

KIC 003102000

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})
003102000-01	OBS	3373.01	57.060030	164.256232	66553.4	7.438	753.3	714.1	0.86	5931	22.25	10.13
003102000-02	OBS	No	57.059903	168.766026	3583.8	7.768	46.7	45.9	0.86	5931	5.62	10.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003102000-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
003102000-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

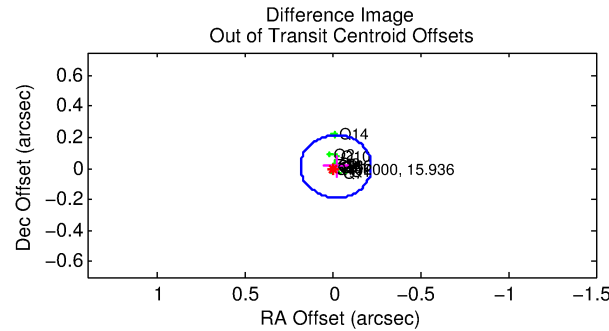
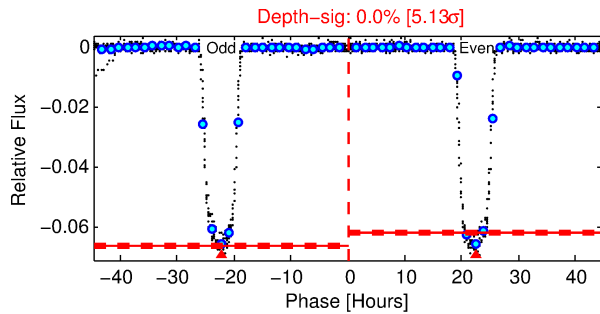
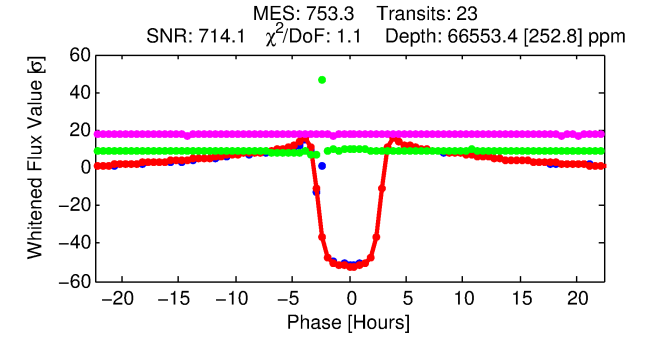
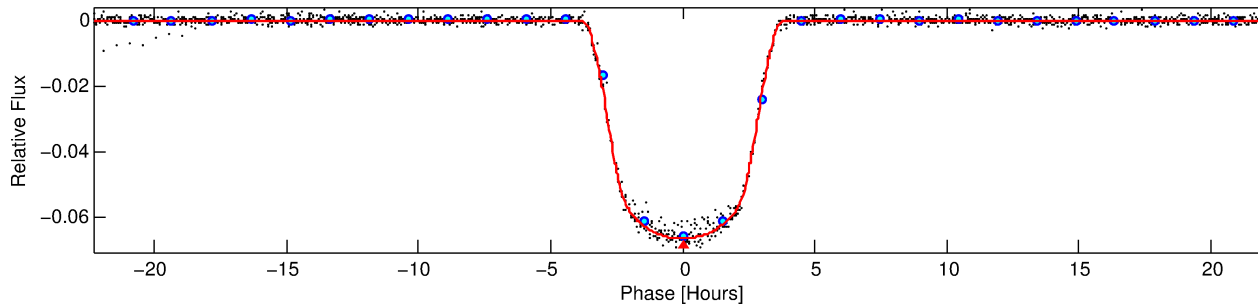
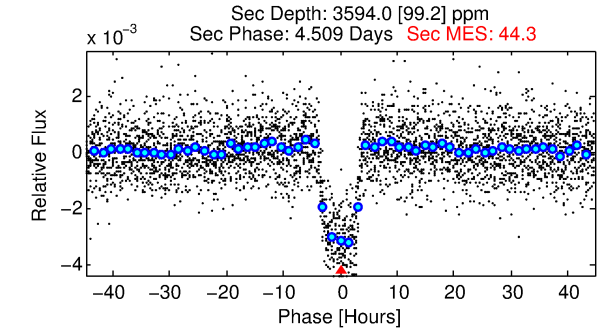
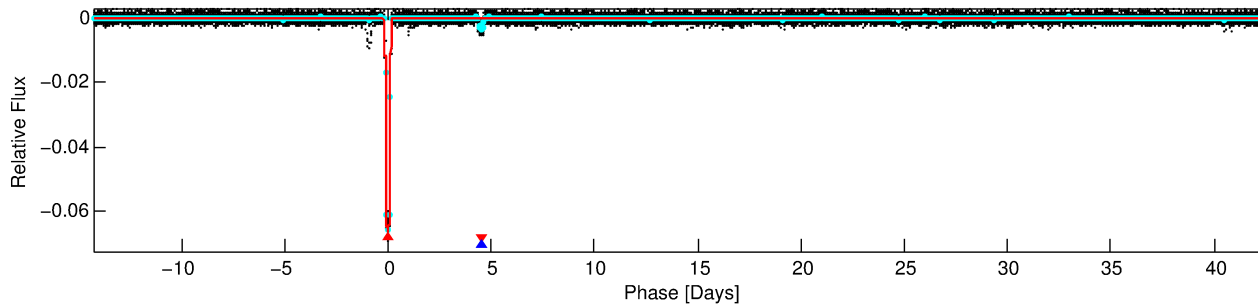
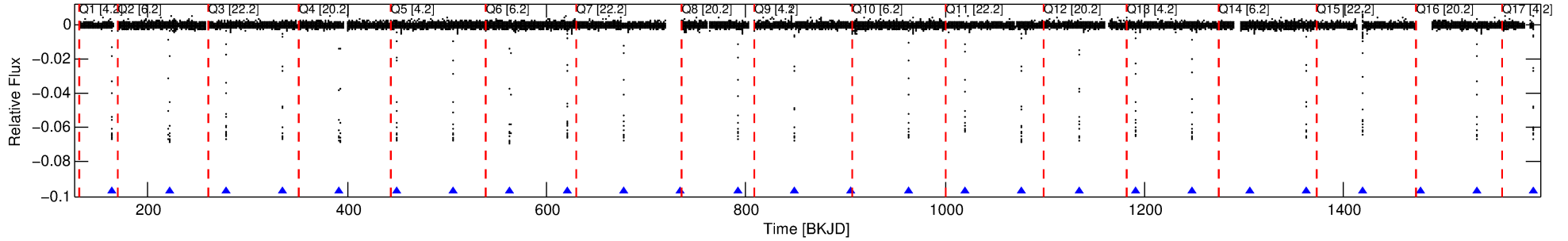
Ephemeris Match Information For 003102000-01

No Significant Match Found

DV One-Page Summary

KIC: 3102000 Candidate: 1 of 2 Period: 57.060 d
KOI: K03373.01 Corr: 0.991

Kp: 15.94 R*: 0.86 Rs Teff: 5931.0 K Logg: 4.54 Fe/H: -0.280



DV Fit Results:

Period = 57.06003 [0.00003] d
Epoch = 164.2562 [0.0004] BKJD
Rp/R* = 0.2362 [0.0008]
a/R* = 72.45 [0.71]
b = 0.00 [3.05]
Seff = 10.13 [3.25]
Teq = 455 [36] K
Rp = 22.25 [5.59] Re
a = 0.2855 [0.0593] AU
Ag = 325.61 [97.26] [3.34σ]
Teffp = 2988 [92] K [25.56σ]

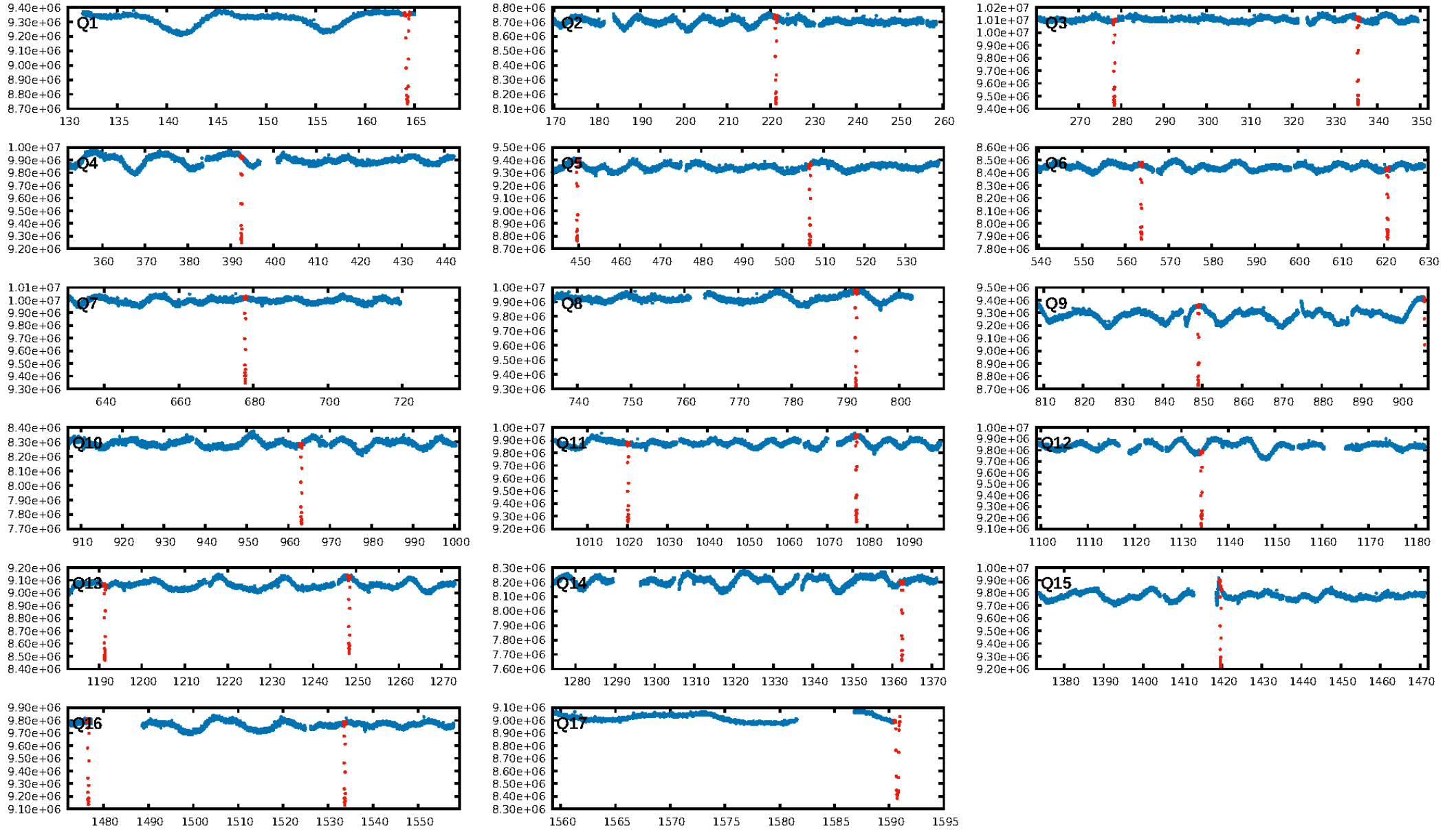
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [21/21]
GhostDiagnostic-chr: 3.25
Centroid-sig: 0.0%
Centroid-so: 0.276 arcsec [18.50σ]
OotOffset-rm: 0.022 arcsec [0.33σ]
KicOffset-rm: 0.147 arcsec [2.13σ]
OotOffset-st: 4/3/2/4 [13]
KicOffset-st: 4/3/2/4 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

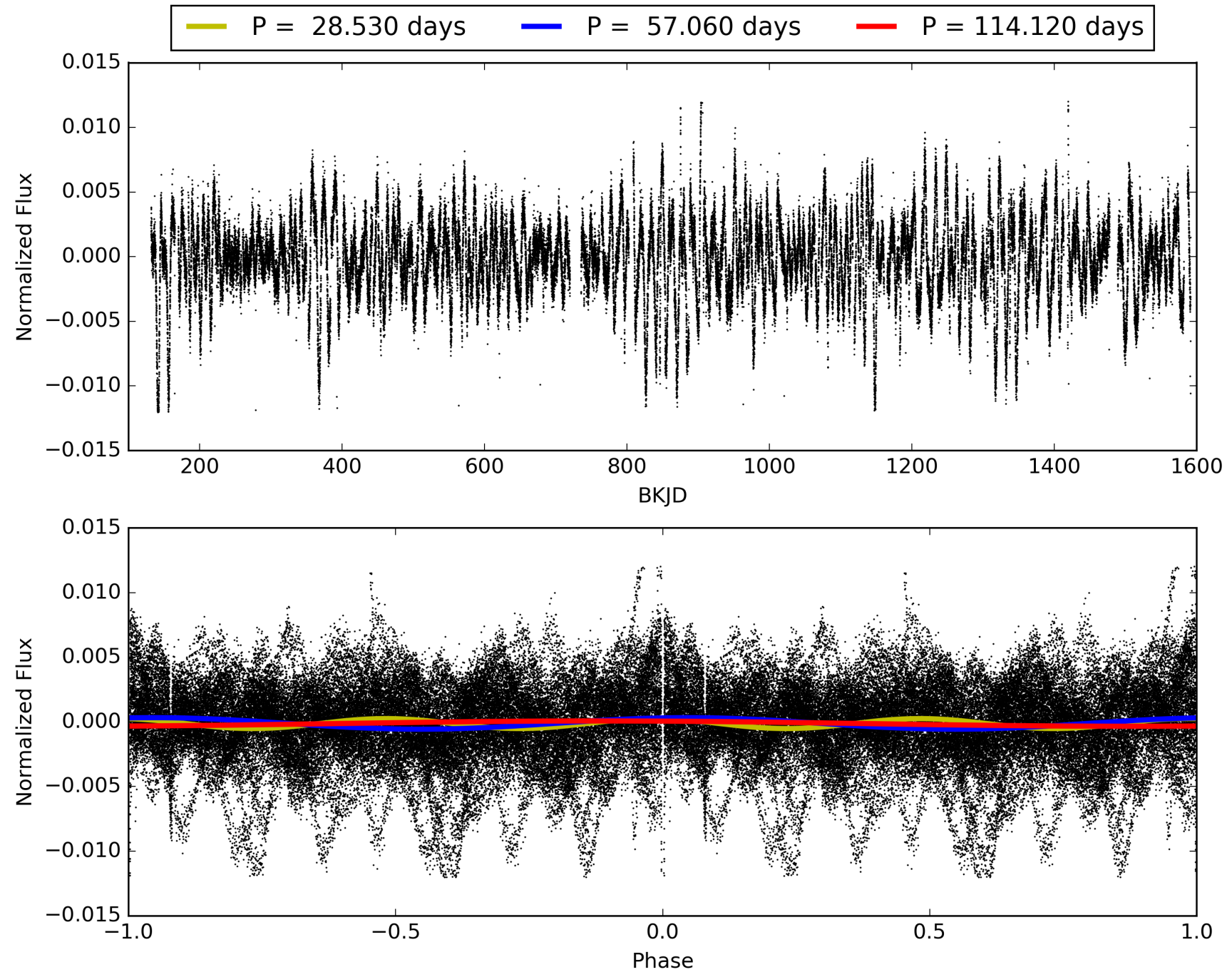
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:31:13 Z

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

TCE 003102000-01, PDC Light Curves

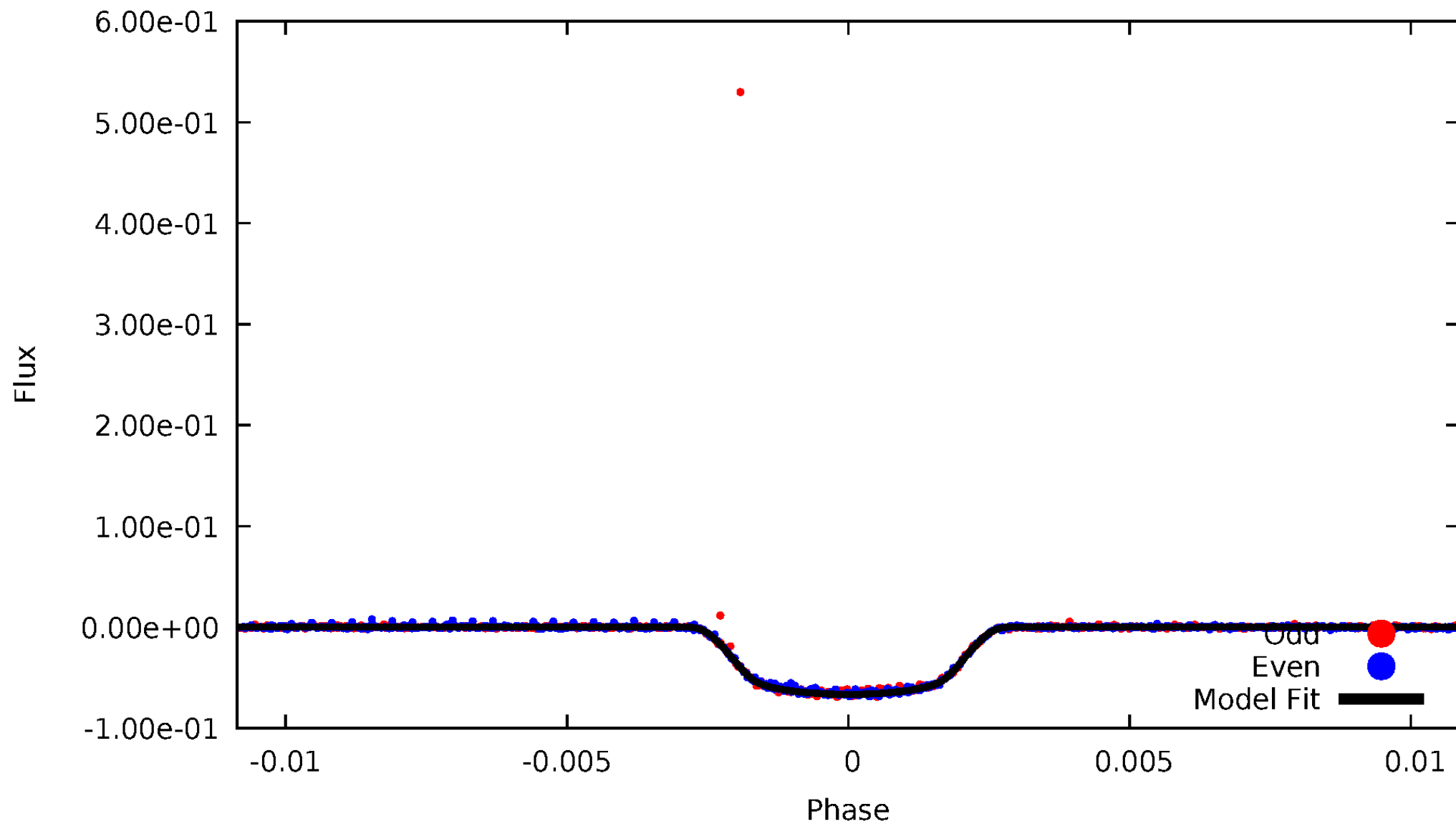


TCE 003102000-01



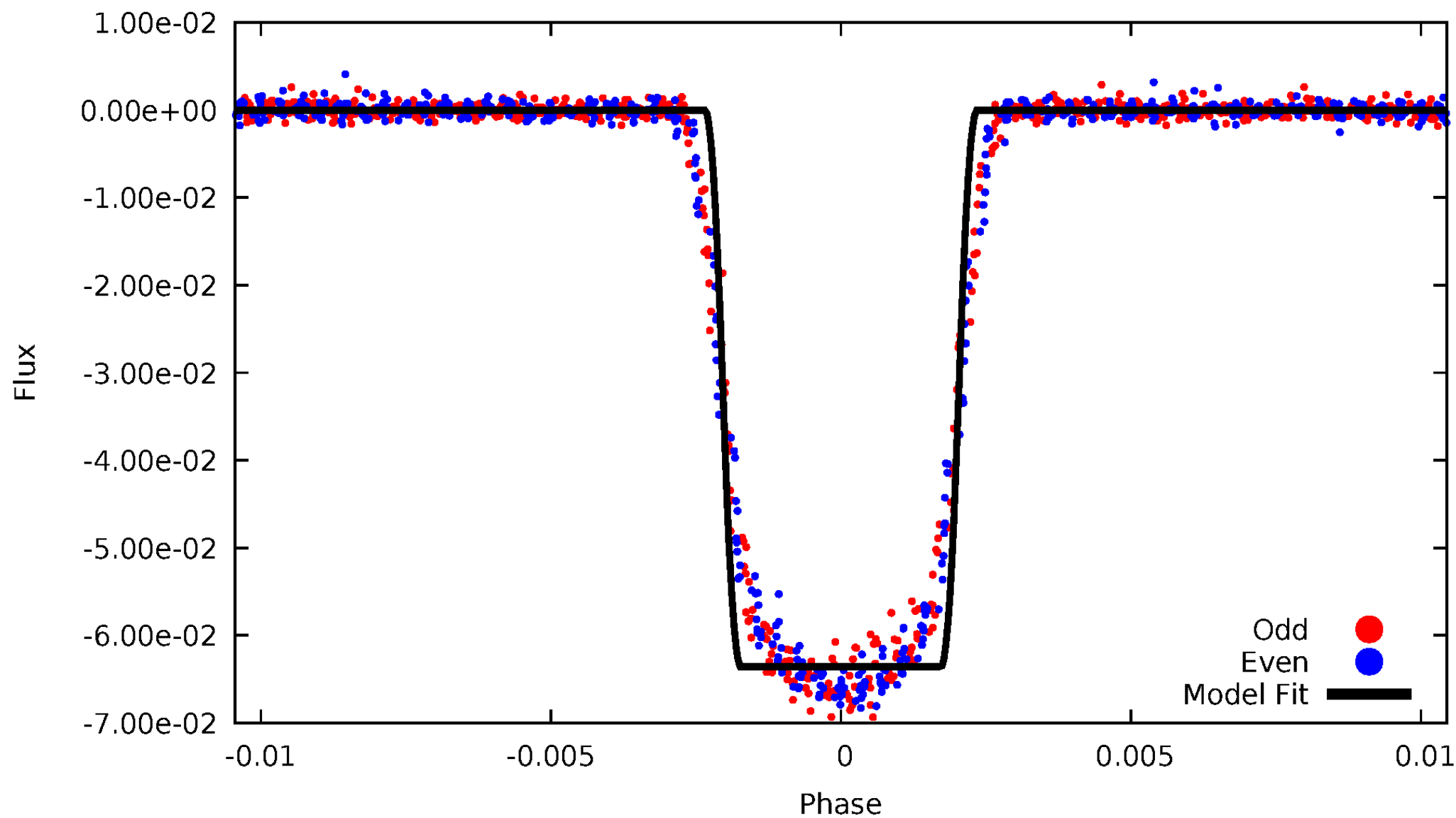
DV Odd/Even

TCE 003102000-01



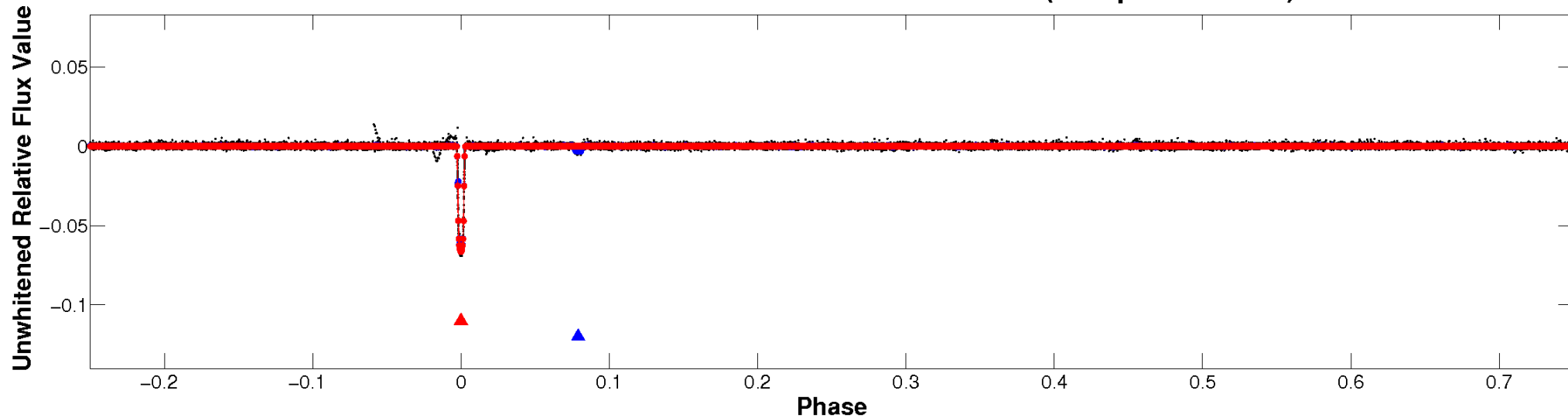
ALT Odd/Even

TCE 003102000-01

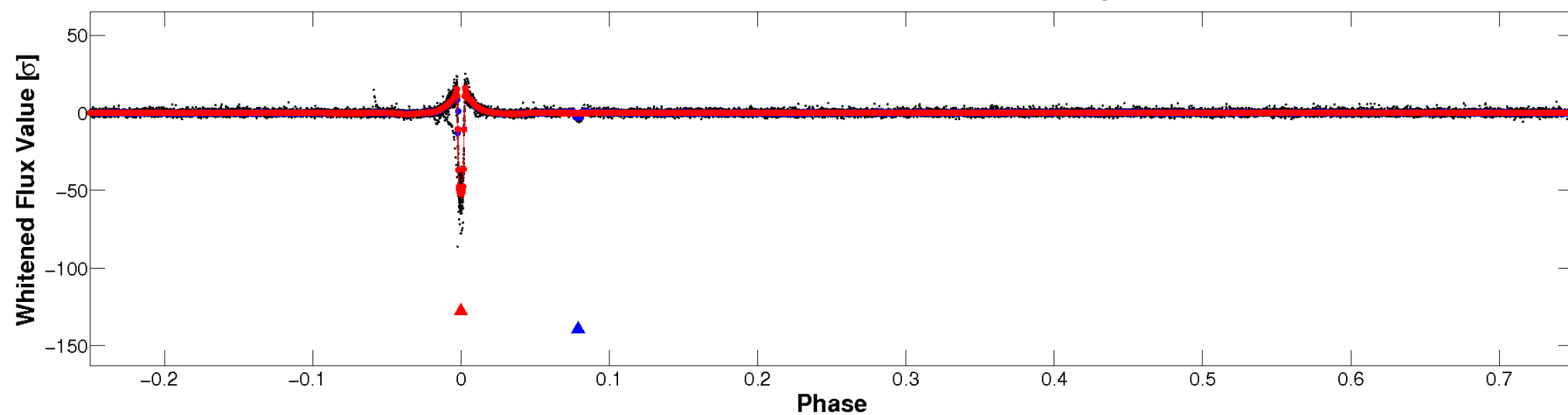


Non-Whitened Vs. Whitened Light Curve

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

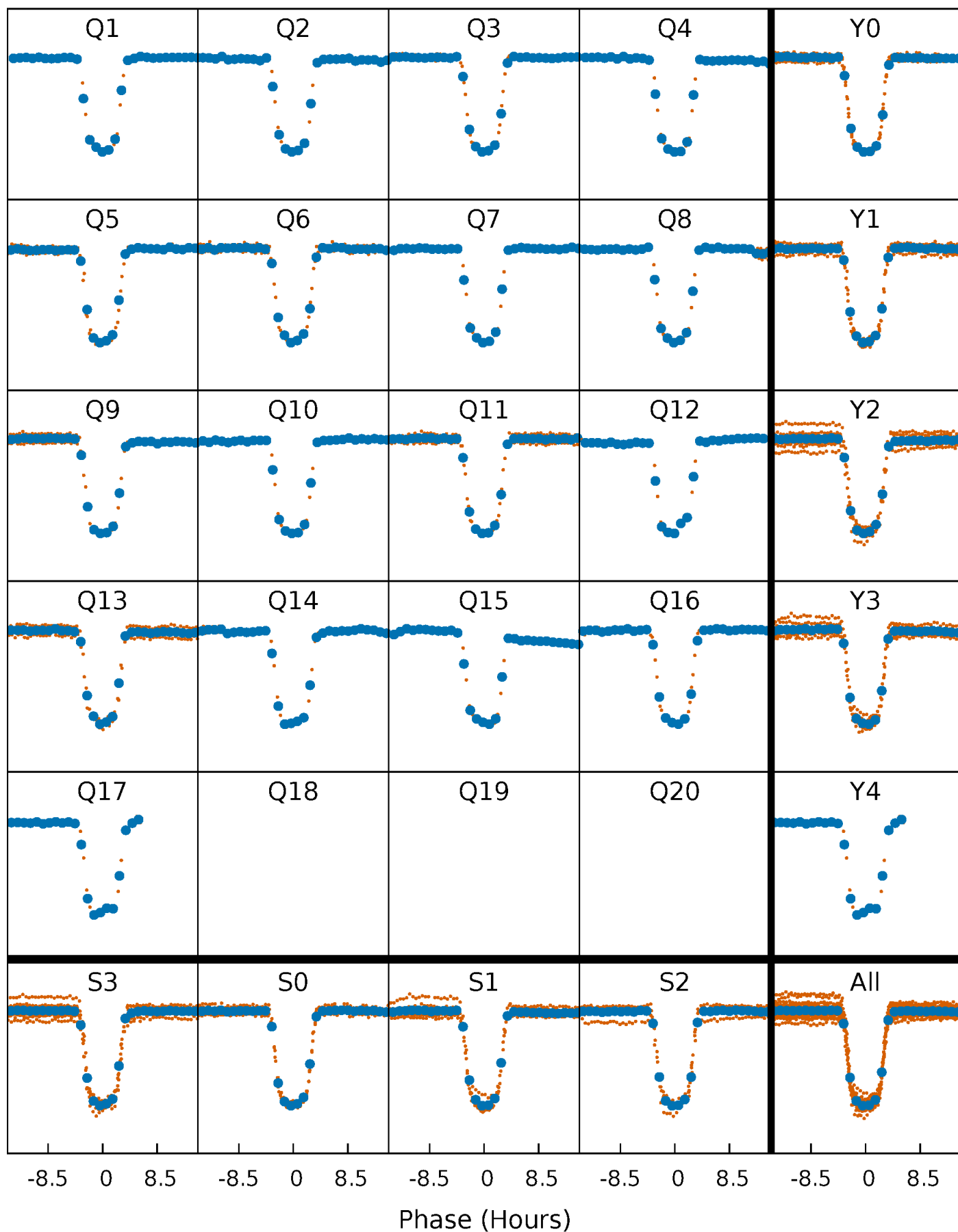


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



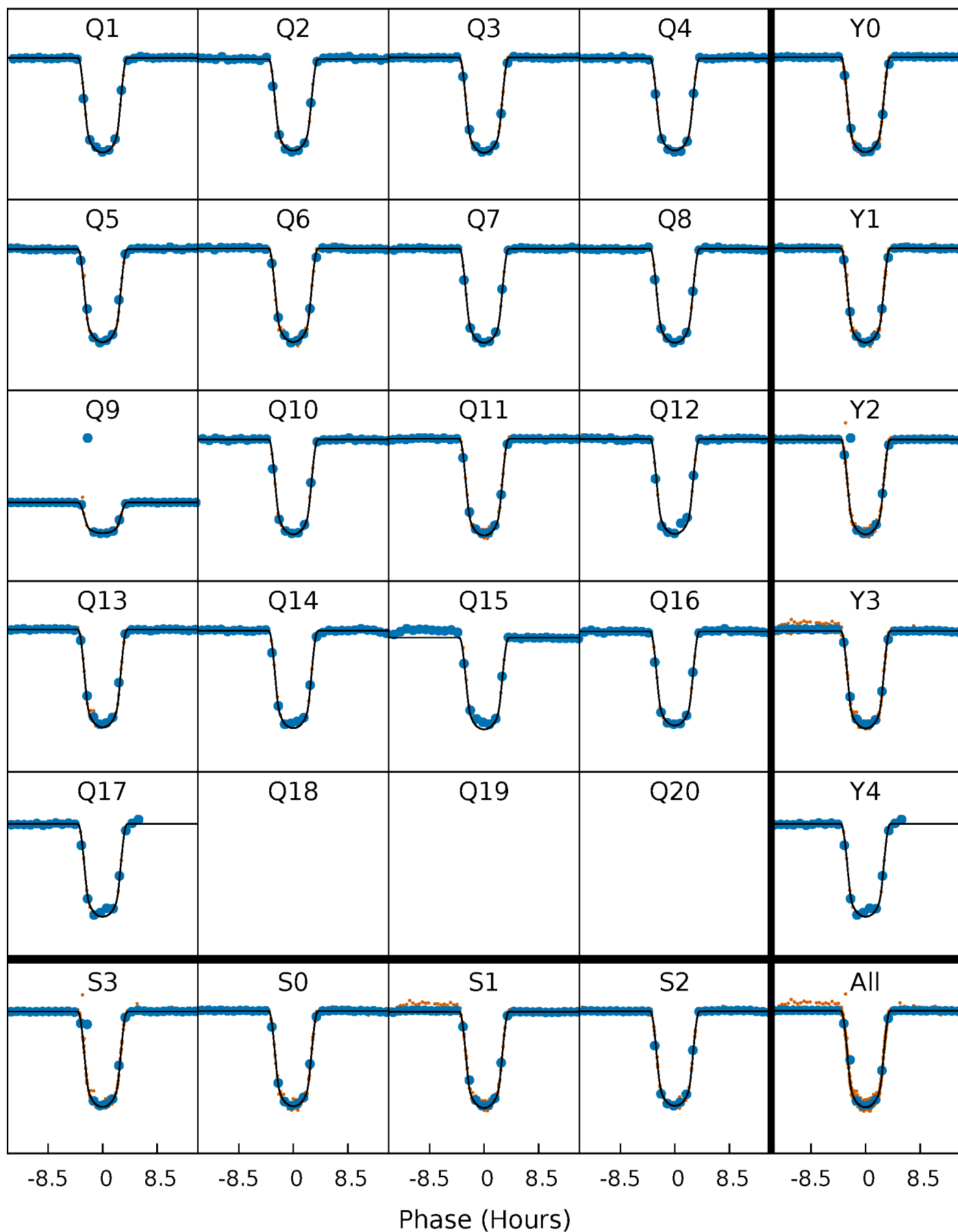
PDC Quarter-Phased Transit Curves

TCE 003102000-01 P= 57.060030 Days $T_0=164.256232$ (BKJD)



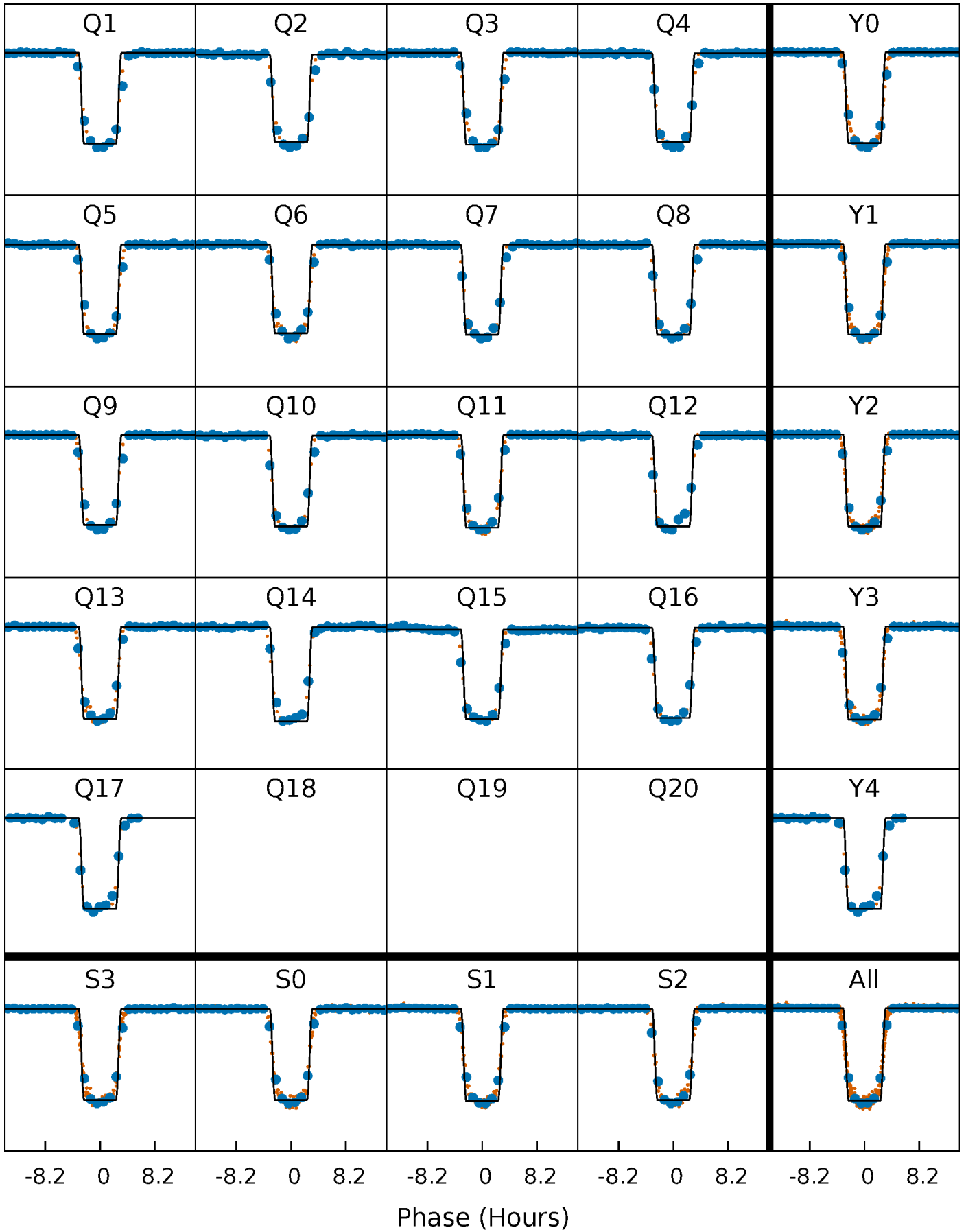
DV Quarter-Phased Transit Curves

TCE 003102000-01 P= 57.060030 Days $T_0=164.256232$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

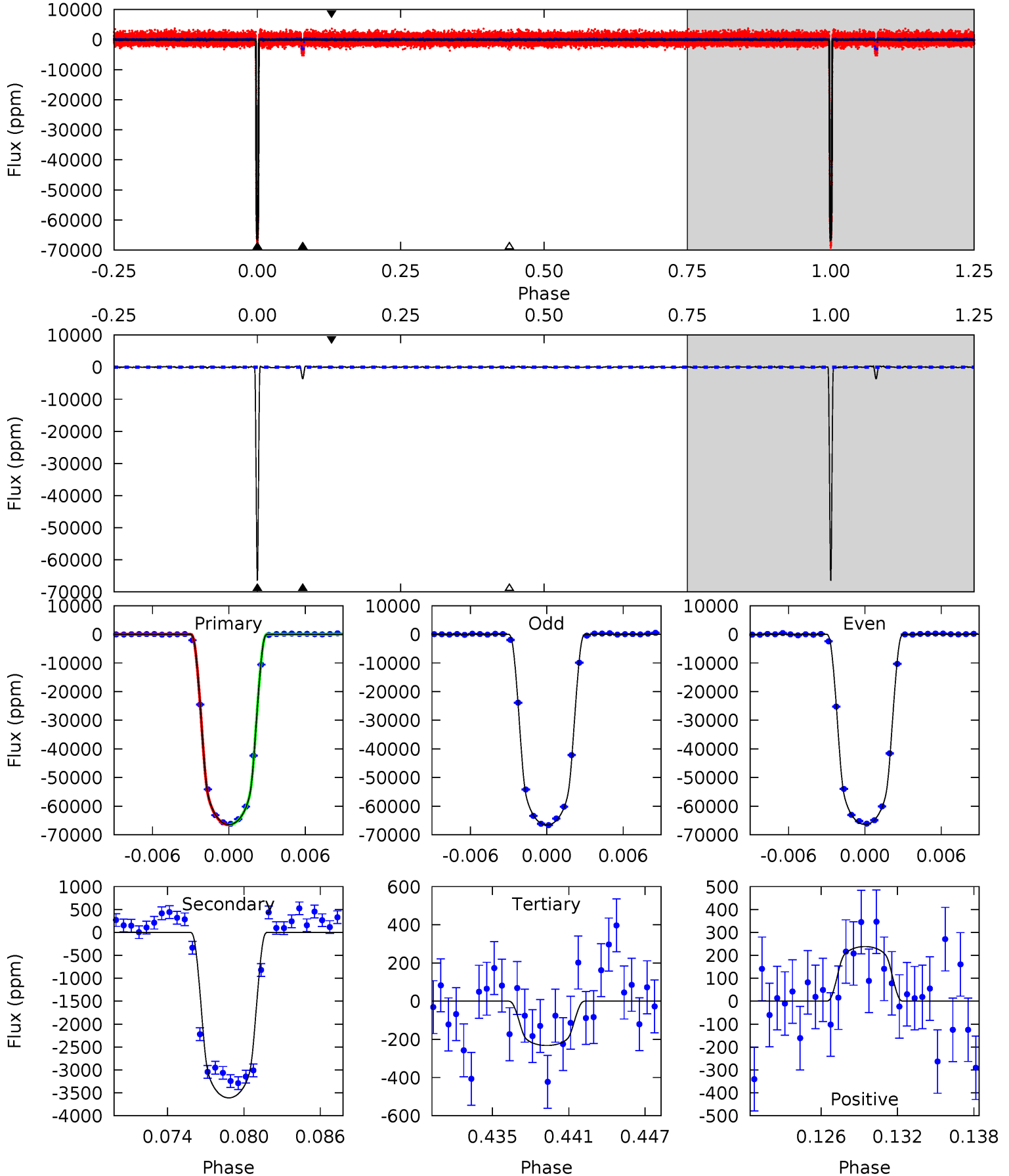
TCE 003102000-01 P= 57.060486 Days $T_0=164.250803$ (BKJD)



DV Model-Shift Uniqueness Test

003102000-01, P = 57.060030 Days, E = 107.196202 Days

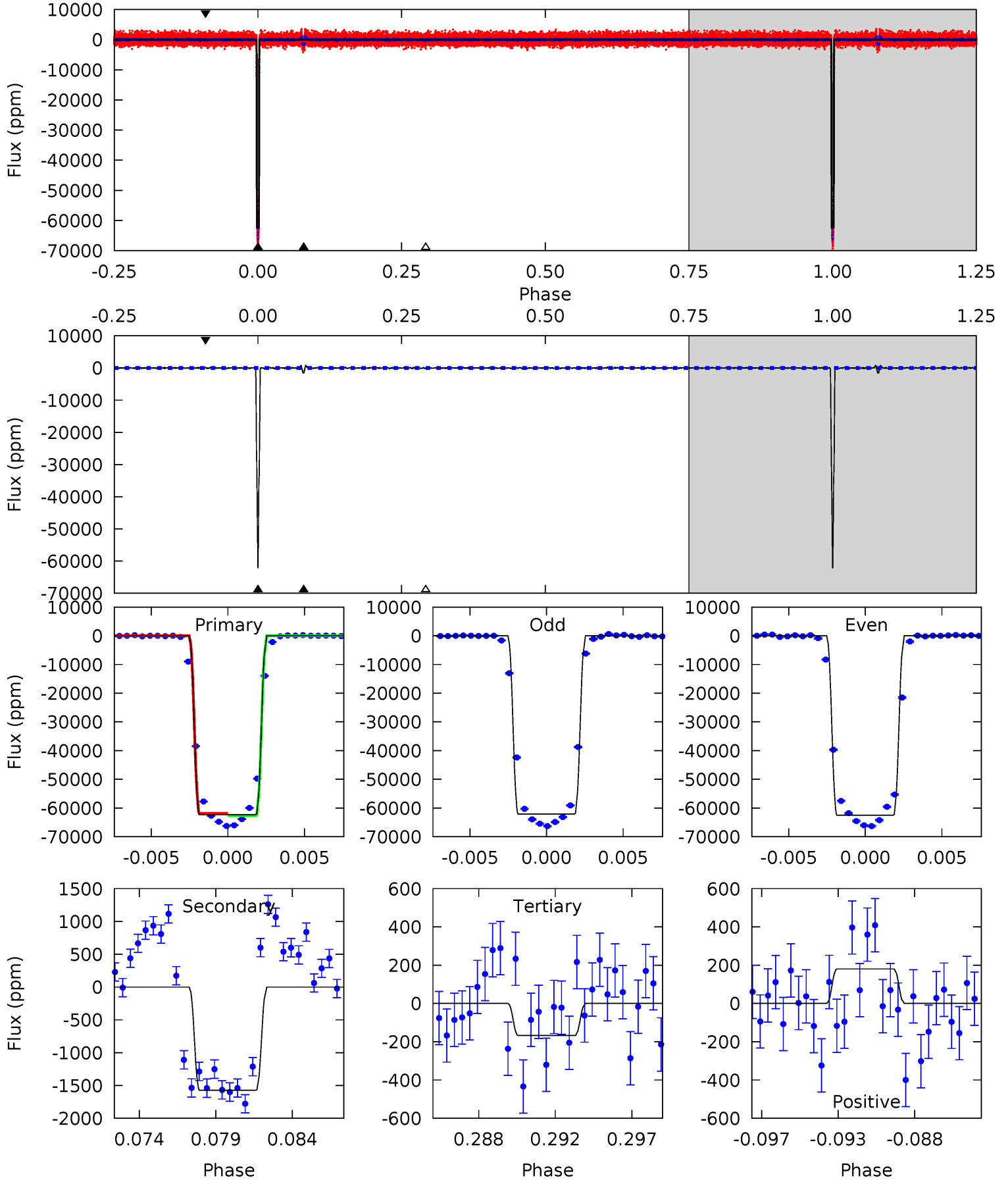
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1424	77.3	4.97	5.11	5.13	2.76	1.67	1419	1419	72.4	72.2	2.11	0.46	0.00	0.84



Alt Model-Shift Uniqueness Test

003102000-01, P = 57.060486 Days, E = 107.190317 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1144	28.9	3.08	3.31	5.17	2.83	1.01	1141	1141	25.8	25.6	3.89	0.99	0.01	6.75



Stellar Parameters For KIC 003102000

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5931^{+161}_{-178}	$4.545^{+0.040}_{-0.160}$	$-0.280^{+0.300}_{-0.300}$	$0.863^{+0.217}_{-0.081}$	$0.953^{+0.098}_{-0.119}$	$2.087^{+0.449}_{-0.923}$
	+3%/-3%	+1%/-4%	+107%/-107%	+25%/-9%	+10%/-12%	+22%/-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 003102000-01 / KOI 3373.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3609 ± 47	$22.67^{+2.93}_{-1.47}$	647^{+35}_{-29}	3480^{+66}_{-67}	309^{+37}_{-58}
Alt.	-1573 ± 54	$24.30^{+3.03}_{-1.61}$	648^{+37}_{-27}	3016^{+51}_{-57}	117^{+15}_{-22}

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 $A_{obs} \gg 1.0$

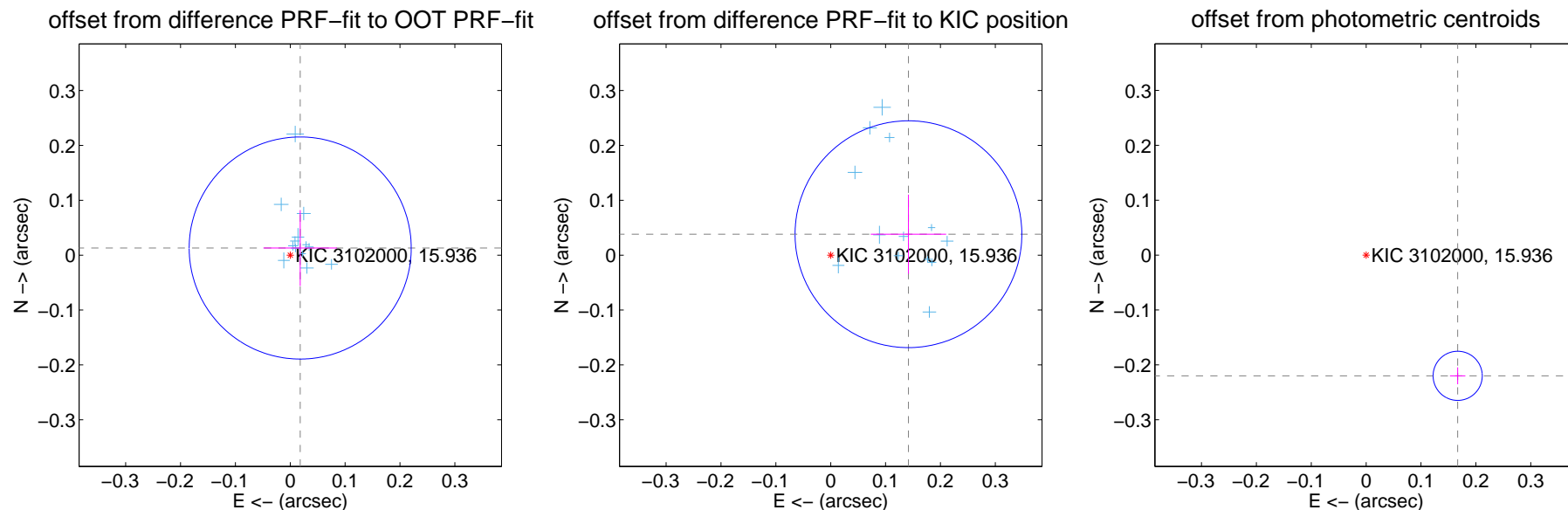
DV Centroid Data

Supplemental centroid analysis for 003102000-01. Kepler magnitude: 15.94. Transit SNR 714.11

There are 13 quarters with good PRF difference image offsets

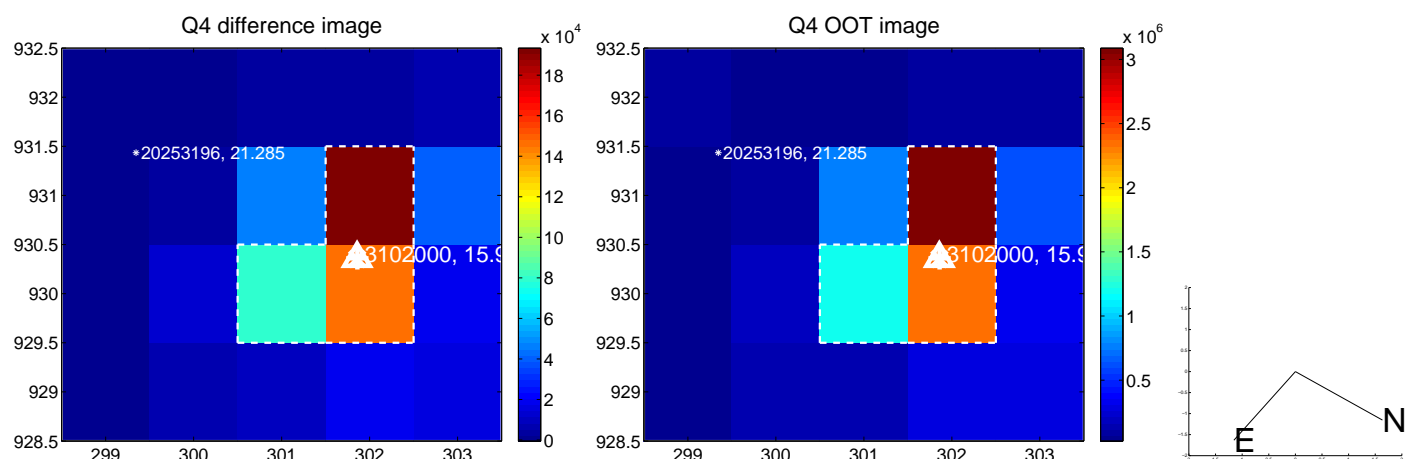
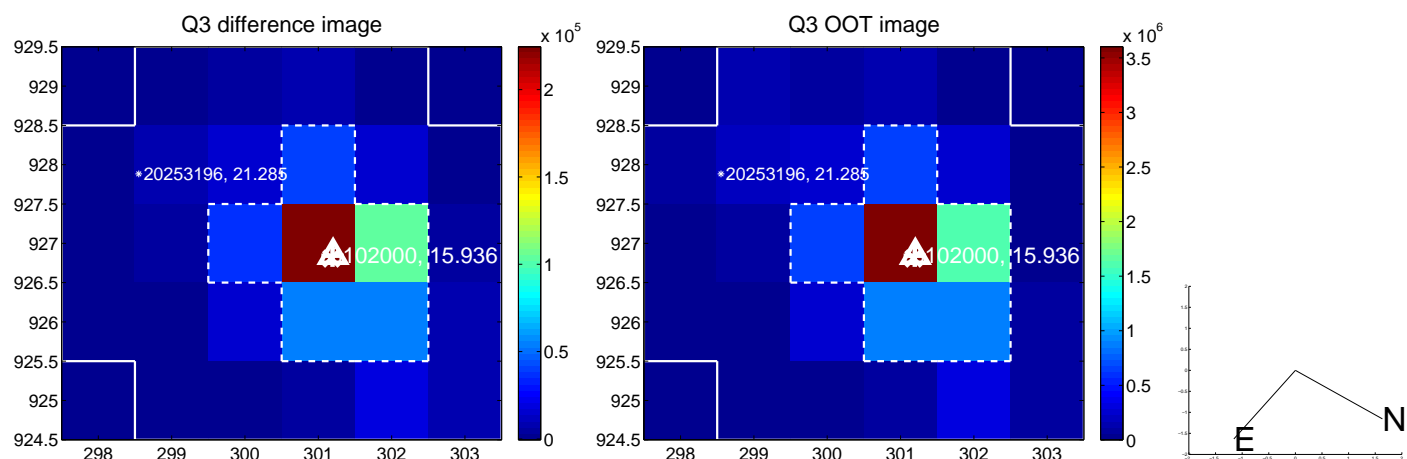
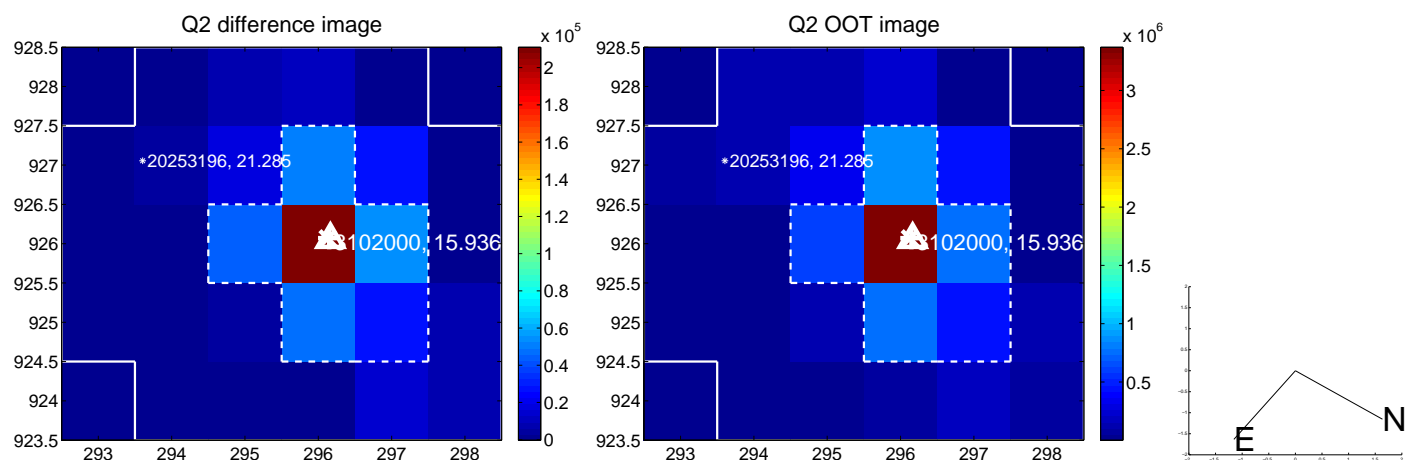
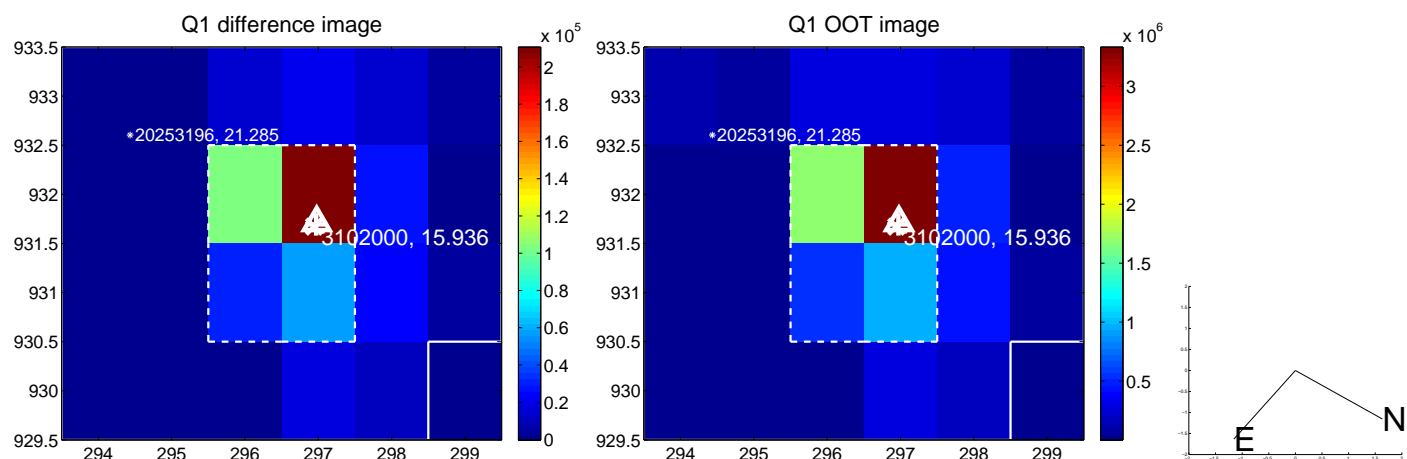
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.022 ± 0.067	0.33	-0.018 ± 0.067	0.013 ± 0.069
PRF-fit source offset from KIC position	0.147 ± 0.069	2.13	-0.142 ± 0.069	0.038 ± 0.072
photometric centroid source offset	0.28 ± 0.01	18.50	-0.17 ± 0.01	-0.22 ± 0.02

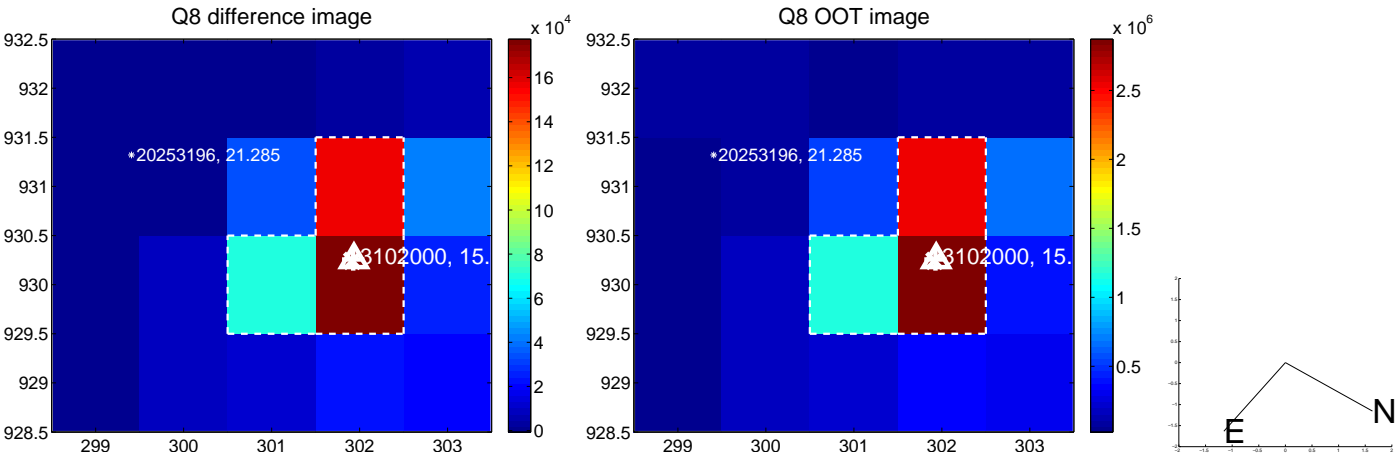
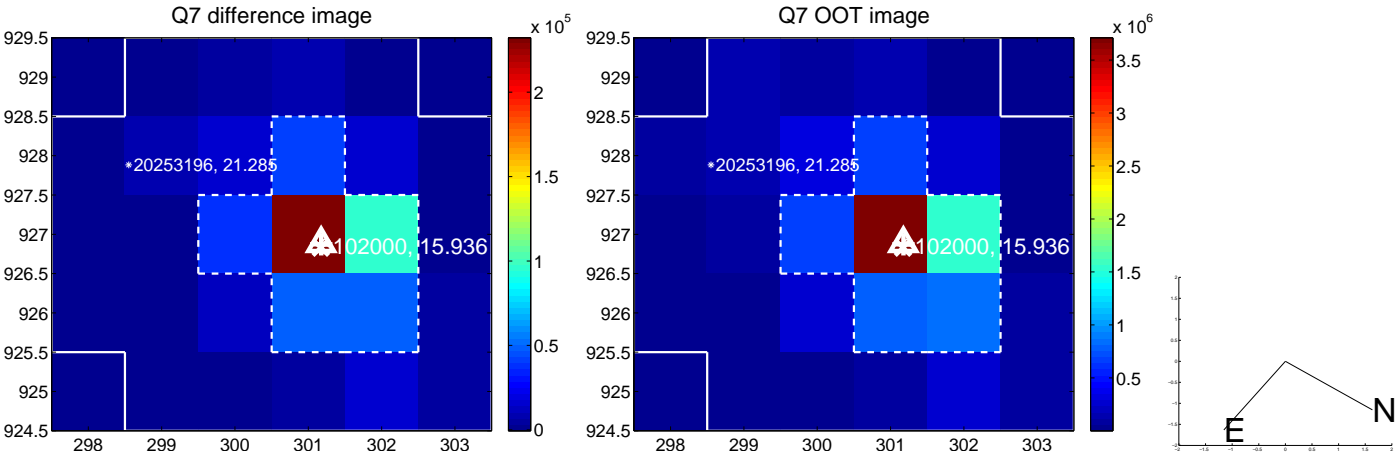
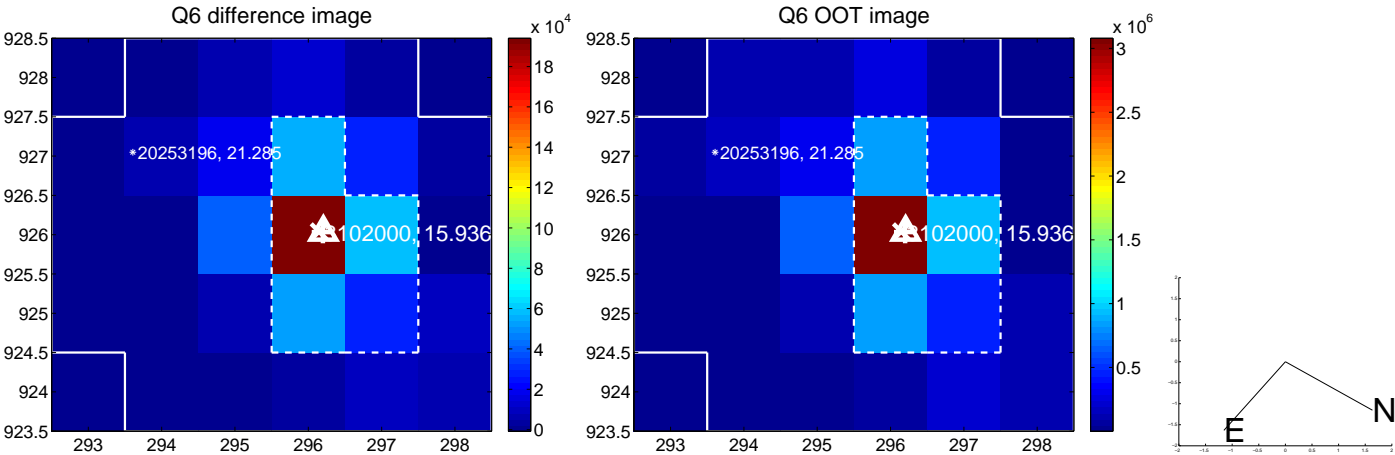
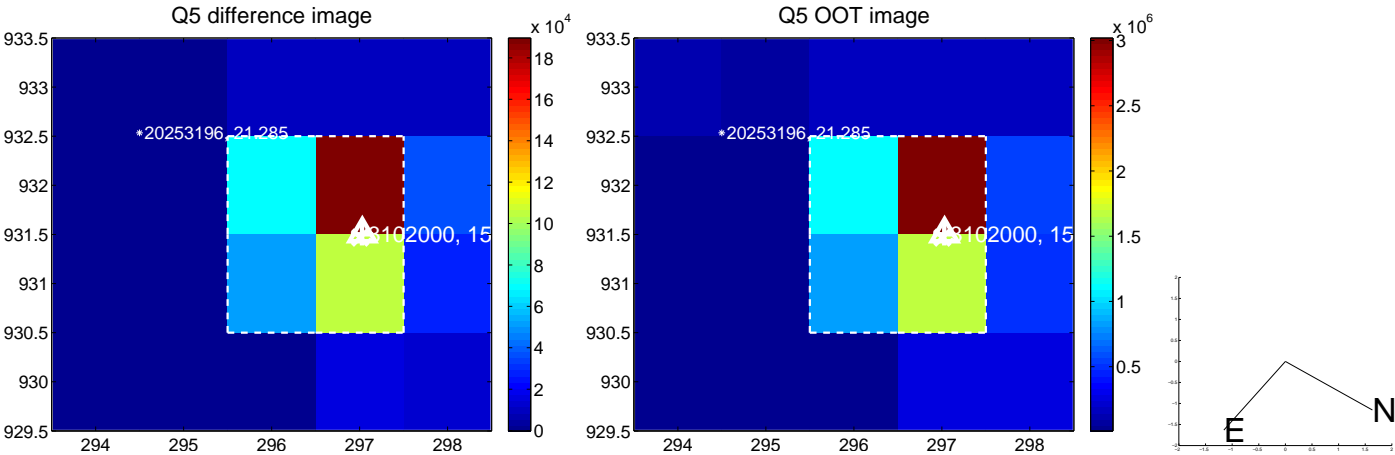


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

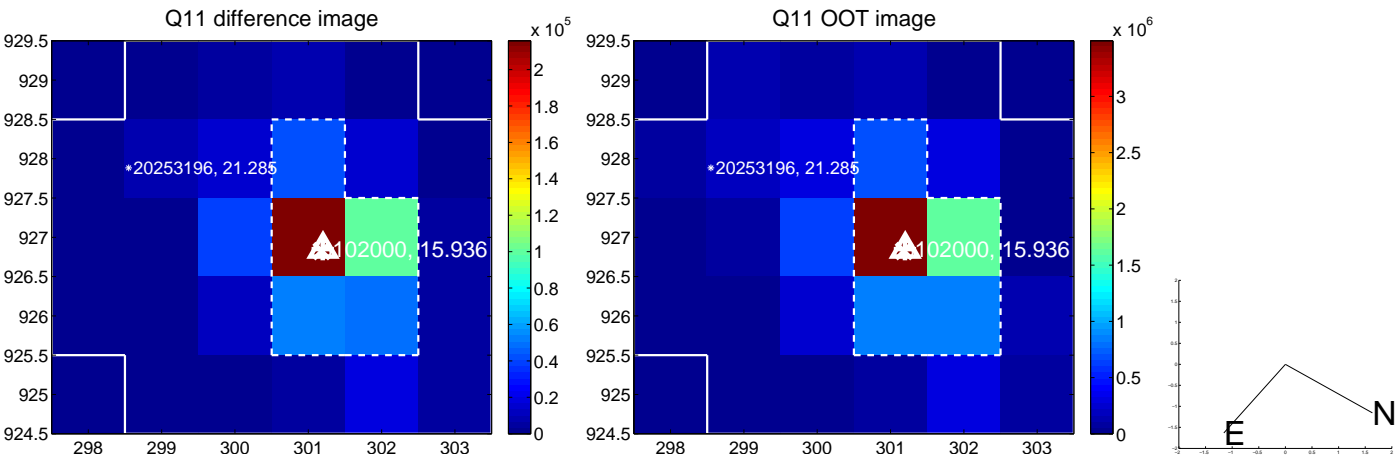
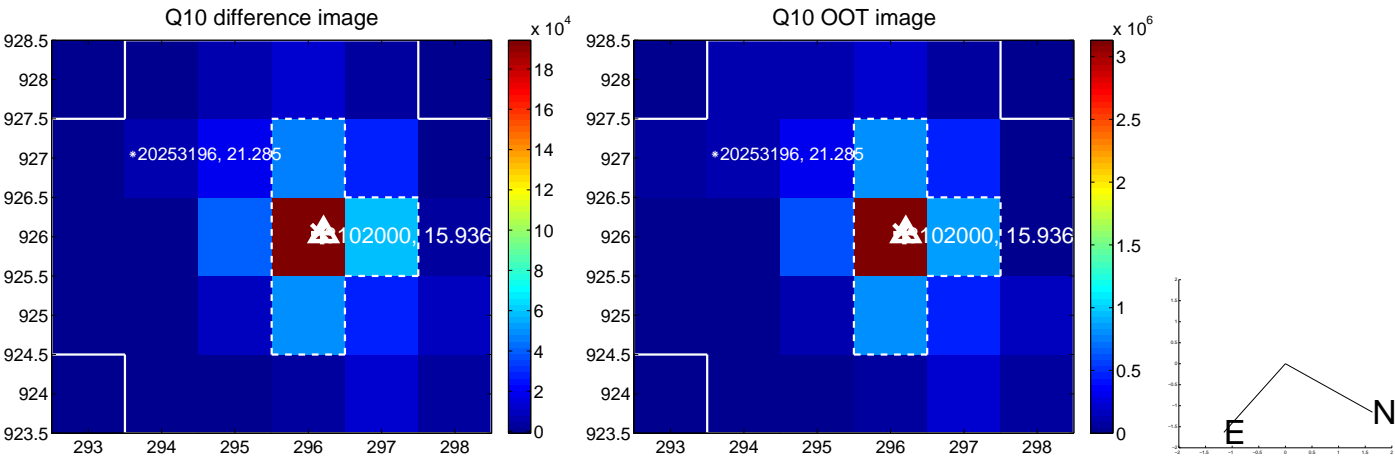
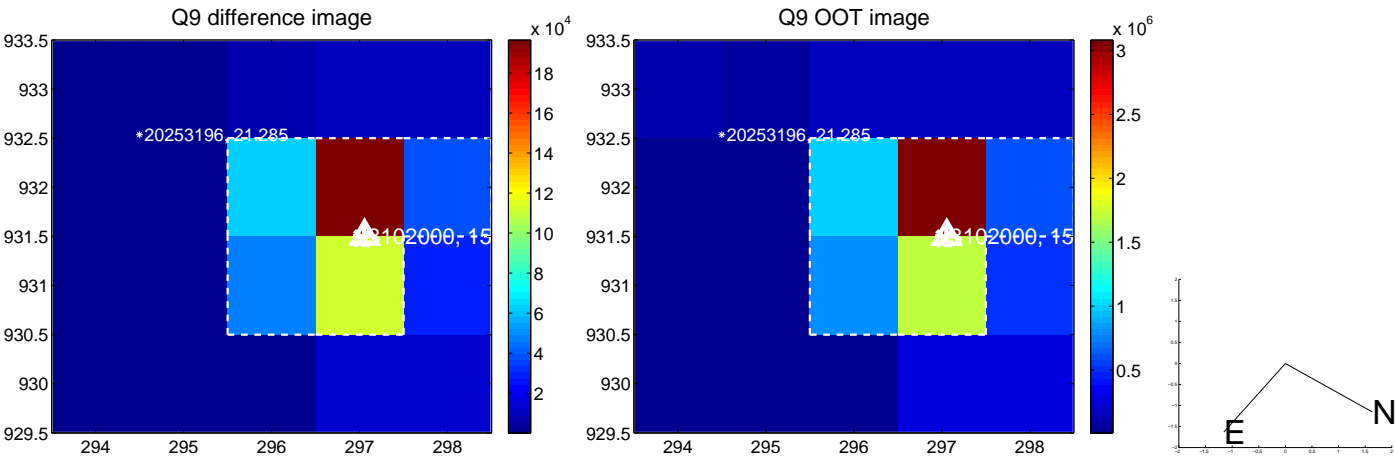
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



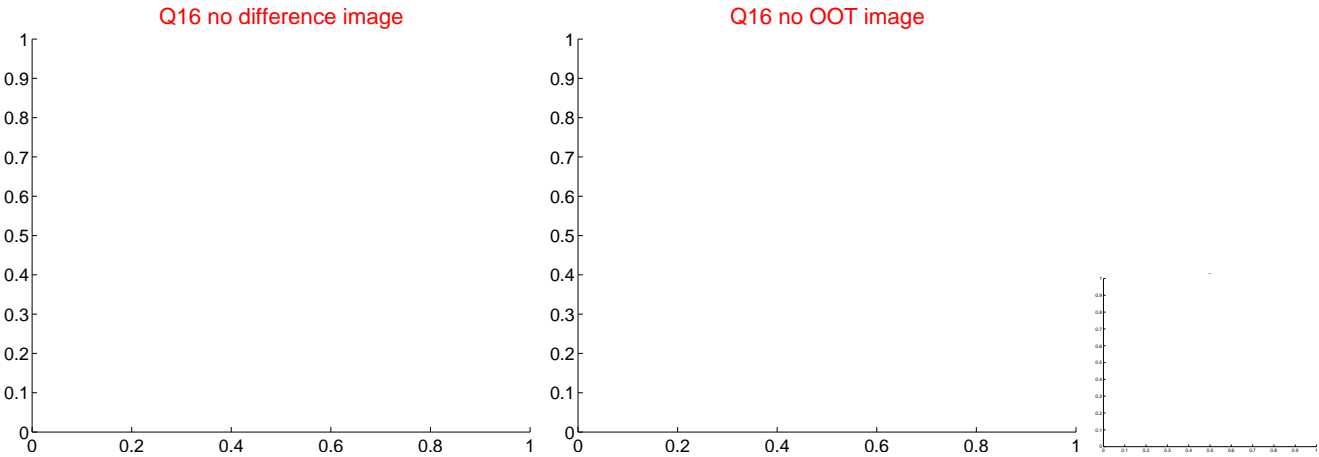
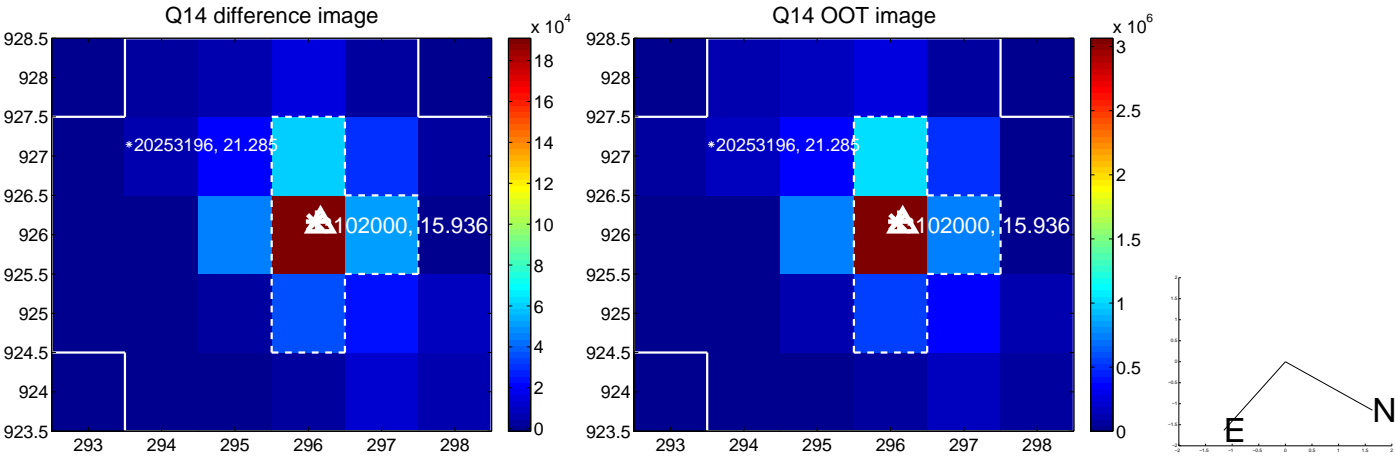
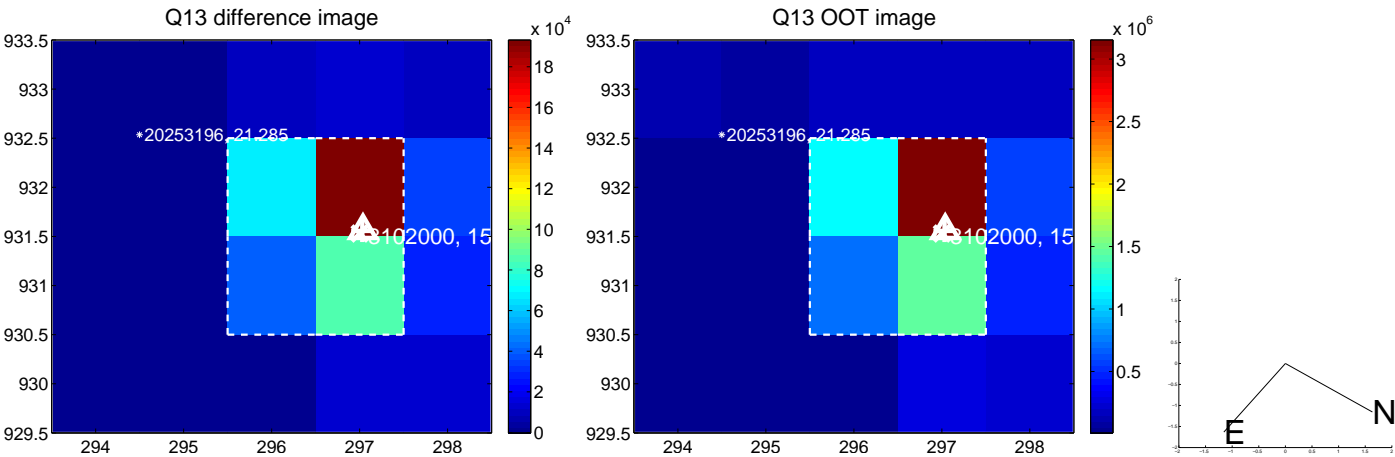
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



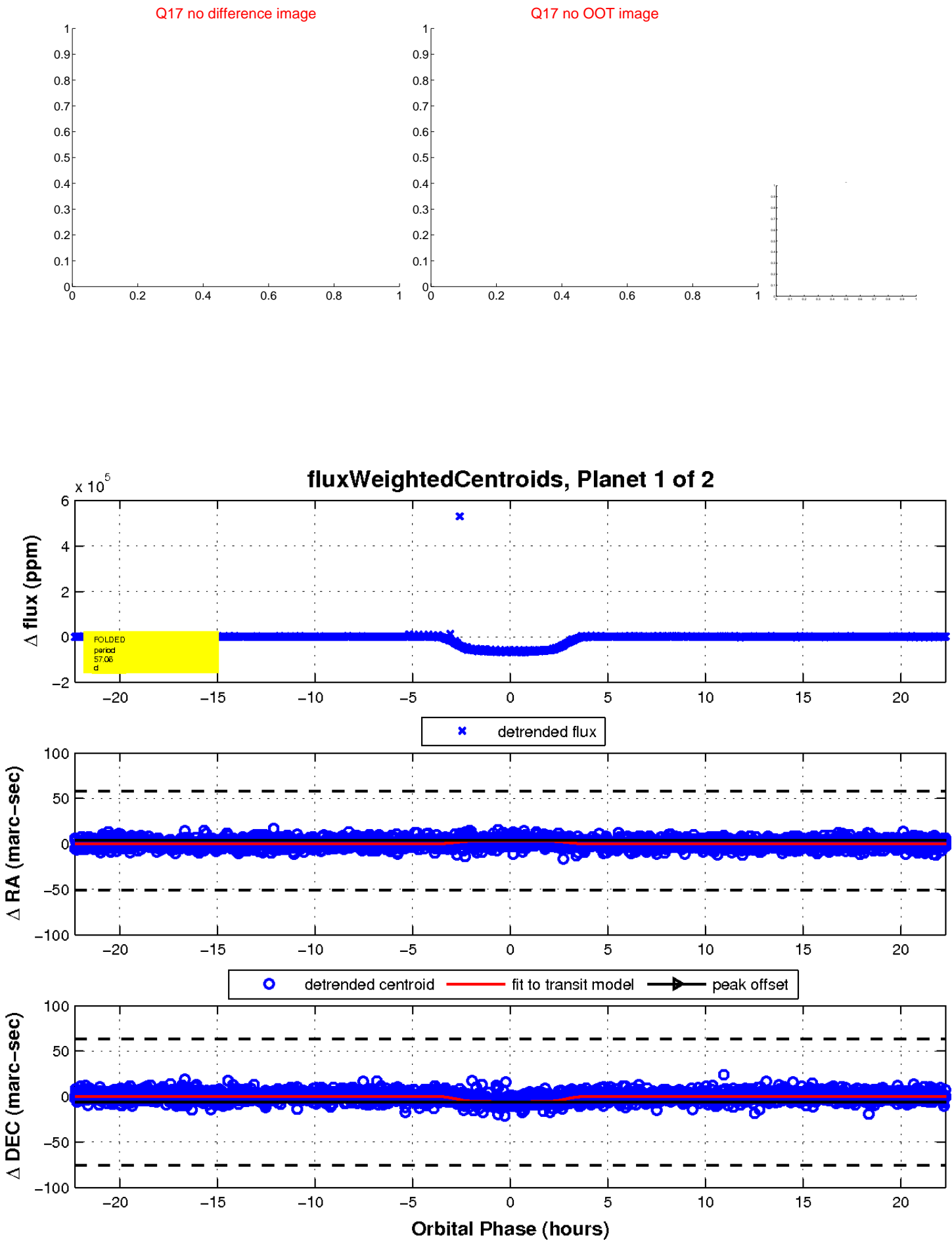
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

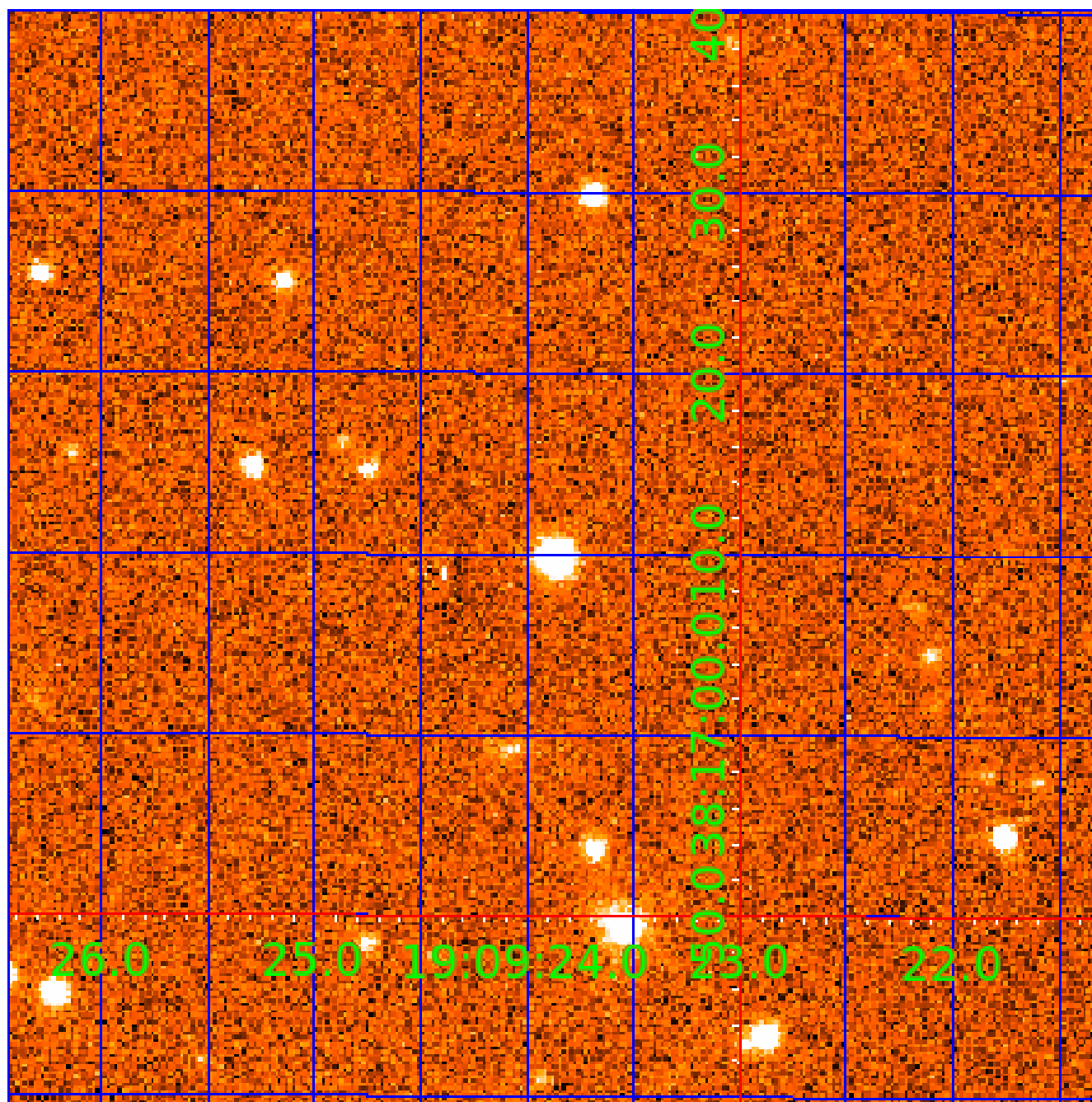


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003102000

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})
003102000-01	OBS	3373.01	57.060030	164.256232	66553.4	7.438	753.3	714.1	0.86	5931	22.25	10.13
003102000-02	OBS	No	57.059903	168.766026	3583.8	7.768	46.7	45.9	0.86	5931	5.62	10.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003102000-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
003102000-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

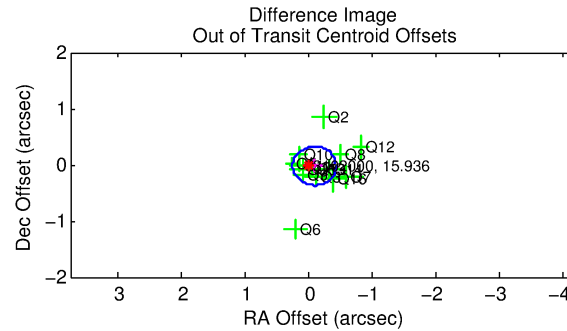
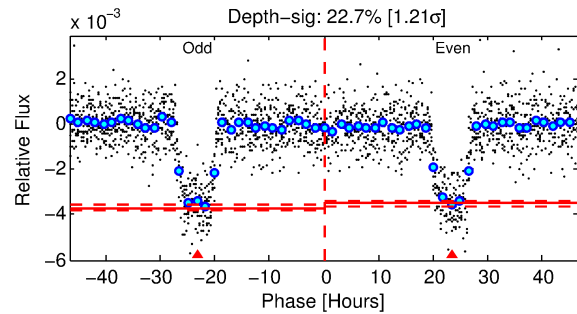
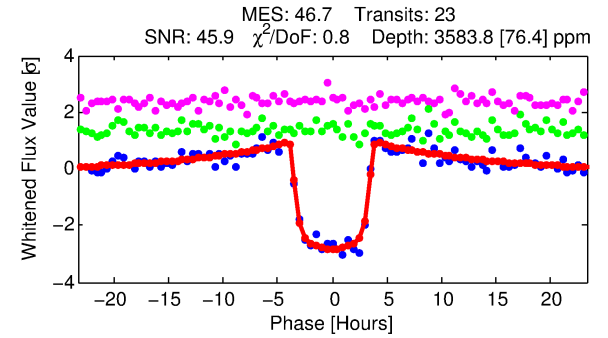
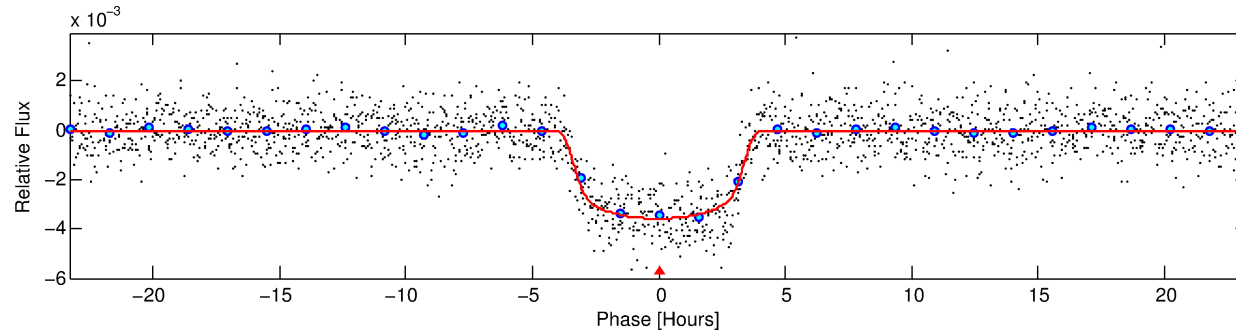
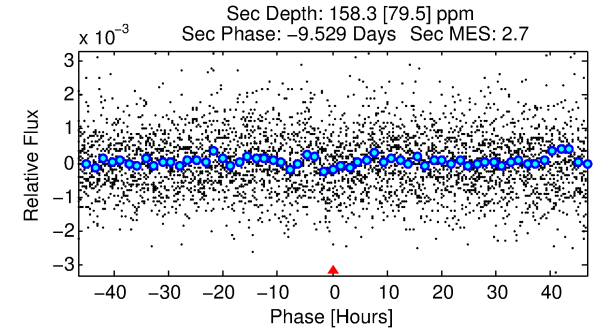
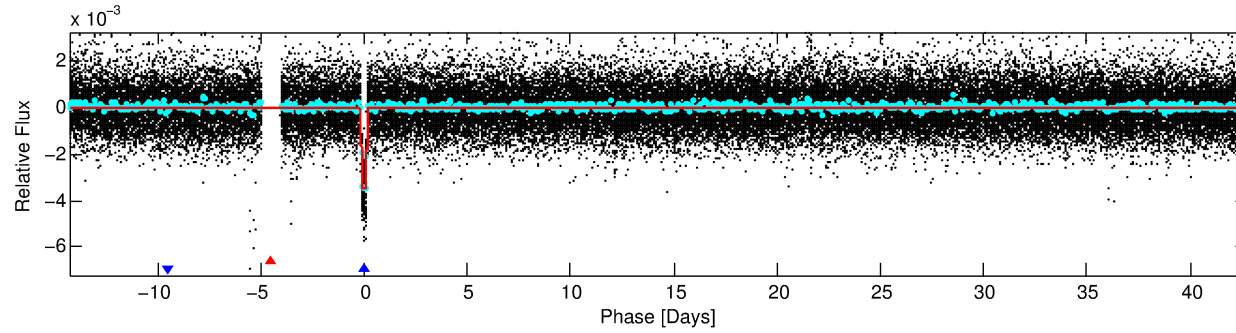
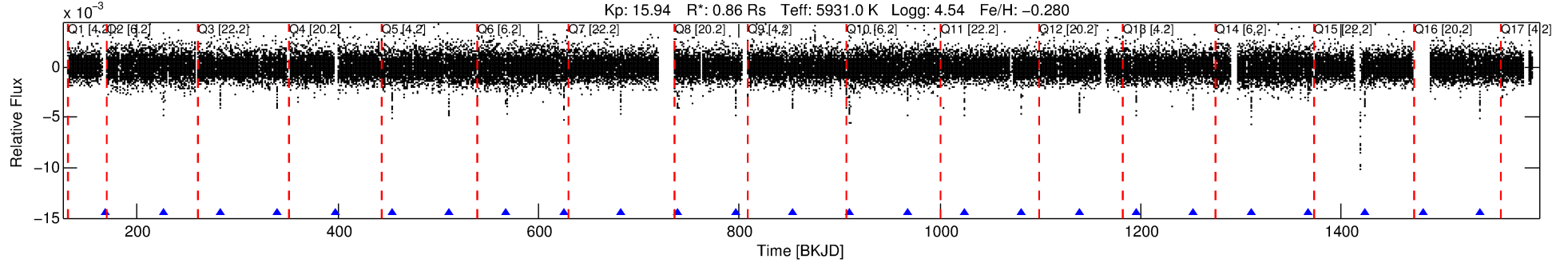
Ephemeris Match Information For 003102000-02

No Significant Match Found

DV One-Page Summary

KIC: 3102000 Candidate: 2 of 2 Period: 57.060 d

KOI: K03373 Corr: No Ephemeris Match



DV Fit Results:

Period = 57.05990 [0.00021] d
Epoch = 168.7660 [0.0030] BKJD
Rp/R* = 0.0597 [0.0015]
a/R* = 41.68 [4.24]
b = 0.76 [0.06]
Seff = 10.13 [3.25]
Teq = 455 [36] K
Rp = 5.62 [1.42] Re
a = 0.2855 [0.0593] AU
Ag = 224.51 [131.48] [1.70σ]
Teffp = 2723 [353] K [6.39σ]

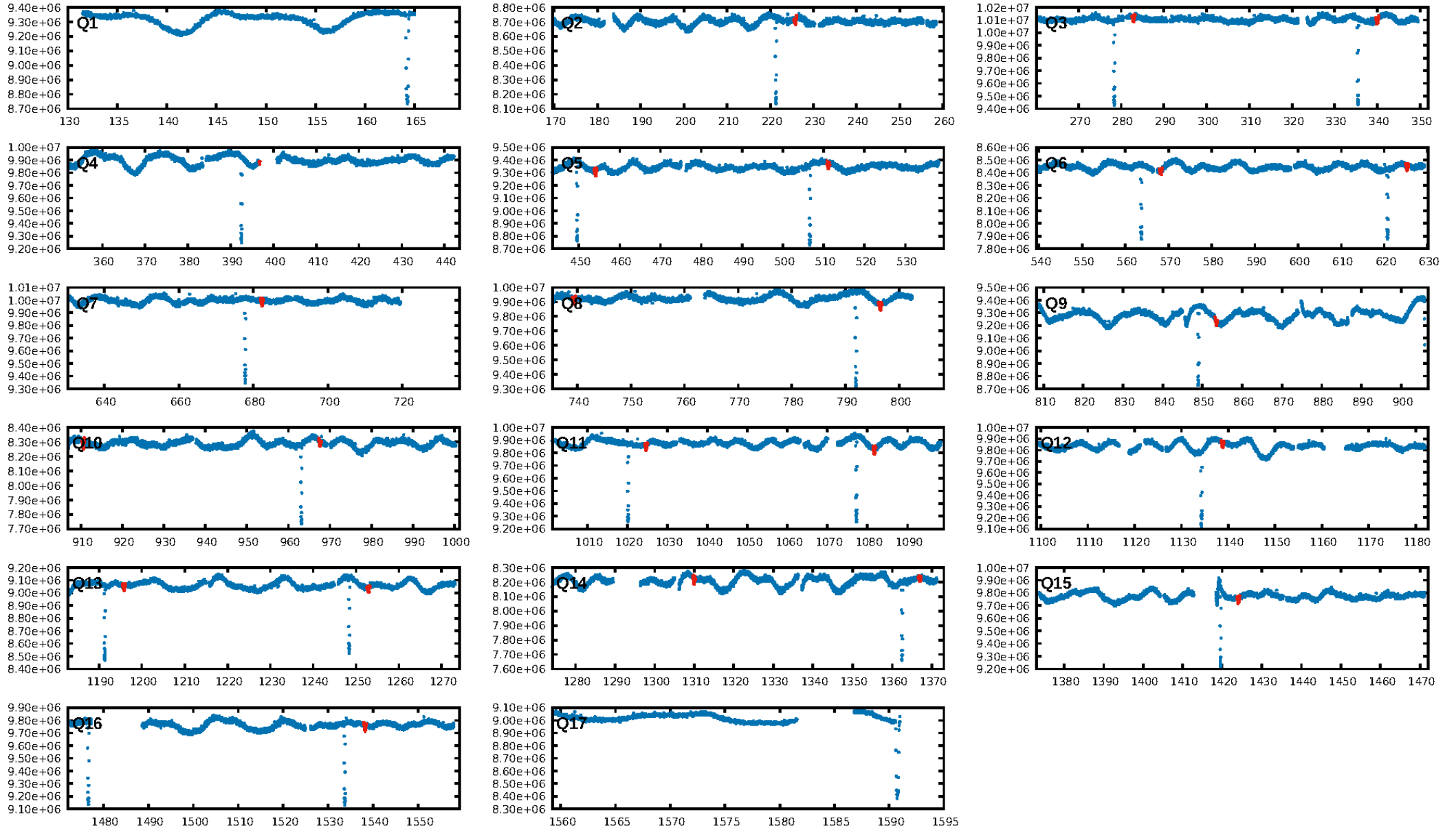
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 75.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [23/23]
GhostDiagnostic-chr: 2.216
Centroid-sig: 19.6%
Centroid-so: 0.208 arcsec [0.80σ]
OotOffset-rm: 0.090 arcsec [0.78σ]
KicOffset-rm: 0.201 arcsec [1.80σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

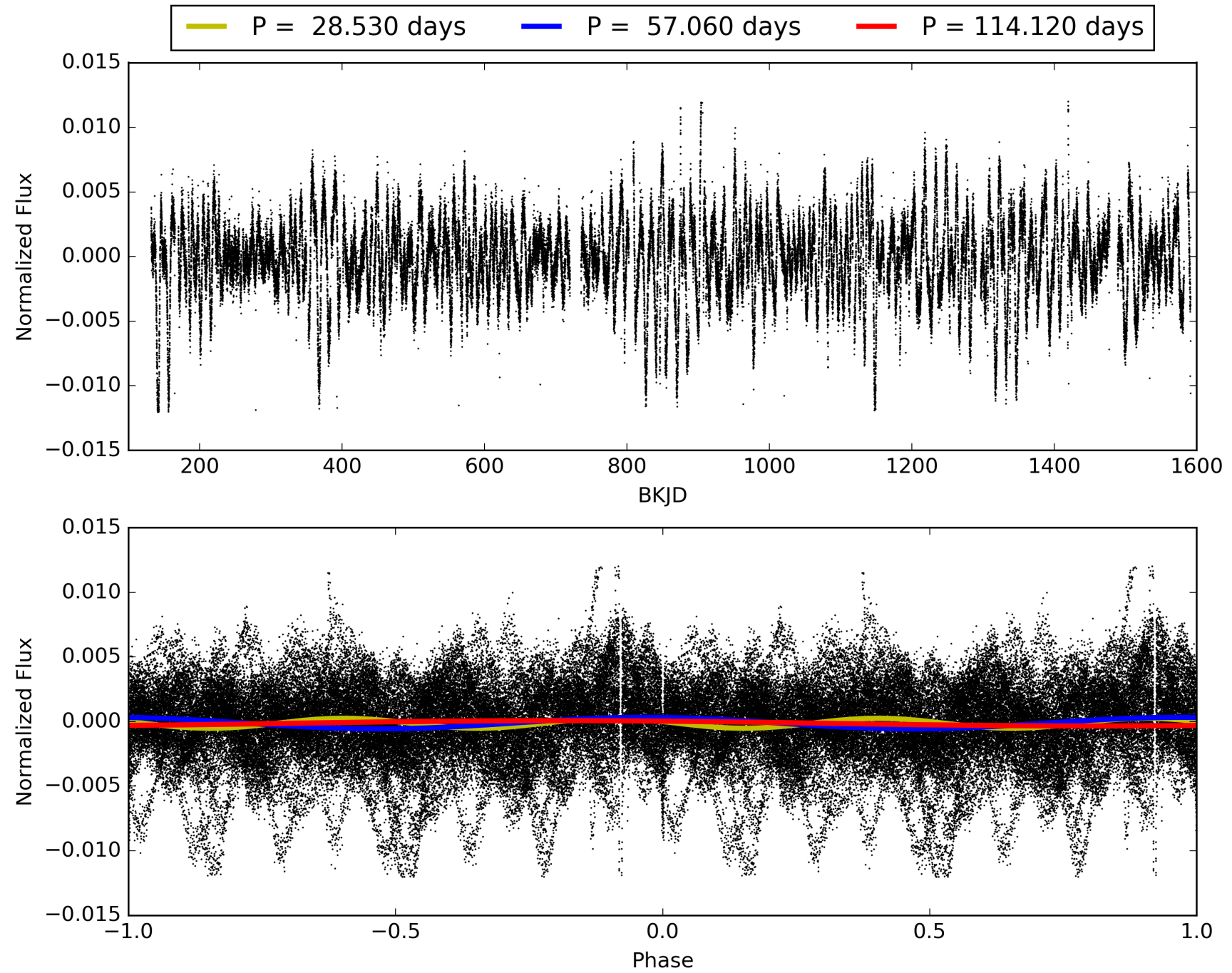
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:31:18 Z

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TCE 003102000-02, PDC Light Curves

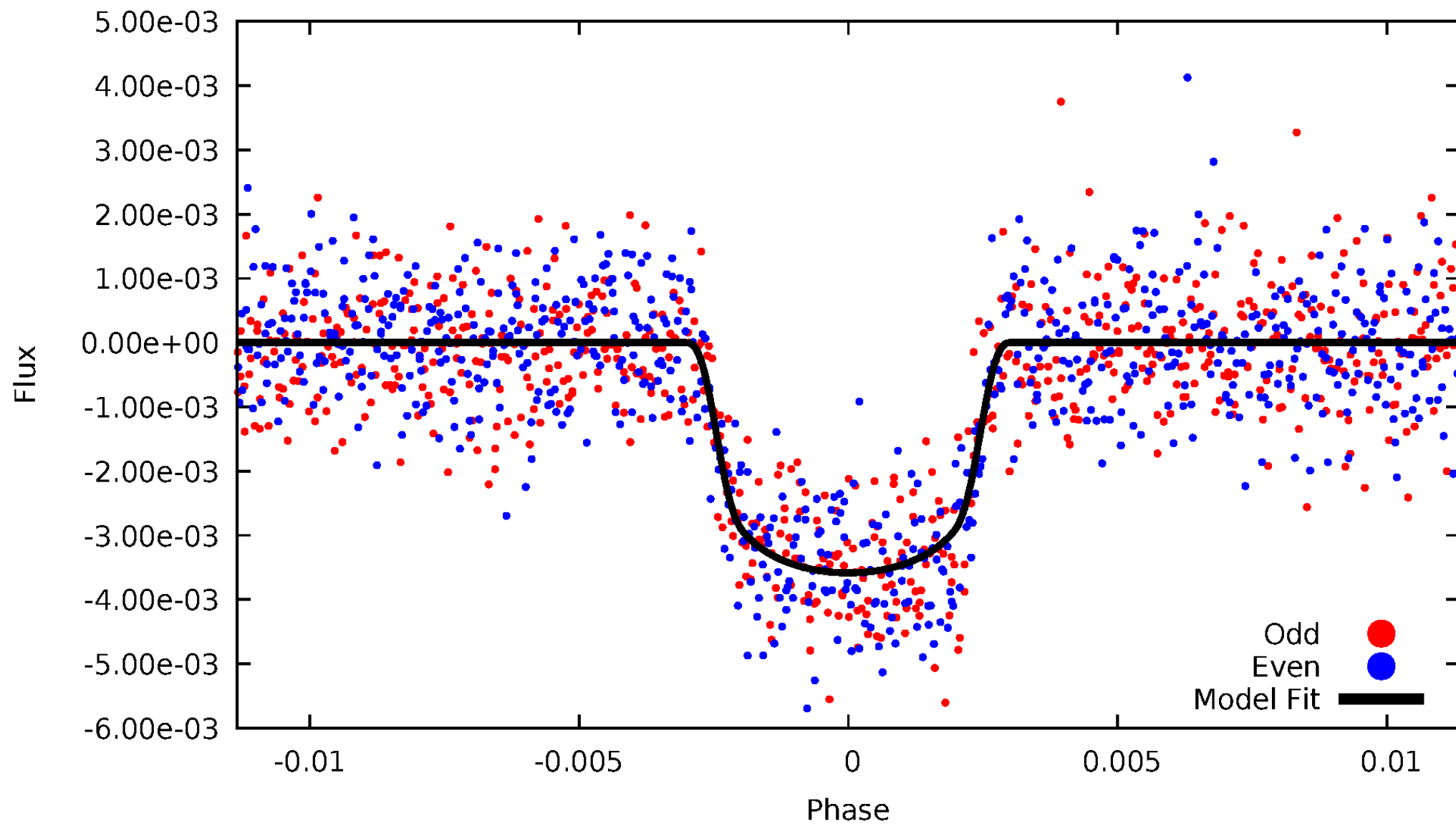


TCE 003102000-02



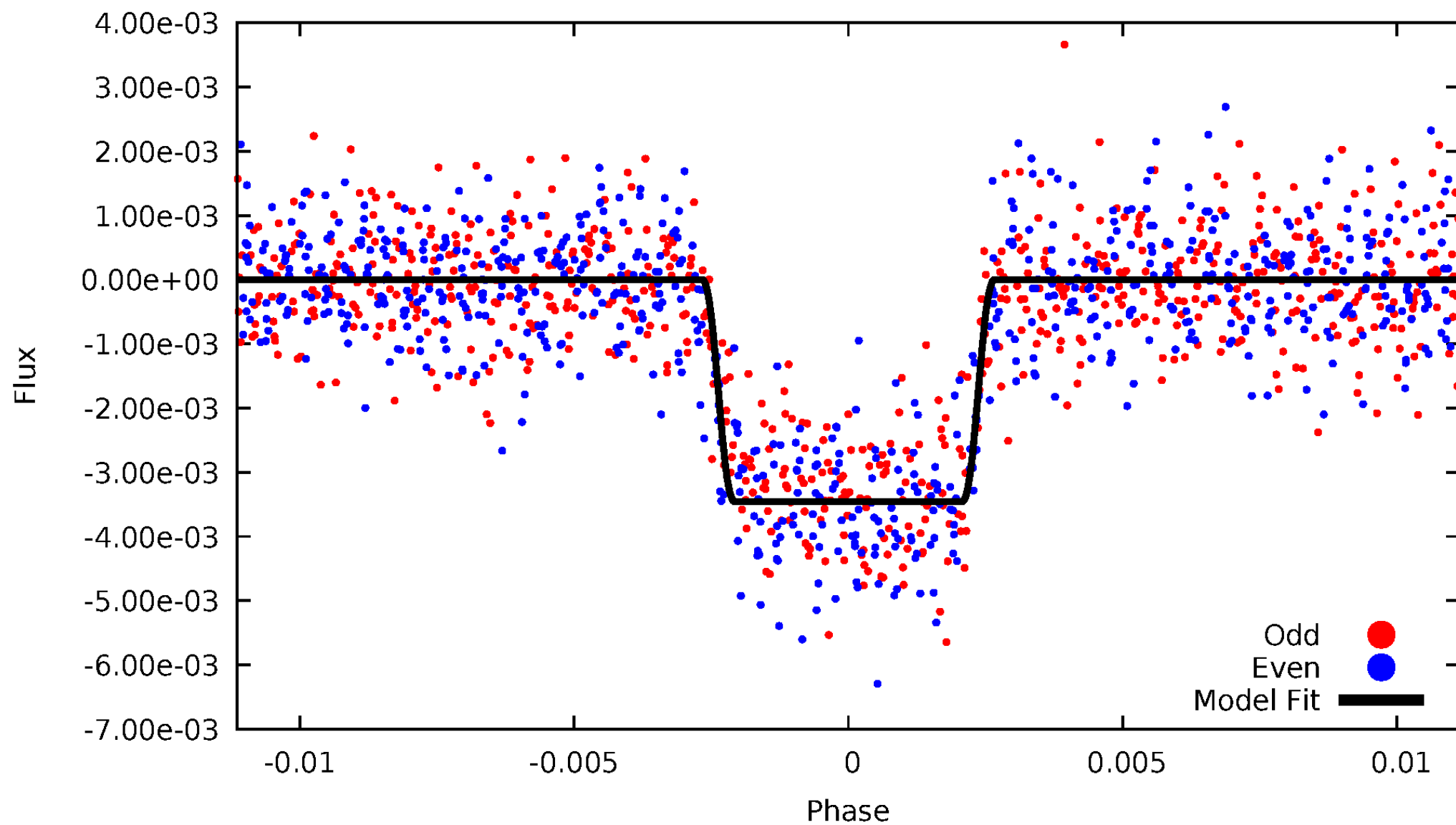
DV Odd/Even

TCE 003102000-02



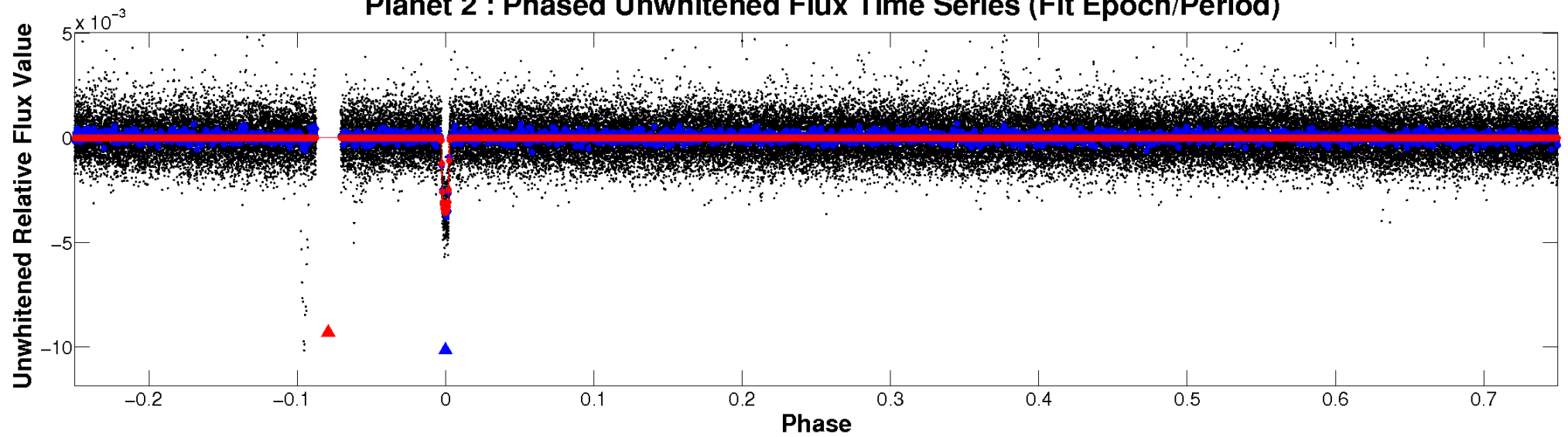
ALT Odd/Even

TCE 003102000-02

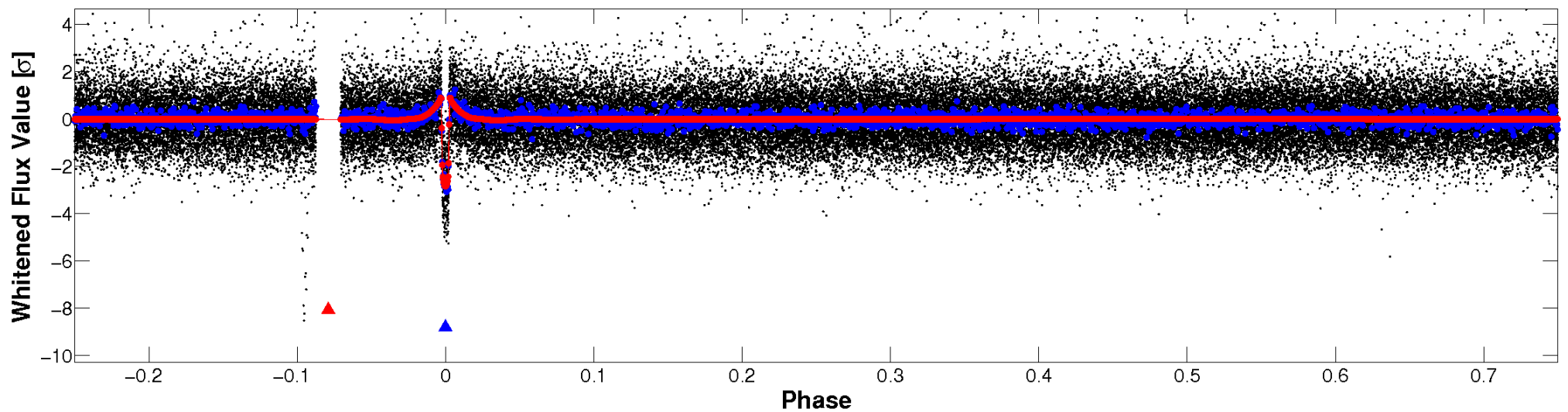


Non-Whitened Vs. Whitened Light Curve

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

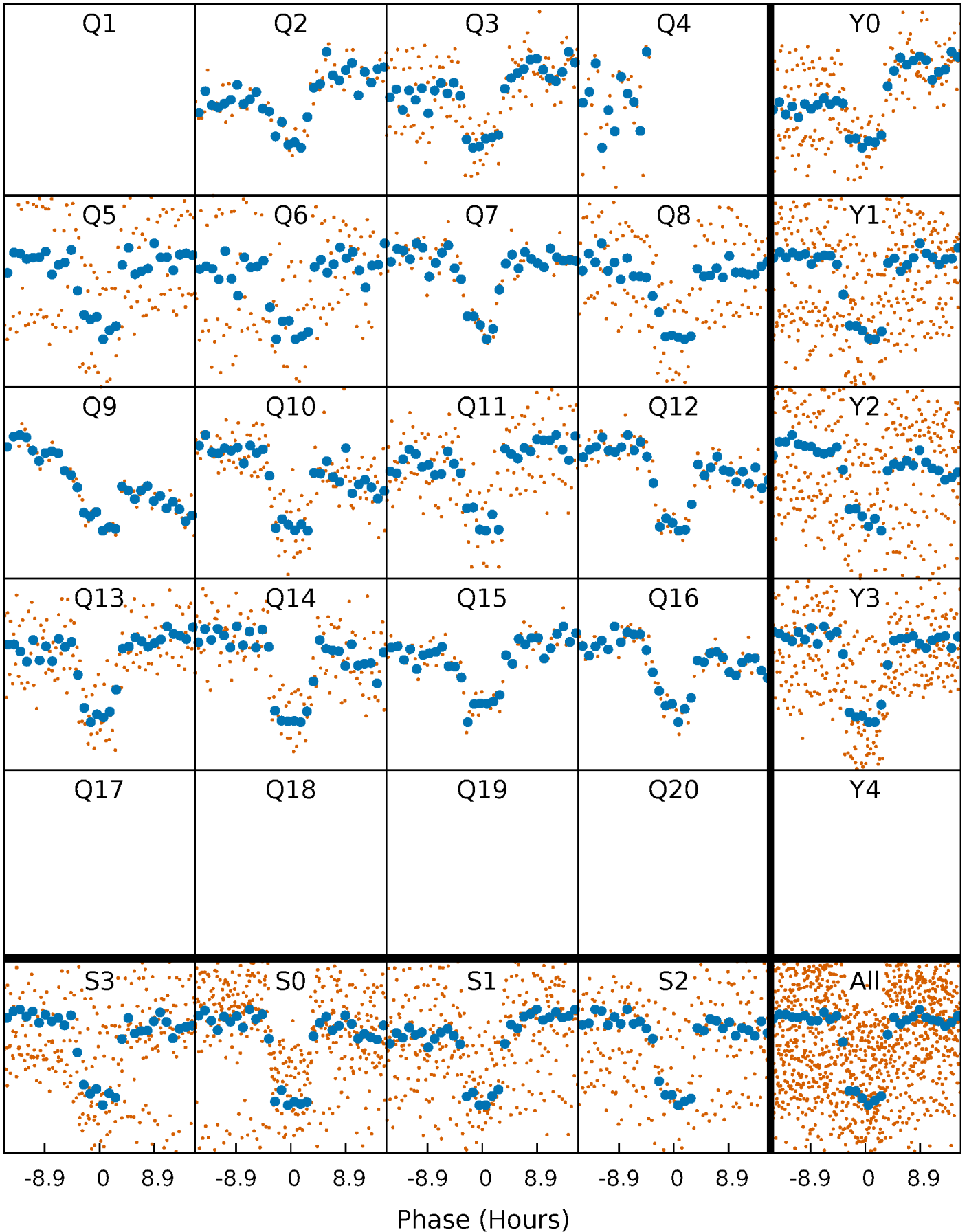


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



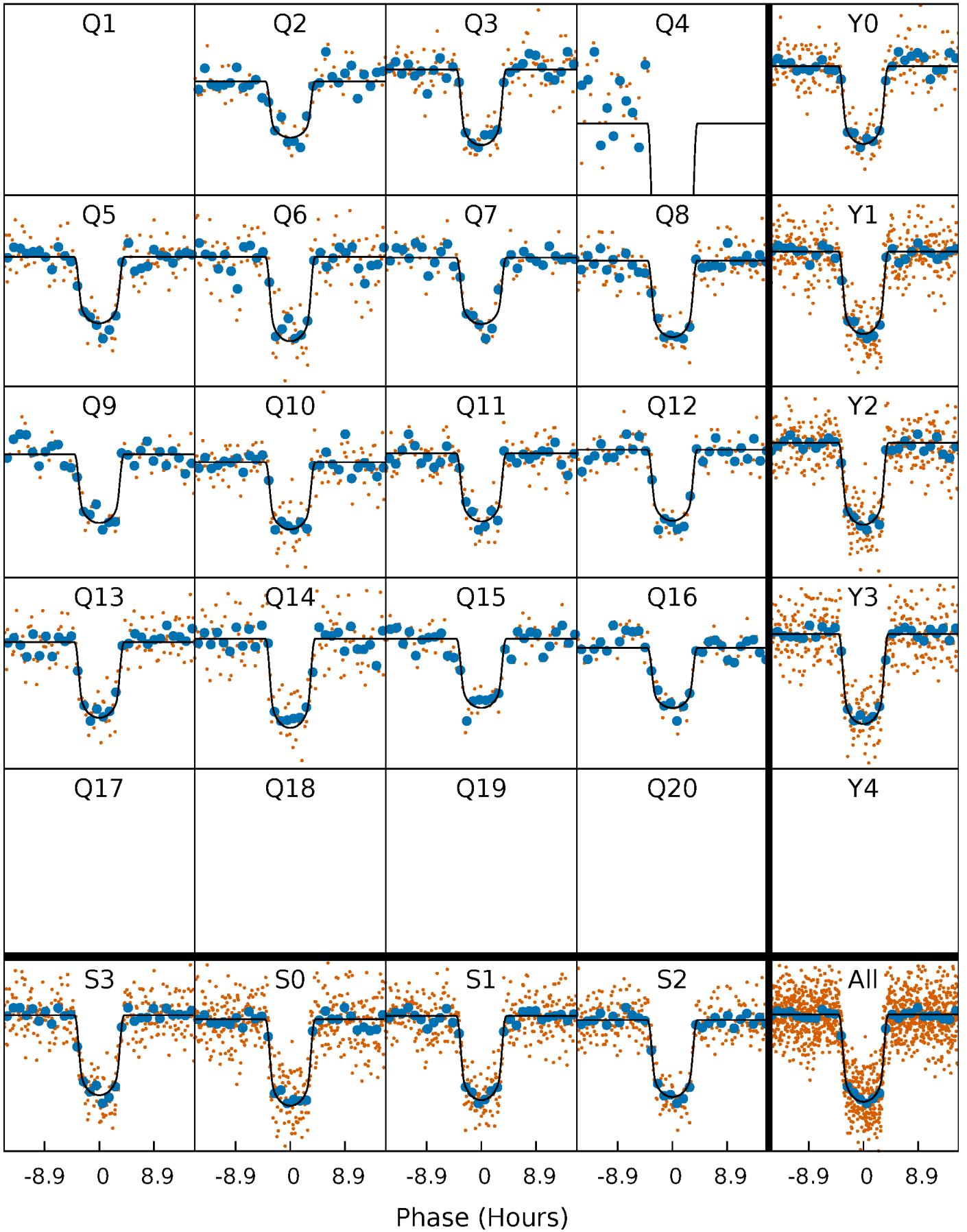
PDC Quarter-Phased Transit Curves

TCE 003102000-02 P= 57.059903 Days $T_0=168.766026$ (BKJD)



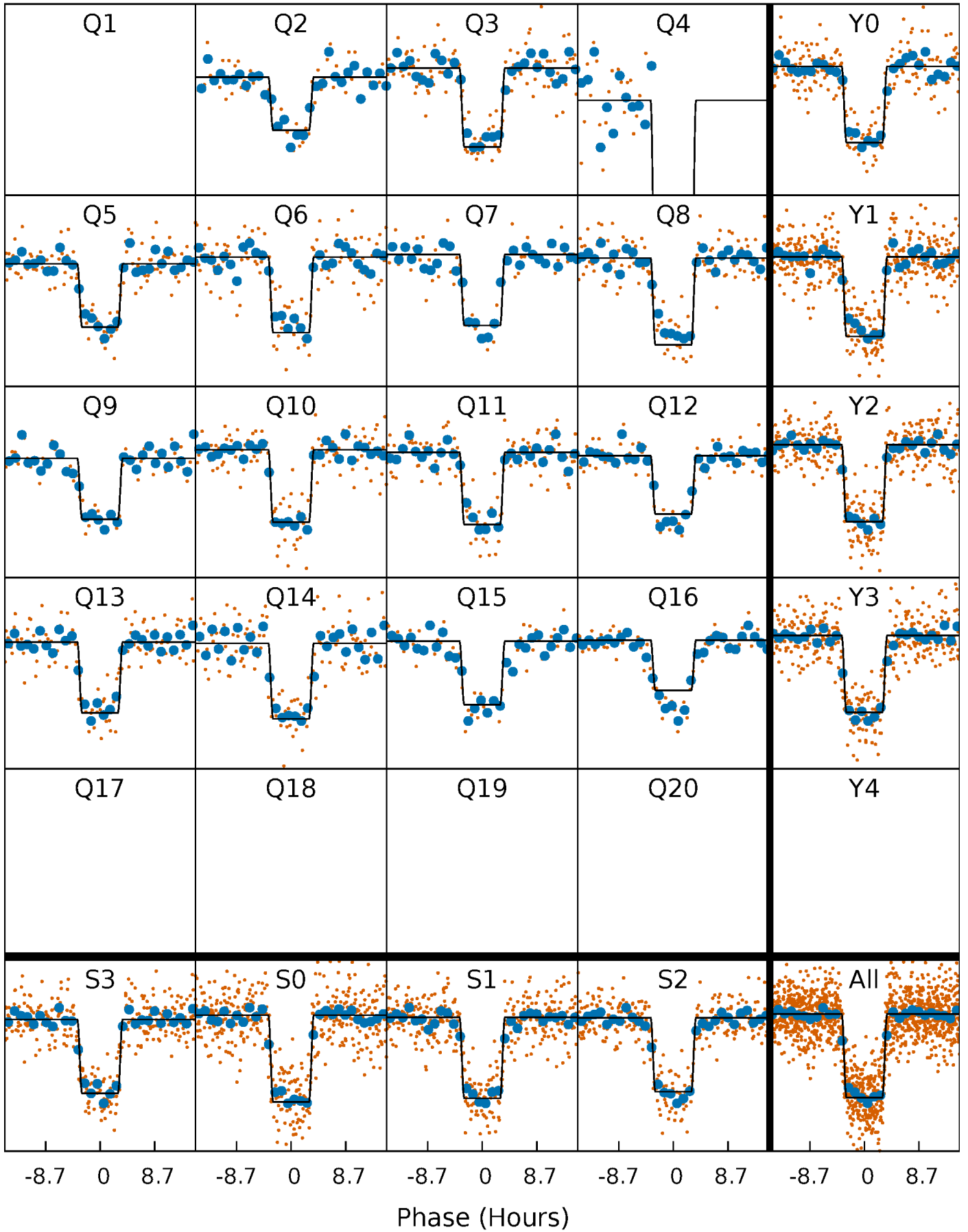
DV Quarter-Phased Transit Curves

TCE 003102000-02 P= 57.059903 Days $T_0=168.766026$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

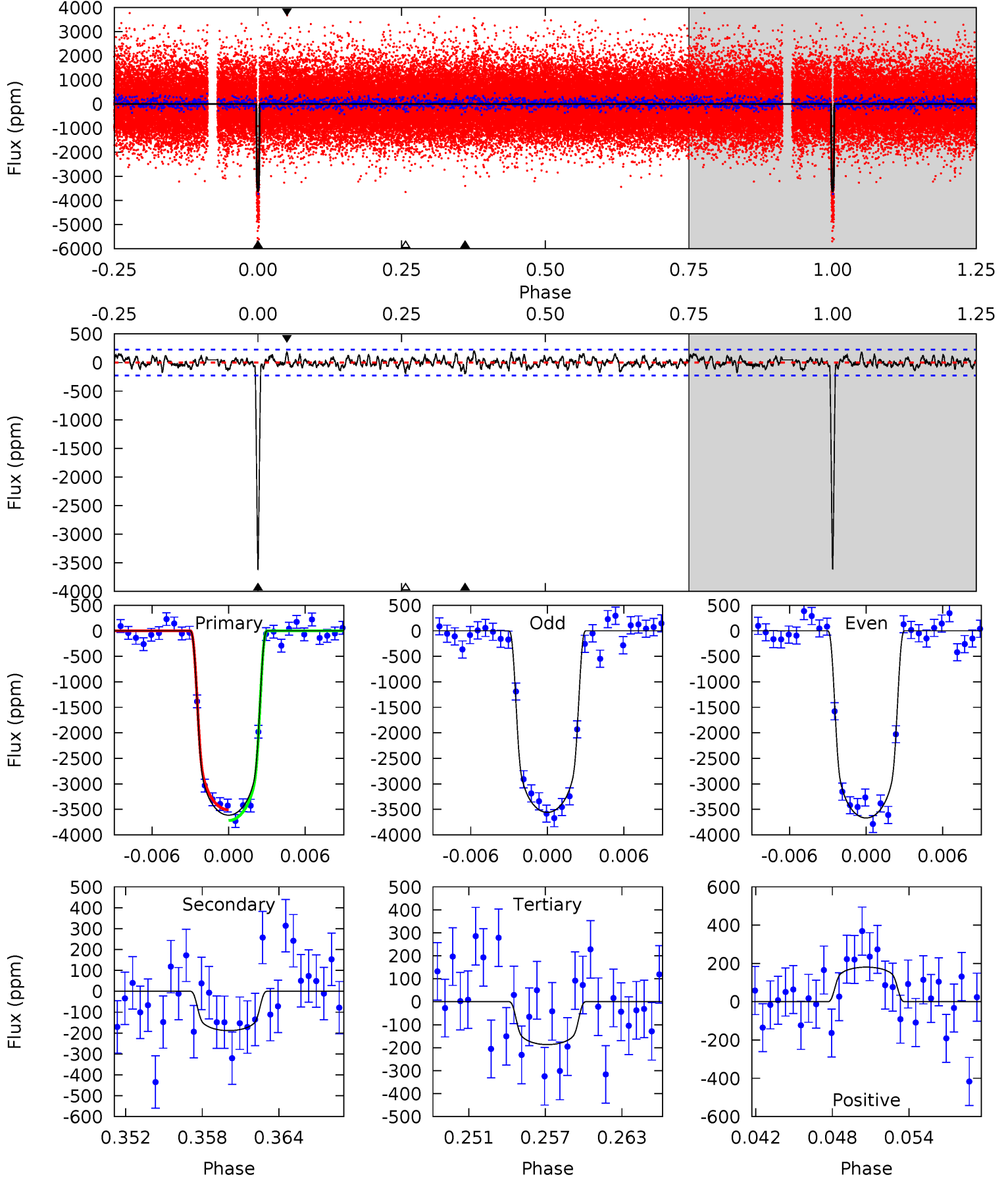
TCE 003102000-02 P= 57.060432 Days $T_0=168.759525$ (BKJD)



DV Model-Shift Uniqueness Test

003102000-02, $P = 57.059903$ Days, $E = 111.706123$ Days

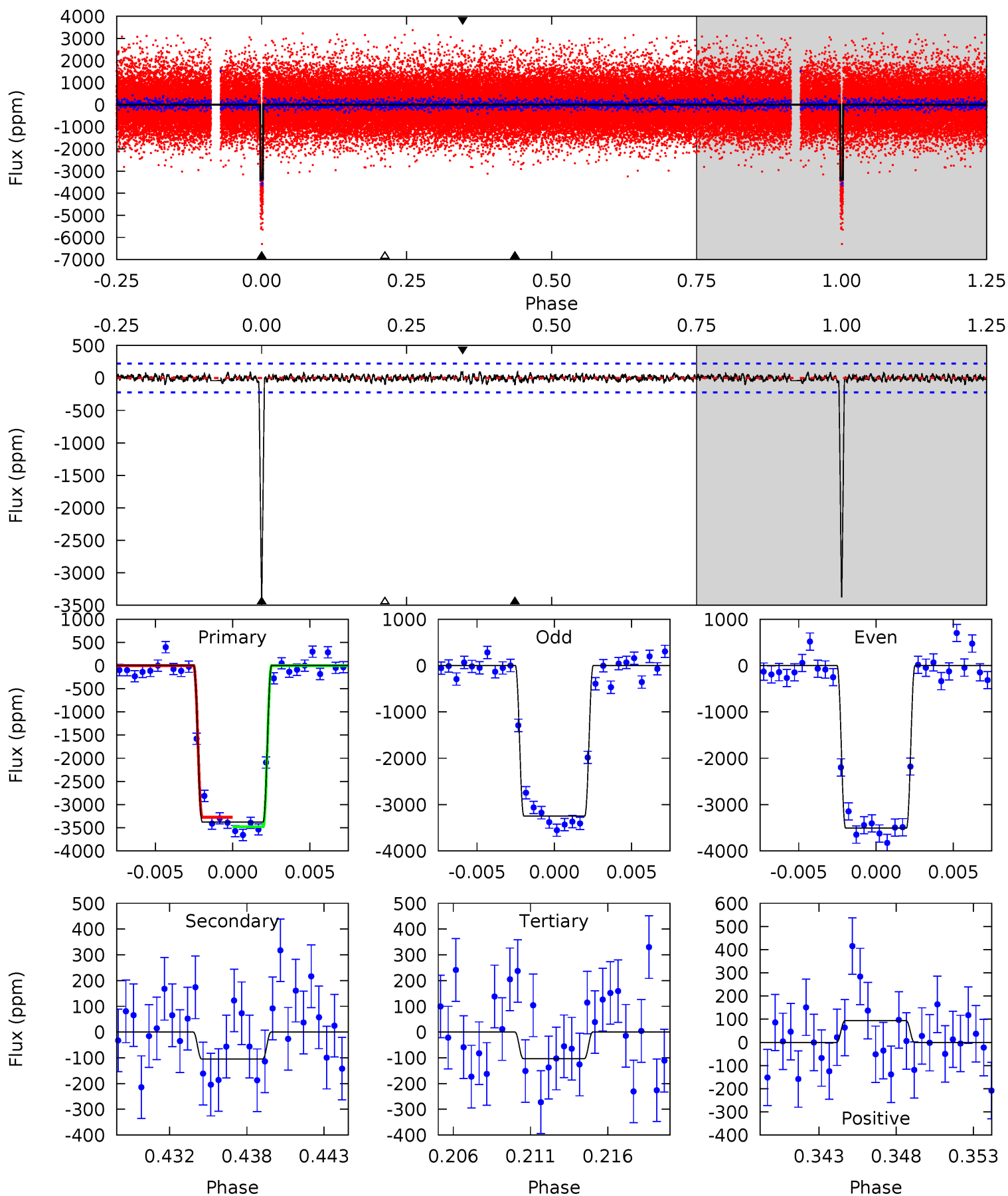
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.1	4.28	4.24	4.11	5.12	2.75	1.43	77.8	78.0	0.04	0.17	1.25	1.00	0.05	2.38



Alt Model-Shift Uniqueness Test

003102000-02, $P = 57.060432$ Days, $E = 111.699093$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
78.3	2.43	2.39	2.17	5.15	2.79	0.70	75.9	76.1	0.04	0.26	3.06	1.01	0.03	2.39



Stellar Parameters For KIC 003102000

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5931^{+161}_{-178}	$4.545^{+0.040}_{-0.160}$	$-0.280^{+0.300}_{-0.300}$	$0.863^{+0.217}_{-0.081}$	$0.953^{+0.098}_{-0.119}$	$2.087^{+0.449}_{-0.923}$
	+3%/-3%	+1%/-4%	+107%/-107%	+25%/-9%	+10%/-12%	+22%/-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 003102000-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-188 ± 44	$5.76^{+0.76}_{-0.41}$	649^{+37}_{-28}	3376^{+134}_{-155}	246^{+73}_{-73}
Alt.	-105 ± 43	$5.63^{+0.74}_{-0.39}$	647^{+35}_{-26}	3092^{+182}_{-233}	132^{+71}_{-57}

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

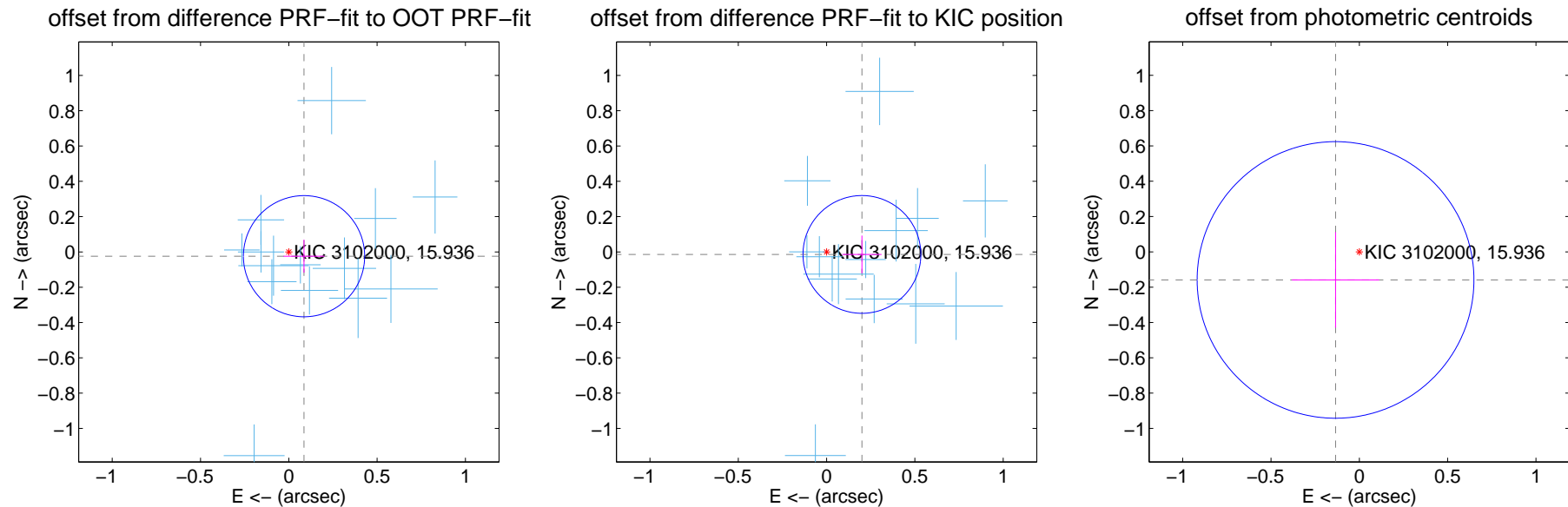
DV Centroid Data

Supplemental centroid analysis for 003102000-02. Kepler magnitude: 15.94. Transit SNR 45.89

There are 14 quarters with good PRF difference image offsets

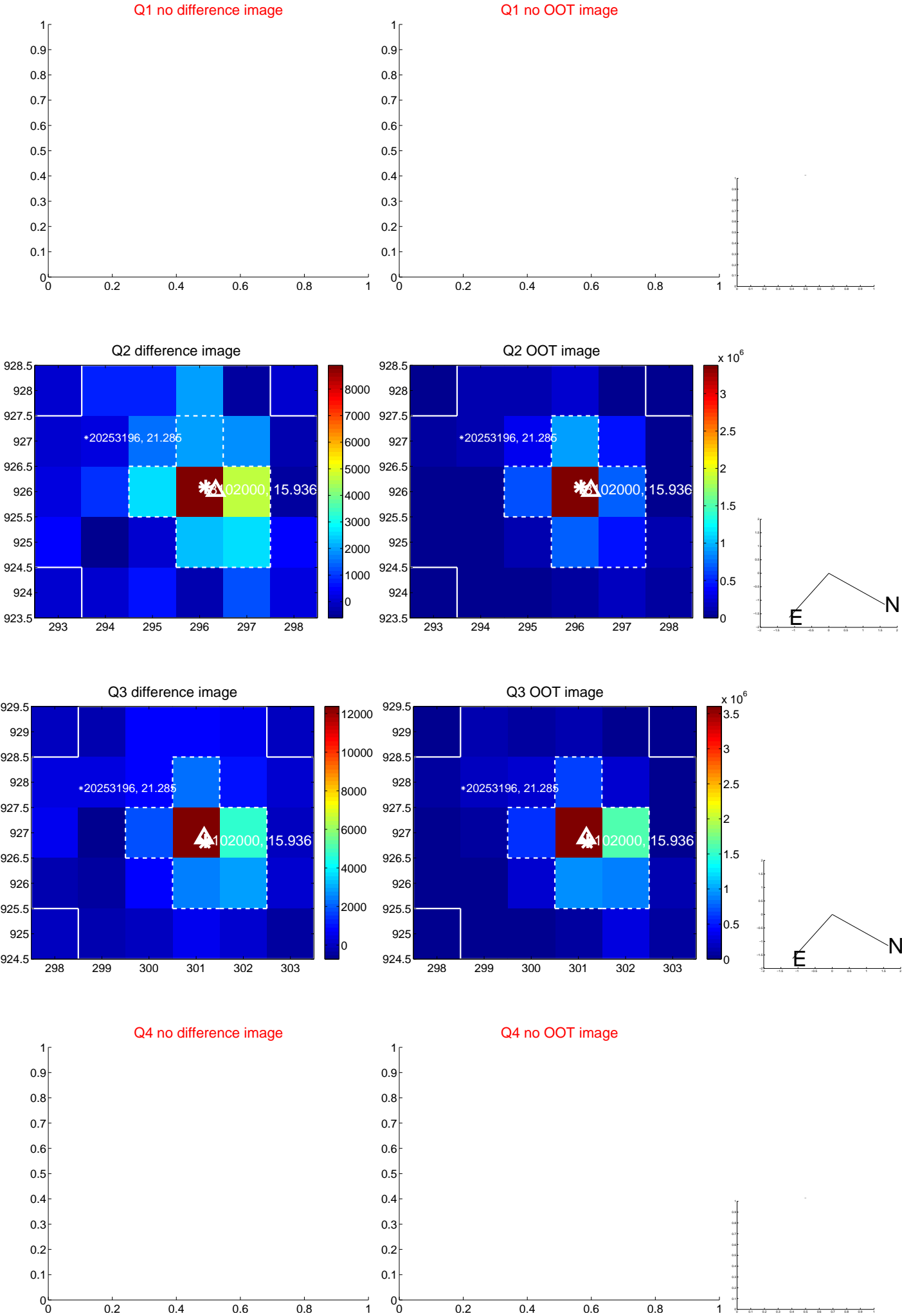
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.090 ± 0.114	0.78	-0.086 ± 0.116	-0.024 ± 0.093
PRF-fit source offset from KIC position	0.201 ± 0.111	1.80	-0.200 ± 0.111	-0.014 ± 0.107
photometric centroid source offset	0.21 ± 0.26	0.80	0.13 ± 0.25	-0.16 ± 0.27

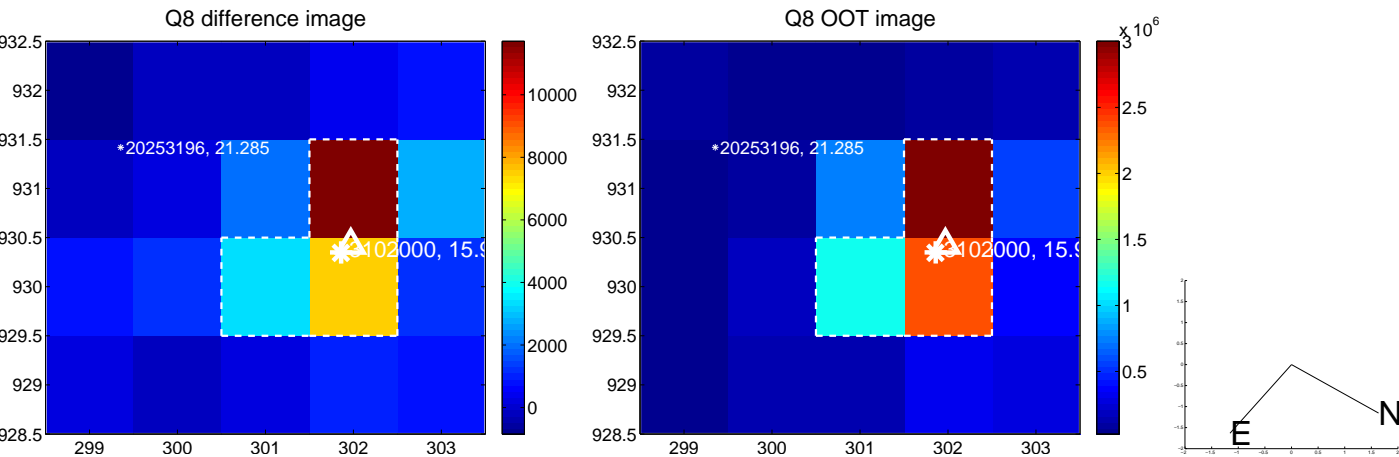
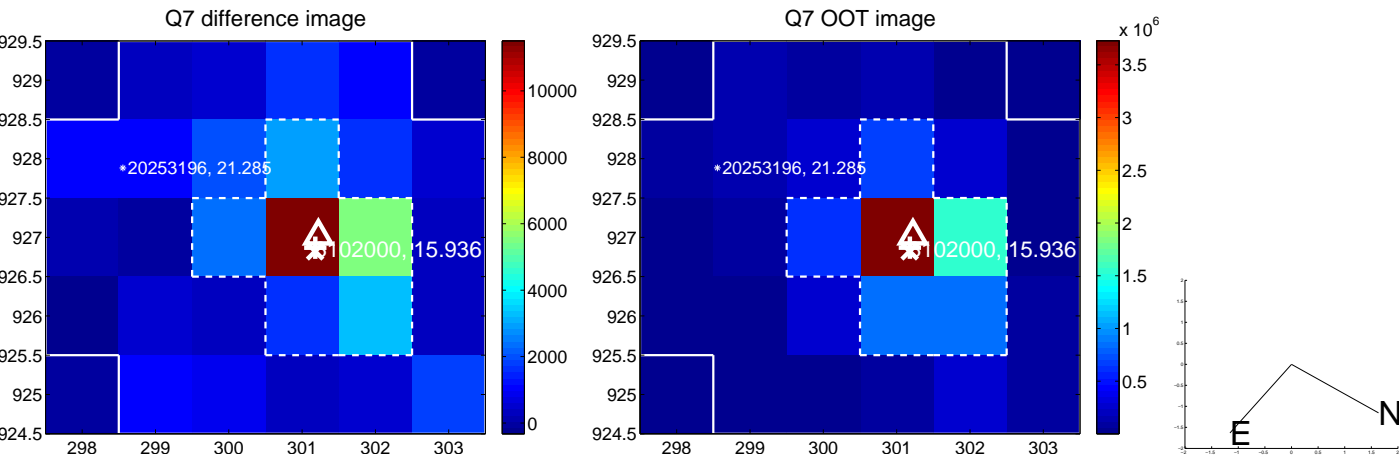
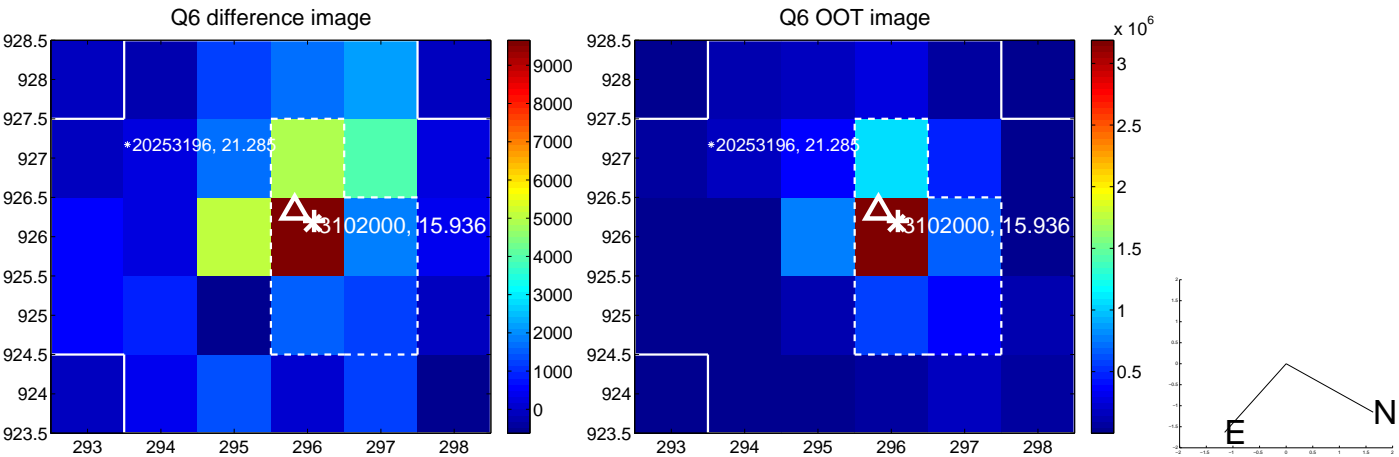
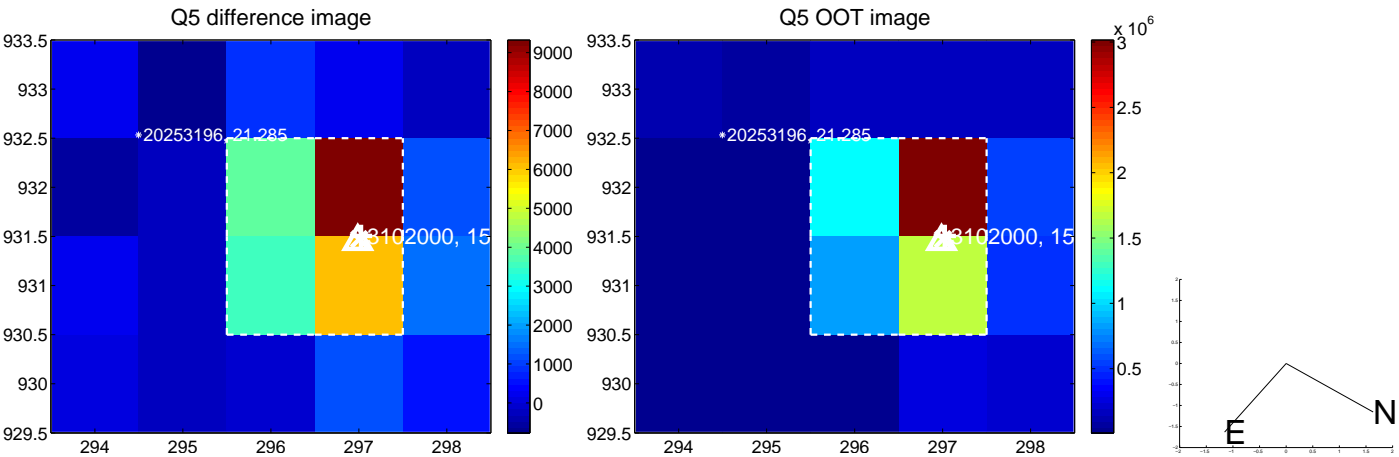


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

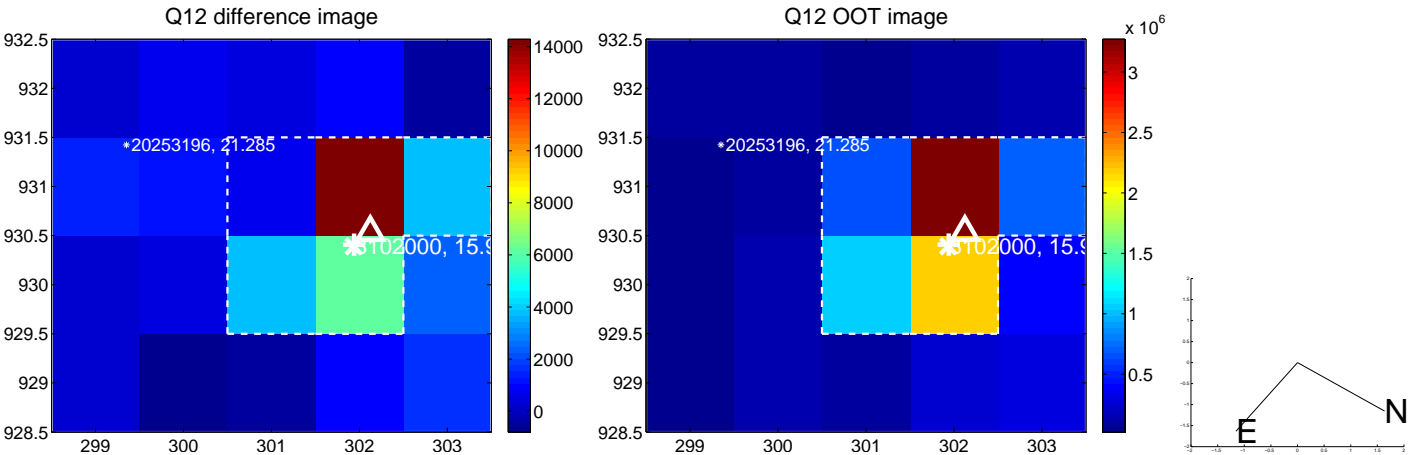
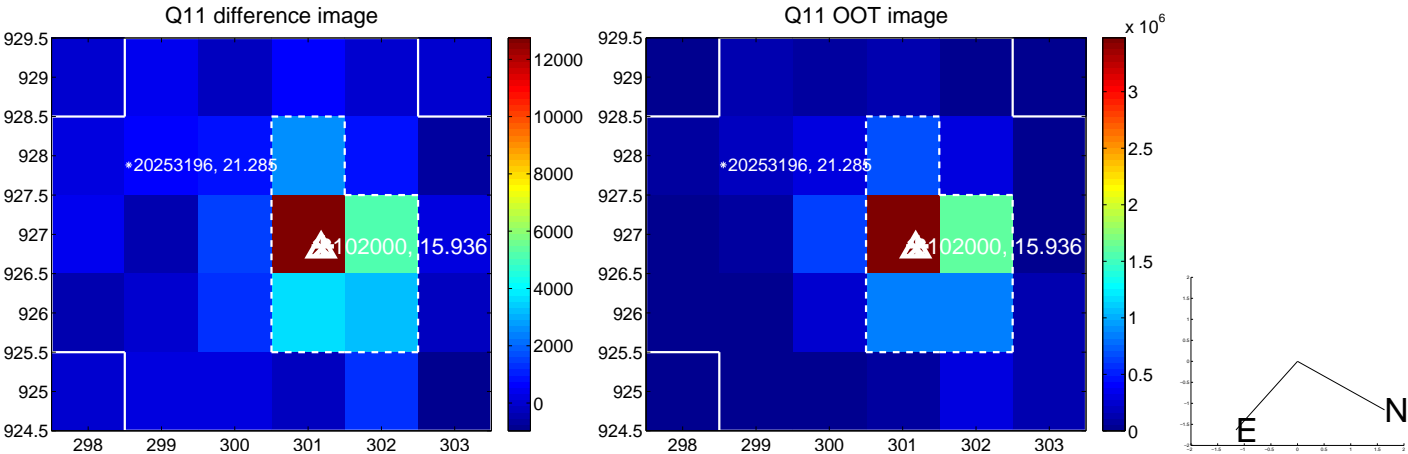
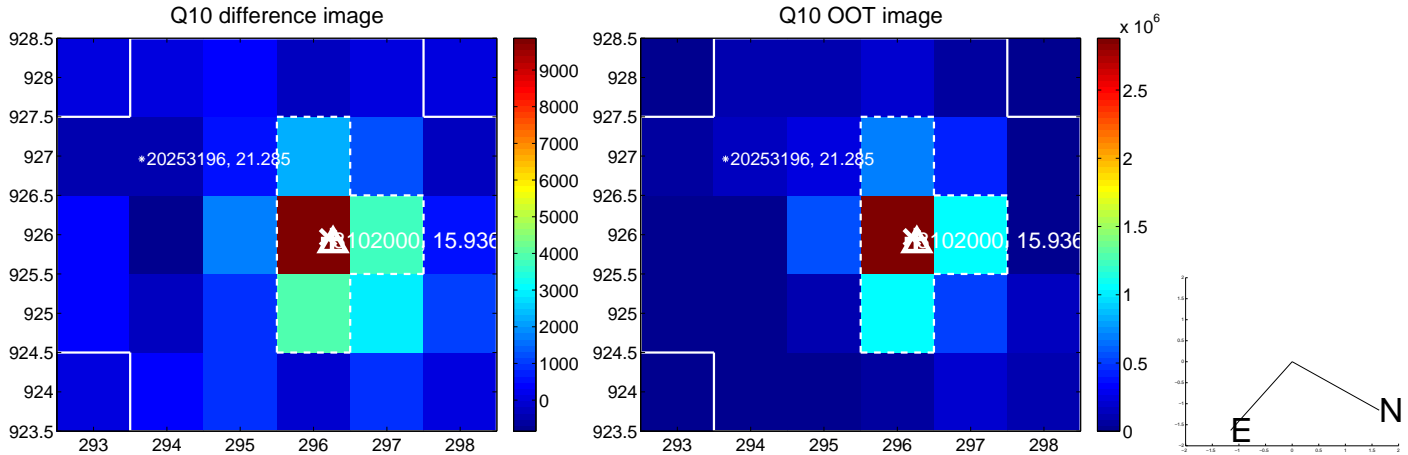
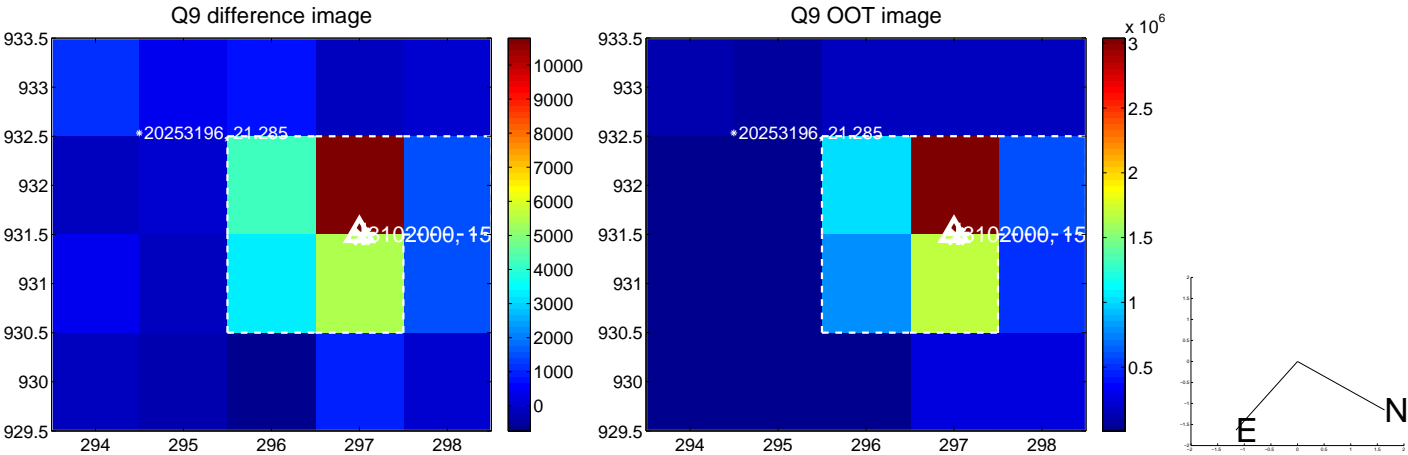
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



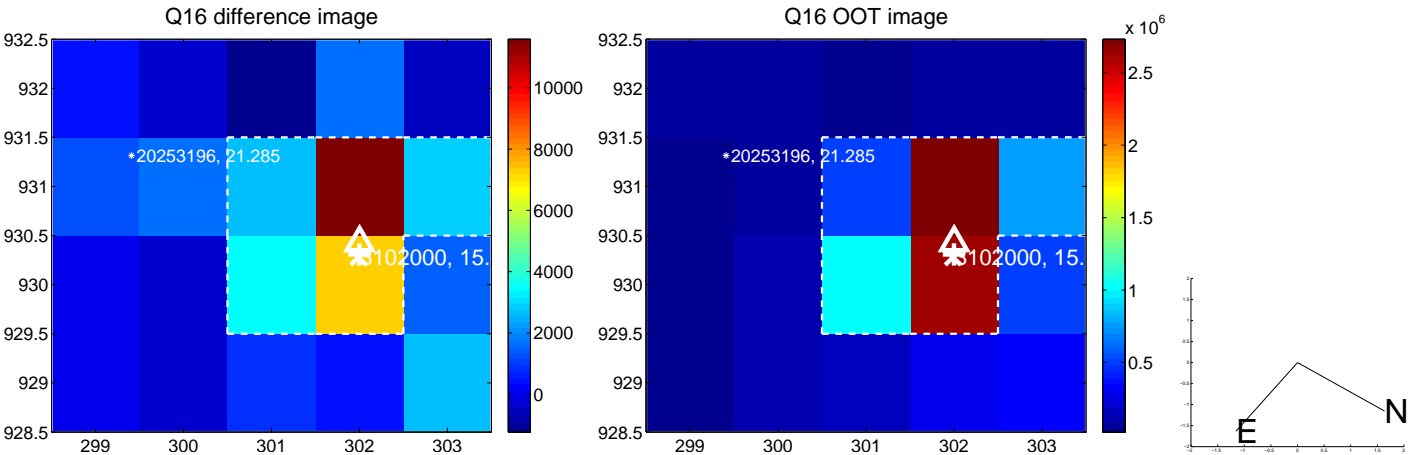
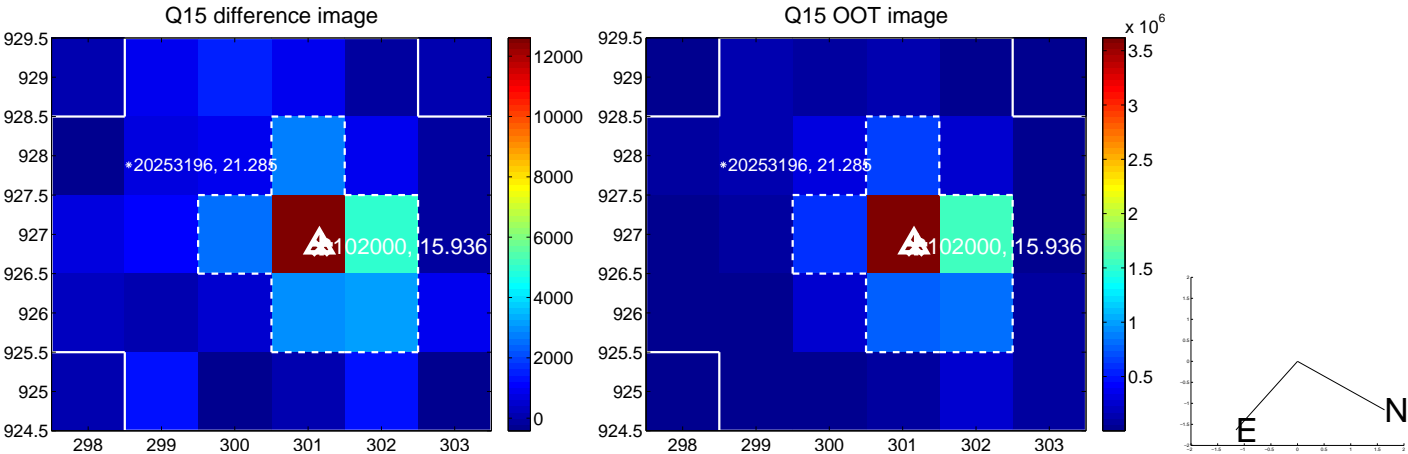
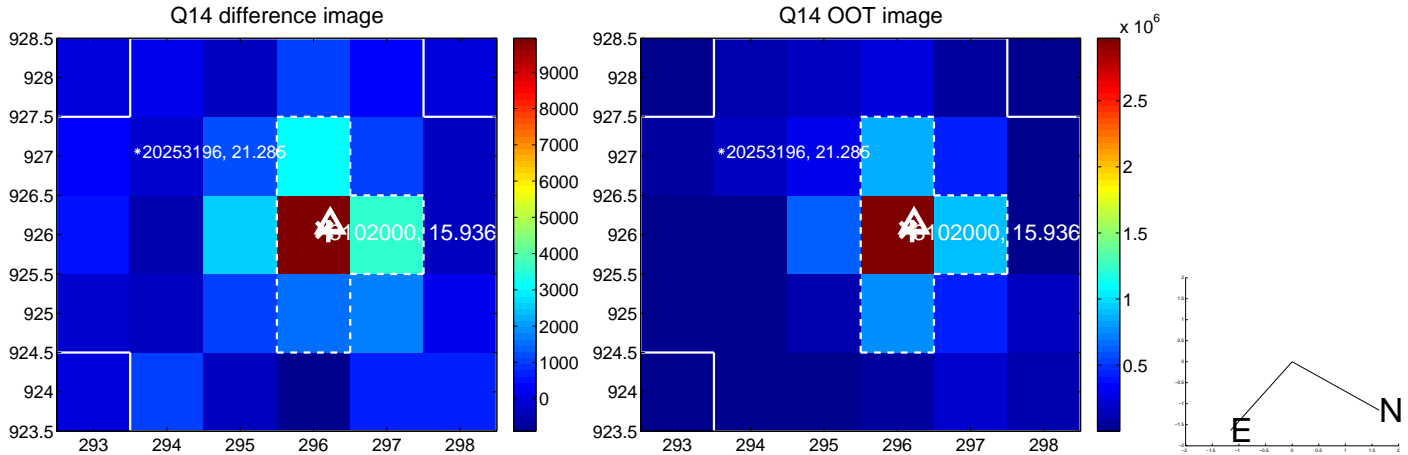
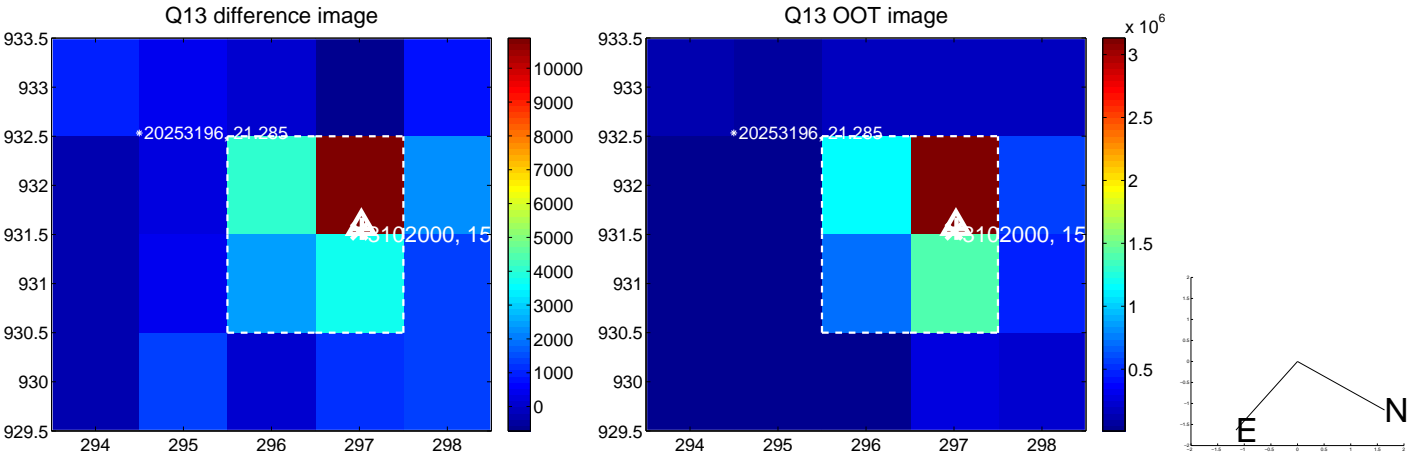
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

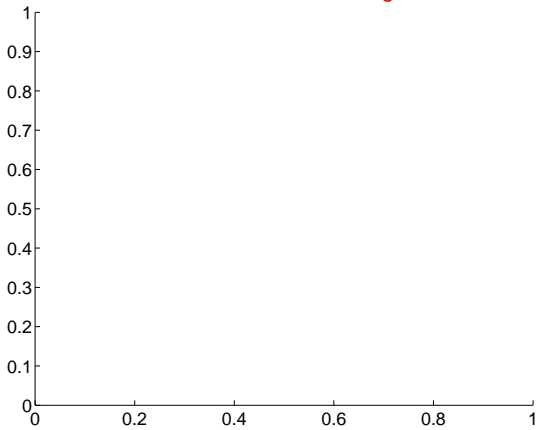


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

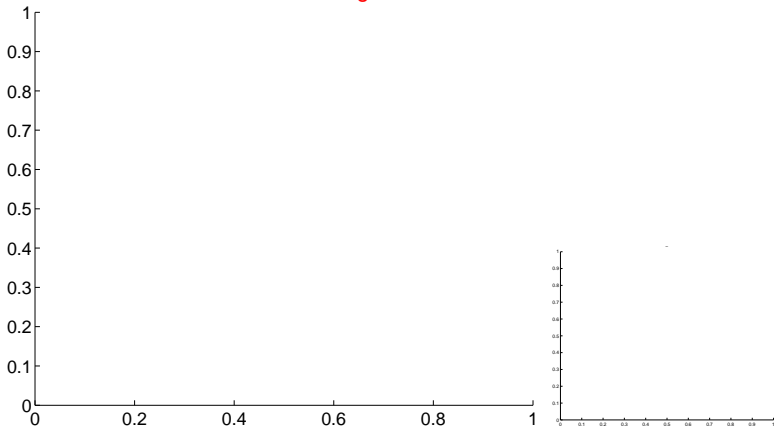


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

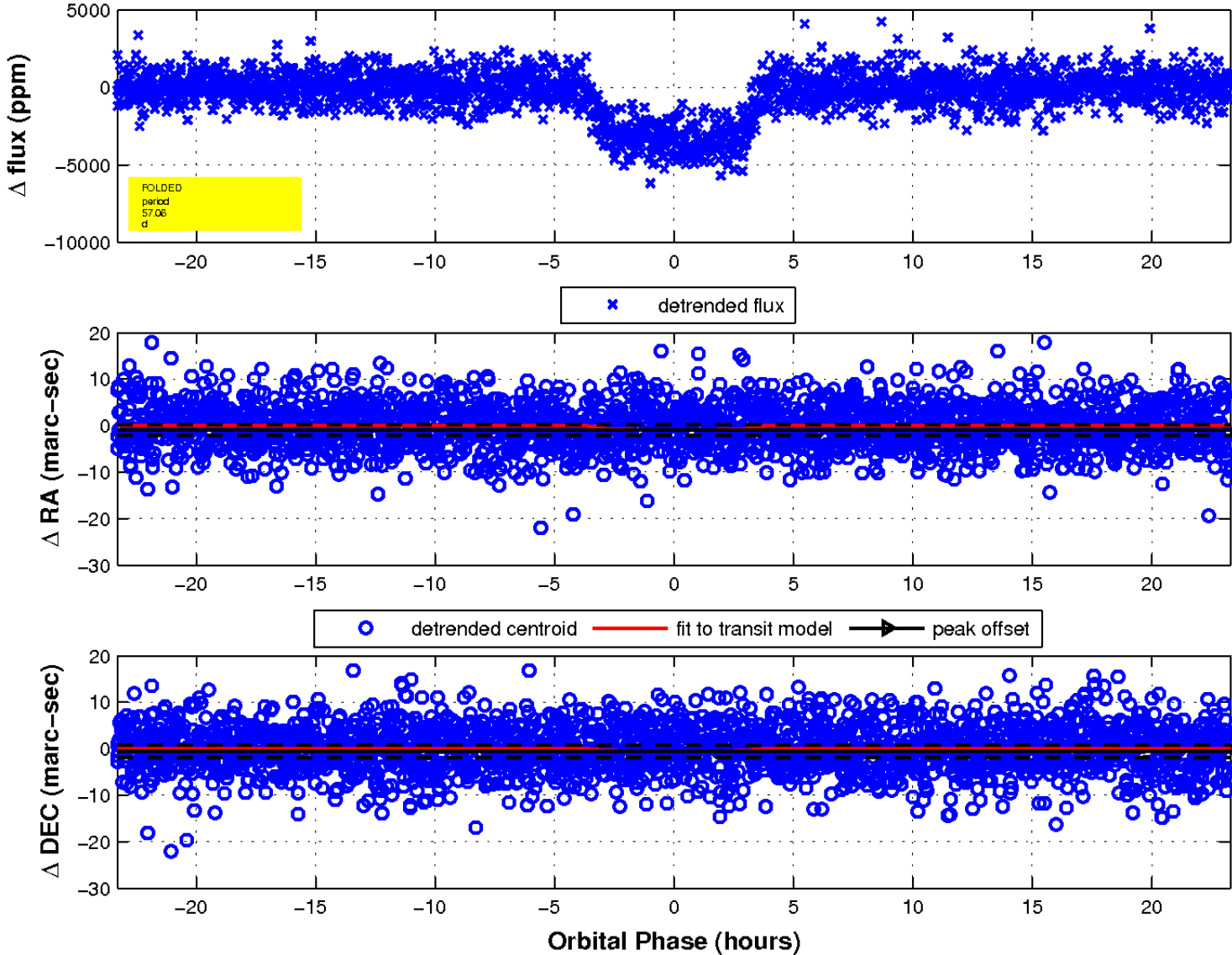
Q17 no difference image



Q17 no OOT image



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

