

KIC 005558458

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})
005558458-01	OBS	No	2.094574	132.581538	6.5	10.003	8.5	9.1	1.96	9566	0.59	16483.31
005558458-02	OBS	No	2.094851	133.024783	10.5	25.138	10.9	12.0	1.96	9566	0.65	16480.41

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558458-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL —LPP_DV —CENT_SATURATED
005558458-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA —SWEET_NTL —LPP_DV —MOD_NONUNIQ_ALT —SAME_NTL_PERIOD —CENT_SATURATED

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

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

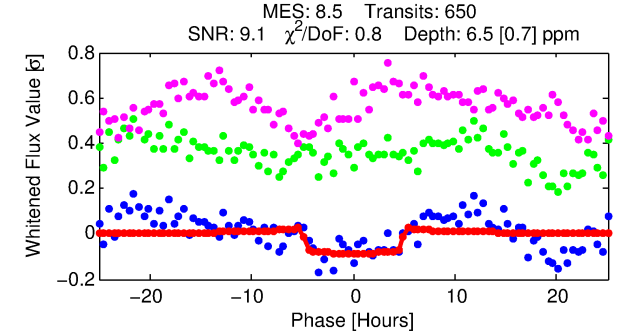
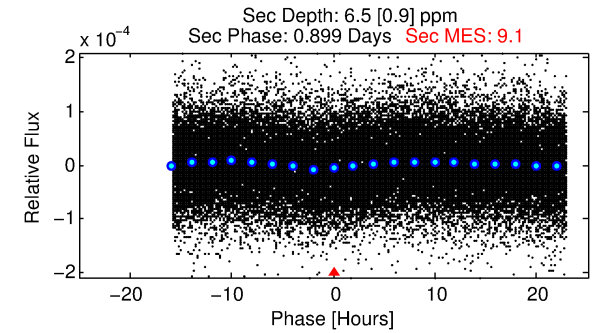
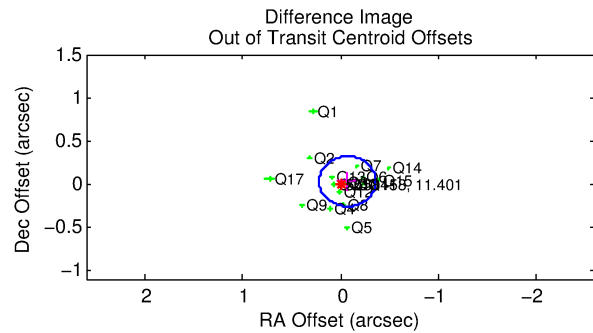
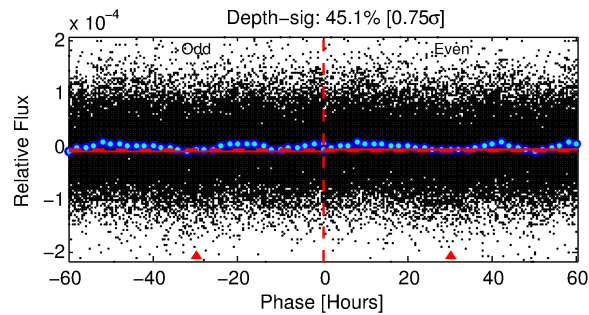
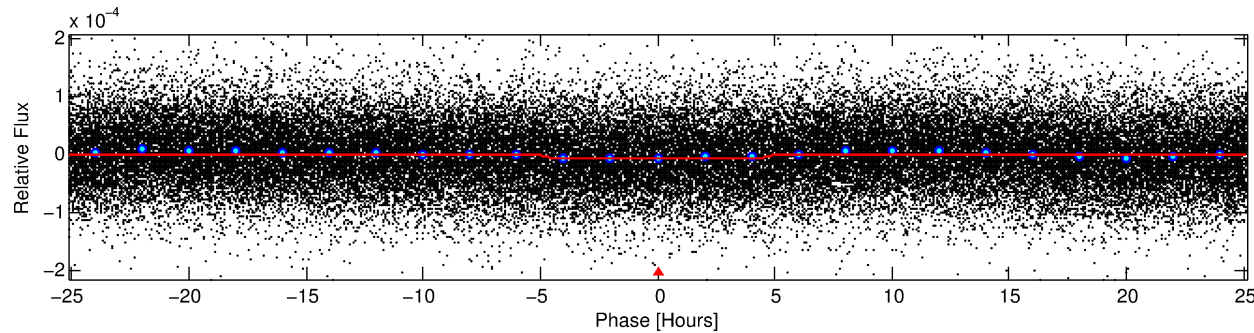
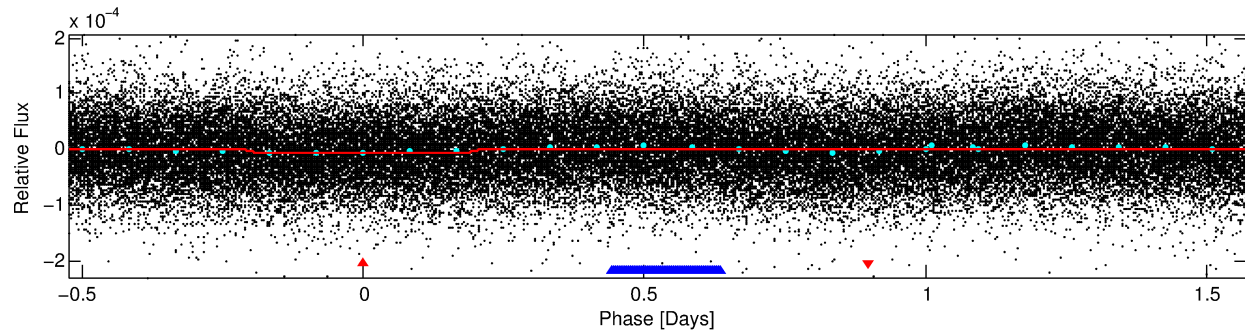
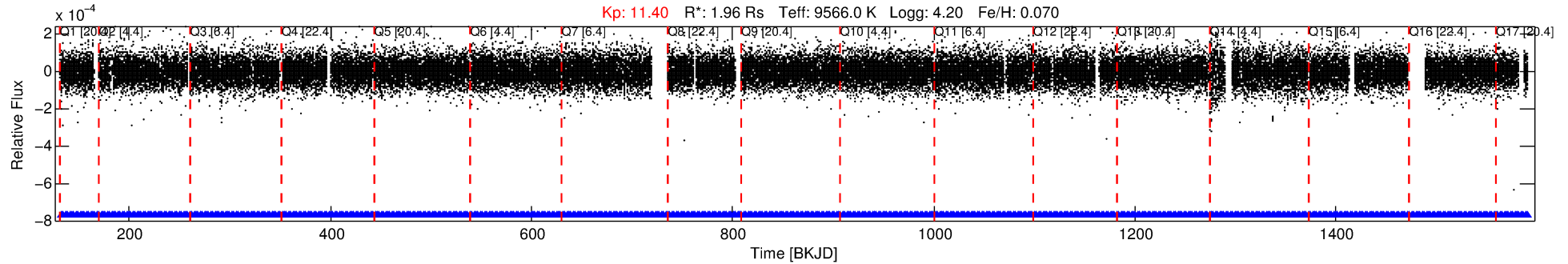
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005558458-01

No Significant Match Found

DV One-Page Summary

KIC: 5558458 Candidate: 1 of 2 Period: 2.095 d



DV Fit Results:

Period = 2.09457 [0.00003] d
Epoch = 132.5815 [0.0076] BKJD
Rp/R* = 0.0028 [0.0004]
a/R* = 1.10 [0.20]
b = 0.95 [0.11]
Seff = 16483.31 [8187.24]
Teq = 2889 [359] K
Rp = 0.59 [0.27] Re
a = 0.0418 [0.0144] AU
Ag = 17.75 [9.86] [1.70 σ]
Teffp = 9168 [813] K [7.06 σ]

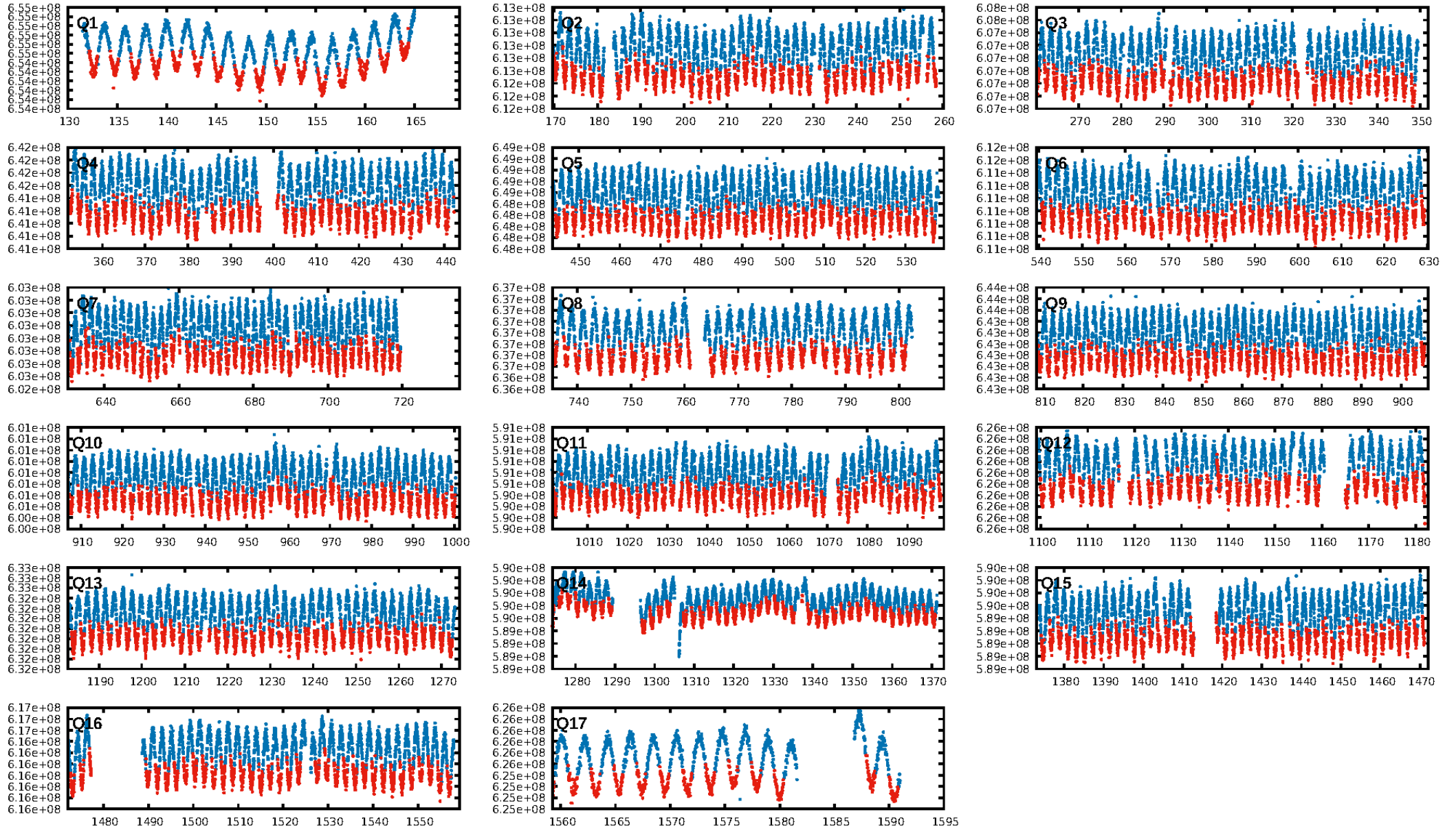
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [622/622]
GhostDiagnostic-chr: 1.377
Centroid-sig: 34.8%
Centroid-so: 1.352 arcsec [0.78 σ]
OotOffset-rm: 0.076 arcsec [0.78 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.153 arcsec [1.55 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

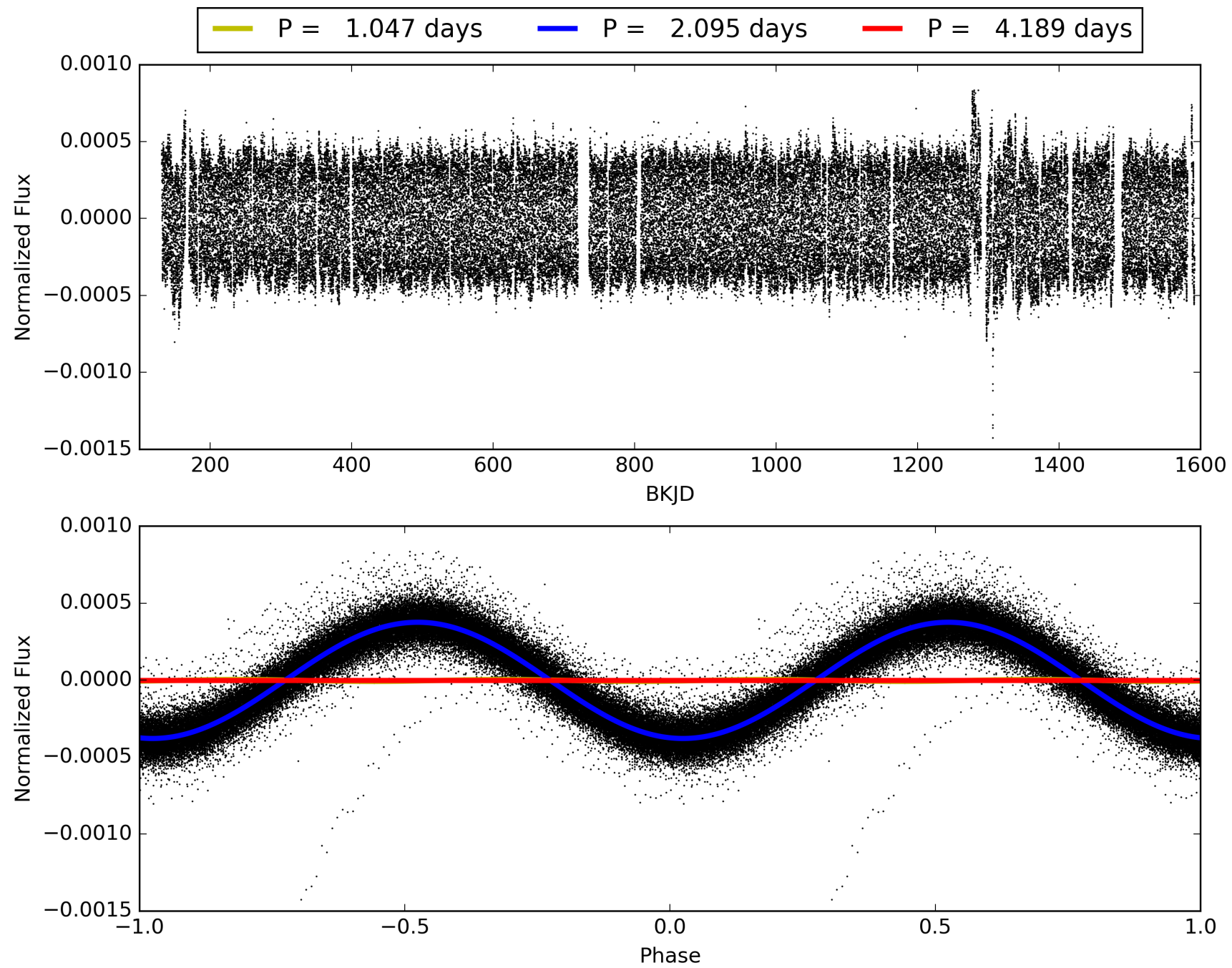
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:58:39 Z

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

TCE 005558458-01, PDC Light Curves

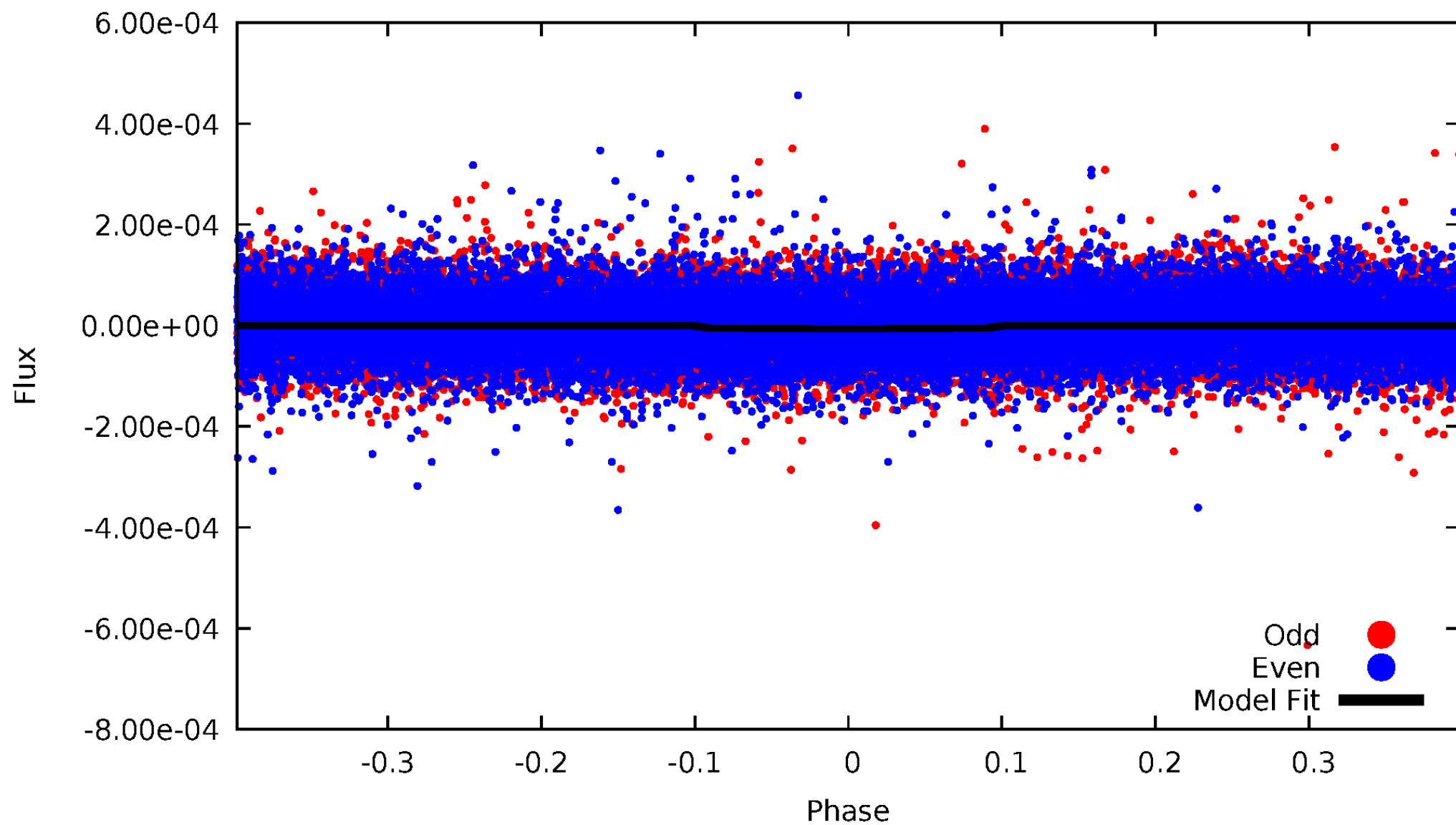


TCE 005558458-01



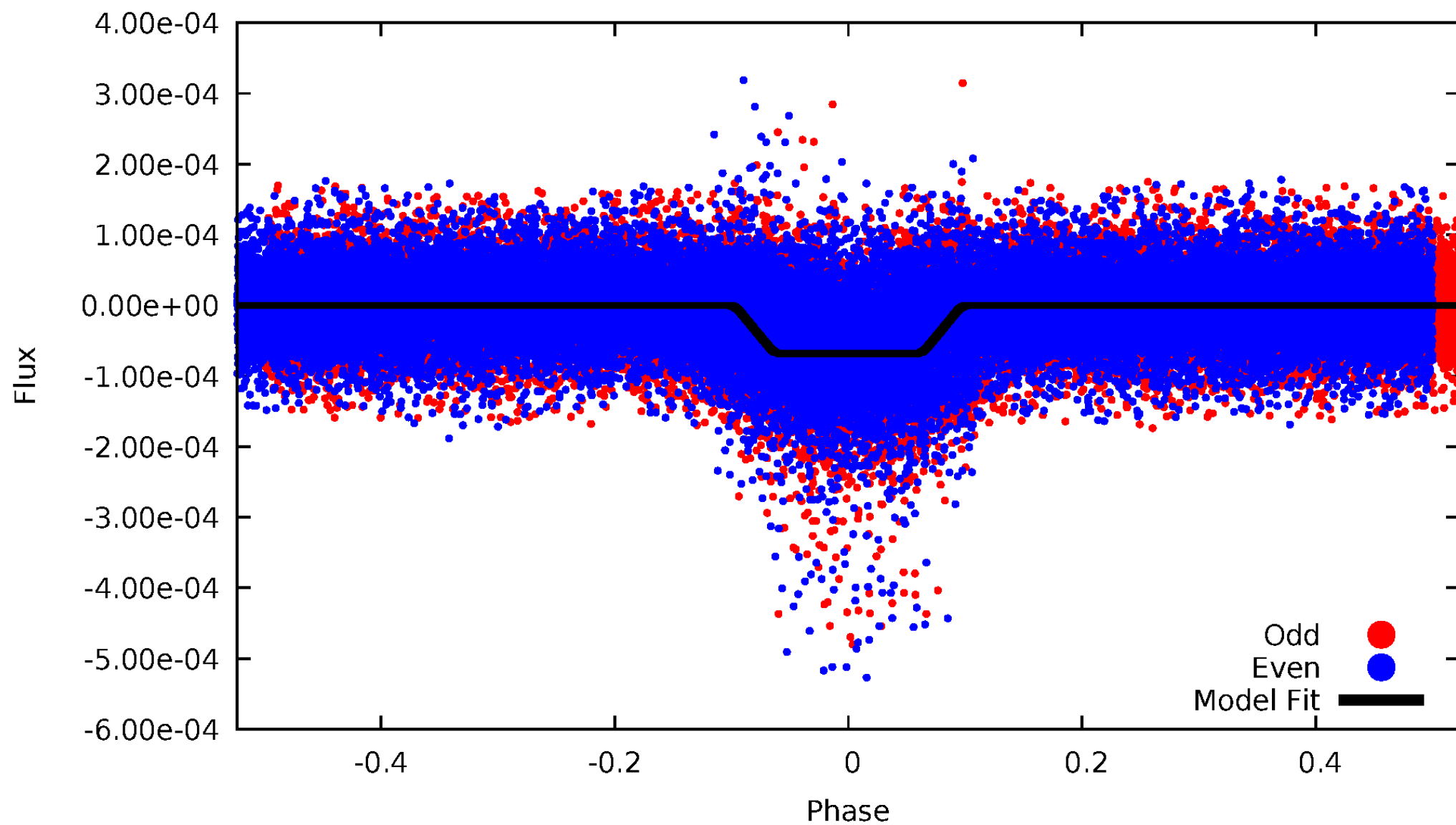
DV Odd/Even

TCE 005558458-01



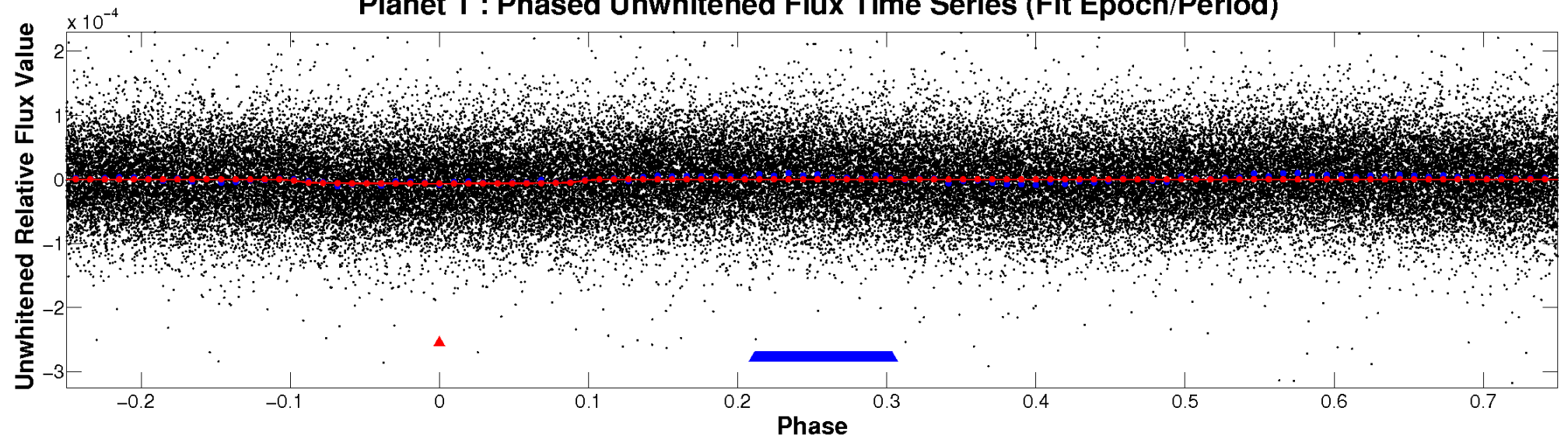
ALT Odd/Even

TCE 005558458-01

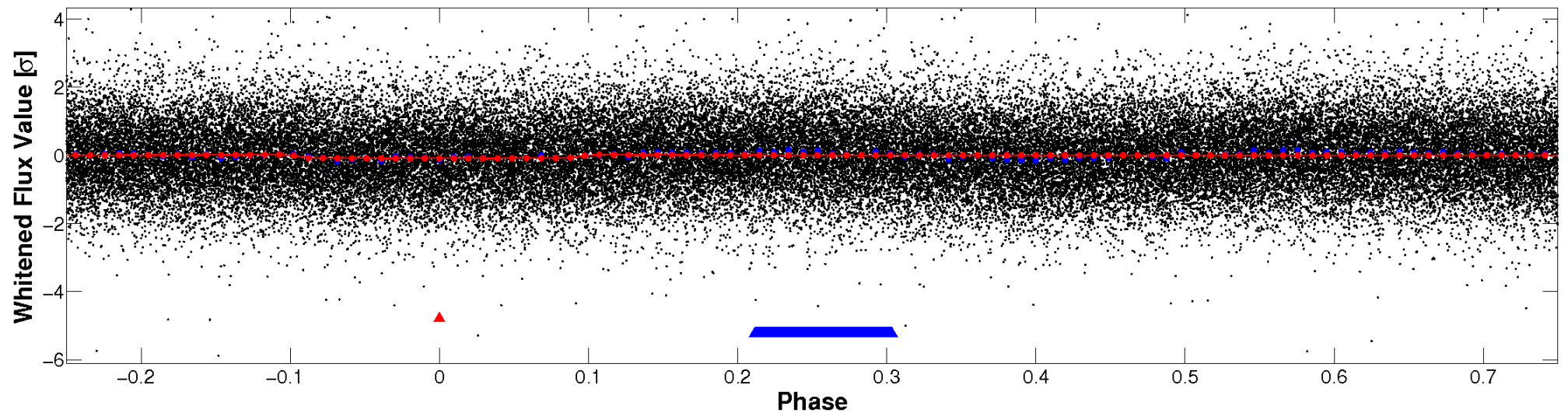


Non-Whitened Vs. Whitened Light Curve

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

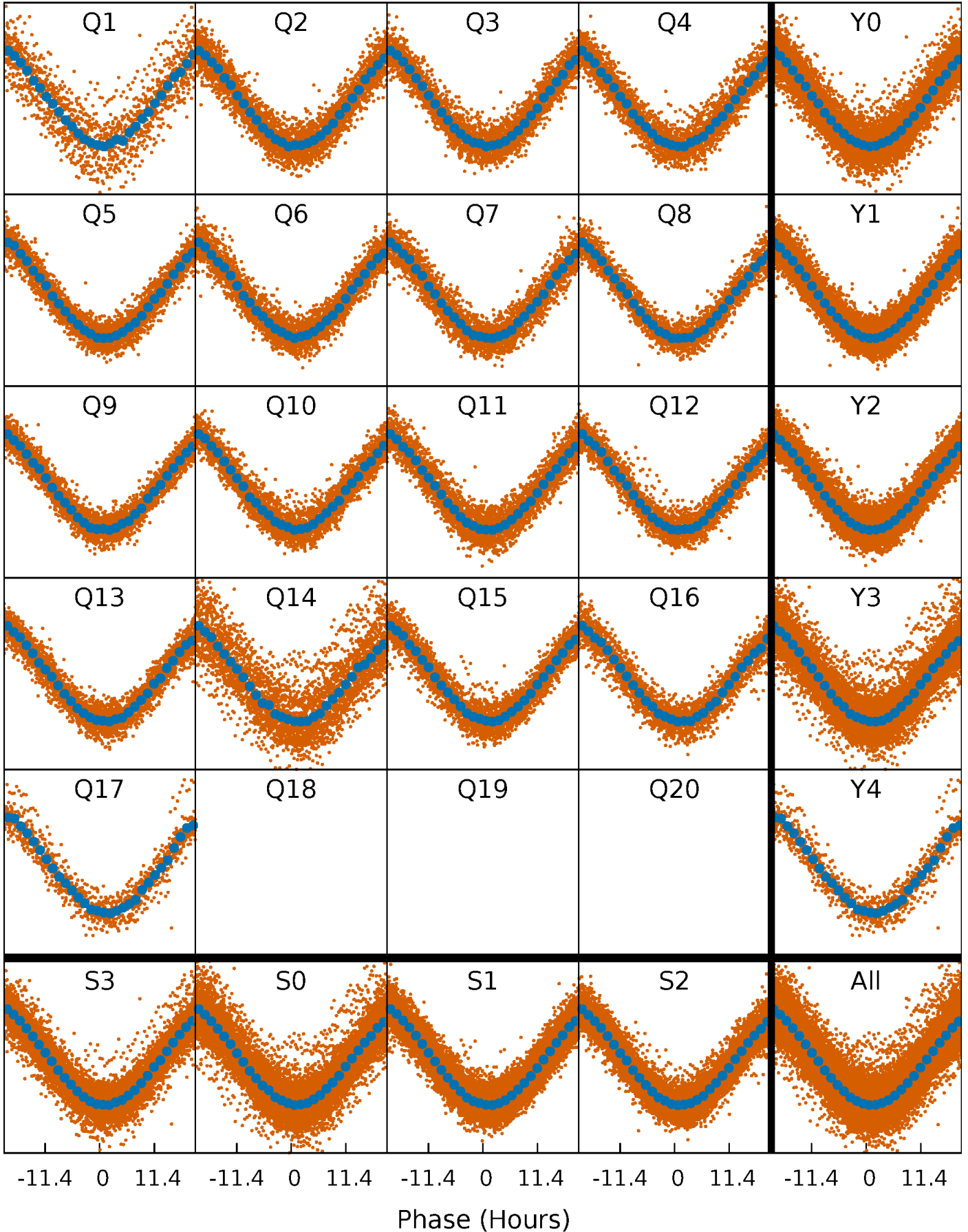


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



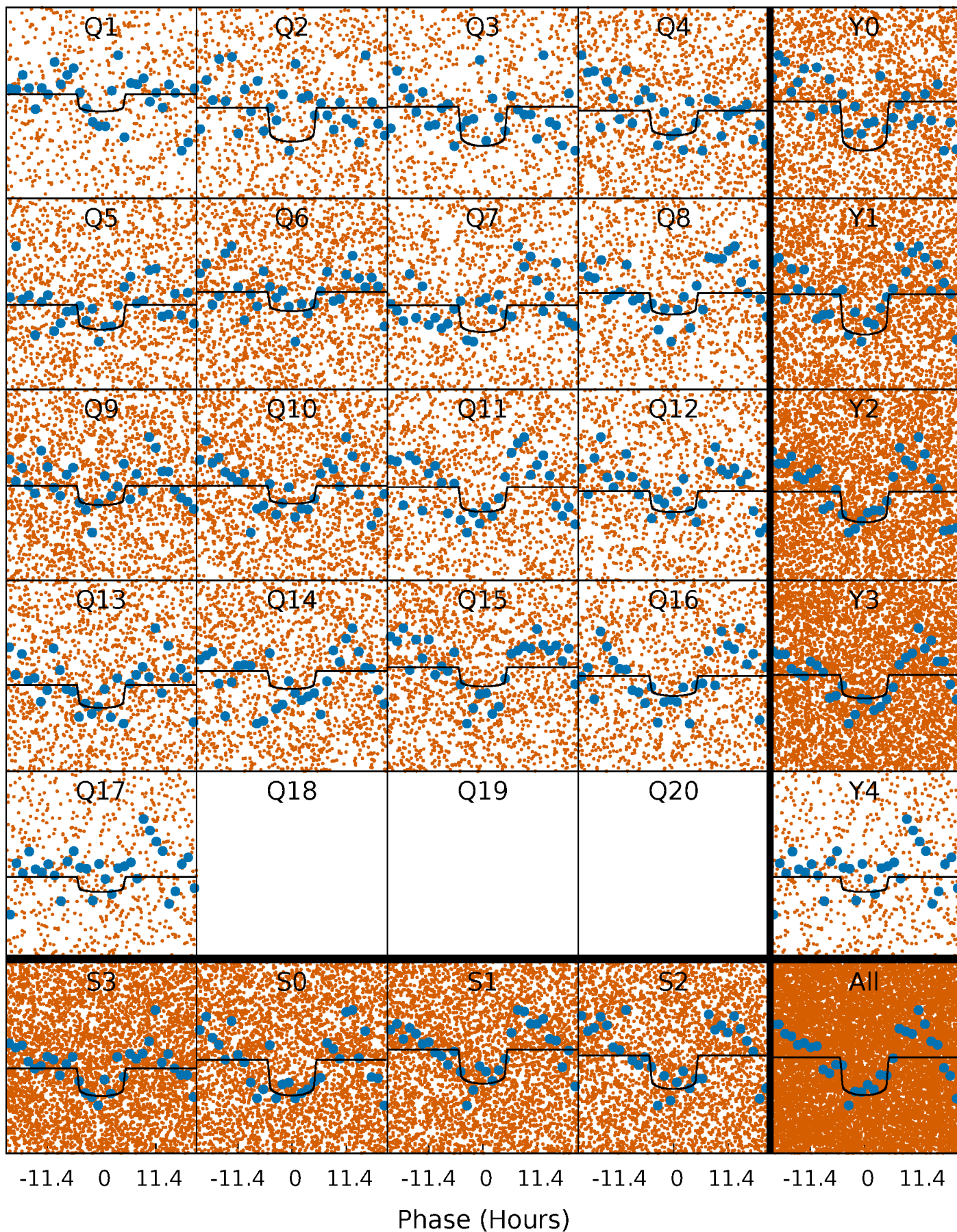
PDC Quarter-Phased Transit Curves

TCE 005558458-01 P= 2.094574 Days $T_0=132.581538$ (BKJD)



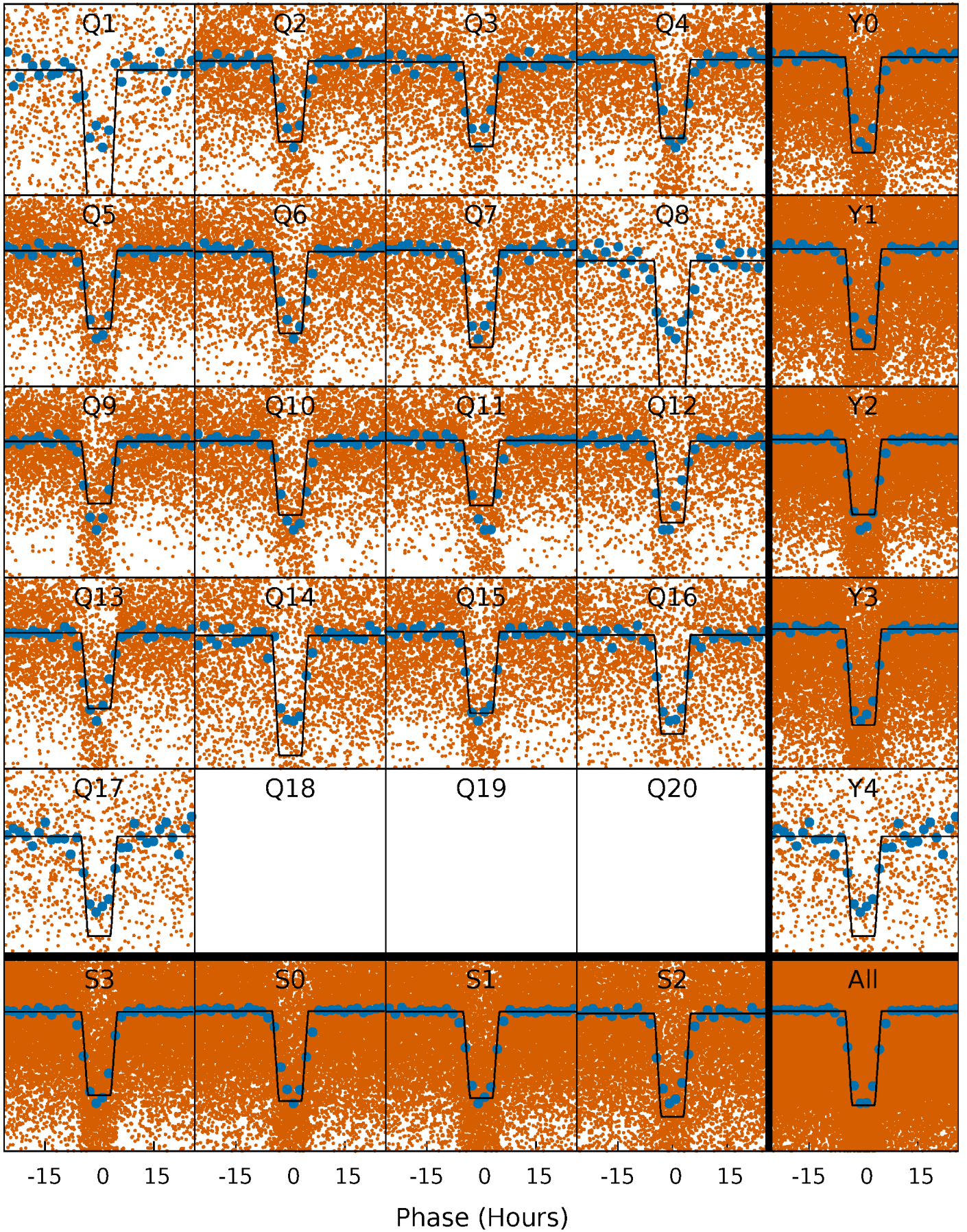
DV Quarter-Phased Transit Curves

TCE 005558458-01 P= 2.094574 Days $T_0=132.581538$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

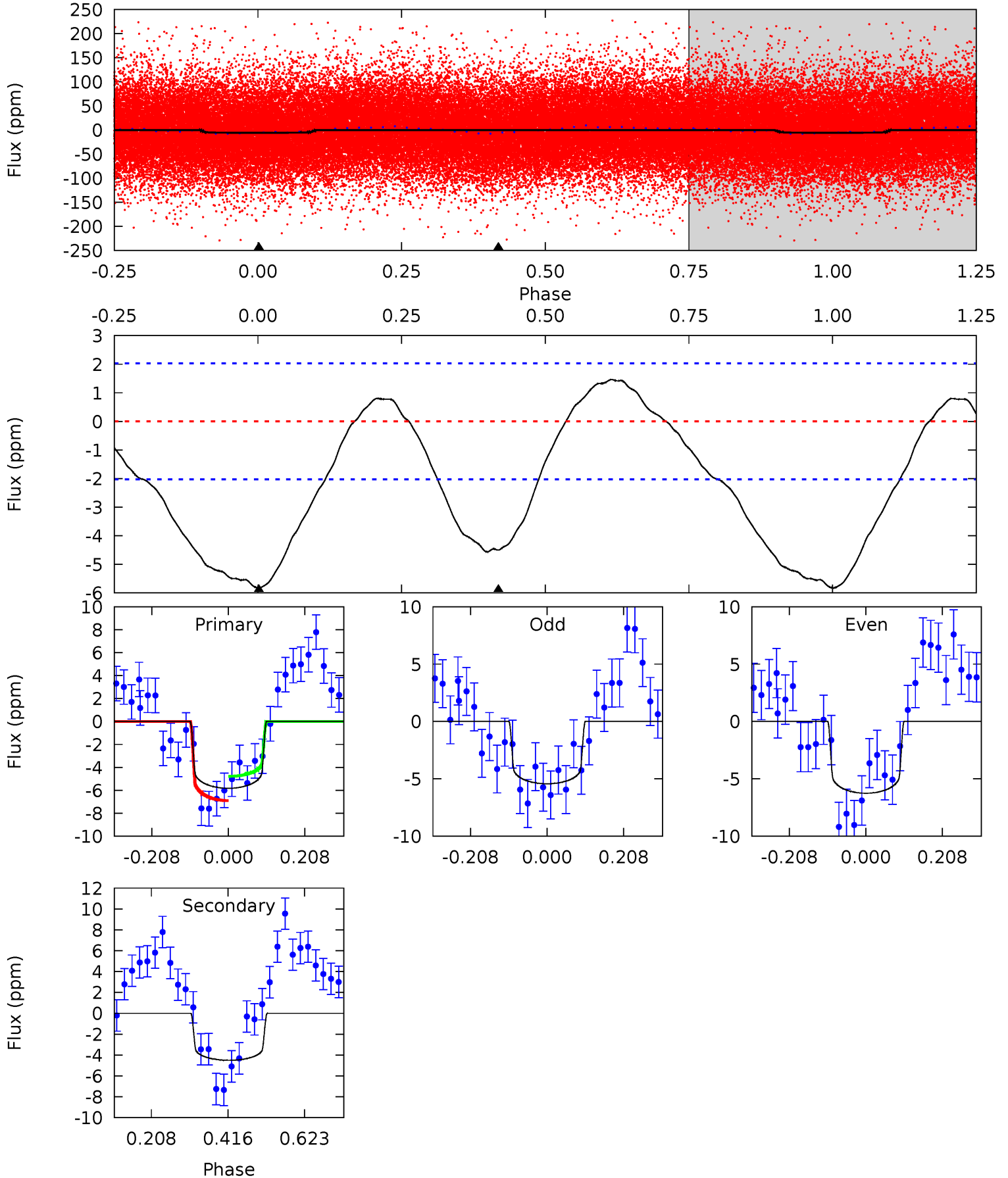
TCE 005558458-01 P= 2.094669 Days $T_0=132.522559$ (BKJD)



DV Model-Shift Uniqueness Test

005558458-01, P = 2.094574 Days, E = 130.486964 Days

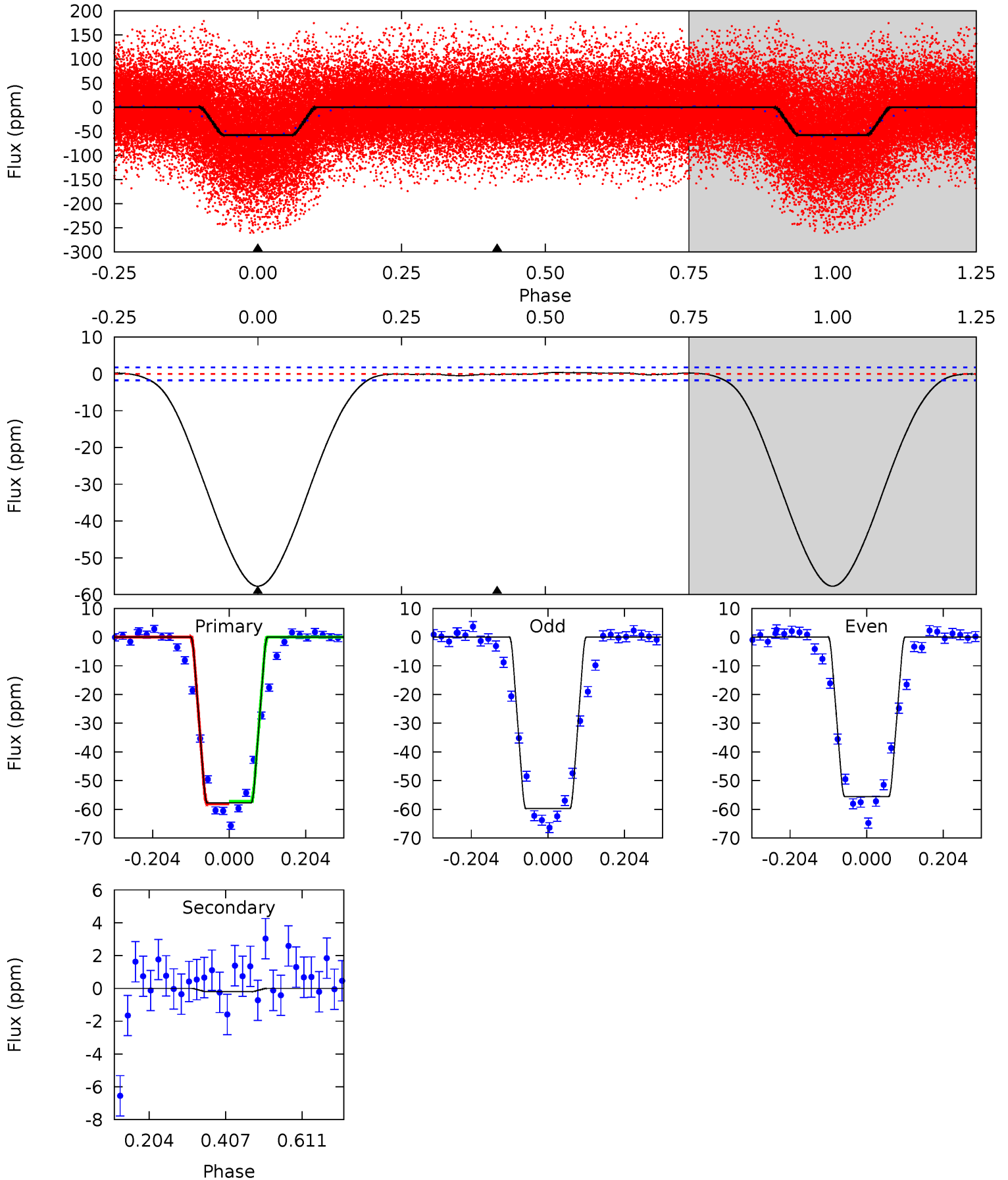
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	9.78	0	0	4.41	1.26	2.23	12.7	12.7	9.78	9.78	0.90	1.09	0.20	2.31



Alt Model-Shift Uniqueness Test

005558458-01, P = 2.094669 Days, E = 130.427890 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
144.2	0.50	0	0	4.41	1.27	0.61	144.2	144.2	0.50	0.50	5.23	1.10	0.01	1.02



Stellar Parameters For KIC 005558458

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9566^{+272}_{-428}	$4.200^{+0.126}_{-0.234}$	$0.070^{+0.150}_{-0.700}$	$1.959^{+0.860}_{-0.463}$	$2.220^{+0.445}_{-0.544}$	$0.416^{+0.323}_{-0.241}$
	+3%/-4%	+3%/-6%	+214%/-1000%	+44%/-24%	+20%/-25%	+78%/-58%
Source	KIC0	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 005558458-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4 ± 0	$0.61^{+0.16}_{-0.12}$	4073^{+368}_{-297}	7878^{+824}_{-697}	12^{+6}_{-4}
Alt.	-0 ± 0	$1.81^{+0.41}_{-0.25}$	4090^{+415}_{-310}	-3499^{+425}_{-321}	$0.051^{+0.122}_{-0.107}$

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

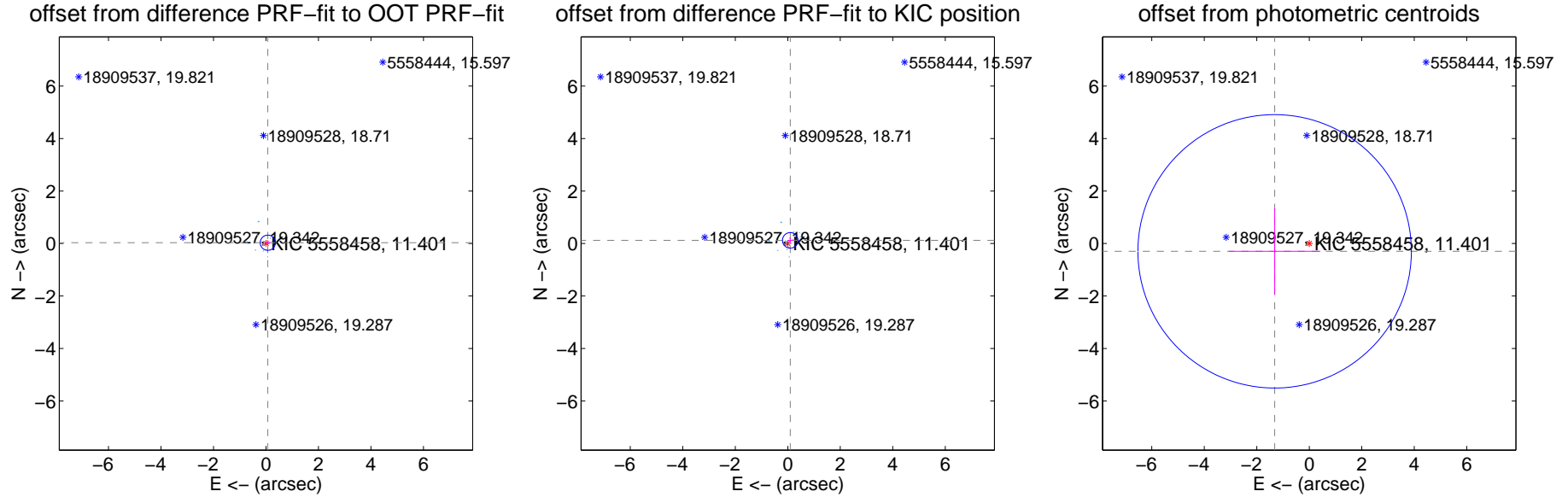
DV Centroid Data

Supplemental centroid analysis for 005558458-01. **Kepler magnitude: 11.40.** Transit SNR 9.12

There are 17 quarters with good PRF difference image offsets

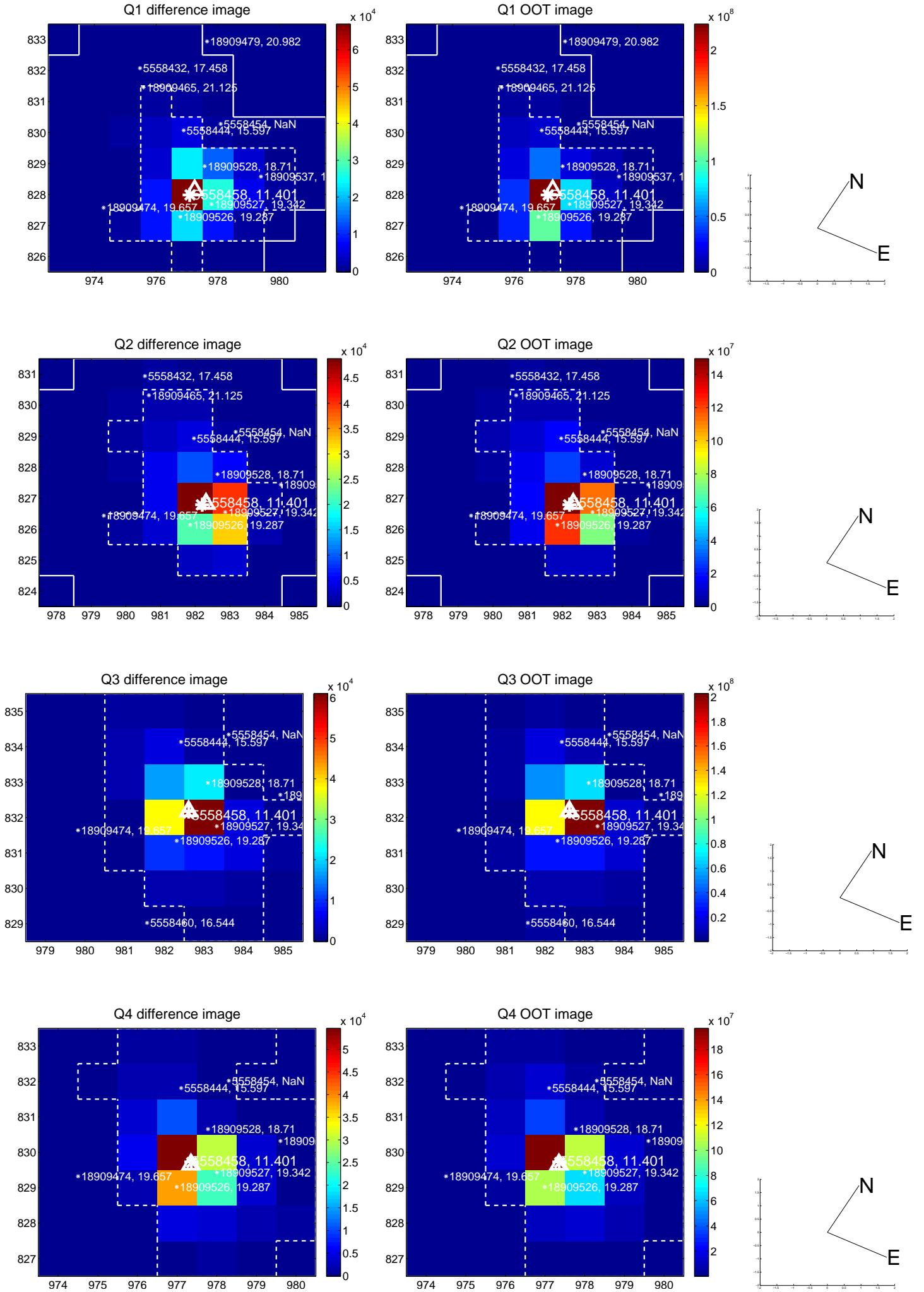
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.076 ± 0.097	0.78	-0.069 ± 0.099	0.030 ± 0.095
PRF-fit source offset from KIC position	0.153 ± 0.099	1.55	-0.094 ± 0.095	0.121 ± 0.100
photometric centroid source offset	1.35 ± 1.74	0.78	1.32 ± 1.74	-0.30 ± 1.64

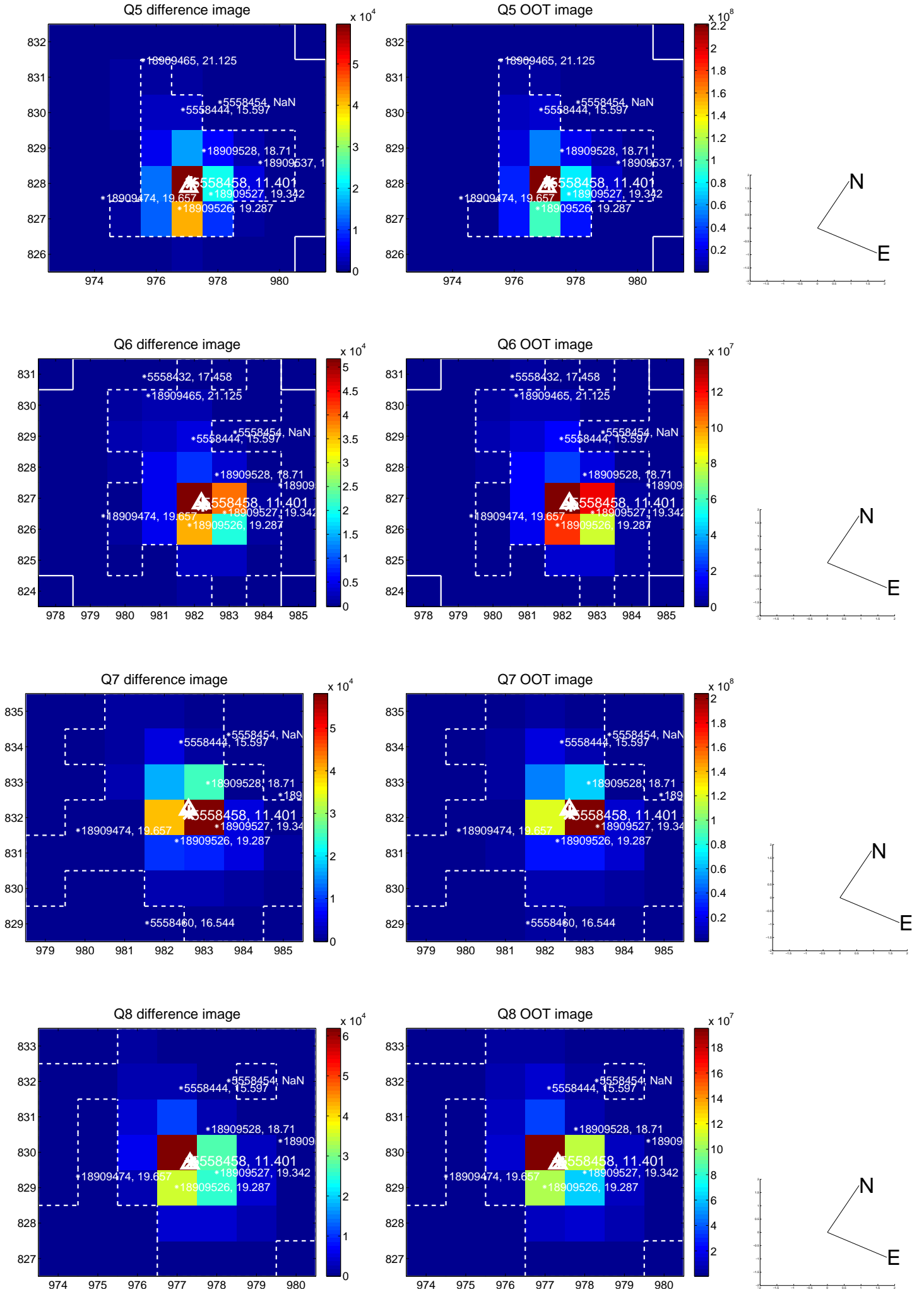


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

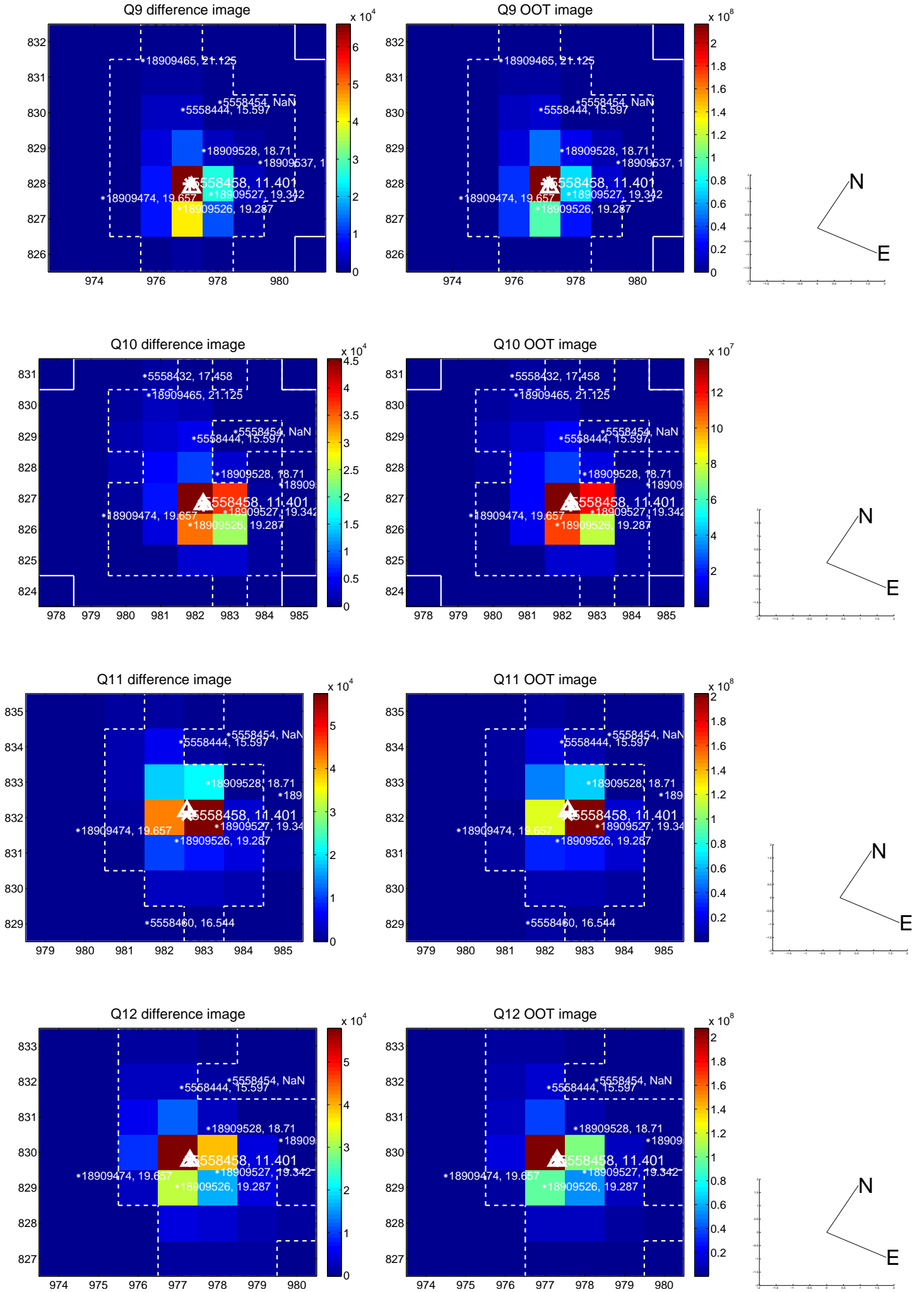
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



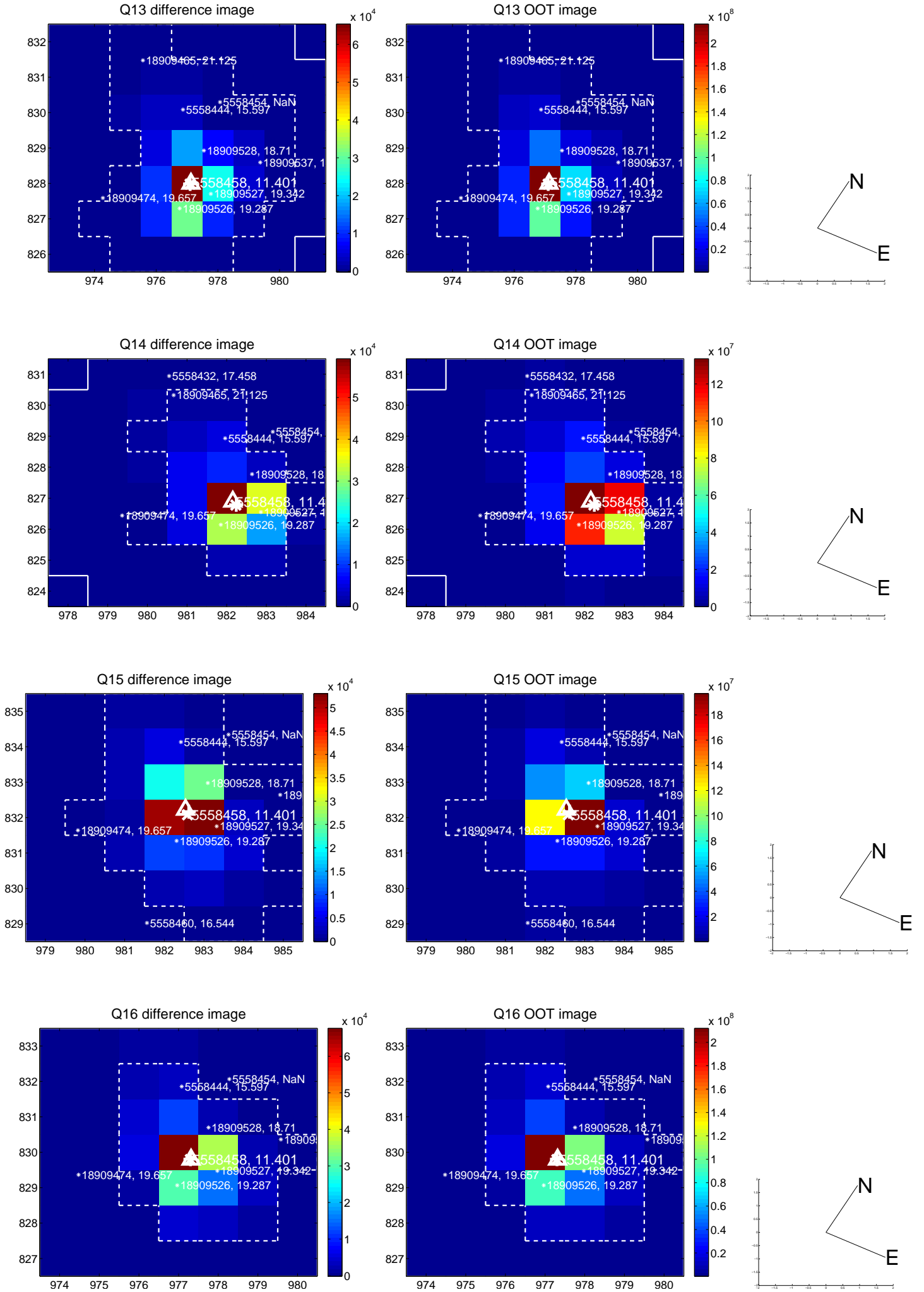
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



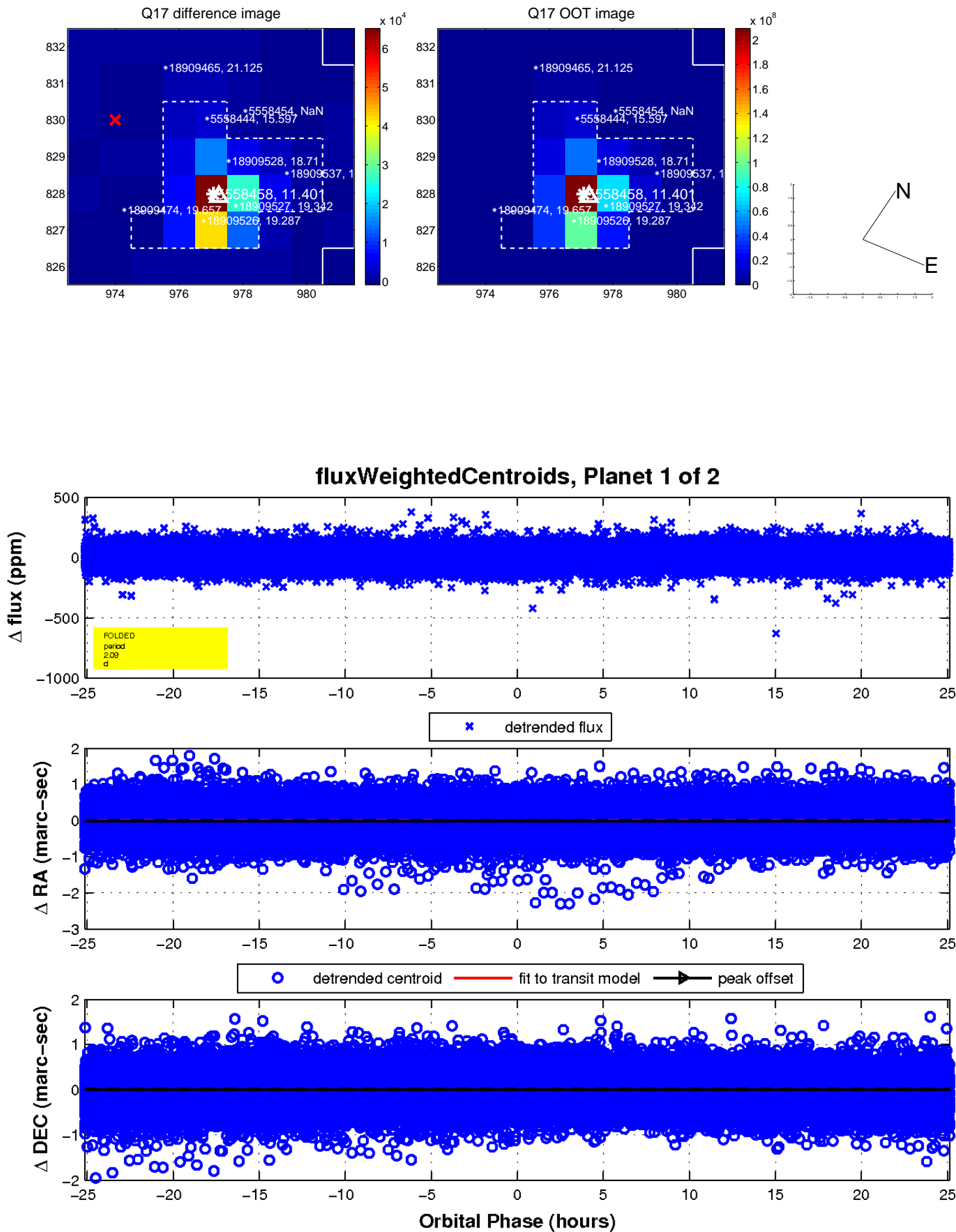
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

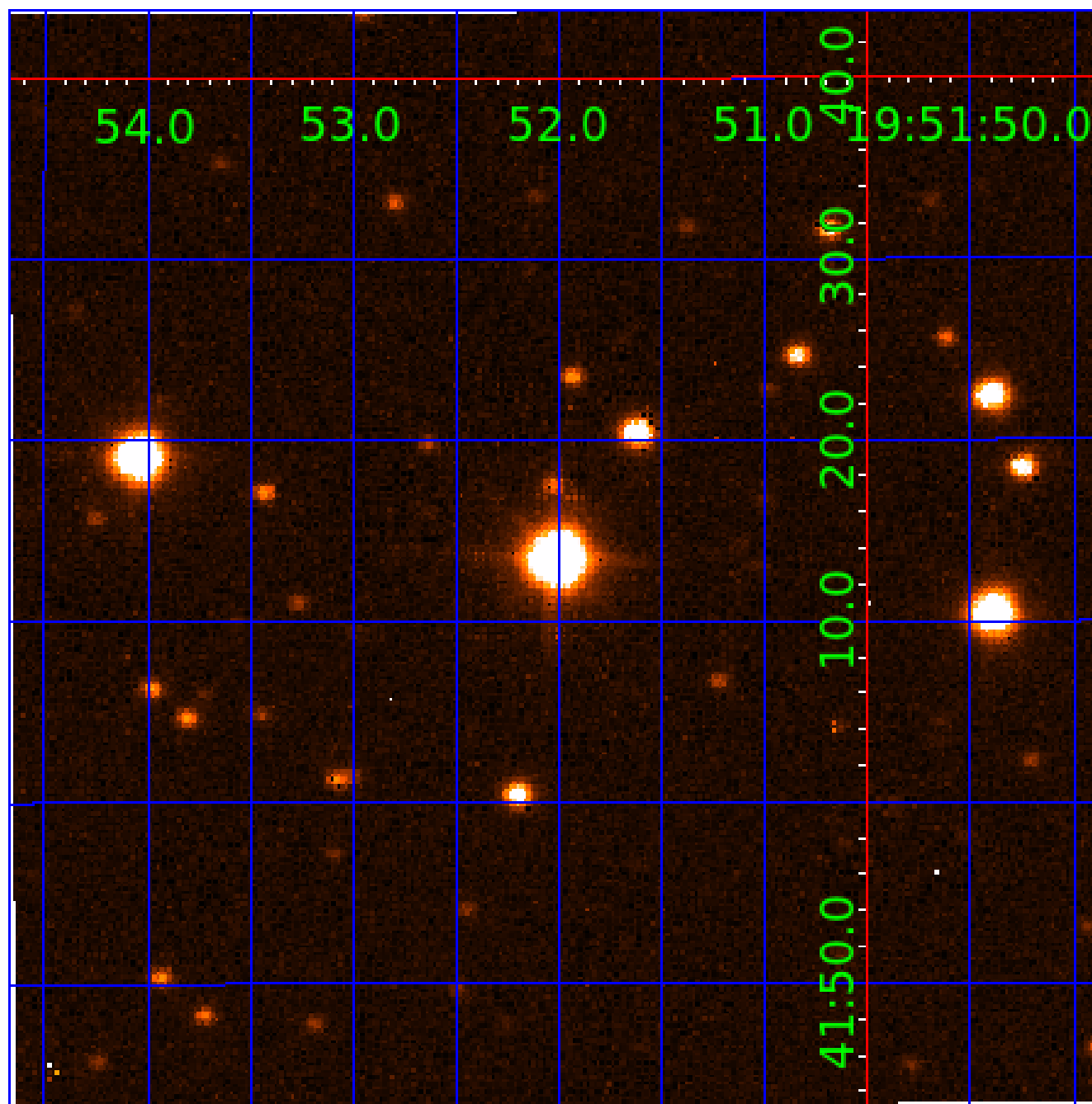


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005558458

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})
005558458-01	OBS	No	2.094574	132.581538	6.5	10.003	8.5	9.1	1.96	9566	0.59	16483.31
005558458-02	OBS	No	2.094851	133.024783	10.5	25.138	10.9	12.0	1.96	9566	0.65	16480.41

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558458-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
005558458-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

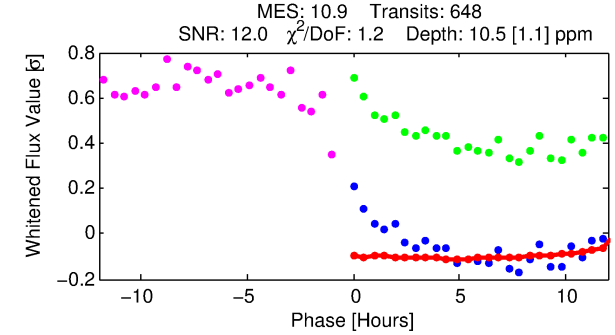
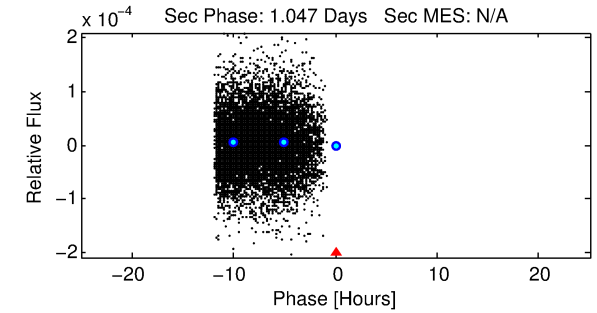
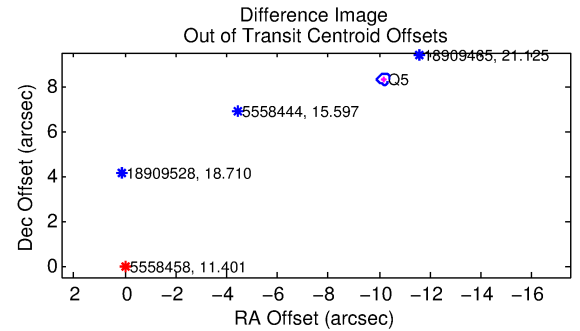
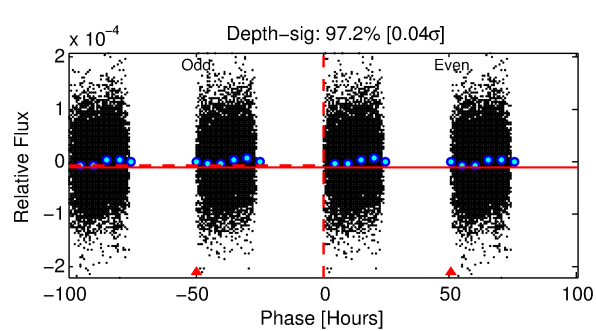
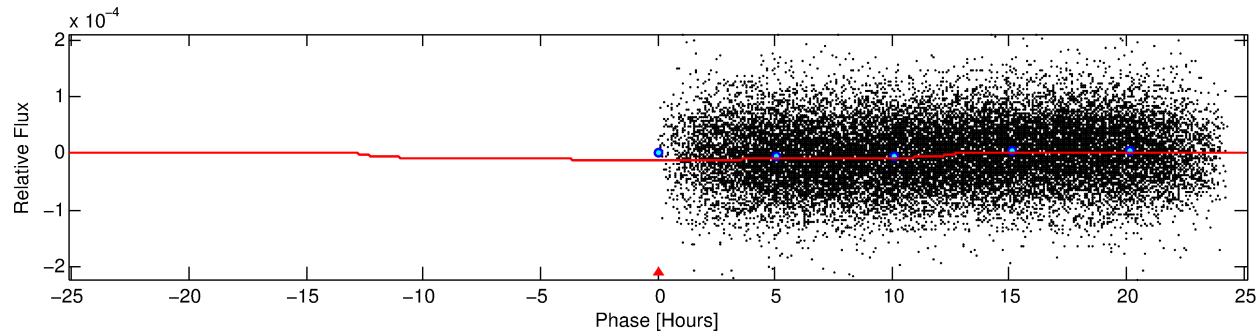
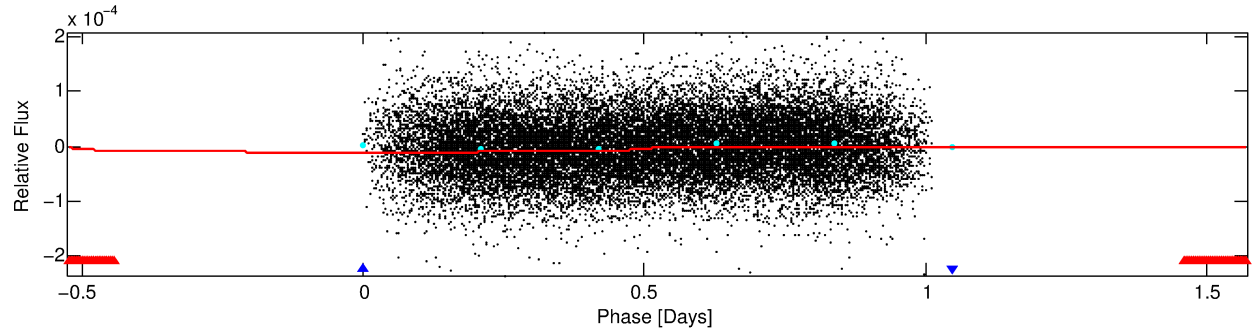
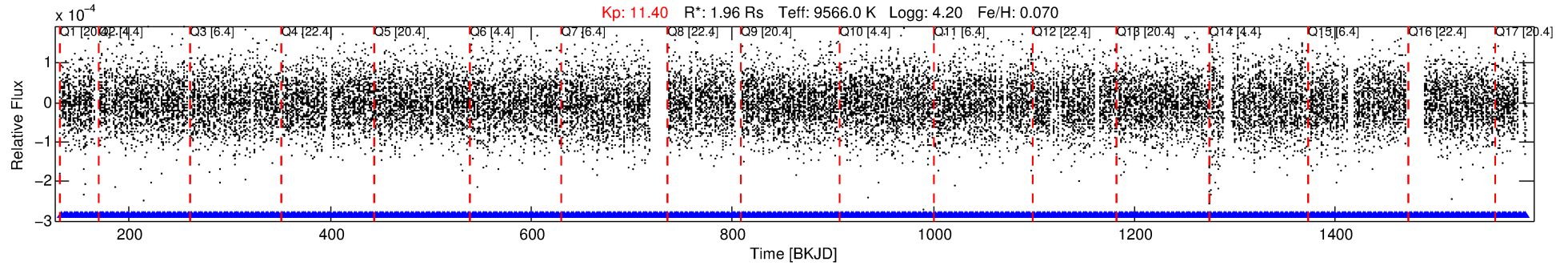
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005558458-02

No Significant Match Found

DV One-Page Summary

KIC: 5558458 Candidate: 2 of 2 Period: 2.095 d



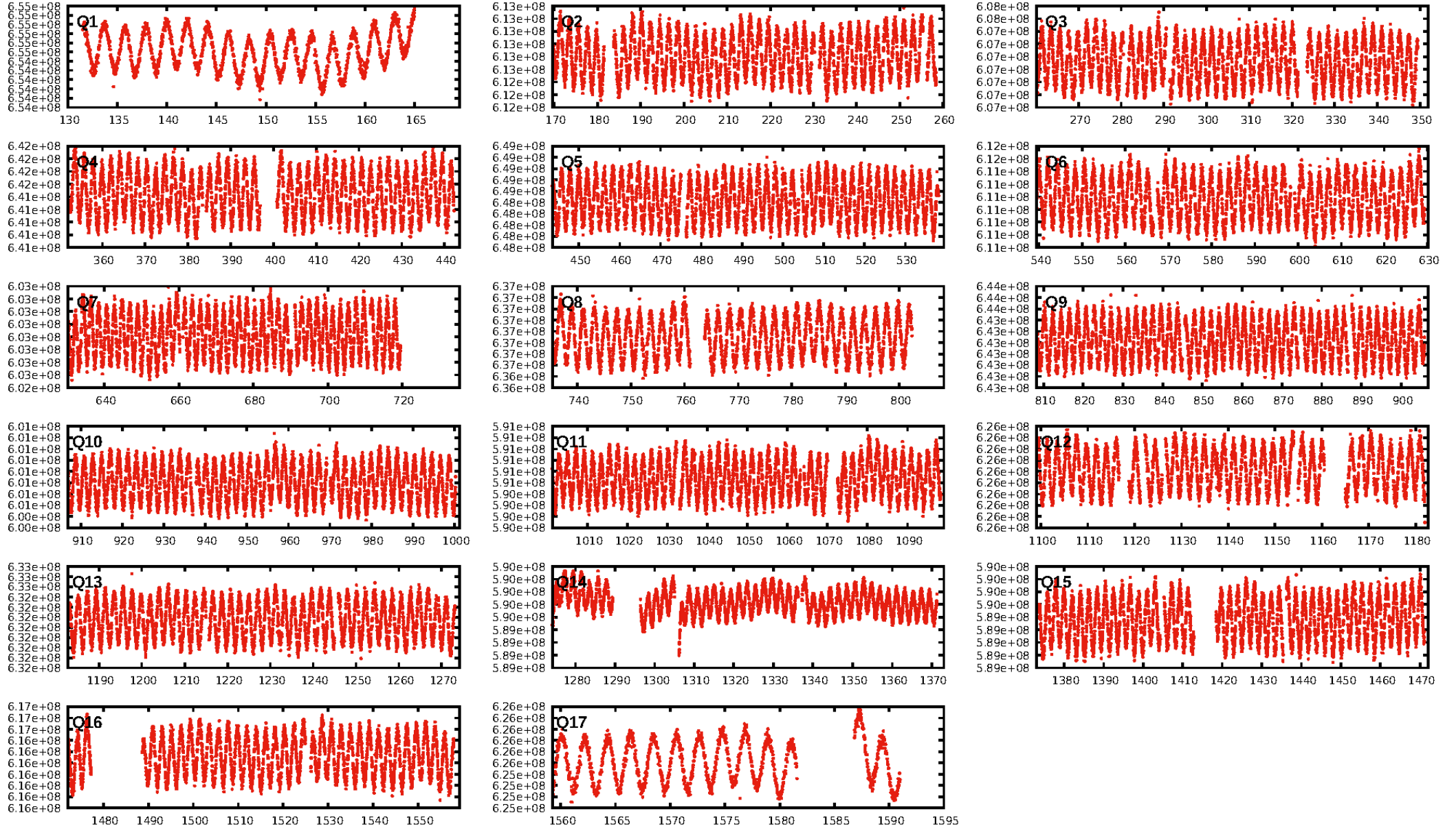
DV Fit Results:

Period = 2.09485 [0.00004] d
Epoch = 133.0248 [0.0274] BKJD
Rp/R* = 0.0030 [0.0008]
a/R* = 1.00 [0.01]
b = 0.00 [1804.49]
Seff = 16480.41 [8185.80]
T_{eq} = 2889 [359] K
Rp = 0.65 [0.33] Re
a = 0.0418 [0.0144] AU

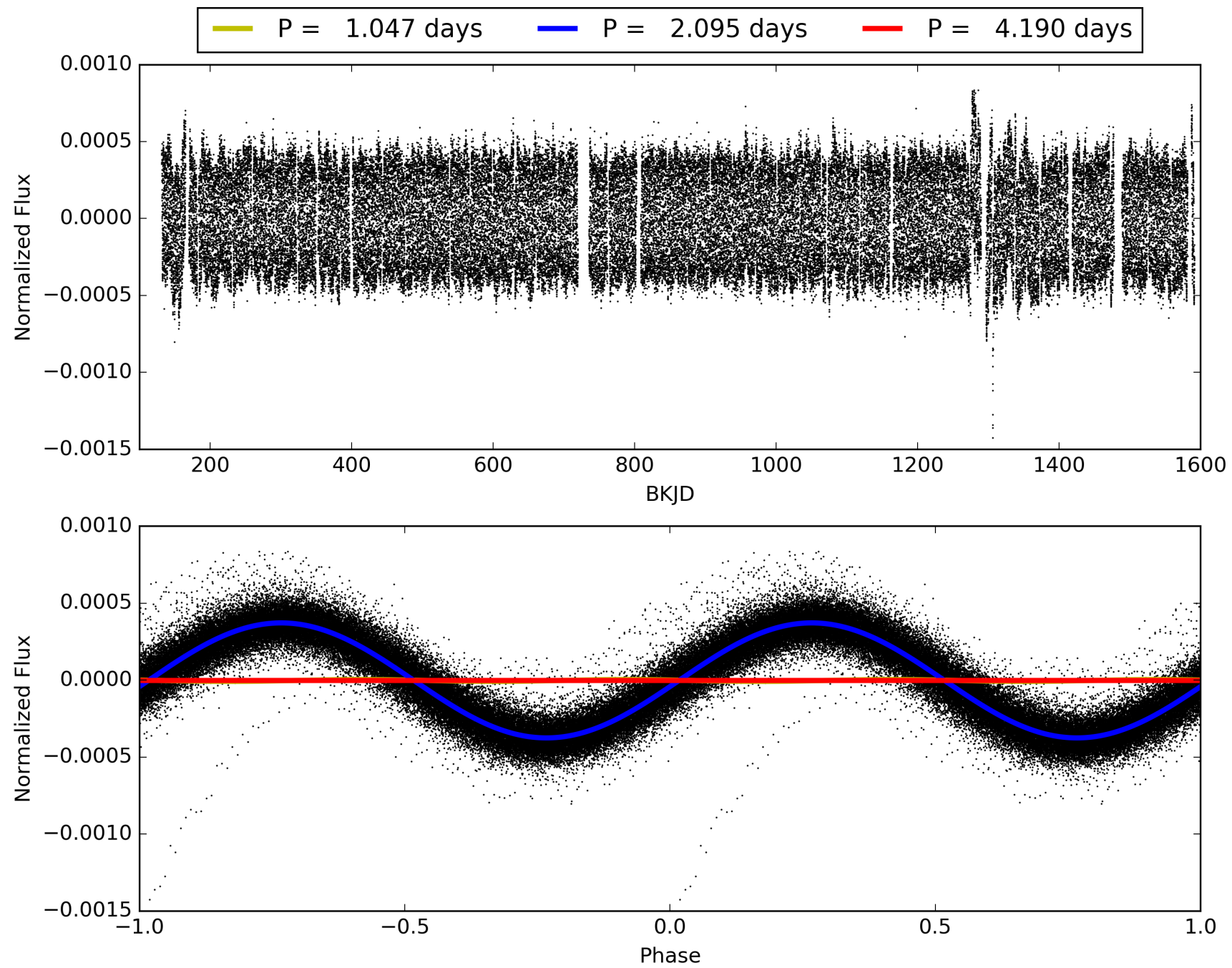
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [619/619]
GhostDiagnostic-chr: 1.058
Centroid-sig: 0.0%
Centroid-so: 2.319 arcsec [3.05σ]
OotOffset-rm: 13.123 arcsec [165.57σ]
KicOffset-rm: 13.121 arcsec [165.55σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 005558458-02, PDC Light Curves

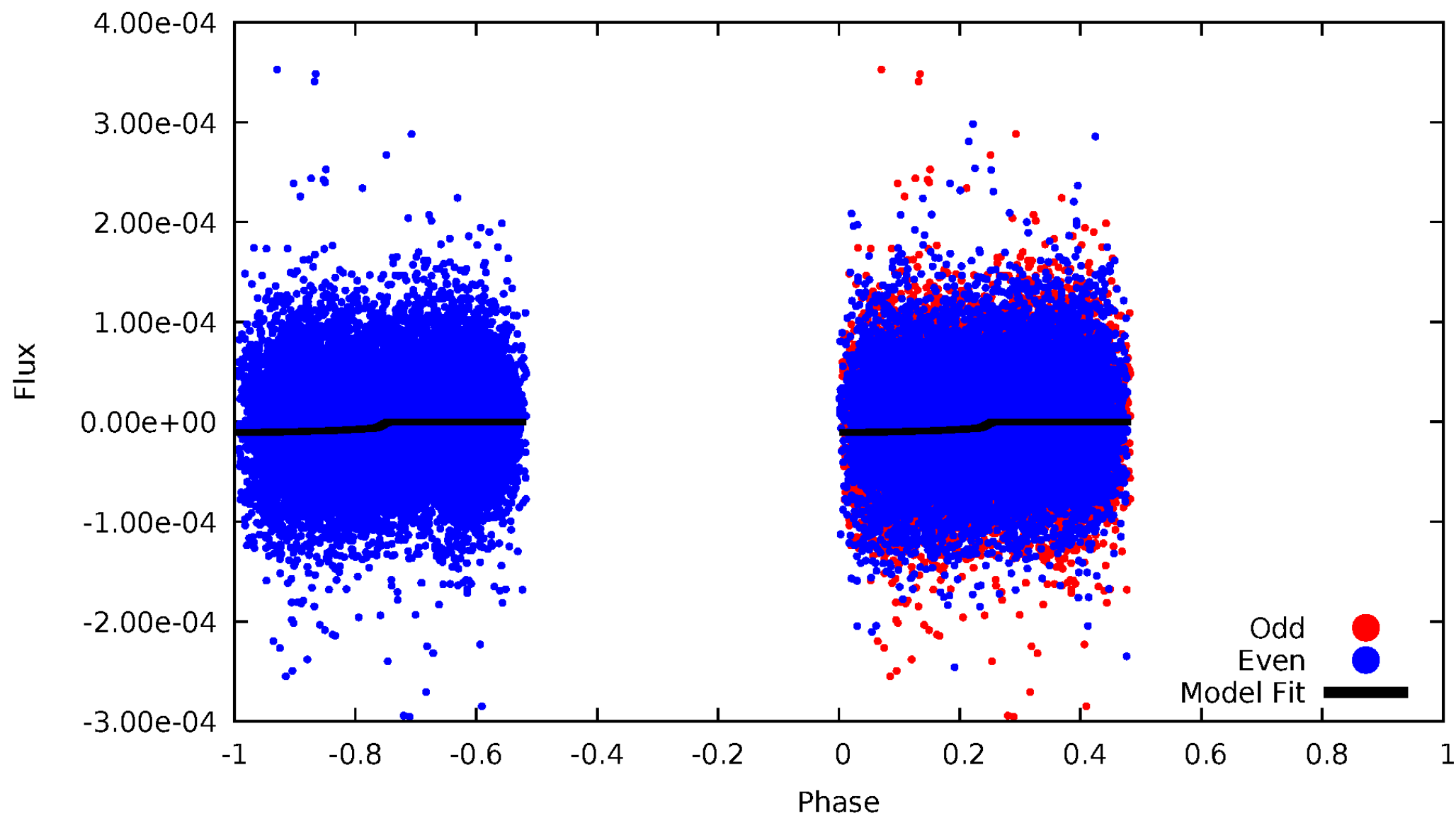


TCE 005558458-02



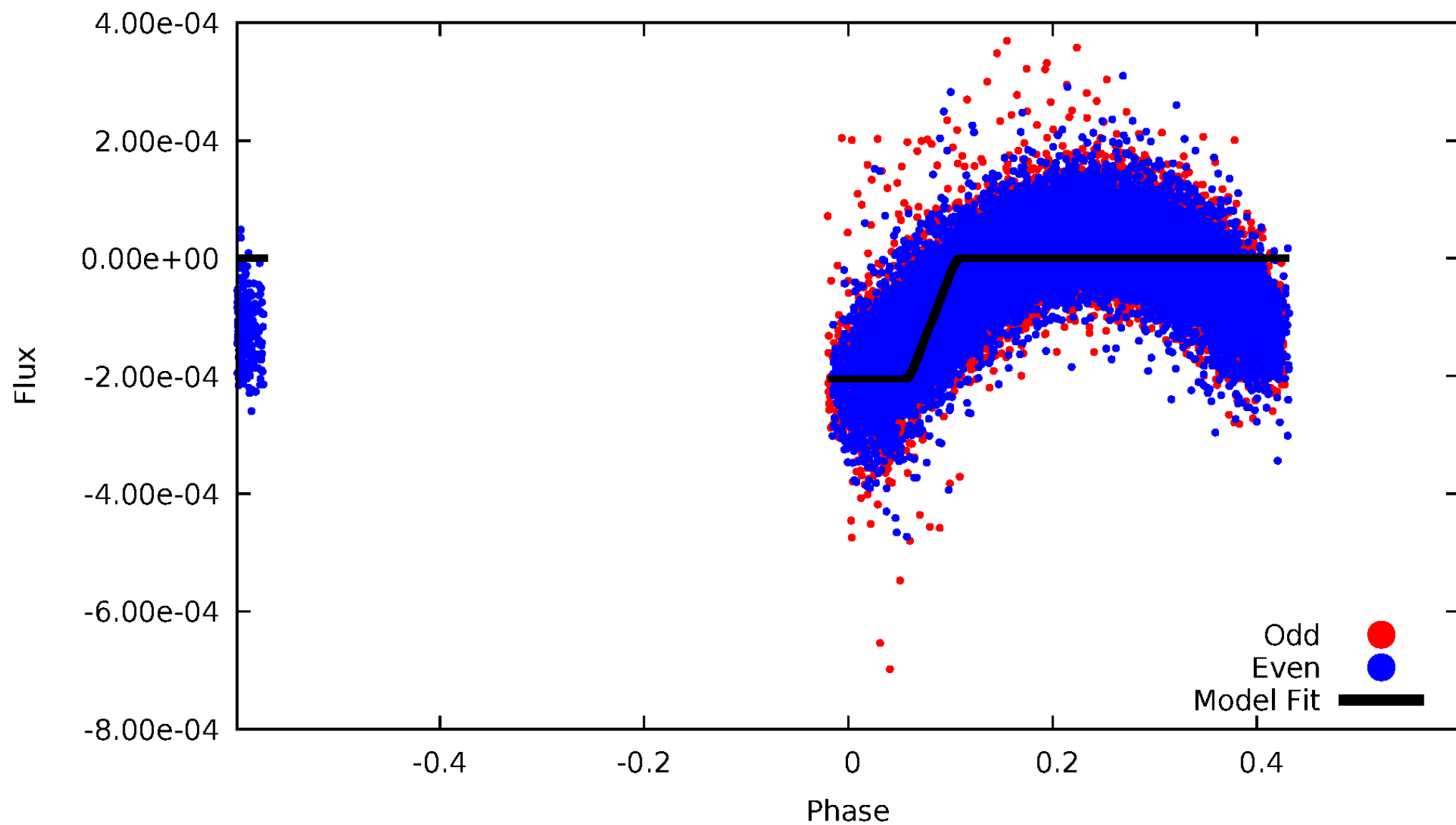
DV Odd/Even

TCE 005558458-02



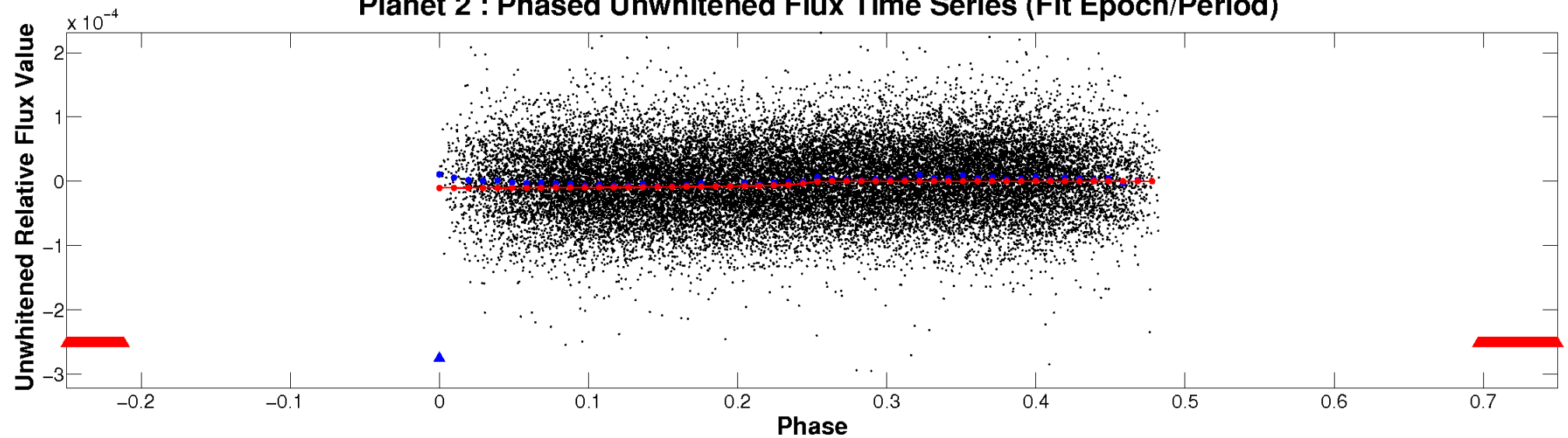
ALT Odd/Even

TCE 005558458-02

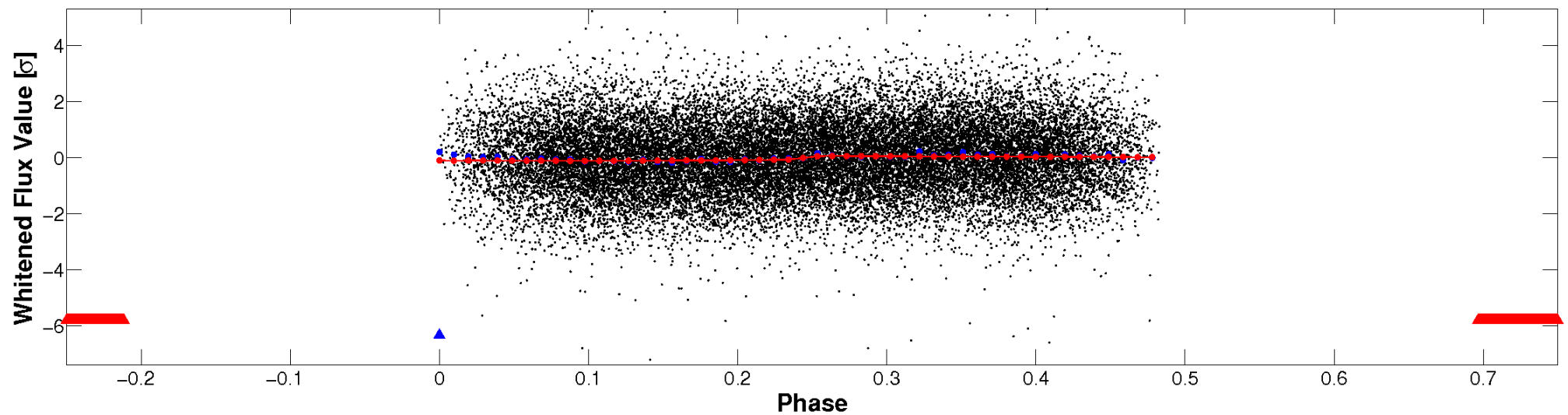


Non-Whitened Vs. Whitened Light Curve

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

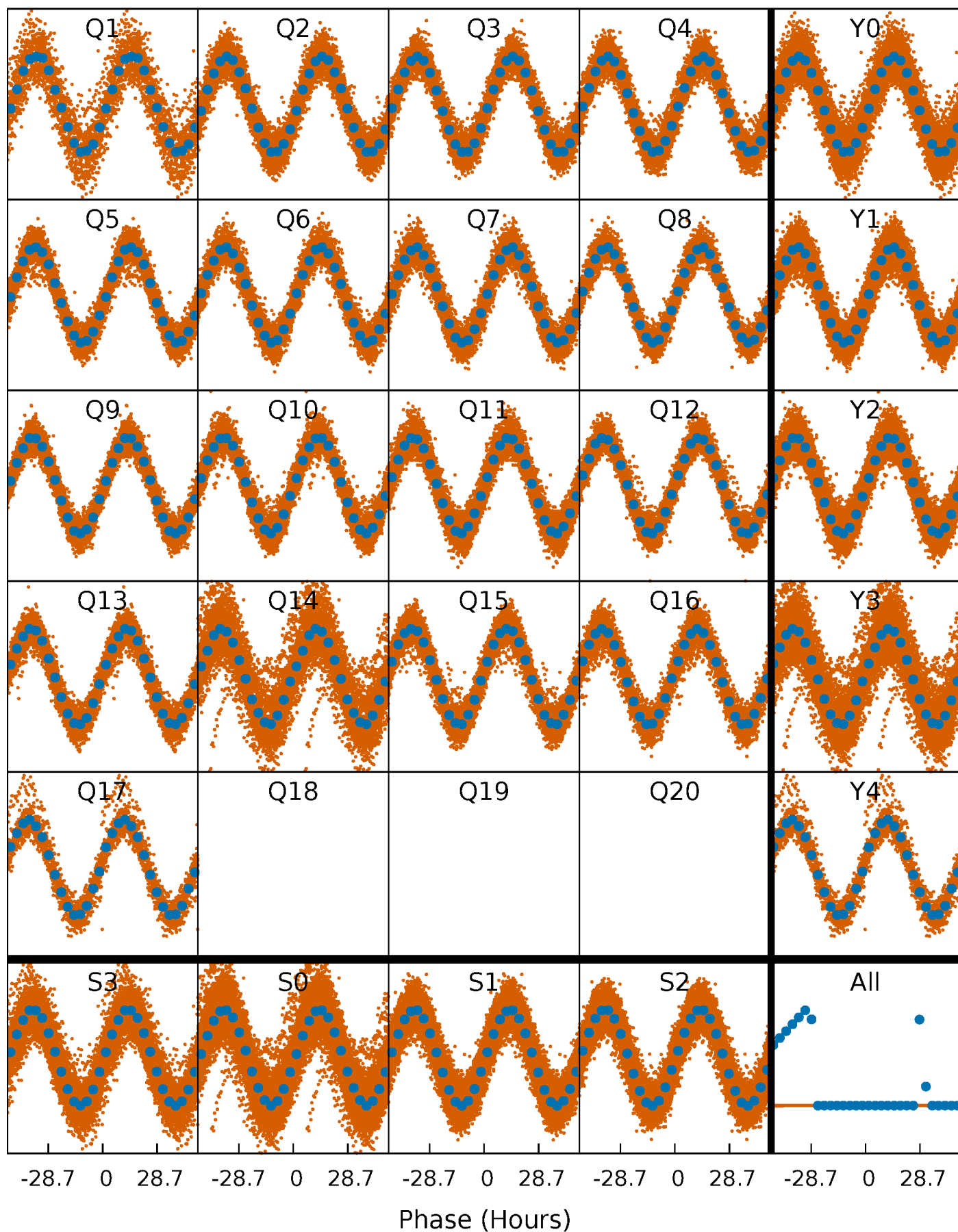


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



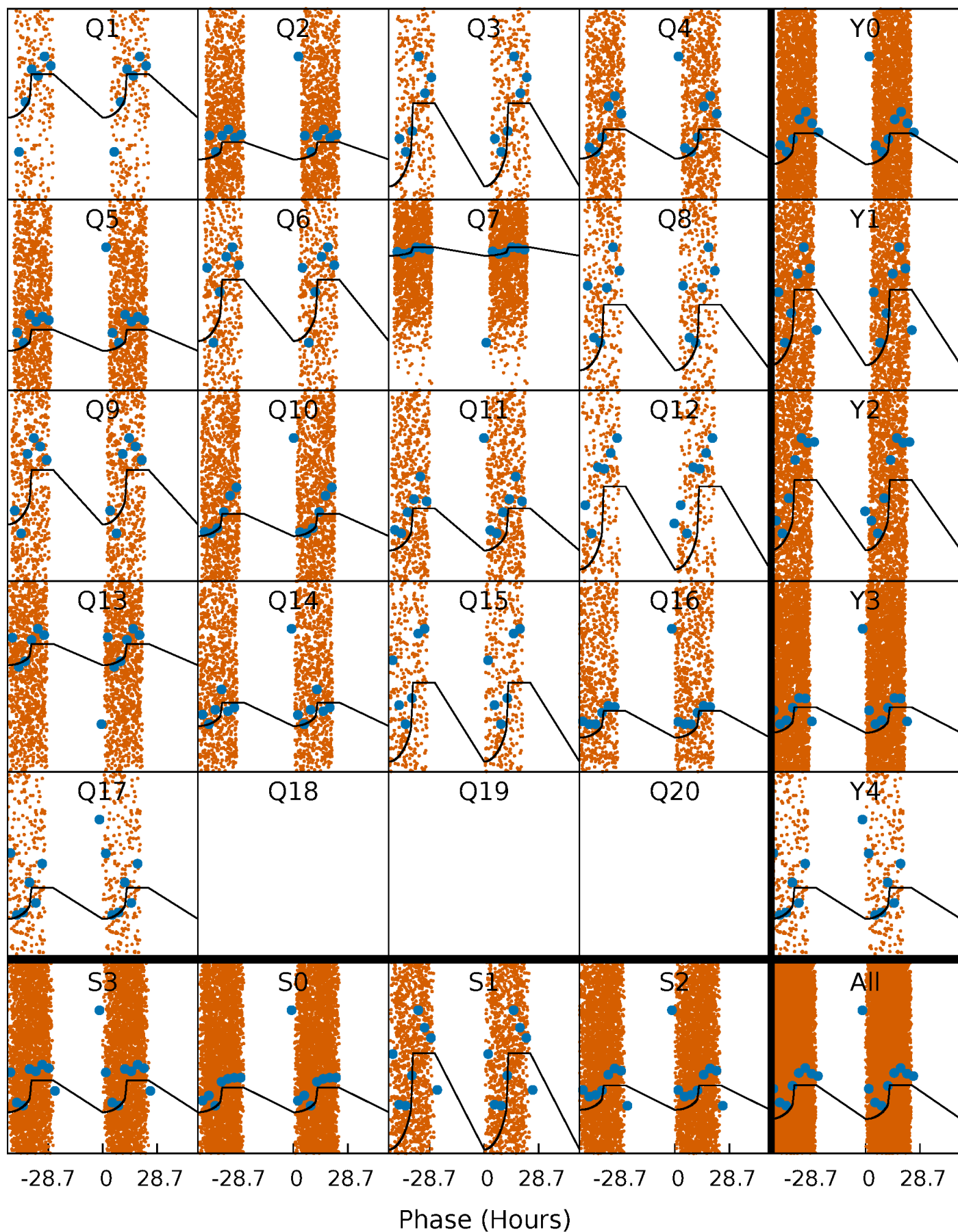
PDC Quarter-Phased Transit Curves

TCE 005558458-02 P= 2.094851 Days $T_0=133.024783$ (BKJD)



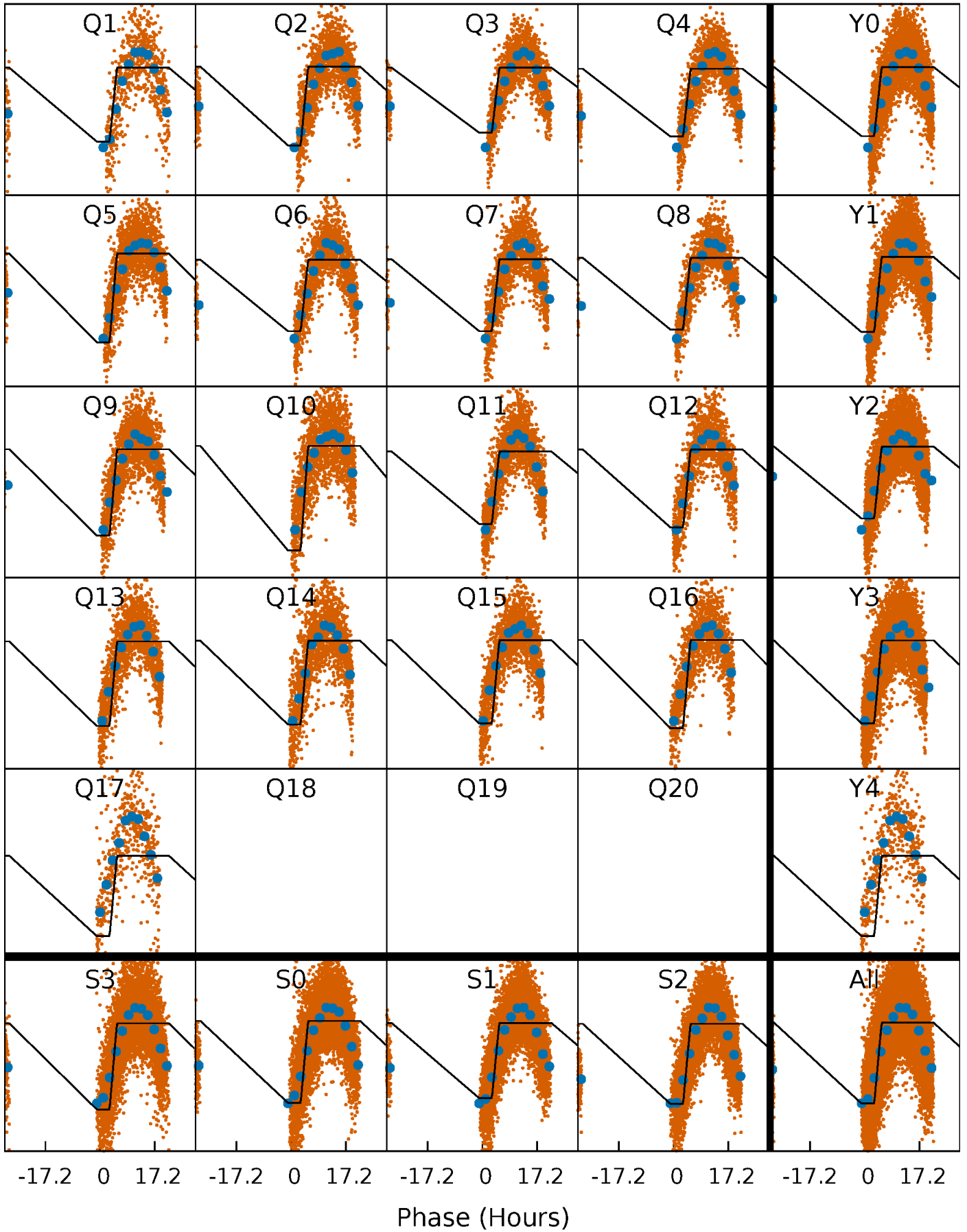
DV Quarter-Phased Transit Curves

TCE 005558458-02 P= 2.094851 Days $T_0=133.024783$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

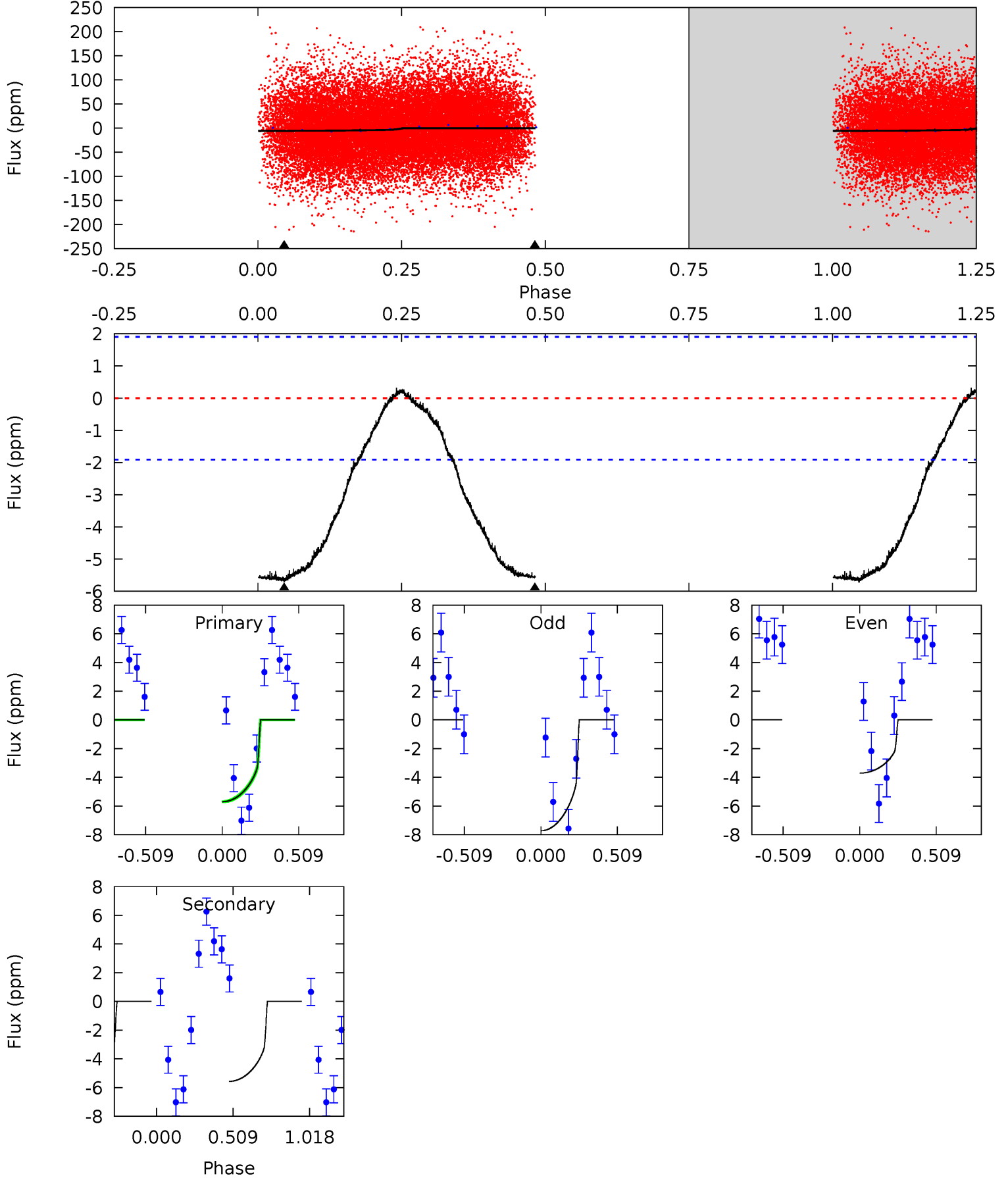
TCE 005558458-02 P= 2.094759 Days $T_0=133.132320$ (BKJD)



DV Model-Shift Uniqueness Test

005558458-02, P = 2.094851 Days, E = 130.929932 Days

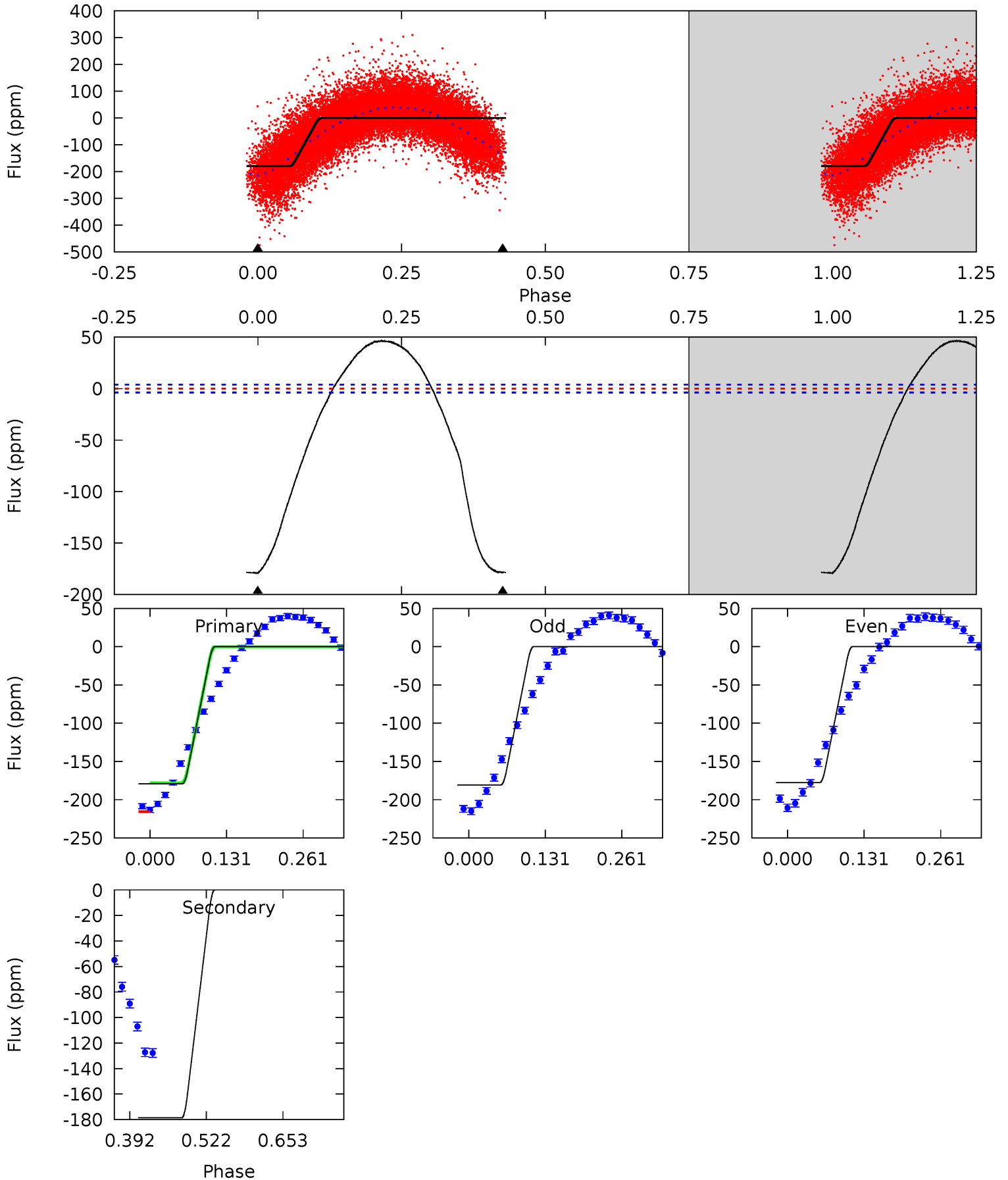
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	12.3	0	0	4.21	0.66	0.39	12.6	12.6	12.3	12.3	4.46	0.78	0.05	0



Alt Model-Shift Uniqueness Test

005558458-02, P = 2.094759 Days, E = 131.037561 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
212.7	211.9	0	0	4.51	1.51	70.9	212.7	212.7	211.9	211.9	1.73	1.01	0.21	11.3



Stellar Parameters For KIC 005558458

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9566^{+272}_{-428}	$4.200^{+0.126}_{-0.234}$	$0.070^{+0.150}_{-0.700}$	$1.959^{+0.860}_{-0.463}$	$2.220^{+0.445}_{-0.544}$	$0.416^{+0.323}_{-0.241}$
	+3%/-4%	+3%/-6%	+214%/-1000%	+44%/-24%	+20%/-25%	+78%/-58%
Source	KIC0	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 005558458-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-6 ± 0	$0.65^{+0.22}_{-0.18}$	4097^{+359}_{-299}	8138^{+1774}_{-1141}	12^{+11}_{-5}
Alt.	-179 ± 1	$3.12^{+0.69}_{-0.44}$	4085^{+370}_{-281}	9008^{+455}_{-430}	17^{+5}_{-5}

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 $A_{obs} \gg 1.0$

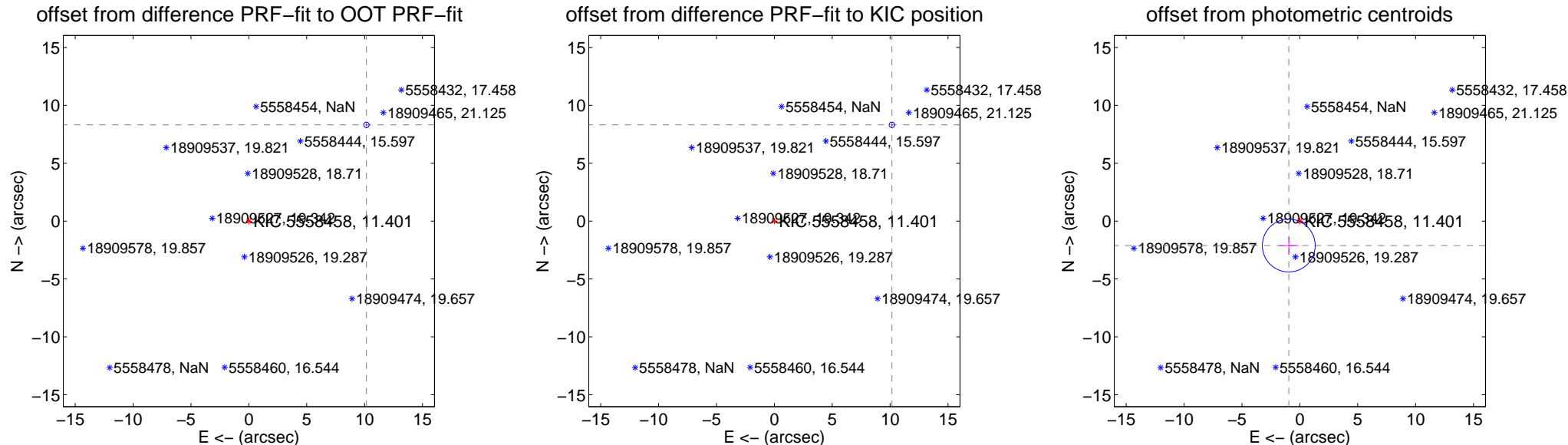
DV Centroid Data

Supplemental centroid analysis for 005558458-02. **Kepler magnitude: 11.40.** Transit SNR 12.01

There are 0 quarters with good PRF difference image offsets

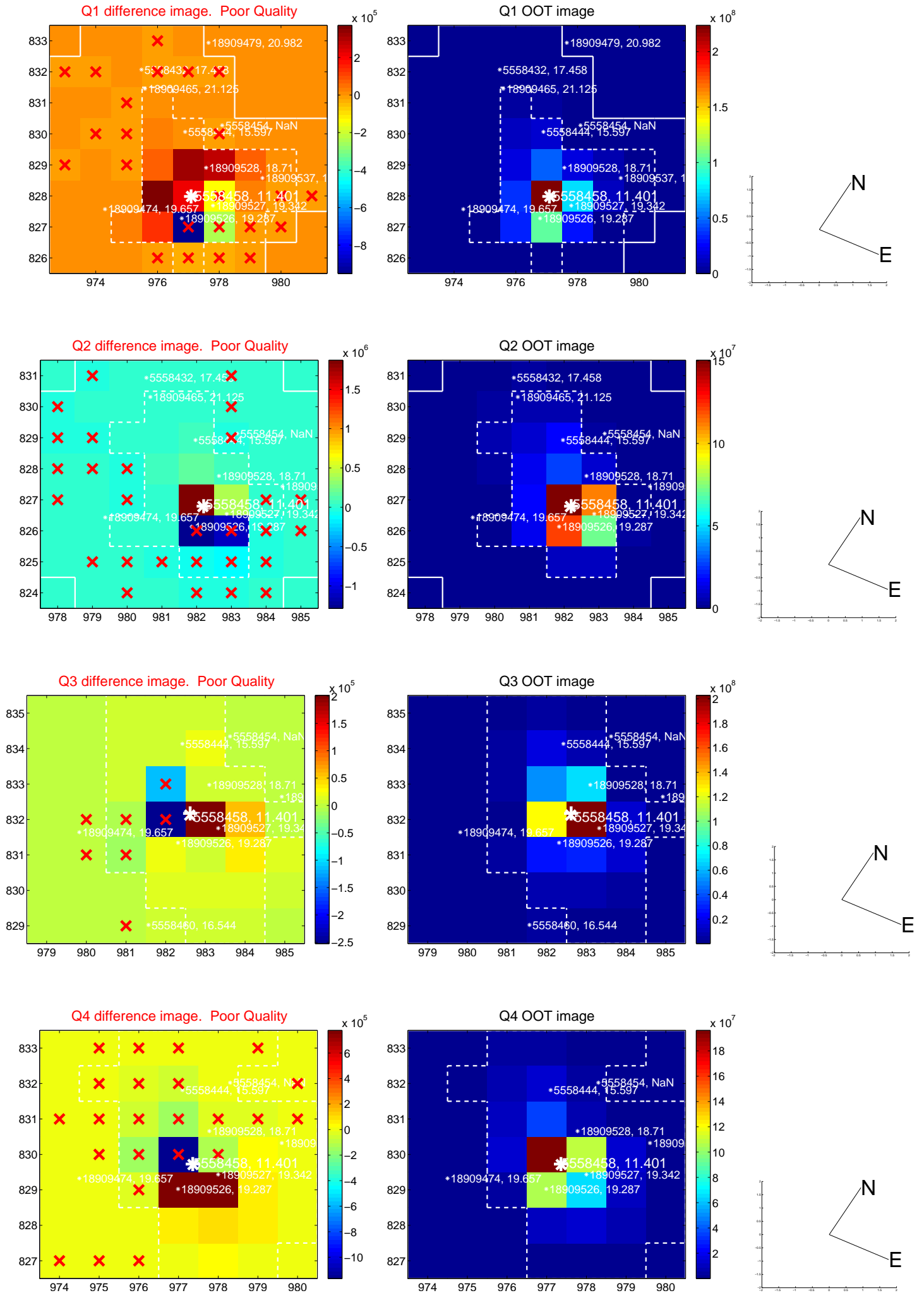
The direct PRF centroid is offset from the target star catalog position by about 0.00 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	13.123 \pm 0.079	165.57	-10.156 \pm 0.078	8.312 \pm 0.082
PRF-fit source offset from KIC position	13.121 \pm 0.079	165.55	-10.154 \pm 0.078	8.310 \pm 0.082
photometric centroid source offset	2.32 \pm 0.76	3.05	0.96 \pm 0.81	-2.11 \pm 0.75

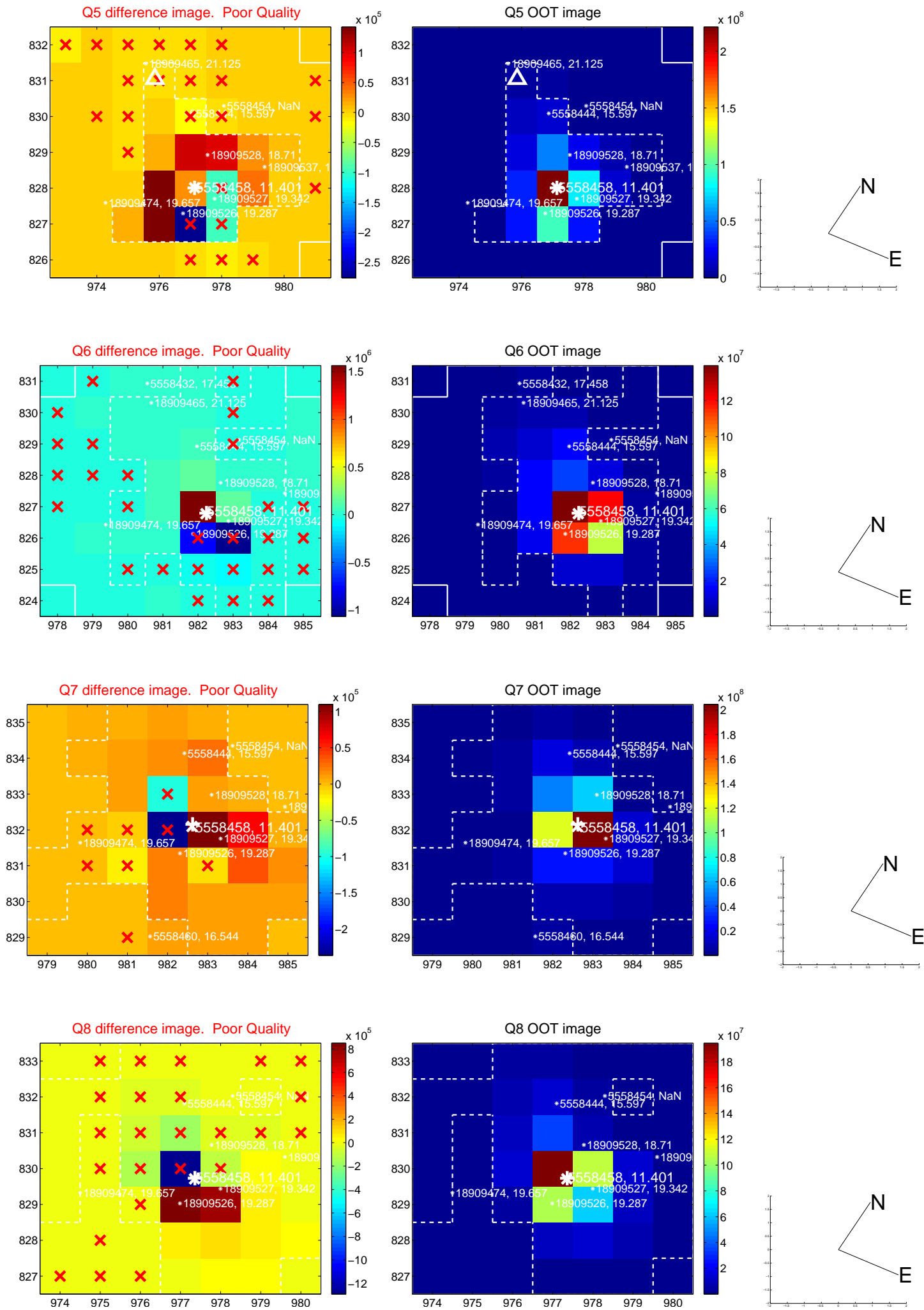


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

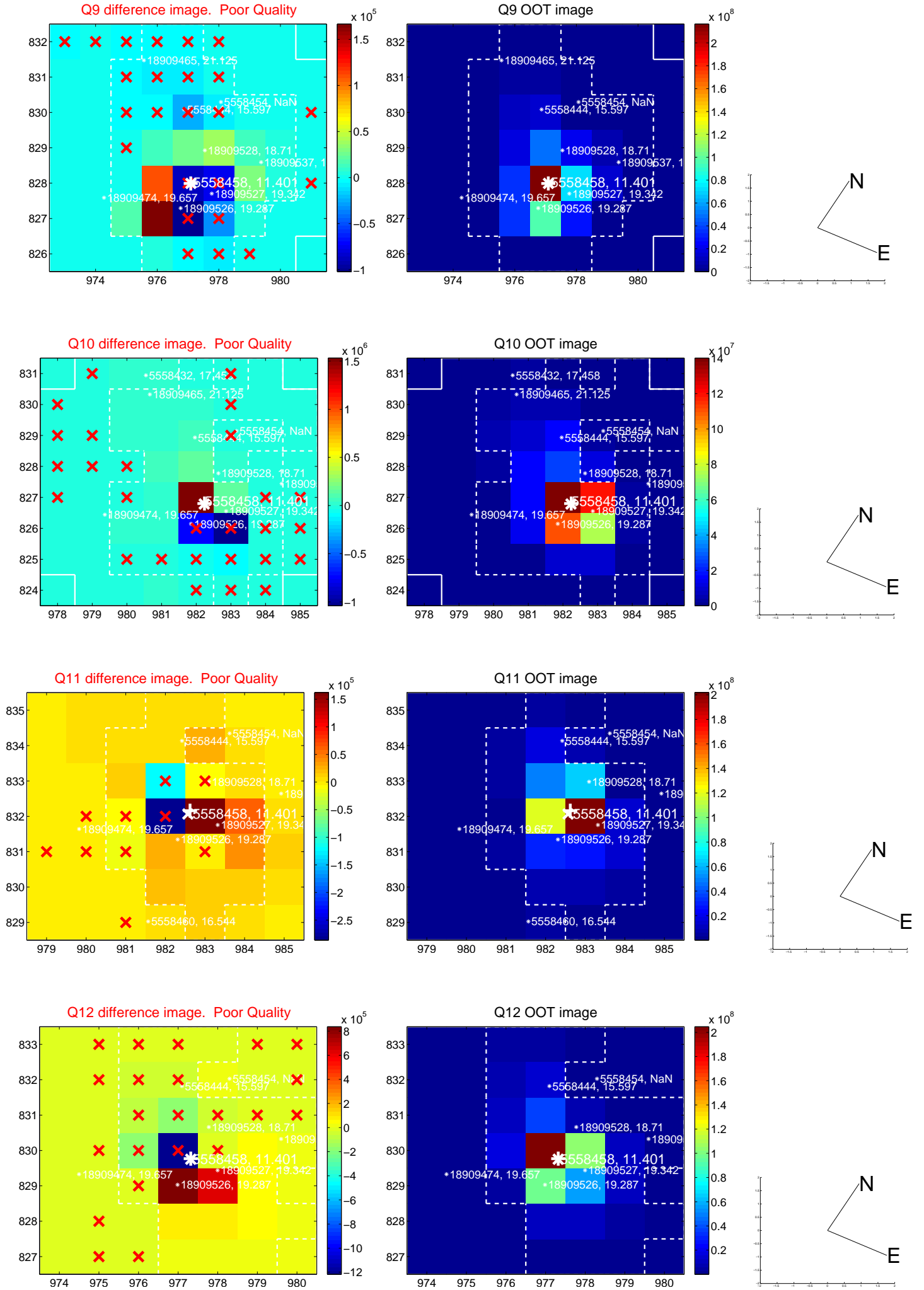
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



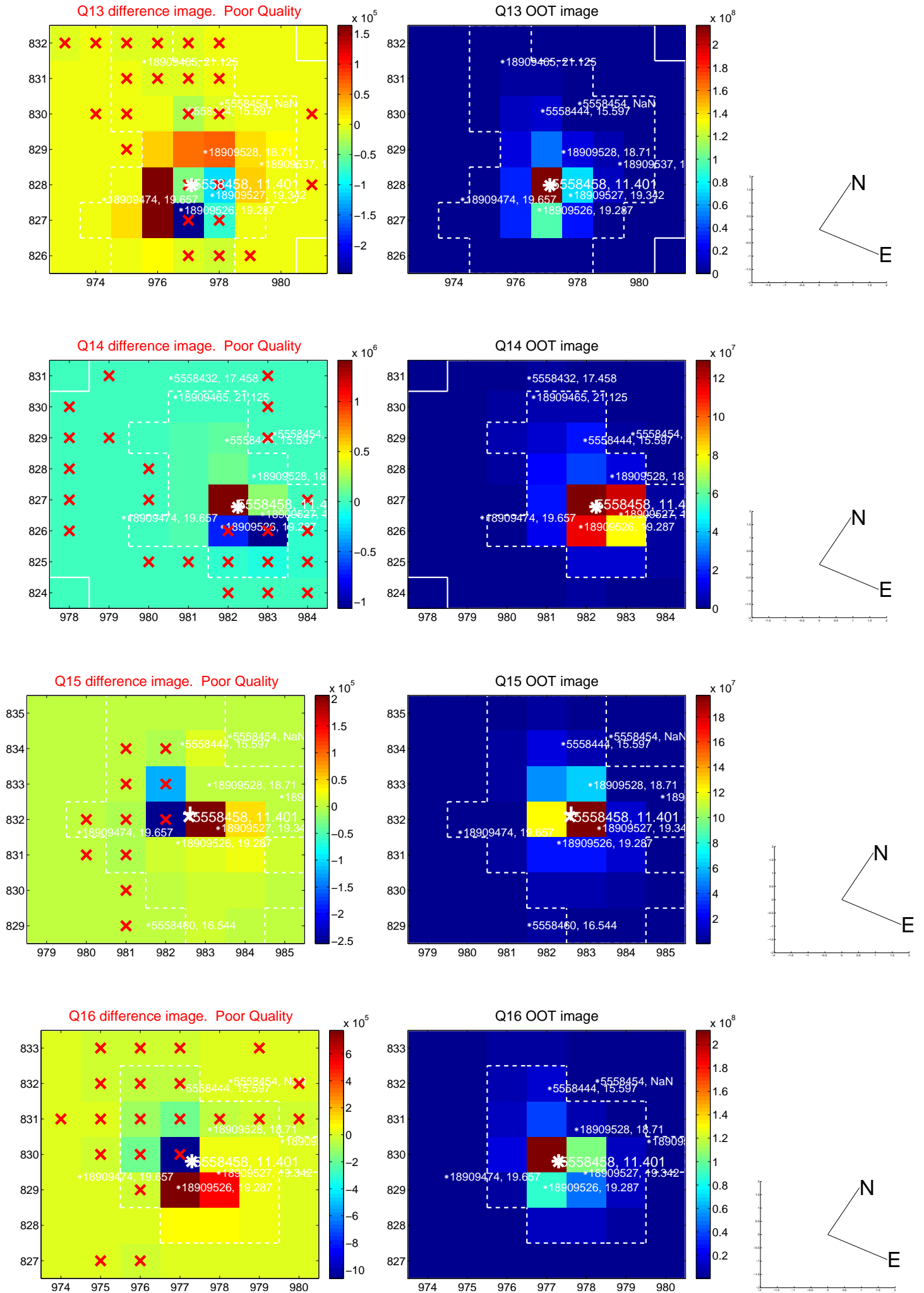
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



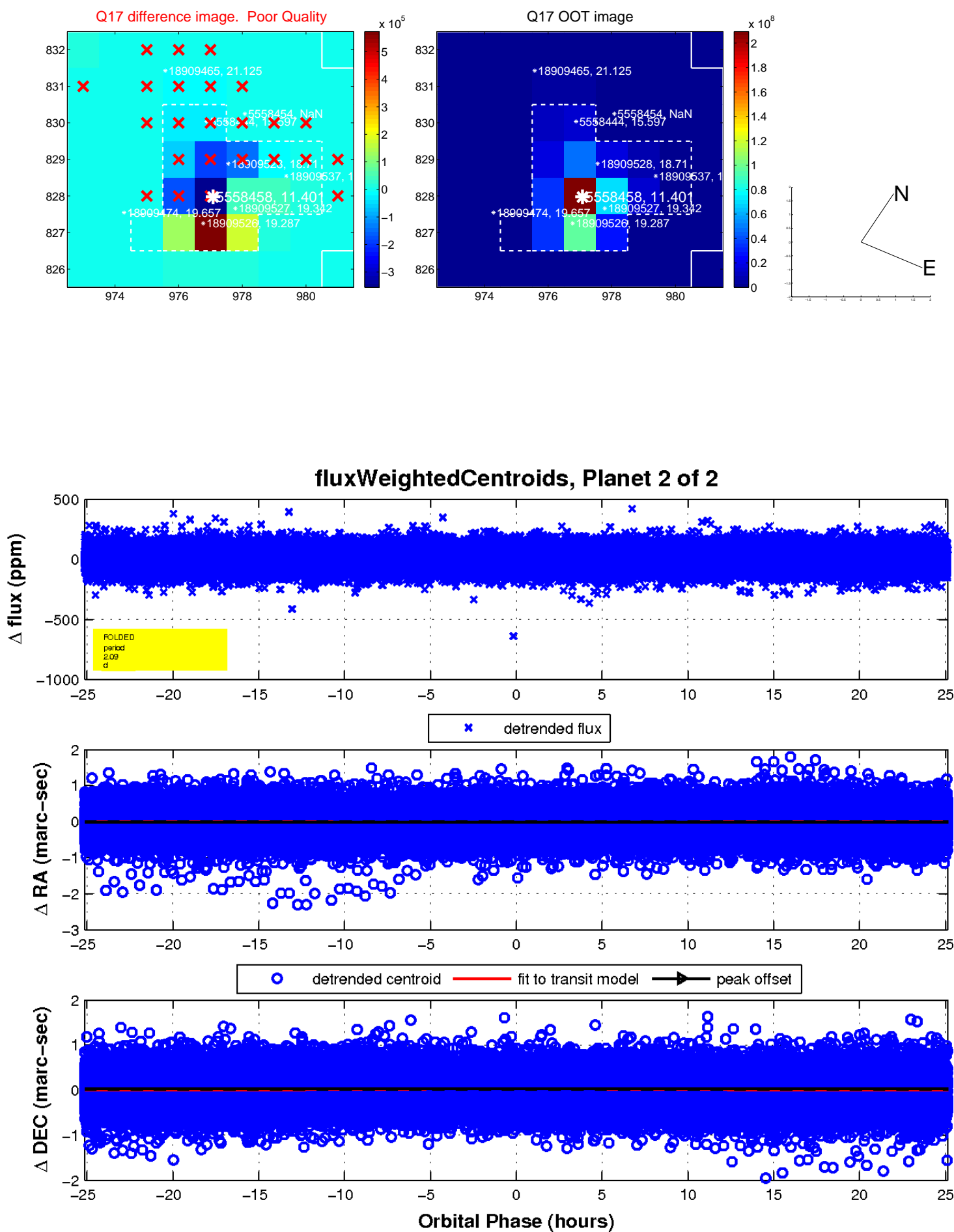
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

