

KIC 005038443

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})
005038443-01	OBS	No	1.368403	131.678761	131.3	3.923	9.1	8.4	0.83	5556	1.20	1134.44
005038443-02	OBS	No	1.958479	132.199130	144.6	4.486	7.8	7.1	0.83	5556	1.20	703.36
005038443-03	OBS	No	334.940561	282.103070	2126.2	3.340	7.4	7.2	0.83	5556	4.18	0.74
005038443-04	OBS	No	41.901174	145.561608	1234.5	1.523	7.4	7.7	0.83	5556	3.07	11.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005038443-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
005038443-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005038443-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005038443-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

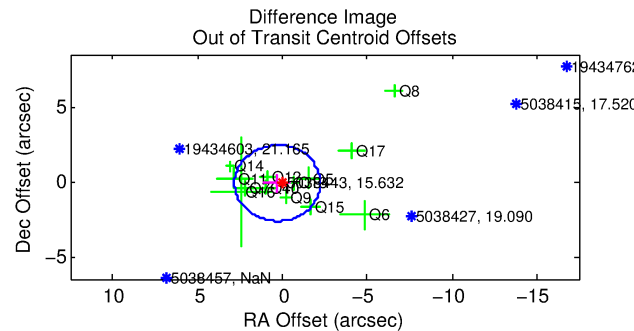
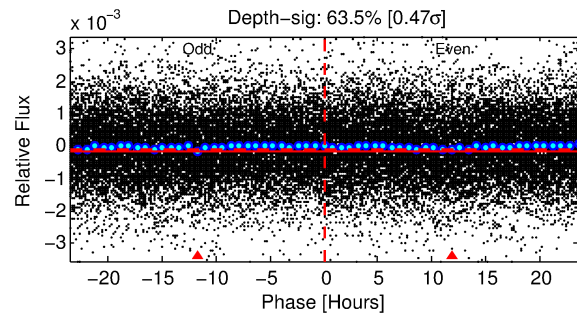
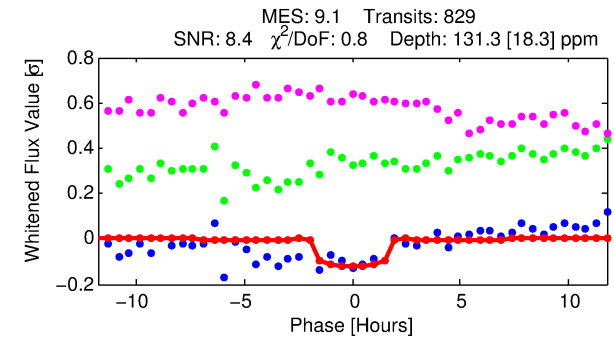
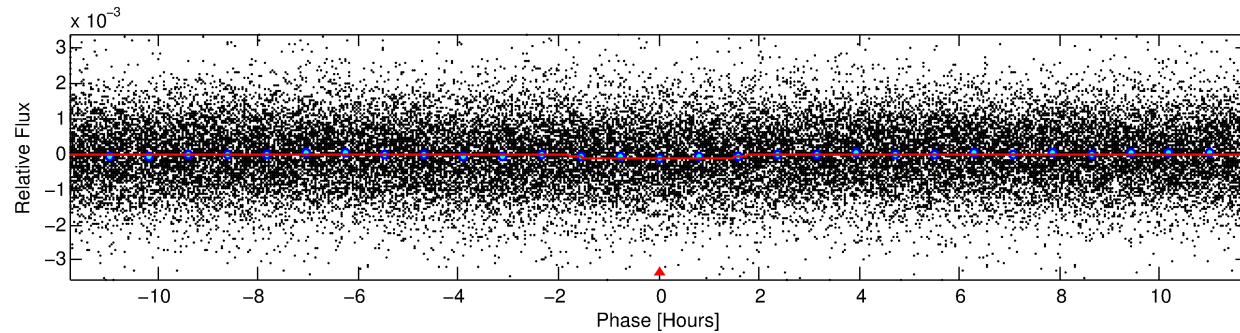
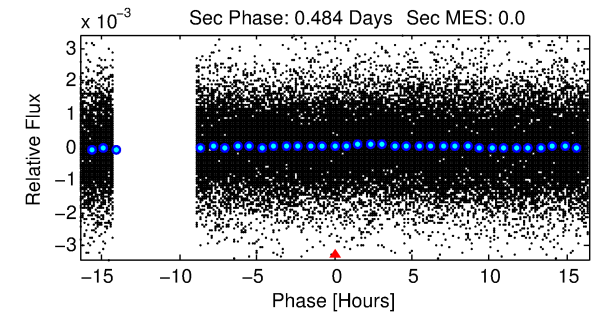
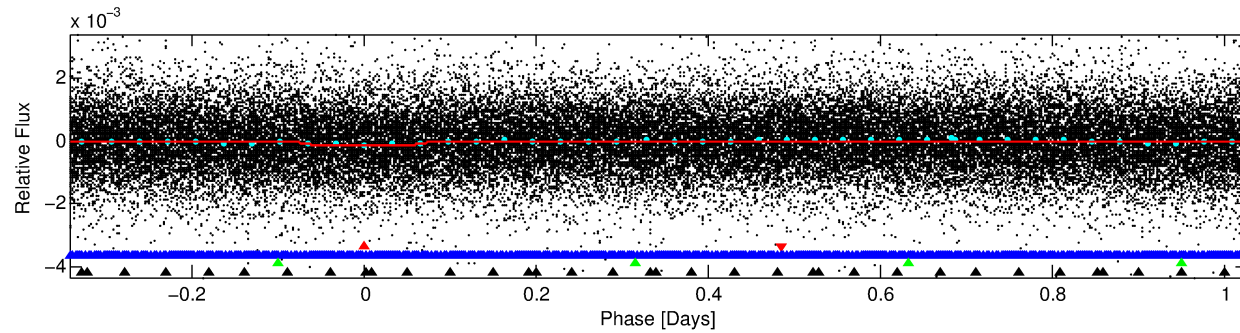
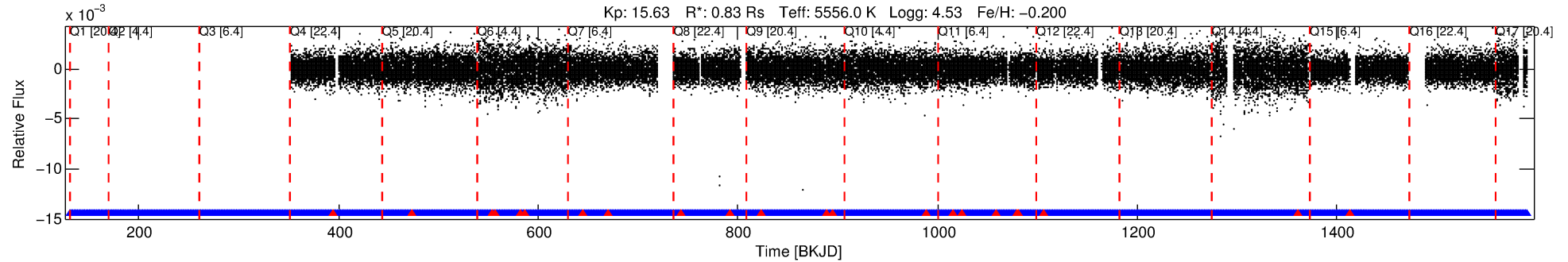
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005038443-01

No Significant Match Found

DV One-Page Summary

KIC: 5038443 Candidate: 1 of 4 Period: 1.368 d



DV Fit Results:

Period = 1.36840 [0.00002] d
Epoch = 131.6788 [0.0052] BKJD
Rp/R* = 0.0132 [0.0031]
a/R* = 1.39 [0.74]
b = 0.94 [0.14]
Seff = 1134.44 [346.57]
Teq = 1480 [113] K
Rp = 1.20 [0.40] Re
a = 0.0229 [0.0045] AU
Ag = N/A
Teffp = N/A

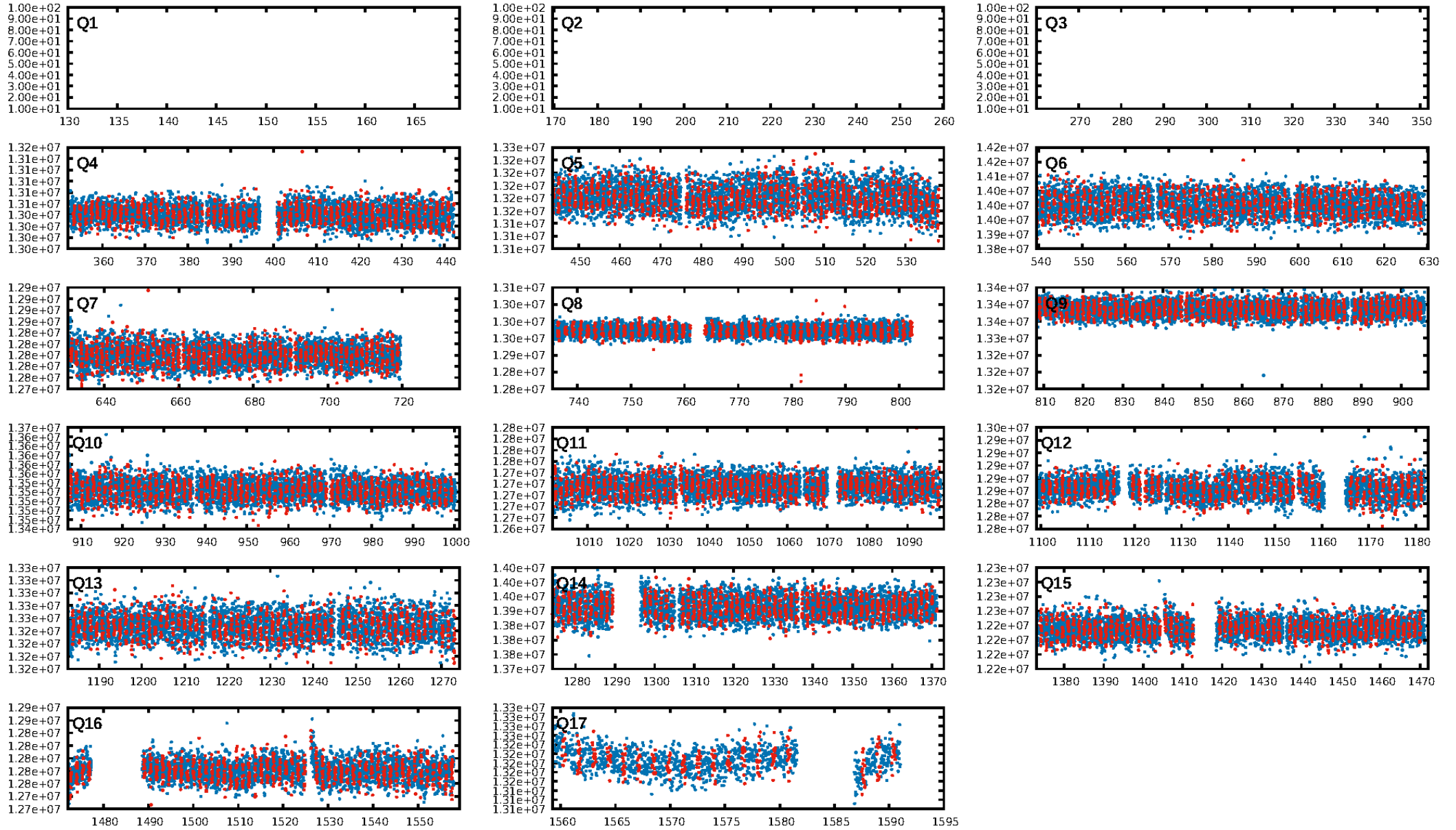
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 98.3% [2.38σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.04e-14
RollingBand-fgt: 0.97 [788/810]
GhostDiagnostic-chr: 0.2476
Centroid-sig: 45.6%
Centroid-so: 2.206 arcsec [3.79σ]
OotOffset-rm: 0.306 arcsec [0.36σ]
KicOffset-rm: 4.810 arcsec [5.44σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [14/14]

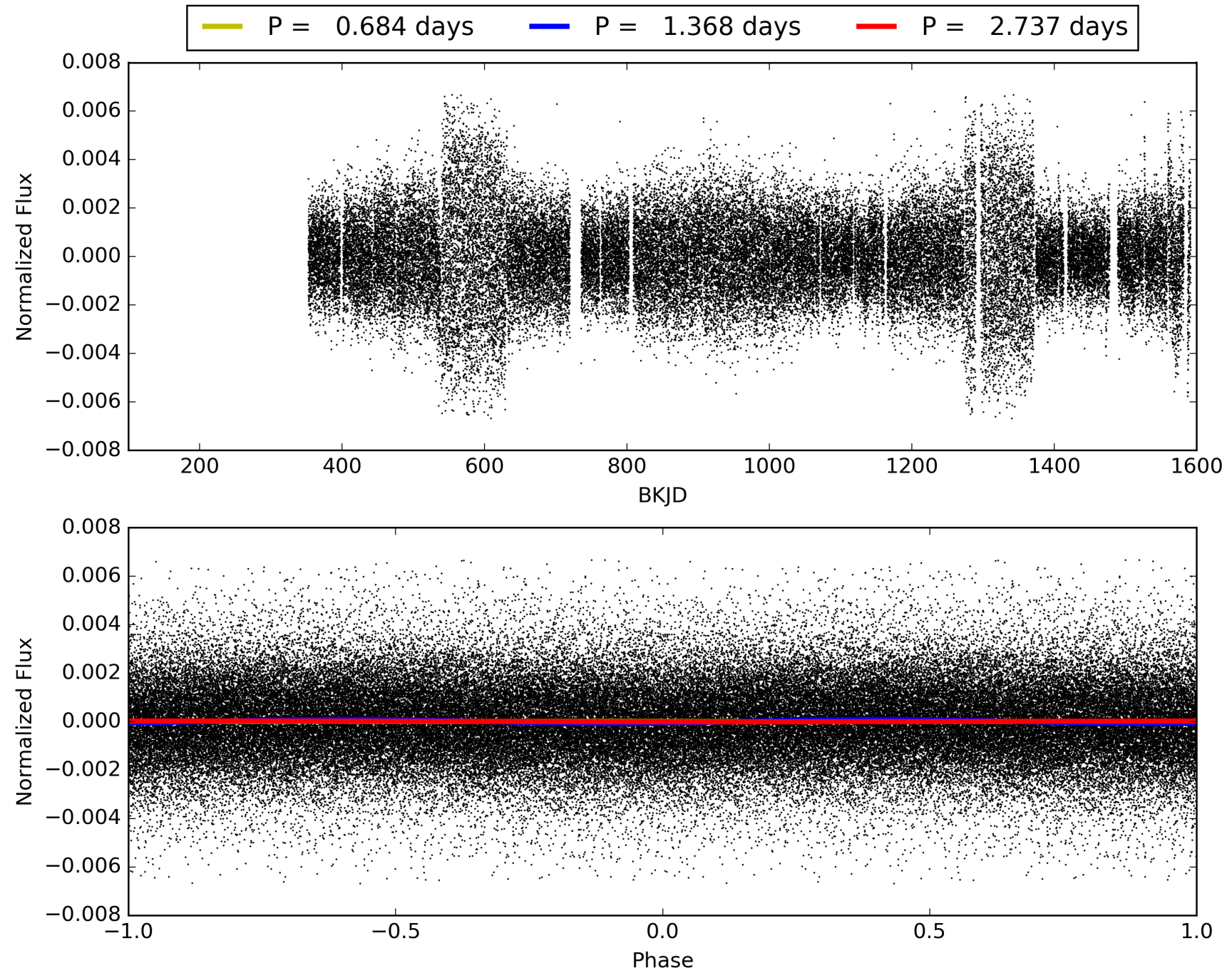
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005038443-01, PDC Light Curves

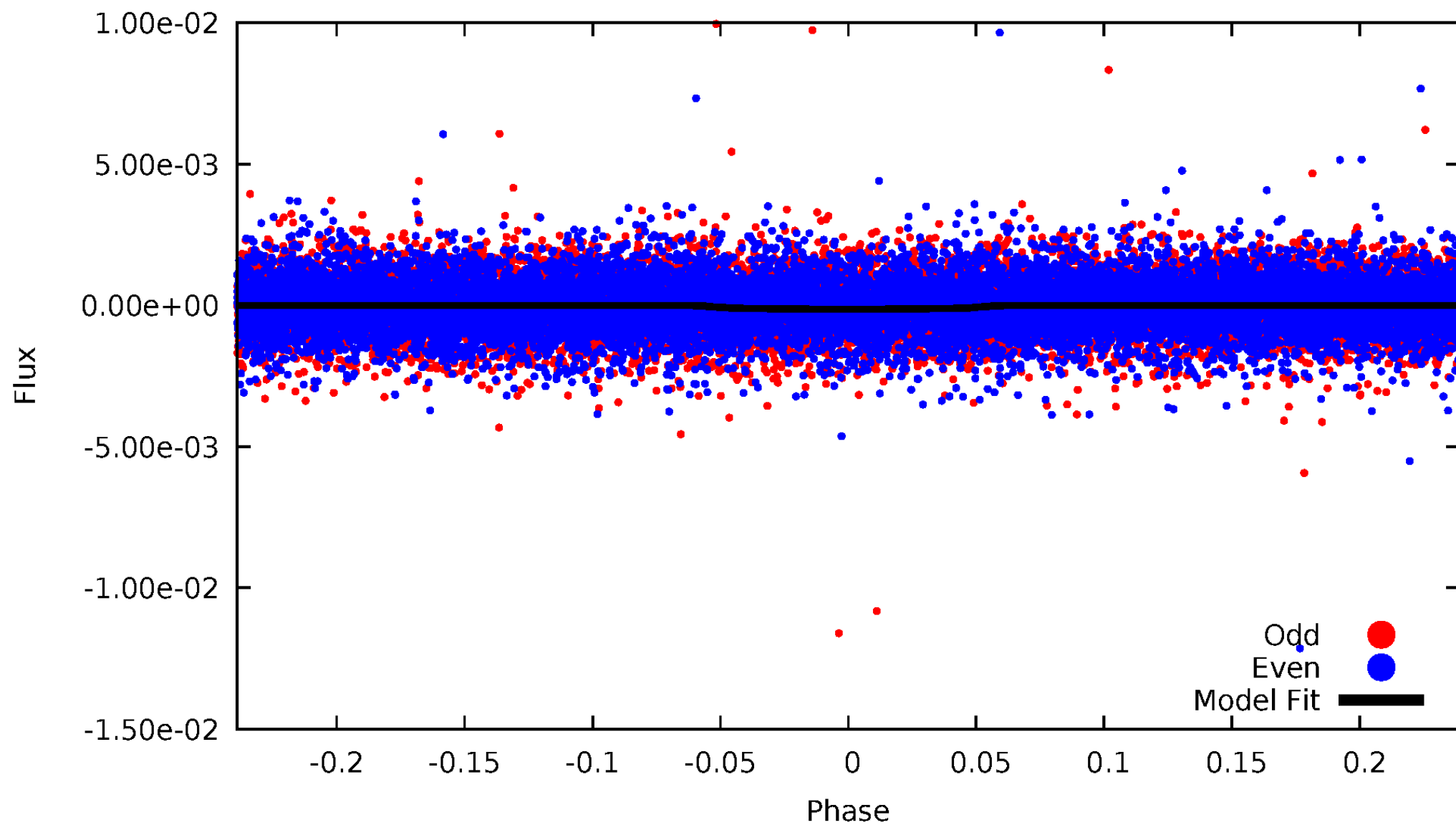


TCE 005038443-01



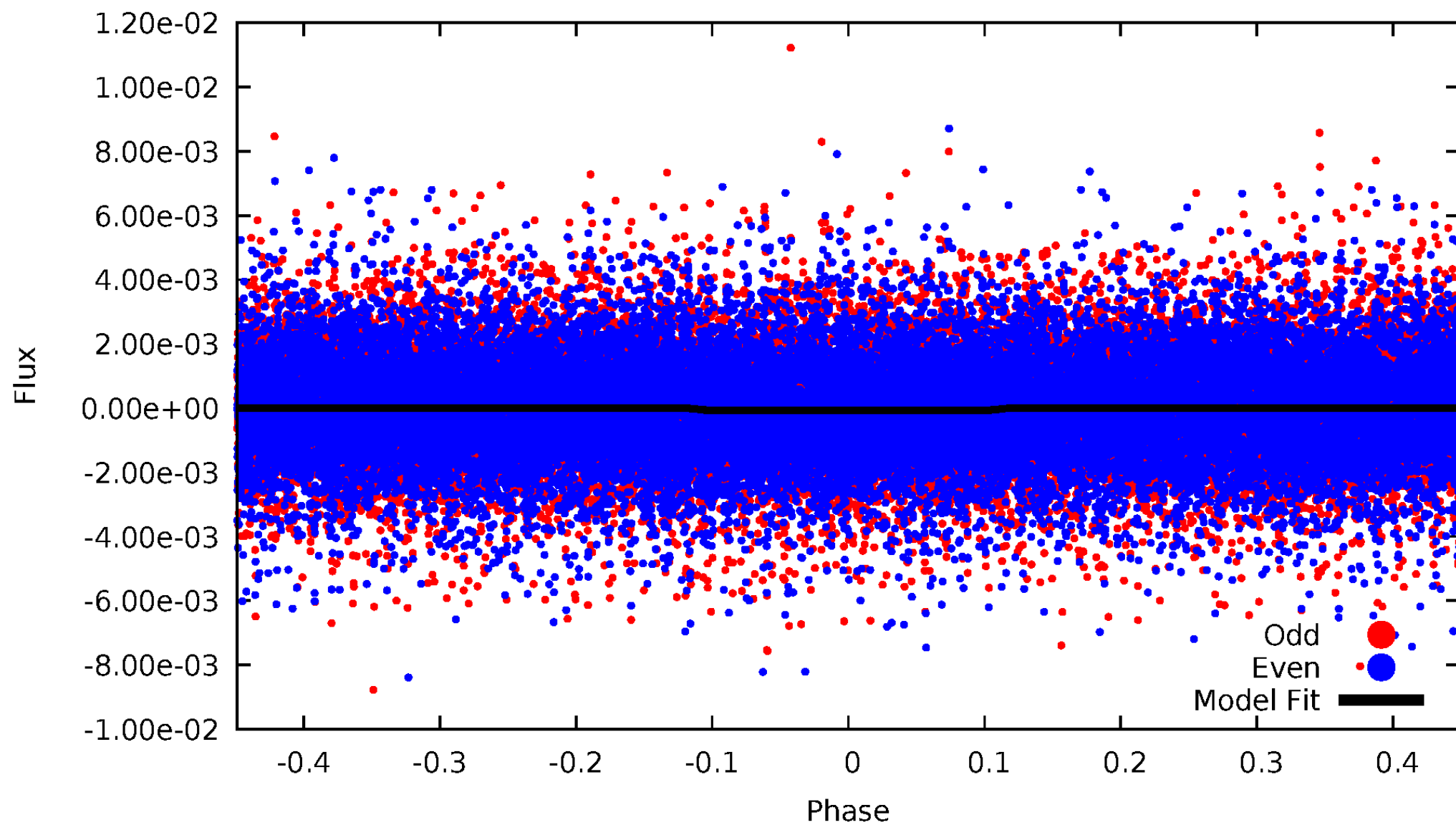
DV Odd/Even

TCE 005038443-01

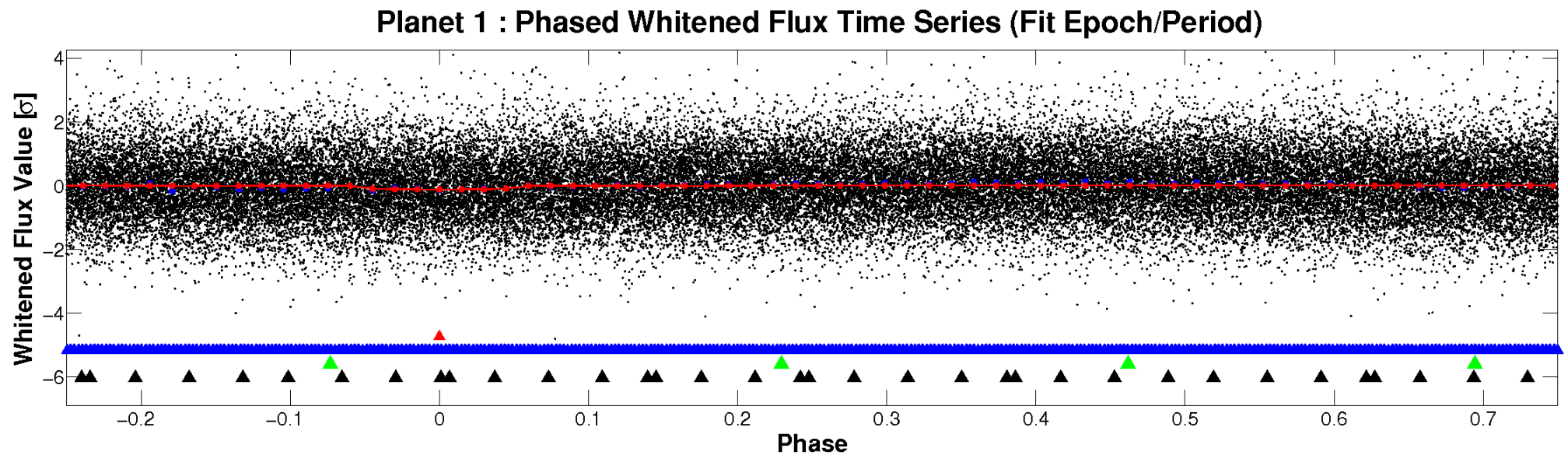
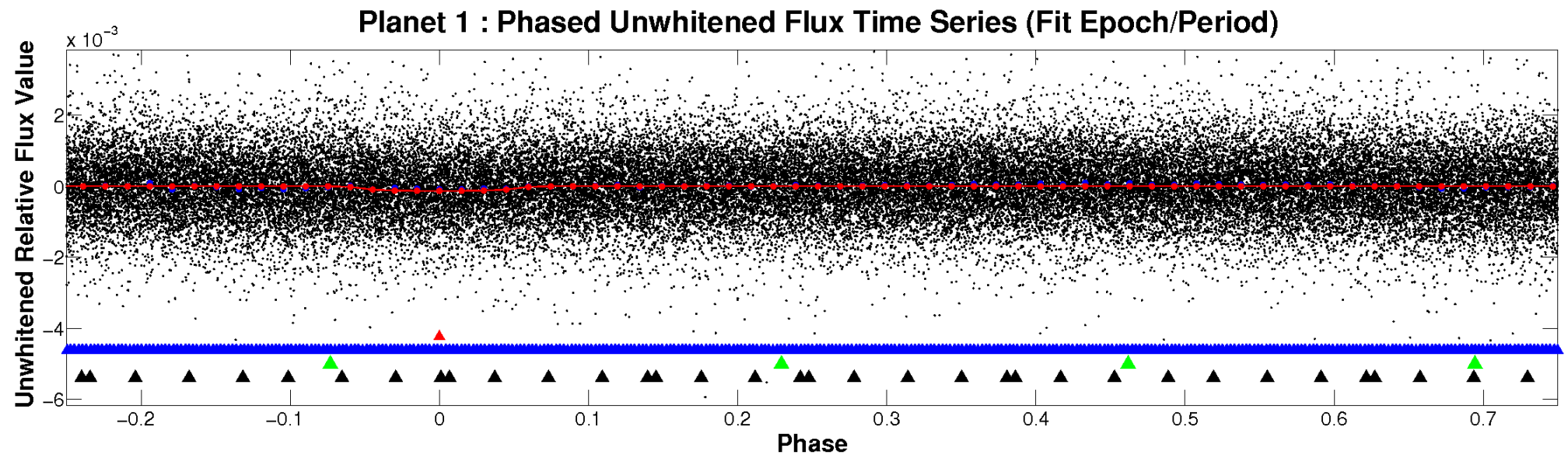


ALT Odd/Even

TCE 005038443-01

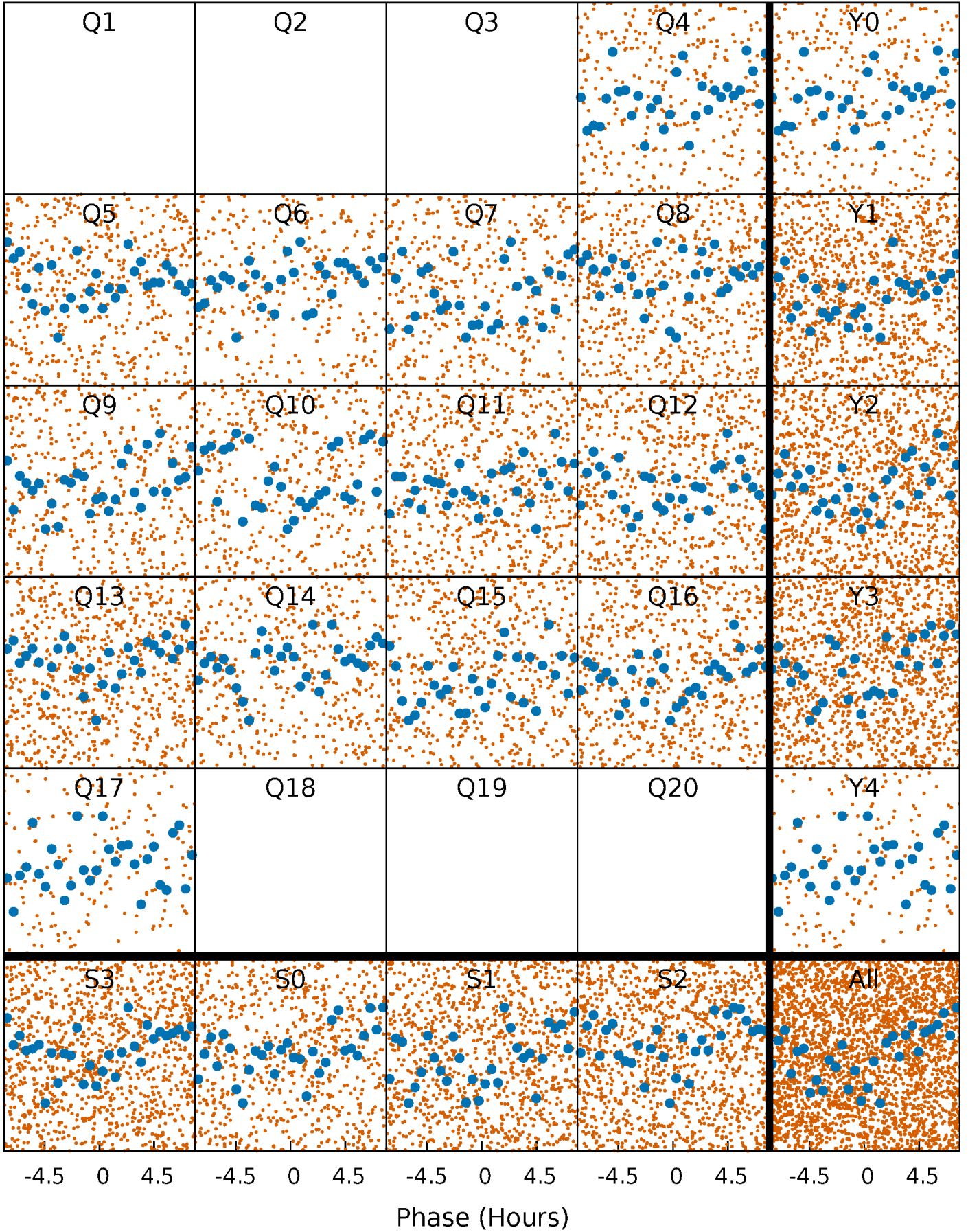


Non-Whitened Vs. Whitened Light Curve



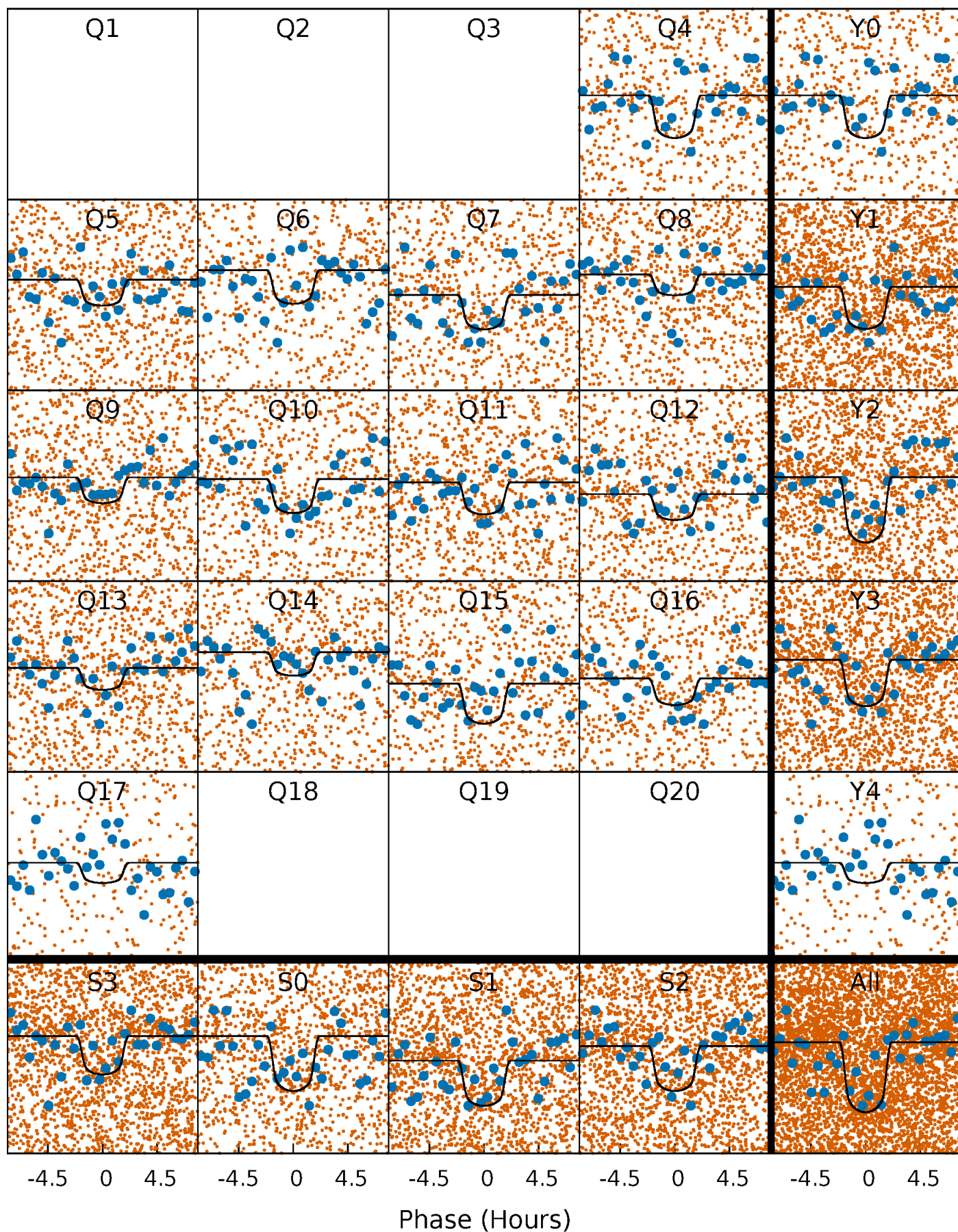
PDC Quarter-Phased Transit Curves

TCE 005038443-01 P= 1.368403 Days $T_0=131.678761$ (BKJD)



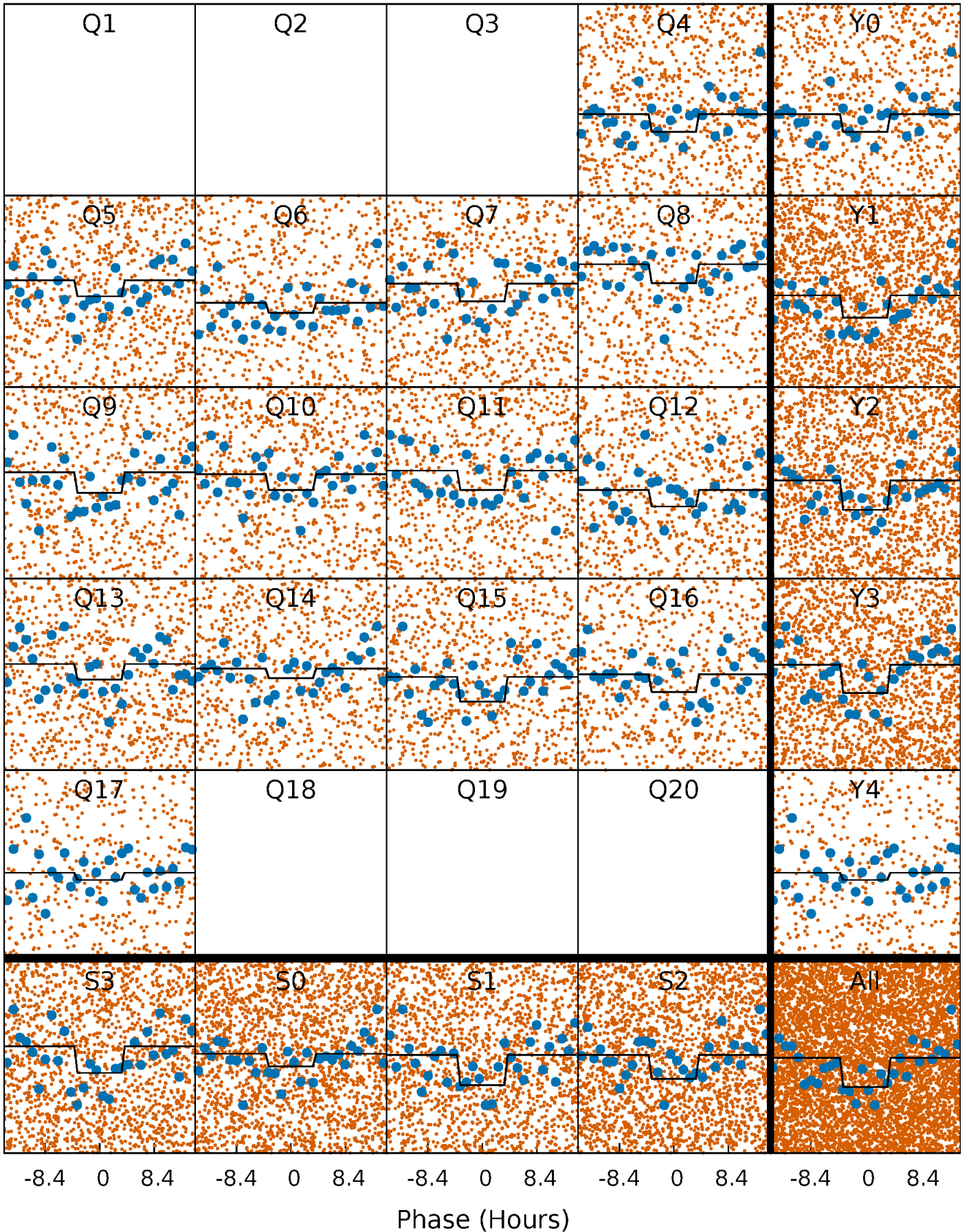
DV Quarter-Phased Transit Curves

TCE 005038443-01 P= 1.368403 Days $T_0=131.678761$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

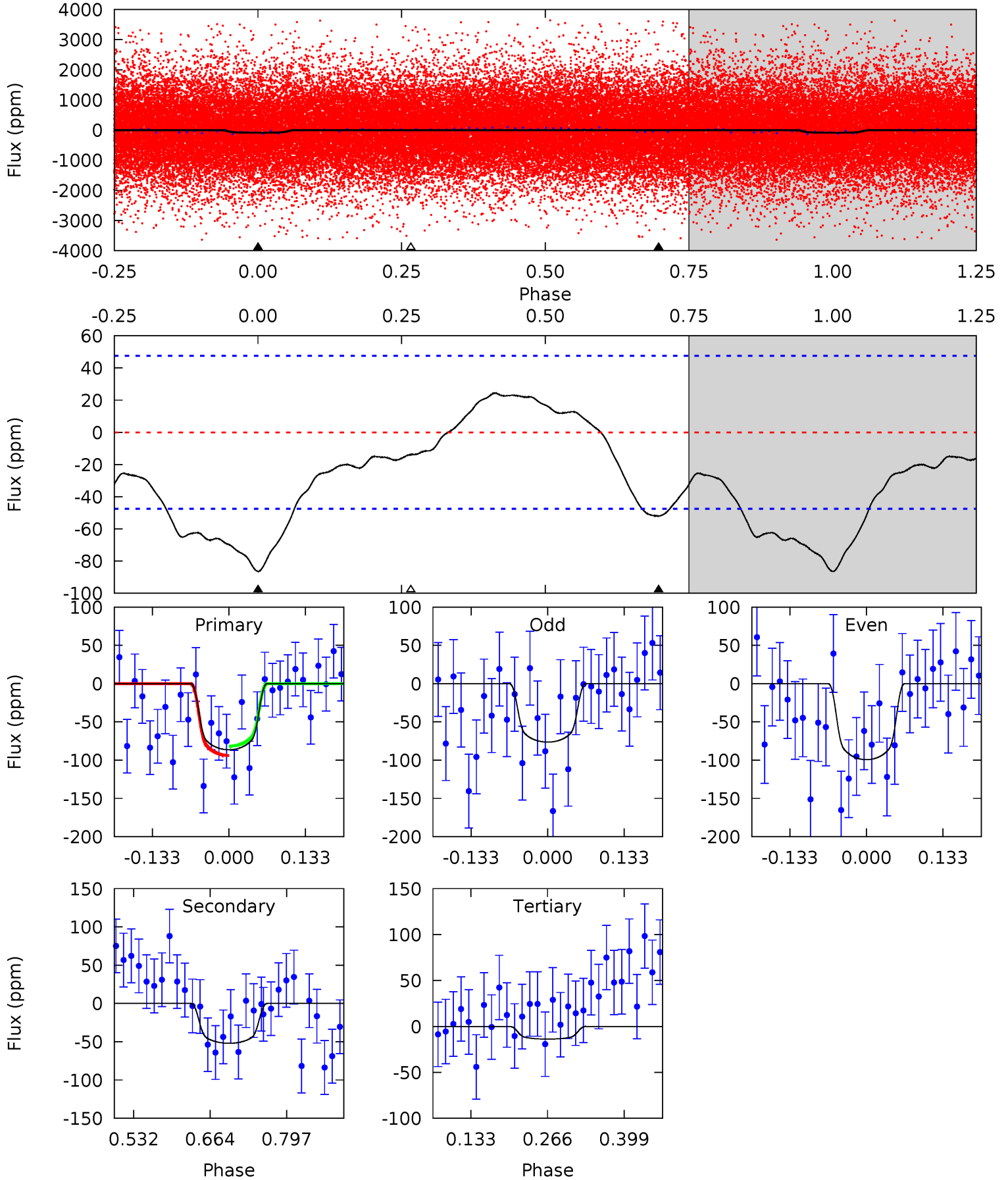
TCE 005038443-01 P= 1.368248 Days $T_0=131.717624$ (BKJD)



DV Model-Shift Uniqueness Test

005038443-01, P = 1.368403 Days, E = 131.678761 Days

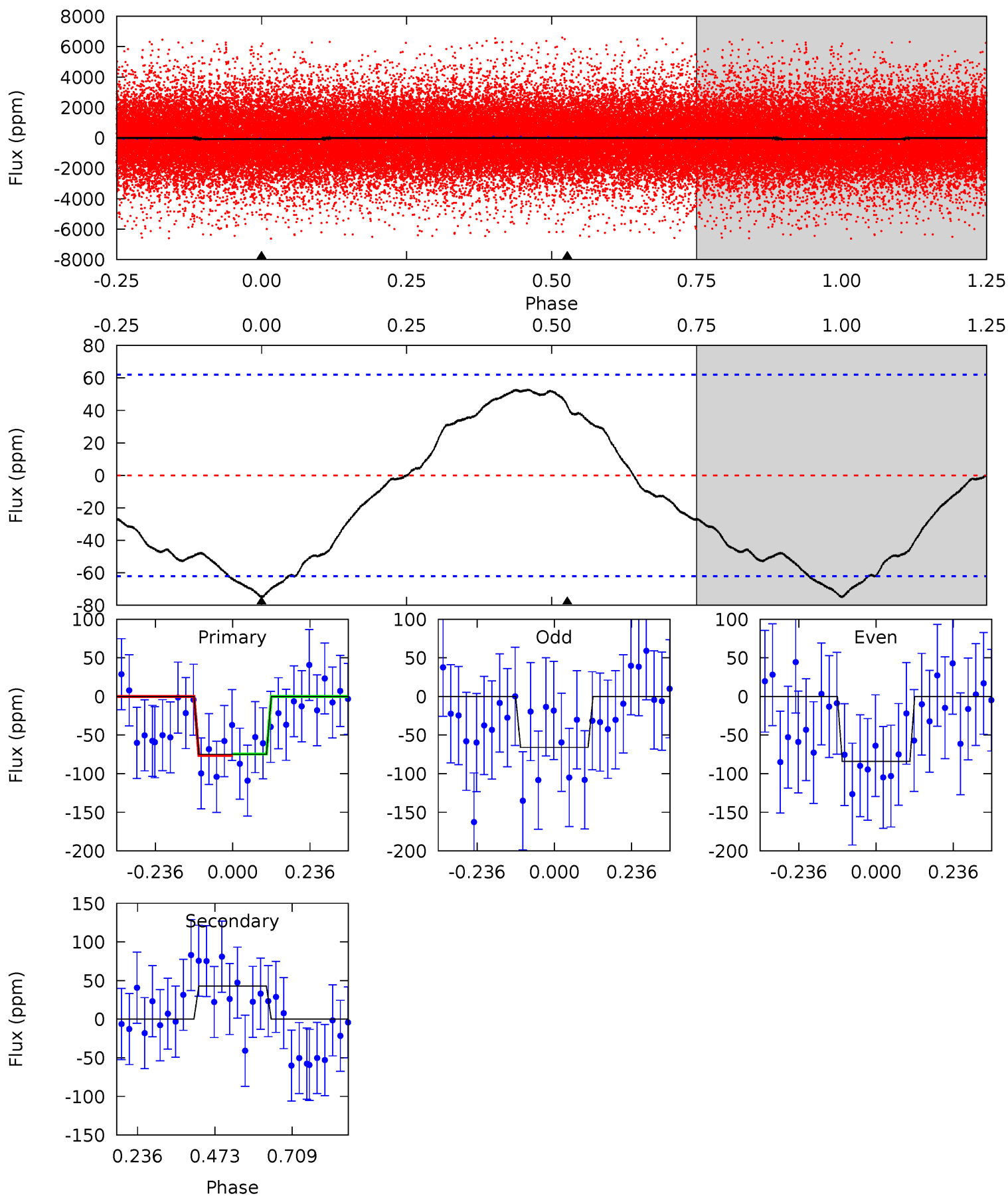
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.19	4.92	1.31	0	4.50	1.50	2.10	6.88	8.19	3.62	4.92	1.09	1.05	0.22	0.57



Alt Model-Shift Uniqueness Test

005038443-01, P = 1.368248 Days, E = 131.717624 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.29	-3.02	0	0	4.38	1.18	1.10	5.29	5.29	-3.02	-3.02	0.64	0.78	0.41	0.06



Stellar Parameters For KIC 005038443

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5556^{+182}_{-182}	$4.527^{+0.063}_{-0.147}$	$-0.200^{+0.300}_{-0.300}$	$0.835^{+0.199}_{-0.085}$	$0.856^{+0.102}_{-0.081}$	$2.071^{+0.565}_{-0.891}$
	+3%/-3%	+1%/-3%	+150%/-150%	+24%/-10%	+12%/-9%	+27%/-43%
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 005038443-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-52 ± 11	$1.23^{+0.34}_{-0.31}$	2088^{+112}_{-98}	4267^{+578}_{-373}	$9.802^{+7.874}_{-4.046}$
Alt.	43 ± 14	$0.75^{+0.32}_{-0.28}$	2086^{+116}_{-95}	-5023^{+693}_{-1360}	$-20.823^{+11.329}_{-34.838}$

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 $A_{obs} \gg 1.0$

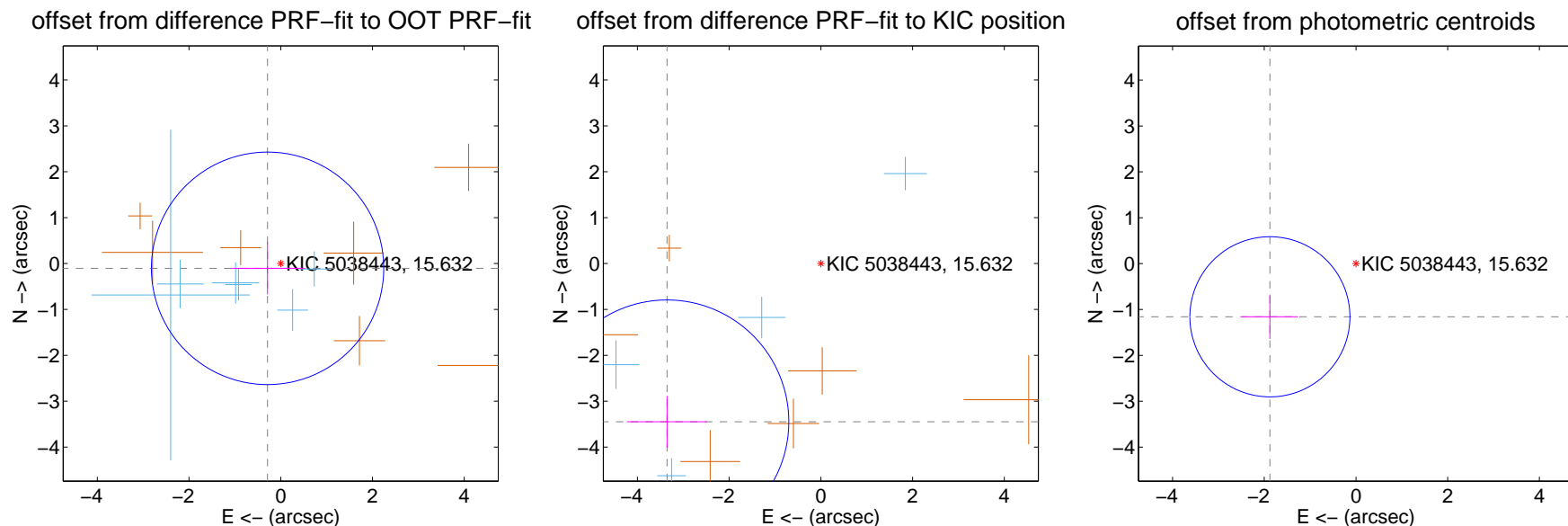
DV Centroid Data

Supplemental centroid analysis for 005038443-01. Kepler magnitude: 15.63. Transit SNR 8.41

There are 7 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 6.02 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

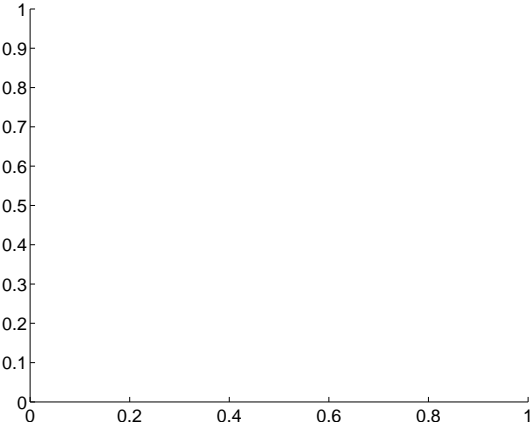
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.306 ± 0.844	0.36	0.287 ± 0.797	-0.105 ± 0.568
PRF-fit source offset from KIC position	4.810 ± 0.885	5.44	3.354 ± 0.870	-3.448 ± 0.563
photometric centroid source offset	2.21 ± 0.58	3.79	1.88 ± 0.62	-1.16 ± 0.48



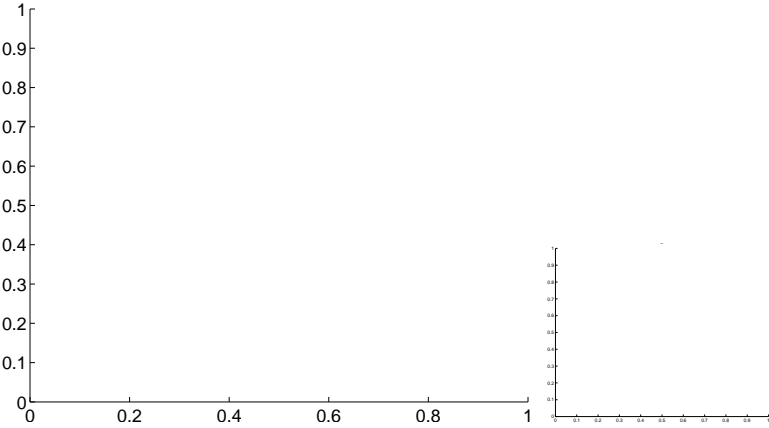
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

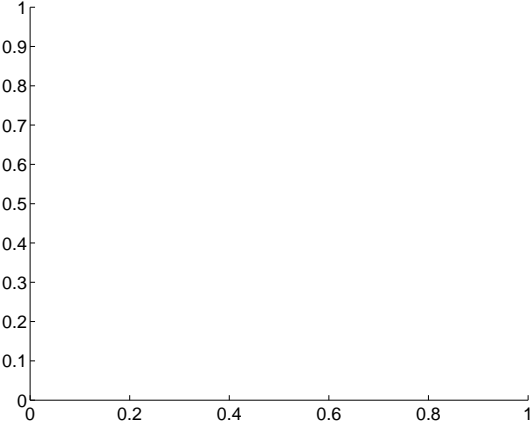
Q1 no difference image



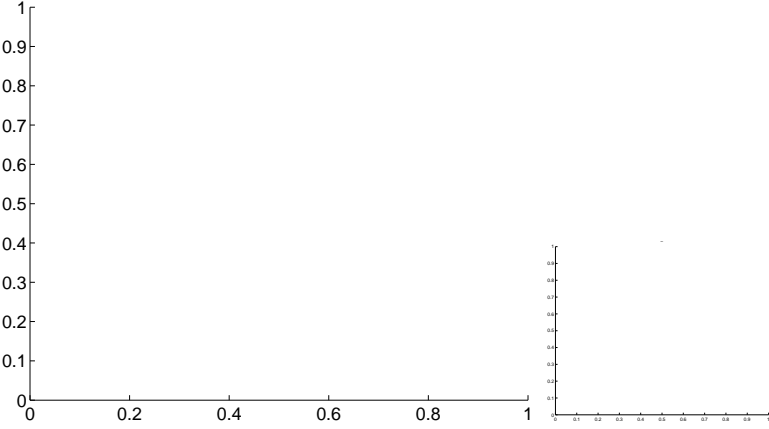
Q1 no OOT image



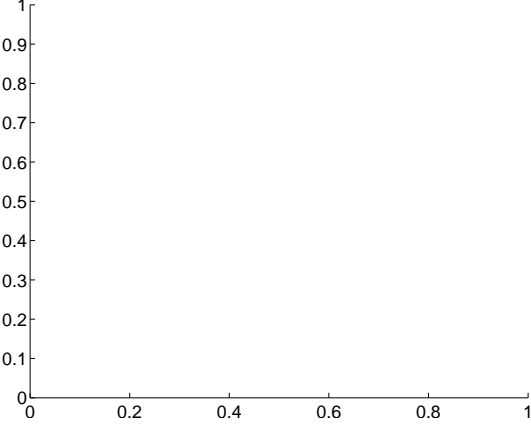
Q2 no difference image



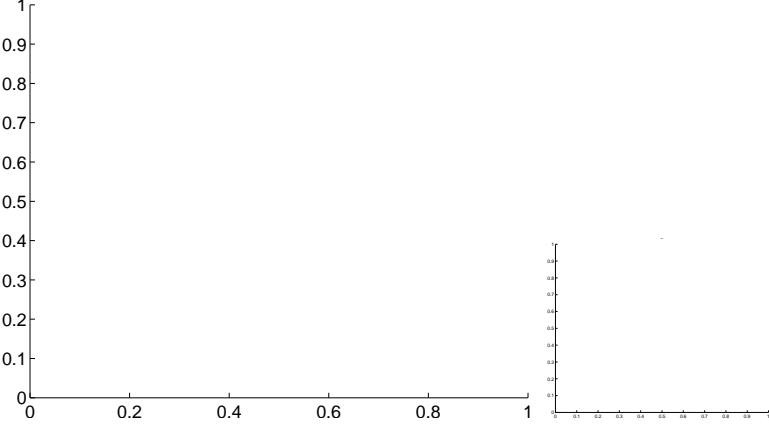
Q2 no OOT image



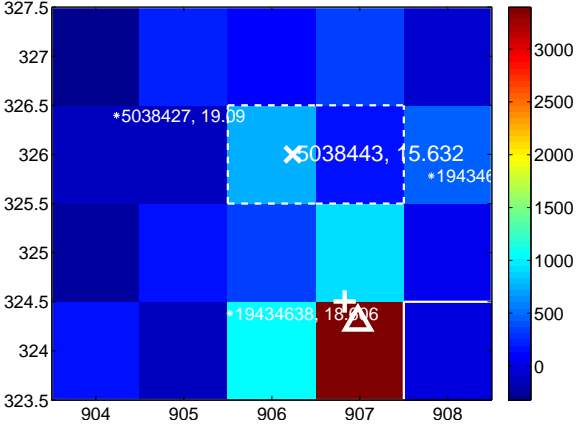
Q3 no difference image



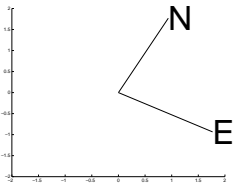
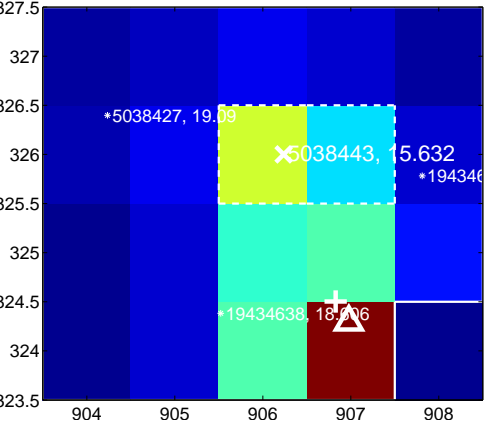
Q3 no OOT image



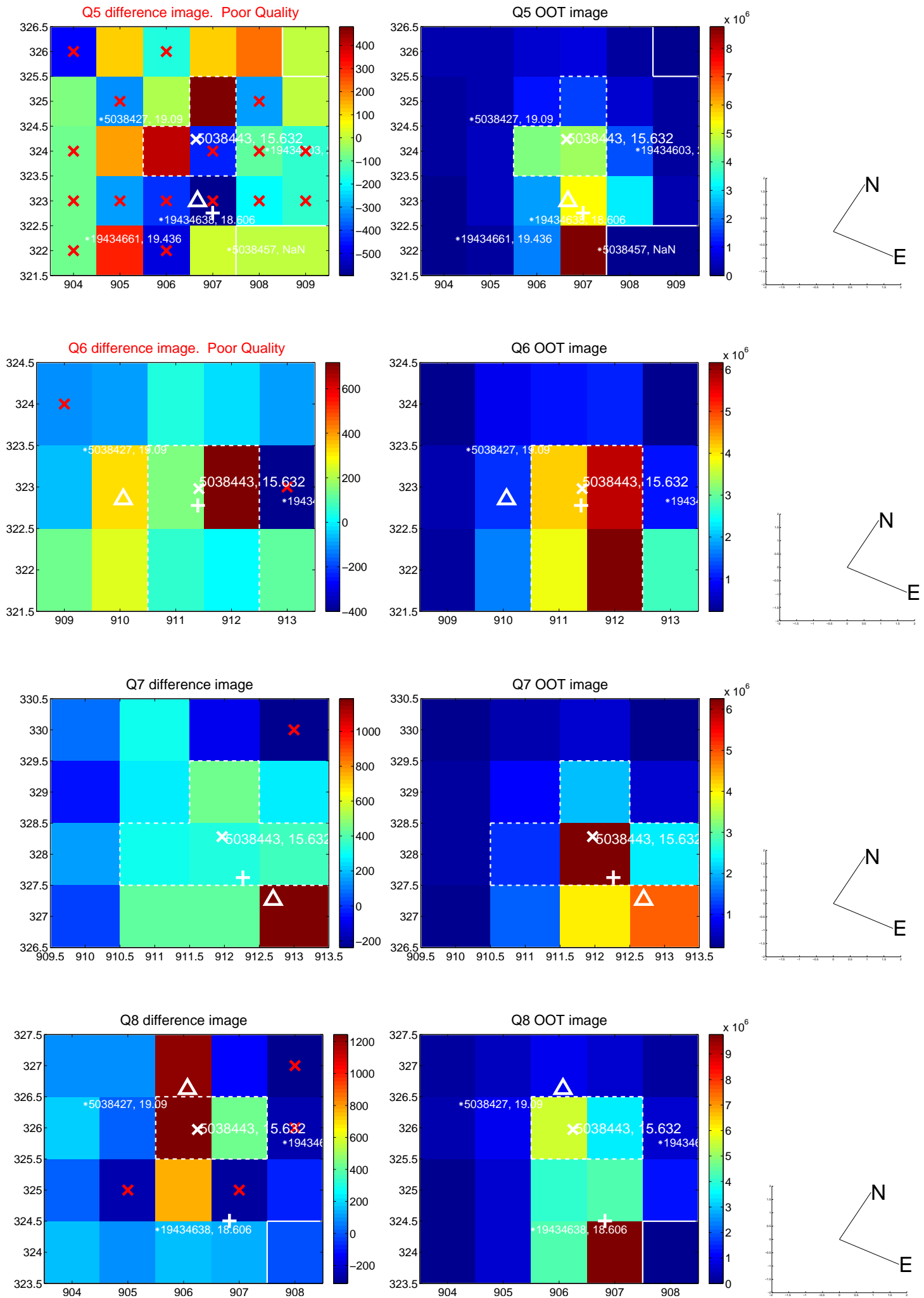
Q4 difference image



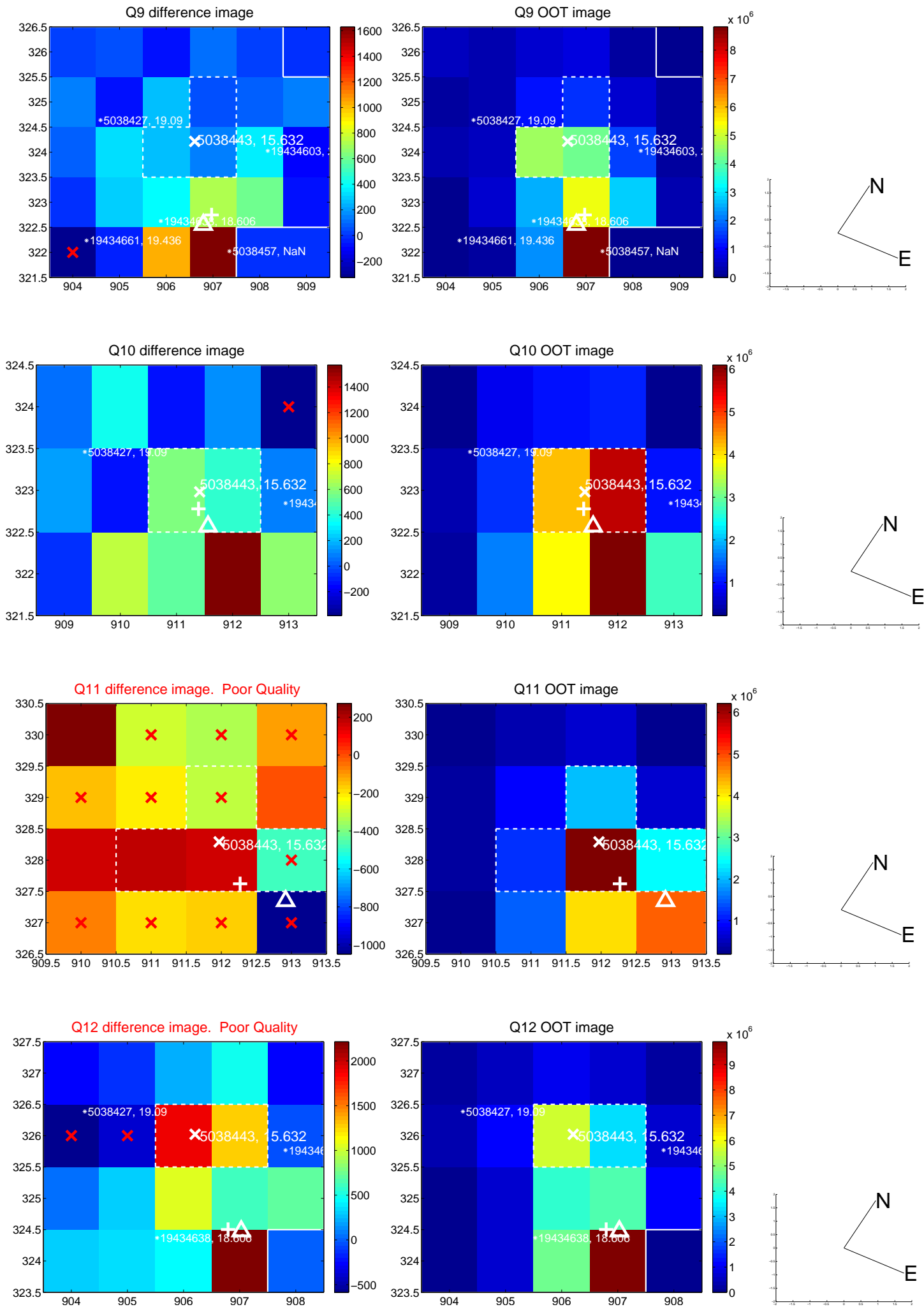
Q4 OOT image



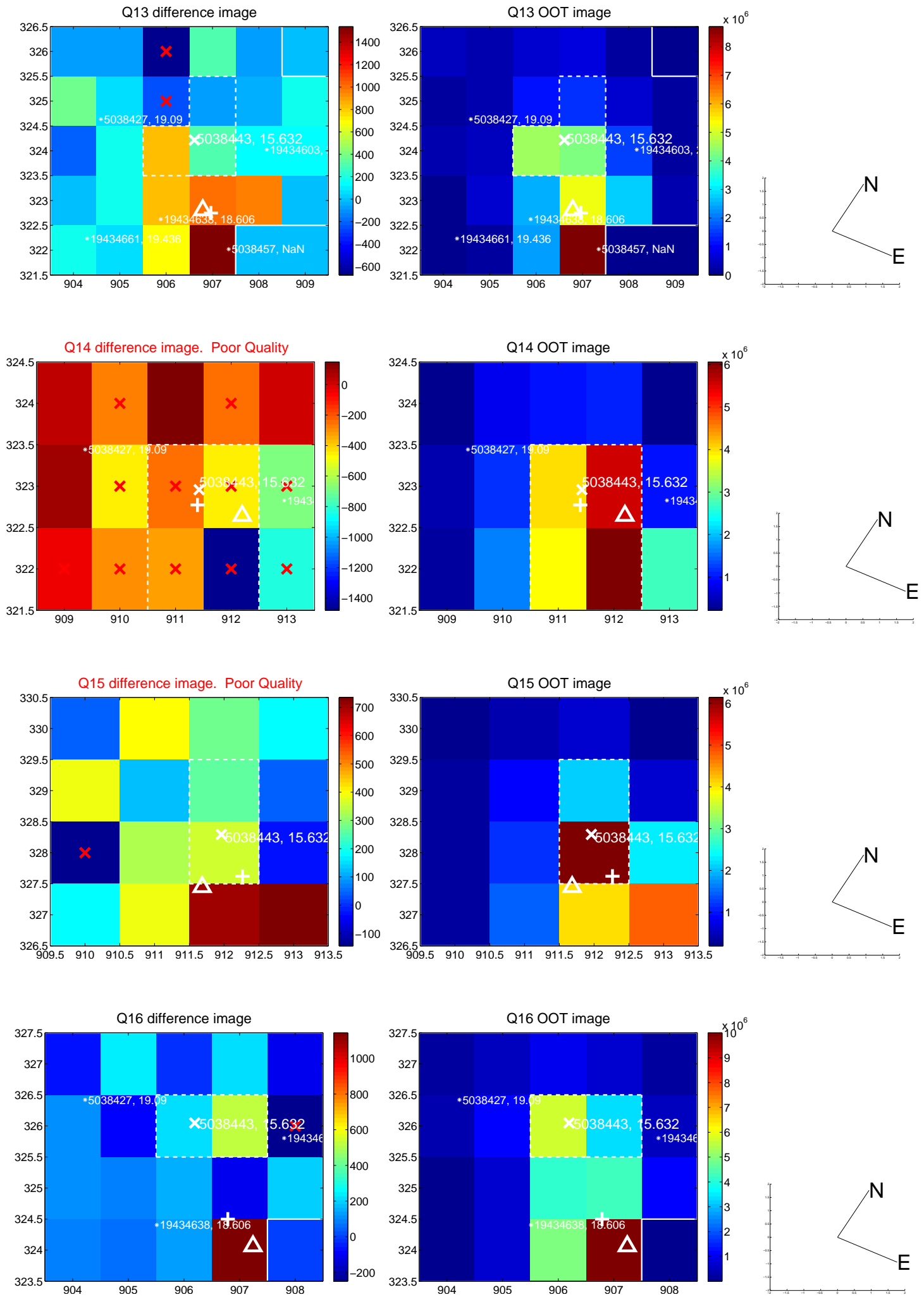
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



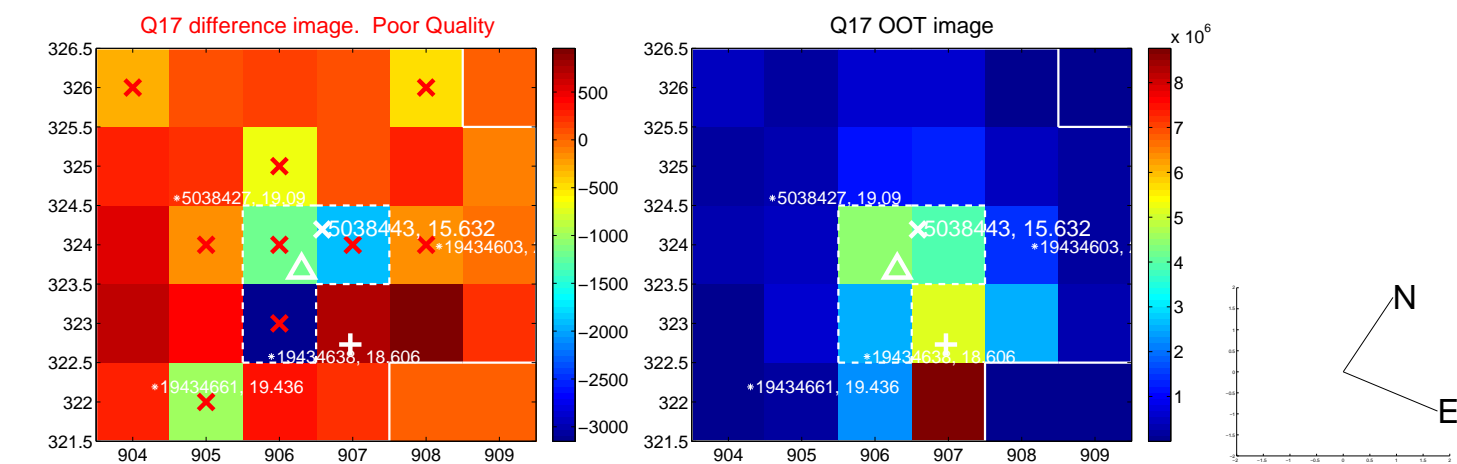
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



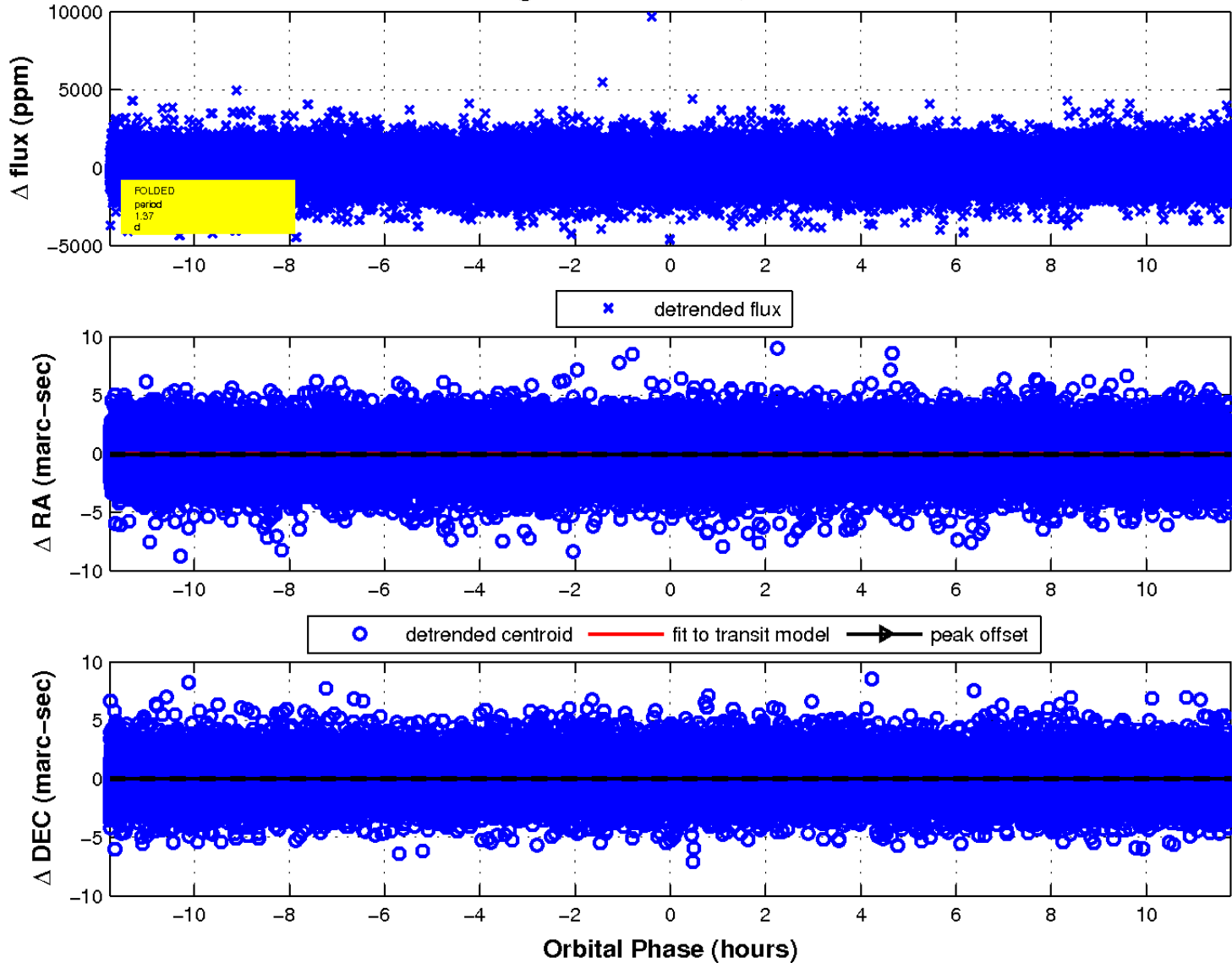
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



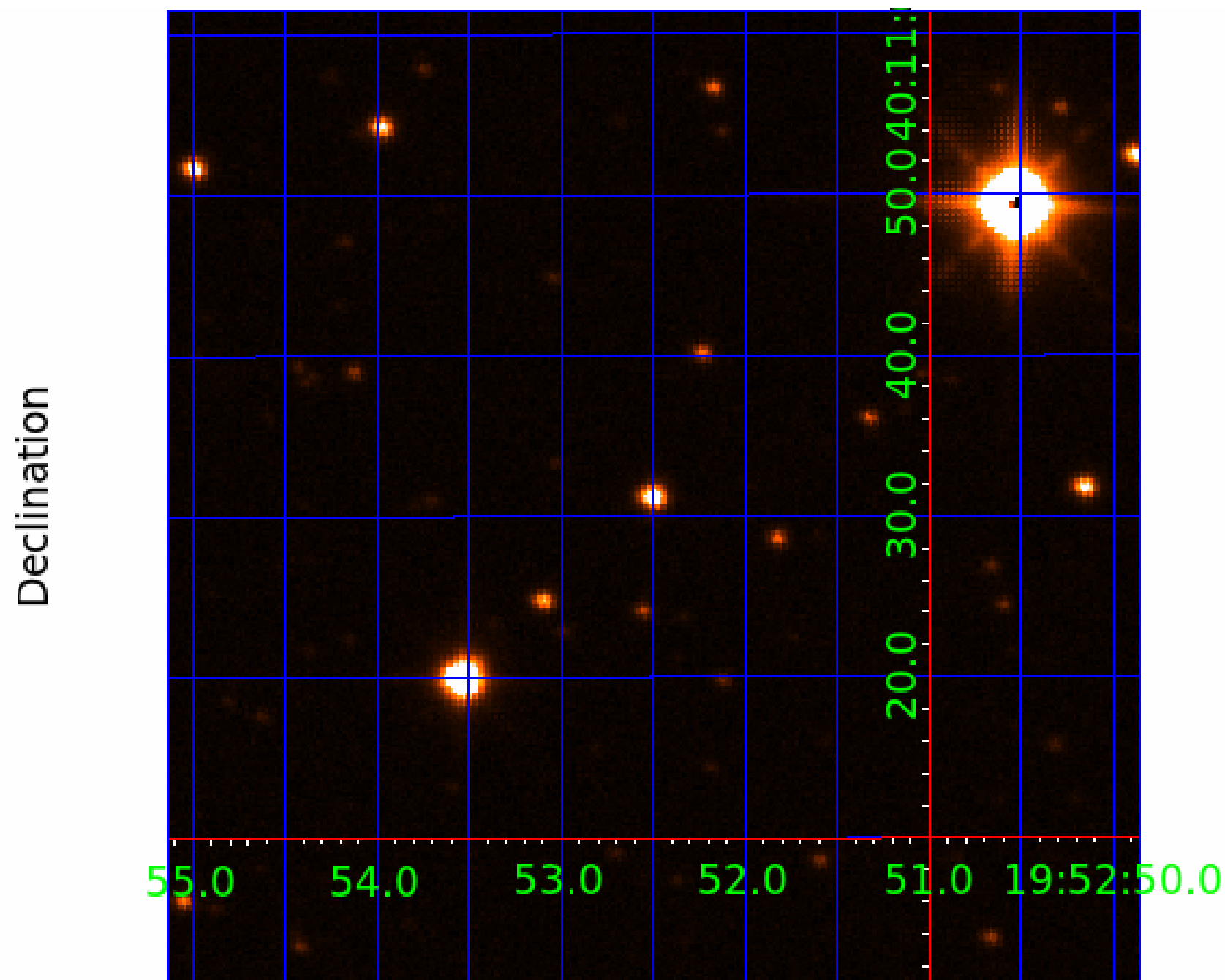
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image



KIC 005038443

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})
005038443-01	OBS	No	1.368403	131.678761	131.3	3.923	9.1	8.4	0.83	5556	1.20	1134.44
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005038443-03	OBS	No	334.940561	282.103070	2126.2	3.340	7.4	7.2	0.83	5556	4.18	0.74
005038443-04	OBS	No	41.901174	145.561608	1234.5	1.523	7.4	7.7	0.83	5556	3.07	11.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005038443-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
005038443-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005038443-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005038443-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

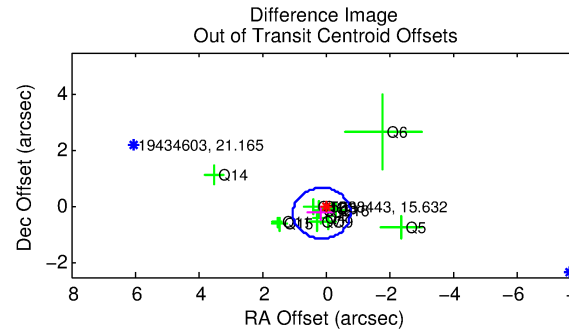
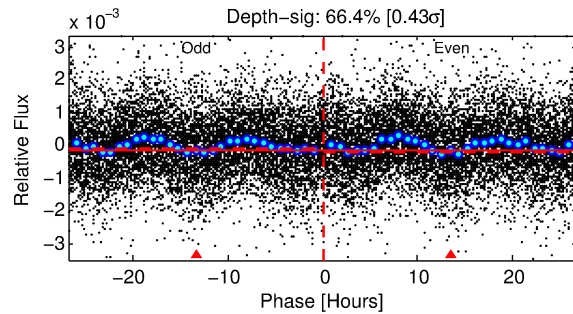
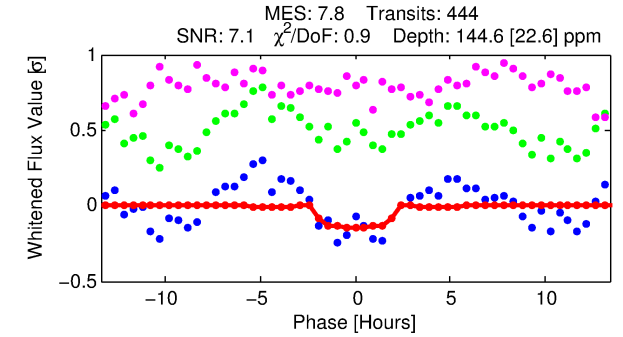
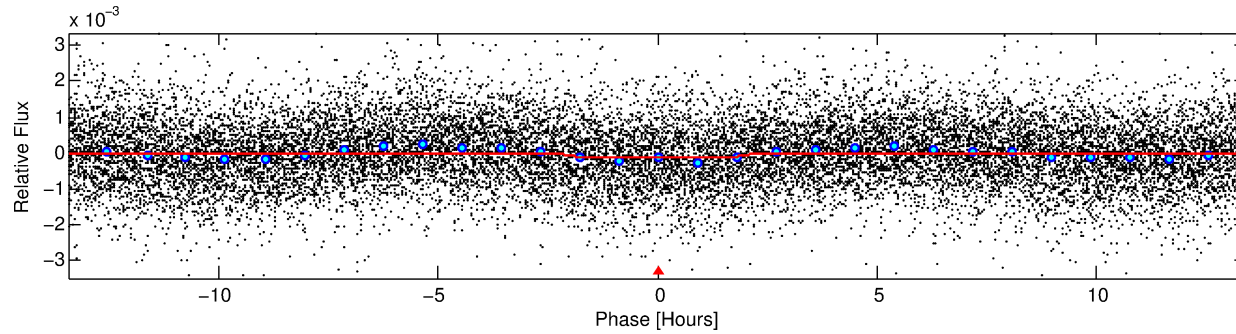
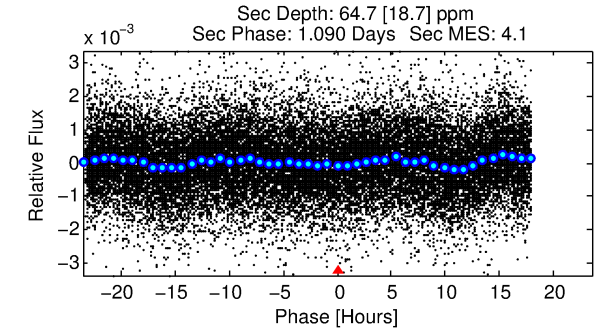
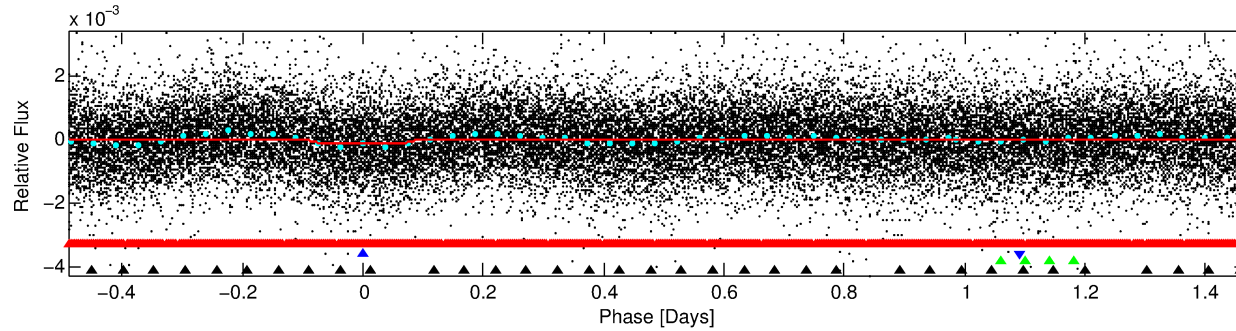
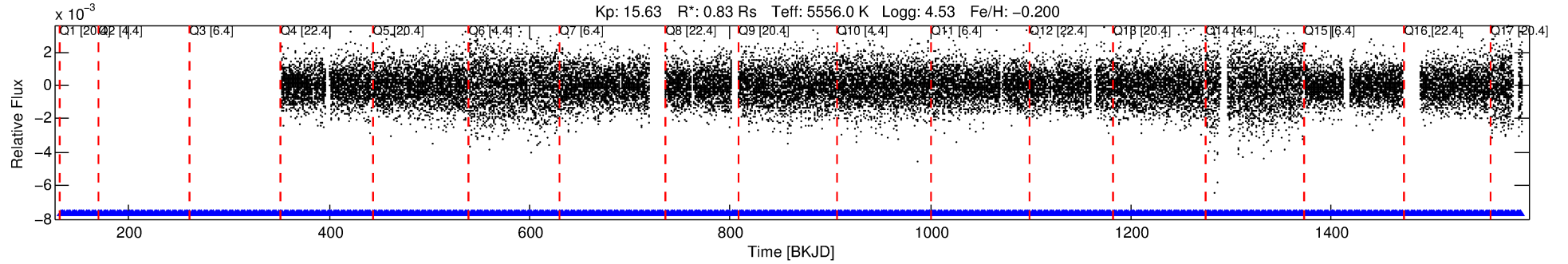
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005038443-02

No Significant Match Found

DV One-Page Summary

KIC: 5038443 Candidate: 2 of 4 Period: 1.958 d



DV Fit Results:

Period = 1.95848 [0.00003] d
Epoch = 132.1991 [0.0073] BKJD
Rp/R* = 0.0132 [0.0074]
a/R* = 1.81 [3.28]
b = 0.90 [0.56]
Seff = 703.36 [214.88]
Teq = 1313 [100] K
Rp = 1.20 [0.73] Re
a = 0.0291 [0.0057] AU
Ag = 20.98 [24.91] [0.80σ]
Teffp = 4345 [1262] K [2.39σ]

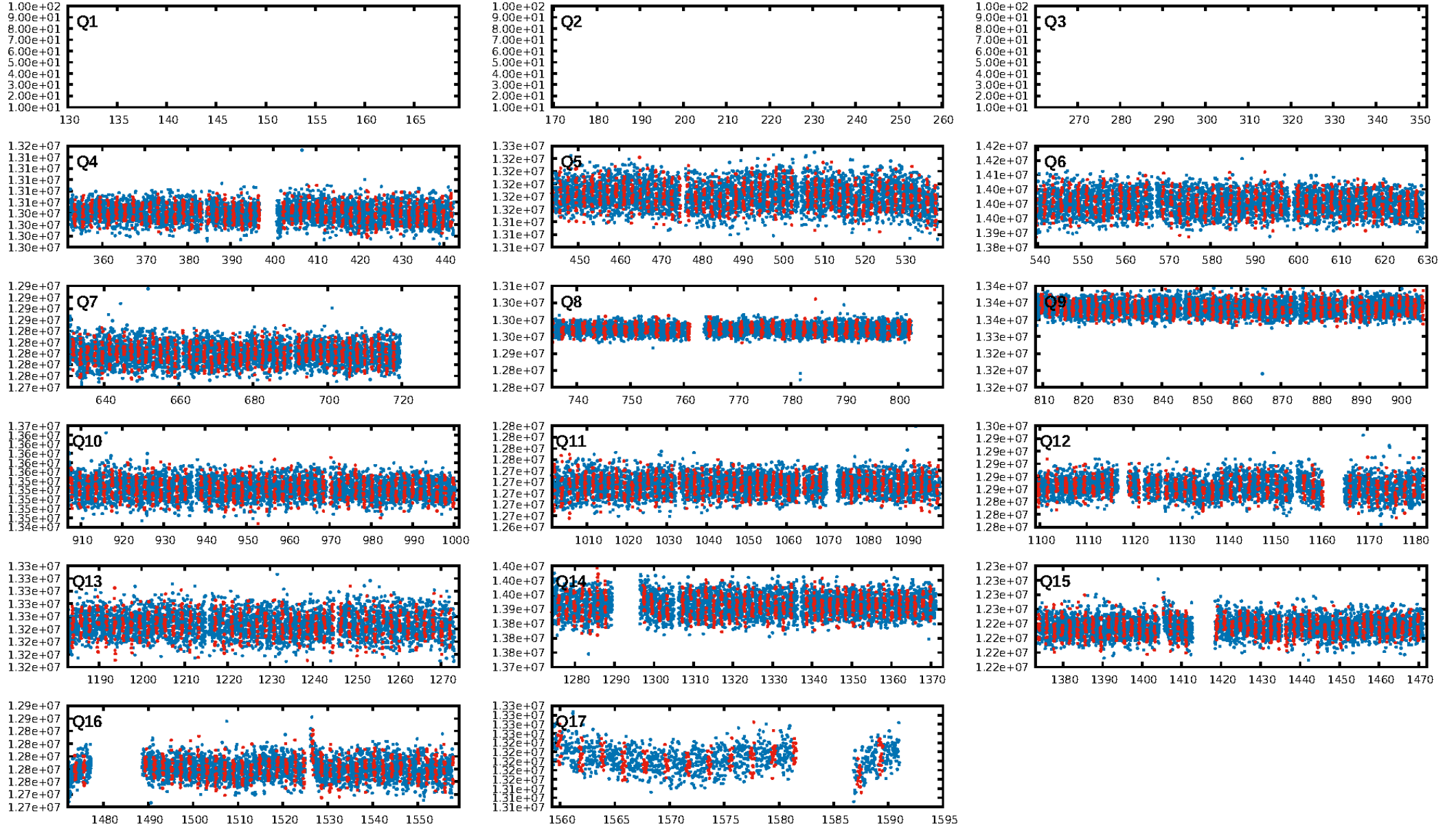
DV Diagnostic Results:

ShortPeriod-sig: 98.3% [2.38σ]
LongPeriod-sig: 100.0% [202.34σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.27e-11
RollingBand-fgt: 1.00 [433/433]
GhostDiagnostic-chr: 0.4697
Centroid-sig: 1.0%
Centroid-so: 2.828 arcsec [5.00σ]
OotOffset-rm: 0.263 arcsec [0.88σ]
KicOffset-rm: 5.361 arcsec [7.34σ]
OotOffset-st: 3/3/4/3 [13]
KicOffset-st: 3/3/4/3 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 1.00 [14/14]

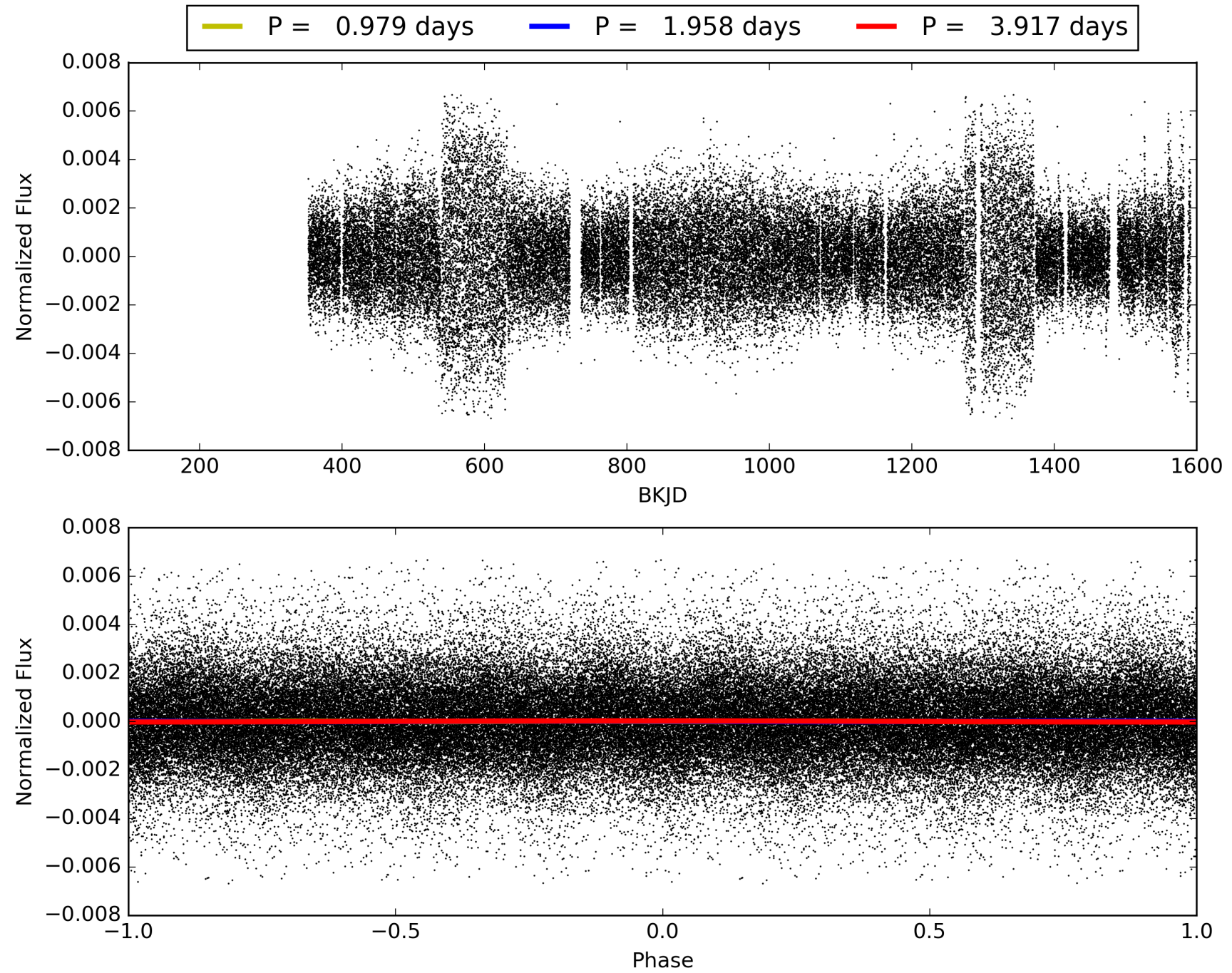
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:50:32 Z

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

TCE 005038443-02, PDC Light Curves

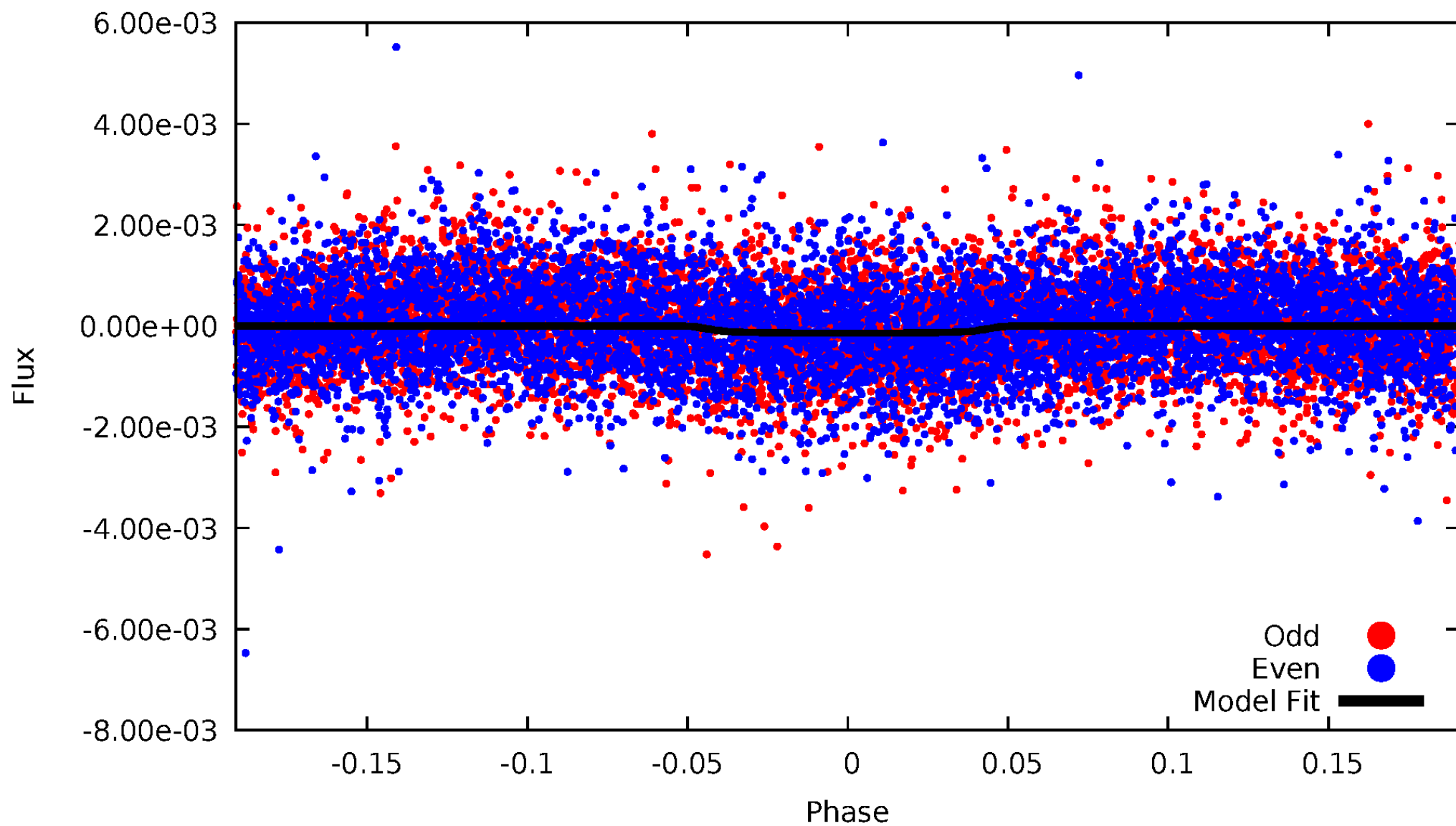


TCE 005038443-02



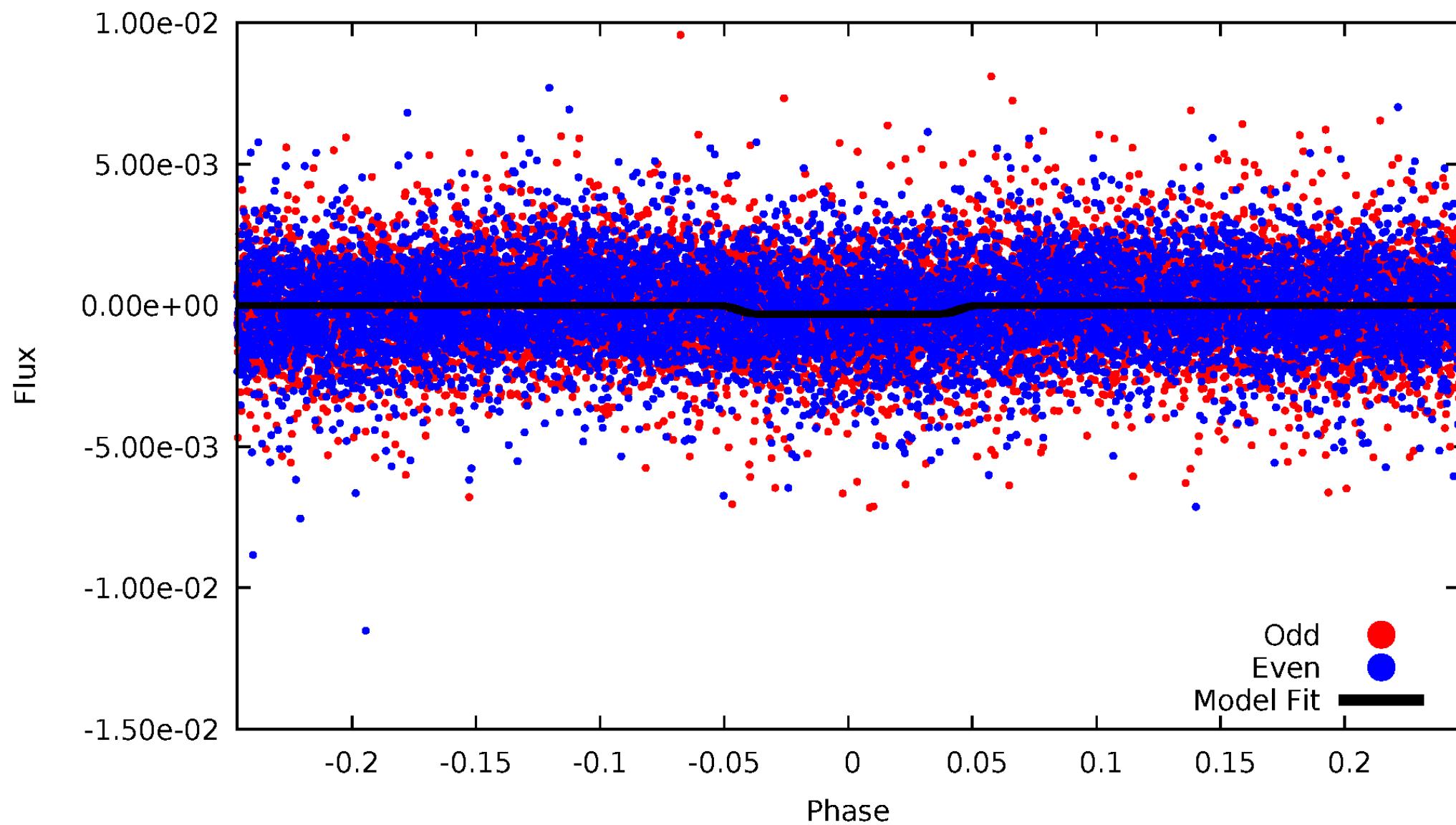
DV Odd/Even

TCE 005038443-02



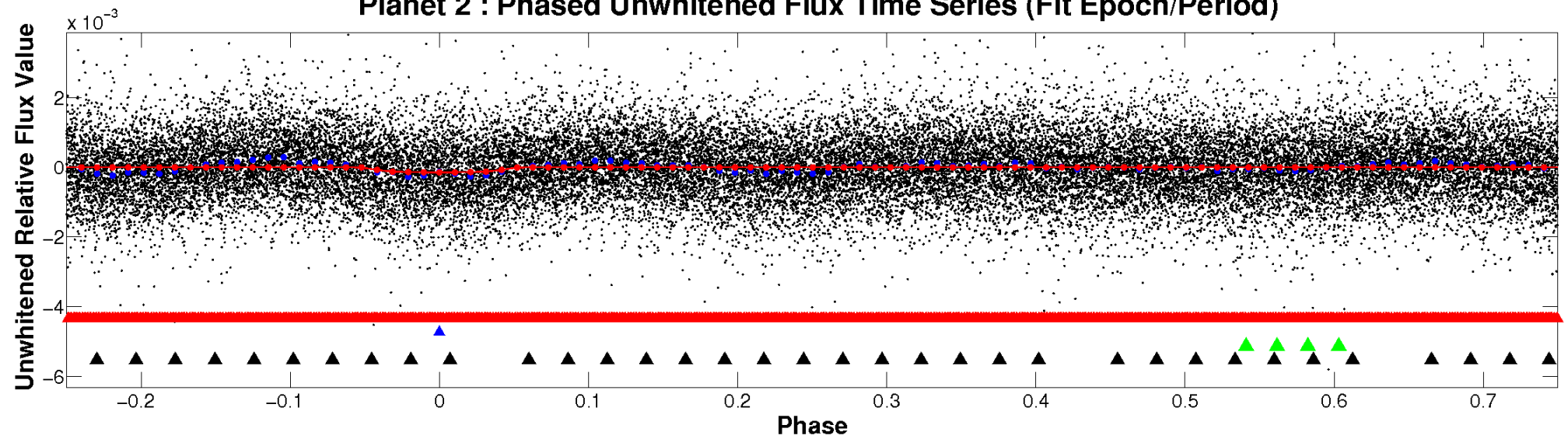
ALT Odd/Even

TCE 005038443-02

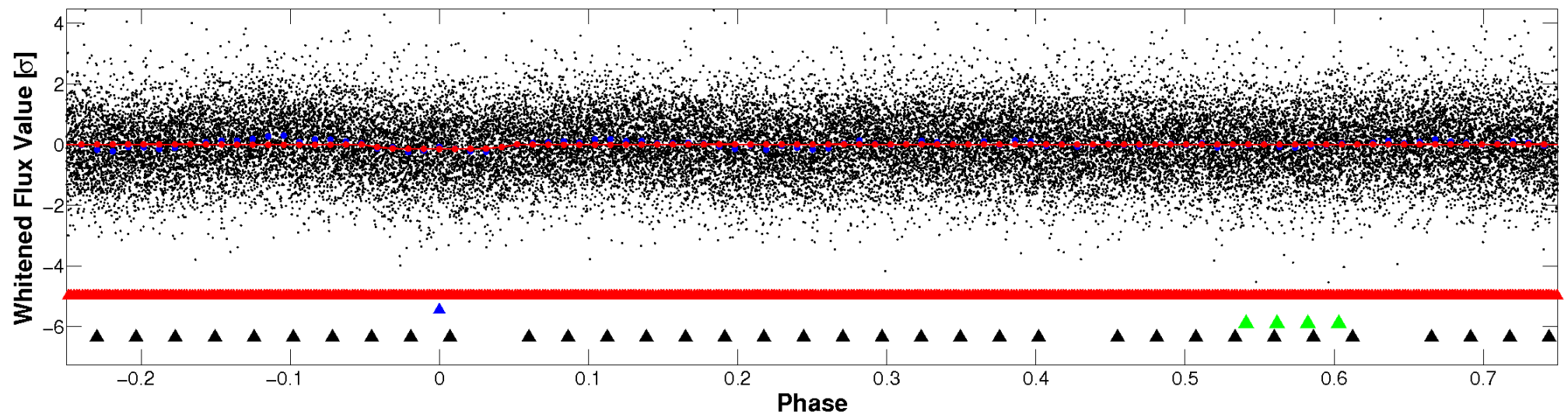


Non-Whitened Vs. Whitened Light Curve

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

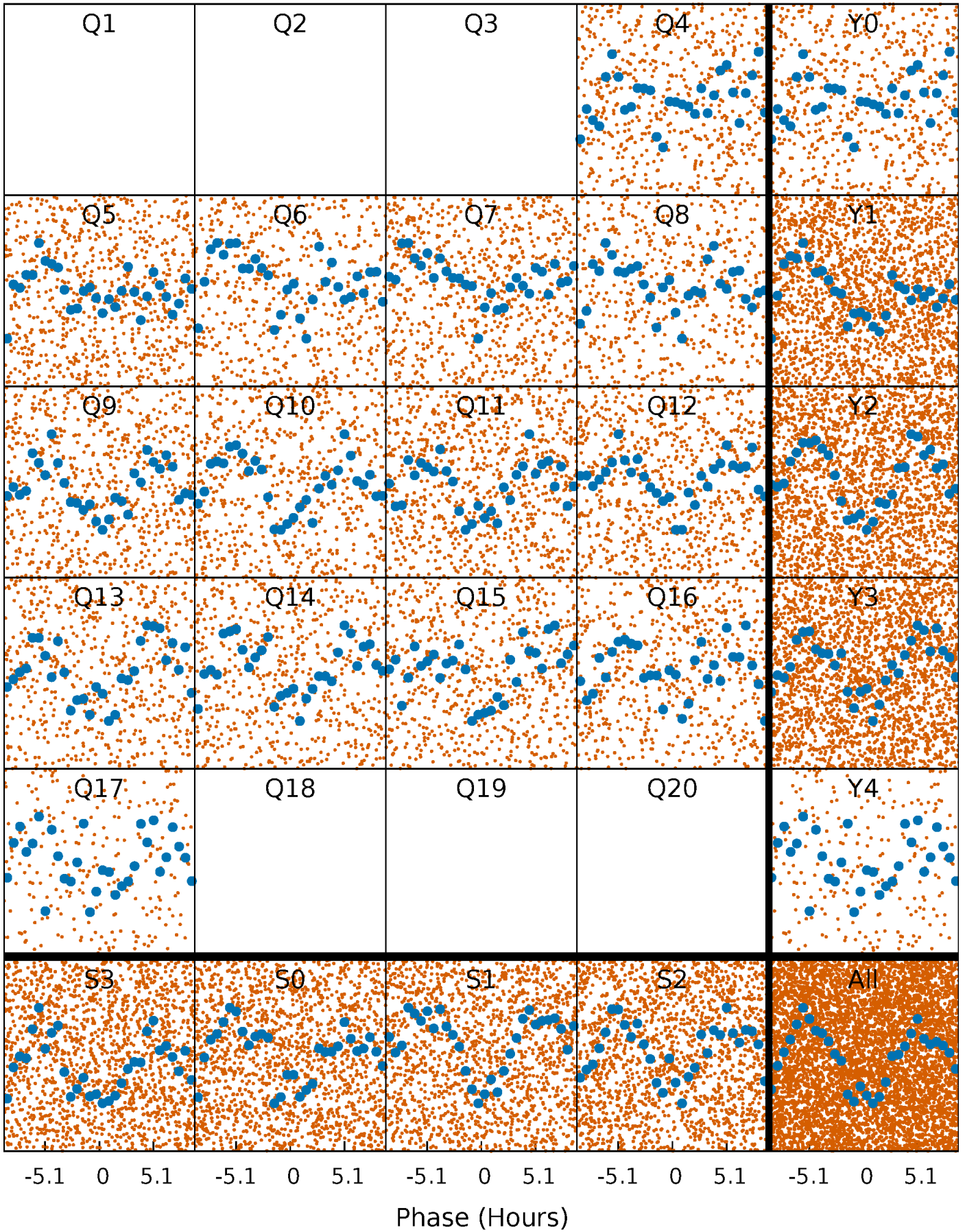


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



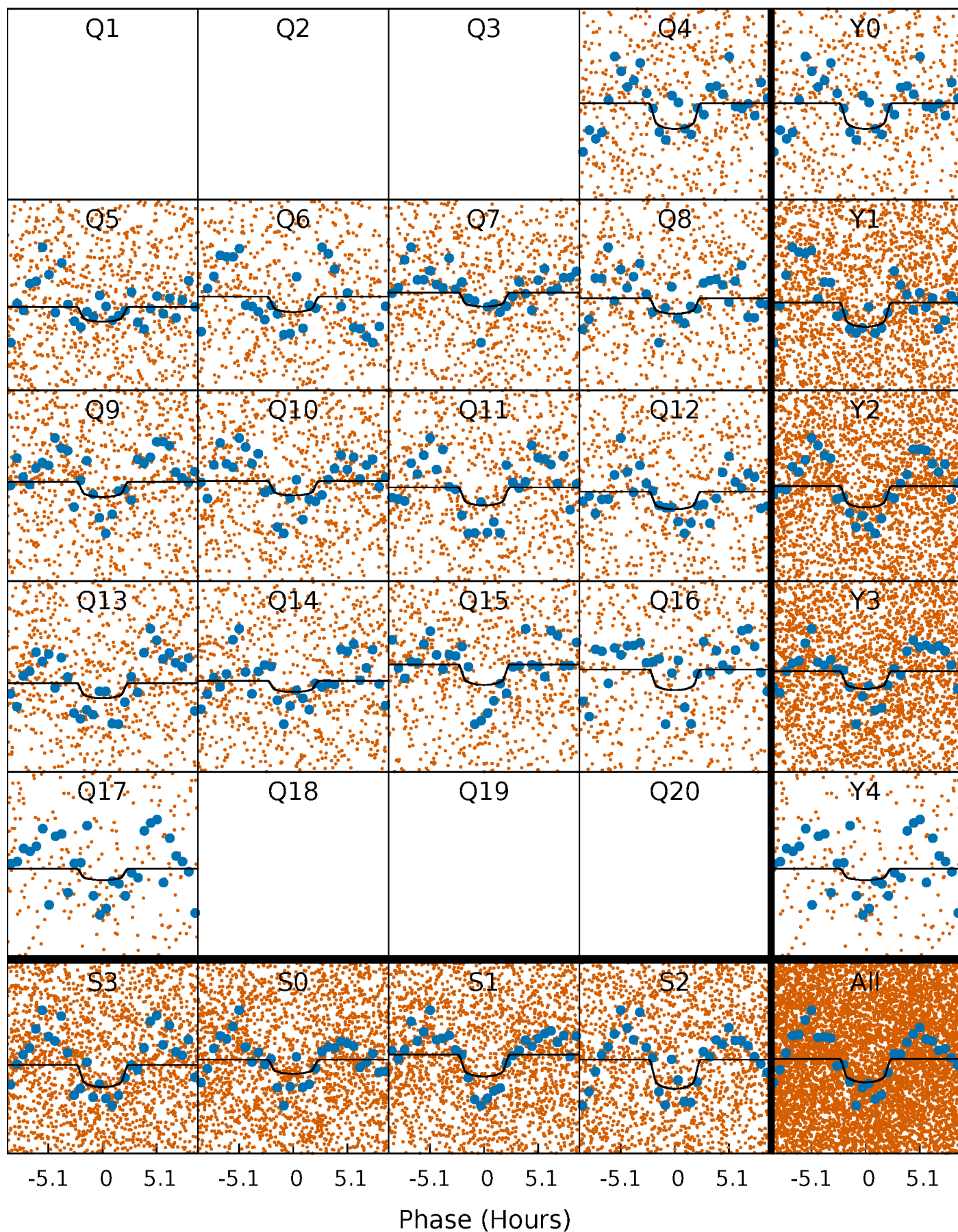
PDC Quarter-Phased Transit Curves

TCE 005038443-02 P= 1.958479 Days $T_0=132.199130$ (BKJD)



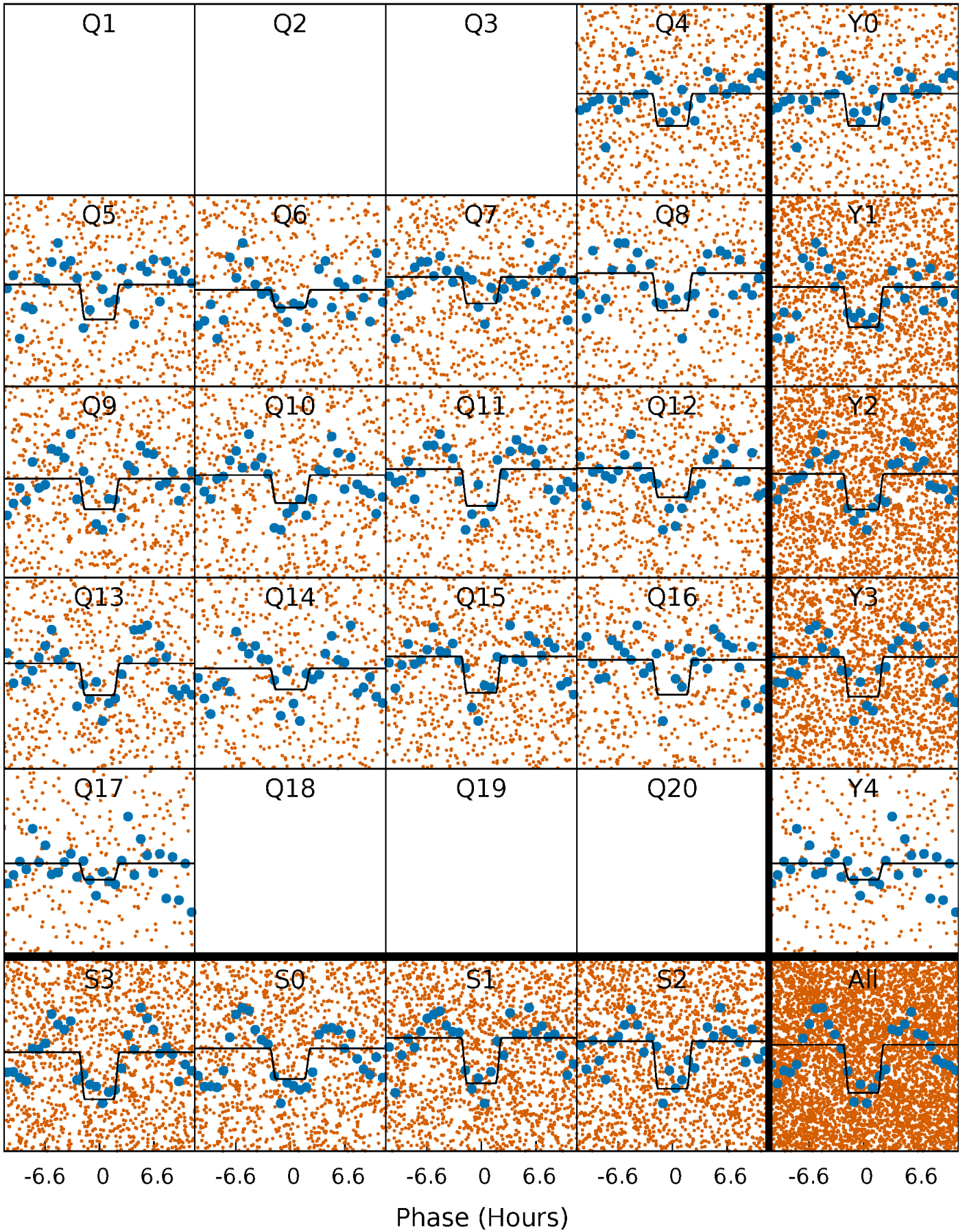
DV Quarter-Phased Transit Curves

TCE 005038443-02 P= 1.958479 Days $T_0=132.199130$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

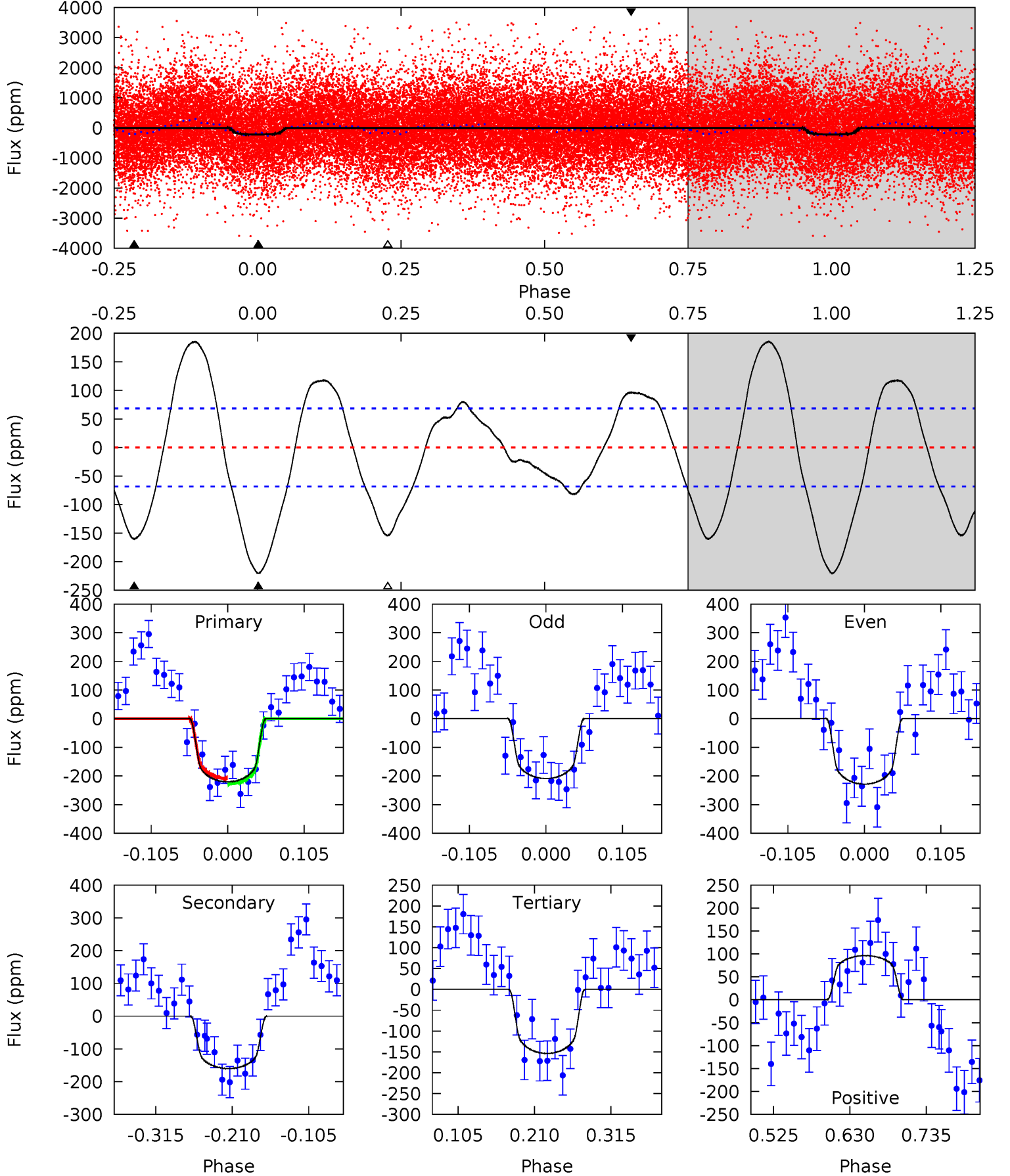
TCE 005038443-02 P= 1.958553 Days $T_0=132.168612$ (BKJD)



DV Model-Shift Uniqueness Test

005038443-02, P = 1.958479 Days, E = 132.199130 Days

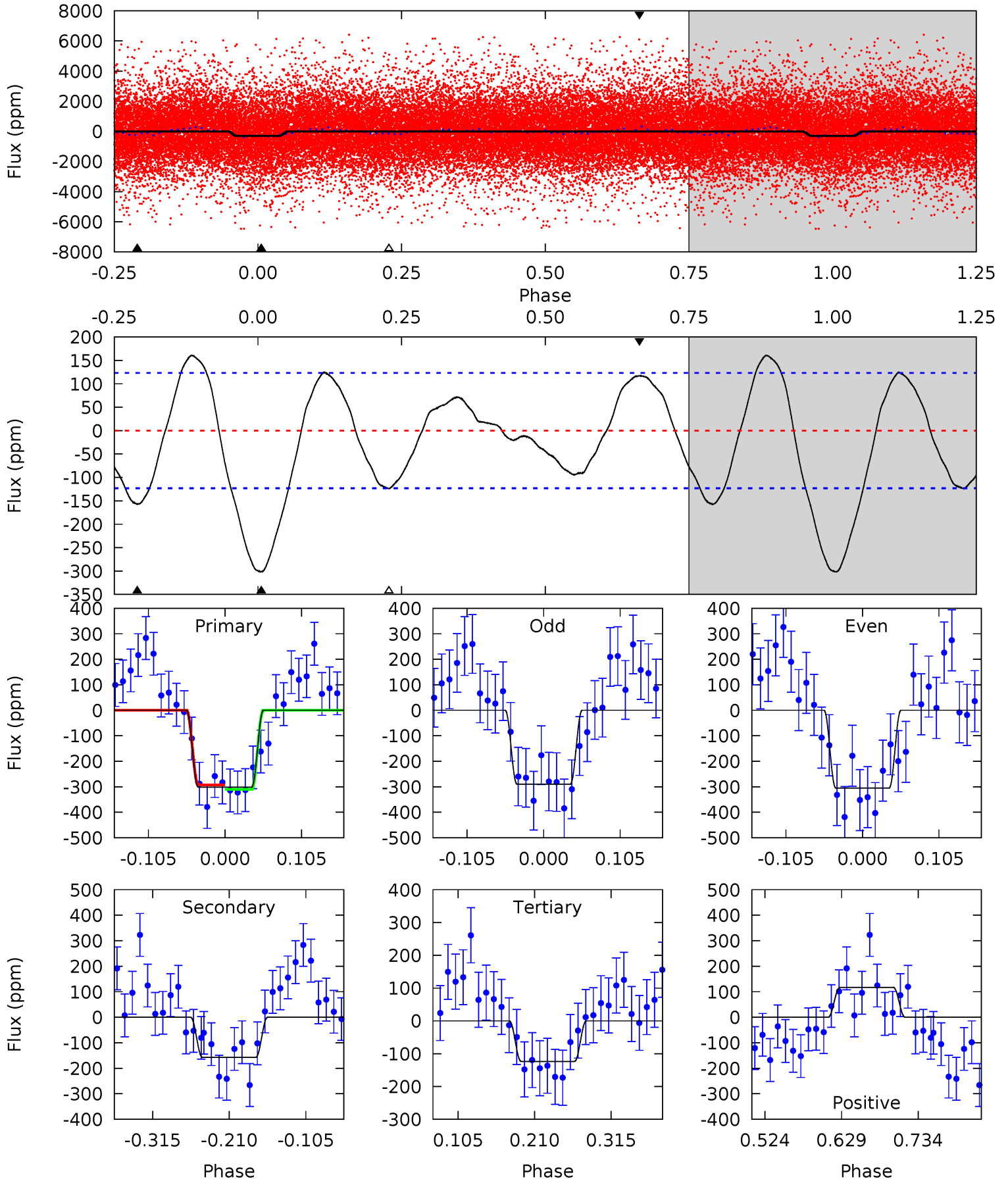
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	10.7	10.3	6.42	4.55	1.62	4.82	4.45	8.29	0.43	4.27	0.66	1.09	0.46	0.63



Alt Model-Shift Uniqueness Test

005038443-02, P = 1.958553 Days, E = 132.168612 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	5.81	4.57	4.33	4.55	1.62	2.61	6.58	6.81	1.24	1.47	0.29	0.96	0.35	0.33



Stellar Parameters For KIC 005038443

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5556^{+182}_{-182}	$4.527^{+0.063}_{-0.147}$	$-0.200^{+0.300}_{-0.300}$	$0.835^{+0.199}_{-0.085}$	$0.856^{+0.102}_{-0.081}$	$2.071^{+0.565}_{-0.891}$
	+3%/-3%	+1%/-3%	+150%/-150%	+24%/-10%	+12%/-9%	+27%/-43%
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 005038443-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-160 ± 15	$1.26^{+0.70}_{-0.66}$	1853^{+108}_{-84}	5362^{+2577}_{-888}	45^{+158}_{-26}
Alt.	-157 ± 27	$1.63^{+0.75}_{-0.65}$	1858^{+119}_{-88}	4807^{+1195}_{-646}	27^{+47}_{-15}

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

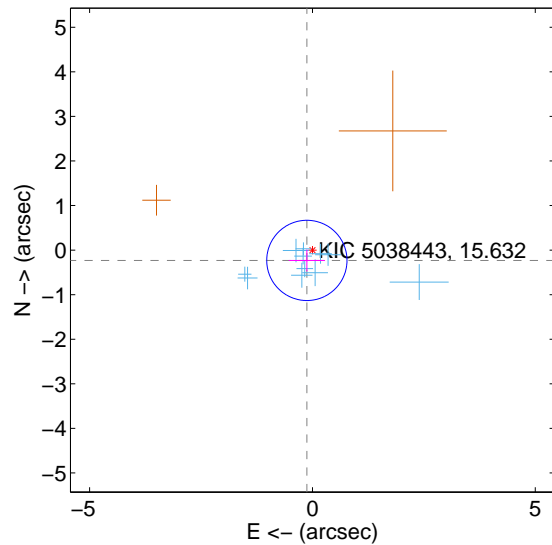
Supplemental centroid analysis for 005038443-02. Kepler magnitude: 15.63. Transit SNR 7.12

There are 11 quarters with good PRF difference image offsets

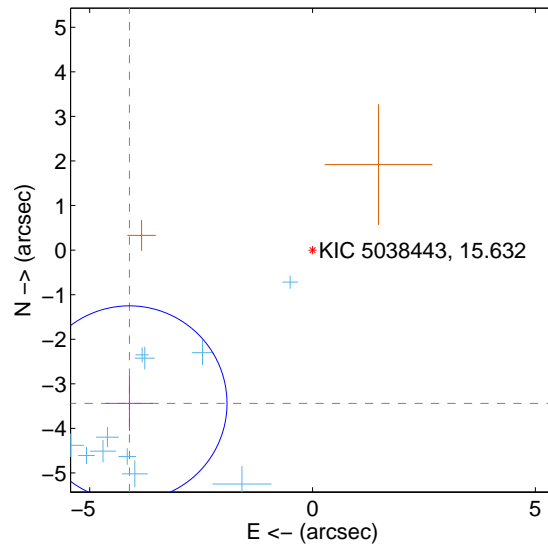
The OOT PRF centroid is offset from the target star catalog position by about 6.71 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.263 ± 0.300	0.88	0.125 ± 0.407	-0.231 ± 0.245
PRF-fit source offset from KIC position	5.361 ± 0.730	7.34	4.110 ± 0.528	-3.442 ± 0.615
photometric centroid source offset	2.83 ± 0.57	5.00	2.25 ± 0.61	-1.71 ± 0.48

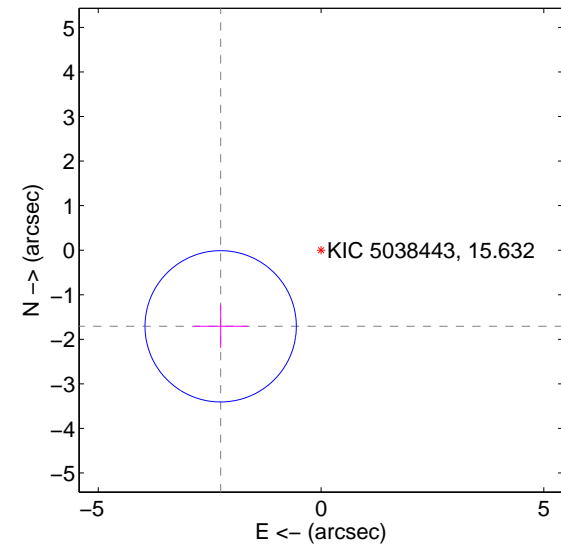
offset from difference PRF-fit to OOT PRF-fit



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.

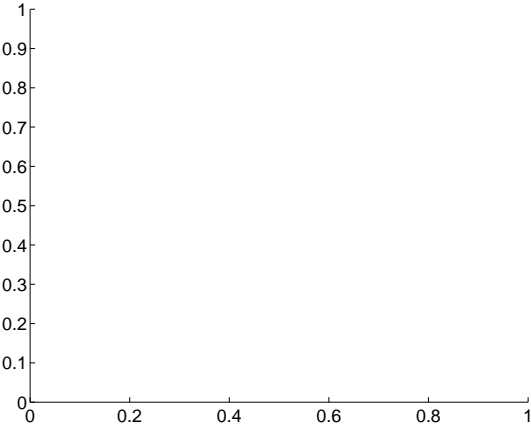
Q1 no difference image



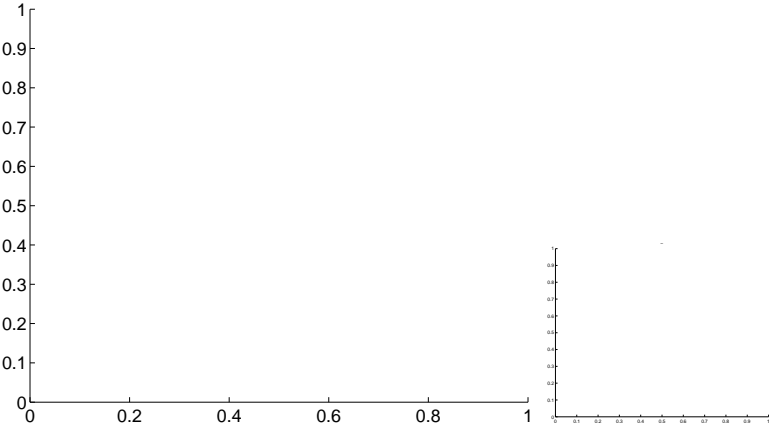
Q1 no OOT image



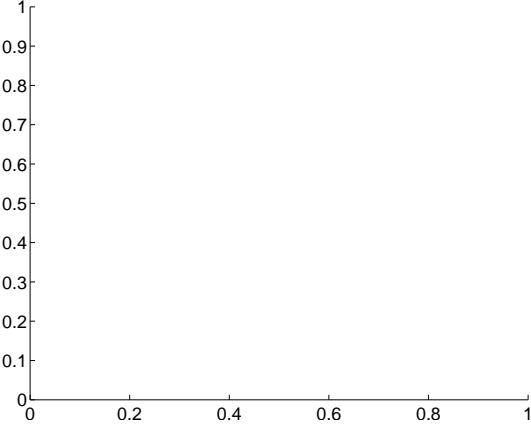
Q2 no difference image



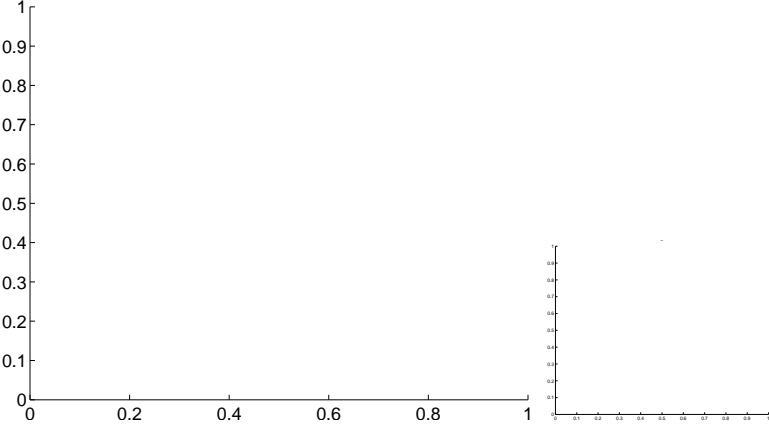
Q2 no OOT image



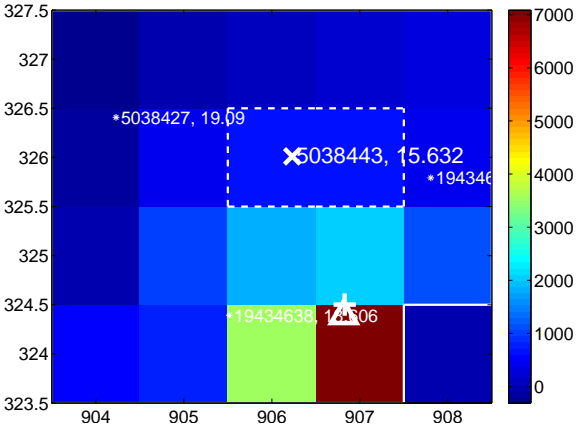
Q3 no difference image



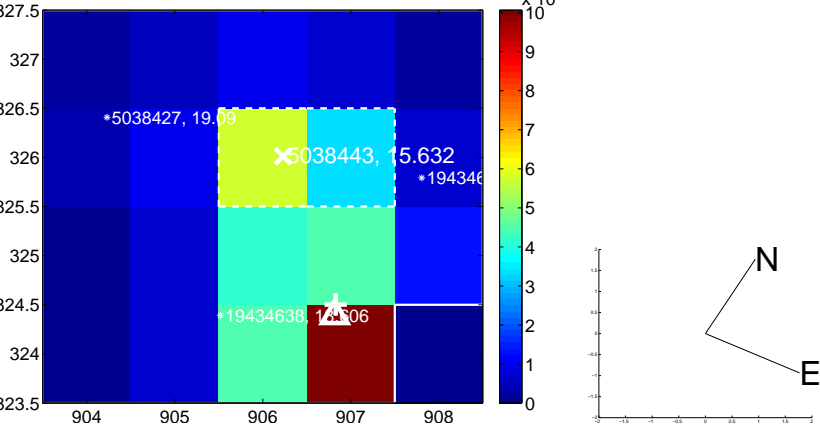
Q3 no OOT image



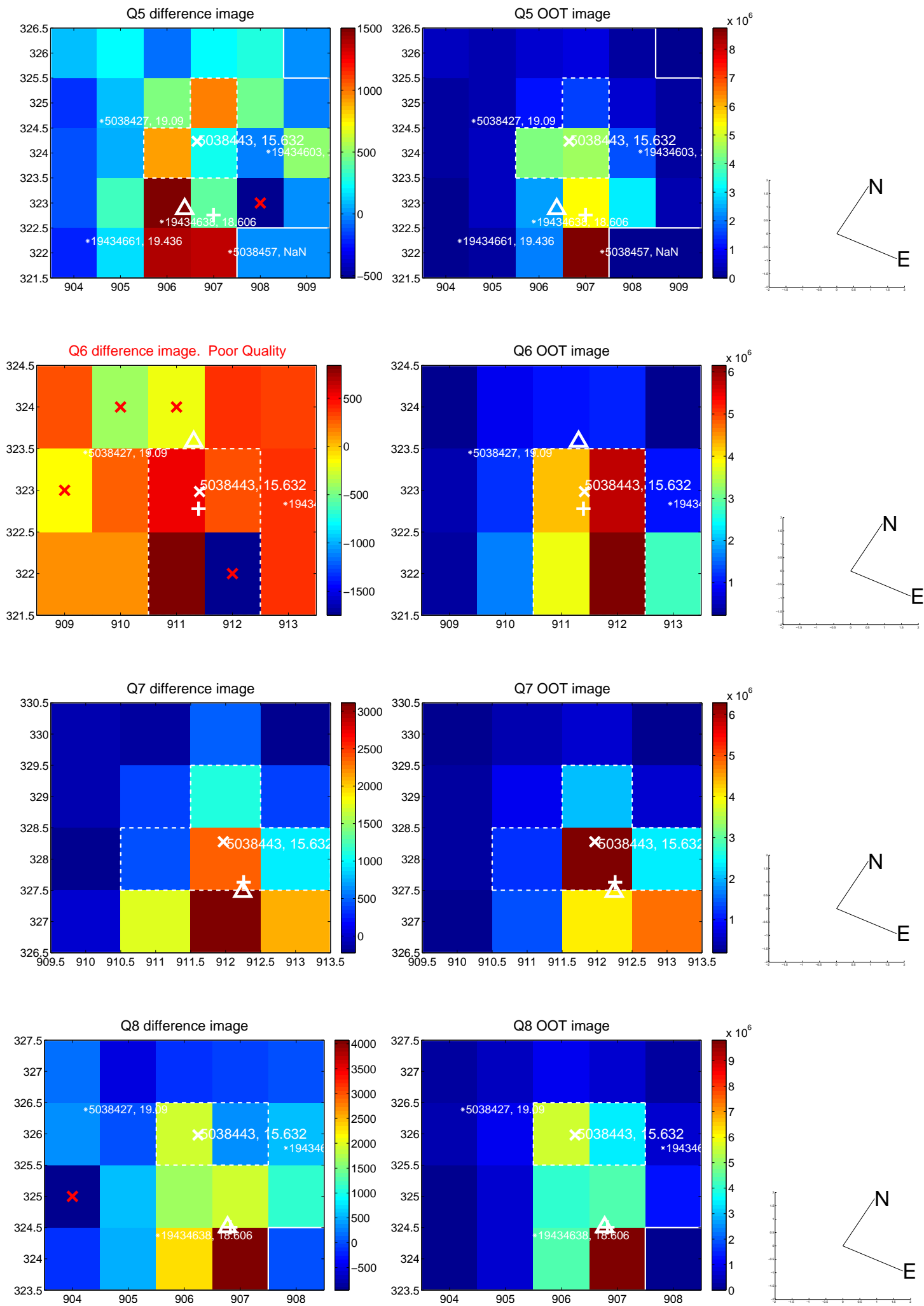
Q4 difference image



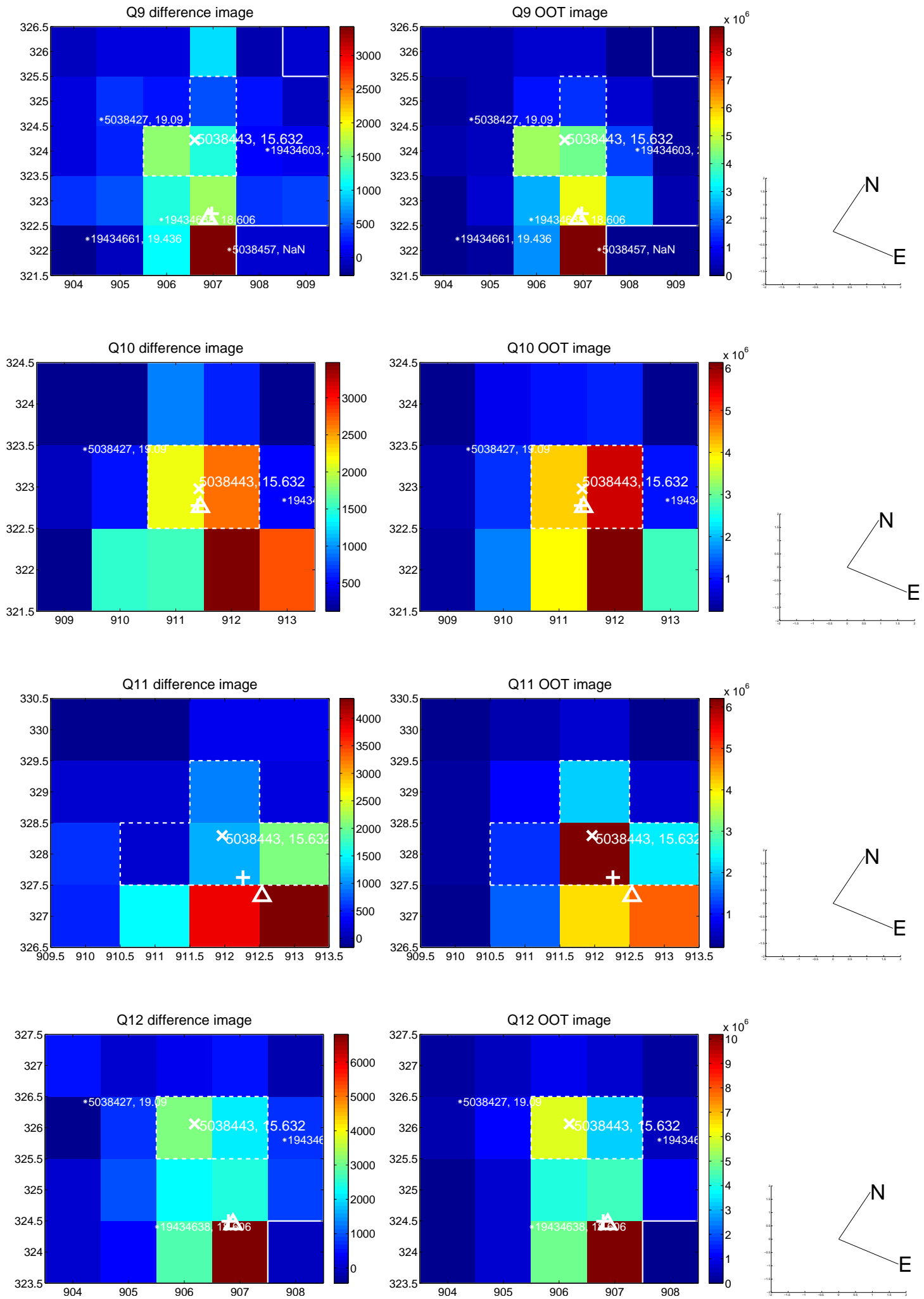
Q4 OOT image



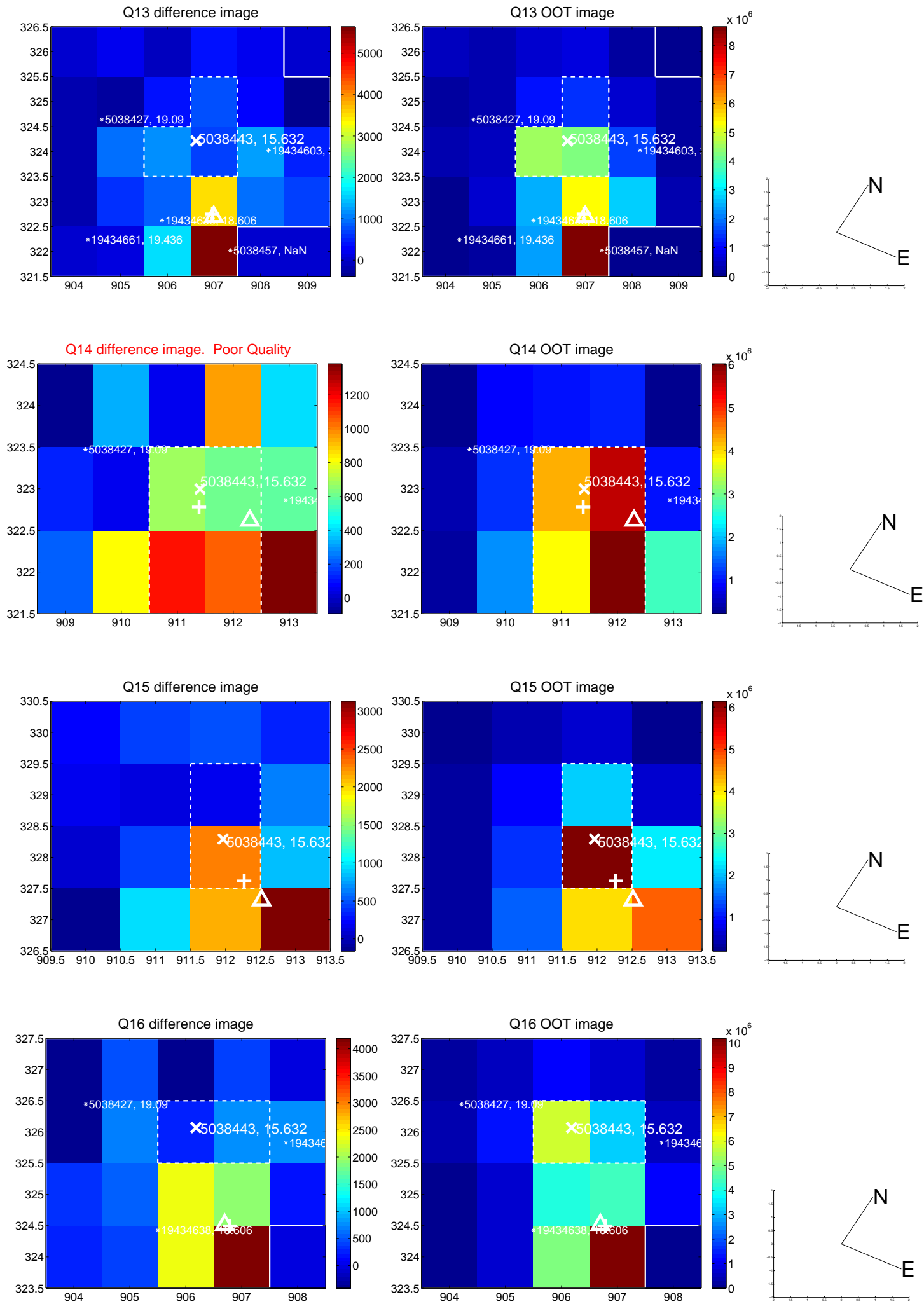
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



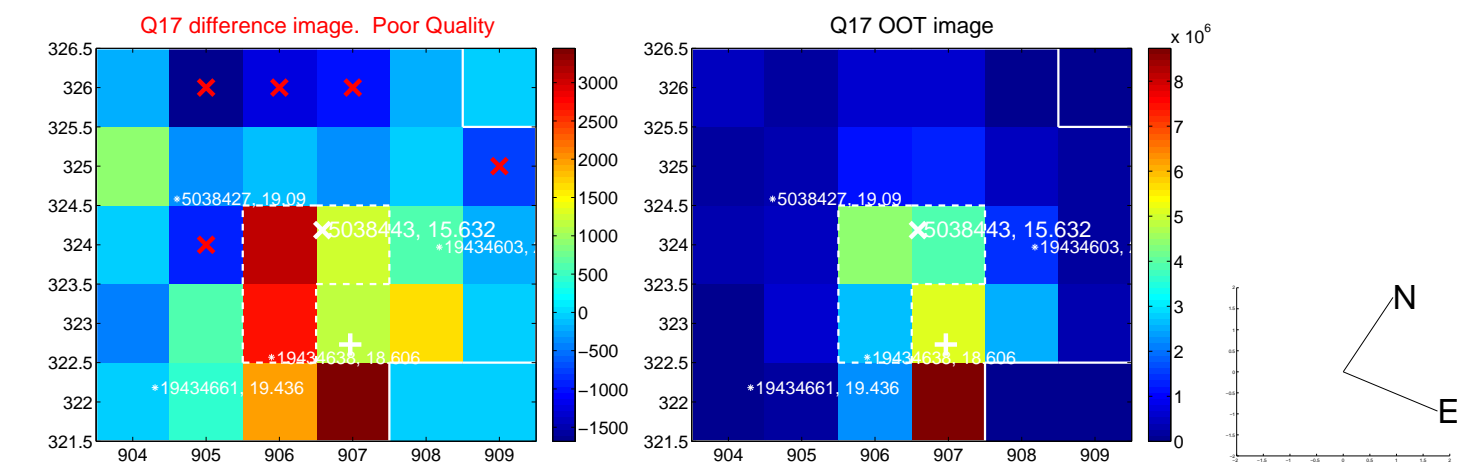
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



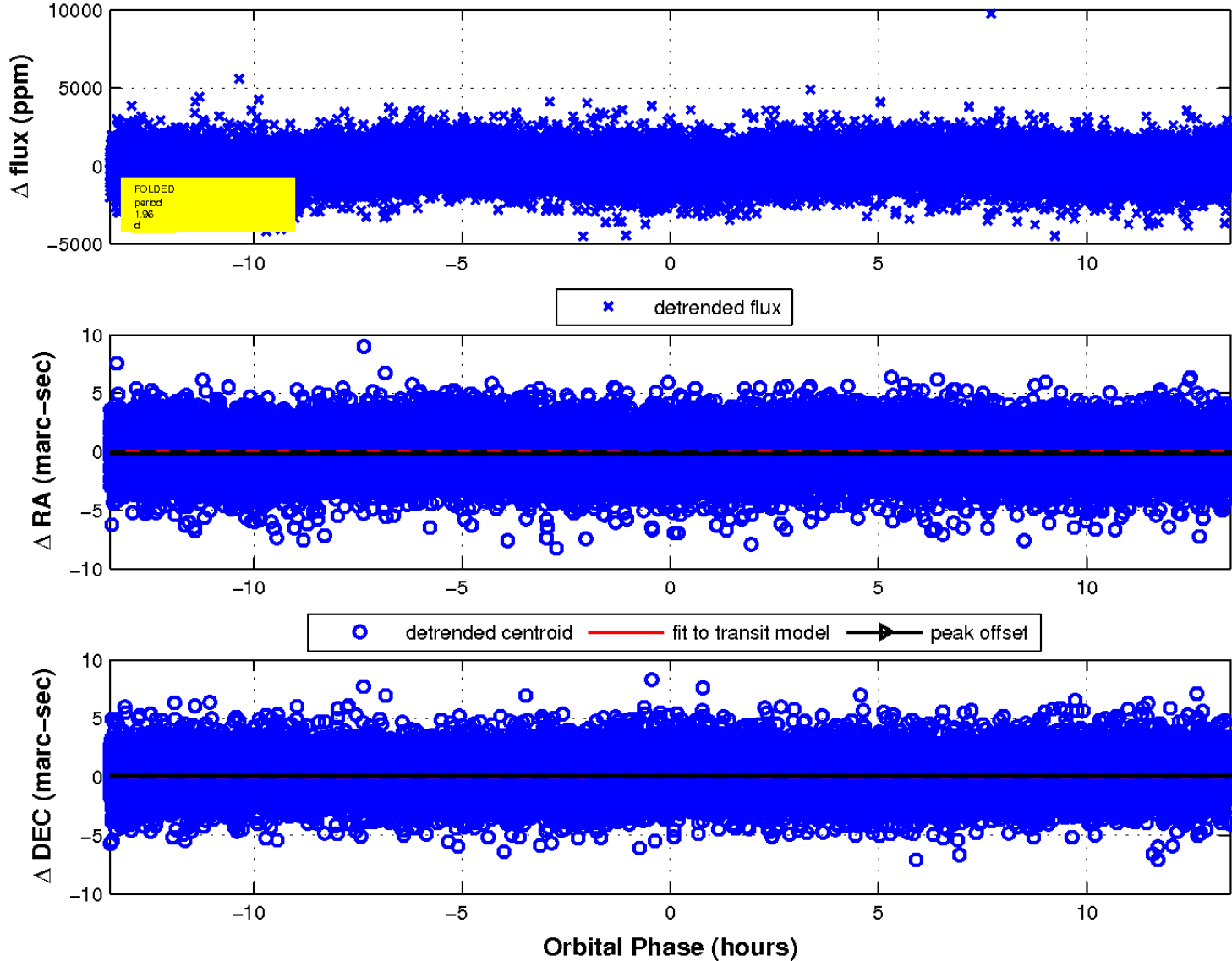
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



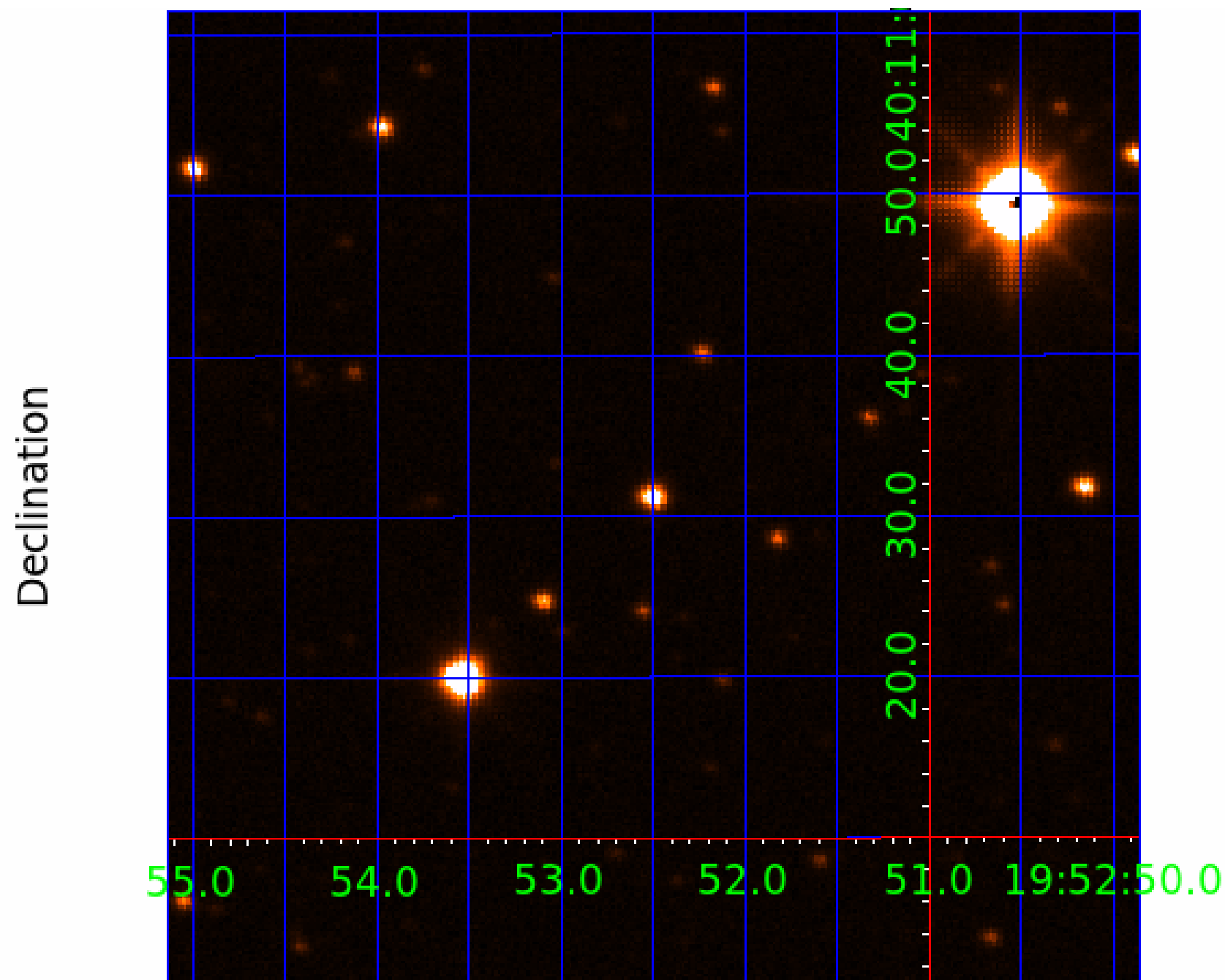
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 4



UKIRT Image



KIC 005038443

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})
005038443-01	OBS	No	1.368403	131.678761	131.3	3.923	9.1	8.4	0.83	5556	1.20	1134.44
005038443-02	OBS	No	1.958479	132.199130	144.6	4.486	7.8	7.1	0.83	5556	1.20	703.36
005038443-03	OBS	No	334.940561	282.103070	2126.2	3.340	7.4	7.2	0.83	5556	4.18	0.74
005038443-04	OBS	No	41.901174	145.561608	1234.5	1.523	7.4	7.7	0.83	5556	3.07	11.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005038443-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
005038443-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005038443-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005038443-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

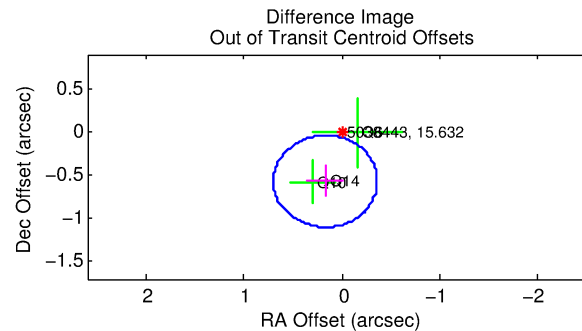
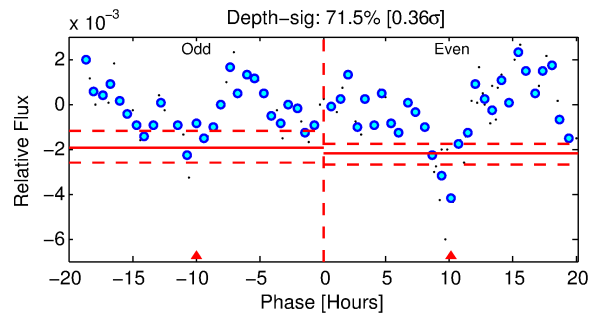
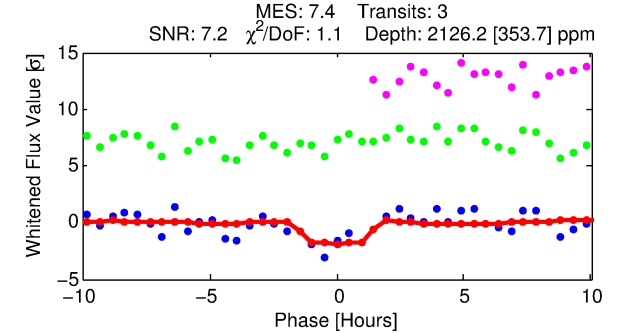
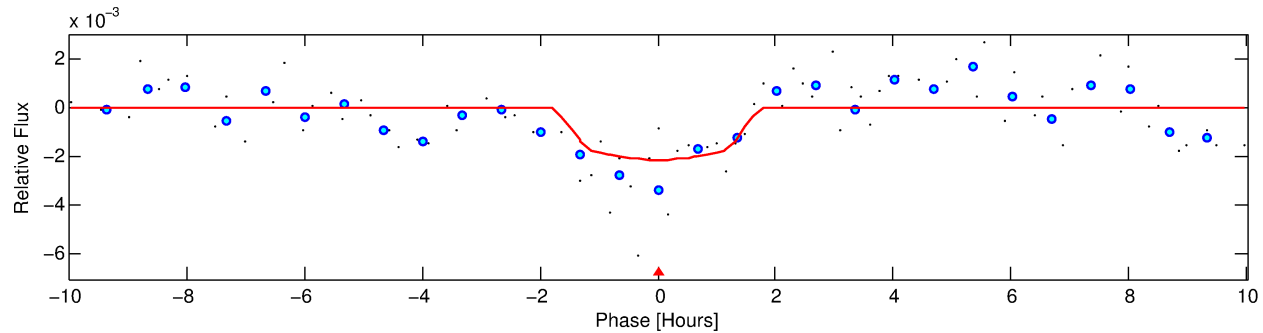
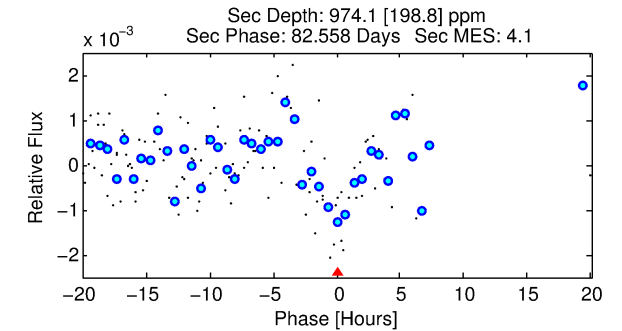
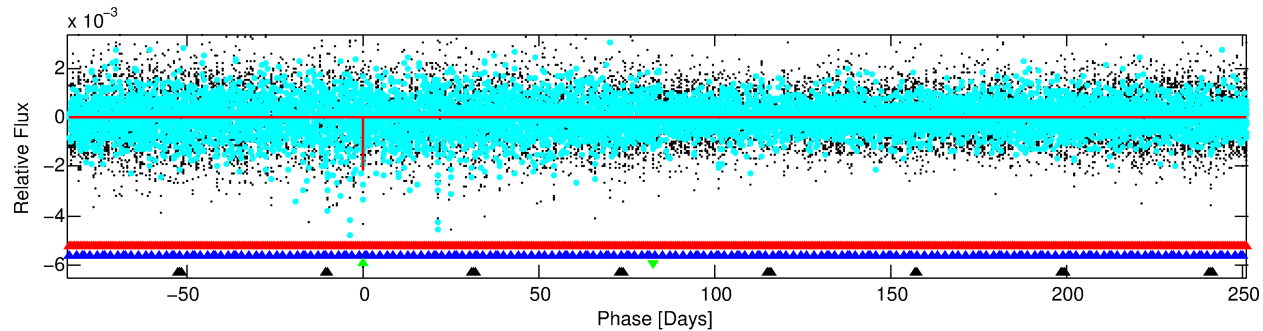
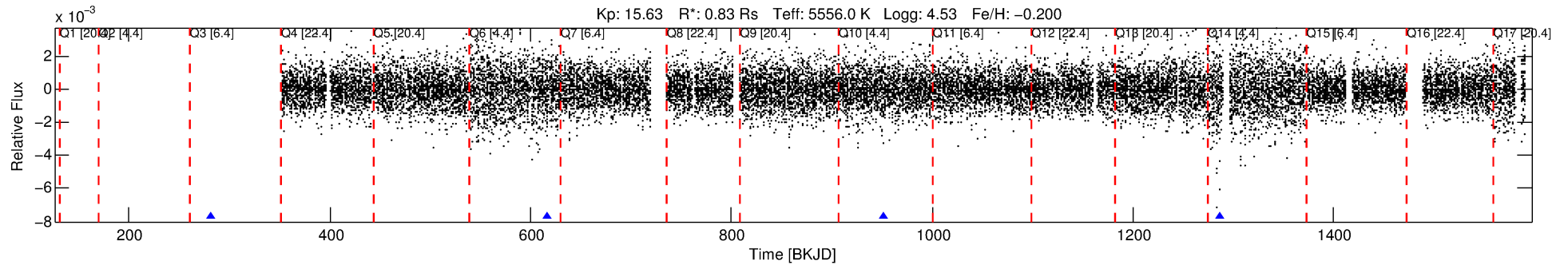
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005038443-03

No Significant Match Found

DV One-Page Summary

KIC: 5038443 Candidate: 3 of 4 Period: 334.941 d



DV Fit Results:

Period = 334.94056 [0.00928] d
Epoch = 282.1031 [0.0186] BKJD
Rp/R* = 0.0459 [0.0361]
a/R* = 561.29 [1819.44]
b = 0.75 [1.95]
Seff = 0.74 [0.23]
Teq = 237 [18] K
Rp = 4.18 [3.44] Re
a = 0.8963 [0.1747] AU
Ag = 24616.73 [39654.80] [0.62σ]
Teff = 4582 [1824] K [2.38σ]

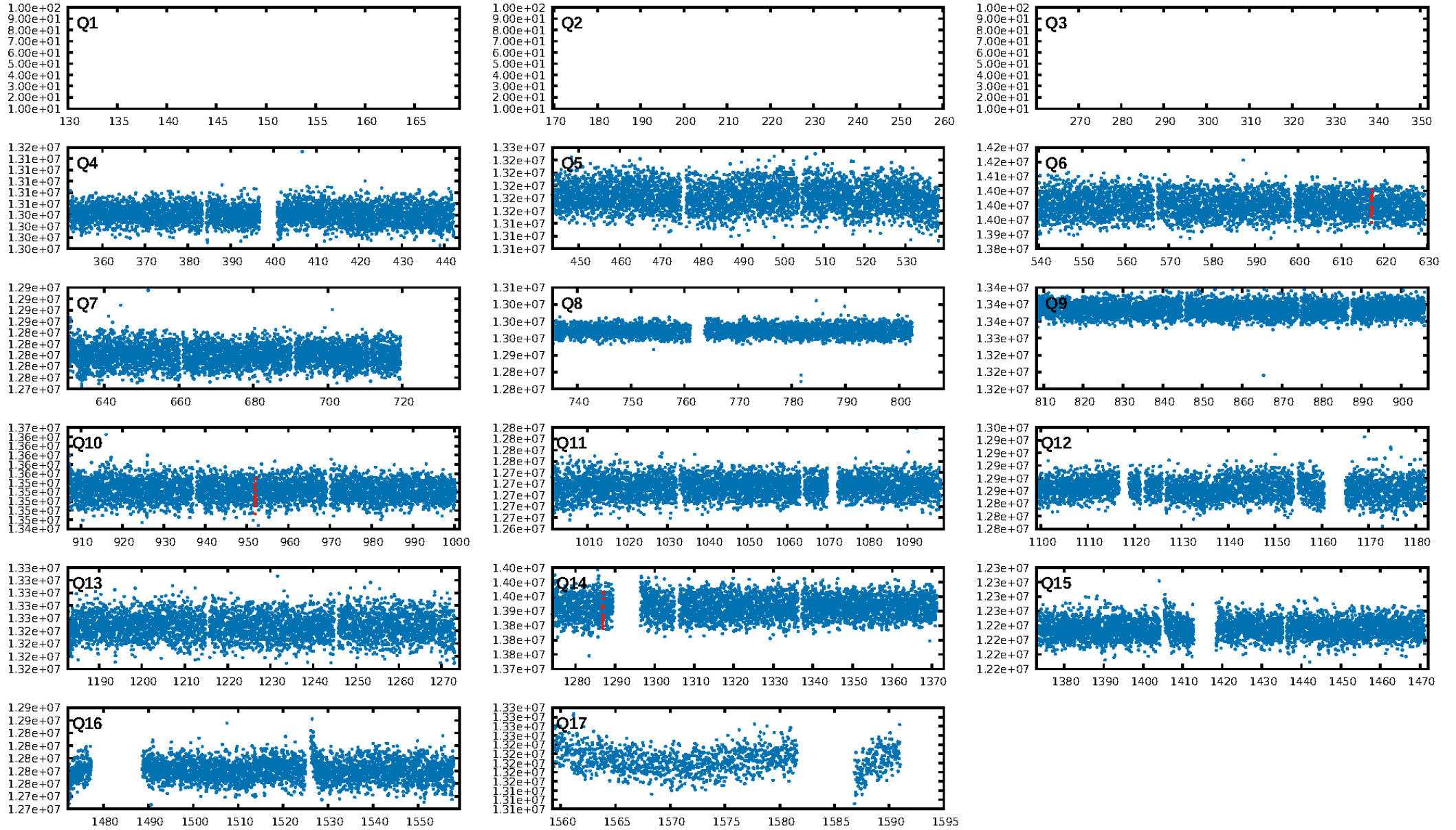
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1915.83σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 40.6%
ModelChiSquareGof-sig: 90.3%
Bootstrap-pfa: 1.93e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6902
Centroid-sig: 69.4%
Centroid-so: 1.609 arcsec [3.17σ]
OotOffset-rm: 0.594 arcsec [3.36σ]
KicOffset-rm: 1.794 arcsec [7.39σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.33 [1/3]

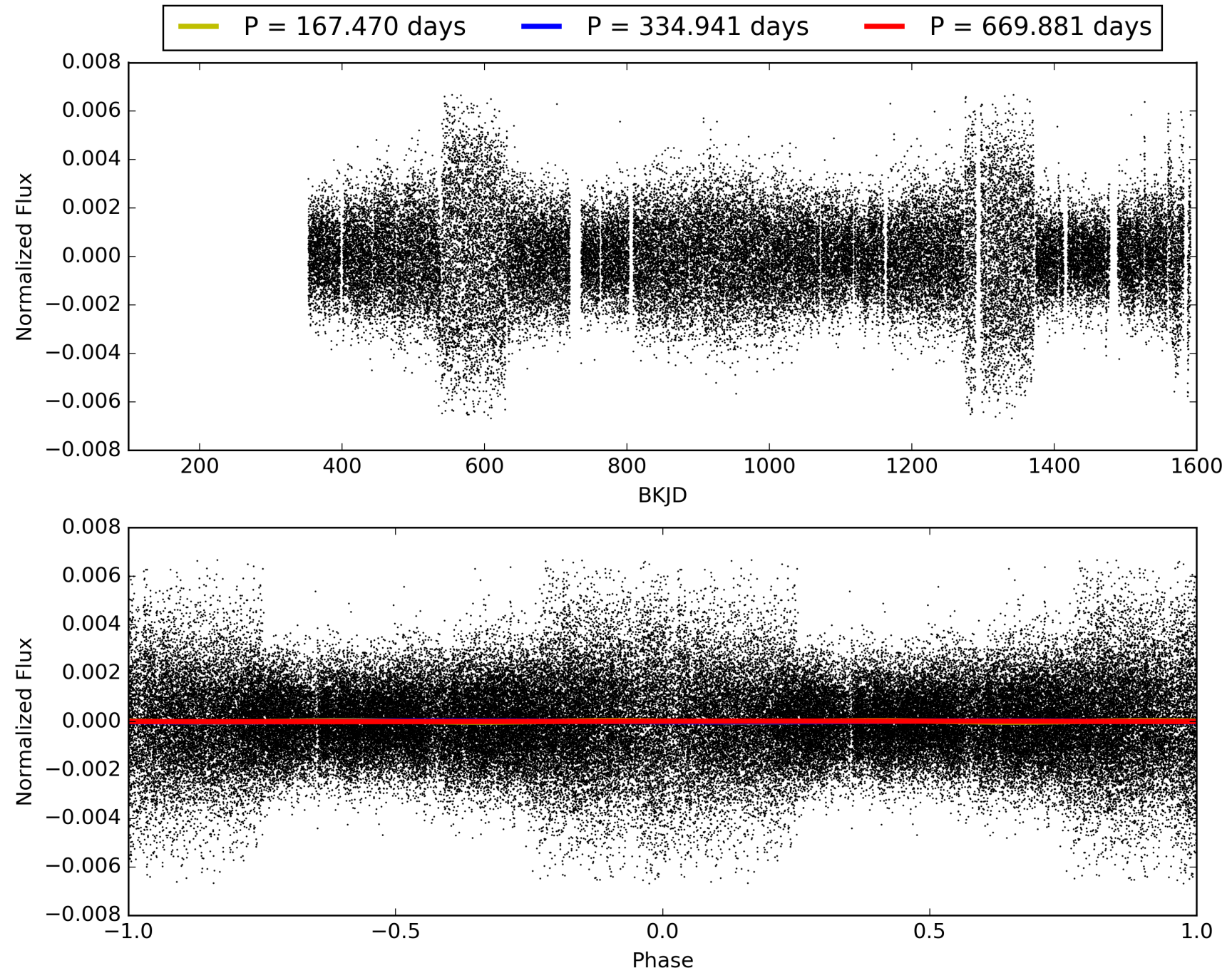
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:50:51 Z

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

TCE 005038443-03, PDC Light Curves

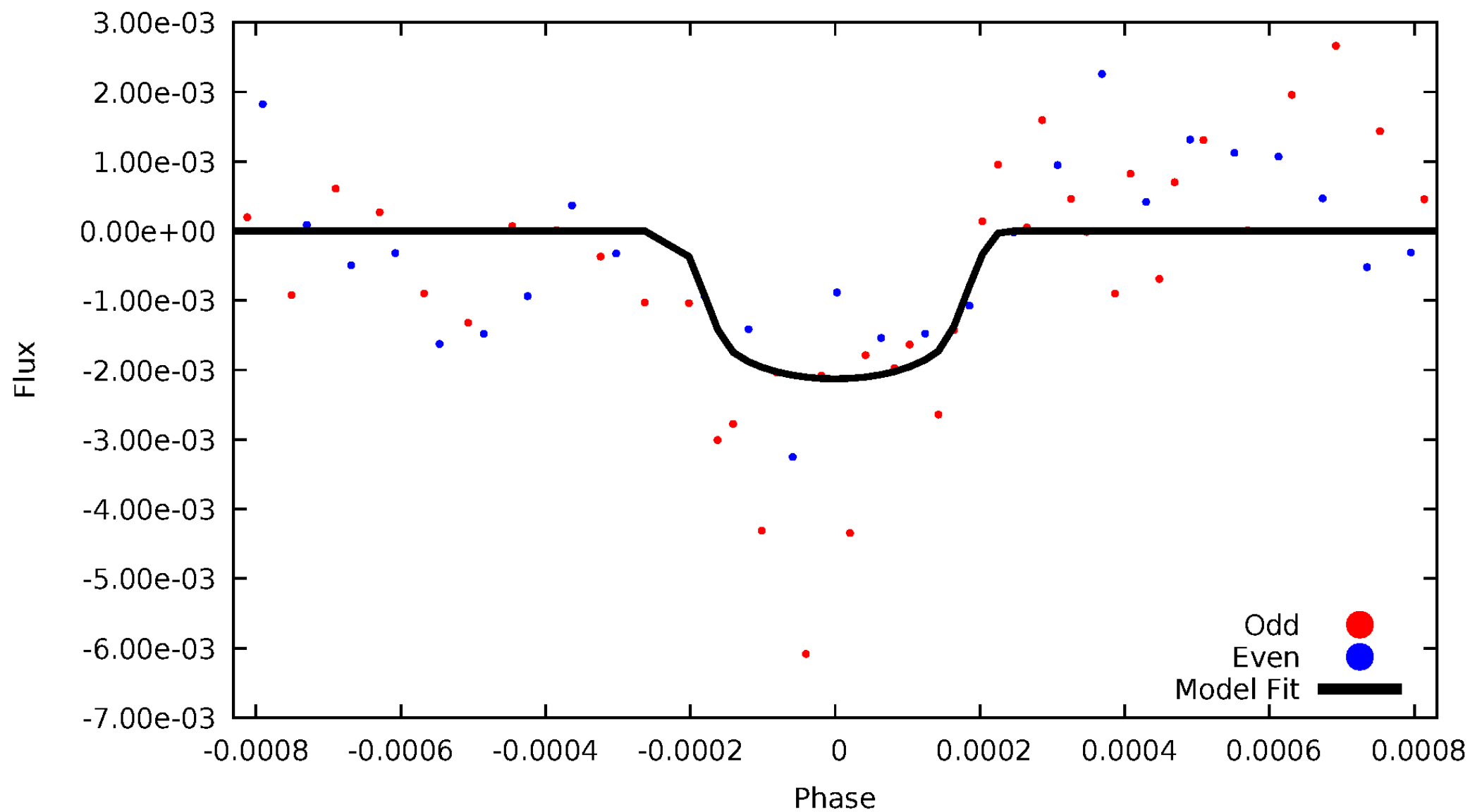


TCE 005038443-03



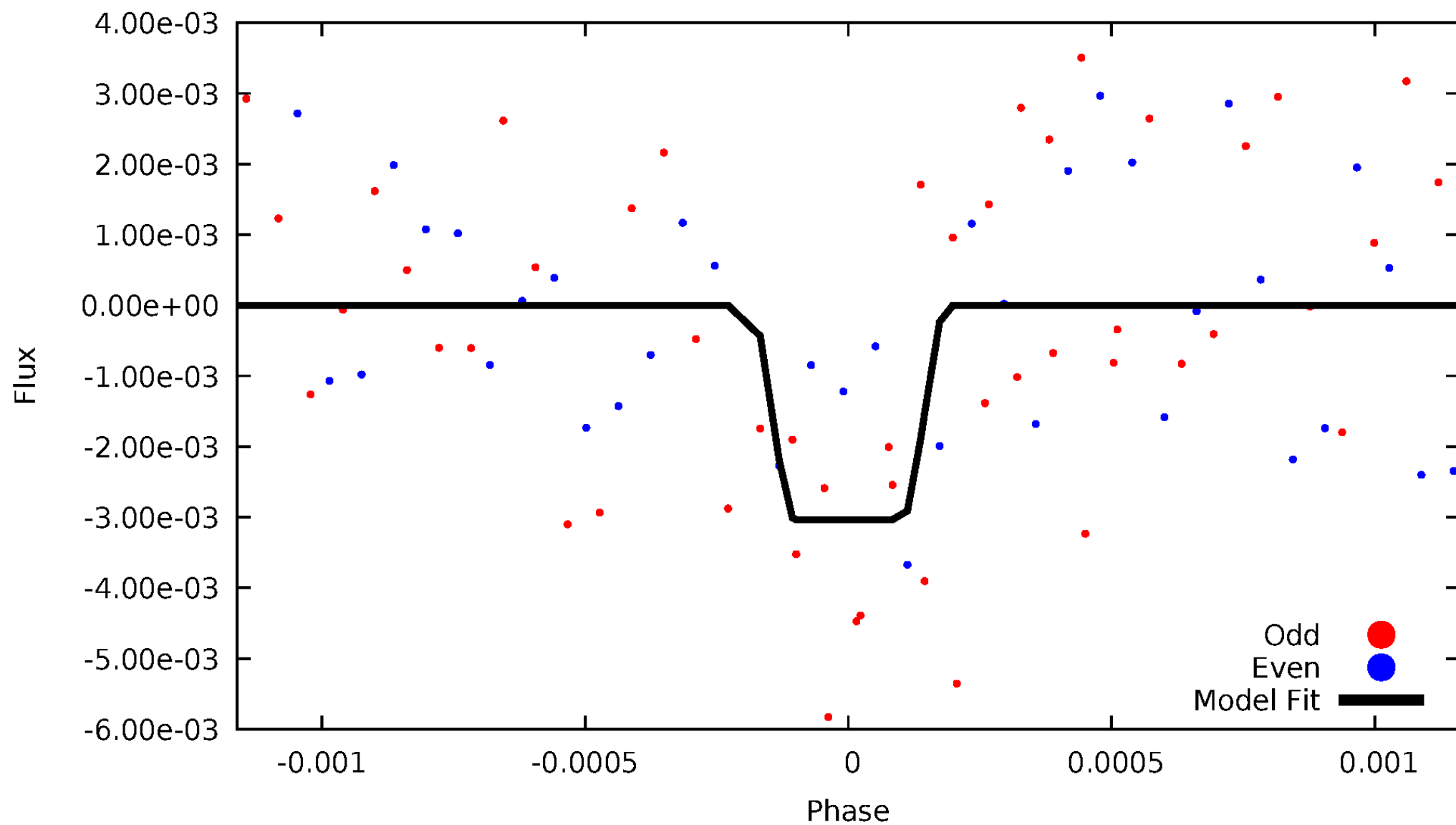
DV Odd/Even

TCE 005038443-03



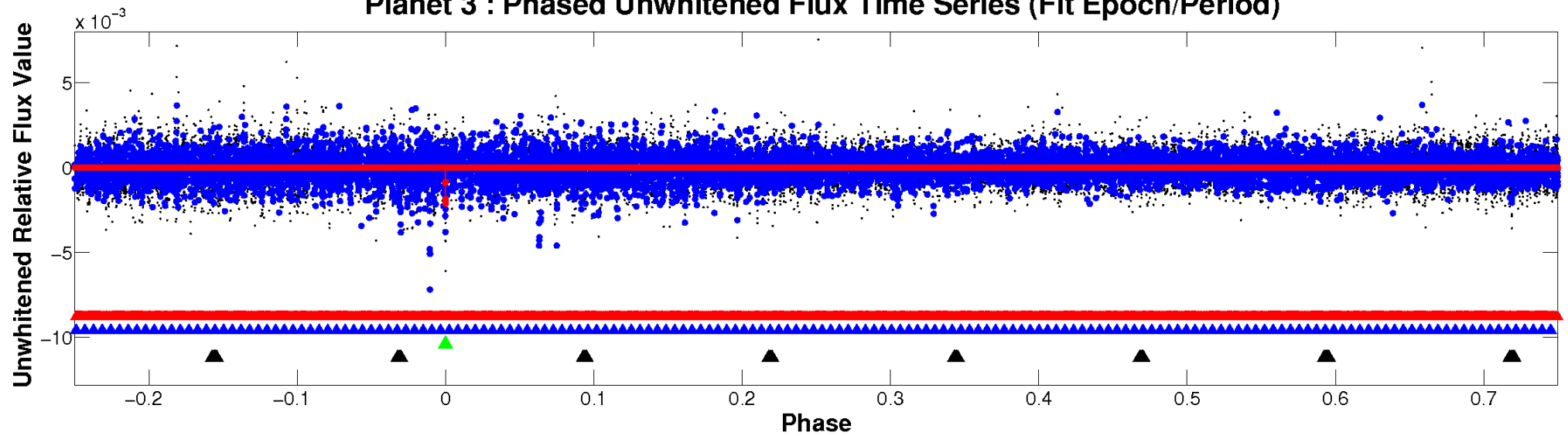
ALT Odd/Even

TCE 005038443-03

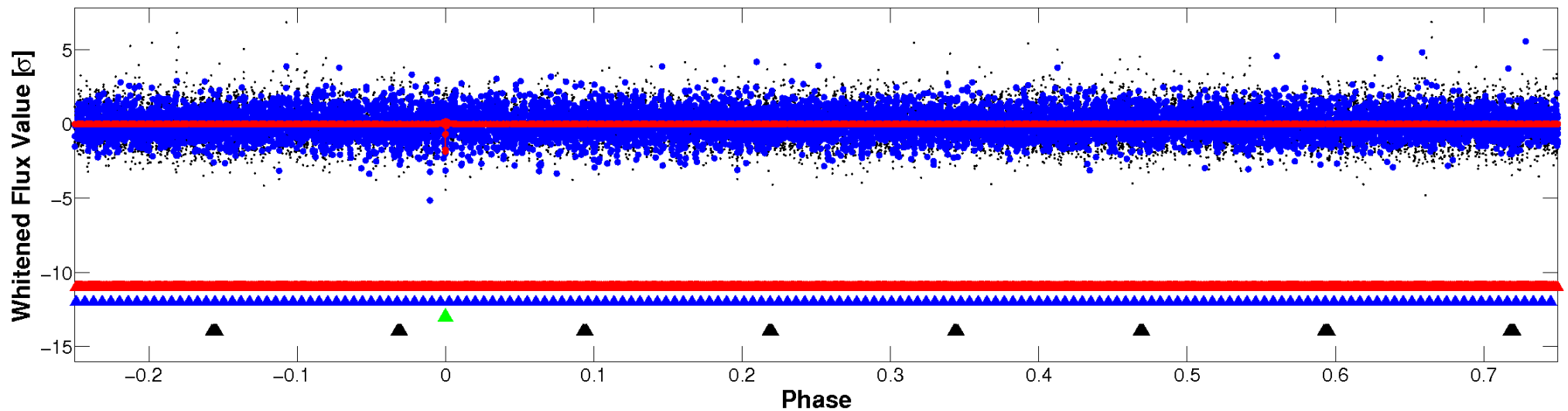


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

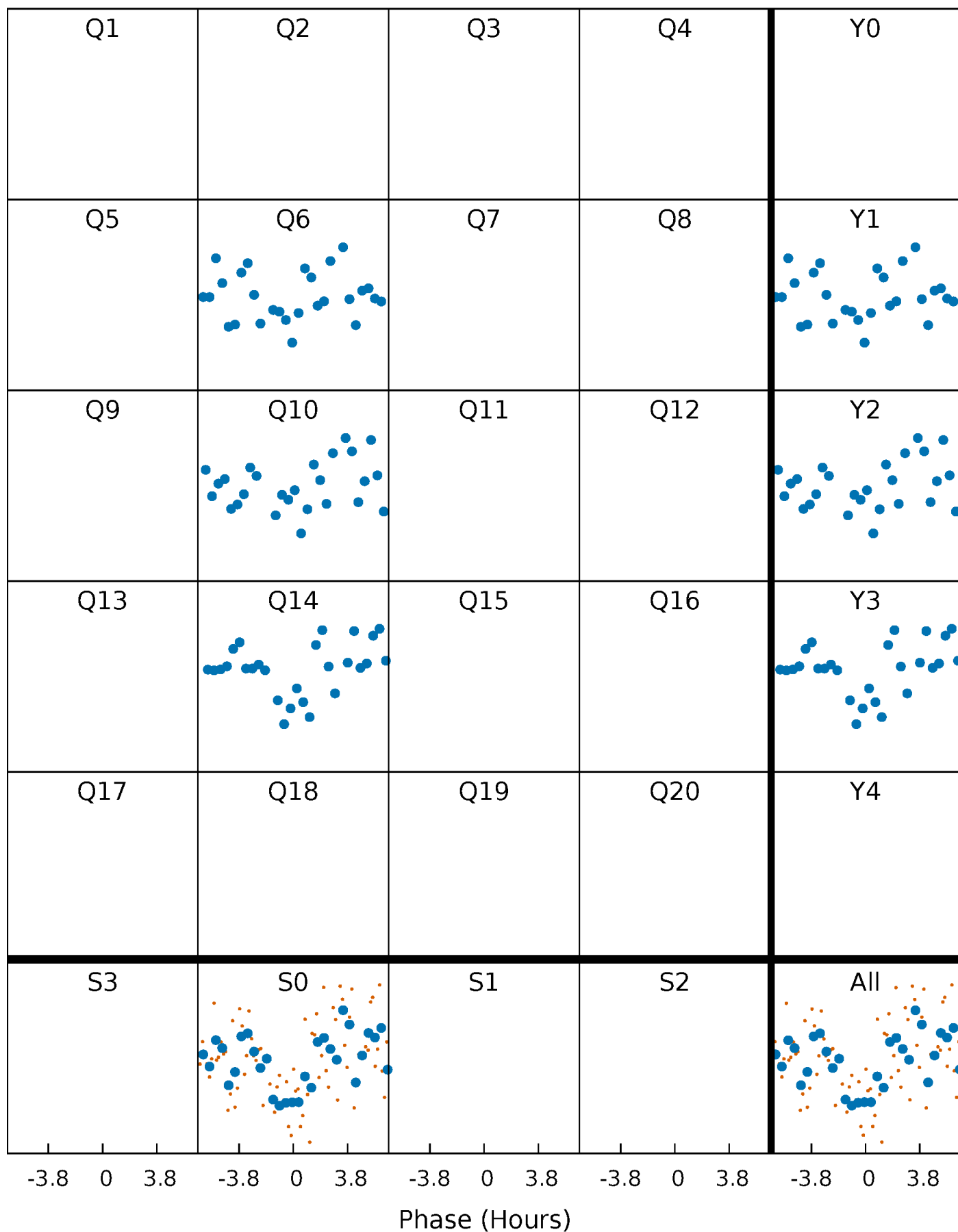


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



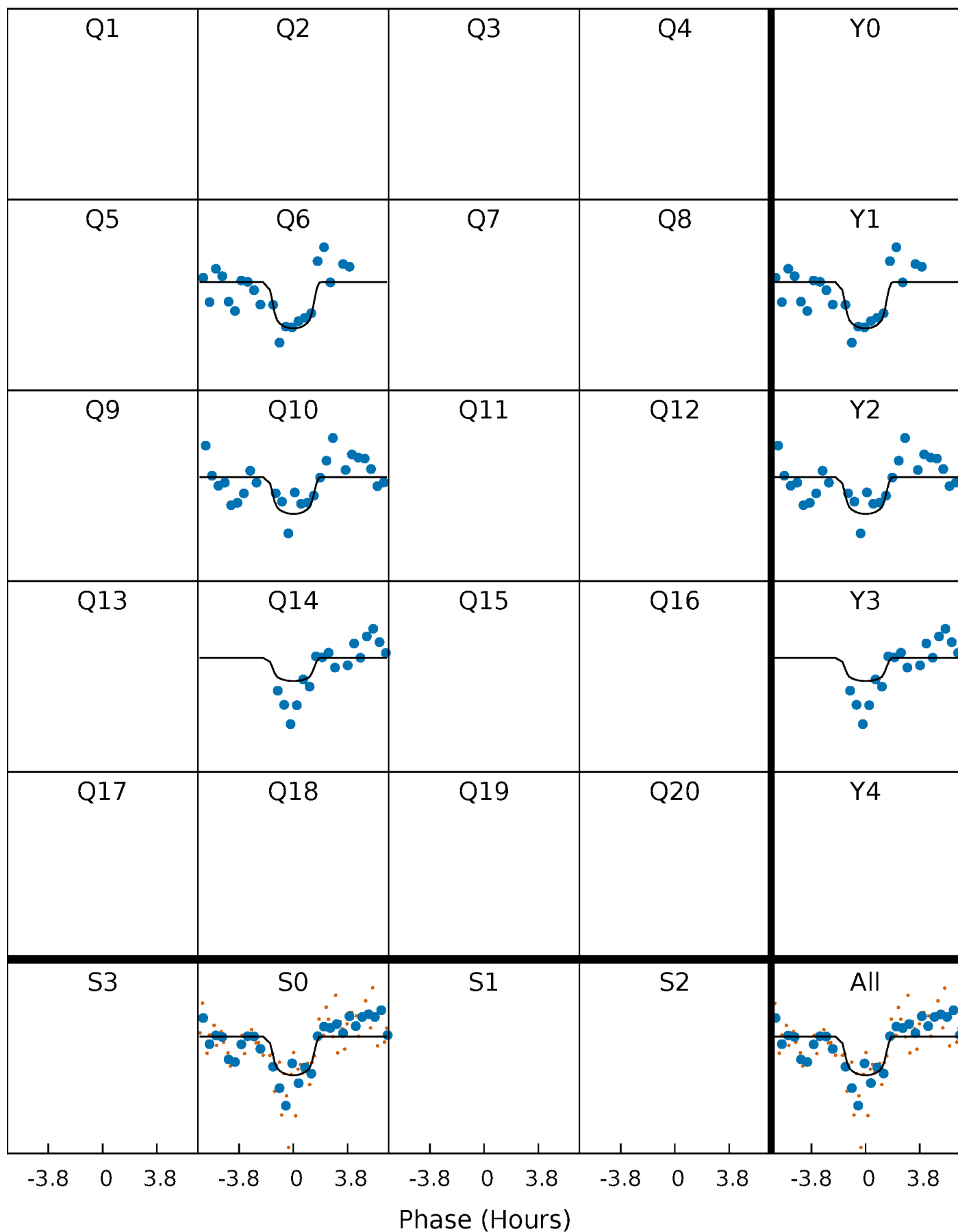
PDC Quarter-Phased Transit Curves

TCE 005038443-03 $P=334.940561$ Days $T_0=282.103070$ (BKJD)



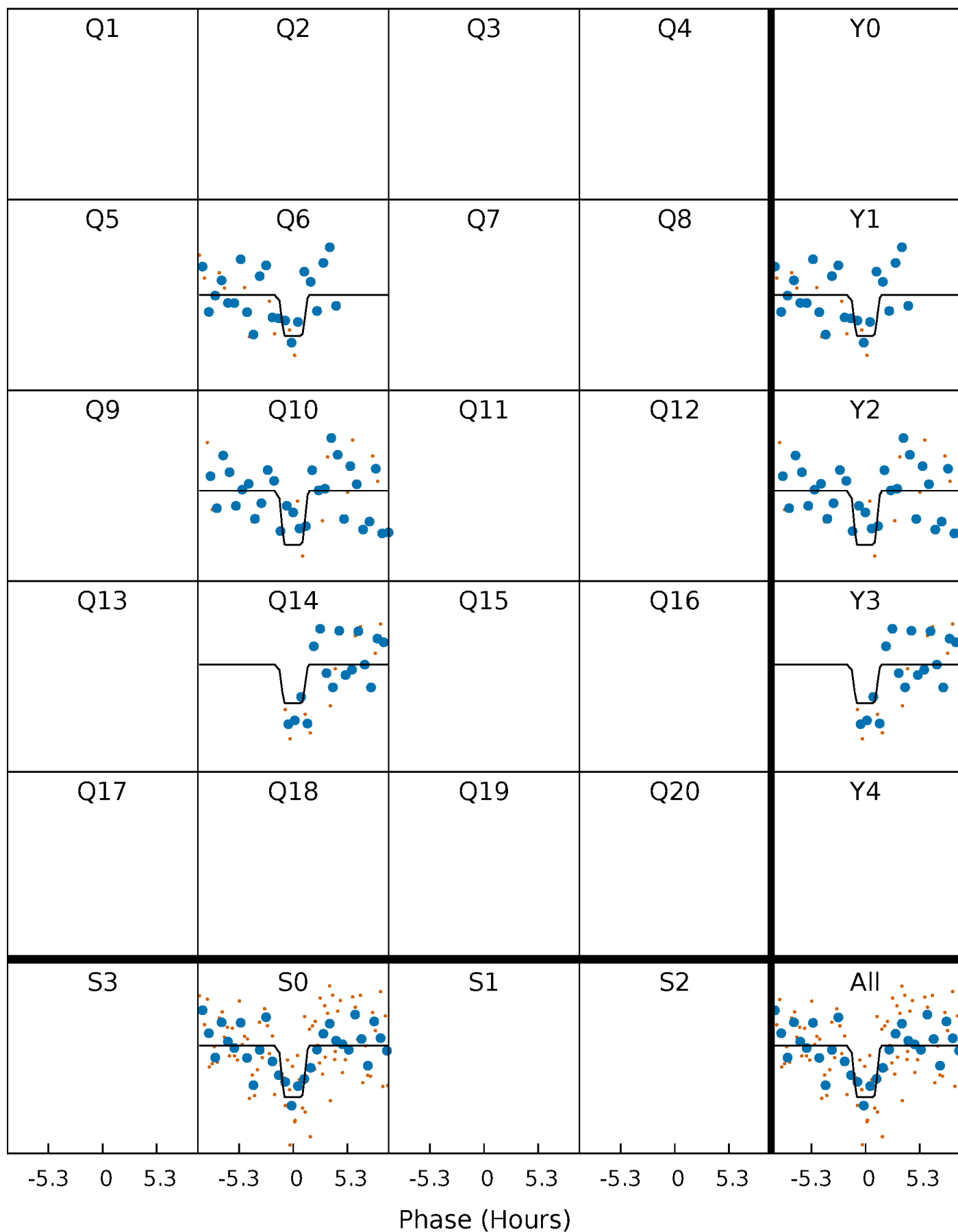
DV Quarter-Phased Transit Curves

TCE 005038443-03 P=334.940561 Days $T_0=282.103070$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

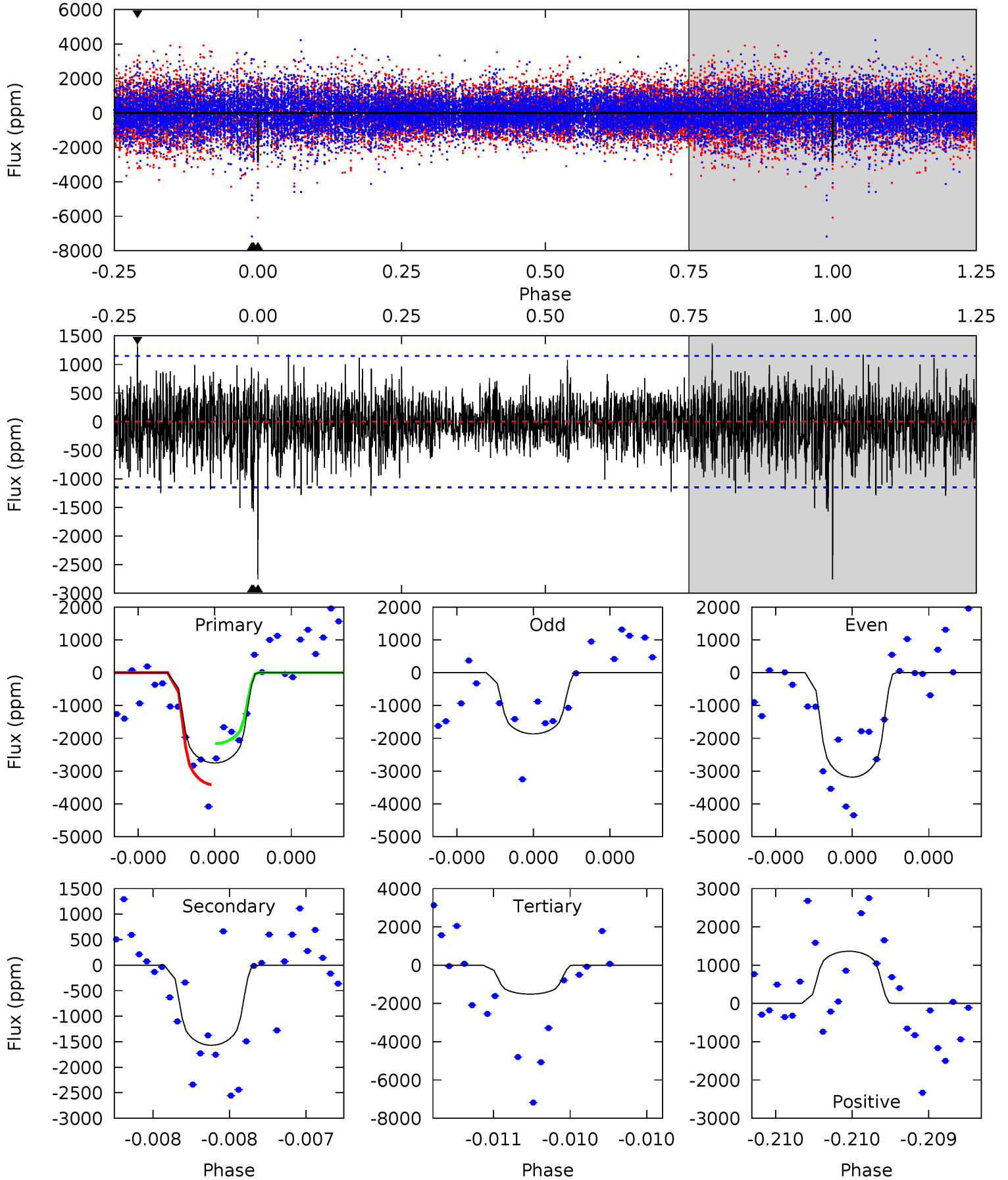
TCE 005038443-03 $P=334.935740$ Days $T_0=282.096314$ (BKJD)



DV Model-Shift Uniqueness Test

005038443-03, P = 334.940561 Days, E = 282.103070 Days

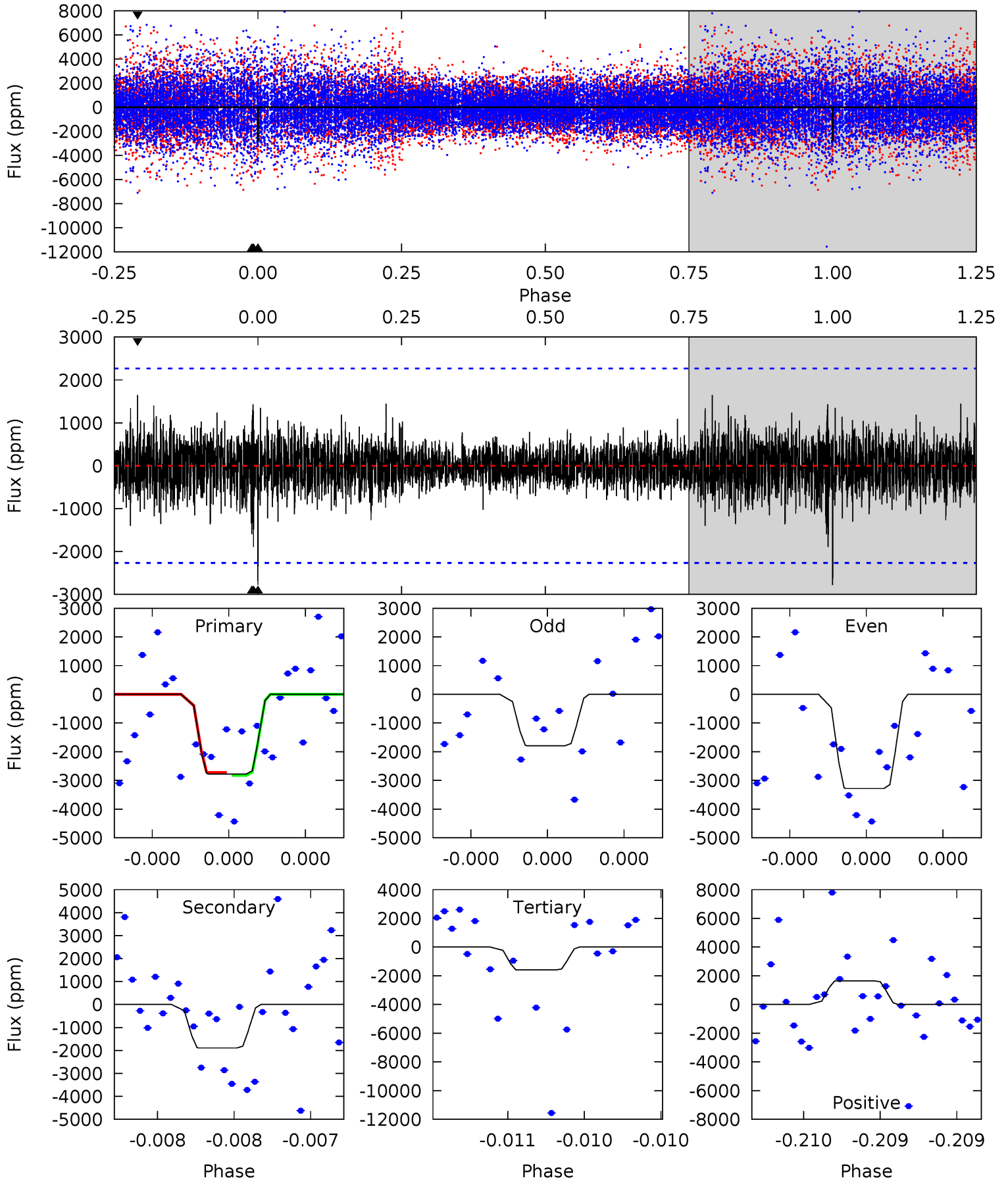
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	7.66	7.38	6.66	5.60	3.52	1.59	6.08	6.79	0.29	1.00	3.04	1.25	0.33	3.00



Alt Model-Shift Uniqueness Test

005038443-03, P = 334.935740 Days, E = 282.096314 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.90	4.70	3.96	4.10	5.63	3.56	0.81	2.94	2.80	0.74	0.60	1.88	1.21	0.37	0.12



Stellar Parameters For KIC 005038443

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5556^{+182}_{-182}	$4.527^{+0.063}_{-0.147}$	$-0.200^{+0.300}_{-0.300}$	$0.835^{+0.199}_{-0.085}$	$0.856^{+0.102}_{-0.081}$	$2.071^{+0.565}_{-0.891}$
	+3%/-3%	+1%/-3%	+150%/-150%	+24%/-10%	+12%/-9%	+27%/-43%
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 005038443-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1569 ± 205	$4.87^{+3.20}_{-2.66}$	335^{+19}_{-16}	4963^{+2406}_{-928}	$29057^{+116545}_{-18372}$
Alt.	-1893 ± 403	$5.55^{+3.16}_{-2.83}$	334^{+20}_{-16}	4842^{+1993}_{-800}	27190^{+84312}_{-16686}

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

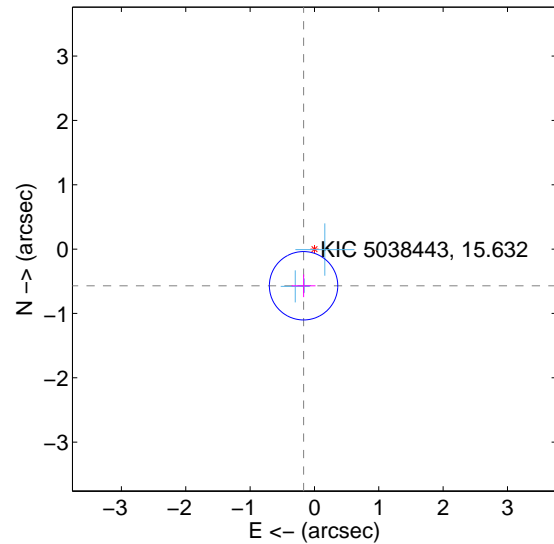
Supplemental centroid analysis for 005038443-03. Kepler magnitude: 15.63. Transit SNR 7.21

There are 3 quarters with good PRF difference image offsets

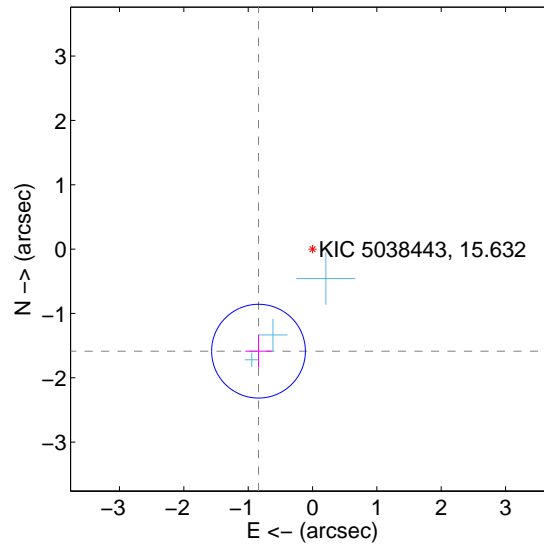
The direct PRF centroid is offset from the target star catalog position by about 1.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.594 ± 0.177	3.36	0.169 ± 0.186	-0.570 ± 0.176
PRF-fit source offset from KIC position	1.794 ± 0.243	7.39	0.839 ± 0.206	-1.586 ± 0.252
photometric centroid source offset	1.61 ± 0.51	3.17	1.09 ± 0.58	-1.18 ± 0.44

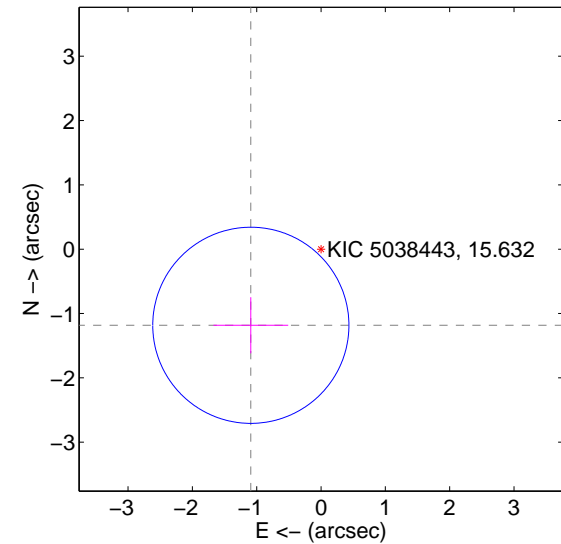
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

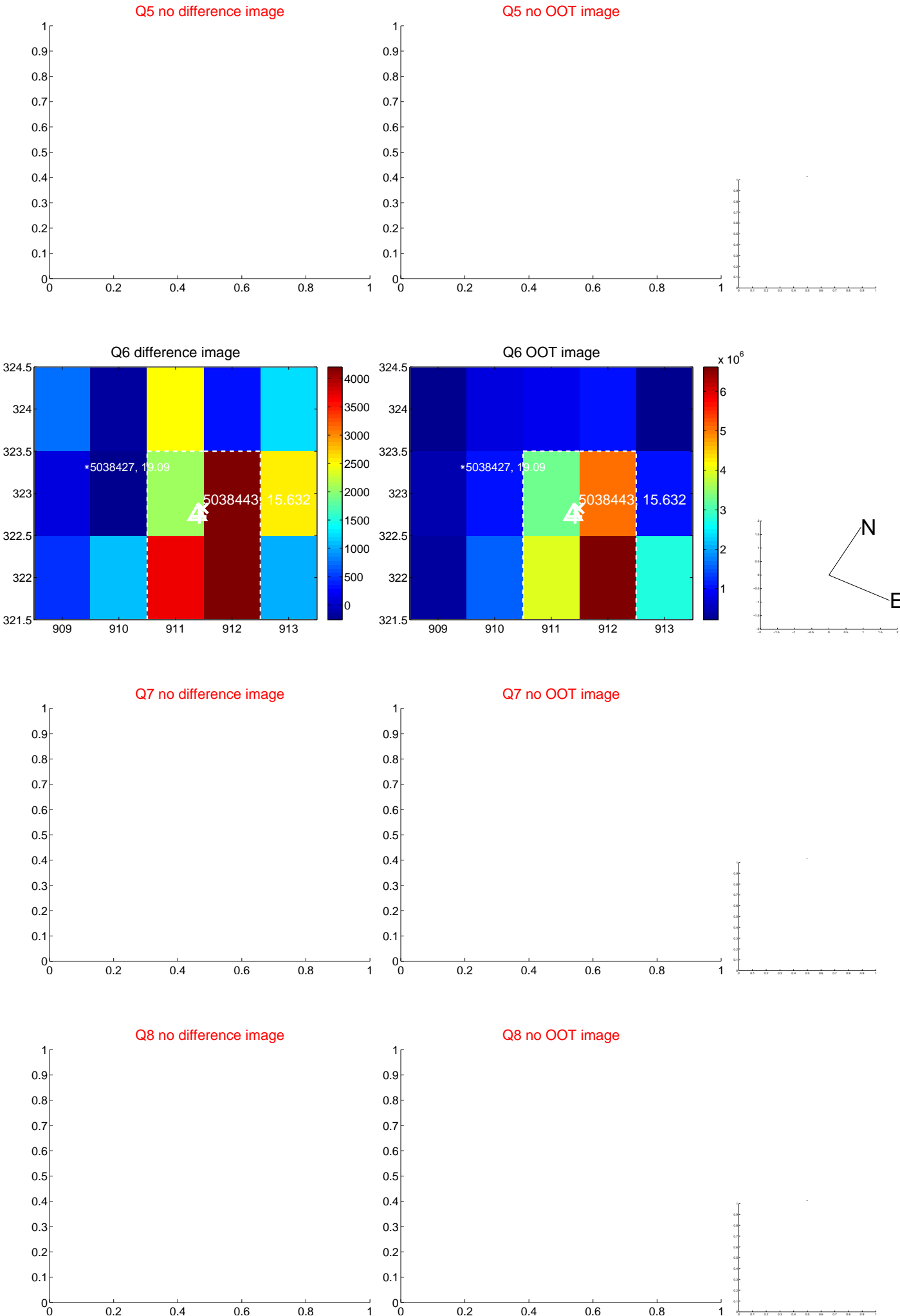


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

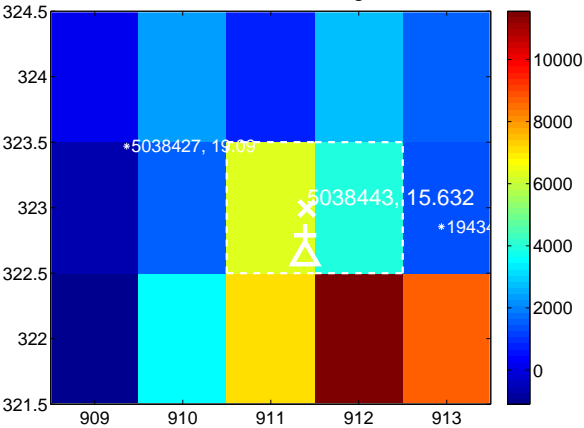
Q9 no difference image



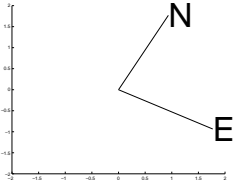
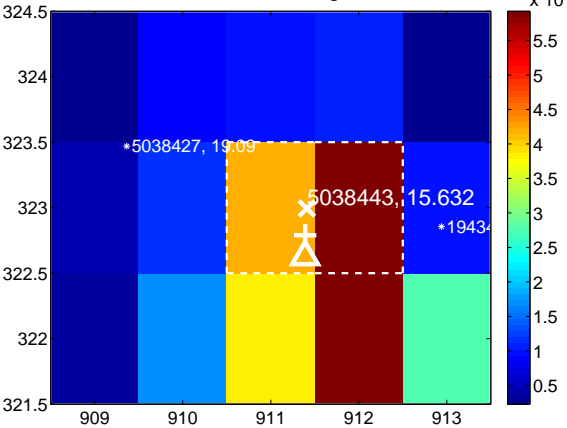
Q9 no OOT image



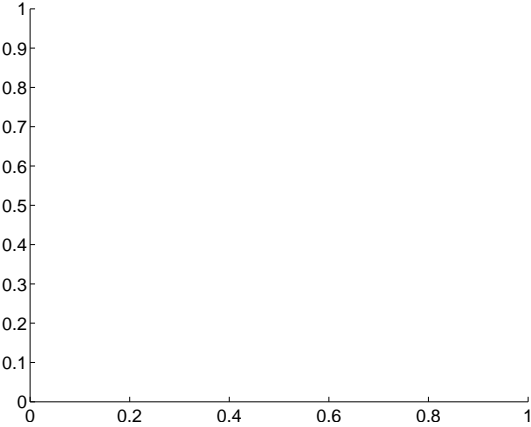
Q10 difference image



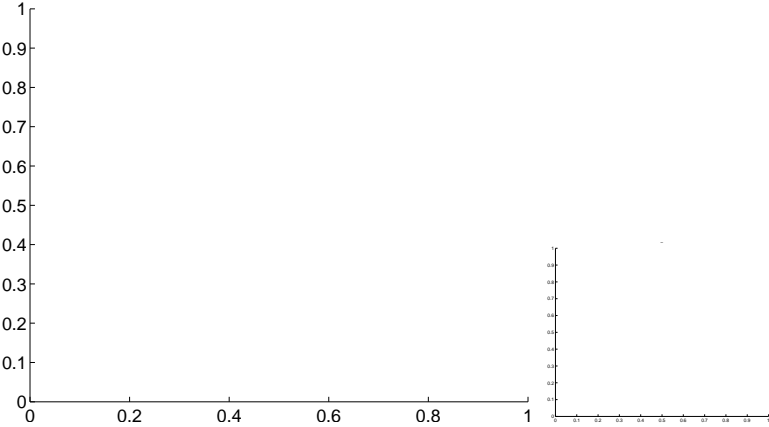
Q10 OOT image



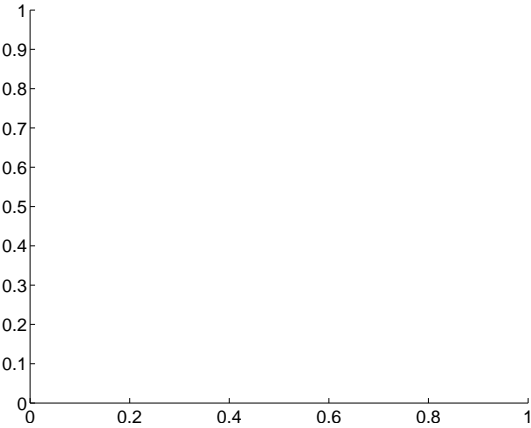
Q11 no difference image



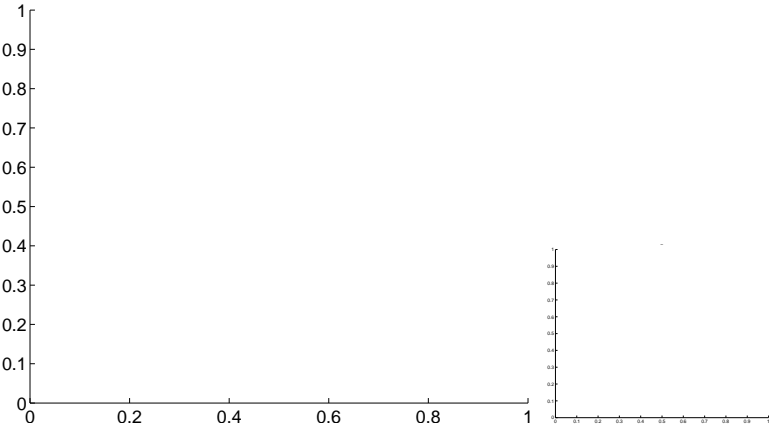
Q11 no OOT image



Q12 no difference image



Q12 no OOT image

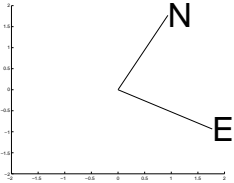
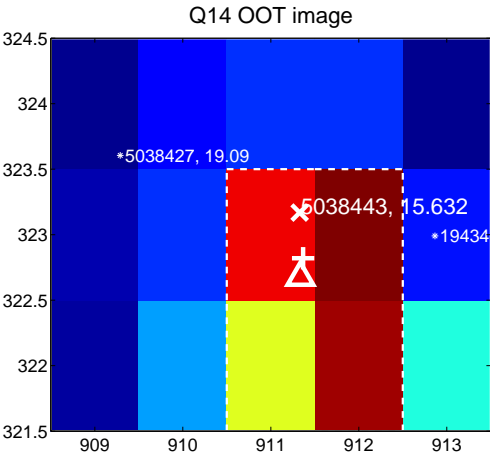
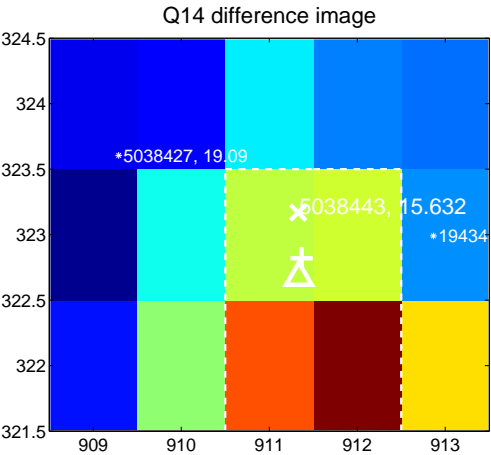


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

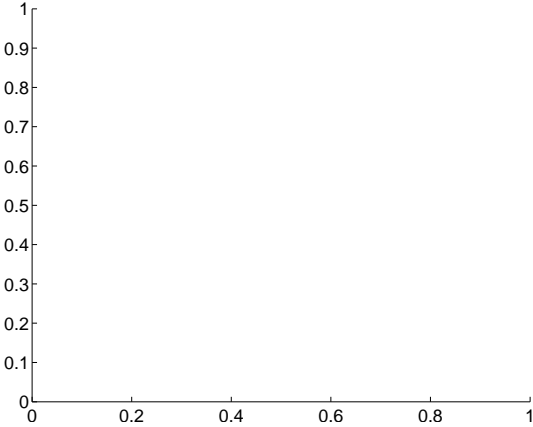
Q13 no difference image



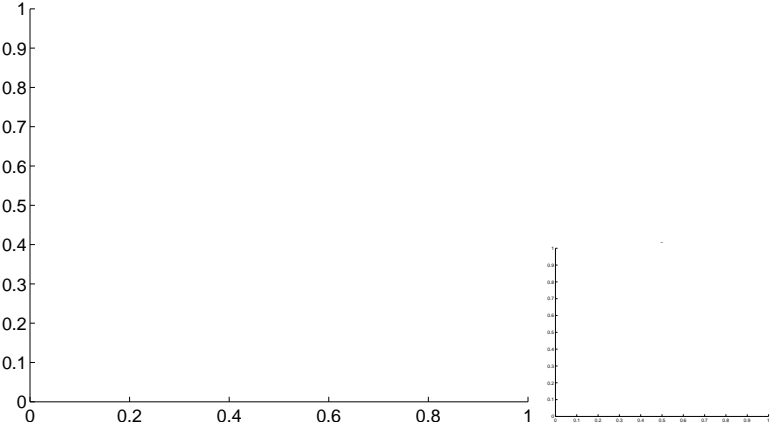
Q13 no OOT image



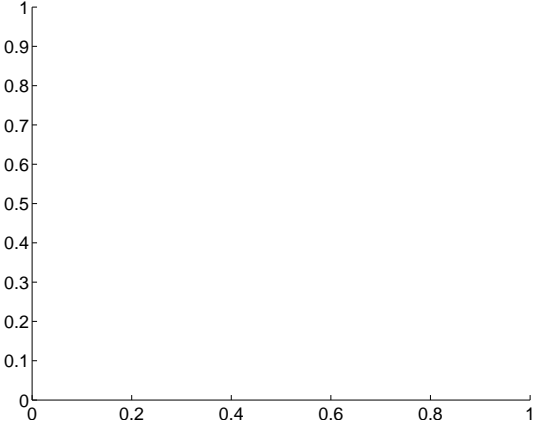
Q15 no difference image



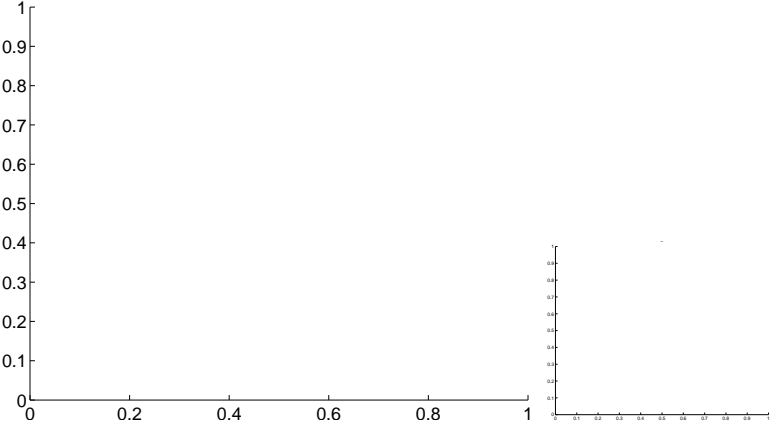
Q15 no OOT image



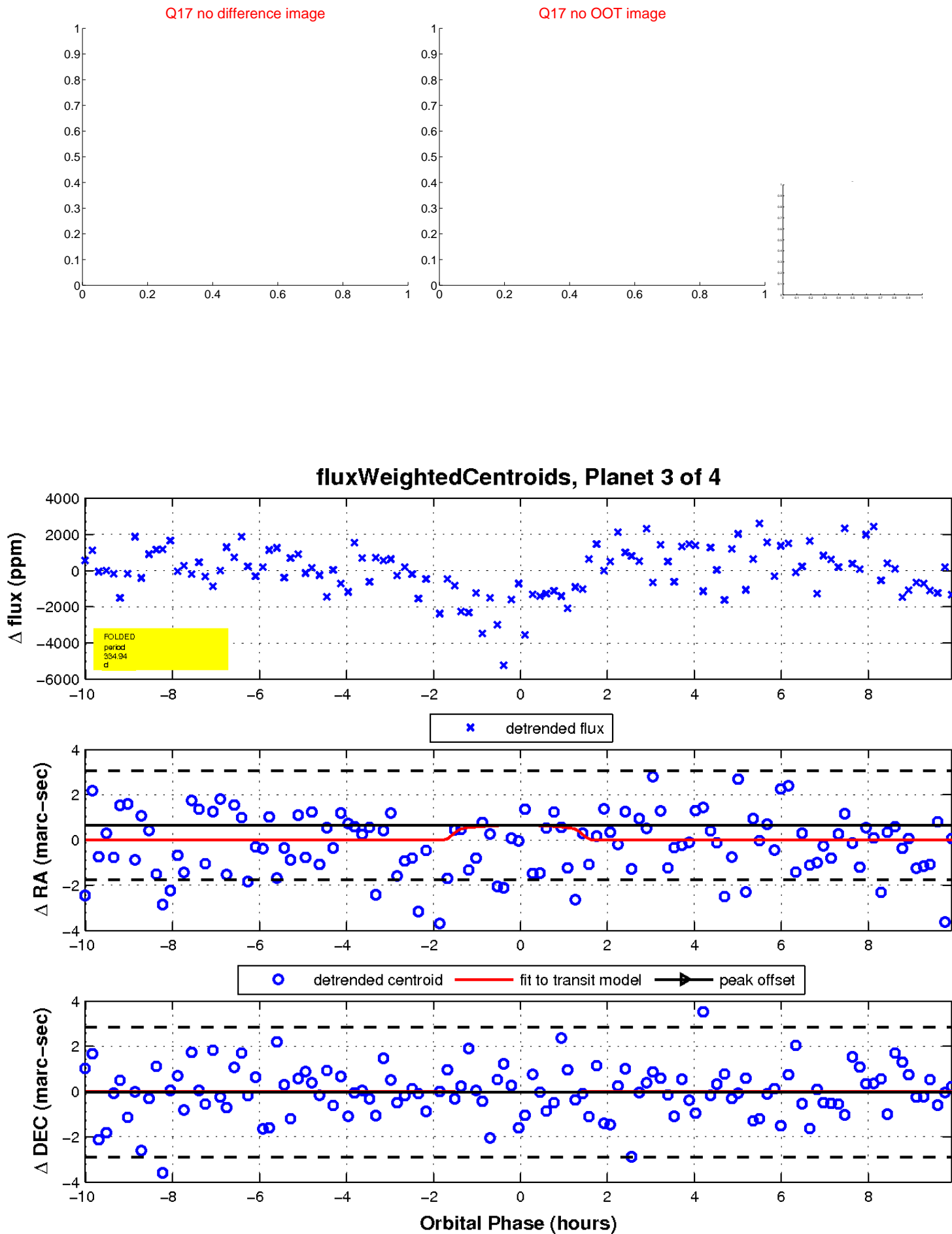
Q16 no difference image



Q16 no OOT image

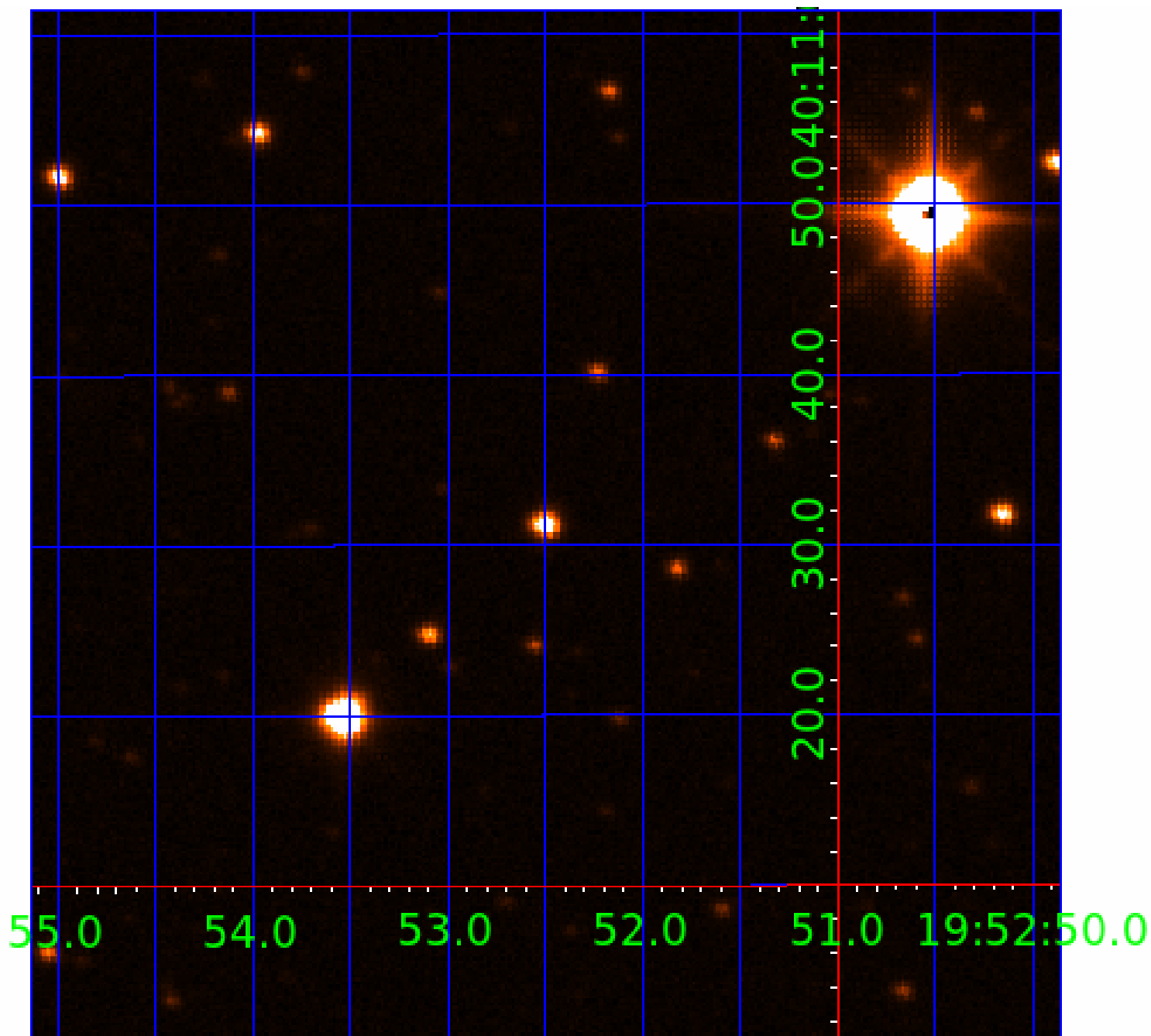


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005038443

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})
005038443-01	OBS	No	1.368403	131.678761	131.3	3.923	9.1	8.4	0.83	5556	1.20	1134.44
005038443-02	OBS	No	1.958479	132.199130	144.6	4.486	7.8	7.1	0.83	5556	1.20	703.36
005038443-03	OBS	No	334.940561	282.103070	2126.2	3.340	7.4	7.2	0.83	5556	4.18	0.74
005038443-04	OBS	No	41.901174	145.561608	1234.5	1.523	7.4	7.7	0.83	5556	3.07	11.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005038443-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
005038443-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005038443-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005038443-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

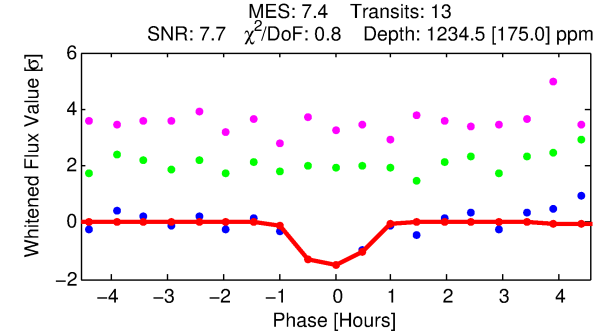
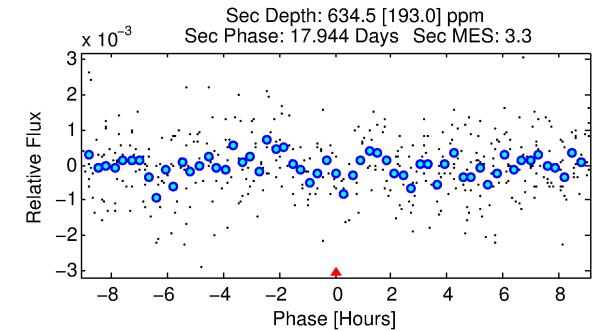
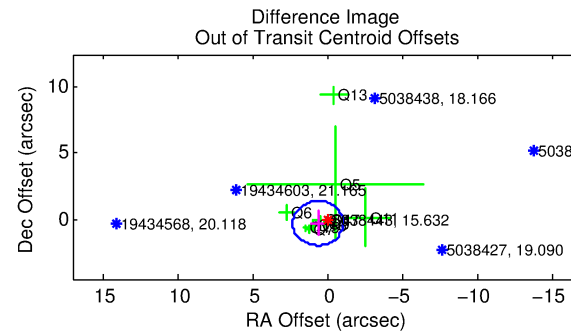
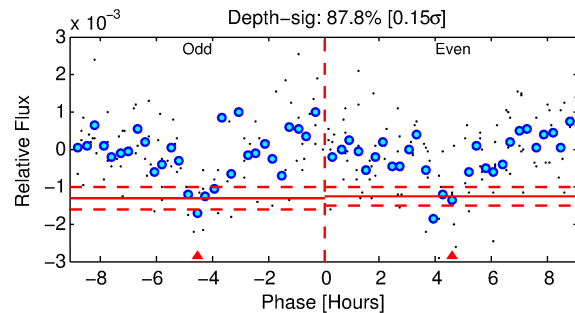
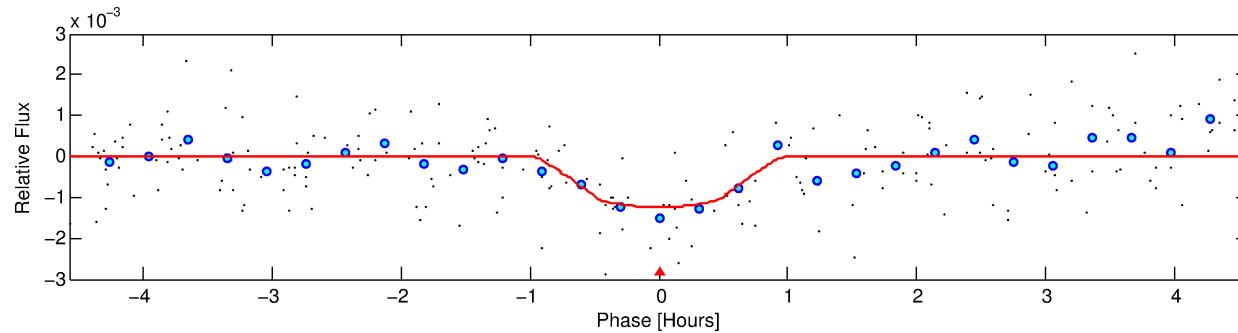
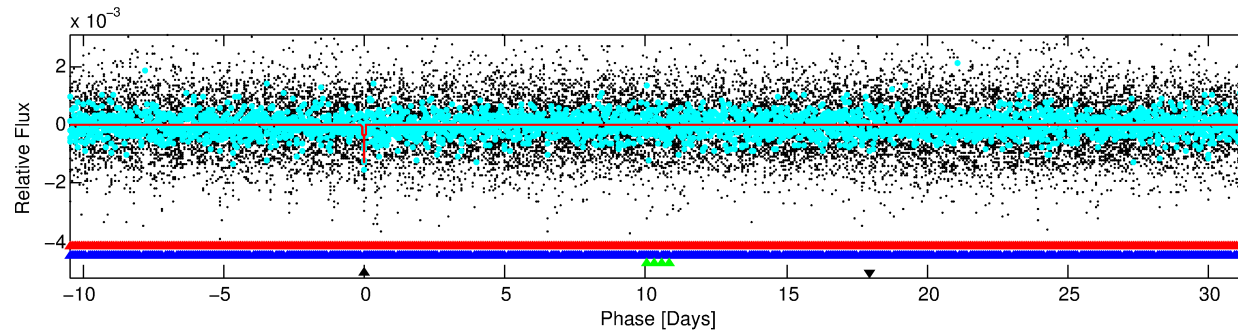
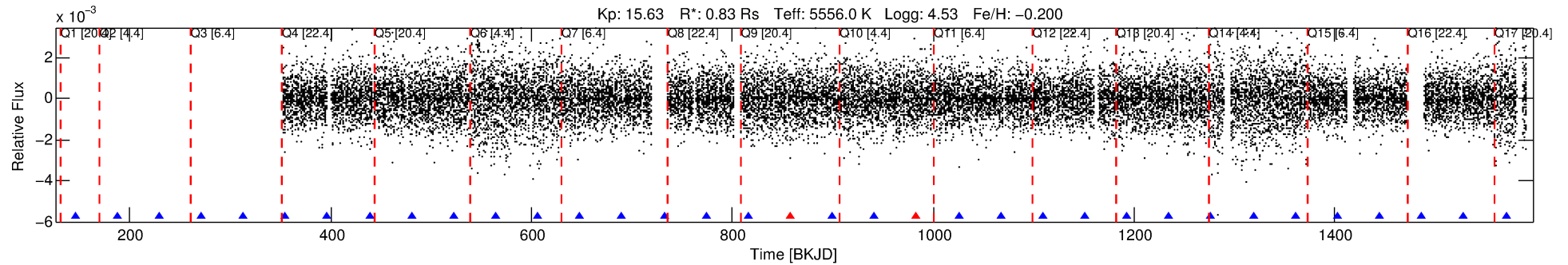
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005038443-04

No Significant Match Found

DV One-Page Summary

KIC: 5038443 Candidate: 4 of 4 Period: 41.901 d



DV Fit Results:

Period = 41.90117 [0.00033] d
Epoch = 145.5616 [0.0067] BKJD
Rp/R* = 0.0337 [0.1190]
a/R* = 175.63 [2579.75]
b = 0.61 [15.47]
Seff = 11.84 [3.62]
Teq = 473 [36] K
Rp = 3.07 [10.86] Re
a = 0.2242 [0.0437] AU
Ag = 1865.05 [13203.61] [0.14 σ]
Teffp = 4806 [8501] K [0.51 σ]

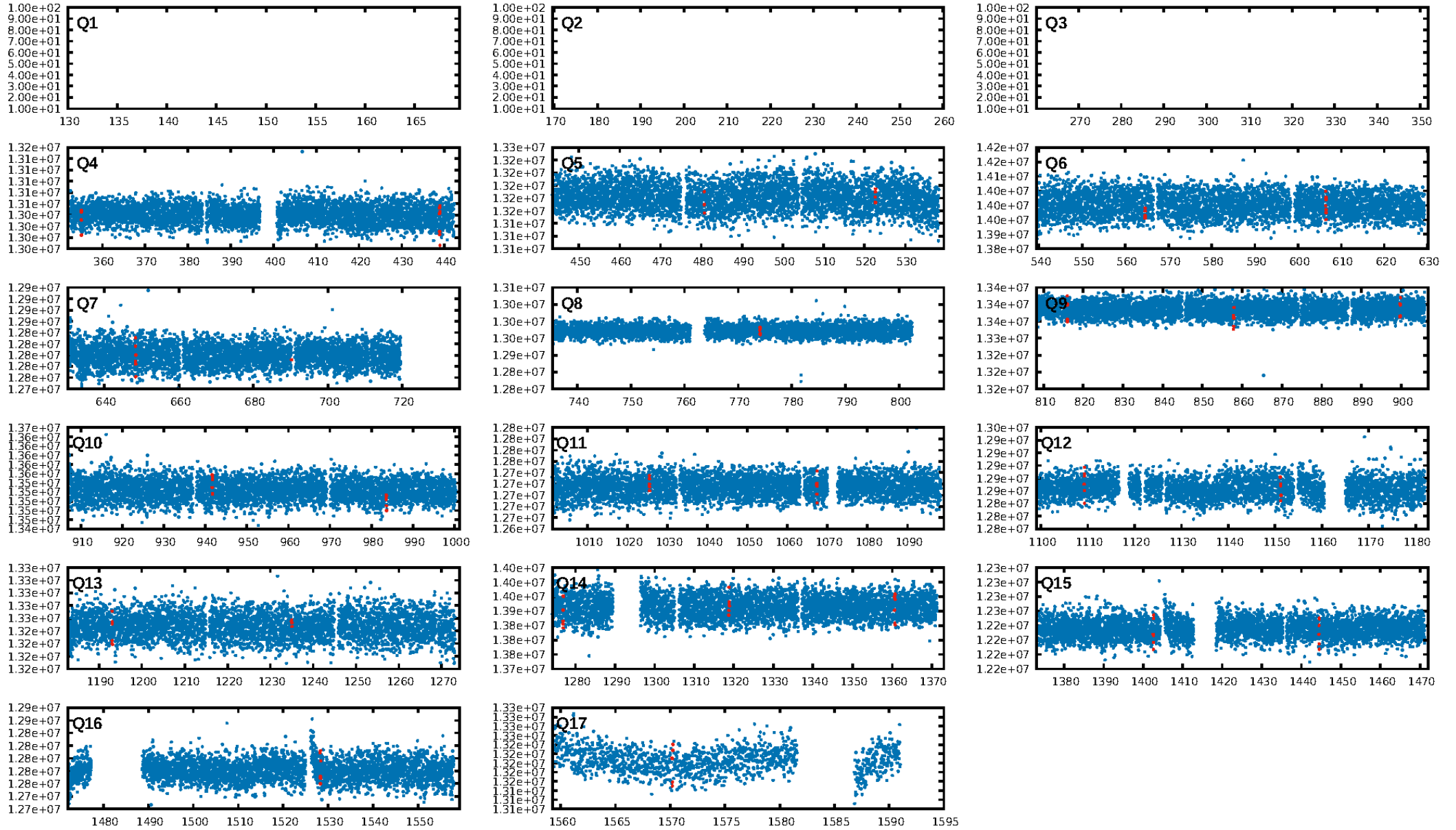
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [202.34 σ]
LongPeriod-sig: 100.0% [1915.83 σ]
ModelChiSquare2-sig: 83.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.82e-11
RollingBand-fgt: 0.83 [10/12]
GhostDiagnostic-chr: -0.1452
Centroid-sig: 10.9%
Centroid-so: 2.535 arcsec [4.63 σ]
OotOffset-rm: 0.680 arcsec [1.21 σ]
KicOffset-rm: 5.768 arcsec [8.26 σ]
OotOffset-st: 1/3/3/4 [11]
KicOffset-st: 1/3/3/4 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 0.71 [10/14]

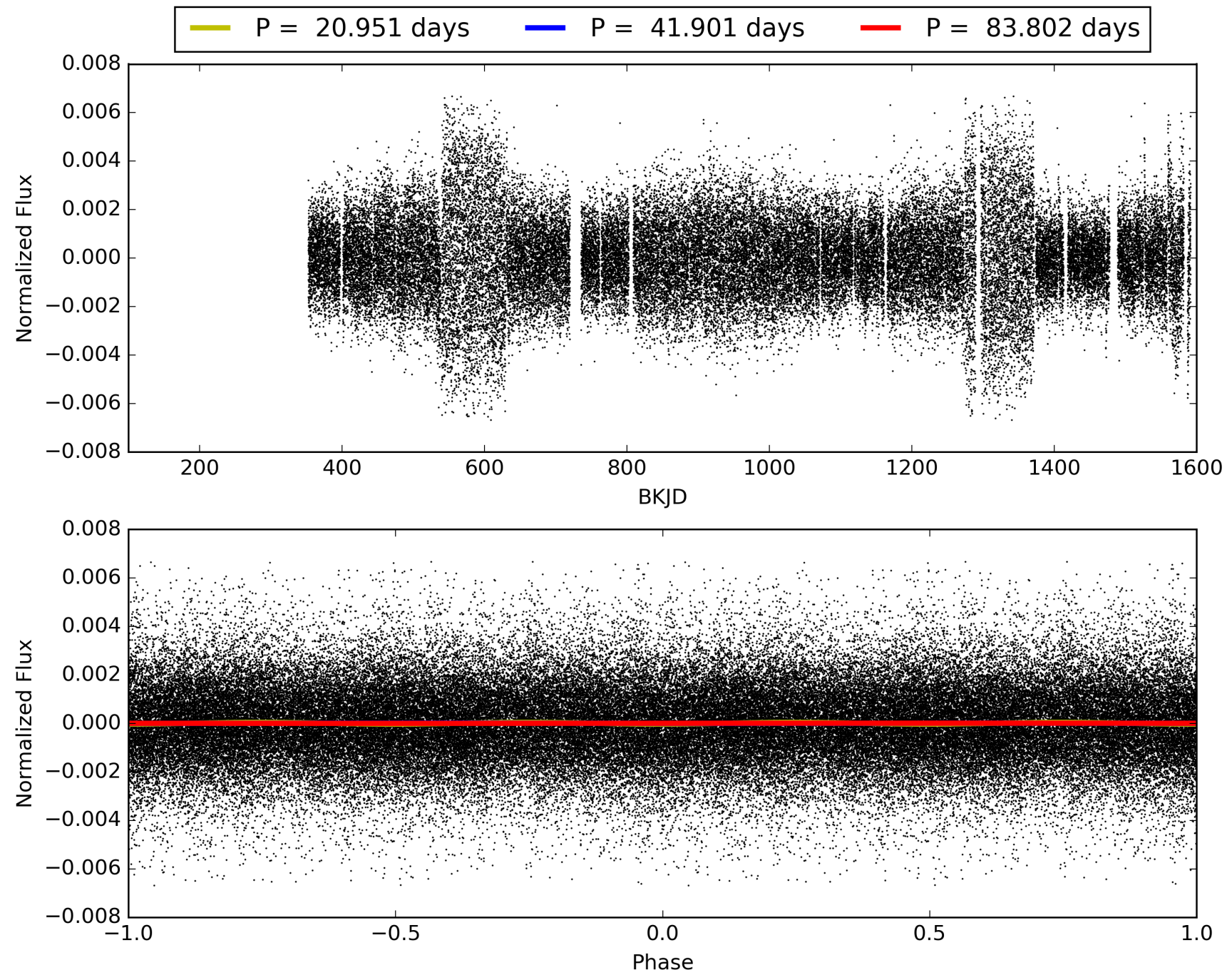
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:50:58 Z

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

TCE 005038443-04, PDC Light Curves

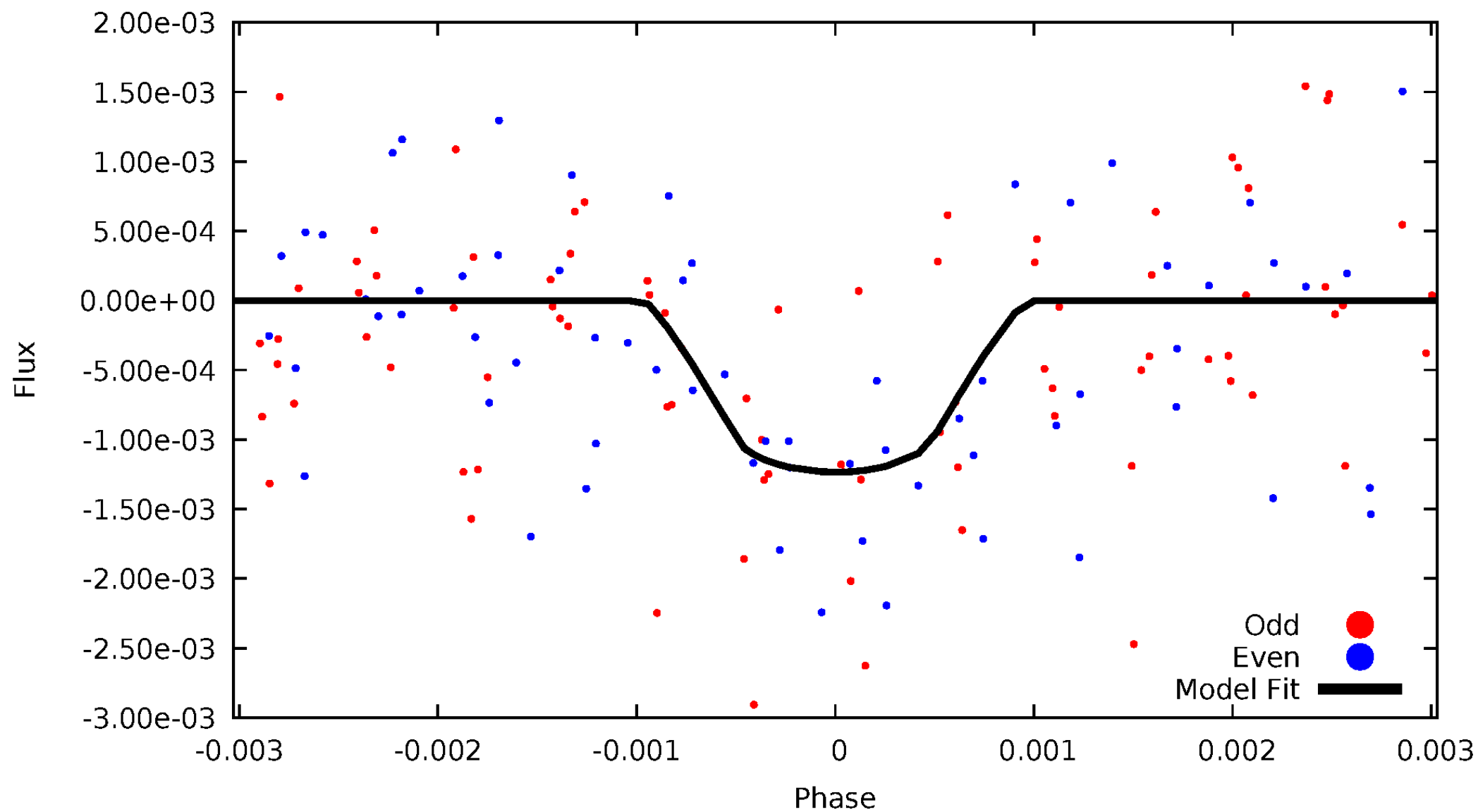


TCE 005038443-04



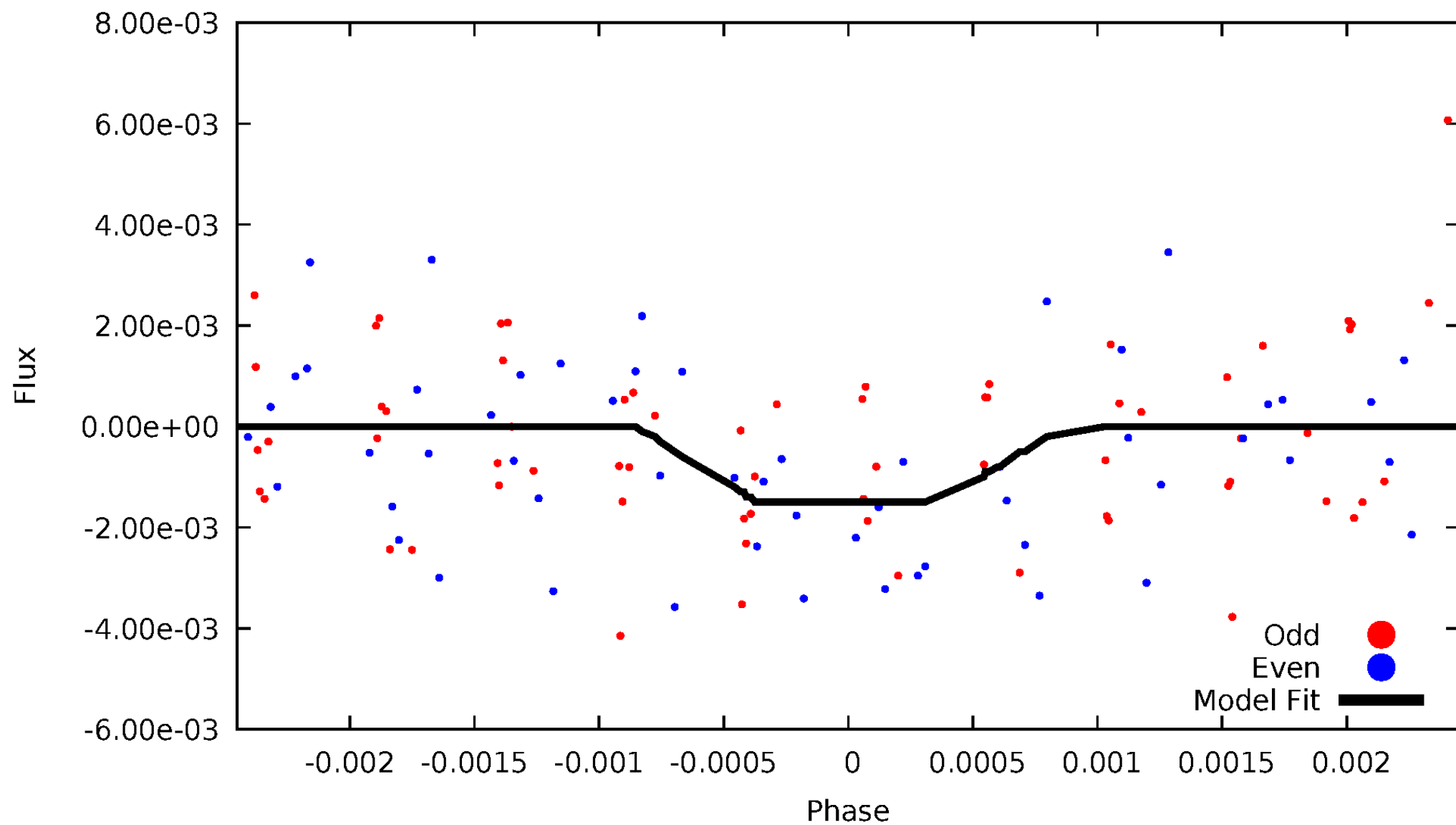
DV Odd/Even

TCE 005038443-04



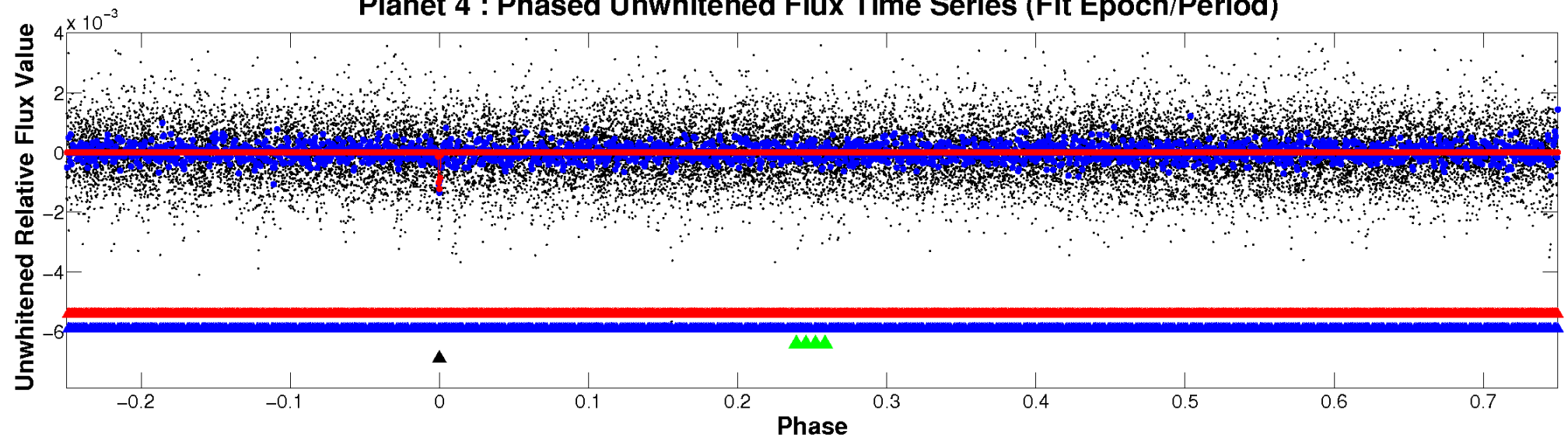
ALT Odd/Even

TCE 005038443-04

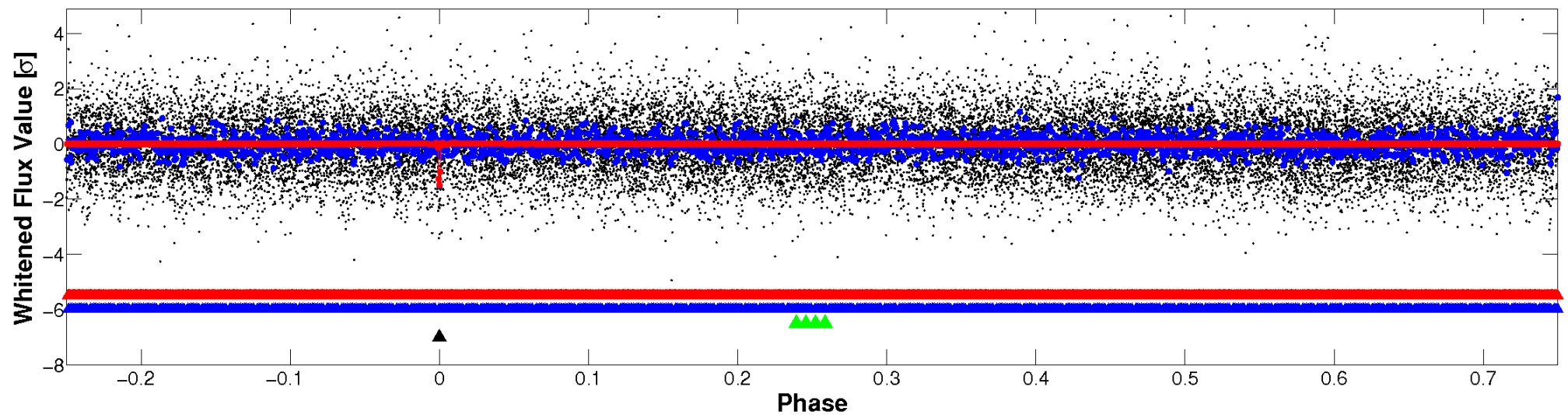


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

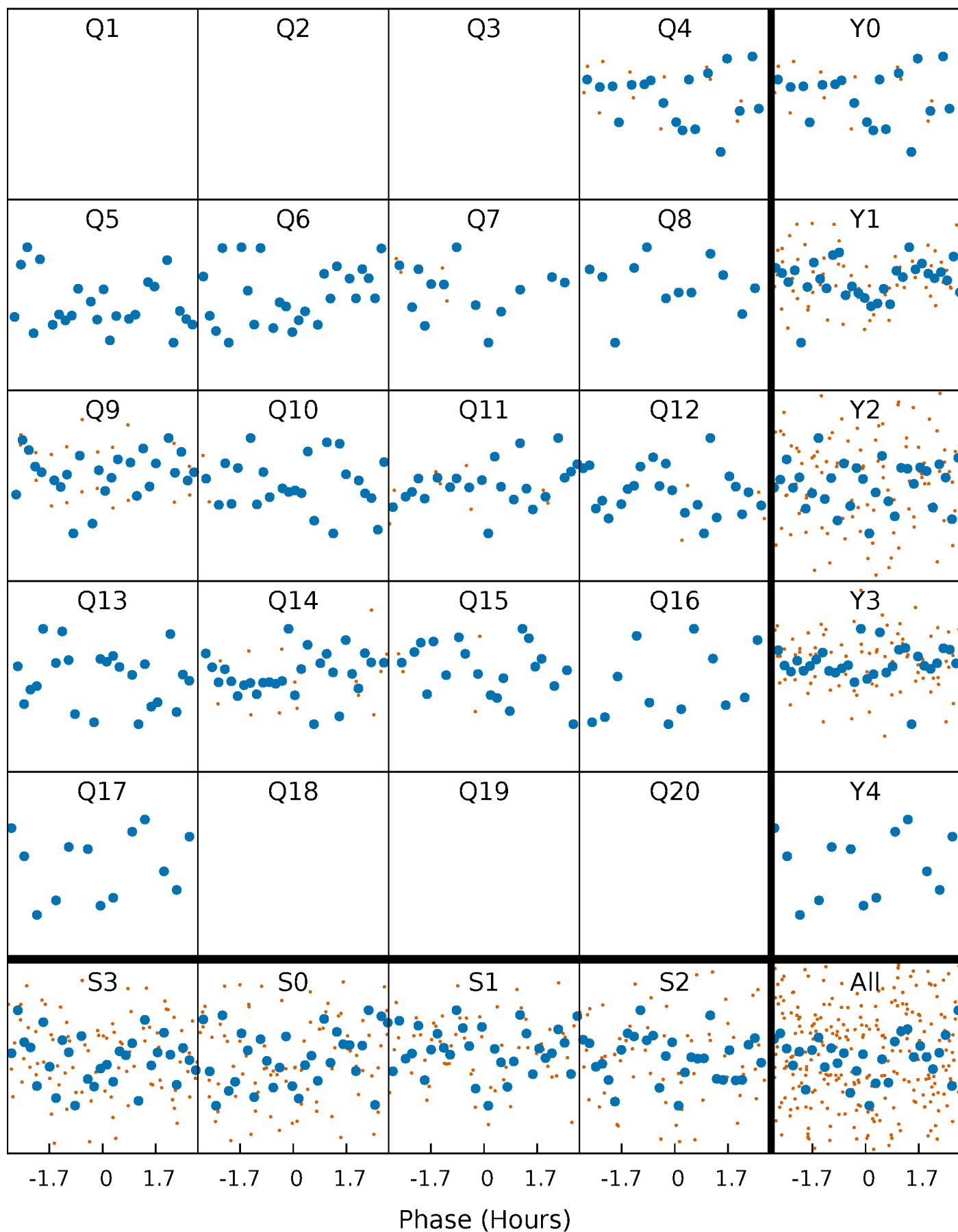


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



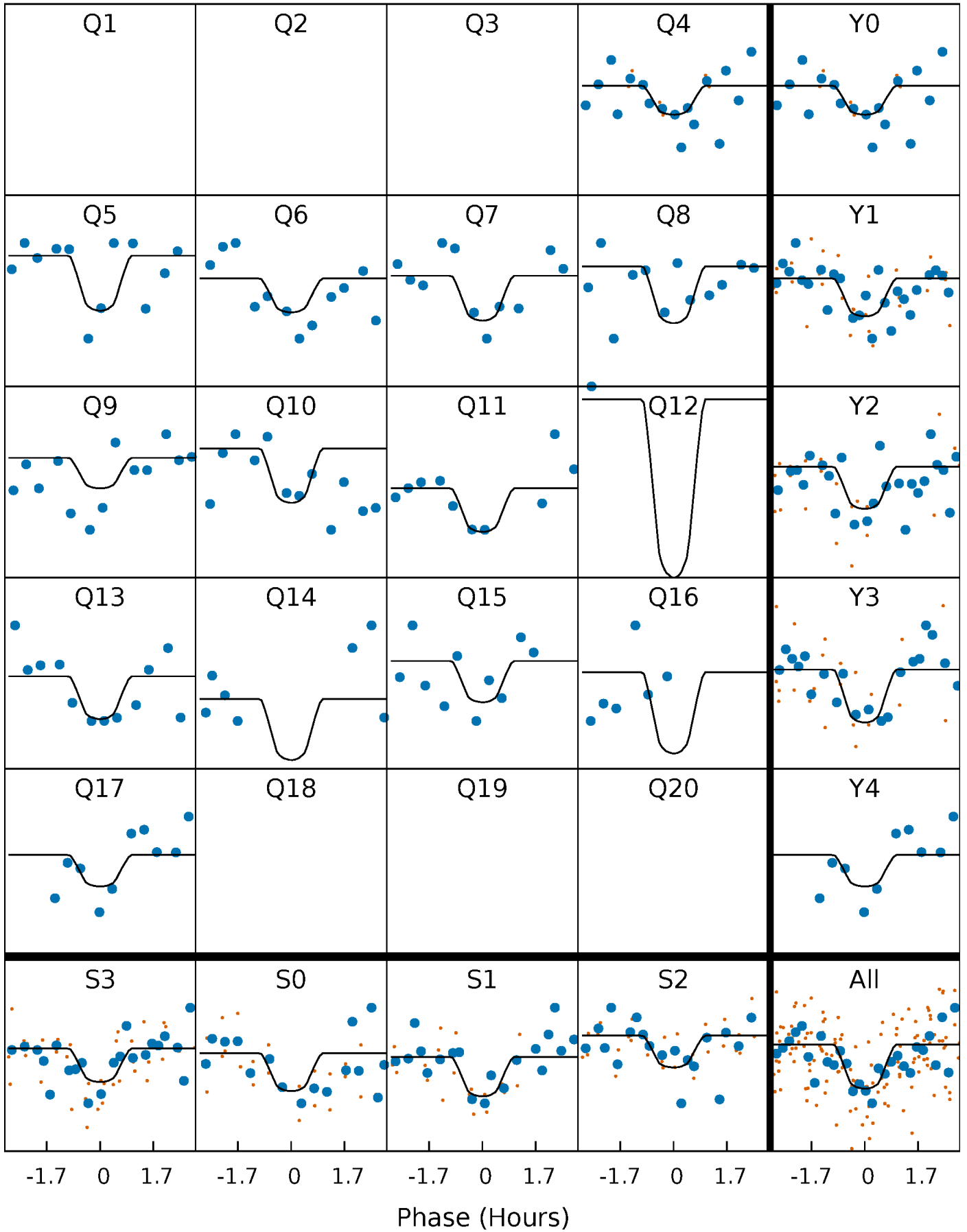
PDC Quarter-Phased Transit Curves

TCE 005038443-04 P= 41.901174 Days $T_0=145.561608$ (BKJD)



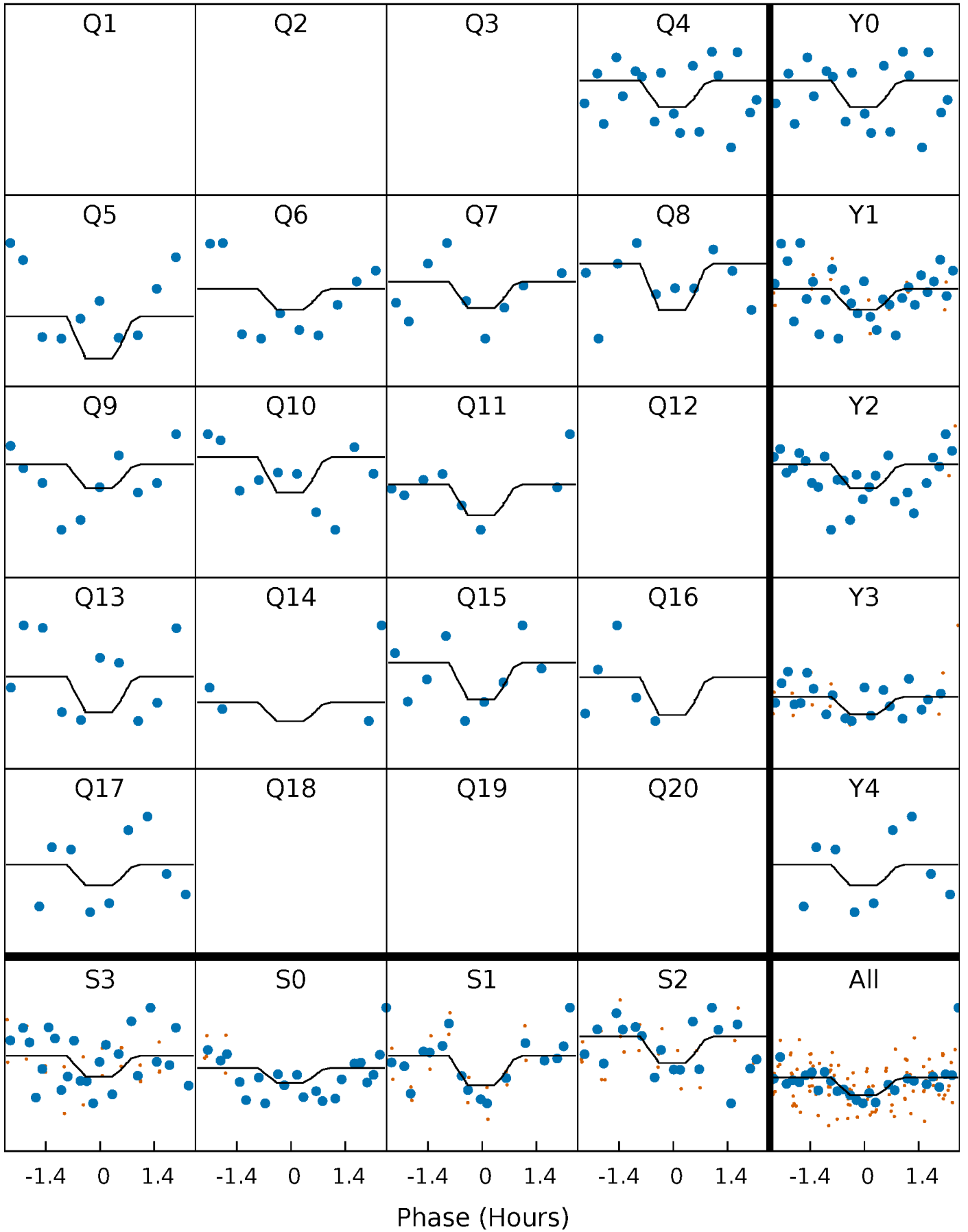
DV Quarter-Phased Transit Curves

TCE 005038443-04 P= 41.901174 Days $T_0=145.561608$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

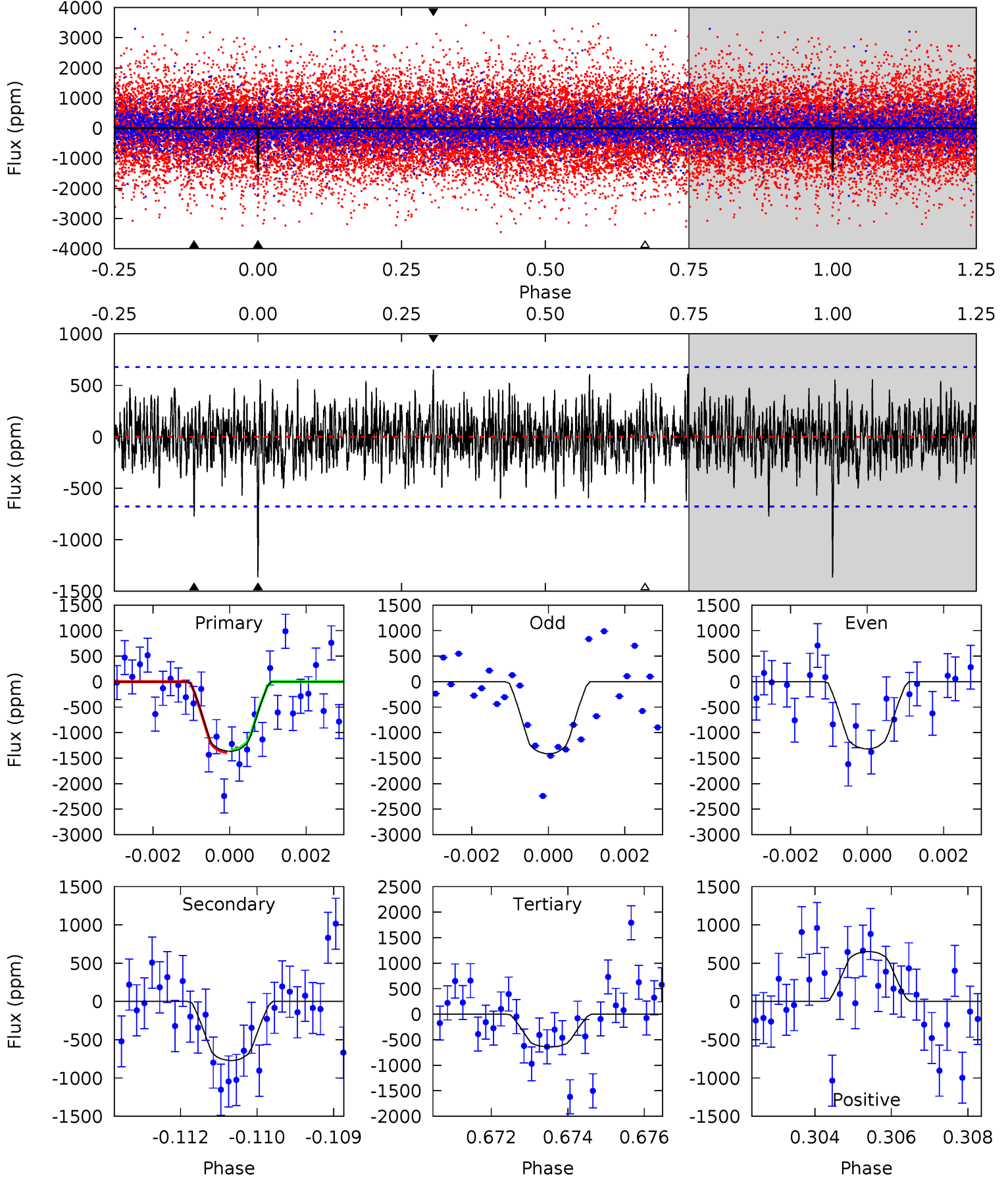
TCE 005038443-04 P= 41.901403 Days $T_0=145.558430$ (BKJD)



DV Model-Shift Uniqueness Test

005038443-04, P = 41.901174 Days, E = 145.561608 Days

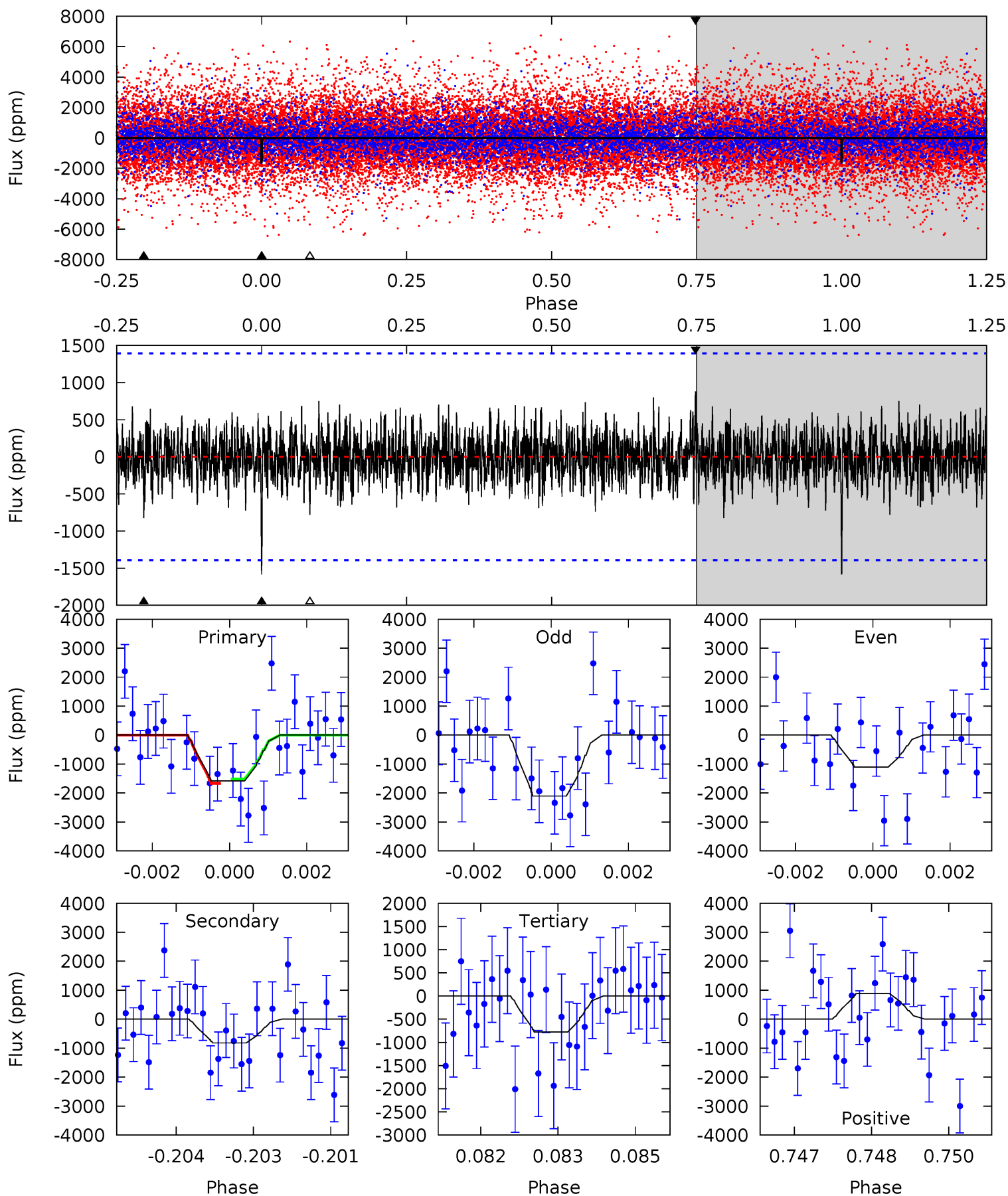
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	6.09	5.05	5.14	5.34	3.11	1.50	5.71	5.63	1.03	0.95	0.38	1.04	0.32	0.23



Alt Model-Shift Uniqueness Test

005038443-04, P = 41.901403 Days, E = 145.558430 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.11	3.17	3.00	3.39	5.37	3.16	0.94	3.11	2.71	0.17	-0.22	1.94	0.91	0.36	0.28



Stellar Parameters For KIC 005038443

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5556^{+182}_{-182}	$4.527^{+0.063}_{-0.147}$	$-0.200^{+0.300}_{-0.300}$	$0.835^{+0.199}_{-0.085}$	$0.856^{+0.102}_{-0.081}$	$2.071^{+0.565}_{-0.891}$
	+3%/-3%	+1%/-3%	+150%/-150%	+24%/-10%	+12%/-9%	+27%/-43%
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 005038443-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-772 ± 127	$9.80^{+8.16}_{-6.94}$	669^{+41}_{-31}	3378^{+2023}_{-563}	214^{+2600}_{-151}
Alt.	-822 ± 259	$8.90^{+9.62}_{-5.81}$	668^{+40}_{-31}	3463^{+1779}_{-662}	254^{+2274}_{-195}

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 $A_{obs} \gg 1.0$

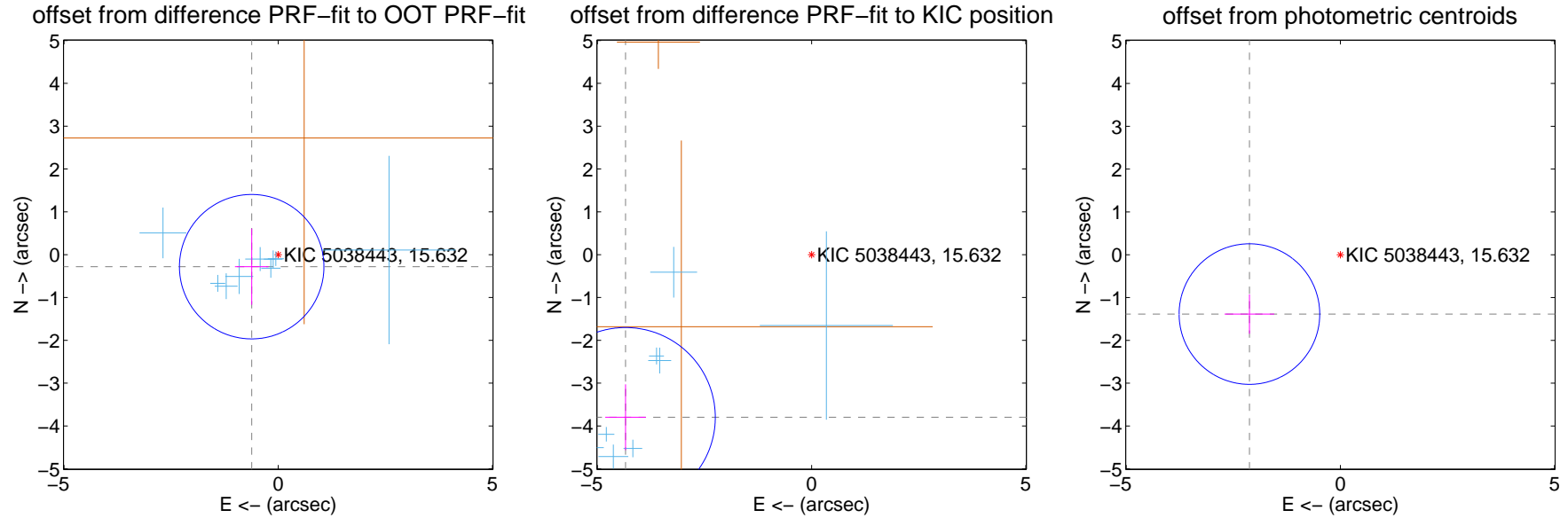
DV Centroid Data

Supplemental centroid analysis for 005038443-04. Kepler magnitude: 15.63. Transit SNR 7.69

There are 9 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 6.00 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.680 ± 0.562	1.21	0.619 ± 0.390	-0.281 ± 0.890
PRF-fit source offset from KIC position	5.768 ± 0.698	8.26	4.342 ± 0.474	-3.797 ± 0.768
photometric centroid source offset	2.54 ± 0.55	4.63	2.12 ± 0.58	-1.39 ± 0.46



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



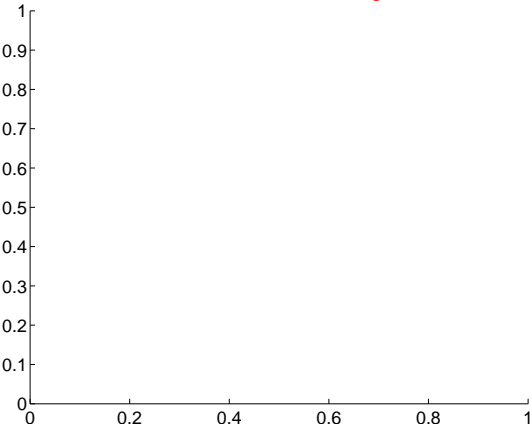
Q2 no difference image



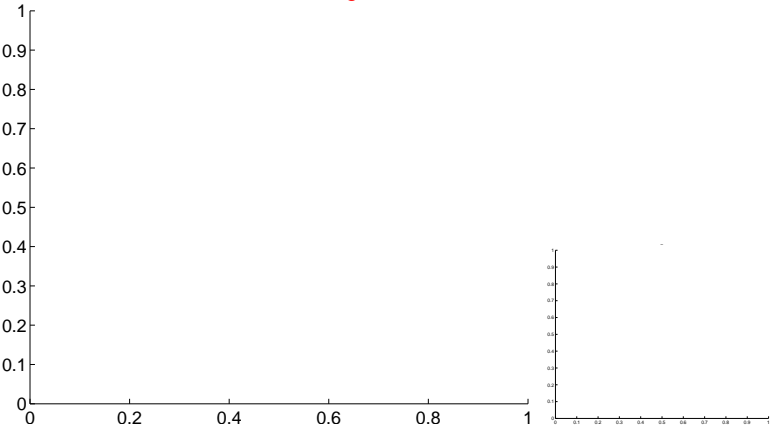
Q2 no OOT image



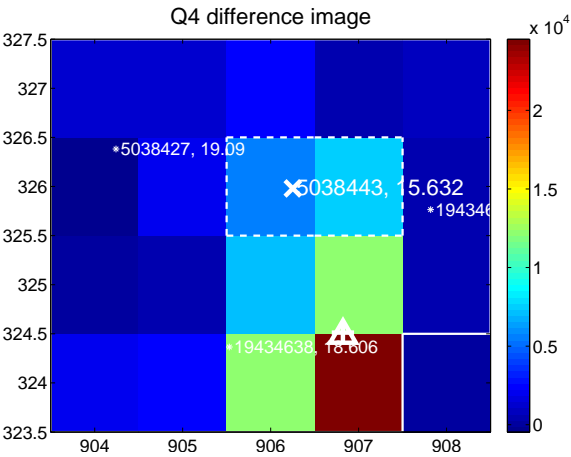
Q3 no difference image



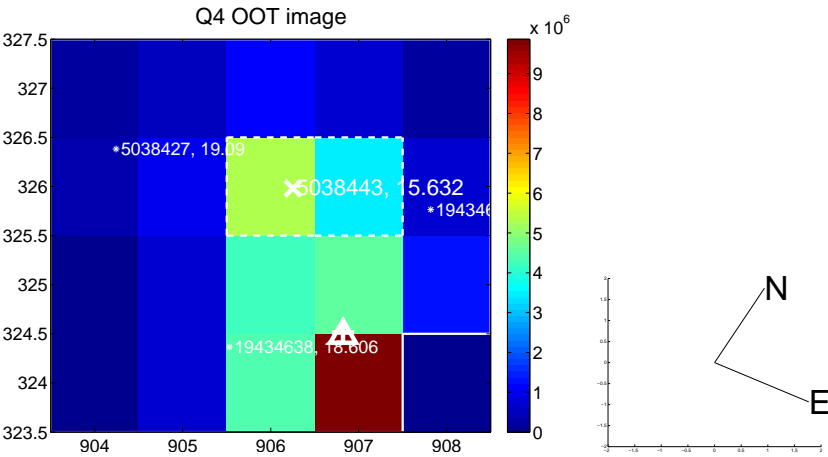
Q3 no OOT image



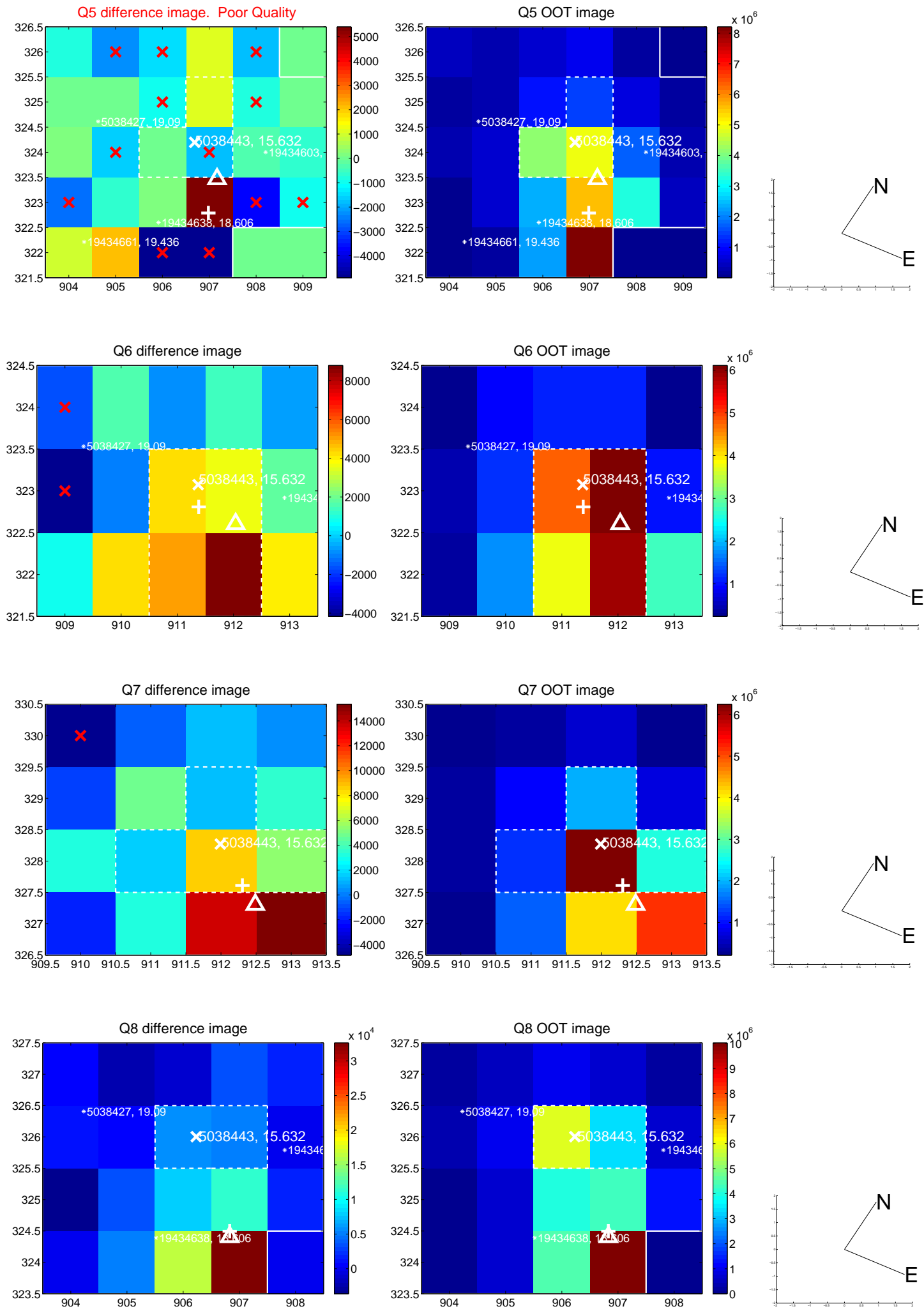
Q4 difference image



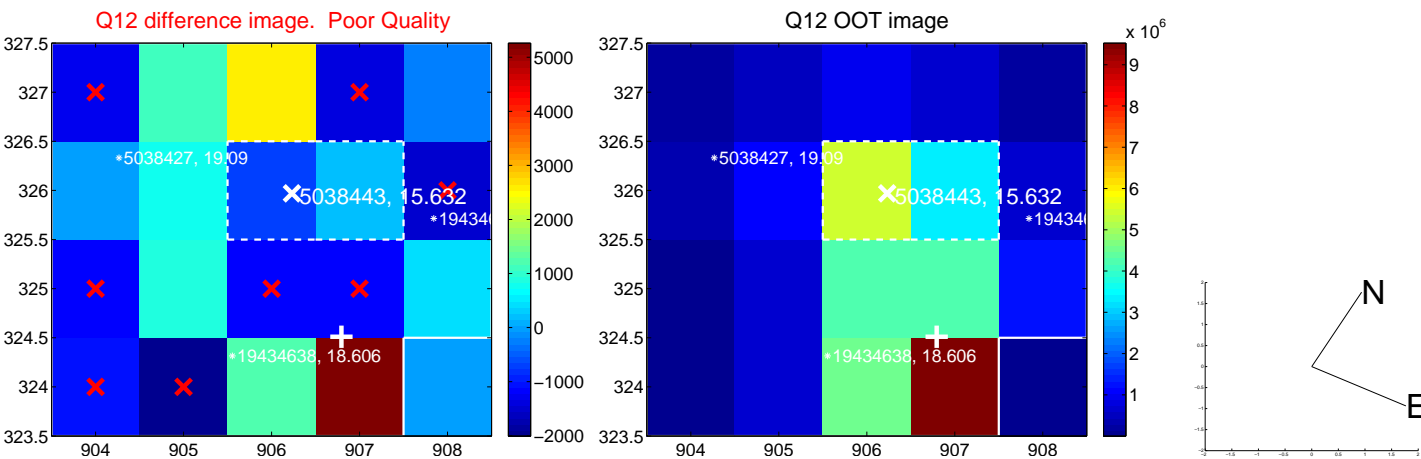
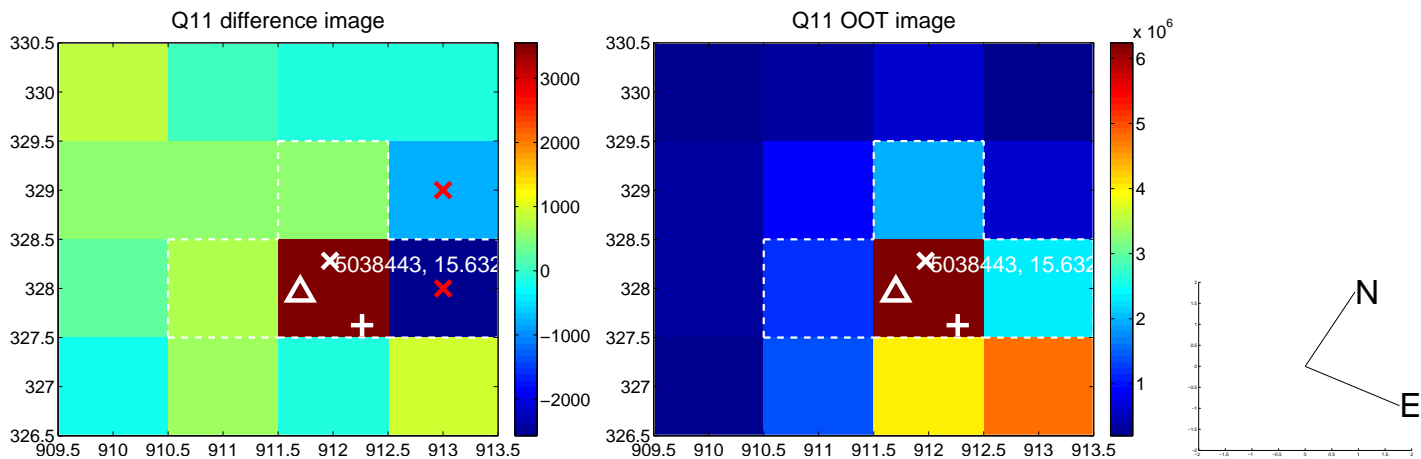
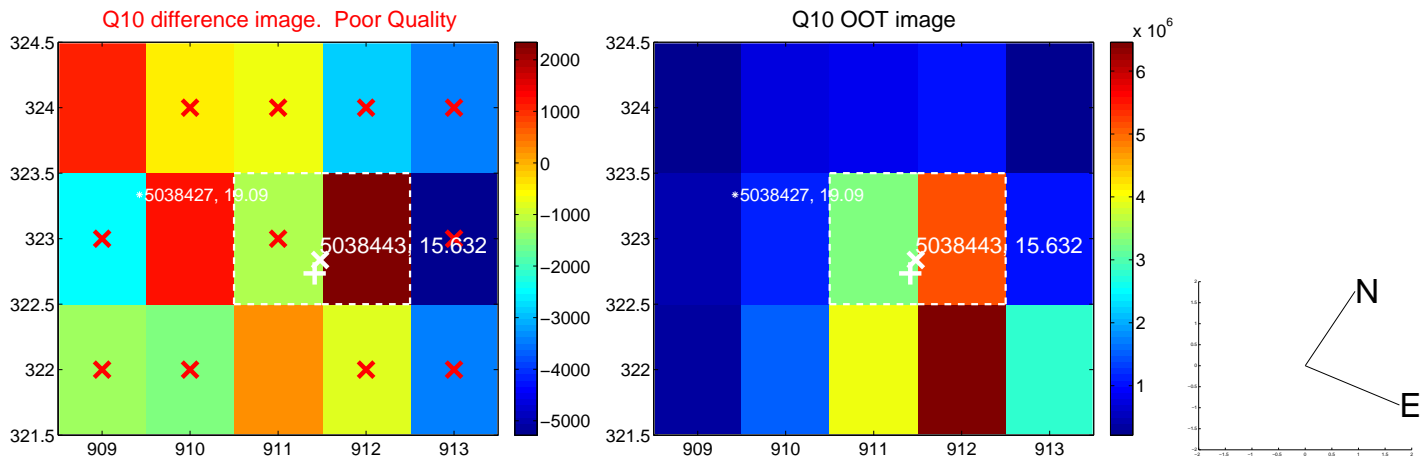
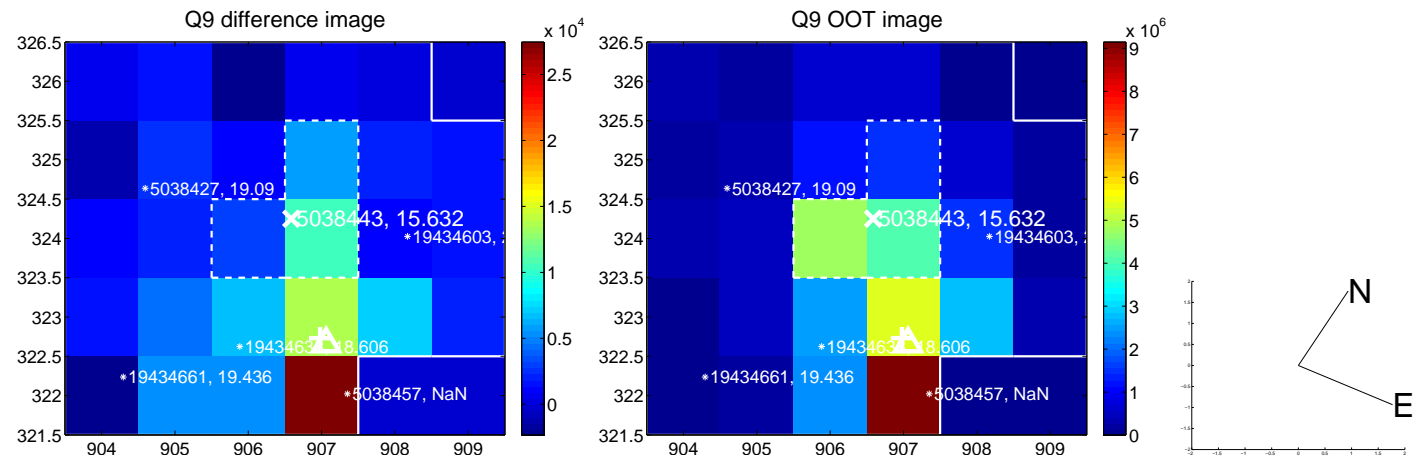
Q4 OOT image



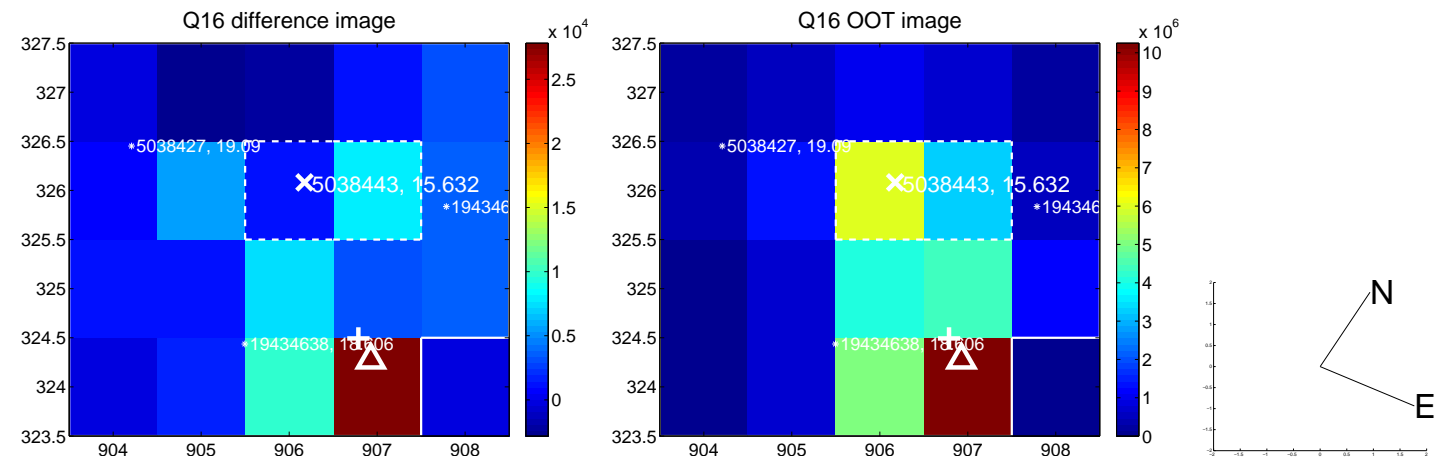
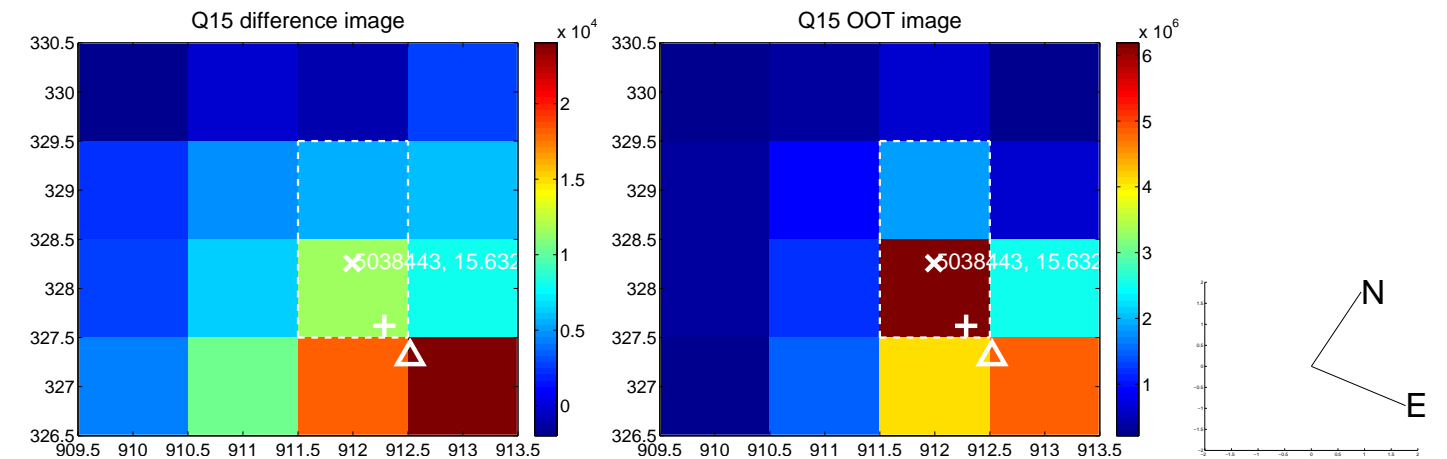
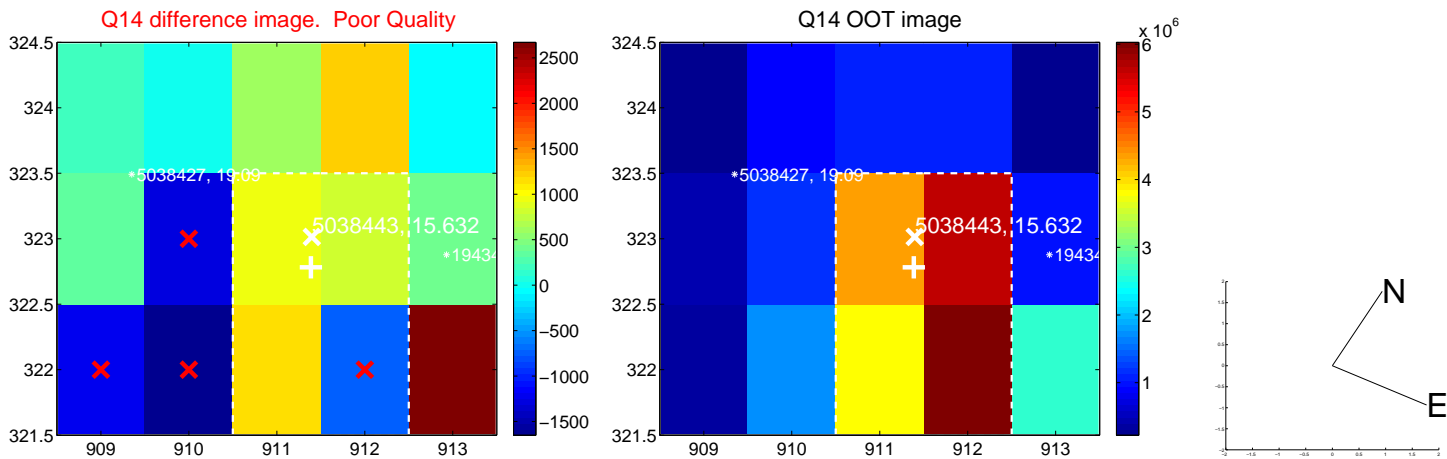
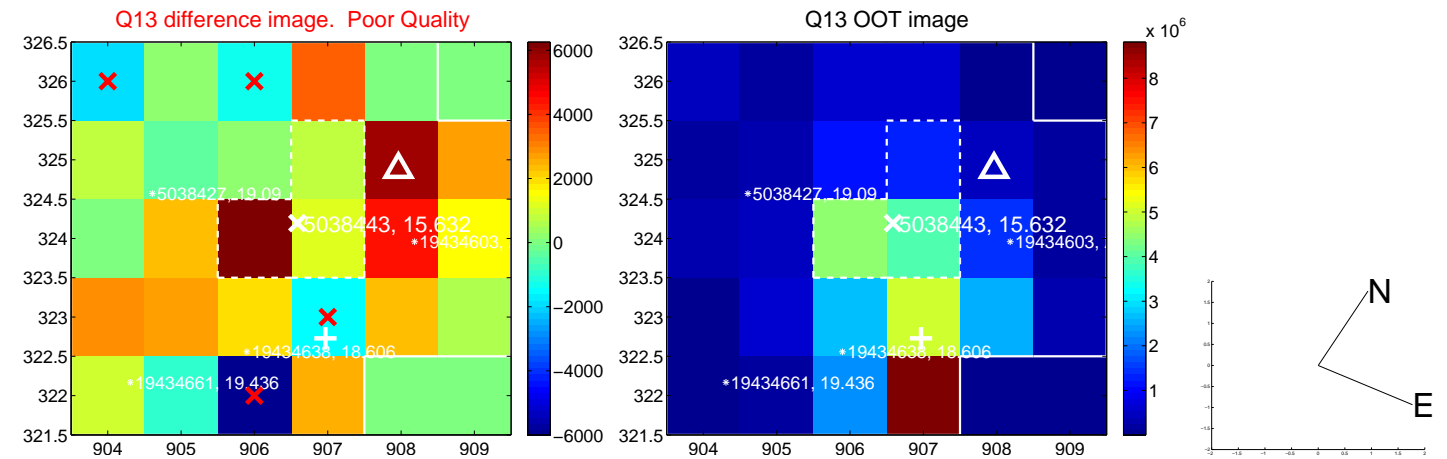
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



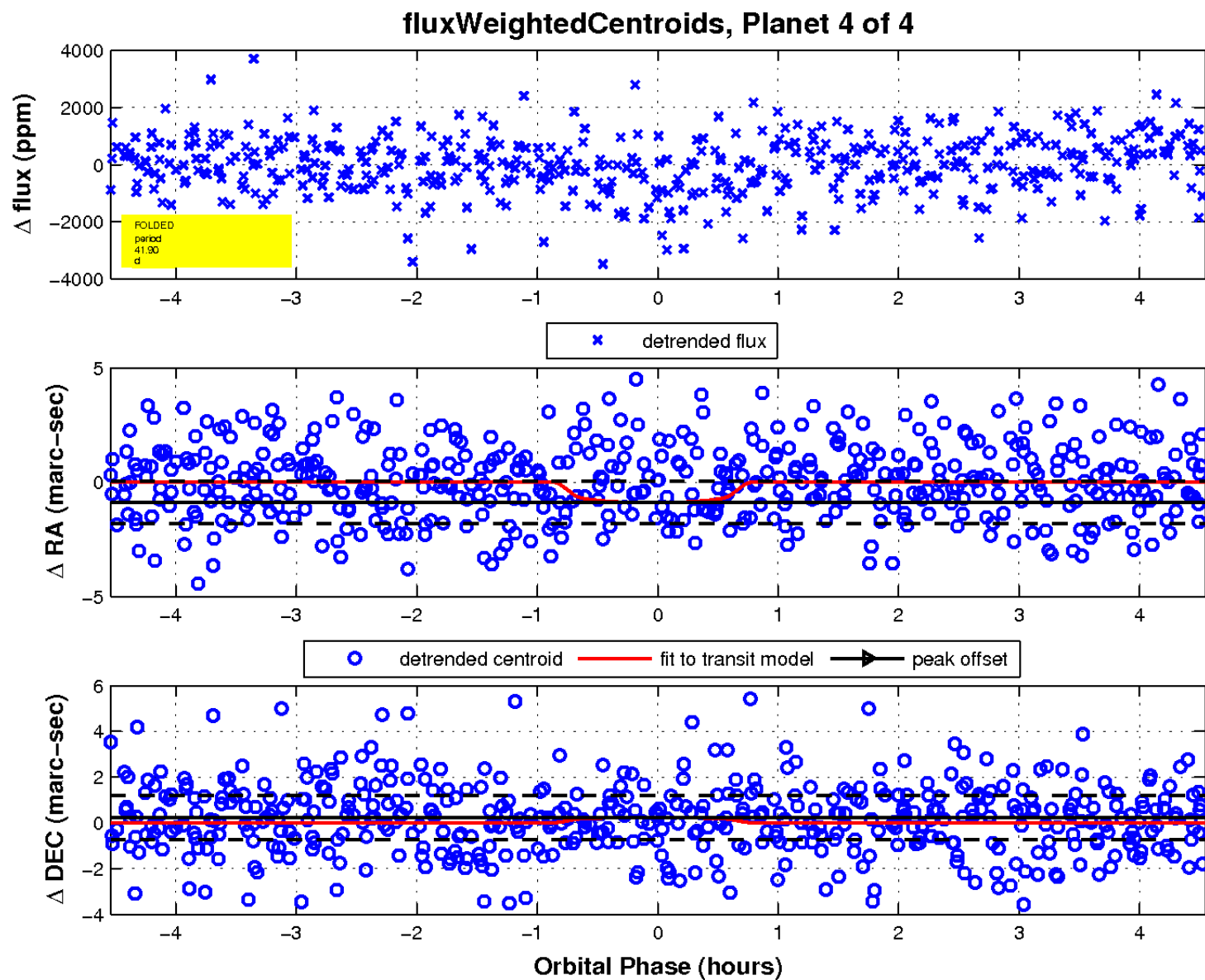
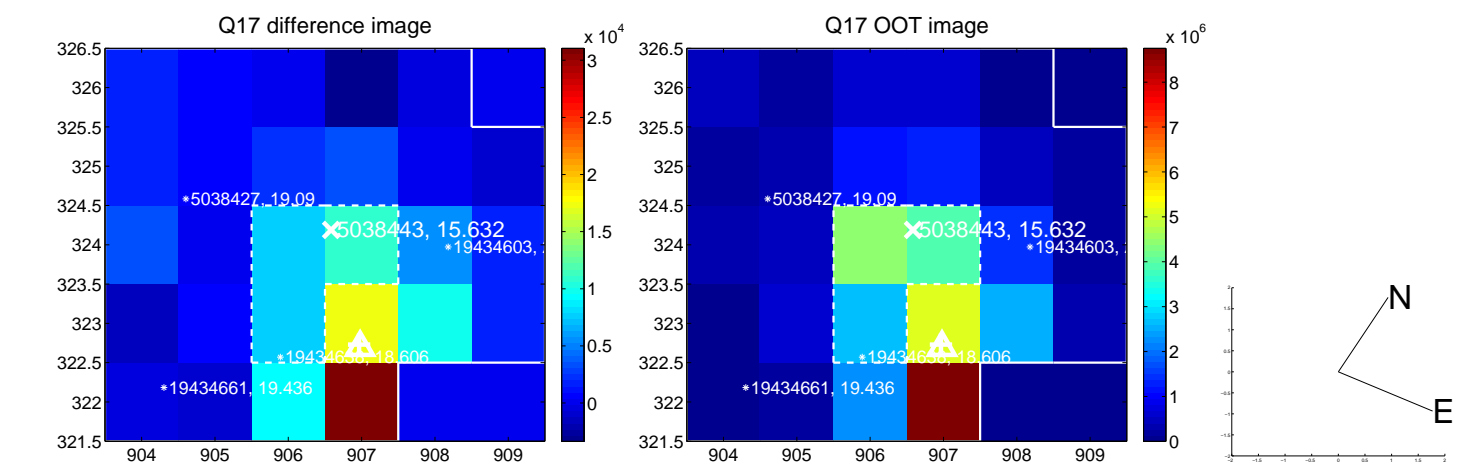
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \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

