

KIC 004946956

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})
004946956-01	OBS	No	1.016281	131.702803	31.5	3.171	9.6	11.7	1.79	7313	1.17	15576.62
004946956-02	OBS	No	1.016272	132.216473	29.0	2.193	8.5	10.3	1.79	7313	1.12	15576.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004946956-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004946956-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

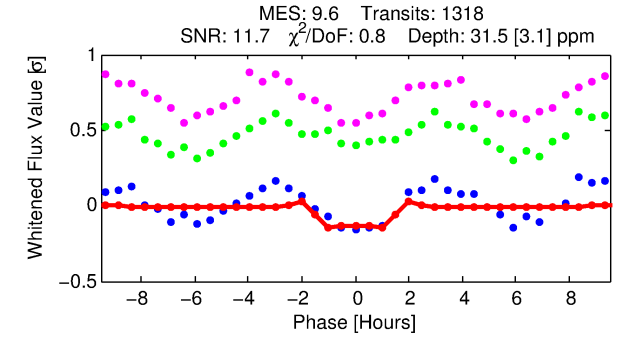
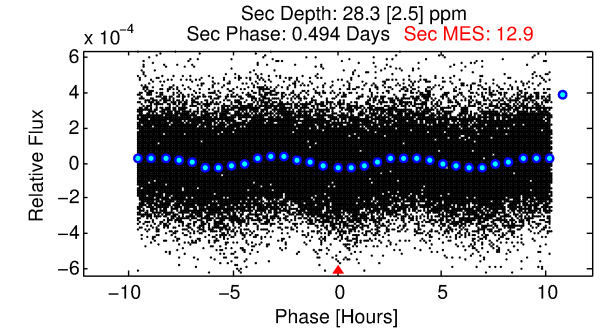
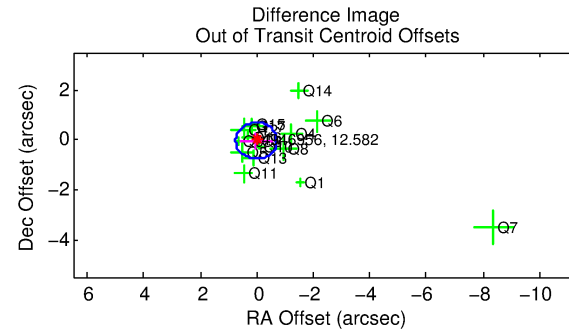
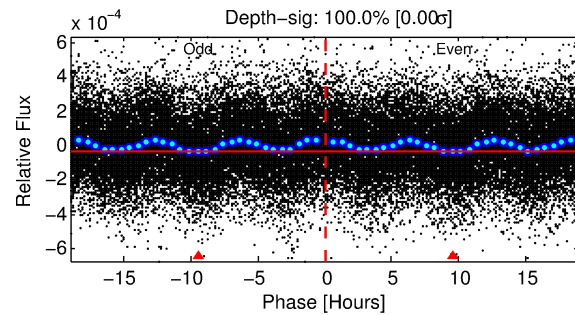
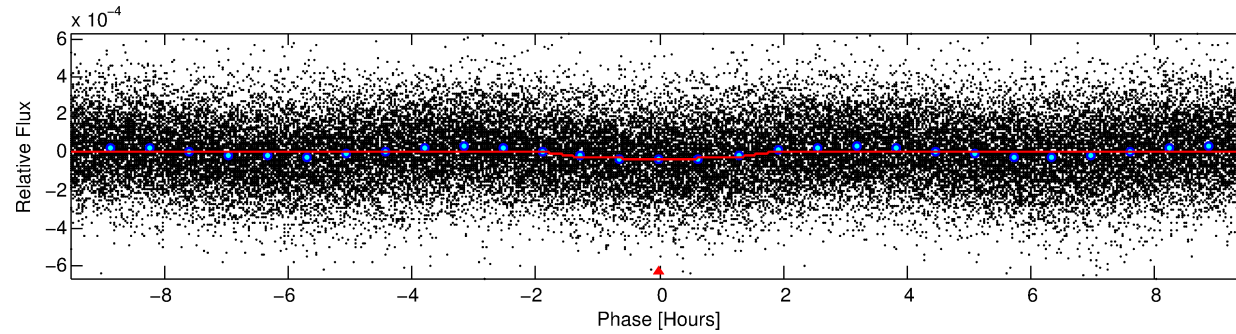
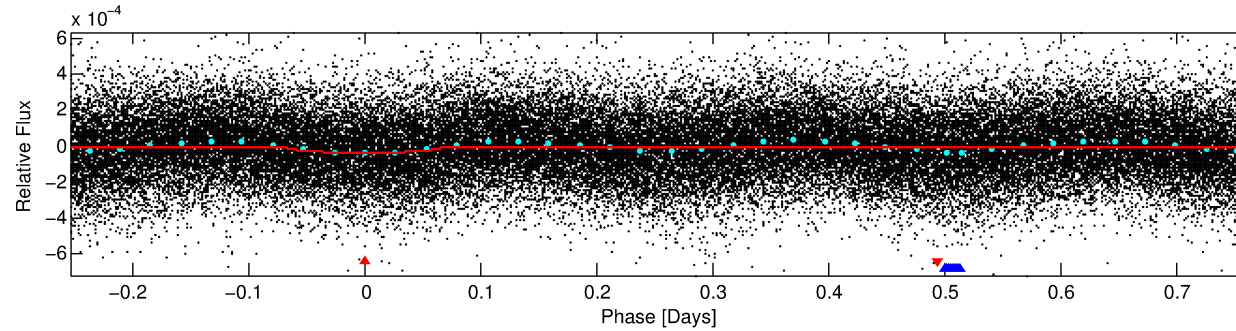
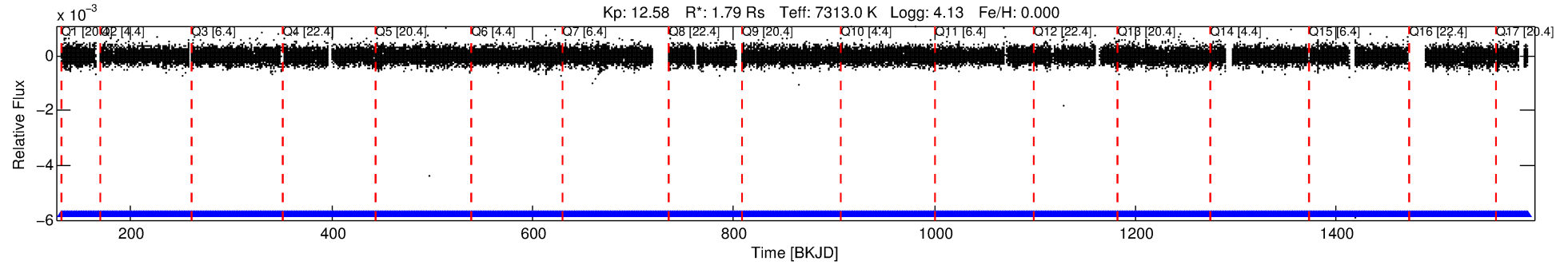
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004946956-01

No Significant Match Found

DV One-Page Summary

KIC: 4946956 Candidate: 1 of 2 Period: 1.016 d



DV Fit Results:

Period = 1.01628 [0.00001] d
Epoch = 131.7028 [0.0023] BKJD
Rp/R* = 0.0060 [0.0015]
a/R* = 1.45 [1.17]
b = 0.90 [0.33]
Seff = 15576.62 [6131.81]
Teq = 2849 [280] K
Rp = 1.17 [0.46] Re
a = 0.0230 [0.0058] AU
Ag = 6.05 [3.68] [1.37σ]
Teffp = 6909 [907] K [4.28σ]

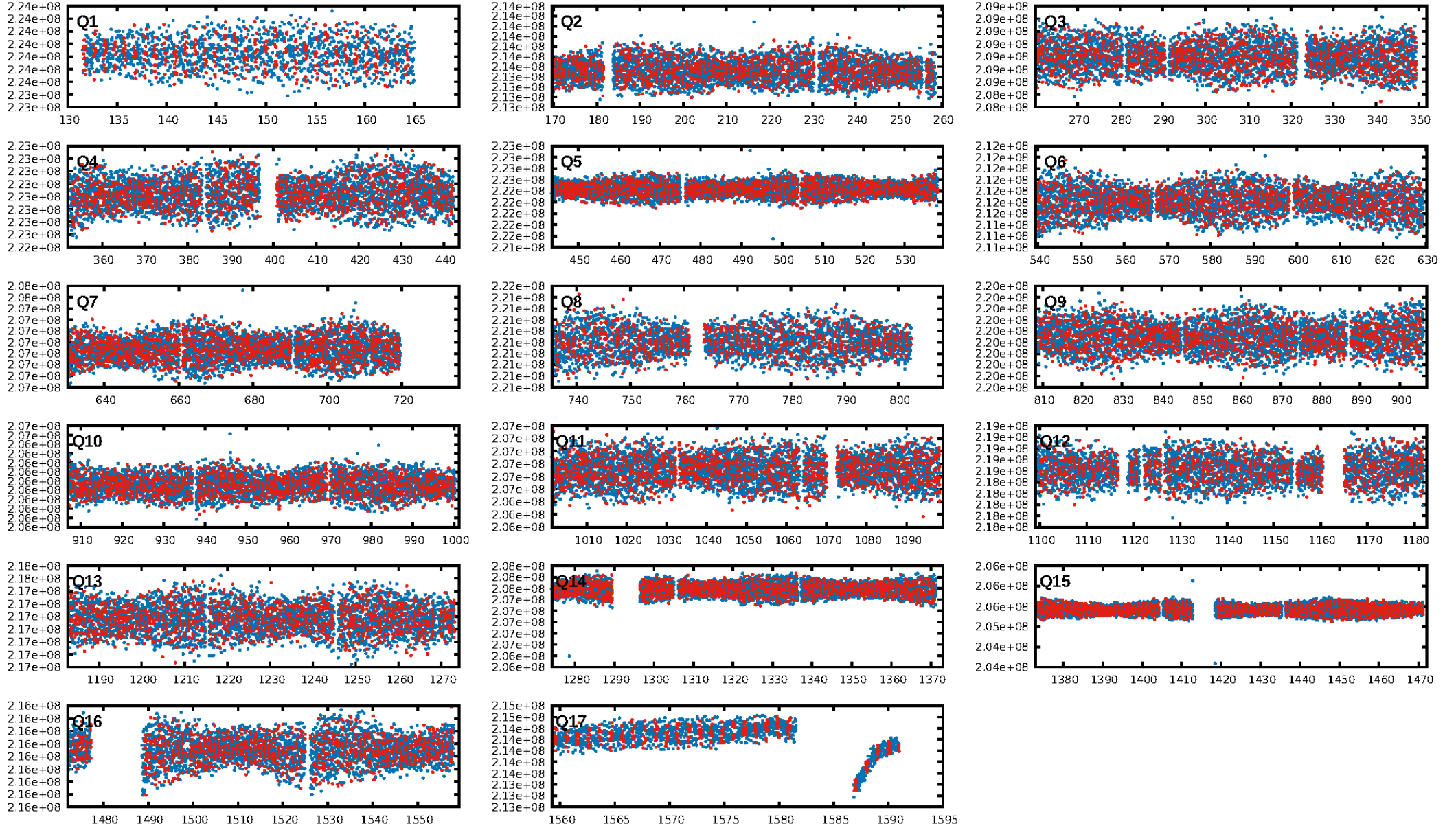
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.73e-13
RollingBand-fgt: 1.00 [1259/1259]
GhostDiagnostic-chr: 9.248
Centroid-sig: 74.6%
Centroid-so: 0.106 arcsec [0.17σ]
OotOffset-rm: 0.049 arcsec [0.20σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-rm: 0.146 arcsec [0.33σ]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [17/17]

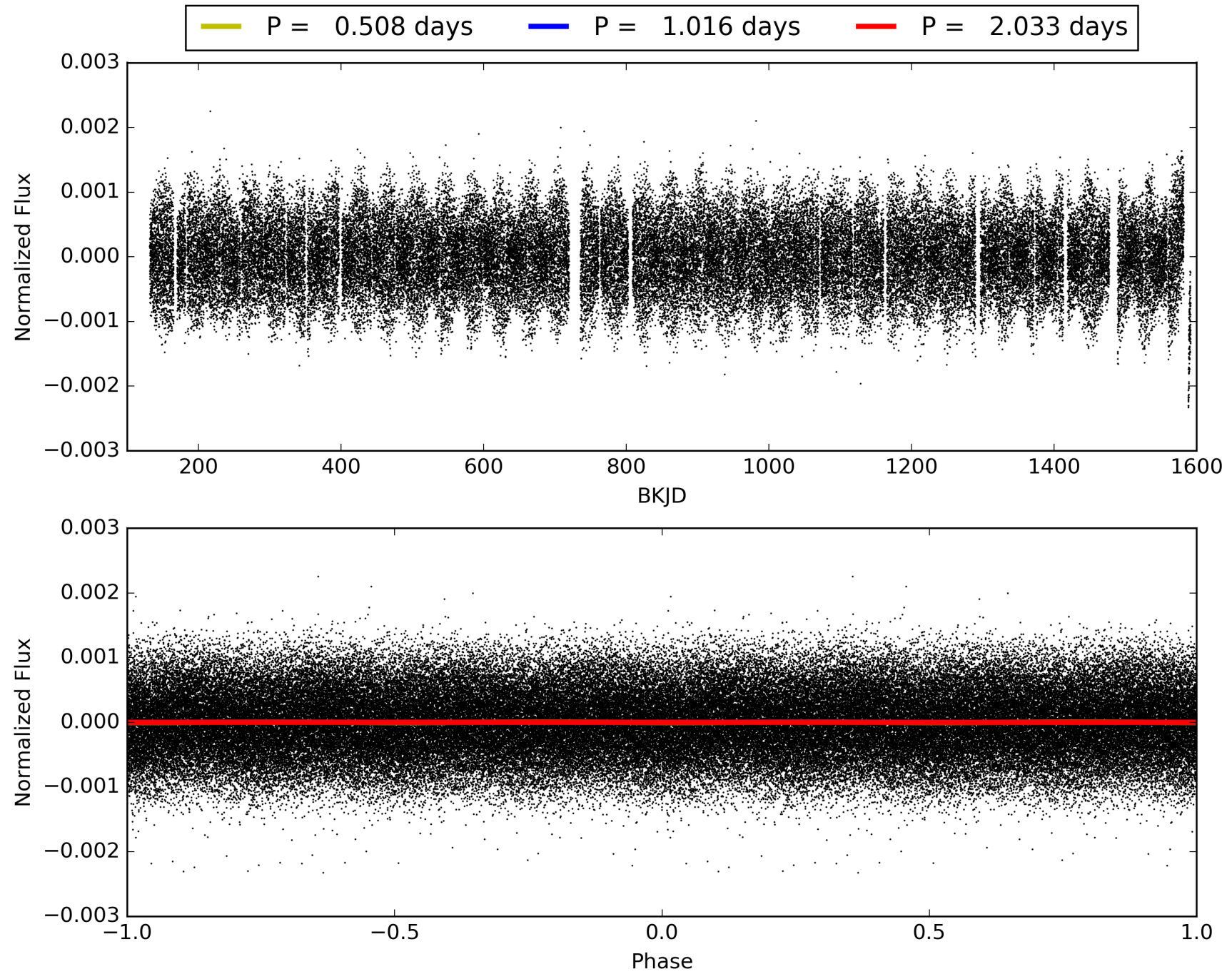
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:45:50 Z

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

TCE 004946956-01, PDC Light Curves

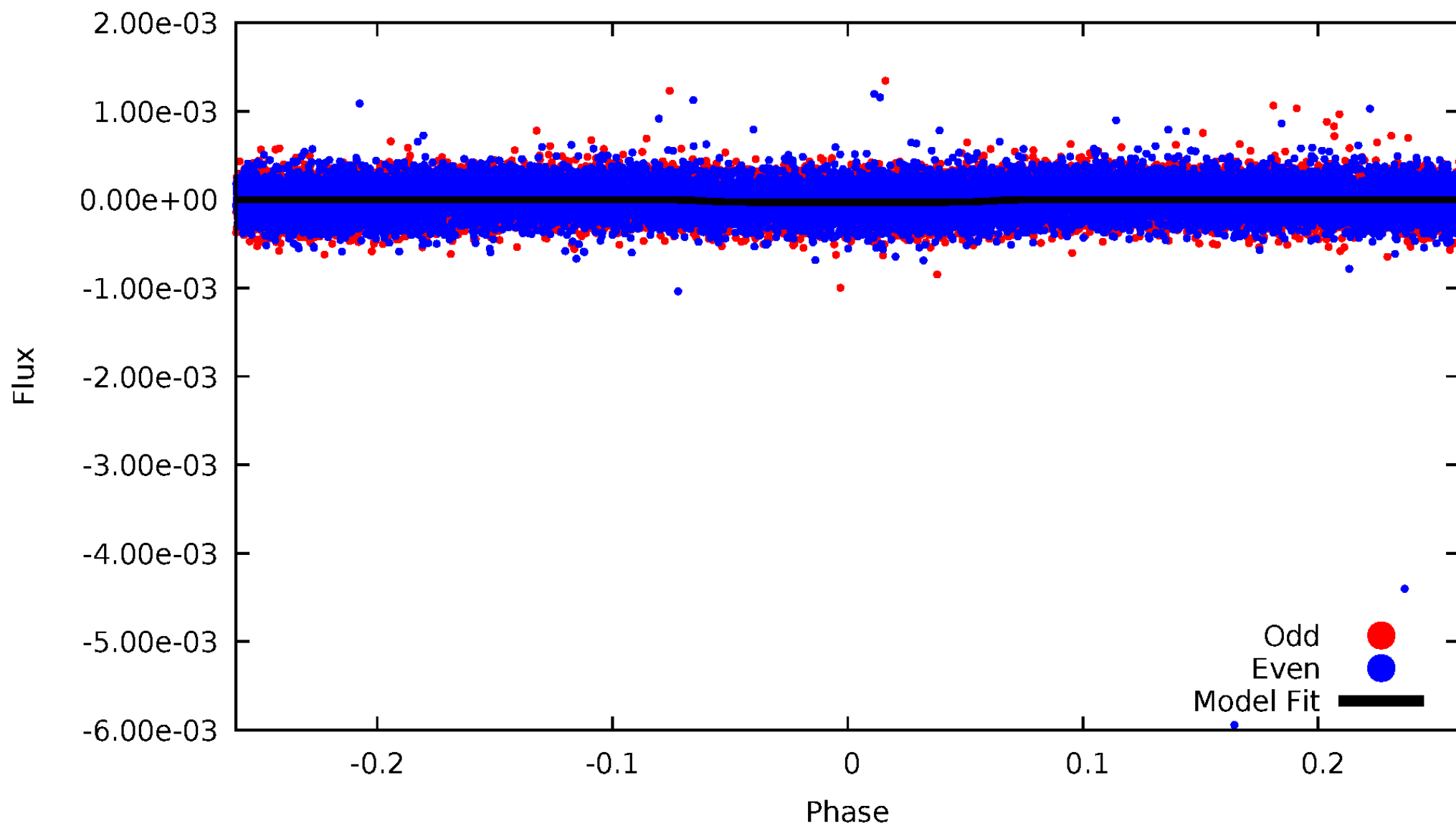


TCE 004946956-01



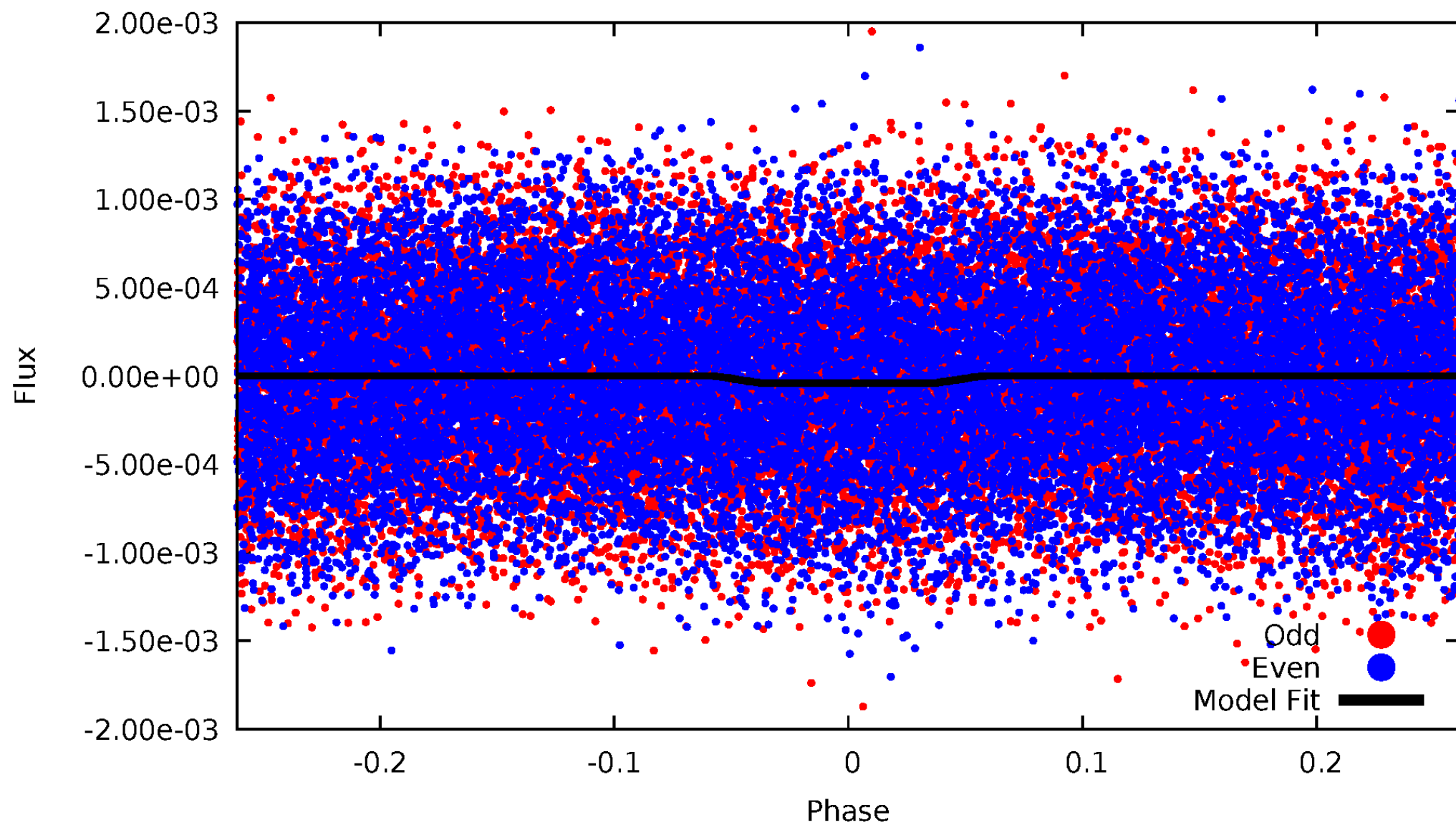
DV Odd/Even

TCE 004946956-01

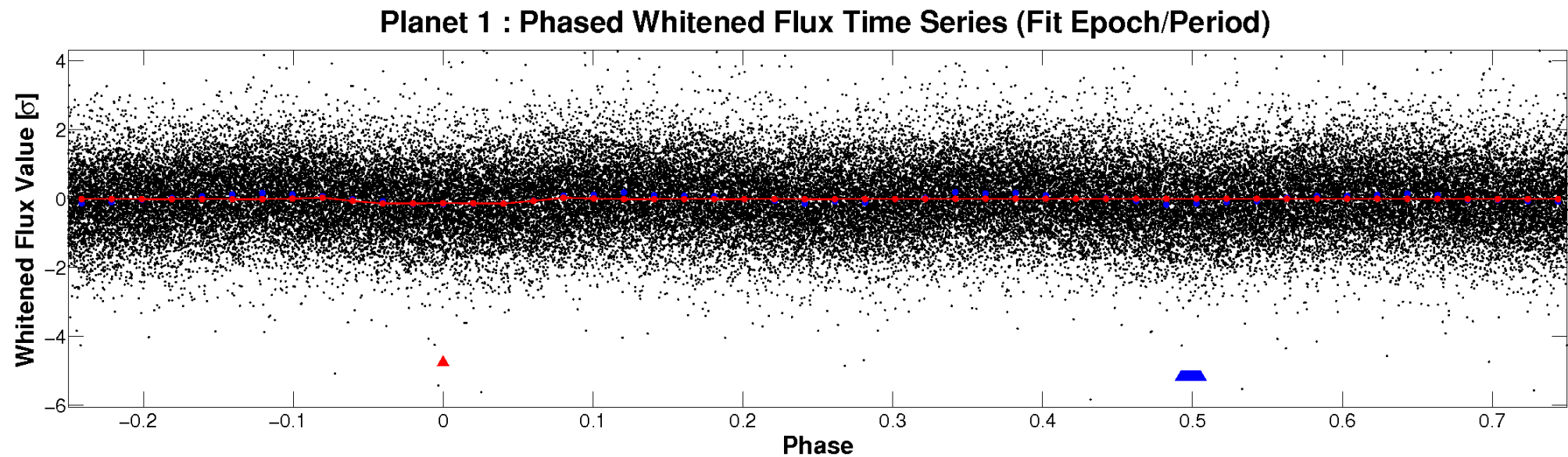
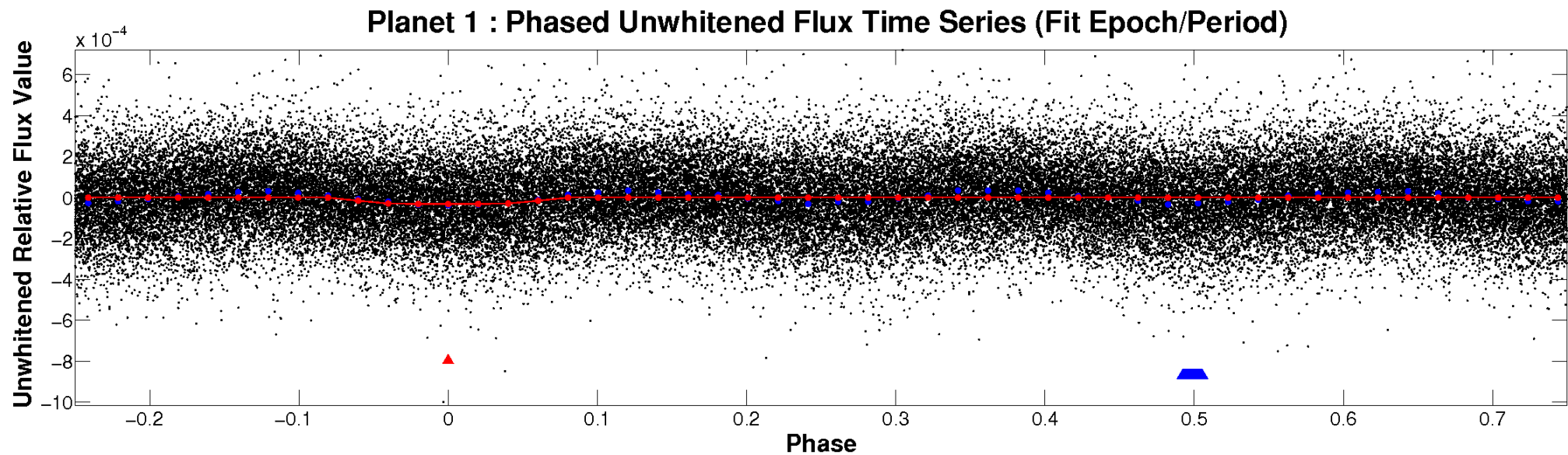


ALT Odd/Even

TCE 004946956-01

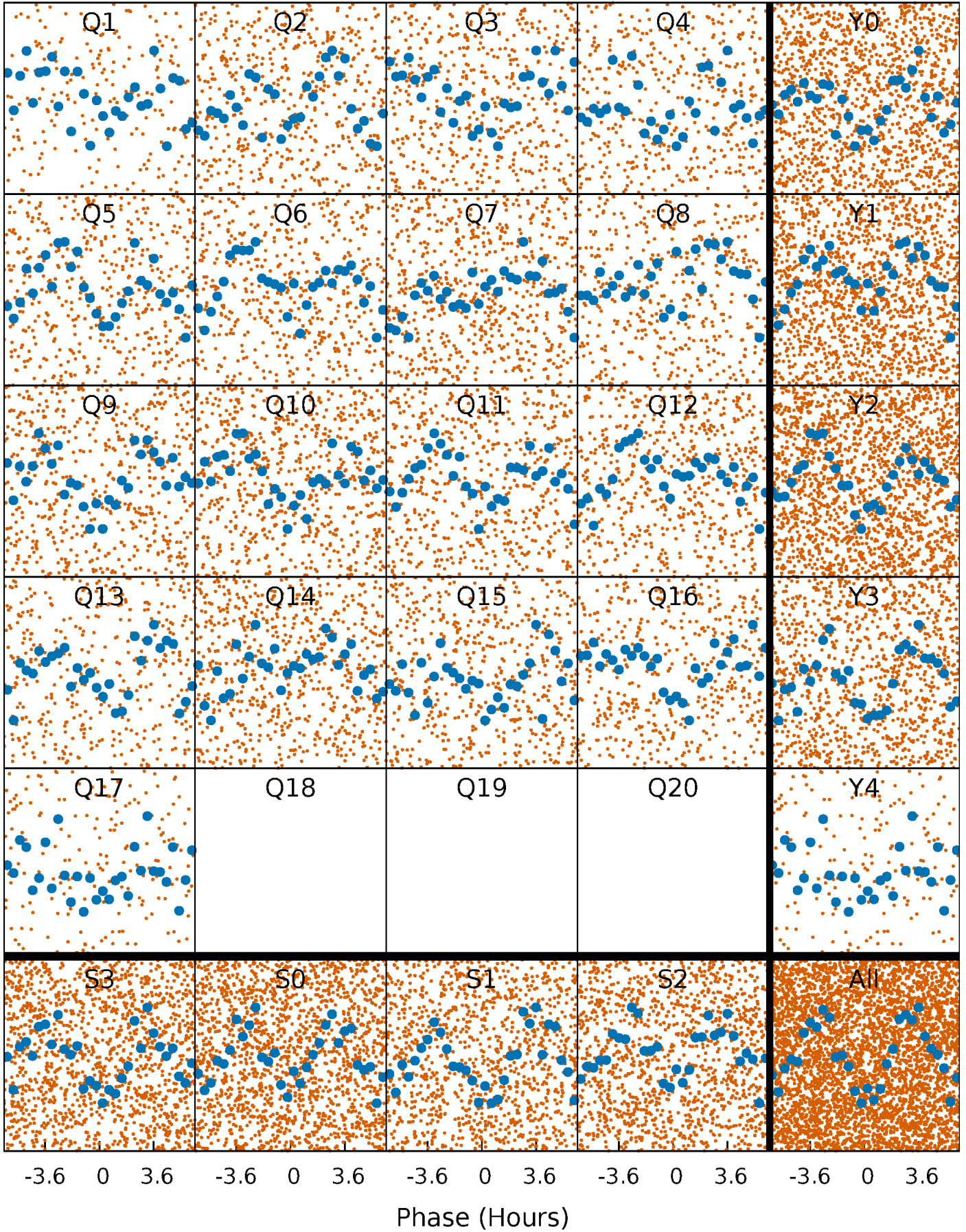


Non-Whitened Vs. Whitened Light Curve



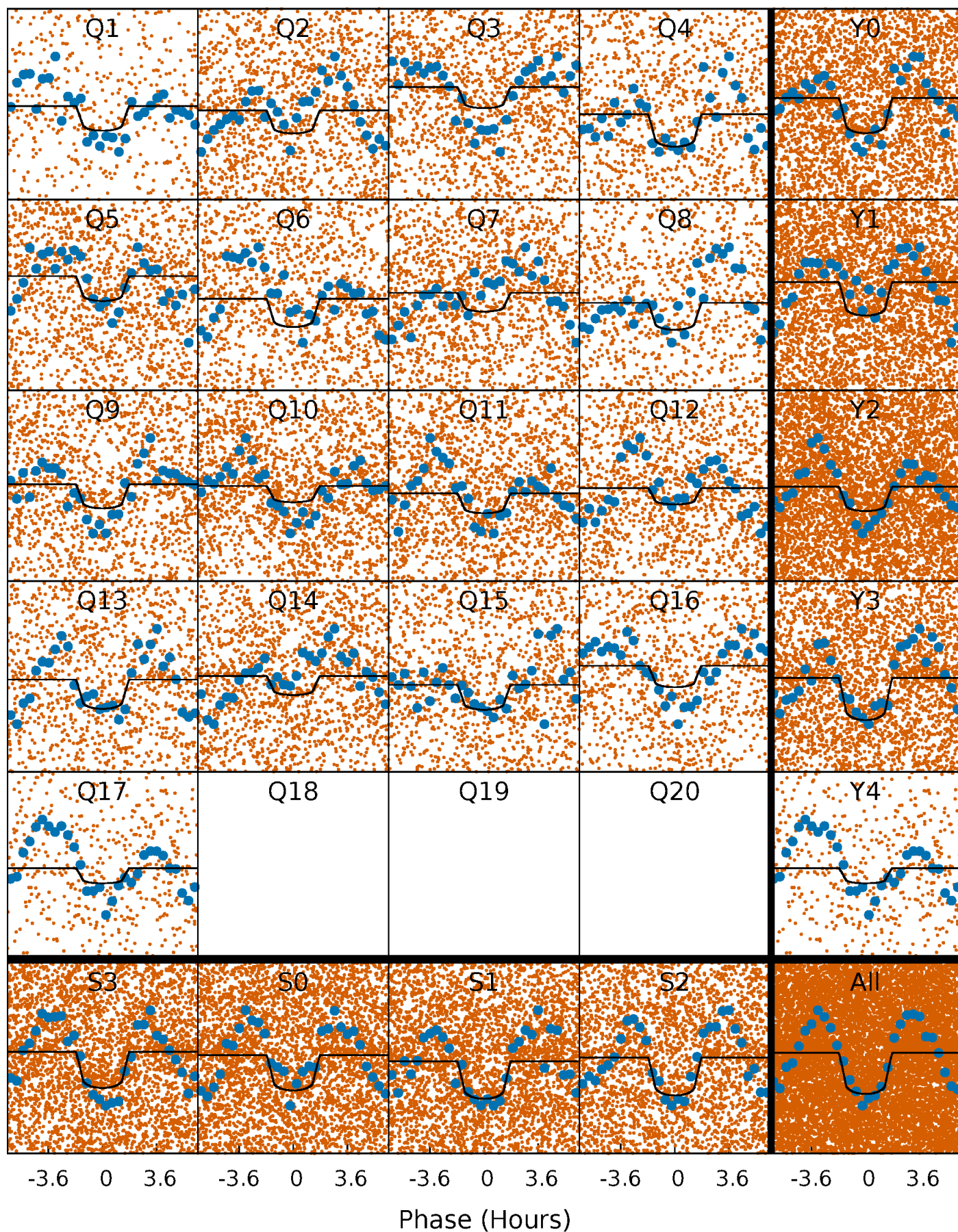
PDC Quarter-Phased Transit Curves

TCE 004946956-01 P= 1.016281 Days $T_0=131.702803$ (BKJD)



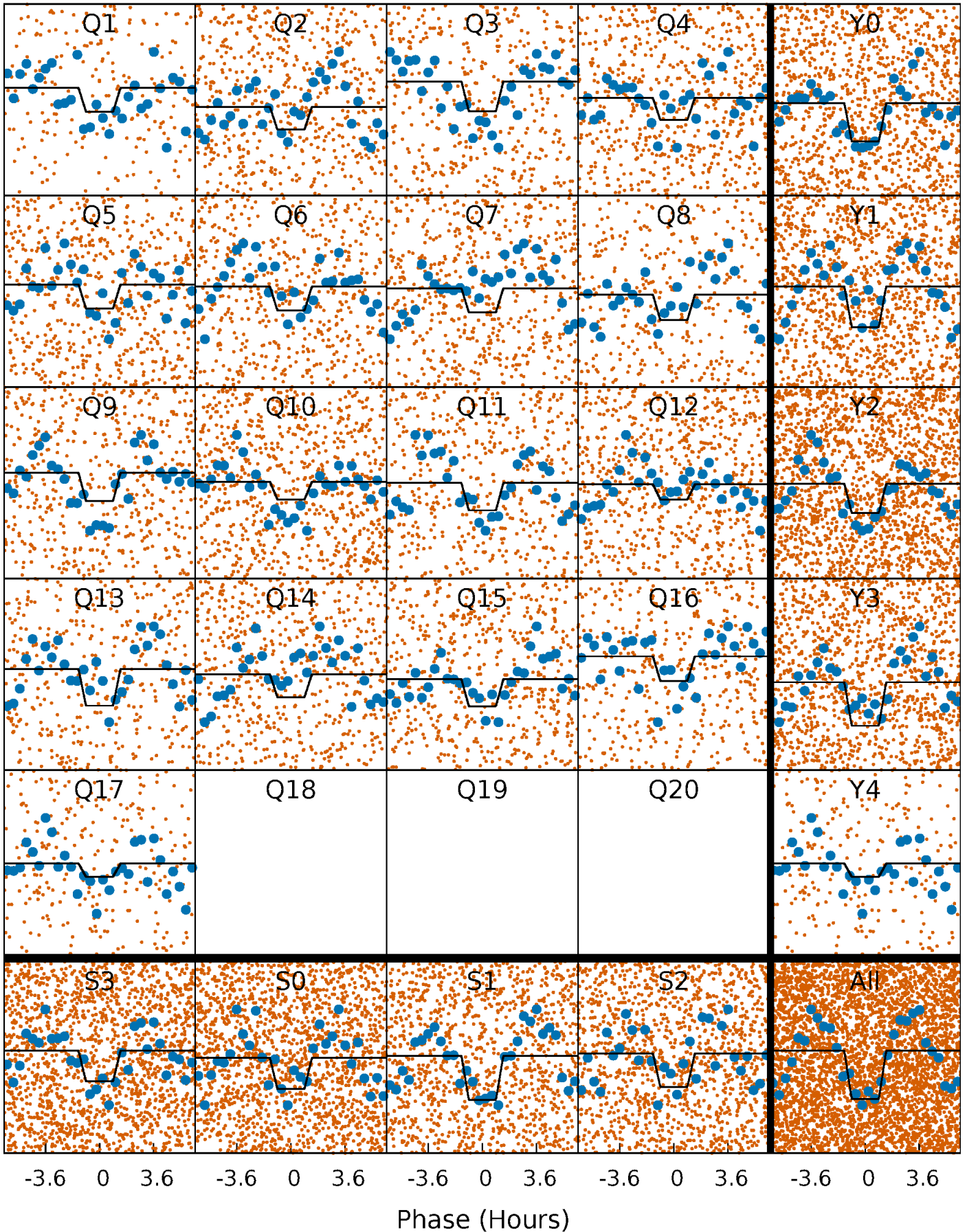
DV Quarter-Phased Transit Curves

TCE 004946956-01 P= 1.016281 Days $T_0=131.702803$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

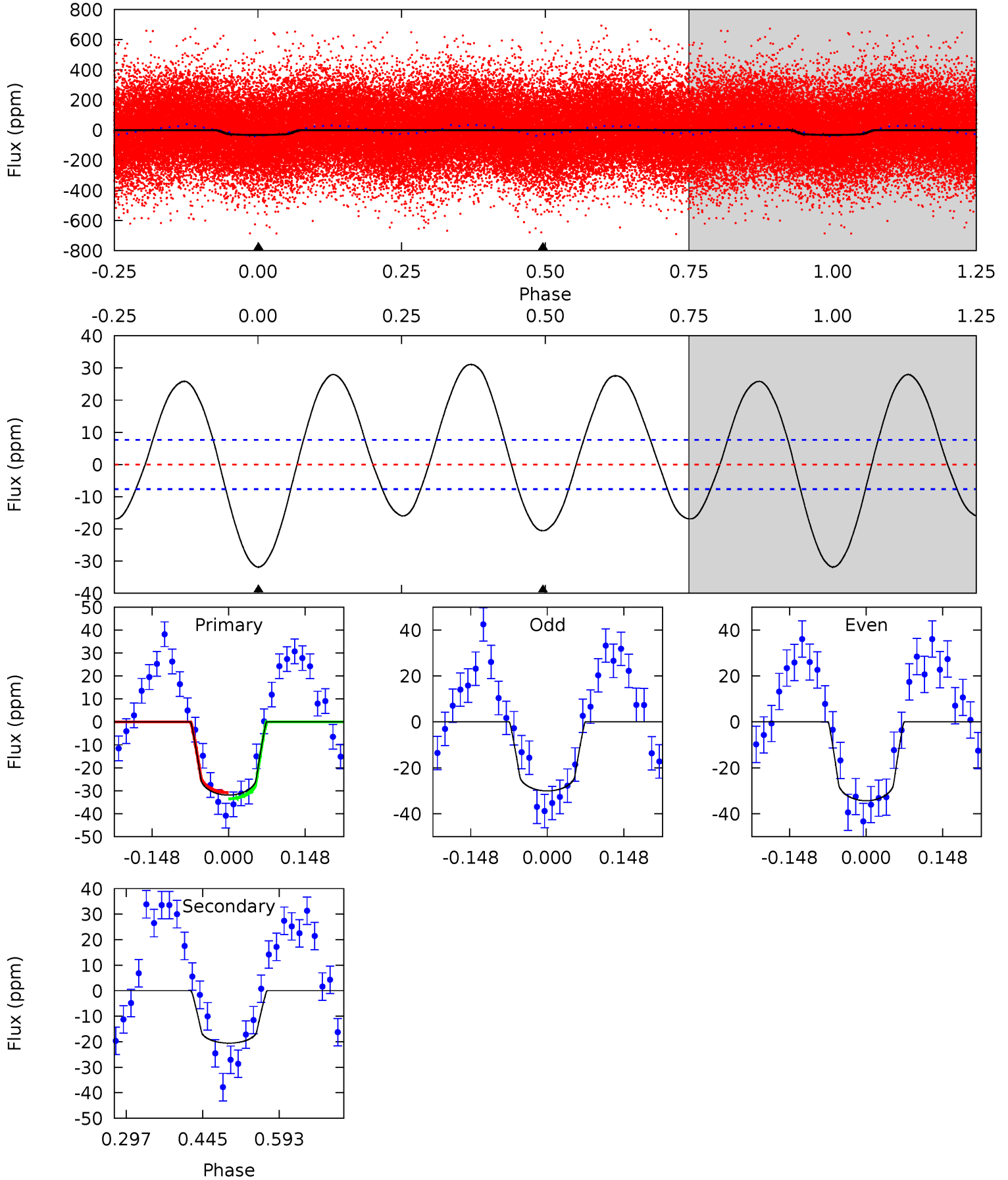
TCE 004946956-01 P= 1.016291 Days $T_0=131.702999$ (BKJD)



DV Model-Shift Uniqueness Test

004946956-01, P = 1.016281 Days, E = 130.686522 Days

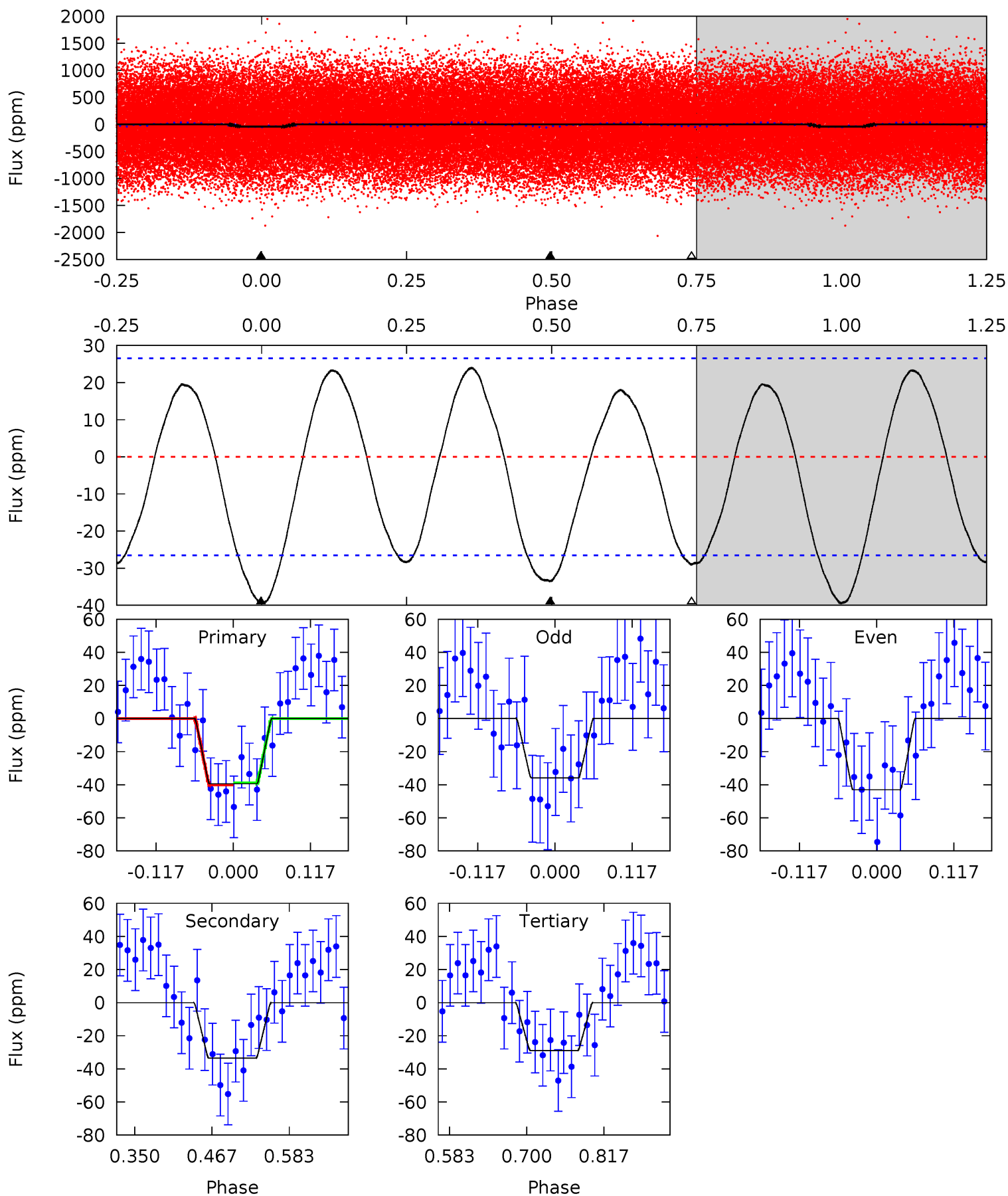
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.7	12.0	0	0	4.48	1.45	8.05	18.7	18.7	12.0	12.0	1.25	0.95	0.49	0.79



Alt Model-Shift Uniqueness Test

004946956-01, P = 1.016291 Days, E = 130.686708 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.73	5.72	4.95	0	4.53	1.57	3.11	1.78	6.73	0.77	5.72	0.61	1.07	0.38	0.11



Stellar Parameters For KIC 004946956

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7313^{+232}_{-319}	$4.127^{+0.124}_{-0.186}$	$0.000^{+0.200}_{-0.350}$	$1.794^{+0.558}_{-0.326}$	$1.570^{+0.203}_{-0.248}$	$0.383^{+0.275}_{-0.197}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+31%/-18%	+13%/-16%	+72%/-51%
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 004946956-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-21 ± 2	$1.18^{+0.37}_{-0.30}$	4000^{+323}_{-253}	6163^{+1106}_{-749}	$4.244^{+3.426}_{-1.794}$
Alt.	-34 ± 6	$1.26^{+0.36}_{-0.30}$	3997^{+304}_{-272}	6758^{+1193}_{-766}	$5.970^{+4.741}_{-2.389}$

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 $A_{obs} \gg 1.0$

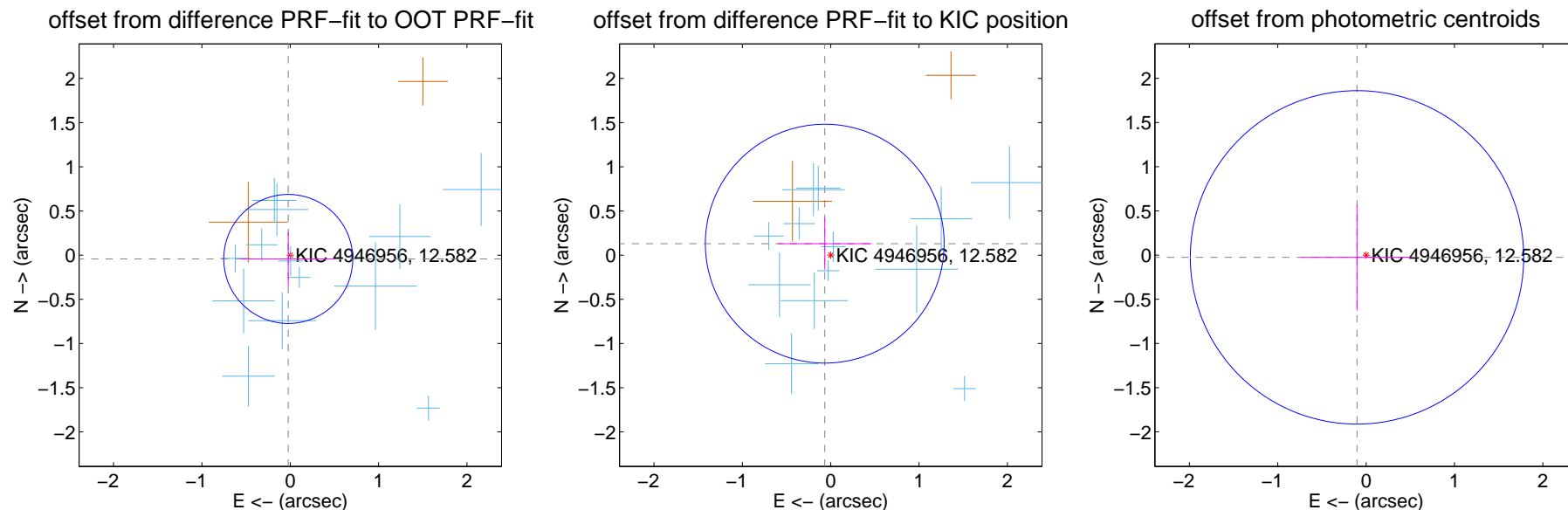
DV Centroid Data

Supplemental centroid analysis for 004946956-01. Kepler magnitude: 12.58. Transit SNR 11.73

There are 13 quarters with good PRF difference image offsets

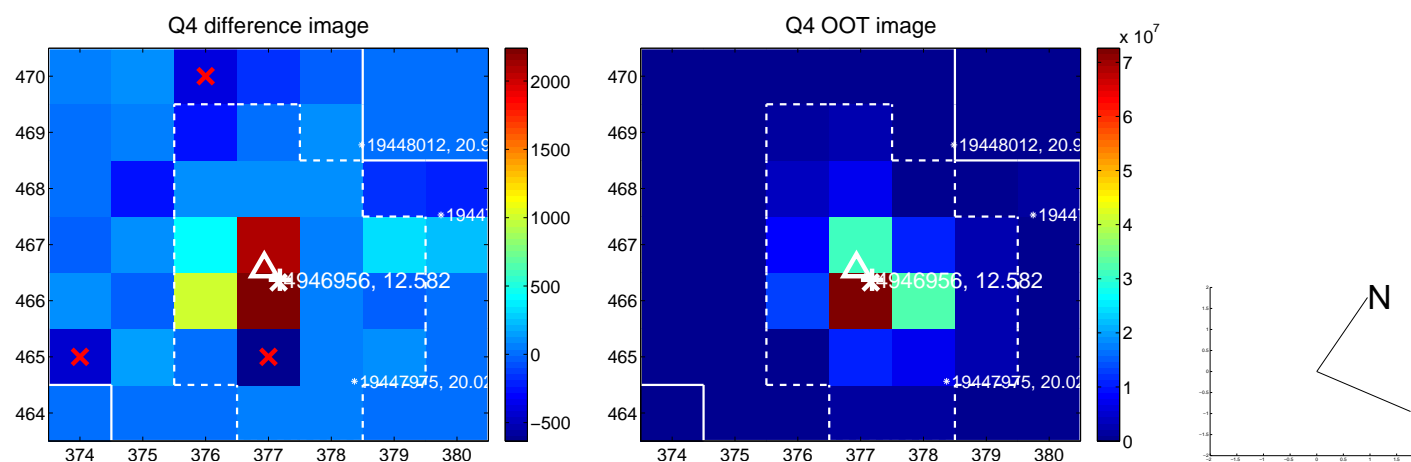
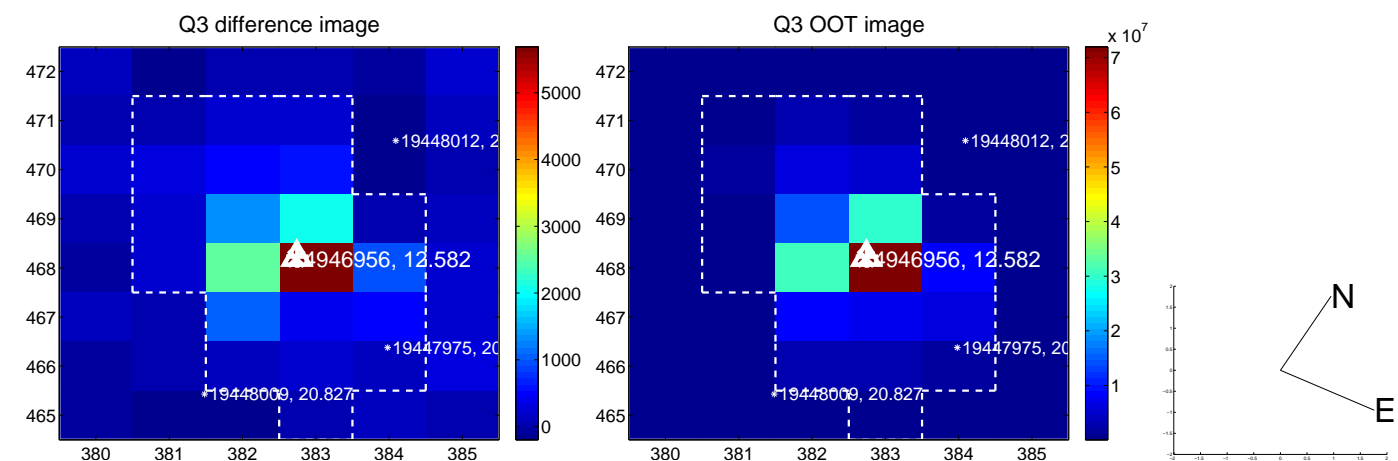
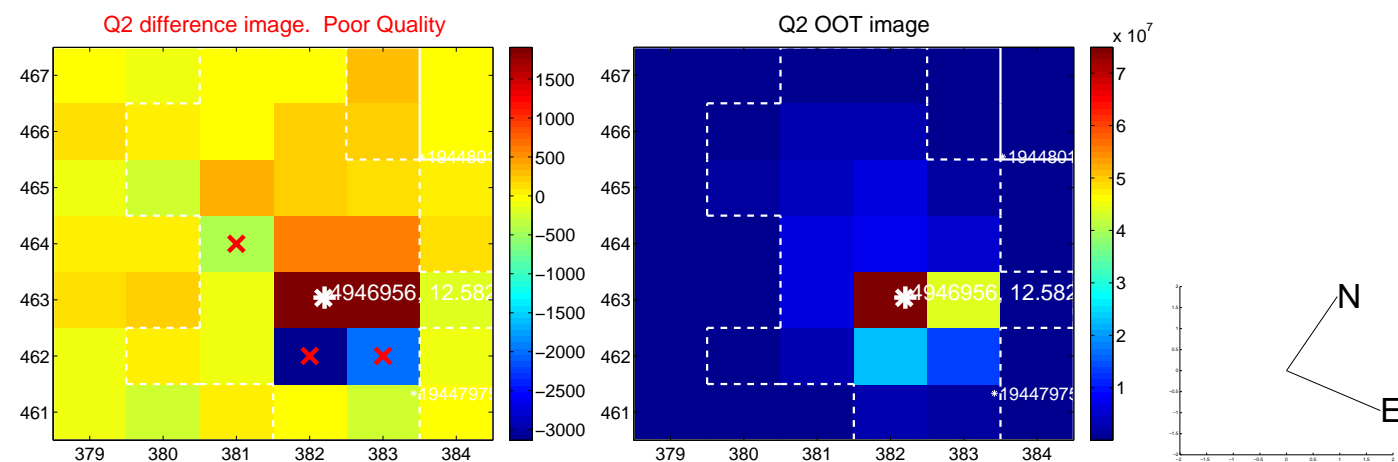
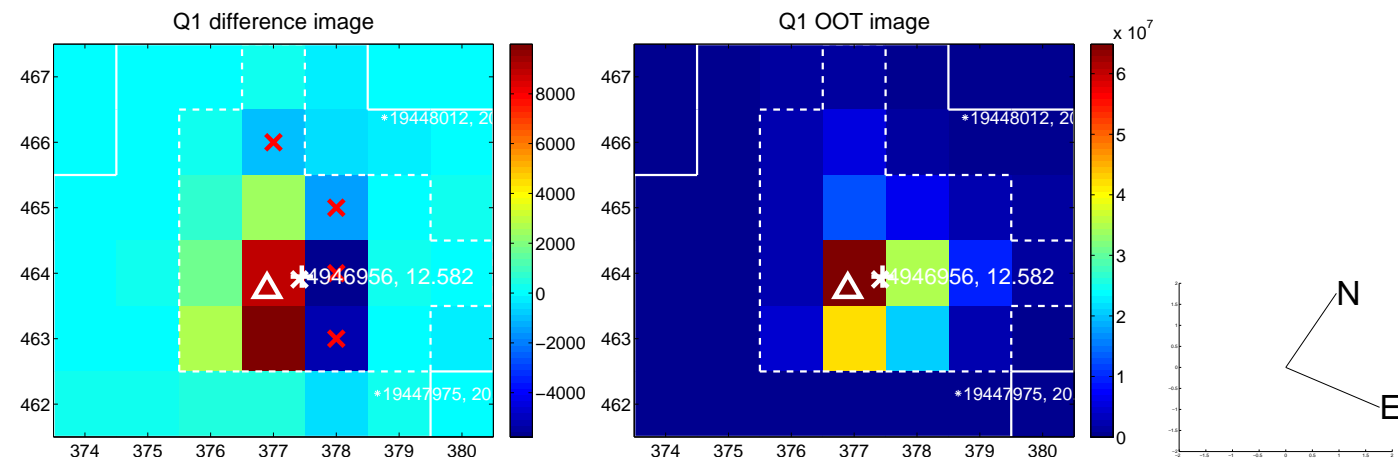
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.049 ± 0.243	0.20	0.023 ± 0.541	-0.043 ± 0.309
PRF-fit source offset from KIC position	0.146 ± 0.451	0.33	0.068 ± 0.531	0.130 ± 0.293
photometric centroid source offset	0.11 ± 0.63	0.17	0.10 ± 0.63	-0.03 ± 0.60

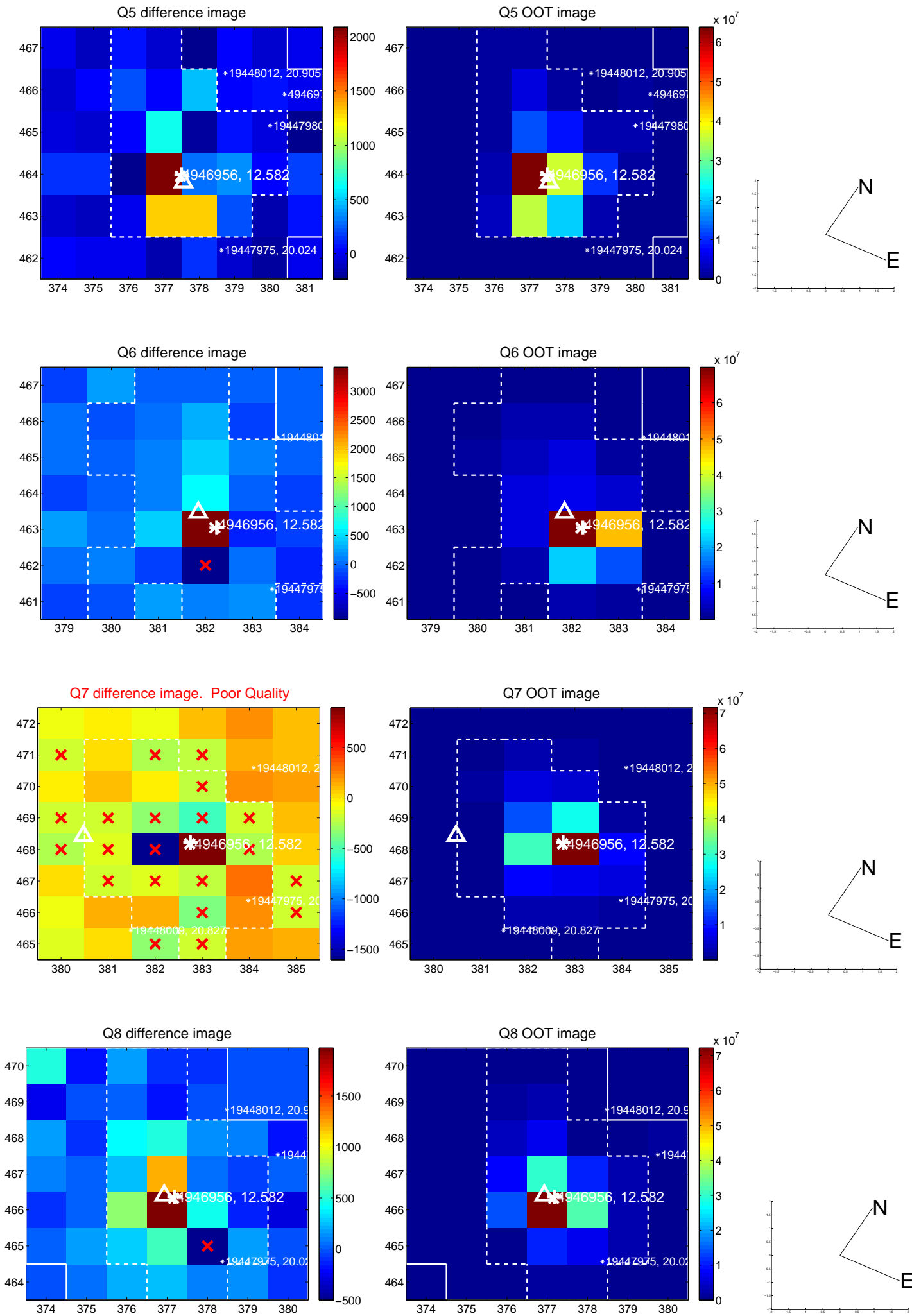


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

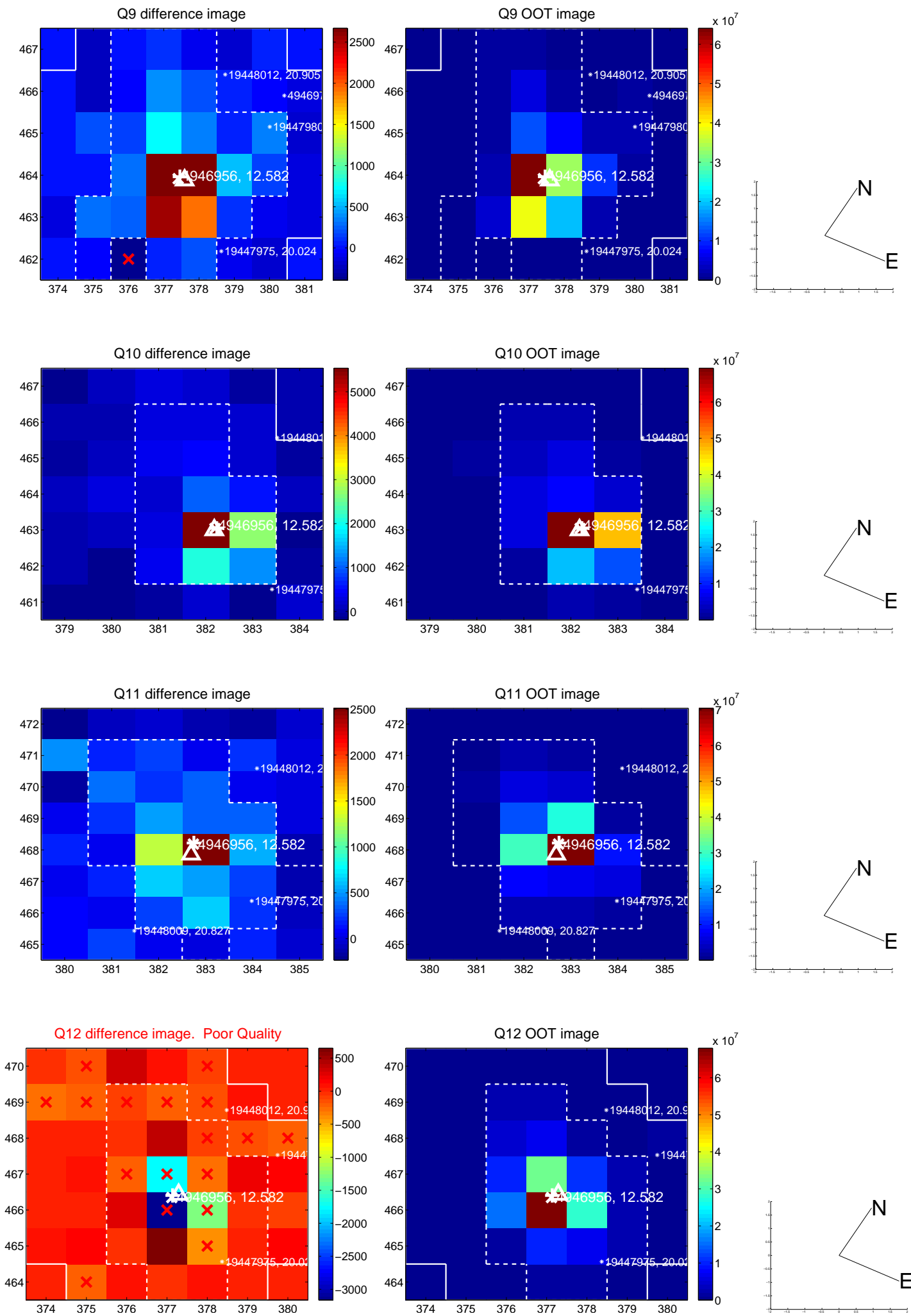
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



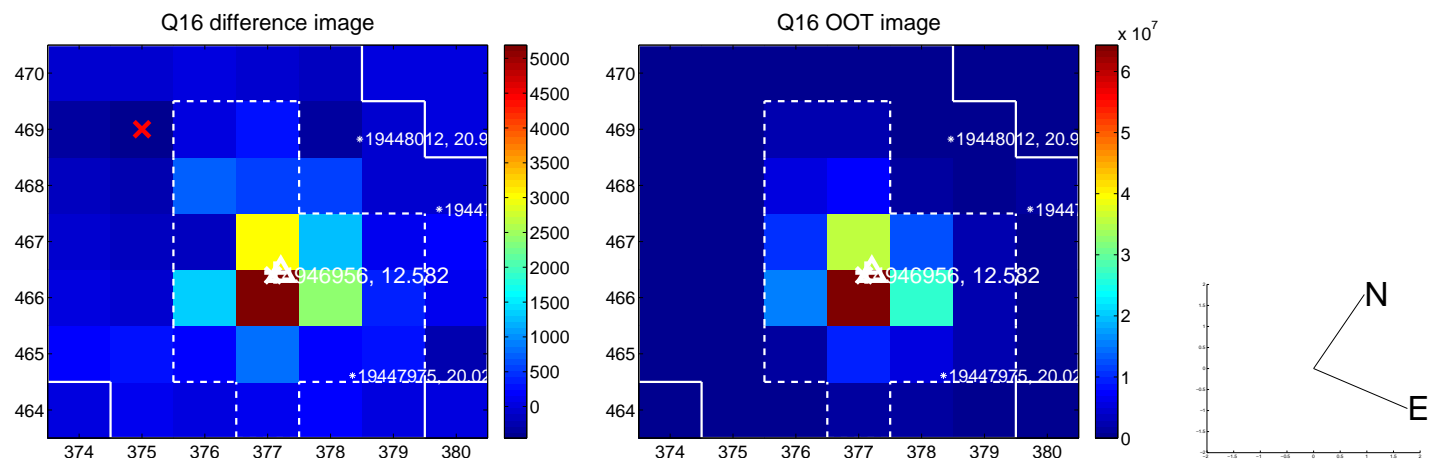
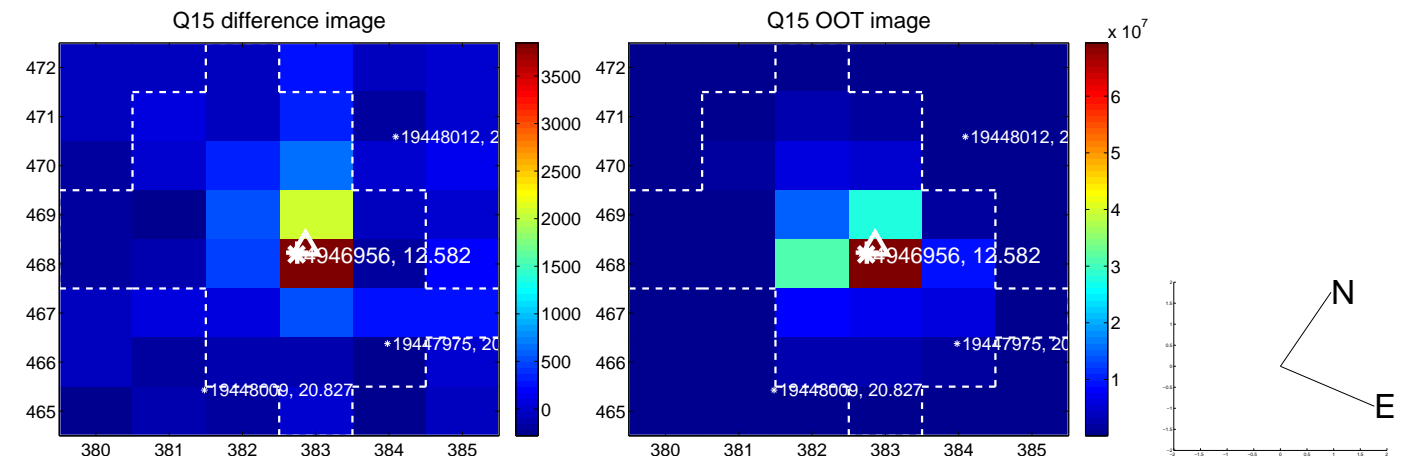
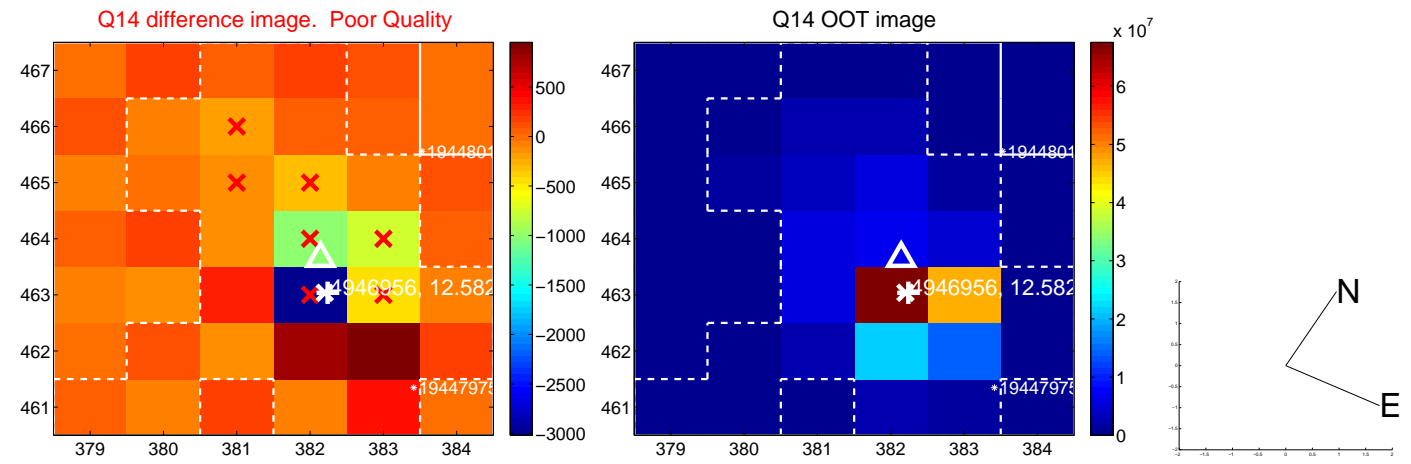
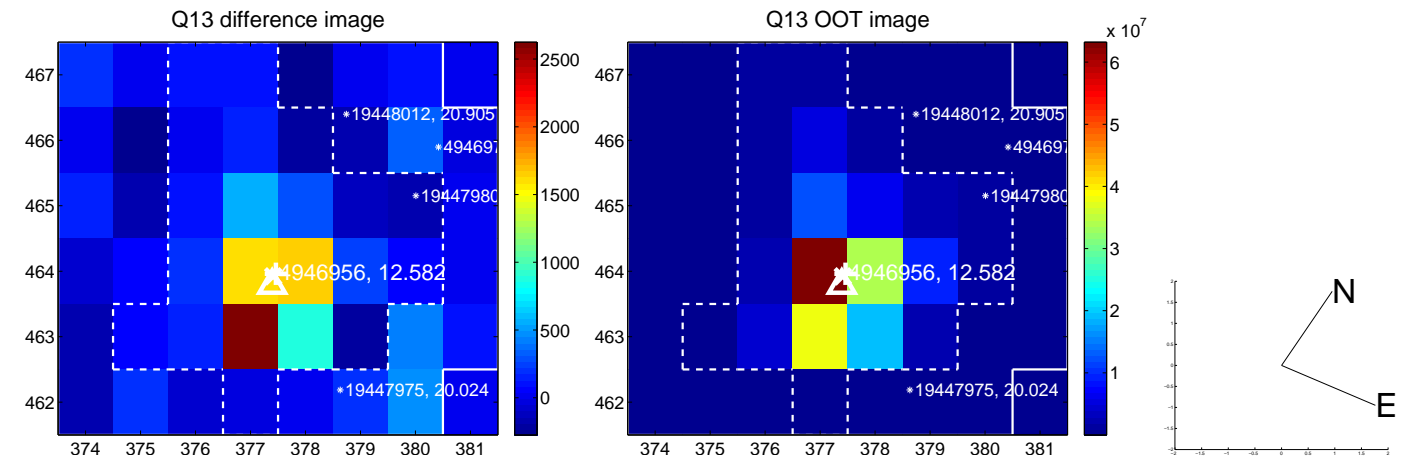
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



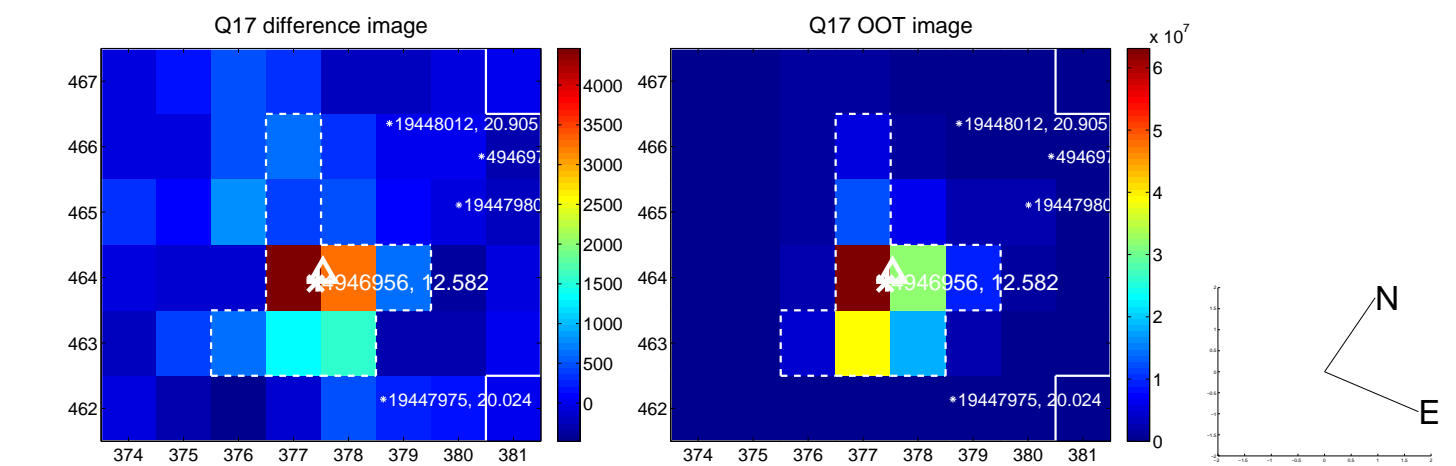
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



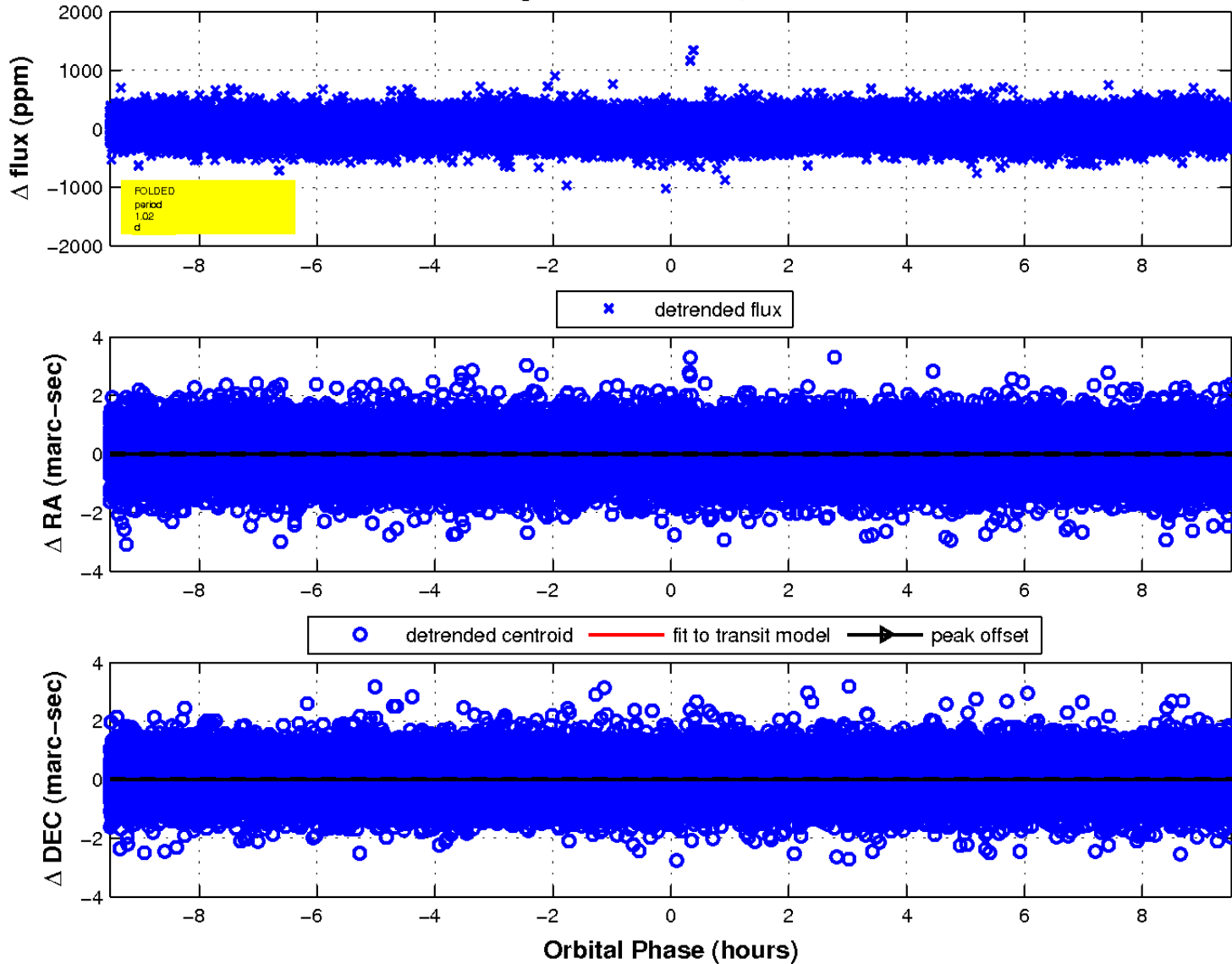
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



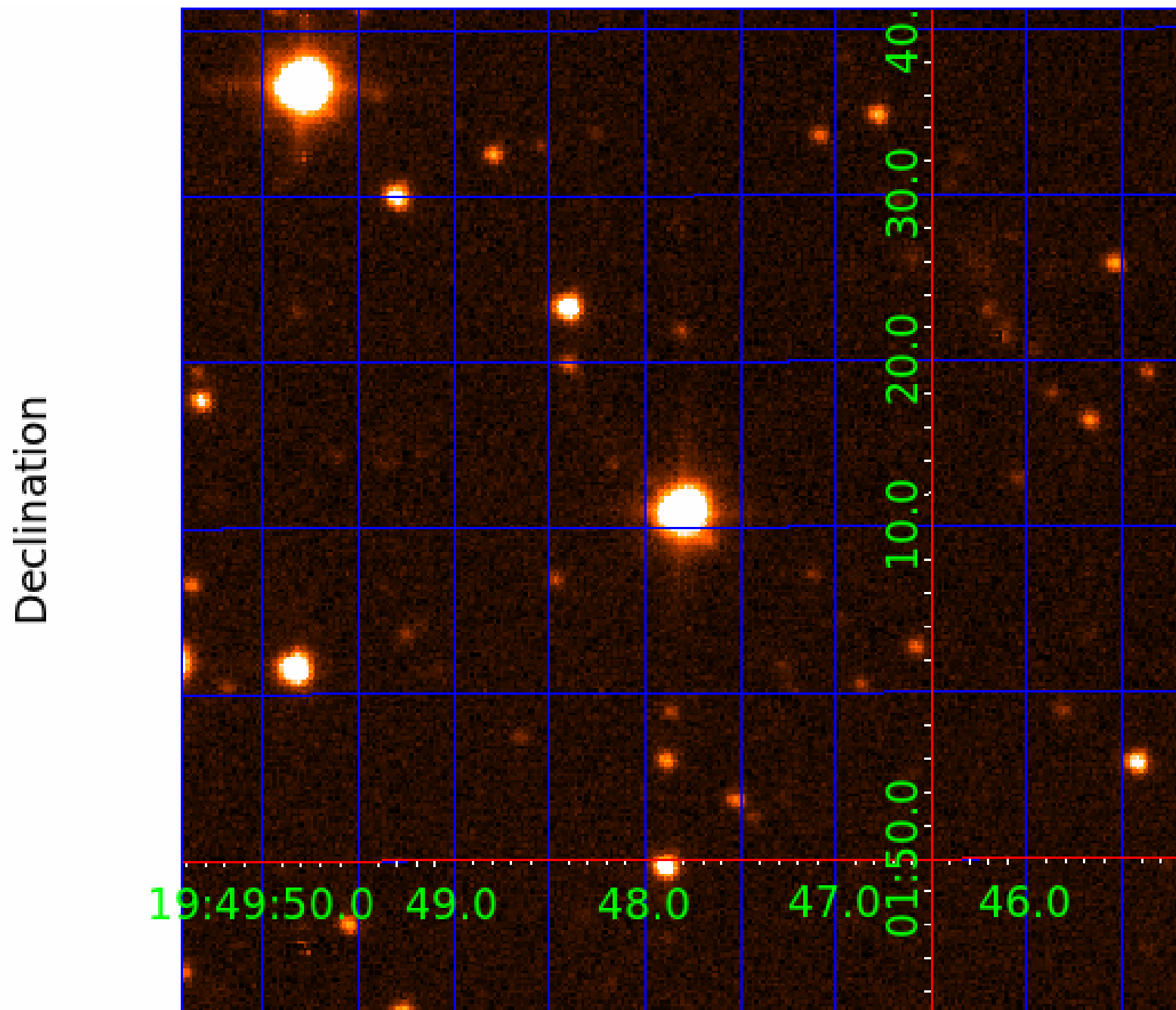
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 004946956

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})
004946956-01	OBS	No	1.016281	131.702803	31.5	3.171	9.6	11.7	1.79	7313	1.17	15576.62
004946956-02	OBS	No	1.016272	132.216473	29.0	2.193	8.5	10.3	1.79	7313	1.12	15576.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004946956-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004946956-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

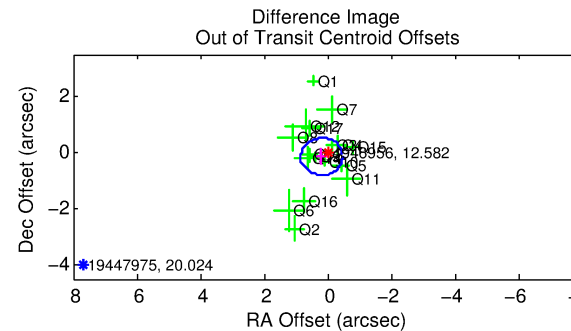
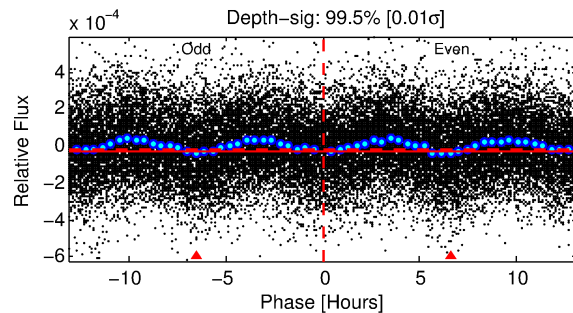
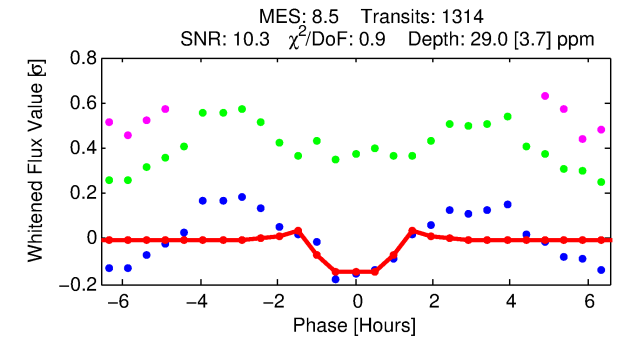
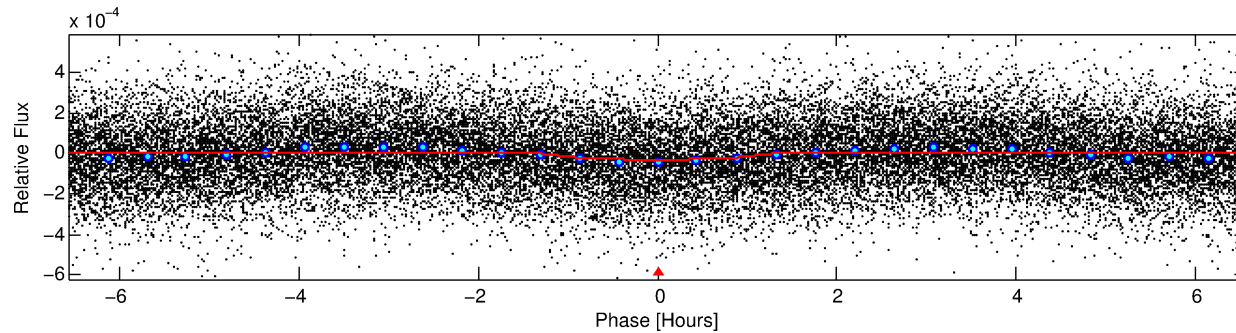
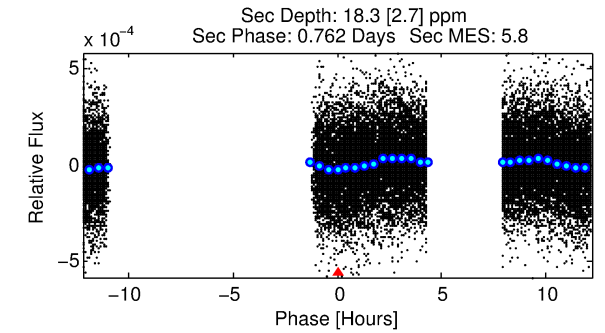
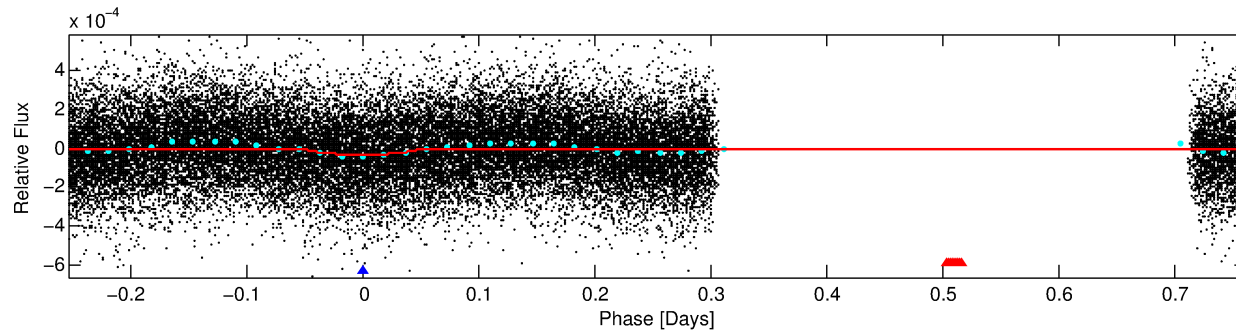
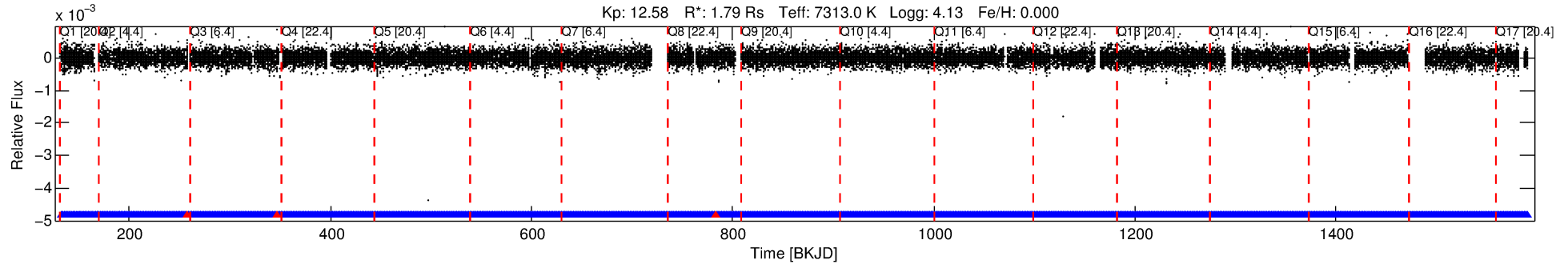
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004946956-02

No Significant Match Found

DV One-Page Summary

KIC: 4946956 Candidate: 2 of 2 Period: 1.016 d



DV Fit Results:

Period = 1.01627 [0.00001] d
Epoch = 132.2165 [0.0022] BKJD
Rp/R* = 0.0057 [0.0015]
a/R* = 1.84 [2.14]
b = 0.90 [0.35]
Seff = 15576.81 [6131.88]
Teq = 2849 [280] K
Rp = 1.12 [0.46] Re
a = 0.0230 [0.0058] AU
Ag = 4.23 [2.75] [1.18σ]
Teffp = 6318 [903] K [3.67σ]

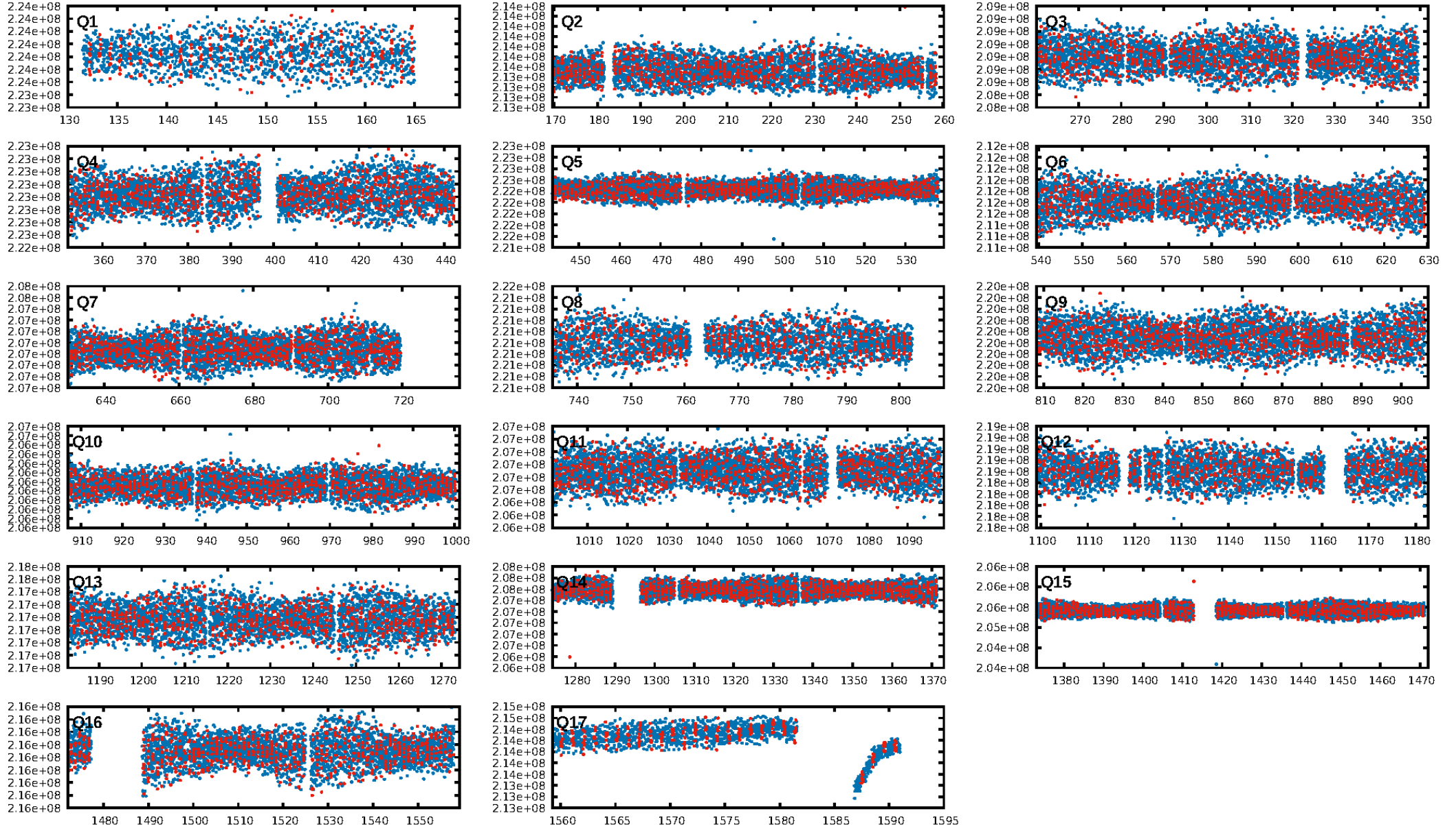
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.13e-11
RollingBand-fgt: 1.00 [1252/1255]
GhostDiagnostic-chr: 0.9686
Centroid-sig: 20.0%
Centroid-so: 1.126 arcsec [1.38σ]
OotOffset-rm: 0.232 arcsec [1.05σ]
KicOffset-rm: 0.260 arcsec [1.54σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

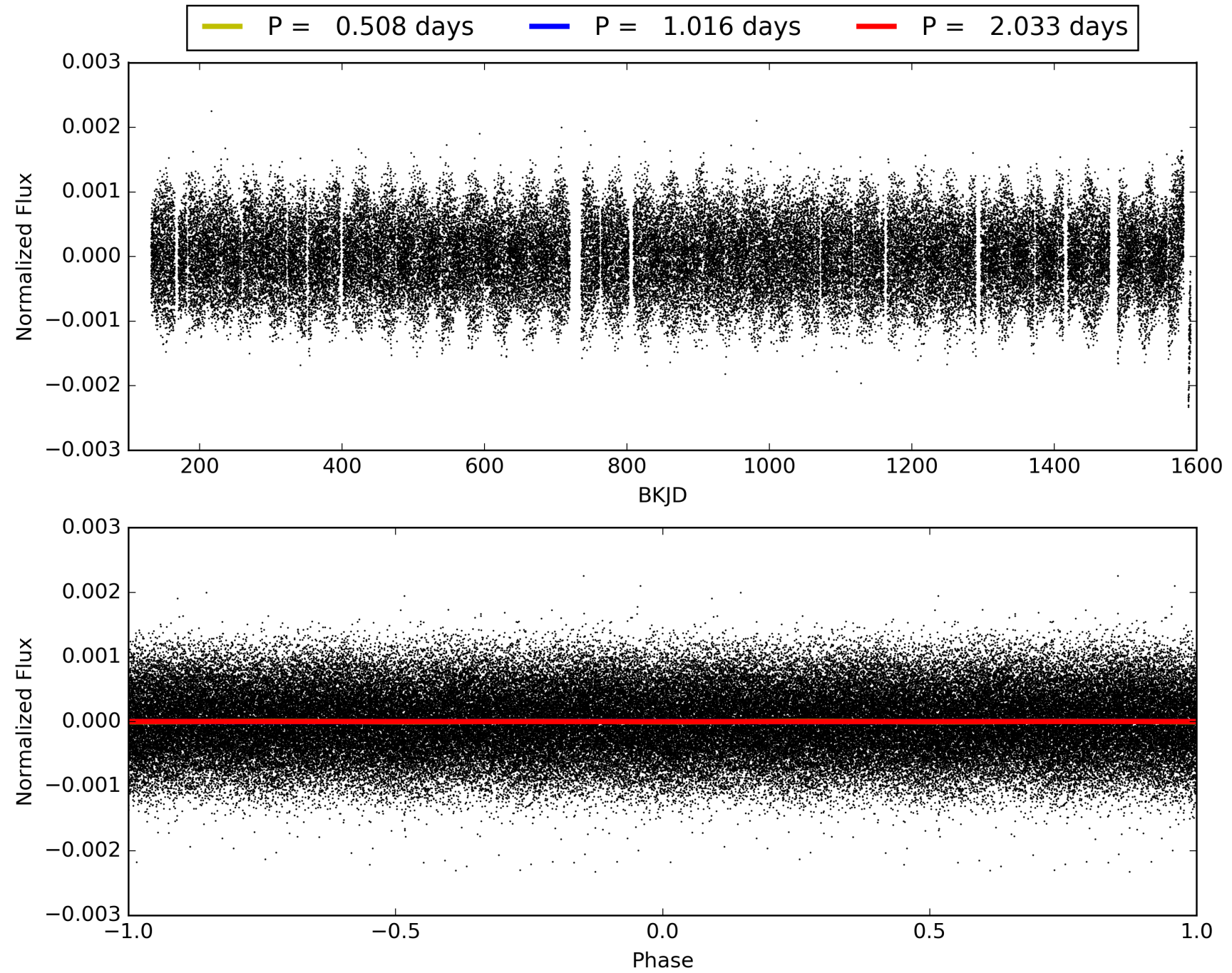
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:46:00 Z

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

TCE 004946956-02, PDC Light Curves

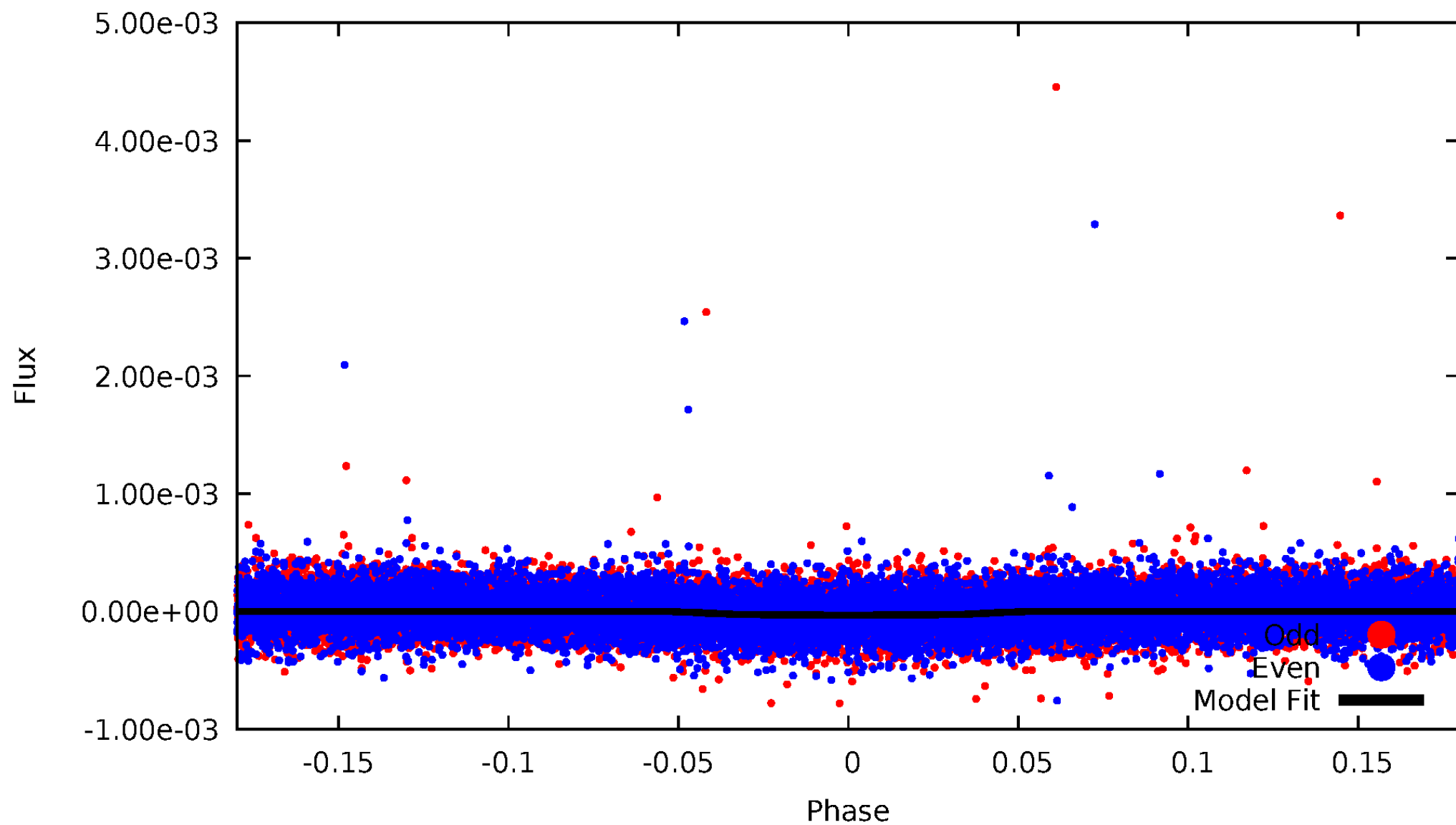


TCE 004946956-02



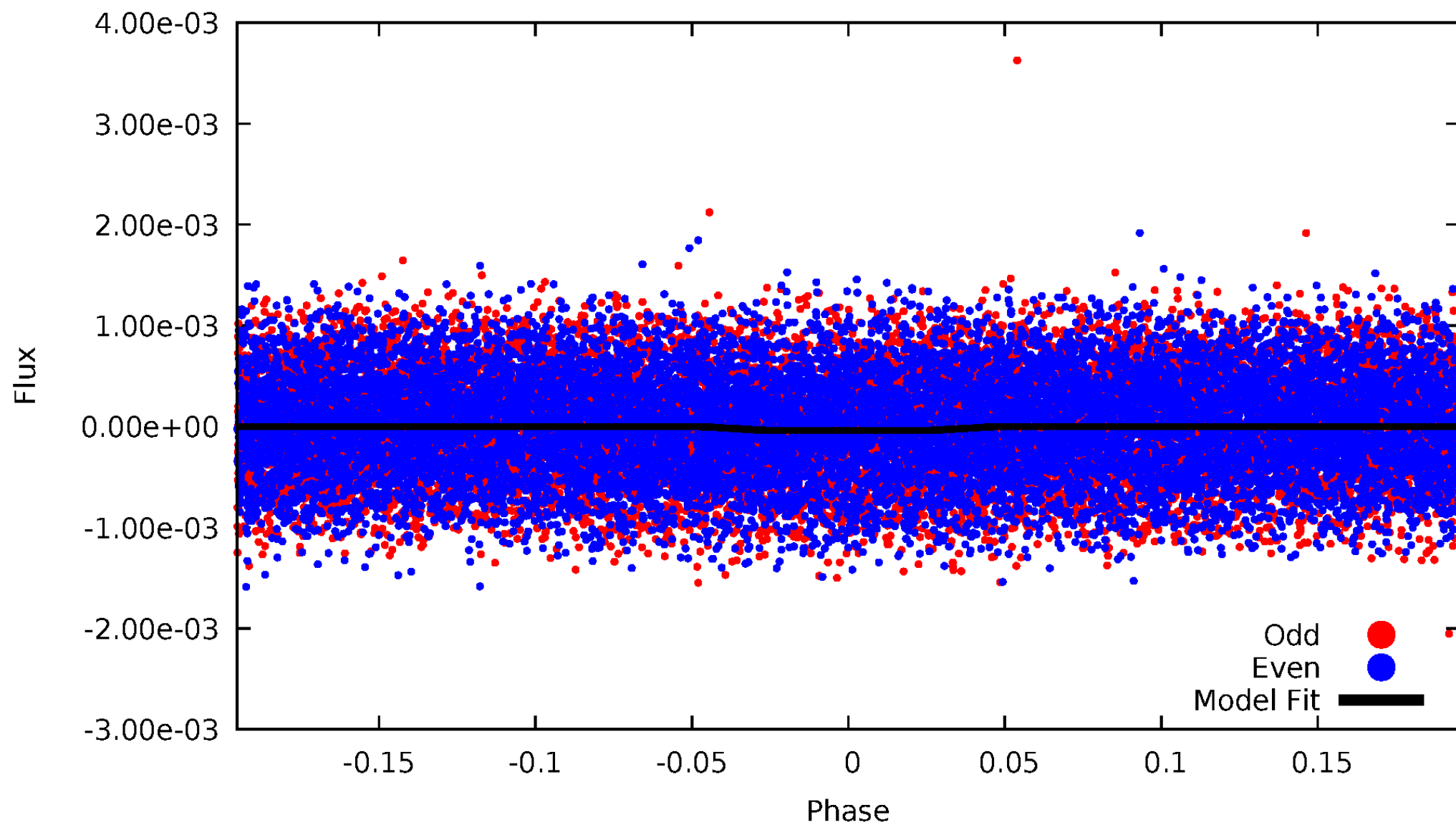
DV Odd/Even

TCE 004946956-02



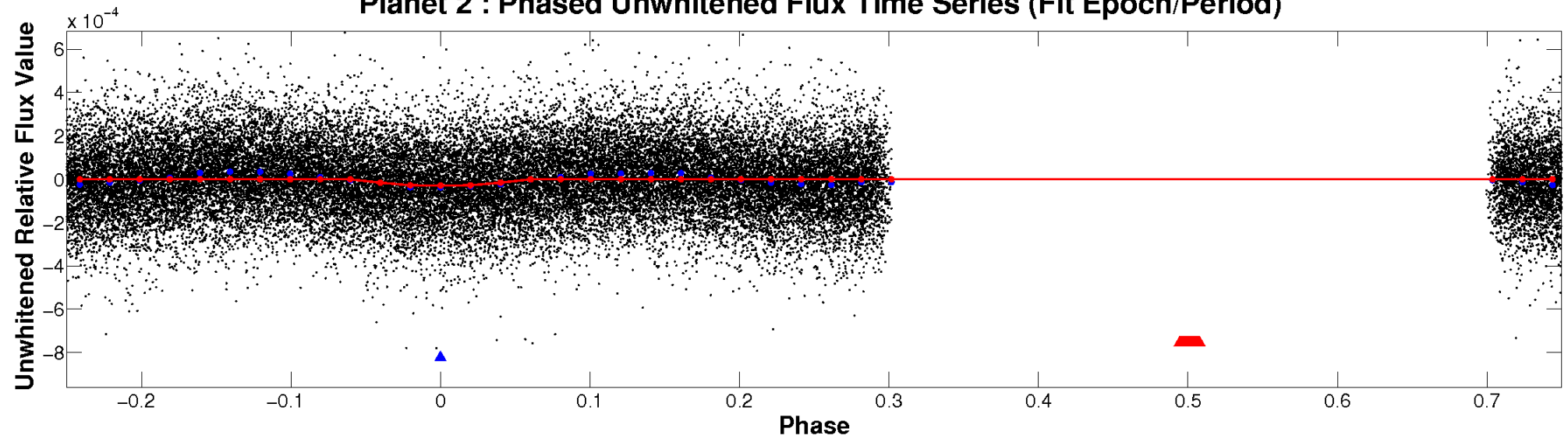
ALT Odd/Even

TCE 004946956-02

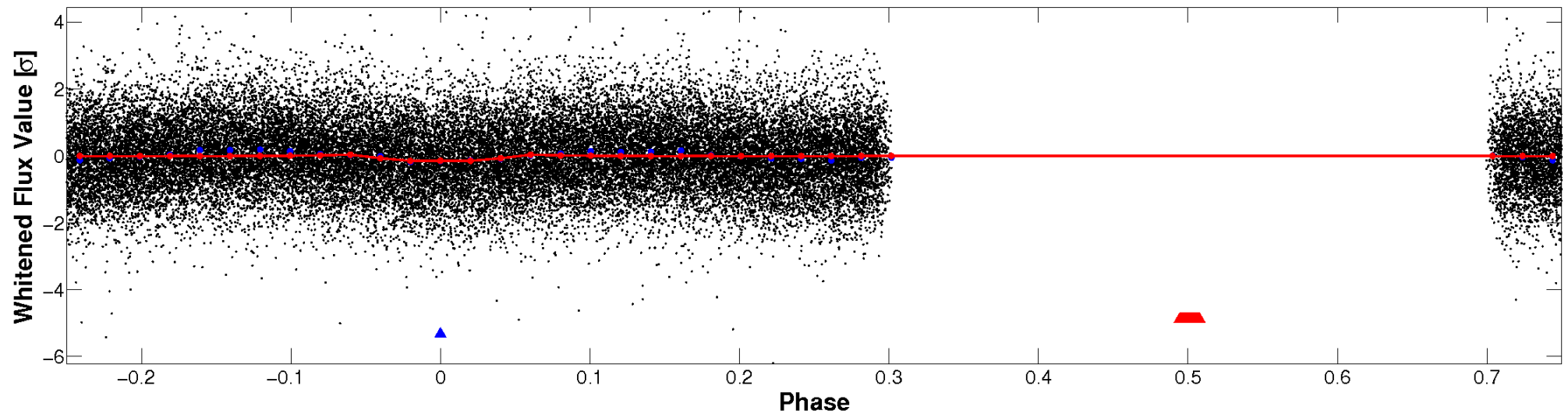


Non-Whitened Vs. Whitened Light Curve

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

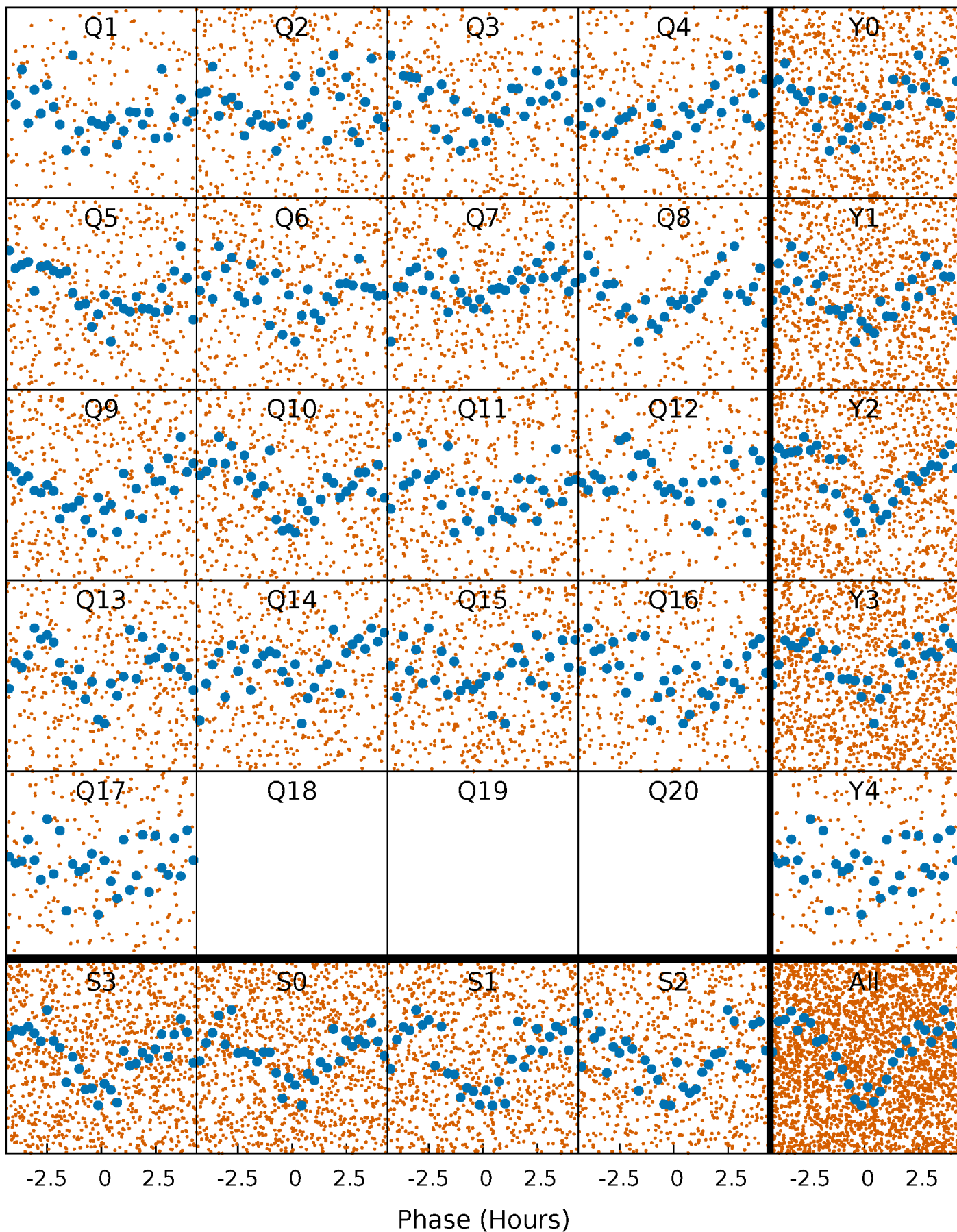


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



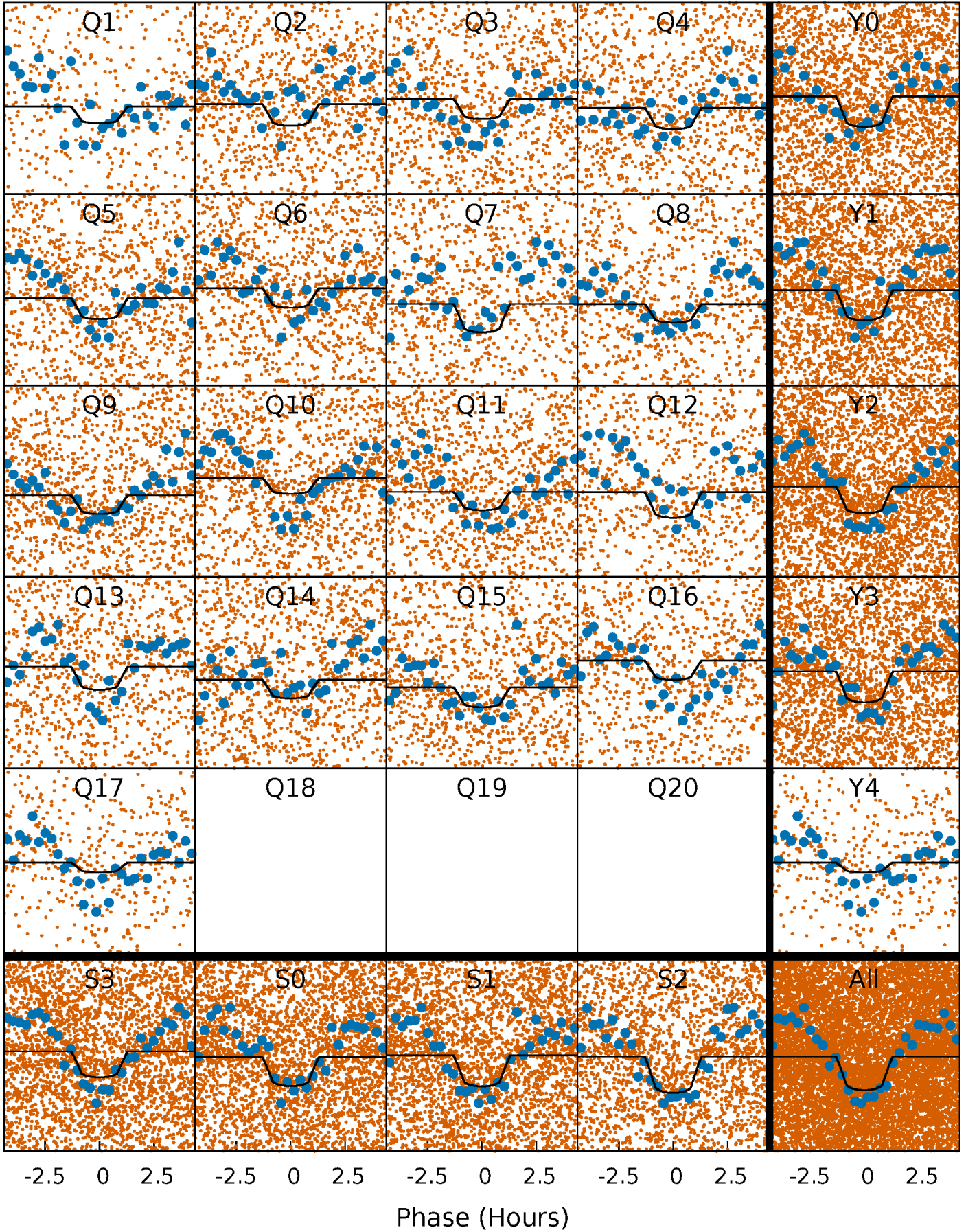
PDC Quarter-Phased Transit Curves

TCE 004946956-02 P= 1.016272 Days $T_0=132.216473$ (BKJD)



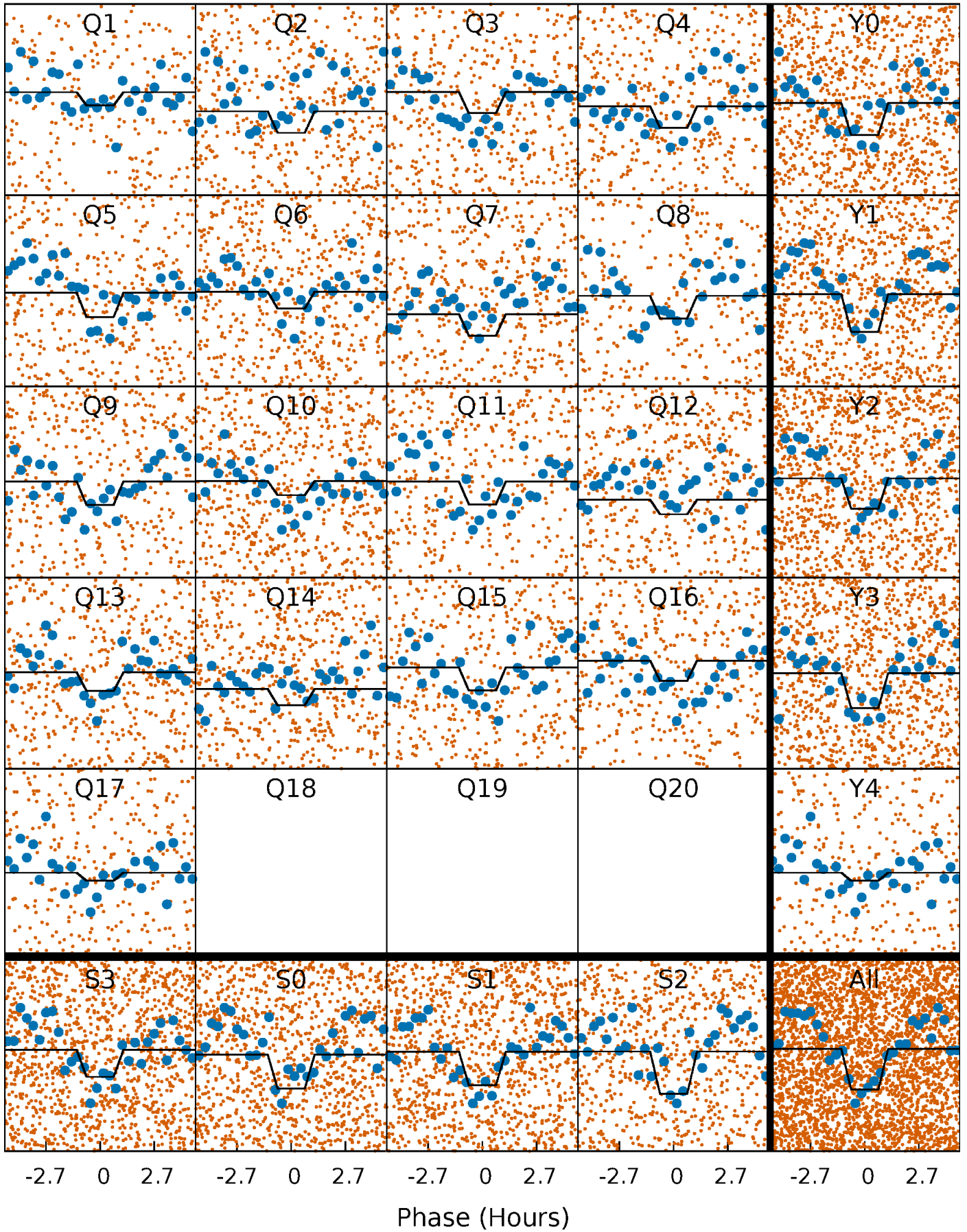
DV Quarter-Phased Transit Curves

TCE 004946956-02 P= 1.016272 Days $T_0=132.216473$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

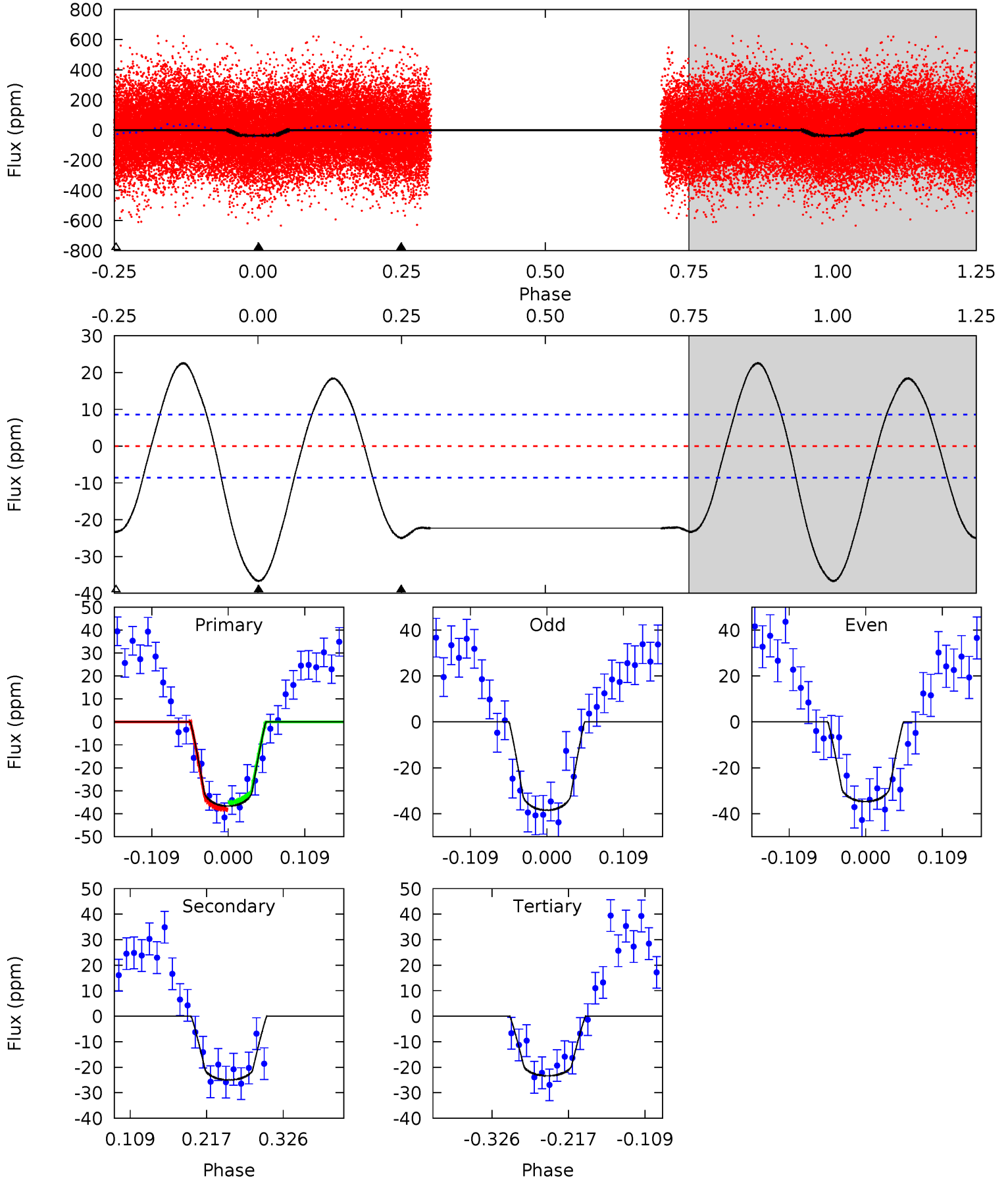
TCE 004946956-02 P= 1.016283 Days $T_0=132.209958$ (BKJD)



DV Model-Shift Uniqueness Test

004946956-02, P = 1.016272 Days, E = 131.200201 Days

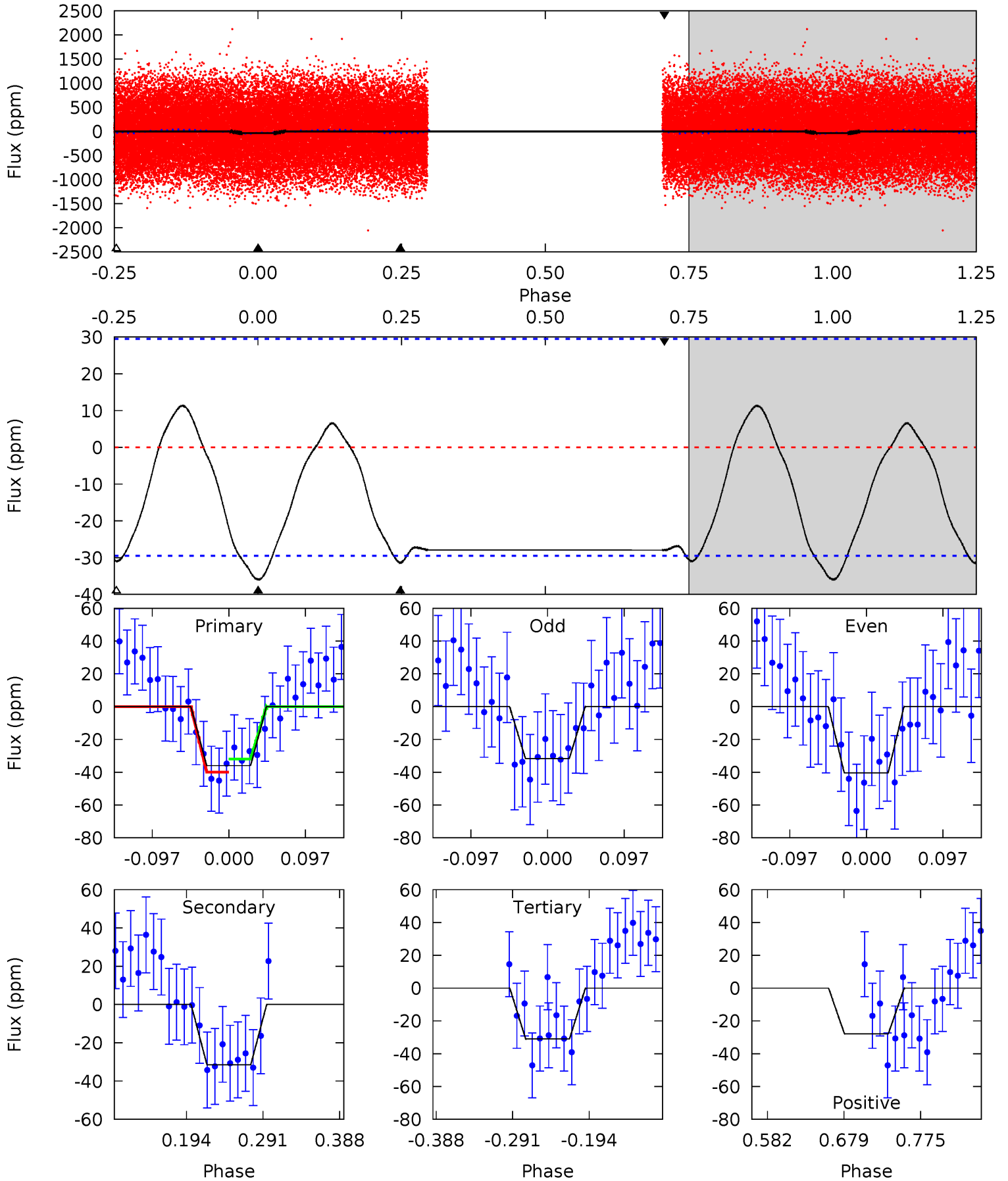
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.5	13.3	12.4	0	4.55	1.60	9.76	7.07	19.5	0.87	13.3	1.00	1.34	0.38	0.72



Alt Model-Shift Uniqueness Test

004946956-02, P = 1.016283 Days, E = 131.193675 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.58	4.88	4.81	-4.32	4.57	1.66	2.42	0.77	9.90	0.07	9.20	0.68	0.90	0.24	0.61



Stellar Parameters For KIC 004946956

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7313^{+232}_{-319}	$4.127^{+0.124}_{-0.186}$	$0.000^{+0.200}_{-0.350}$	$1.794^{+0.558}_{-0.326}$	$1.570^{+0.203}_{-0.248}$	$0.383^{+0.275}_{-0.197}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+31%/-18%	+13%/-16%	+72%/-51%
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 004946956-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-25 ± 2	$1.16^{+0.32}_{-0.35}$	3998^{+319}_{-250}	6684^{+1310}_{-901}	$5.378^{+5.126}_{-2.145}$
Alt.	-31 ± 6	$1.20^{+0.37}_{-0.32}$	4013^{+299}_{-268}	6870^{+1369}_{-926}	$6.273^{+5.618}_{-2.760}$

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 $A_{obs} \gg 1.0$

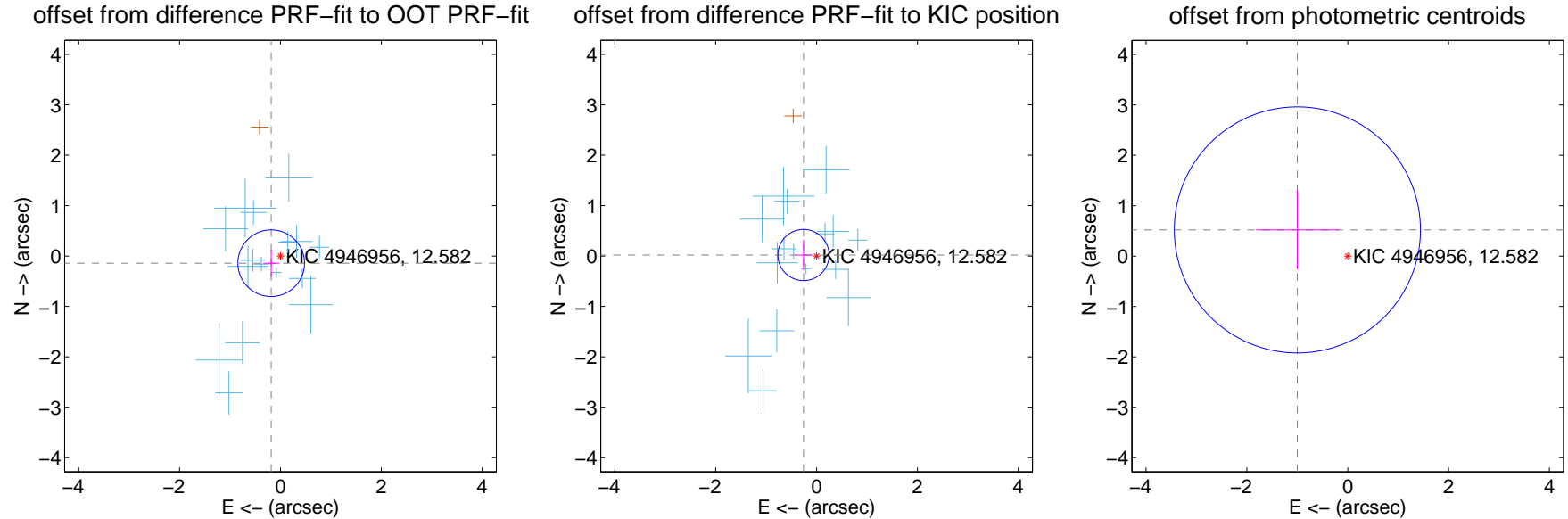
DV Centroid Data

Supplemental centroid analysis for 004946956-02. Kepler magnitude: 12.58. Transit SNR 10.28

There are 16 quarters with good PRF difference image offsets

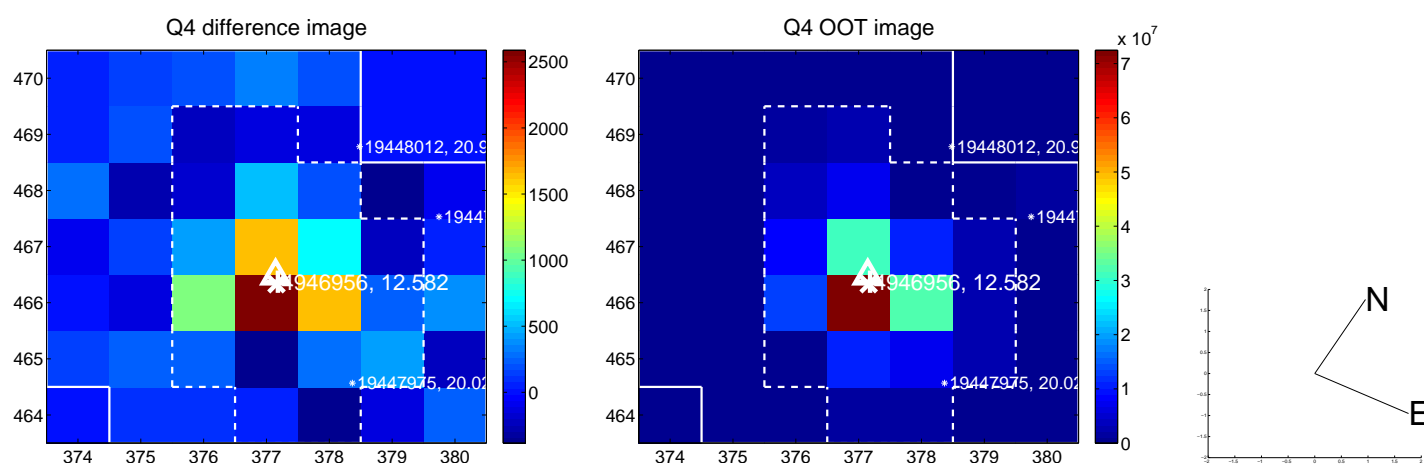
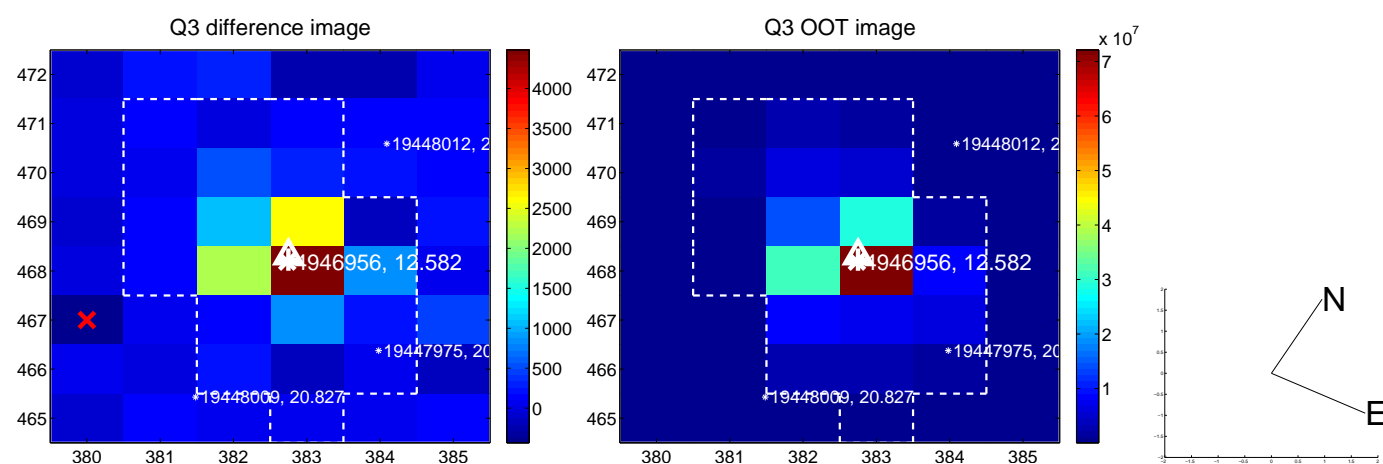
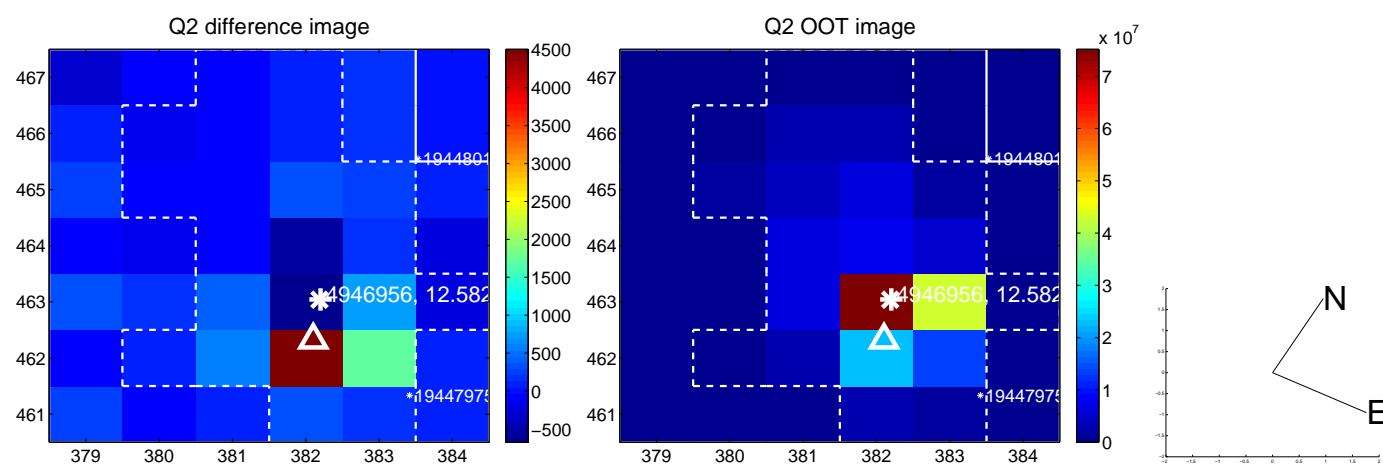
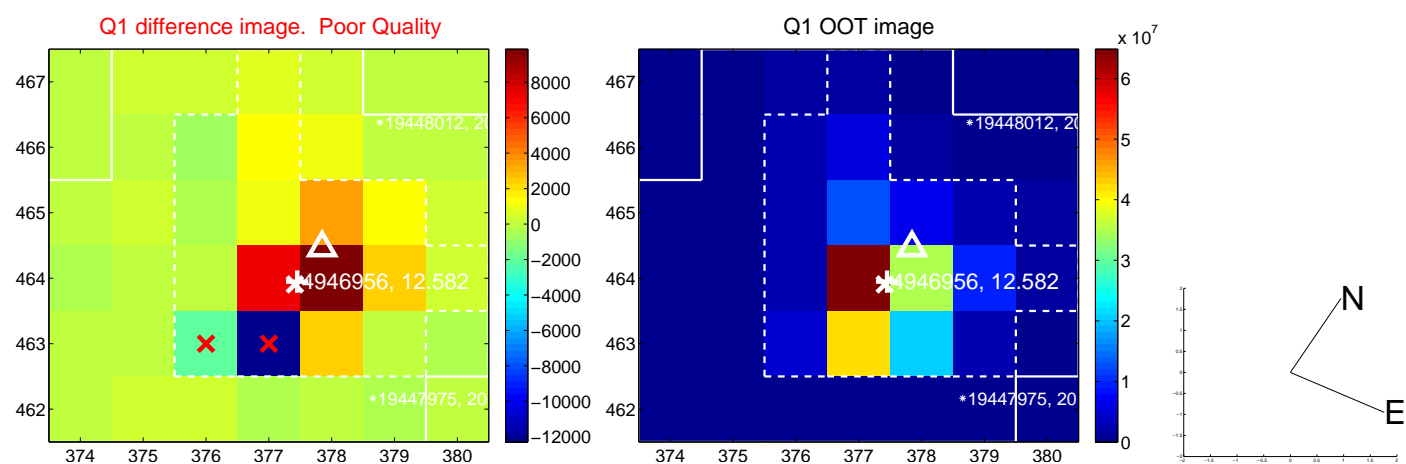
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.232 ± 0.220	1.05	0.184 ± 0.158	-0.142 ± 0.267
PRF-fit source offset from KIC position	0.260 ± 0.169	1.54	0.259 ± 0.174	0.020 ± 0.299
photometric centroid source offset	1.13 ± 0.81	1.38	1.00 ± 0.82	0.52 ± 0.78

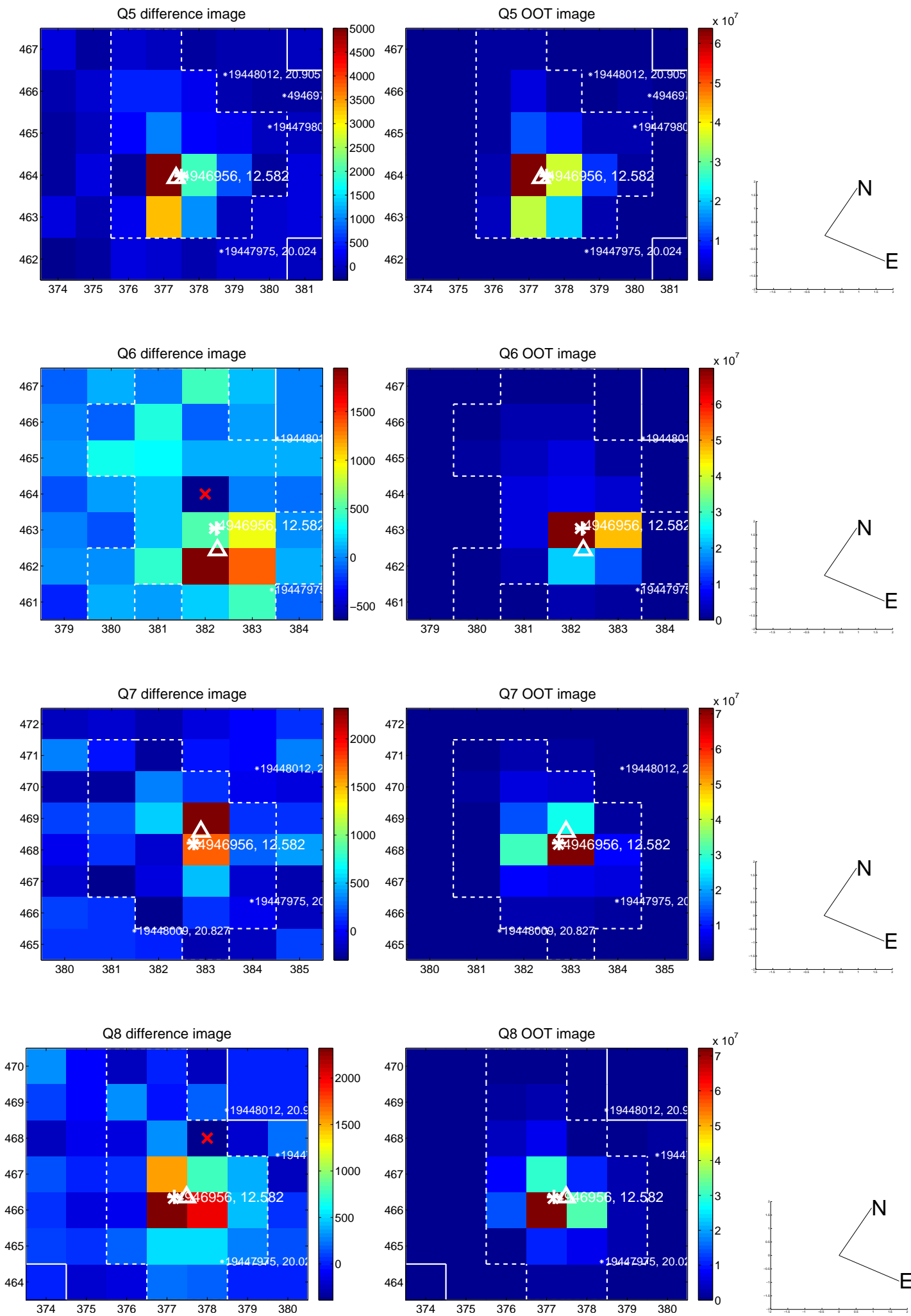


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

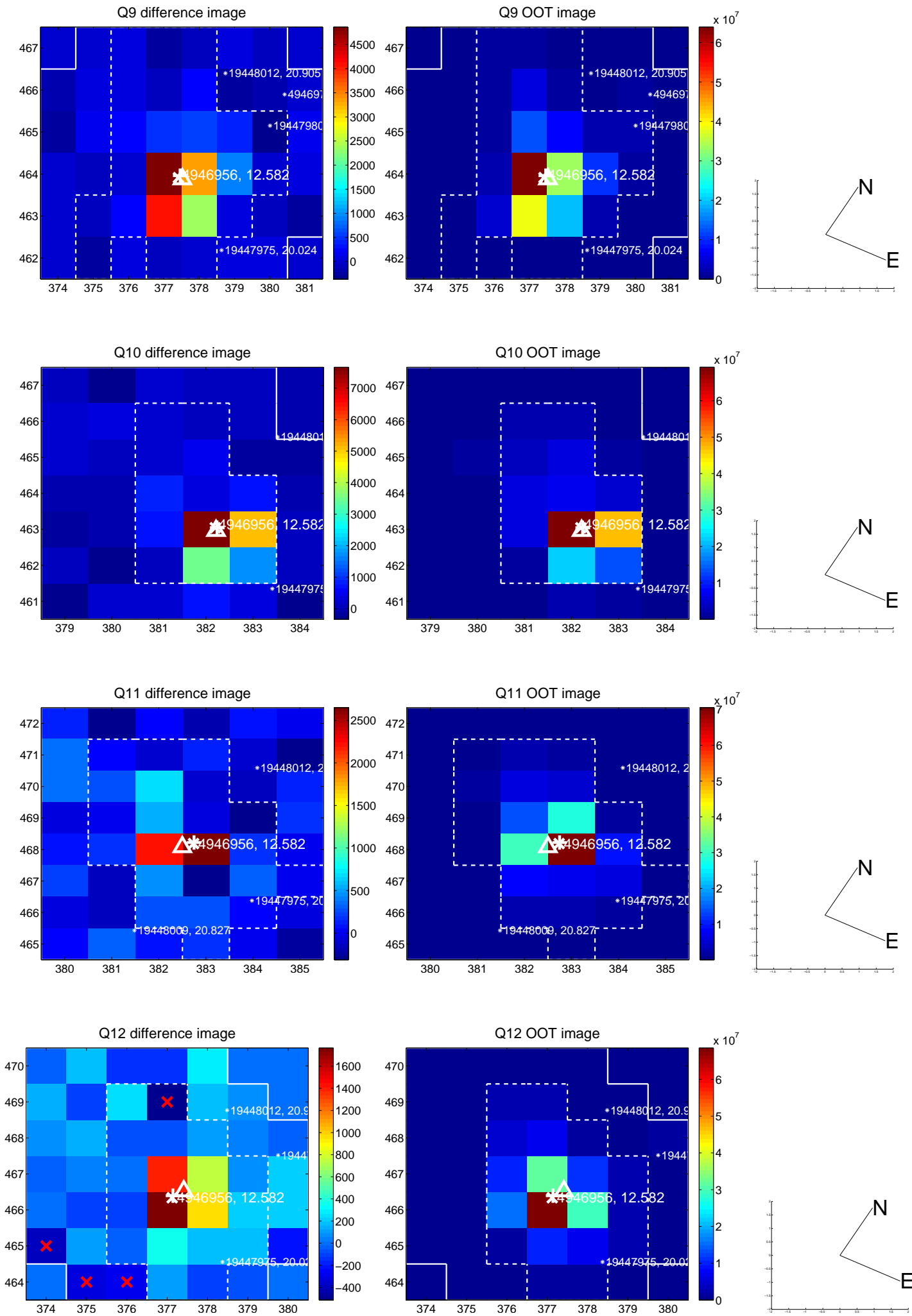
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



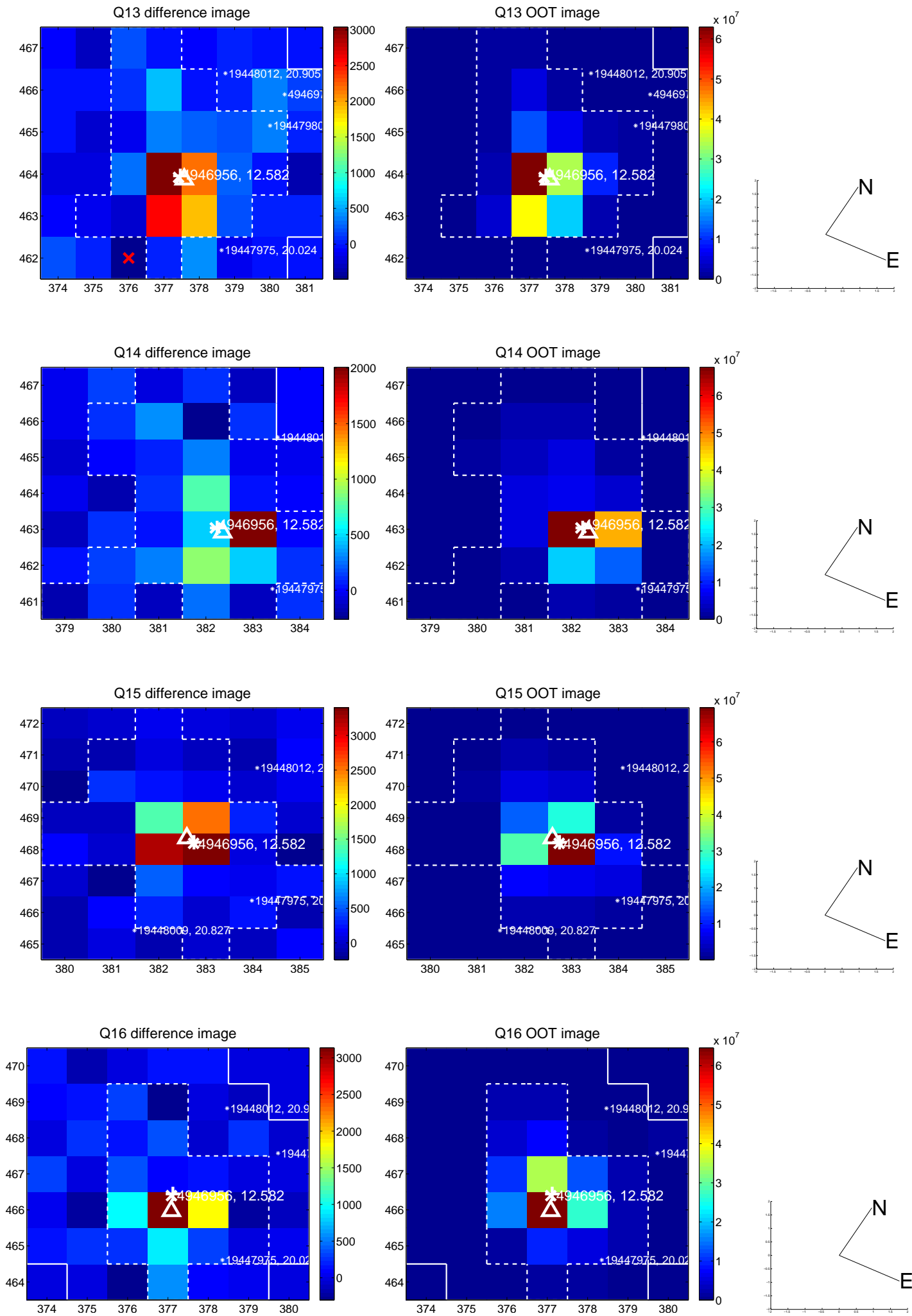
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



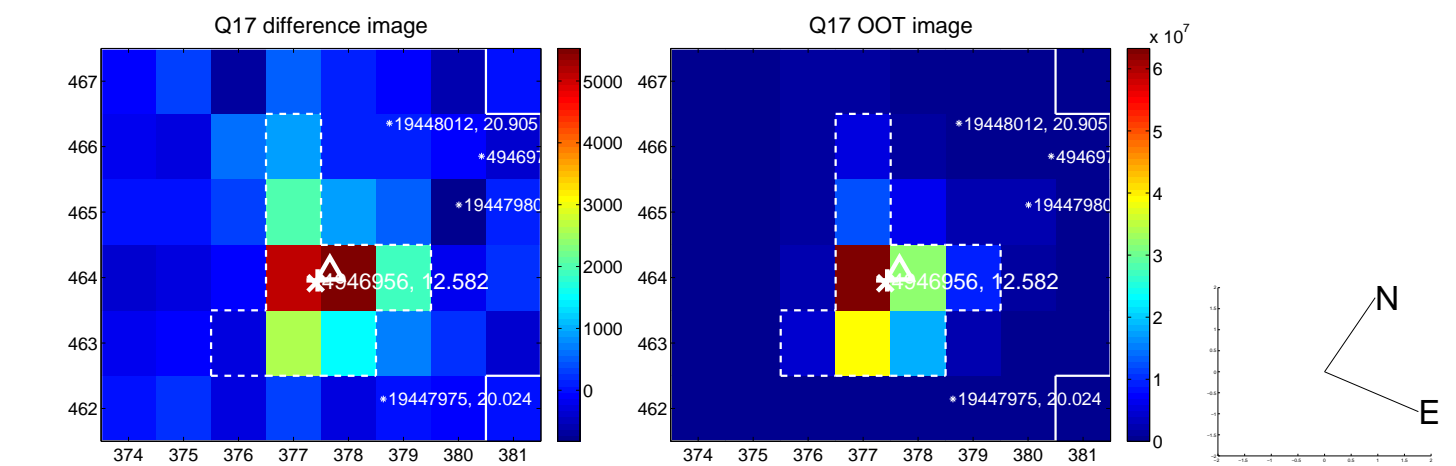
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



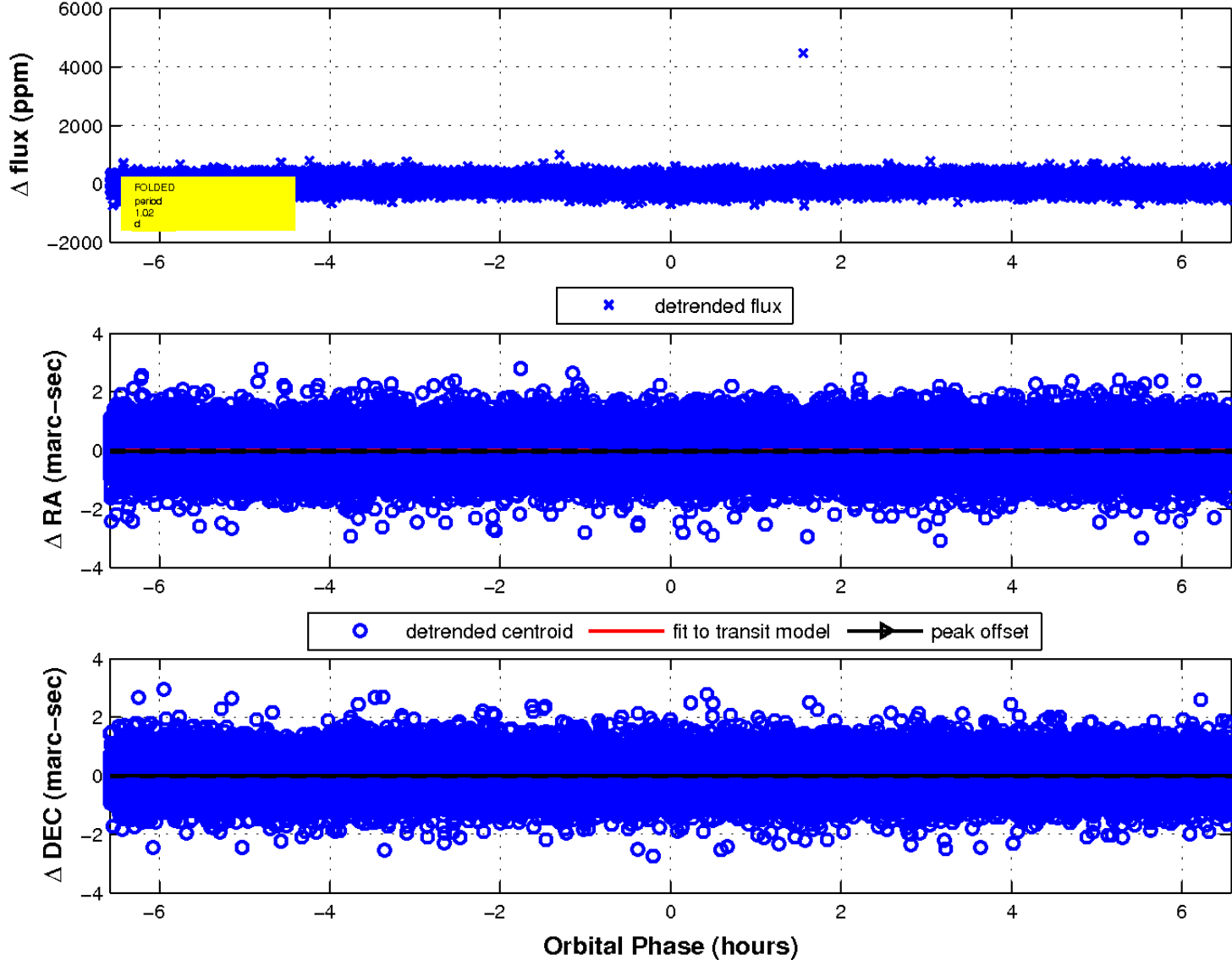
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

