

KIC 007939330

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})
007939330-01	OBS	1581.01	29.542106	137.580699	862.9	13.766	31.4	33.3	0.80	5510	3.10	16.60
007939330-02	OBS	1581.02	144.547314	265.951985	1052.3	15.501	20.0	21.7	0.80	5510	2.79	2.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007939330-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007939330-02	OBS	PC	0.99	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.

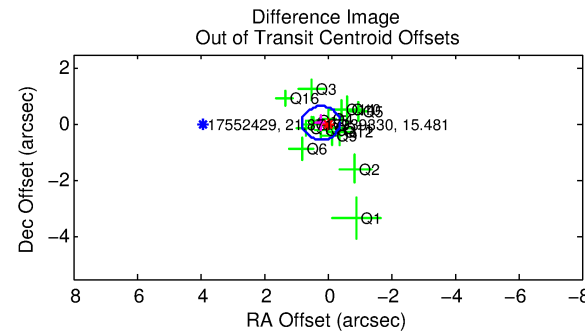
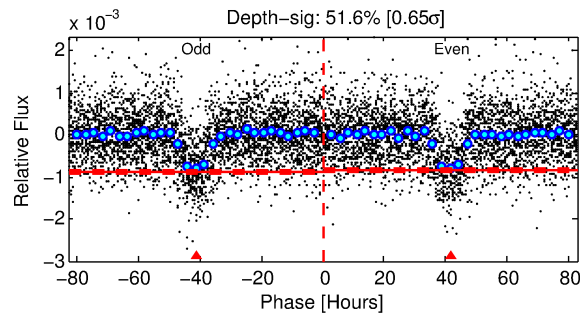
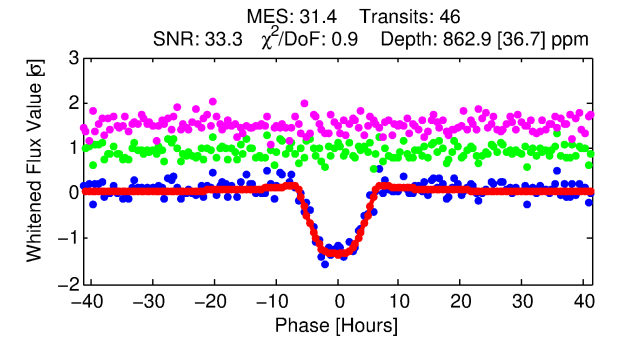
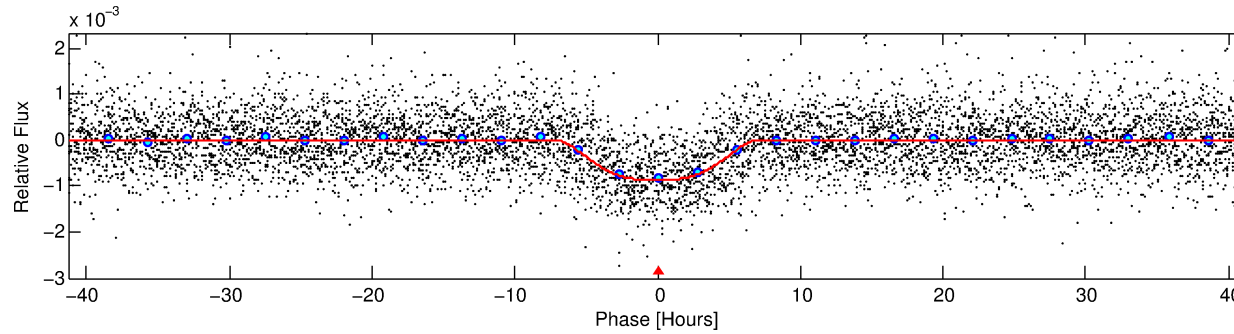
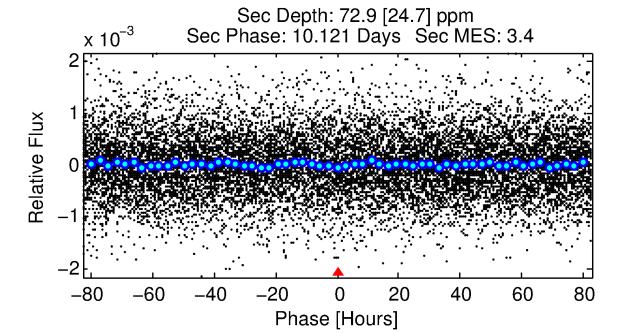
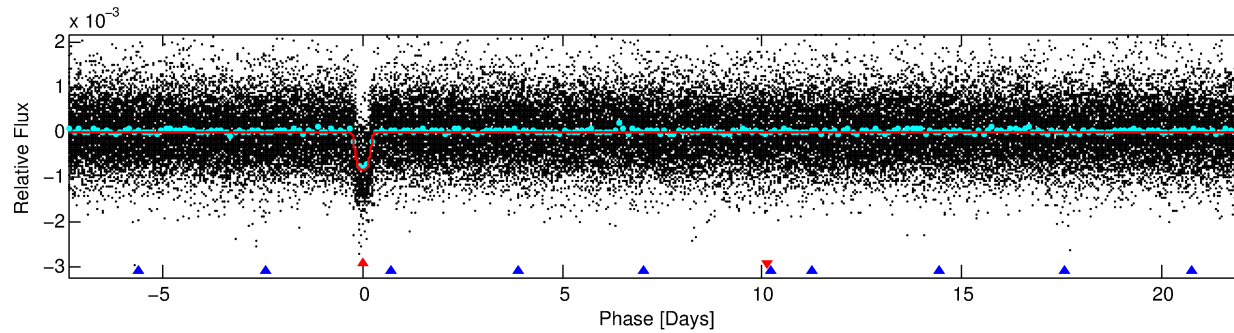
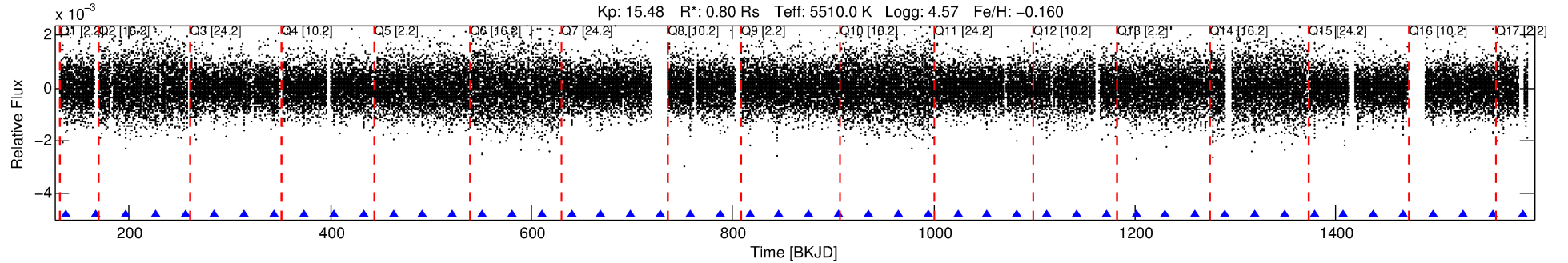
Ephemeris Match Information For 007939330-01

No Significant Match Found

DV One-Page Summary

KIC: 7939330 Candidate: 1 of 2 Period: 29.542 d

KOI: K01581.01 Corr: 0.995



DV Fit Results:

Period = 29.54211 [0.00034] d
Epoch = 137.5807 [0.0097] BKJD
Rp/R* = 0.0354 [0.0012]
a/R* = 6.43 [0.38]
b = 0.96 [0.01]
Seff = 16.60 [5.07]
Teq = 515 [39] K
Rp = 3.10 [0.73] Re
a = 0.1791 [0.0349] AU
Ag = 133.46 [59.46] [2.23σ]
Teffp = 2705 [248] K [8.73σ]

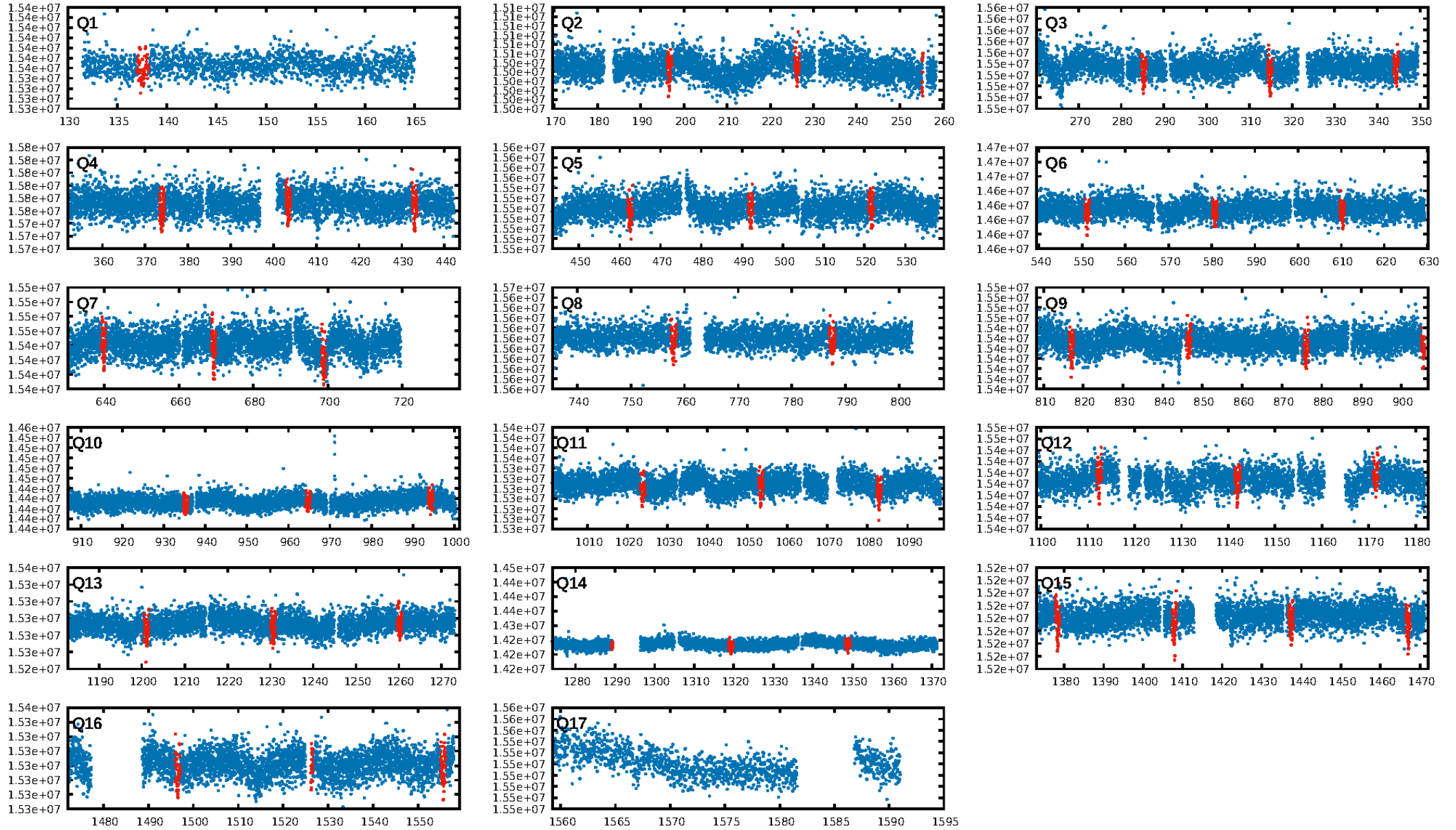
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [133.14σ]
ModelChiSquare2-sig: 67.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.32e-208
RollingBand-fgt: 1.00 [45/45]
GhostDiagnostic-chr: 2.939
Centroid-sig: N/A
Centroid-so: 0.901 arcsec [2.11σ]
OotOffset-rm: 0.223 arcsec [1.12σ]
KicOffset-rm: 0.174 arcsec [1.00σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [16/16]

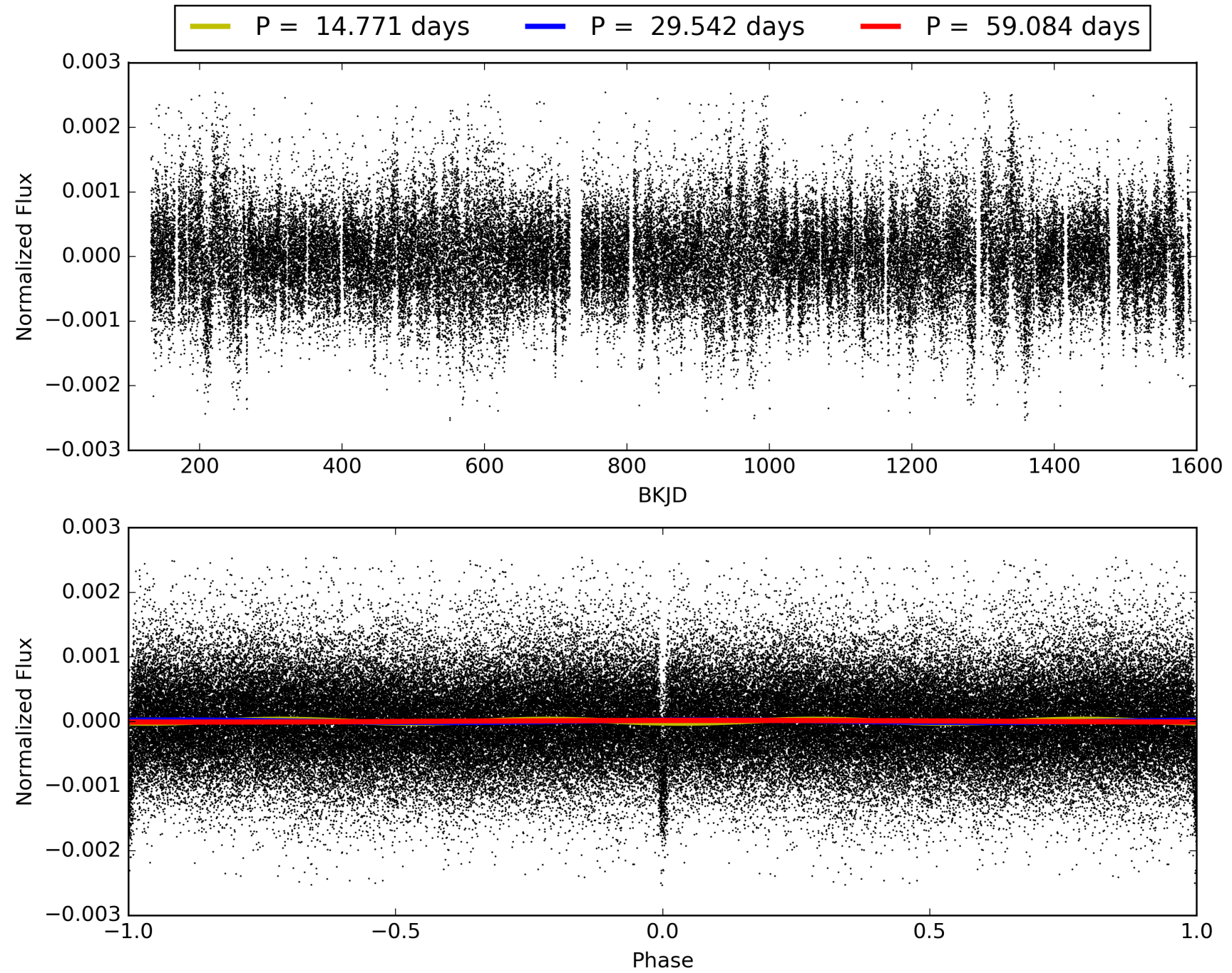
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:46:32 Z

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

TCE 007939330-01, PDC Light Curves

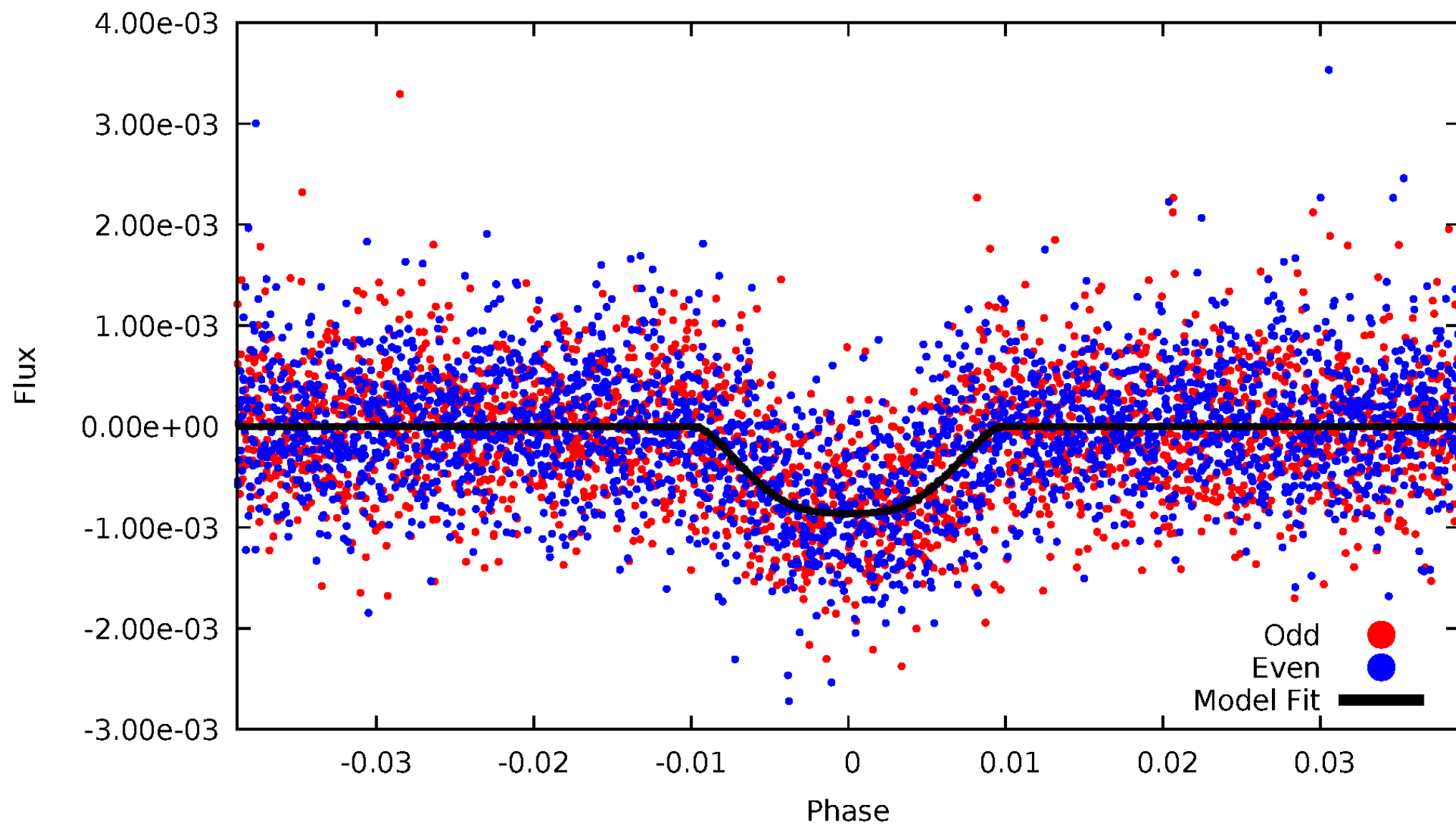


TCE 007939330-01



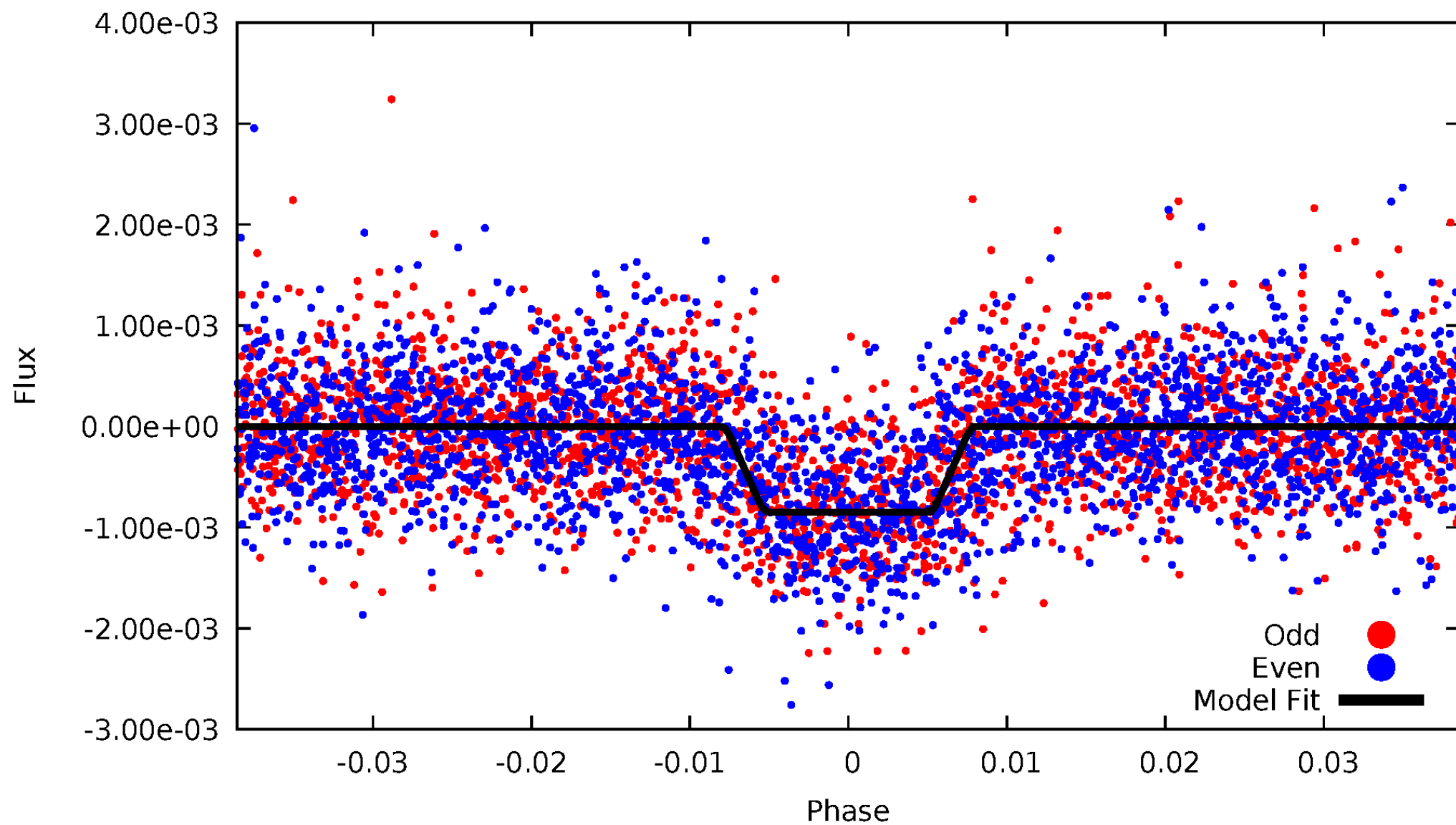
DV Odd/Even

TCE 007939330-01

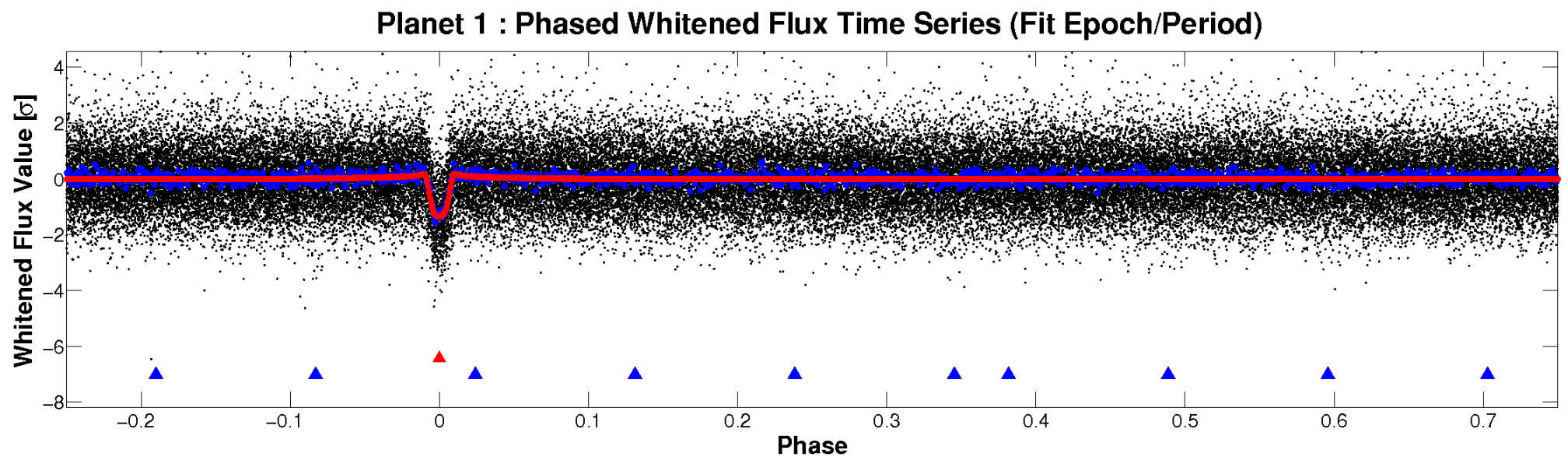
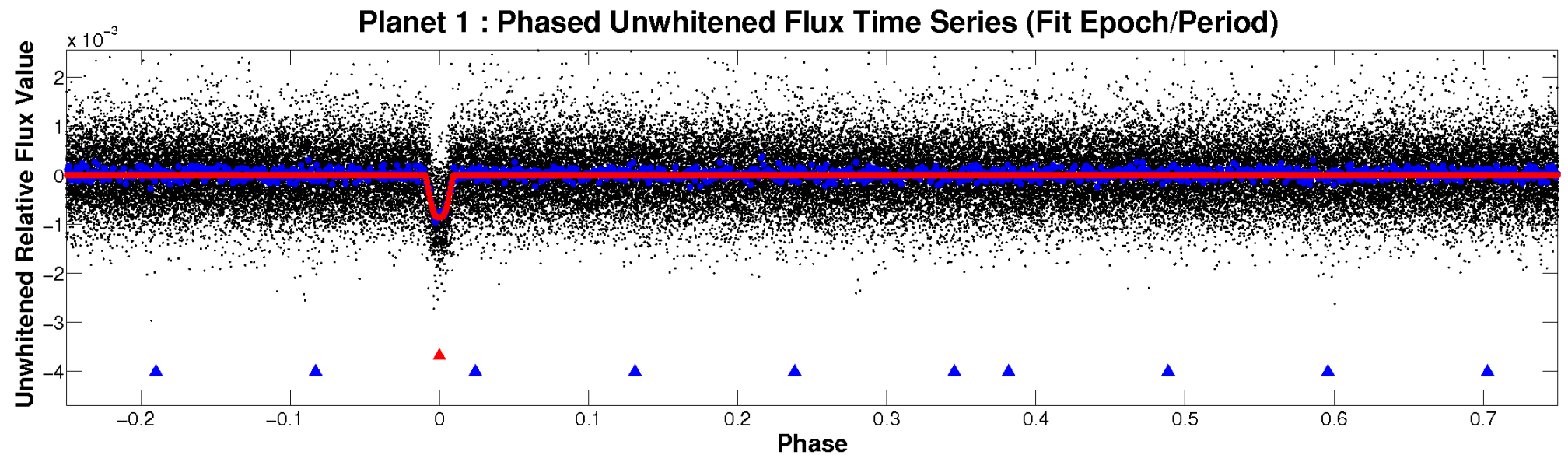


ALT Odd/Even

TCE 007939330-01

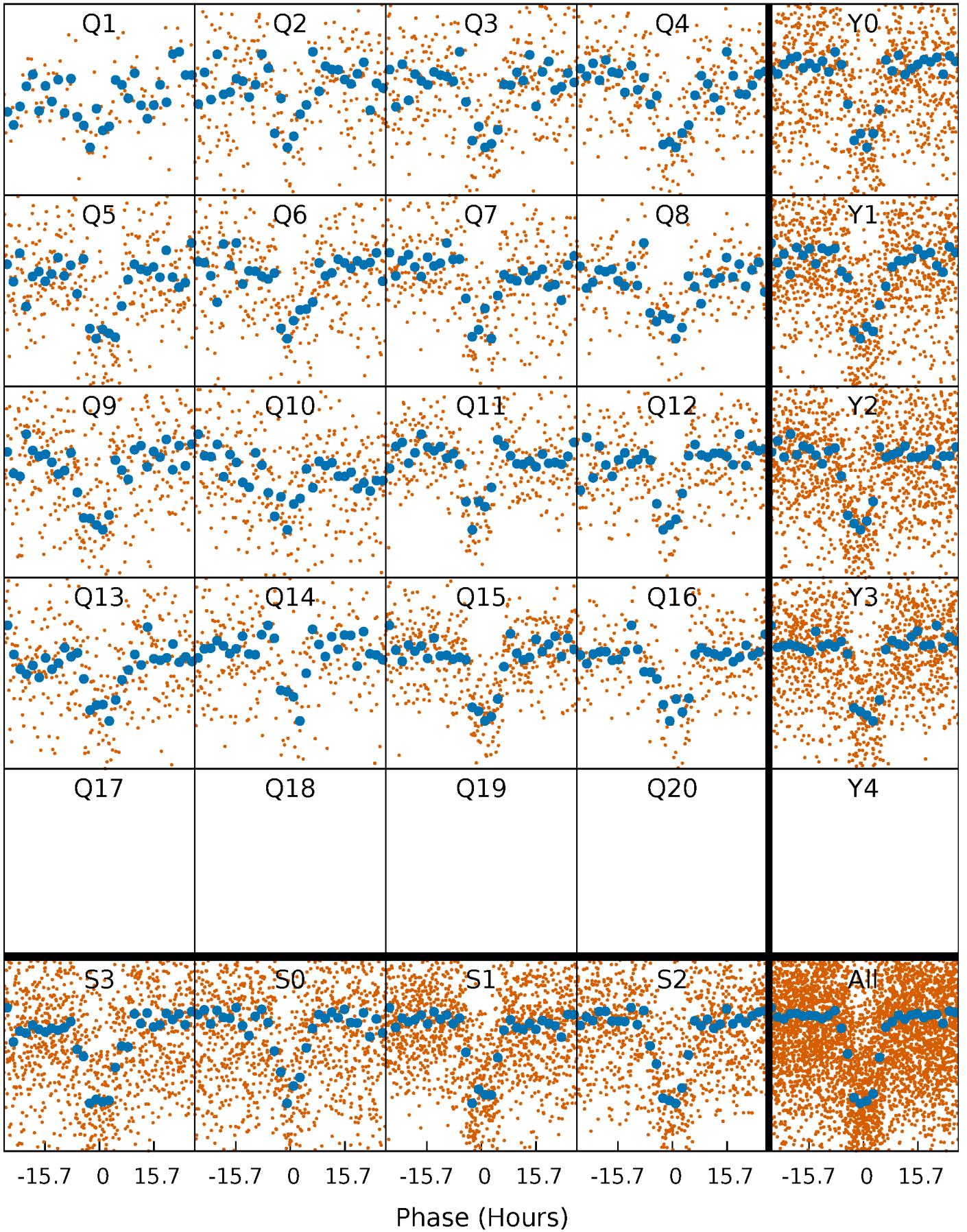


Non-Whitened Vs. Whitened Light Curve



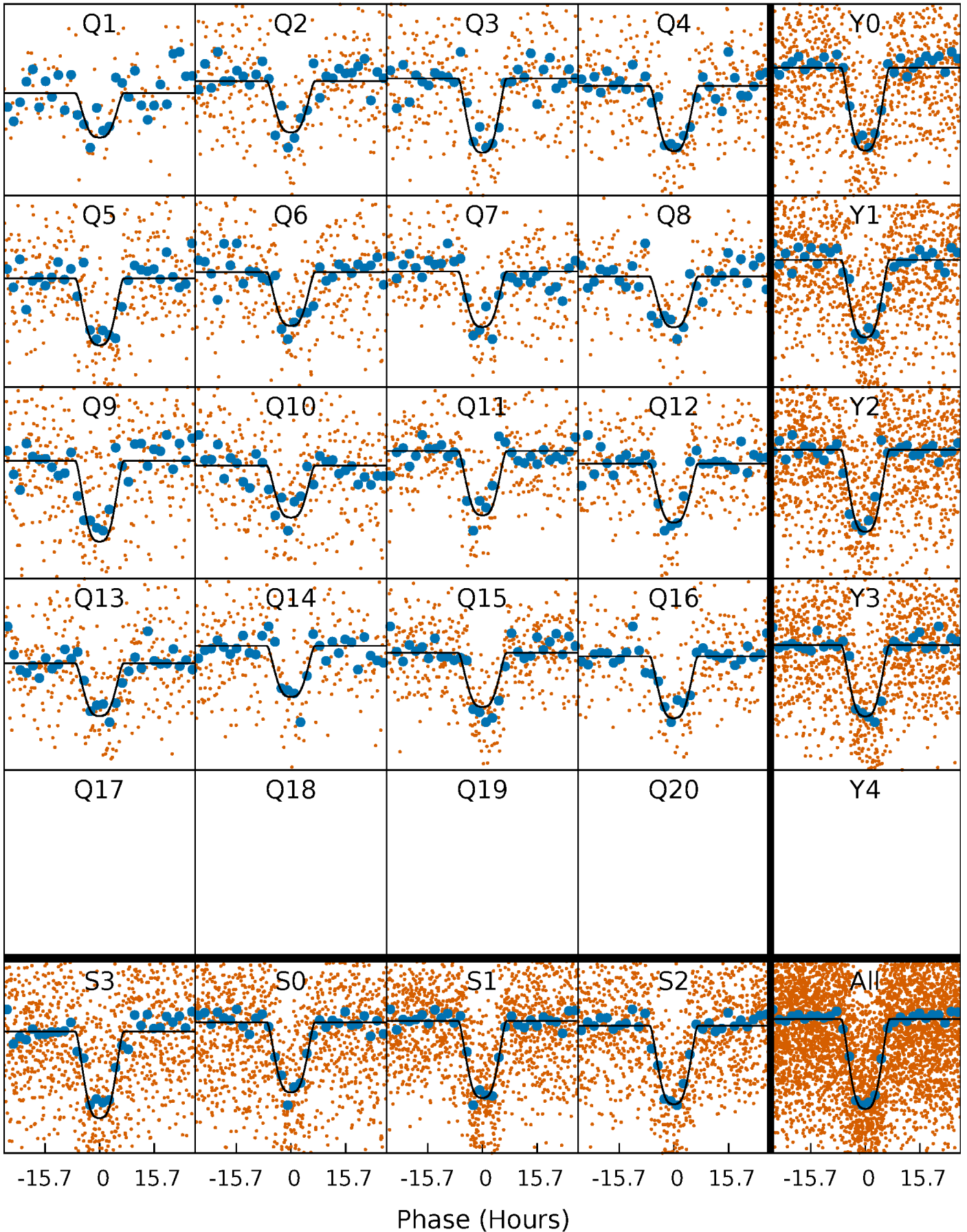
PDC Quarter-Phased Transit Curves

TCE 007939330-01 P= 29.542106 Days $T_0=137.580699$ (BKJD)



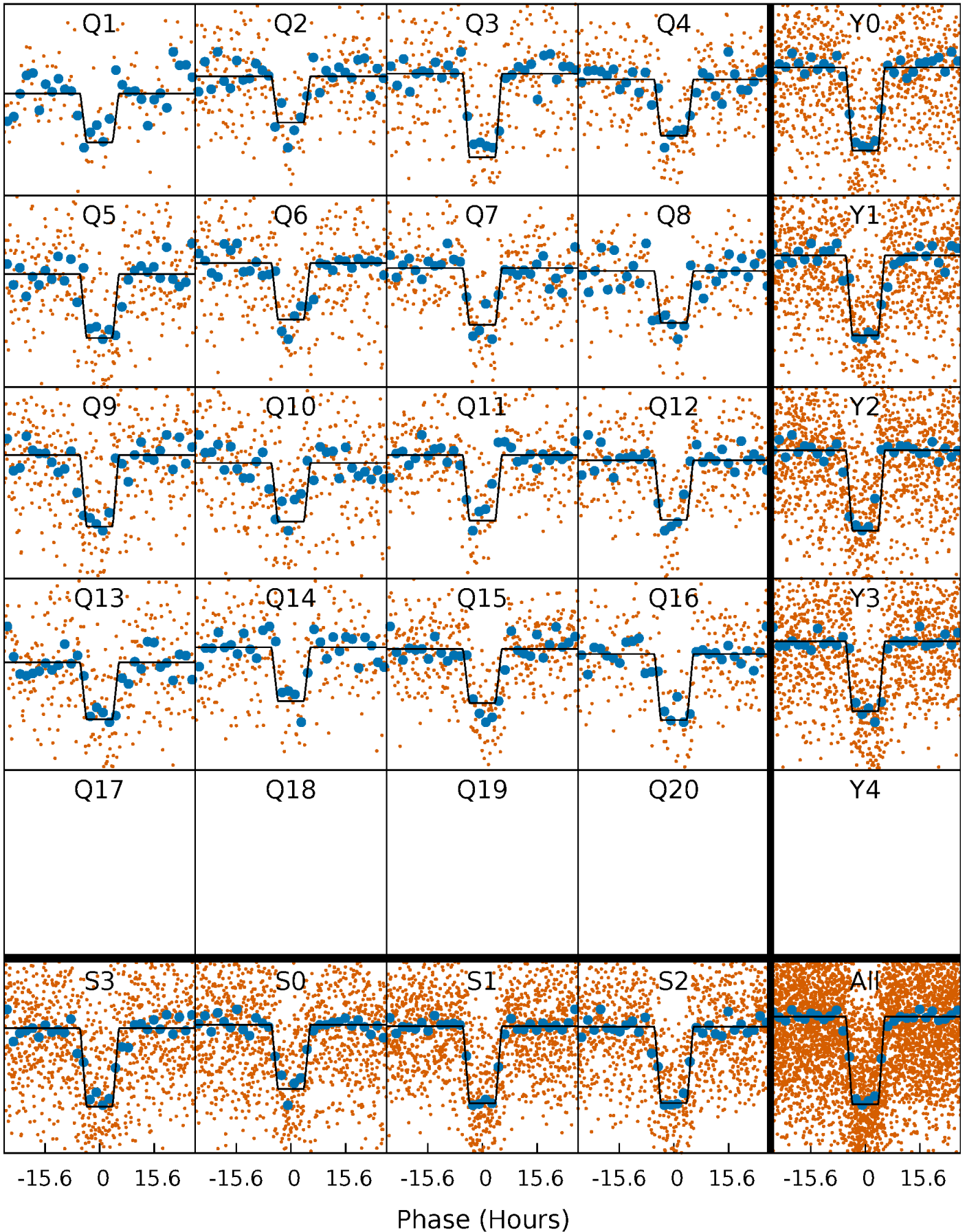
DV Quarter-Phased Transit Curves

TCE 007939330-01 P= 29.542106 Days $T_0=137.580699$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

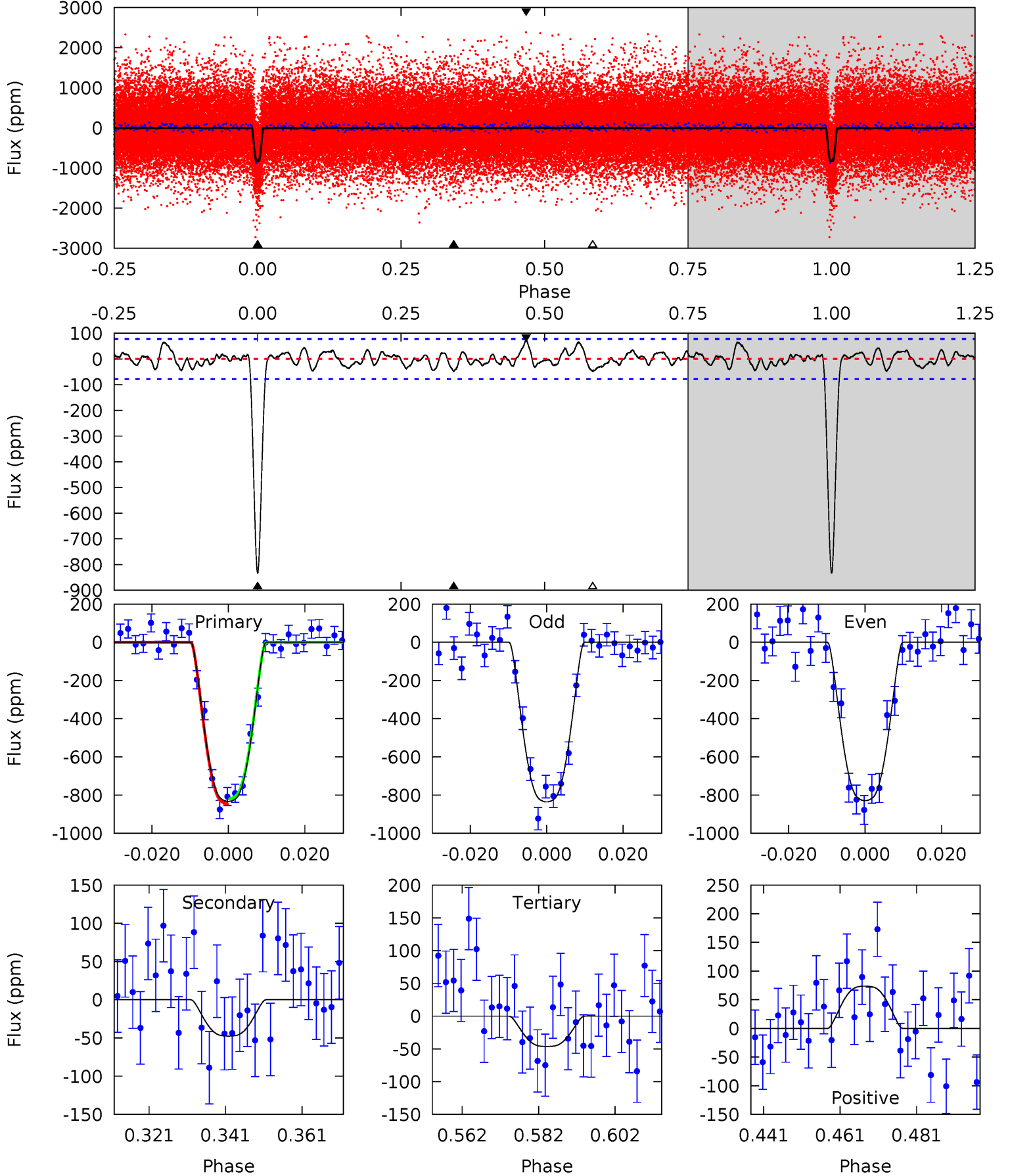
TCE 007939330-01 P= 29.541661 Days $T_0=137.591700$ (BKJD)



DV Model-Shift Uniqueness Test

007939330-01, $P = 29.542106$ Days, $E = 108.038593$ Days

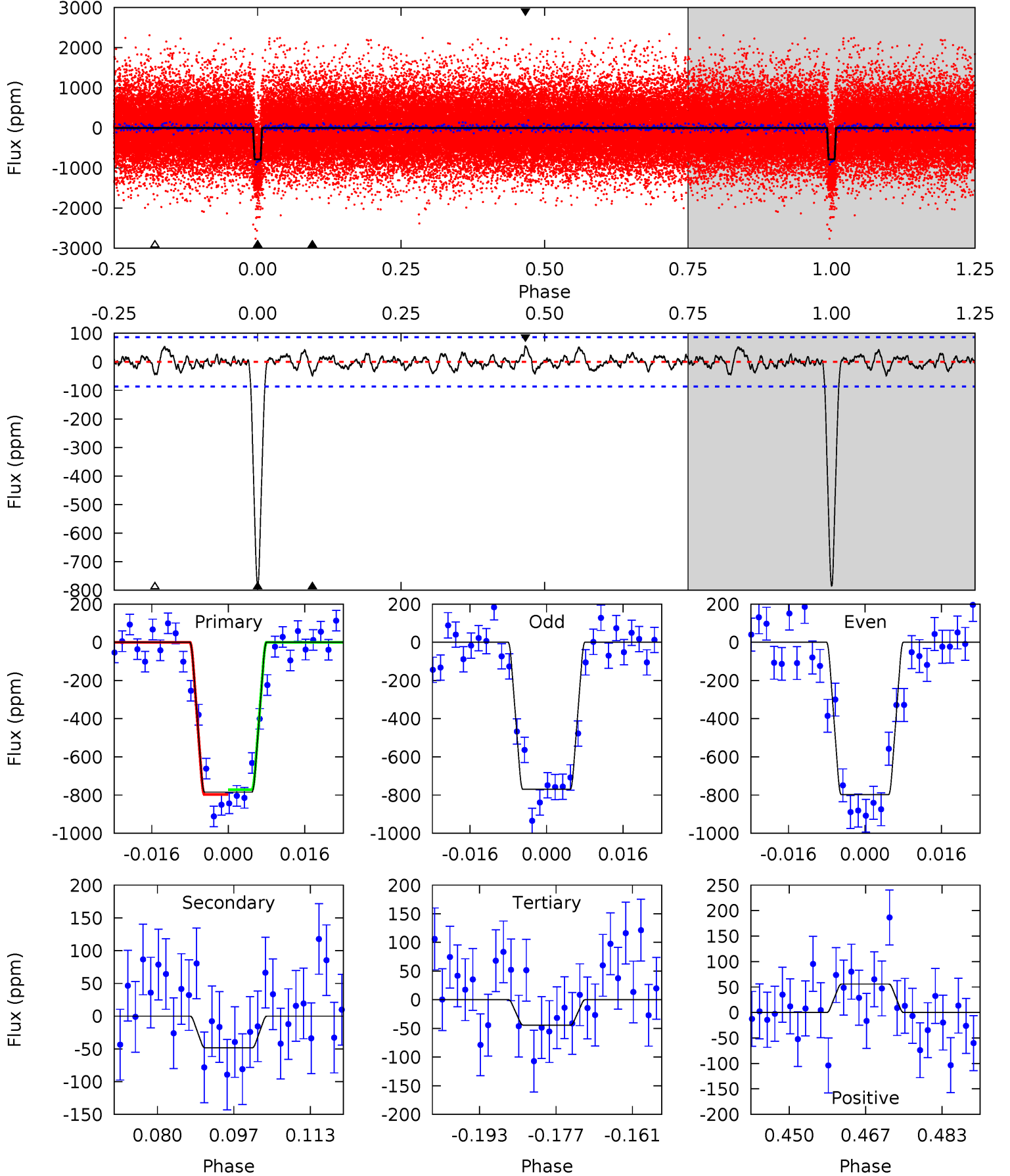
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.5	3.00	2.93	4.65	4.89	2.33	1.47	49.6	47.9	0.07	-1.65	0.21	0.95	0.08	0.82



Alt Model-Shift Uniqueness Test

007939330-01, $P = 29.541661$ Days, $E = 108.050039$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.8	2.75	2.52	3.18	4.93	2.41	1.00	42.3	41.6	0.23	-0.43	0.79	0.99	0.07	0.71



Stellar Parameters For KIC 007939330

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5510^{+166}_{-149}	$4.572^{+0.038}_{-0.152}$	$-0.160^{+0.300}_{-0.300}$	$0.803^{+0.188}_{-0.063}$	$0.877^{+0.083}_{-0.092}$	$2.389^{+0.469}_{-0.995}$
	+3%/-3%	+1%/-3%	+188%/-188%	+23%/-8%	+9%/-10%	+20%/-42%
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 007939330-01 / KOI 1581.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-48 ± 16	$3.18^{+0.38}_{-0.23}$	734^{+39}_{-31}	3061^{+144}_{-180}	78^{+33}_{-29}
Alt.	-48 ± 18	$2.61^{+0.34}_{-0.20}$	734^{+44}_{-30}	3255^{+177}_{-210}	118^{+51}_{-43}

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

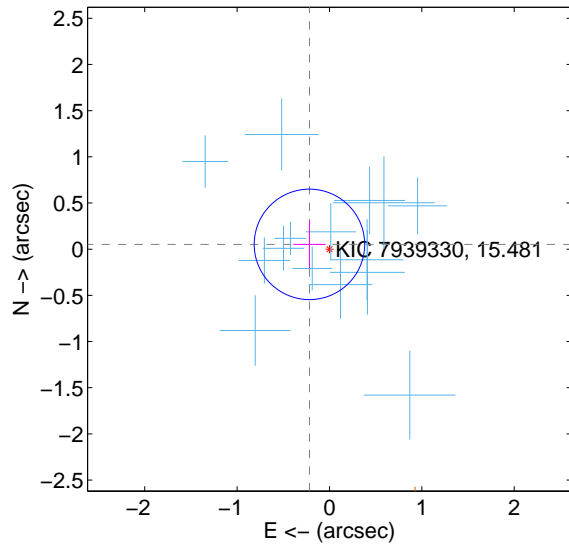
Supplemental centroid analysis for 007939330-01. Kepler magnitude: 15.48. Transit SNR 33.28

There are 15 quarters with good PRF difference image offsets

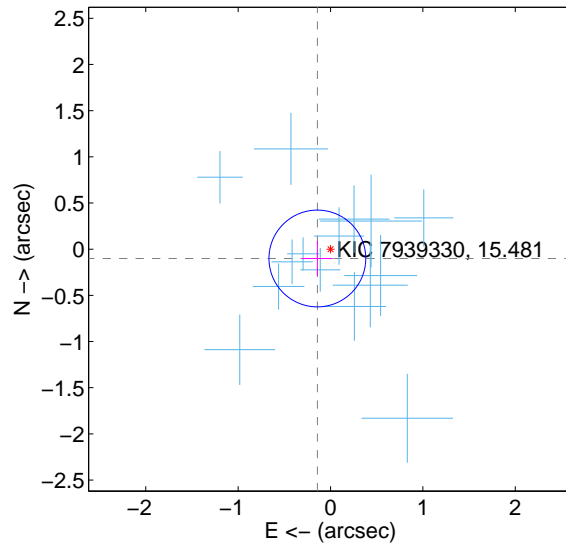
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.223 ± 0.199	1.12	0.217 ± 0.175	0.052 ± 0.256
PRF-fit source offset from KIC position	0.174 ± 0.175	1.00	0.142 ± 0.167	-0.101 ± 0.189
photometric centroid source offset	0.90 ± 0.43	2.11	-0.07 ± 0.39	-0.90 ± 0.43

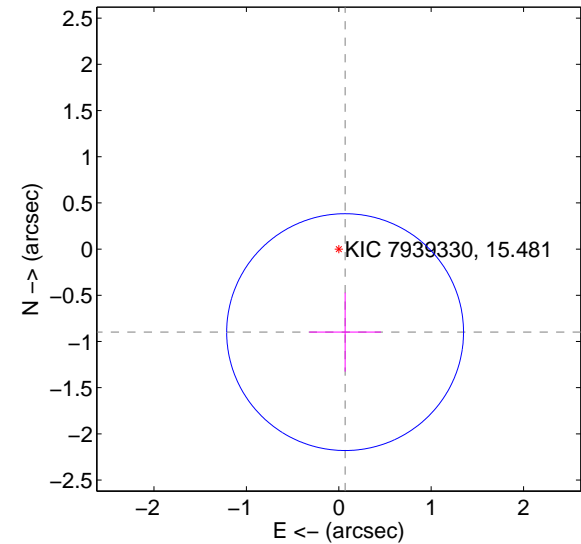
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

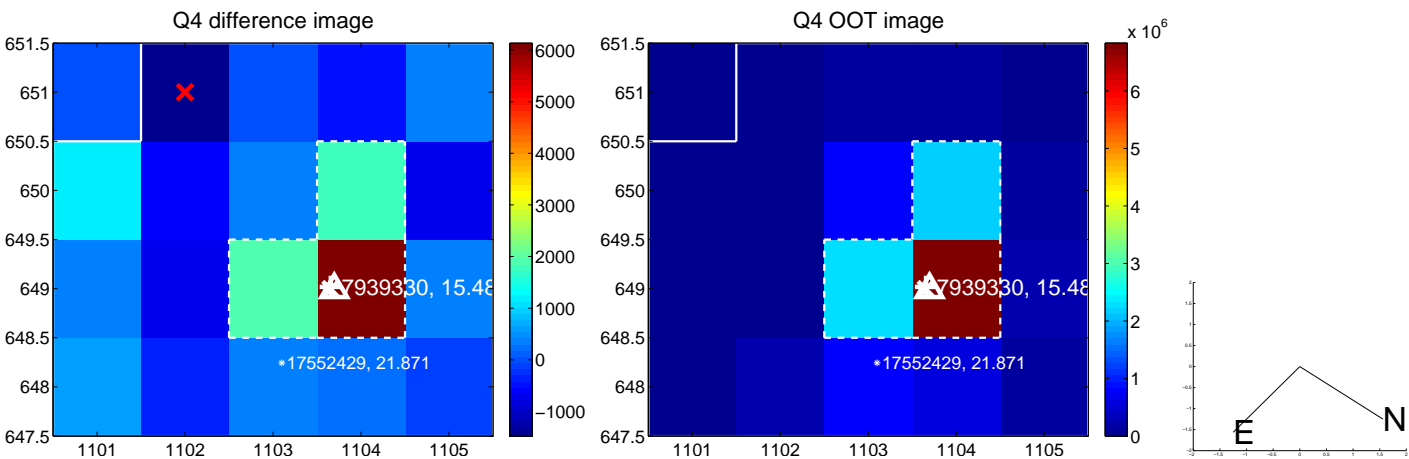
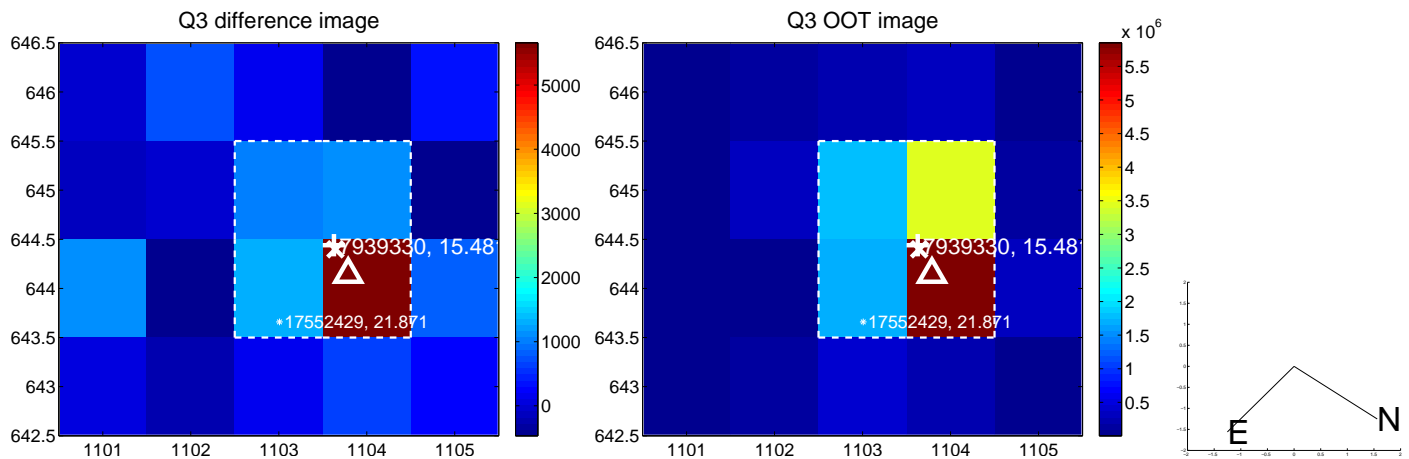
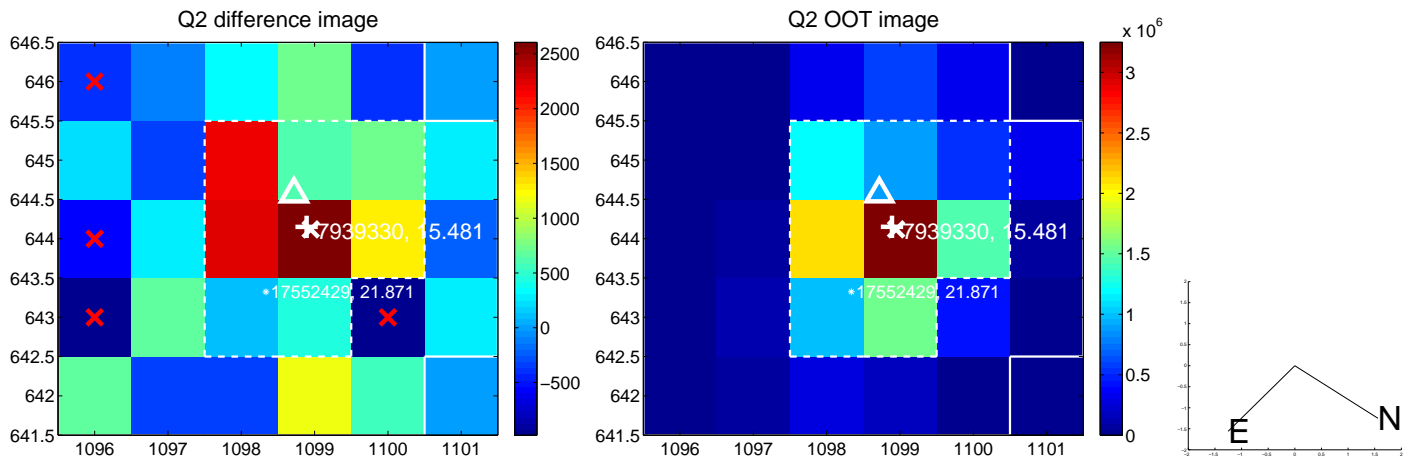
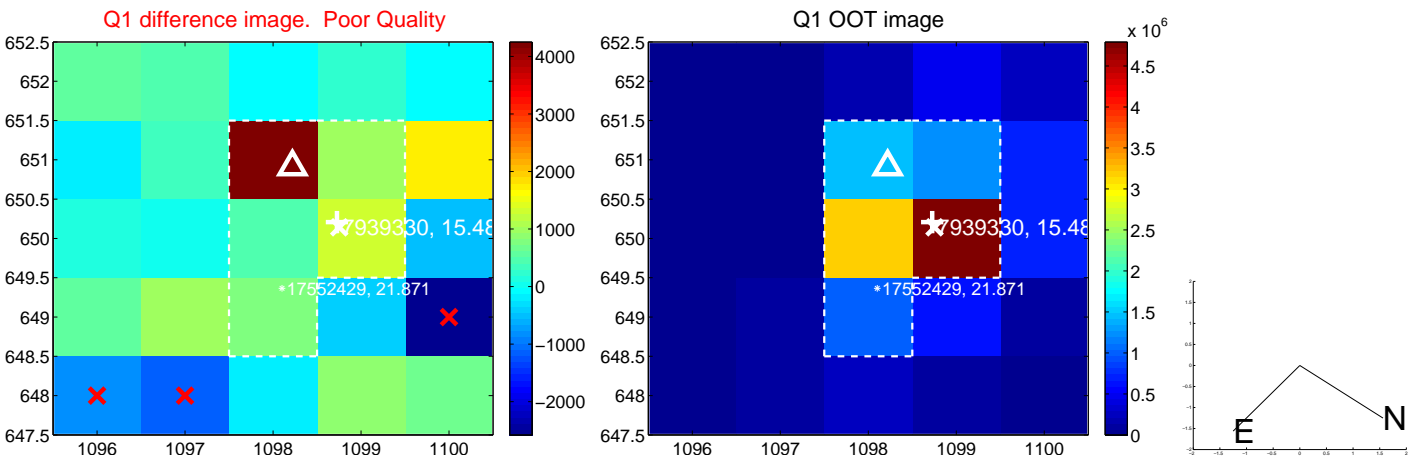


offset from photometric centroids

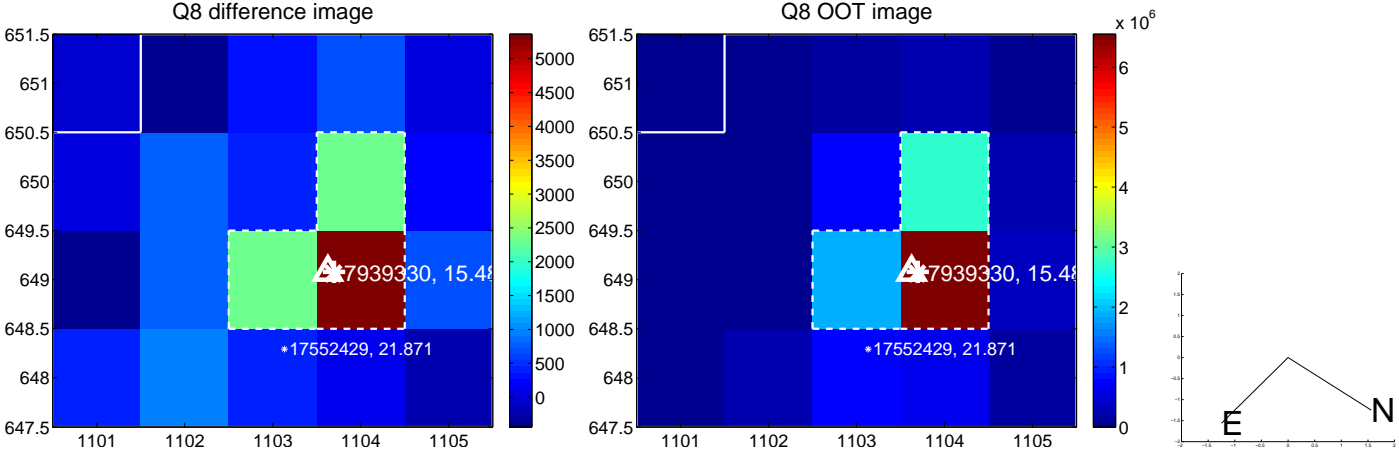
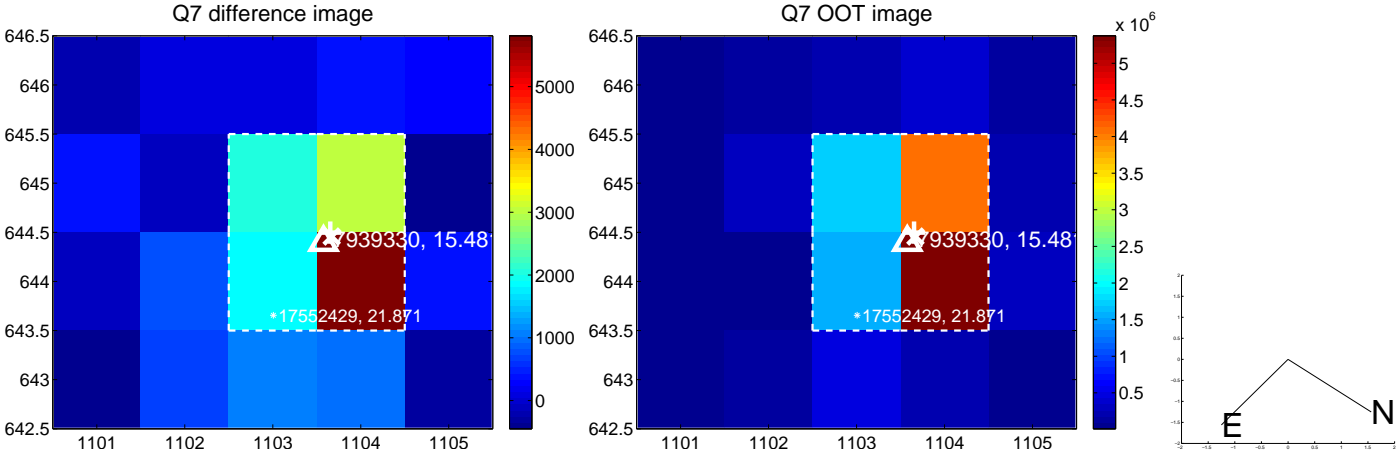
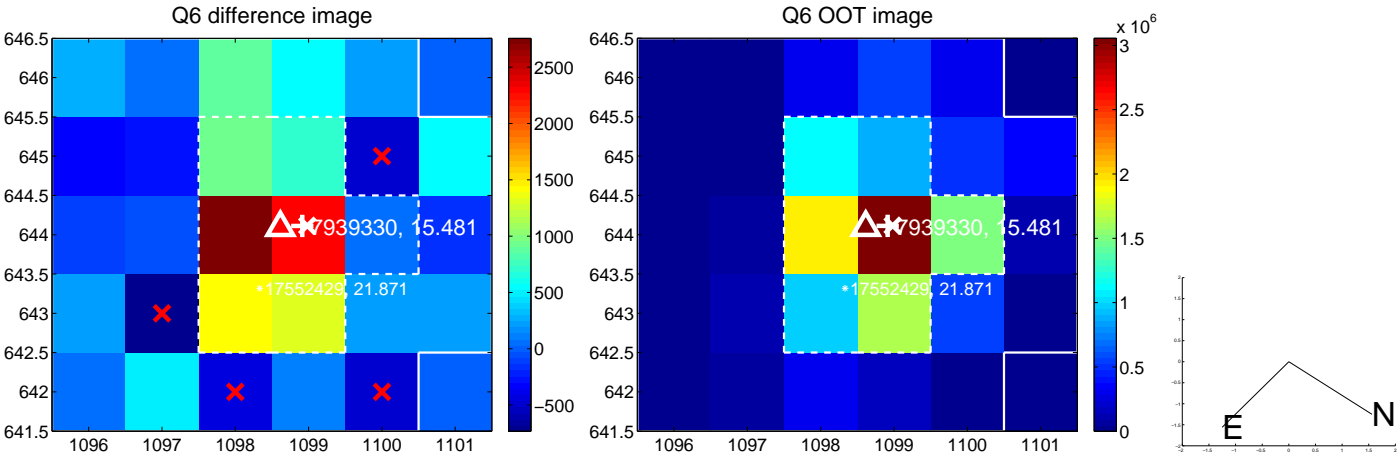
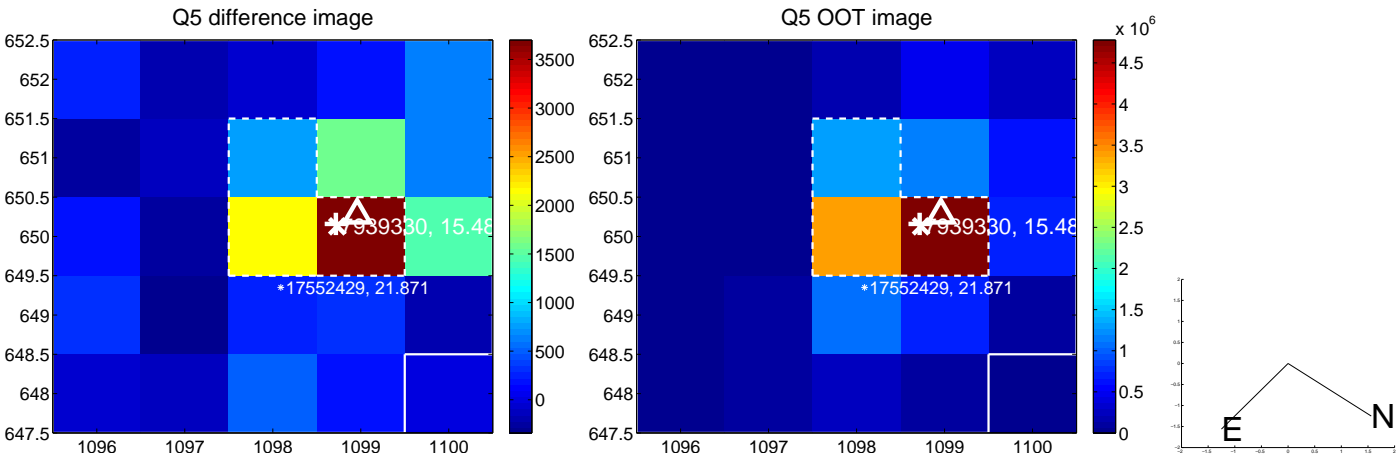


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

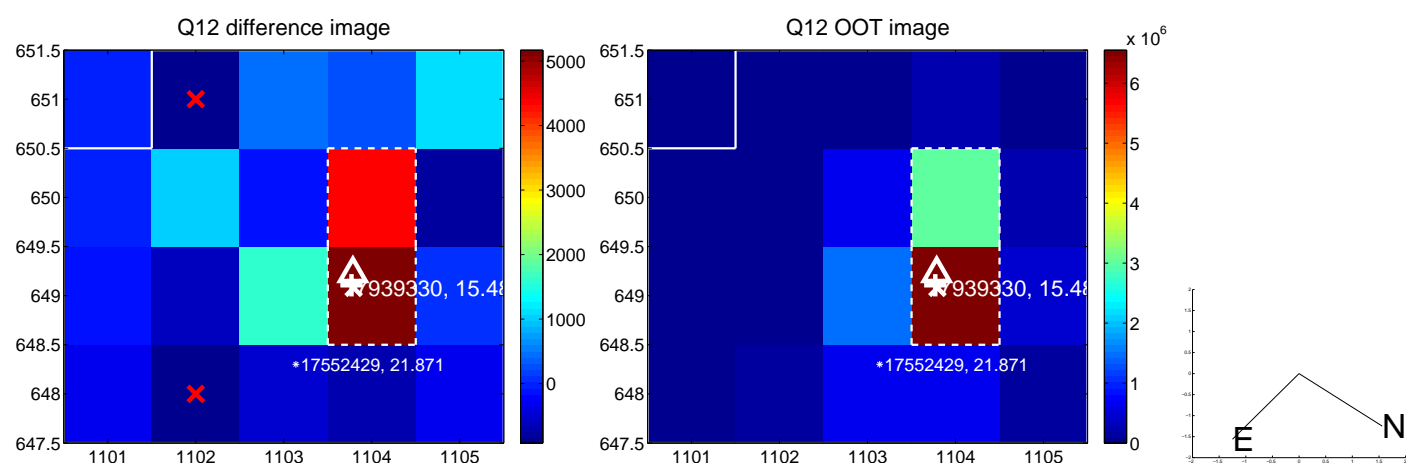
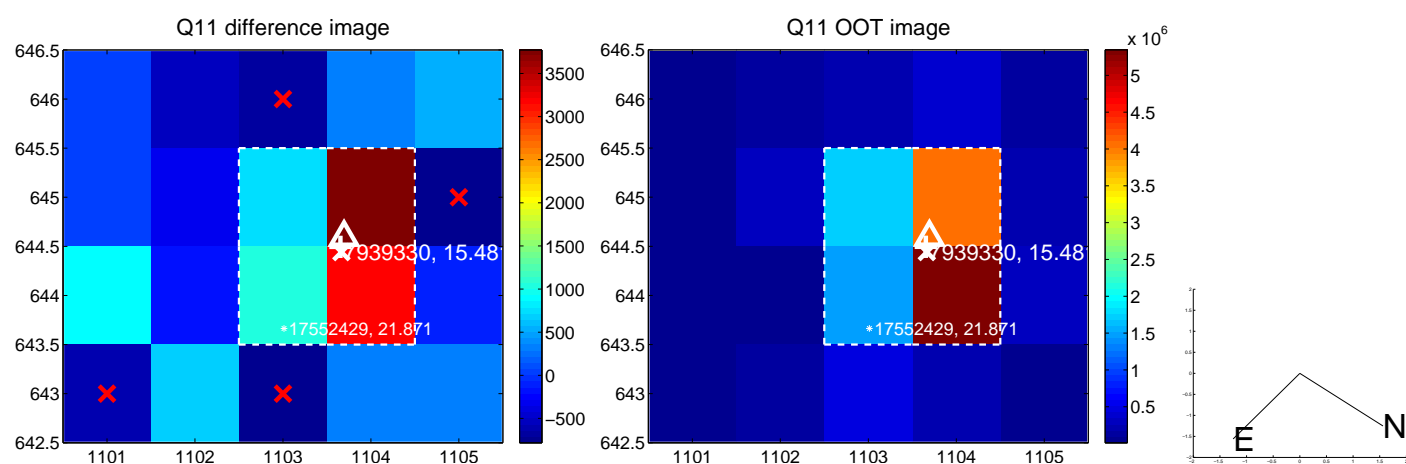
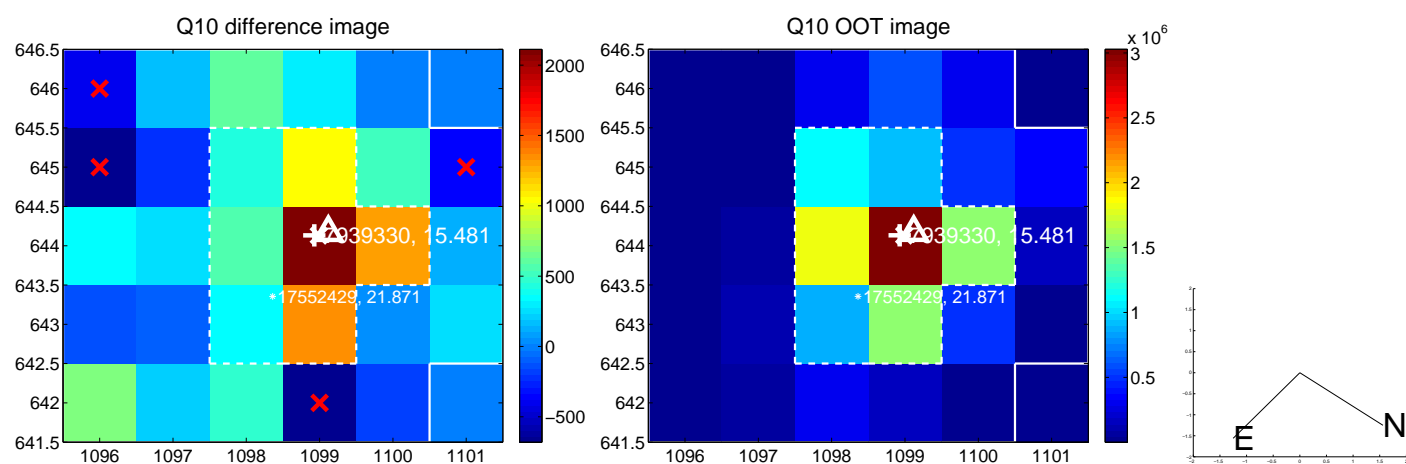
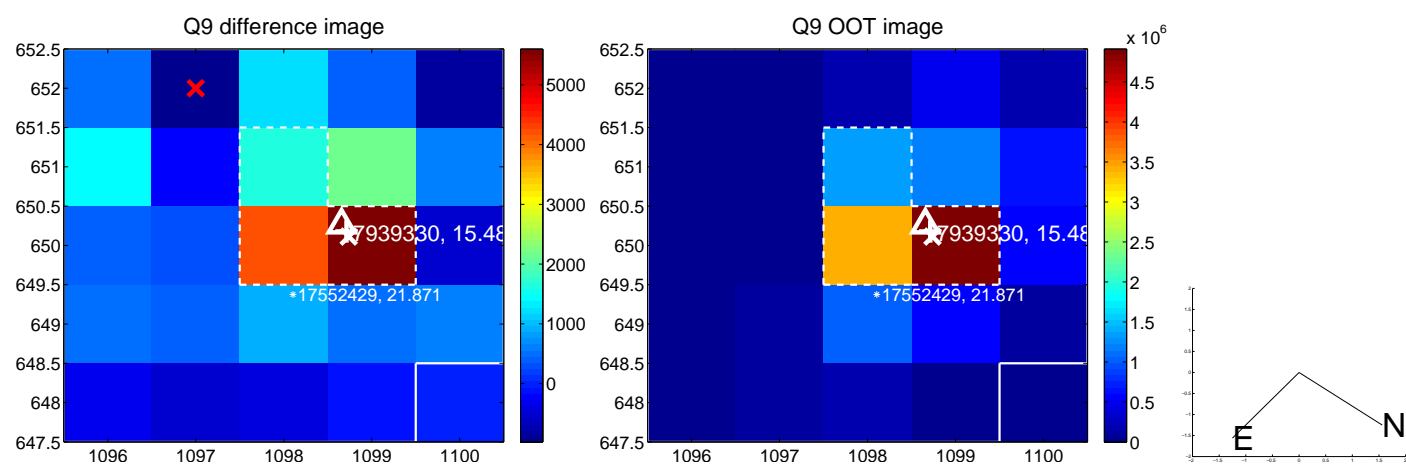
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



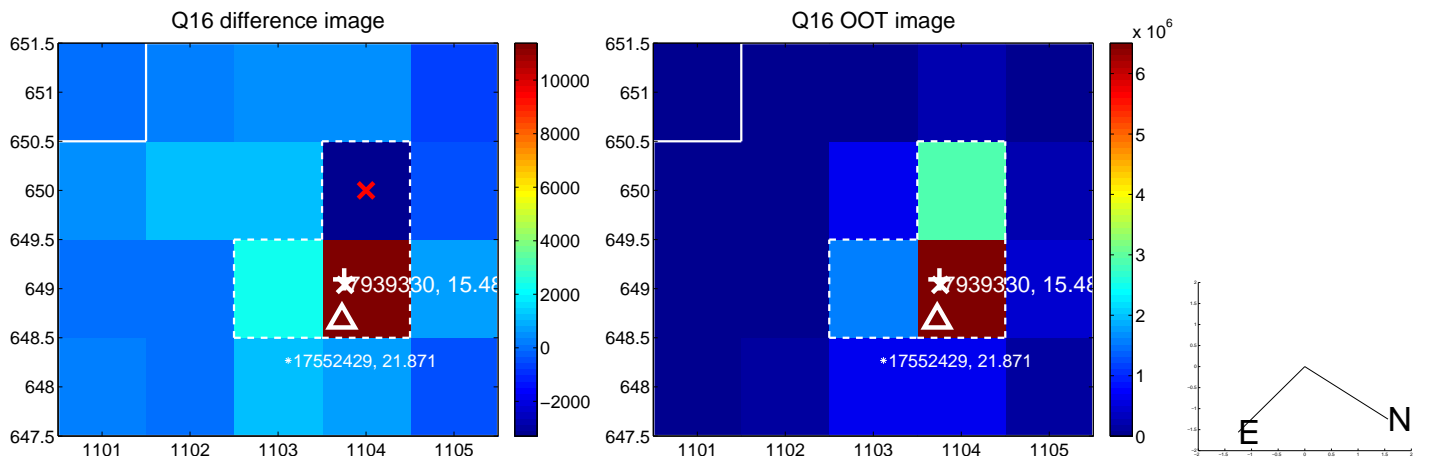
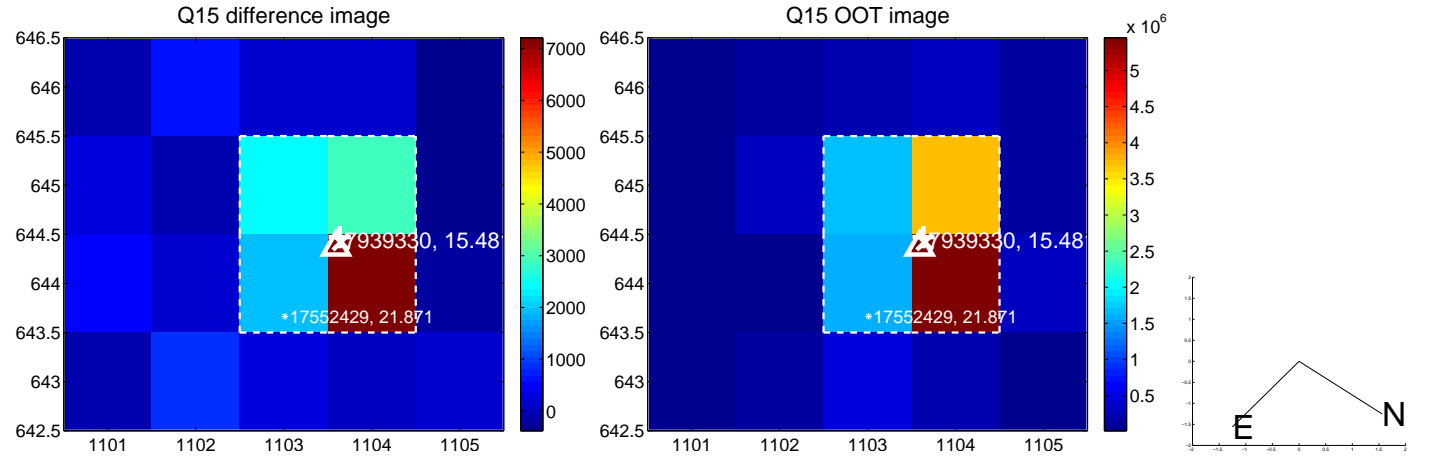
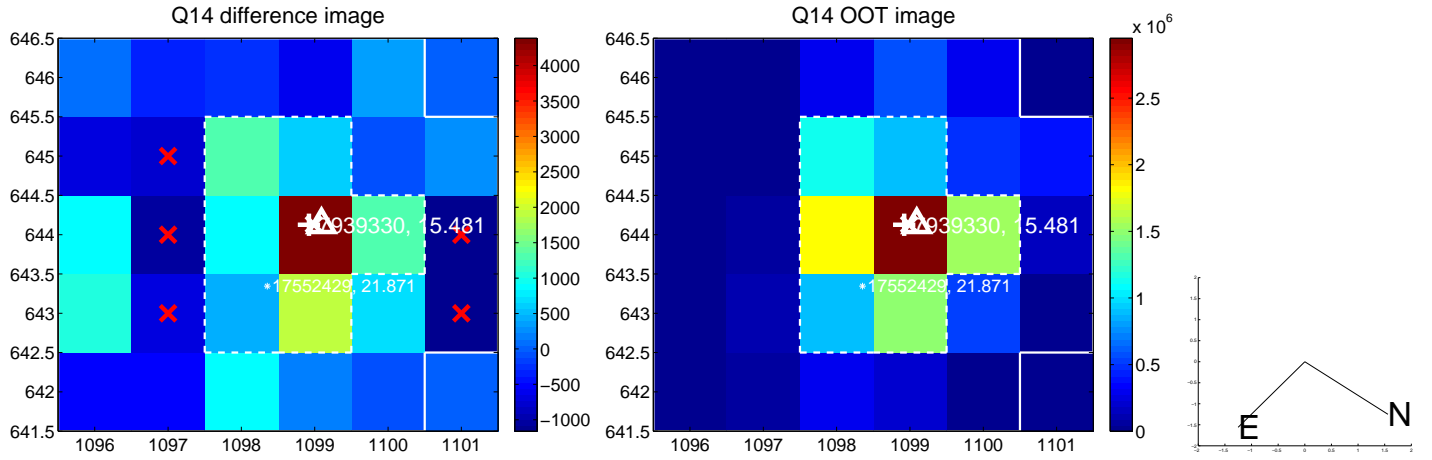
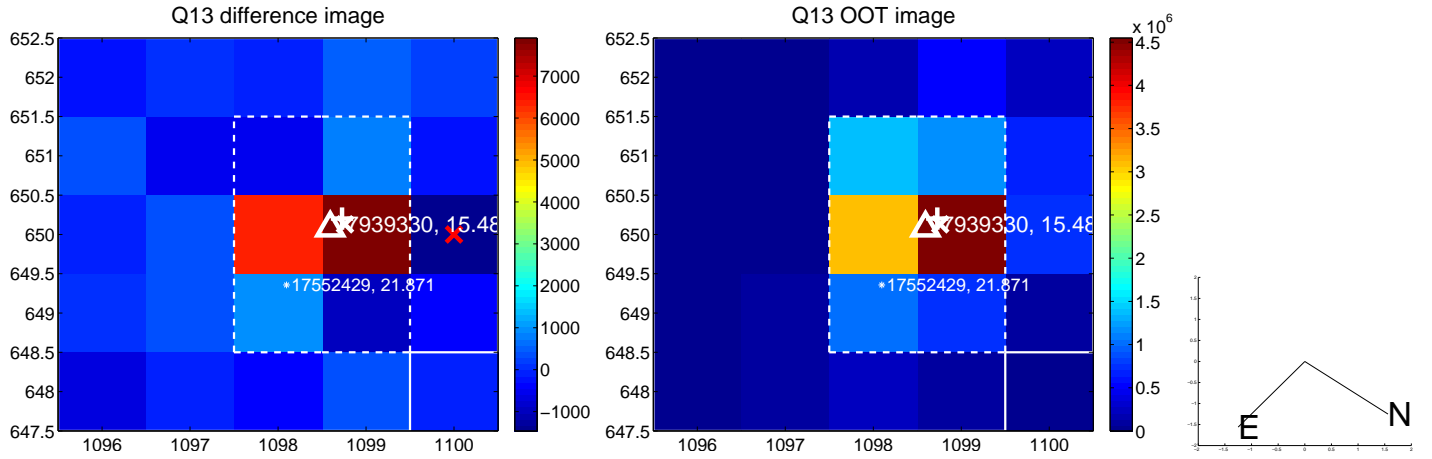
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



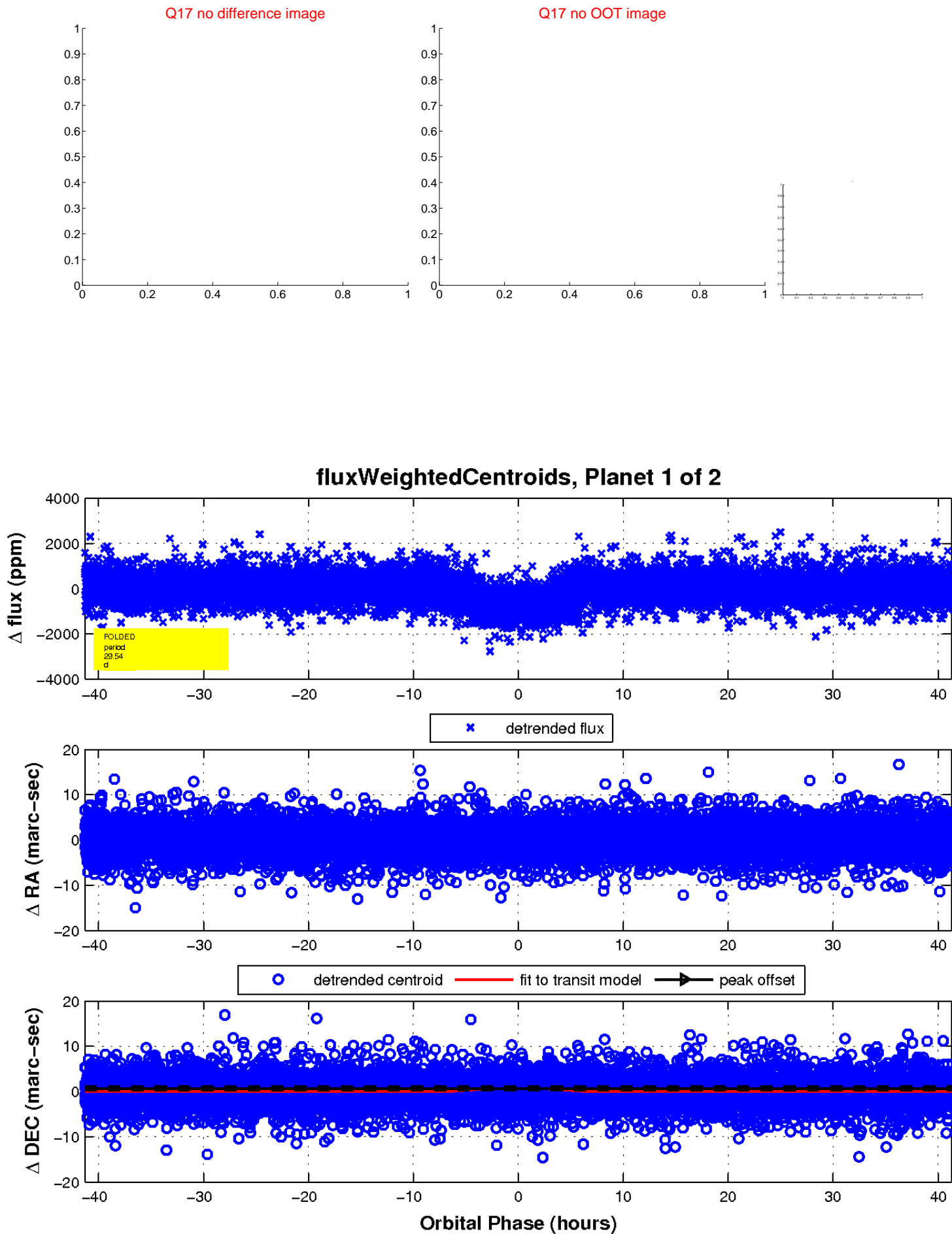
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

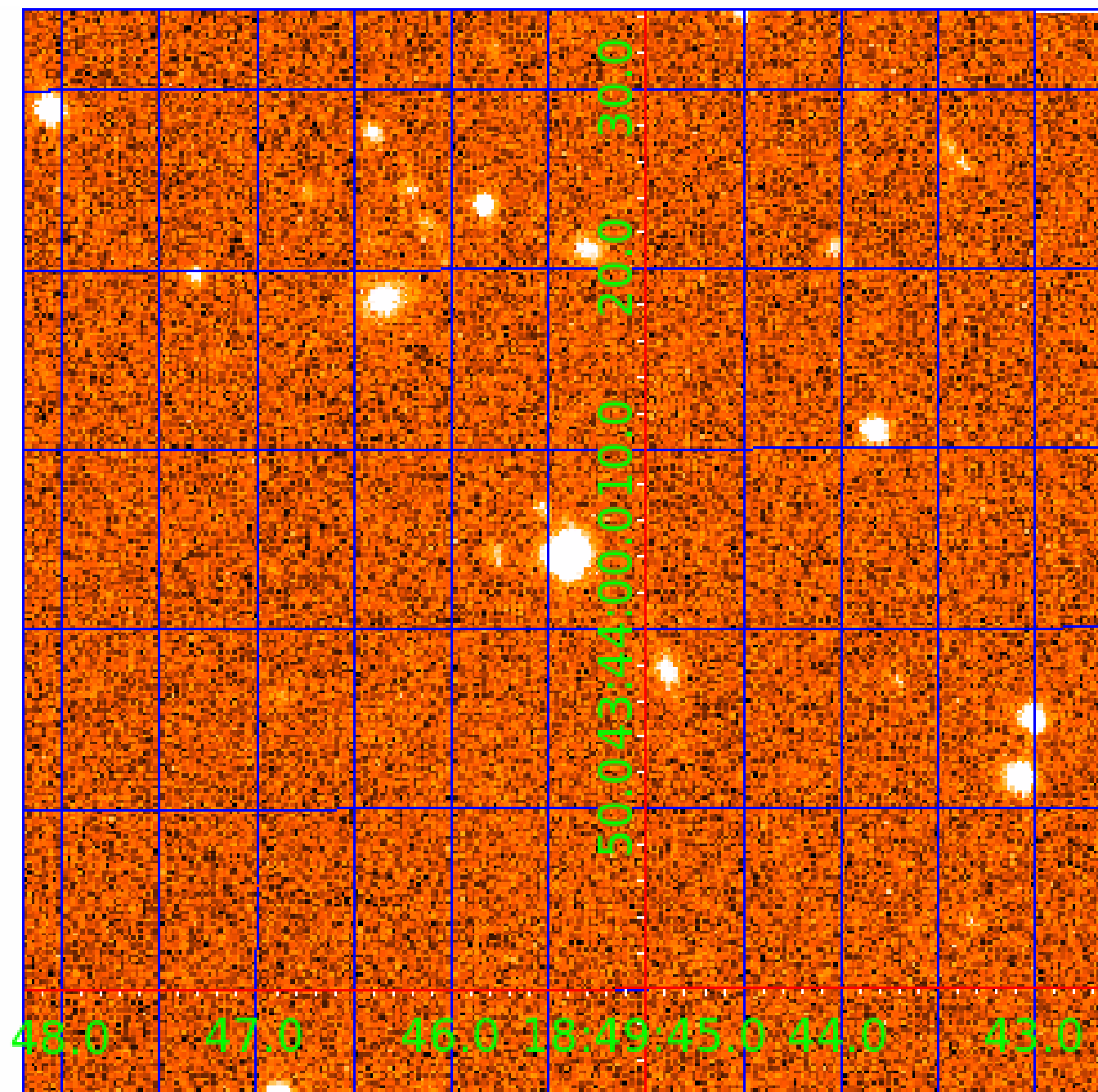


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007939330

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})
007939330-01	OBS	1581.01	29.542106	137.580699	862.9	13.766	31.4	33.3	0.80	5510	3.10	16.60
007939330-02	OBS	1581.02	144.547314	265.951985	1052.3	15.501	20.0	21.7	0.80	5510	2.79	2.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007939330-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007939330-02	OBS	PC	0.99	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.

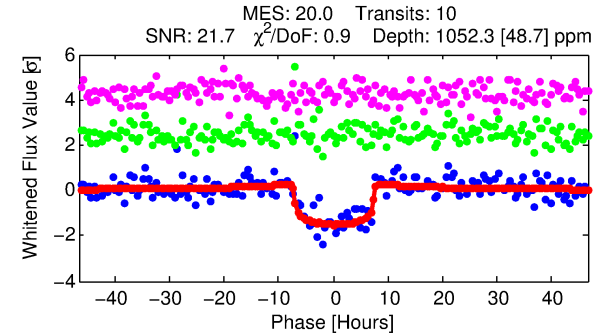
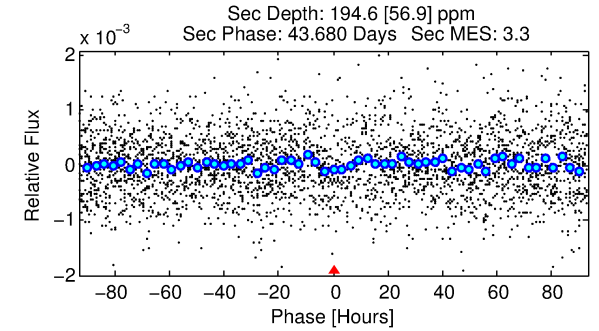
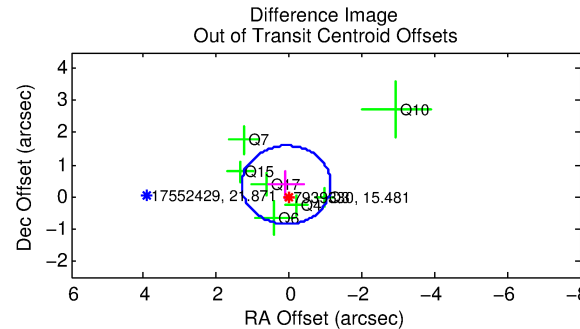
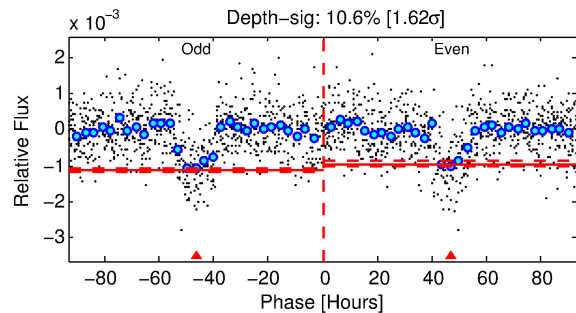
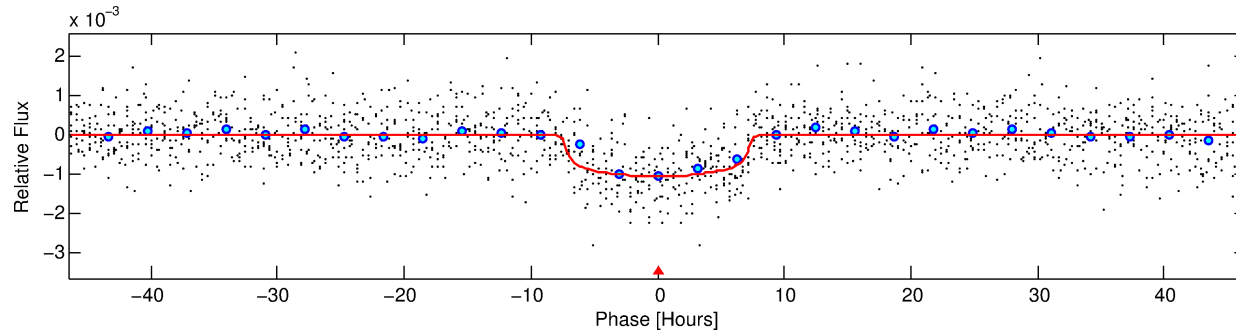
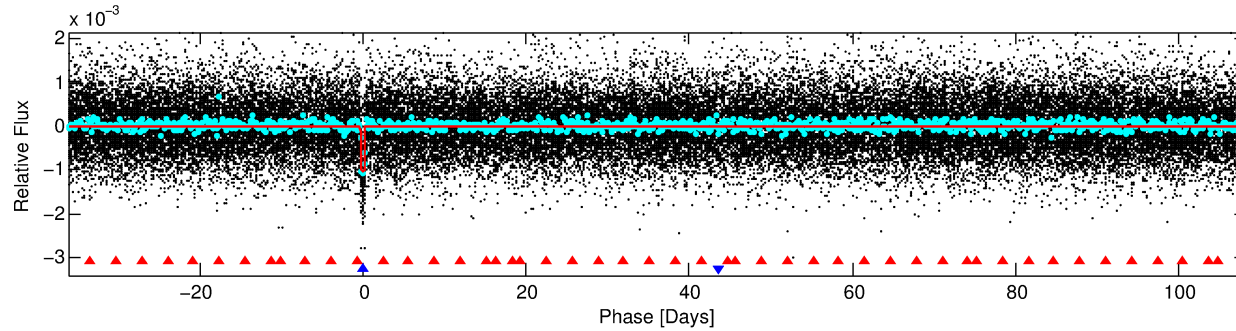
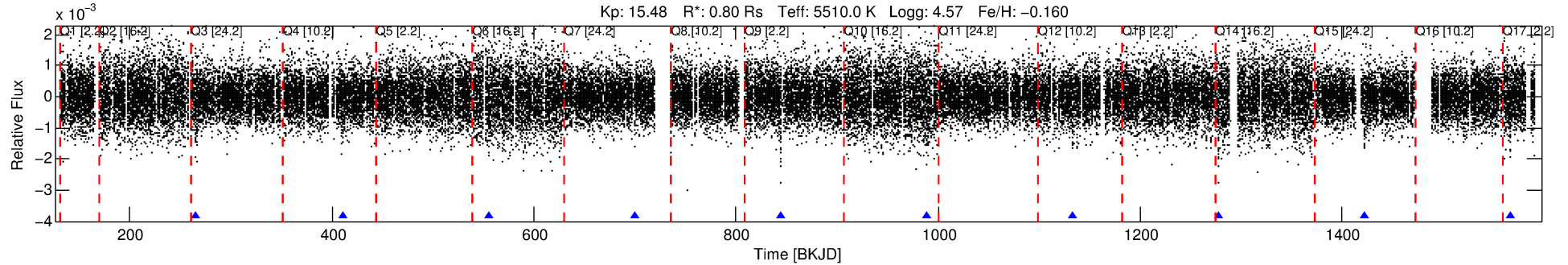
Ephemeris Match Information For 007939330-02

No Significant Match Found

DV One-Page Summary

KIC: 7939330 Candidate: 2 of 2 Period: 144.547 d

KOI: K01581.02 Corr: 0.982



DV Fit Results:

Period = 144.54731 [0.00181] d
Epoch = 265.9520 [0.0100] BKJD
Rp/R* = 0.0319 [0.0033]
a/R* = 53.11 [21.84]
b = 0.71 [0.29]
Seff = 2.00 [0.61]
Teq = 303 [23] K
Rp = 2.79 [0.71] Re
a = 0.5162 [0.1006] AU
Ag = 3661.61 [1661.92] [2.20 σ]
Teffp = 3646 [343] K [9.7 σ]

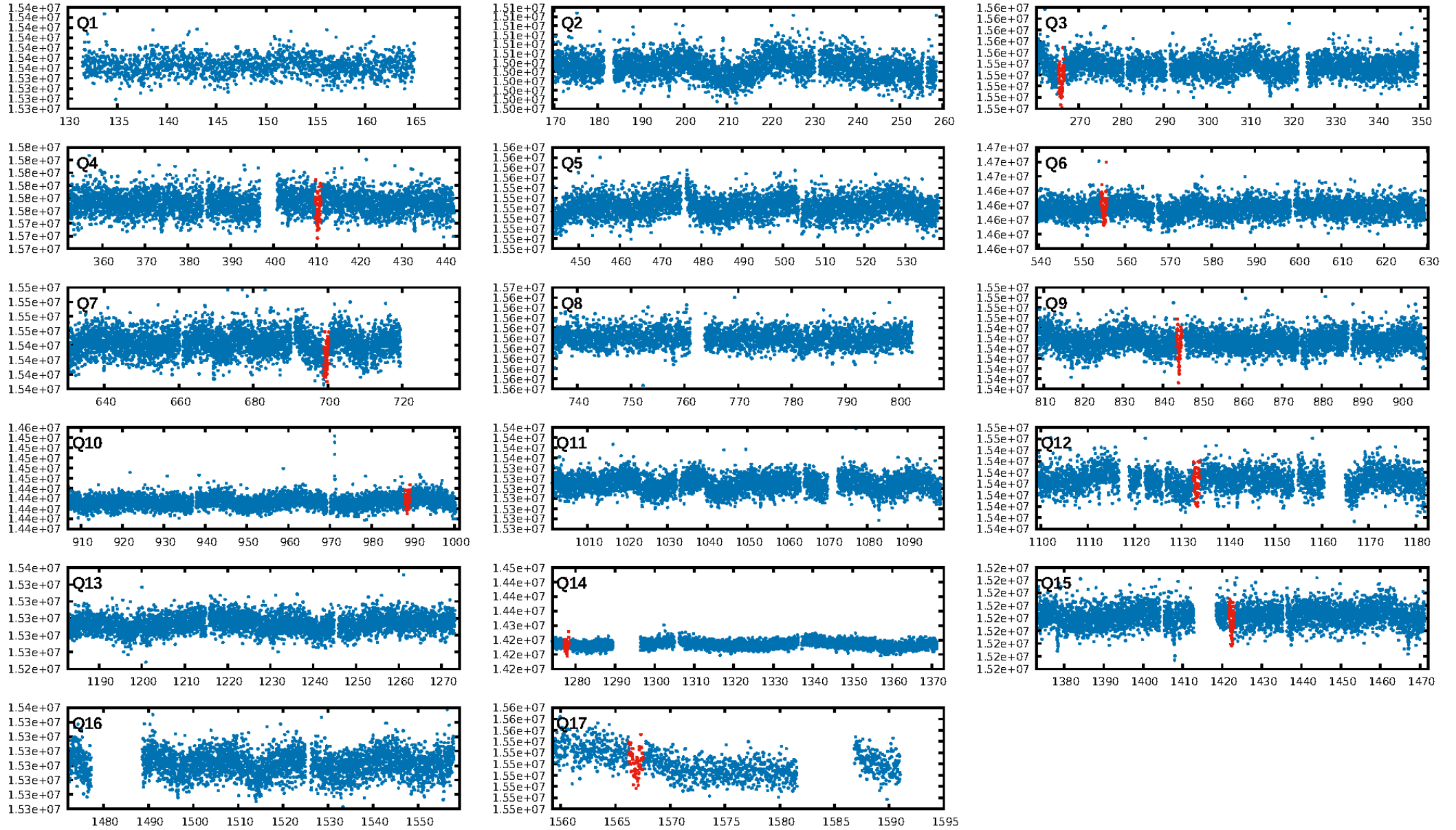
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [133.14 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 14.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.24e-93
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 62.72
Centroid-sig: N/A
Centroid-so: 0.291 arcsec [0.49 σ]
OotOffset-rm: 0.376 arcsec [0.92 σ]
KicOffset-rm: 0.228 arcsec [0.51 σ]
OotOffset-st: 2/3/1/1 [7]
KicOffset-st: 2/3/1/1 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 0.86 [6/7]

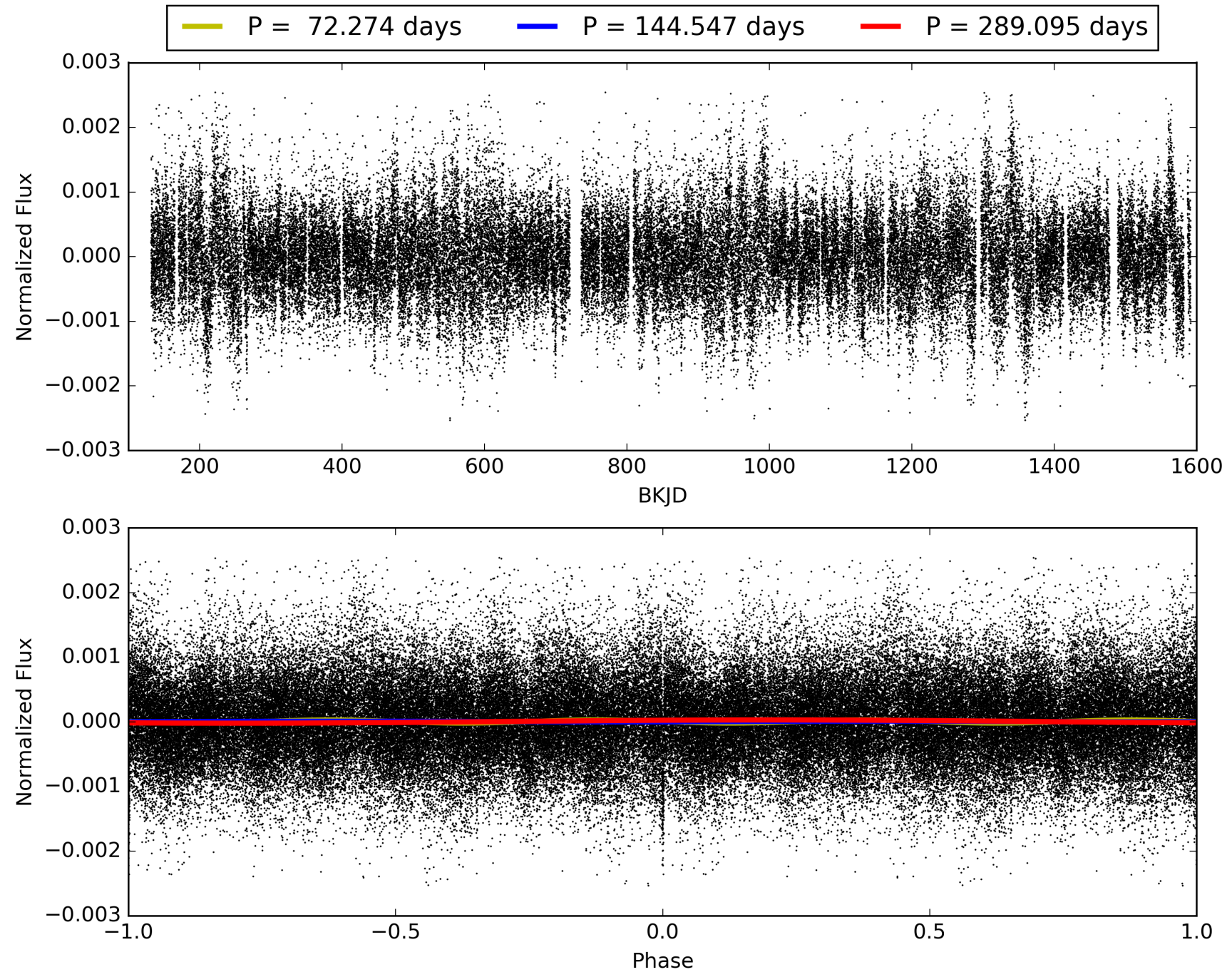
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:46:40 Z

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

TCE 007939330-02, PDC Light Curves

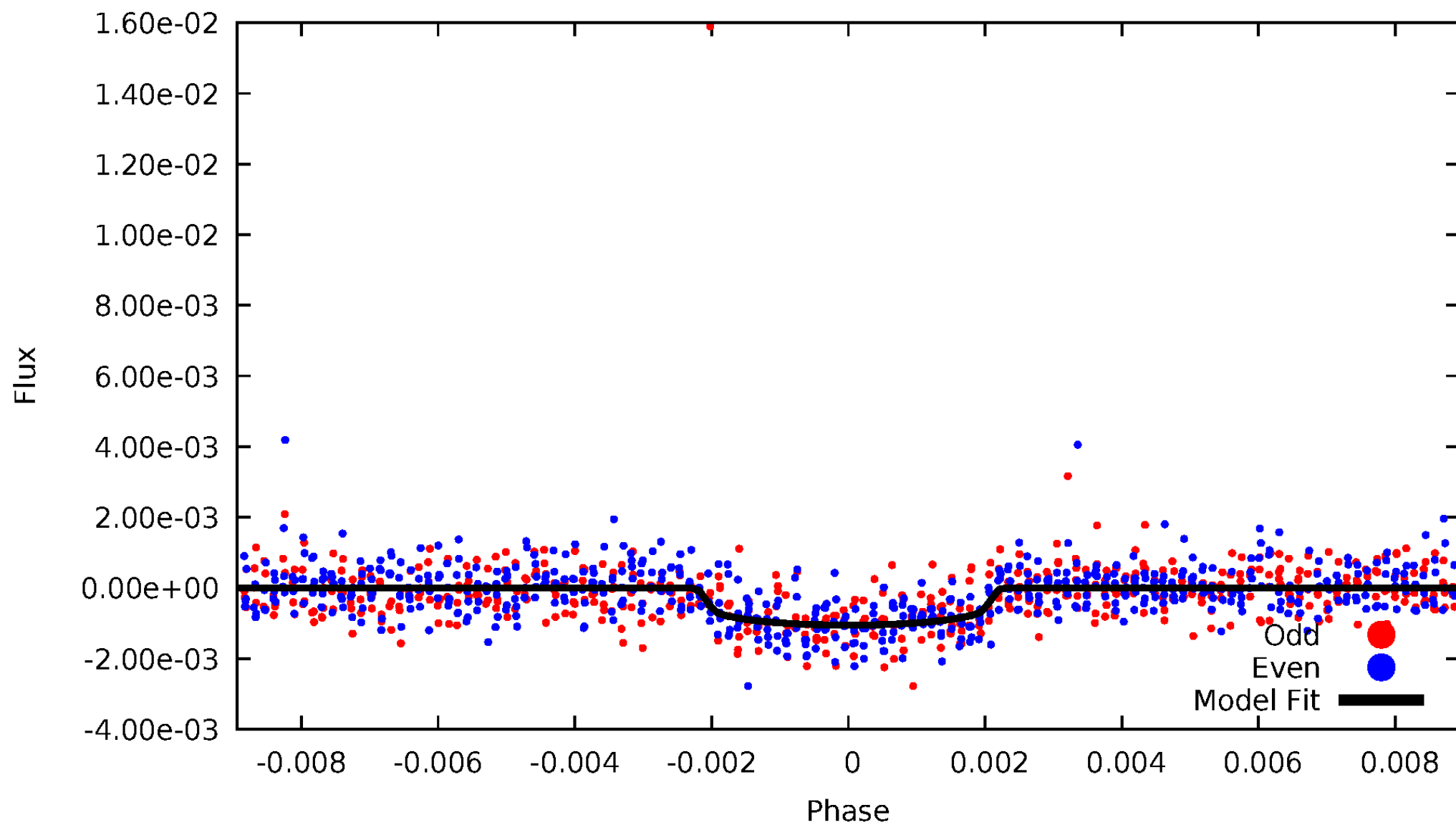


TCE 007939330-02



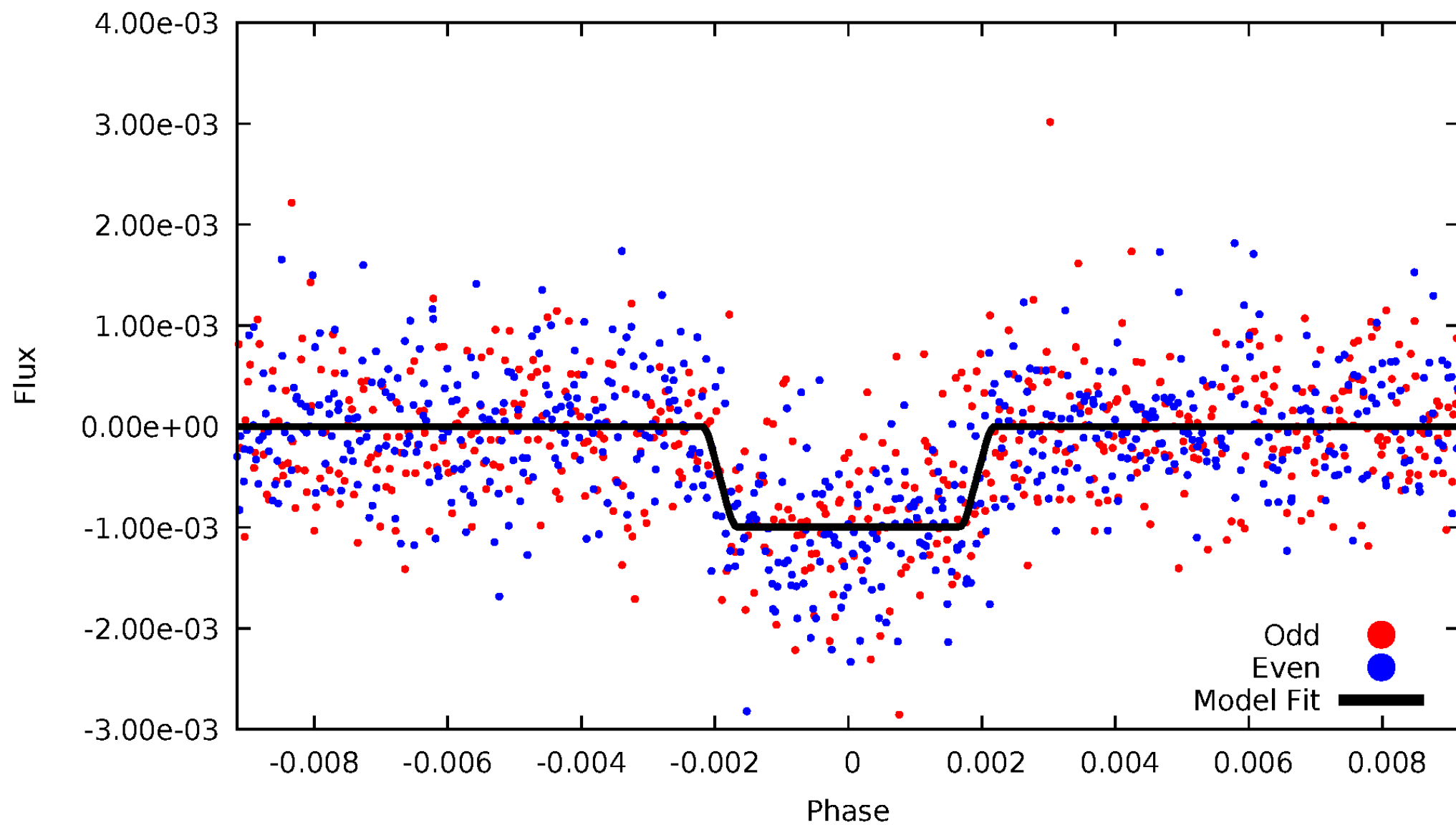
DV Odd/Even

TCE 007939330-02



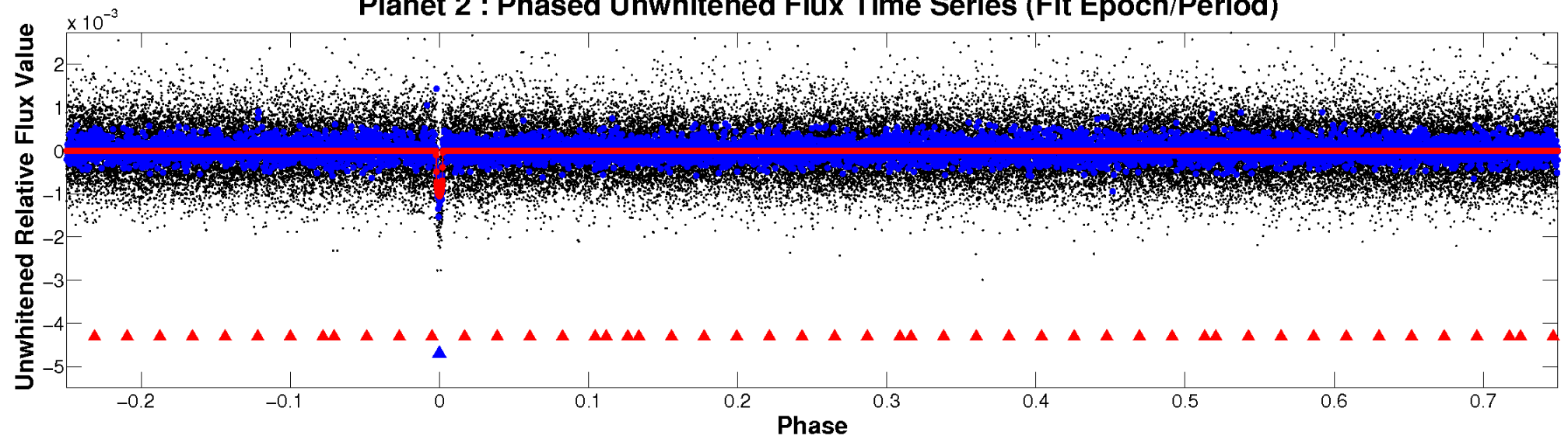
ALT Odd/Even

TCE 007939330-02

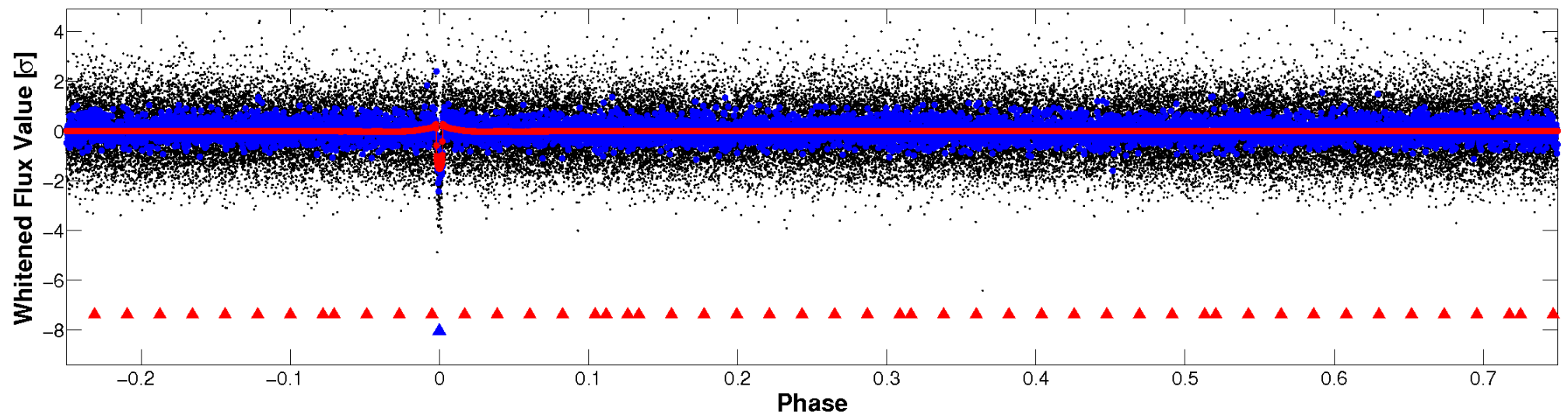


Non-Whitened Vs. Whitened Light Curve

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

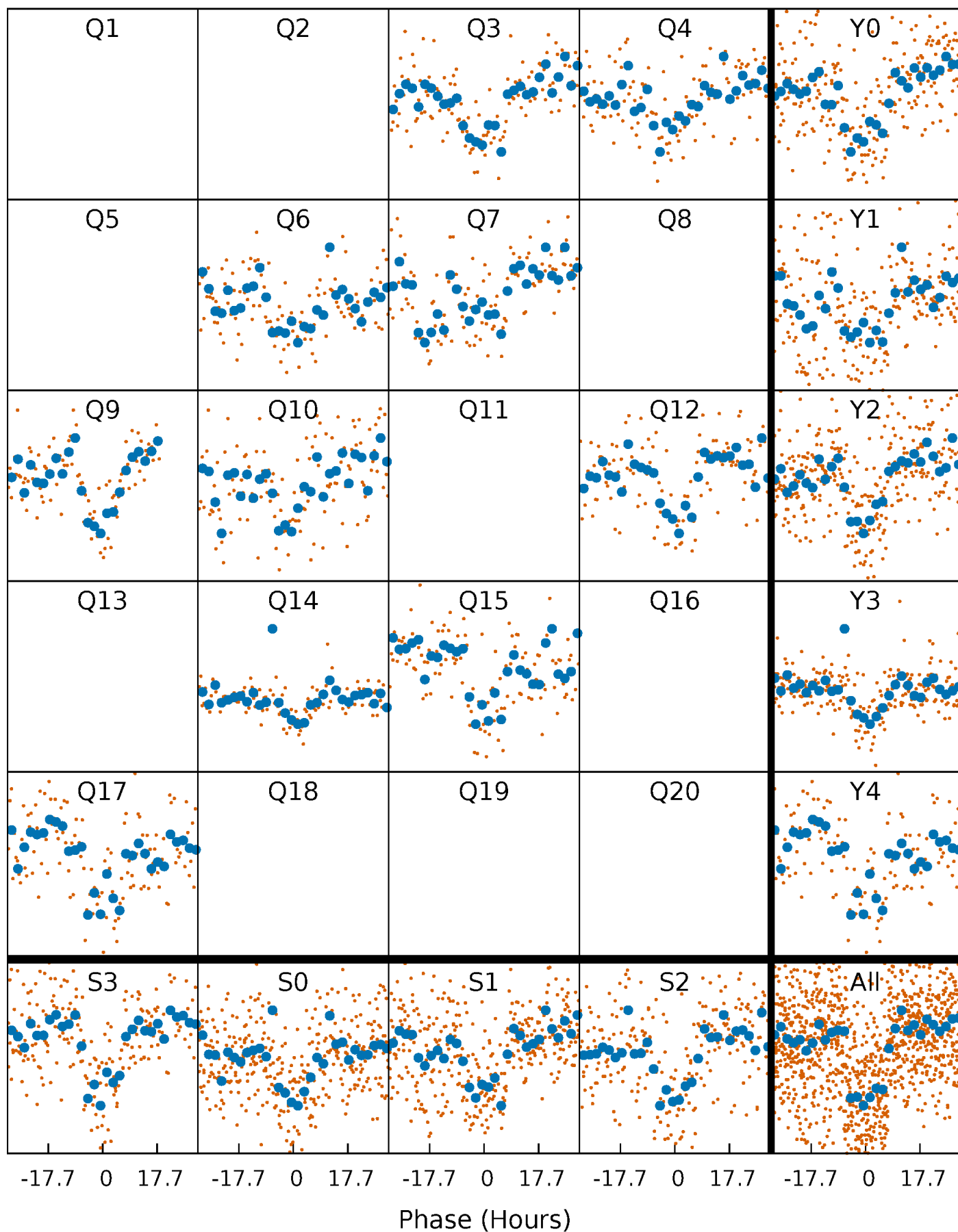


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



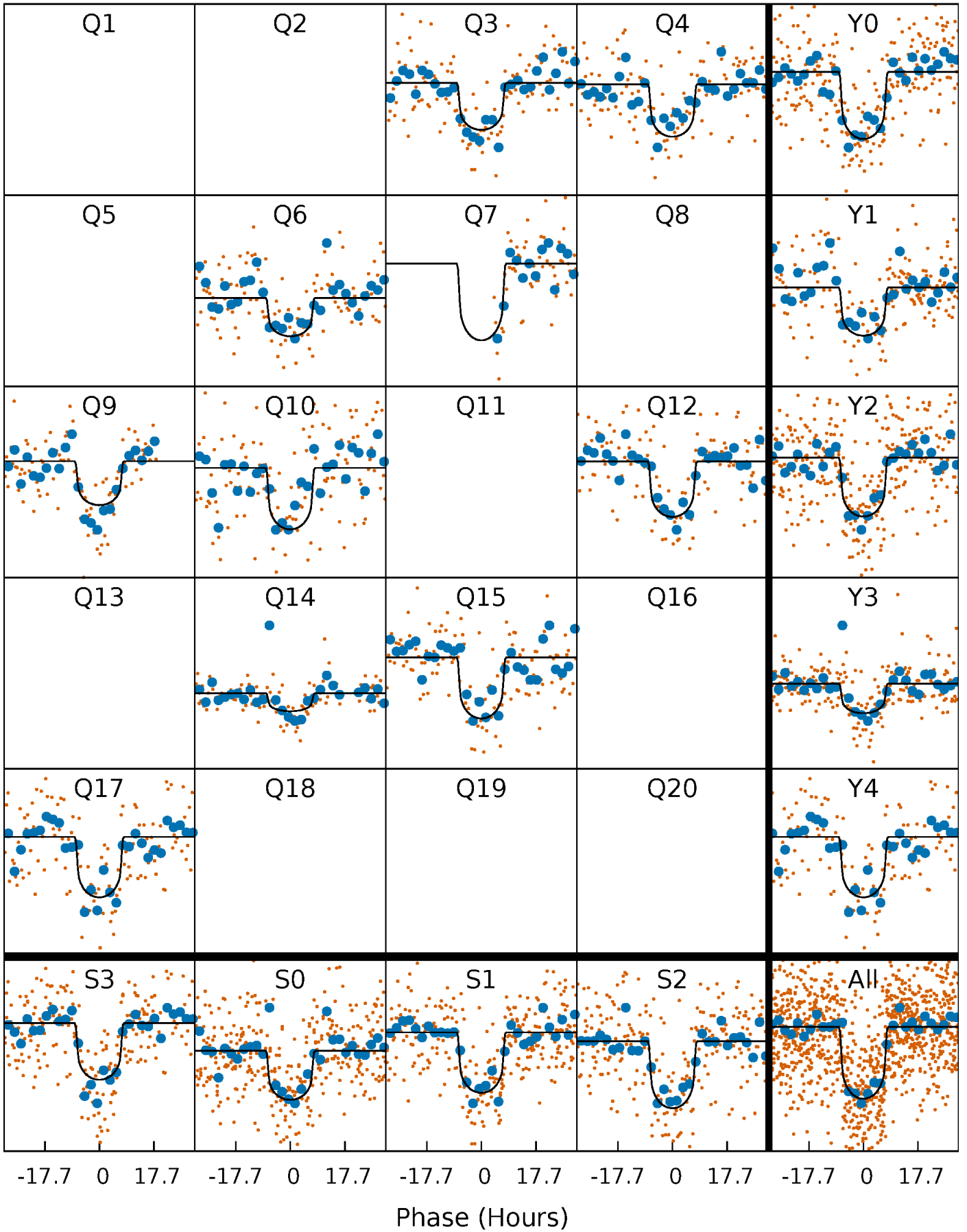
PDC Quarter-Phased Transit Curves

TCE 007939330-02 $P=144.547314$ Days $T_0=265.951985$ (BKJD)



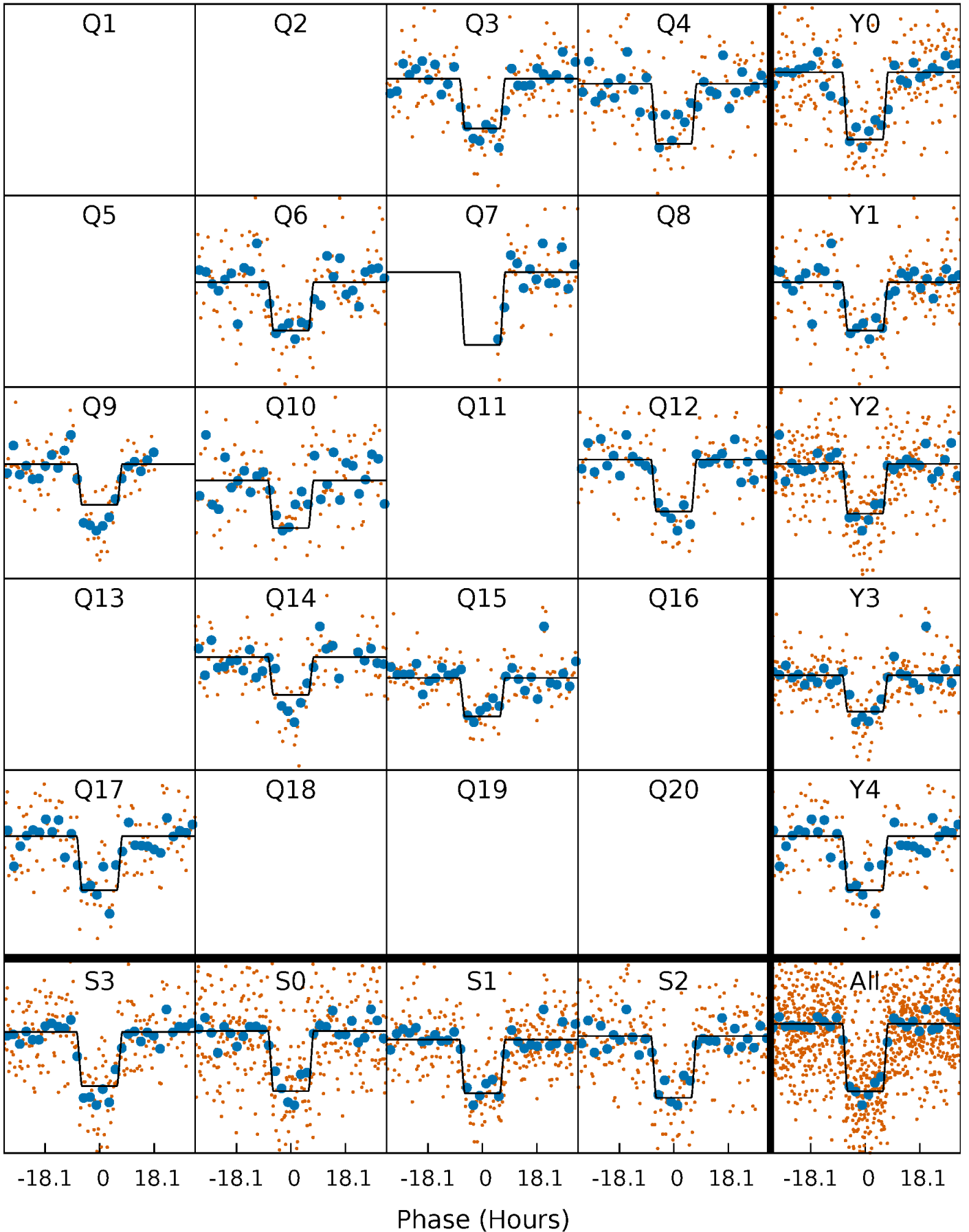
DV Quarter-Phased Transit Curves

TCE 007939330-02 $P=144.547314$ Days $T_0=265.951985$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

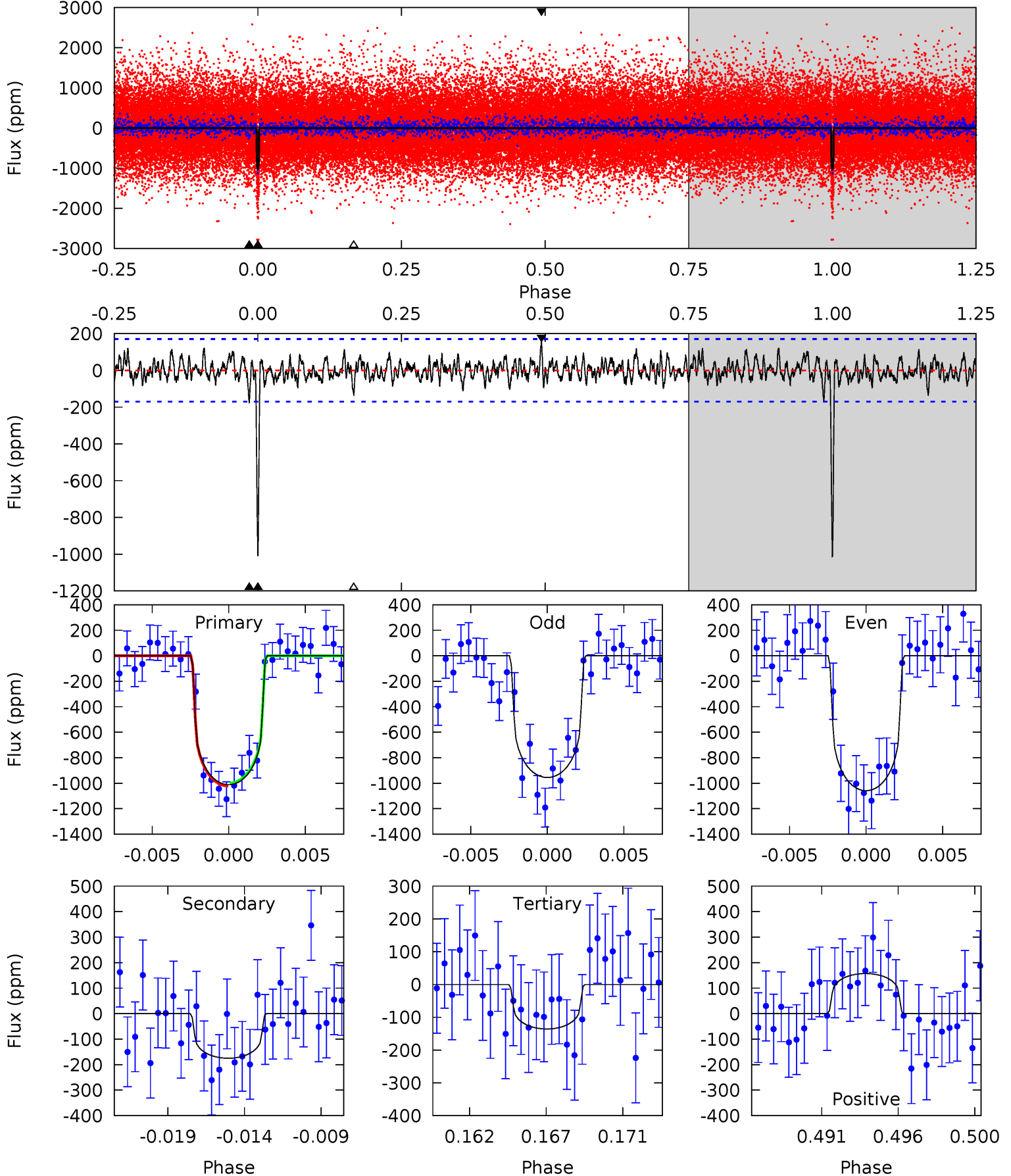
TCE 007939330-02 P=144.553815 Days $T_0=265.933656$ (BKJD)



DV Model-Shift Uniqueness Test

007939330-02, P = 144.547314 Days, E = 121.404671 Days

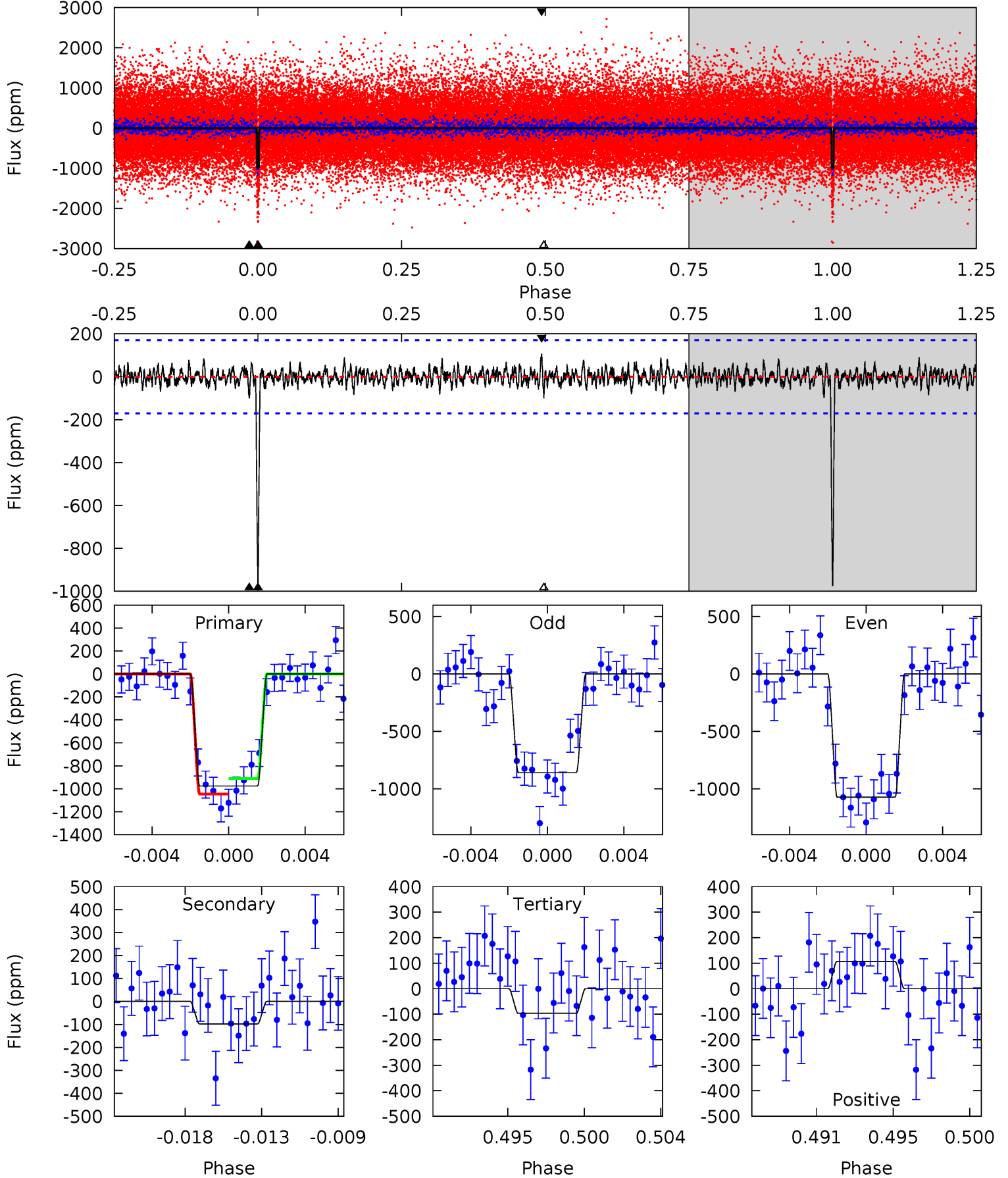
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.7	5.31	4.12	4.77	5.17	2.83	1.26	26.6	25.9	1.19	0.54	1.57	1.06	0.13	0.34



Alt Model-Shift Uniqueness Test

007939330-02, P = 144.553815 Days, E = 121.379841 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.6	2.97	2.93	3.24	5.18	2.85	0.85	26.7	26.4	0.04	-0.27	3.25	0.98	0.10	2.03



Stellar Parameters For KIC 007939330

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5510^{+166}_{-149}	$4.572^{+0.038}_{-0.152}$	$-0.160^{+0.300}_{-0.300}$	$0.803^{+0.188}_{-0.063}$	$0.877^{+0.083}_{-0.092}$	$2.389^{+0.469}_{-0.995}$
	+3%/-3%	+1%/-3%	+188%/-188%	+23%/-8%	+9%/-10%	+20%/-42%
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 007939330-02 / KOI 1581.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-175 ± 33	$2.88^{+0.39}_{-0.36}$	430^{+23}_{-17}	3885^{+210}_{-197}	3008^{+1100}_{-827}
Alt.	-98 ± 33	$2.84^{+0.44}_{-0.35}$	431^{+24}_{-18}	3519^{+262}_{-229}	1677^{+855}_{-625}

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

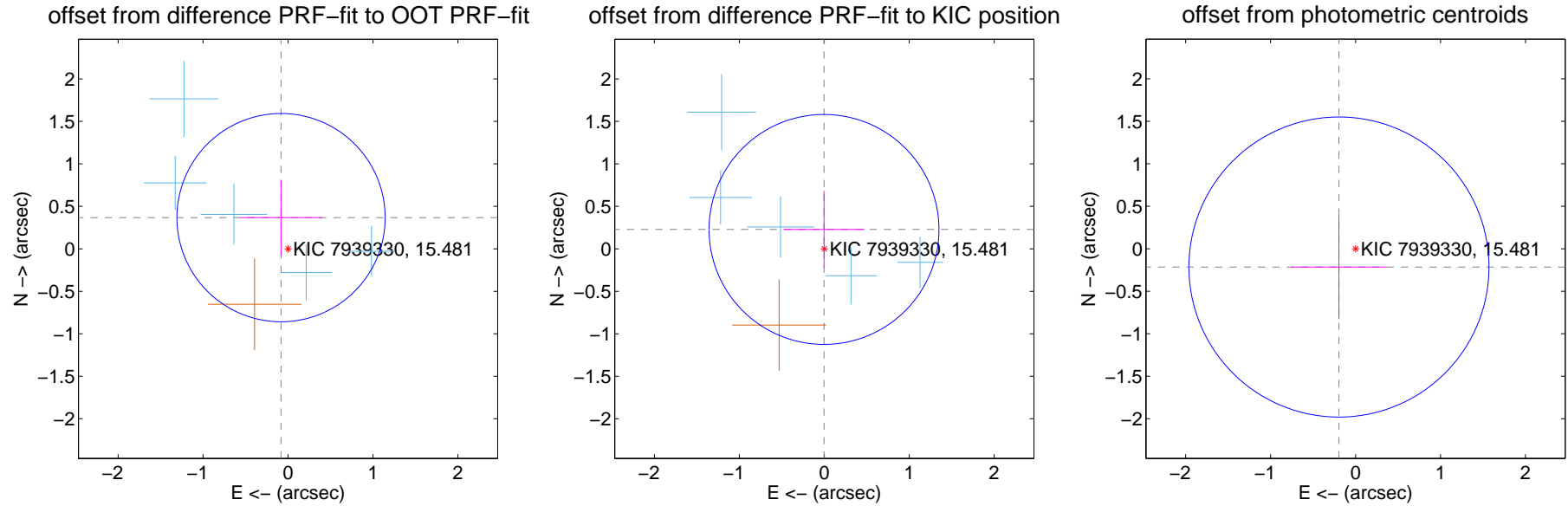
DV Centroid Data

Supplemental centroid analysis for 007939330-02. Kepler magnitude: 15.48. Transit SNR 21.73

There are 5 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	0.376 ± 0.409	0.92	0.082 ± 0.486	0.367 ± 0.443
PRF-fit source offset from KIC position	0.228 ± 0.451	0.51	0.003 ± 0.478	0.228 ± 0.454
photometric centroid source offset	0.29 ± 0.59	0.49	0.20 ± 0.56	-0.22 ± 0.61



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.

Q1 no difference image



Q1 no OOT image



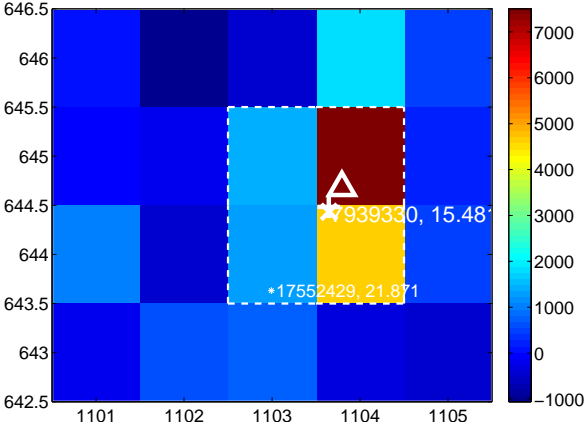
Q2 no difference image



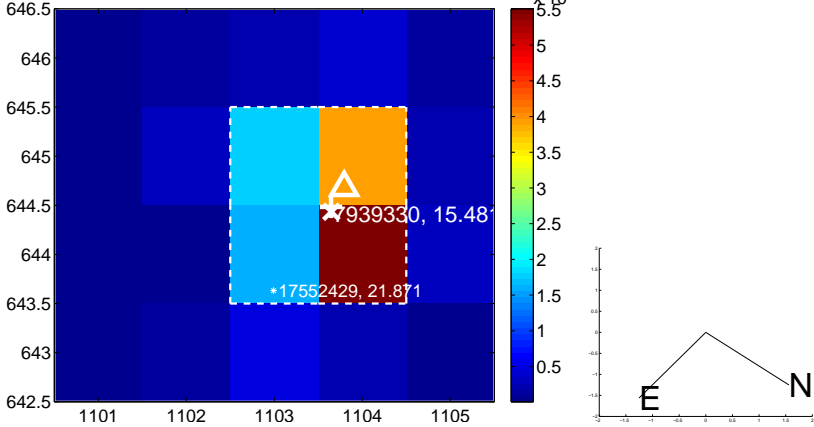
Q2 no OOT image



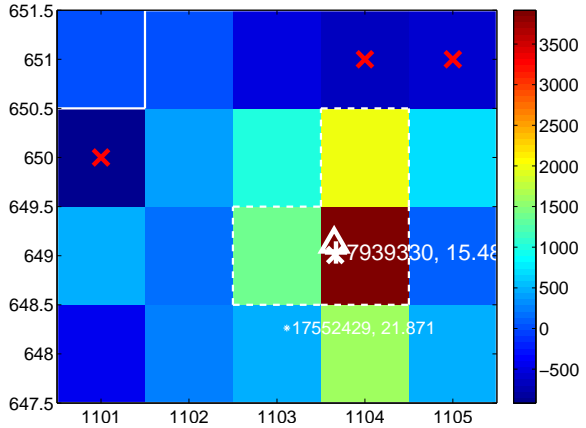
Q3 difference image



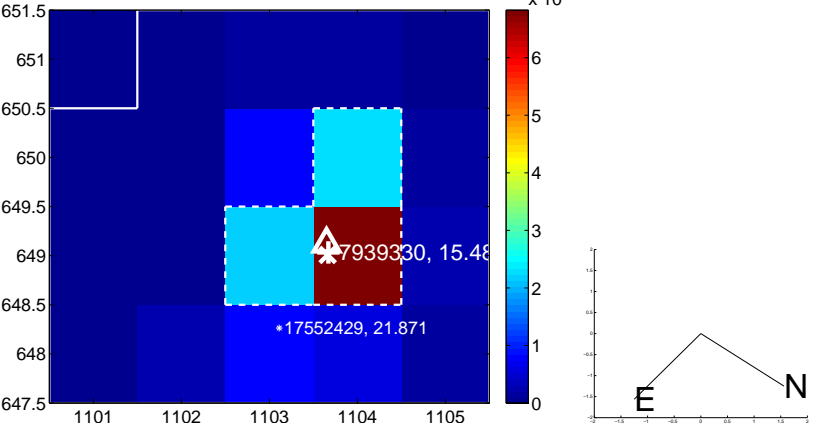
Q3 OOT image



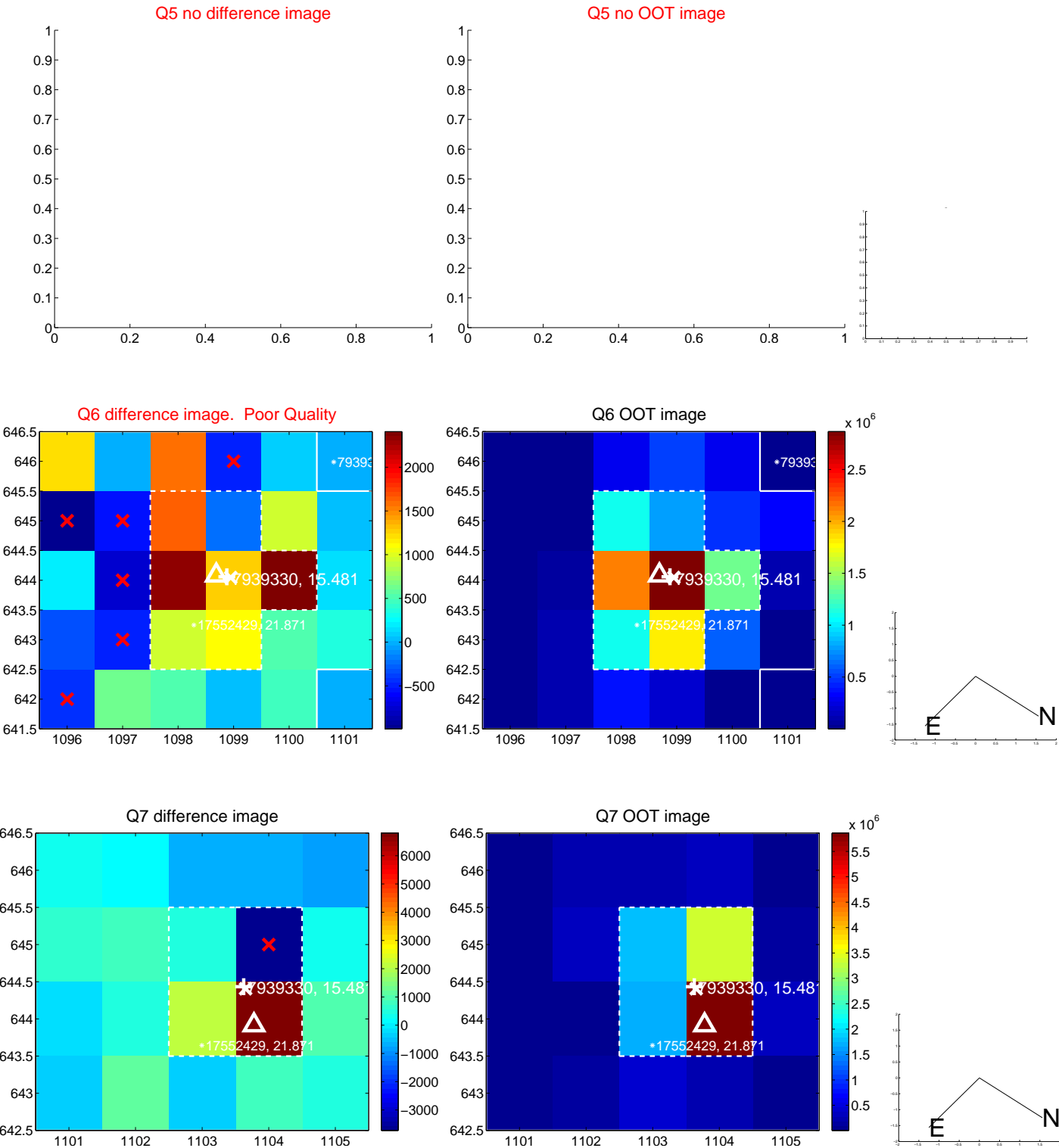
Q4 difference image



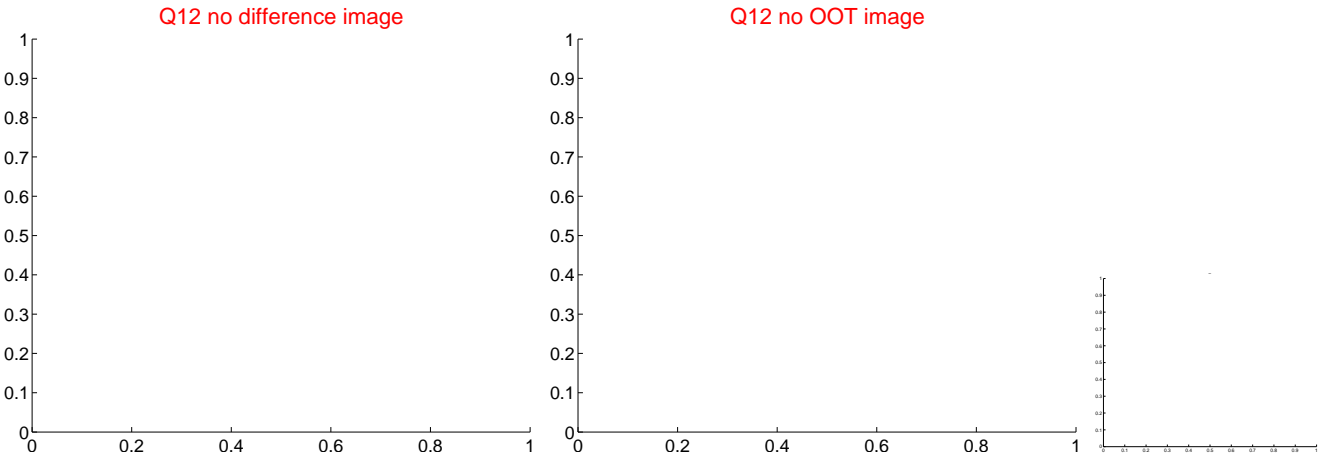
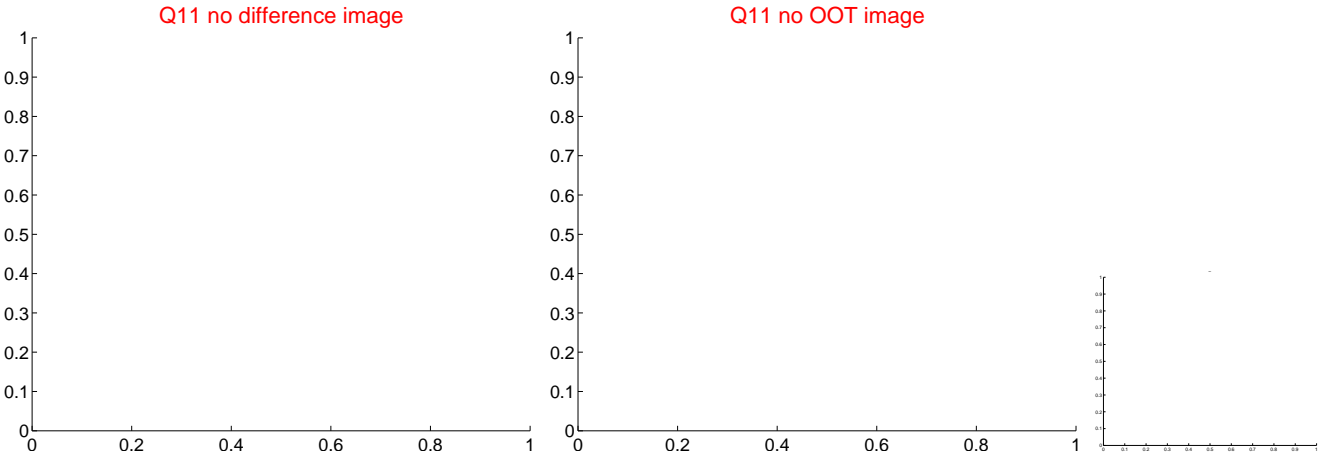
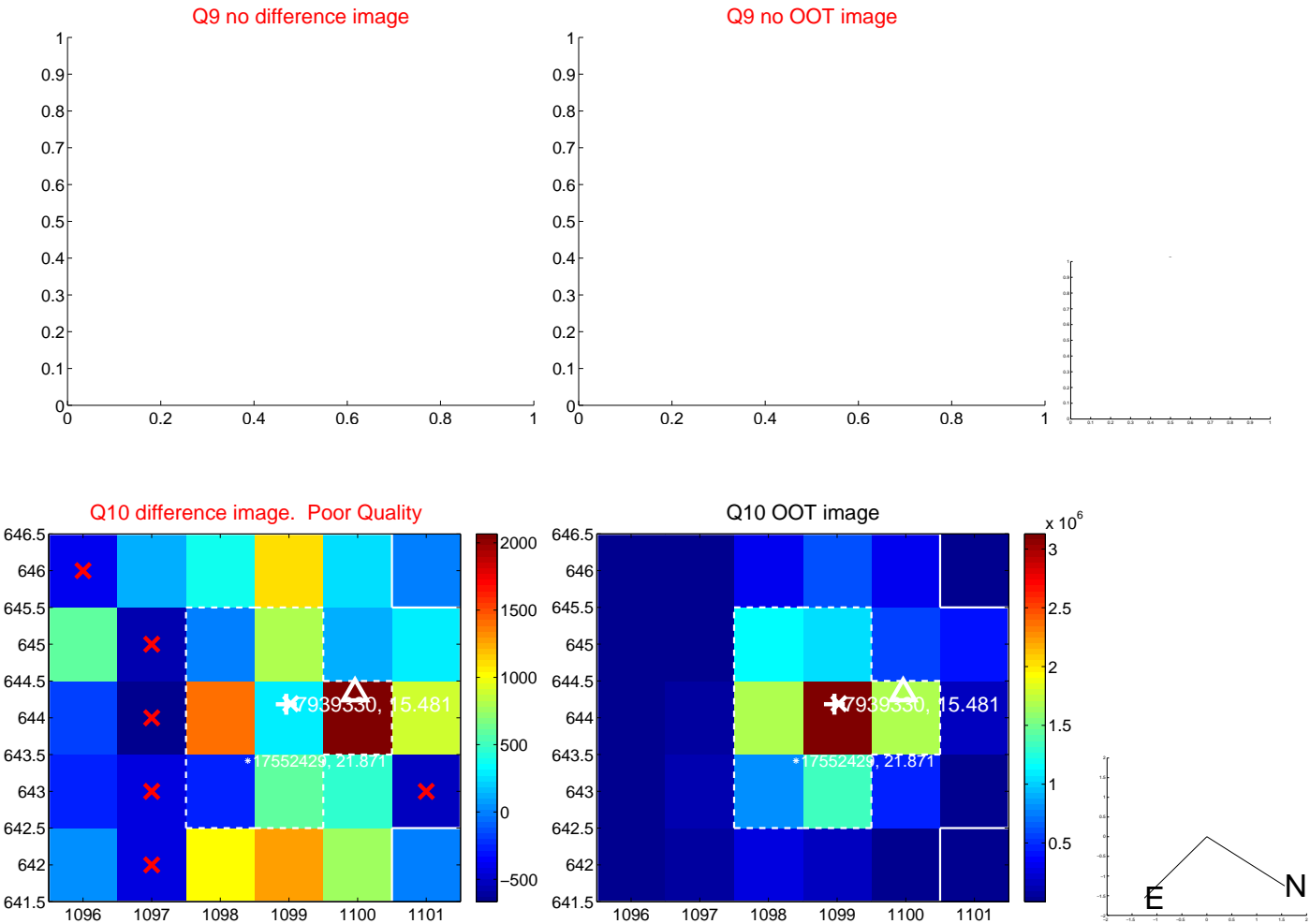
Q4 OOT image



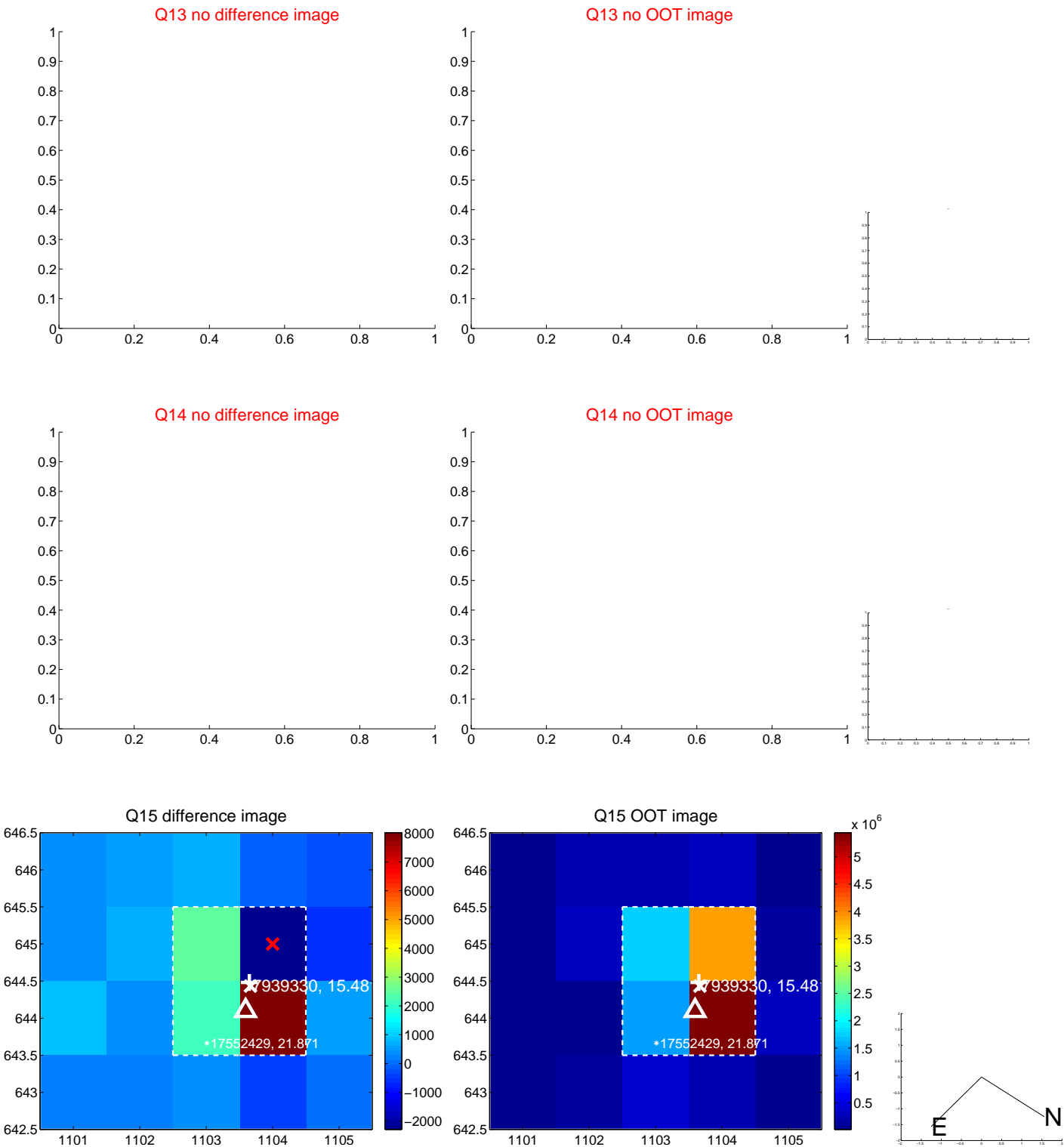
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



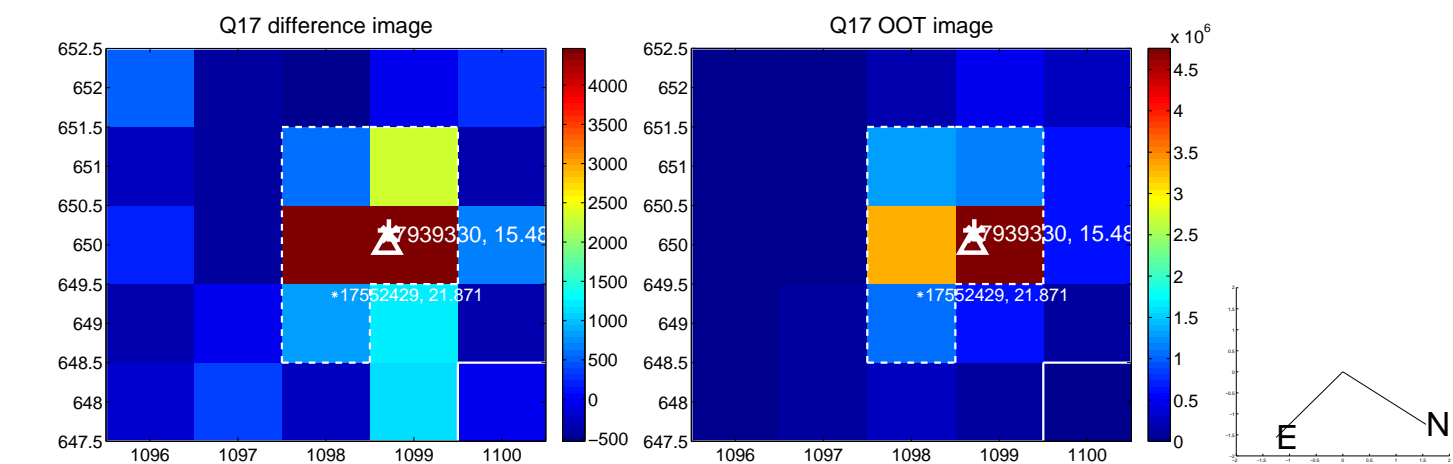
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



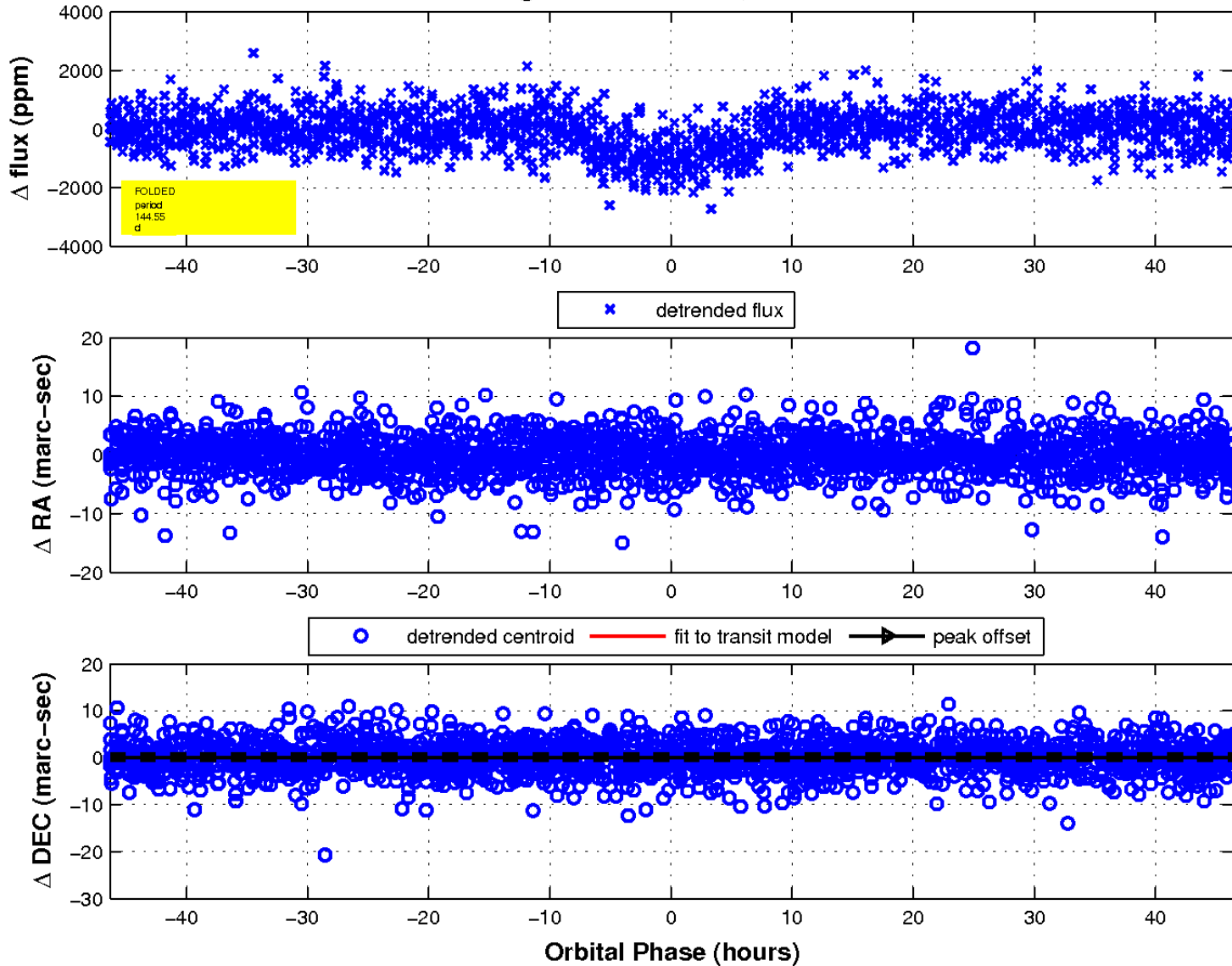
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

