

KIC 005471480

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})
005471480-01	OBS	6587.01	12.424994	141.566752	324.7	24.203	14.4	18.2	0.90	5853	2.01	77.01
005471480-02	OBS	No	12.425835	133.925184	315.4	30.721	13.2	17.6	0.90	5853	2.14	77.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471480-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
005471480-02	OBS	FP	0.00	1	0	1	1	LPP_DV—SAME_NTL_PERIOD—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

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

Ephemeris Match Information For 005471480-01

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
005471480-01	5471480	V380-Cyg-pri	5385723	1:1	317.3	68	42	5.77	15.71	445.95	Direct-PRF	0	2.08	0.80

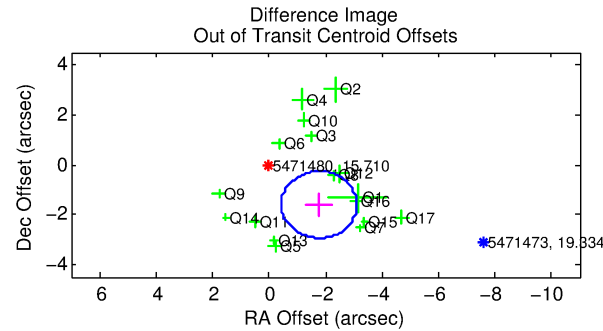
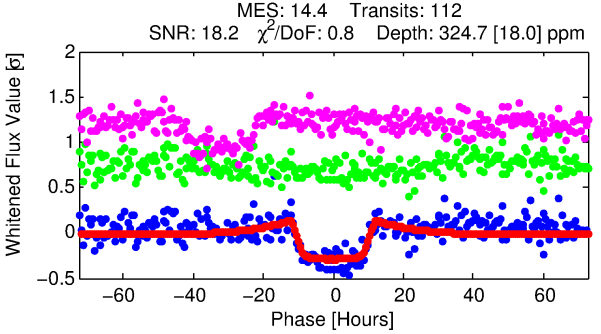
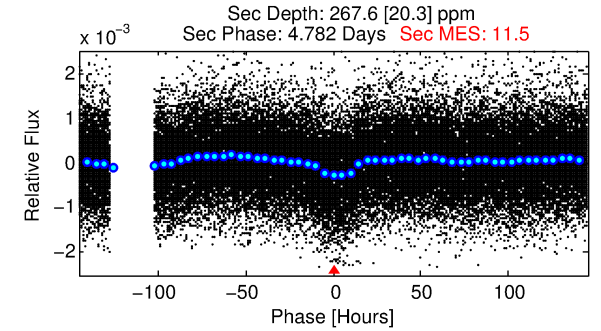
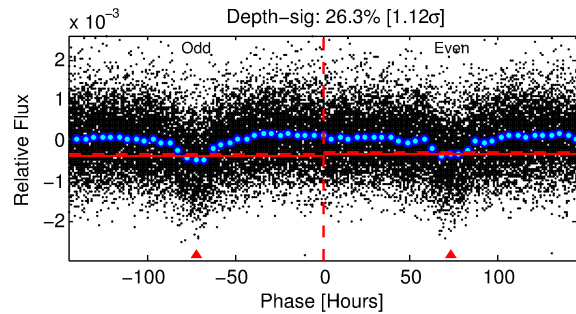
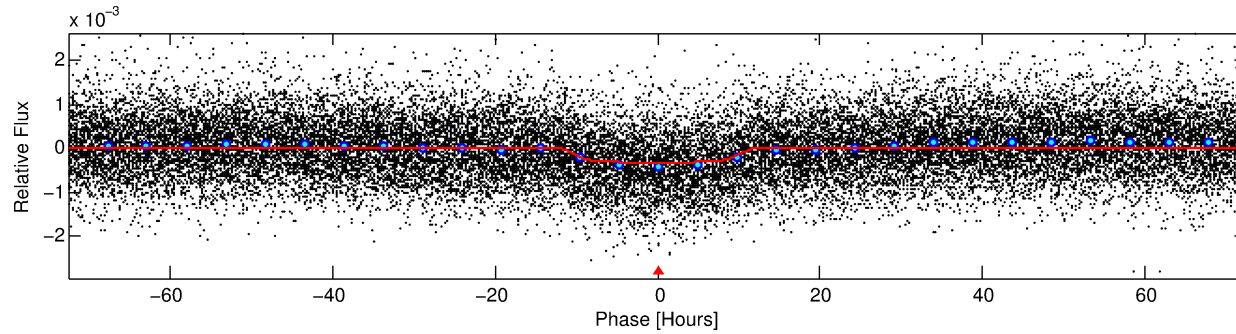
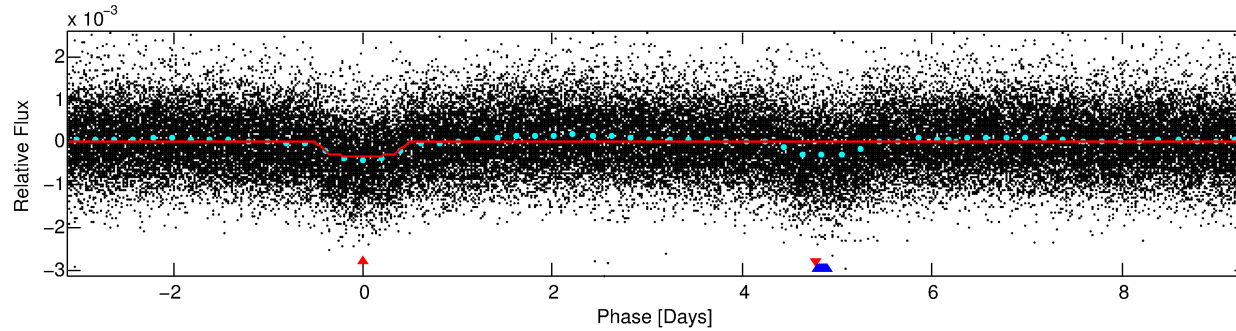
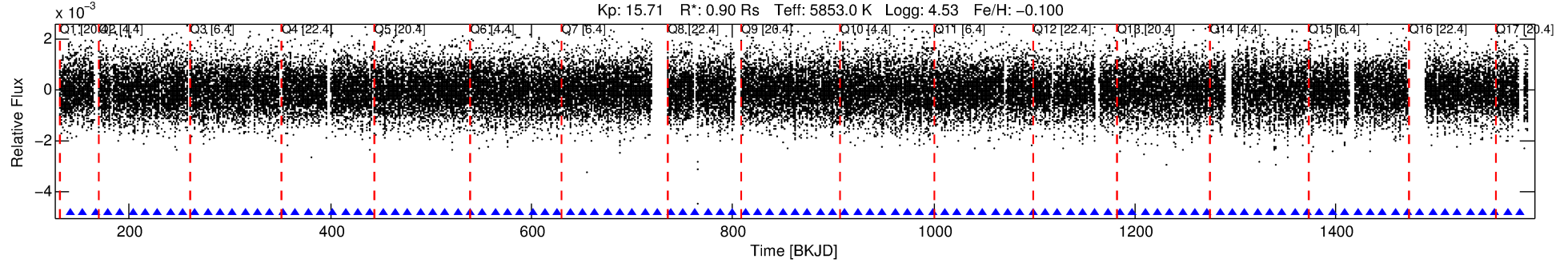
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 5471480 Candidate: 1 of 2 Period: 12.425 d

KOI: K06587.01 Corr: 0.985

Kp: 15.71 R*: 0.90 Rs Teff: 5853.0 K Logg: 4.53 Fe/H: -0.100



DV Fit Results:

Period = 12.42499 [0.00029] d
Epoch = 141.5668 [0.0190] BKJD
Rp/R* = 0.0205 [0.0009]
a/R* = 1.83 [0.18]
b = 0.94 [0.02]
Seff = 77.01 [25.50]
Teq = 755 [63] K
Rp = 2.01 [0.49] Re
a = 0.1046 [0.0216] AU
Ag = 400.20 [129.80] [3.08σ]
Teffp = 5224 [226] K [19.04σ]

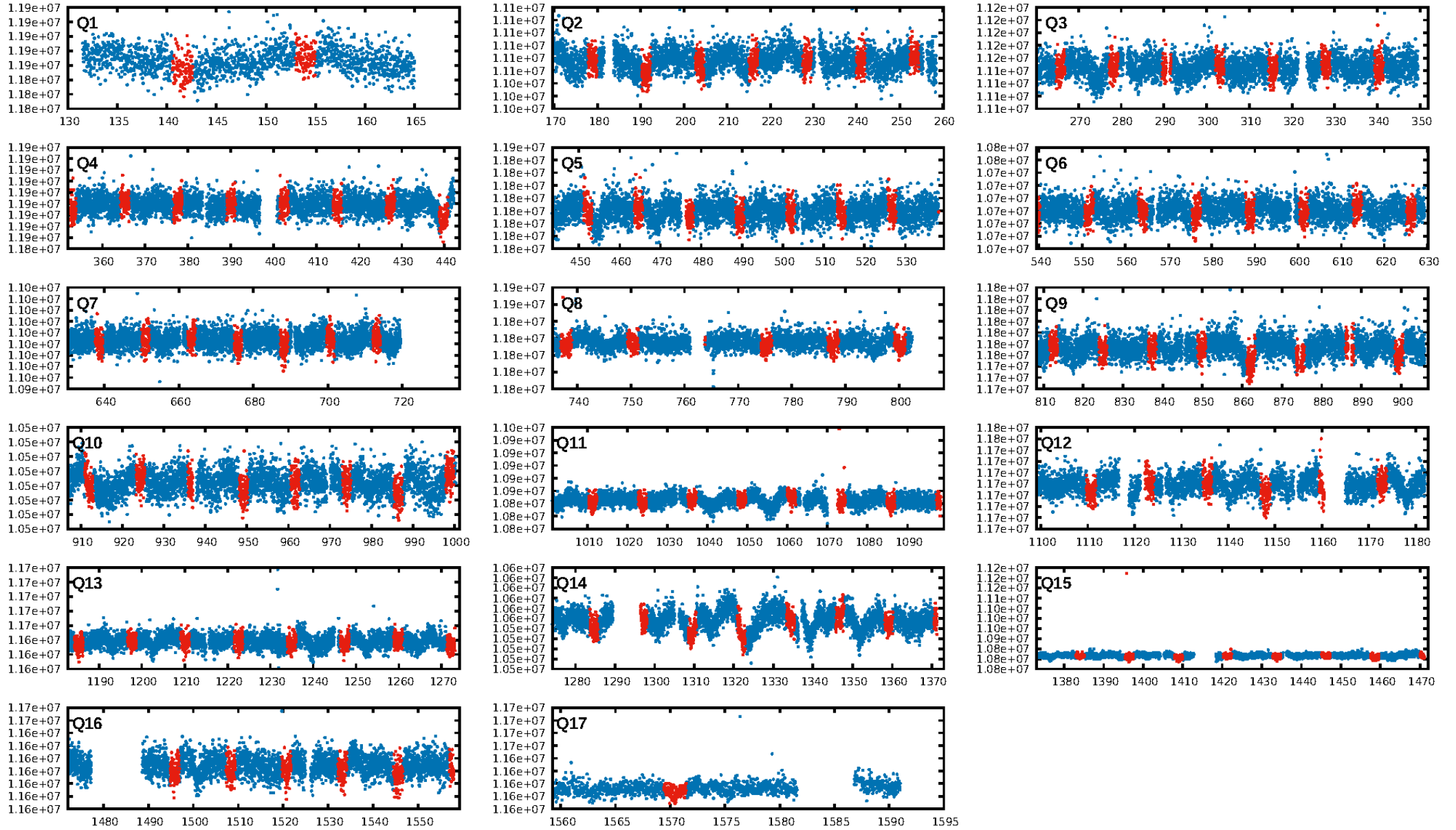
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 11.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.99e-45
RollingBand-fgt: 1.00 [109/109]
GhostDiagnostic-chr: 0.0185
Centroid-sig: 0.0%
Centroid-so: 2.036 arcsec [4.13σ]
OotOffset-rm: 2.388 arcsec [5.35σ]
KicOffset-rm: 2.389 arcsec [5.40σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.24 [4/17]
DiffImageOverlap-fno: 1.00 [17/17]

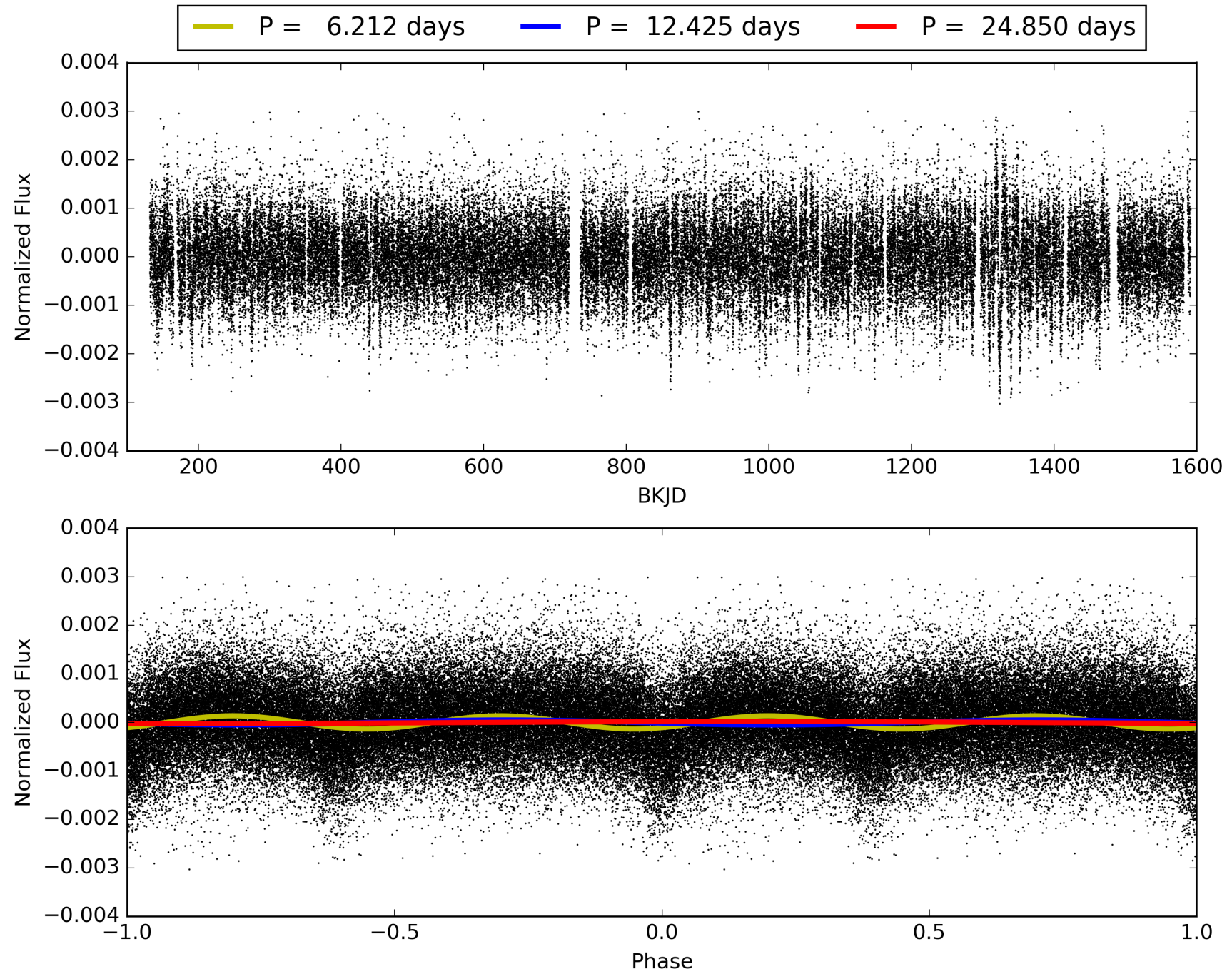
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:23:16 Z

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

TCE 005471480-01, PDC Light Curves

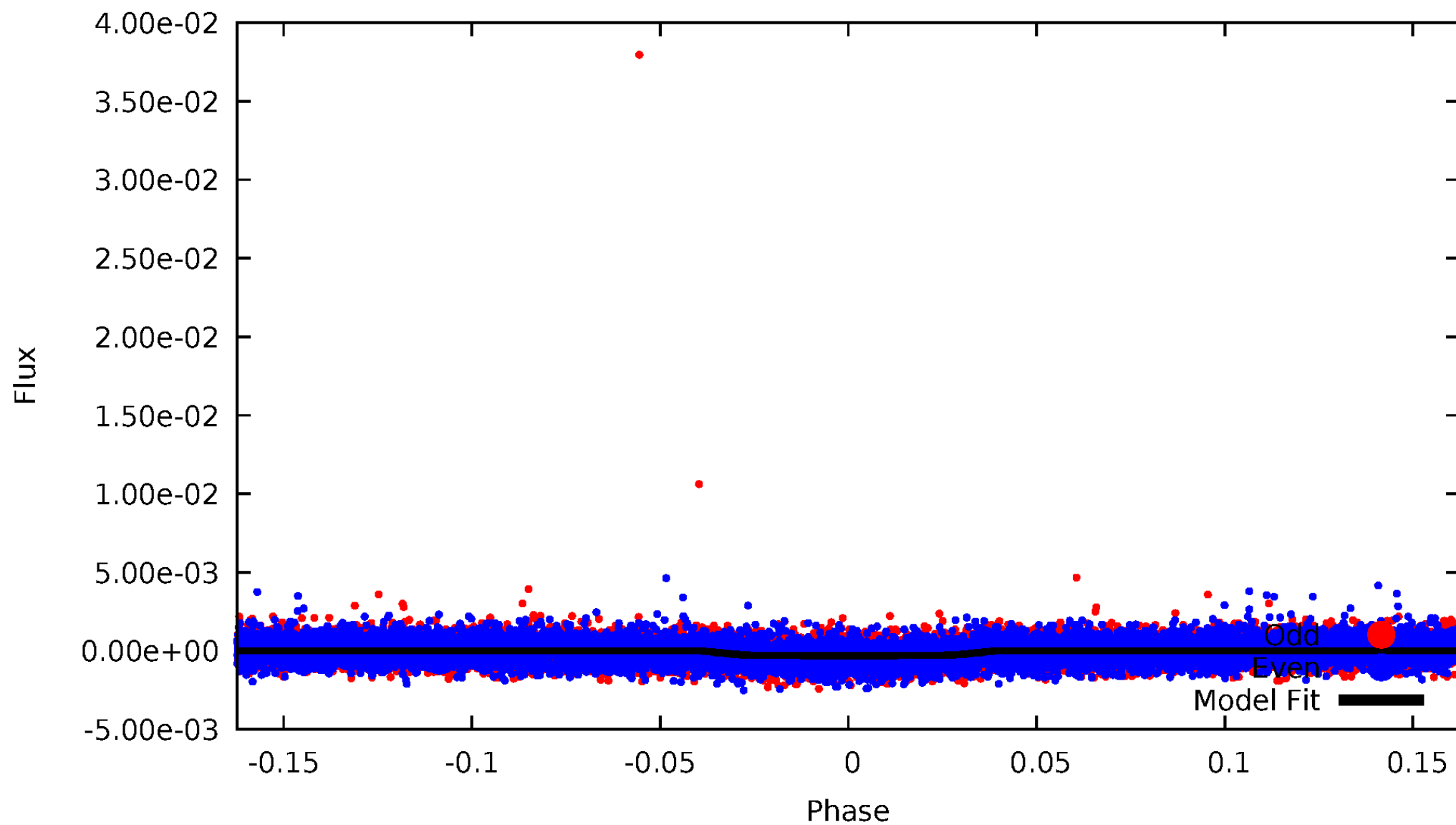


TCE 005471480-01



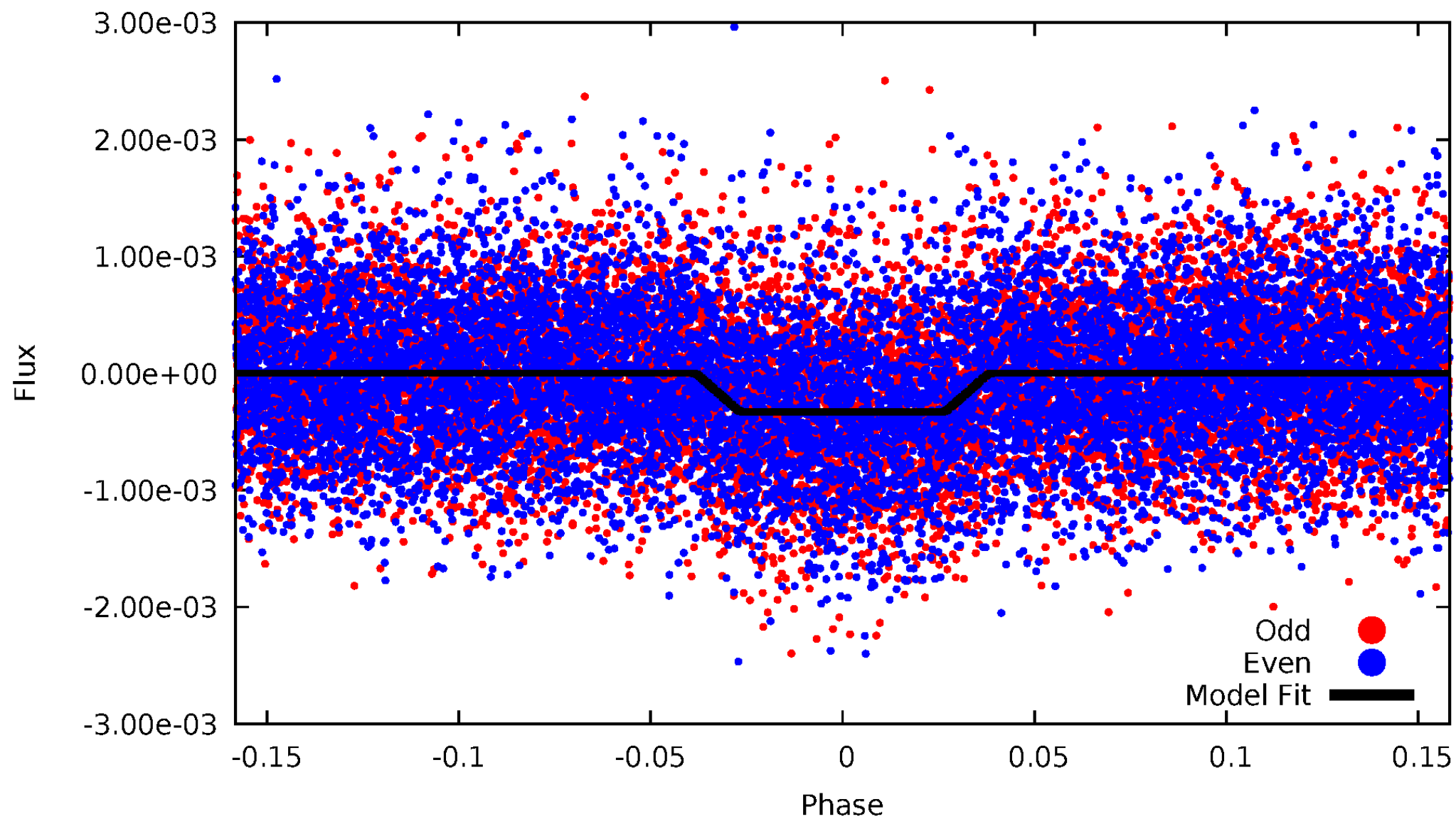
DV Odd/Even

TCE 005471480-01

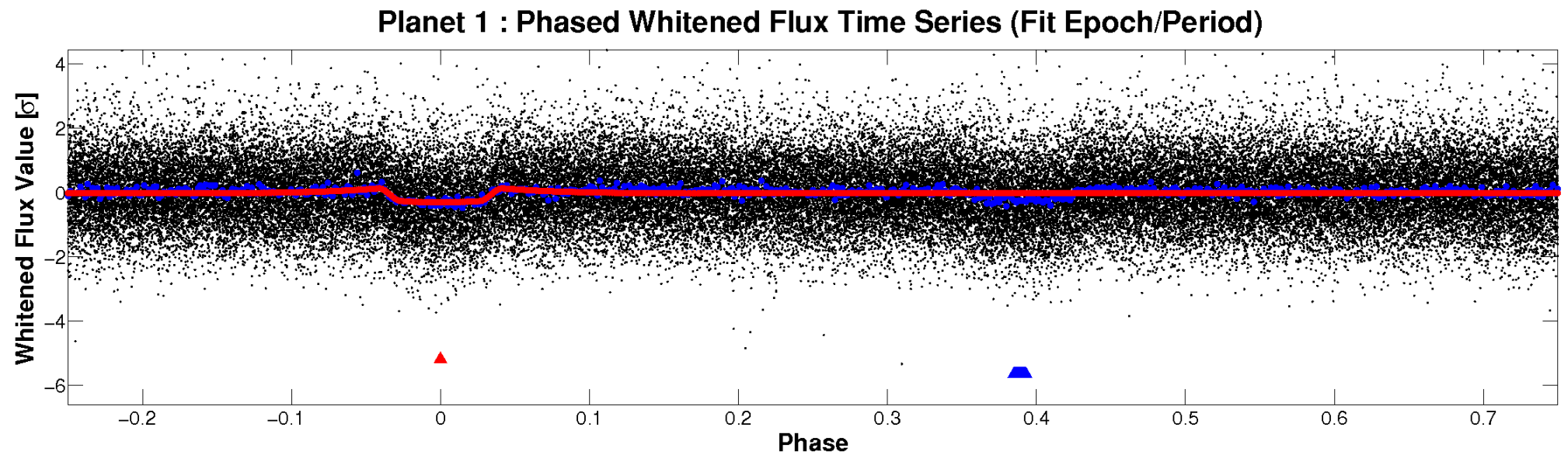
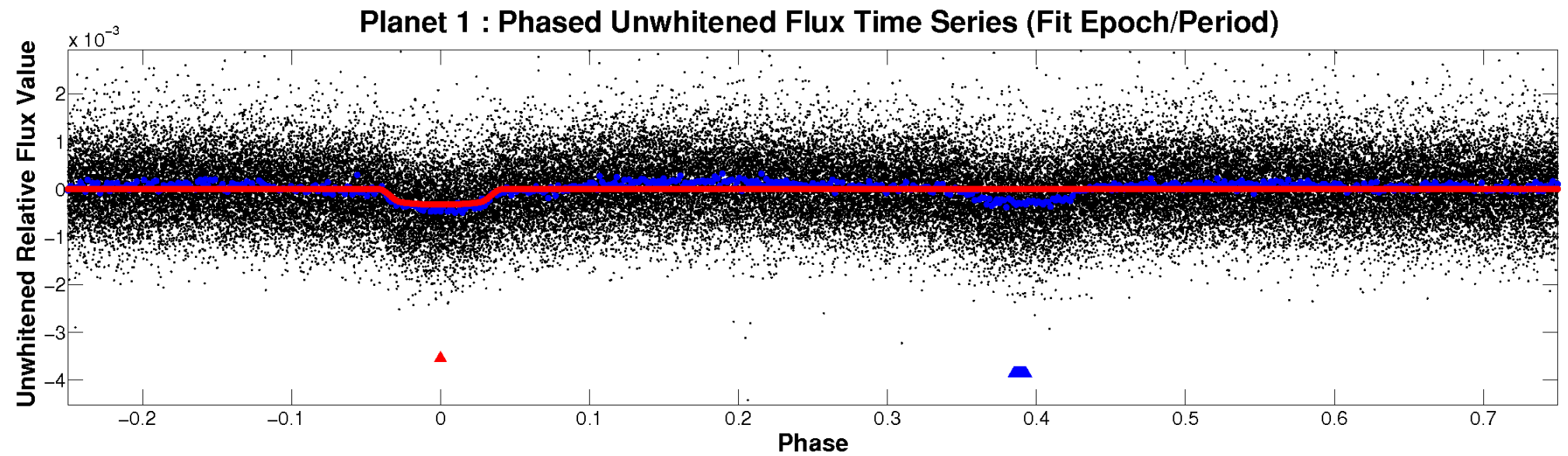


ALT Odd/Even

TCE 005471480-01

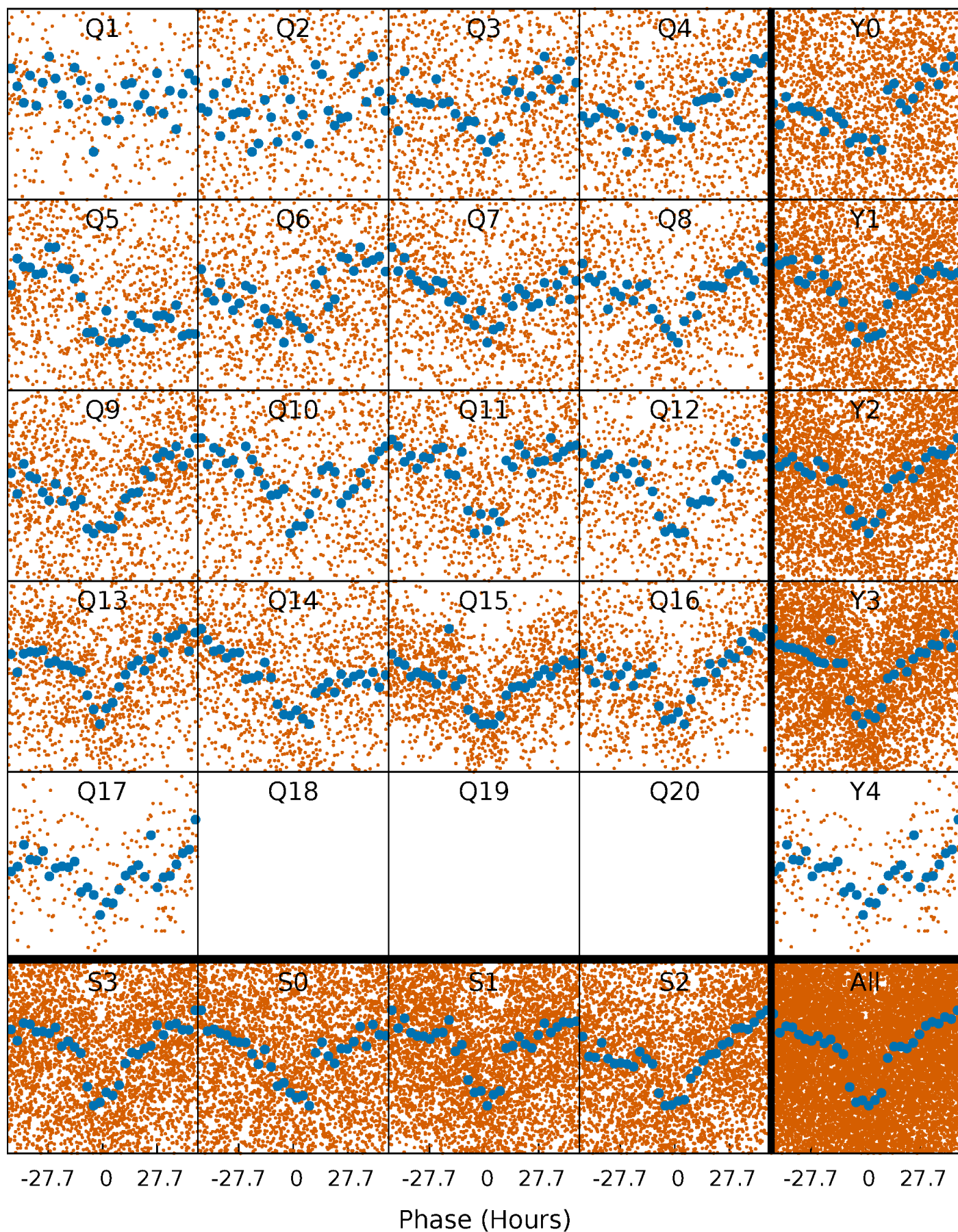


Non-Whitened Vs. Whitened Light Curve



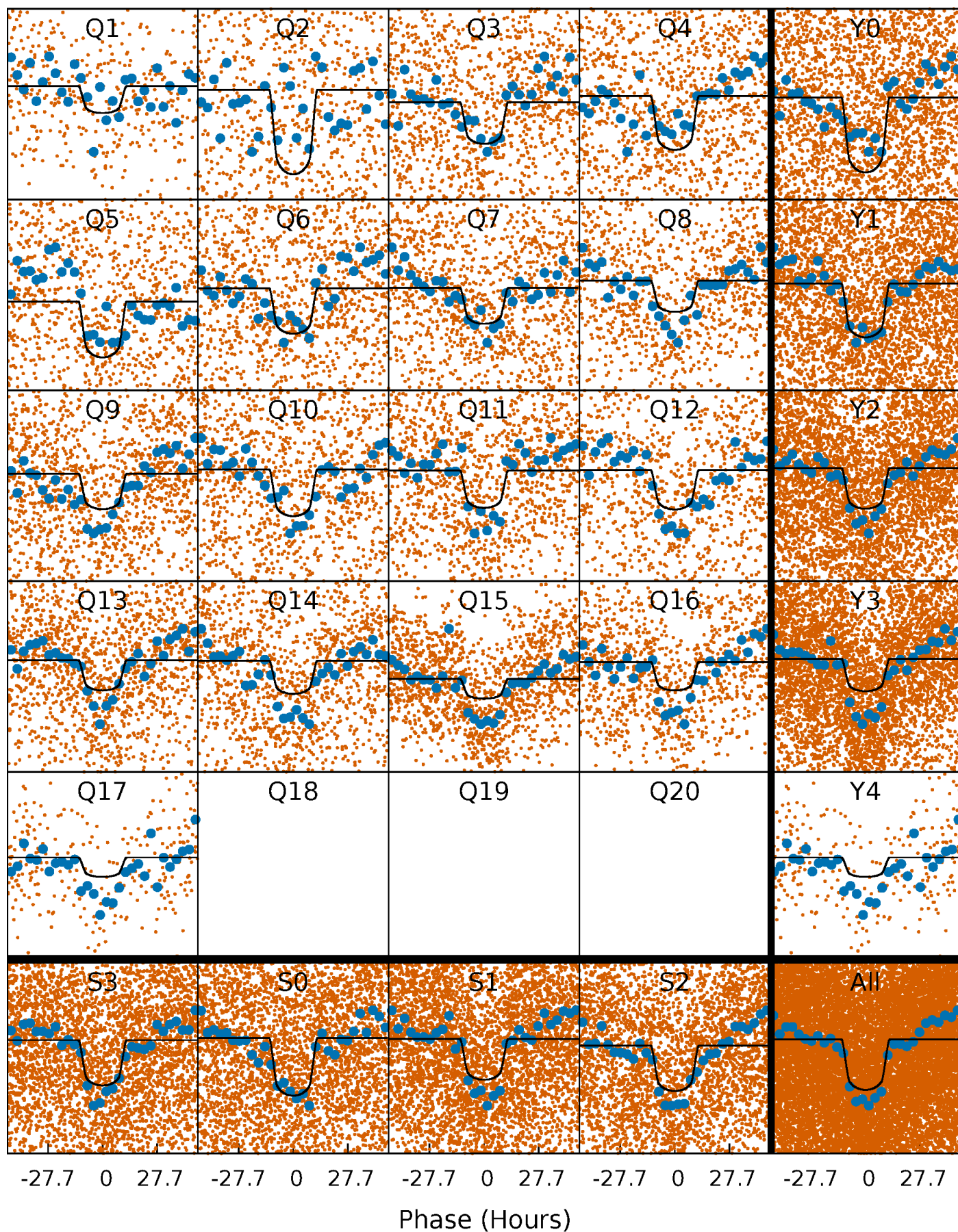
PDC Quarter-Phased Transit Curves

TCE 005471480-01 P= 12.424994 Days $T_0=141.566752$ (BKJD)



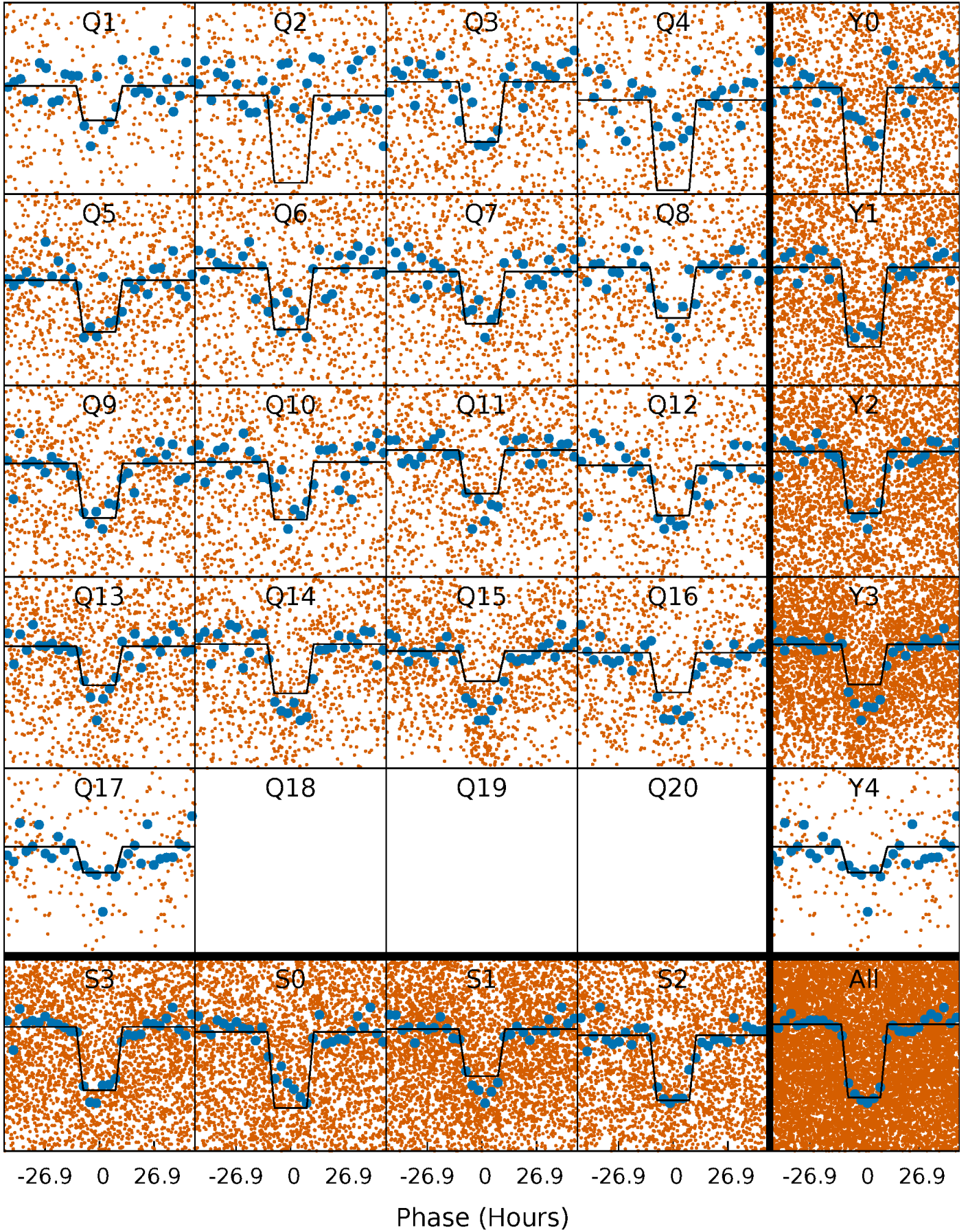
DV Quarter-Phased Transit Curves

TCE 005471480-01 P= 12.424994 Days $T_0=141.566752$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

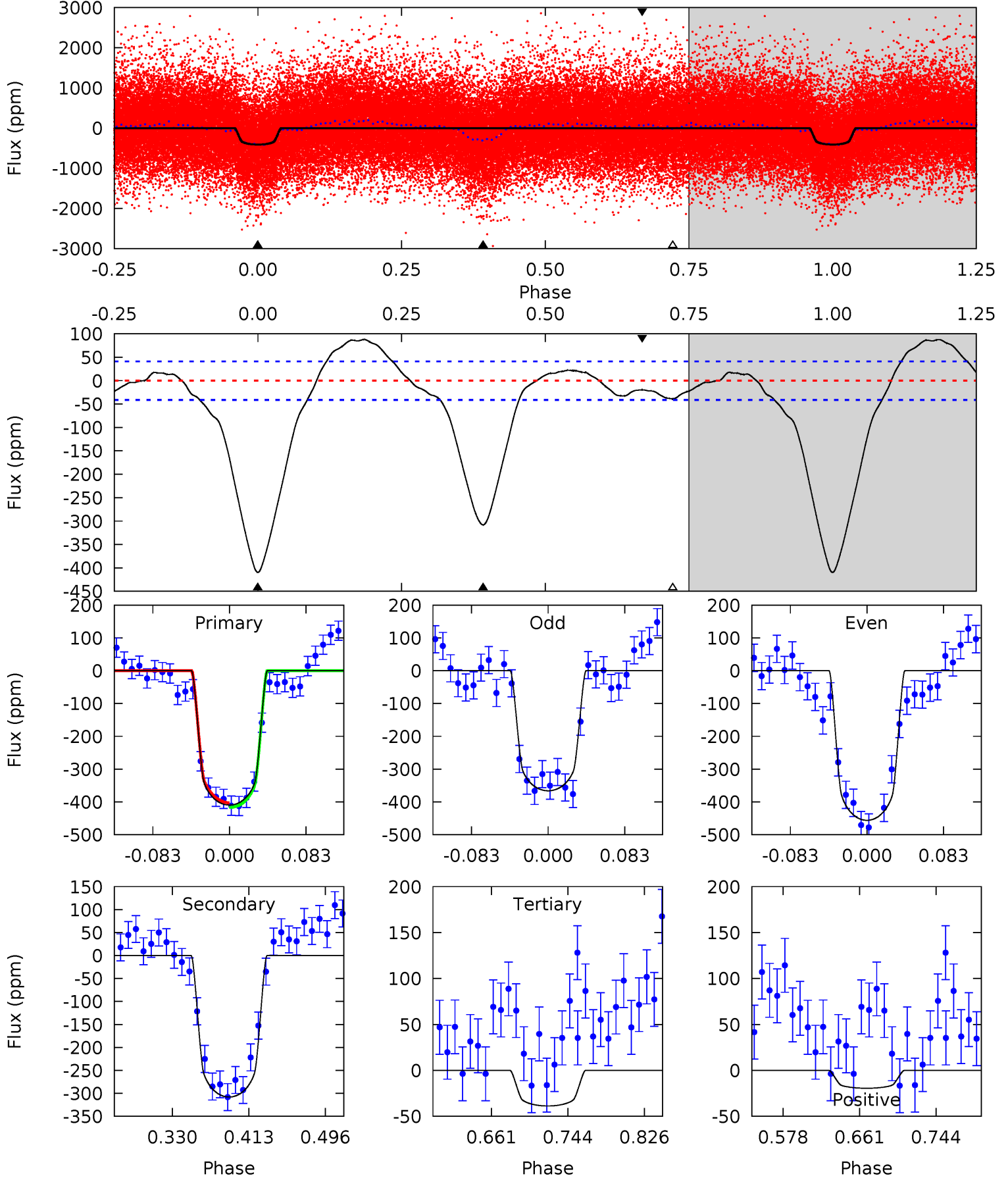
TCE 005471480-01 P= 12.424613 Days $T_0=141.591648$ (BKJD)



DV Model-Shift Uniqueness Test

005471480-01, P = 12.424994 Days, E = 129.141758 Days

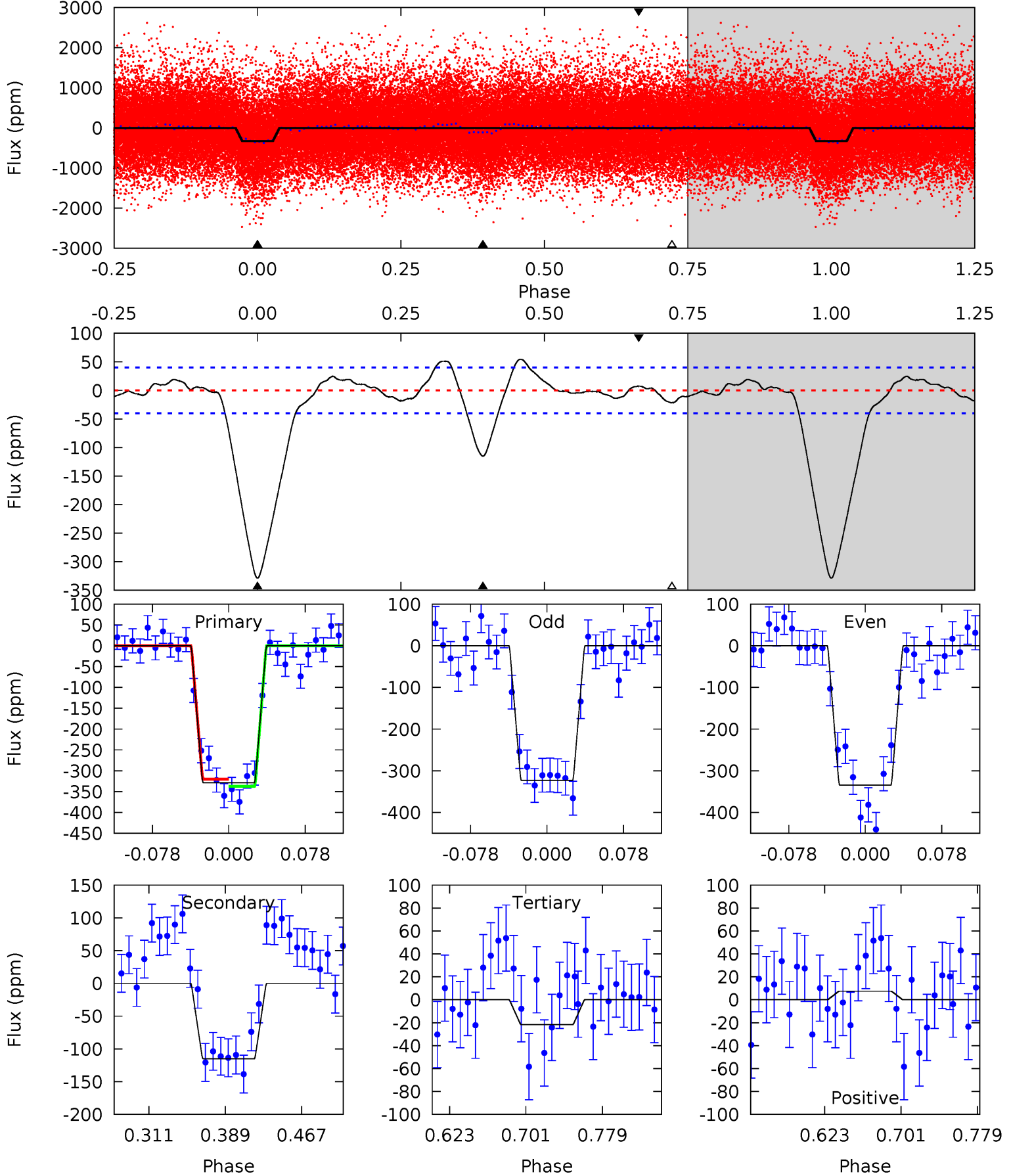
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.8	34.5	4.34	-2.18	4.60	1.74	4.06	41.5	48.0	30.1	36.6	5.04	1.06	0.18	0.79



Alt Model-Shift Uniqueness Test

005471480-01, P = 12.424613 Days, E = 129.167035 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.7	13.2	2.49	0.86	4.62	1.76	1.54	35.2	36.9	10.7	12.3	0.64	1.05	0.14	0.99



Stellar Parameters For KIC 005471480

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5853^{+157}_{-192}	$4.529^{+0.042}_{-0.168}$	$-0.100^{+0.300}_{-0.300}$	$0.895^{+0.216}_{-0.093}$	$0.990^{+0.104}_{-0.116}$	$1.941^{+0.417}_{-0.856}$
	+3%/-3%	+1%/-4%	+300%/-300%	+24%/-10%	+11%/-12%	+21%/-44%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005471480-01 / KOI 6587.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-308 ± 9	$2.09^{+0.28}_{-0.18}$	1078^{+68}_{-53}	5424^{+197}_{-193}	422^{+72}_{-91}
Alt.	-115 ± 9	$1.83^{+0.25}_{-0.16}$	1072^{+63}_{-49}	4632^{+164}_{-160}	202^{+41}_{-41}

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

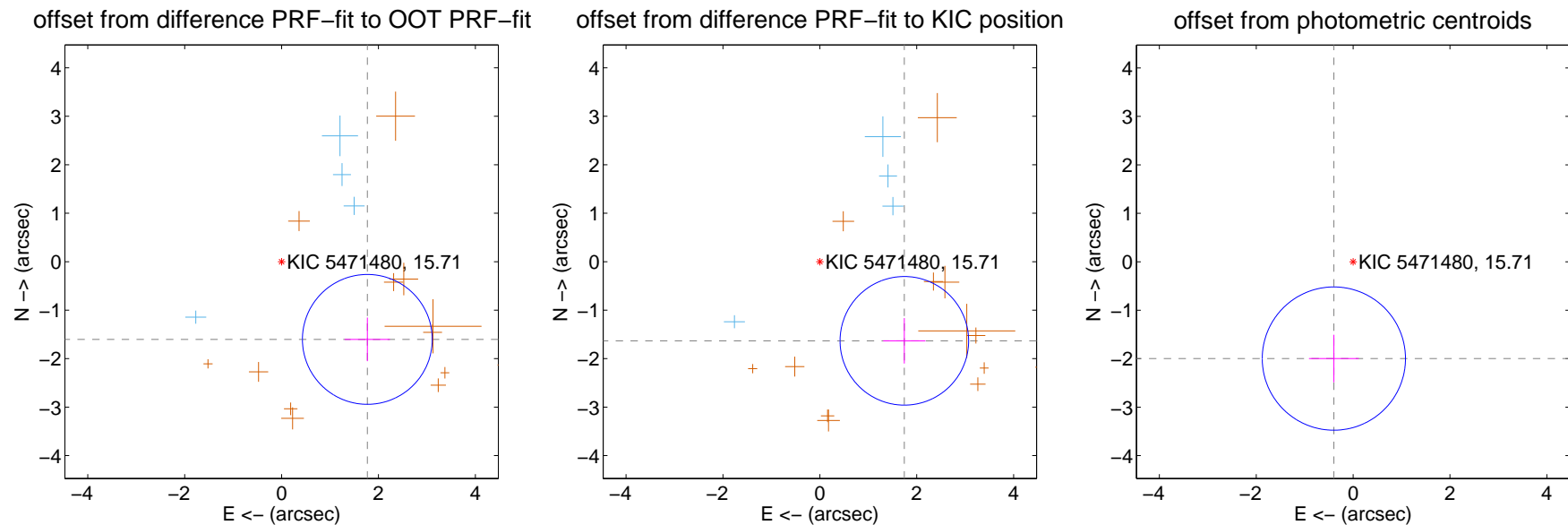
DV Centroid Data

Supplemental centroid analysis for 005471480-01. Kepler magnitude: 15.71. Transit SNR 18.18

There are 4 quarters with good PRF difference image offsets

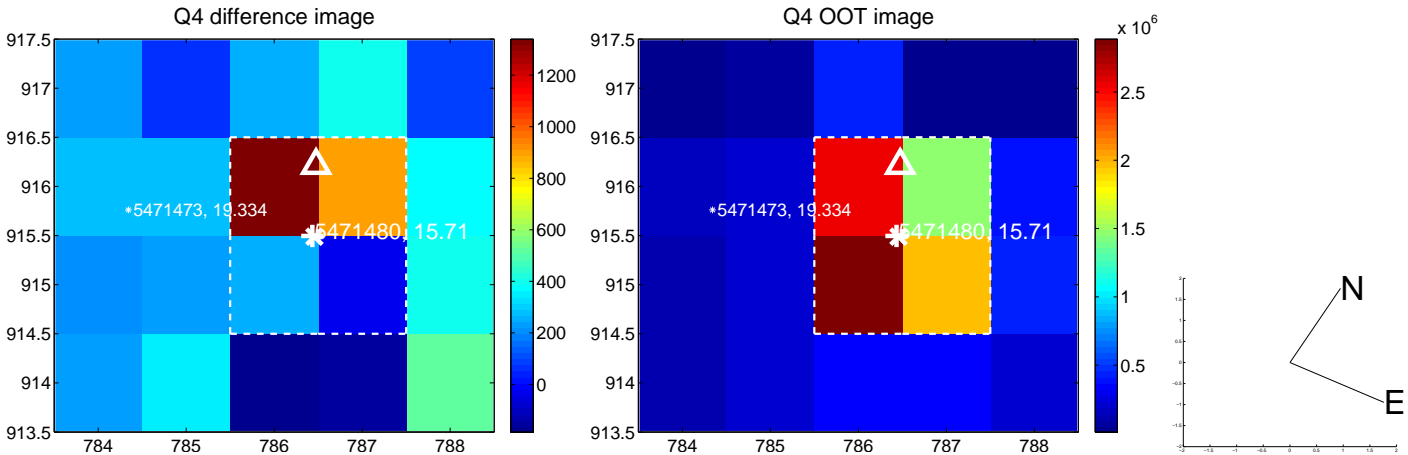
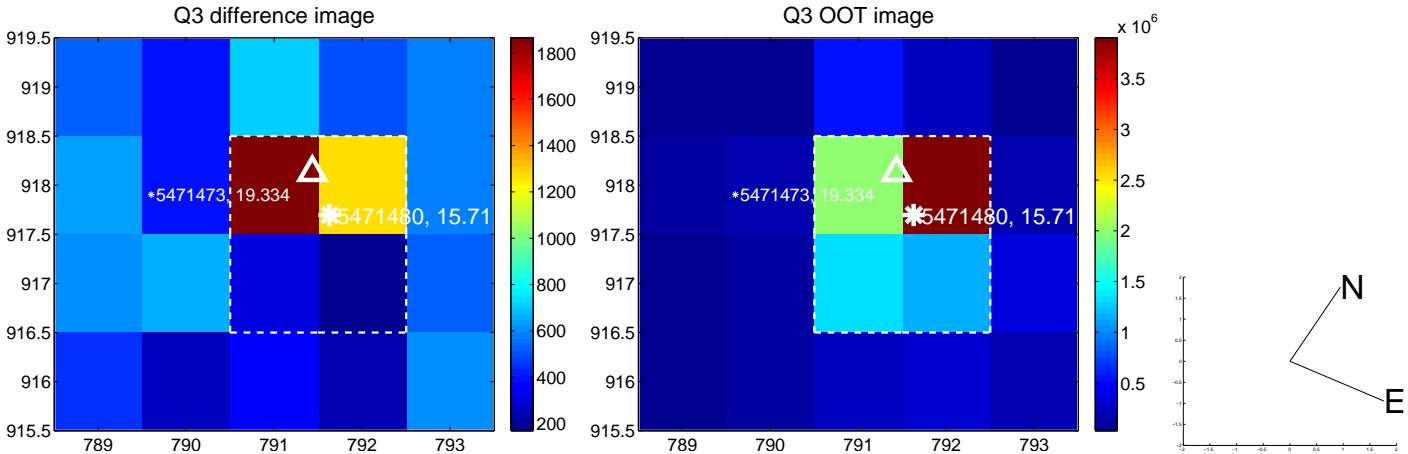
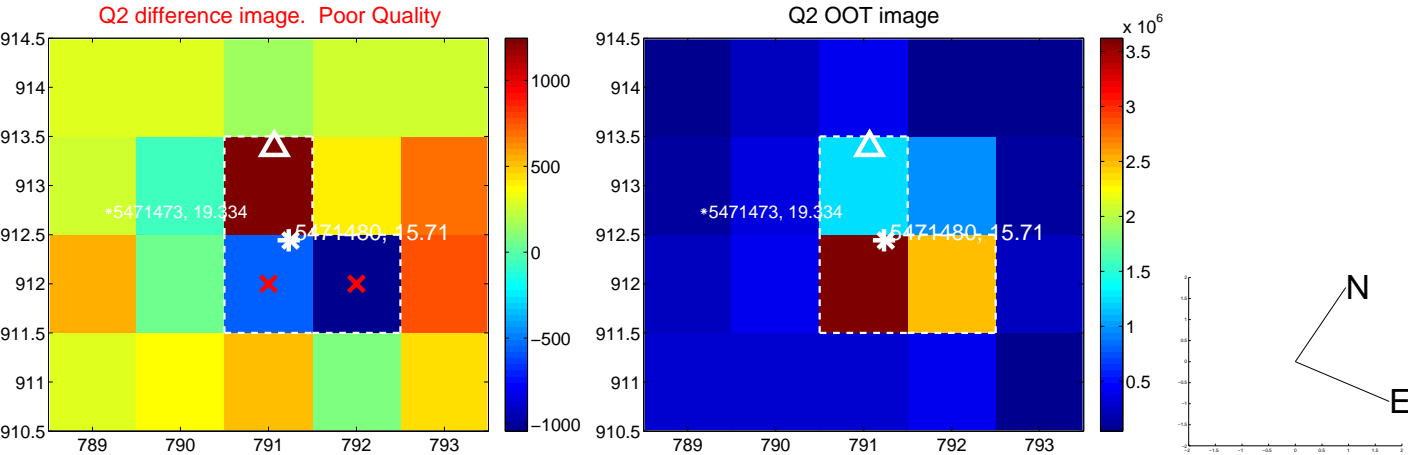
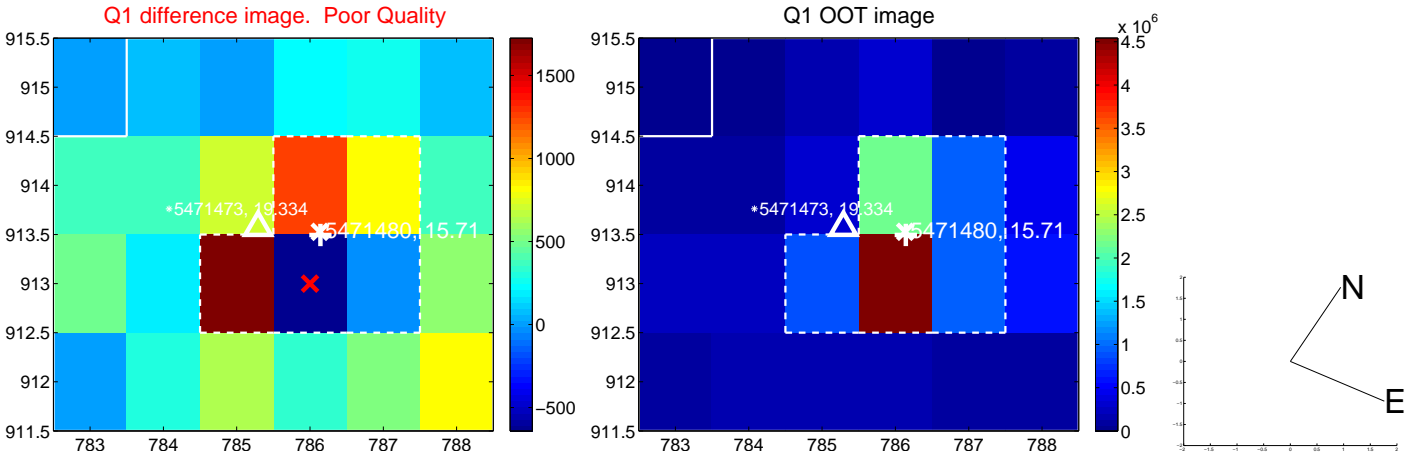
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.388 ± 0.446	5.35	-1.770 ± 0.467	-1.603 ± 0.450
PRF-fit source offset from KIC position	2.389 ± 0.442	5.40	-1.744 ± 0.436	-1.632 ± 0.469
photometric centroid source offset	2.04 ± 0.49	4.13	0.40 ± 0.51	-2.00 ± 0.49

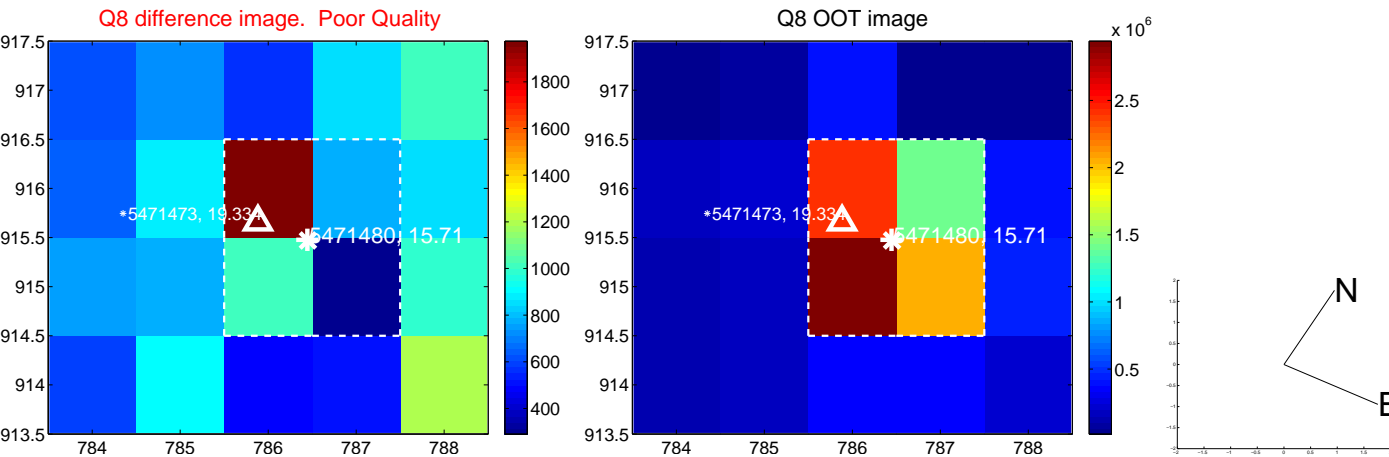
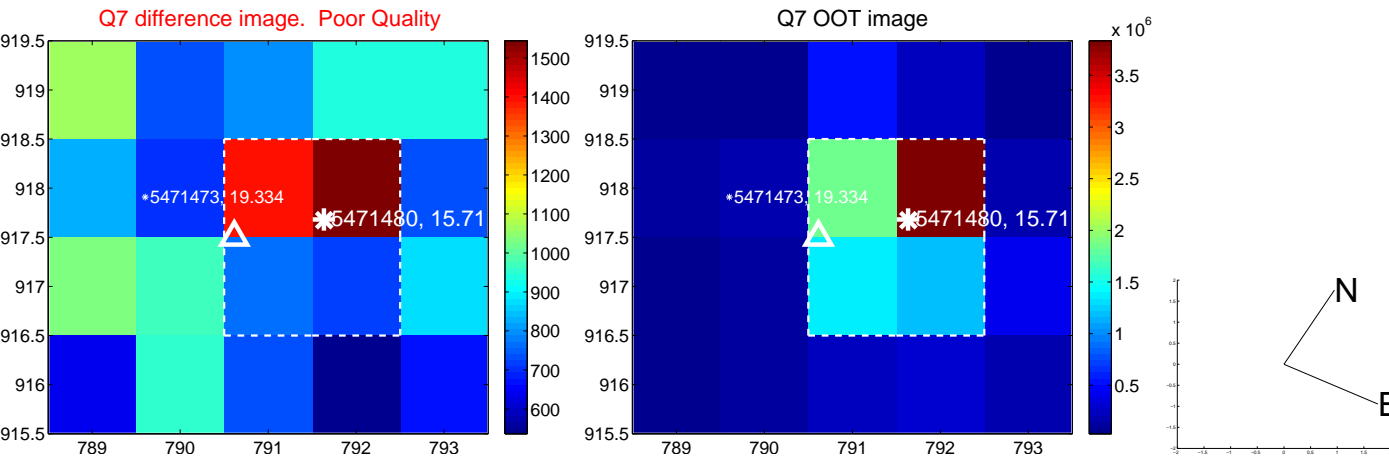
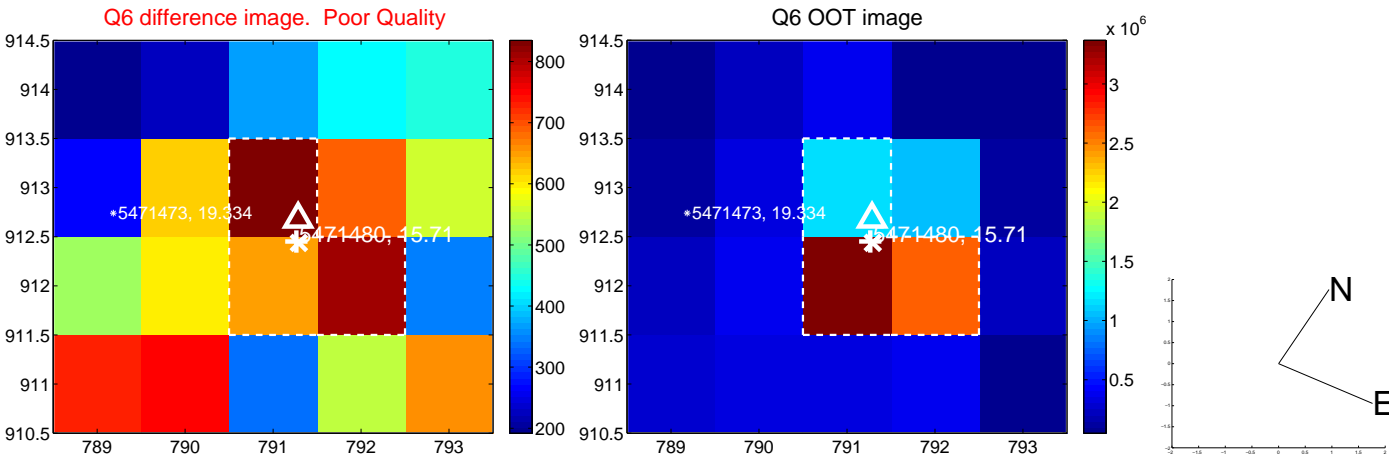
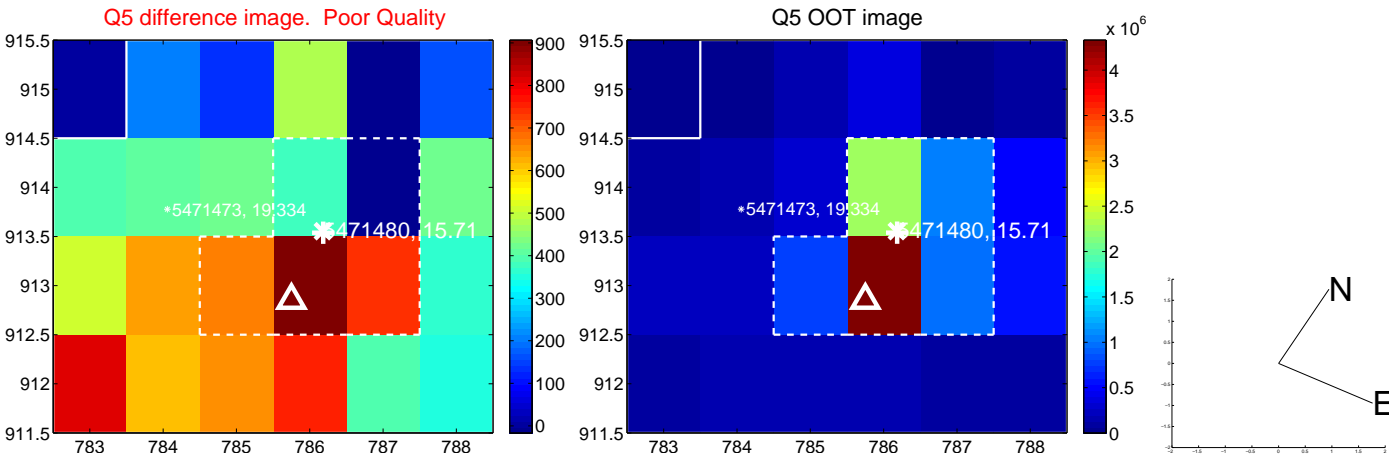


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

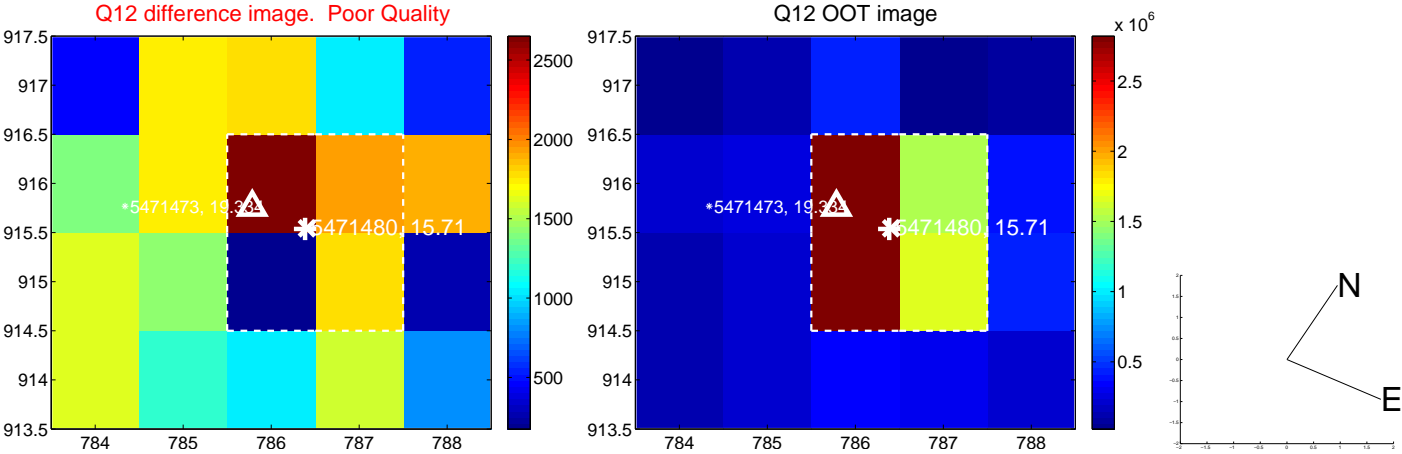
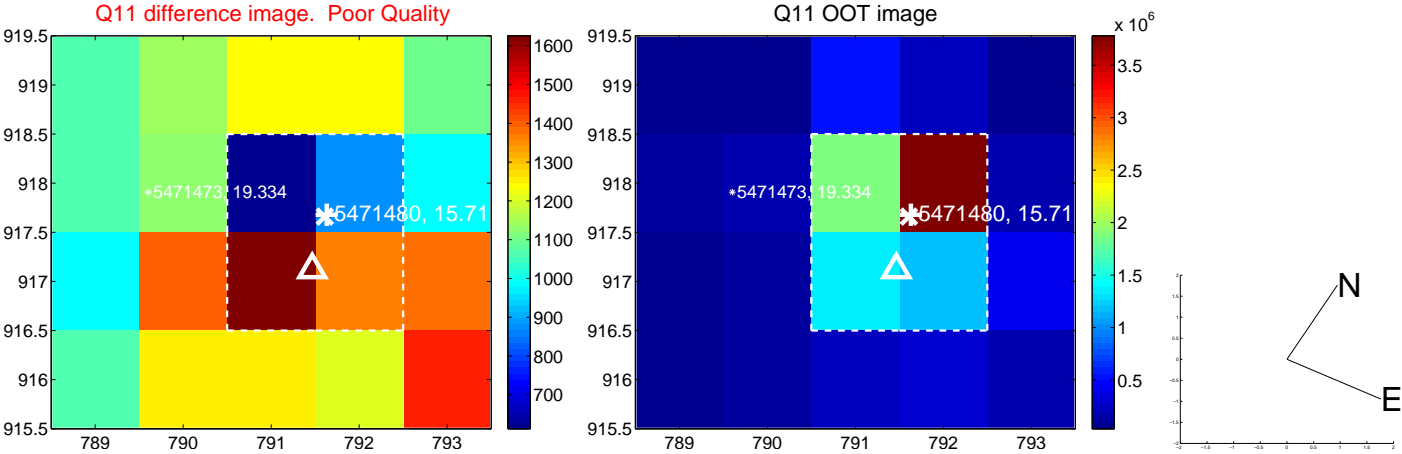
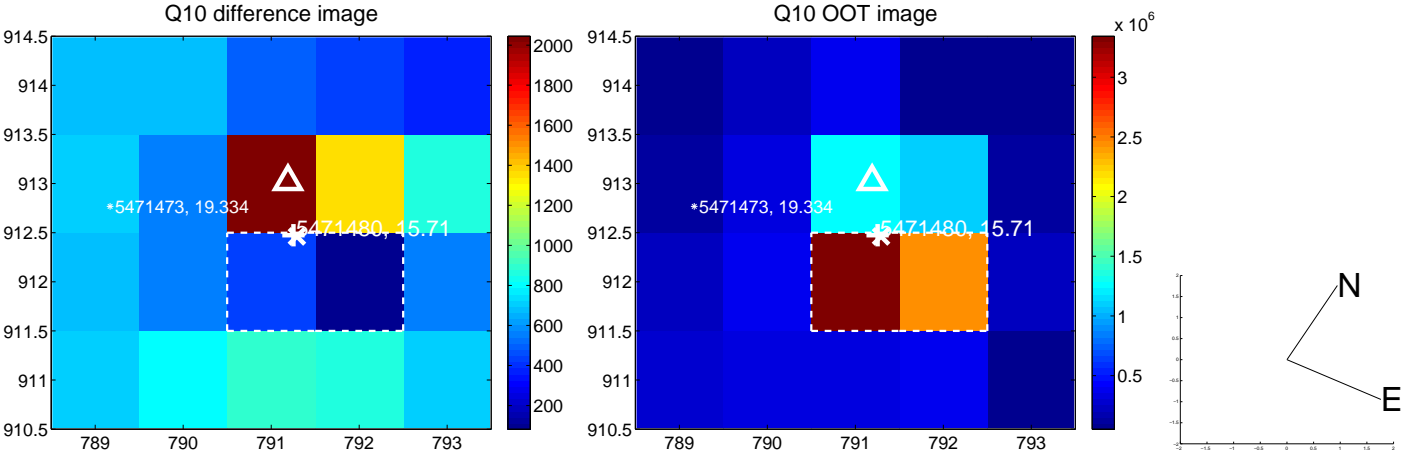
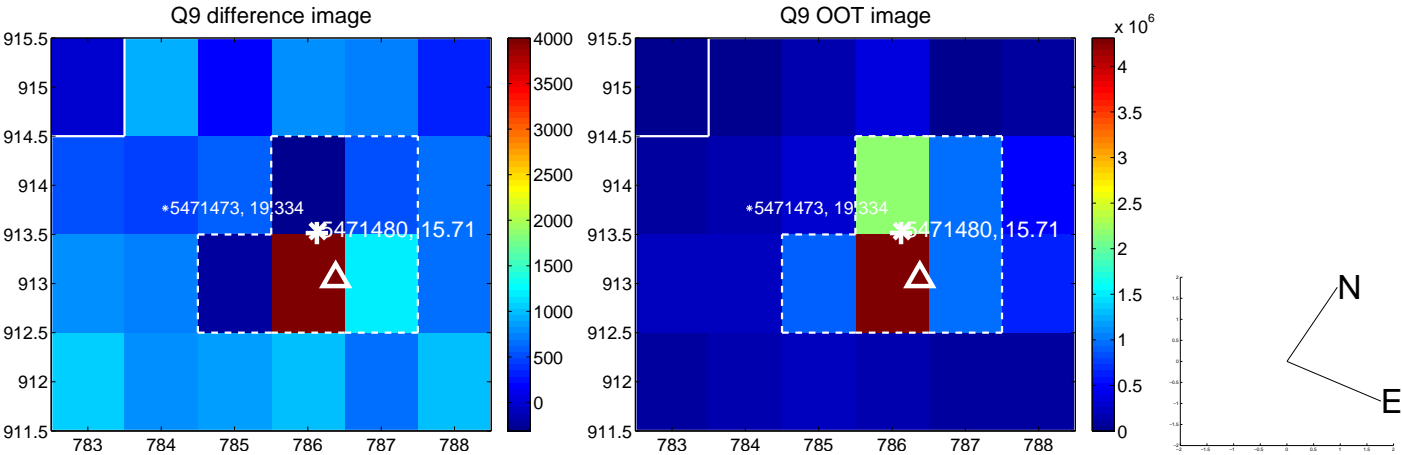
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



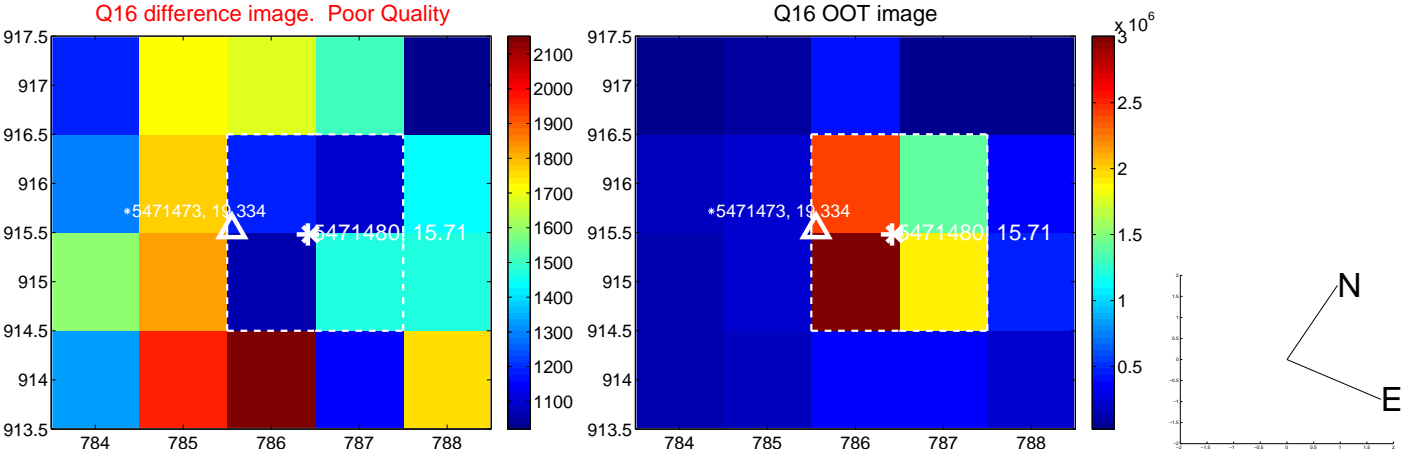
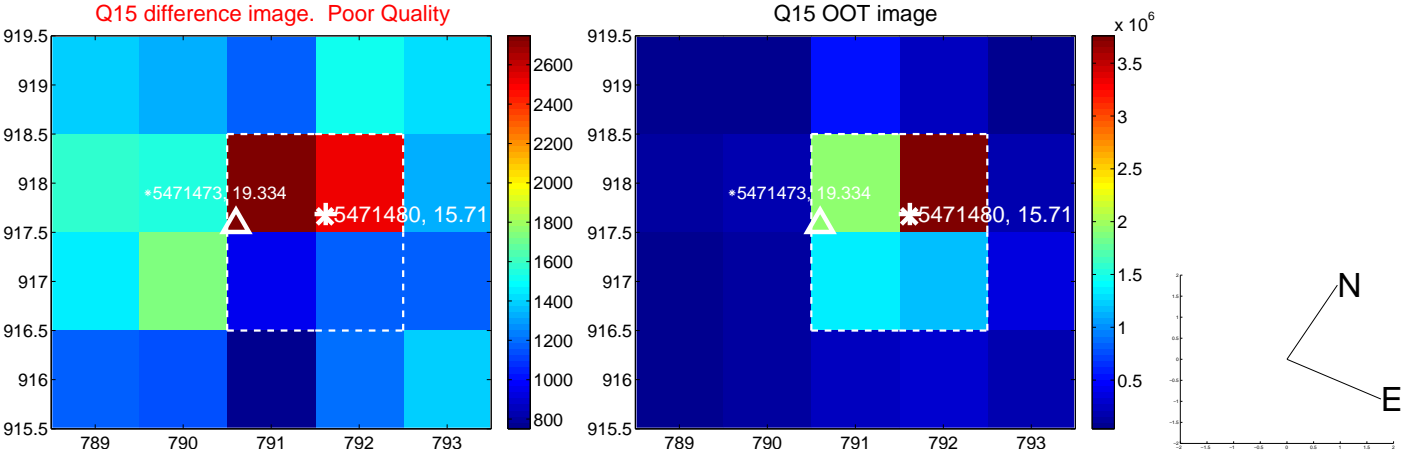
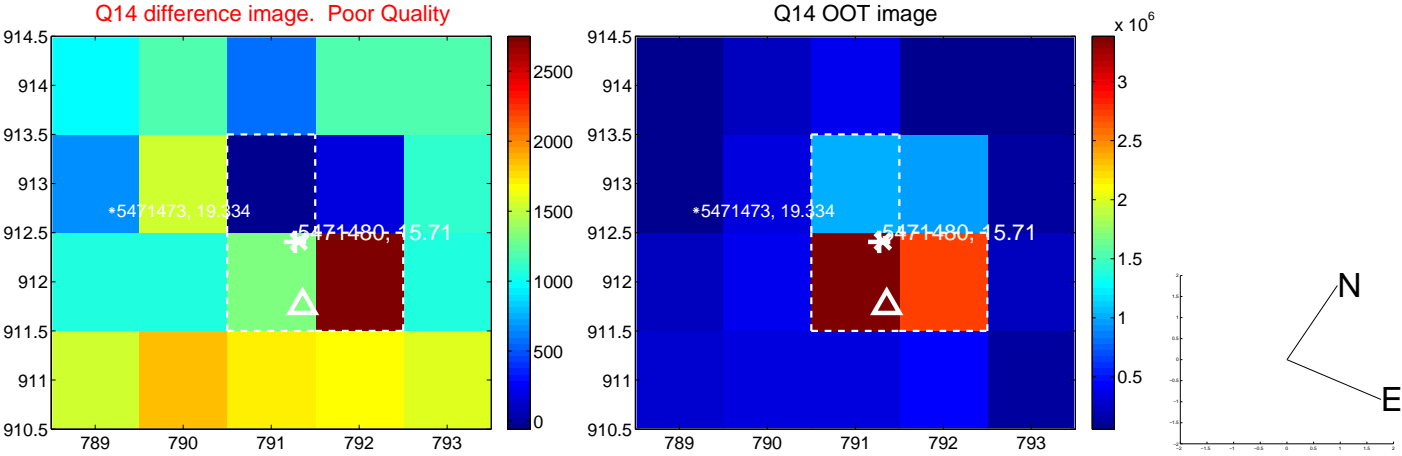
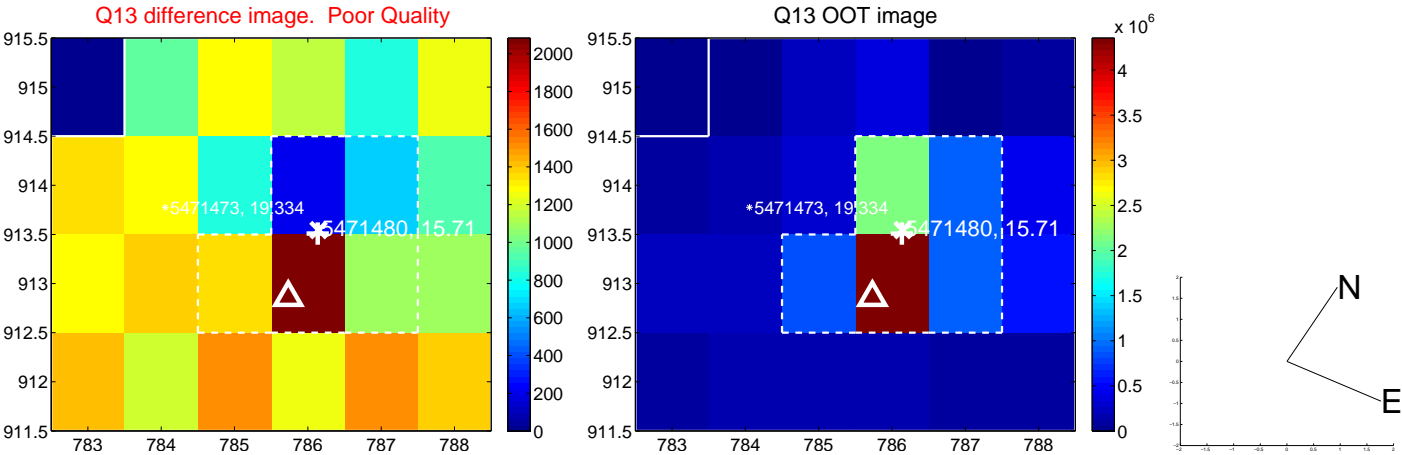
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



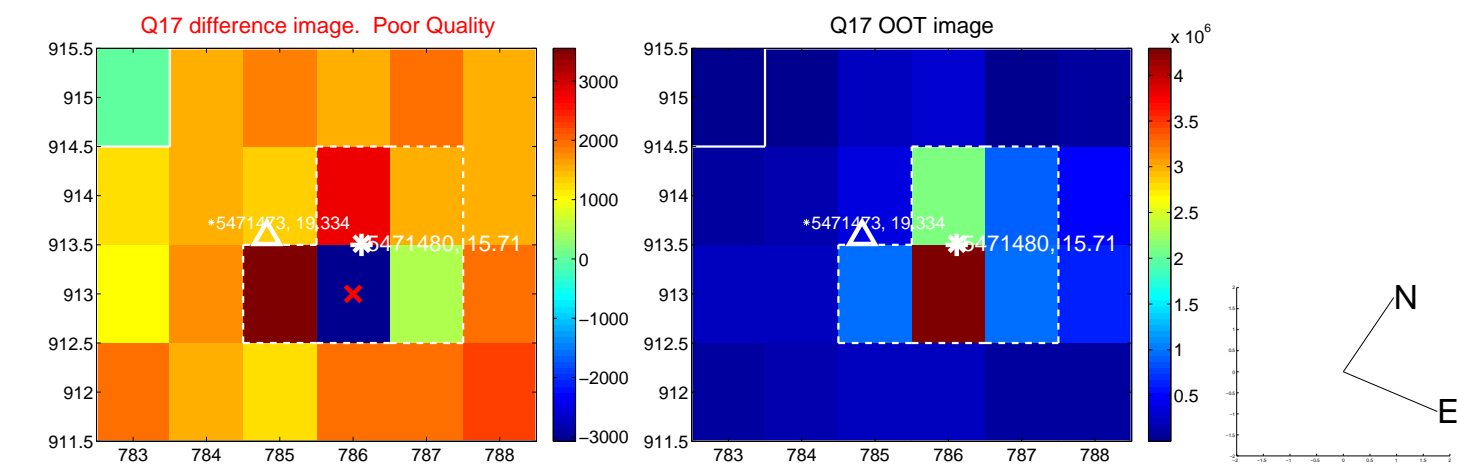
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



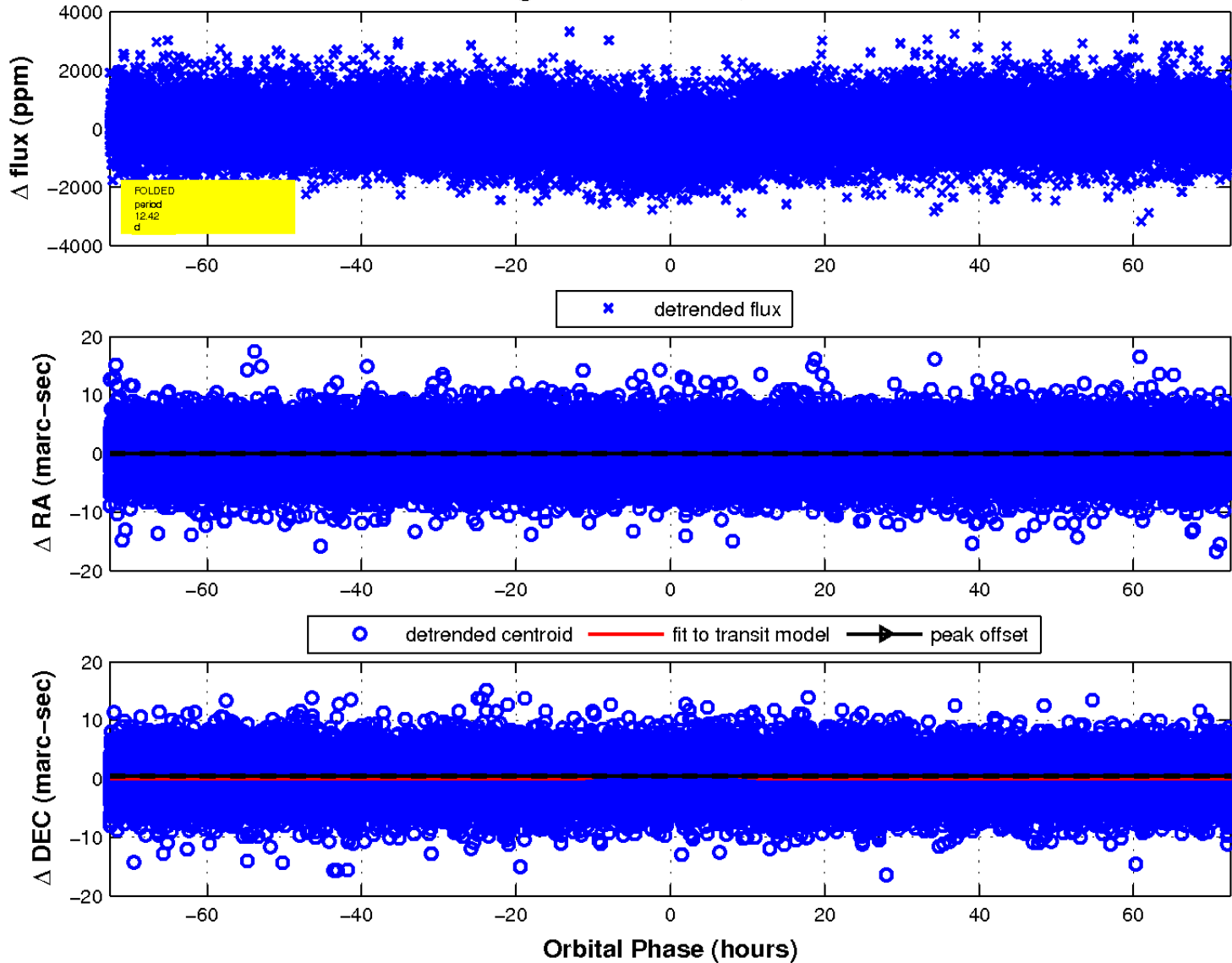
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

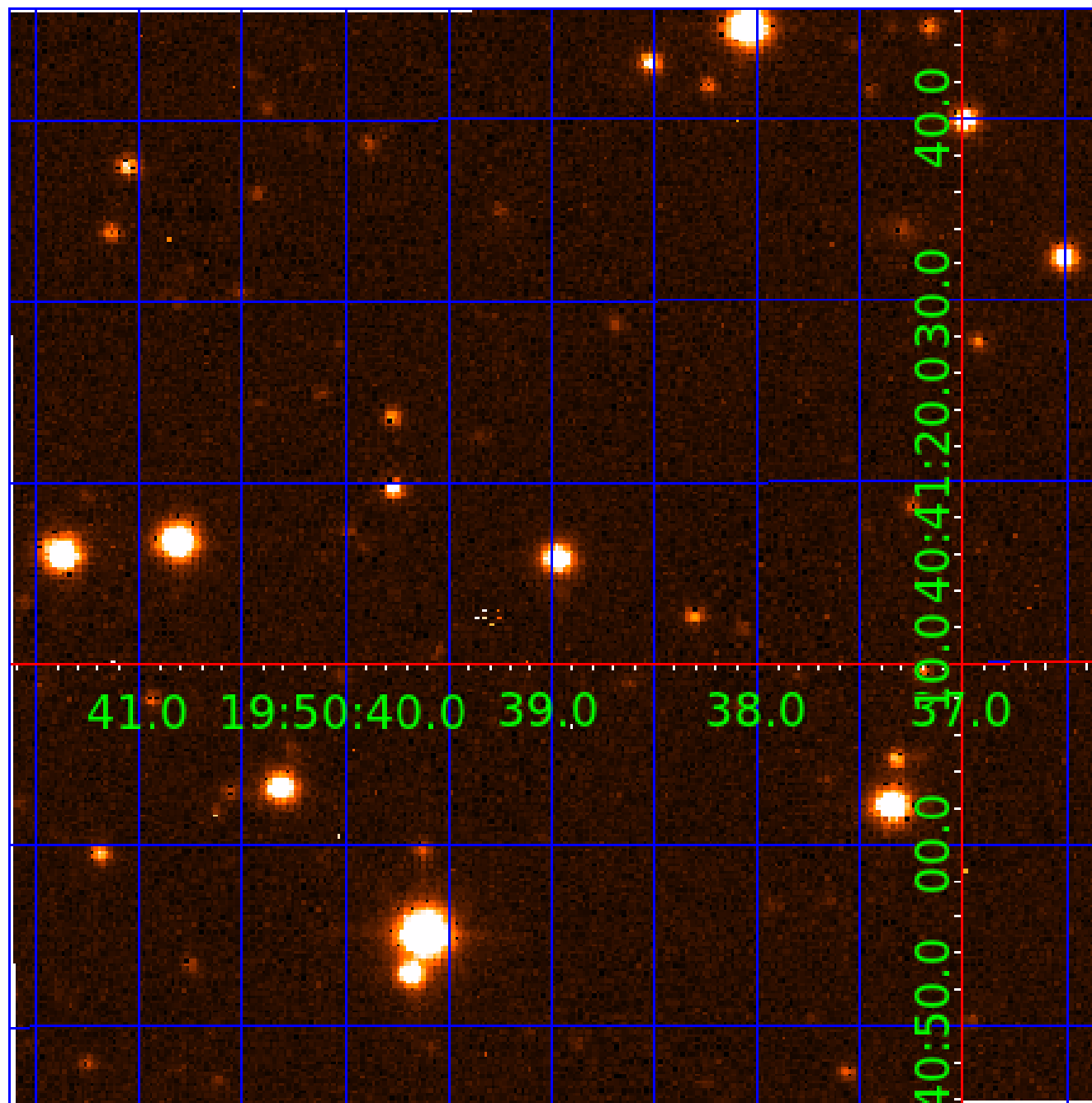


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005471480

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})
005471480-01	OBS	6587.01	12.424994	141.566752	324.7	24.203	14.4	18.2	0.90	5853	2.01	77.01
005471480-02	OBS	No	12.425835	133.925184	315.4	30.721	13.2	17.6	0.90	5853	2.14	77.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471480-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
005471480-02	OBS	FP	0.00	1	0	1	1	LPP_DV—SAME_NTL_PERIOD—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

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

Ephemeris Match Information For 005471480-02

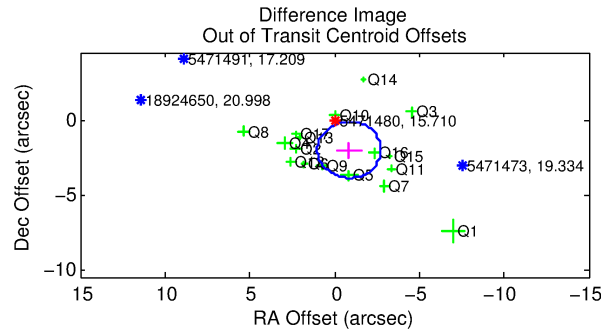
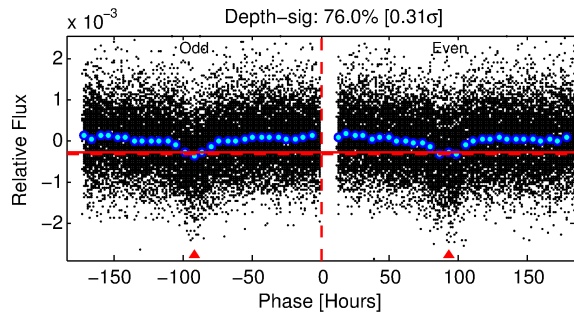
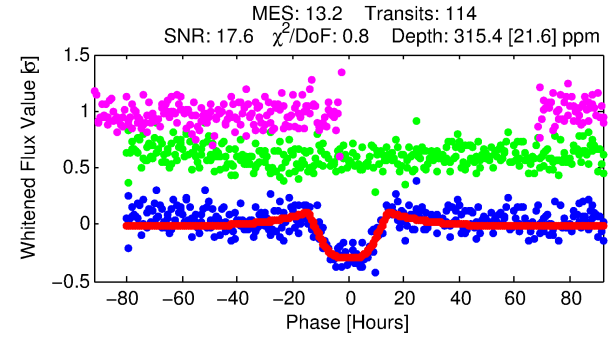
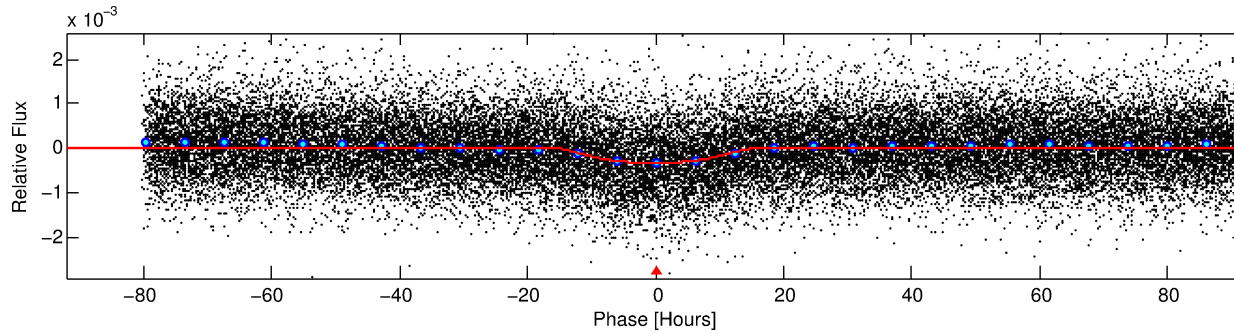
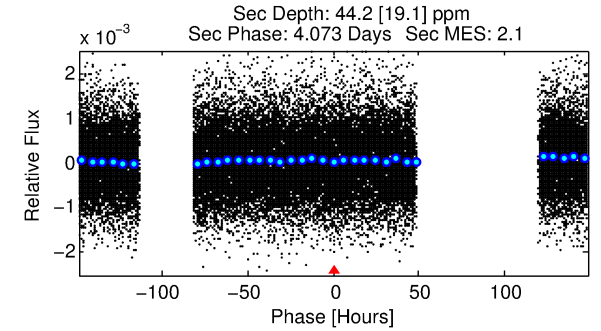
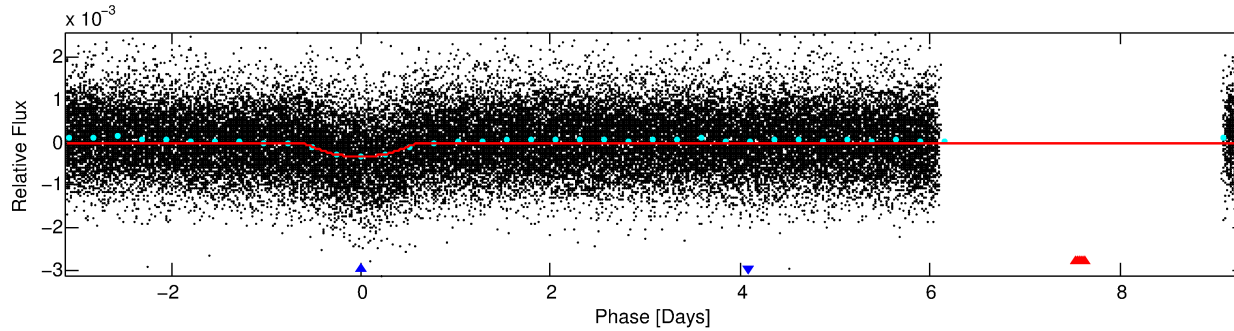
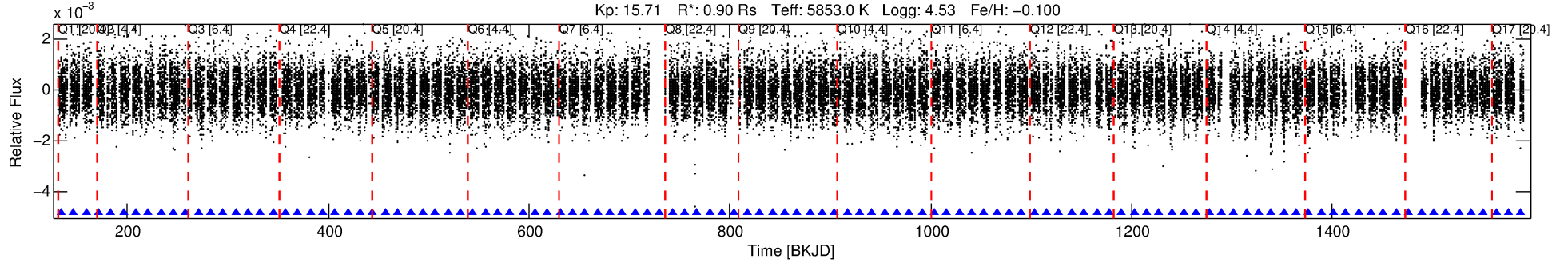
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005471480-02	5471480	V380-Cyg-sec	5385723	1:1	317.3	68	42	5.77	15.71	409.64	Direct-PRF	0	1.01	0.63

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: 5471480 Candidate: 2 of 2 Period: 12.426 d
KOI: K06587 Corr: No Ephemeris Match

Kp: 15.71 R*: 0.90 Rs Teff: 5853.0 K Logg: 4.53 Fe/H: -0.100



DV Fit Results:

Period = 12.42584 [0.00047] d
Epoch = 133.9252 [0.0302] BKJD
Rp/R* = 0.0219 [0.0010]
a/R* = 1.37 [0.05]
b = 0.97 [0.00]
Seff = 77.01 [25.49]
Teq = 755 [63] K
Rp = 2.14 [0.52] Re
a = 0.1046 [0.0216] AU
Ag = 58.18 [31.18] [1.83σ]
Teffp = 3225 [371] K [6.66σ]

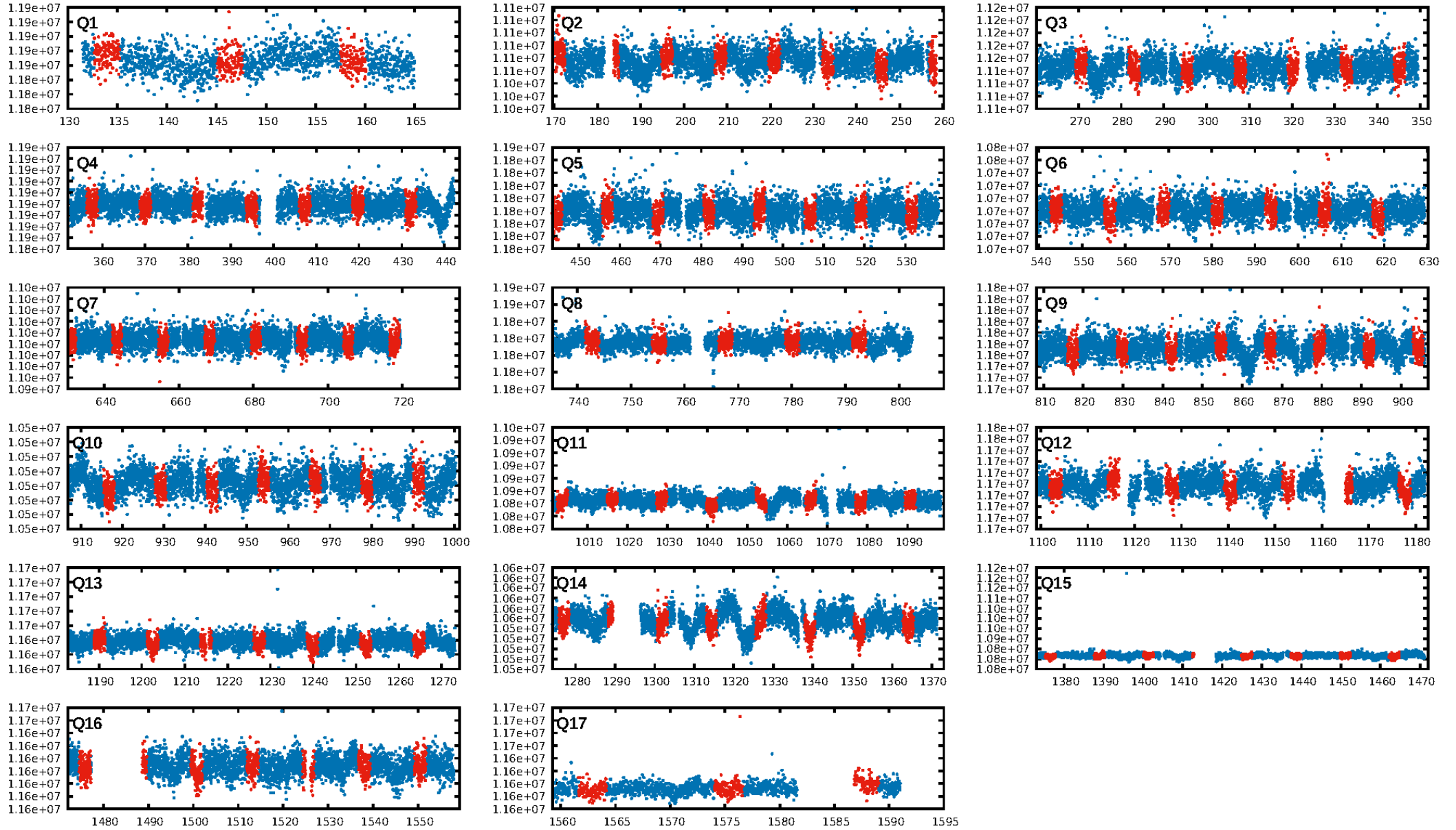
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 54.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.47e-38
RollingBand-fgt: 1.00 [108/108]
GhostDiagnostic-chr: -0.03342
Centroid-sig: 0.0%
Centroid-so: 2.023 arcsec [4.02σ]
OotOffset-rm: 2.188 arcsec [3.50σ]
KicOffset-rm: 2.218 arcsec [3.43σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.18 [3/17]
DiffImageOverlap-fno: 1.00 [17/17]

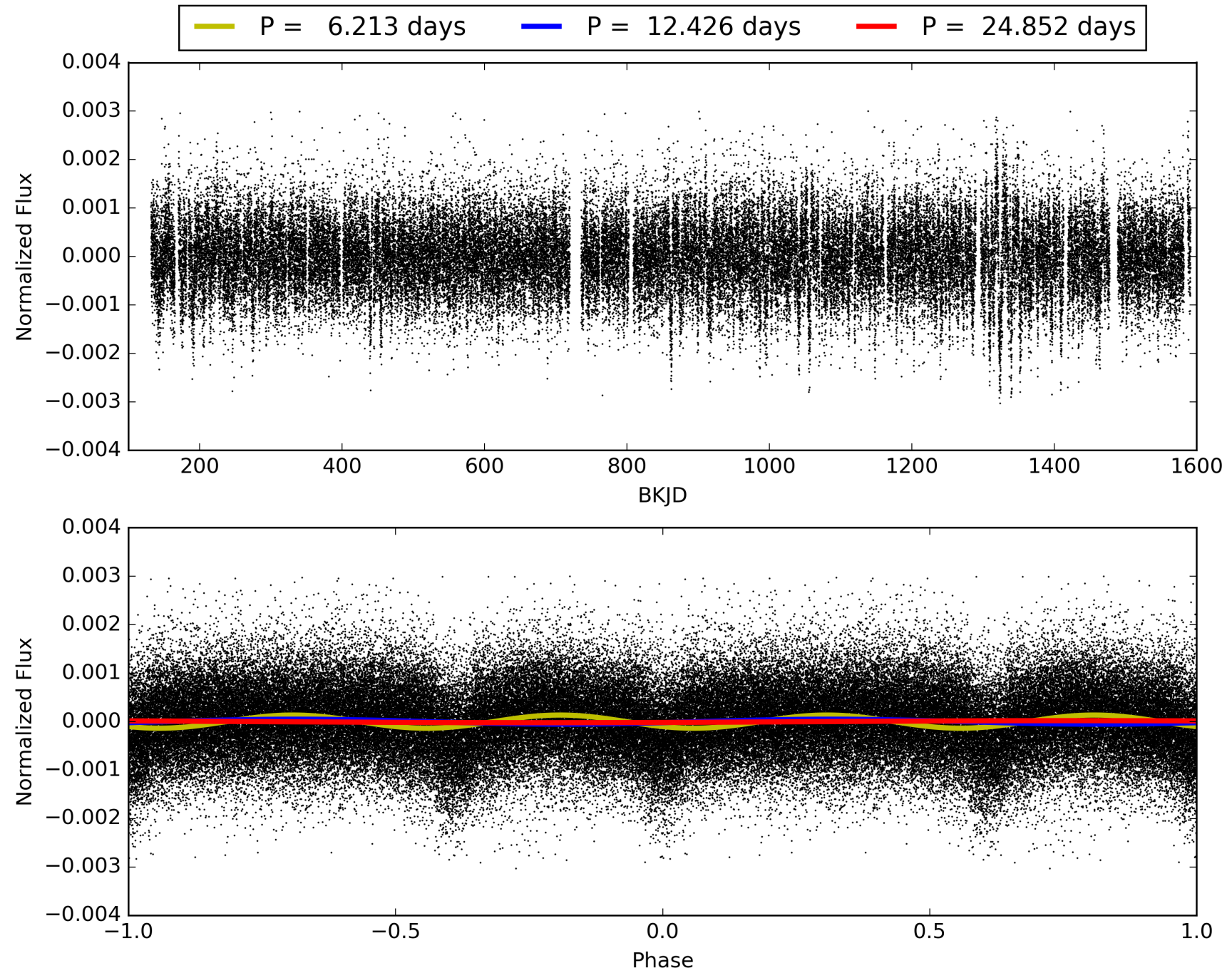
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:23:28 Z

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

TCE 005471480-02, PDC Light Curves

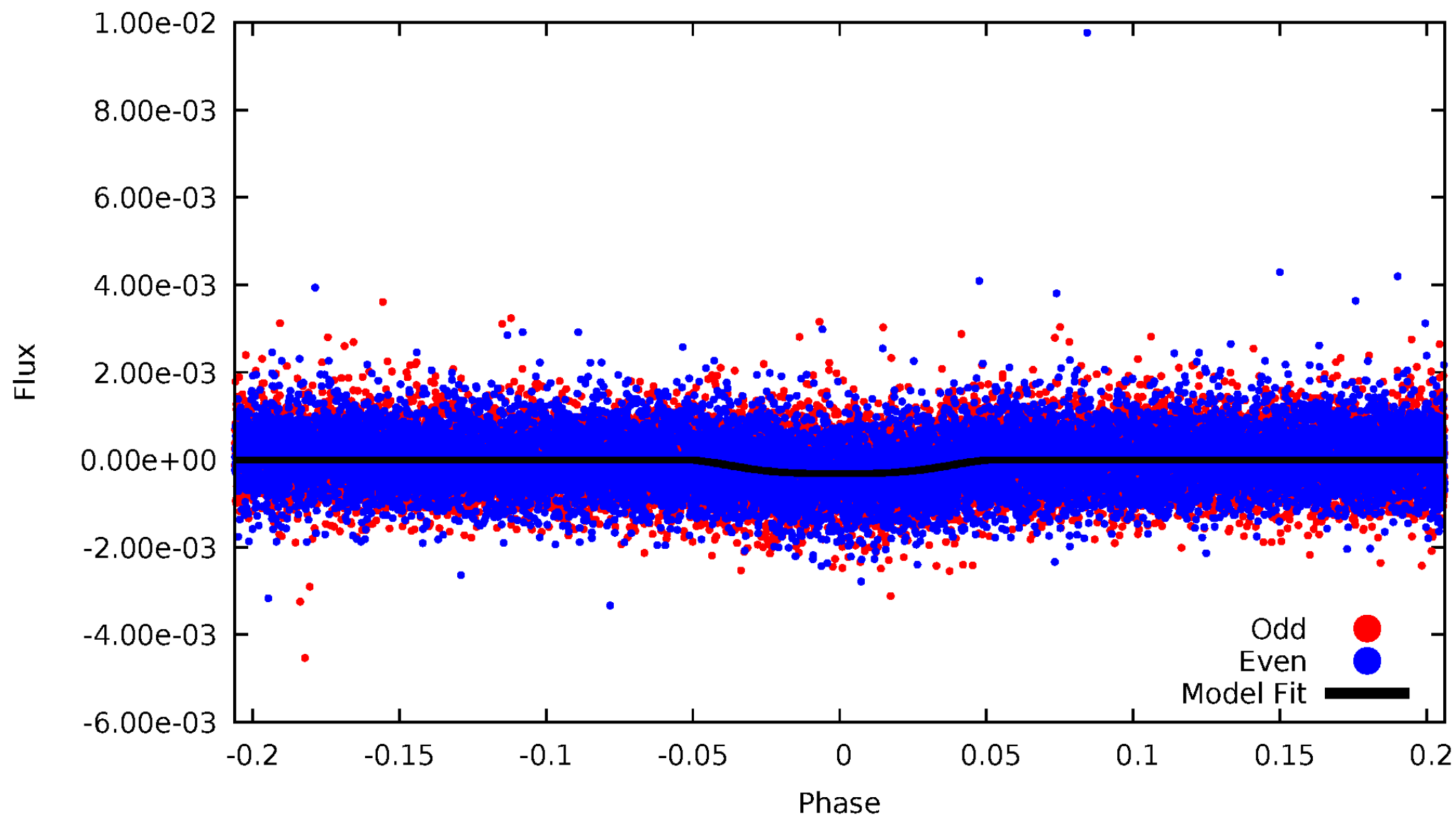


TCE 005471480-02



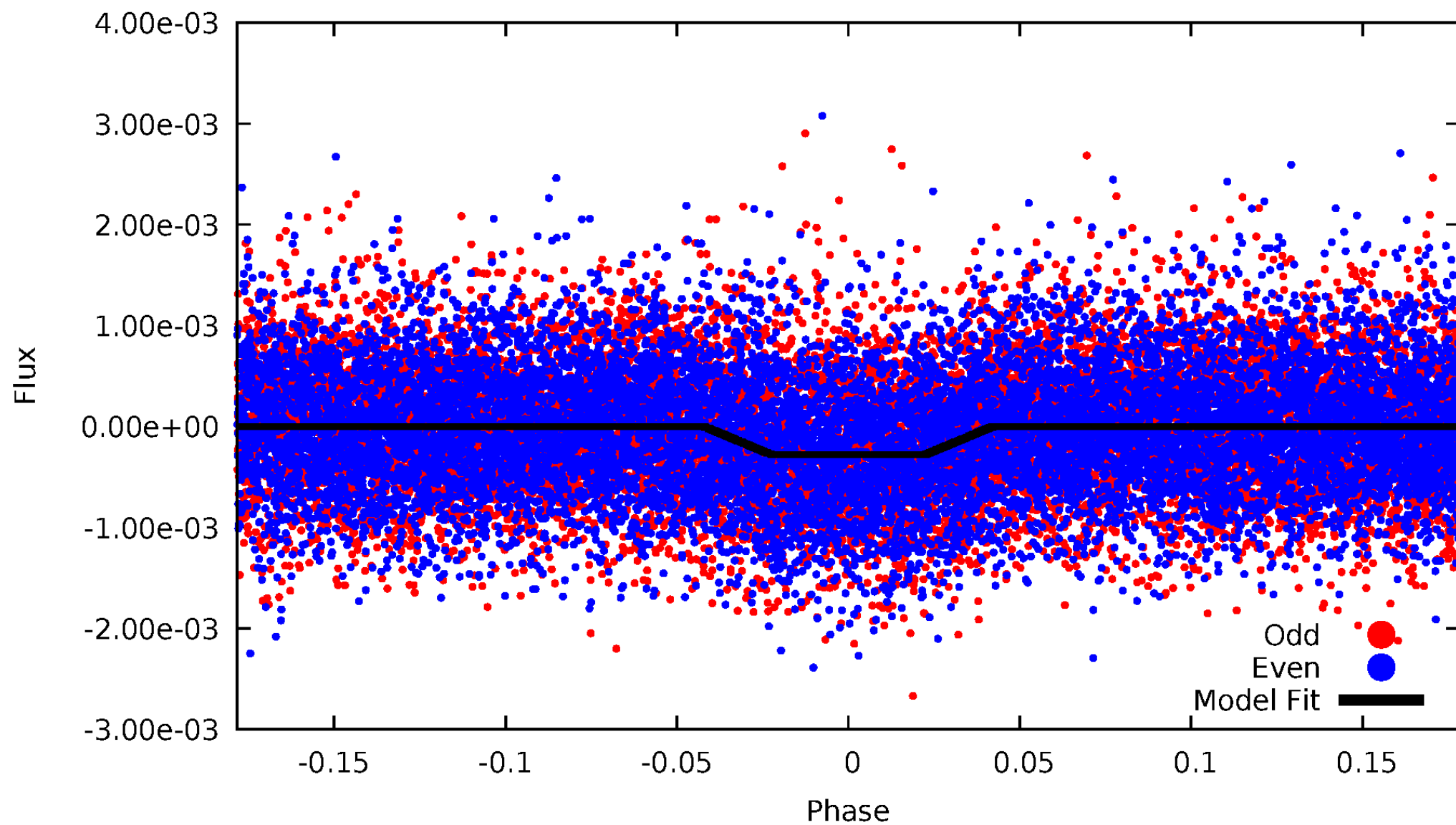
DV Odd/Even

TCE 005471480-02



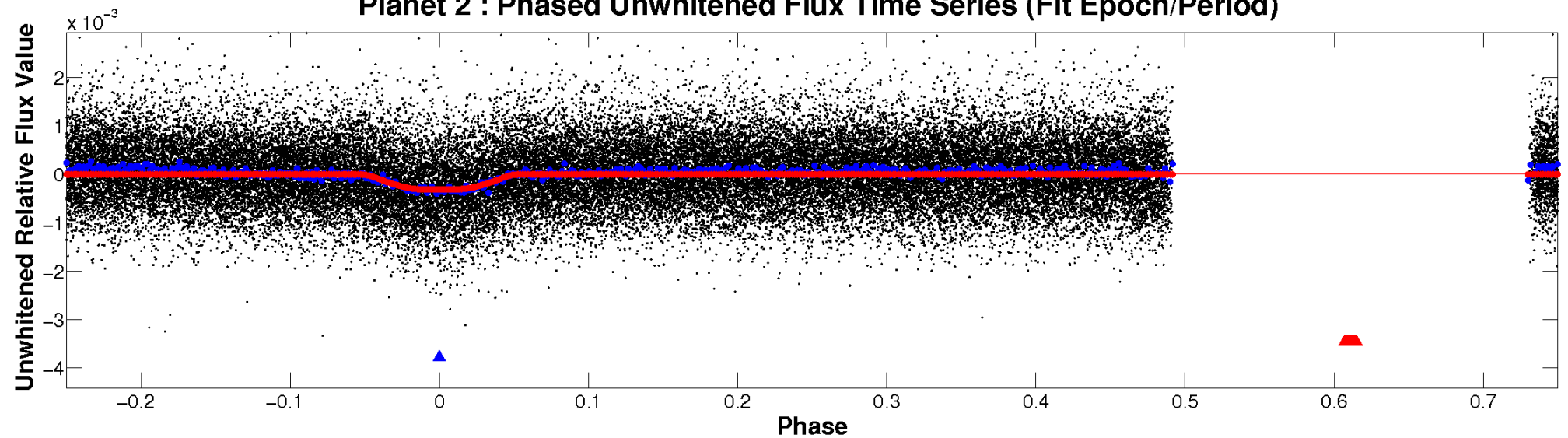
ALT Odd/Even

TCE 005471480-02

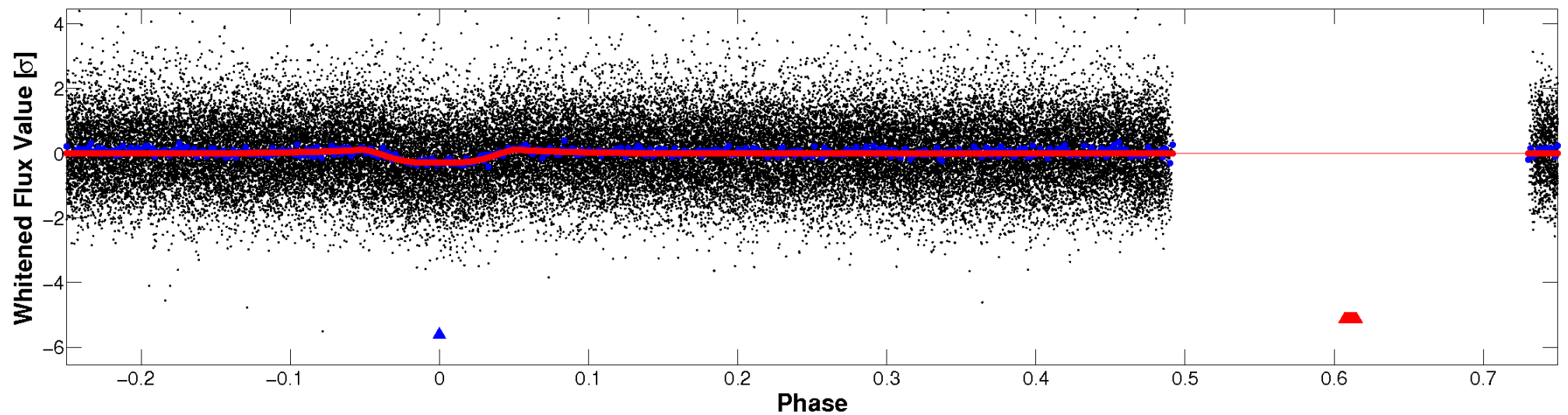


Non-Whitened Vs. Whitened Light Curve

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

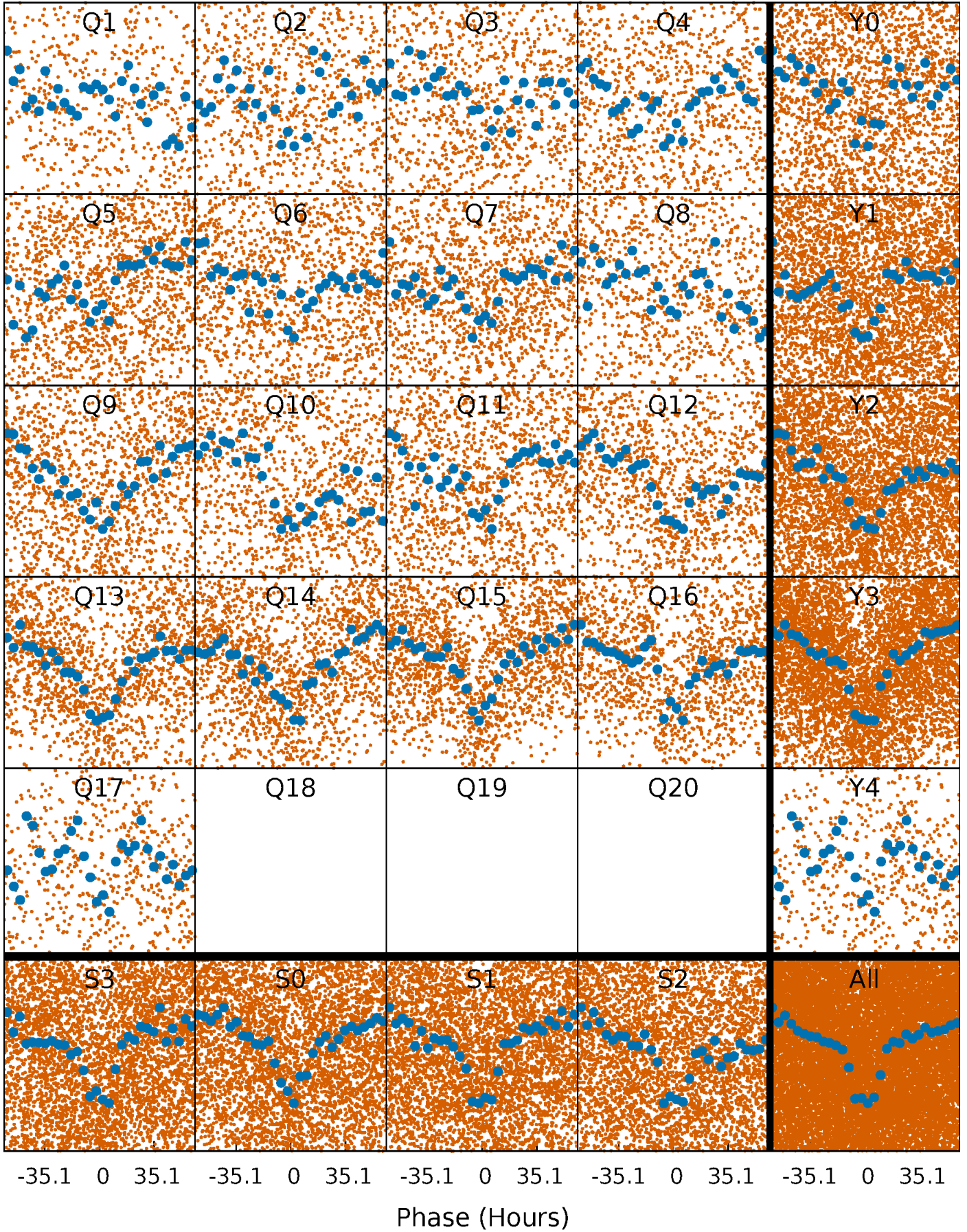


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



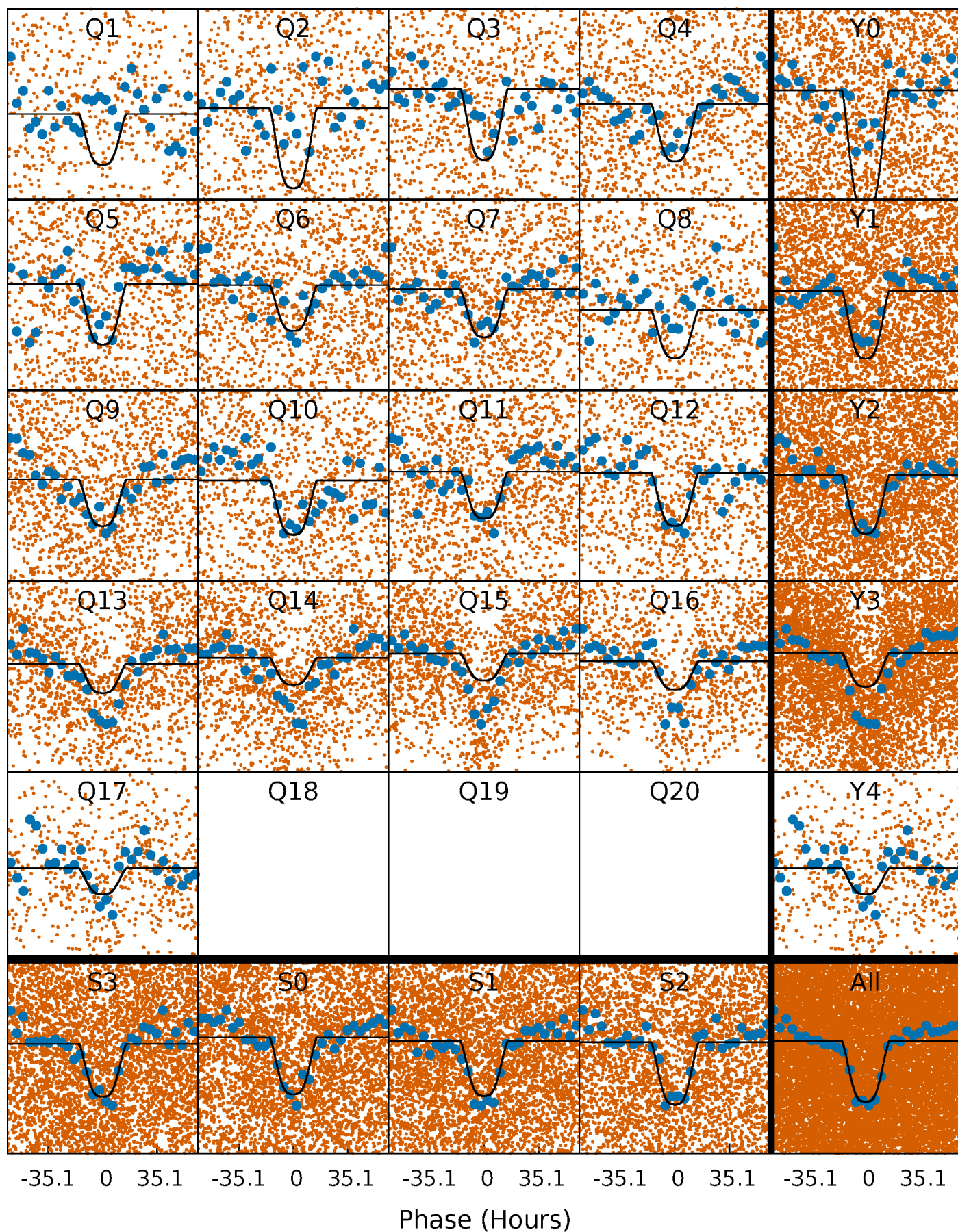
PDC Quarter-Phased Transit Curves

TCE 005471480-02 P= 12.425835 Days $T_0=133.925184$ (BKJD)



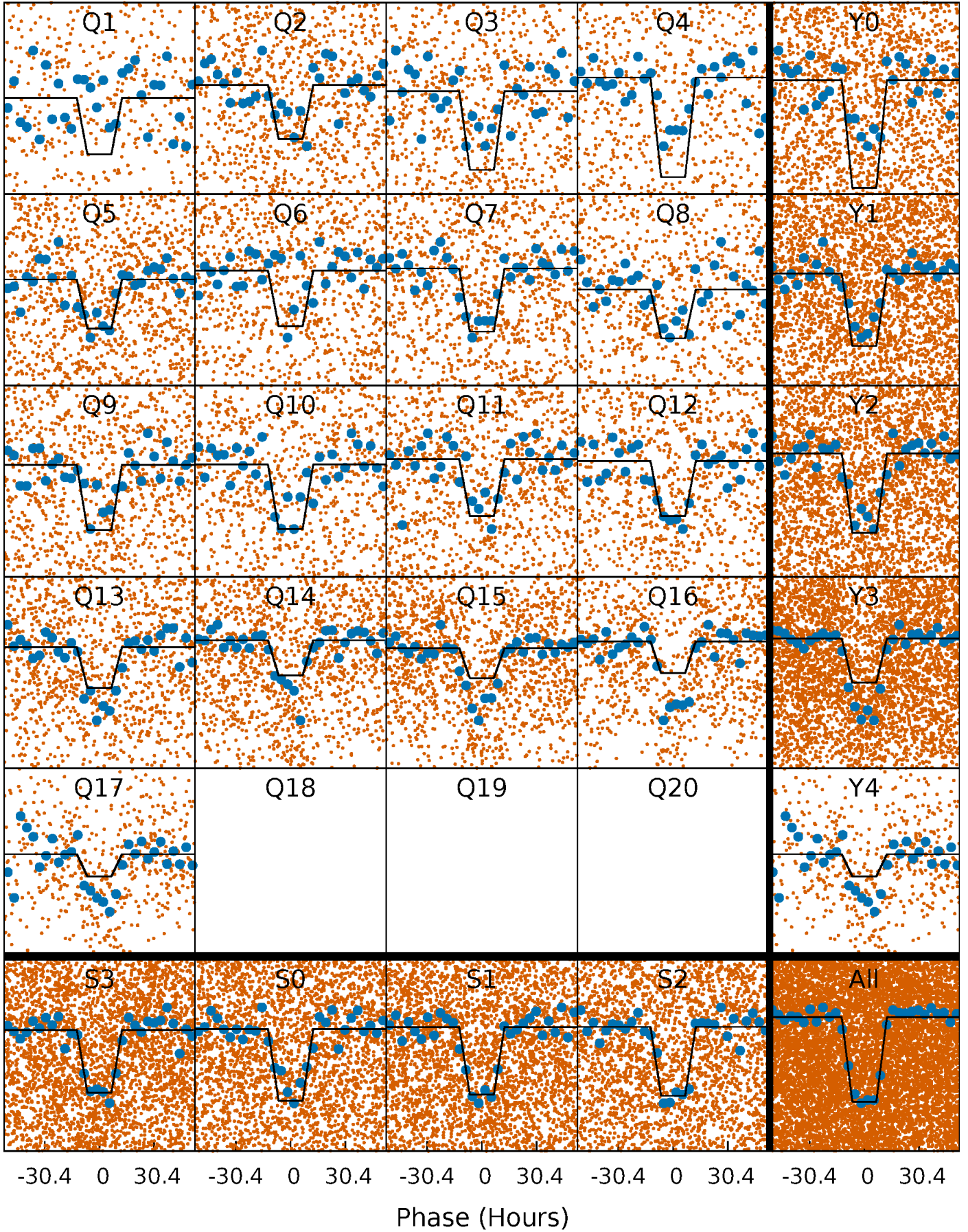
DV Quarter-Phased Transit Curves

TCE 005471480-02 P= 12.425835 Days $T_0=133.925184$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

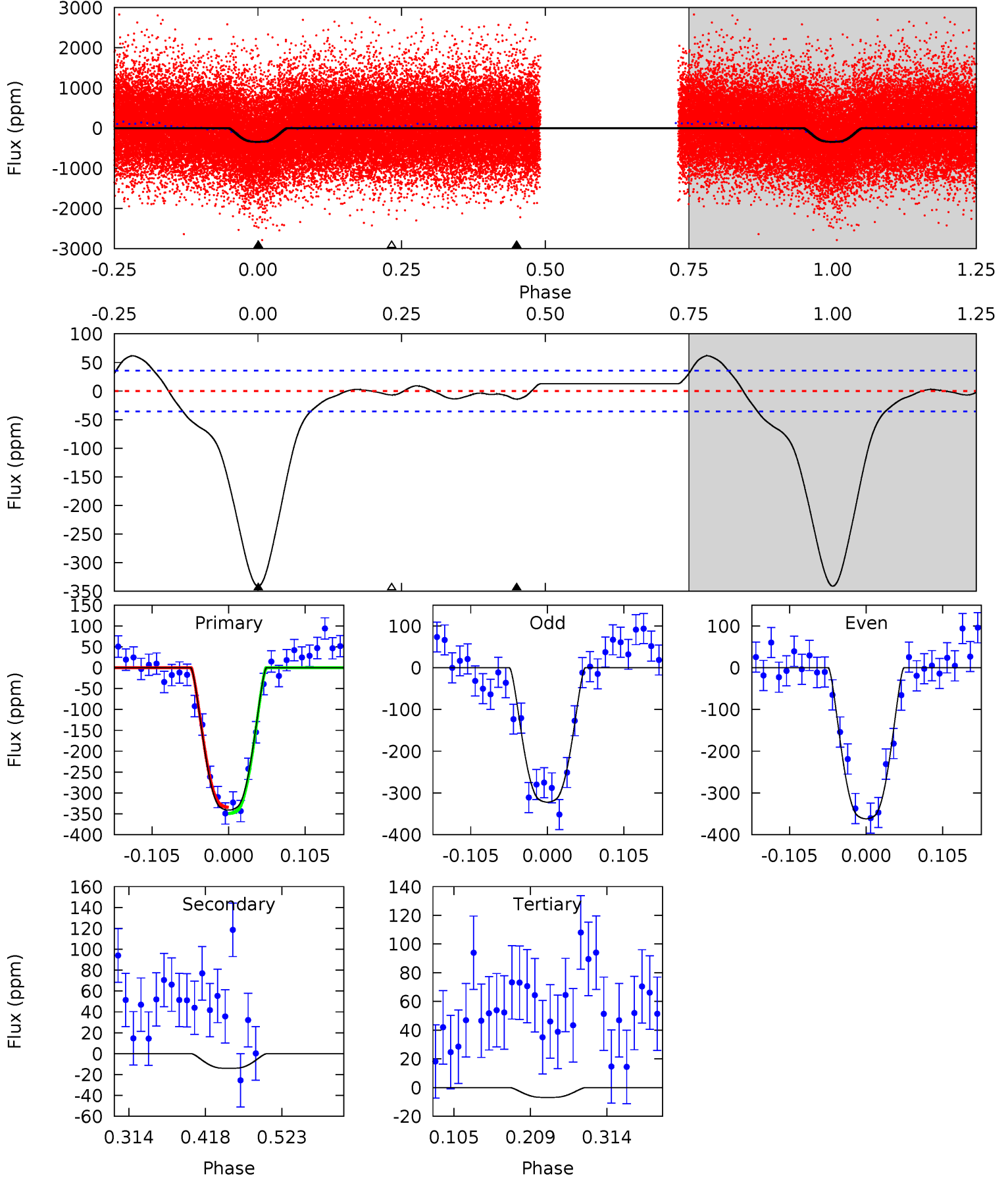
TCE 005471480-02 P= 12.425003 Days $T_0=133.996658$ (BKJD)



DV Model-Shift Uniqueness Test

005471480-02, $P = 12.425835$ Days, $E = 121.499349$ Days

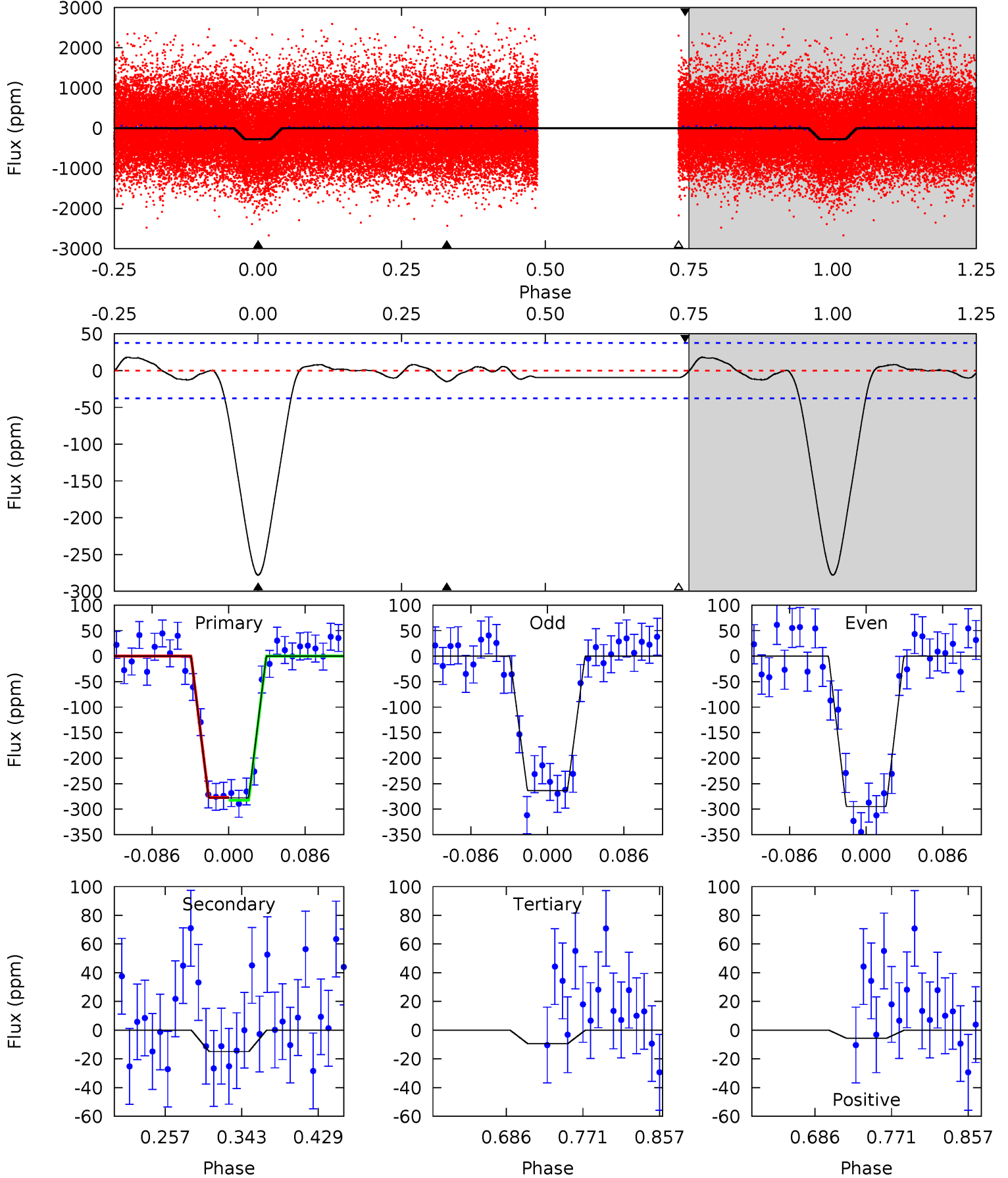
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.5	1.80	0.88	0	4.56	1.62	3.43	42.6	43.5	0.92	1.80	2.58	1.10	0.15	0.97



Alt Model-Shift Uniqueness Test

005471480-02, P = 12.425003 Days, E = 121.571655 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.9	1.81	1.15	-0.69	4.60	1.72	1.03	32.8	34.6	0.66	2.50	1.89	1.05	0.06	0.33



Stellar Parameters For KIC 005471480

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5853^{+157}_{-192}	$4.529^{+0.042}_{-0.168}$	$-0.100^{+0.300}_{-0.300}$	$0.895^{+0.216}_{-0.093}$	$0.990^{+0.104}_{-0.116}$	$1.941^{+0.417}_{-0.856}$
	+3%/-3%	+1%/-4%	+300%/-300%	+24%/-10%	+11%/-12%	+21%/-44%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005471480-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-14 ± 8	$2.23^{+0.27}_{-0.21}$	1079^{+65}_{-52}	3058^{+227}_{-369}	16^{+11}_{-10}
Alt.	-15 ± 8	$1.69^{+0.24}_{-0.16}$	1078^{+62}_{-49}	3340^{+264}_{-396}	30^{+19}_{-17}

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 $A_{obs} \gg 1.0$

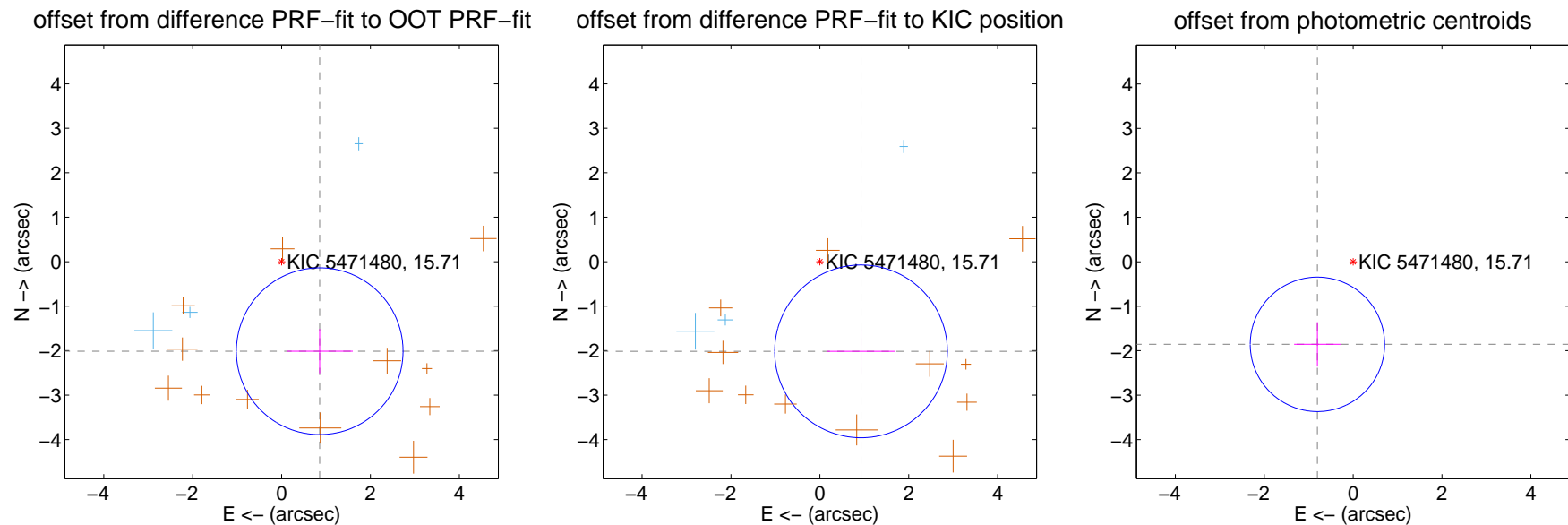
DV Centroid Data

Supplemental centroid analysis for 005471480-02. Kepler magnitude: 15.71. Transit SNR 17.62

There are 3 quarters with good PRF difference image offsets

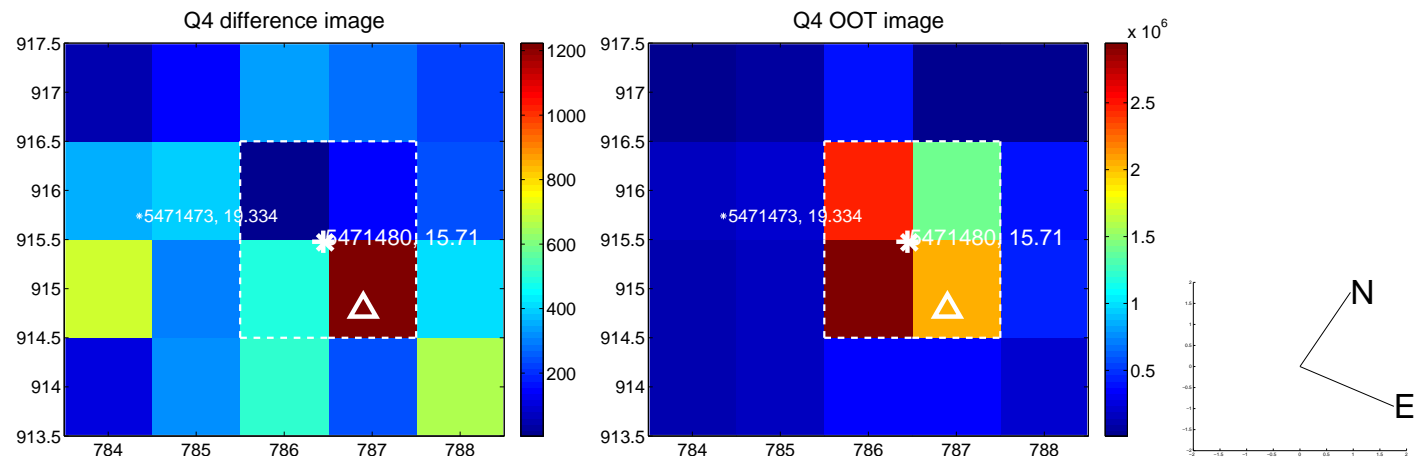
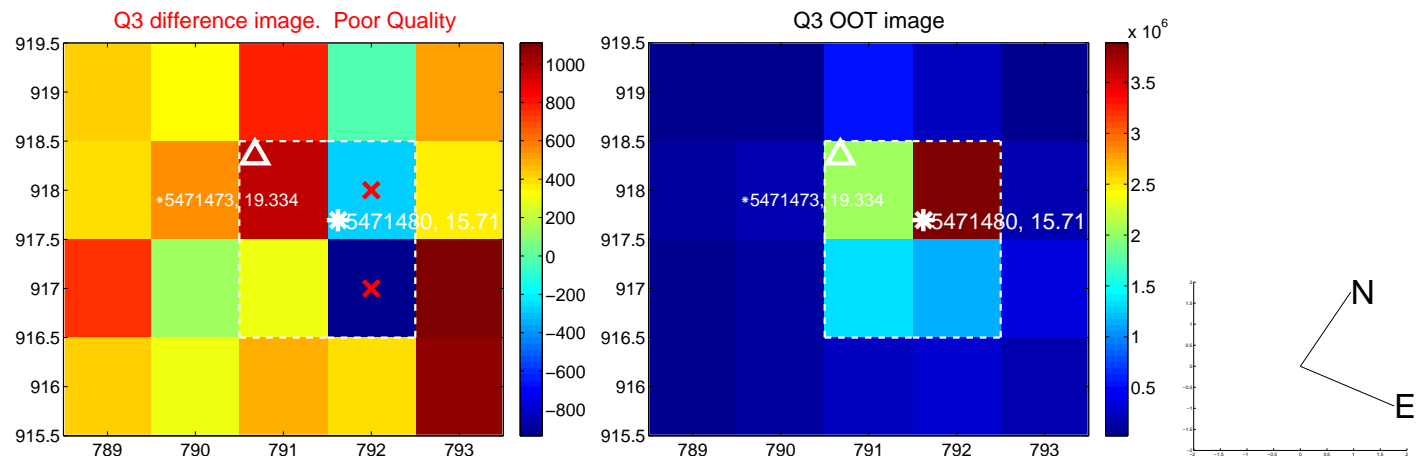
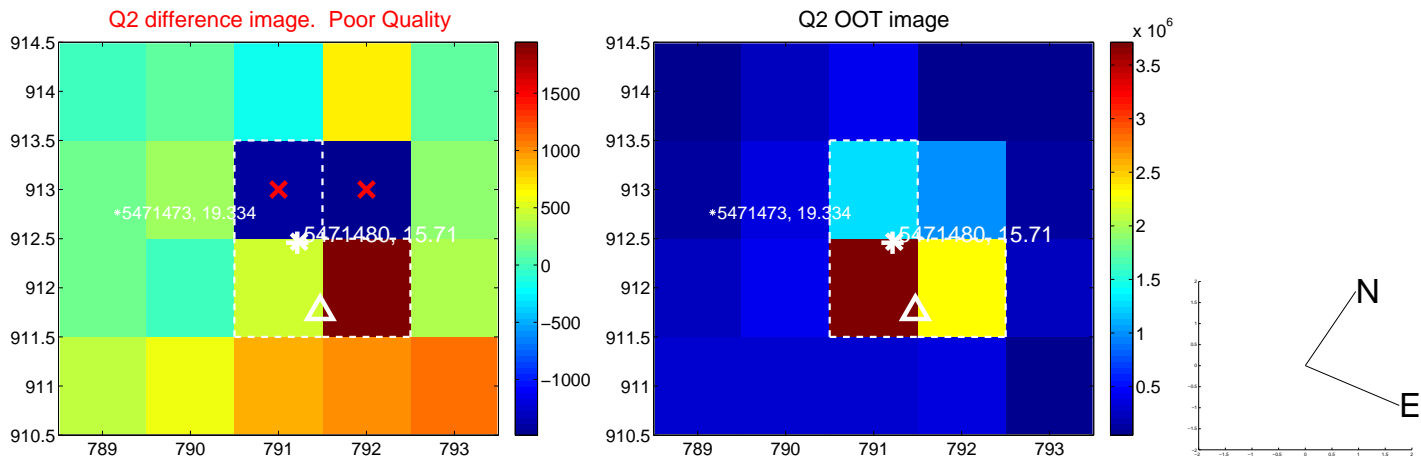
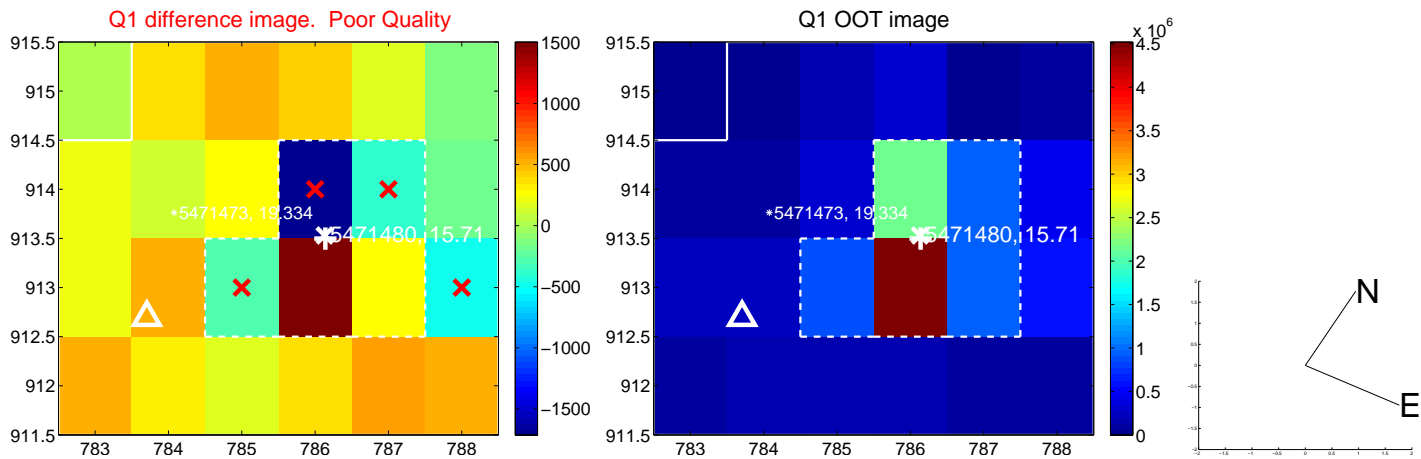
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.188 ± 0.625	3.50	-0.858 ± 0.744	-2.013 ± 0.499
PRF-fit source offset from KIC position	2.218 ± 0.647	3.43	-0.926 ± 0.772	-2.016 ± 0.497
photometric centroid source offset	2.02 ± 0.50	4.02	0.80 ± 0.52	-1.86 ± 0.50

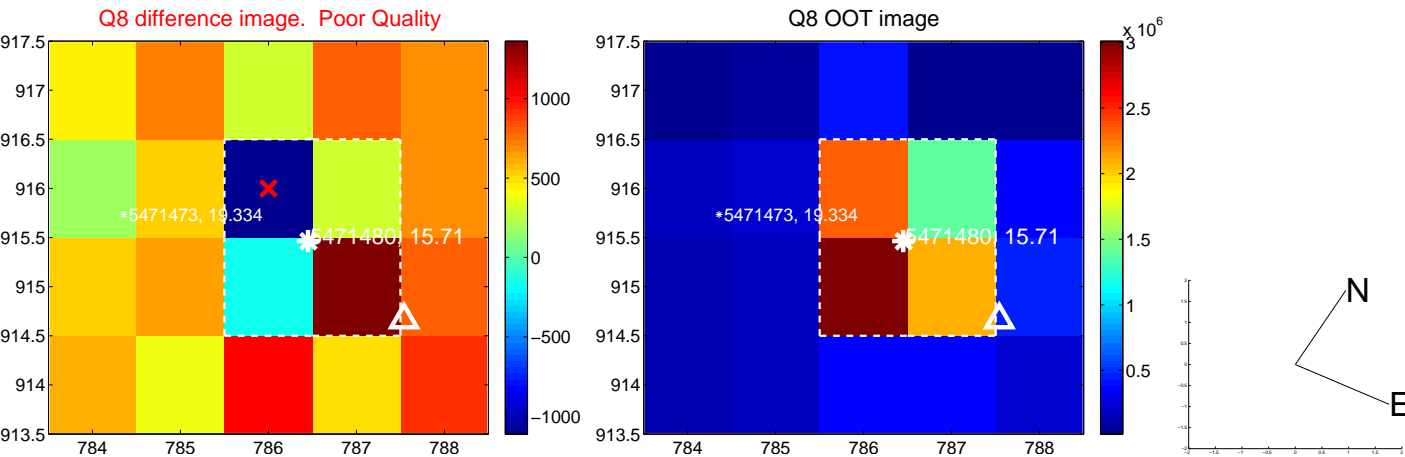
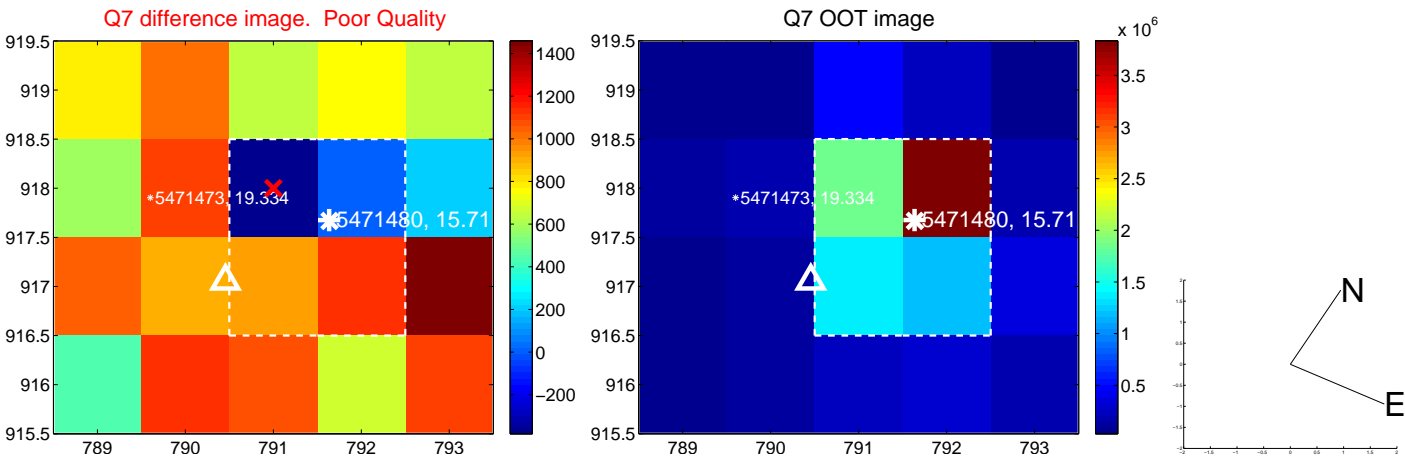
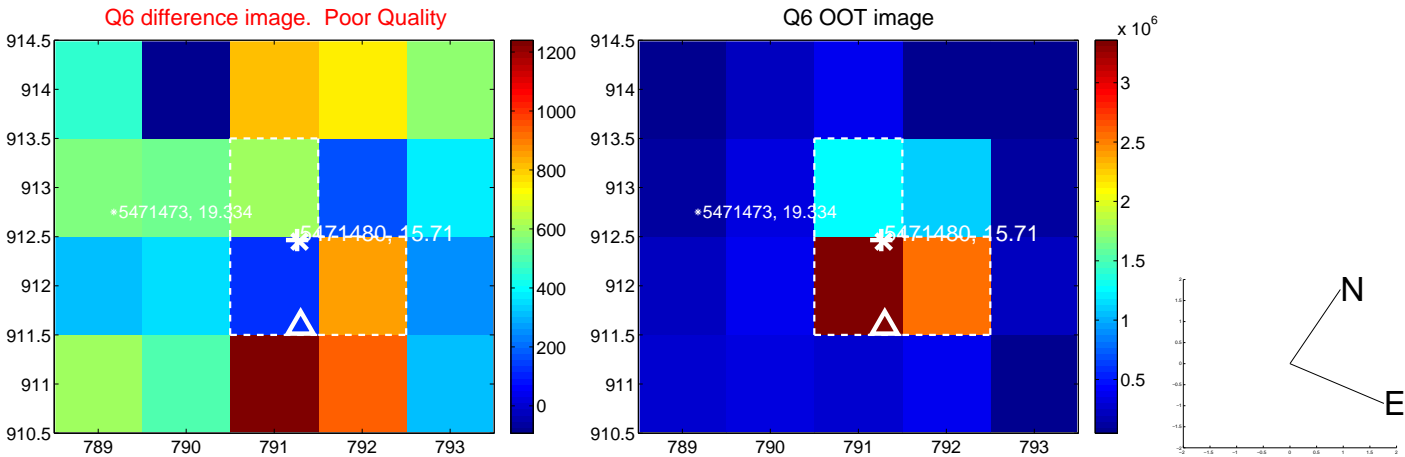
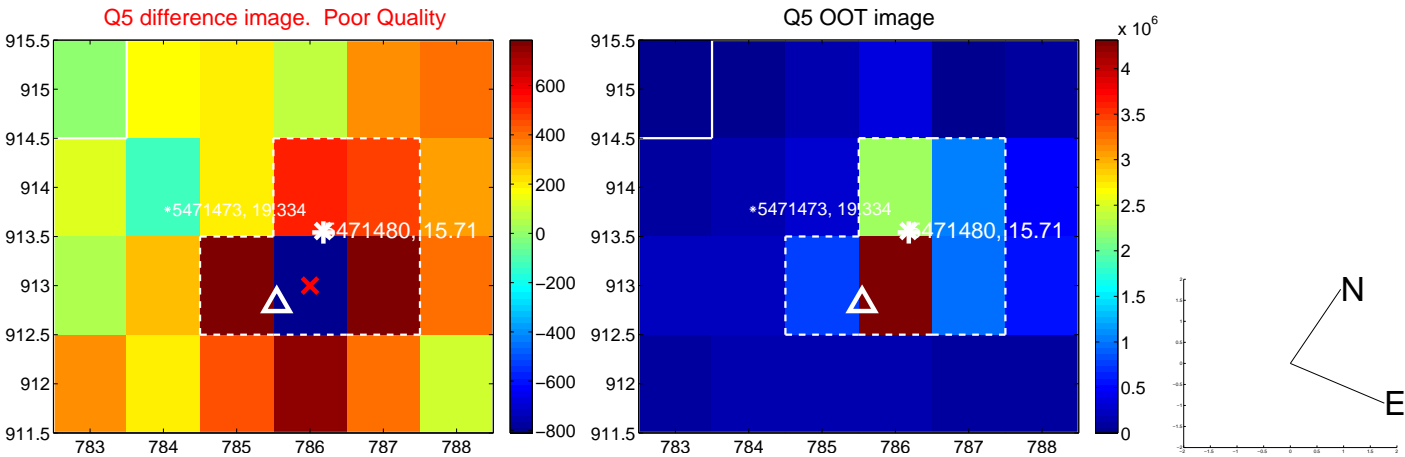


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

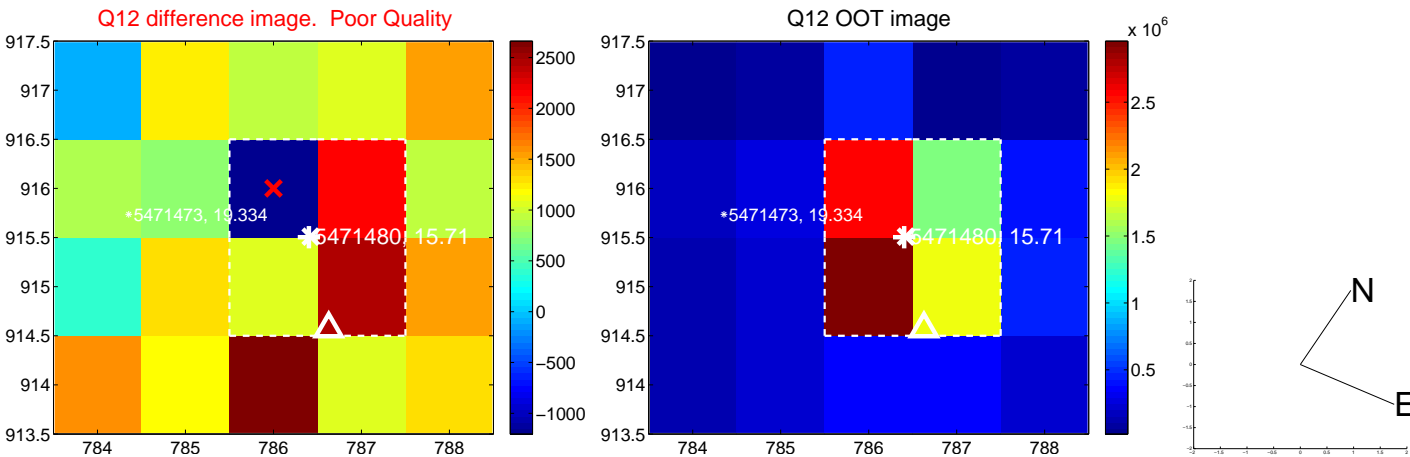
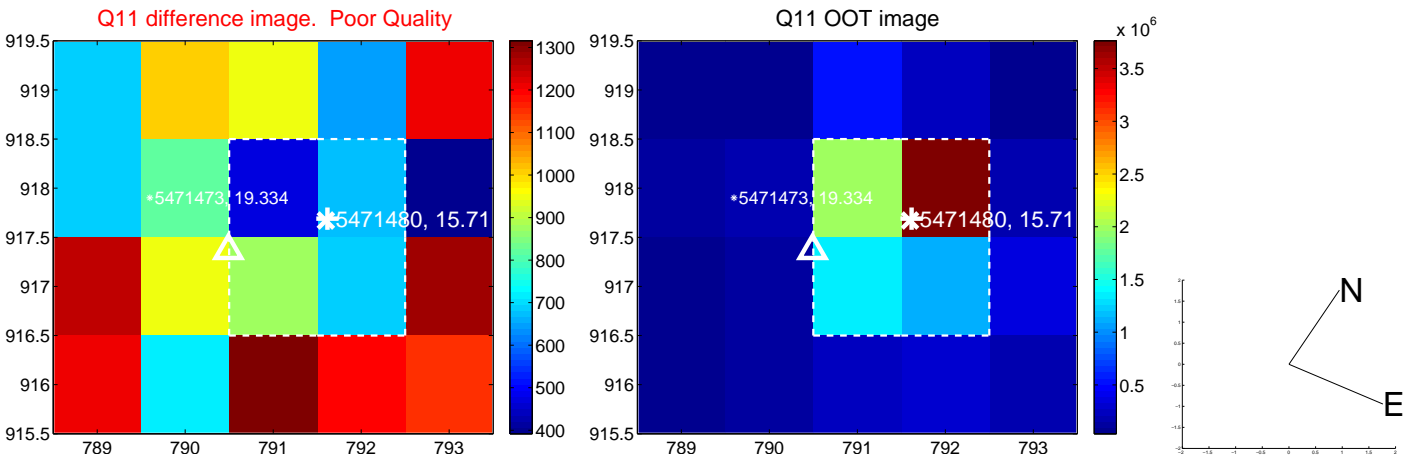
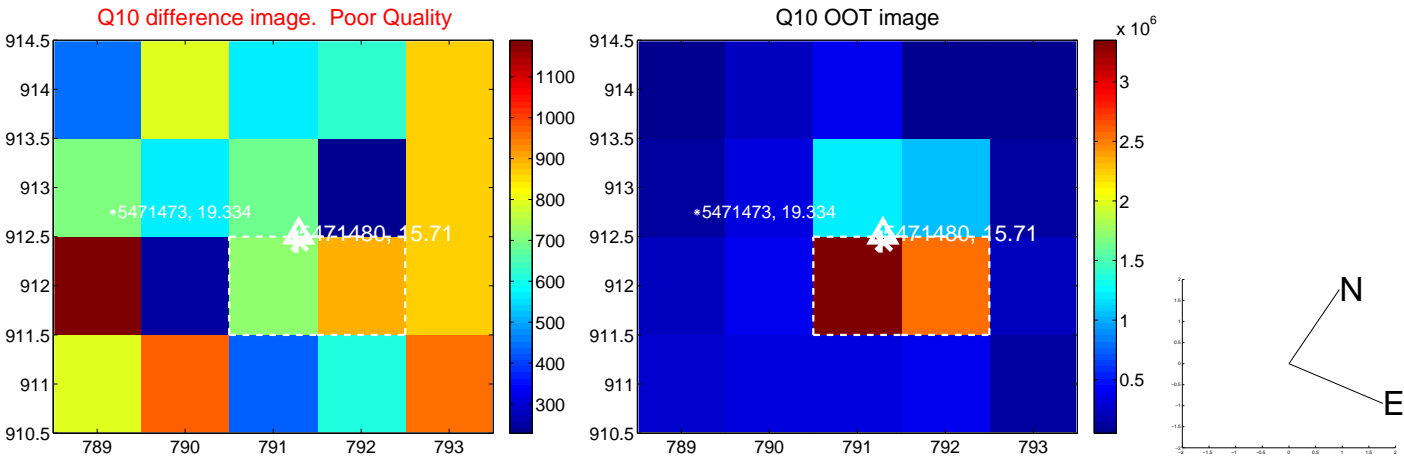
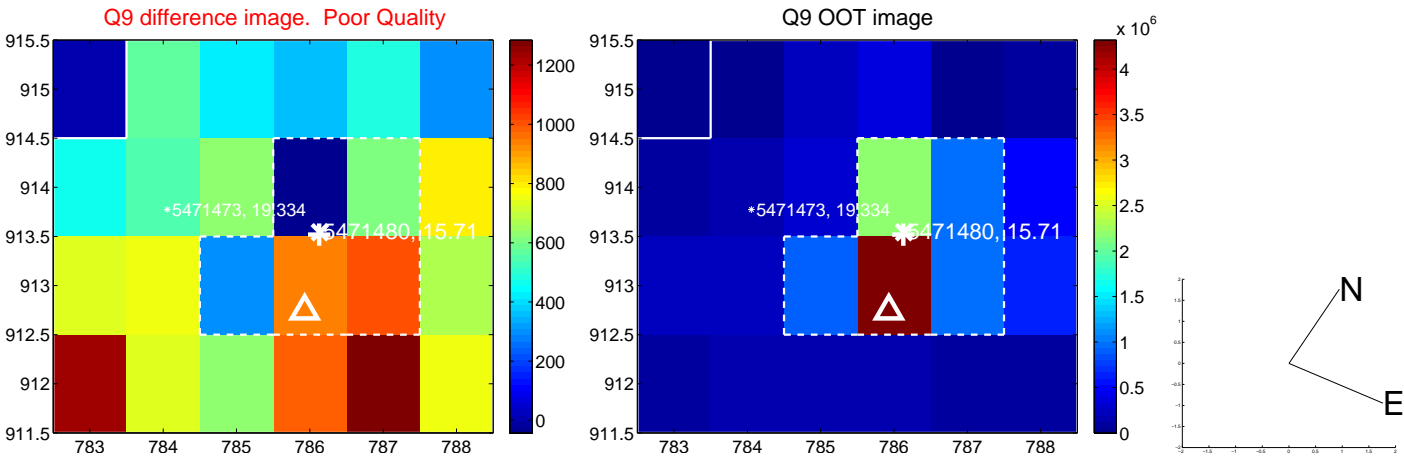
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



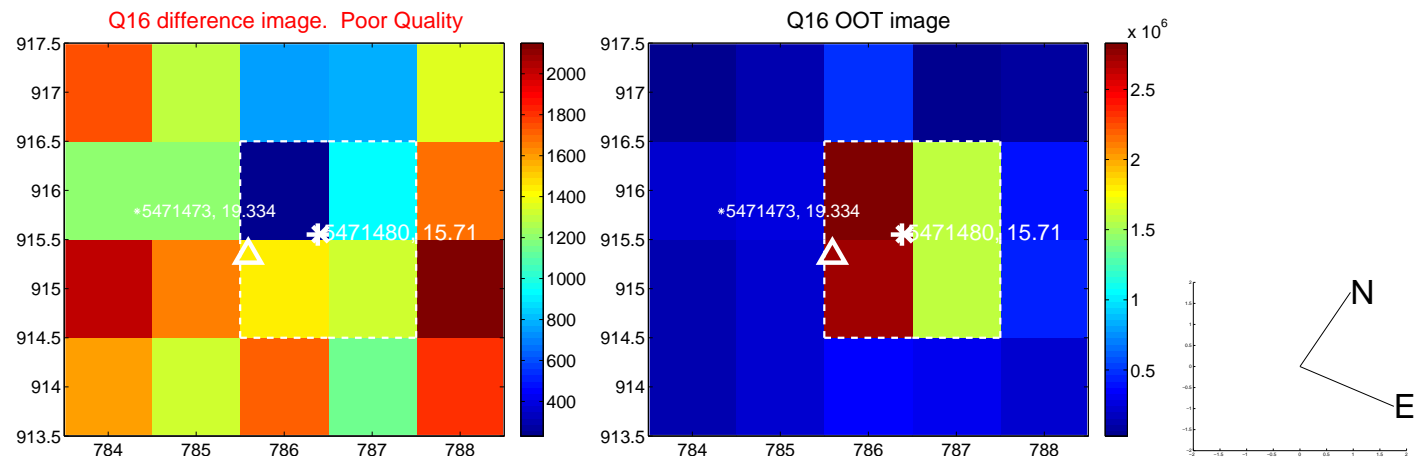
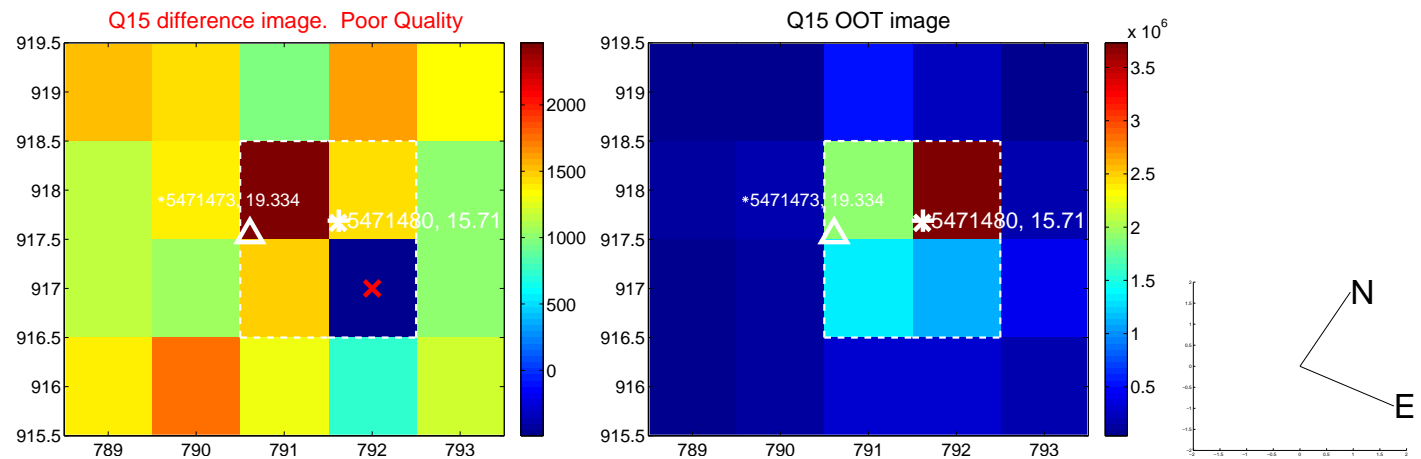
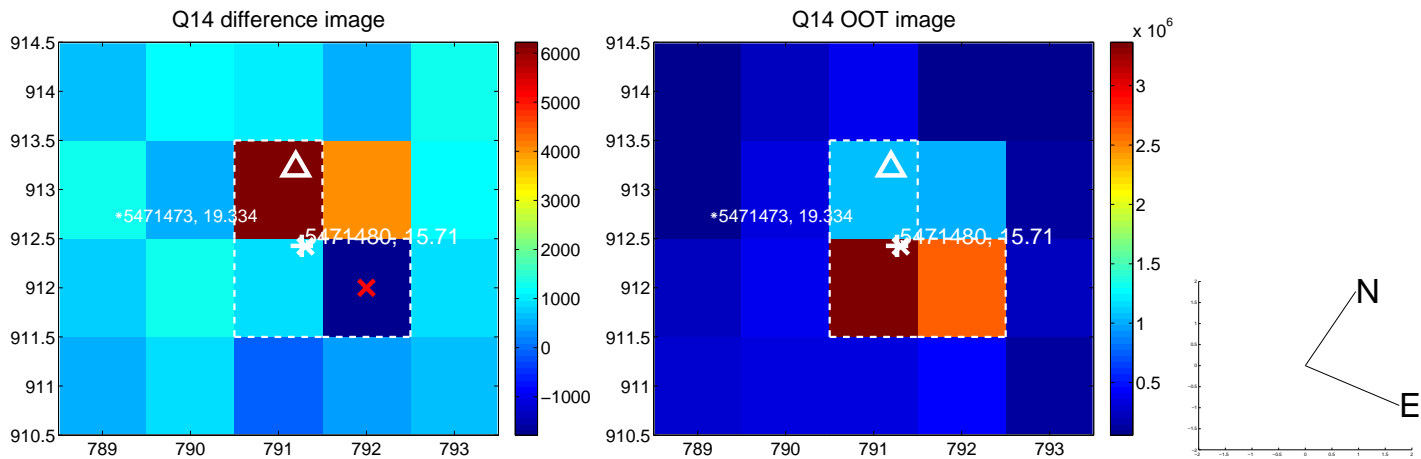
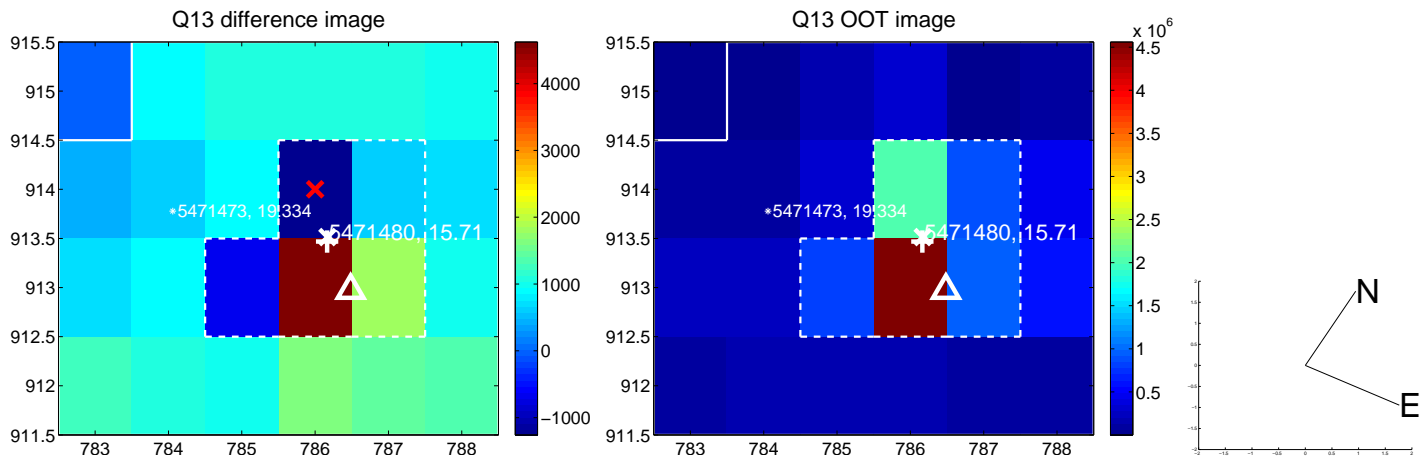
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



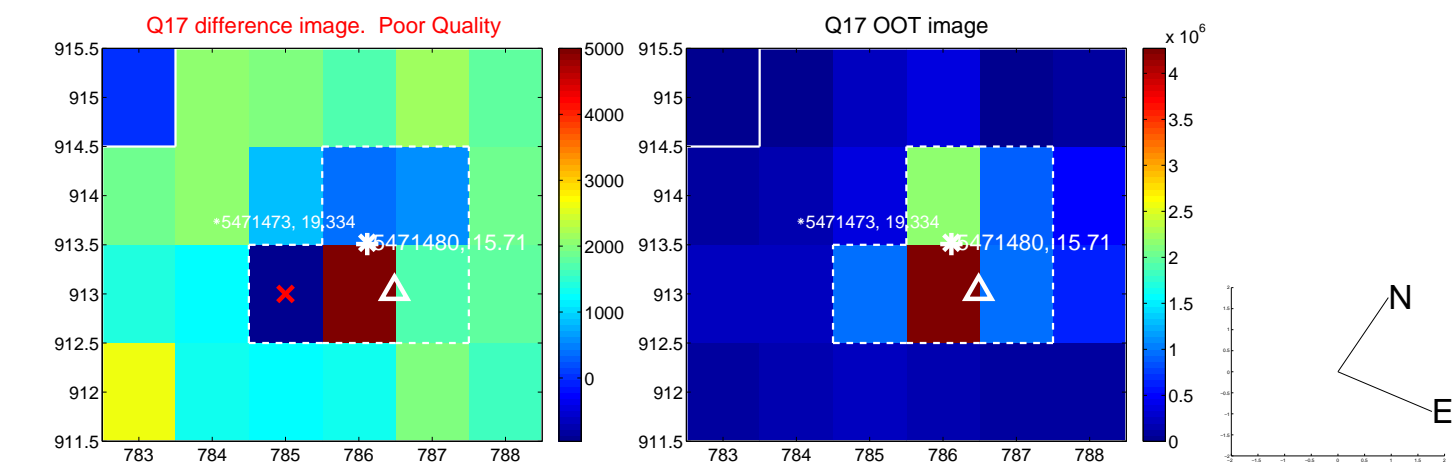
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



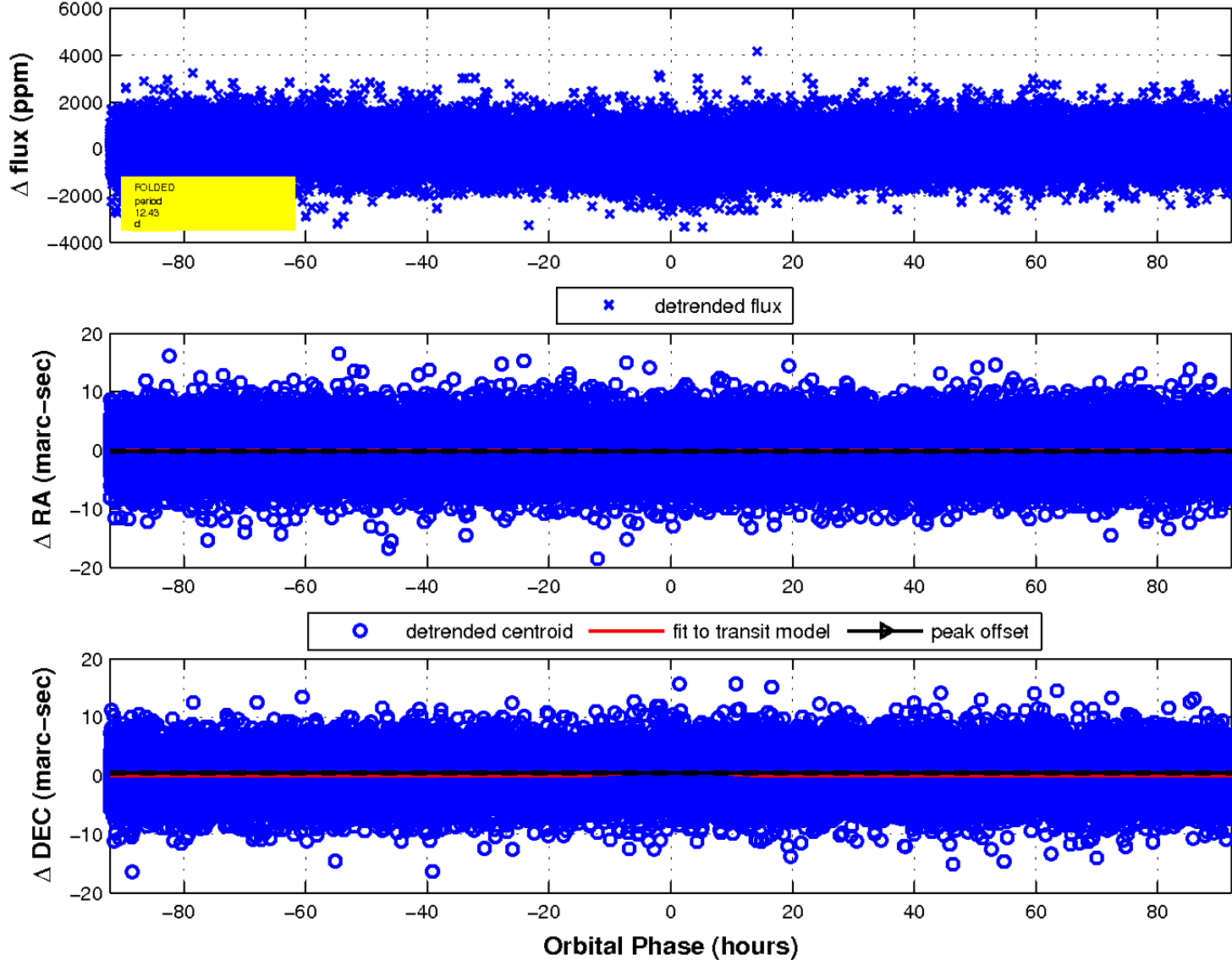
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

