

KIC 011093538

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})
011093538-01	OBS	3326.01	14.778212	144.097247	10559.3	5.795	149.5	149.2	1.05	6258	16.52	101.27
011093538-02	OBS	No	14.778340	138.092108	1178.5	5.931	27.3	27.2	1.05	6258	6.10	101.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011093538-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
011093538-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

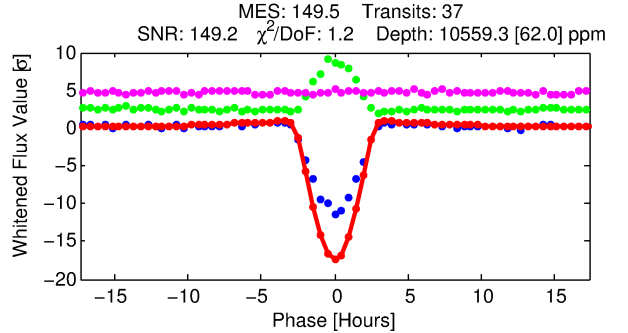
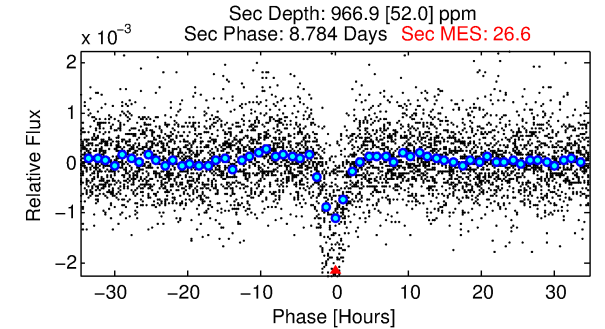
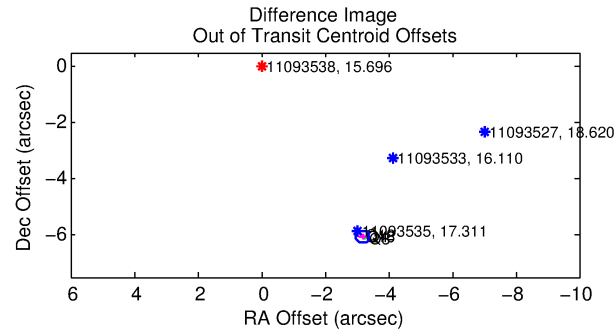
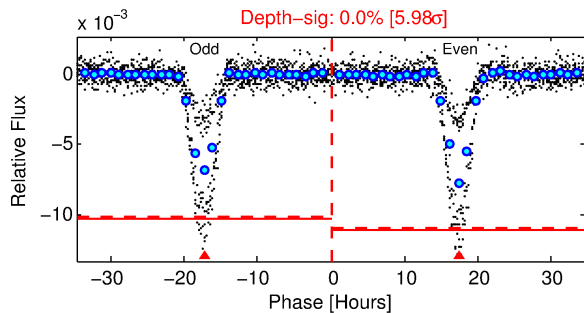
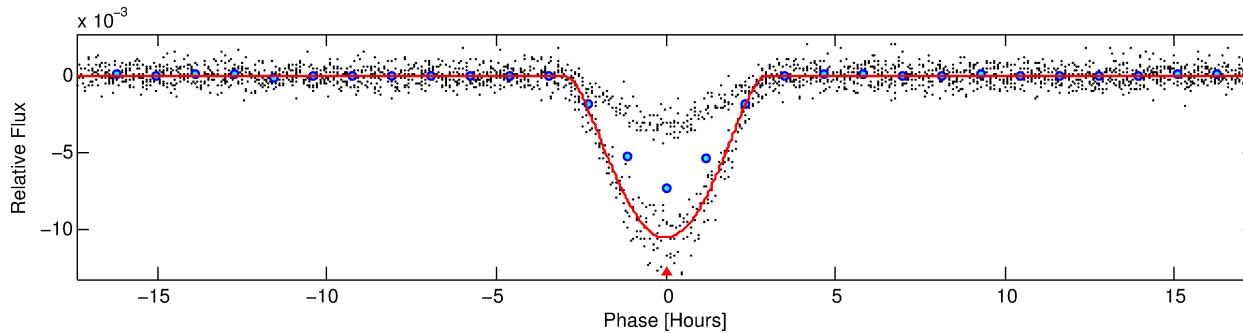
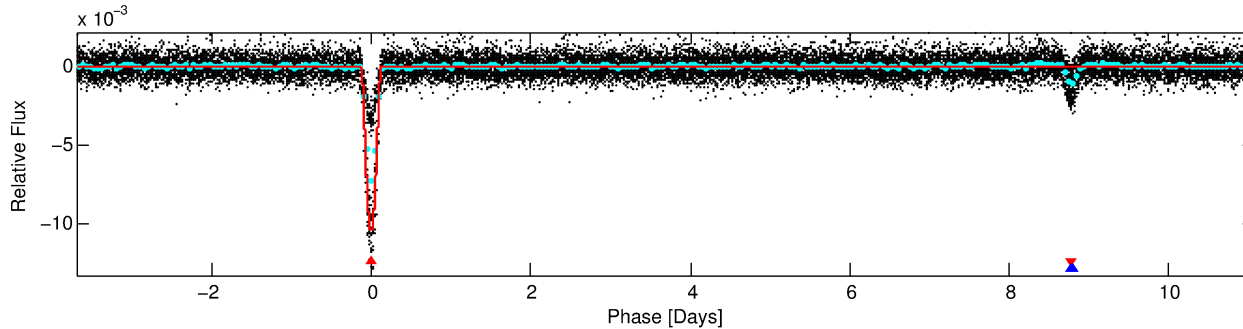
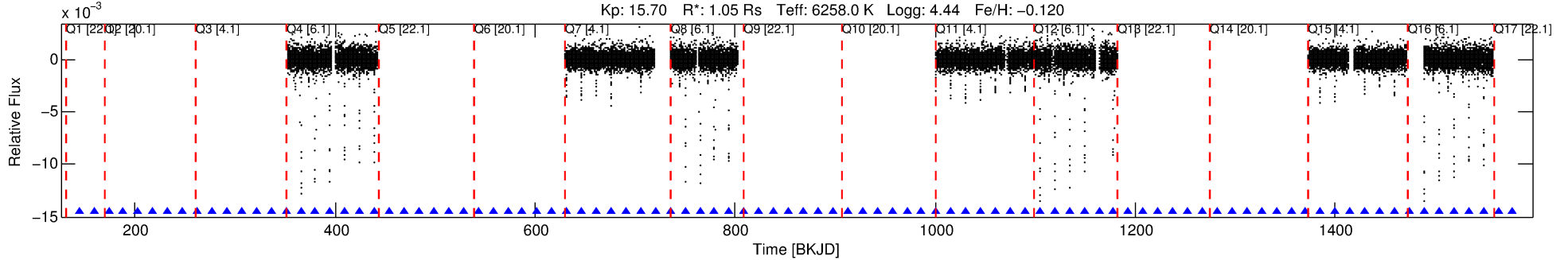
Ephemeris Match Information For 011093538-01

No Significant Match Found

DV One-Page Summary

KIC: 11093538 Candidate: 1 of 2 Period: 14.778 d
KOI: K03326.01 Corr: 0.930

Kp: 15.70 R*: 1.05 Rs Teff: 6258.0 K Logg: 4.44 Fe/H: -0.120



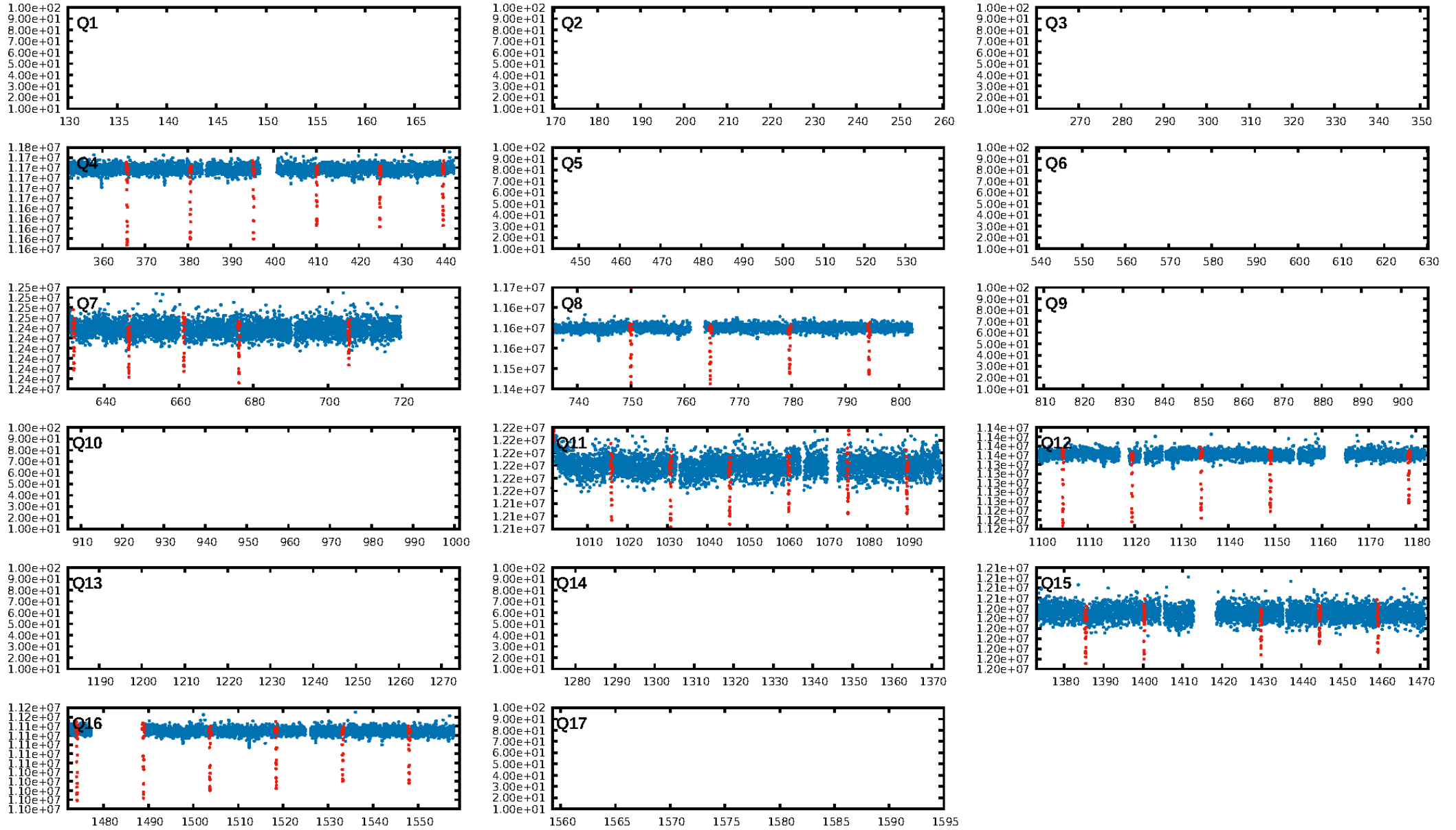
DV Fit Results:

Period = 14.77821 [0.00001] d
Epoch = 144.0972 [0.0009] BKJD
Rp/R* = 0.1447 [0.0209]
a/R* = 12.01 [0.37]
b = 0.97 [0.03]
Seff = 101.27 [43.13]
Teq = 809 [86] K
Rp = 16.52 [5.67] Re
a = 0.1218 [0.0324] AU
Ag = 28.95 [14.16] [1.97σ]
Teff = 2901 [245] K [8.04σ]

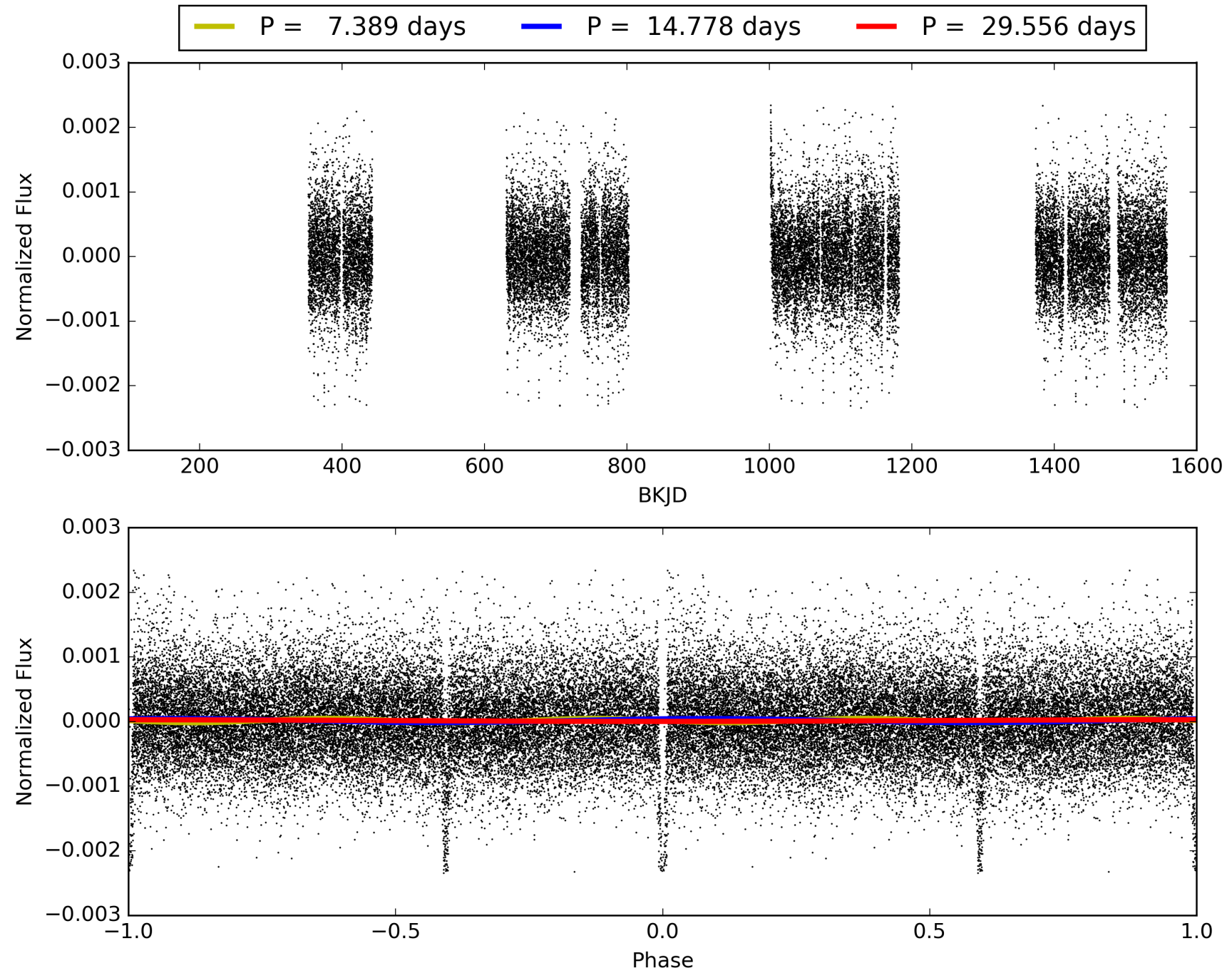
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [37/37]
GhostDiagnostic-chr: -0.9774
Centroid-sig: 0.0%
Centroid-so: 17.322 arcsec [322.61σ]
OotOffset-rm: 6.856 arcsec [91.81σ]
KicOffset-rm: 6.740 arcsec [83.93σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 011093538-01, PDC Light Curves

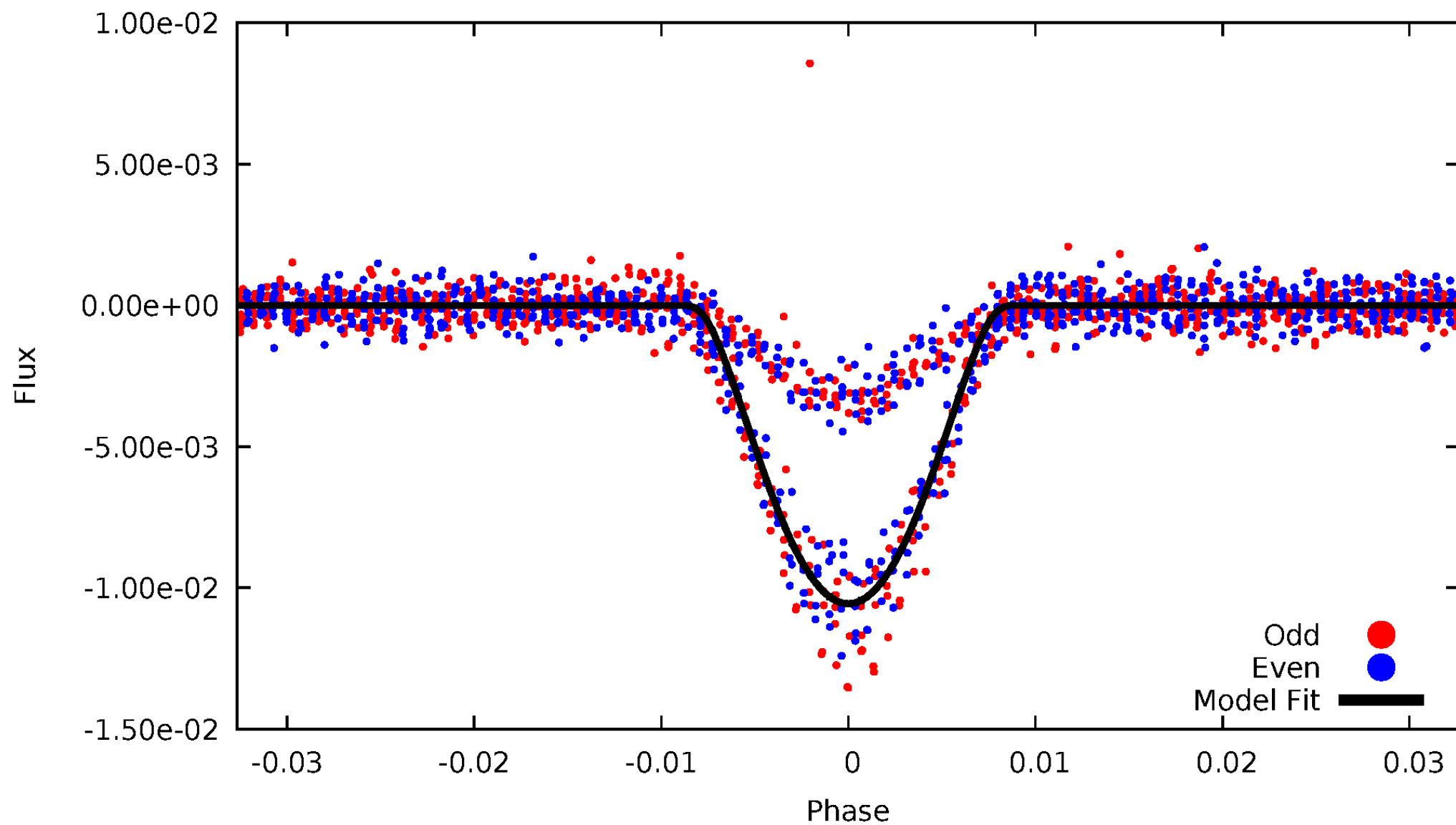


TCE 011093538-01



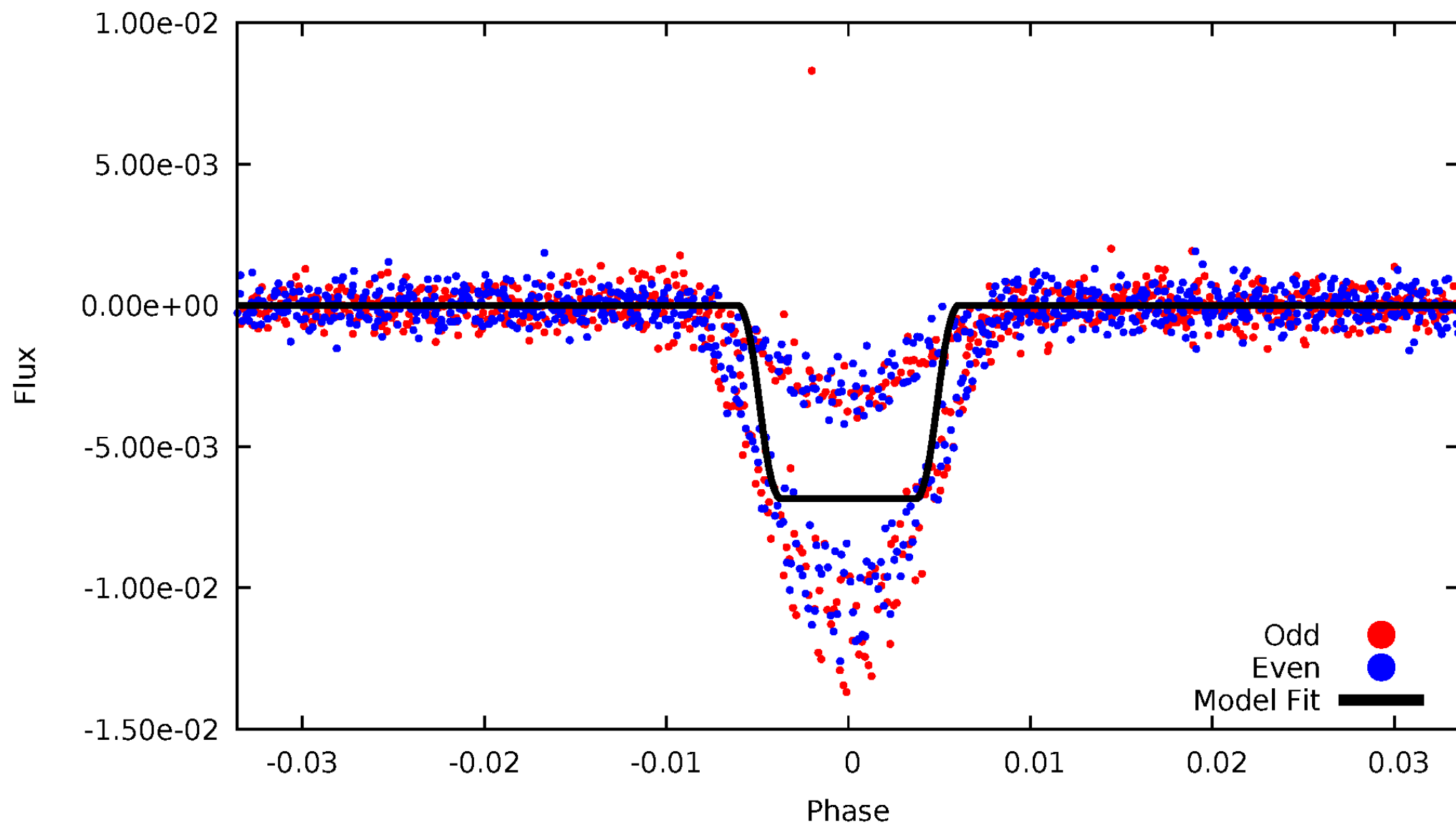
DV Odd/Even

TCE 011093538-01

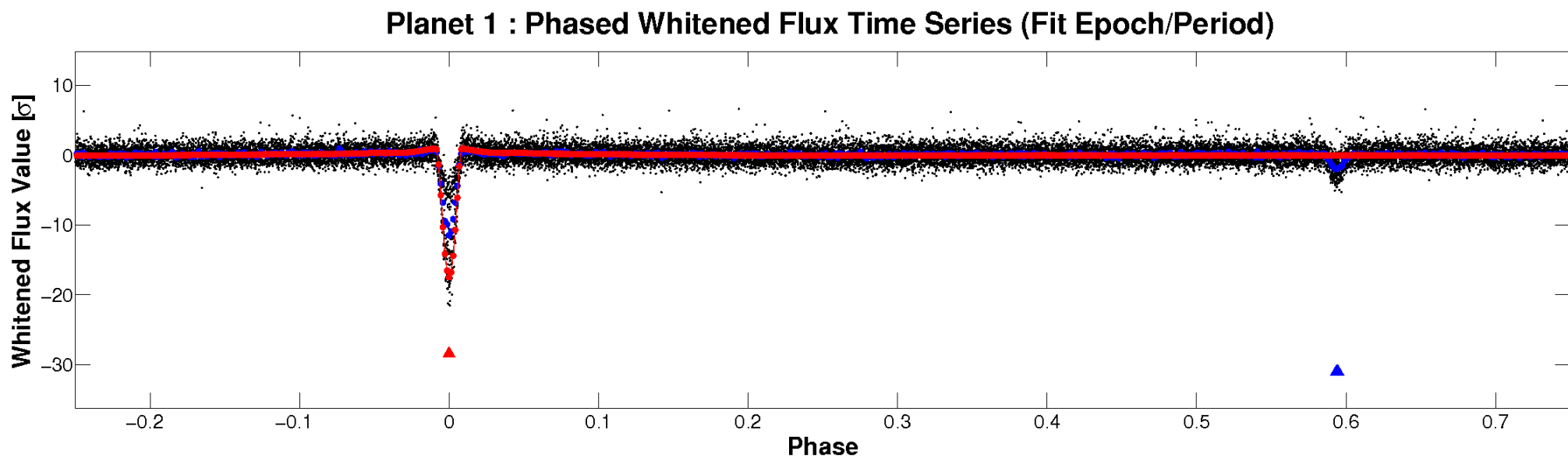
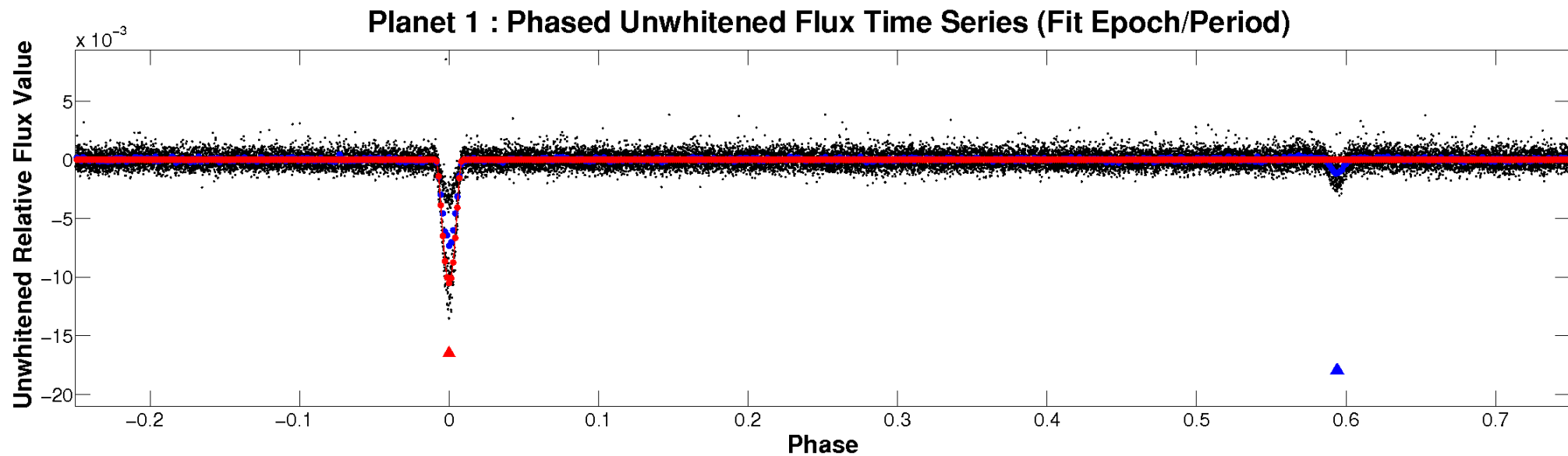


ALT Odd/Even

TCE 011093538-01

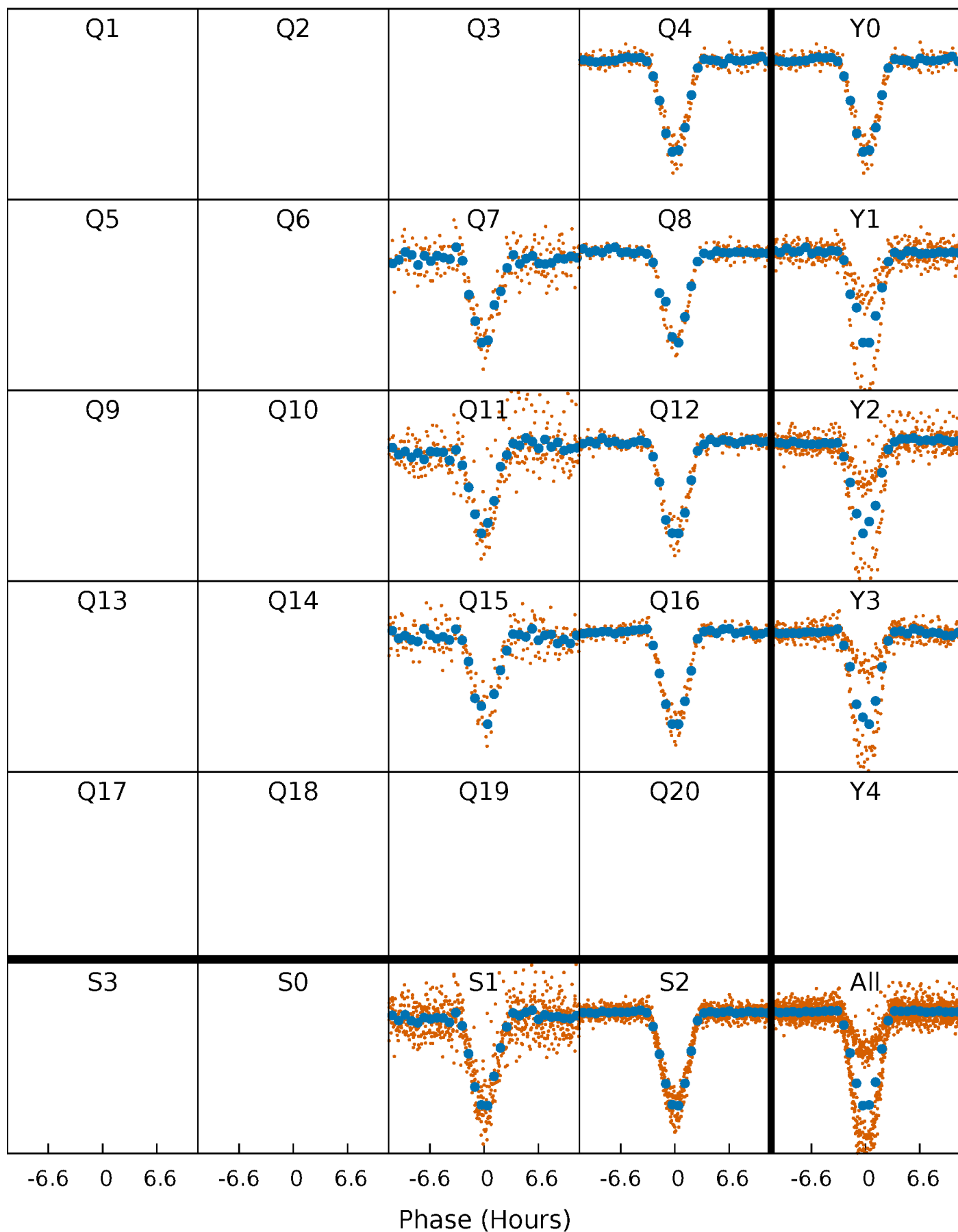


Non-Whitened Vs. Whitened Light Curve



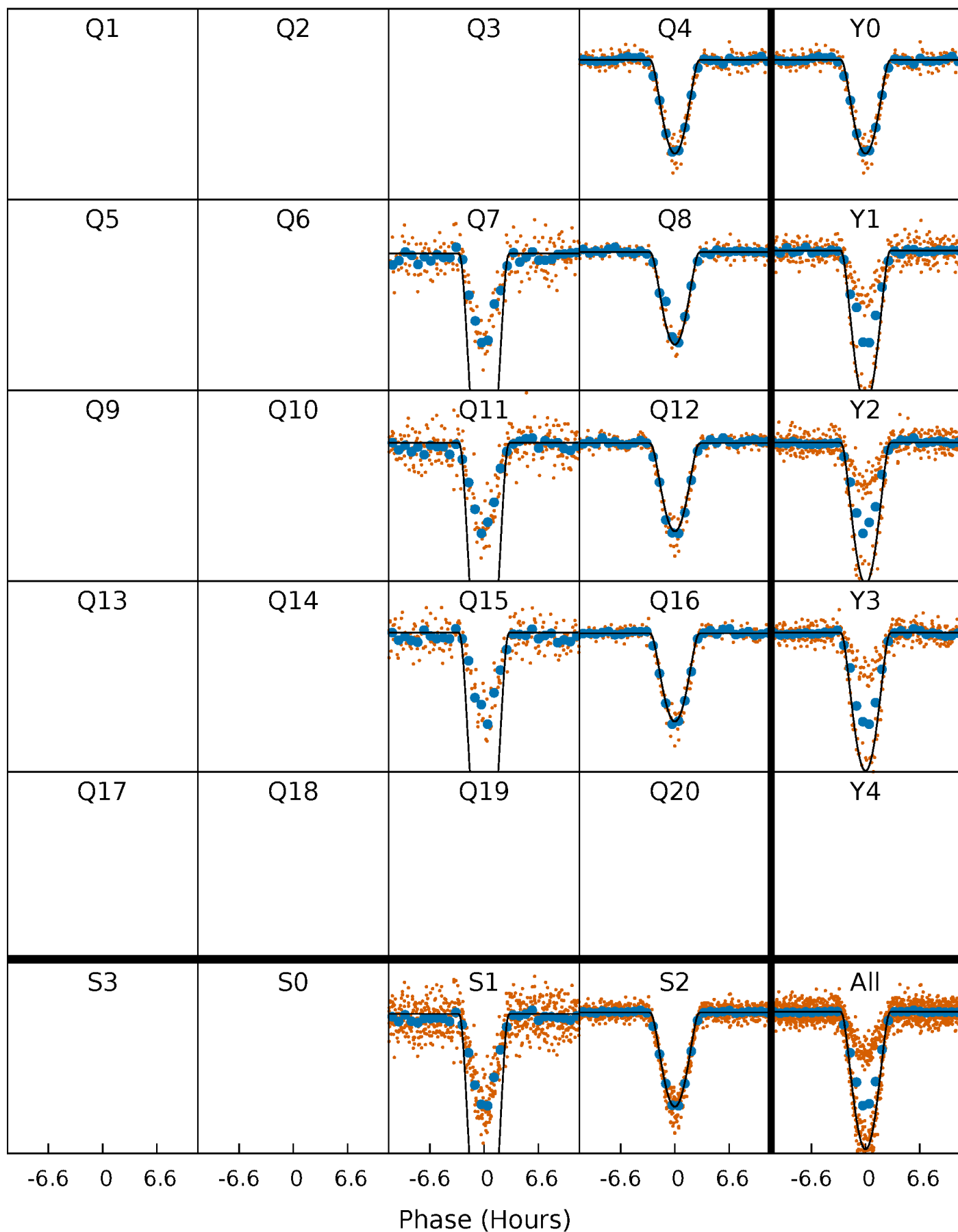
PDC Quarter-Phased Transit Curves

TCE 011093538-01 P= 14.778212 Days $T_0=144.097247$ (BKJD)



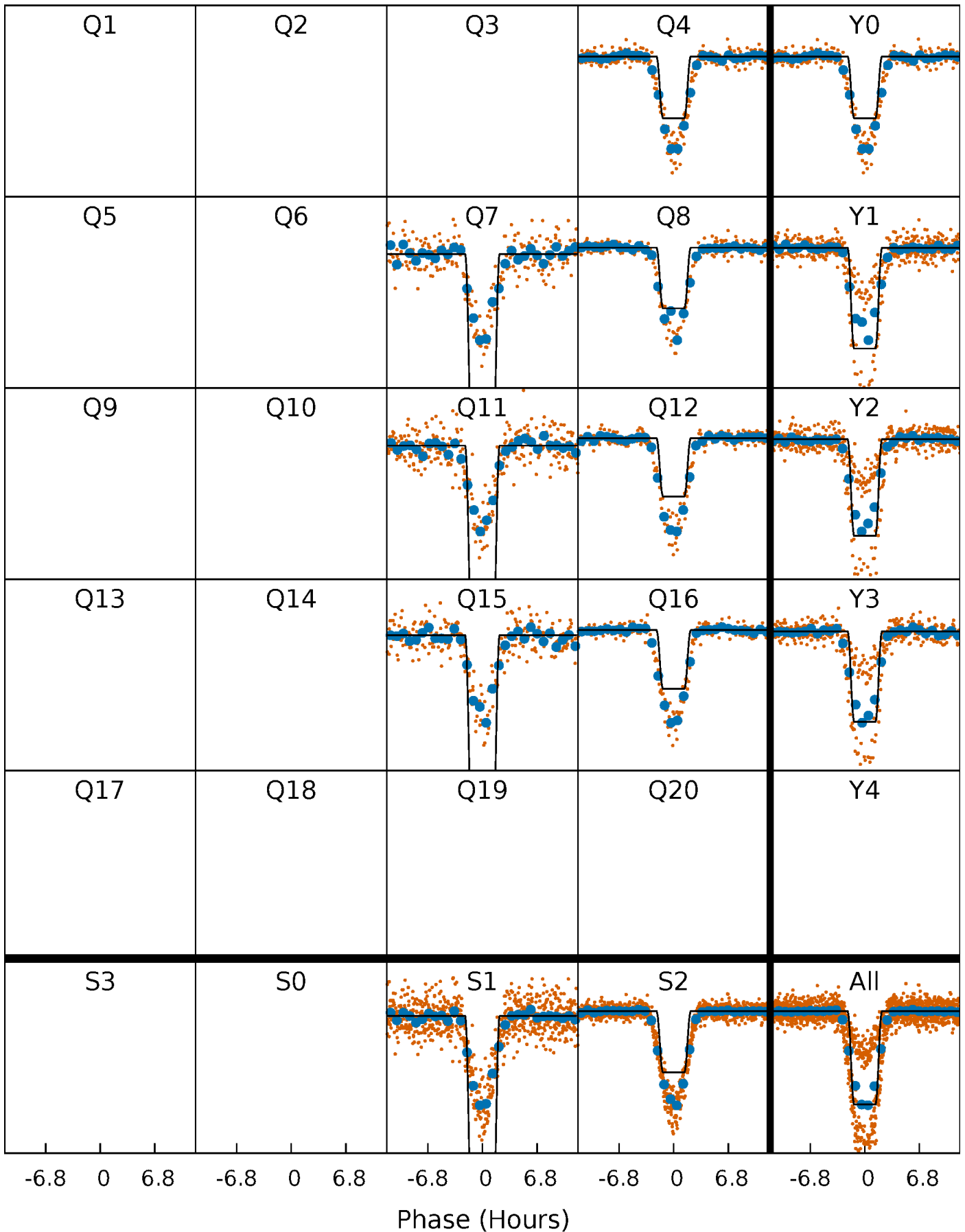
DV Quarter-Phased Transit Curves

TCE 011093538-01 P= 14.778212 Days $T_0=144.097247$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

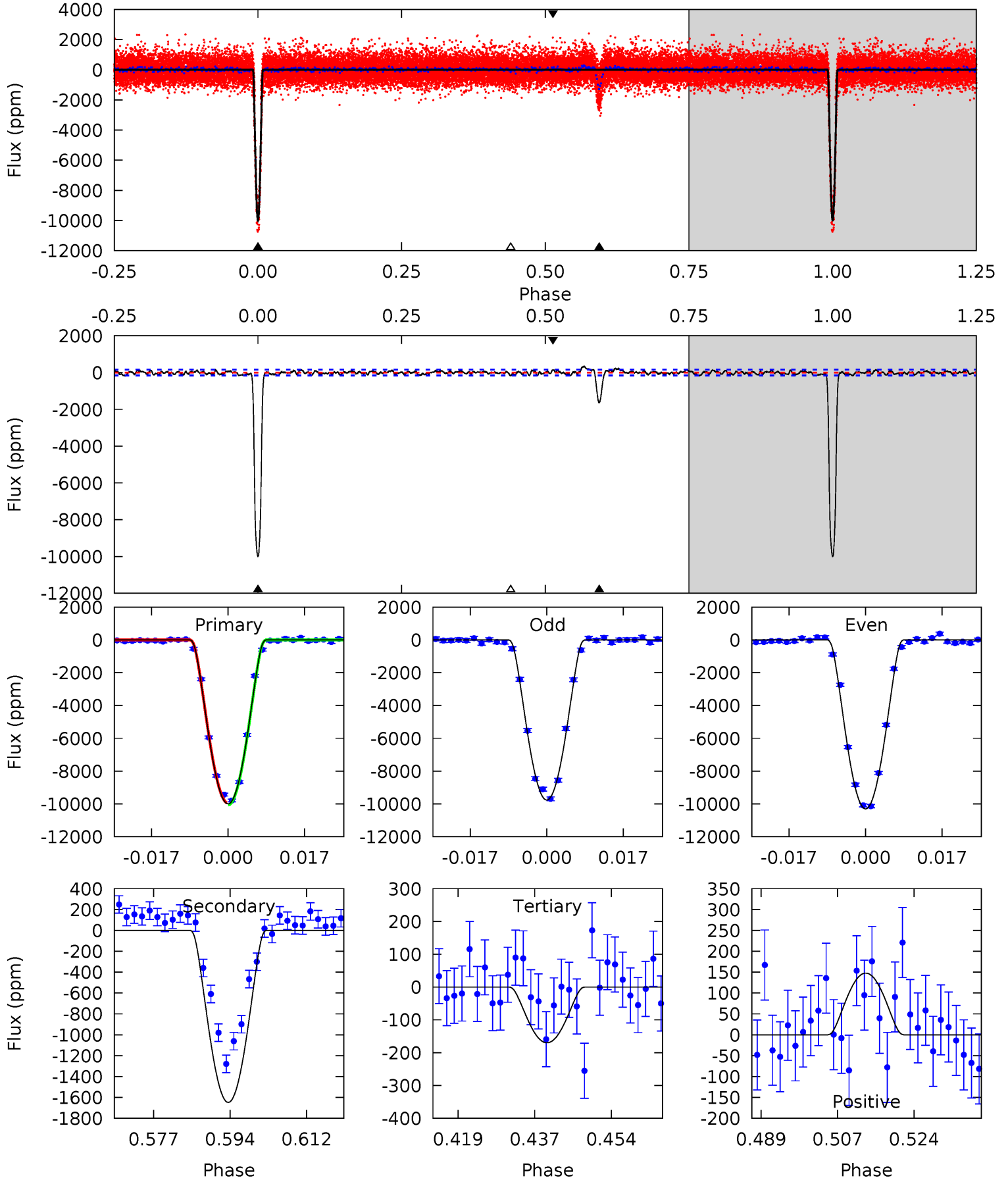
TCE 011093538-01 P= 14.778291 Days $T_0=144.093426$ (BKJD)



DV Model-Shift Uniqueness Test

011093538-01, P = 14.778212 Days, E = 144.097247 Days

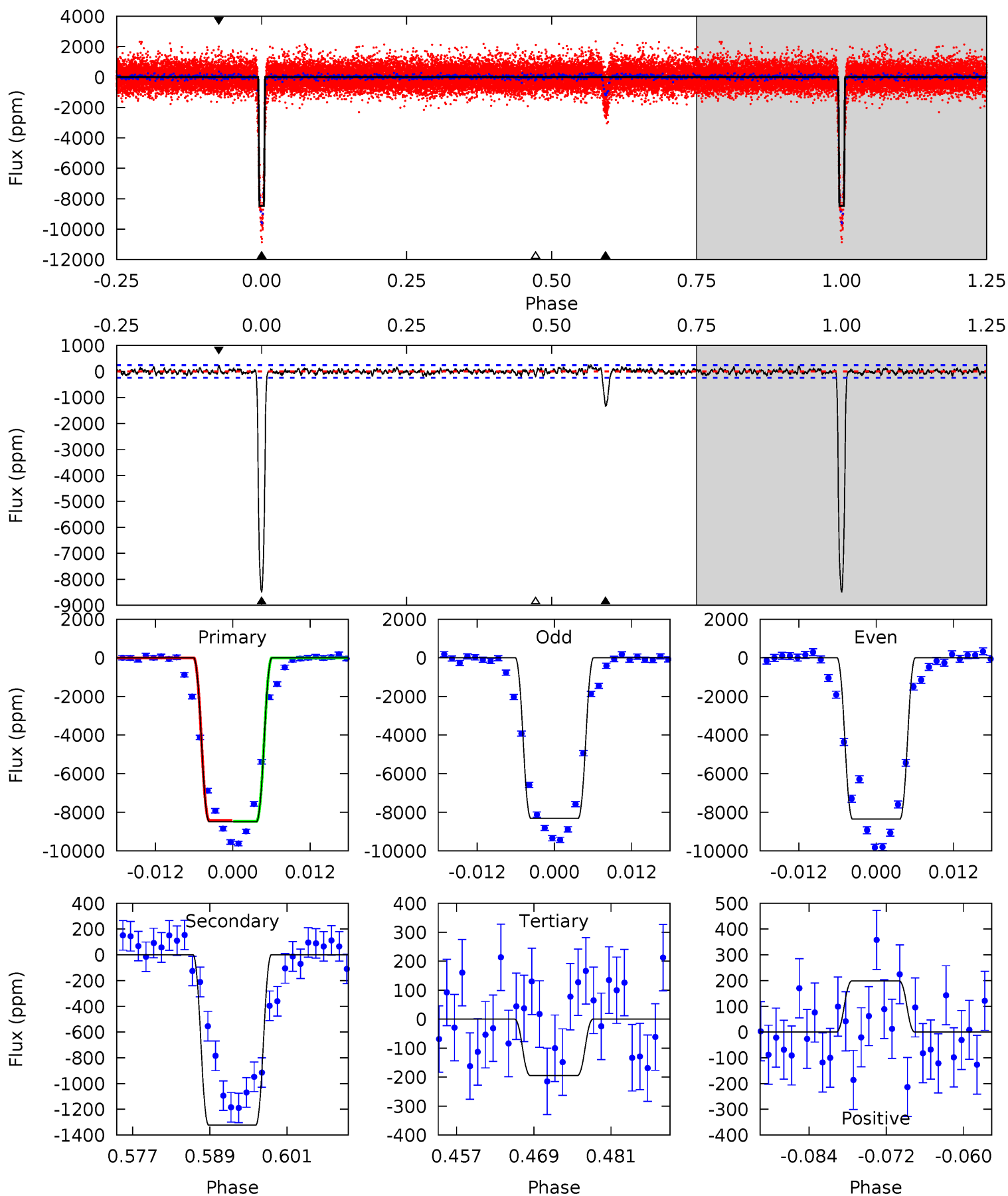
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
307.5	50.7	5.23	4.54	4.92	2.38	2.33	302.3	303.0	45.5	46.1	8.36	0.78	0.03	0



Alt Model-Shift Uniqueness Test

011093538-01, P = 14.778291 Days, E = 144.093426 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
173.3	27.0	3.97	4.06	4.99	2.51	1.34	169.3	169.2	23.0	22.9	0.45	0.79	0.03	0



Stellar Parameters For KIC 011093538

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6258^{+175}_{-263}	$4.442^{+0.067}_{-0.216}$	$-0.120^{+0.250}_{-0.300}$	$1.046^{+0.326}_{-0.116}$	$1.102^{+0.154}_{-0.154}$	$1.357^{+0.408}_{-0.745}$
	+3%/-4%	+2%/-5%	+208%/-250%	+31%/-11%	+14%/-14%	+30%/-55%
Source	KIC0	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 011093538-01 / KOI 3326.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1648 ± 33	$17.44^{+3.57}_{-3.08}$	1151^{+91}_{-63}	3713^{+196}_{-190}	44^{+19}_{-13}
Alt.	-1322 ± 49	$9.78^{+2.74}_{-2.53}$	1149^{+79}_{-60}	4371^{+531}_{-355}	110^{+93}_{-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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

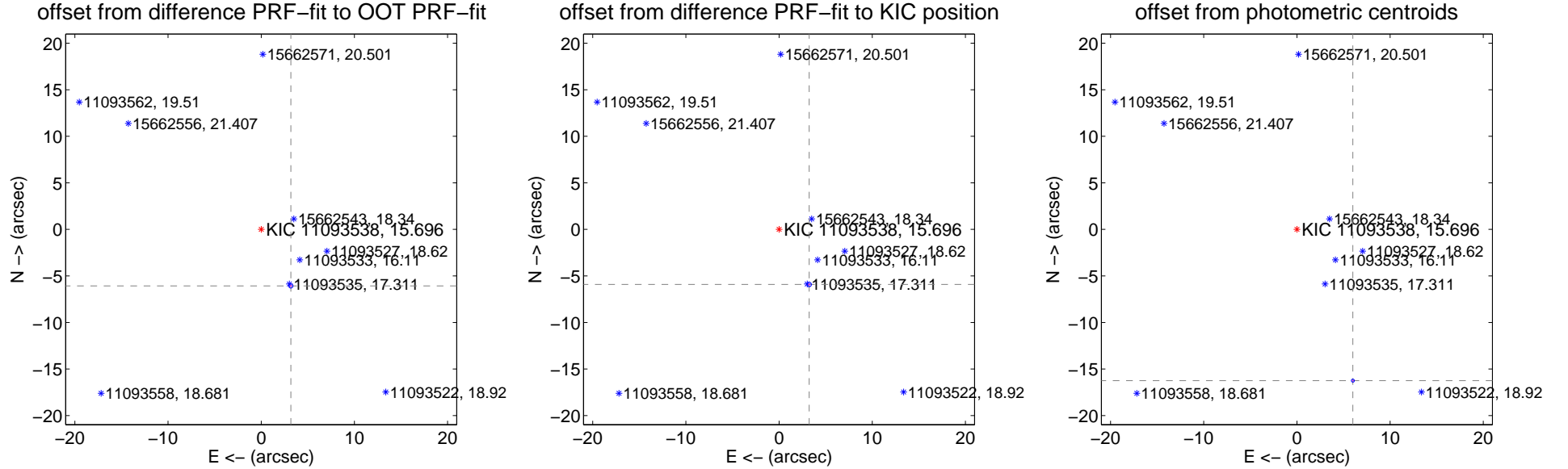
DV Centroid Data

Supplemental centroid analysis for 011093538-01. Kepler magnitude: 15.70. Transit SNR 149.19

There are 4 quarters with good PRF difference image offsets

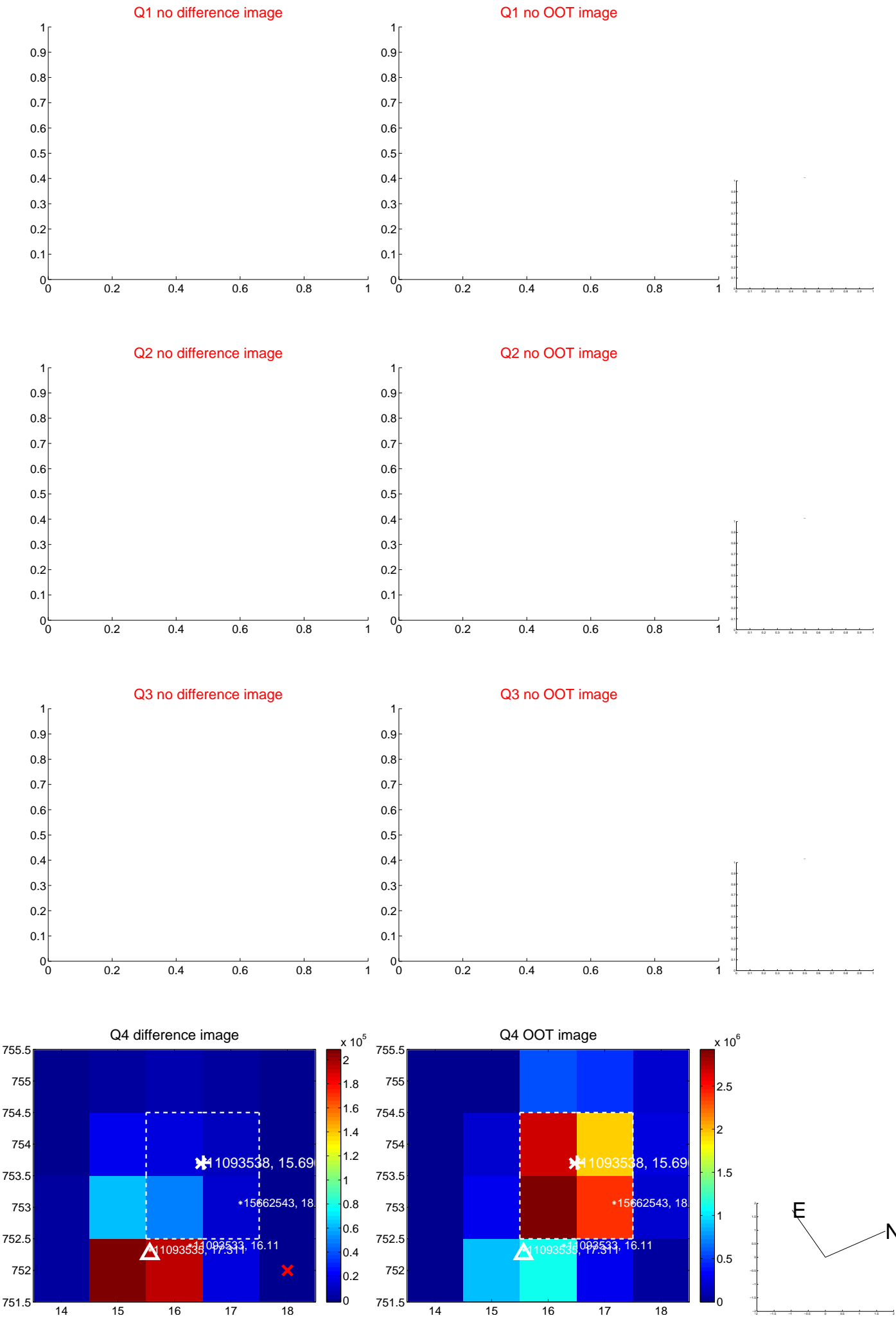
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.856 ± 0.075	91.81	-3.178 ± 0.072	-6.075 ± 0.071
PRF-fit source offset from KIC position	6.740 ± 0.080	83.93	-3.229 ± 0.074	-5.917 ± 0.075
photometric centroid source offset	17.32 ± 0.05	322.61	-6.01 ± 0.05	-16.25 ± 0.05

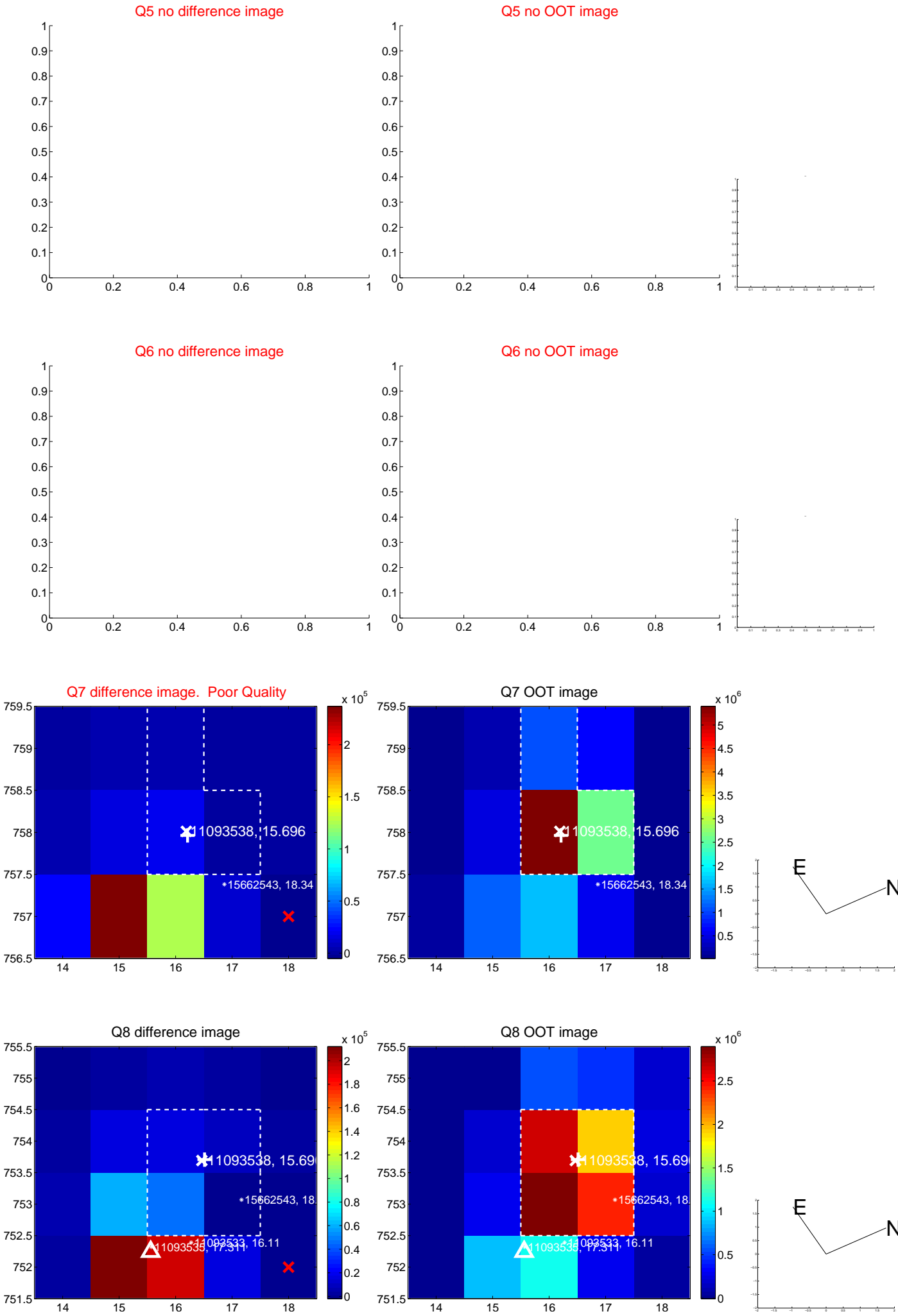


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

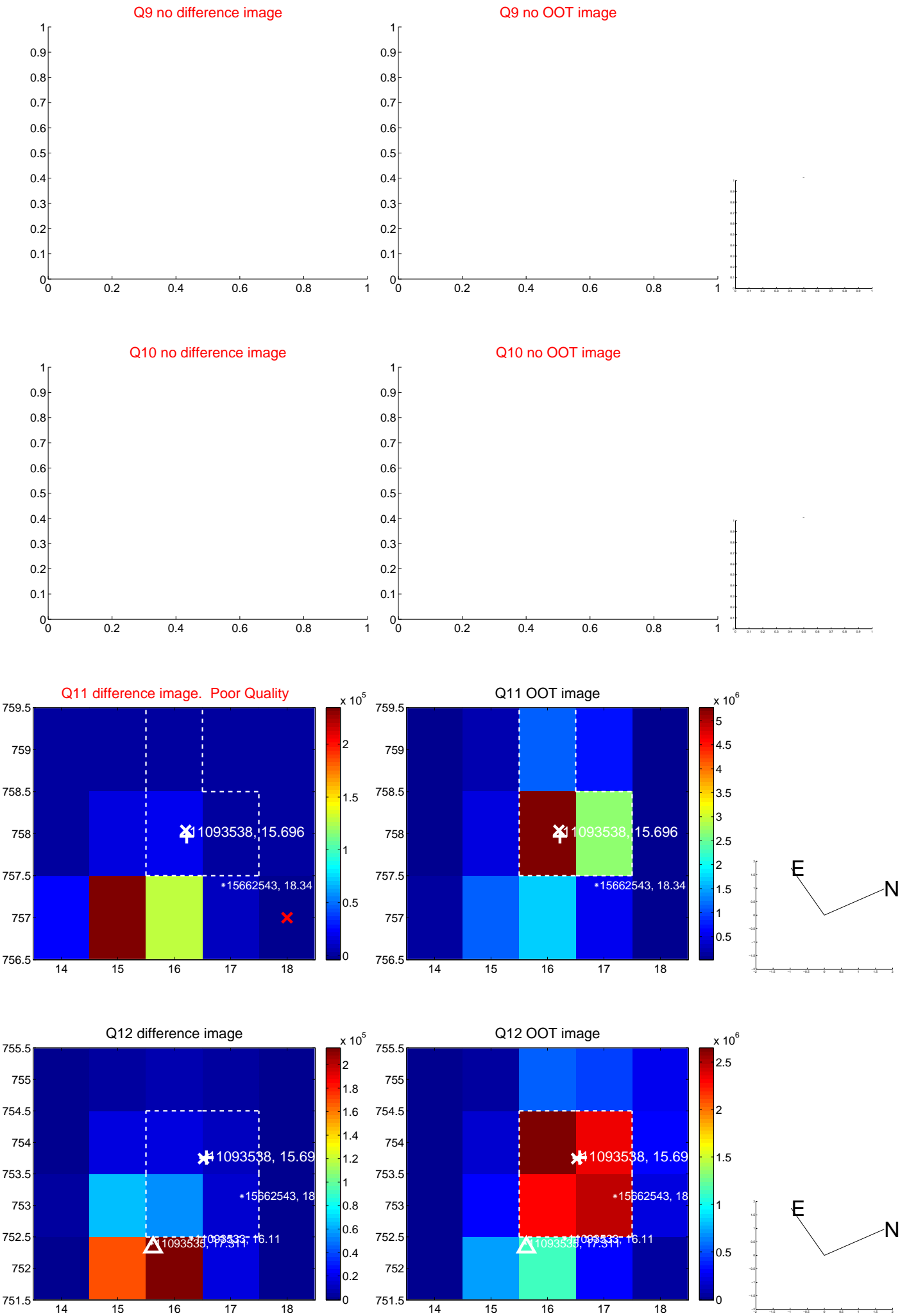
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



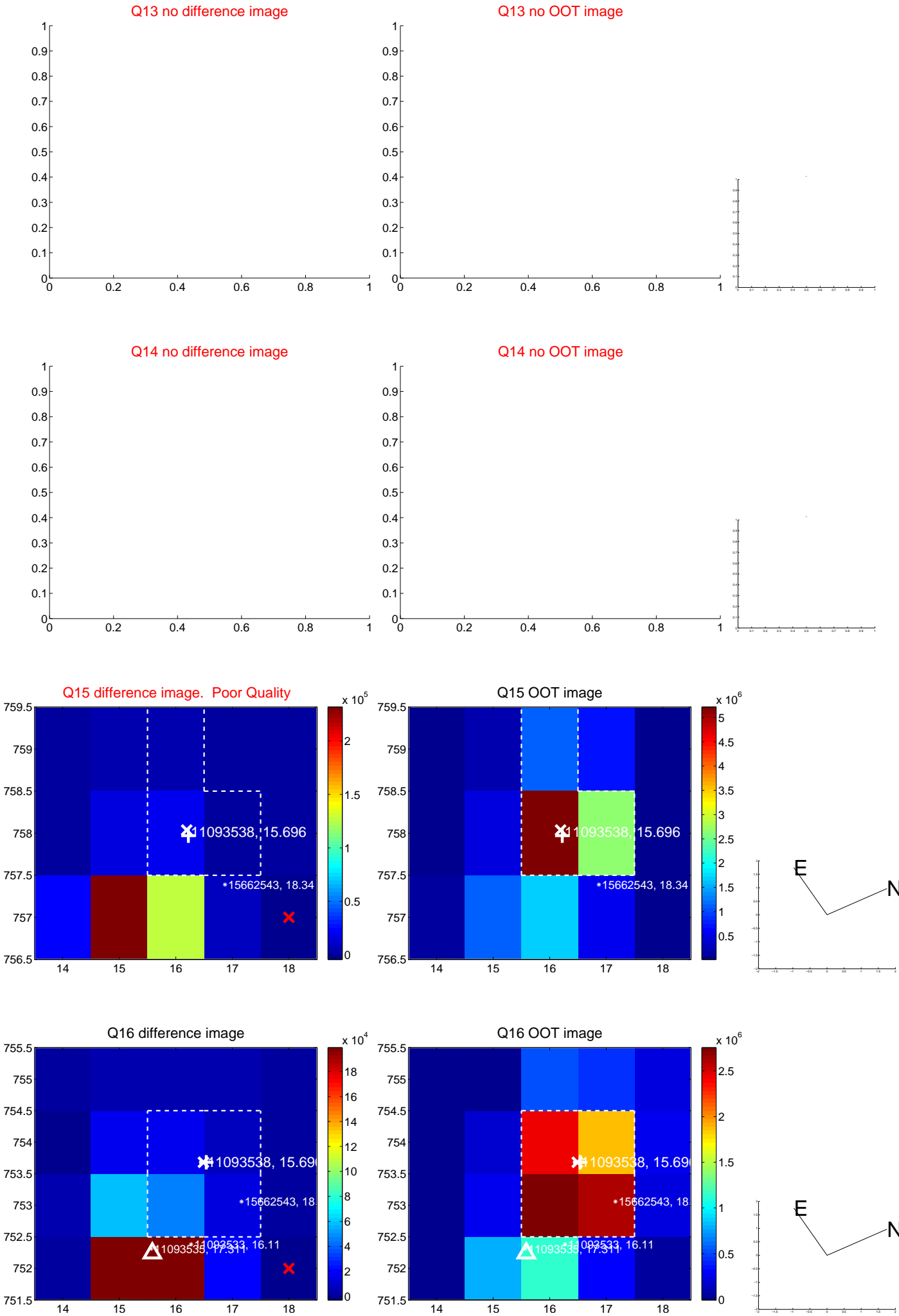
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



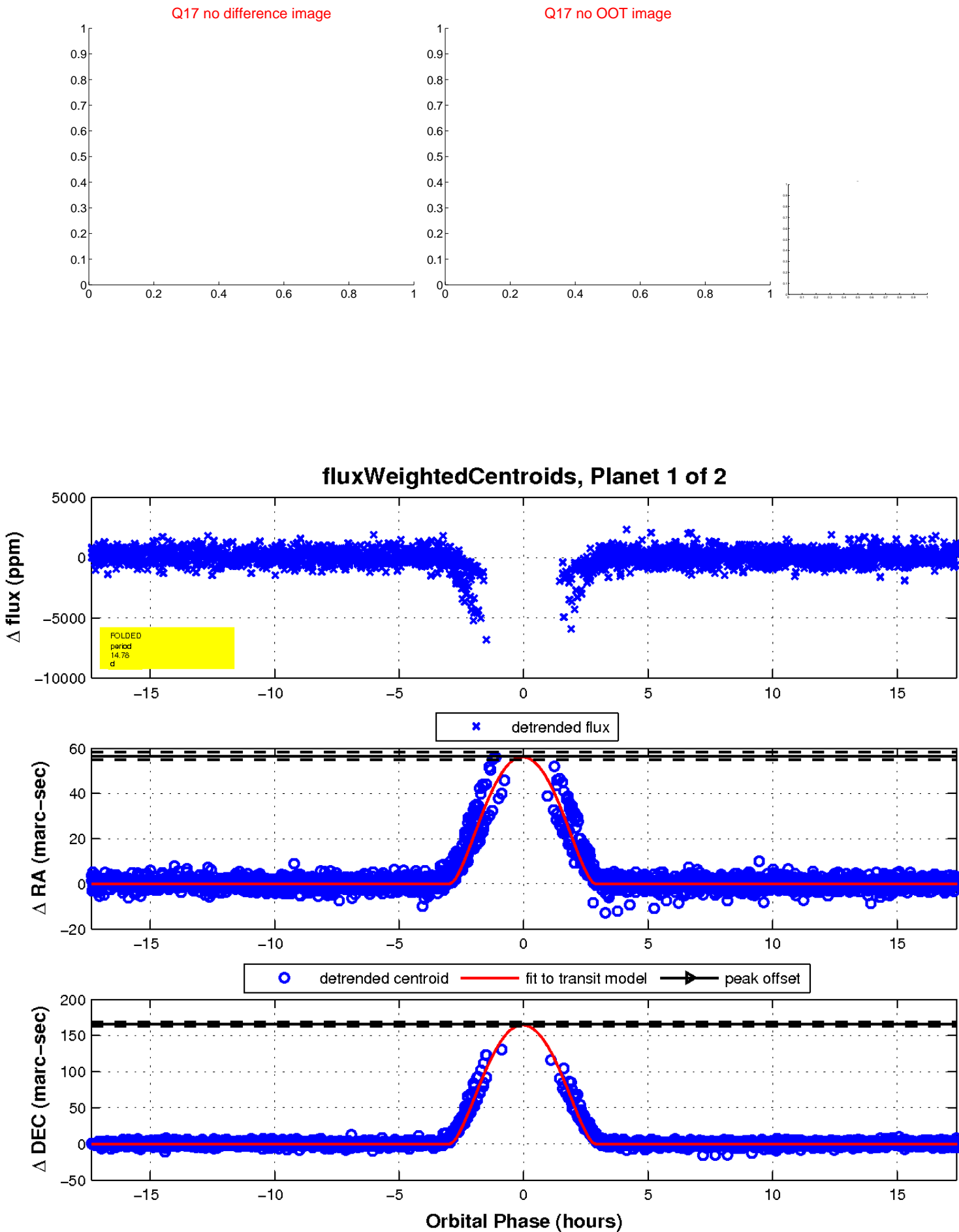
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

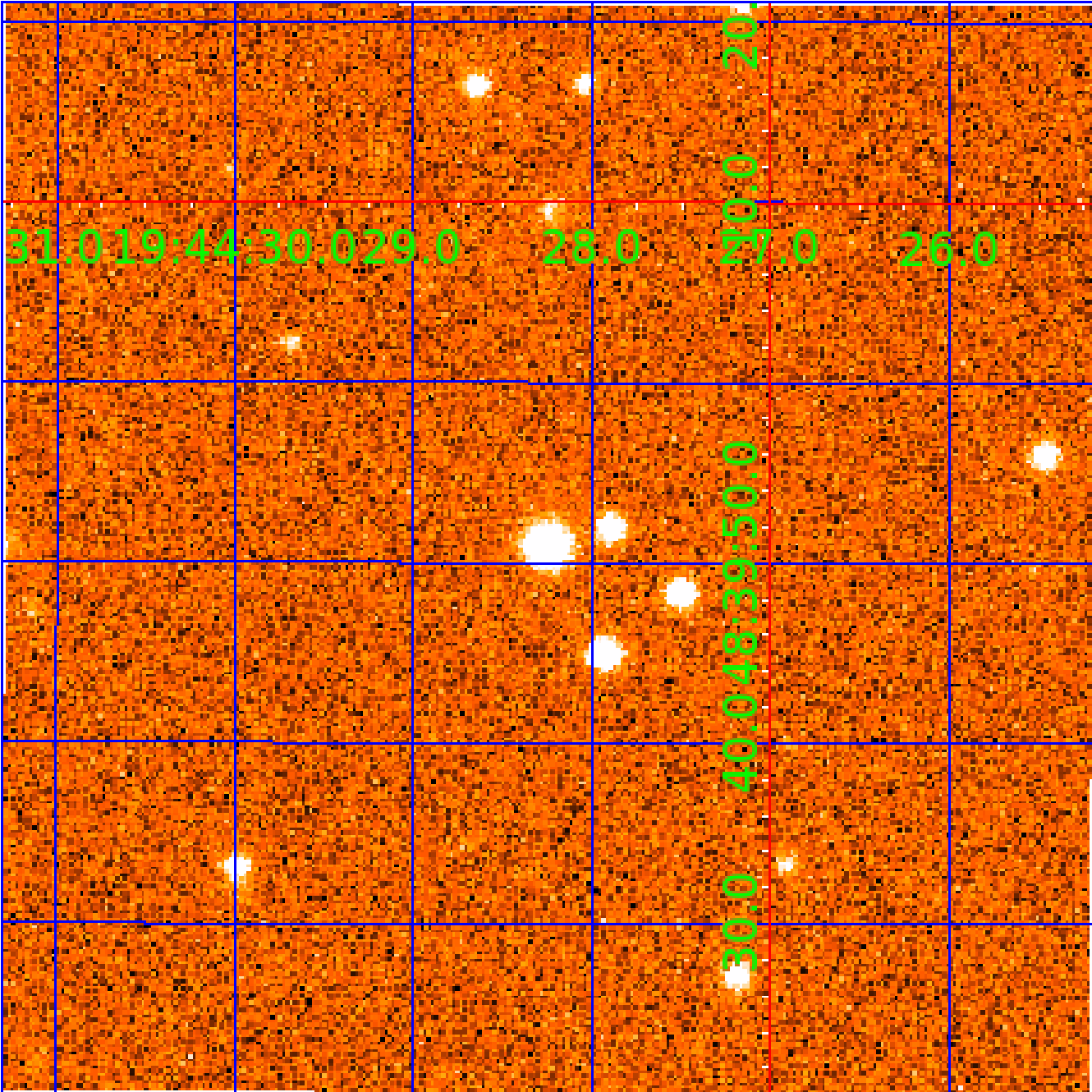


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011093538

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})
011093538-01	OBS	3326.01	14.778212	144.097247	10559.3	5.795	149.5	149.2	1.05	6258	16.52	101.27
011093538-02	OBS	No	14.778340	138.092108	1178.5	5.931	27.3	27.2	1.05	6258	6.10	101.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011093538-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
011093538-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

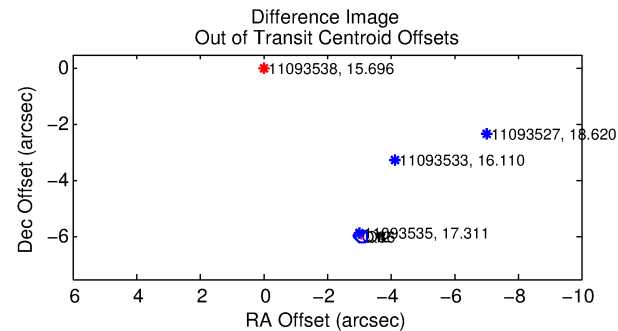
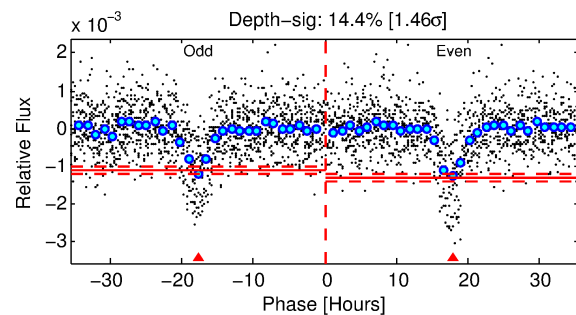
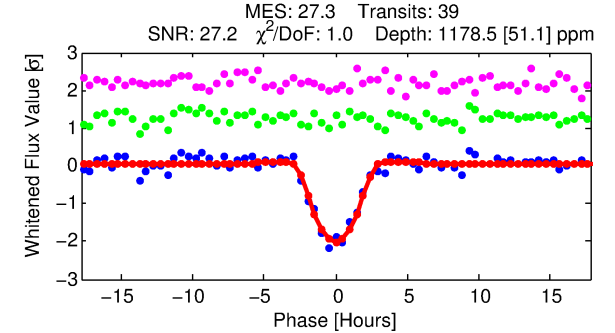
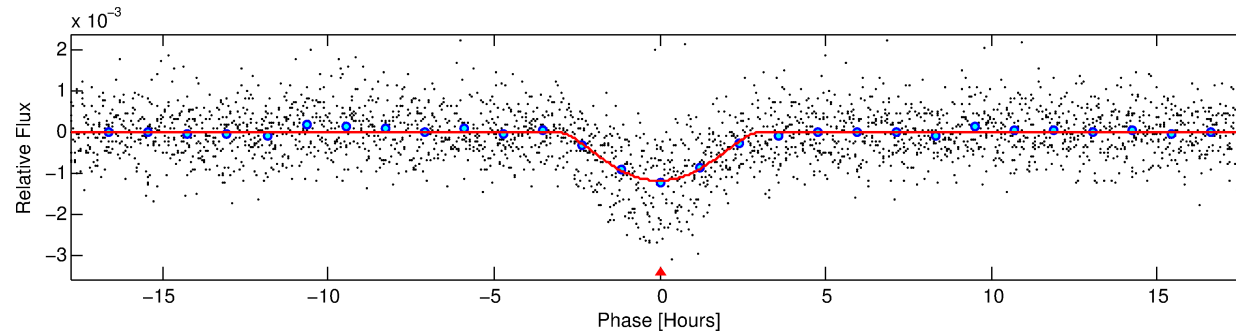
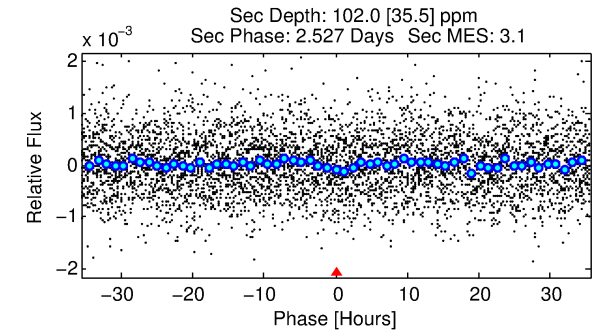
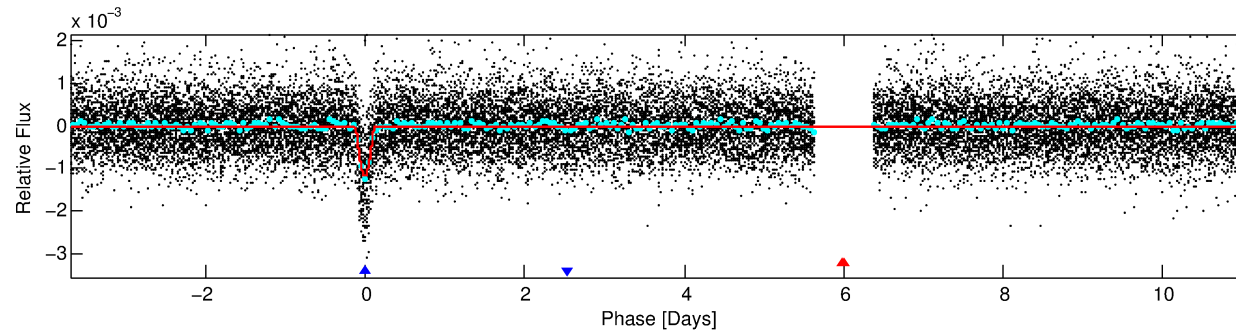
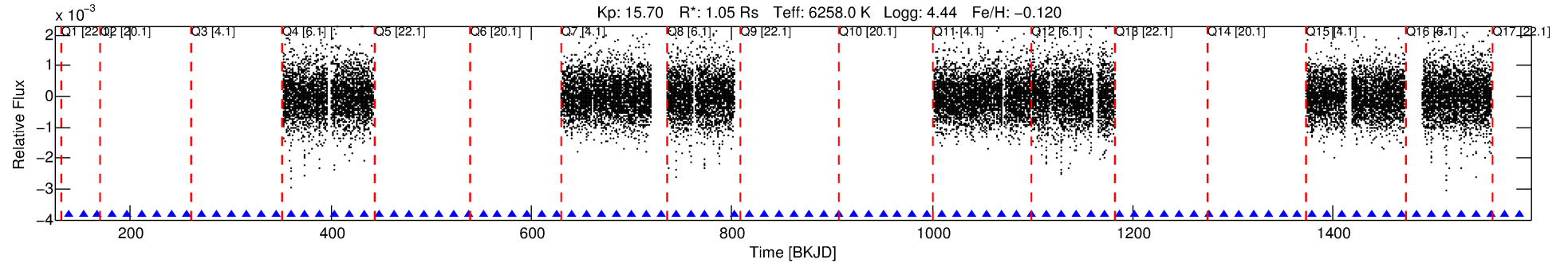
Ephemeris Match Information For 011093538-02

No Significant Match Found

DV One-Page Summary

KIC: 11093538 Candidate: 2 of 2 Period: 14.778 d
KOI: K03326 Corr: No Ephemeris Match

Kp: 15.70 R*: 1.05 Rs Teff: 6258.0 K Logg: 4.44 Fe/H: -0.120



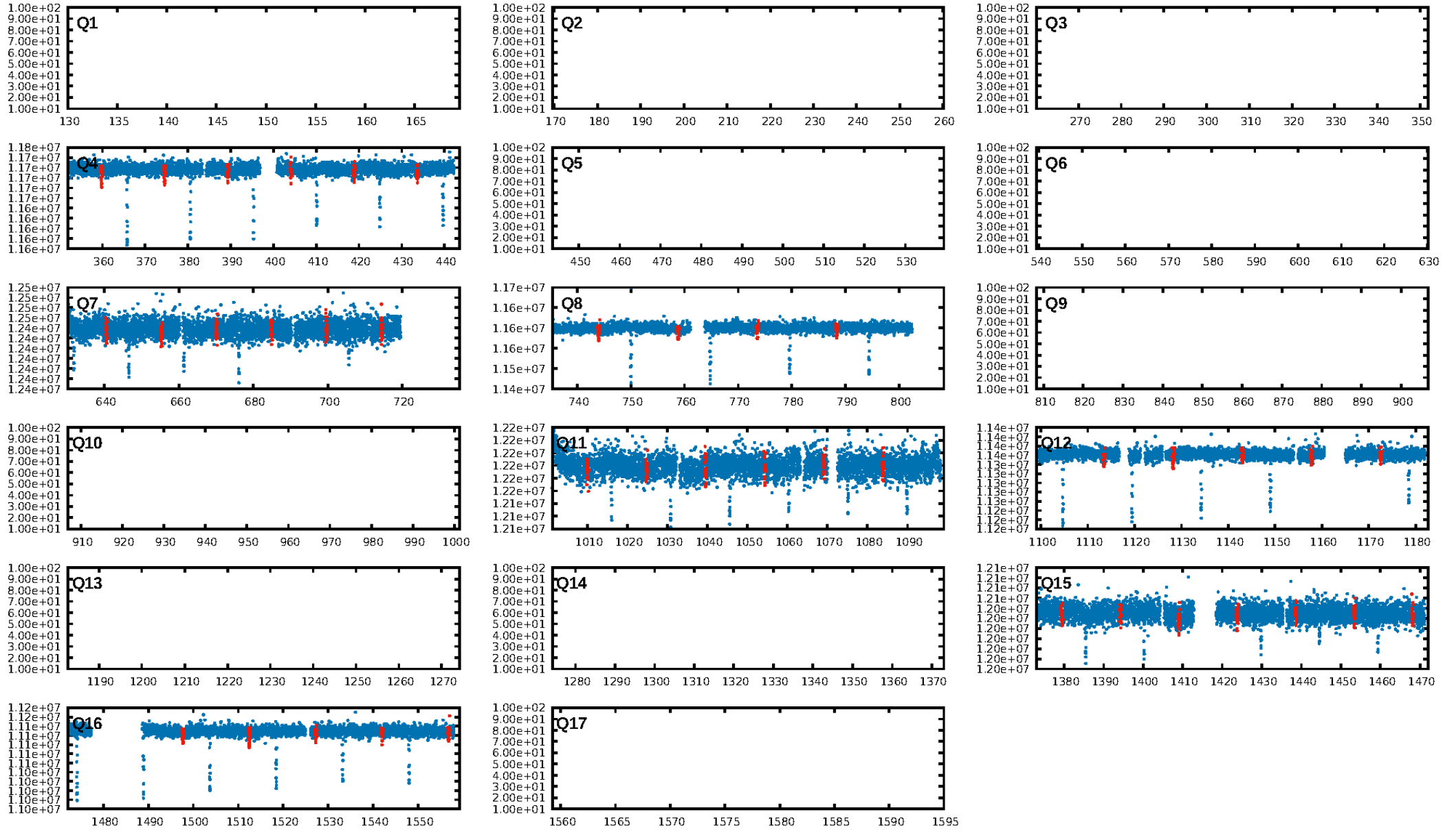
DV Fit Results:

Period = 14.77834 [0.00011] d
Epoch = 138.0921 [0.0068] BKJD
Rp/R* = 0.0535 [0.0555]
a/R* = 6.91 [1.99]
b = 0.99 [0.09]
Seff = 101.27 [43.13]
Teq = 809 [86] K
Rp = 6.10 [6.62] Re
a = 0.1218 [0.0324] AU
Ag = 22.38 [47.94] [0.45 σ]
Teff = 2720 [1437] K [1.33 σ]

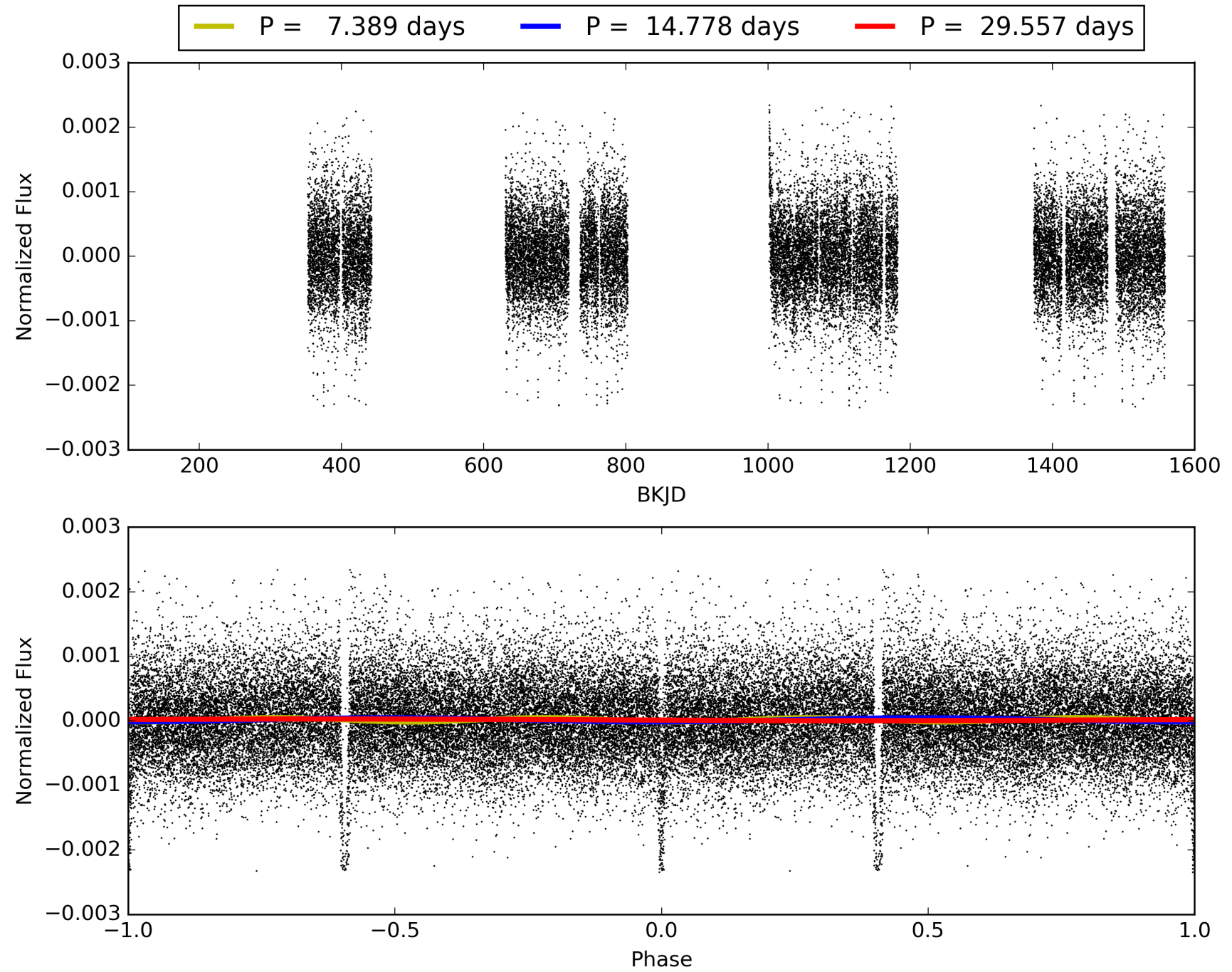
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 98.7%
Bootstrap-pfa: 7.93e-161
RollingBand-fgt: 1.00 [39/39]
GhostDiagnostic-chr: -0.4511
Centroid-sig: 0.0%
Centroid-so: 23.487 arcsec [52.72 σ]
OotOffset-rm: 6.726 arcsec [95.63 σ]
KicOffset-rm: 6.599 arcsec [88.76 σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 011093538-02, PDC Light Curves

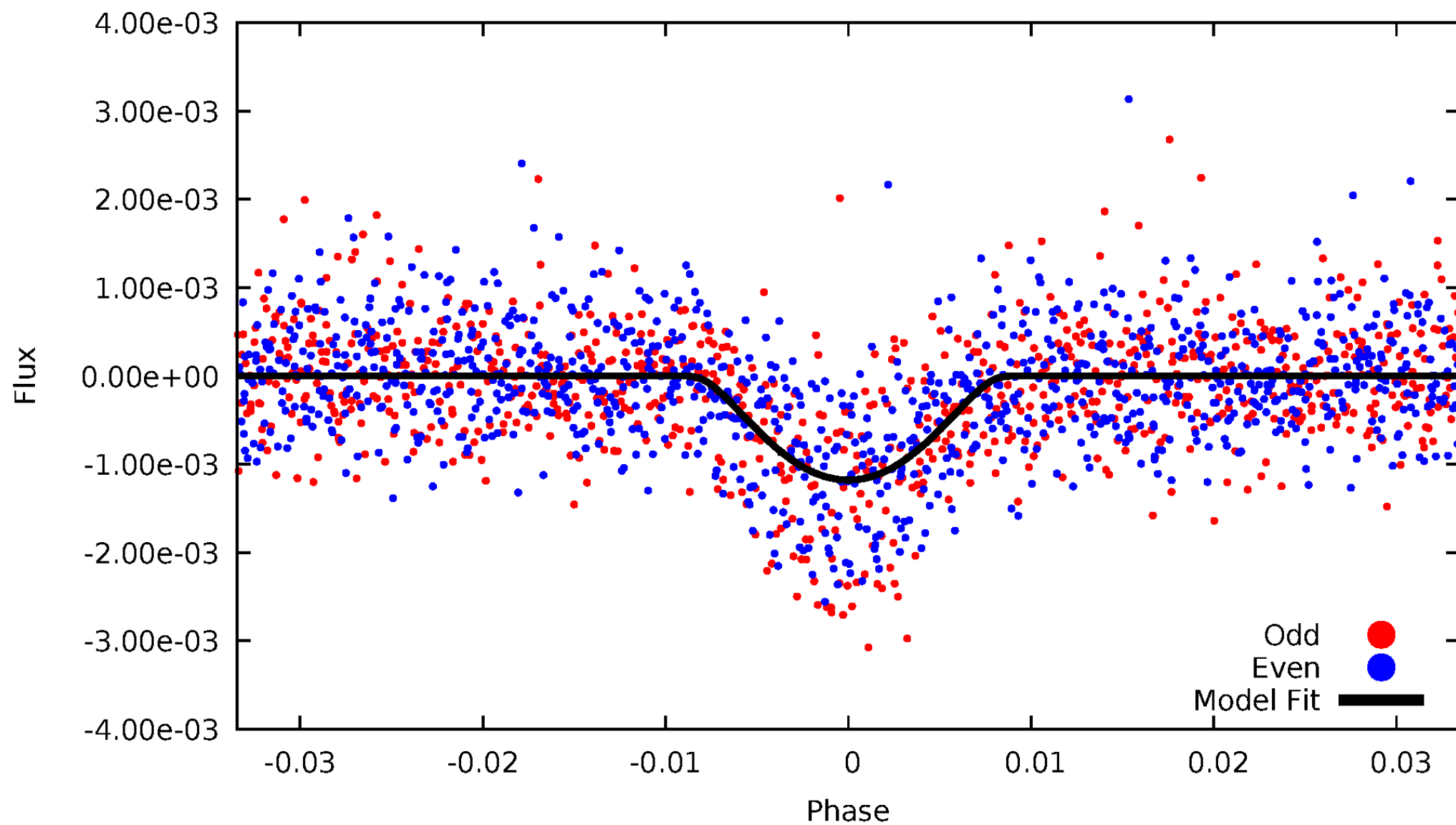


TCE 011093538-02



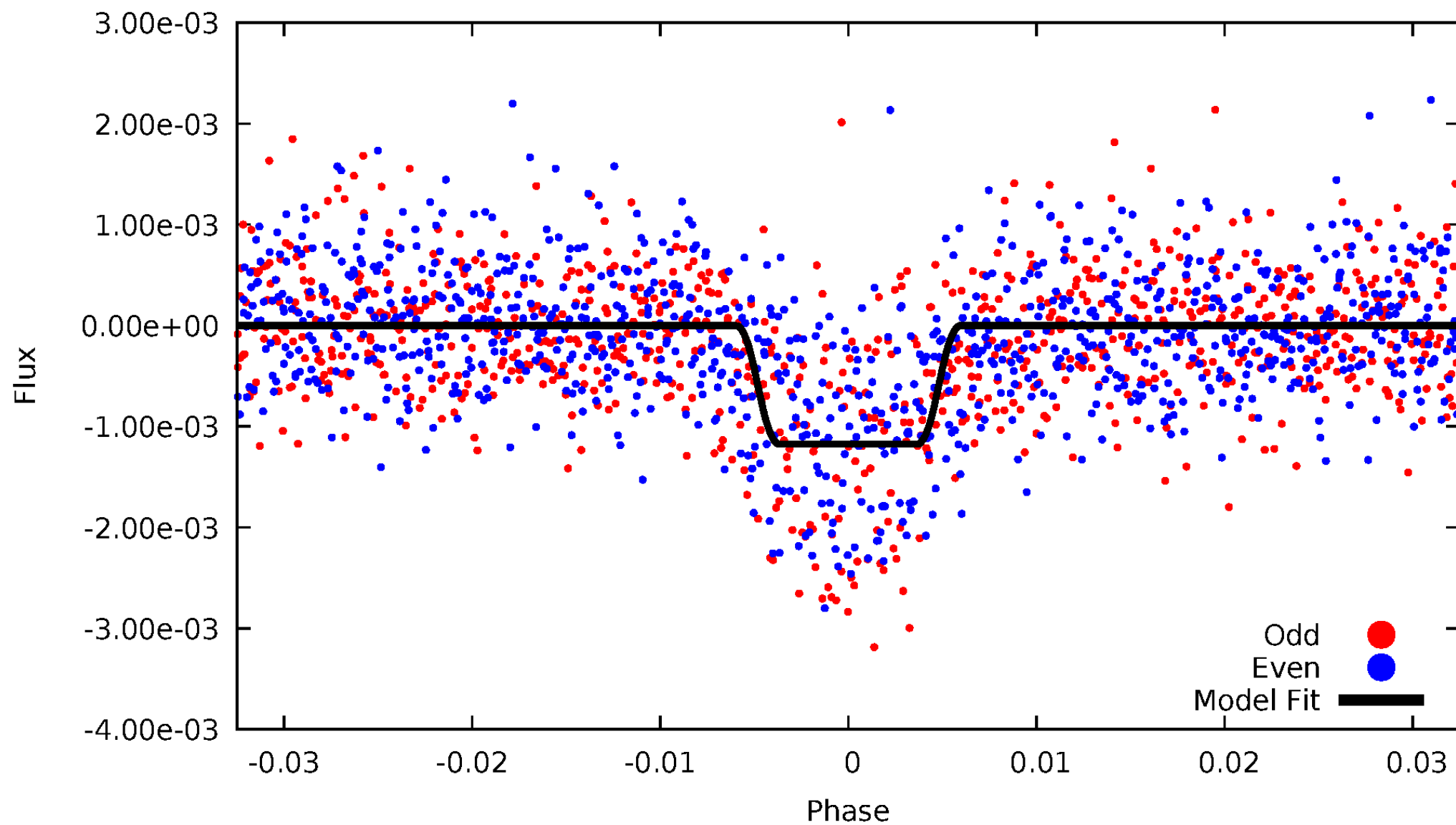
DV Odd/Even

TCE 011093538-02



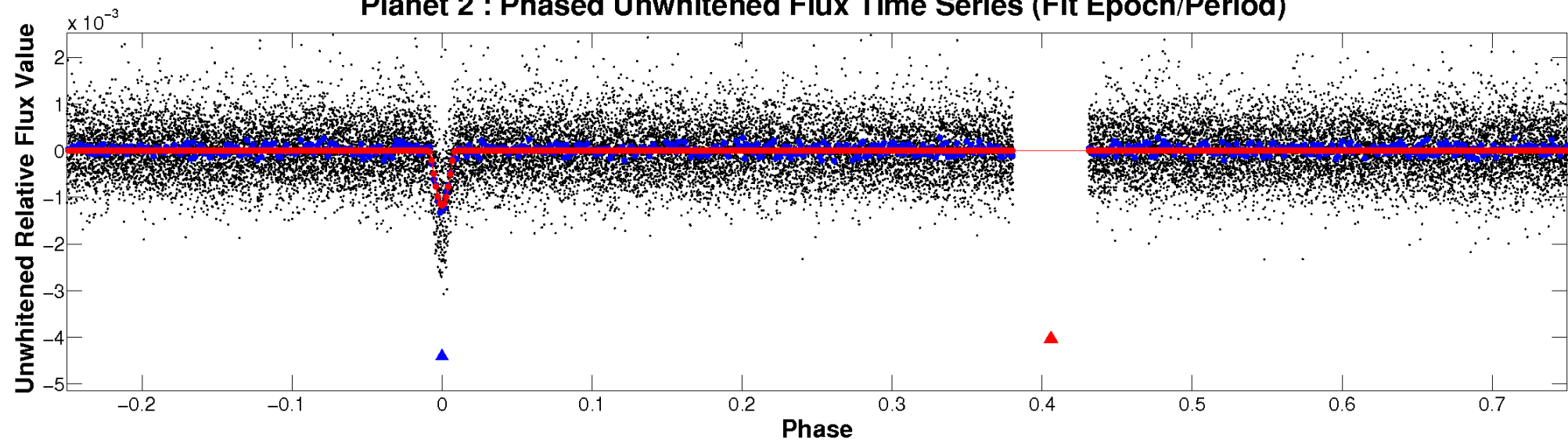
ALT Odd/Even

TCE 011093538-02

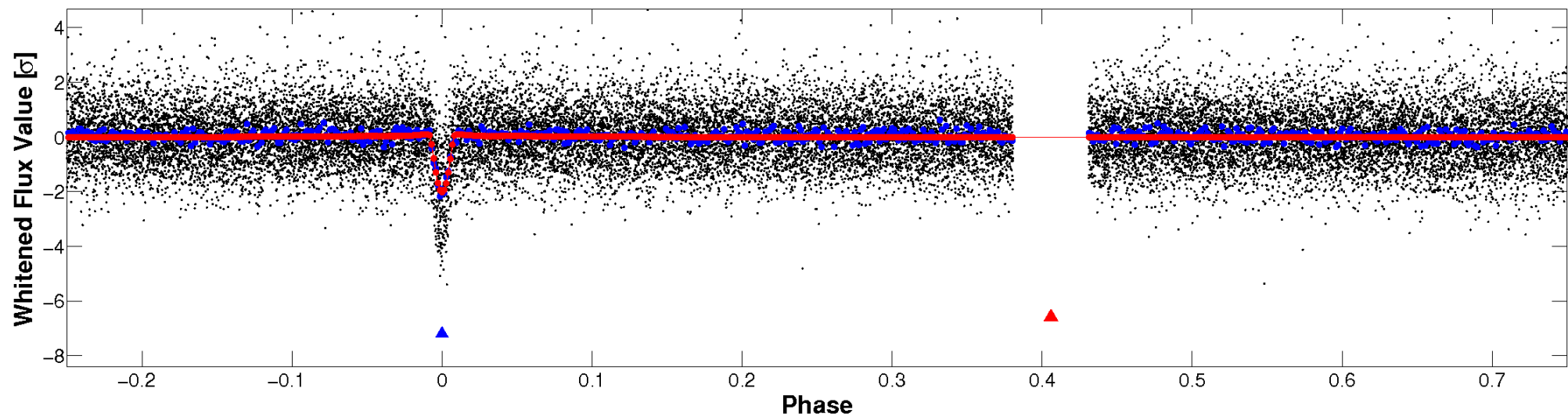


Non-Whitened Vs. Whitened Light Curve

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

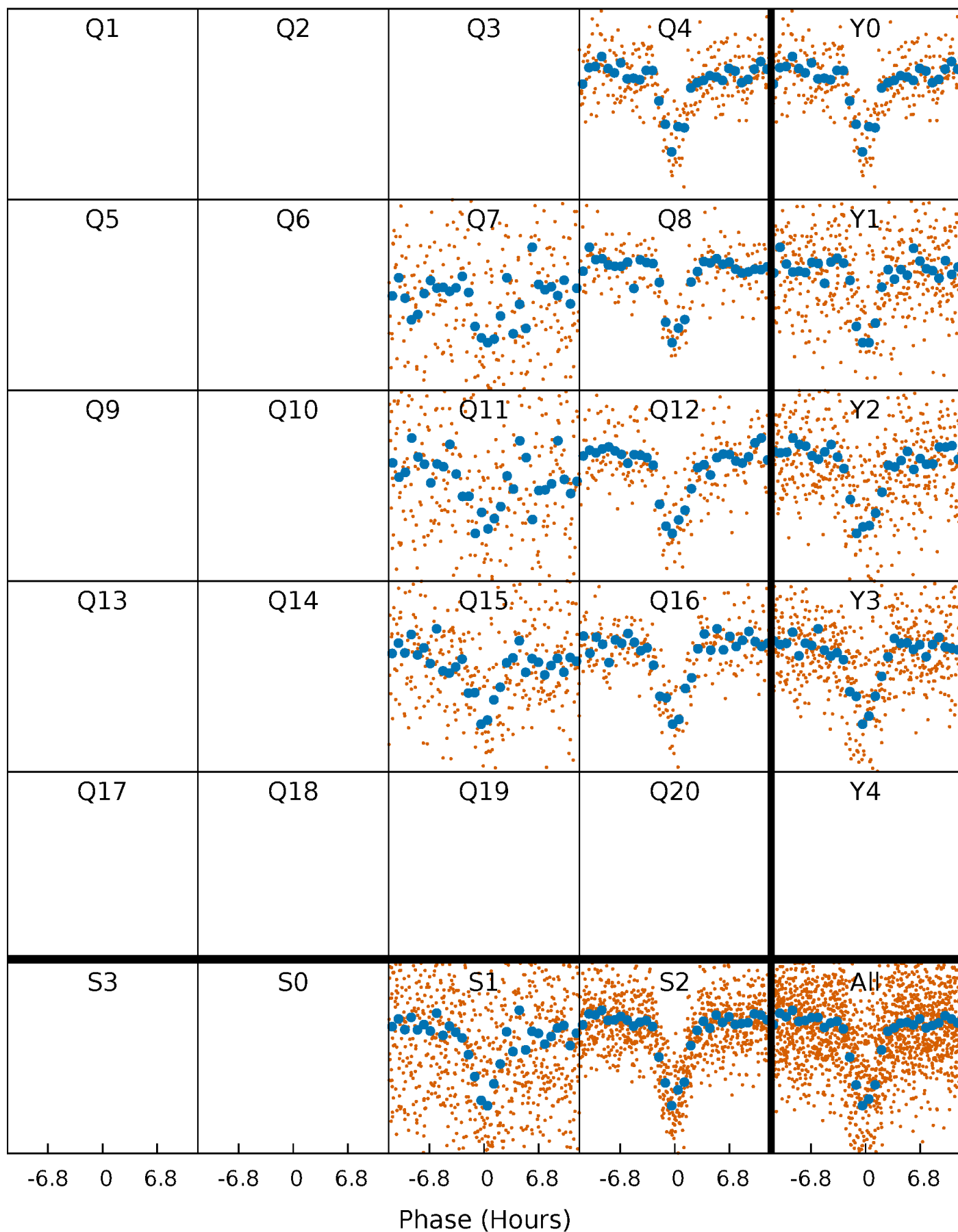


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



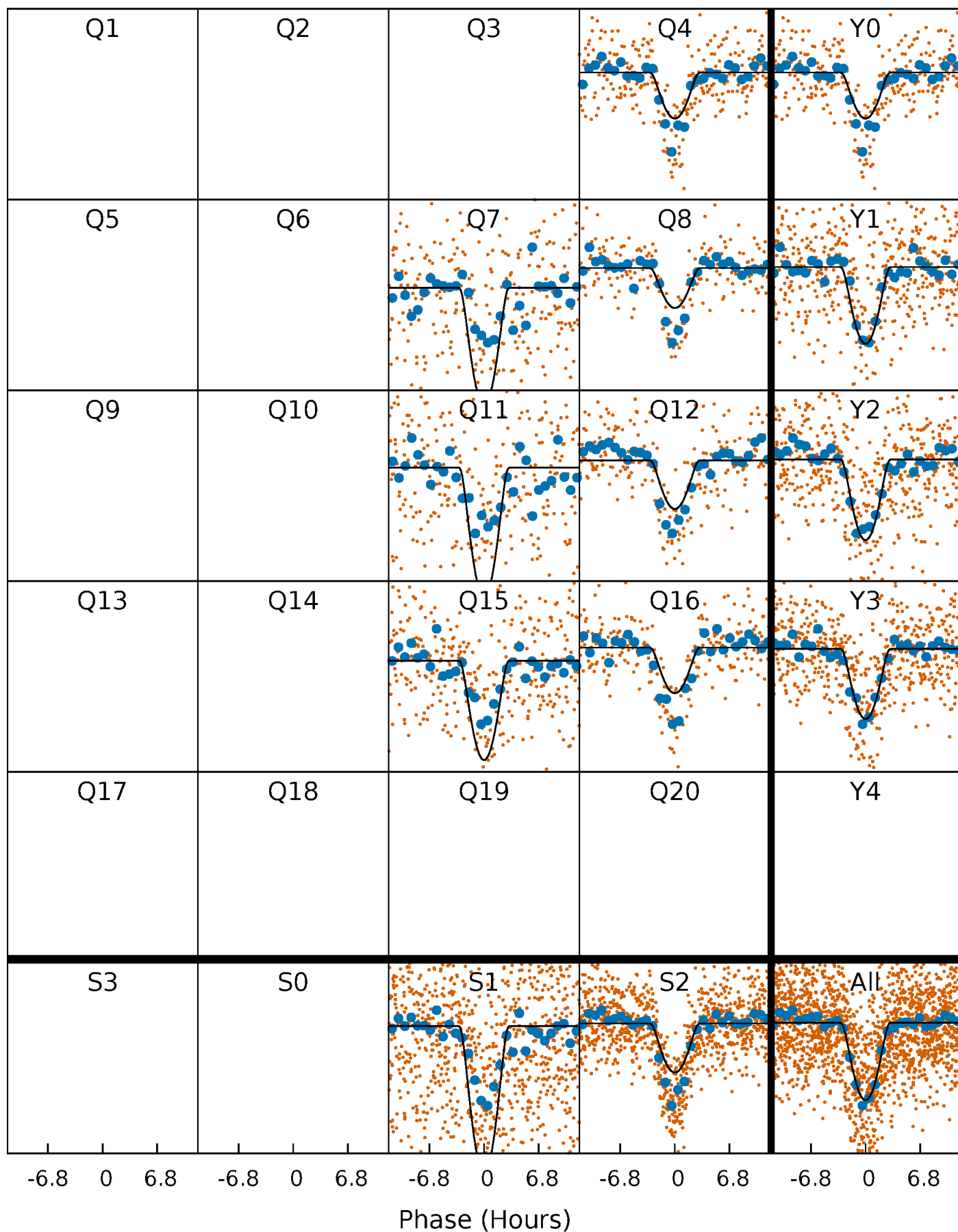
PDC Quarter-Phased Transit Curves

TCE 011093538-02 P= 14.778340 Days $T_0=138.092108$ (BKJD)



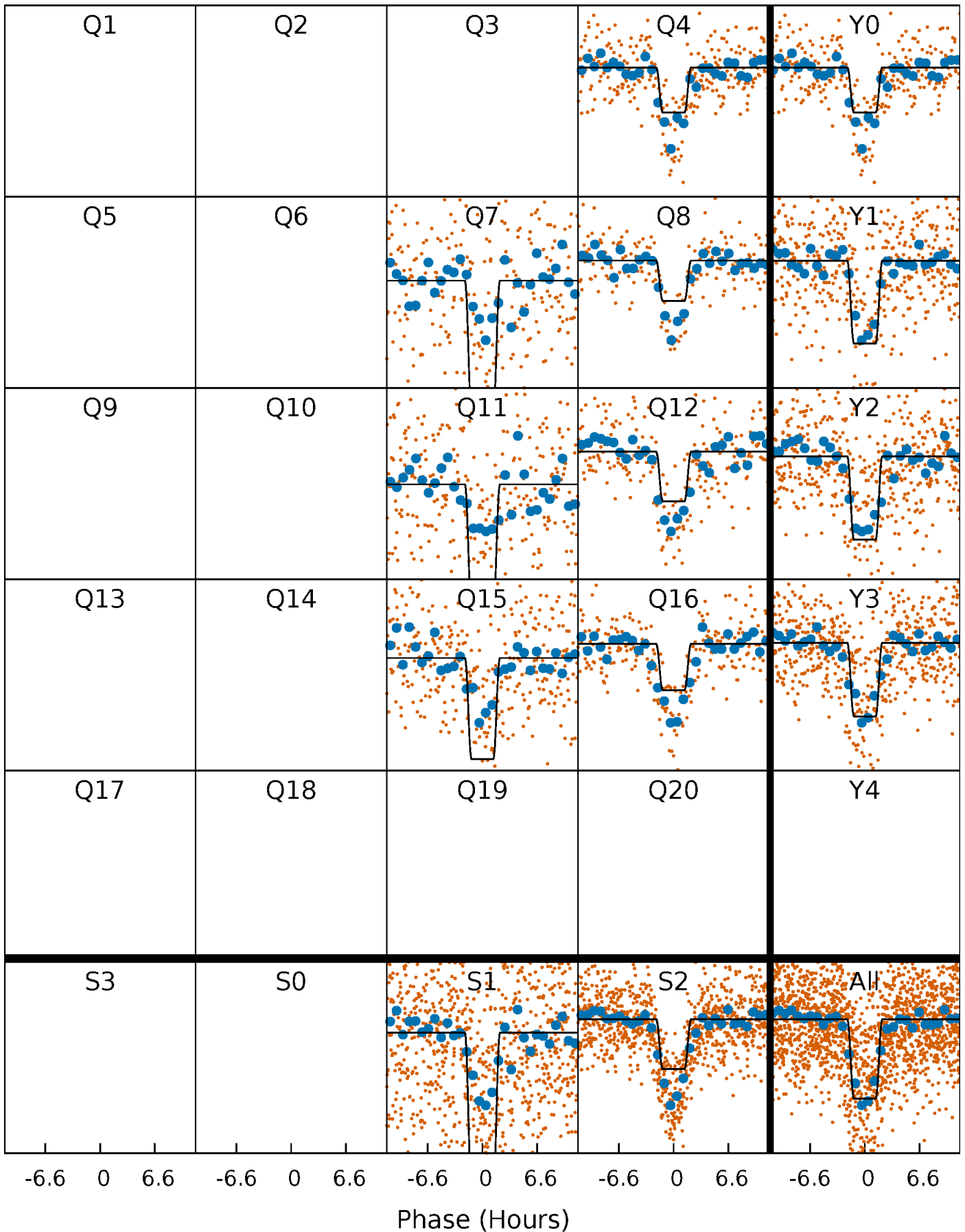
DV Quarter-Phased Transit Curves

TCE 011093538-02 P= 14.778340 Days $T_0=138.092108$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

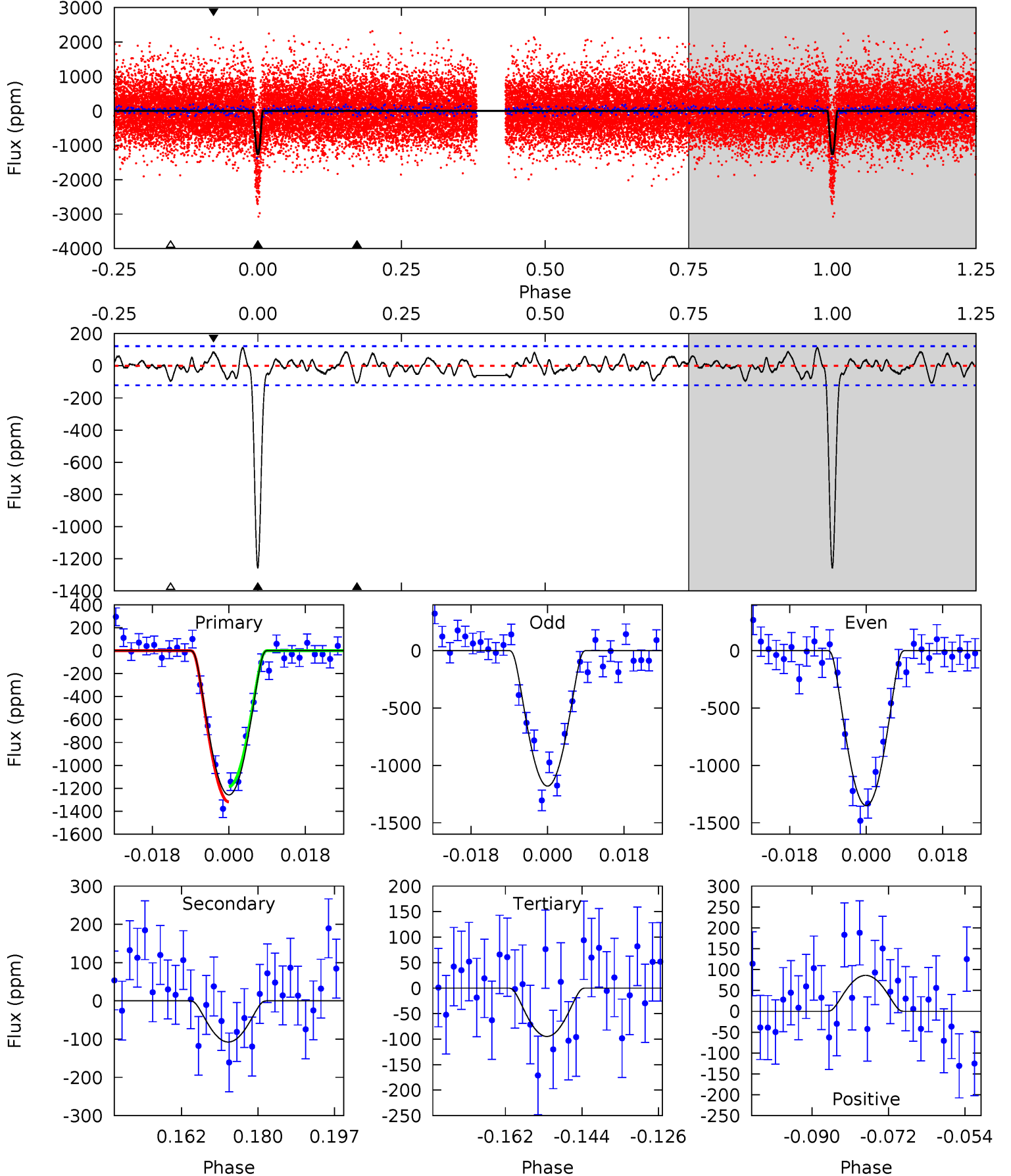
TCE 011093538-02 P= 14.778291 Days $T_0=138.092510$ (BKJD)



DV Model-Shift Uniqueness Test

011093538-02, $P = 14.778340$ Days, $E = 138.092108$ Days

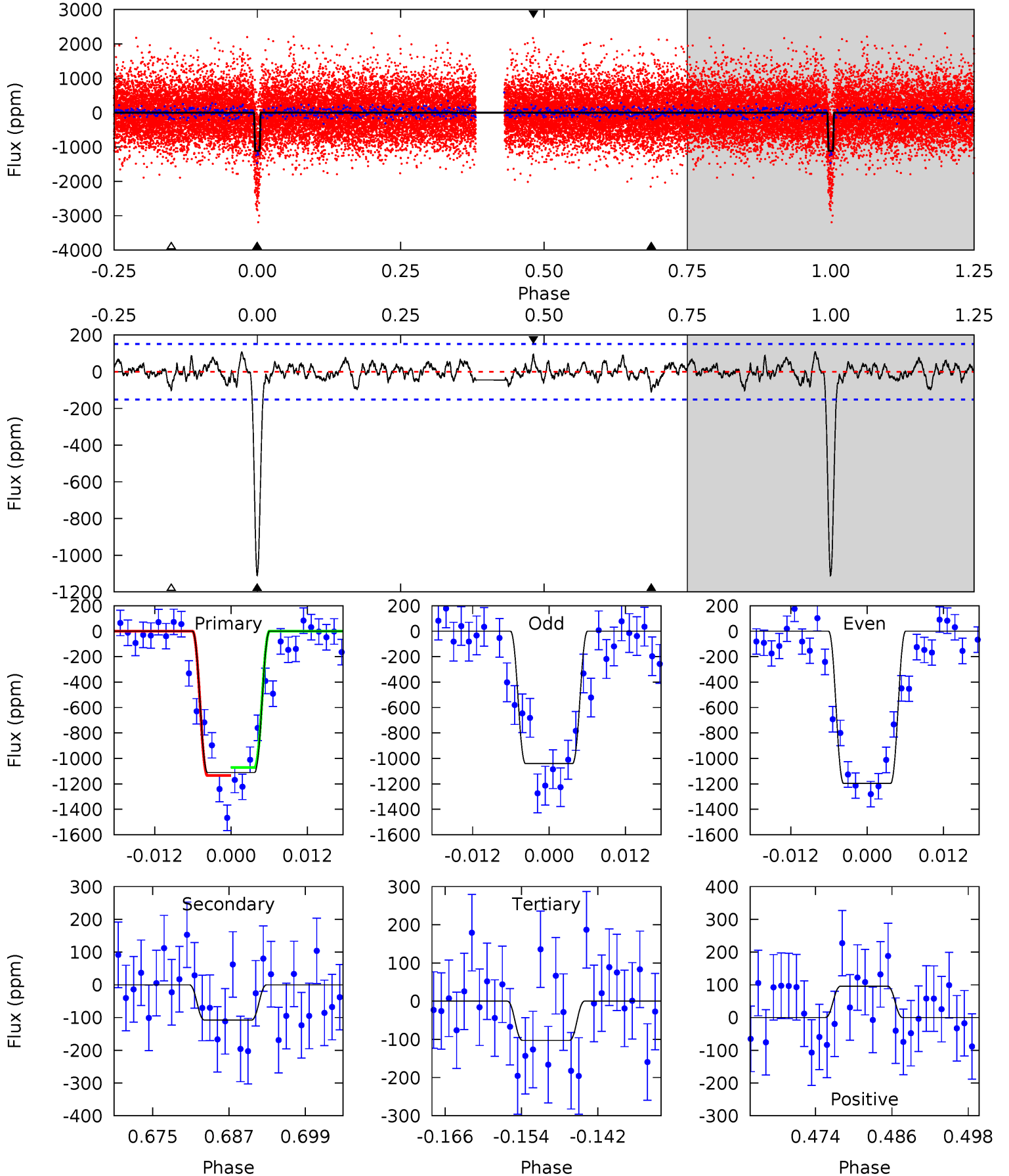
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.8	4.34	3.83	3.48	4.91	2.37	1.48	46.9	47.3	0.52	0.86	3.43	1.13	0.08	2.70



Alt Model-Shift Uniqueness Test

011093538-02, $P = 14.778291$ Days, $E = 138.092510$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.7	3.57	3.40	3.17	4.99	2.52	1.12	33.3	33.6	0.17	0.39	2.56	1.16	0.09	1.04



Stellar Parameters For KIC 011093538

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6258^{+175}_{-263}	$4.442^{+0.067}_{-0.216}$	$-0.120^{+0.250}_{-0.300}$	$1.046^{+0.326}_{-0.116}$	$1.102^{+0.154}_{-0.154}$	$1.357^{+0.408}_{-0.745}$
	+3%/-4%	+2%/-5%	+208%/-250%	+31%/-11%	+14%/-14%	+30%/-55%
Source	KIC0	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 011093538-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-108 ± 25	$7.70^{+5.77}_{-4.77}$	1150^{+88}_{-67}	3096^{+1144}_{-464}	14^{+79}_{-10}
Alt.	-108 ± 30	$6.42^{+5.54}_{-4.08}$	1147^{+89}_{-61}	3266^{+1367}_{-542}	20^{+131}_{-14}

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

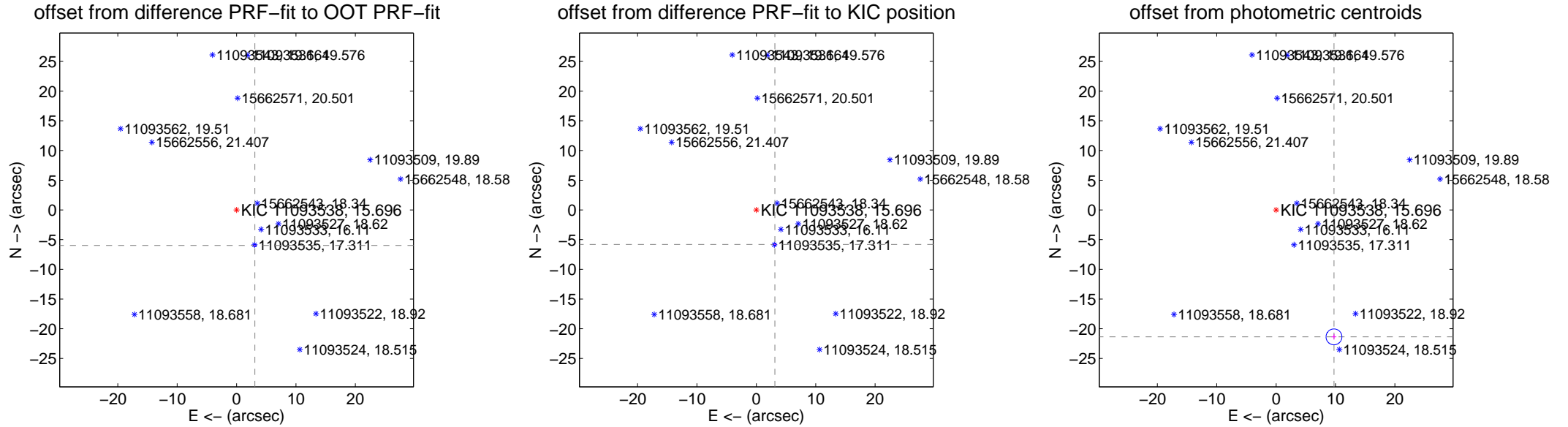
DV Centroid Data

Supplemental centroid analysis for 011093538-02. Kepler magnitude: 15.70. Transit SNR 27.21

There are 4 quarters with good PRF difference image offsets

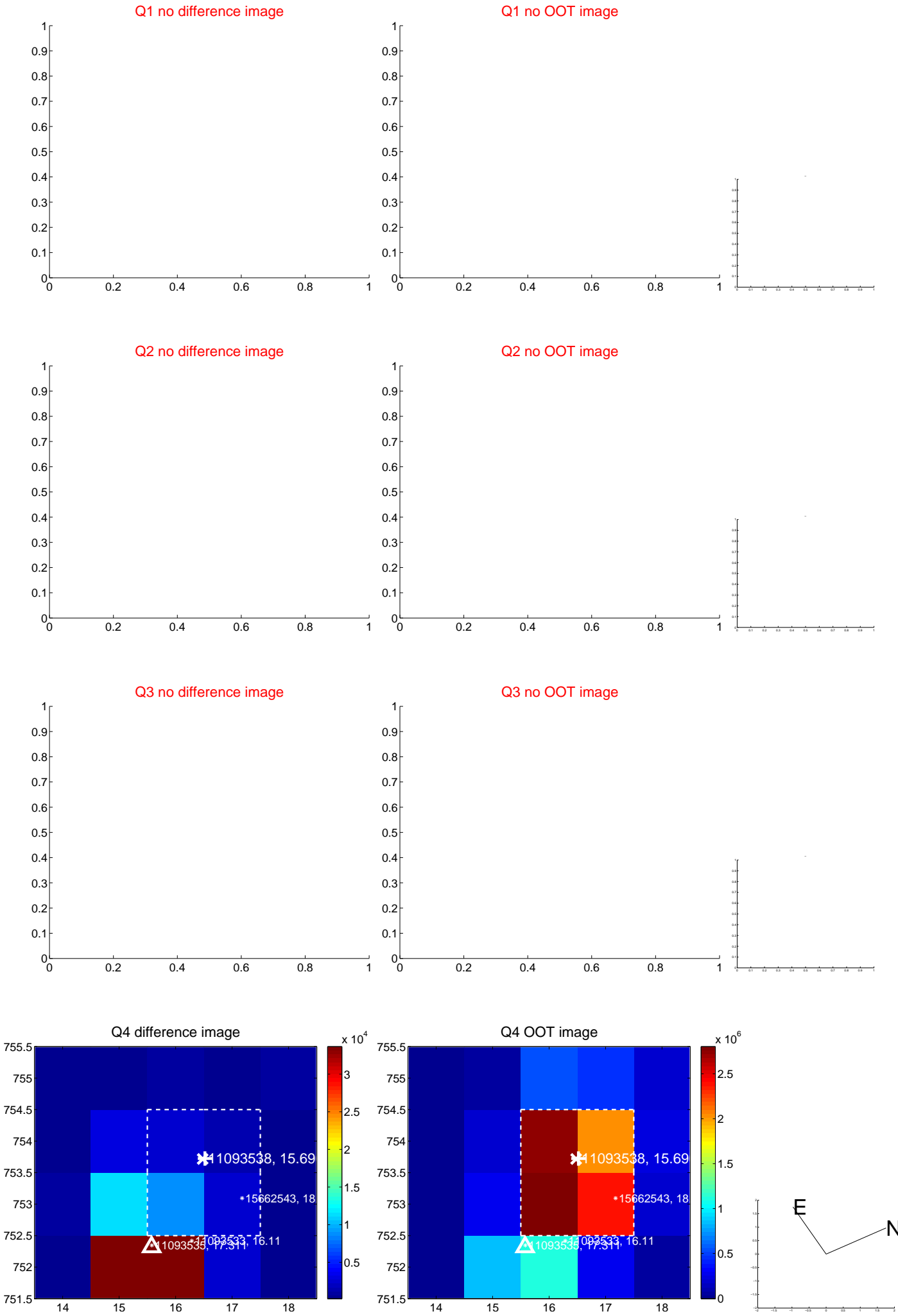
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.726 \pm 0.070	95.63	-3.076 \pm 0.072	-5.981 \pm 0.070
PRF-fit source offset from KIC position	6.599 \pm 0.074	88.76	-3.118 \pm 0.077	-5.816 \pm 0.069
photometric centroid source offset	23.49 \pm 0.45	52.72	-9.74 \pm 0.40	-21.37 \pm 0.45

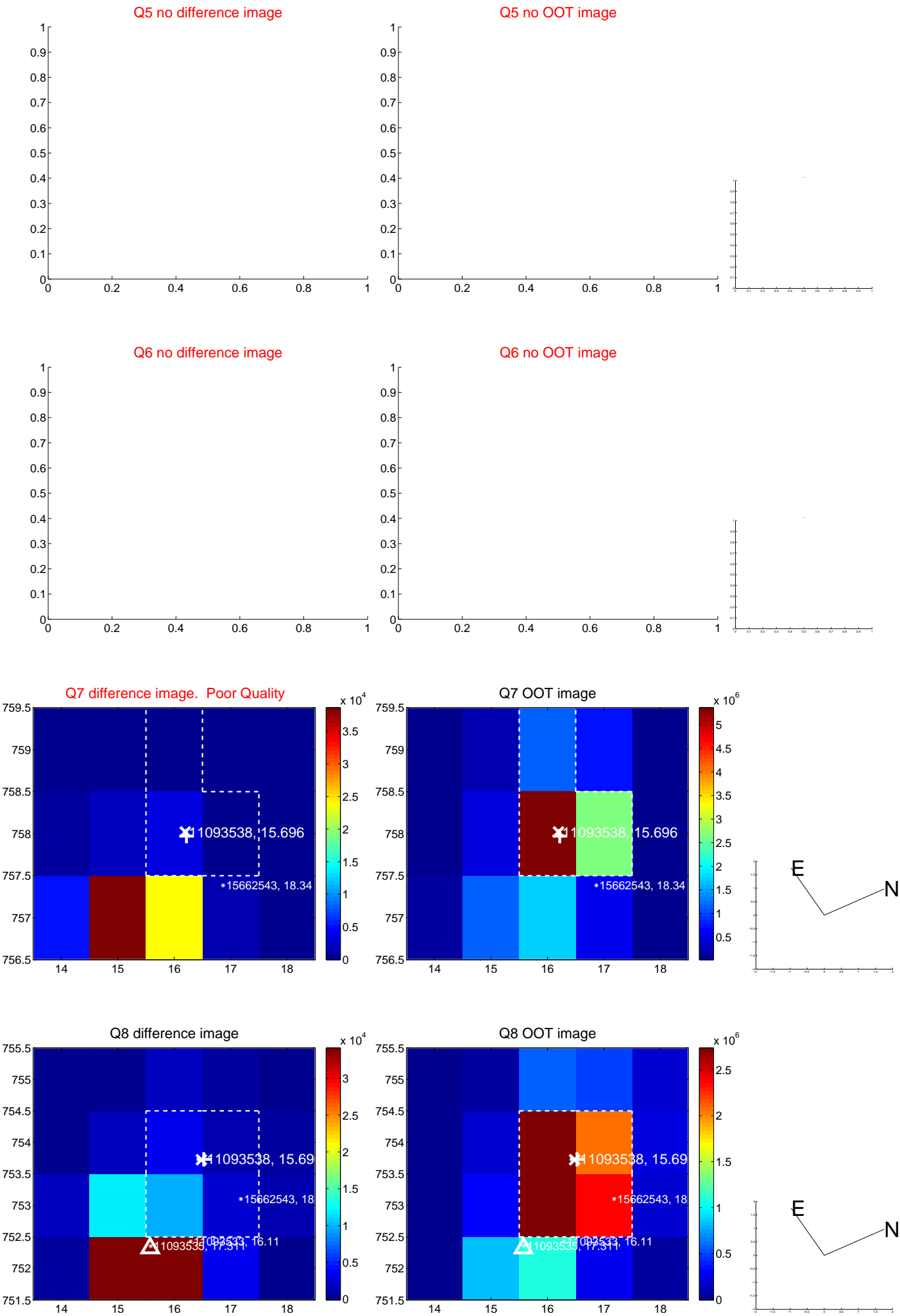


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

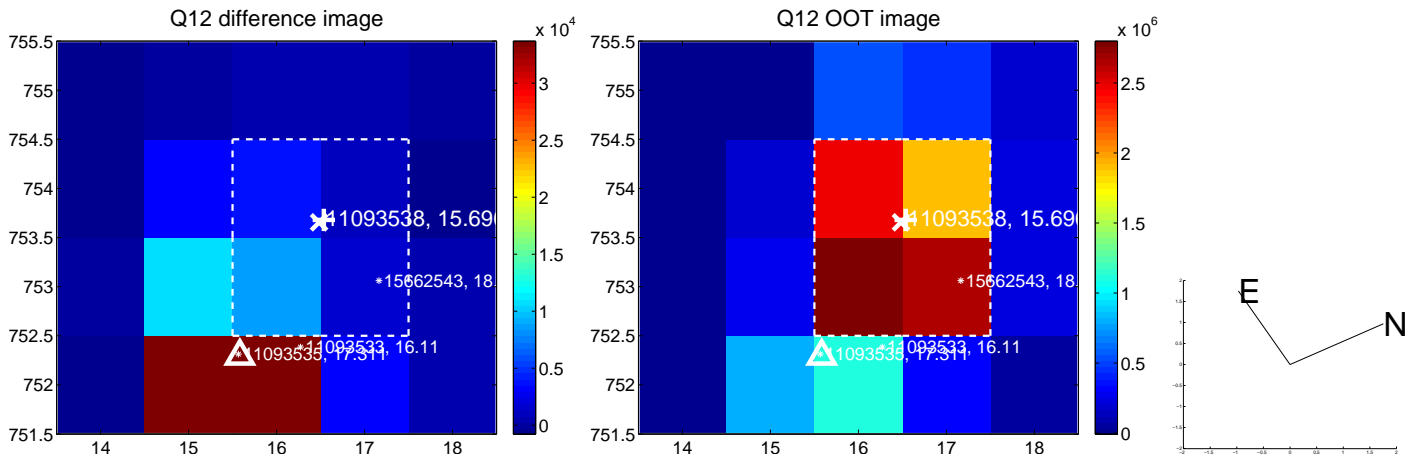
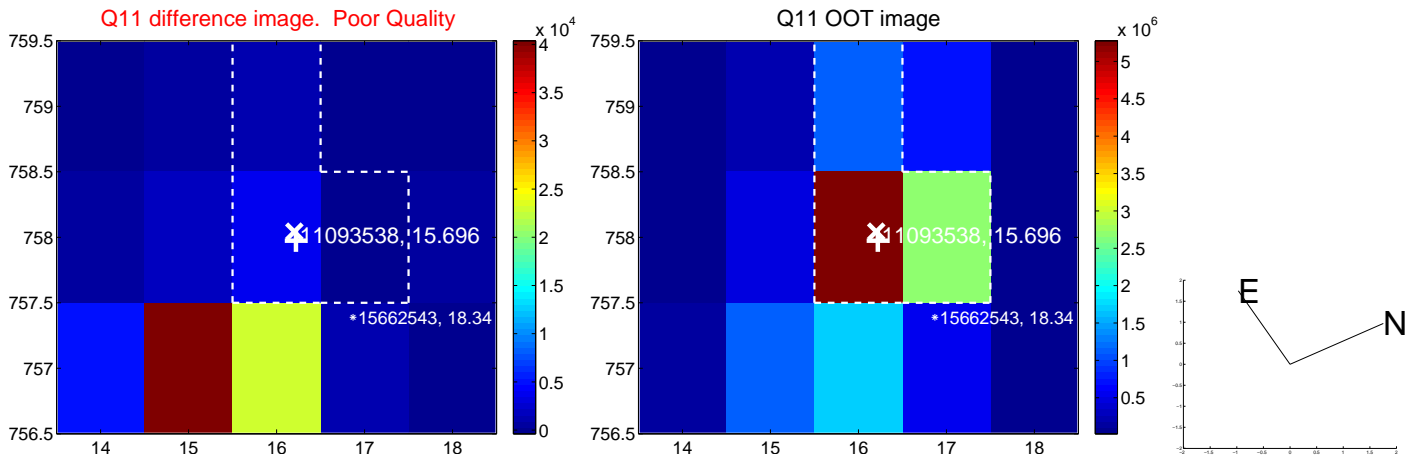
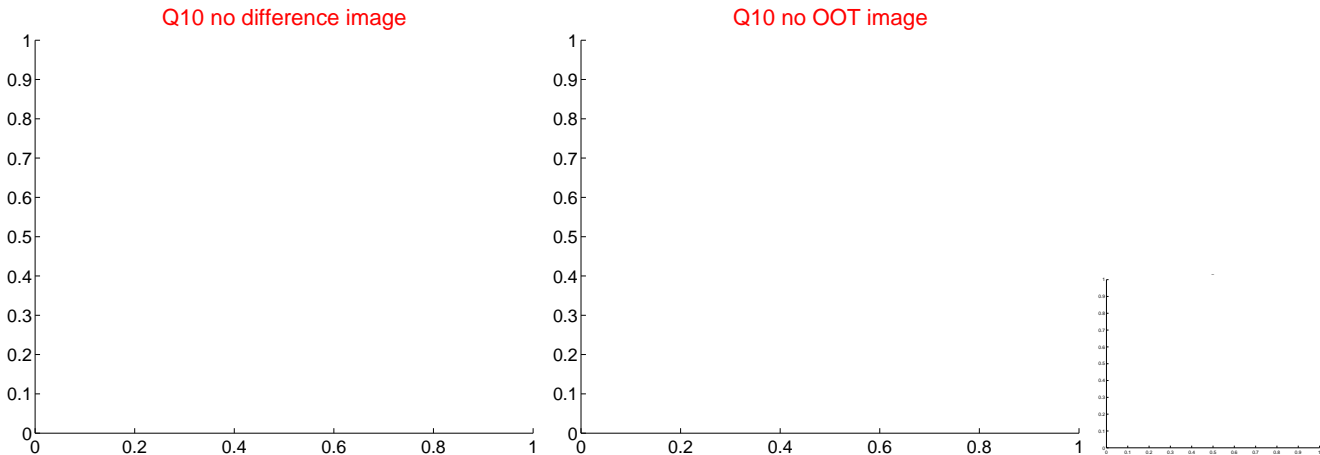
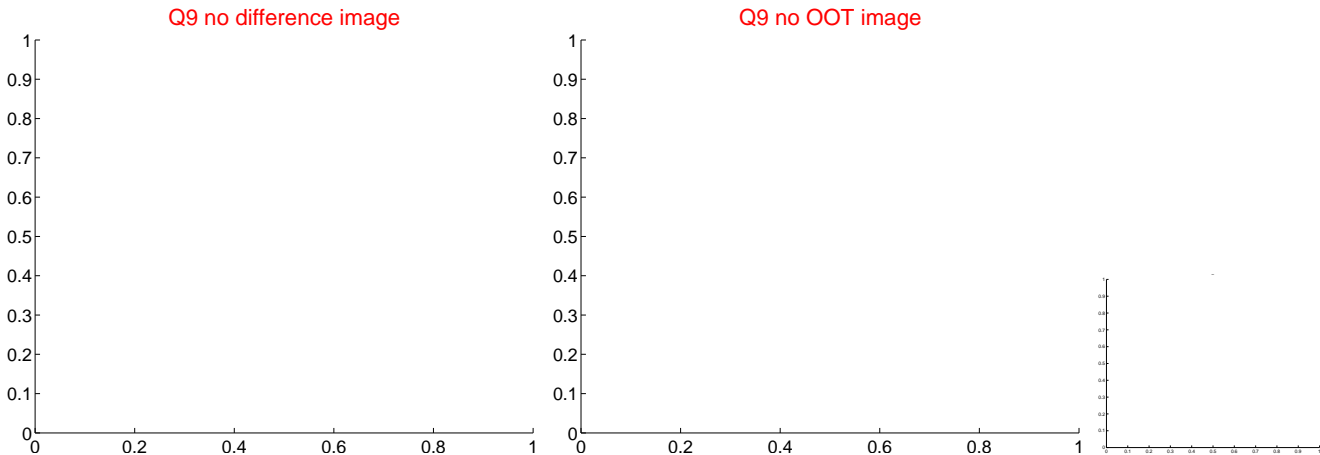
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



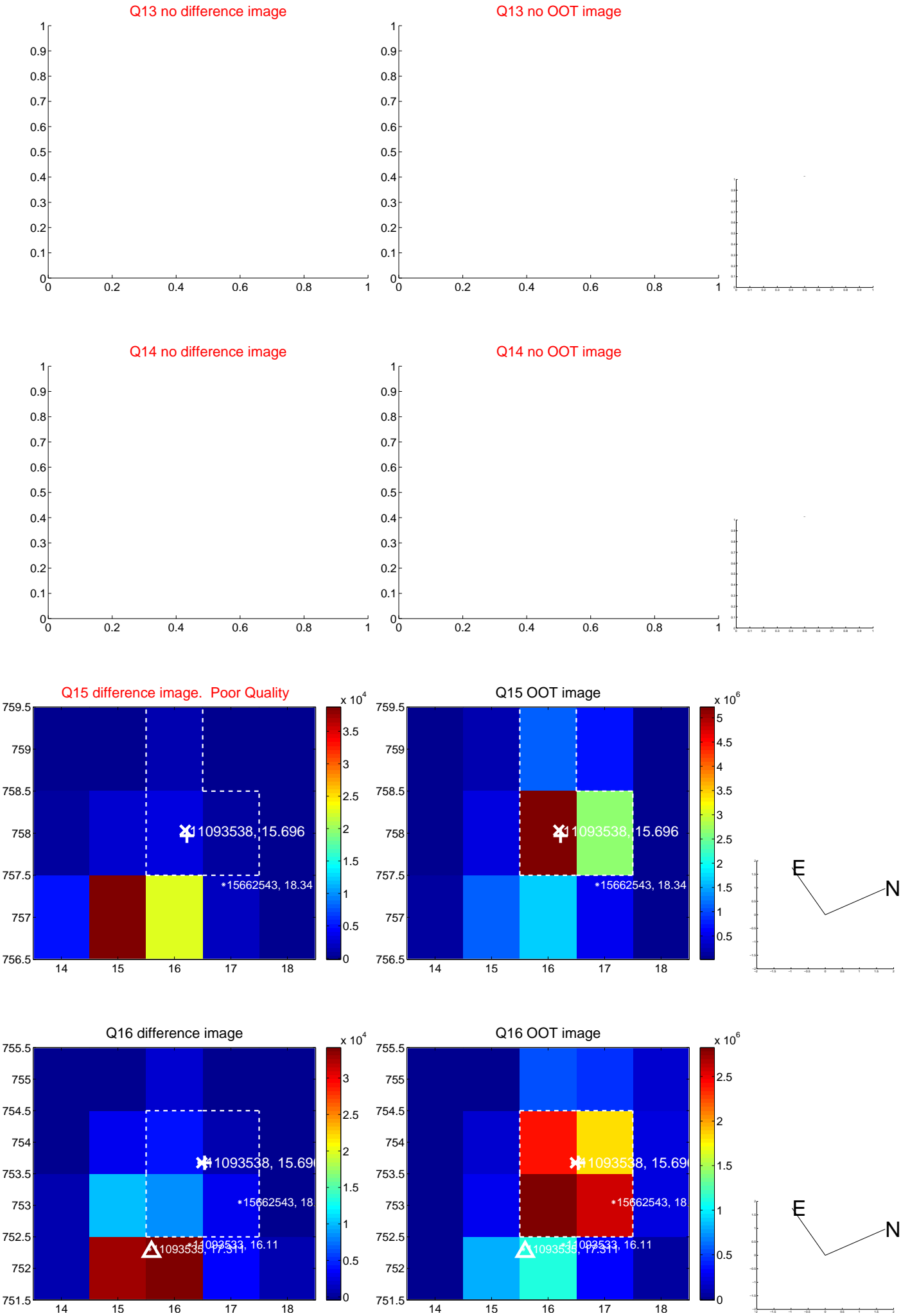
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



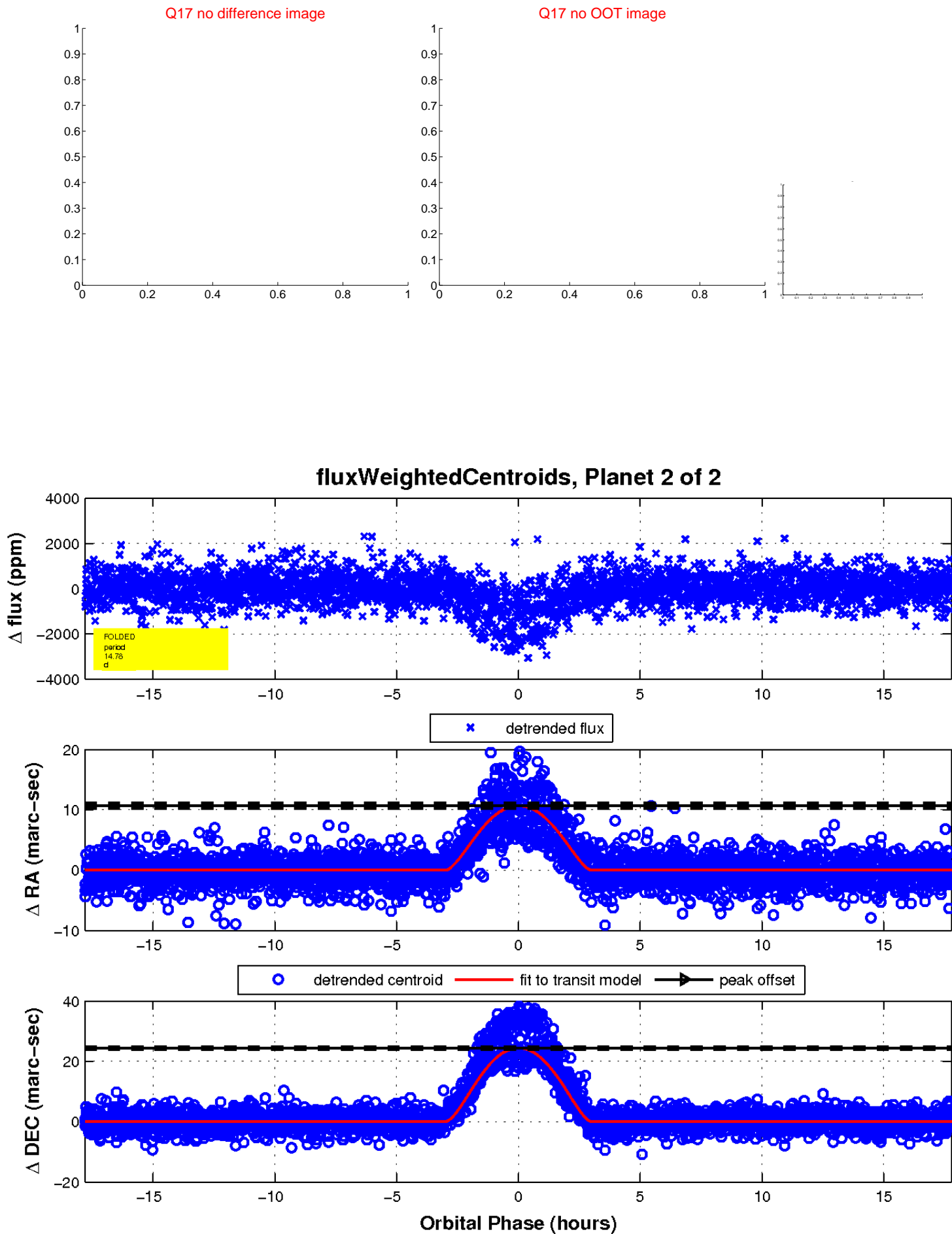
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

