

KIC 008560861

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})
008560861-01	OBS	7059.01	31.973289	133.867707	75557.4	13.252	3506.6	5048.2	3.46	7854	160.76	653.27
008560861-02	OBS	No	15.986631	134.613476	34343.7	13.367	1426.4	2604.7	3.46	7854	90.57	1646.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008560861-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED—EPHEM_MATCH
008560861-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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 008560861-01

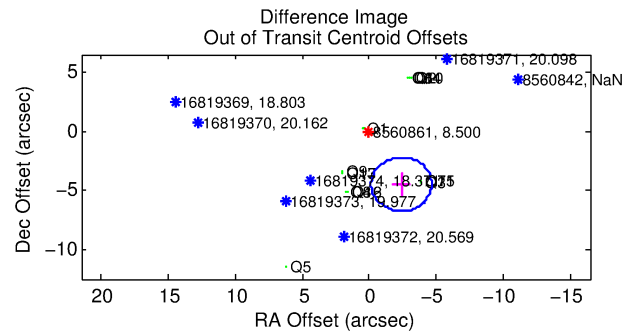
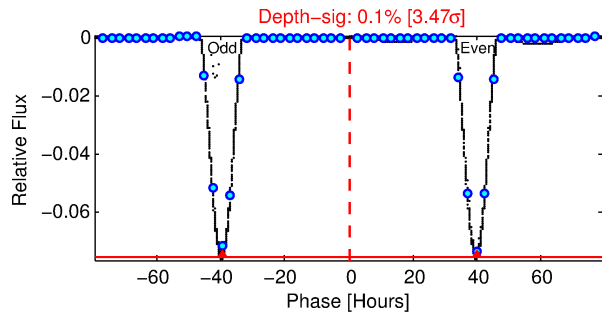
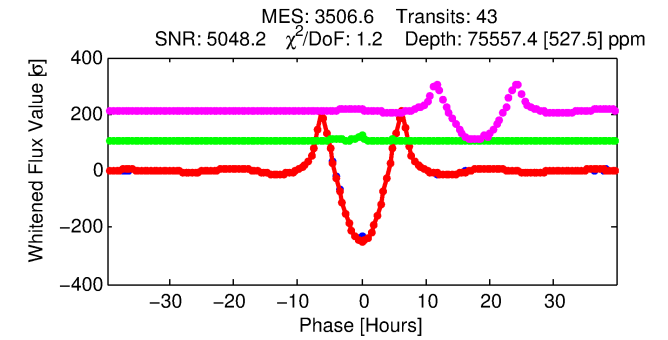
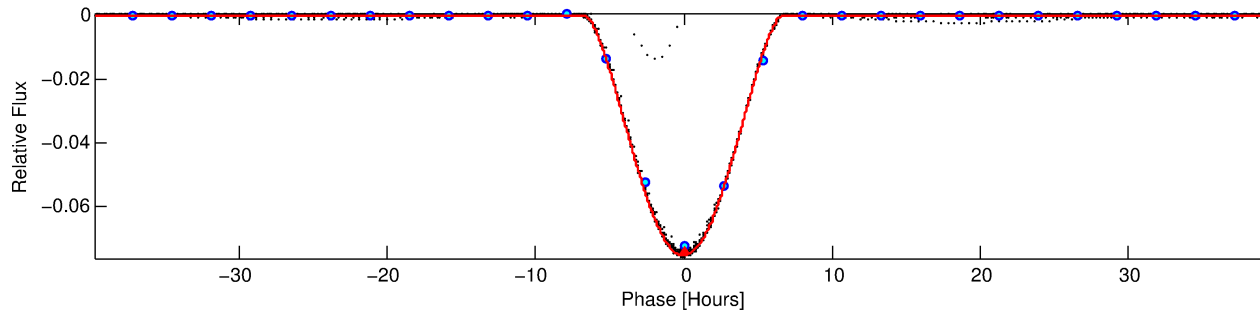
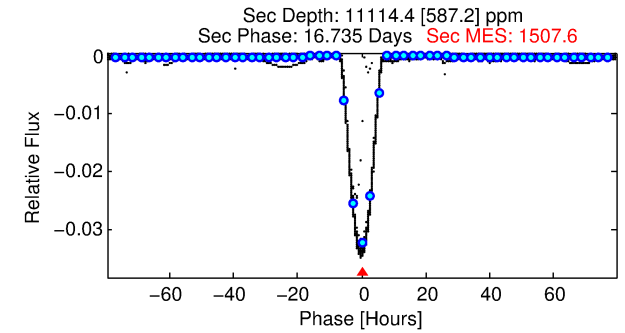
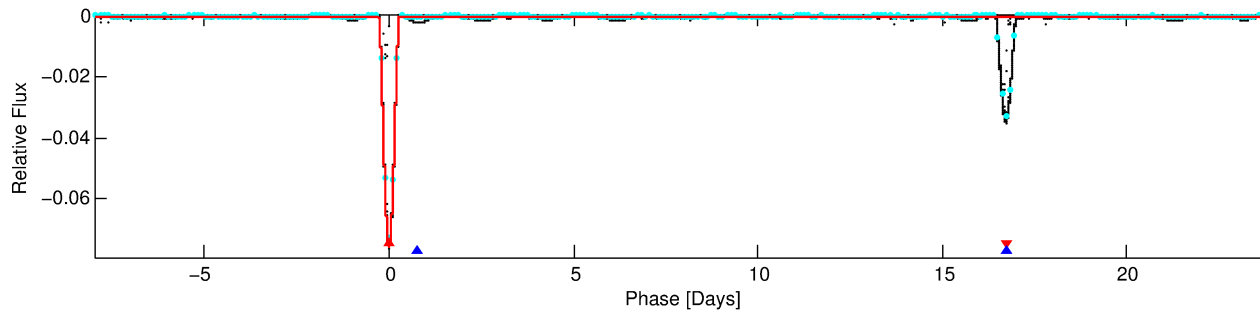
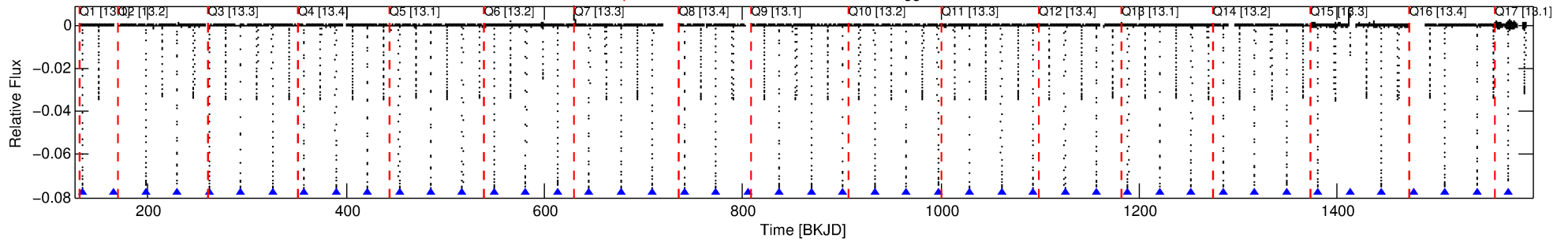
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008560861-01	8560861	009021047-03	9021047	1:11	3024.5	-7	1	15.25	8.50	0.03	Col-Anomaly	1	2.96	0.25

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: 8560861 Candidate: 1 of 2 Period: 31.973 d
KOI: K07059.01 Corr: 0.997

Kp: 8.50 R*: 3.46 Rs Teff: 7854.0 K Logg: 3.67 Fe/H: -0.120



DV Fit Results:

Period = 31.97329 [0.00000] d
Epoch = 133.8677 [0.0000] BKJD
Rp/R* = 0.4255 [0.0039]
a/R* = 18.76 [0.01]
b = 1.00 [0.00]
Seff = 653.27 [492.46]
Teq = 1289 [243] K
Rp = 160.76 [76.63] Re
a = 0.2501 [0.1149] AU
Ag = 14.80 [10.91] [1.26σ]
Teffp = 3909 [171] K [8.82σ]

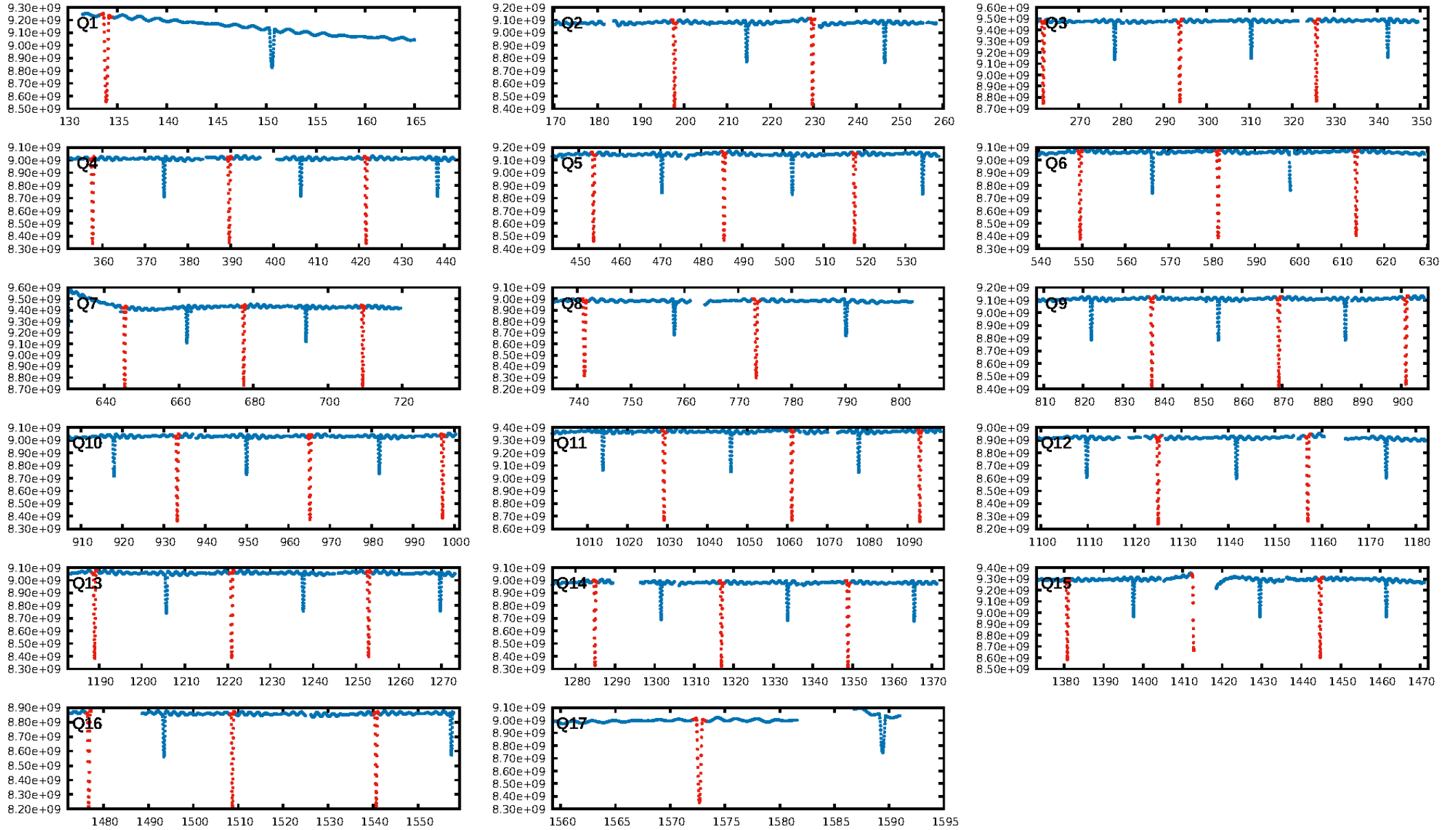
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.38σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 24.2%
Bootstrap-pfa: 0.00e+00
RollingBand-figt: 1.00 [41/41]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 1.849 arcsec [1266.84σ]
OotOffset-rm: 5.089 arcsec [6.75σ]
KicOffset-rm: 6.307 arcsec [6.71σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:18:13 Z

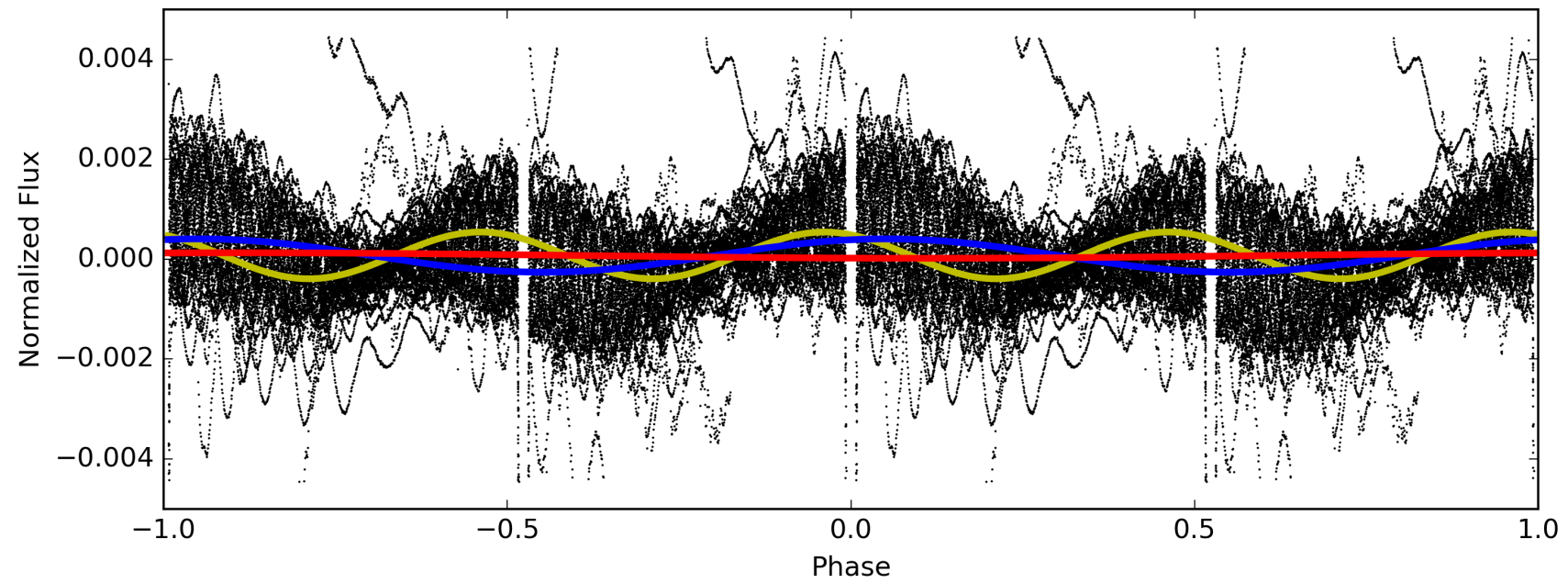
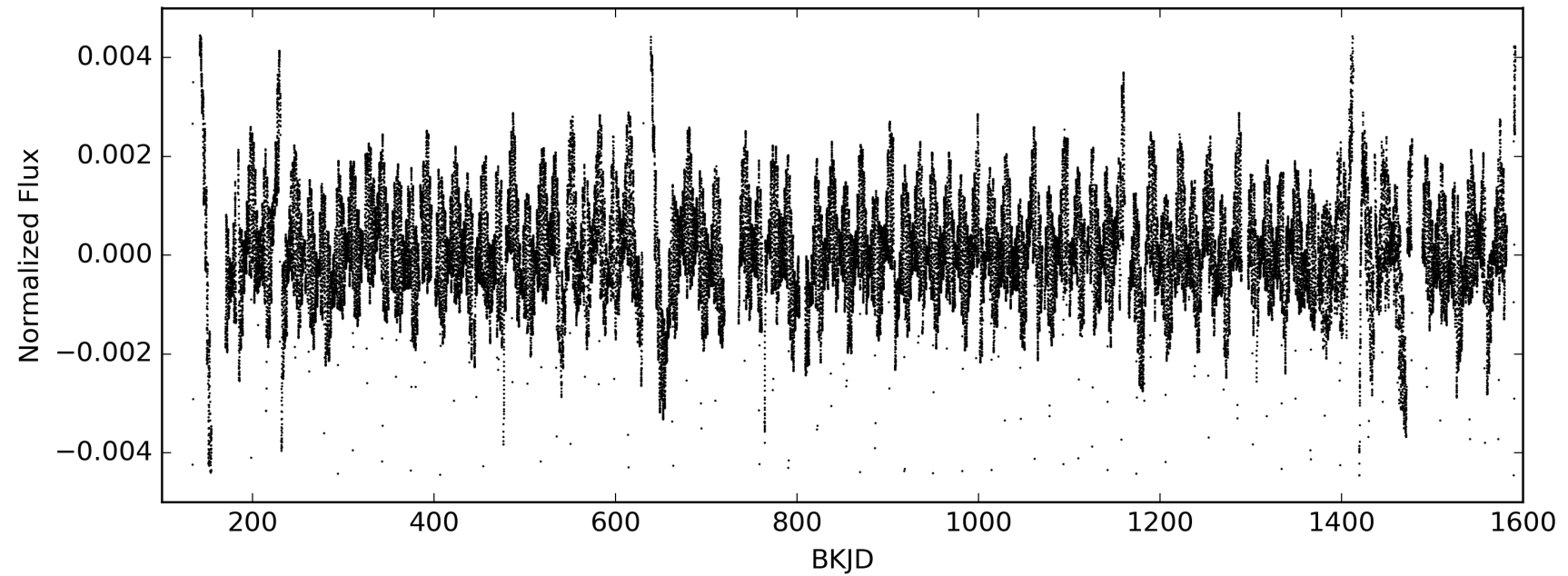
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008560861-01, PDC Light Curves



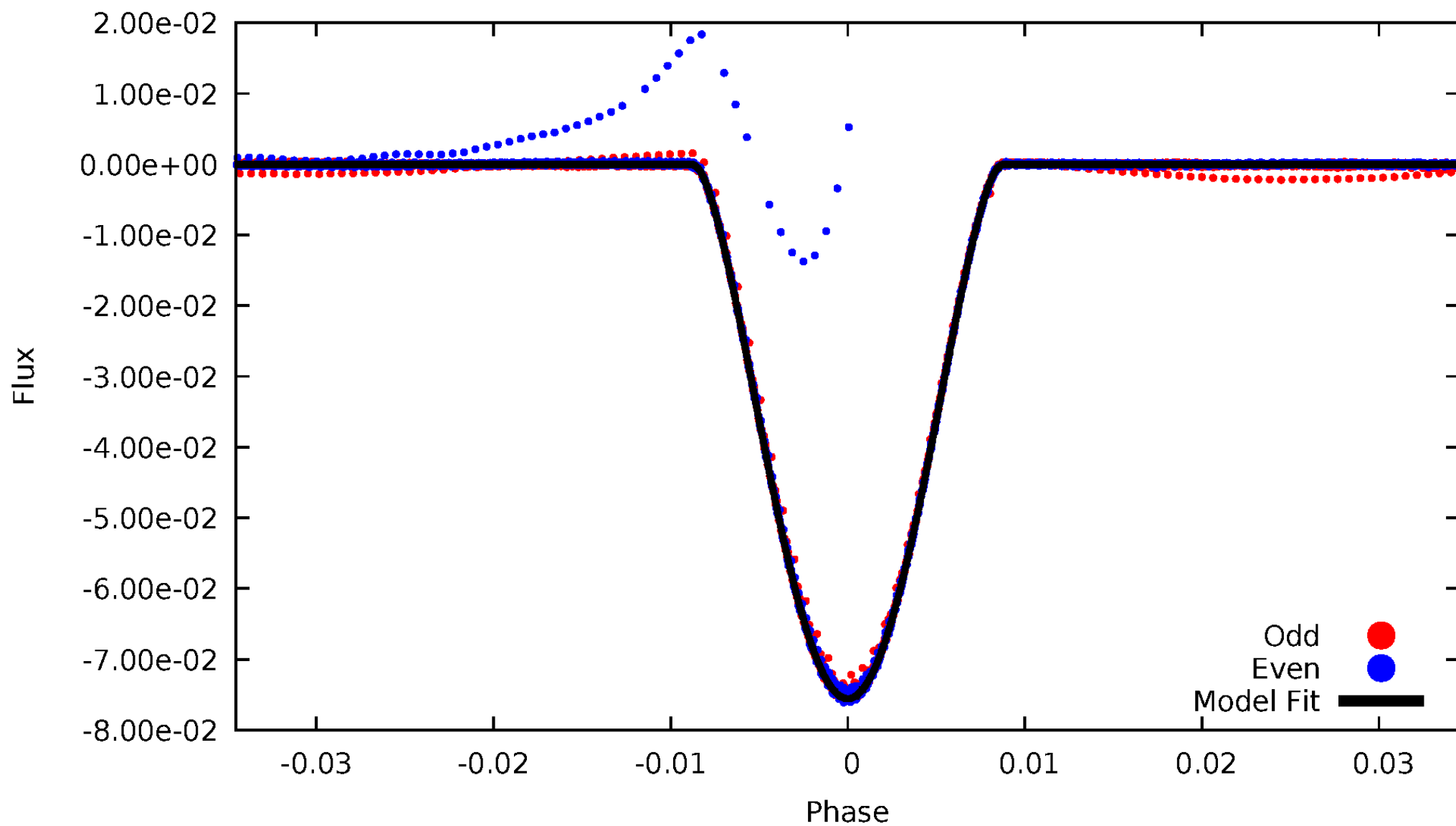
TCE 008560861-01

— P = 15.987 days — P = 31.973 days — P = 63.947 days



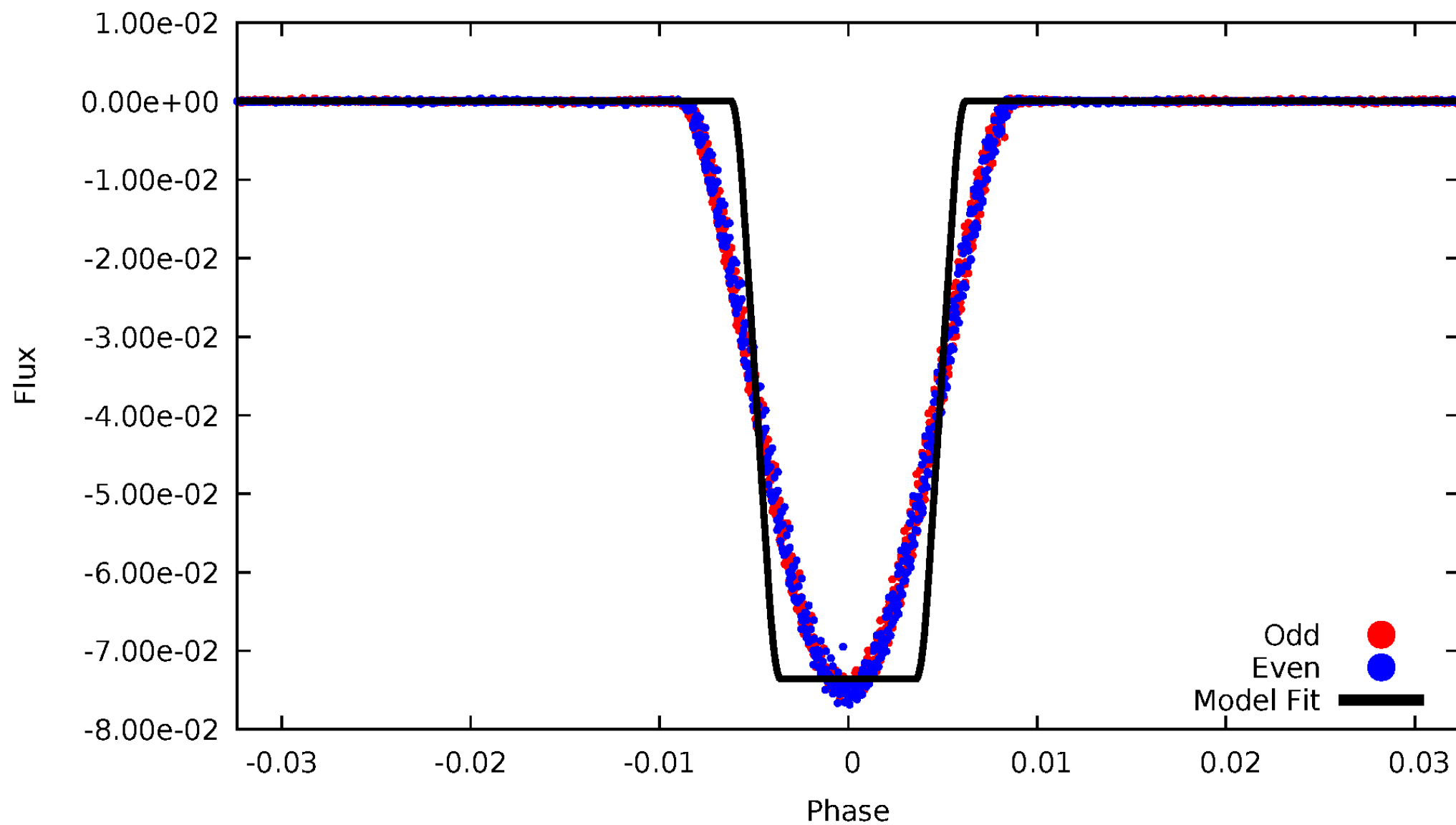
DV Odd/Even

TCE 008560861-01



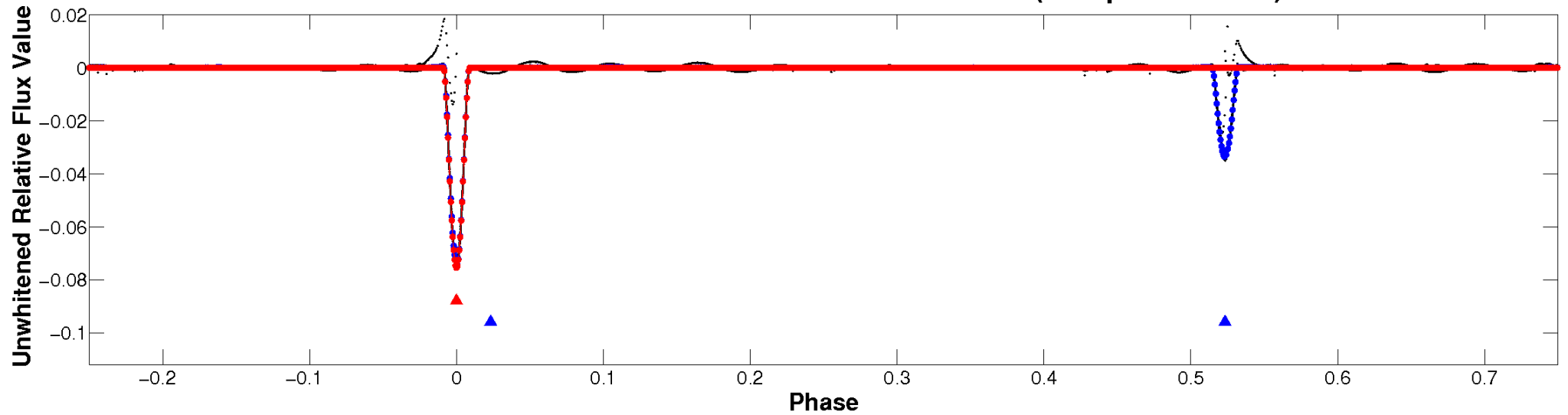
ALT Odd/Even

TCE 008560861-01

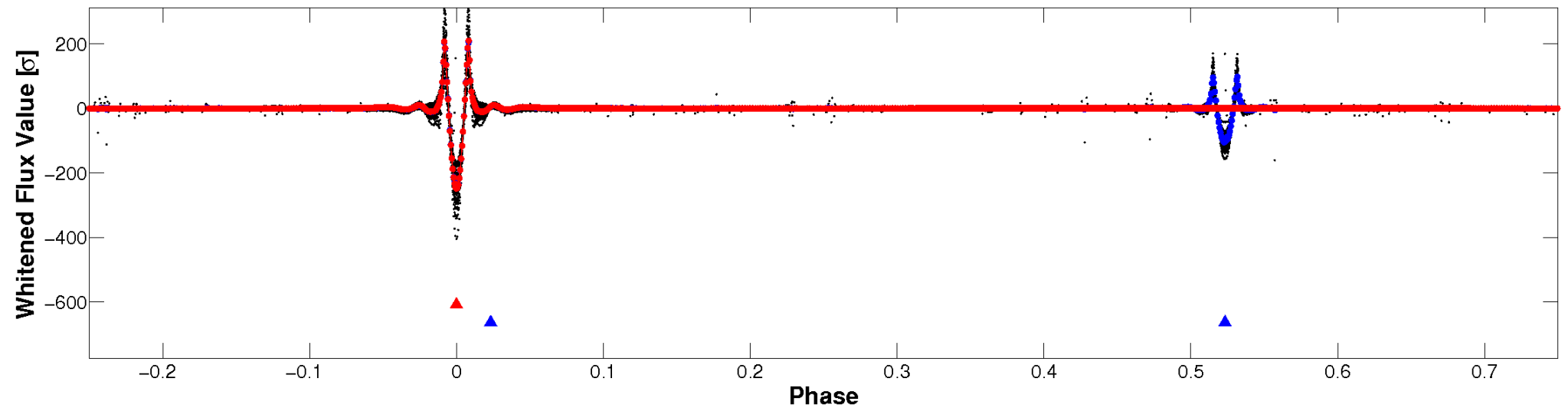


Non-Whitened Vs. Whitened Light Curve

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

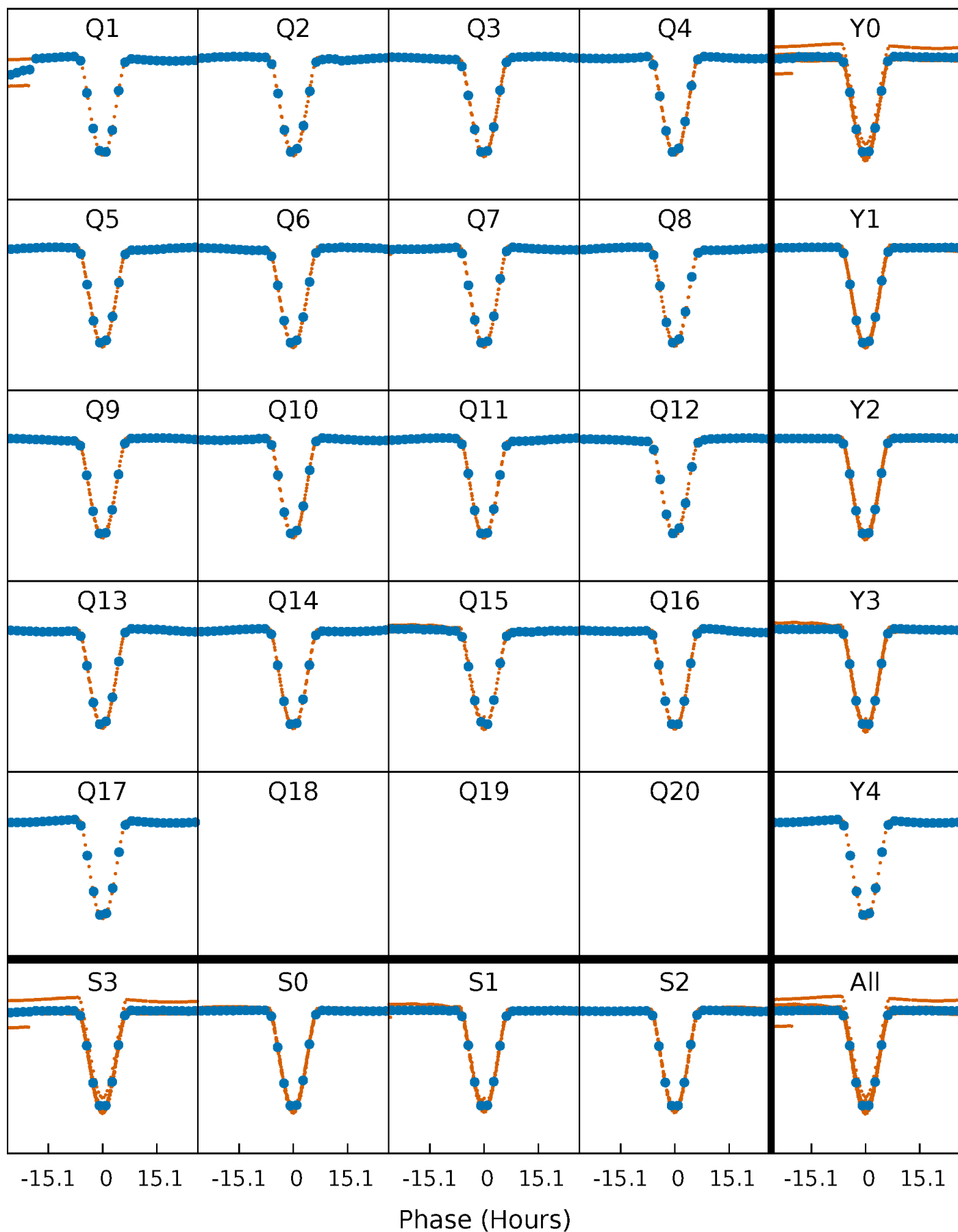


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



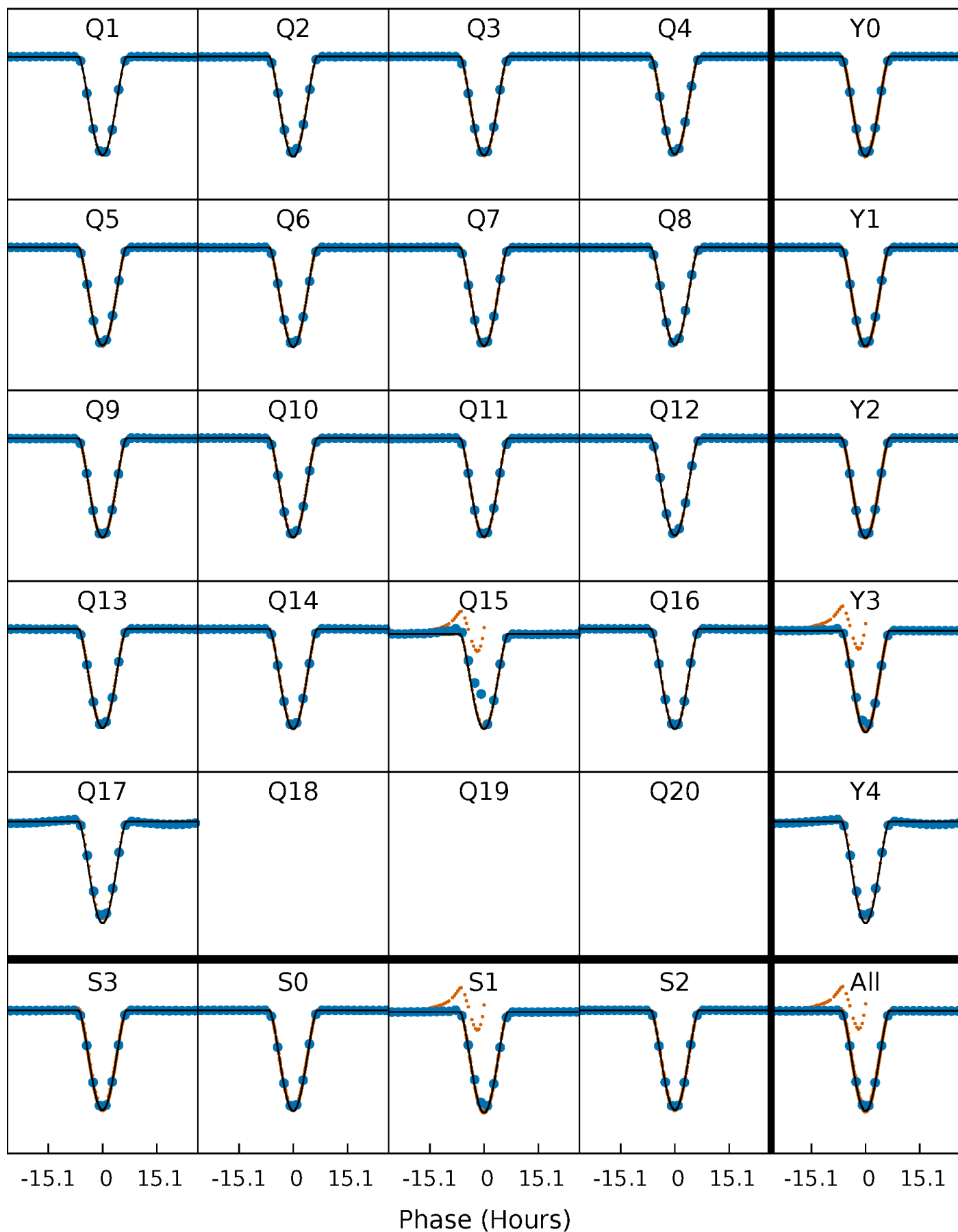
PDC Quarter-Phased Transit Curves

TCE 008560861-01 P= 31.973289 Days $T_0=133.867707$ (BKJD)



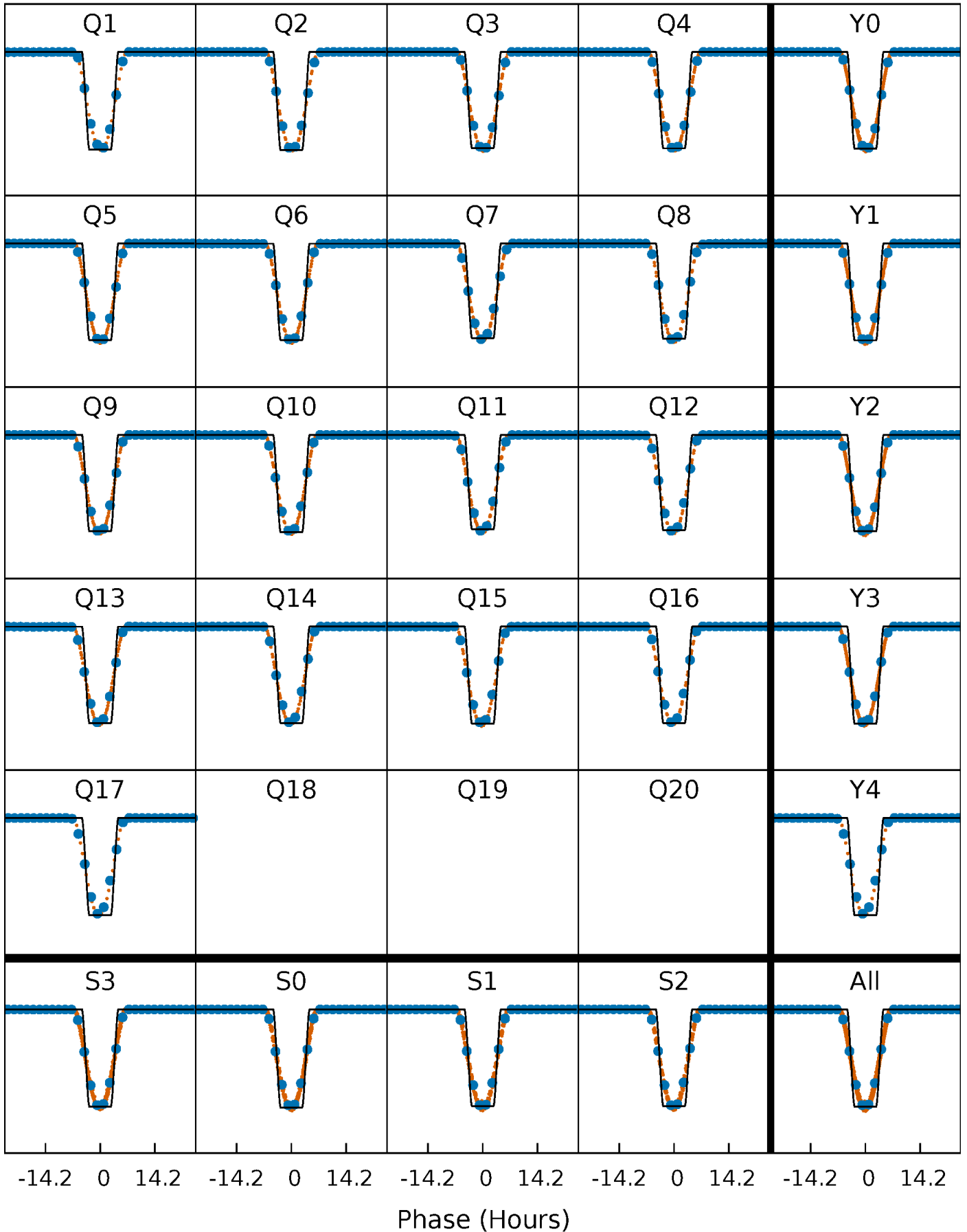
DV Quarter-Phased Transit Curves

TCE 008560861-01 P= 31.973289 Days $T_0=133.867707$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

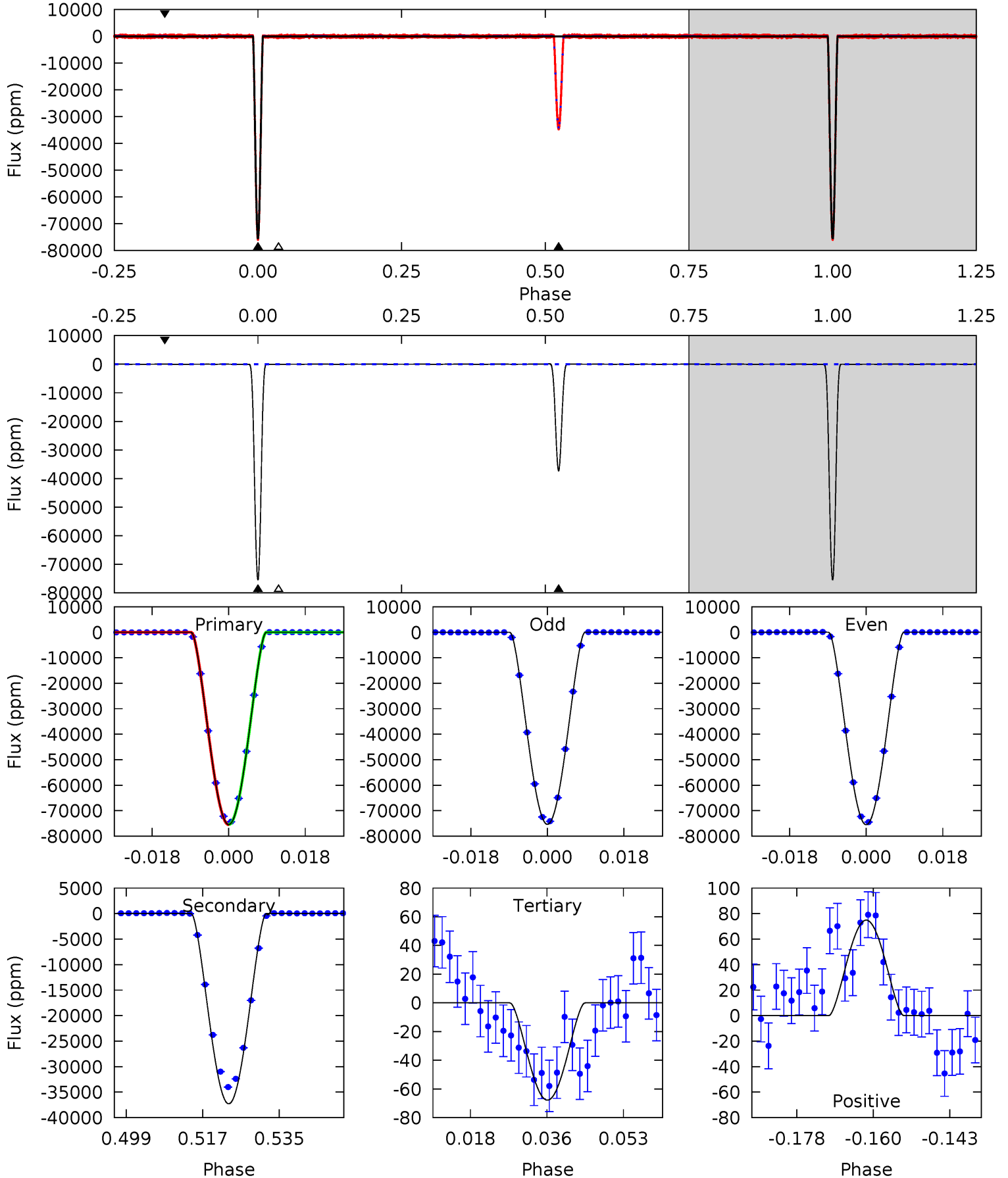
TCE 008560861-01 P= 31.973778 Days $T_0=133.858985$ (BKJD)



DV Model-Shift Uniqueness Test

008560861-01, P = 31.973289 Days, E = 101.894418 Days

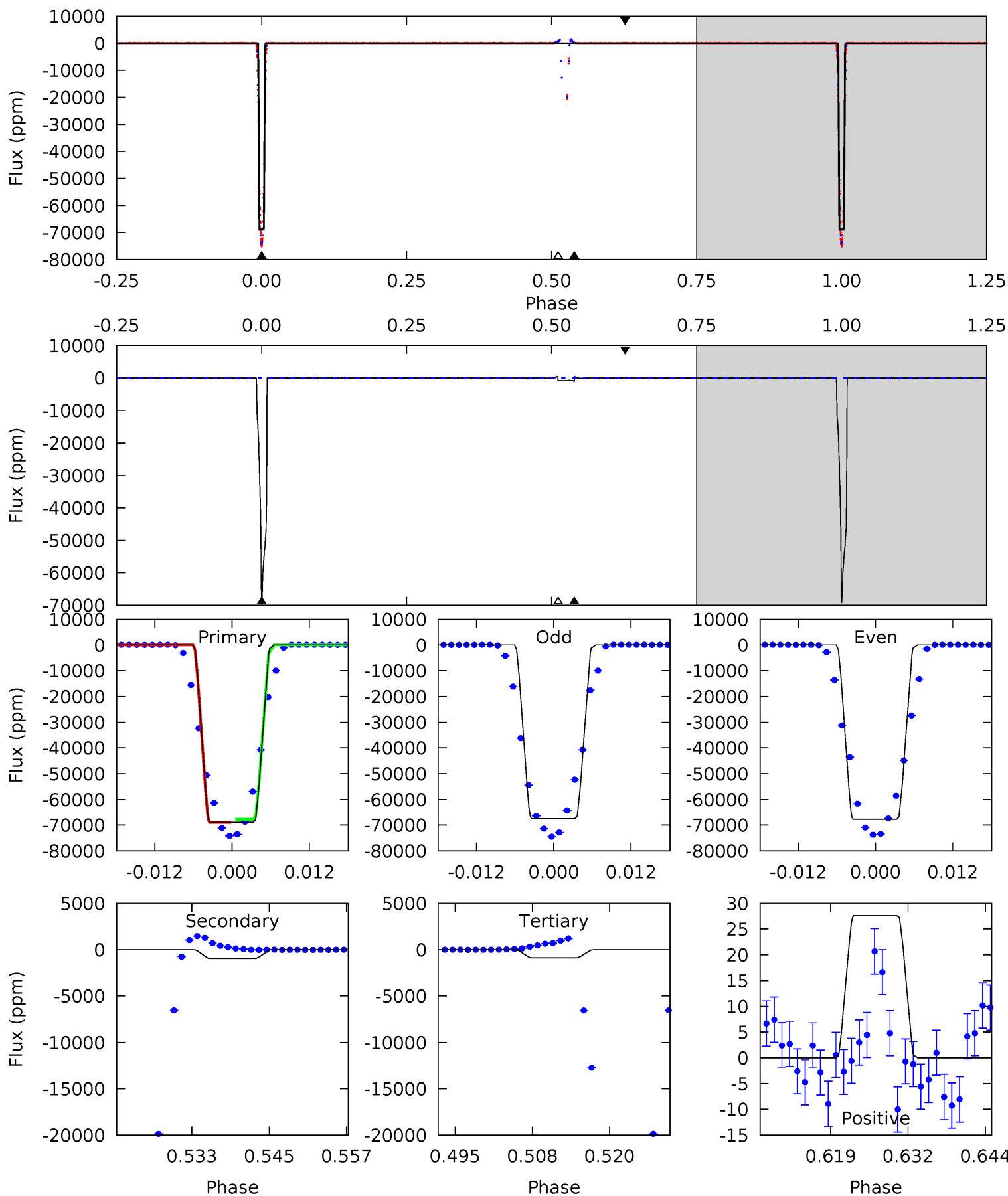
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13972	6906	12.6	13.9	4.91	2.37	6.11	13960	13958	6893	6892	15.5	0.98	0.00	0.35



Alt Model-Shift Uniqueness Test

008560861-01, P = 31.973778 Days, E = 101.885207 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6905	96.3	88.1	2.76	4.99	2.50	1.73	6817	6902	8.20	93.5	7.98	1.00	0.01	0



Stellar Parameters For KIC 008560861

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7854^{+217}_{-326}	$3.669^{+0.432}_{-0.108}$	$-0.120^{+0.200}_{-0.300}$	$3.462^{+0.707}_{-1.650}$	$2.039^{+0.370}_{-0.494}$	$0.069^{+0.302}_{-0.024}$
	+3%/-4%	+12%/-3%	+167%/-250%	+20%/-48%	+18%/-24%	+437%/-34%
Source	KIC0	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 008560861-01 / KOI 7059.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-37282 ± 5	$154.11^{+23.19}_{-34.92}$	1748^{+136}_{-206}	5271^{+102}_{-152}	56^{+34}_{-12}
Alt.	-961 ± 10	$100.46^{+13.16}_{-24.30}$	1749^{+134}_{-187}	3153^{+47}_{-64}	$3.355^{+2.115}_{-0.645}$

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 $A_{obs} \gg 1.0$

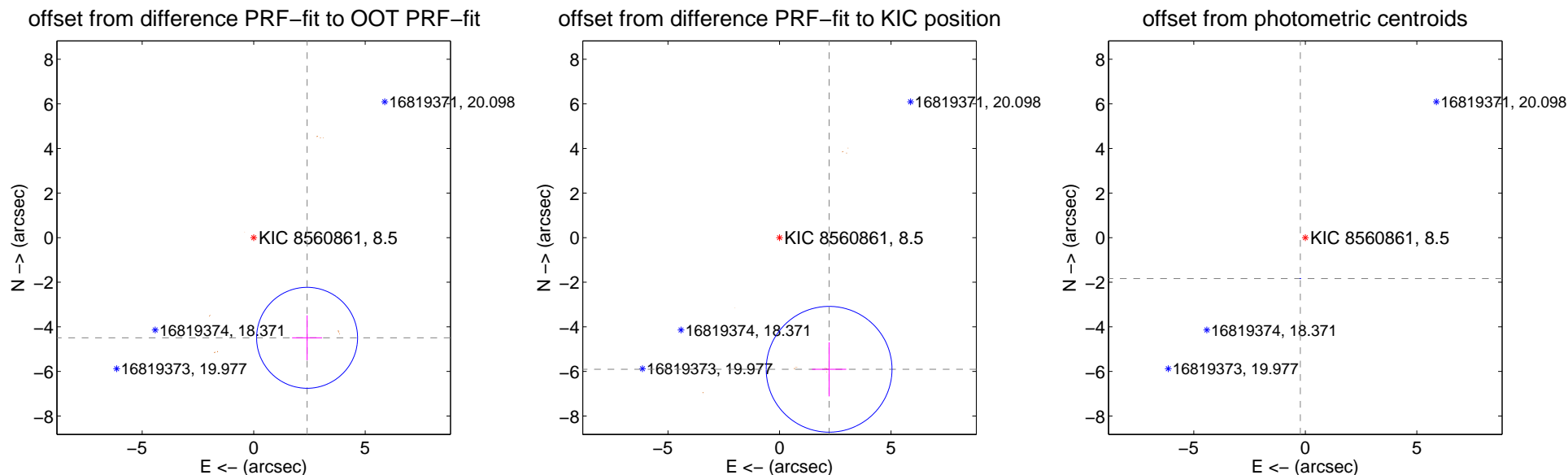
DV Centroid Data

Supplemental centroid analysis for 008560861-01. **Kepler magnitude: 8.50.** Transit SNR 5048.17

There are 0 quarters with good PRF difference image offsets

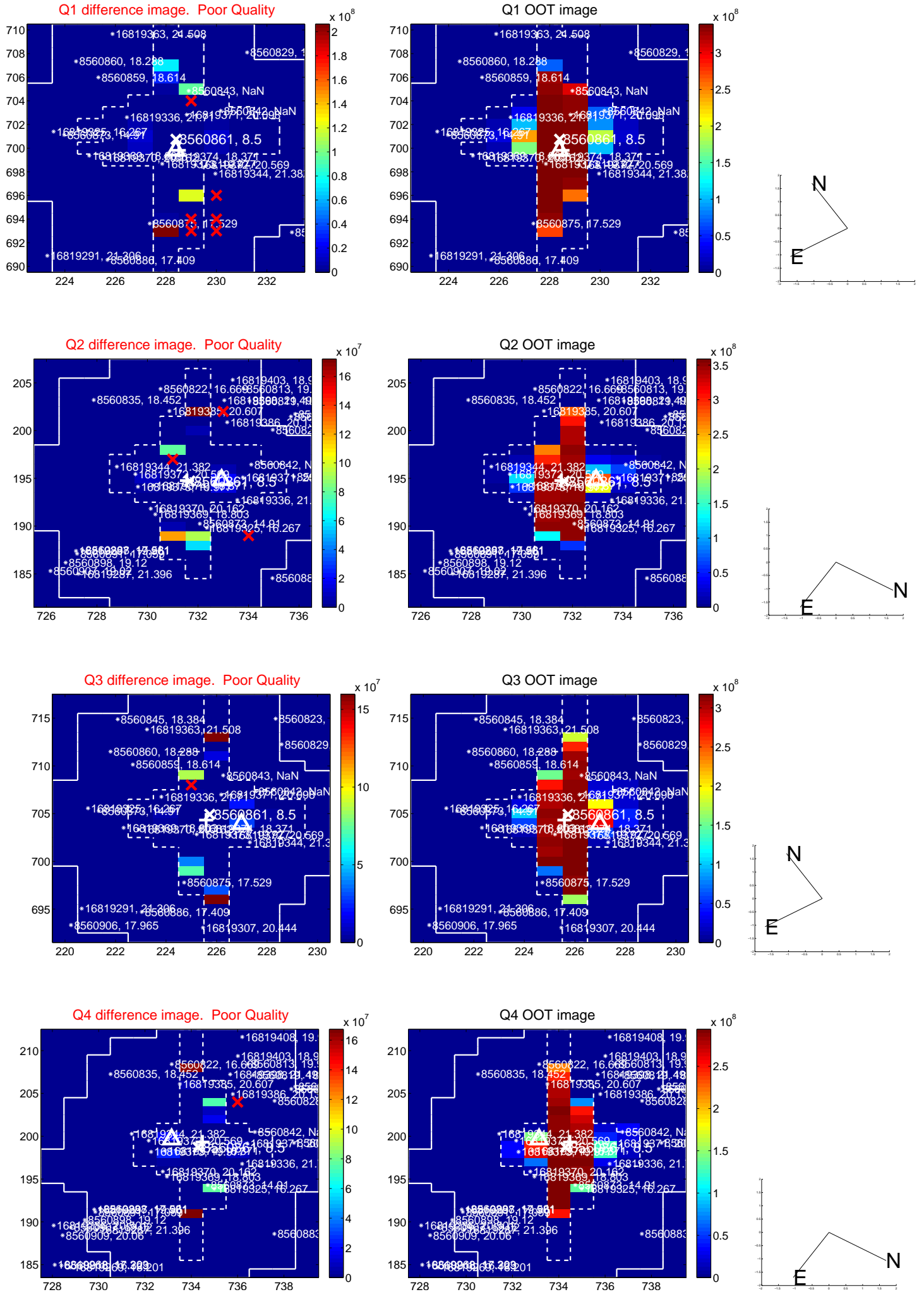
The OOT PRF centroid is offset from the target star catalog position by about 3.76 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.089 ± 0.754	6.75	-2.395 ± 0.673	-4.491 ± 1.006
PRF-fit source offset from KIC position	6.307 ± 0.940	6.71	-2.224 ± 0.768	-5.902 ± 1.213
photometric centroid source offset	1.85 ± 0.00	1266.84	0.22 ± 0.00	-1.84 ± 0.00

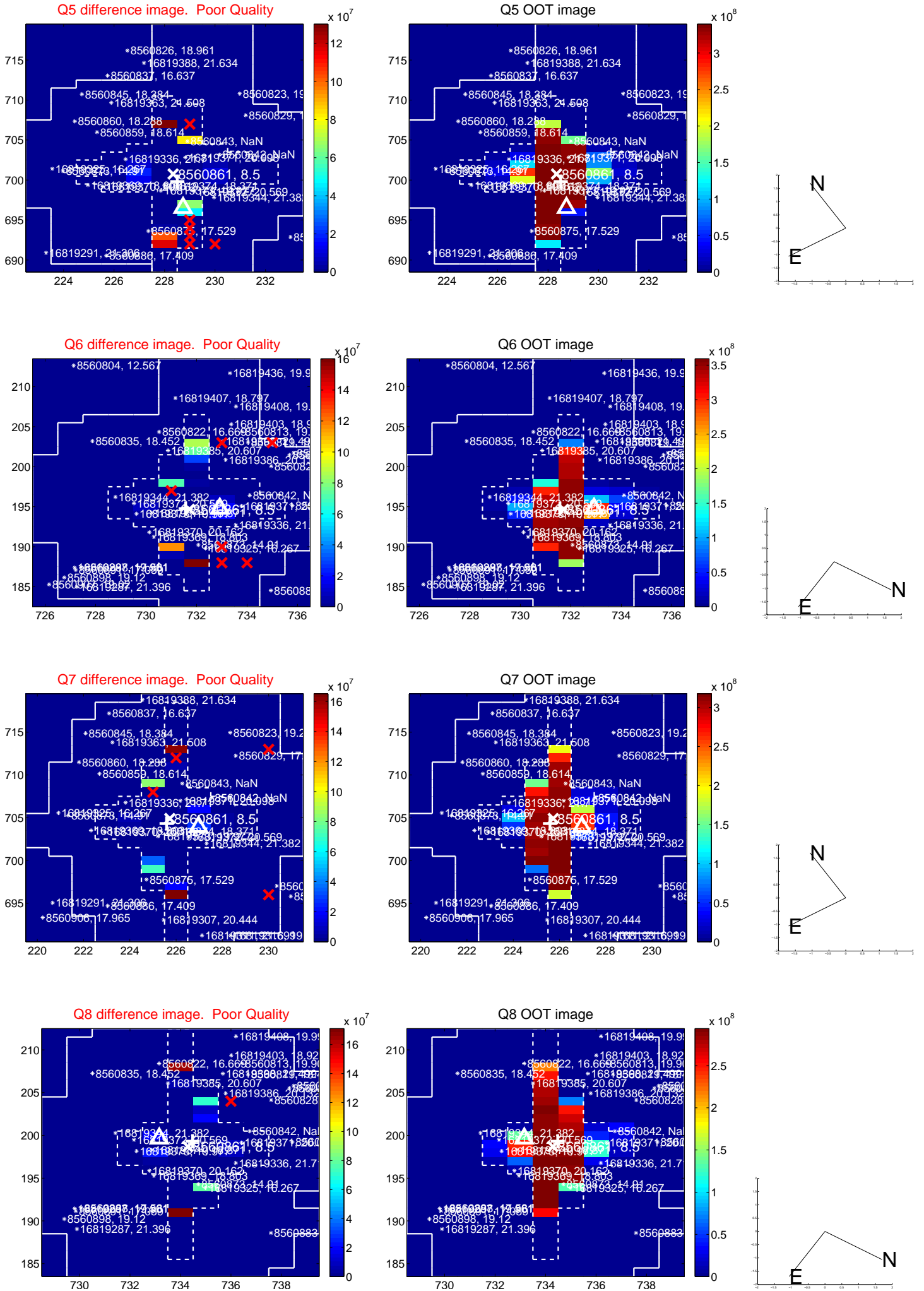


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

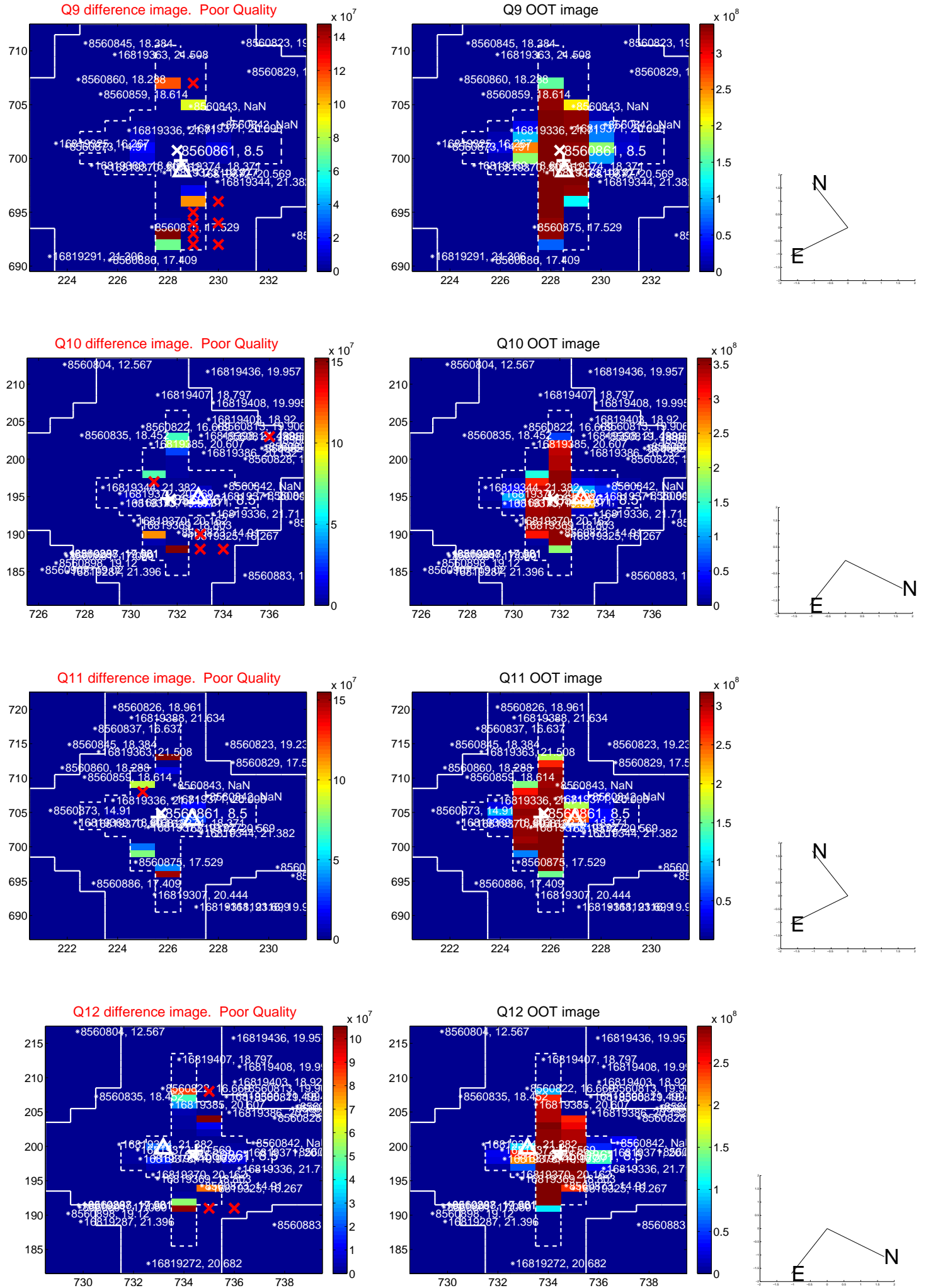
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



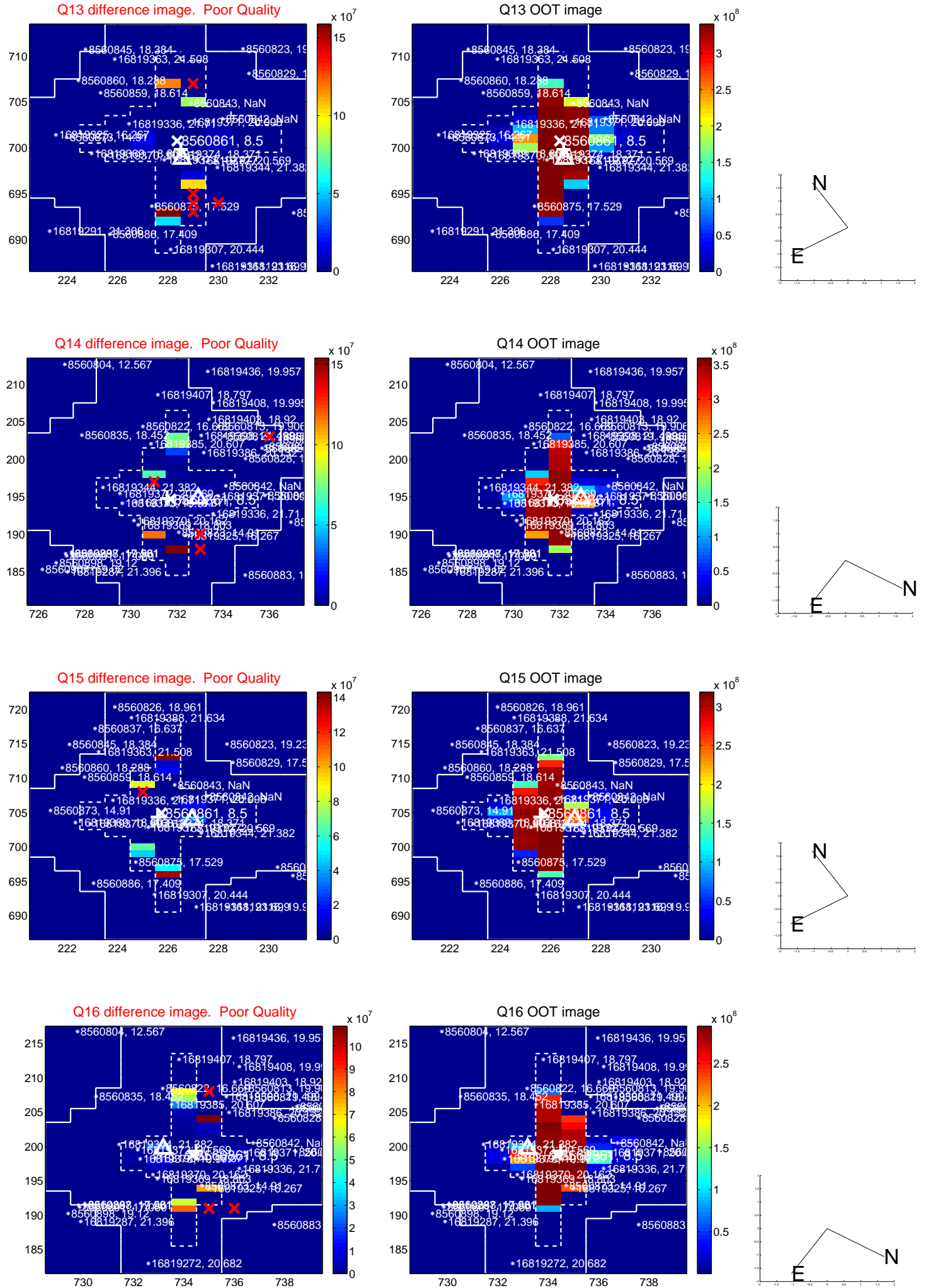
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



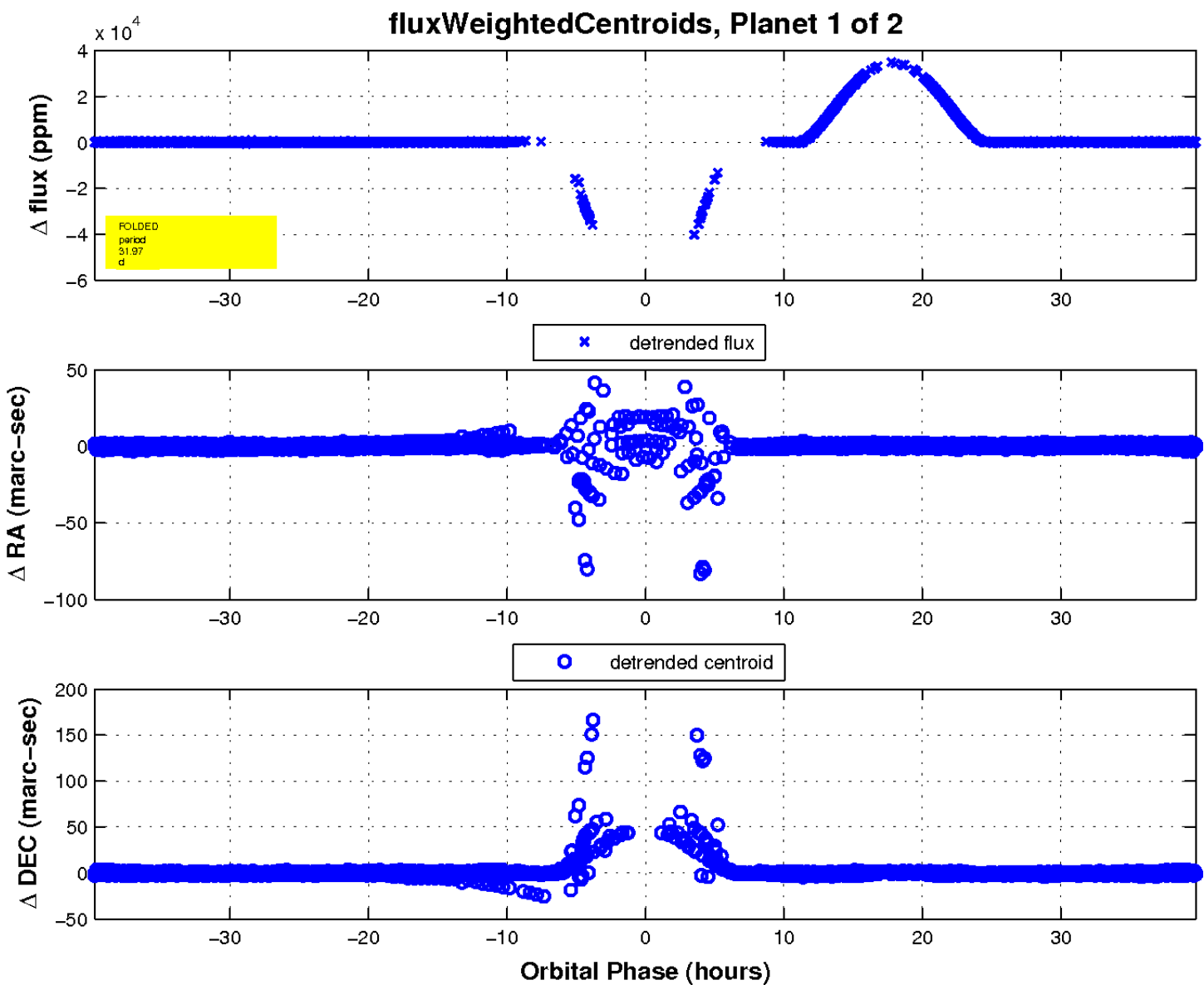
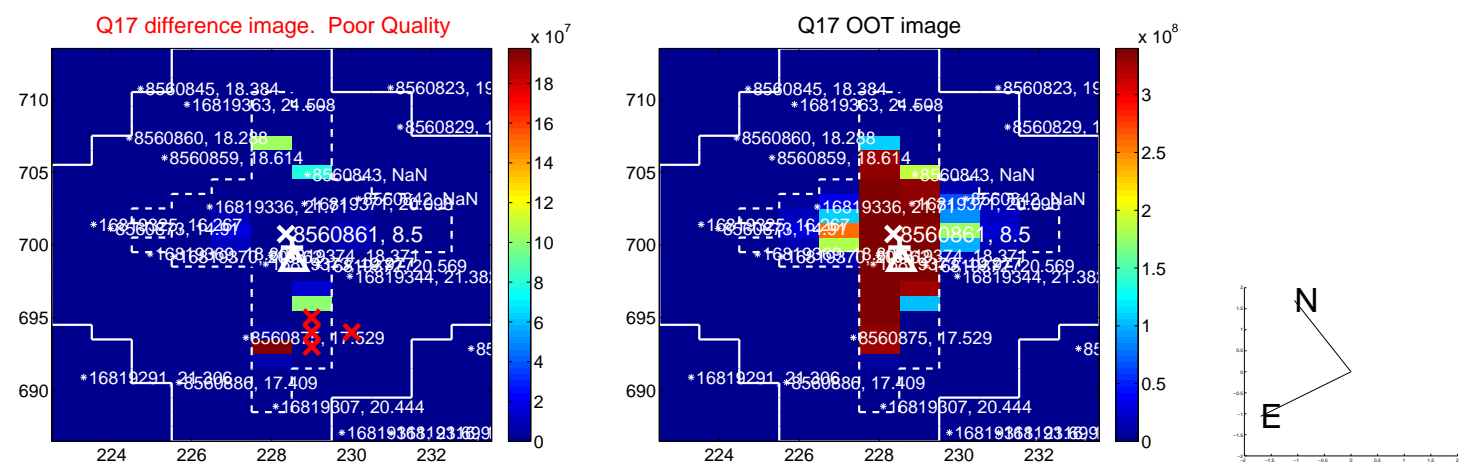
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



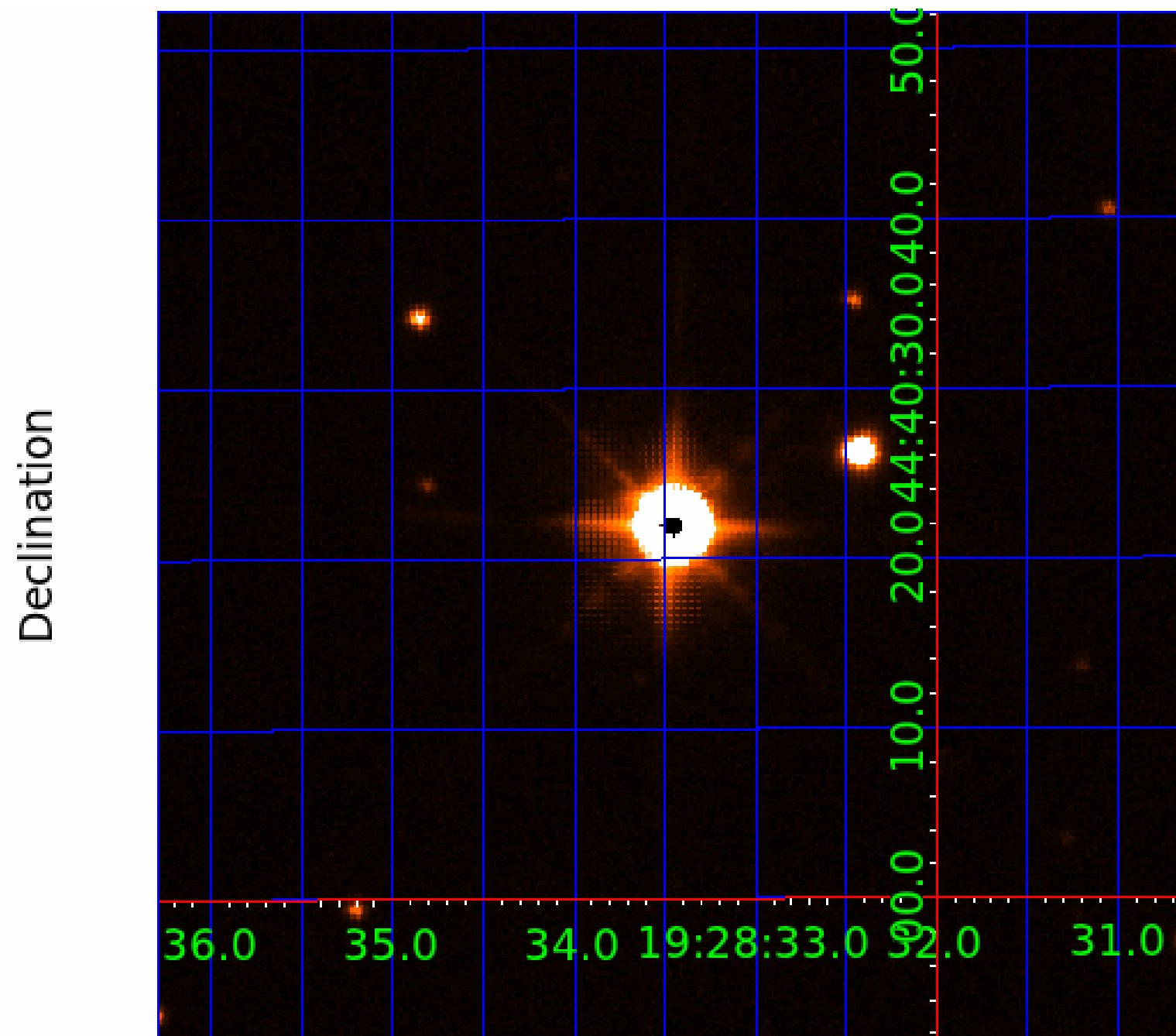
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008560861

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})
008560861-01	OBS	7059.01	31.973289	133.867707	75557.4	13.252	3506.6	5048.2	3.46	7854	160.76	653.27
008560861-02	OBS	No	15.986631	134.613476	34343.7	13.367	1426.4	2604.7	3.46	7854	90.57	1646.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008560861-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED—EPHEM_MATCH
008560861-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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 008560861-02

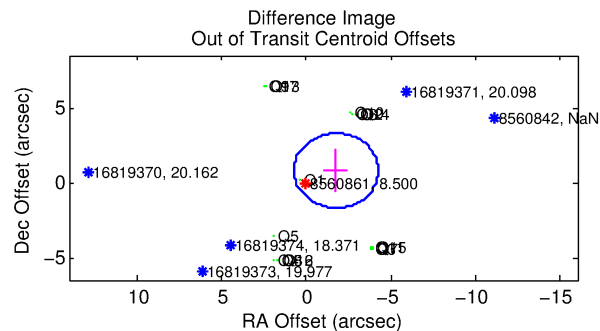
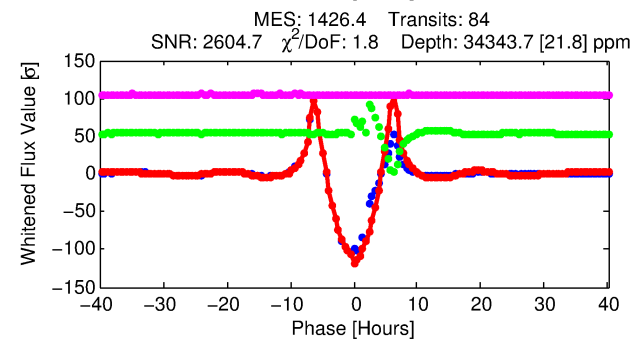
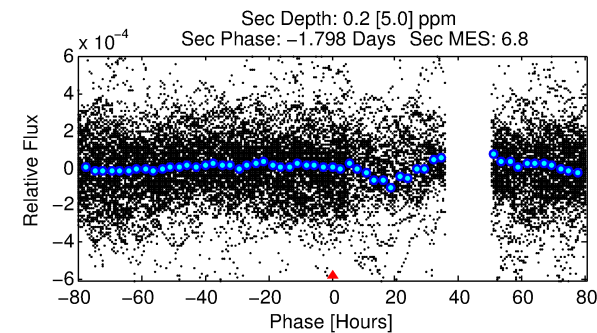
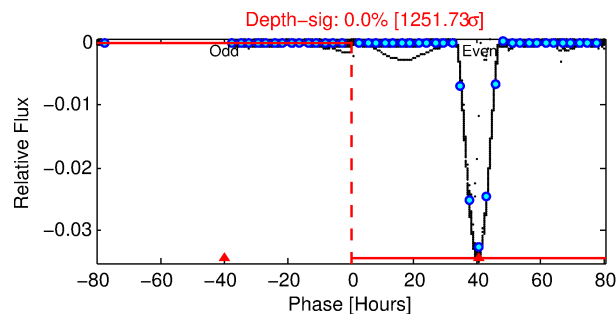
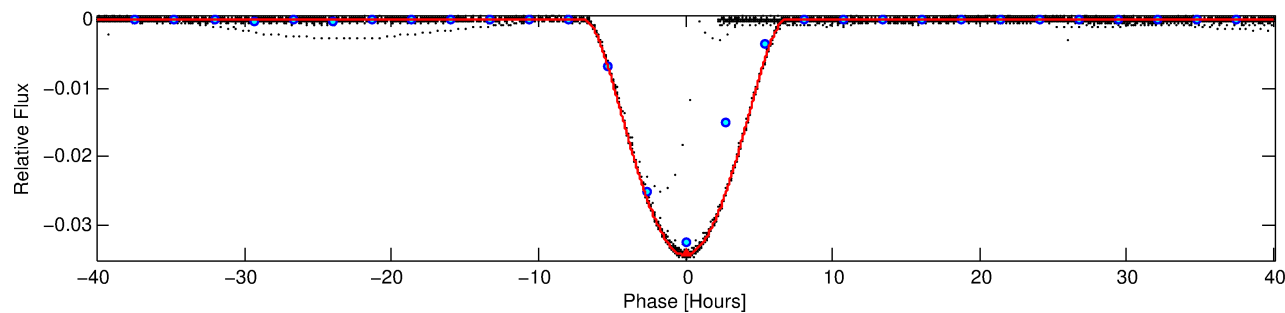
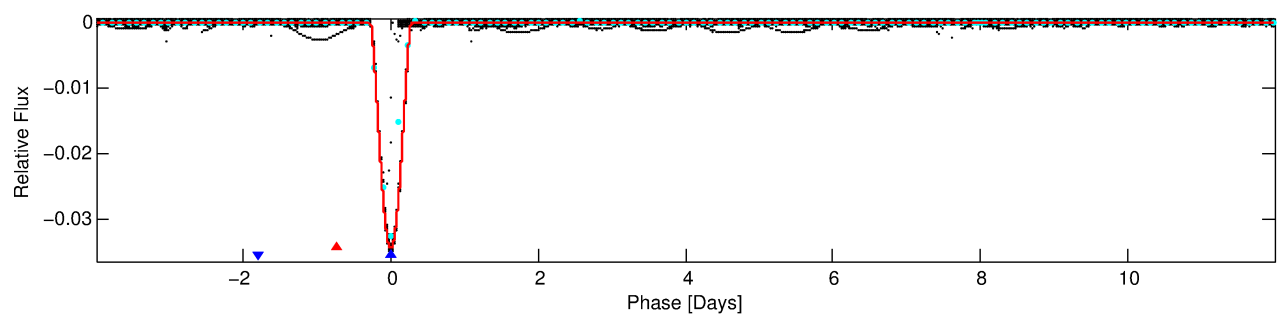
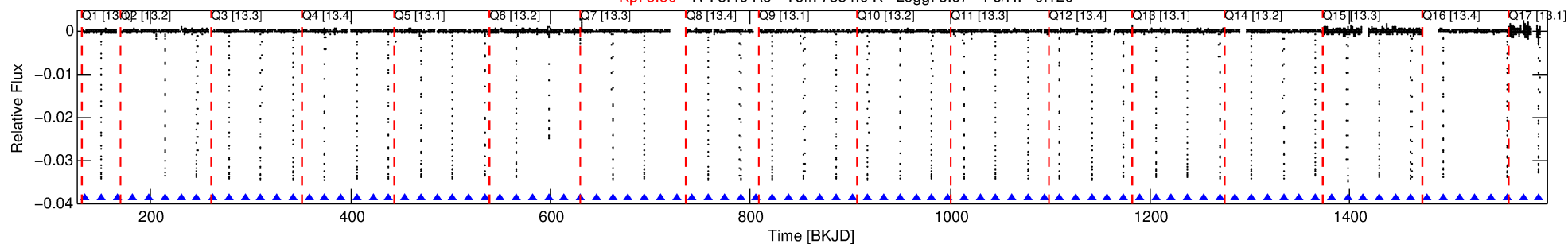
No Significant Match Found

DV One-Page Summary

KIC: 8560861 Candidate: 2 of 2 Period: 15.987 d

KOI: K07059 Corr: No Ephemeris Match

Kp: 8.50 R*: 3.46 Rs Teff: 7854.0 K Logg: 3.67 Fe/H: -0.120



DV Fit Results:

Period = 15.98663 [0.00000] d
Epoch = 134.6135 [0.0001] BKJD
Rp/R* = 0.2397 [0.0007]
a/R* = 7.62 [0.00]
b = 0.92 [0.00]
Seff = 1646.14 [1240.93]
Teq = 1624 [306] K
Rp = 90.57 [43.17] Re
a = 0.1576 [0.0724] AU
Ag = 0.00 [0.01] [-119.81σ]
Teffp = 351 [1914] K [-0.66σ]

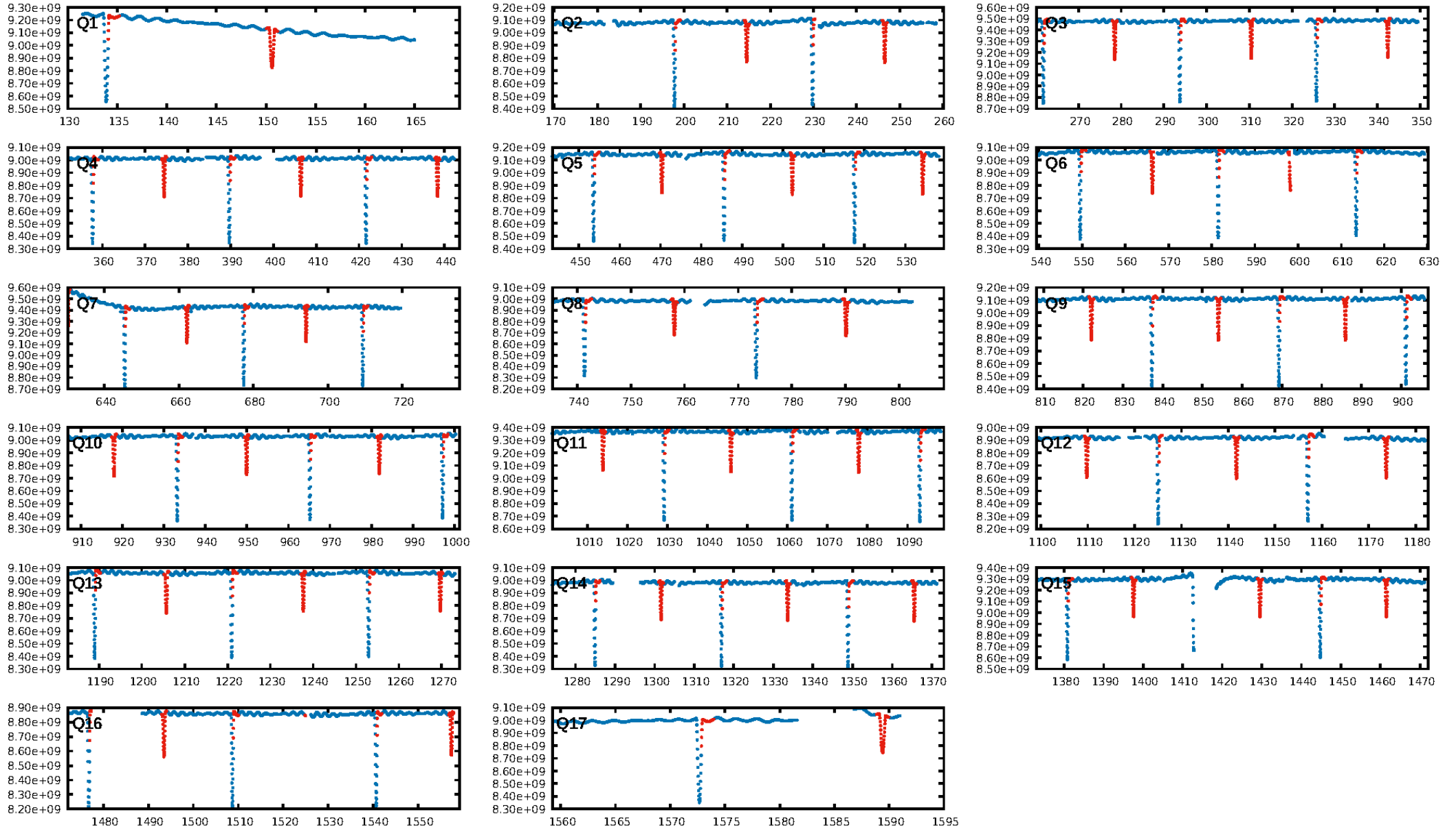
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [20.38σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [80/80]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 1.522 arcsec [673.57σ]
OotOffset-rm: 1.921 arcsec [2.31σ]
KicOffset-rm: 2.056 arcsec [2.55σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.94 [16/17]

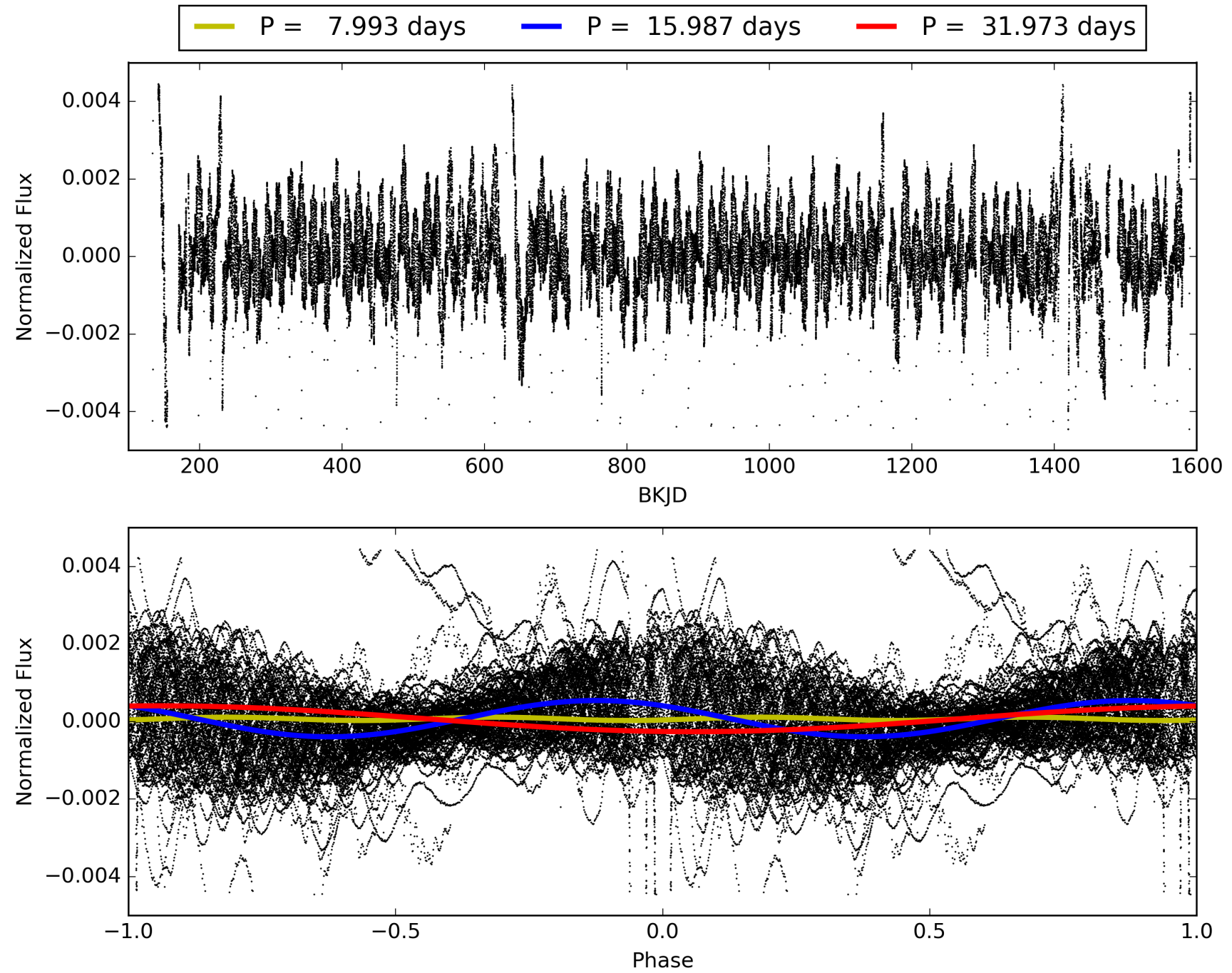
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:18:17 Z

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

TCE 008560861-02, PDC Light Curves

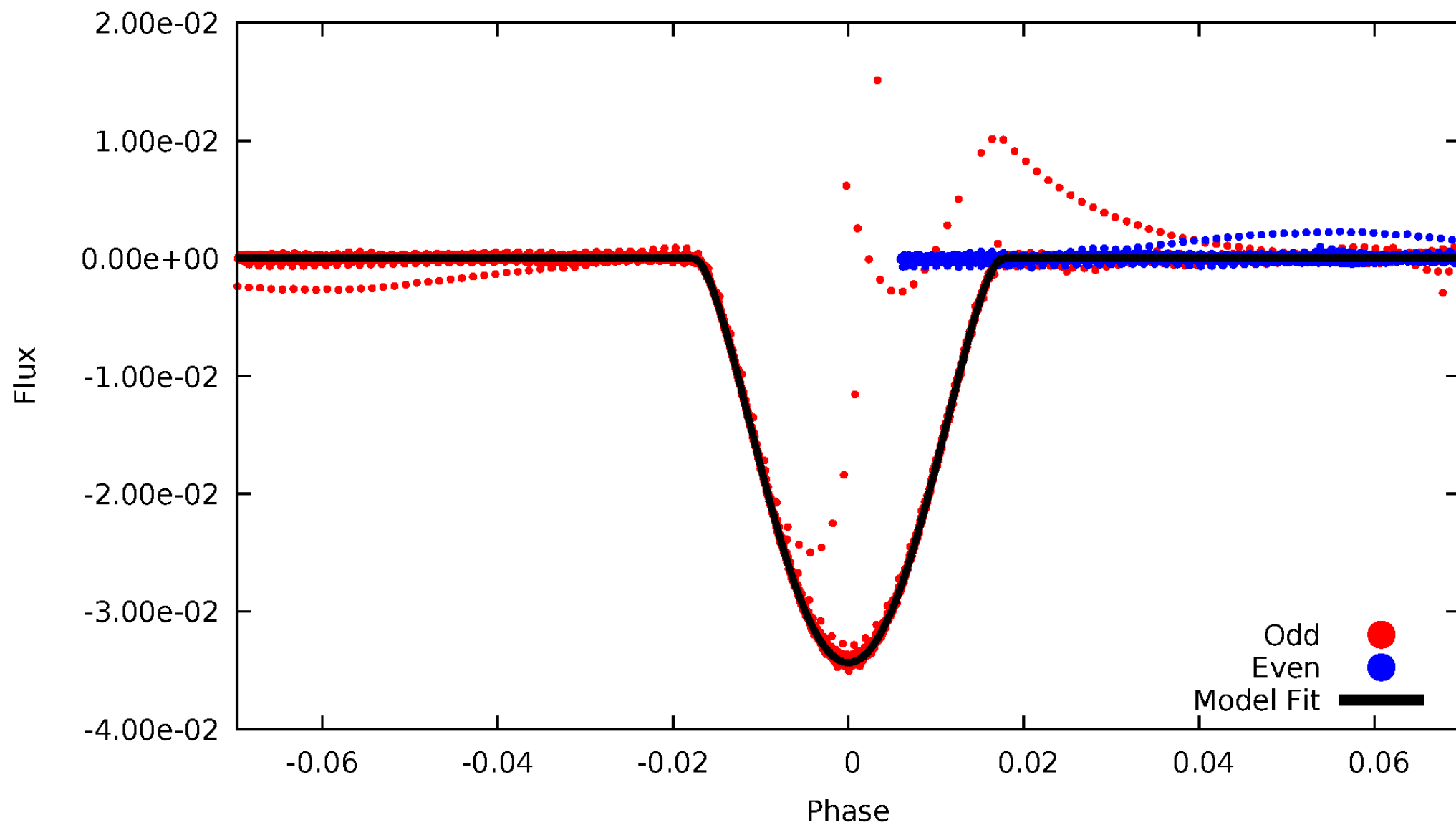


TCE 008560861-02



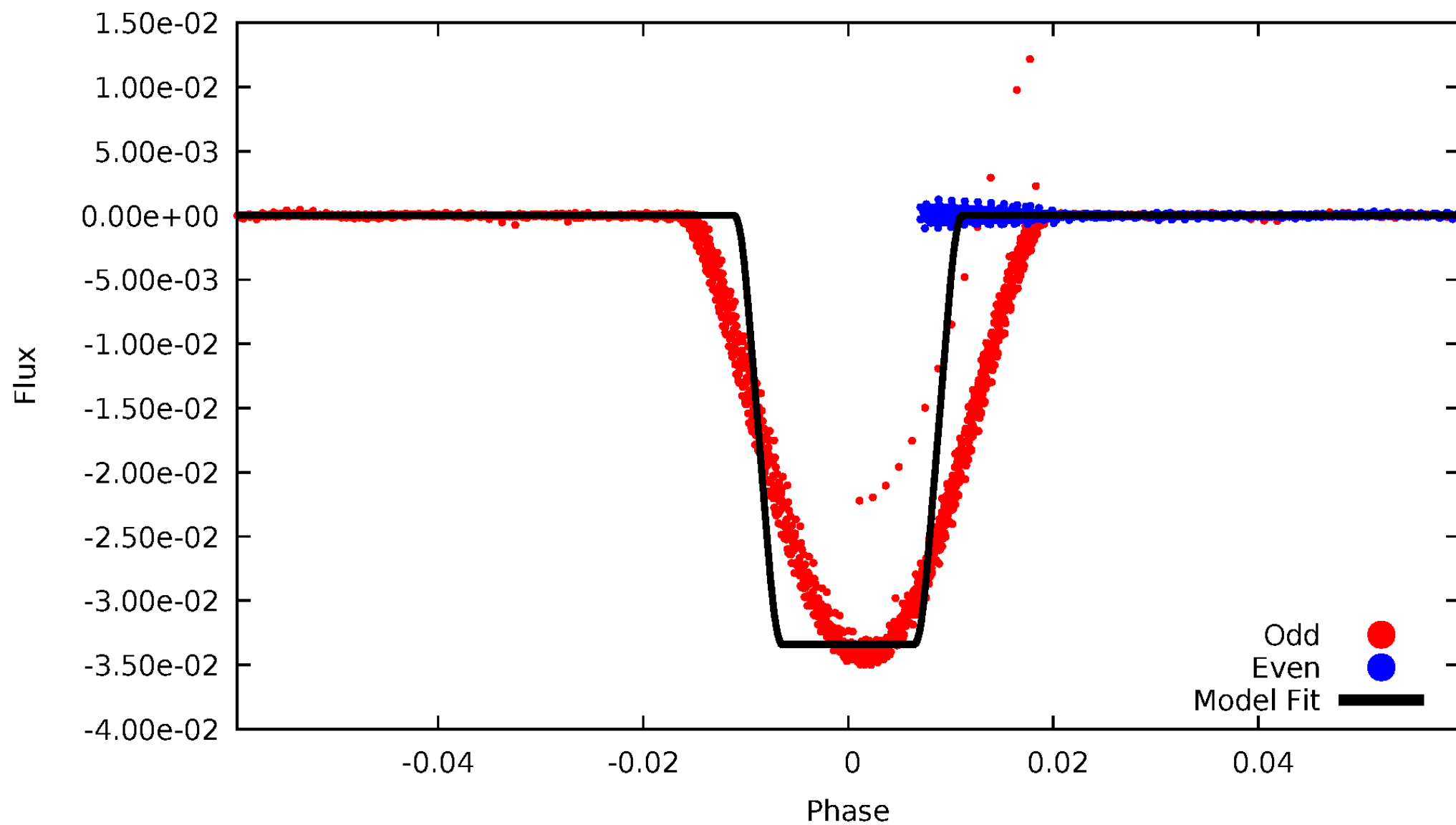
DV Odd/Even

TCE 008560861-02



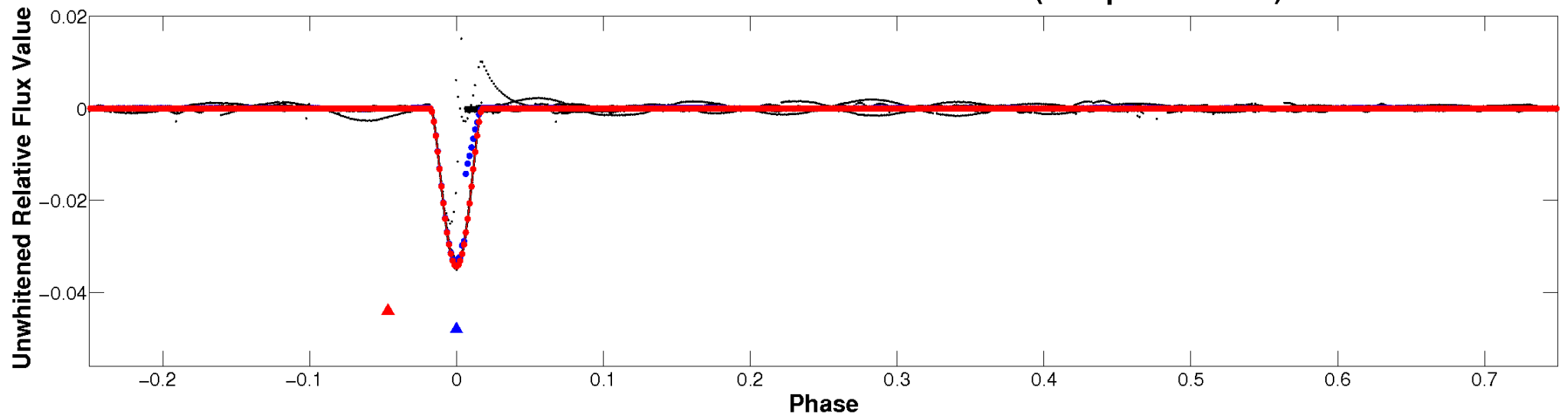
ALT Odd/Even

TCE 008560861-02

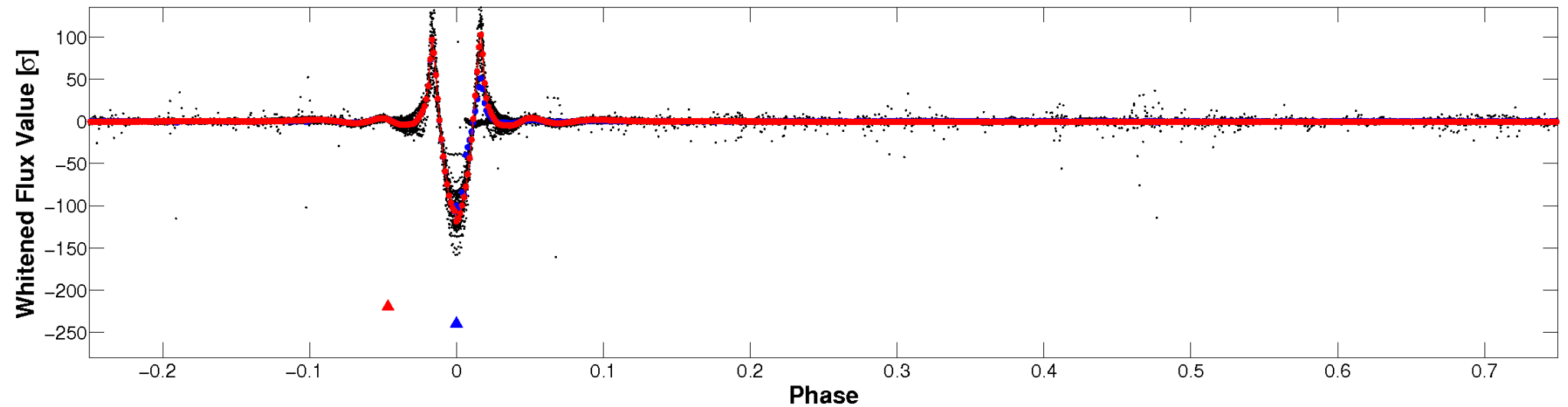


Non-Whitened Vs. Whitened Light Curve

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

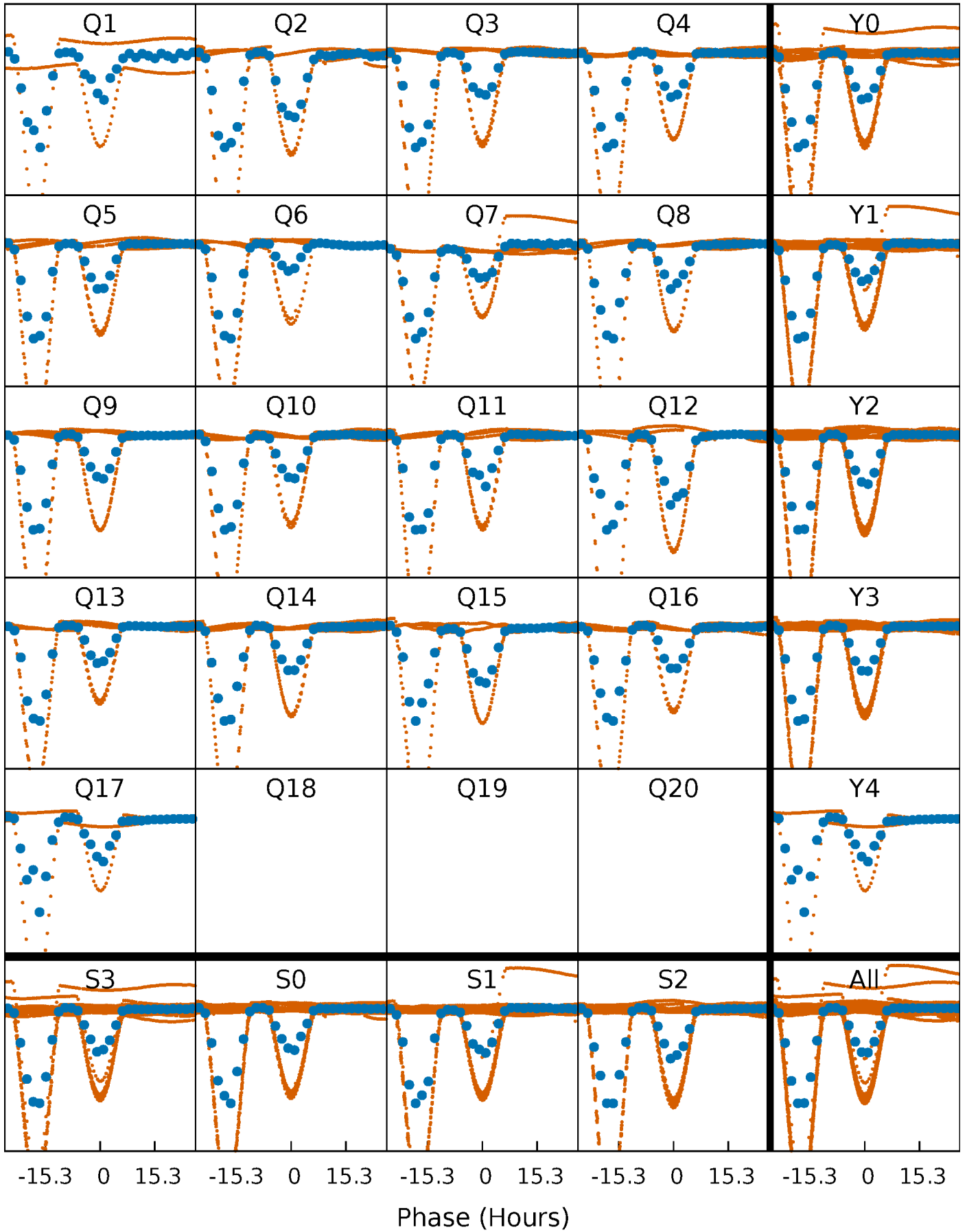


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



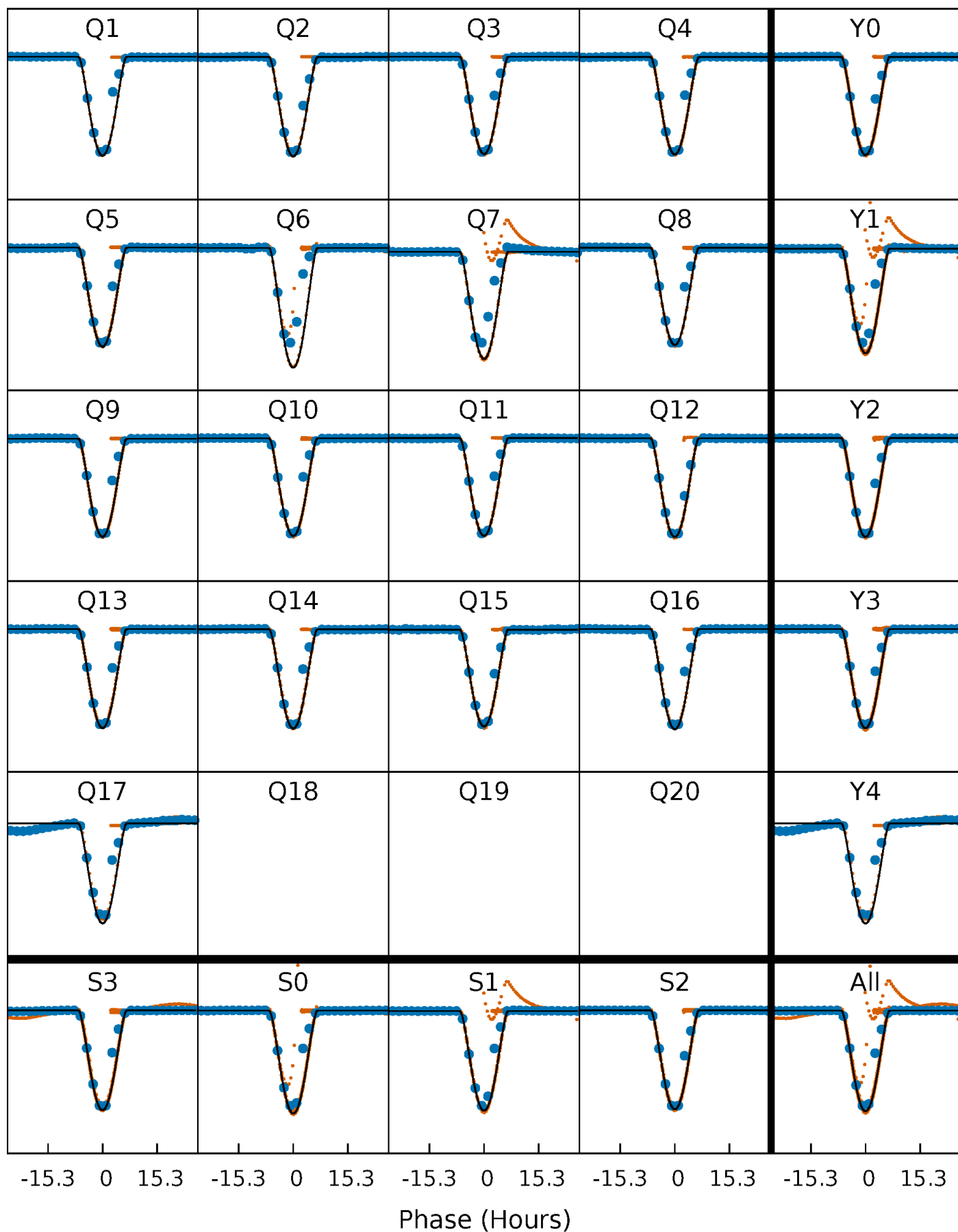
PDC Quarter-Phased Transit Curves

TCE 008560861-02 P= 15.986631 Days $T_0=134.613476$ (BKJD)



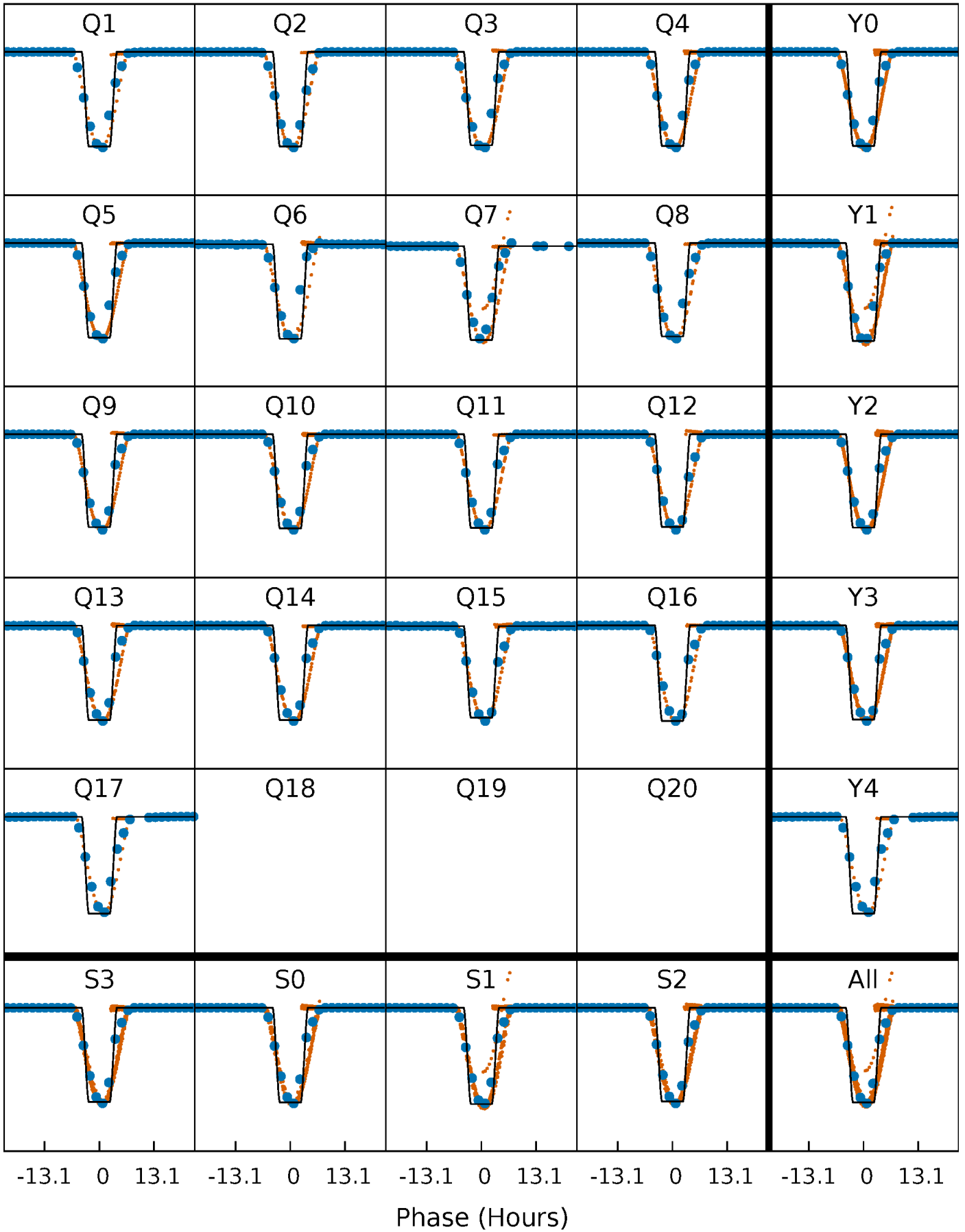
DV Quarter-Phased Transit Curves

TCE 008560861-02 P= 15.986631 Days $T_0=134.613476$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

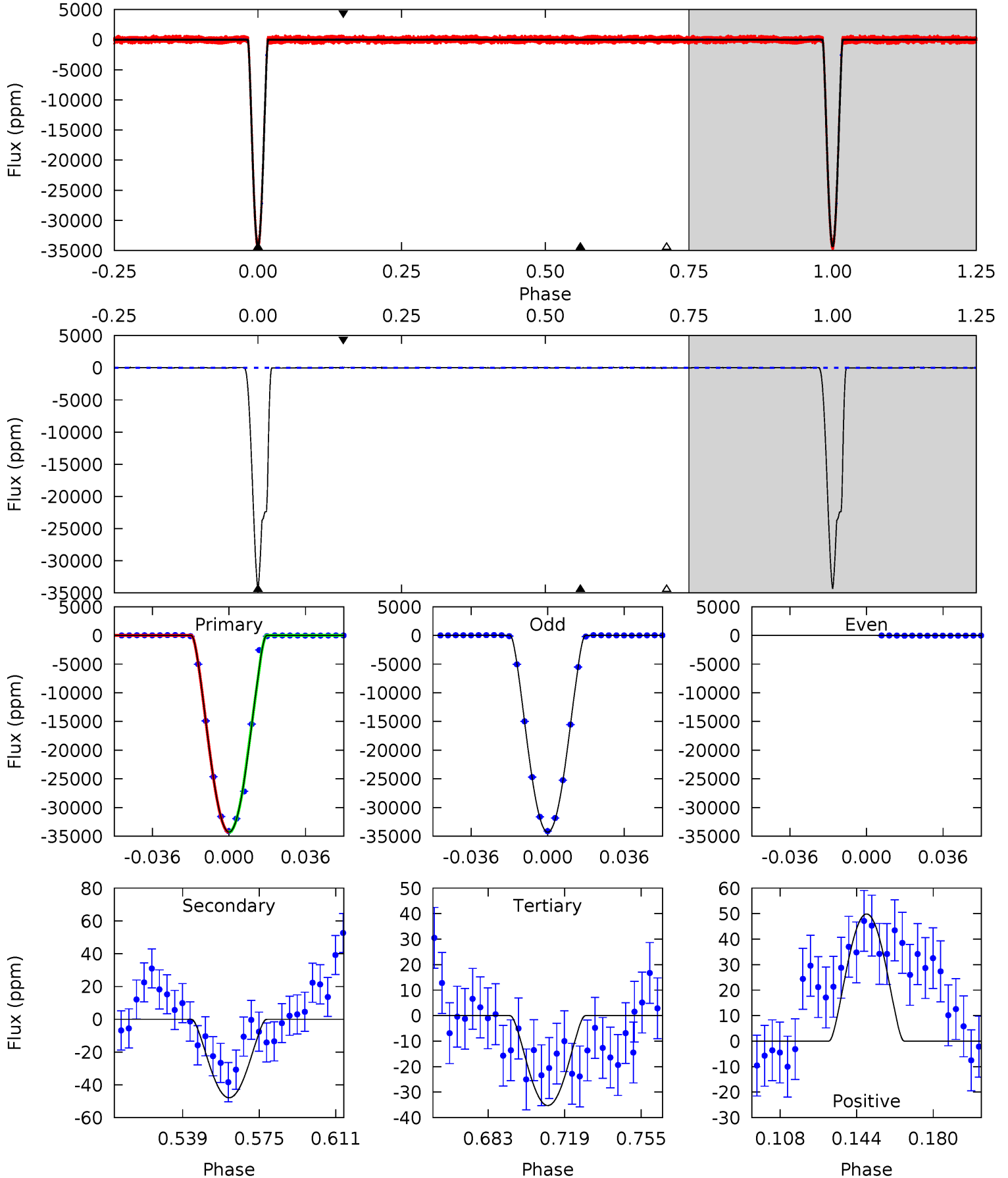
TCE 008560861-02 P= 15.986358 Days $T_0=134.600993$ (BKJD)



DV Model-Shift Uniqueness Test

008560861-02, P = 15.986631 Days, E = 118.626845 Days

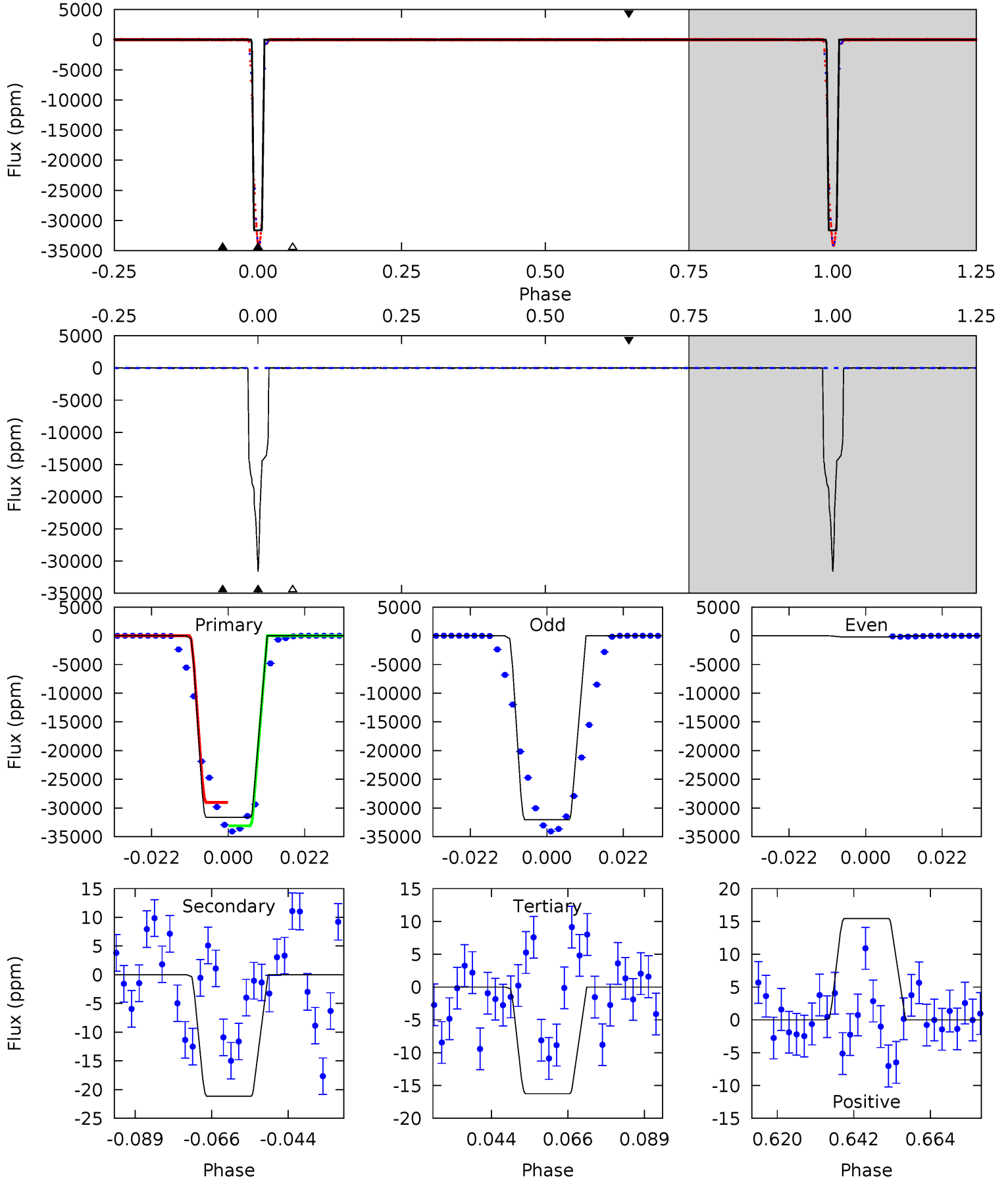
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6080	8.49	6.25	8.84	4.77	2.10	3.75	6074	6071	2.24	-0.35	3377	0.87	0.00	1.42



Alt Model-Shift Uniqueness Test

008560861-02, P = 15.986358 Days, E = 118.614635 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7949	5.32	4.08	3.88	4.87	2.29	1.08	7945	7945	1.23	1.44	4273	0.54	0.00	0



Stellar Parameters For KIC 008560861

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7854^{+217}_{-326}	$3.669^{+0.432}_{-0.108}$	$-0.120^{+0.200}_{-0.300}$	$3.462^{+0.707}_{-1.650}$	$2.039^{+0.370}_{-0.494}$	$0.069^{+0.302}_{-0.024}$
	+3%/-4%	+12%/-3%	+167%/-250%	+20%/-48%	+18%/-24%	+437%/-34%
Source	KIC0	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 008560861-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-48 ± 6	$87.45^{+12.83}_{-20.33}$	2200^{+183}_{-241}	-2480^{+199}_{-120}	$0.087^{+0.056}_{-0.020}$
Alt.	-21 ± 4	$66.12^{+10.30}_{-15.33}$	2196^{+173}_{-258}	-2508^{+196}_{-111}	$0.068^{+0.044}_{-0.020}$

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 $A_{obs} \gg 1.0$

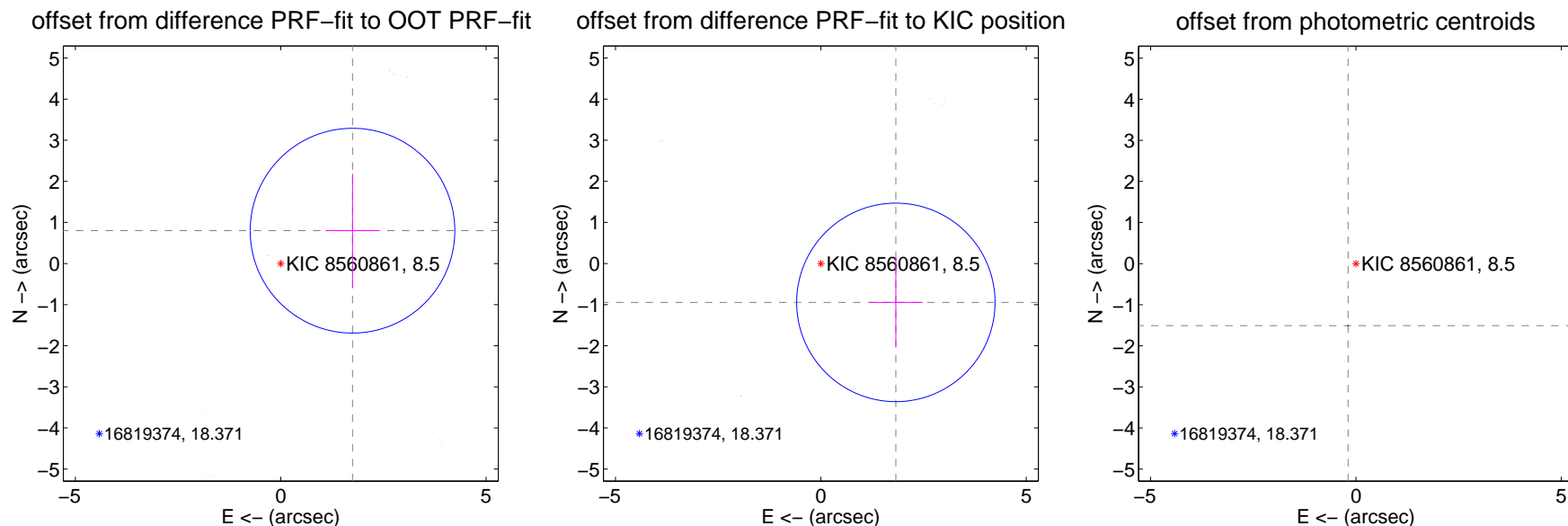
DV Centroid Data

Supplemental centroid analysis for 008560861-02. **Kepler magnitude: 8.50.** Transit SNR 2604.68

There are 0 quarters with good PRF difference image offsets

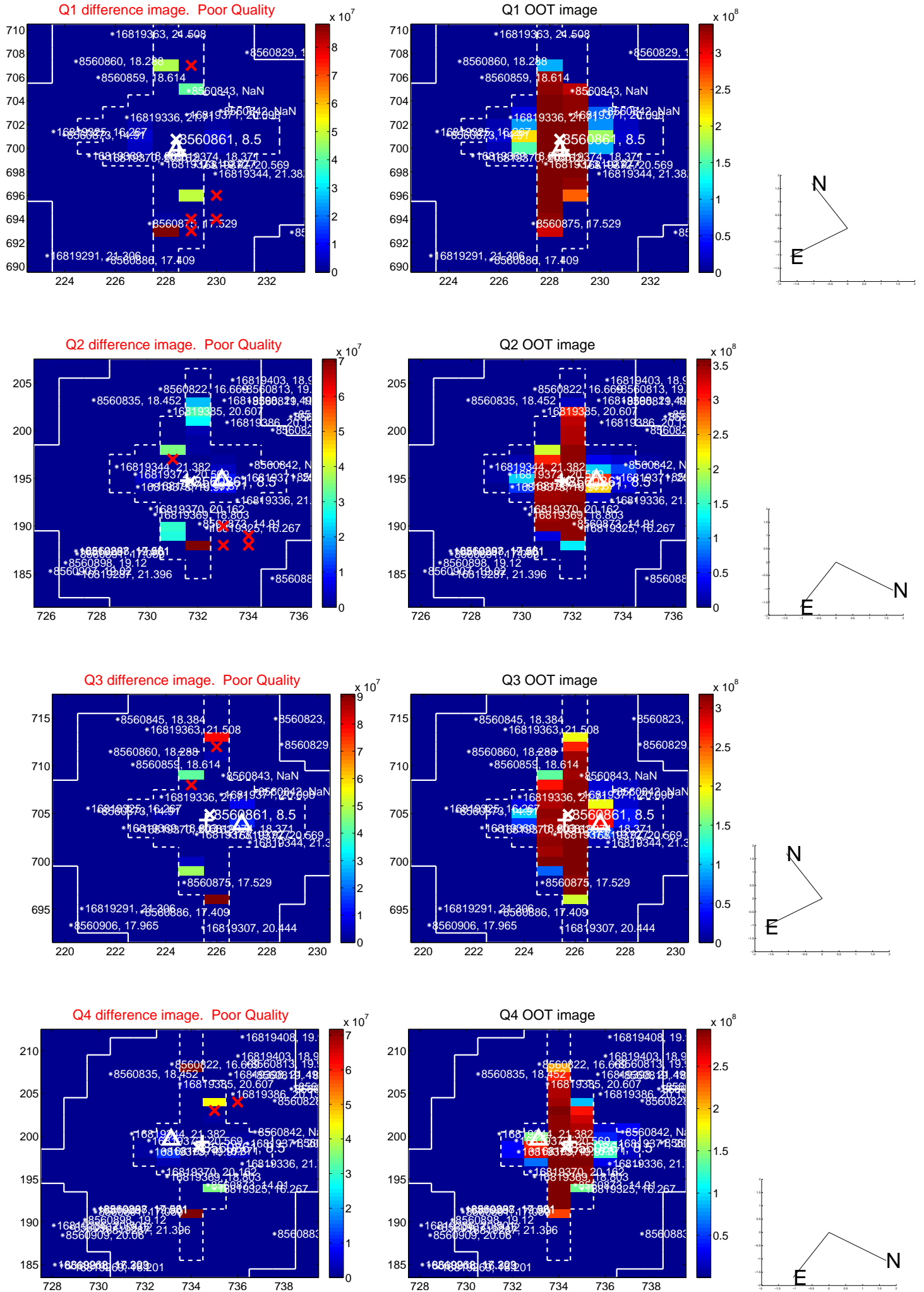
The OOT PRF centroid is offset from the target star catalog position by about 3.75 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.921 ± 0.830	2.31	-1.747 ± 0.657	0.800 ± 1.386
PRF-fit source offset from KIC position	2.056 ± 0.805	2.55	-1.826 ± 0.653	-0.946 ± 1.079
photometric centroid source offset	1.52 ± 0.00	673.57	0.19 ± 0.00	-1.51 ± 0.00

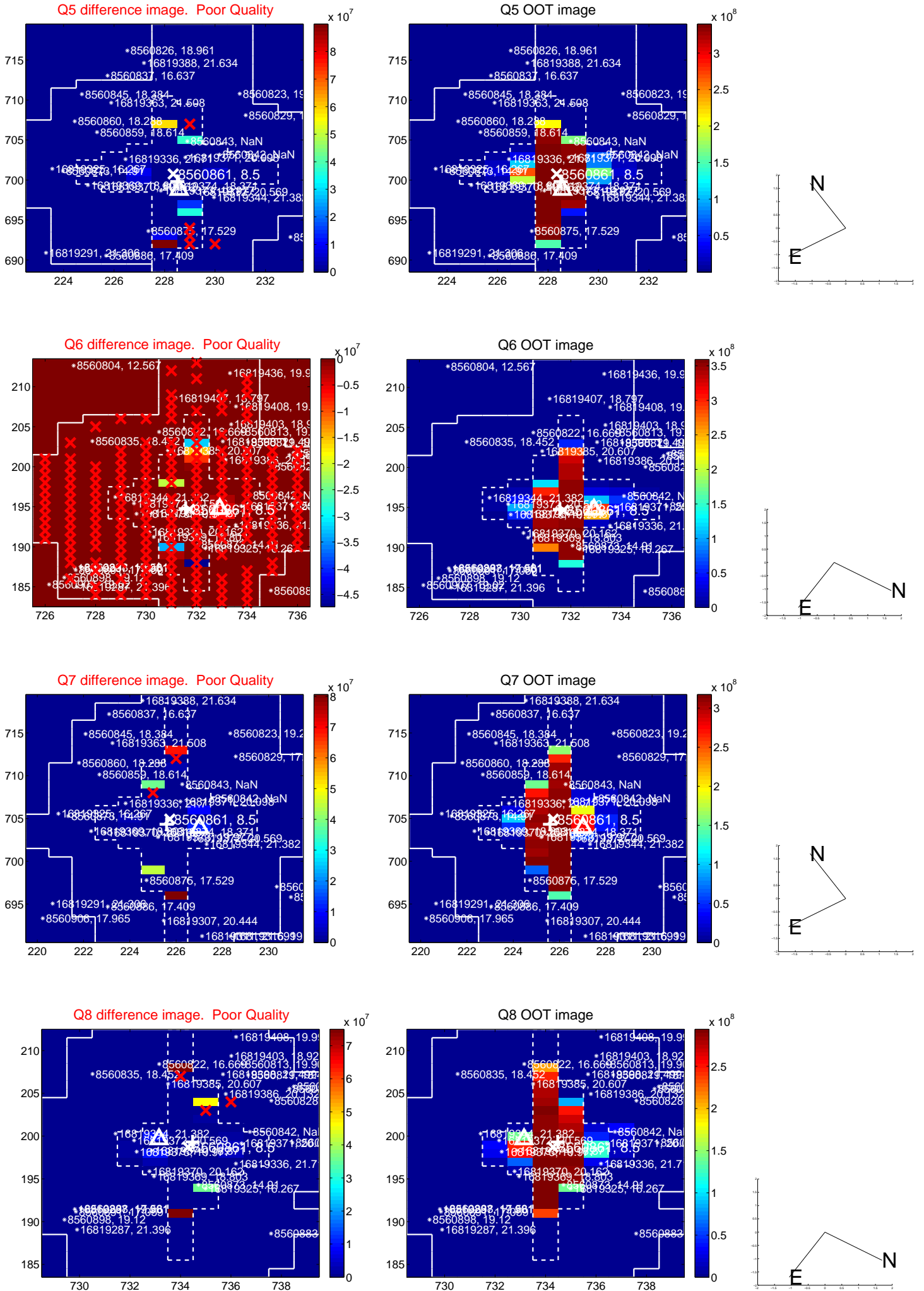


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

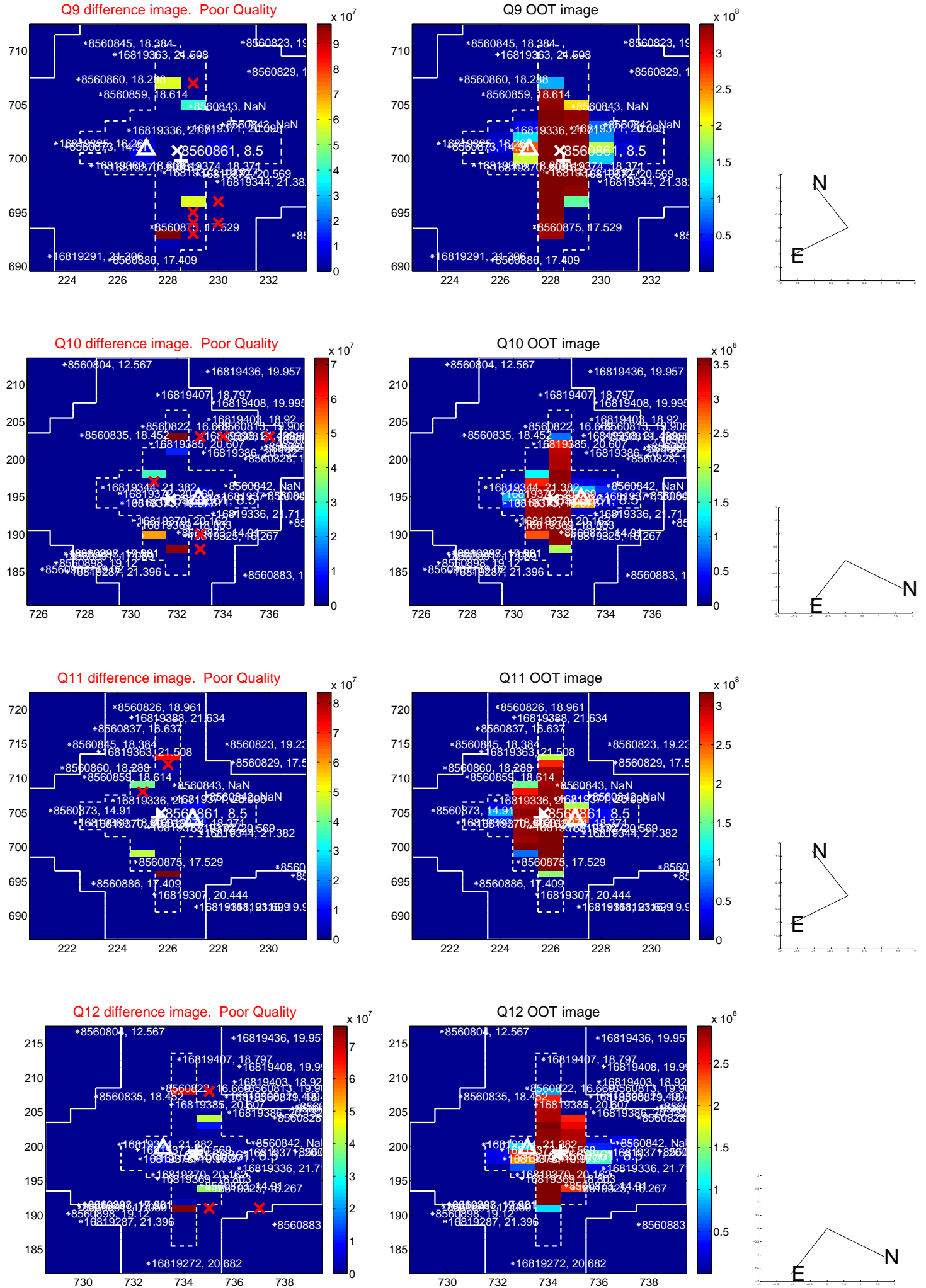
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



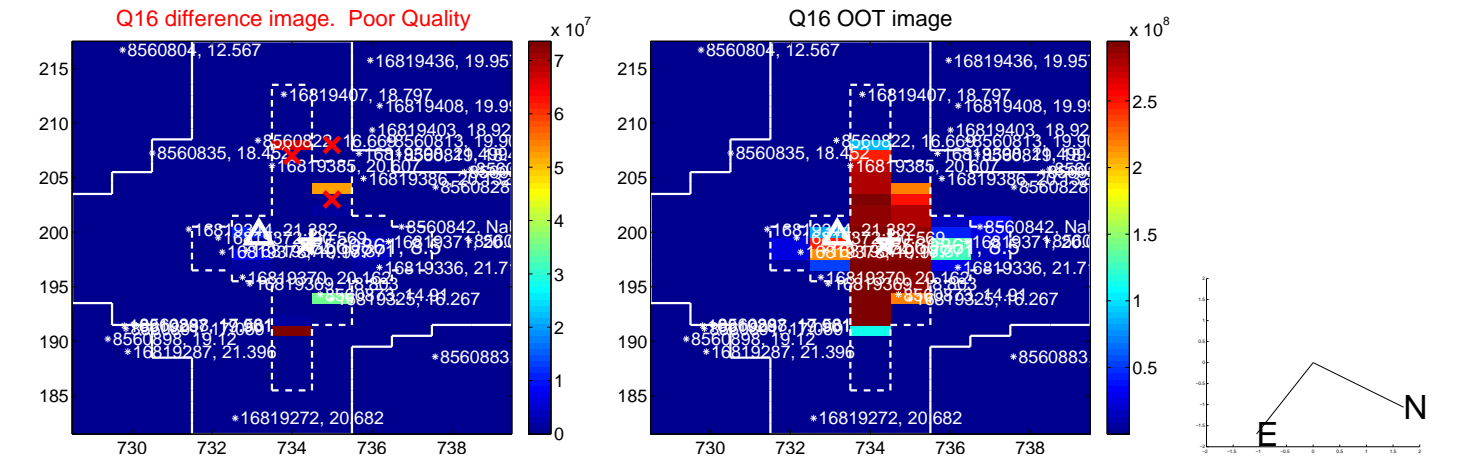
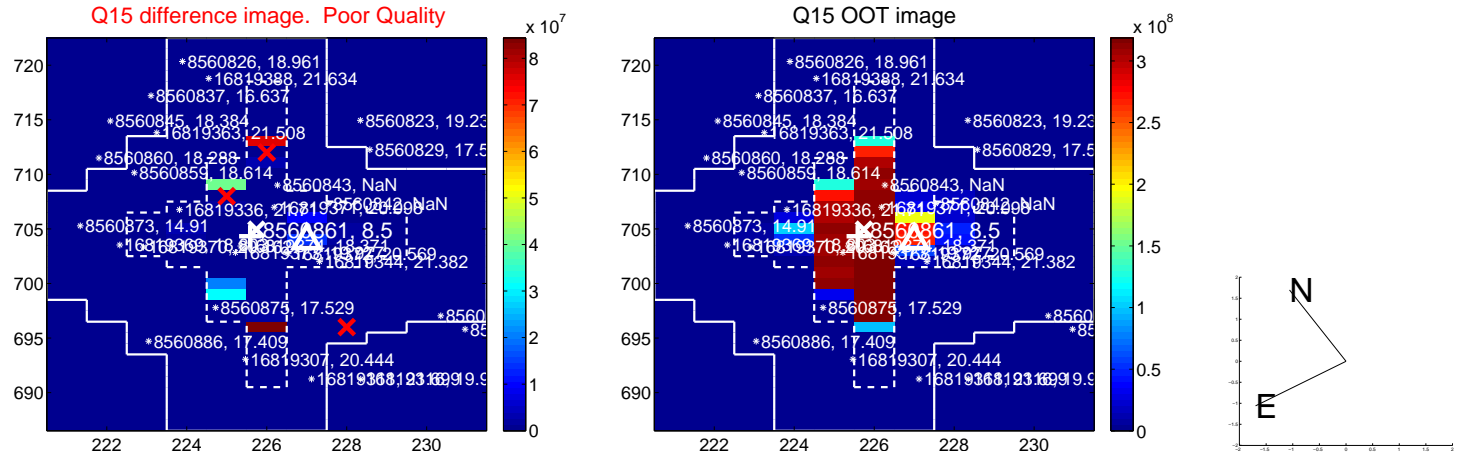
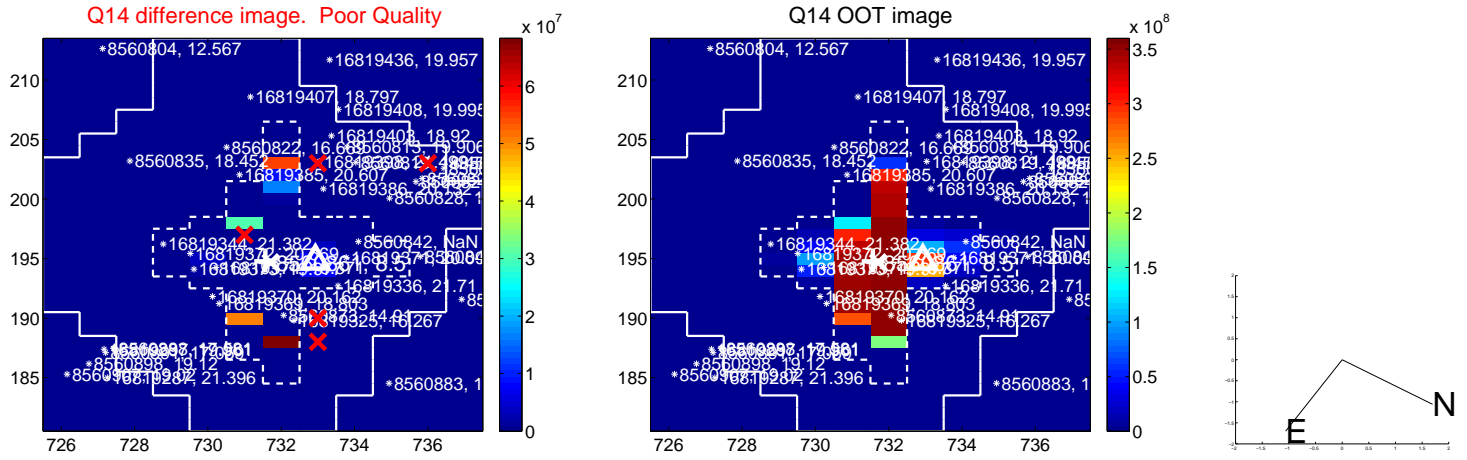
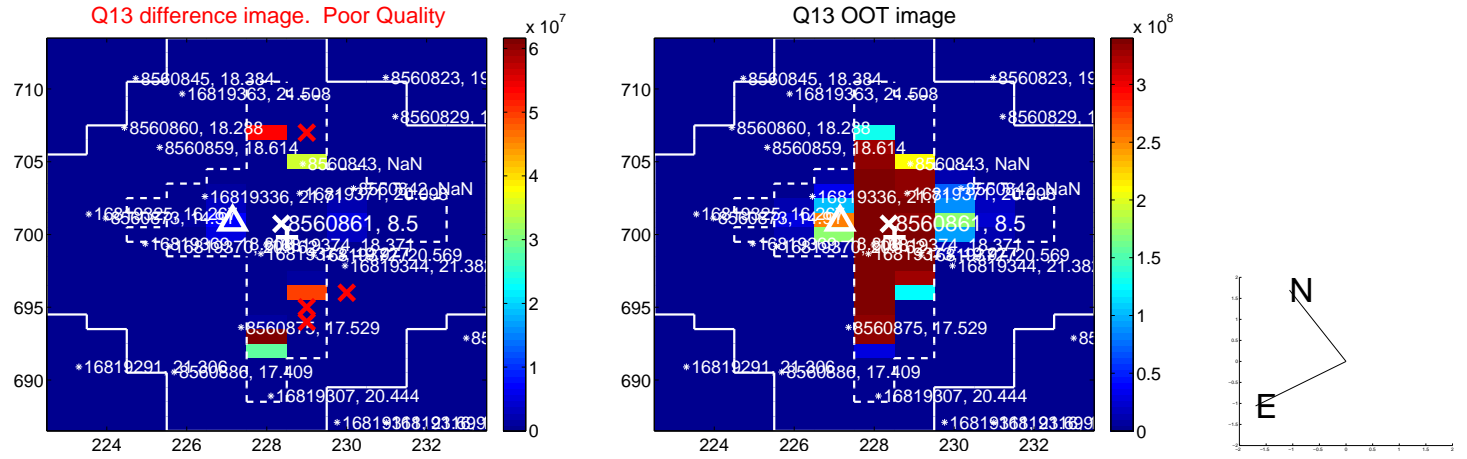
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



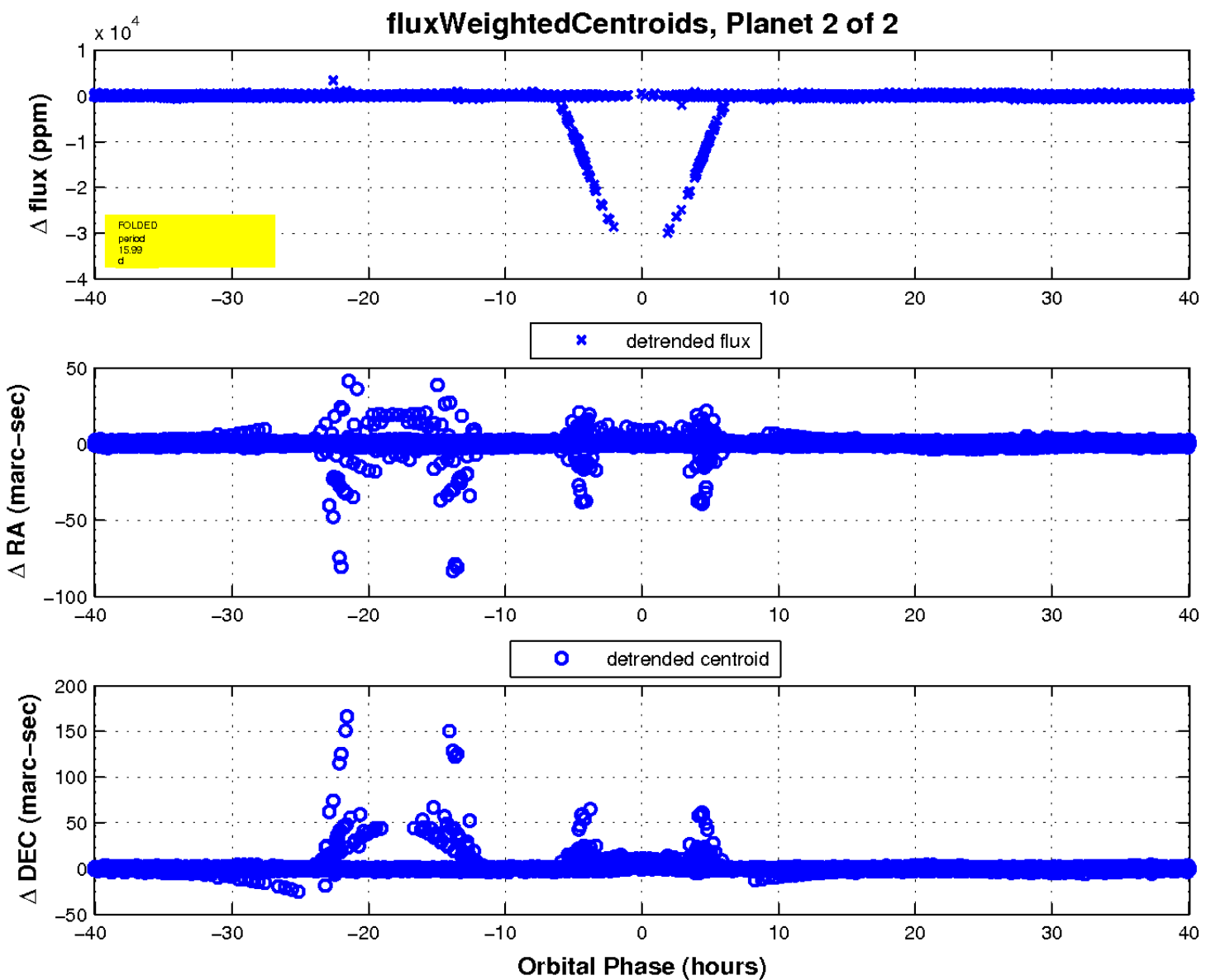
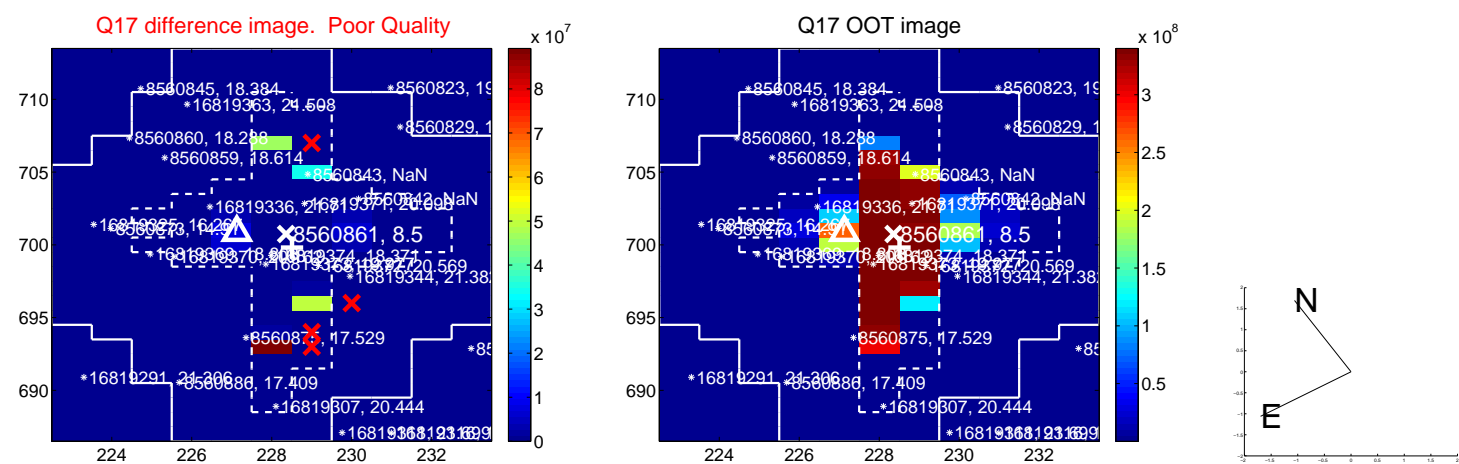
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

