

KIC 006444896

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})
006444896-01	OBS	3138.01	8.689106	133.235409	1634.9	1.260	12.0	15.7	0.12	2703	0.50	0.47
006444896-02	OBS	3138.02	19.535196	148.206761	1453.5	1.230	8.0	9.3	0.12	2703	0.48	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006444896-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
006444896-02	OBS	FP	0.37	1	0	0	0	MOD_NONUNIQ_ALT—CENT_KIC_POS

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

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

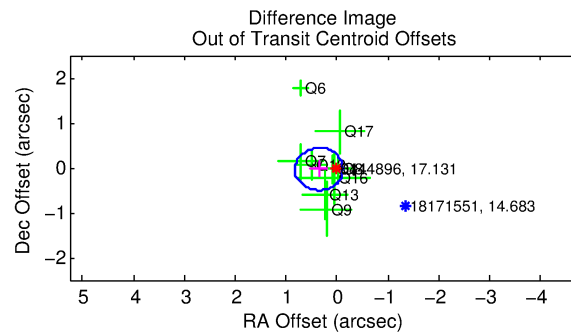
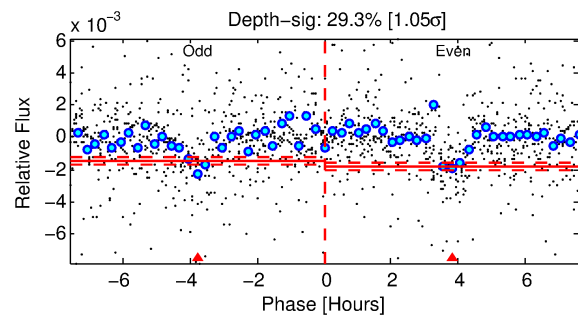
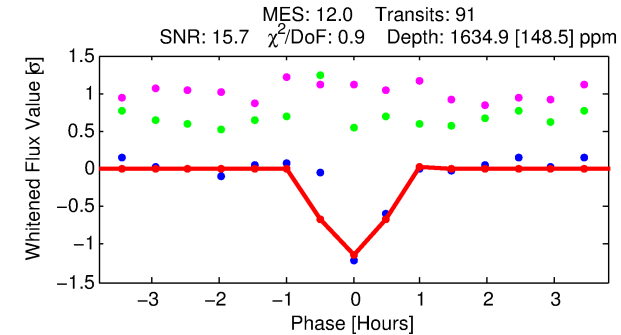
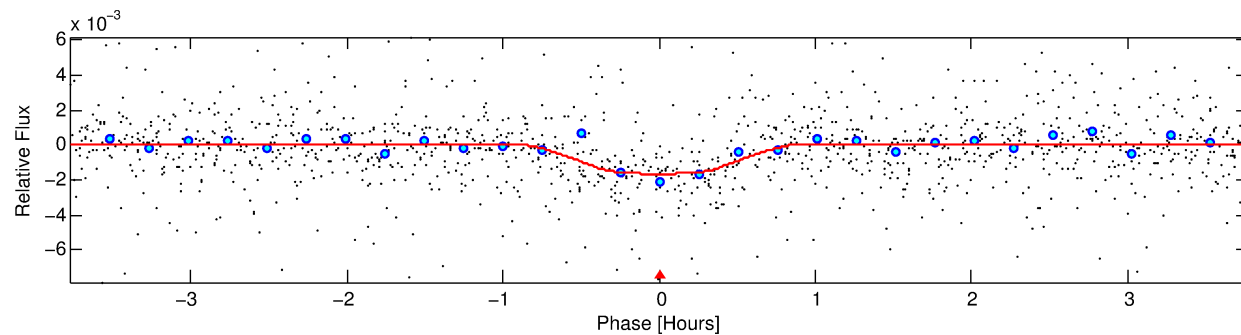
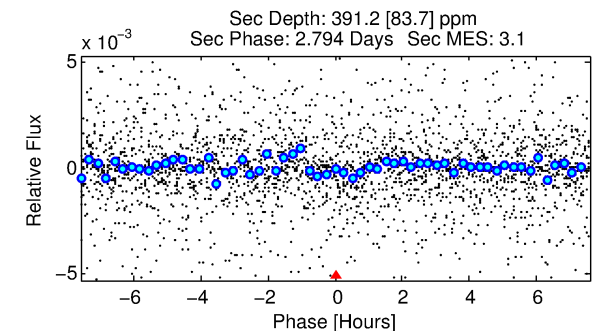
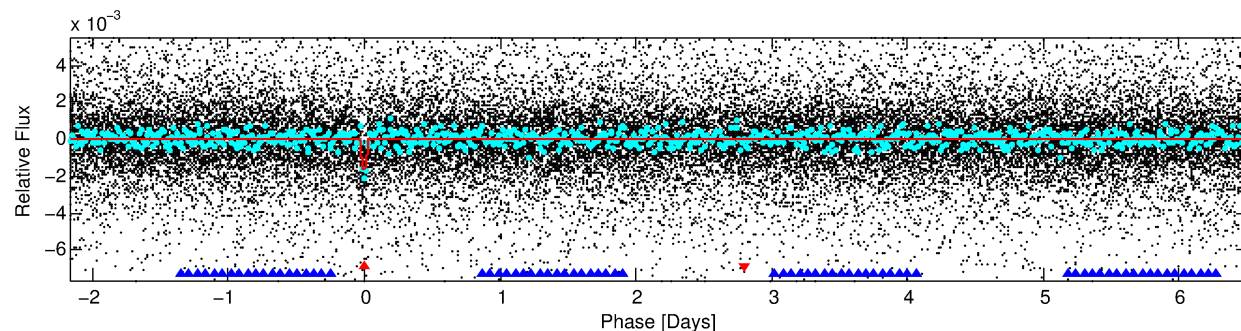
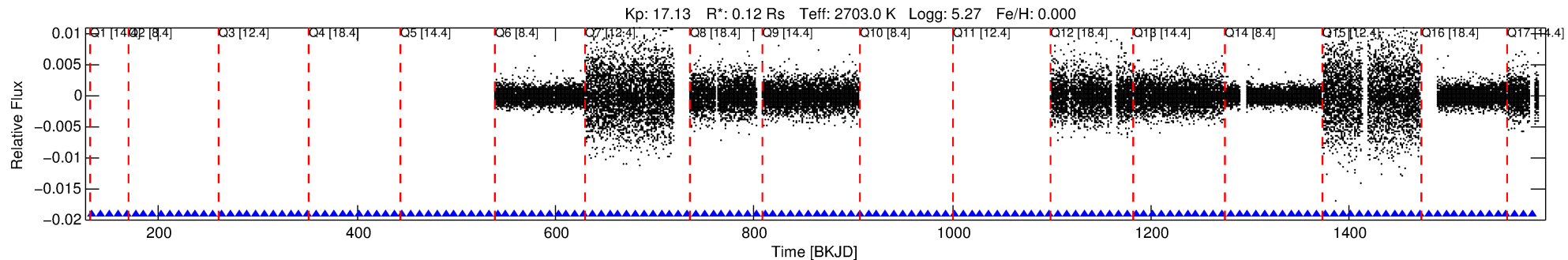
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006444896-01

No Significant Match Found

DV One-Page Summary

KIC: 6444896 Candidate: 1 of 2 Period: 8.689 d
KOI: K03138.01 Corr: 0.908



DV Fit Results:

Period = 8.68911 [0.00003] d
Epoch = 133.2354 [0.0029] BKJD
Rp/R* = 0.0390 [0.0470]
a/R* = 43.47 [225.48]
b = 0.63 [4.96]
Seff = 0.47 [0.00]
Teq = 211 [0] K
Rp = 0.50 [0.61] Re
a = 0.0378 [0.0000] AU
Ag = 1220.97 [2956.00] [0.41σ]
Teff = 1925 [1165] K [1.47σ]

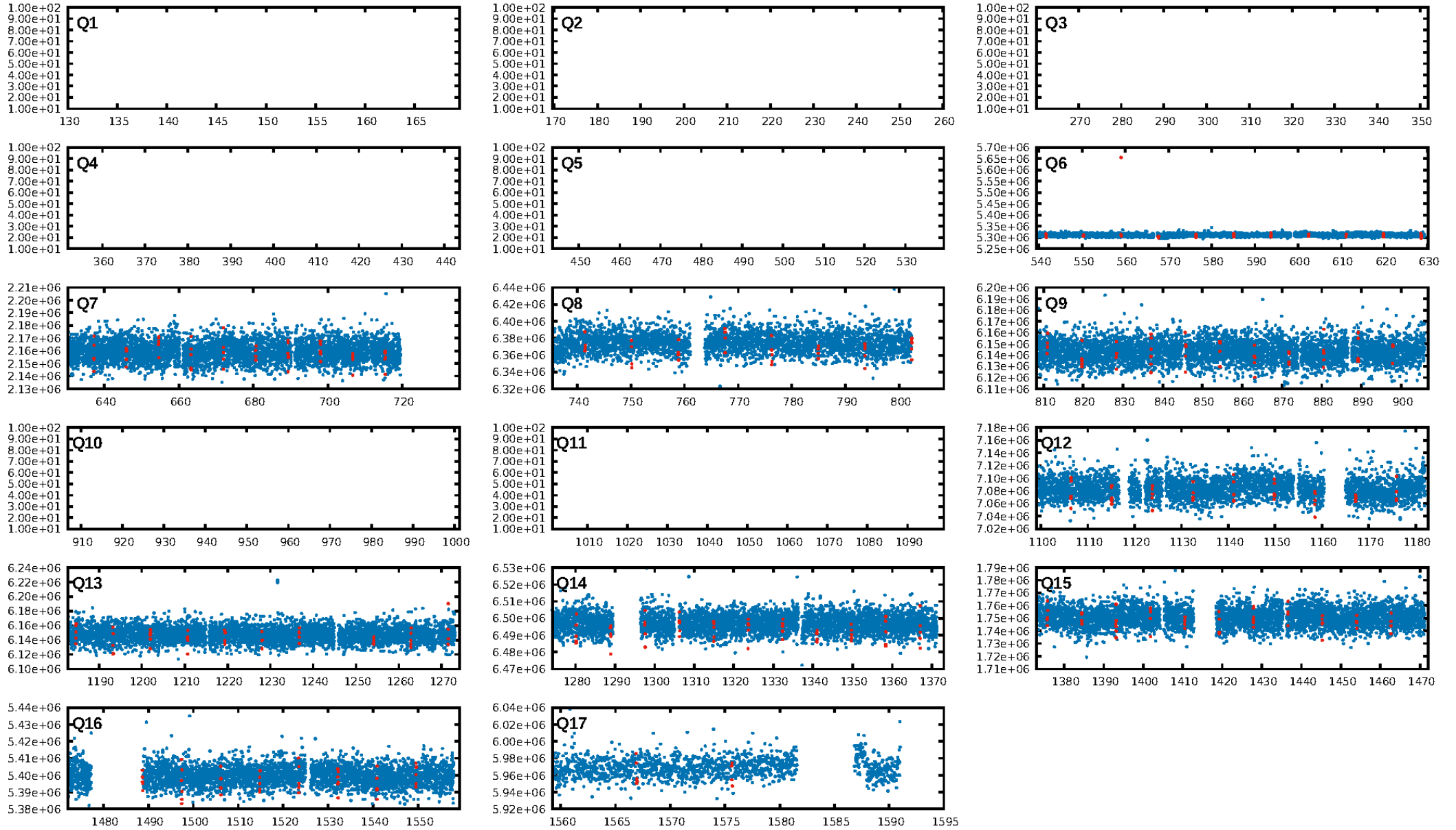
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [147.82σ]
ModelChiSquare2-sig: 71.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.93e-32
RollingBand-fgt: 1.00 [89/89]
GhostDiagnostic-chr: 1.447
Centroid-sig: 0.8%
Centroid-so: 0.841 arcsec [1.06σ]
OotOffset-rm: 0.355 arcsec [2.26σ]
KicOffset-rm: 1.968 arcsec [7.81σ]
OotOffset-st: 2/1/3/3 [9]
KicOffset-st: 2/1/3/3 [9]
DiffImageQuality-fgm: 0.67 [6/9]
DiffImageOverlap-fno: 1.00 [10/10]

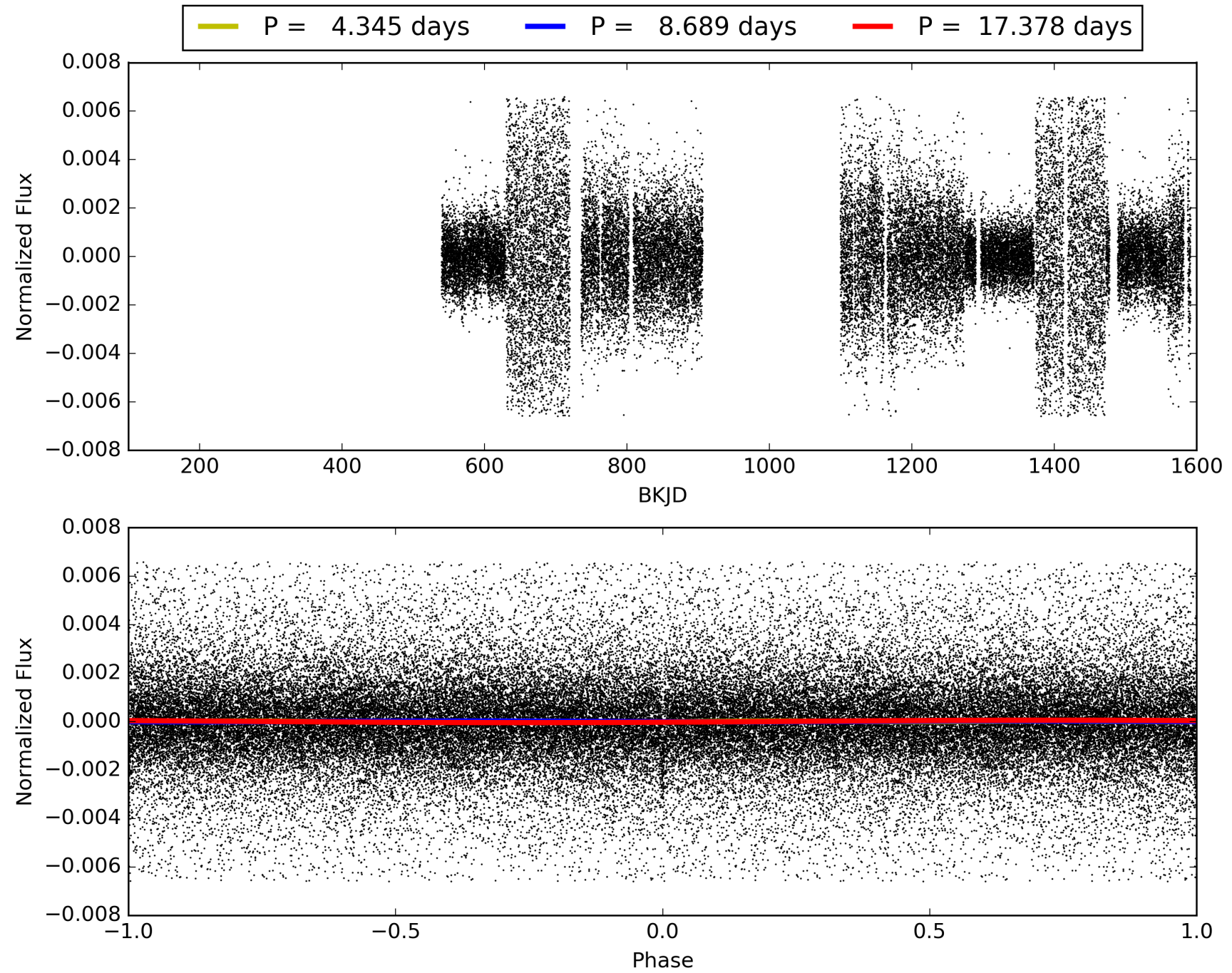
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:46:10 Z

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

TCE 006444896-01, PDC Light Curves

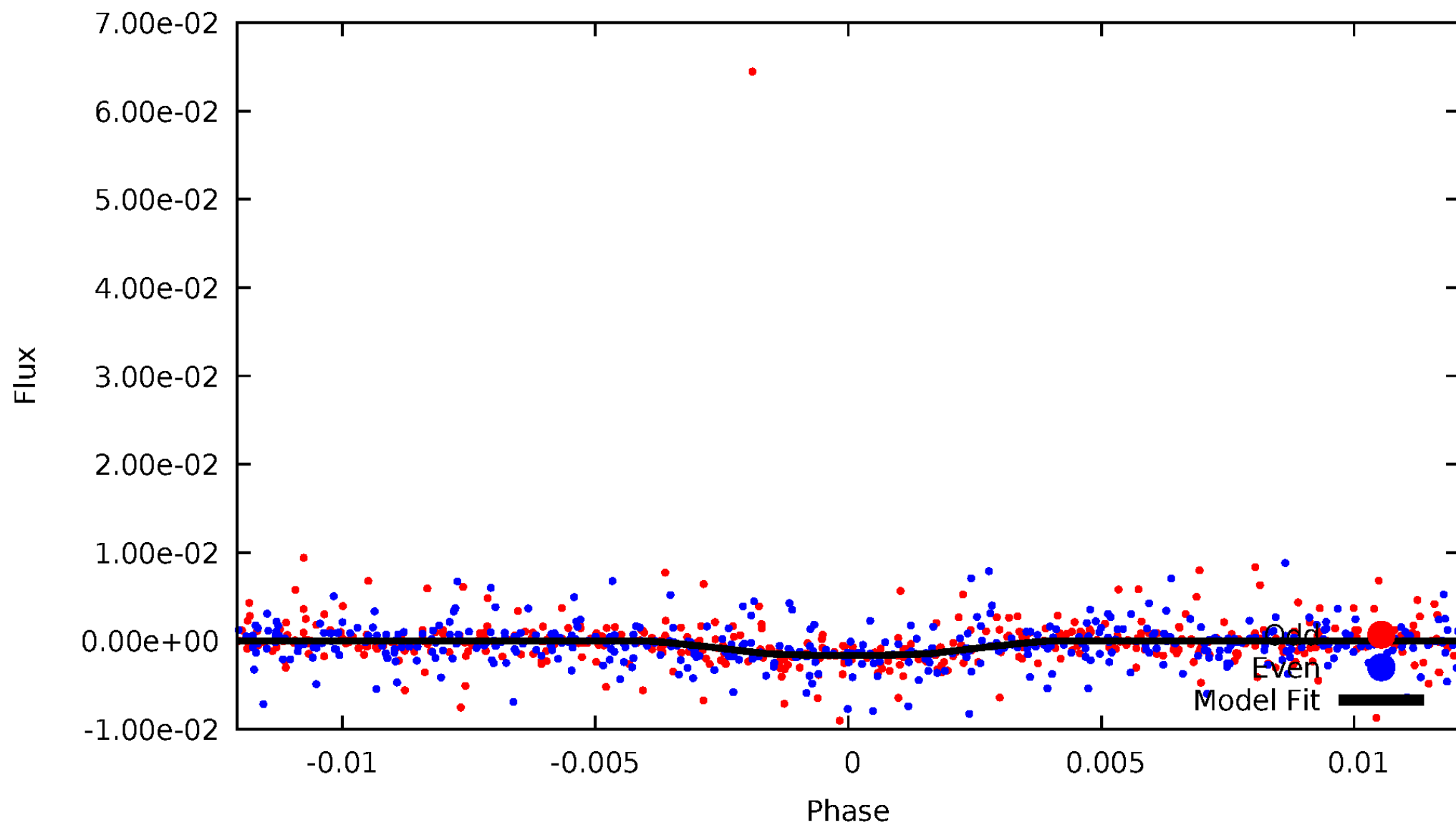


TCE 006444896-01



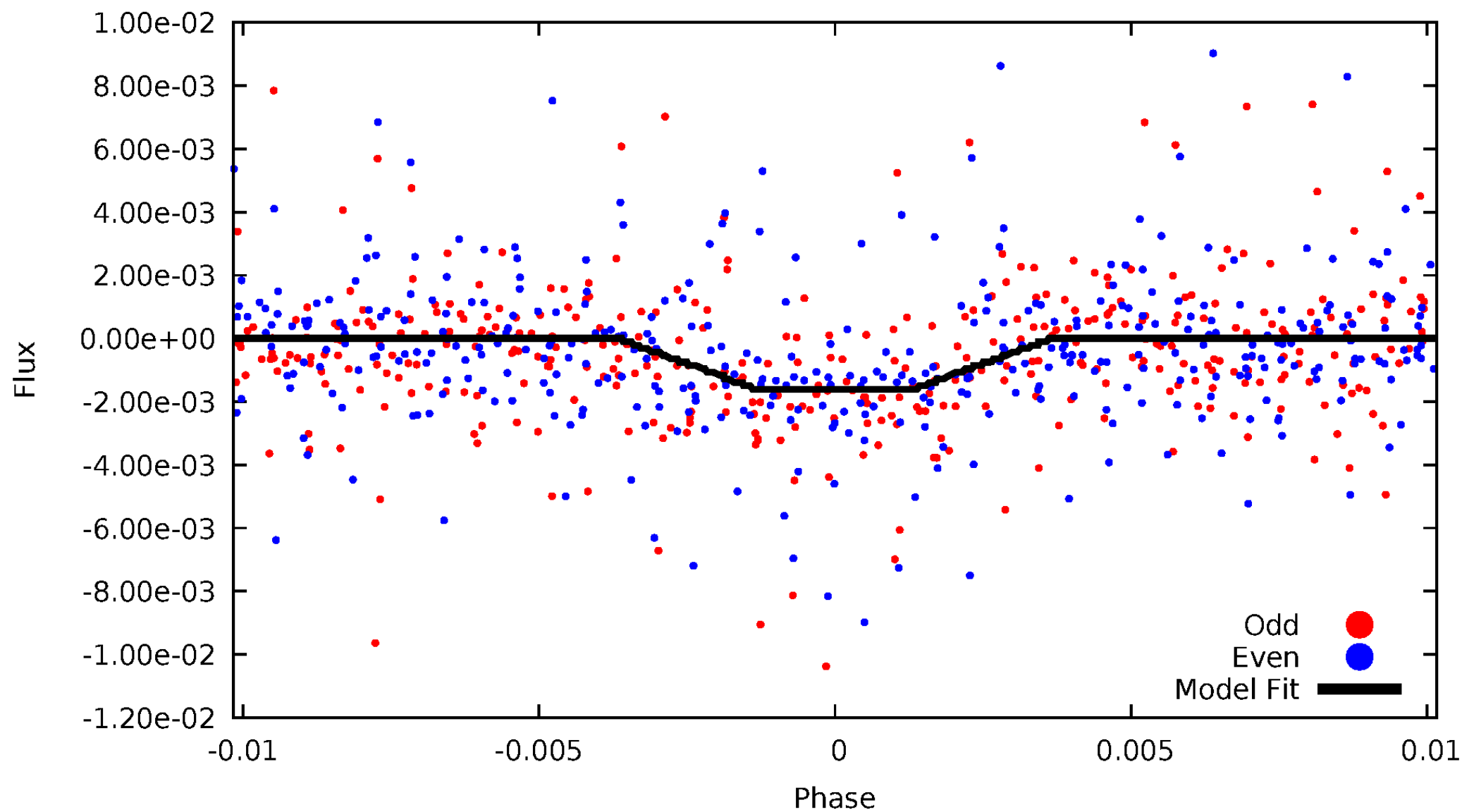
DV Odd/Even

TCE 006444896-01

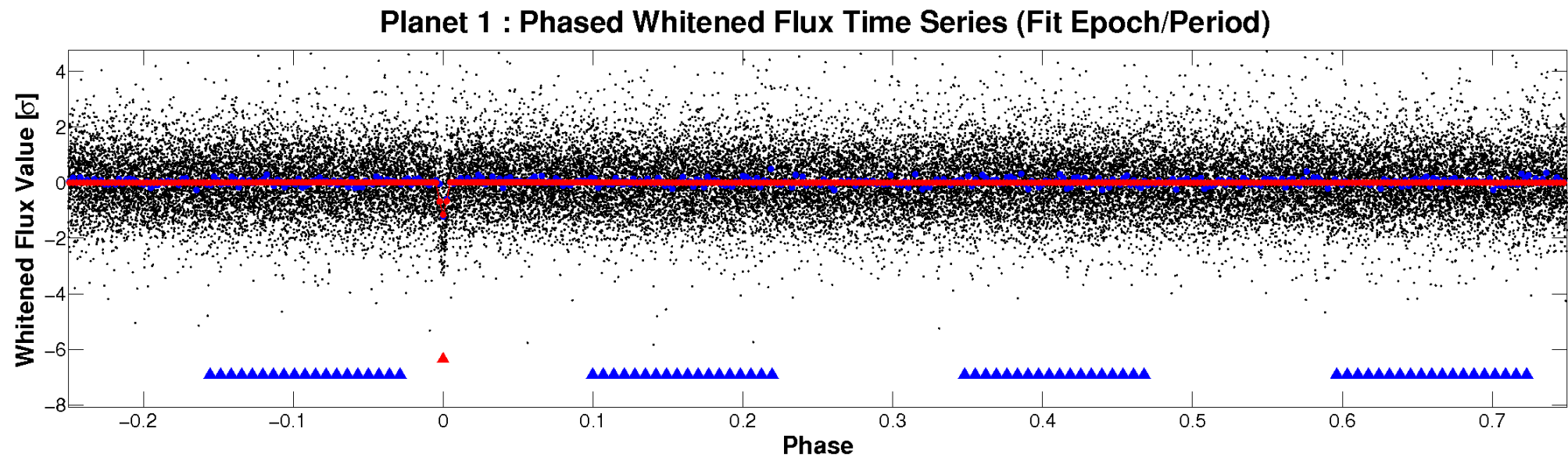
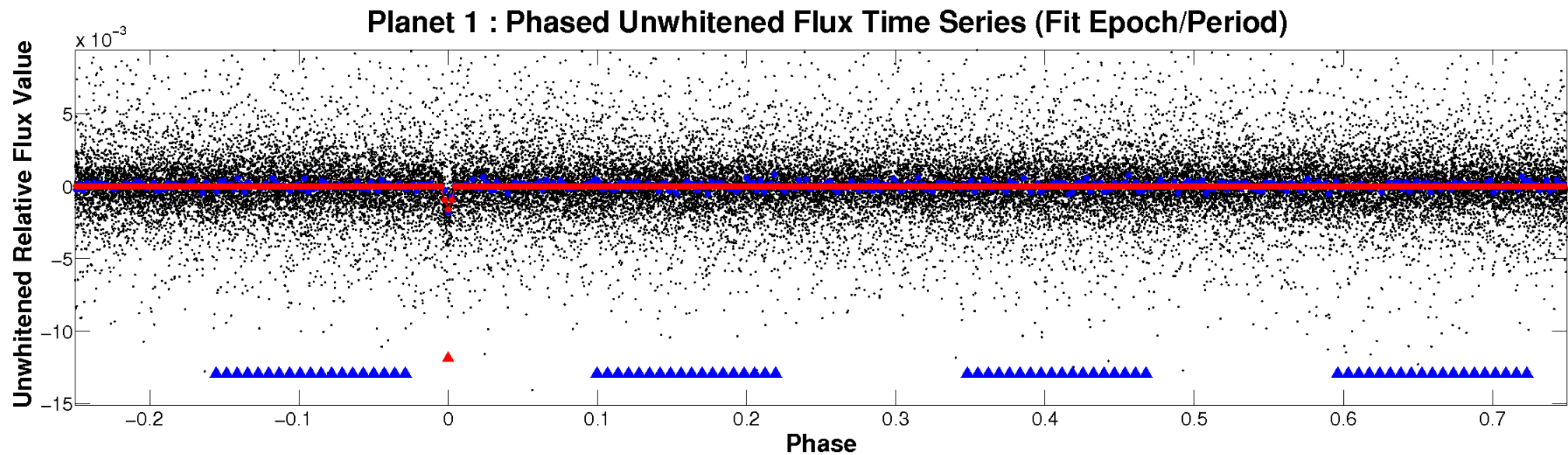


ALT Odd/Even

TCE 006444896-01

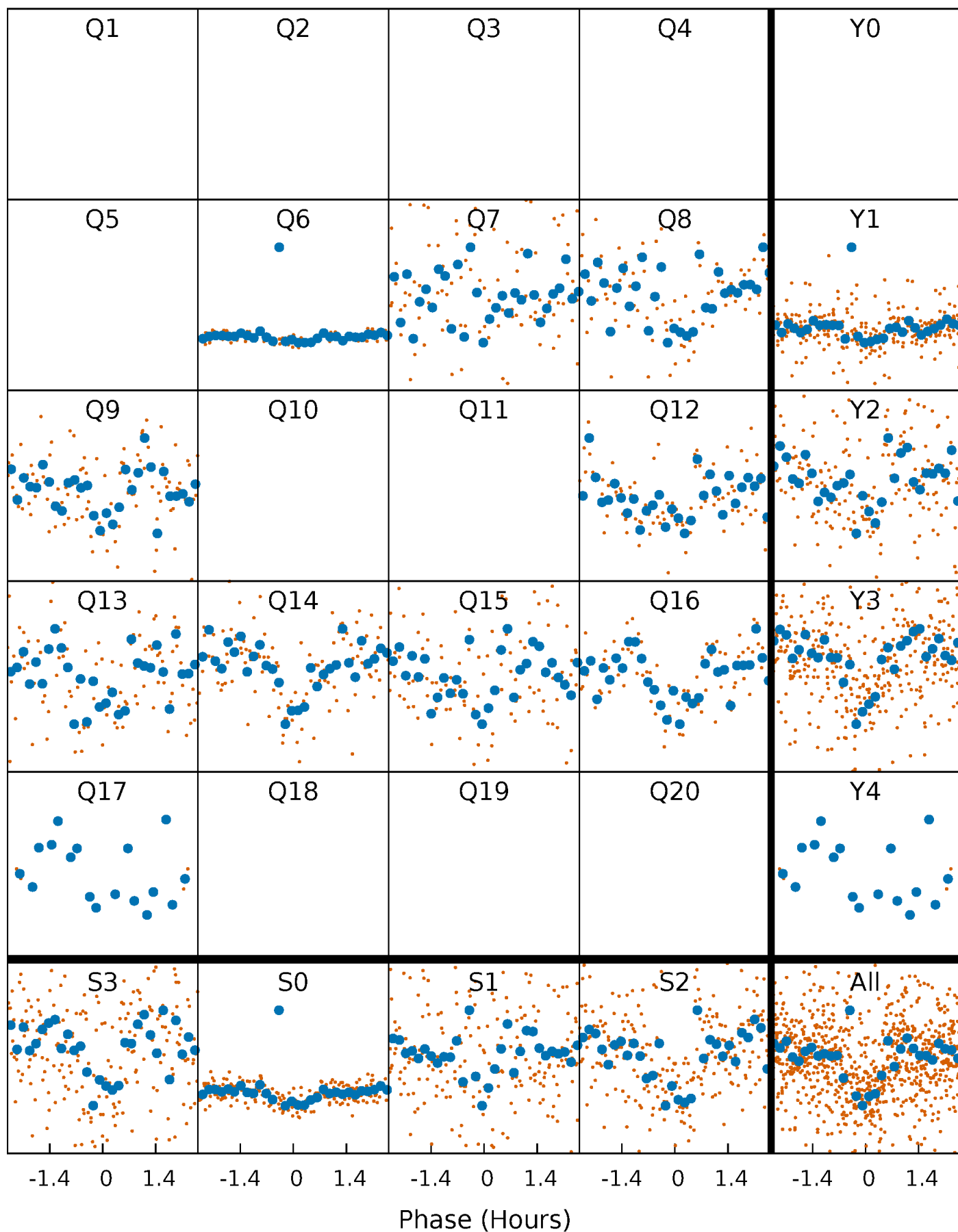


Non-Whitened Vs. Whitened Light Curve



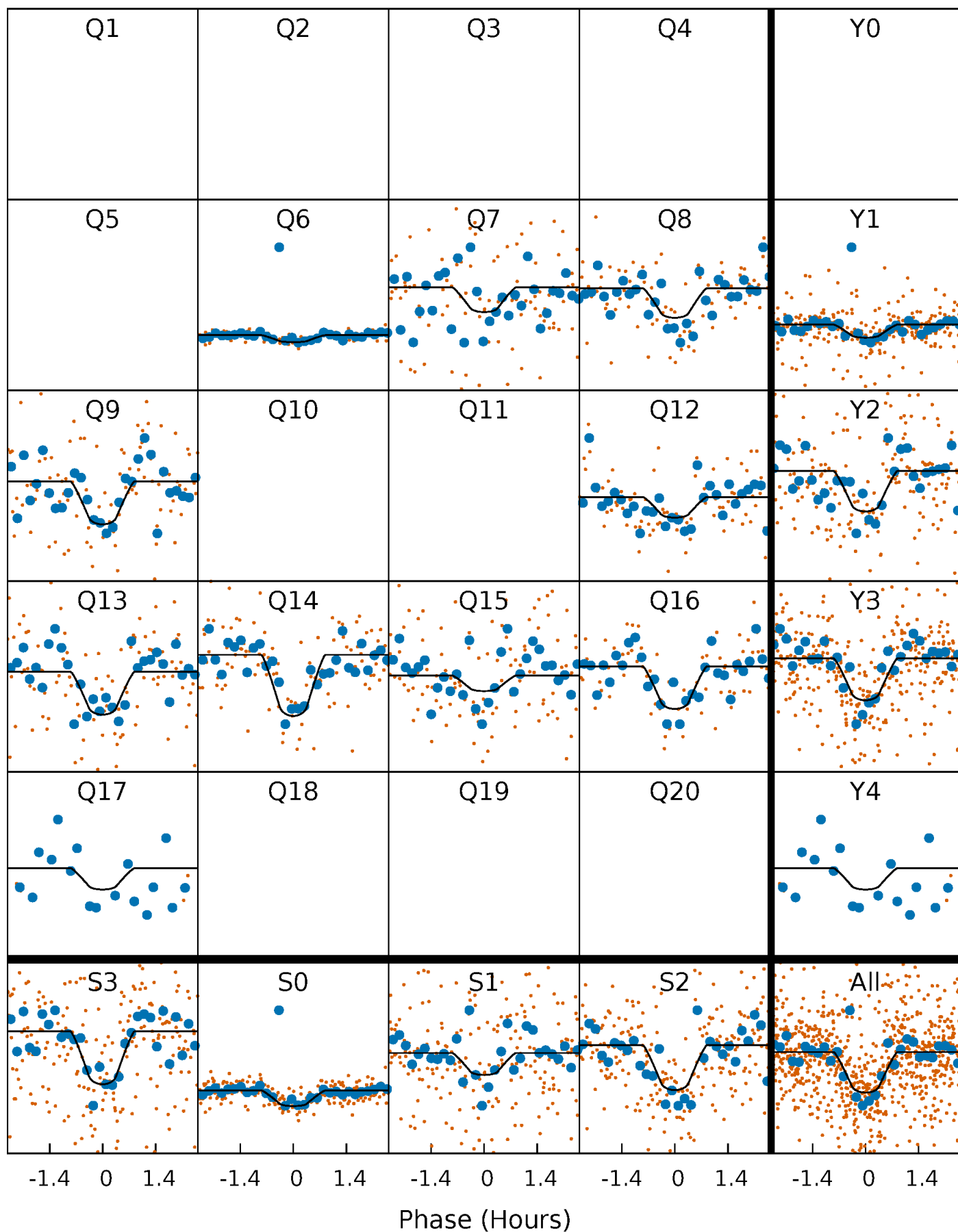
PDC Quarter-Phased Transit Curves

TCE 006444896-01 P= 8.689106 Days $T_0=133.235409$ (BKJD)



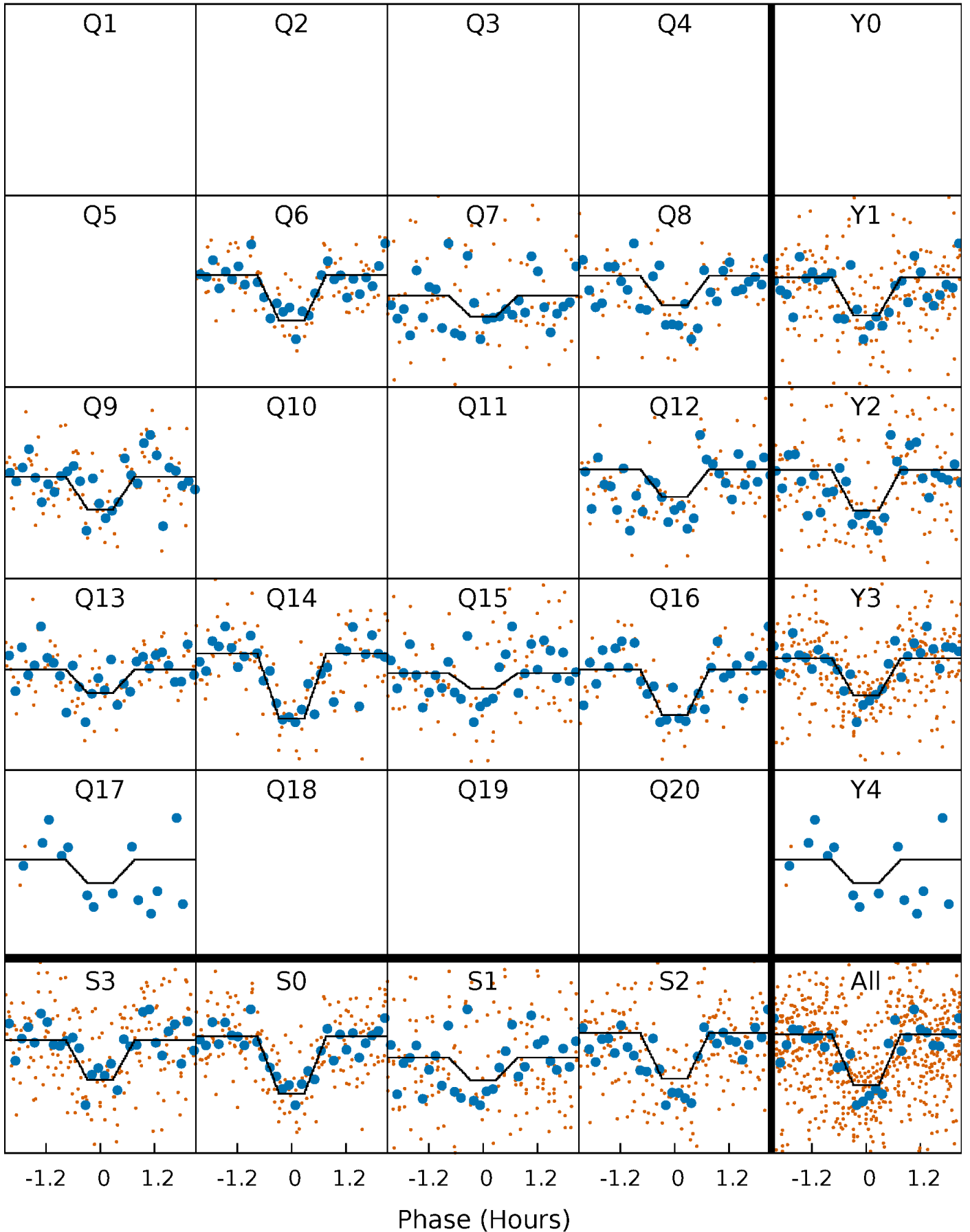
DV Quarter-Phased Transit Curves

TCE 006444896-01 P= 8.689106 Days $T_0=133.235409$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

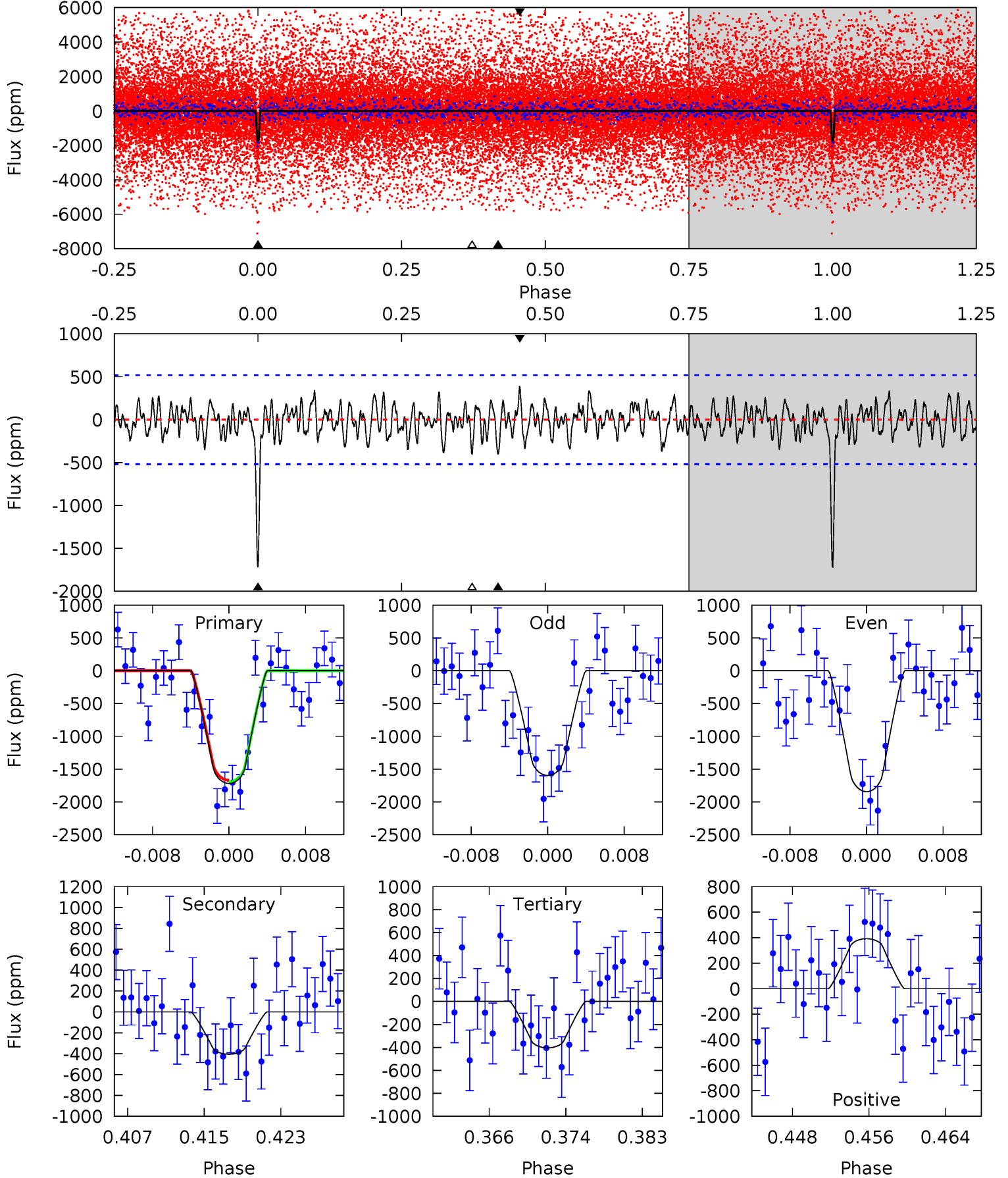
TCE 006444896-01 P= 8.689093 Days $T_0=133.237158$ (BKJD)



DV Model-Shift Uniqueness Test

006444896-01, P = 8.689106 Days, E = 133.235409 Days

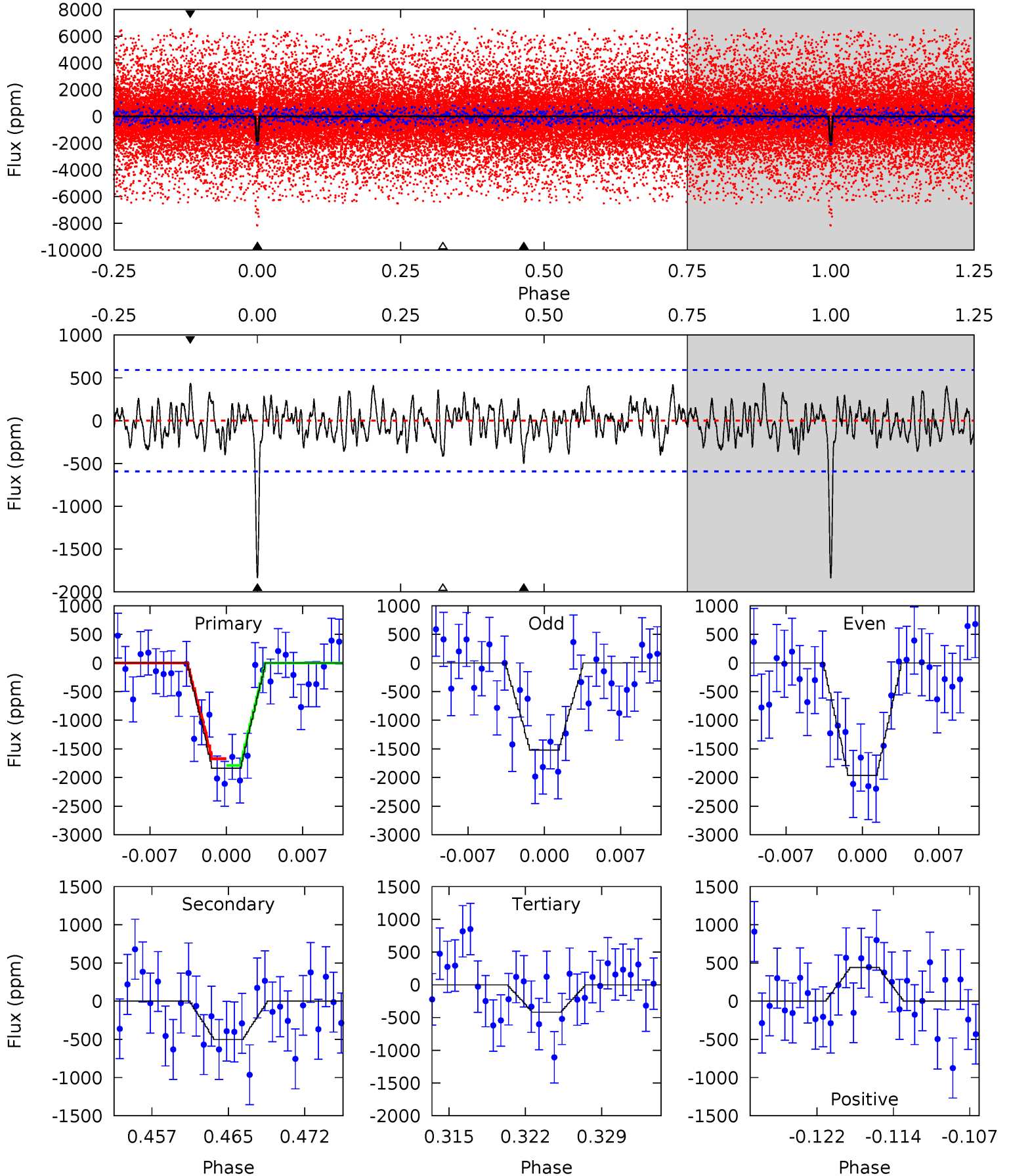
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	3.95	3.94	3.82	5.07	2.65	1.39	12.8	12.9	0.02	0.14	1.23	0.60	0.19	0



Alt Model-Shift Uniqueness Test

006444896-01, P = 8.689093 Days, E = 133.237158 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	4.31	3.61	3.78	5.09	2.69	1.37	12.2	12.0	0.71	0.54	1.92	1.01	0.19	0.51



Stellar Parameters For KIC 006444896

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	2703^{+1}_{-1}	$5.274^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$0.118^{+1.000}_{-1.000}$	$0.096^{+1.000}_{-1.000}$	$81.780^{+1.000}_{-1.000}$
	+0%/-0%	+19%/-19%	+inf%/-inf%	+847%/-847%	+1042%/-1042%	+1%/-1%
Source	PHO54	PHO54	PHO54	BTSL		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 006444896-01 / KOI 3138.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-405 ± 103	$0.75^{+0.76}_{-0.52}$	302^{+31}_{-30}	2182^{+701}_{-303}	699^{+5418}_{-521}
Alt.	-502 ± 116	$0.77^{+0.79}_{-0.49}$	301^{+31}_{-31}	2191^{+618}_{-295}	752^{+4774}_{-542}

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

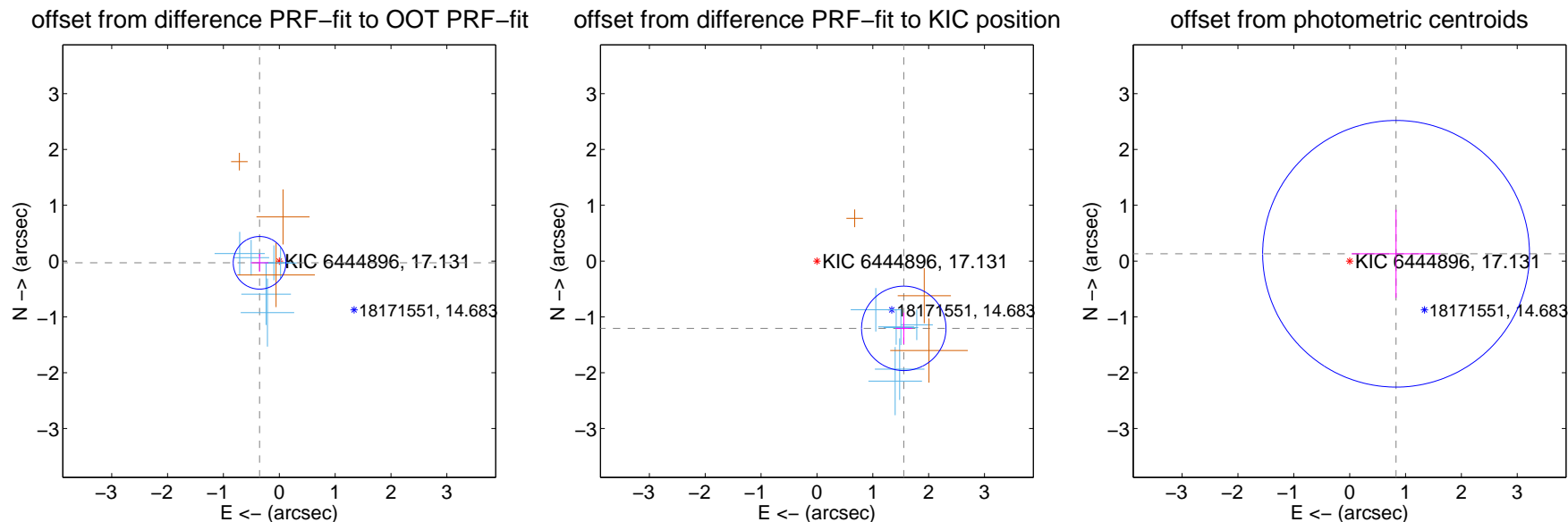
DV Centroid Data

Supplemental centroid analysis for 006444896-01. Kepler magnitude: 17.13. Transit SNR 15.72

There are 6 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.33 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	0.355 ± 0.157	2.26	0.353 ± 0.157	-0.031 ± 0.160
PRF-fit source offset from KIC position	1.968 ± 0.252	7.81	-1.555 ± 0.147	-1.205 ± 0.281
photometric centroid source offset	0.84 ± 0.80	1.06	-0.83 ± 0.80	0.13 ± 0.79



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.

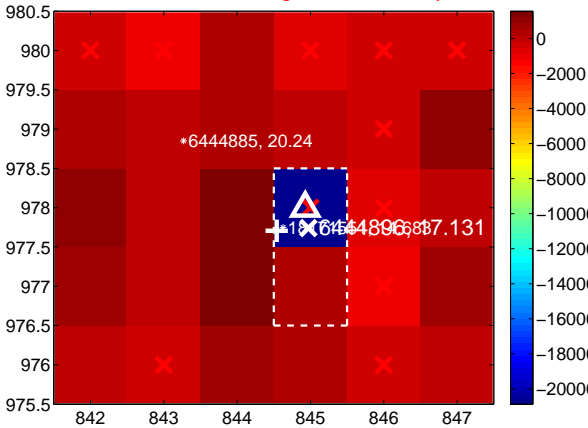
Q5 no difference image



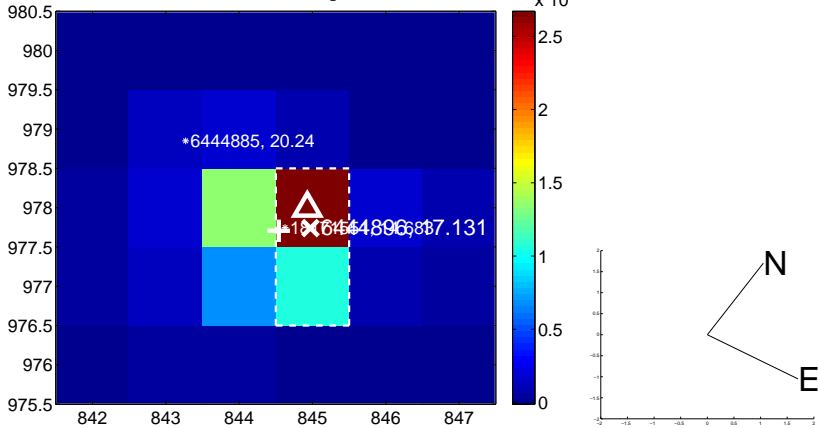
Q5 no OOT image



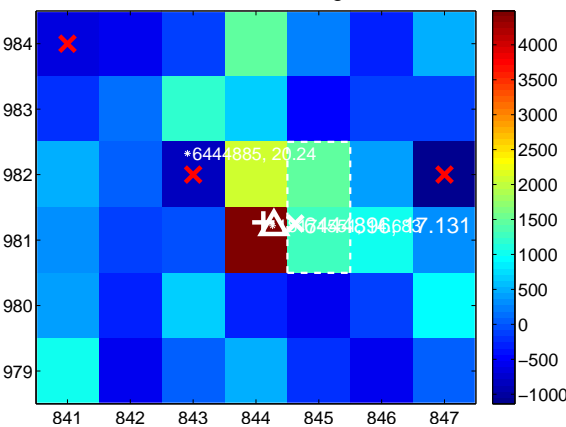
Q6 difference image. Poor Quality



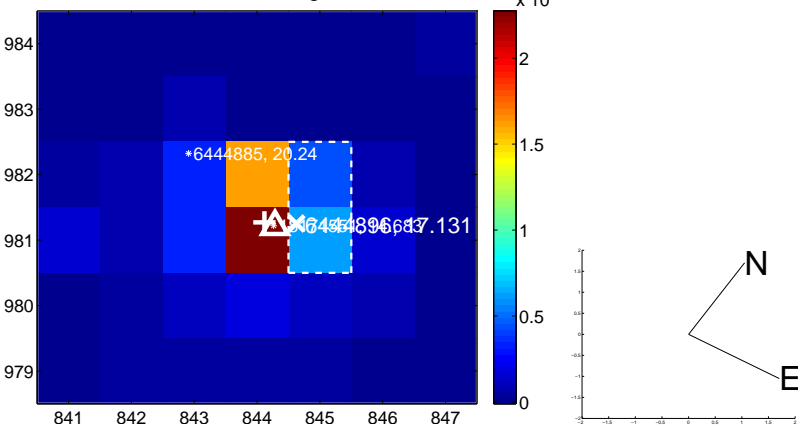
Q6 OOT image



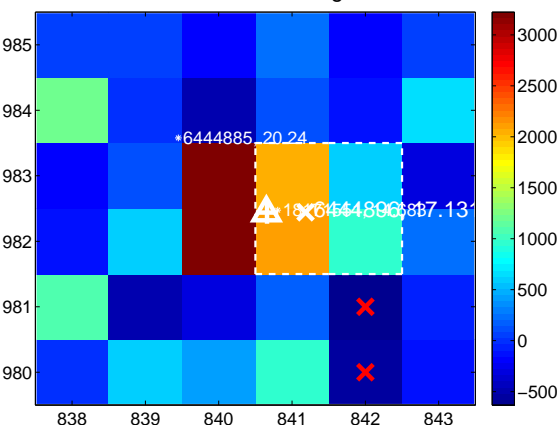
Q7 difference image



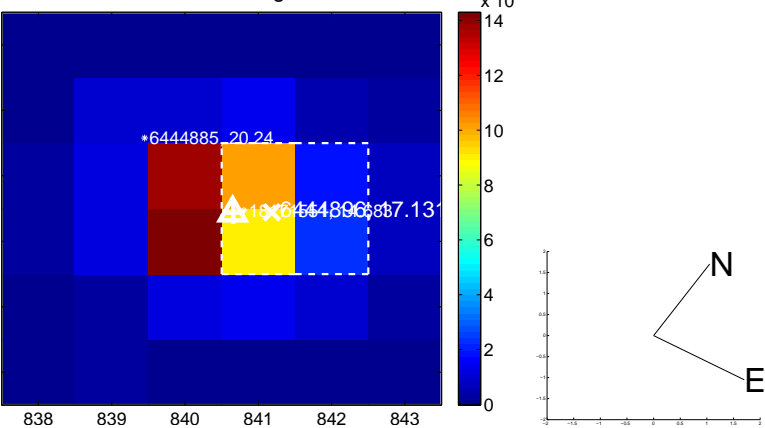
Q7 OOT image



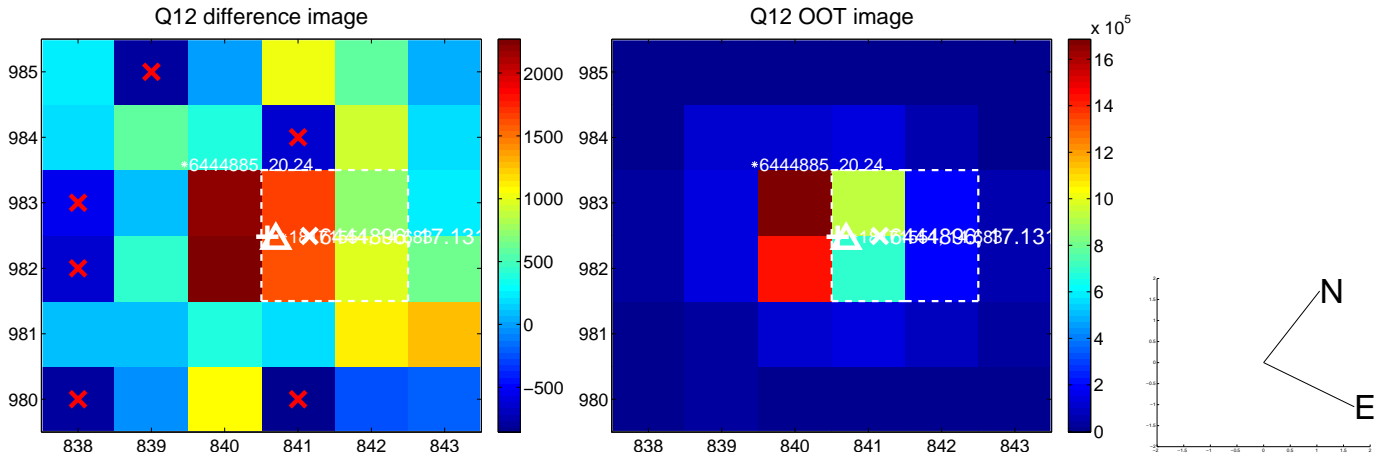
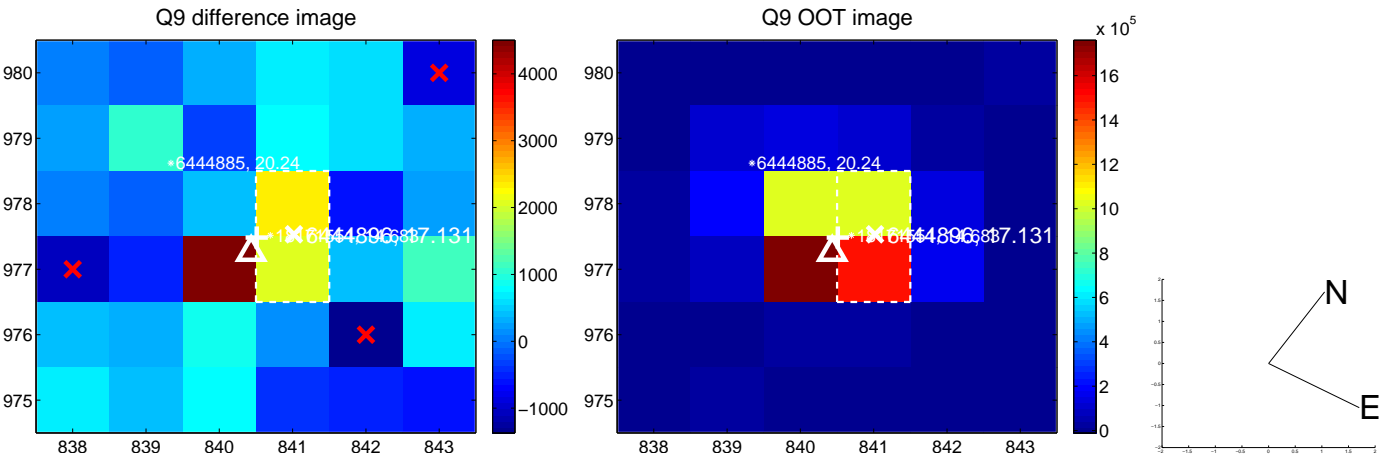
Q8 difference image



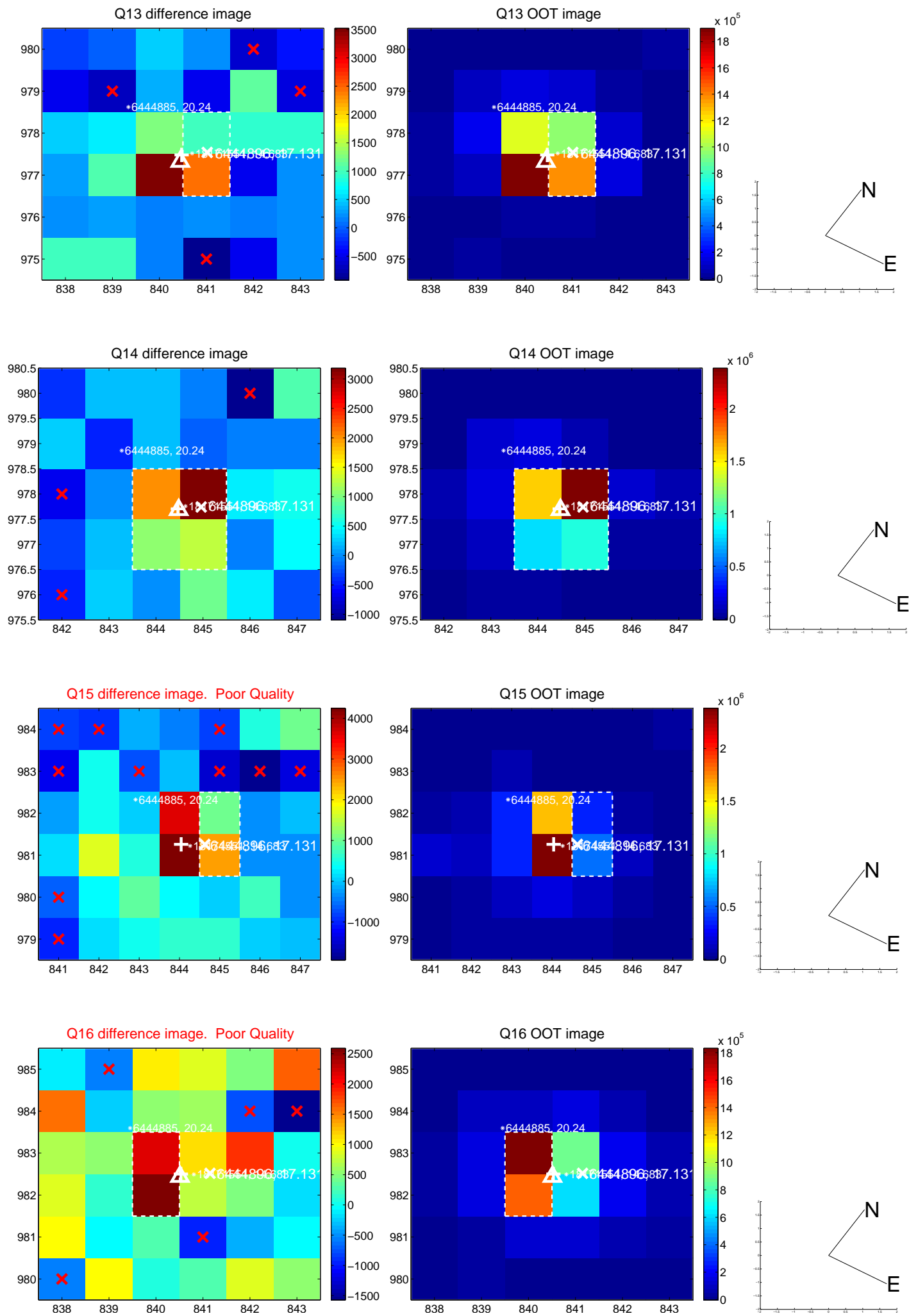
Q8 OOT image



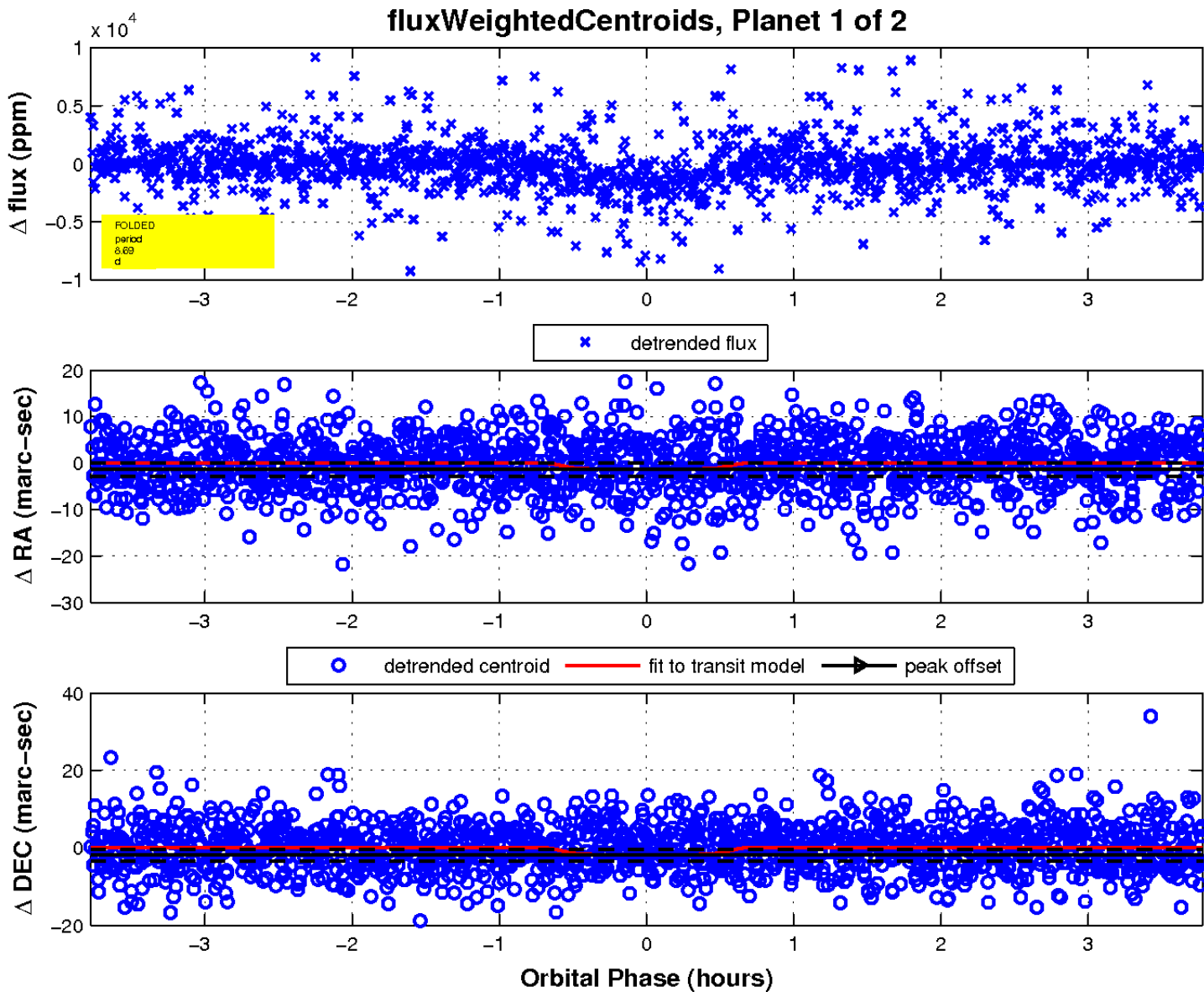
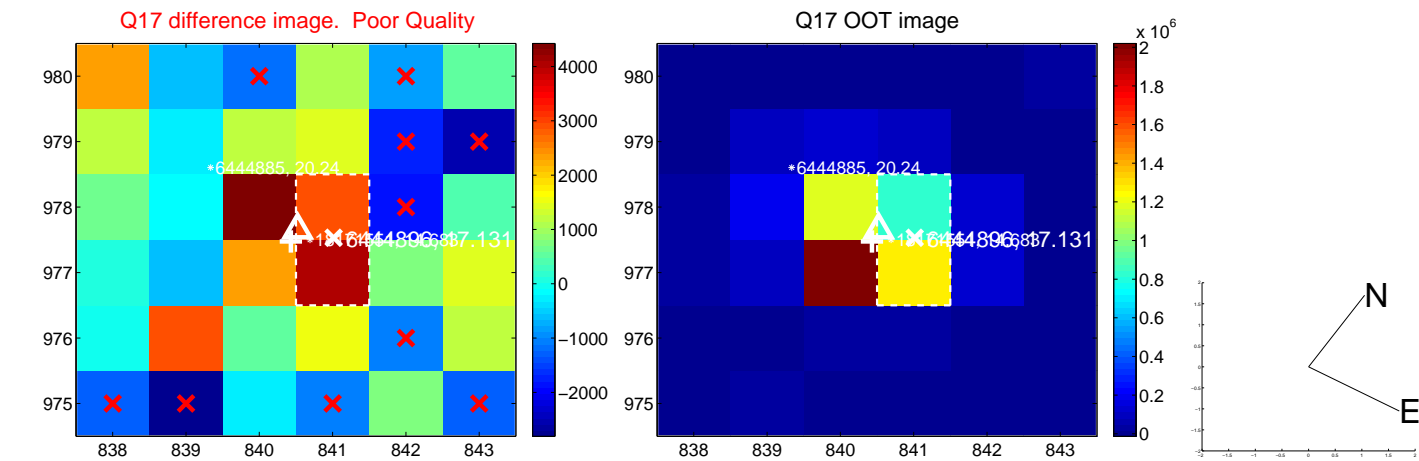
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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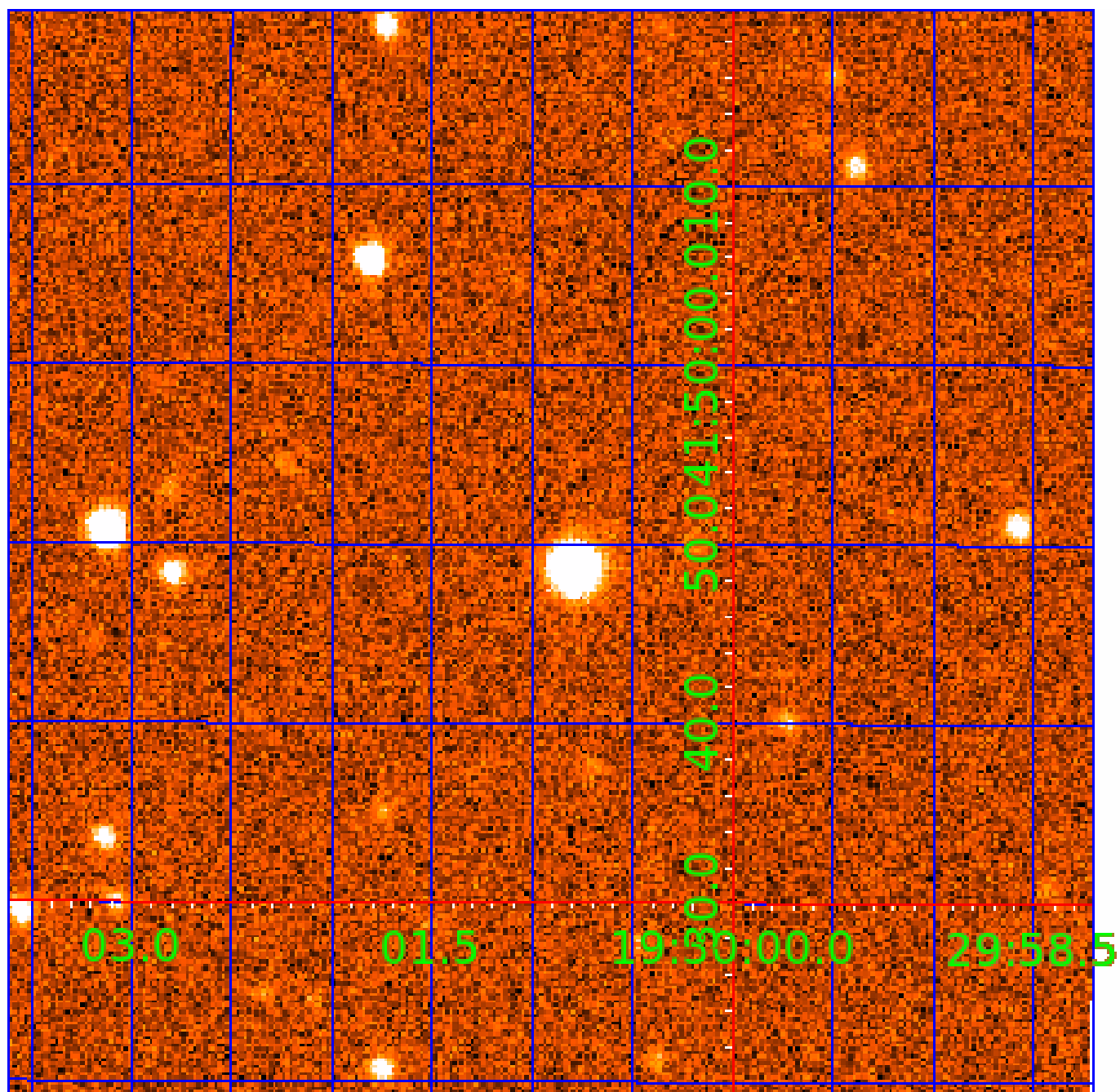


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006444896

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})
006444896-01	OBS	3138.01	8.689106	133.235409	1634.9	1.260	12.0	15.7	0.12	2703	0.50	0.47
006444896-02	OBS	3138.02	19.535196	148.206761	1453.5	1.230	8.0	9.3	0.12	2703	0.48	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006444896-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
006444896-02	OBS	FP	0.37	1	0	0	0	MOD_NONUNIQ_ALT—CENT_KIC_POS

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 006444896-02

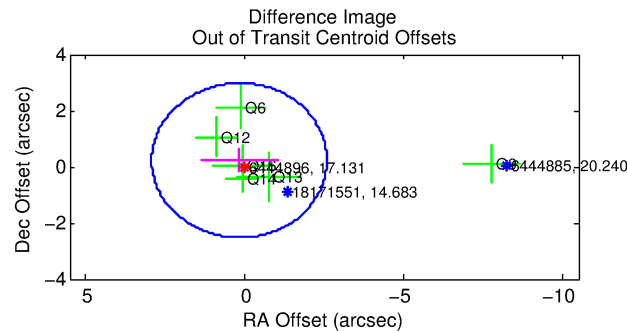
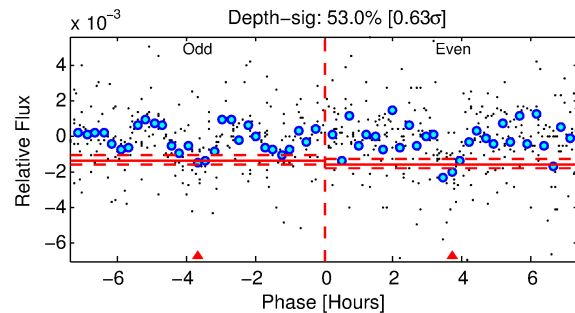
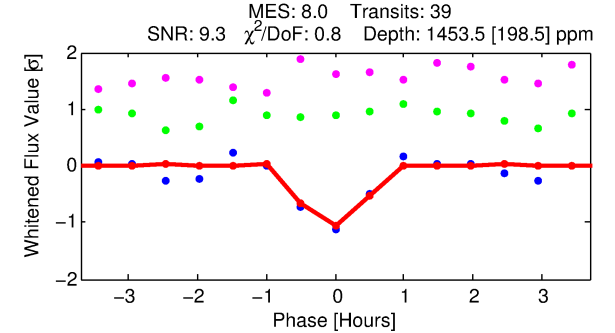
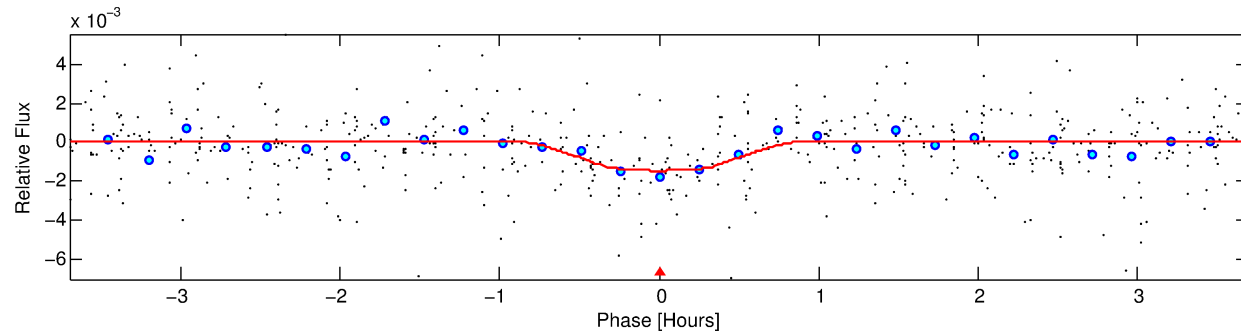
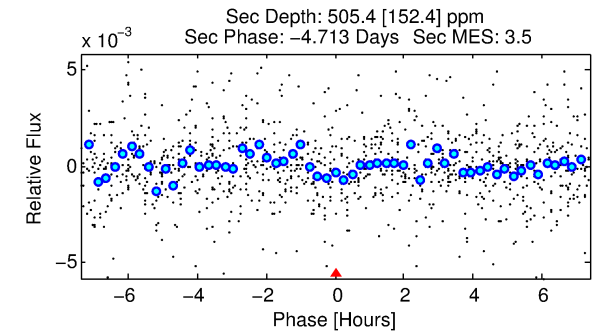
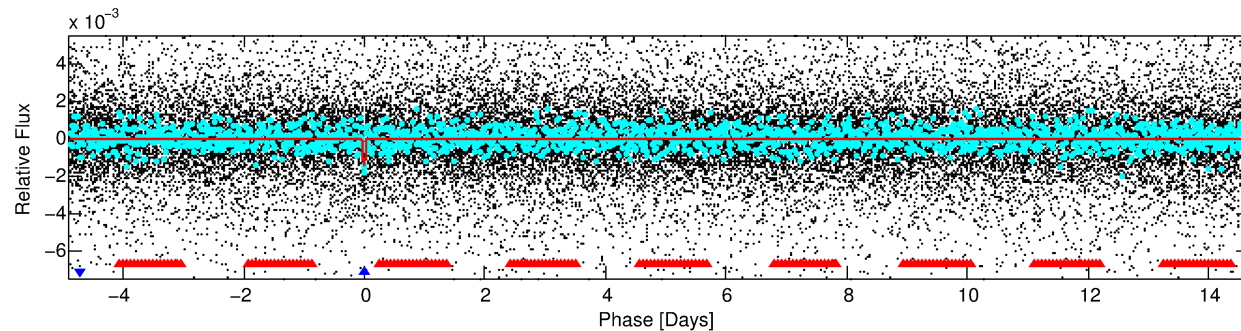
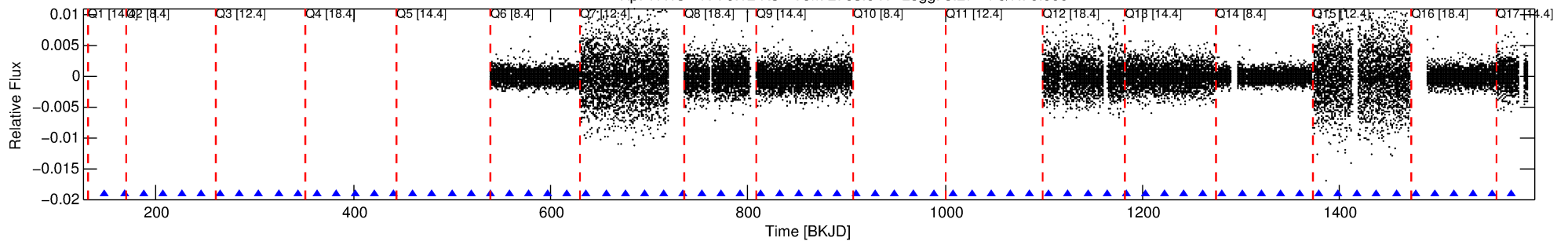
No Significant Match Found

DV One-Page Summary

KIC: 6444896 Candidate: 2 of 2 Period: 19.535 d

KOI: K03138 Corr: No Ephemeris Match

Kp: 17.13 R*: 0.12 Rs Teff: 2703.0 K Logg: 5.27 Fe/H: 0.000



DV Fit Results:

Period = 19.53520 [0.00011] d
Epoch = 148.2068 [0.0060] BKJD
Rp/R* = 0.0373 [0.0752]
a/R* = 94.82 [812.80]
b = 0.68 [6.81]
Seff = 0.16 [0.00]
Teq = 161 [0] K
Rp = 0.48 [0.97] Re
a = 0.0649 [0.0000] AU
Ag = 5085.67 [20573.34] [0.25σ]
Teff = 2100 [2123] K [0.91σ]

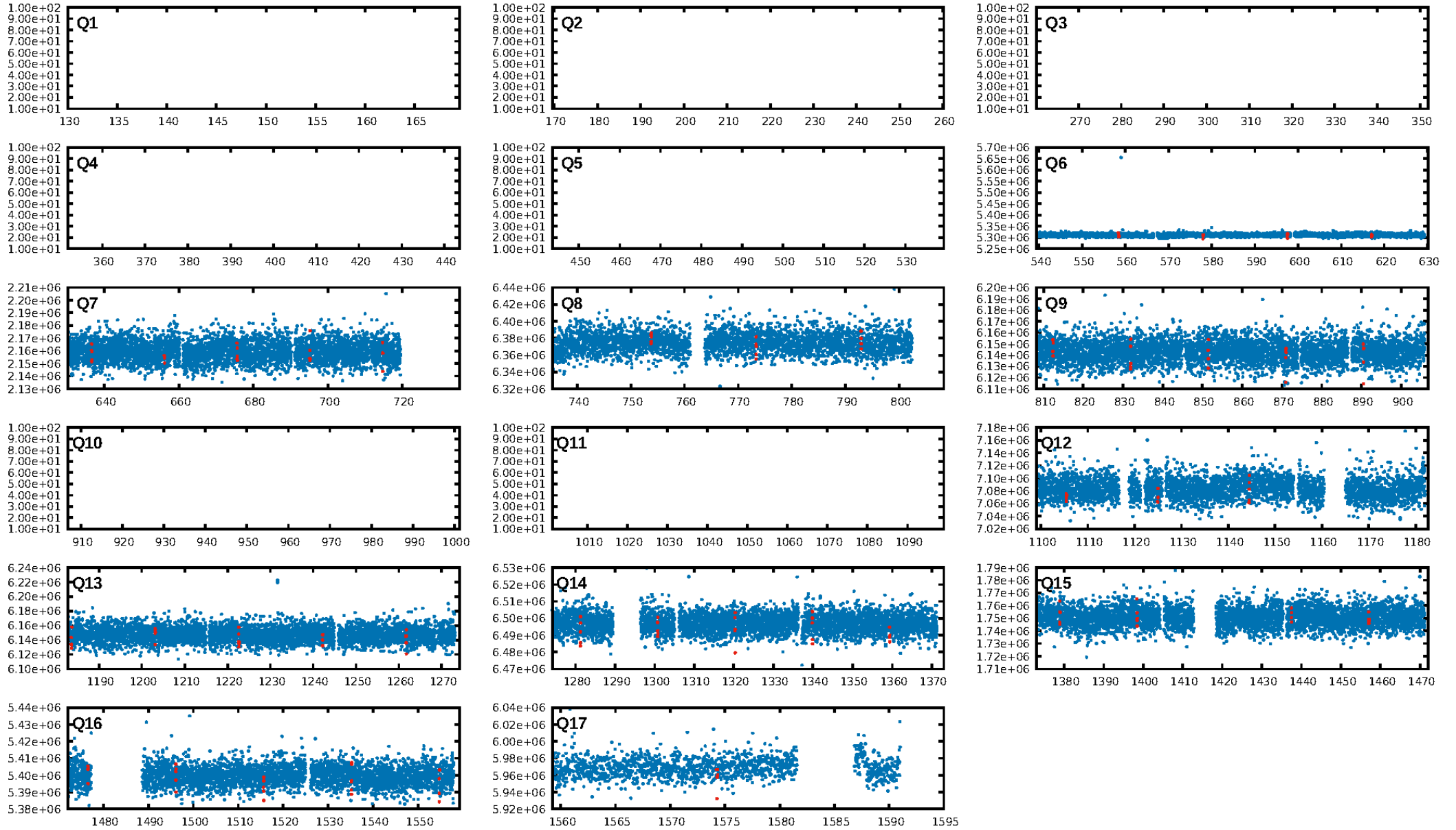
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [147.82σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.30e-15
RollingBand-fgt: 1.00 [38/38]
GhostDiagnostic-chr: 1.016
Centroid-sig: 37.3%
Centroid-so: 1.791 arcsec [1.32σ]
OotOffset-rm: 0.279 arcsec [0.30σ]
OotOffset-st: 2/0/2/2 [6]
KicOffset-rm: 1.813 arcsec [1.61σ]
KicOffset-st: 2/0/2/2 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 1.00 [10/10]

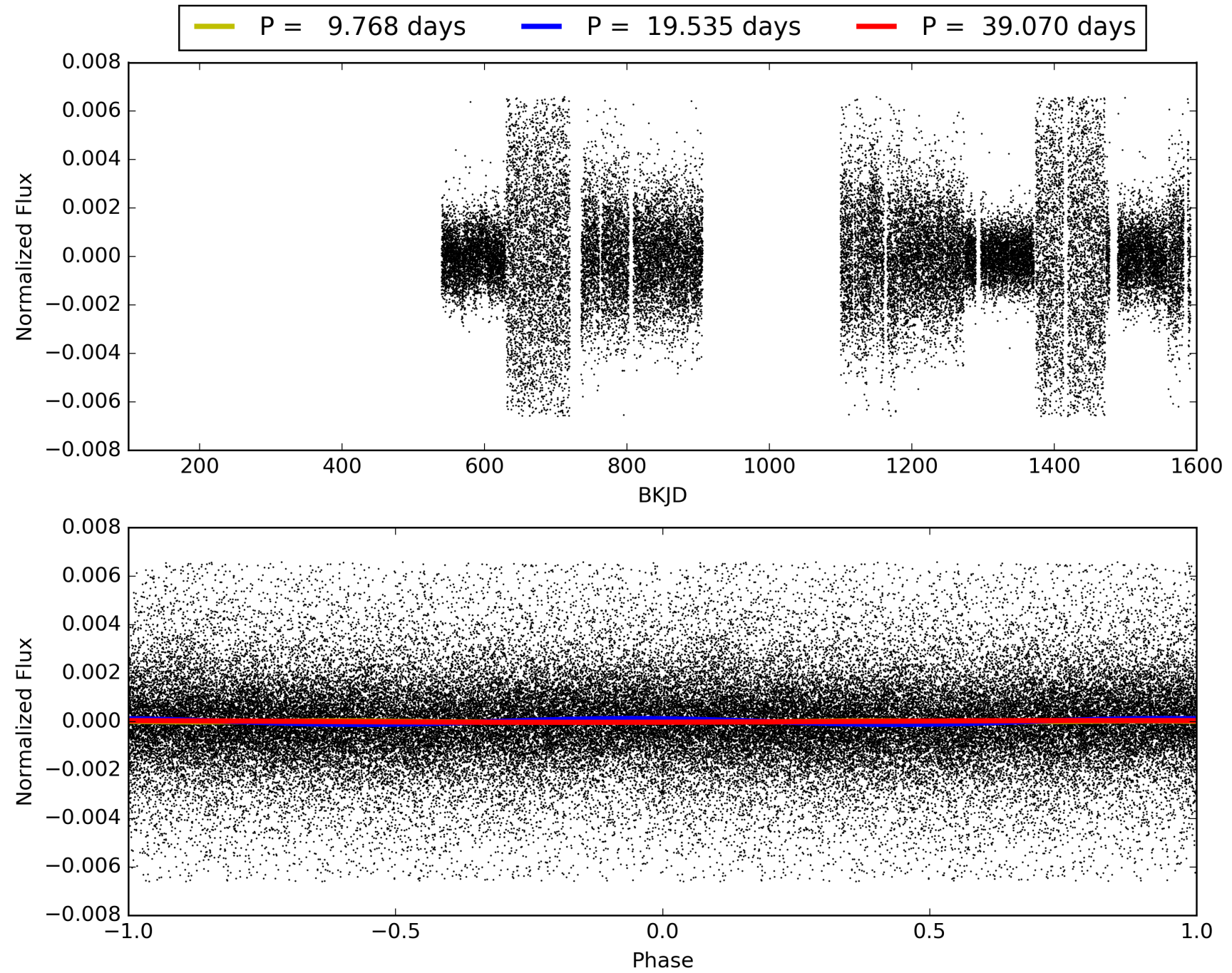
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:46:16 Z

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TCE 006444896-02, PDC Light Curves

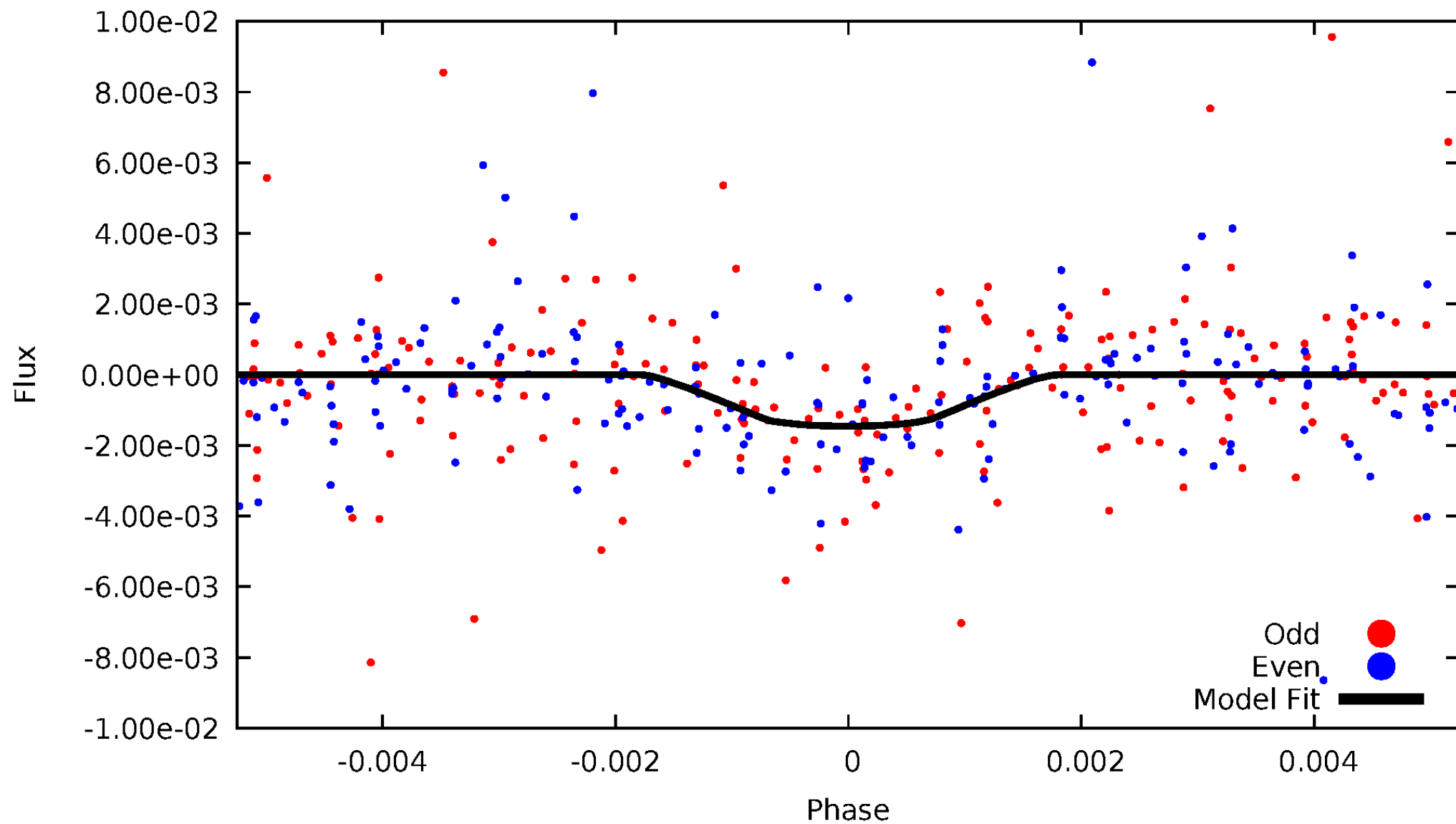


TCE 006444896-02



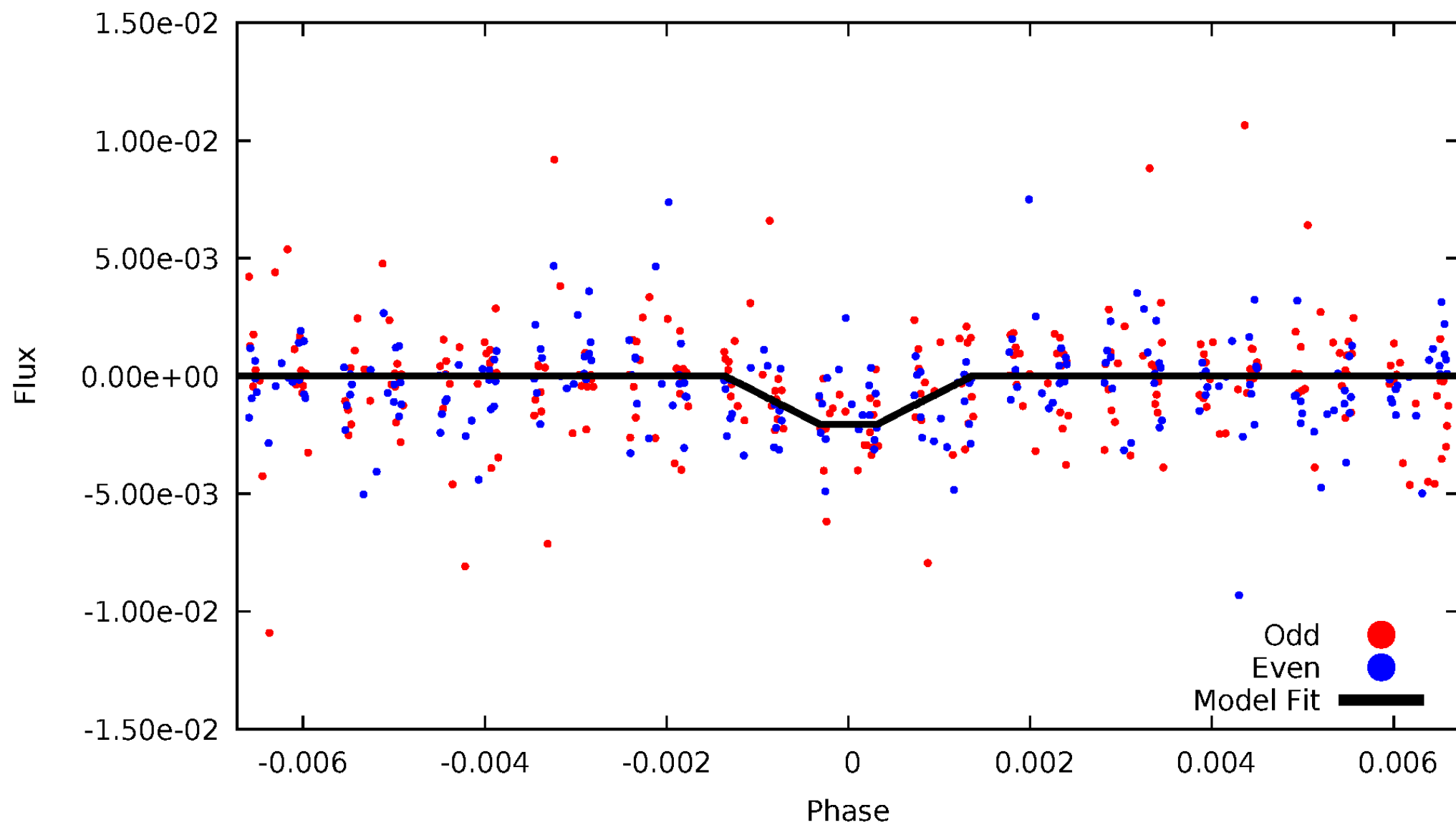
DV Odd/Even

TCE 006444896-02



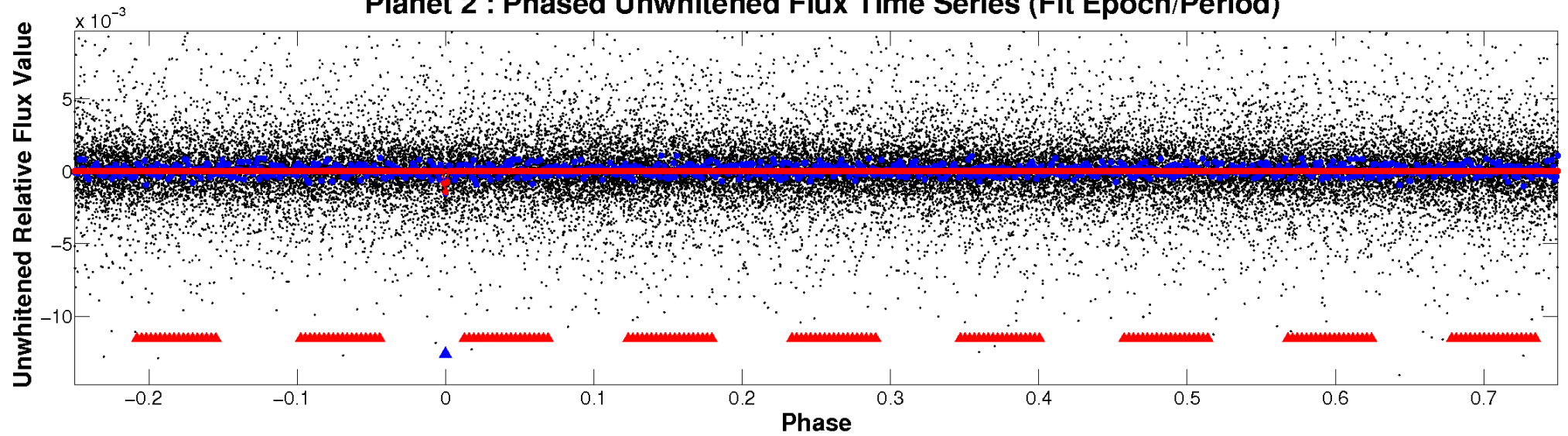
ALT Odd/Even

TCE 006444896-02

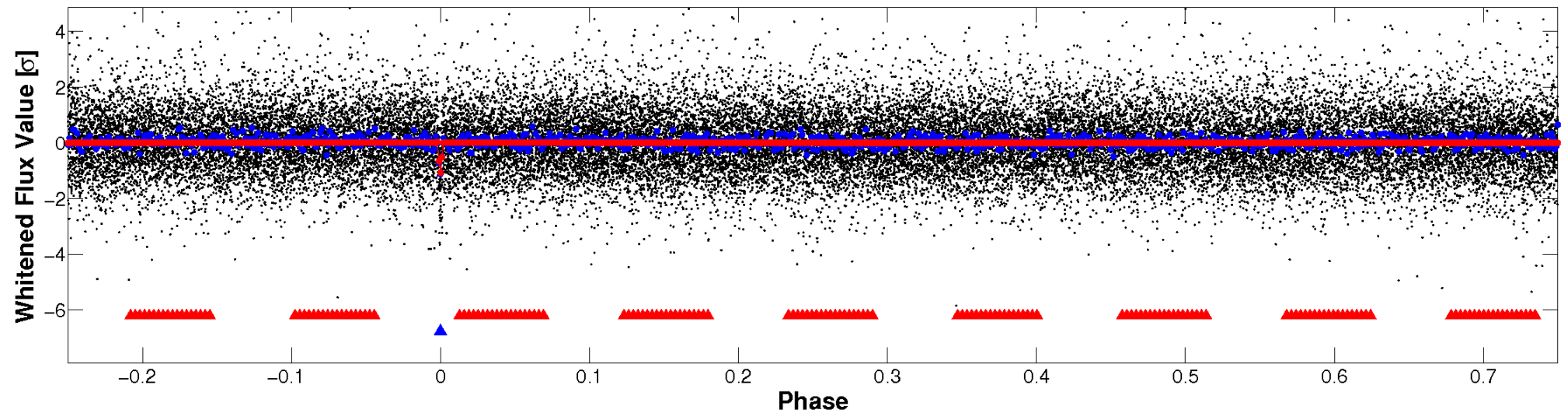


Non-Whitened Vs. Whitened Light Curve

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

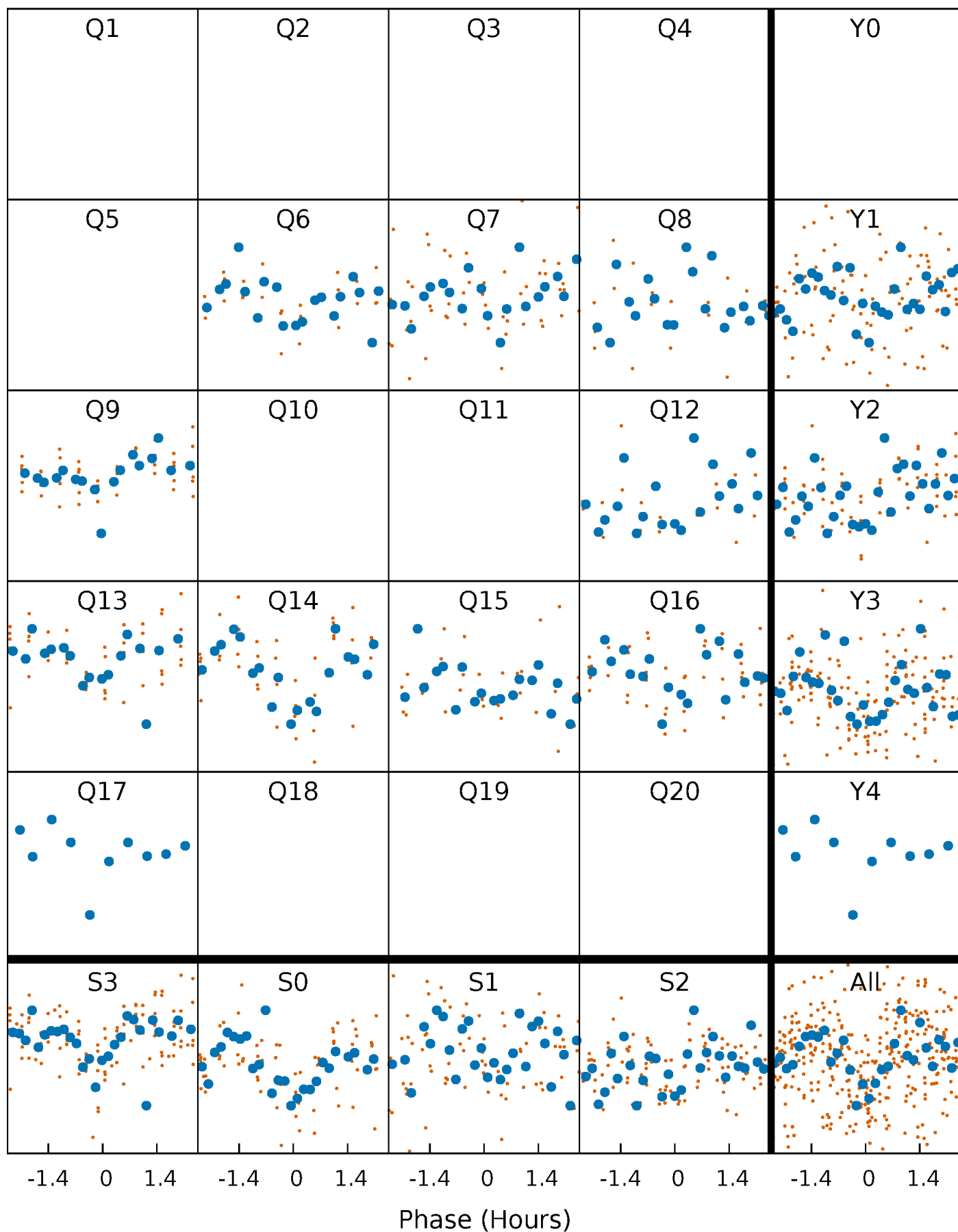


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



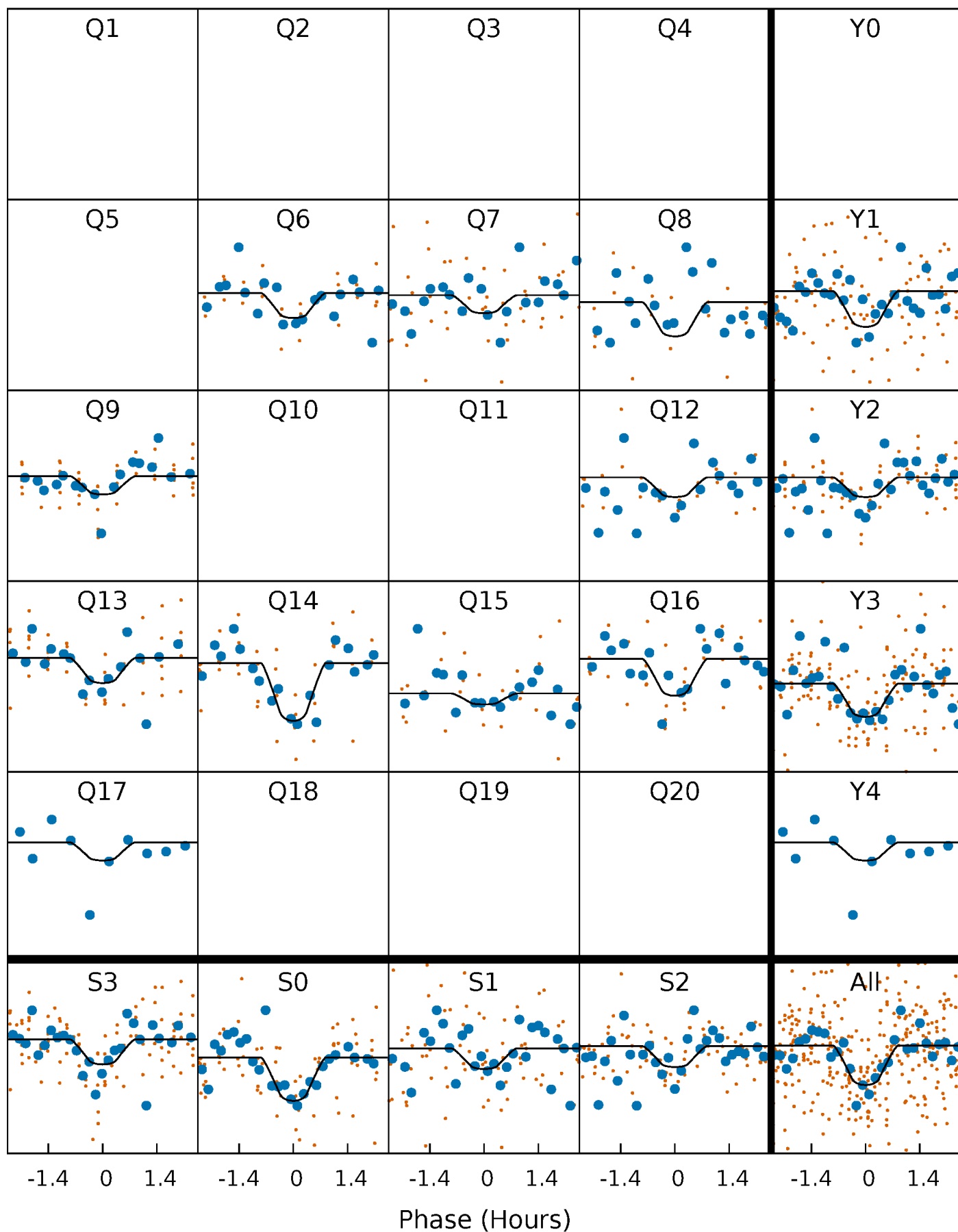
PDC Quarter-Phased Transit Curves

TCE 006444896-02 P= 19.535196 Days $T_0=148.206761$ (BKJD)



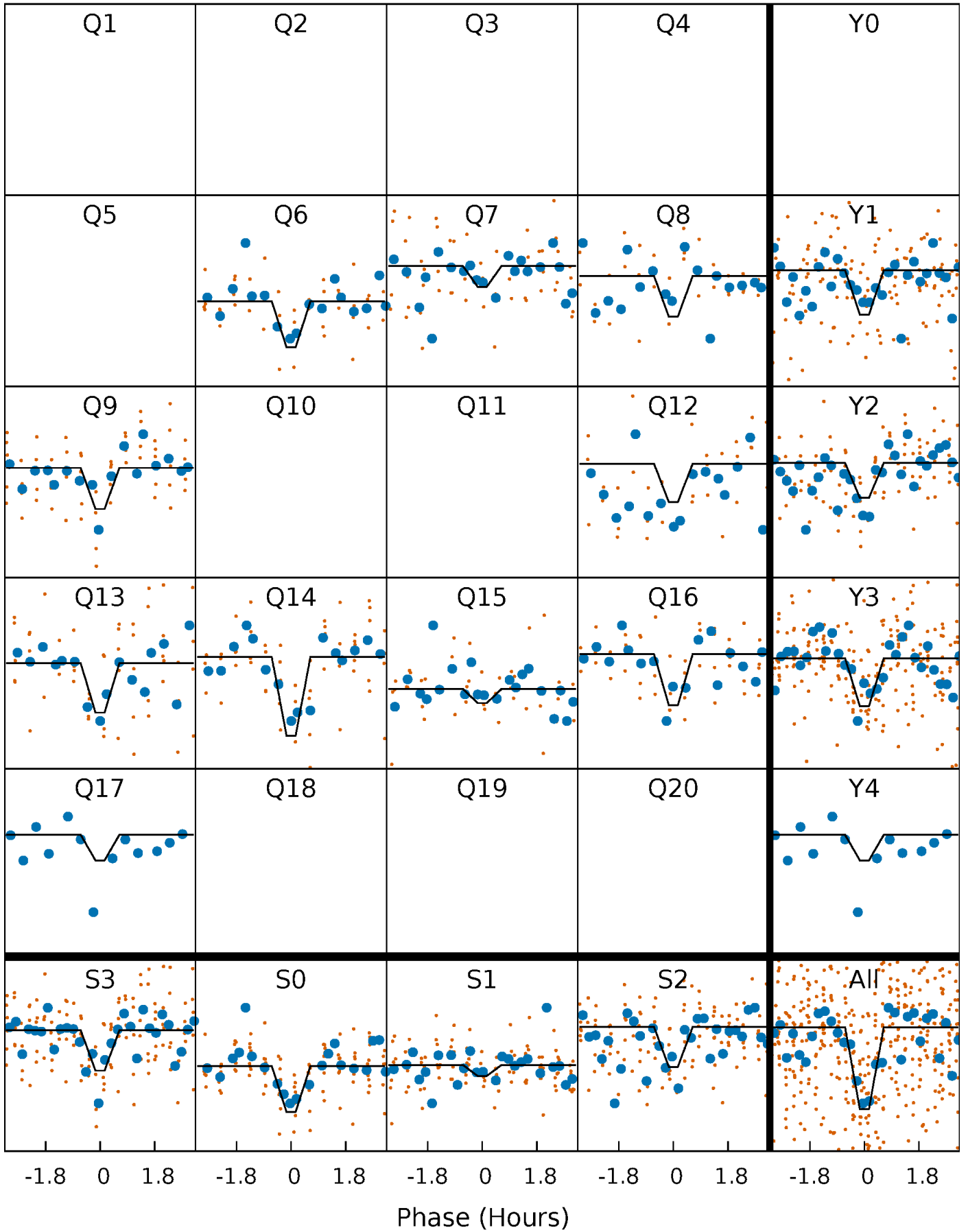
DV Quarter-Phased Transit Curves

TCE 006444896-02 $P = 19.535196$ Days $T_0 = 148.206761$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

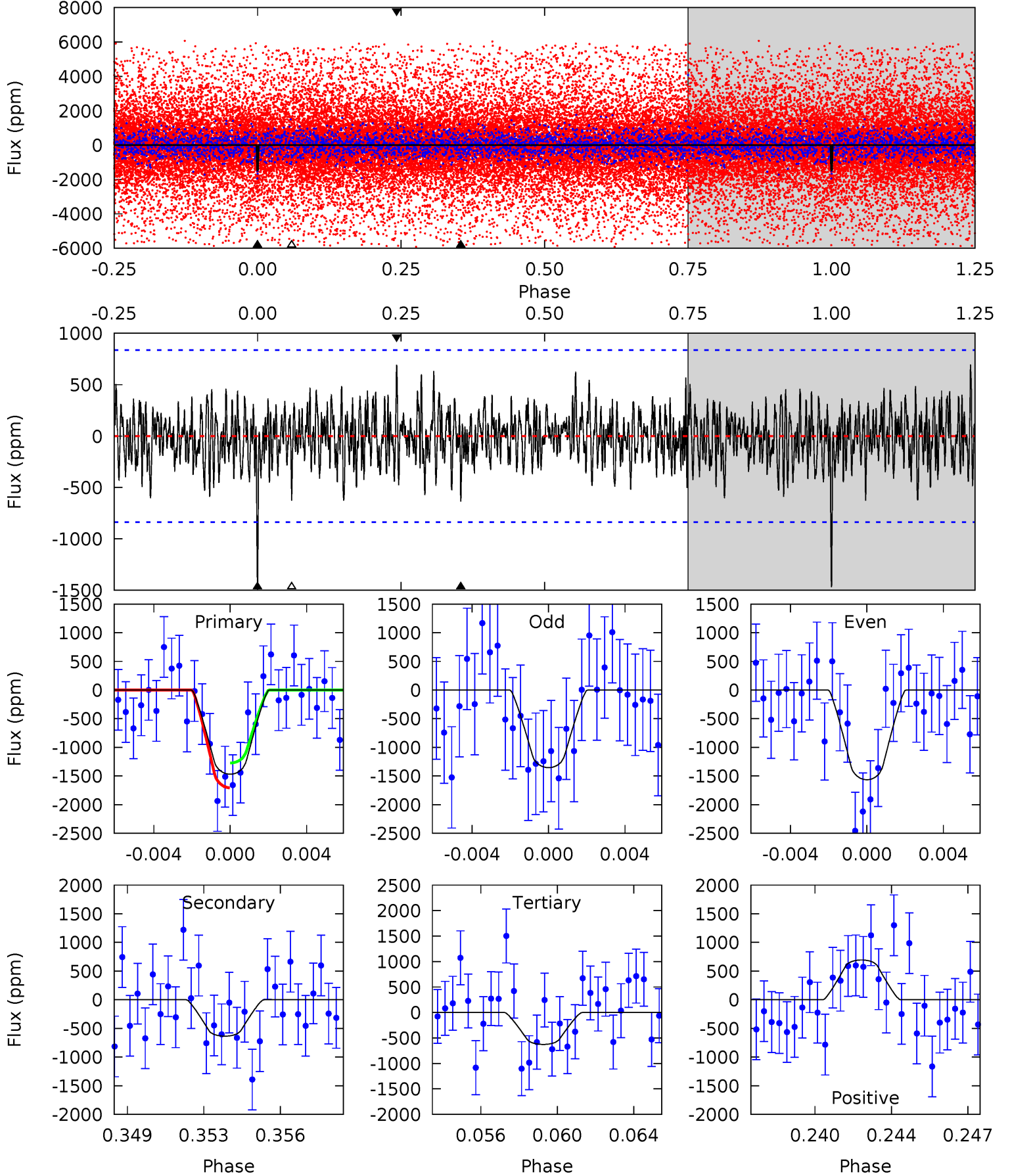
TCE 006444896-02 P= 19.535021 Days $T_0=148.213702$ (BKJD)



DV Model-Shift Uniqueness Test

006444896-02, P = 19.535196 Days, E = 148.206761 Days

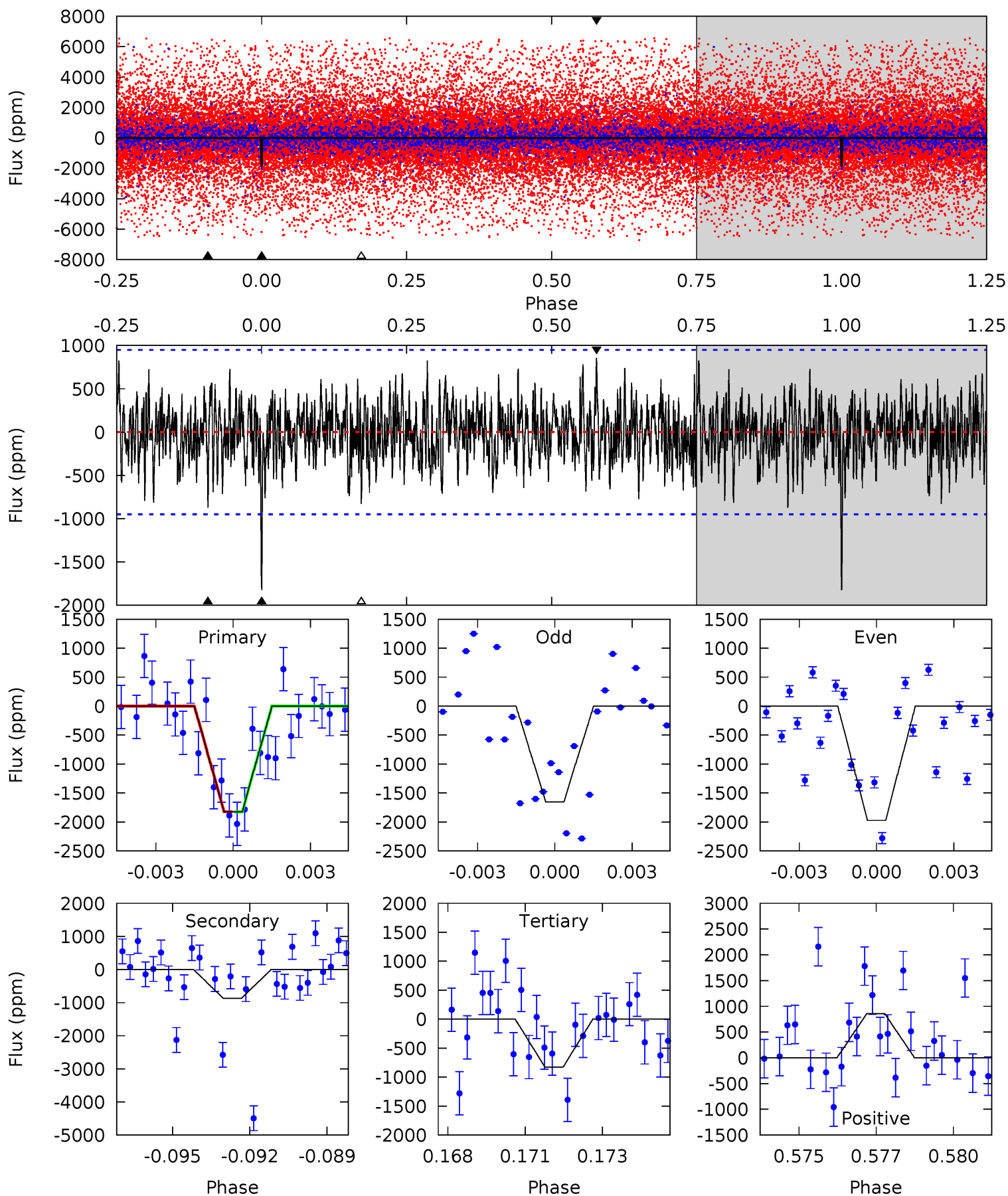
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.17	3.97	3.91	4.33	5.22	2.92	1.30	5.26	4.83	0.06	-0.37	0.67	0.93	0.32	1.38



Alt Model-Shift Uniqueness Test

006444896-02, $P = 19.535021$ Days, $E = 148.213702$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	4.84	4.59	4.75	5.27	3.00	1.52	5.53	5.37	0.25	0.09	0.90	1.17	0.32	0.01



Stellar Parameters For KIC 006444896

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	2703^{+1}_{-1}	$5.274^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$0.118^{+1.000}_{-1.000}$	$0.096^{+1.000}_{-1.000}$	$81.780^{+1.000}_{-1.000}$
	+0%/-0%	+19%/-19%	+inf%/-inf%	+847%/-847%	+1042%/-1042%	+1%/-1%
Source	PHO54	PHO54	PHO54	BTSL		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 006444896-02 / KOI 3138.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-636 ± 160	$0.96^{+1.05}_{-0.65}$	230^{+23}_{-23}	2159^{+691}_{-317}	1904^{+17507}_{-1478}
Alt.	-873 ± 180	$1.09^{+1.18}_{-0.72}$	230^{+23}_{-21}	2157^{+621}_{-287}	2007^{+13803}_{-1482}

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

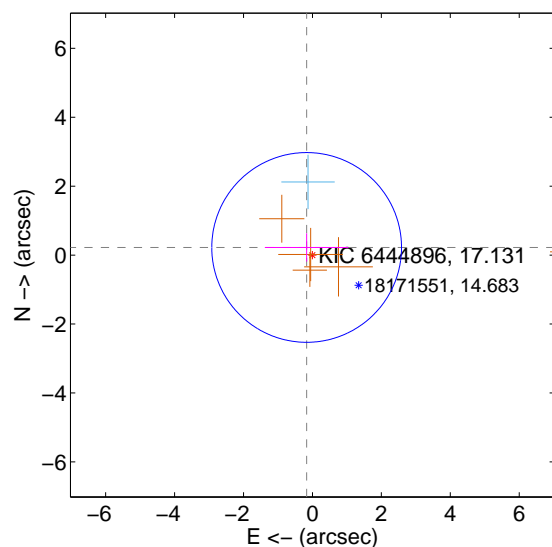
Supplemental centroid analysis for 006444896-02. Kepler magnitude: 17.13. Transit SNR 9.26

There are 1 quarters with good PRF difference image offsets

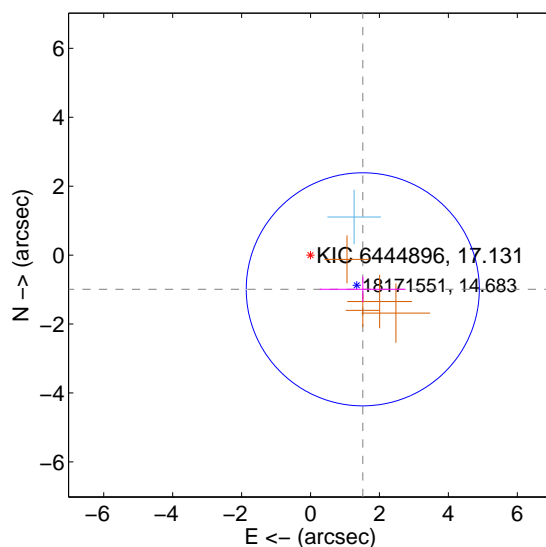
The OOT PRF centroid is offset from the target star catalog position by about 2.47 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.279 ± 0.918	0.30	0.168 ± 1.214	0.222 ± 0.411
PRF-fit source offset from KIC position	1.813 ± 1.127	1.61	-1.516 ± 1.248	-0.993 ± 0.366
photometric centroid source offset	1.79 ± 1.35	1.32	-0.65 ± 1.35	-1.67 ± 1.35

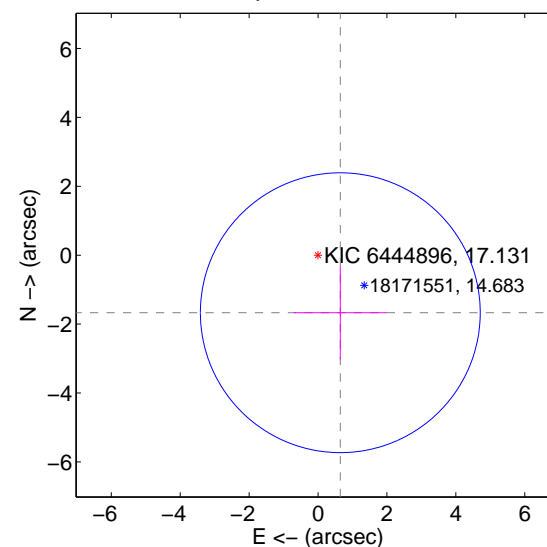
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

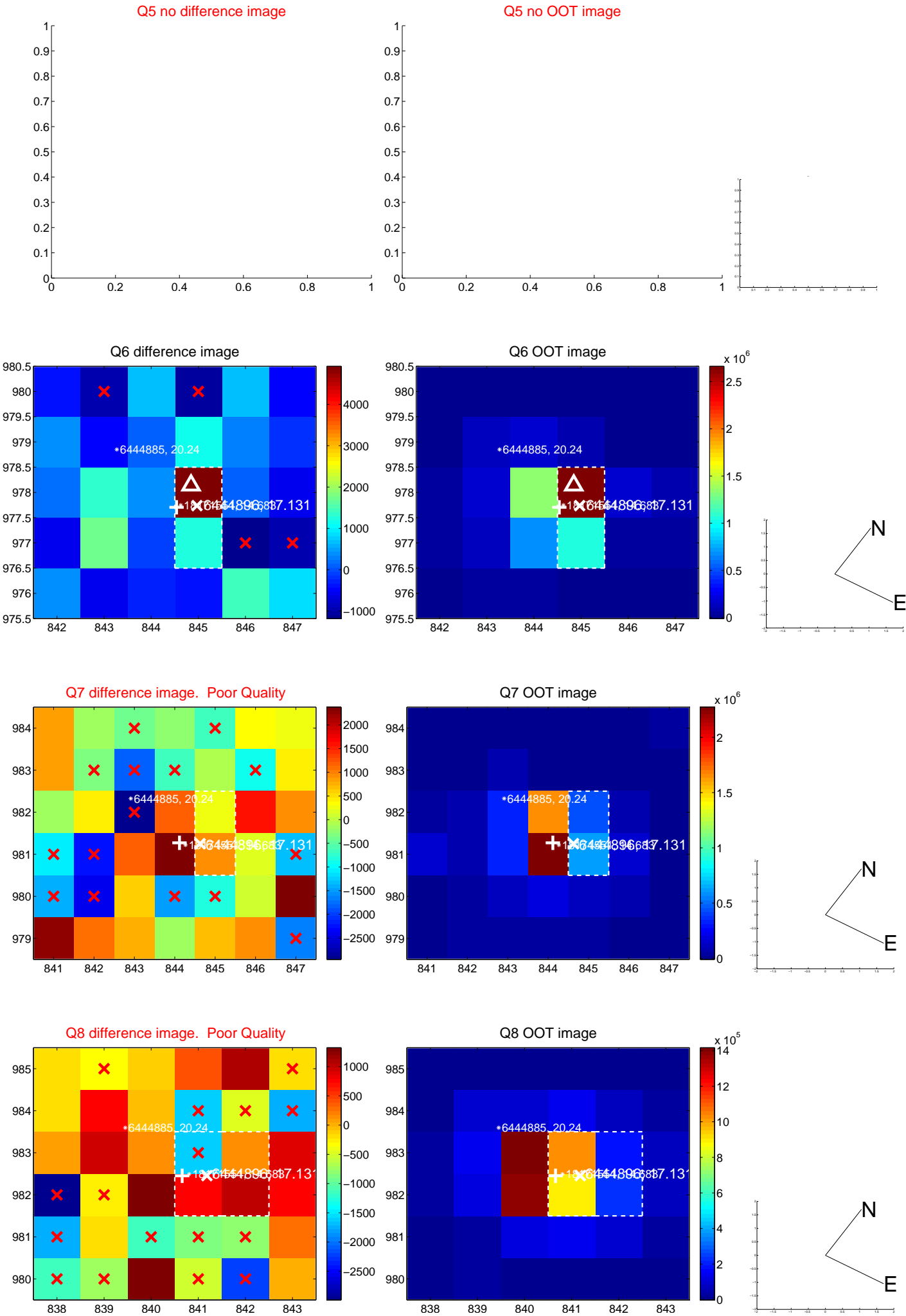


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

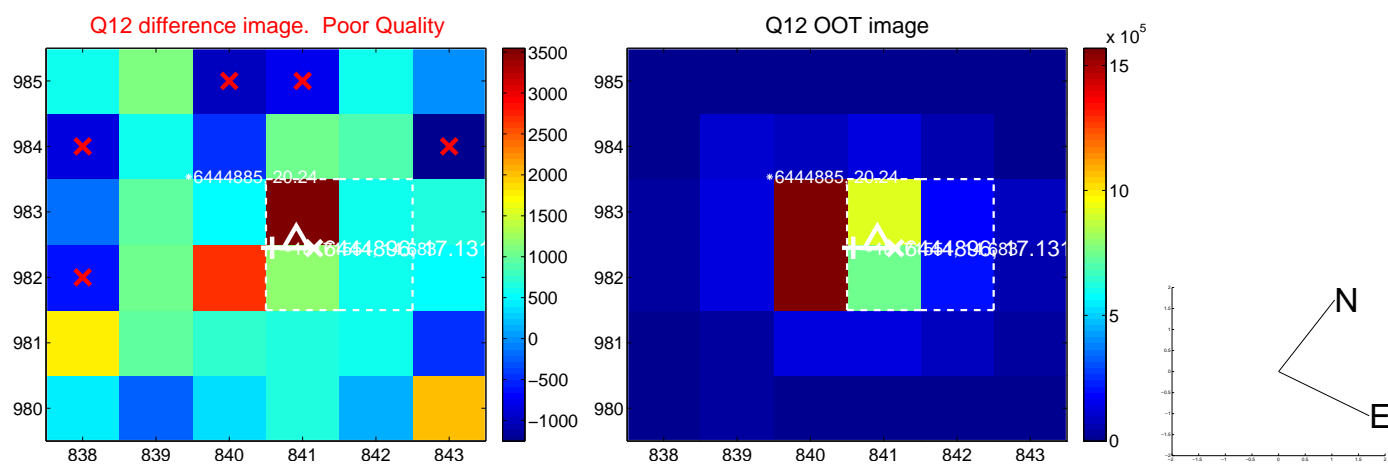
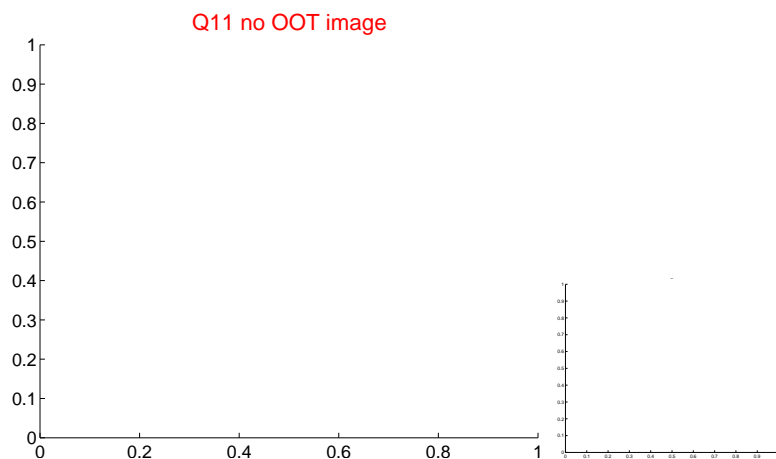
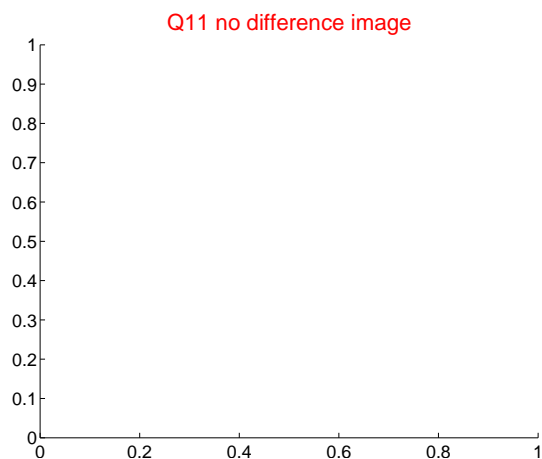
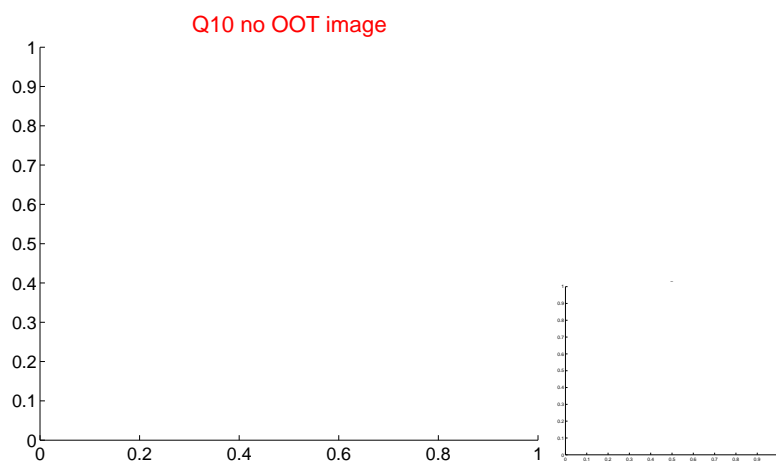
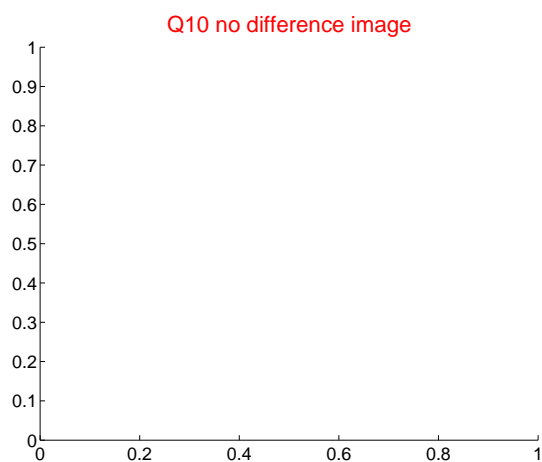
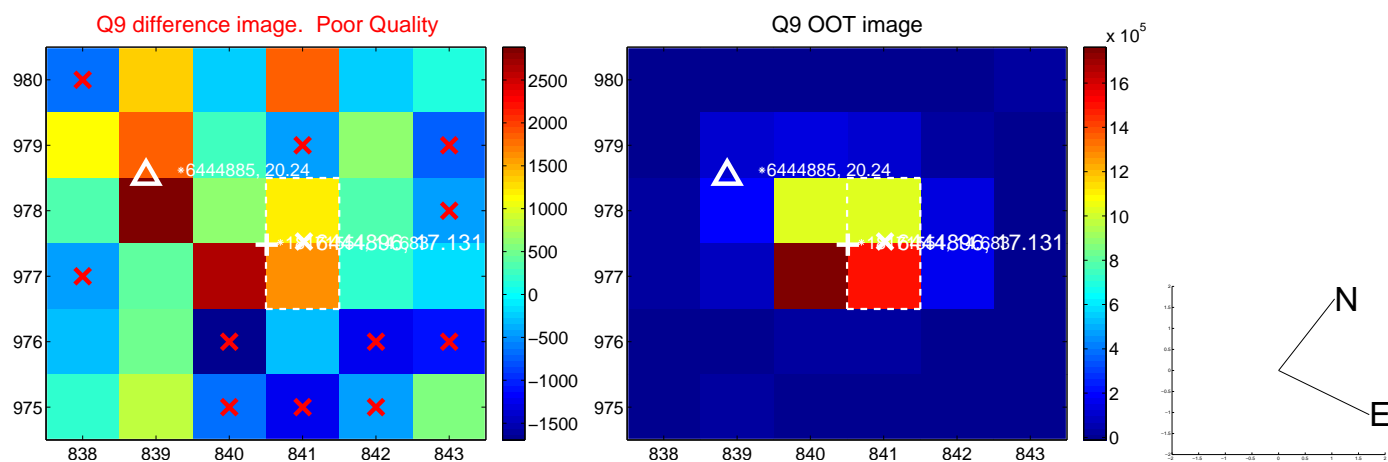
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



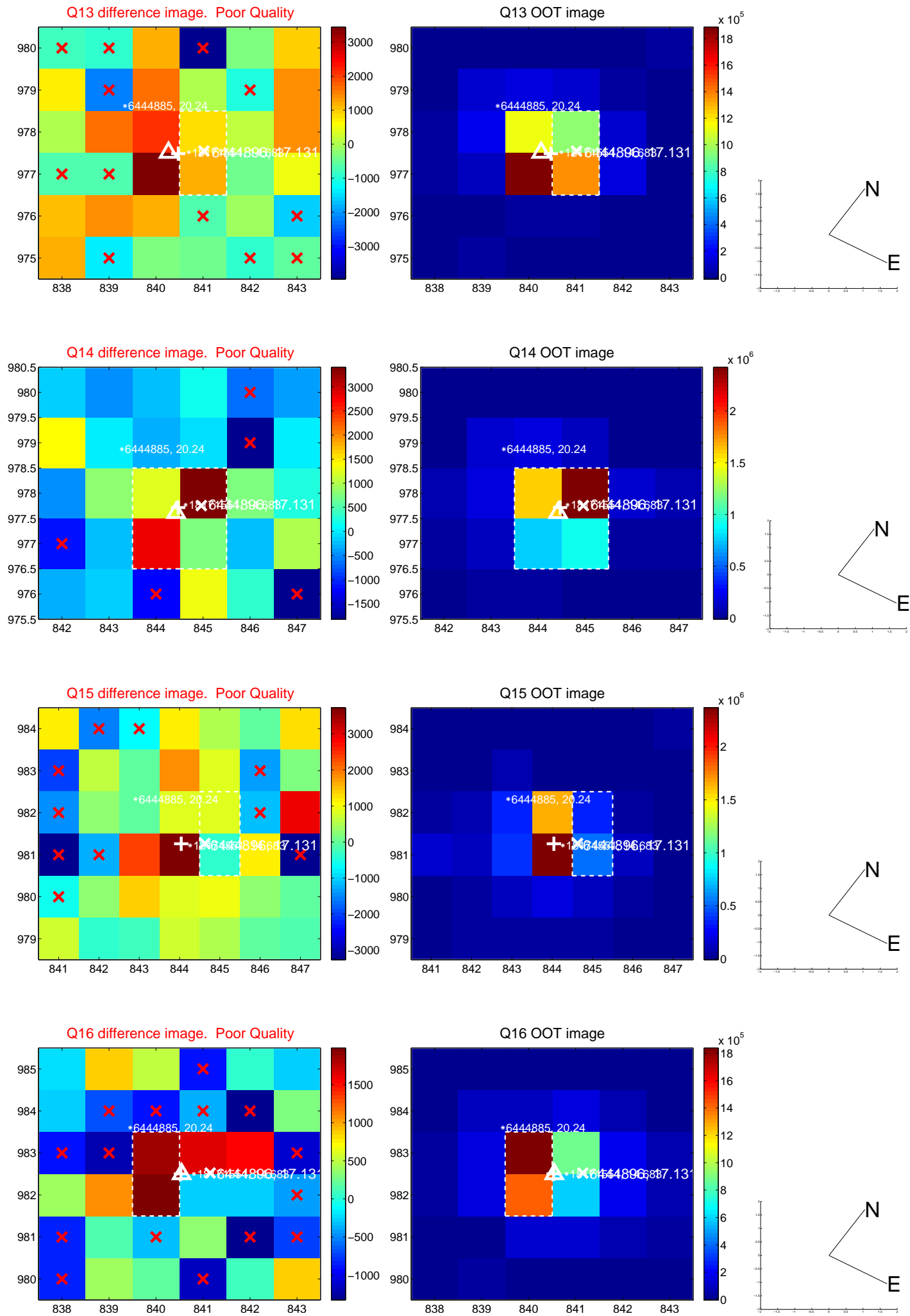
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



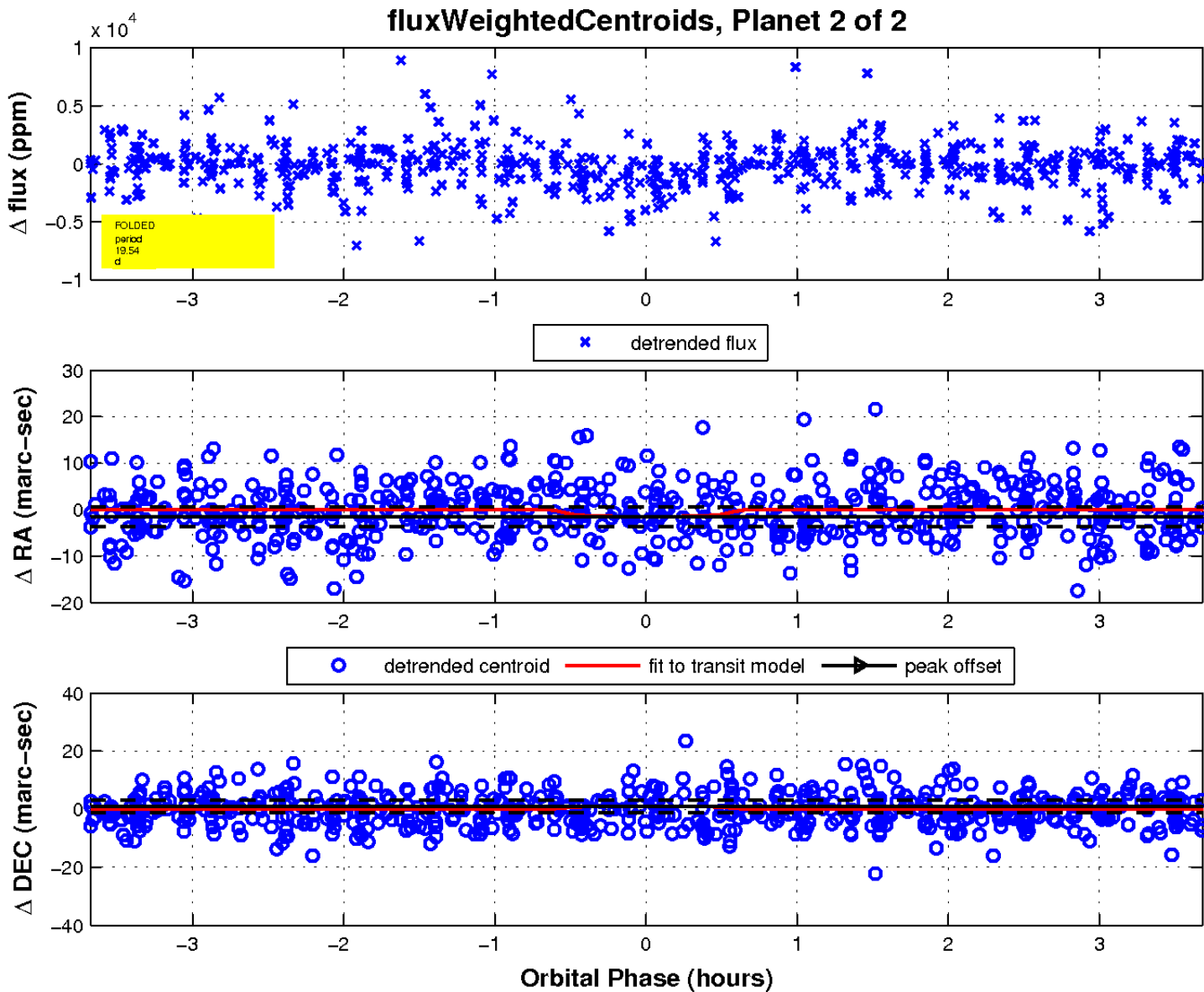
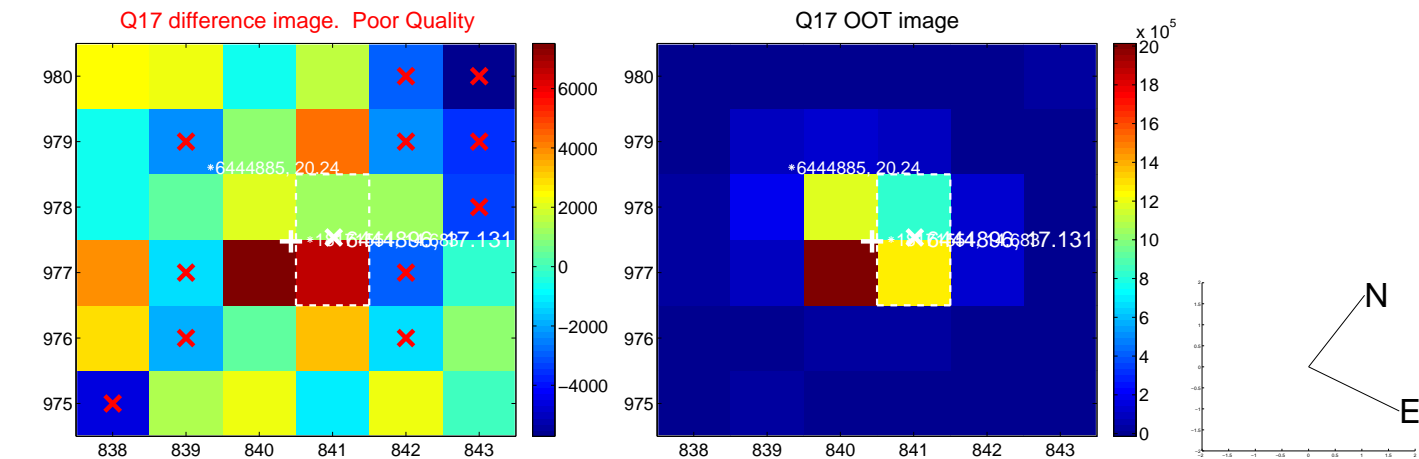
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UKIRT Image

Declination

