

KIC 004859557

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})
004859557-01	OBS	No	0.597244	131.752120	20.3	0.602	9.5	2.0	1.00	6028	0.46	5865.99
004859557-02	OBS	No	0.597213	132.078035	46.4	2.876	10.1	10.5	1.00	6028	0.77	5866.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004859557-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
004859557-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

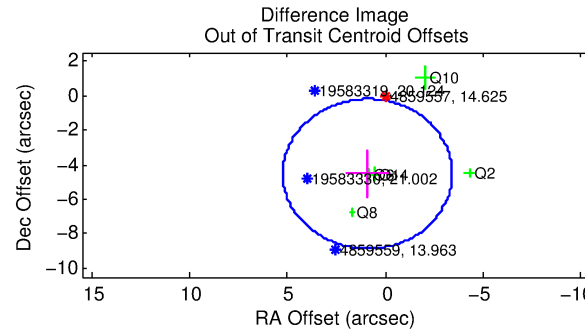
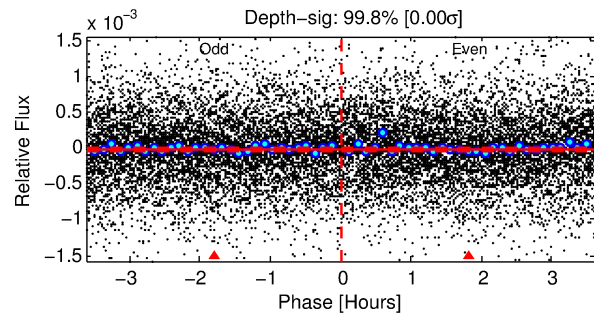
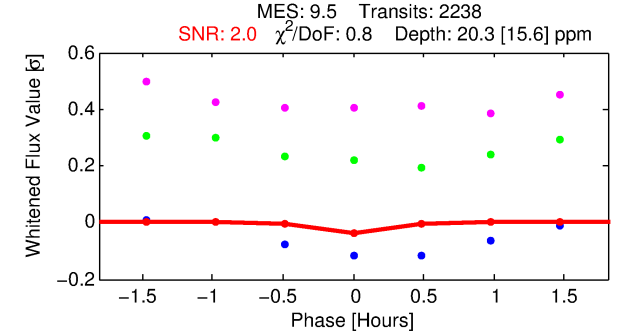
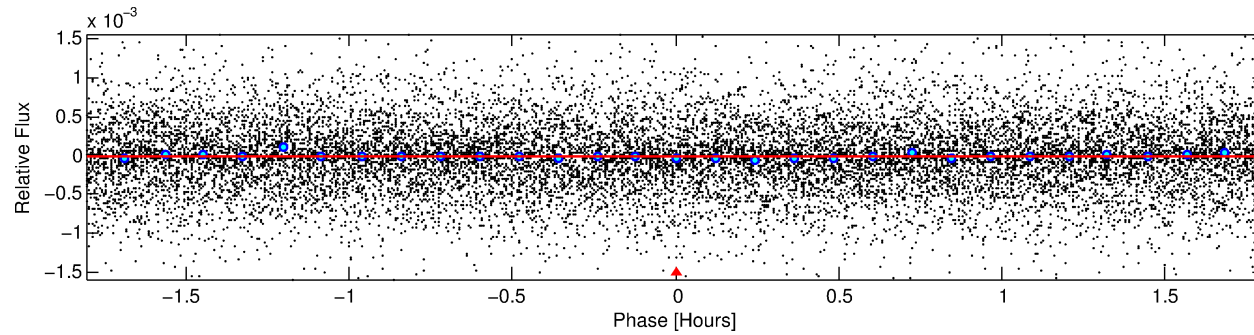
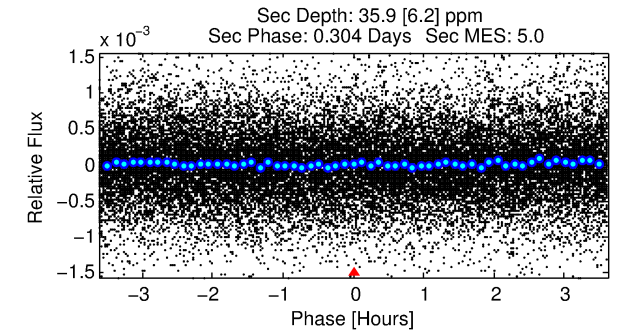
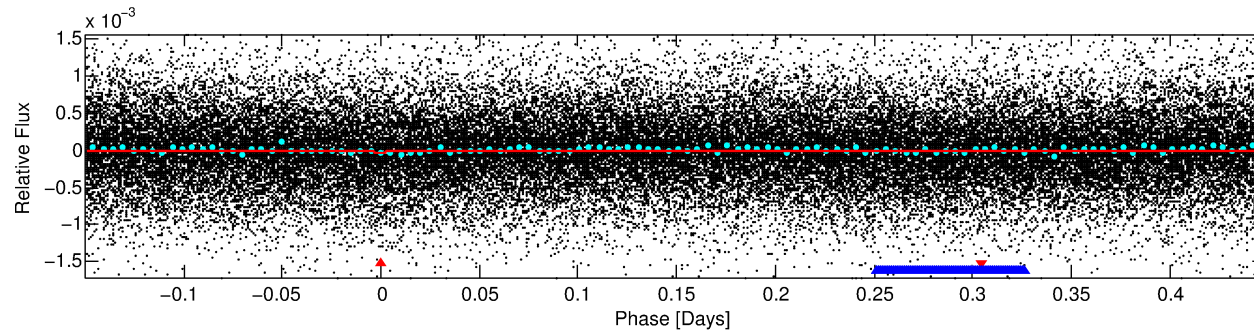
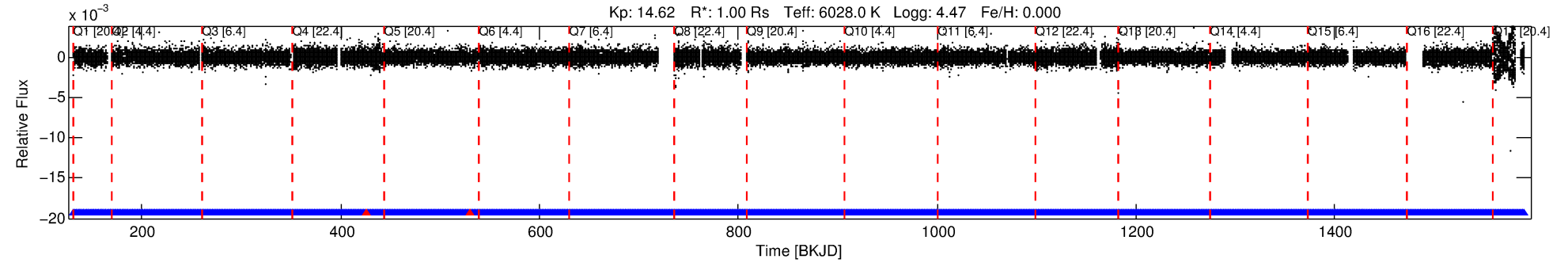
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004859557-01

No Significant Match Found

DV One-Page Summary

KIC: 4859557 Candidate: 1 of 2 Period: 0.597 d



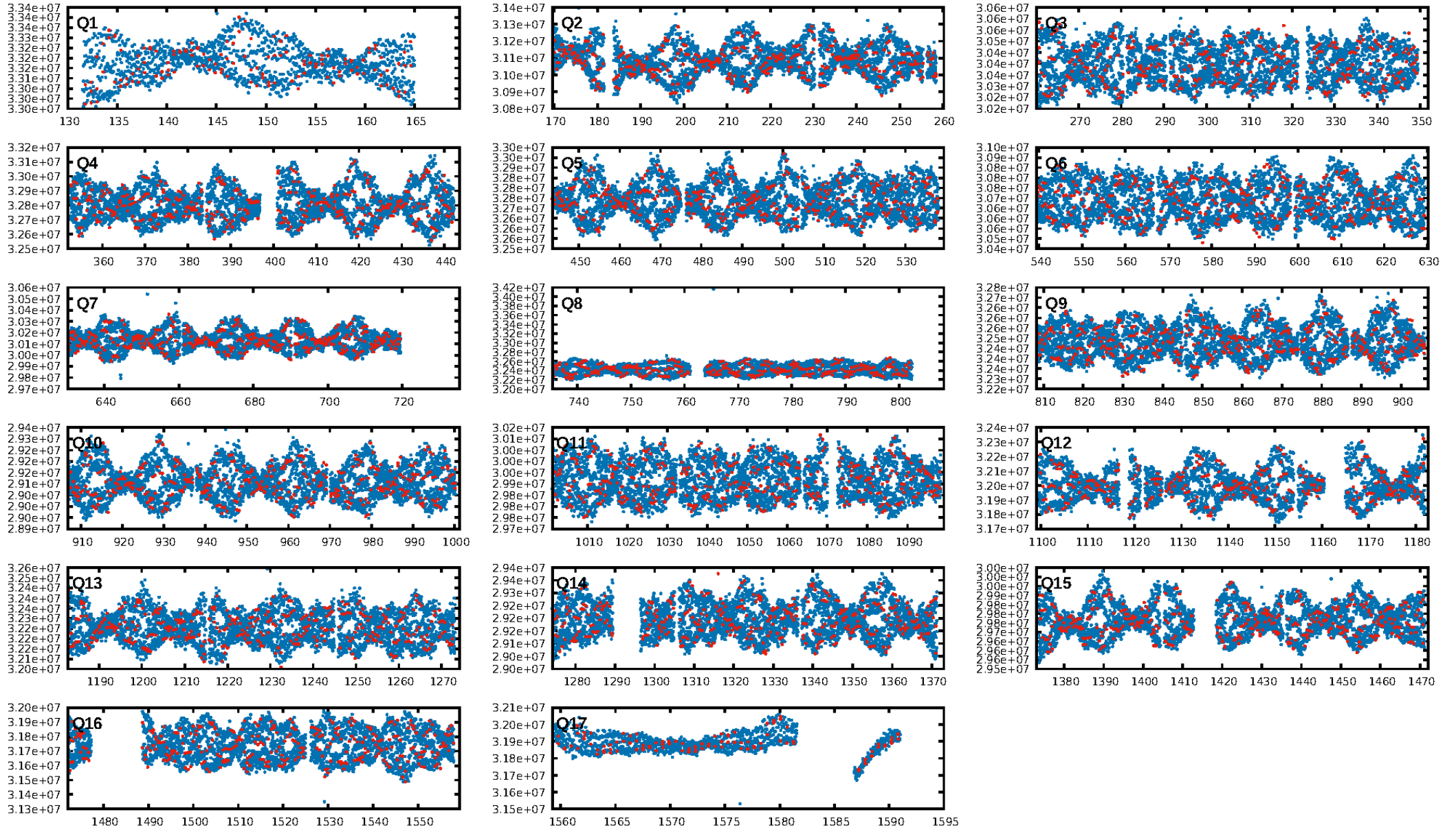
DV Fit Results:

Period = 0.59724 [0.00006] d
Epoch = 131.7521 [0.0068] BKJD
Rp/R* = 0.0042 [0.0593]
a/R* = 7.63 [503.76]
b = 0.01 [8440.52]
Seff = 5865.99 [2422.29]
Teff = 2232 [230] K
Rp = 0.46 [6.48] Re
a = 0.0142 [0.0037] AU
Ag = 18.68 [524.24] [0.03 σ]
Teffp = 7173 [50315] K [0.10 σ]

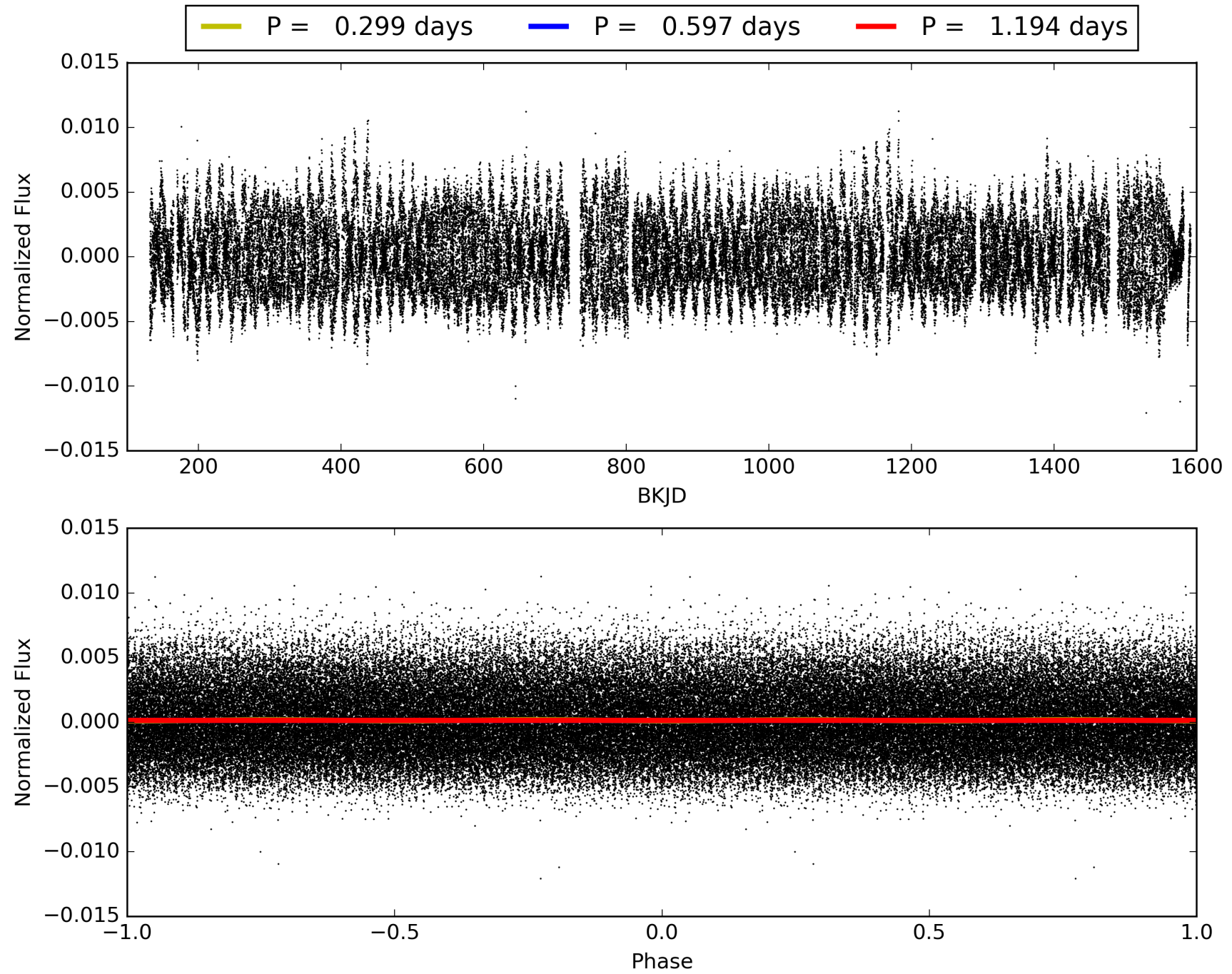
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.02e-29
RollingBand-fgt: 1.00 [2136/2138]
GhostDiagnostic-chr: 0.002523
Centroid-sig: 0.0%
Centroid-so: 54.876 arcsec [5.18 σ]
OotOffset-rm: 4.621 arcsec [3.20 σ]
KicOffset-rm: 5.953 arcsec [3.99 σ]
OotOffset-st: 4/0/1/0 [5]
KicOffset-st: 4/0/1/0 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.59 [10/17]

TCE 004859557-01, PDC Light Curves

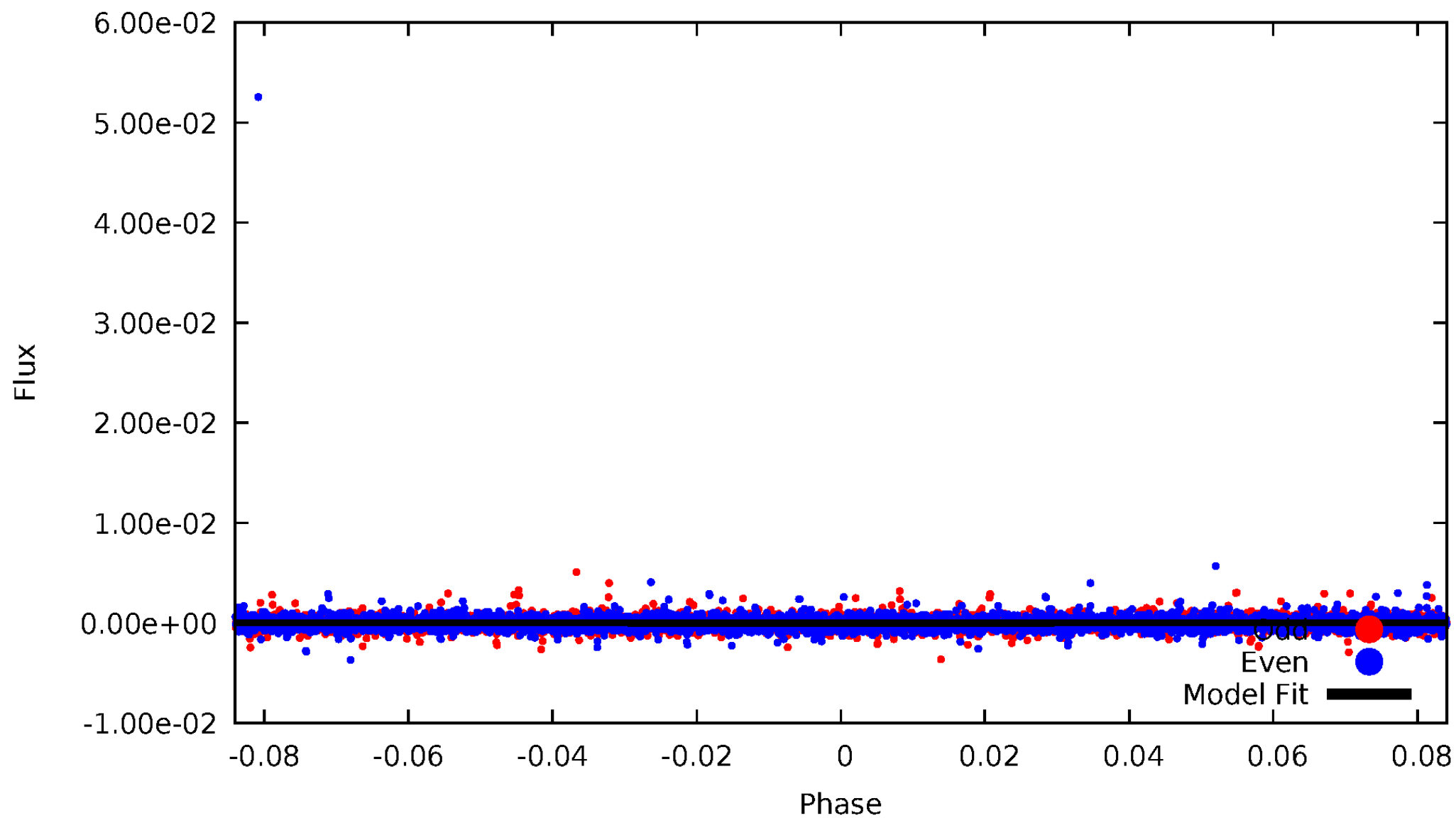


TCE 004859557-01



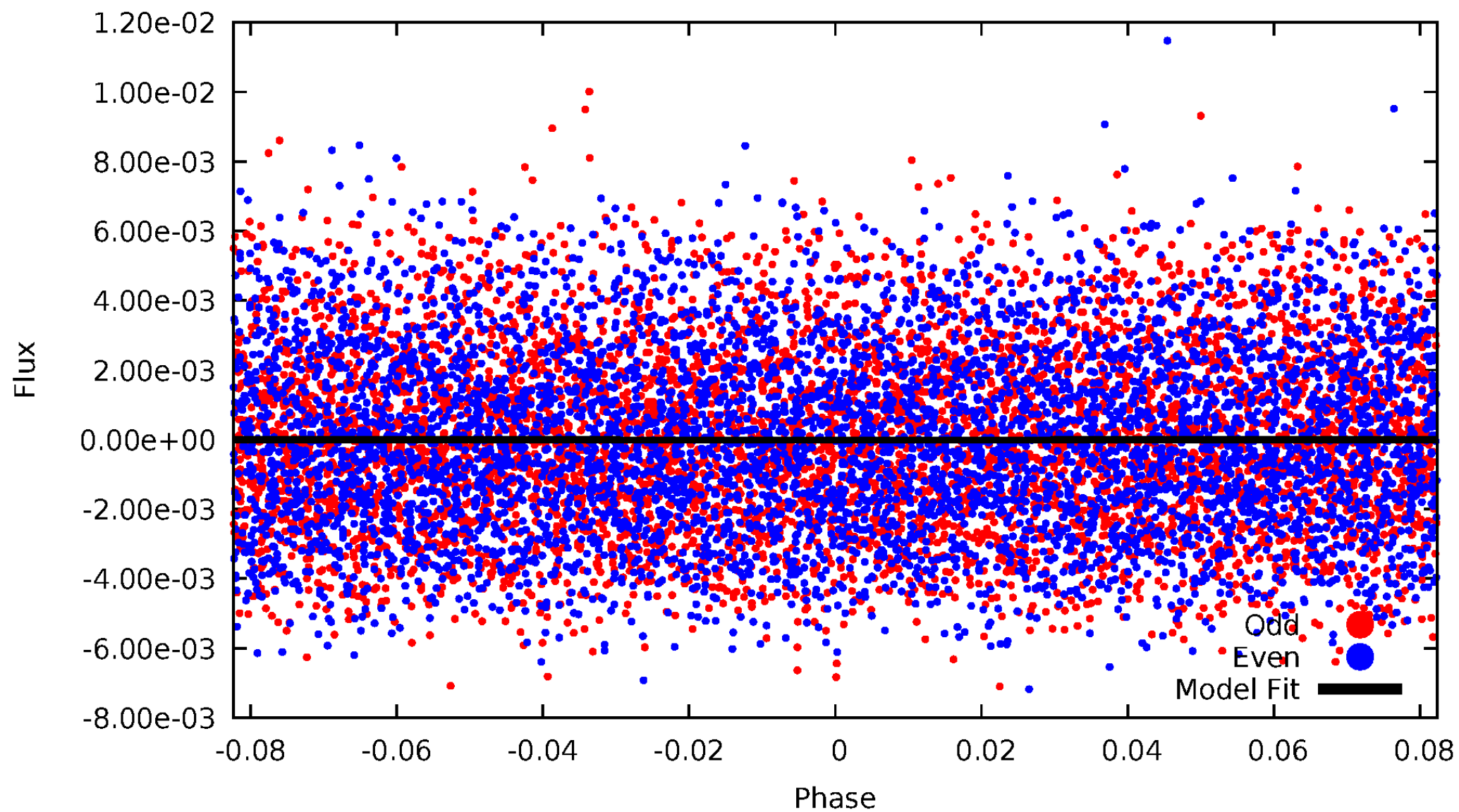
DV Odd/Even

TCE 004859557-01



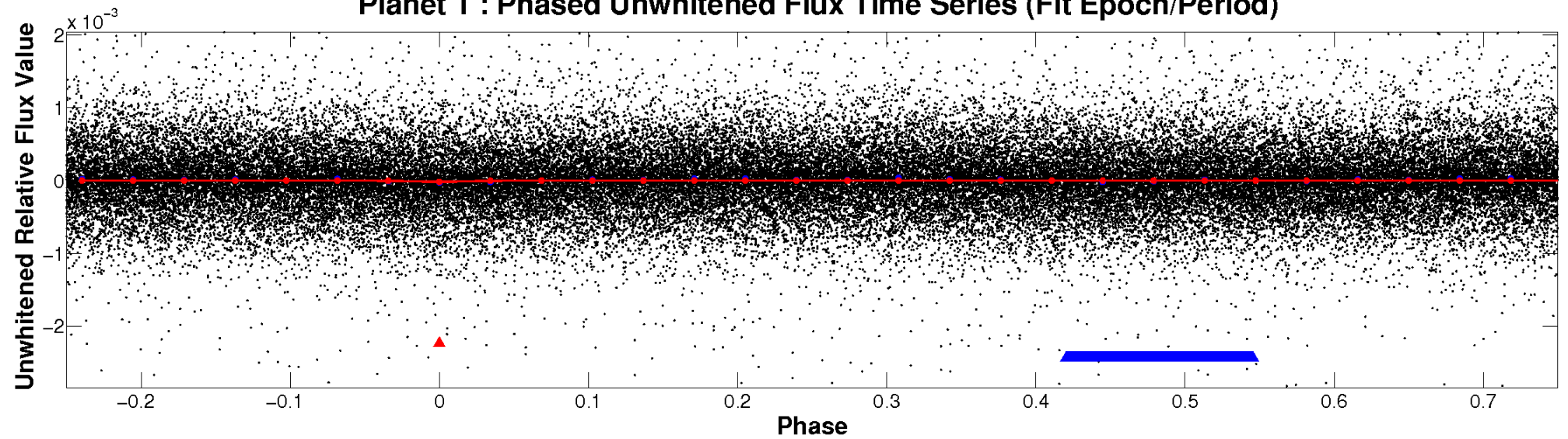
ALT Odd/Even

TCE 004859557-01

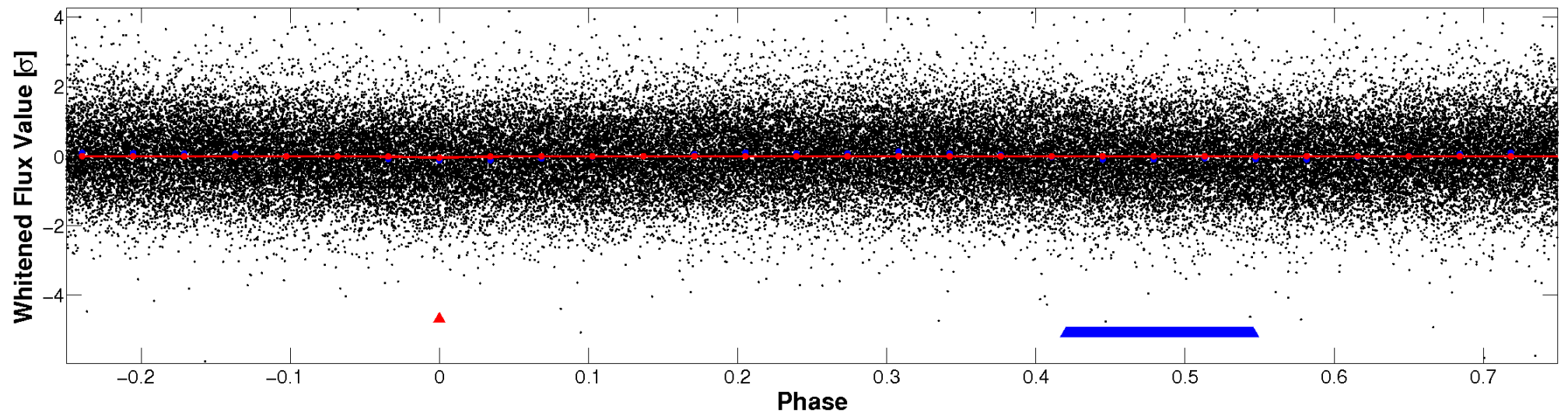


Non-Whitened Vs. Whitened Light Curve

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

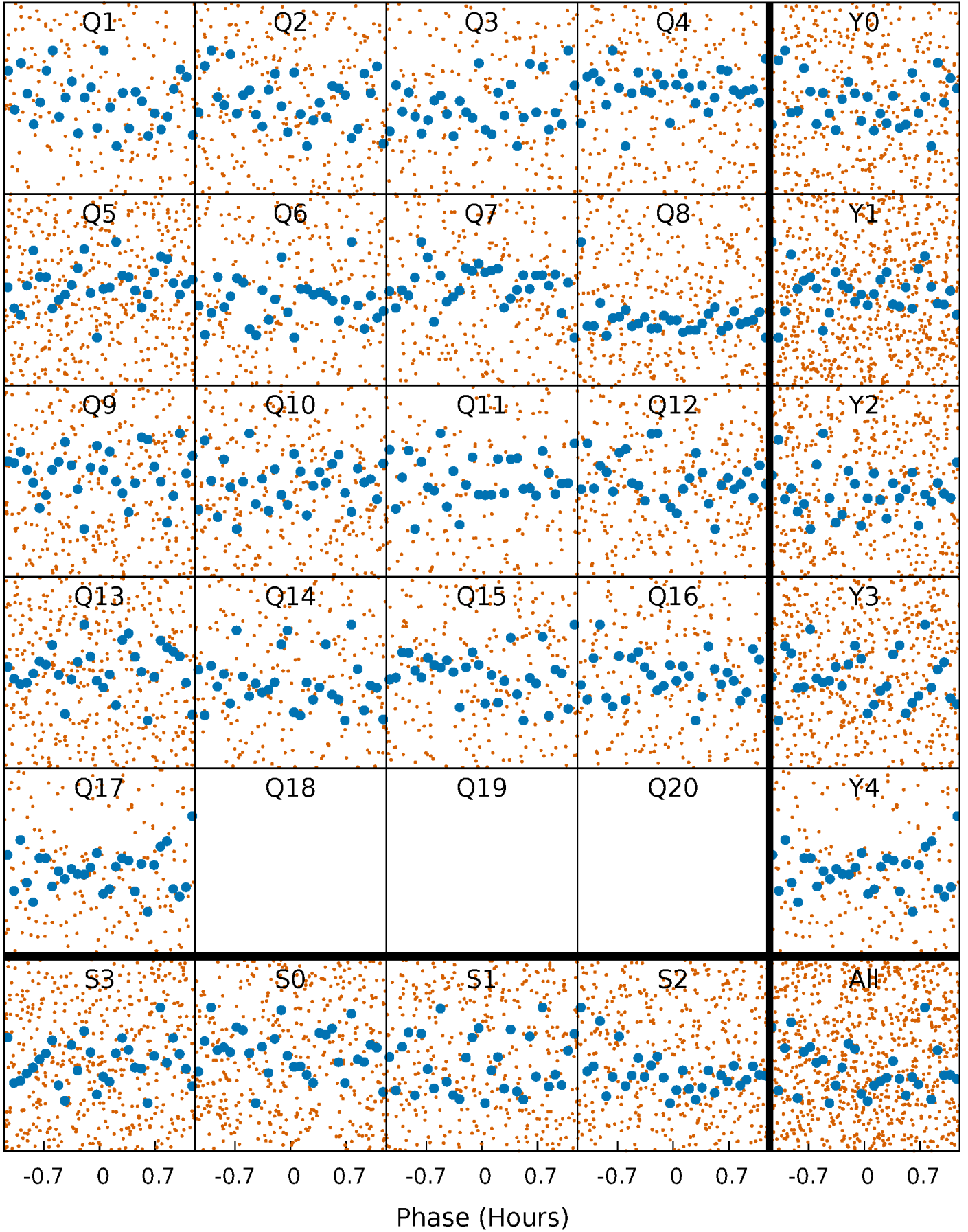


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



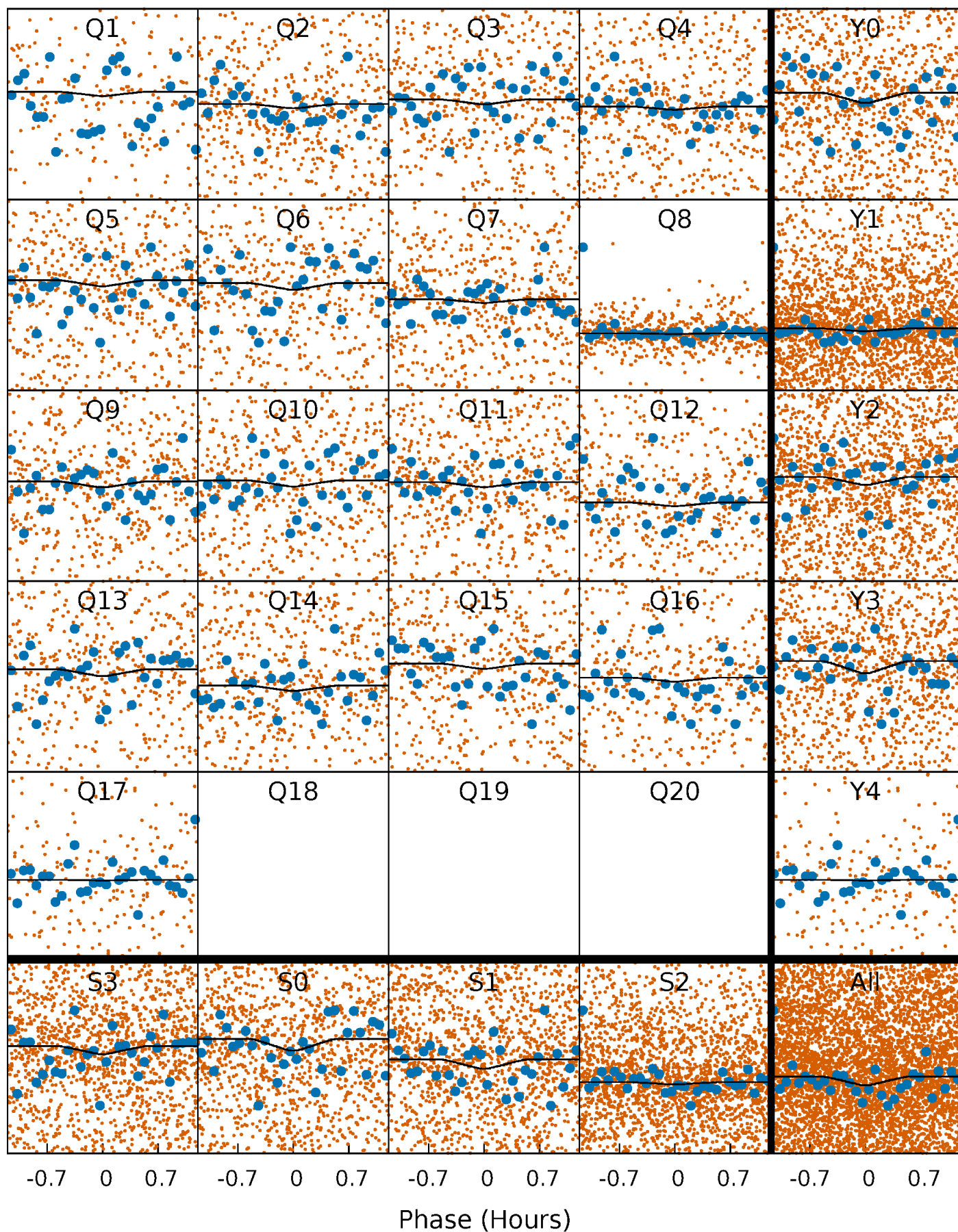
PDC Quarter-Phased Transit Curves

TCE 004859557-01 P= 0.597244 Days $T_0=131.752120$ (BKJD)



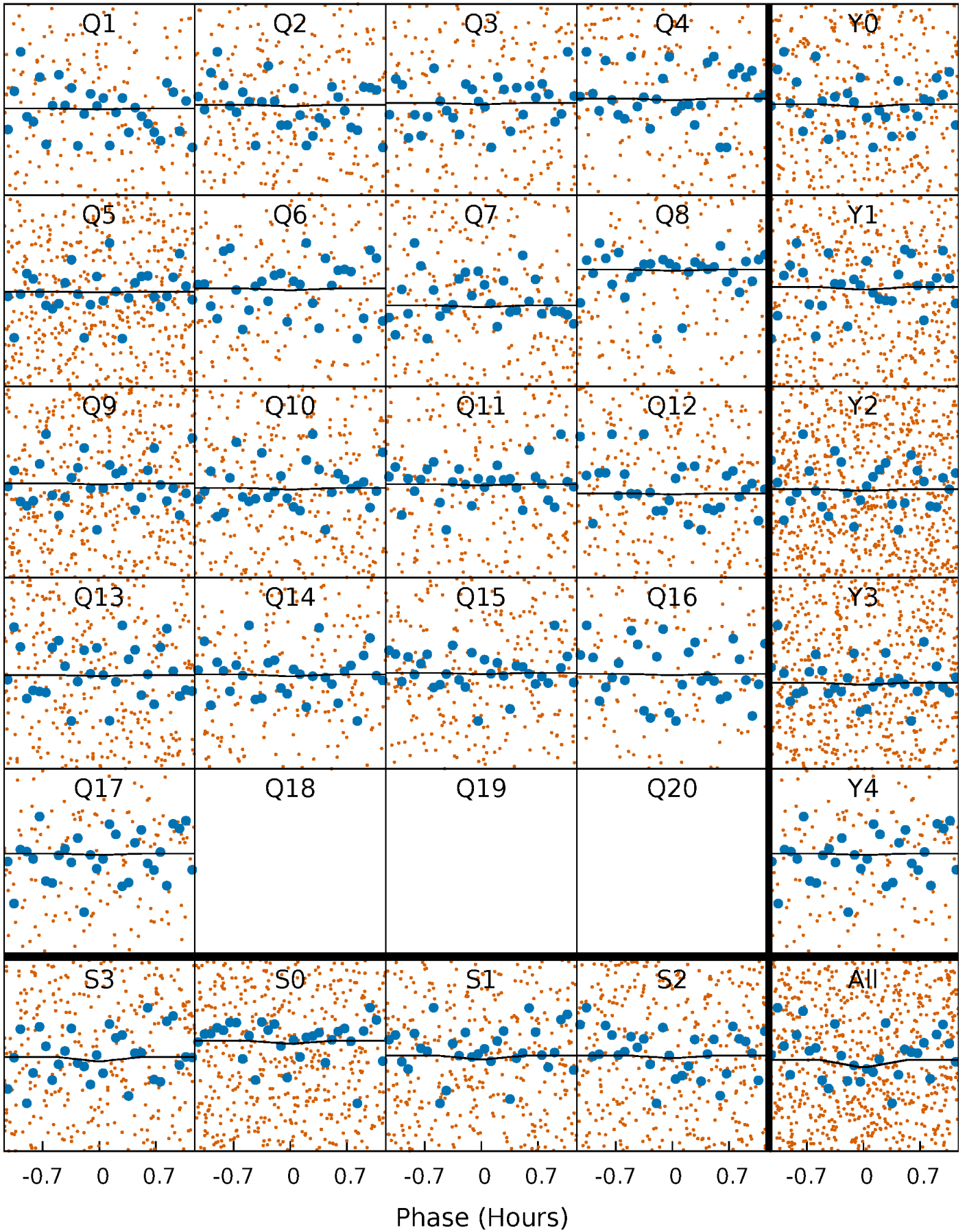
DV Quarter-Phased Transit Curves

TCE 004859557-01 P= 0.597244 Days $T_0=131.752120$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

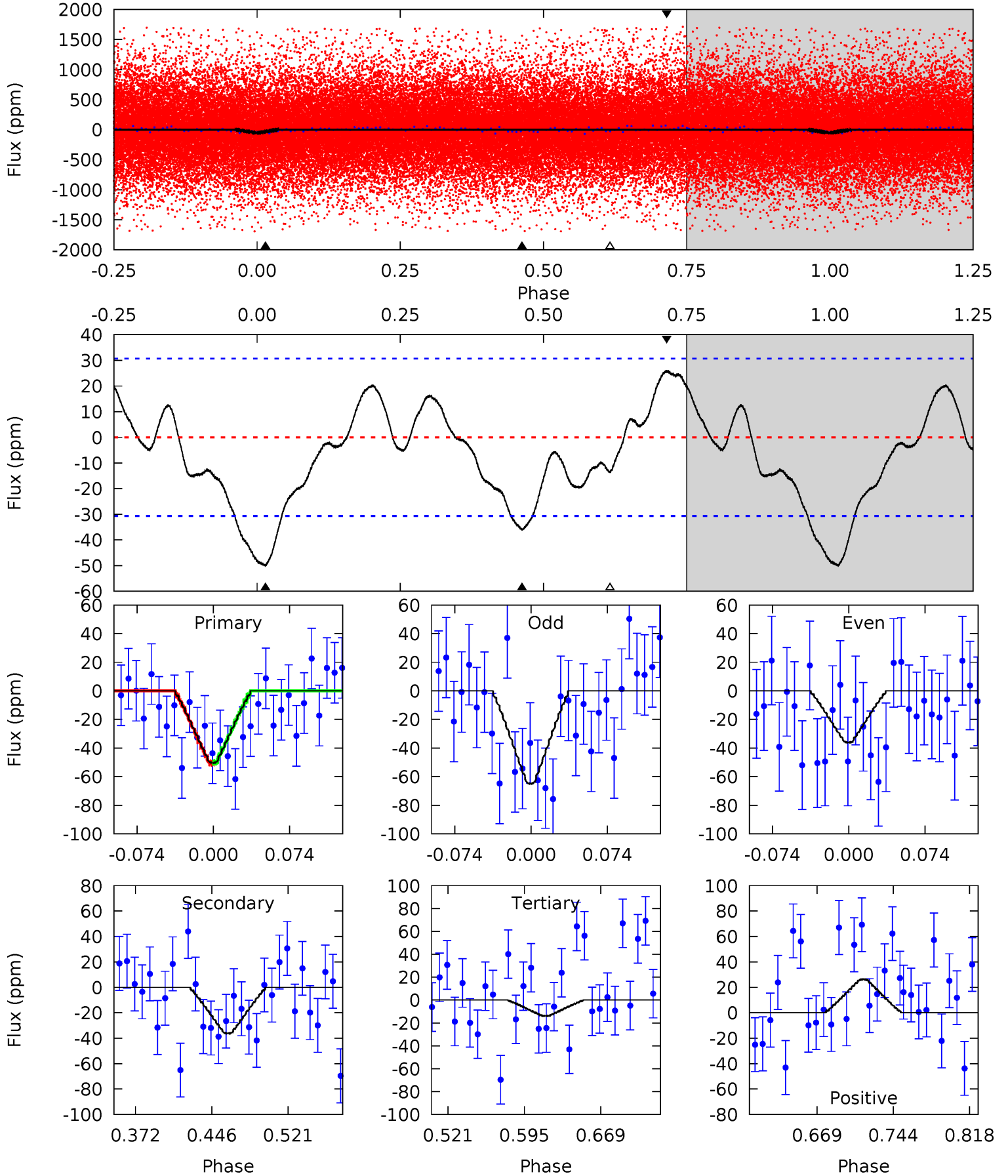
TCE 004859557-01 P= 0.597248 Days $T_0=131.752066$ (BKJD)



DV Model-Shift Uniqueness Test

004859557-01, P = 0.597244 Days, E = 131.154876 Days

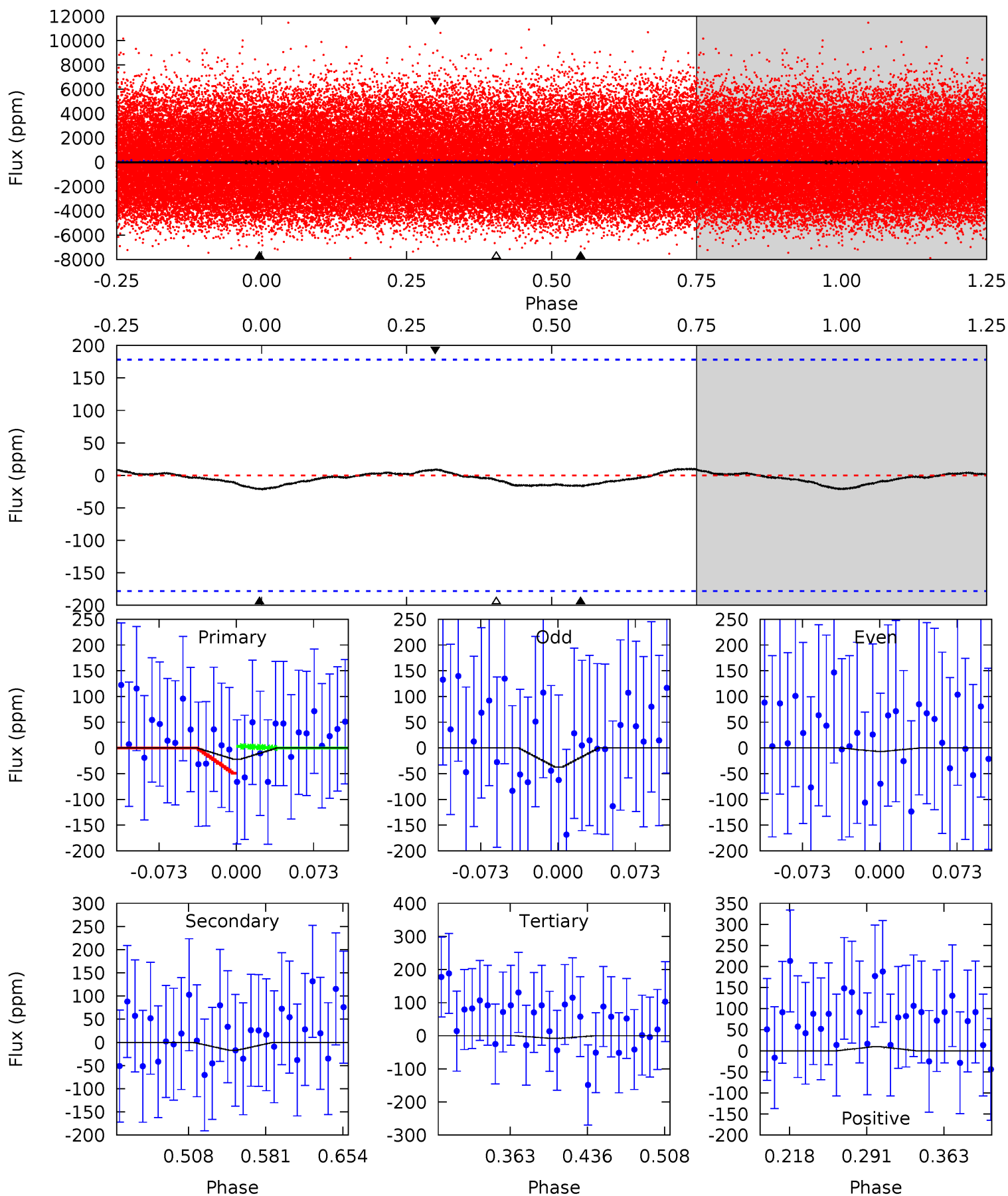
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.61	5.48	2.09	3.96	4.63	1.78	1.85	5.51	3.65	3.39	1.52	2.19	1.15	0.34	0.05



Alt Model-Shift Uniqueness Test

004859557-01, P = 0.597248 Days, E = 131.154818 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.57	0.44	0.21	0.25	4.63	1.80	0.16	0.36	0.32	0.24	0.19	0.40	0.21	0.33	0.60



Stellar Parameters For KIC 004859557

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6028^{+211}_{-232}	$4.468^{+0.056}_{-0.210}$	$0.000^{+0.250}_{-0.300}$	$1.001^{+0.311}_{-0.111}$	$1.073^{+0.145}_{-0.159}$	$1.508^{+0.442}_{-0.817}$
	+4%/-4%	+1%/-5%	+inf%/-inf%	+31%/-11%	+14%/-15%	+29%/-54%
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 004859557-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-36 ± 7	$4.81^{+5.21}_{-3.39}$	3180^{+231}_{-177}	-2823^{+6991}_{-348}	$0.163^{+1.748}_{-0.124}$
Alt.	-17 ± 38	$4.70^{+5.29}_{-3.26}$	3196^{+238}_{-174}	-3131^{+6343}_{-350}	$0.035^{+0.567}_{-0.153}$

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 $A_{obs} \gg 1.0$

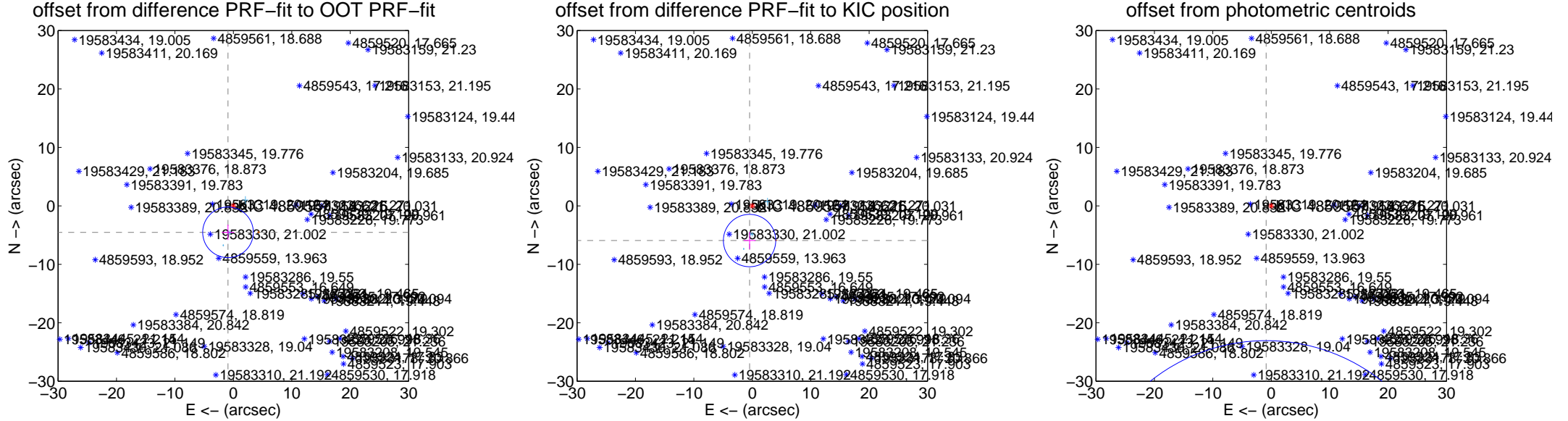
DV Centroid Data

Supplemental centroid analysis for 004859557-01. Kepler magnitude: 14.62. Transit SNR 1.96

There are 4 quarters with good PRF difference image offsets

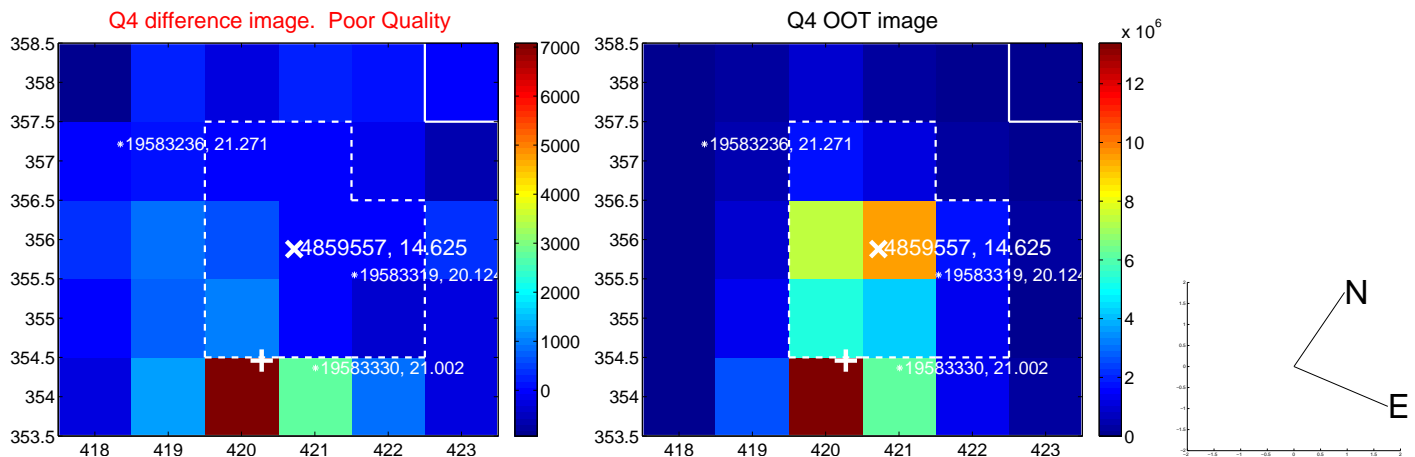
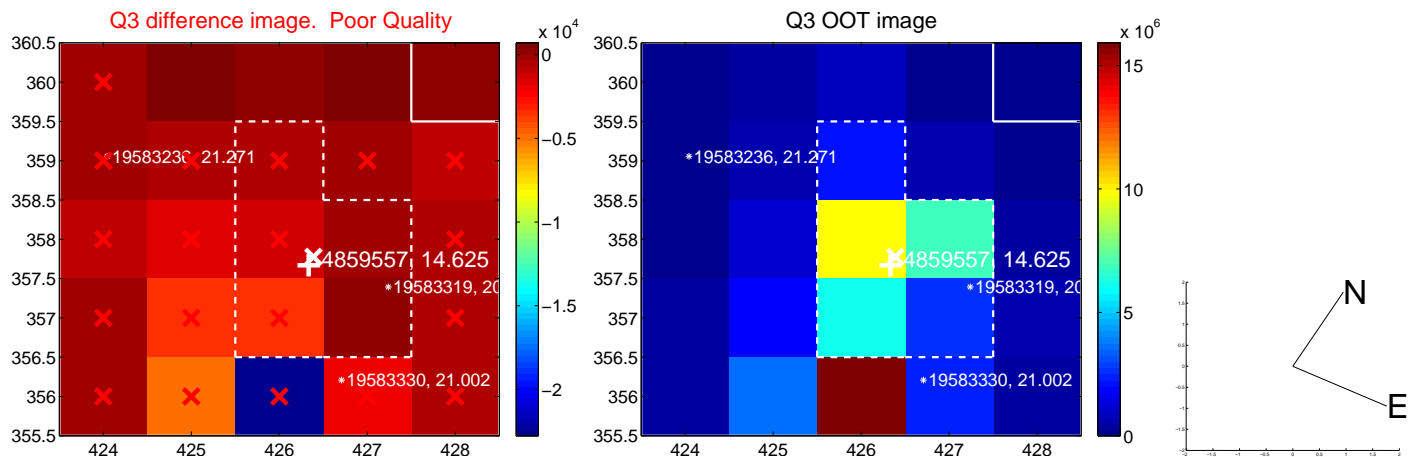
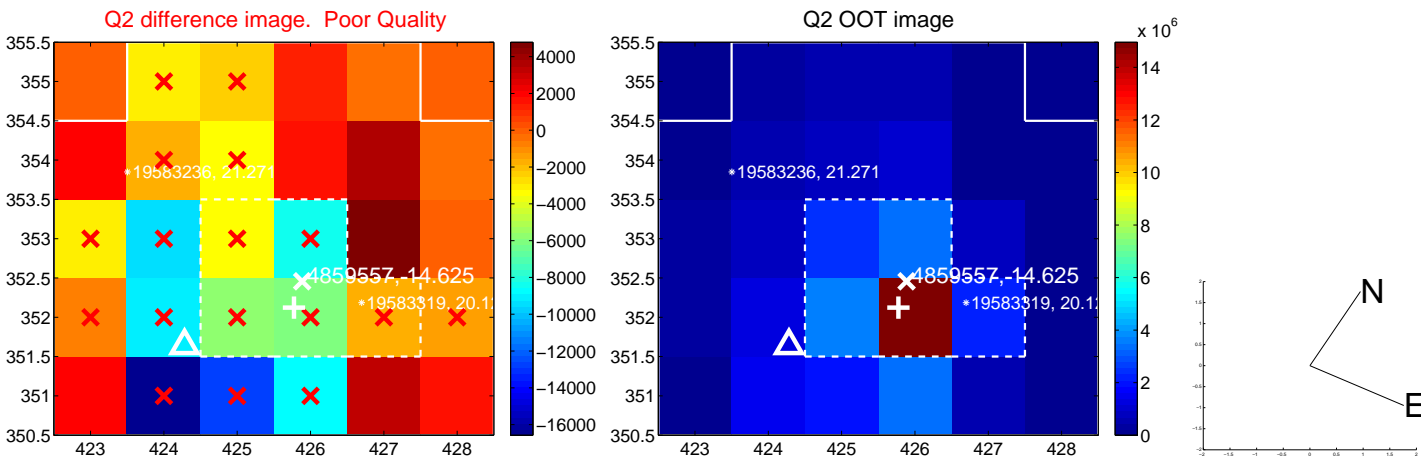
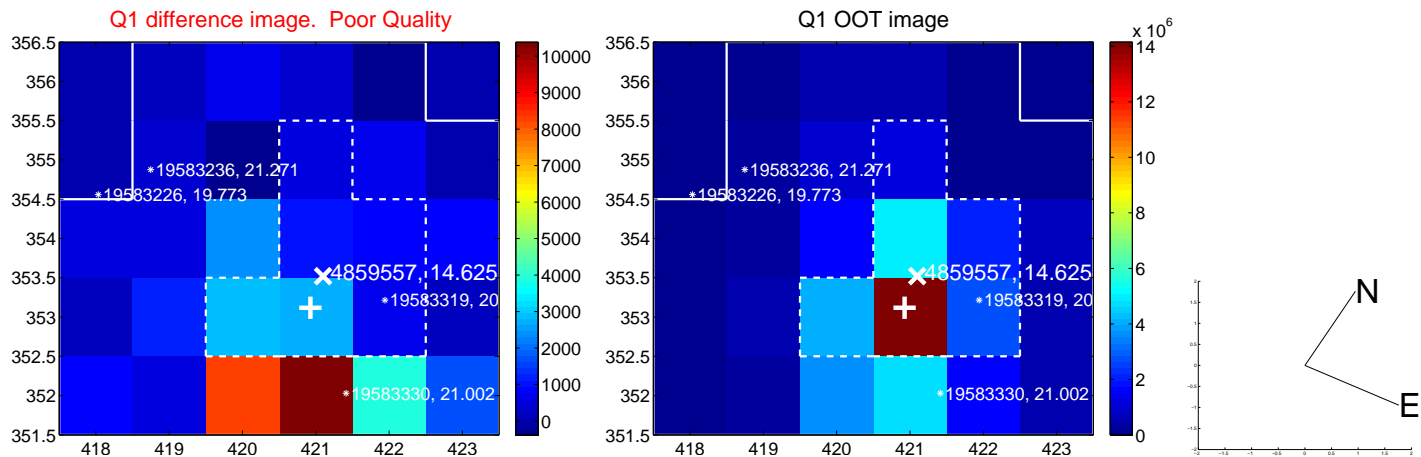
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.621 \pm 1.444	3.20	0.915 \pm 1.060	-4.530 \pm 1.313
PRF-fit source offset from KIC position	5.953 \pm 1.493	3.99	0.468 \pm 1.022	-5.934 \pm 1.474
photometric centroid source offset	54.88 \pm 10.60	5.18	0.87 \pm 4.28	-54.87 \pm 10.60

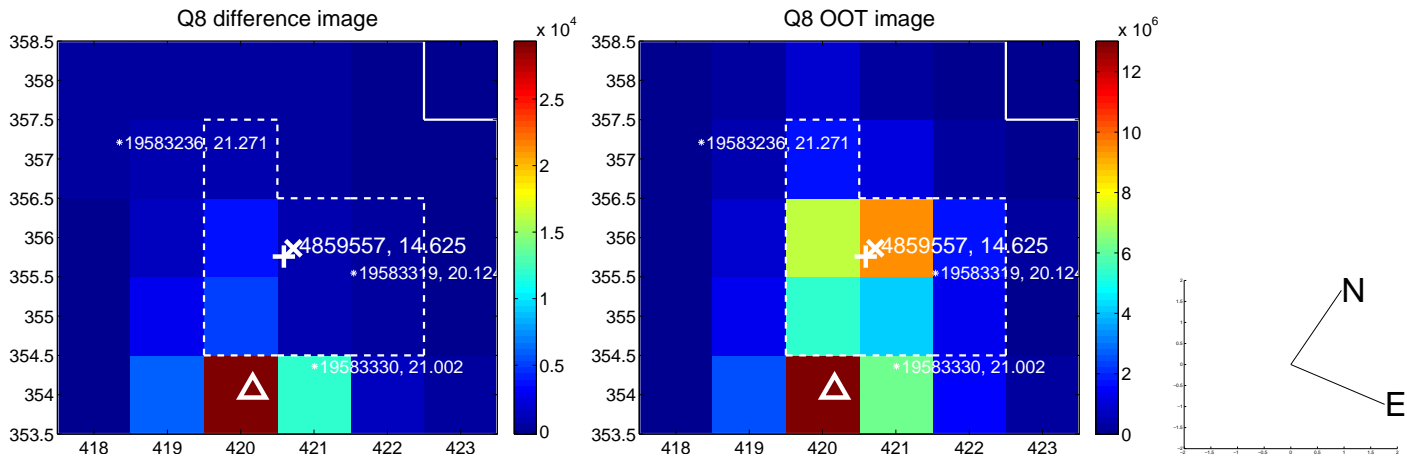
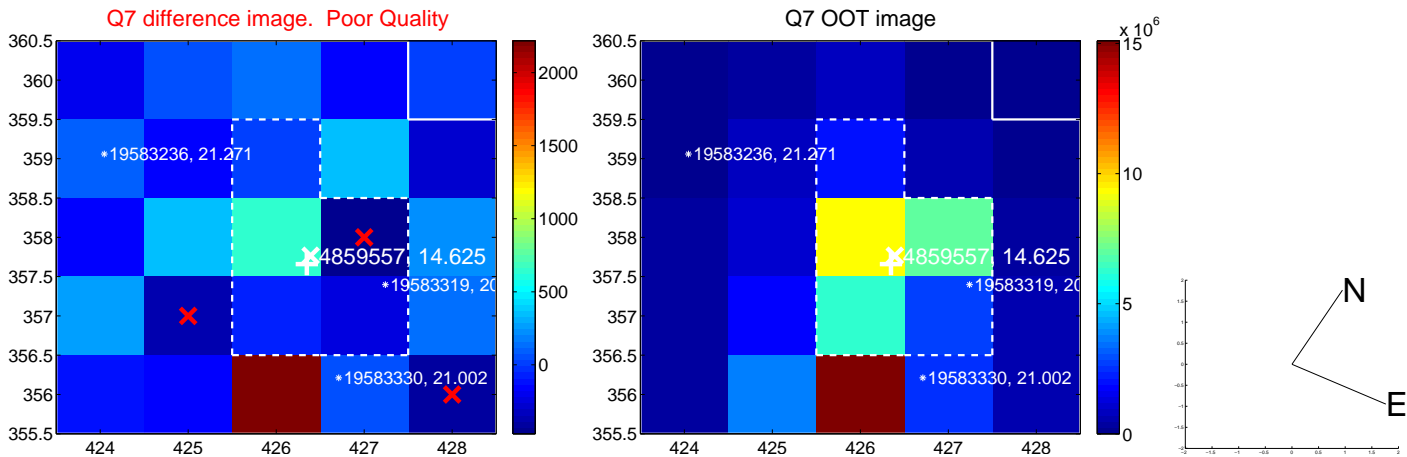
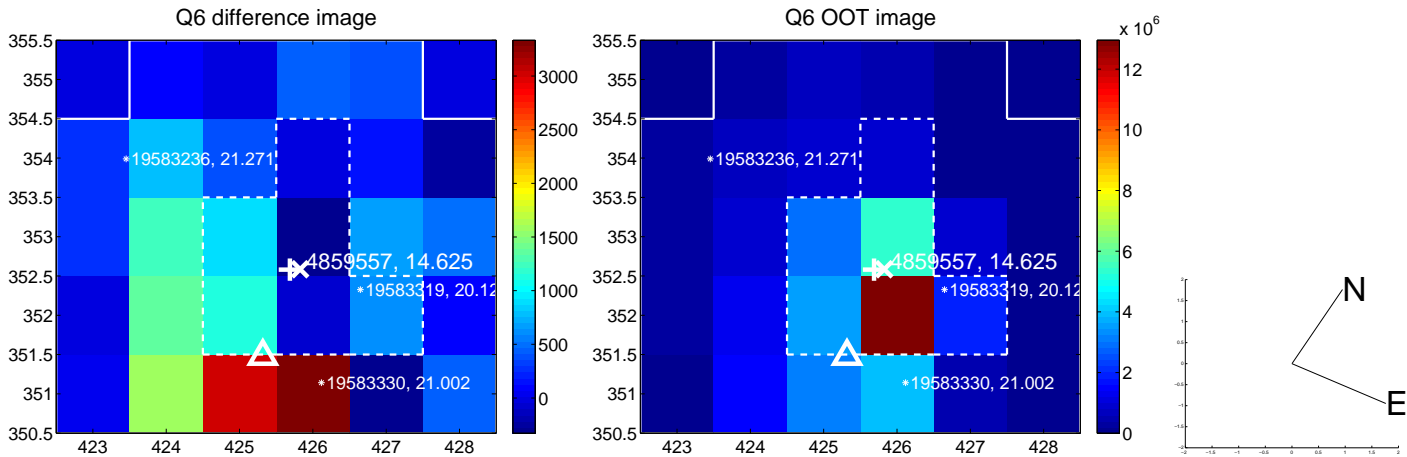
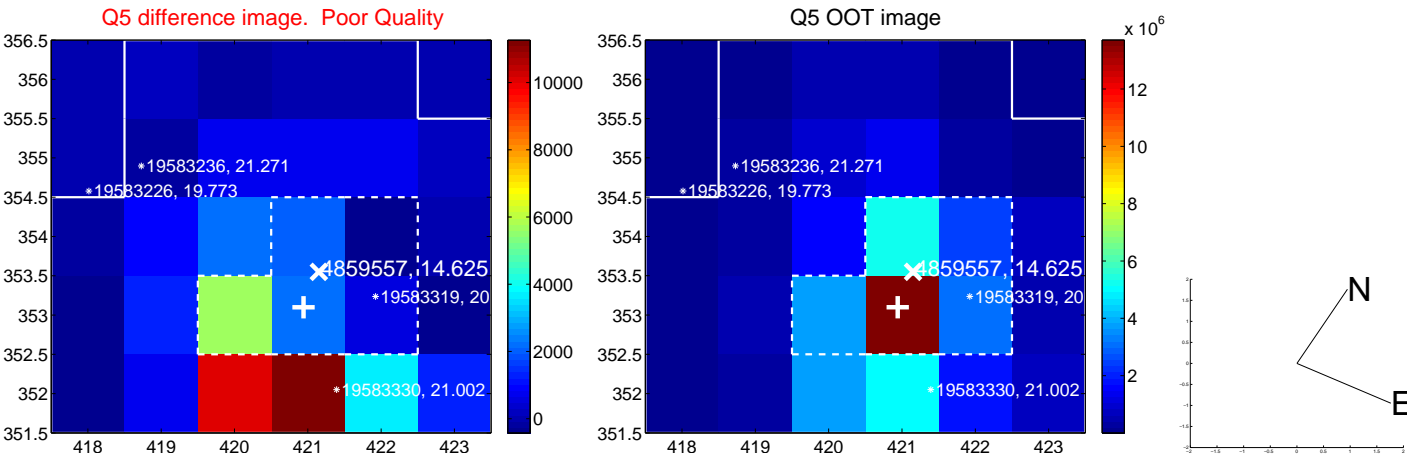


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

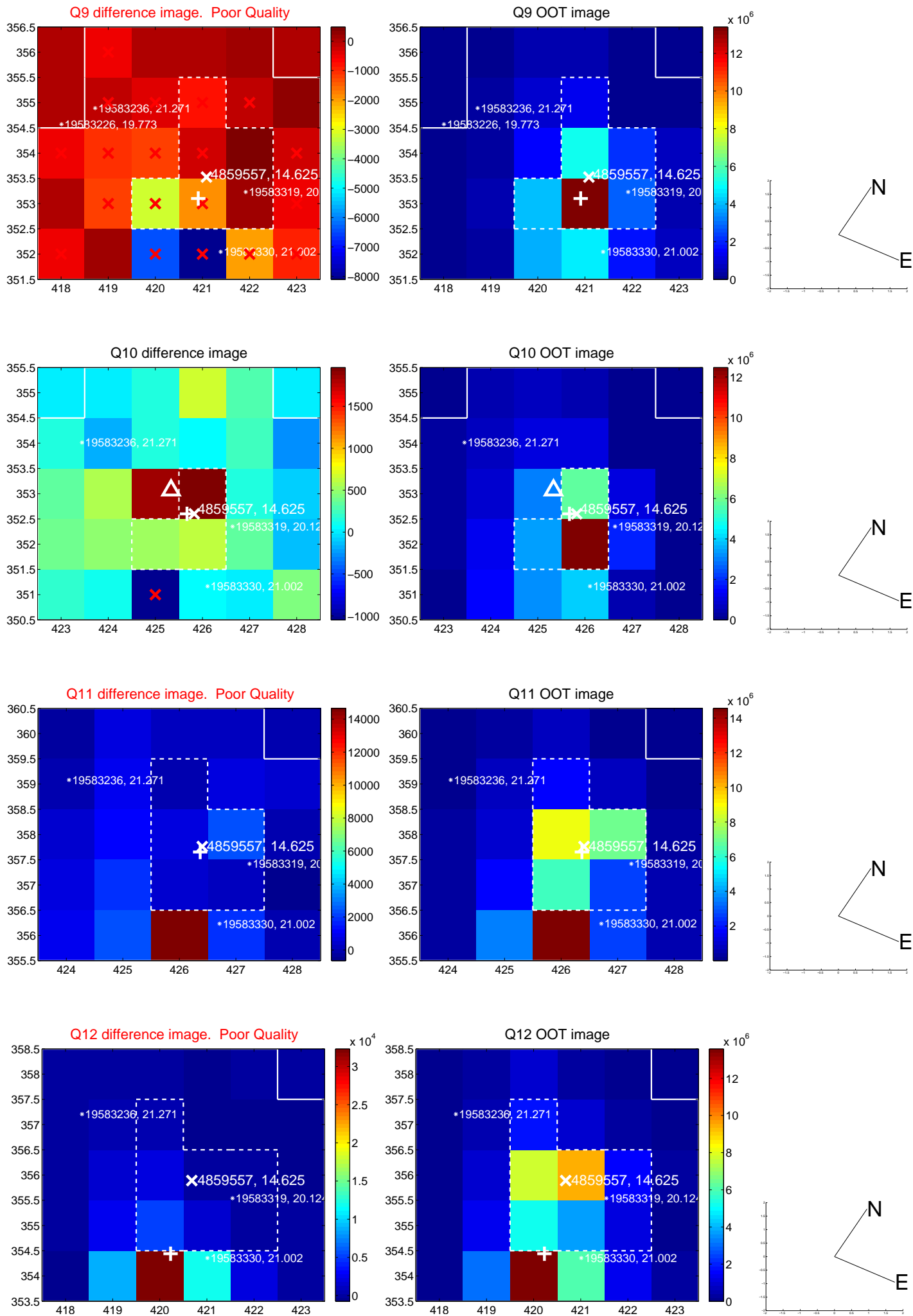
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



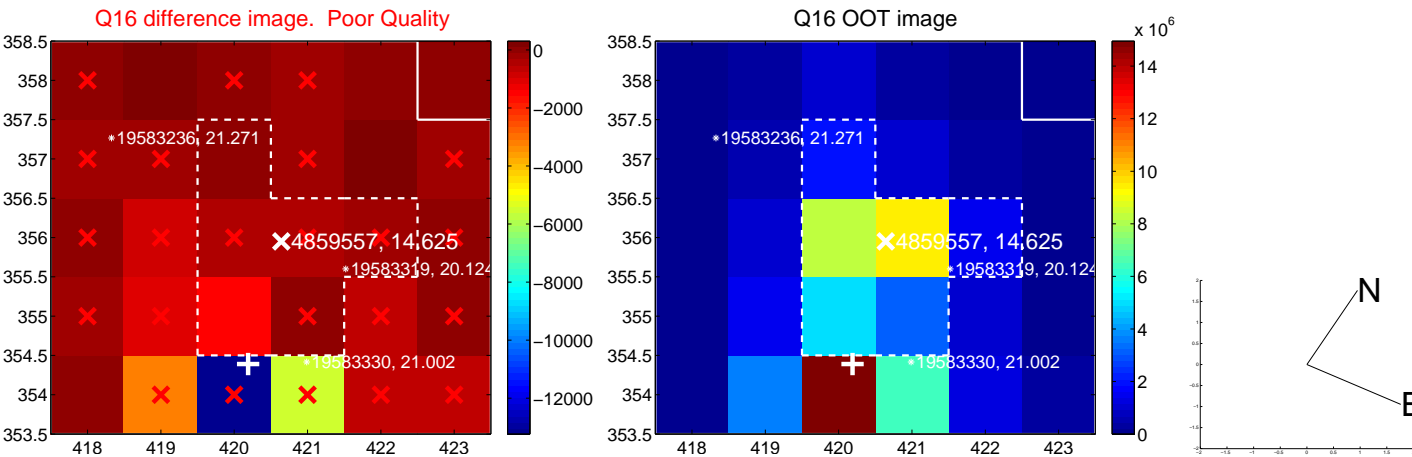
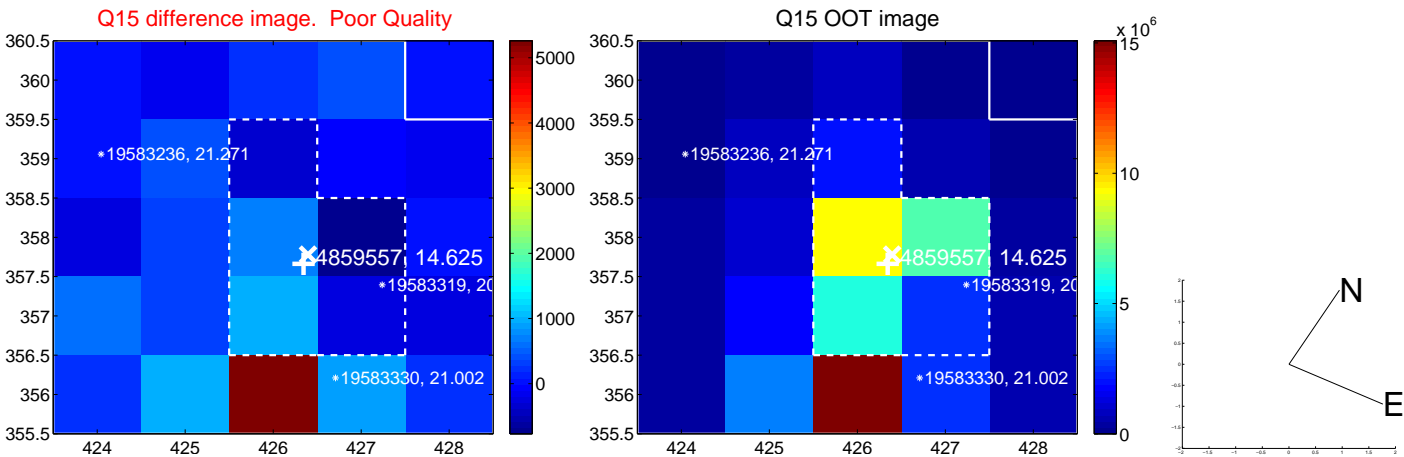
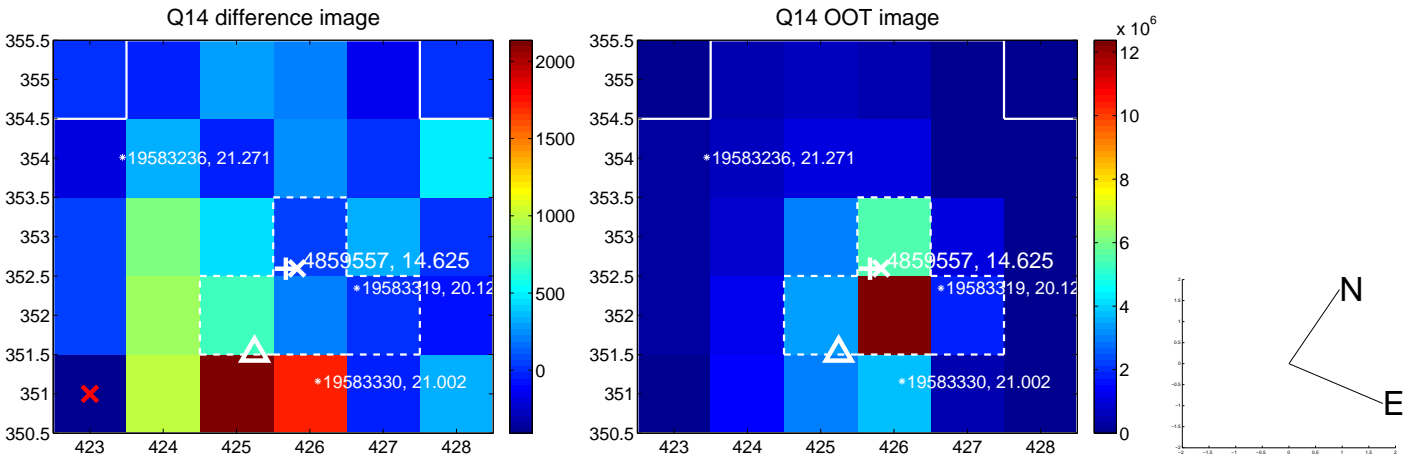
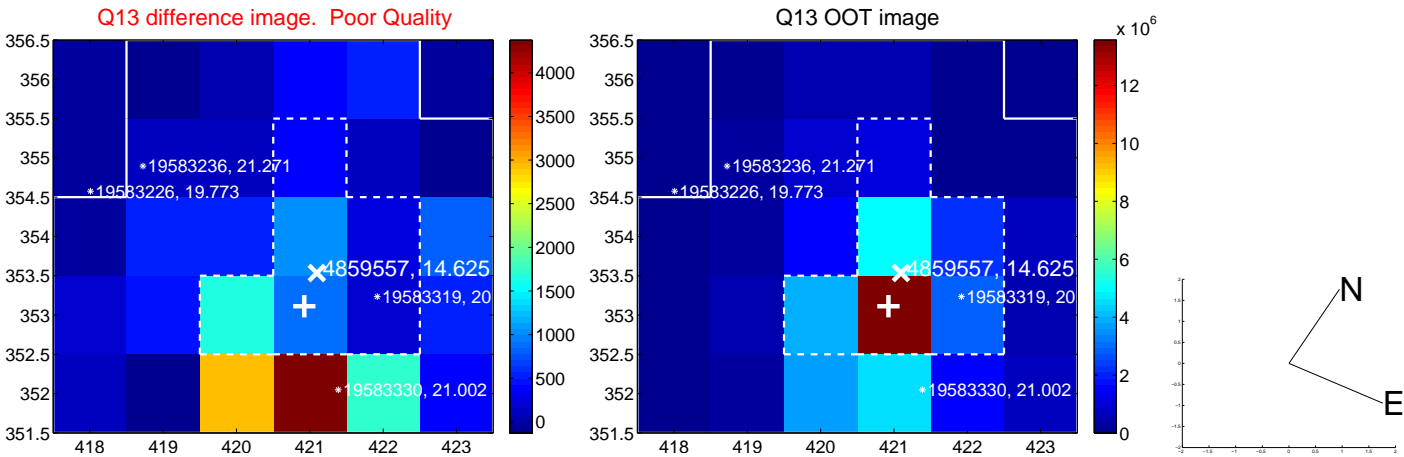
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



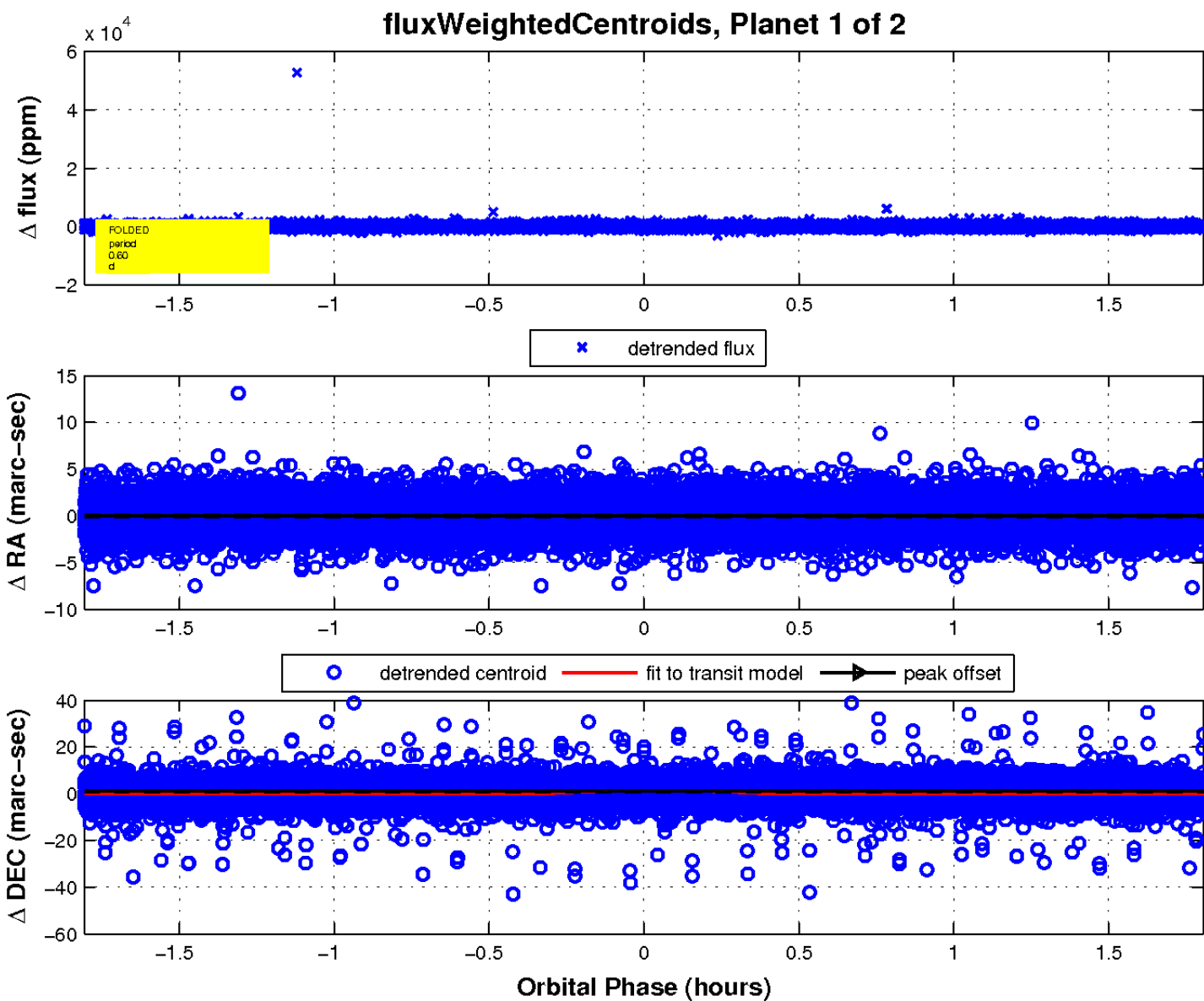
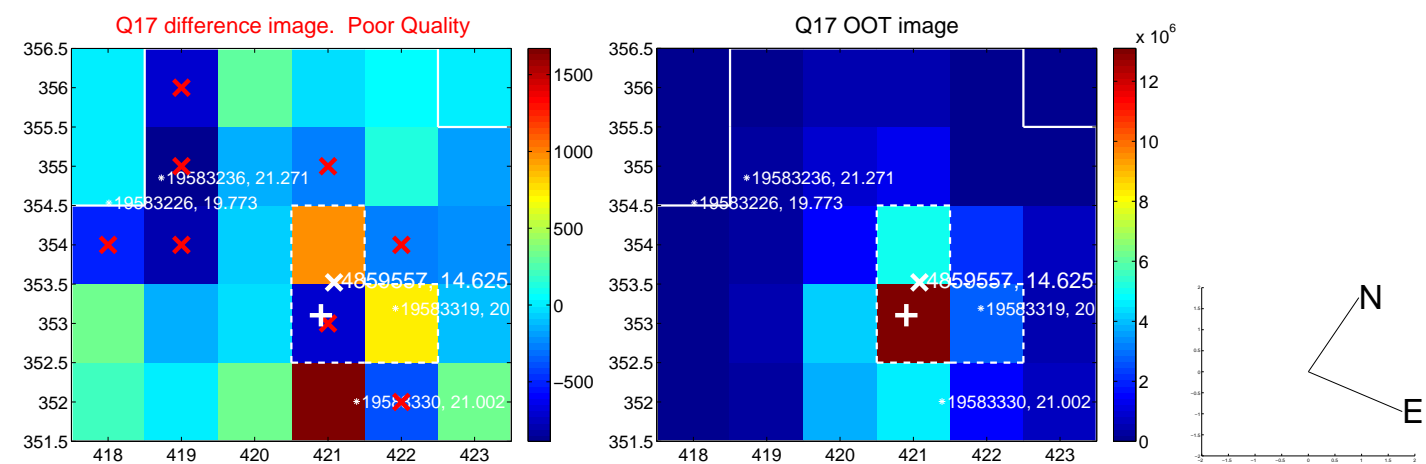
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

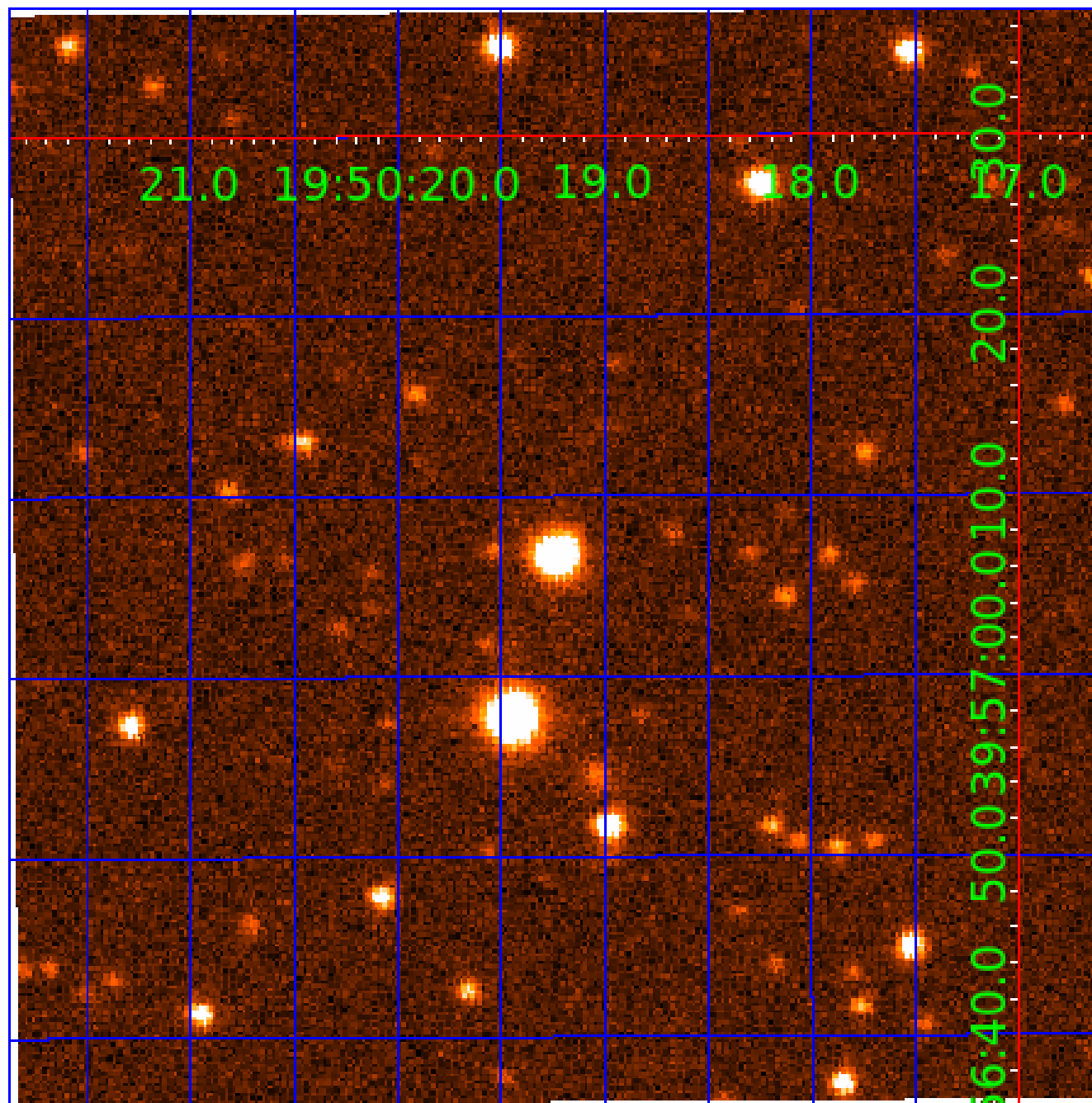


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004859557

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})
004859557-01	OBS	No	0.597244	131.752120	20.3	0.602	9.5	2.0	1.00	6028	0.46	5865.99
004859557-02	OBS	No	0.597213	132.078035	46.4	2.876	10.1	10.5	1.00	6028	0.77	5866.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004859557-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
004859557-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

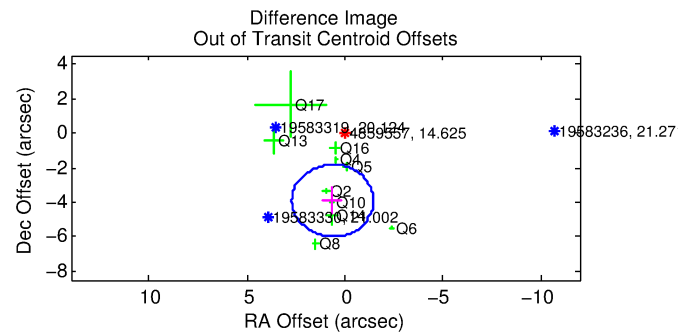
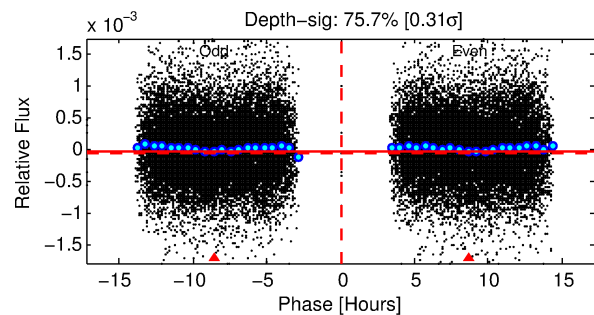
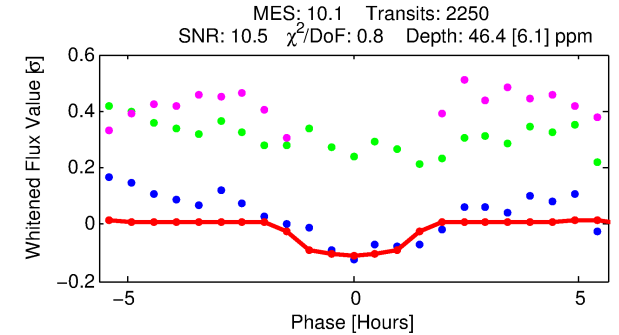
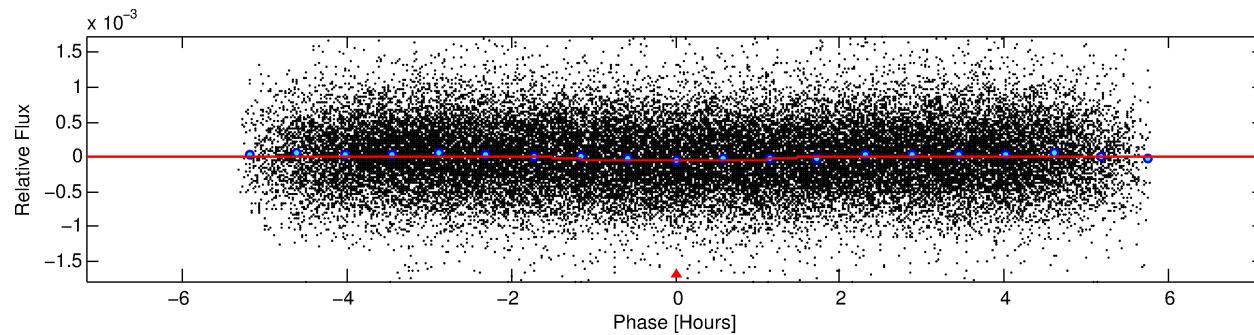
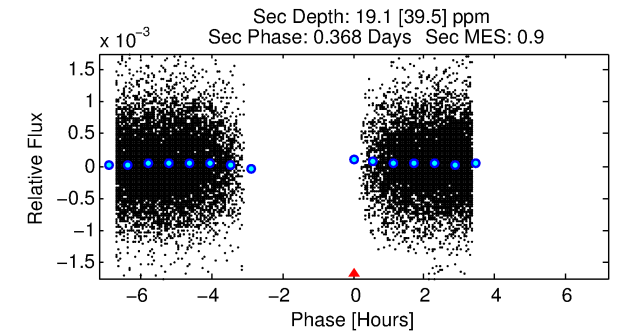
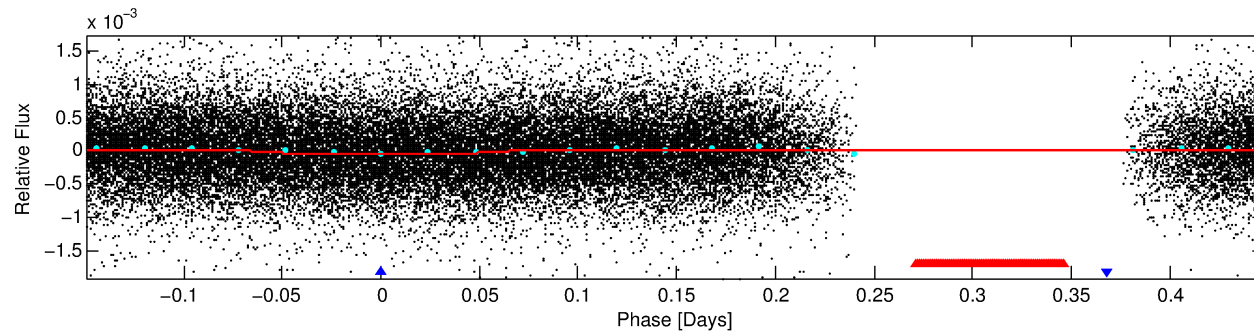
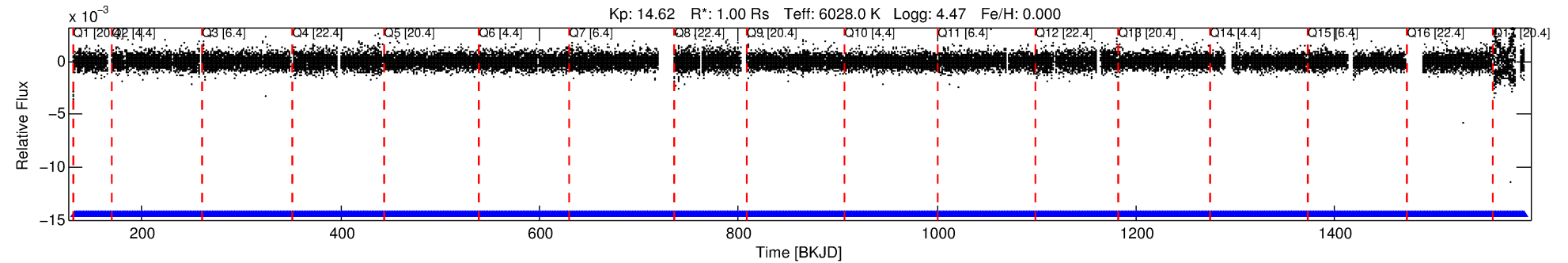
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004859557-02

No Significant Match Found

DV One-Page Summary

KIC: 4859557 Candidate: 2 of 2 Period: 0.597 d



DV Fit Results:

Period = 0.59721 [0.00001] d
Epoch = 132.0780 [0.0036] BKJD
Rp/R* = 0.0071 [0.0056]
a/R* = 1.26 [1.84]
b = 0.84 [1.40]
Seff = 5866.39 [2422.46]
Teff = 2232 [230] K
Rp = 0.77 [0.65] Re
a = 0.0142 [0.0037] AU
Ag = 3.57 [9.38] [0.27σ]
Teffp = 4744 [3085] K [0.81σ]

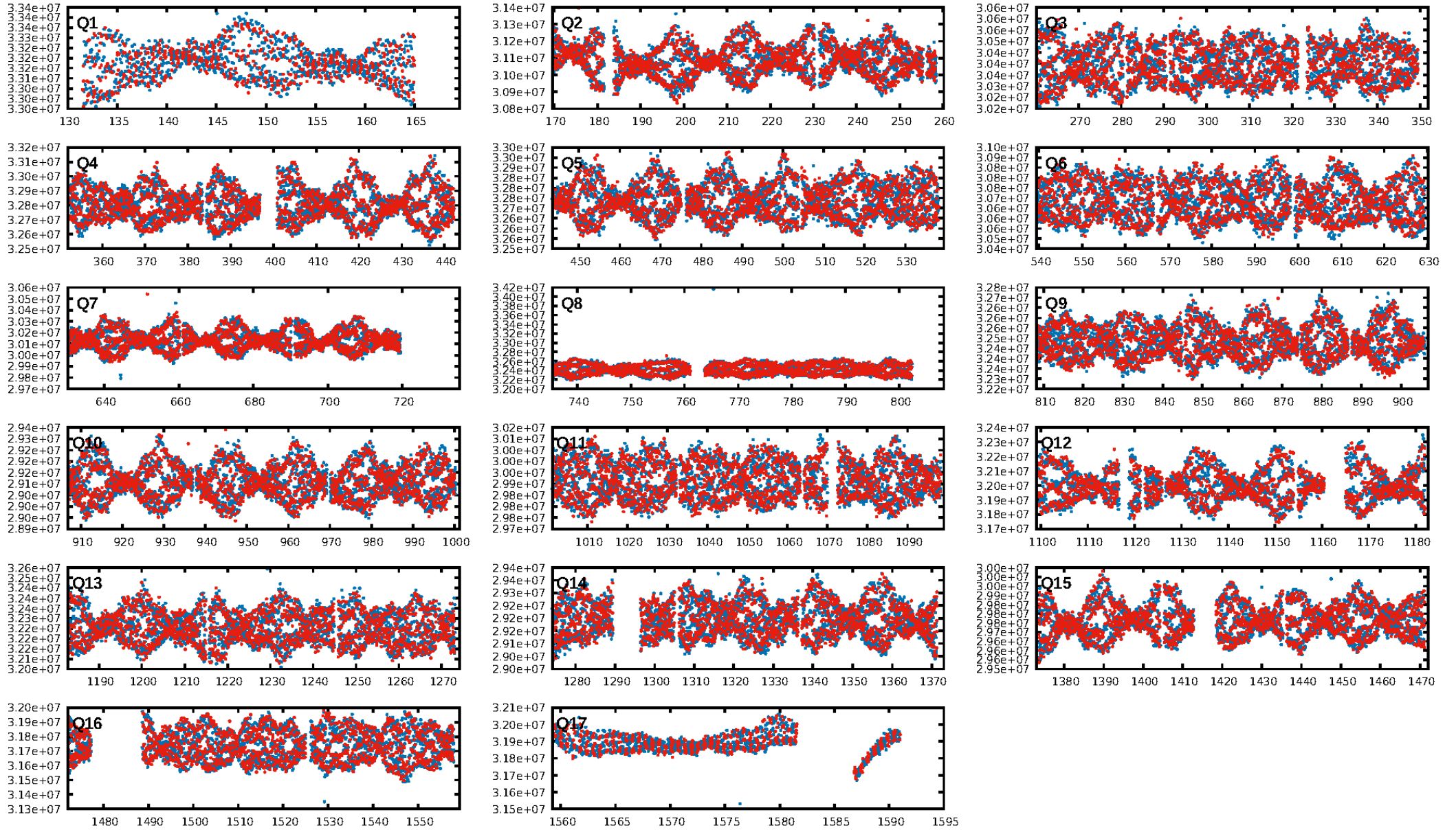
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.43e-32
RollingBand-fgt: 1.00 [2147/2147]
GhostDiagnostic-chr: -0.4877
Centroid-sig: 0.0%
Centroid-so: 10.667 arcsec [5.95σ]
OotOffset-rm: 3.965 arcsec [5.69σ]
KicOffset-rm: 5.146 arcsec [8.31σ]
OotOffset-st: 4/0/3/3 [10]
KicOffset-st: 4/0/3/3 [10]
DiffImageQuality-fgm: 0.60 [6/10]
DiffImageOverlap-fno: 0.00 [0/17]

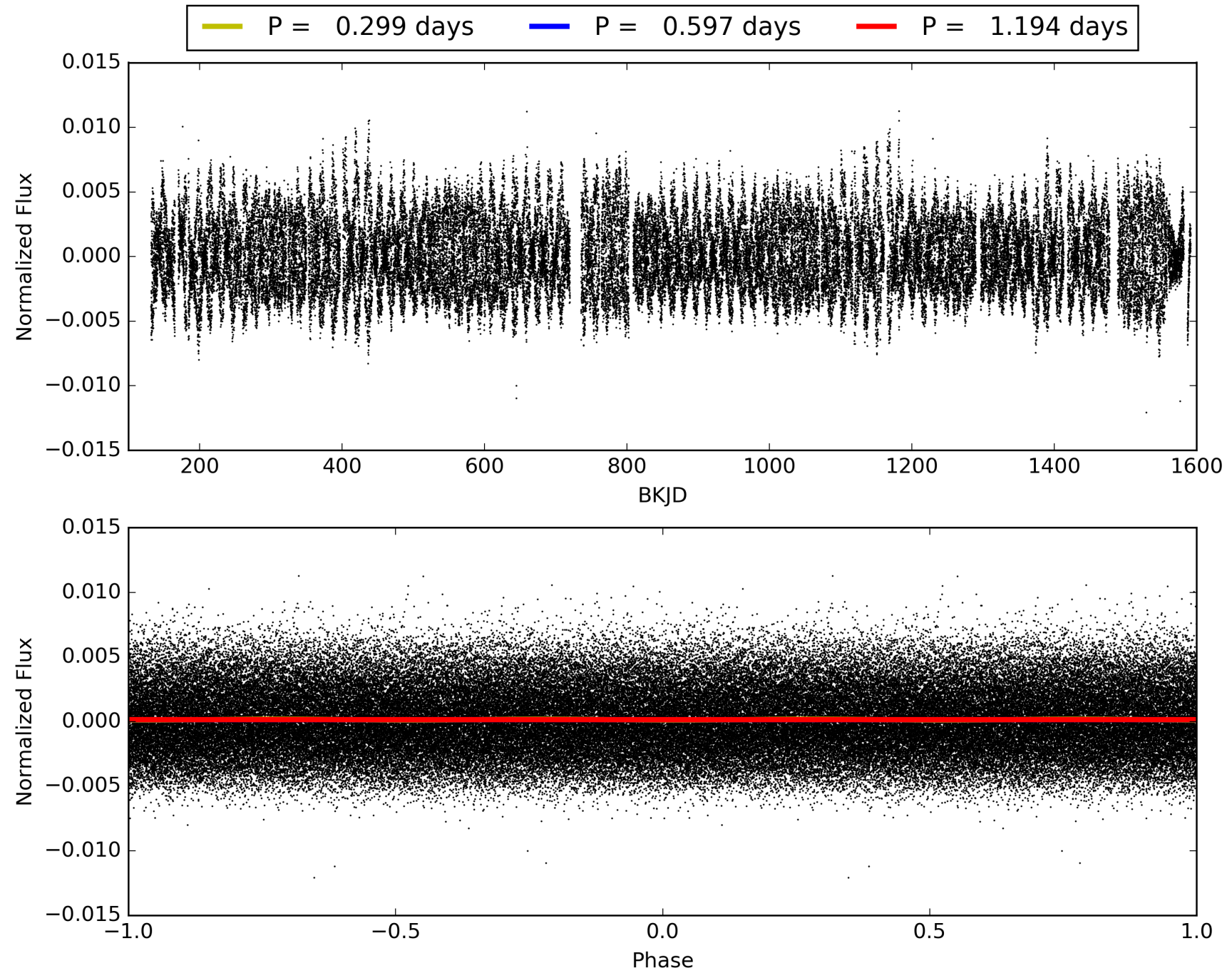
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:09:22 Z

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

TCE 004859557-02, PDC Light Curves

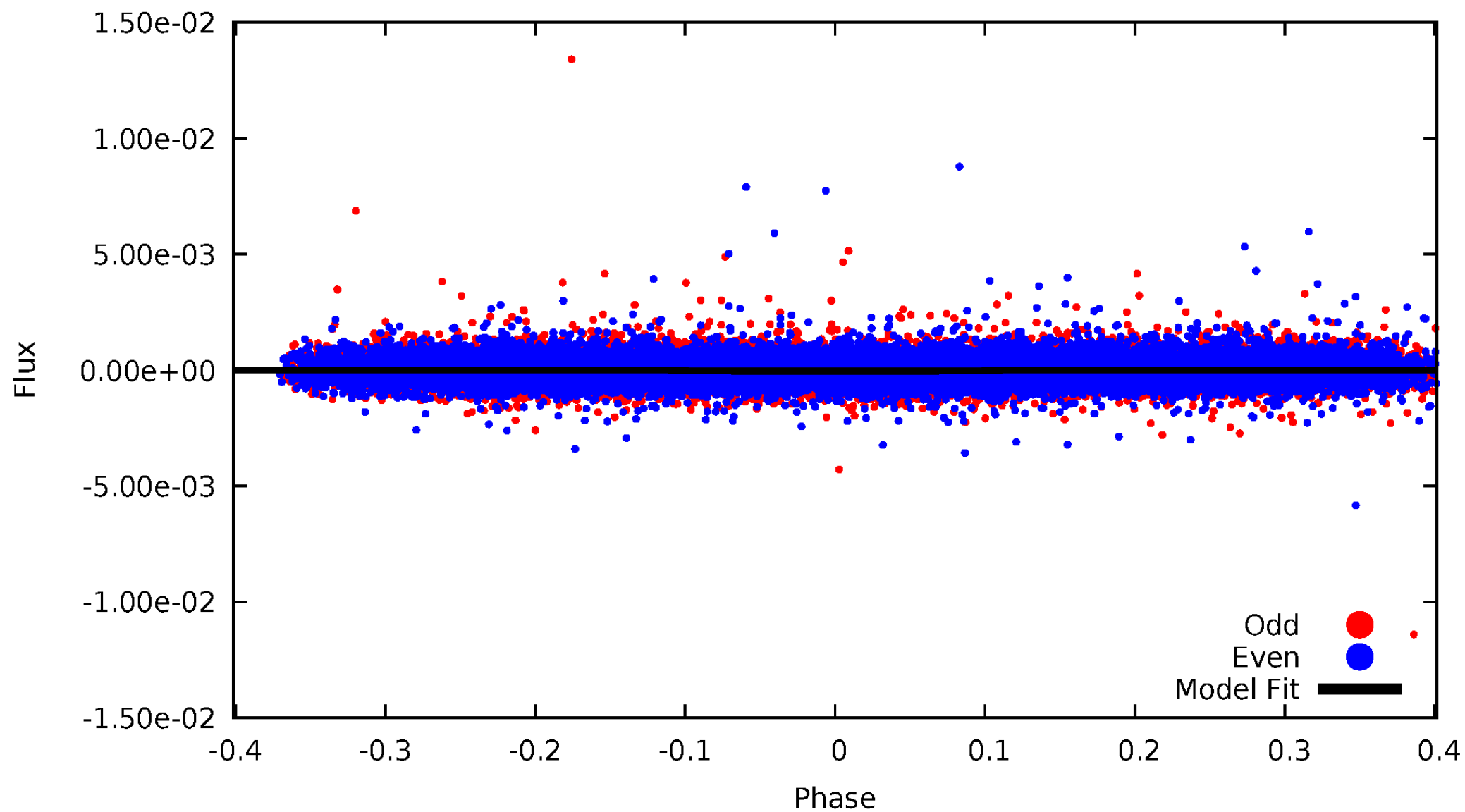


TCE 004859557-02



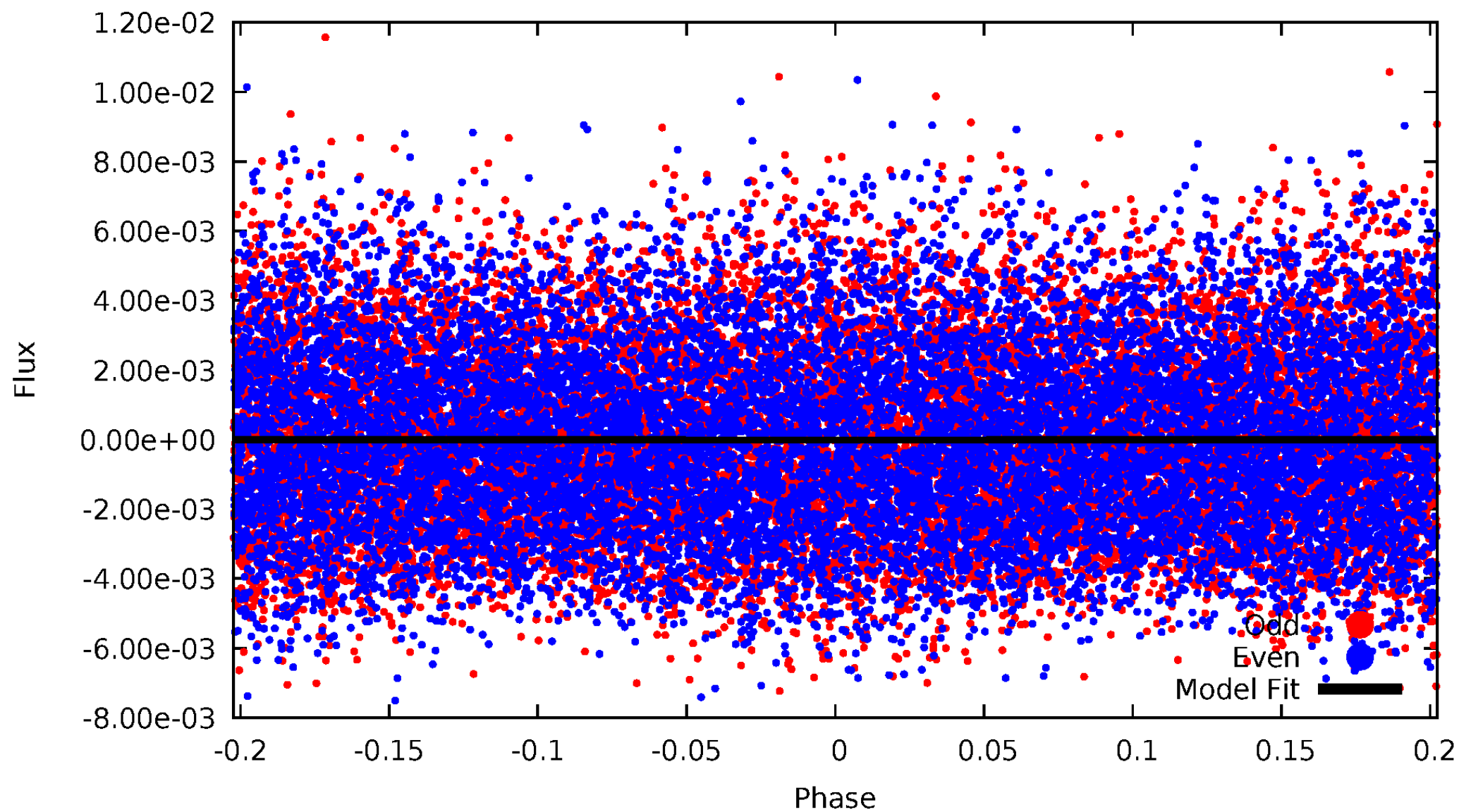
DV Odd/Even

TCE 004859557-02



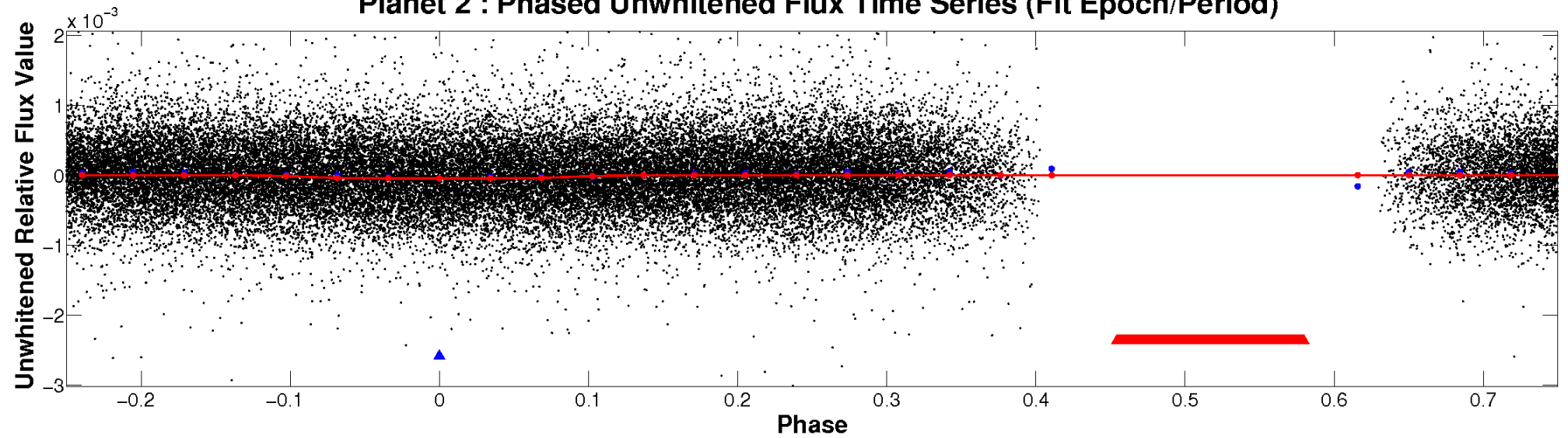
ALT Odd/Even

TCE 004859557-02

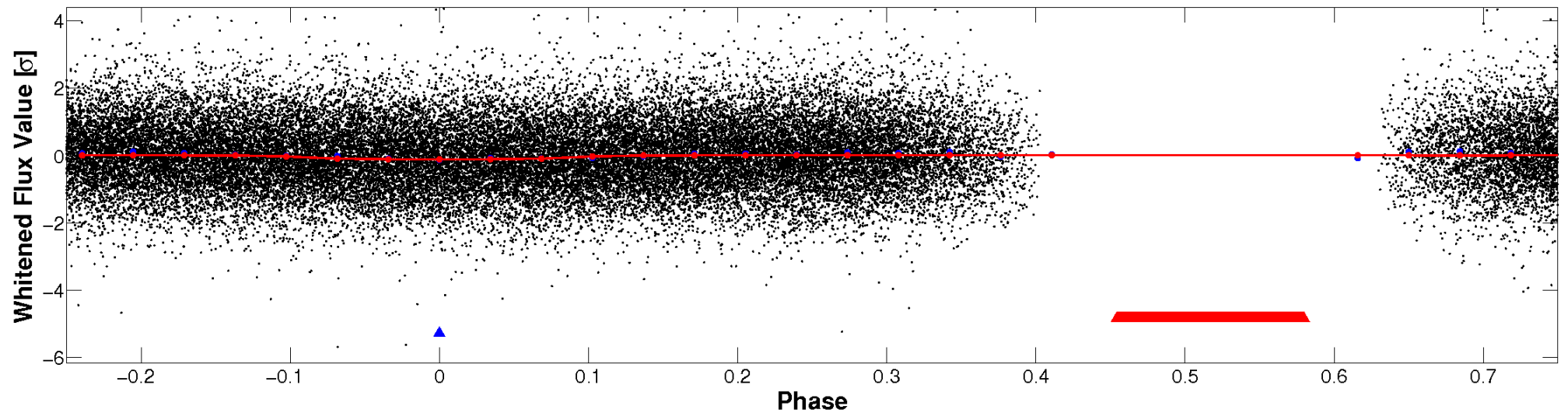


Non-Whitened Vs. Whitened Light Curve

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

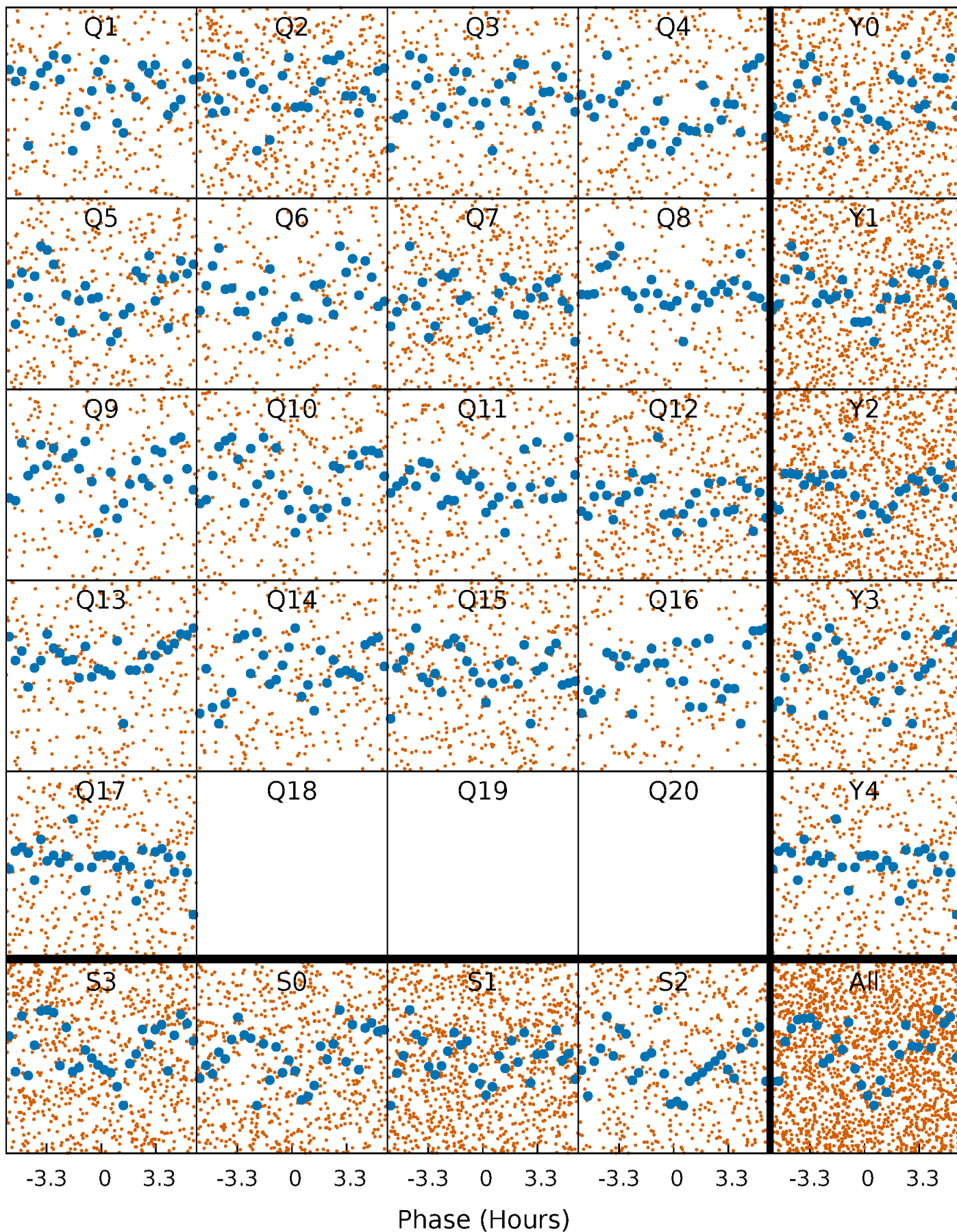


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



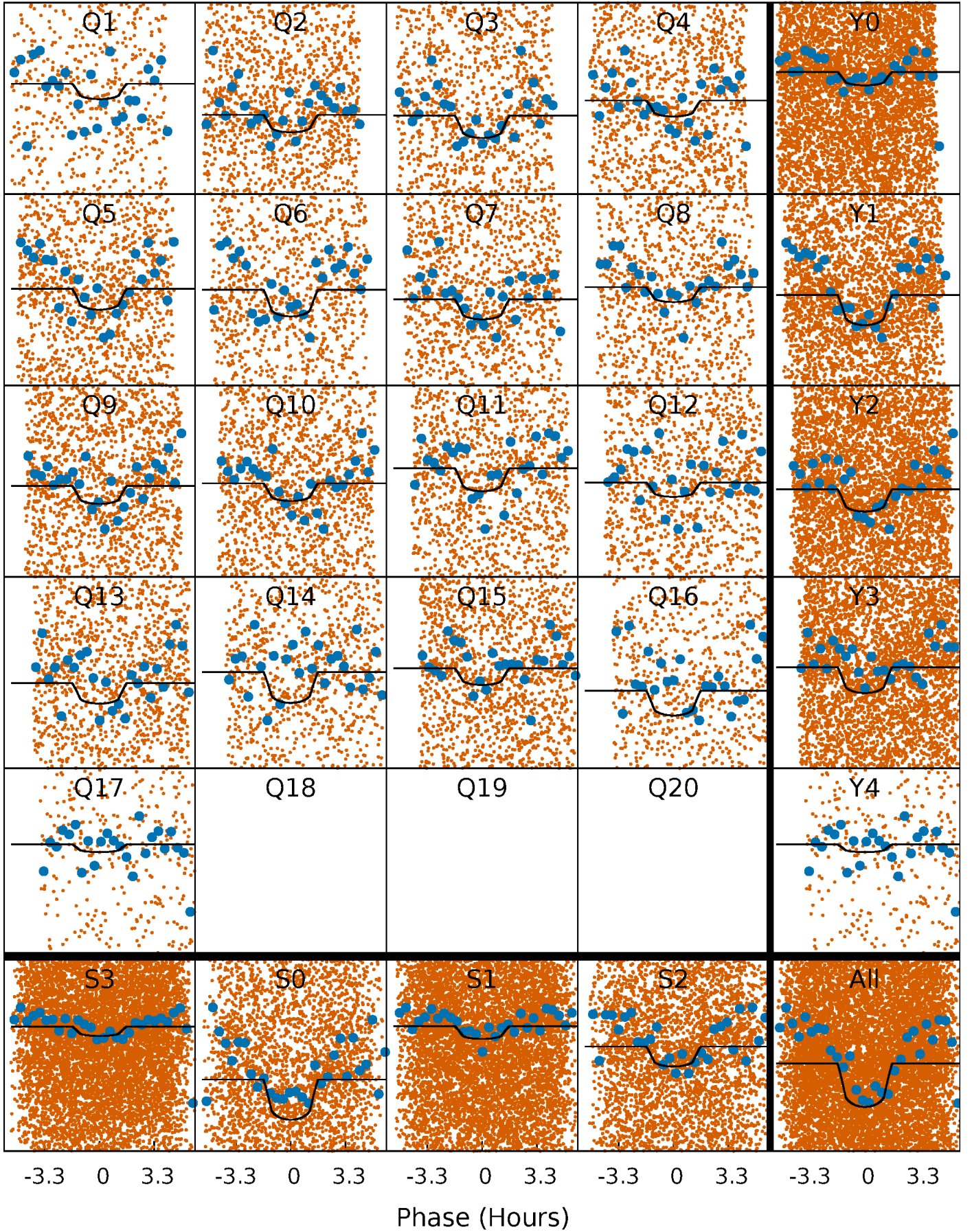
PDC Quarter-Phased Transit Curves

TCE 004859557-02 P= 0.597213 Days $T_0=132.078035$ (BKJD)



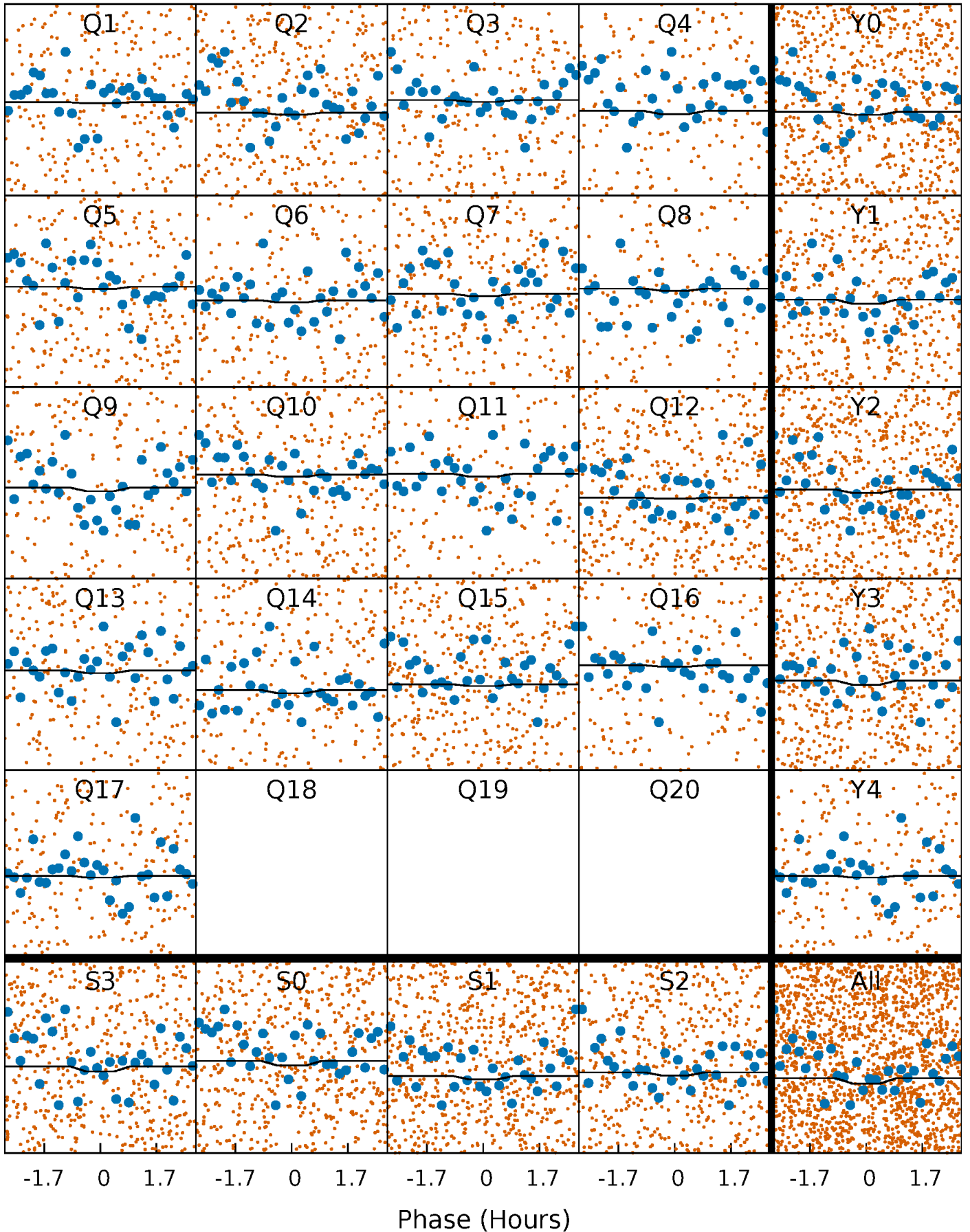
DV Quarter-Phased Transit Curves

TCE 004859557-02 P= 0.597213 Days $T_0=132.078035$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

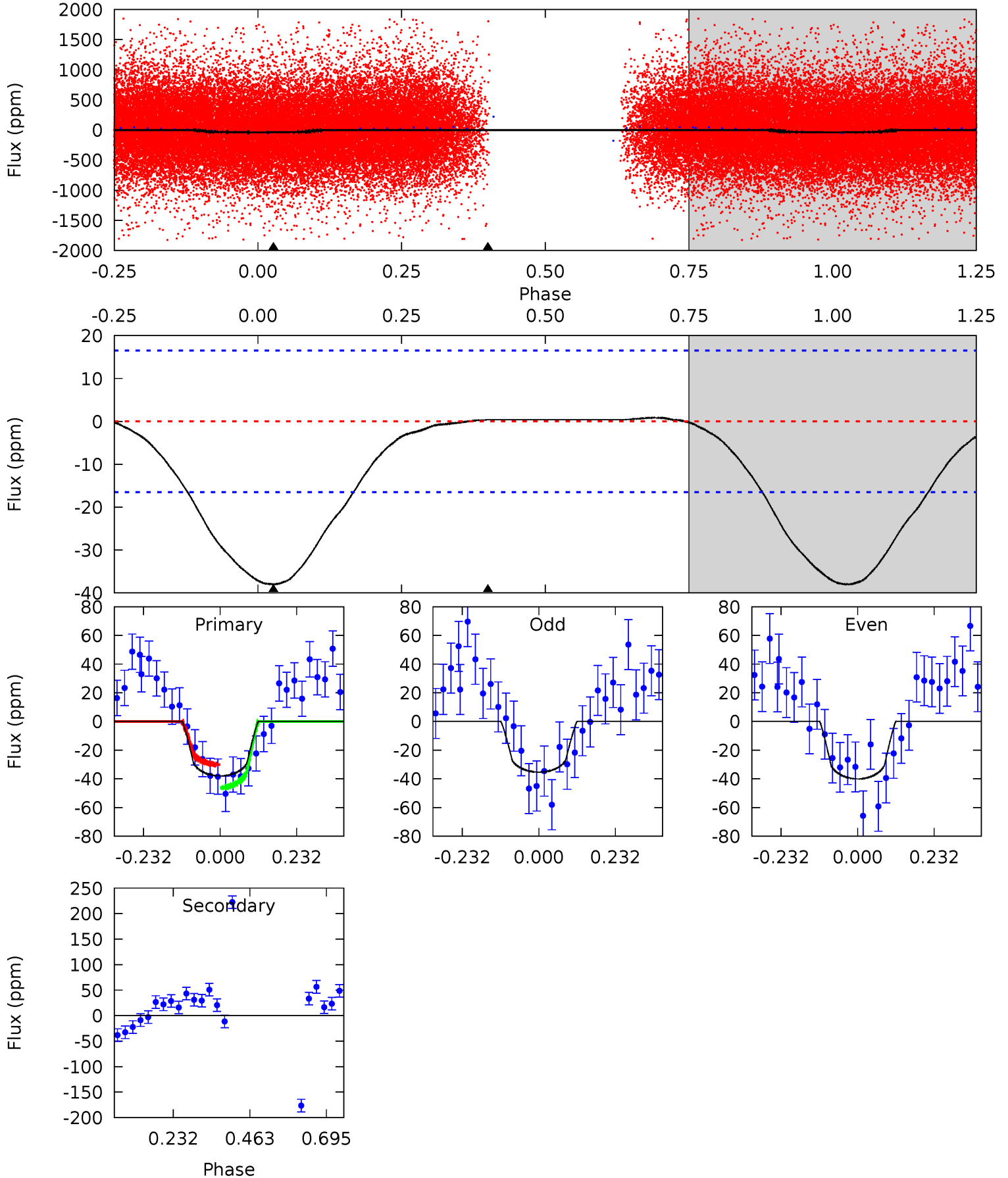
TCE 004859557-02 P= 0.597255 Days $T_0=132.034981$ (BKJD)



DV Model-Shift Uniqueness Test

004859557-02, P = 0.597213 Days, E = 131.480822 Days

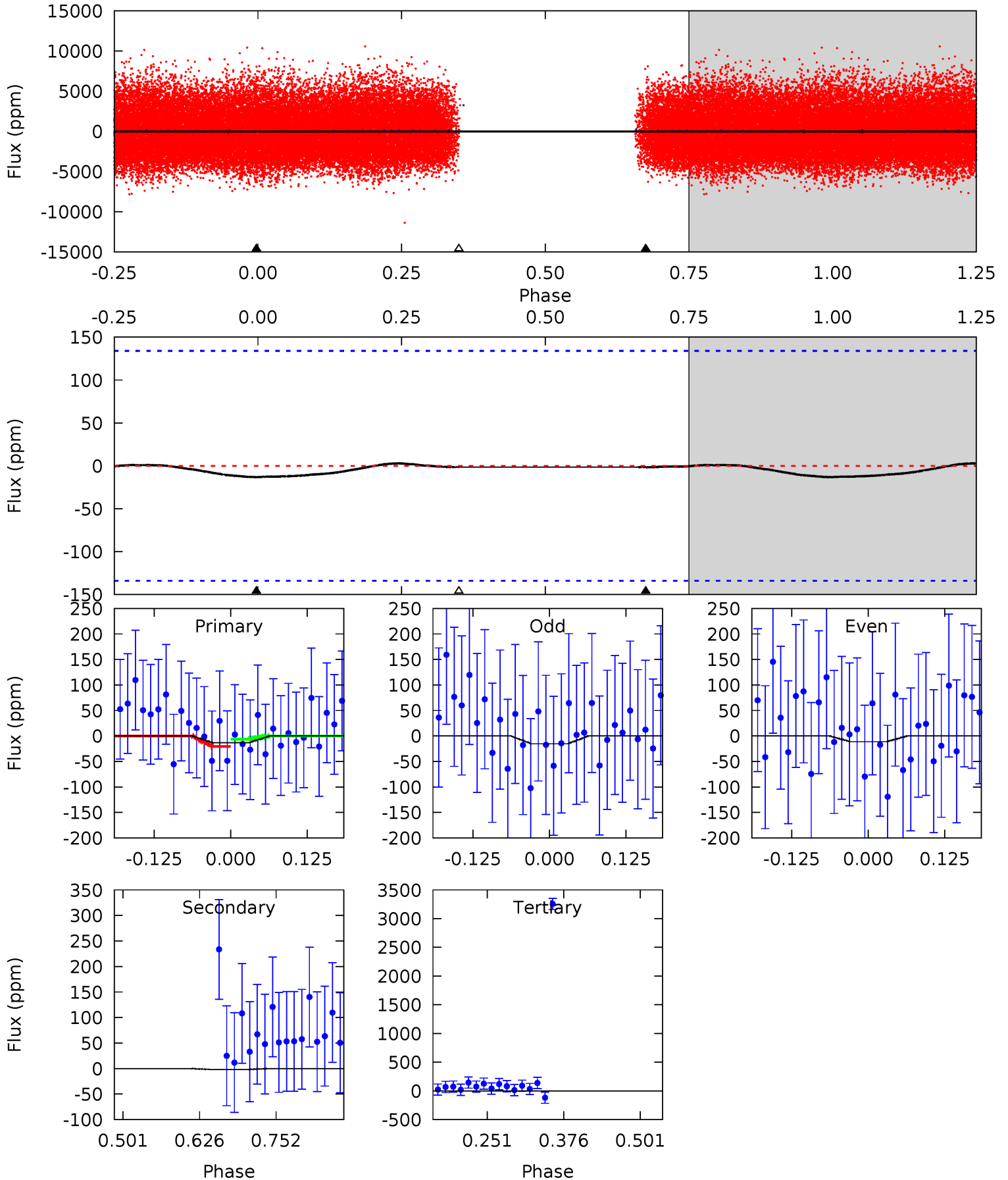
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	-0.10	0	0	4.39	1.20	0.33	10.1	10.1	-0.10	-0.10	0.63	0.82	0.02	2.11



Alt Model-Shift Uniqueness Test

004859557-02, P = 0.597255 Days, E = 131.437726 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.45	0.06	0.05	0	4.52	1.53	0.10	0.39	0.45	0.00	0.06	0.07	0.15	0.18	0.24



Stellar Parameters For KIC 004859557

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6028^{+211}_{-232}	$4.468^{+0.056}_{-0.210}$	$0.000^{+0.250}_{-0.300}$	$1.001^{+0.311}_{-0.111}$	$1.073^{+0.145}_{-0.159}$	$1.508^{+0.442}_{-0.817}$
	+4%/-4%	+1%/-5%	+inf%/-inf%	+31%/-11%	+14%/-15%	+29%/-54%
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 004859557-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 4	$0.88^{+0.64}_{-0.49}$	3189^{+228}_{-179}	-3276^{+6567}_{-705}	$-0.028^{+0.669}_{-0.748}$
Alt.	-2 ± 30	$0.61^{+0.60}_{-0.41}$	3183^{+248}_{-172}	-3074^{+10030}_{-3627}	$0.101^{+15.245}_{-12.772}$

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 $A_{obs} \gg 1.0$

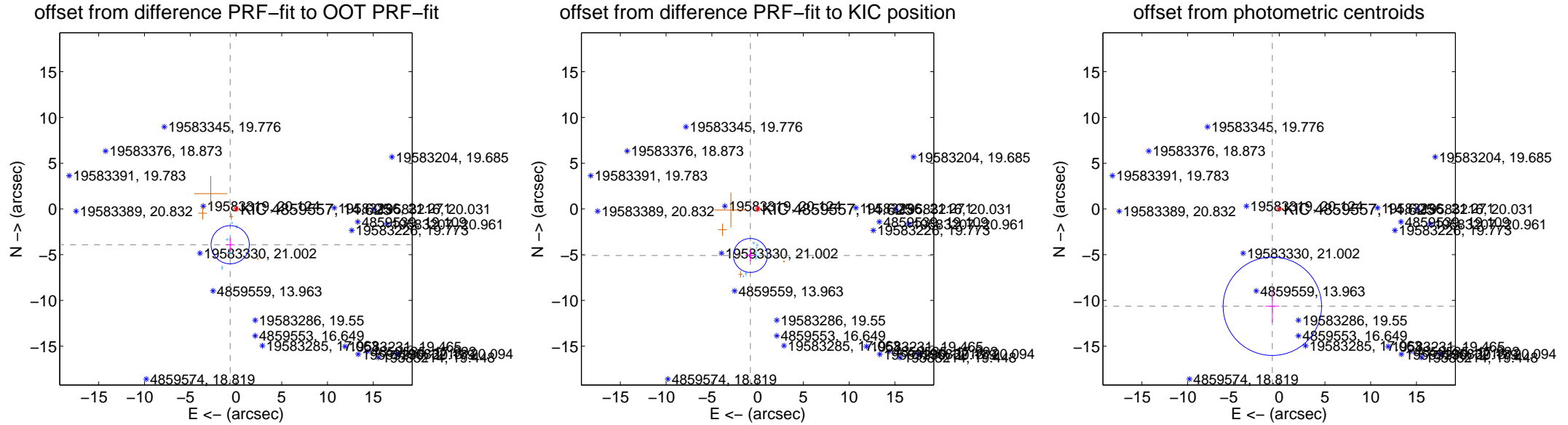
DV Centroid Data

Supplemental centroid analysis for 004859557-02. Kepler magnitude: 14.62. Transit SNR 10.51

There are 6 quarters with good PRF difference image offsets

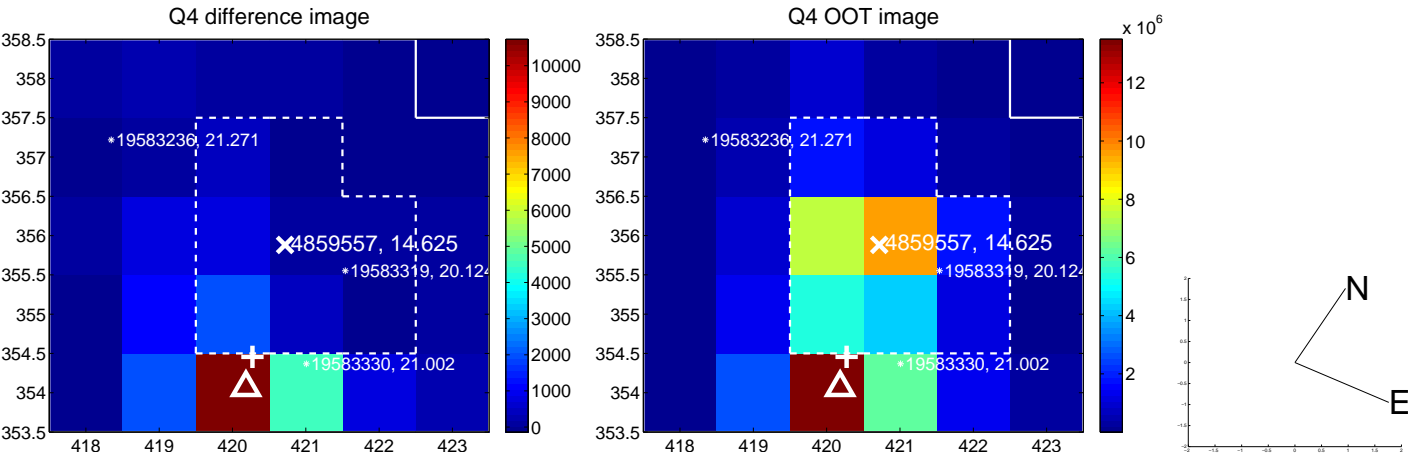
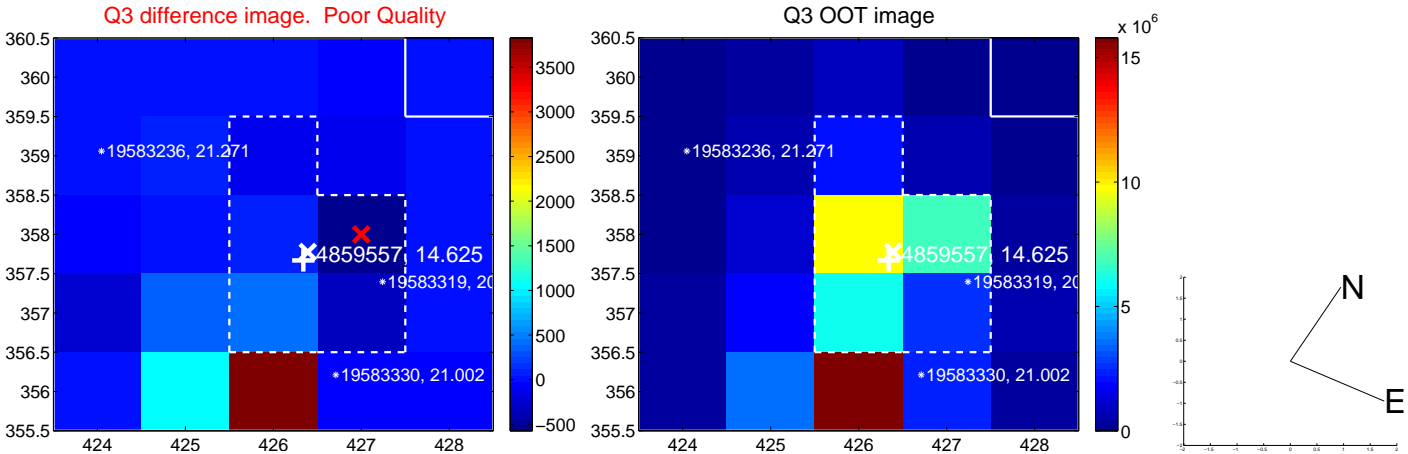
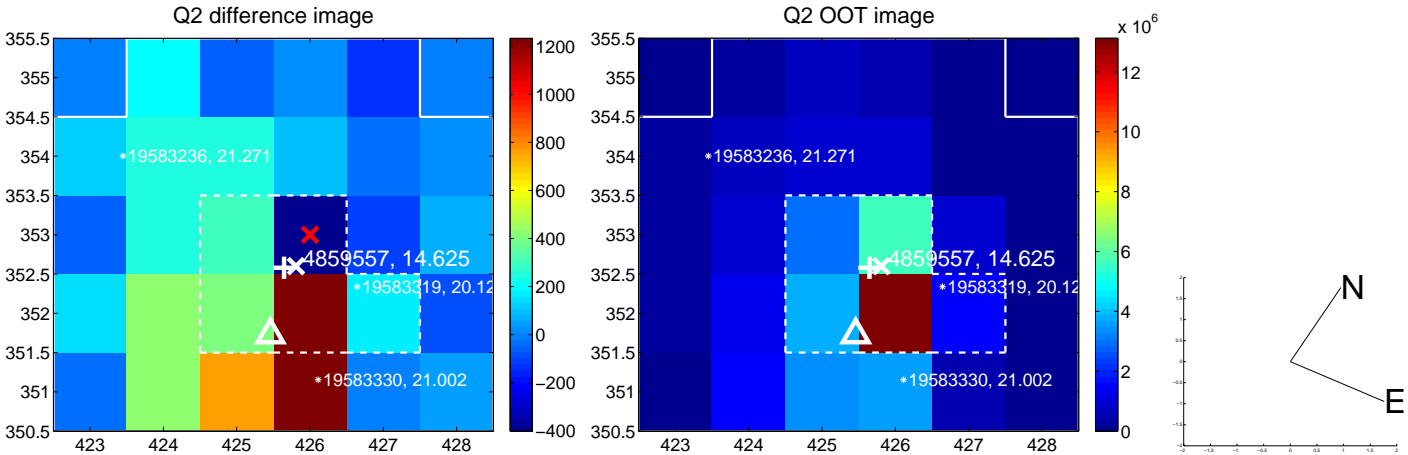
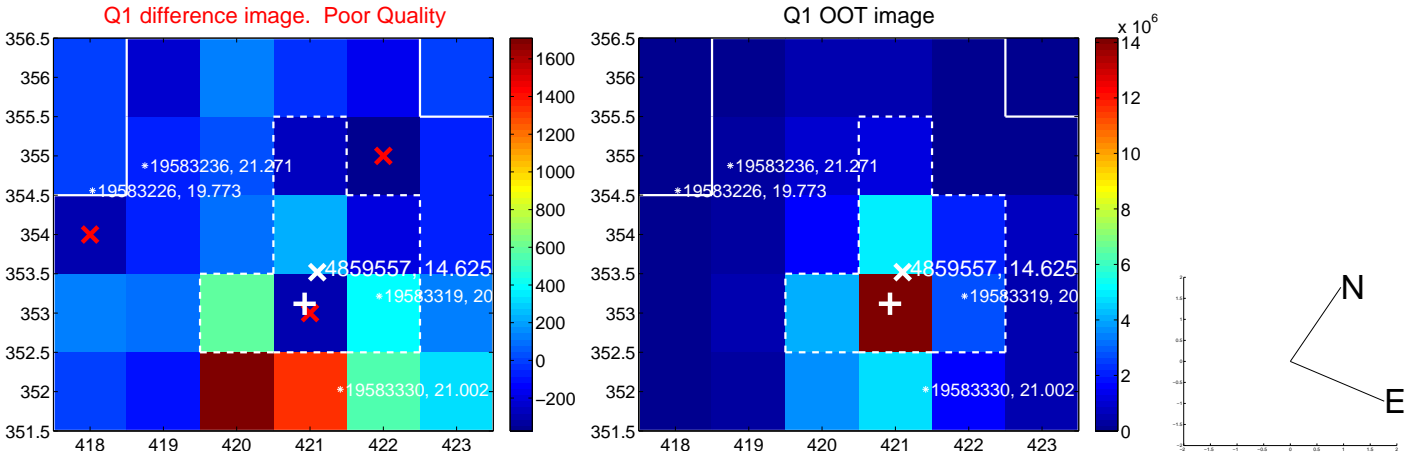
The direct PRF centroid is offset from the target star catalog position by about 1.81 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.965 ± 0.696	5.69	0.636 ± 0.491	-3.913 ± 0.742
PRF-fit source offset from KIC position	5.146 ± 0.619	8.31	0.788 ± 0.581	-5.086 ± 0.658
photometric centroid source offset	10.67 ± 1.79	5.95	0.75 ± 0.76	-10.64 ± 1.80

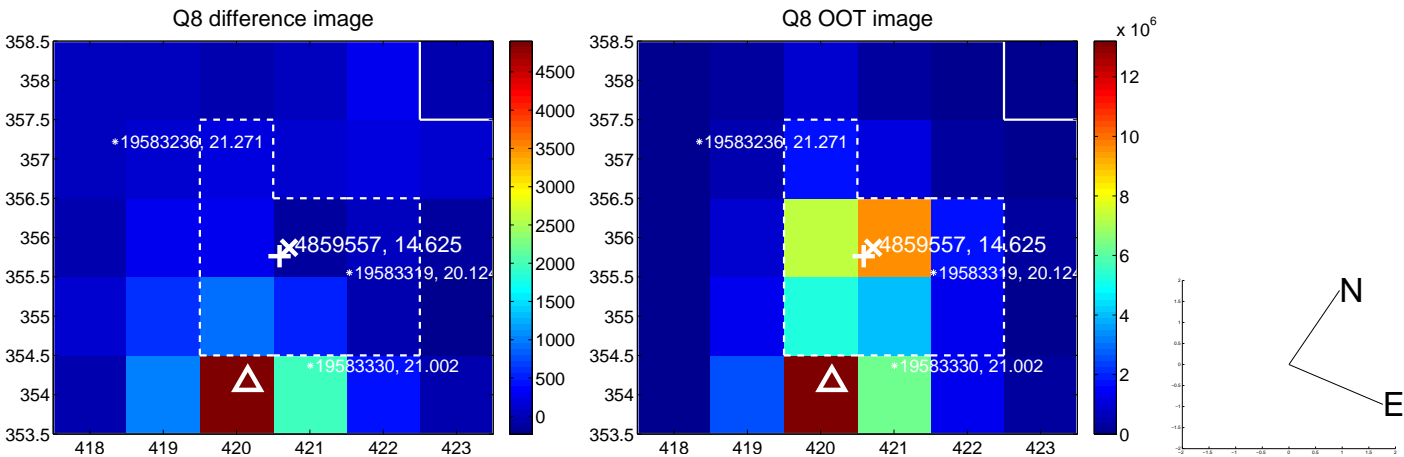
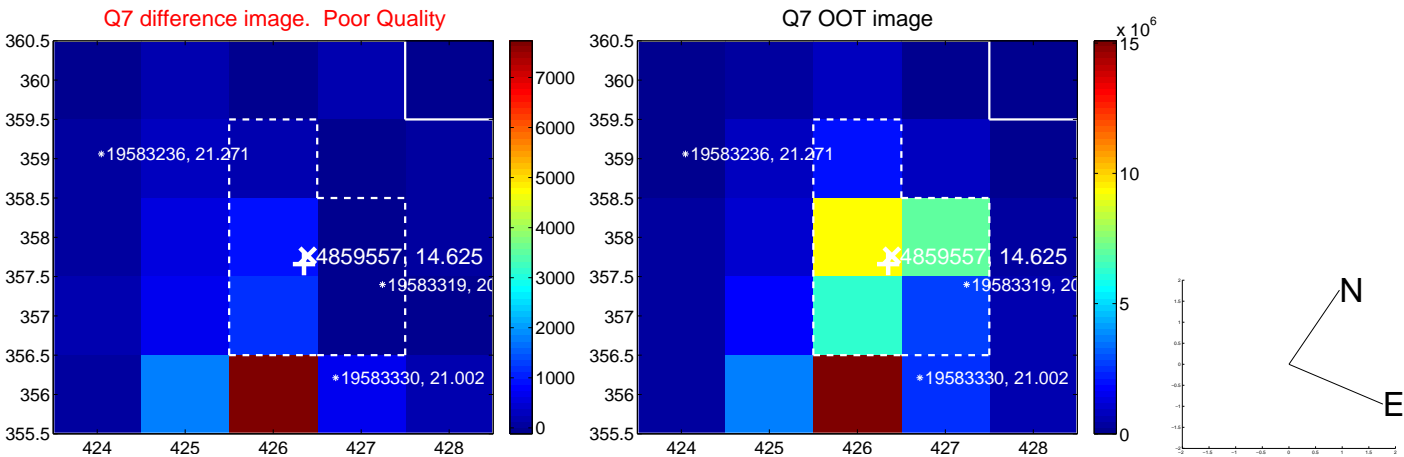
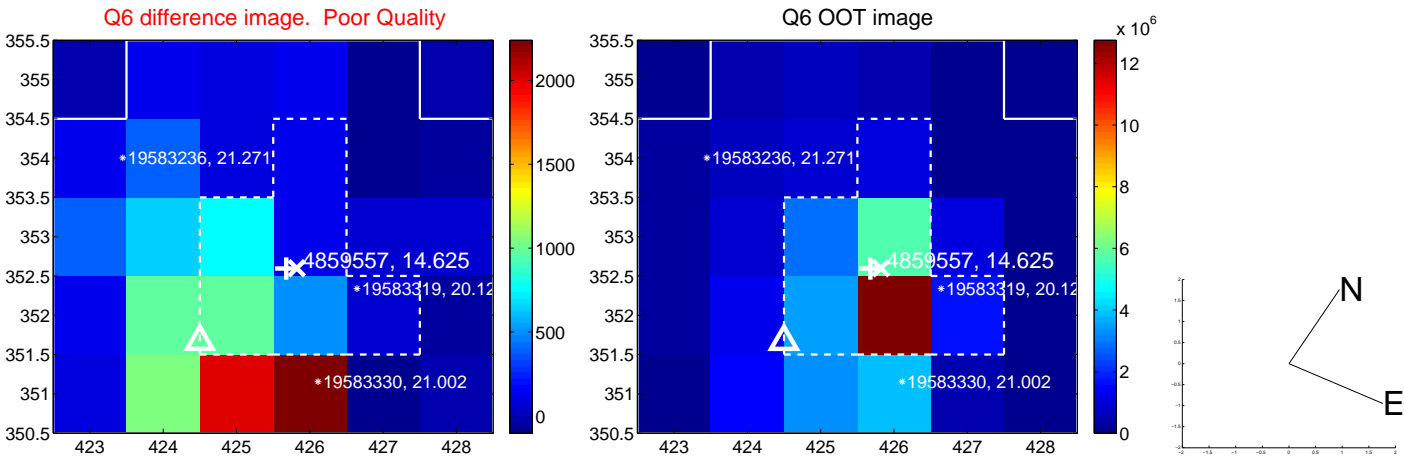
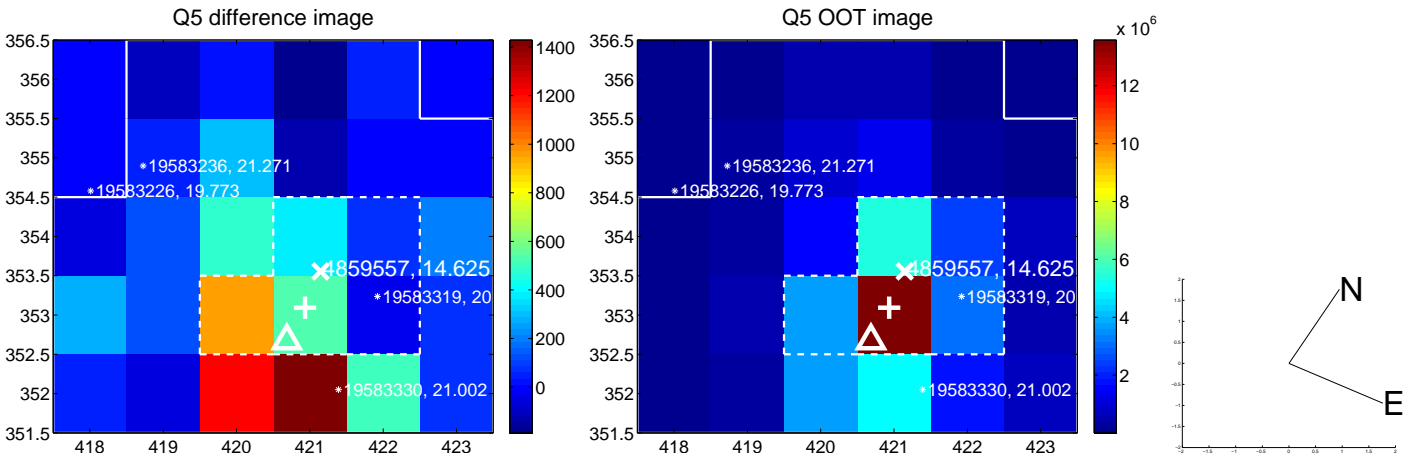


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

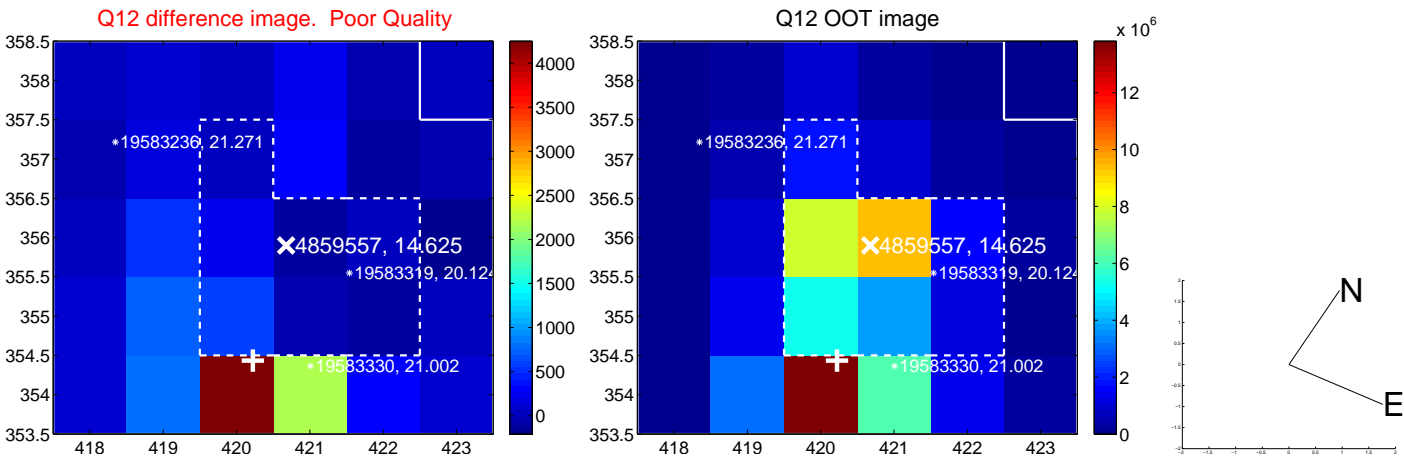
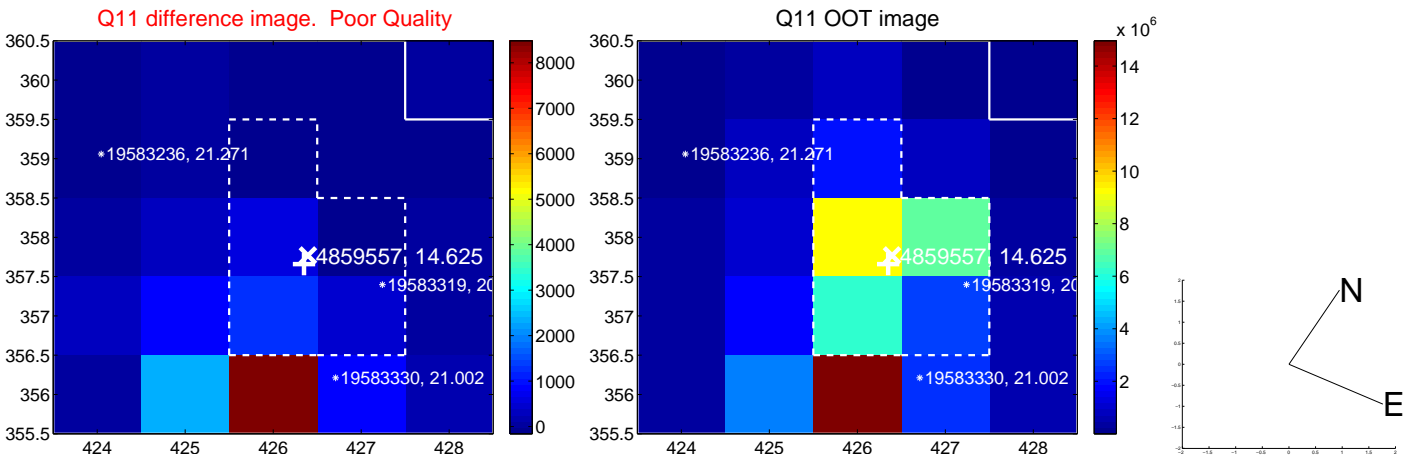
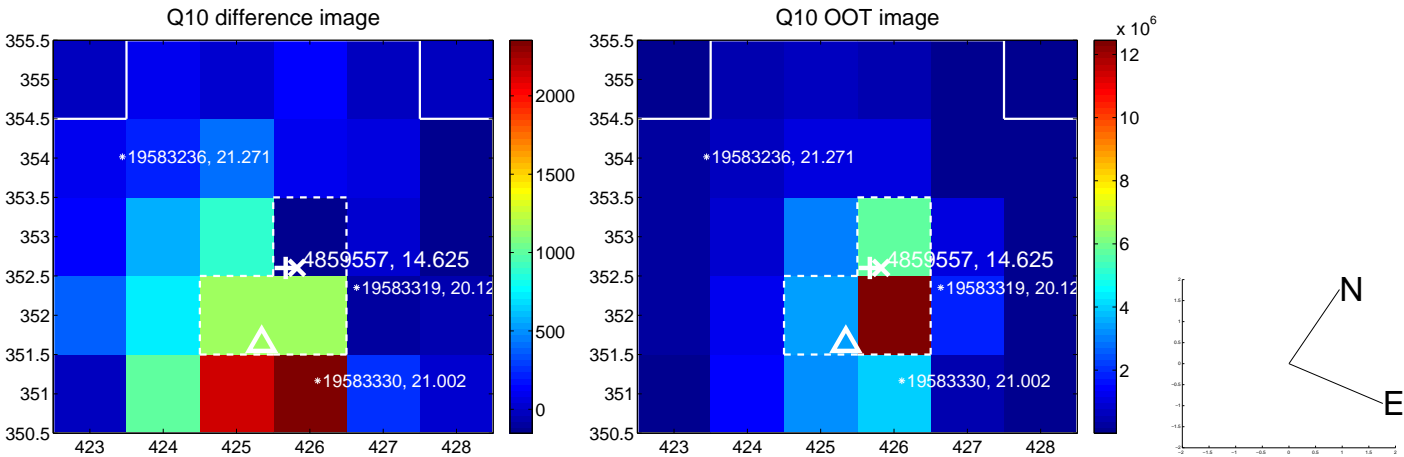
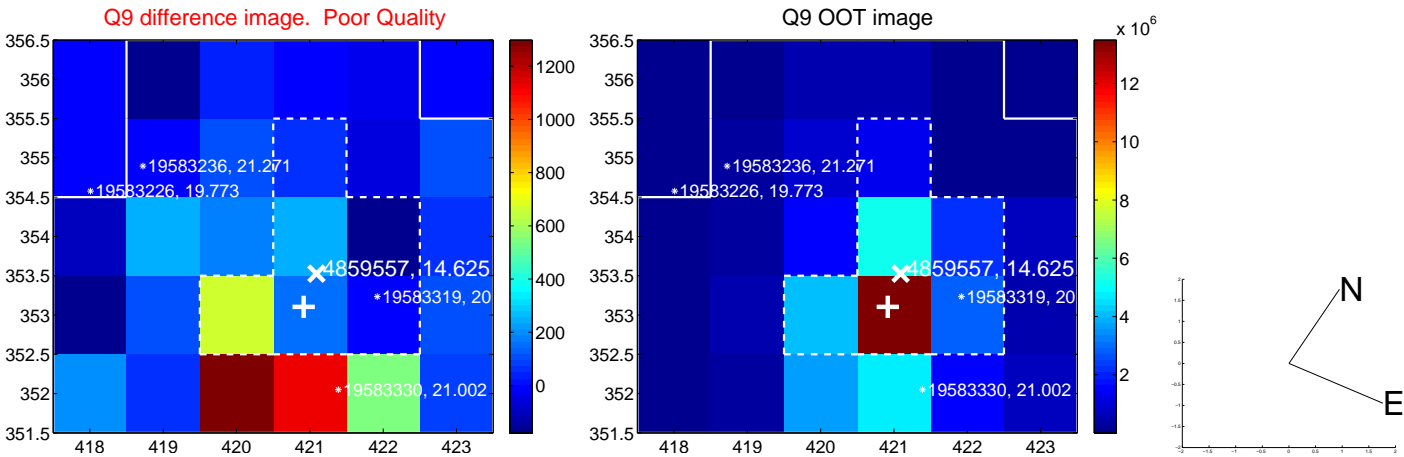
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



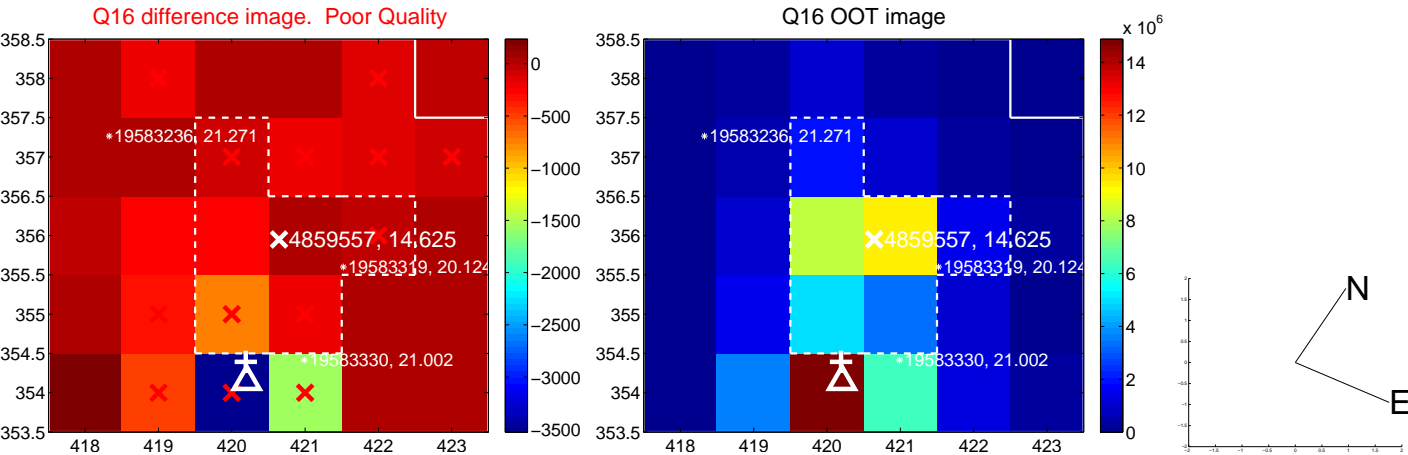
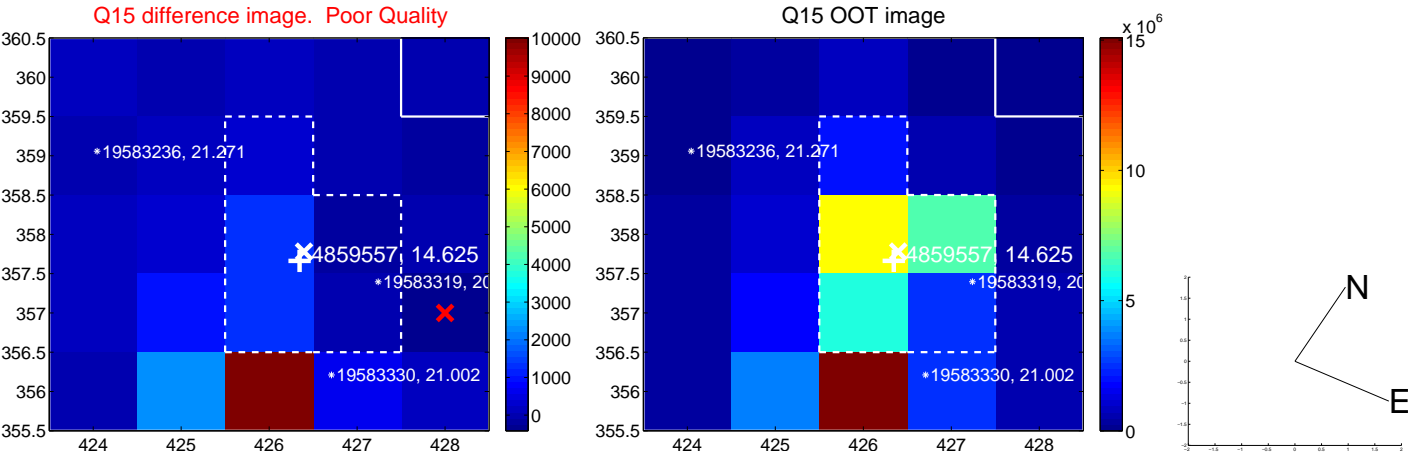
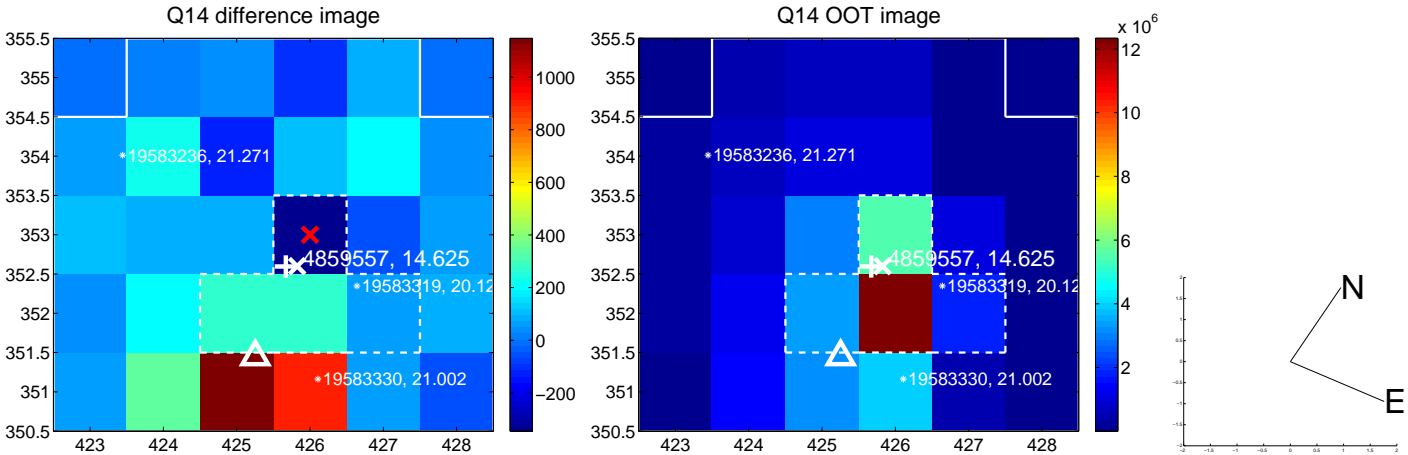
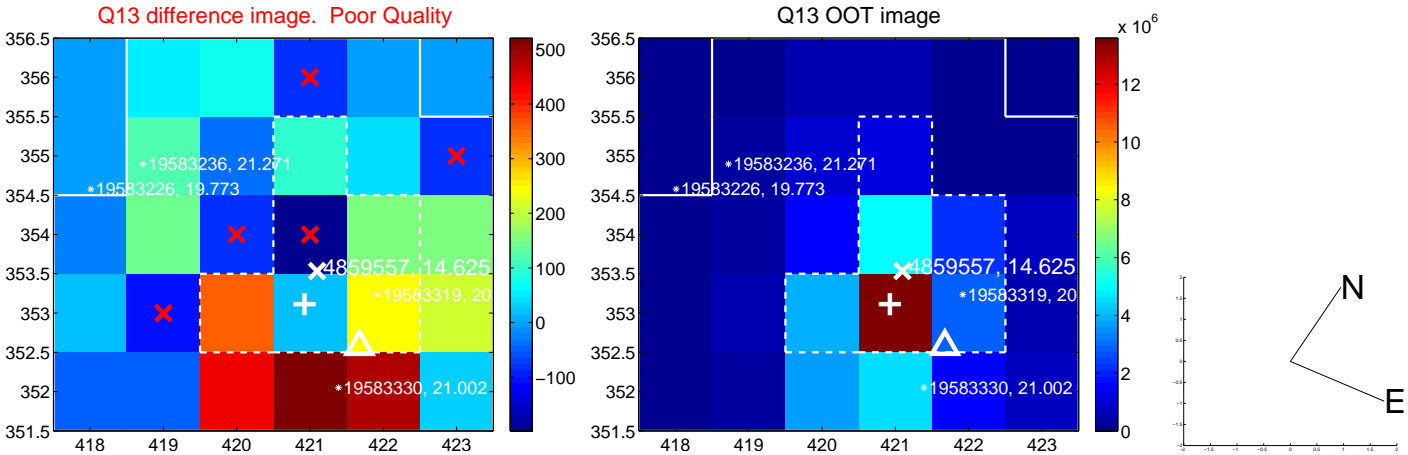
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



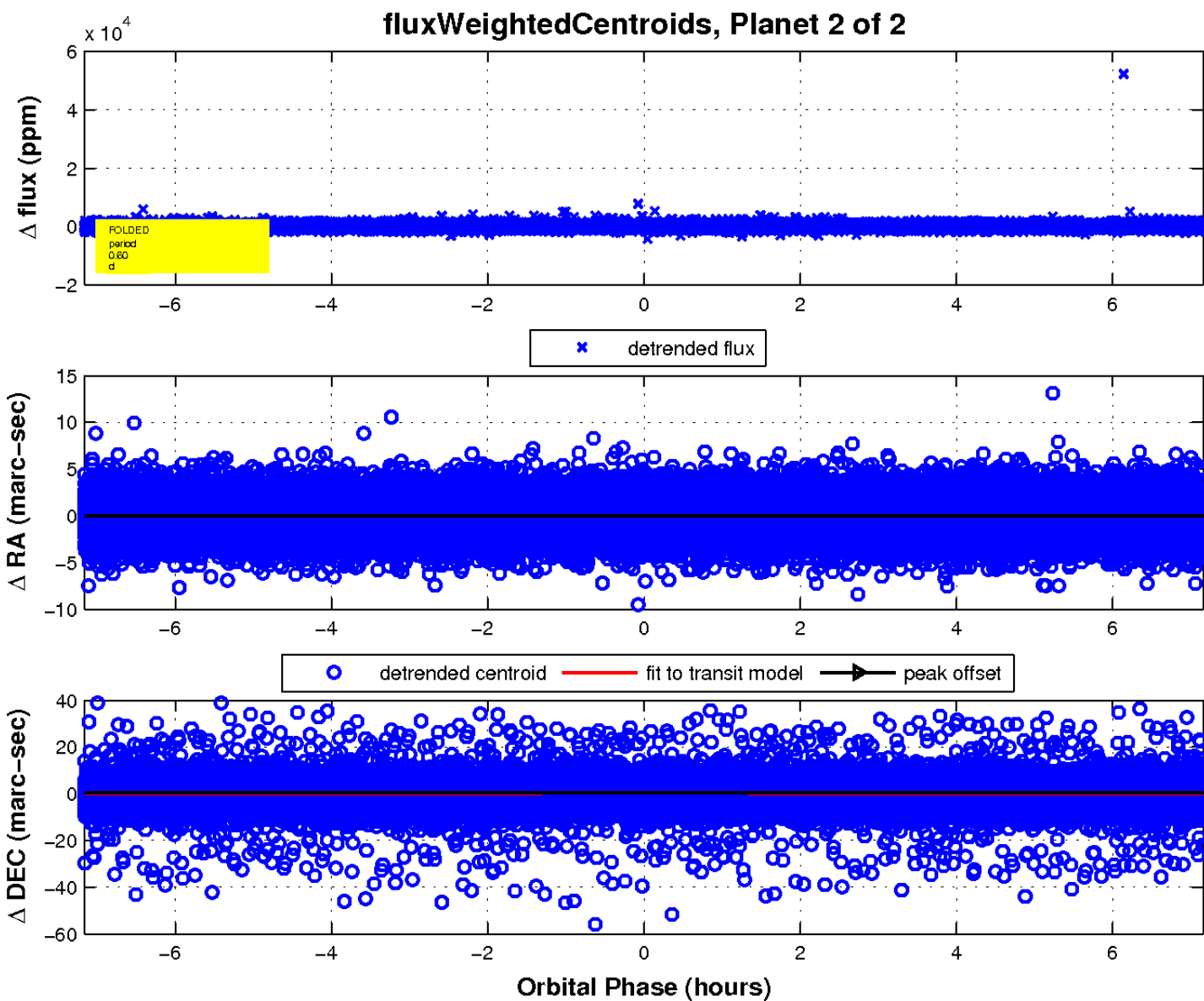
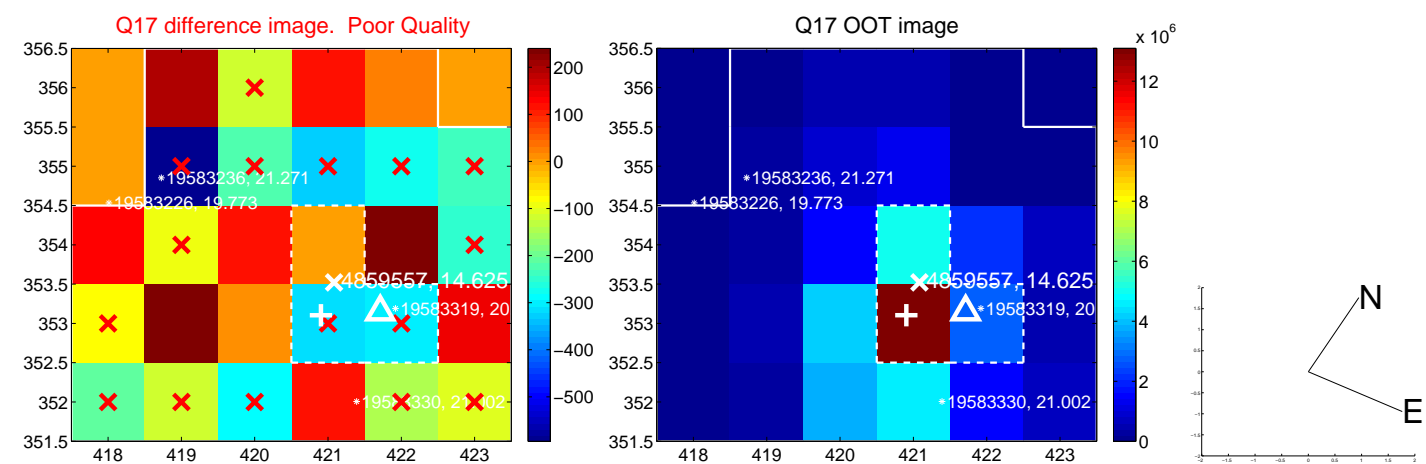
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

