

KIC 008680979

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})
008680979-01	OBS	1891.01	15.955430	143.302290	745.6	4.093	30.5	33.6	0.81	4891	2.44	25.57
008680979-02	OBS	1891.02	8.259778	137.472251	298.1	3.141	14.8	16.9	0.81	4891	1.68	61.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008680979-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008680979-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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

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

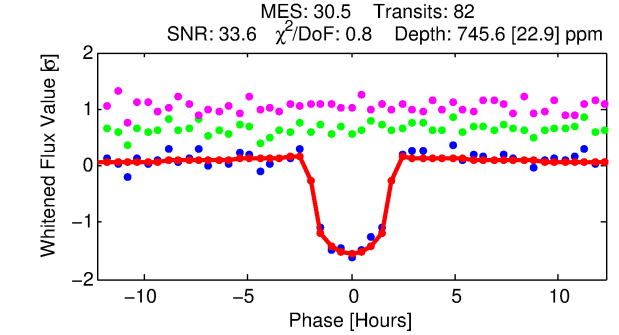
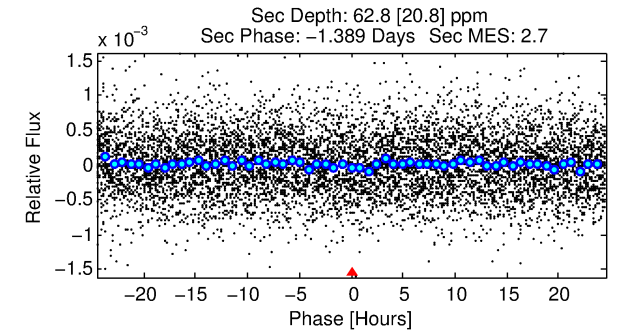
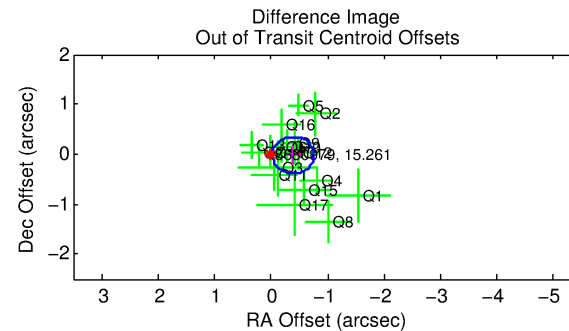
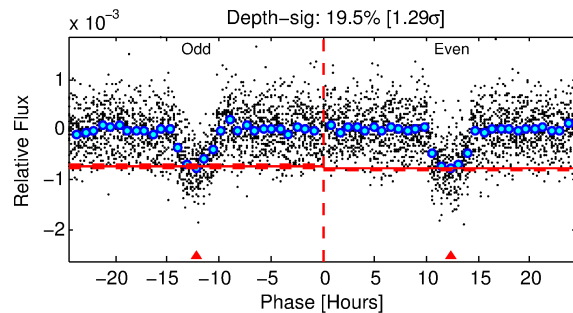
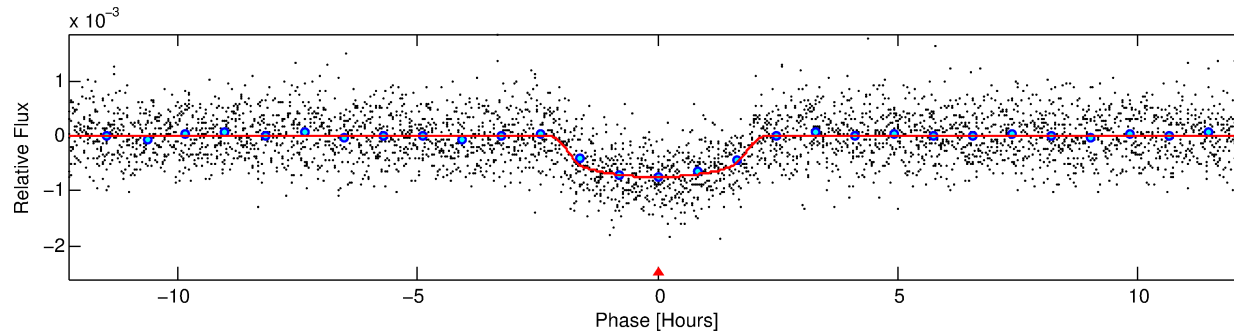
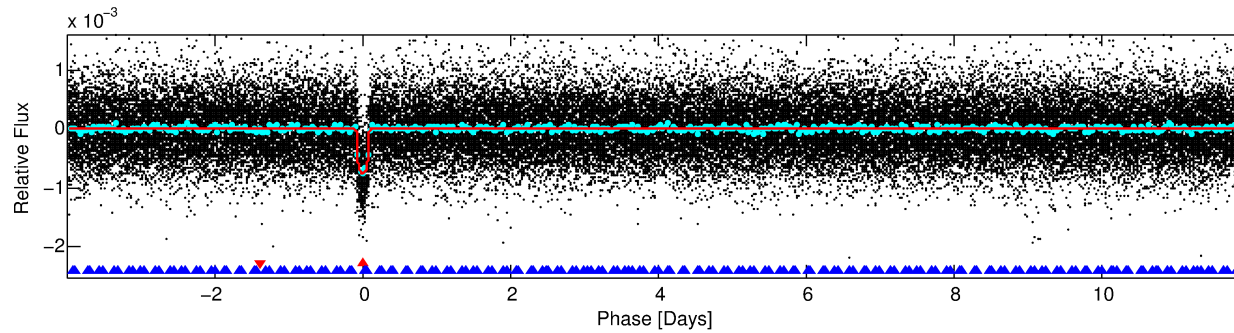
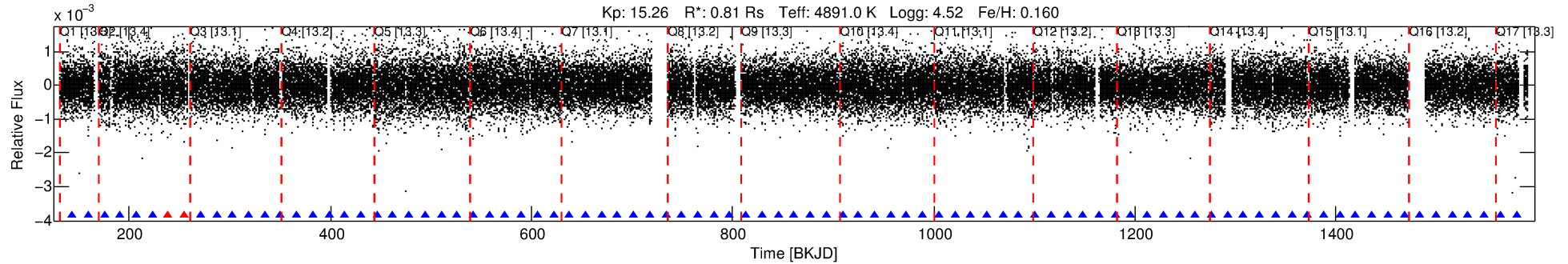
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008680979-01

No Significant Match Found

DV One-Page Summary

KIC: 8680979 Candidate: 1 of 2 Period: 15.955 d
KOI: K01891.01 Name: Kepler-330c Corr: 0.993



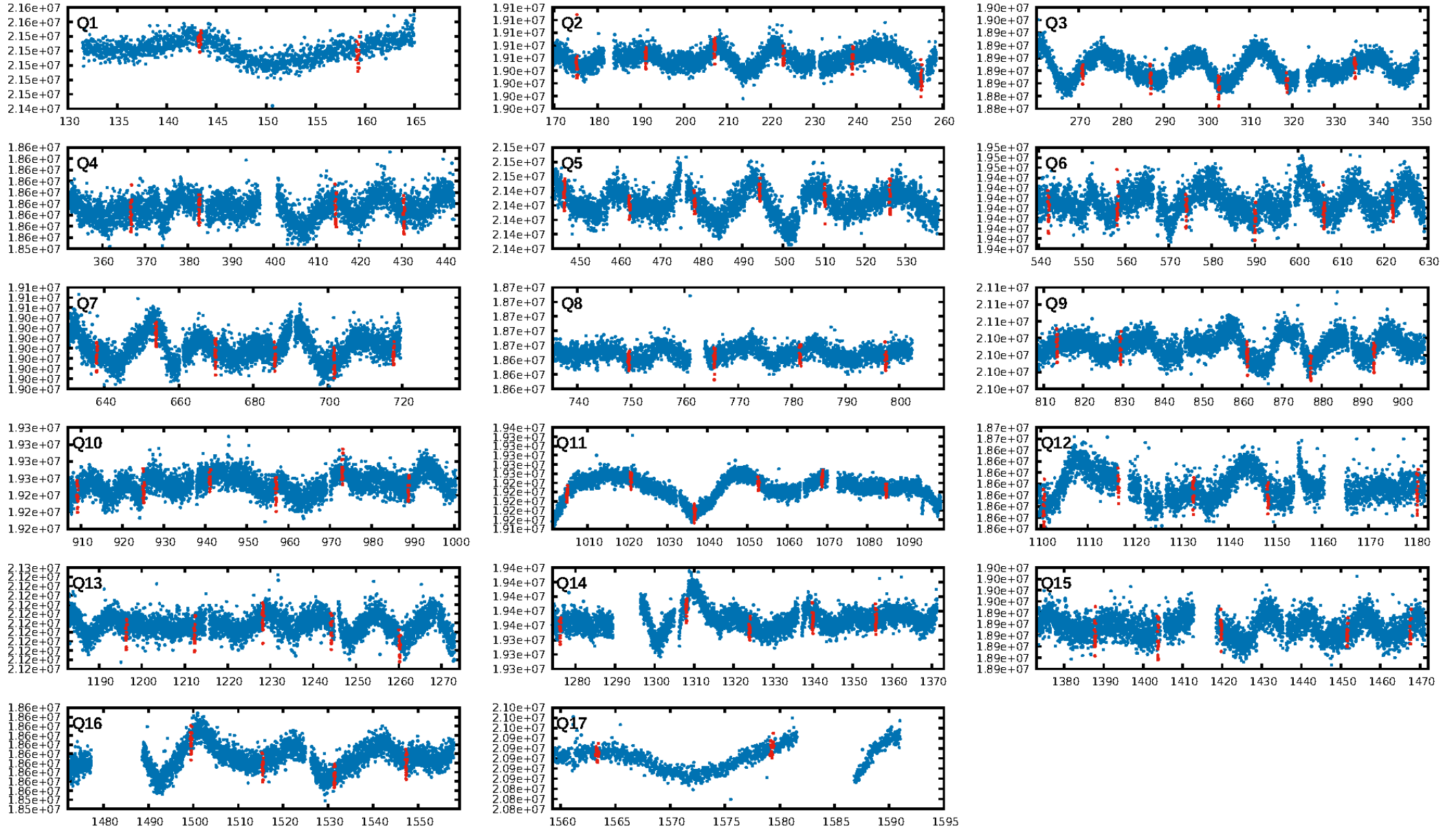
DV Fit Results:

Period = 15.95543 [0.00005] d
Epoch = 143.3023 [0.0026] BKJD
Rp/R* = 0.0277 [0.0068]
a/R* = 20.02 [16.68]
b = 0.78 [0.44]
Seff = 25.57 [3.41]
Teq = 573 [19] K
Rp = 2.44 [0.62] Re
a = 0.1140 [0.0079] AU
Ag = 75.62 [45.44] [1.64 σ]
Teffp = 2614 [389] K [5.25 σ]

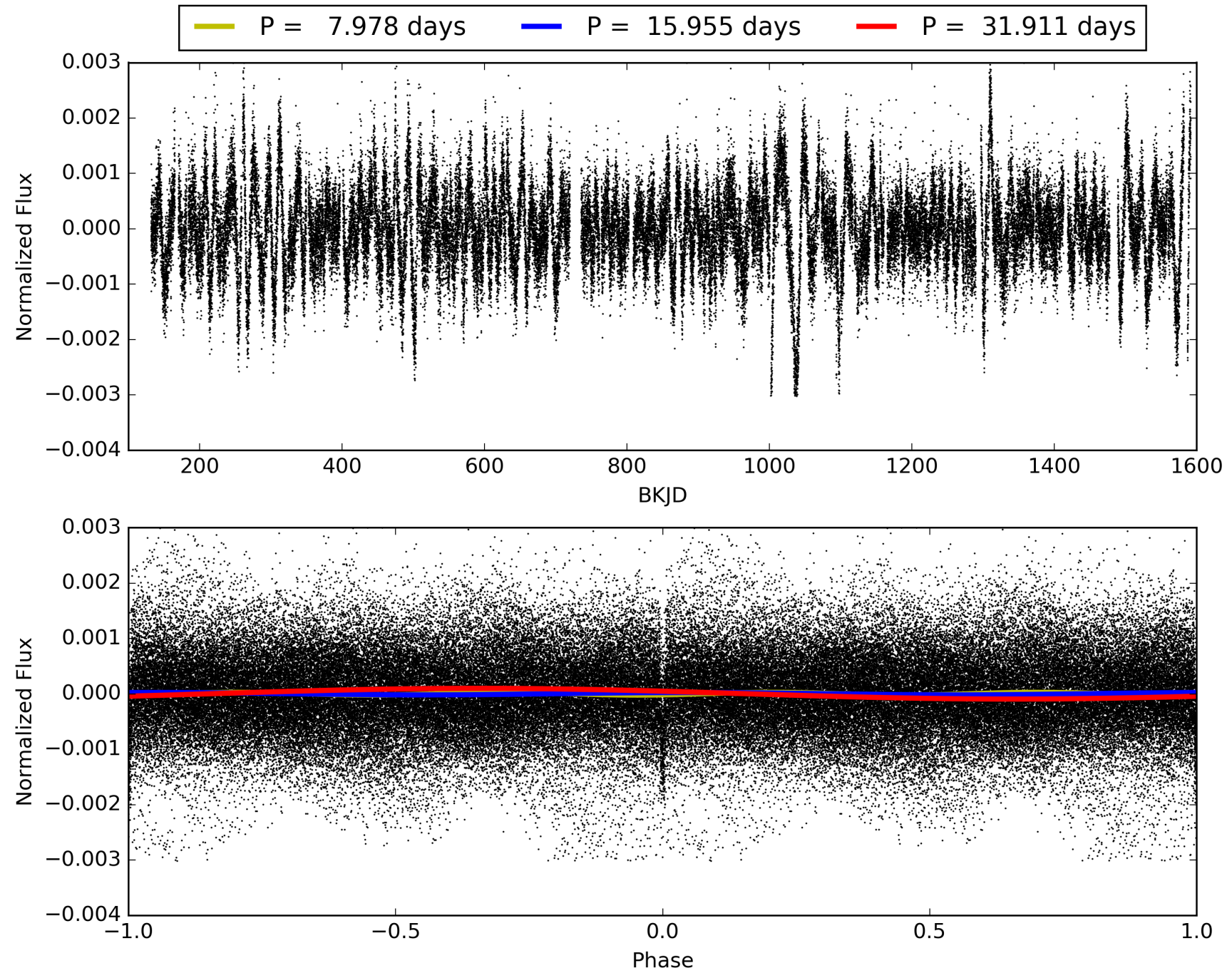
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [35.80 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.57e-190
RollingBand-fgt: 0.97 [76/78]
GhostDiagnostic-chr: 3.51
Centroid-sig: 0.1%
Centroid-so: 0.886 arcsec [2.28 σ]
OotOffset-rm: 0.393 arcsec [3.19 σ]
KicOffset-rm: 0.282 arcsec [1.95 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008680979-01, PDC Light Curves

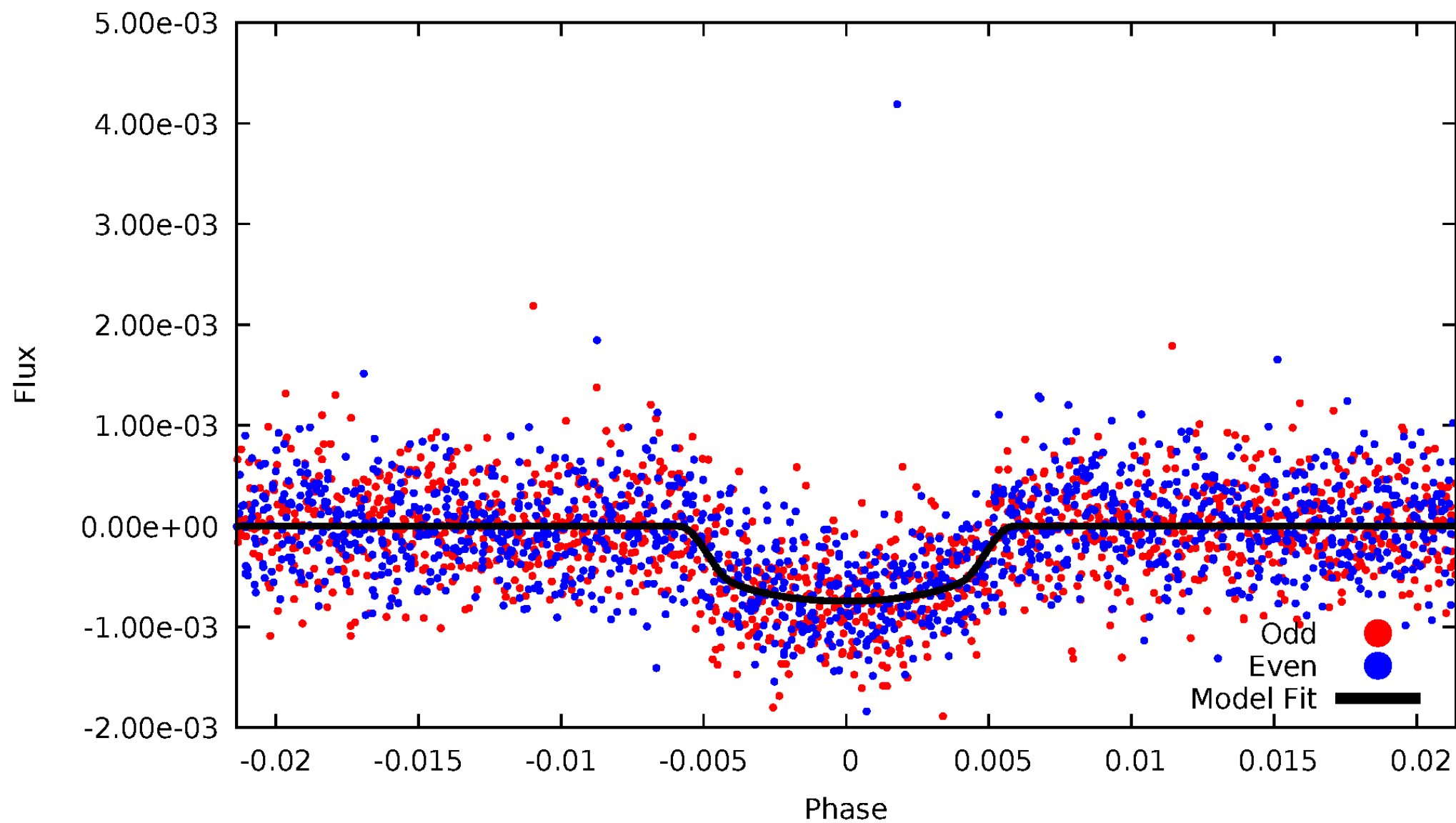


TCE 008680979-01



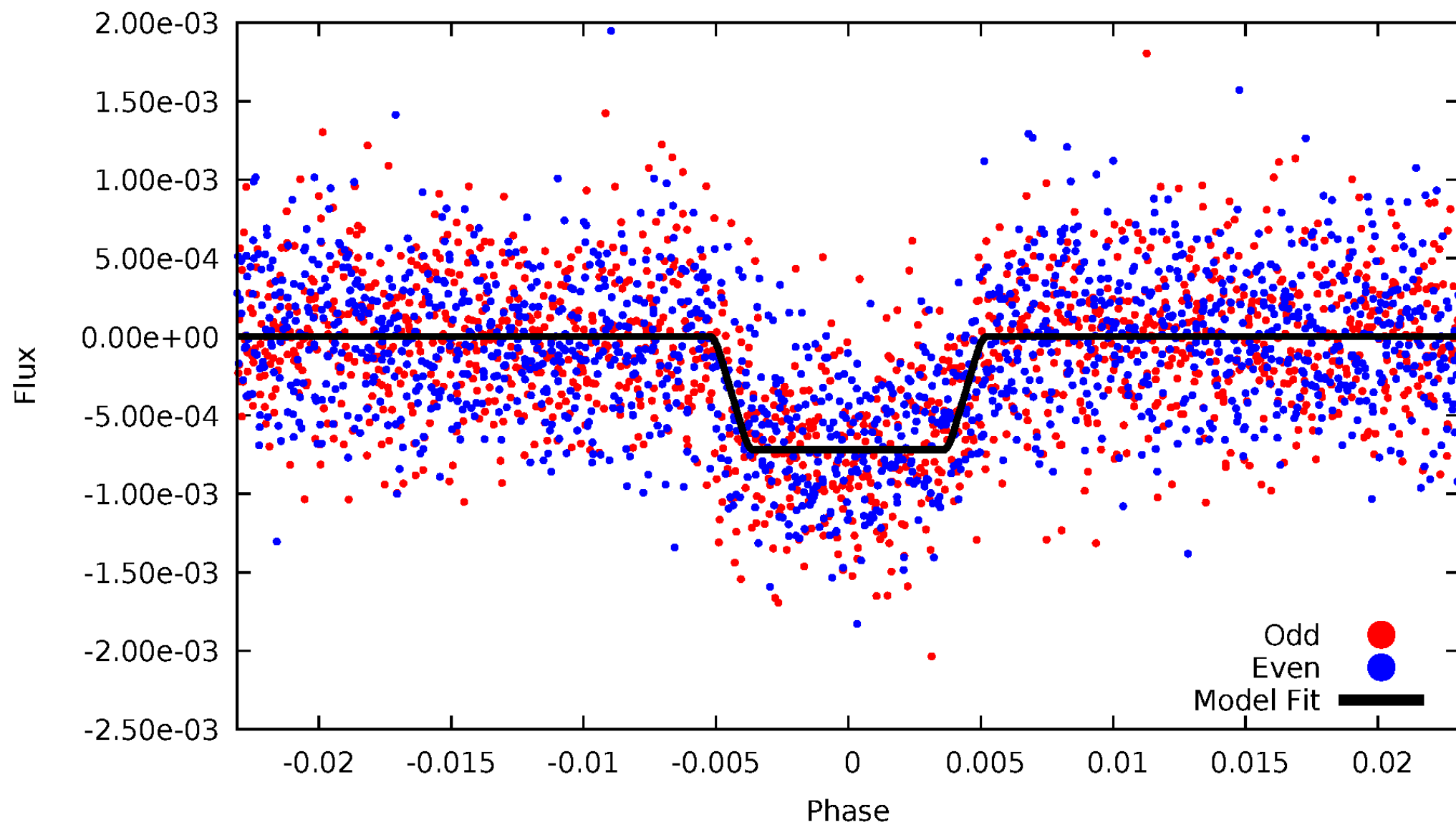
DV Odd/Even

TCE 008680979-01



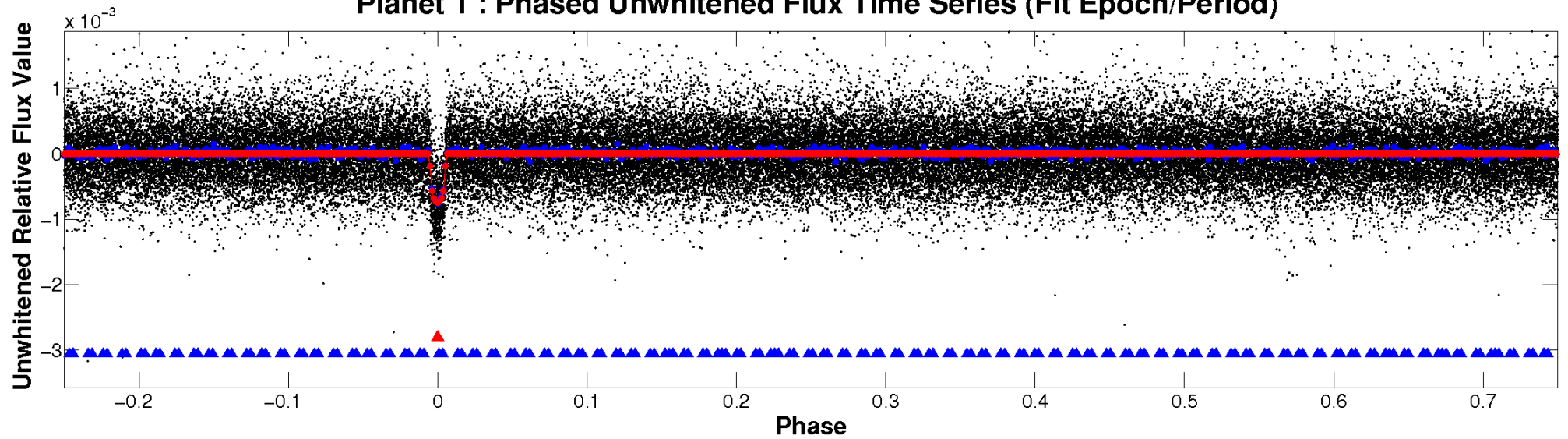
ALT Odd/Even

TCE 008680979-01

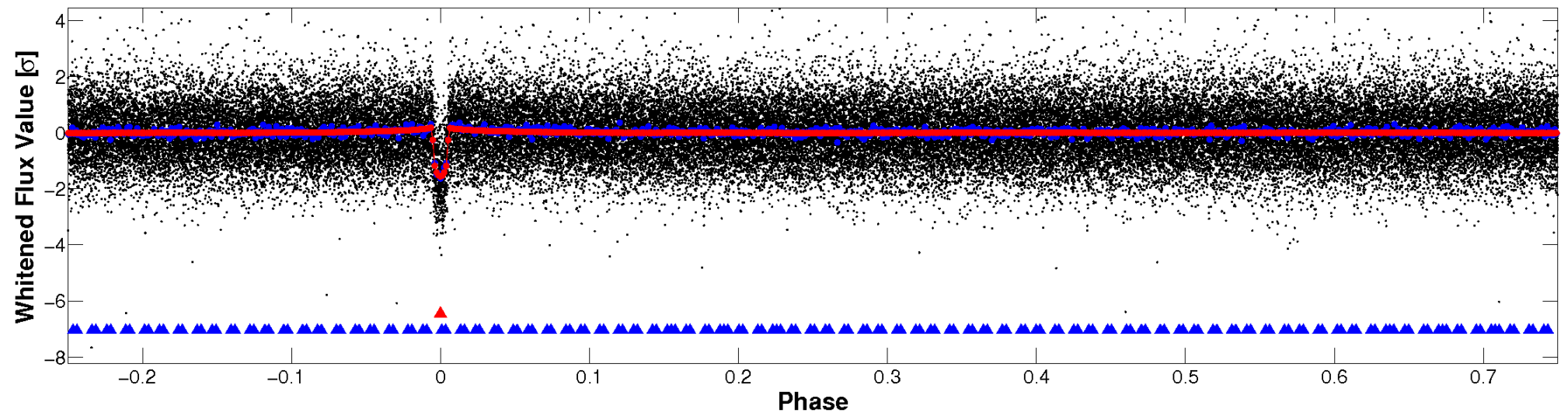


Non-Whitened Vs. Whitened Light Curve

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

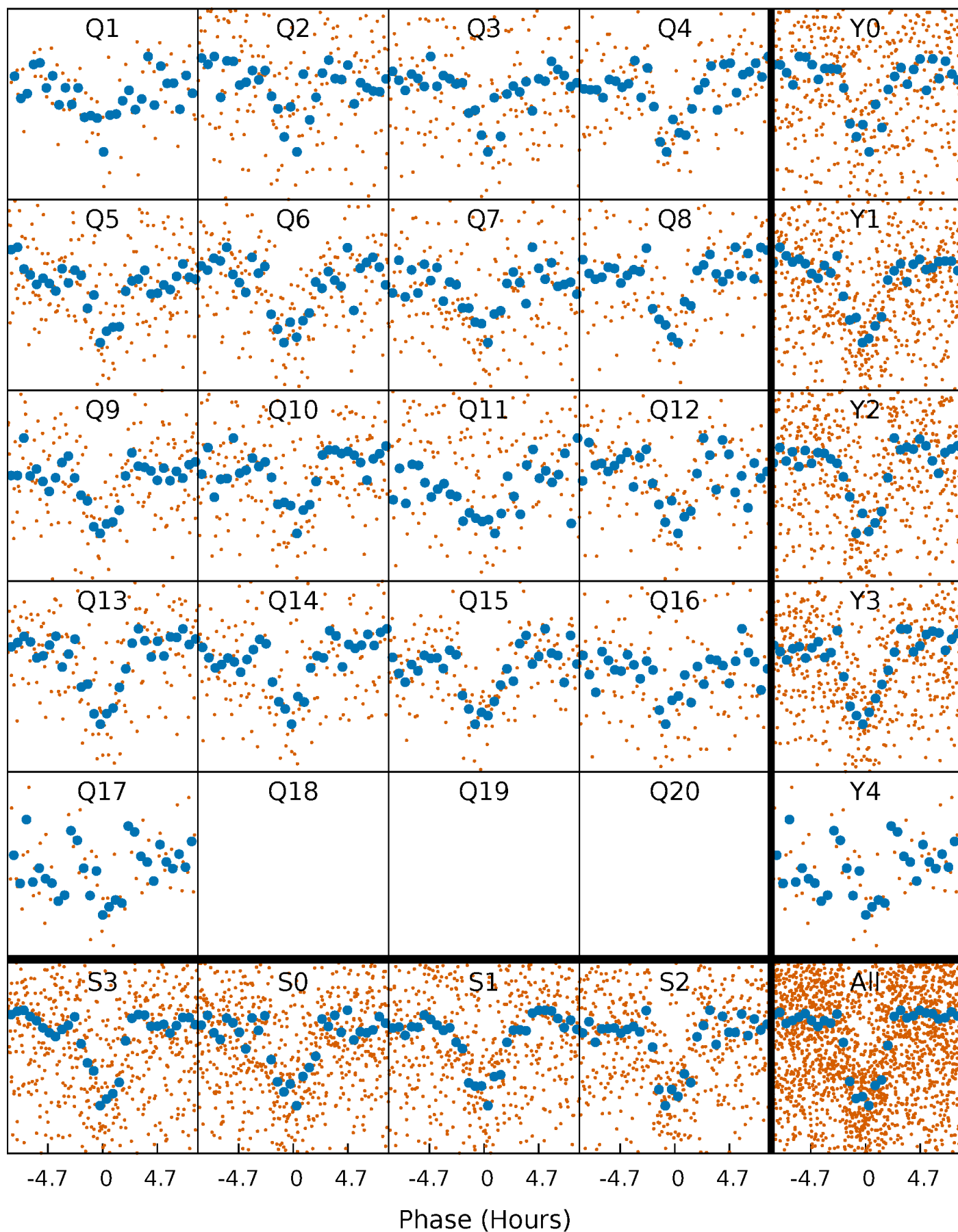


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



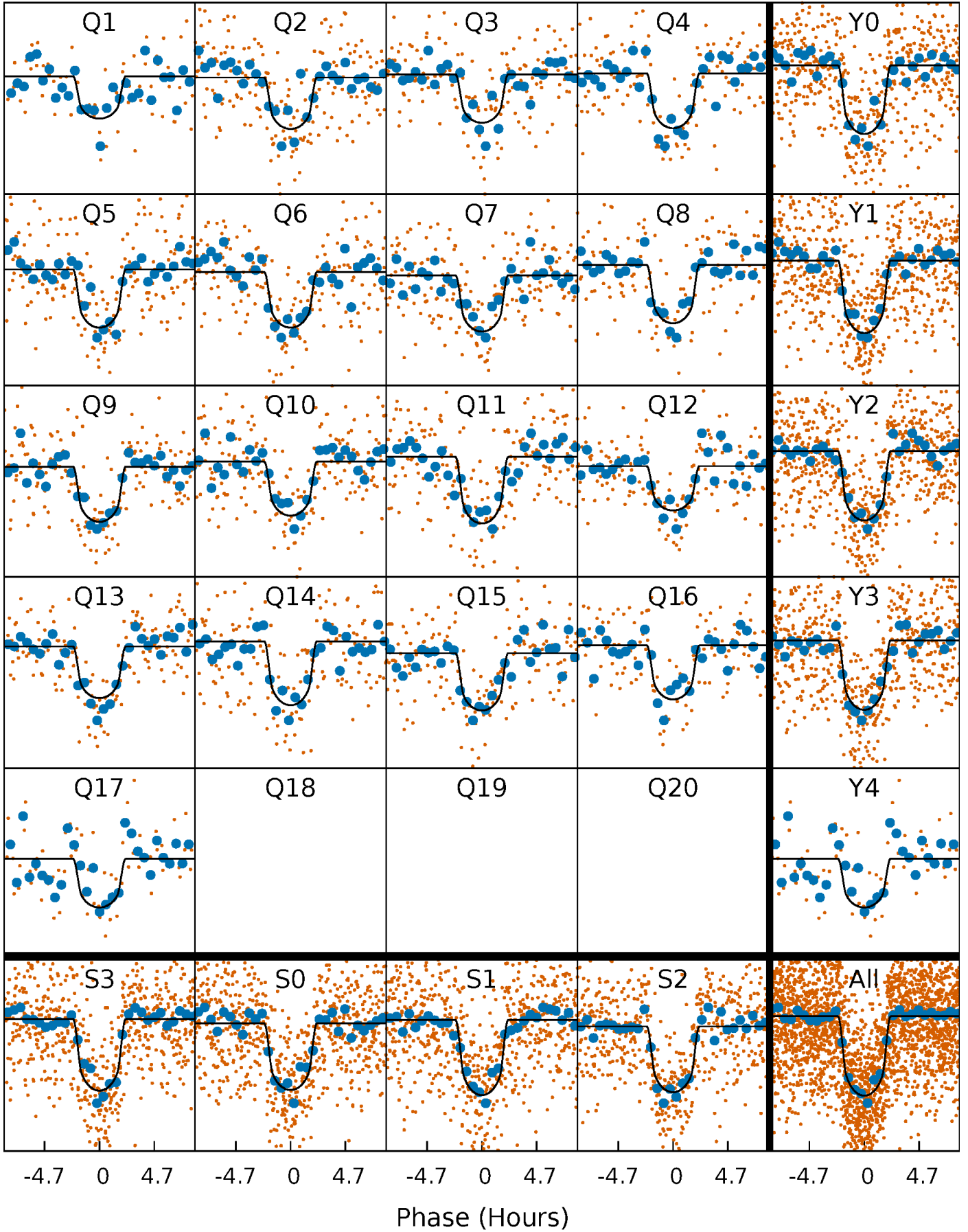
PDC Quarter-Phased Transit Curves

TCE 008680979-01 P= 15.955430 Days $T_0=143.302290$ (BKJD)



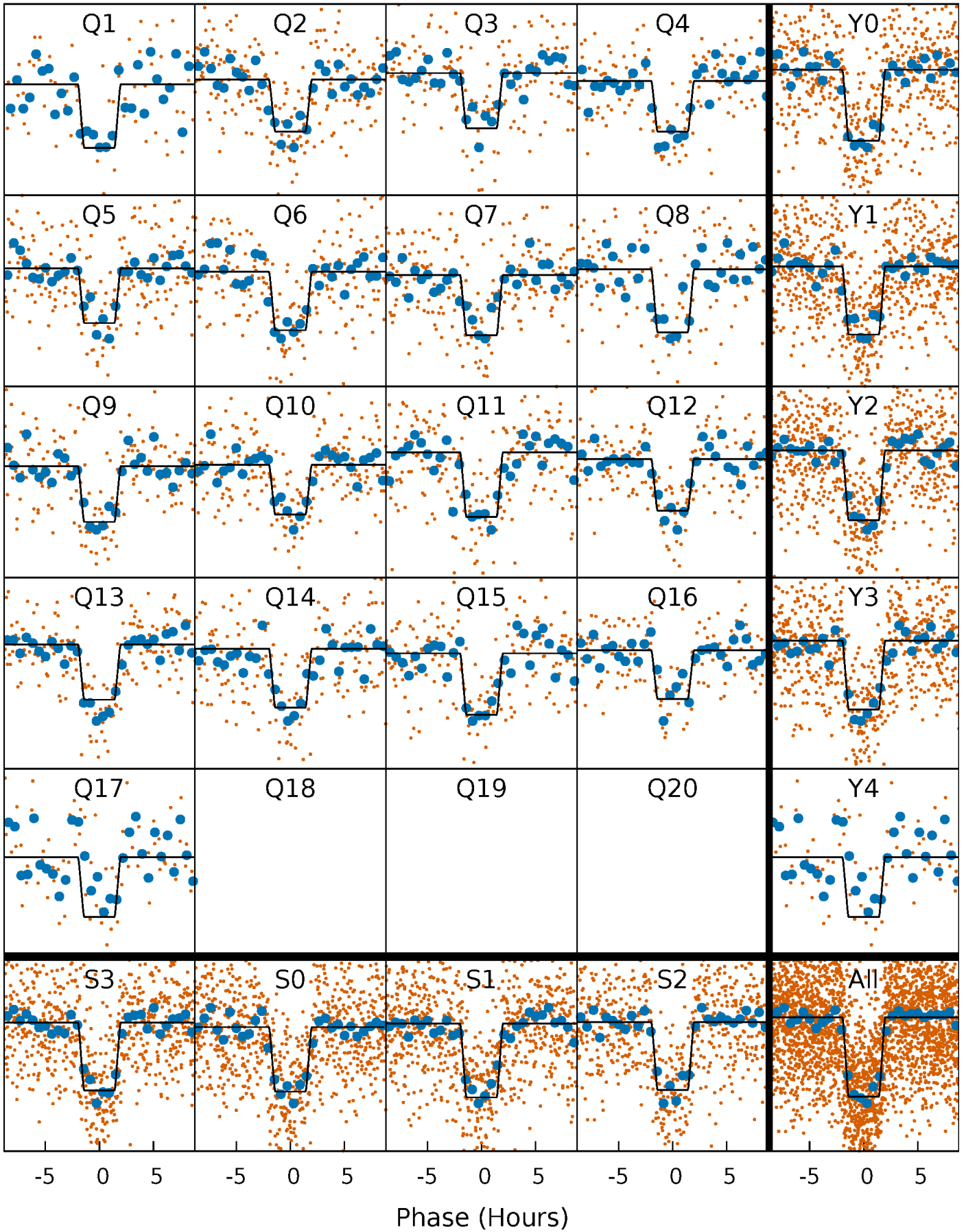
DV Quarter-Phased Transit Curves

TCE 008680979-01 P= 15.955430 Days $T_0=143.302290$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

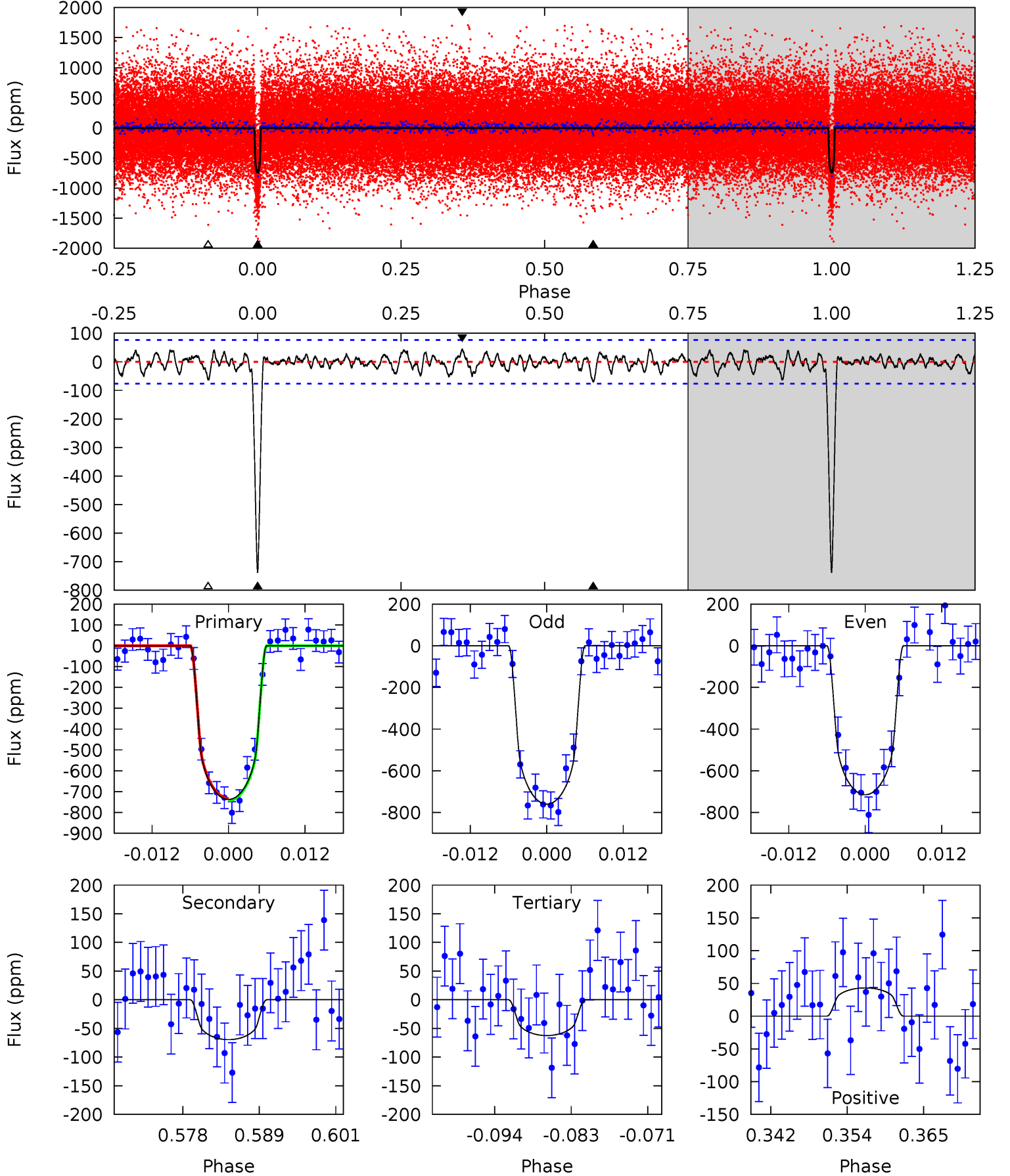
TCE 008680979-01 P= 15.955260 Days $T_0=143.310152$ (BKJD)



DV Model-Shift Uniqueness Test

008680979-01, $P = 15.955430$ Days, $E = 127.346860$ Days

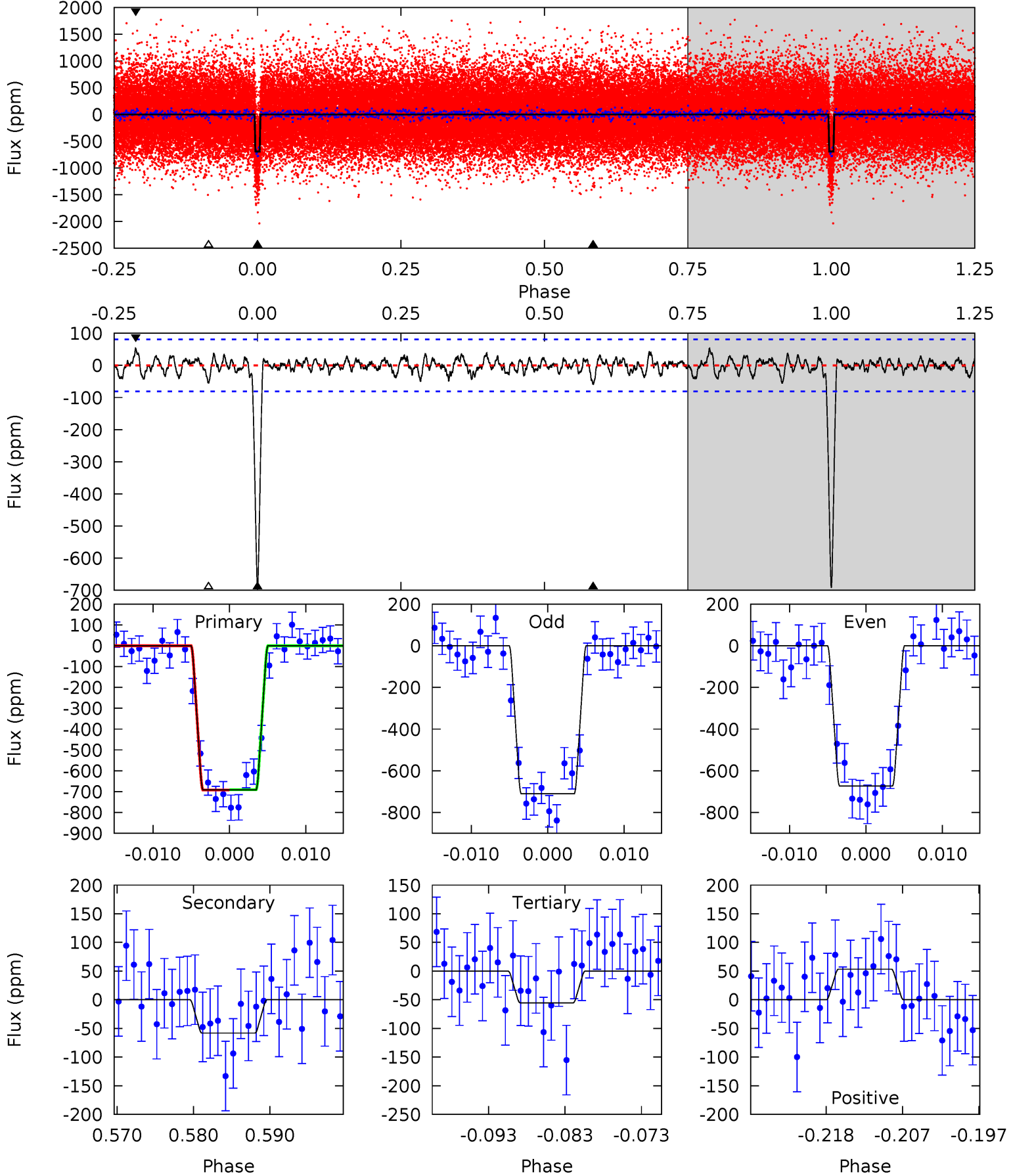
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.2	4.54	4.08	2.81	4.99	2.52	1.27	44.1	45.3	0.47	1.73	1.48	0.97	0.06	0.33



Alt Model-Shift Uniqueness Test

008680979-01, P = 15.955260 Days, E = 127.354892 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.9	3.61	3.43	3.31	5.02	2.56	1.06	39.5	39.6	0.18	0.30	1.18	1.00	0.07	0.05



Stellar Parameters For KIC 008680979

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4891^{+78}_{-87}	$4.516^{+0.067}_{-0.018}$	$0.160^{+0.150}_{-0.150}$	$0.805^{+0.028}_{-0.056}$	$0.776^{+0.048}_{-0.028}$	$2.095^{+0.531}_{-0.152}$
	+2%/-2%	+1%/-0%	+94%/-94%	+3%/-7%	+6%/-4%	+25%/-7%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008680979-01 / KOI 1891.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-70 ± 15	$2.41^{+0.60}_{-0.61}$	796^{+17}_{-19}	3204^{+326}_{-226}	86^{+73}_{-35}
Alt.	-58 ± 16	$2.33^{+0.57}_{-0.61}$	795^{+18}_{-19}	3158^{+333}_{-251}	76^{+78}_{-32}

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

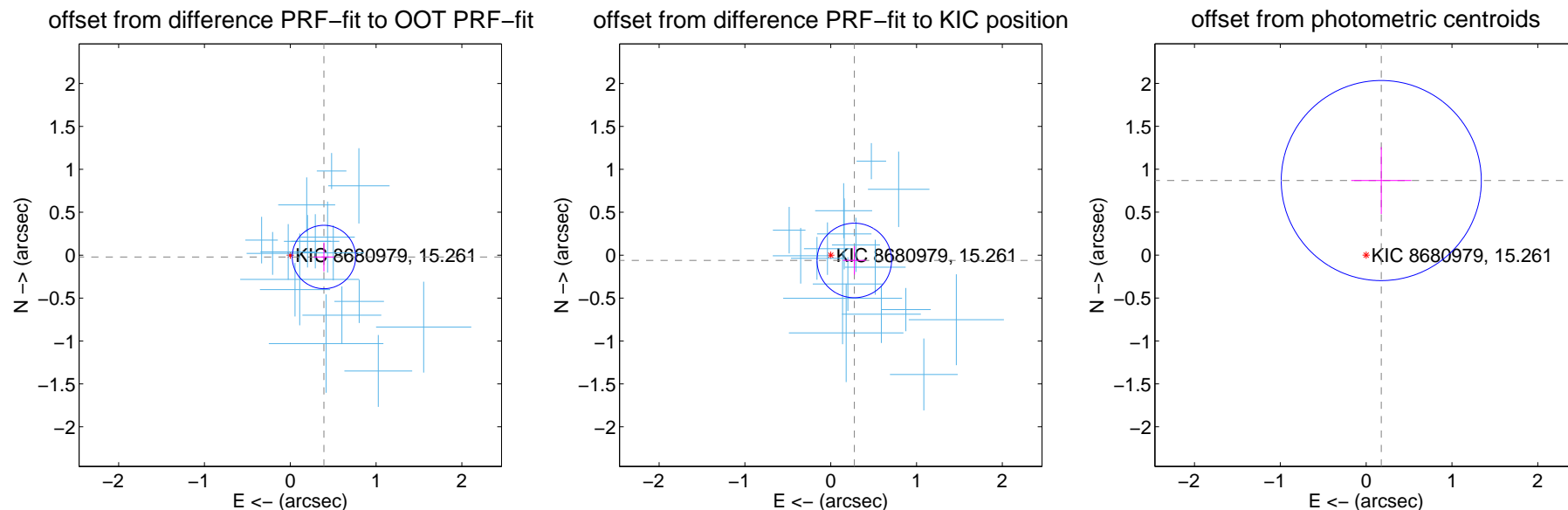
DV Centroid Data

Supplemental centroid analysis for 008680979-01. Kepler magnitude: 15.26. Transit SNR 33.56

There are 17 quarters with good PRF difference image offsets

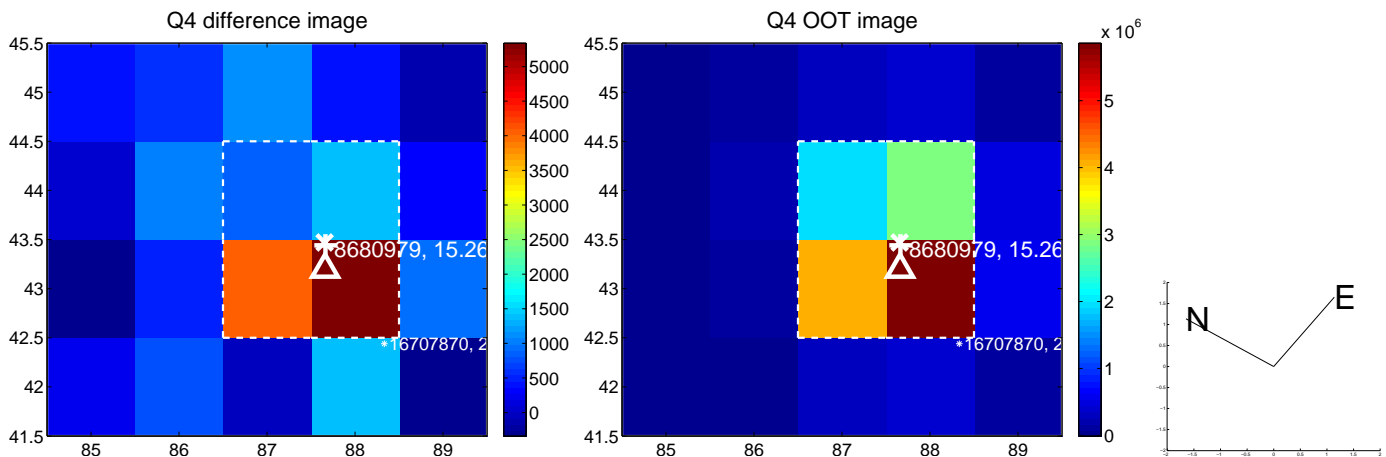
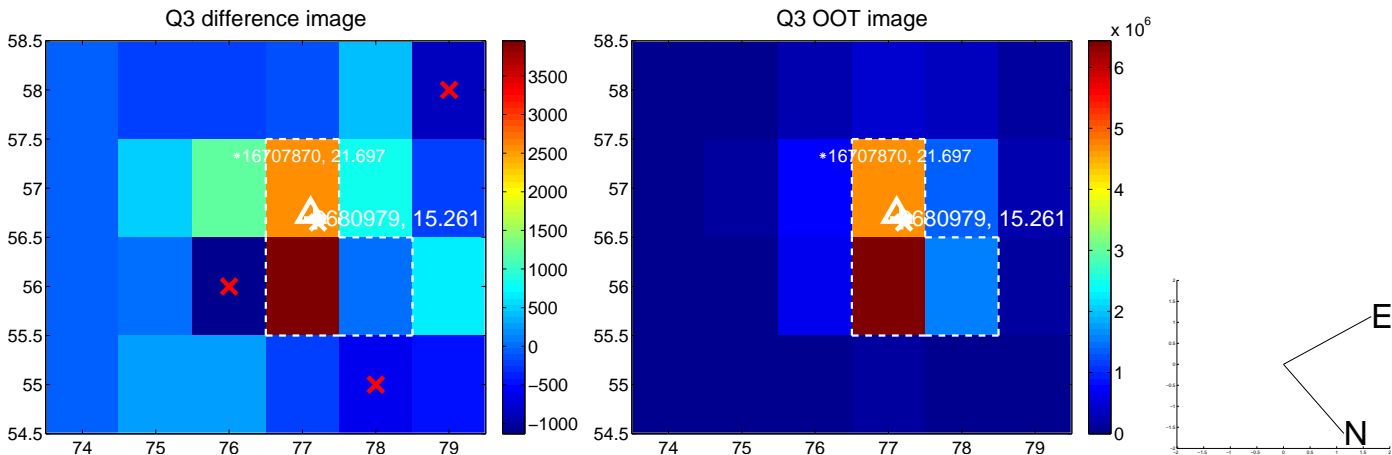
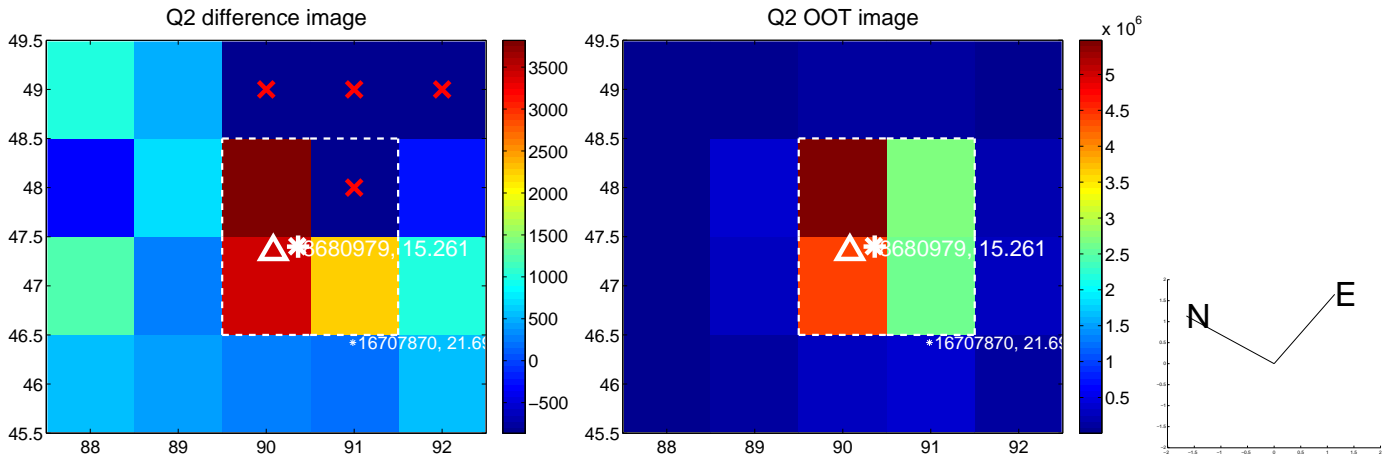
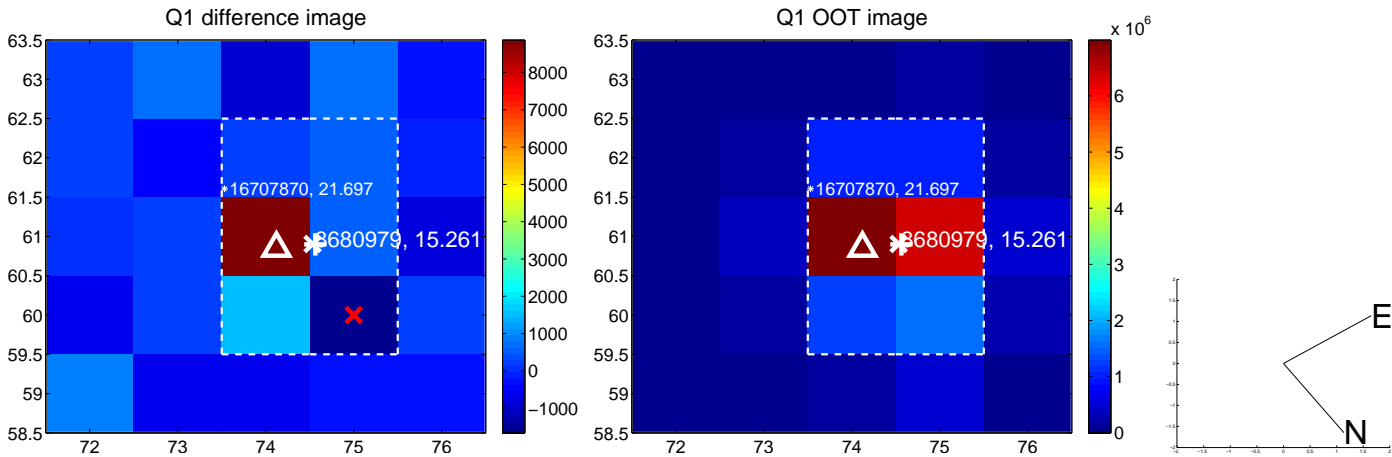
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.393 ± 0.123	3.19	-0.392 ± 0.120	-0.021 ± 0.168
PRF-fit source offset from KIC position	0.282 ± 0.145	1.95	-0.275 ± 0.133	-0.062 ± 0.165
photometric centroid source offset	0.89 ± 0.39	2.28	-0.18 ± 0.35	0.87 ± 0.39

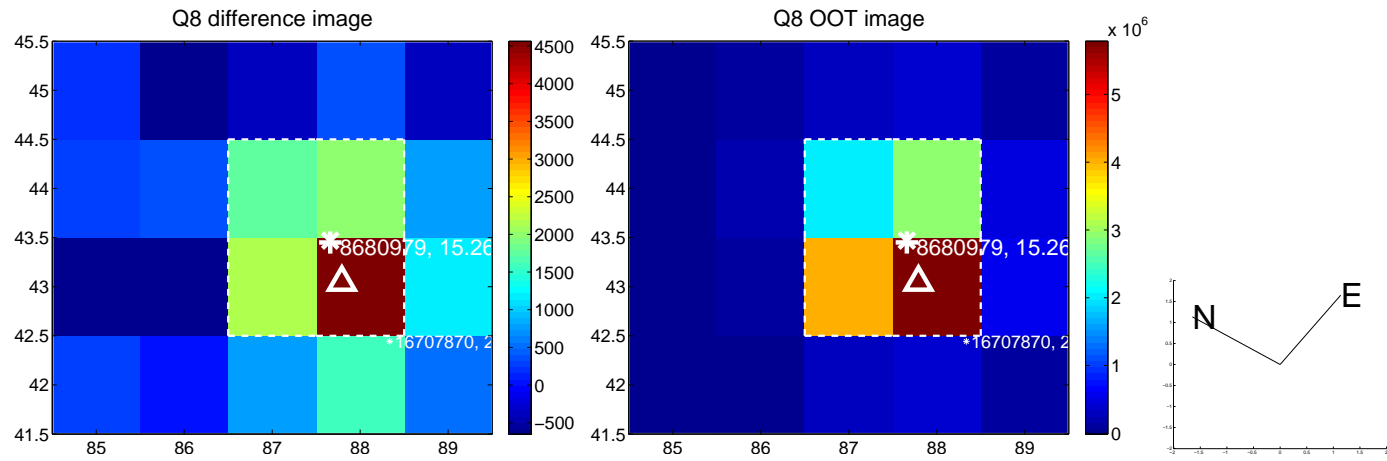
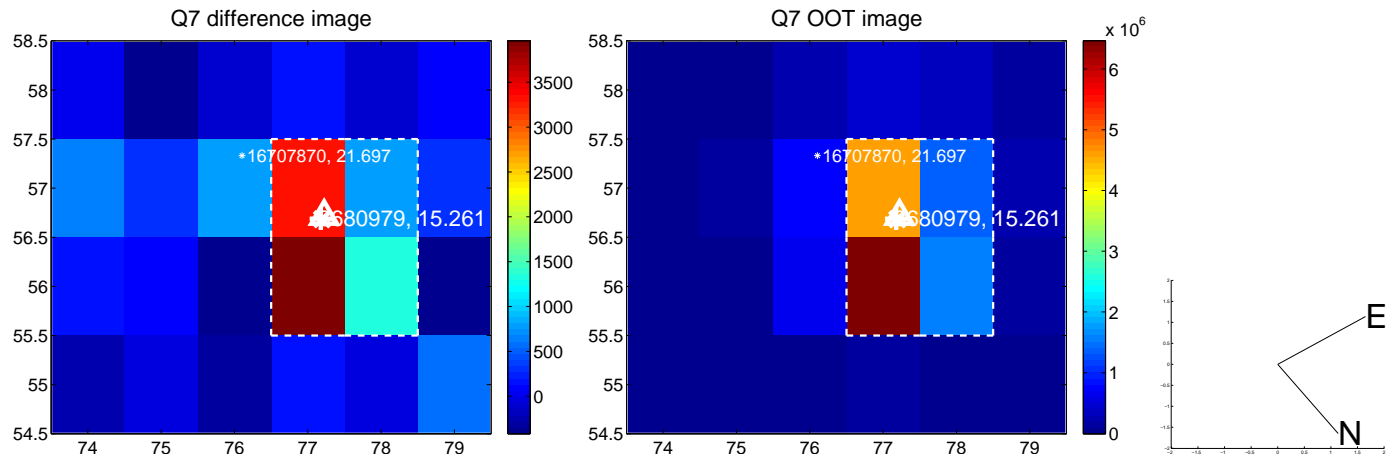
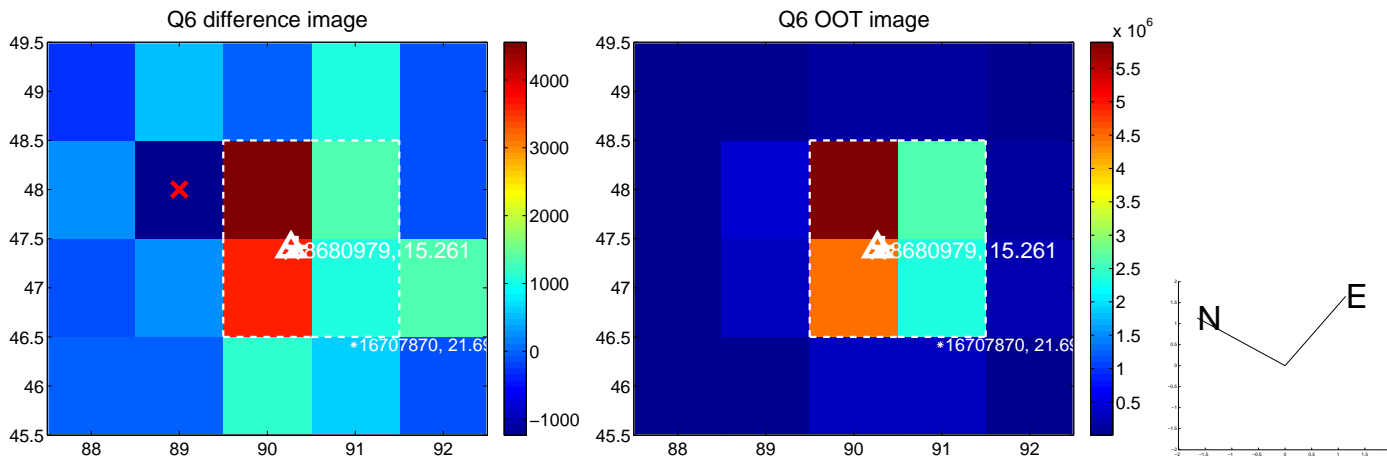
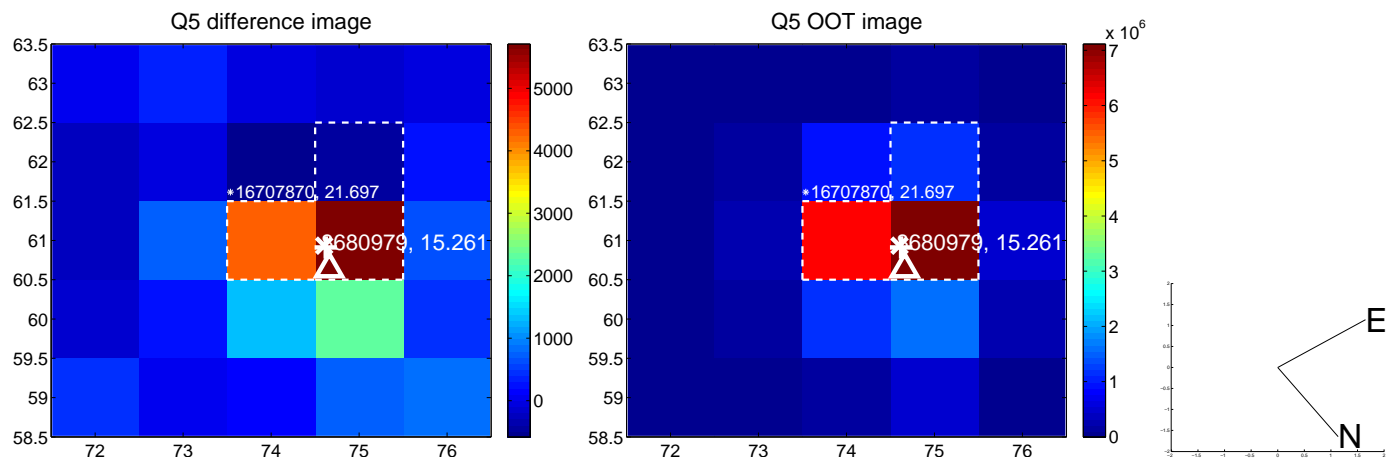


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

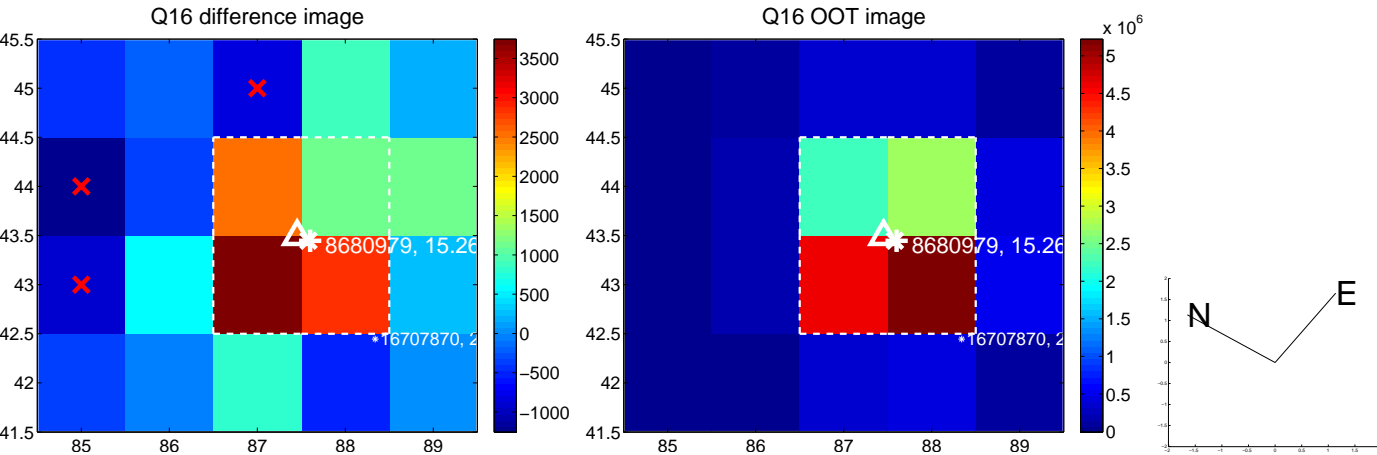
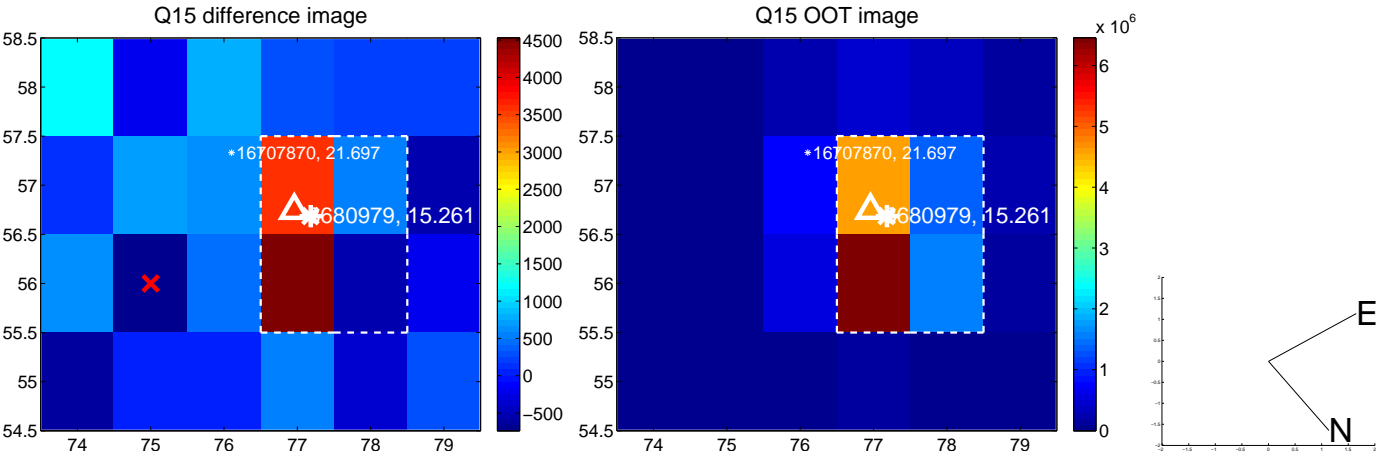
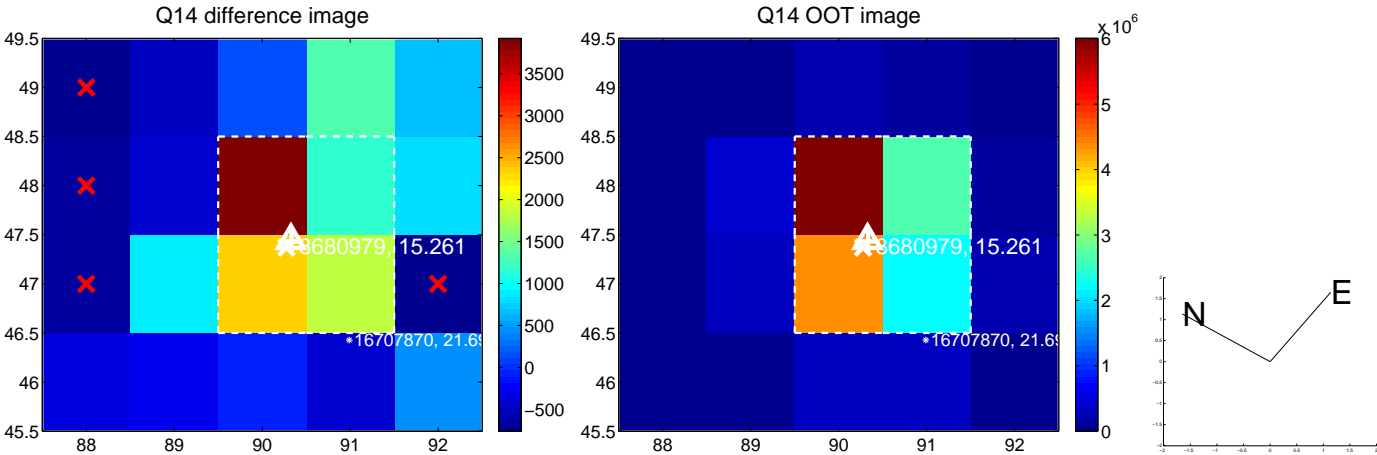
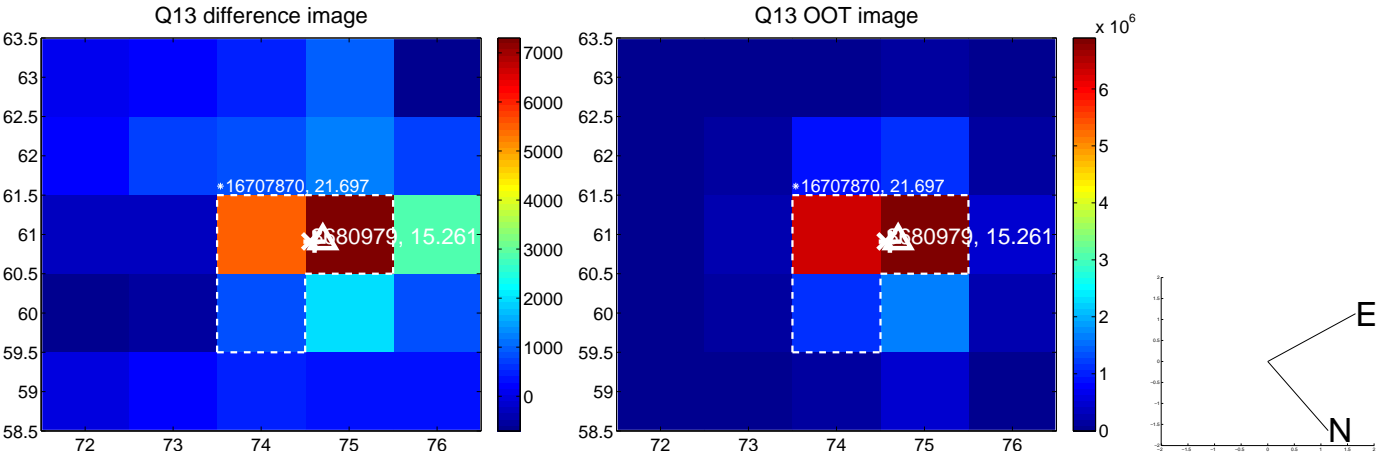
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



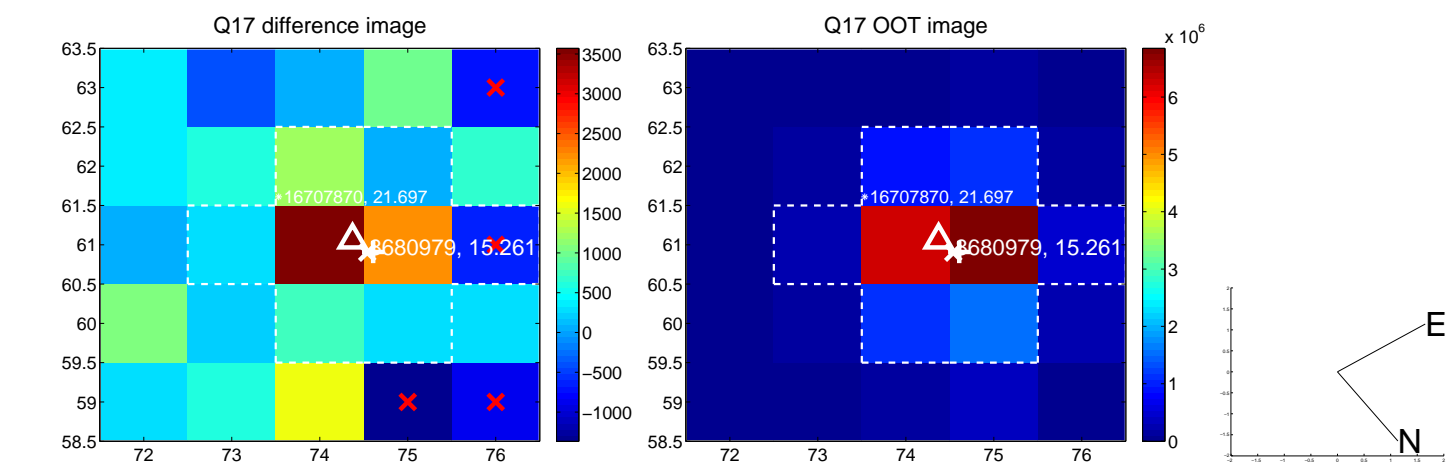
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



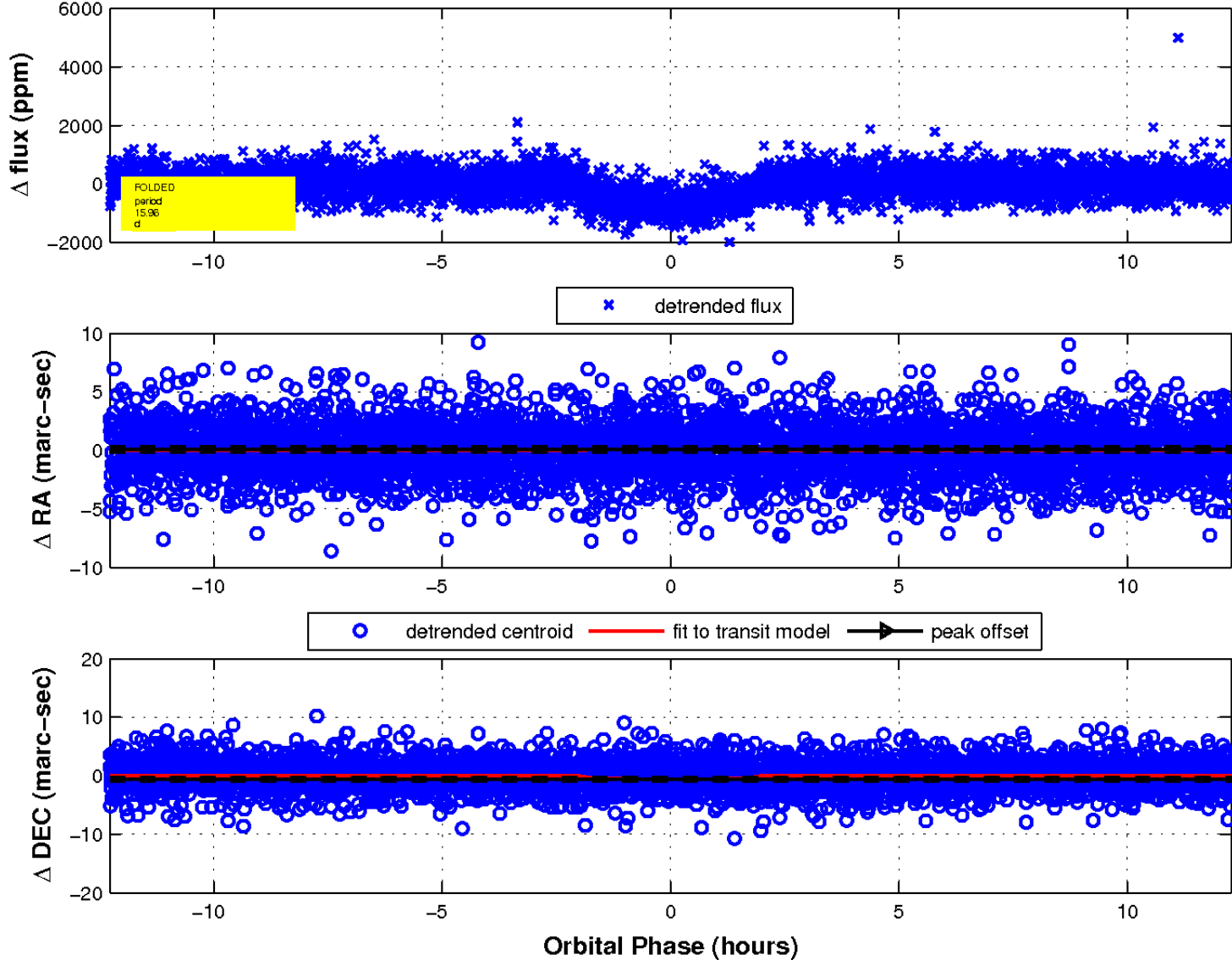
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

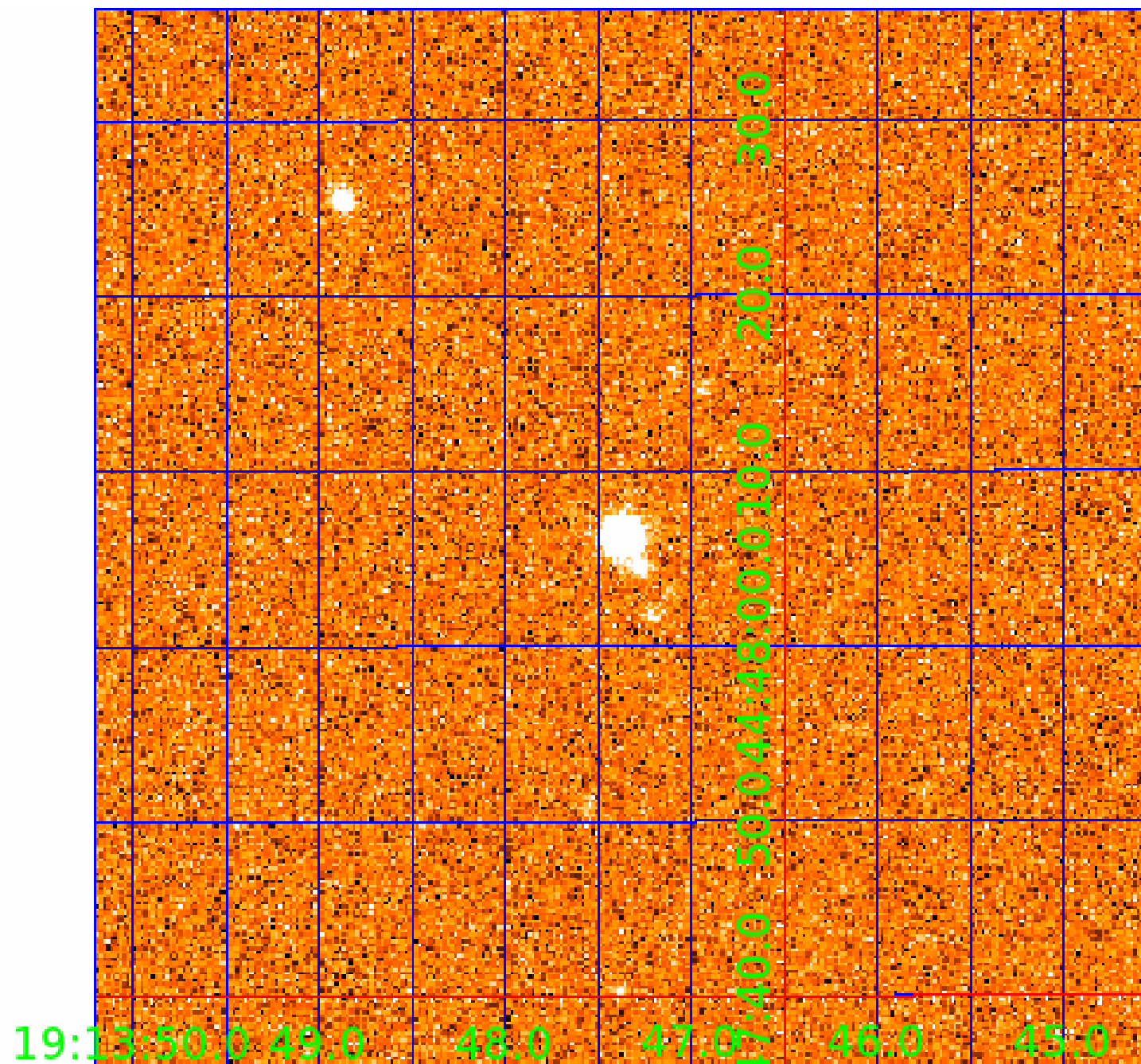


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008680979

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})
008680979-01	OBS	1891.01	15.955430	143.302290	745.6	4.093	30.5	33.6	0.81	4891	2.44	25.57
008680979-02	OBS	1891.02	8.259778	137.472251	298.1	3.141	14.8	16.9	0.81	4891	1.68	61.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008680979-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008680979-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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

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

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

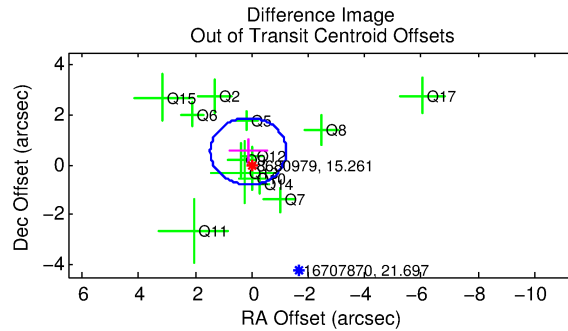
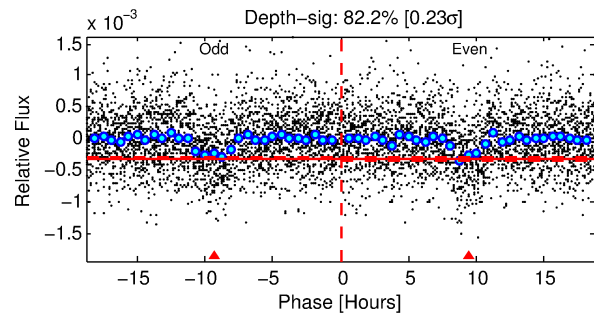
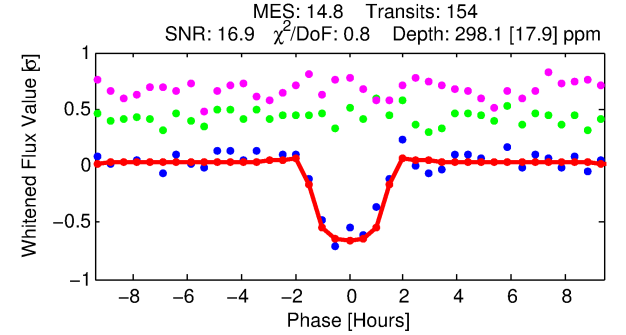
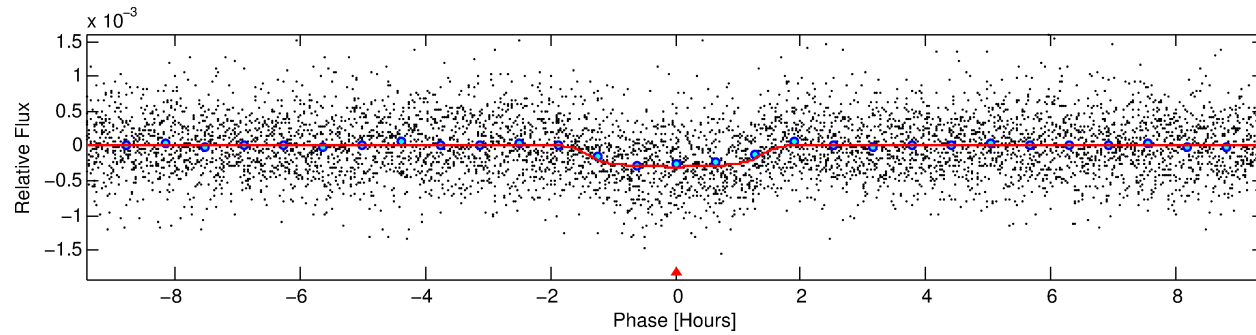
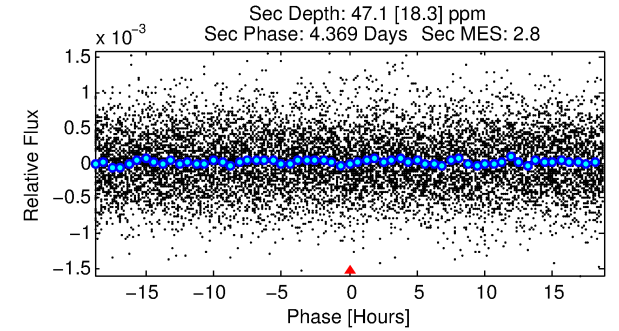
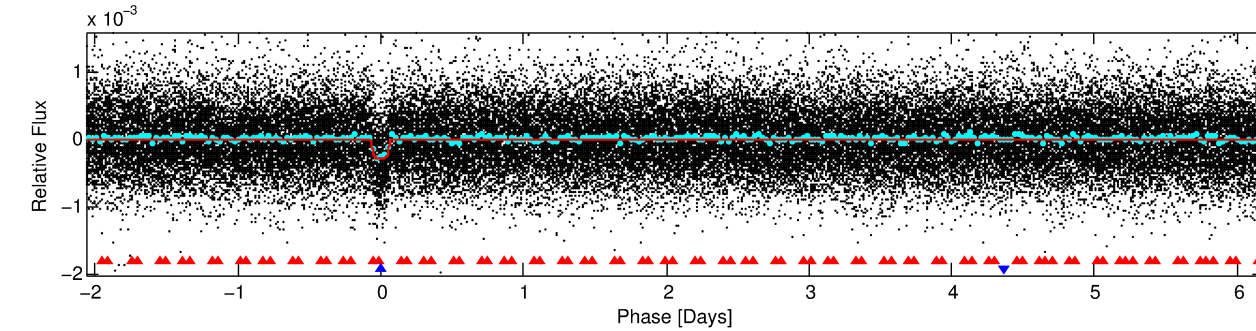
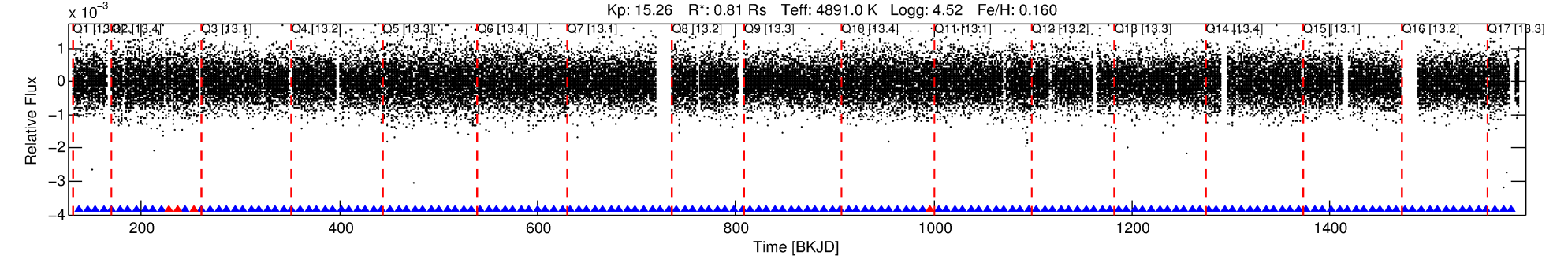
Ephemeris Match Information For 008680979-02

No Significant Match Found

DV One-Page Summary

KIC: 8680979 Candidate: 2 of 2 Period: 8.260 d
KOI: K01891.02 Name: Kepler-330b Corr: 0.975

Kp: 15.26 R*: 0.81 Rs Teff: 4891.0 K Logg: 4.52 Fe/H: 0.160



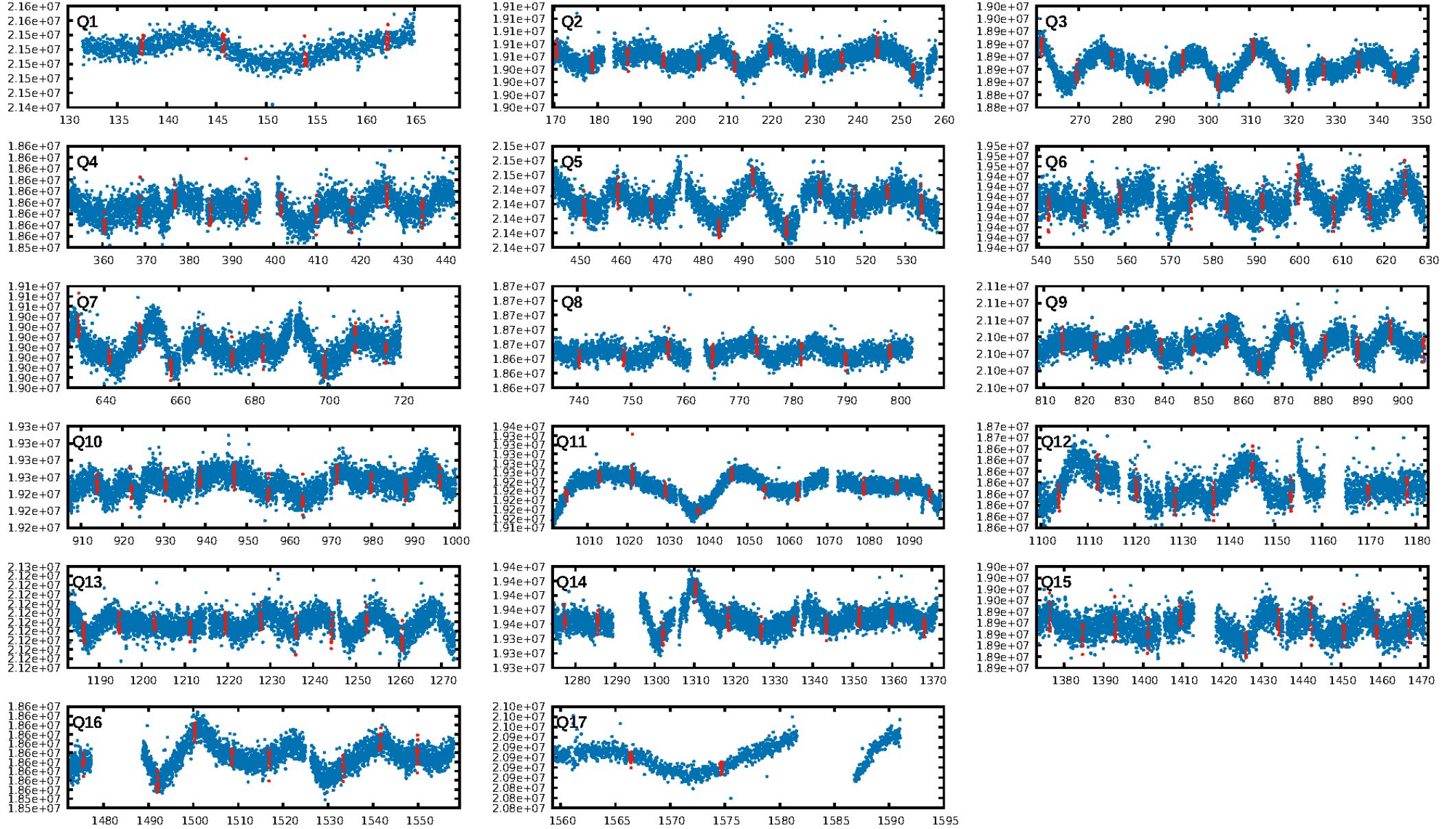
DV Fit Results:

Period = 8.25978 [0.00004] d
Epoch = 137.4723 [0.0038] BKJD
Rp/R* = 0.0191 [0.0072]
a/R* = 10.07 [14.29]
b = 0.89 [0.35]
Seff = 61.53 [8.21]
Teff = 714 [24] K
Rp = 1.68 [0.64] Re
a = 0.0735 [0.0051] AU
Ag = 49.59 [42.49] [1.14σ]
Teffp = 2930 [624] K [3.55σ]

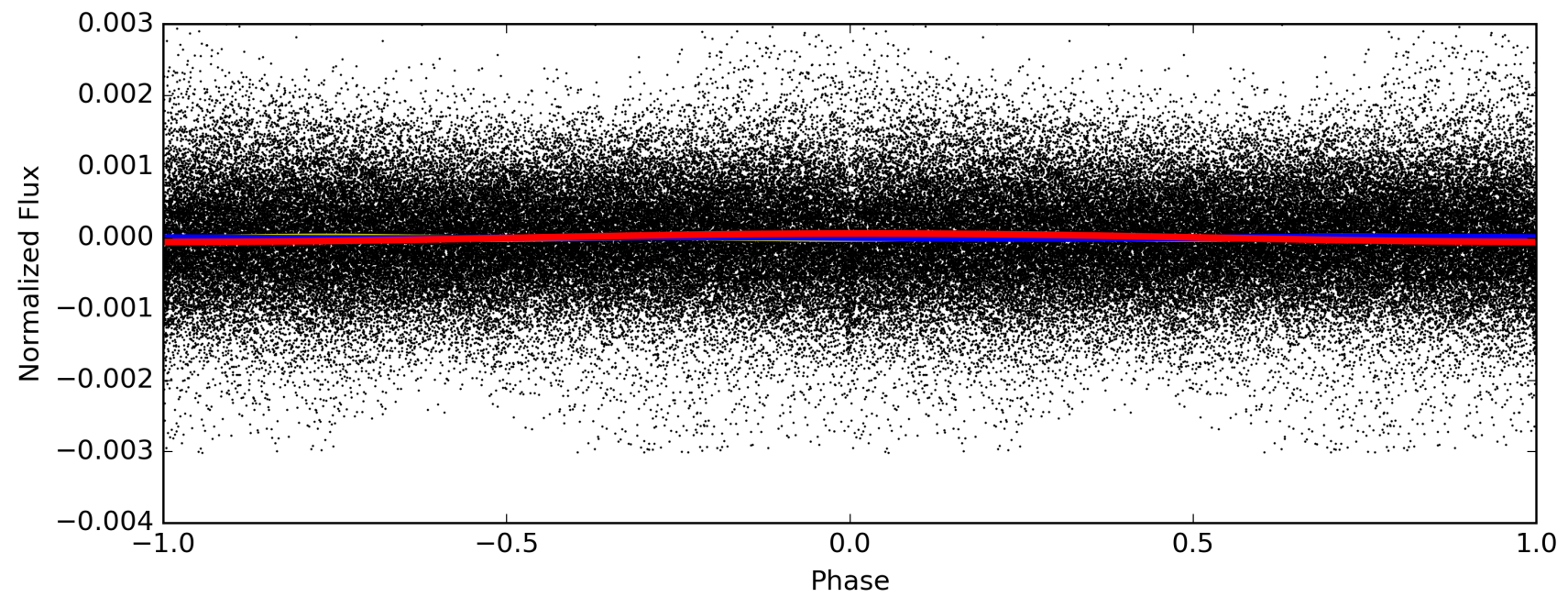
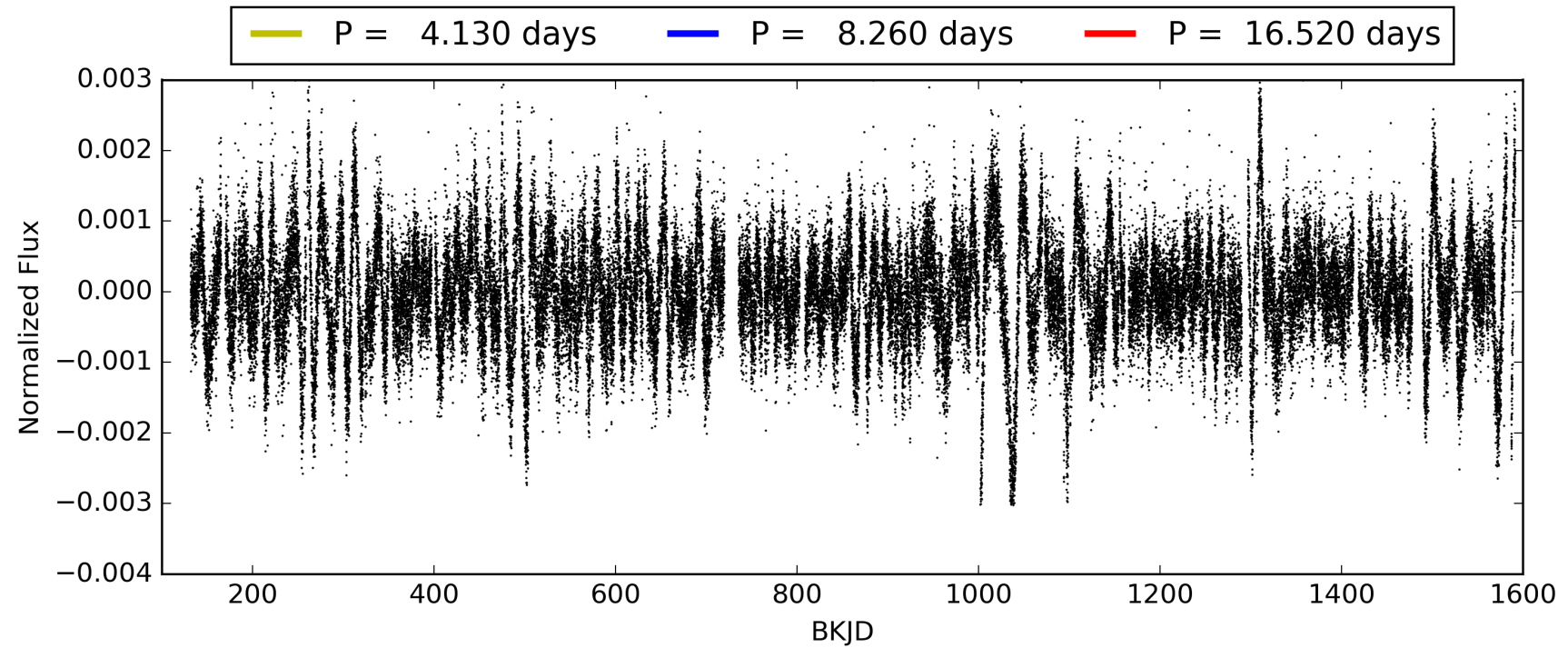
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [35.80σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.51e-47
RollingBand-fgt: 0.97 [144/148]
GhostDiagnostic-chr: 5.146
Centroid-sig: 1.0%
Centroid-so: 1.410 arcsec [1.84σ]
OotOffset-rm: 0.546 arcsec [1.22σ]
KicOffset-rm: 0.543 arcsec [1.07σ]
OotOffset-st: 4/3/2/4 [13]
KicOffset-st: 4/3/2/4 [13]
DiffImageQuality-fgm: 0.77 [10/13]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008680979-02, PDC Light Curves

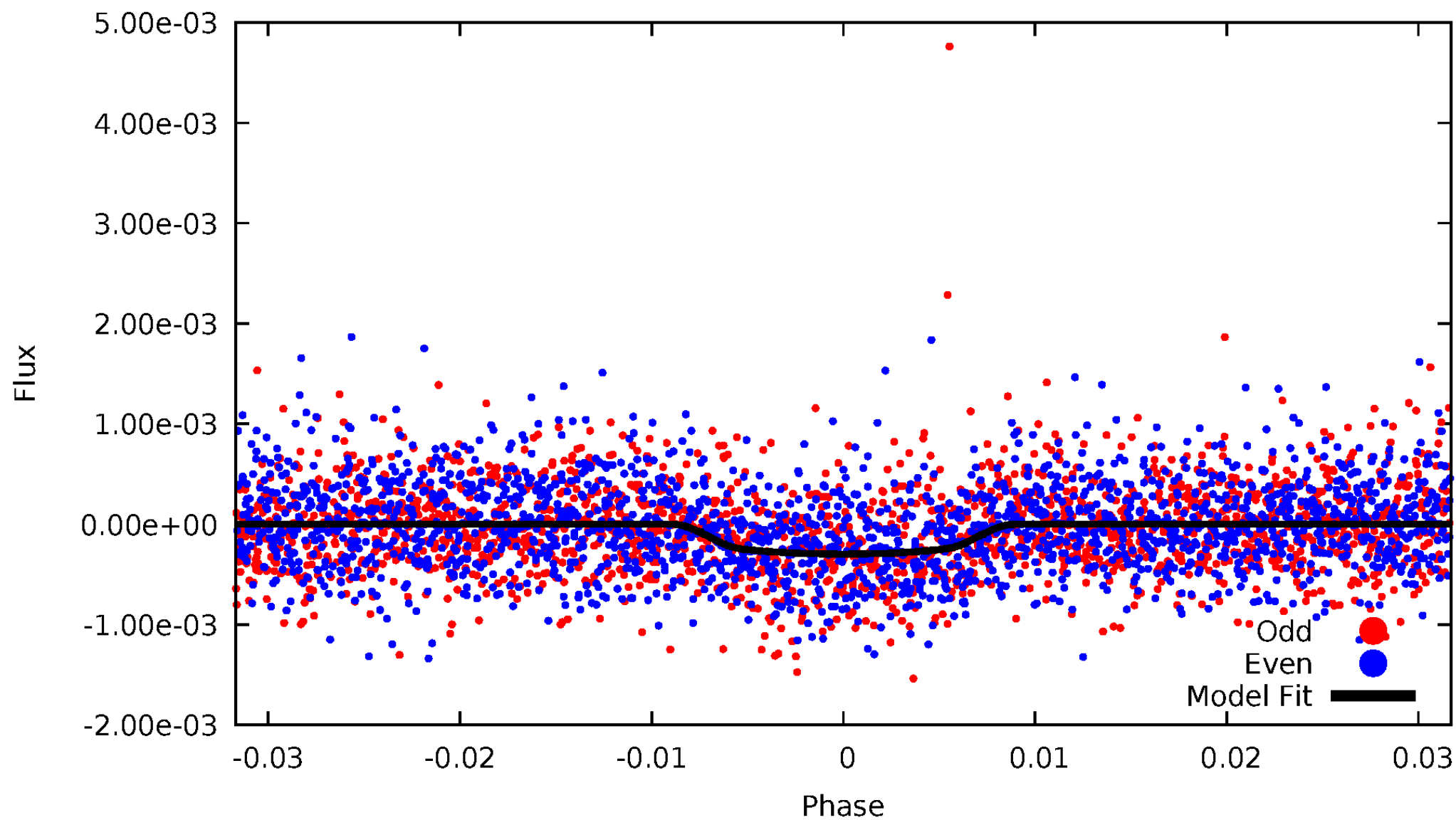


TCE 008680979-02



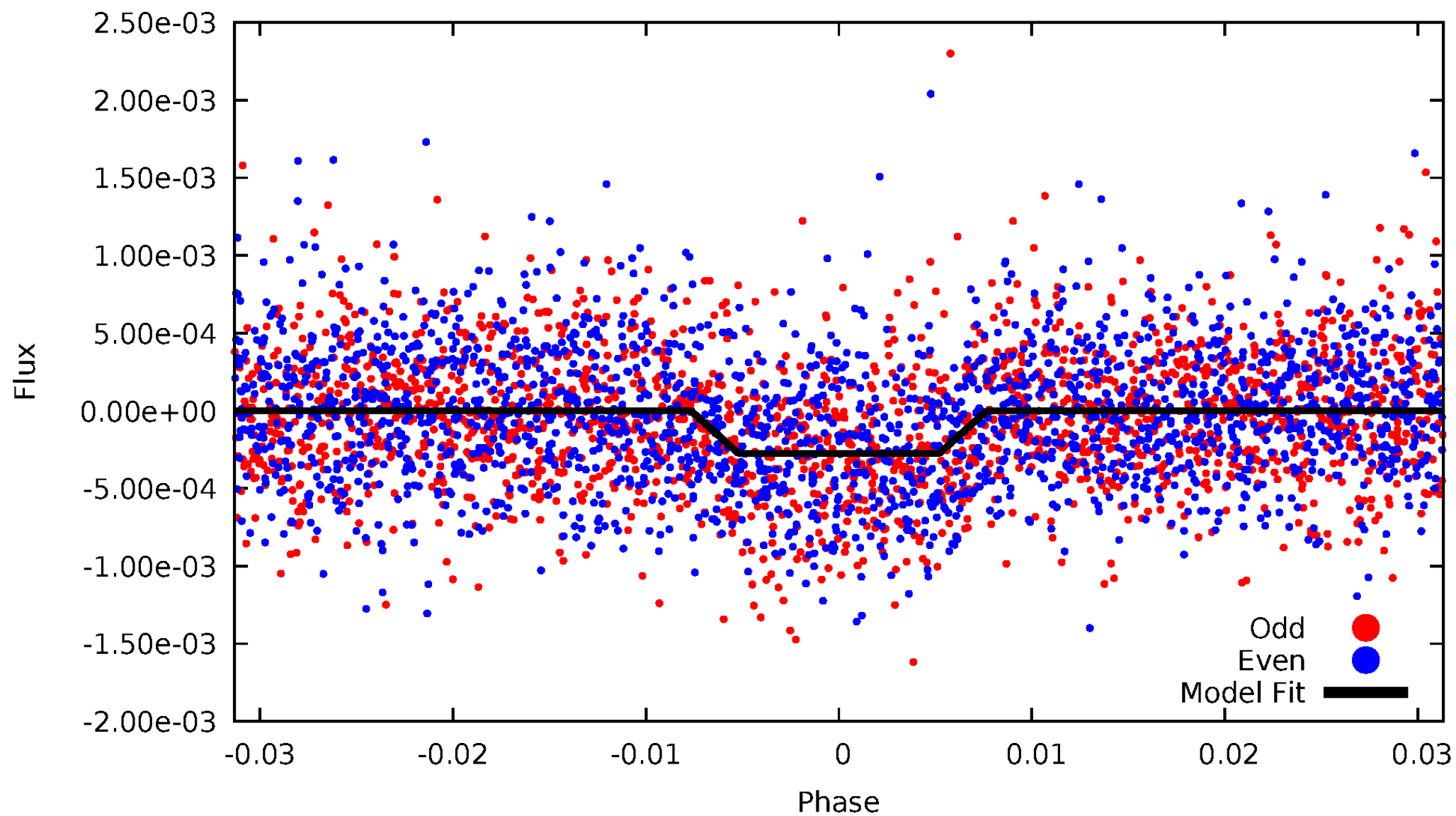
DV Odd/Even

TCE 008680979-02



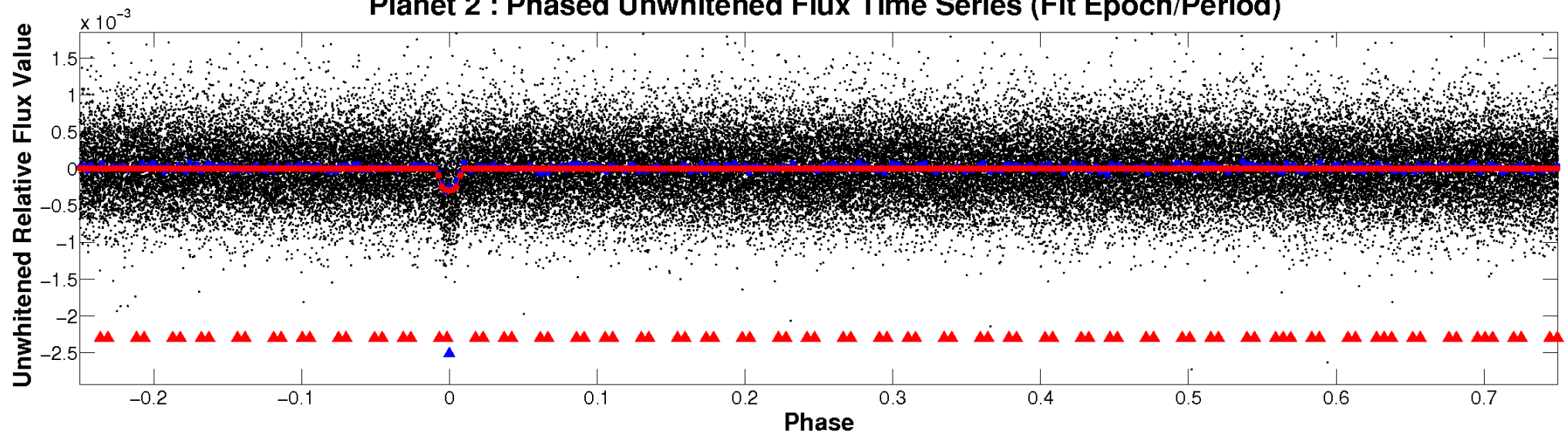
ALT Odd/Even

TCE 008680979-02

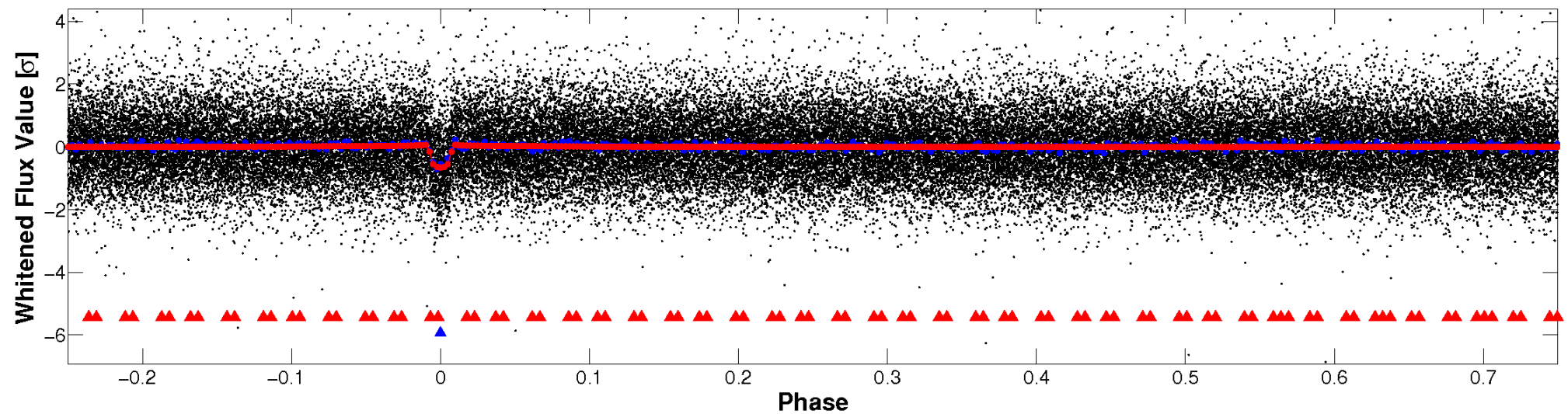


Non-Whitened Vs. Whitened Light Curve

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

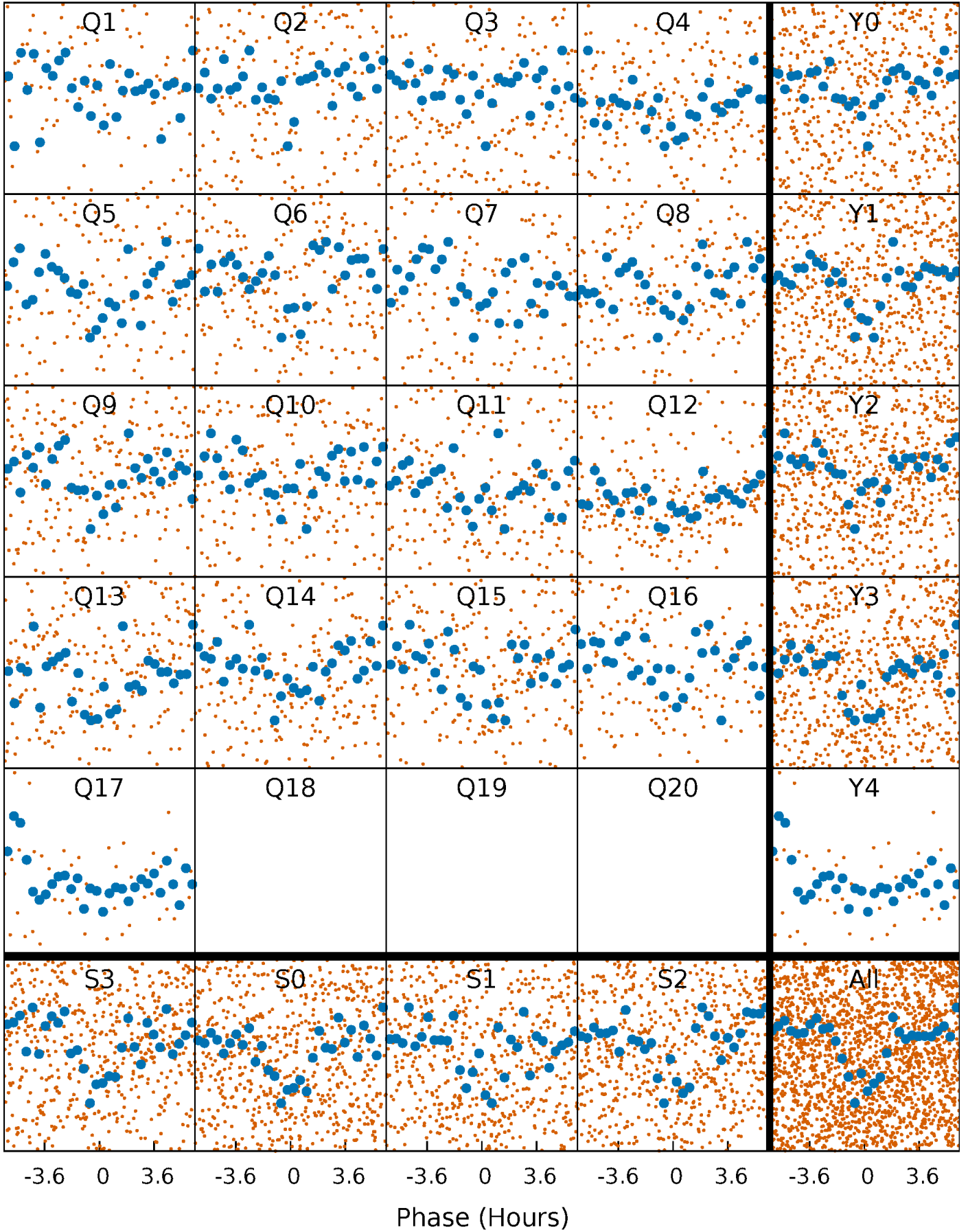


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



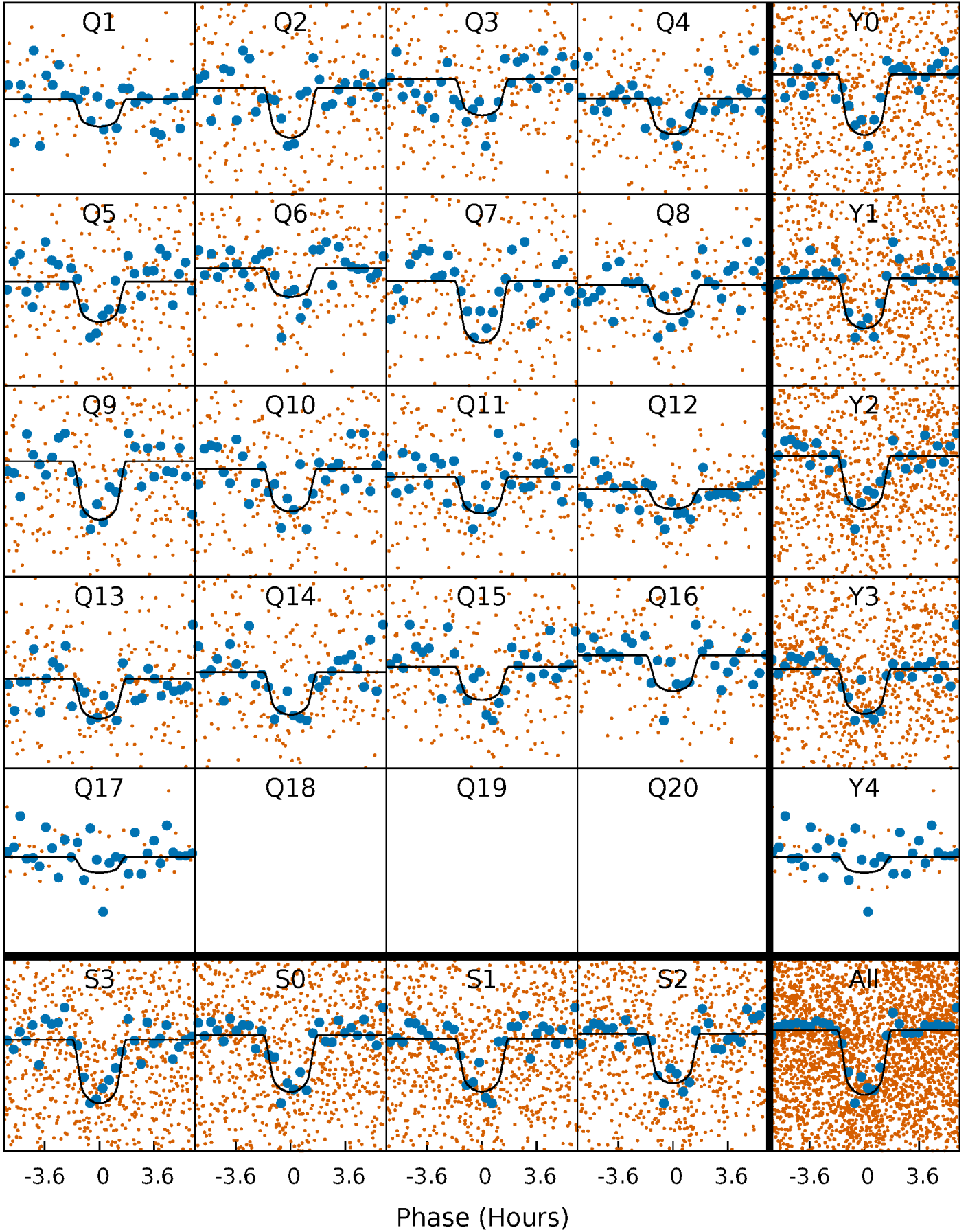
PDC Quarter-Phased Transit Curves

TCE 008680979-02 P= 8.259778 Days $T_0=137.472251$ (BKJD)



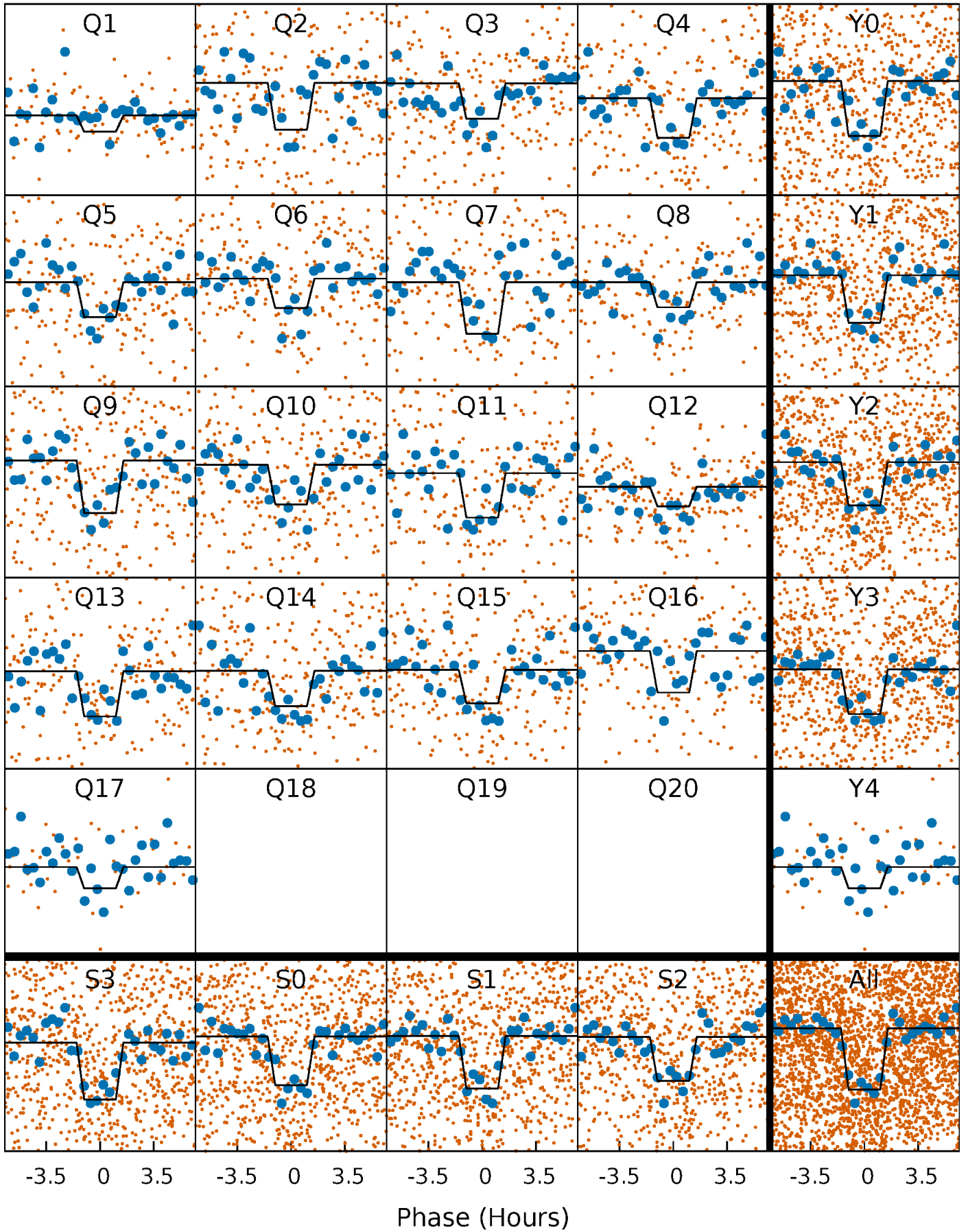
DV Quarter-Phased Transit Curves

TCE 008680979-02 P= 8.259778 Days $T_0=137.472251$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

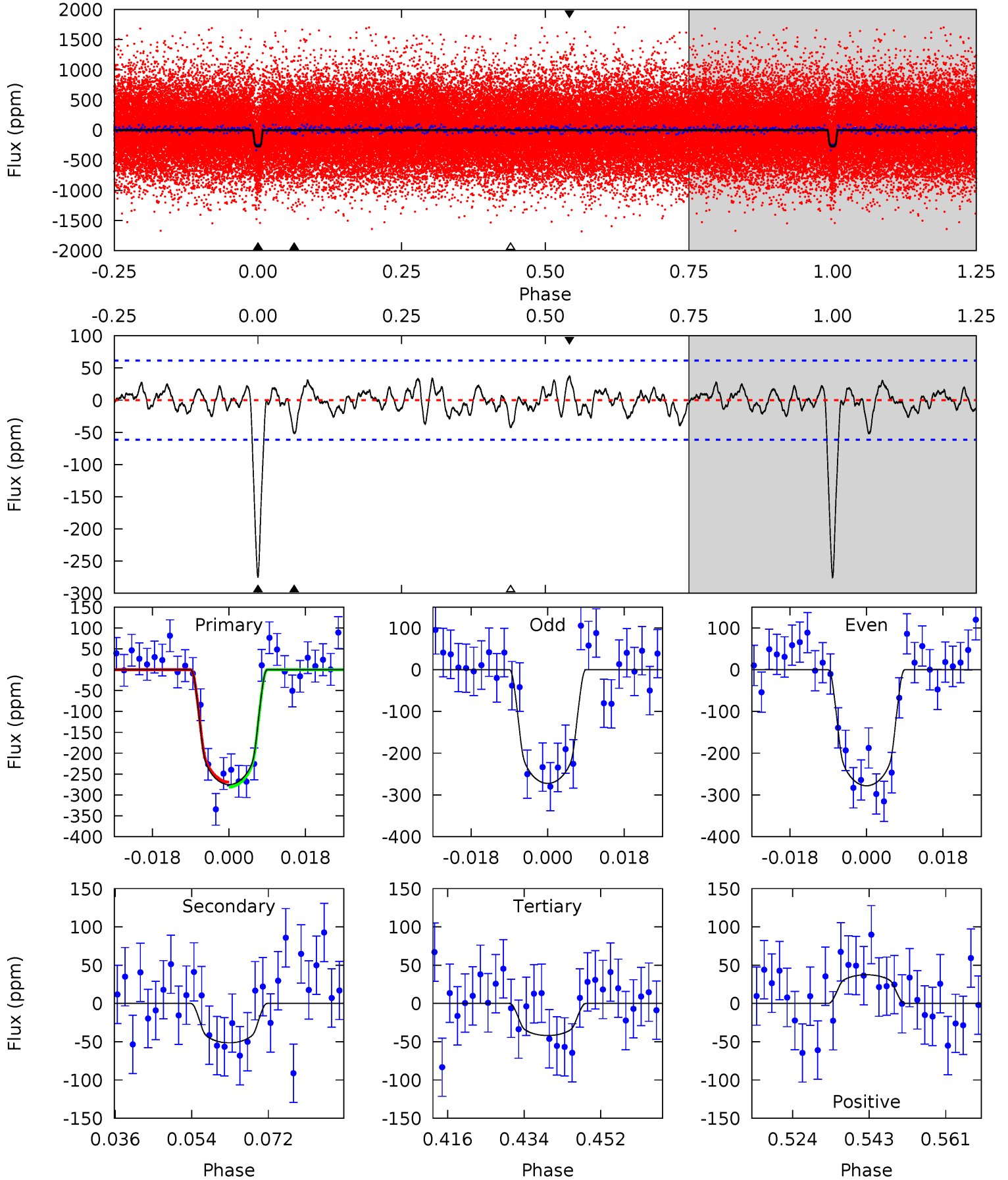
TCE 008680979-02 P= 8.259828 Days $T_0=137.467851$ (BKJD)



DV Model-Shift Uniqueness Test

008680979-02, P = 8.259778 Days, E = 129.212473 Days

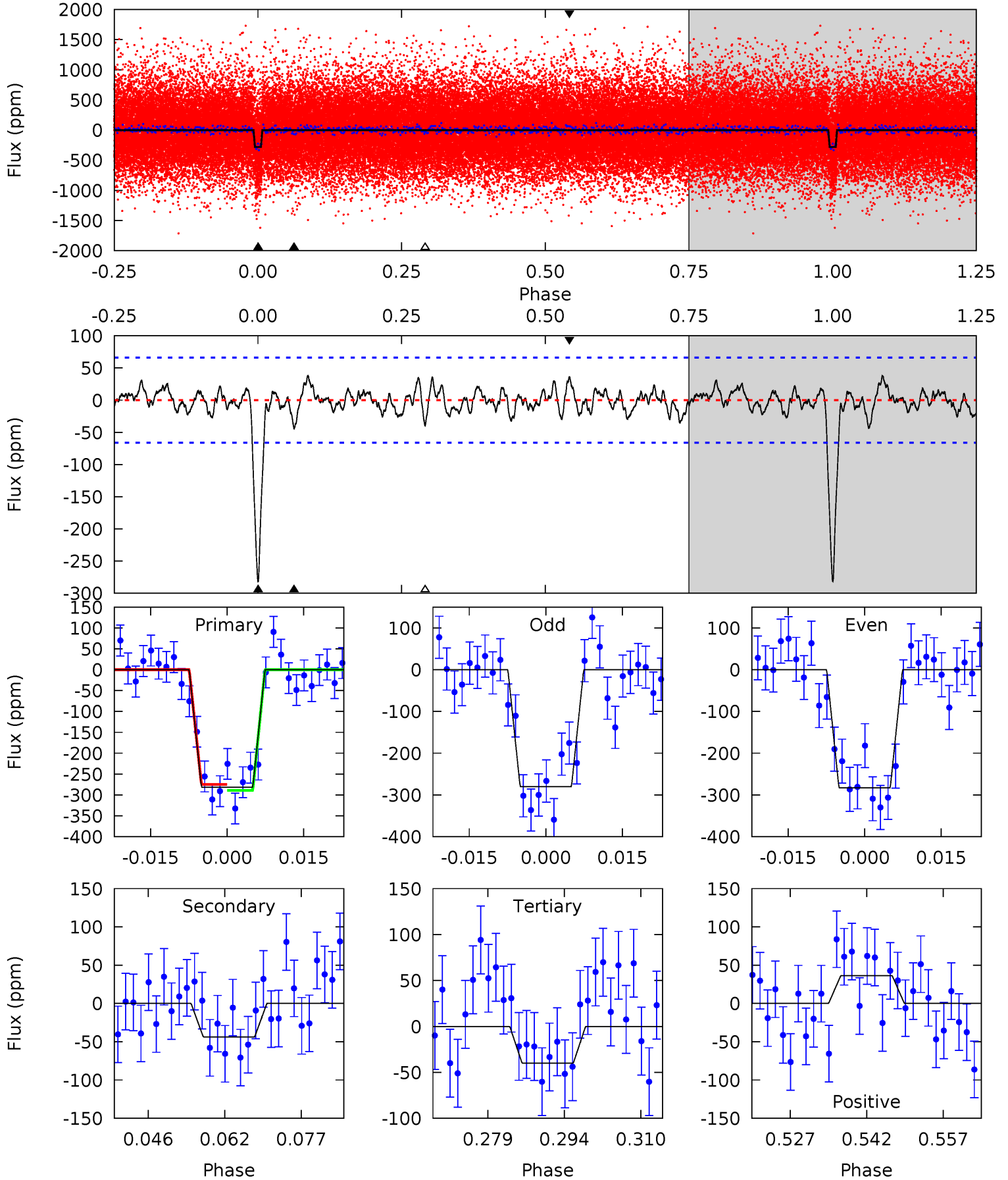
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.0	4.11	3.35	2.99	4.91	2.36	1.16	18.6	19.0	0.76	1.12	0.23	0.94	0.12	0.46



Alt Model-Shift Uniqueness Test

008680979-02, P = 8.259828 Days, E = 129.208023 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	3.27	2.98	2.72	4.94	2.42	1.05	18.1	18.3	0.29	0.55	0.10	1.02	0.12	0.53



Stellar Parameters For KIC 008680979

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4891^{+78}_{-87}	$4.516^{+0.067}_{-0.018}$	$0.160^{+0.150}_{-0.150}$	$0.805^{+0.028}_{-0.056}$	$0.776^{+0.048}_{-0.028}$	$2.095^{+0.531}_{-0.152}$
	+2%/-2%	+1%/-0%	+94%/-94%	+3%/-7%	+6%/-4%	+25%/-7%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008680979-02 / KOI 1891.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-51 ± 13	$1.63^{+0.67}_{-0.62}$	991^{+20}_{-24}	3462^{+604}_{-380}	59^{+90}_{-32}
Alt.	-44 ± 13	$1.47^{+0.62}_{-0.60}$	991^{+20}_{-24}	3451^{+745}_{-365}	58^{+121}_{-31}

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

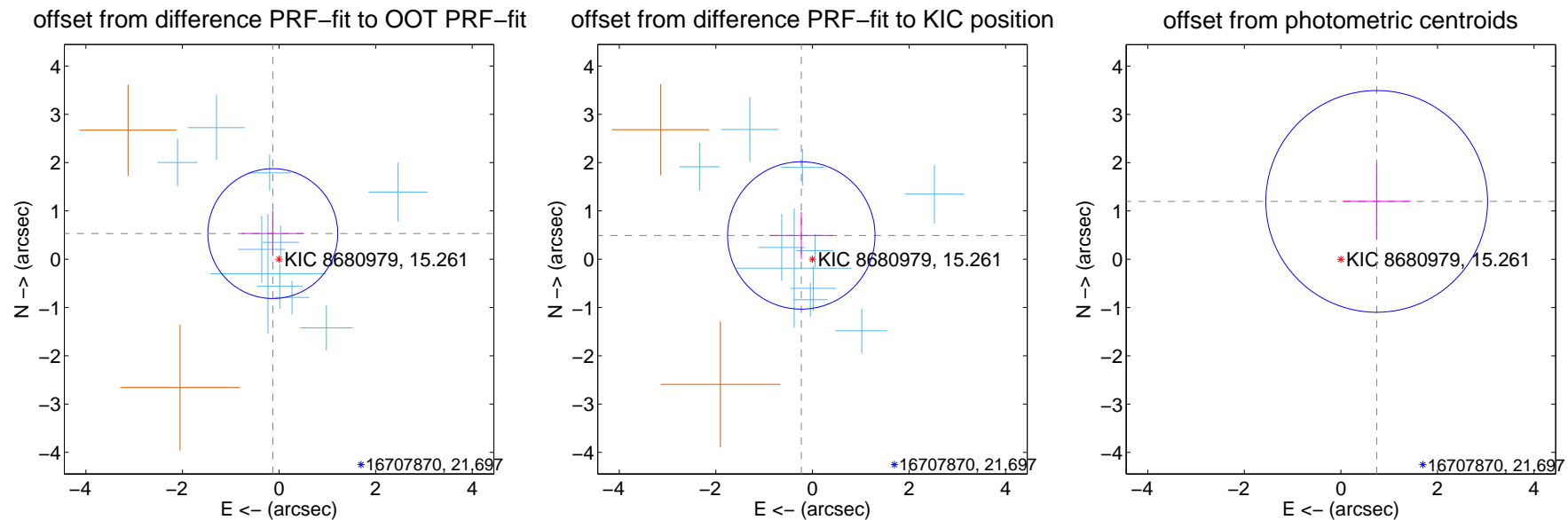
DV Centroid Data

Supplemental centroid analysis for 008680979-02. Kepler magnitude: 15.26. Transit SNR 16.88

There are 10 quarters with good PRF difference image offsets

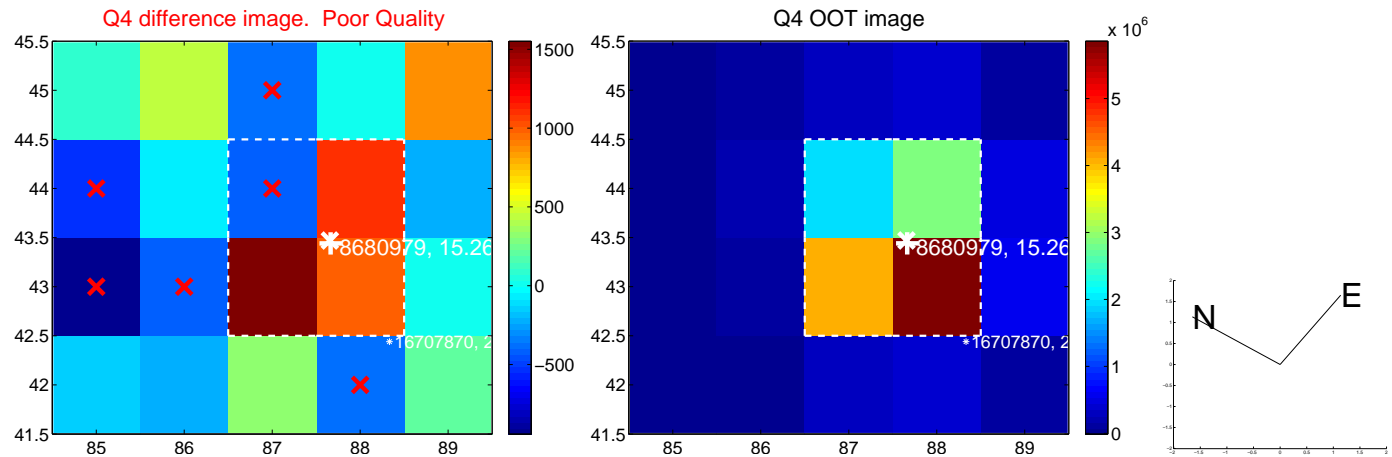
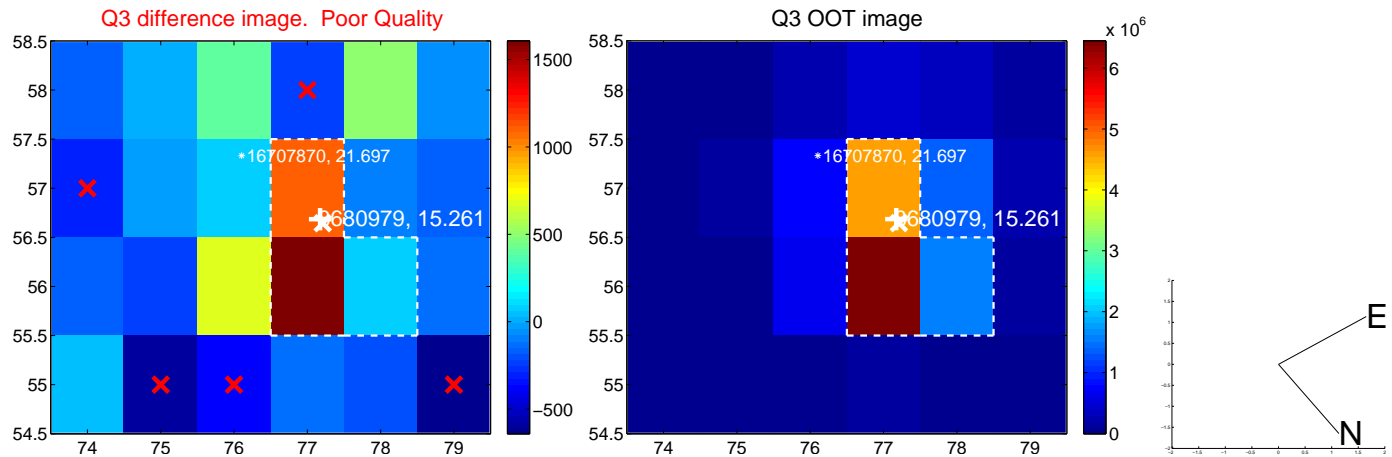
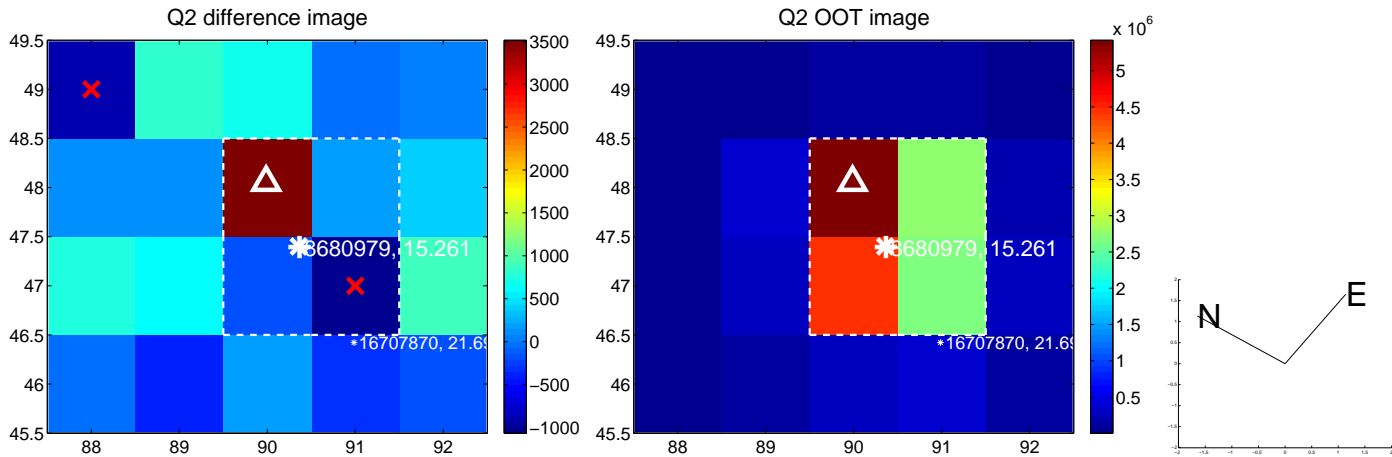
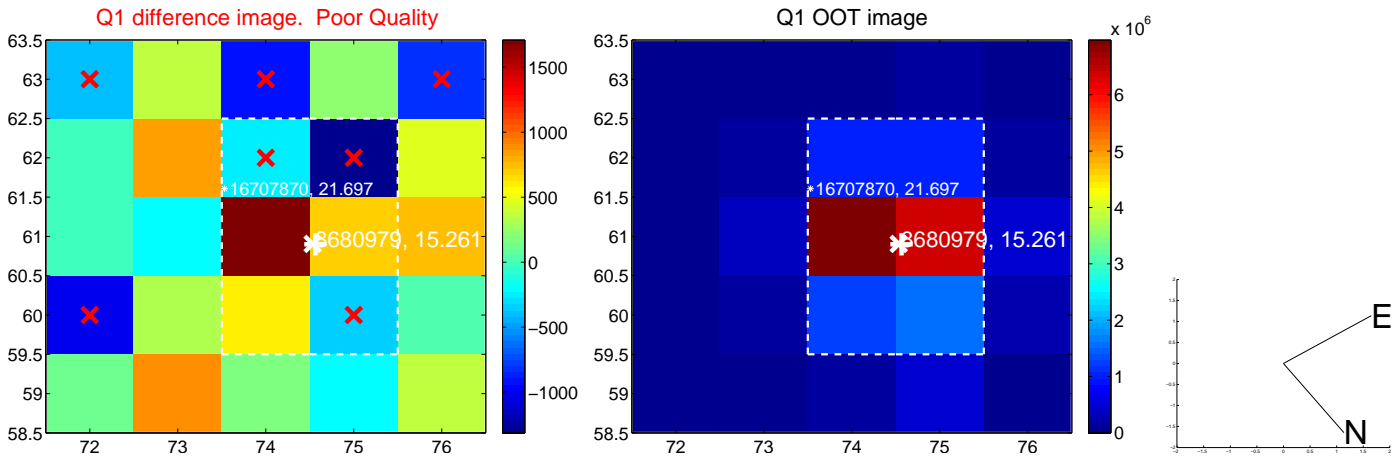
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.546 ± 0.448	1.22	0.130 ± 0.647	0.530 ± 0.464
PRF-fit source offset from KIC position	0.543 ± 0.509	1.07	0.231 ± 0.664	0.492 ± 0.487
photometric centroid source offset	1.41 ± 0.77	1.84	-0.74 ± 0.71	1.20 ± 0.79

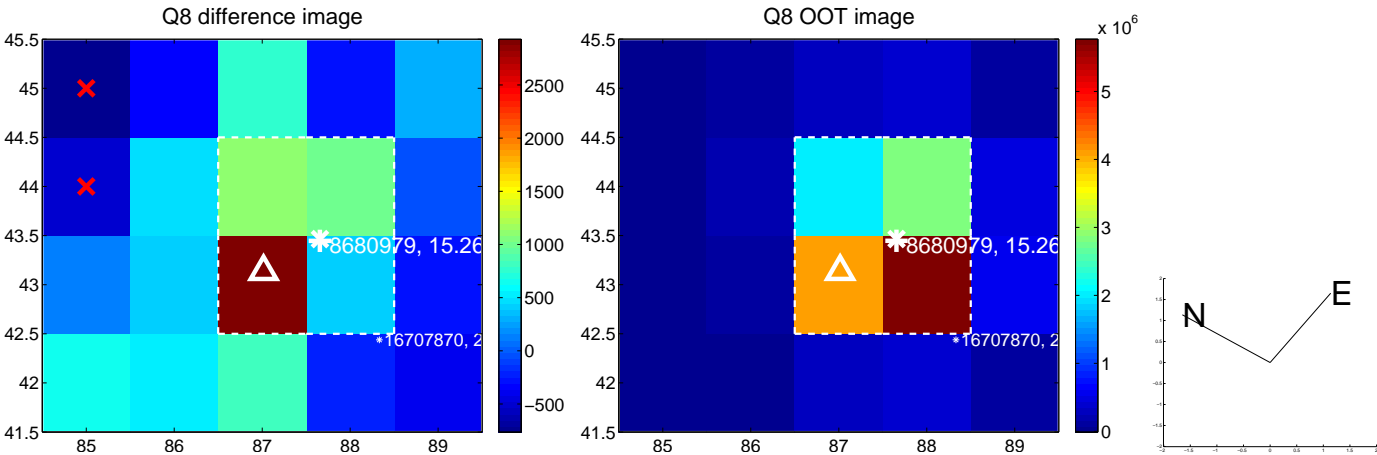
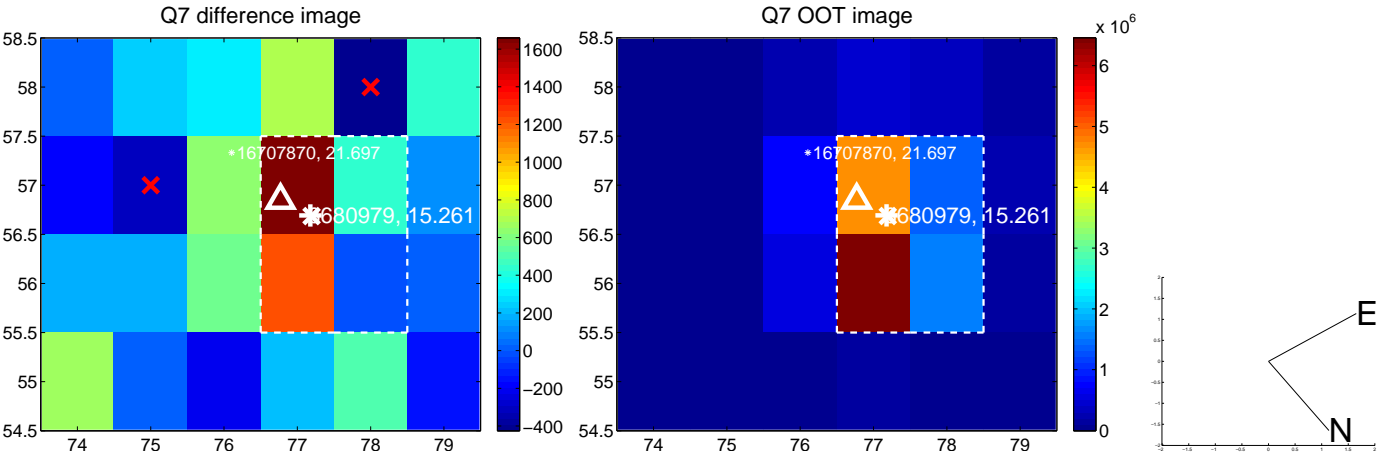
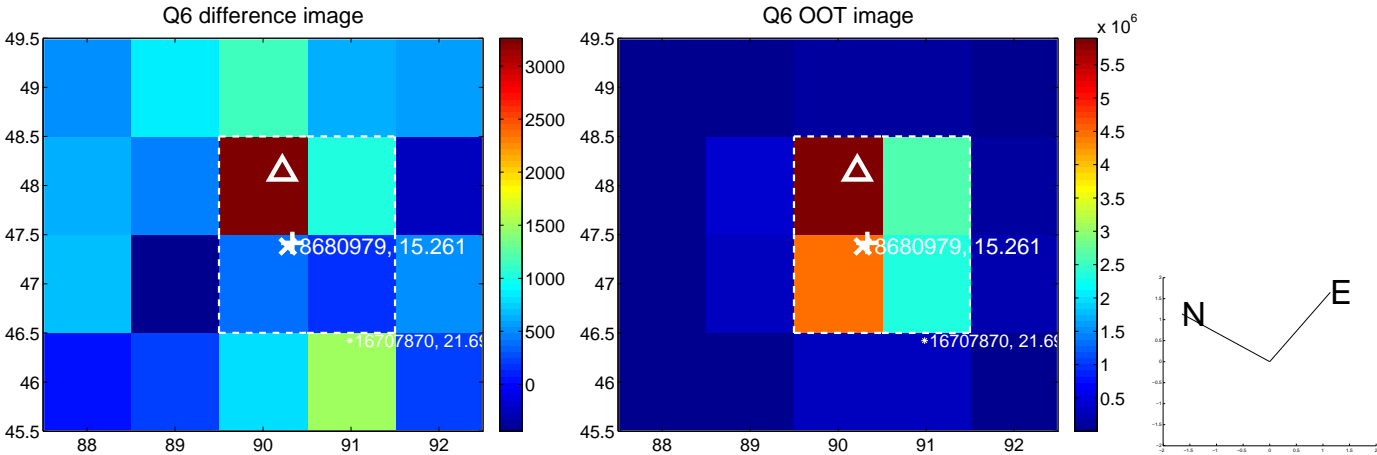
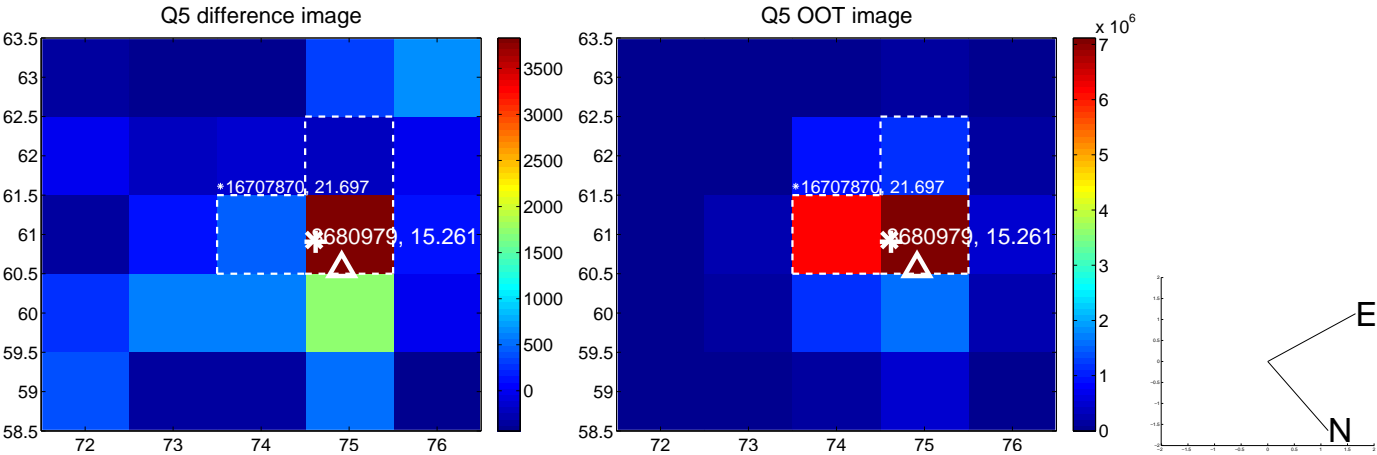


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

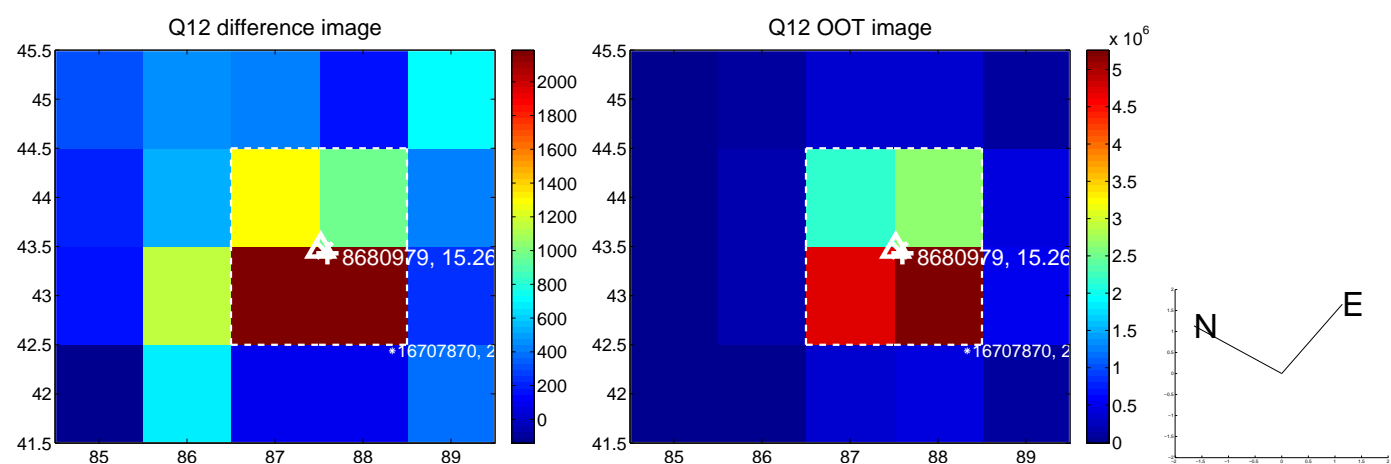
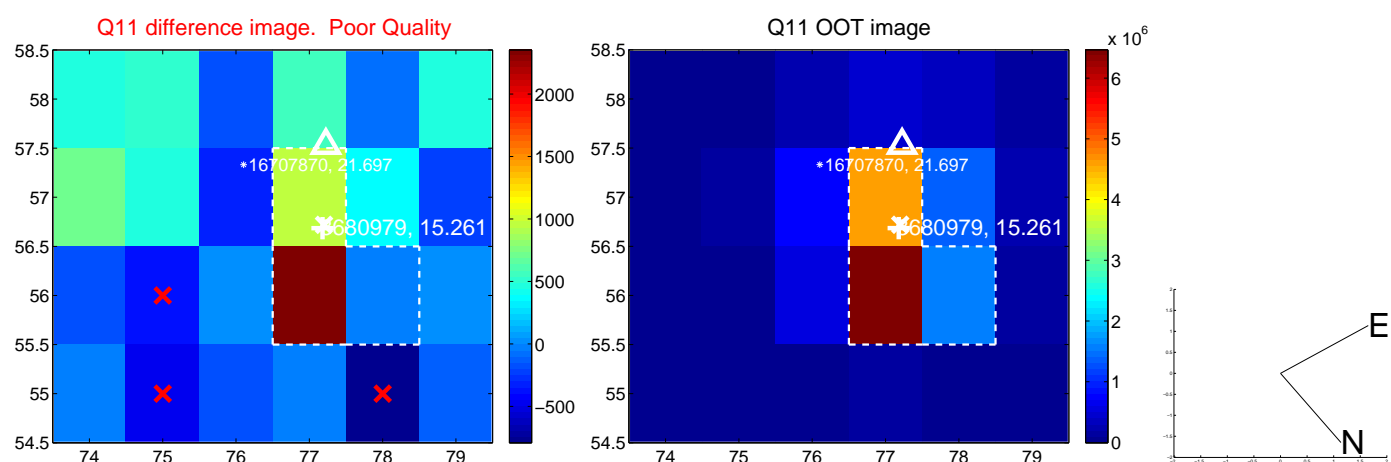
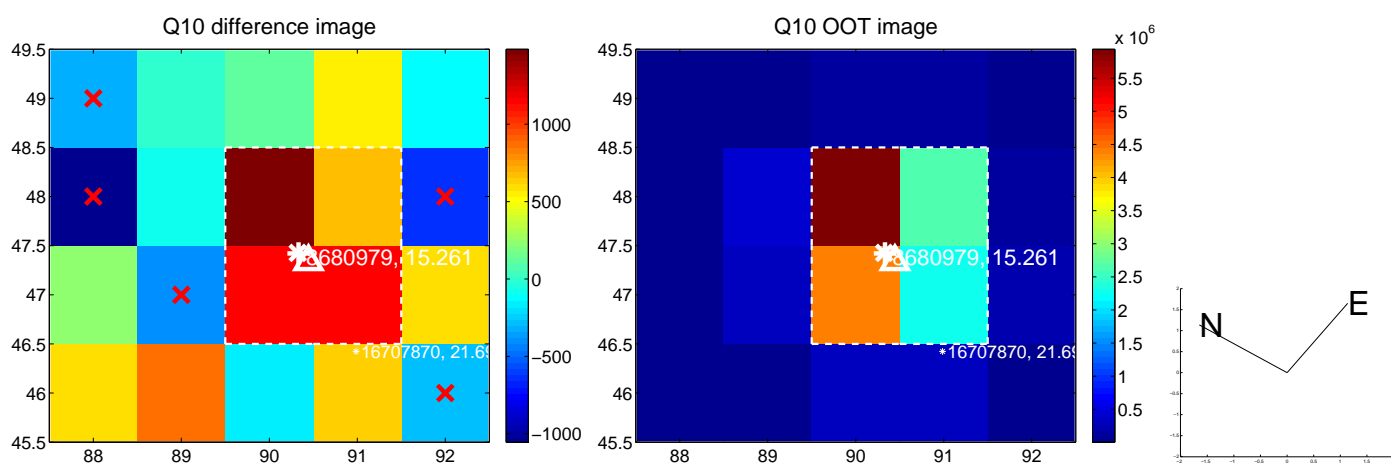
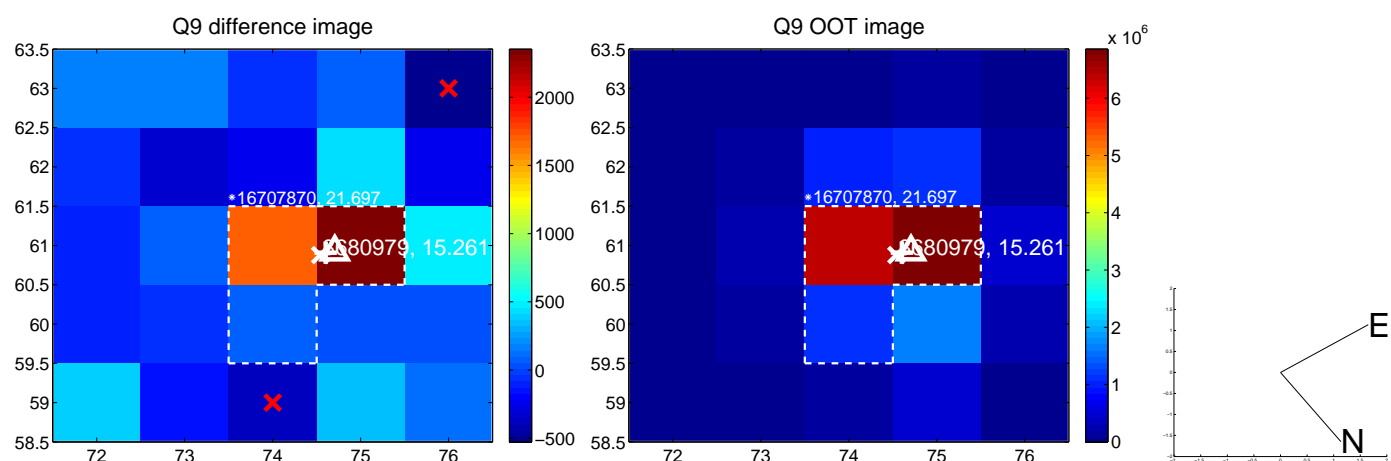
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



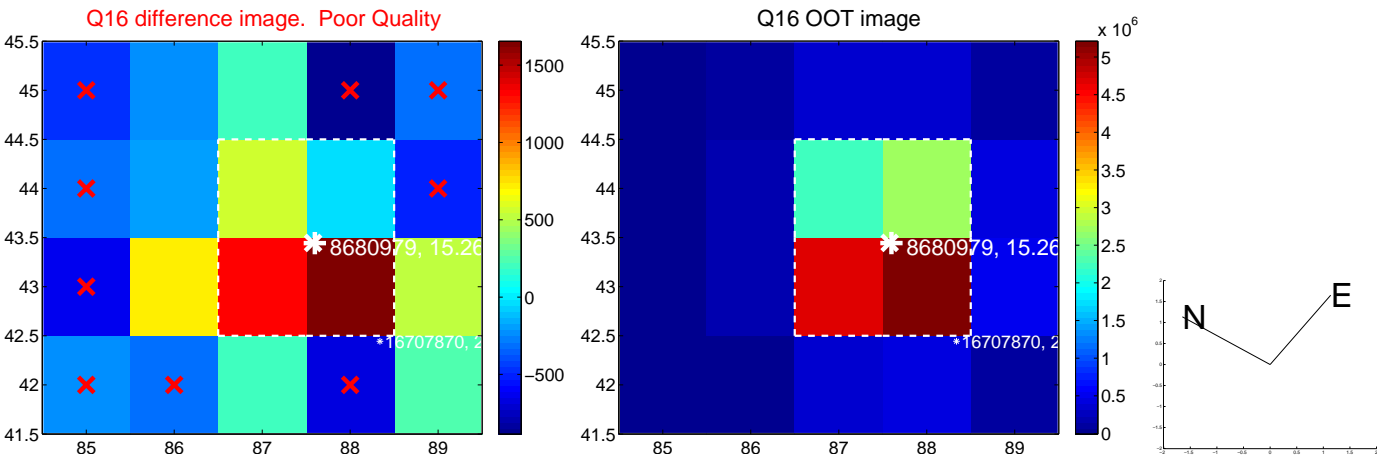
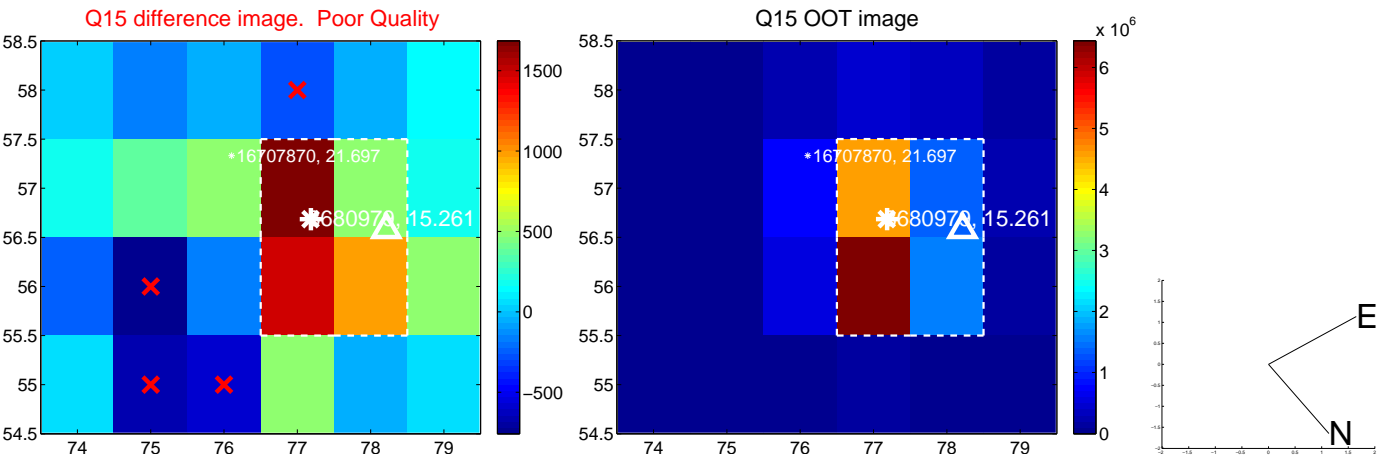
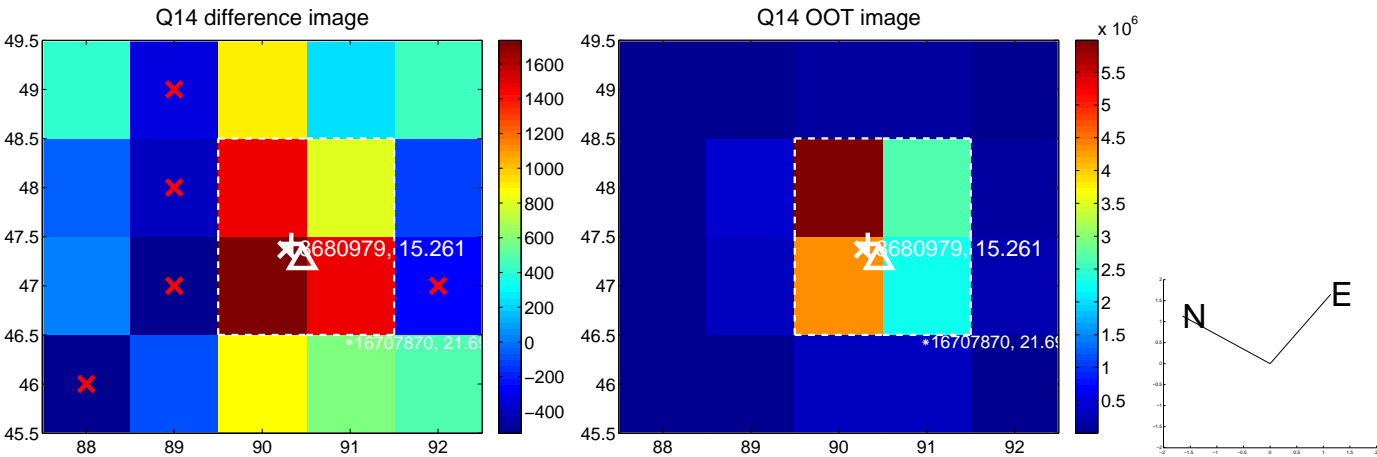
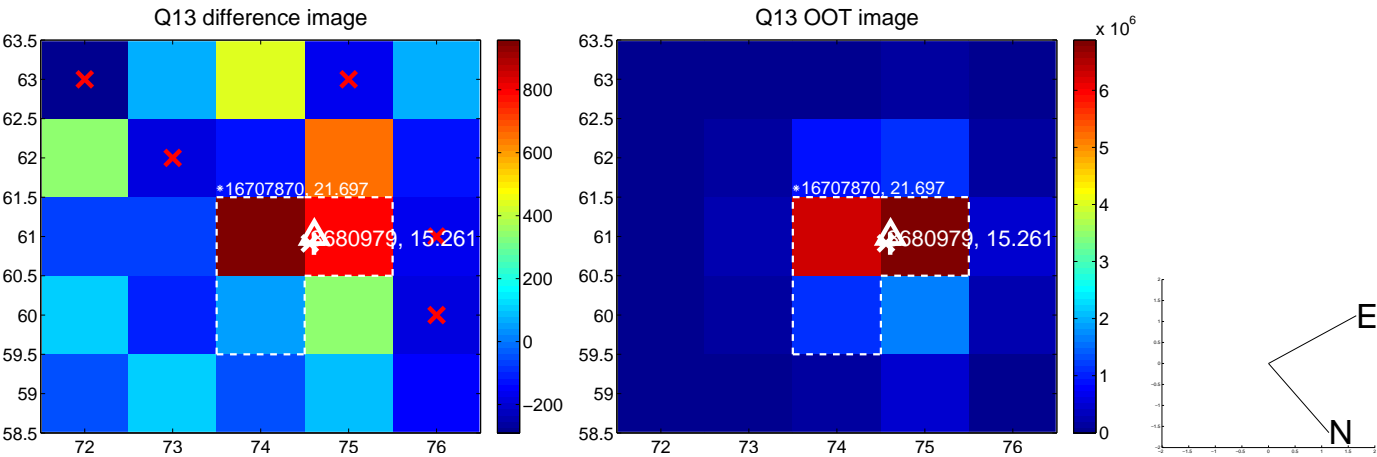
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



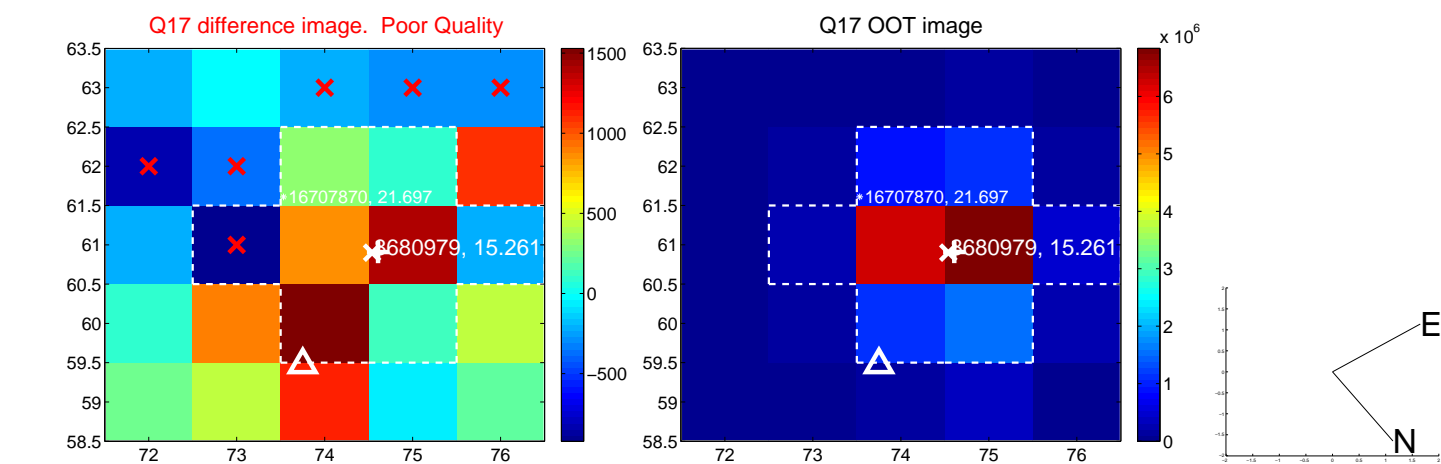
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



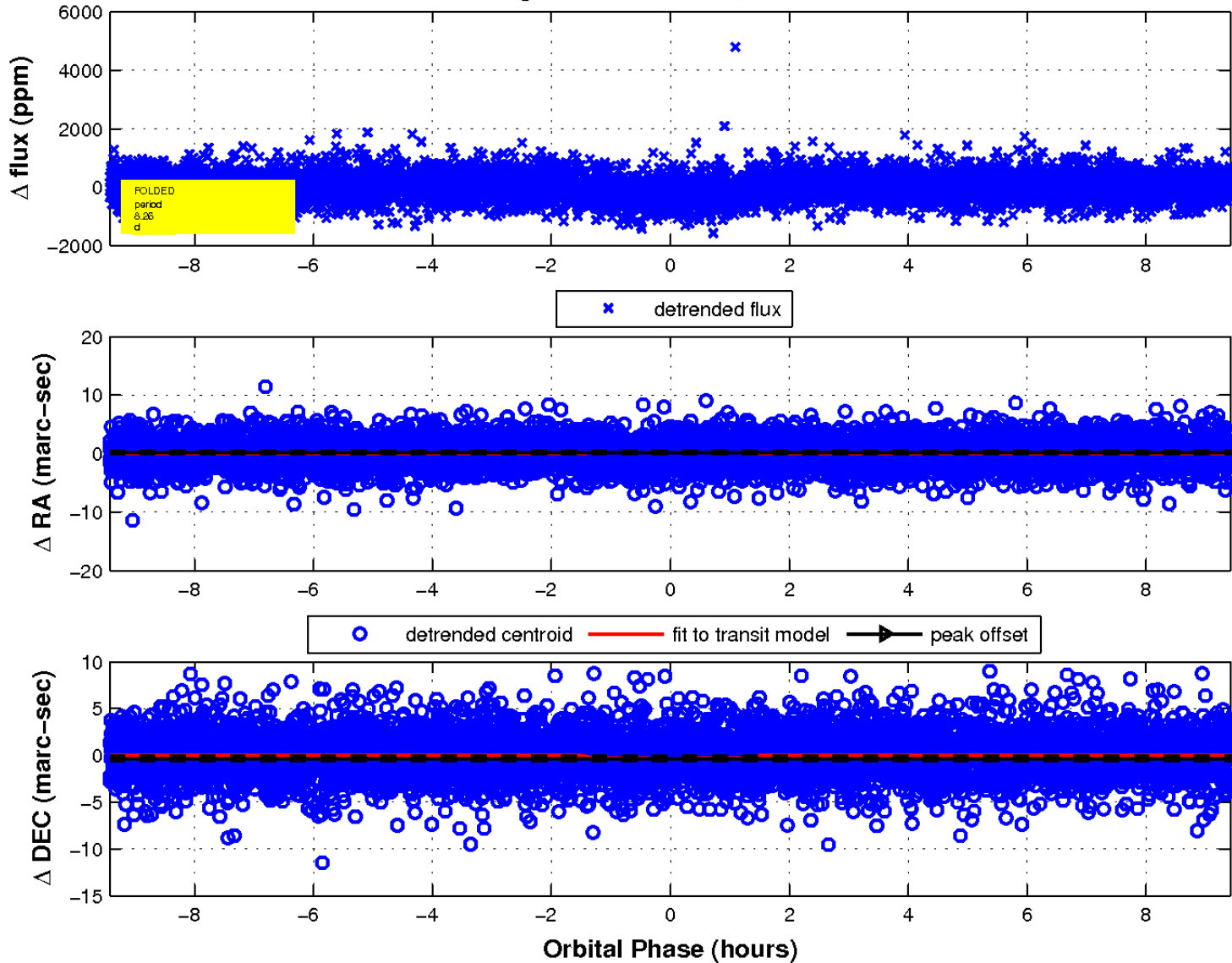
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

