

KIC 003939150

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})
003939150-01	OBS	1215.01	17.324160	142.101087	238.4	8.147	37.1	39.6	1.86	5968	3.26	204.43
003939150-02	OBS	1215.02	33.006299	145.387310	266.0	7.410	29.8	31.1	1.86	5968	3.55	86.55

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003939150-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003939150-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

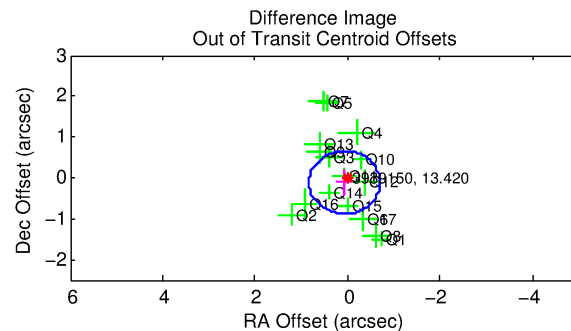
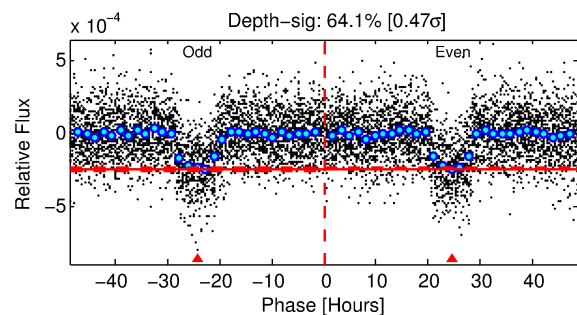
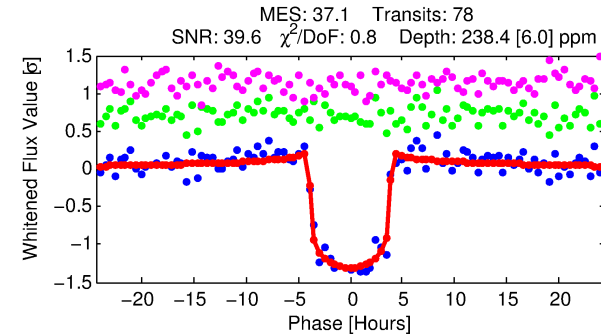
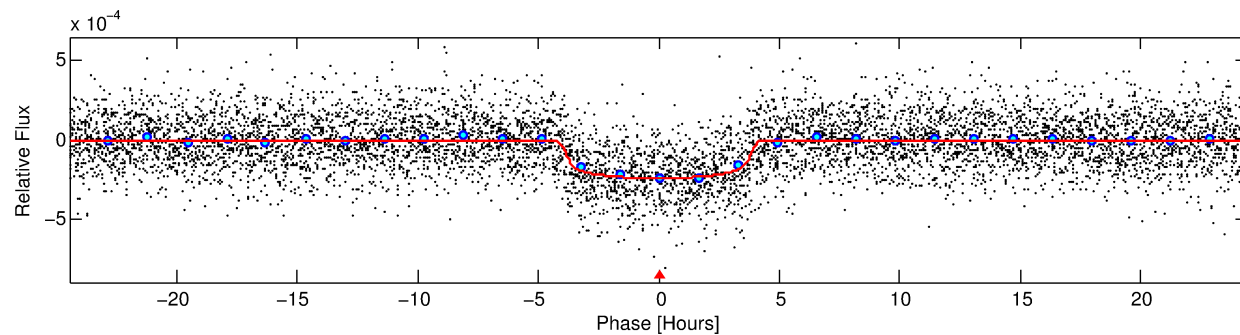
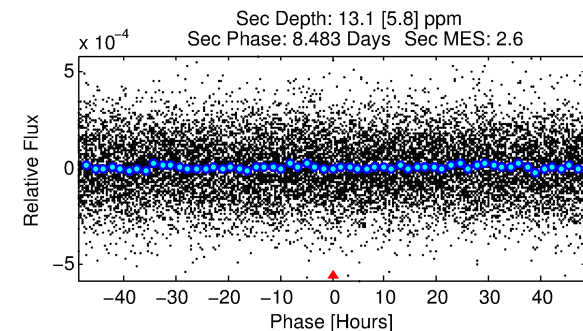
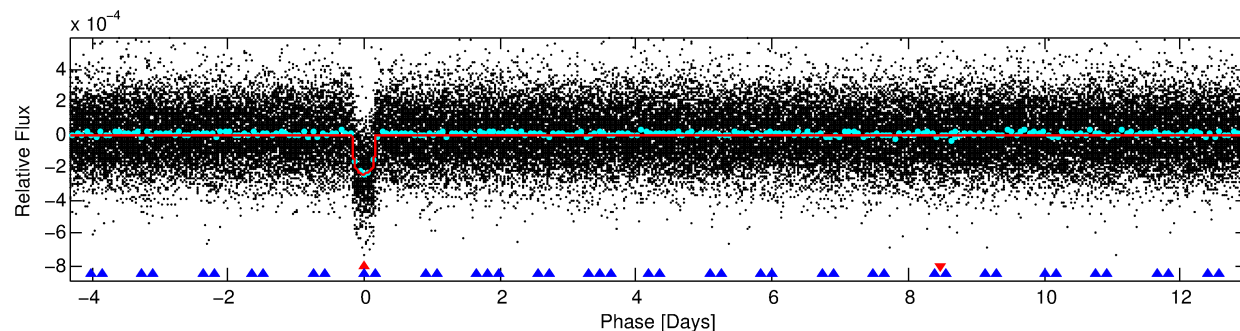
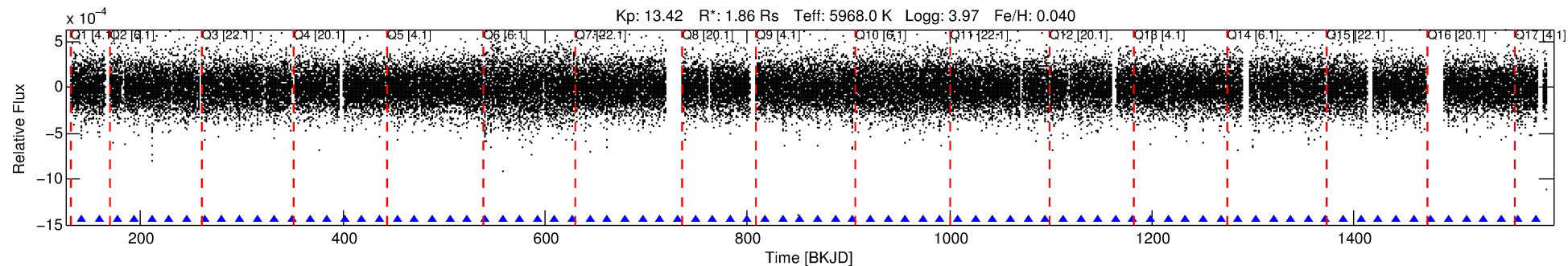
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003939150-01

No Significant Match Found

DV One-Page Summary

KIC: 3939150 Candidate: 1 of 2 Period: 17.324 d
KOI: K01215.01 Name: Kepler-277b Corr: 0.996



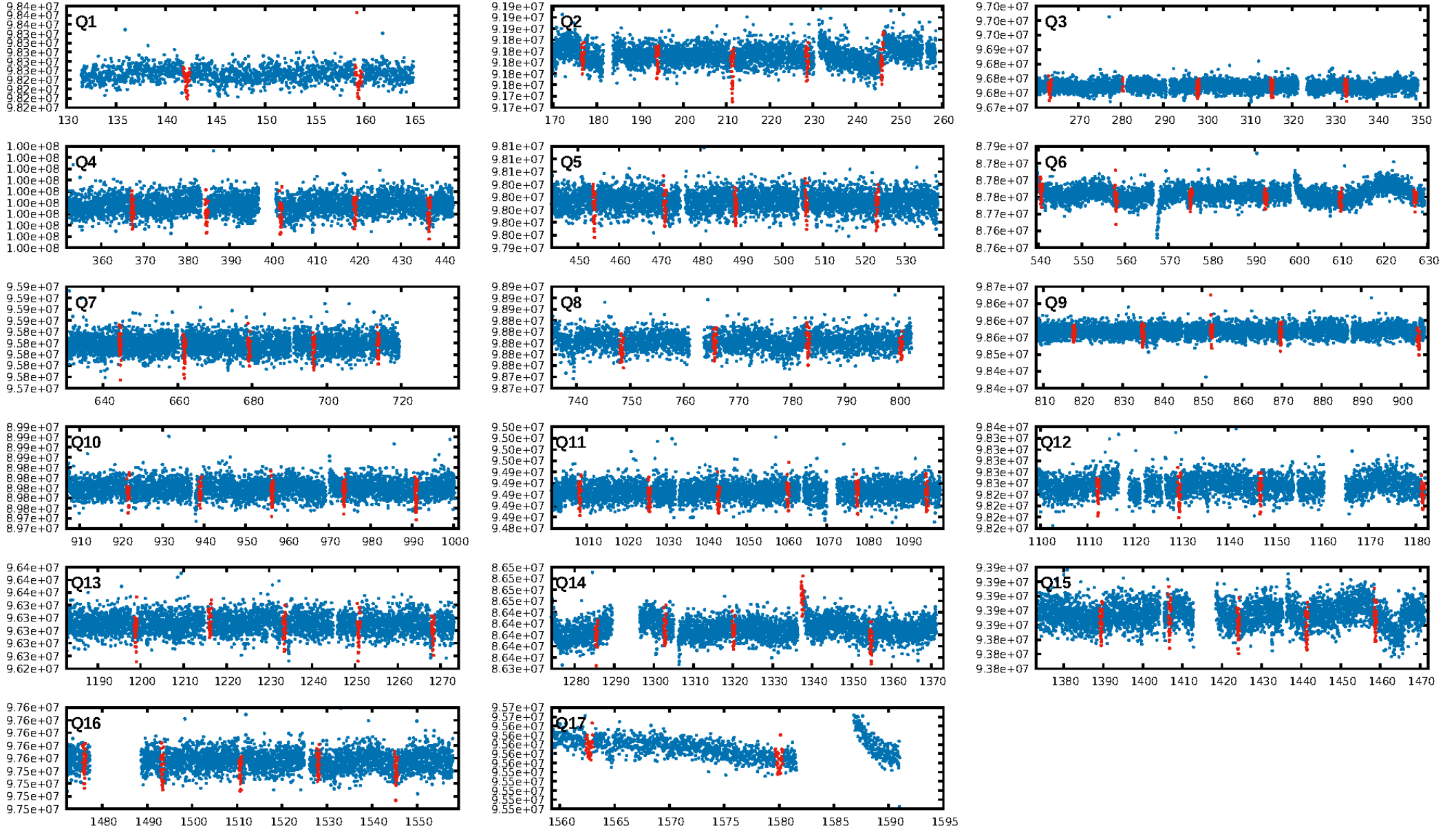
DV Fit Results:

Period = 17.32416 [0.00007] d
Epoch = 142.1011 [0.0033] BKJD
Rp/R* = 0.0161 [0.0012]
a/R* = 9.13 [3.13]
b = 0.85 [0.12]
Seff = 204.43 [75.59]
Teq = 964 [89] K
Rp = 3.26 [0.83] Re
a = 0.1385 [0.0317] AU
Ag = 13.02 [7.64] [1.57σ]
Teffp = 2832 [332] K [5.43σ]

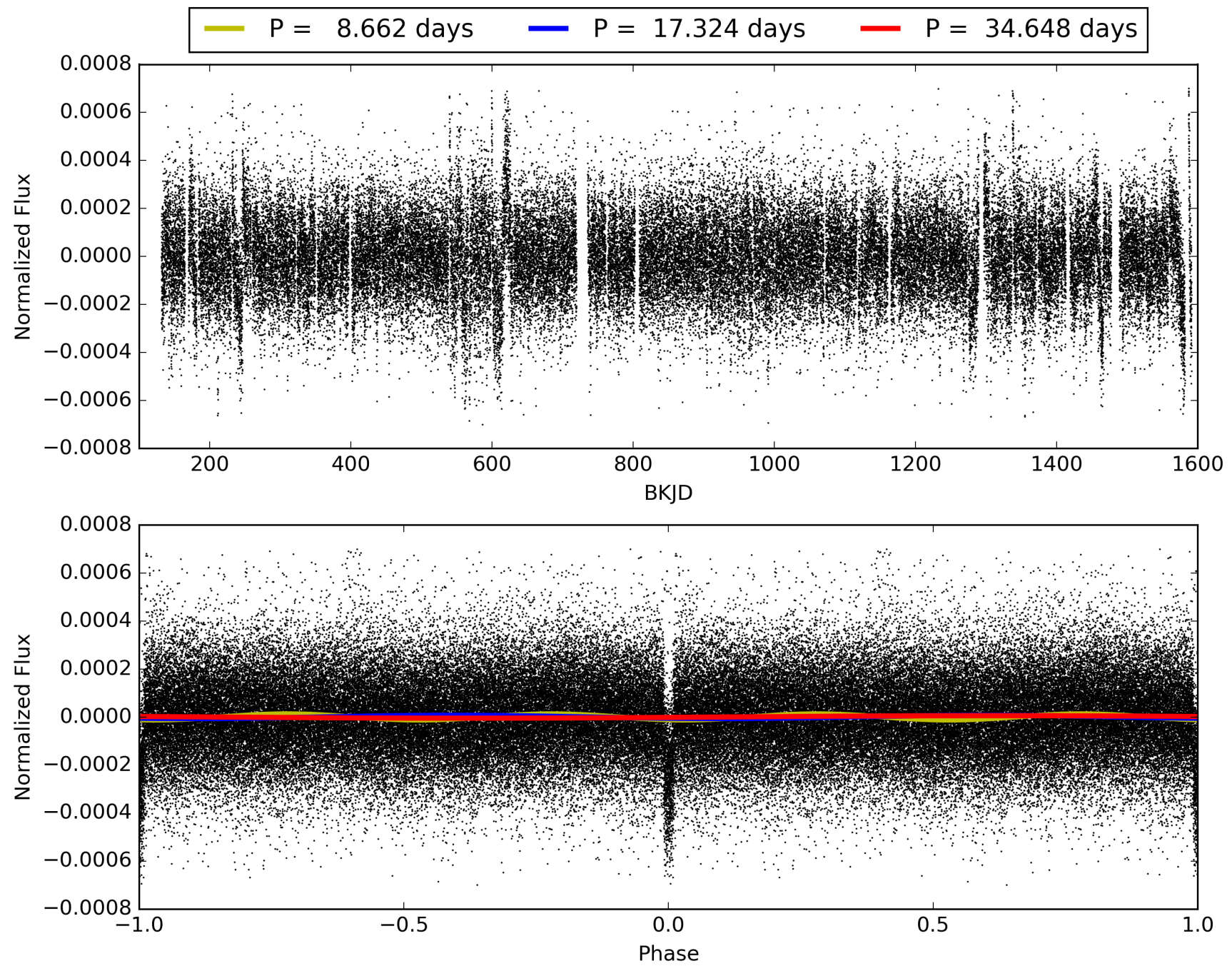
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [34.17σ]
ModelChiSquare2-sig: 25.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.86e-278
RollingBand-fgt: 1.00 [74/74]
GhostDiagnostic-chr: 3.238
Centroid-sig: 0.0%
Centroid-so: 0.079 arcsec [0.30σ]
OotOffset-rm: 0.133 arcsec [0.52σ]
KicOffset-rm: 0.142 arcsec [0.82σ]
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]

TCE 003939150-01, PDC Light Curves

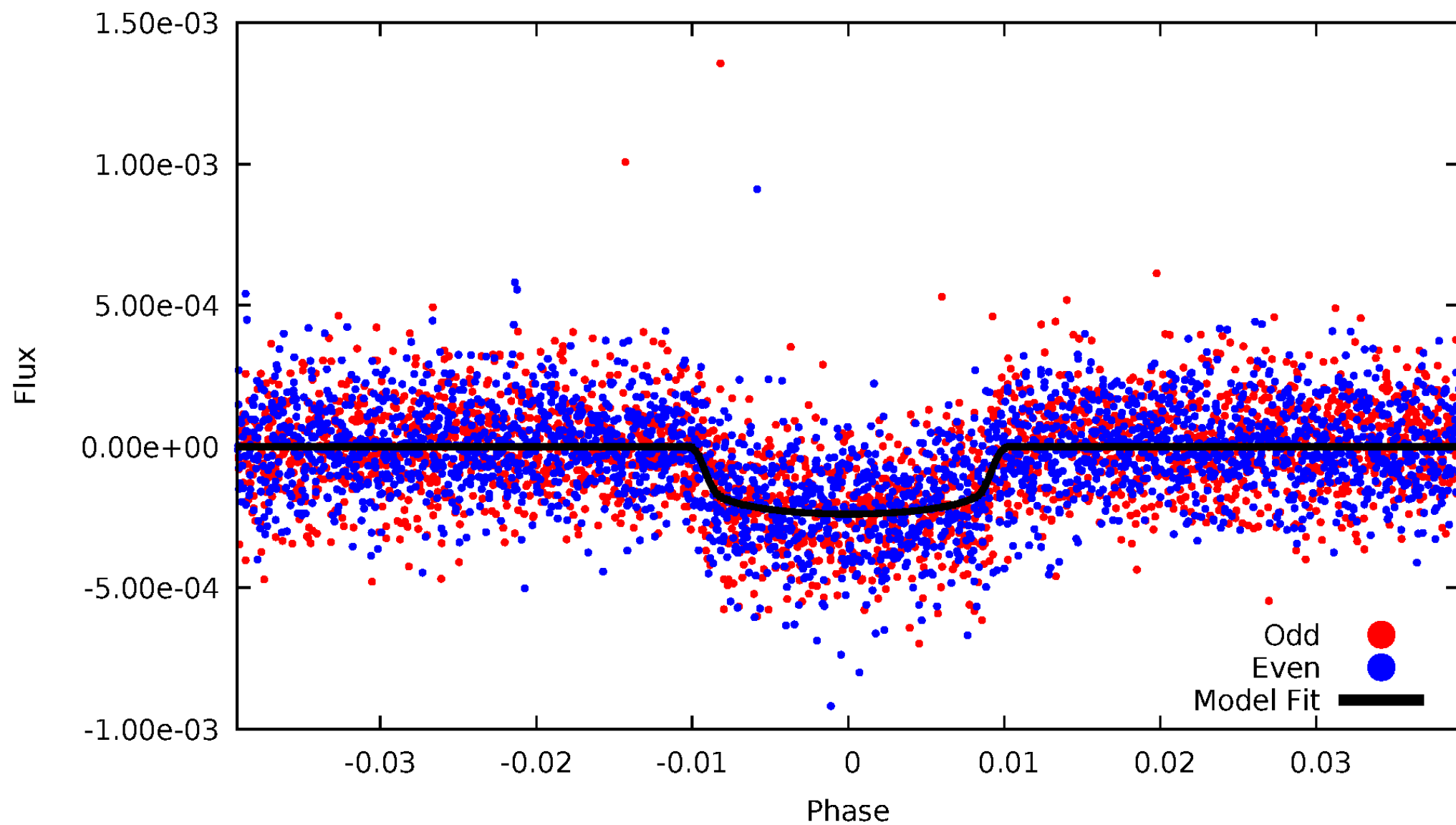


TCE 003939150-01



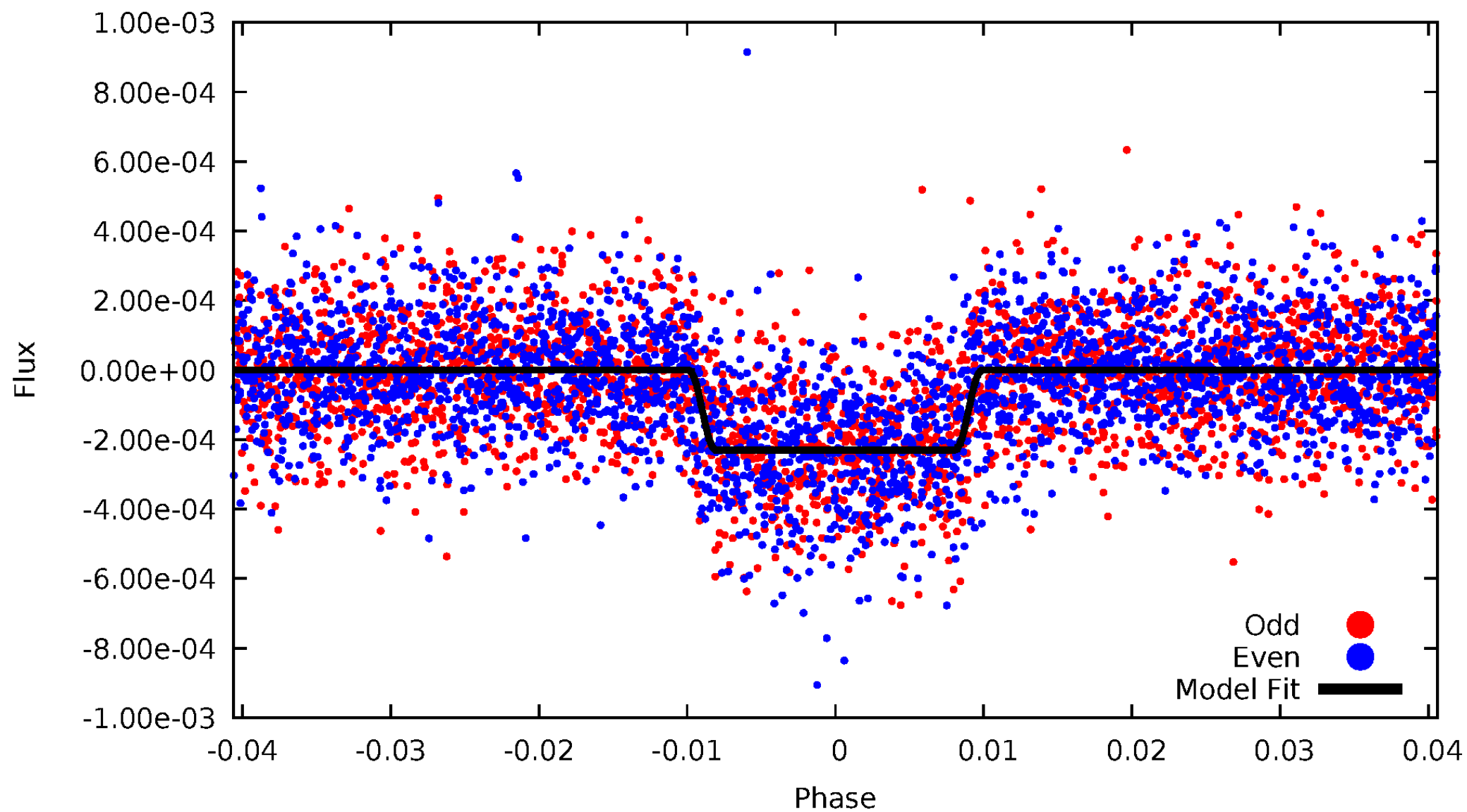
DV Odd/Even

TCE 003939150-01

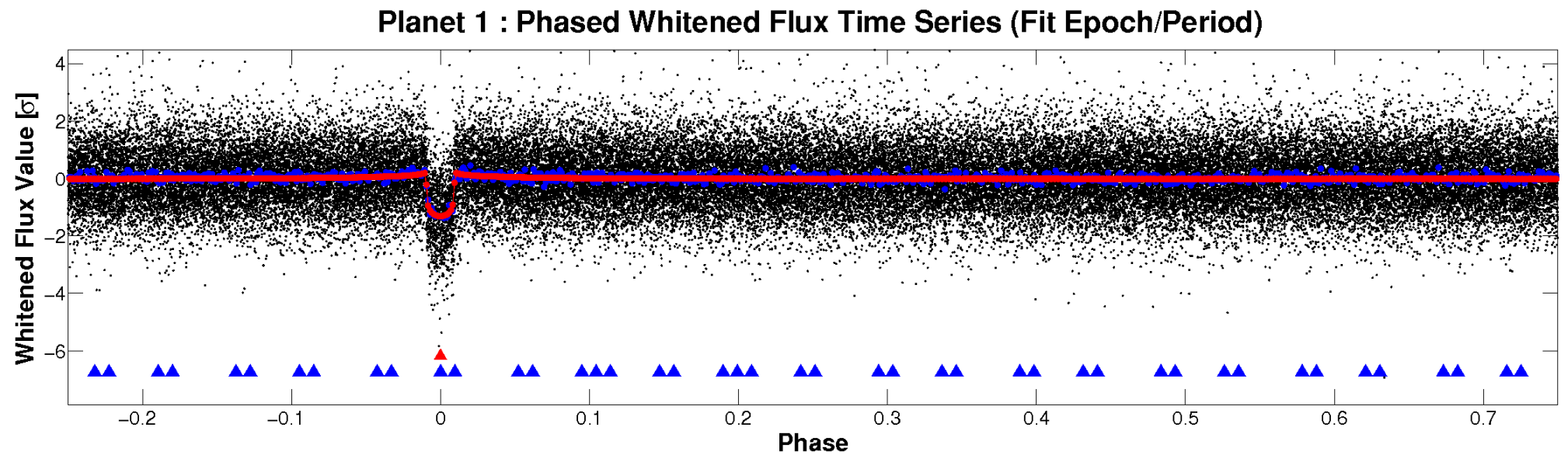
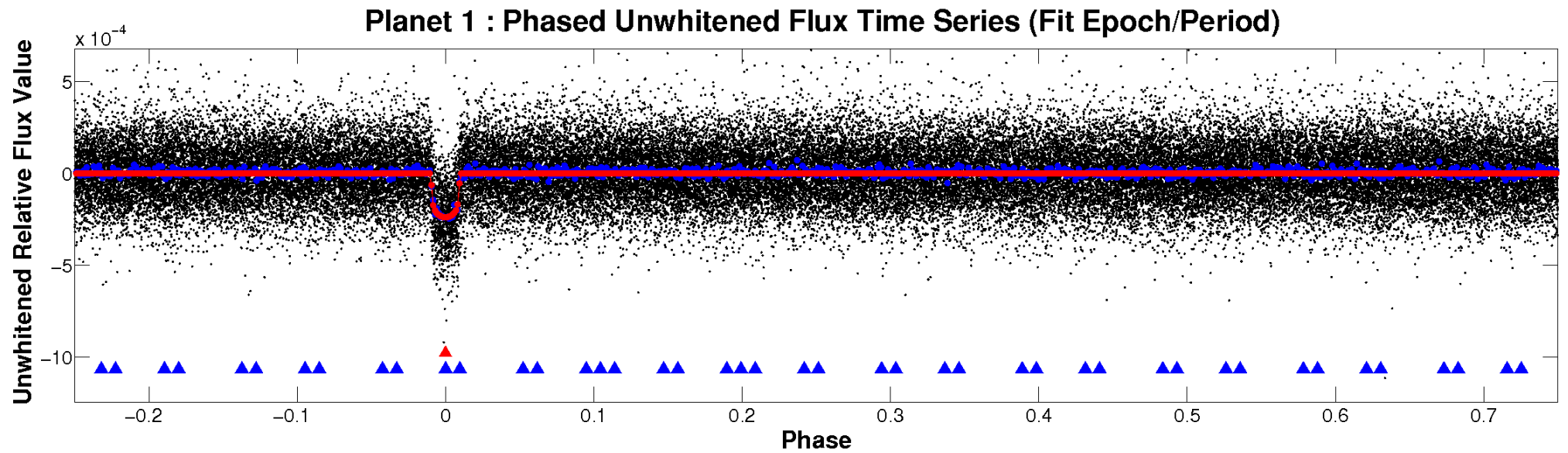


ALT Odd/Even

TCE 003939150-01

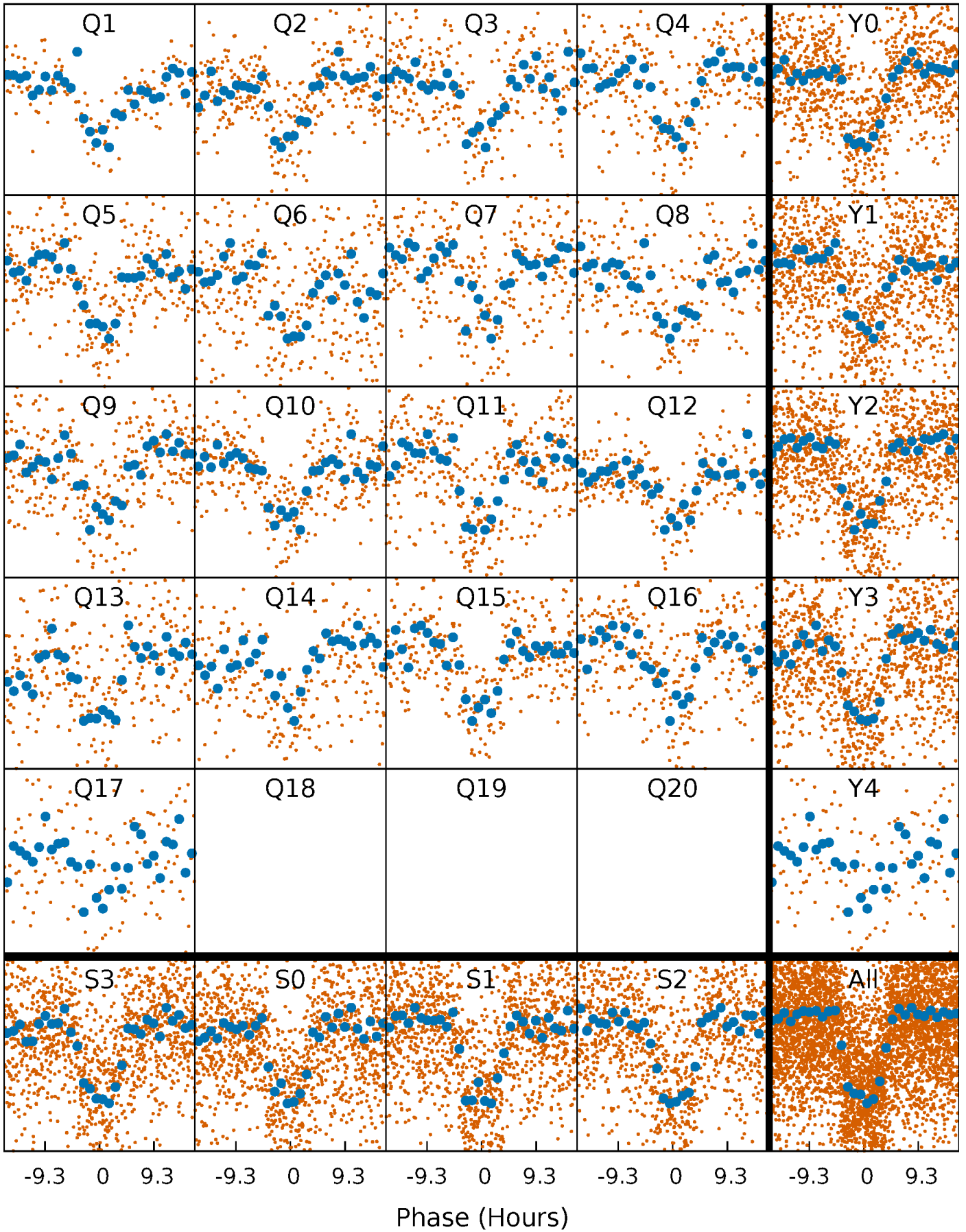


Non-Whitened Vs. Whitened Light Curve



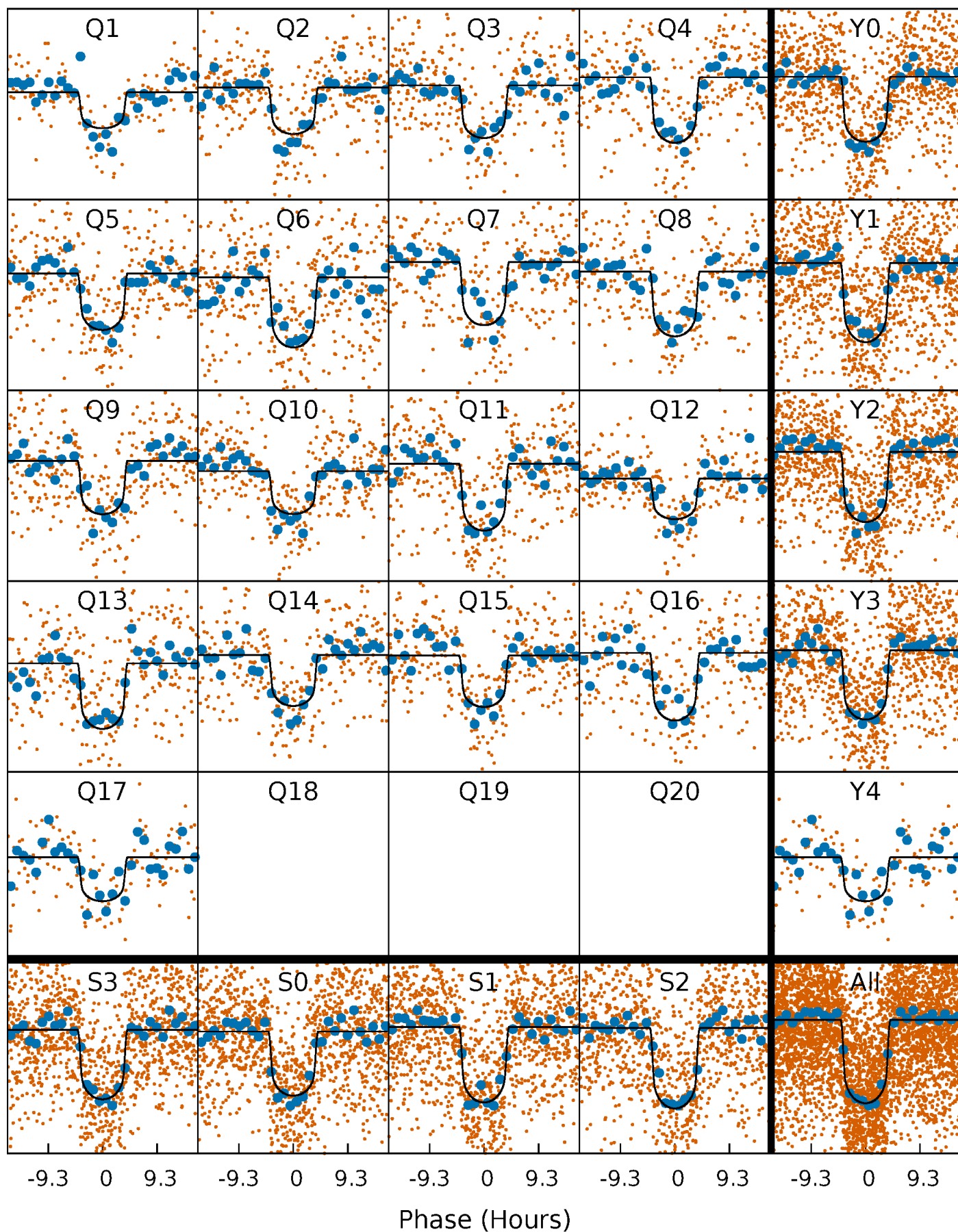
PDC Quarter-Phased Transit Curves

TCE 003939150-01 P= 17.324160 Days $T_0=142.101087$ (BKJD)



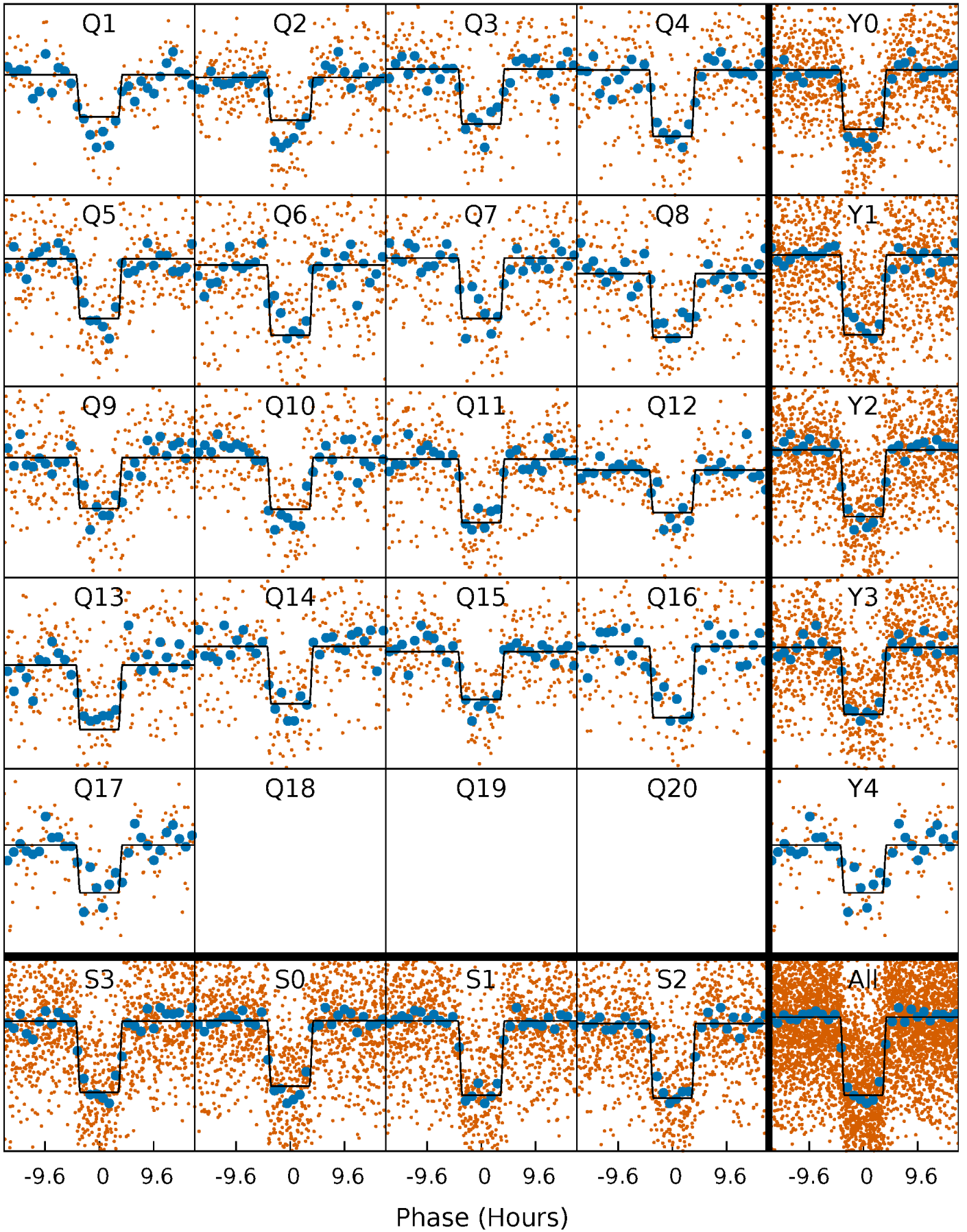
DV Quarter-Phased Transit Curves

TCE 003939150-01 P= 17.324160 Days $T_0=142.101087$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

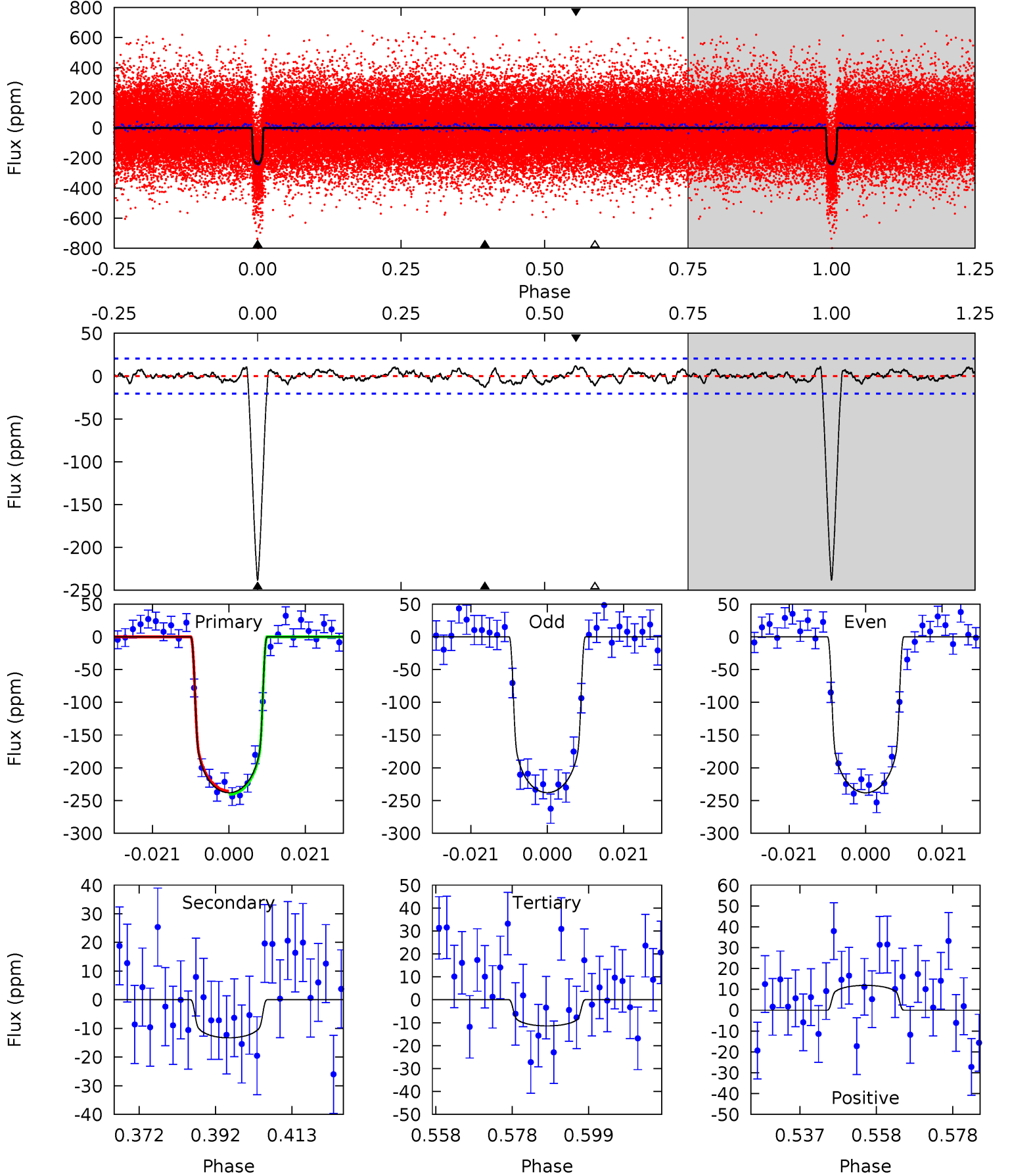
TCE 003939150-01 P= 17.324167 Days $T_0=142.103013$ (BKJD)



DV Model-Shift Uniqueness Test

003939150-01, $P = 17.324160$ Days, $E = 124.776927$ Days

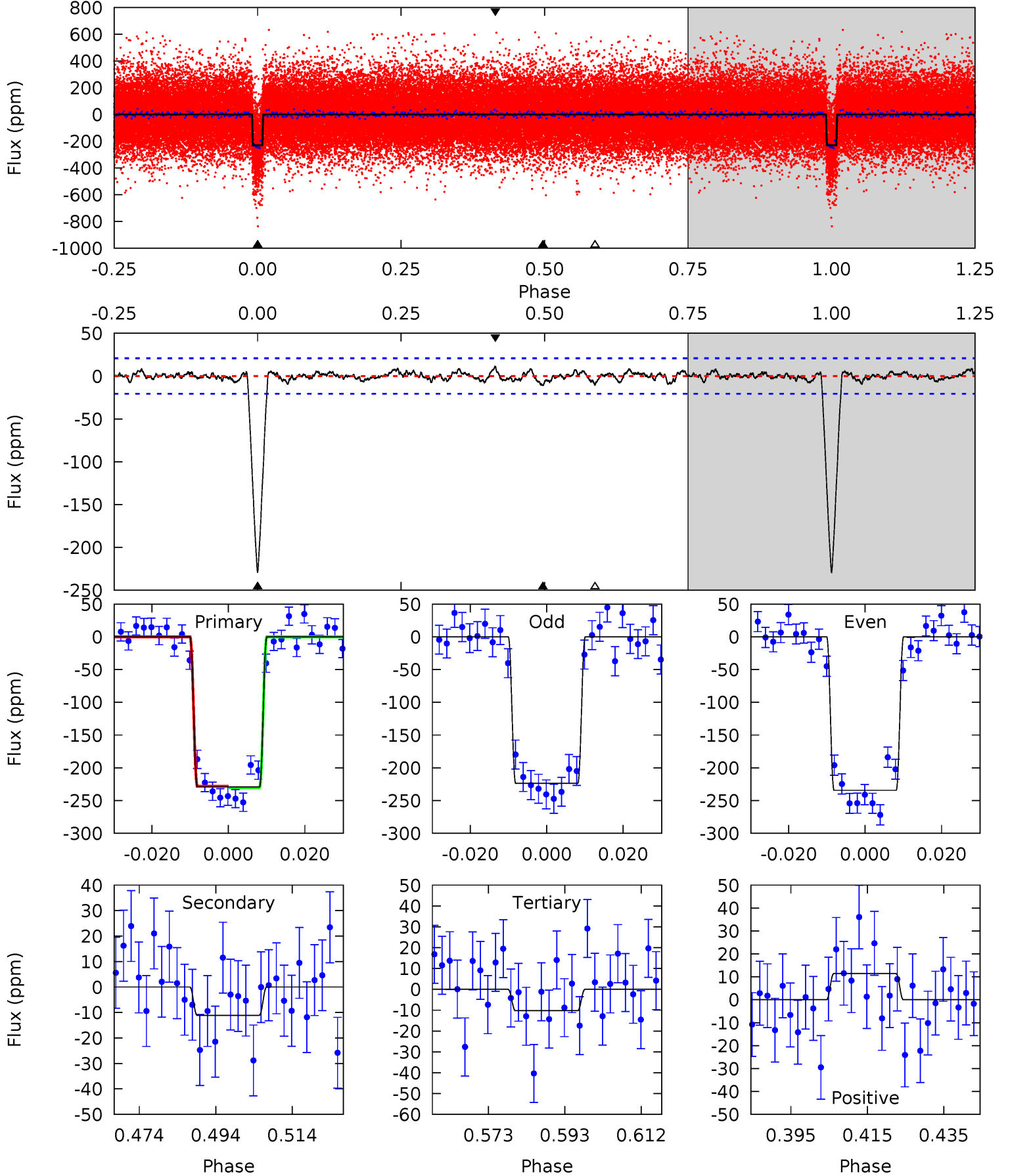
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.8	3.17	2.72	2.84	4.89	2.31	1.06	54.1	54.0	0.45	0.33	0.02	1.03	0.05	0.59



Alt Model-Shift Uniqueness Test

003939150-01, $P = 17.324167$ Days, $E = 124.778846$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.0	2.61	2.42	2.69	4.89	2.33	0.86	51.6	51.3	0.20	-0.08	1.26	1.08	0.05	0.26



Stellar Parameters For KIC 003939150

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5968^{+120}_{-108}	$3.972^{+0.210}_{-0.084}$	$0.040^{+0.150}_{-0.150}$	$1.857^{+0.264}_{-0.452}$	$1.179^{+0.144}_{-0.130}$	$0.259^{+0.283}_{-0.070}$
	+2%/-2%	+5%/-2%	+375%/-375%	+14%/-24%	+12%/-11%	+109%/-27%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 003939150-01 / KOI 1215.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-13 ± 4	$3.19^{+0.42}_{-0.44}$	1333^{+64}_{-88}	3363^{+181}_{-218}	14^{+7}_{-5}
Alt.	-11 ± 4	$3.04^{+0.37}_{-0.46}$	1331^{+62}_{-80}	3317^{+214}_{-230}	13^{+7}_{-5}

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

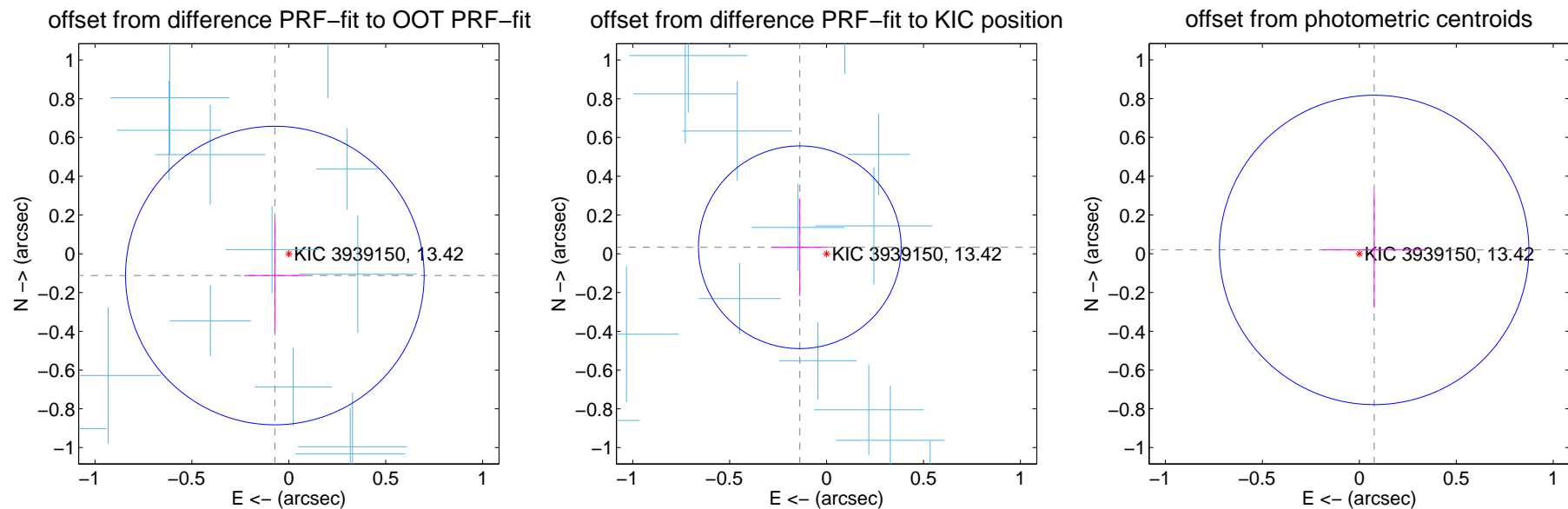
DV Centroid Data

Supplemental centroid analysis for 003939150-01. Kepler magnitude: 13.42. Transit SNR 39.59

There are 17 quarters with good PRF difference image offsets

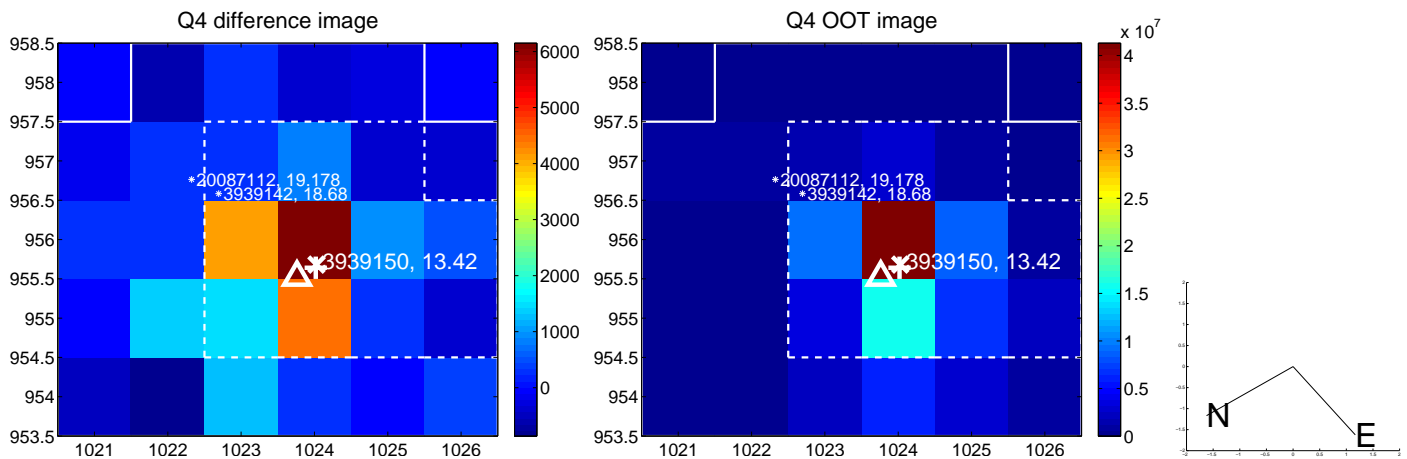
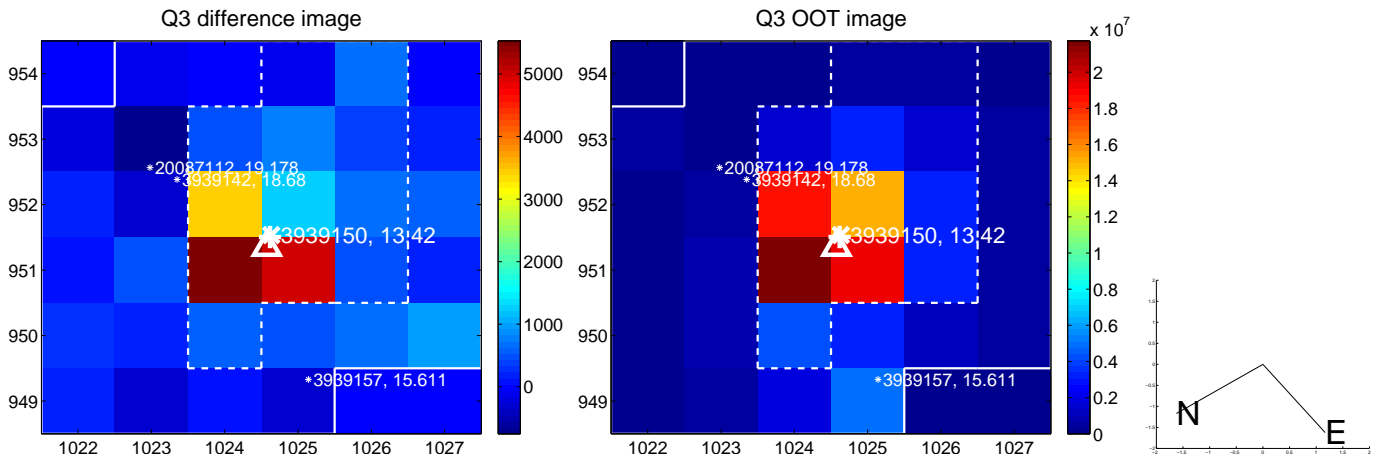
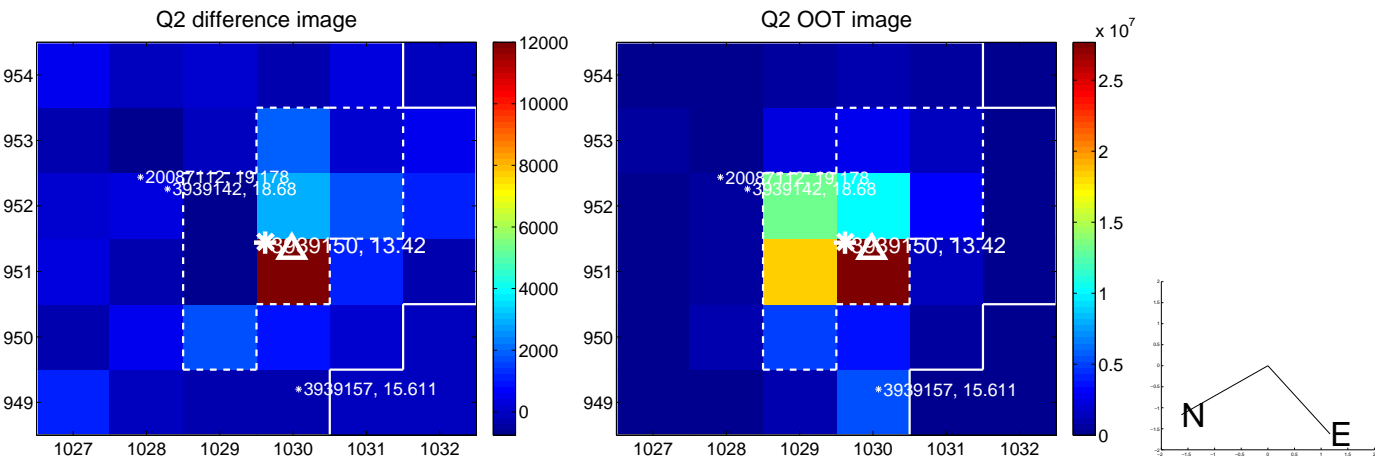
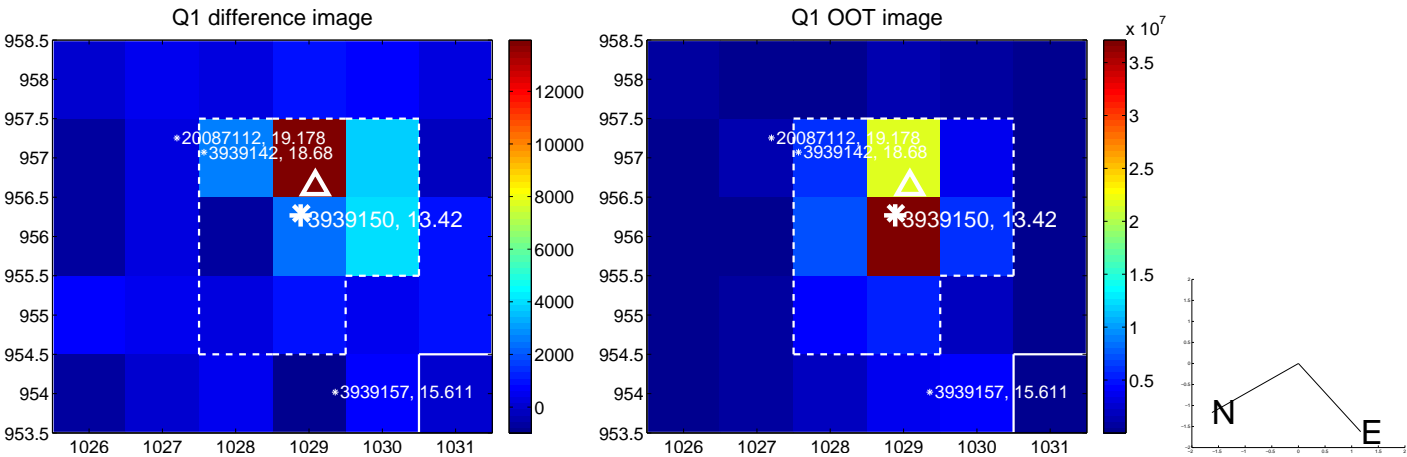
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.133 ± 0.257	0.52	0.072 ± 0.159	-0.112 ± 0.288
PRF-fit source offset from KIC position	0.142 ± 0.174	0.82	0.138 ± 0.149	0.034 ± 0.251
photometric centroid source offset	0.08 ± 0.27	0.30	-0.08 ± 0.26	0.02 ± 0.30

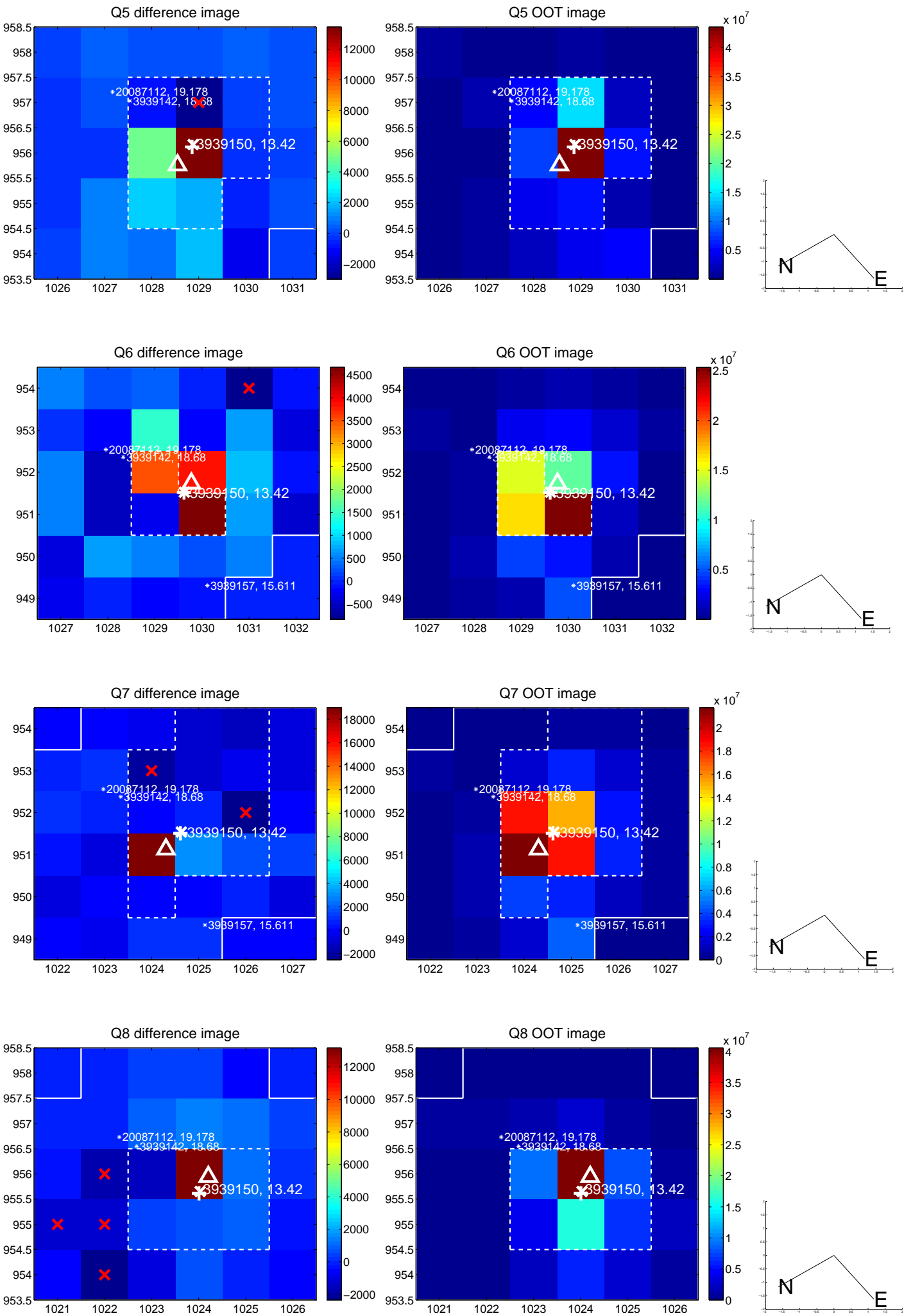


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

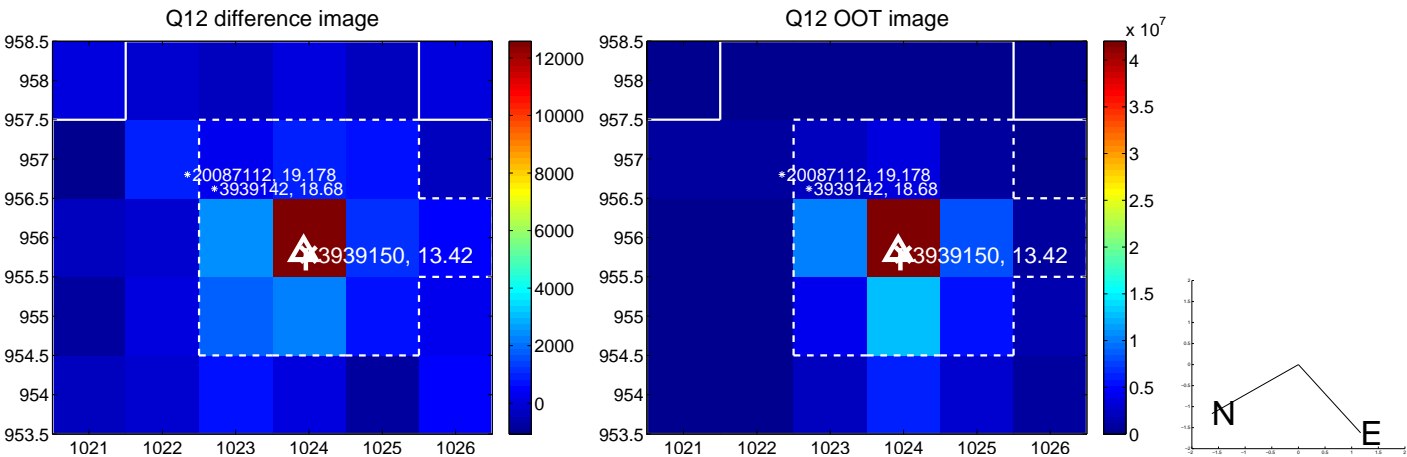
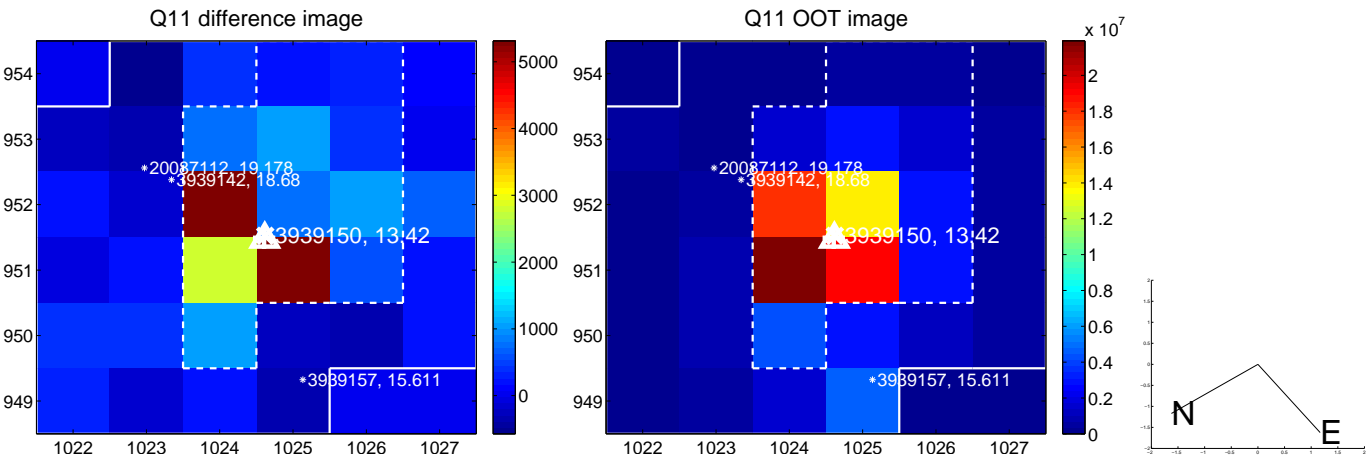
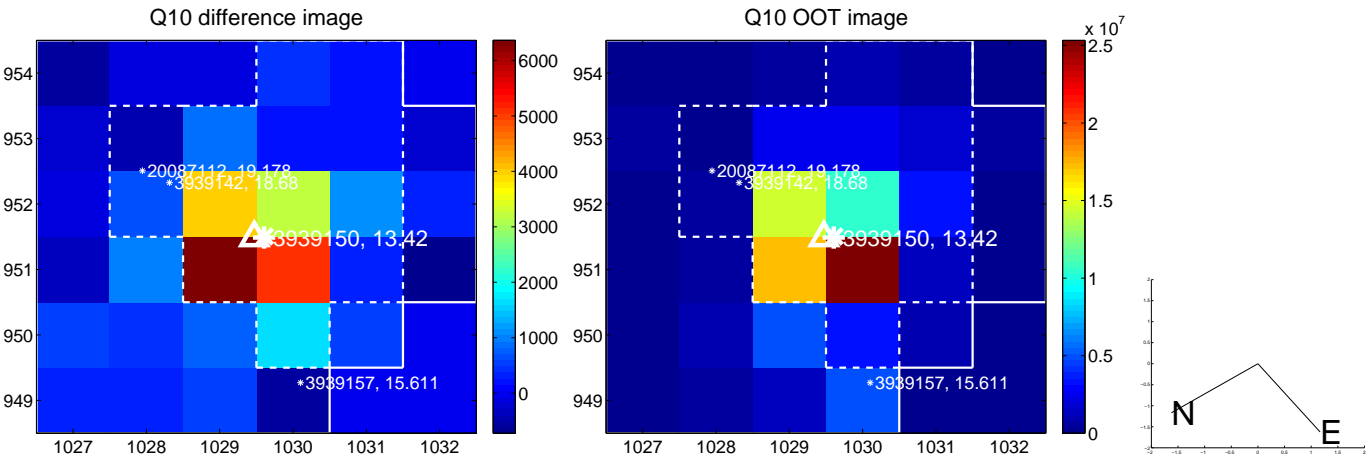
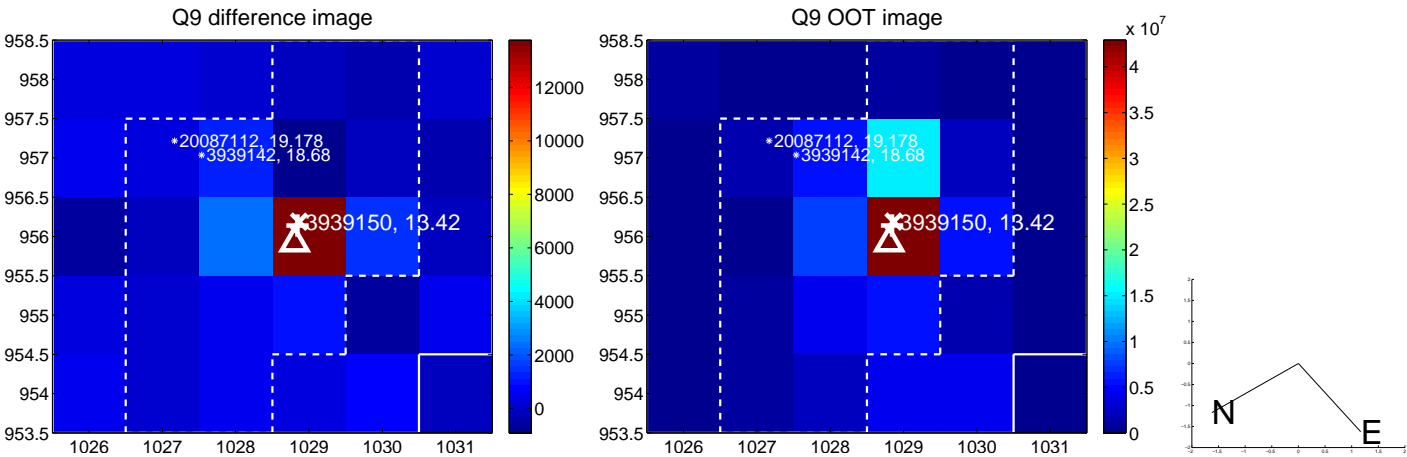
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



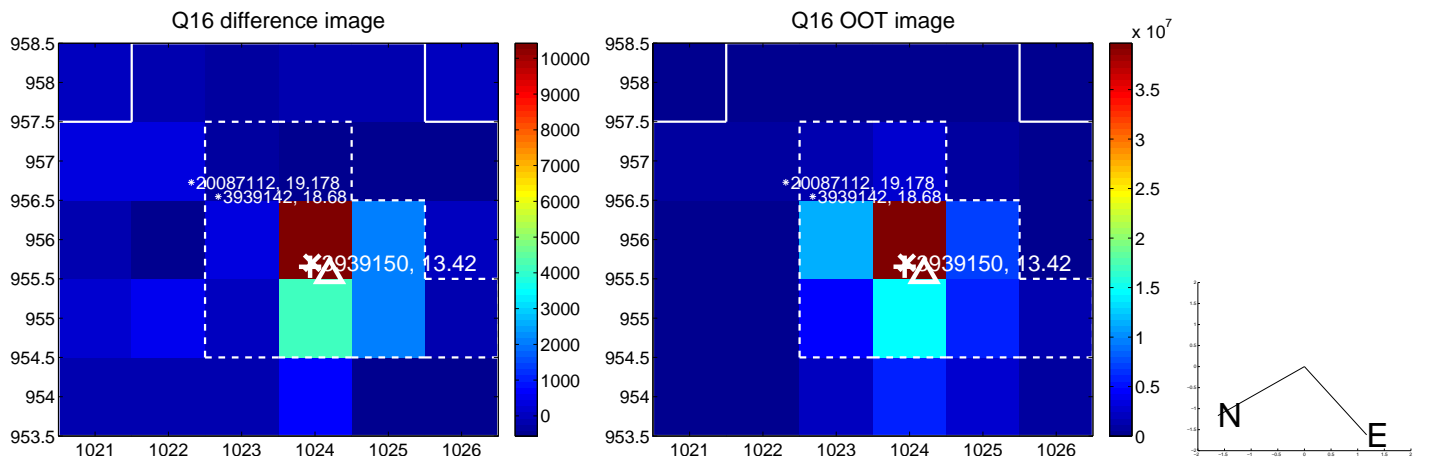
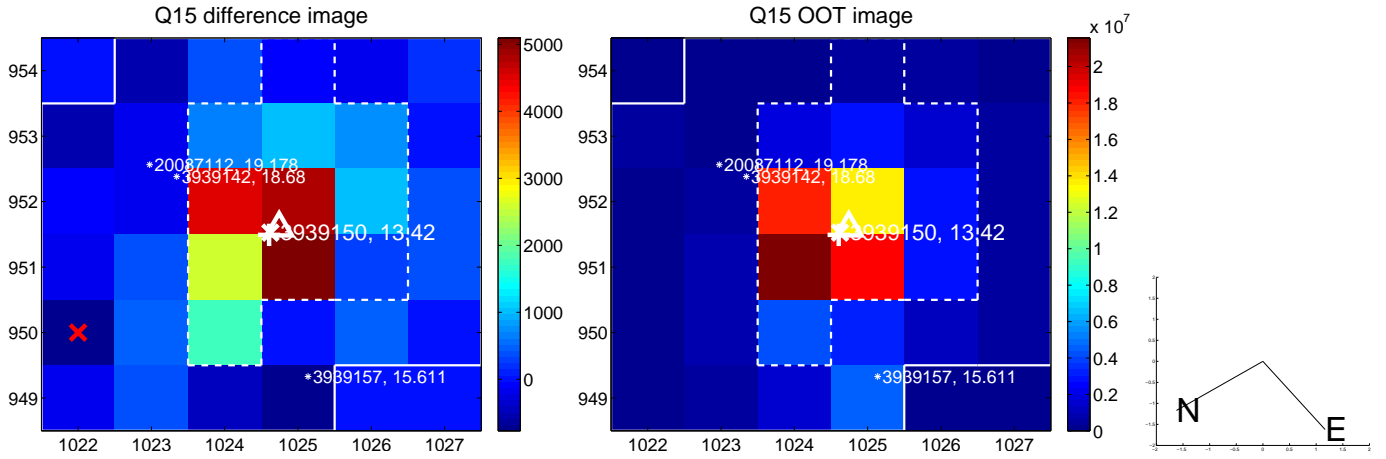
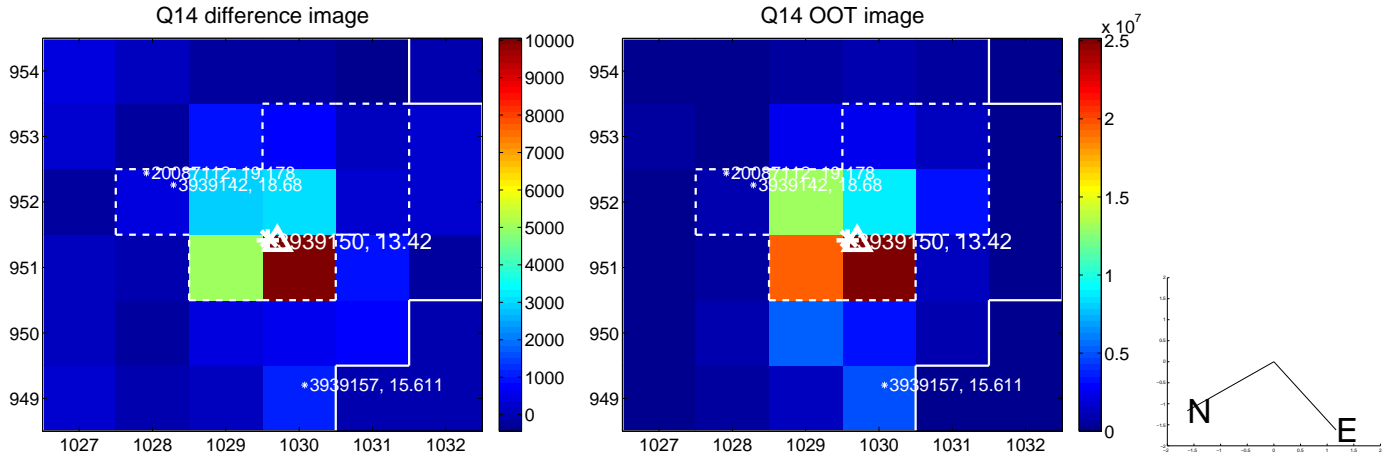
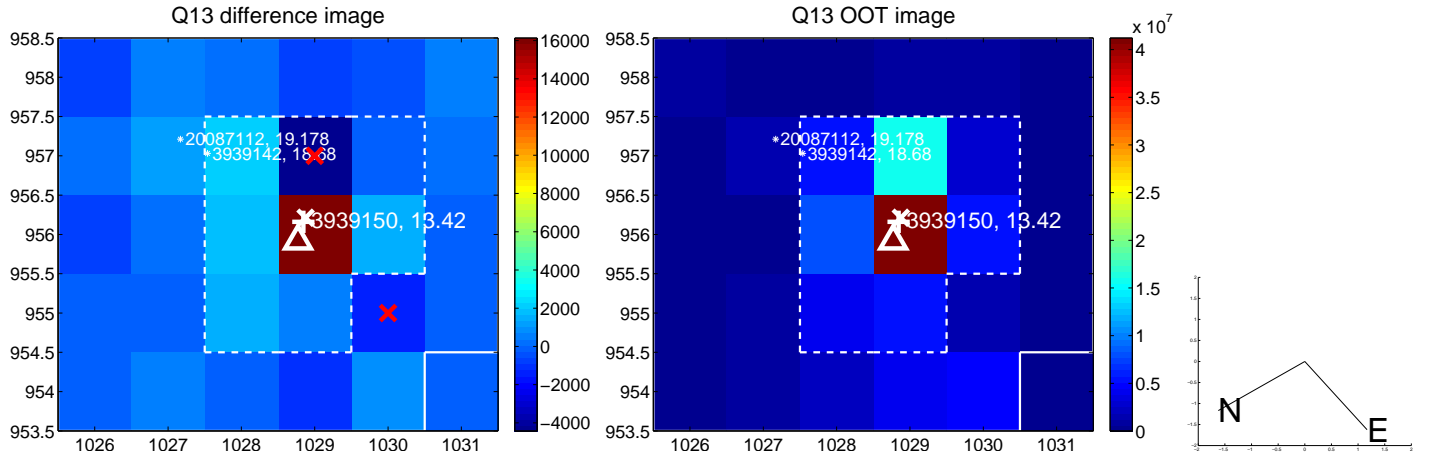
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



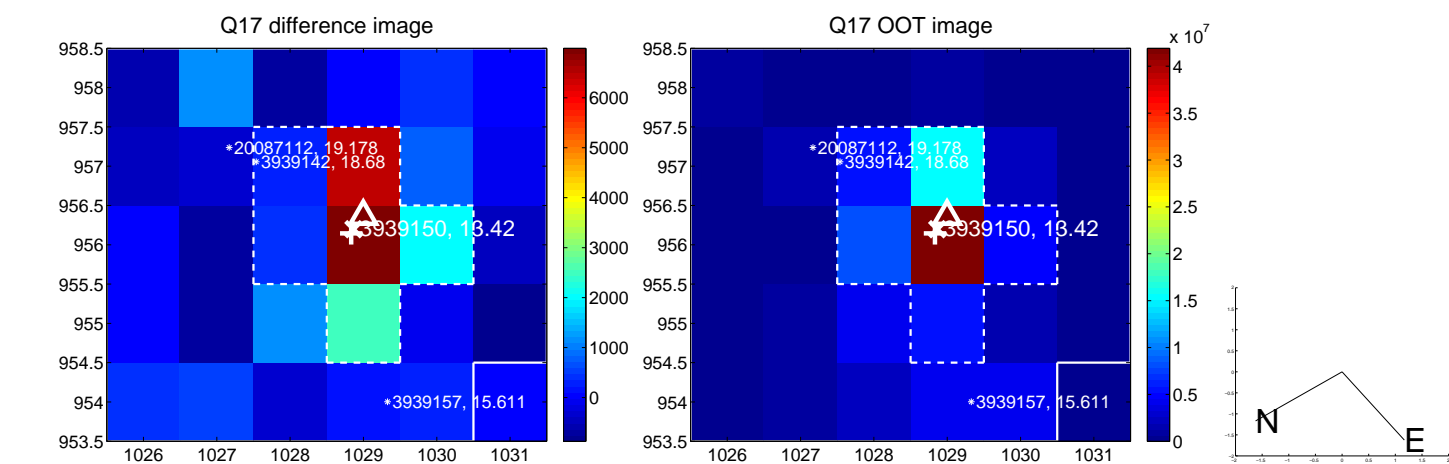
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



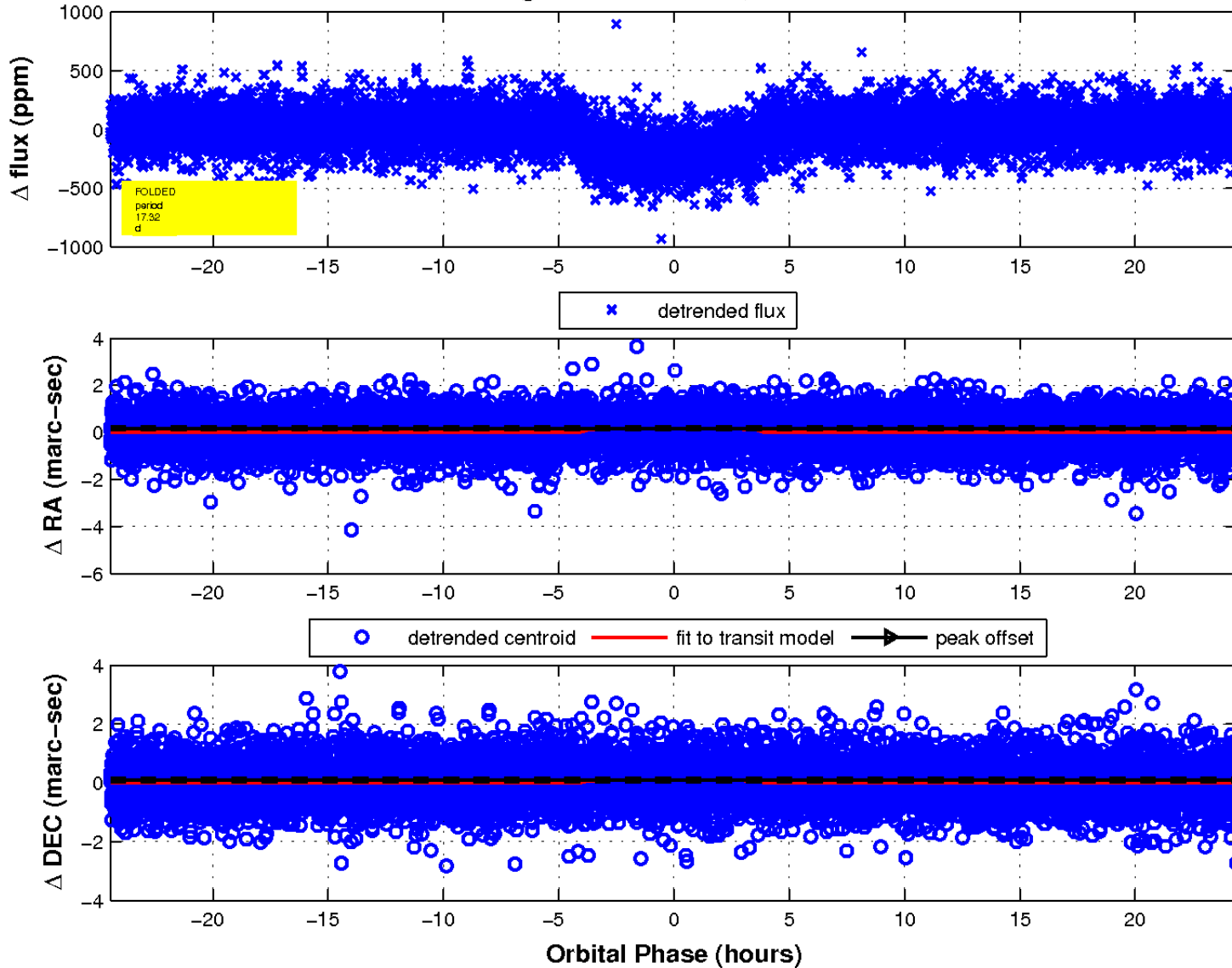
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

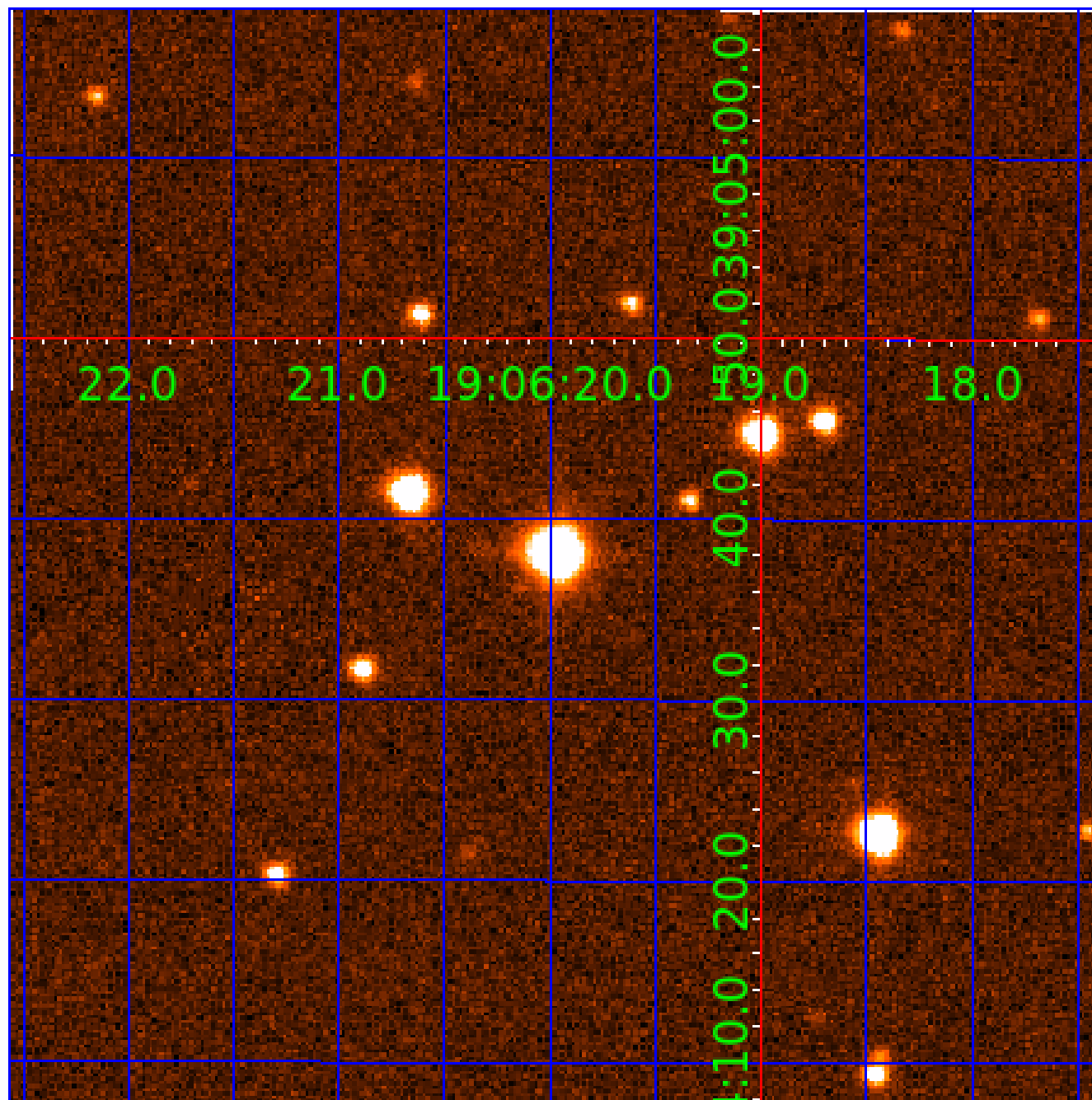


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 003939150

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})
003939150-01	OBS	1215.01	17.324160	142.101087	238.4	8.147	37.1	39.6	1.86	5968	3.26	204.43
003939150-02	OBS	1215.02	33.006299	145.387310	266.0	7.410	29.8	31.1	1.86	5968	3.55	86.55

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003939150-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003939150-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

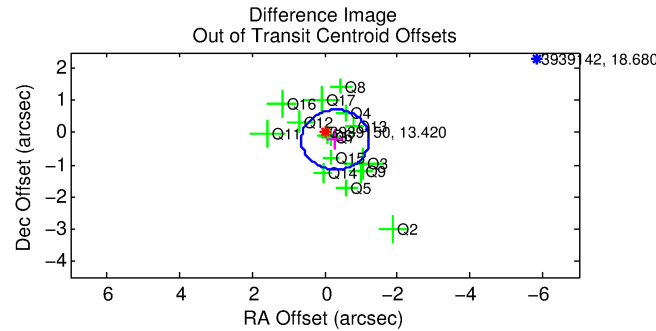
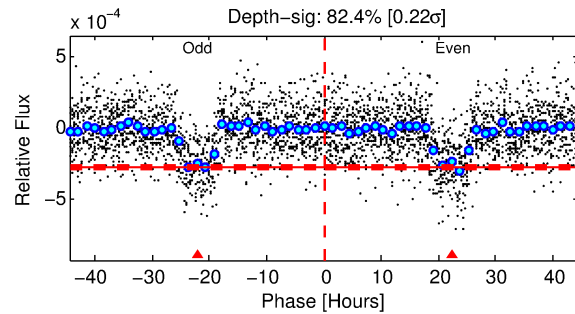
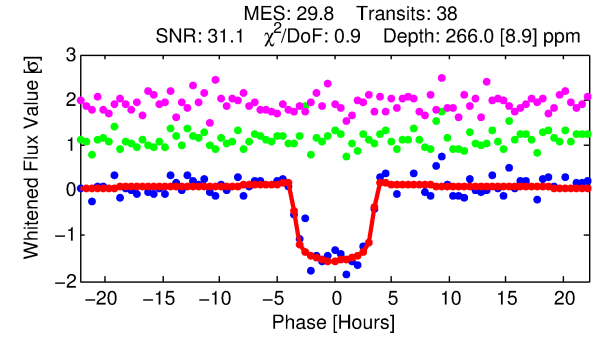
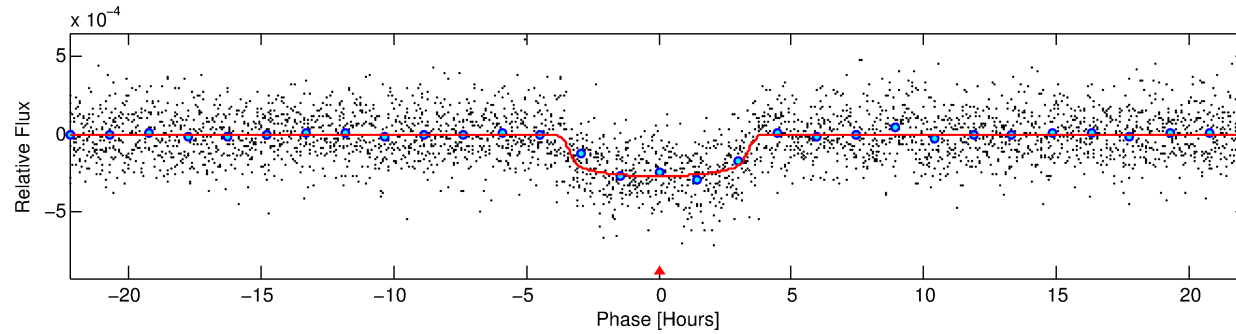
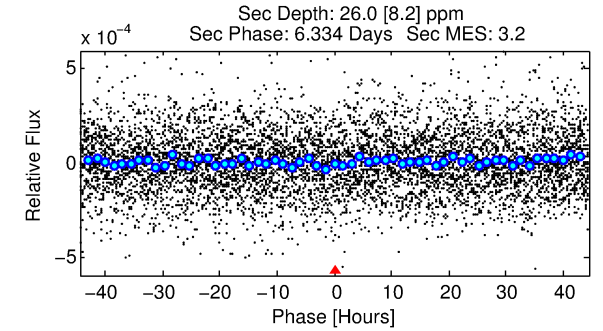
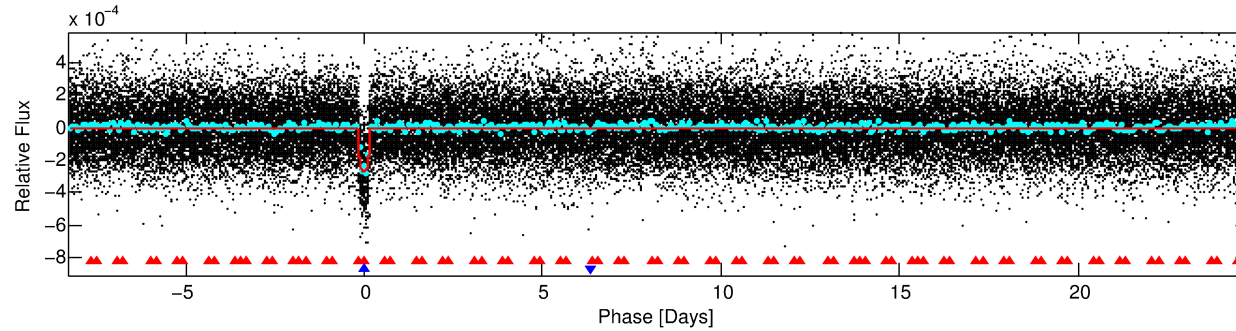
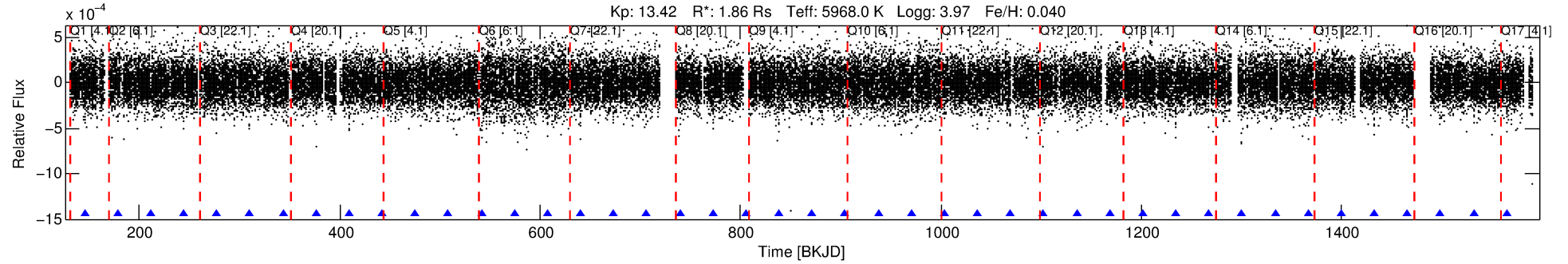
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003939150-02

No Significant Match Found

DV One-Page Summary

KIC: 3939150 Candidate: 2 of 2 Period: 33.006 d
KOI: K01215.02 Name: Kepler-277c Corr: 0.986



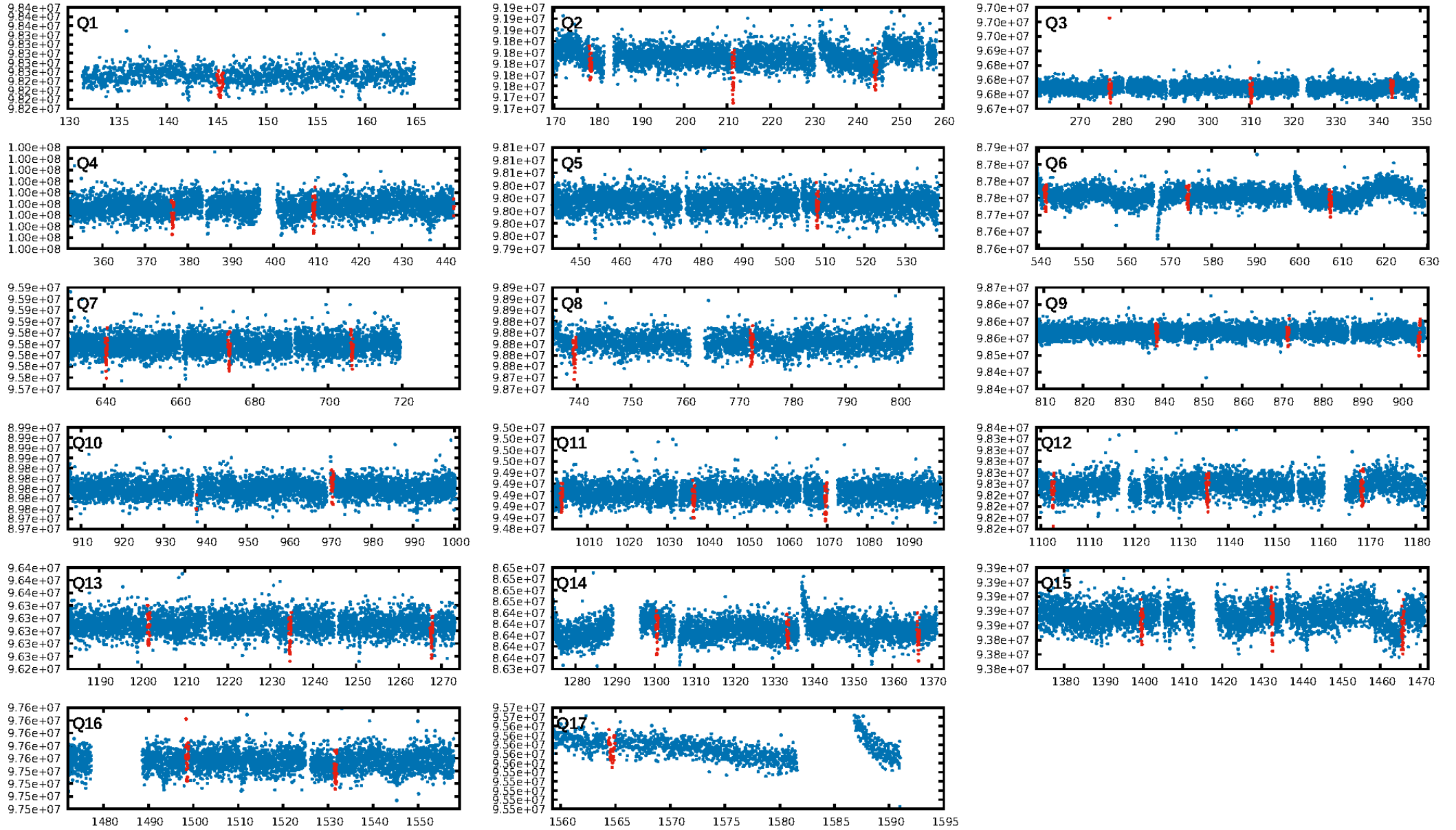
DV Fit Results:

Period = 33.00630 [0.00017] d
Epoch = 145.3873 [0.0046] BKJD
Rp/R* = 0.0175 [0.0012]
a/R* = 16.74 [5.26]
b = 0.89 [0.07]
Seff = 86.55 [32.00]
Teq = 778 [72] K
Rp = 3.55 [0.90] Re
a = 0.2128 [0.0487] AU
Ag = 51.29 [25.53] [1.97σ]
Teffp = 3218 [283] K [8.35σ]

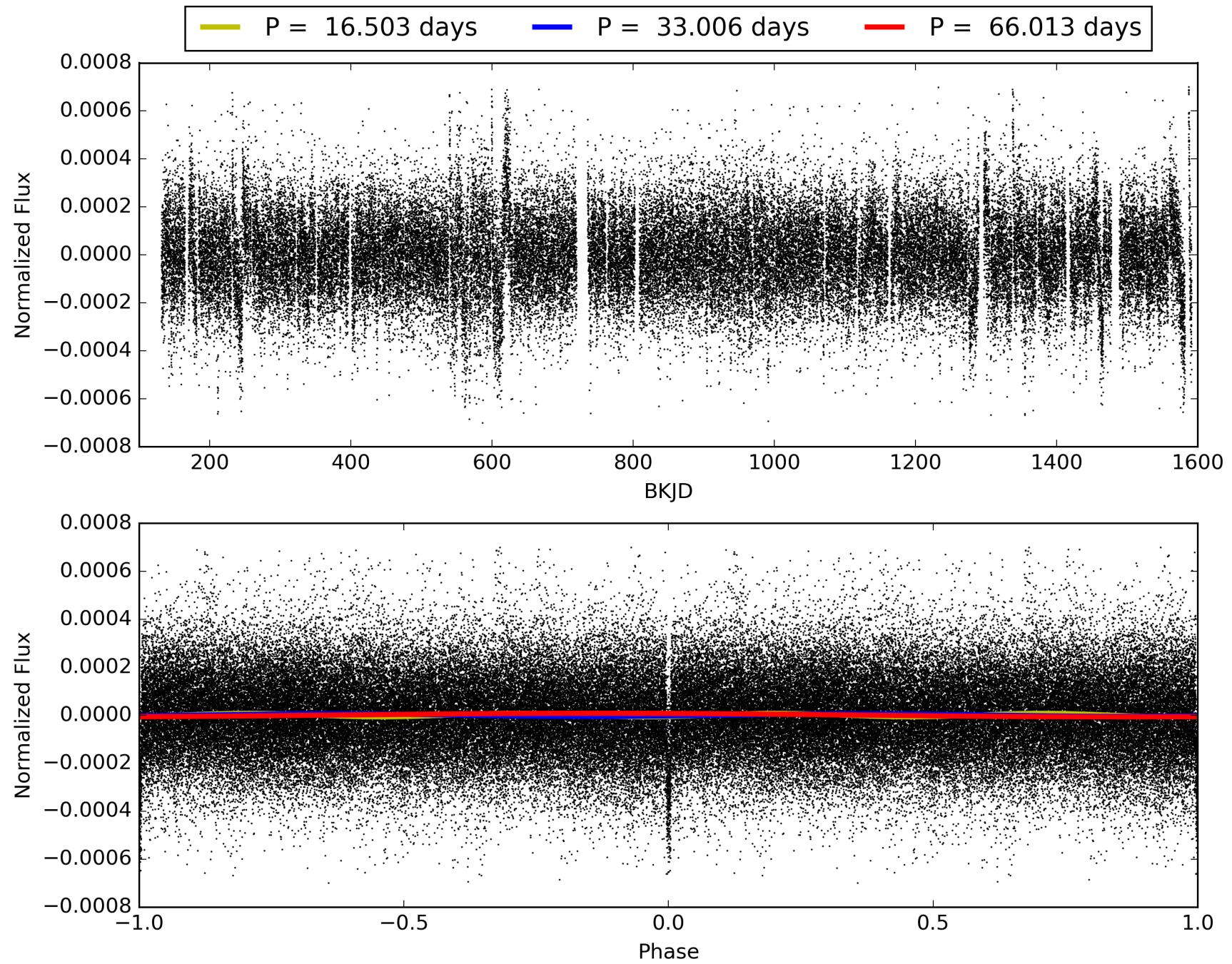
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.17σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 96.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.56e-178
RollingBand-fgt: 1.00 [36/36]
GhostDiagnostic-chr: 2.315
Centroid-sig: 27.3%
Centroid-so: 0.546 arcsec [1.43σ]
OotOffset-rm: 0.367 arcsec [1.18σ]
KicOffset-rm: 0.236 arcsec [0.87σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 003939150-02, PDC Light Curves

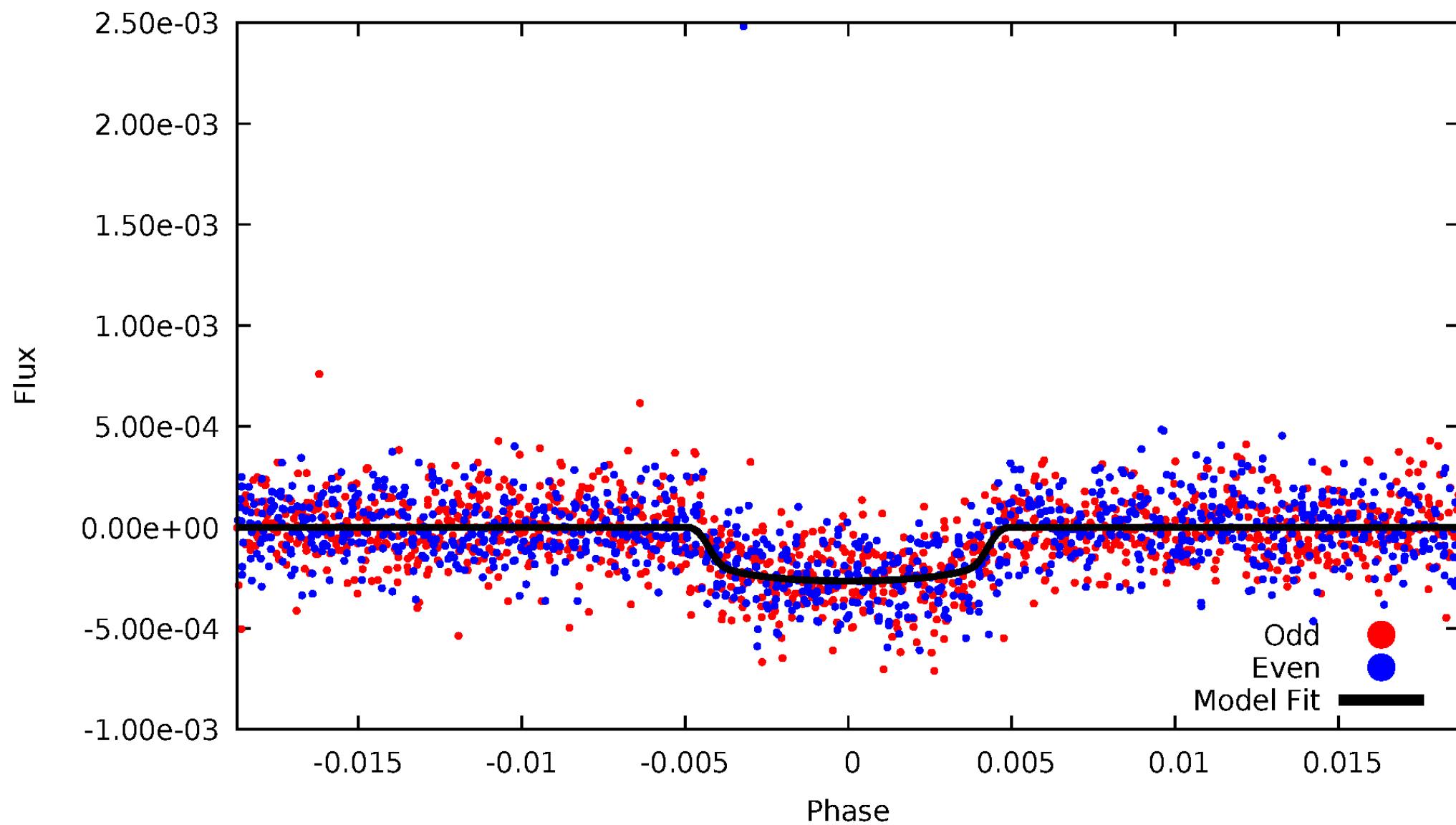


TCE 003939150-02



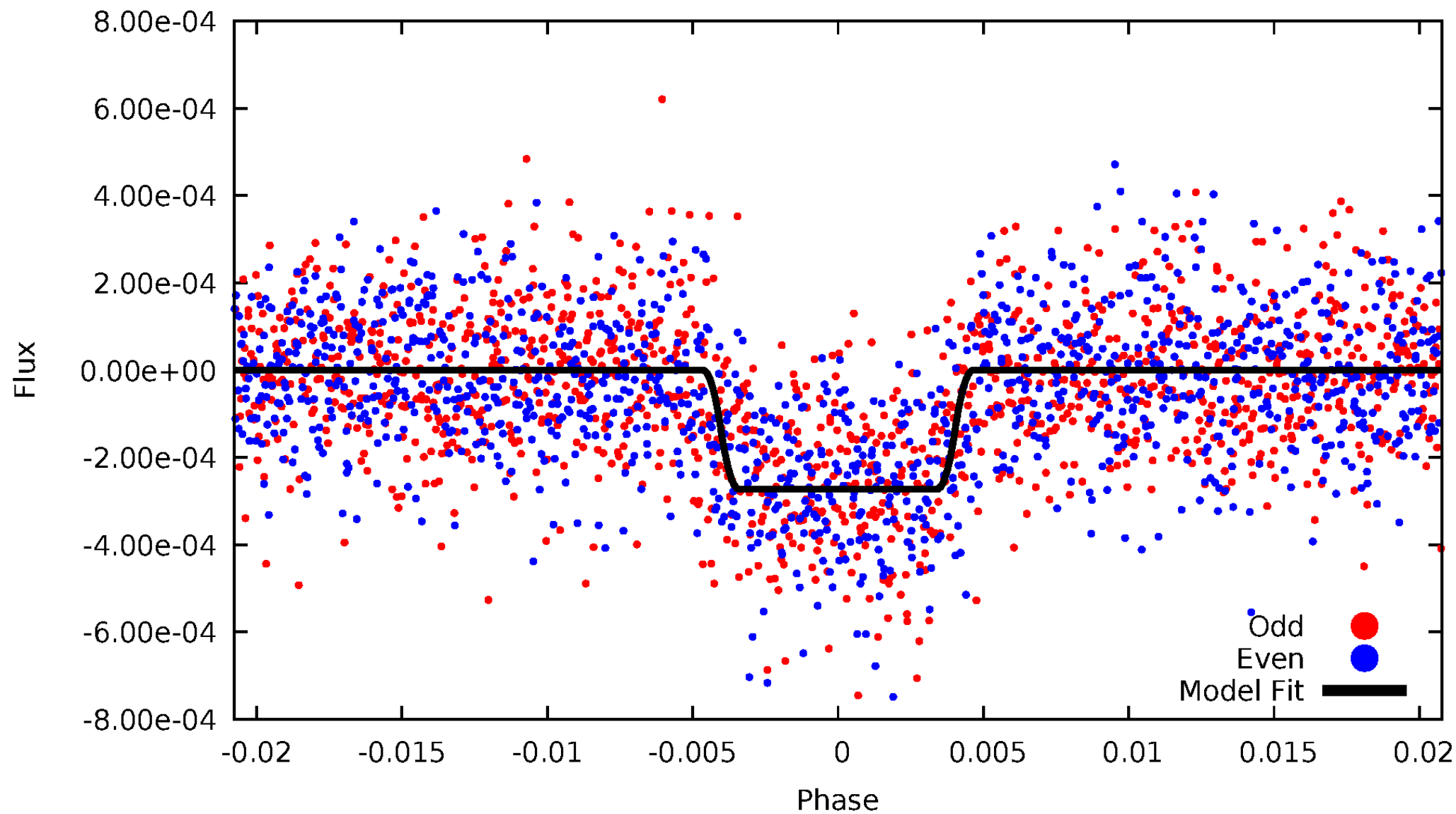
DV Odd/Even

TCE 003939150-02



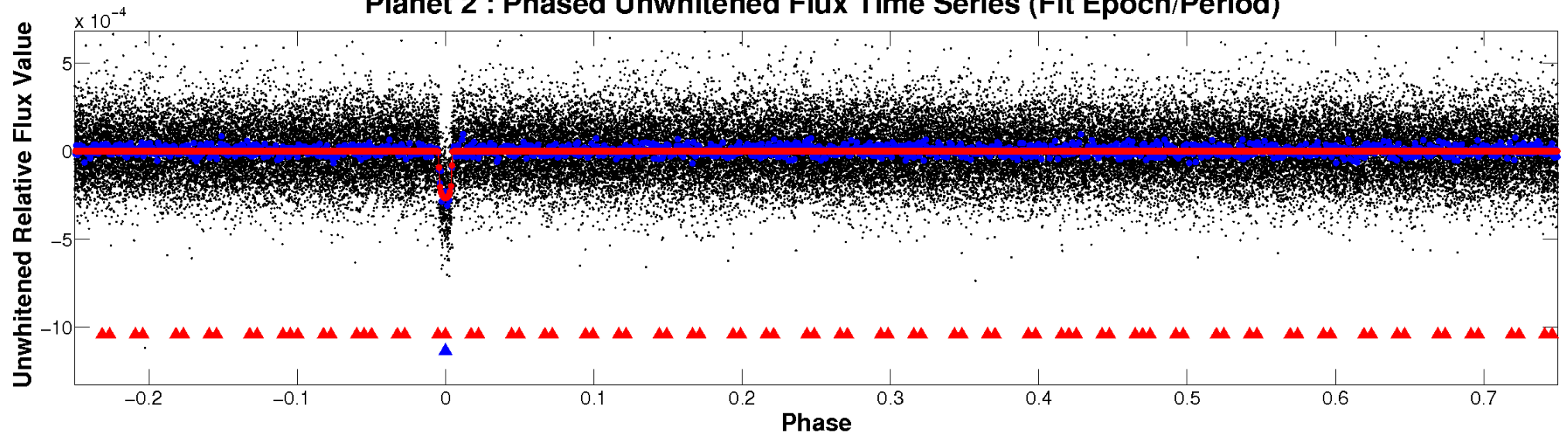
ALT Odd/Even

TCE 003939150-02

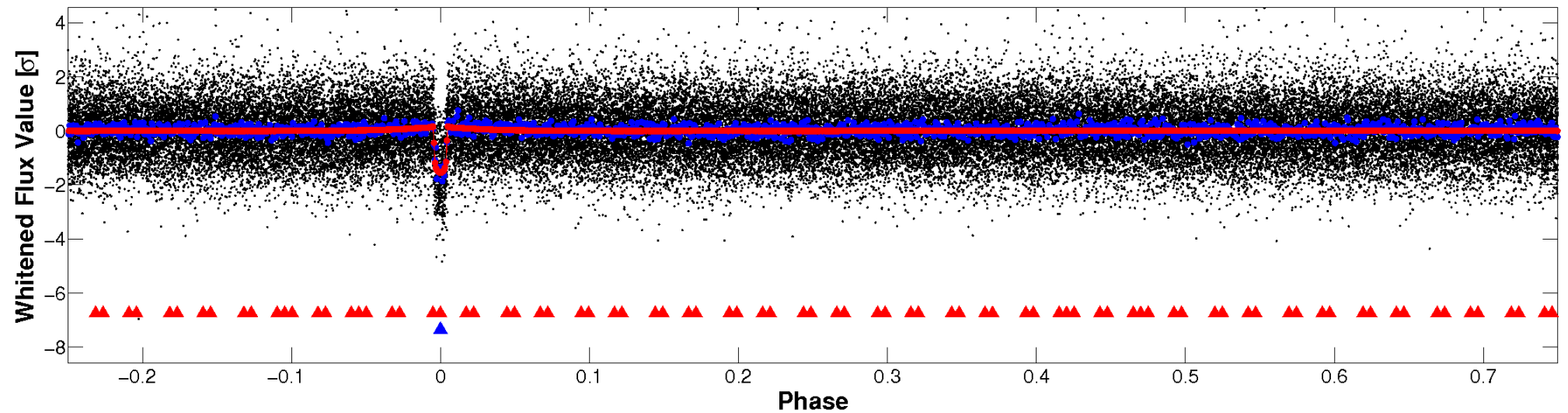


Non-Whitened Vs. Whitened Light Curve

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

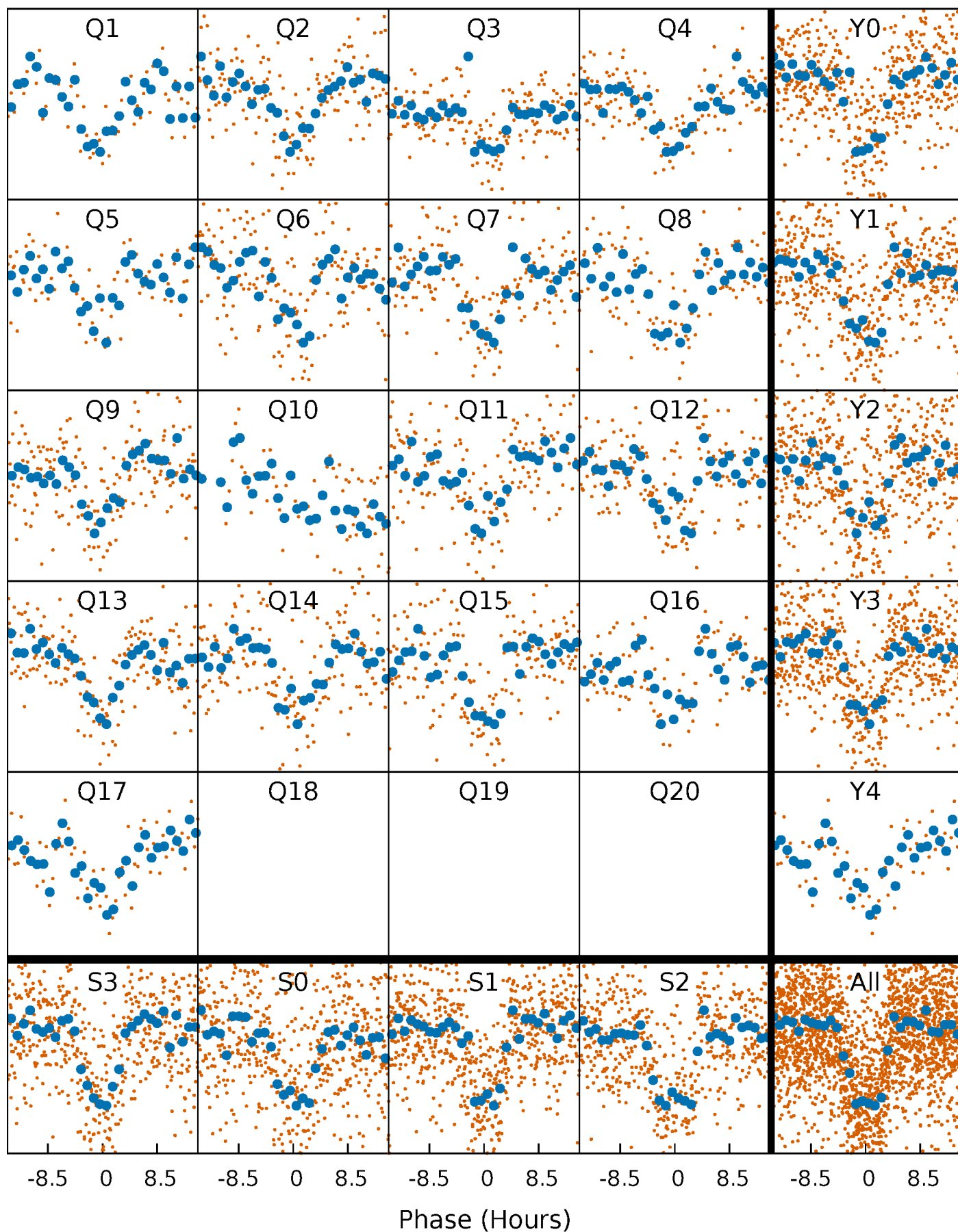


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



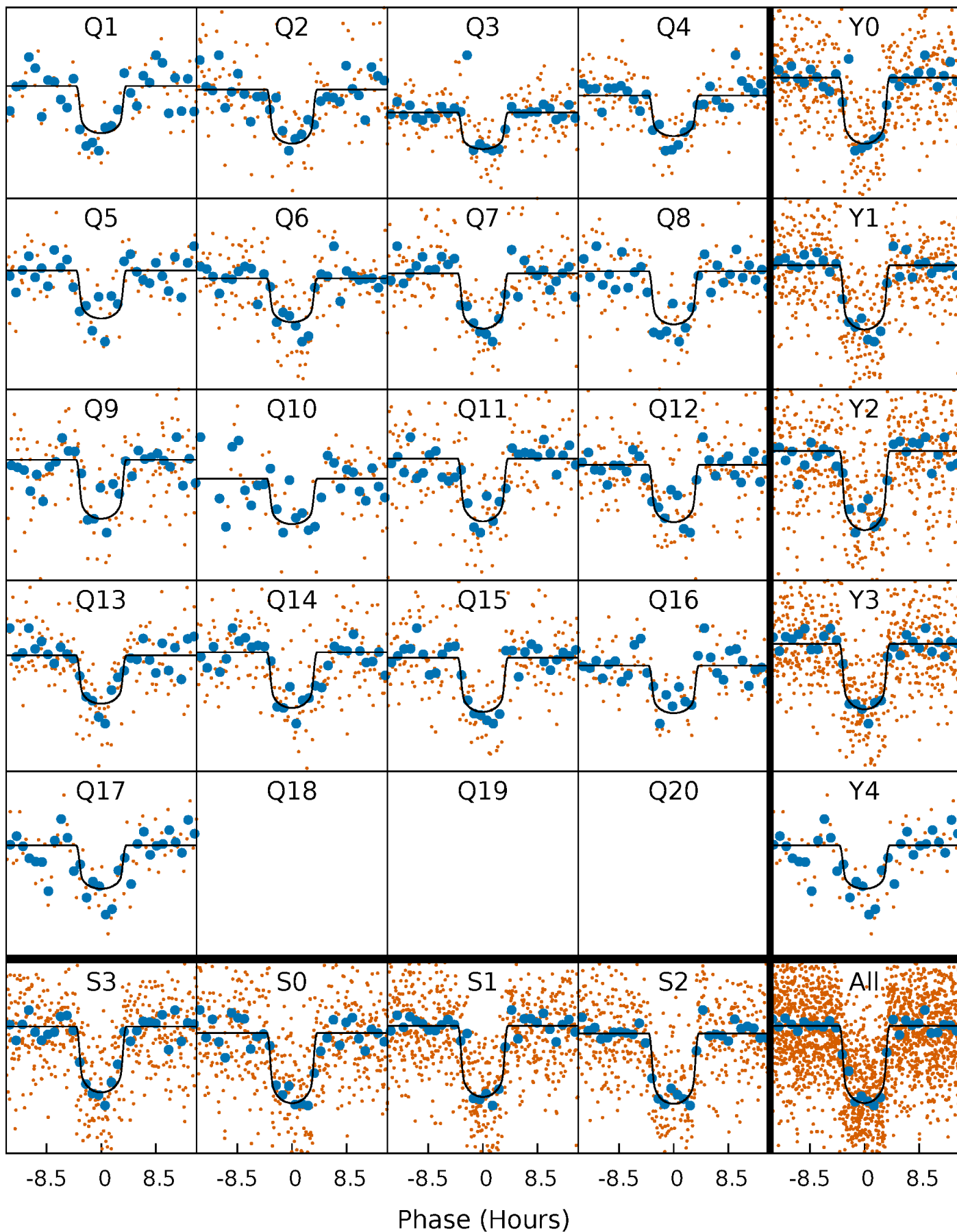
PDC Quarter-Phased Transit Curves

TCE 003939150-02 P= 33.006299 Days $T_0=145.387310$ (BKJD)



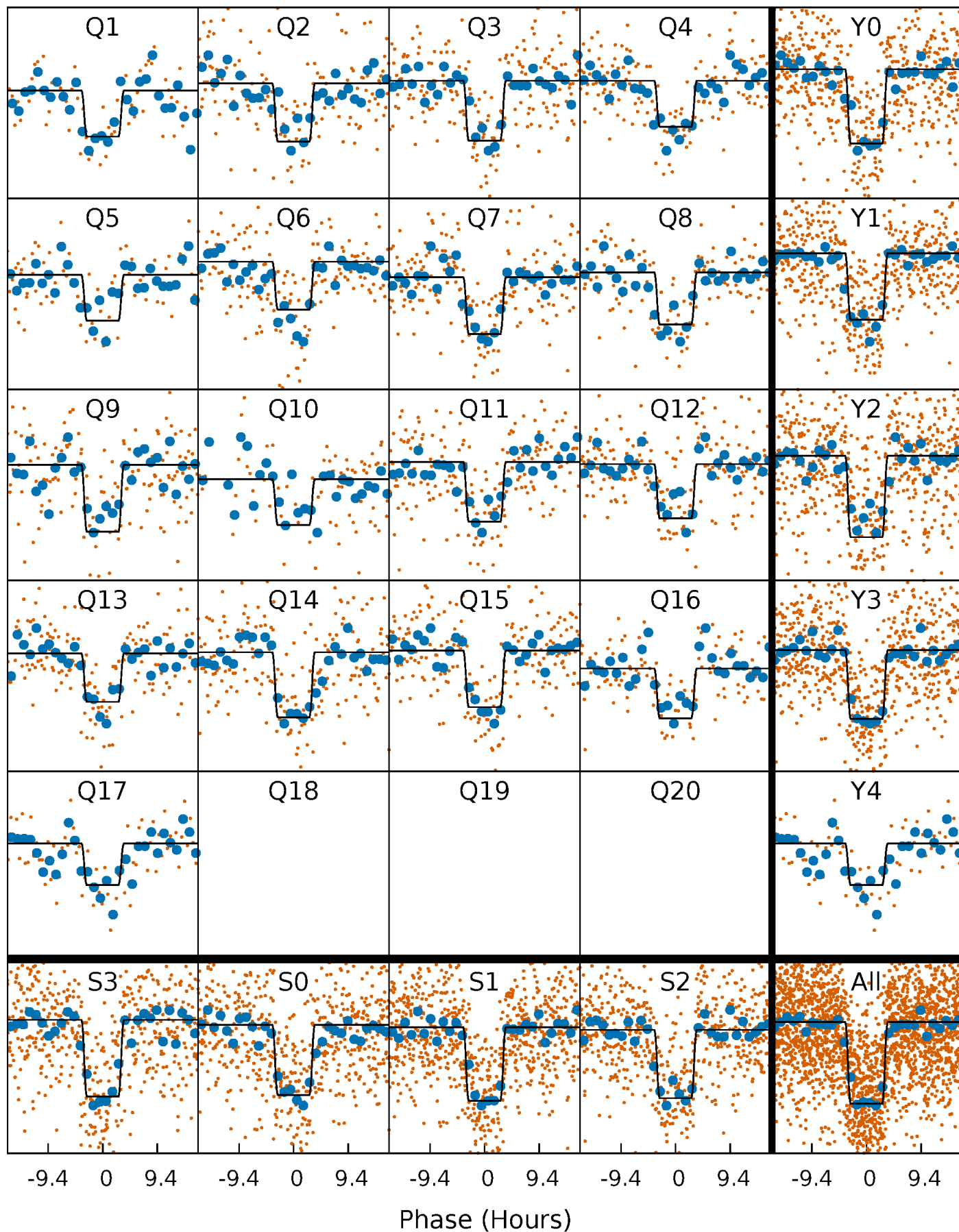
DV Quarter-Phased Transit Curves

TCE 003939150-02 P= 33.006299 Days $T_0=145.387310$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

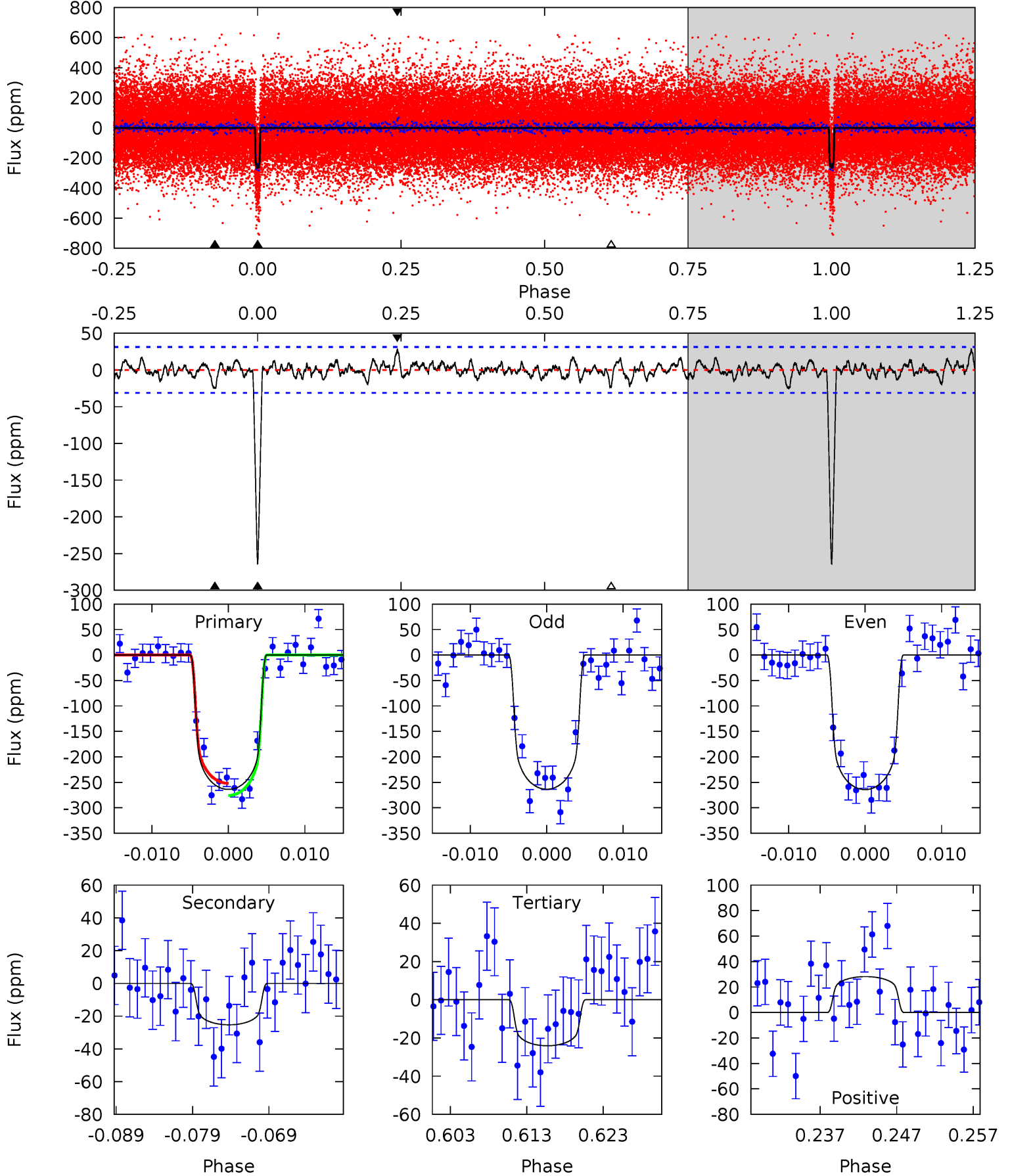
TCE 003939150-02 P= 33.005606 Days $T_0=145.404778$ (BKJD)



DV Model-Shift Uniqueness Test

003939150-02, P = 33.006299 Days, E = 112.381011 Days

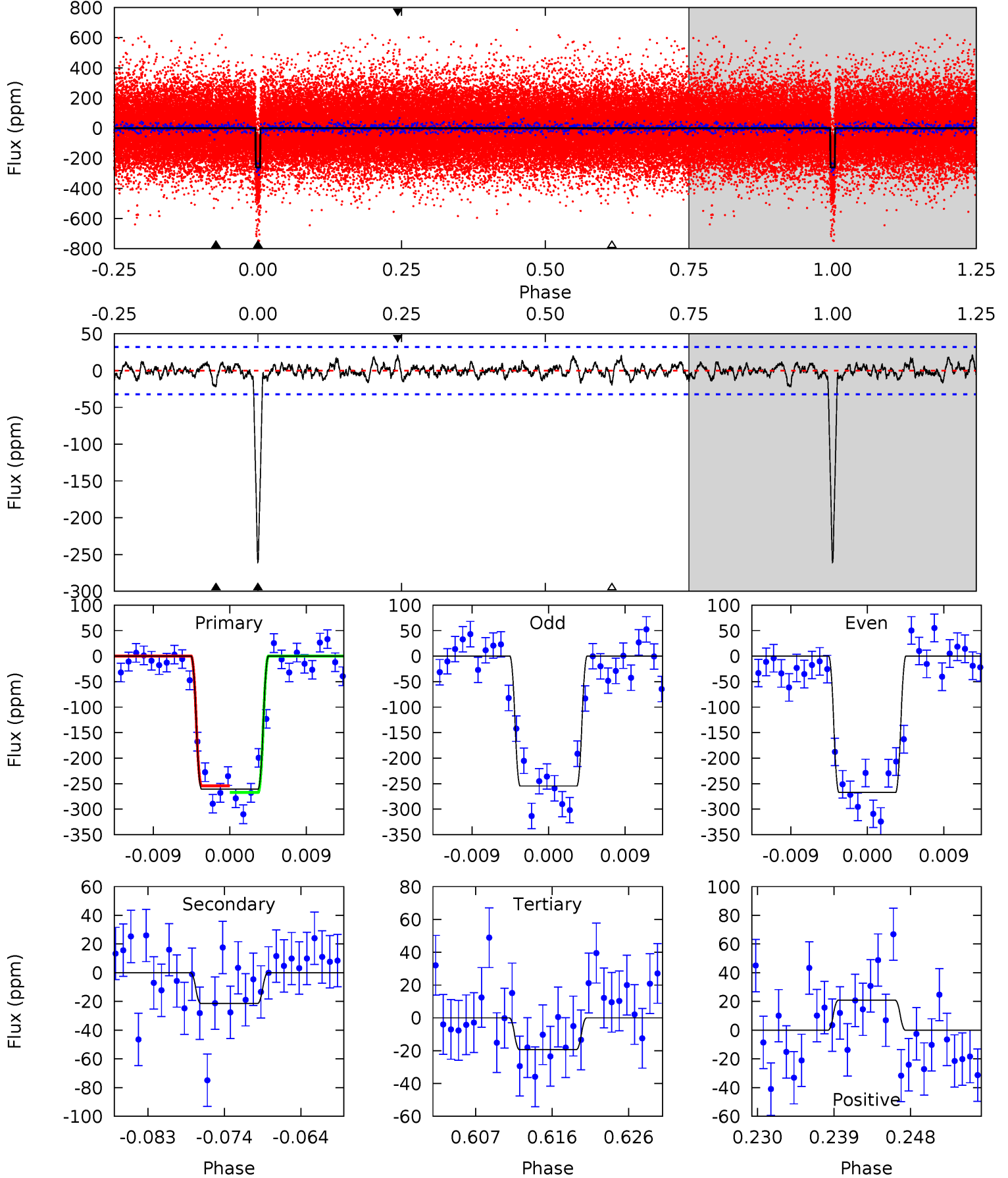
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.5	4.08	3.88	4.54	5.03	2.58	1.17	38.7	38.0	0.20	-0.46	0.06	0.98	0.10	1.92



Alt Model-Shift Uniqueness Test

003939150-02, P = 33.005606 Days, E = 112.399172 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.8	3.36	3.04	3.28	5.04	2.60	1.01	37.8	37.6	0.32	0.08	0.99	1.00	0.07	1.00



Stellar Parameters For KIC 003939150

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5968^{+120}_{-108}	$3.972^{+0.210}_{-0.084}$	$0.040^{+0.150}_{-0.150}$	$1.857^{+0.264}_{-0.452}$	$1.179^{+0.144}_{-0.130}$	$0.259^{+0.283}_{-0.070}$
	+2%/-2%	+5%/-2%	+375%/-375%	+14%/-24%	+12%/-11%	+109%/-27%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 003939150-02 / KOI 1215.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25 ± 6	$3.48^{+0.42}_{-0.48}$	1076^{+51}_{-71}	3633^{+170}_{-183}	54^{+22}_{-17}
Alt.	-21 ± 6	$3.28^{+0.40}_{-0.45}$	1076^{+51}_{-67}	3614^{+168}_{-216}	50^{+22}_{-16}

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

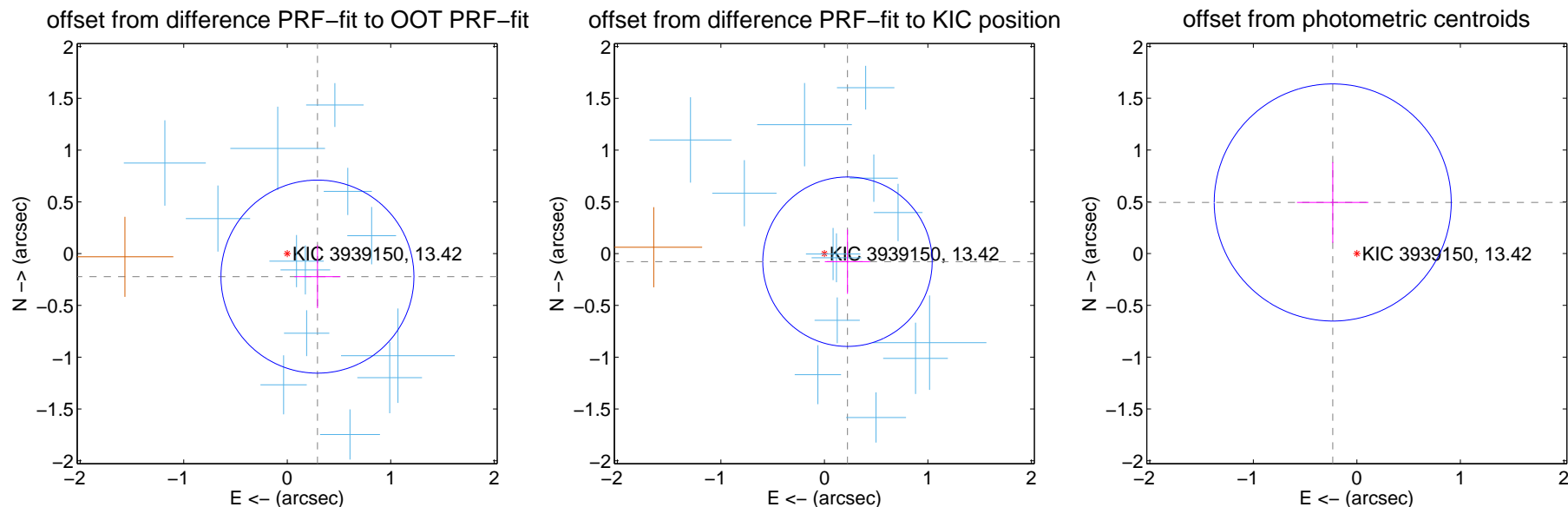
DV Centroid Data

Supplemental centroid analysis for 003939150-02. Kepler magnitude: 13.42. Transit SNR 31.12

There are 14 quarters with good PRF difference image offsets

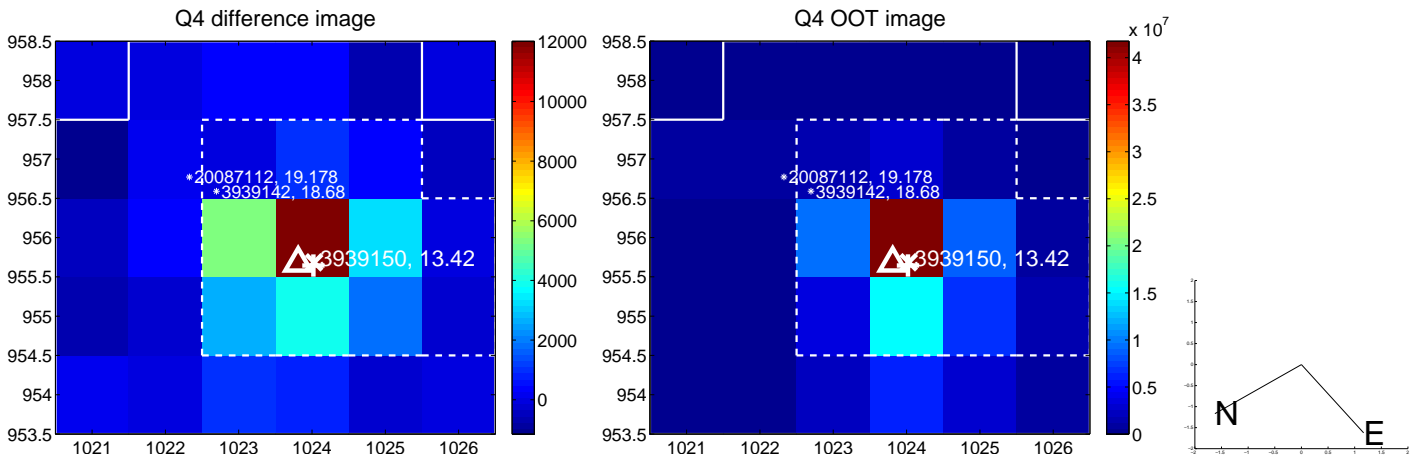
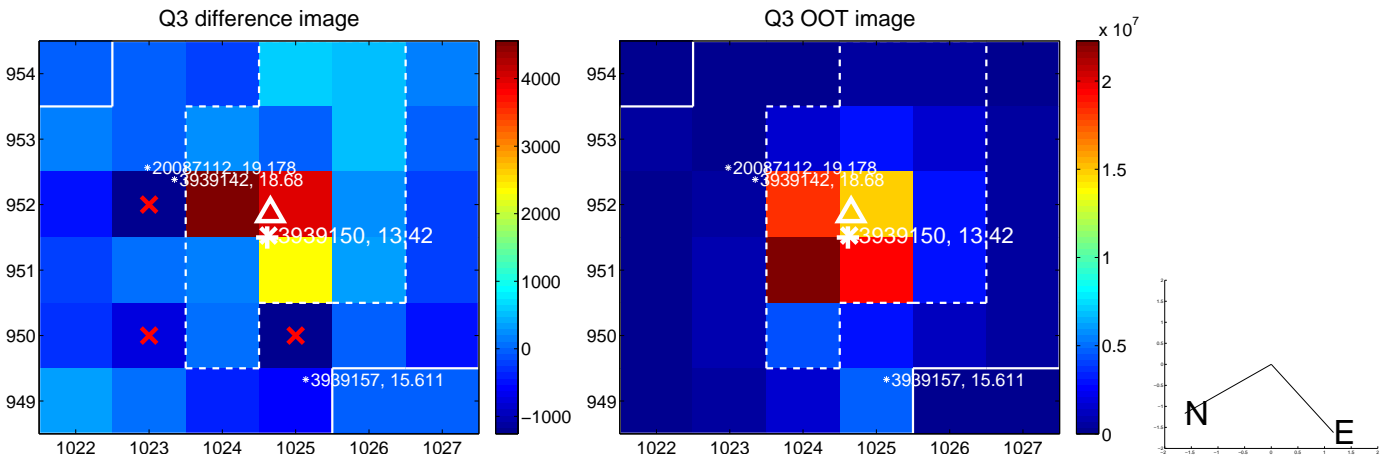
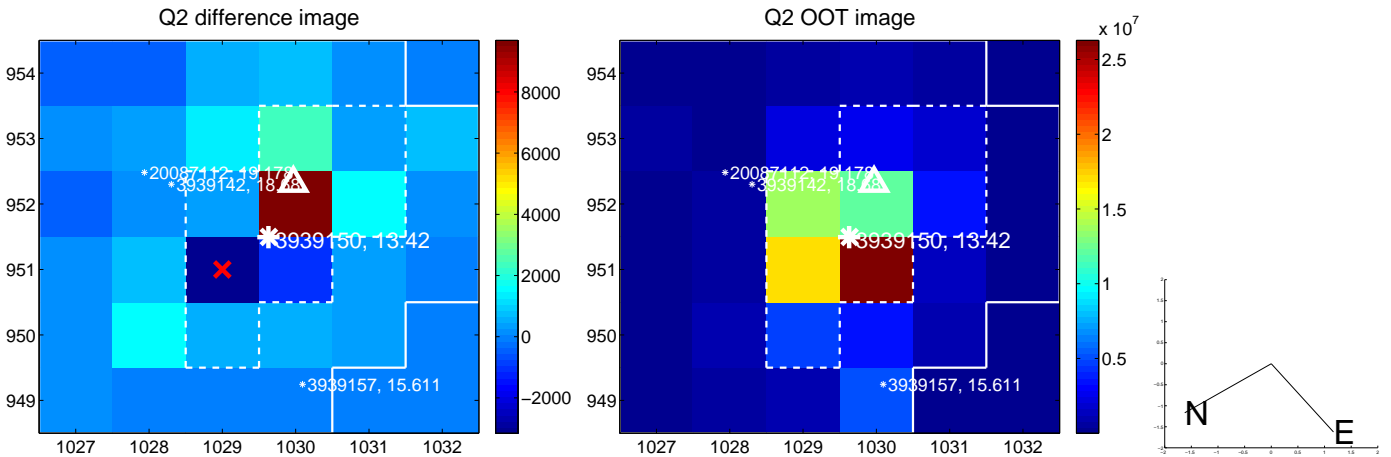
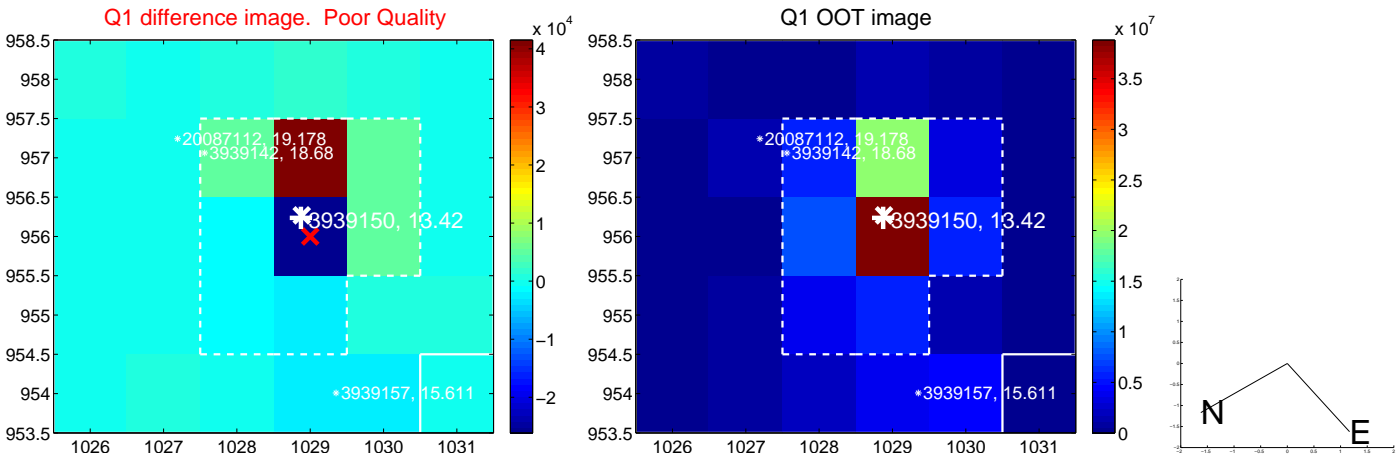
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.367 ± 0.311	1.18	-0.292 ± 0.222	-0.222 ± 0.304
PRF-fit source offset from KIC position	0.236 ± 0.273	0.87	-0.223 ± 0.218	-0.078 ± 0.310
photometric centroid source offset	0.55 ± 0.38	1.43	0.23 ± 0.34	0.49 ± 0.39

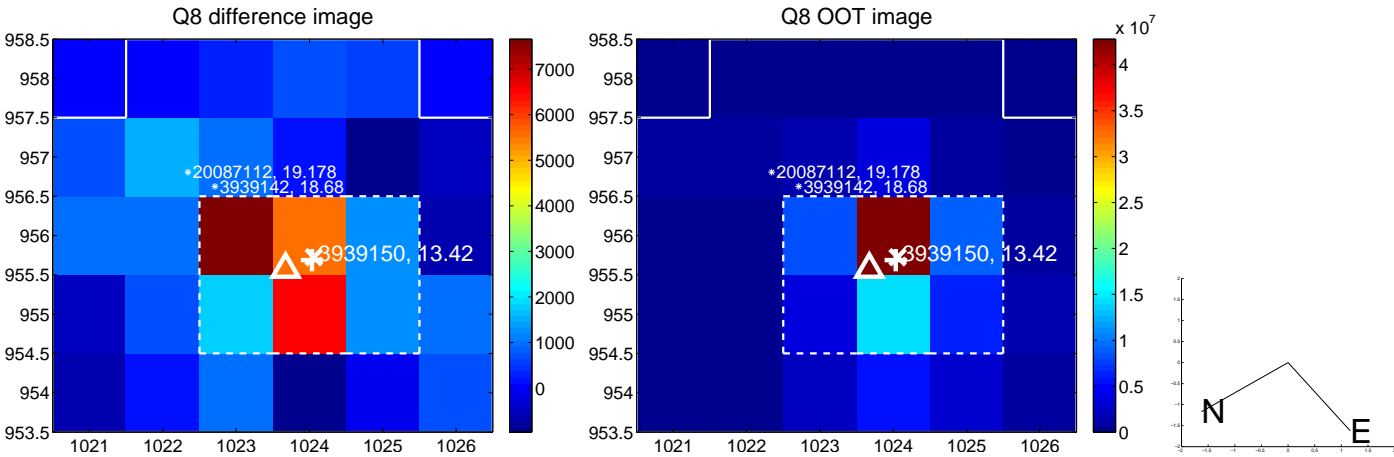
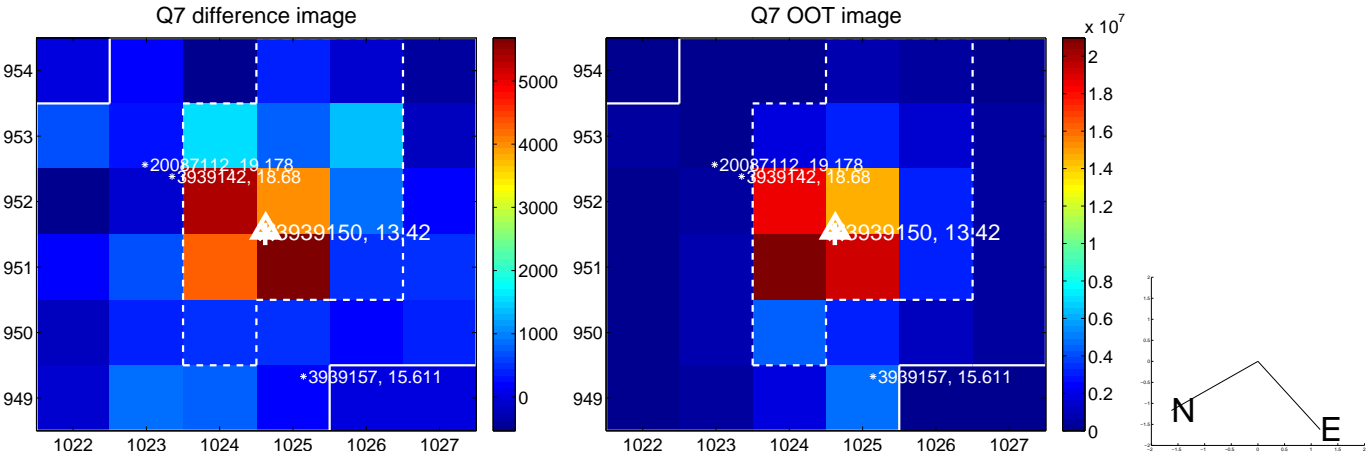
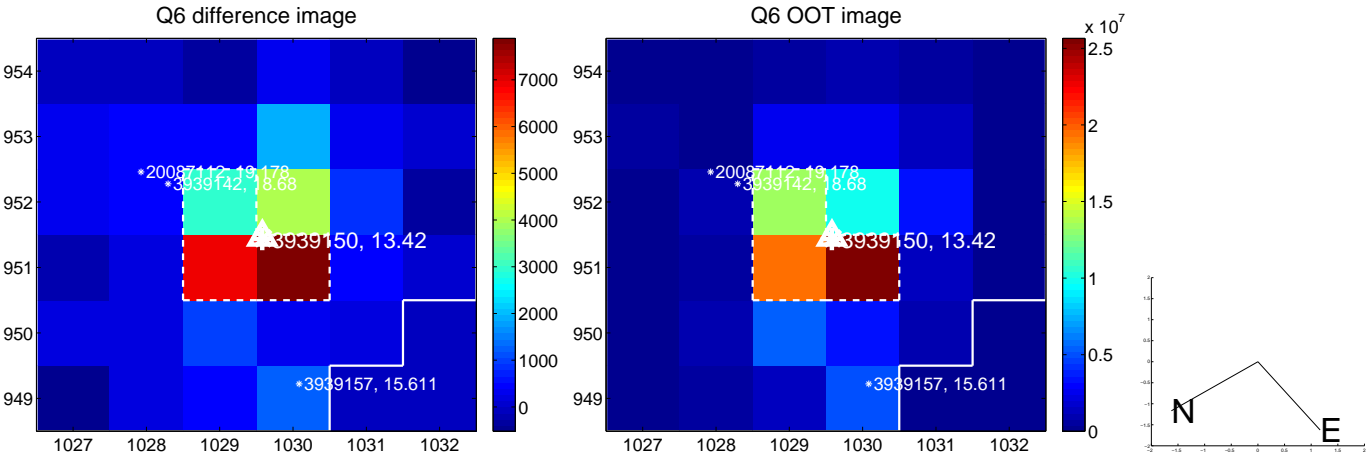
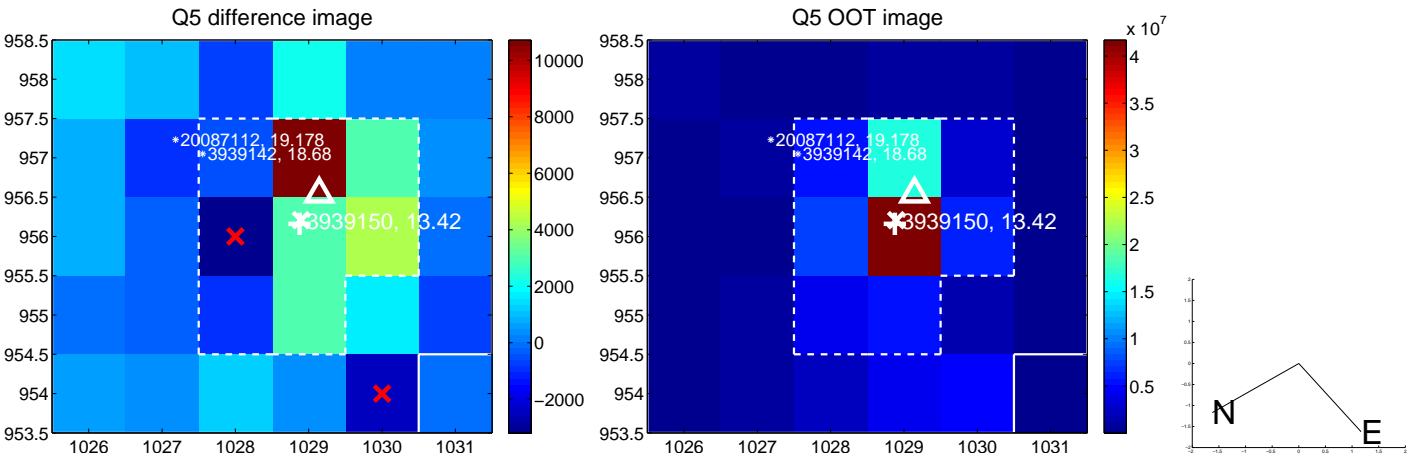


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

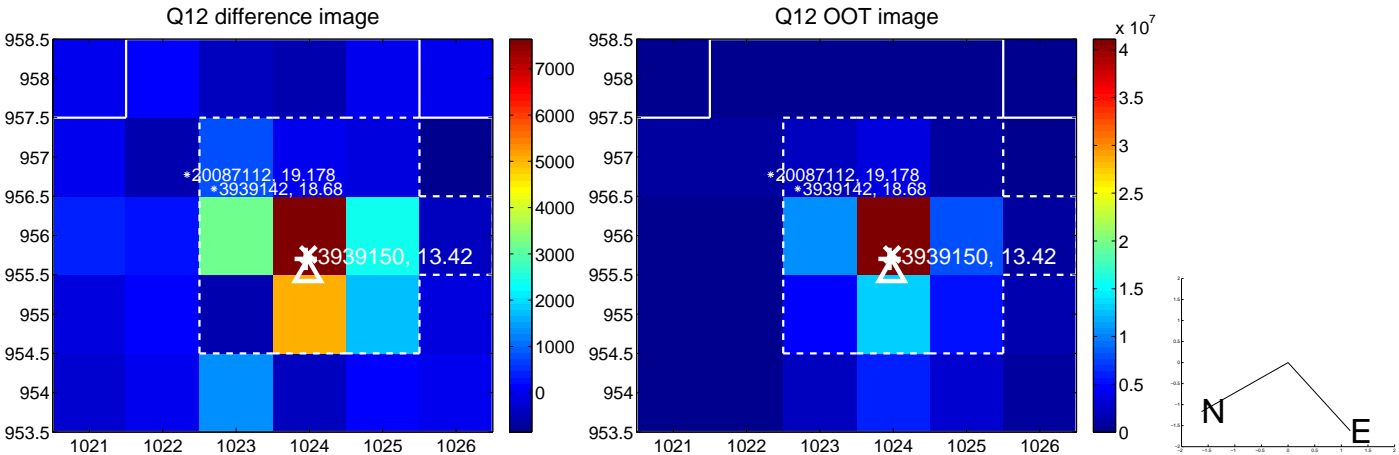
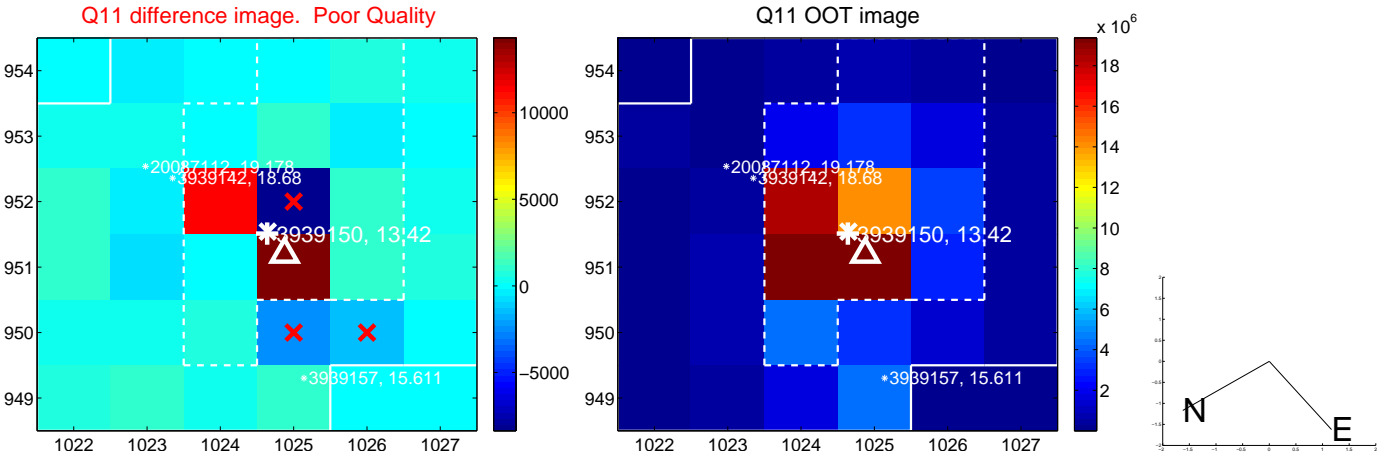
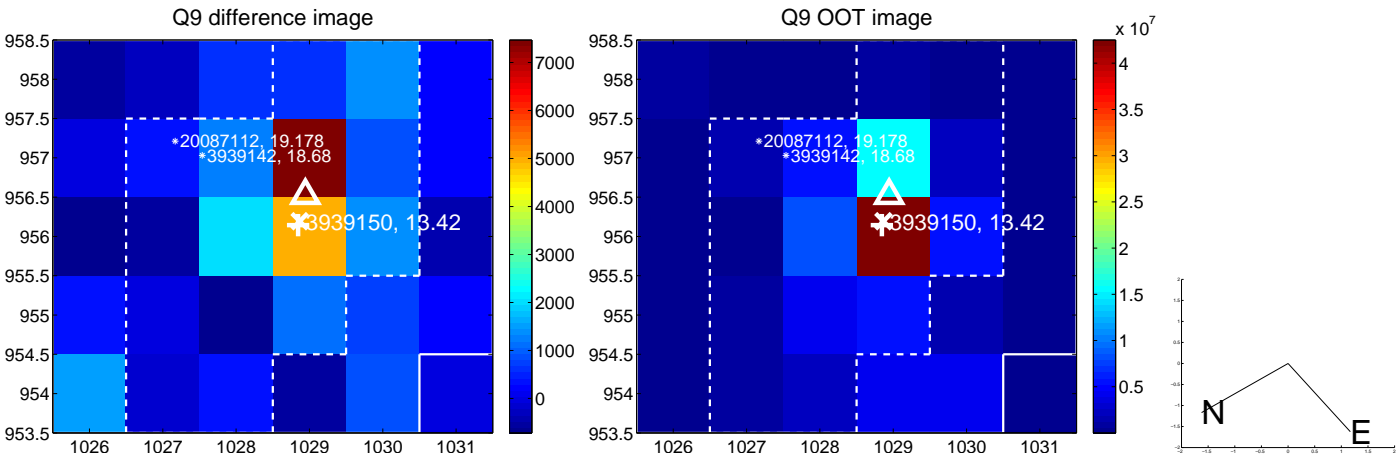
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



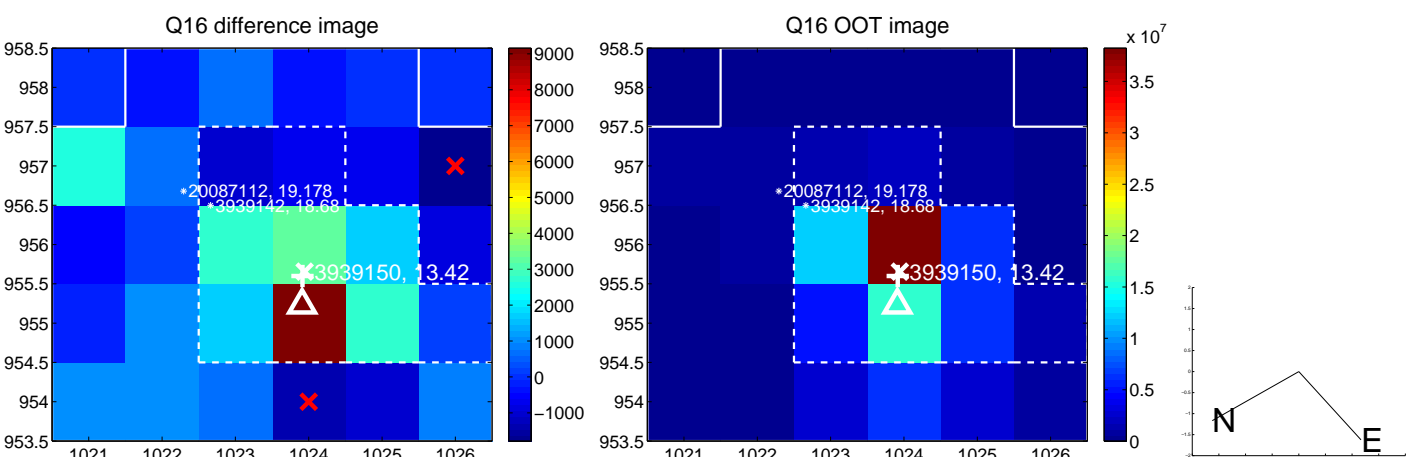
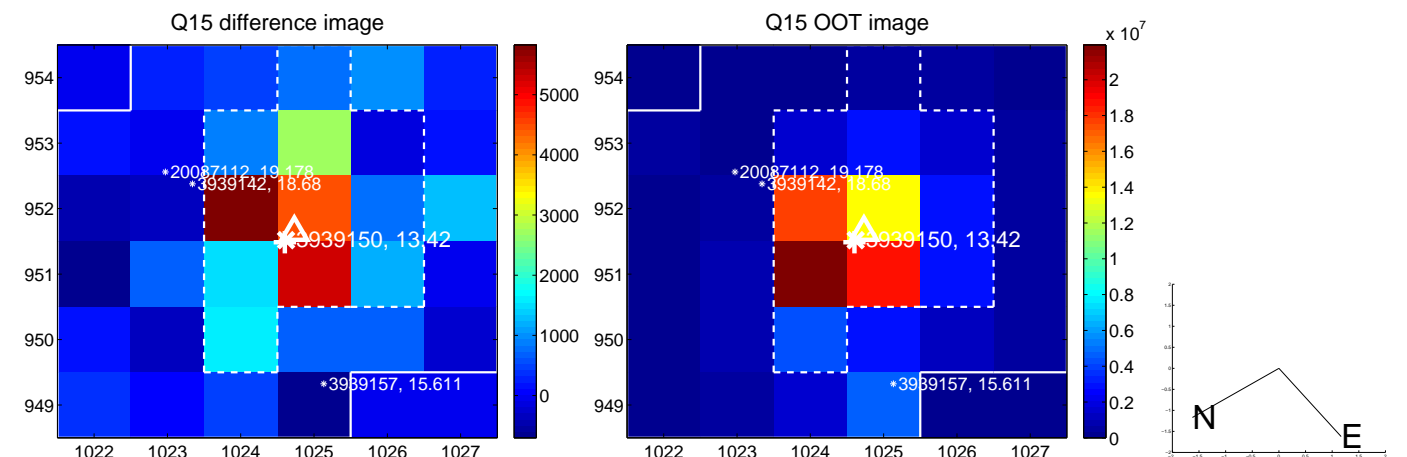
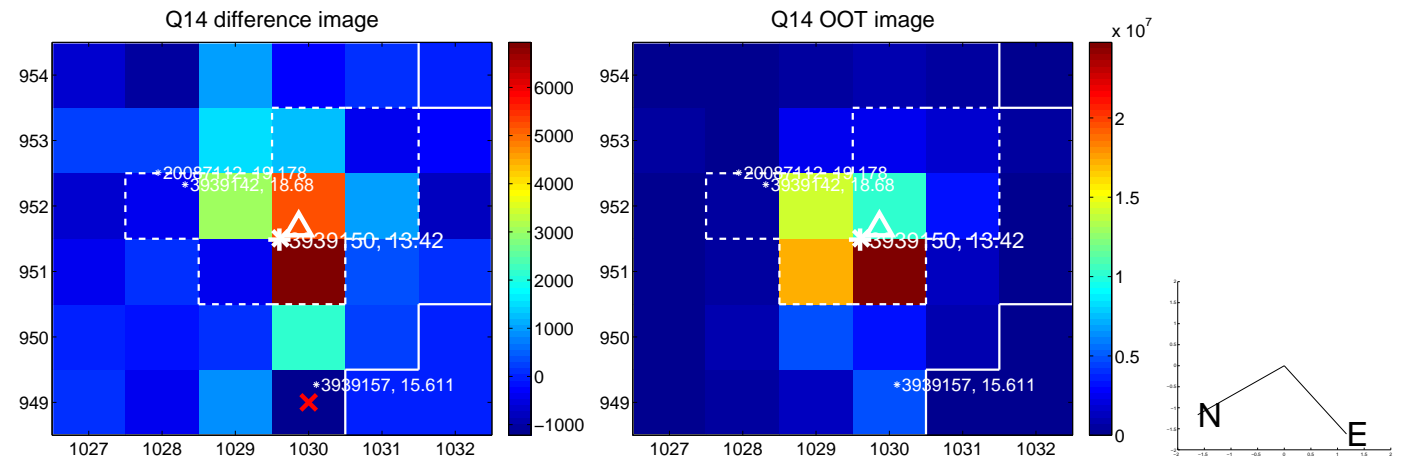
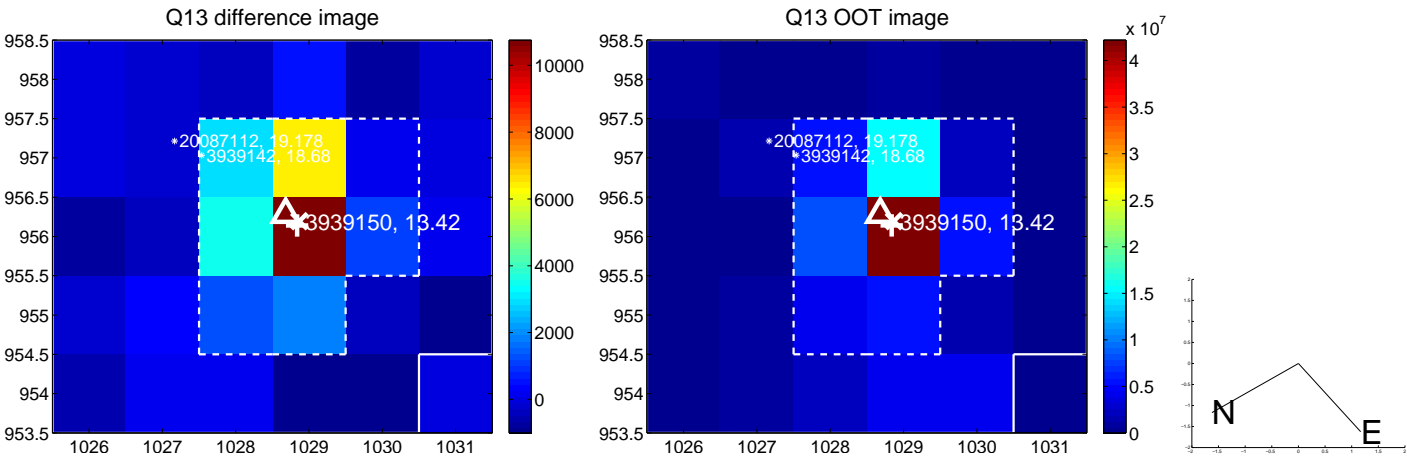
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



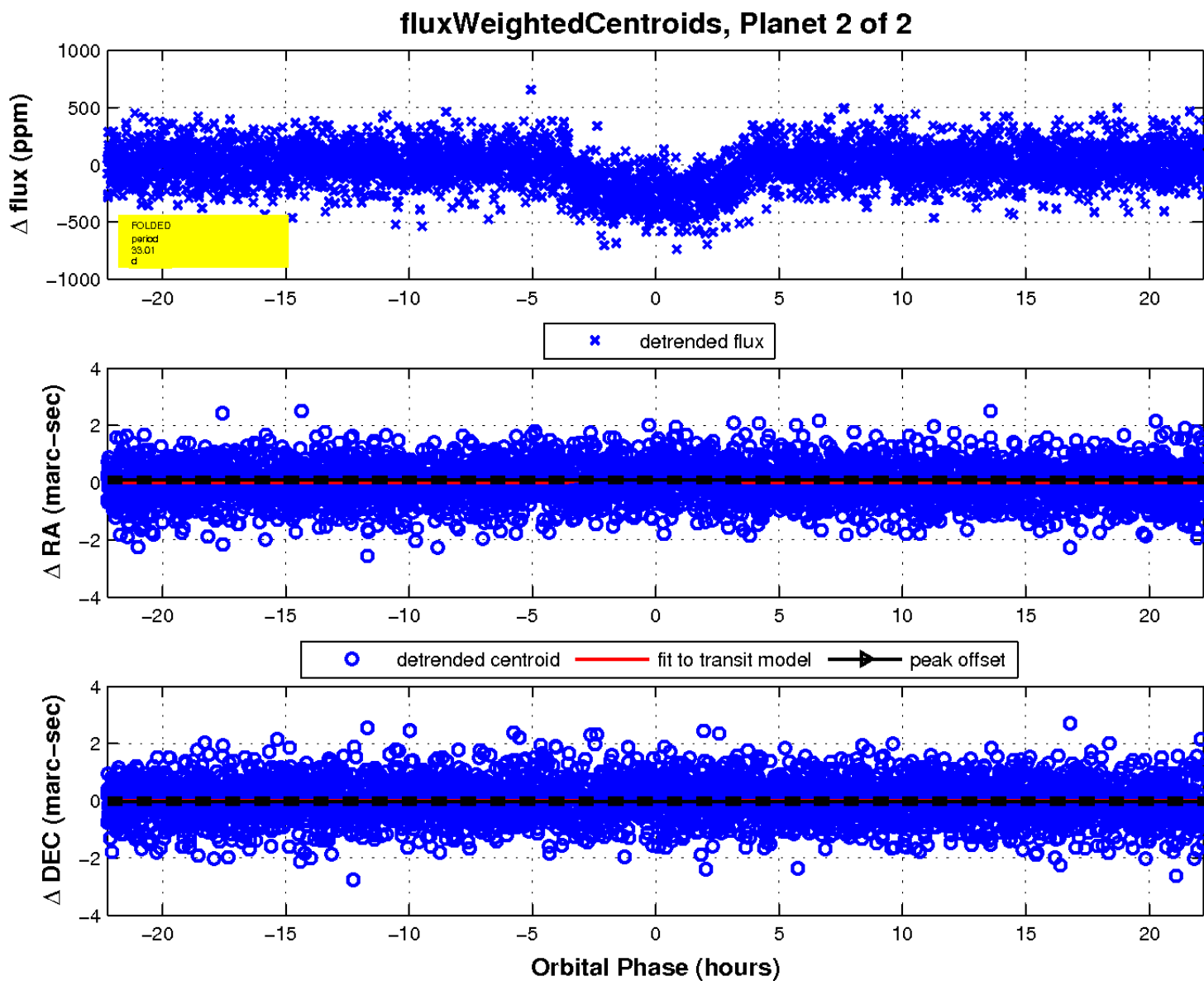
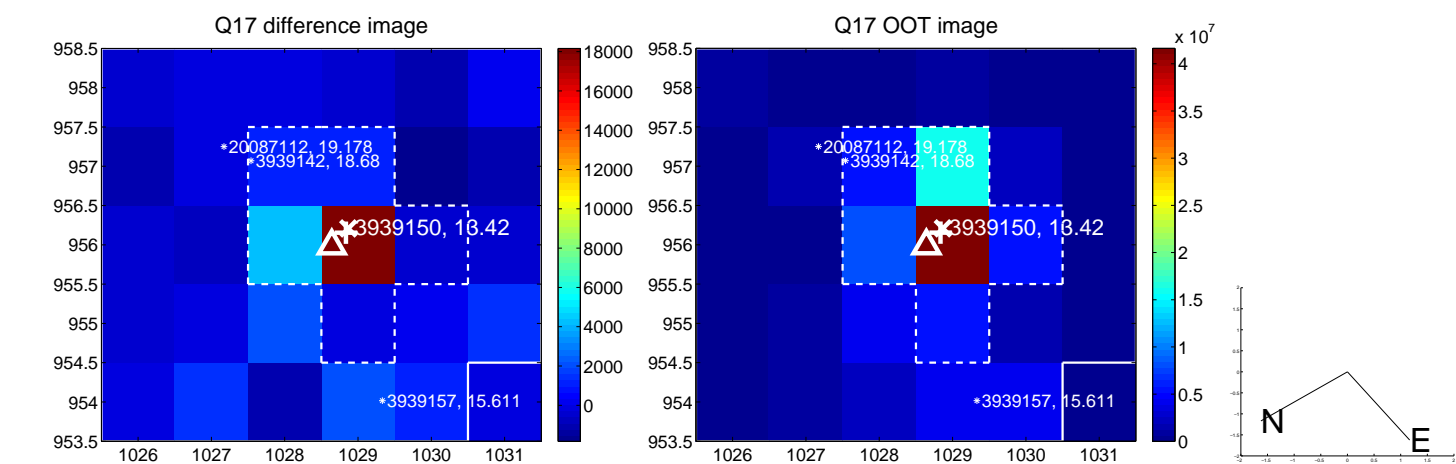
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

