

KIC 012158032

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})
012158032-01	OBS	No	0.577811	131.884857	34.0	4.426	7.5	4.9	0.71	5051	0.40	1873.09
012158032-02	OBS	No	3.479974	131.971726	35.7	15.444	60.0	1.3	0.71	5051	0.52	170.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012158032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
012158032-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—CENT_FEW_DIFFS

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

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

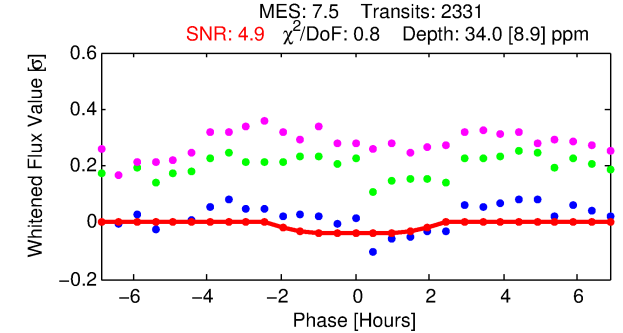
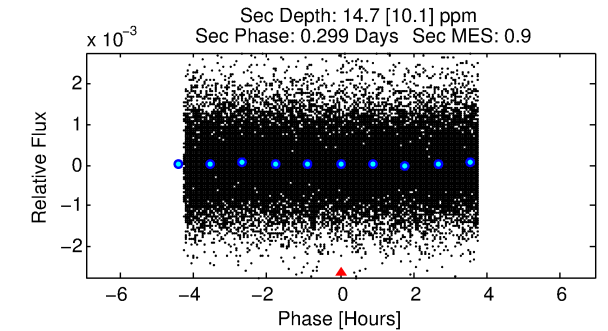
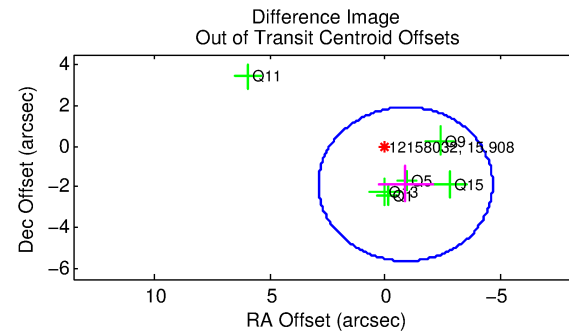
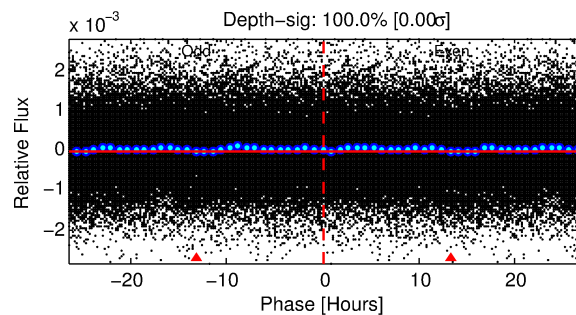
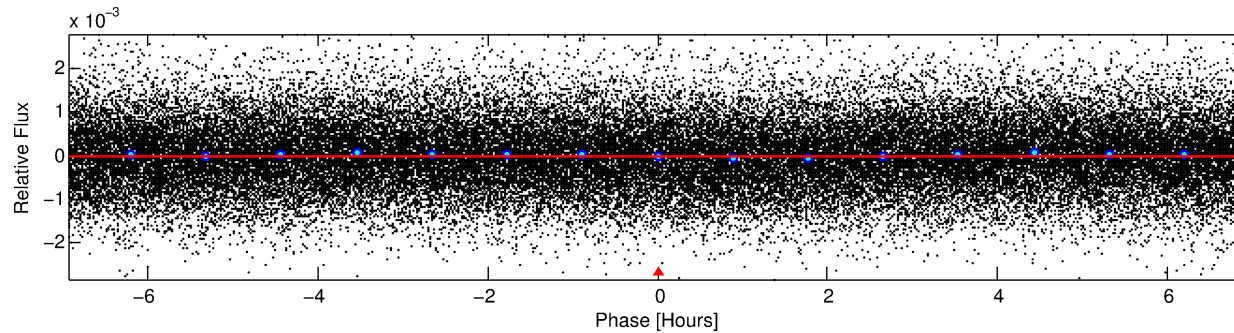
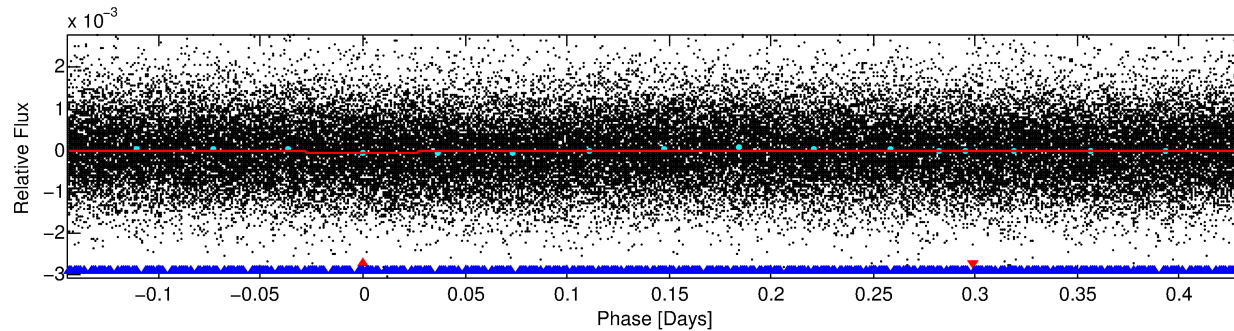
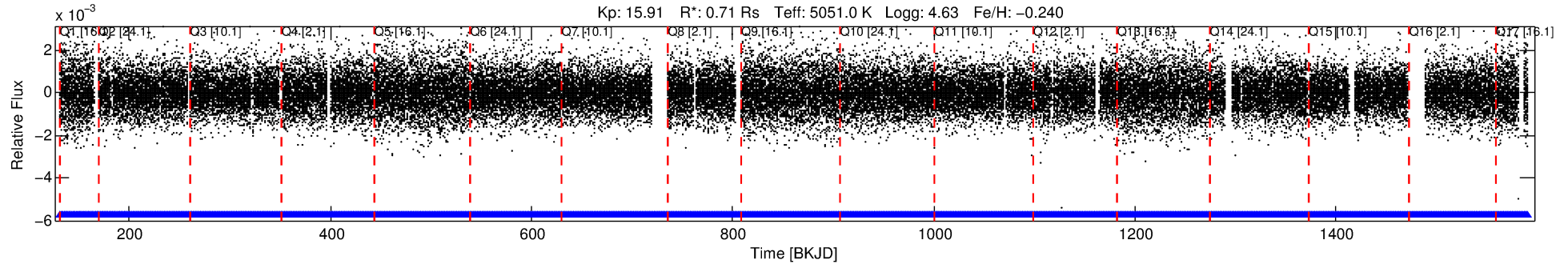
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012158032-01

No Significant Match Found

DV One-Page Summary

KIC: 12158032 Candidate: 1 of 2 Period: 0.578 d



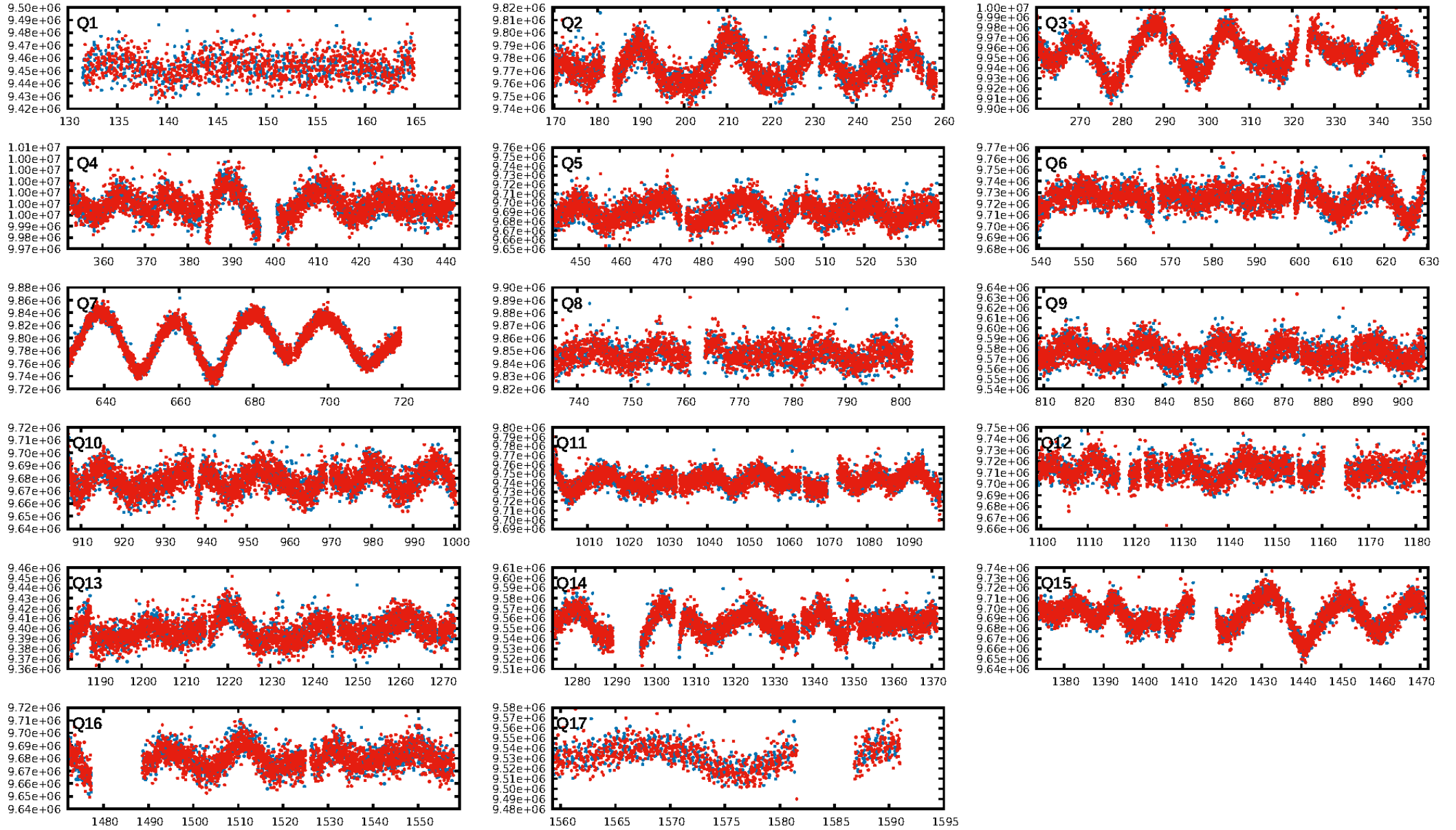
DV Fit Results:

Period = 0.57781 [0.00002] d
Epoch = 131.8849 [0.0103] BKJD
Rp/R* = 0.0052 [0.0146]
a/R* = 1.19 [3.46]
b = 0.10 [100.94]
Seff = 1873.09 [337.37]
Teq = 1678 [76] K
Rp = 0.40 [1.12] Re
a = 0.0125 [0.0012] AU
Ag = 7.85 [44.36] [0.15σ]
Teffp = 4341 [6134] K [0.43σ]

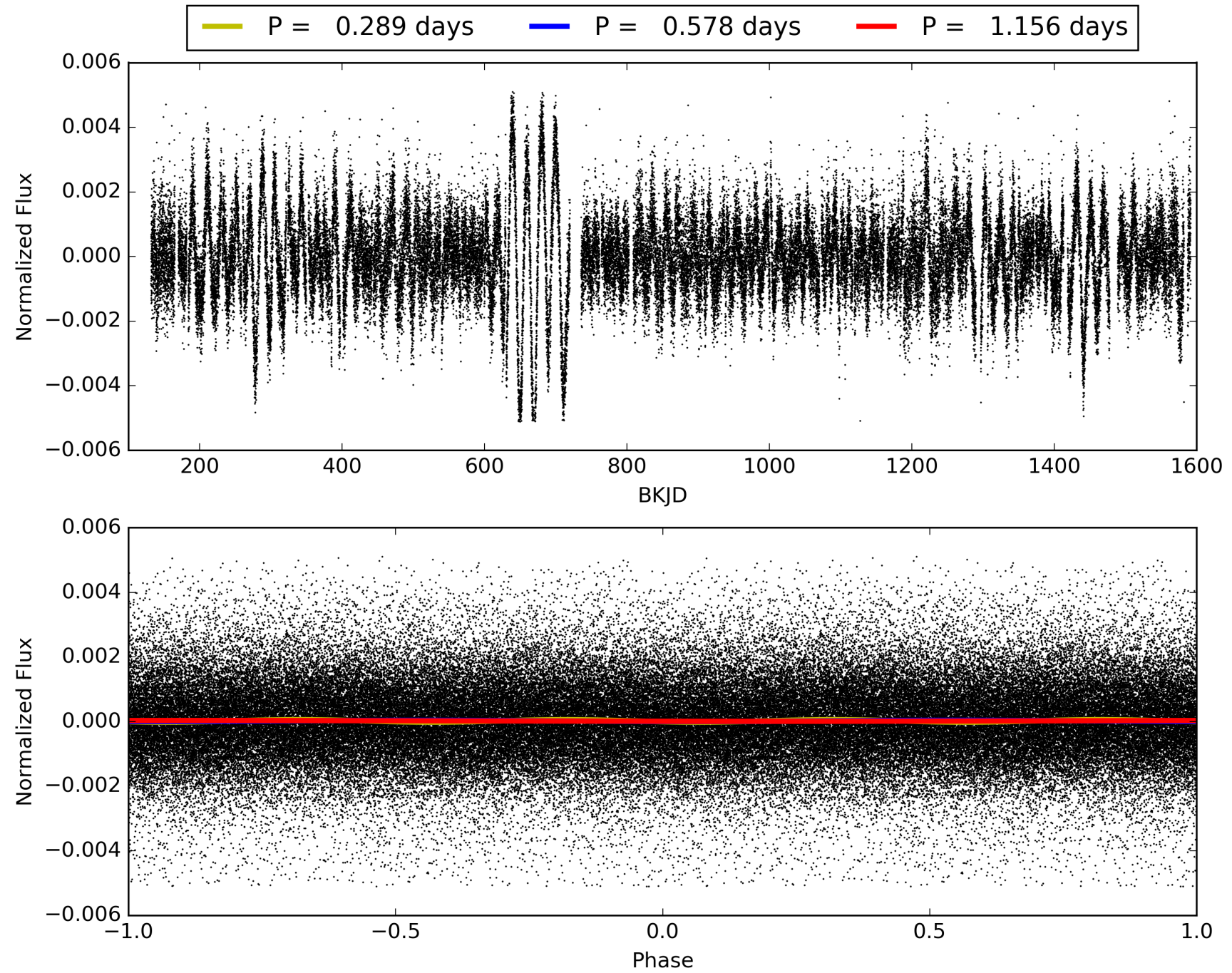
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [4.34σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2226/2226]
GhostDiagnostic-chr: 0.5066
Centroid-sig: 3.6%
Centroid-so: 5.981 arcsec [1.96σ]
OotOffset-rm: 2.052 arcsec [1.63σ]
KicOffset-rm: 2.040 arcsec [2.65σ]
OotOffset-st: 0/2/0/4 [6]
KicOffset-st: 0/2/0/4 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 012158032-01, PDC Light Curves

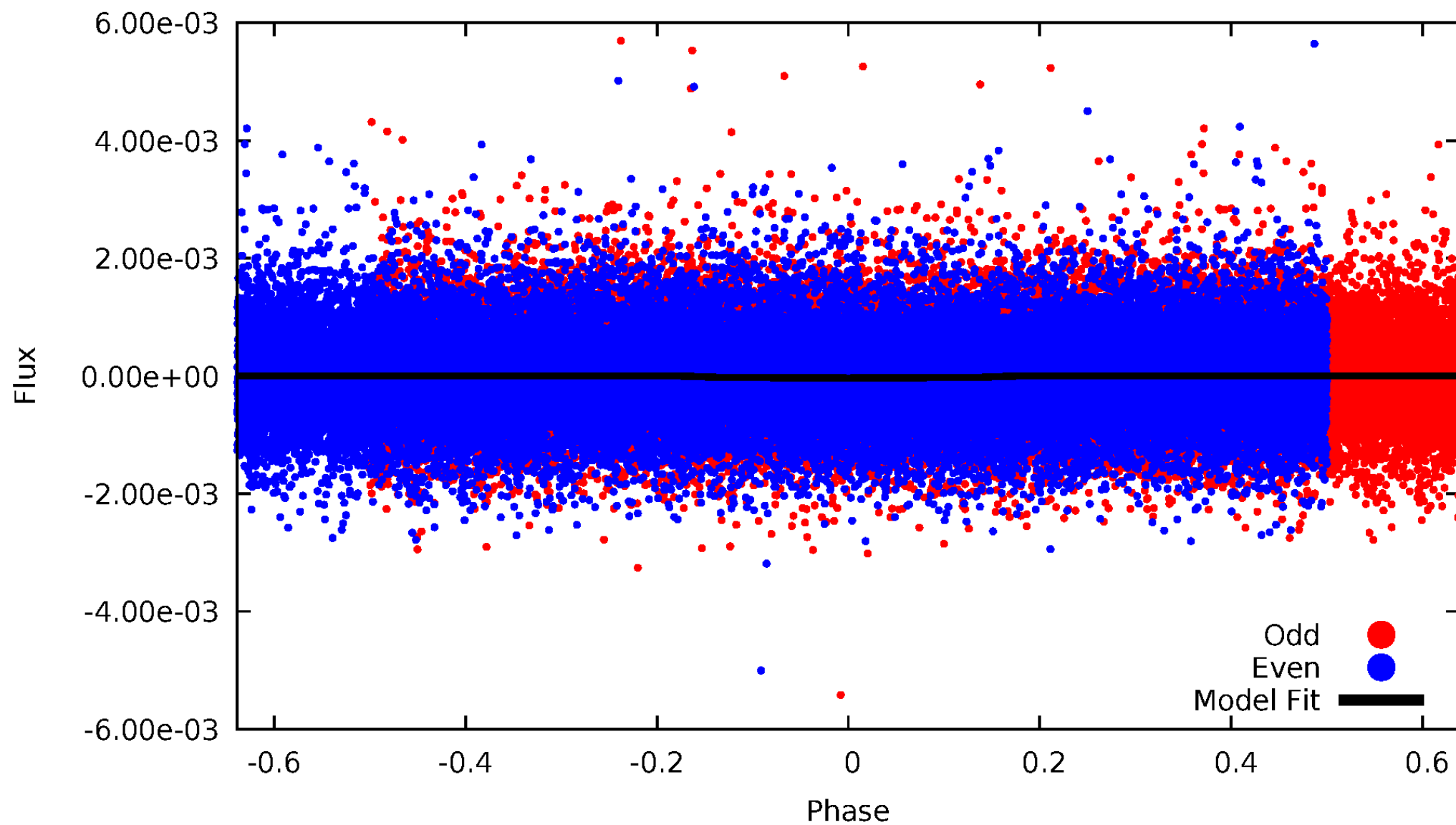


TCE 012158032-01



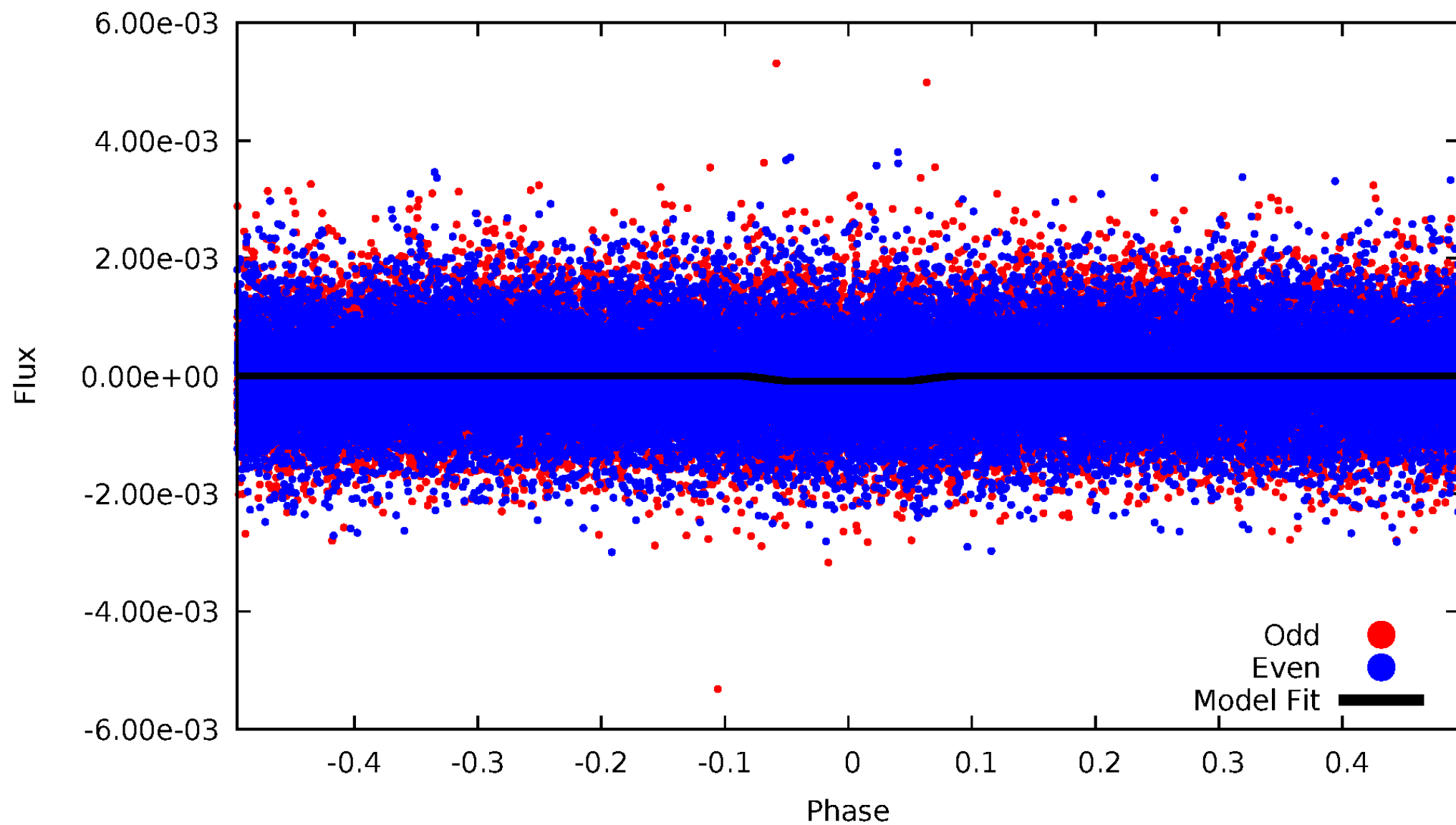
DV Odd/Even

TCE 012158032-01



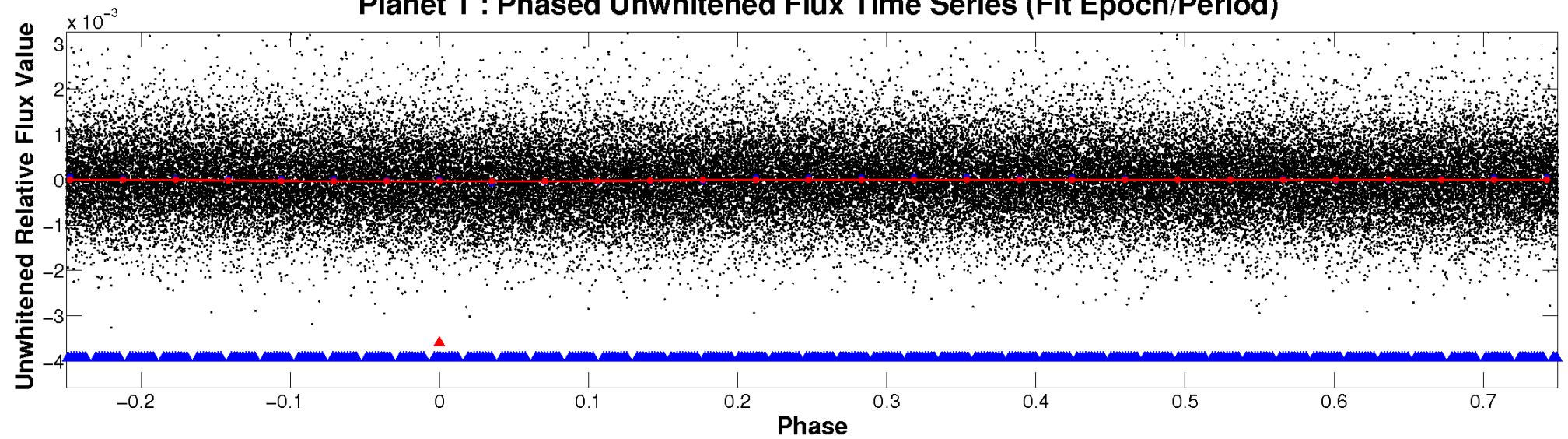
ALT Odd/Even

TCE 012158032-01

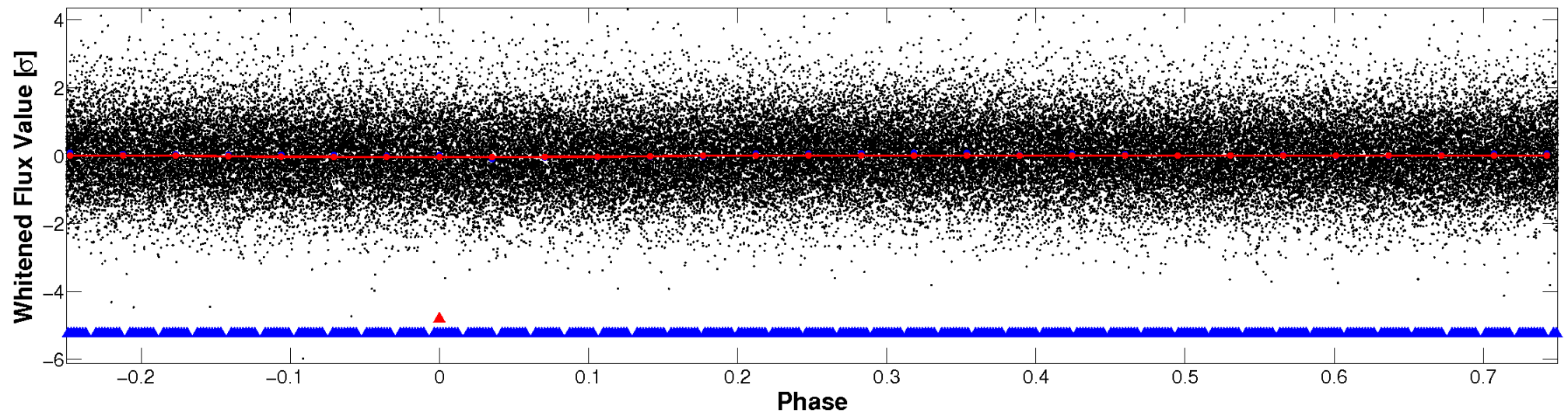


Non-Whitened Vs. Whitened Light Curve

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

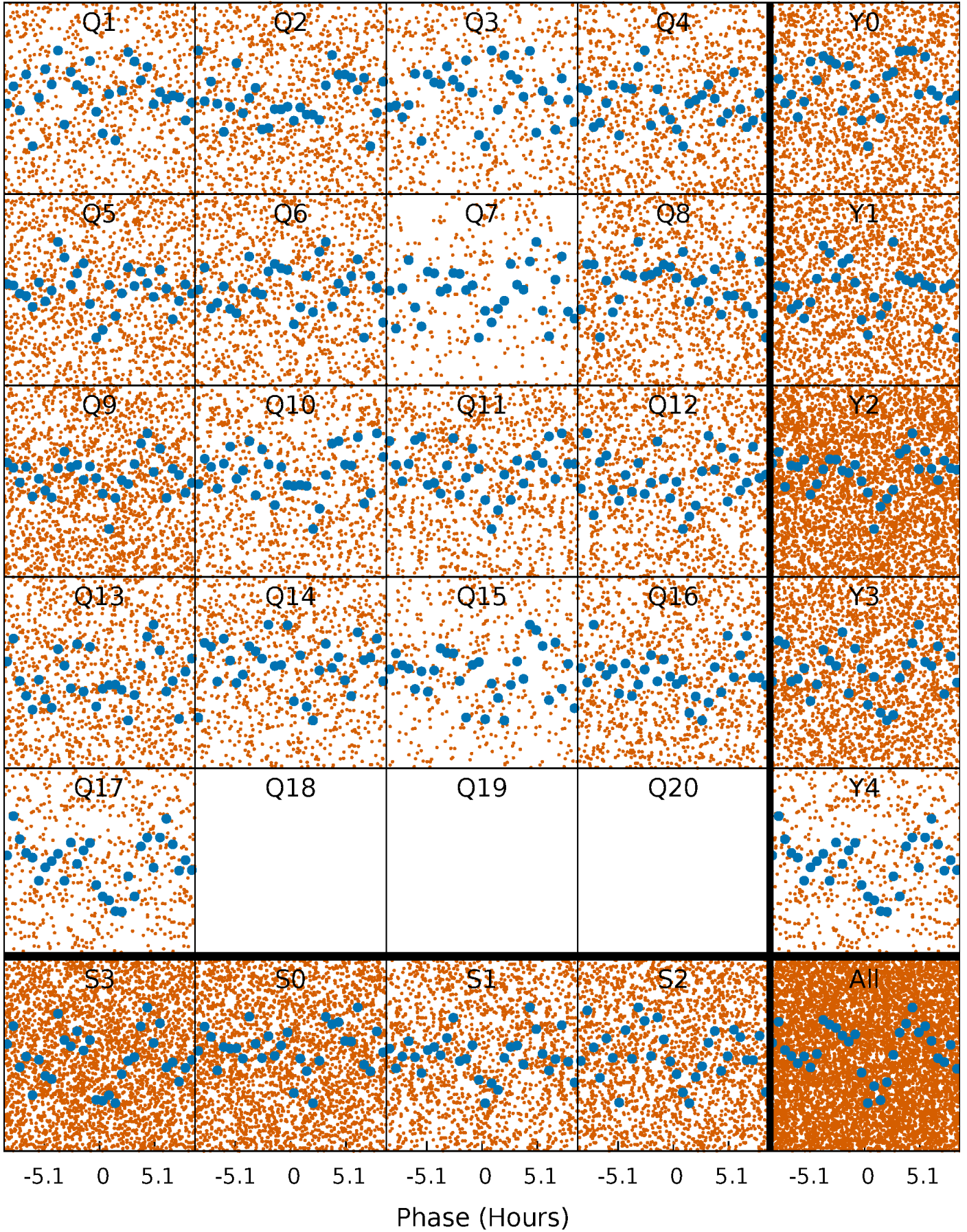


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



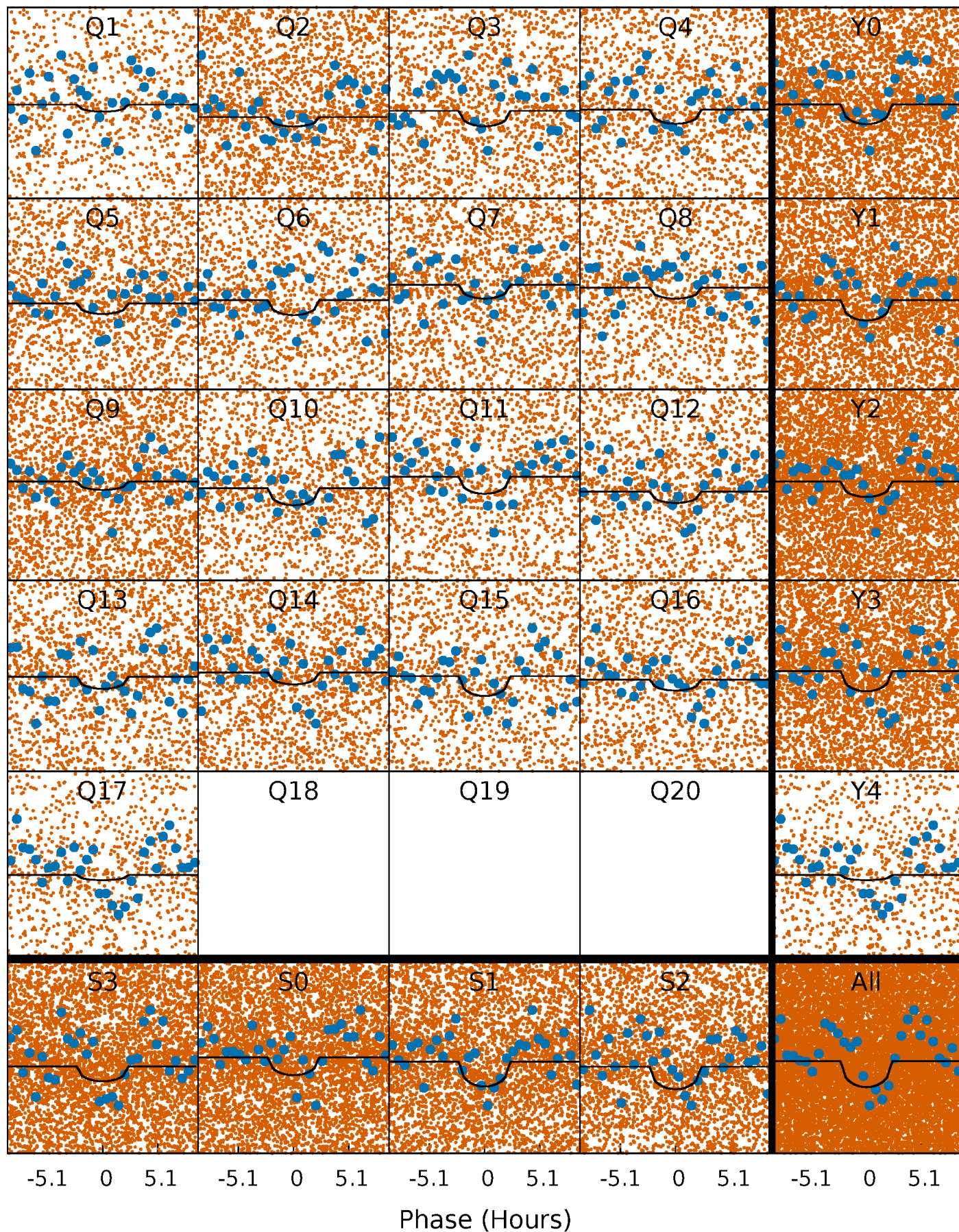
PDC Quarter-Phased Transit Curves

TCE 012158032-01 P= 0.577811 Days $T_0=131.884857$ (BKJD)



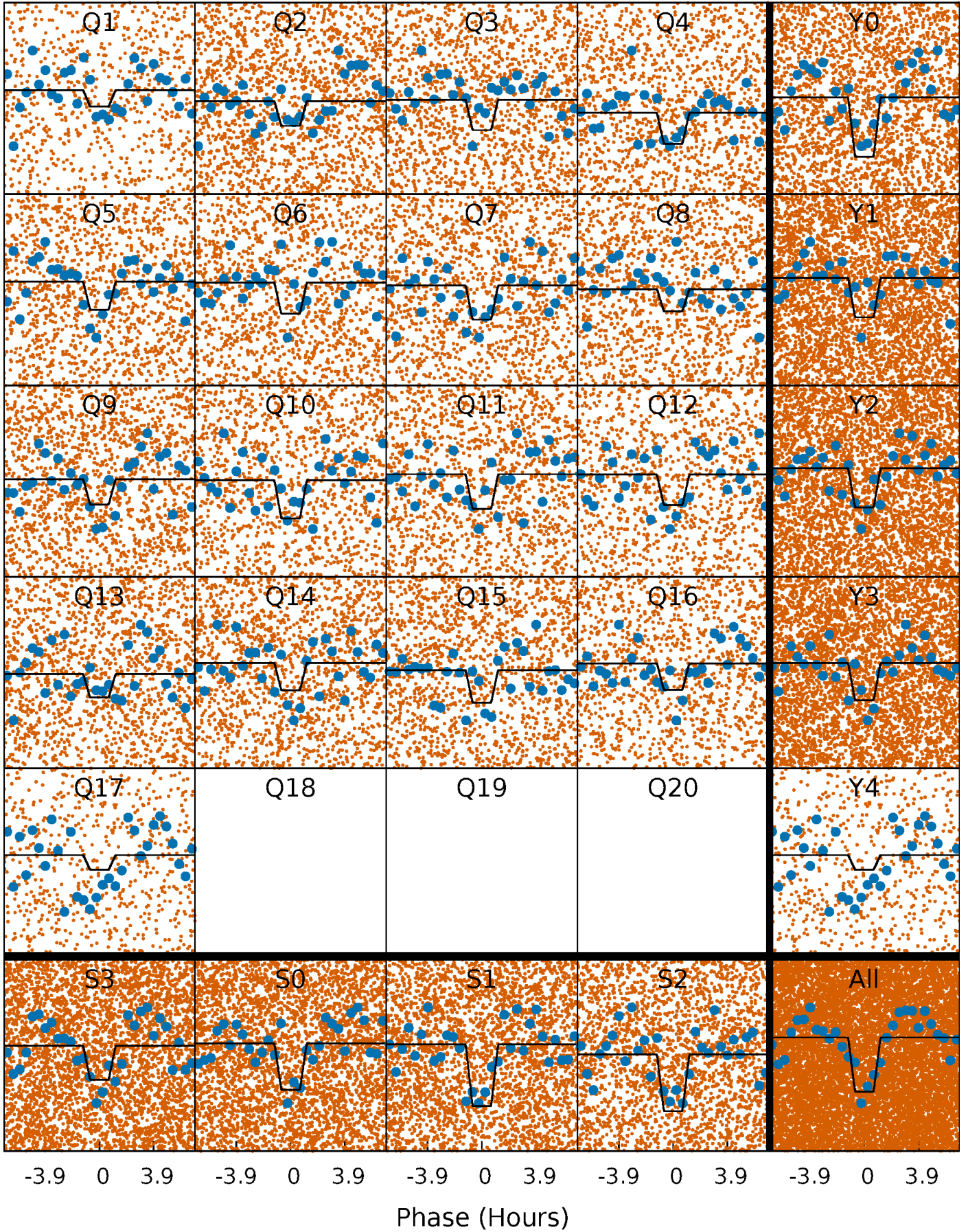
DV Quarter-Phased Transit Curves

TCE 012158032-01 P= 0.577811 Days $T_0=131.884857$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

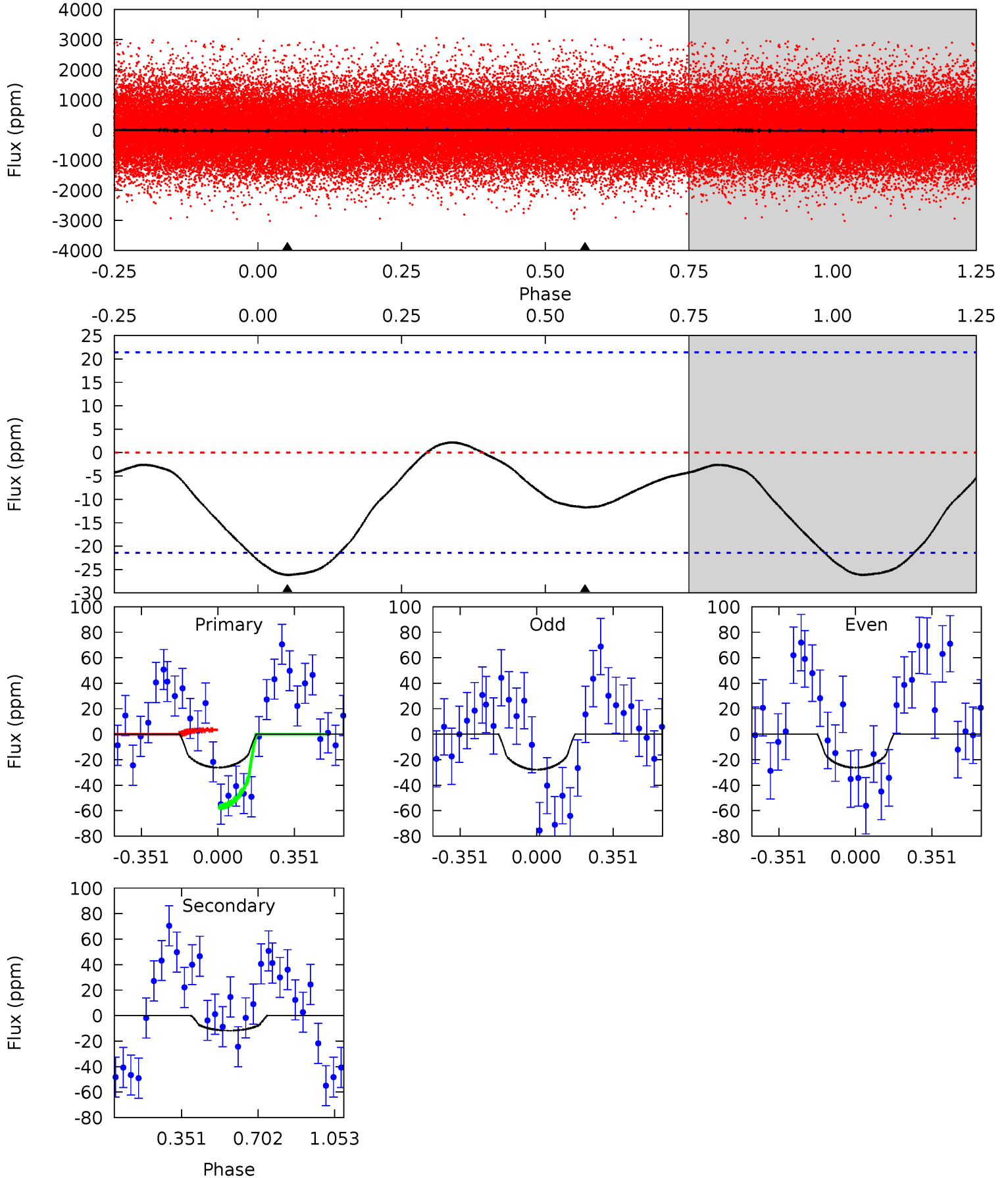
TCE 012158032-01 P= 0.577844 Days $T_0=131.885618$ (BKJD)



DV Model-Shift Uniqueness Test

012158032-01, P = 0.577811 Days, E = 131.307046 Days

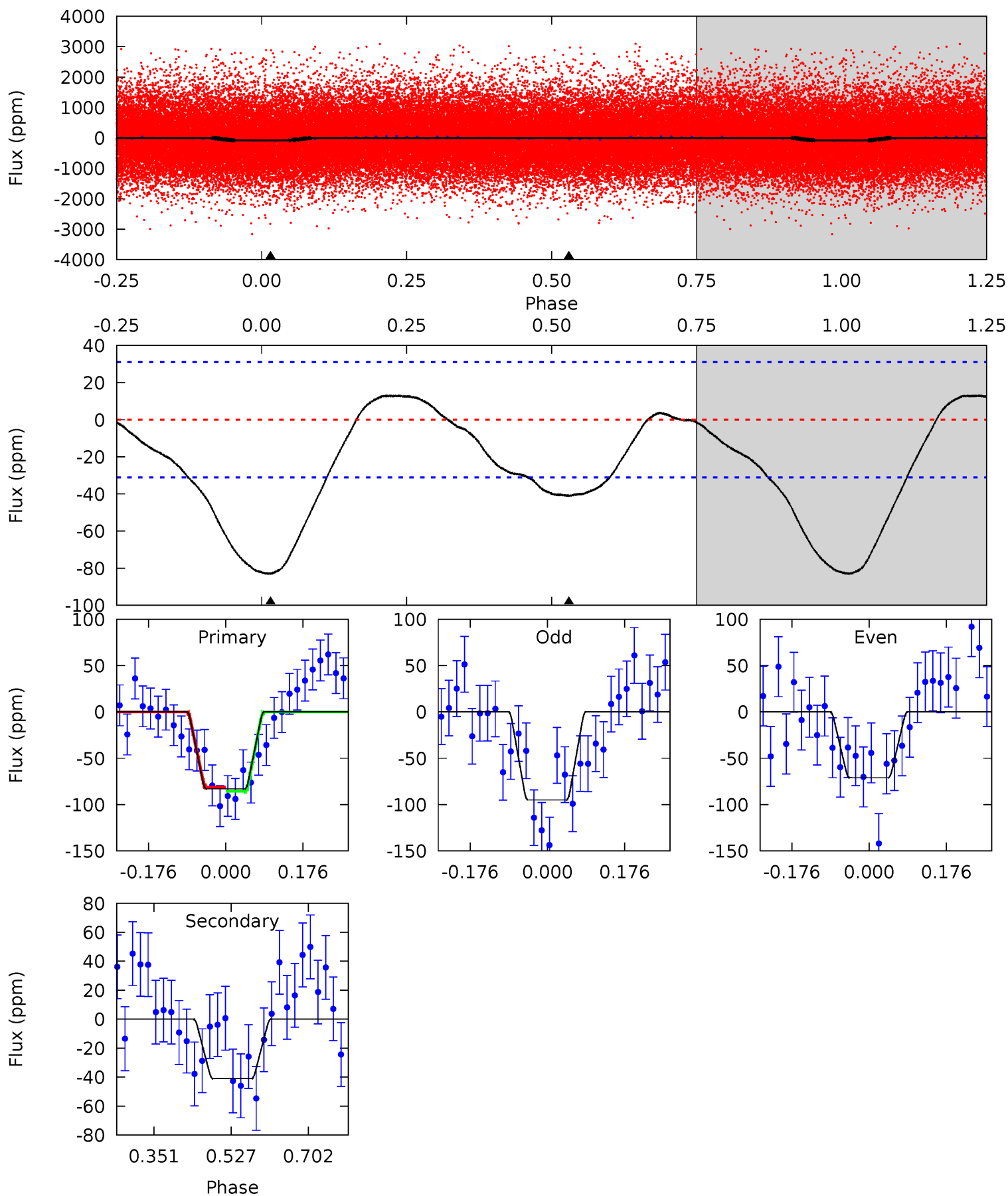
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.24	2.35	0	0	4.29	0.93	0.40	5.24	5.24	2.35	2.35	0.16	1.12	0.08	5.40



Alt Model-Shift Uniqueness Test

012158032-01, P = 0.577844 Days, E = 131.307774 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	5.87	0	0	4.45	1.35	1.44	11.9	11.9	5.87	5.87	1.72	0.98	0.14	0.33



Stellar Parameters For KIC 012158032

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5051^{+151}_{-136}	$4.628^{+0.030}_{-0.070}$	$-0.240^{+0.300}_{-0.300}$	$0.706^{+0.086}_{-0.058}$	$0.786^{+0.063}_{-0.087}$	$3.145^{+0.494}_{-0.797}$
	+3%/-3%	+1%/-2%	+125%/-125%	+12%/-8%	+8%/-11%	+16%/-25%
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 012158032-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-12 ± 5	$0.93^{+0.98}_{-0.64}$	2363^{+83}_{-79}	3111^{+1733}_{-5389}	$1.175^{+9.886}_{-0.945}$
Alt.	-41 ± 7	$1.13^{+0.96}_{-0.73}$	2371^{+85}_{-82}	3634^{+2051}_{-751}	$2.759^{+18.690}_{-1.960}$

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

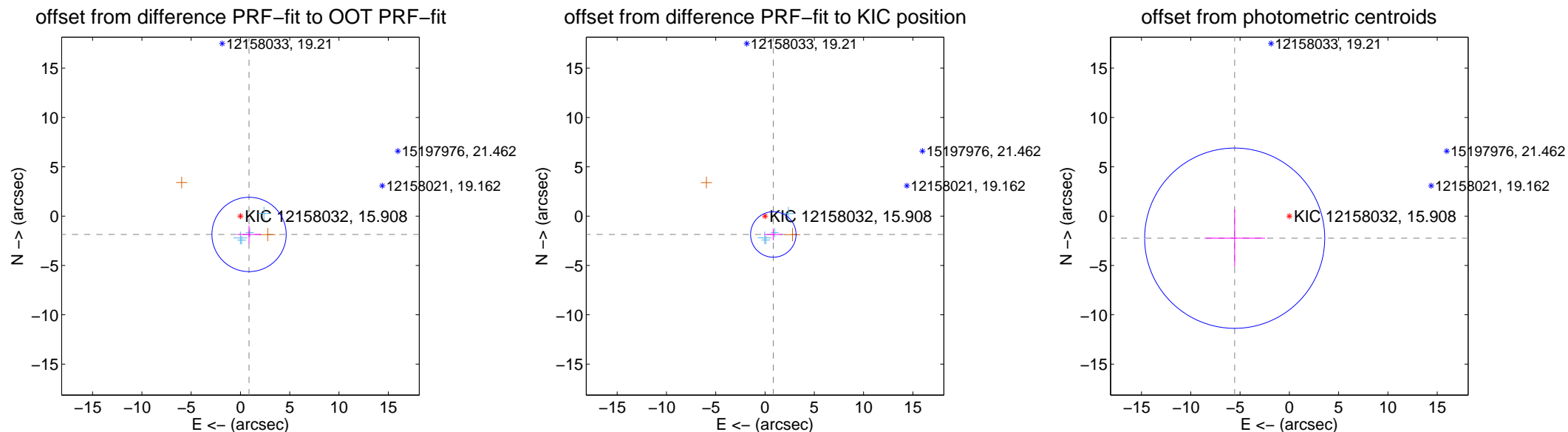
DV Centroid Data

Supplemental centroid analysis for 012158032-01. Kepler magnitude: 15.91. Transit SNR 4.88

There are 4 quarters with good PRF difference image offsets

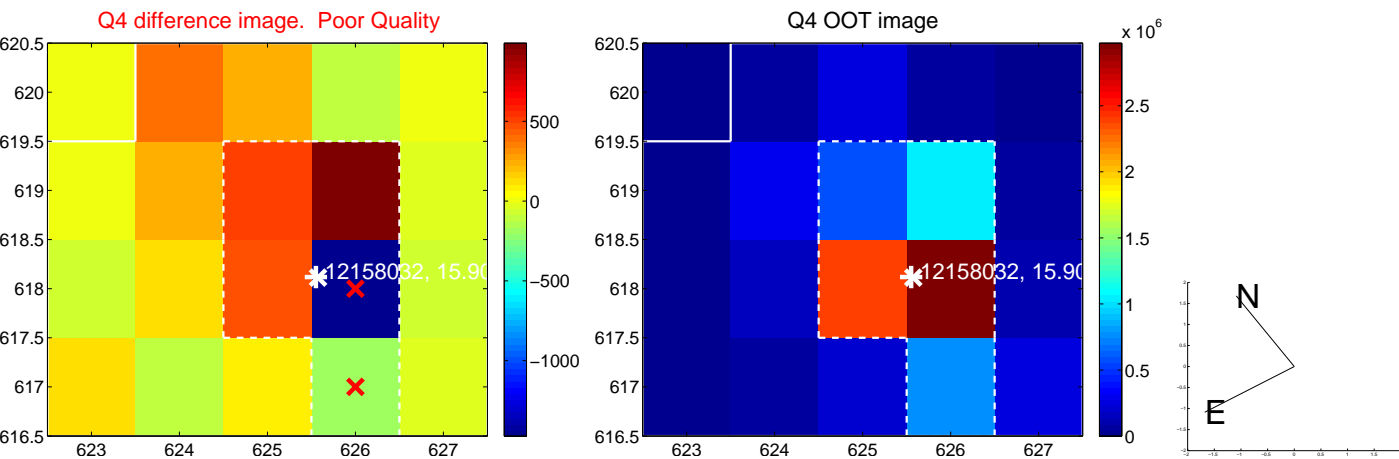
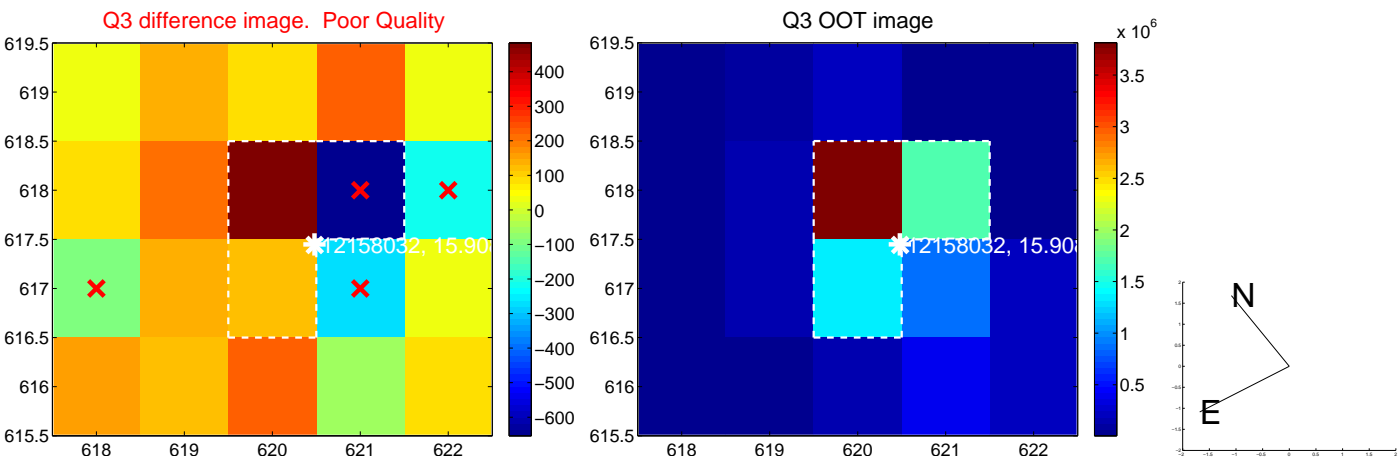
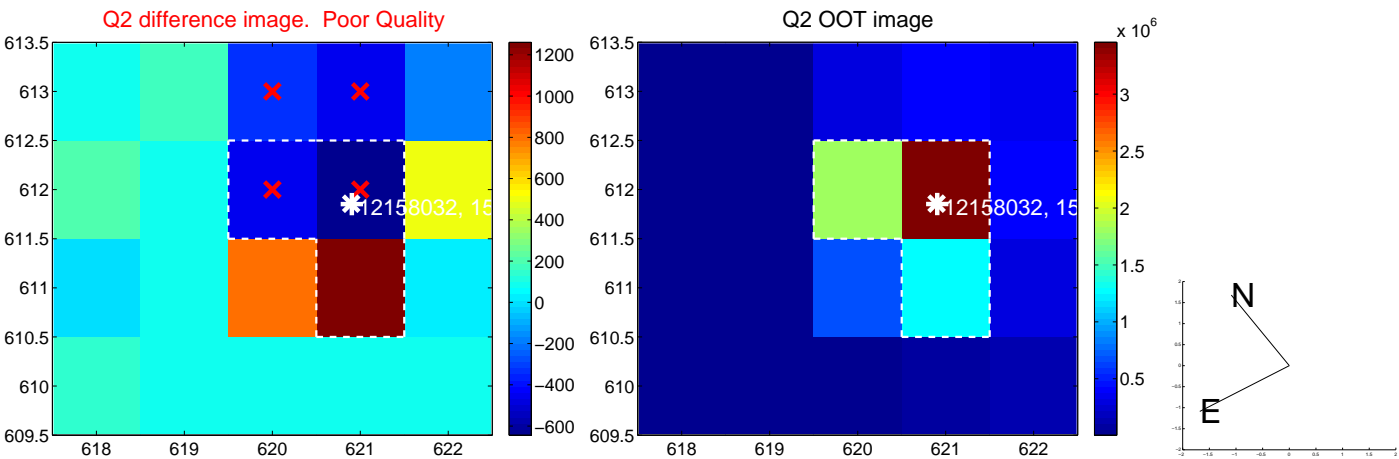
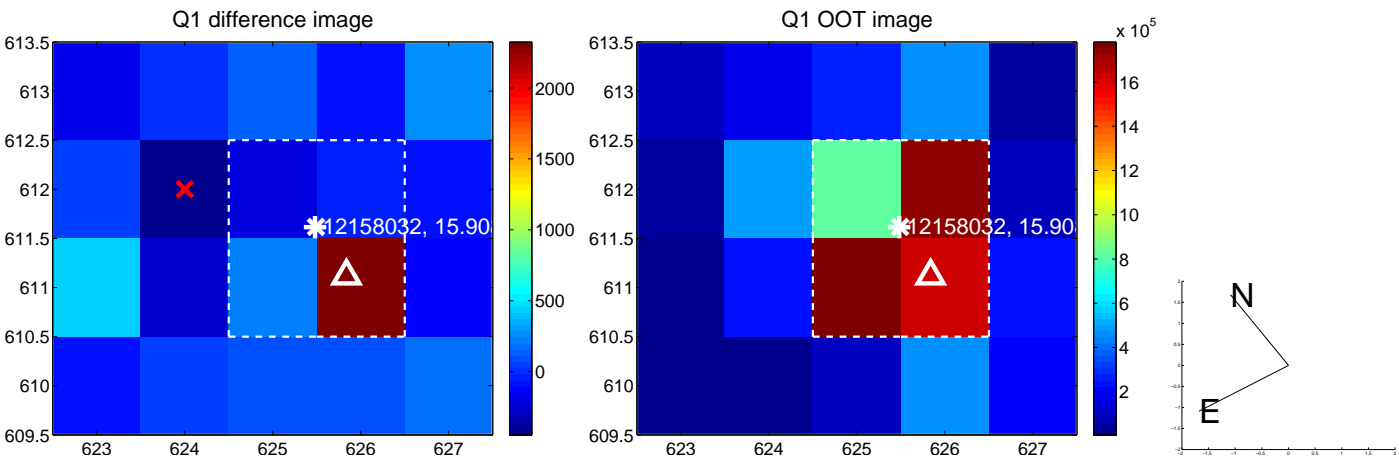
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.052 ± 1.256	1.63	-0.875 ± 1.189	-1.856 ± 0.881
PRF-fit source offset from KIC position	2.040 ± 0.769	2.65	-0.841 ± 0.912	-1.858 ± 0.582
photometric centroid source offset	5.98 ± 3.05	1.96	5.55 ± 3.07	-2.24 ± 2.90

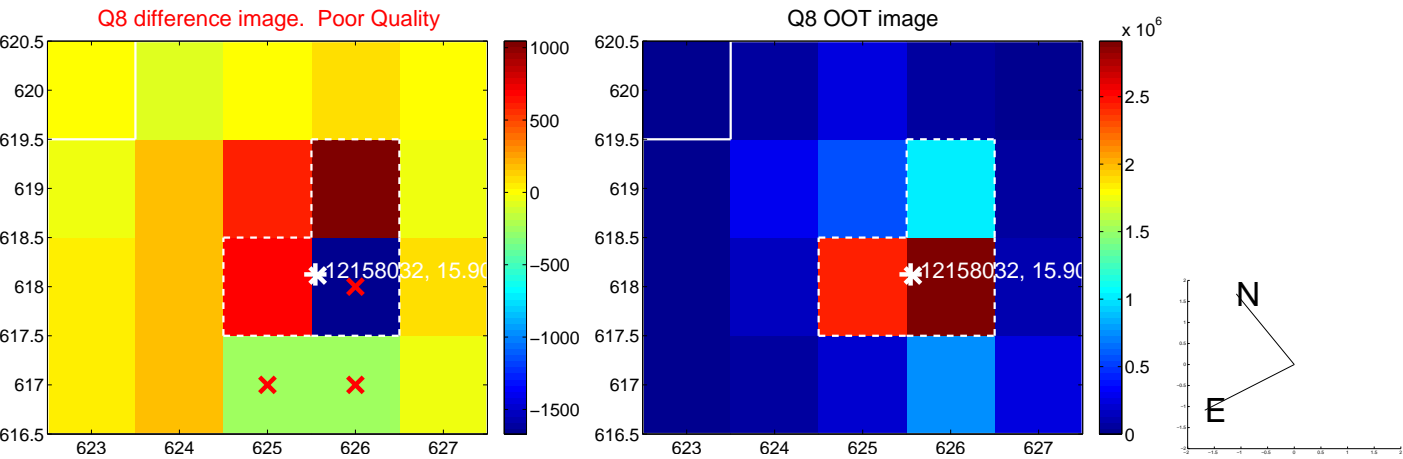
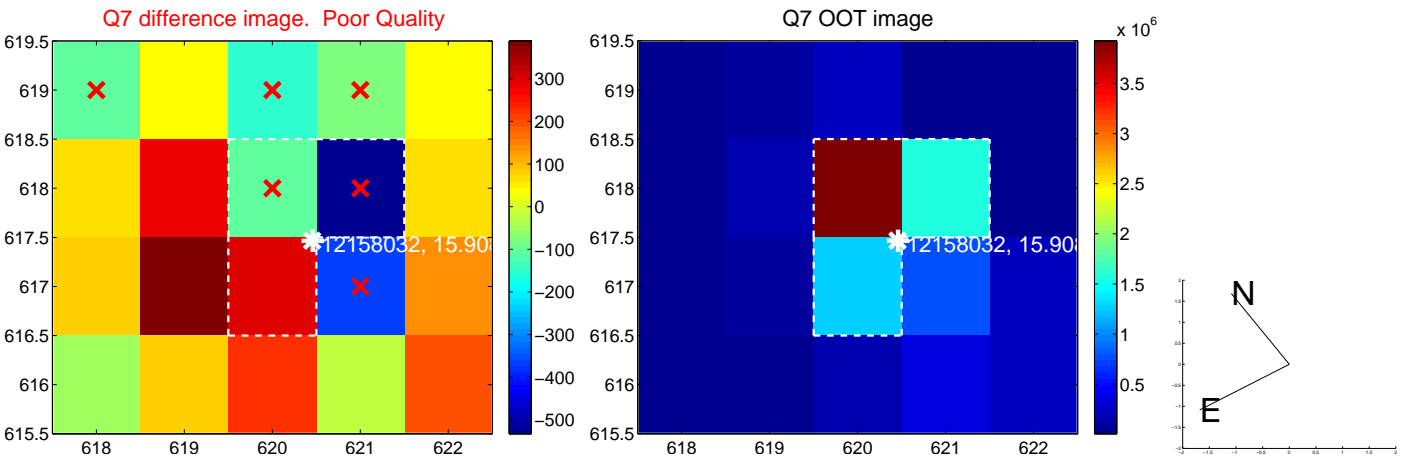
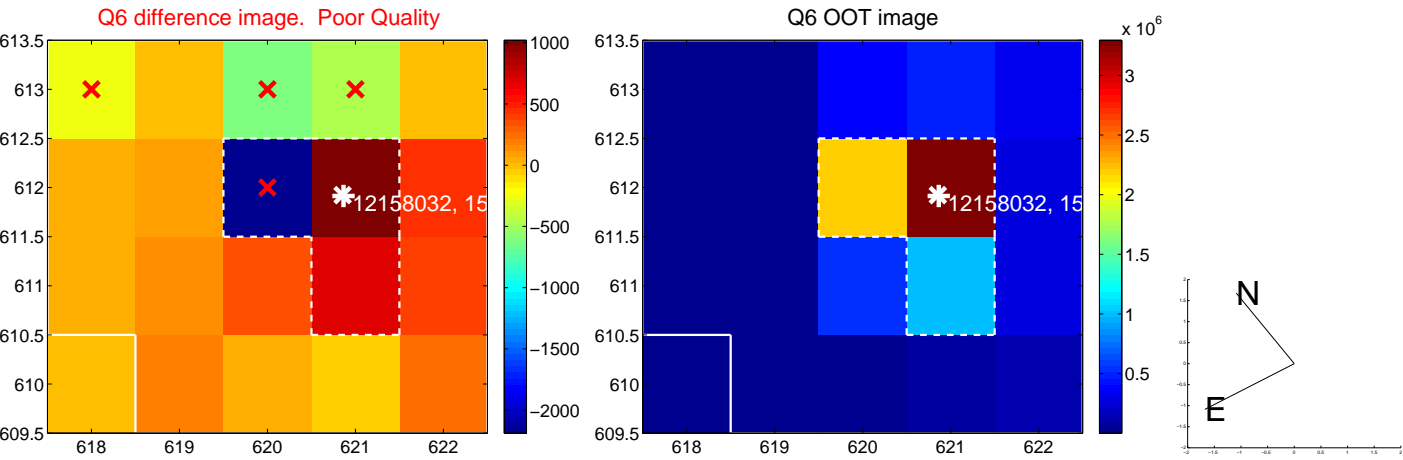
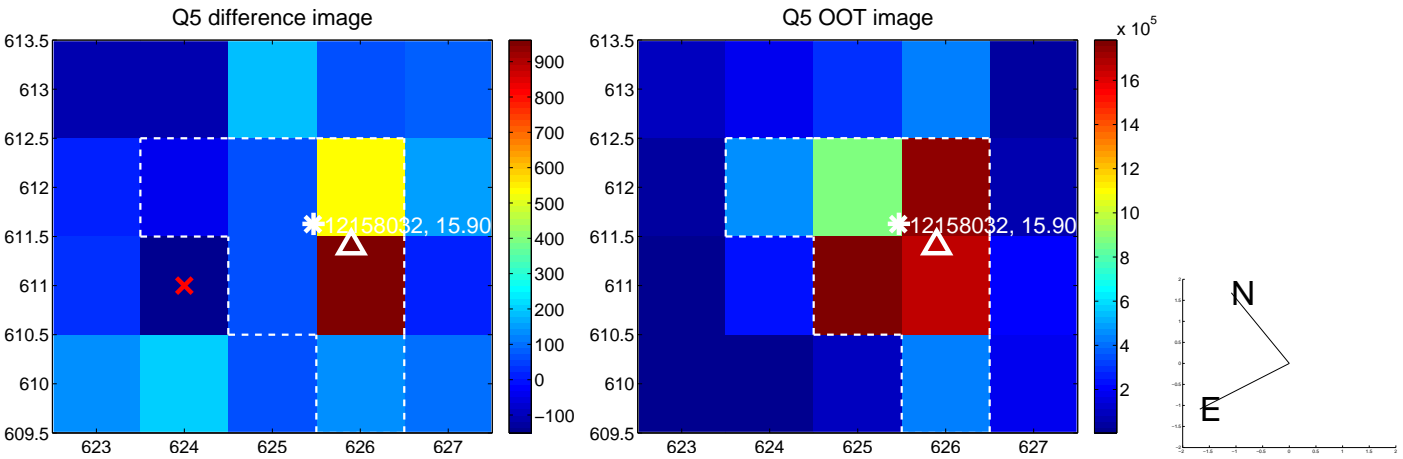


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

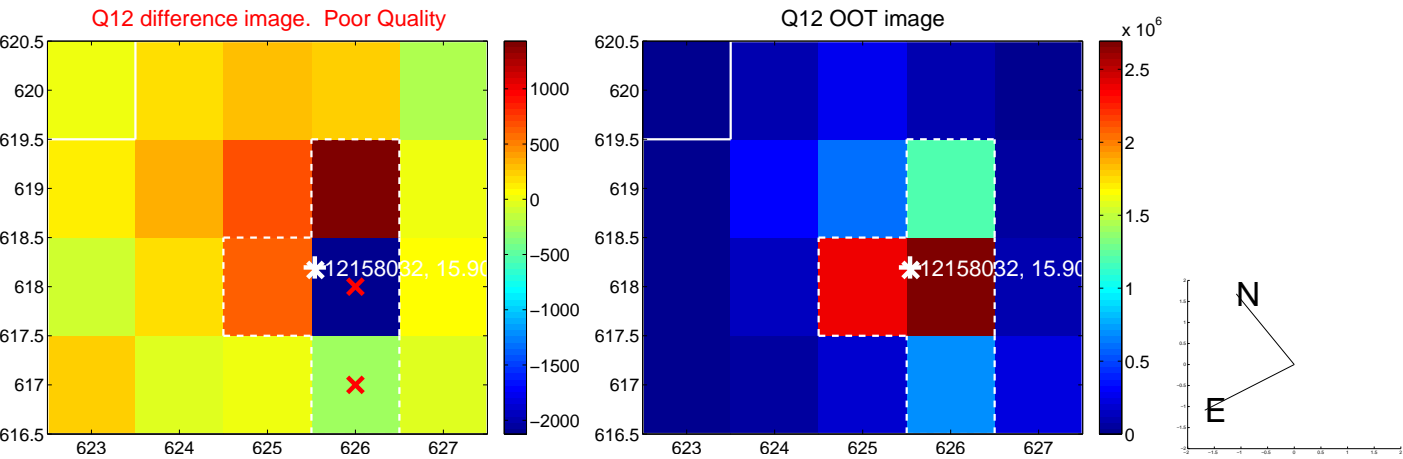
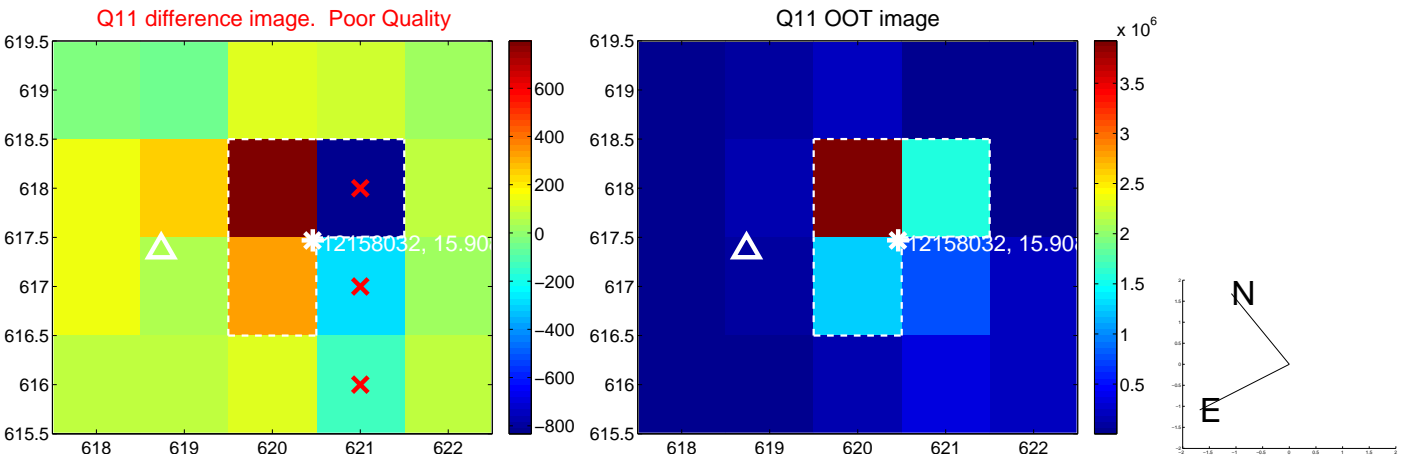
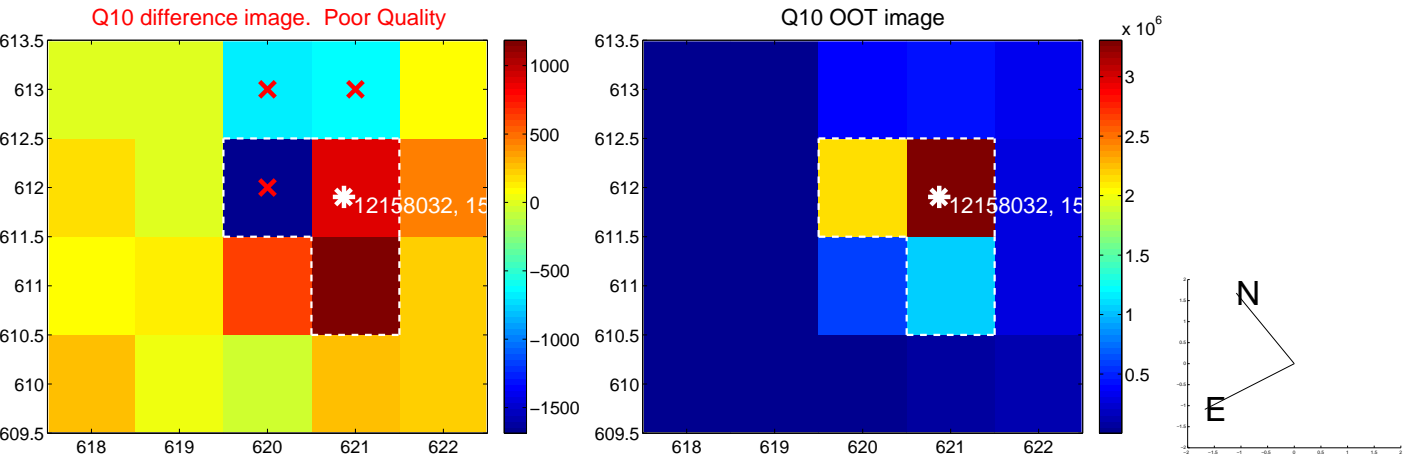
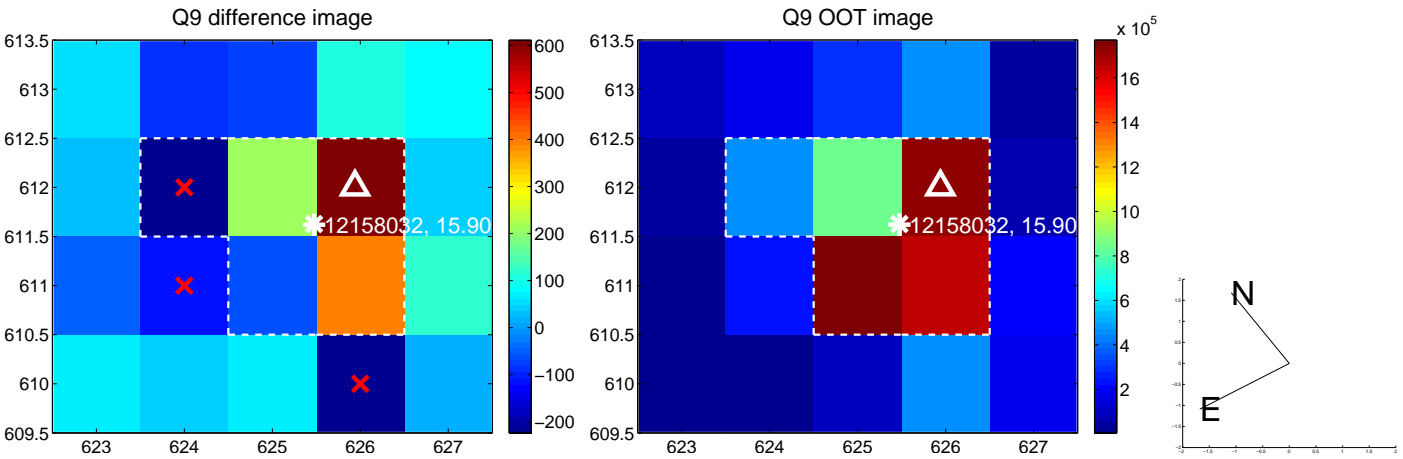
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



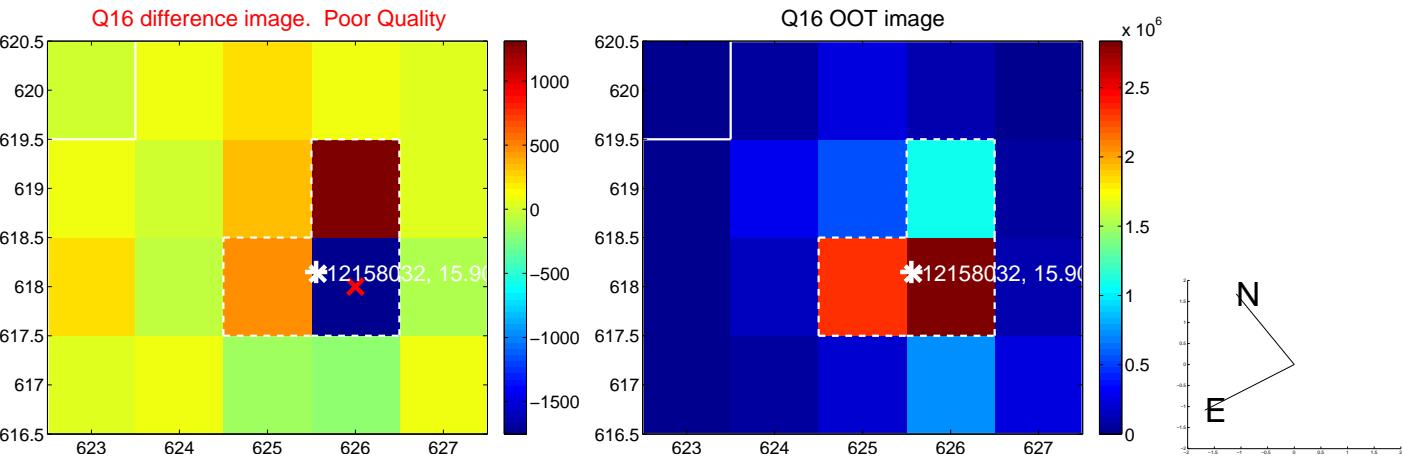
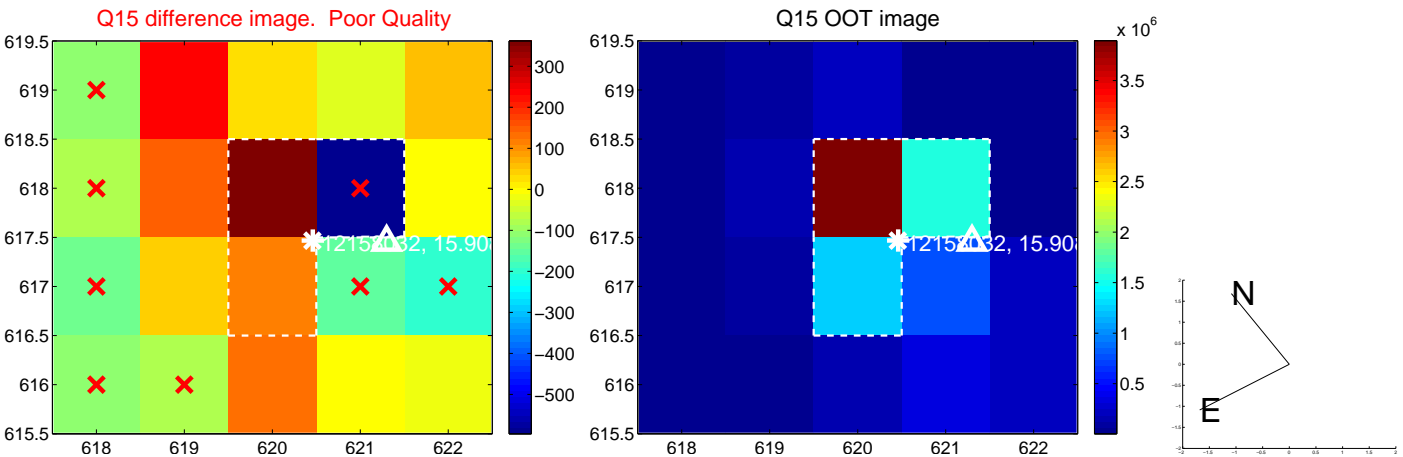
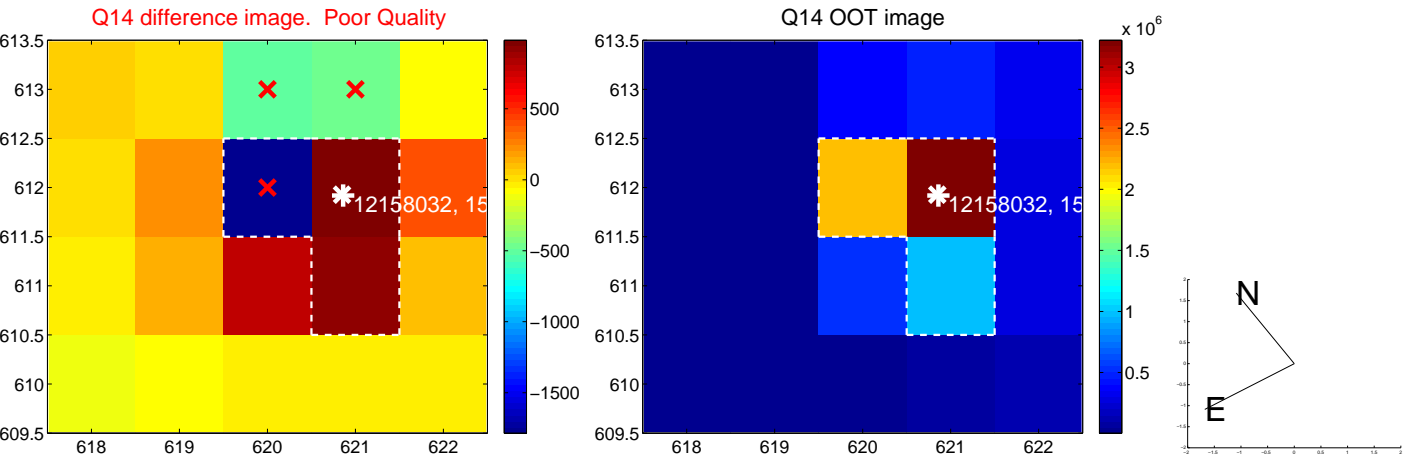
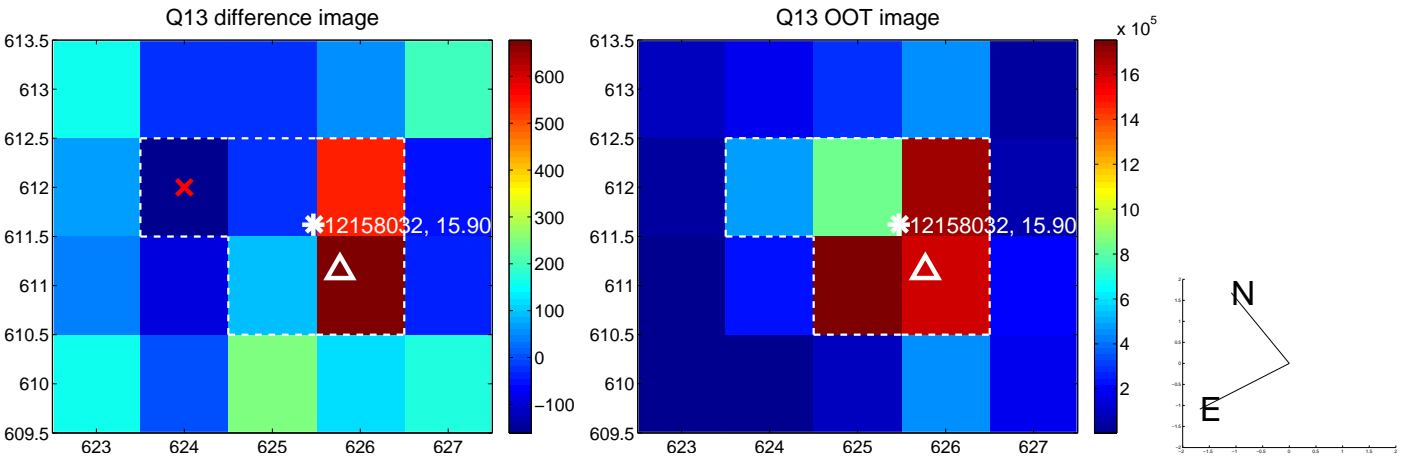
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



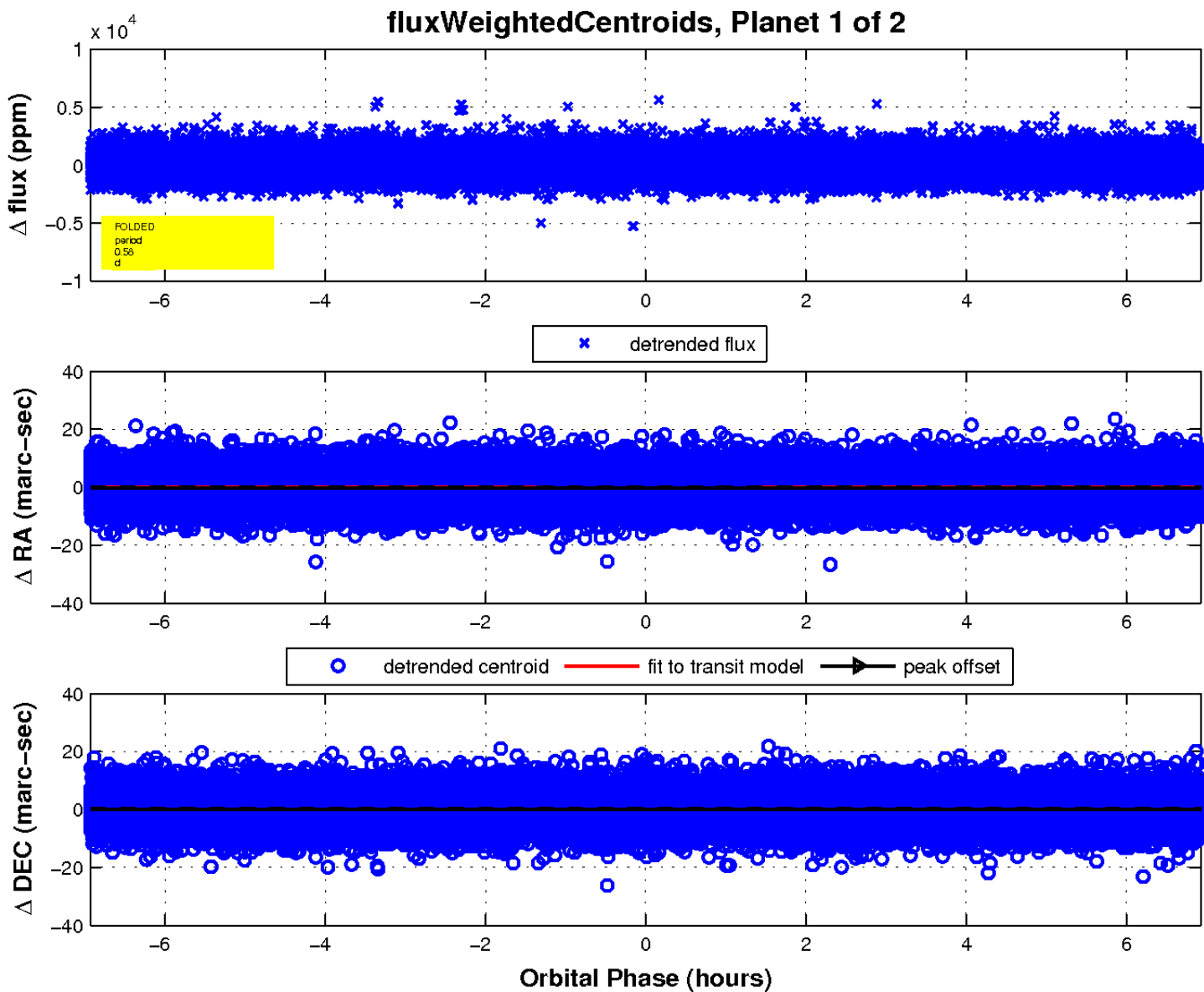
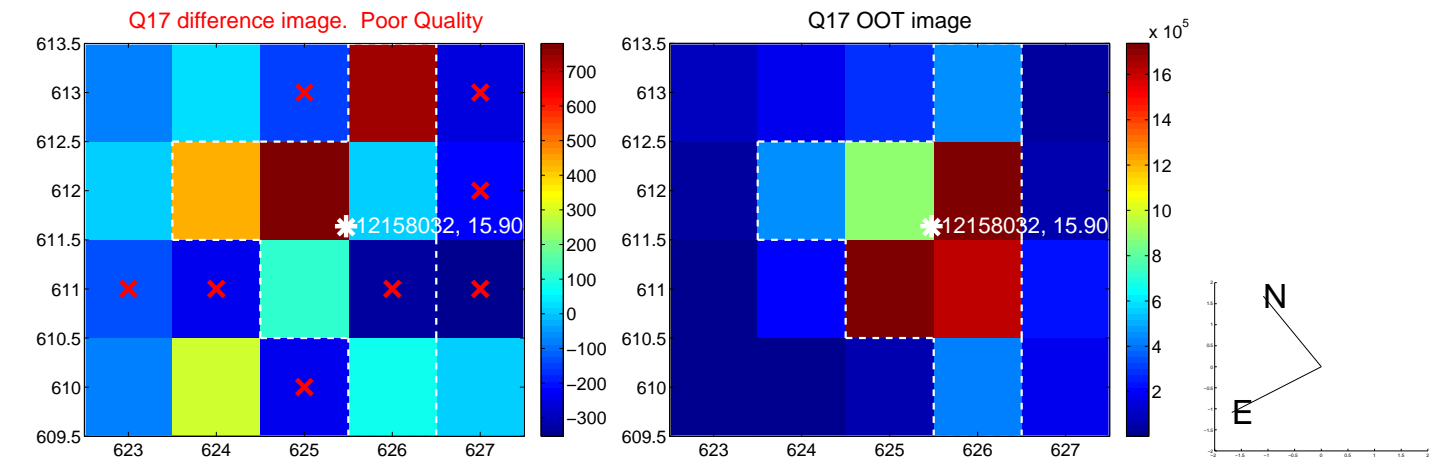
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

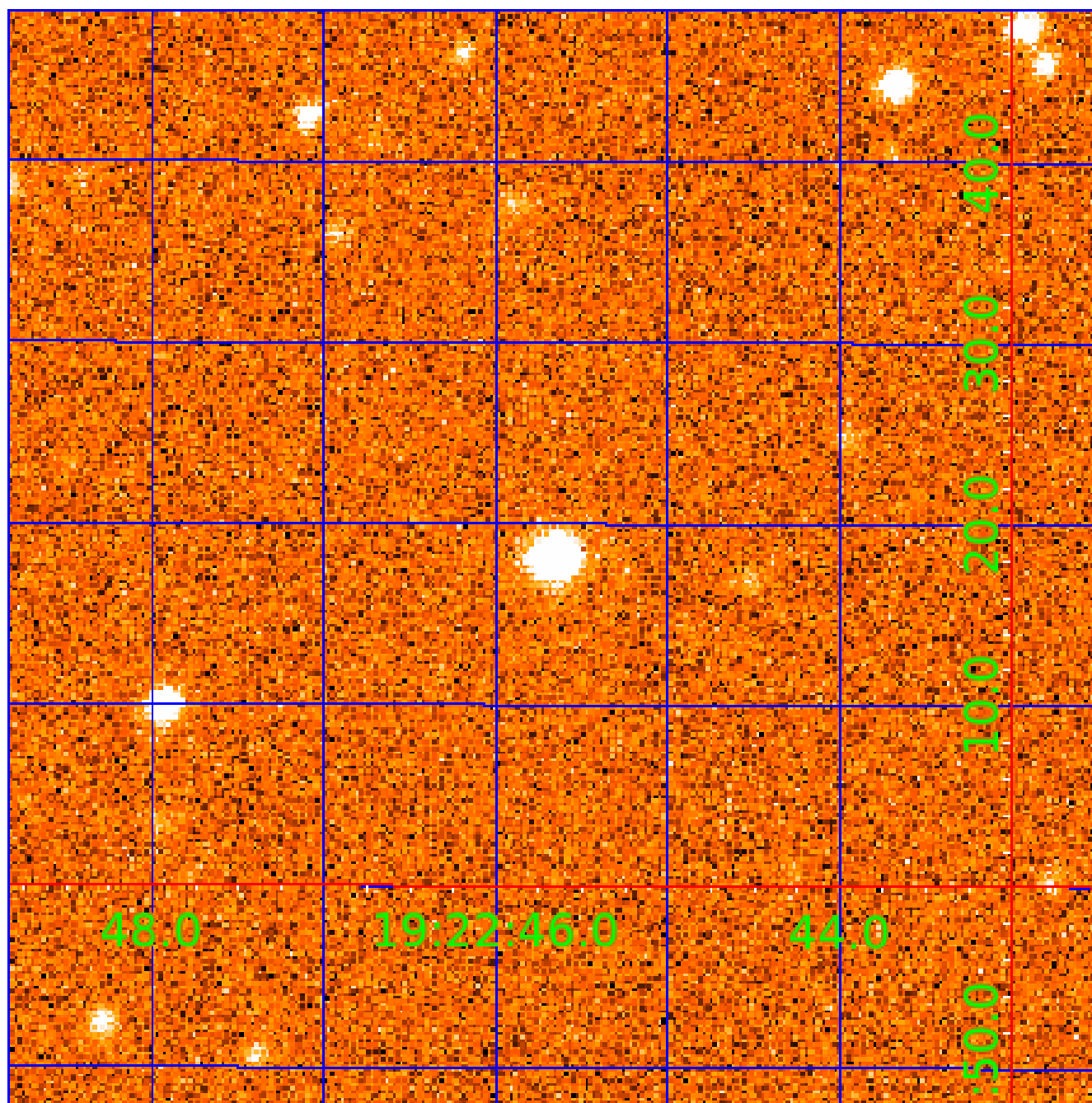


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012158032

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})
012158032-01	OBS	No	0.577811	131.884857	34.0	4.426	7.5	4.9	0.71	5051	0.40	1873.09
012158032-02	OBS	No	3.479974	131.971726	35.7	15.444	60.0	1.3	0.71	5051	0.52	170.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012158032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
012158032-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—CENT_FEW_DIFFS

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

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

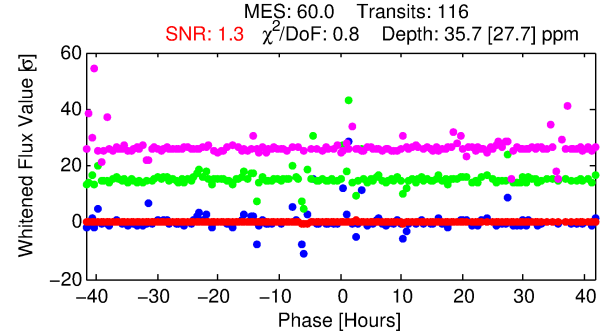
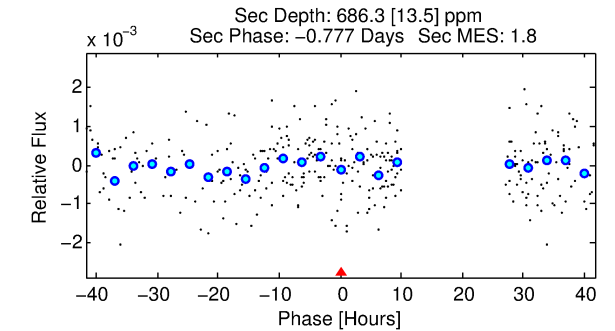
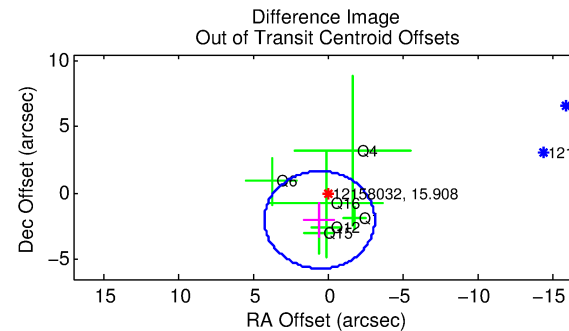
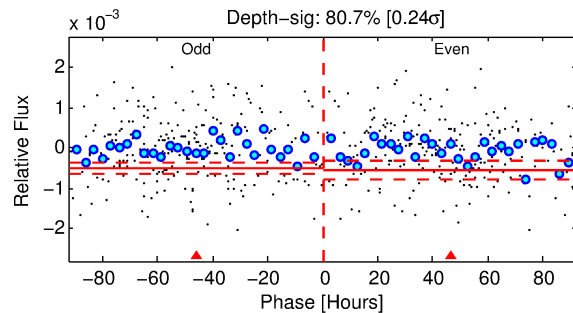
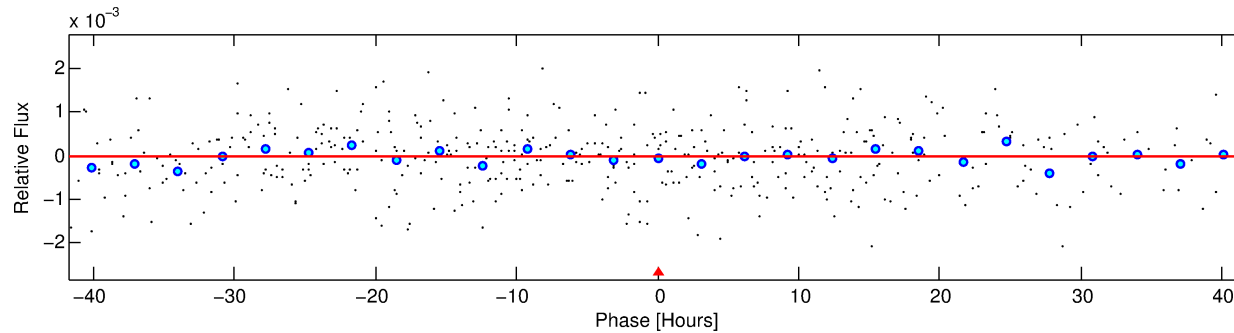
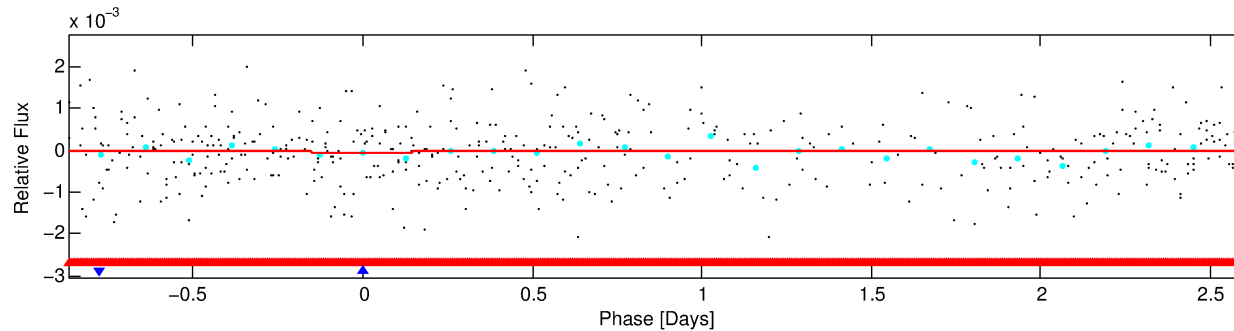
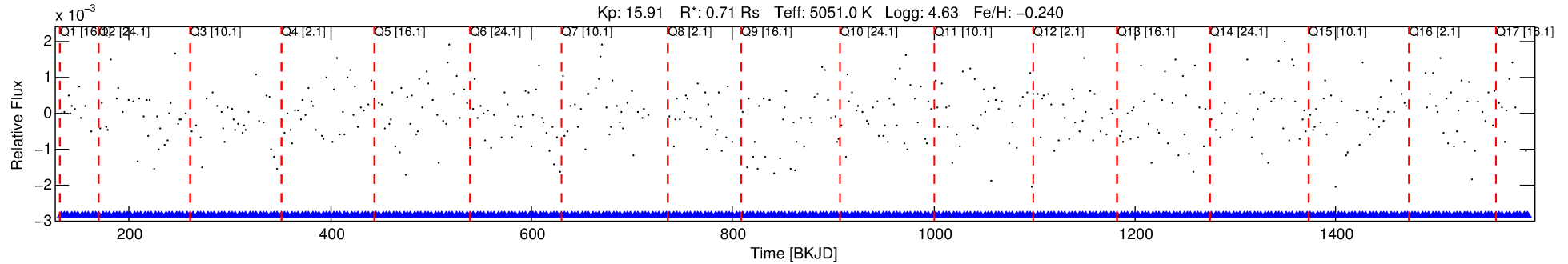
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012158032-02

No Significant Match Found

DV One-Page Summary

KIC: 12158032 Candidate: 2 of 2 Period: 3.480 d



DV Fit Results:

Period = 3.47997 [0.00018] d
Epoch = 131.9717 [0.0529] BKJD
Rp/R* = 0.0067 [0.0096]
a/R* = 1.20 [2.51]
b = 0.91 [1.31]
Seff = 170.94 [30.79]
Teq = 922 [42] K
Rp = 0.52 [0.74] Re
a = 0.0412 [0.0040] AU
Ag = 2383.10 [6765.23] [0.35 σ]
Teffp = 9960 [7067] K [1.28 σ]

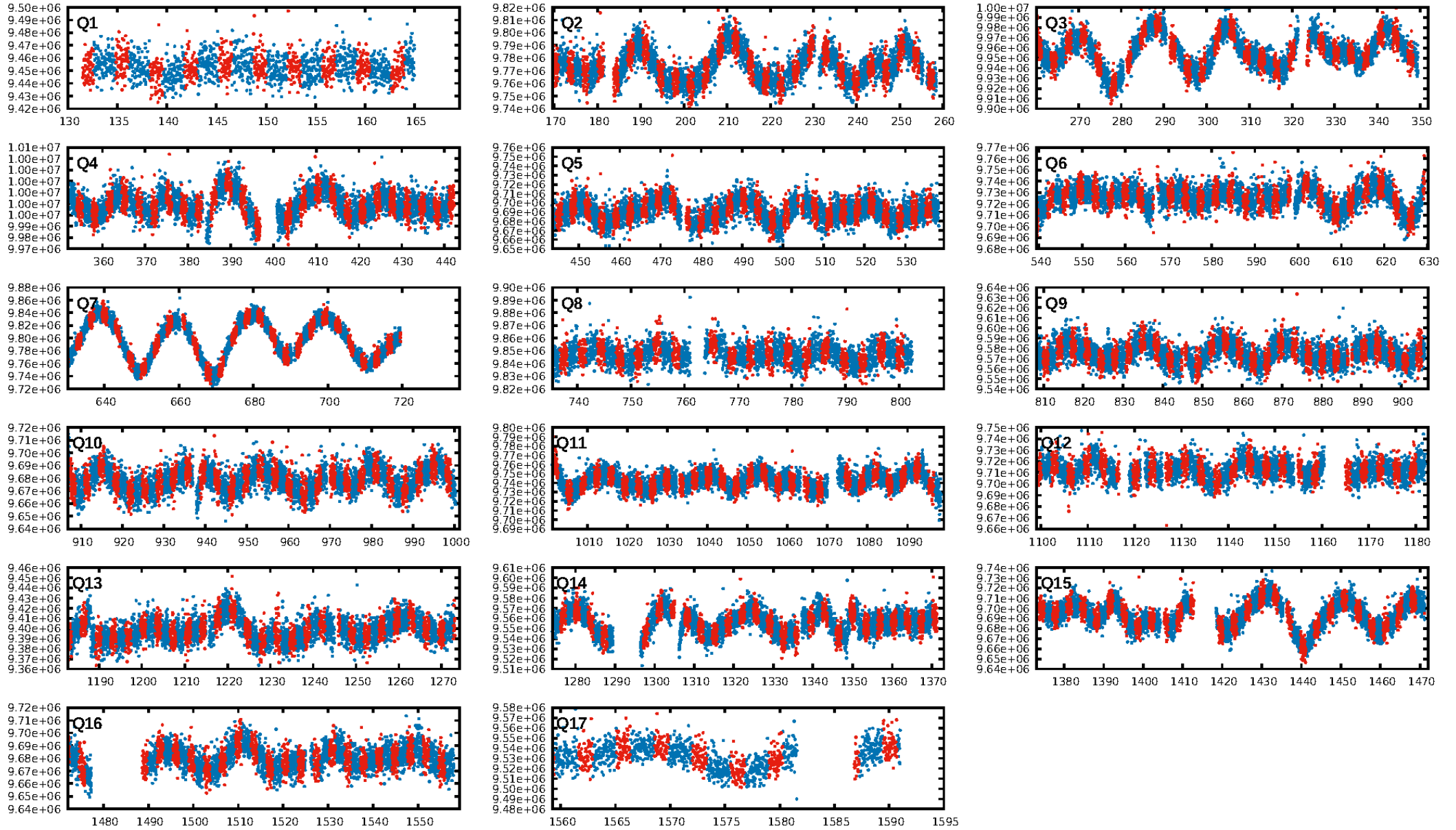
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.34 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 97.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [111/111]
GhostDiagnostic-chr: -4.134
Centroid-sig: 59.3%
Centroid-so: 2.822 arcsec [0.79 σ]
OotOffset-rm: 2.097 arcsec [1.71 σ]
KicOffset-rm: 2.047 arcsec [1.66 σ]
OotOffset-st: 1/1/3/1 [6]
KicOffset-st: 1/1/3/1 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.00 [0/17]

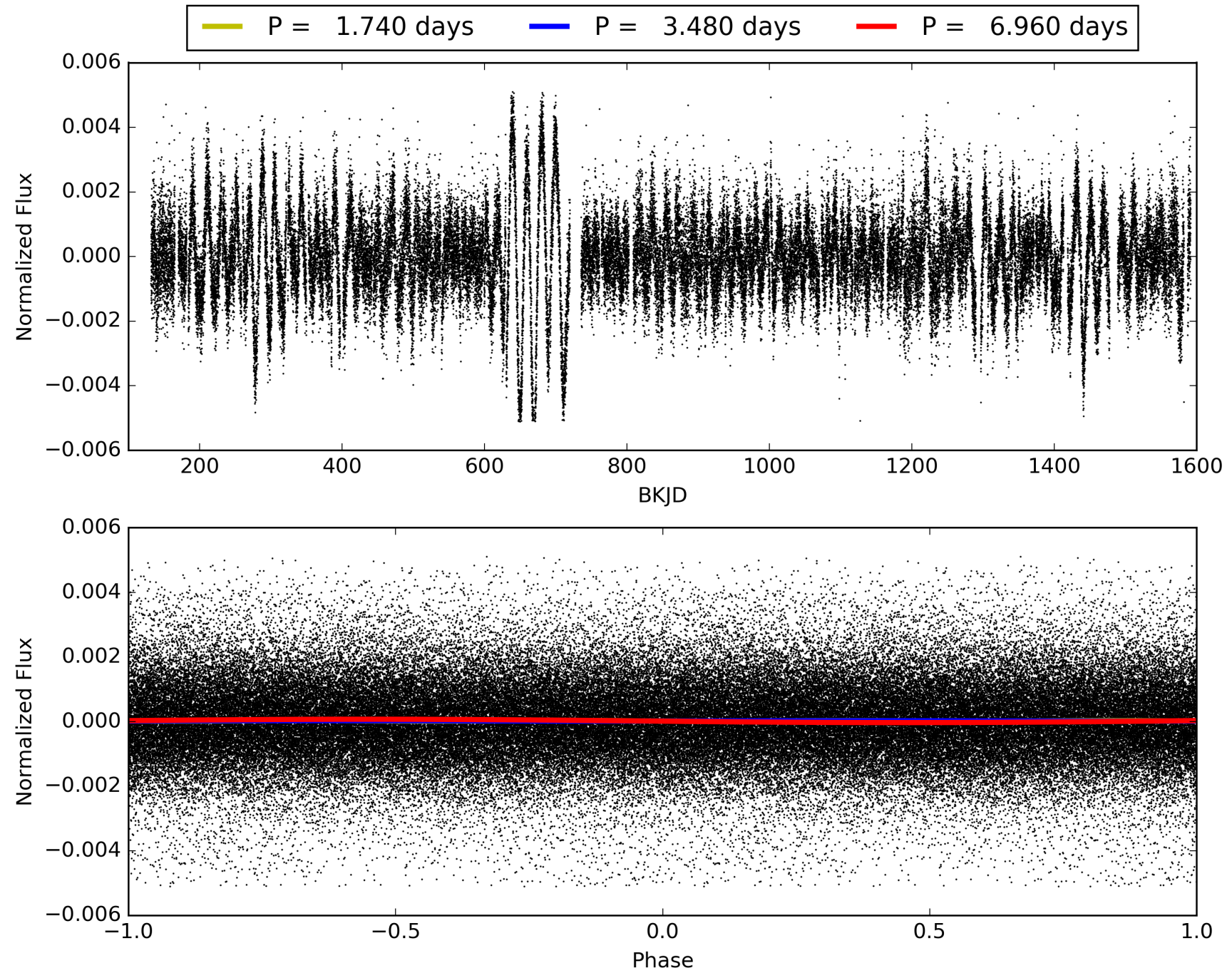
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:48:25 Z

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

TCE 012158032-02, PDC Light Curves

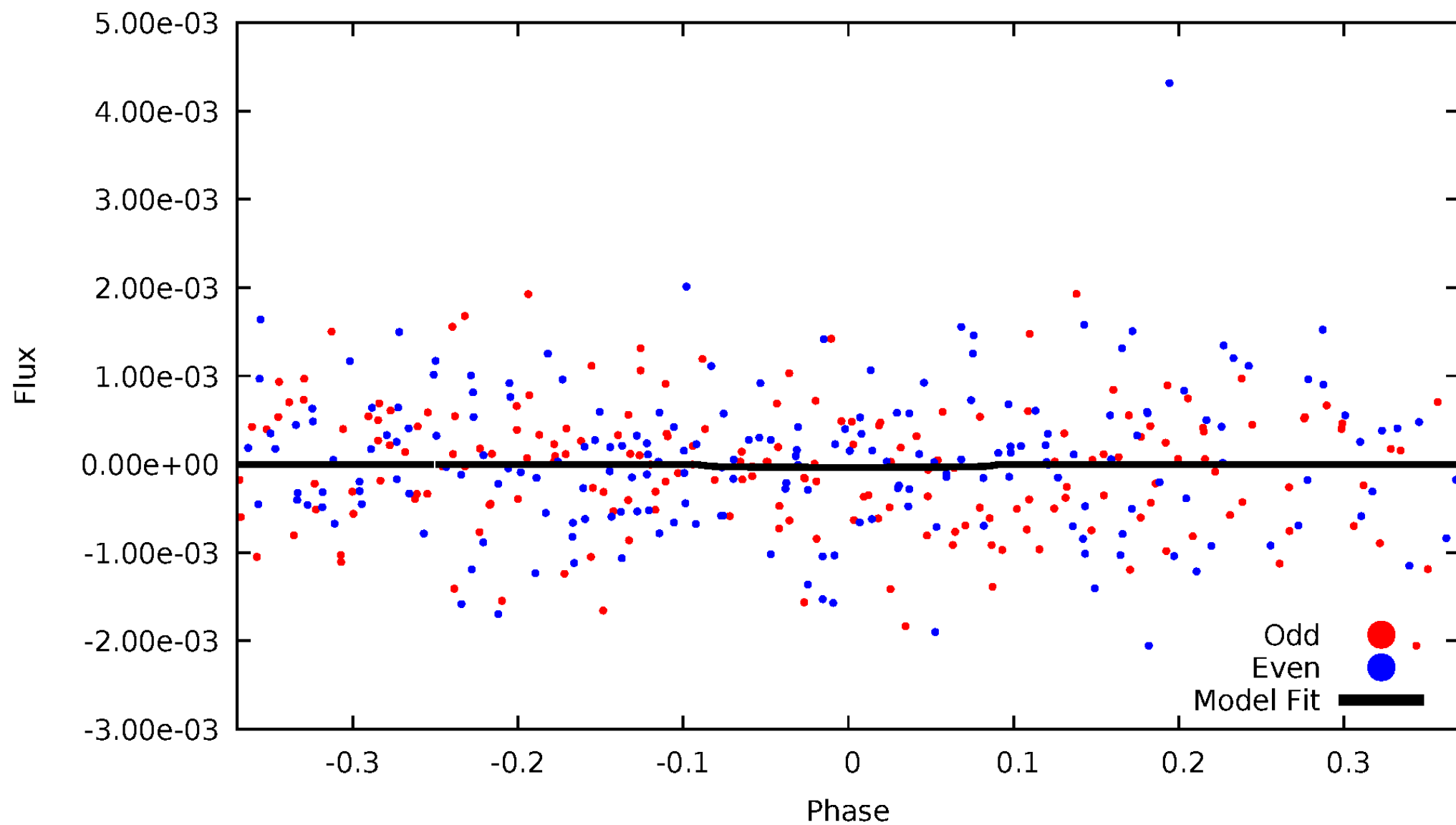


TCE 012158032-02



DV Odd/Even

TCE 012158032-02

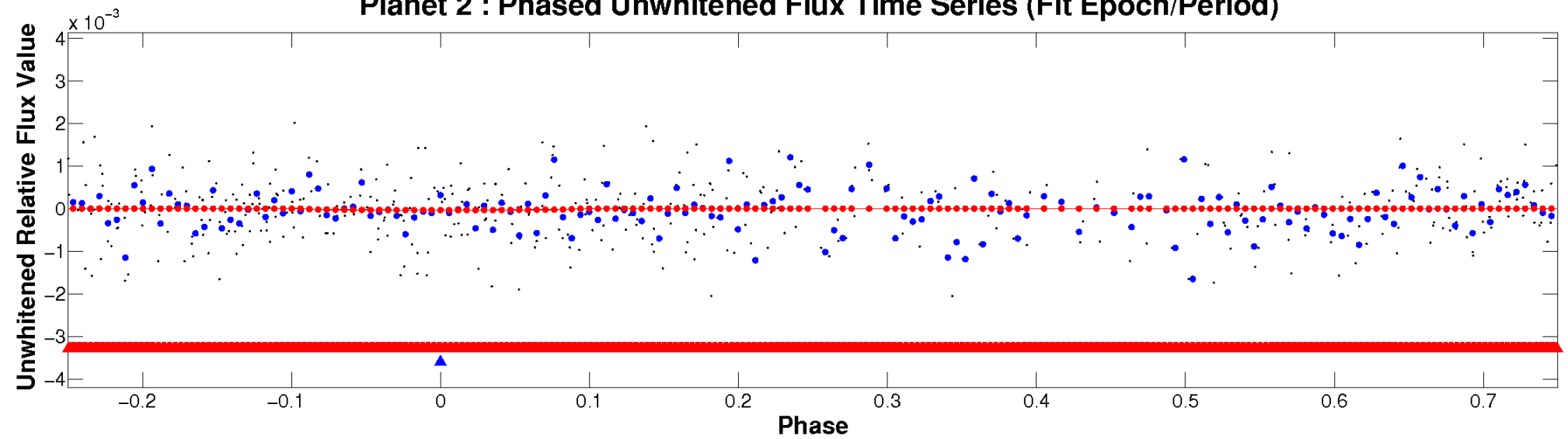


ALT Odd/Even

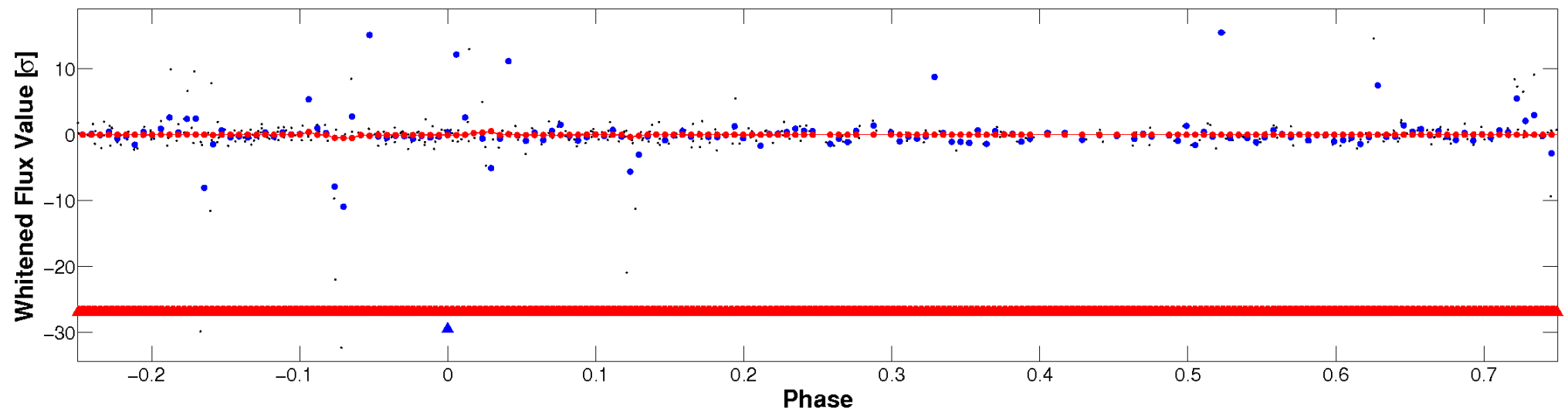
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

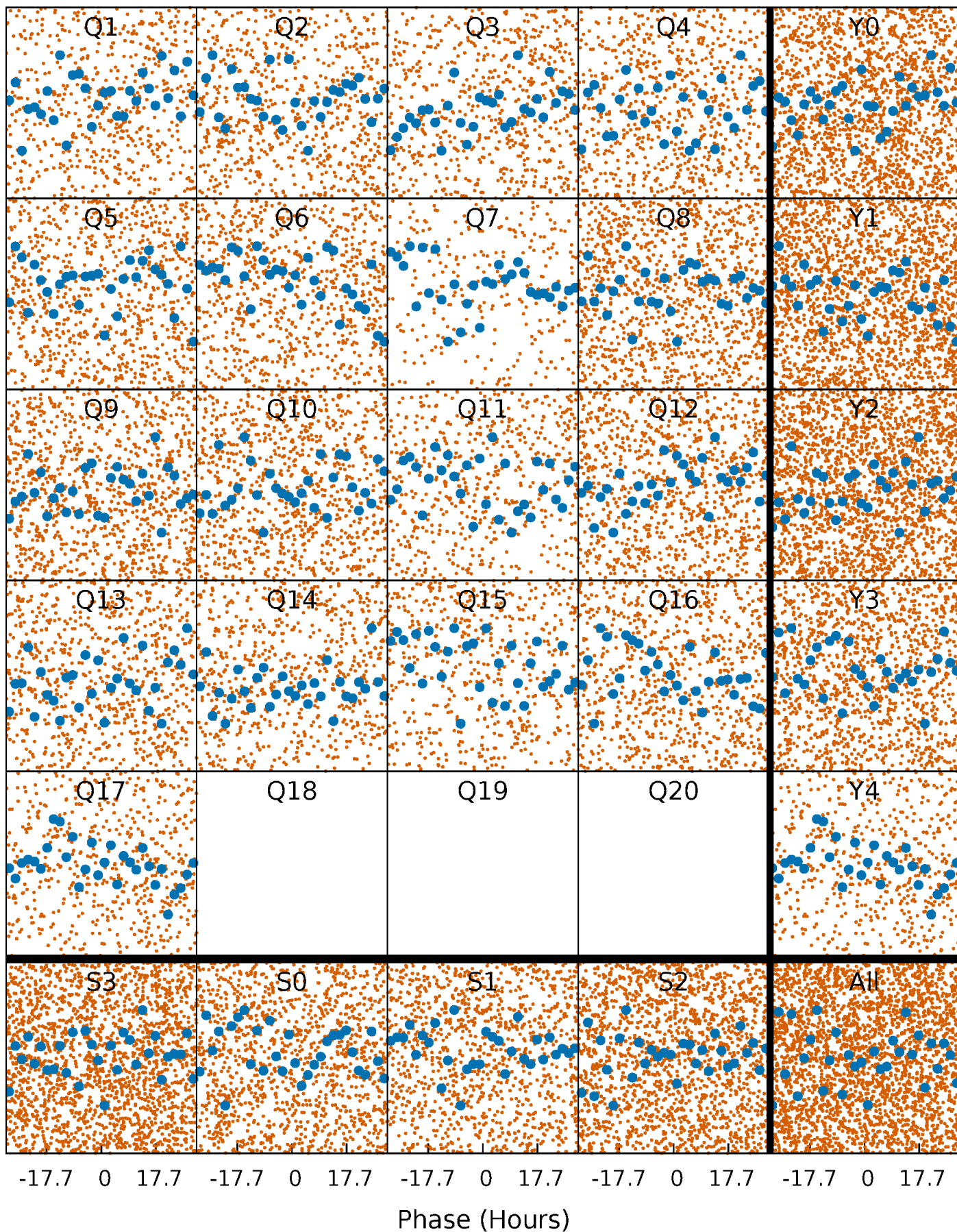


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



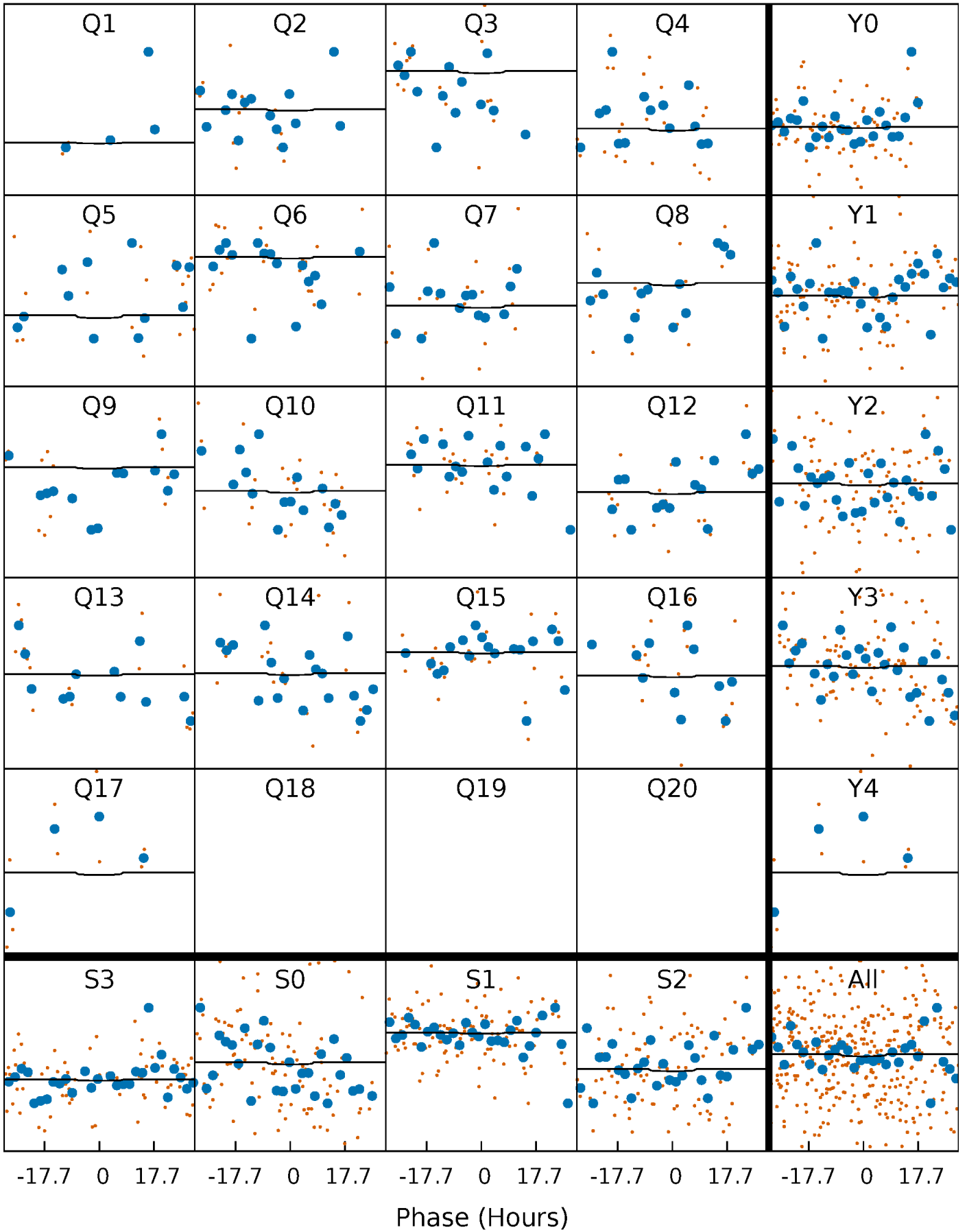
PDC Quarter-Phased Transit Curves

TCE 012158032-02 P= 3.479974 Days $T_0=131.971726$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 012158032-02 $P = 3.479974$ Days $T_0 = 131.971726$ (BKJD)

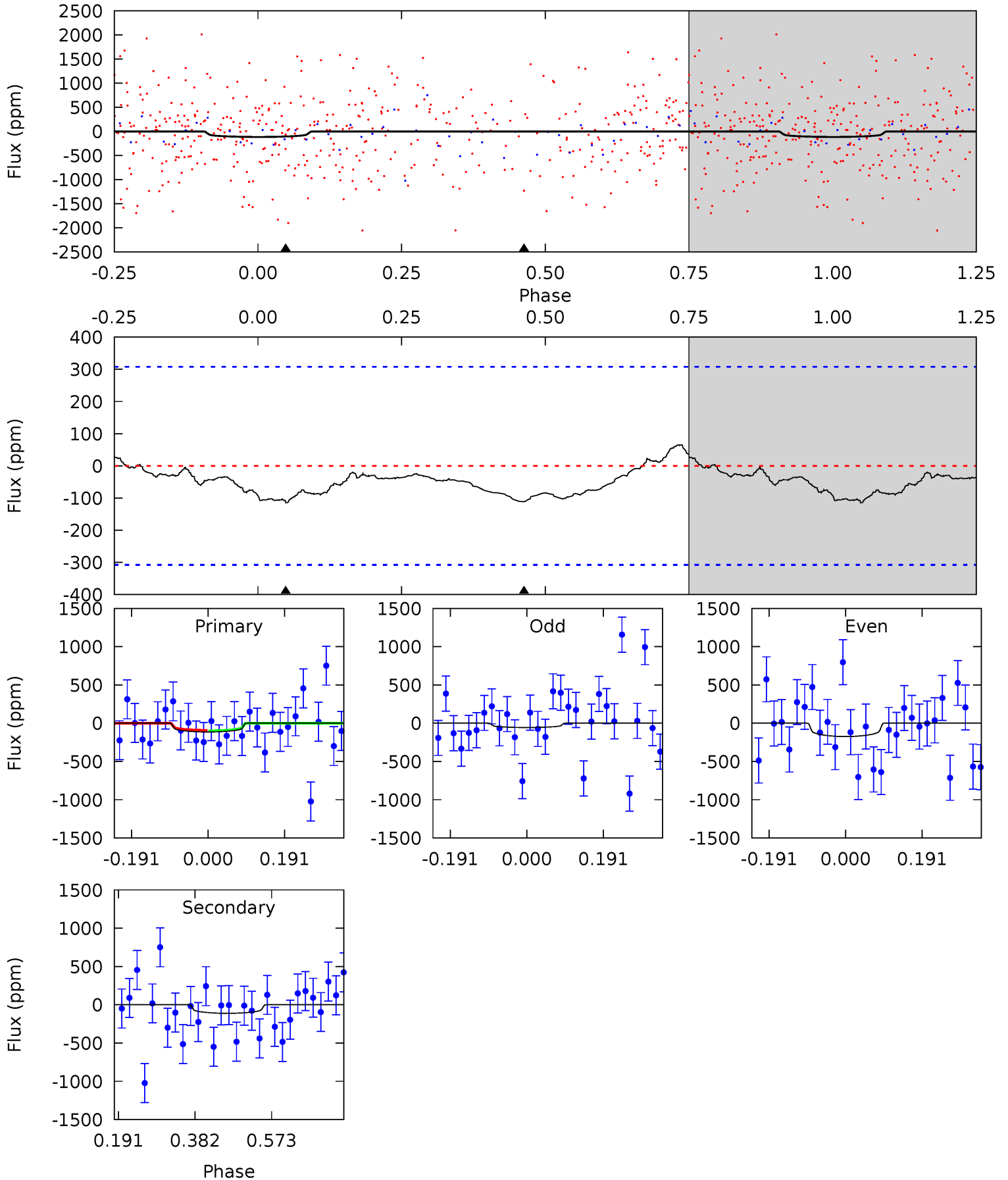


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

012158032-02, P = 3.479974 Days, E = 131.971726 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.65	1.60	0	0	4.43	1.31	0.43	1.65	1.65	1.60	1.60	0.90	0	0.36	0.06



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 012158032

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5051^{+151}_{-136}	$4.628^{+0.030}_{-0.070}$	$-0.240^{+0.300}_{-0.300}$	$0.706^{+0.086}_{-0.058}$	$0.786^{+0.063}_{-0.087}$	$3.145^{+0.494}_{-0.797}$
	+3%/-3%	+1%/-2%	+125%/-125%	+12%/-8%	+8%/-11%	+16%/-25%
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 012158032-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-111 ± 70	$0.76^{+0.66}_{-0.51}$	1305^{+48}_{-44}	5154^{+4242}_{-1285}	158^{+1327}_{-122}
Alt.	N/A	N/A	N/A	N/A	N/A

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

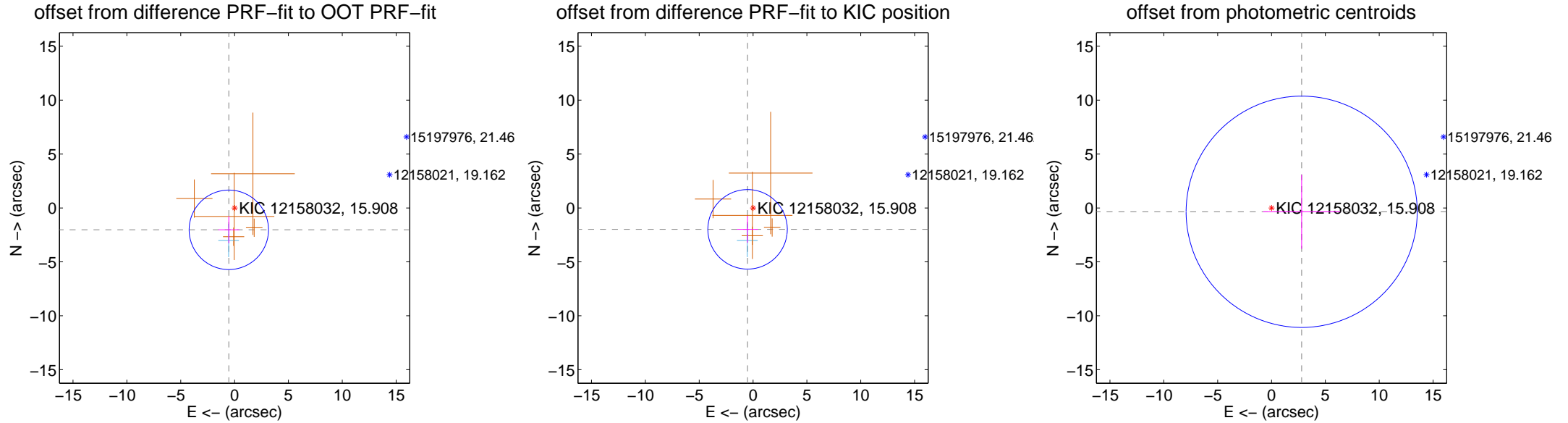
DV Centroid Data

Supplemental centroid analysis for 012158032-02. Kepler magnitude: 15.91. Transit SNR 1.29

There are 1 quarters with good PRF difference image offsets

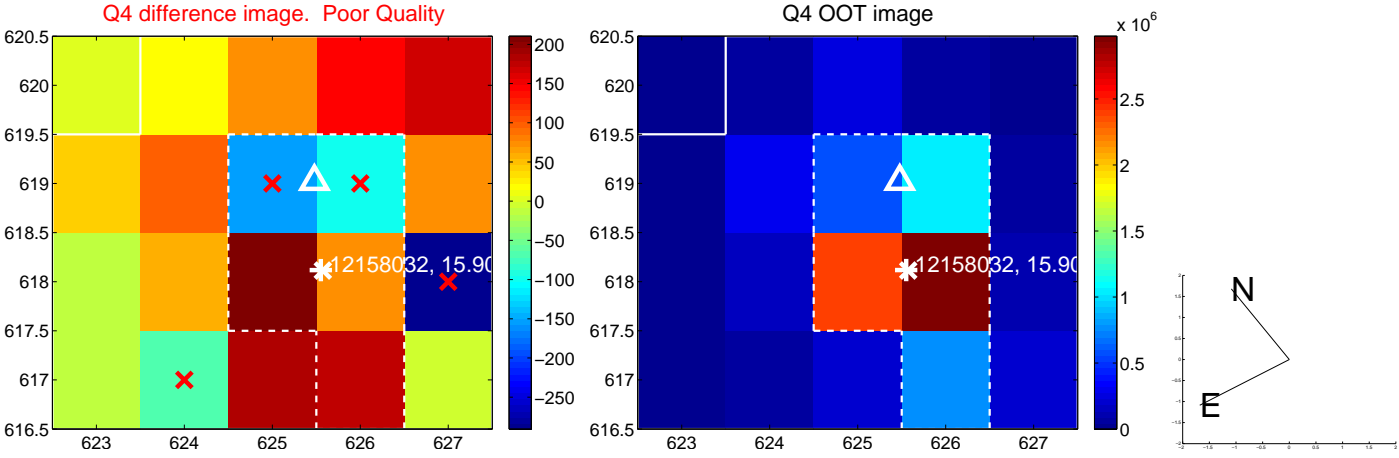
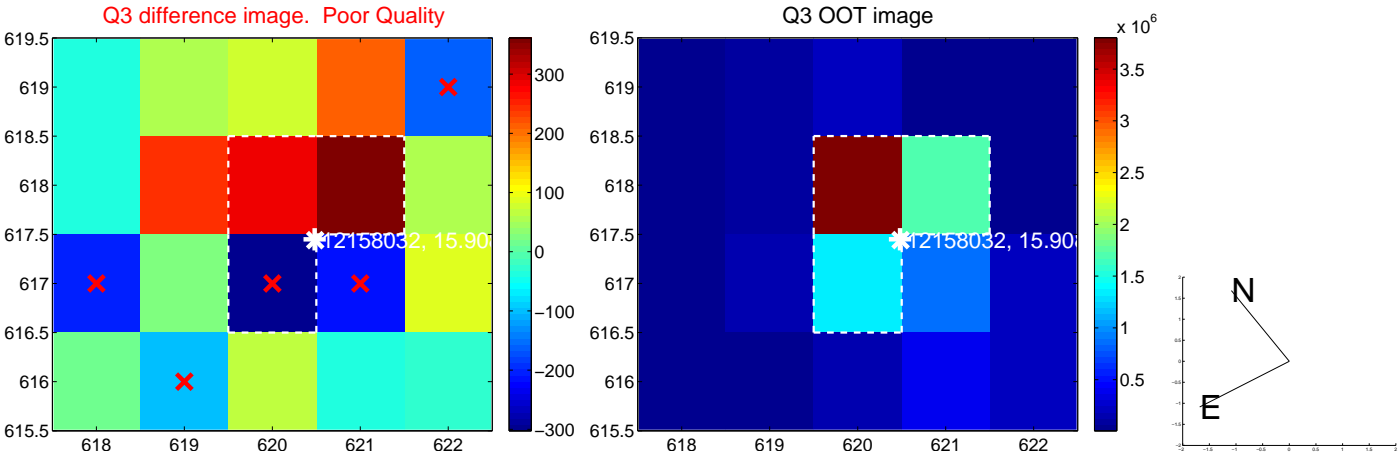
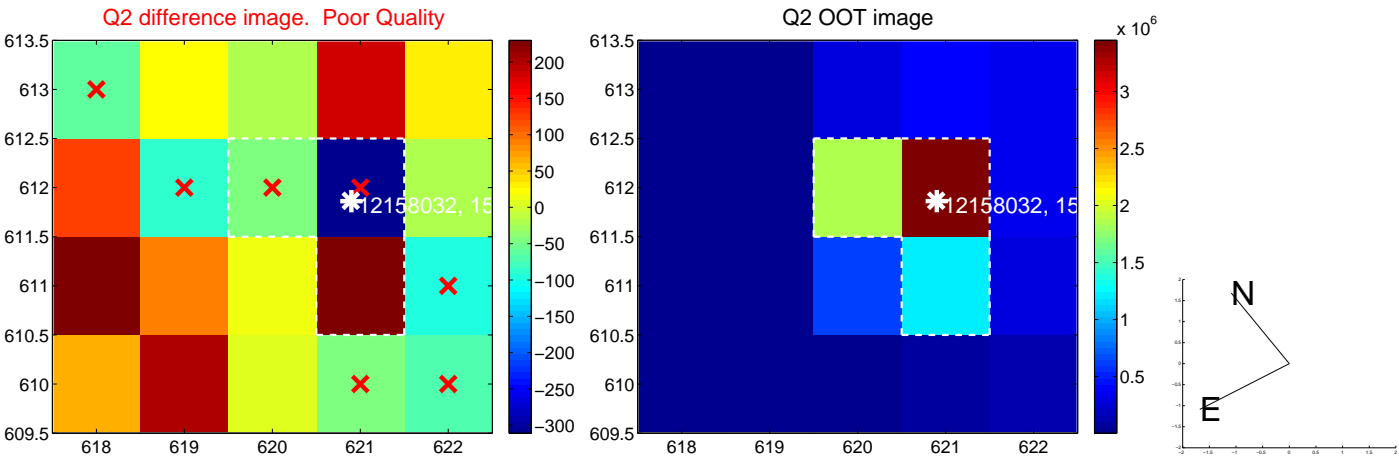
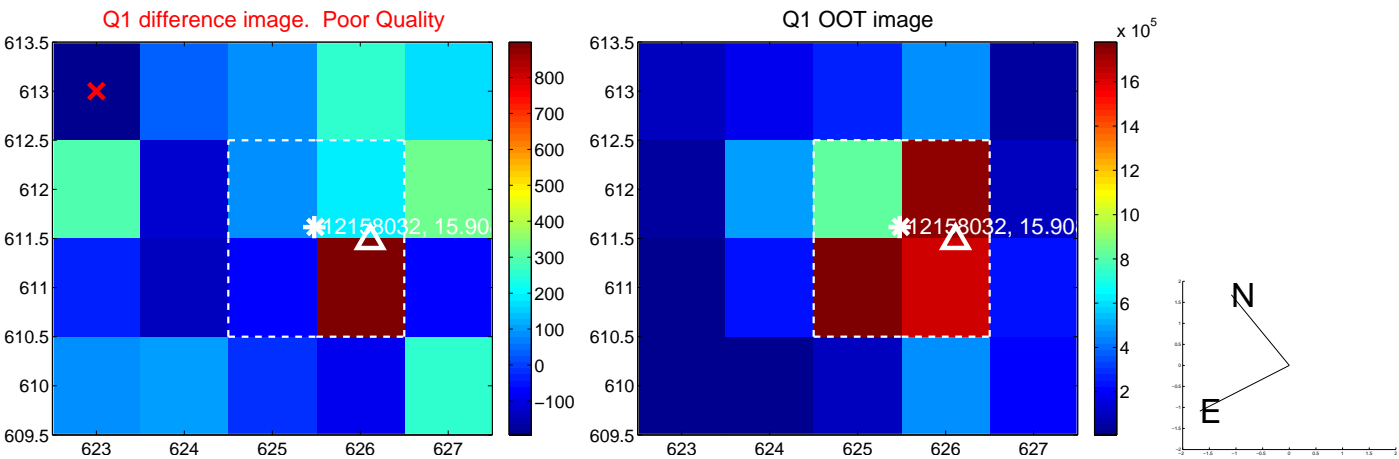
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.097 ± 1.229	1.71	0.534 ± 0.977	-2.027 ± 1.244
PRF-fit source offset from KIC position	2.047 ± 1.229	1.66	0.509 ± 0.977	-1.983 ± 1.244
photometric centroid source offset	2.82 ± 3.58	0.79	-2.80 ± 3.58	-0.36 ± 3.43

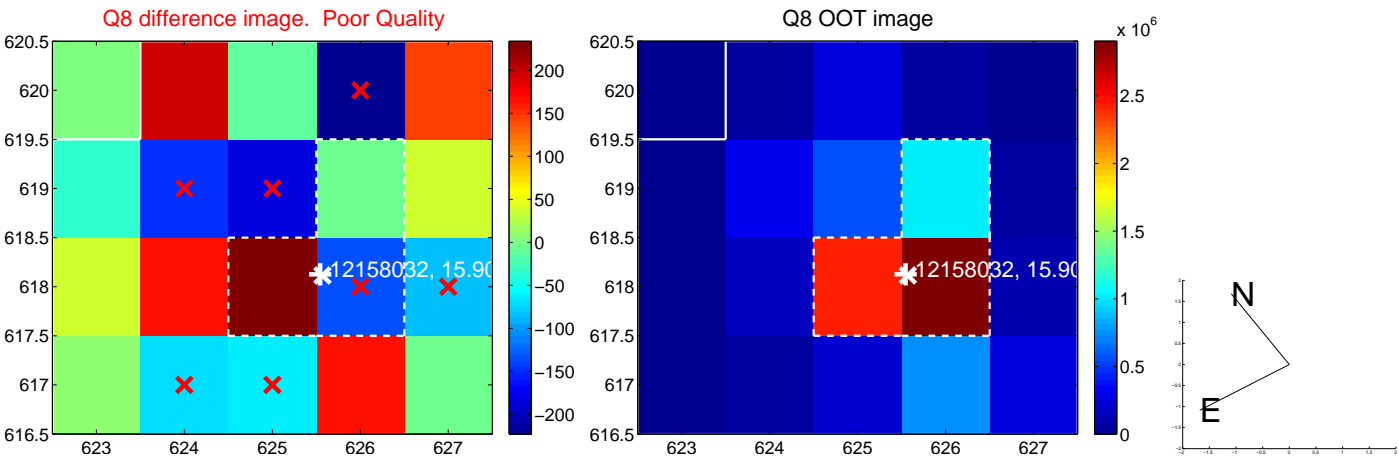
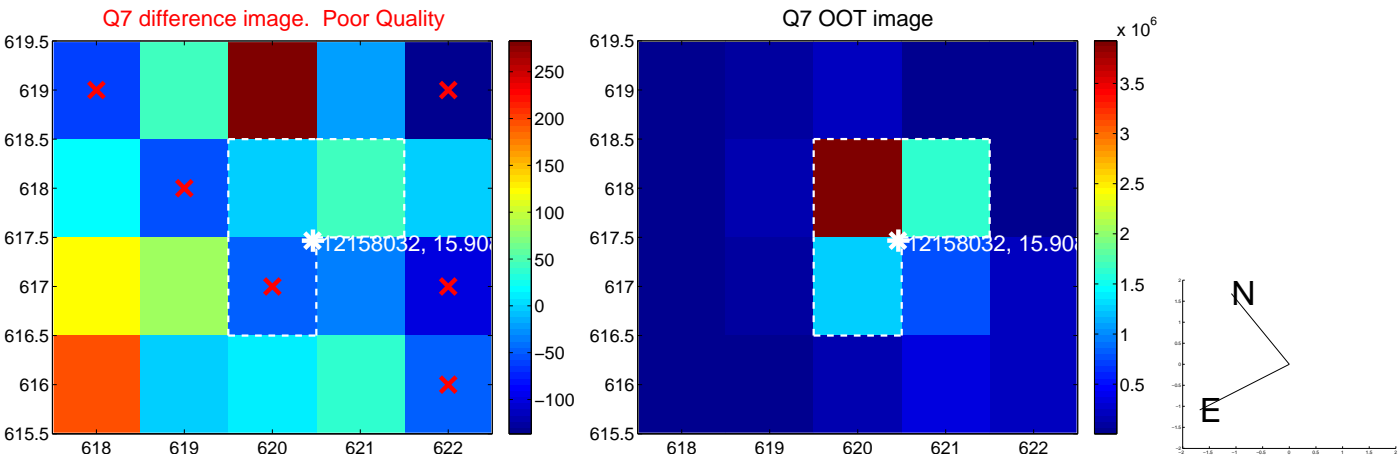
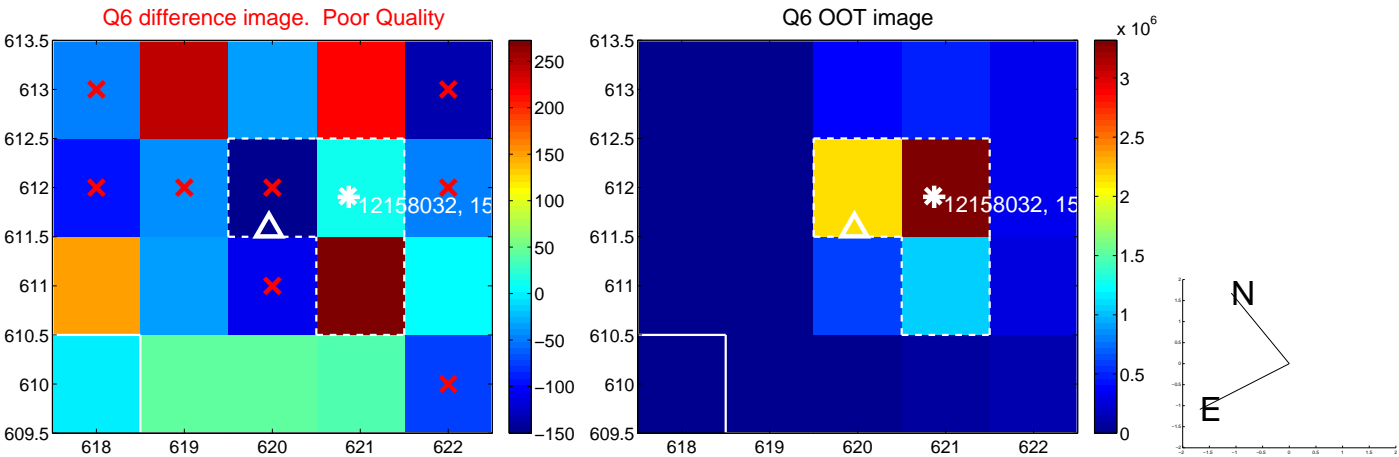
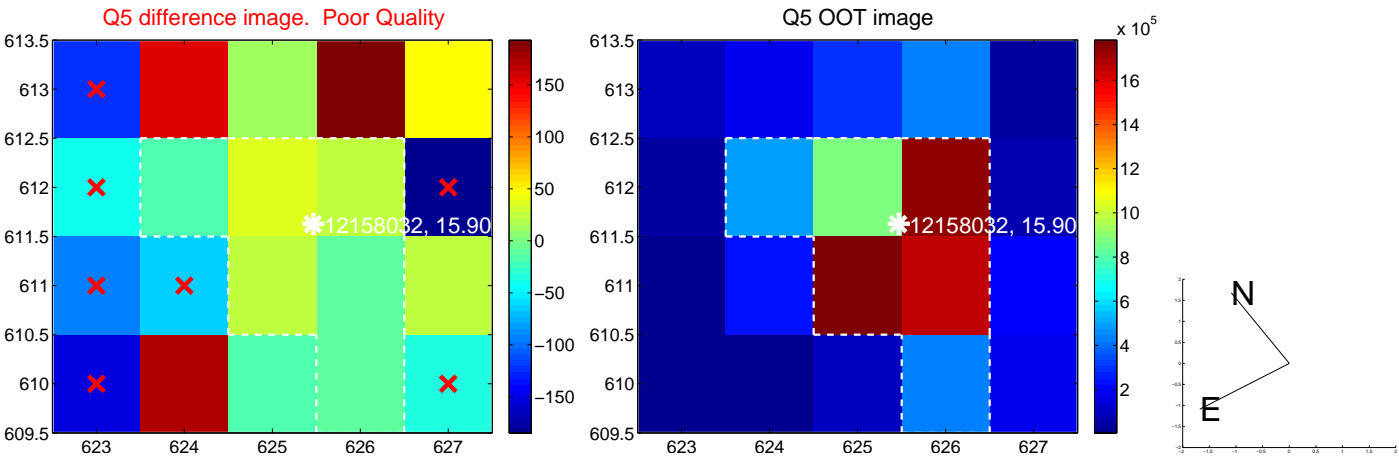


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

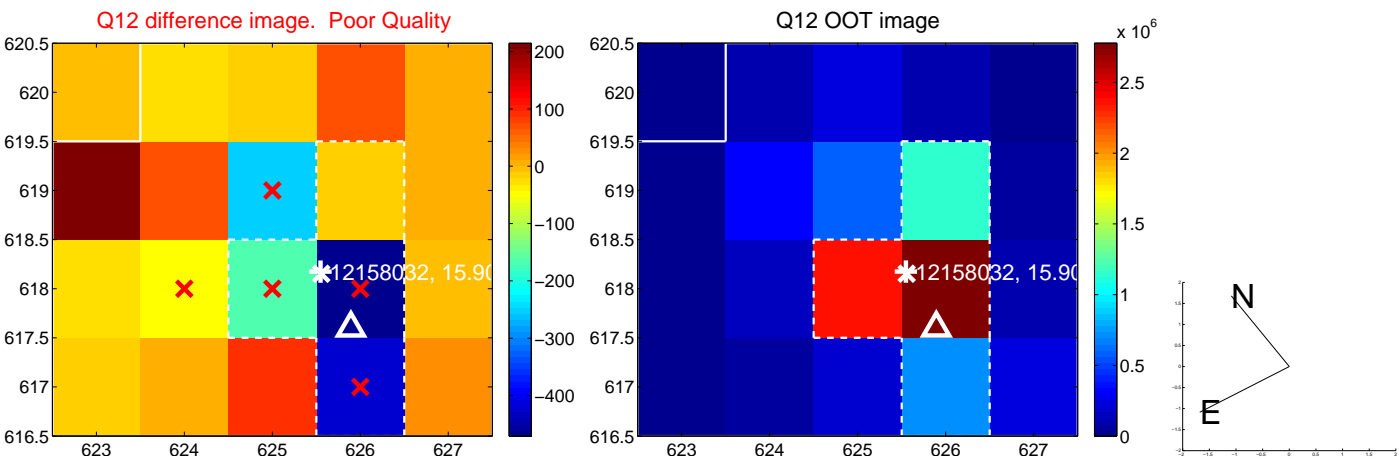
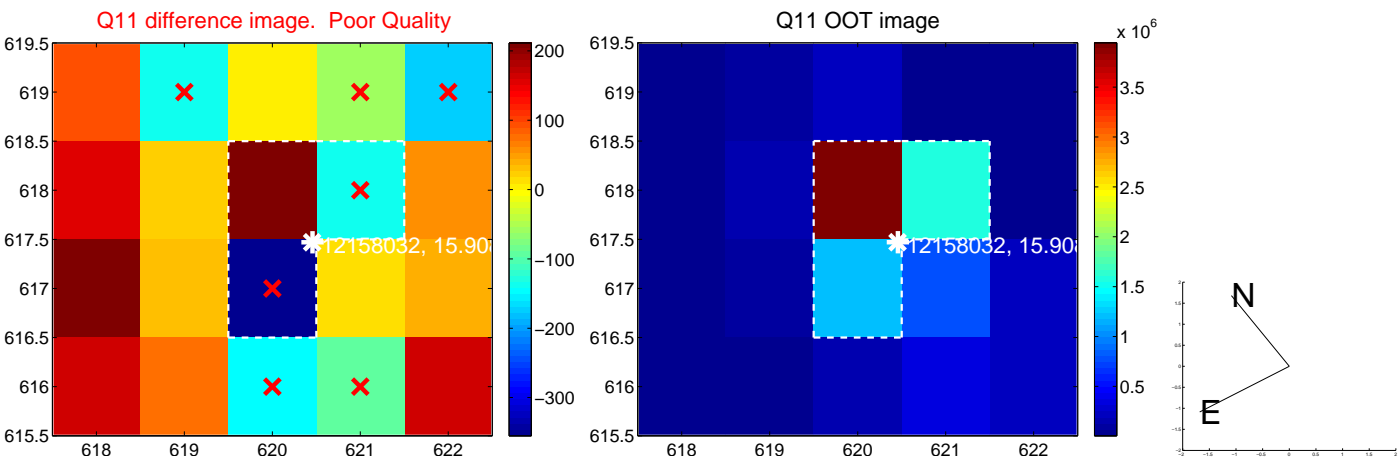
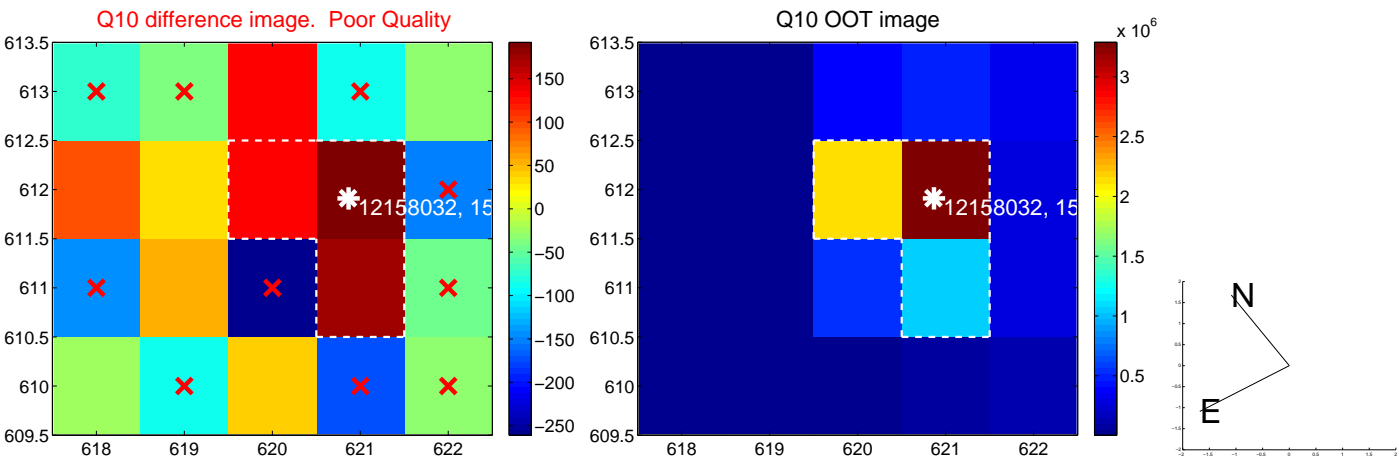
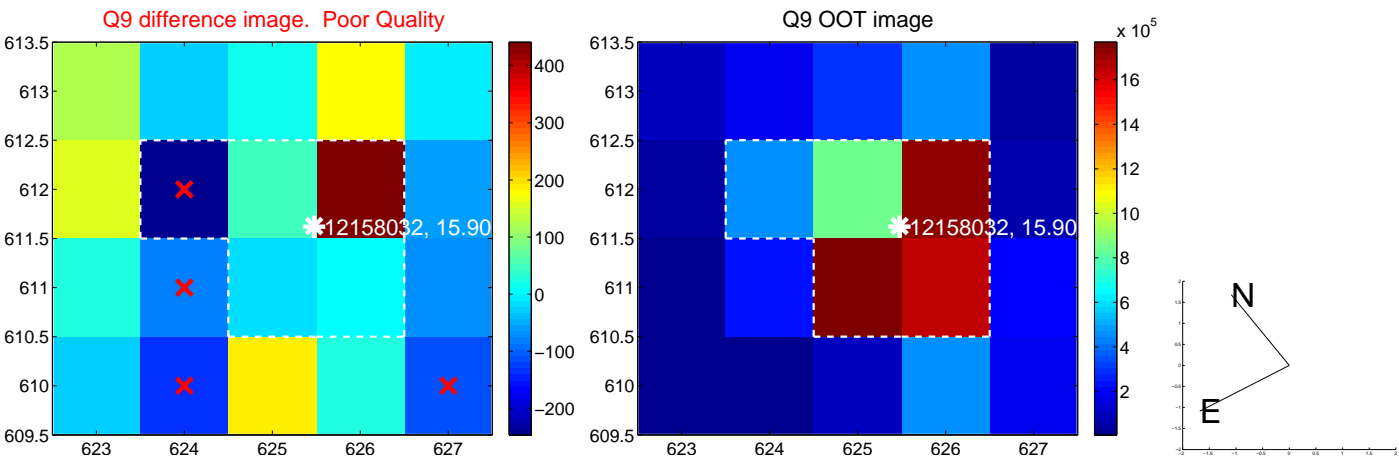
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



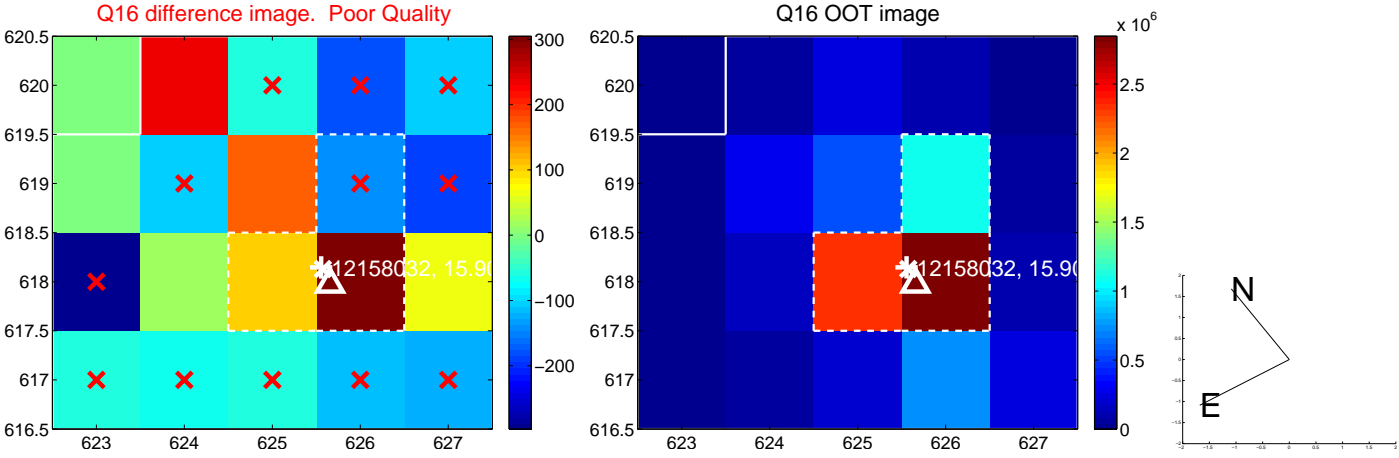
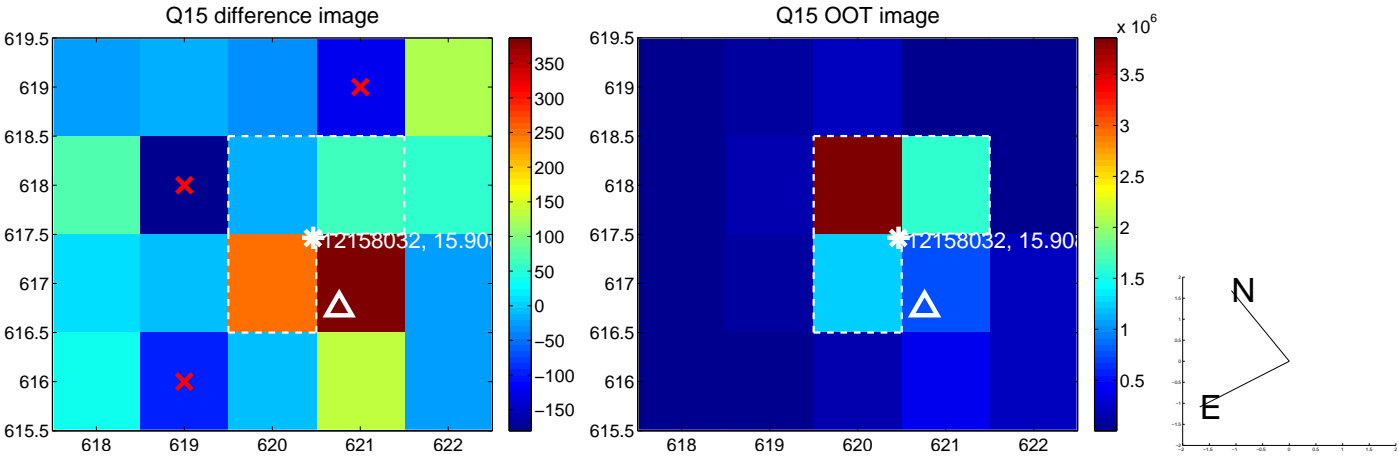
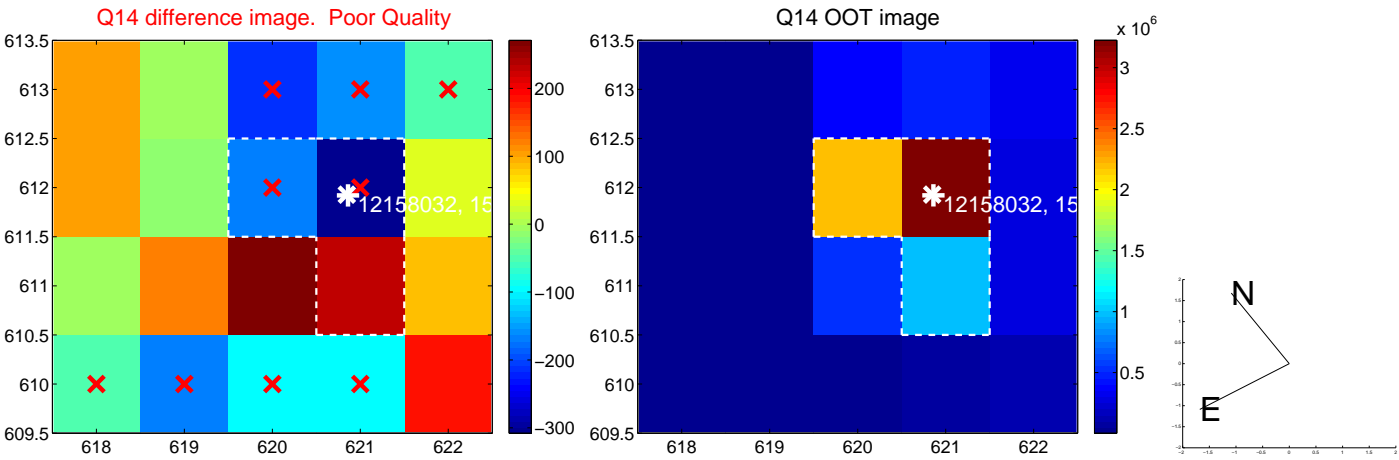
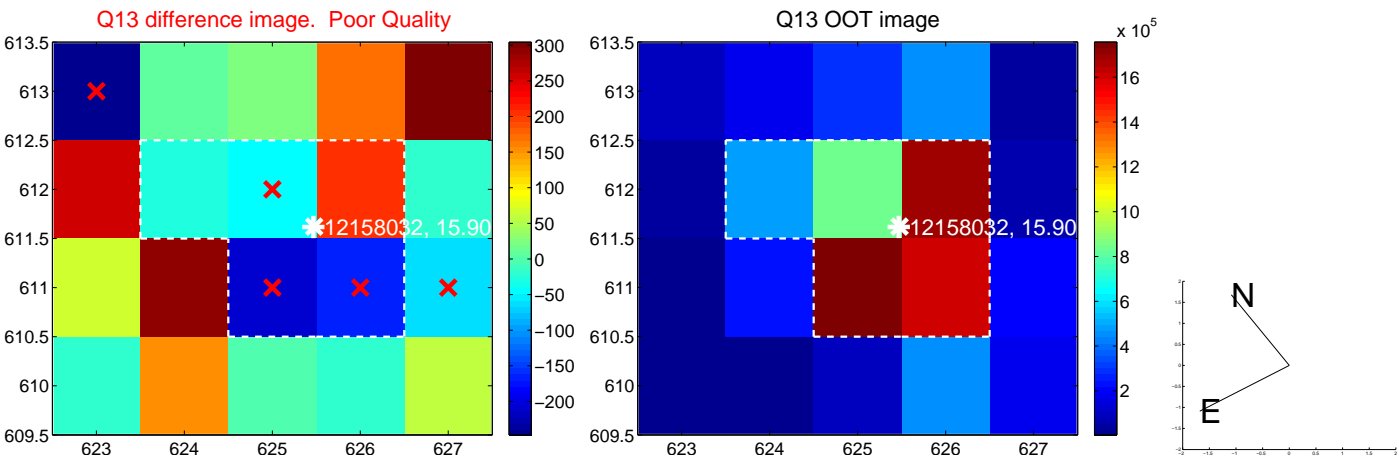
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



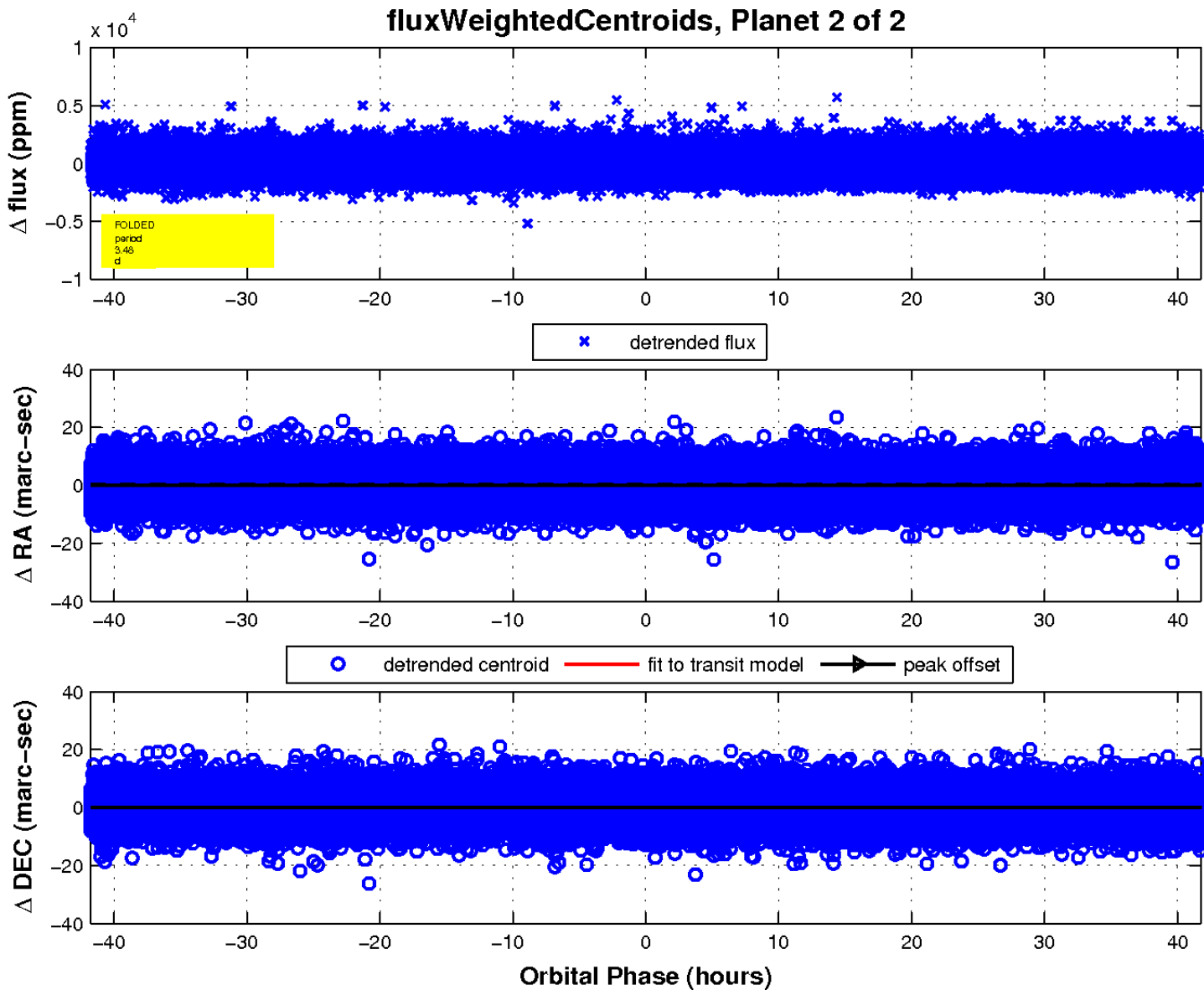
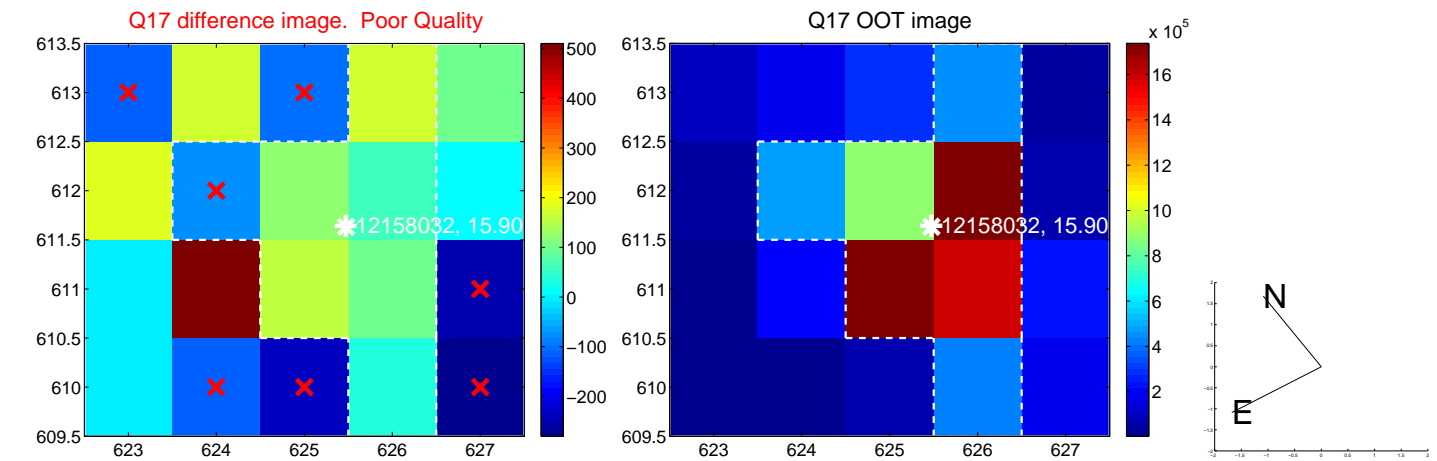
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

