

KIC 009328641

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})
009328641-01	OBS	3400.01	33.324241	133.081254	779.9	13.363	17.1	16.6	0.56	5192	1.83	7.08
009328641-02	OBS	No	33.324184	132.338201	2045.7	25.695	21.1	27.1	0.56	5192	2.72	7.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009328641-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009328641-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—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.

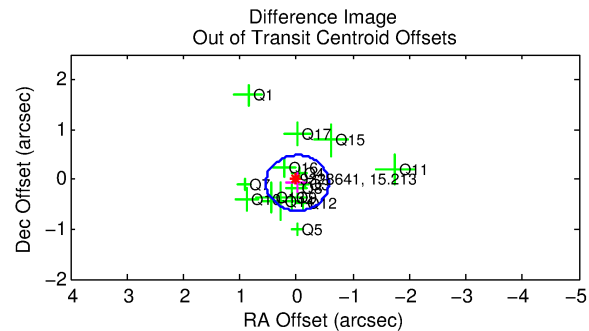
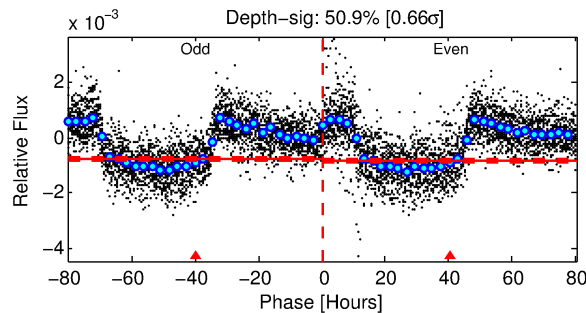
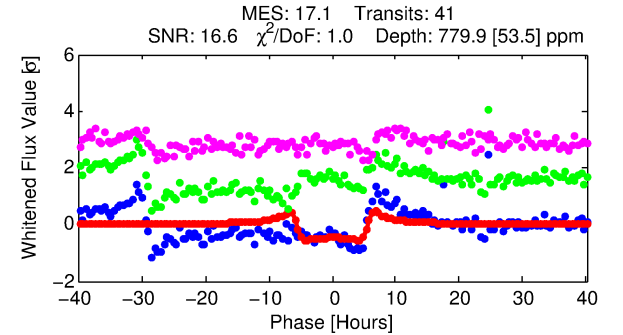
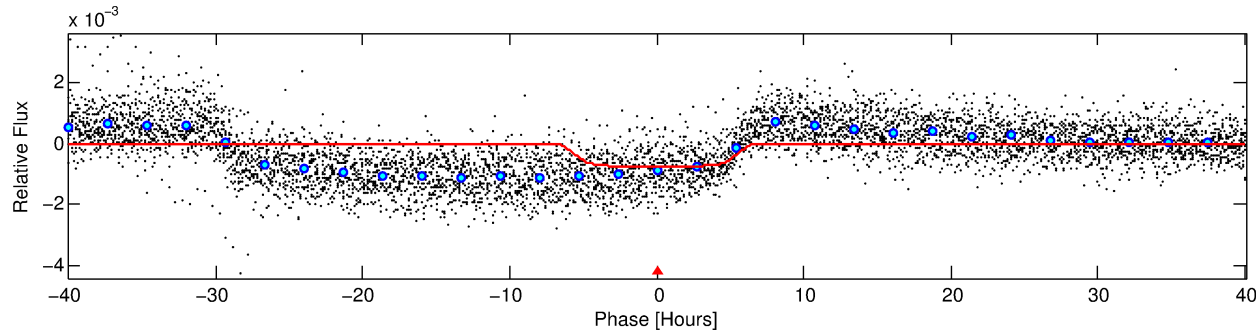
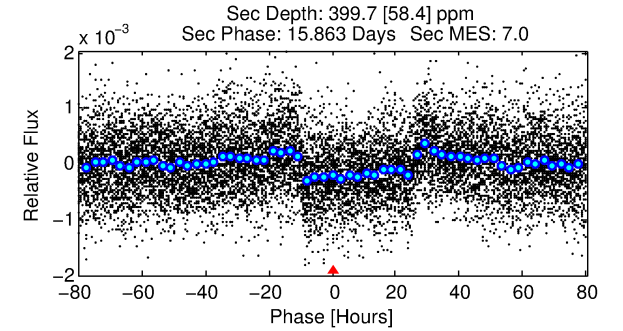
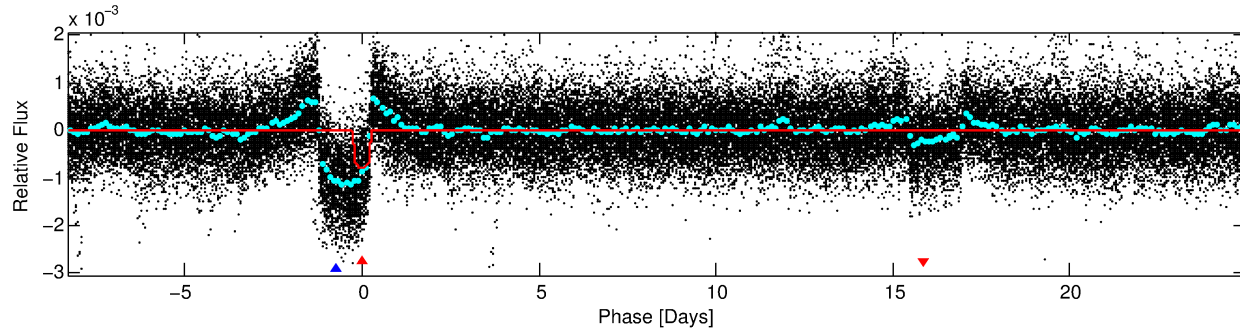
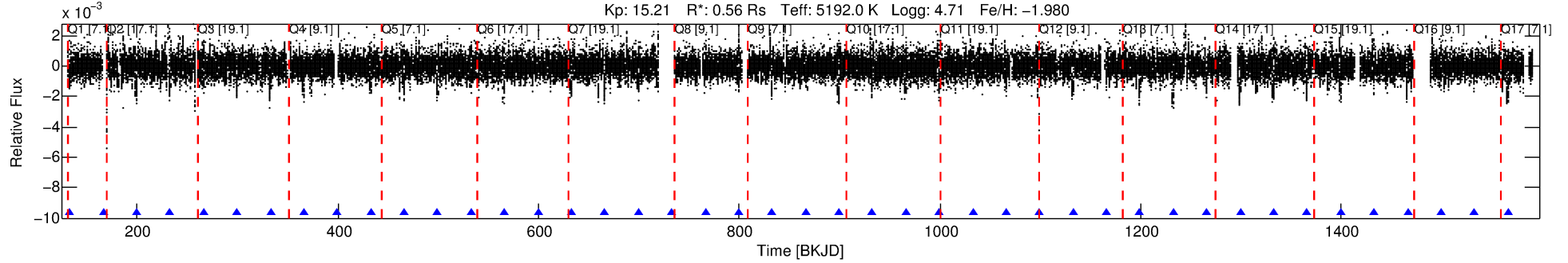
Ephemeris Match Information For 009328641-01

No Significant Match Found

DV One-Page Summary

KIC: 9328641 Candidate: 1 of 2 Period: 33.324 d
KOI: K03400 Corr: No Ephemeris Match

Kp: 15.21 R*: 0.56 Rs Teff: 5192.0 K Logg: 4.71 Fe/H: -1.980



DV Fit Results:

Period = 33.32424 [0.00035] d
Epoch = 133.0813 [0.0092] BKJD
Rp/R* = 0.0302 [0.0012]
a/R* = 9.14 [0.85]
b = 0.91 [0.02]
Seff = 7.08 [1.13]
Teq = 416 [17] K
Rp = 1.83 [0.12] Re
a = 0.1683 [0.0081] AU
Ag = 1859.13 [343.53] [5.41σ]
Teffp = 4223 [230] K [16.53σ]

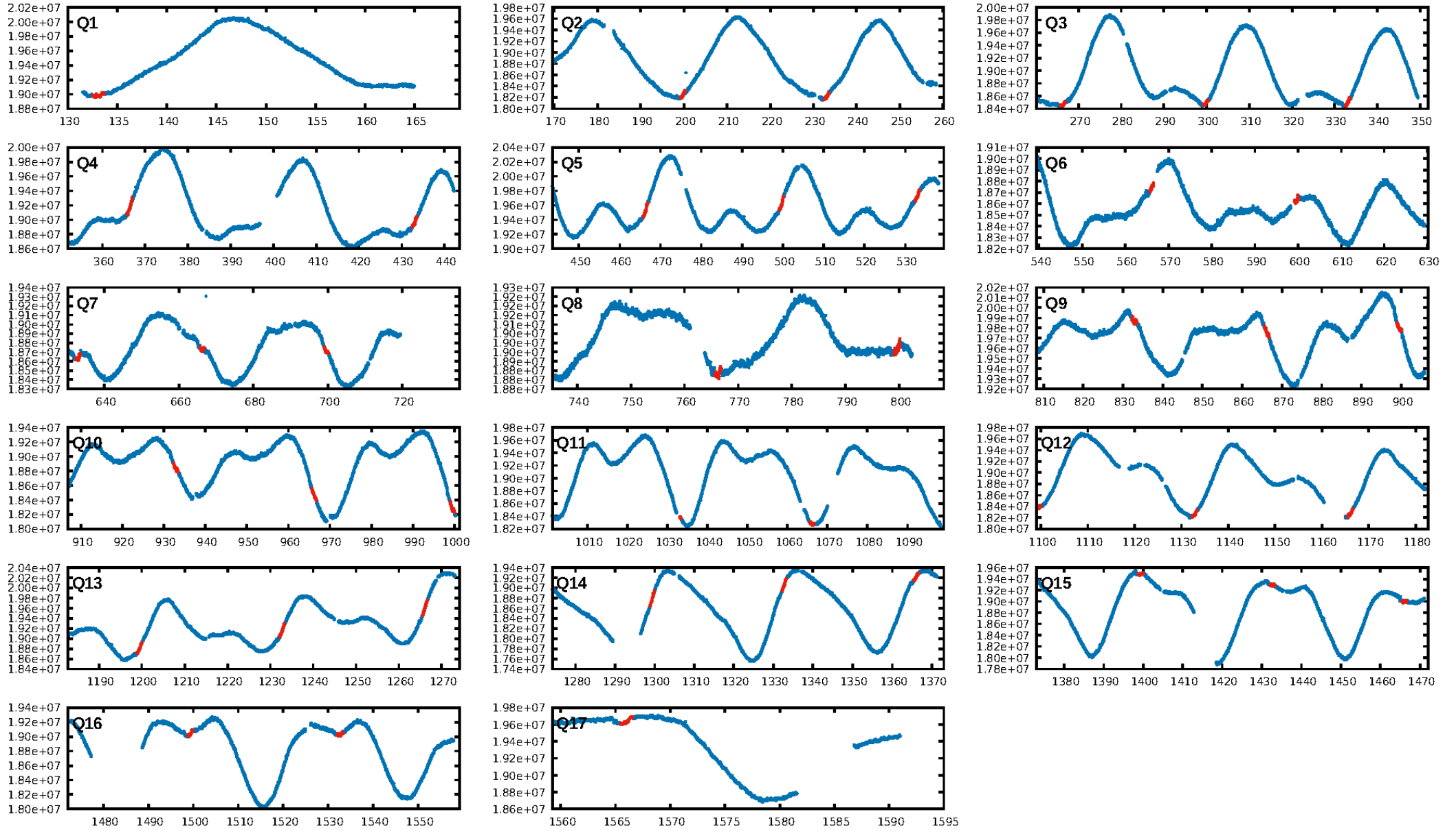
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.23e-57
RollingBand-fgt: 1.00 [39/39]
GhostDiagnostic-chr: 0.7444
Centroid-sig: 2.0%
Centroid-so: 0.648 arcsec [2.13σ]
OotOffset-rm: 0.080 arcsec [0.43σ]
KicOffset-rm: 0.073 arcsec [0.43σ]
OotOffset-st: 2/4/4/5 [15]
KicOffset-st: 2/4/4/5 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 0.00 [0/15]

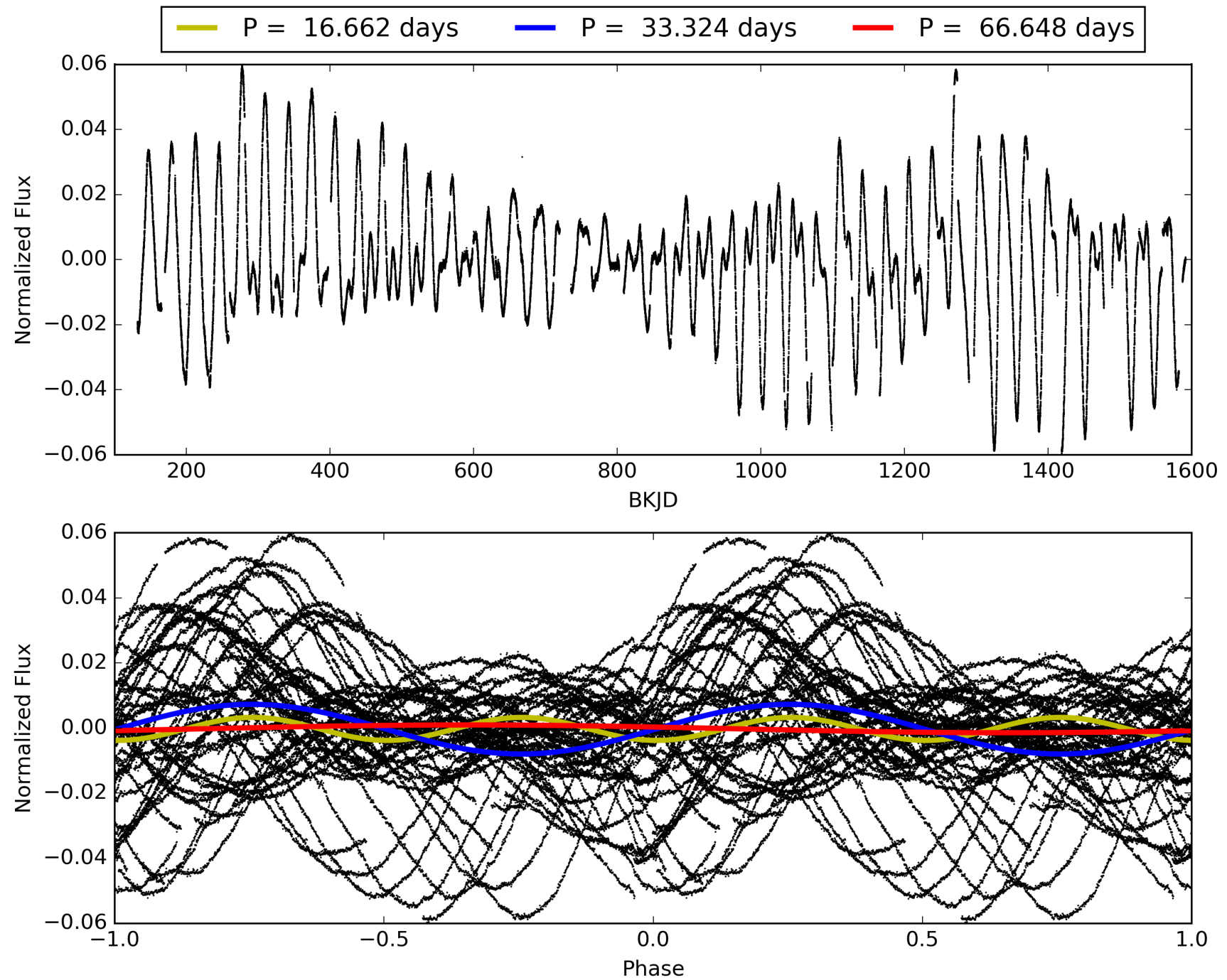
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:54:22 Z

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

TCE 009328641-01, PDC Light Curves

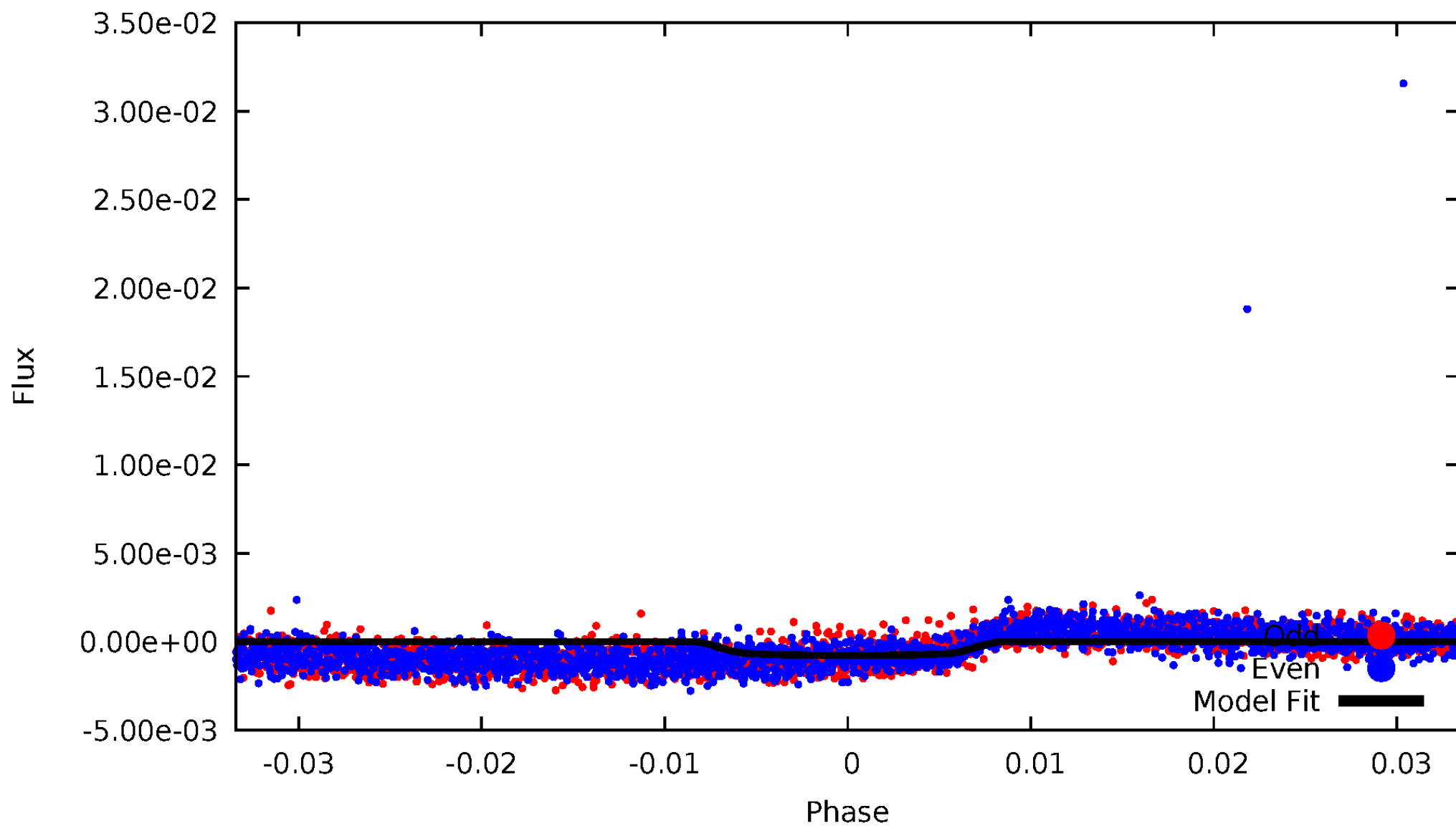


TCE 009328641-01



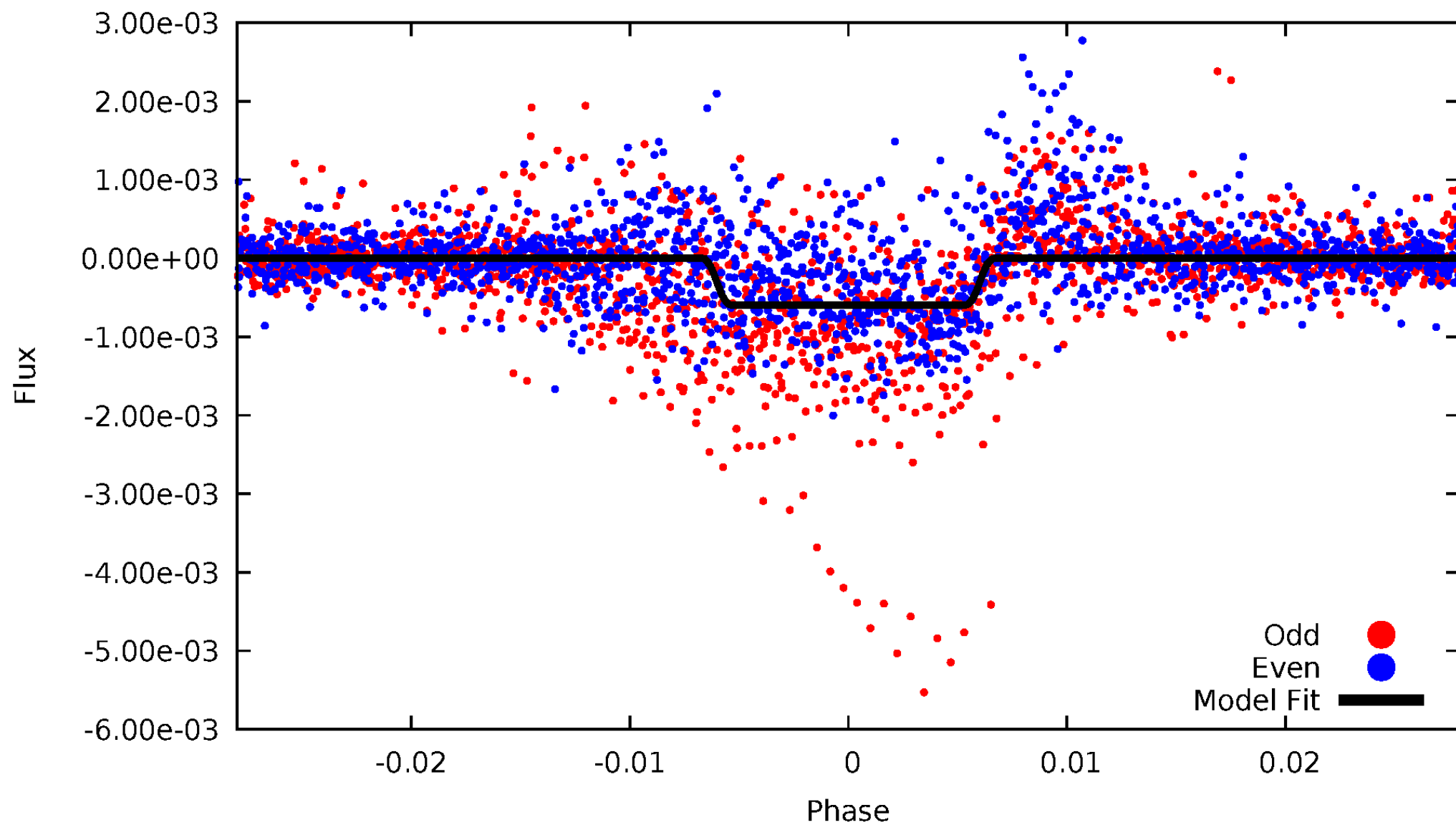
DV Odd/Even

TCE 009328641-01



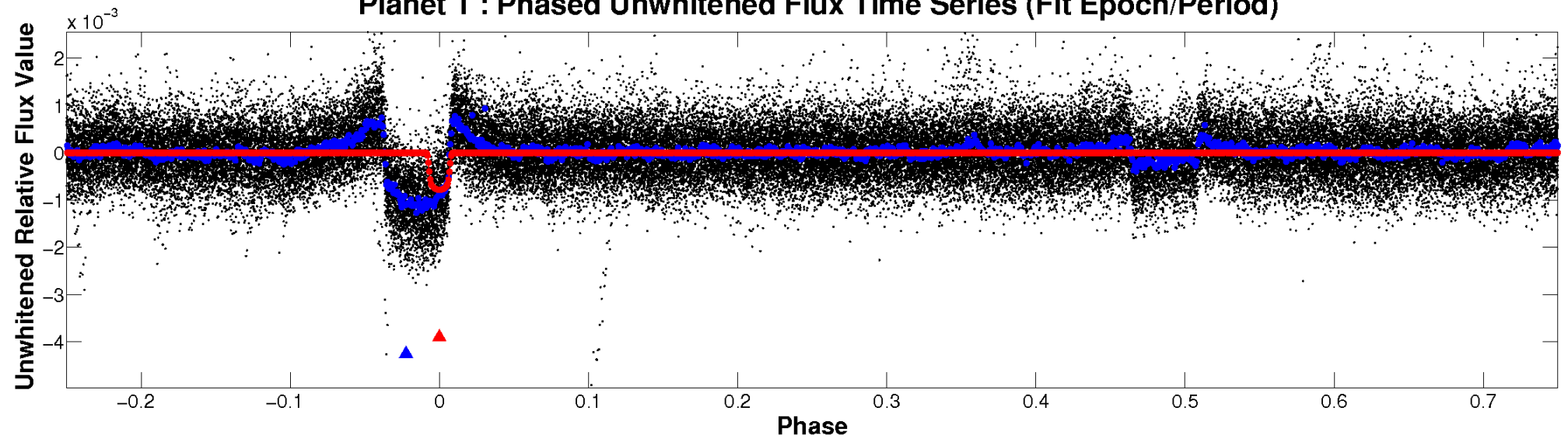
ALT Odd/Even

TCE 009328641-01

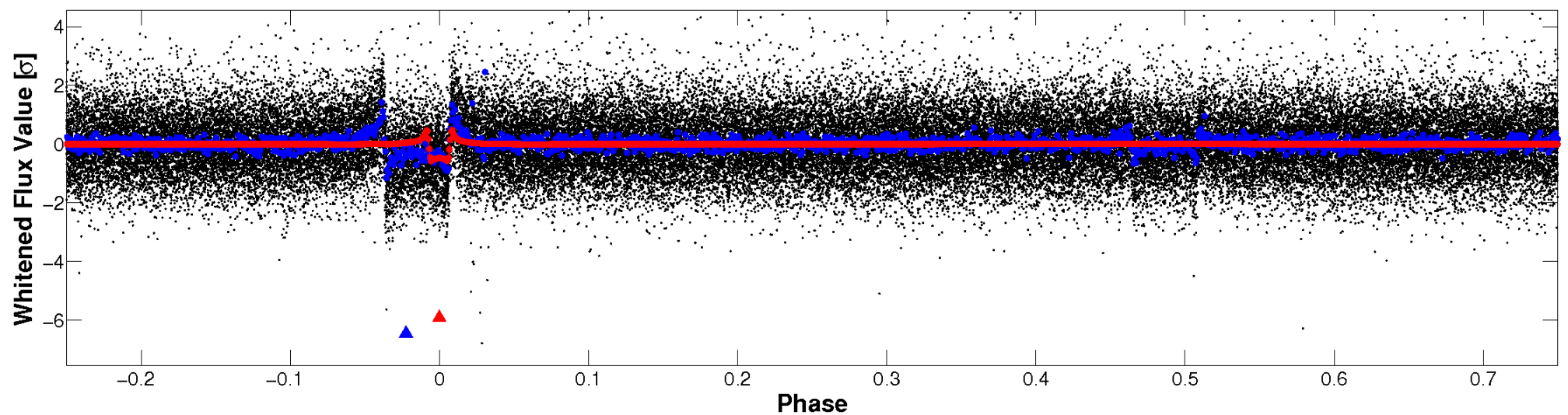


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

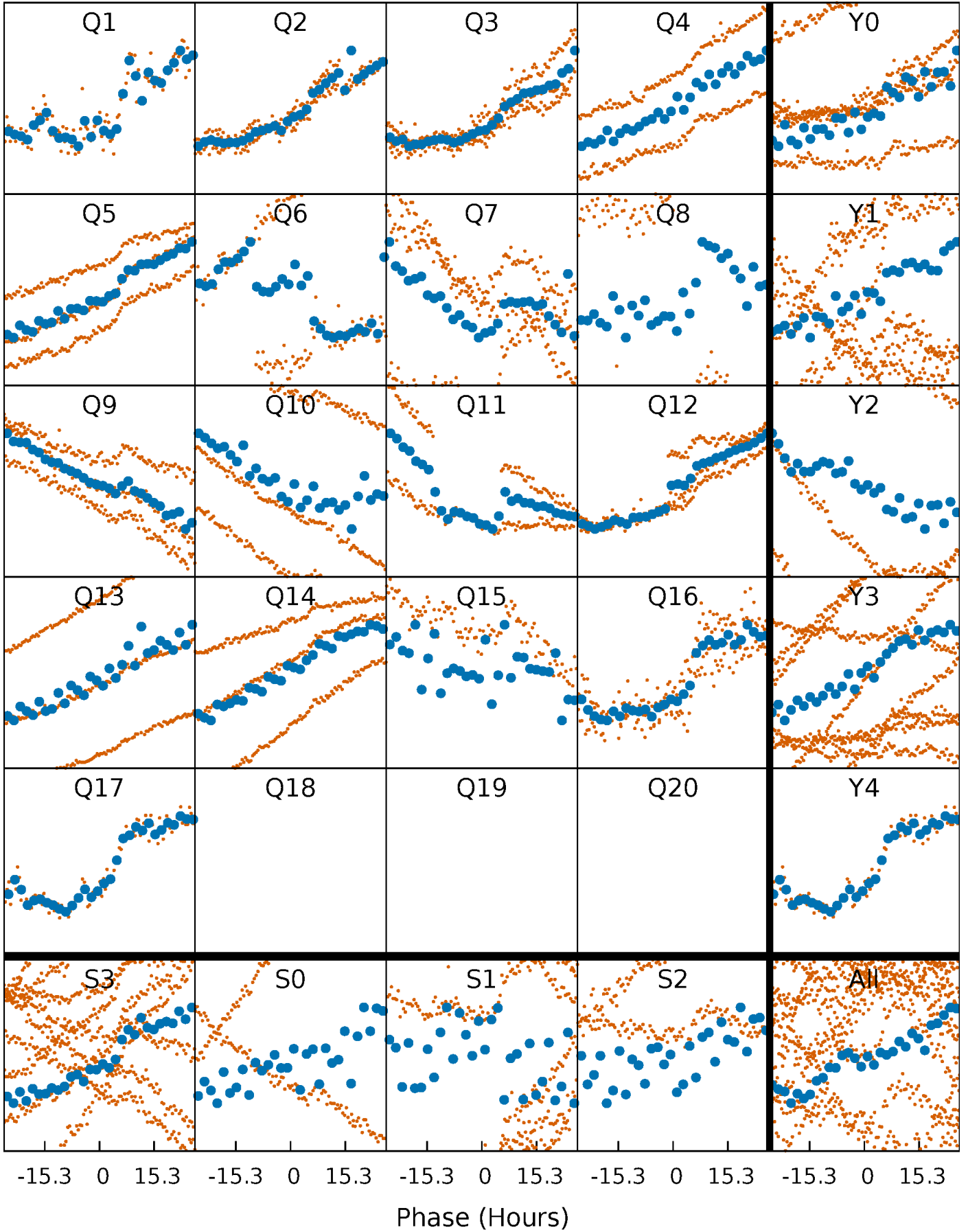


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



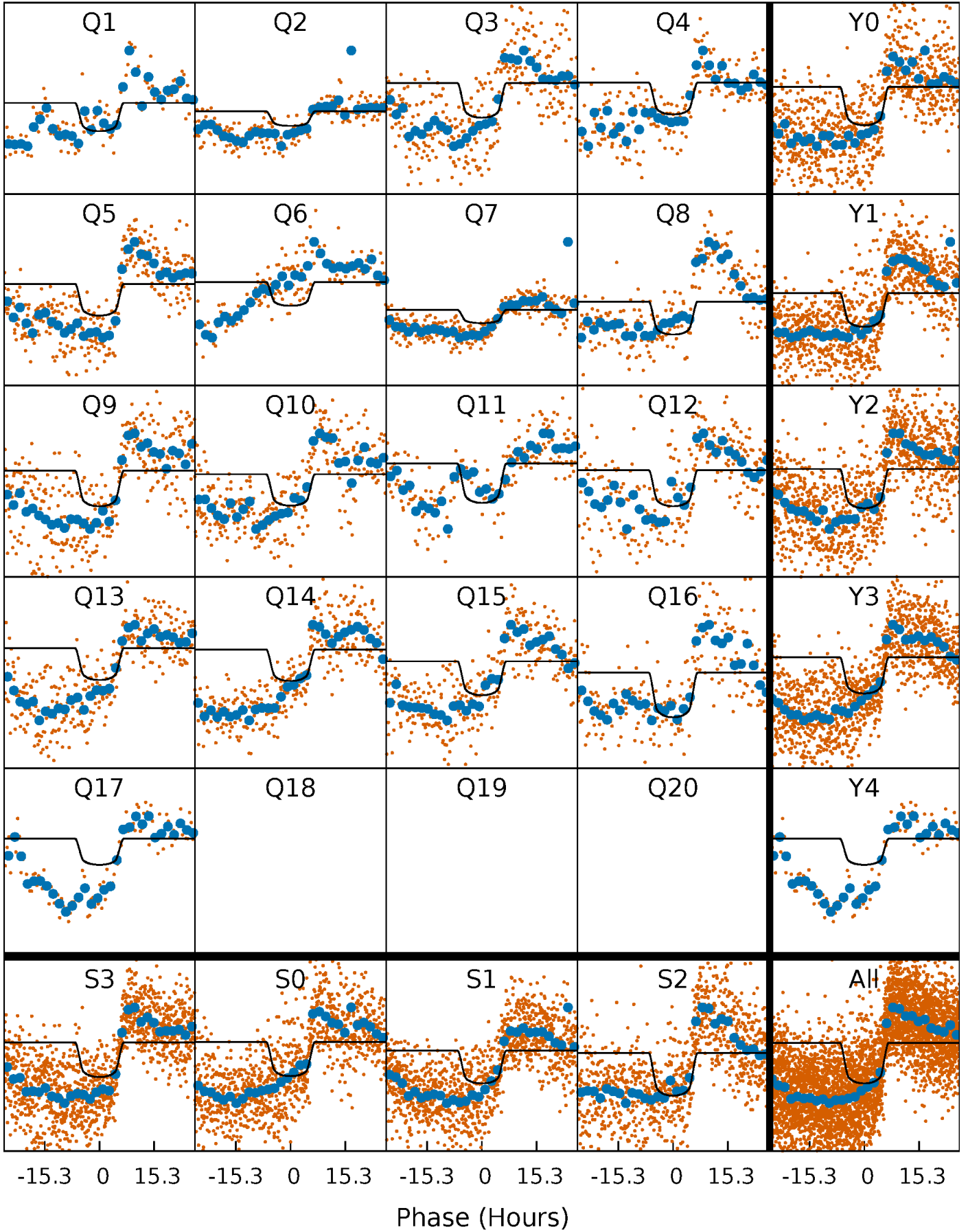
PDC Quarter-Phased Transit Curves

TCE 009328641-01 P= 33.324241 Days $T_0=133.081254$ (BKJD)



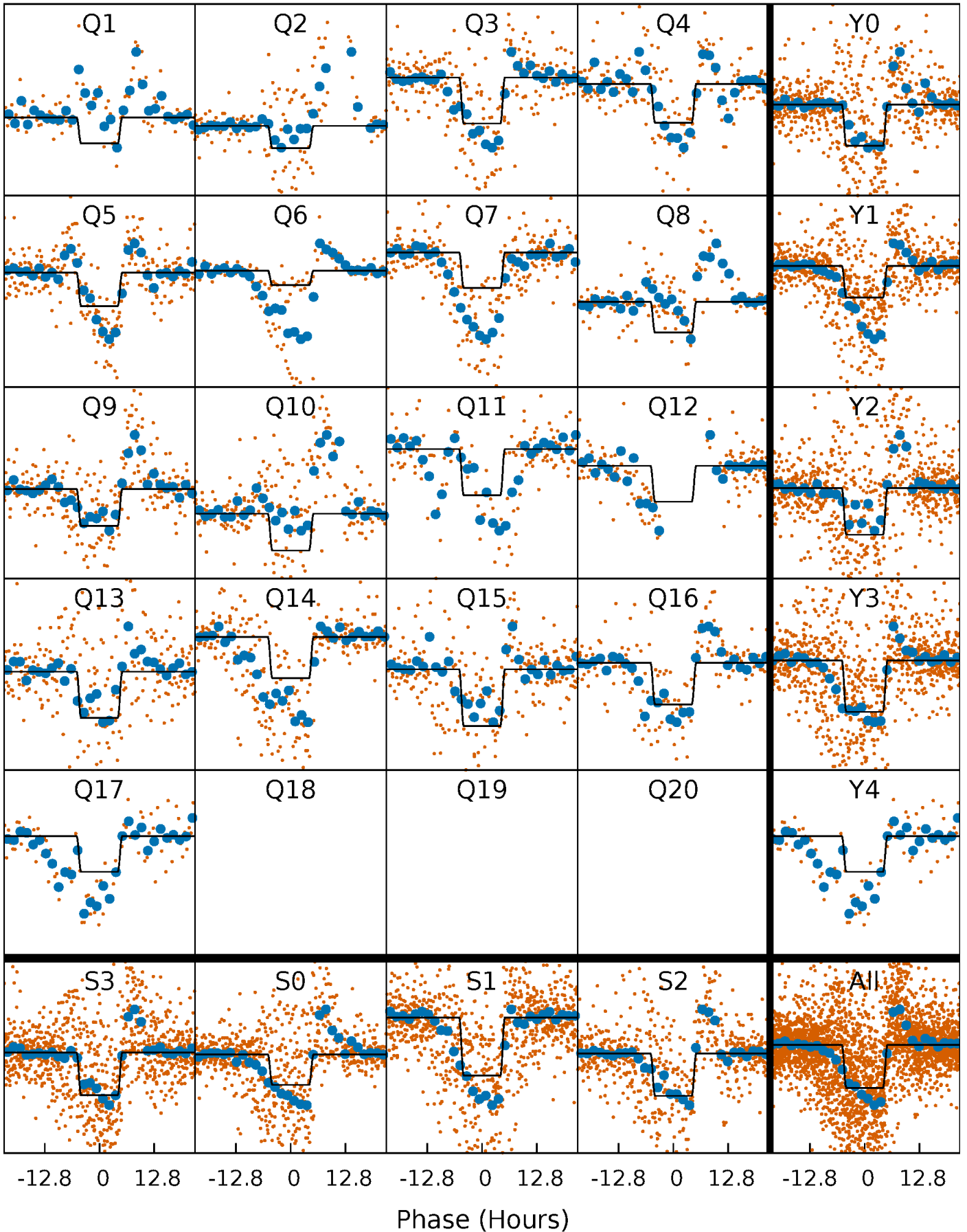
DV Quarter-Phased Transit Curves

TCE 009328641-01 P= 33.324241 Days $T_0=133.081254$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

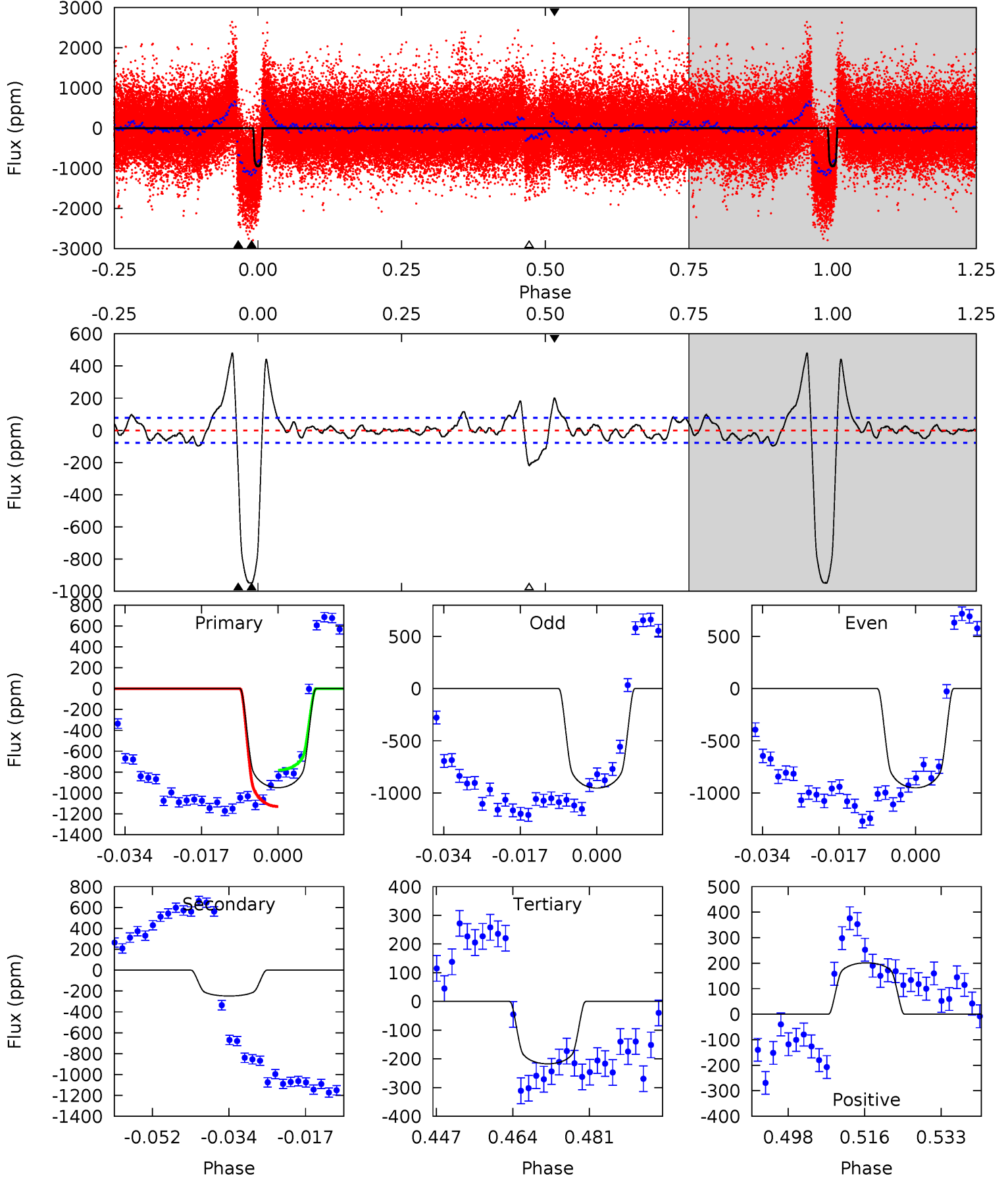
TCE 009328641-01 P= 33.325002 Days $T_0=133.082311$ (BKJD)



DV Model-Shift Uniqueness Test

009328641-01, P = 33.324241 Days, E = 99.757013 Days

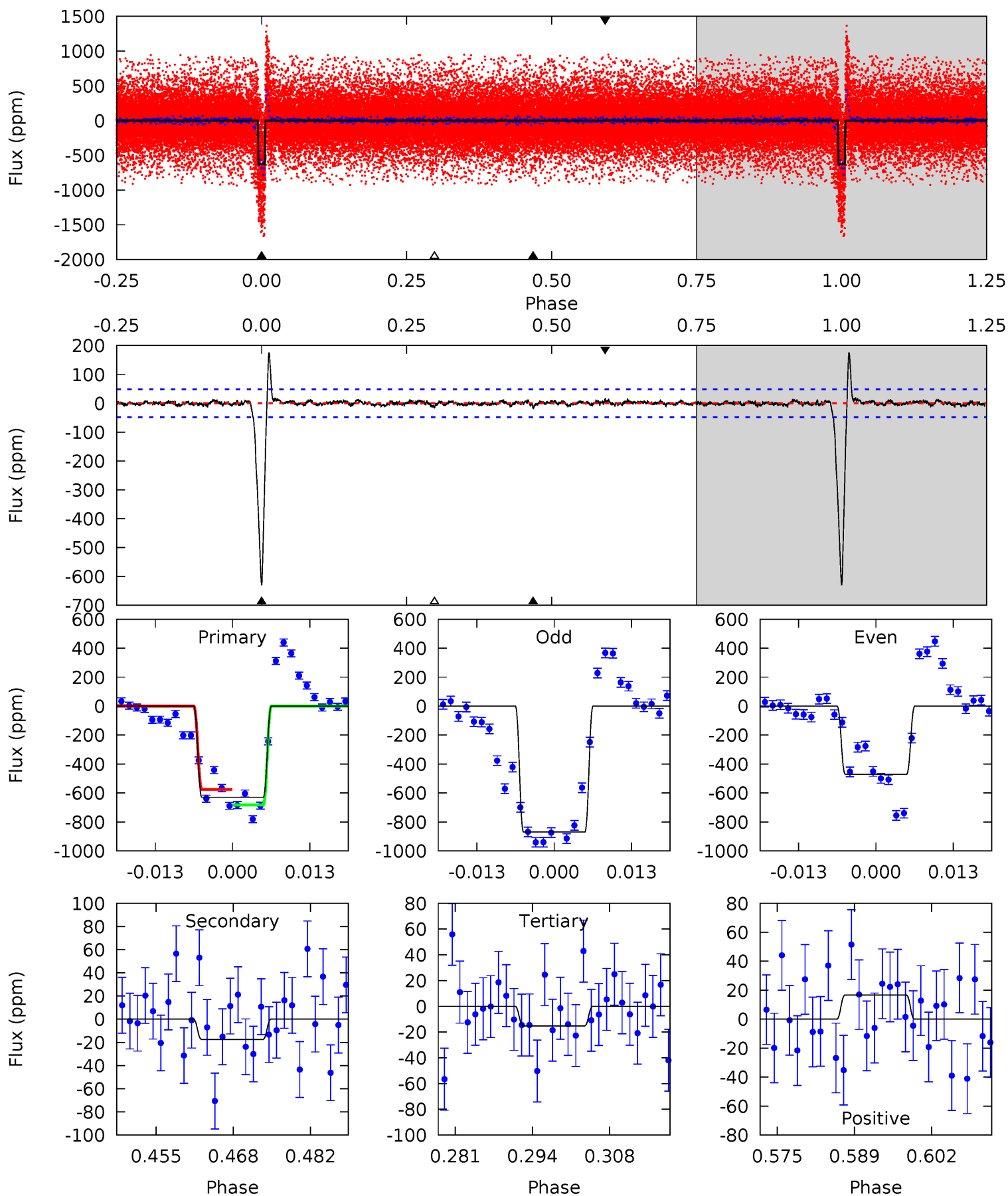
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
60.0	15.6	13.7	12.7	4.92	2.38	5.00	46.2	47.2	1.92	2.93	0.08	0.95	0.34	10.8



Alt Model-Shift Uniqueness Test

009328641-01, P = 33.325002 Days, E = 99.757309 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
64.4	1.79	1.56	1.71	4.97	2.47	0.88	62.8	62.6	0.23	0.08	20.7	1.09	0.22	0



Stellar Parameters For KIC 009328641

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5192^{+180}_{-180}	$4.707^{+0.046}_{-0.025}$	$-1.980^{+0.250}_{-0.050}$	$0.555^{+0.027}_{-0.024}$	$0.572^{+0.042}_{-0.017}$	$4.713^{+0.707}_{-0.456}$
	+3%/-3%	+1%/-1%	+13%/-3%	+5%/-4%	+7%/-3%	+15%/-10%
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 009328641-01 / KOI 3400.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-248 ± 16	$1.83^{+0.10}_{-0.10}$	579^{+20}_{-22}	4017^{+146}_{-135}	1165^{+149}_{-127}
Alt.	-17 ± 10	$1.47^{+0.09}_{-0.08}$	579^{+21}_{-22}	2844^{+203}_{-301}	127^{+76}_{-72}

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 $A_{obs} \gg 1.0$

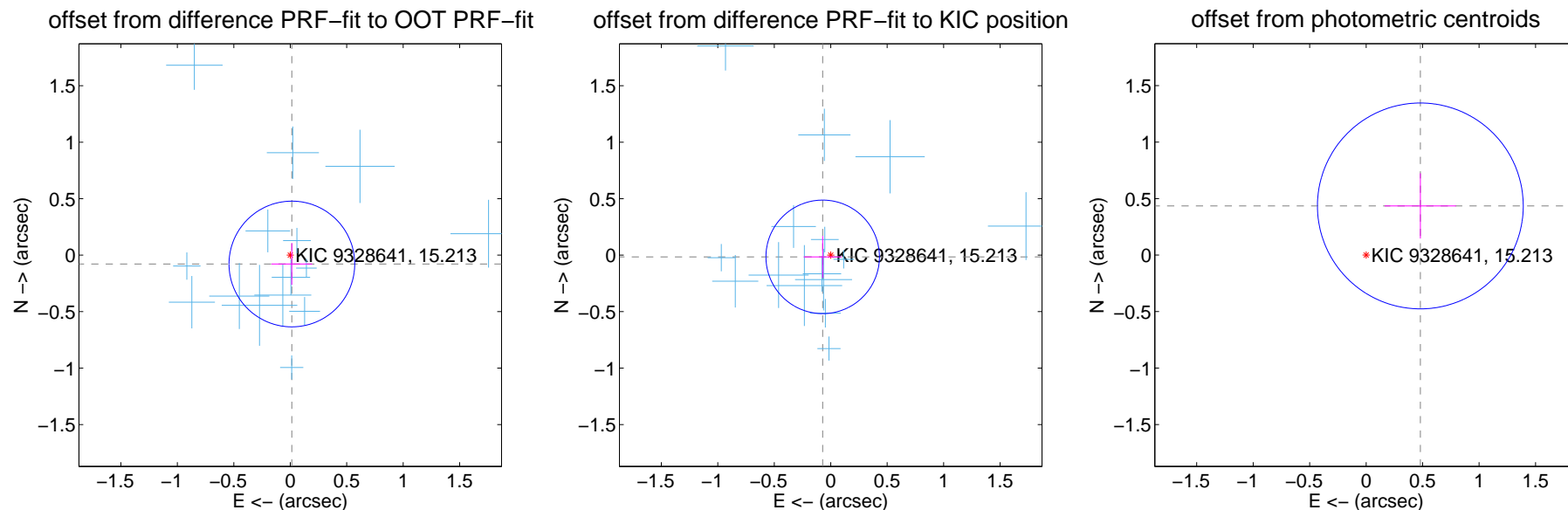
DV Centroid Data

Supplemental centroid analysis for 009328641-01. Kepler magnitude: 15.21. Transit SNR 16.61

There are 15 quarters with good PRF difference image offsets

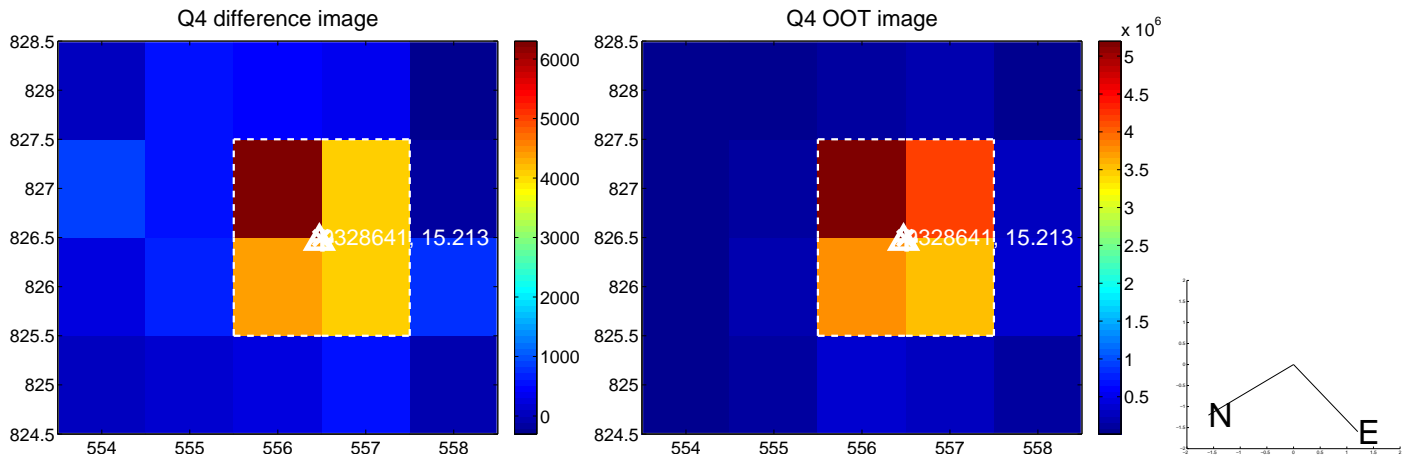
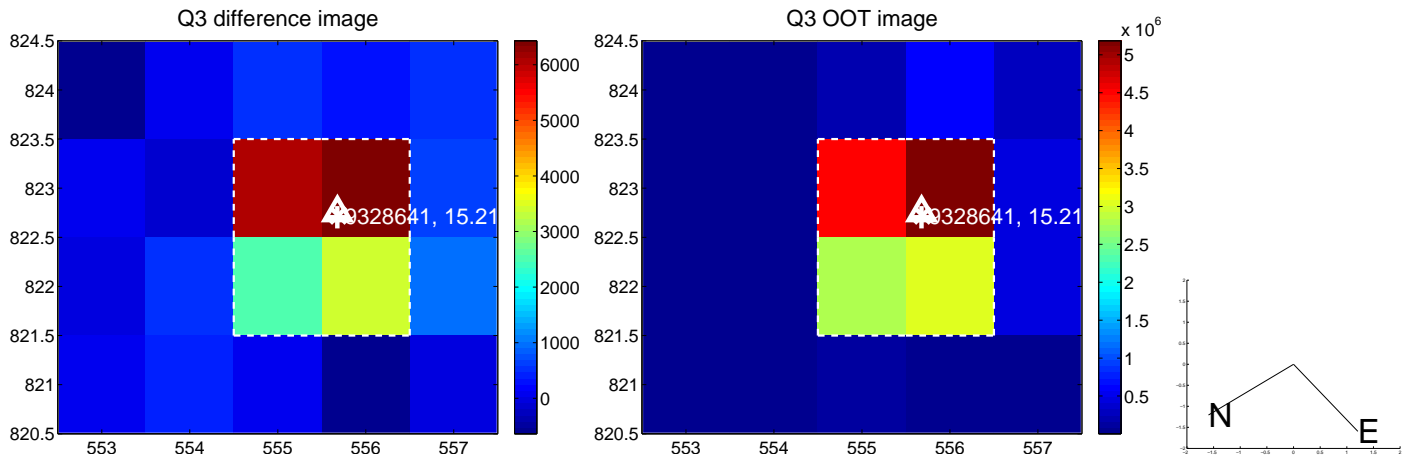
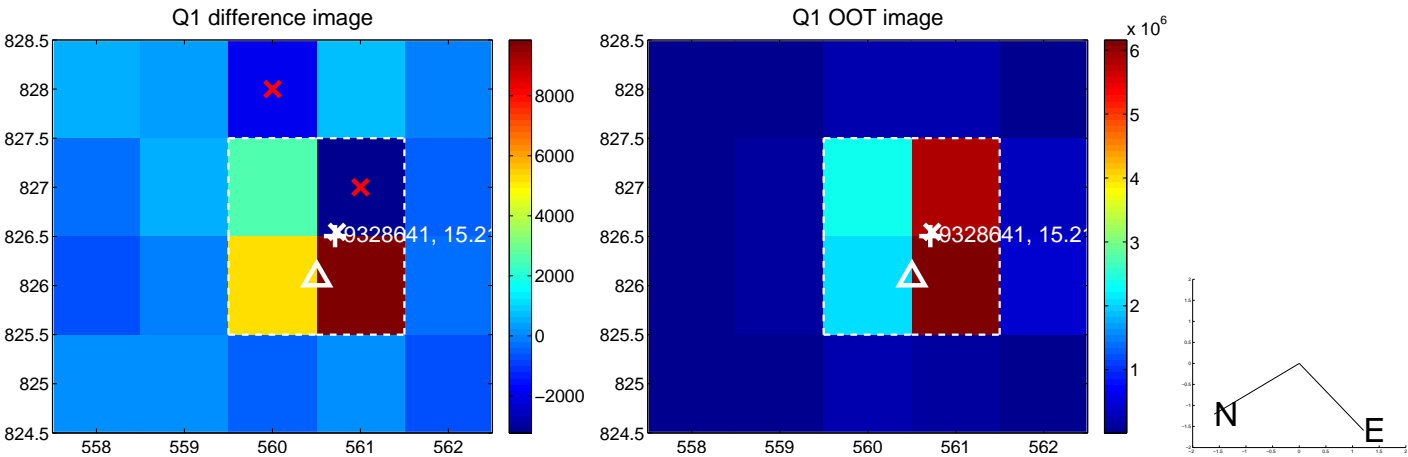
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.080 ± 0.185	0.43	-0.014 ± 0.180	-0.078 ± 0.185
PRF-fit source offset from KIC position	0.073 ± 0.167	0.43	0.071 ± 0.169	-0.015 ± 0.185
photometric centroid source offset	0.65 ± 0.30	2.13	-0.48 ± 0.32	0.44 ± 0.29

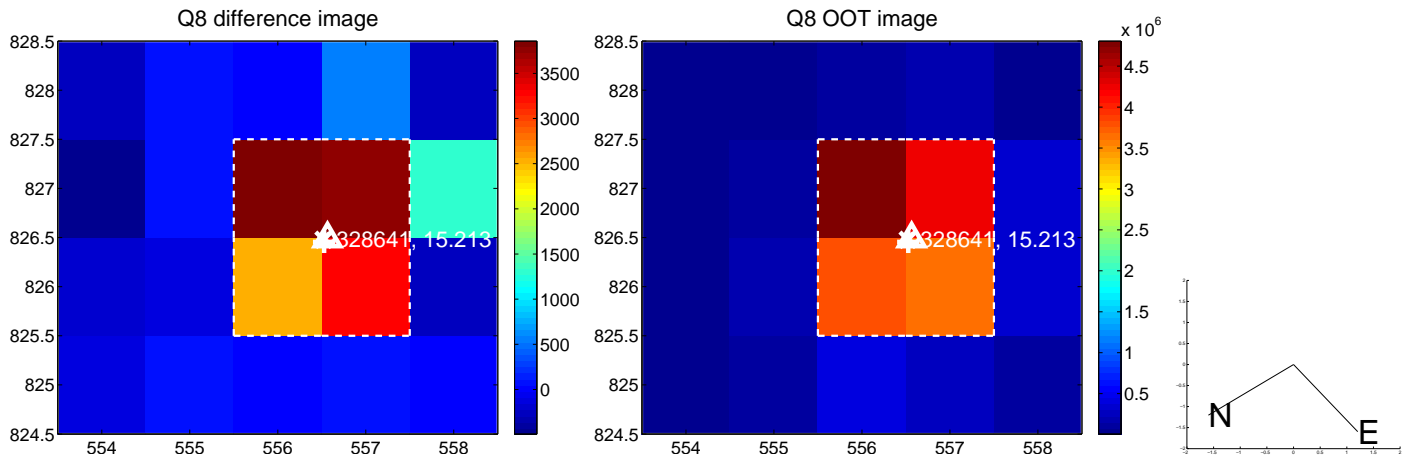
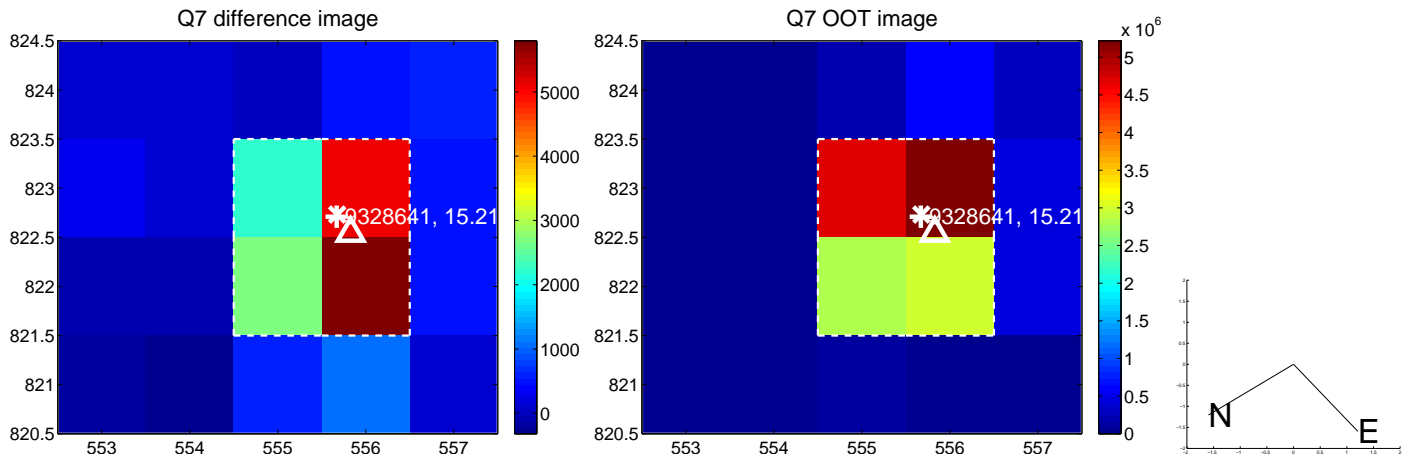
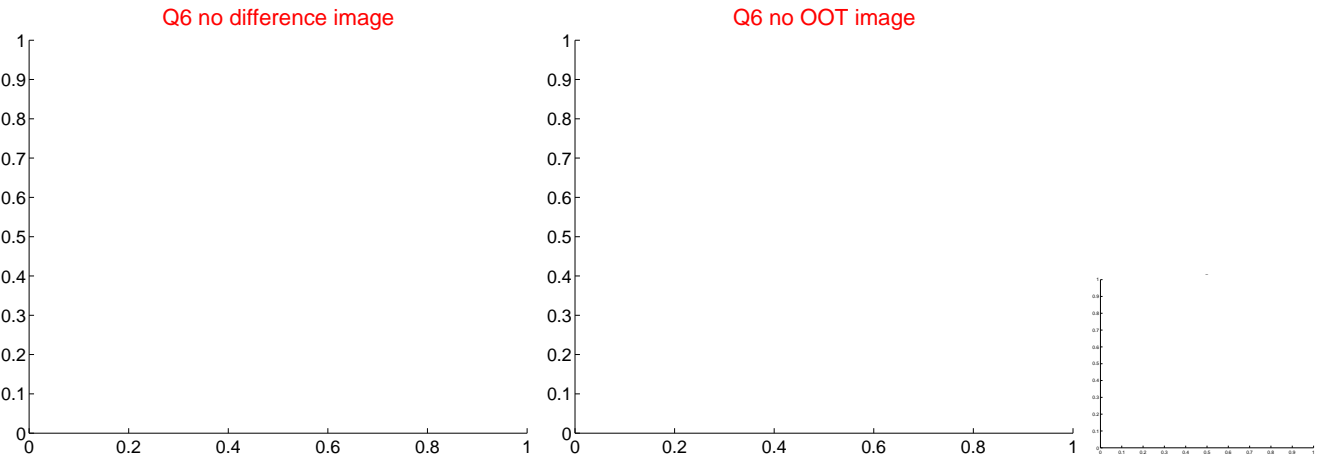
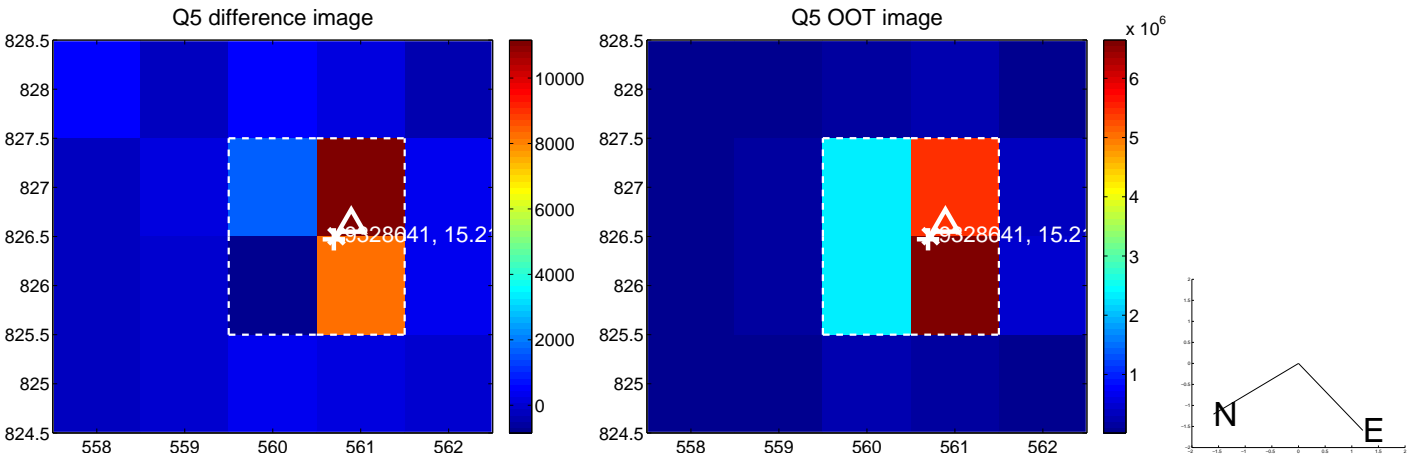


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

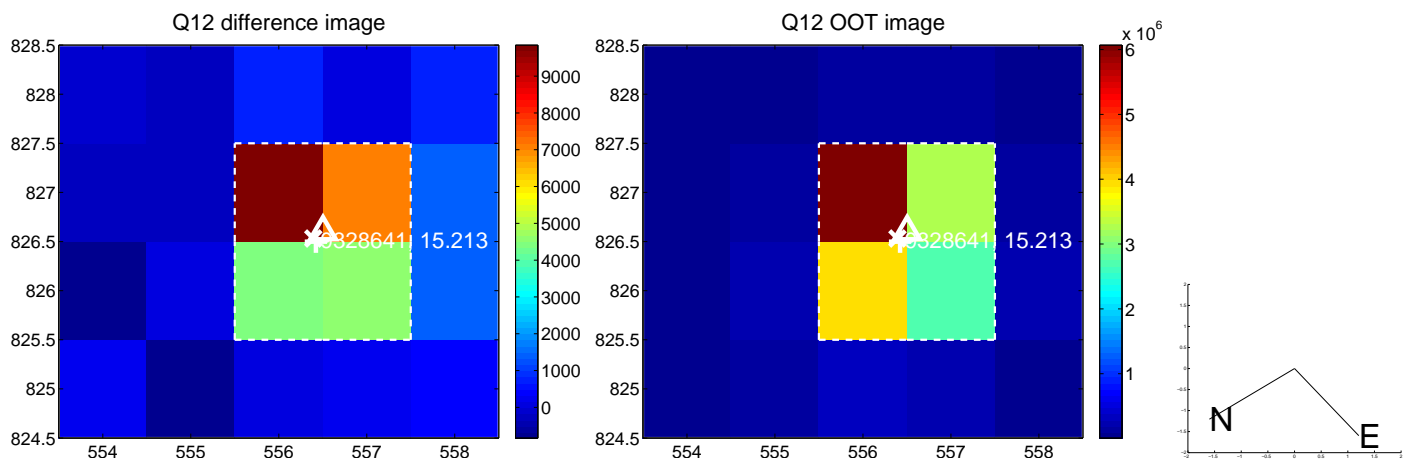
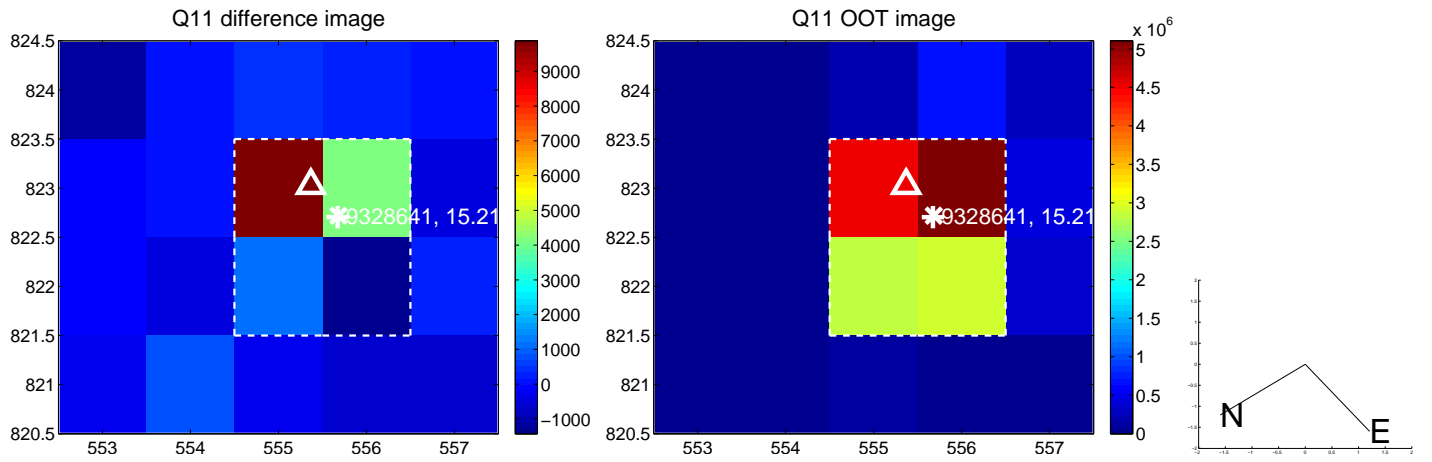
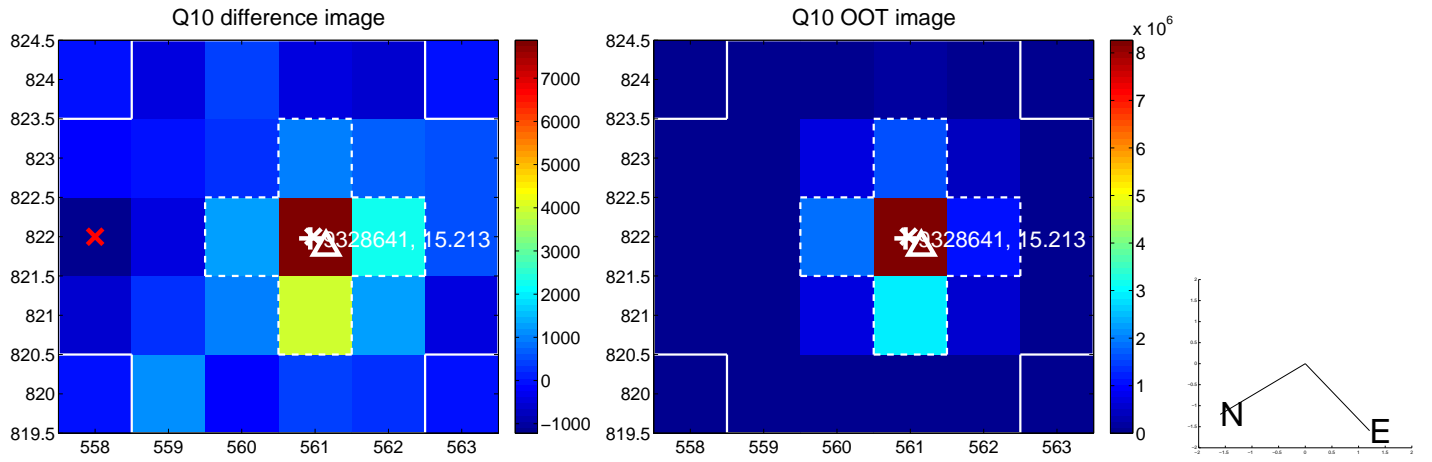
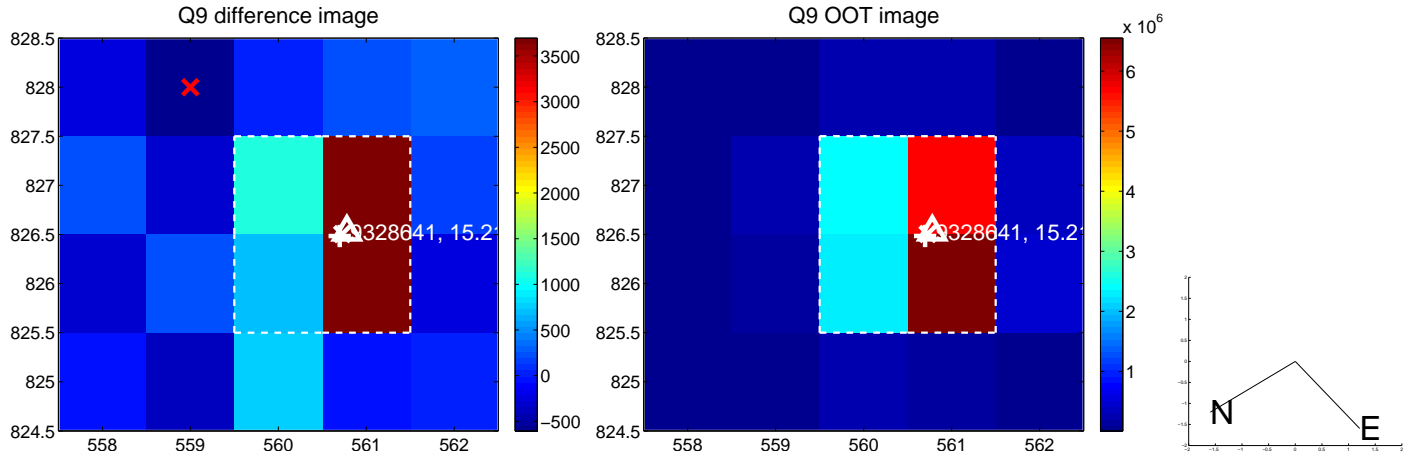
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



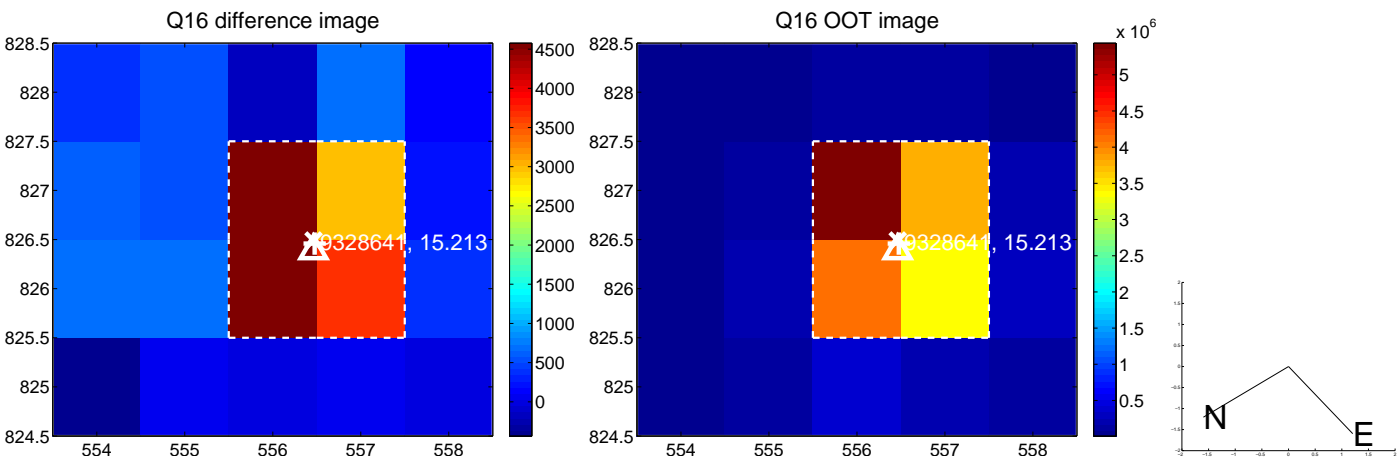
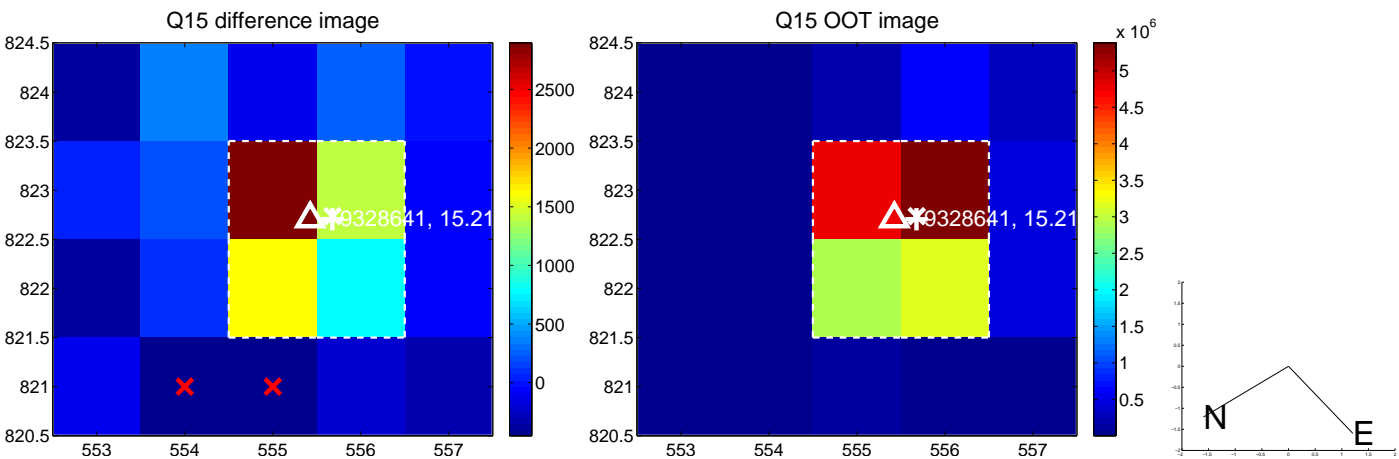
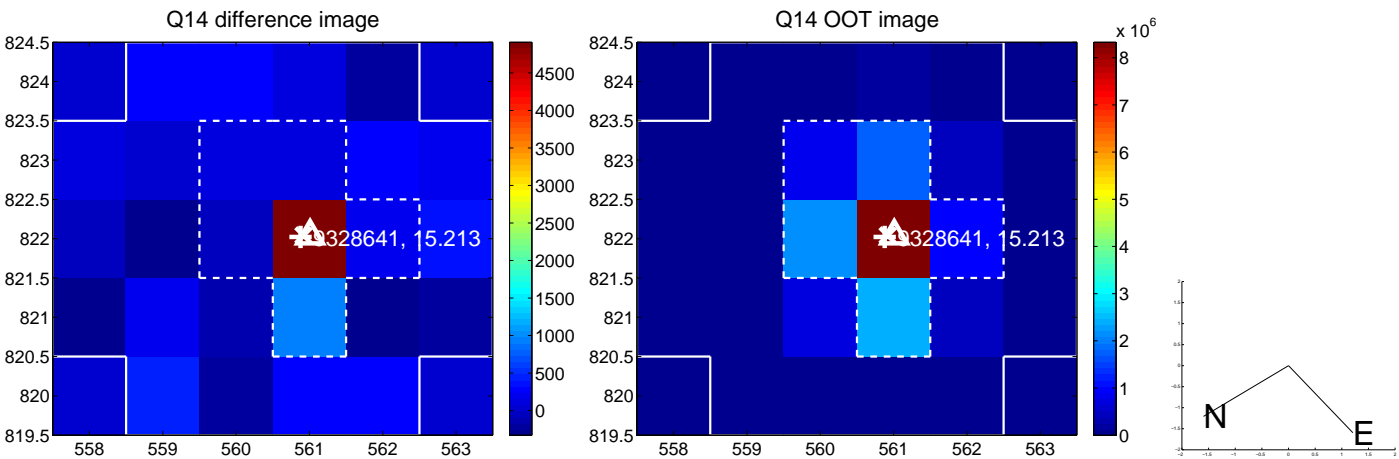
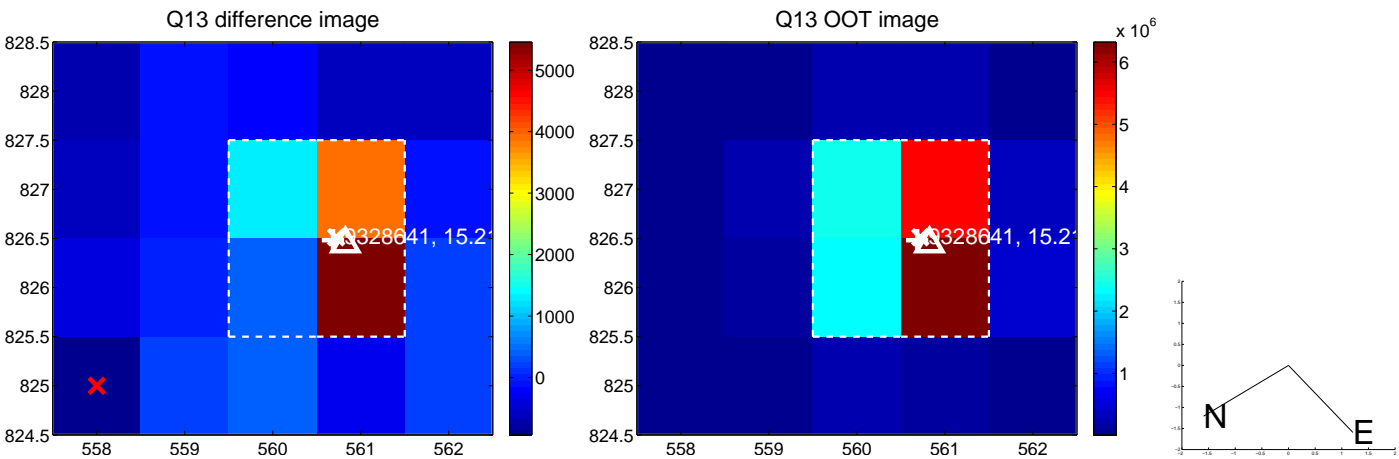
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



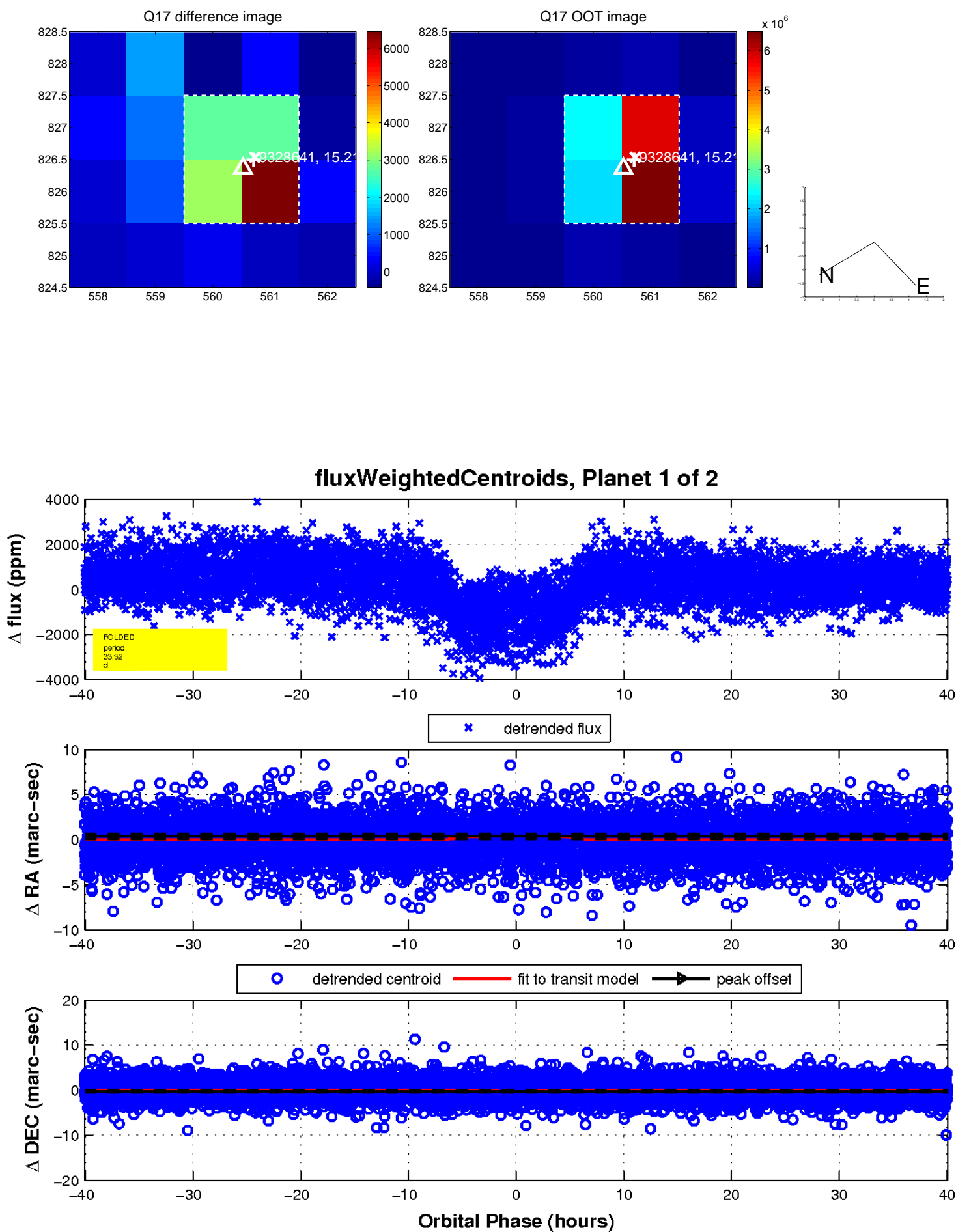
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

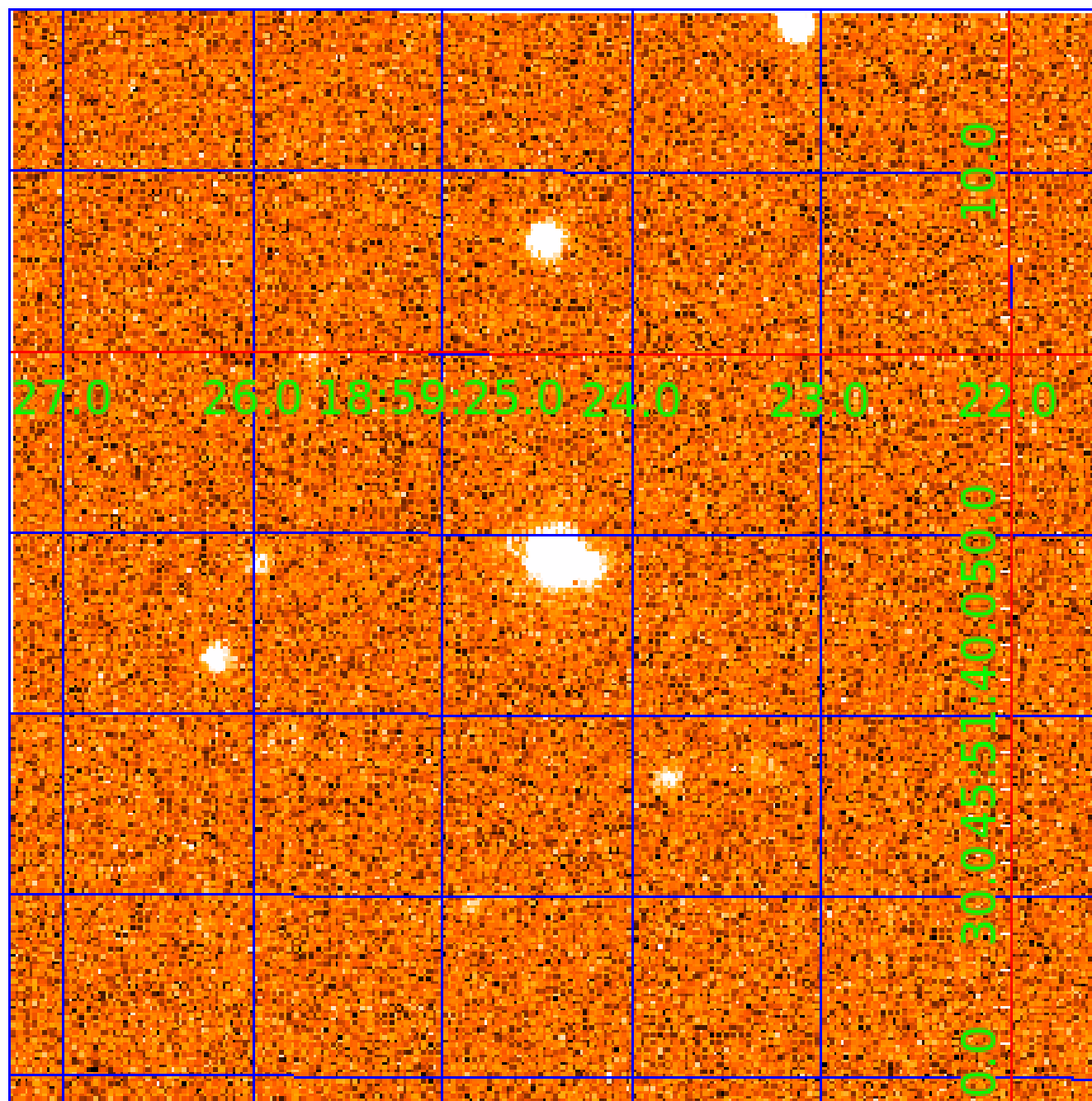


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009328641

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})
009328641-01	OBS	3400.01	33.324241	133.081254	779.9	13.363	17.1	16.6	0.56	5192	1.83	7.08
009328641-02	OBS	No	33.324184	132.338201	2045.7	25.695	21.1	27.1	0.56	5192	2.72	7.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009328641-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009328641-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—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.

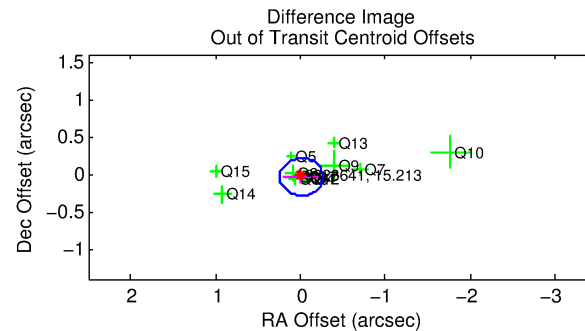
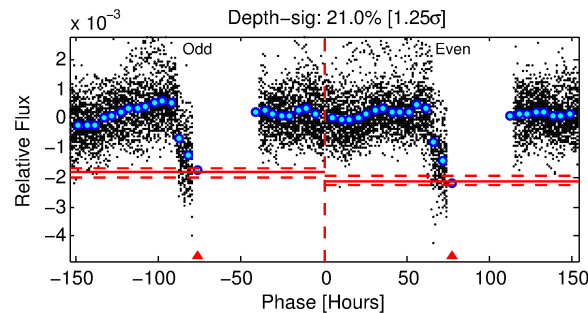
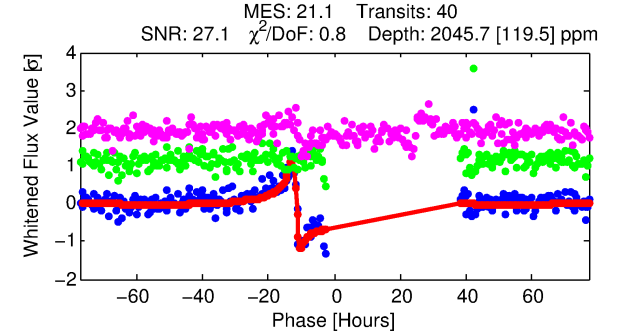
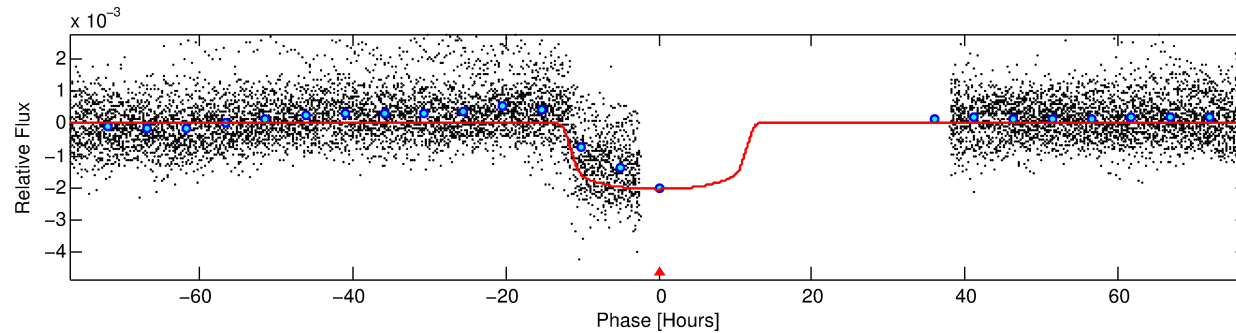
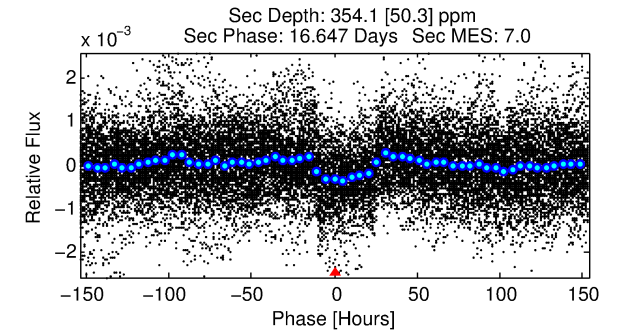
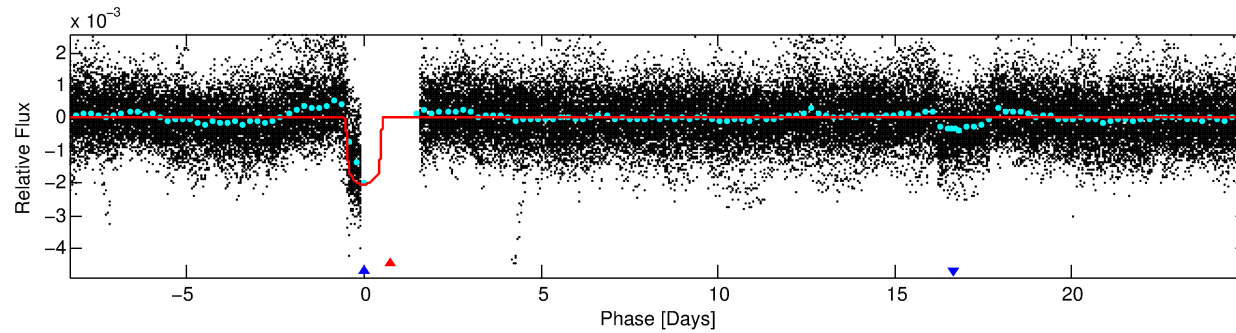
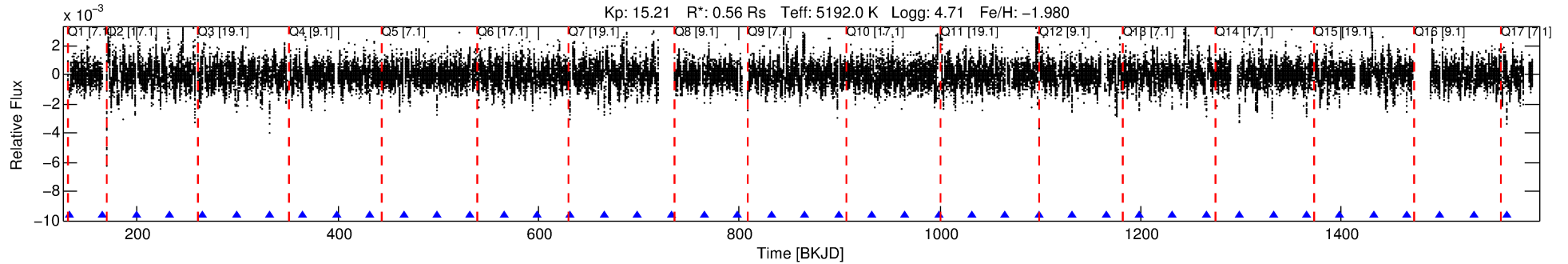
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009328641-02

No Significant Match Found

DV One-Page Summary

KIC: 9328641 Candidate: 2 of 2 Period: 33.324 d
KOI: K03400.01 Corr: 0.819



DV Fit Results:

Period = 33.32418 [0.00022] d
Epoch = 132.3382 [0.0511] BKJD
Rp/R* = 0.0450 [0.0010]
a/R* = 7.24 [0.35]
b = 0.75 [0.06]
Seff = 7.08 [1.13]
Teq = 416 [17] K
Rp = 2.72 [0.15] Re
a = 0.1683 [0.0081] AU
Ag = 743.80 [125.35] [5.93σ]
Teffp = 3359 [171] K [17.10σ]

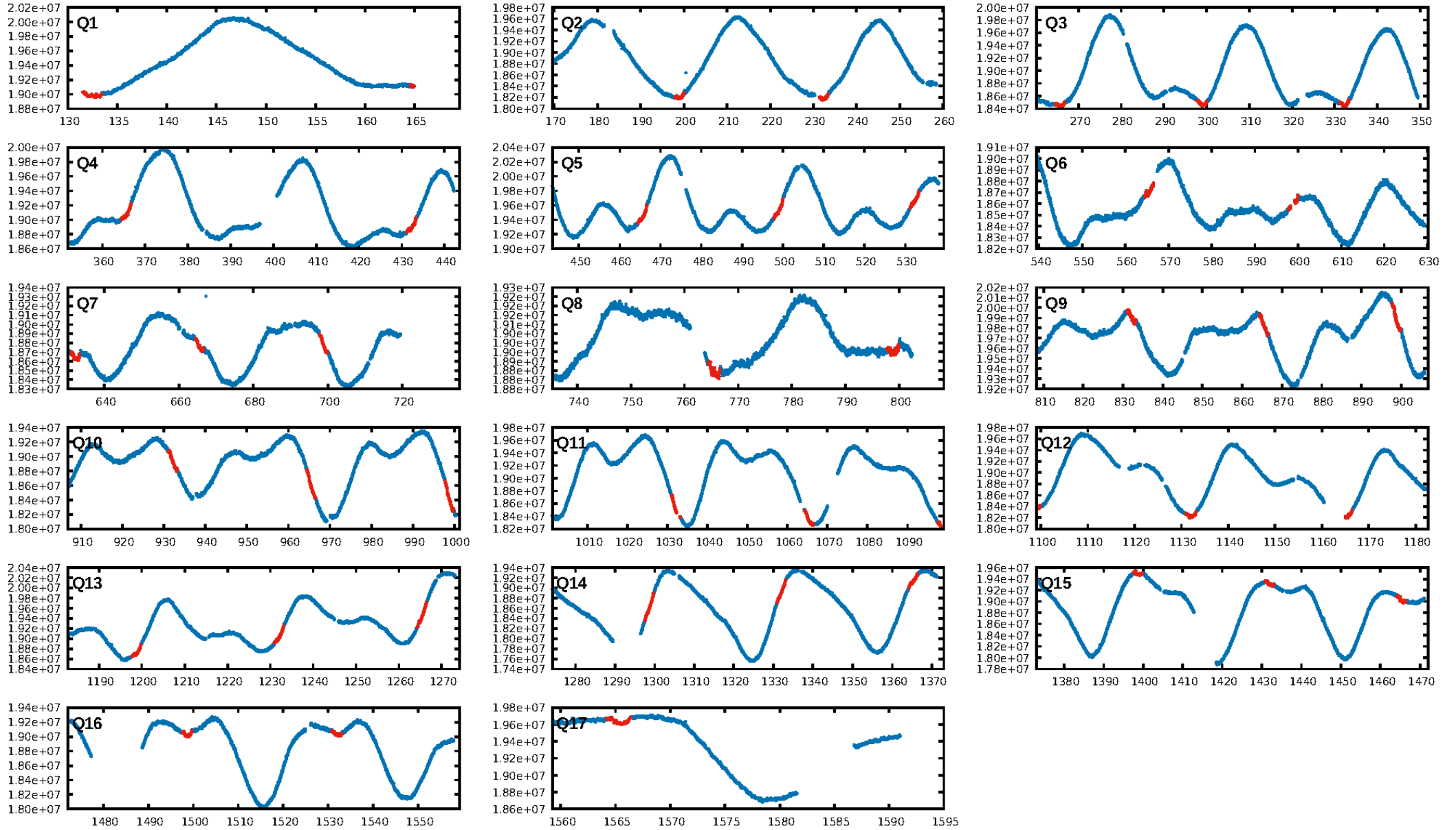
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.54e-86
RollingBand-fgt: 1.00 [38/38]
GhostDiagnostic-chr: 2.034
Centroid-sig: 12.1%
Centroid-so: 0.222 arcsec [2.78σ]
OotOffset-rm: 0.039 arcsec [0.46σ]
KicOffset-rm: 0.073 arcsec [0.39σ]
OotOffset-st: 2/3/4/4 [13]
KicOffset-st: 2/3/4/4 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/13]

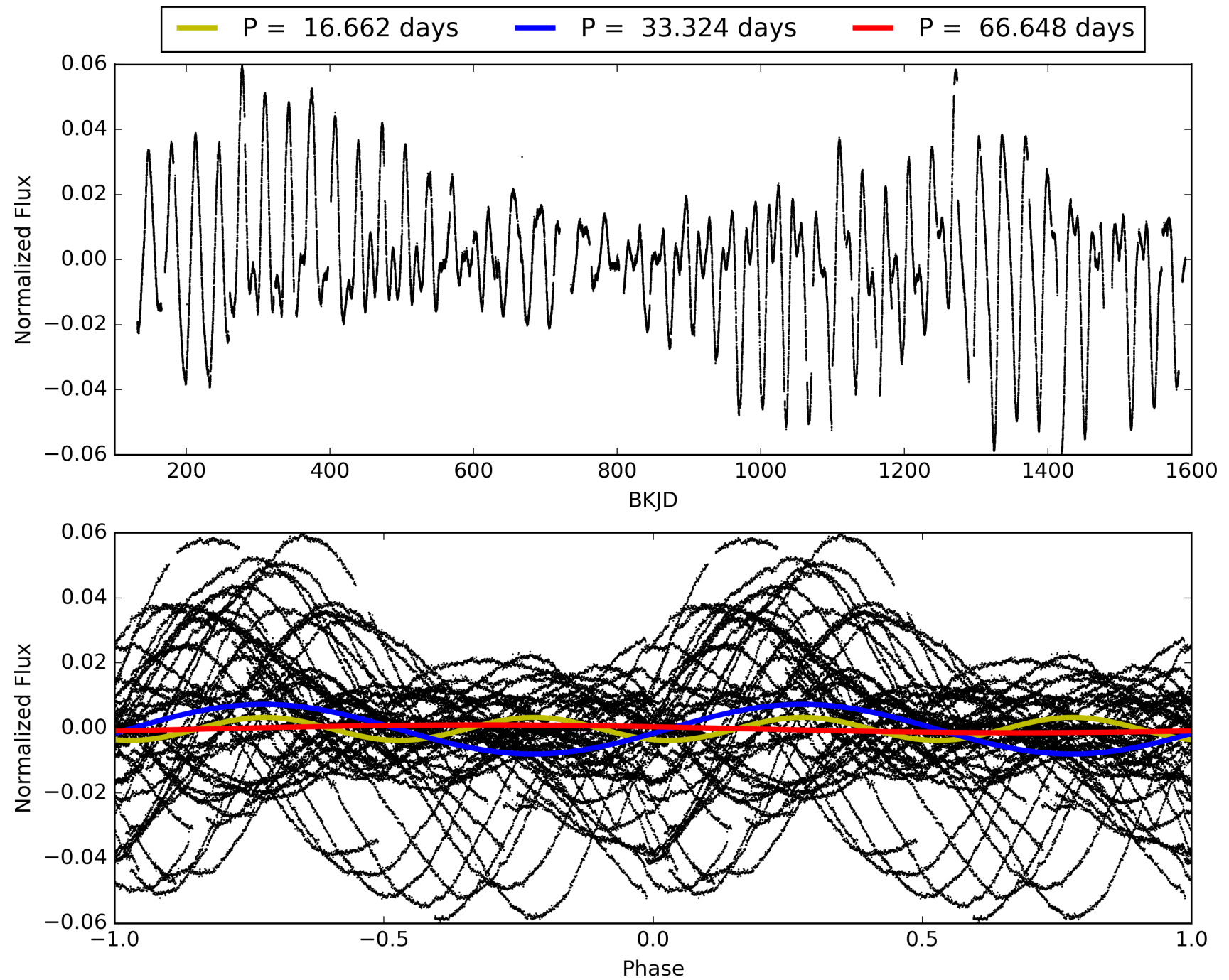
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:54:29 Z

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

TCE 009328641-02, PDC Light Curves

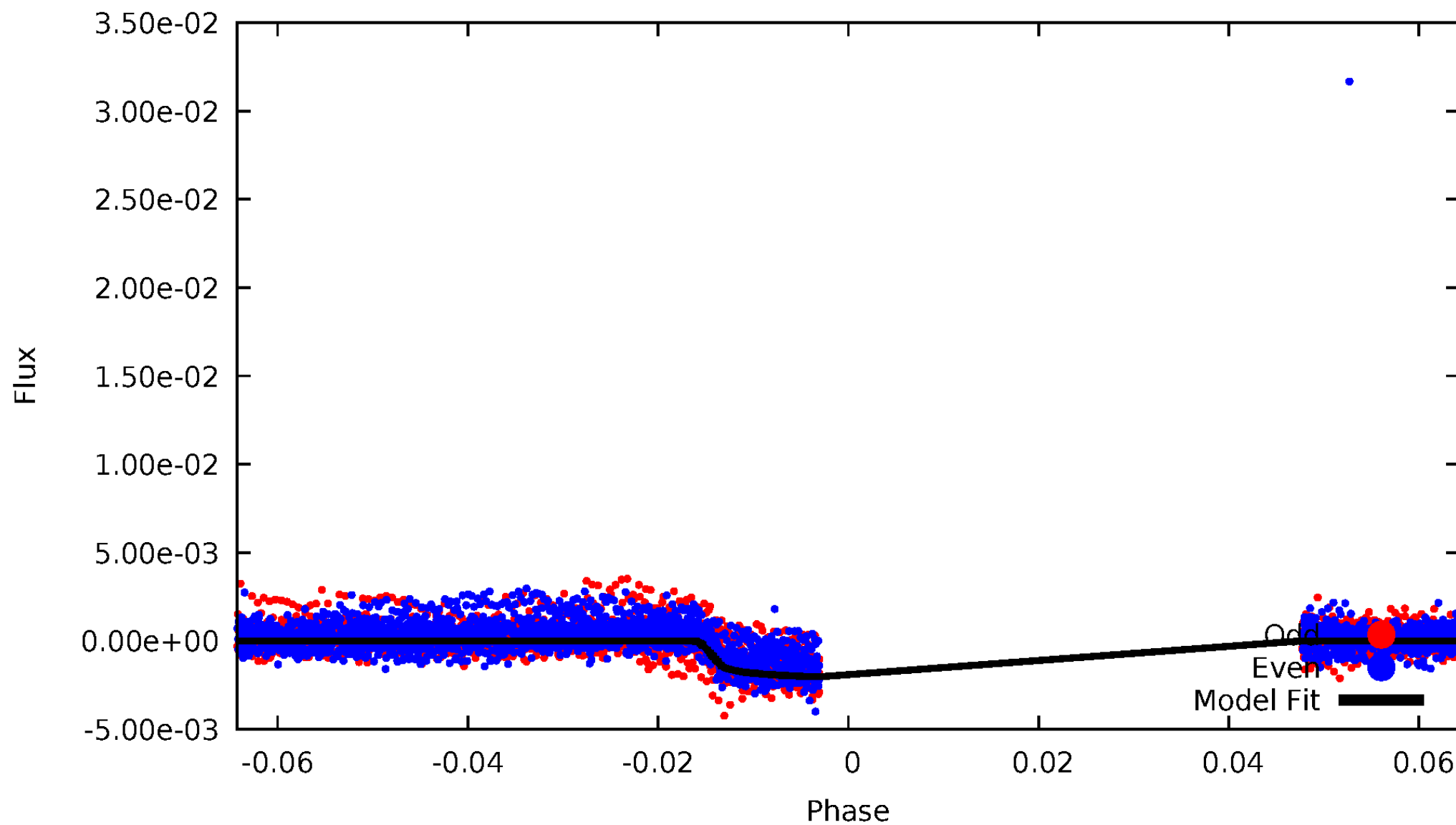


TCE 009328641-02



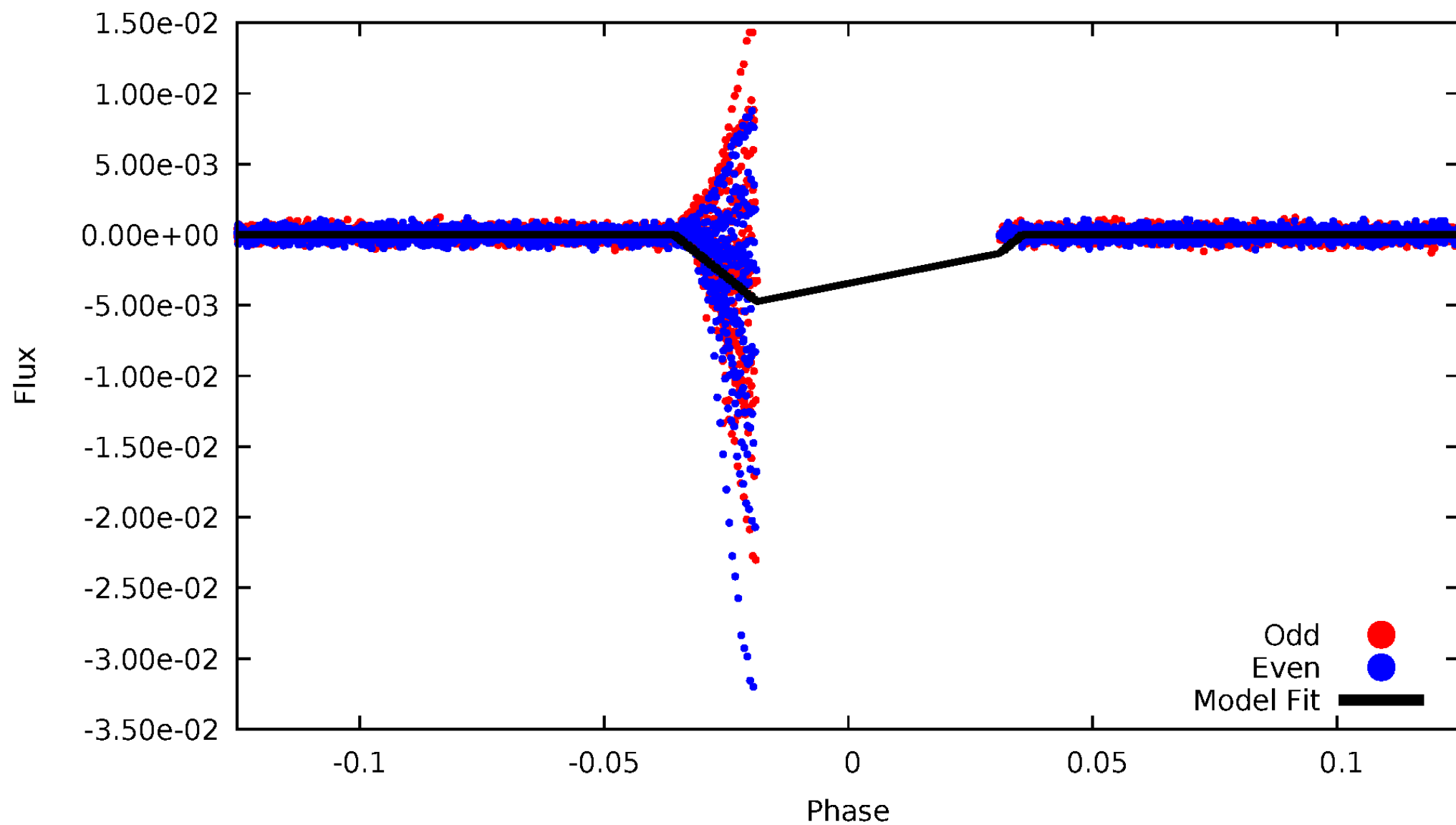
DV Odd/Even

TCE 009328641-02



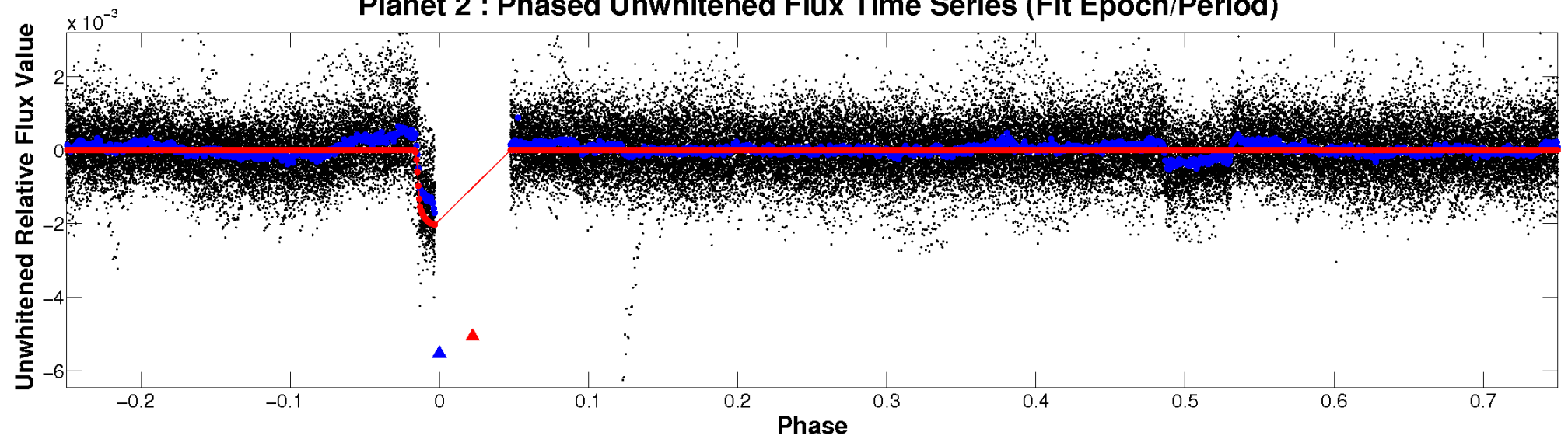
ALT Odd/Even

TCE 009328641-02

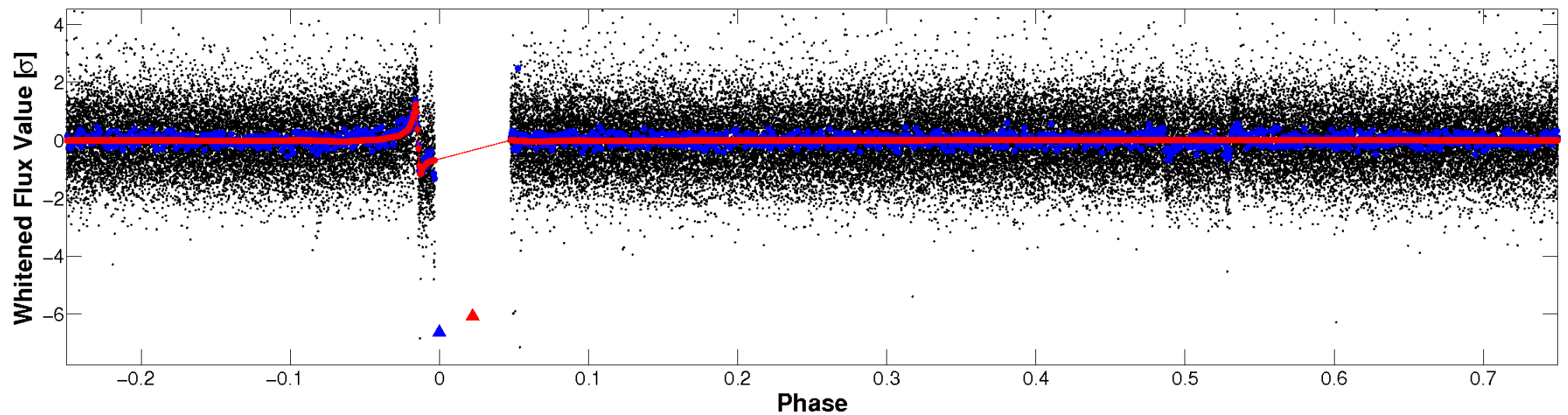


Non-Whitened Vs. Whitened Light Curve

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

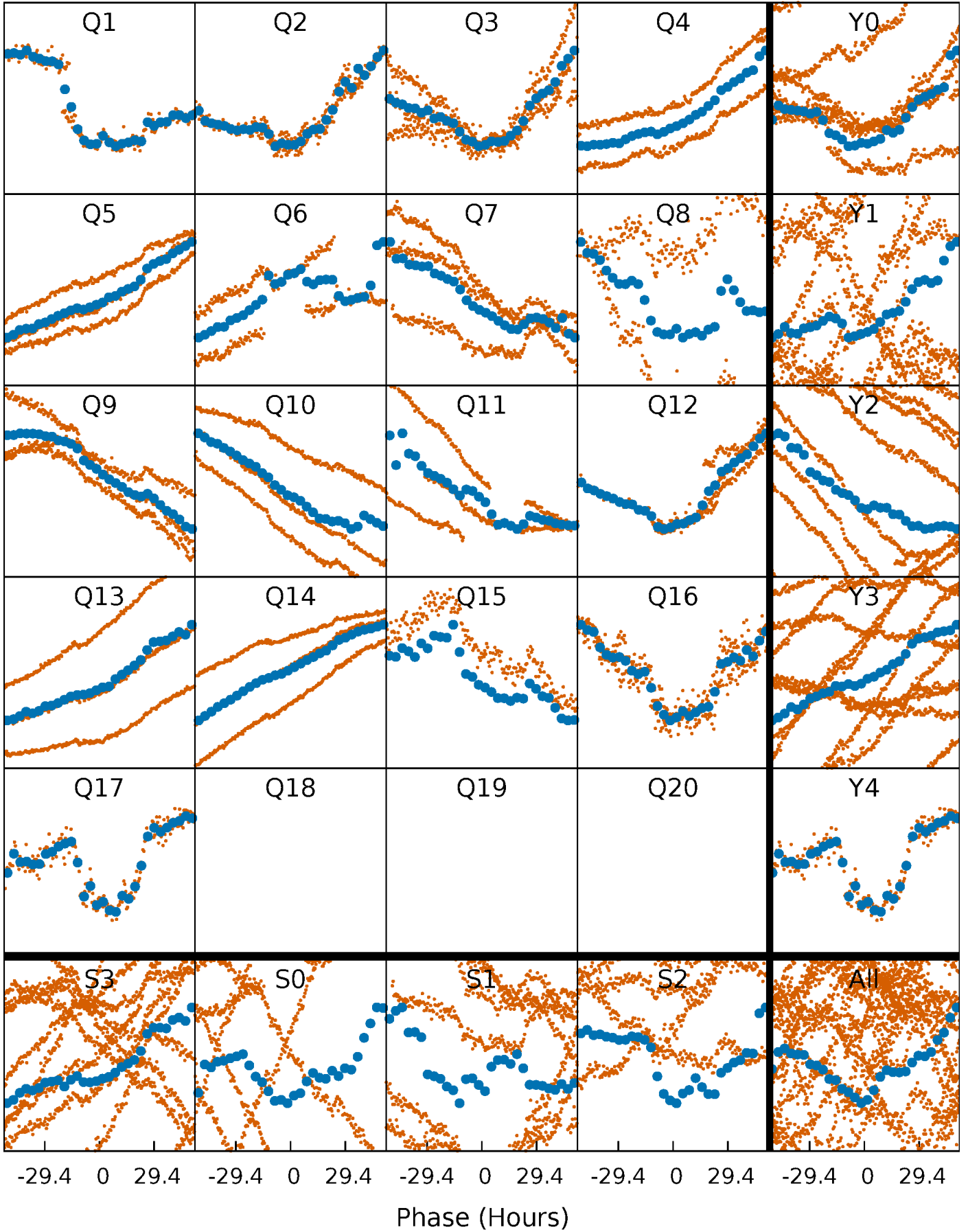


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



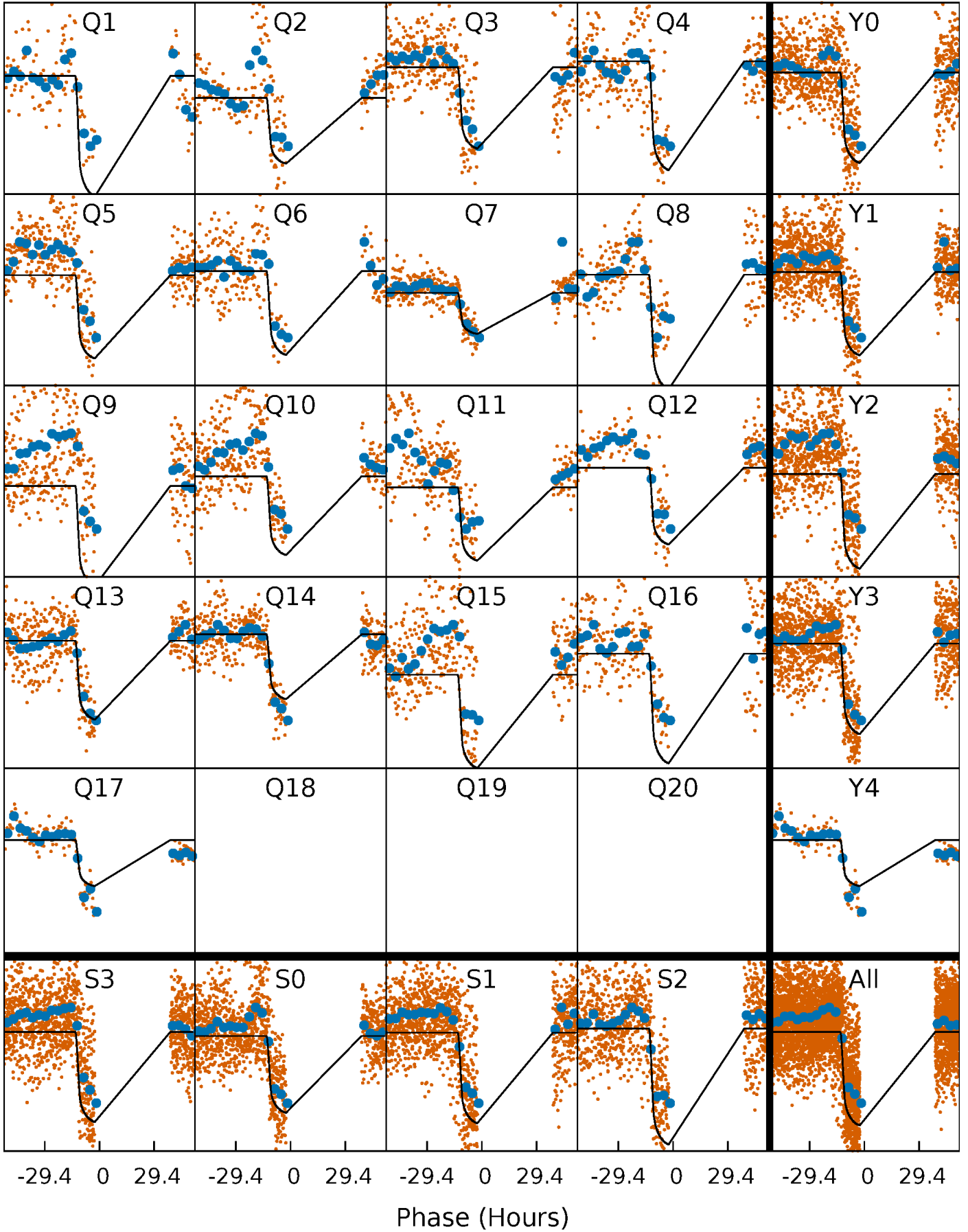
PDC Quarter-Phased Transit Curves

TCE 009328641-02 P= 33.324184 Days $T_0=132.338200$ (BKJD)



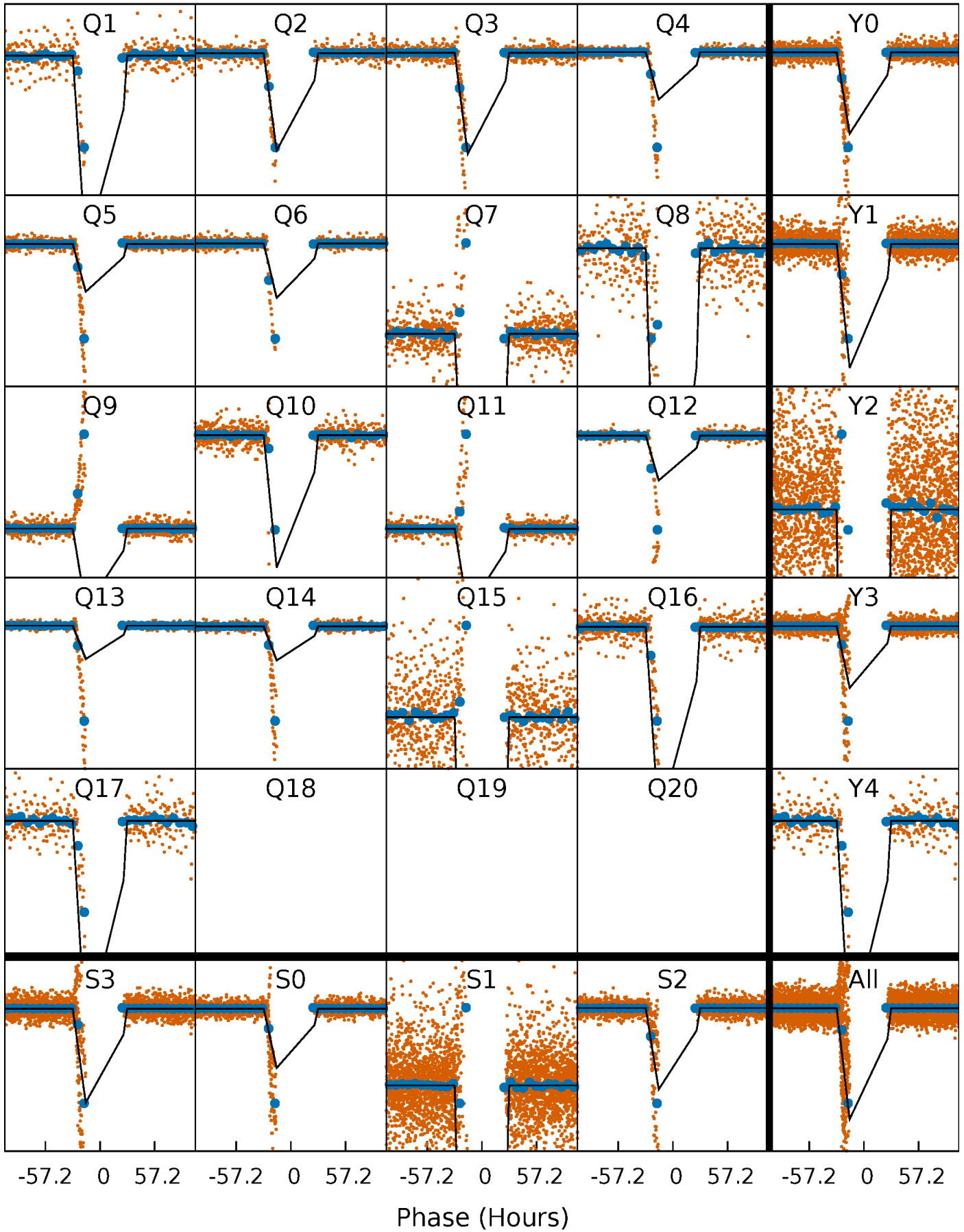
DV Quarter-Phased Transit Curves

TCE 009328641-02 $P = 33.324184$ Days $T_0 = 132.338200$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

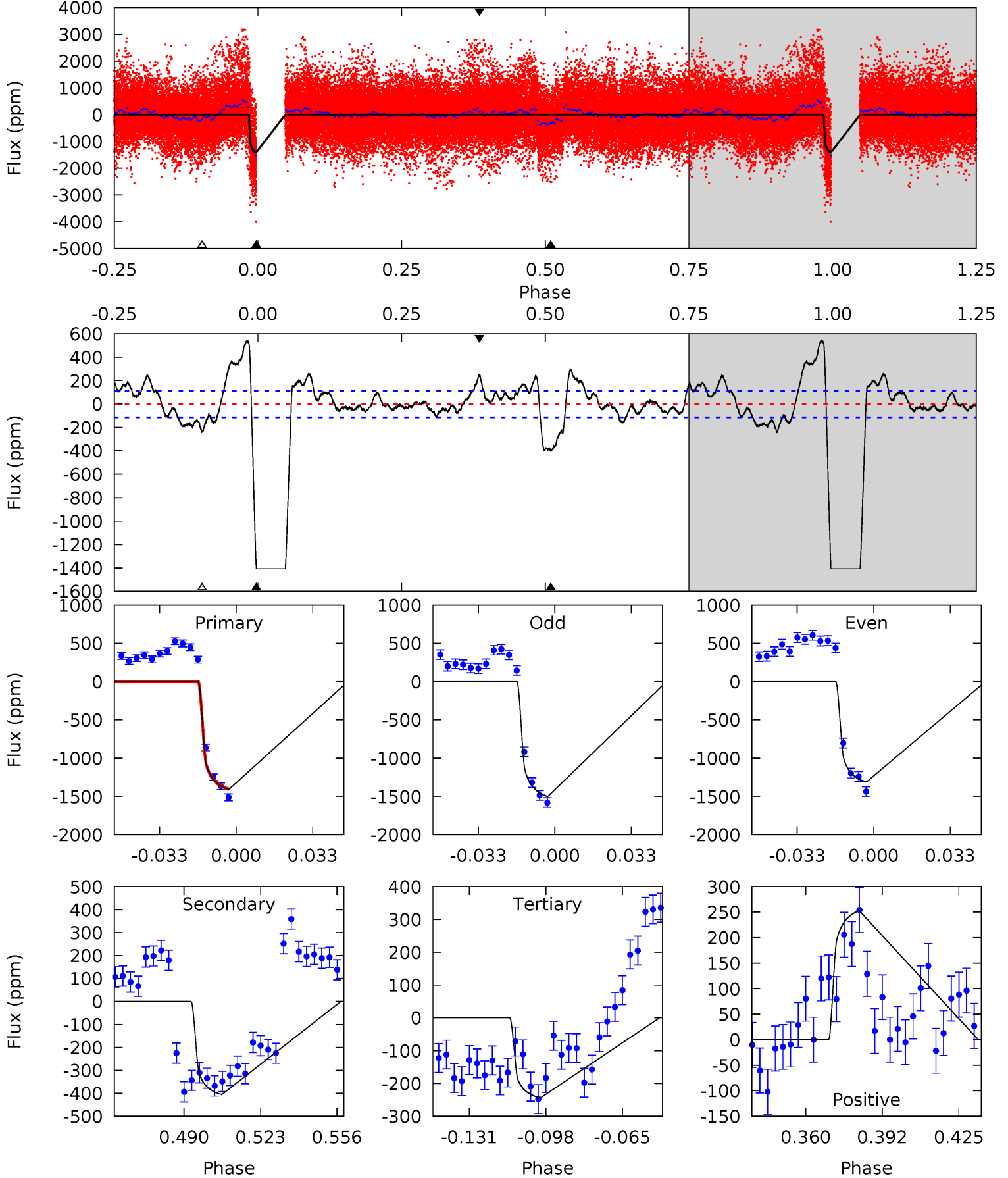
TCE 009328641-02 P= 33.323051 Days $T_0=132.903123$ (BKJD)



DV Model-Shift Uniqueness Test

009328641-02, P = 33.324184 Days, E = 99.014016 Days

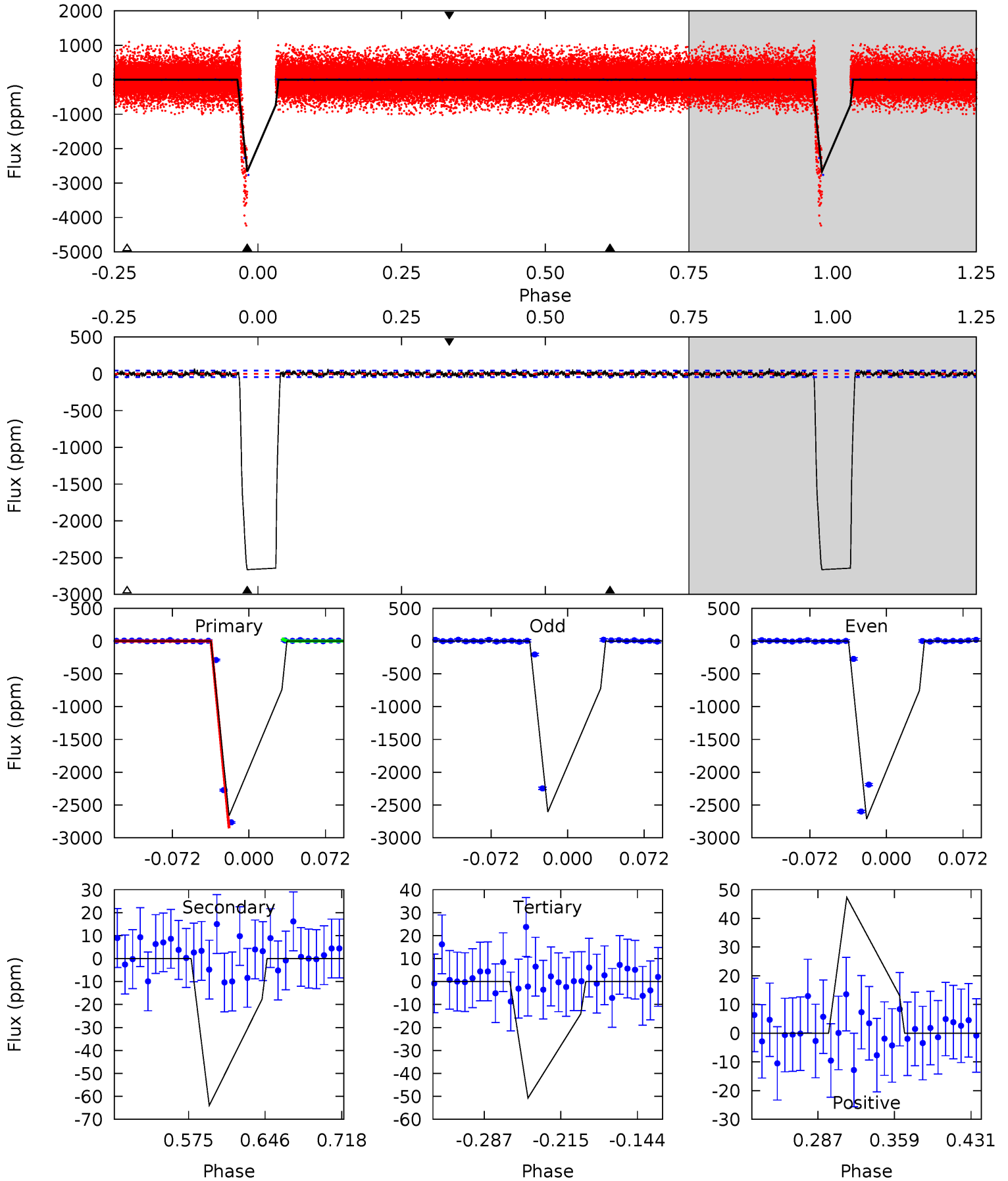
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.5	17.1	10.3	10.7	4.79	2.14	6.14	49.2	48.8	6.83	6.45	4.02	0	0.28	0



Alt Model-Shift Uniqueness Test

009328641-02, P = 33.323051 Days, E = 99.580072 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
273.8	6.58	5.22	4.86	4.63	1.80	1.66	268.6	268.9	1.36	1.71	5.56	1.23	0.03	136.0



Stellar Parameters For KIC 009328641

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5192^{+180}_{-180}	$4.707^{+0.046}_{-0.025}$	$-1.980^{+0.250}_{-0.050}$	$0.555^{+0.027}_{-0.024}$	$0.572^{+0.042}_{-0.017}$	$4.713^{+0.707}_{-0.456}$
	+3%/-3%	+1%/-1%	+13%/-3%	+5%/-4%	+7%/-3%	+15%/-10%
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 009328641-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-405 ± 24	$2.72^{+0.11}_{-0.10}$	579^{+22}_{-20}	3810^{+119}_{-105}	863^{+83}_{-73}
Alt.	-64 ± 10	$5.18^{+0.17}_{-0.15}$	578^{+22}_{-20}	2436^{+62}_{-63}	37^{+6}_{-6}

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

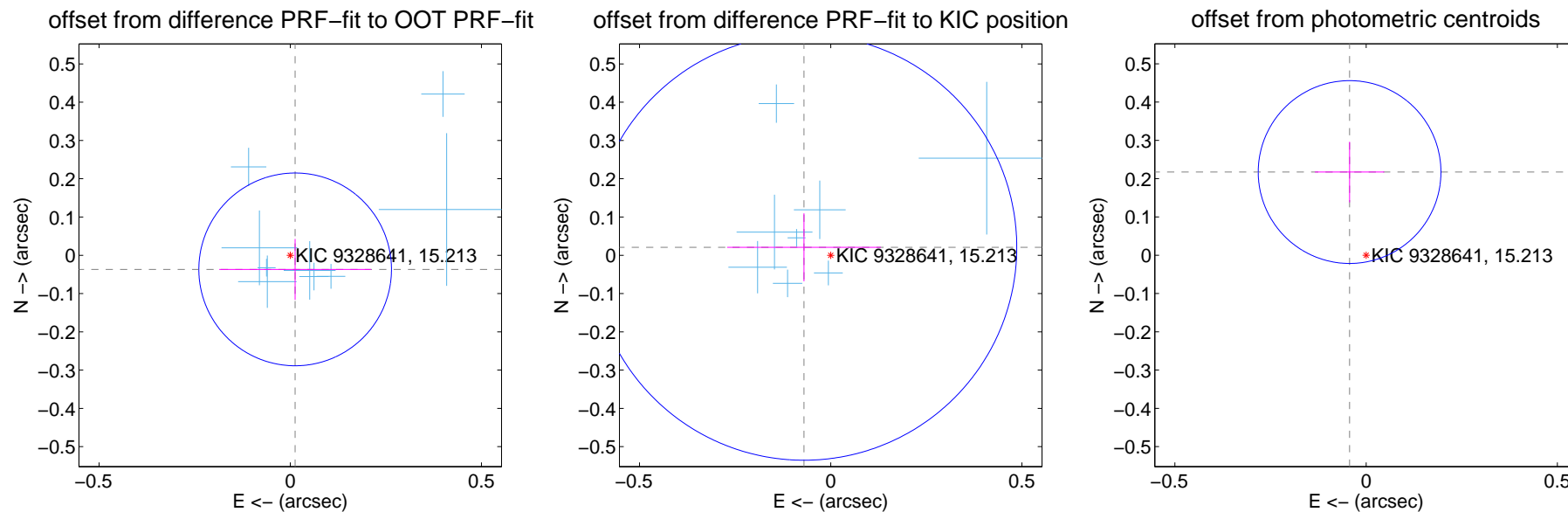
DV Centroid Data

Supplemental centroid analysis for 009328641-02. Kepler magnitude: 15.21. Transit SNR 27.08

There are 13 quarters with good PRF difference image offsets

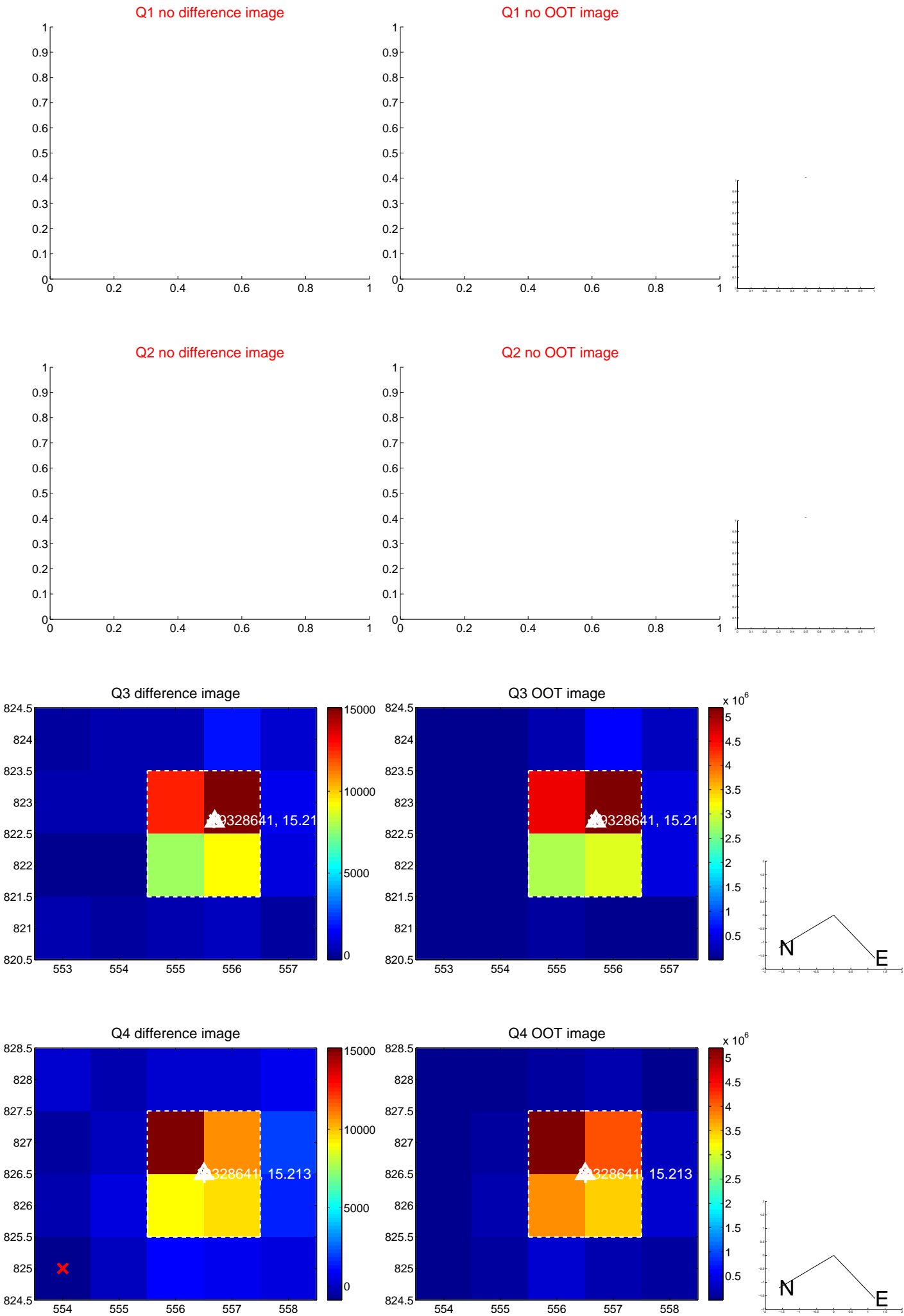
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.039 ± 0.084	0.46	-0.013 ± 0.198	-0.037 ± 0.080
PRF-fit source offset from KIC position	0.073 ± 0.185	0.39	0.070 ± 0.201	0.021 ± 0.089
photometric centroid source offset	0.22 ± 0.08	2.78	0.04 ± 0.09	0.22 ± 0.08

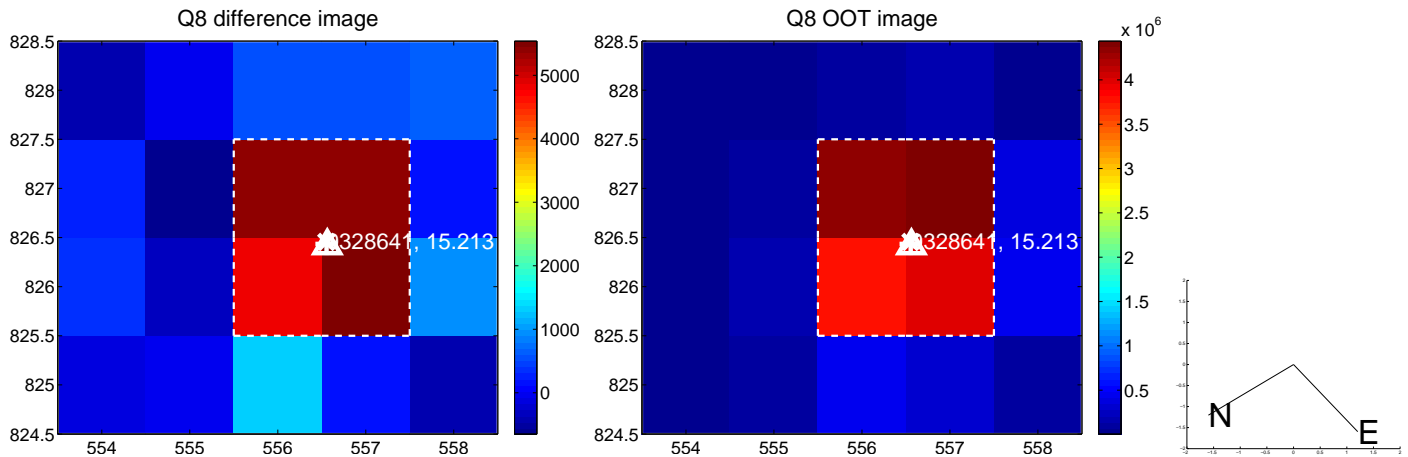
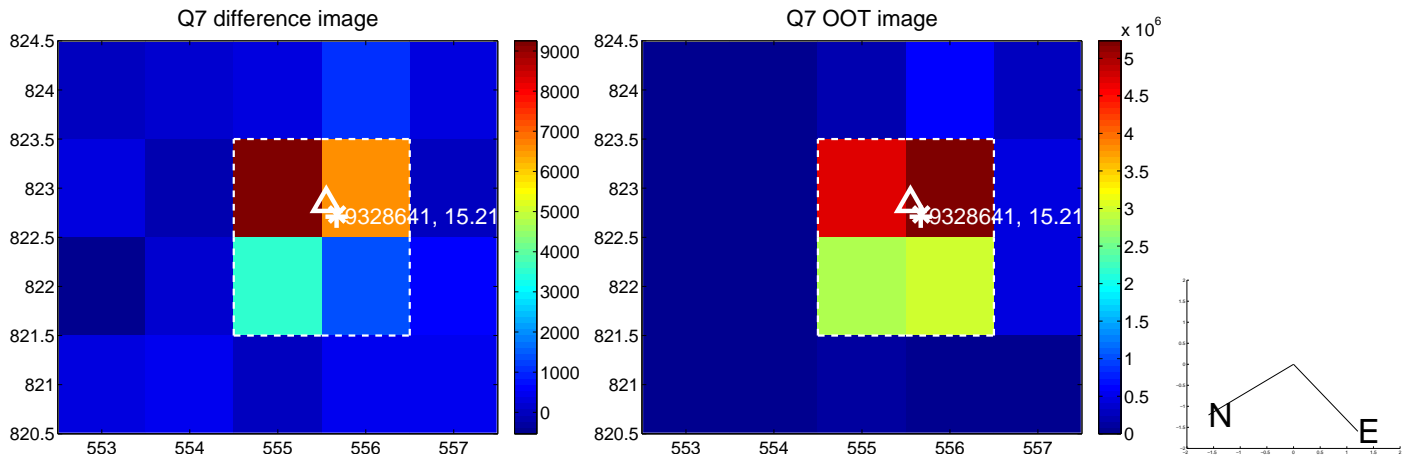
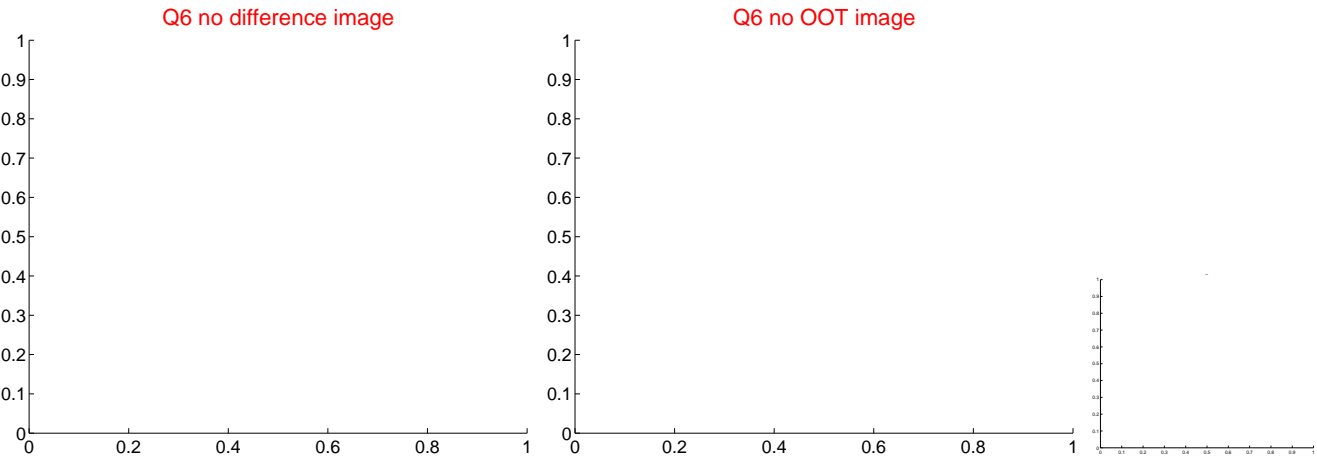
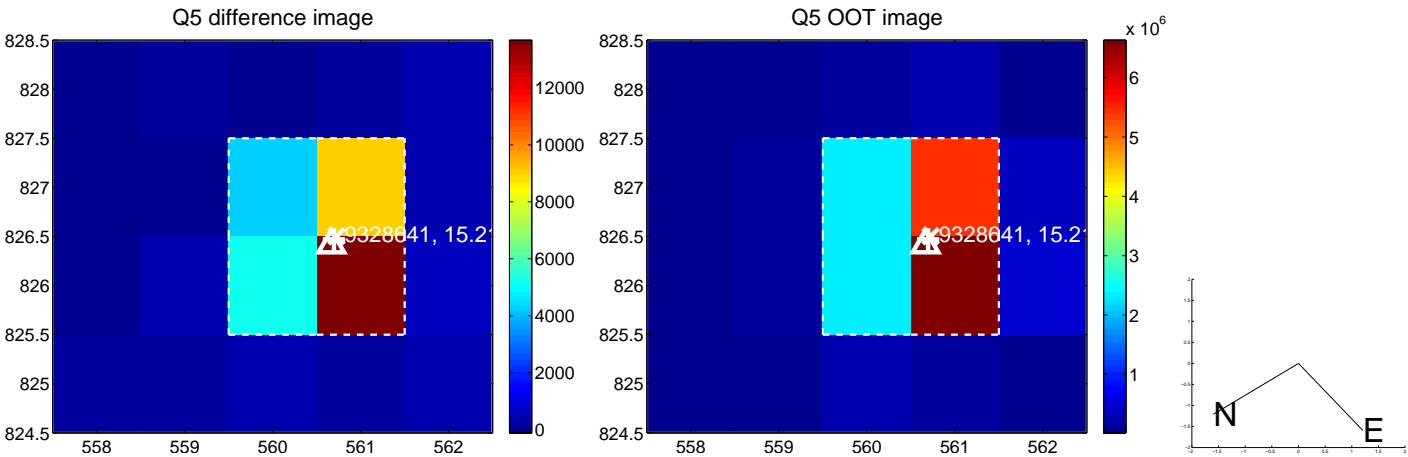


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

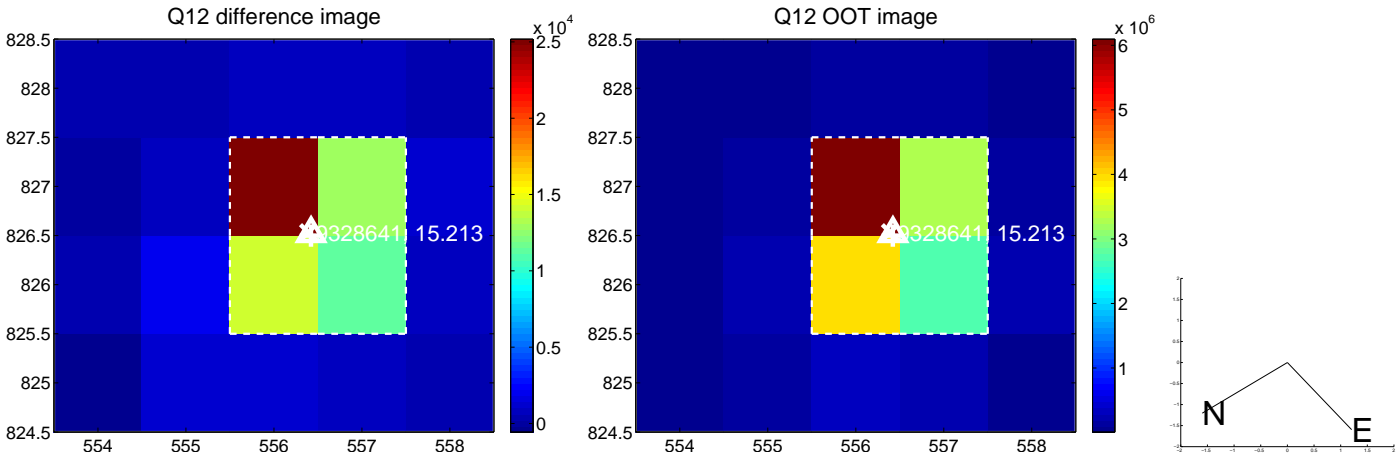
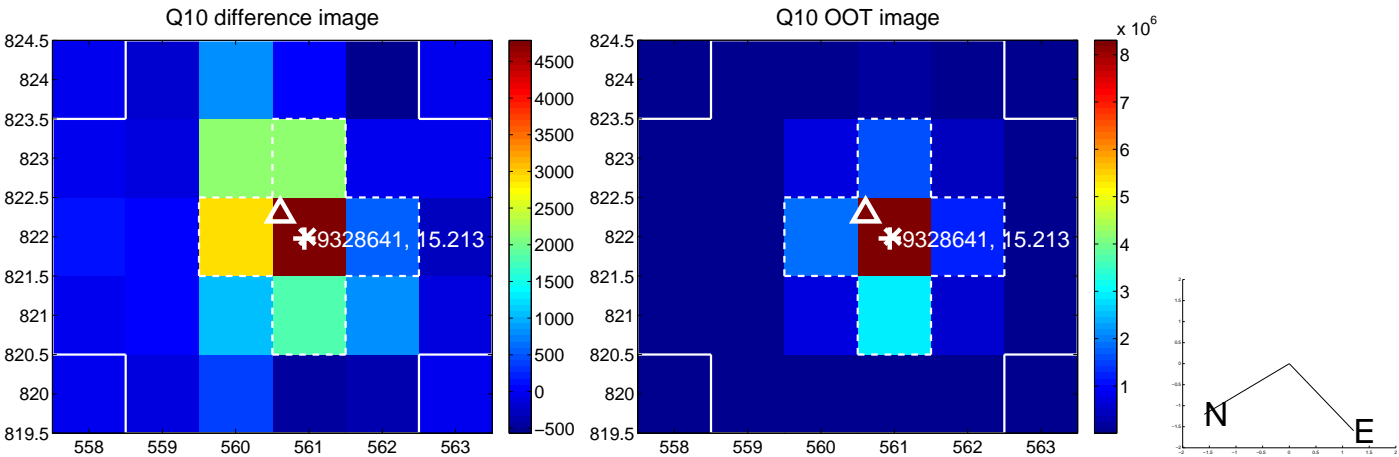
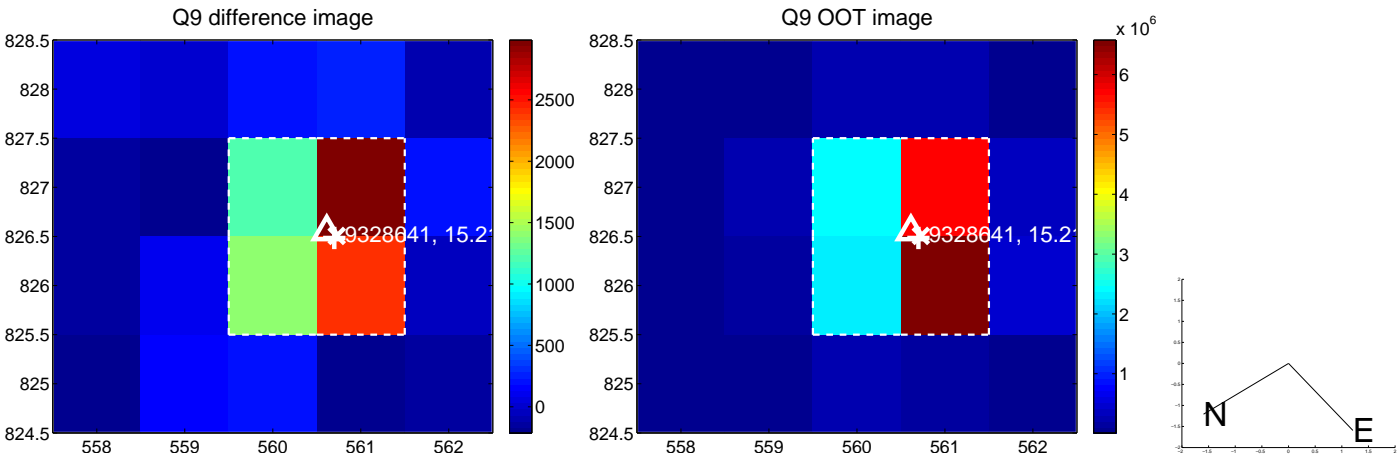
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



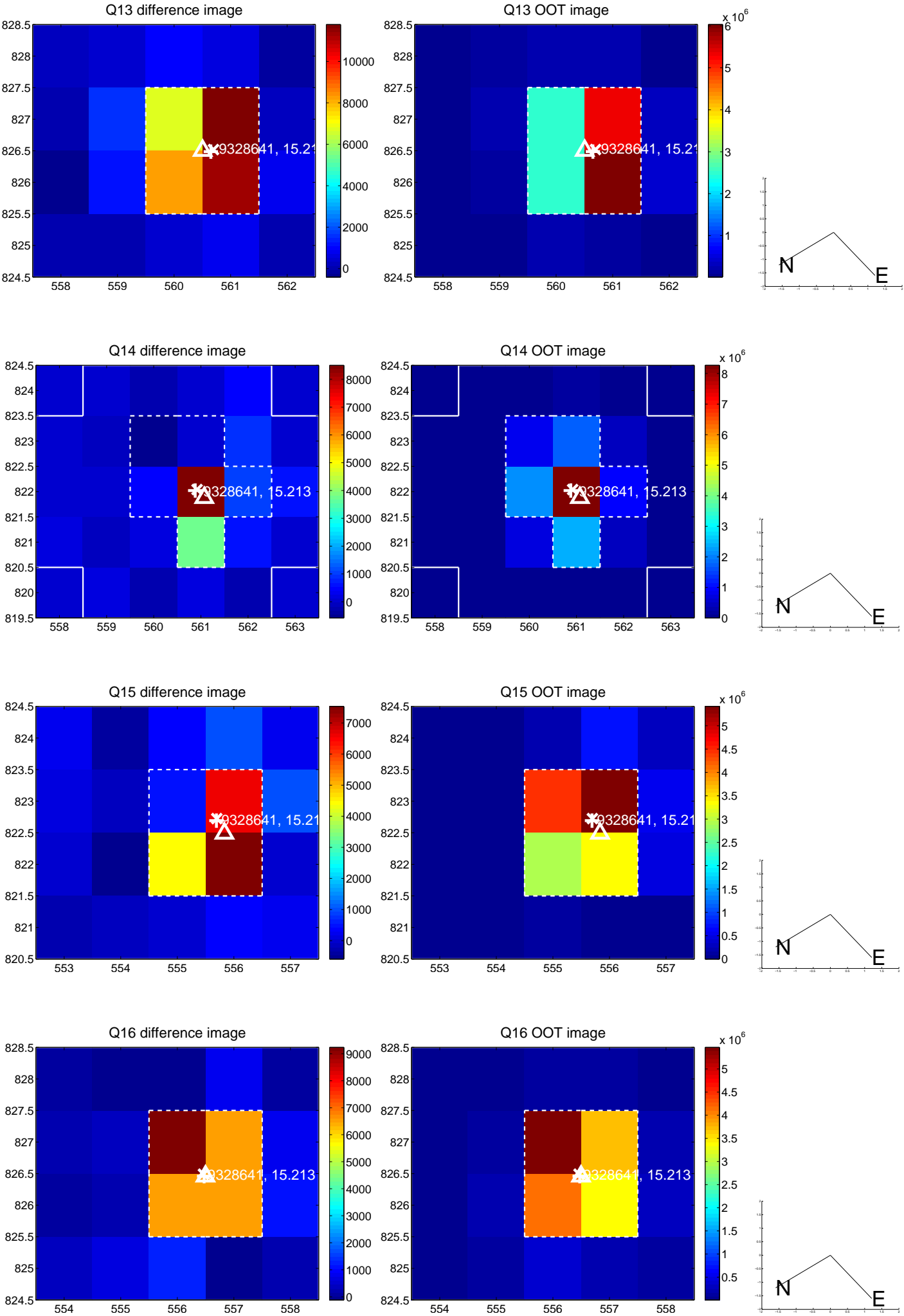
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



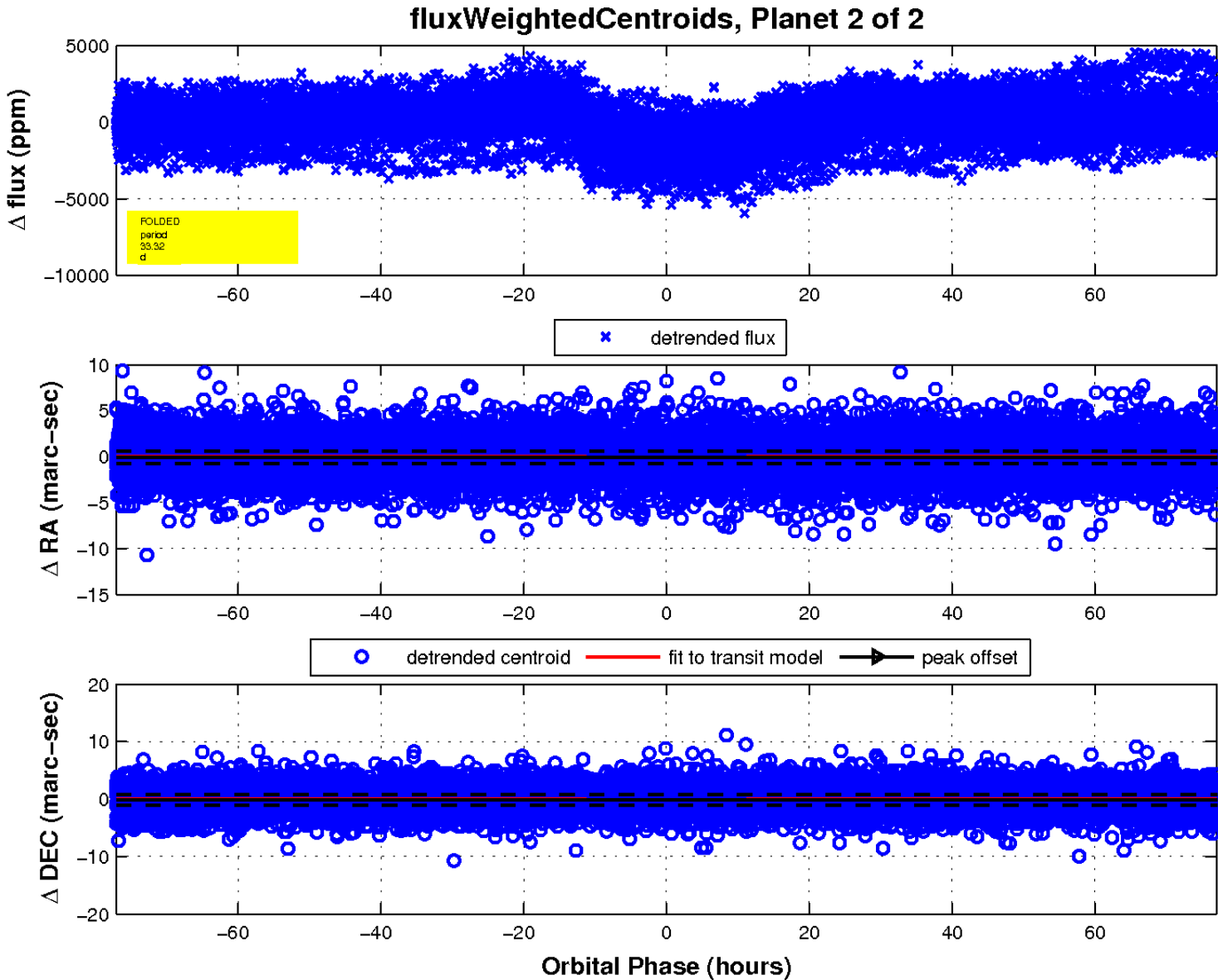
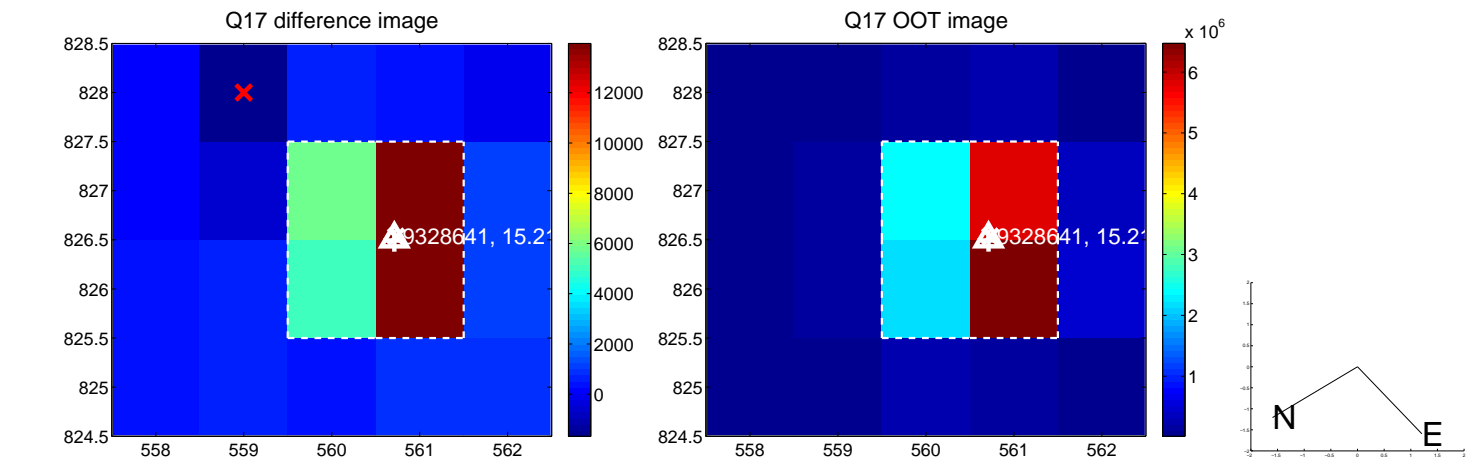
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

