

KIC 004488840

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})
004488840-01	OBS	No	3.567756	134.399189	255.5	10.550	10.4	11.2	4.01	7348	8.90	12307.92
004488840-02	OBS	No	3.567727	132.307402	285.9	10.530	10.8	12.3	4.01	7348	9.76	12308.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004488840-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004488840-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

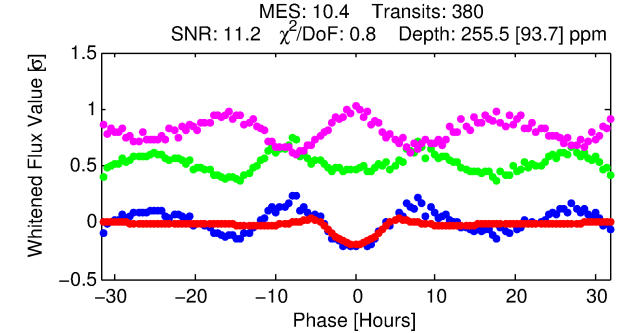
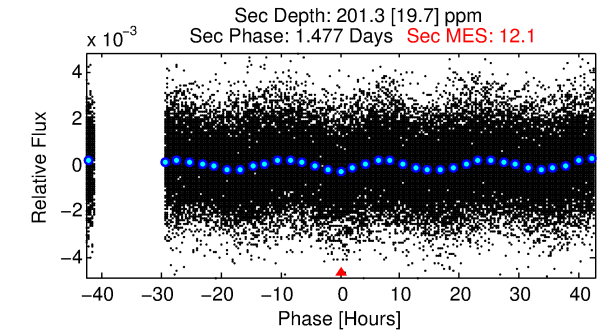
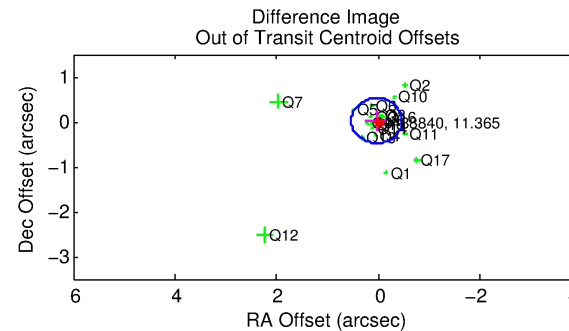
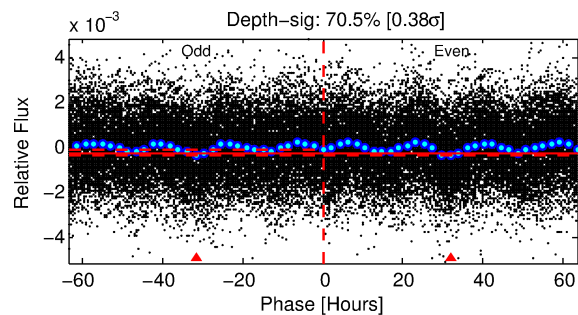
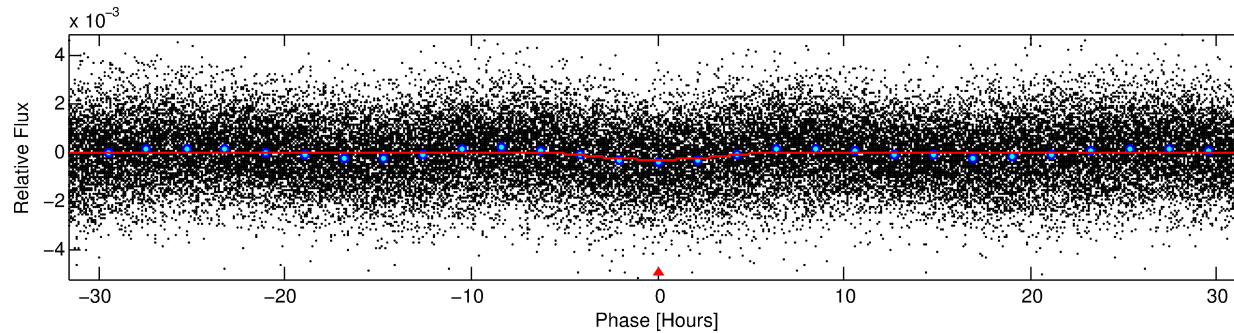
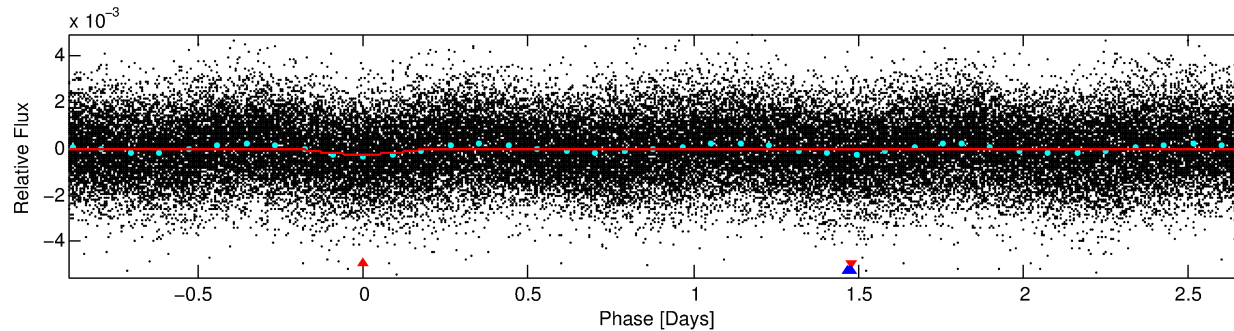
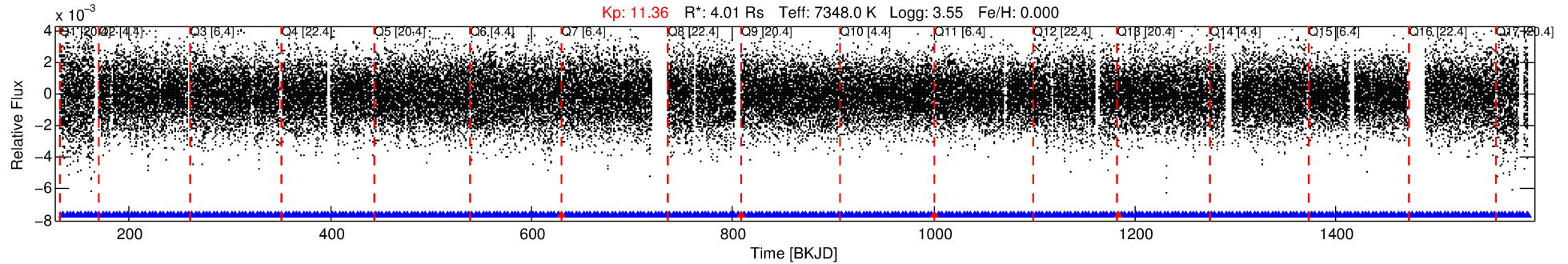
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004488840-01

No Significant Match Found

DV One-Page Summary

KIC: 4488840 Candidate: 1 of 2 Period: 3.568 d



DV Fit Results:

Period = 3.56776 [0.00008] d
Epoch = 134.3992 [0.0195] BKJD
Rp/R* = 0.0204 [0.0091]
a/R* = 1.21 [0.10]
b = 0.99 [0.02]
Seff = 12307.92 [11224.75]
Teq = 2686 [612] K
Rp = 8.90 [6.39] Re
a = 0.0584 [0.0322] AU
Ag = 4.76 [6.06] [0.62 σ]
Teffp = 6134 [1408] K [2.25 σ]

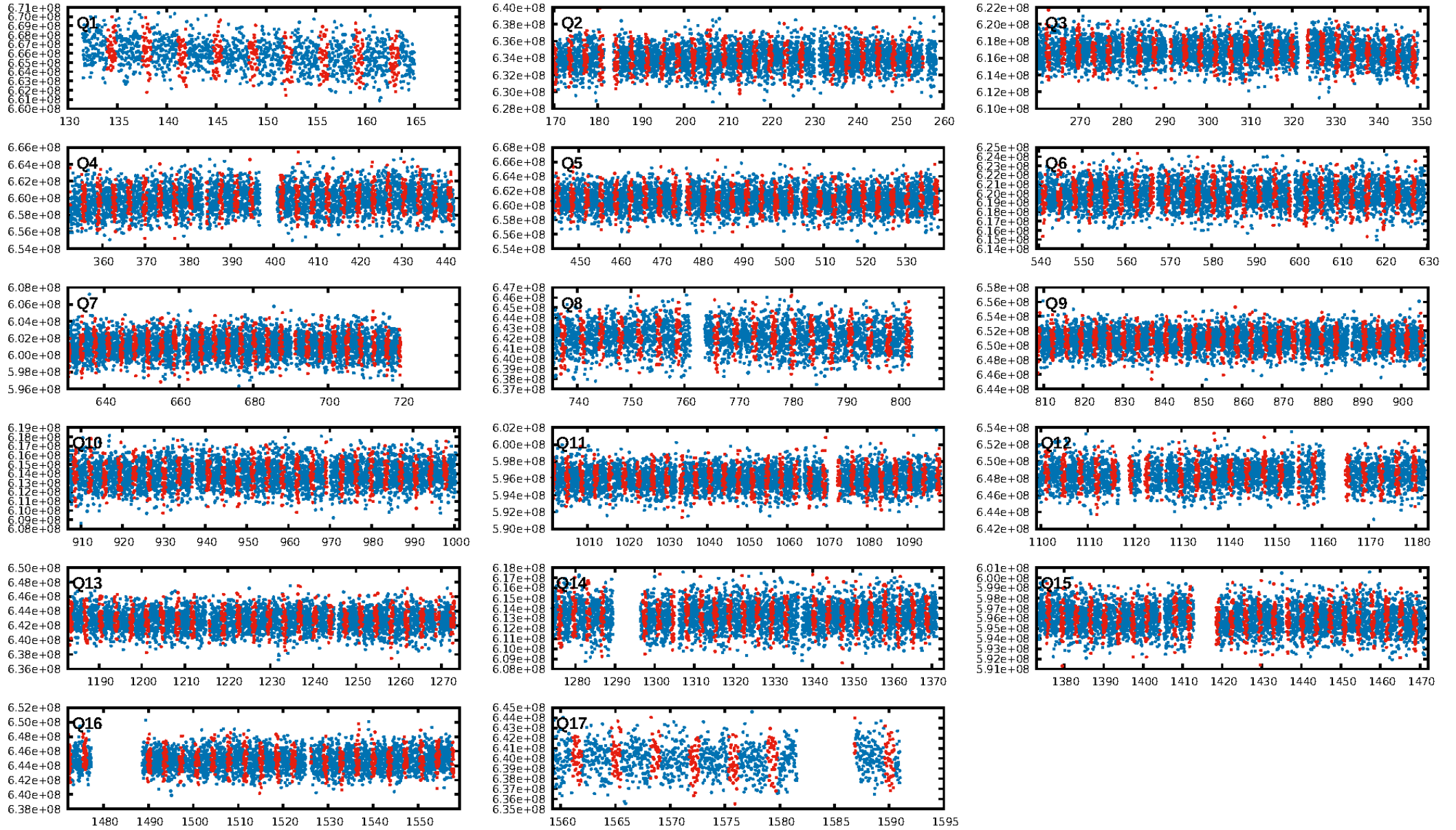
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.34e-23
RollingBand-fgm: 0.99 [360/364]
GhostDiagnostic-chr: 1.765
Centroid-sig: 5.7%
Centroid-so: 0.330 arcsec [4.37 σ]
OotOffset-rm: 0.048 arcsec [0.29 σ]
KicOffset-rm: 0.142 arcsec [0.54 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

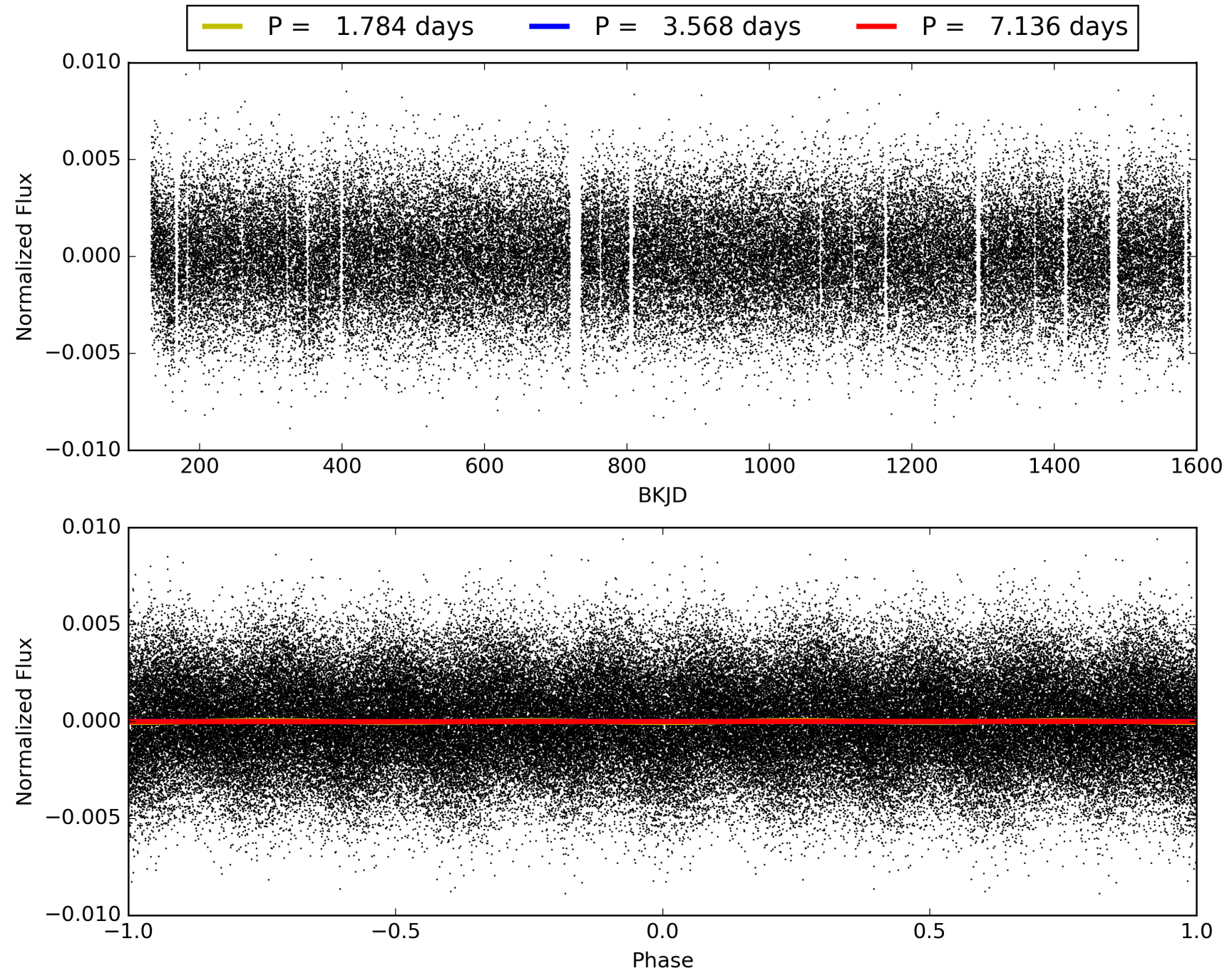
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:02:34 Z

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

TCE 004488840-01, PDC Light Curves

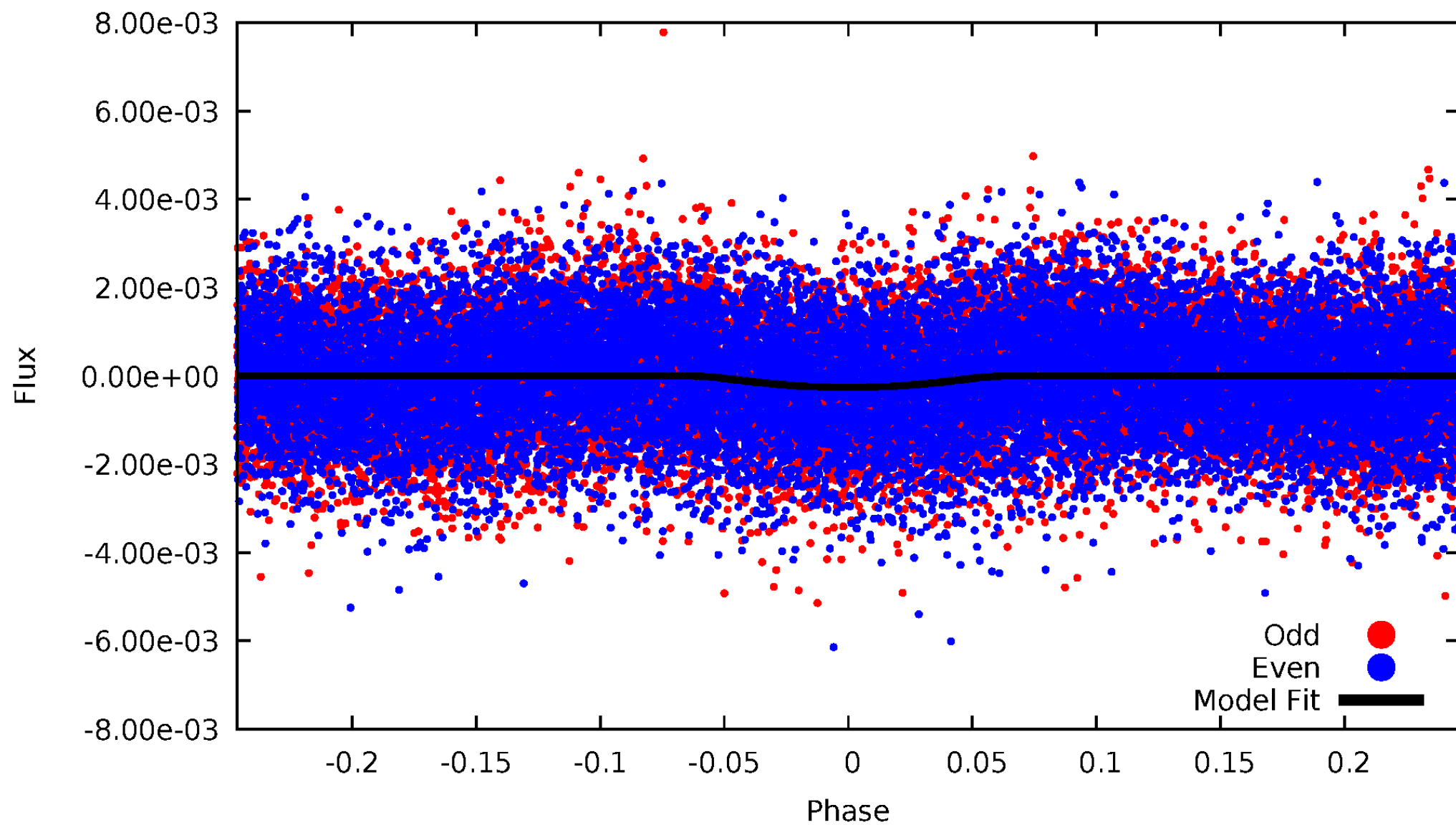


TCE 004488840-01



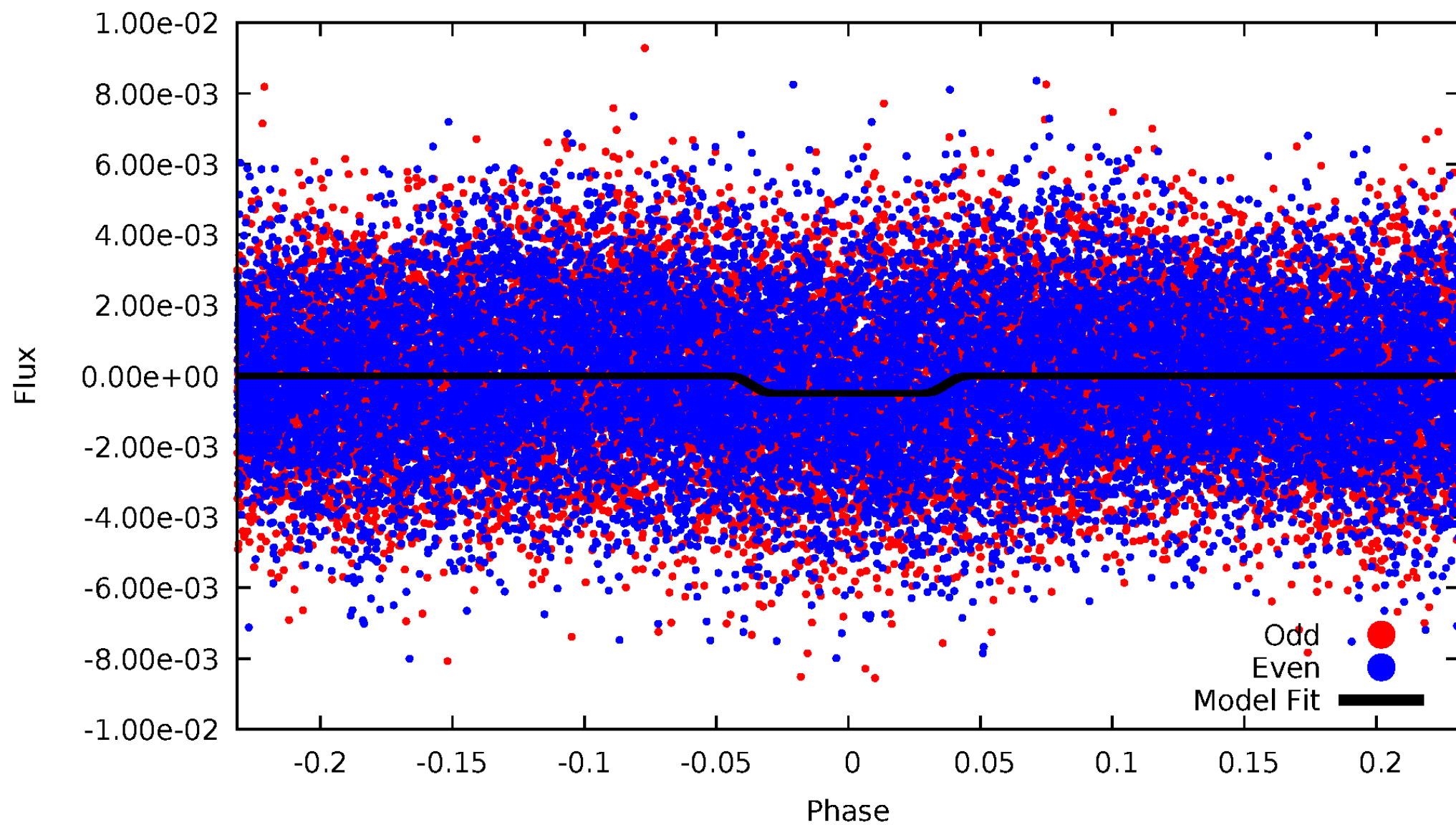
DV Odd/Even

TCE 004488840-01

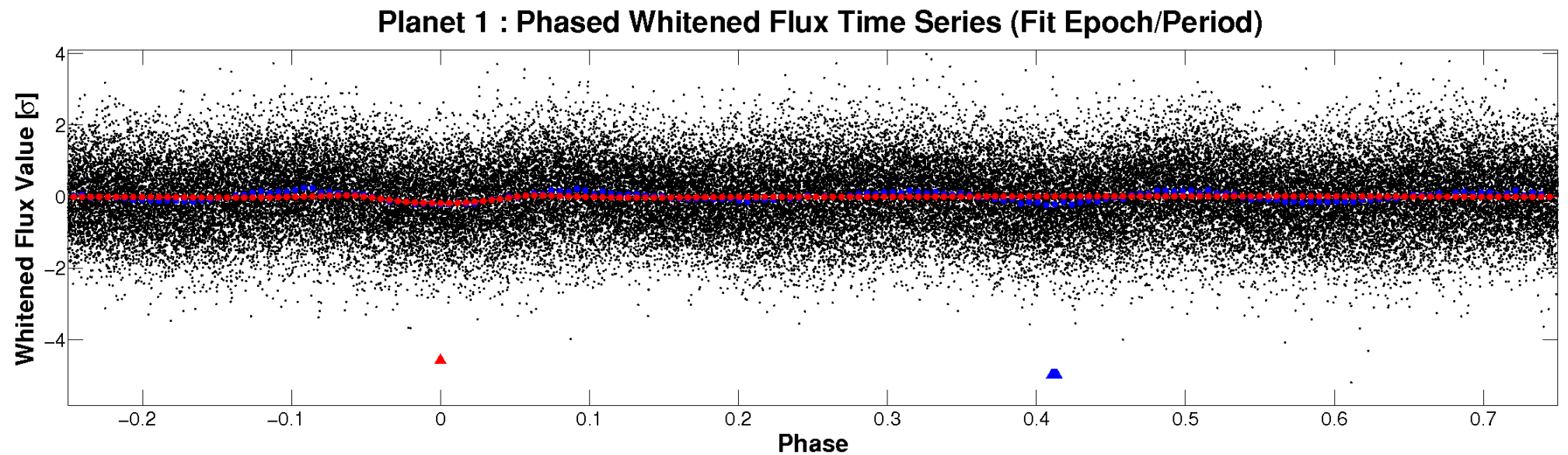
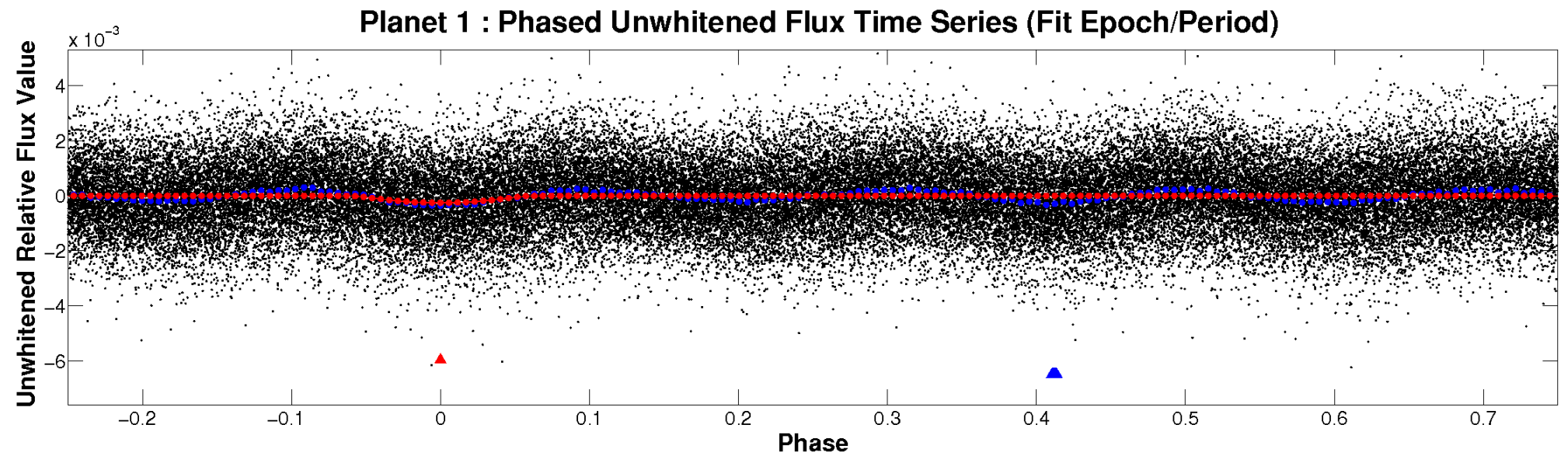


ALT Odd/Even

TCE 004488840-01

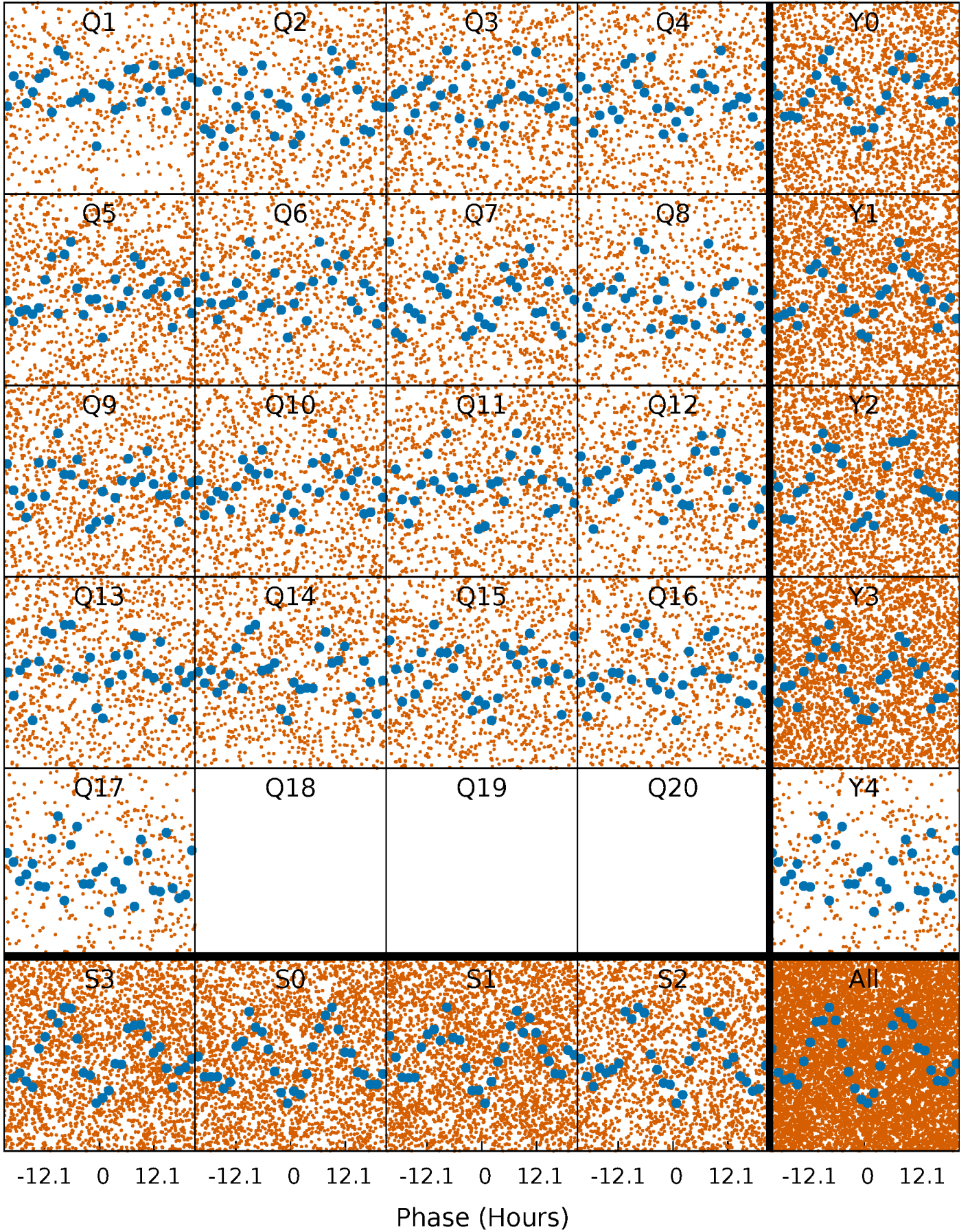


Non-Whitened Vs. Whitened Light Curve



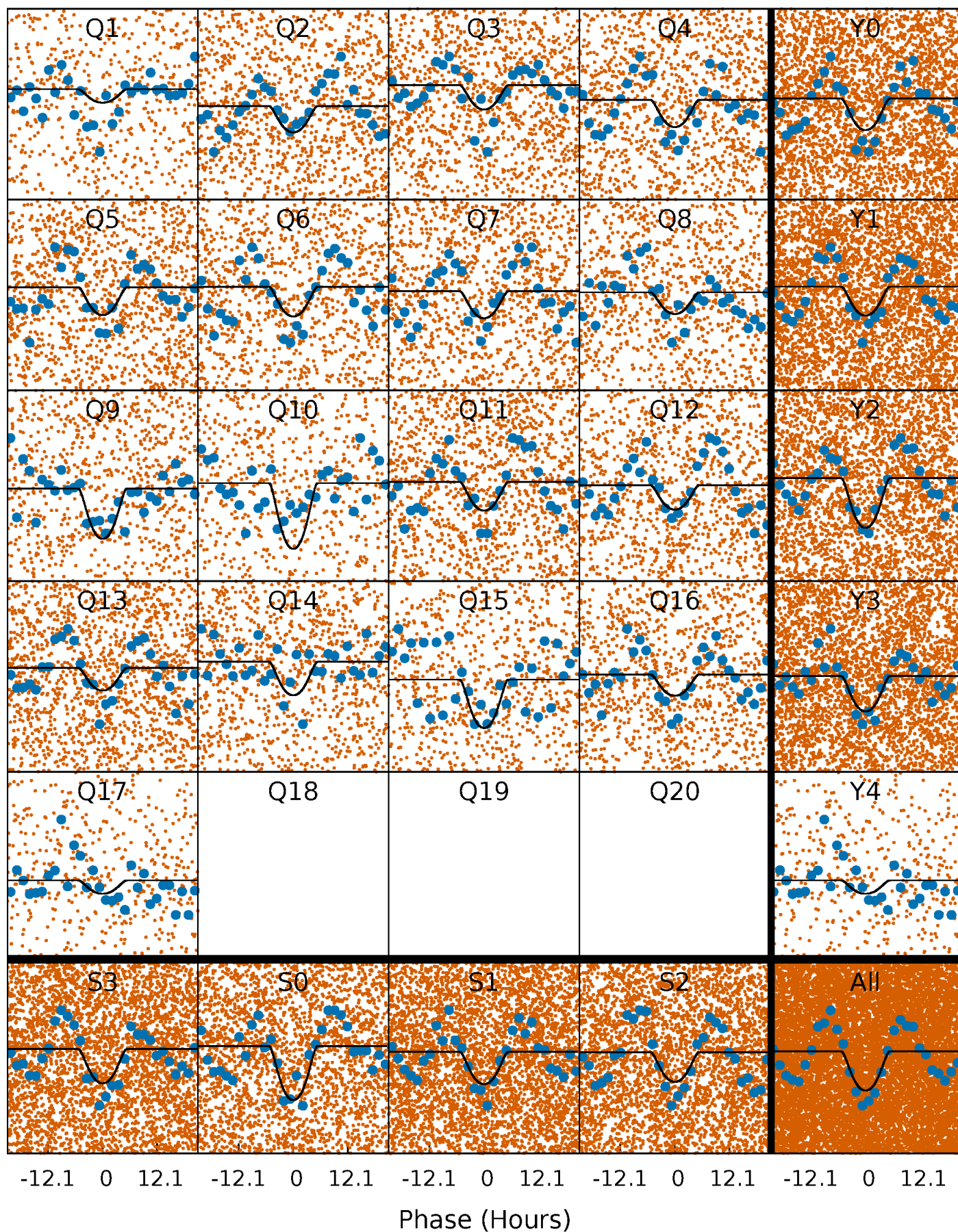
PDC Quarter-Phased Transit Curves

TCE 004488840-01 P= 3.567756 Days $T_0=134.399189$ (BKJD)



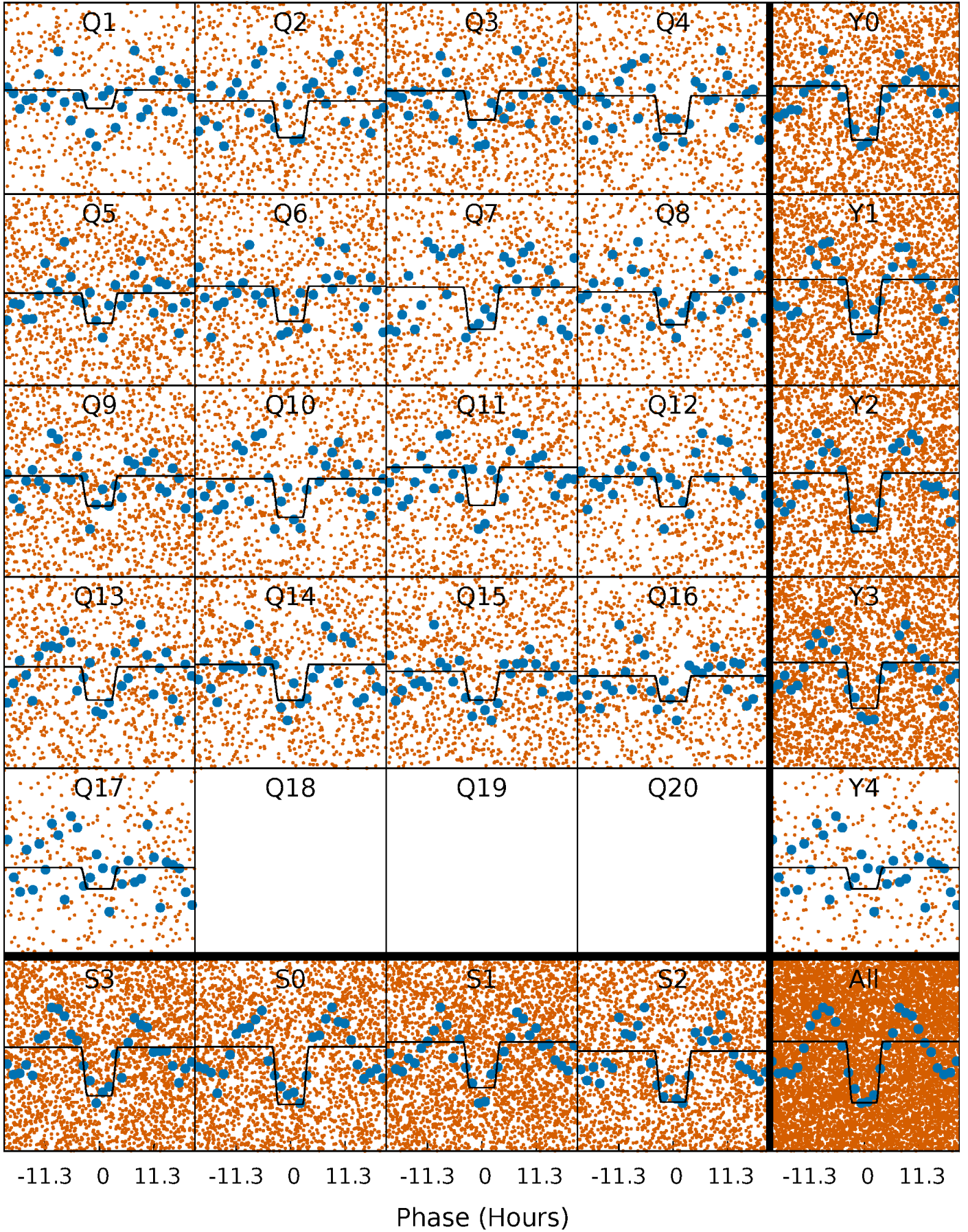
DV Quarter-Phased Transit Curves

TCE 004488840-01 P= 3.567756 Days $T_0=134.399189$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

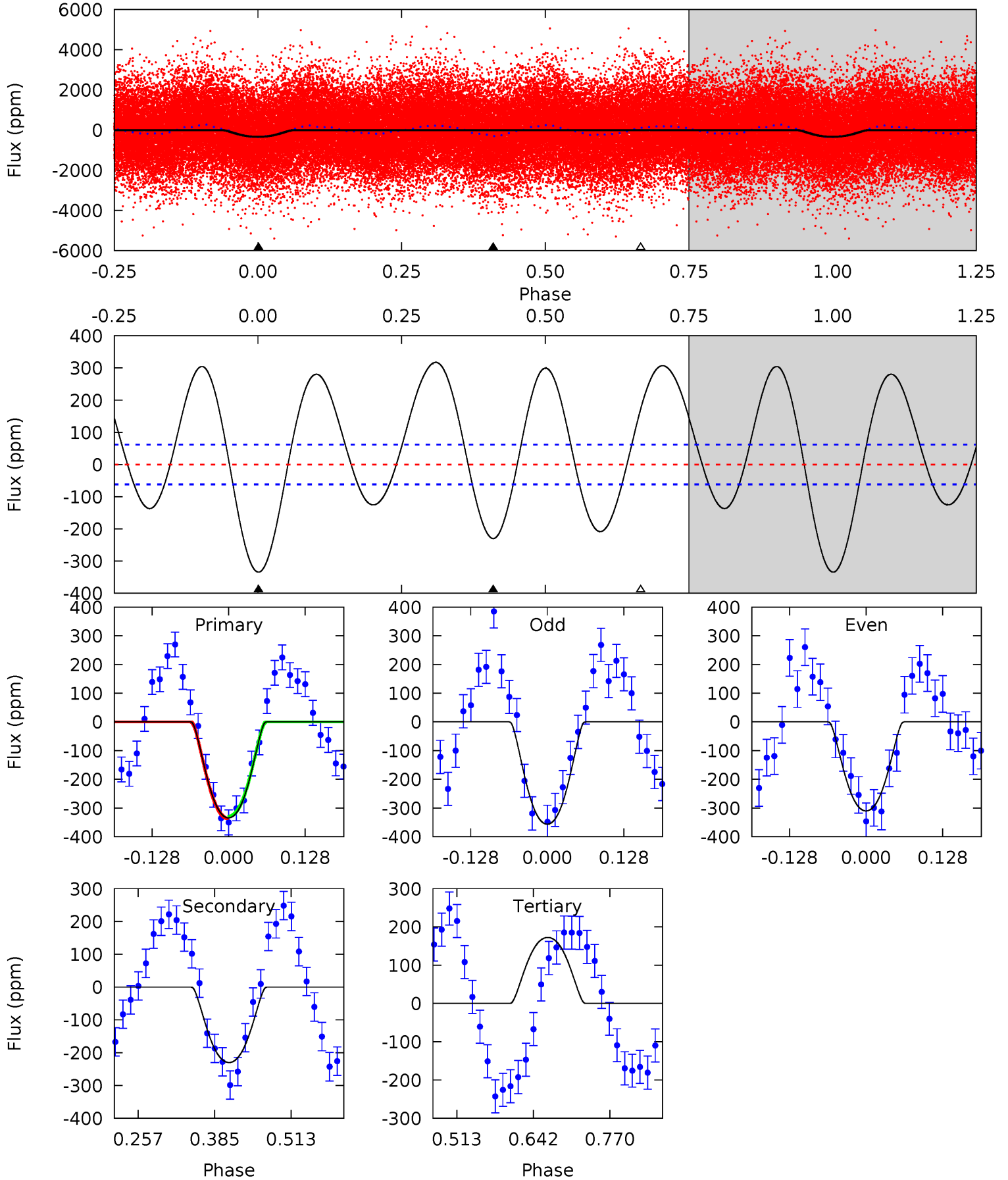
TCE 004488840-01 P= 3.567716 Days $T_0=134.408708$ (BKJD)



DV Model-Shift Uniqueness Test

004488840-01, P = 3.567756 Days, E = 130.831433 Days

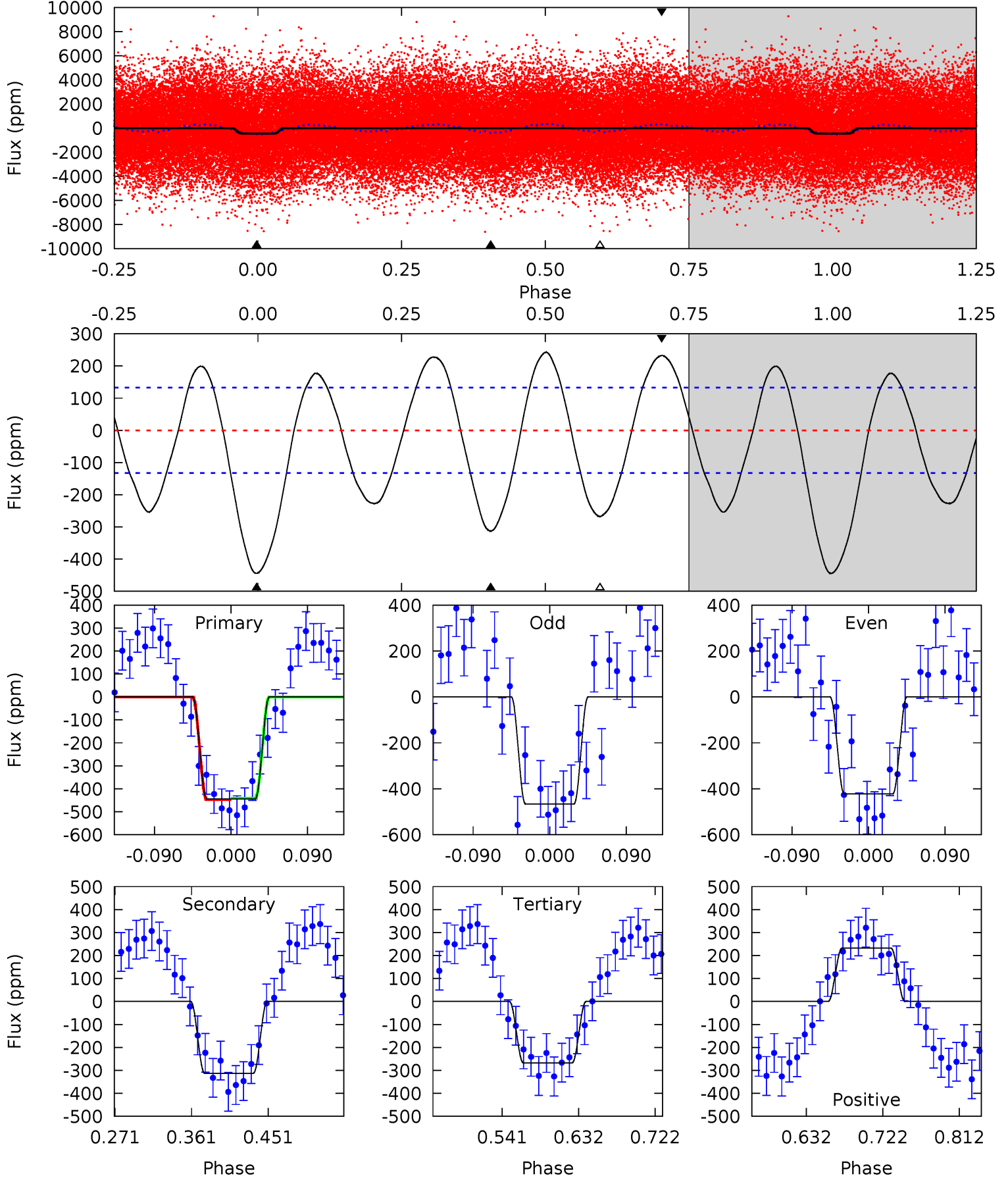
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.4	16.8	-12.6	0	4.51	1.52	10.9	37.0	24.4	29.4	16.8	1.69	0.89	0.49	0.28



Alt Model-Shift Uniqueness Test

004488840-01, P = 3.567716 Days, E = 130.840992 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	10.8	9.25	8.05	4.59	1.69	5.81	6.12	7.31	1.57	2.77	0.75	0.95	0.35	0.12



Stellar Parameters For KIC 004488840

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7348^{+205}_{-308}	$3.551^{+0.531}_{-0.059}$	$0.000^{+0.200}_{-0.300}$	$4.006^{+0.396}_{-2.242}$	$2.082^{+0.233}_{-0.583}$	$0.046^{+0.303}_{-0.009}$
	+3%/-4%	+15%/-2%	+inf%/-inf%	+10%/-56%	+11%/-28%	+663%/-21%
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 004488840-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-230 ± 14	$7.85^{+4.13}_{-3.30}$	3620^{+232}_{-461}	6146^{+2150}_{-1058}	$6.961^{+13.937}_{-3.971}$
Alt.	-313 ± 29	$8.63^{+4.37}_{-4.00}$	3615^{+237}_{-427}	6397^{+2347}_{-1040}	$7.924^{+19.484}_{-4.426}$

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 $A_{obs} \gg 1.0$

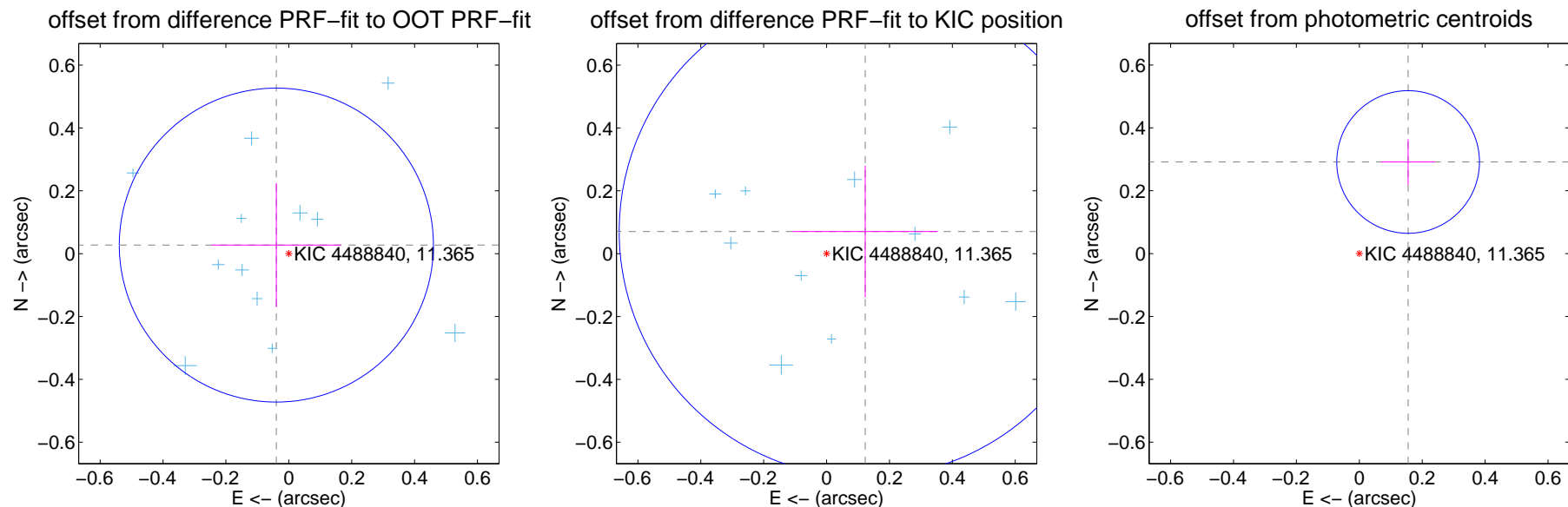
DV Centroid Data

Supplemental centroid analysis for 004488840-01. **Kepler magnitude: 11.37.** Transit SNR 11.18

There are 17 quarters with good PRF difference image offsets

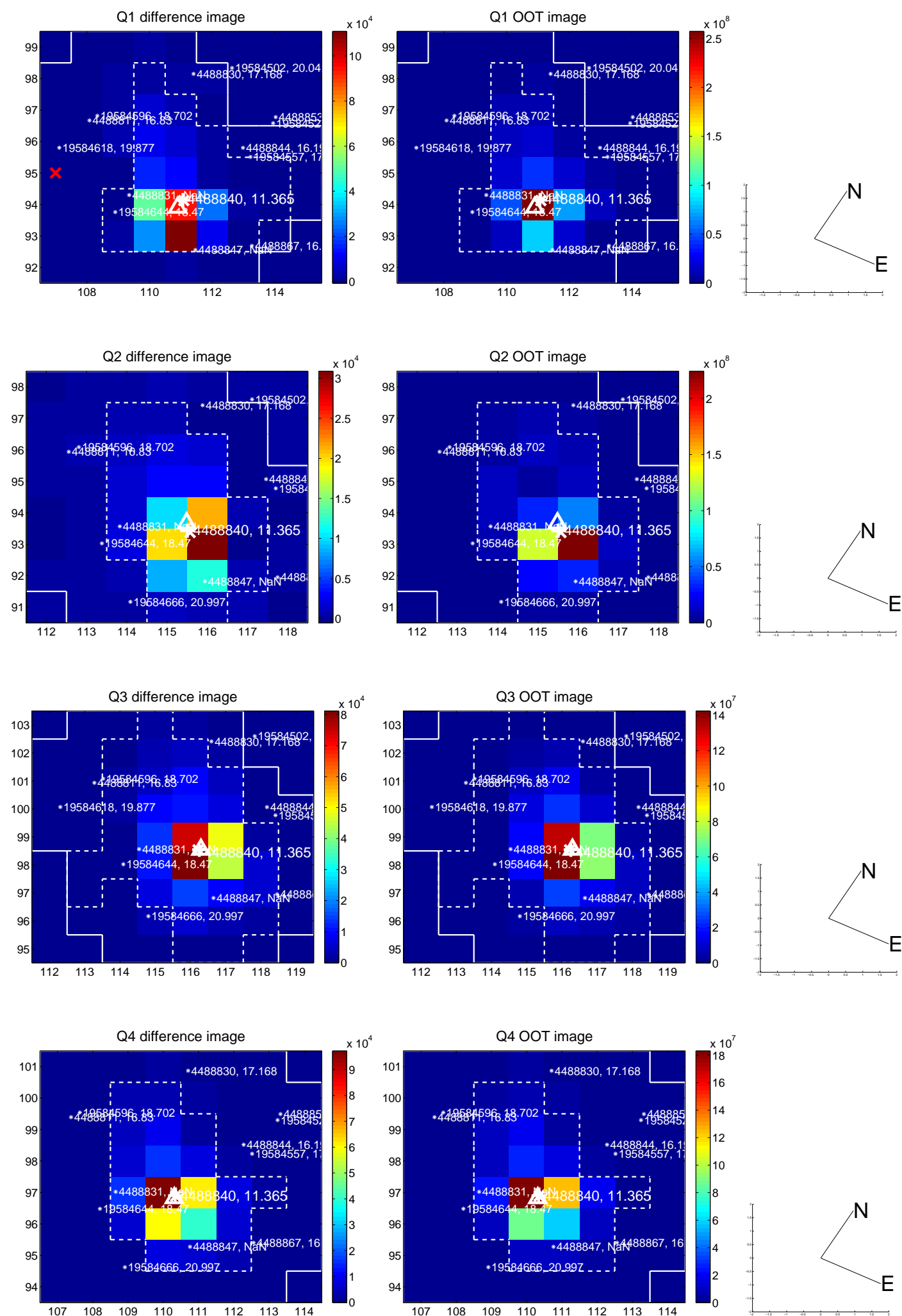
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.048 ± 0.167	0.29	0.040 ± 0.206	0.027 ± 0.197
PRF-fit source offset from KIC position	0.142 ± 0.261	0.54	-0.123 ± 0.231	0.070 ± 0.210
photometric centroid source offset	0.33 ± 0.08	4.37	-0.16 ± 0.09	0.29 ± 0.07

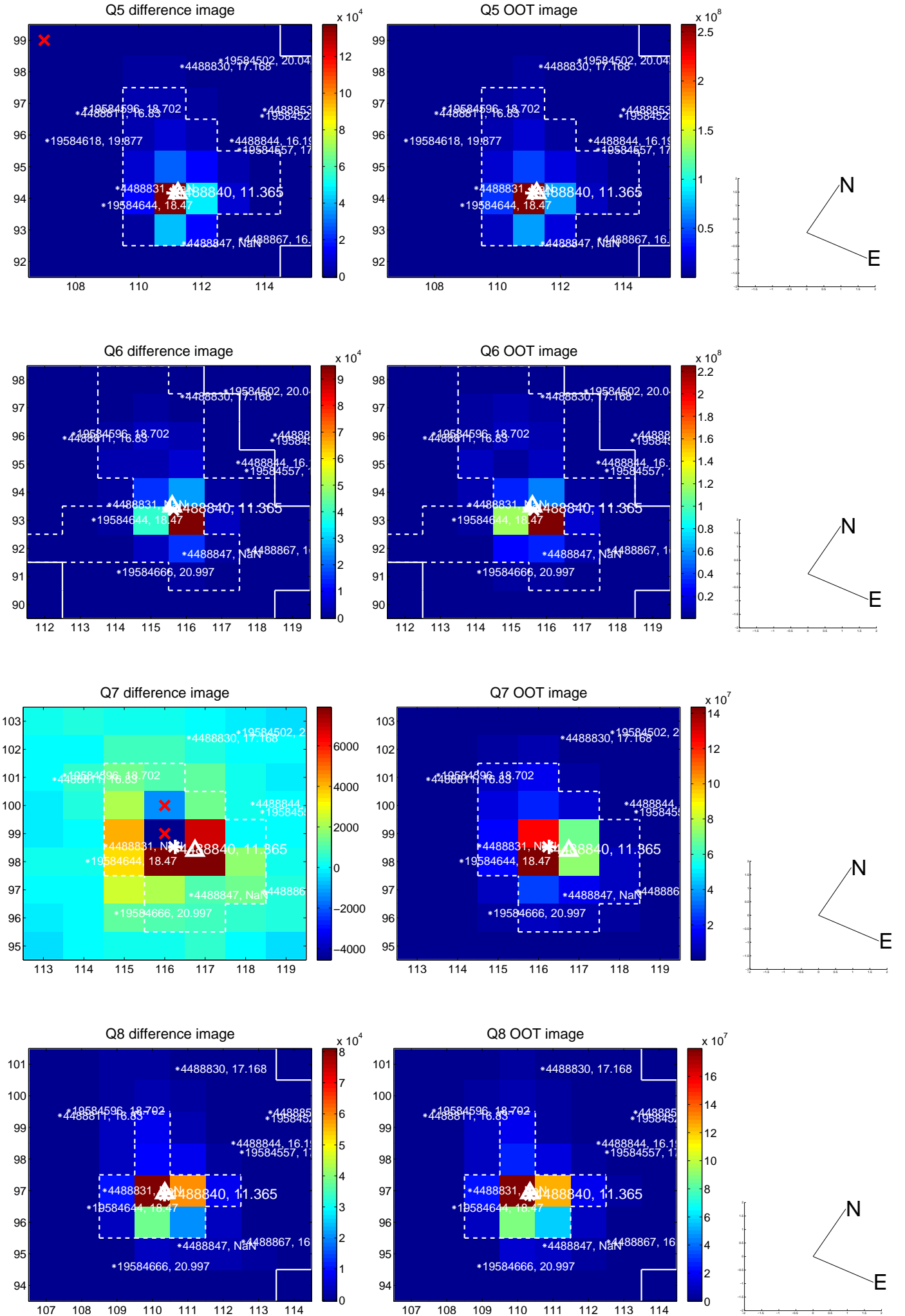


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

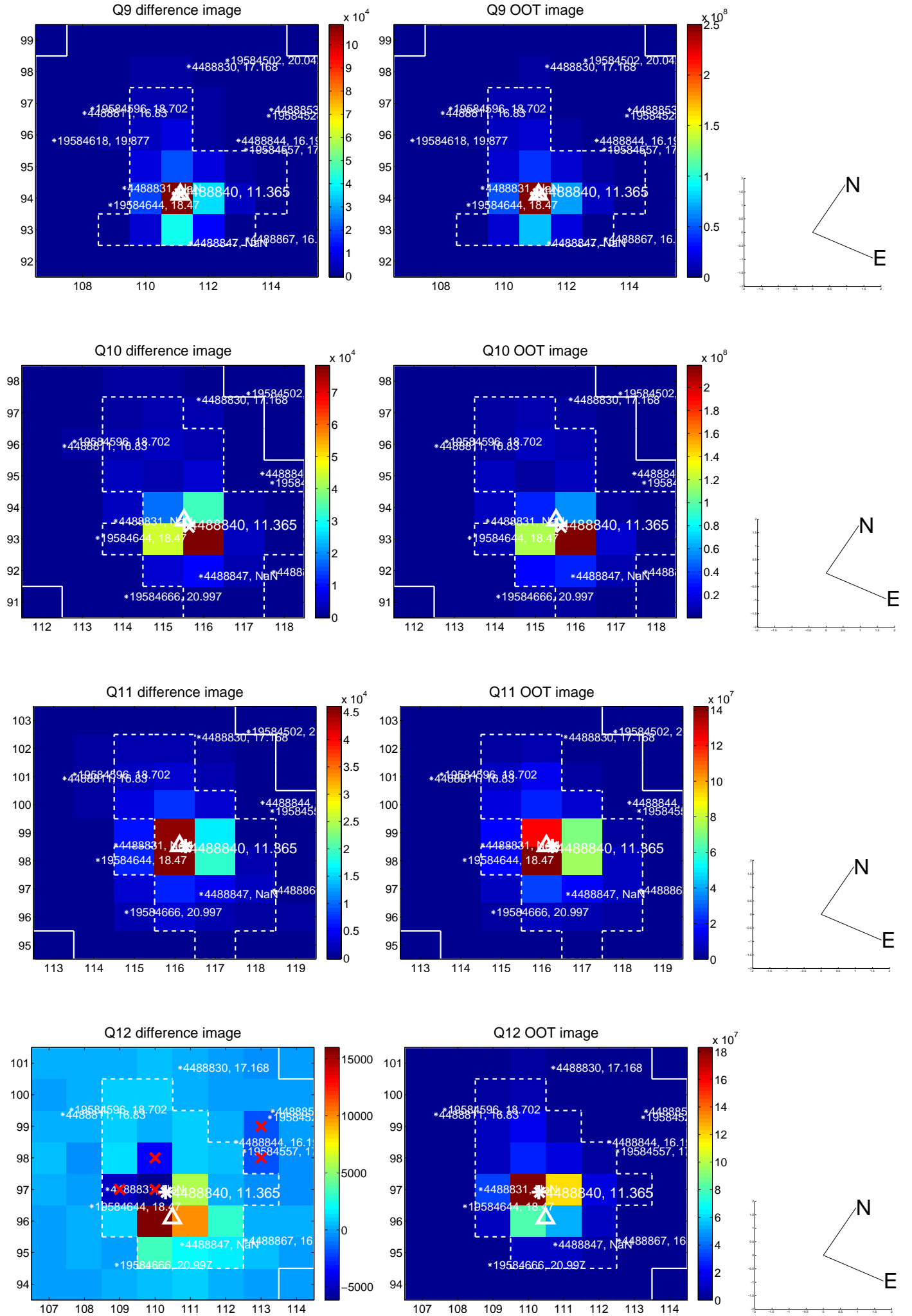
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



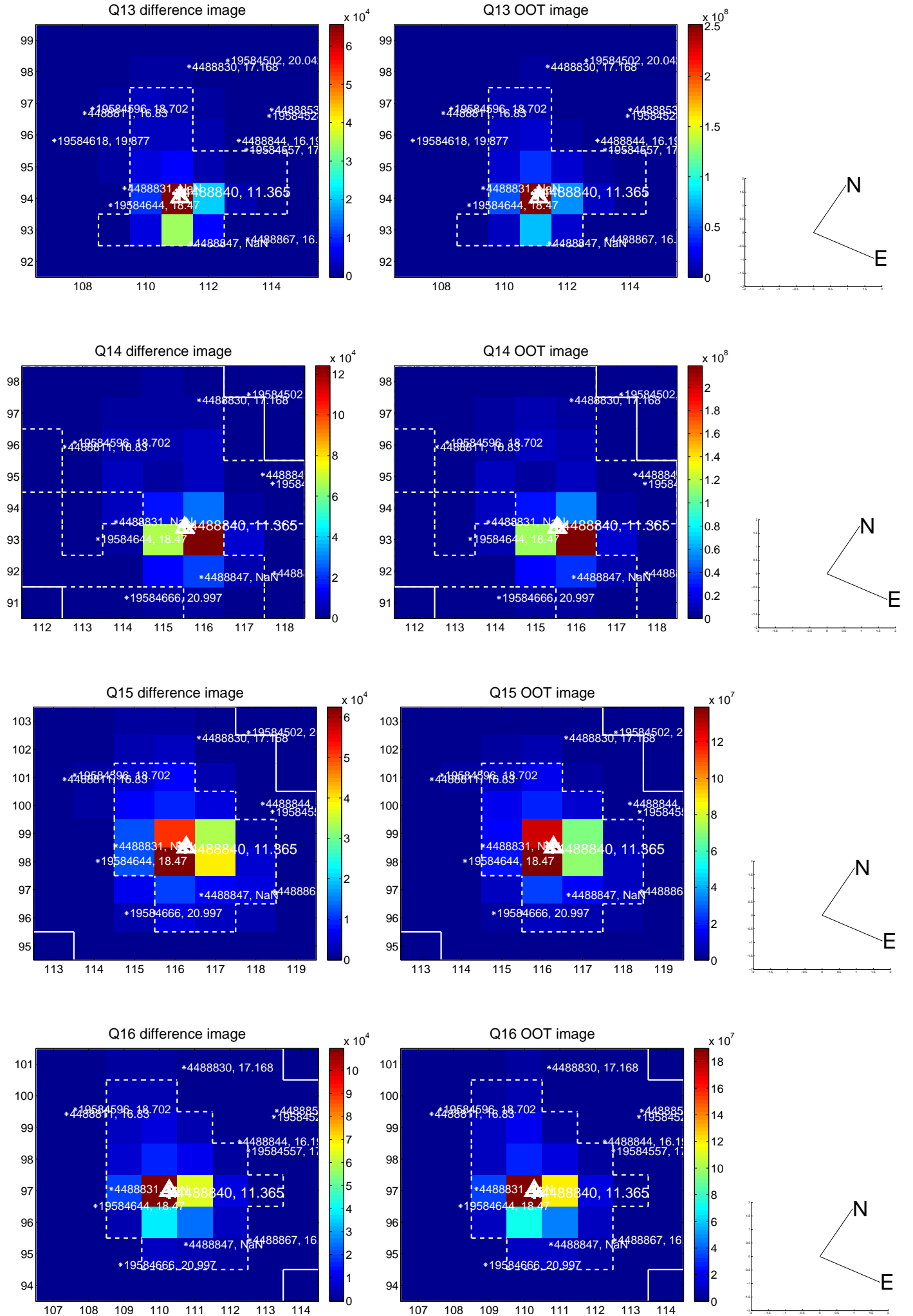
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



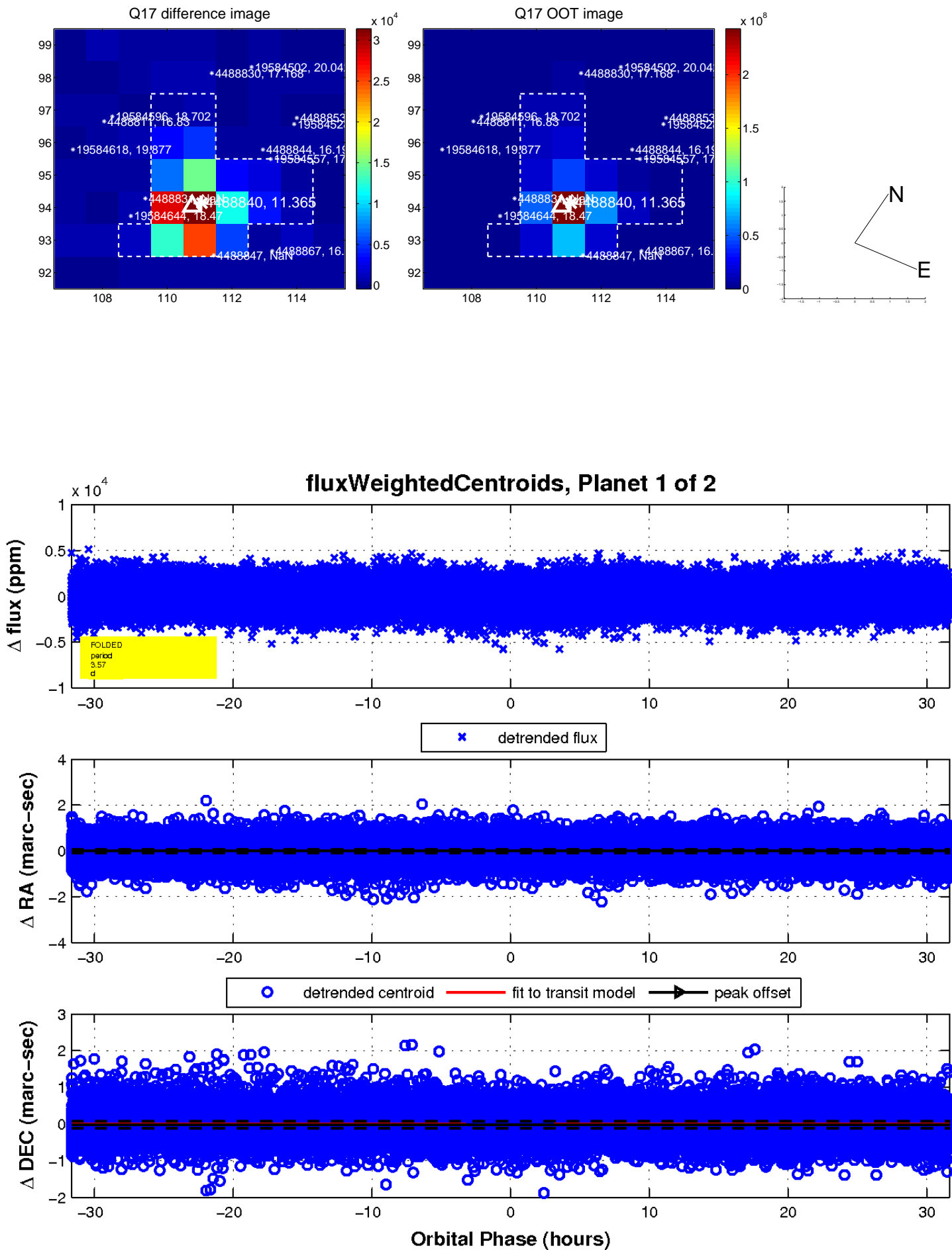
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



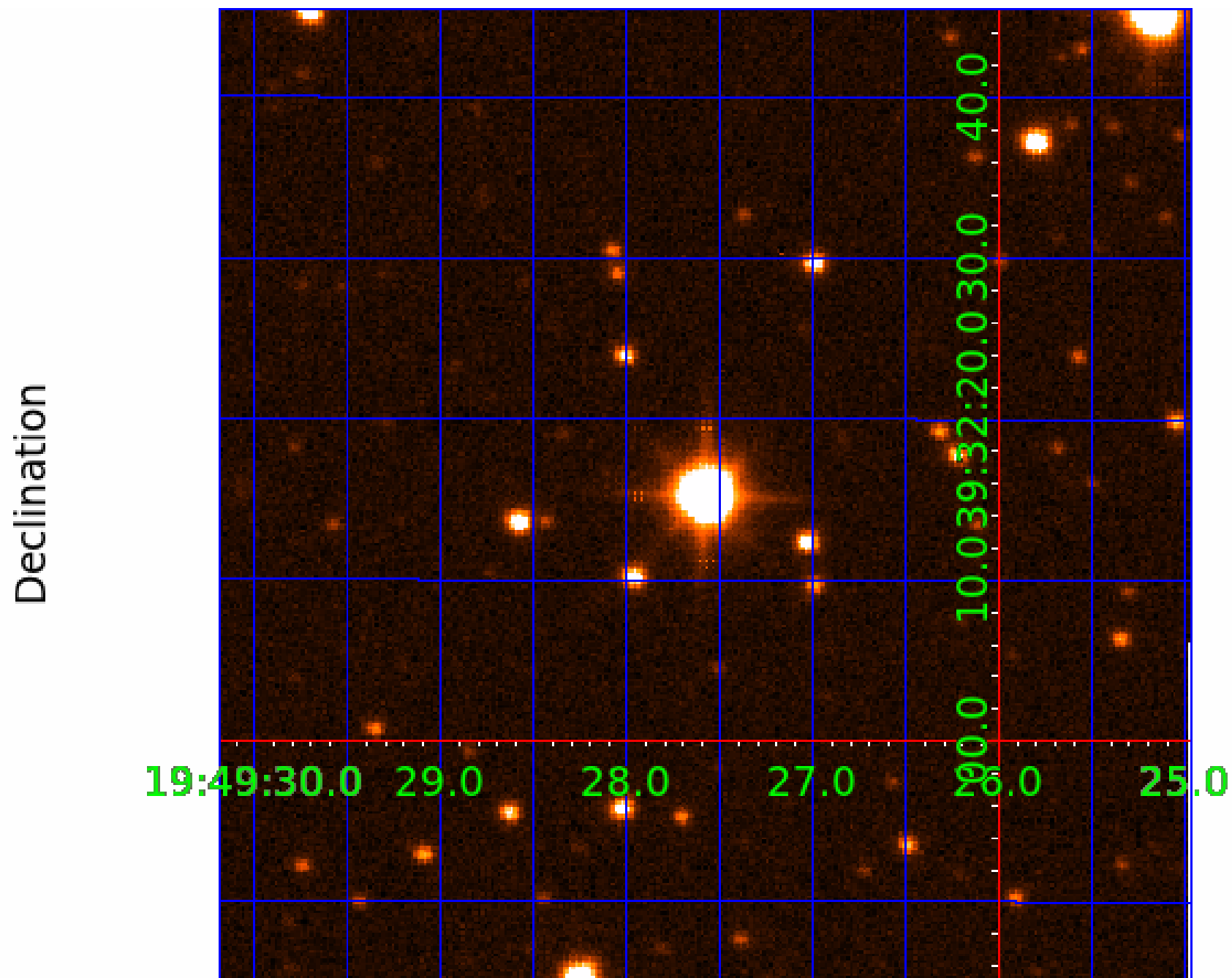
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004488840

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})
004488840-01	OBS	No	3.567756	134.399189	255.5	10.550	10.4	11.2	4.01	7348	8.90	12307.92
004488840-02	OBS	No	3.567727	132.307402	285.9	10.530	10.8	12.3	4.01	7348	9.76	12308.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004488840-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004488840-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

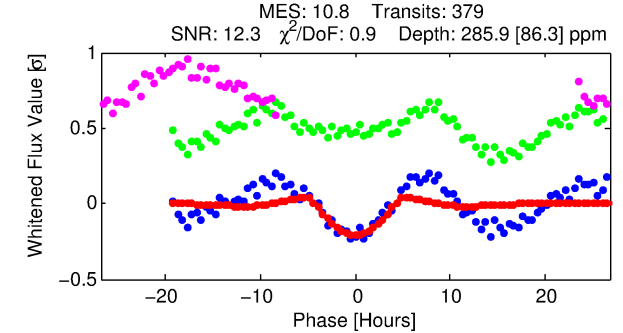
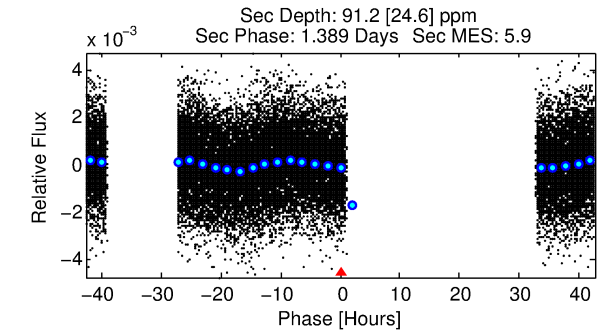
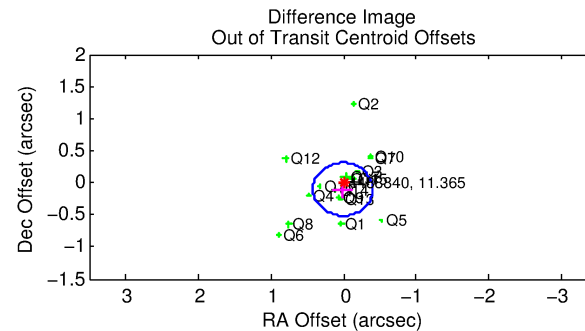
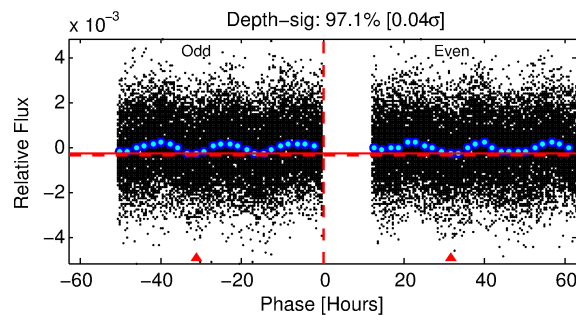
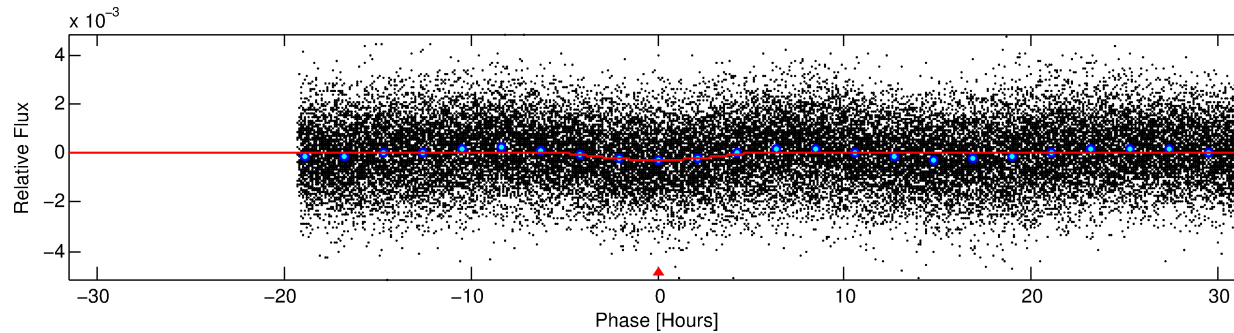
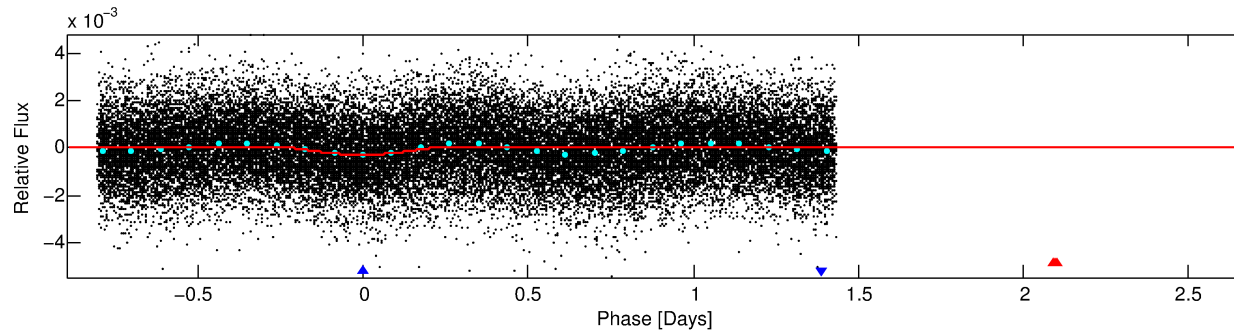
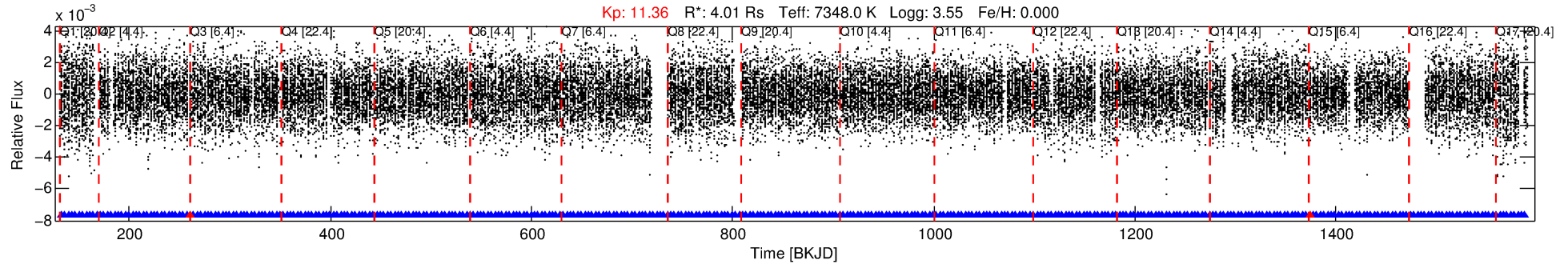
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004488840-02

No Significant Match Found

DV One-Page Summary

KIC: 4488840 Candidate: 2 of 2 Period: 3.568 d



DV Fit Results:

Period = 3.56773 [0.00007] d
Epoch = 132.3074 [0.0178] BKJD
Rp/R* = 0.0223 [0.0132]
a/R* = 1.22 [0.11]
b = 0.99 [0.03]
Seff = 12308.06 [11224.87]
Teq = 2686 [612] K
Rp = 9.76 [7.95] Re
a = 0.0584 [0.0322] AU
Ag = 1.80 [2.71] [0.29 σ]
Teffp = 4807 [1473] K [1.33 σ]

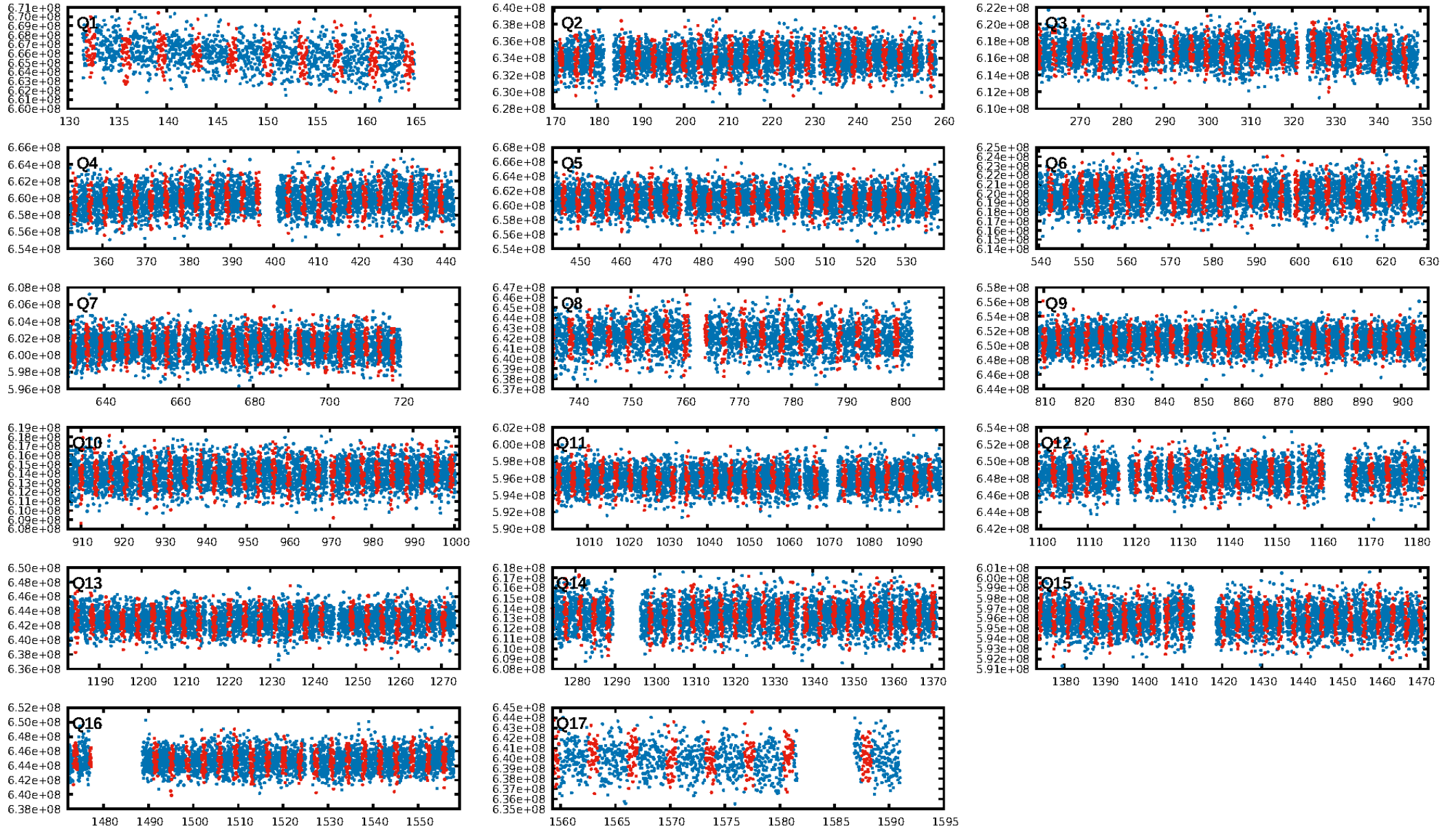
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.84e-24
RollingBand-fgt: 0.99 [359/361]
GhostDiagnostic-chr: 1.414
Centroid-sig: 0.2%
Centroid-so: 0.395 arcsec [5.72 σ]
OotOffset-rm: 0.102 arcsec [0.74 σ]
KicOffset-rm: 0.125 arcsec [0.99 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

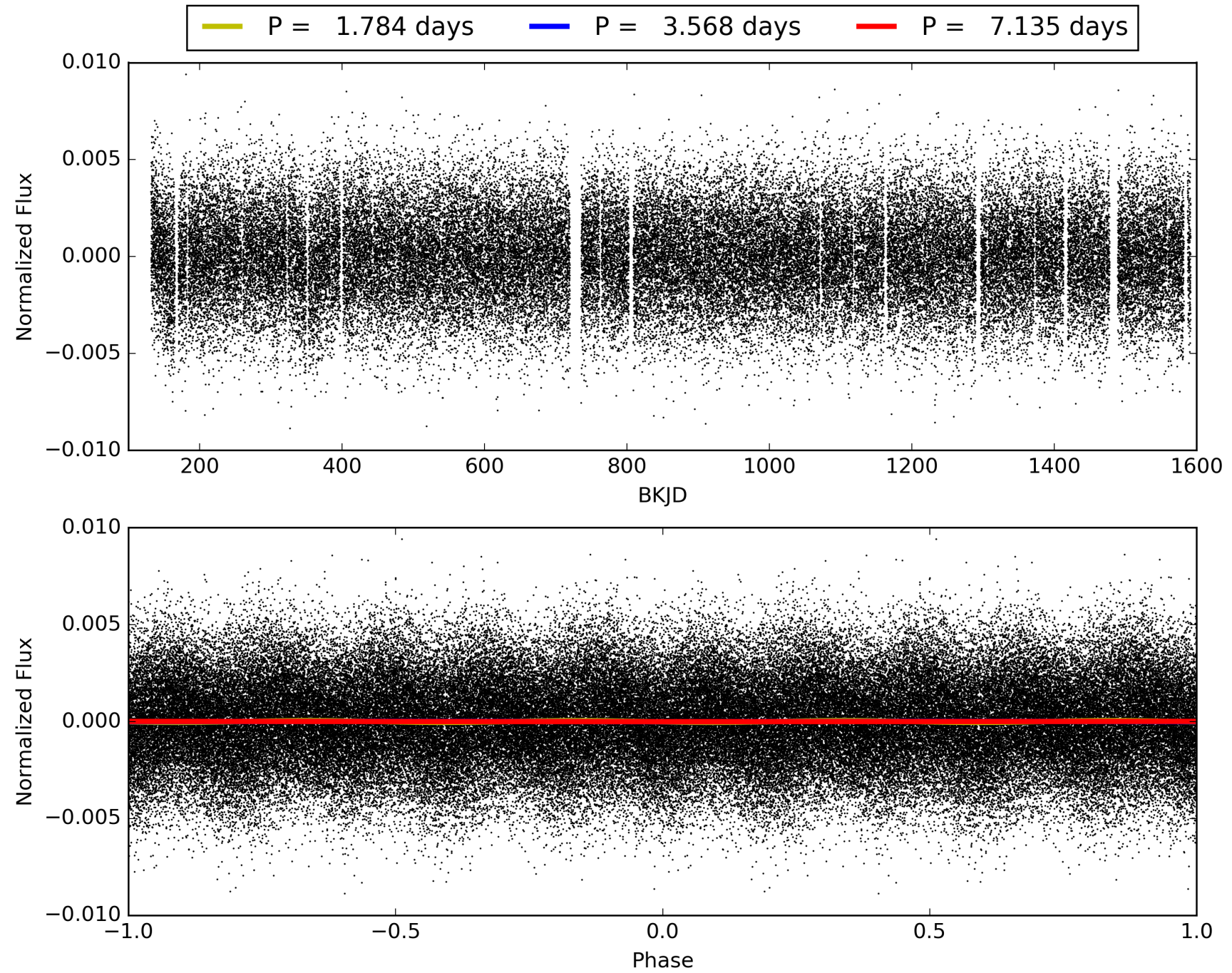
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:02:46 Z

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

TCE 004488840-02, PDC Light Curves

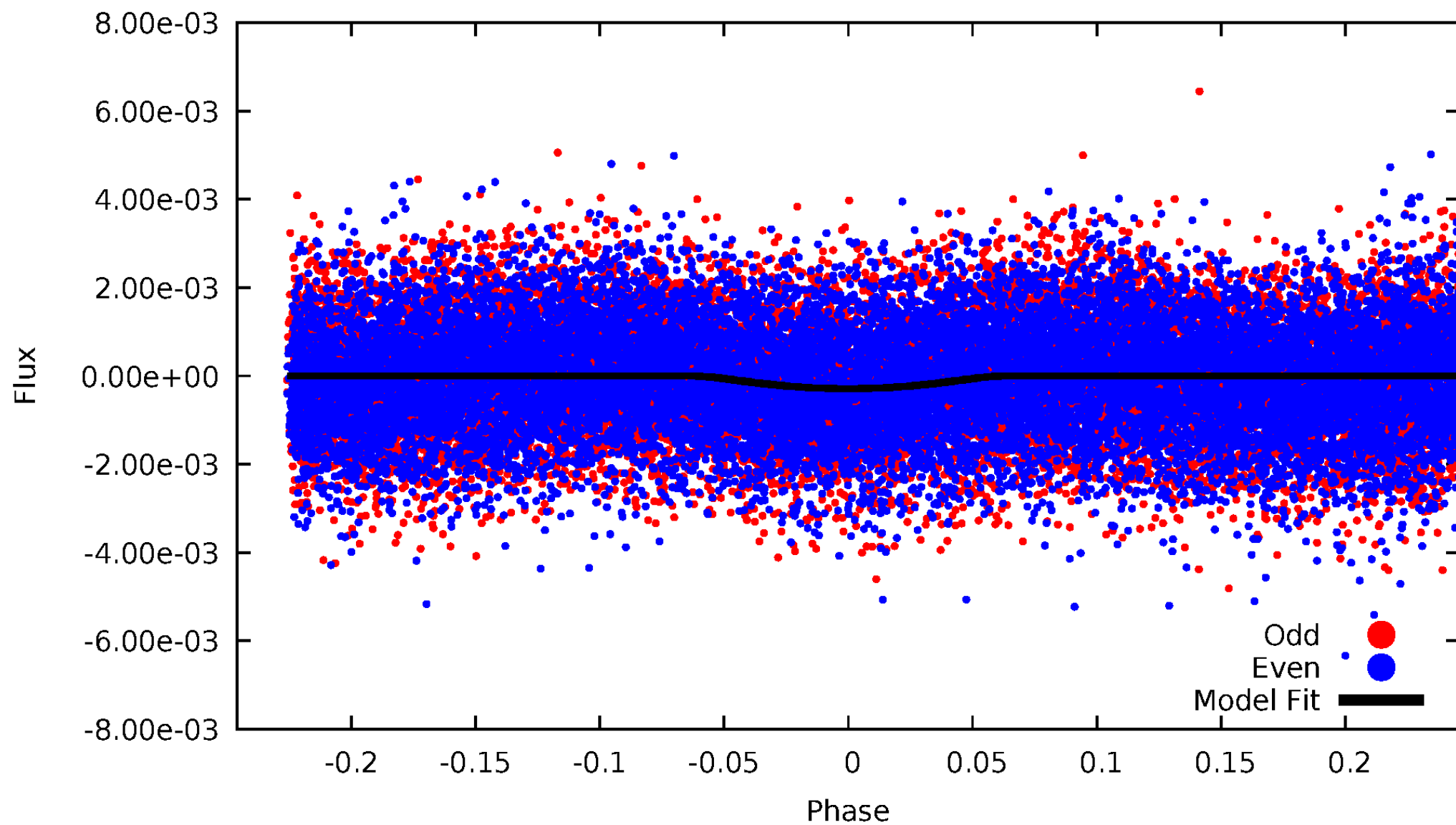


TCE 004488840-02



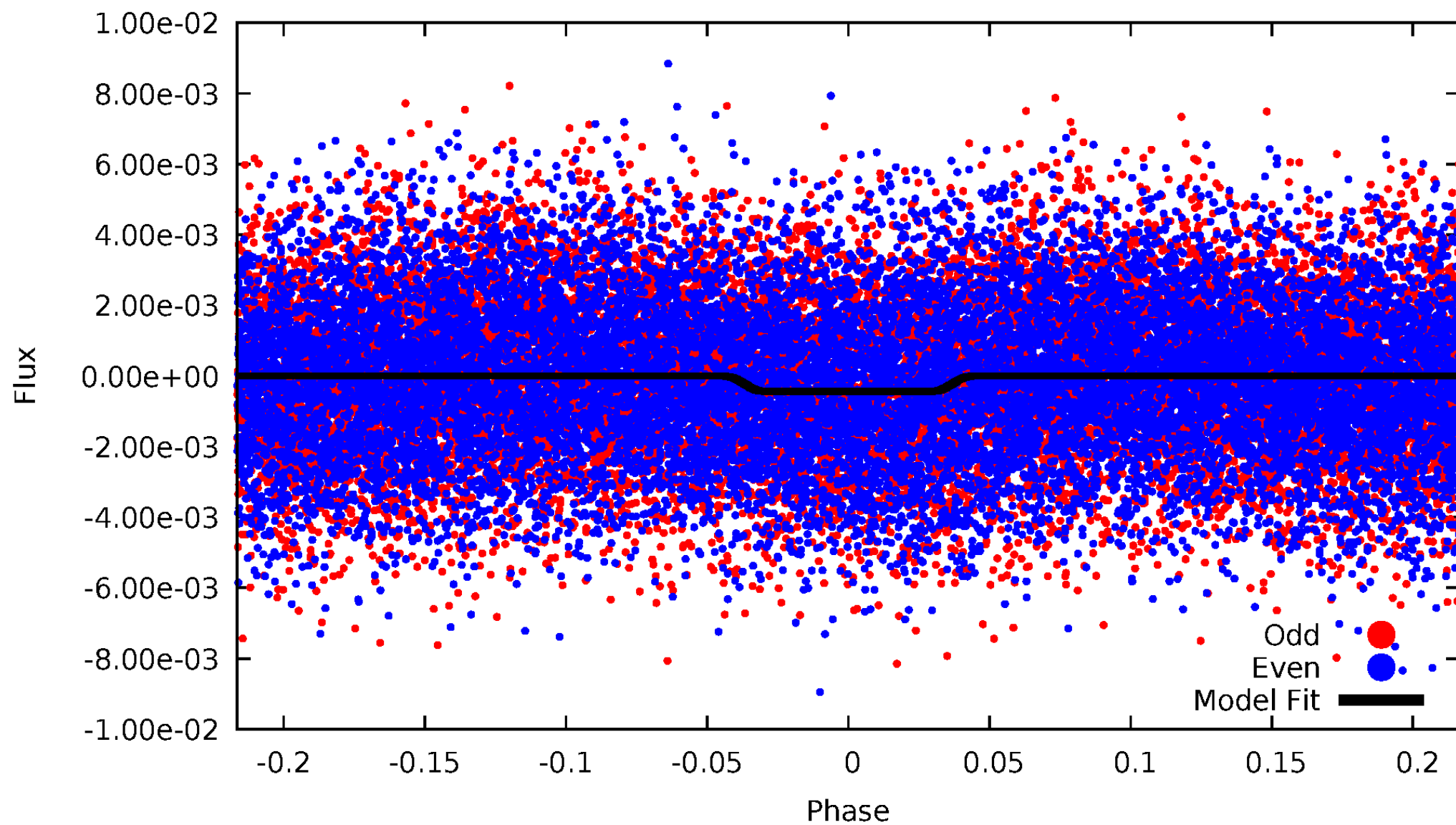
DV Odd/Even

TCE 004488840-02



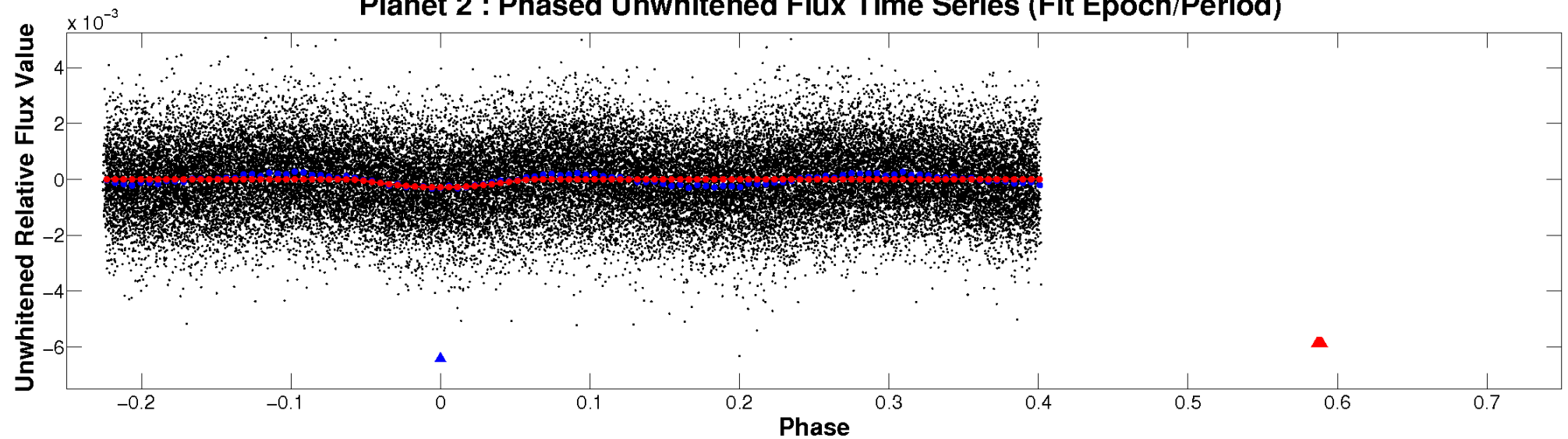
ALT Odd/Even

TCE 004488840-02

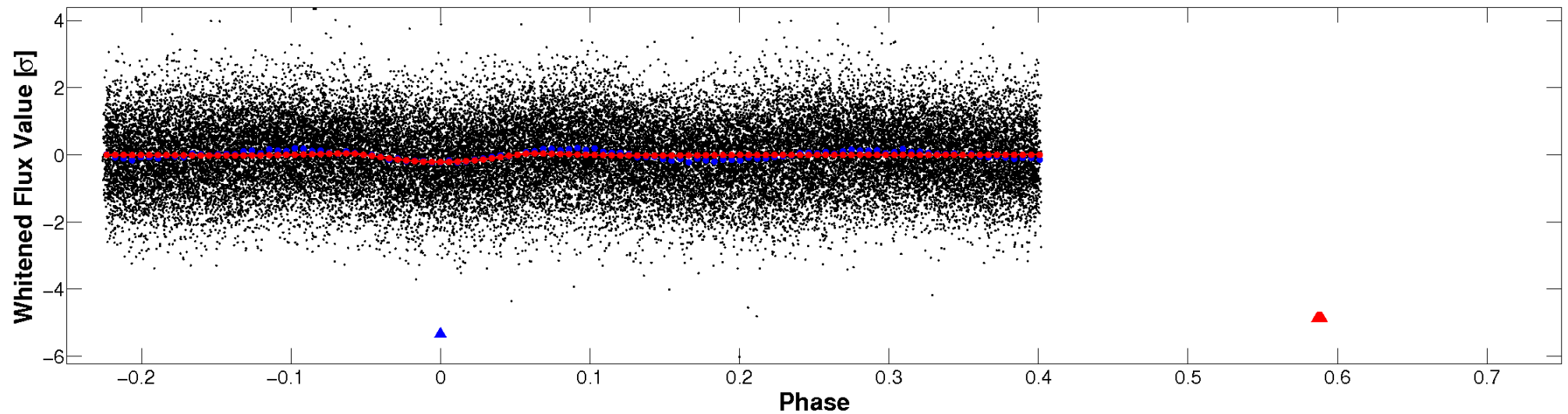


Non-Whitened Vs. Whitened Light Curve

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

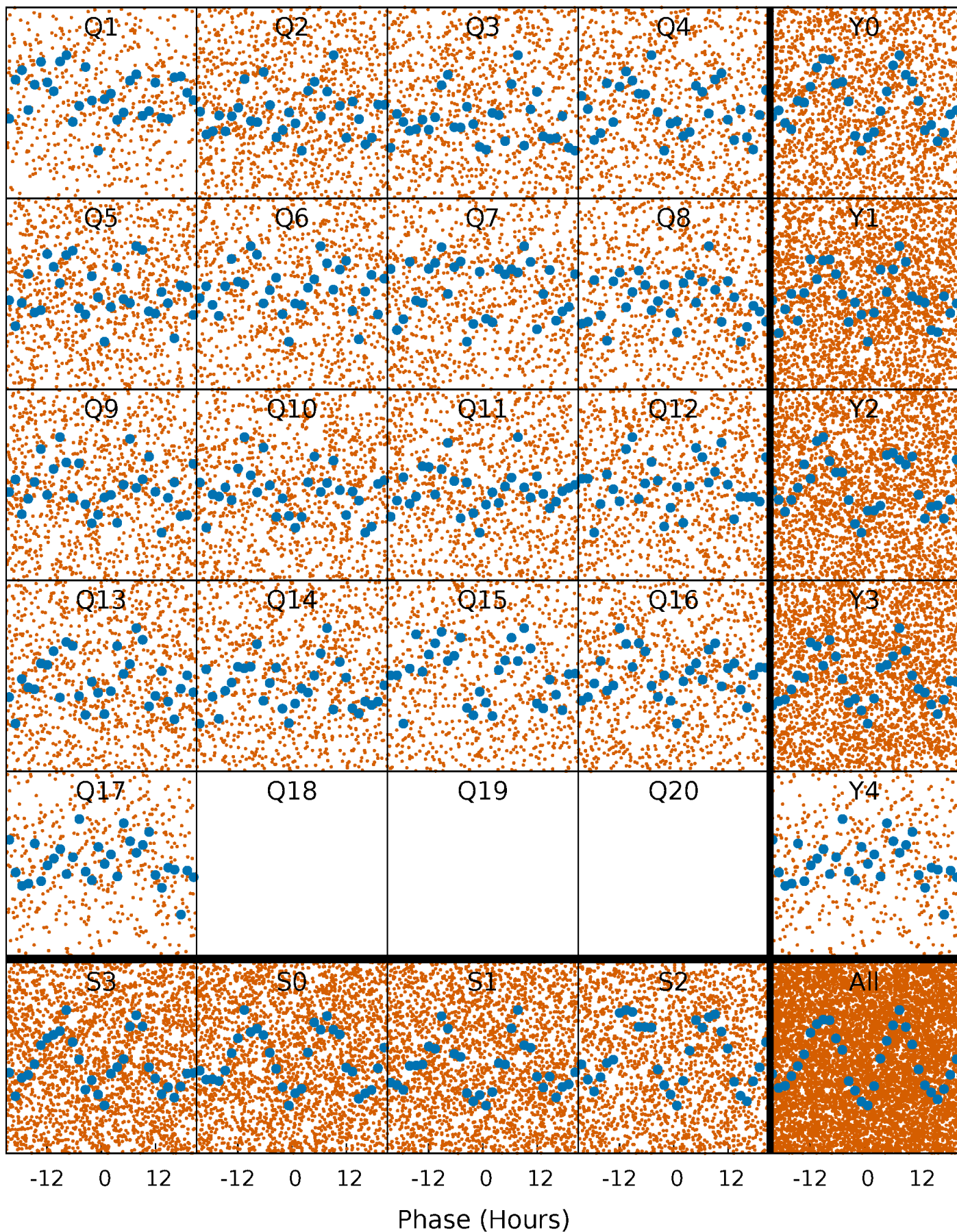


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



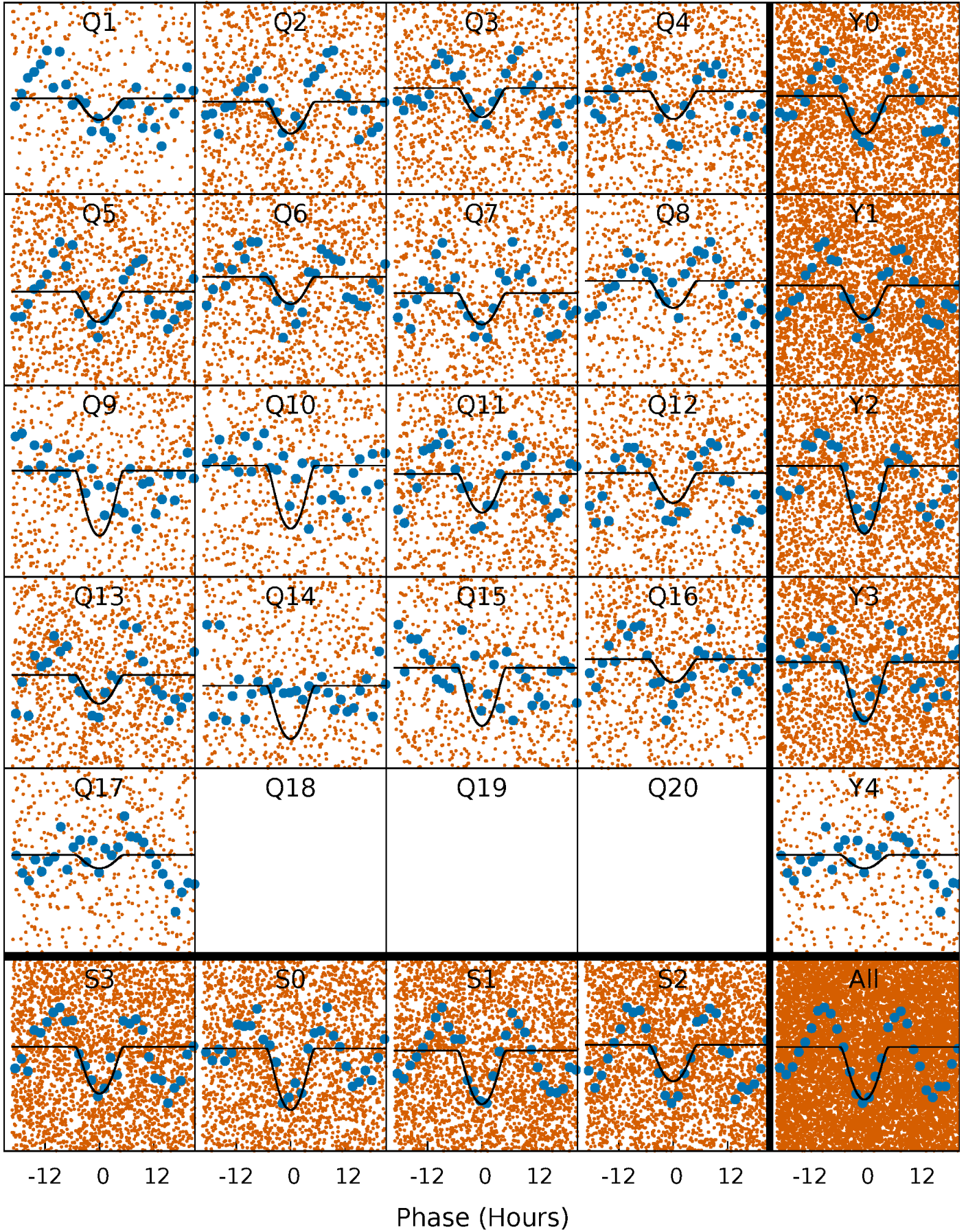
PDC Quarter-Phased Transit Curves

TCE 004488840-02 P= 3.567727 Days $T_0=132.307402$ (BKJD)



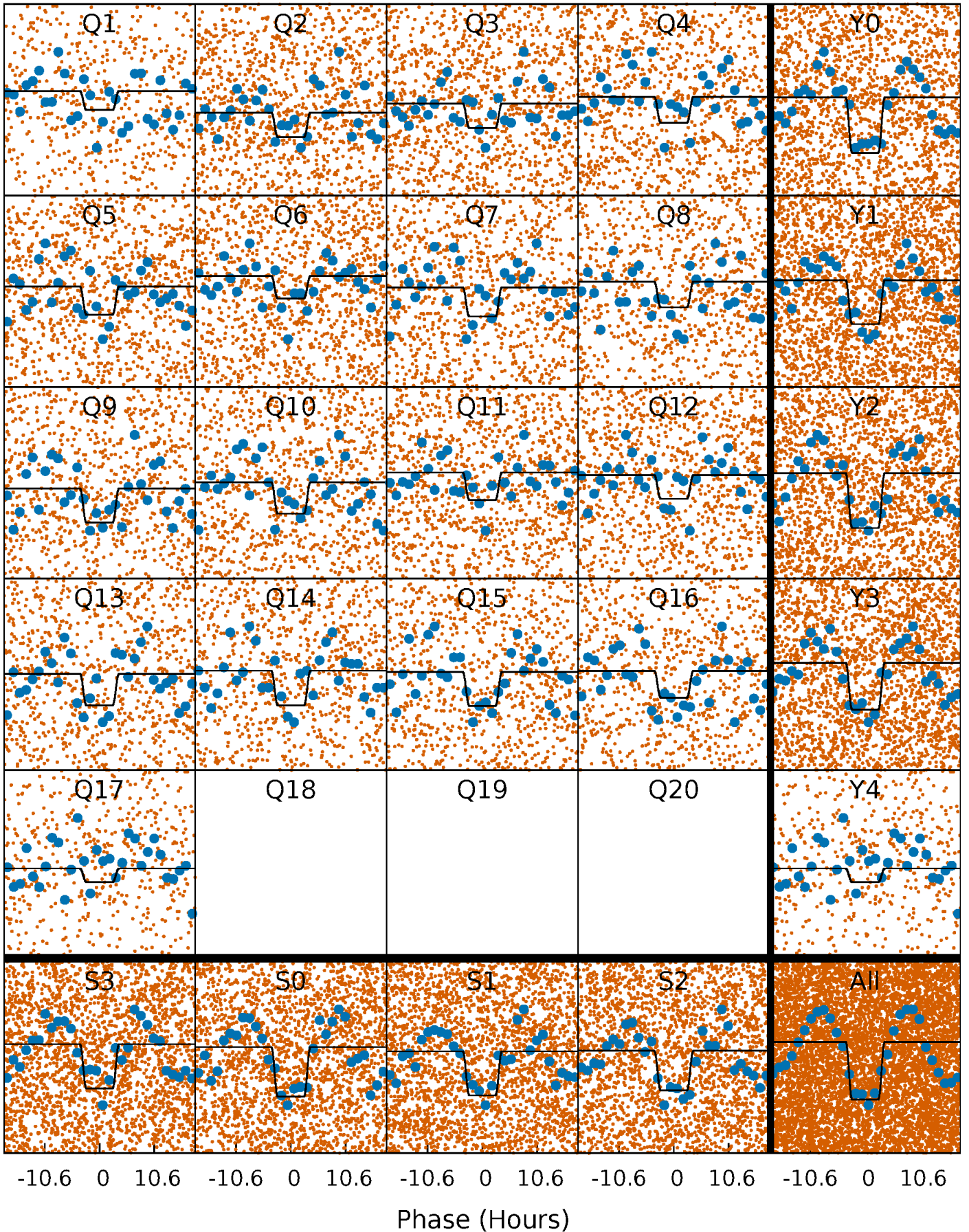
DV Quarter-Phased Transit Curves

TCE 004488840-02 P= 3.567727 Days $T_0=132.307402$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

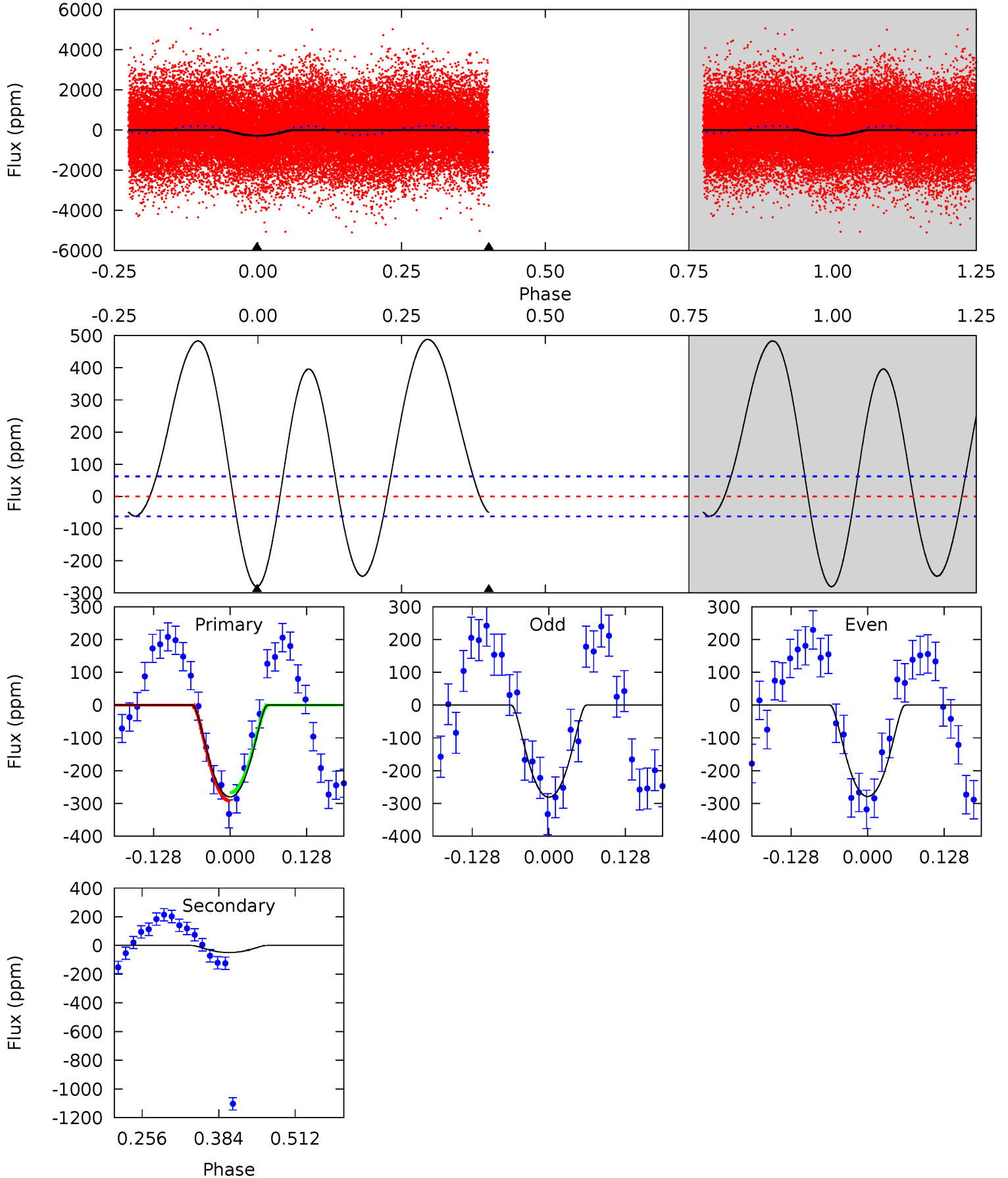
TCE 004488840-02 P= 3.567716 Days $T_0=132.286751$ (BKJD)



DV Model-Shift Uniqueness Test

004488840-02, P = 3.567727 Days, E = 128.739675 Days

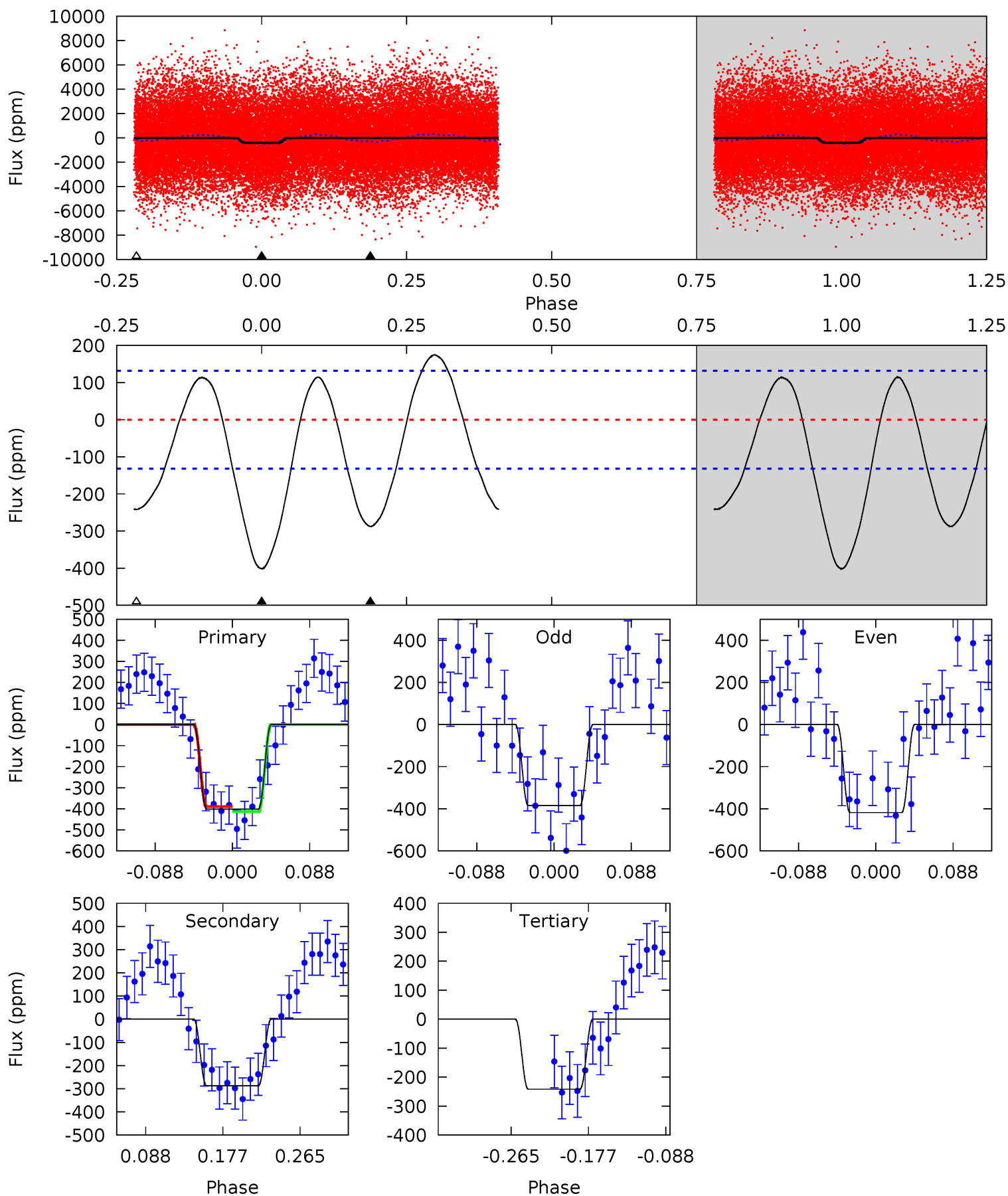
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	3.58	0	0	4.51	1.52	14.1	20.4	20.4	3.58	3.58	0.08	1.00	0.64	0.94



Alt Model-Shift Uniqueness Test

004488840-02, P = 3.567716 Days, E = 128.719035 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	9.99	8.40	0	4.59	1.70	4.97	5.56	14.0	1.60	9.99	0.58	0.94	0.30	0.42



Stellar Parameters For KIC 004488840

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7348^{+205}_{-308}	$3.551^{+0.531}_{-0.059}$	$0.000^{+0.200}_{-0.300}$	$4.006^{+0.396}_{-2.242}$	$2.082^{+0.233}_{-0.583}$	$0.046^{+0.303}_{-0.009}$
	+3%/-4%	+15%/-2%	+inf%/-inf%	+10%/-56%	+11%/-28%	+663%/-21%
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 004488840-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-49 ± 14	$8.39^{+6.01}_{-4.49}$	3605^{+247}_{-447}	4038^{+1698}_{-1026}	$1.226^{+4.715}_{-0.786}$
Alt.	-288 ± 29	$8.09^{+5.70}_{-4.61}$	3632^{+231}_{-511}	6343^{+3962}_{-1375}	$7.944^{+34.541}_{-5.084}$

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 $A_{obs} \gg 1.0$

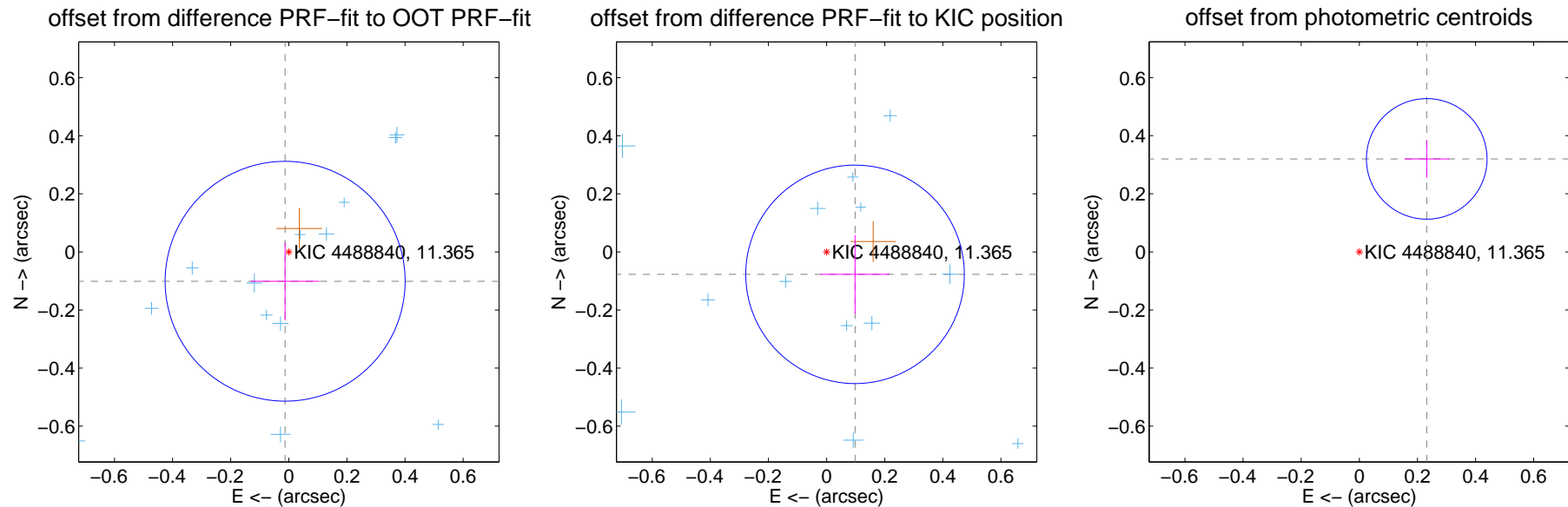
DV Centroid Data

Supplemental centroid analysis for 004488840-02. **Kepler magnitude: 11.37.** Transit SNR 12.29

There are 16 quarters with good PRF difference image offsets

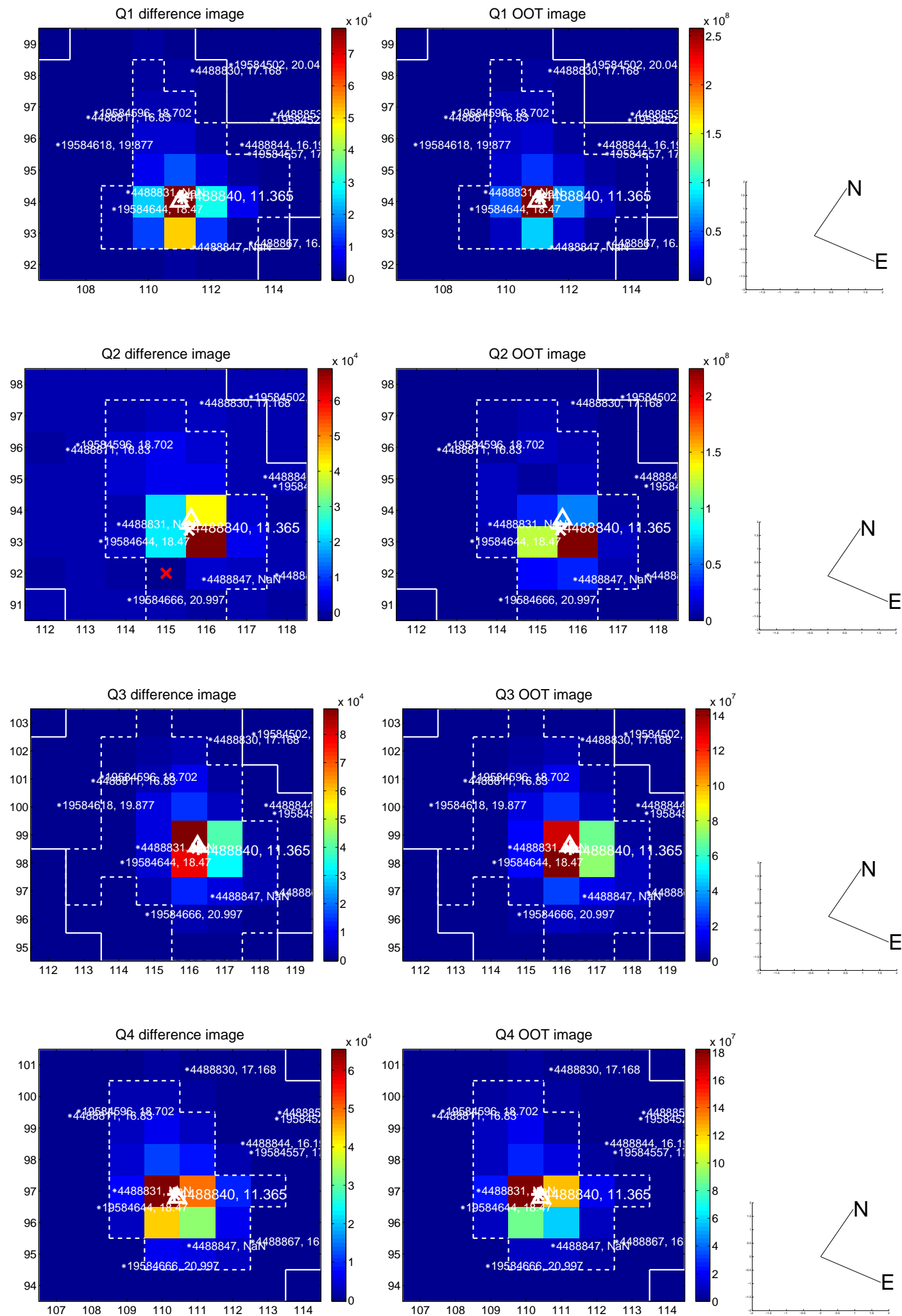
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.102 ± 0.138	0.74	0.013 ± 0.118	-0.101 ± 0.134
PRF-fit source offset from KIC position	0.125 ± 0.125	0.99	-0.098 ± 0.119	-0.077 ± 0.135
photometric centroid source offset	0.40 ± 0.07	5.72	-0.23 ± 0.08	0.32 ± 0.06

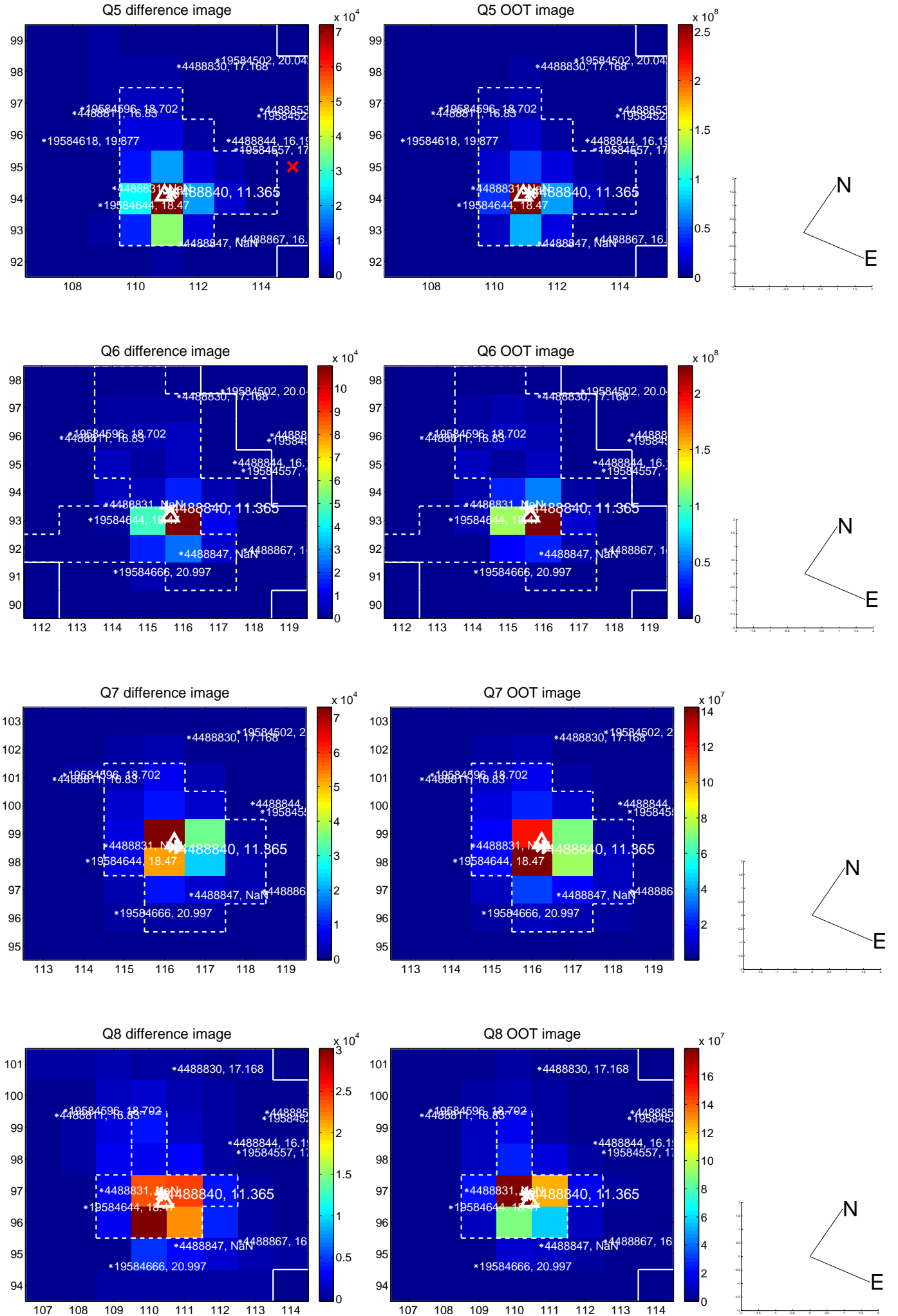


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

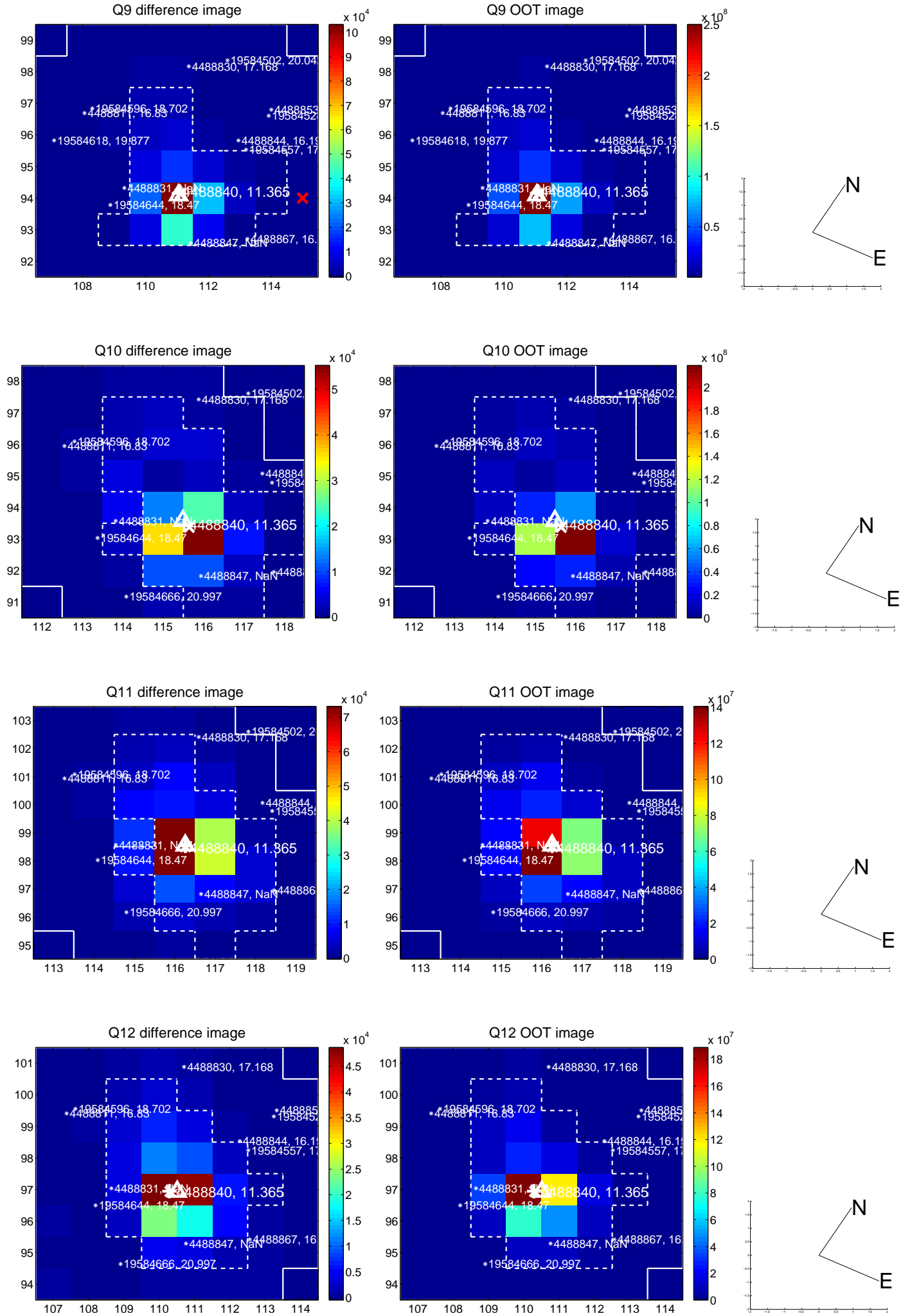
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



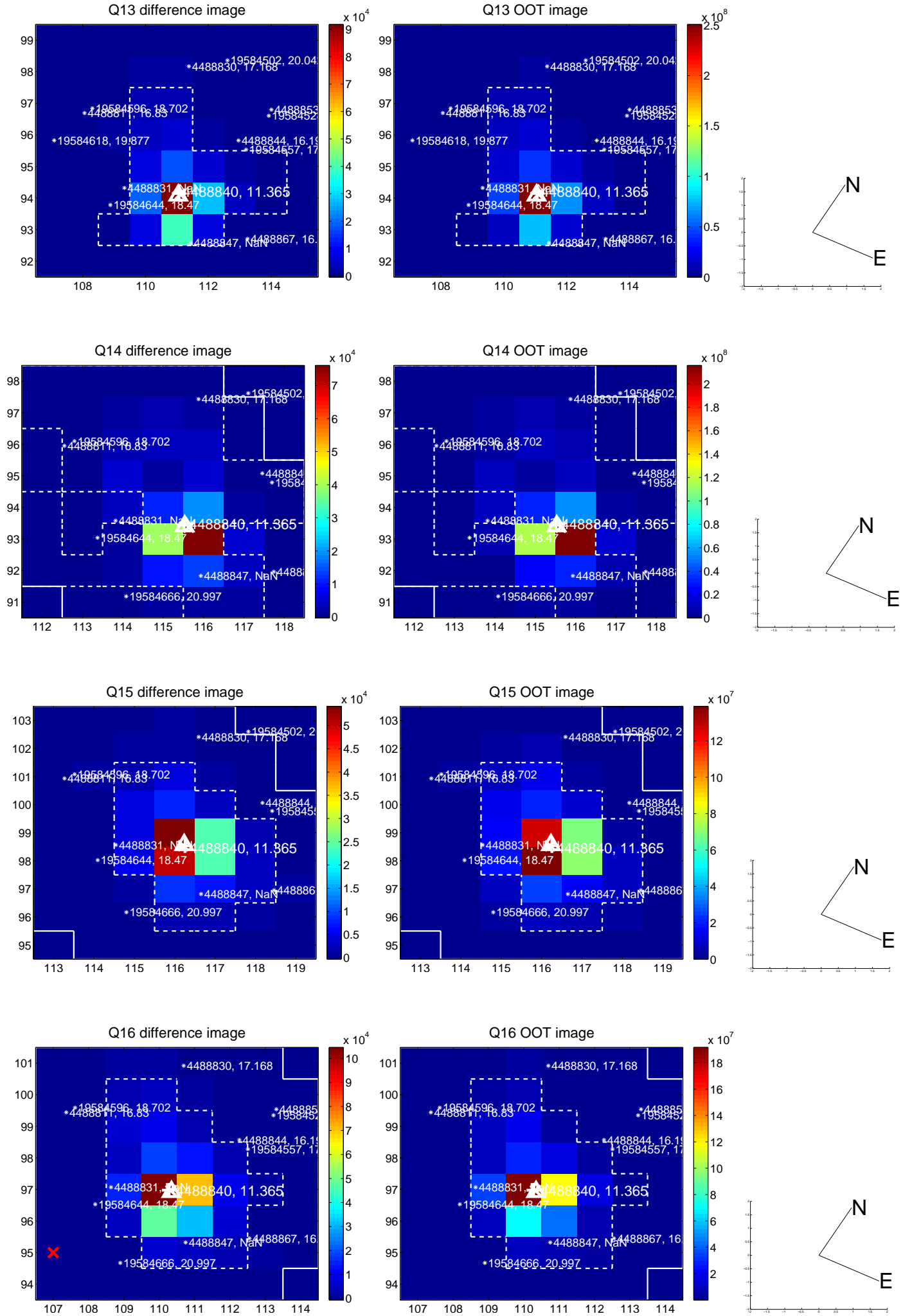
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



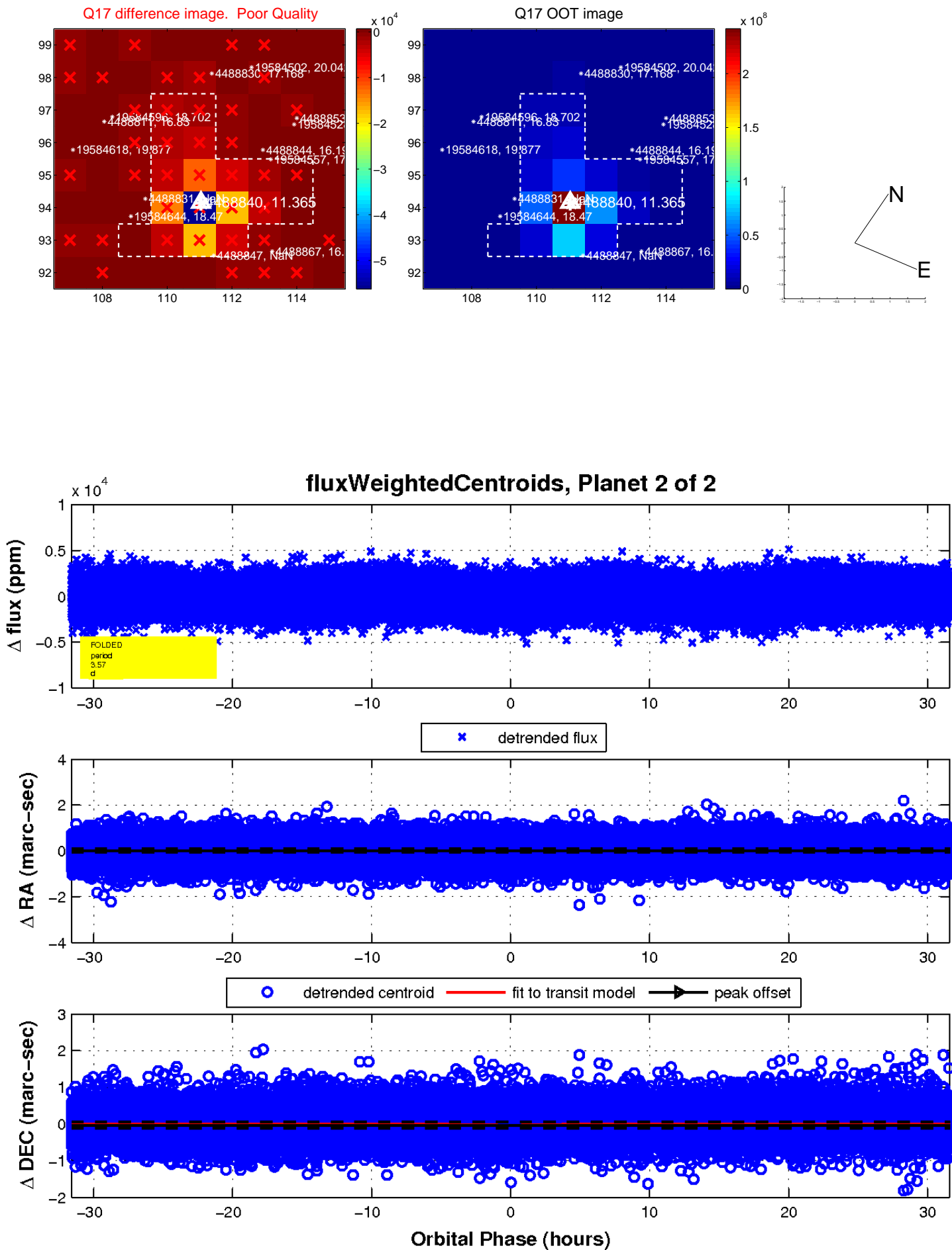
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

