

# KIC 006586333

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006586333-01	OBS	No	1.019870	132.405237	90.4	2.057	12.4	10.1	2.45	7492	2.69	29573.72
006586333-02	OBS	No	1.911061	131.992974	78.6	20.816	10.0	12.2	2.45	7492	2.85	12801.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006586333-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006586333-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

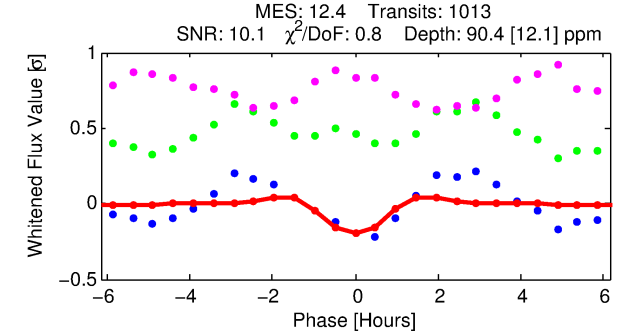
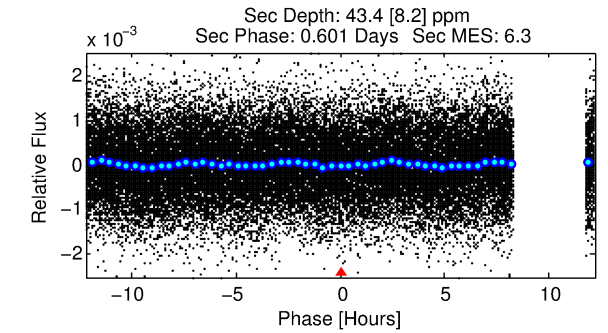
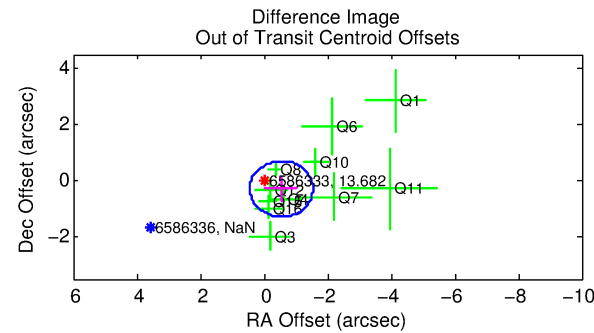
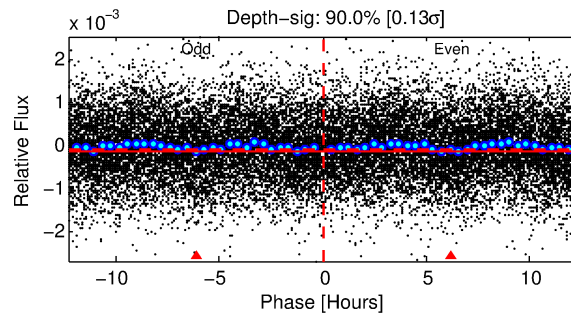
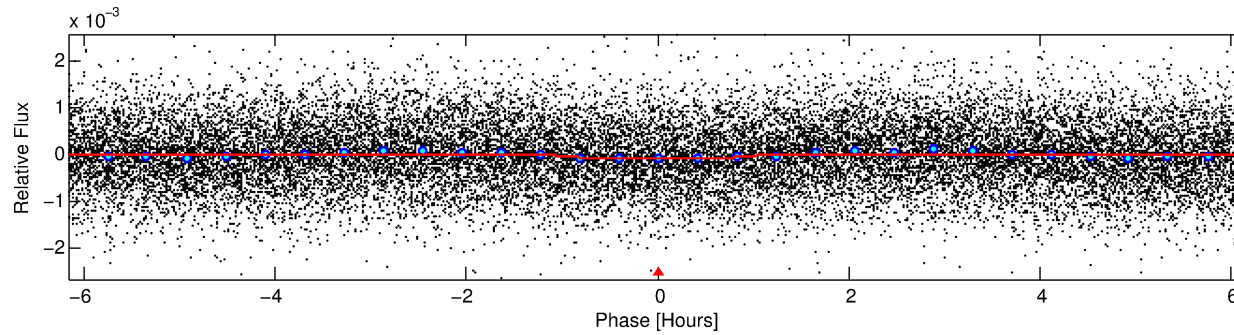
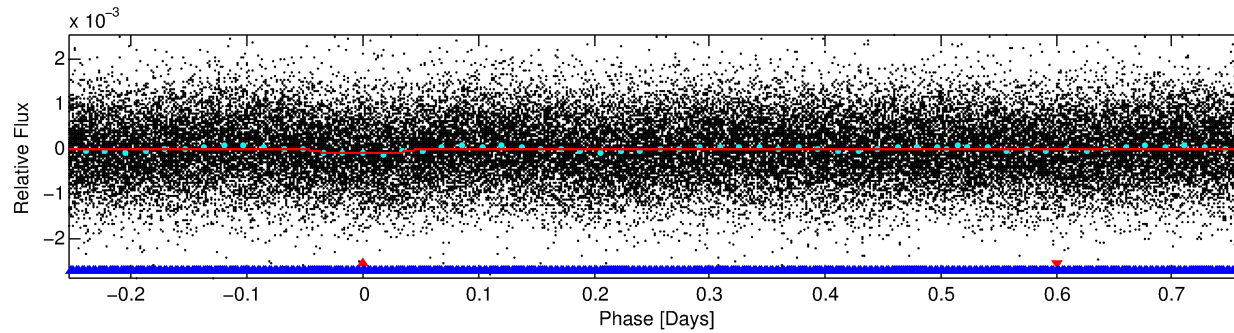
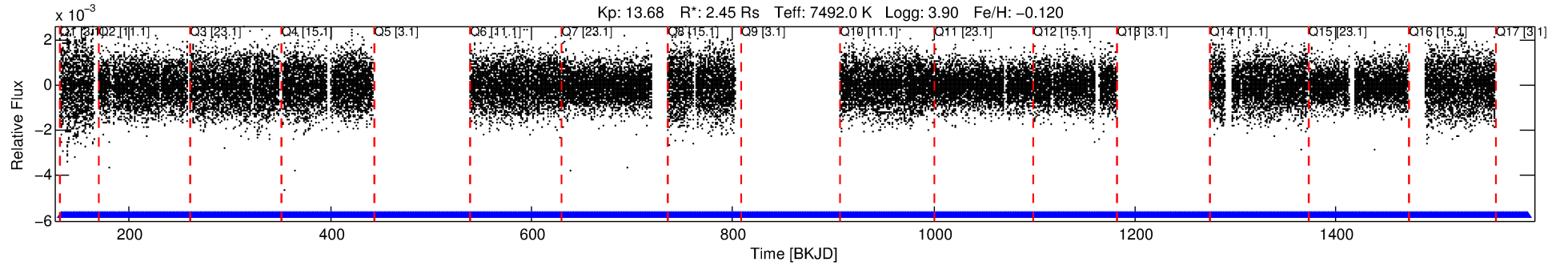
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006586333-01

No Significant Match Found

# DV One-Page Summary

KIC: 6586333 Candidate: 1 of 2 Period: 1.020 d



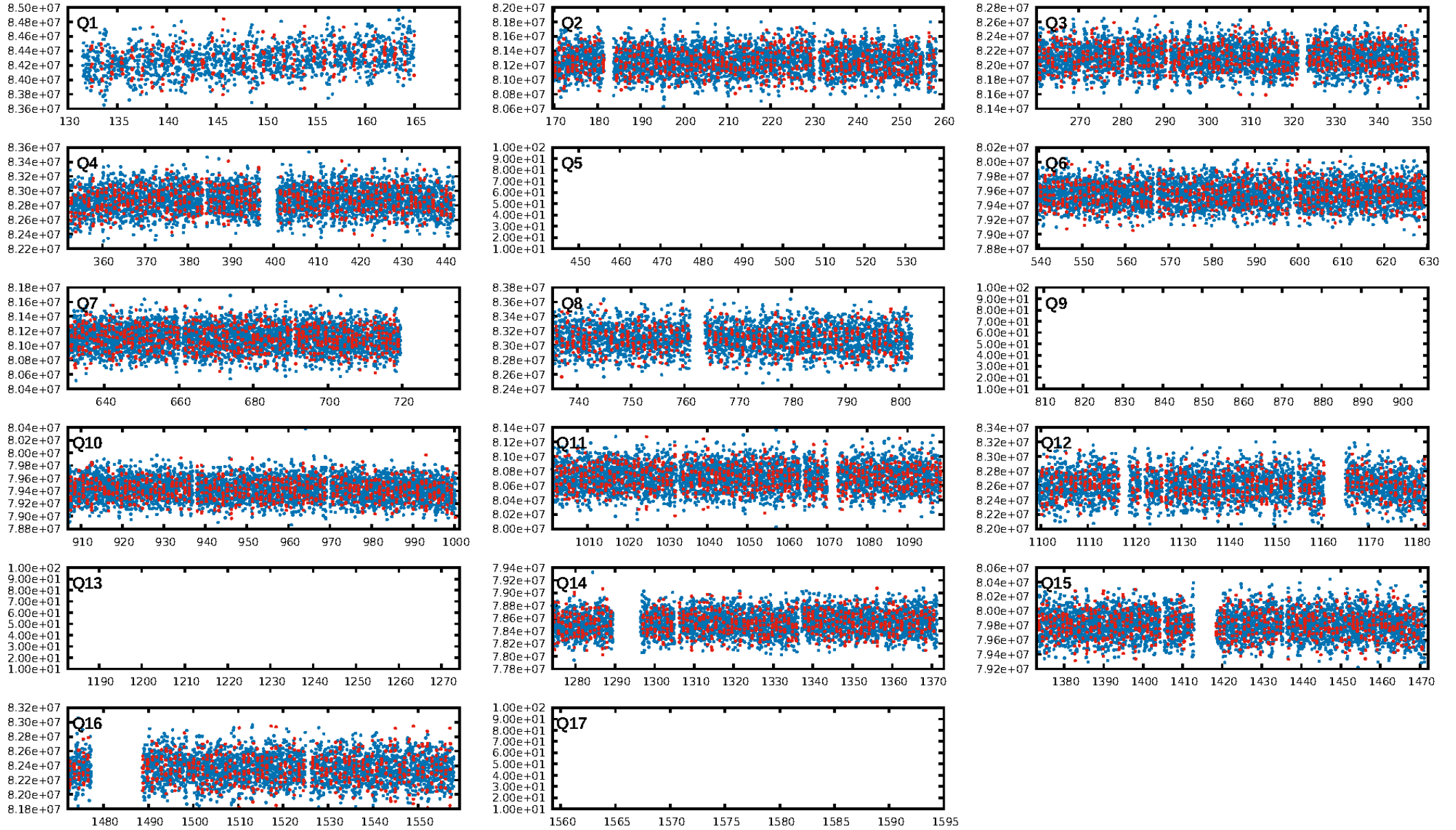
## DV Fit Results:

Period = 1.01987 [0.00001] d  
Epoch = 132.4052 [0.0026] BKJD  
Rp/R\* = 0.0101 [0.0066]  
a/R\* = 2.02 [6.30]  
b = 0.89 [0.95]  
Seff = 29573.71 [16184.27]  
Teq = 3344 [457] K  
Rp = 2.69 [2.06] Re  
a = 0.0240 [0.0083] AU  
Ag = 1.89 [2.70] [0.33 $\sigma$ ]  
Teffp = 6060 [2033] K [1.30 $\sigma$ ]

## DV Diagnostic Results:

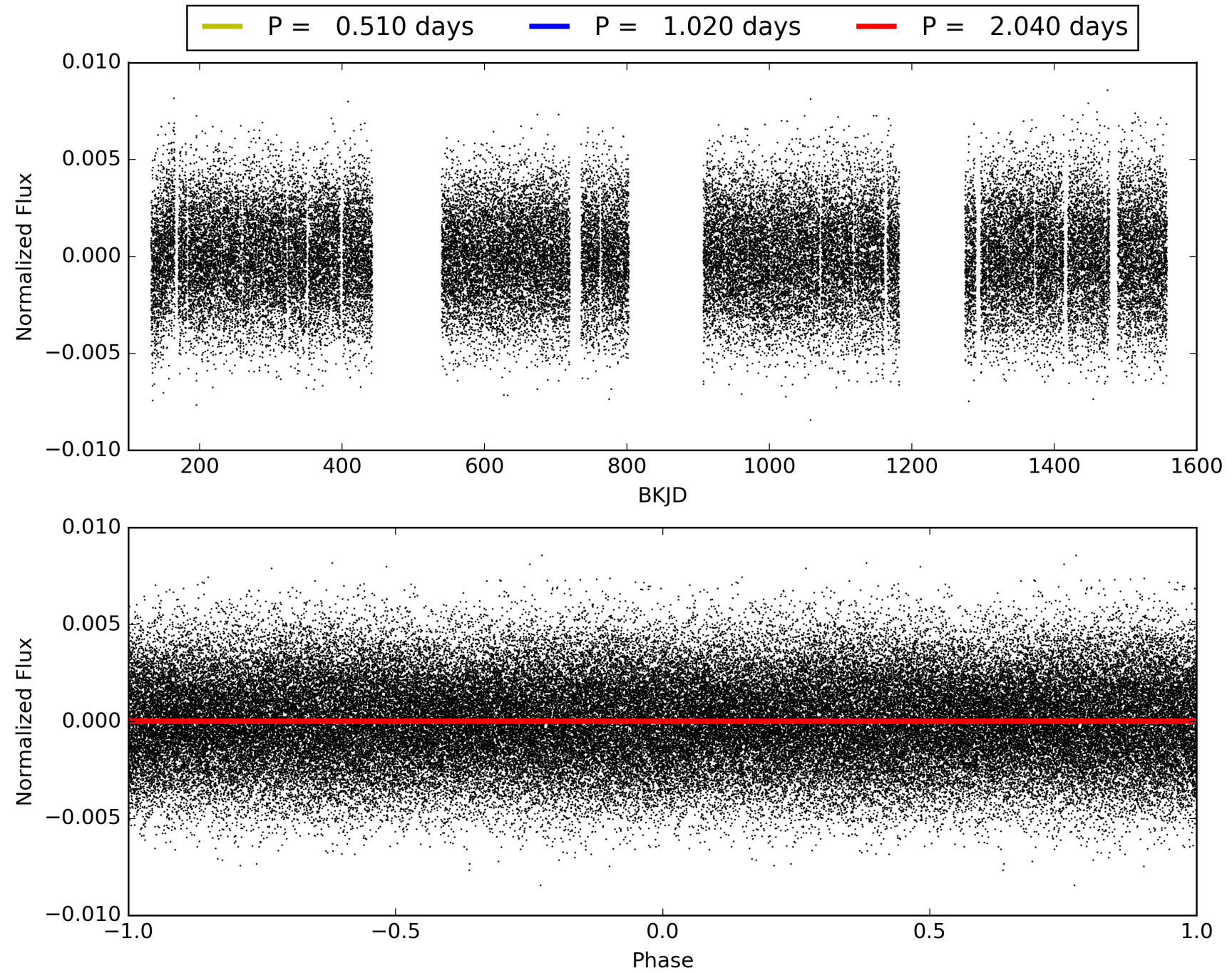
ShortPeriod-sig: N/A  
LongPeriod-sig: 69.3% [1.02 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [981/981]  
GhostDiagnostic-chr: 8.802  
Centroid-sig: 2.4%  
Centroid-so: 0.655 arcsec [1.48 $\sigma$ ]  
OotOffset-rm: 0.620 arcsec [1.87 $\sigma$ ]  
KicOffset-rm: 0.465 arcsec [1.05 $\sigma$ ]  
OotOffset-st: 2/4/4/1 [11]  
KicOffset-st: 2/4/4/1 [11]  
DiffImageQuality-fgm: 0.64 [7/11]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 006586333-01, PDC Light Curves



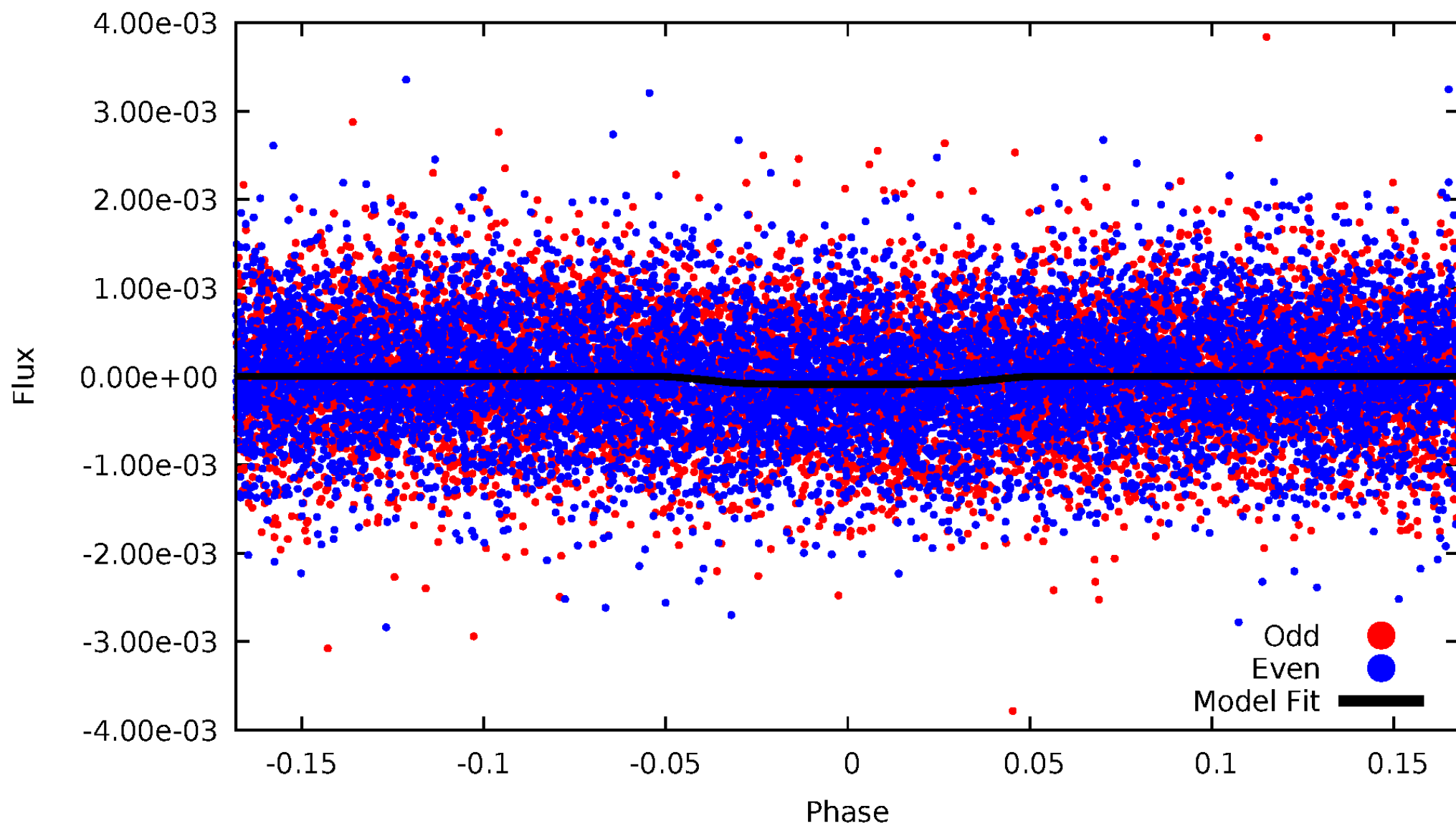


TCE 006586333-01



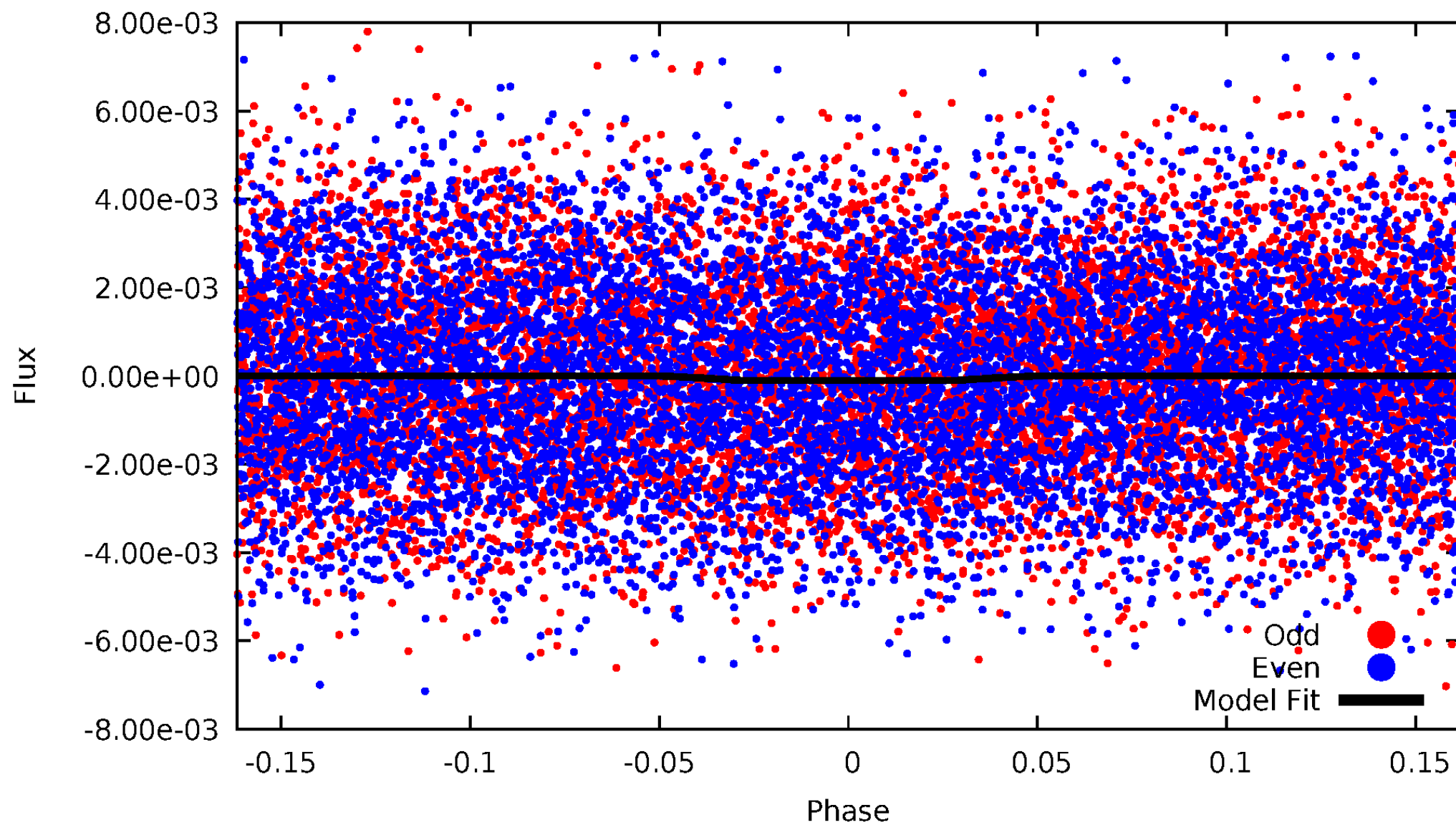
# DV Odd/Even

TCE 006586333-01



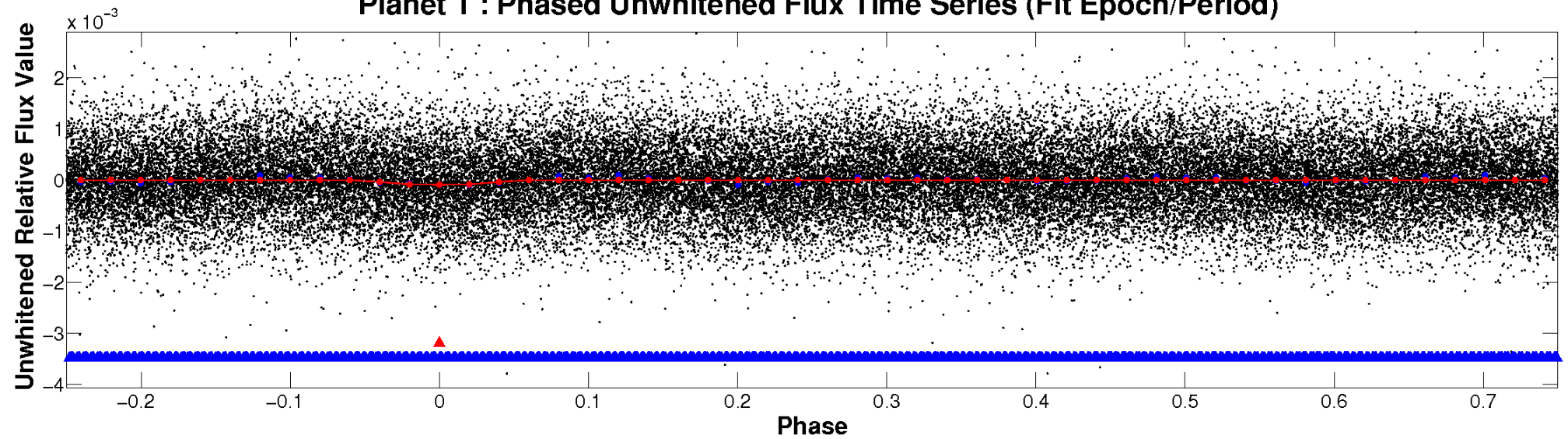
# ALT Odd/Even

TCE 006586333-01

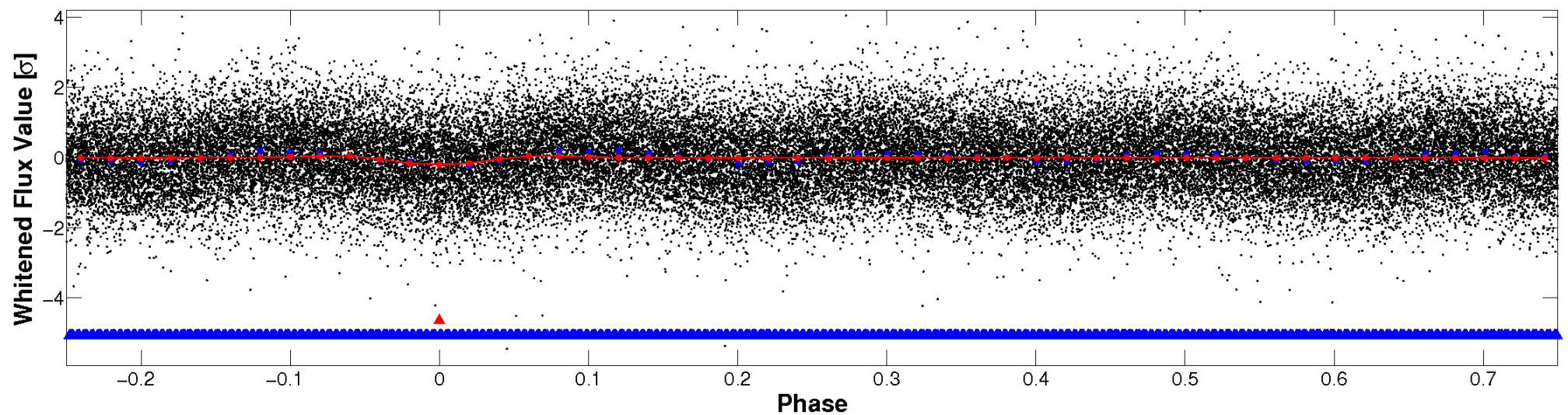


# Non-Whitened Vs. Whitened Light Curve

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



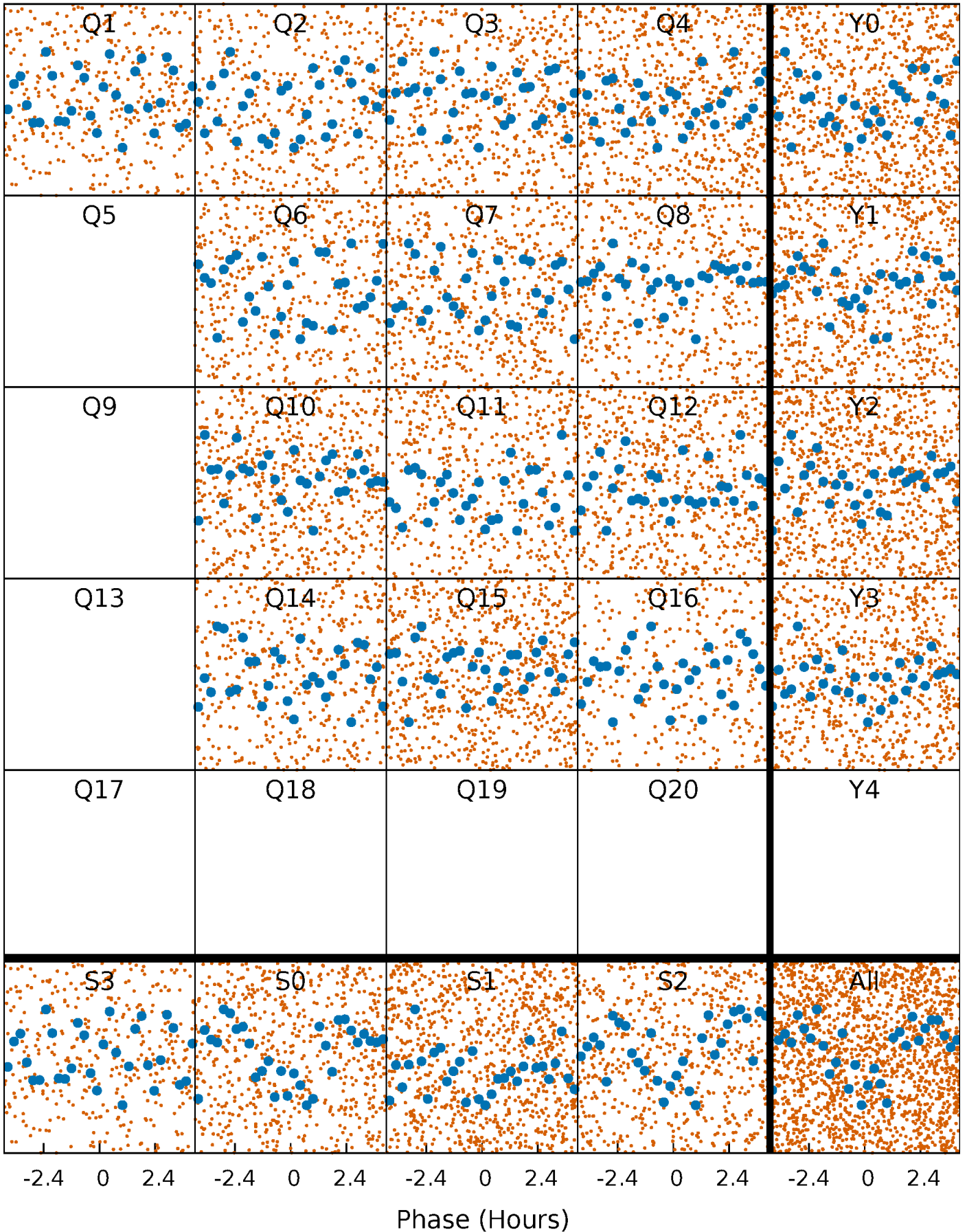
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

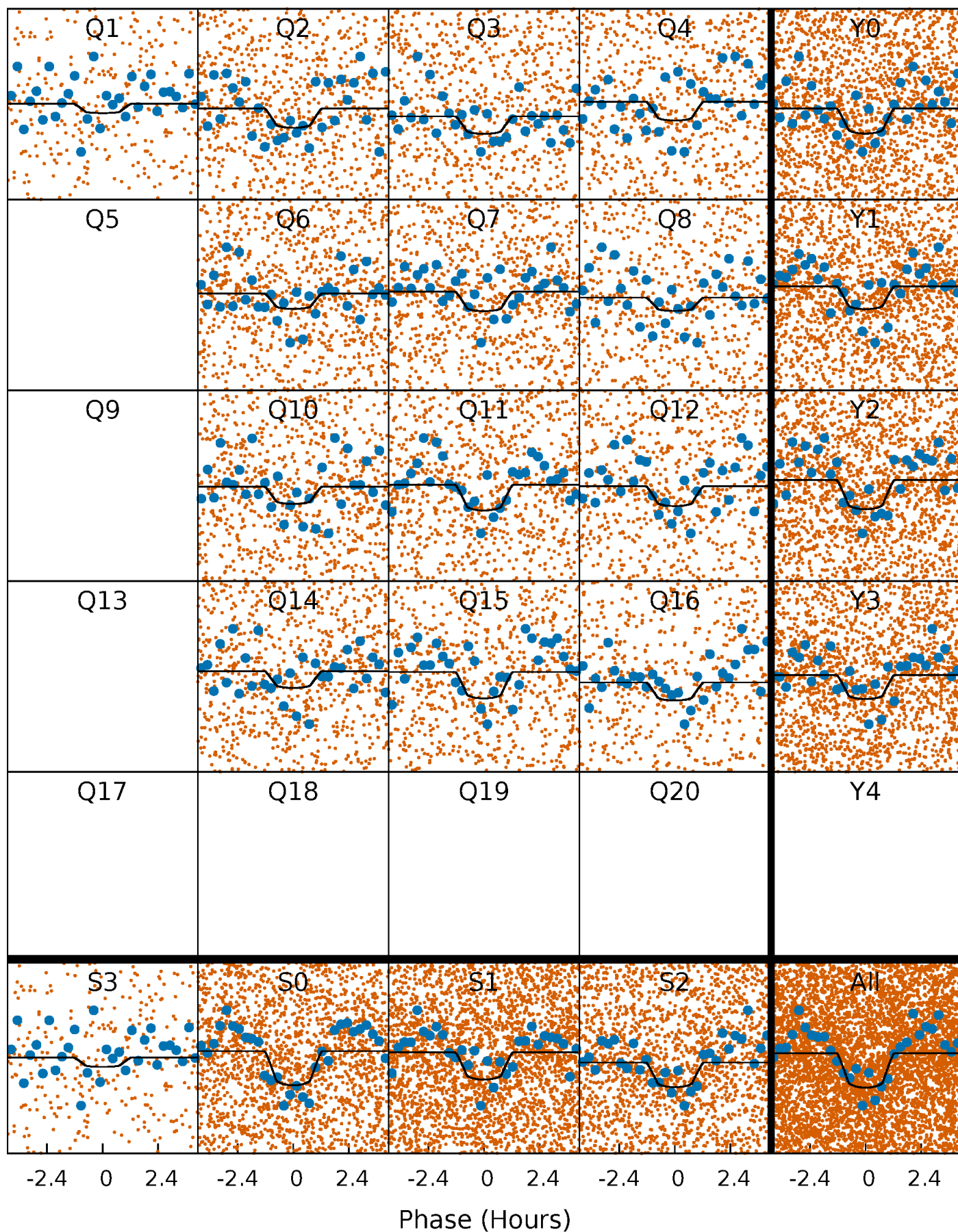
TCE 006586333-01 P= 1.019870 Days  $T_0=132.405237$  (BKJD)





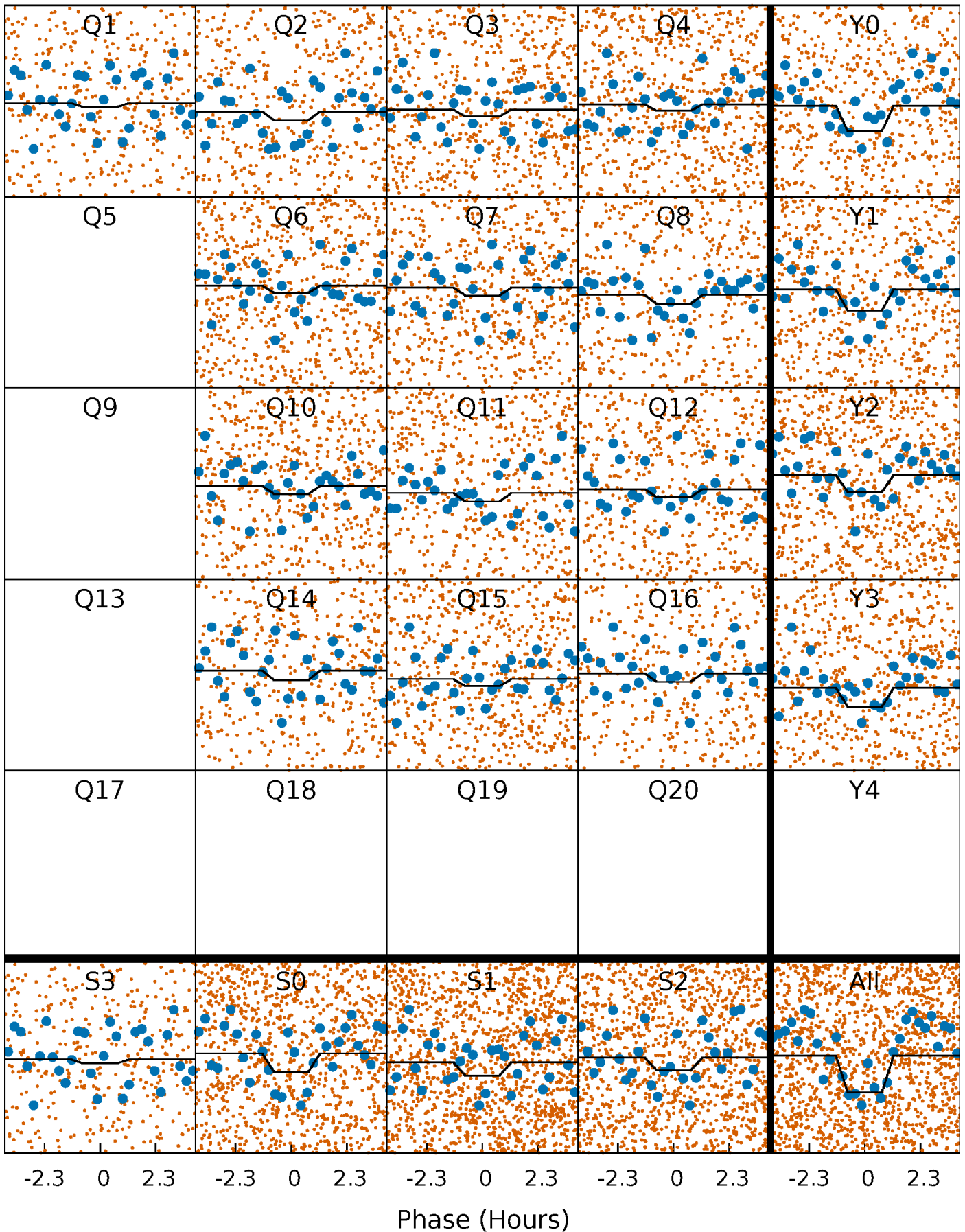
# DV Quarter-Phased Transit Curves

TCE 006586333-01 P= 1.019870 Days  $T_0=132.405237$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

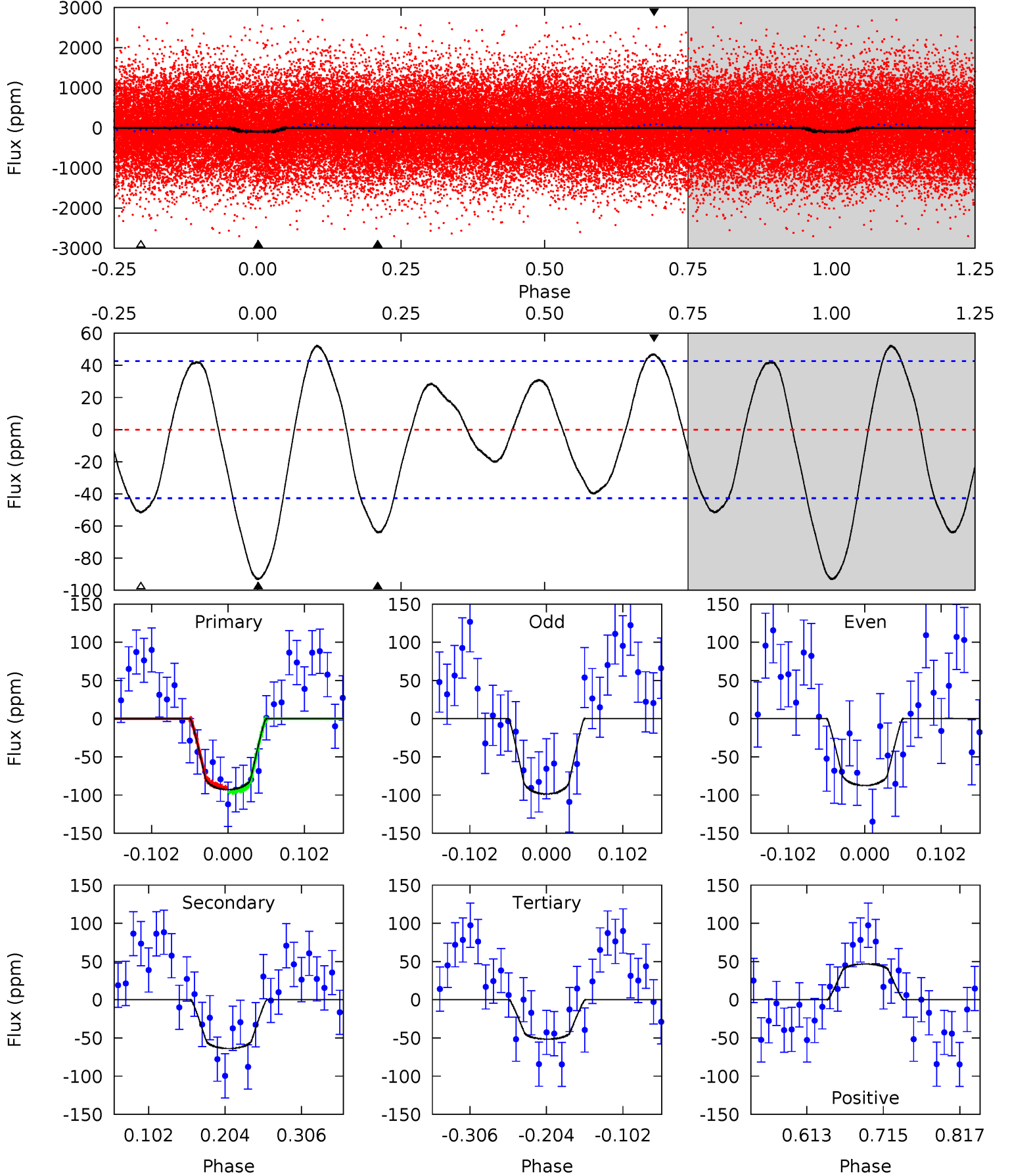
TCE 006586333-01 P= 1.019882 Days  $T_0=132.404390$  (BKJD)



# DV Model-Shift Uniqueness Test

006586333-01, P = 1.019870 Days, E = 131.385367 Days

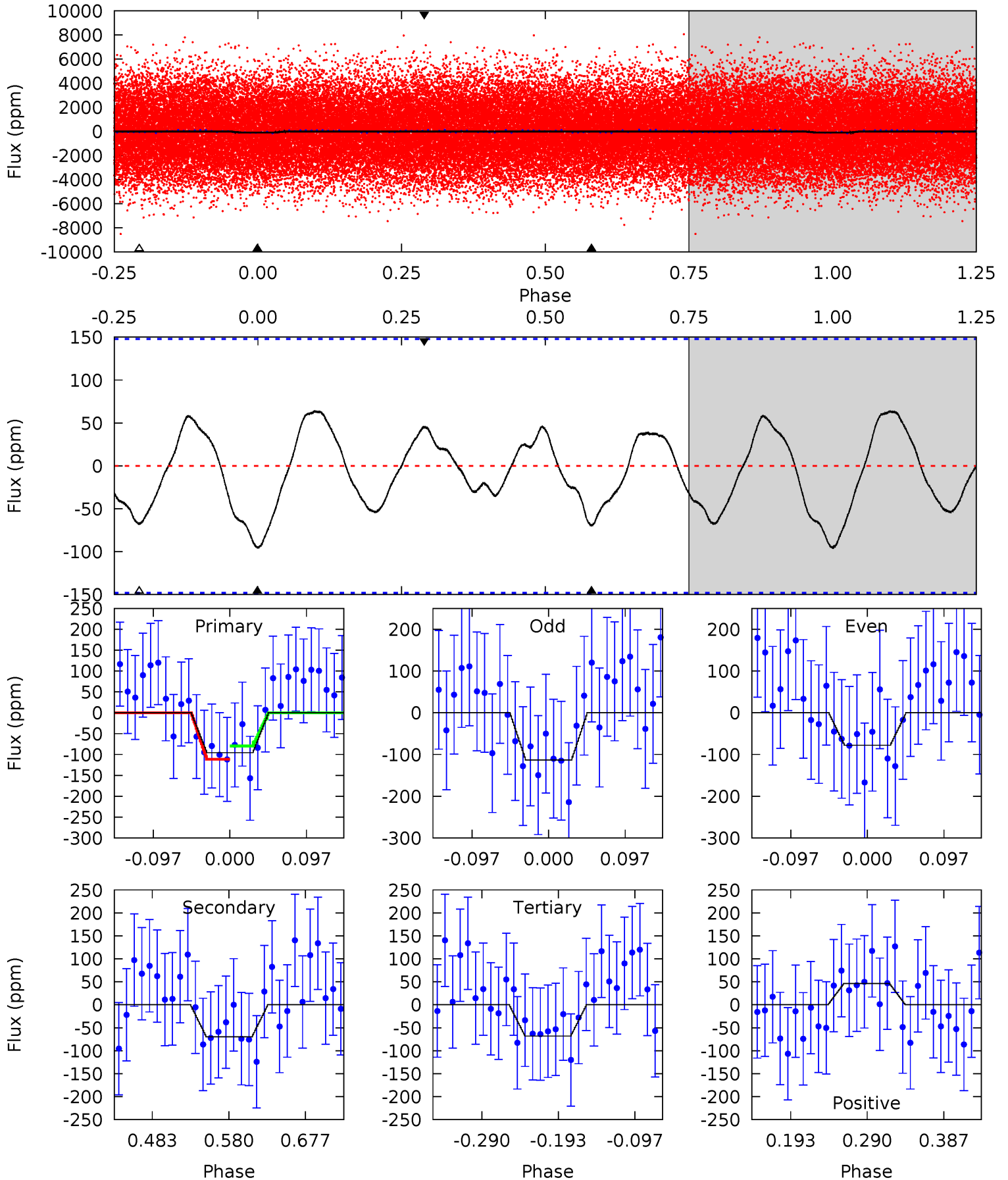
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.92	6.82	5.51	5.00	4.56	1.63	3.01	4.42	4.92	1.31	1.82	0.60	0.95	0.36	0.32



# Alt Model-Shift Uniqueness Test

006586333-01, P = 1.019882 Days, E = 131.384508 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.96	2.15	2.10	1.42	4.57	1.66	1.09	0.85	1.53	0.05	0.73	0.55	0.90	0.40	0.50





### Stellar Parameters For KIC 006586333

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7492^{+235}_{-314}$	$3.905^{+0.294}_{-0.126}$	$-0.120^{+0.200}_{-0.350}$	$2.452^{+0.478}_{-0.957}$	$1.763^{+0.167}_{-0.391}$	$0.168^{+0.356}_{-0.065}$
	+3%/-4%	+8%/-3%	+167%/-292%	+19%/-39%	+9%/-22%	+212%/-39%
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 006586333-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-64 \pm 9$	$2.57^{+1.75}_{-1.48}$	$4604^{+346}_{-423}$	$6348^{+4681}_{-1635}$	$2.915^{+14.099}_{-1.887}$
Alt.	$-70 \pm 32$	$2.63^{+1.99}_{-1.53}$	$4614^{+325}_{-450}$	$6312^{+5176}_{-1893}$	$3.018^{+13.372}_{-2.220}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = 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  $A_{\text{obs}} \gg 1.0$

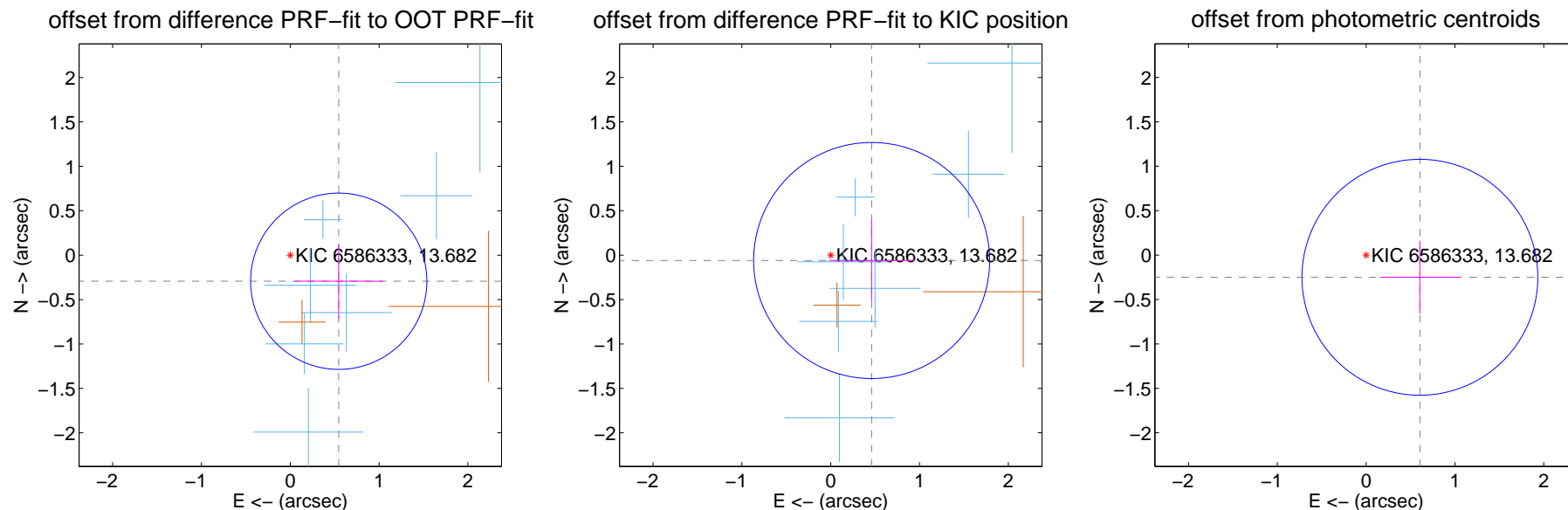
## DV Centroid Data

Supplemental centroid analysis for 006586333-01. Kepler magnitude: 13.68. Transit SNR 10.06

There are 7 quarters with good PRF difference image offsets

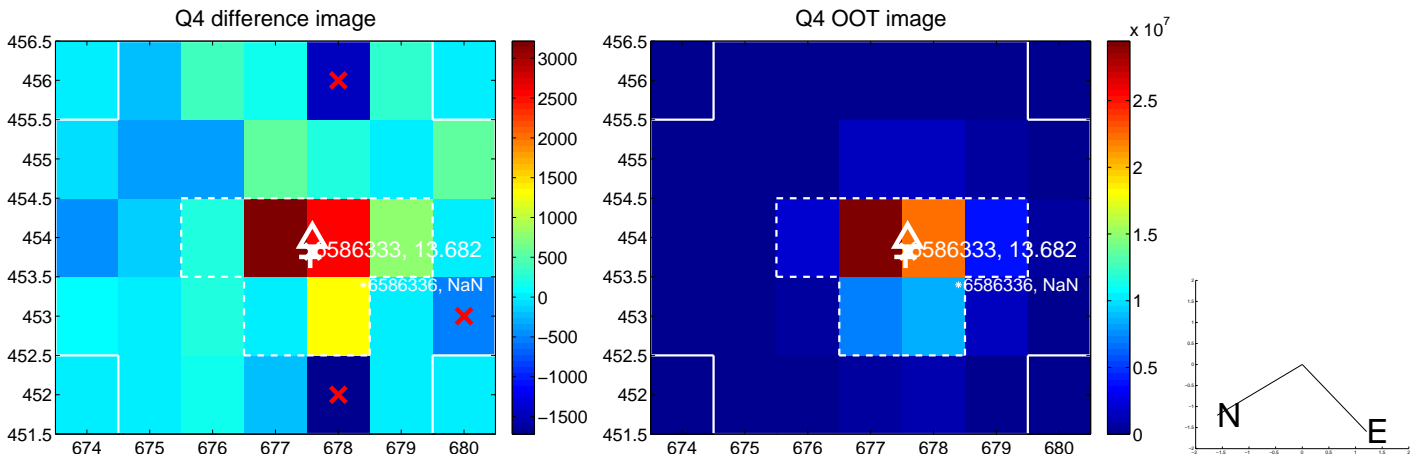
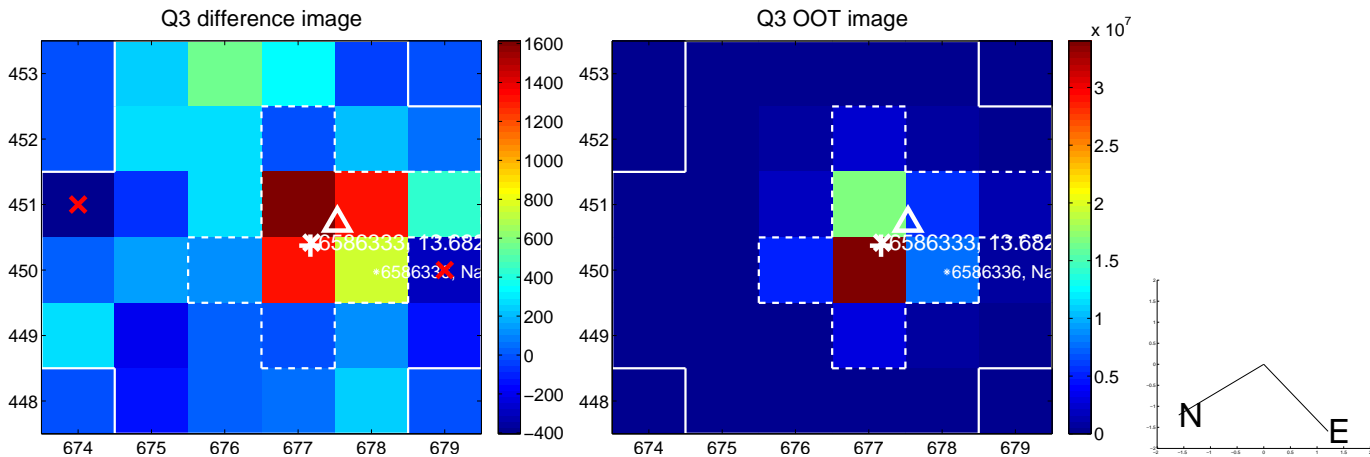
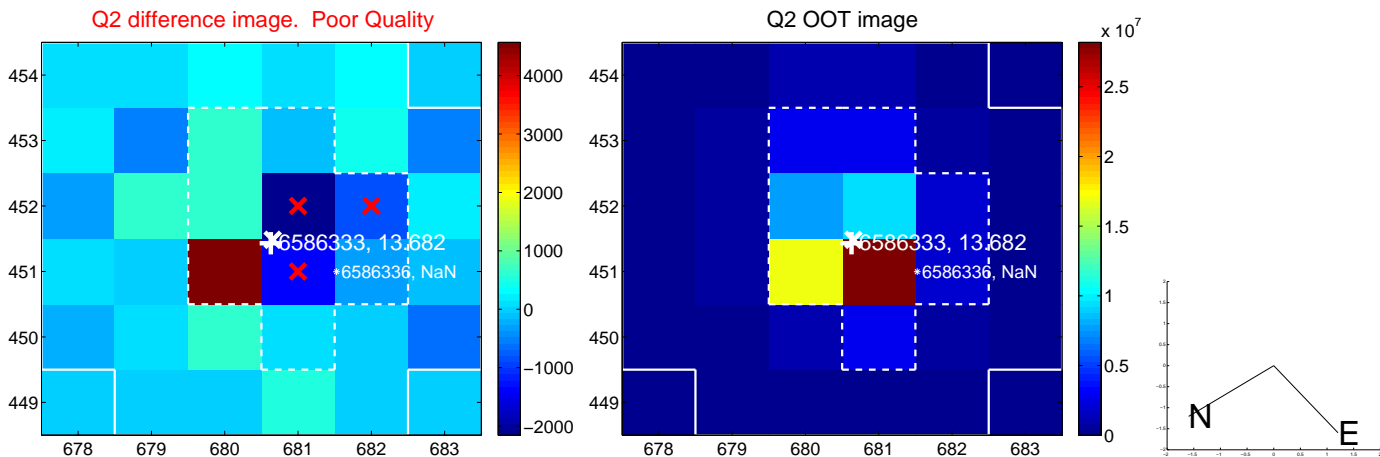
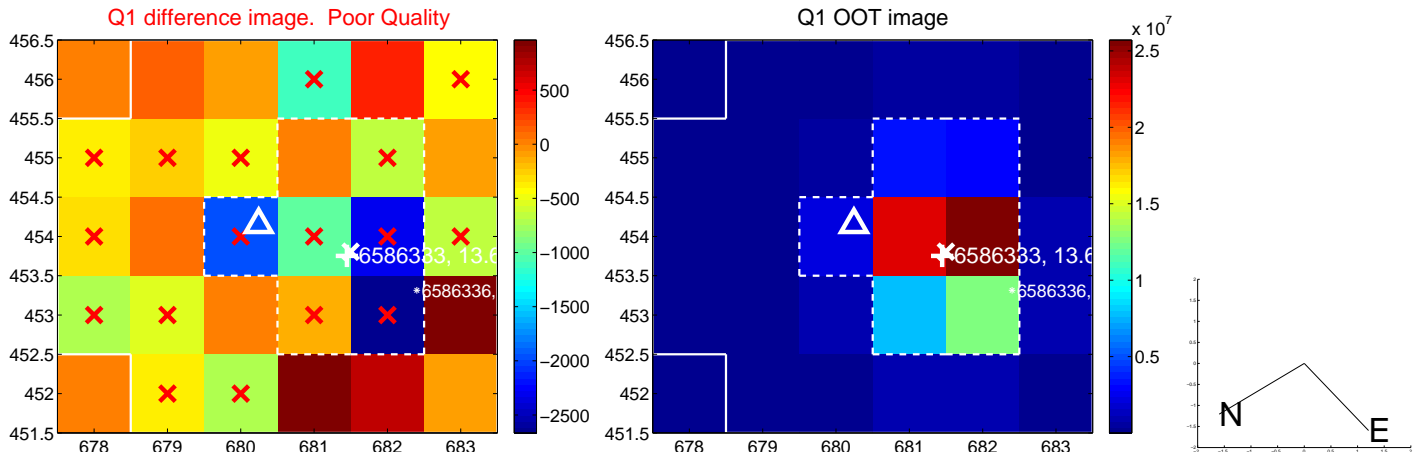
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.620 \pm 0.331$	1.87	$-0.546 \pm 0.500$	$-0.294 \pm 0.418$
PRF-fit source offset from KIC position	$0.465 \pm 0.443$	1.05	$-0.461 \pm 0.481$	$-0.060 \pm 0.458$
photometric centroid source offset	$0.65 \pm 0.44$	1.48	$-0.61 \pm 0.45$	$-0.25 \pm 0.41$

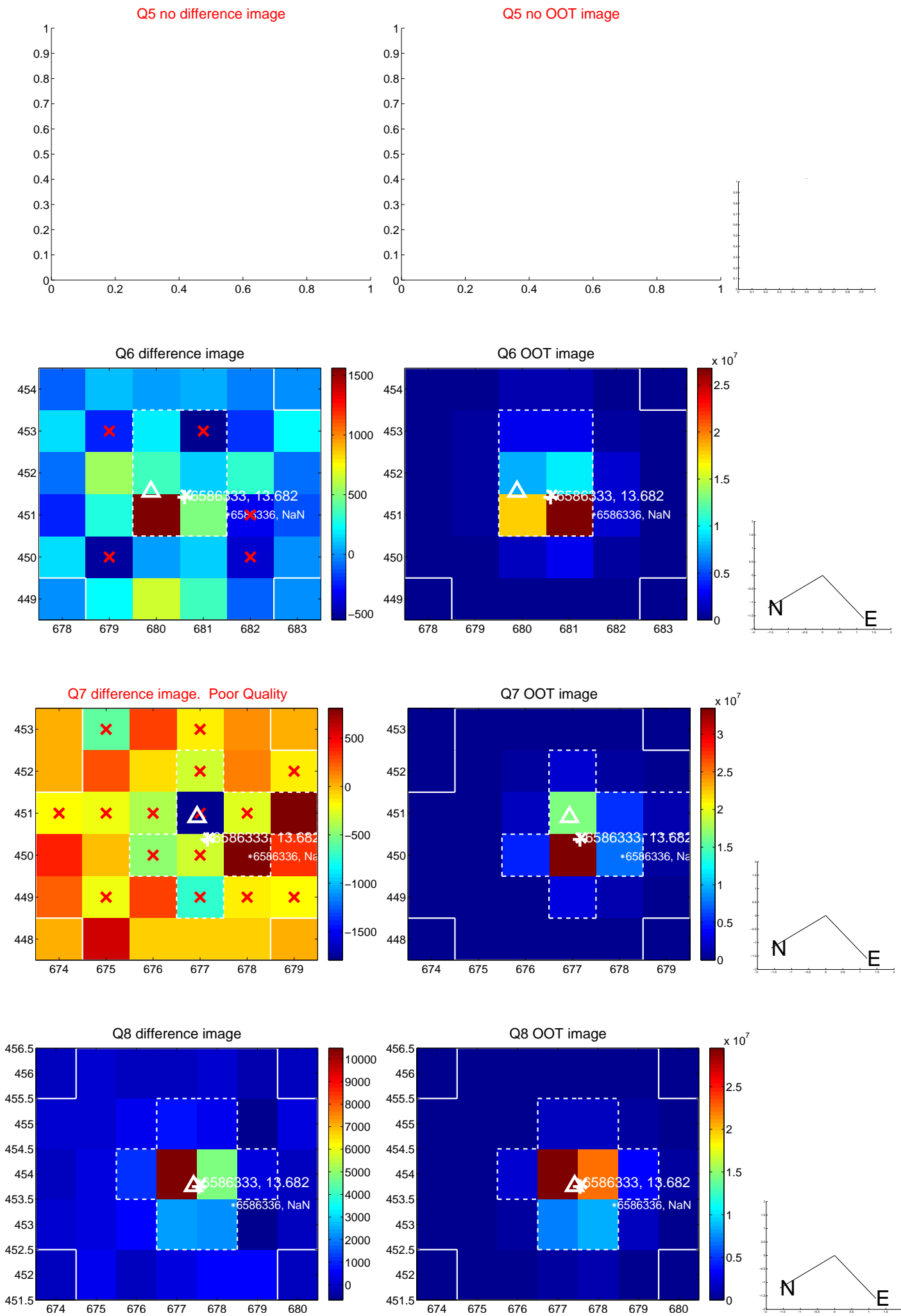


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

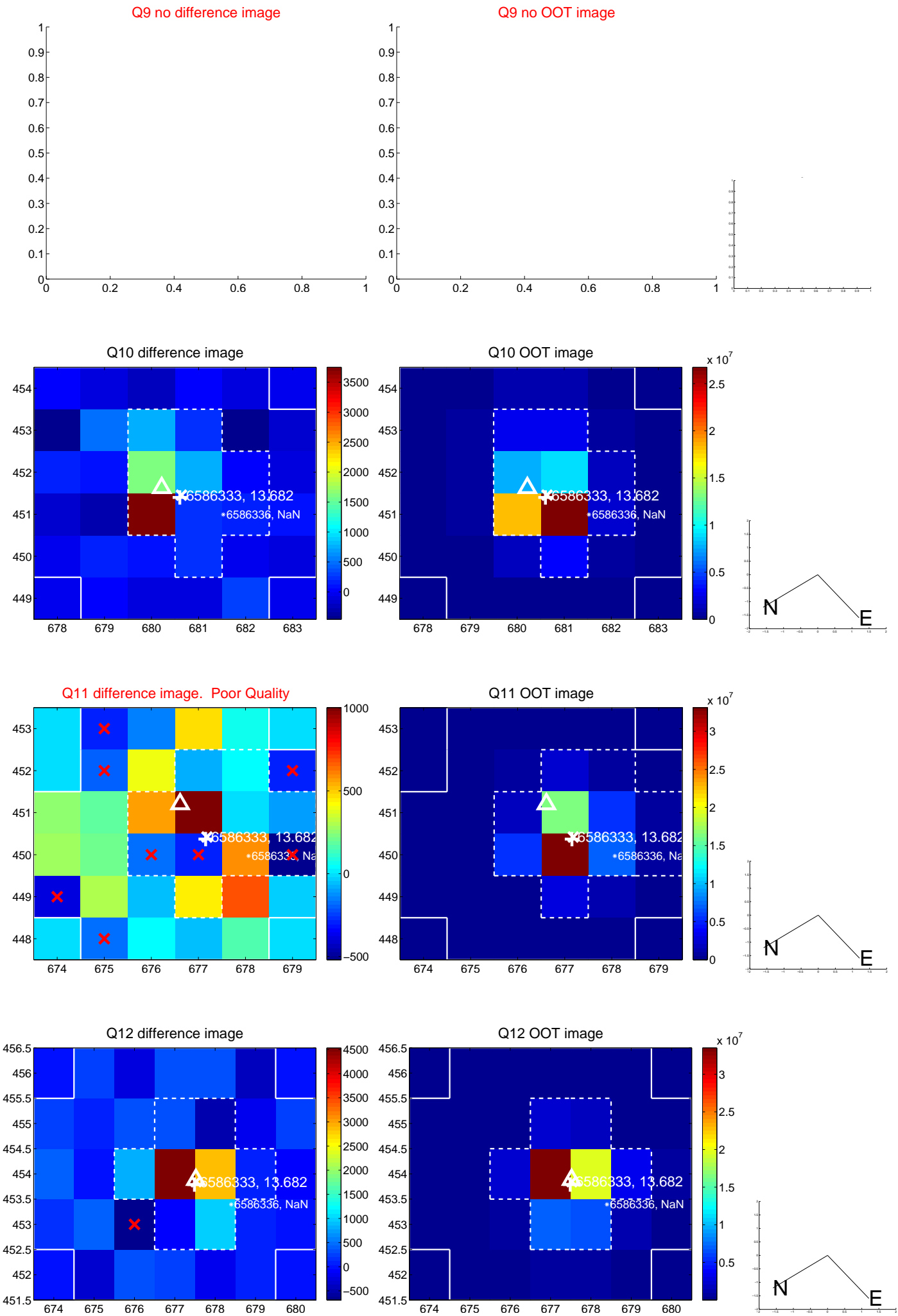


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

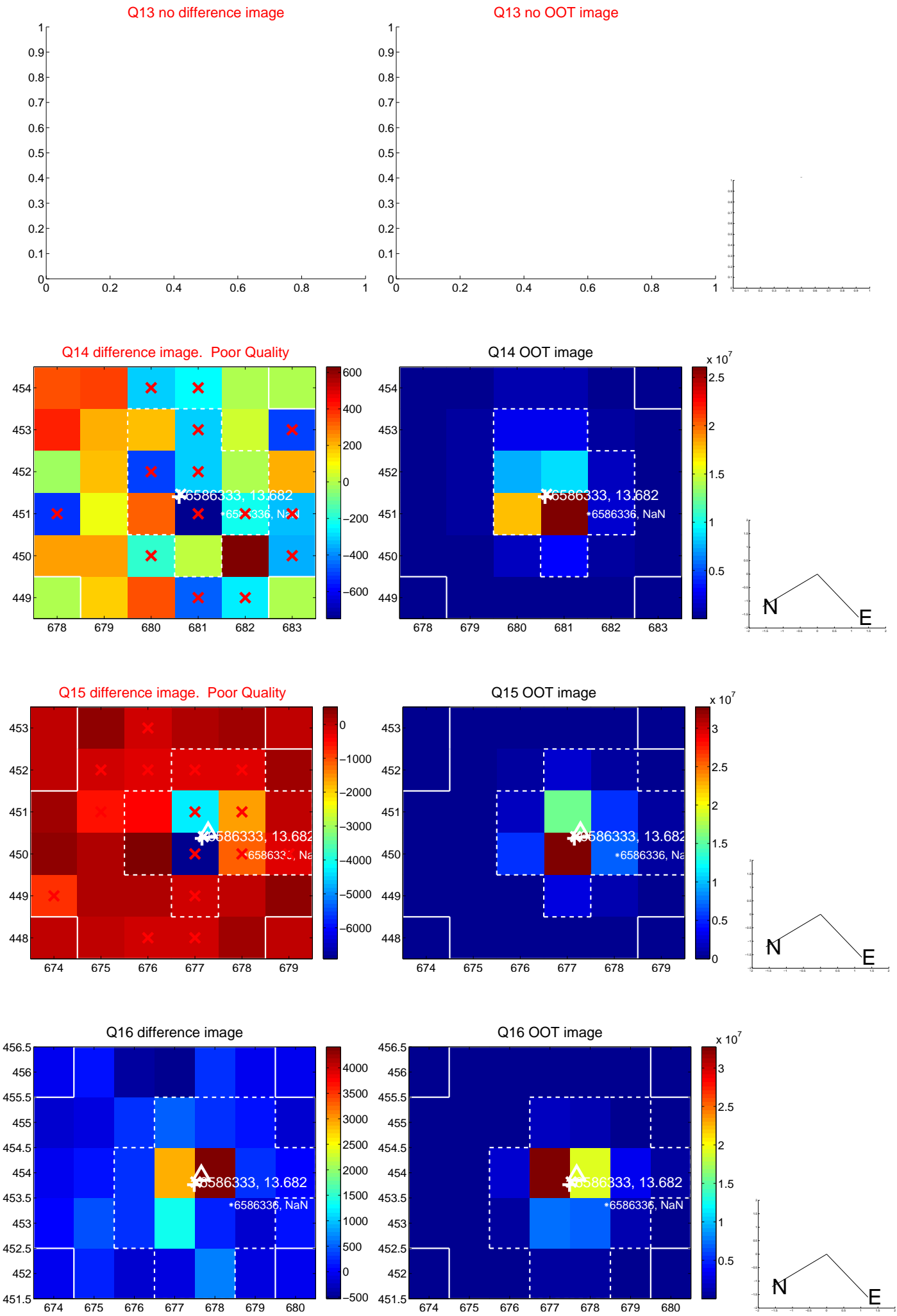




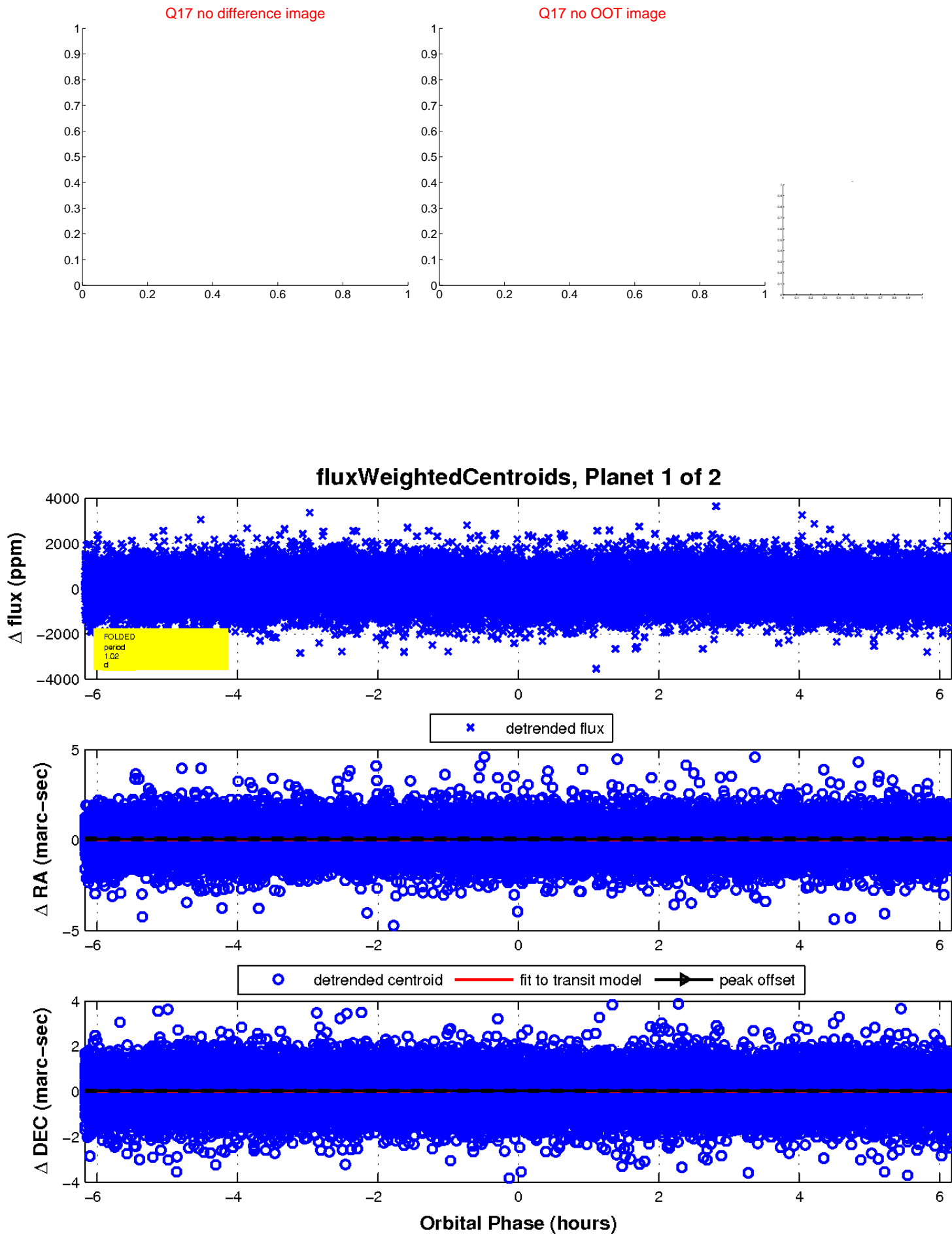
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

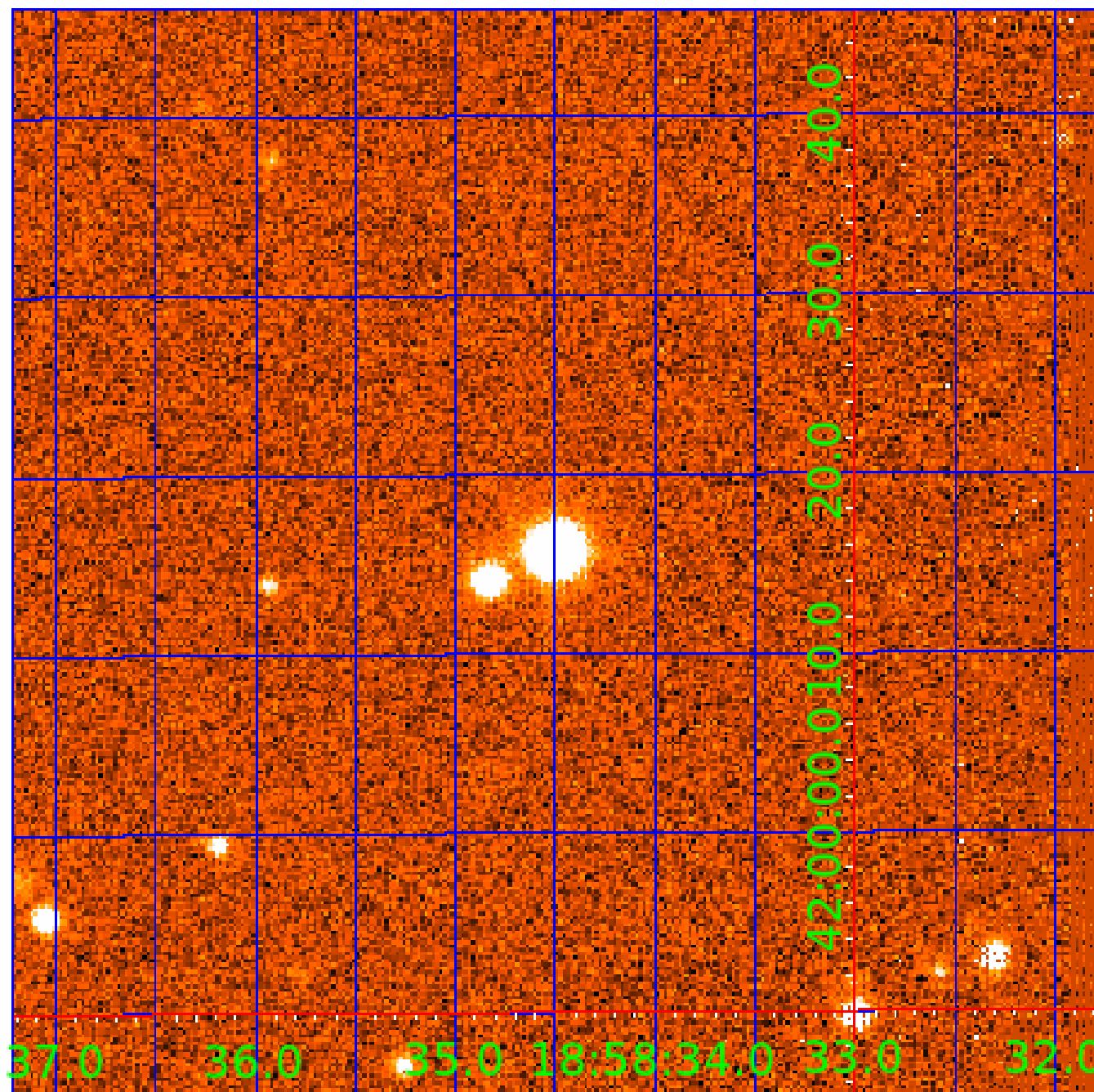


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 006586333

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006586333-01	OBS	No	1.019870	132.405237	90.4	2.057	12.4	10.1	2.45	7492	2.69	29573.72
006586333-02	OBS	No	1.911061	131.992974	78.6	20.816	10.0	12.2	2.45	7492	2.85	12801.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006586333-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006586333-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

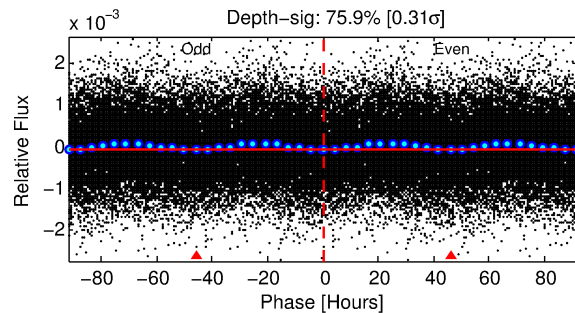
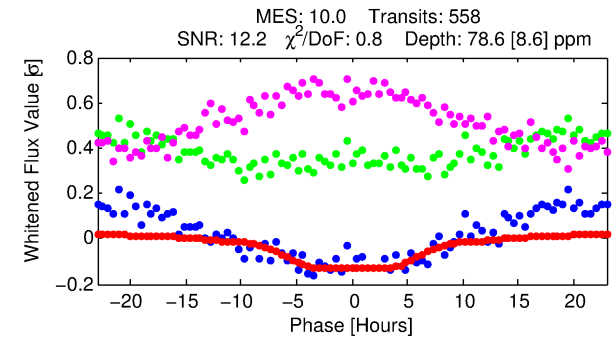
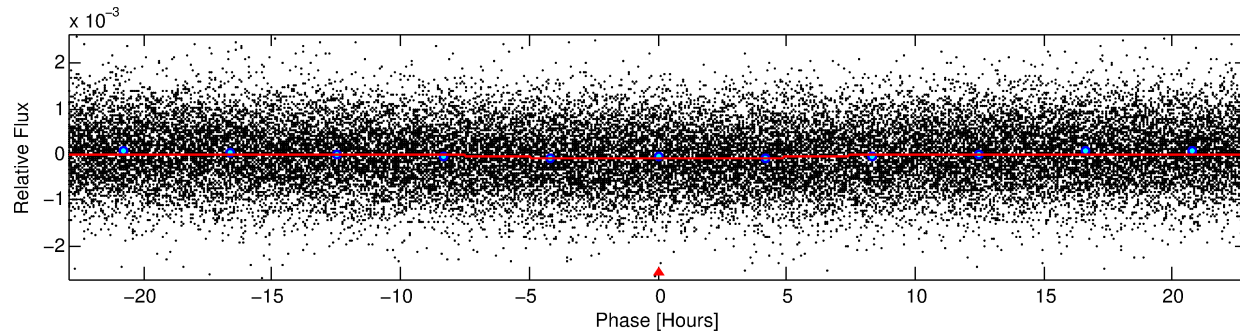
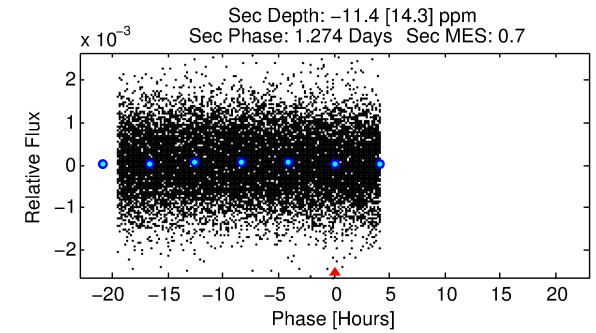
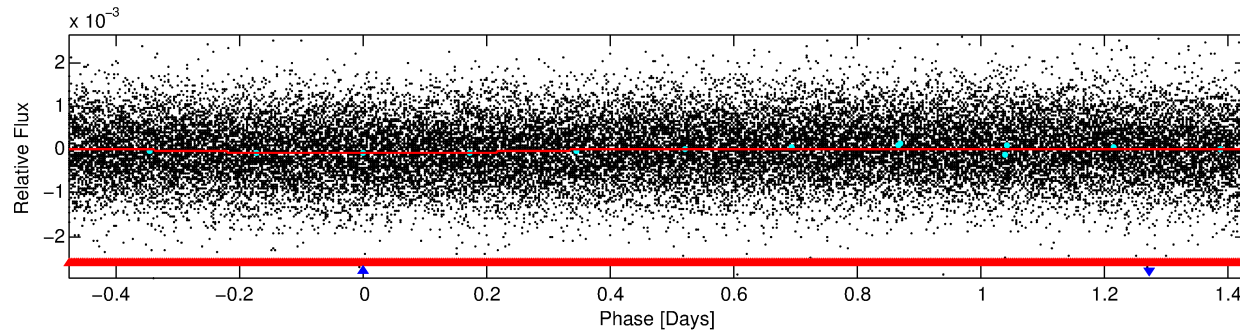
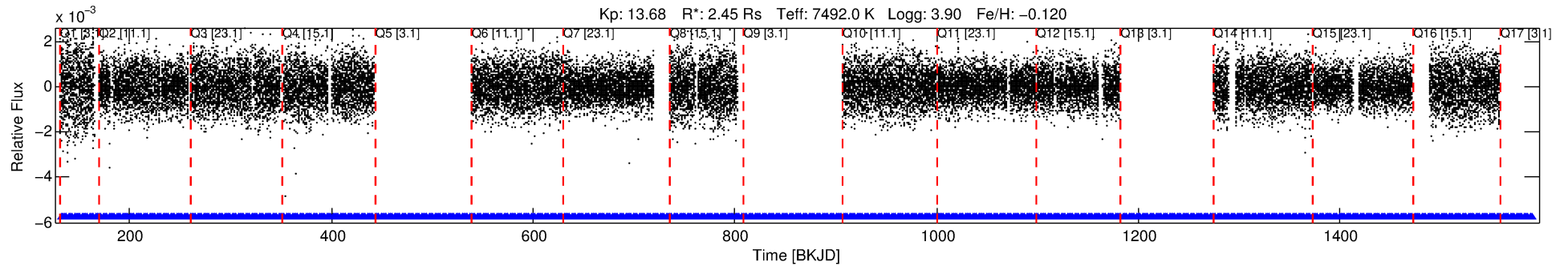
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006586333-02

No Significant Match Found

# DV One-Page Summary

KIC: 6586333 Candidate: 2 of 2 Period: 1.911 d



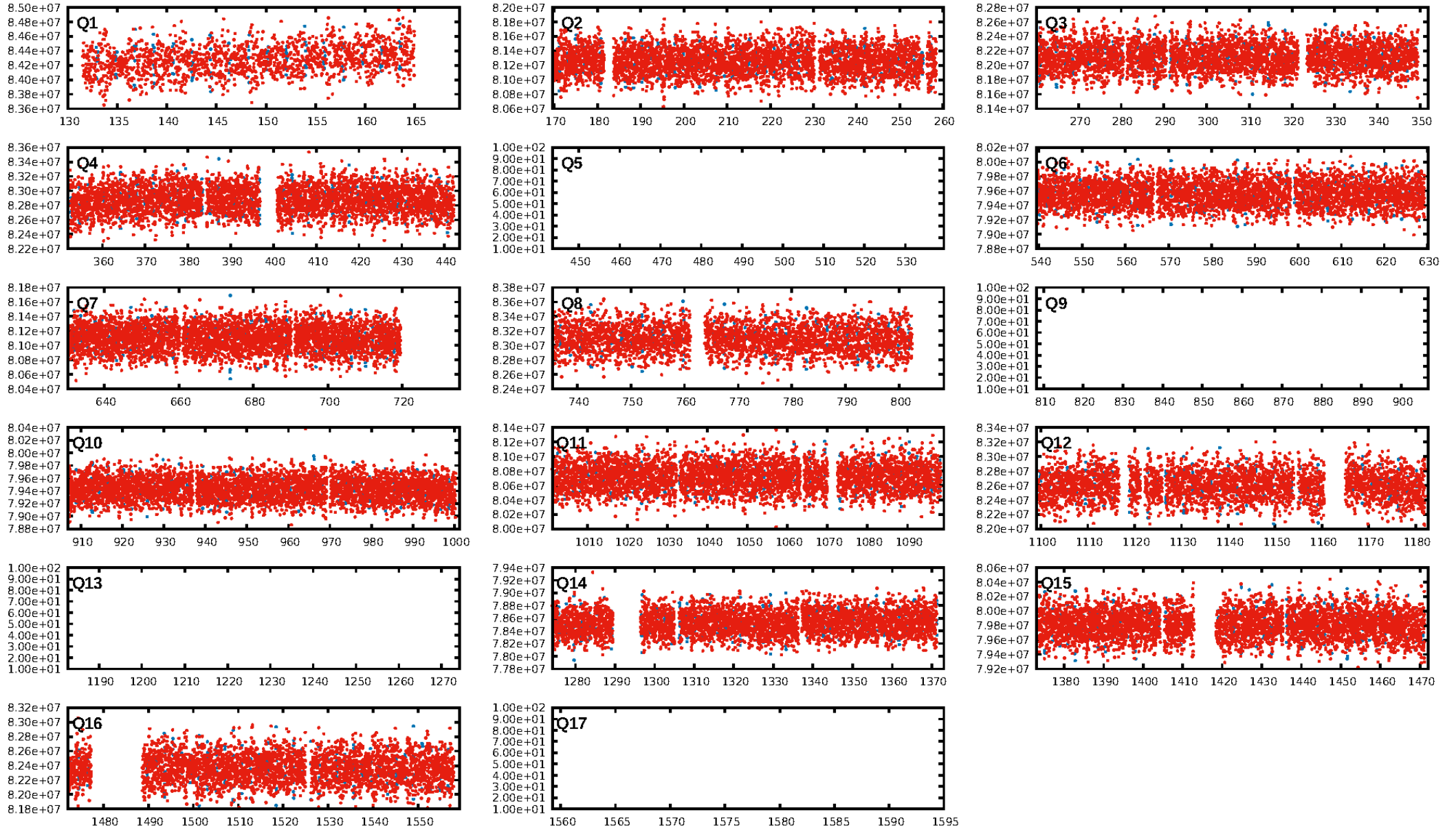
## DV Fit Results:

Period = 1.91106 [0.00009] d  
Epoch = 131.9930 [0.0377] BKJD  
Rp/R\* = 0.0107 [0.0007]  
a/R\* = 1.01 [0.00]  
b = 0.98 [0.01]  
Seff = 12801.66 [7005.73]  
Teff = 2712 [371] K  
Rp = 2.85 [1.13] Re  
a = 0.0364 [0.0125] AU  
Ag = N/A  
Teffp = N/A

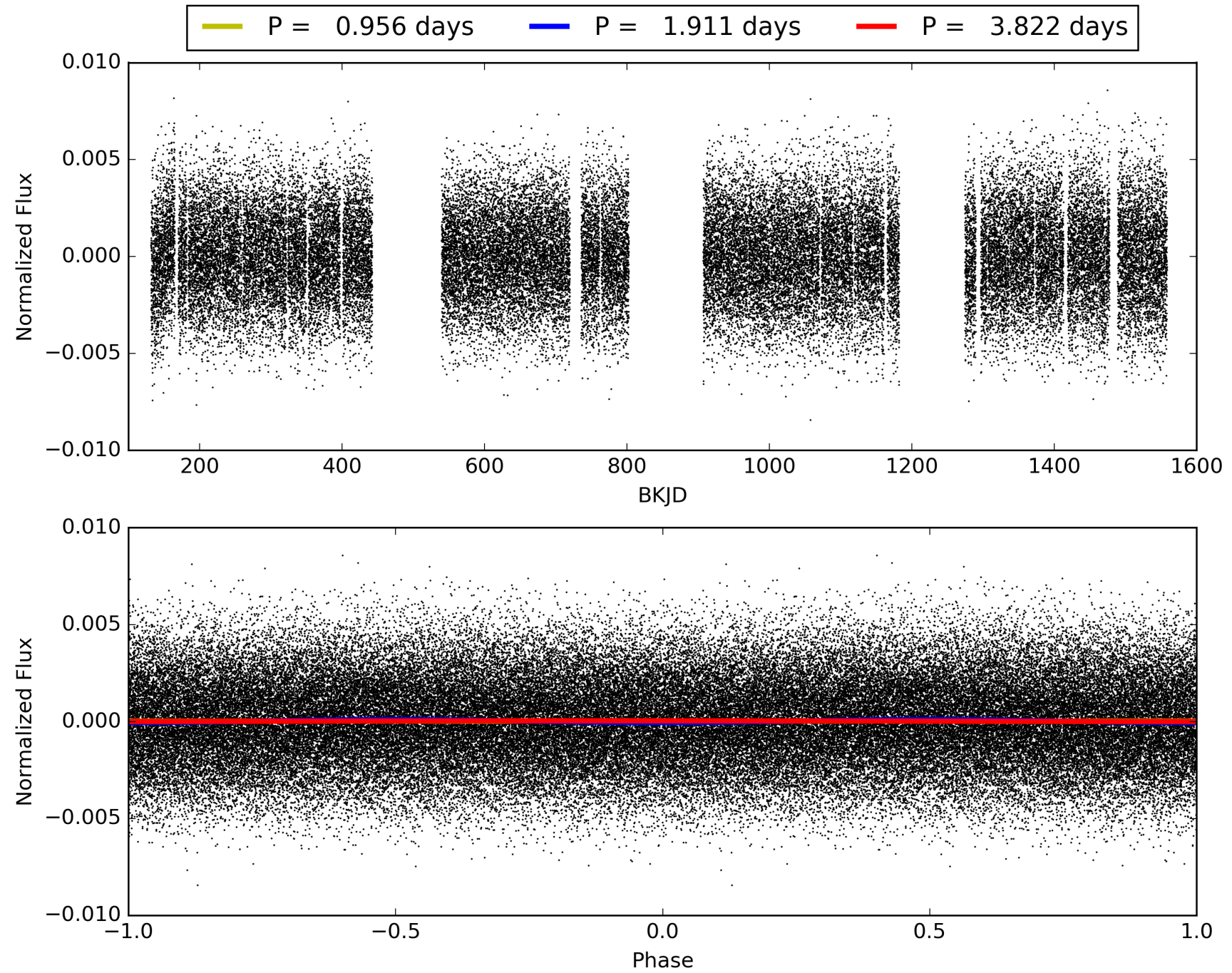
## DV Diagnostic Results:

ShortPeriod-sig: 69.3% [1.02σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [540/540]  
GhostDiagnostic-chr: 2.87  
Centroid-sig: 39.1%  
Centroid-so: 0.411 arcsec [1.44σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.00 [0/13]

# TCE 006586333-02, PDC Light Curves



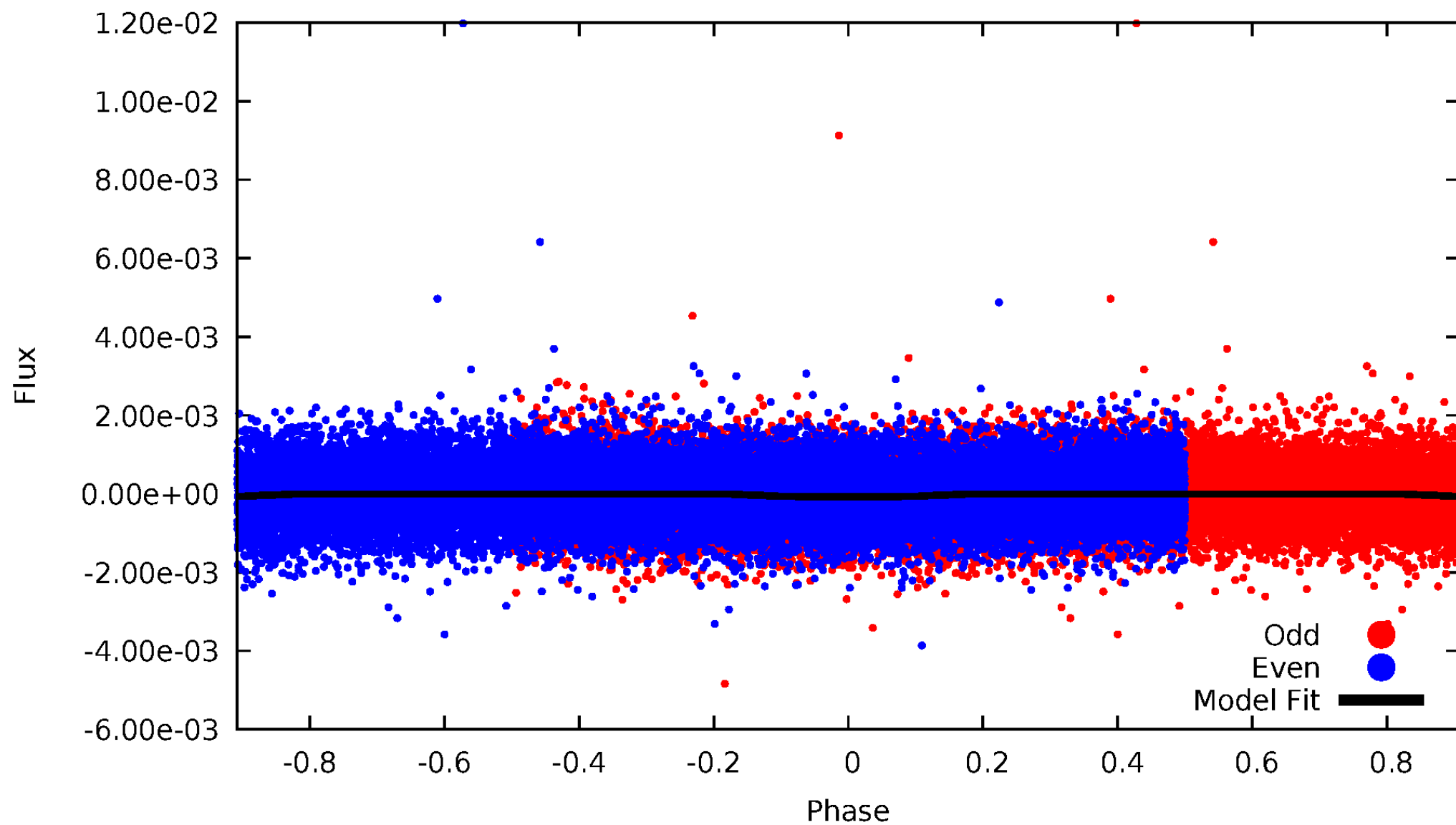
TCE 006586333-02





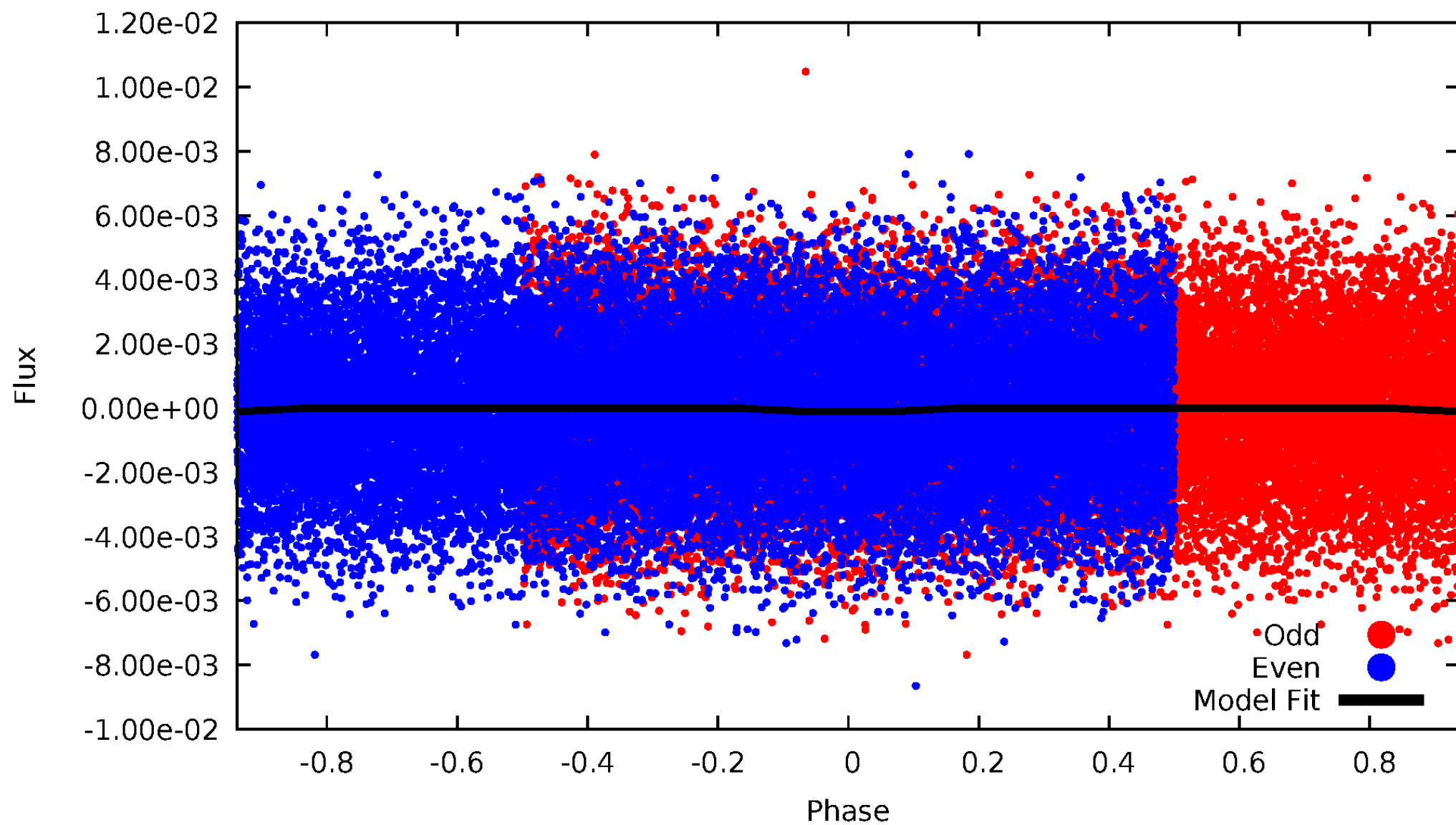
# DV Odd/Even

TCE 006586333-02



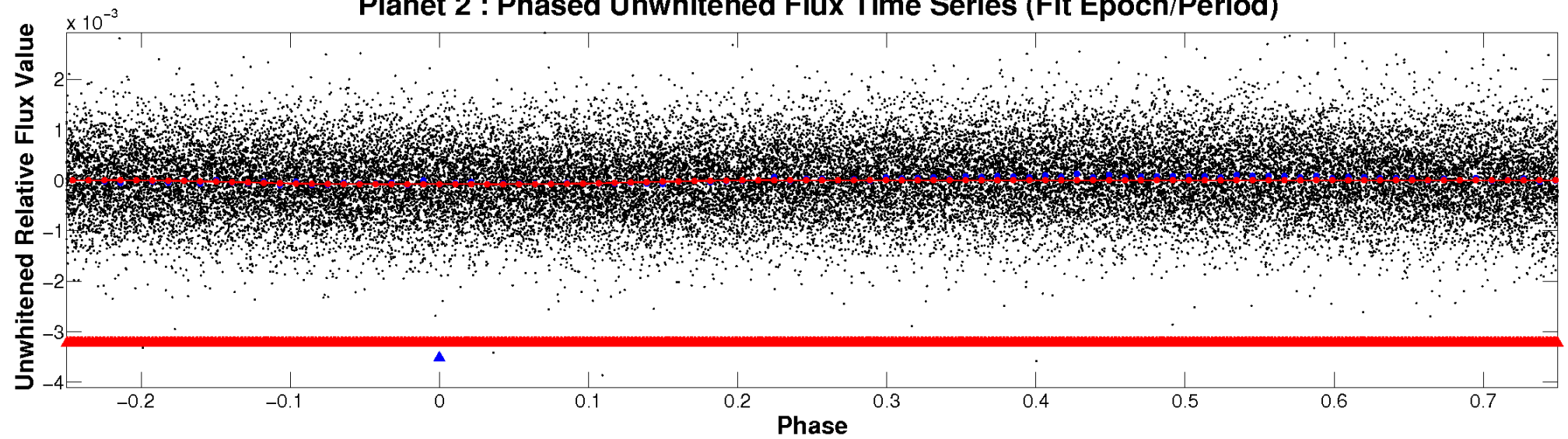
# ALT Odd/Even

TCE 006586333-02

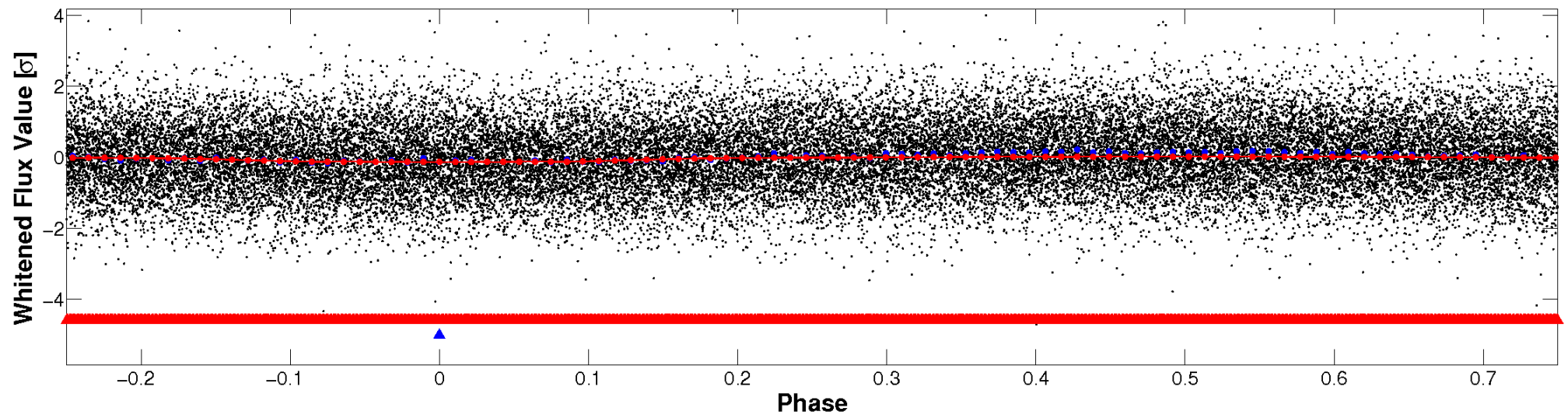


# Non-Whitened Vs. Whitened Light Curve

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

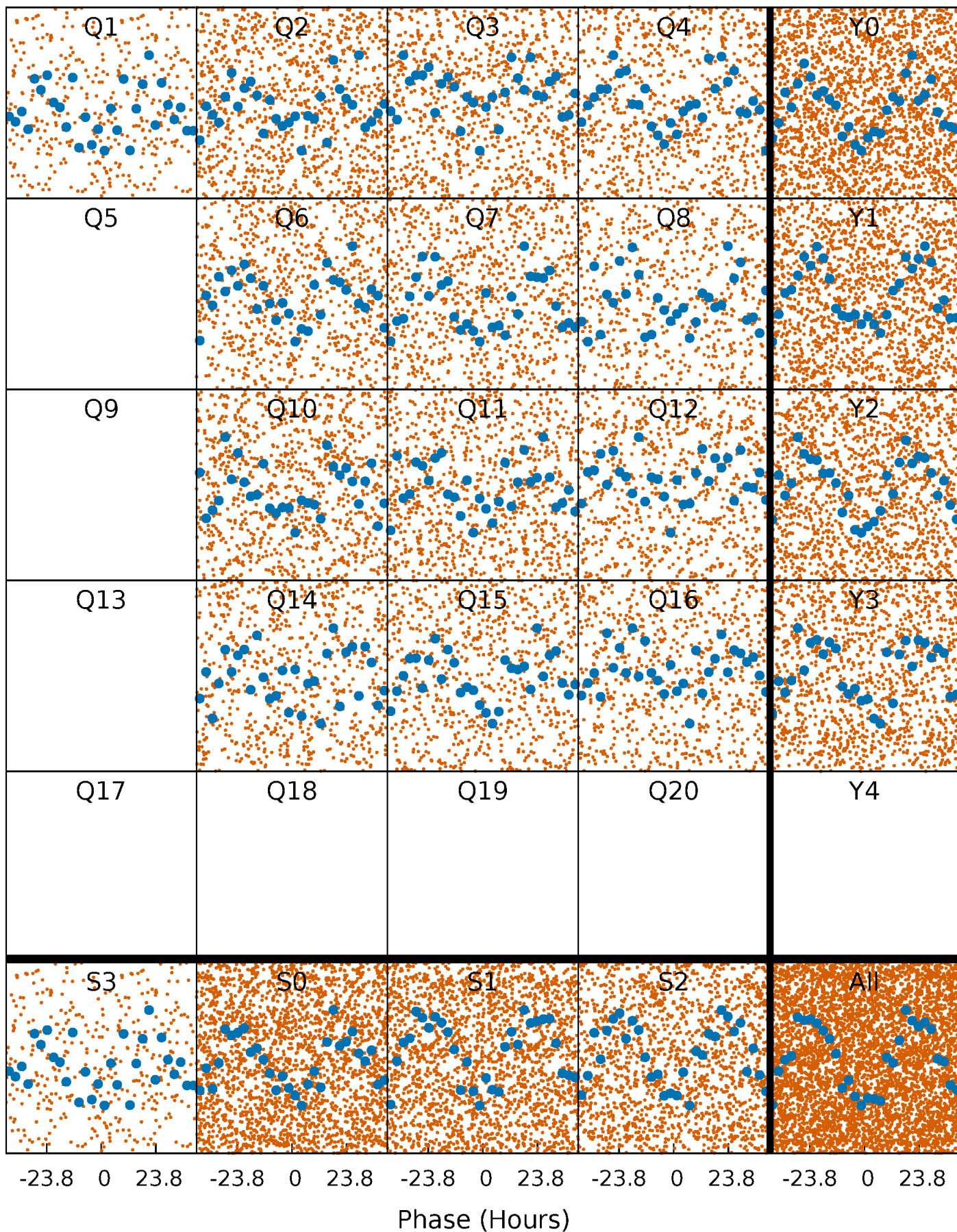


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

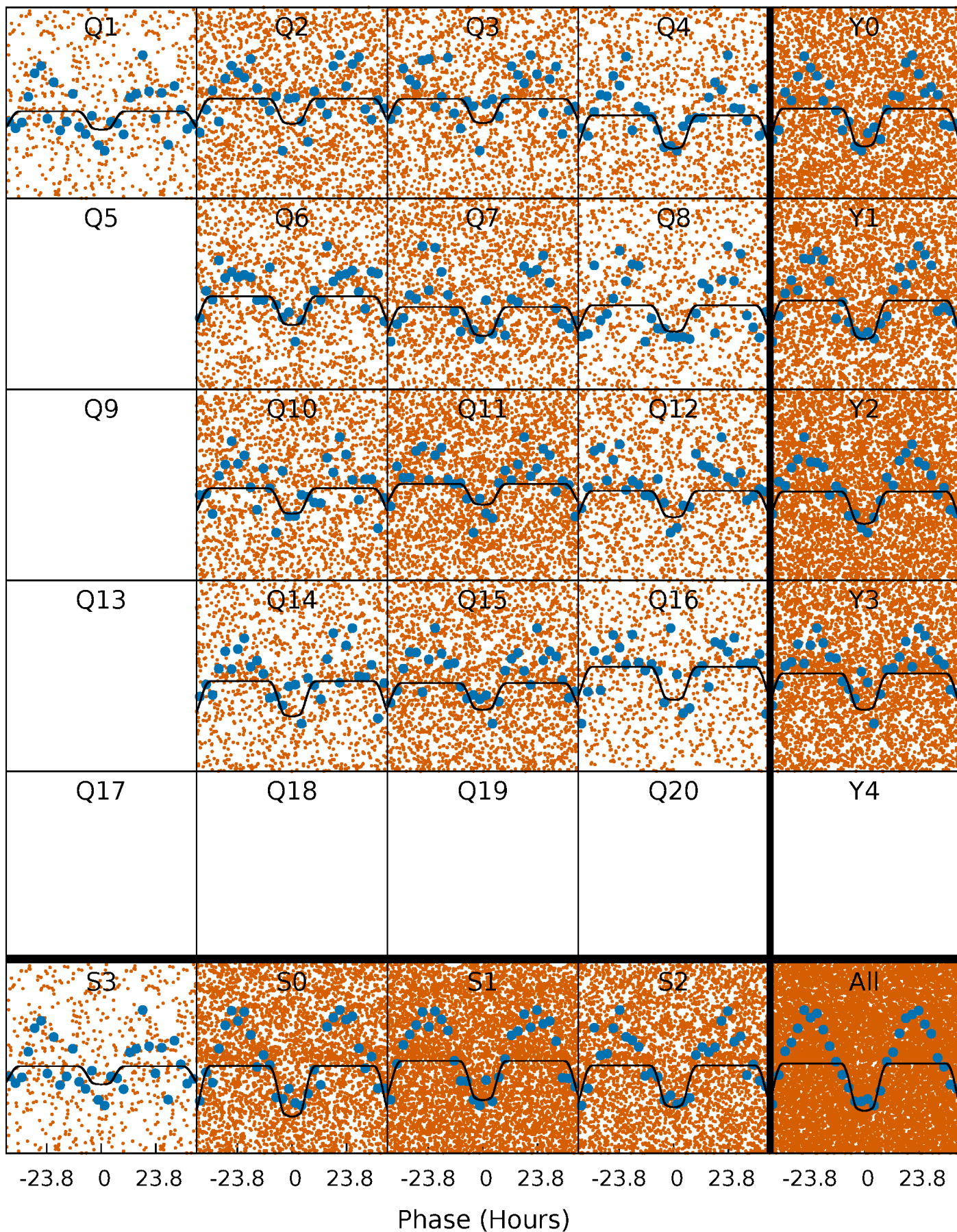
TCE 006586333-02   P= 1.911061 Days    $T_0=131.992974$  (BKJD)





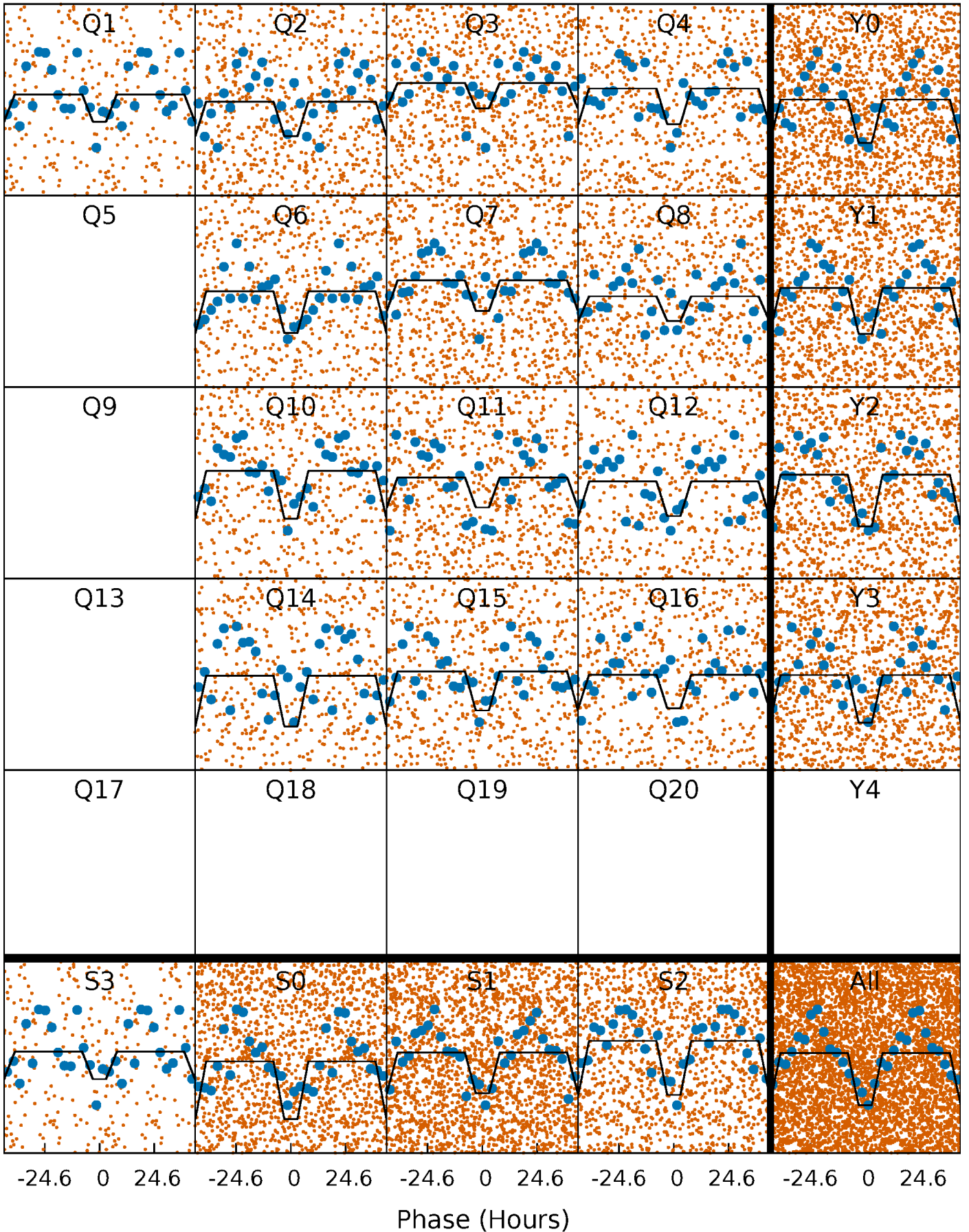
# DV Quarter-Phased Transit Curves

TCE 006586333-02 P= 1.911061 Days  $T_0=131.992974$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006586333-02 P= 1.911477 Days  $T_0=131.841390$  (BKJD)

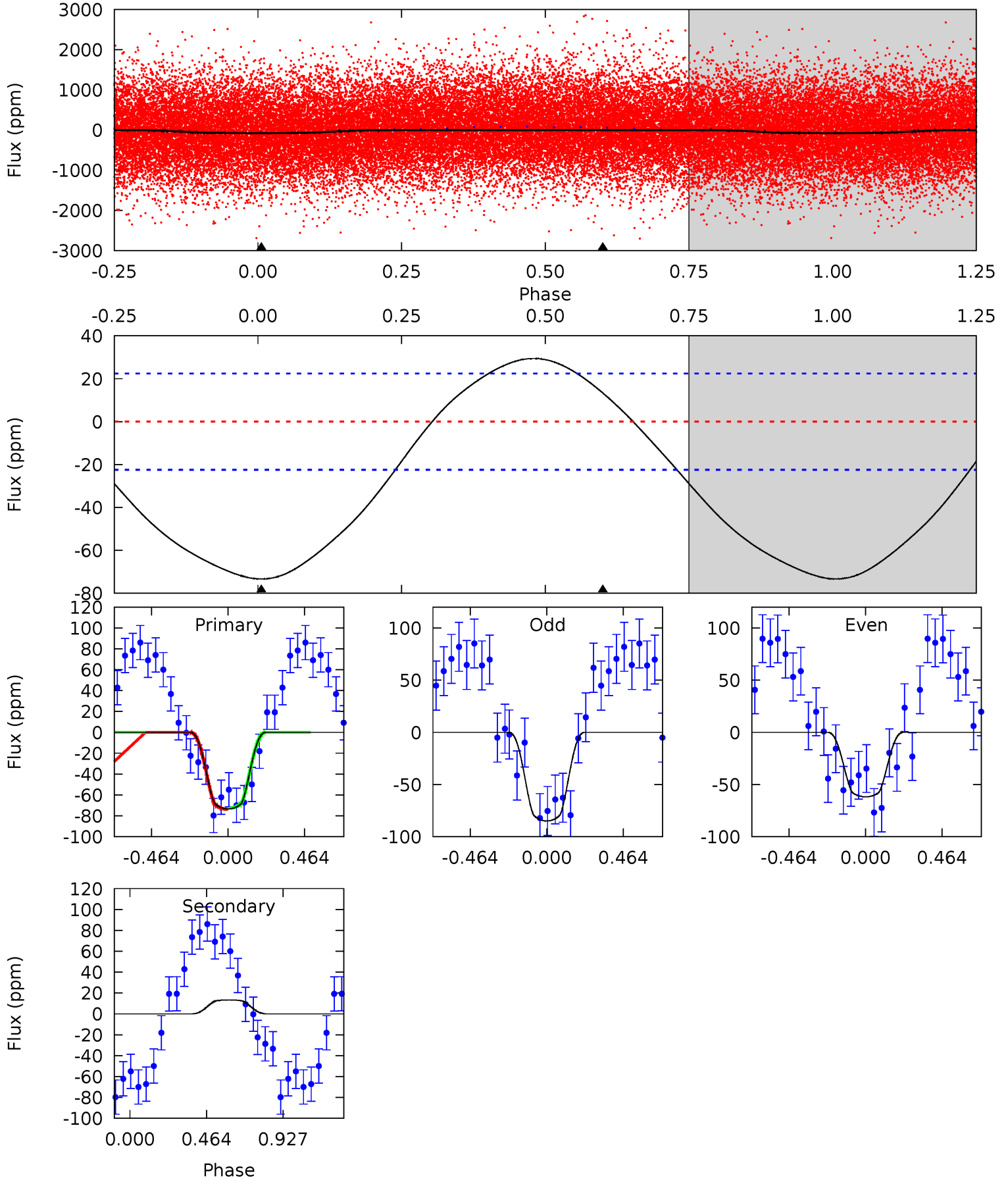




# DV Model-Shift Uniqueness Test

006586333-02, P = 1.911061 Days, E = 130.081913 Days

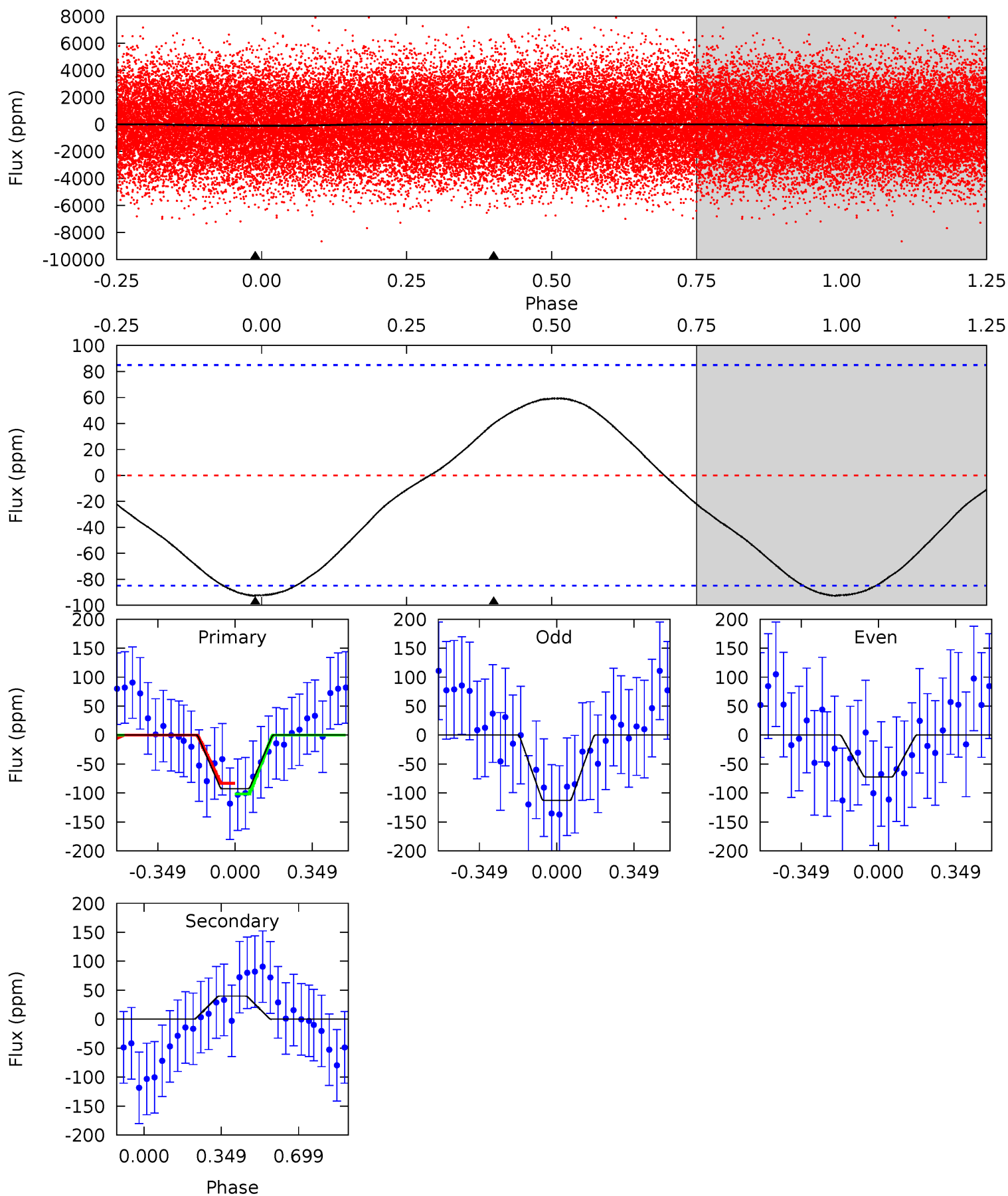
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	-2.52	0	0	4.23	0.73	1.73	13.8	13.8	-2.52	-2.52	2.18	1.73	0.29	0.10



# Alt Model-Shift Uniqueness Test

006586333-02, P = 1.911477 Days, E = 129.929913 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.68	-2.02	0	0	4.30	0.94	0.63	4.68	4.68	-2.02	-2.02	1.01	-0.08	0.39	0.47



### Stellar Parameters For KIC 006586333

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7492^{+235}_{-314}$	$3.905^{+0.294}_{-0.126}$	$-0.120^{+0.200}_{-0.350}$	$2.452^{+0.478}_{-0.957}$	$1.763^{+0.167}_{-0.391}$	$0.168^{+0.356}_{-0.065}$
	+3%/-4%	+8%/-3%	+167%/-292%	+19%/-39%	+9%/-22%	+212%/-39%
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 006586333-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$13 \pm 5$	$2.80^{+0.42}_{-0.53}$	$3743^{+263}_{-343}$	$-4701^{+389}_{-312}$	$-1.279^{+0.589}_{-0.762}$
Alt.	$40 \pm 20$	$2.70^{+0.41}_{-0.54}$	$3733^{+287}_{-352}$	$-5840^{+761}_{-630}$	$-3.889^{+1.904}_{-2.951}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

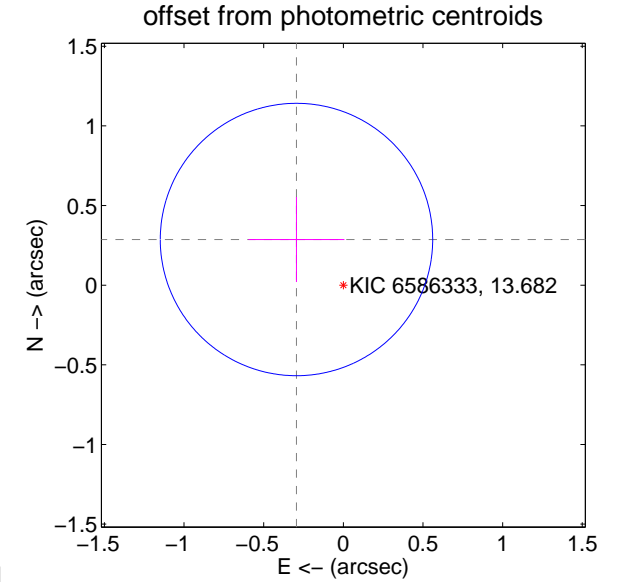
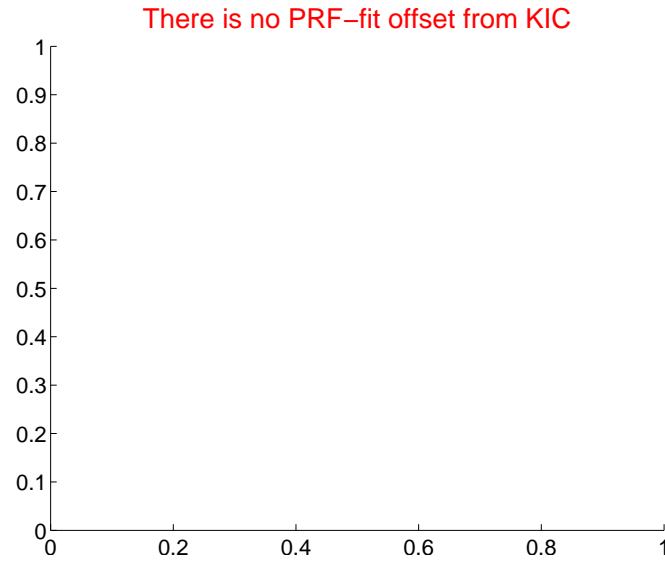
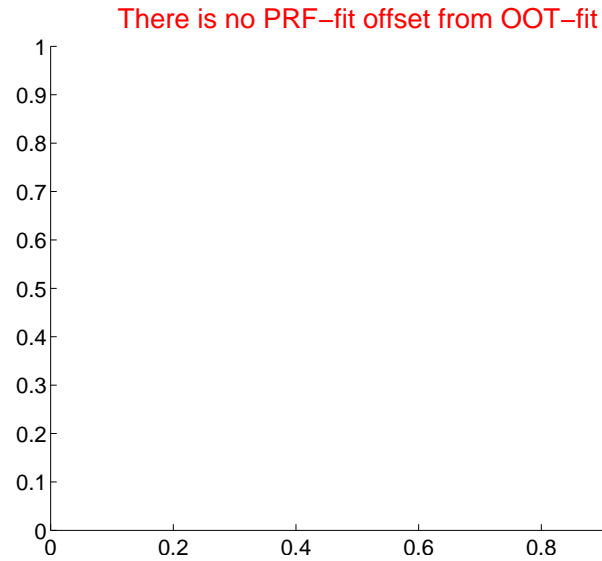
## DV Centroid Data

Supplemental centroid analysis for 006586333-02. Kepler magnitude: 13.68. Transit SNR 12.24

There are 0 quarters with good PRF difference image offsets

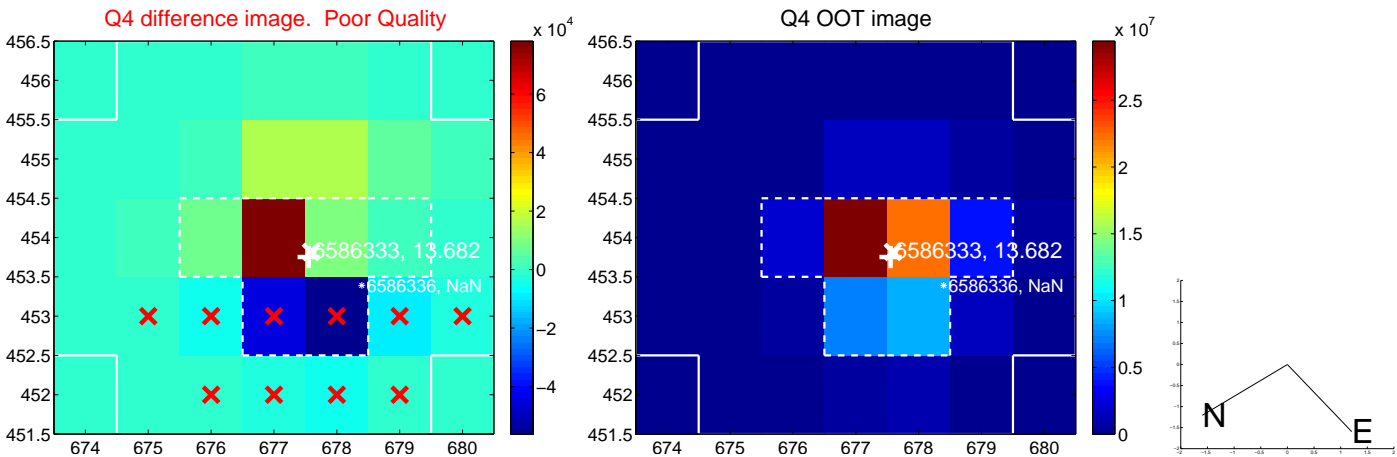
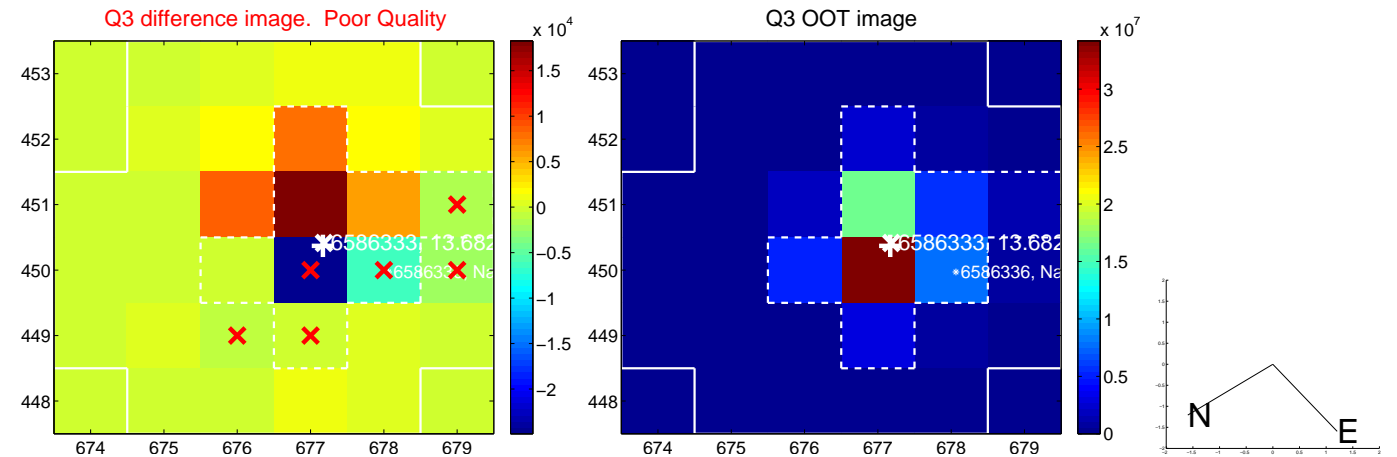
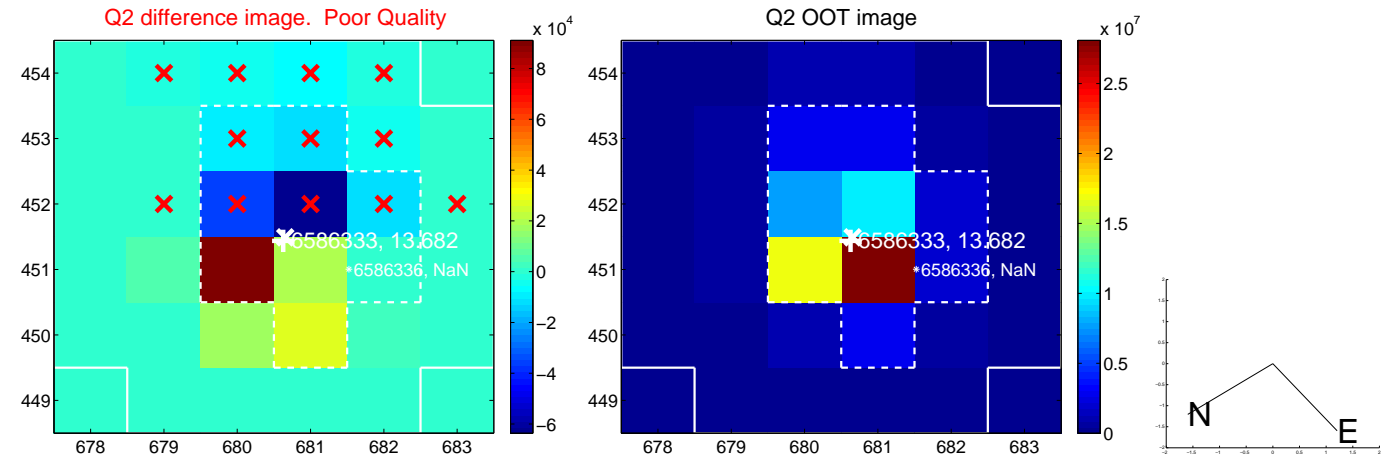
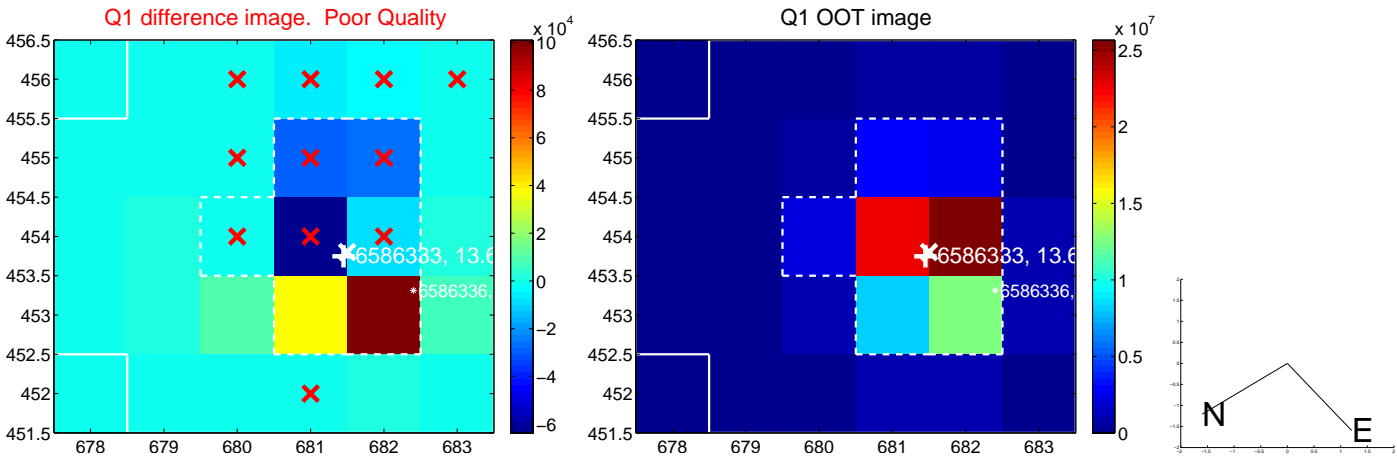
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$0.41 \pm 0.28$	1.44	$0.29 \pm 0.30$	$0.29 \pm 0.27$



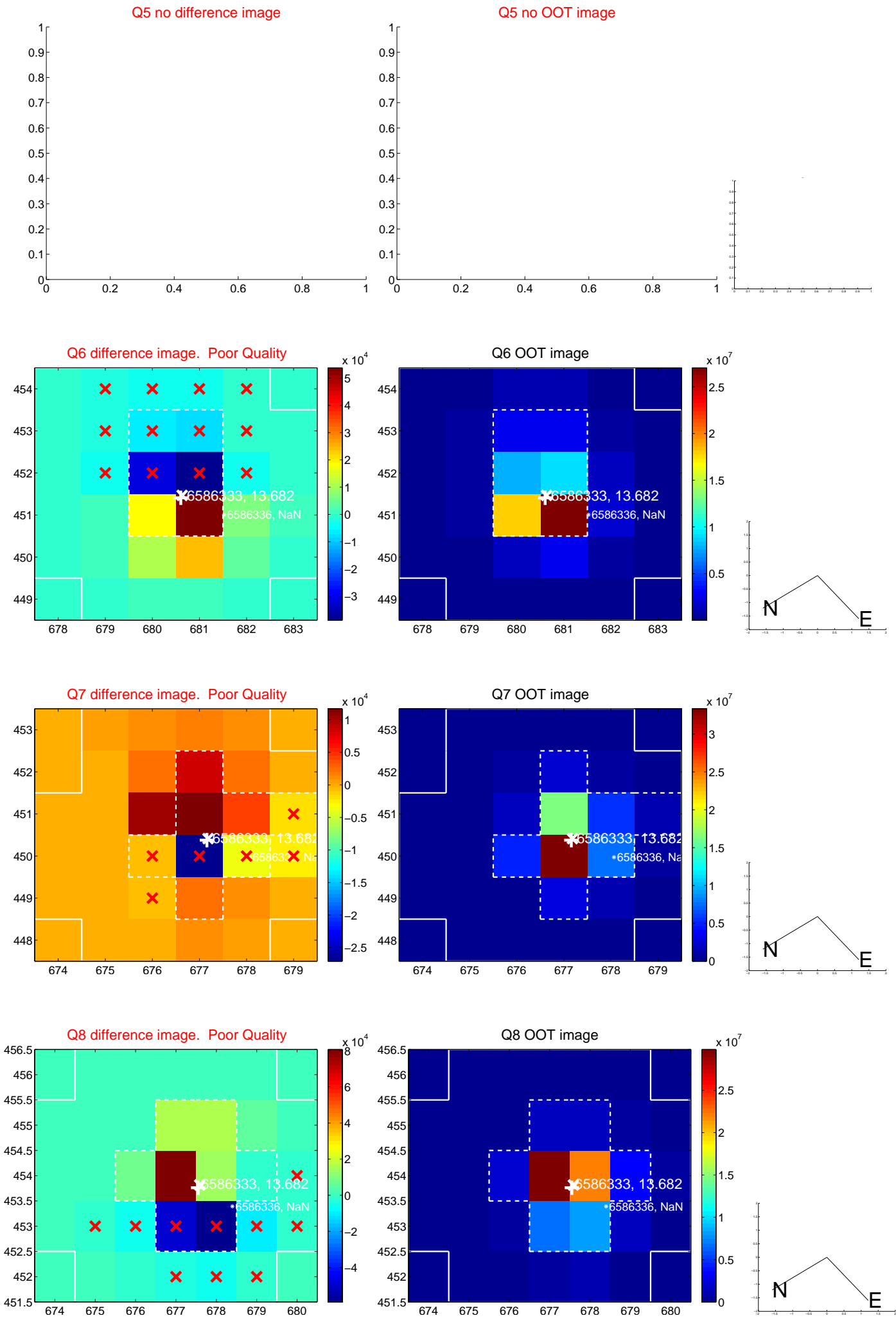
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

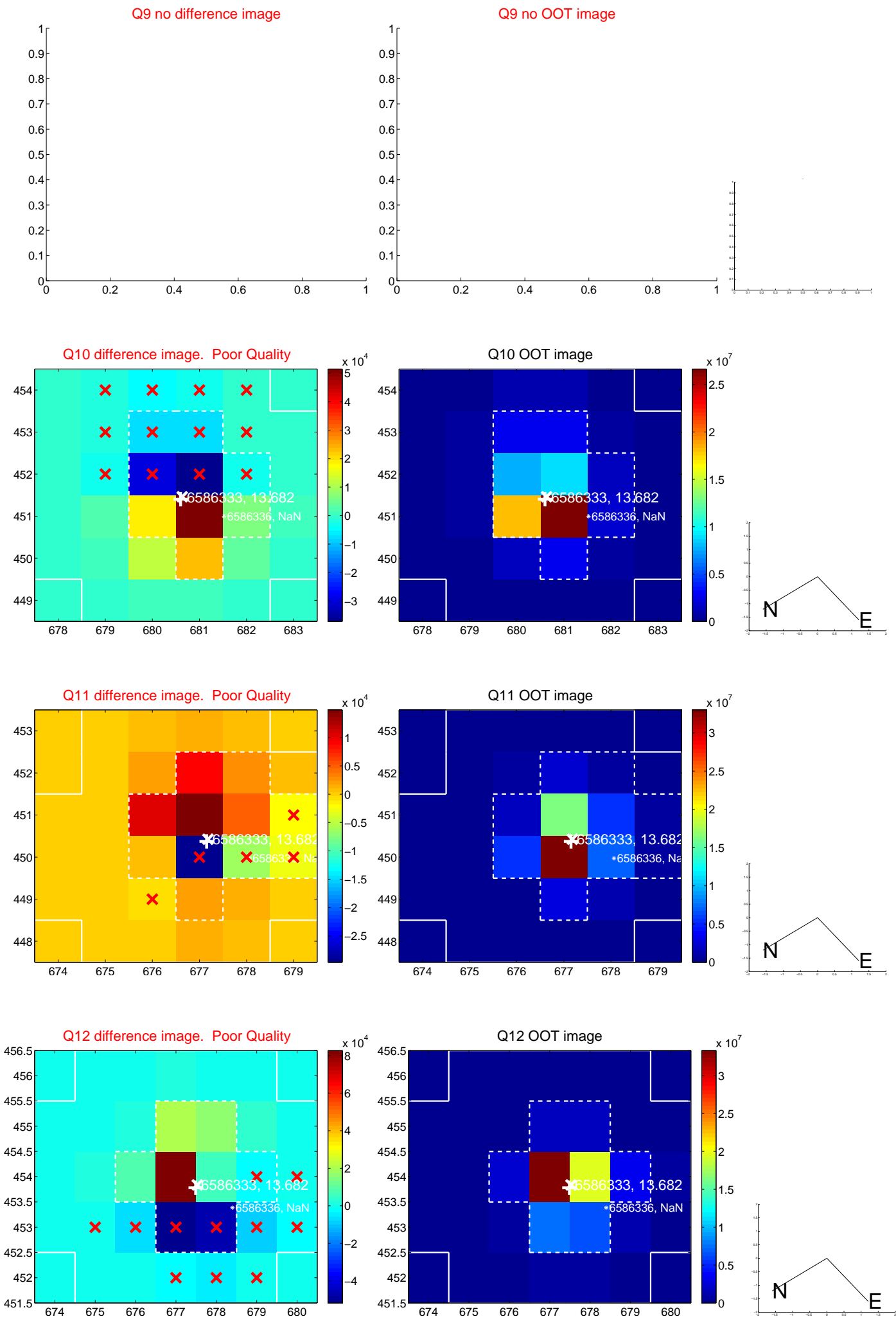




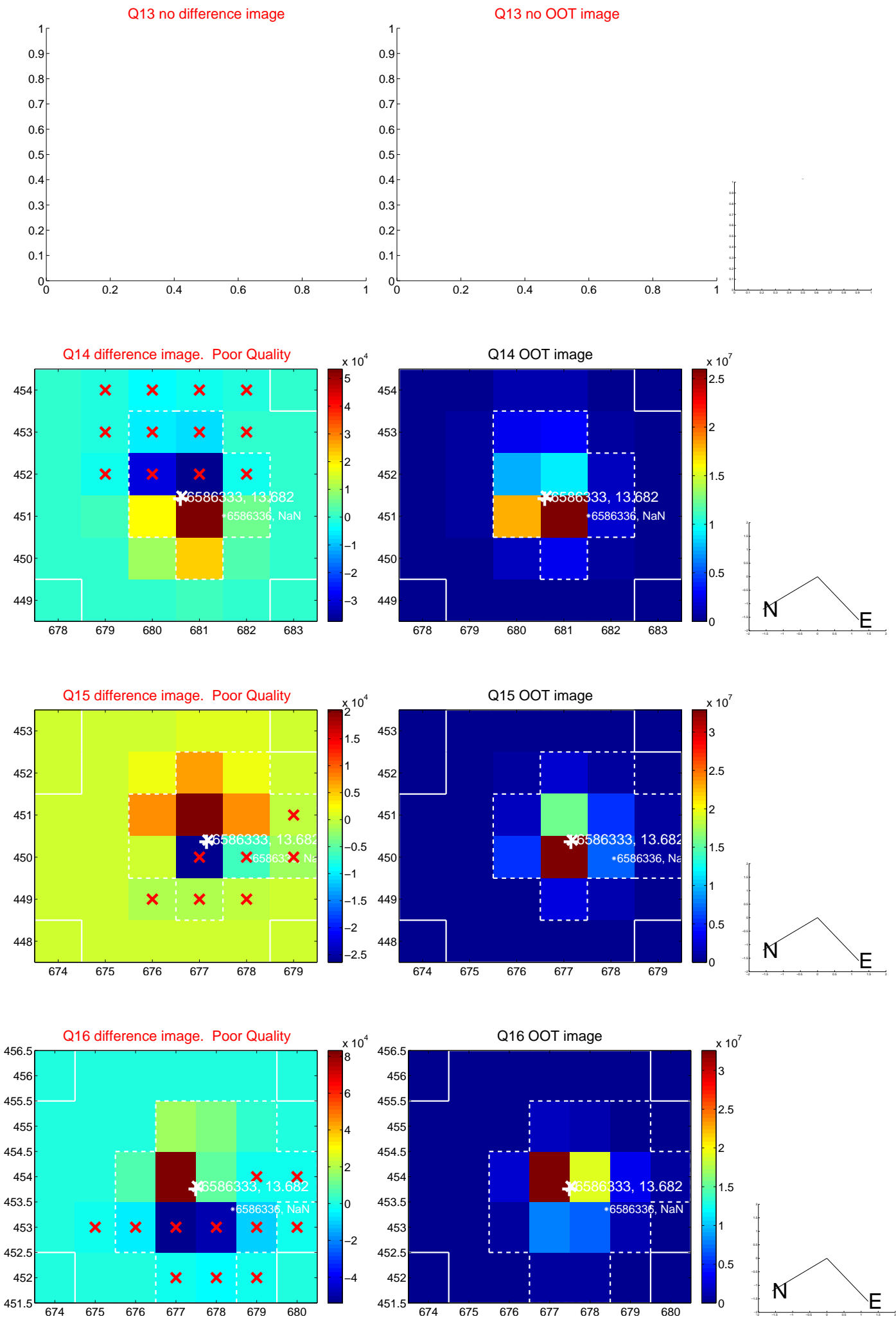
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



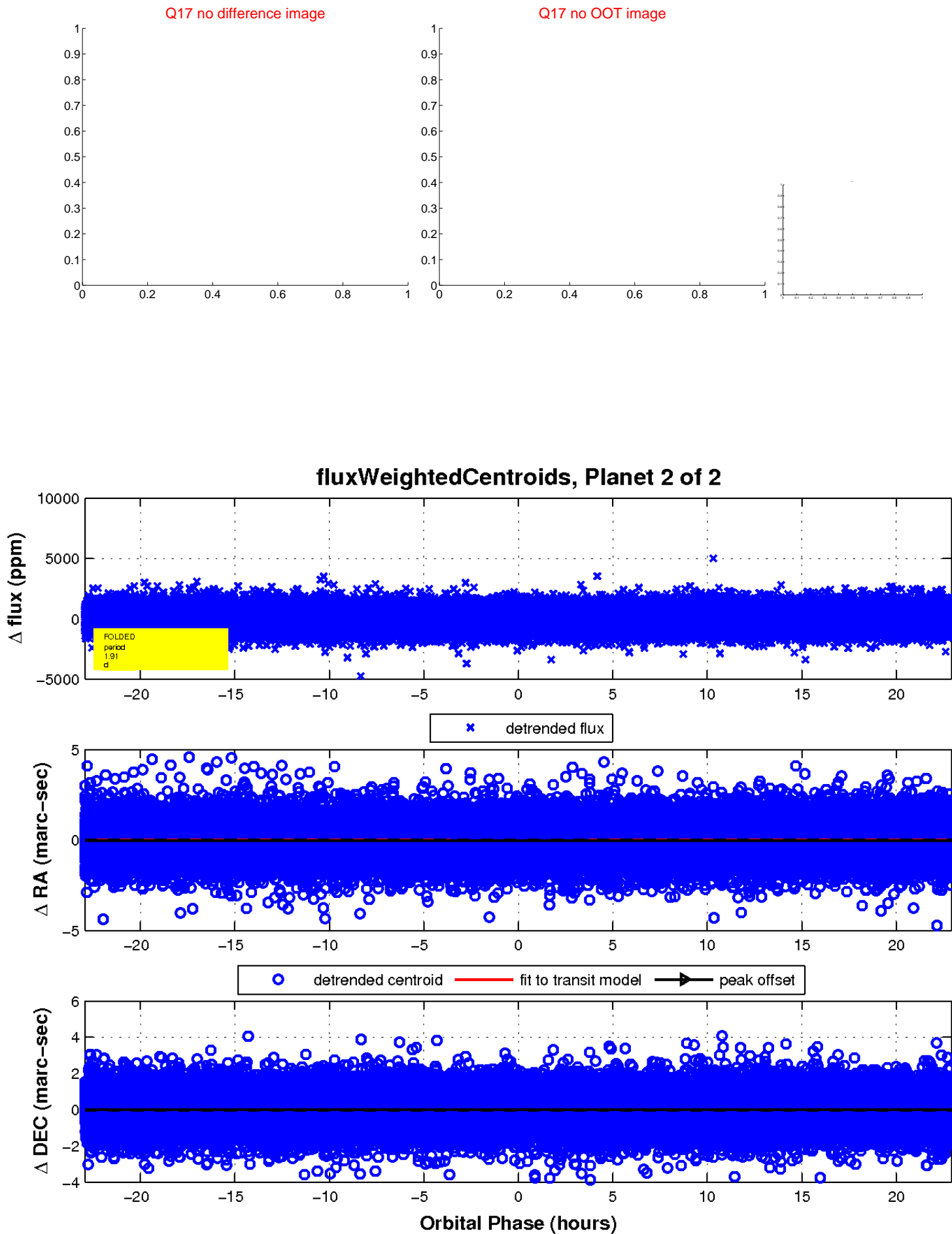
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

