

# KIC 006678383

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006678383-01	OBS	0111.01	11.427559	137.613282	492.6	4.697	148.1	144.7	1.00	5979	2.47	124.62
006678383-02	OBS	0111.03	51.755302	167.577510	599.5	7.548	99.9	98.9	1.00	5979	2.70	16.63
006678383-03	OBS	0111.02	23.668368	132.713165	448.6	5.838	99.4	97.7	1.00	5979	2.33	47.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006678383-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
006678383-02	OBS	PC	0.98	0	0	0	0	CENT_KIC_POS
006678383-03	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

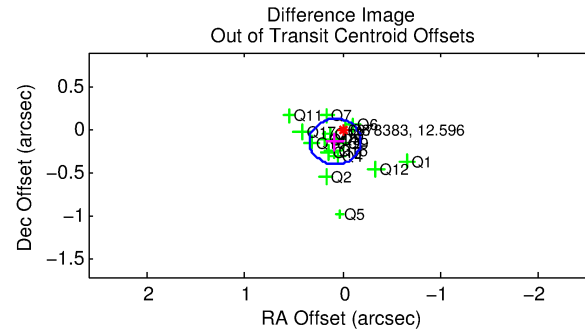
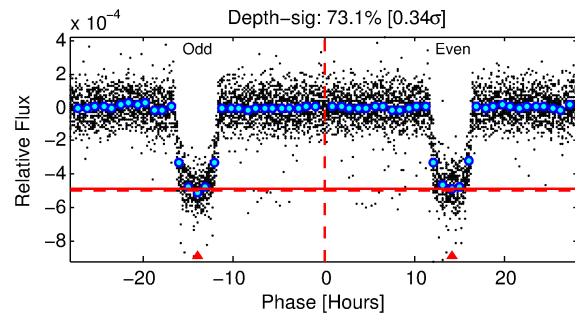
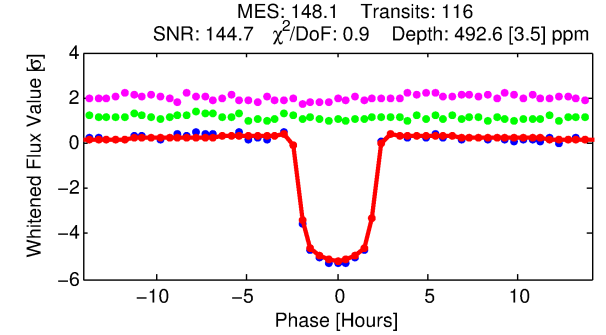
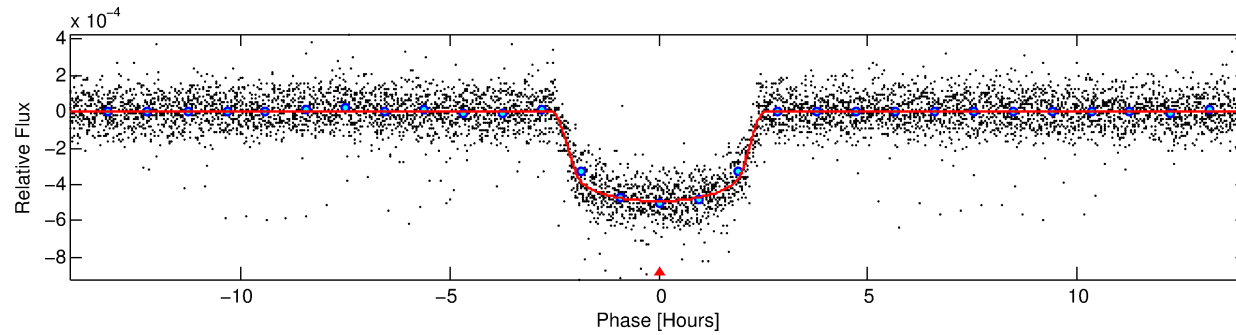
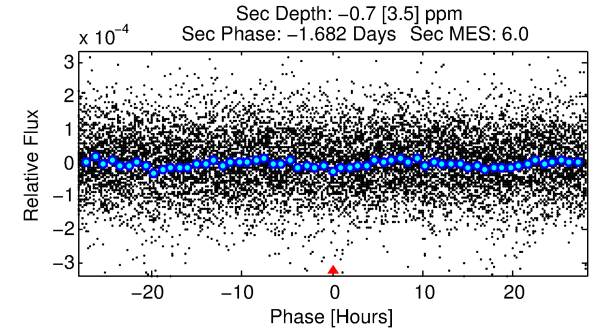
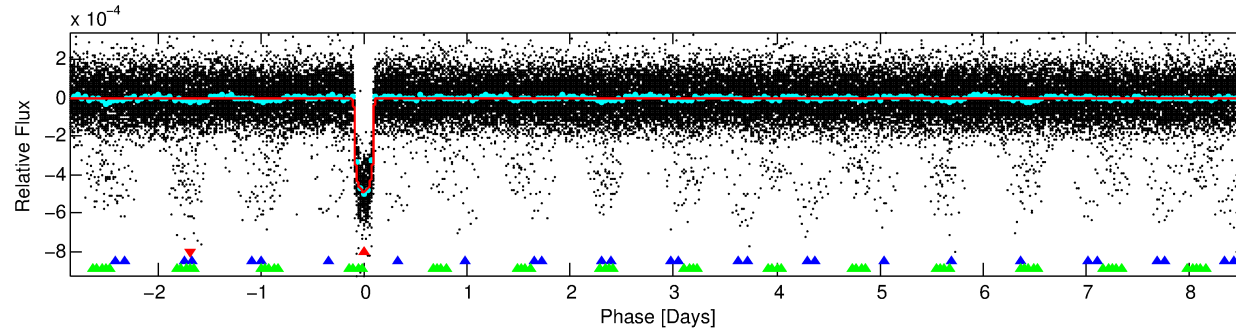
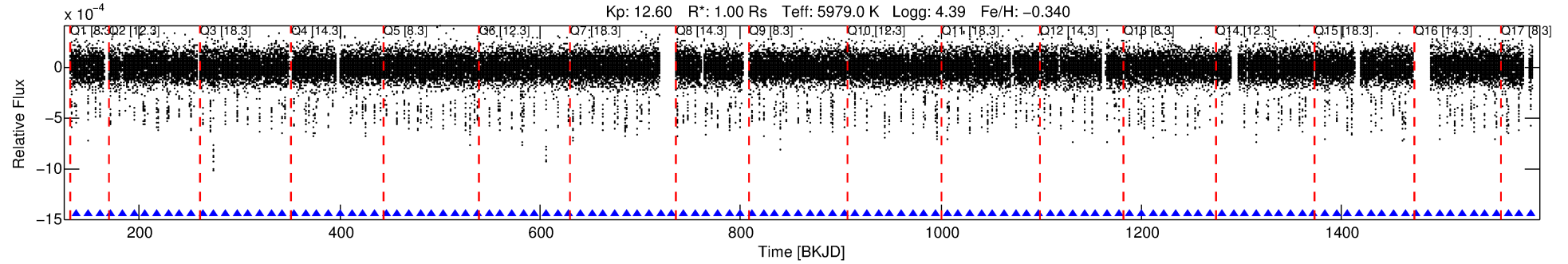
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006678383-01

No Significant Match Found

# DV One-Page Summary

KIC: 6678383 Candidate: 1 of 3 Period: 11.428 d  
KOI: K00111.01 Name: Kepler-104b Corr: 0.985



## DV Fit Results:

Period = 11.42756 [0.00001] d  
Epoch = 137.6133 [0.0006] BKJD  
Rp/R\* = 0.0225 [0.0008]  
a/R\* = 11.87 [2.15]  
b = 0.80 [0.08]  
Seff = 124.62 [25.94]  
Teq = 852 [44] K  
Rp = 2.47 [0.35] Re  
a = 0.0963 [0.0120] AU  
Ag = N/A  
Teffp = N/A

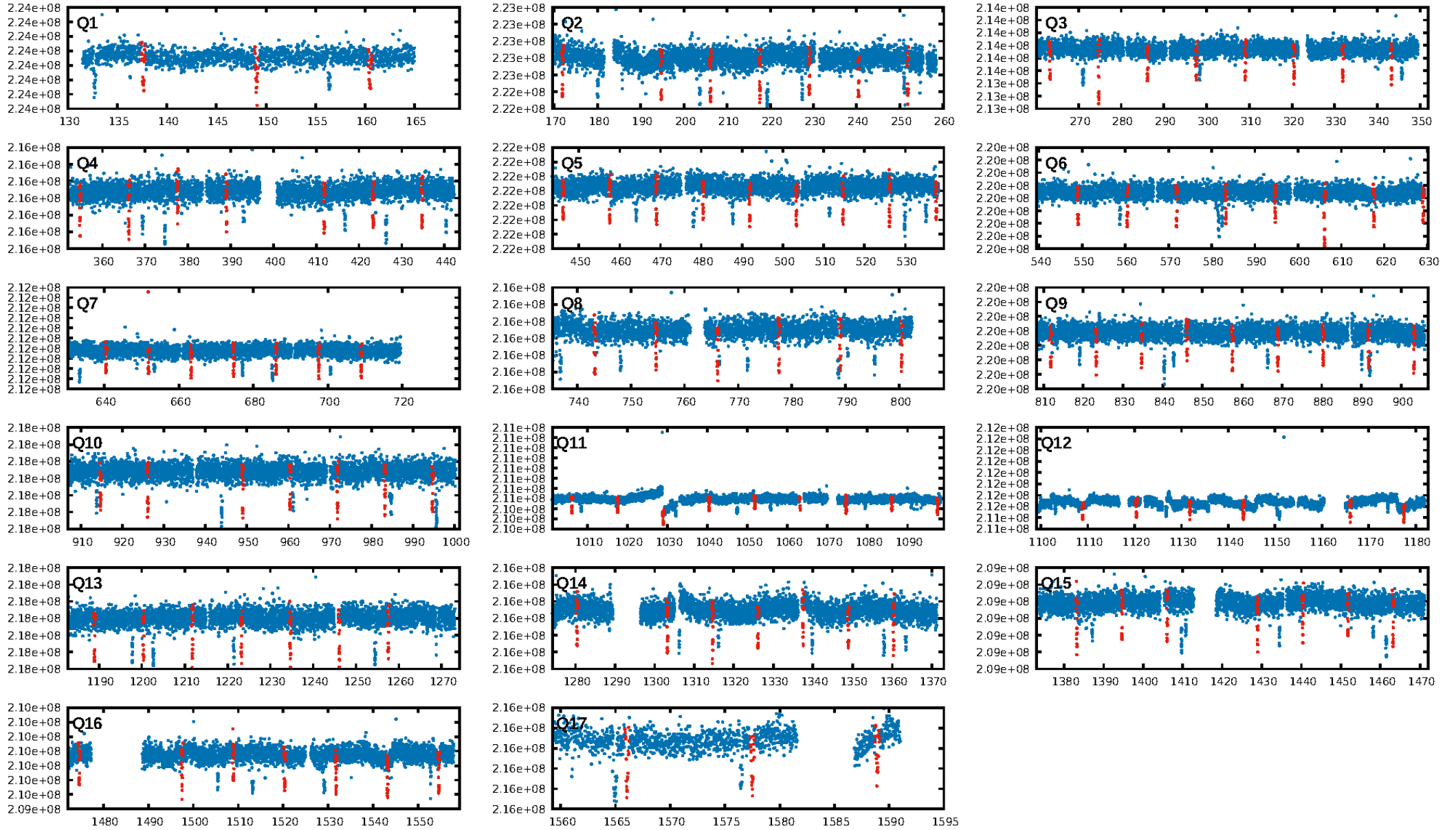
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [39.21σ]  
ModelChiSquare2-sig: 9.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [110/110]  
GhostDiagnostic-chr: 8.416  
Centroid-sig: 0.0%  
Centroid-so: 0.735 arcsec [8.91σ]  
OotOffset-rm: 0.154 arcsec [1.75σ]  
KicOffset-rm: 0.799 arcsec [8.62σ]  
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]

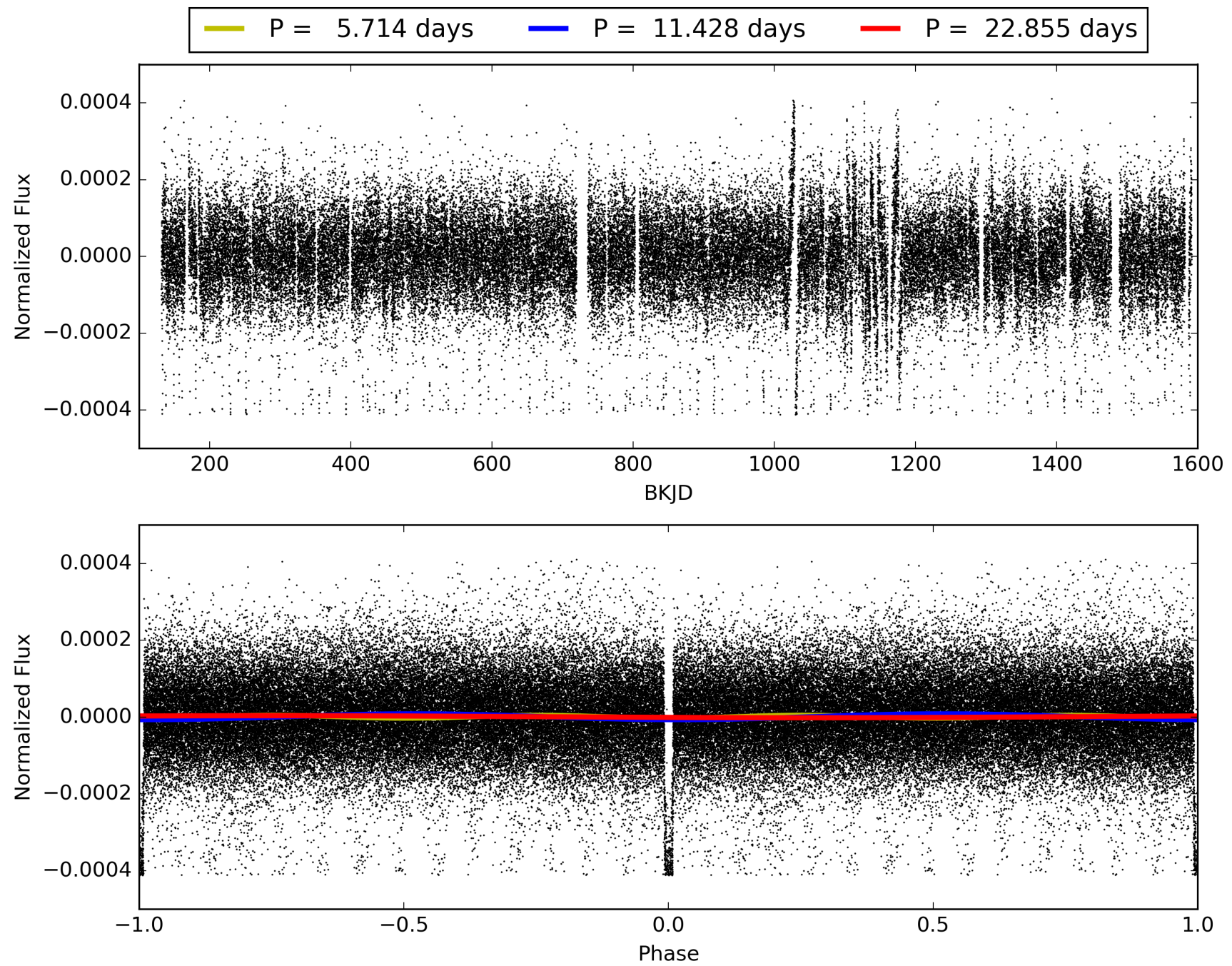
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:04:22 Z

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

# TCE 006678383-01, PDC Light Curves

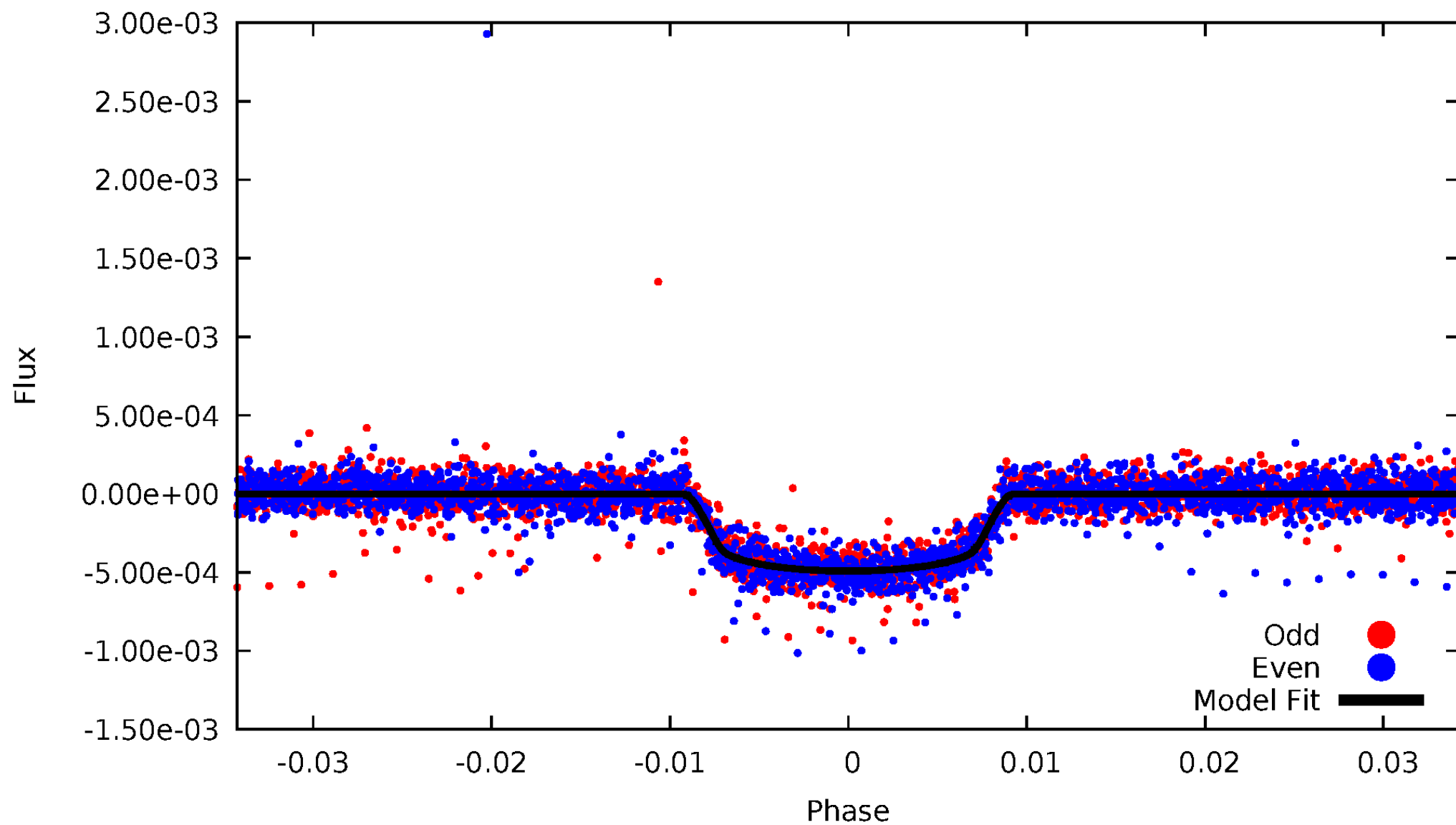


TCE 006678383-01



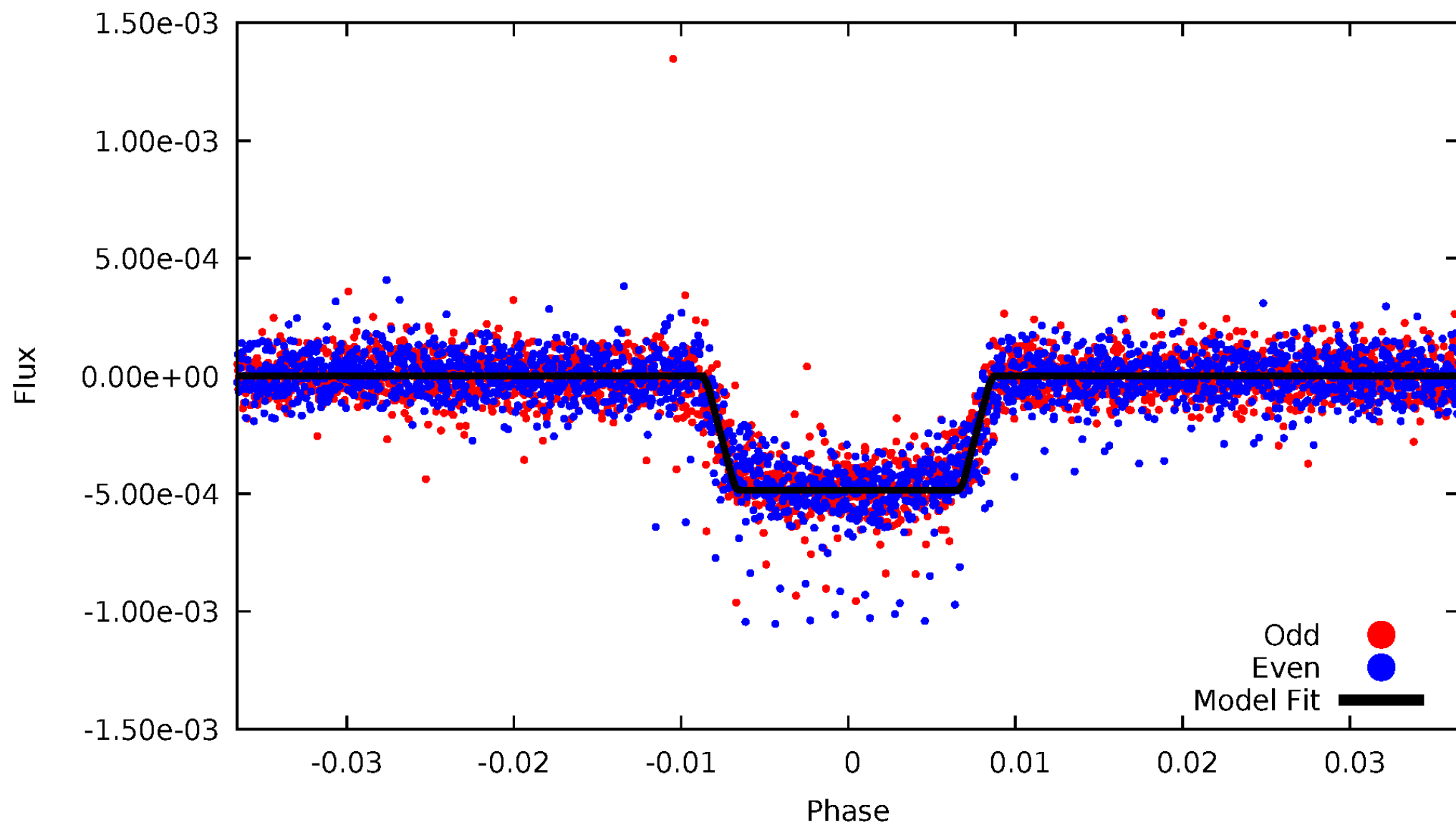
# DV Odd/Even

TCE 006678383-01



# ALT Odd/Even

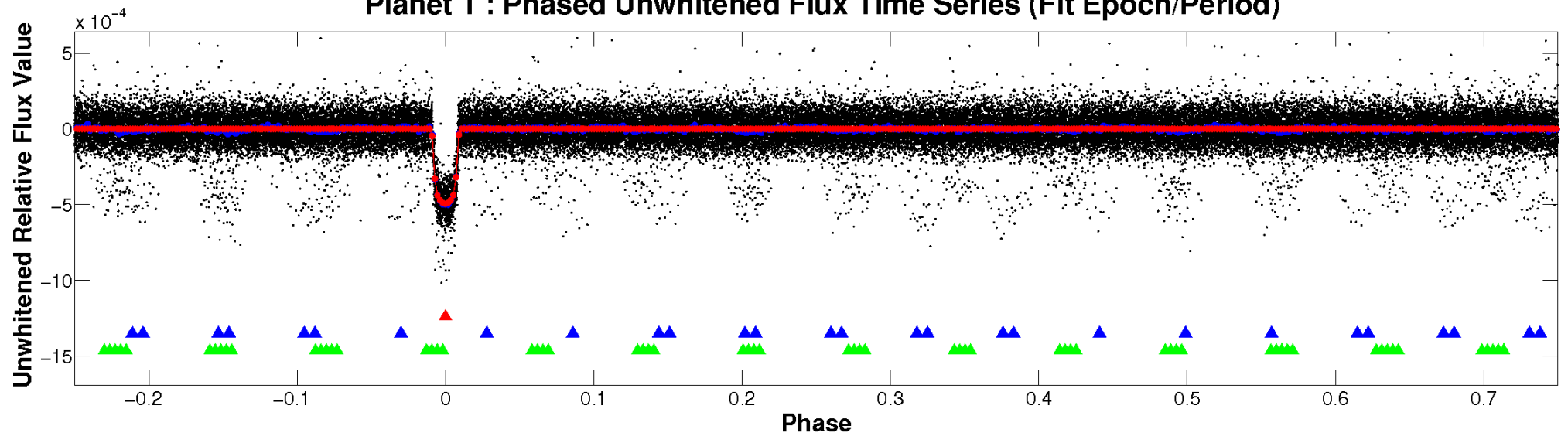
TCE 006678383-01



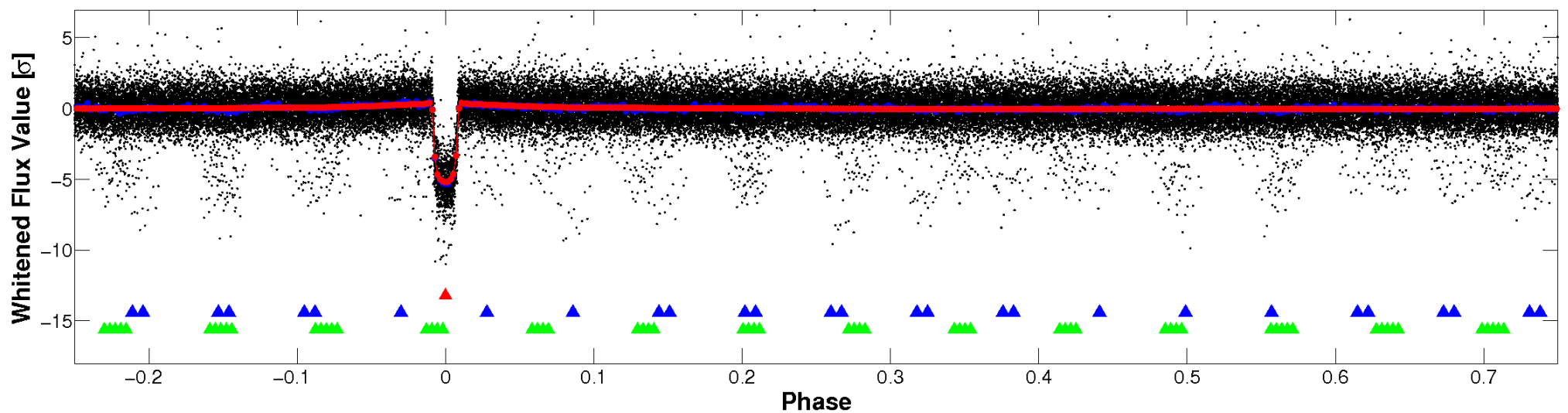


# Non-Whitened Vs. Whitened Light Curve

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

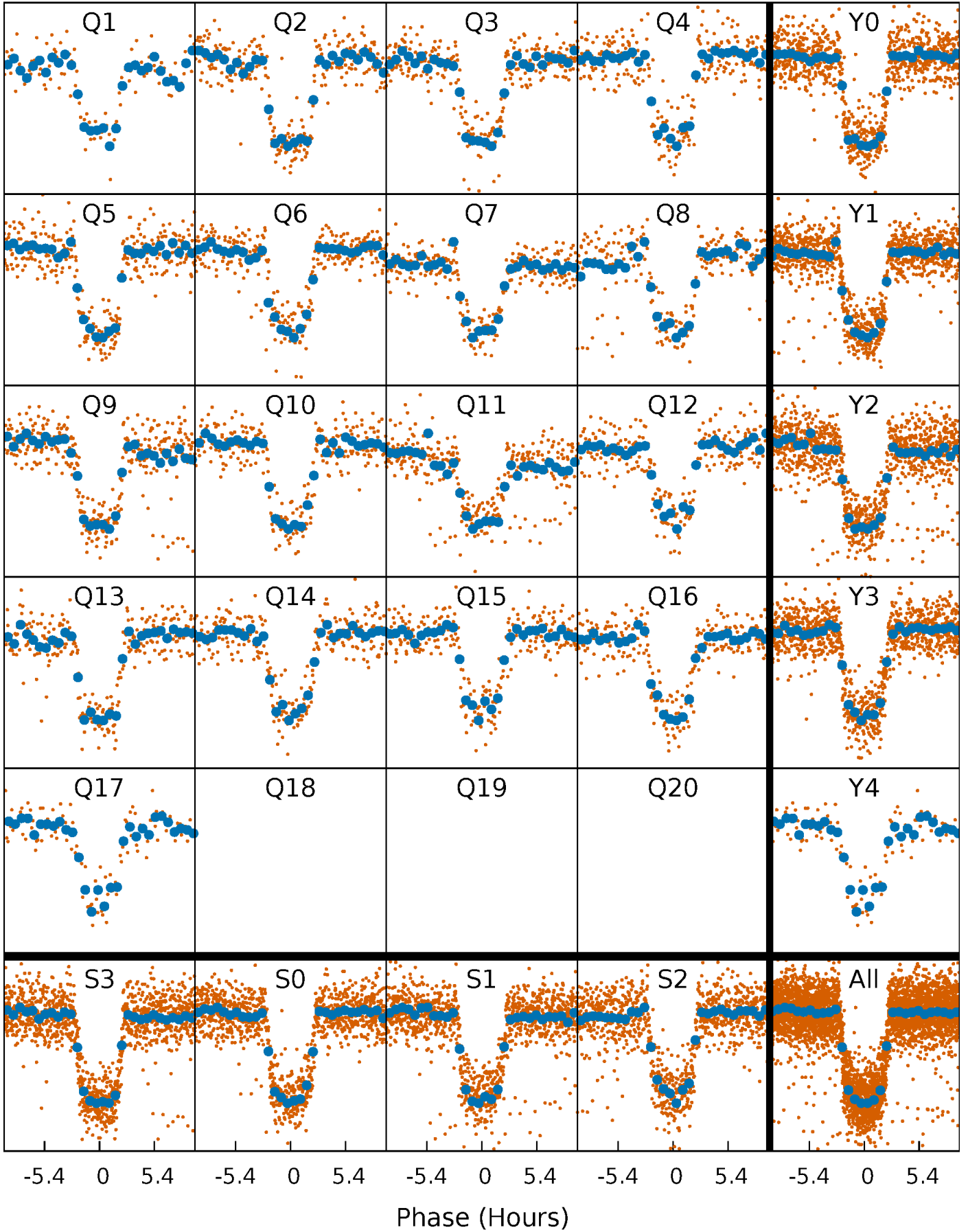


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

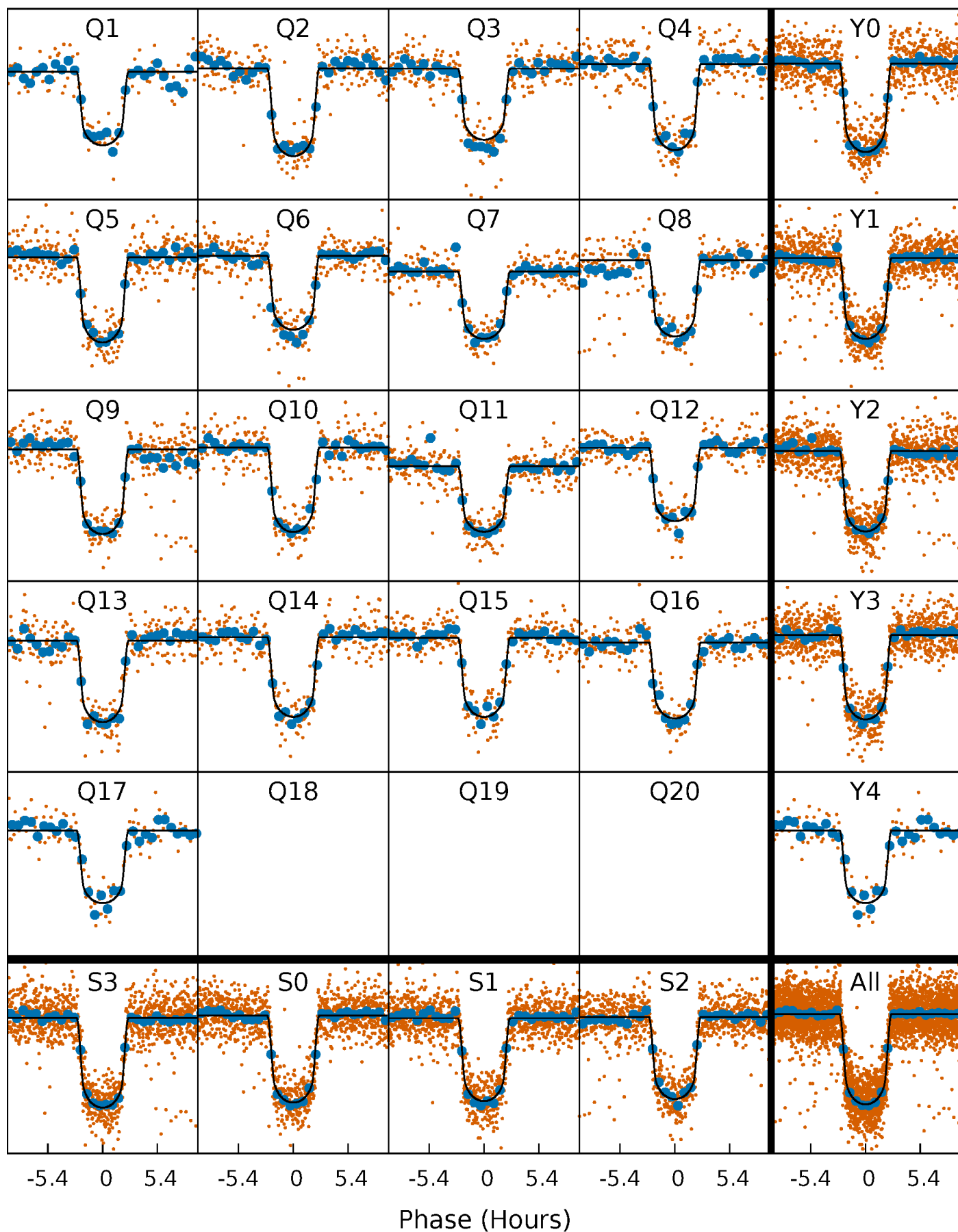
TCE 006678383-01 P= 11.427559 Days  $T_0=137.613282$  (BKJD)





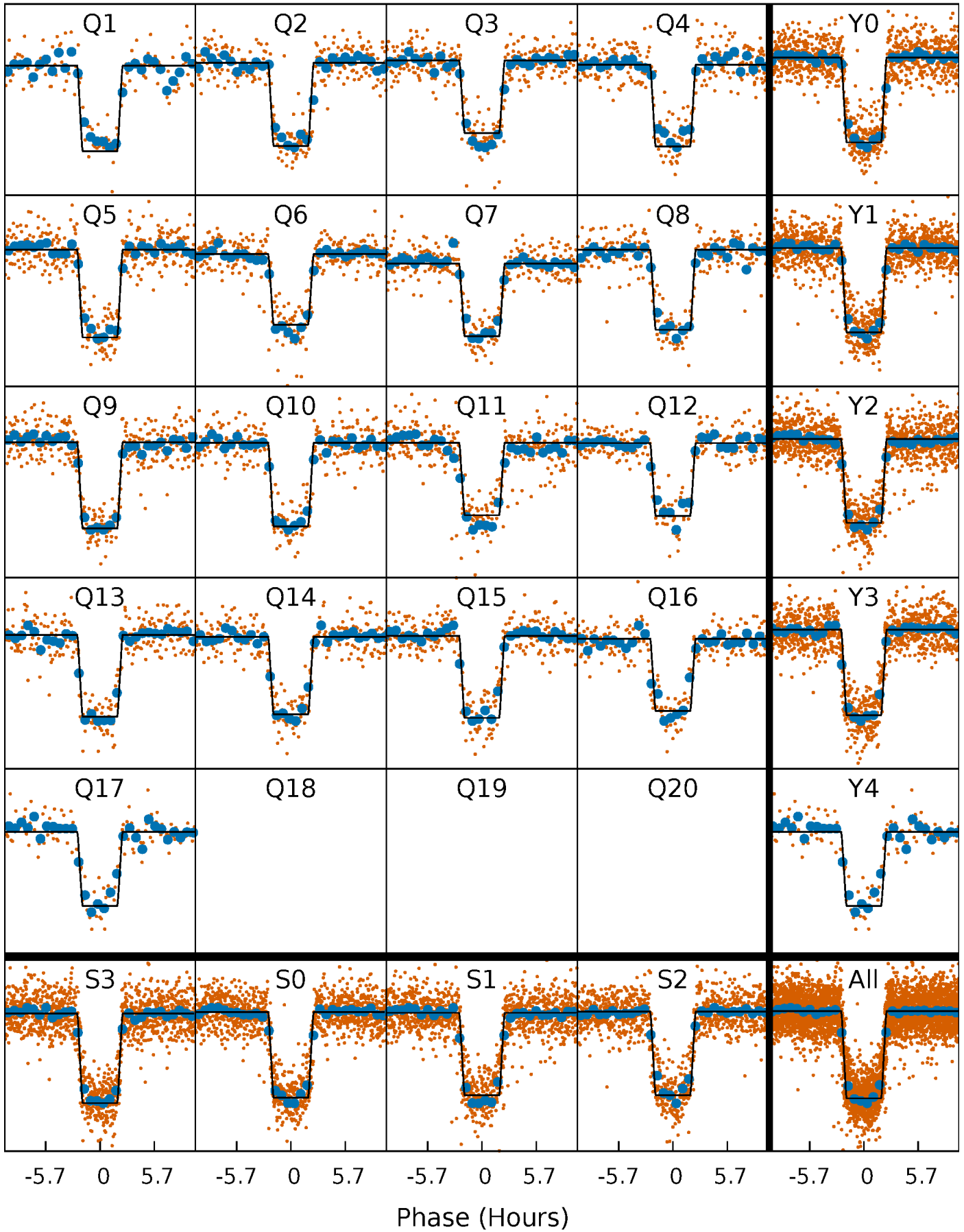
# DV Quarter-Phased Transit Curves

TCE 006678383-01 P= 11.427559 Days  $T_0=137.613282$  (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

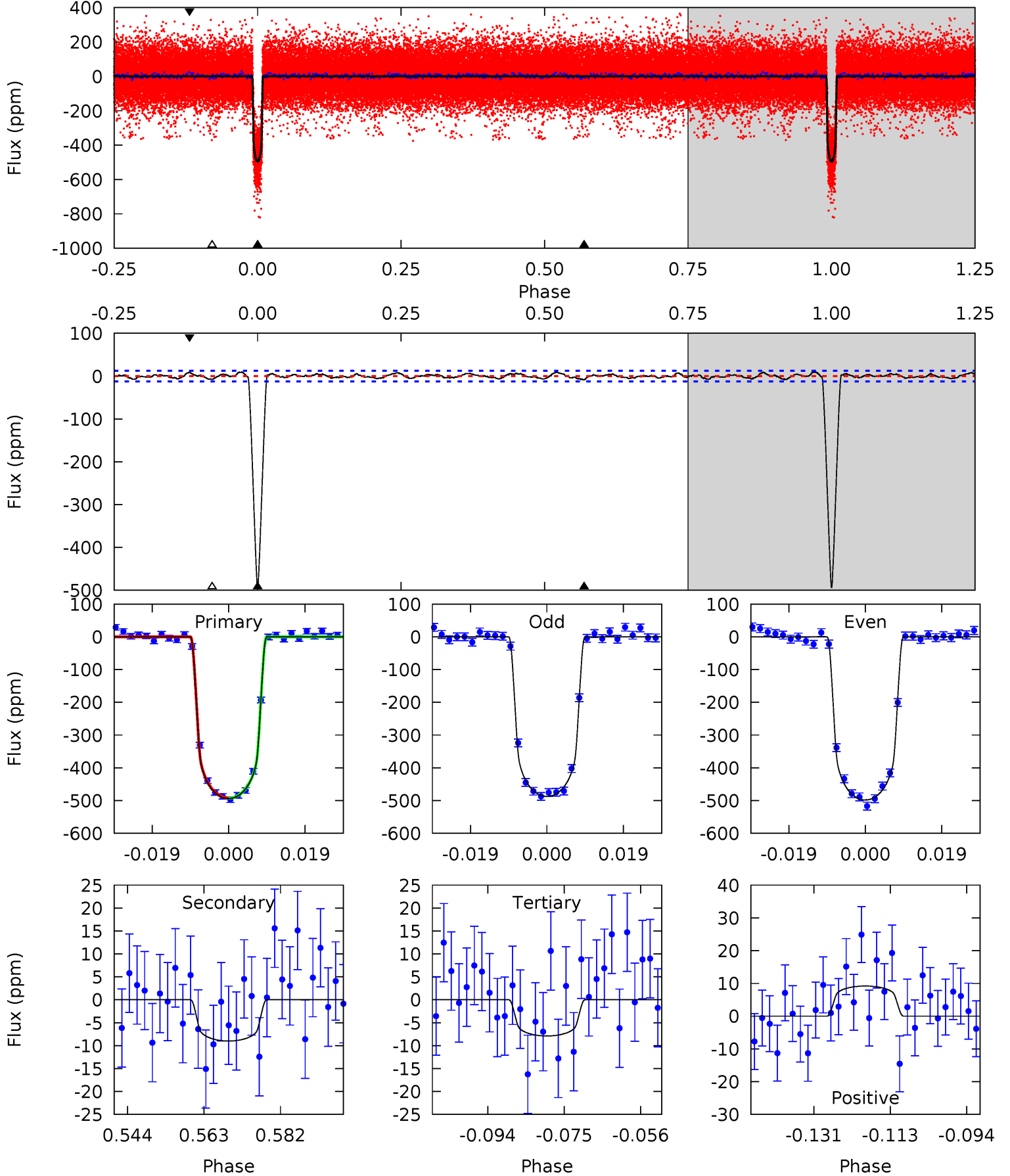
TCE 006678383-01   P= 11.427688 Days    $T_0=137.605323$  (BKJD)



# DV Model-Shift Uniqueness Test

006678383-01, P = 11.427559 Days, E = 126.185723 Days

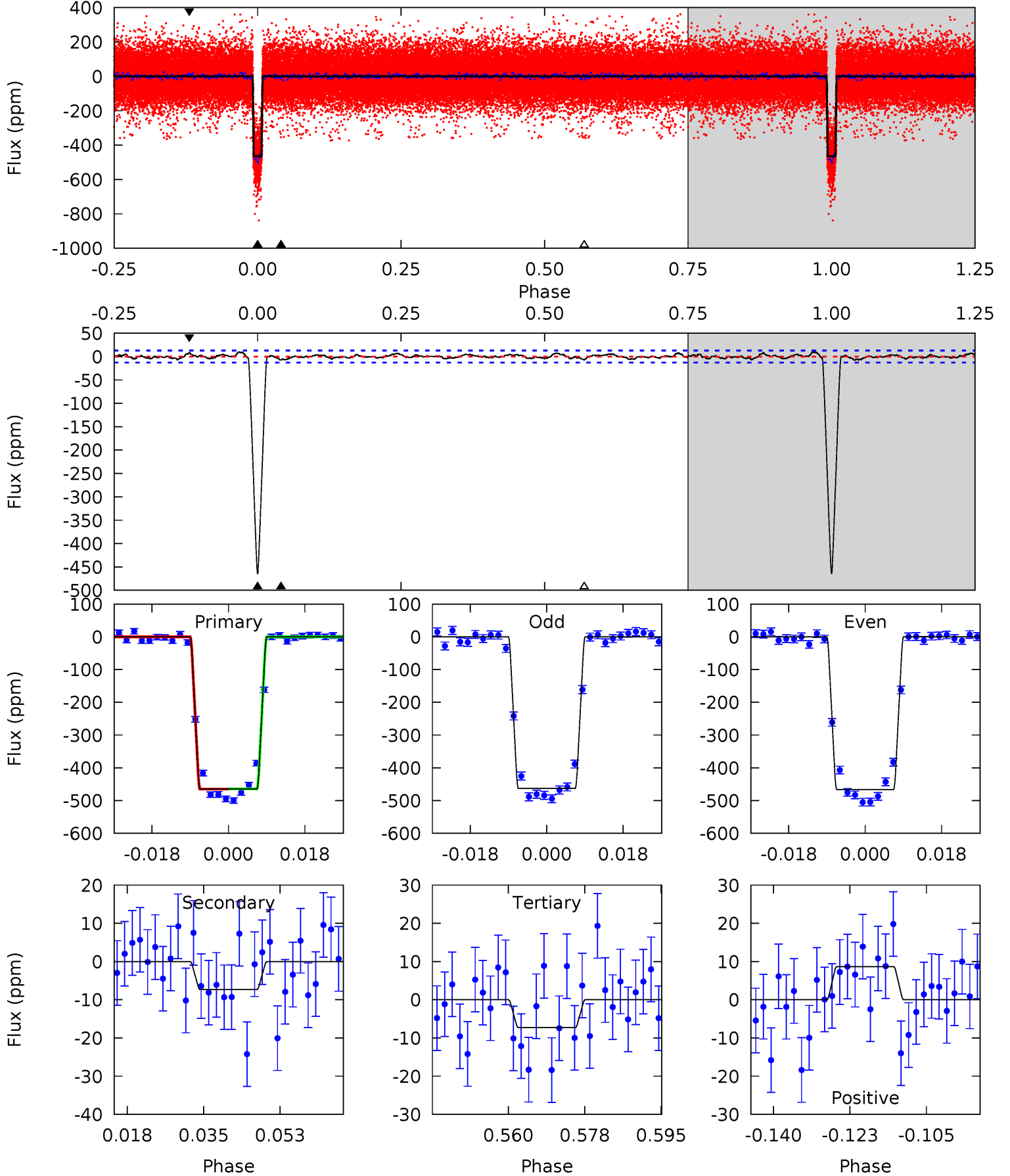
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
193.0	3.52	3.09	3.59	4.90	2.35	1.41	190.0	189.4	0.43	-0.07	2.15	1.00	0.02	0.19



# Alt Model-Shift Uniqueness Test

006678383-01, P = 11.427688 Days, E = 126.177635 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
176.3	2.78	2.77	3.28	4.92	2.38	1.14	173.5	173.0	0.01	-0.50	0.56	1.00	0.02	0.20



### Stellar Parameters For KIC 006678383

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5979^{+108}_{-120}$	$4.394^{+0.110}_{-0.110}$	$-0.340^{+0.150}_{-0.150}$	$1.005^{+0.138}_{-0.113}$	$0.913^{+0.058}_{-0.058}$	$1.267^{+0.562}_{-0.389}$
	+2%/-2%	+3%/-3%	+44%/-44%	+14%/-11%	+6%/-6%	+44%/-31%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 006678383-01 / KOI 0111.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-9 \pm 3$	$2.45^{+0.23}_{-0.19}$	$1189^{+52}_{-51}$	$2877^{+113}_{-149}$	$7.469^{+2.783}_{-2.301}$
Alt.	$-7 \pm 3$	$2.41^{+0.22}_{-0.19}$	$1189^{+49}_{-46}$	$2812^{+139}_{-188}$	$6.399^{+2.747}_{-2.541}$

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

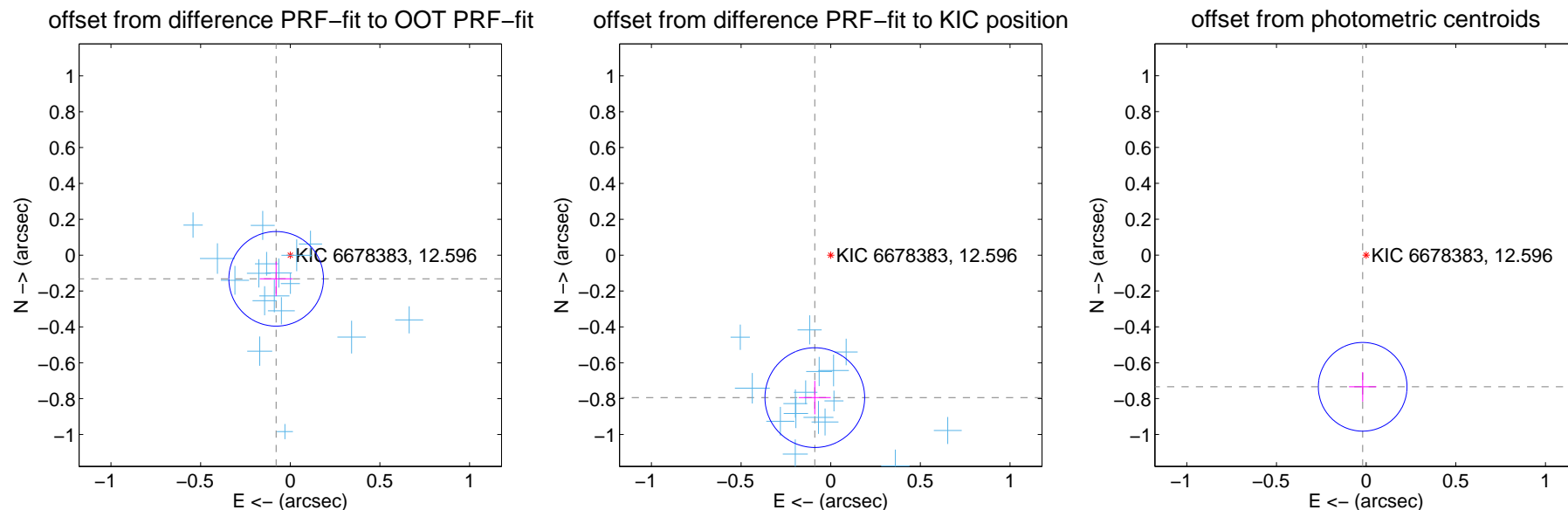
## DV Centroid Data

Supplemental centroid analysis for 006678383-01. Kepler magnitude: 12.60. Transit SNR 144.75

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.72 arcsec

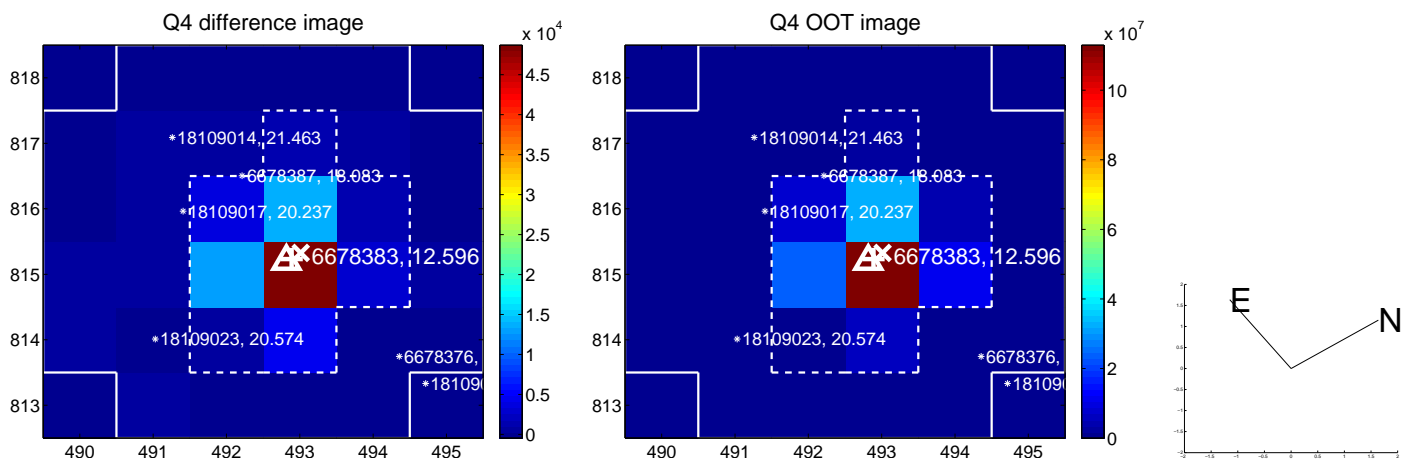
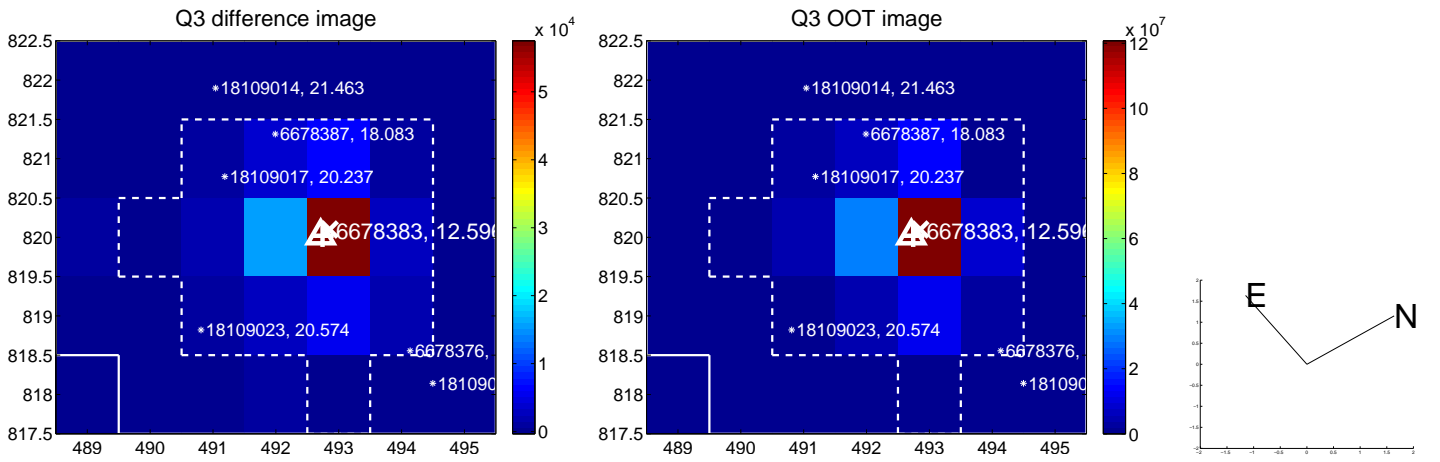
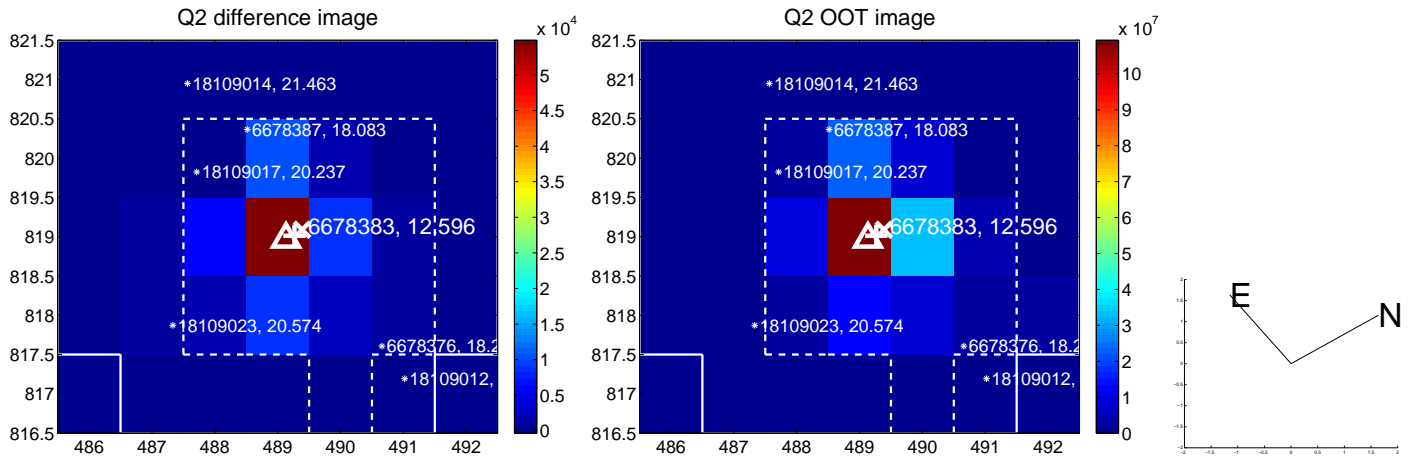
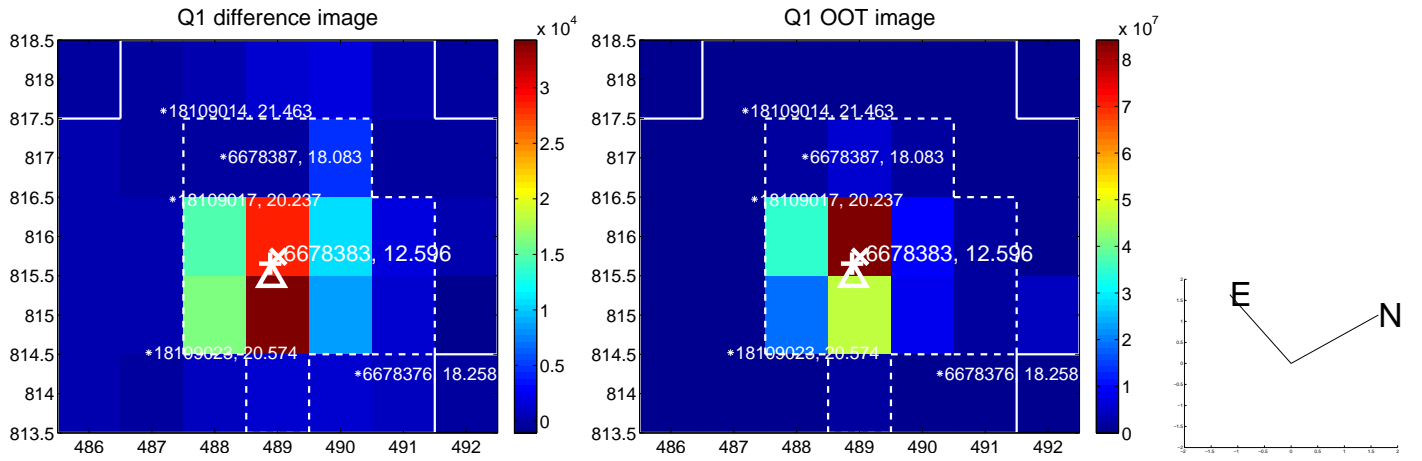
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.154 \pm 0.088$	1.75	$0.079 \pm 0.091$	$-0.132 \pm 0.096$
PRF-fit source offset from KIC position	$0.799 \pm 0.093$	8.62	$0.089 \pm 0.089$	$-0.794 \pm 0.093$
photometric centroid source offset	$0.73 \pm 0.08$	8.91	$0.02 \pm 0.08$	$-0.73 \pm 0.08$



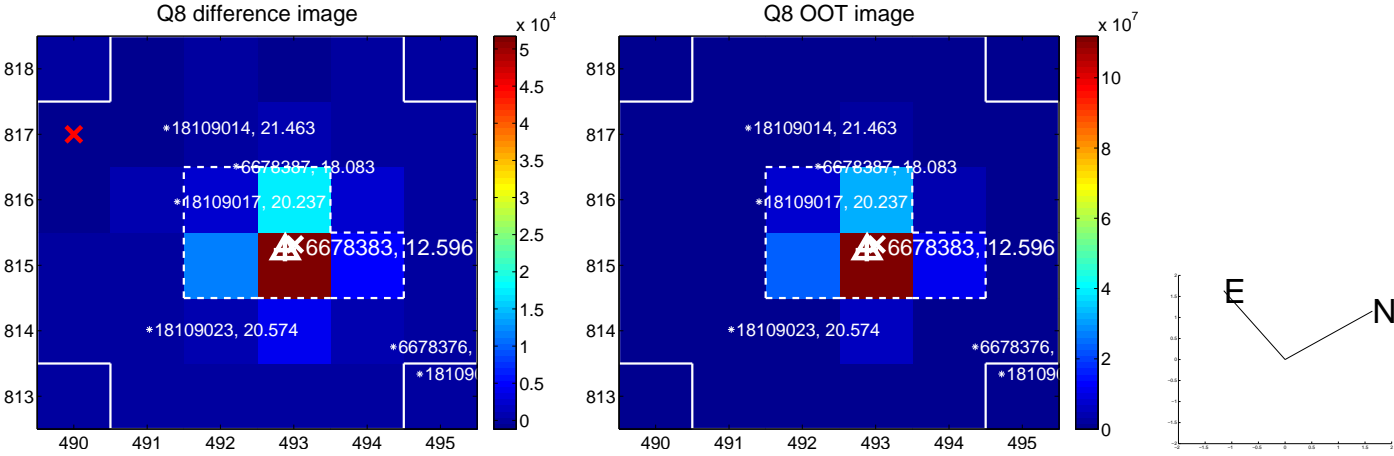
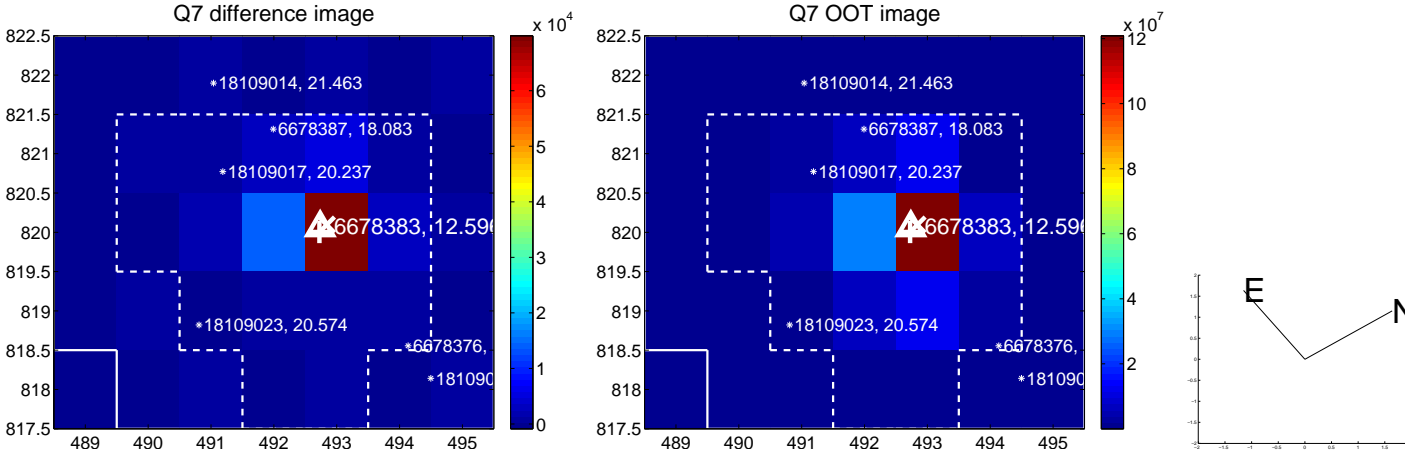
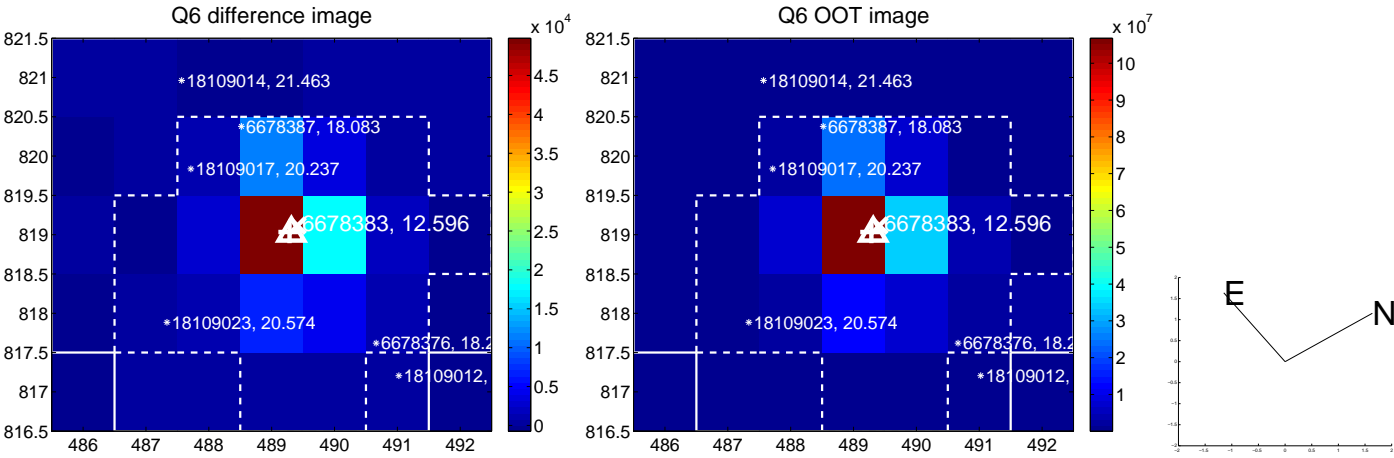
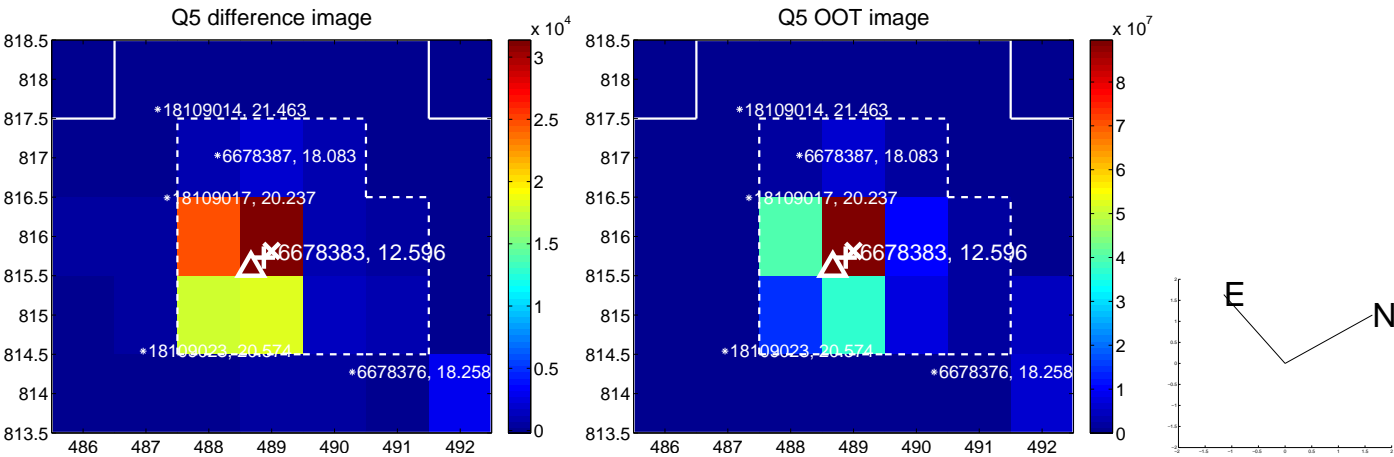
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



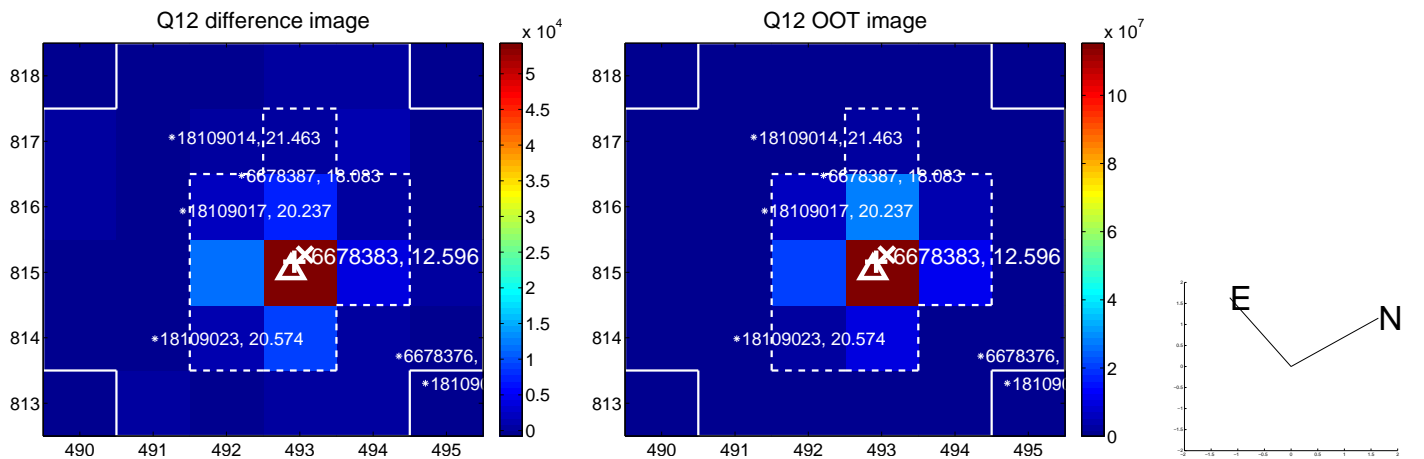
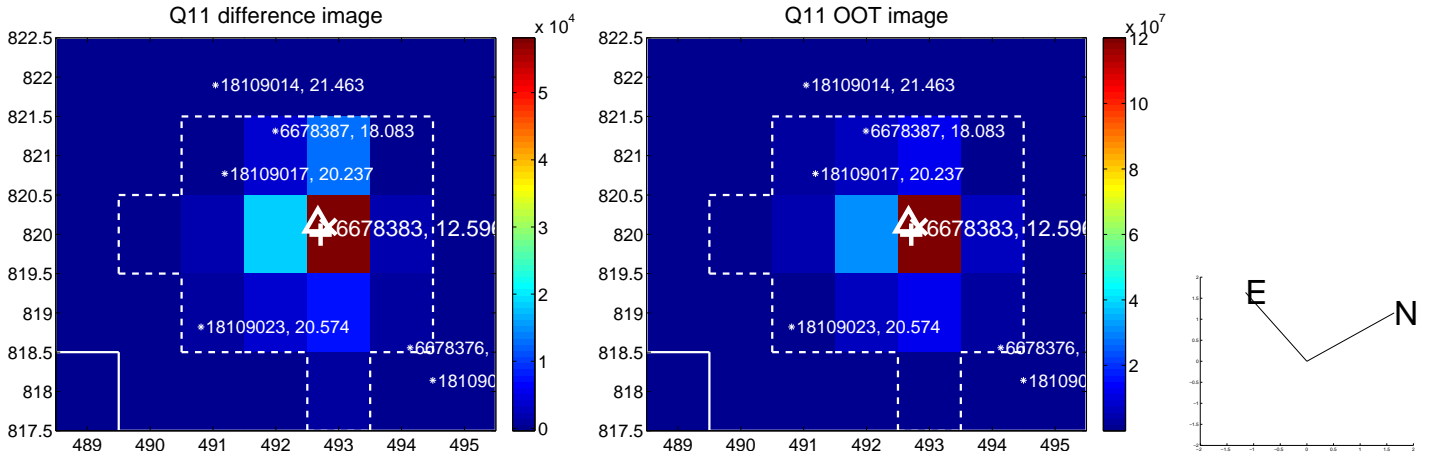
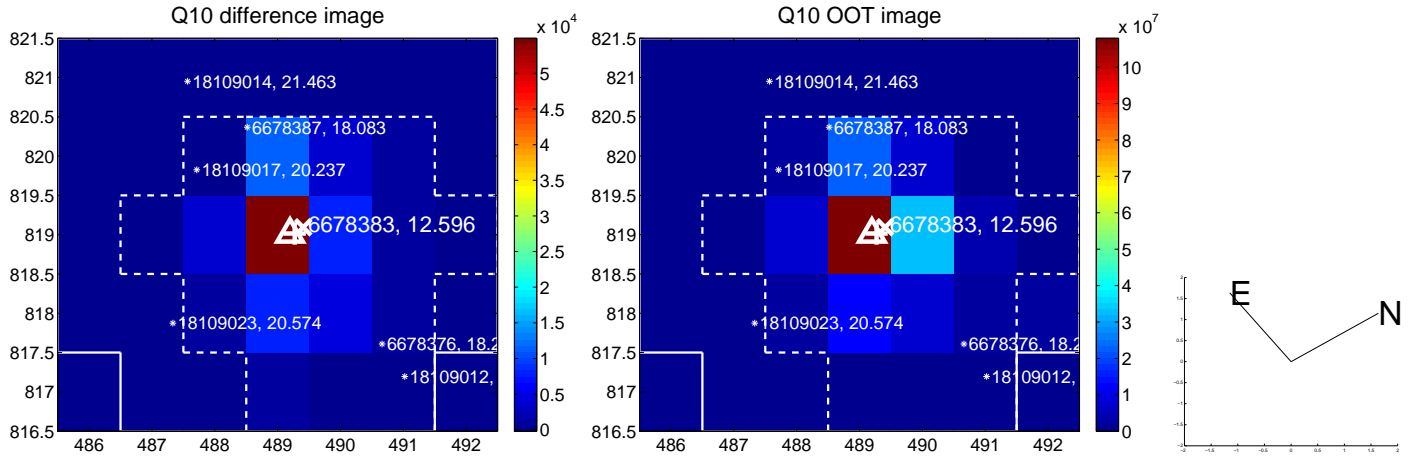
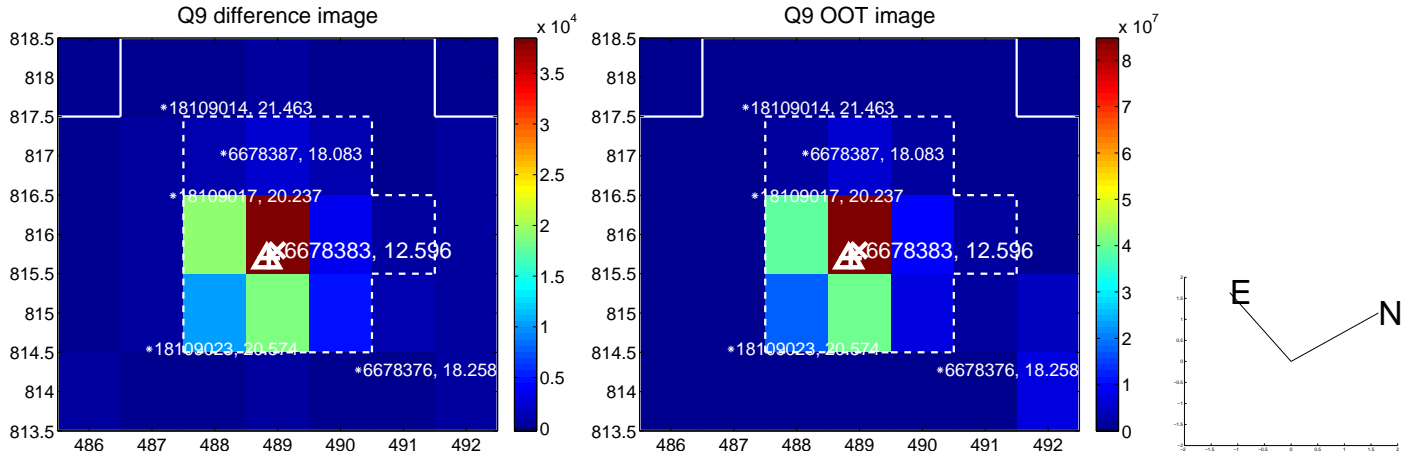
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



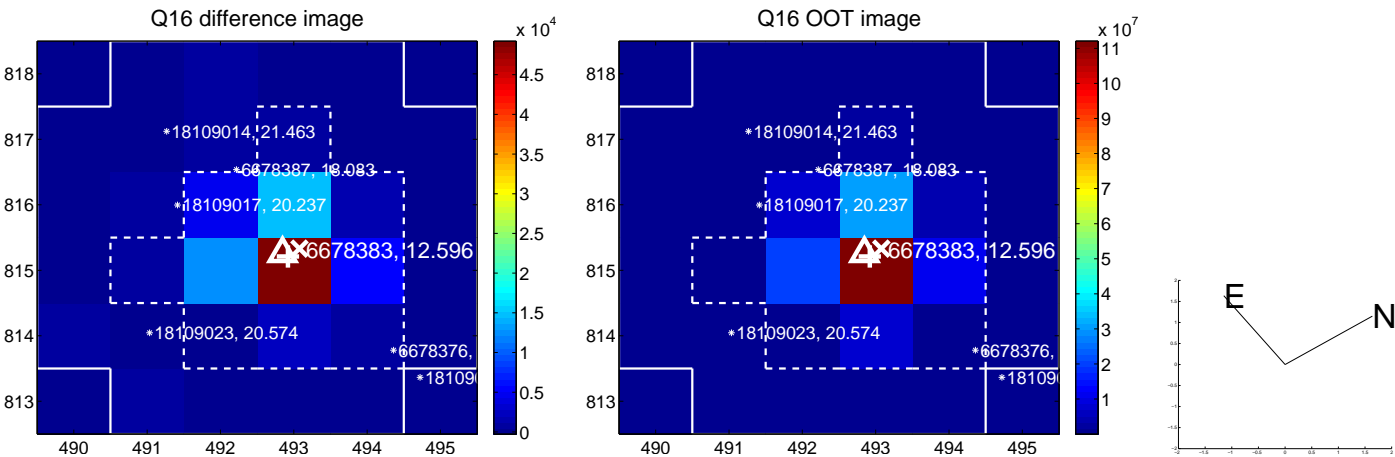
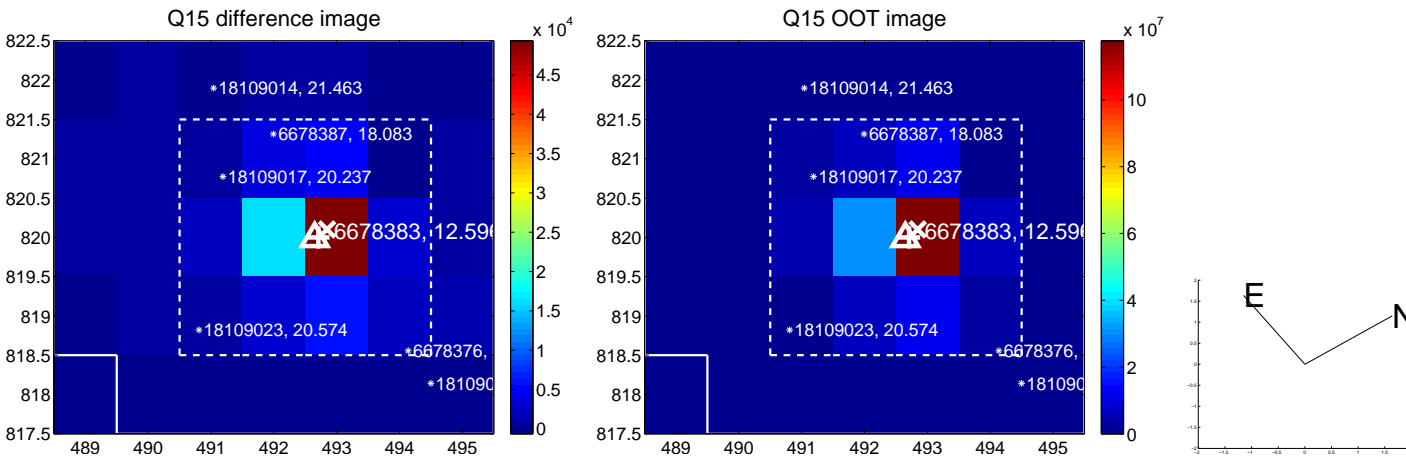
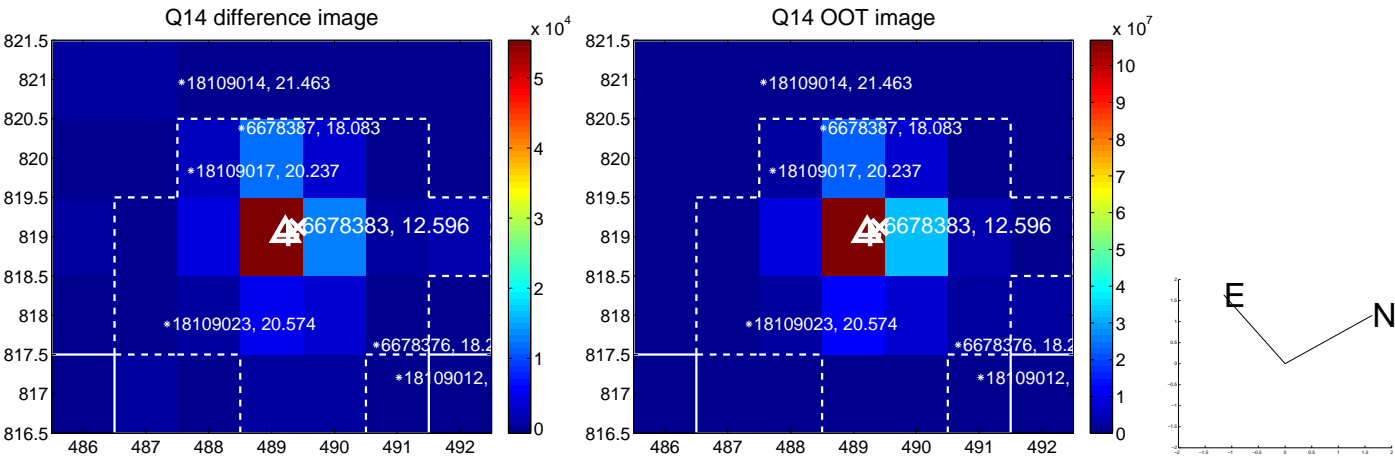
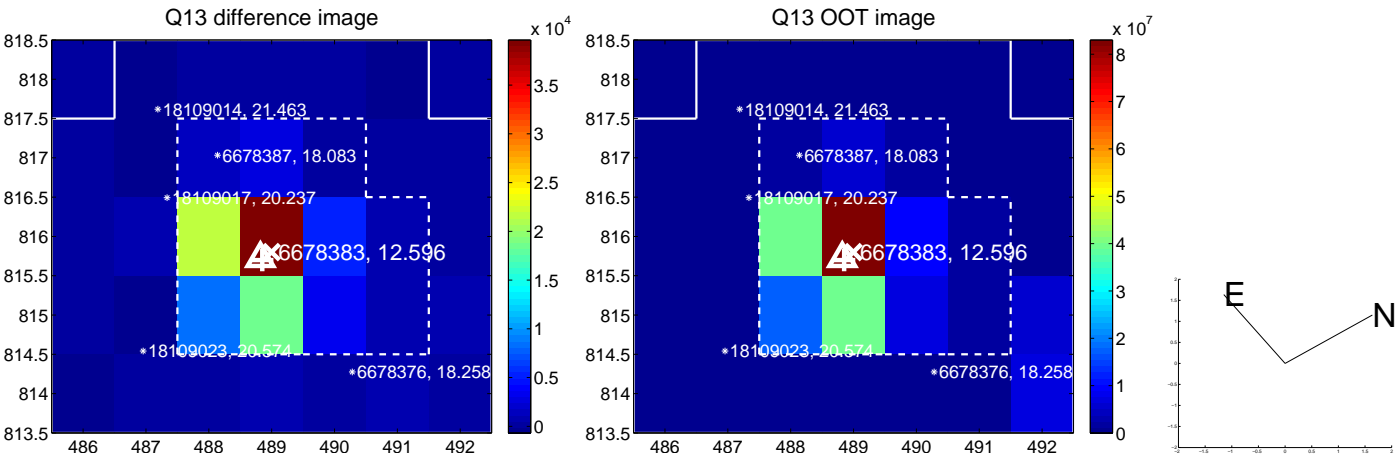
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



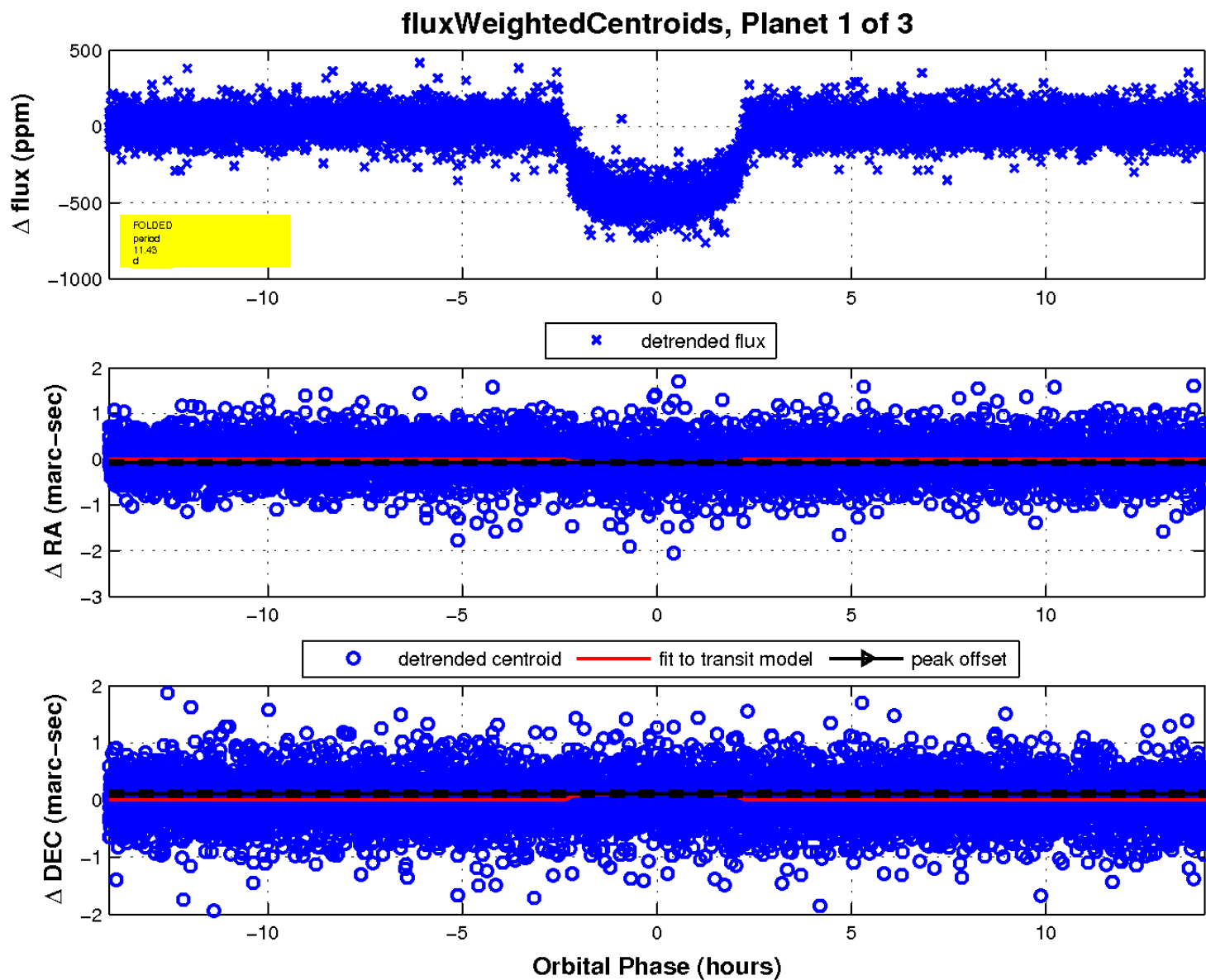
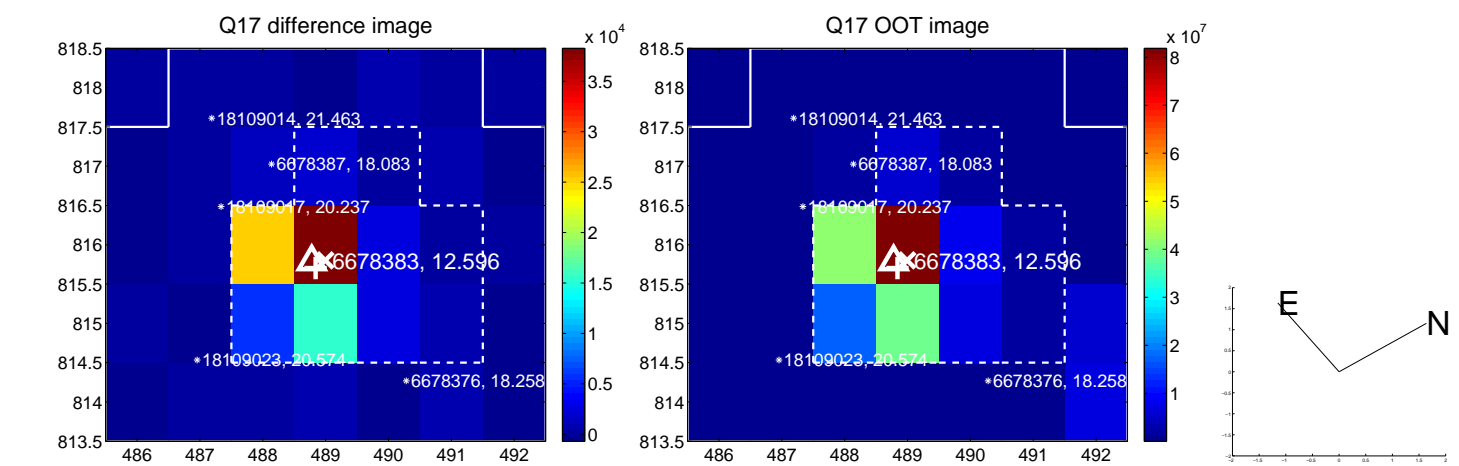
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

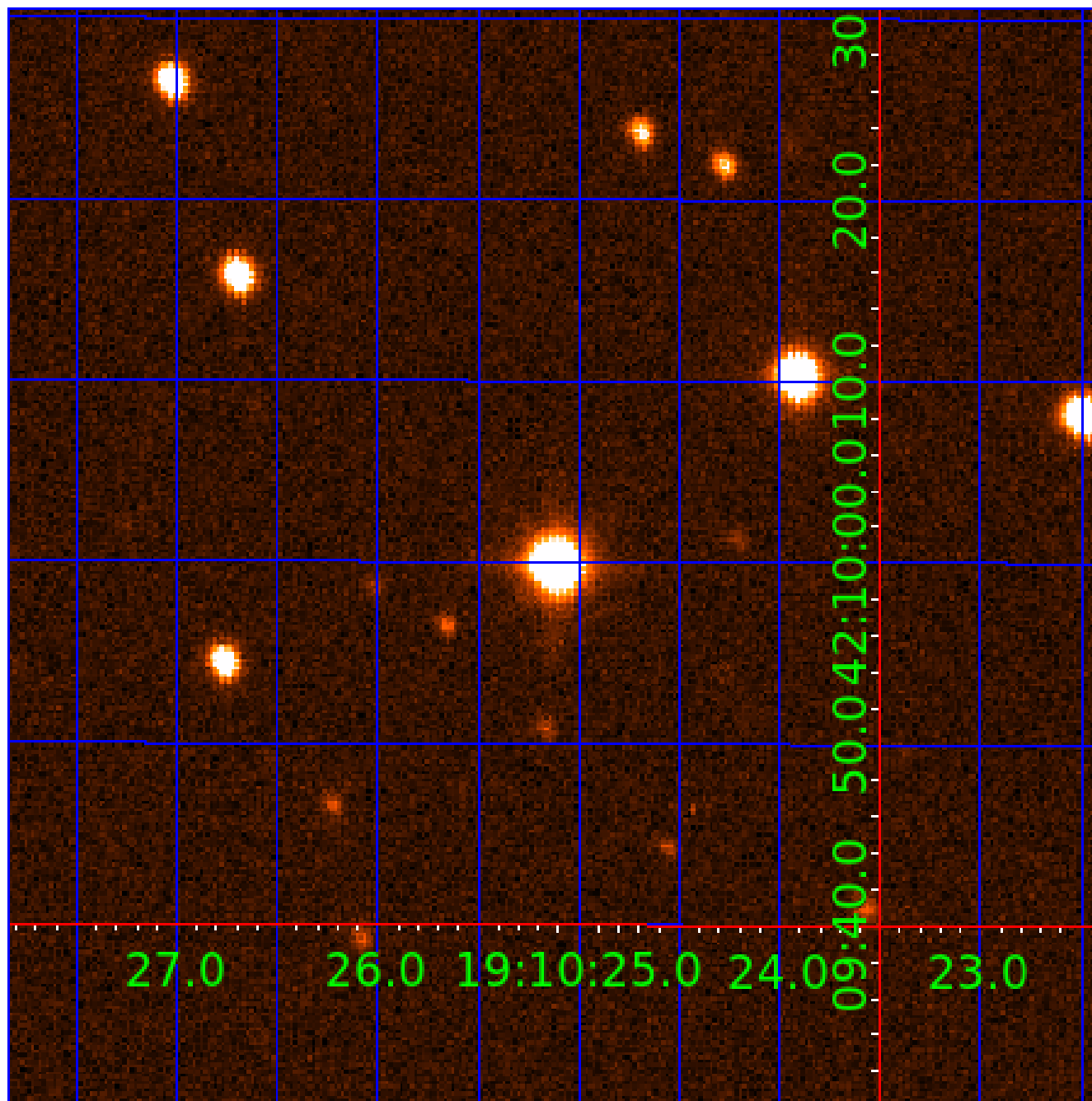


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006678383

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006678383-01	OBS	0111.01	11.427559	137.613282	492.6	4.697	148.1	144.7	1.00	5979	2.47	124.62
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006678383-03	OBS	0111.02	23.668368	132.713165	448.6	5.838	99.4	97.7	1.00	5979	2.33	47.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006678383-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
006678383-02	OBS	PC	0.98	0	0	0	0	CENT_KIC_POS
006678383-03	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

**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.

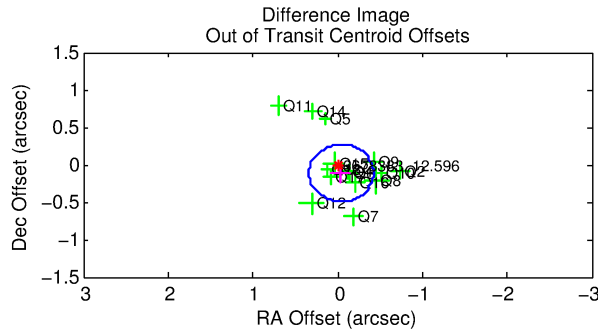
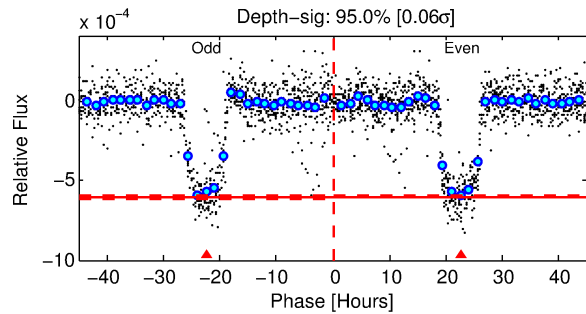
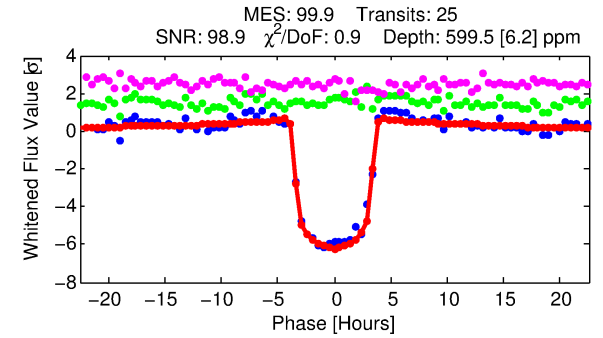
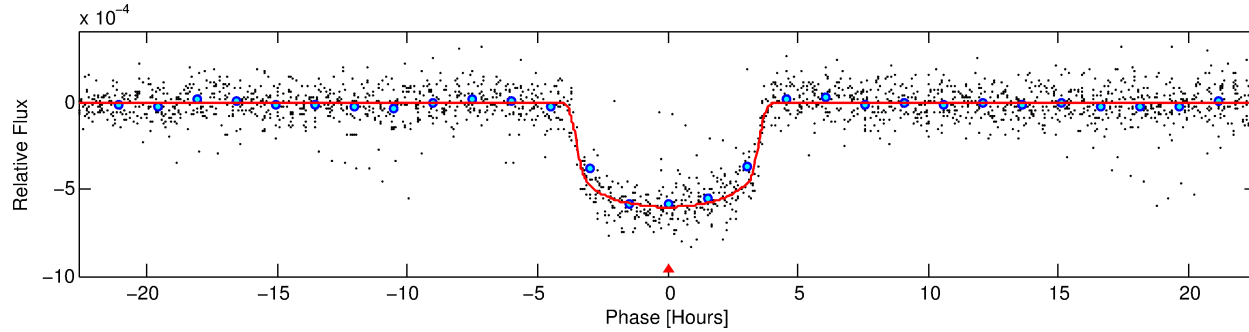
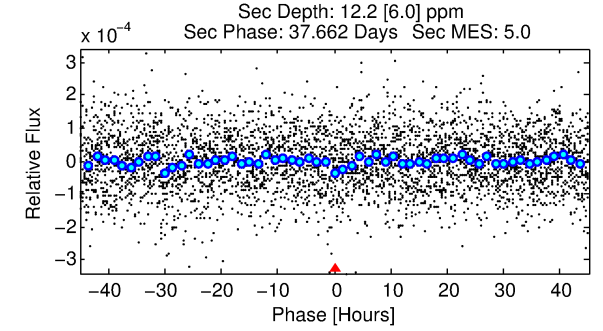
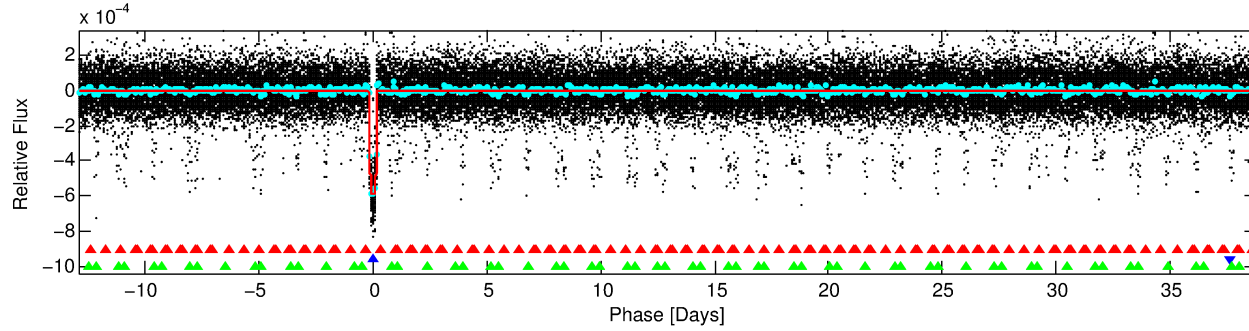
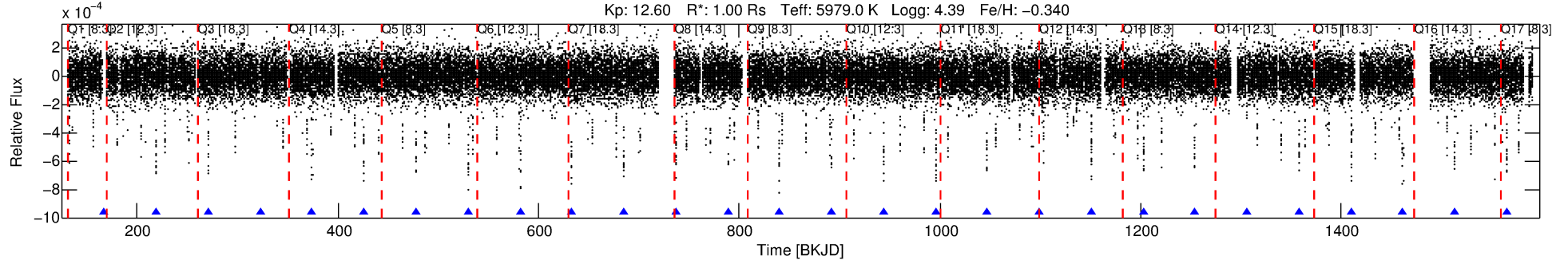
## Ephemeris Match Information For 006678383-02

No Significant Match Found

# DV One-Page Summary

KIC: 6678383 Candidate: 2 of 3 Period: 51.755 d  
KOI: K00111.03 Name: Kepler-104d Corr: 0.987

Kp: 12.60 R\*: 1.00 Rs Teff: 5979.0 K Logg: 4.39 Fe/H: -0.340



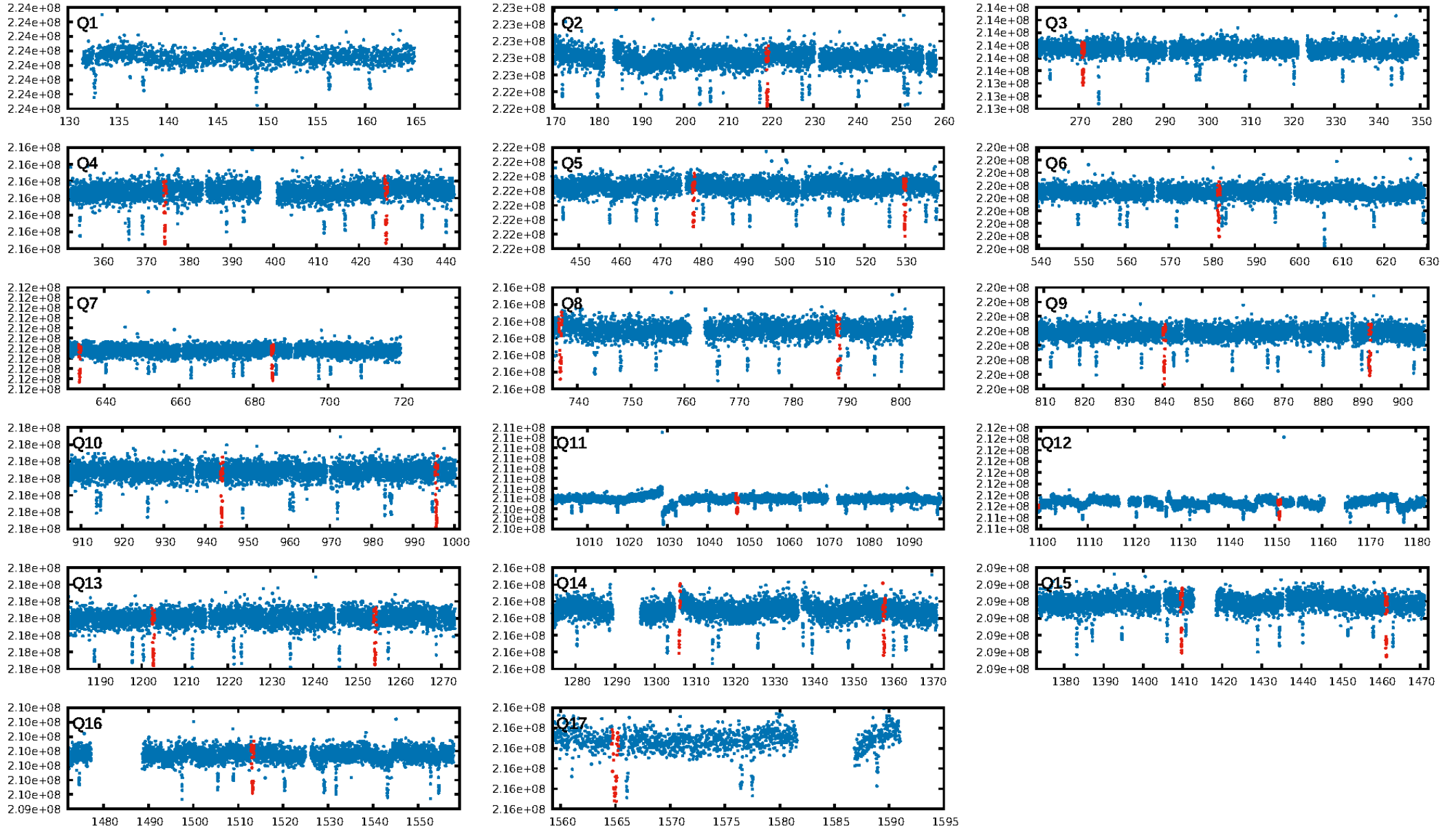
## DV Fit Results:

Period = 51.75530 [0.00009] d  
Epoch = 167.5775 [0.0014] BKJD  
Rp/R\* = 0.0246 [0.0008]  
a/R\* = 34.80 [5.68]  
b = 0.78 [0.08]  
Seff = 16.63 [3.46]  
Teff = 515 [27] K  
Rp = 2.70 [0.38] Re  
a = 0.2637 [0.0328] AU  
Ag = 64.25 [34.13] [1.85σ]  
Teffp = 2254 [283] K [6.12σ]

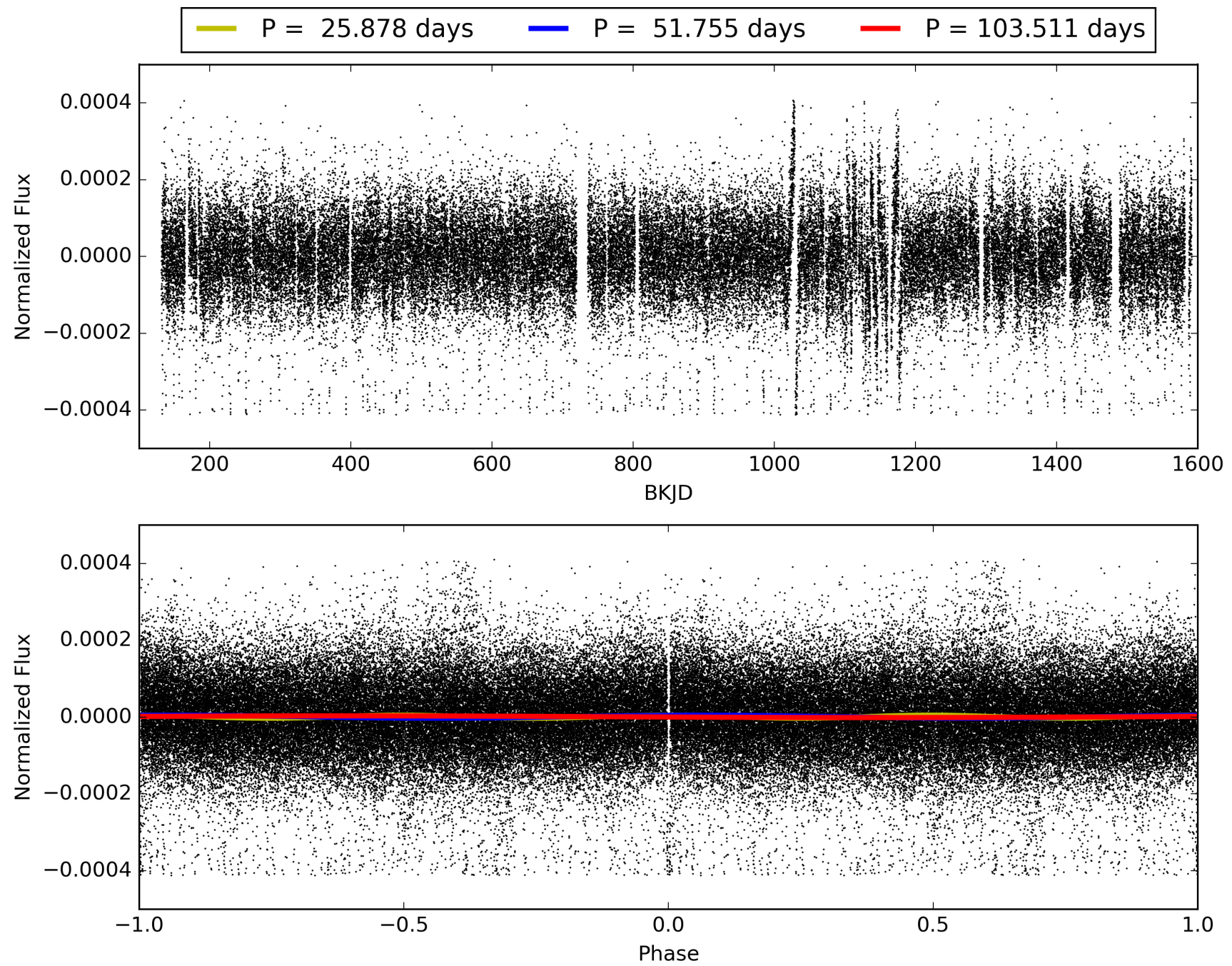
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [70.64σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 49.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [24/24]  
GhostDiagnostic-chr: 16.26  
Centroid-sig: 4.9%  
Centroid-so: 0.634 arcsec [5.37σ]  
OotOffset-rm: 0.121 arcsec [0.95σ]  
KicOffset-rm: 0.805 arcsec [6.25σ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 0.87 [13/15]

# TCE 006678383-02, PDC Light Curves

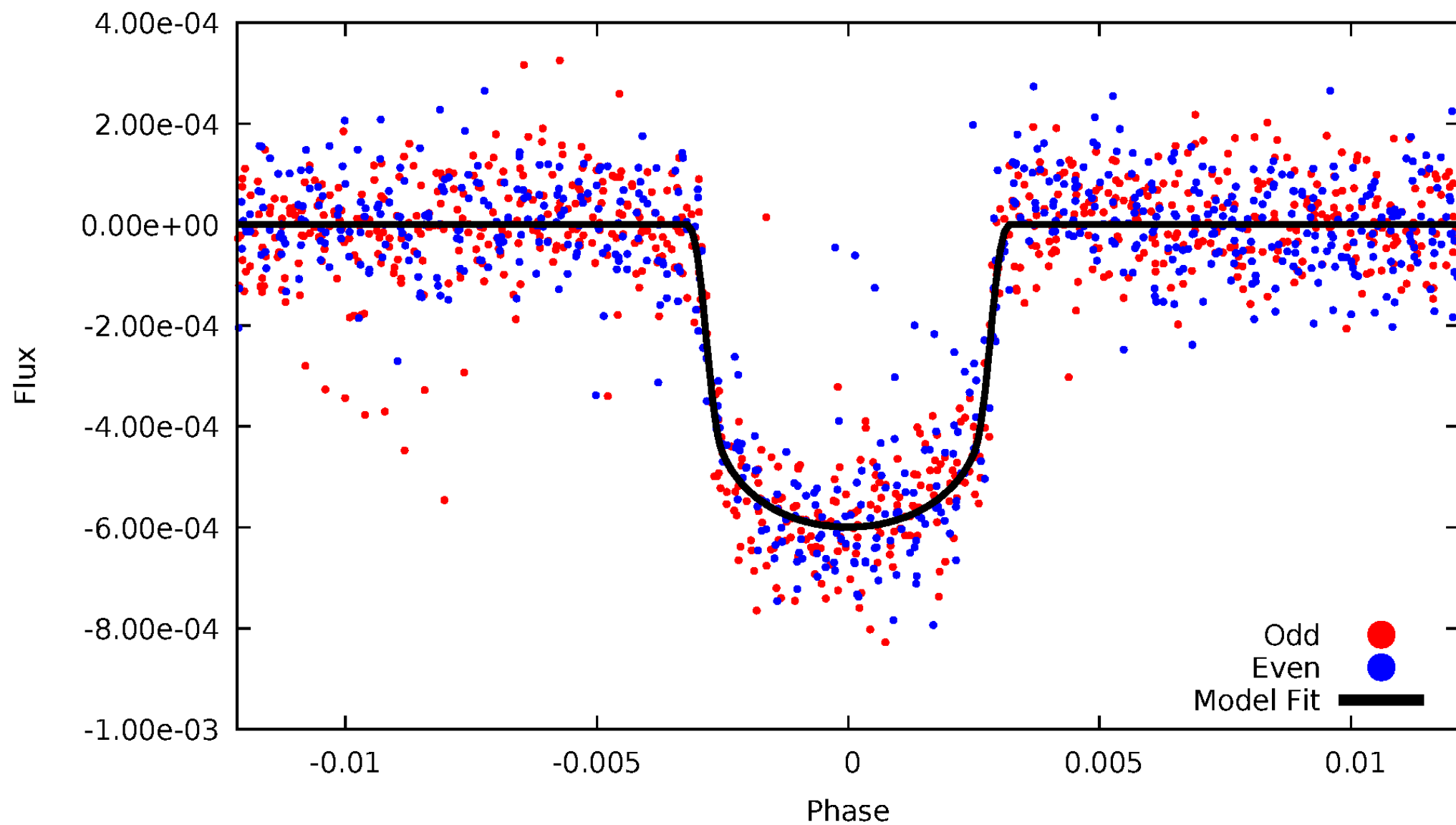


TCE 006678383-02



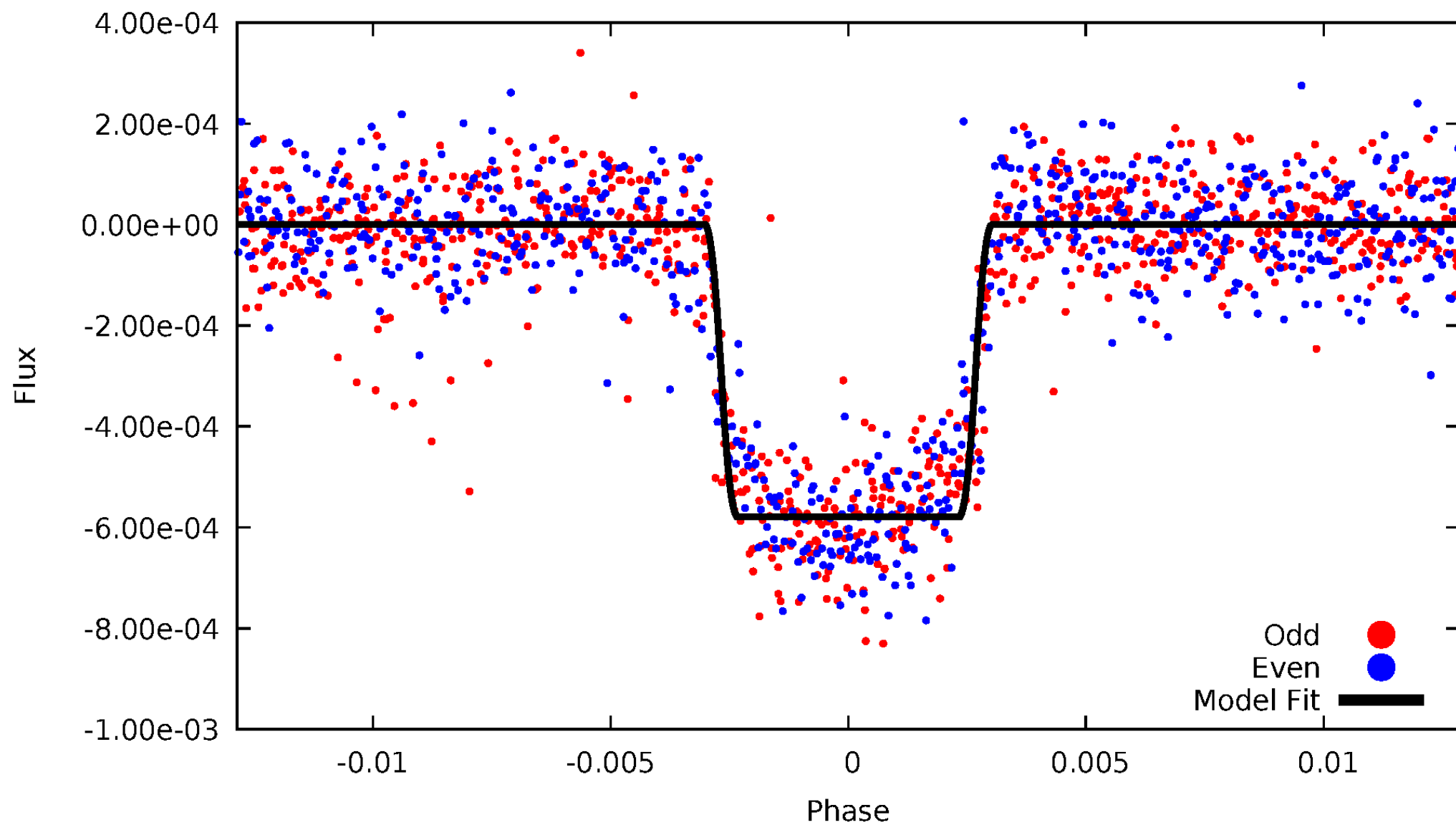
# DV Odd/Even

TCE 006678383-02



# ALT Odd/Even

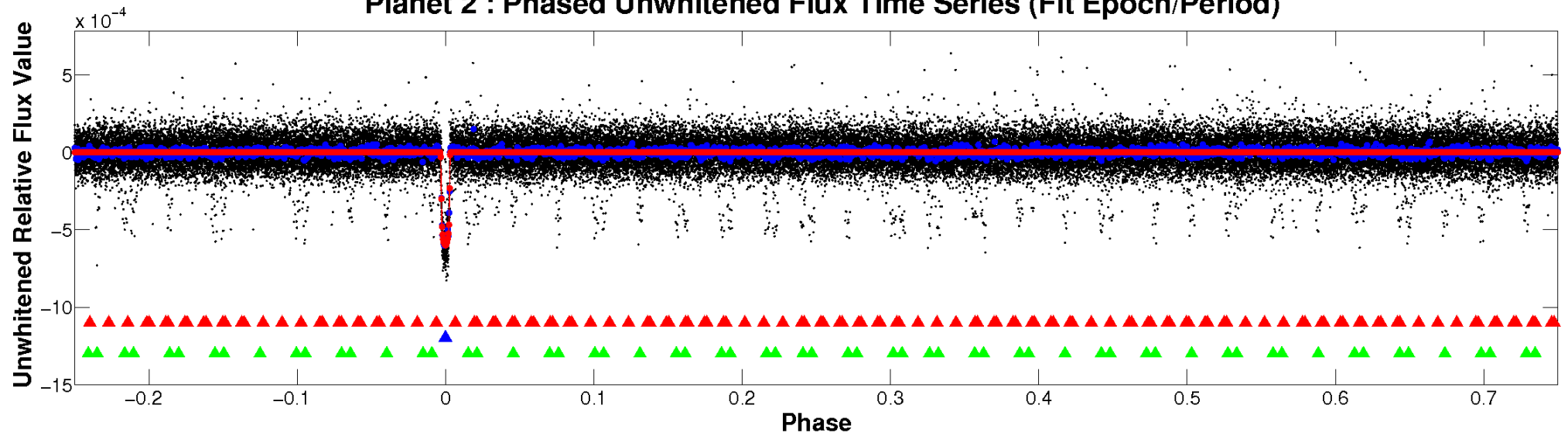
TCE 006678383-02



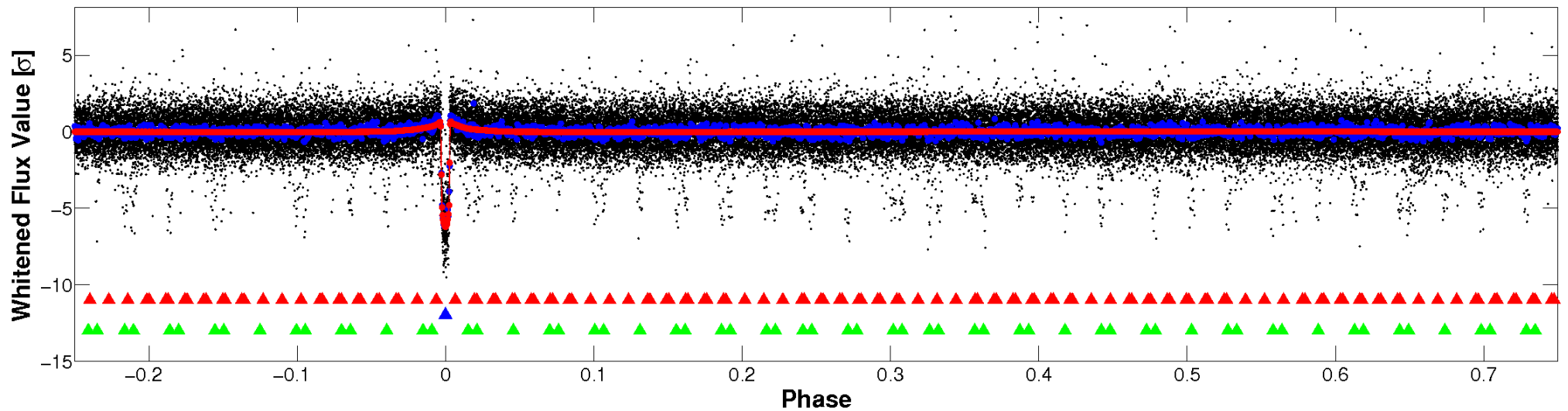


# Non-Whitened Vs. Whitened Light Curve

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

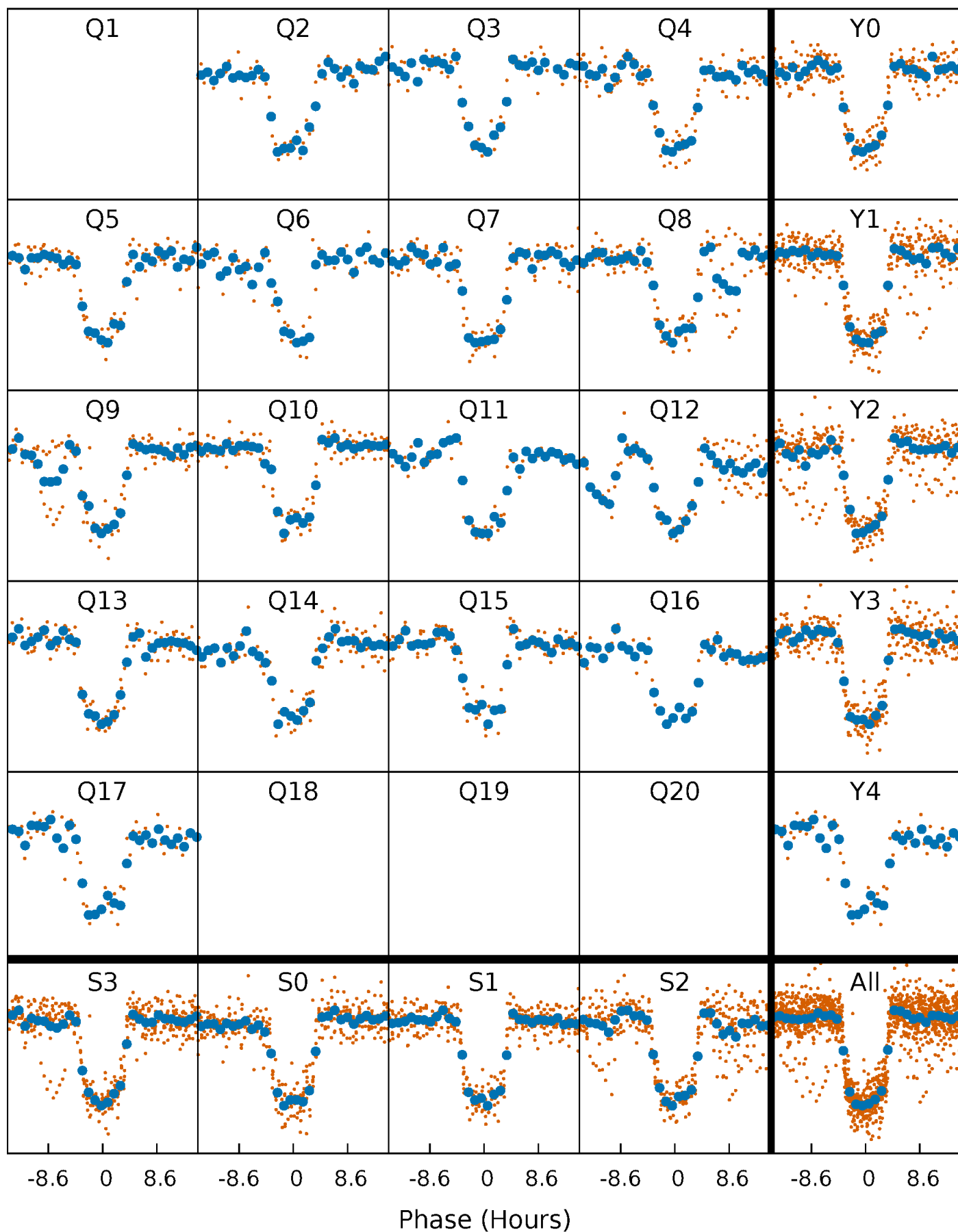


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



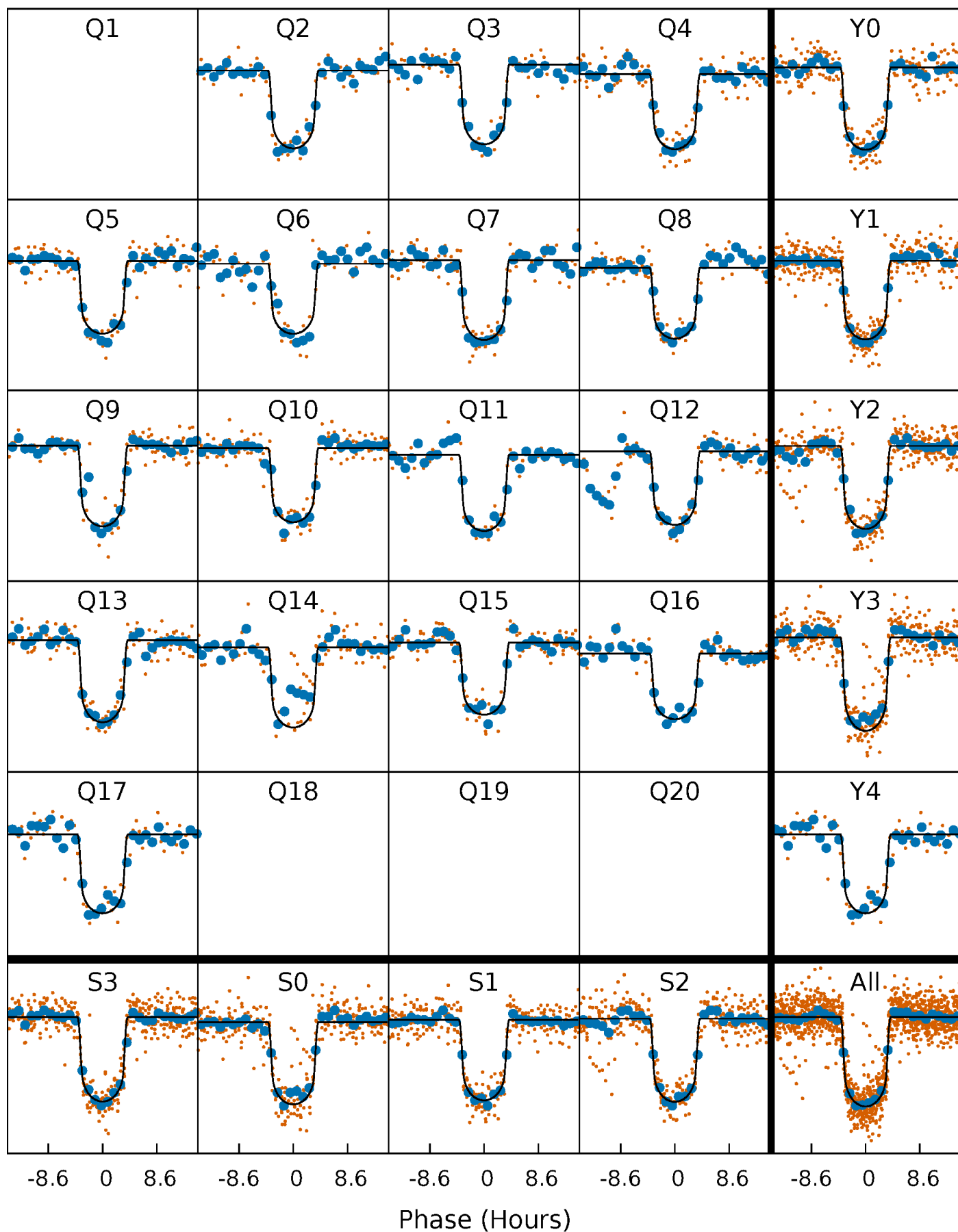
# PDC Quarter-Phased Transit Curves

TCE 006678383-02 P= 51.755302 Days  $T_0=167.577510$  (BKJD)



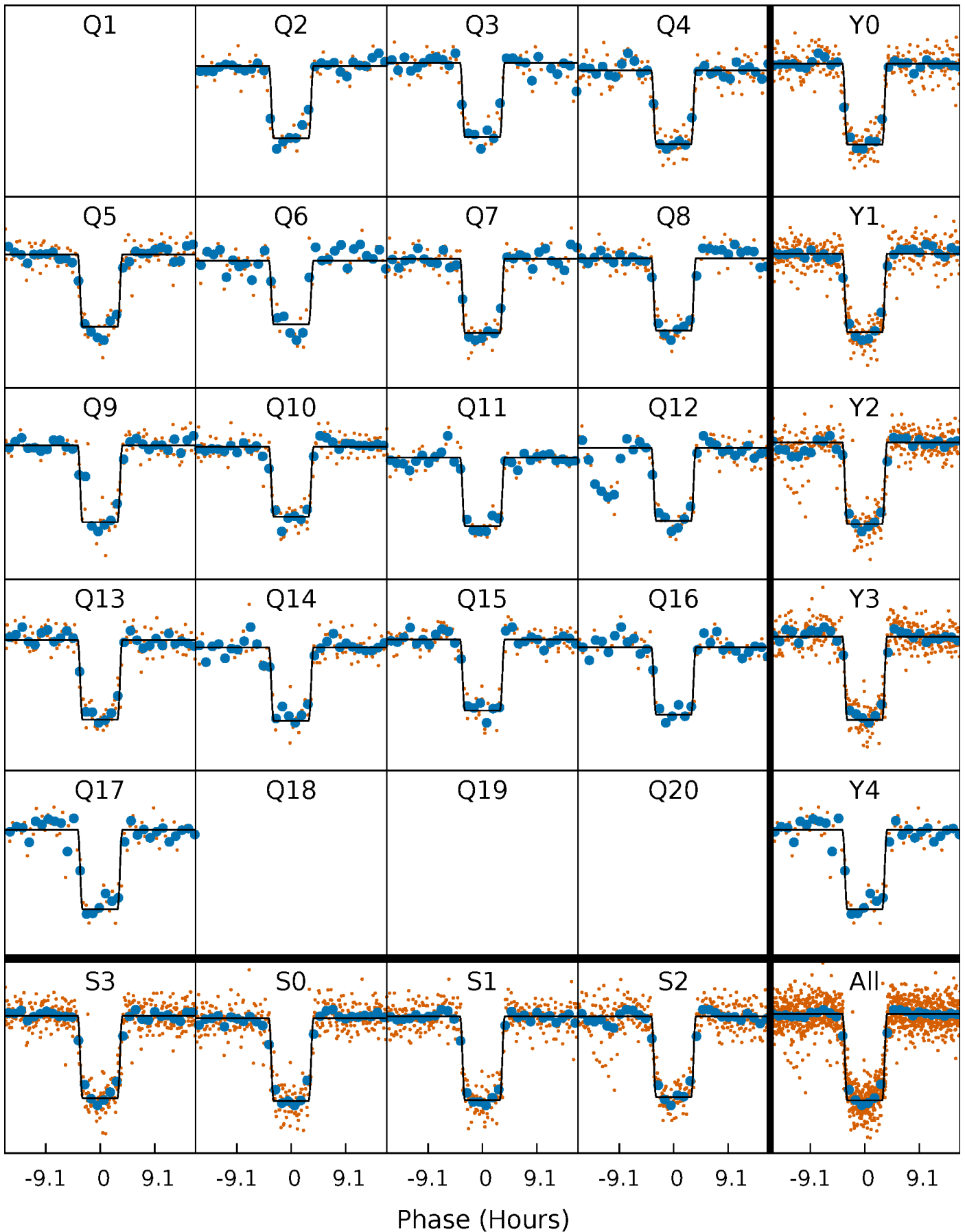
# DV Quarter-Phased Transit Curves

TCE 006678383-02 P= 51.755302 Days  $T_0=167.577510$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

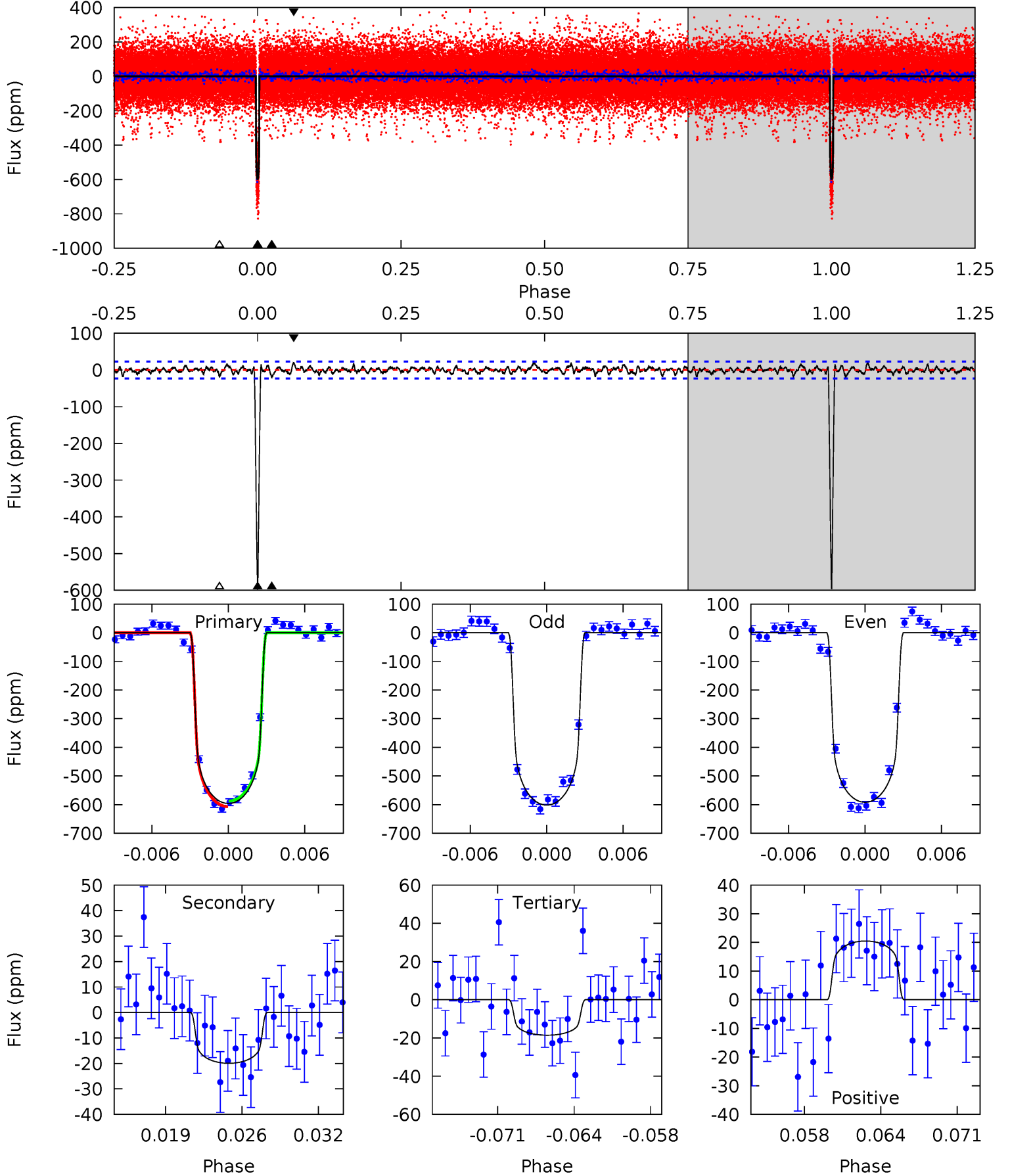
TCE 006678383-02 P= 51.754753 Days  $T_0=167.584721$  (BKJD)



# DV Model-Shift Uniqueness Test

006678383-02, P = 51.755302 Days, E = 115.822208 Days

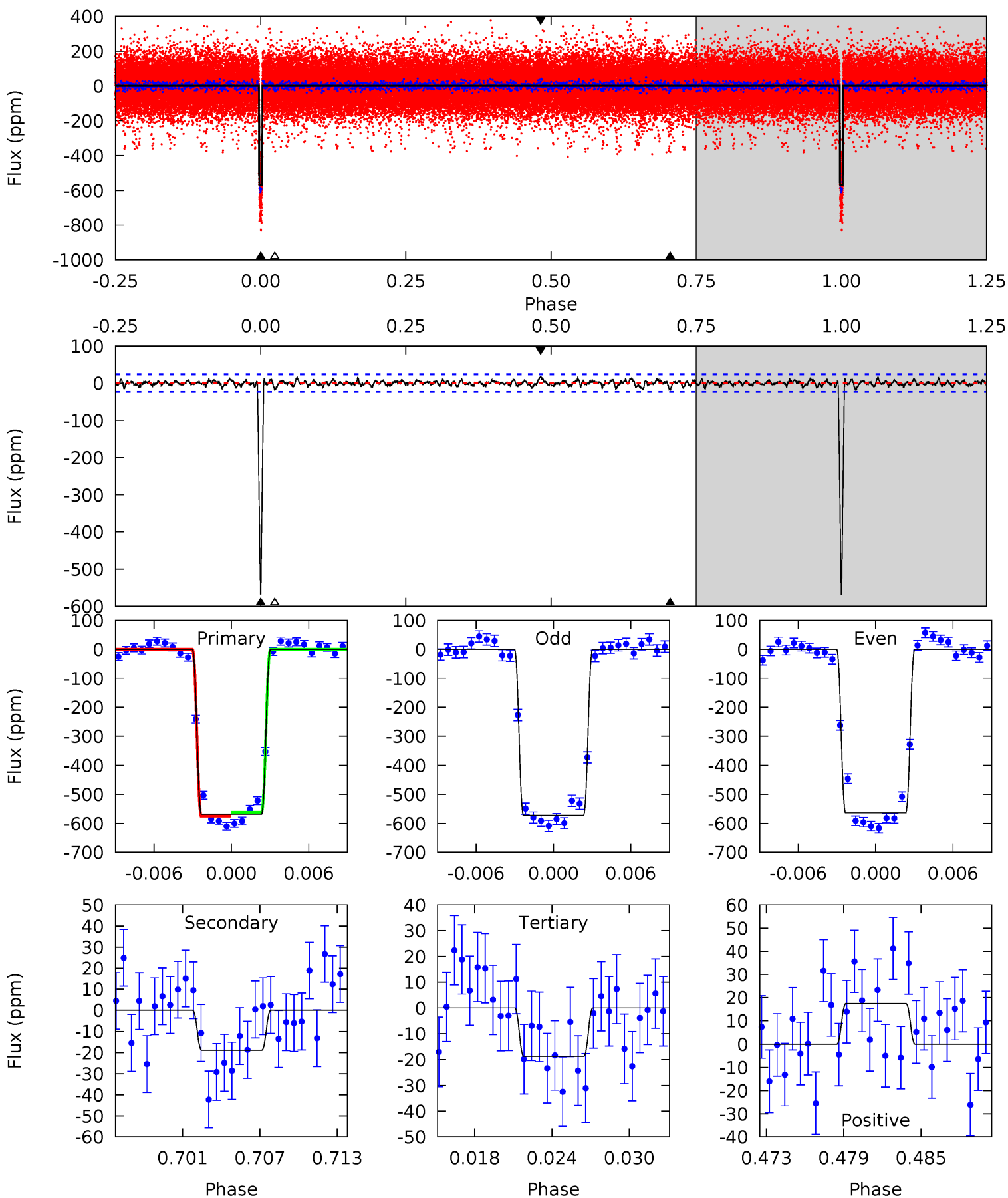
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
131.1	4.39	4.08	4.51	5.11	2.73	1.30	127.0	126.6	0.30	-0.12	1.09	0.98	0.03	2.16



# Alt Model-Shift Uniqueness Test

006678383-02, P = 51.754753 Days, E = 115.829968 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
122.8	4.09	4.04	3.77	5.12	2.75	1.16	118.8	119.1	0.04	0.32	0.92	1.00	0.03	1.54



### Stellar Parameters For KIC 006678383

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5979^{+108}_{-120}$	$4.394^{+0.110}_{-0.110}$	$-0.340^{+0.150}_{-0.150}$	$1.005^{+0.138}_{-0.113}$	$0.913^{+0.058}_{-0.058}$	$1.267^{+0.562}_{-0.389}$
	+2%/-2%	+3%/-3%	+44%/-44%	+14%/-11%	+6%/-6%	+44%/-31%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 006678383-02 / KOI 0111.03

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-20 \pm 5$	$2.70^{+0.23}_{-0.22}$	$718^{+31}_{-28}$	$3159^{+109}_{-125}$	$105^{+32}_{-26}$
Alt.	$-19 \pm 5$	$2.64^{+0.22}_{-0.22}$	$719^{+29}_{-28}$	$3155^{+121}_{-131}$	$104^{+33}_{-31}$

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



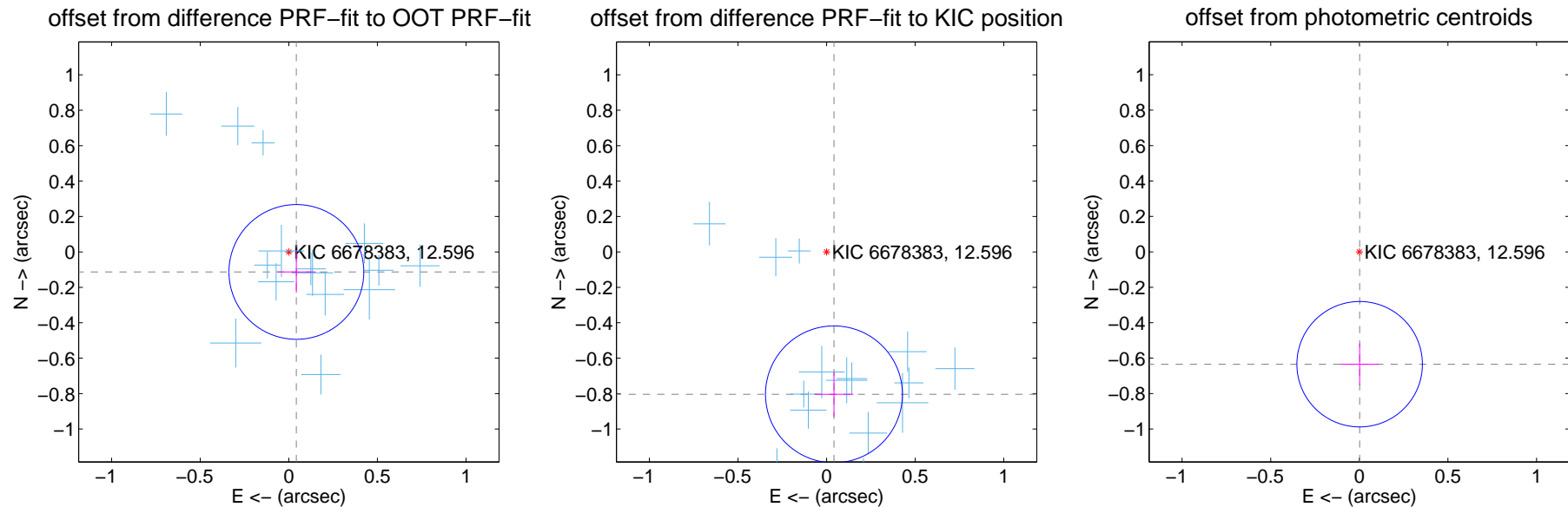
## DV Centroid Data

Supplemental centroid analysis for 006678383-02. Kepler magnitude: 12.60. Transit SNR 98.89

There are 15 quarters with good PRF difference image offsets

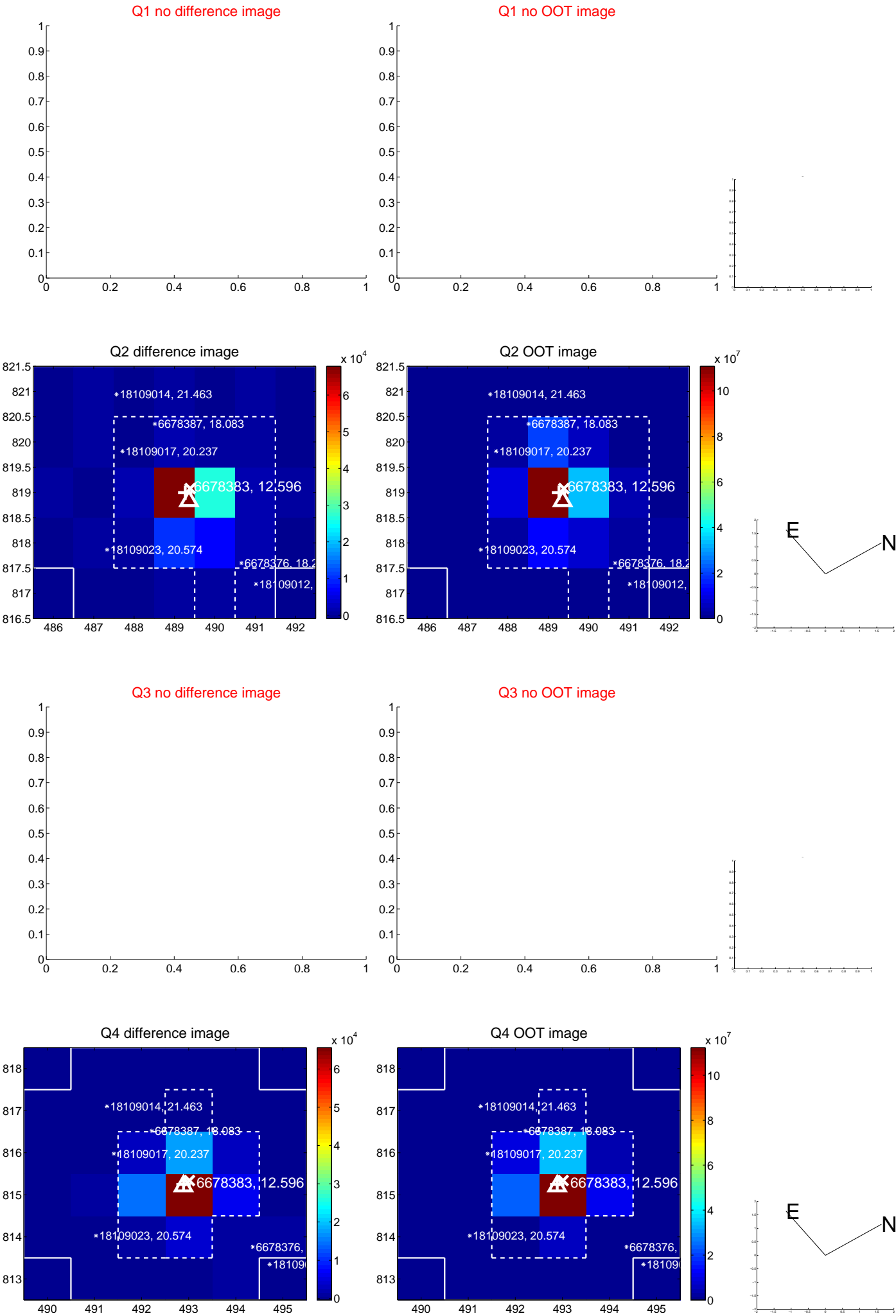
The direct PRF centroid is offset from the target star catalog position by about 0.73 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.121 \pm 0.127$	0.95	$-0.043 \pm 0.110$	$-0.113 \pm 0.118$
PRF-fit source offset from KIC position	$0.805 \pm 0.129$	6.25	$-0.042 \pm 0.110$	$-0.804 \pm 0.127$
photometric centroid source offset	$0.63 \pm 0.12$	5.37	$-0.00 \pm 0.11$	$-0.63 \pm 0.12$

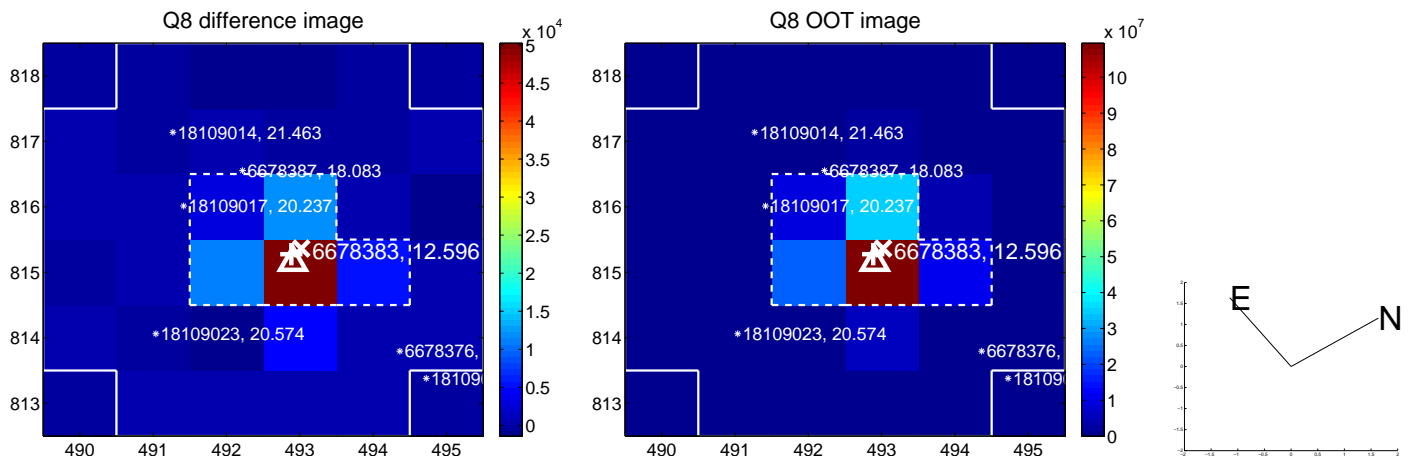
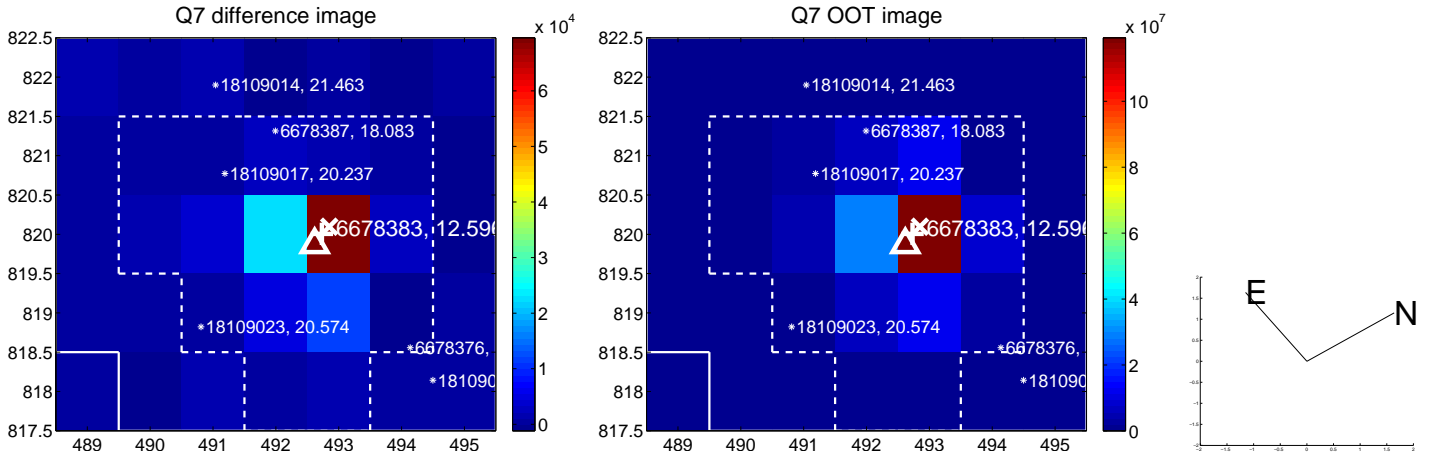
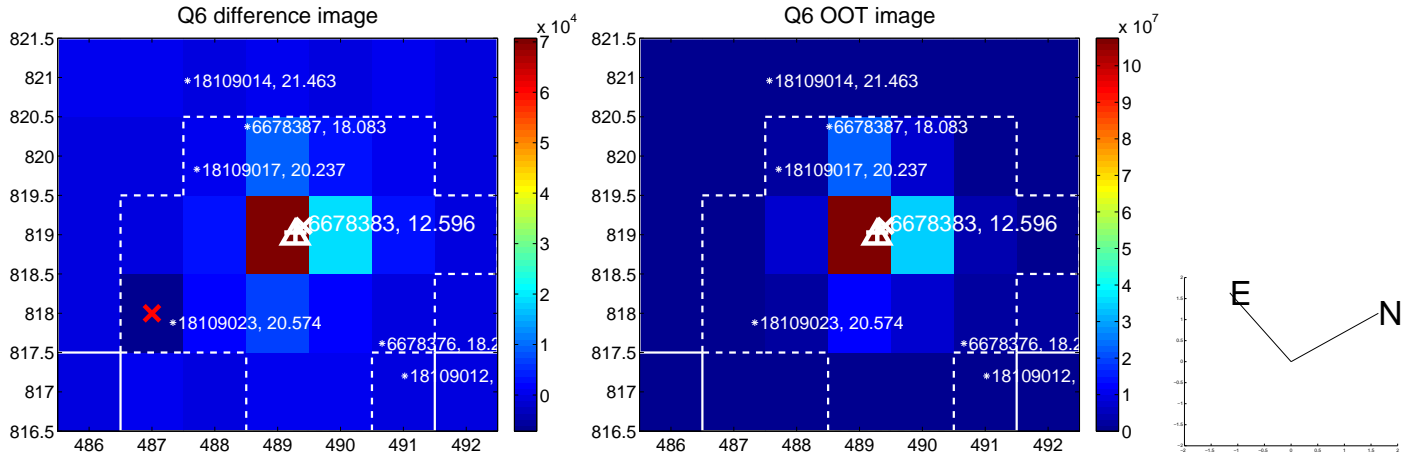
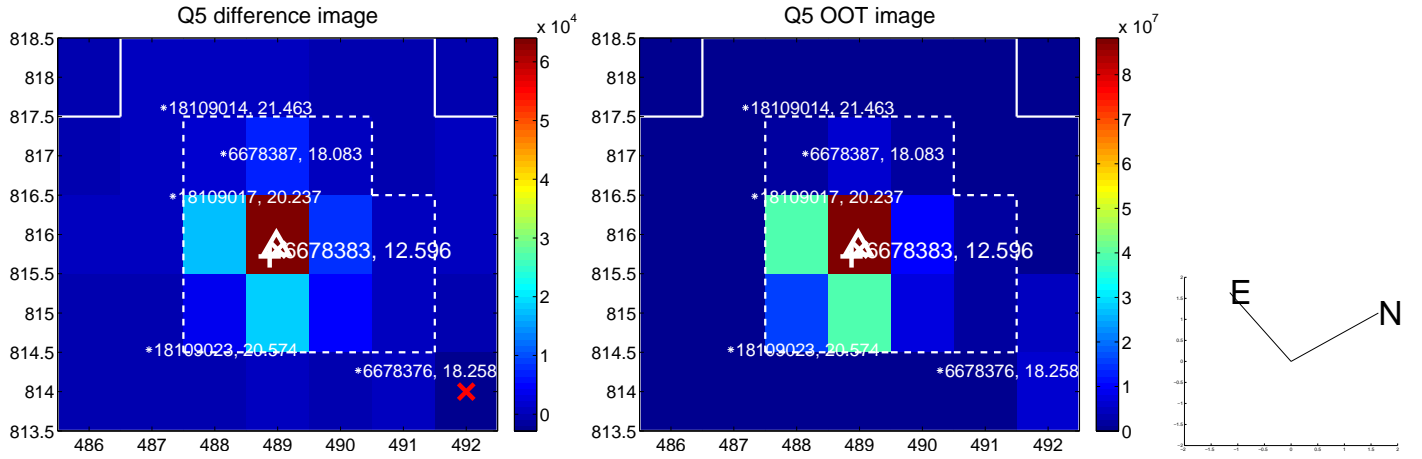


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

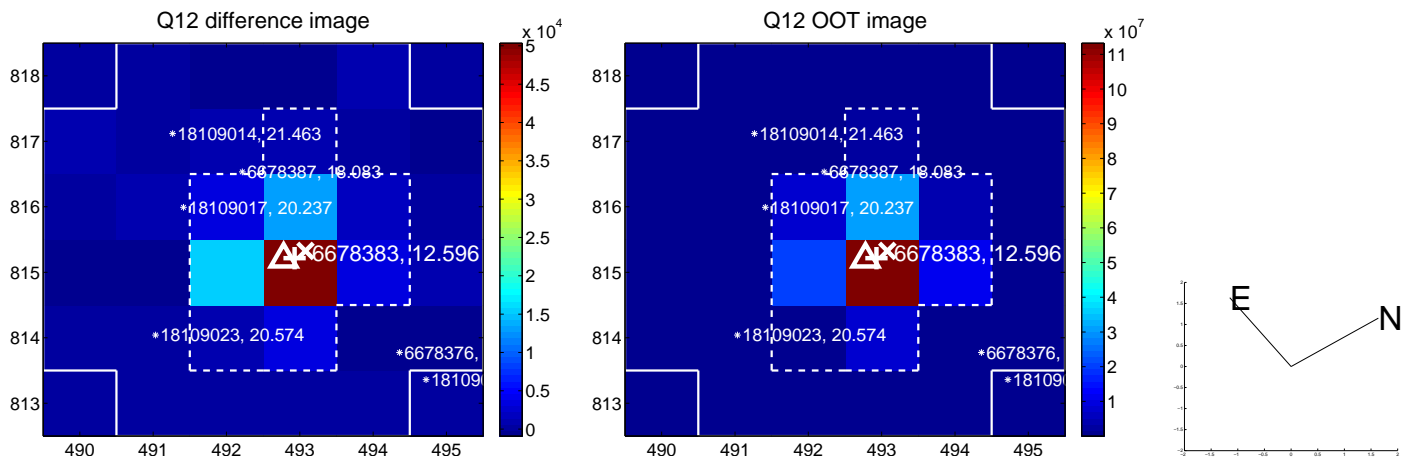
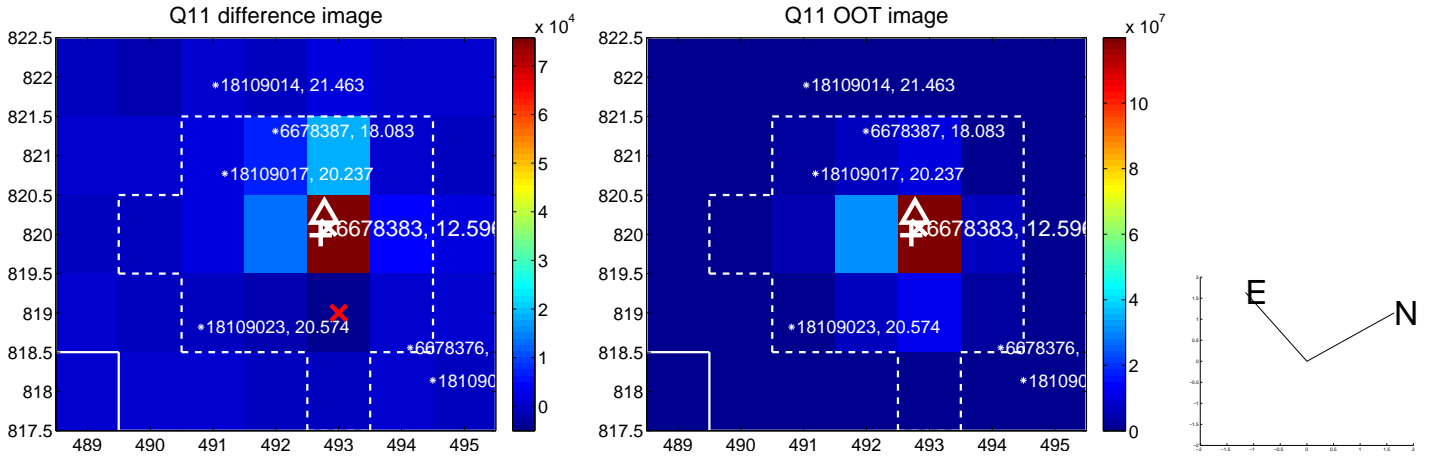
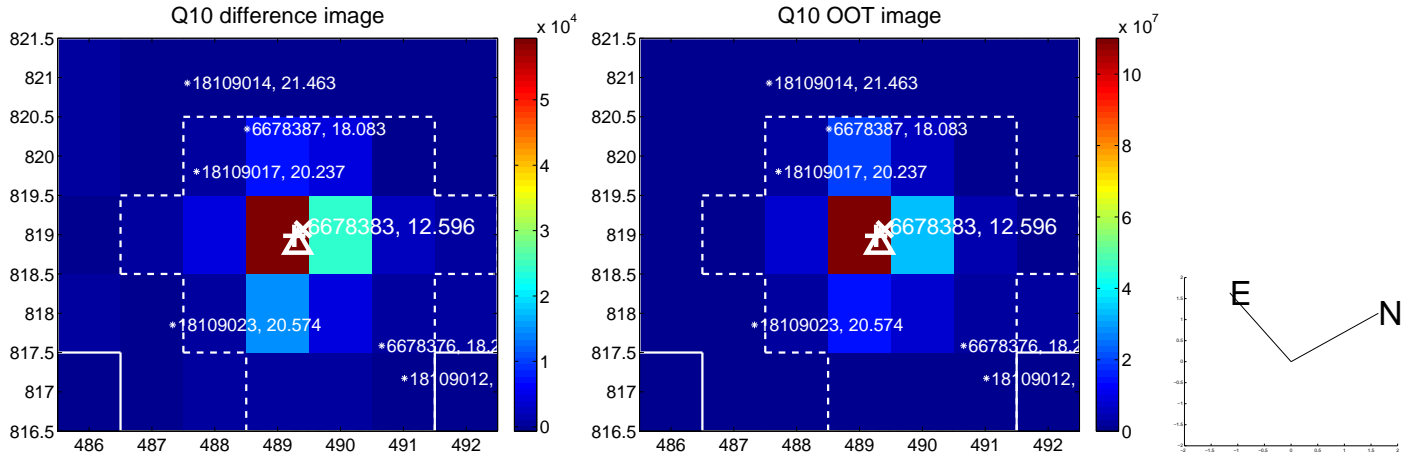
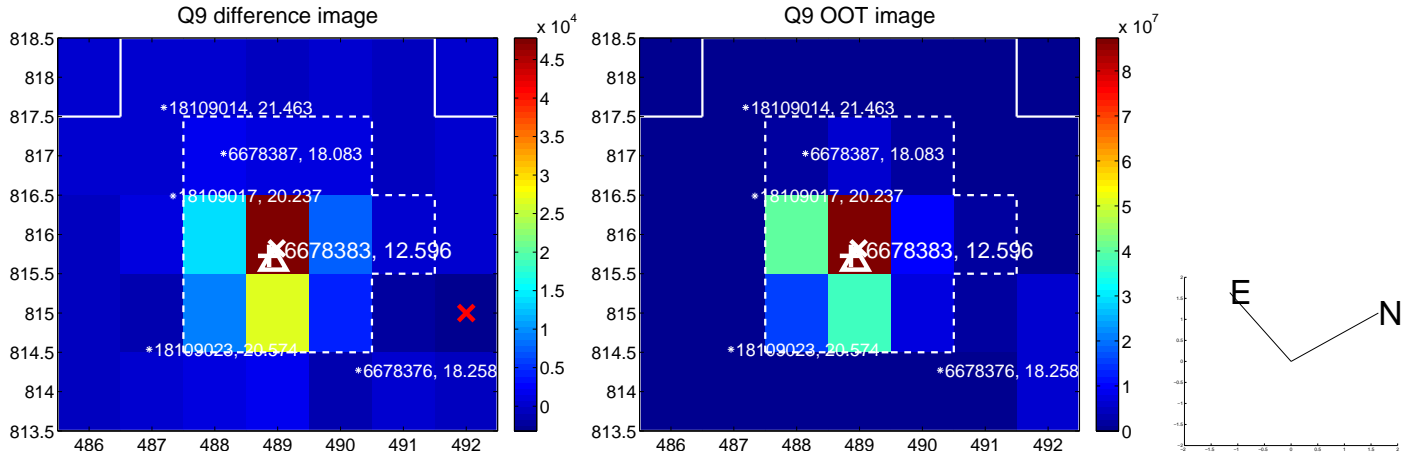
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



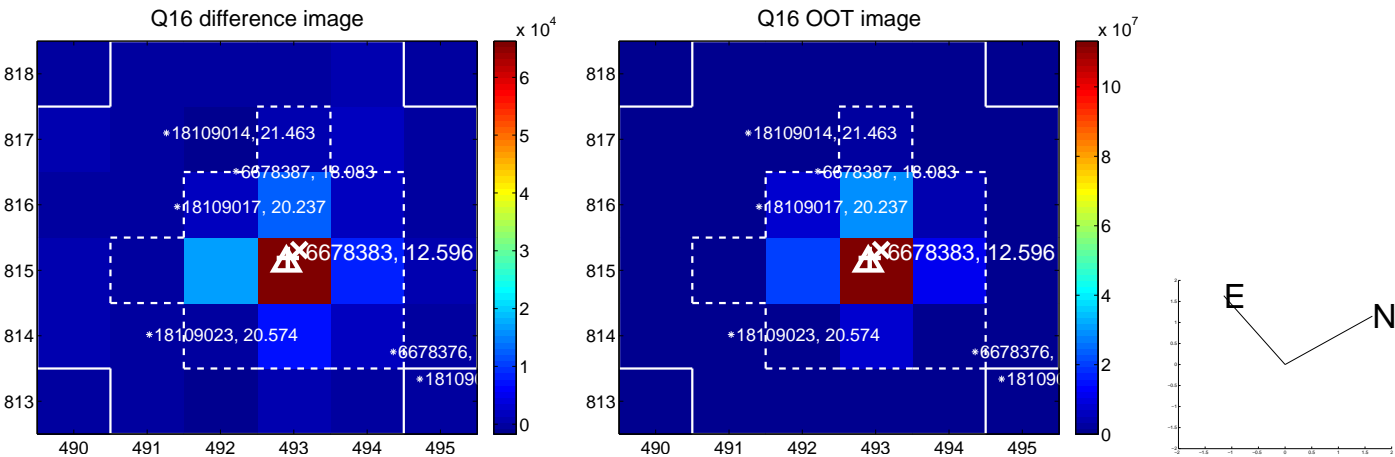
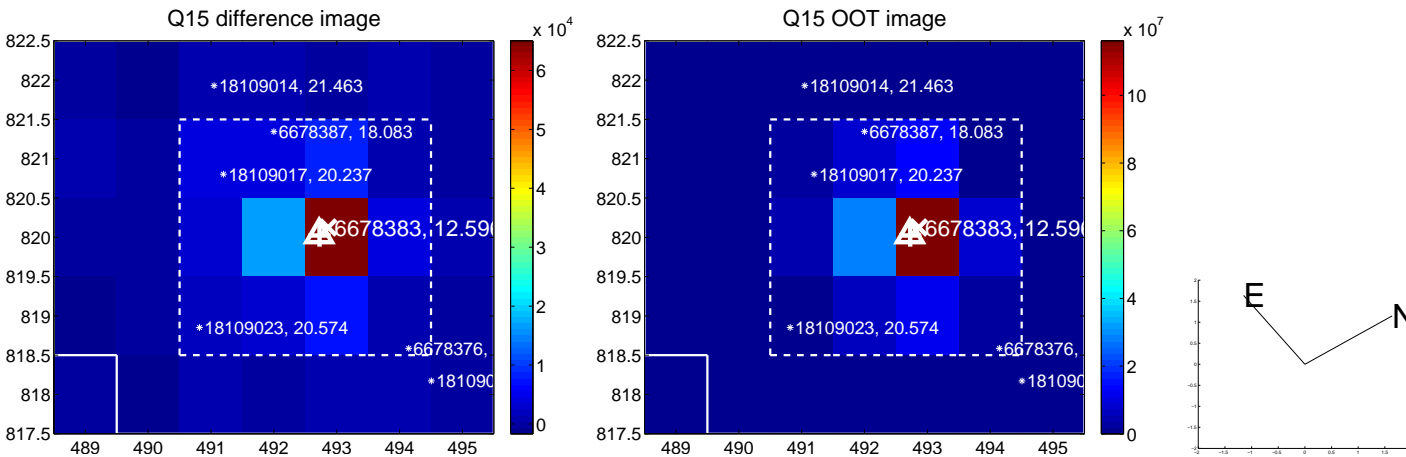
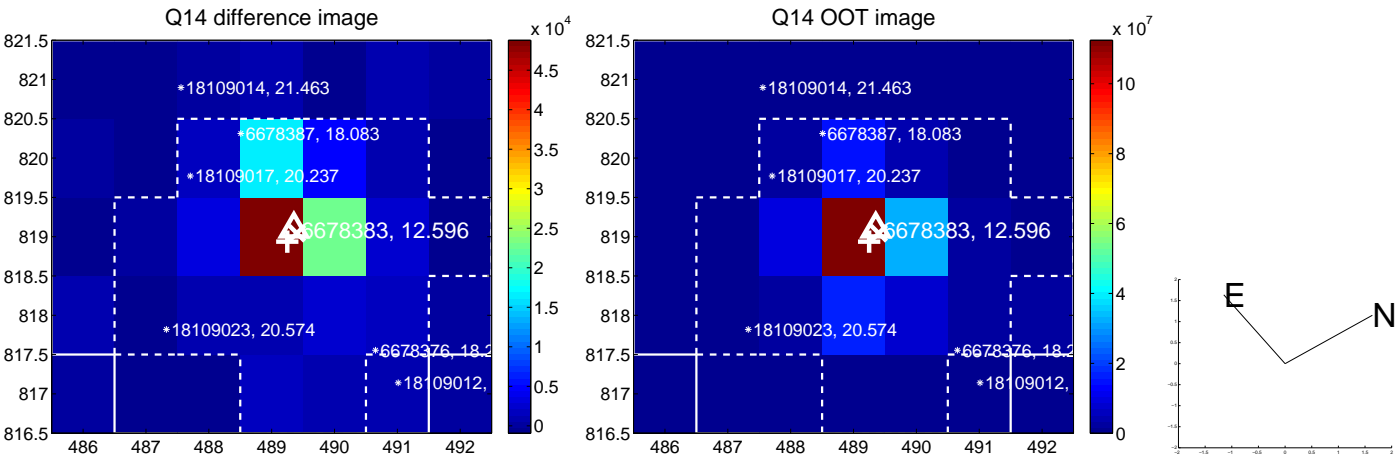
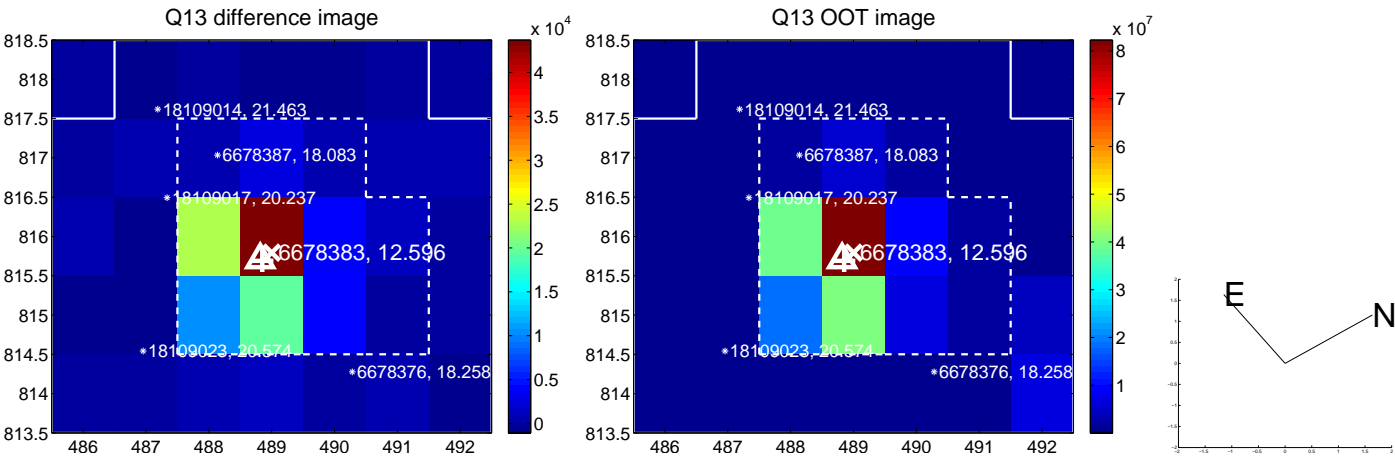
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



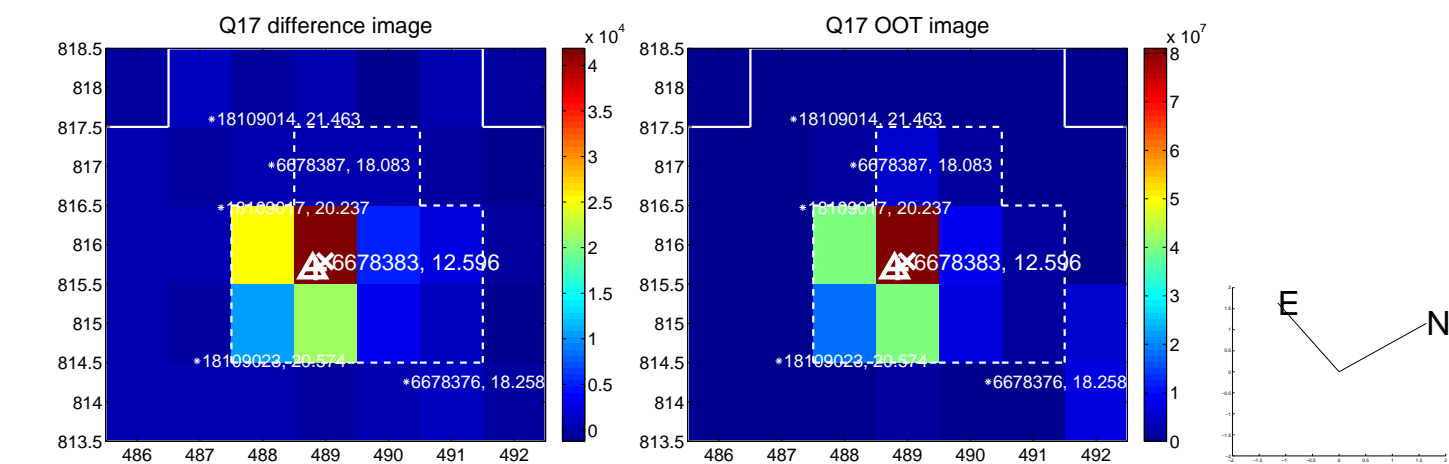
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



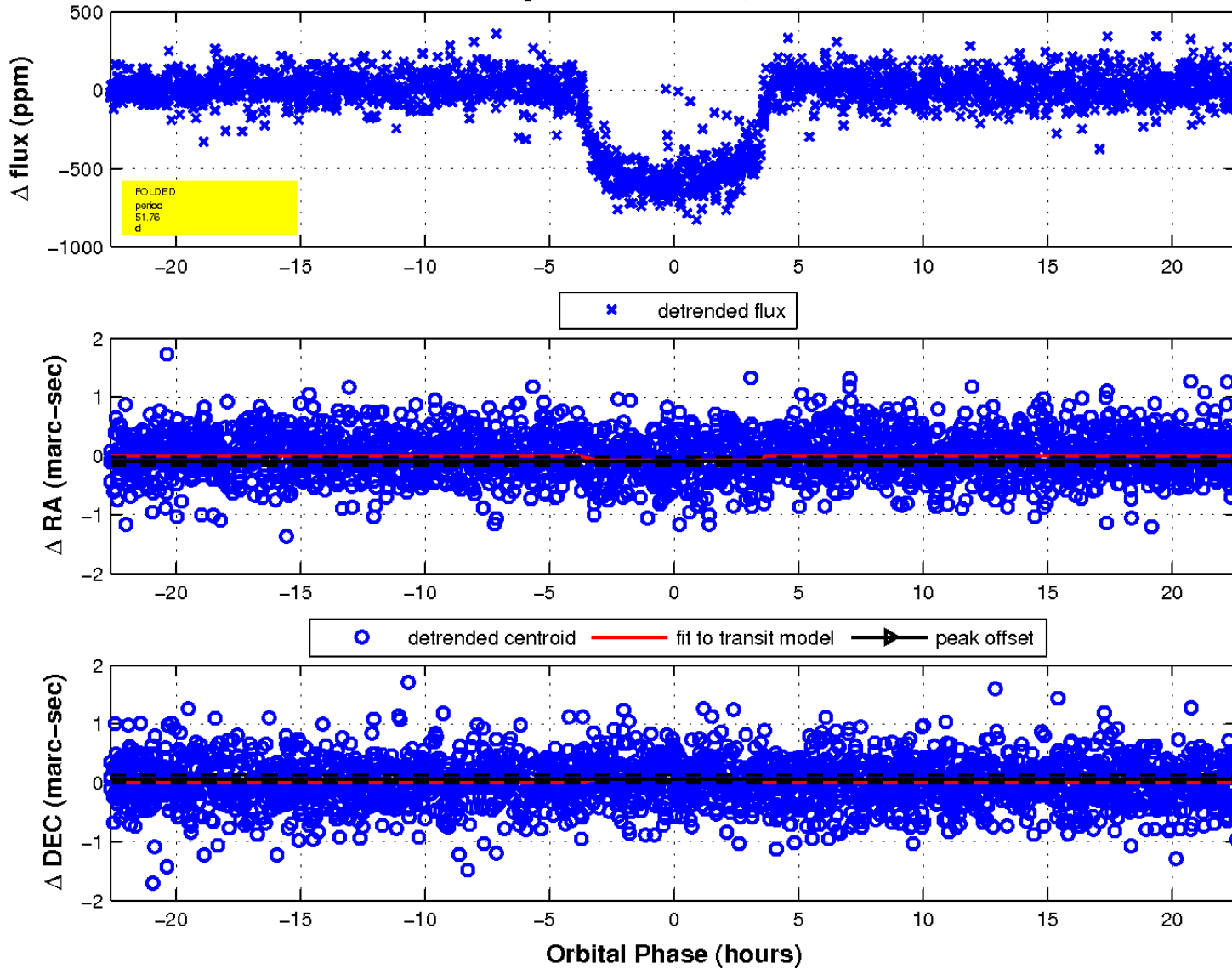
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

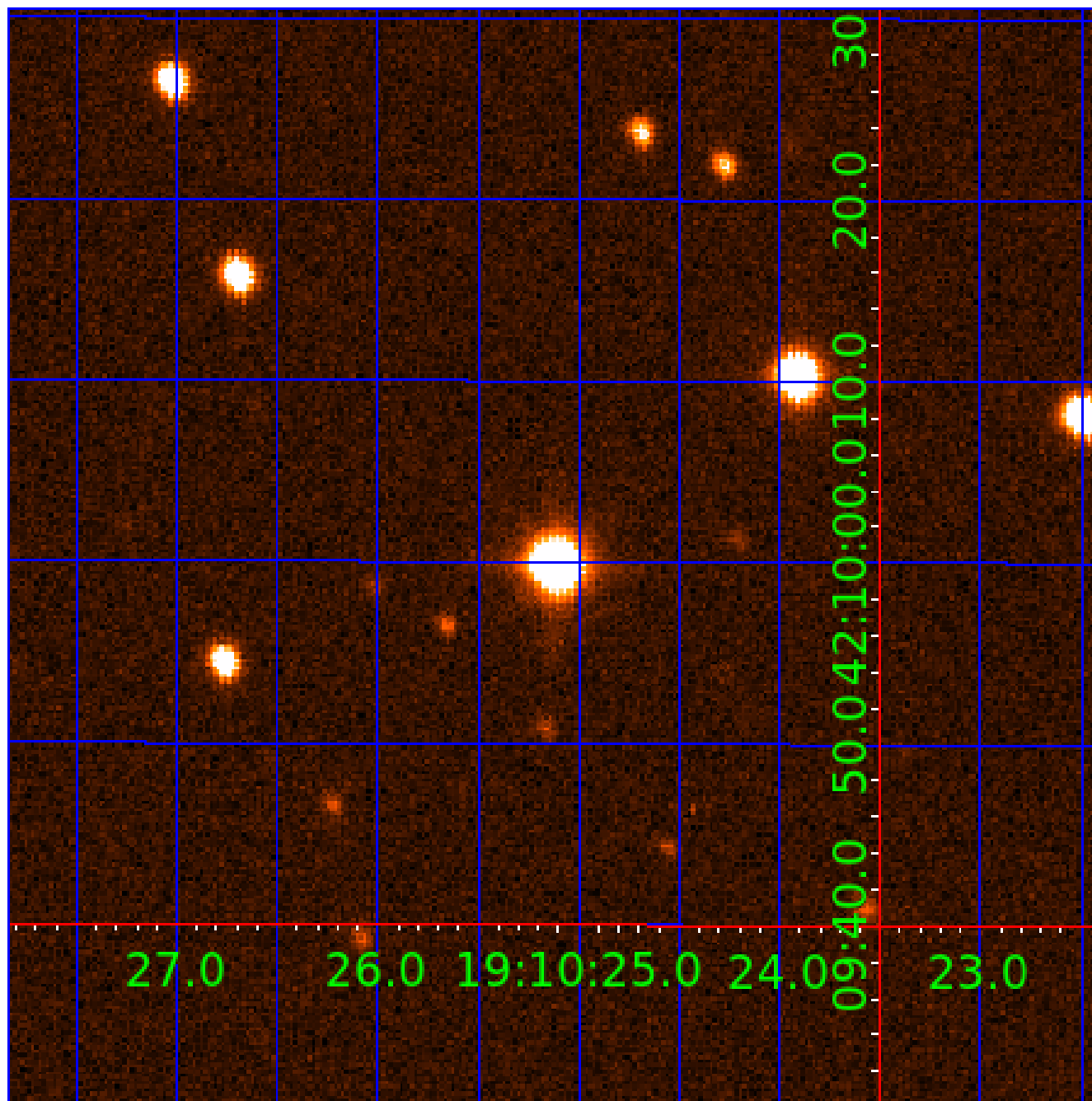


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination





# KIC 006678383

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006678383-01	OBS	0111.01	11.427559	137.613282	492.6	4.697	148.1	144.7	1.00	5979	2.47	124.62
006678383-02	OBS	0111.03	51.755302	167.577510	599.5	7.548	99.9	98.9	1.00	5979	2.70	16.63
006678383-03	OBS	0111.02	23.668368	132.713165	448.6	5.838	99.4	97.7	1.00	5979	2.33	47.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006678383-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
006678383-02	OBS	PC	0.98	0	0	0	0	CENT_KIC_POS
006678383-03	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

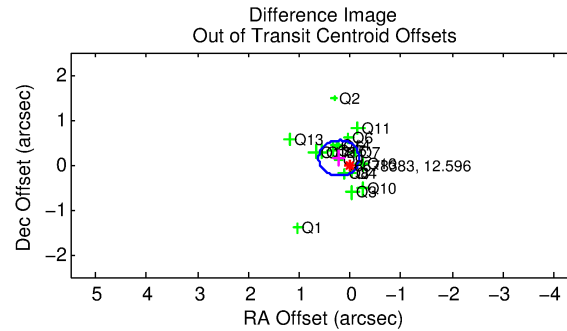
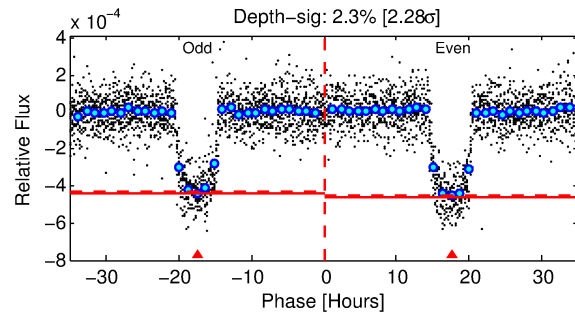
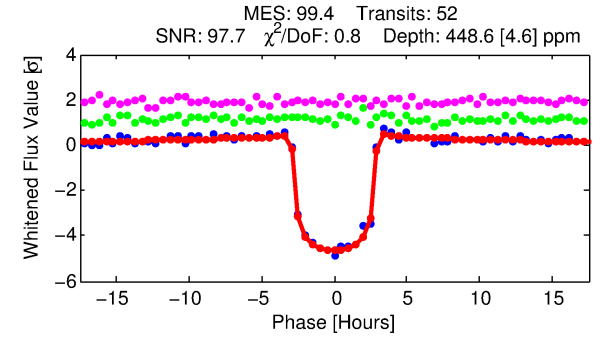
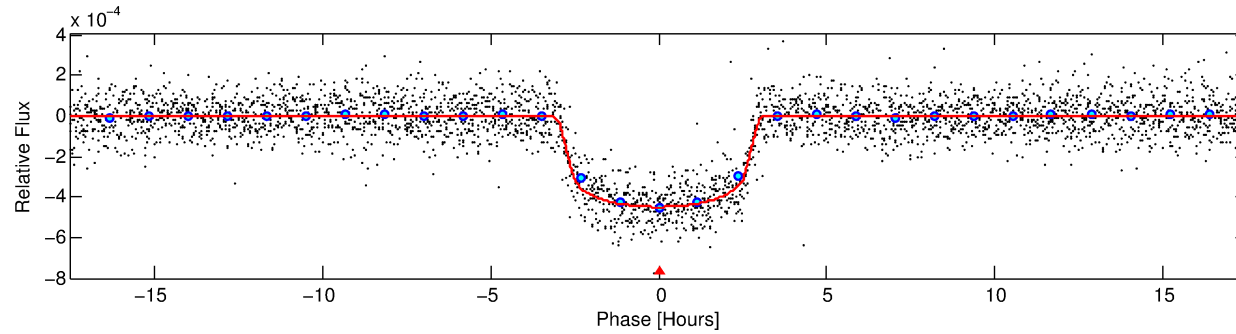
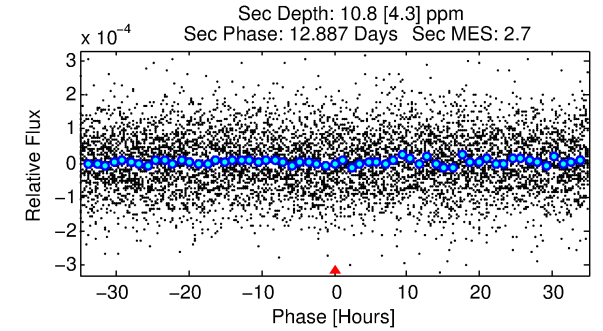
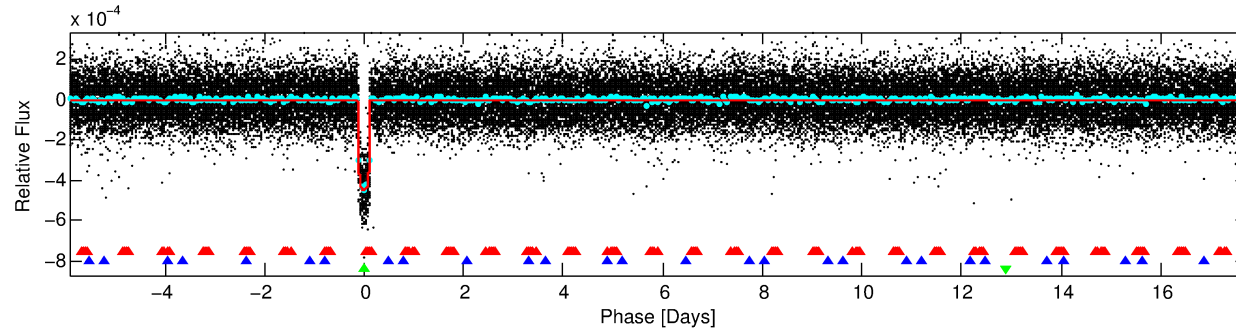
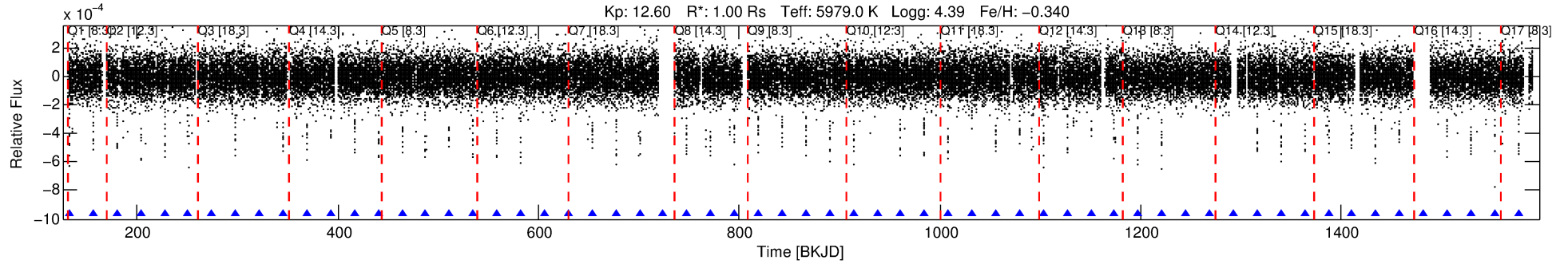
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006678383-03

No Significant Match Found

# DV One-Page Summary

KIC: 6678383 Candidate: 3 of 3 Period: 23.668 d  
KOI: K00111.02 Name: Kepler-104c Corr: 0.995



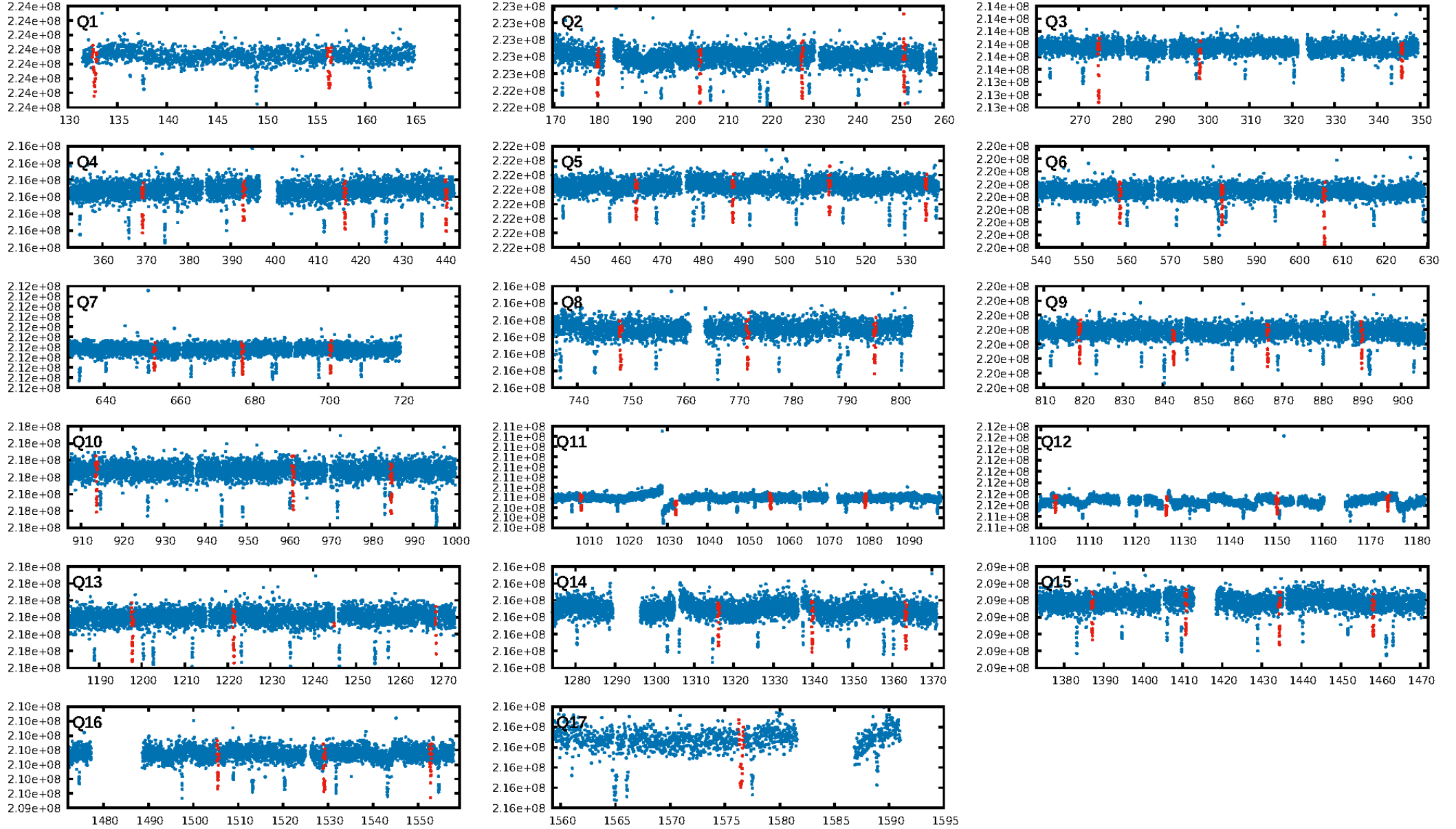
## DV Fit Results:

Period = 23.66837 [0.00003] d  
Epoch = 132.7132 [0.0011] BKJD  
Rp/R\* = 0.0213 [0.0011]  
a/R\* = 20.49 [5.01]  
b = 0.78 [0.13]  
Seff = 47.20 [9.83]  
Teff = 668 [35] K  
Rp = 2.33 [0.34] Re  
a = 0.1565 [0.0195] AU  
Ag = 26.60 [12.19] [2.10σ]  
Teffp = 2347 [249] K [6.69σ]

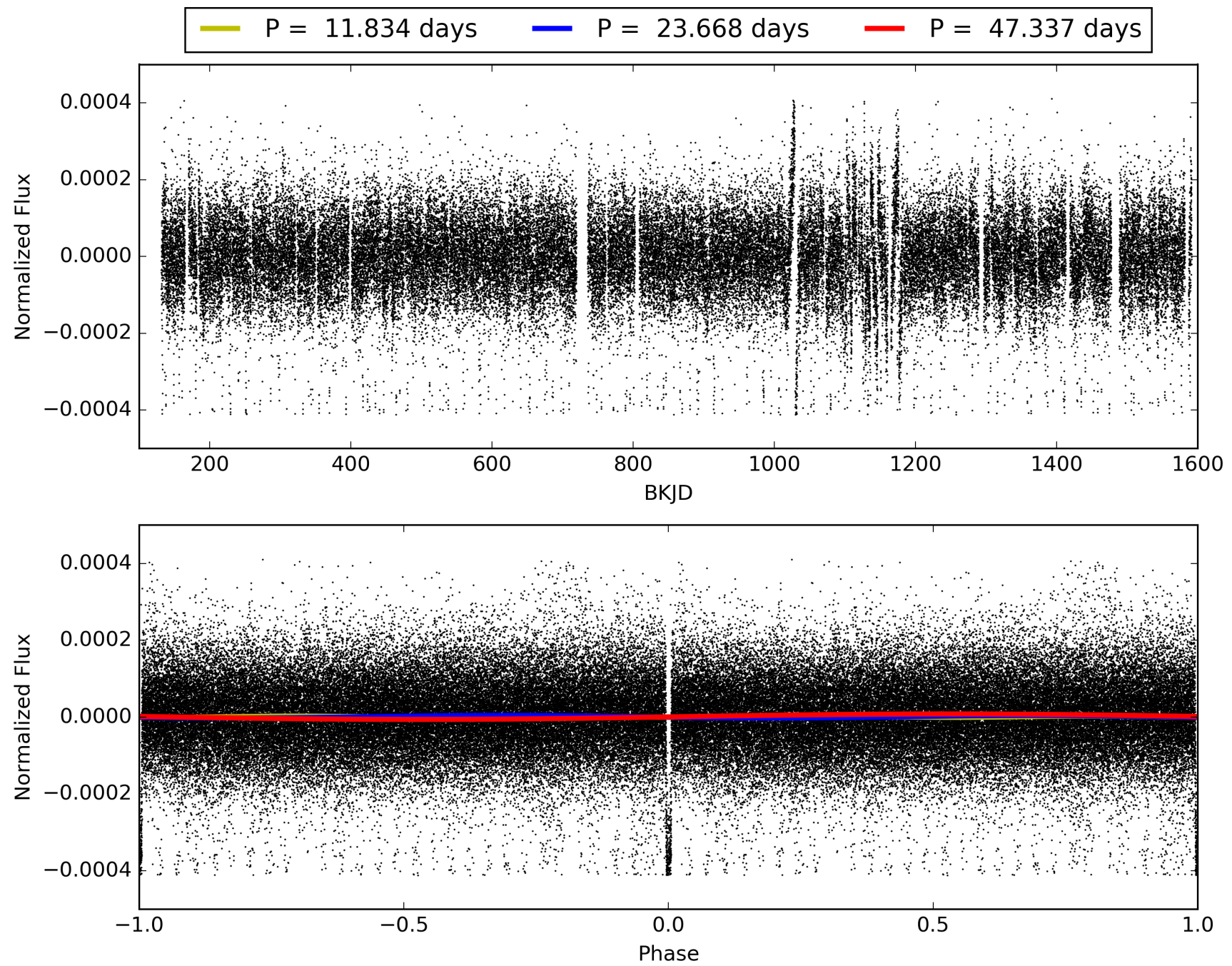
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.21σ]  
LongPeriod-sig: 100.0% [70.64σ]  
ModelChiSquare2-sig: 45.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [49/49]  
GhostDiagnostic-chr: 13.26  
Centroid-sig: 0.1%  
Centroid-so: 0.621 arcsec [5.26σ]  
OotOffset-rm: 0.265 arcsec [2.01σ]  
KicOffset-rm: 0.538 arcsec [3.51σ]  
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 006678383-03, PDC Light Curves

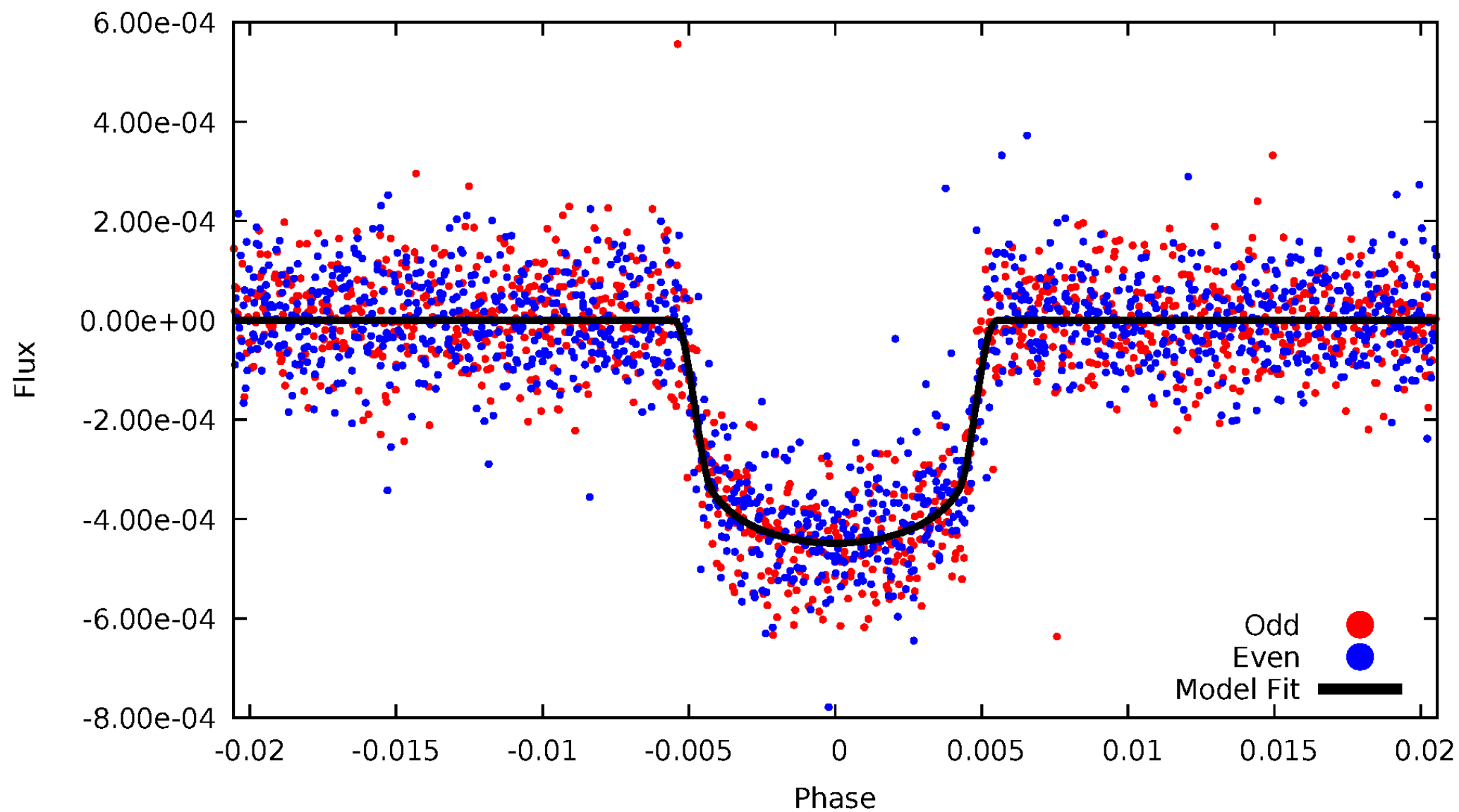


TCE 006678383-03



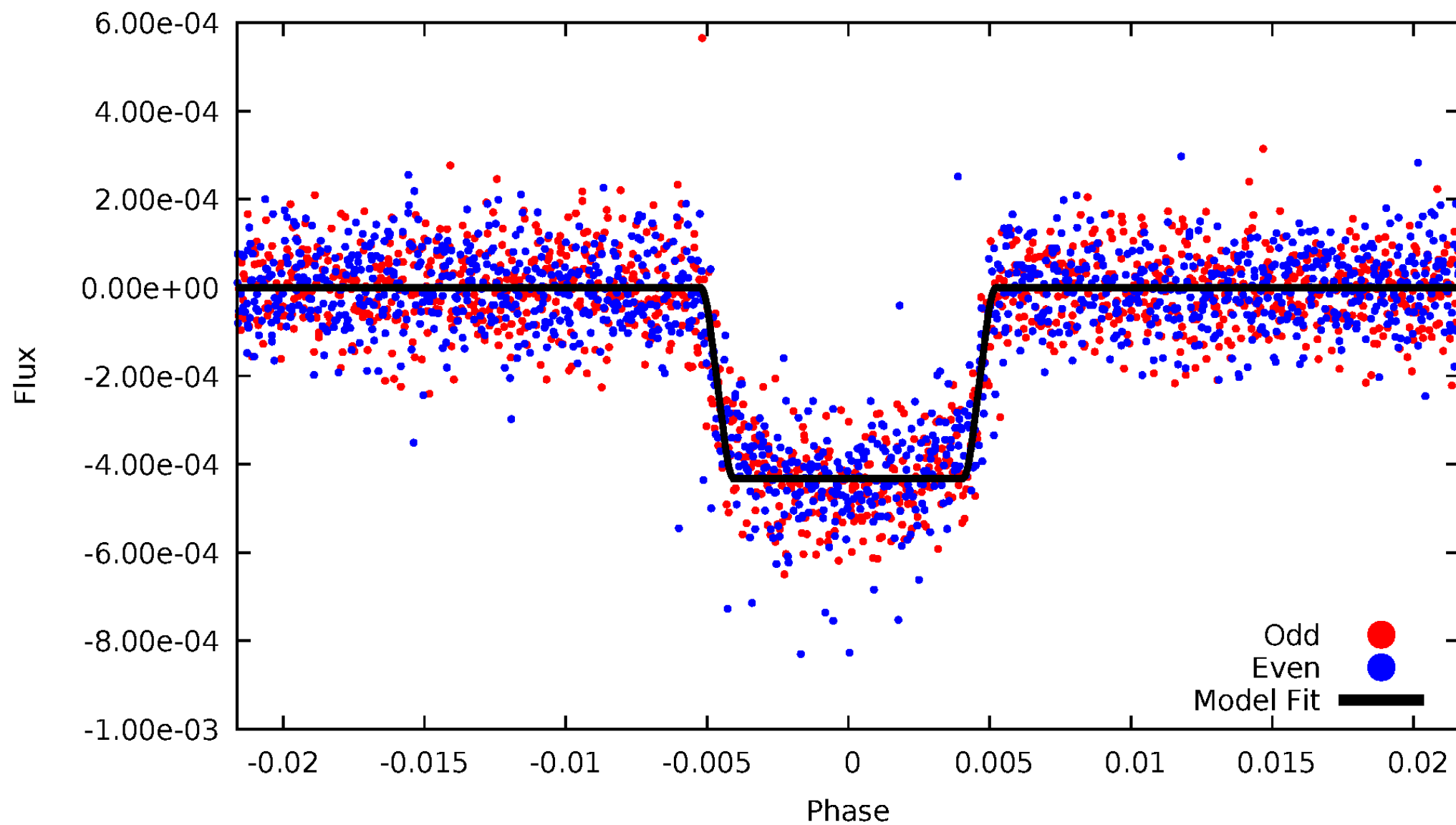
# DV Odd/Even

TCE 006678383-03



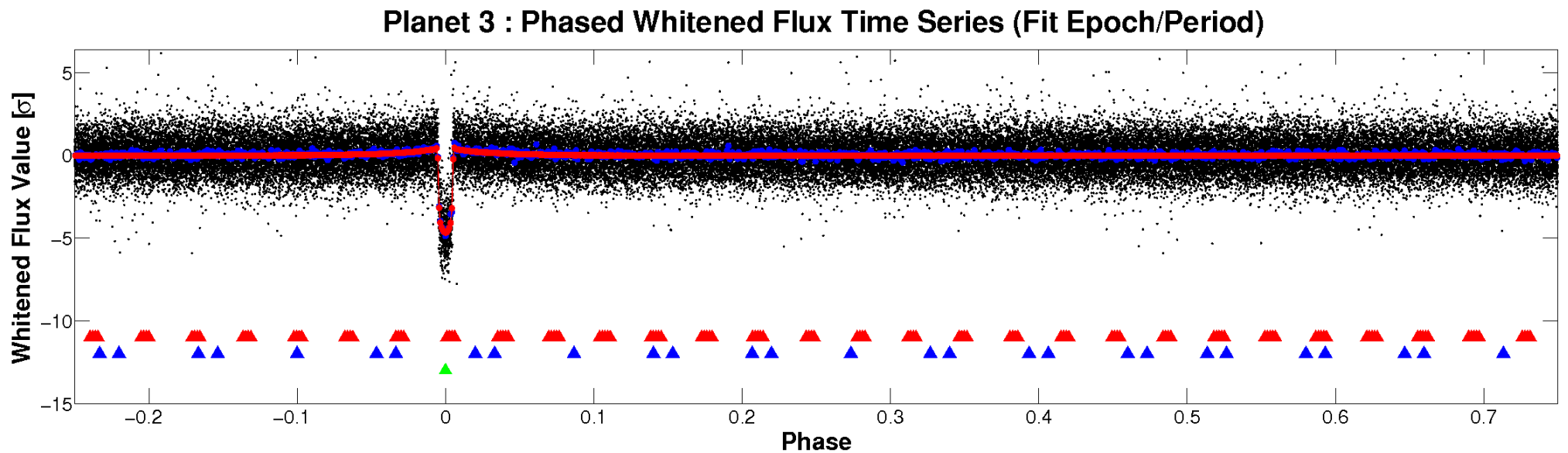
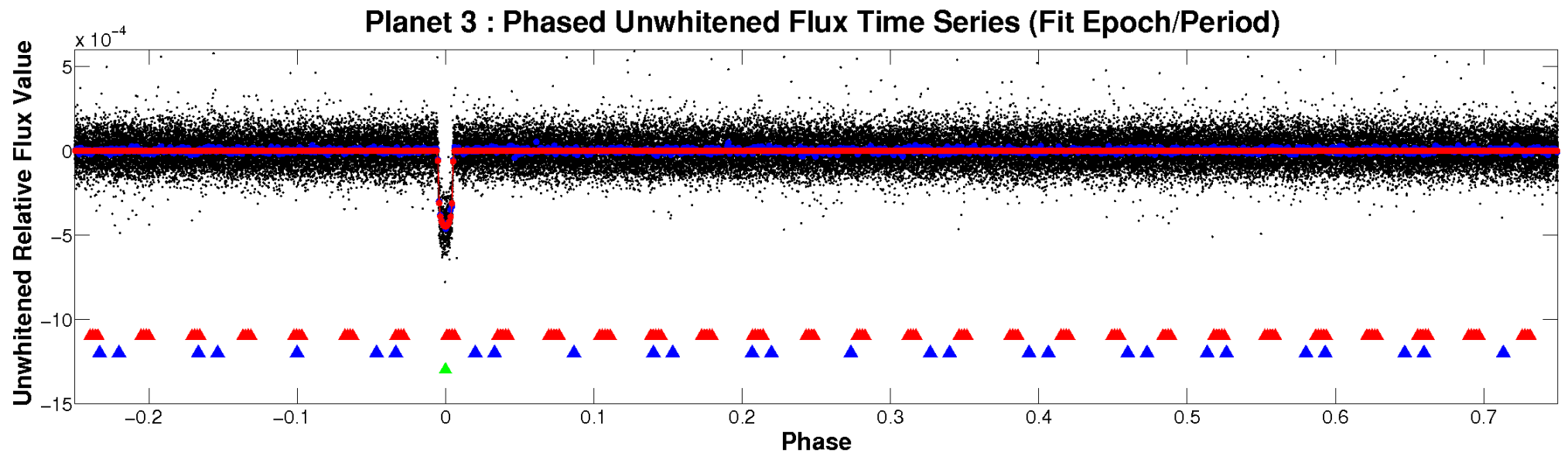
# ALT Odd/Even

TCE 006678383-03





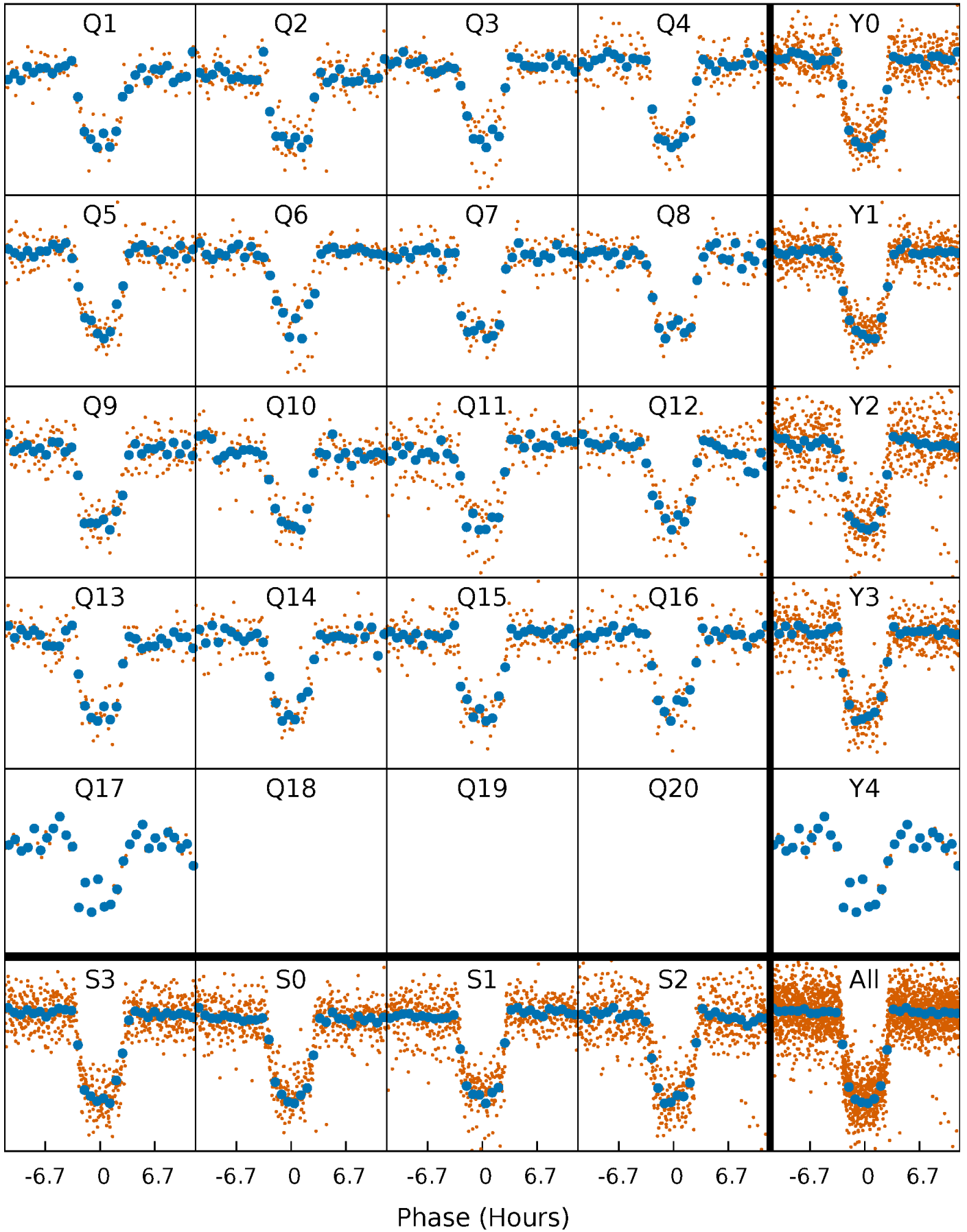
# Non-Whitened Vs. Whitened Light Curve





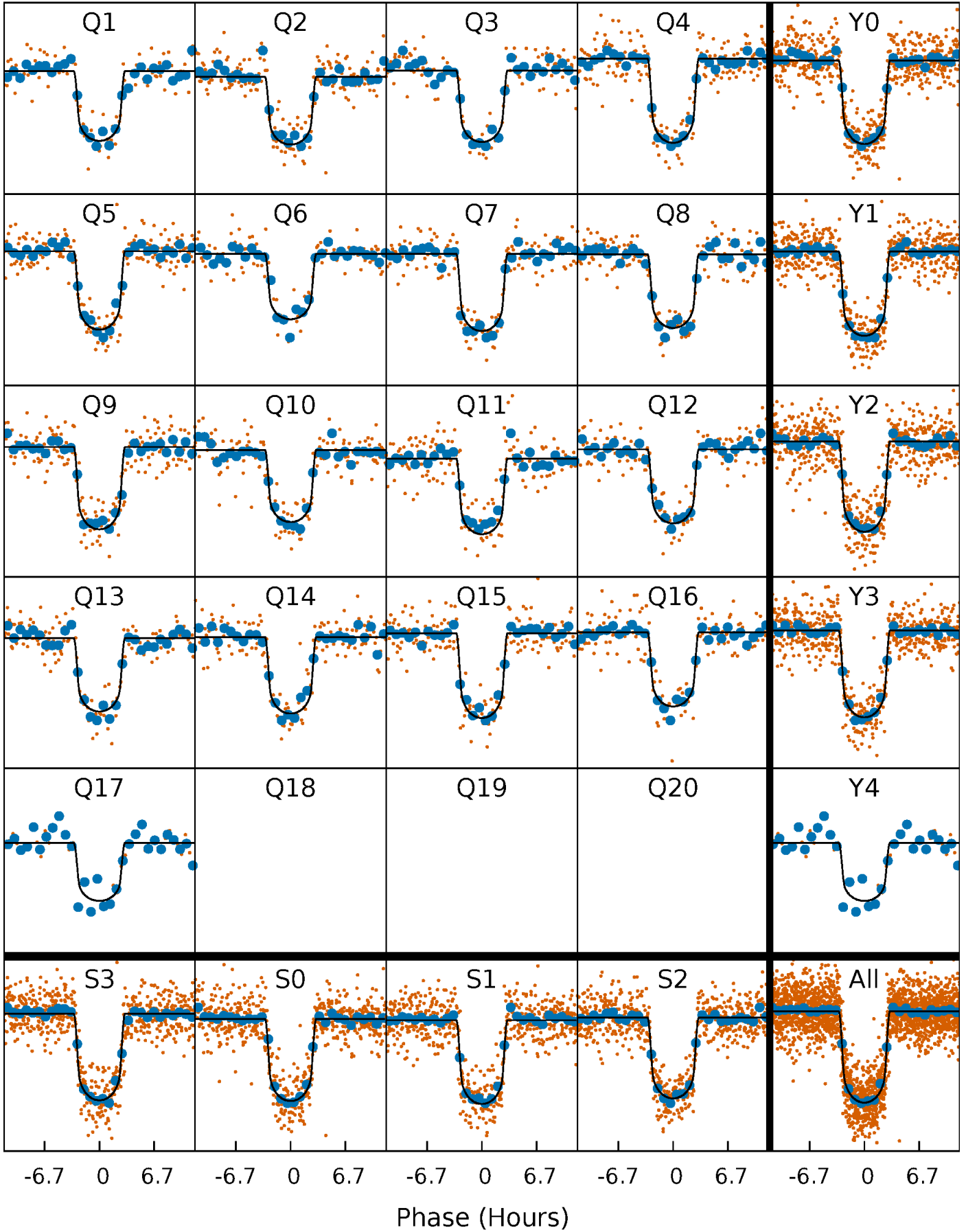
# PDC Quarter-Phased Transit Curves

TCE 006678383-03 P= 23.668368 Days  $T_0=132.713165$  (BKJD)



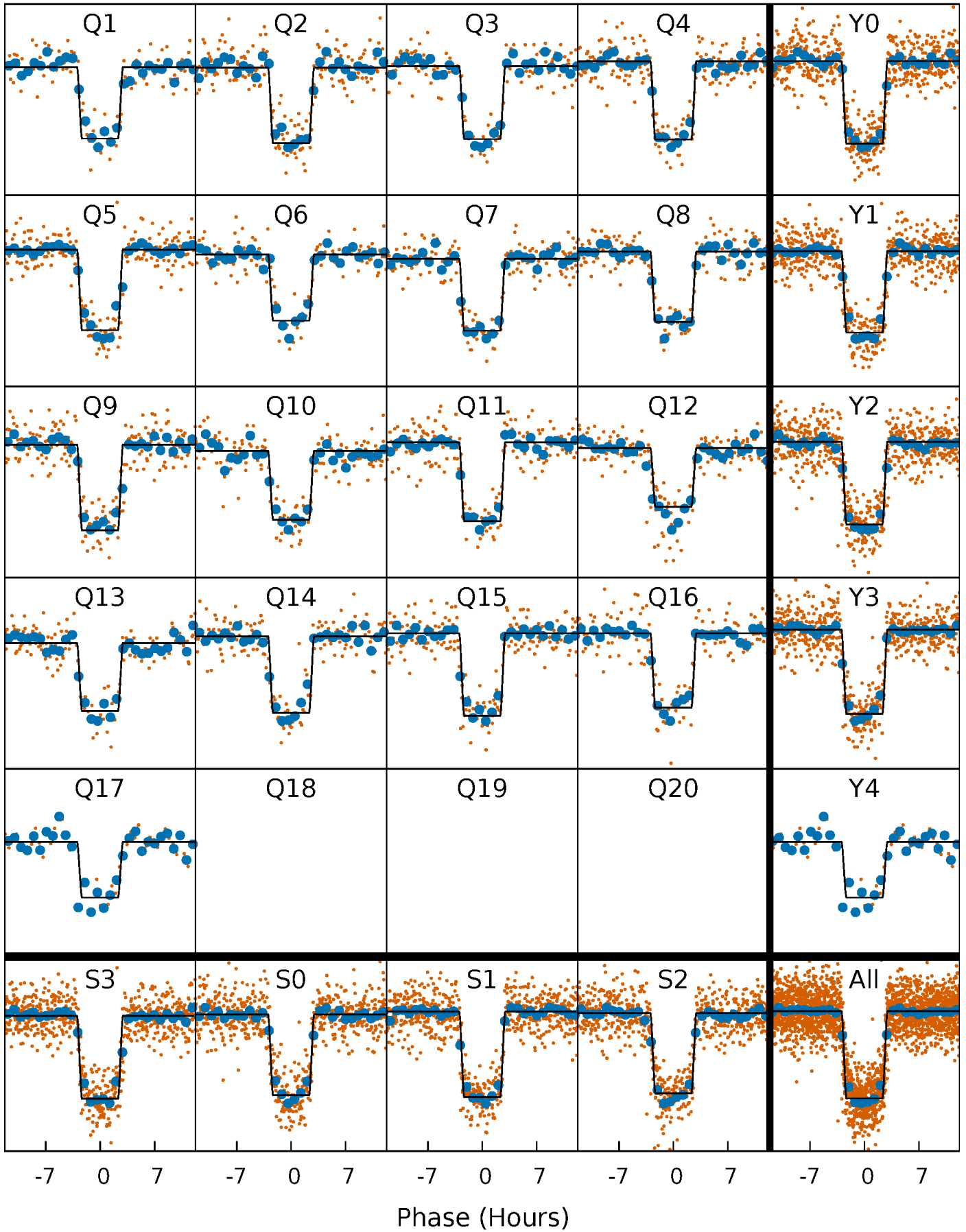
# DV Quarter-Phased Transit Curves

TCE 006678383-03   P= 23.668368 Days    $T_0=132.713165$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

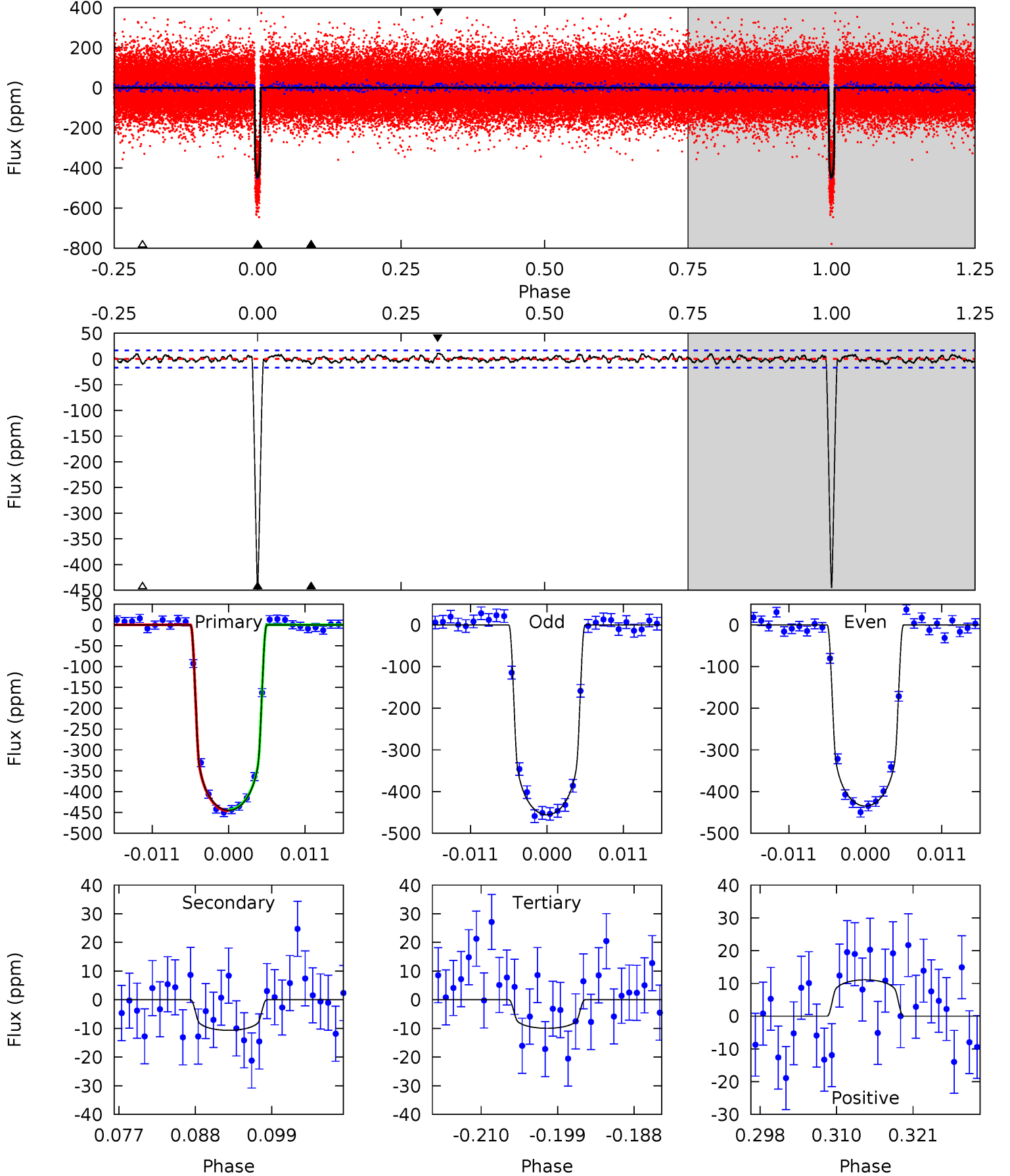
TCE 006678383-03   P= 23.668593 Days    $T_0=132.707043$  (BKJD)



# DV Model-Shift Uniqueness Test

006678383-03, P = 23.668368 Days, E = 109.044797 Days

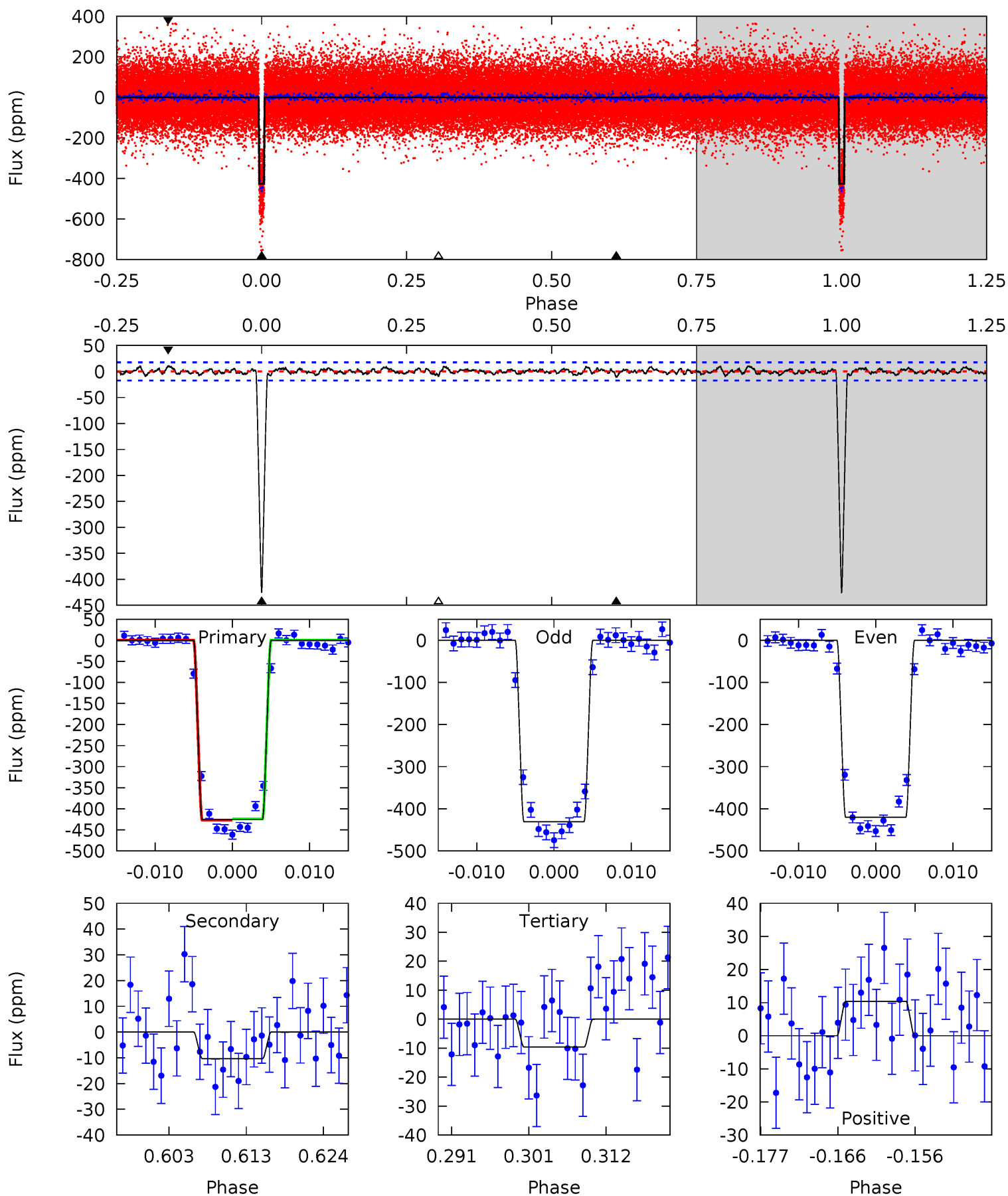
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
132.6	3.18	2.97	3.30	5.01	2.54	1.17	129.6	129.3	0.21	-0.13	3.13	0.99	0.02	0.39



# Alt Model-Shift Uniqueness Test

006678383-03, P = 23.668593 Days, E = 109.038450 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
122.8	2.98	2.76	3.01	5.02	2.56	1.02	120.0	119.8	0.22	-0.03	1.49	1.02	0.02	0.38



### Stellar Parameters For KIC 006678383

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5979^{+108}_{-120}$	$4.394^{+0.110}_{-0.110}$	$-0.340^{+0.150}_{-0.150}$	$1.005^{+0.138}_{-0.113}$	$0.913^{+0.058}_{-0.058}$	$1.267^{+0.562}_{-0.389}$
	+2%/-2%	+3%/-3%	+44%/-44%	+14%/-11%	+6%/-6%	+44%/-31%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 006678383-03 / KOI 0111.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-11 \pm 3$	$2.33^{+0.23}_{-0.19}$	$934^{+41}_{-37}$	$3008^{+122}_{-164}$	$26^{+10}_{-9}$
Alt.	$-10 \pm 3$	$2.29^{+0.24}_{-0.20}$	$935^{+41}_{-40}$	$3008^{+145}_{-181}$	$26^{+11}_{-9}$

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

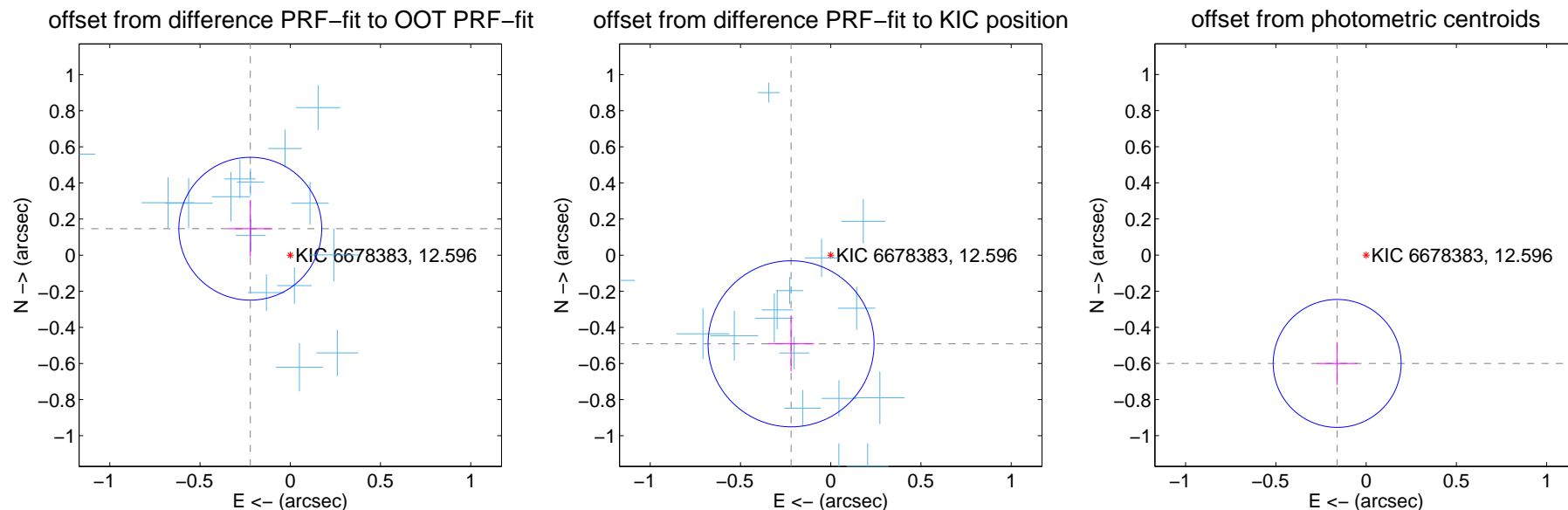
## DV Centroid Data

Supplemental centroid analysis for 006678383-03. Kepler magnitude: 12.60. Transit SNR 97.65

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.73 arcsec

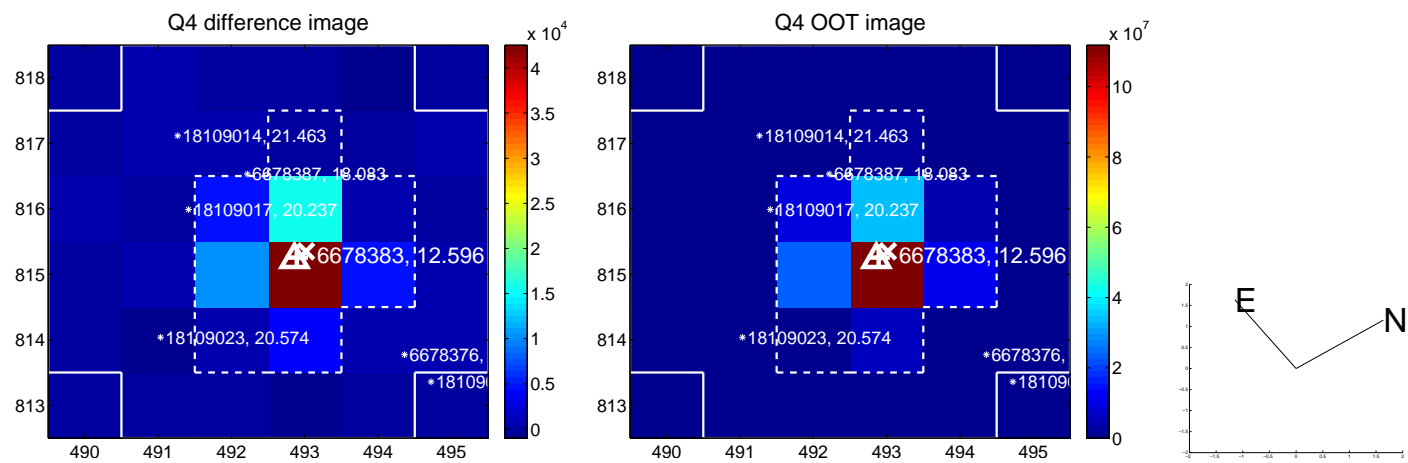
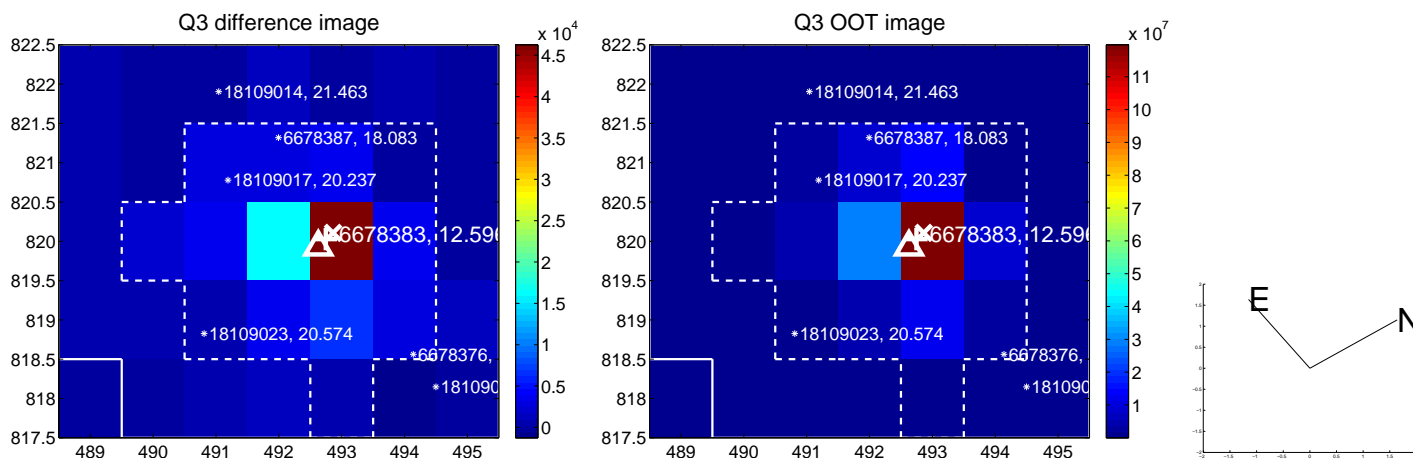
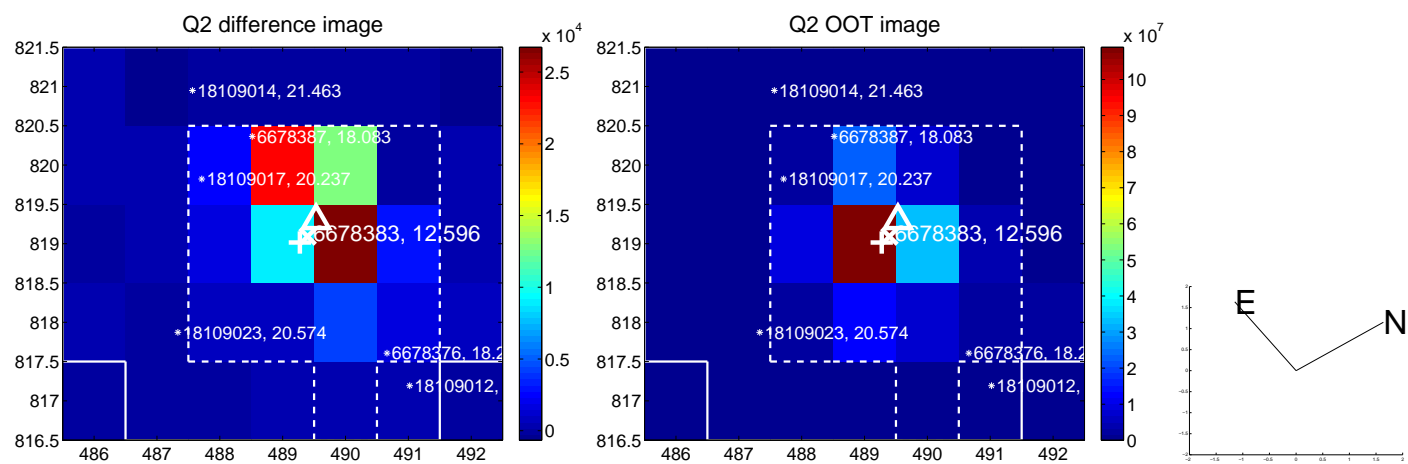
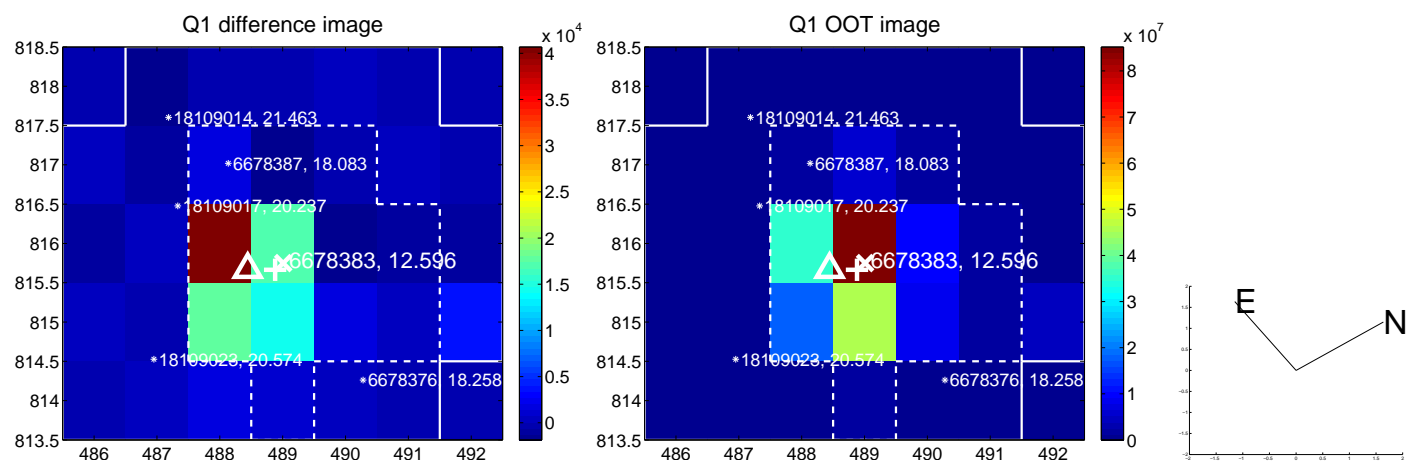
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.265 \pm 0.132$	2.01	$0.221 \pm 0.123$	$0.146 \pm 0.157$
PRF-fit source offset from KIC position	$0.538 \pm 0.153$	3.51	$0.220 \pm 0.128$	$-0.491 \pm 0.153$
photometric centroid source offset	$0.62 \pm 0.12$	5.26	$0.16 \pm 0.11$	$-0.60 \pm 0.12$



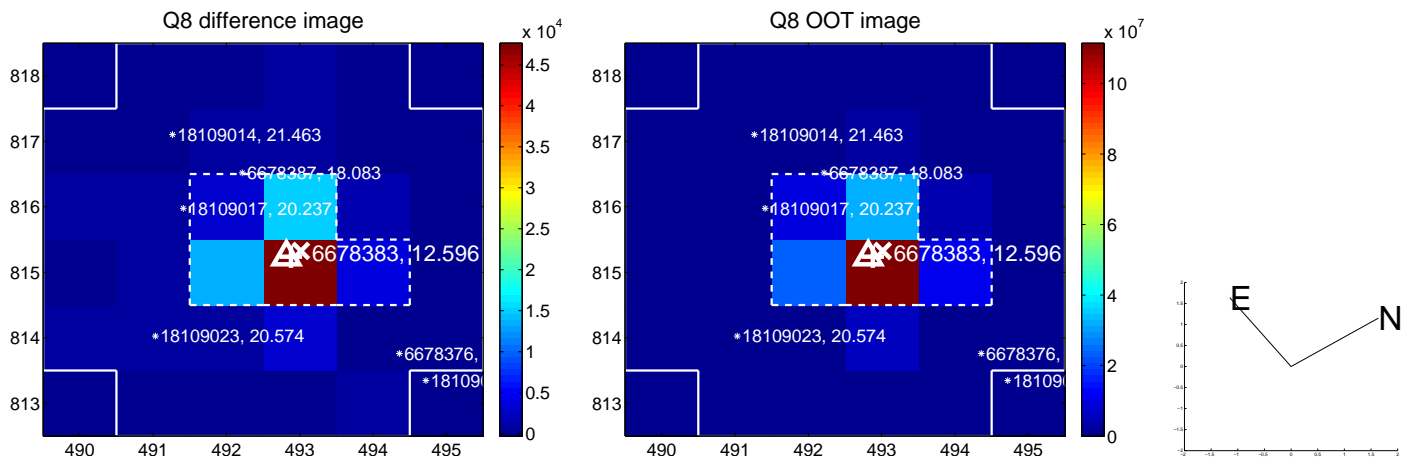
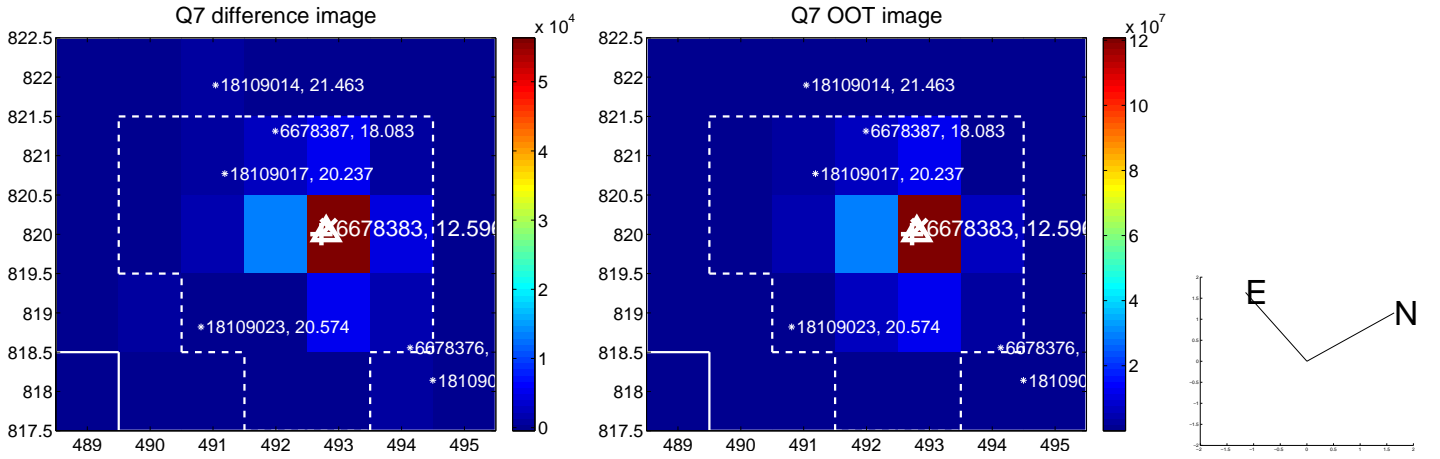
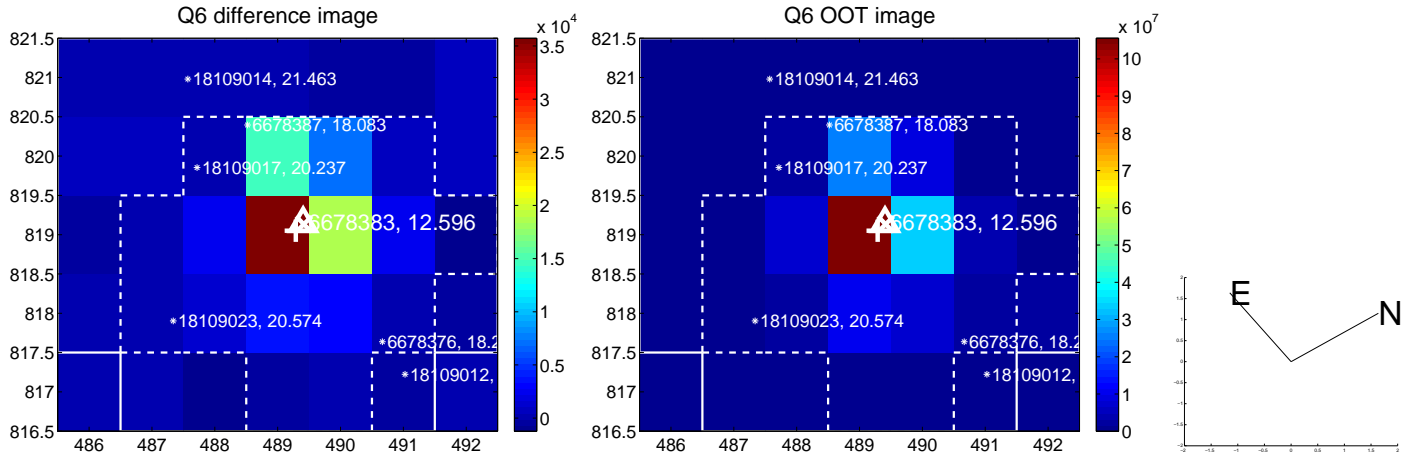
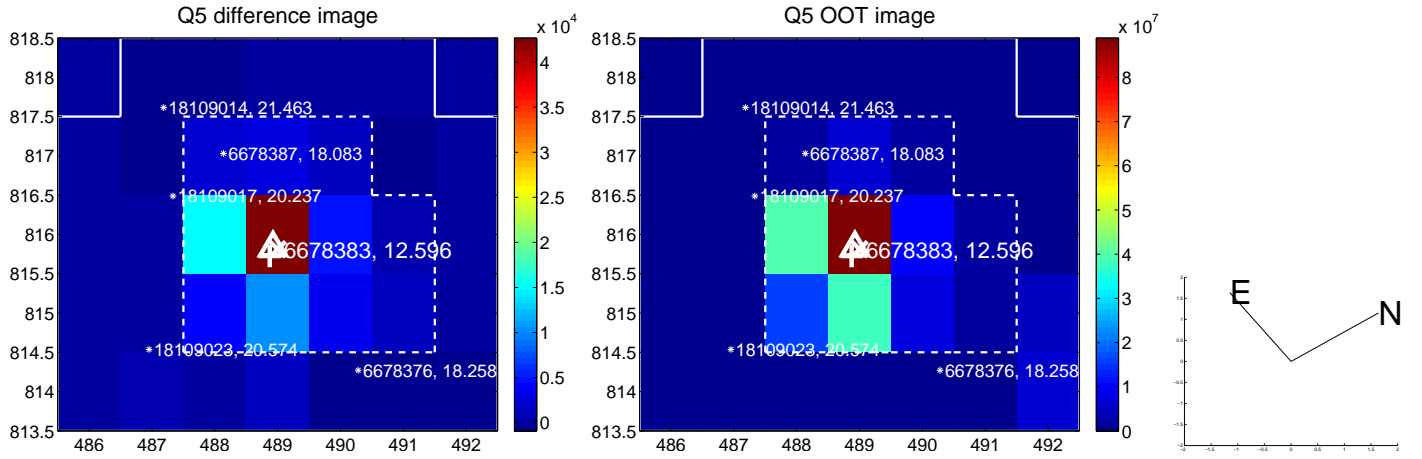
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



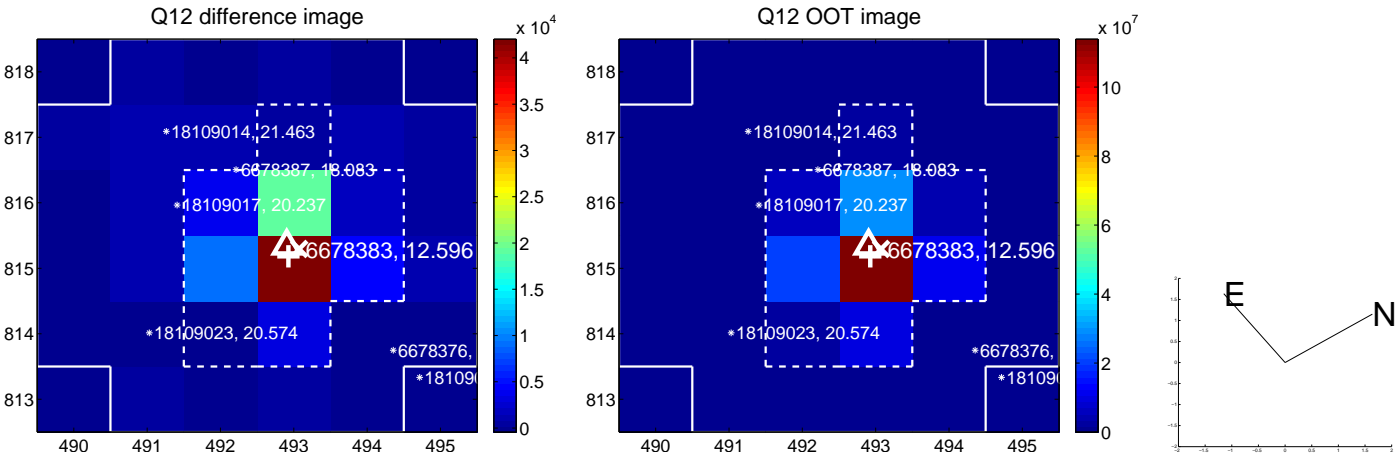
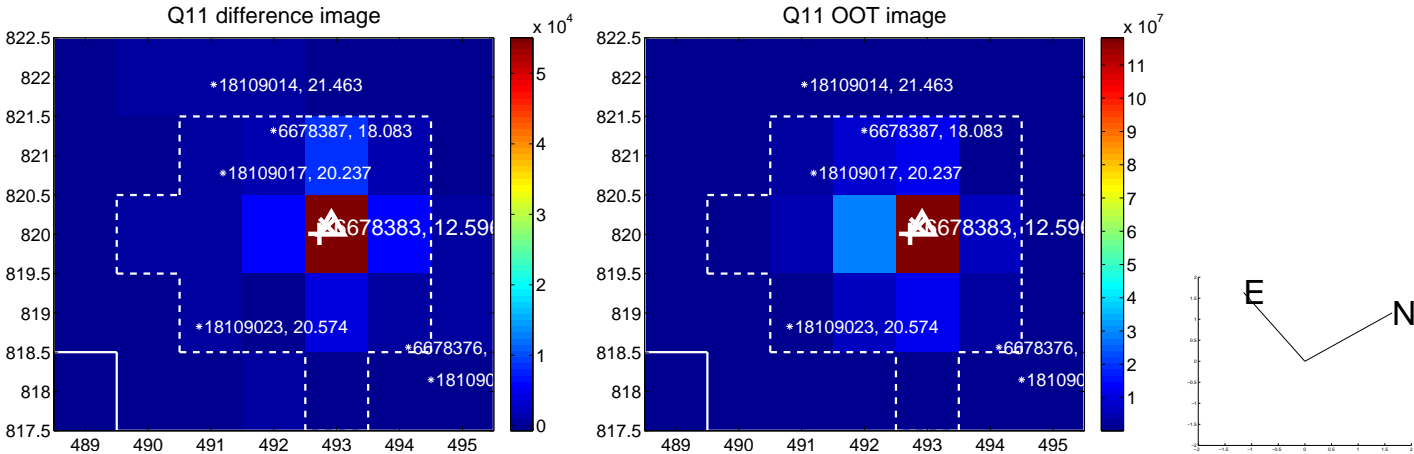
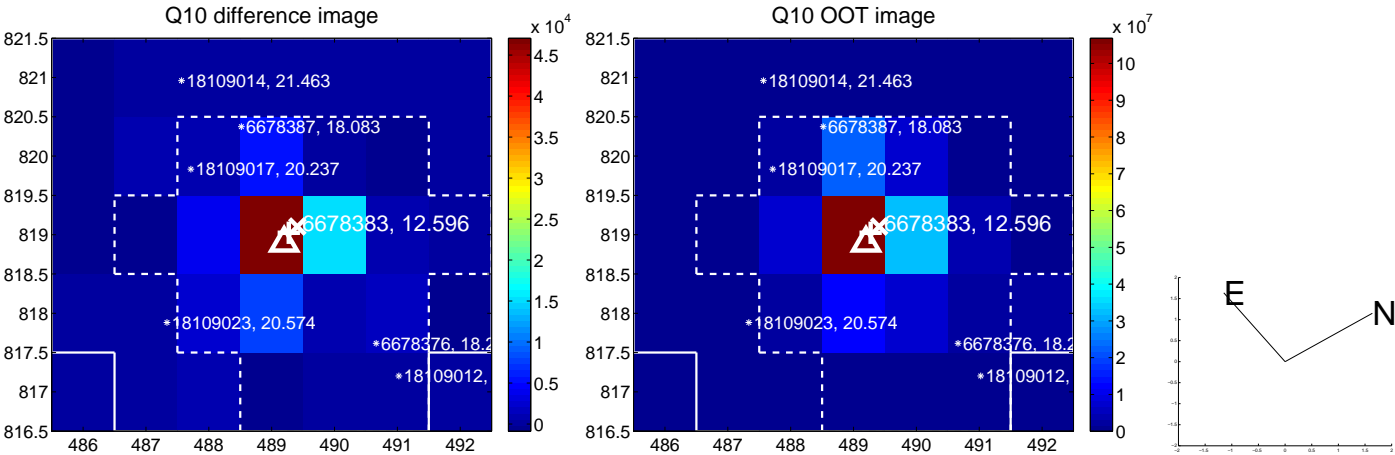
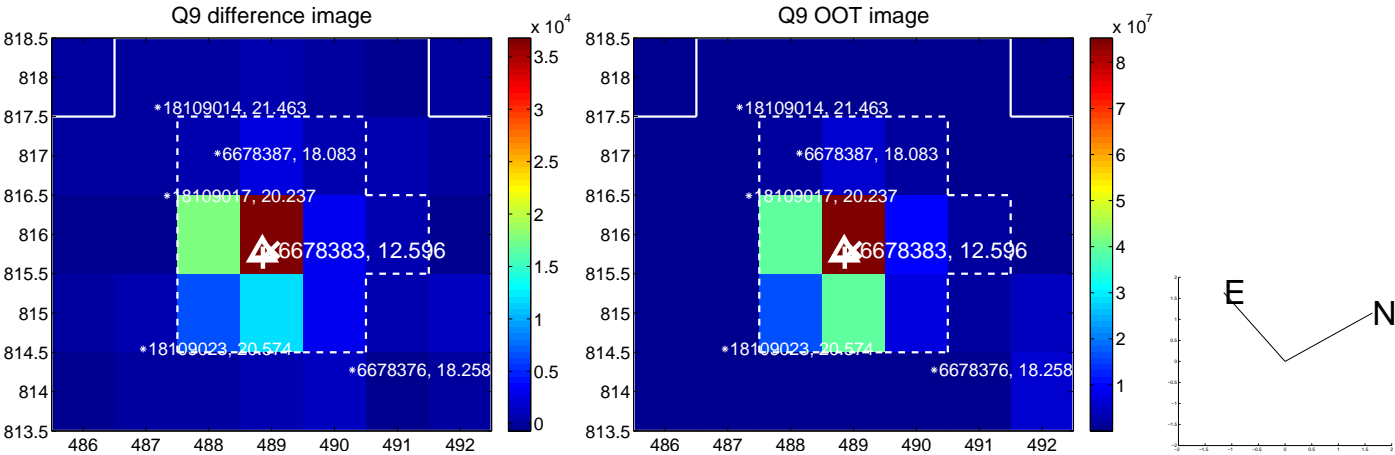
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



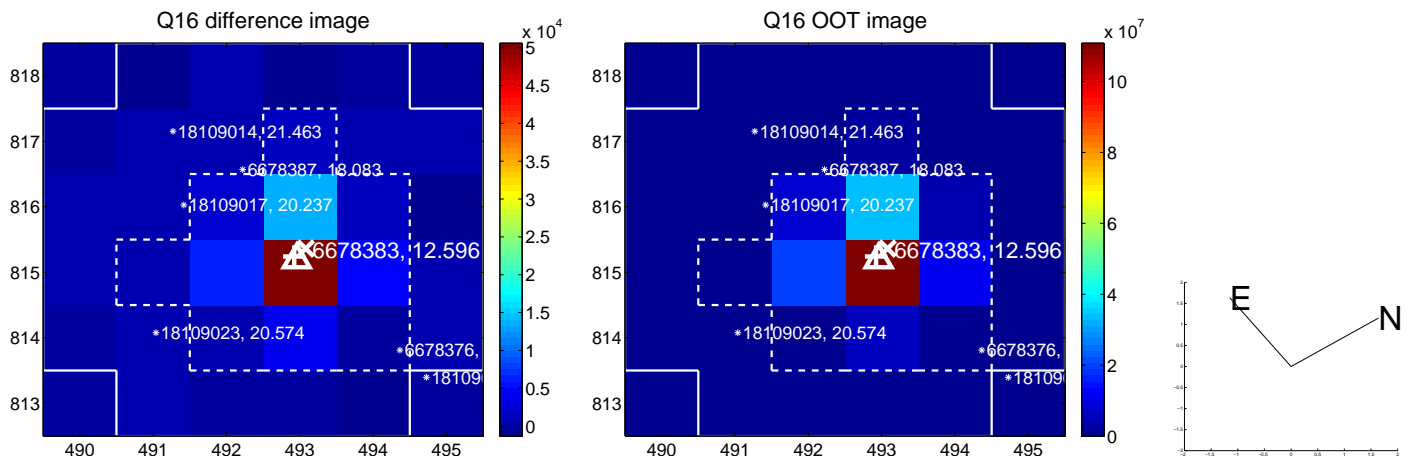
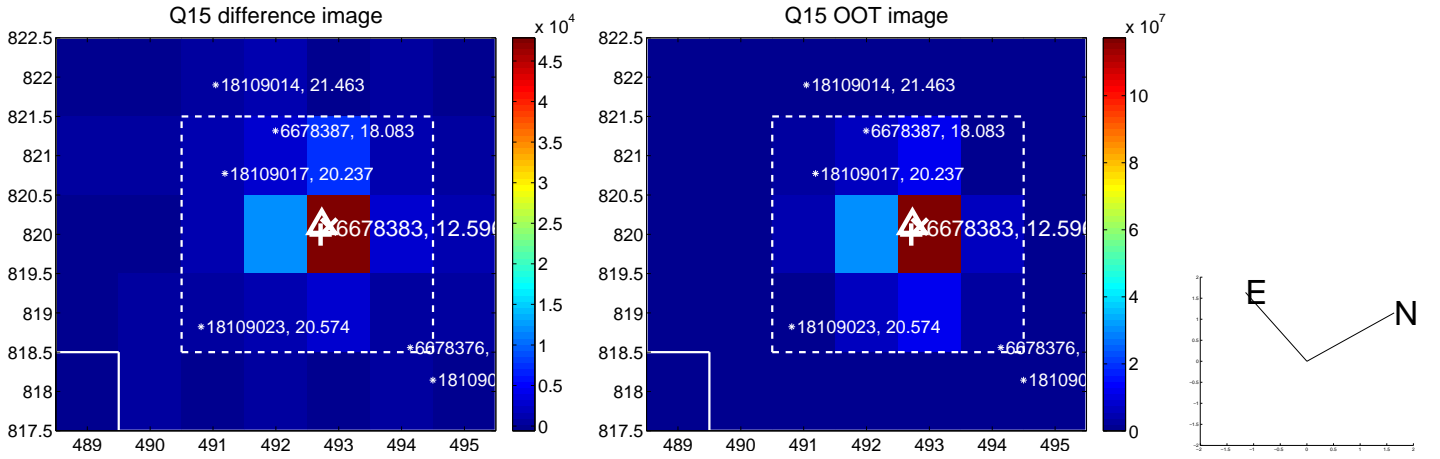
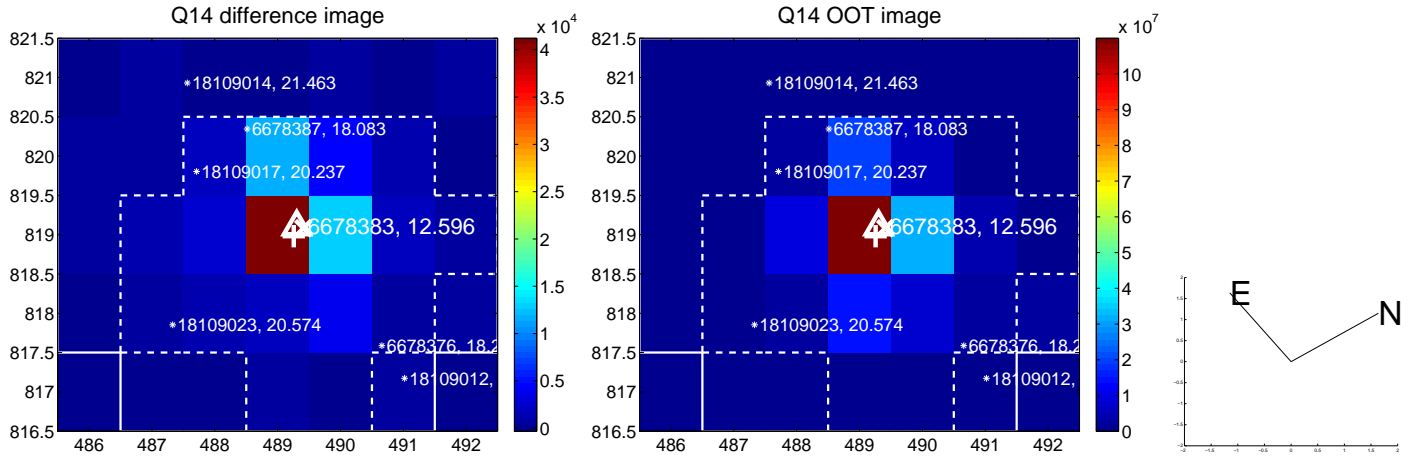
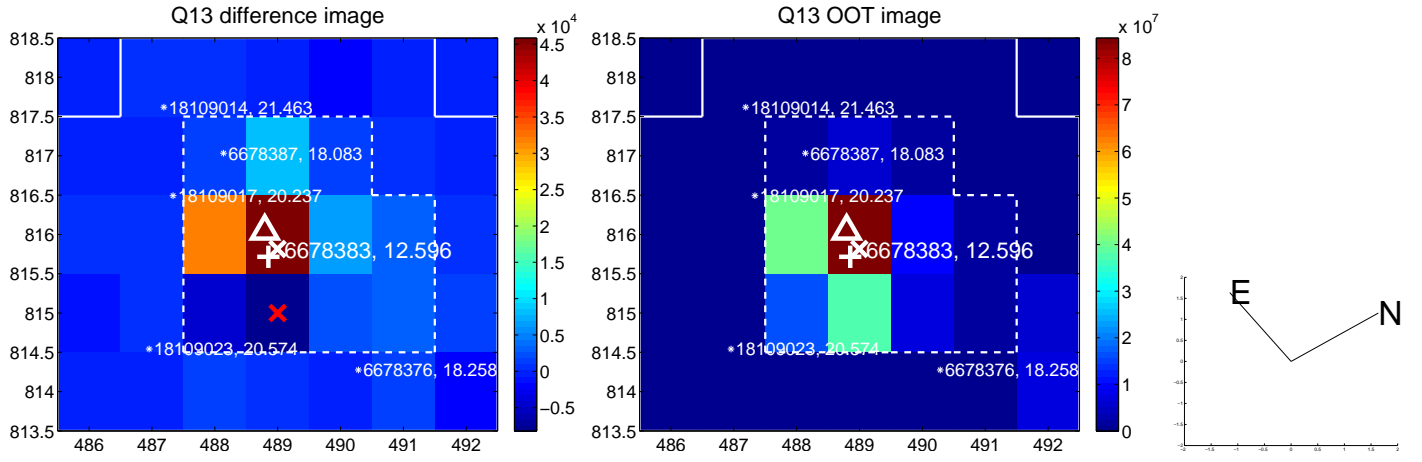
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



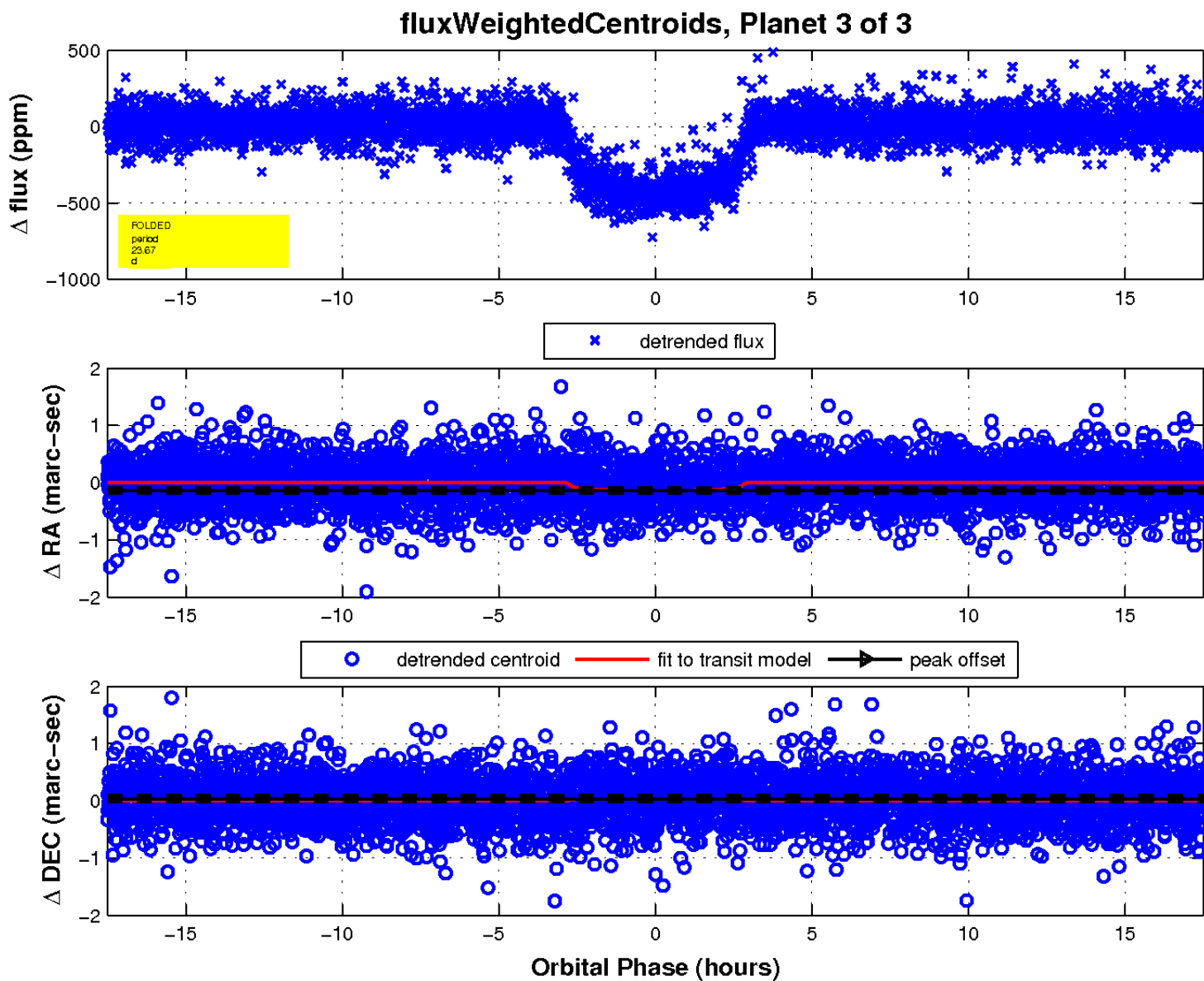
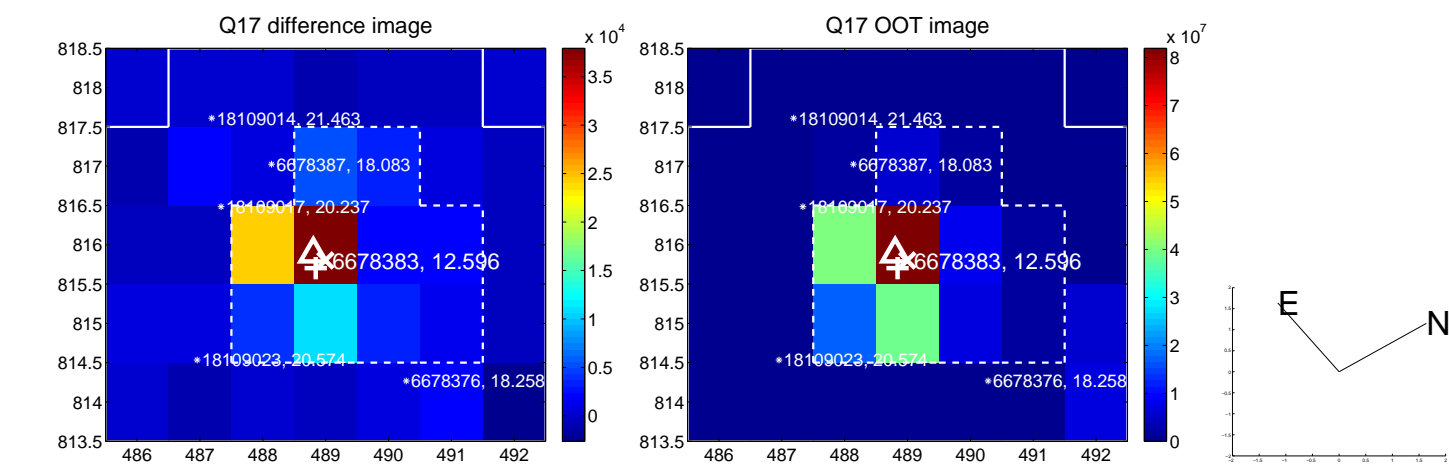
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

