

KIC 003957584

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})
003957584-01	OBS	No	2.979956	132.476279	14.9	15.090	10.2	10.6	2.26	7528	0.97	5932.68
003957584-02	OBS	No	447.037666	494.513730	102.7	10.397	7.6	7.4	2.26	7528	2.38	7.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003957584-01	OBS	FP	0.00	1	0	0	0	LPP_DV
003957584-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

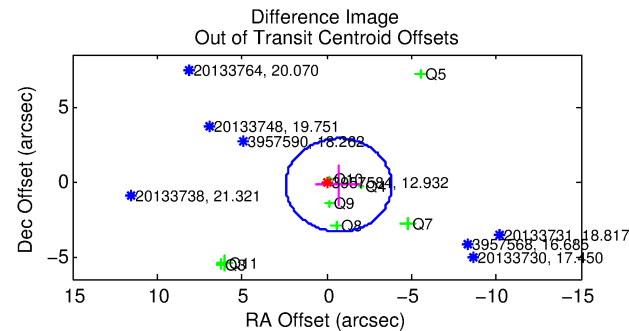
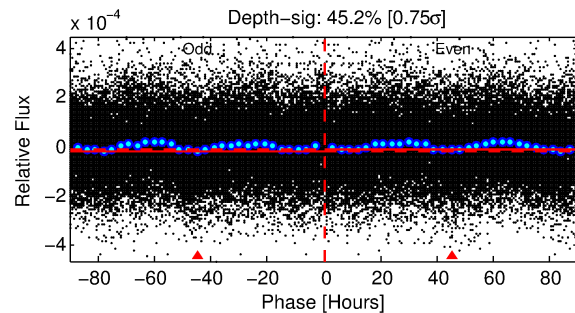
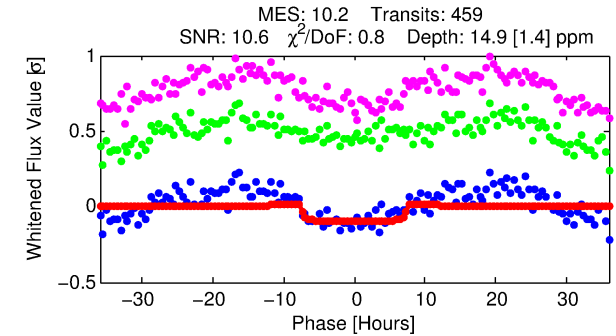
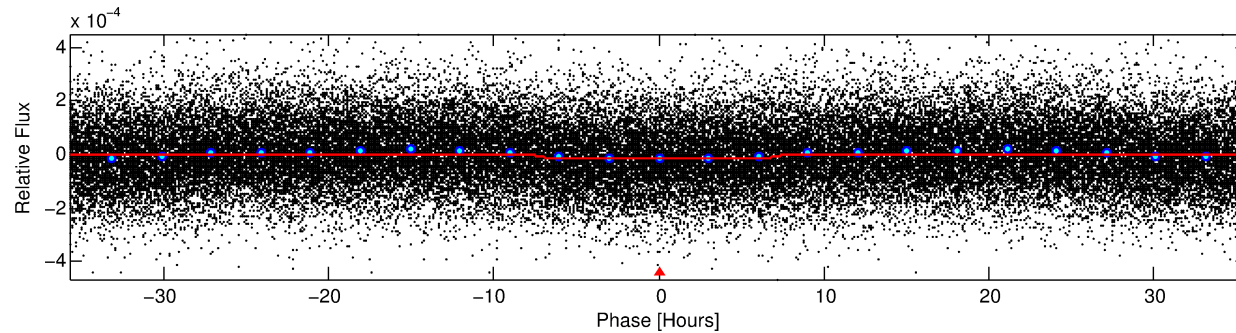
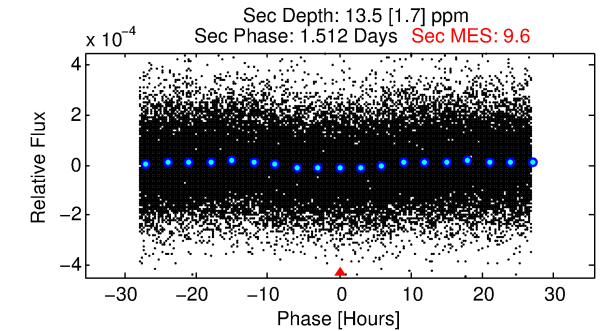
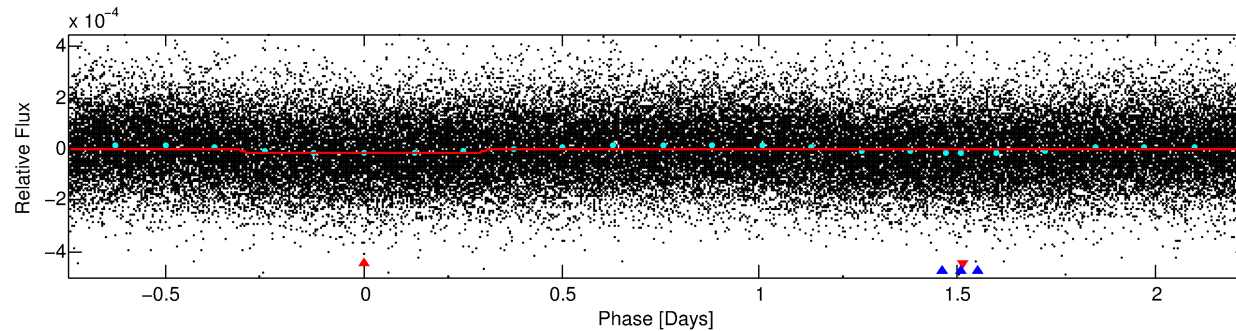
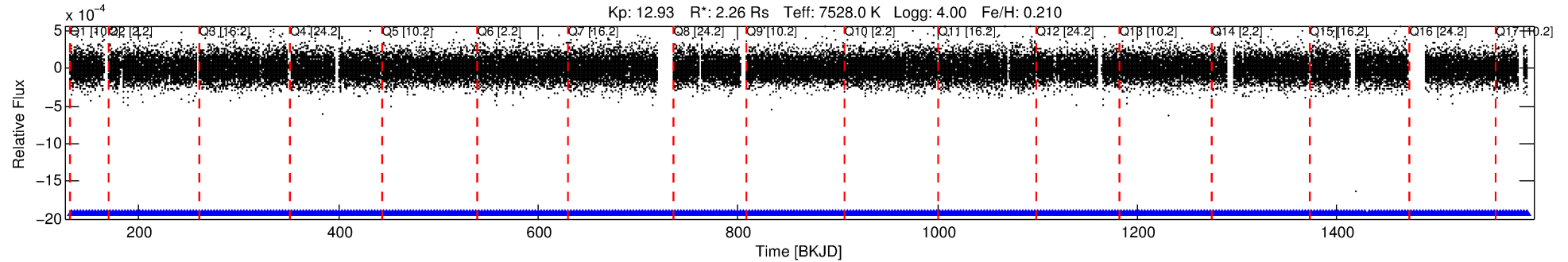
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003957584-01

No Significant Match Found

DV One-Page Summary

KIC: 3957584 Candidate: 1 of 2 Period: 2.980 d



DV Fit Results:

Period = 2.97996 [0.00005] d
Epoch = 132.4763 [0.0106] BKJD
Rp/R* = 0.0039 [0.0010]
a/R* = 1.25 [0.71]
b = 0.82 [0.64]
Seff = 5932.68 [1194.37]
Teq = 2238 [113] K
Rp = 0.97 [0.28] Re
a = 0.0499 [0.0065] AU
Ag = 19.79 [10.66] [1.76σ]
Teffp = 7298 [920] K [5.46σ]

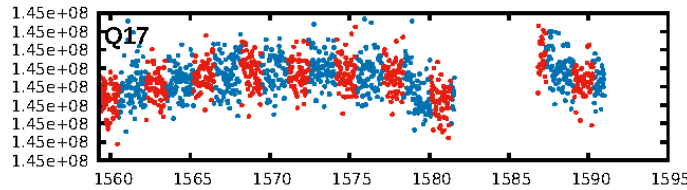
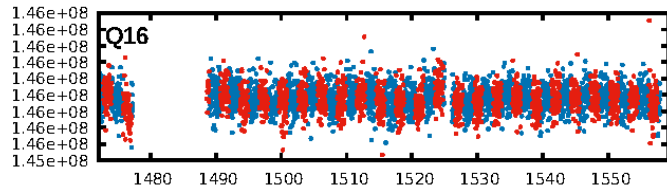
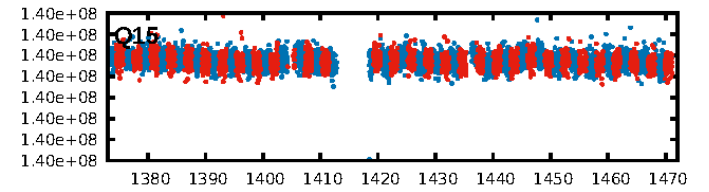
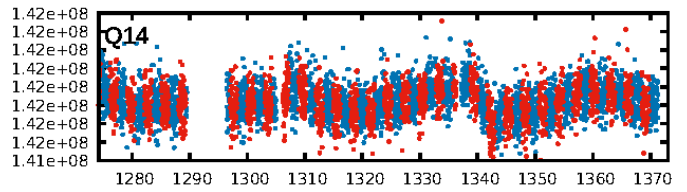
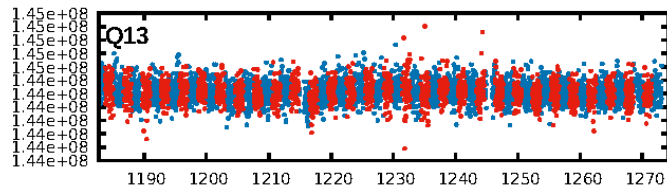
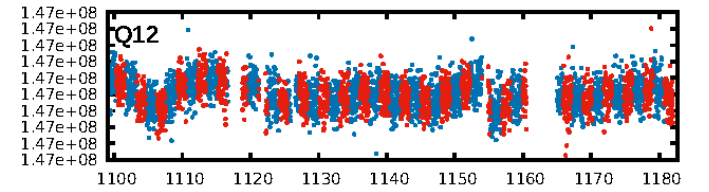
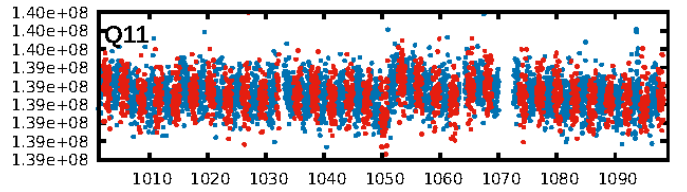
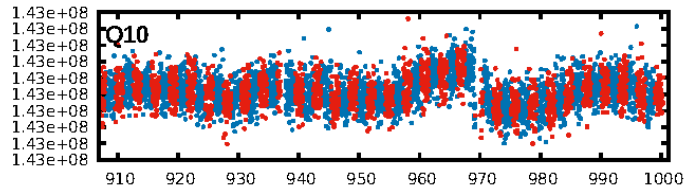
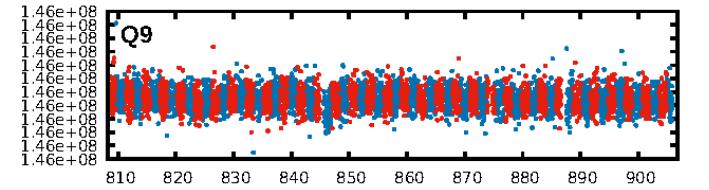
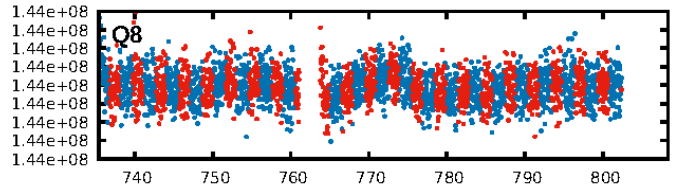
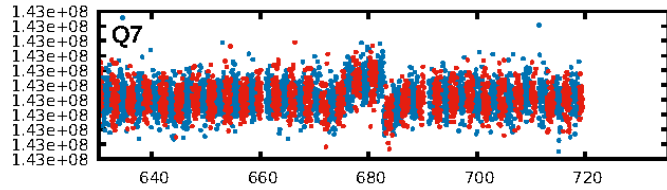
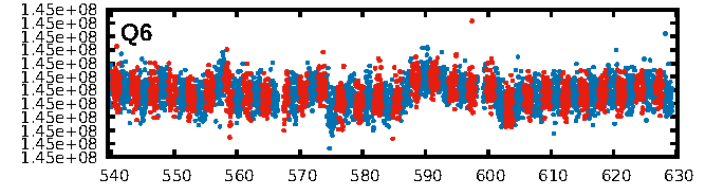
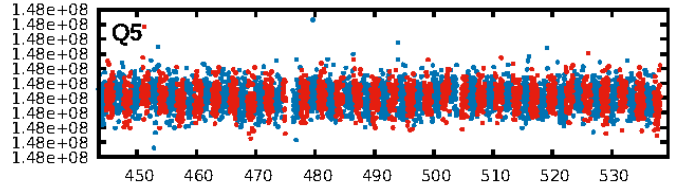
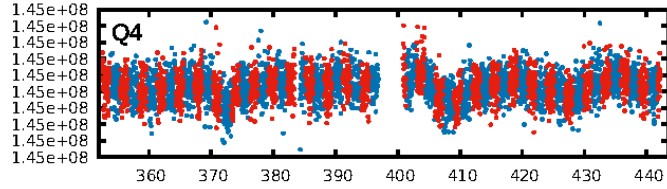
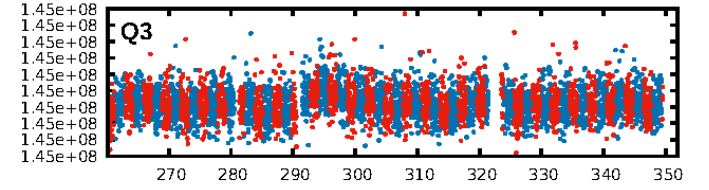
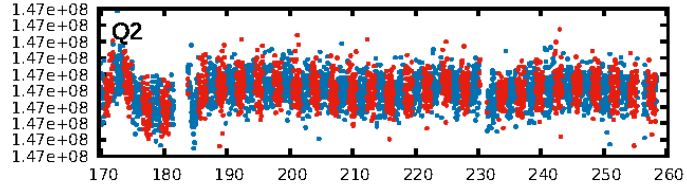
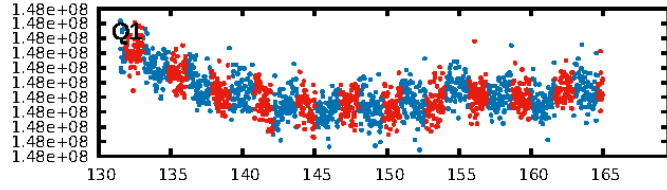
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [581.59σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.63e-16
RollingBand-fgt: 1.00 [437/437]
GhostDiagnostic-chr: 5.395
Centroid-sig: 58.3%
Centroid-so: 0.816 arcsec [0.53σ]
OotOffset-rm: 0.740 arcsec [0.71σ]
OotOffset-st: 1/3/2/2 [8]
KicOffset-rm: 0.751 arcsec [0.61σ]
KicOffset-st: 1/3/2/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 1.00 [17/17]

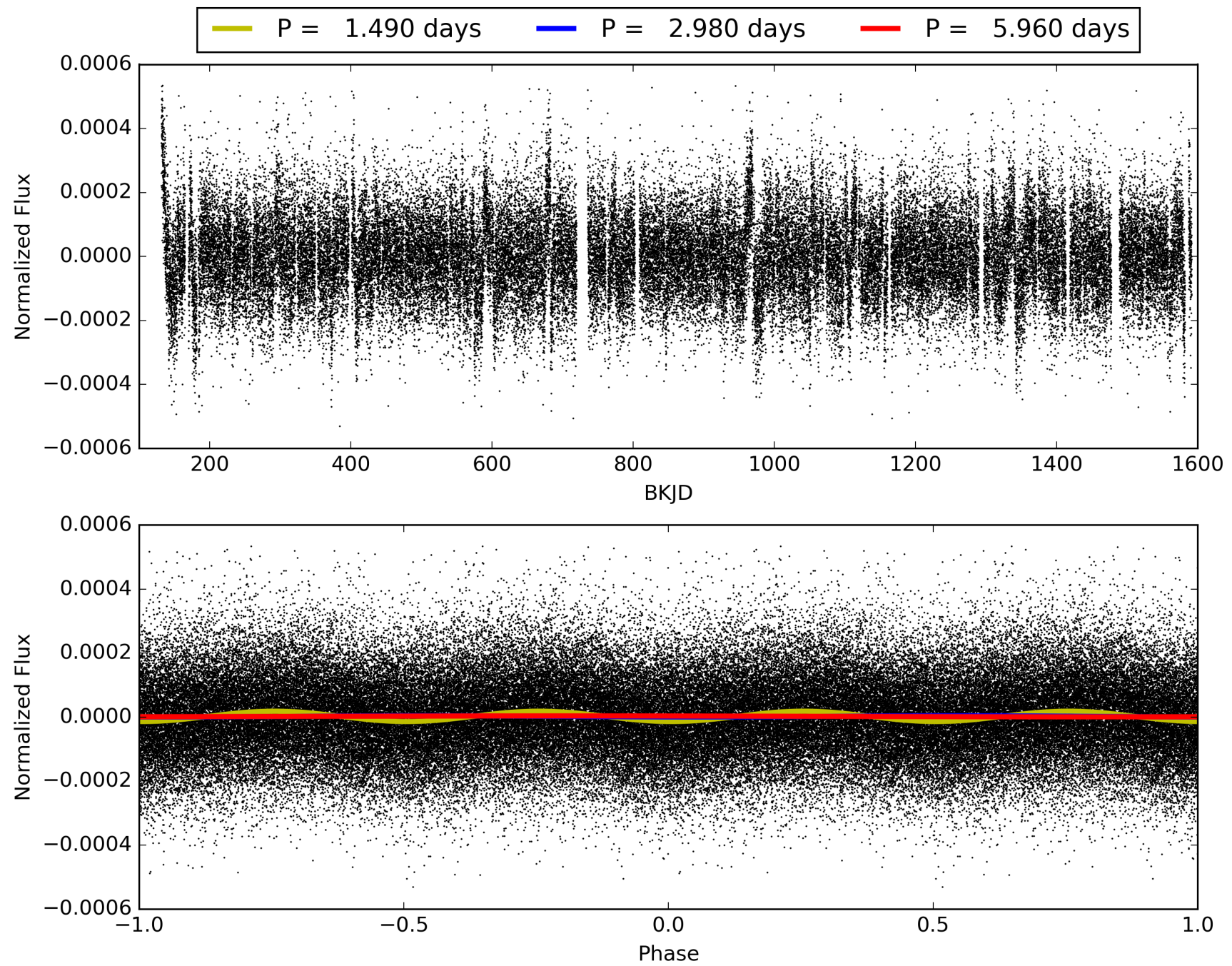
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:03:14 Z

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

TCE 003957584-01, PDC Light Curves

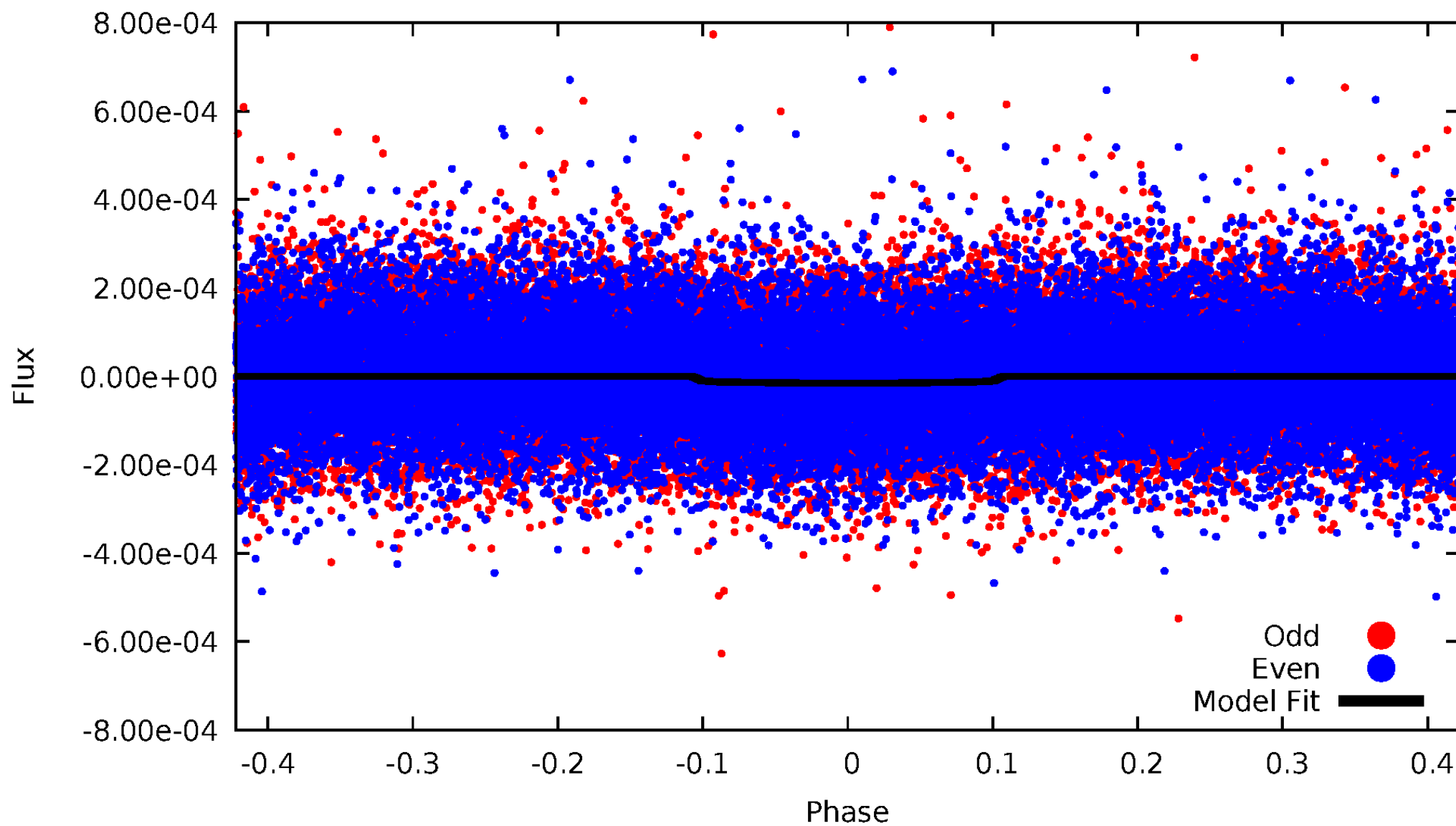


TCE 003957584-01



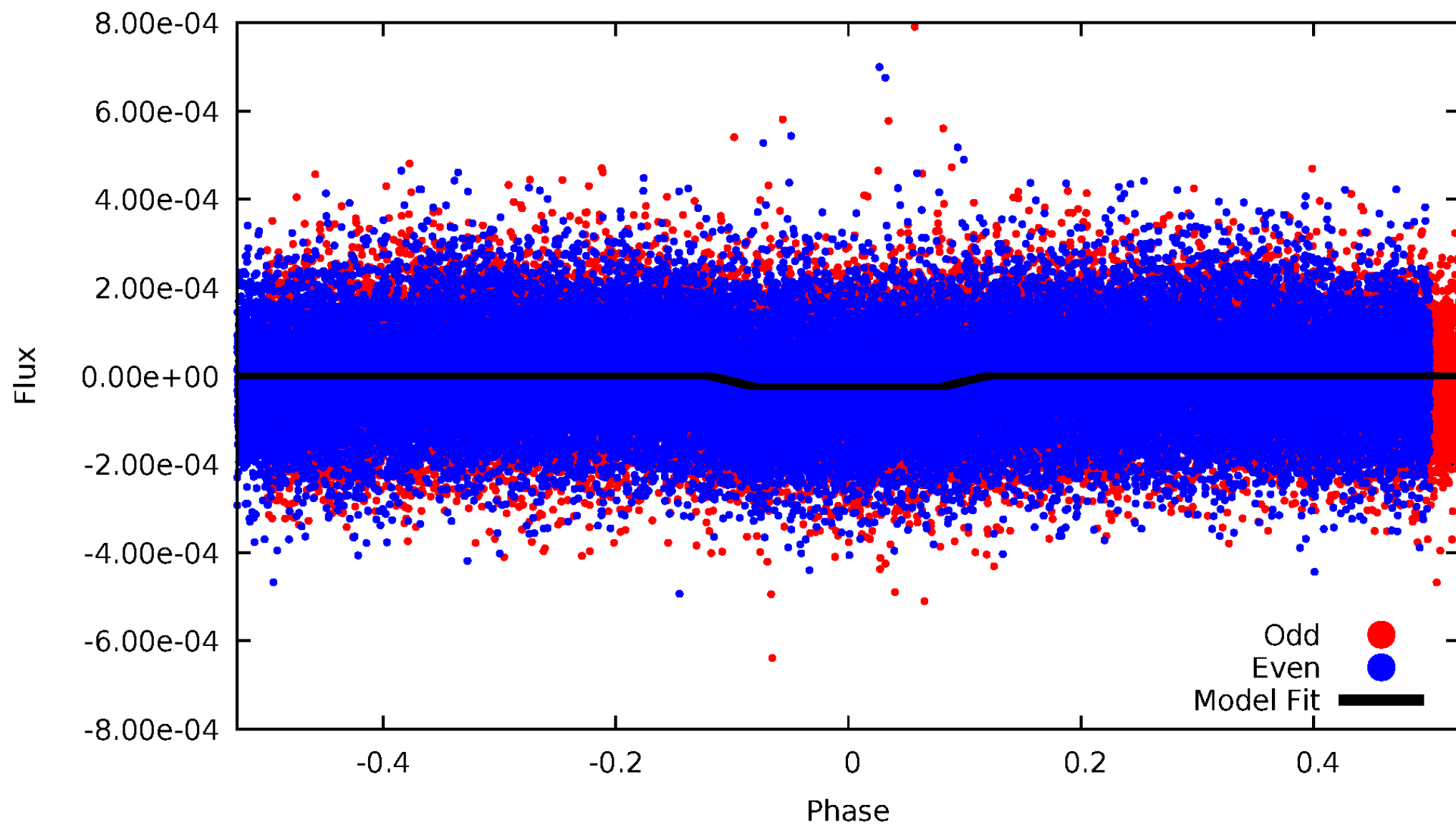
DV Odd/Even

TCE 003957584-01

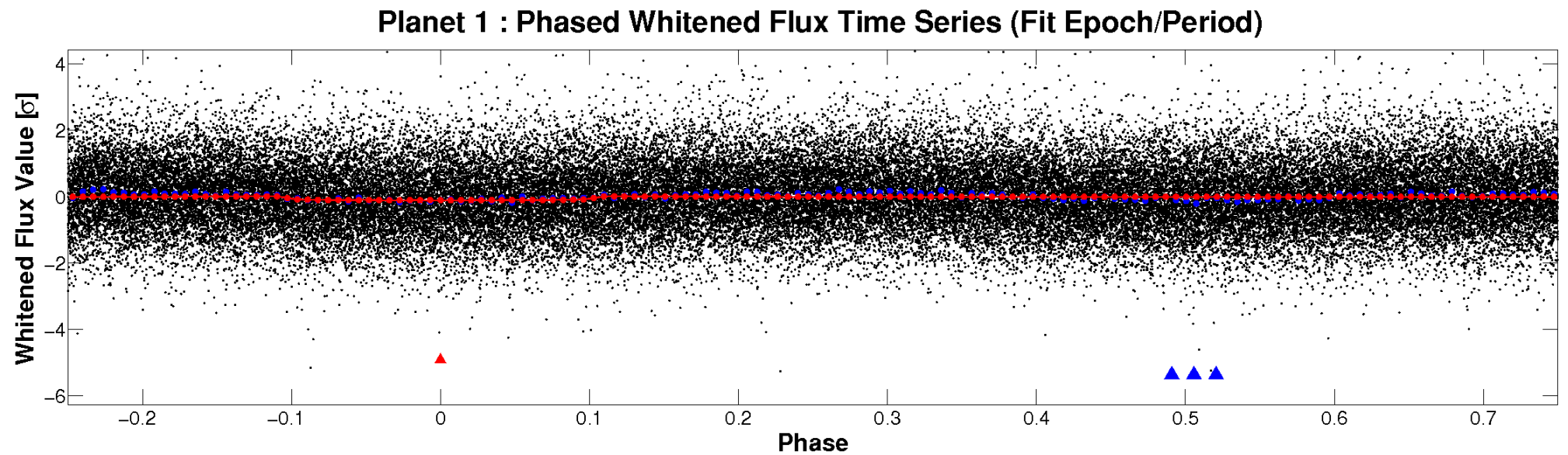
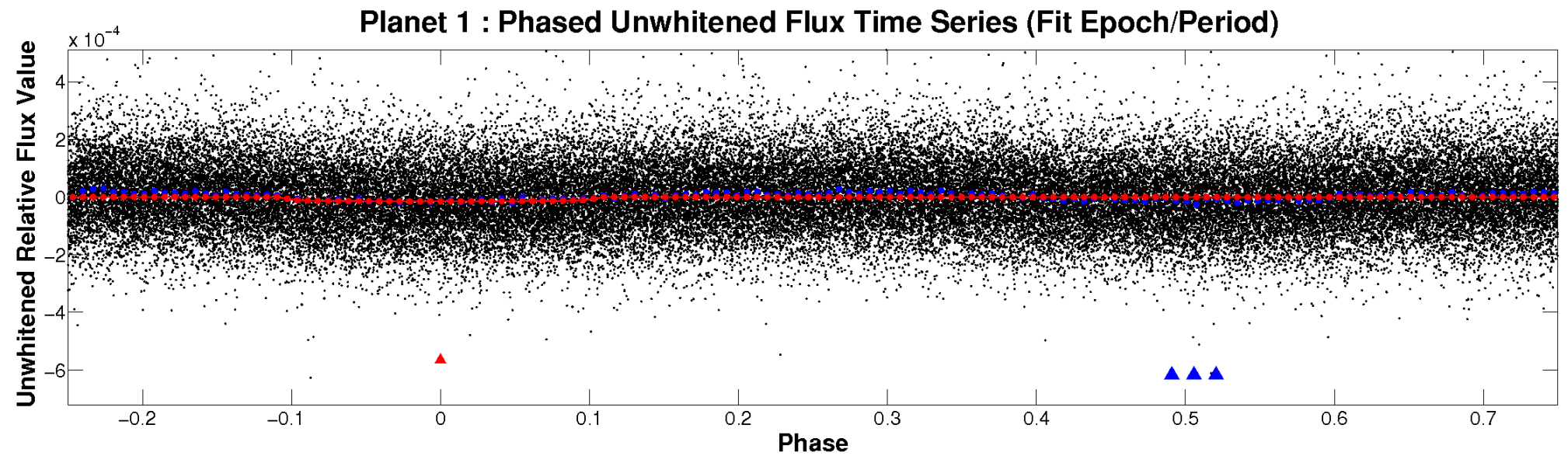


ALT Odd/Even

TCE 003957584-01

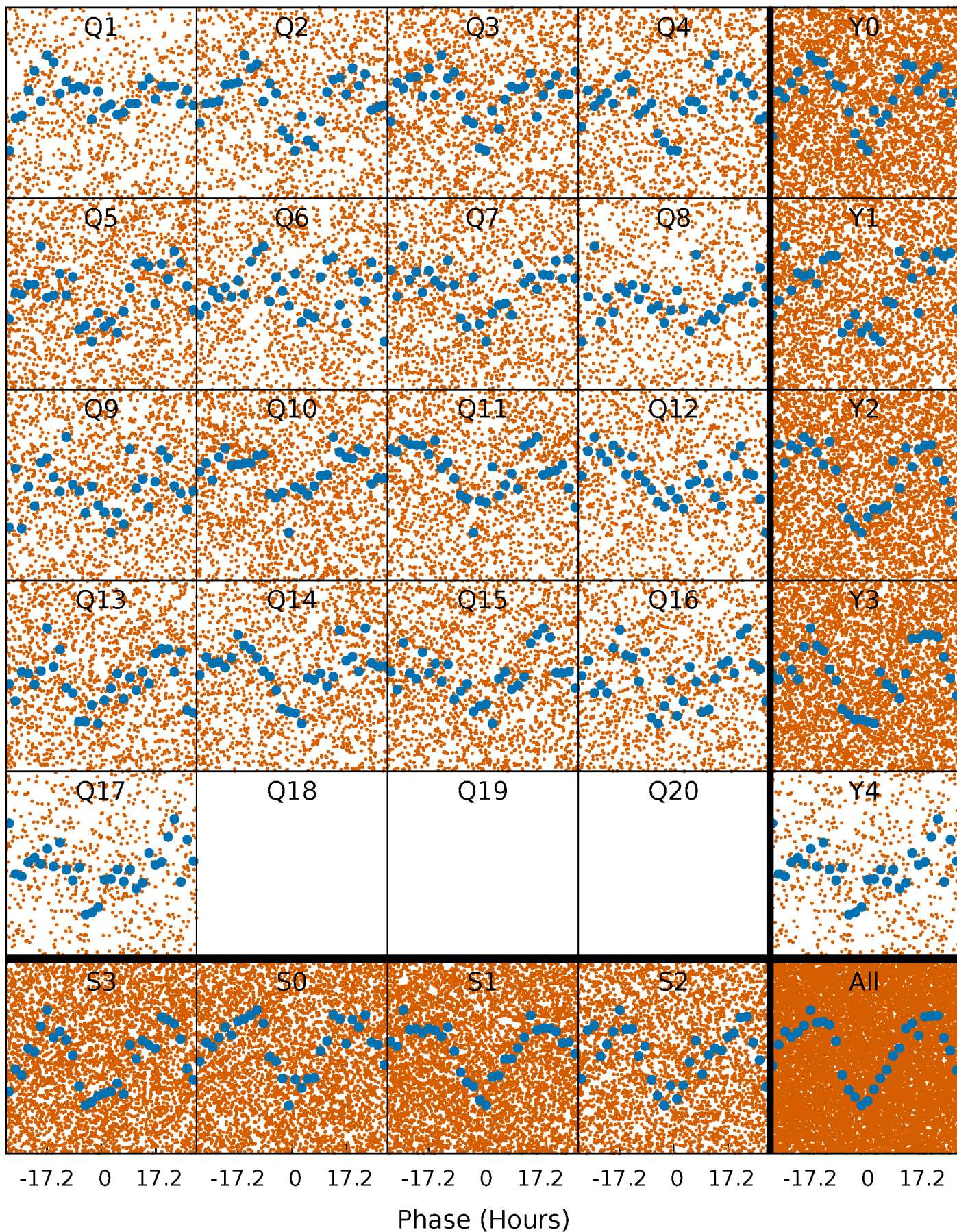


Non-Whitened Vs. Whitened Light Curve



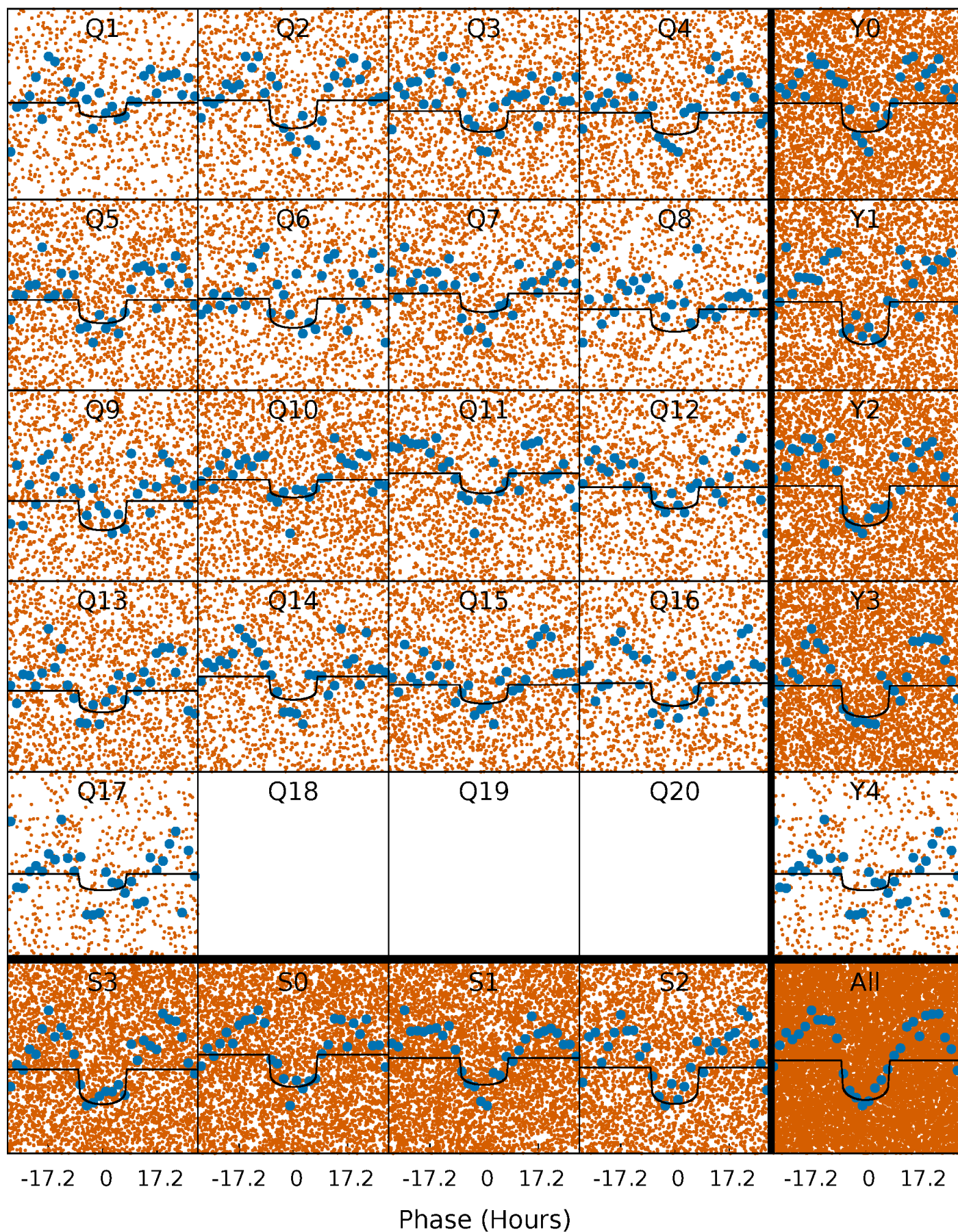
PDC Quarter-Phased Transit Curves

TCE 003957584-01 P= 2.979956 Days $T_0=132.476279$ (BKJD)



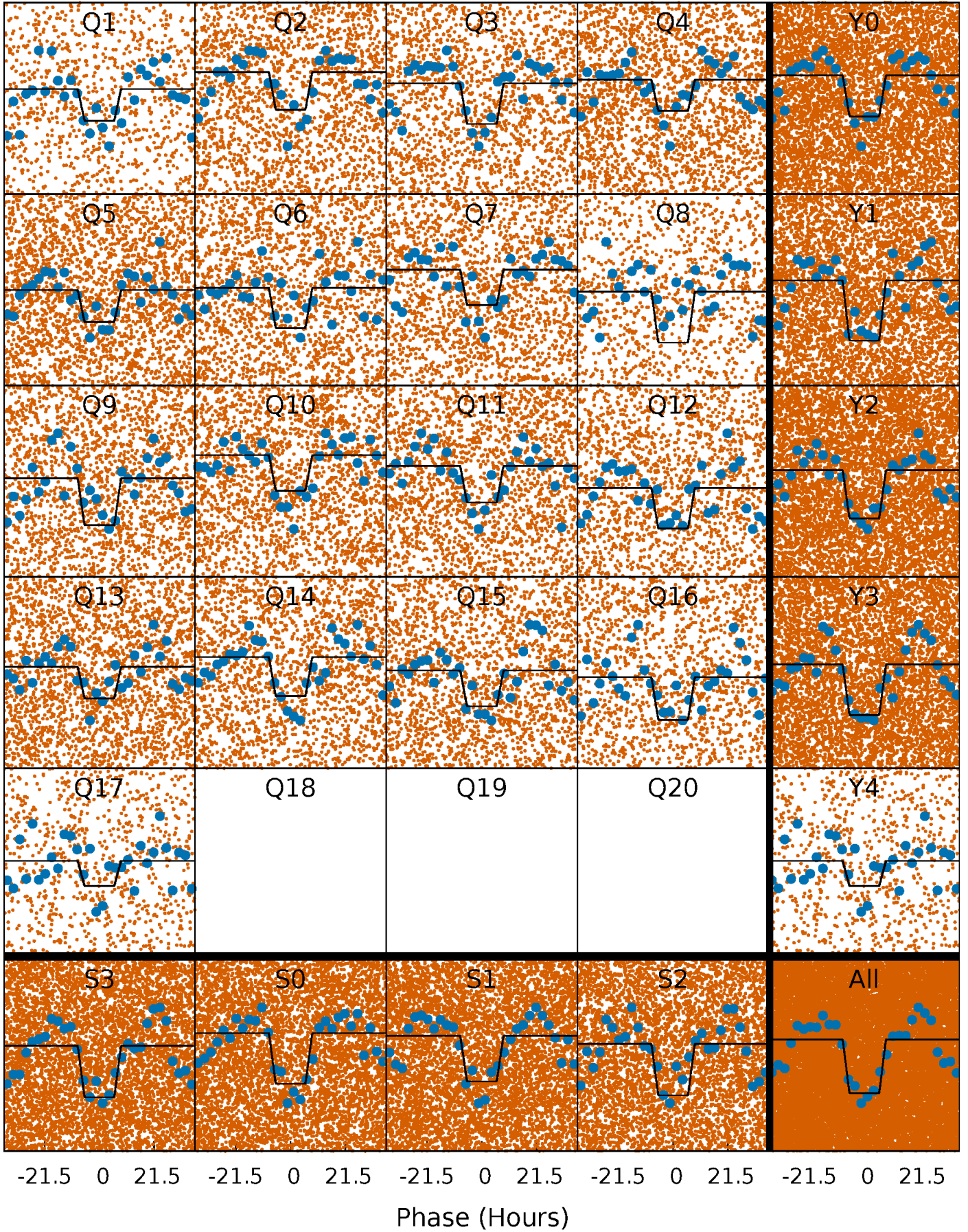
DV Quarter-Phased Transit Curves

TCE 003957584-01 P= 2.979956 Days $T_0=132.476279$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

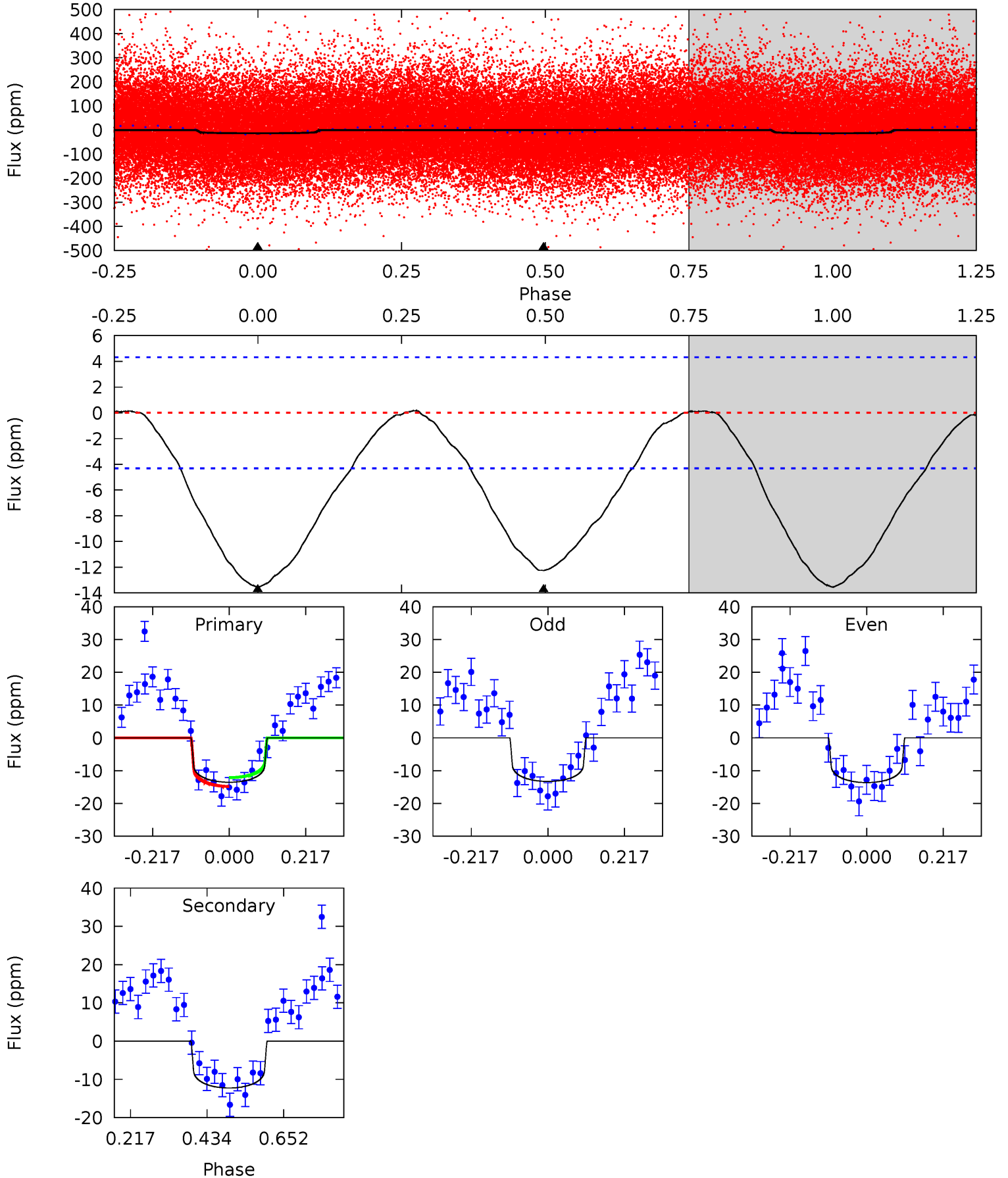
TCE 003957584-01 P= 2.979594 Days $T_0=132.545275$ (BKJD)



DV Model-Shift Uniqueness Test

003957584-01, P = 2.979956 Days, E = 129.496323 Days

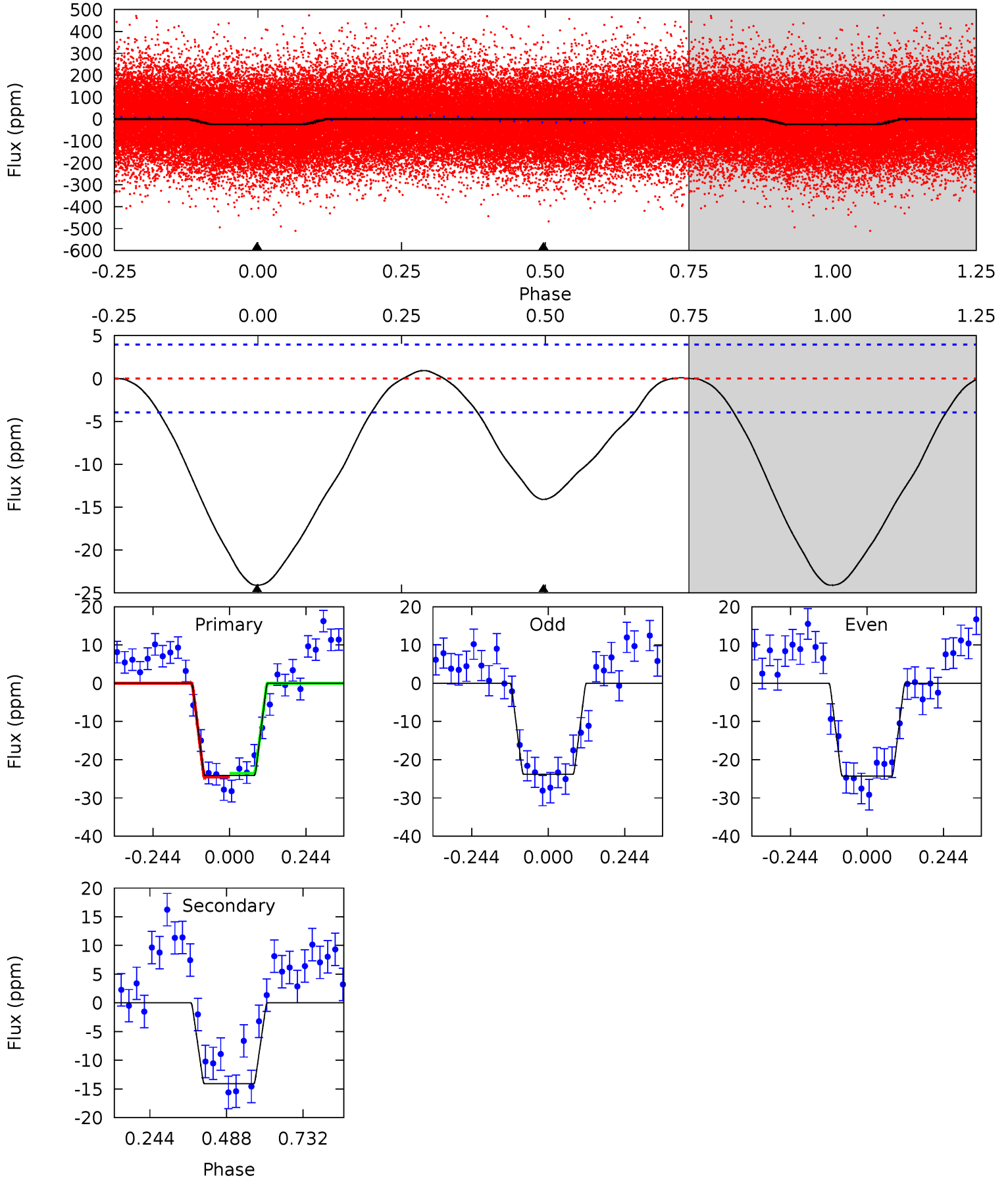
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	12.5	0	0	4.40	1.23	0.31	13.8	13.8	12.5	12.5	0.18	0.95	0.01	1.37



Alt Model-Shift Uniqueness Test

003957584-01, P = 2.979594 Days, E = 129.565681 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.7	15.6	0	0	4.37	1.16	0.49	26.7	26.7	15.6	15.6	0.26	0.86	0.04	0.54



Stellar Parameters For KIC 003957584

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7528^{+67}_{-90}	$3.998^{+0.110}_{-0.090}$	$0.210^{+0.150}_{-0.150}$	$2.264^{+0.335}_{-0.335}$	$1.860^{+0.088}_{-0.143}$	$0.226^{+0.123}_{-0.068}$
	+1%/-1%	+3%/-2%	+71%/-71%	+15%/-15%	+5%/-8%	+55%/-30%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003957584-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-12 ± 1	$0.94^{+0.27}_{-0.23}$	3114^{+118}_{-124}	7071^{+1199}_{-834}	19^{+14}_{-8}
Alt.	-14 ± 1	$1.20^{+0.25}_{-0.24}$	3116^{+126}_{-127}	6459^{+771}_{-574}	13^{+7}_{-4}

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 $A_{obs} \gg 1.0$

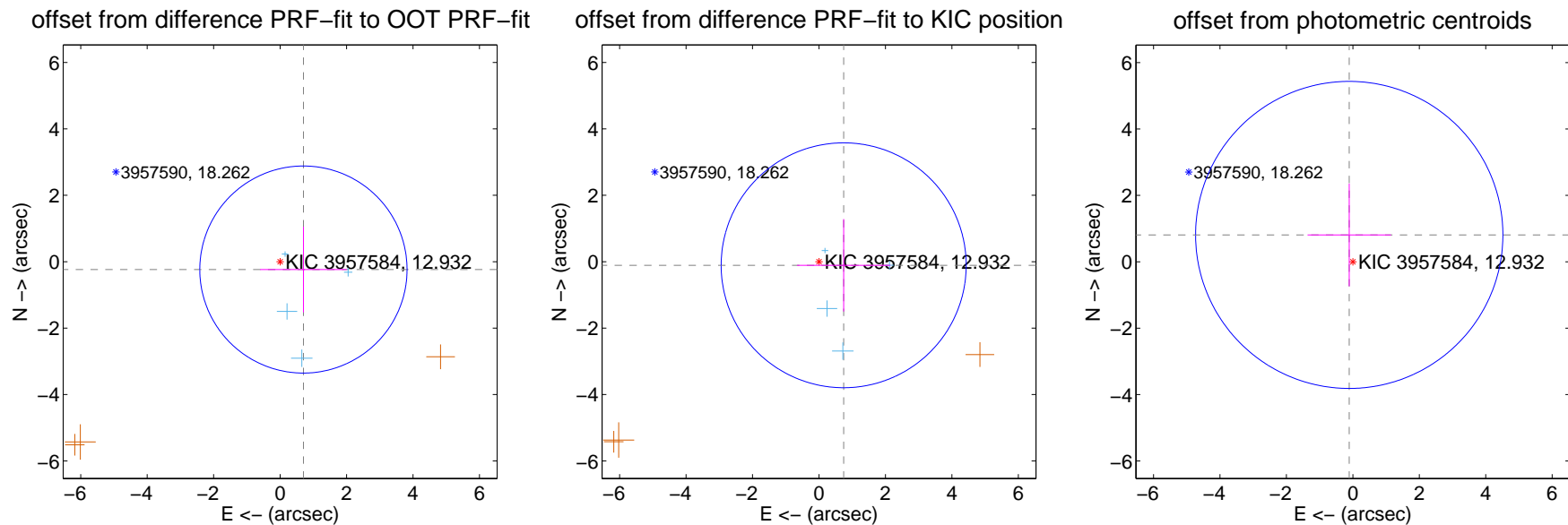
DV Centroid Data

Supplemental centroid analysis for 003957584-01. Kepler magnitude: 12.93. Transit SNR 10.62

There are 4 quarters with good PRF difference image offsets

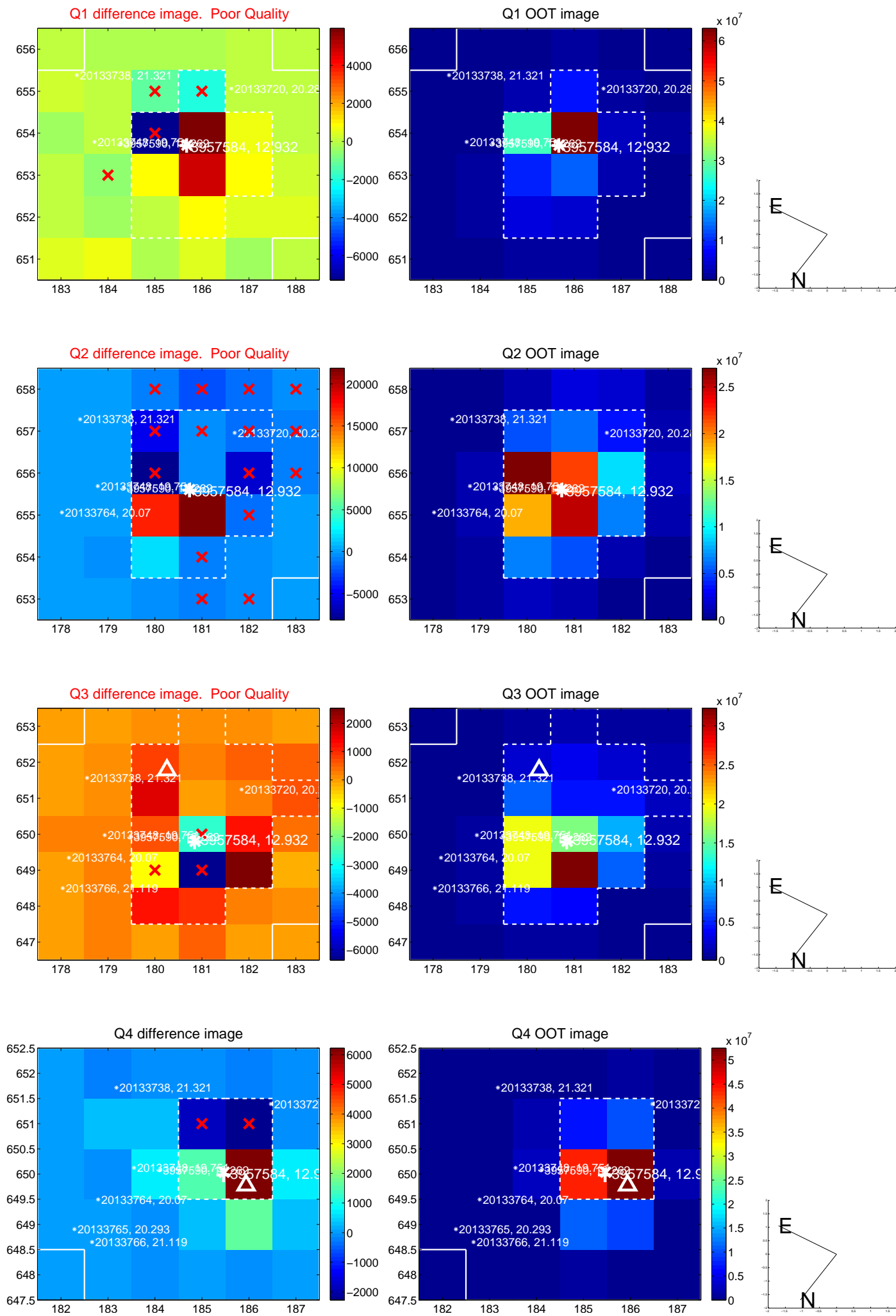
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.740 ± 1.039	0.71	-0.702 ± 1.302	-0.236 ± 1.291
PRF-fit source offset from KIC position	0.751 ± 1.229	0.61	-0.743 ± 1.403	-0.108 ± 1.392
photometric centroid source offset	0.82 ± 1.54	0.53	0.11 ± 1.26	0.81 ± 1.55

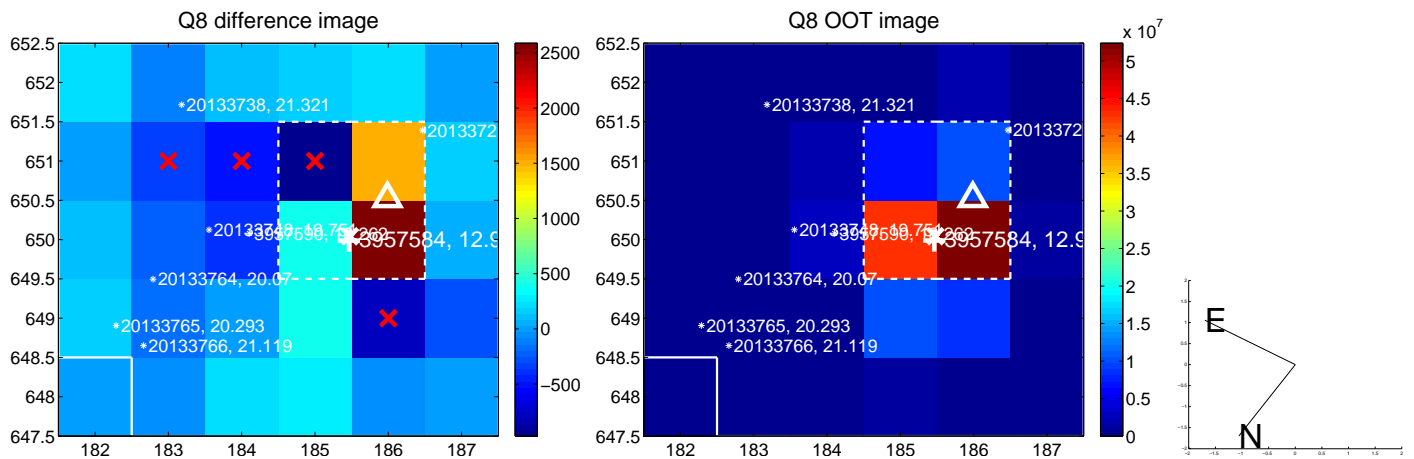
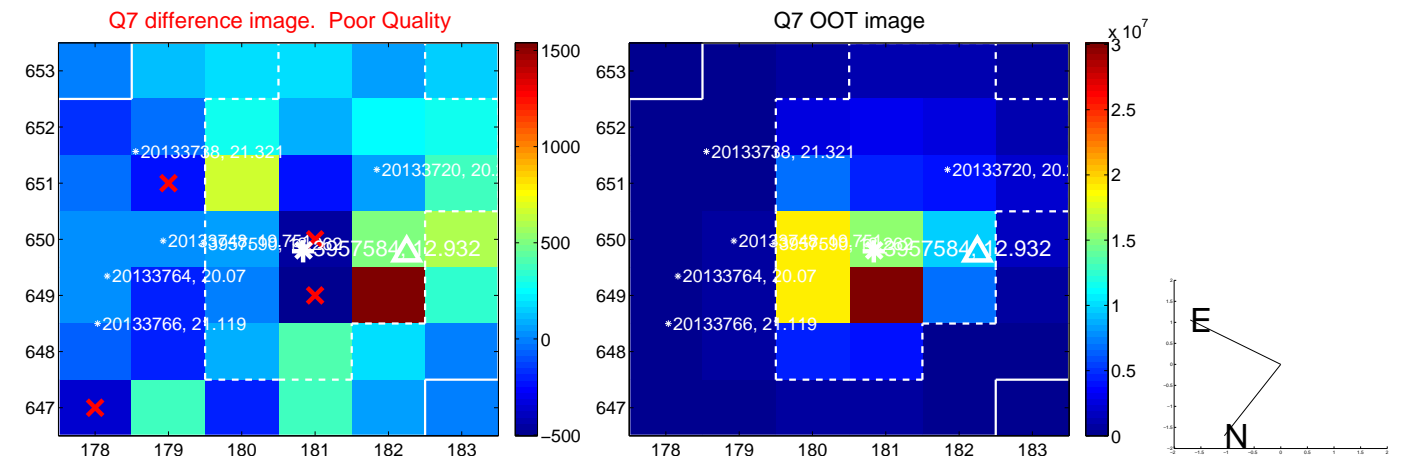
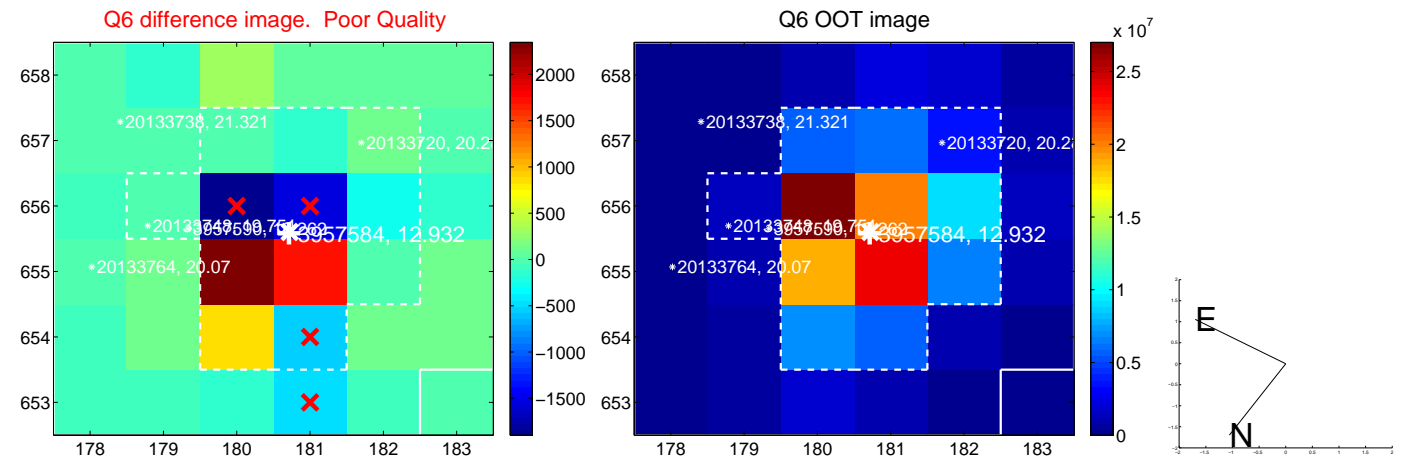
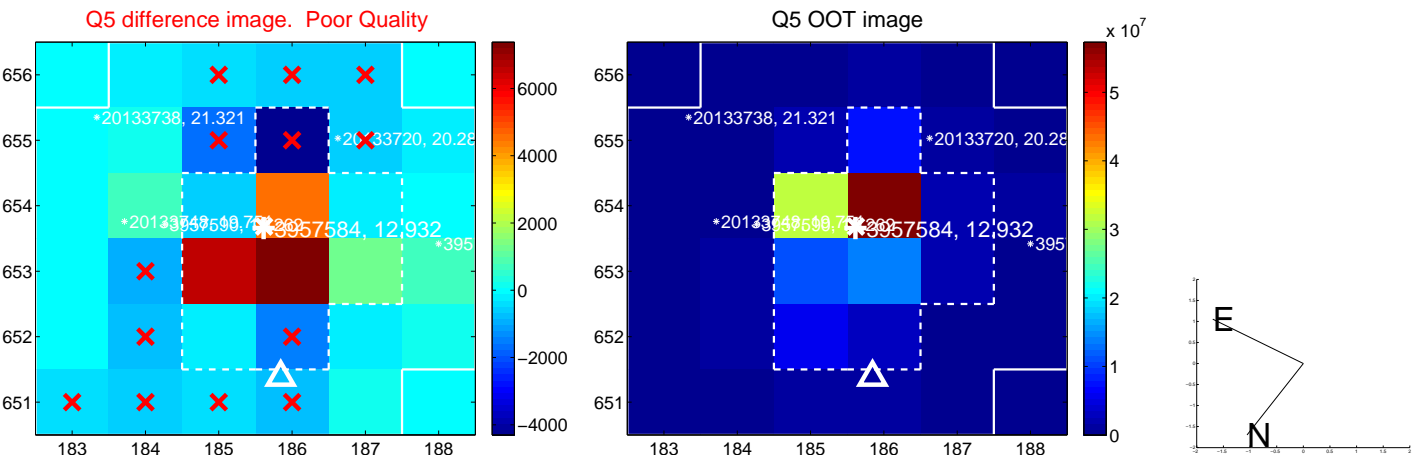


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

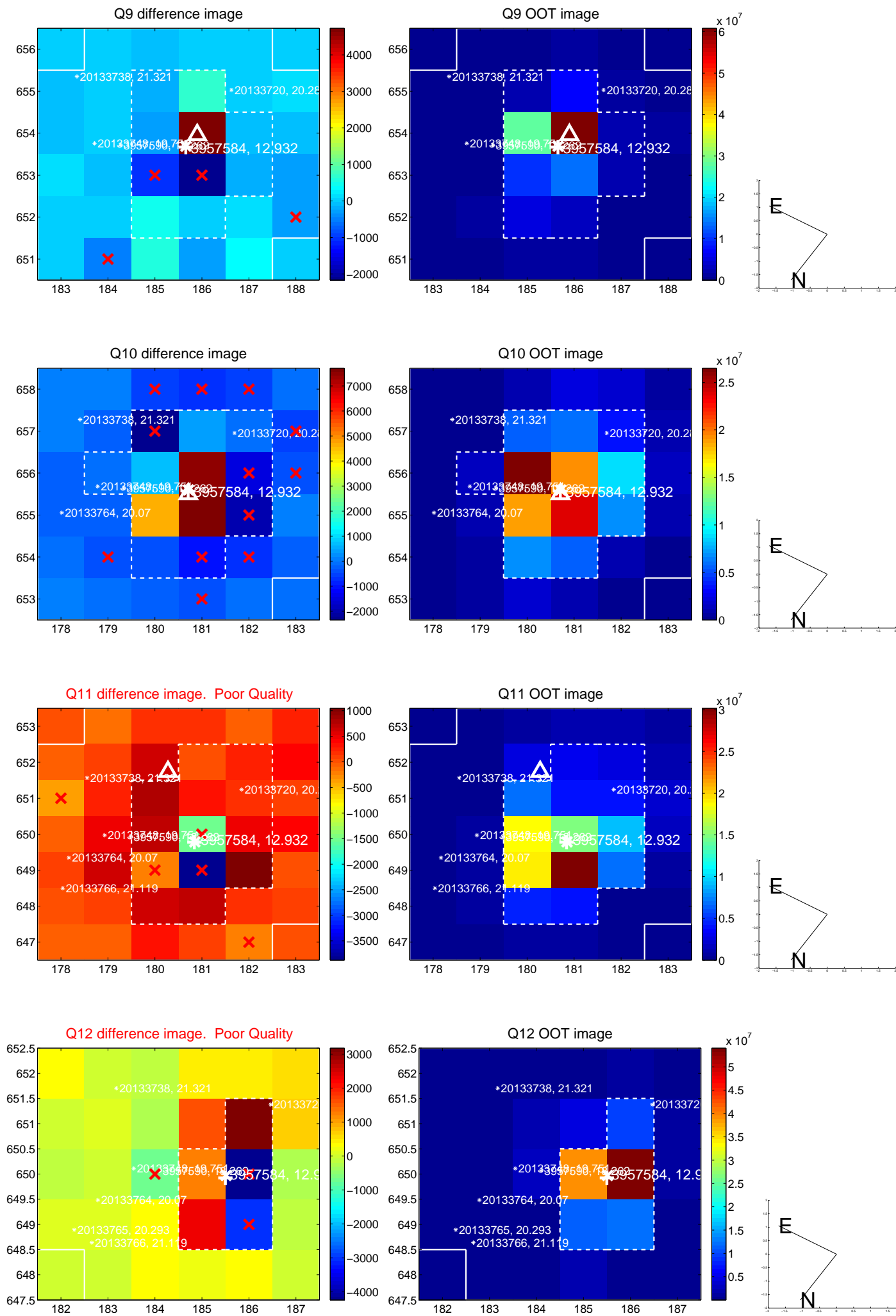
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



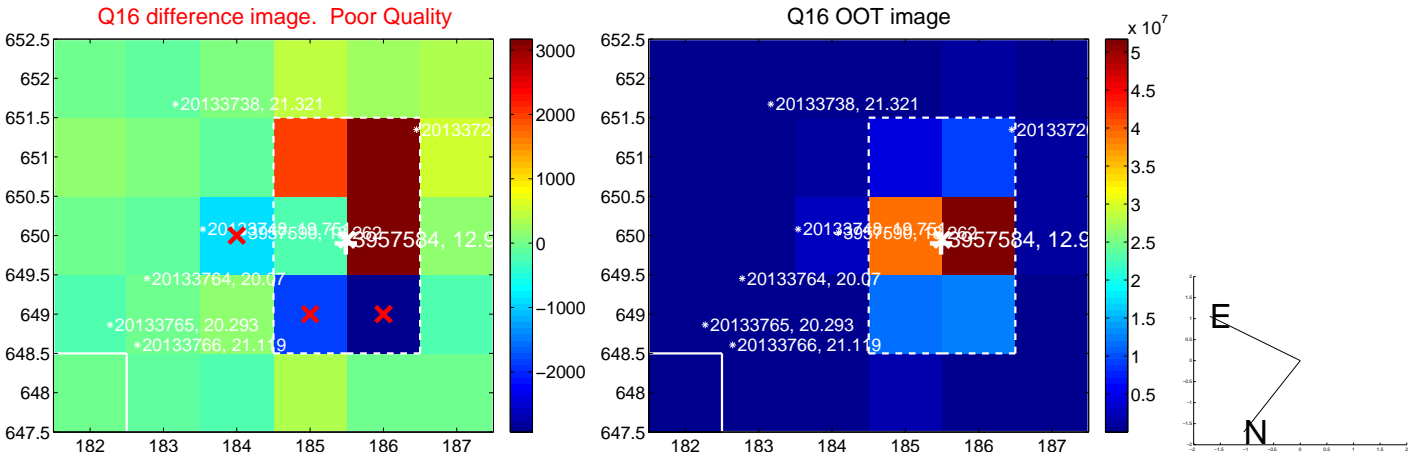
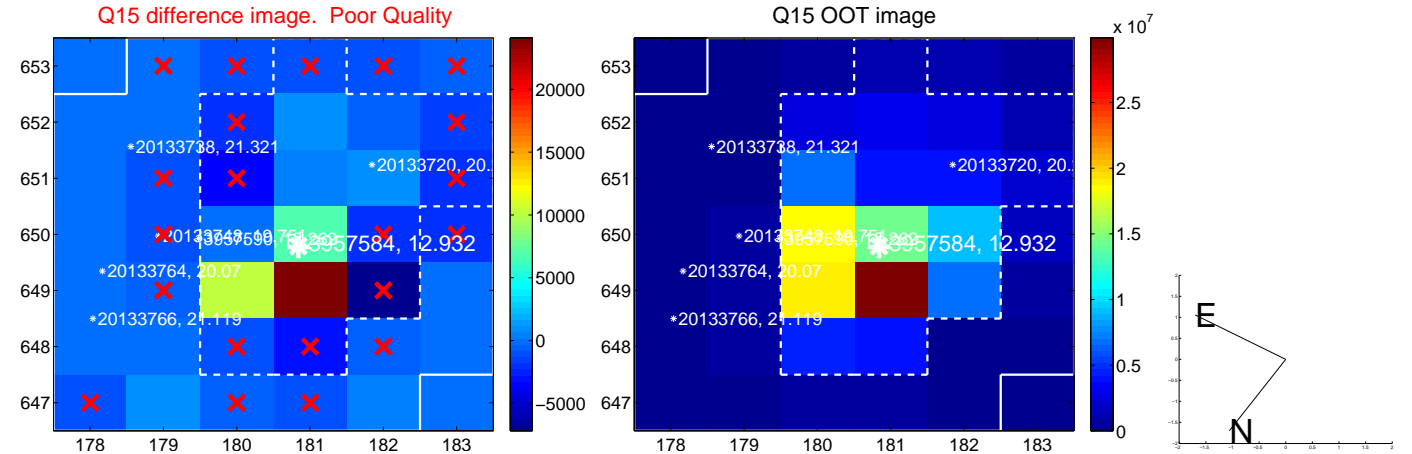
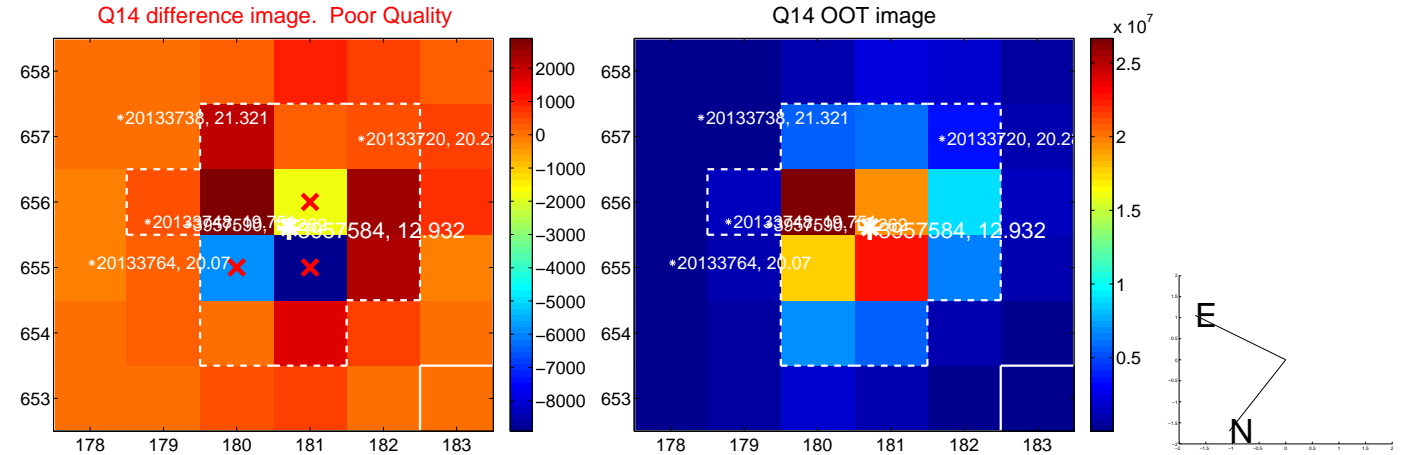
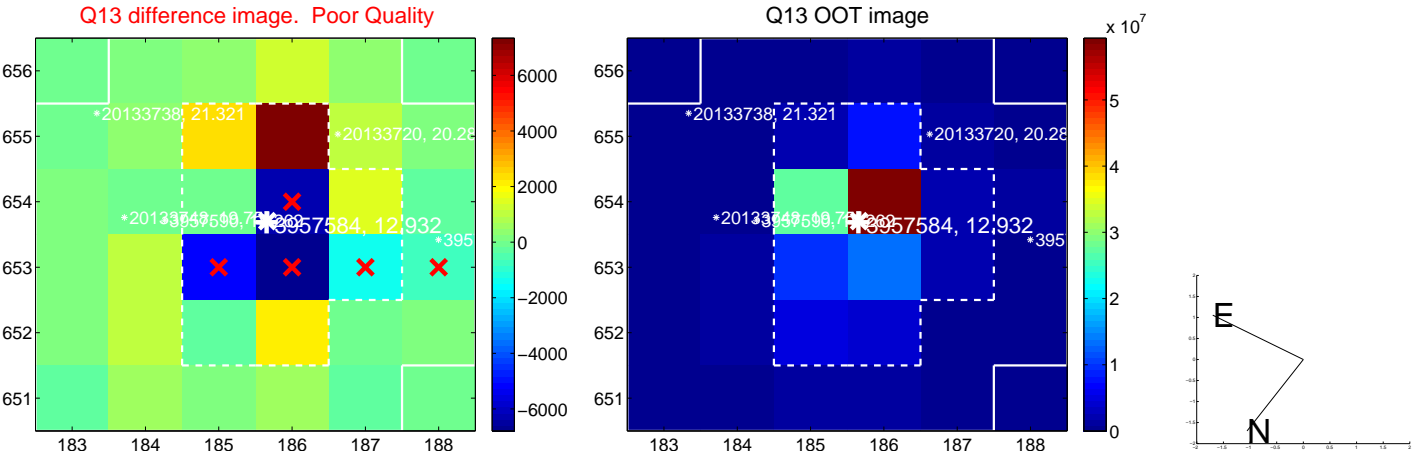
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



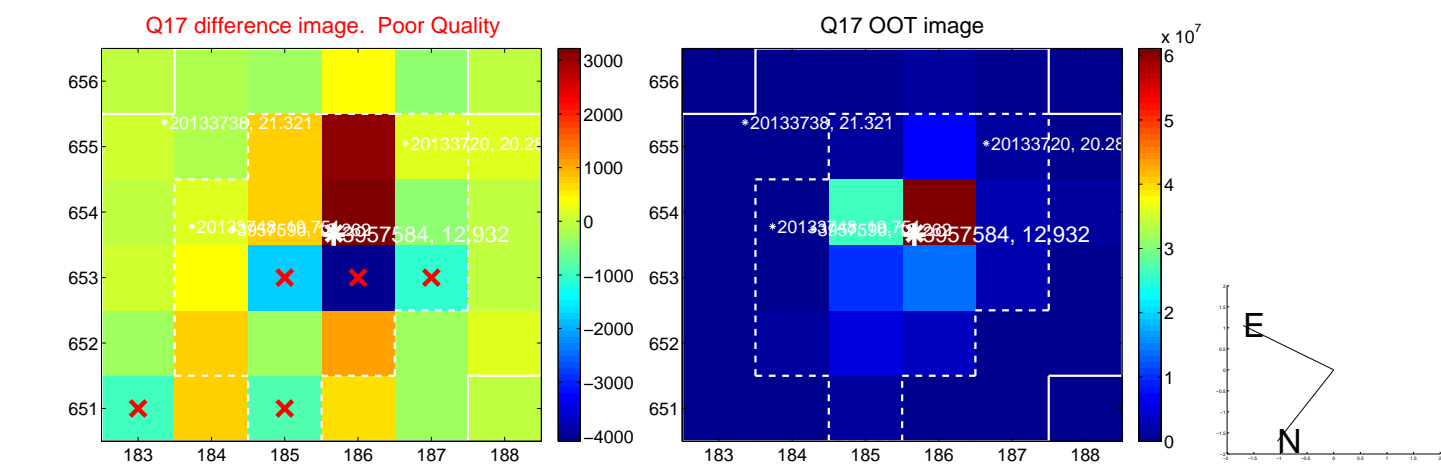
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



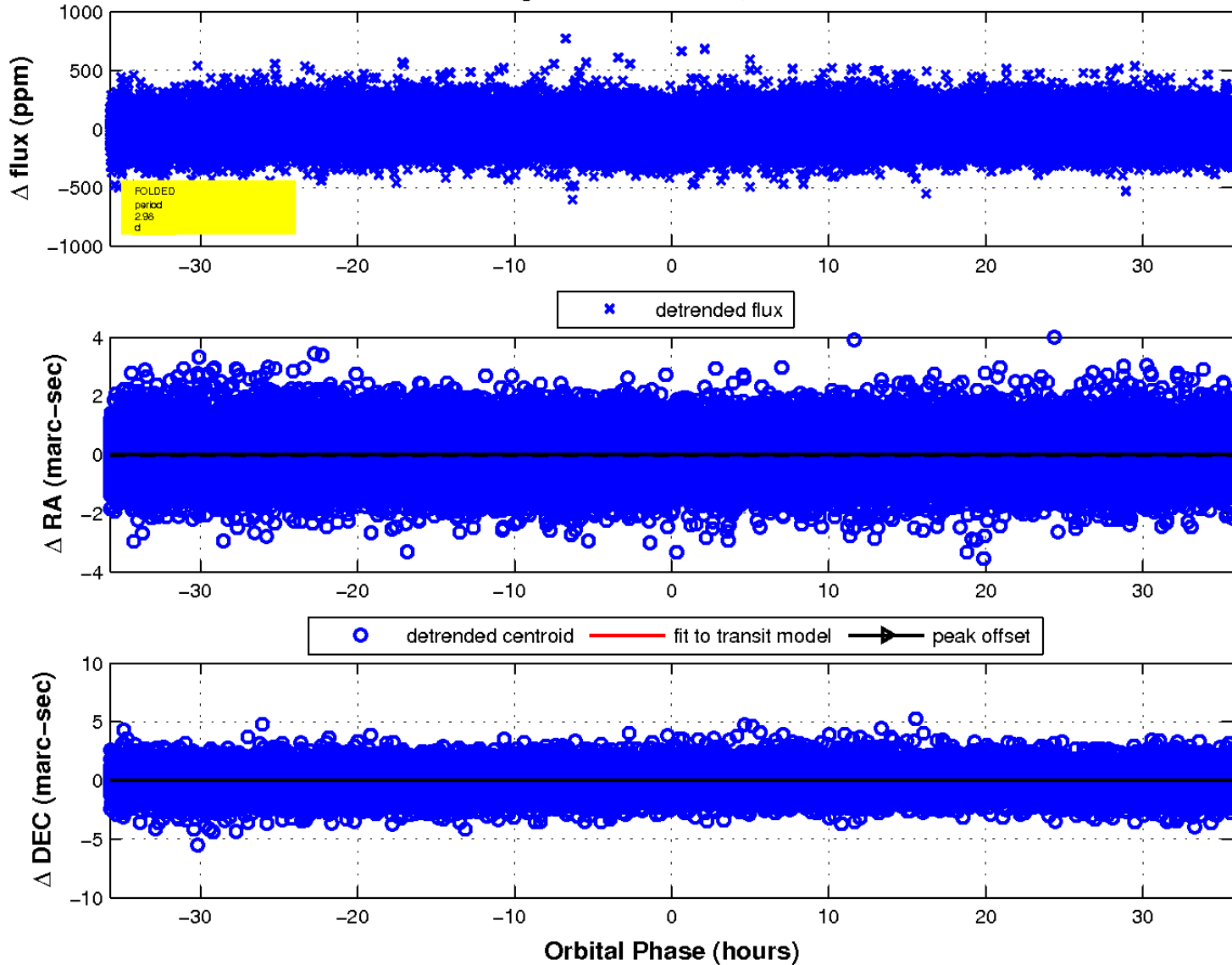
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

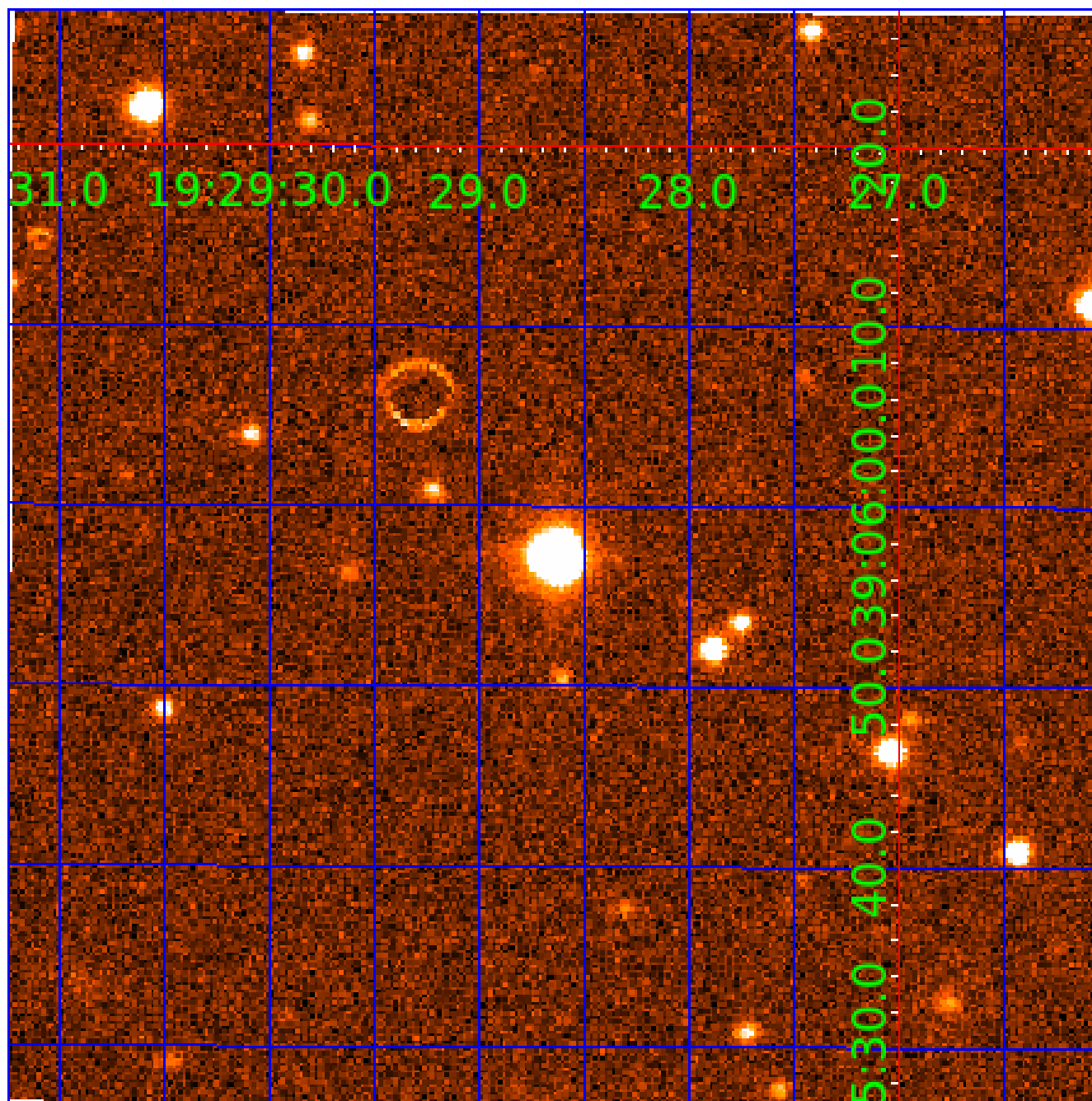


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 003957584

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})
003957584-01	OBS	No	2.979956	132.476279	14.9	15.090	10.2	10.6	2.26	7528	0.97	5932.68
003957584-02	OBS	No	447.037666	494.513730	102.7	10.397	7.6	7.4	2.26	7528	2.38	7.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003957584-01	OBS	FP	0.00	1	0	0	0	LPP_DV
003957584-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

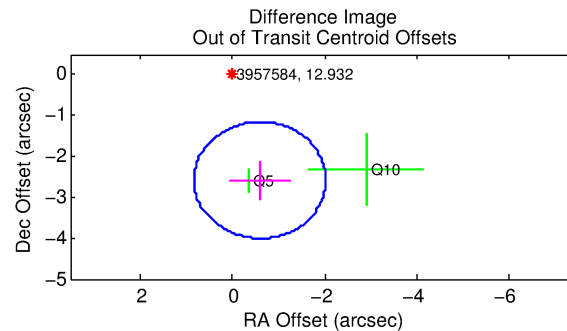
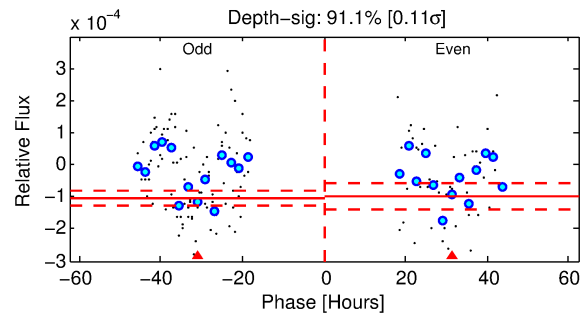
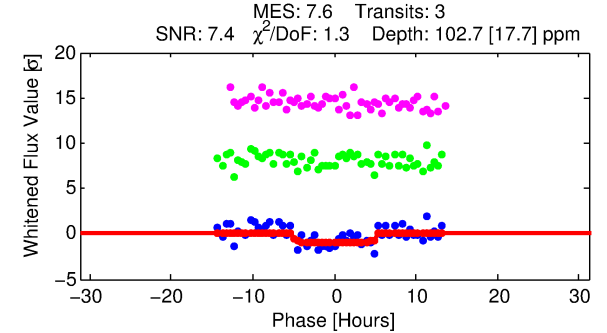
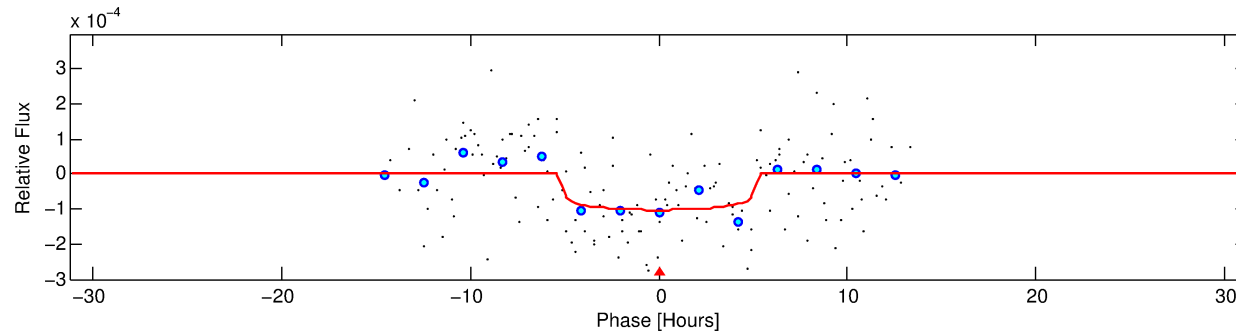
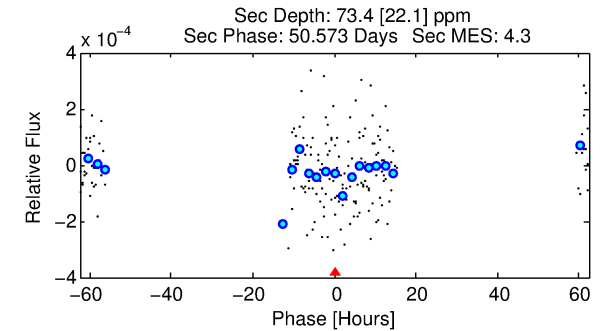
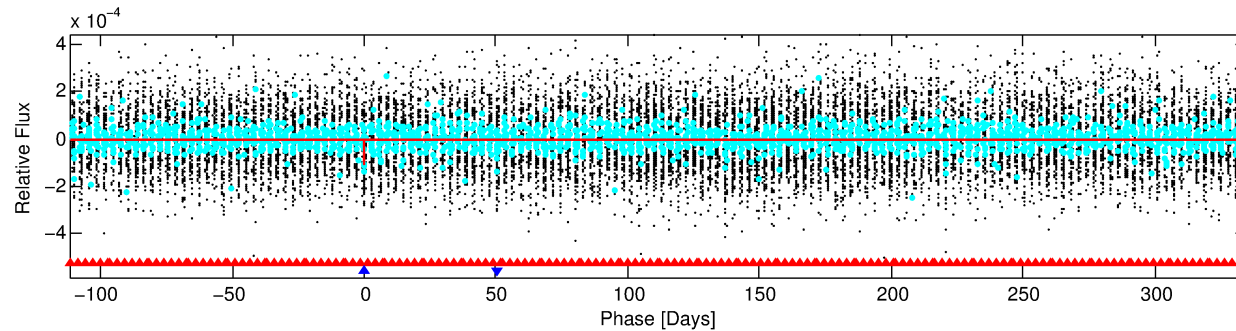
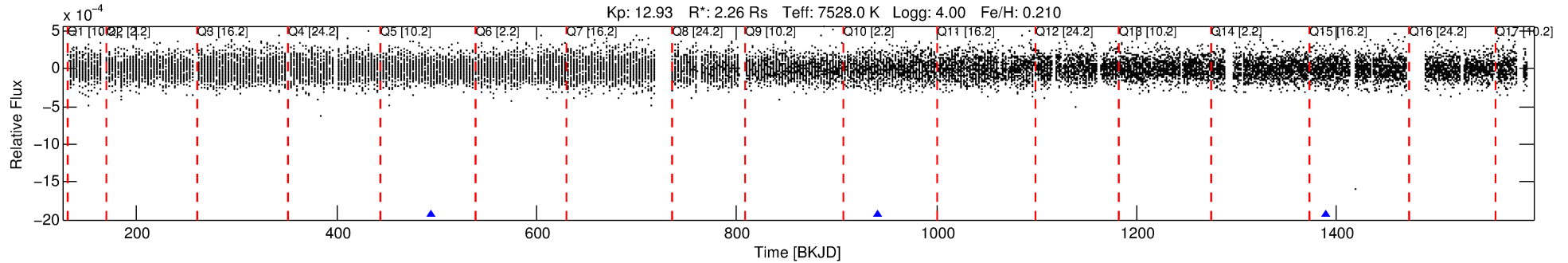
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003957584-02

No Significant Match Found

DV One-Page Summary

KIC: 3957584 Candidate: 2 of 2 Period: 447.038 d



DV Fit Results:

Period = 447.03767 [0.01848] d
Epoch = 494.5137 [0.0246] BKJD
Rp/R* = 0.0096 [0.0116]
a/R* = 291.93 [2154.20]
b = 0.48 [11.96]
Seff = 7.44 [1.50]
Teq = 421 [21] K
Rp = 2.38 [2.88] Re
a = 1.4077 [0.1828] AU
Ag = 14150.19 [34370.57] [0.41σ]
Teffp = 7102 [4300] K [1.55σ]

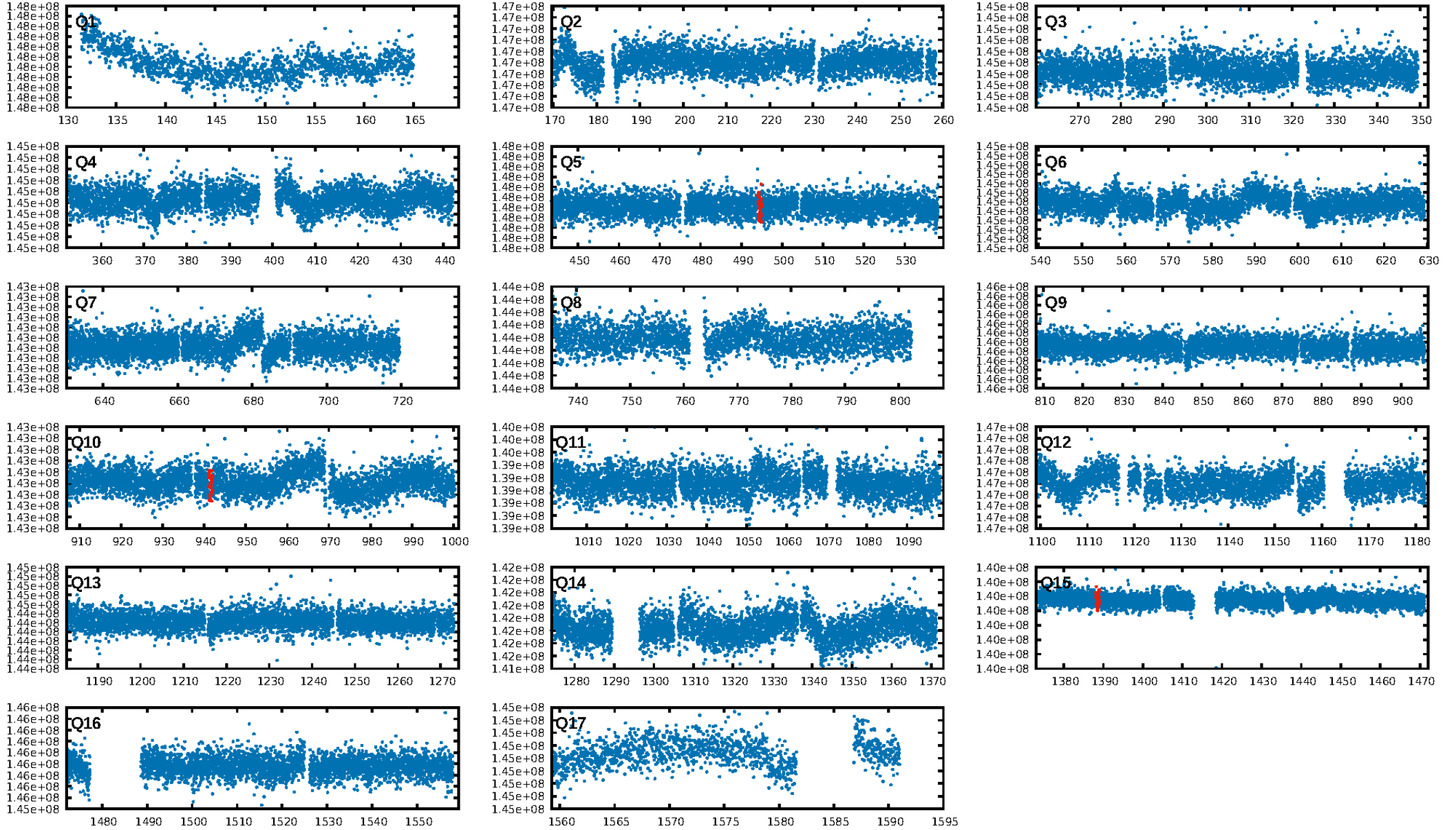
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [581.59σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.2%
ModelChiSquareGof-sig: 82.7%
Bootstrap-pfa: 7.32e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -3.834
Centroid-sig: 66.9%
Centroid-so: 1.919 arcsec [0.56σ]
OotOffset-rm: 2.649 arcsec [5.58σ]
KicOffset-rm: 2.570 arcsec [5.38σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

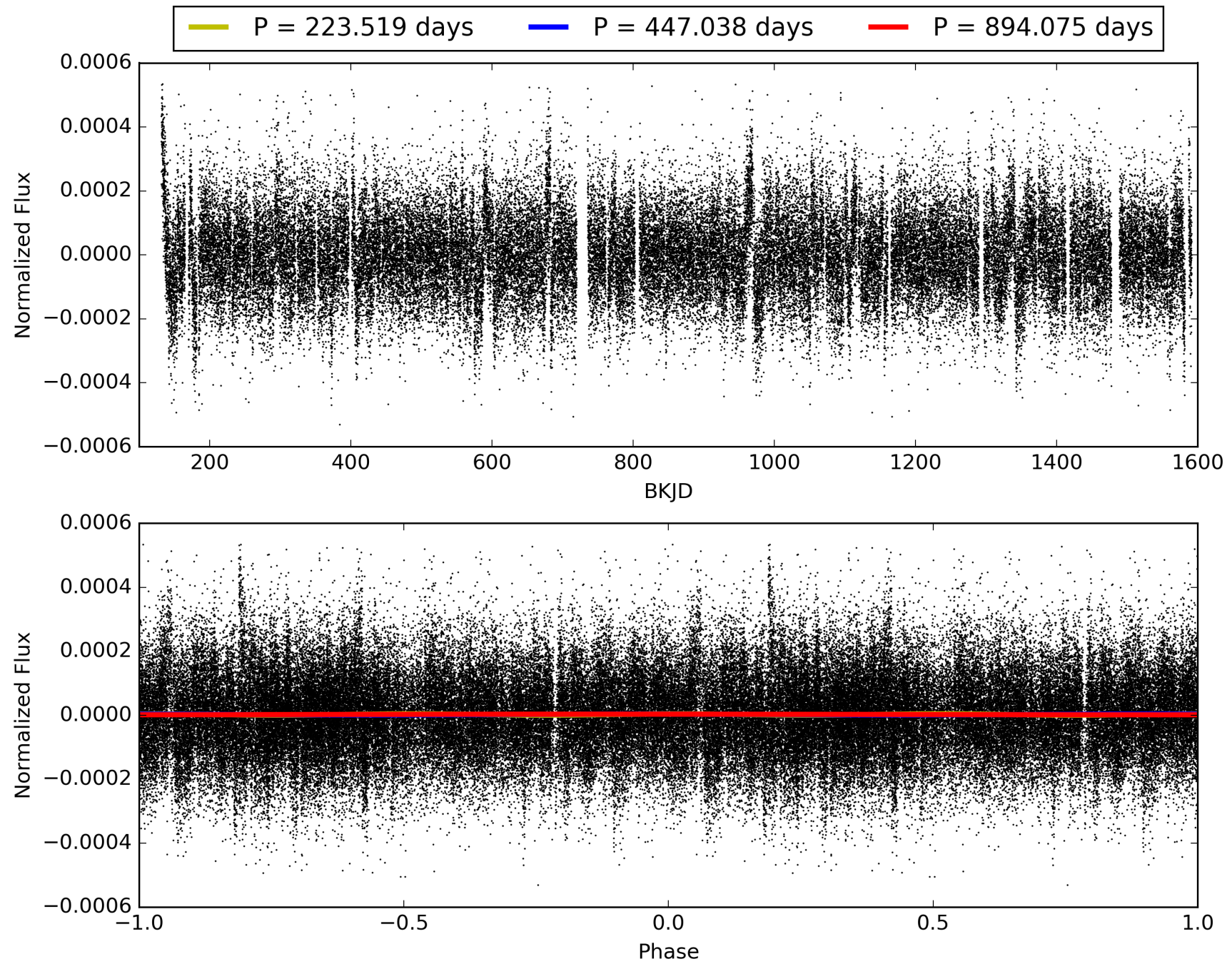
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:03:26 Z

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

TCE 003957584-02, PDC Light Curves

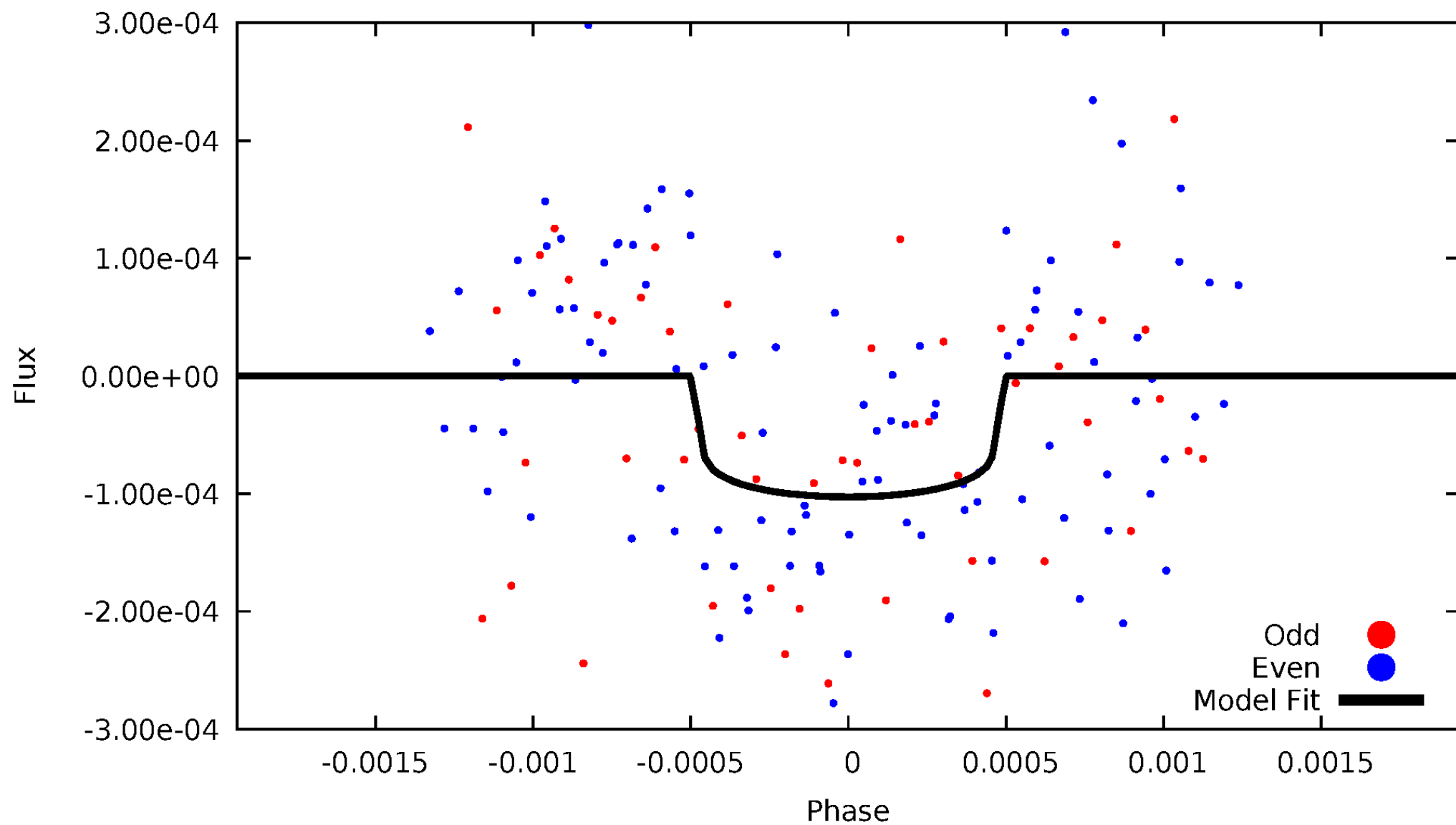


TCE 003957584-02



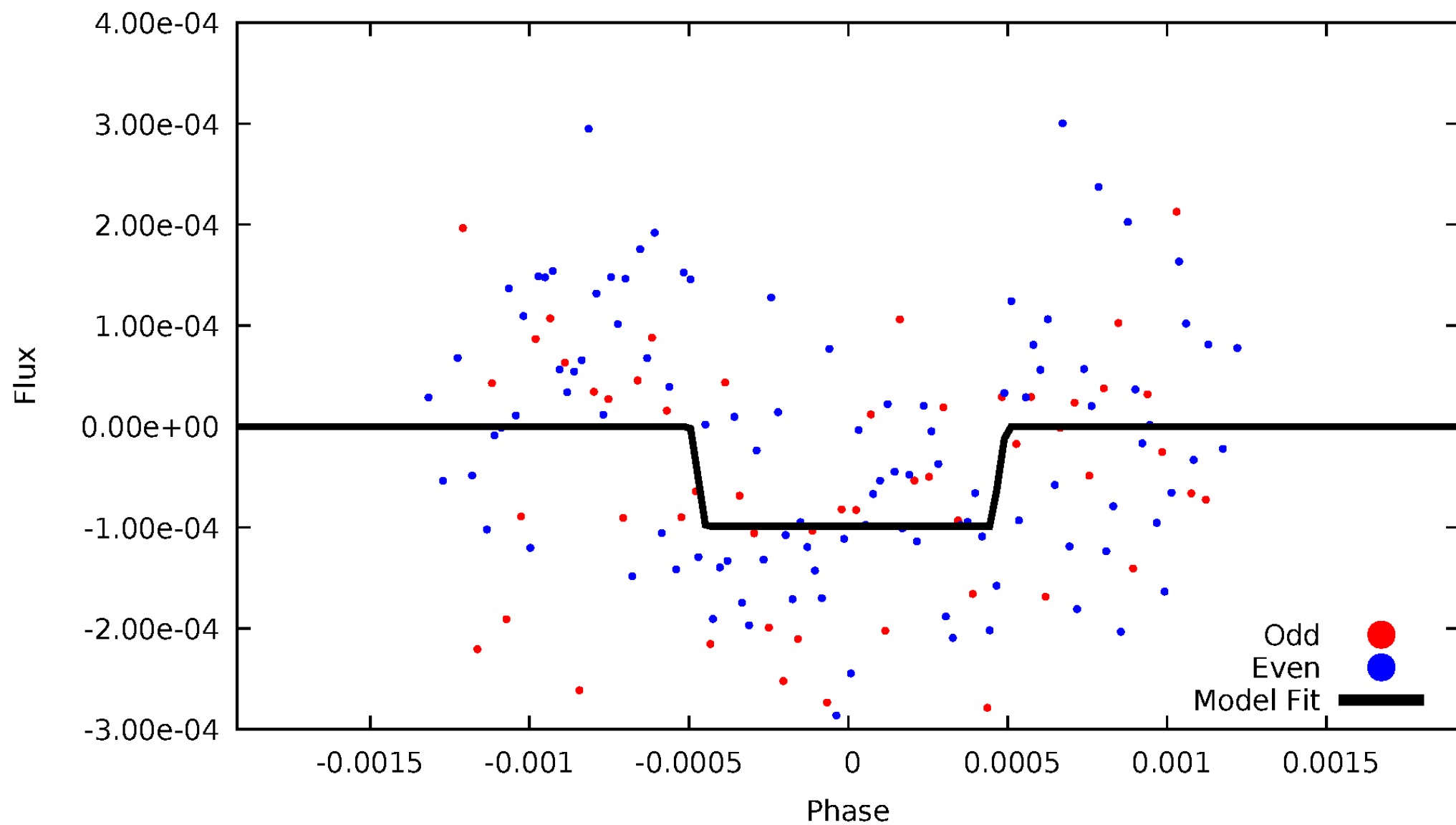
DV Odd/Even

TCE 003957584-02



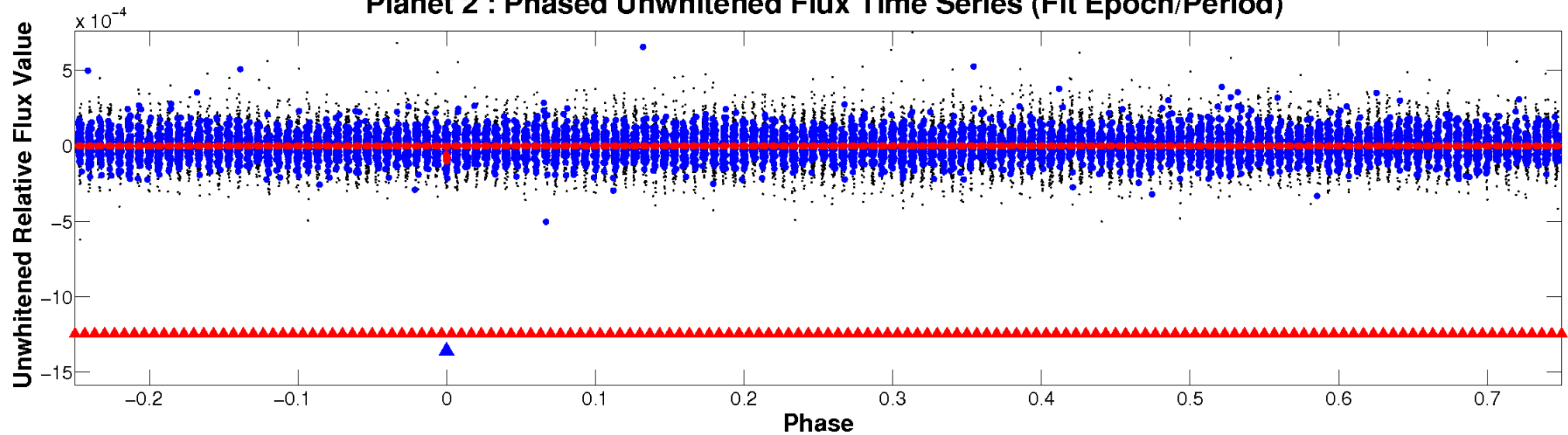
ALT Odd/Even

TCE 003957584-02

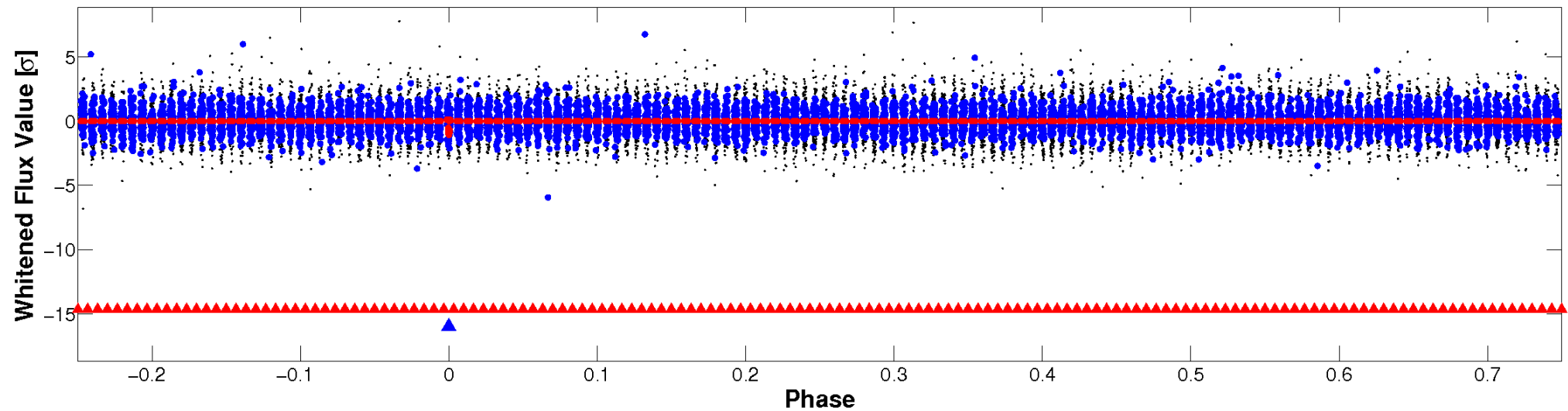


Non-Whitened Vs. Whitened Light Curve

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

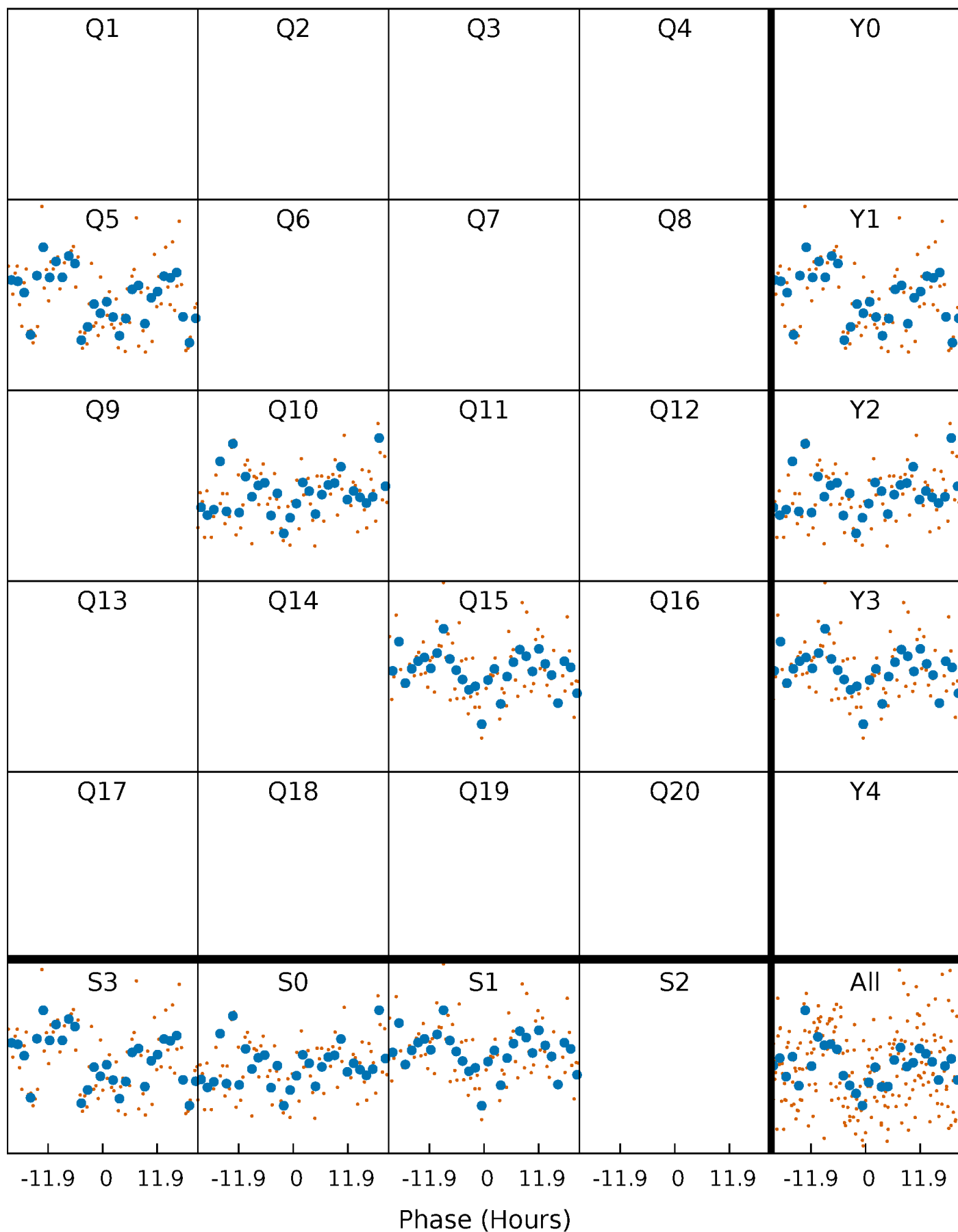


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



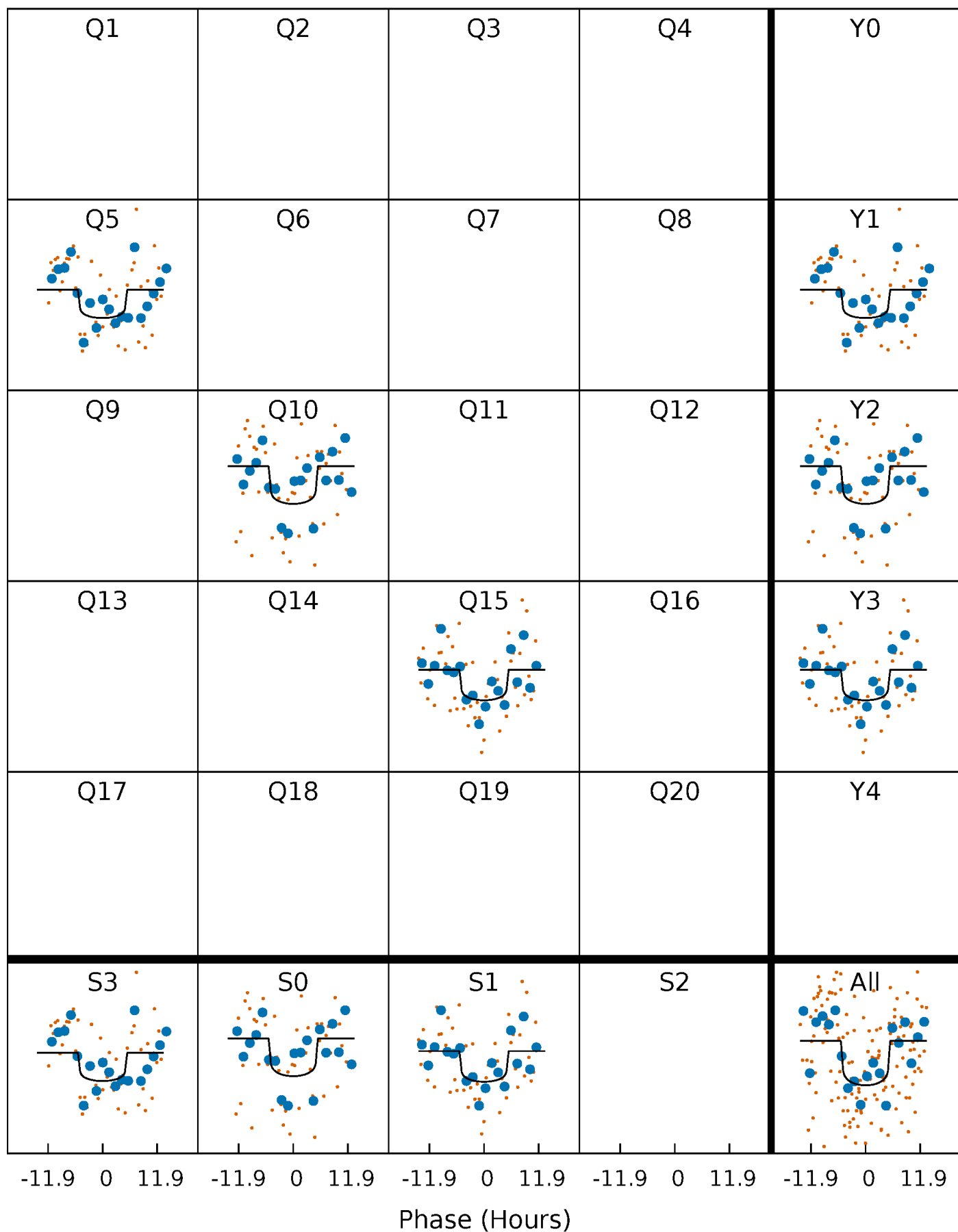
PDC Quarter-Phased Transit Curves

TCE 003957584-02 P=447.037666 Days $T_0=494.513731$ (BKJD)



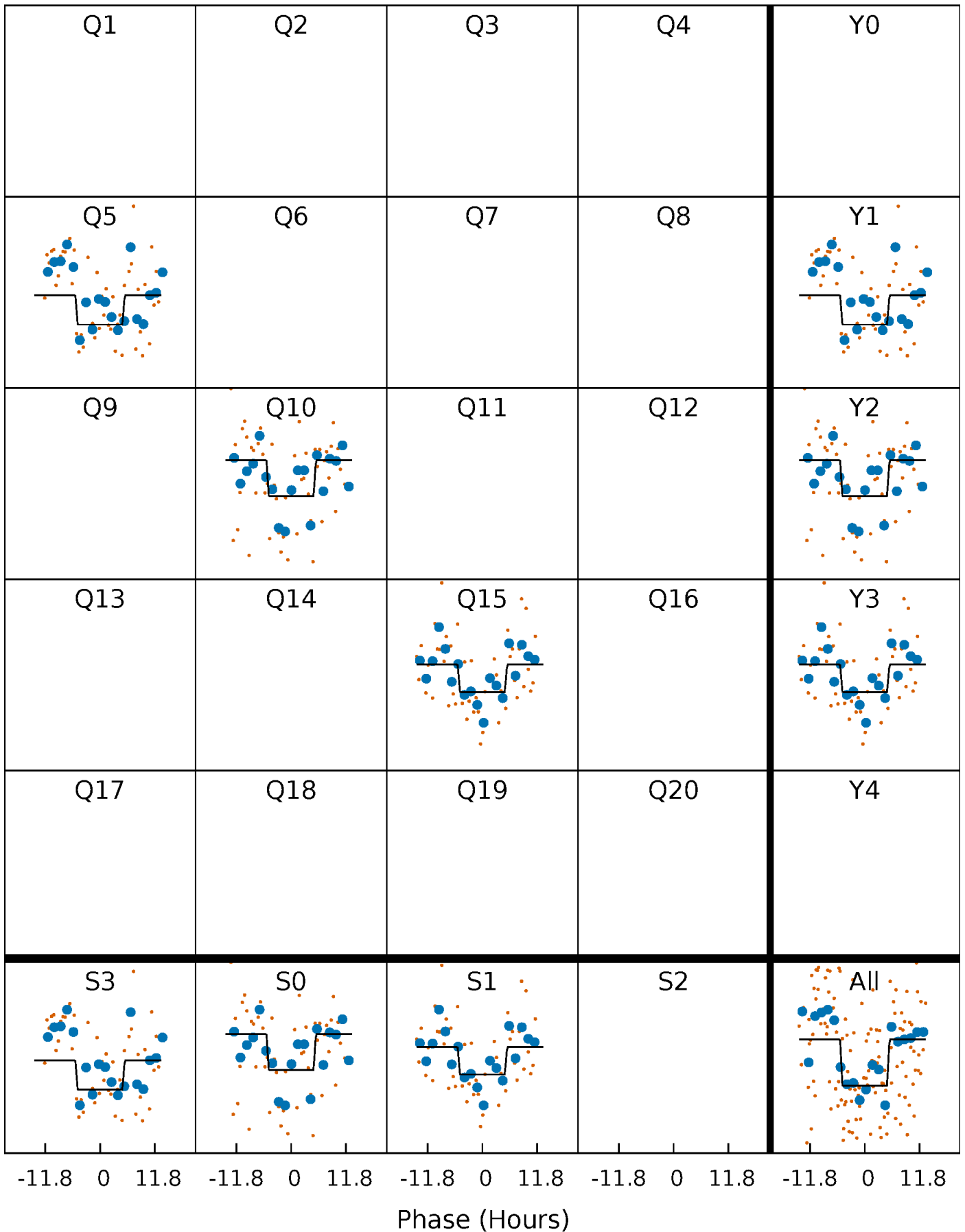
DV Quarter-Phased Transit Curves

TCE 003957584-02 P=447.037666 Days $T_0=494.513731$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

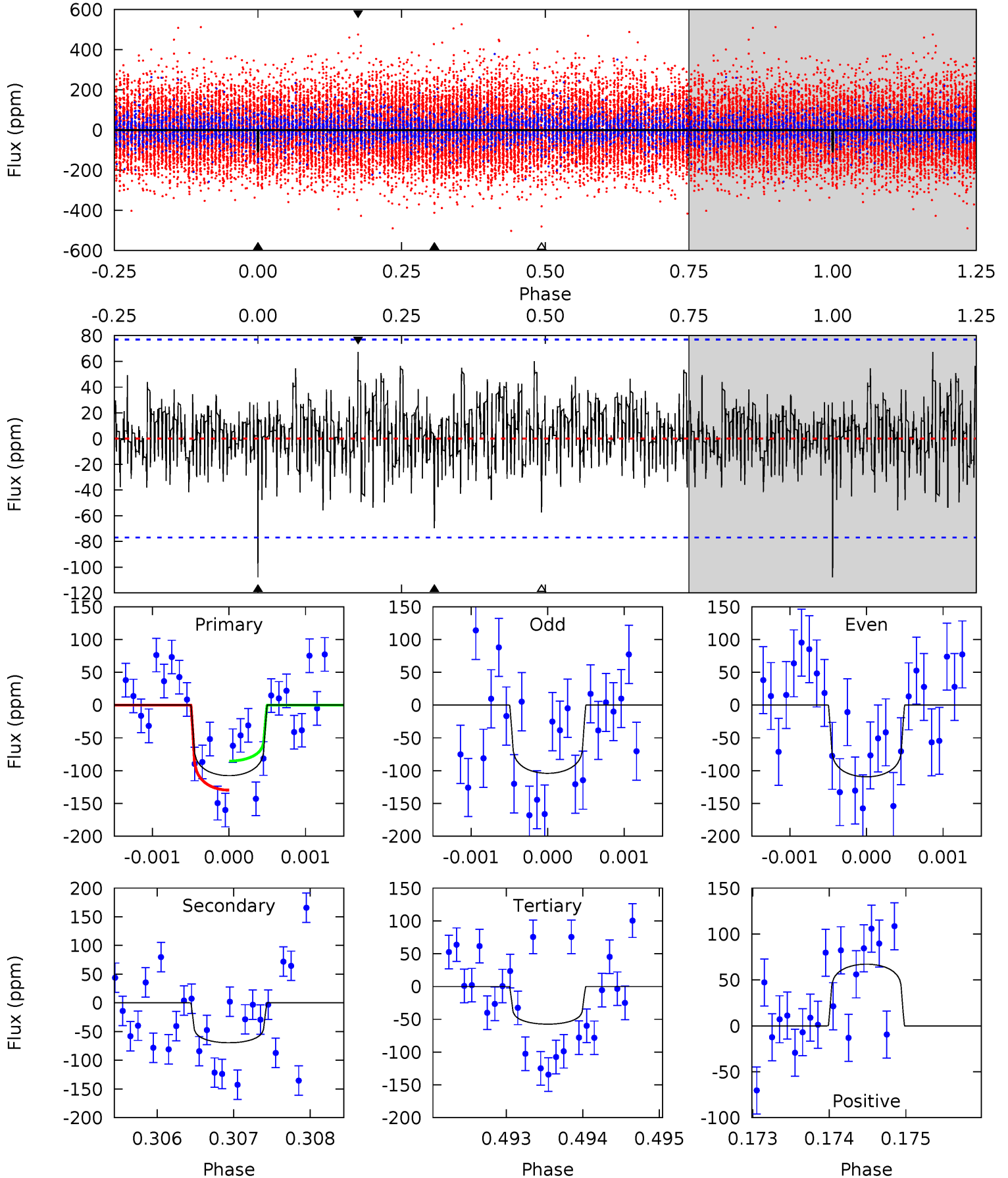
TCE 003957584-02 P=447.031803 Days $T_0=494.521062$ (BKJD)



DV Model-Shift Uniqueness Test

003957584-02, P = 447.037666 Days, E = 47.476065 Days

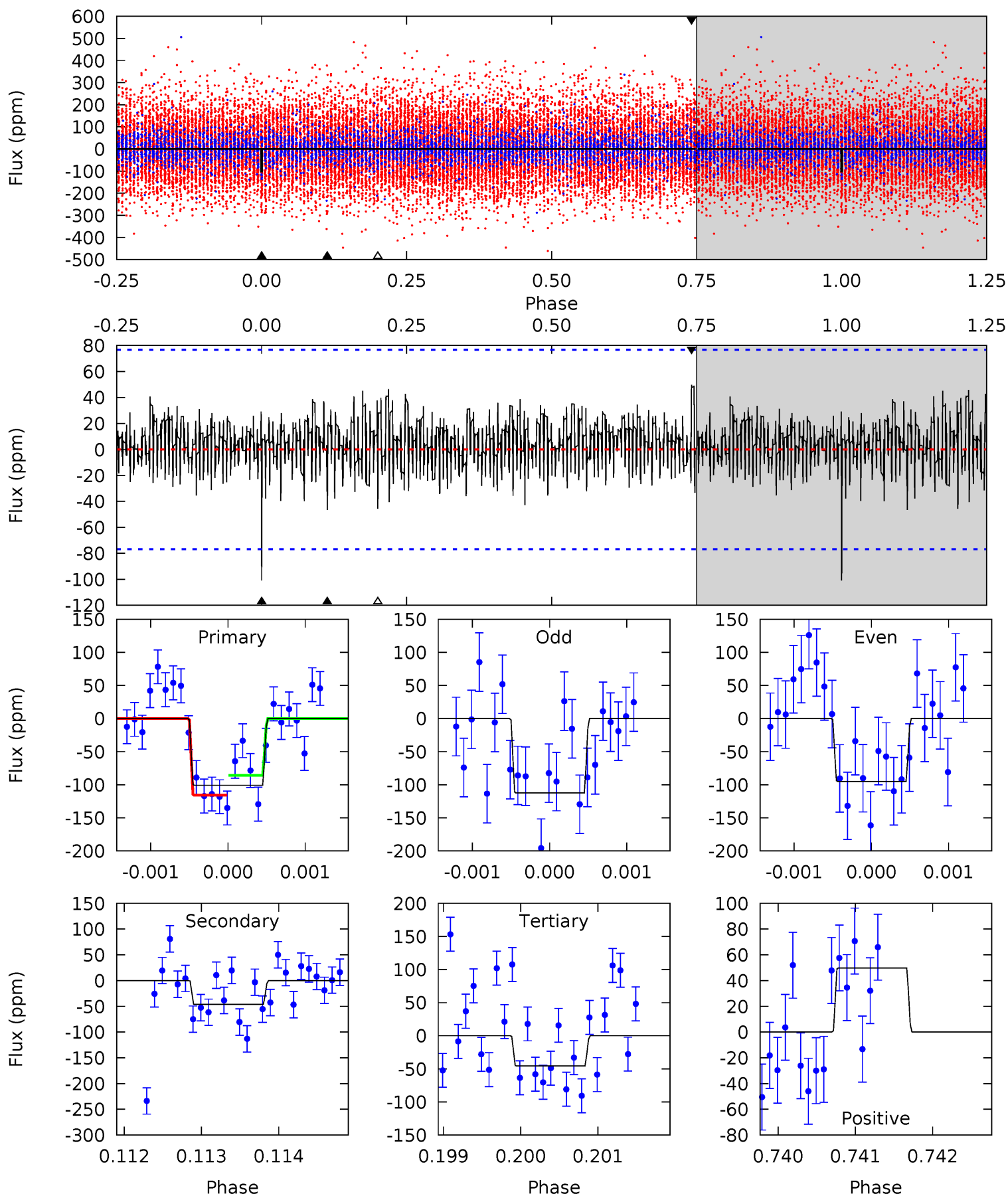
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.63	4.93	4.07	4.76	5.45	3.29	1.28	3.56	2.87	0.85	0.17	0.18	1.00	0.38	1.58



Alt Model-Shift Uniqueness Test

003957584-02, $P = 447.031803$ Days, $E = 47.489259$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.17	3.29	3.24	3.53	5.45	3.29	0.97	3.93	3.63	0.06	-0.24	0.58	0.93	0.33	1.07



Stellar Parameters For KIC 003957584

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7528^{+67}_{-90}	$3.998^{+0.110}_{-0.090}$	$0.210^{+0.150}_{-0.150}$	$2.264^{+0.335}_{-0.335}$	$1.860^{+0.088}_{-0.143}$	$0.226^{+0.123}_{-0.068}$
	+1%/-1%	+3%/-2%	+71%/-71%	+15%/-15%	+5%/-8%	+55%/-30%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003957584-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-70 ± 14	$3.05^{+2.42}_{-1.95}$	586^{+22}_{-20}	5948^{+5300}_{-1302}	7491^{+50081}_{-5107}
Alt.	-46 ± 14	$3.13^{+2.62}_{-1.97}$	587^{+22}_{-23}	5438^{+4196}_{-1261}	4964^{+33942}_{-3611}

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 $A_{obs} \gg 1.0$

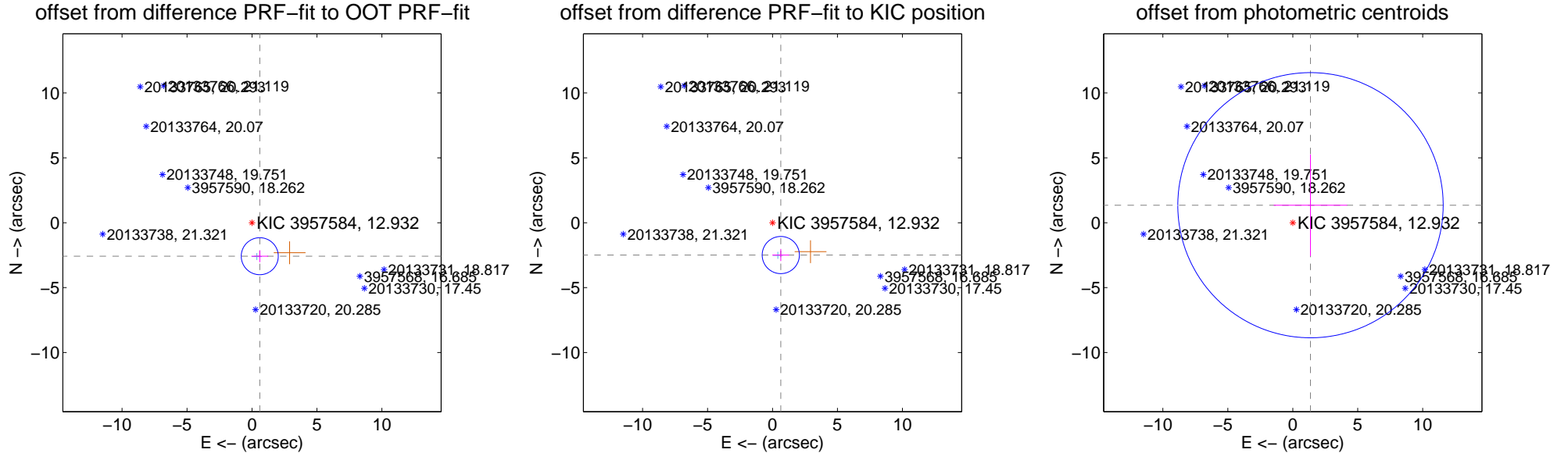
DV Centroid Data

Supplemental centroid analysis for 003957584-02. Kepler magnitude: 12.93. Transit SNR 7.43

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.649 \pm 0.475	5.58	-0.600 \pm 0.645	-2.580 \pm 0.464
PRF-fit source offset from KIC position	2.570 \pm 0.477	5.38	-0.637 \pm 0.645	-2.490 \pm 0.464
photometric centroid source offset	1.92 \pm 3.41	0.56	-1.36 \pm 2.83	1.35 \pm 3.91

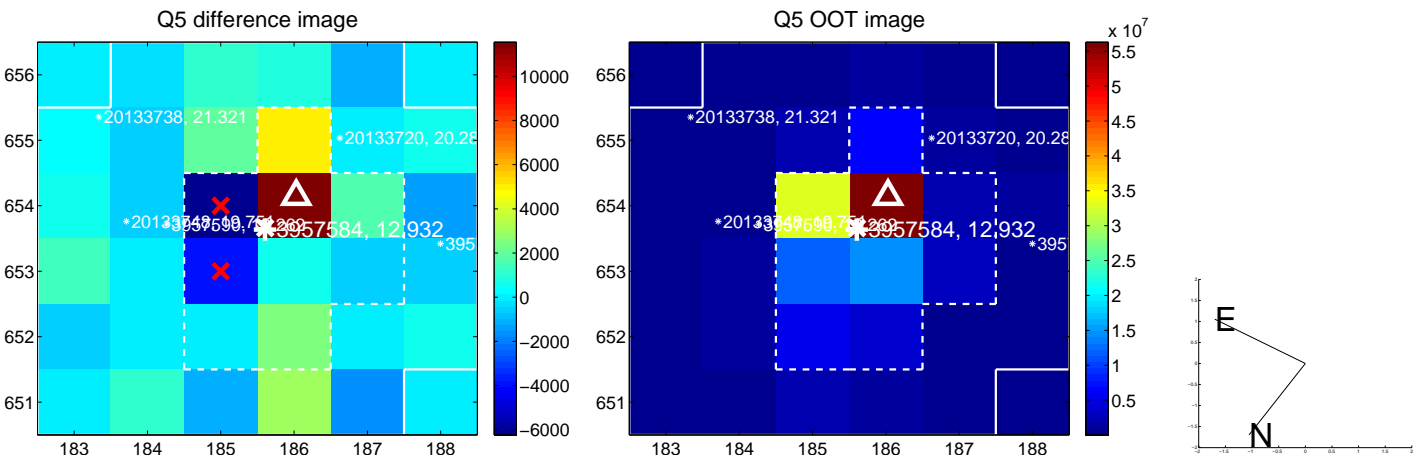


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

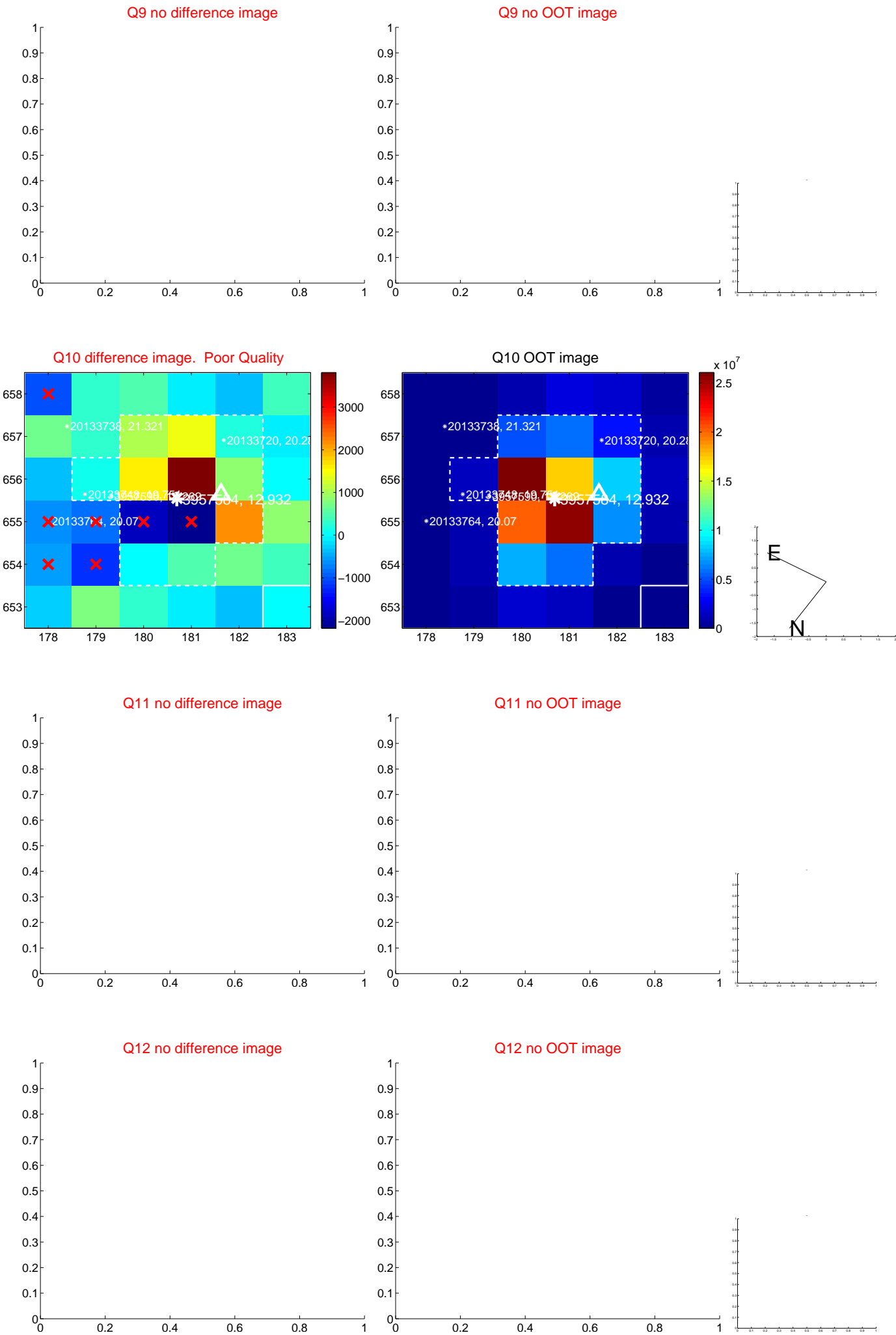
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

Q13 no difference image



Q13 no OOT image



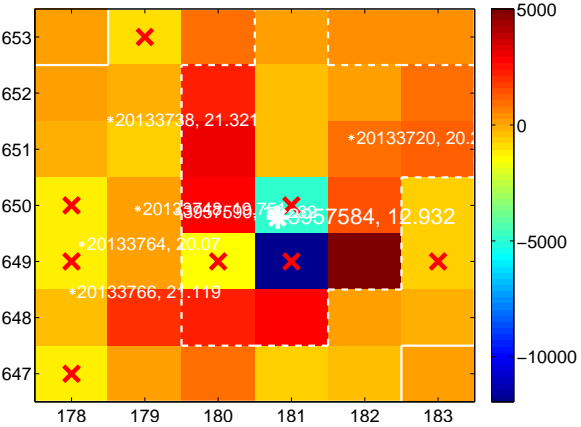
Q14 no difference image



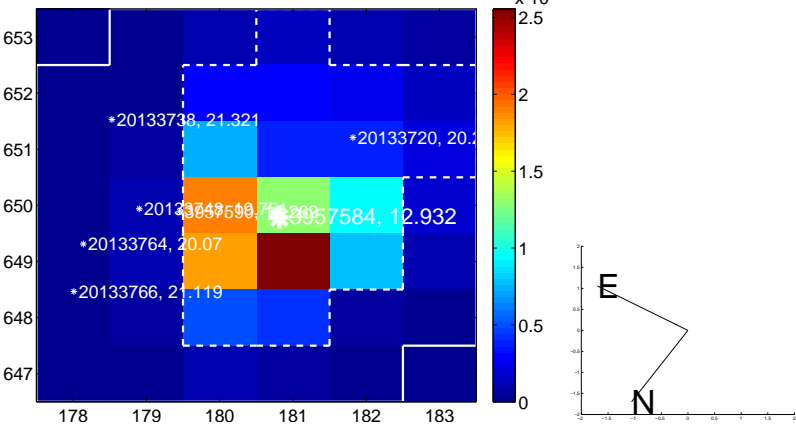
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



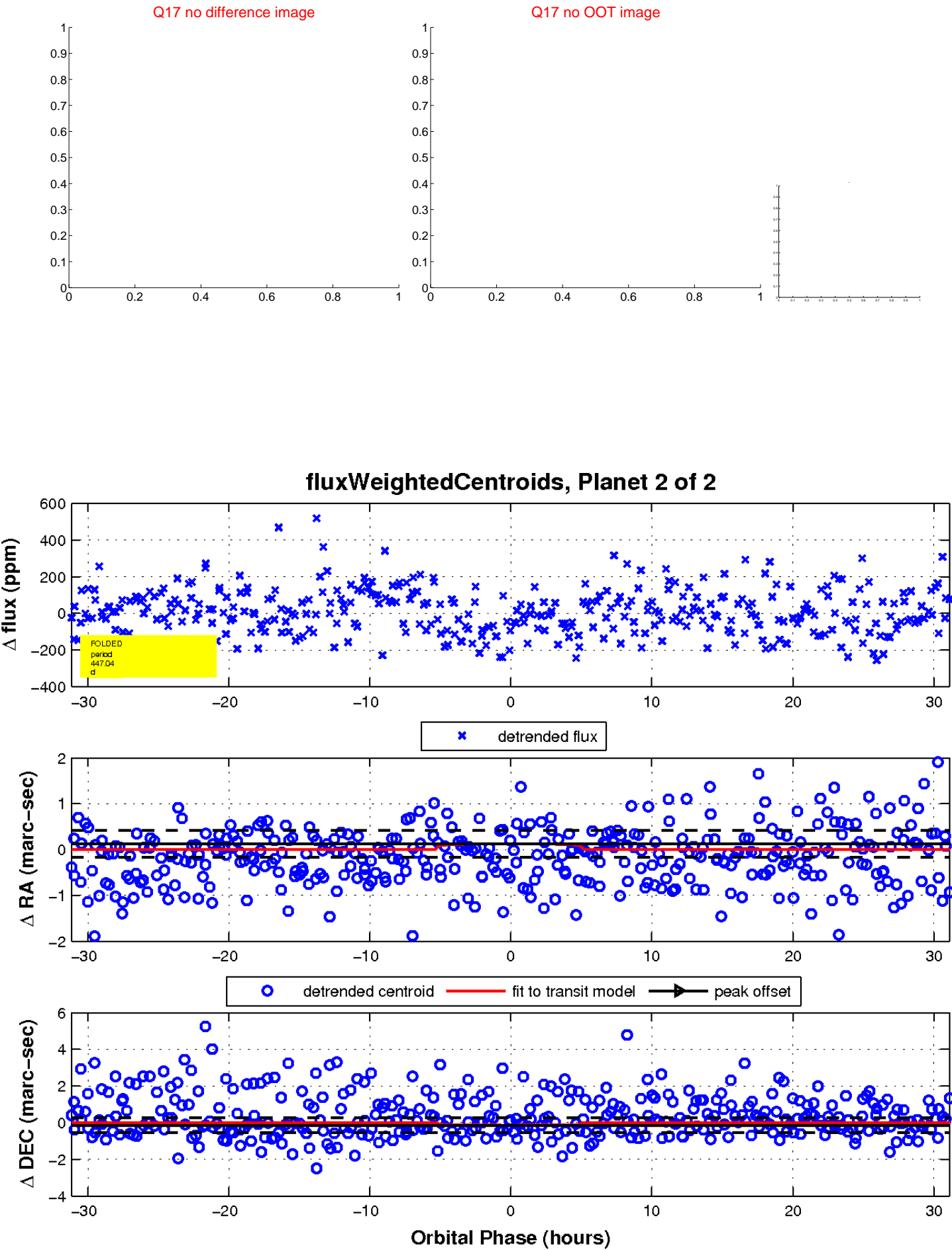
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

