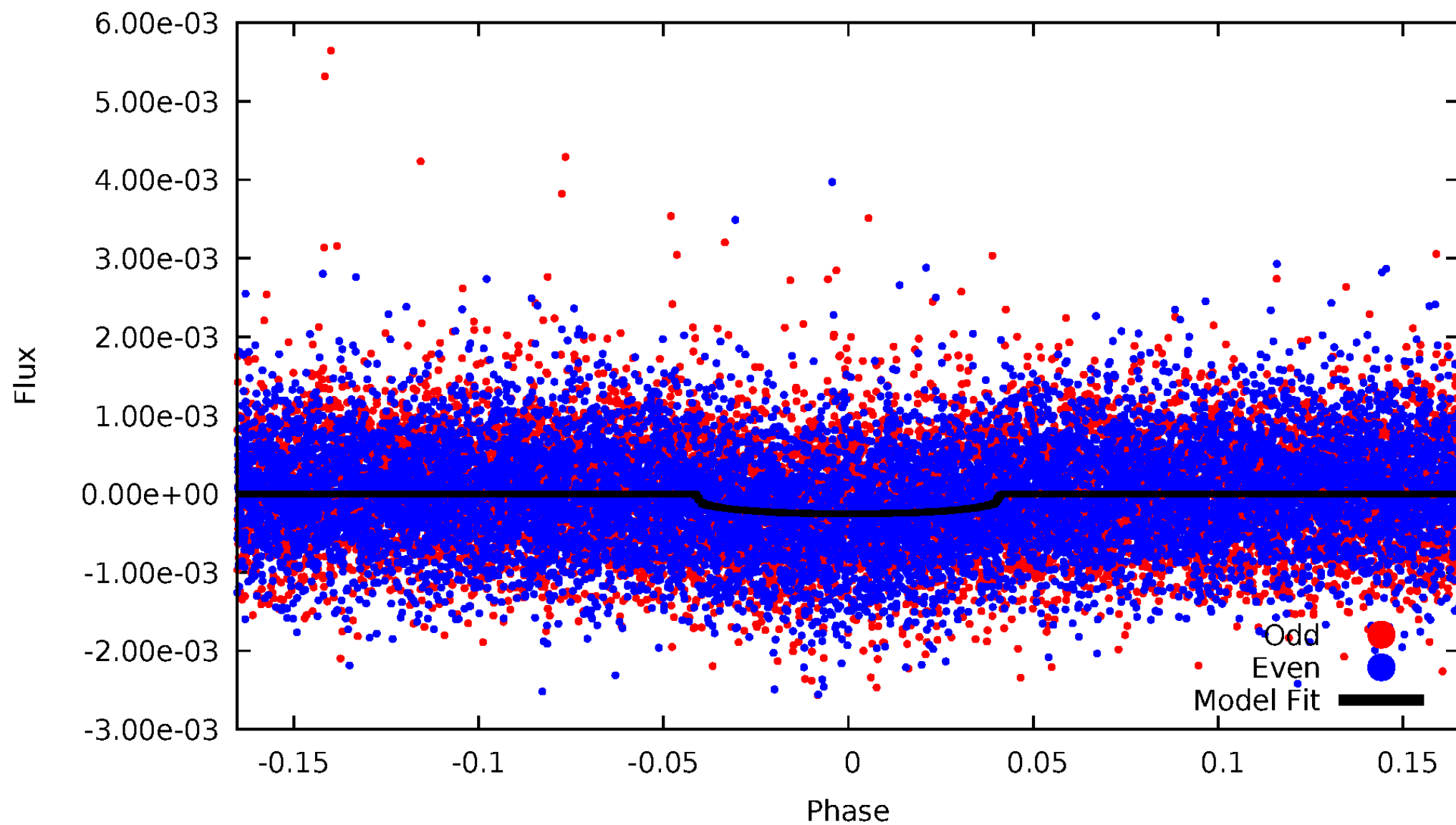


TCE 005385509-02



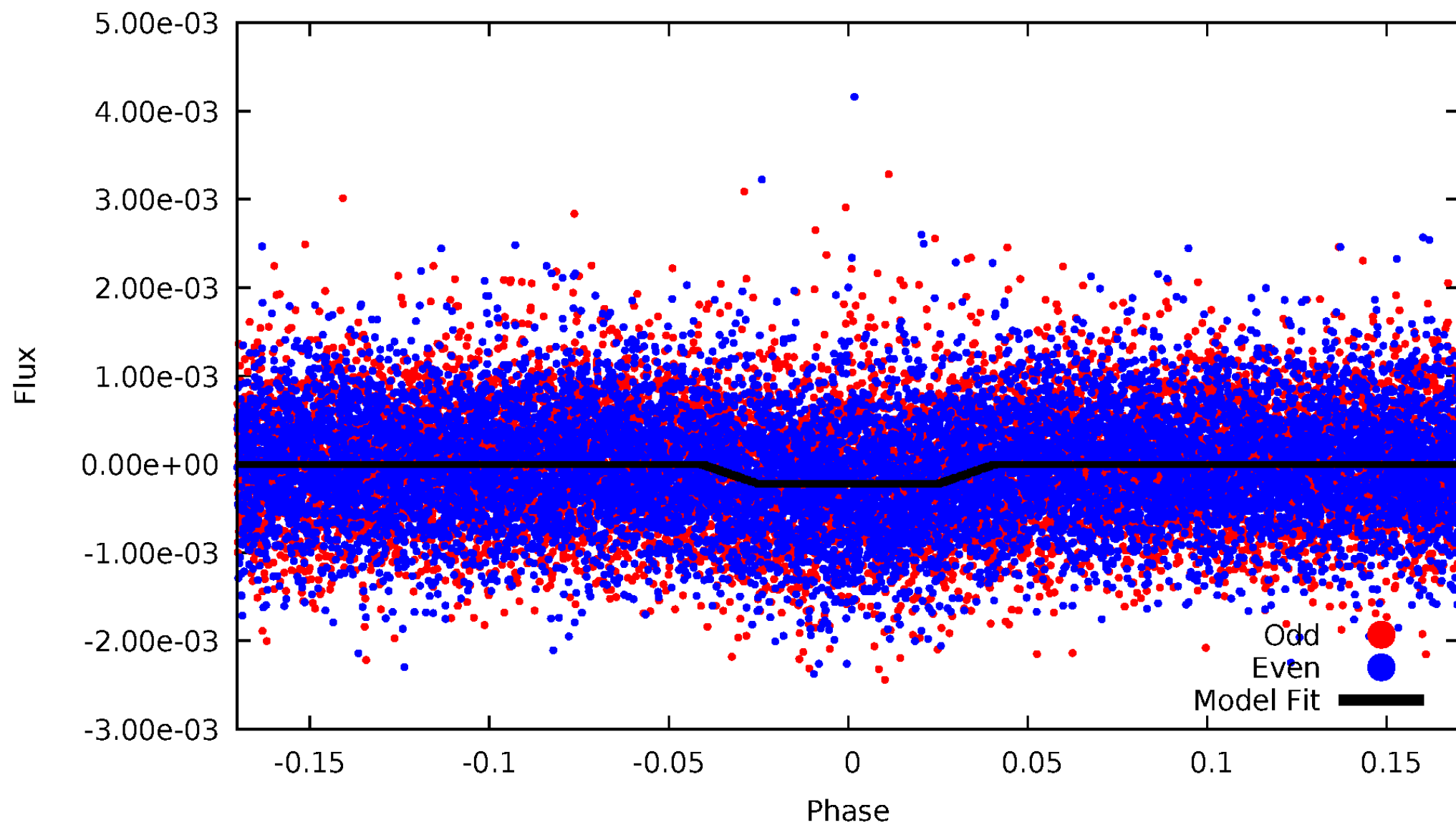
DV Odd/Even

TCE 005385509-02



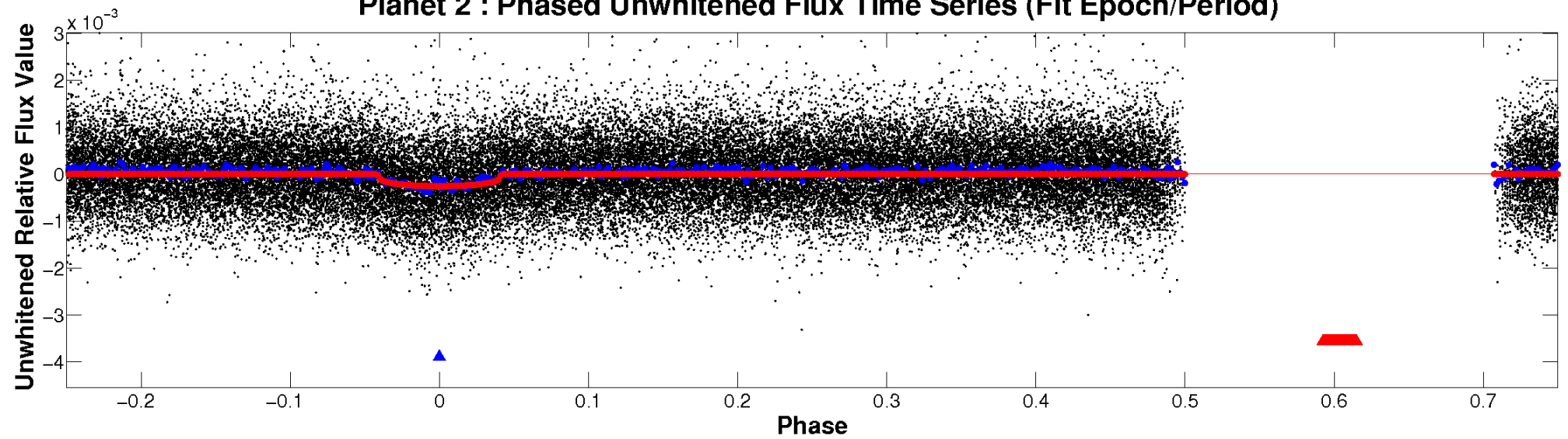
ALT Odd/Even

TCE 005385509-02

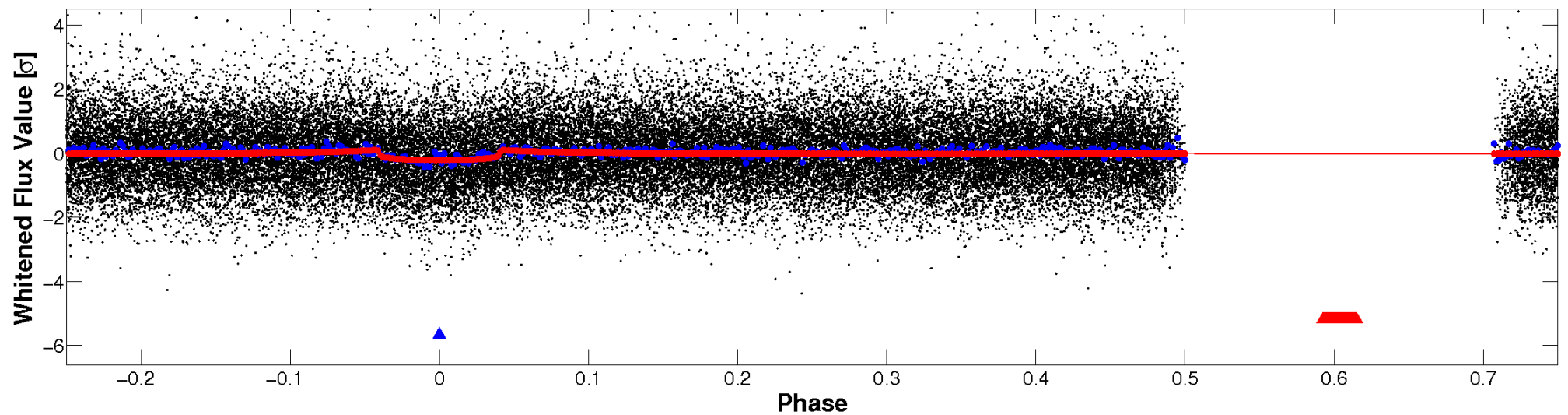


Non-Whitened Vs. Whitened Light Curve

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

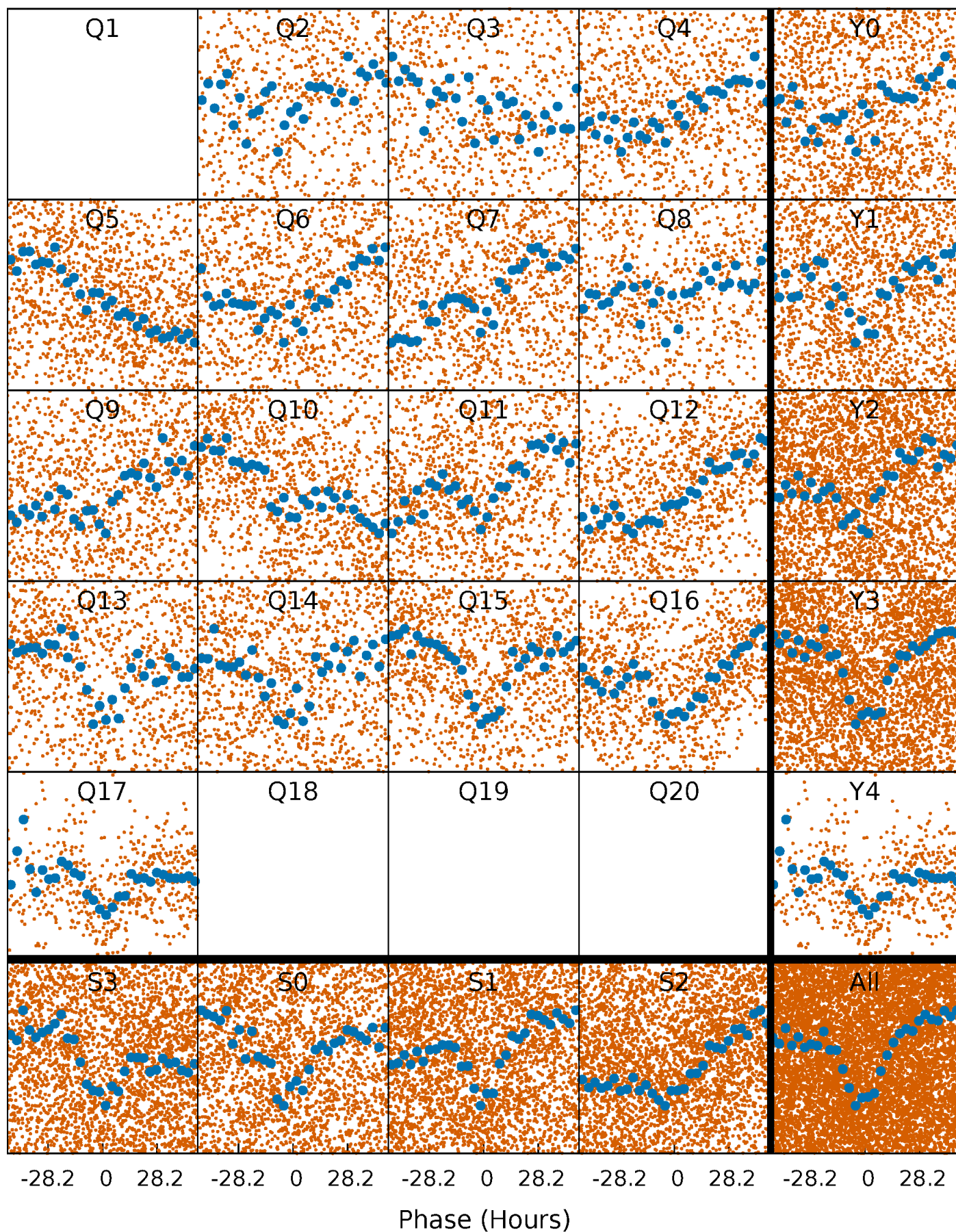


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



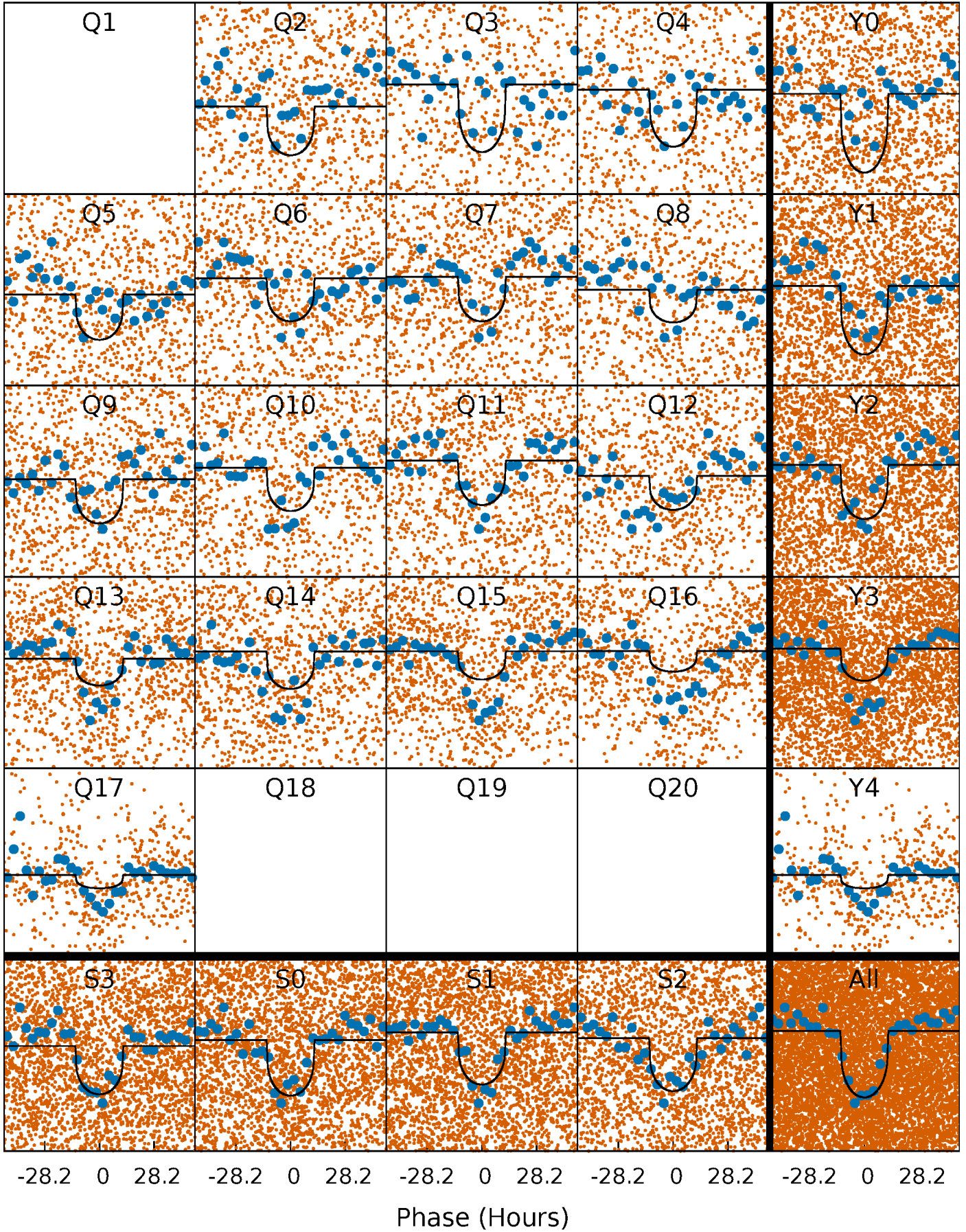
PDC Quarter-Phased Transit Curves

TCE 005385509-02 P= 12.423495 Days $T_0=134.141263$ (BKJD)



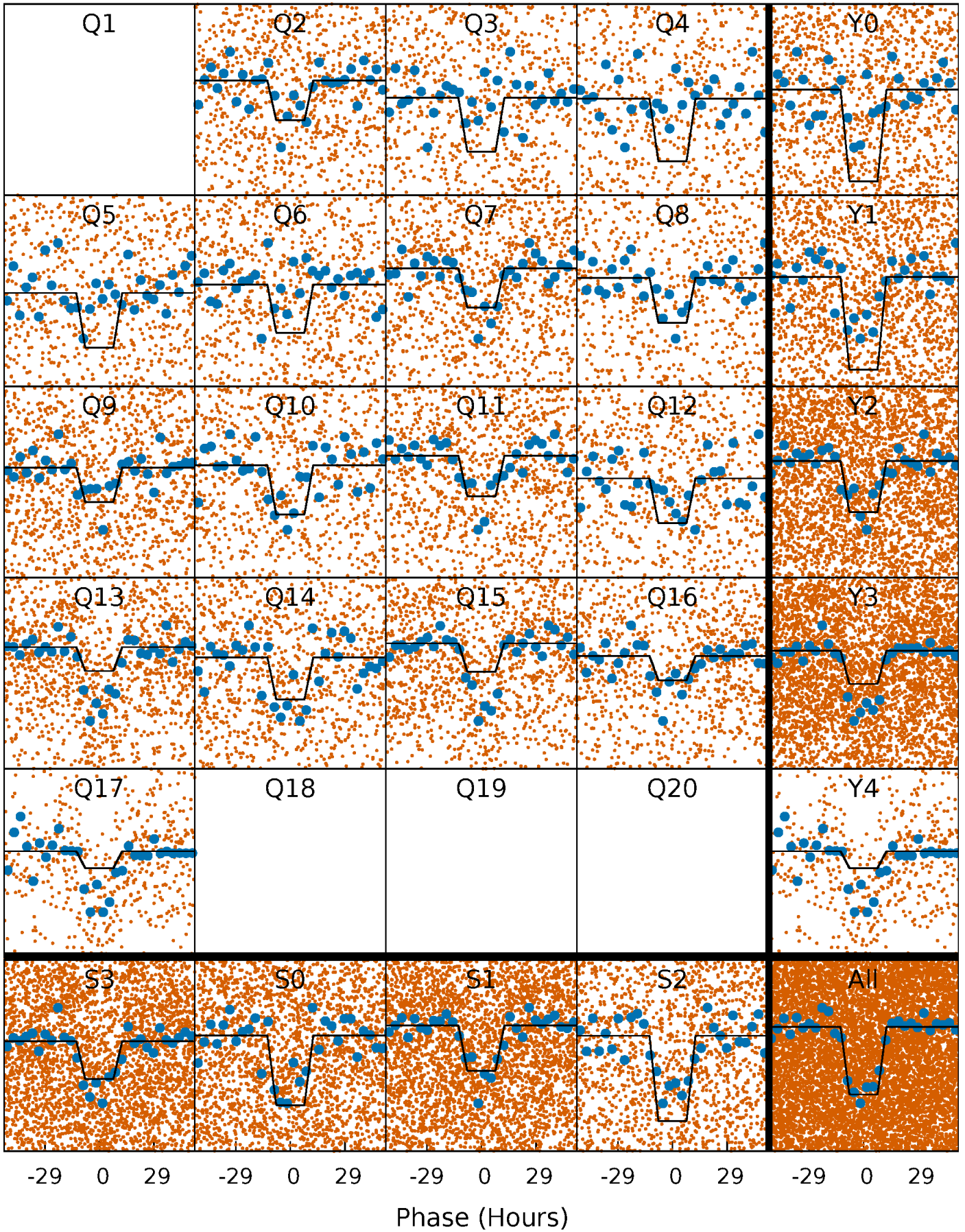
DV Quarter-Phased Transit Curves

TCE 005385509-02 P= 12.423495 Days $T_0=134.141263$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

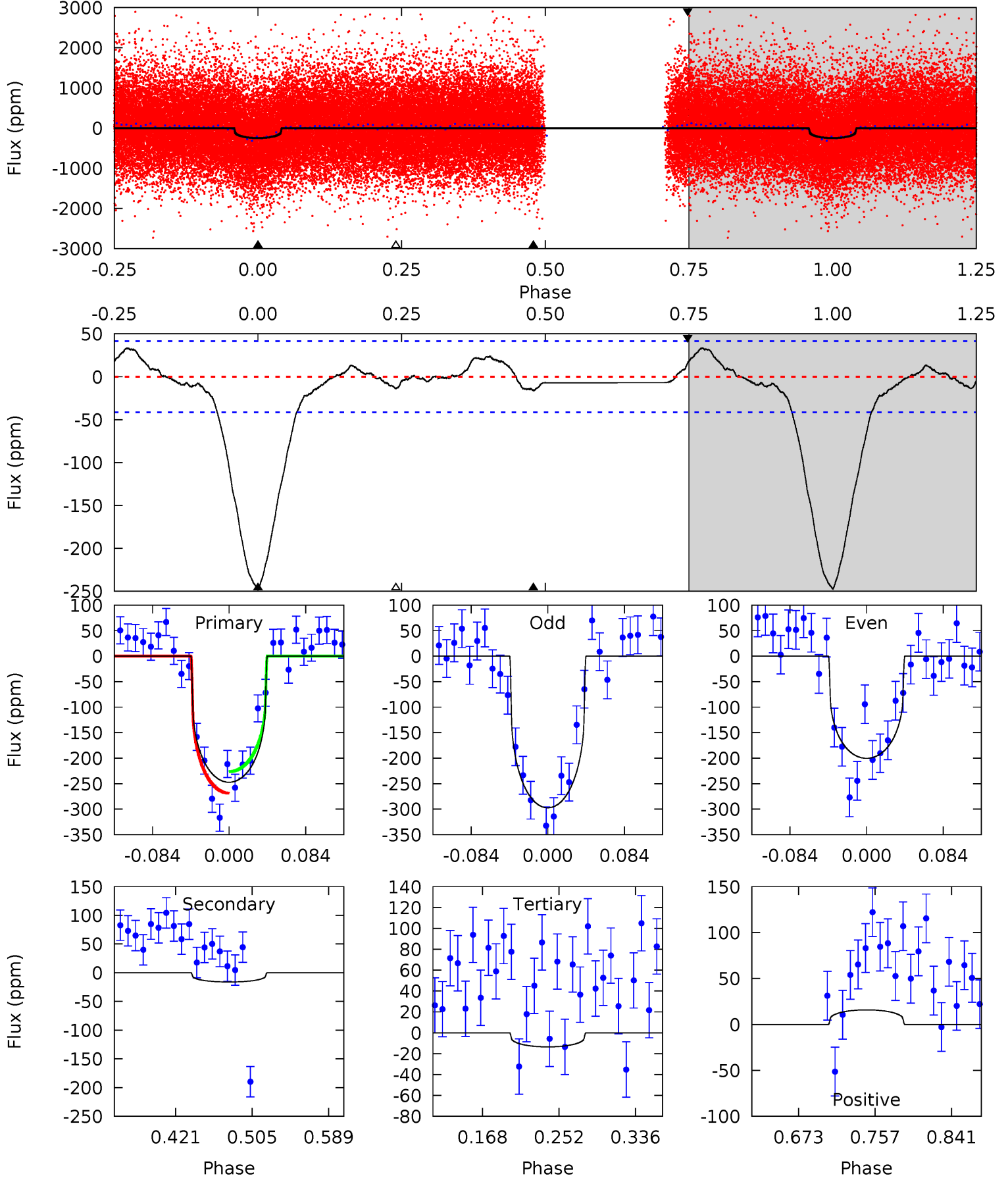
TCE 005385509-02 P= 12.424613 Days $T_0=134.045370$ (BKJD)



DV Model-Shift Uniqueness Test

005385509-02, P = 12.423495 Days, E = 134.141263 Days

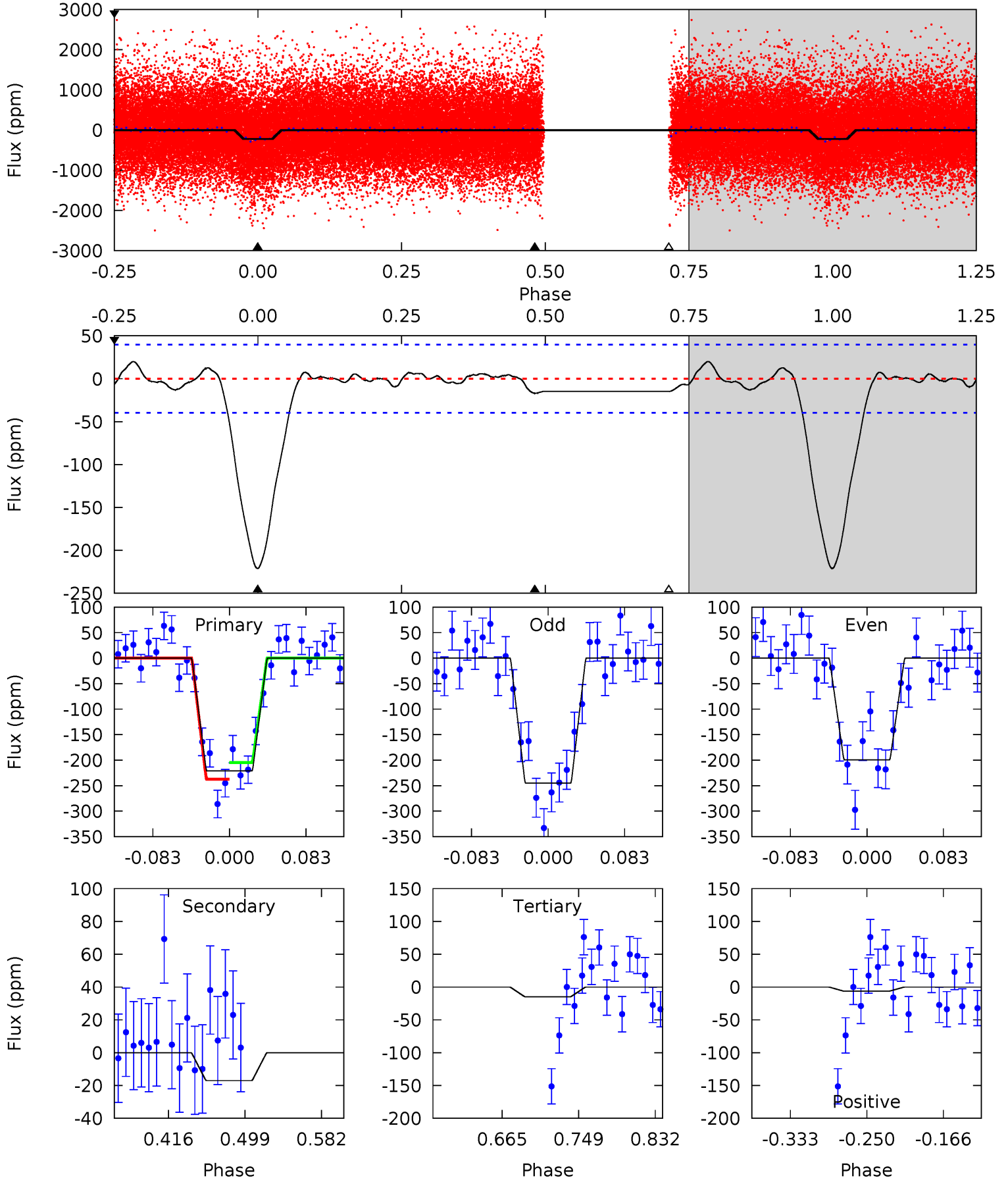
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.4	1.79	1.50	1.76	4.60	1.73	1.35	25.9	25.7	0.29	0.03	5.37	1.26	0.12	2.36



Alt Model-Shift Uniqueness Test

005385509-02, P = 12.424613 Days, E = 134.045370 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.6	1.97	1.71	-0.72	4.60	1.73	0.77	23.9	26.4	0.27	2.69	2.63	1.25	0.08	1.92



Stellar Parameters For KIC 005385509

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4873^{+146}_{-146}	$4.586^{+0.060}_{-0.035}$	$-0.320^{+0.300}_{-0.300}$	$0.693^{+0.062}_{-0.069}$	$0.676^{+0.088}_{-0.047}$	$2.857^{+0.760}_{-0.464}$
	+3%/-3%	+1%/-1%	+94%/-94%	+9%/-10%	+13%/-7%	+27%/-16%
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 005385509-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-16 ± 9	$1.11^{+0.45}_{-0.44}$	822^{+28}_{-30}	3057^{+573}_{-418}	54^{+110}_{-35}
Alt.	-17 ± 9	$1.11^{+0.49}_{-0.47}$	822^{+29}_{-31}	3111^{+599}_{-434}	61^{+134}_{-40}

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 $A_{obs} \gg 1.0$

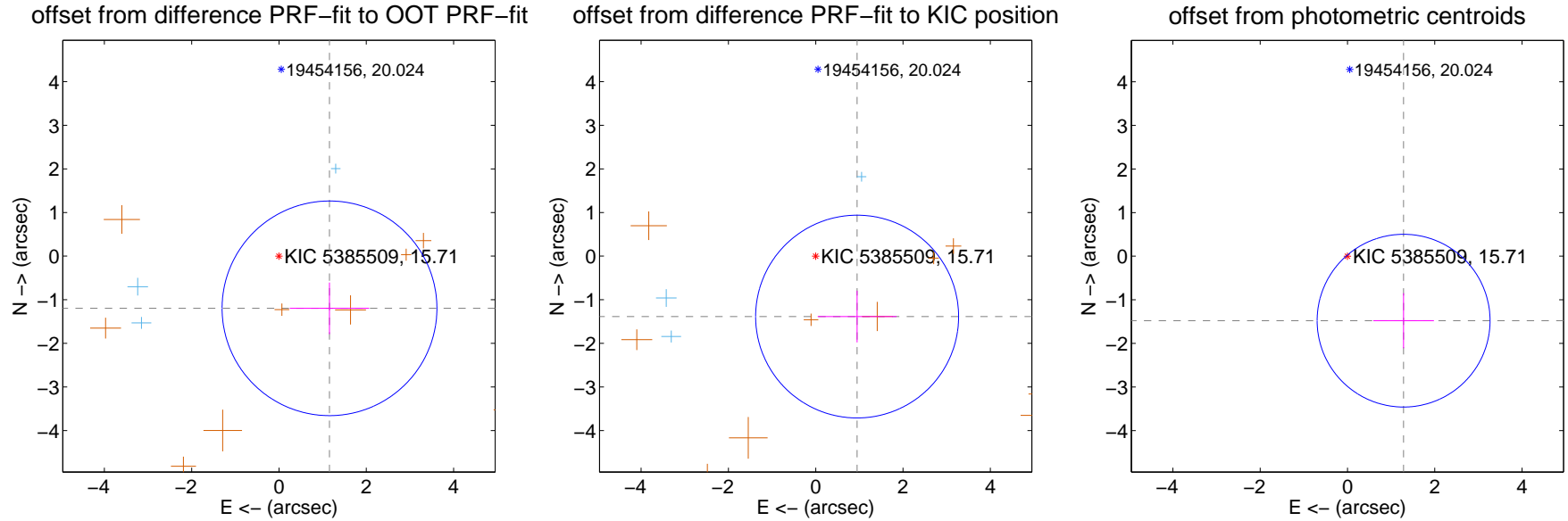
DV Centroid Data

Supplemental centroid analysis for 005385509-02. Kepler magnitude: 15.71. Transit SNR 13.55

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.665 ± 0.820	2.03	-1.157 ± 0.909	-1.197 ± 0.592
PRF-fit source offset from KIC position	1.679 ± 0.775	2.17	-0.948 ± 0.903	-1.386 ± 0.592
photometric centroid source offset	1.96 ± 0.66	2.97	-1.29 ± 0.70	-1.48 ± 0.63



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.

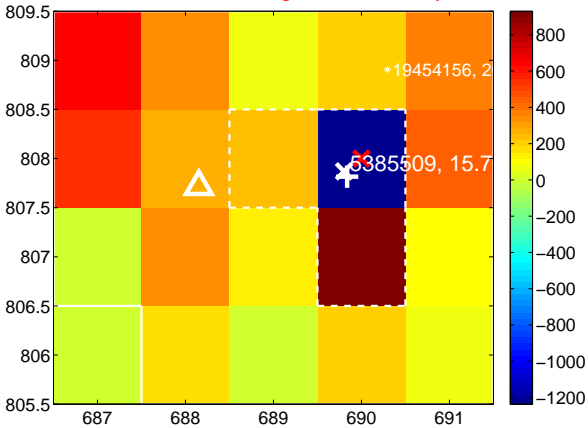
Q1 no difference image



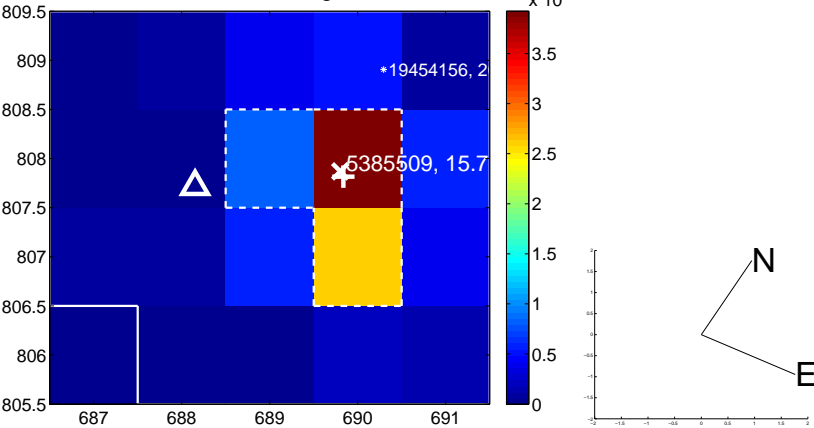
Q1 no OOT image



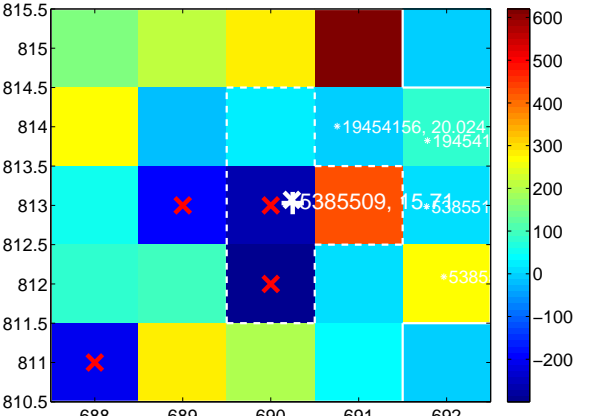
Q2 difference image. Poor Quality



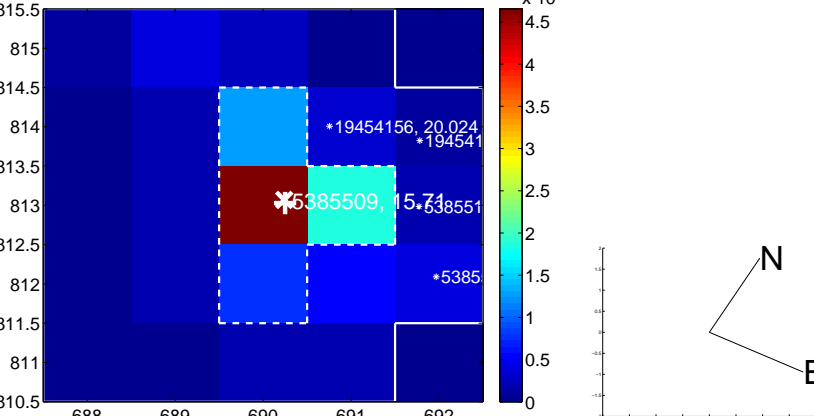
Q2 OOT image



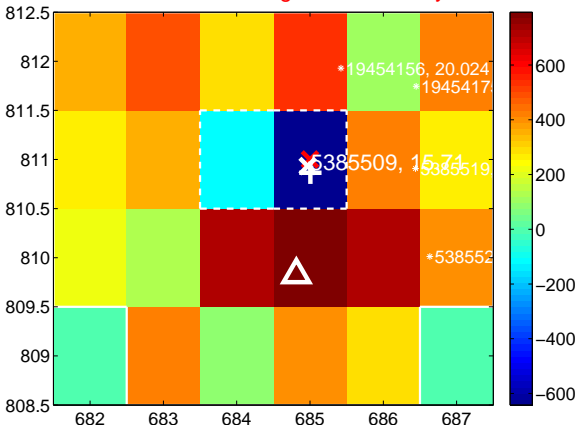
Q3 difference image. Poor Quality



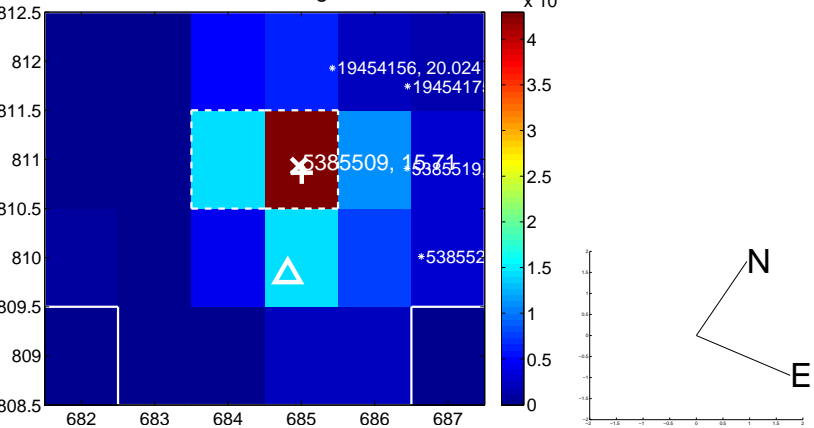
Q3 OOT image



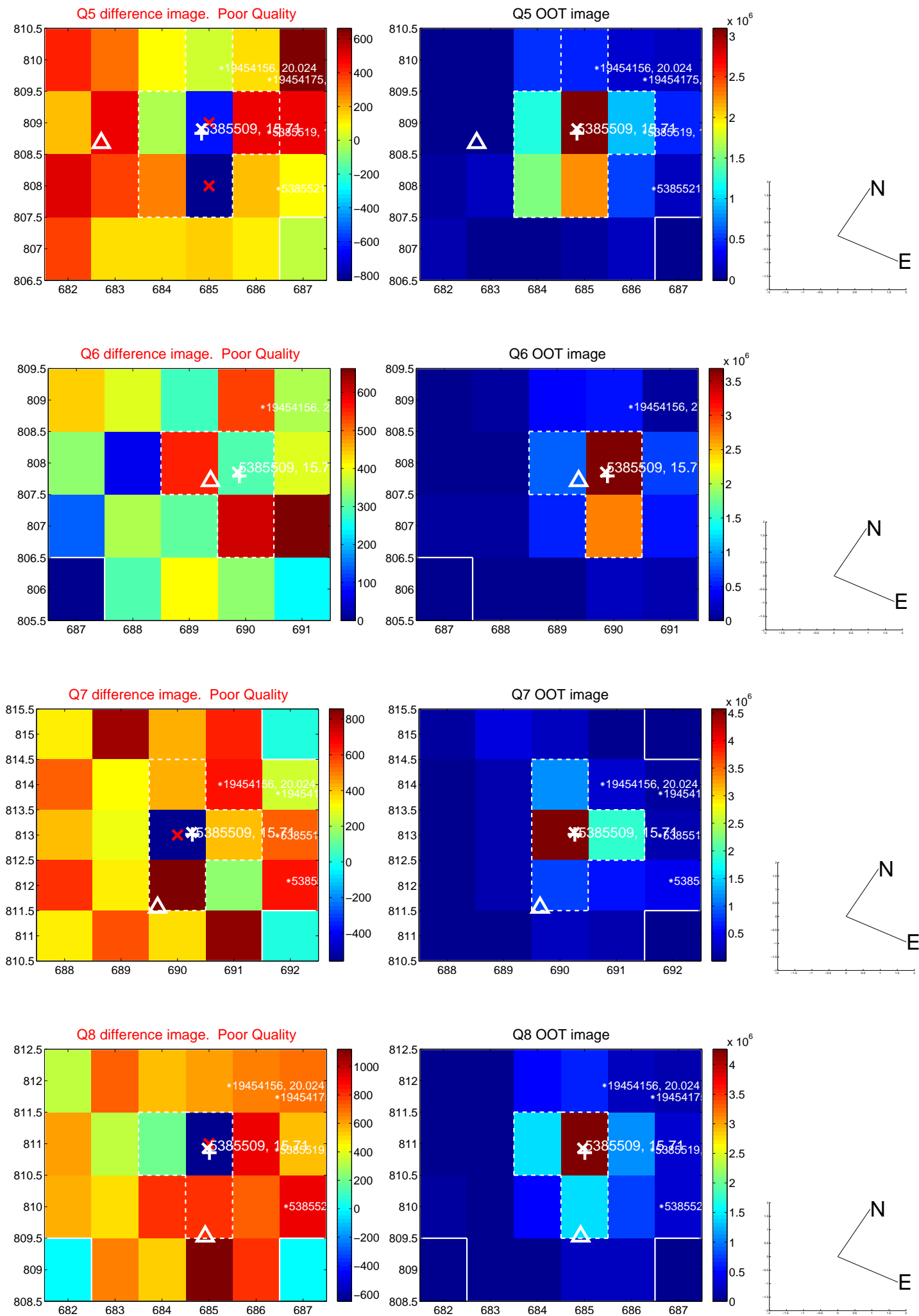
Q4 difference image. Poor Quality



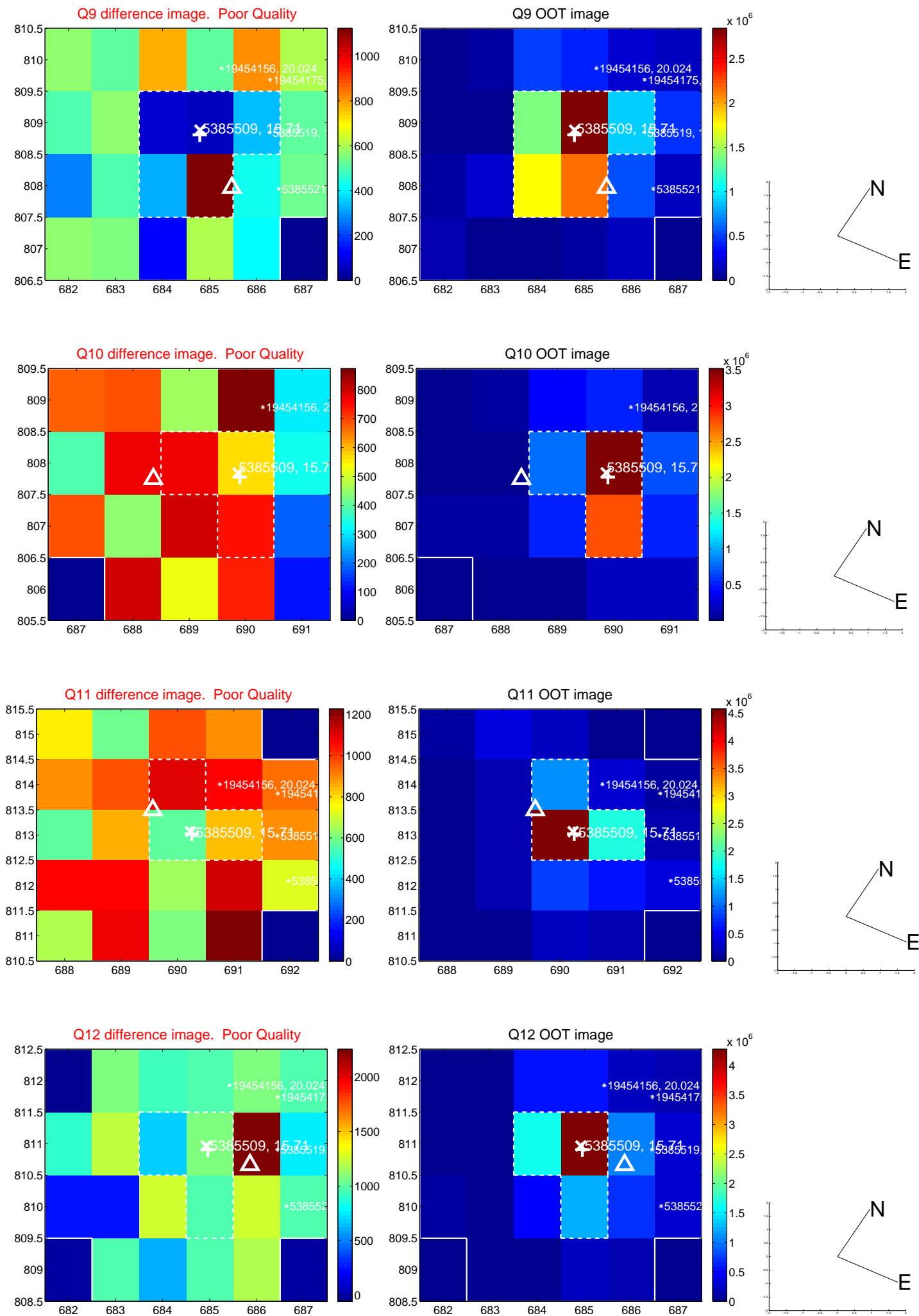
Q4 OOT image



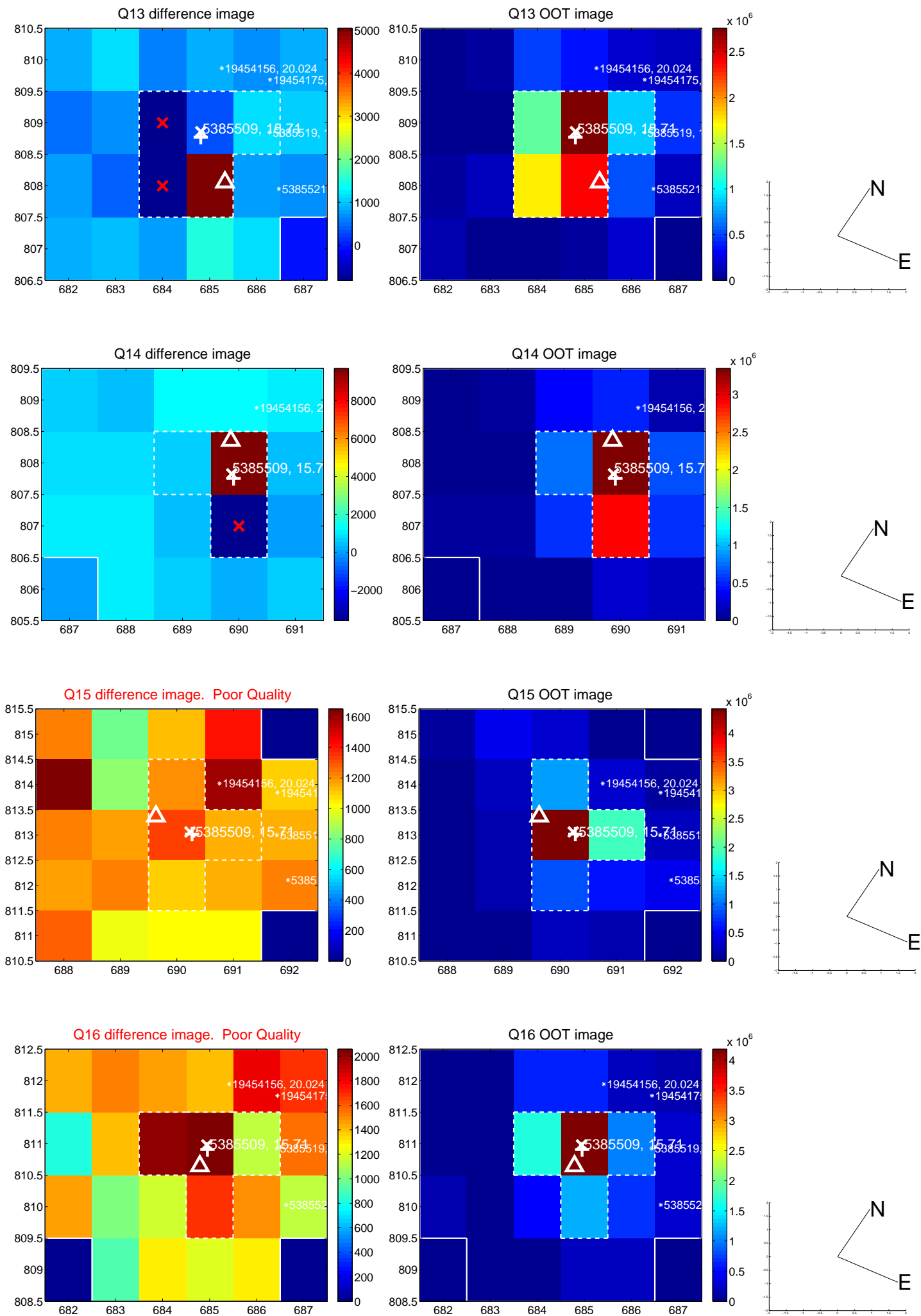
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



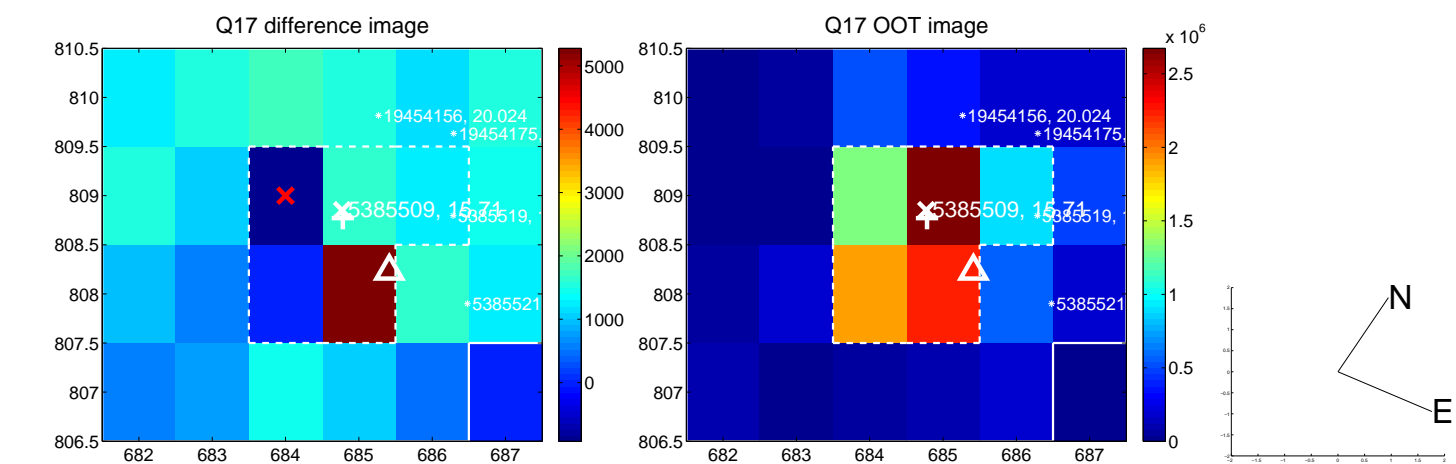
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



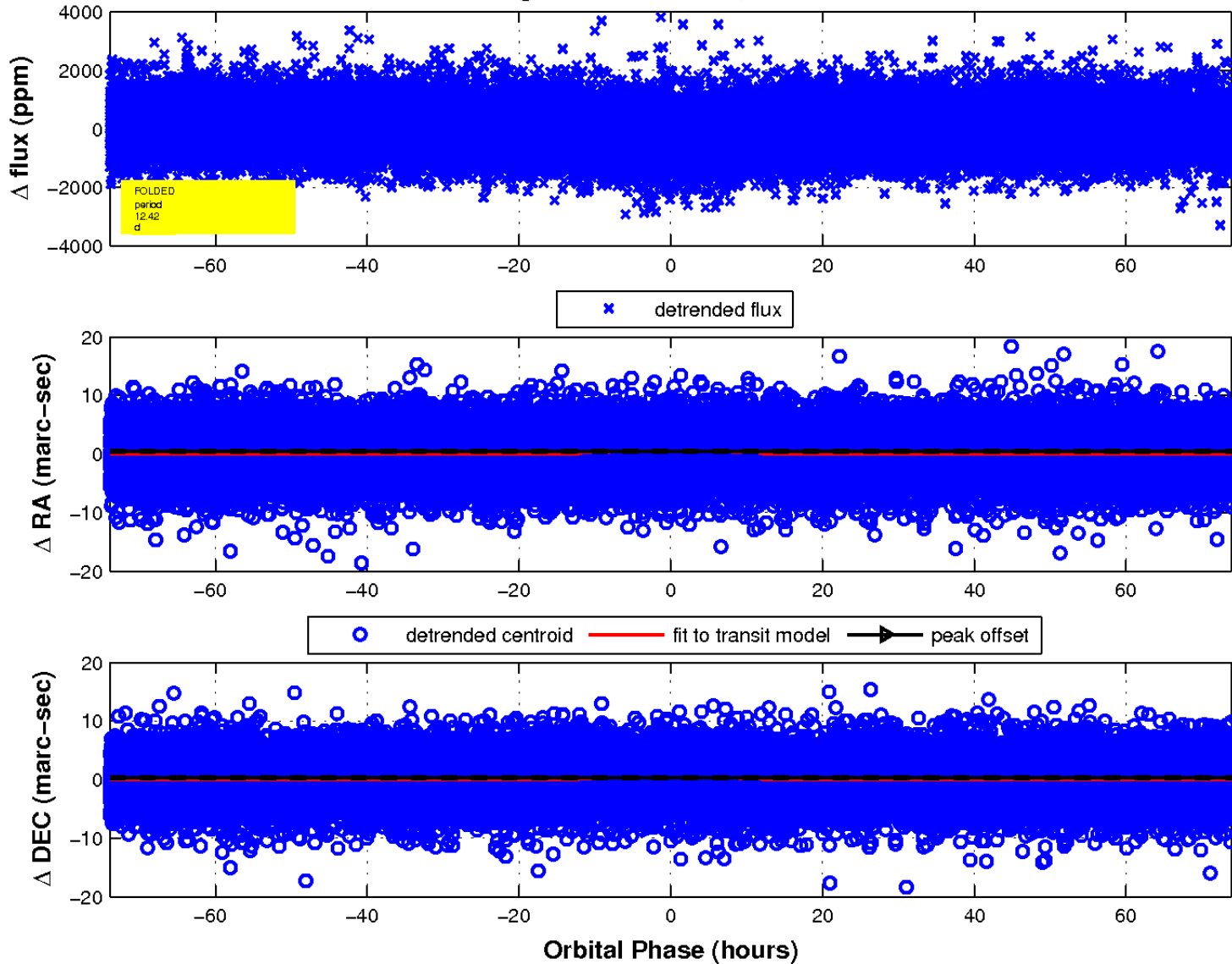
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

