

KIC 006381846

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})
006381846-01	OBS	0509.01	4.166957	132.213859	831.4	3.010	57.9	63.9	0.94	5456	3.20	291.73
006381846-02	OBS	0509.02	11.463474	137.386682	1022.5	2.806	39.5	45.8	0.94	5456	3.48	75.68
006381846-03	OBS	0509.03	39.605925	168.048867	475.7	9.665	13.2	12.9	0.94	5456	4.20	14.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381846-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006381846-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006381846-03	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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.

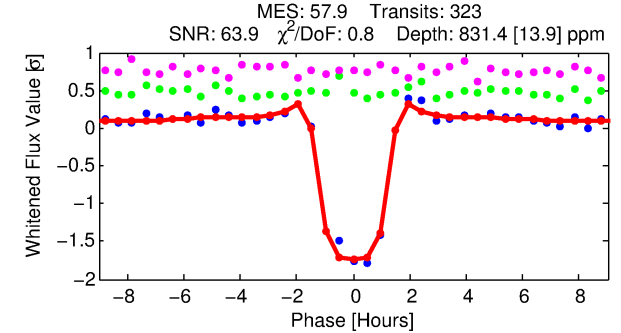
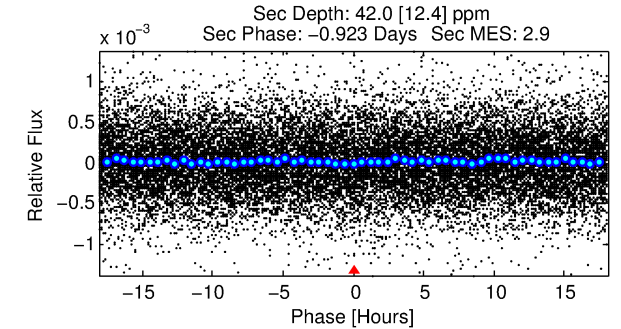
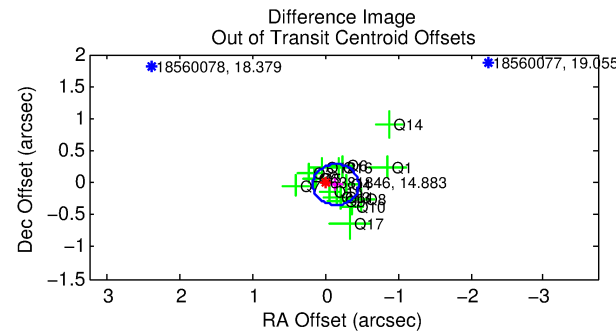
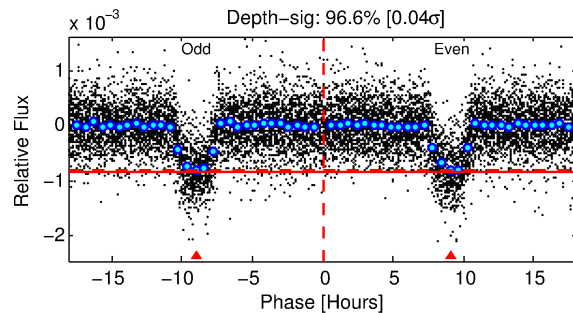
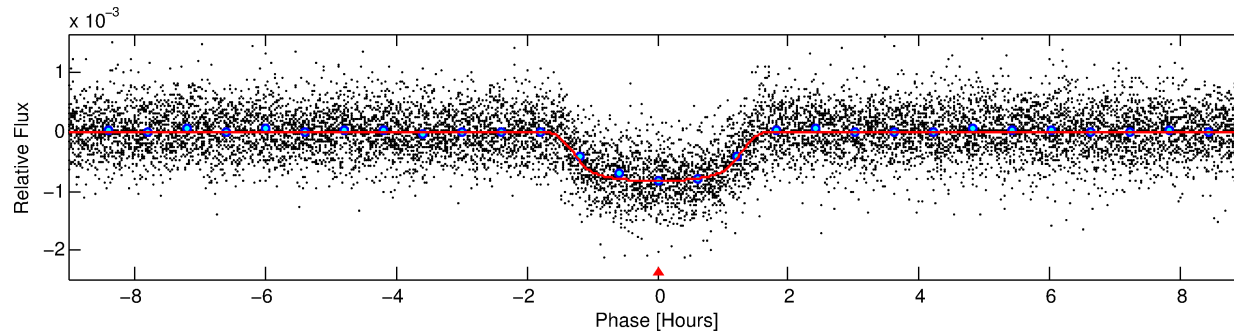
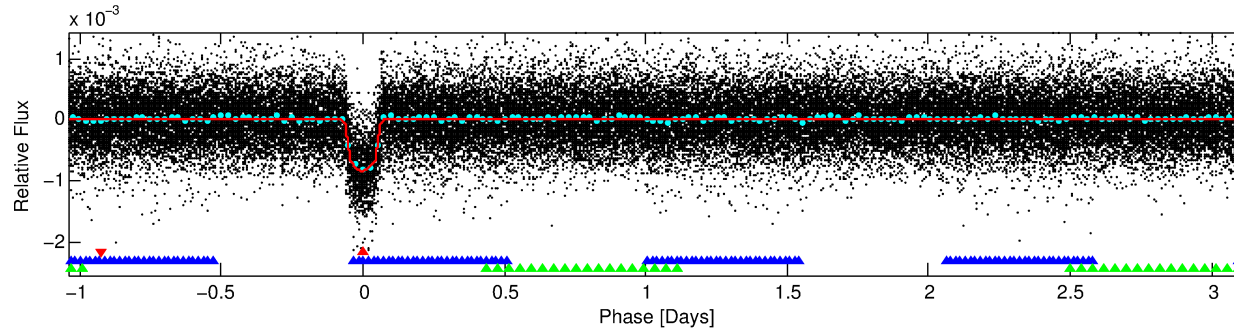
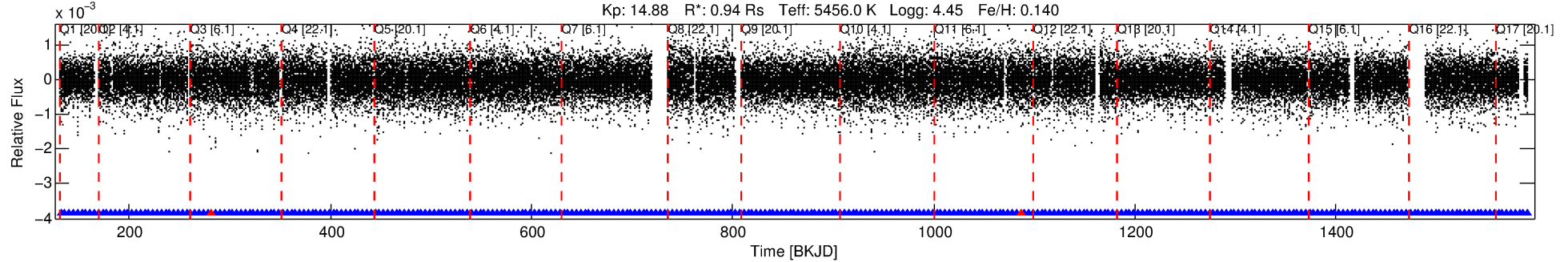
Ephemeris Match Information For 006381846-01

No Significant Match Found

DV One-Page Summary

KIC: 6381846 Candidate: 1 of 3 Period: 4.167 d
KOI: K00509.01 Name: Kepler-171b Corr: 0.951

Kp: 14.88 R*: 0.94 Rs Teff: 5456.0 K Logg: 4.45 Fe/H: 0.140



DV Fit Results:

Period = 4.16696 [0.00000] d
Epoch = 132.2139 [0.0007] BKJD
Rp/R* = 0.0311 [0.0015]
a/R* = 5.81 [1.07]
b = 0.88 [0.05]
Seff = 291.73 [52.07]
Teq = 1054 [47] K
Rp = 3.20 [0.42] Re
a = 0.0492 [0.0054] AU
Ag = 5.46 [1.93] [2.31σ]
Teffp = 2490 [197] K [7.10σ]

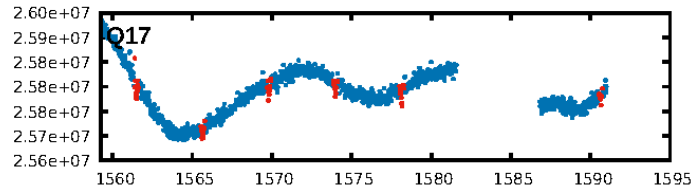
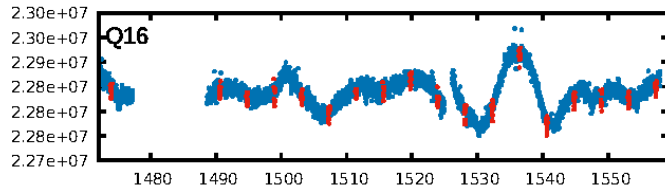
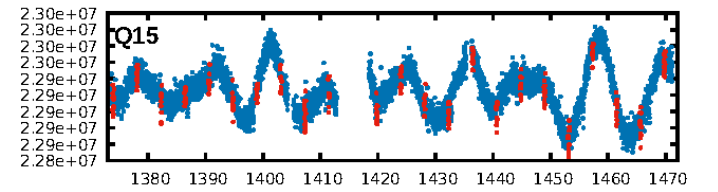
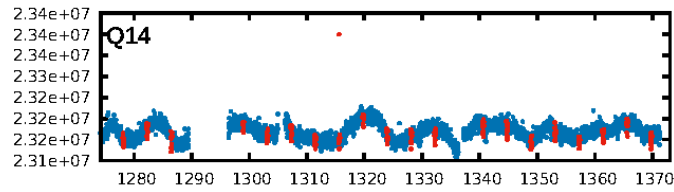
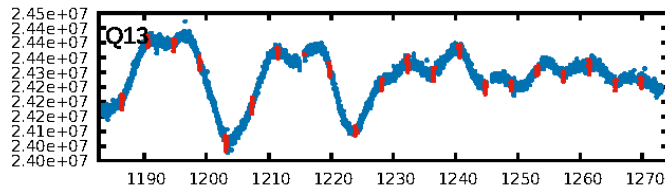
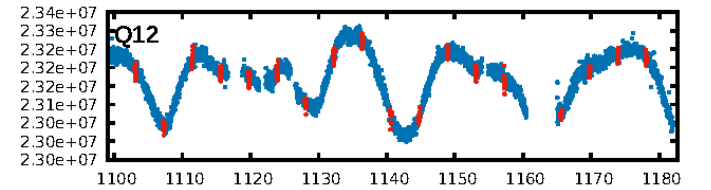
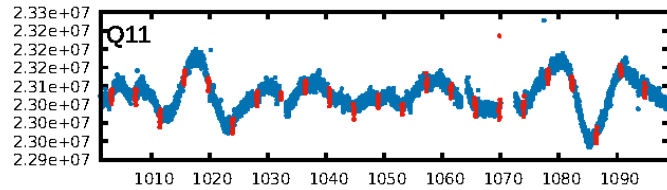
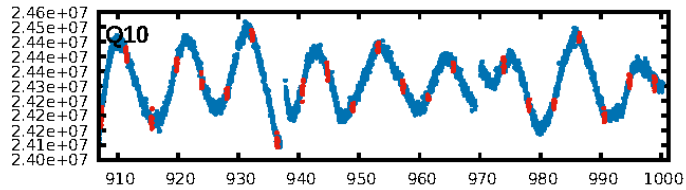
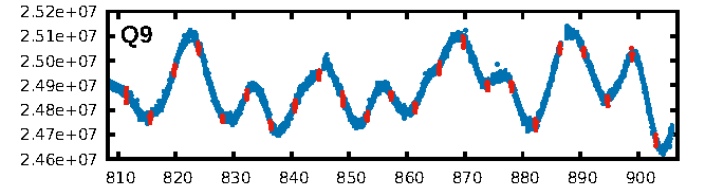
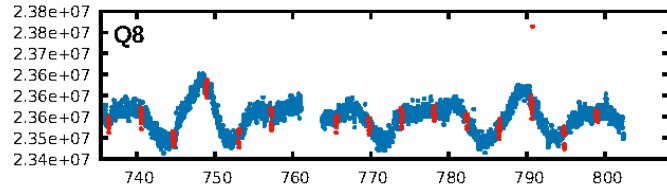
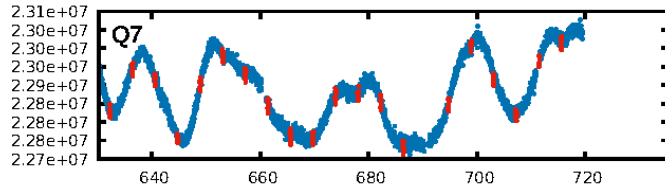
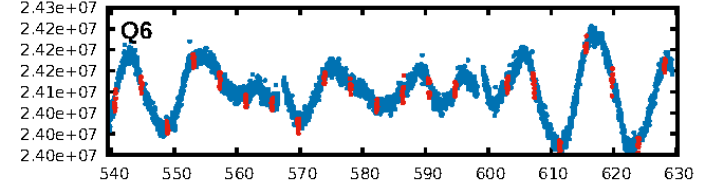
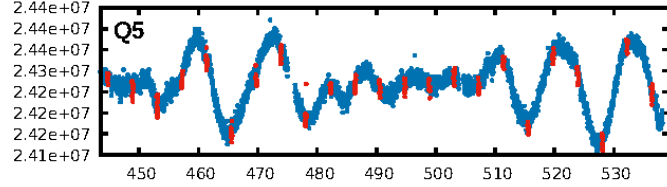
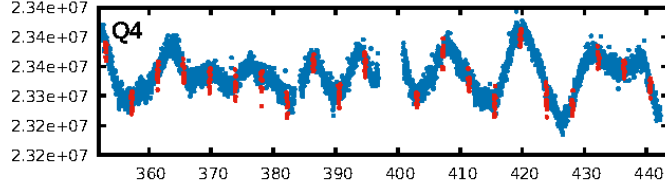
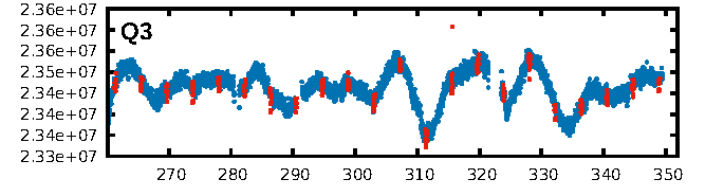
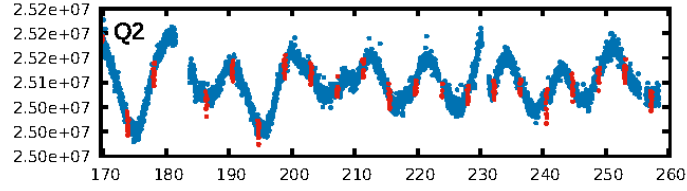
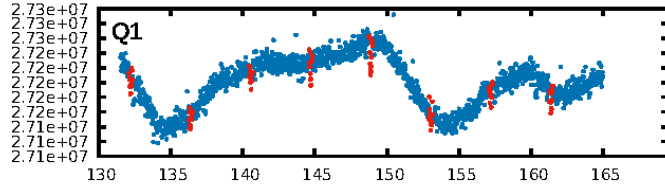
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [42.56σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [307/309]
GhostDiagnostic-chr: 6.804
Centroid-sig: 1.0%
Centroid-so: 0.151 arcsec [1.06σ]
OotOffset-rm: 0.144 arcsec [1.36σ]
KicOffset-rm: 0.261 arcsec [2.46σ]
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]

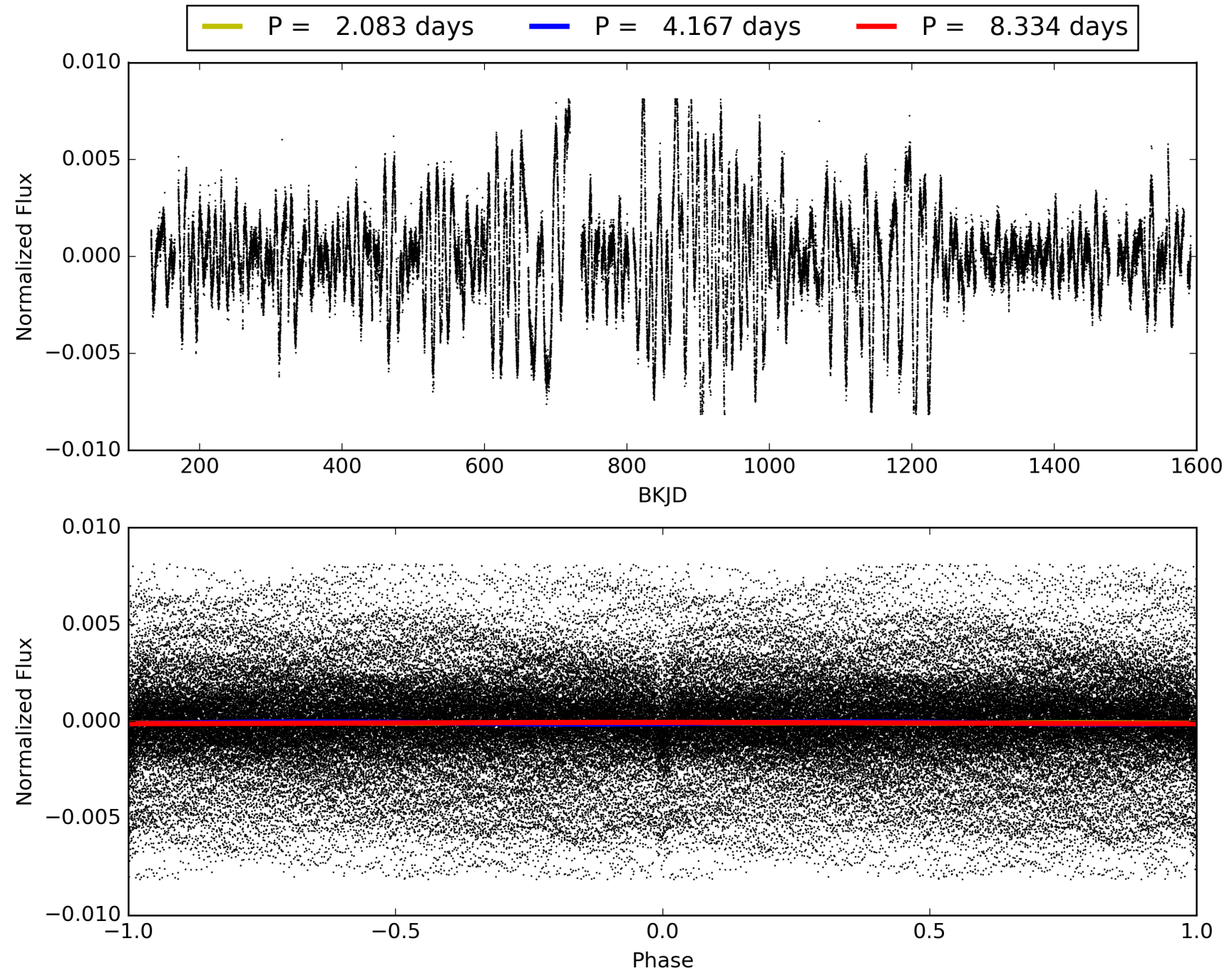
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006381846-01, PDC Light Curves

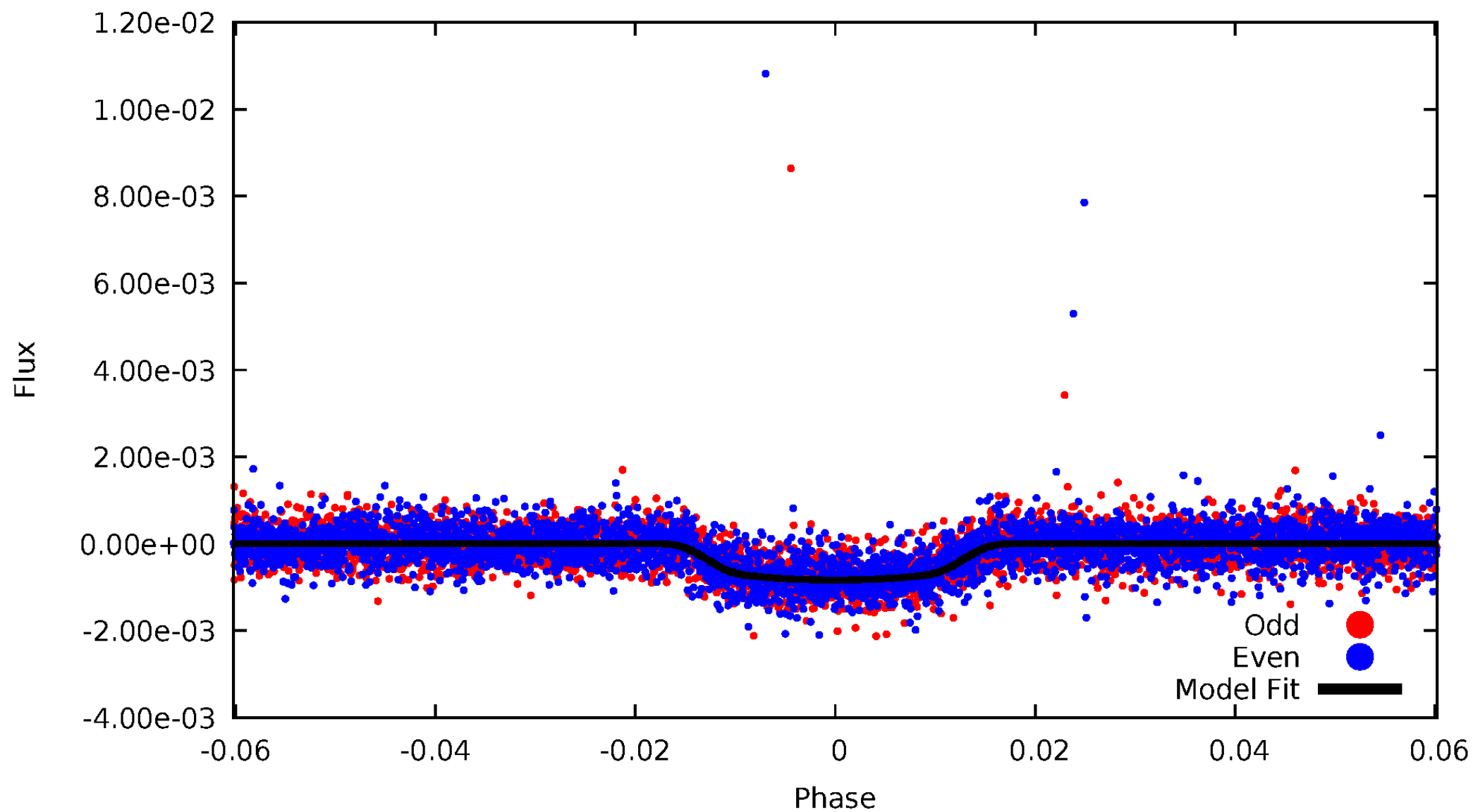


TCE 006381846-01



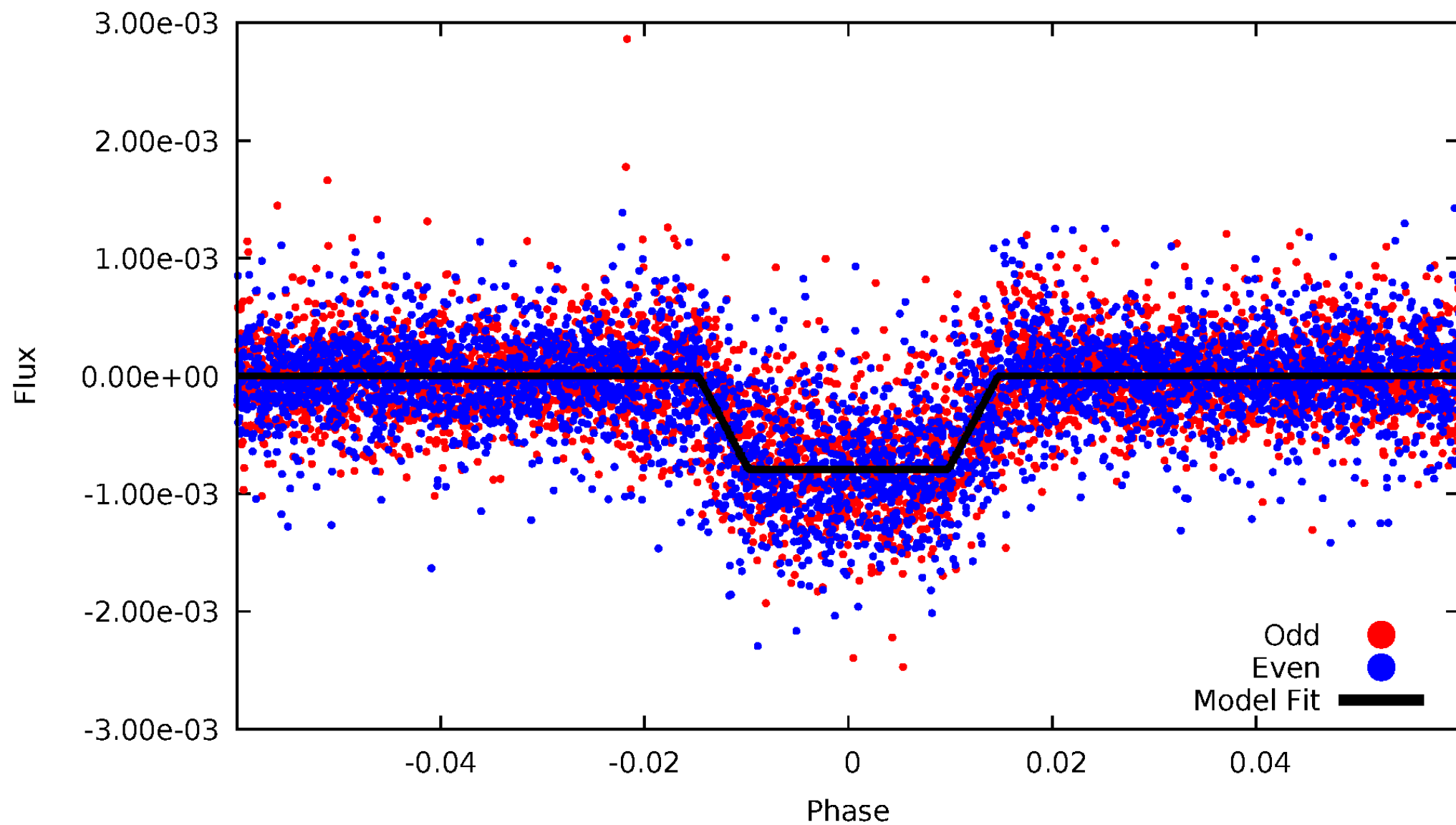
DV Odd/Even

TCE 006381846-01



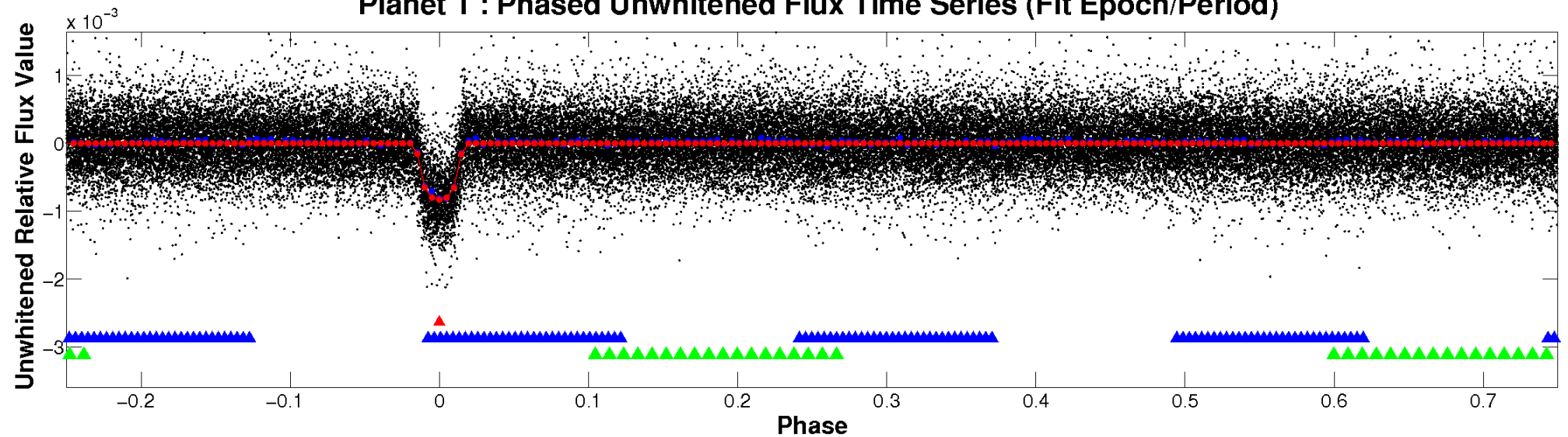
ALT Odd/Even

TCE 006381846-01

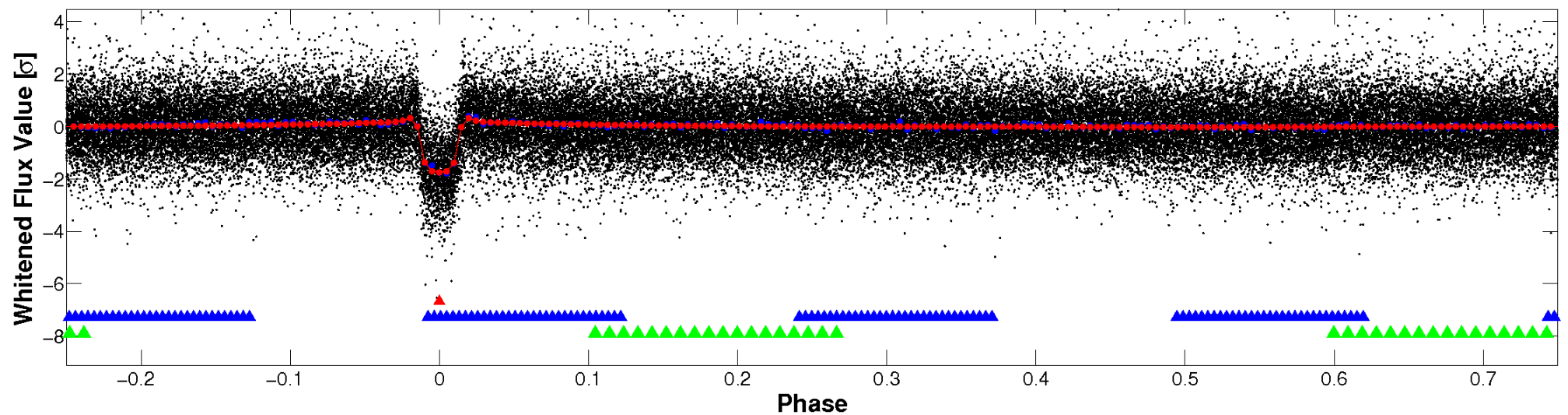


Non-Whitened Vs. Whitened Light Curve

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

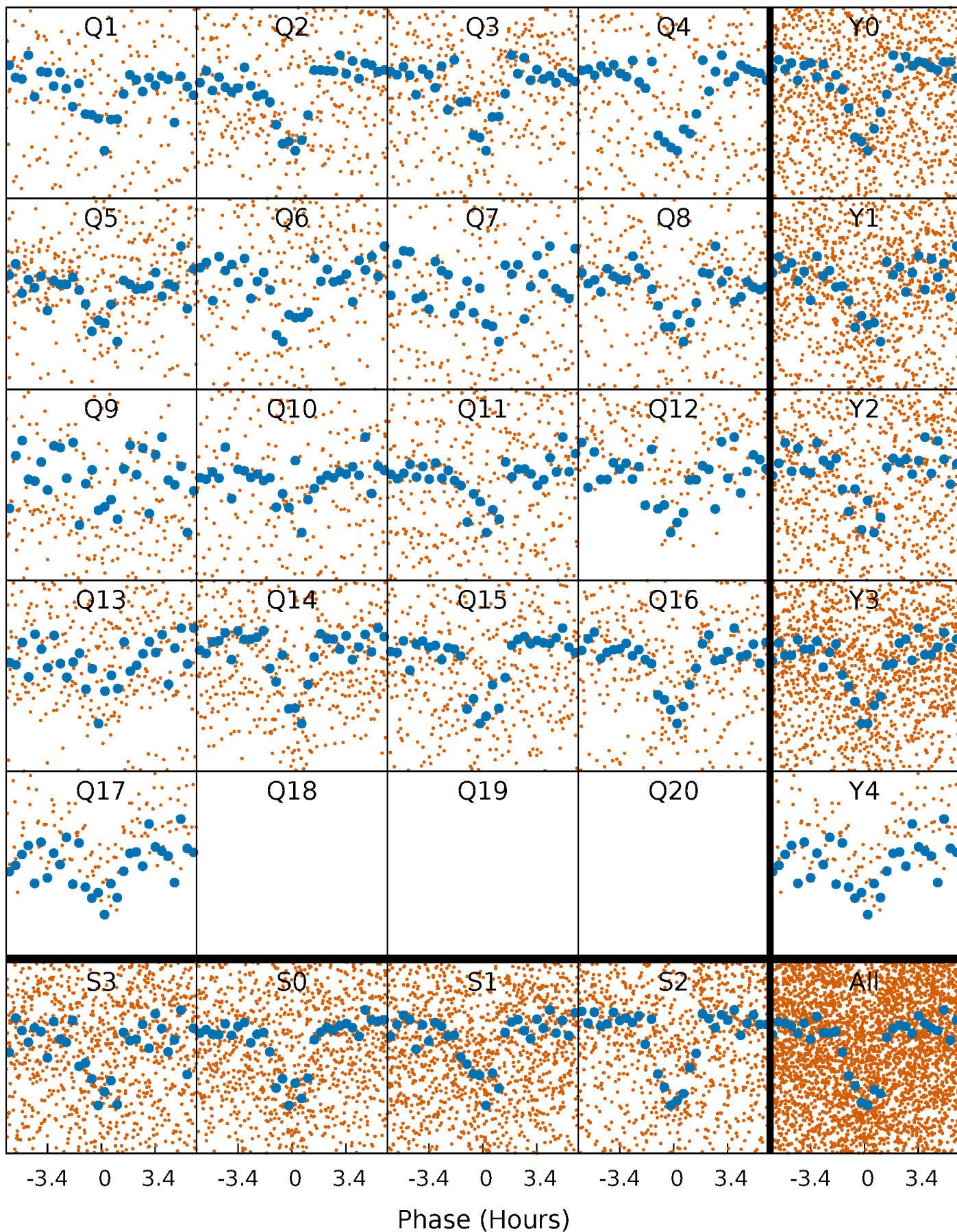


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



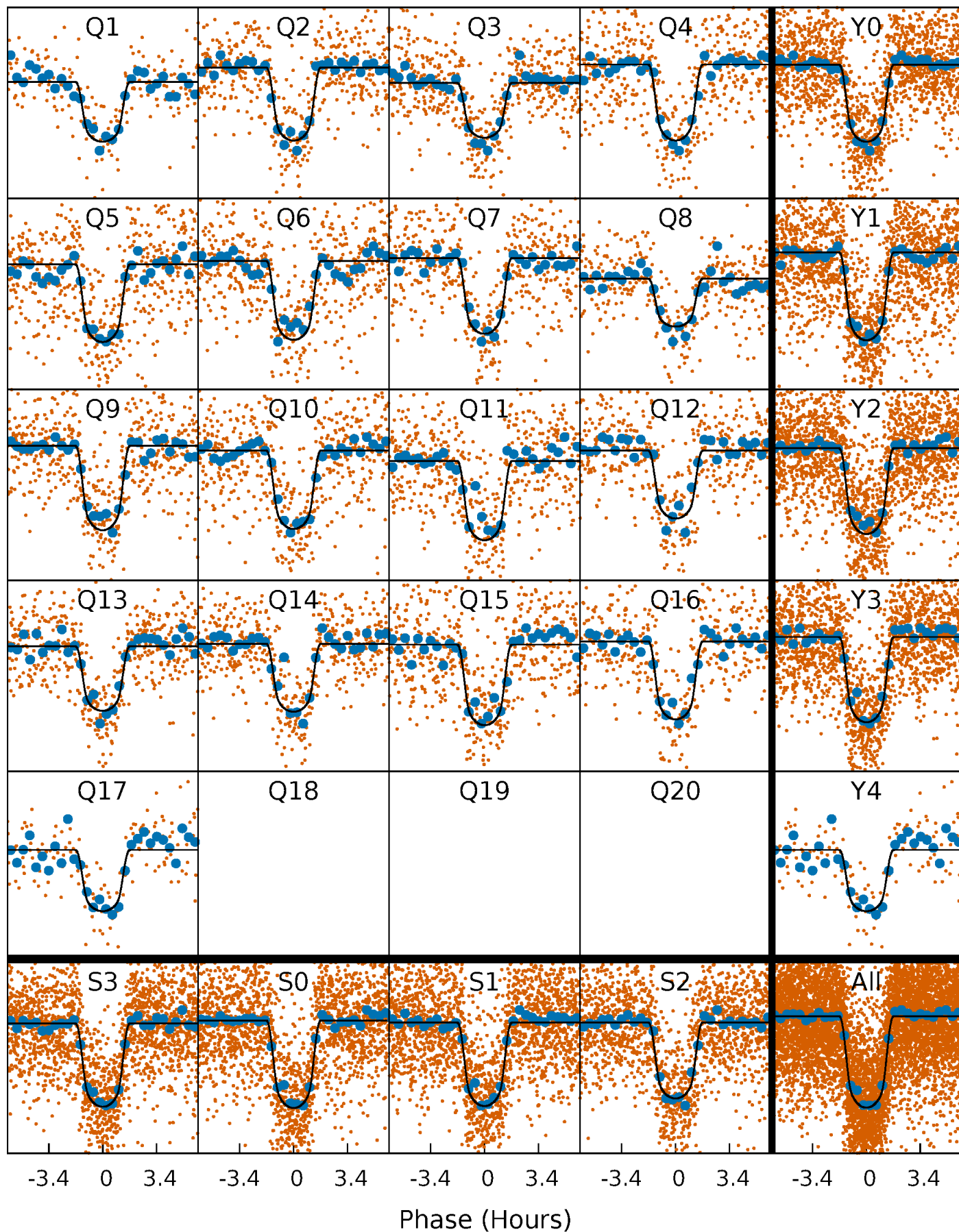
PDC Quarter-Phased Transit Curves

TCE 006381846-01 P= 4.166957 Days $T_0=132.213859$ (BKJD)



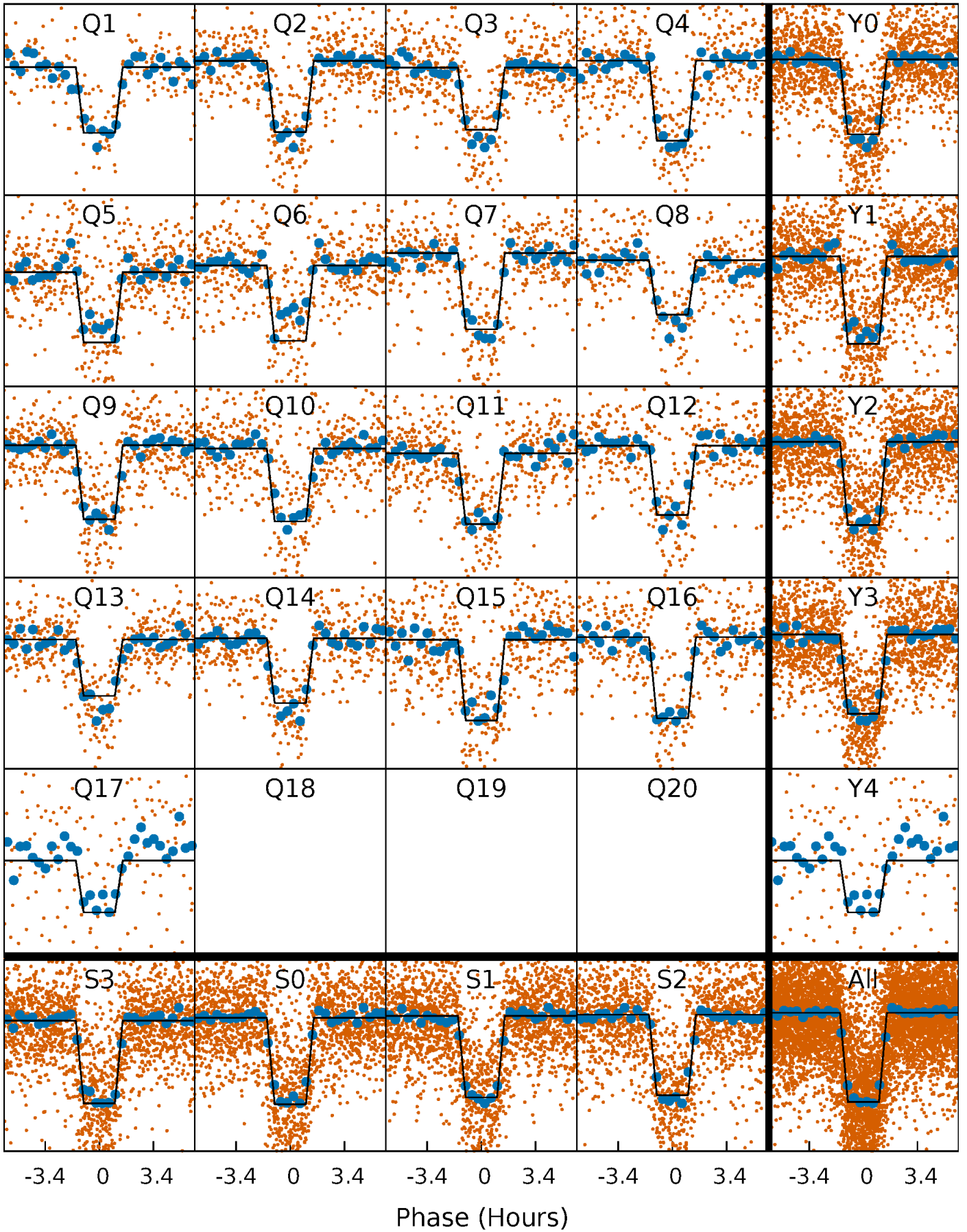
DV Quarter-Phased Transit Curves

TCE 006381846-01 P= 4.166957 Days $T_0=132.213859$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

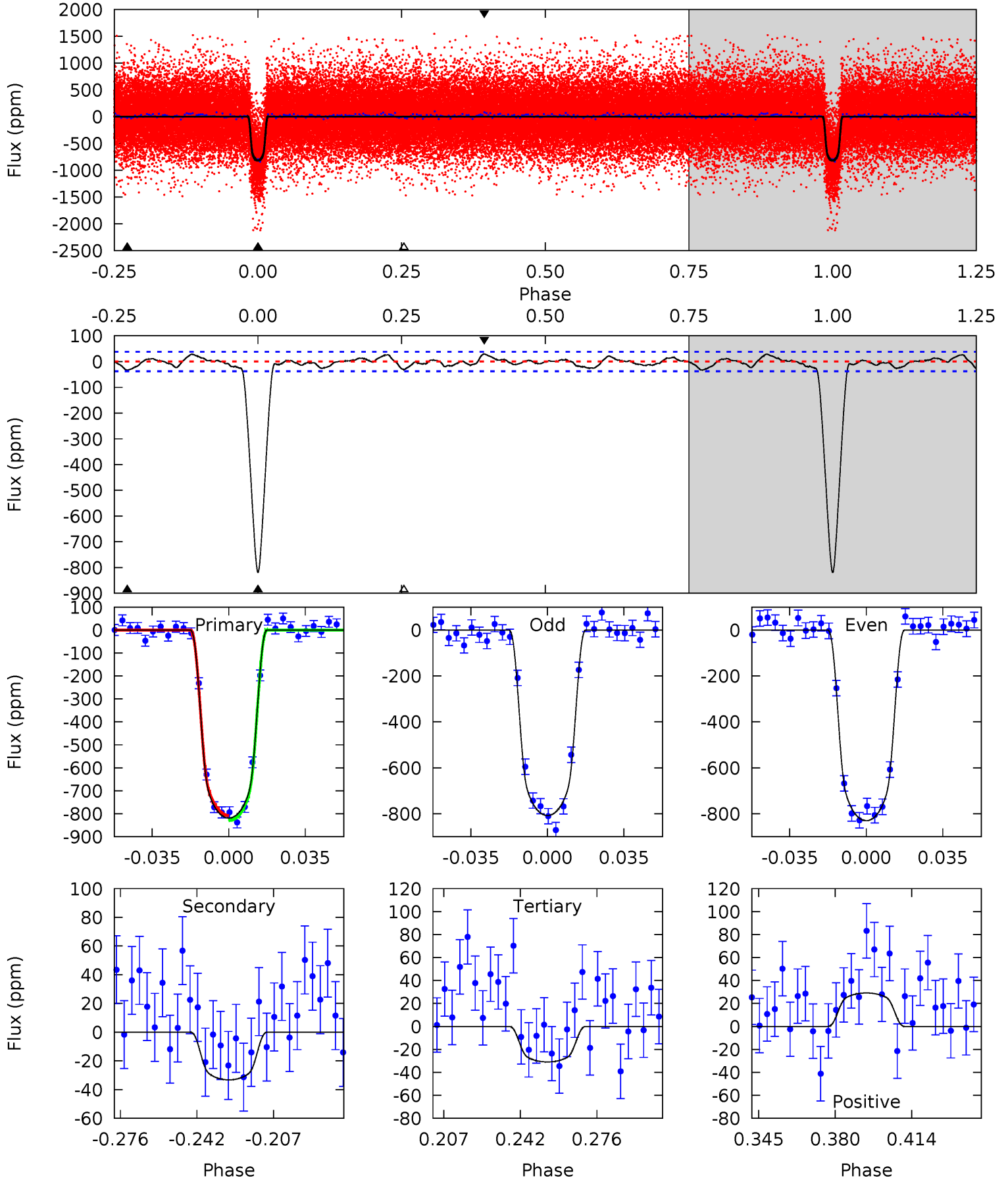
TCE 006381846-01 P= 4.166967 Days $T_0=132.212470$ (BKJD)



DV Model-Shift Uniqueness Test

006381846-01, P = 4.166957 Days, E = 128.046902 Days

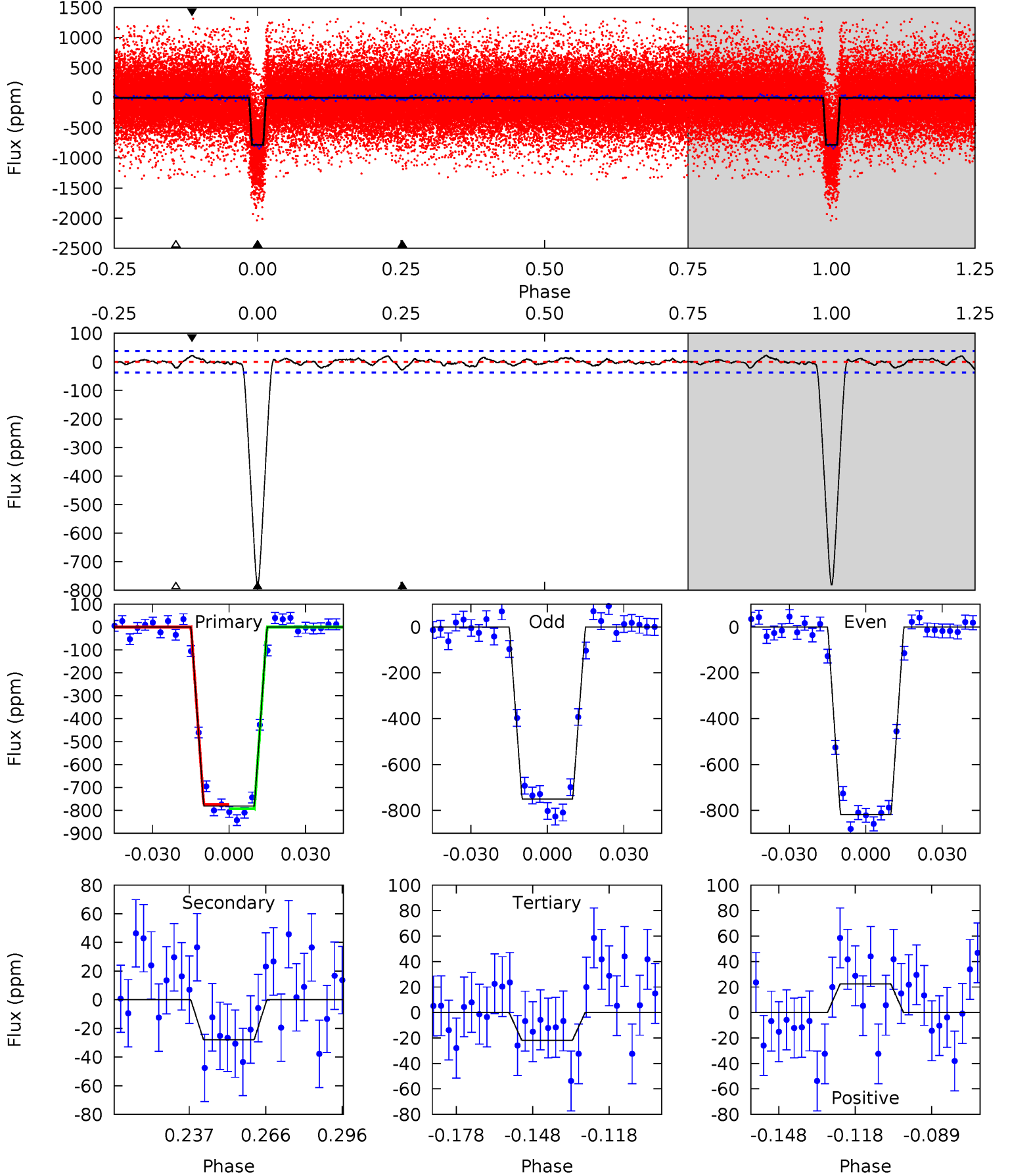
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
103.3	4.19	3.90	3.67	4.78	2.11	1.57	99.4	99.6	0.29	0.52	1.43	0.97	0.03	1.37



Alt Model-Shift Uniqueness Test

006381846-01, P = 4.166967 Days, E = 128.045503 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
101.0	3.61	2.82	2.89	4.81	2.18	1.01	98.2	98.1	0.79	0.71	4.39	0.96	0.03	1.26



Stellar Parameters For KIC 006381846

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5456^{+81}_{-81}	$4.450^{+0.072}_{-0.096}$	$0.140^{+0.150}_{-0.150}$	$0.943^{+0.115}_{-0.077}$	$0.914^{+0.052}_{-0.046}$	$1.538^{+0.433}_{-0.433}$
	+1%/-1%	+2%/-2%	+107%/-107%	+12%/-8%	+6%/-5%	+28%/-28%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006381846-01 / KOI 0509.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-33 ± 8	$3.21^{+0.27}_{-0.23}$	1475^{+55}_{-45}	2974^{+108}_{-135}	$4.261^{+1.210}_{-1.206}$
Alt.	-28 ± 8	$2.92^{+0.25}_{-0.21}$	1475^{+53}_{-45}	2989^{+126}_{-162}	$4.401^{+1.393}_{-1.408}$

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

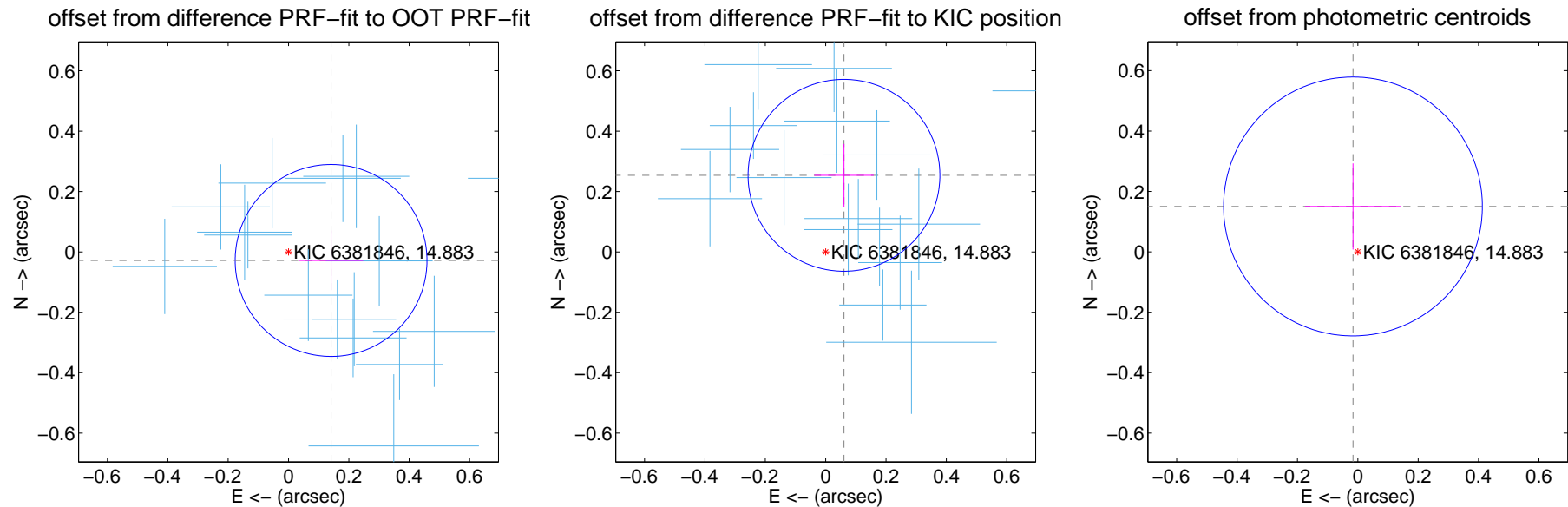
DV Centroid Data

Supplemental centroid analysis for 006381846-01. Kepler magnitude: 14.88. Transit SNR 63.92

There are 17 quarters with good PRF difference image offsets

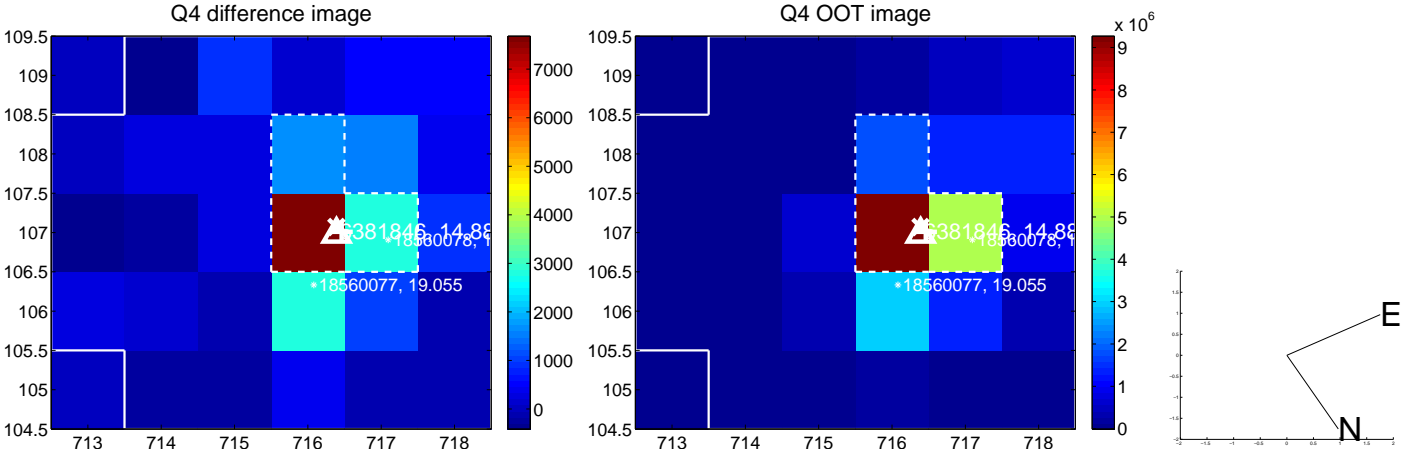
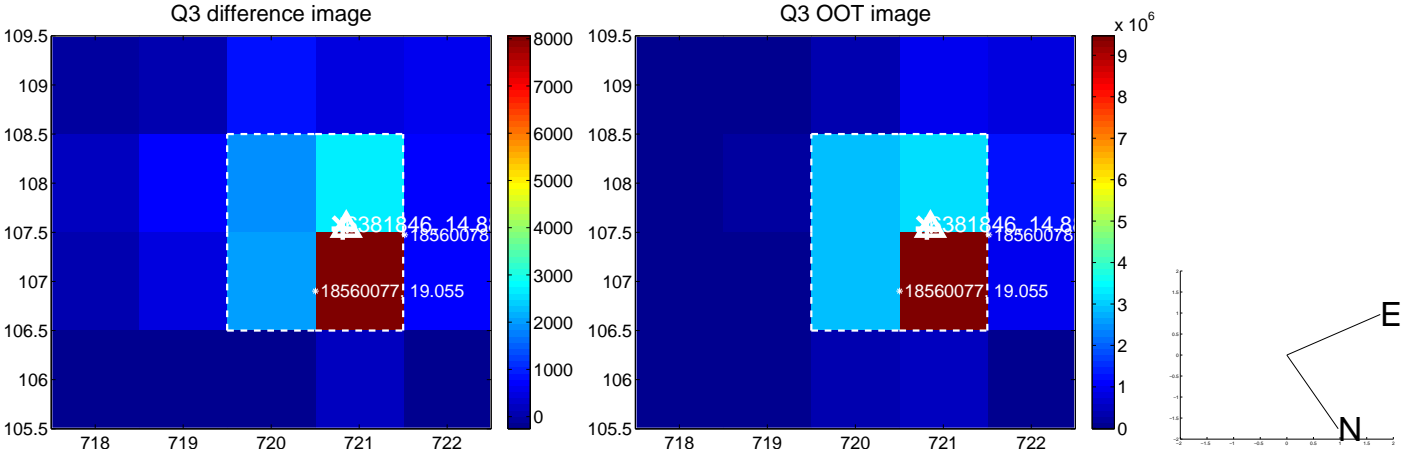
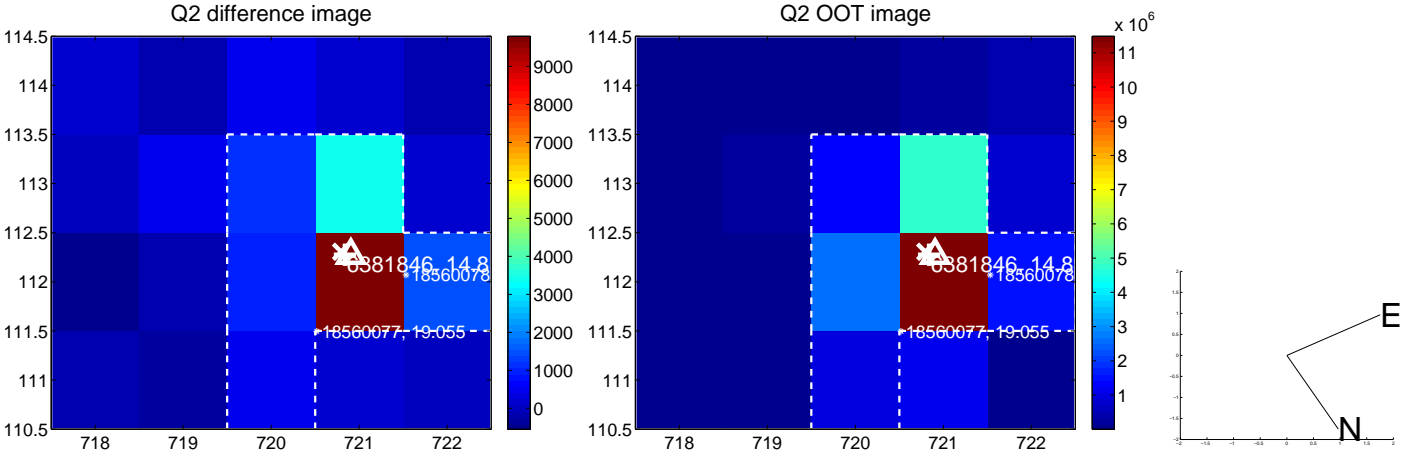
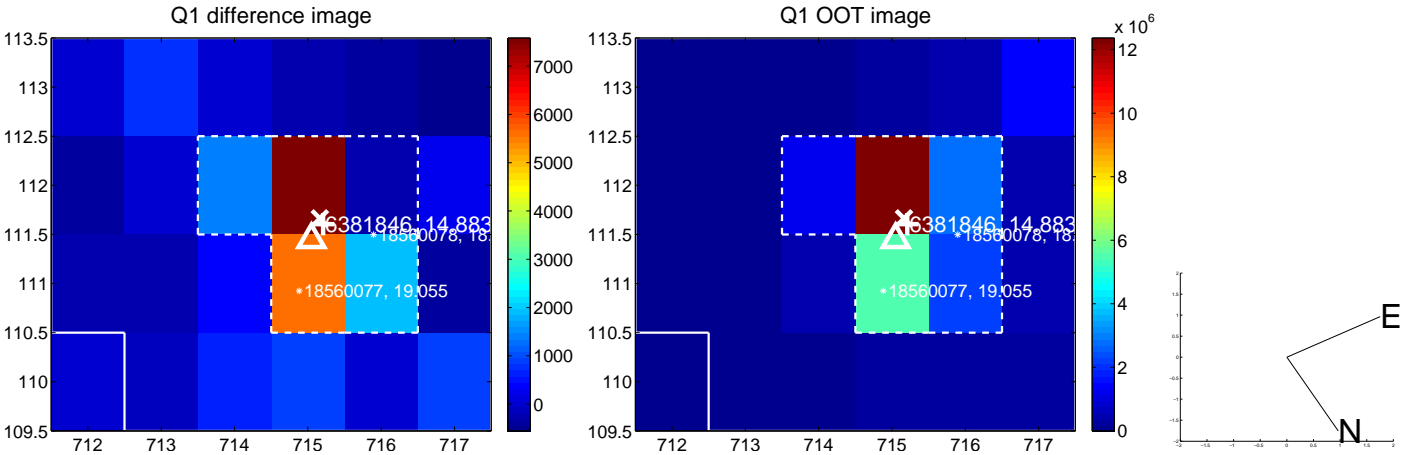
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.144 ± 0.106	1.36	-0.141 ± 0.106	-0.028 ± 0.099
PRF-fit source offset from KIC position	0.261 ± 0.106	2.46	-0.061 ± 0.098	0.254 ± 0.104
photometric centroid source offset	0.15 ± 0.14	1.06	0.02 ± 0.16	0.15 ± 0.14

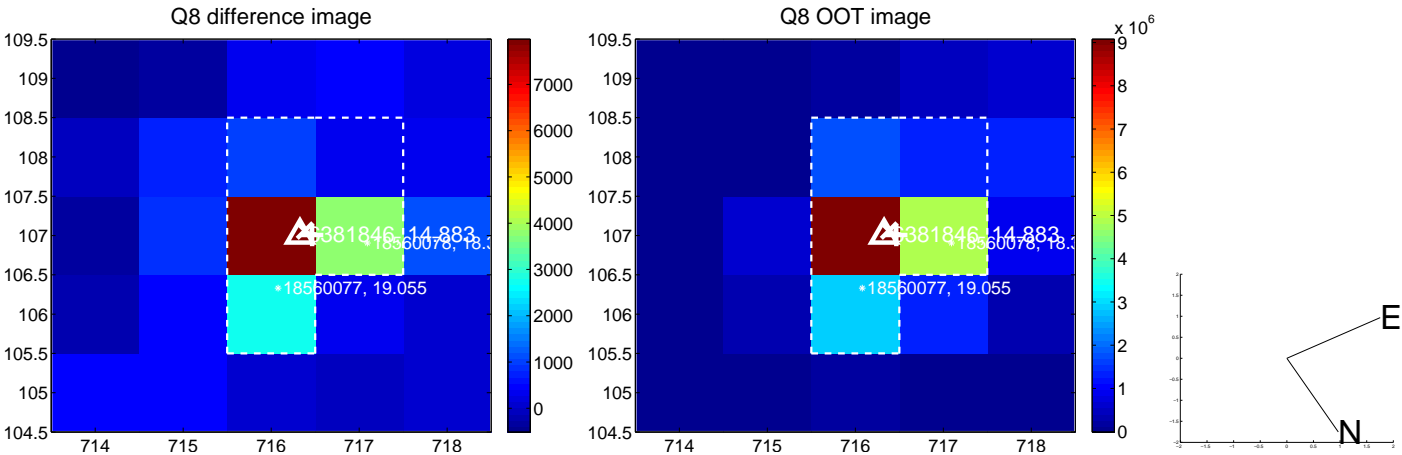
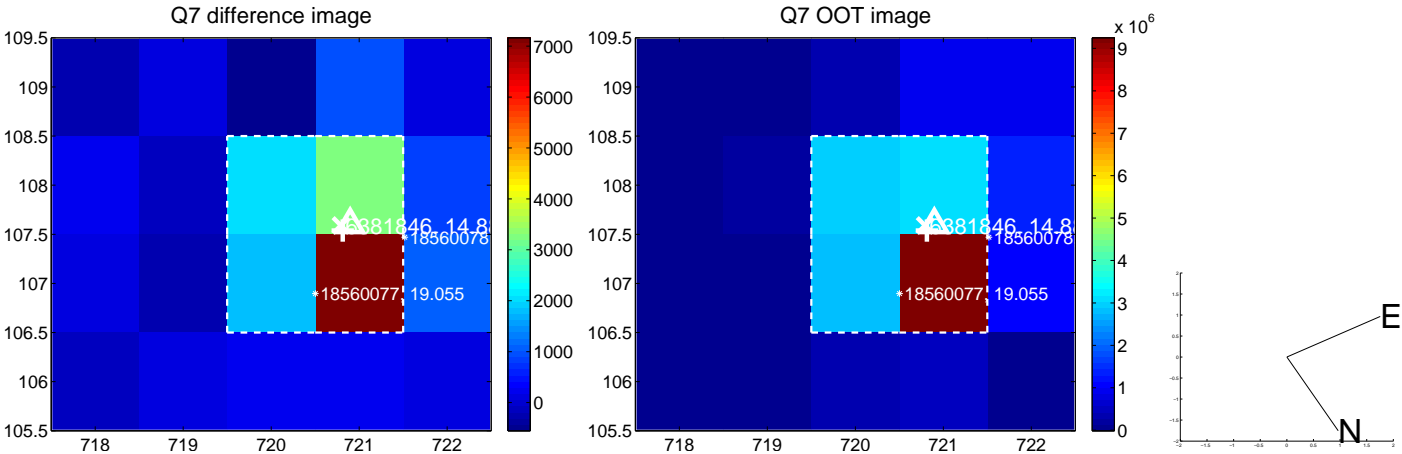
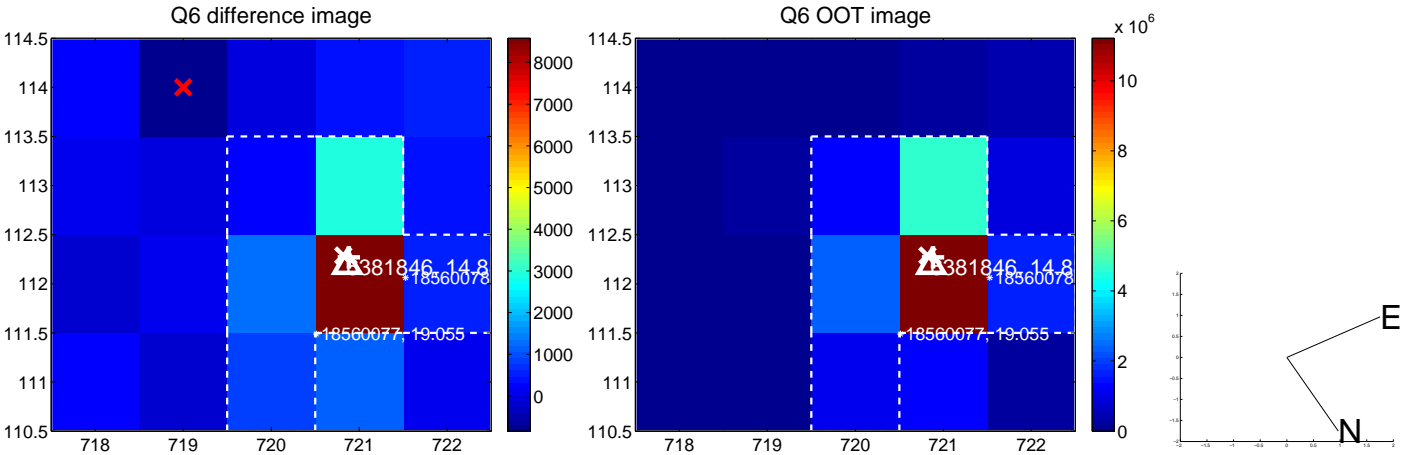
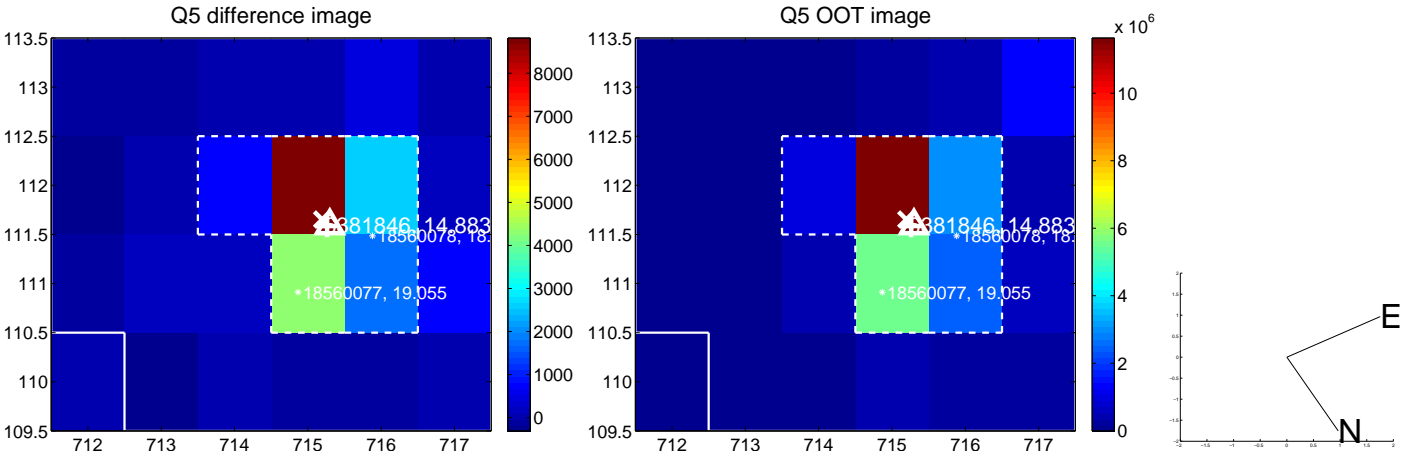


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

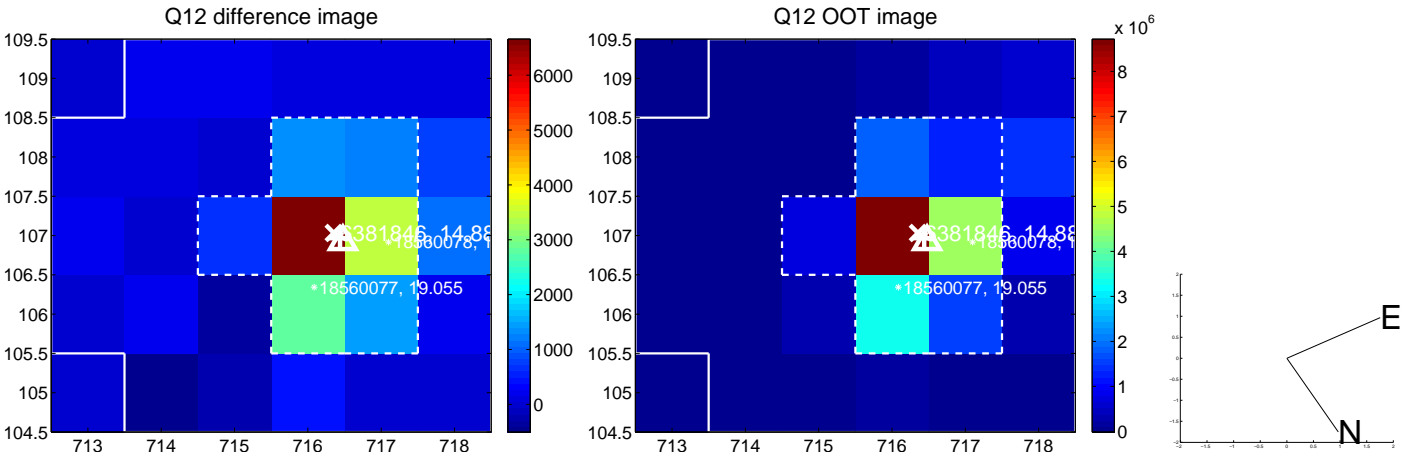
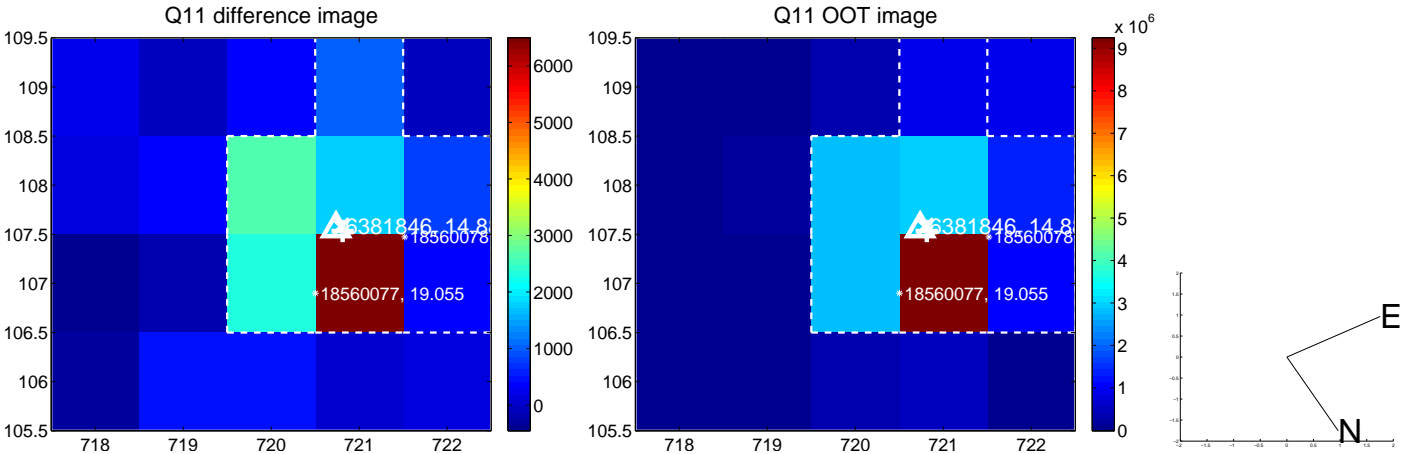
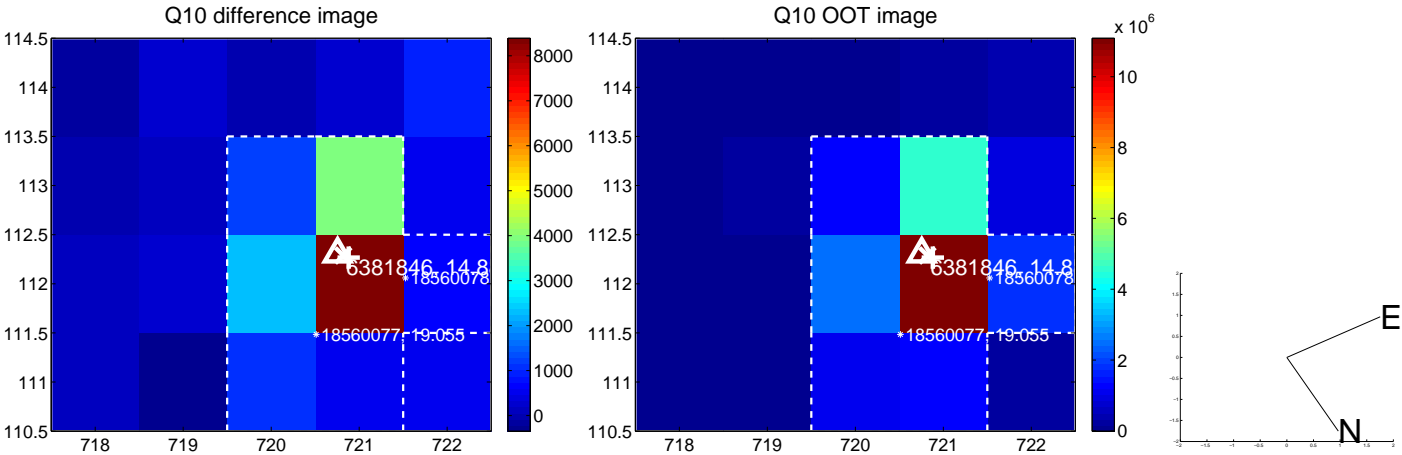
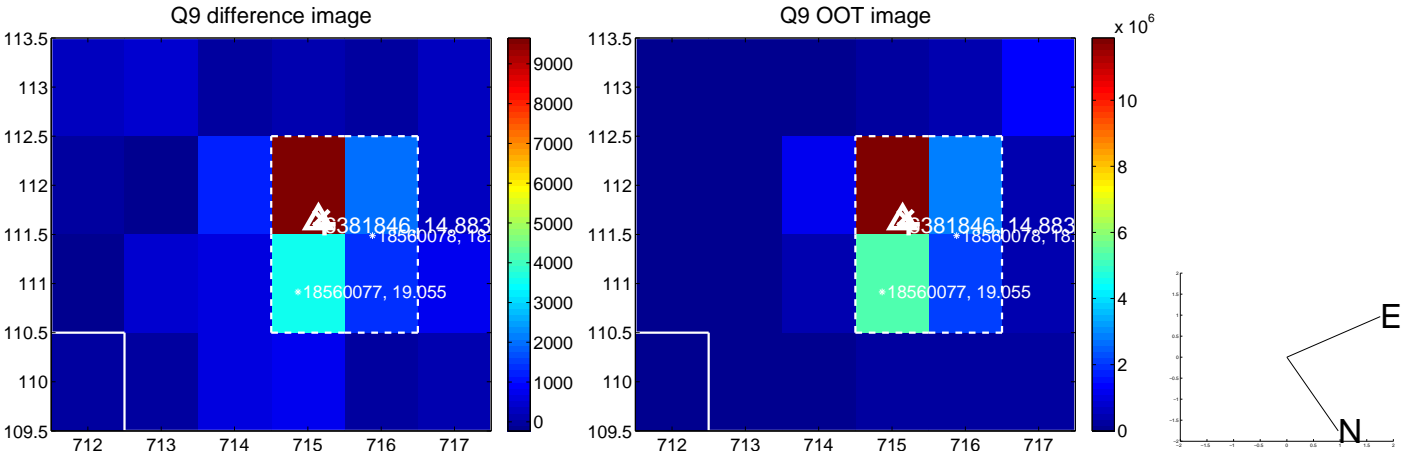
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



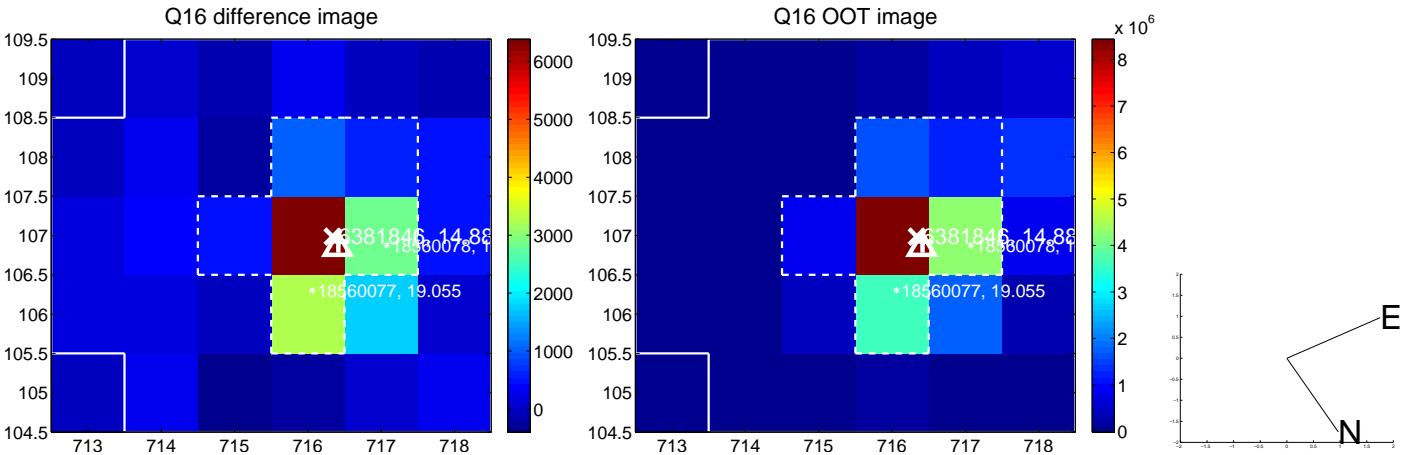
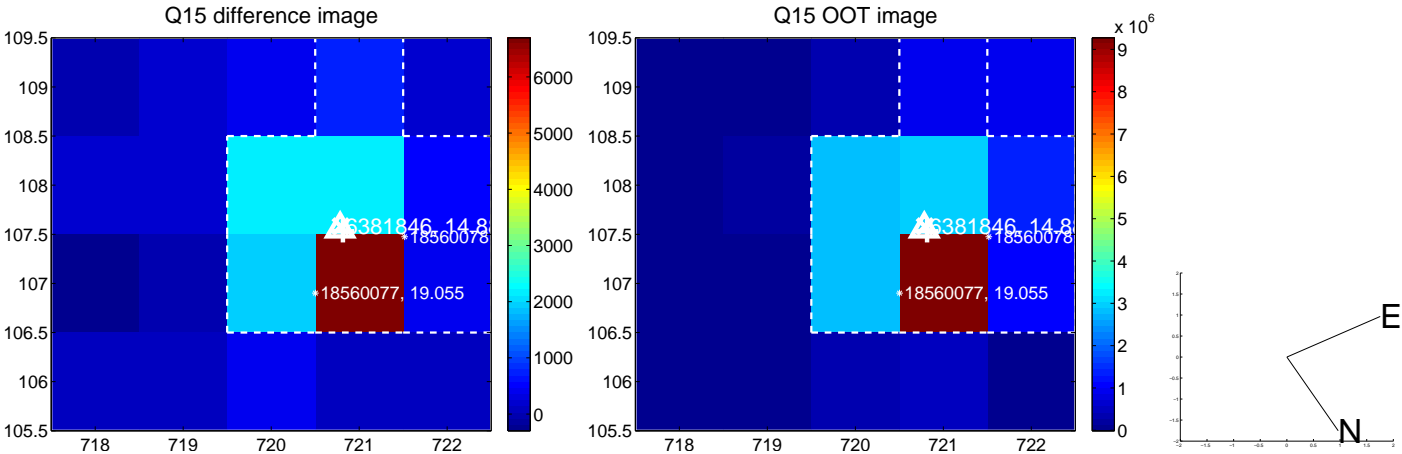
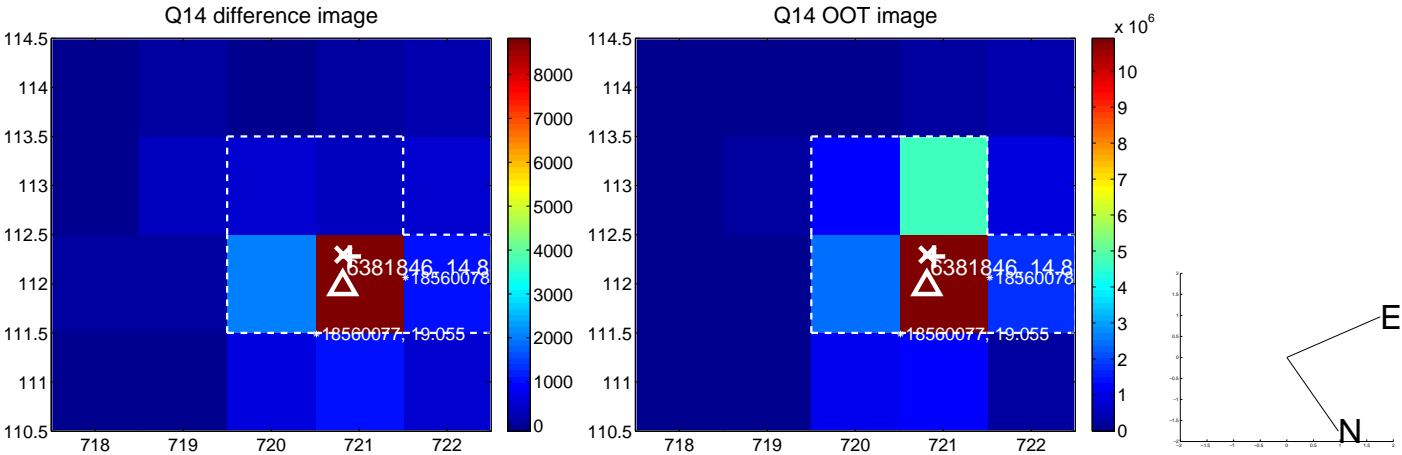
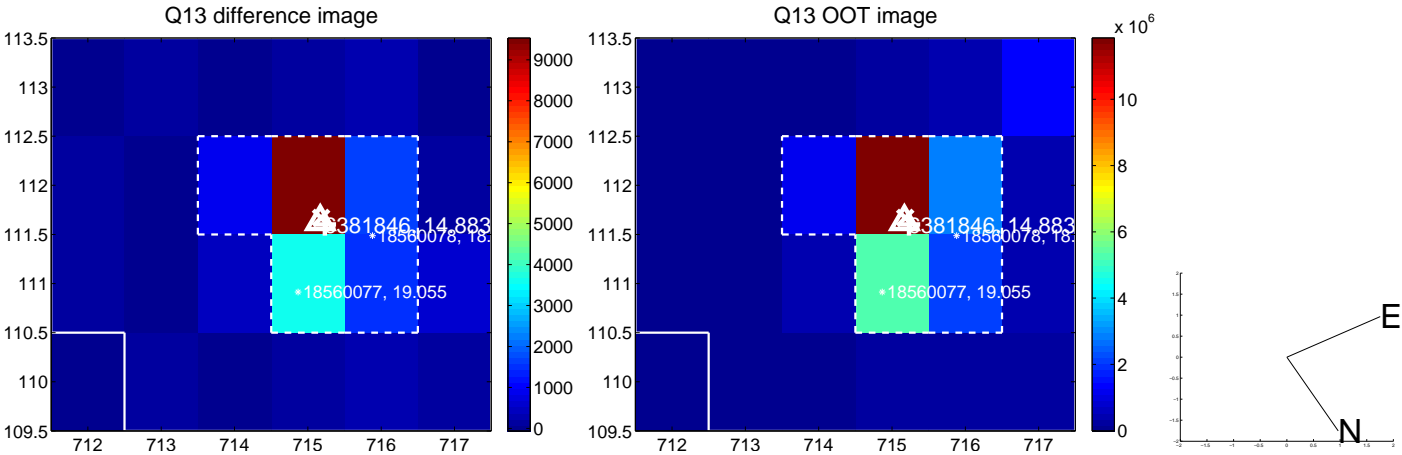
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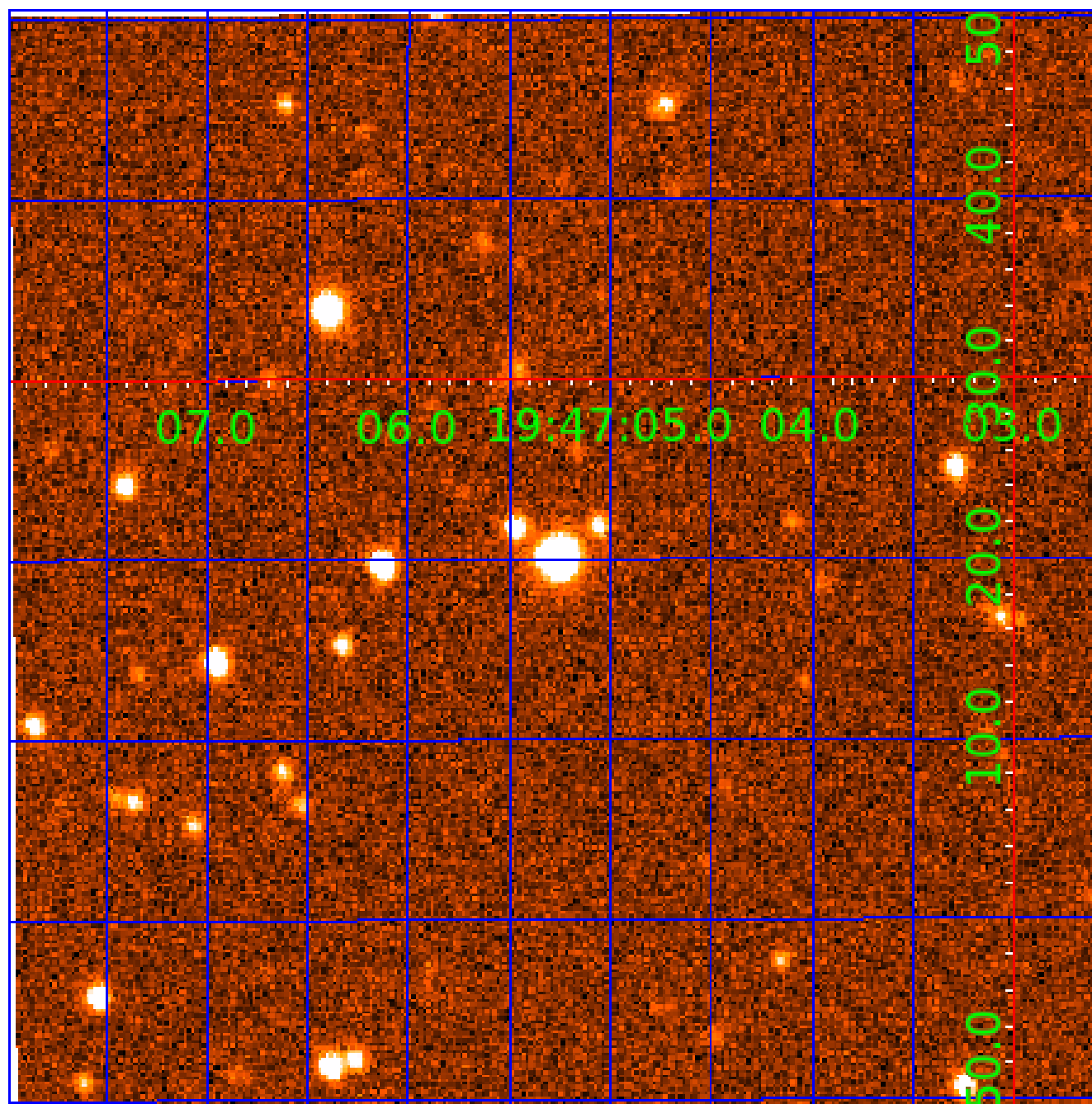


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UKIRT Image

Declination



KIC 006381846

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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006381846-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006381846-03	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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.

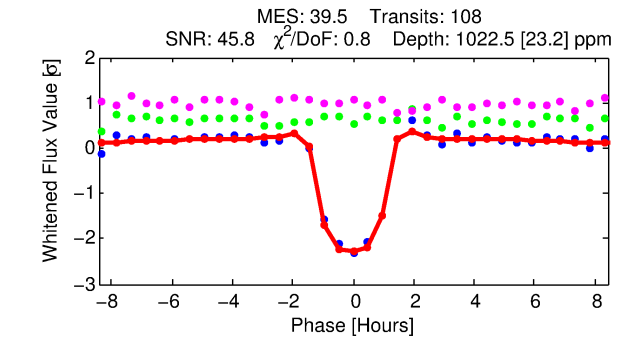
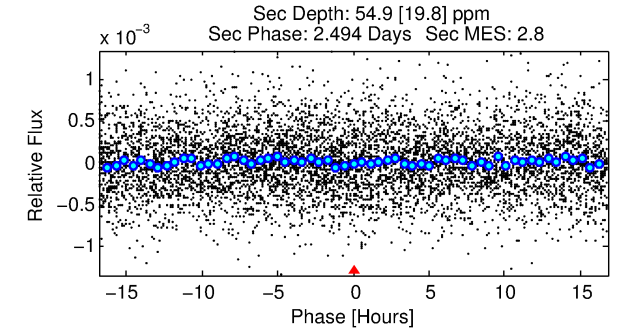
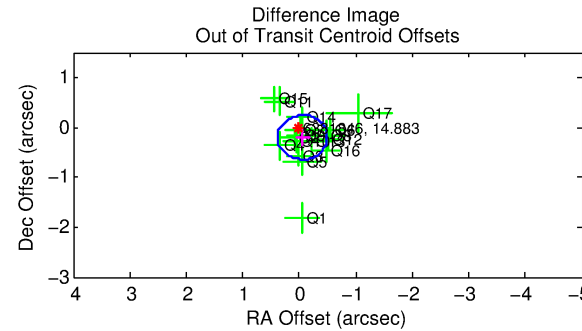
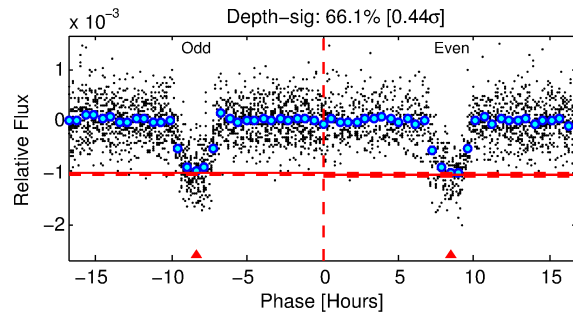
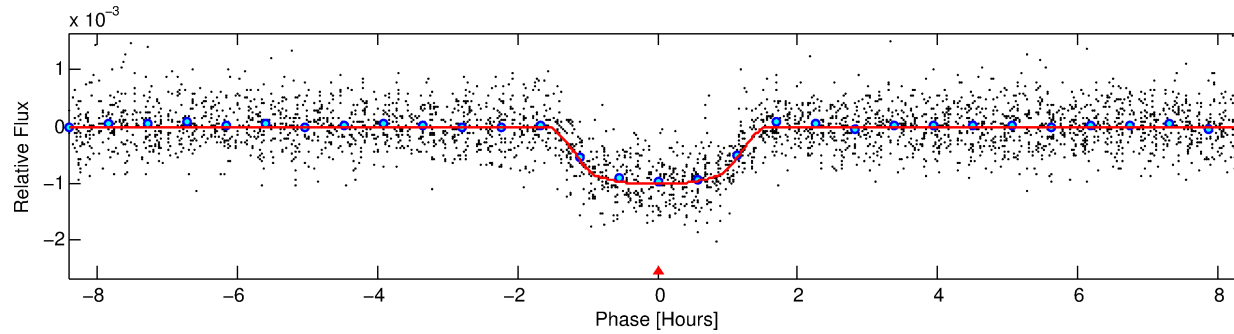
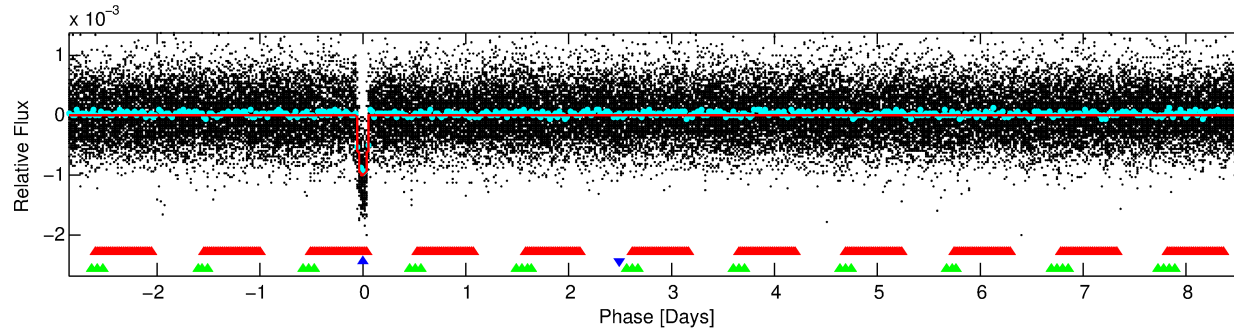
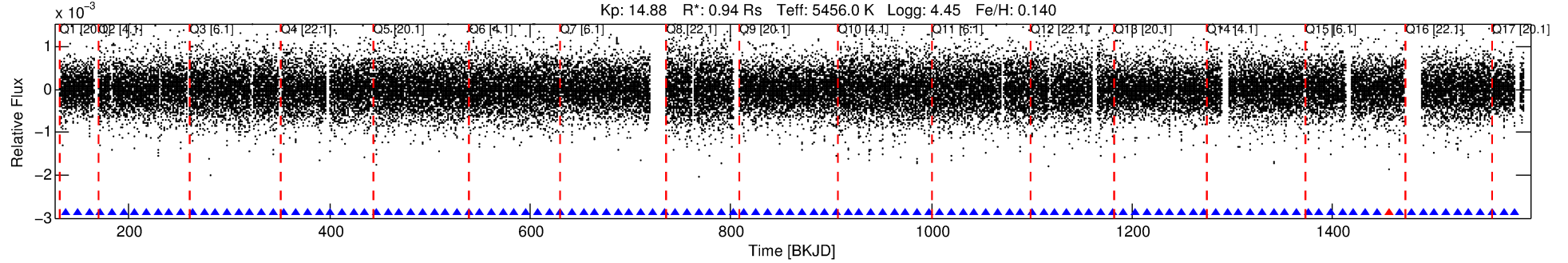
Ephemeris Match Information For 006381846-02

No Significant Match Found

DV One-Page Summary

KIC: 6381846 Candidate: 2 of 3 Period: 11.463 d
KOI: K00509.02 Name: Kepler-171c Corr: 0.955

Kp: 14.88 R*: 0.94 Rs Teff: 5456.0 K Logg: 4.45 Fe/H: 0.140



DV Fit Results:

Period = 11.46347 [0.00002] d
Epoch = 137.3867 [0.0013] BKJD
Rp/R* = 0.0338 [0.0033]
a/R* = 18.23 [6.97]
b = 0.85 [0.13]
Seff = 75.68 [13.51]
Teq = 752 [34] K
Rp = 3.48 [0.54] Re
a = 0.0966 [0.0106] AU
Ag = 23.22 [10.28] [2.16σ]
Teffp = 2553 [264] K [6.77σ]

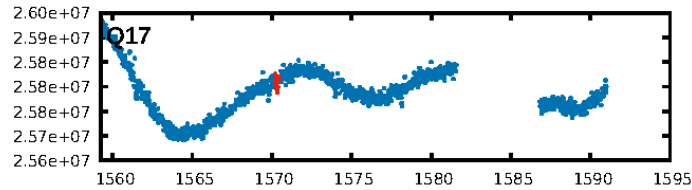
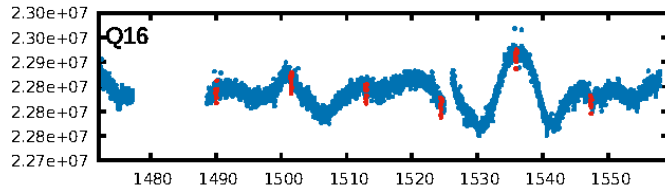
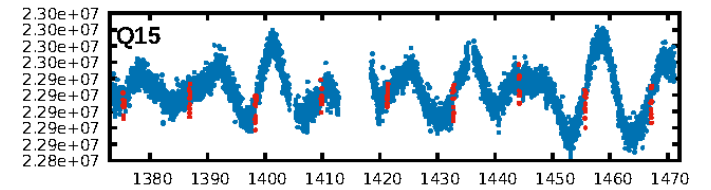
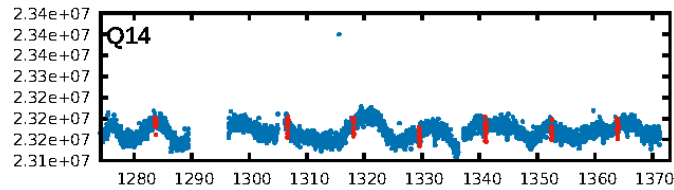
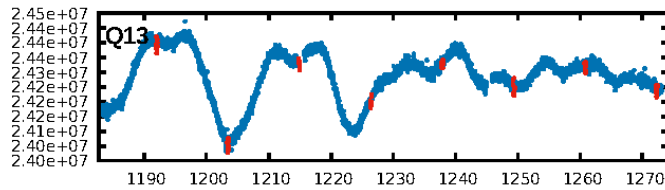
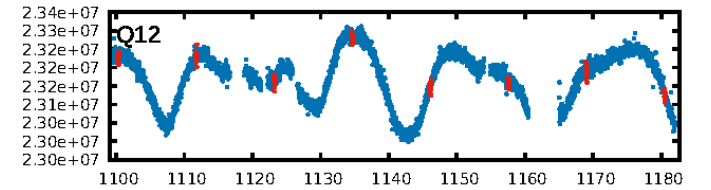
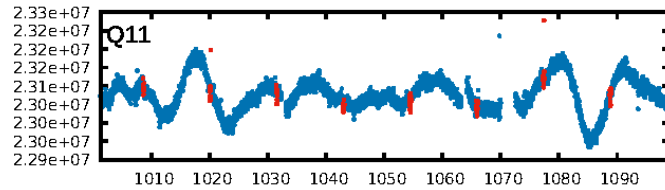
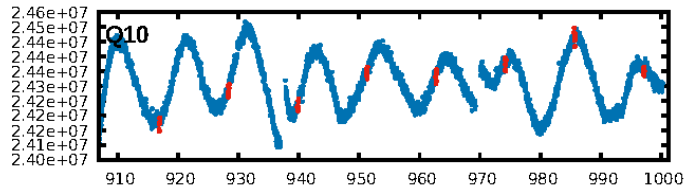
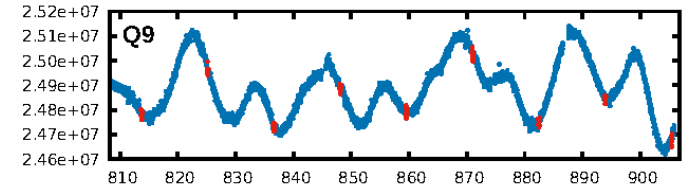
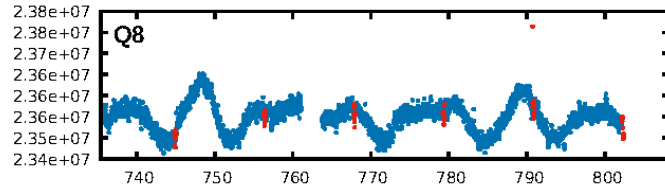
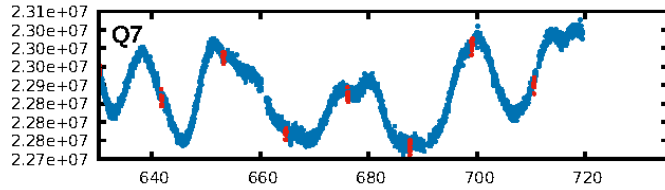
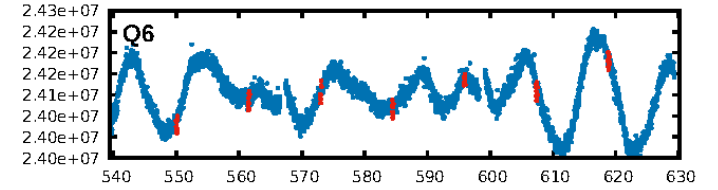
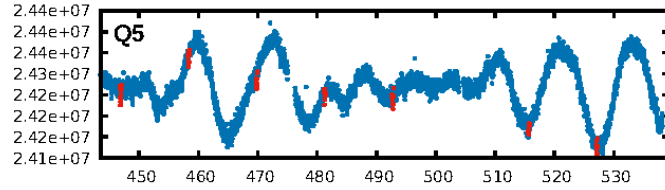
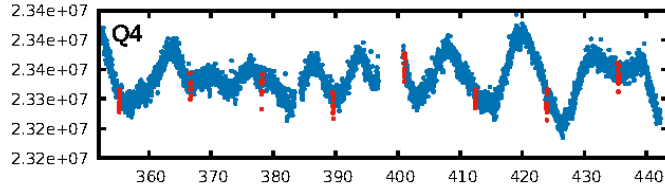
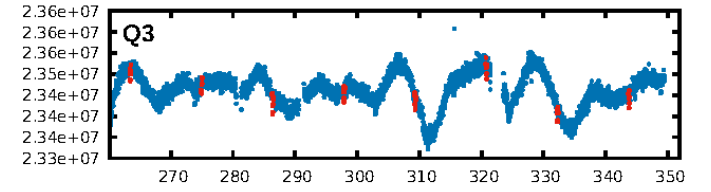
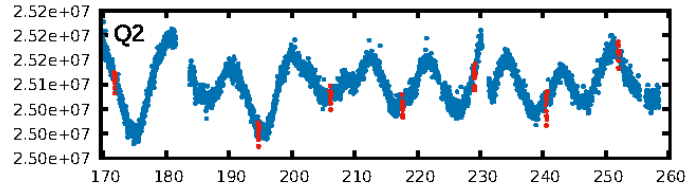
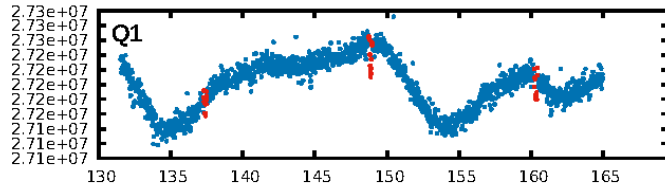
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.56σ]
LongPeriod-sig: 100.0% [67.11σ]
ModelChiSquare2-sig: 95.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [104/105]
GhostDiagnostic-chr: 4.49
Centroid-sig: 7.1%
Centroid-so: 0.648 arcsec [2.96σ]
OotOffset-rm: 0.211 arcsec [1.43σ]
KicOffset-rm: 0.098 arcsec [0.69σ]
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]

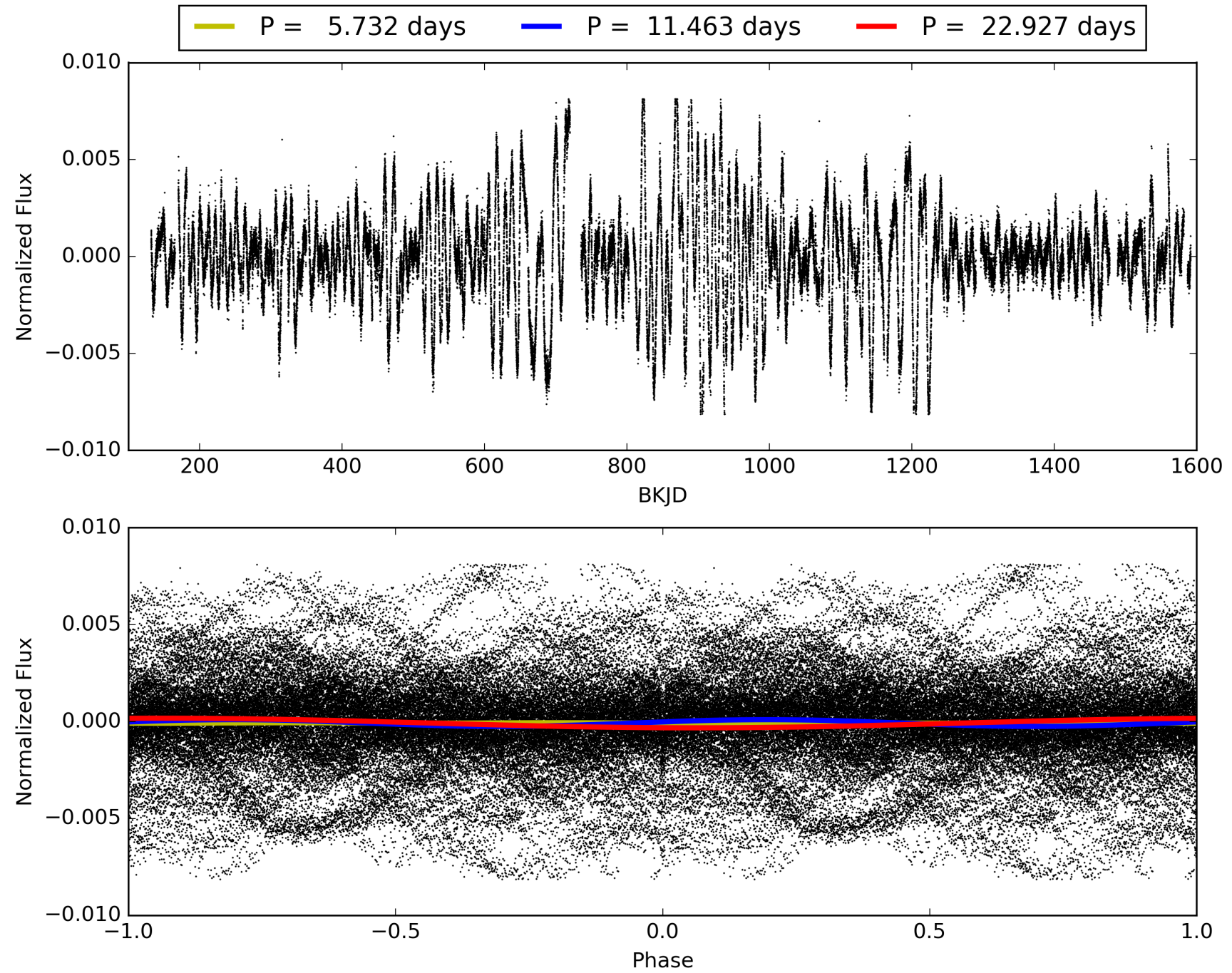
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:56:25 Z

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

TCE 006381846-02, PDC Light Curves

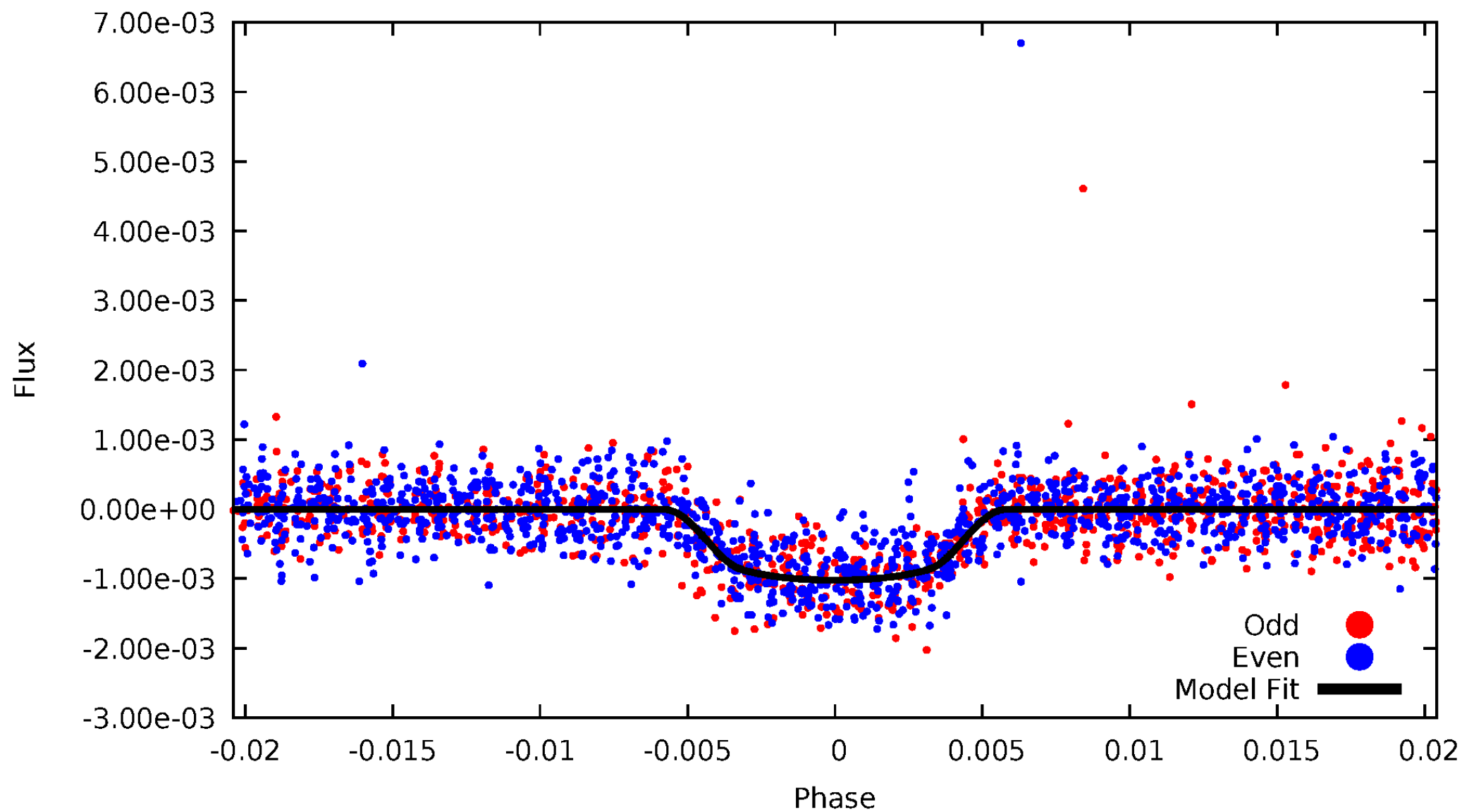


TCE 006381846-02



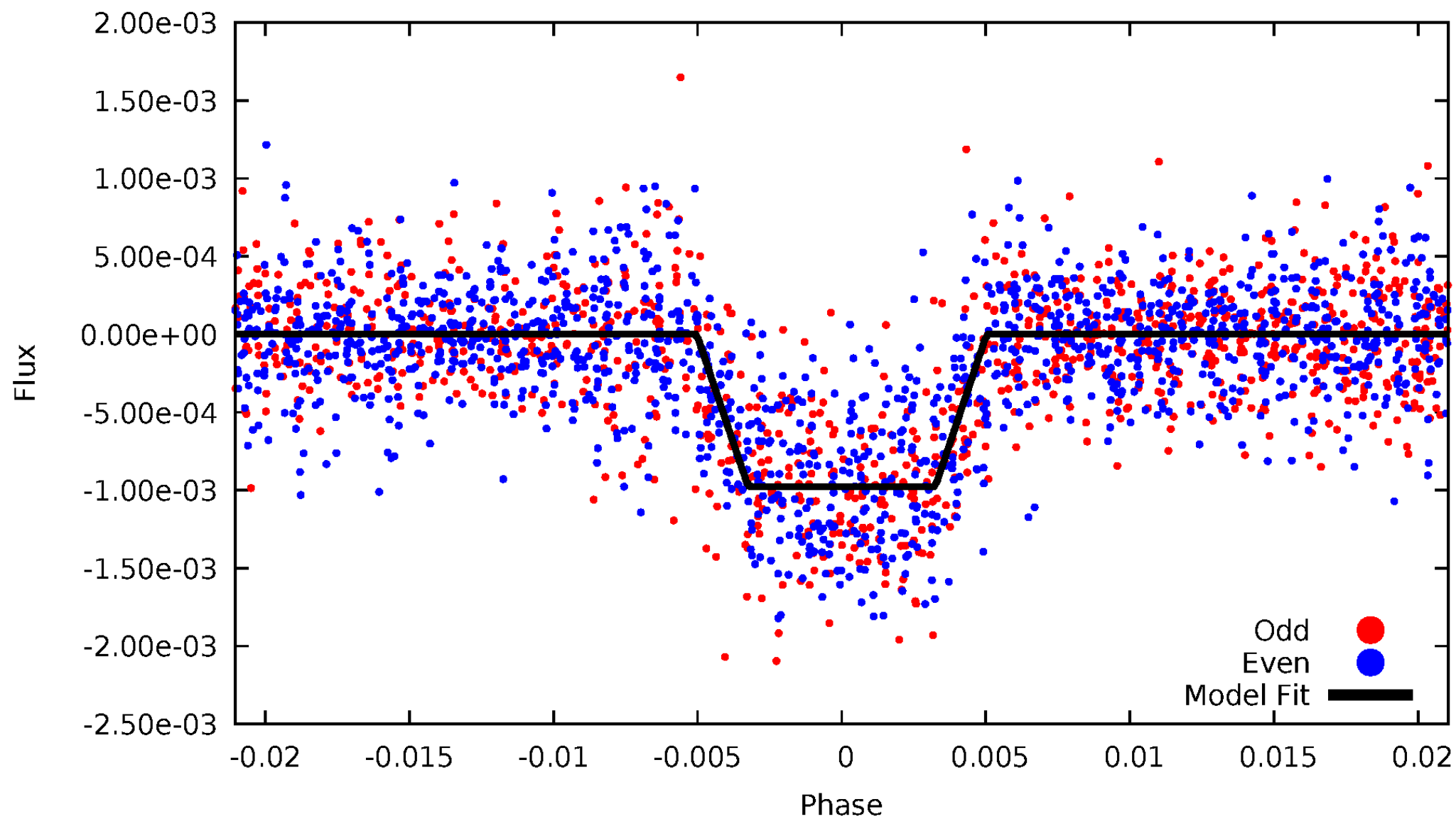
DV Odd/Even

TCE 006381846-02



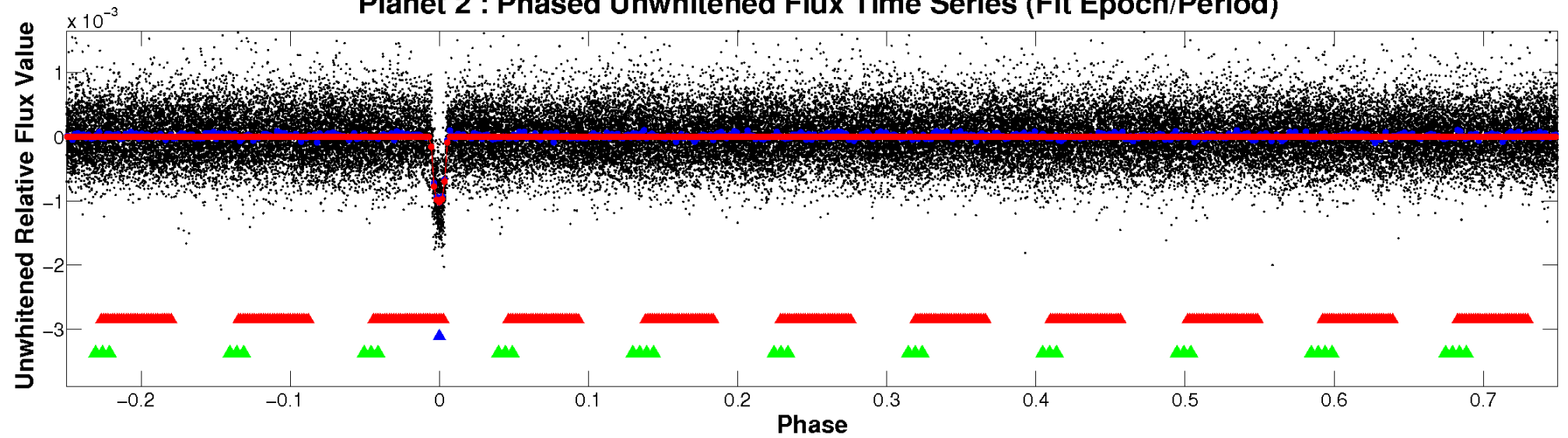
ALT Odd/Even

TCE 006381846-02

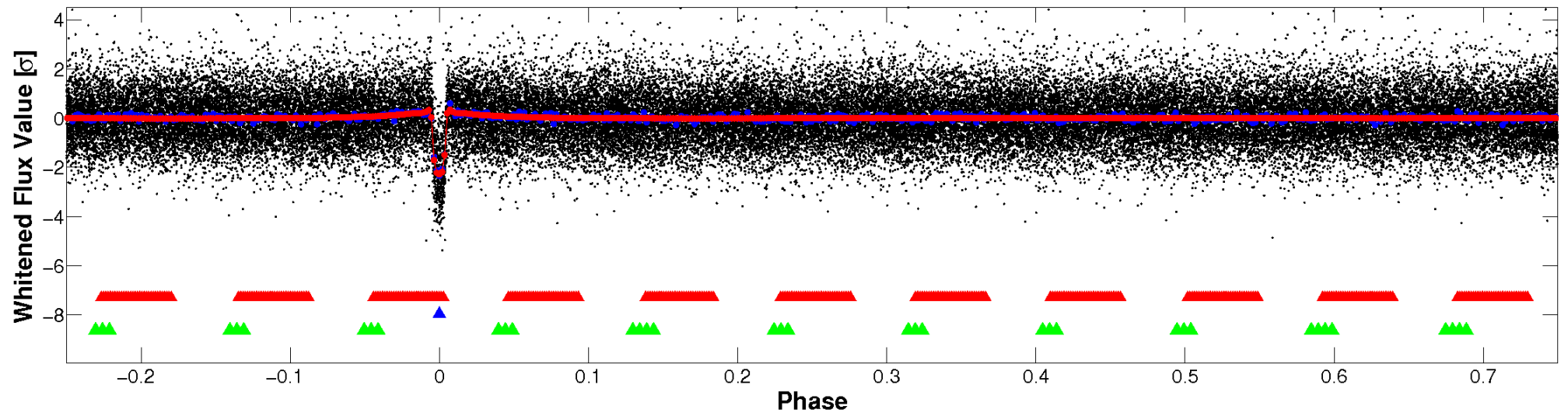


Non-Whitened Vs. Whitened Light Curve

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

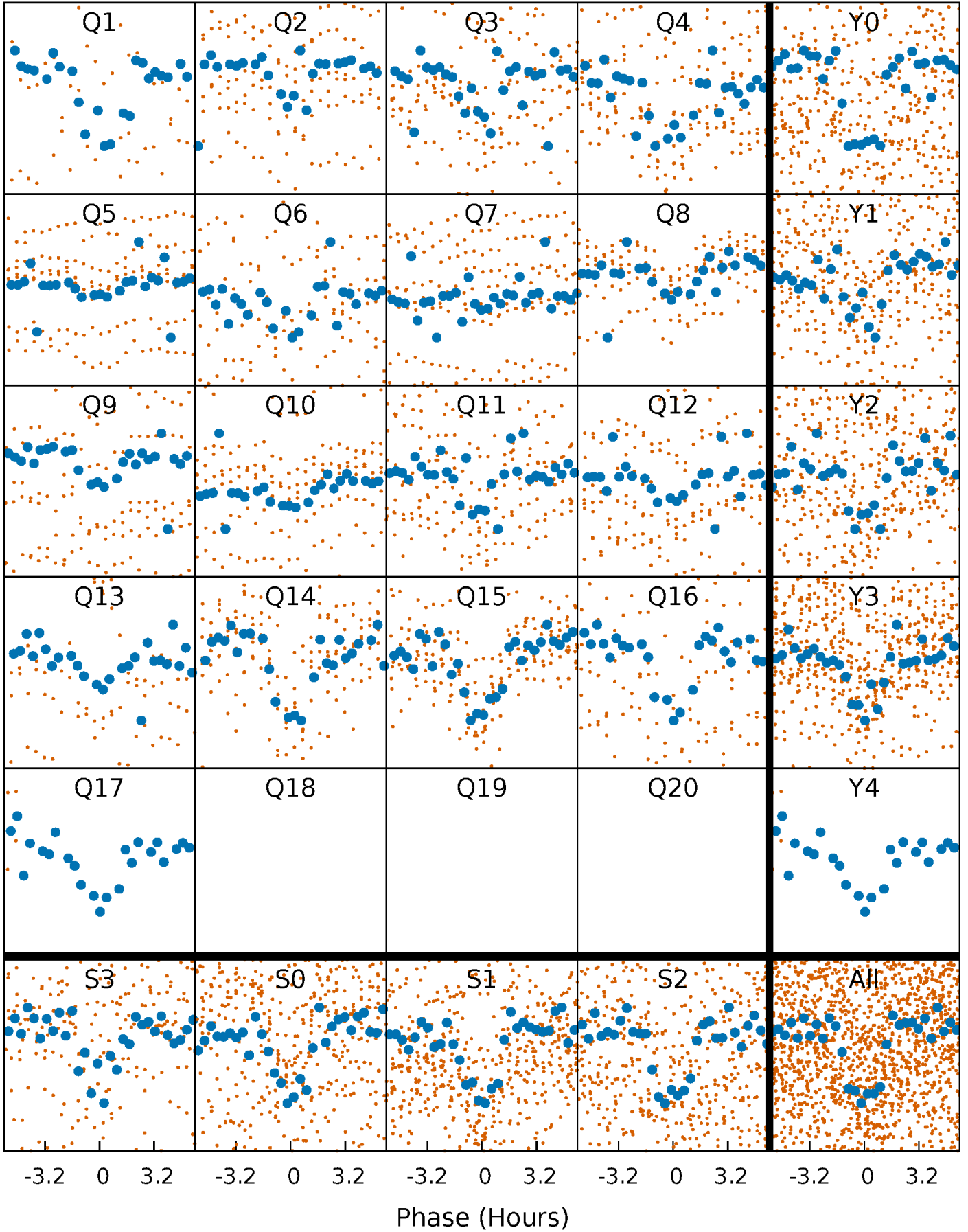


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



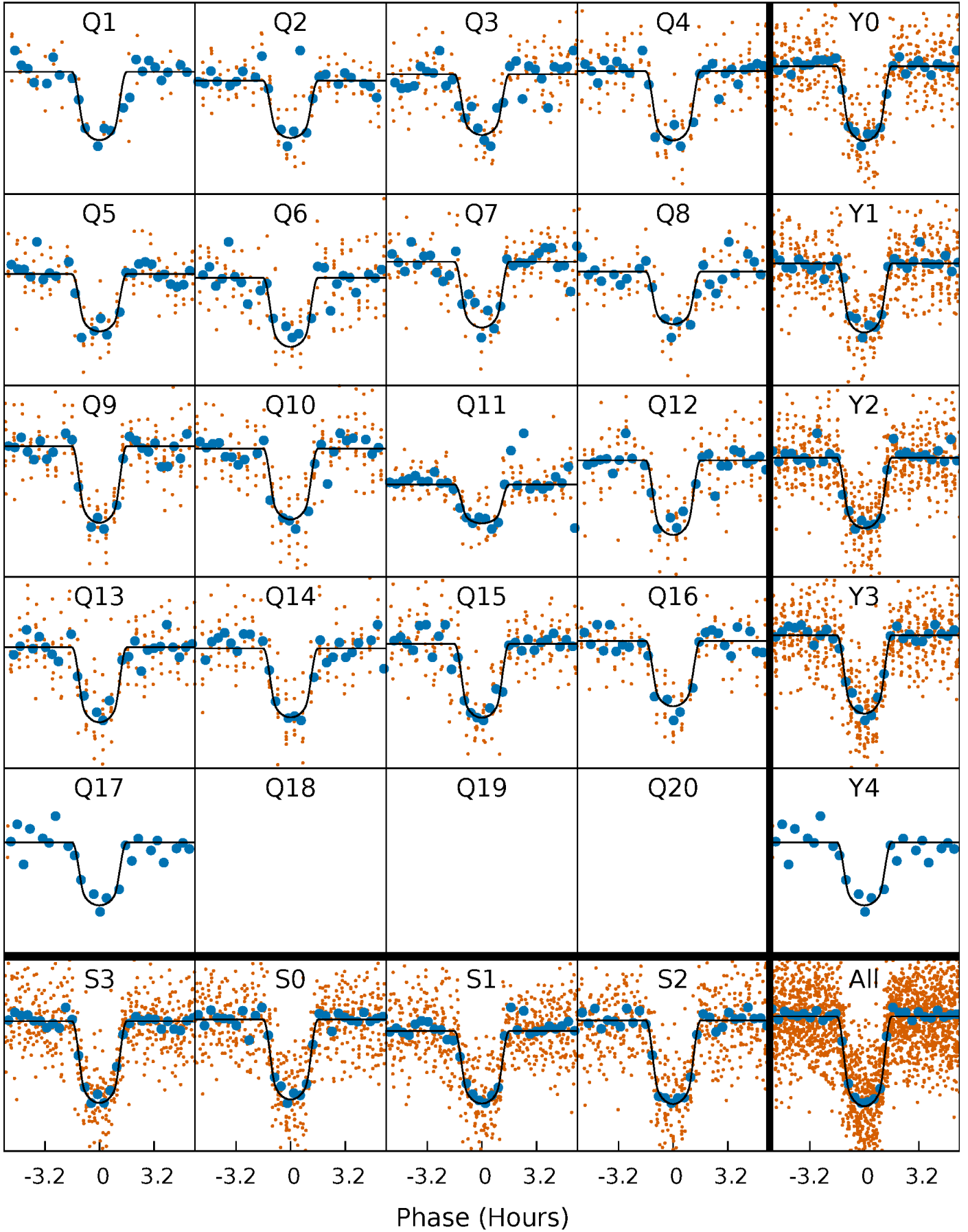
PDC Quarter-Phased Transit Curves

TCE 006381846-02 P= 11.463474 Days $T_0=137.386682$ (BKJD)



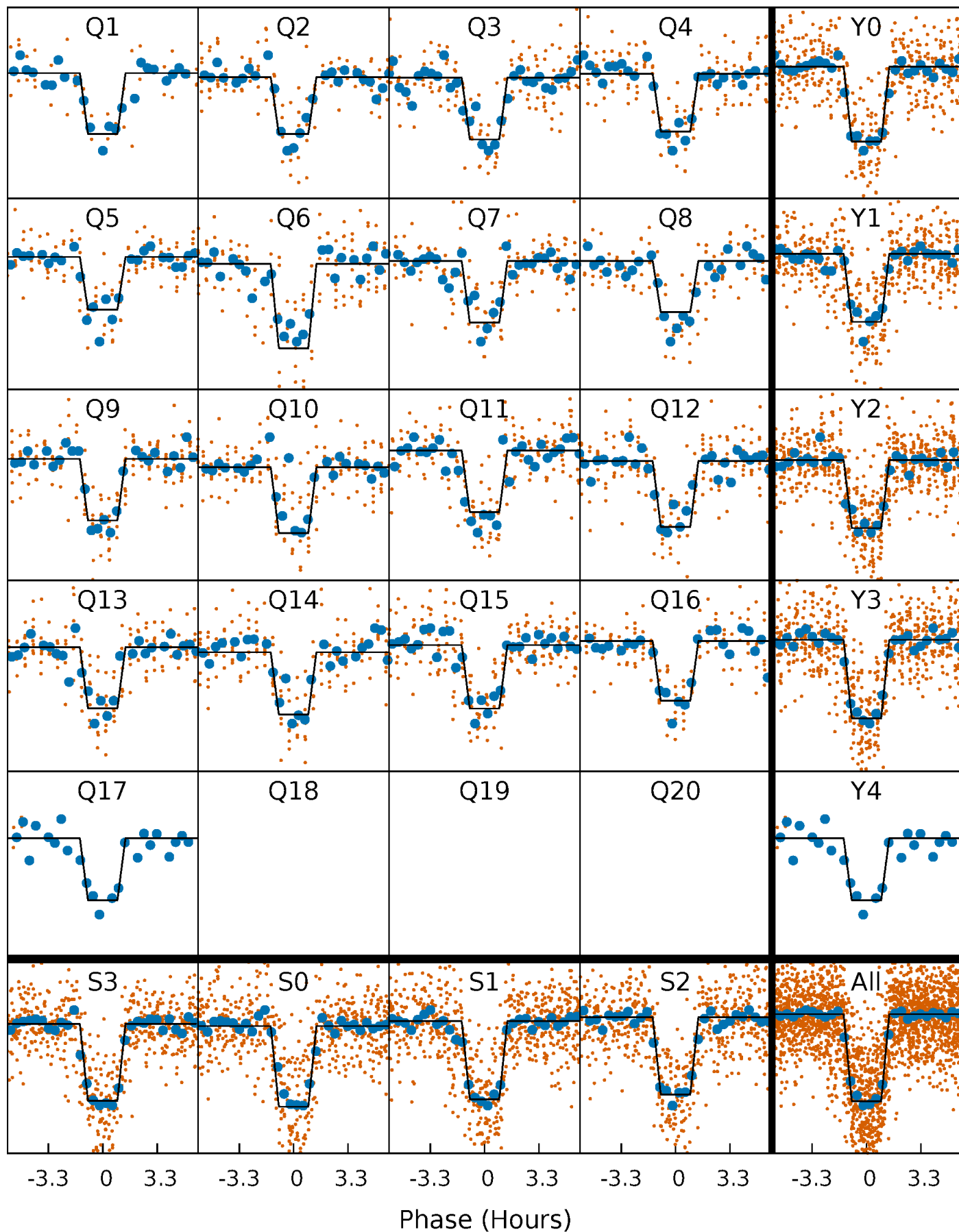
DV Quarter-Phased Transit Curves

TCE 006381846-02 P= 11.463474 Days $T_0=137.386682$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

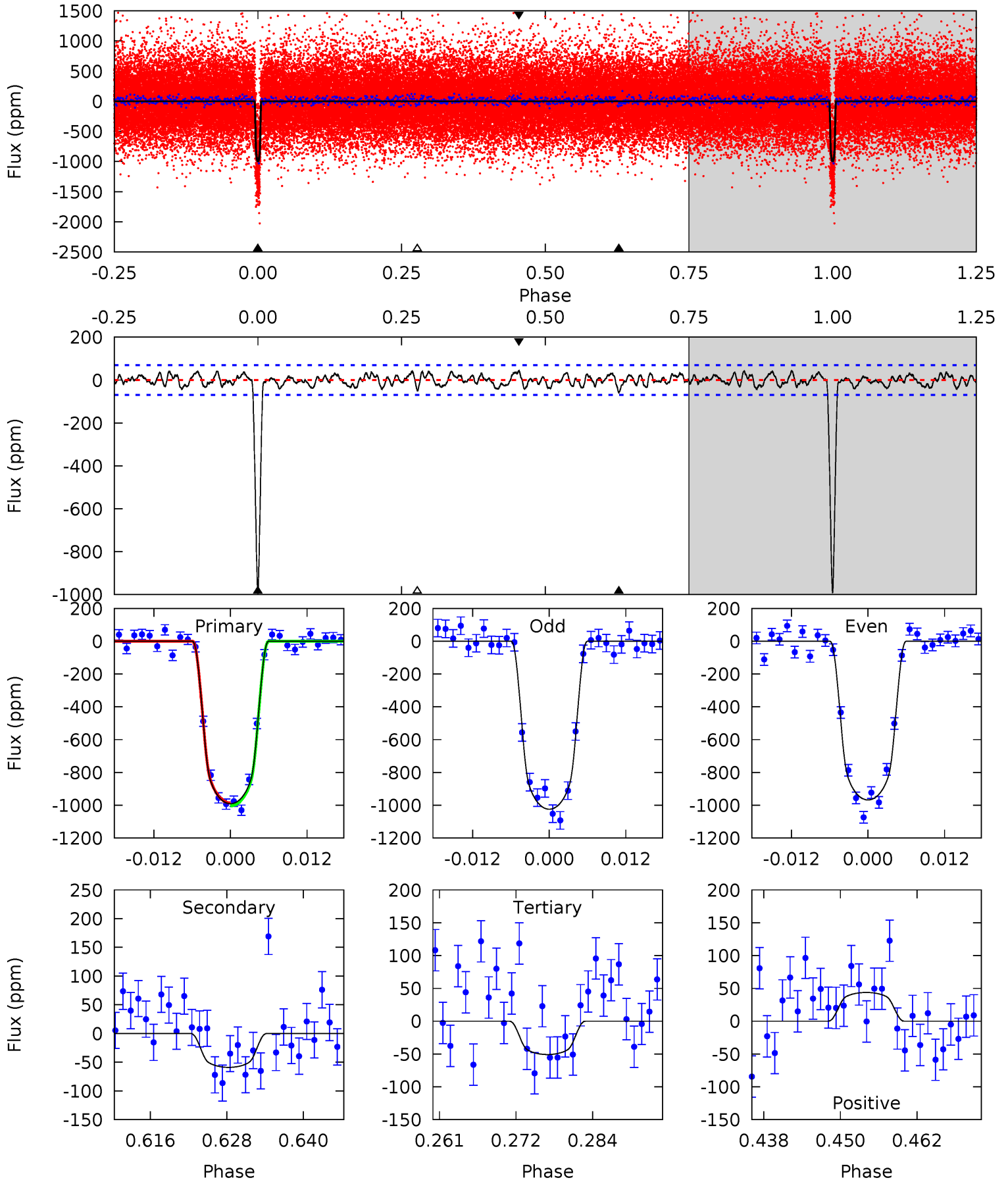
TCE 006381846-02 P= 11.463498 Days $T_0=137.384718$ (BKJD)



DV Model-Shift Uniqueness Test

006381846-02, $P = 11.463474$ Days, $E = 125.923208$ Days

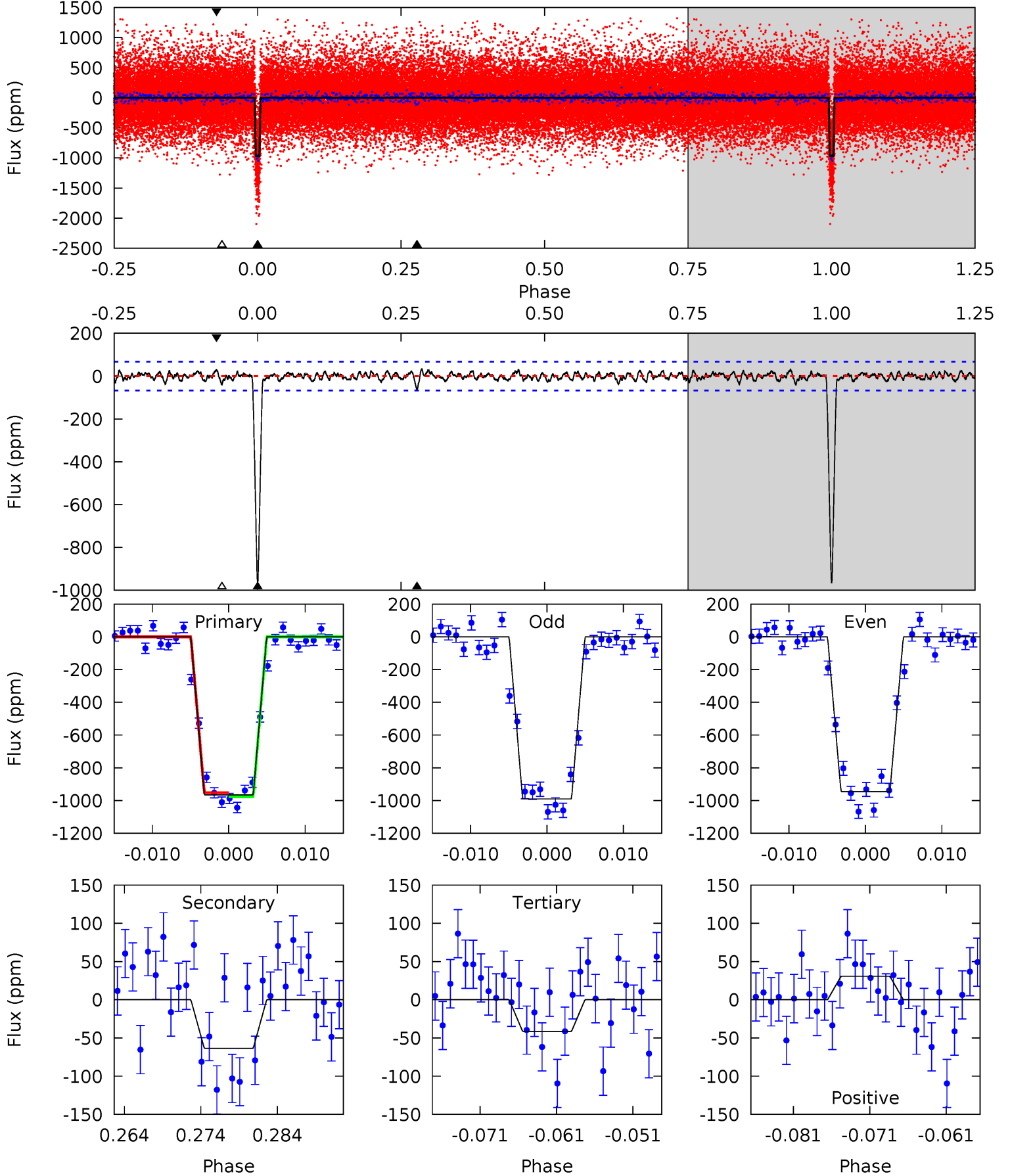
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.8	4.22	3.63	3.13	4.99	2.52	1.43	67.2	67.7	0.59	1.09	2.01	0.99	0.04	0.62



Alt Model-Shift Uniqueness Test

006381846-02, $P = 11.463498$ Days, $E = 125.921220$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
72.2	4.75	3.09	2.29	5.02	2.57	0.95	69.1	69.9	1.66	2.46	1.64	1.02	0.03	0.96



Stellar Parameters For KIC 006381846

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5456^{+81}_{-81}	$4.450^{+0.072}_{-0.096}$	$0.140^{+0.150}_{-0.150}$	$0.943^{+0.115}_{-0.077}$	$0.914^{+0.052}_{-0.046}$	$1.538^{+0.433}_{-0.433}$
	+1%/-1%	+2%/-2%	+107%/-107%	+12%/-8%	+6%/-5%	+28%/-28%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006381846-02 / KOI 0509.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-59 ± 14	$3.50^{+0.41}_{-0.40}$	1051^{+38}_{-33}	3179^{+150}_{-152}	25^{+9}_{-7}
Alt.	-64 ± 13	$3.22^{+0.41}_{-0.38}$	1051^{+39}_{-31}	3291^{+162}_{-151}	31^{+11}_{-9}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

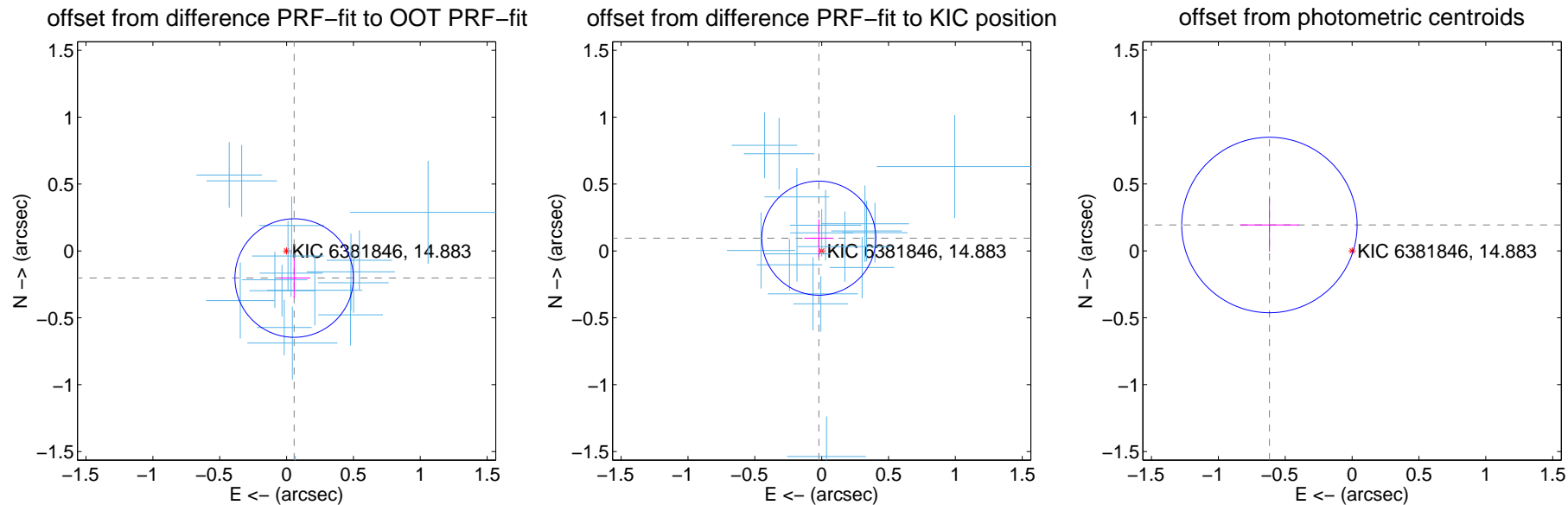
DV Centroid Data

Supplemental centroid analysis for 006381846-02. Kepler magnitude: 14.88. Transit SNR 45.76

There are 17 quarters with good PRF difference image offsets

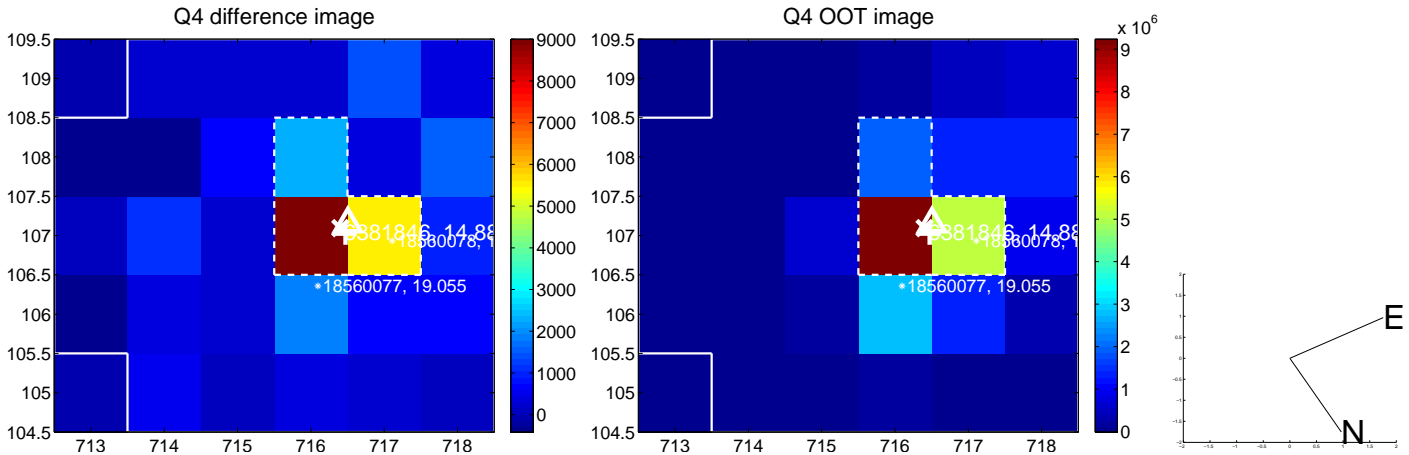
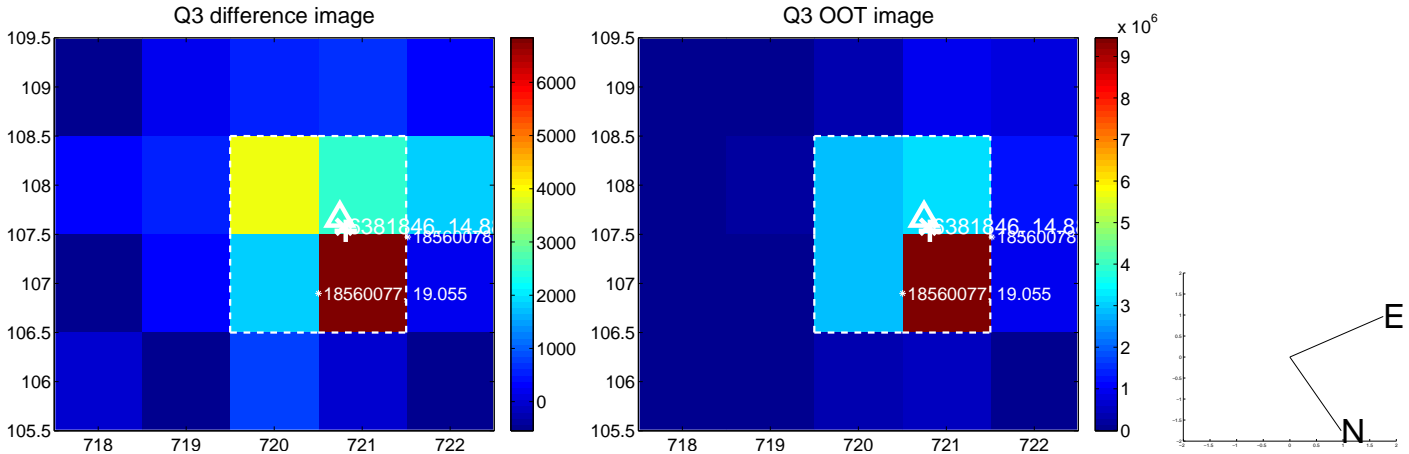
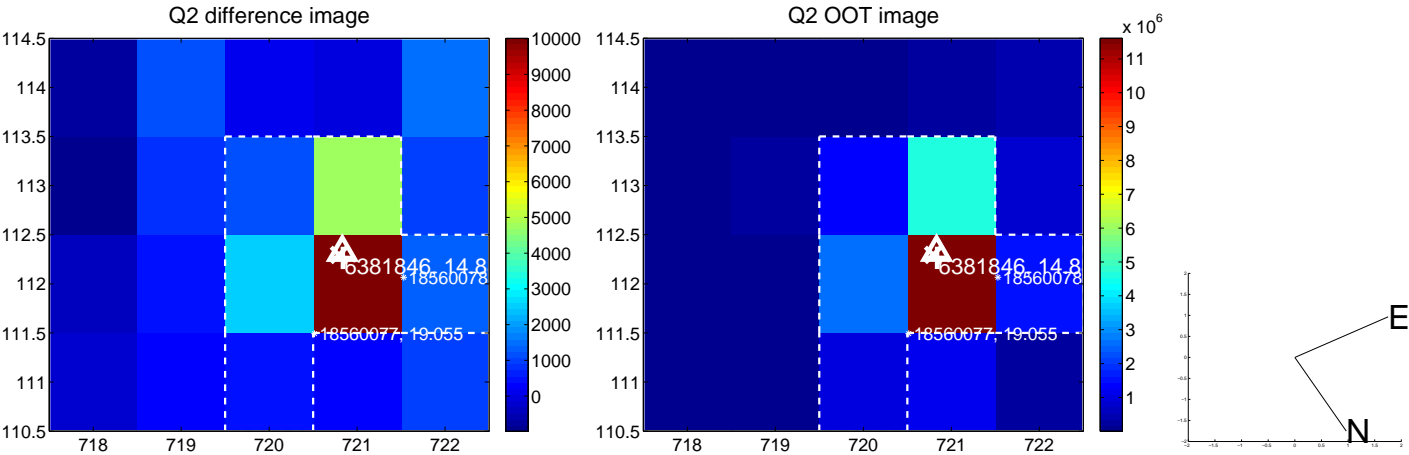
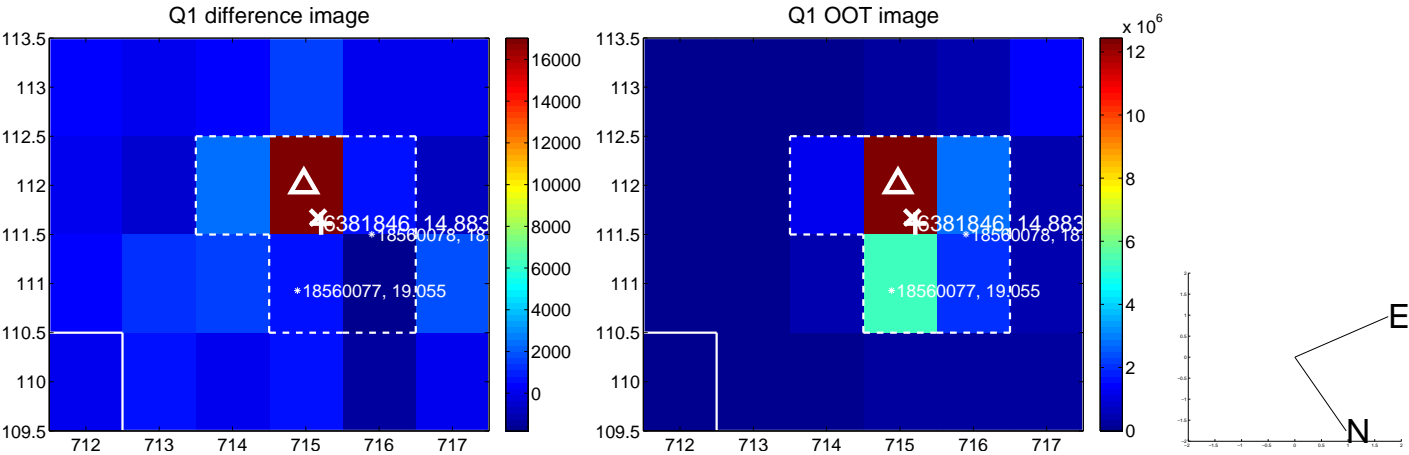
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.211 ± 0.148	1.43	-0.057 ± 0.115	-0.203 ± 0.149
PRF-fit source offset from KIC position	0.098 ± 0.142	0.69	0.021 ± 0.110	0.095 ± 0.141
photometric centroid source offset	0.65 ± 0.22	2.96	0.62 ± 0.22	0.19 ± 0.20

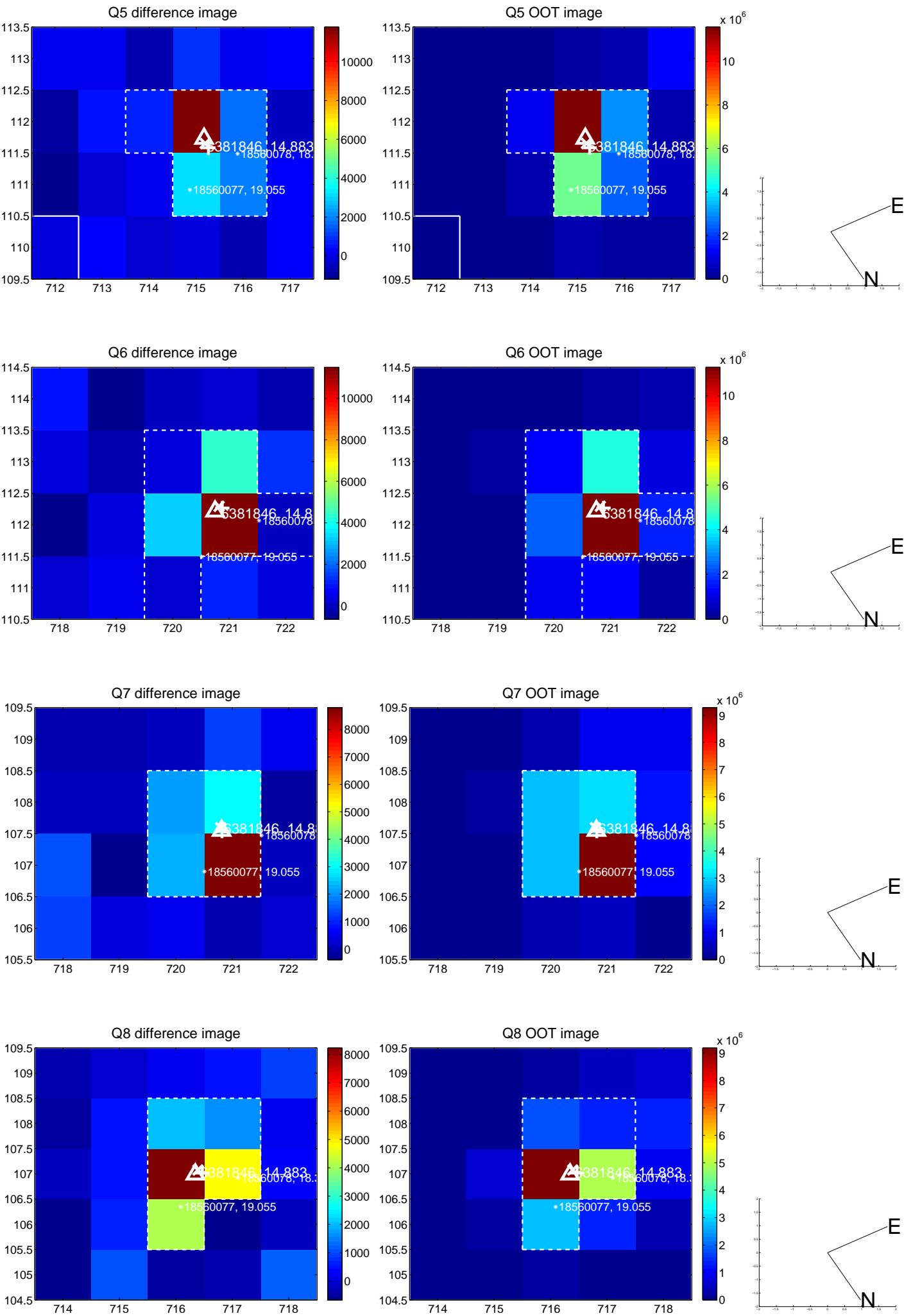


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

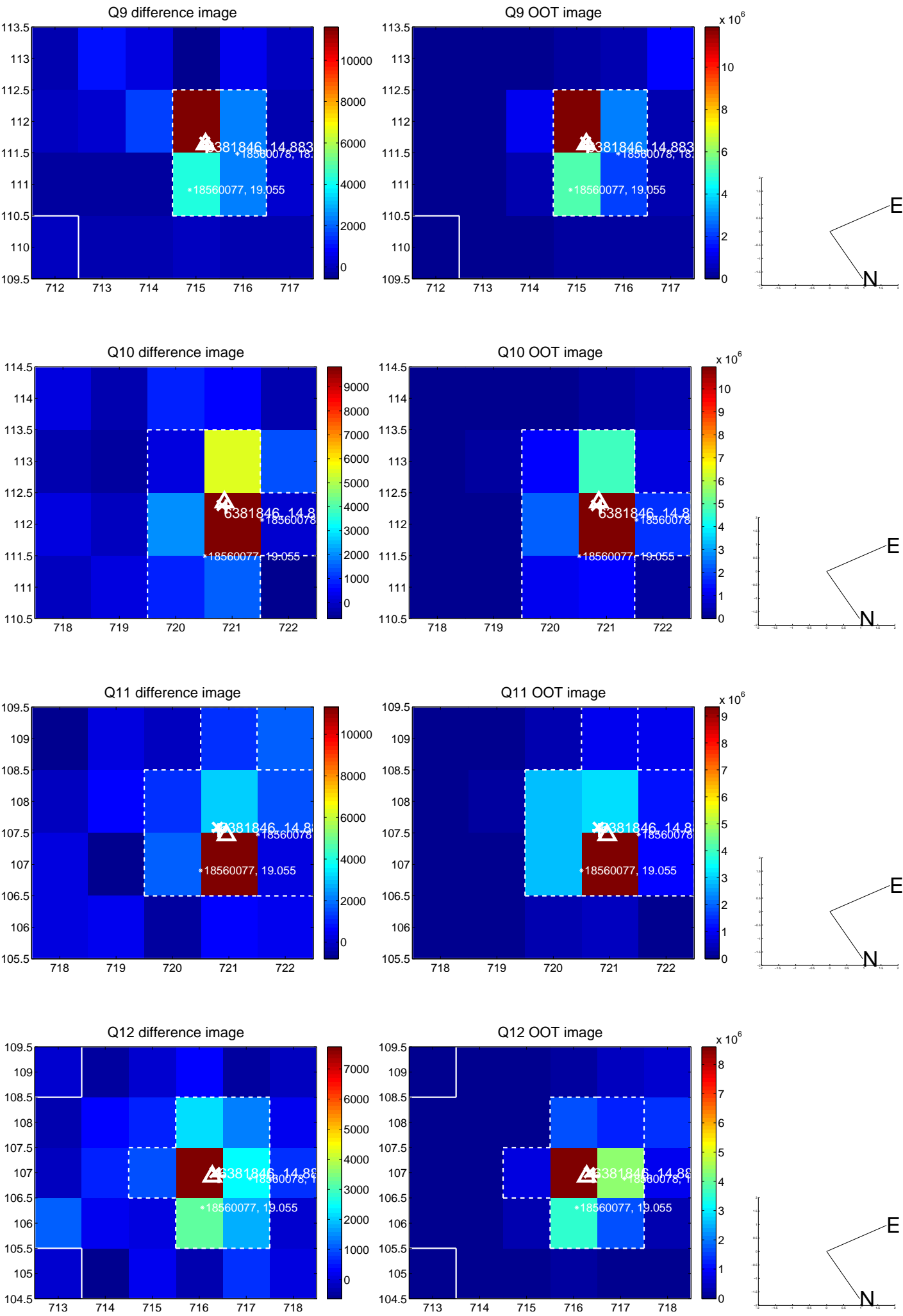
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



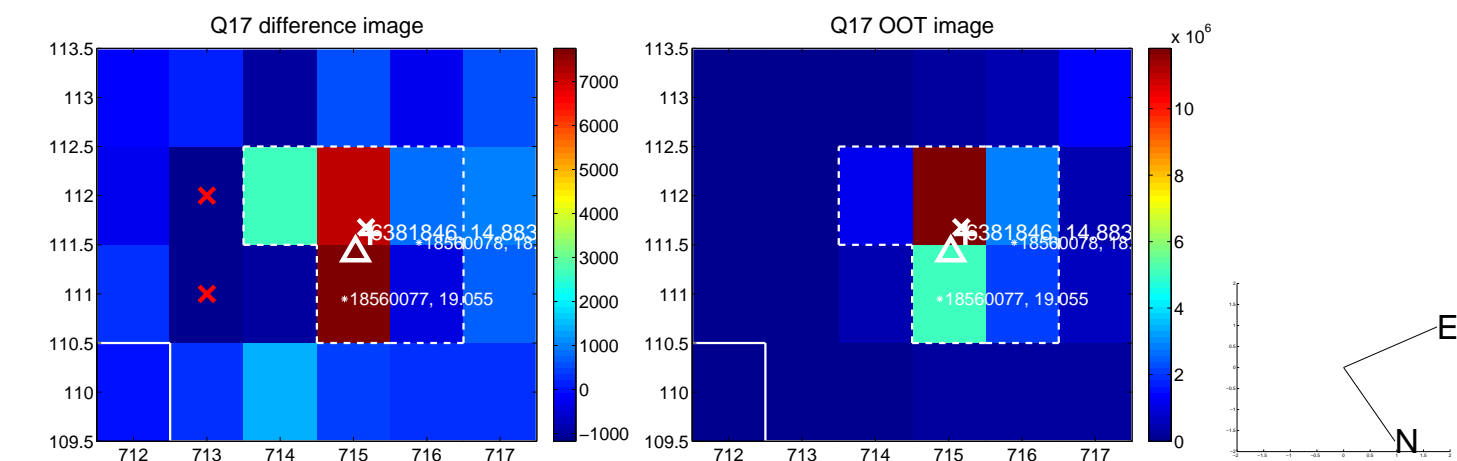
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



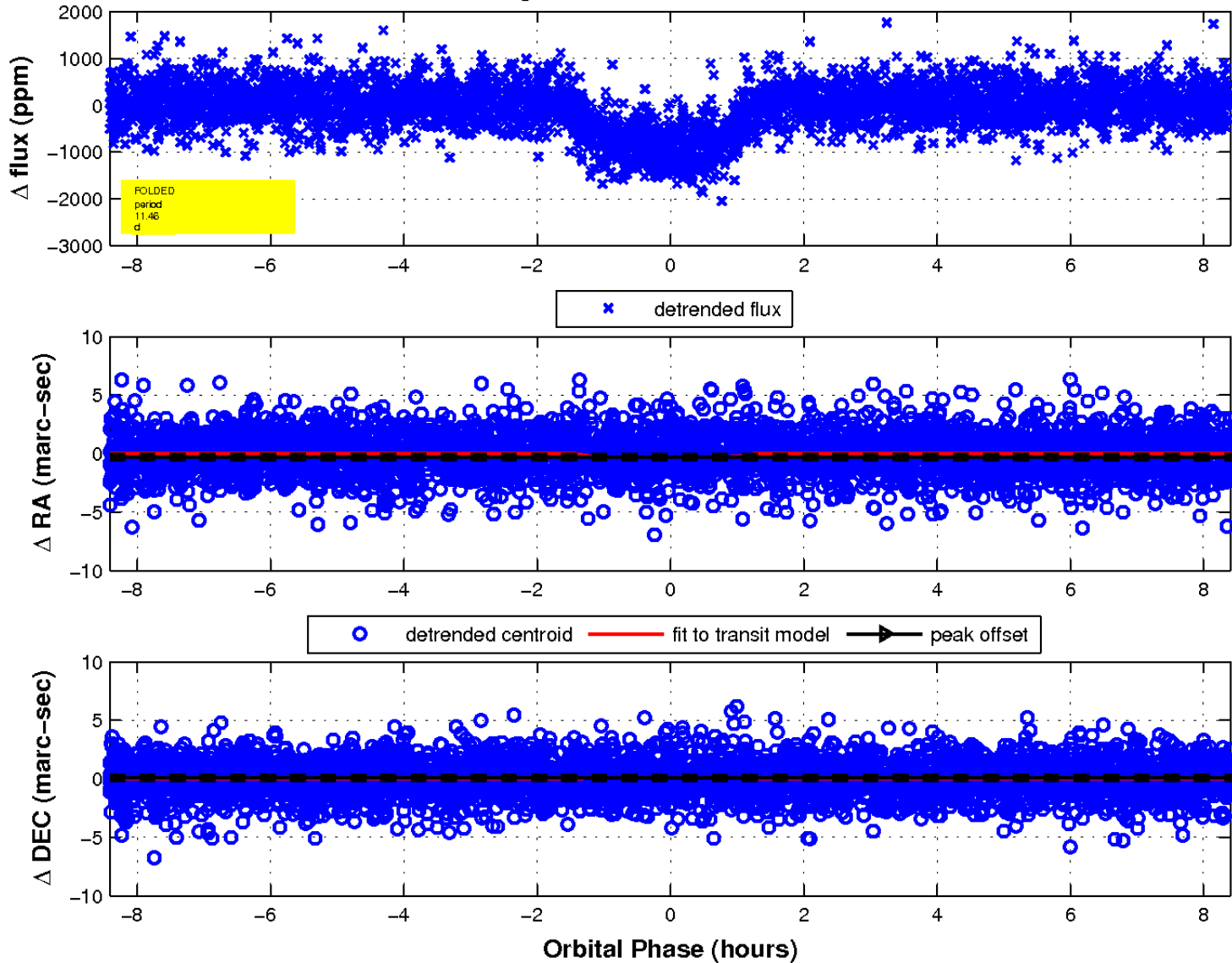
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

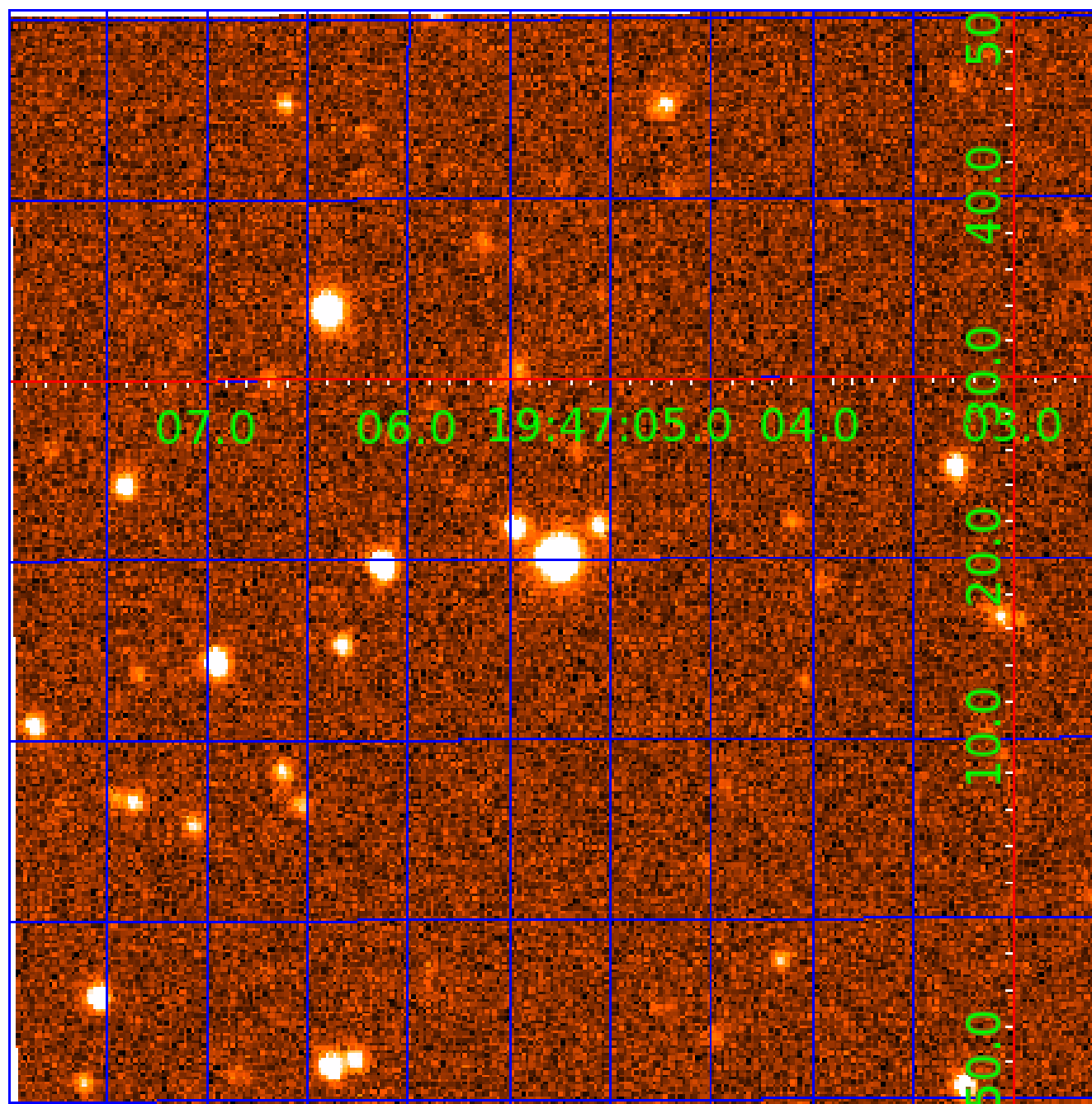


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 006381846

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})
006381846-01	OBS	0509.01	4.166957	132.213859	831.4	3.010	57.9	63.9	0.94	5456	3.20	291.73
006381846-02	OBS	0509.02	11.463474	137.386682	1022.5	2.806	39.5	45.8	0.94	5456	3.48	75.68
006381846-03	OBS	0509.03	39.605925	168.048867	475.7	9.665	13.2	12.9	0.94	5456	4.20	14.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381846-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006381846-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006381846-03	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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.

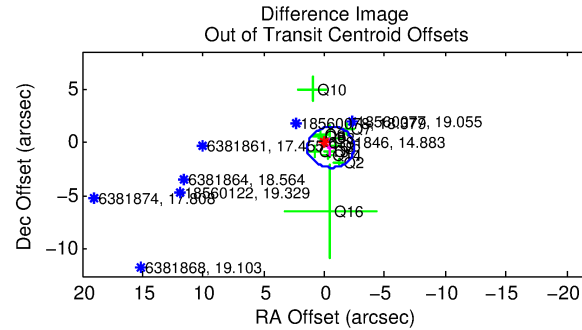
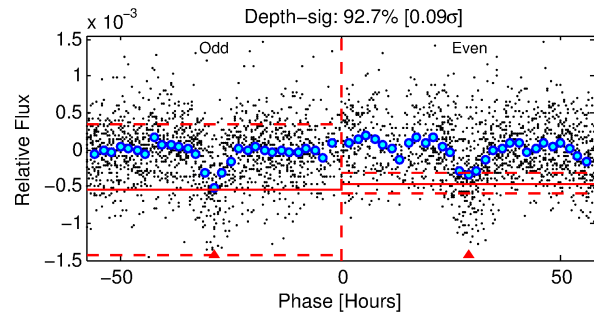
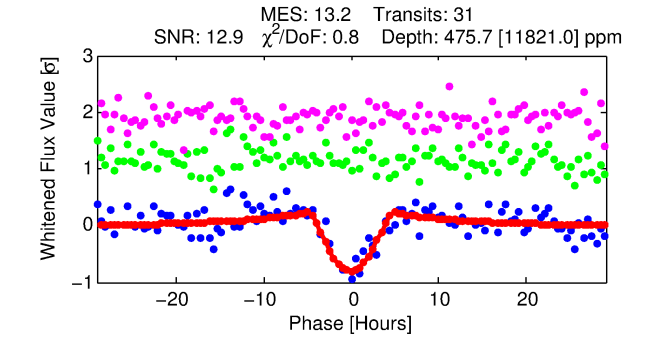
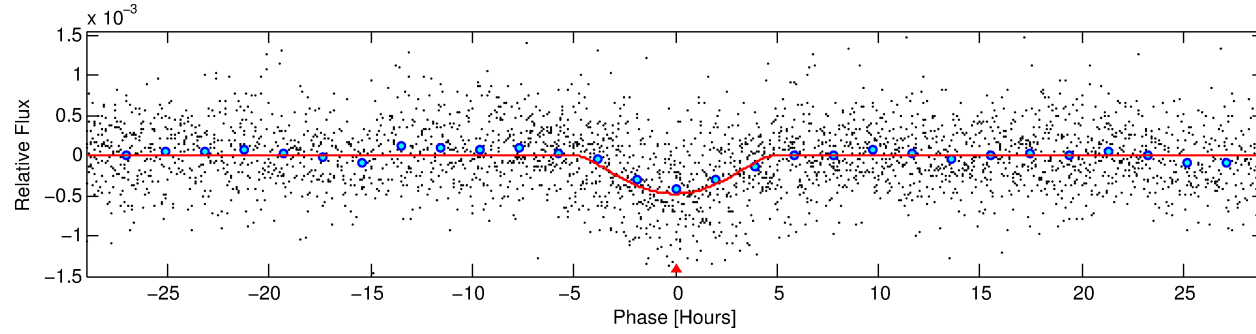
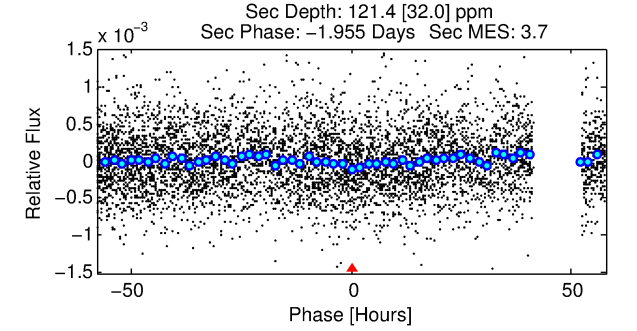
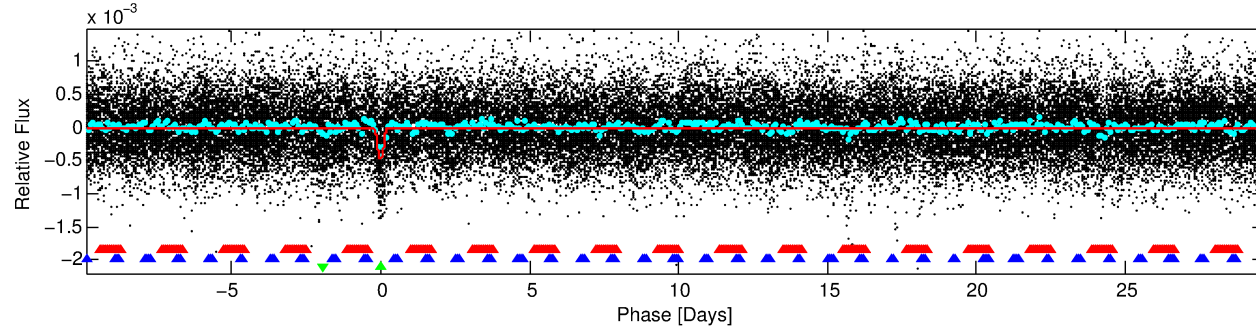
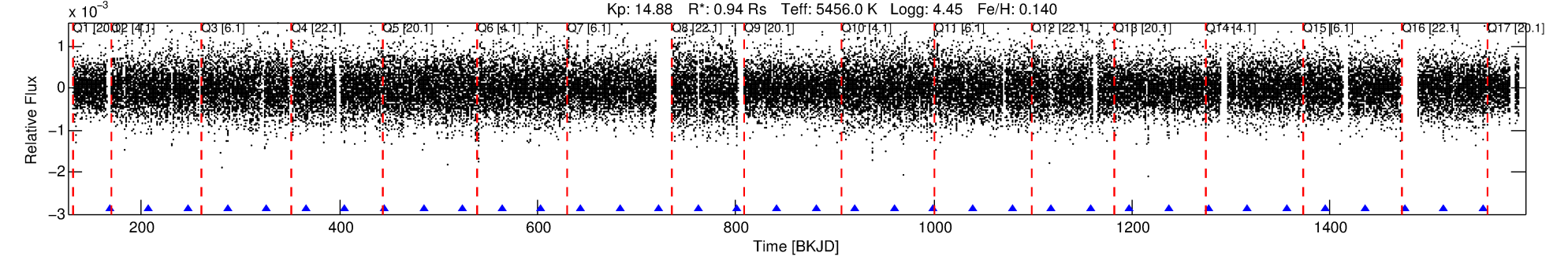
Ephemeris Match Information For 006381846-03

No Significant Match Found

DV One-Page Summary

KIC: 6381846 Candidate: 3 of 3 Period: 39.606 d
KOI: K00509.03 Name: Kepler-171d Corr: 0.879

Kp: 14.88 R*: 0.94 Rs Teff: 5456.0 K Logg: 4.45 Fe/H: 0.140



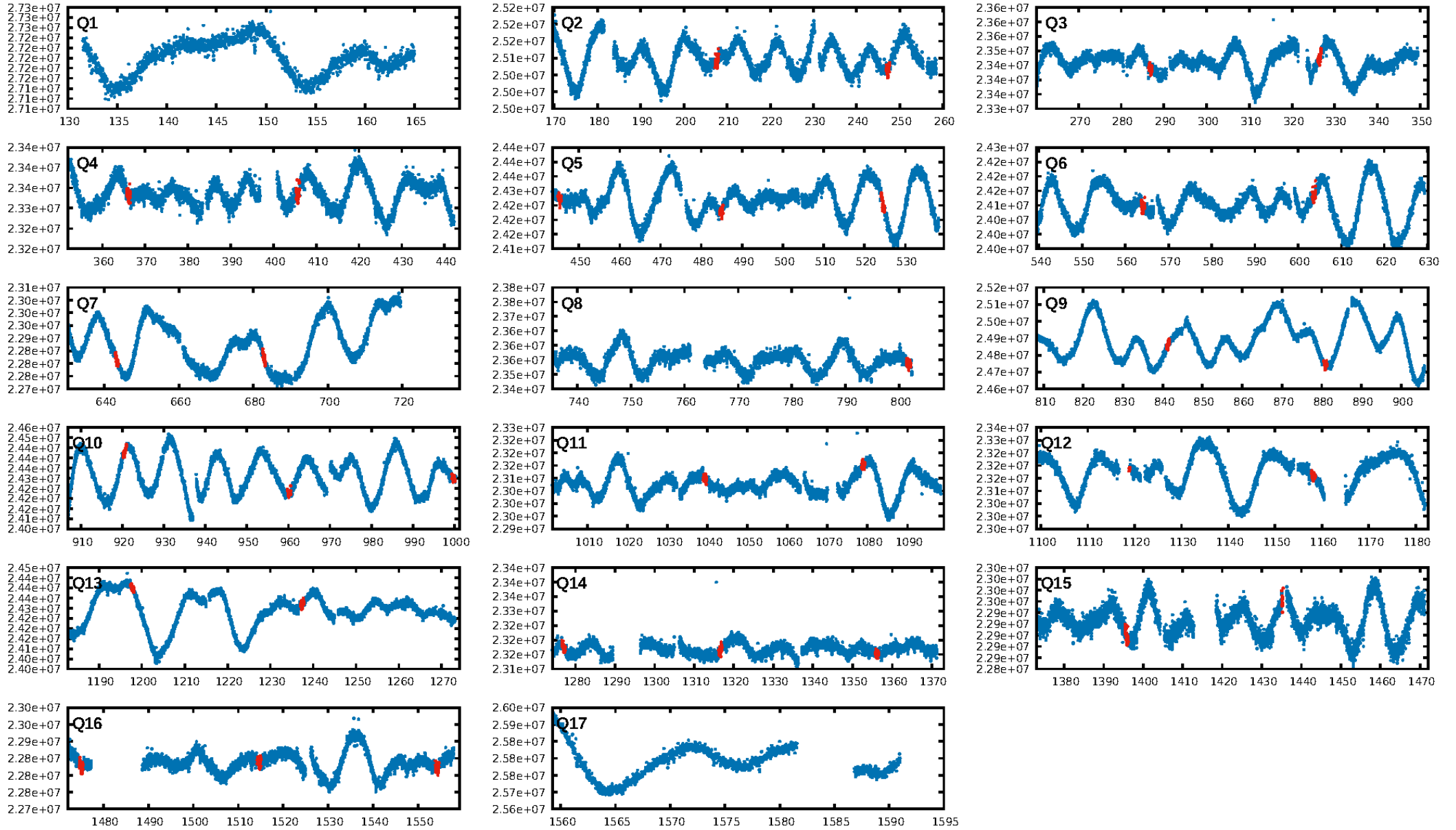
DV Fit Results:

Period = 39.60593 [0.00071] d
Epoch = 168.0489 [0.0146] BKJD
Rp/R* = 0.0408 [0.0910]
a/R* = 9.10 [4.93]
b = 1.00 [0.55]
Seff = 14.49 [2.59]
Teff = 497 [22] K
Rp = 4.20 [9.38] Re
a = 0.2207 [0.0242] AU
Ag = 184.21 [822.69] [0.22 sigma]
Teffp = 2834 [3162] K [0.74 sigma]

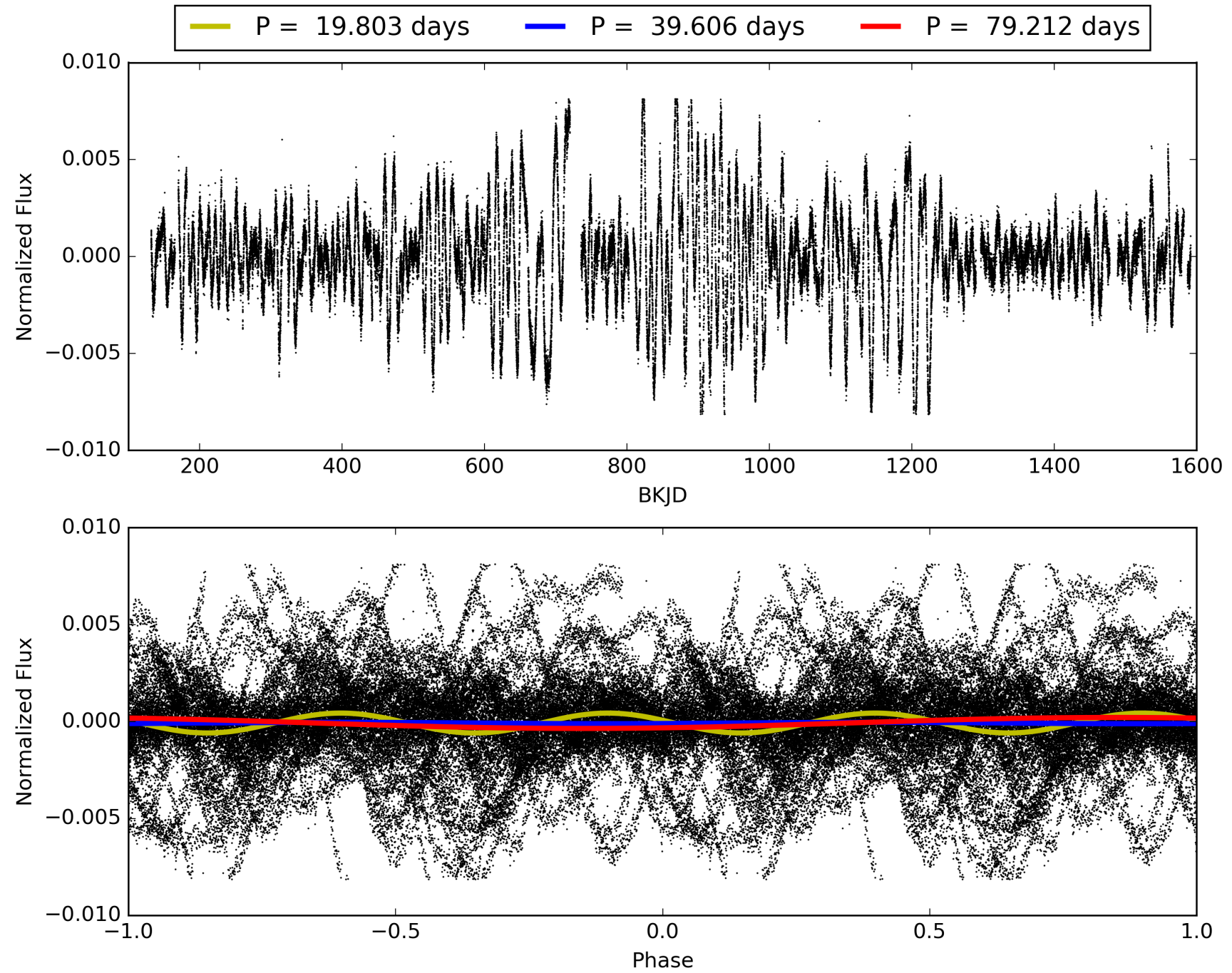
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.11 sigma]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 65.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.47e-34
RollingBand-fgt: 1.00 [31/31]
GhostDiagnostic-chr: 1.879
Centroid-sig: 14.6%
Centroid-so: 0.537 arcsec [0.81 sigma]
OotOffset-rm: 0.697 arcsec [1.09 sigma]
KicOffset-rm: 0.442 arcsec [1.11 sigma]
OotOffset-st: 4/2/2/3 [11]
KicOffset-st: 4/2/2/3 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 0.85 [11/13]

TCE 006381846-03, PDC Light Curves

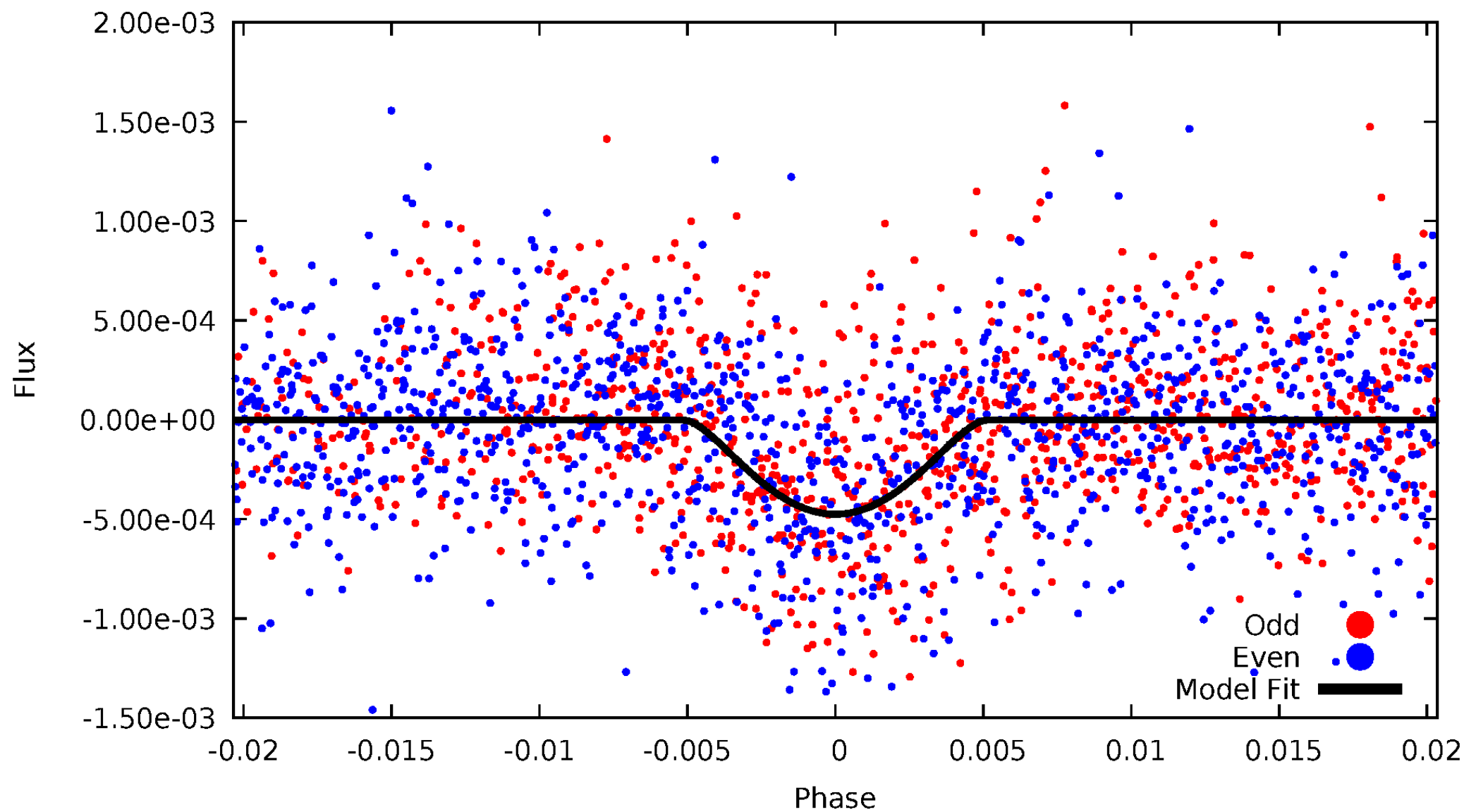


TCE 006381846-03



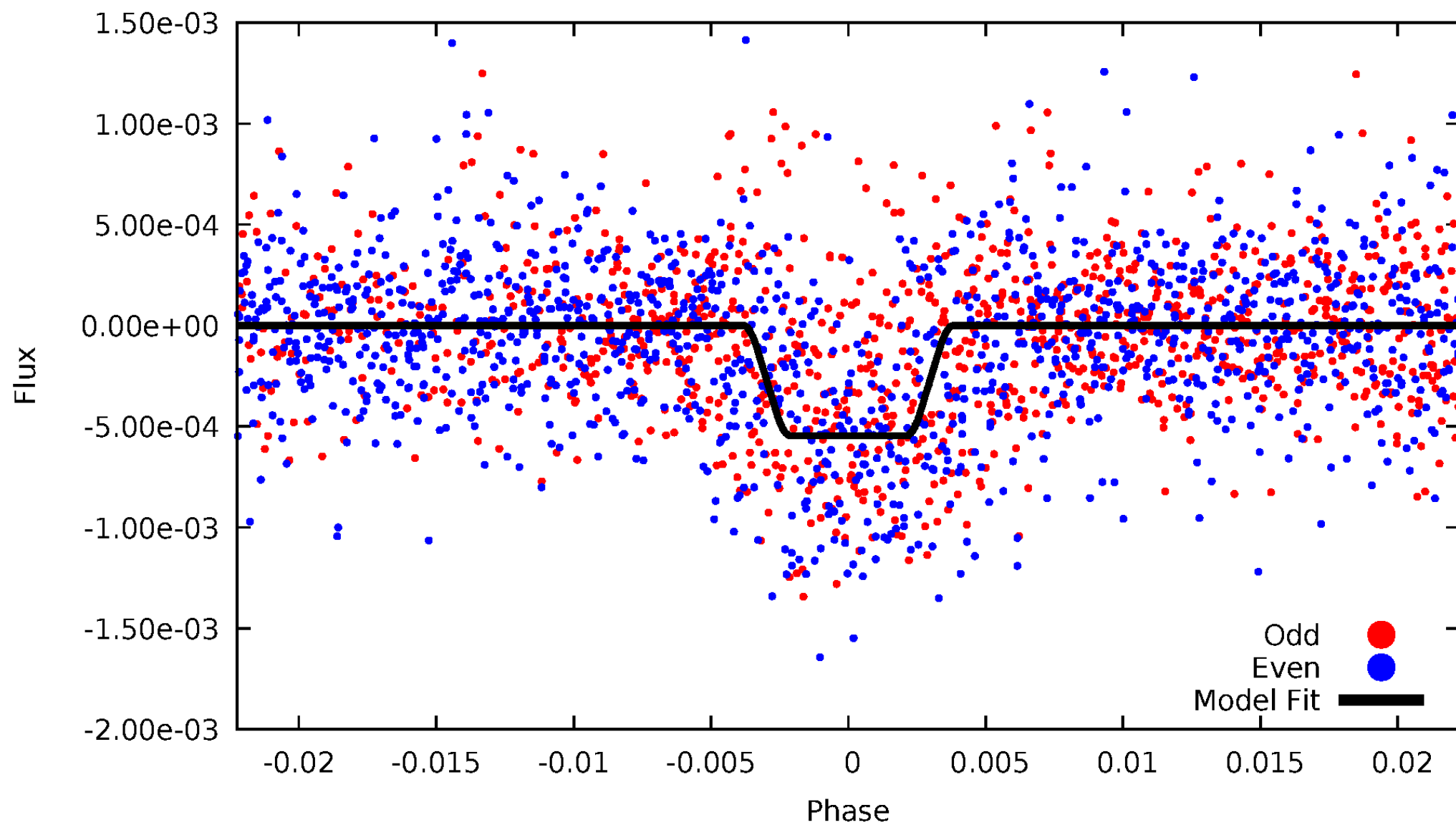
DV Odd/Even

TCE 006381846-03



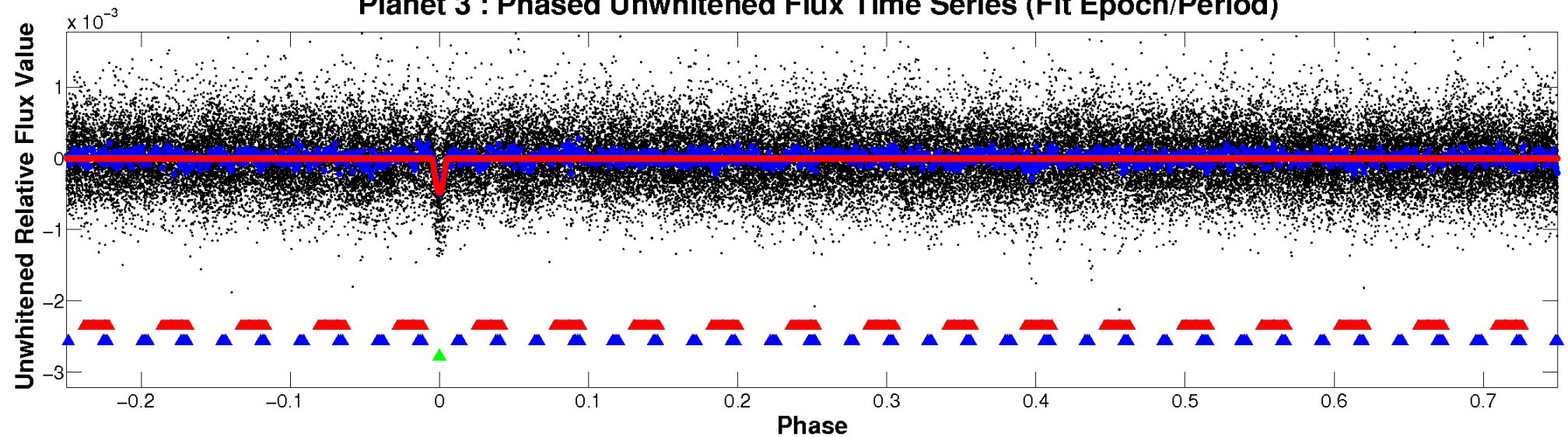
ALT Odd/Even

TCE 006381846-03

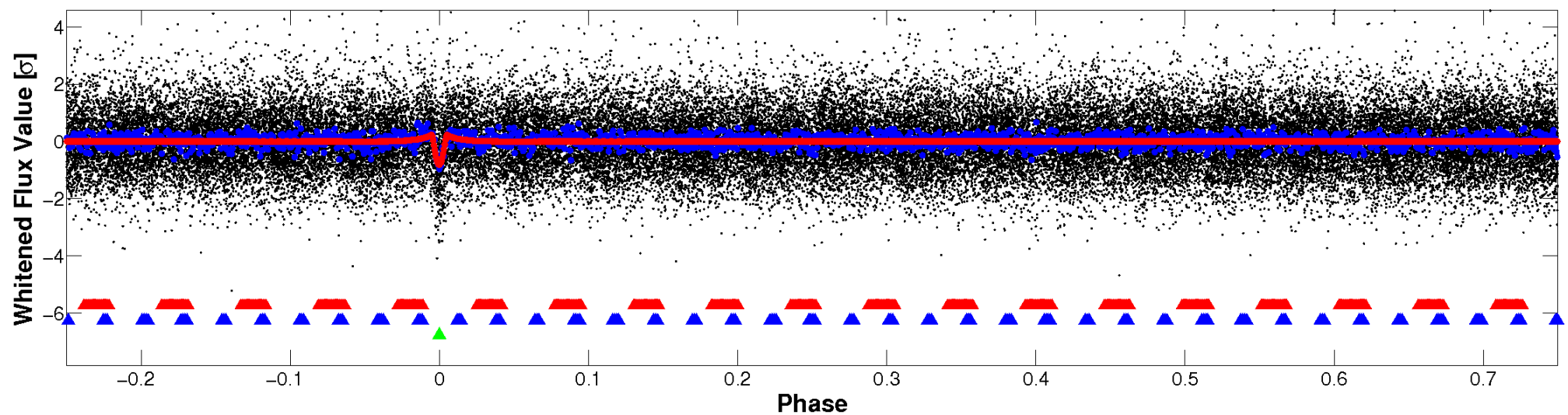


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

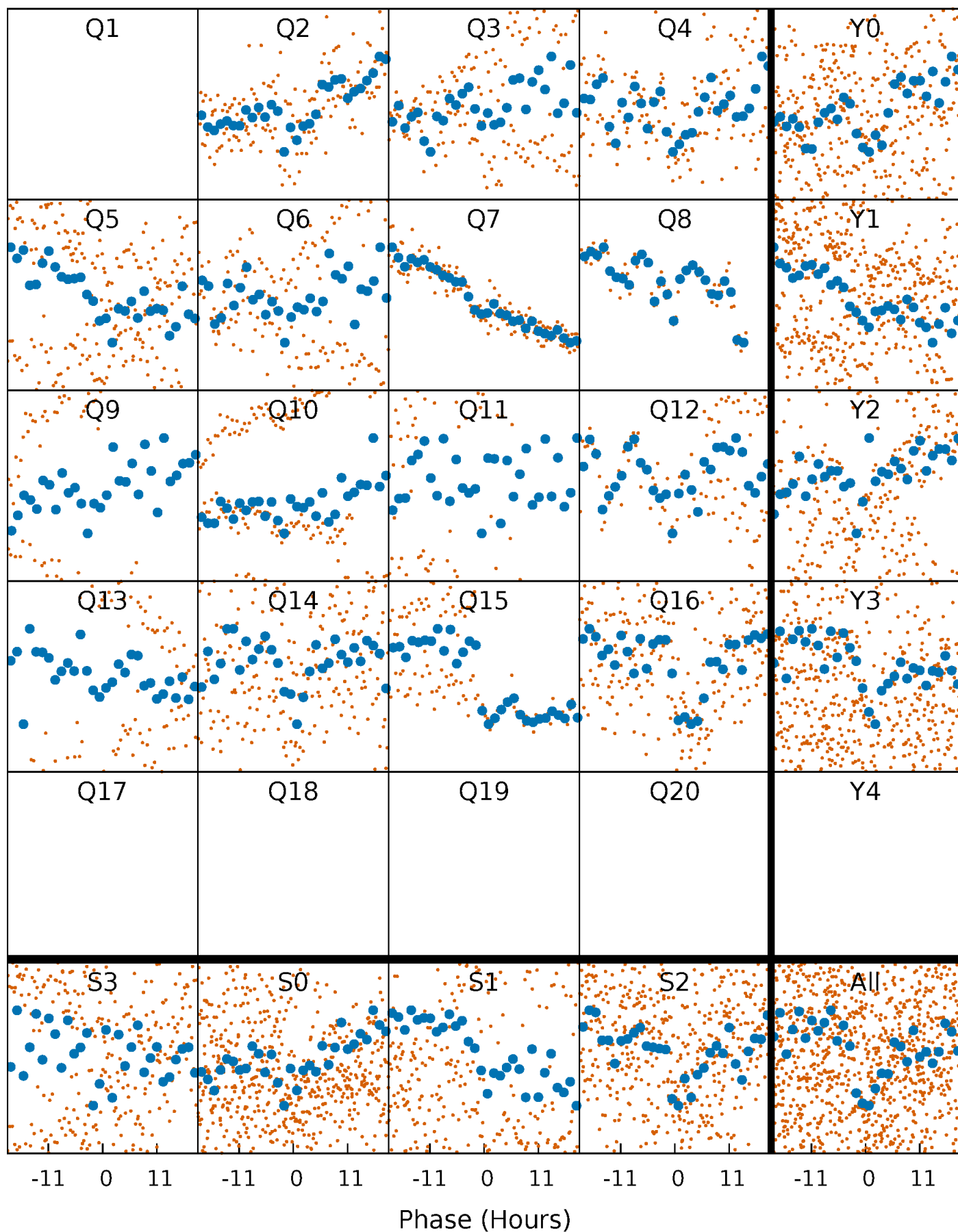


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



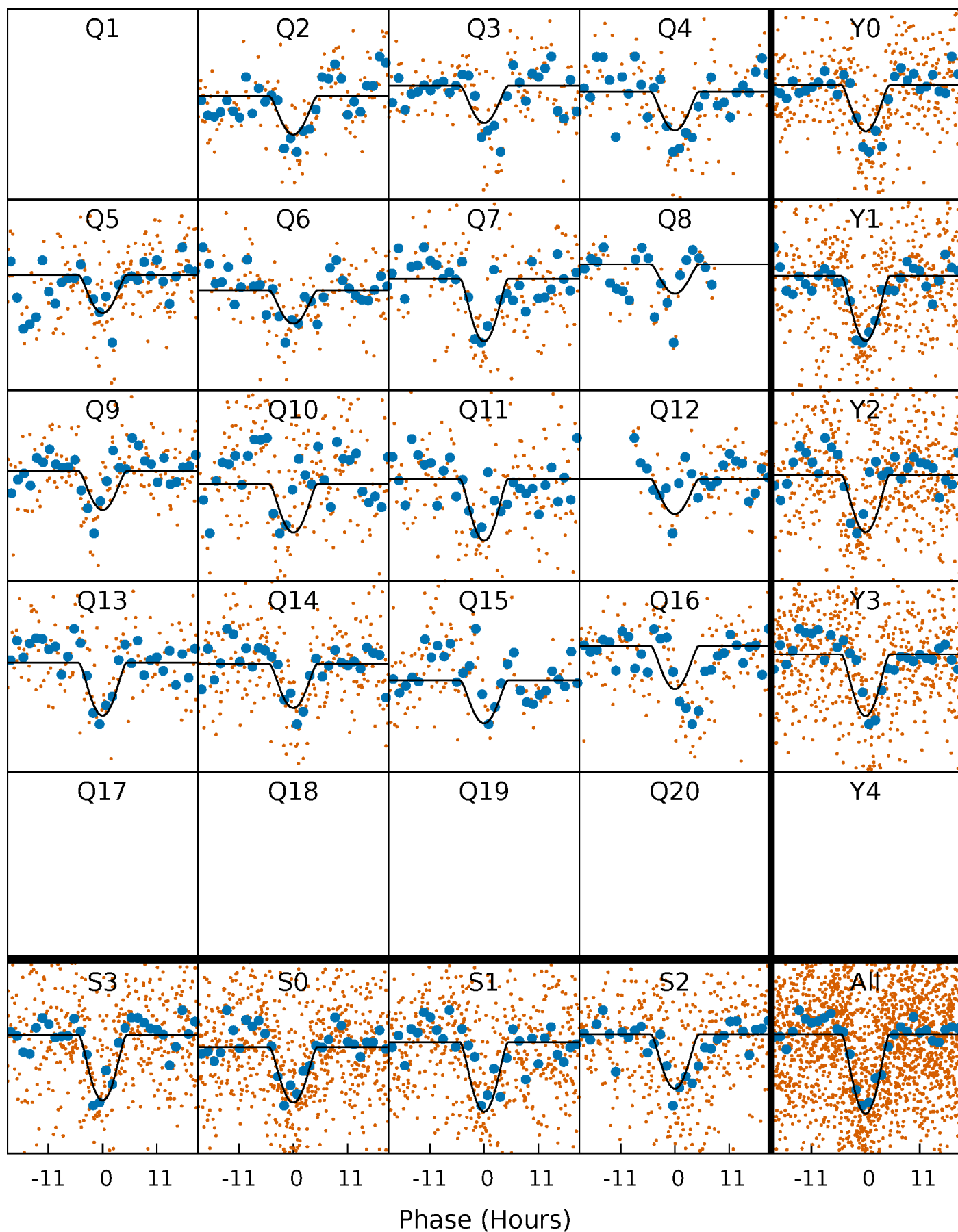
PDC Quarter-Phased Transit Curves

TCE 006381846-03 P= 39.605925 Days $T_0=168.048867$ (BKJD)



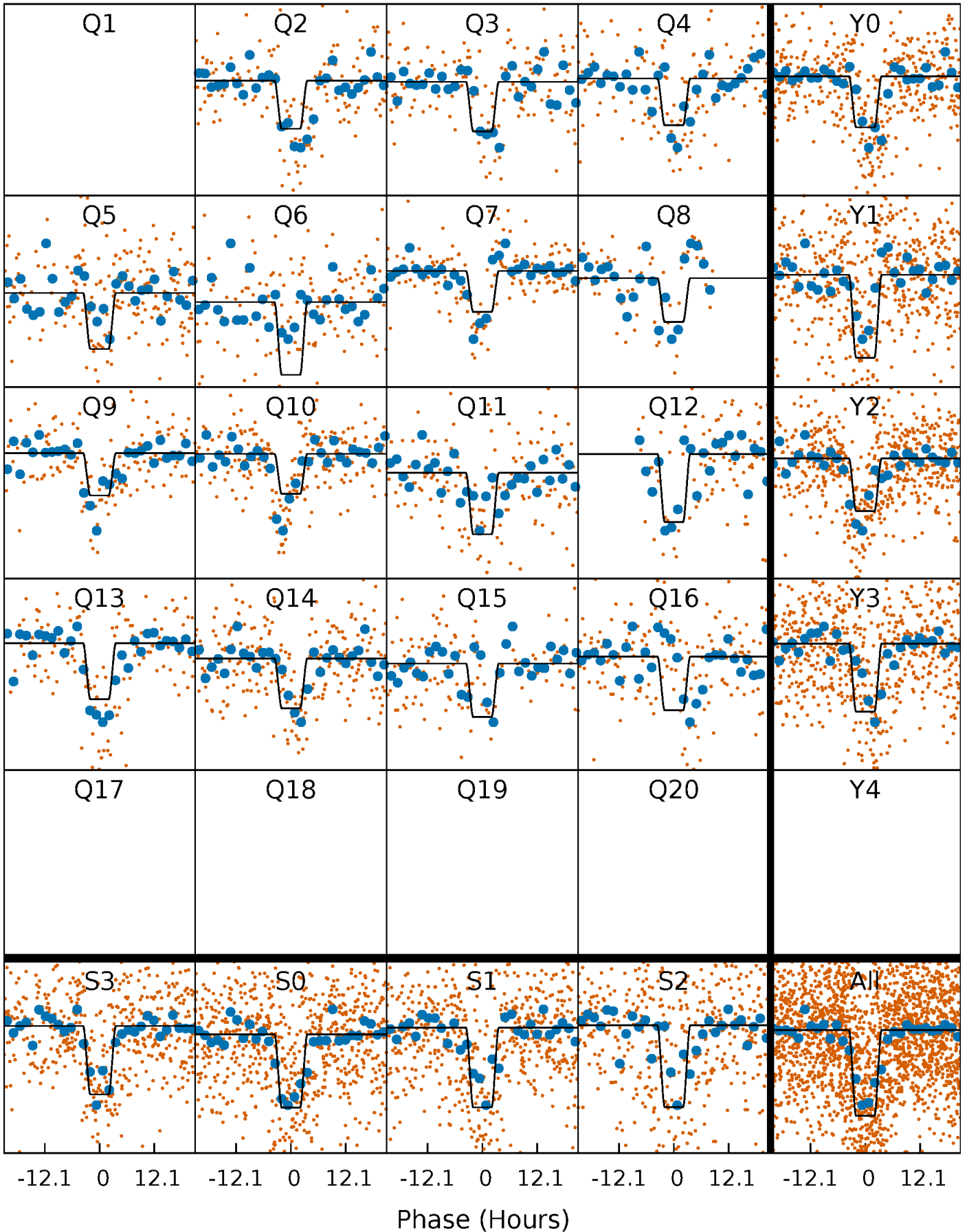
DV Quarter-Phased Transit Curves

TCE 006381846-03 P= 39.605925 Days $T_0=168.048867$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

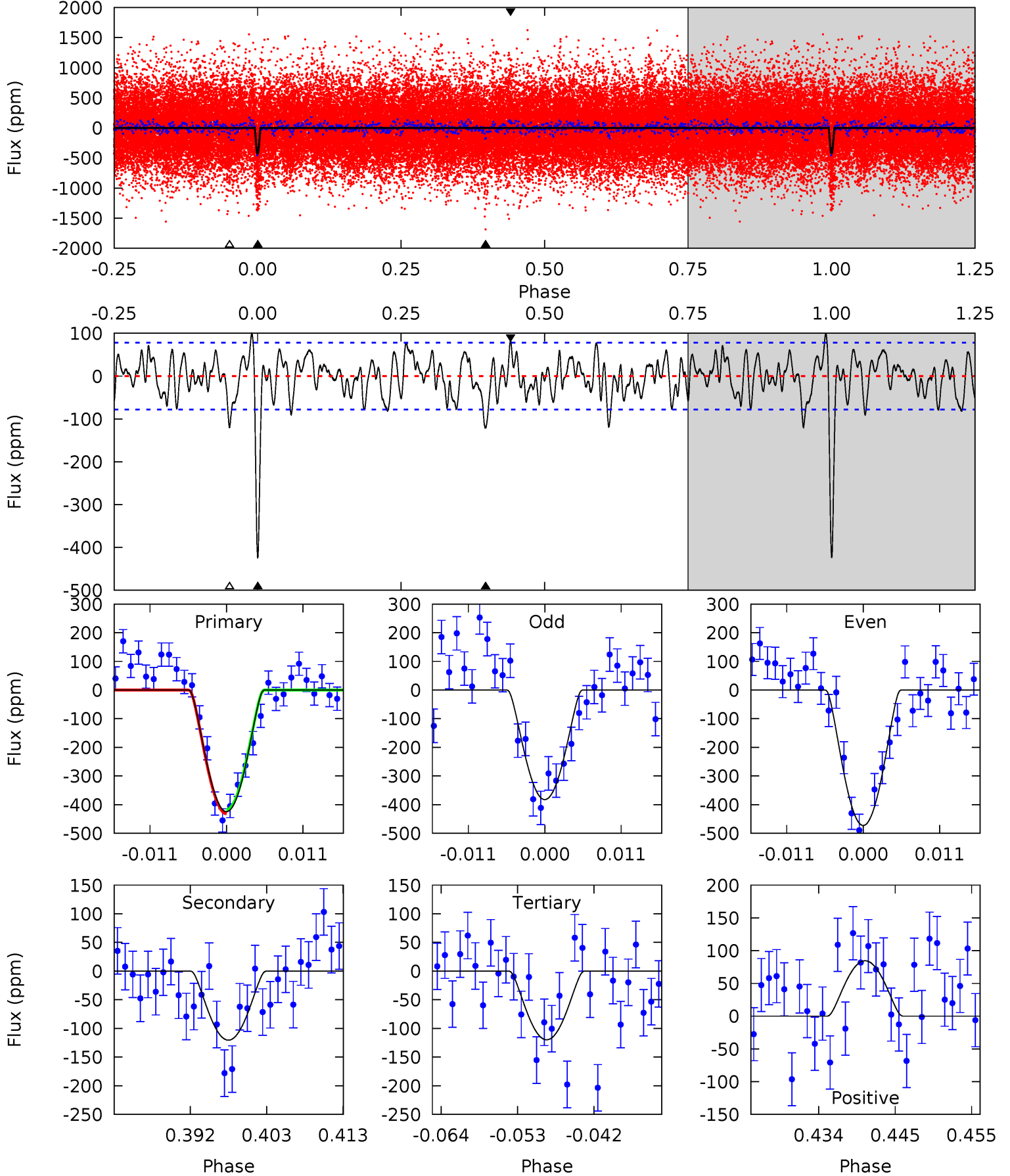
TCE 006381846-03 $P = 39.605314$ Days $T_0 = 168.039178$ (BKJD)



DV Model-Shift Uniqueness Test

006381846-03, P = 39.605925 Days, E = 128.442942 Days

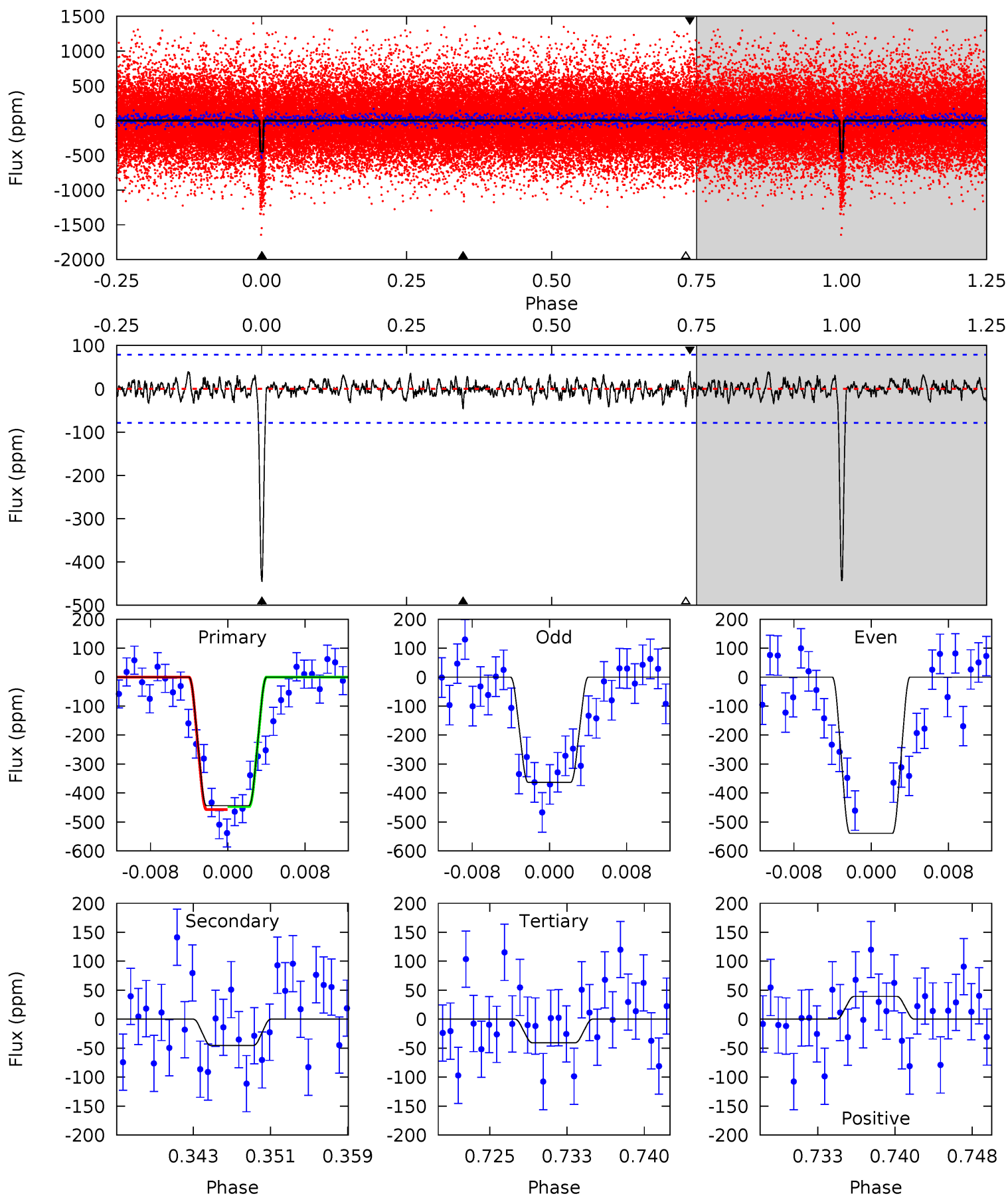
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.3	7.75	7.71	5.43	5.02	2.56	2.38	19.6	21.9	0.04	2.31	2.91	0.87	0.19	0.46



Alt Model-Shift Uniqueness Test

006381846-03, P = 39.605314 Days, E = 128.433864 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.6	2.93	2.63	2.54	5.08	2.67	0.85	26.0	26.1	0.30	0.39	5.68	0.88	0.08	0.34



Stellar Parameters For KIC 006381846

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5456^{+81}_{-81}	$4.450^{+0.072}_{-0.096}$	$0.140^{+0.150}_{-0.150}$	$0.943^{+0.115}_{-0.077}$	$0.914^{+0.052}_{-0.046}$	$1.538^{+0.433}_{-0.433}$
	+1%/-1%	+2%/-2%	+107%/-107%	+12%/-8%	+6%/-5%	+28%/-28%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006381846-03 / KOI 0509.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-120 ± 16	$8.39^{+7.71}_{-5.64}$	695^{+25}_{-21}	2753^{+1132}_{-406}	47^{+385}_{-35}
Alt.	-45 ± 15	$7.39^{+7.86}_{-5.11}$	697^{+24}_{-23}	2517^{+950}_{-424}	23^{+203}_{-18}

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

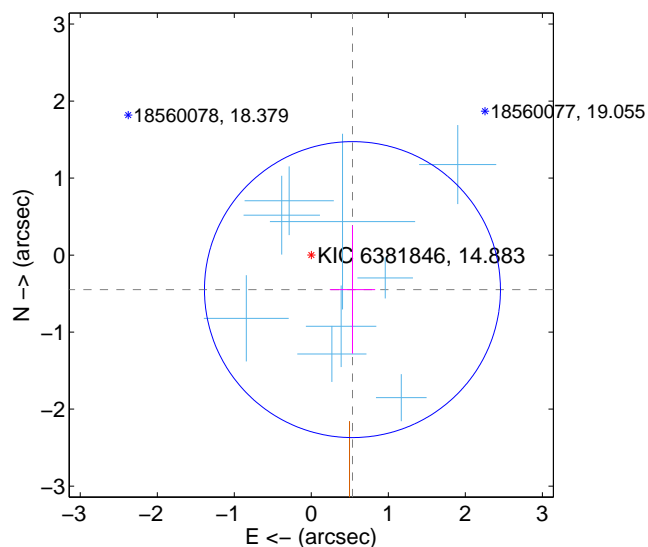
Supplemental centroid analysis for 006381846-03. Kepler magnitude: 14.88. Transit SNR 12.91

There are 9 quarters with good PRF difference image offsets

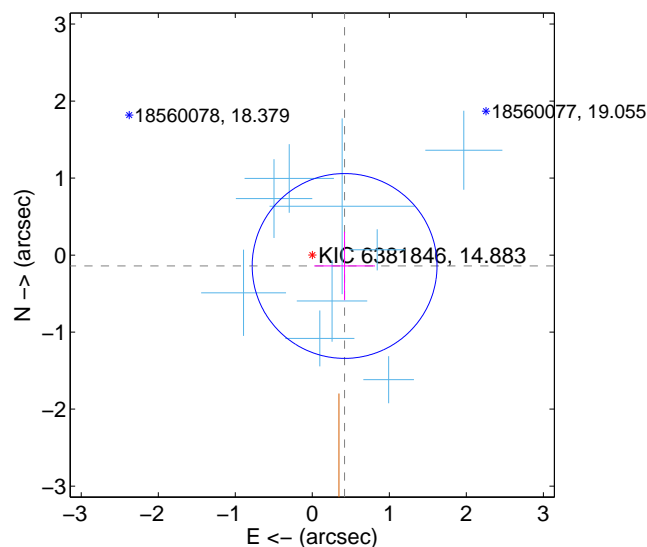
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.697 ± 0.641	1.09	-0.534 ± 0.294	-0.448 ± 0.832
PRF-fit source offset from KIC position	0.442 ± 0.400	1.11	-0.419 ± 0.395	-0.141 ± 0.444
photometric centroid source offset	0.54 ± 0.66	0.81	-0.53 ± 0.66	0.06 ± 0.56

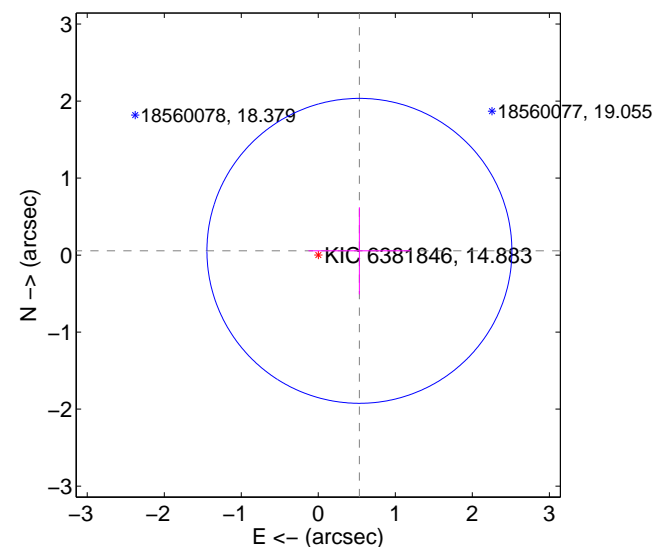
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

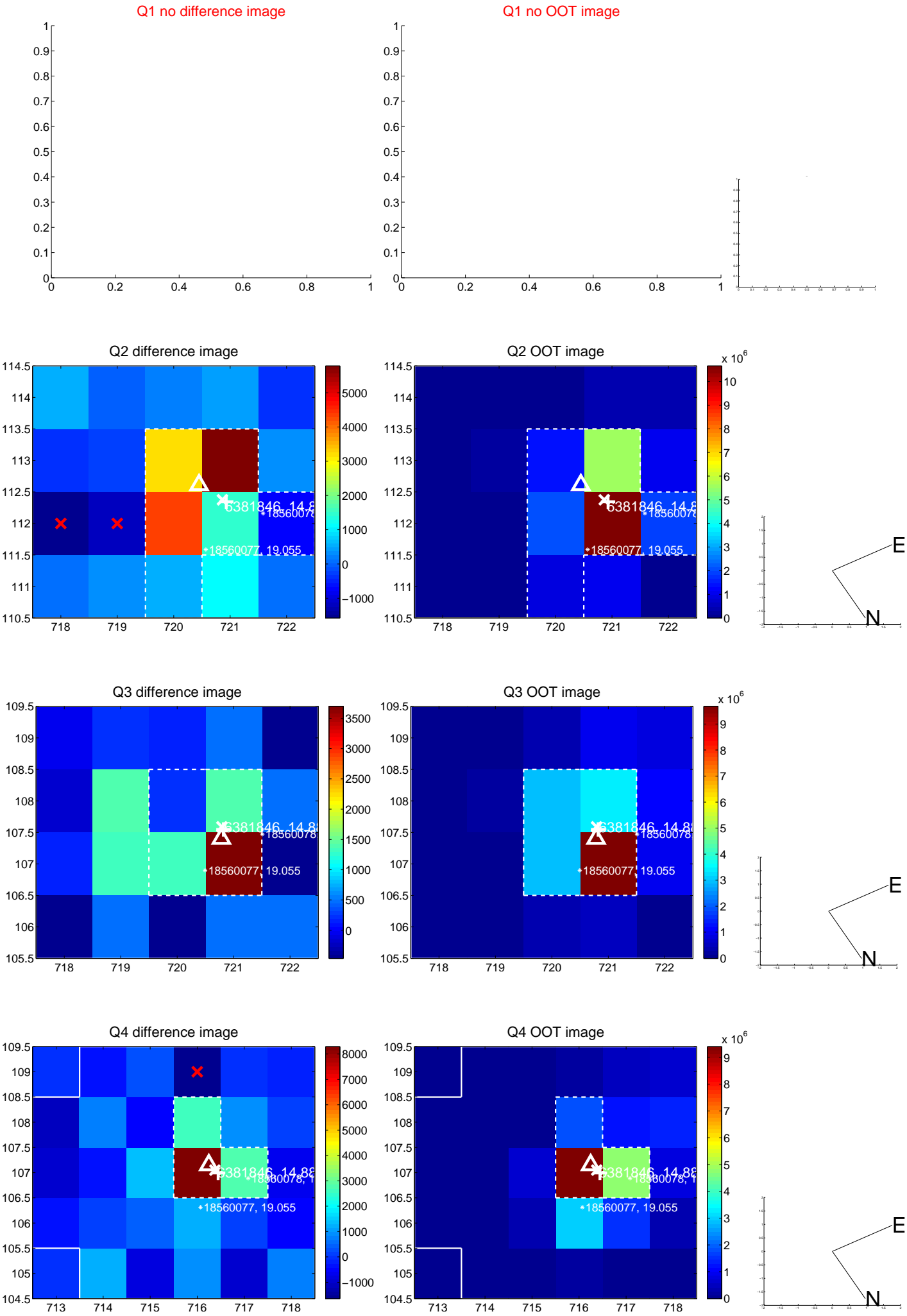


offset from photometric centroids

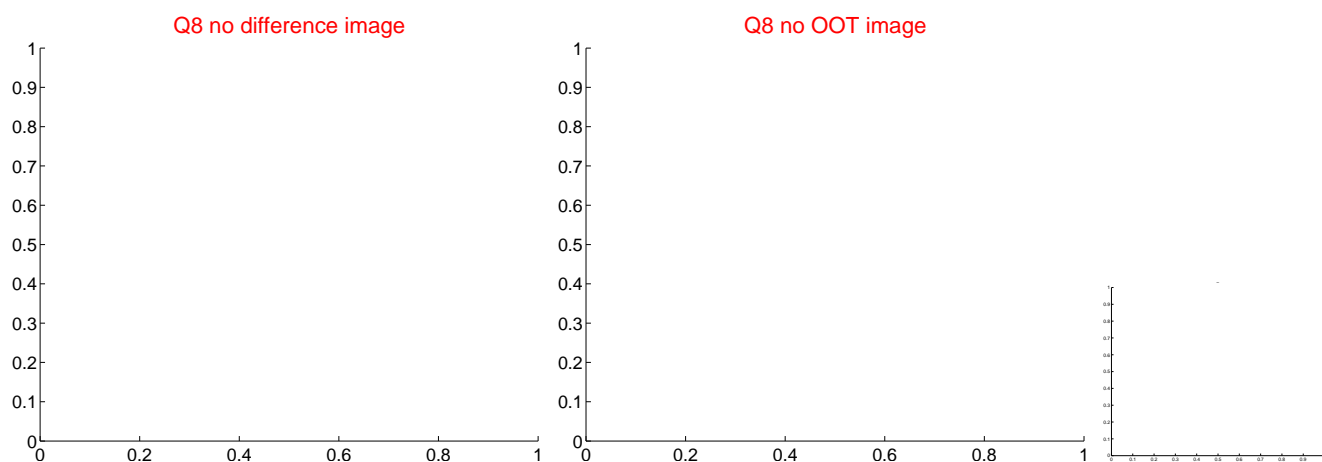
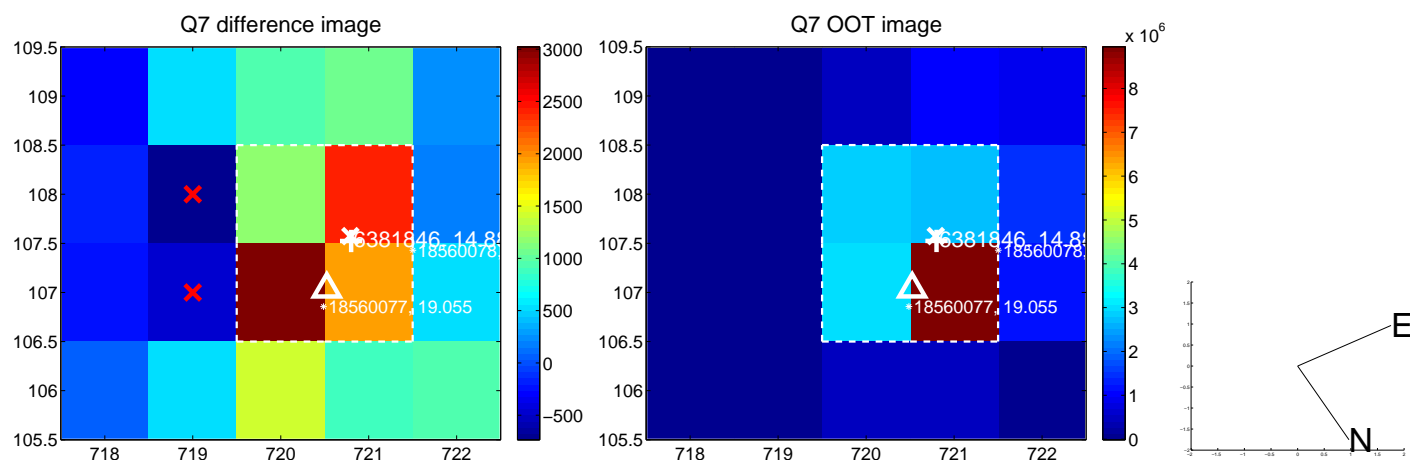
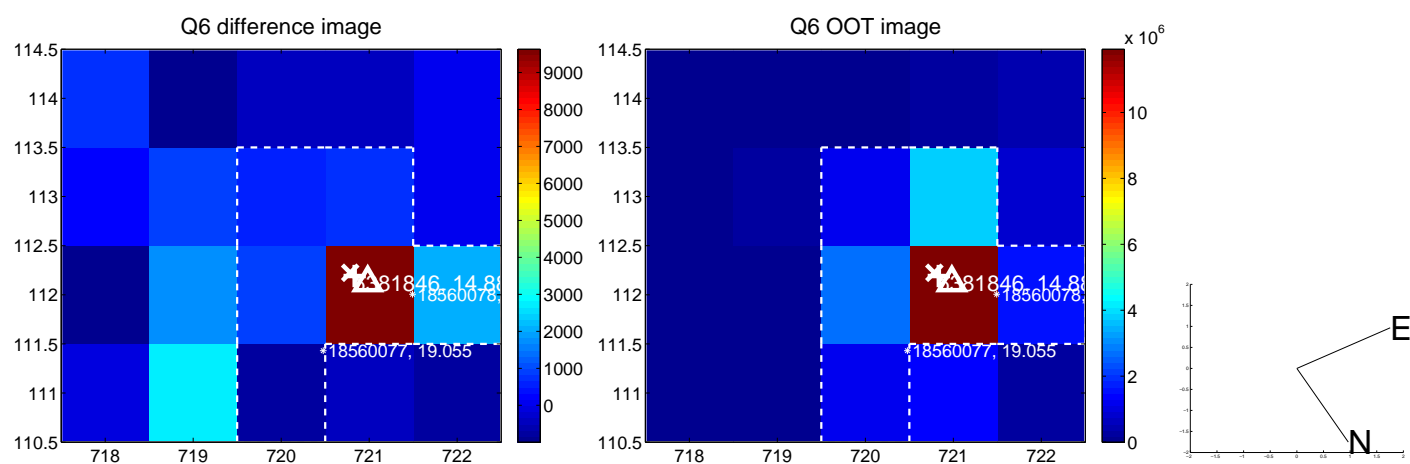
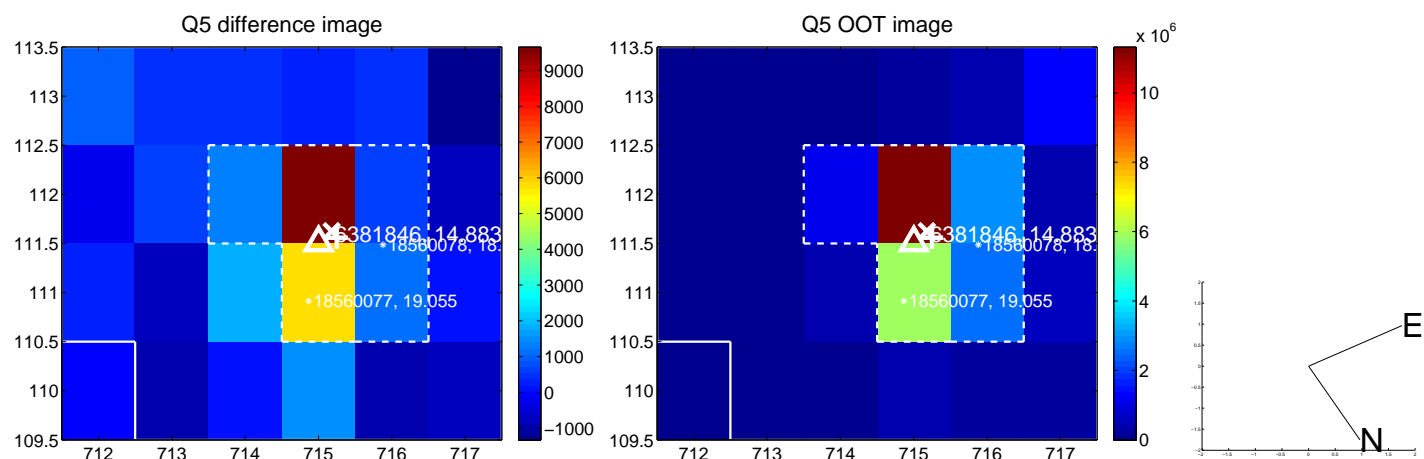


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

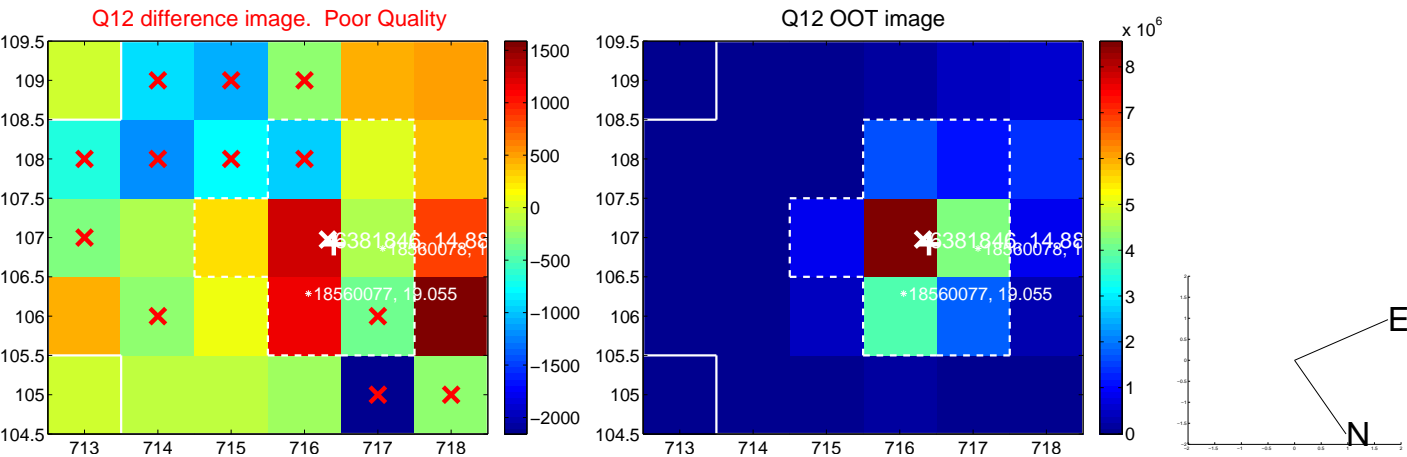
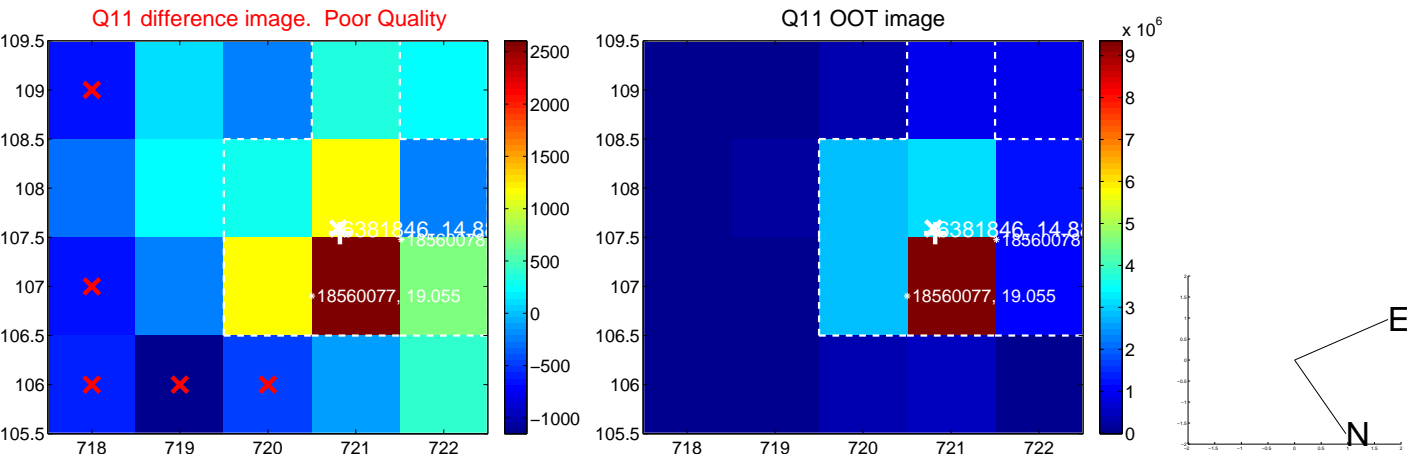
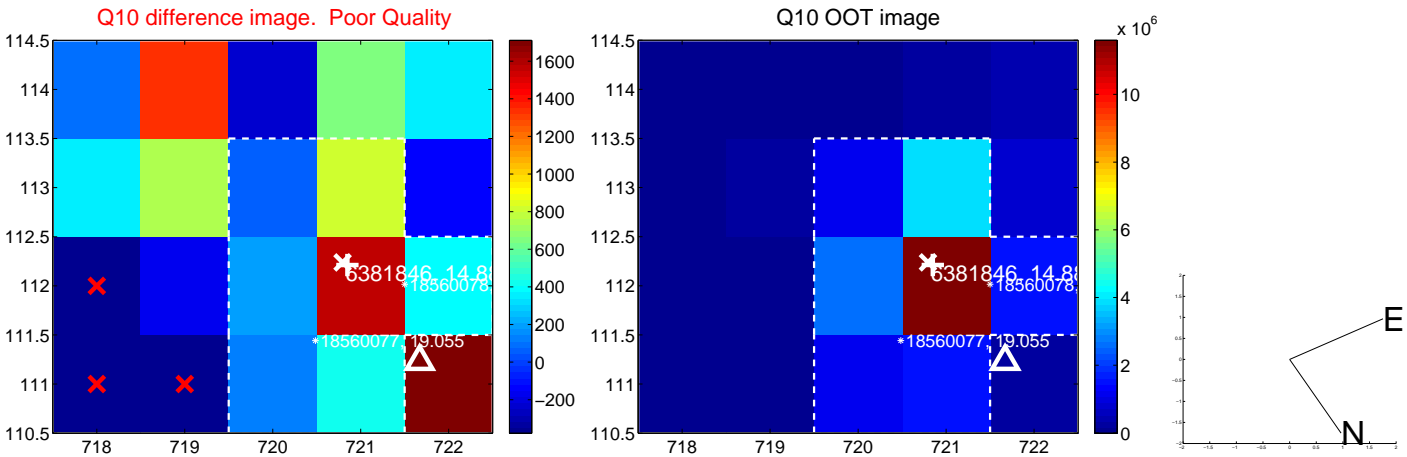
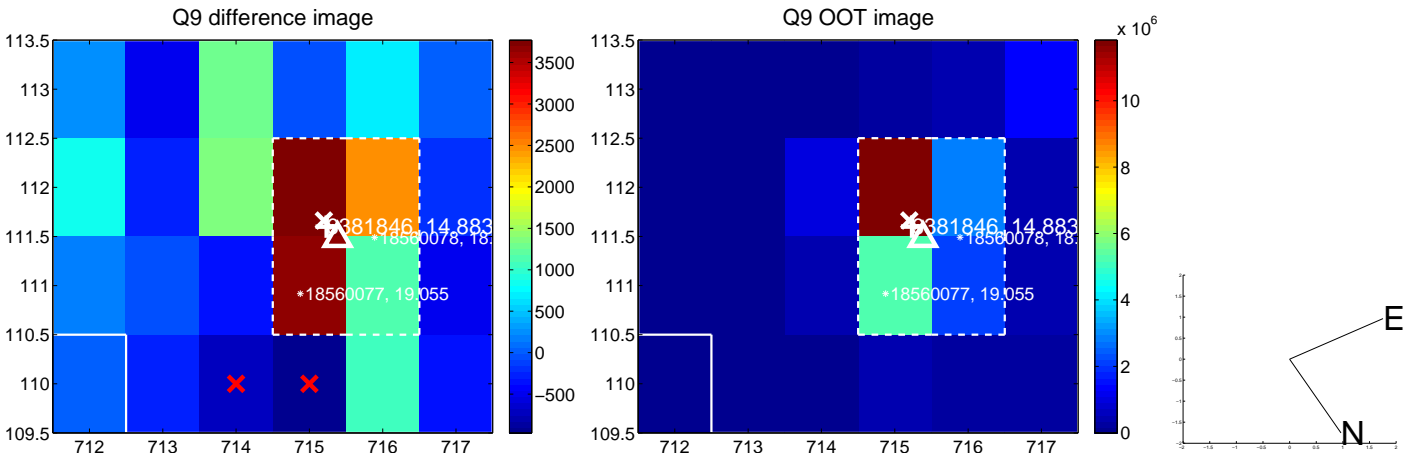
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



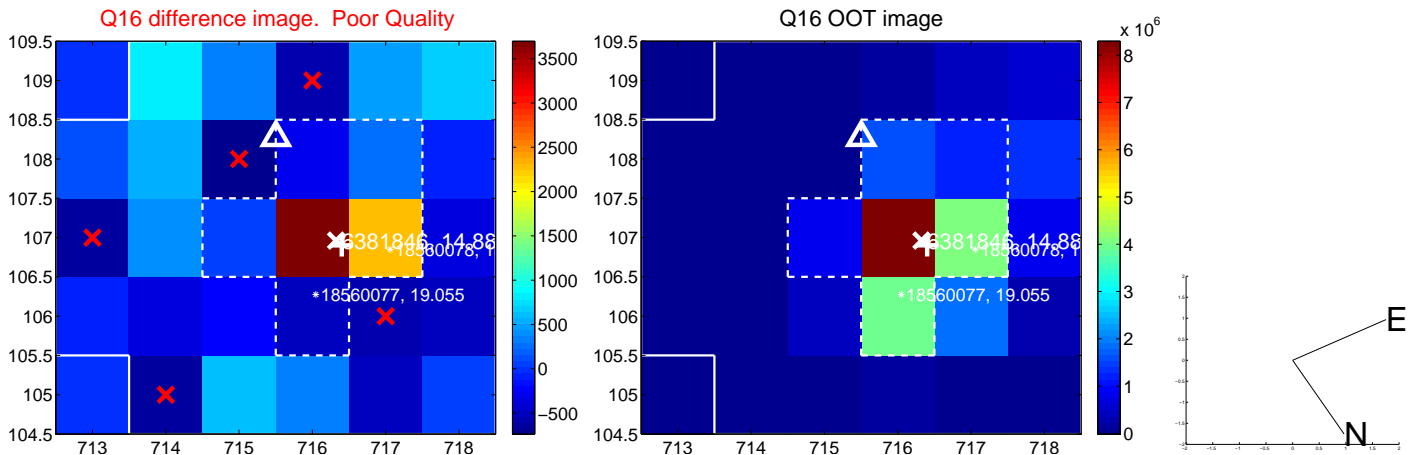
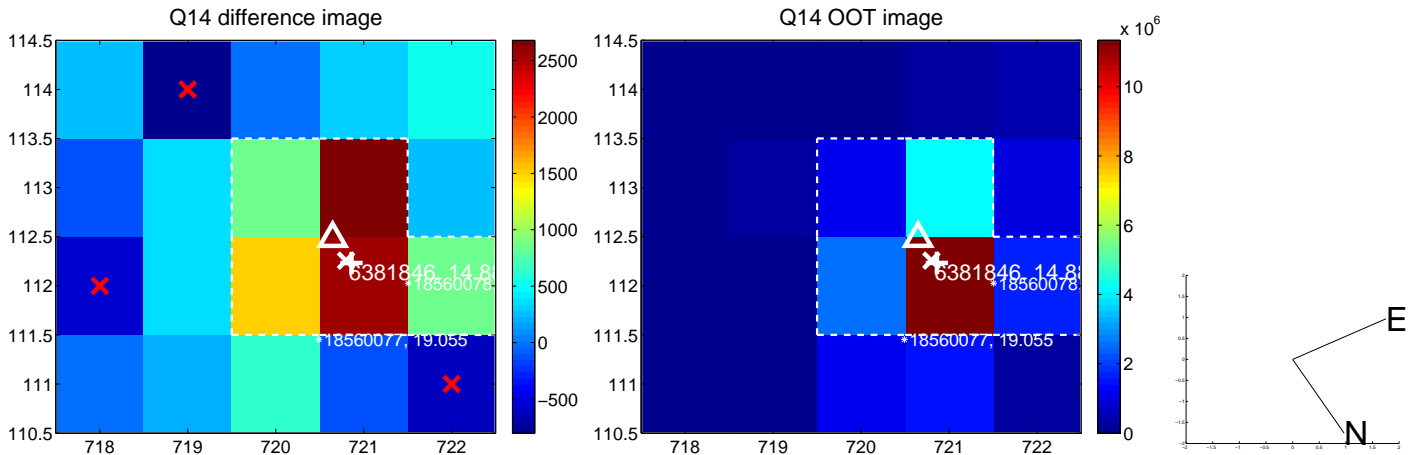
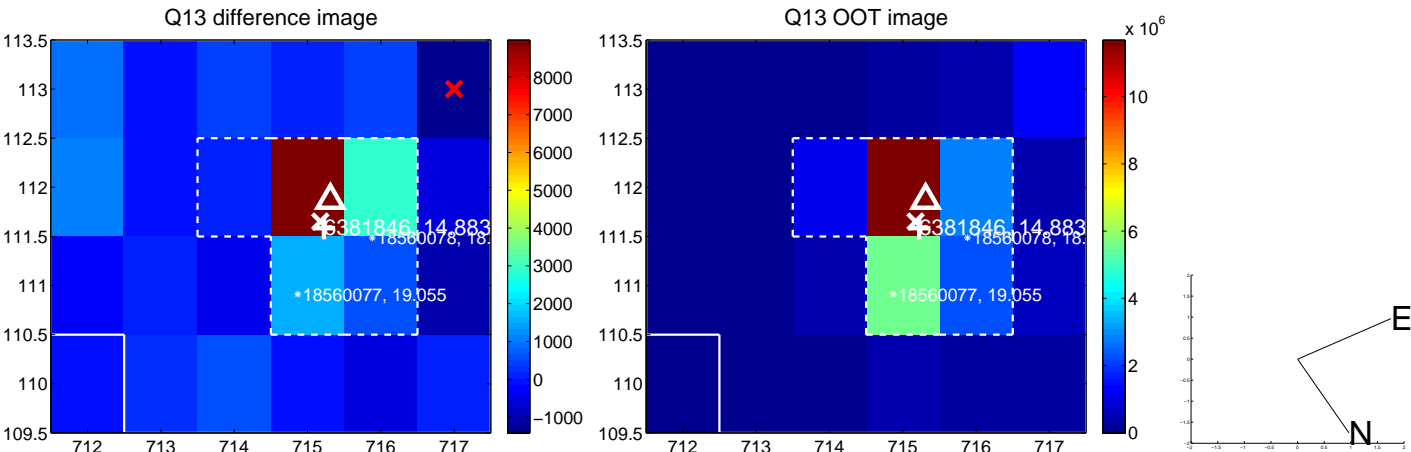
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



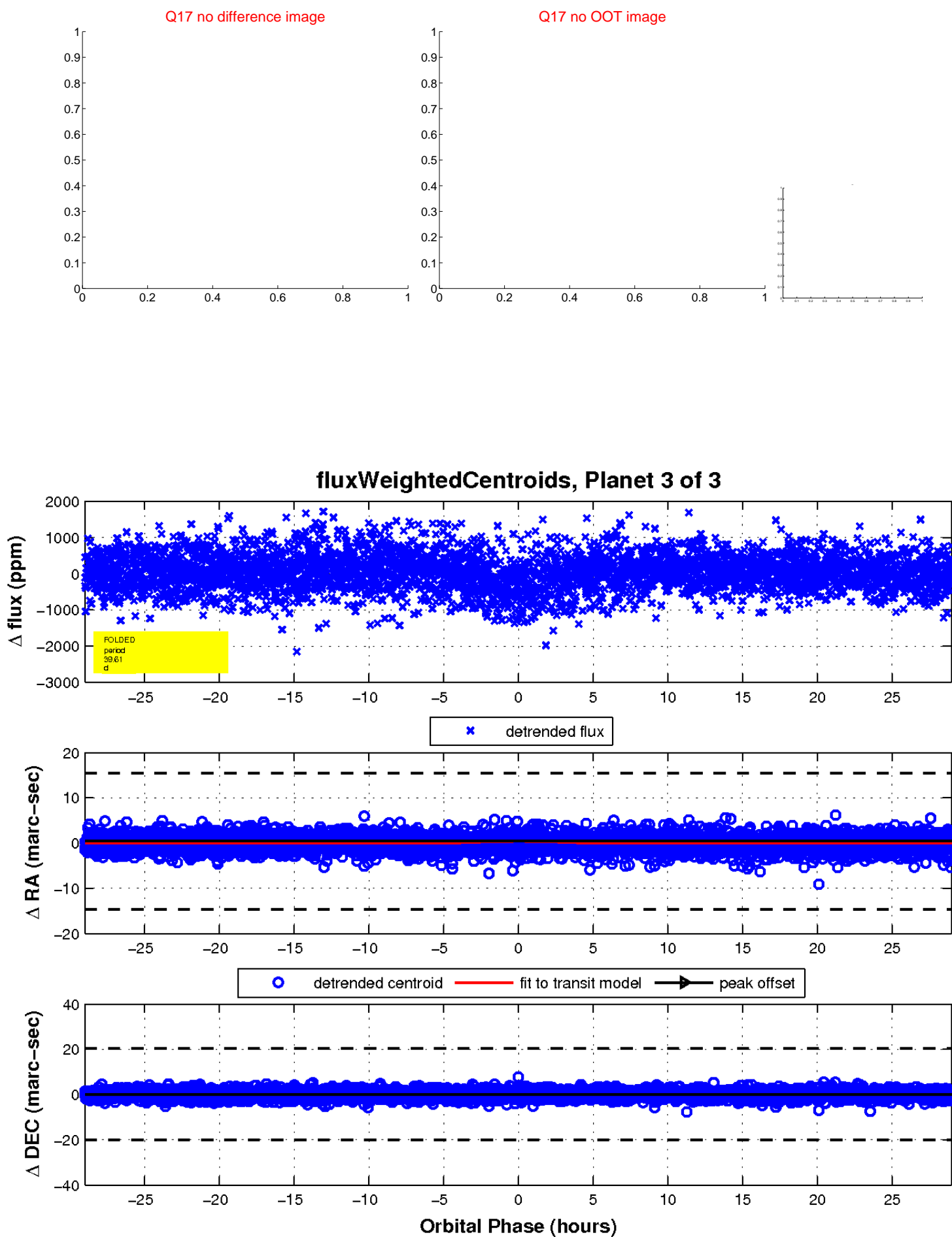
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

