

# KIC 011772971

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011772971-01	OBS	No	0.621666	131.717653	254.4	1.533	9.9	11.9	2.16	7419	3.99	43554.71
011772971-02	OBS	No	1.179397	131.659322	273.1	4.736	8.9	12.2	2.16	7419	3.74	18545.17
011772971-03	OBS	No	0.866433	131.579944	131.6	2.000	8.5	-1.0	2.16	7419	2.52	27976.78

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011772971-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011772971-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
011772971-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

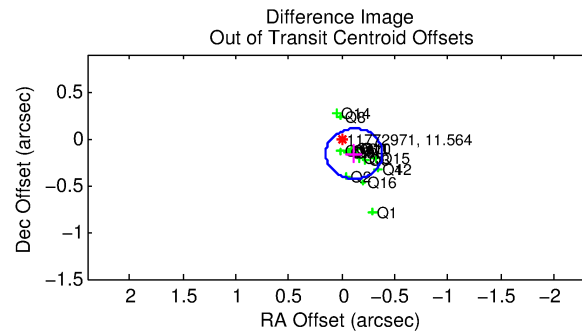
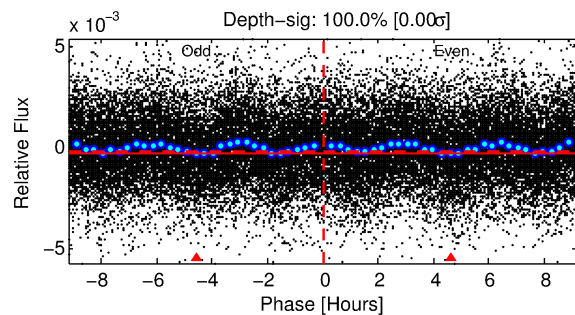
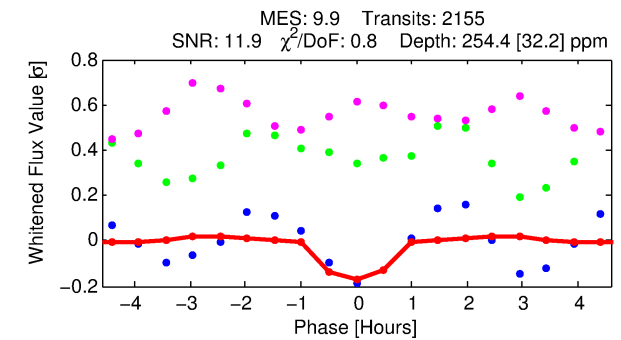
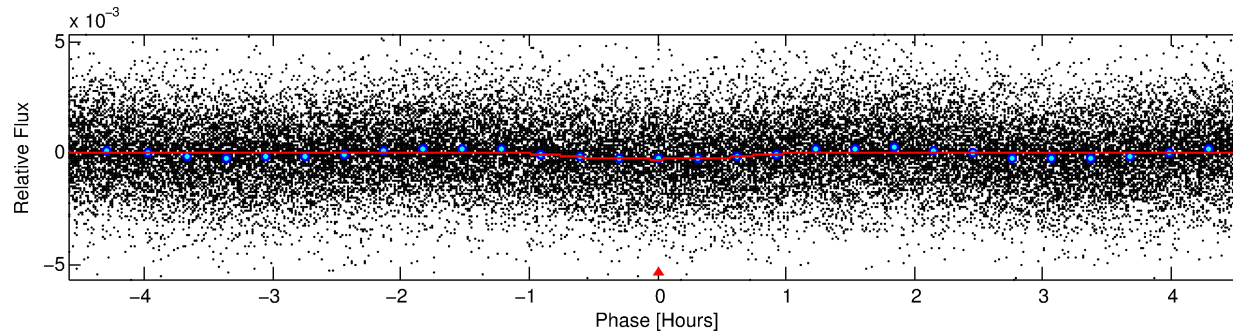
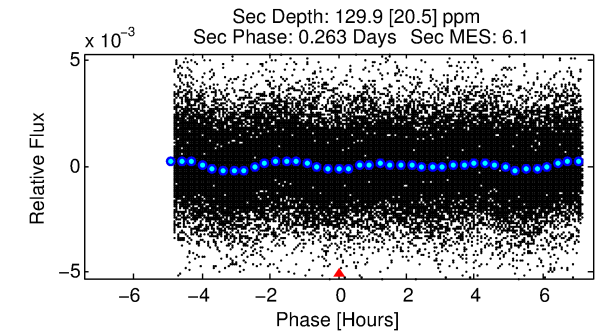
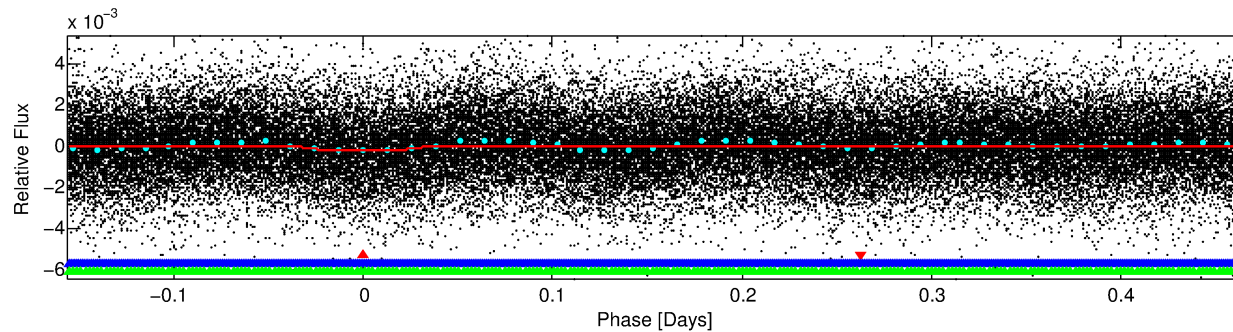
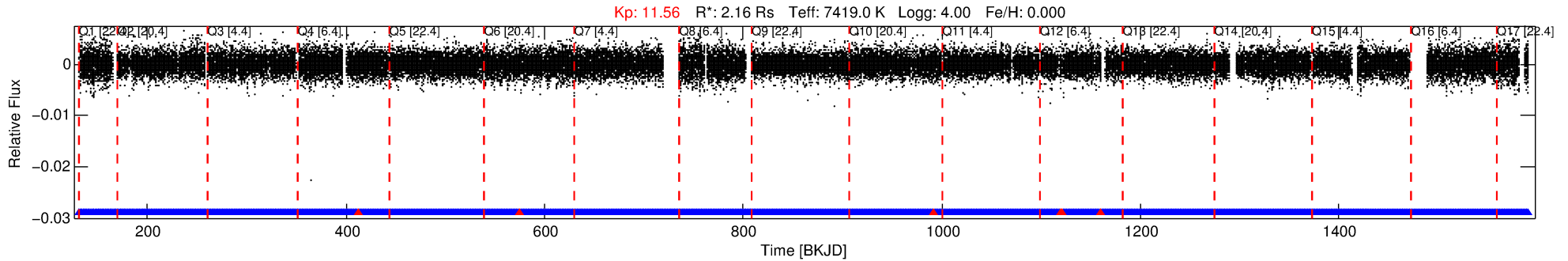
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011772971-01

No Significant Match Found

# DV One-Page Summary

KIC: 11772971 Candidate: 1 of 3 Period: 0.622 d



## DV Fit Results:

Period = 0.62167 [0.00001] d  
Epoch = 131.7177 [0.0018] BKJD  
Rp/R\* = 0.0169 [0.0066]  
a/R\* = 1.76 [2.94]  
b = 0.90 [0.55]  
Seff = 43554.71 [10328.14]  
Teff = 3684 [218] K  
Rp = 3.99 [1.70] Re  
a = 0.0170 [0.0026] AU  
Ag = 1.31 [1.08] [0.28σ]  
Teffp = 6088 [1209] K [1.96σ]

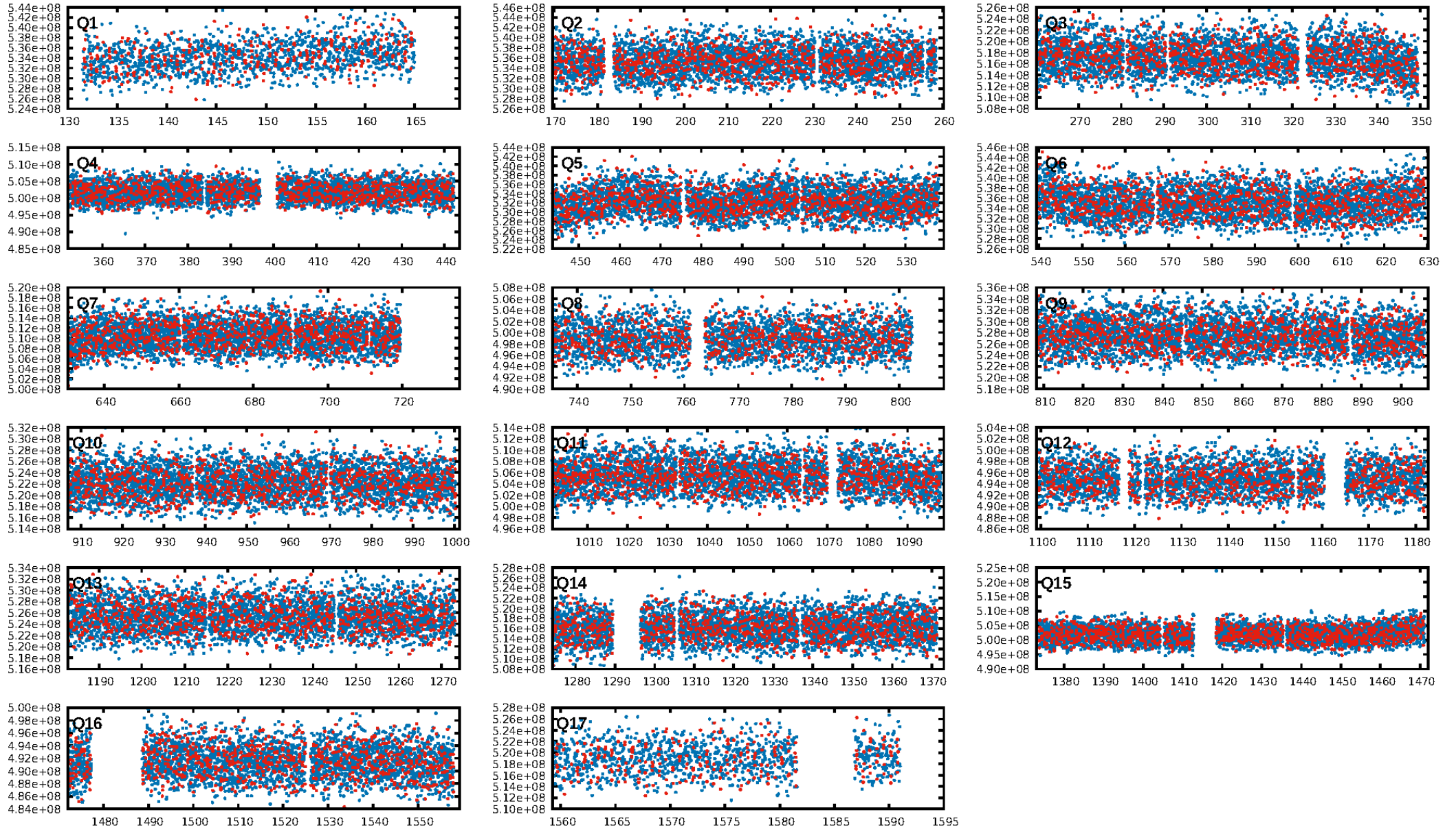
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 98.0% [2.33σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2052/2058]  
**GhostDiagnostic-chr: 0.8128**  
Centroid-sig: 0.0%  
Centroid-so: 0.334 arcsec [5.90σ]  
OotOffset-rm: 0.200 arcsec [2.24σ]  
KicOffset-rm: 0.253 arcsec [3.15σ]  
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: 30-Jan-2016 06:28:43 Z

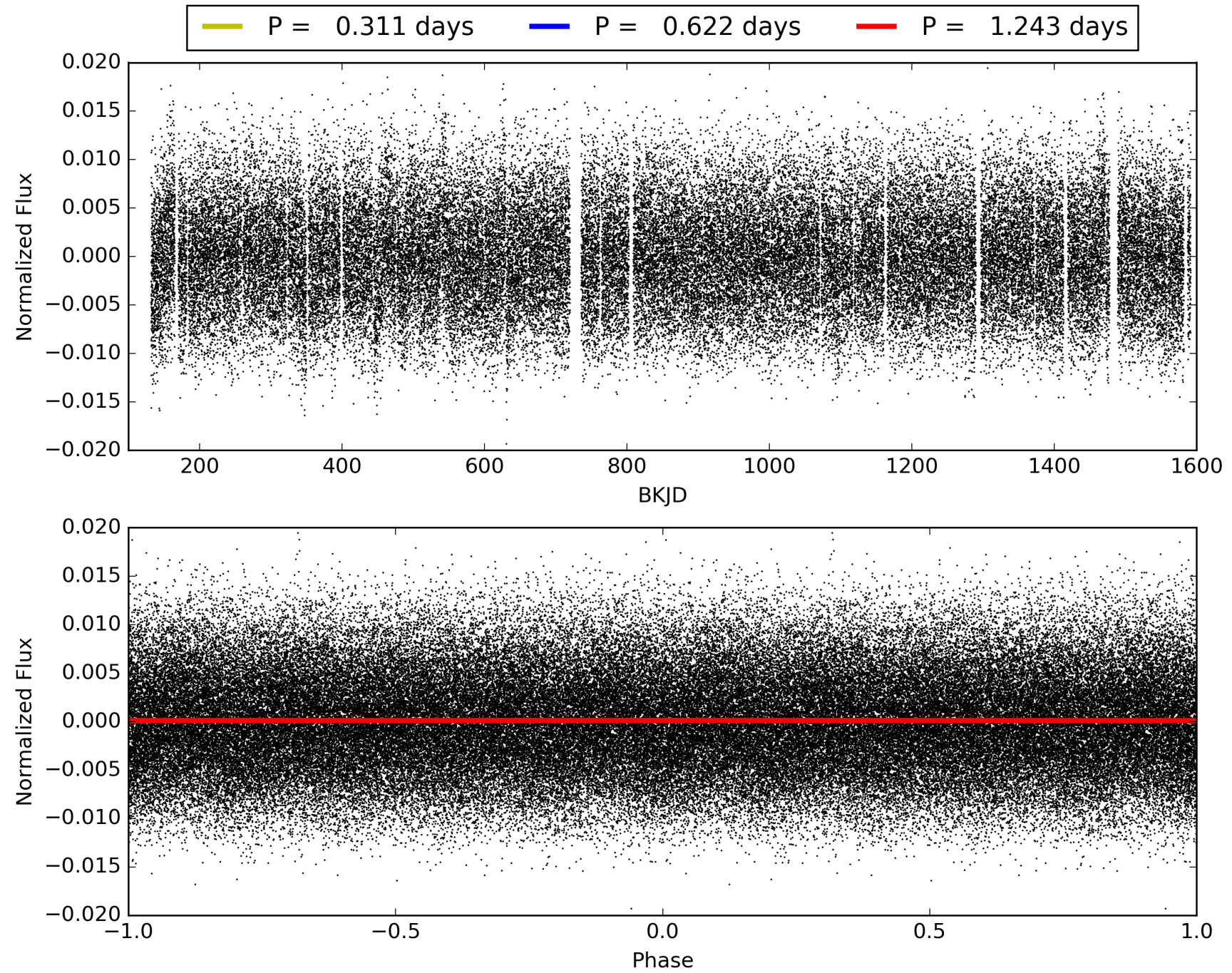
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011772971-01, PDC Light Curves





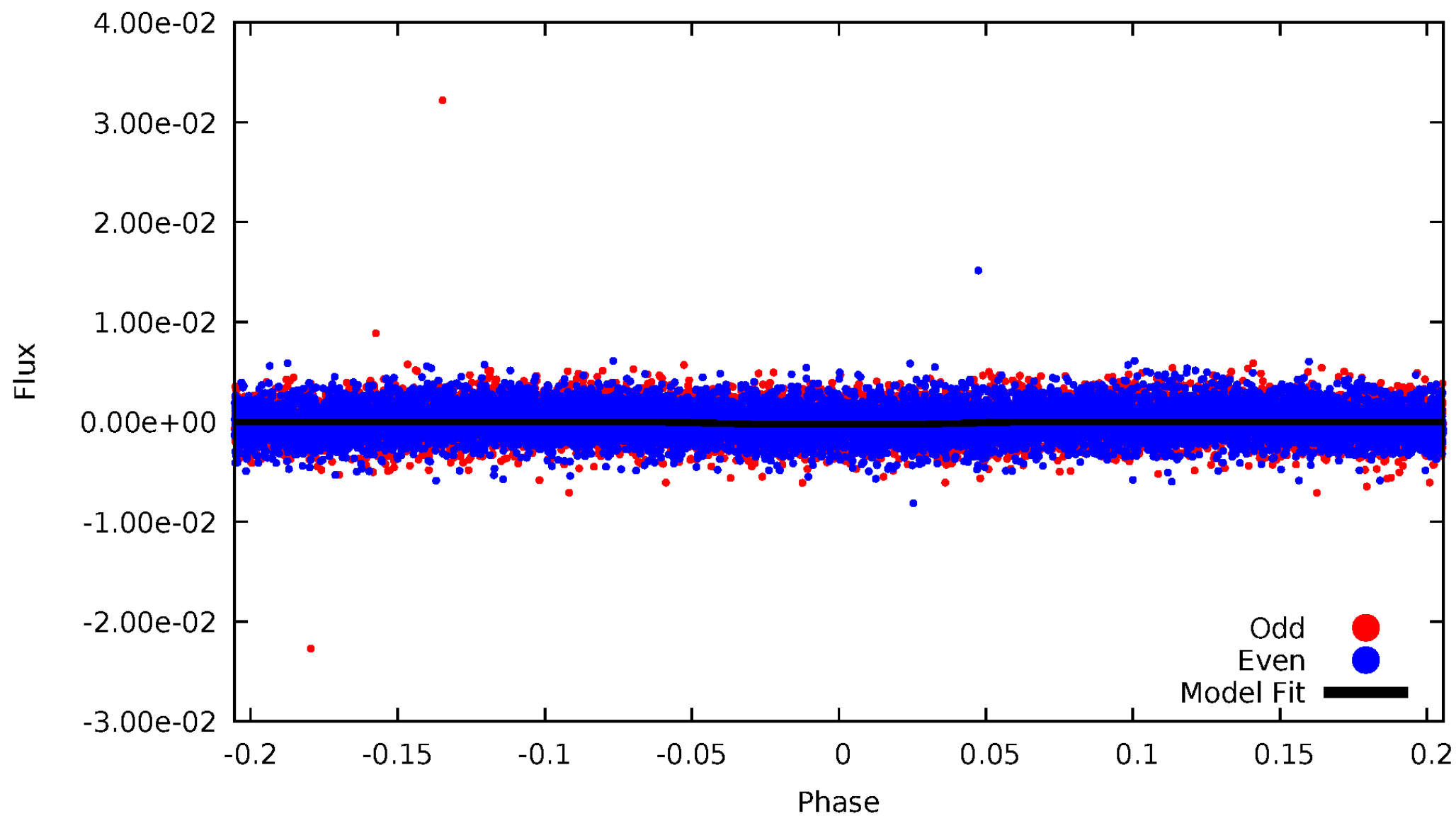
TCE 011772971-01





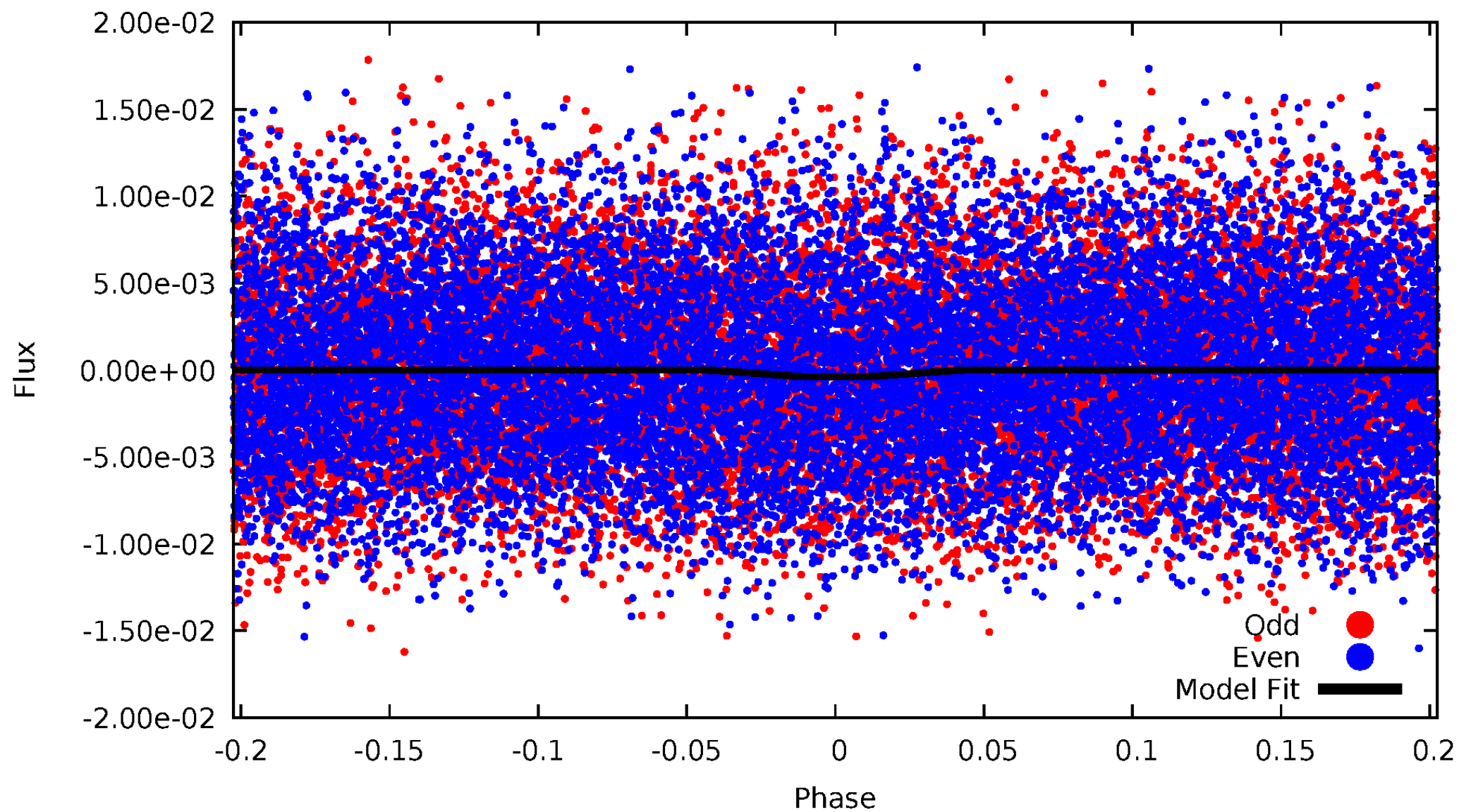
# DV Odd/Even

TCE 011772971-01



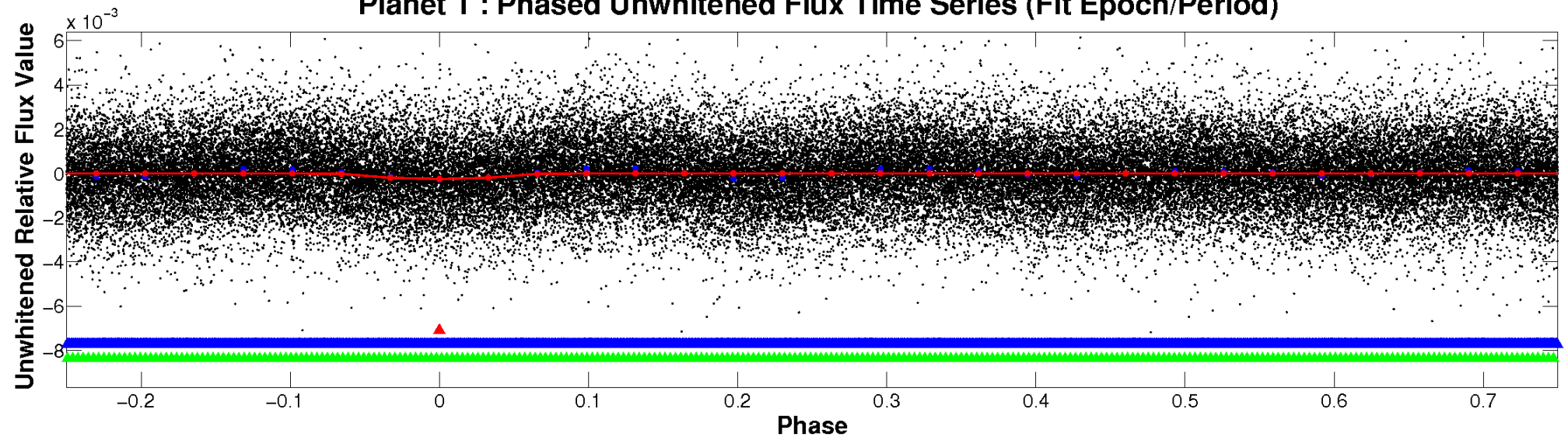
# ALT Odd/Even

TCE 011772971-01

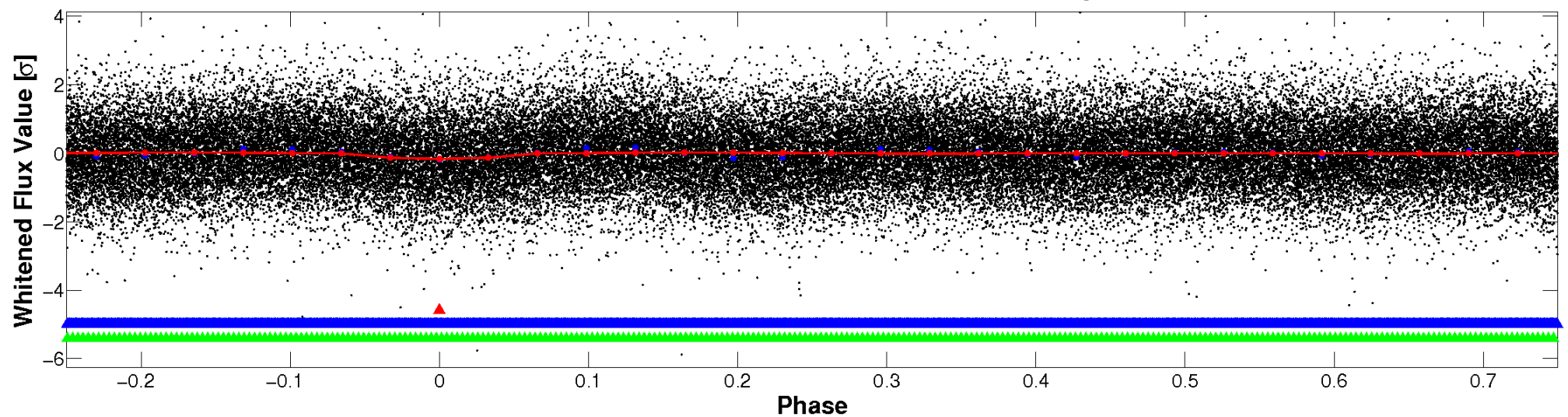


# Non-Whitened Vs. Whitened Light Curve

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



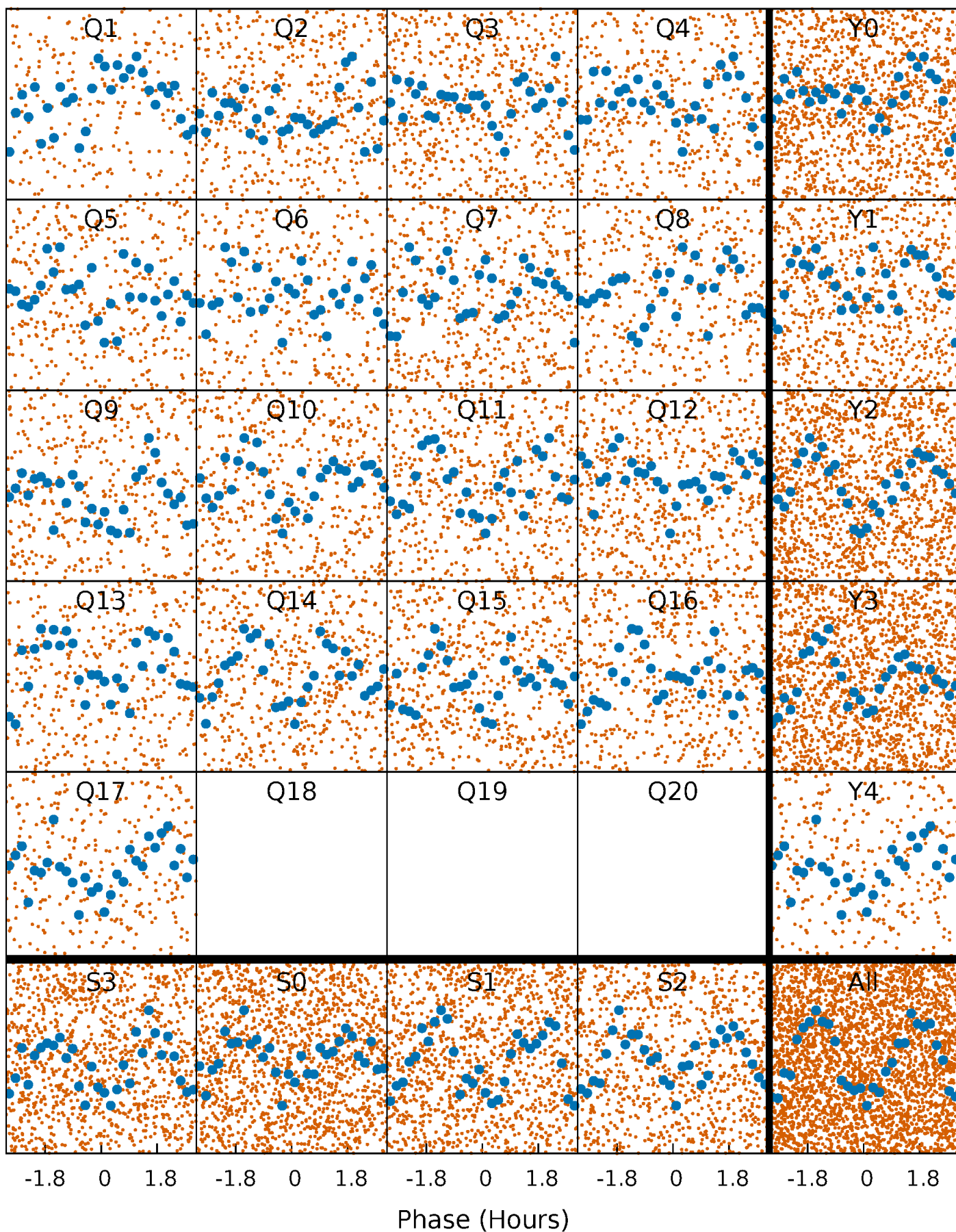
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





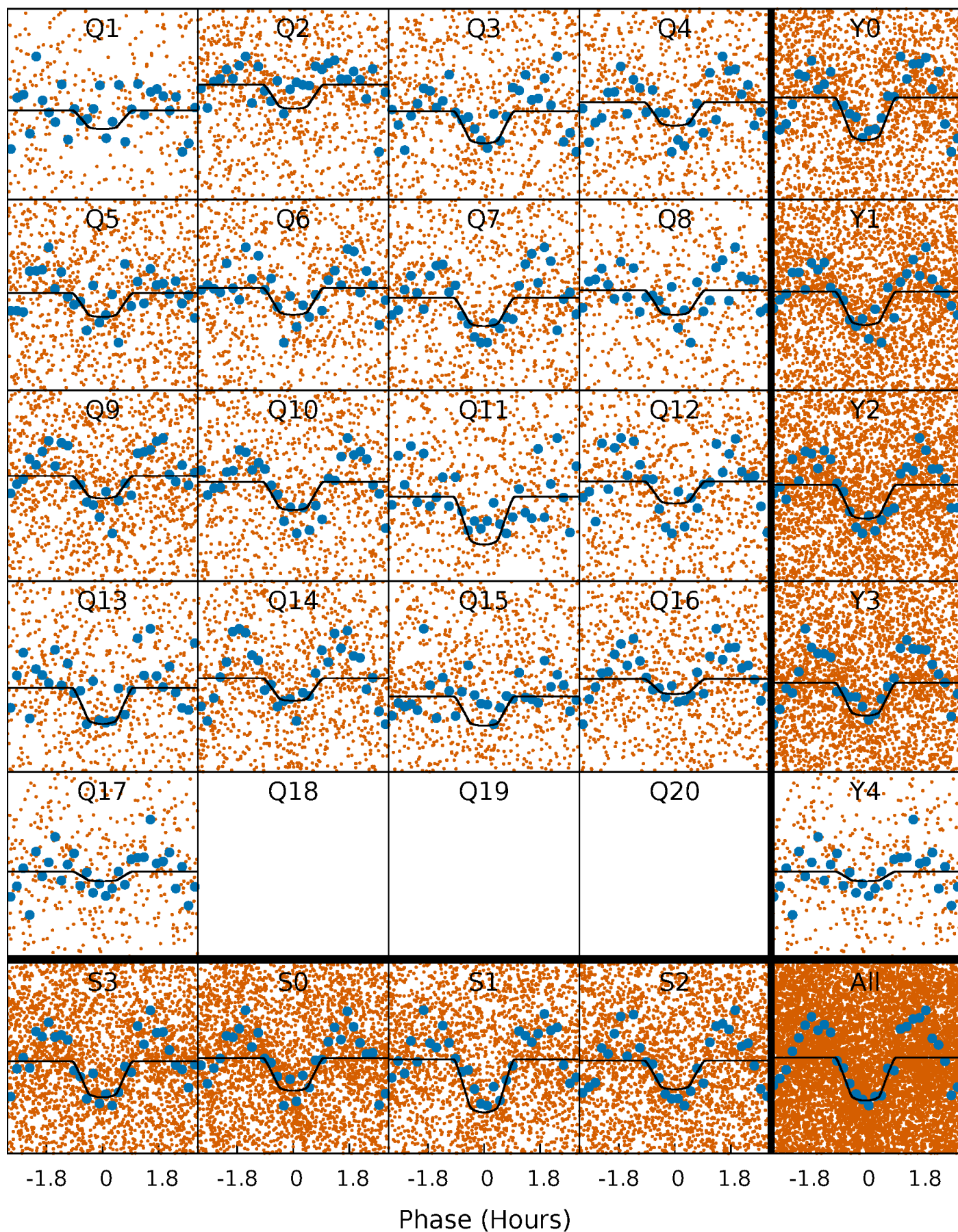
# PDC Quarter-Phased Transit Curves

TCE 011772971-01 P= 0.621666 Days  $T_0=131.717653$  (BKJD)



# DV Quarter-Phased Transit Curves

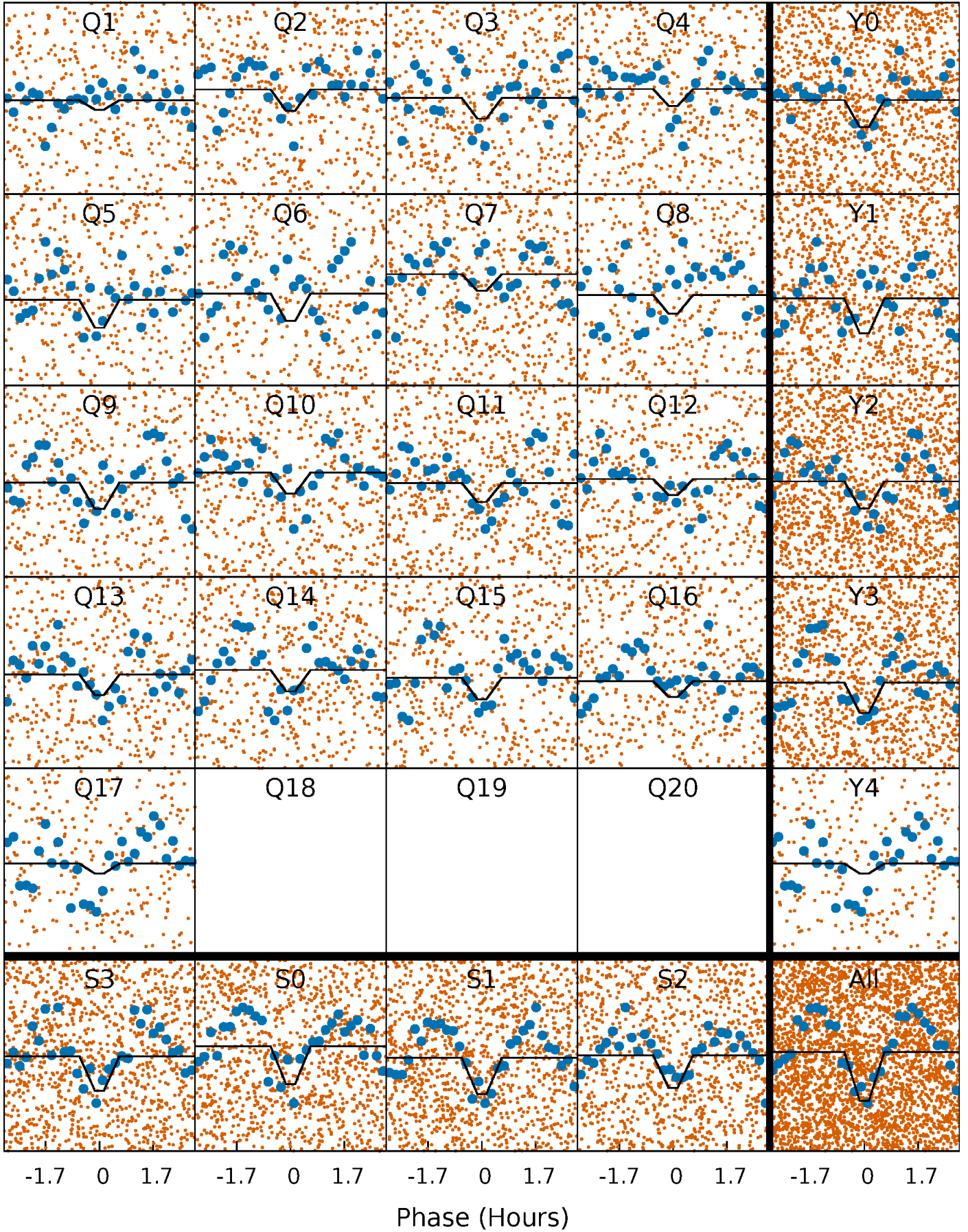
TCE 011772971-01 P= 0.621666 Days  $T_0=131.717653$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011772971-01 P= 0.621672 Days  $T_0=131.712176$  (BKJD)

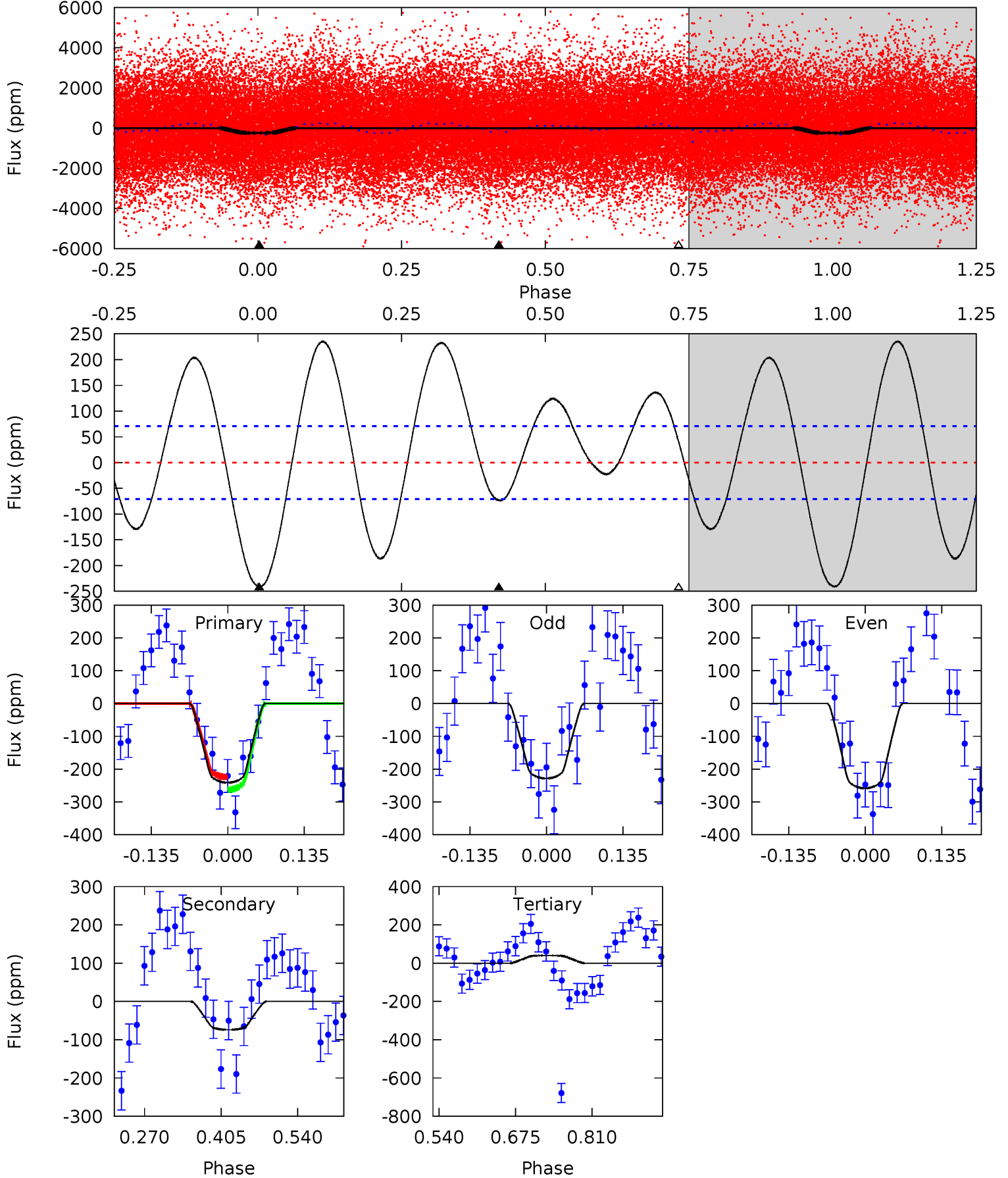




# DV Model-Shift Uniqueness Test

011772971-01, P = 0.621666 Days, E = 131.095987 Days

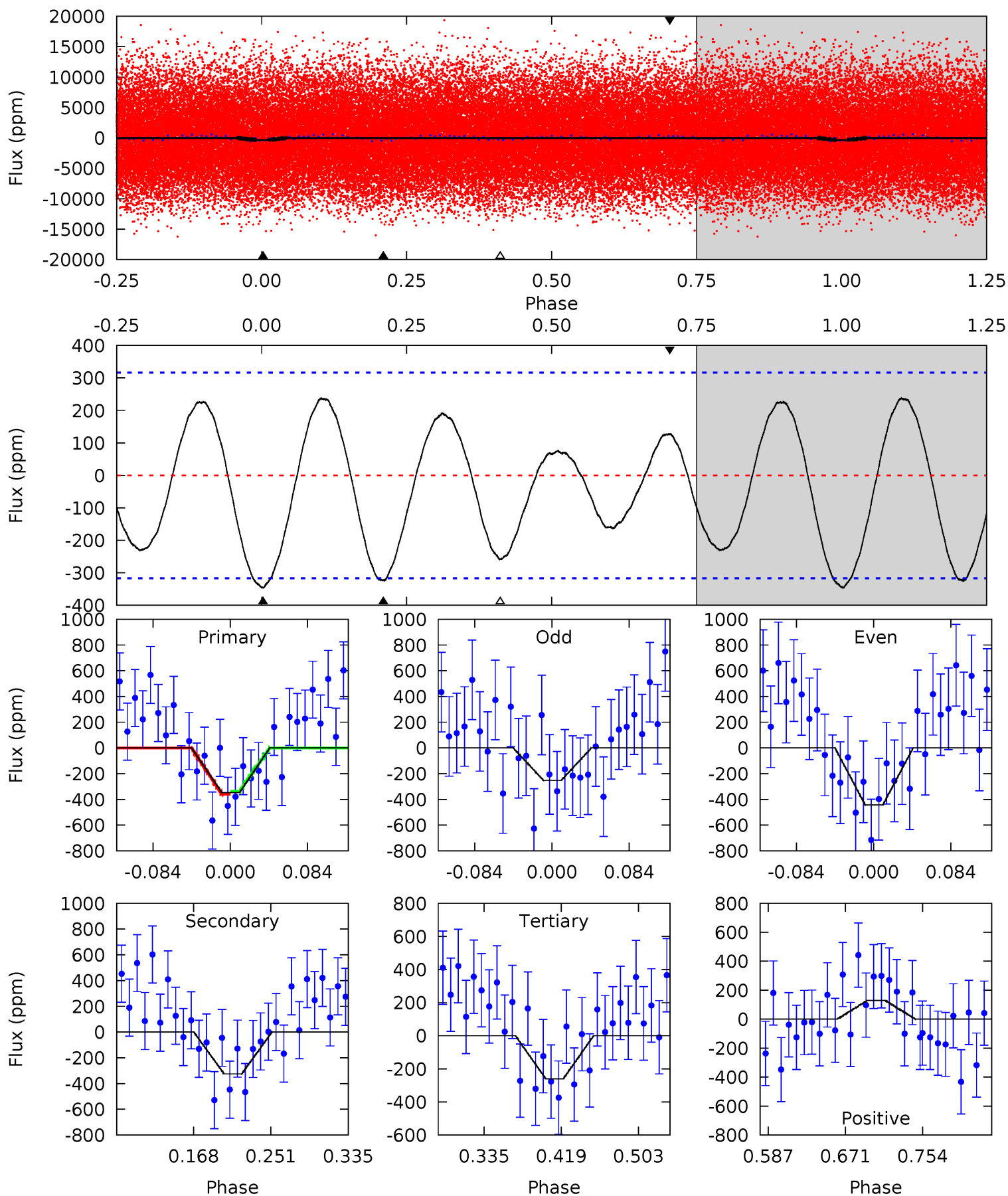
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	4.70	-2.56	0	4.50	1.49	6.10	17.9	15.4	7.26	4.70	0.95	1.03	0.49	1.23



# Alt Model-Shift Uniqueness Test

011772971-01, P = 0.621672 Days, E = 131.090504 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
5.05	4.72	3.78	1.89	4.60	1.73	2.14	1.27	3.17	0.95	2.84	1.38	0.66	0.41	0.17



### Stellar Parameters For KIC 011772971

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7419^{+81}_{-81}$	$4.002^{+0.132}_{-0.108}$	$0.000^{+0.150}_{-0.150}$	$2.159^{+0.373}_{-0.373}$	$1.707^{+0.136}_{-0.151}$	$0.239^{+0.155}_{-0.081}$
	+1%/-1%	+3%/-3%	+inf%/-inf%	+17%/-17%	+8%/-9%	+65%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011772971-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-74 \pm 16$	$4.05^{+1.46}_{-1.53}$	$5145^{+232}_{-232}$	$4593^{+1685}_{-1231}$	$0.696^{+1.208}_{-0.336}$
Alt.	$-325 \pm 69$	$4.83^{+1.64}_{-1.63}$	$5145^{+224}_{-247}$	$6670^{+1786}_{-1203}$	$2.250^{+2.701}_{-1.094}$

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



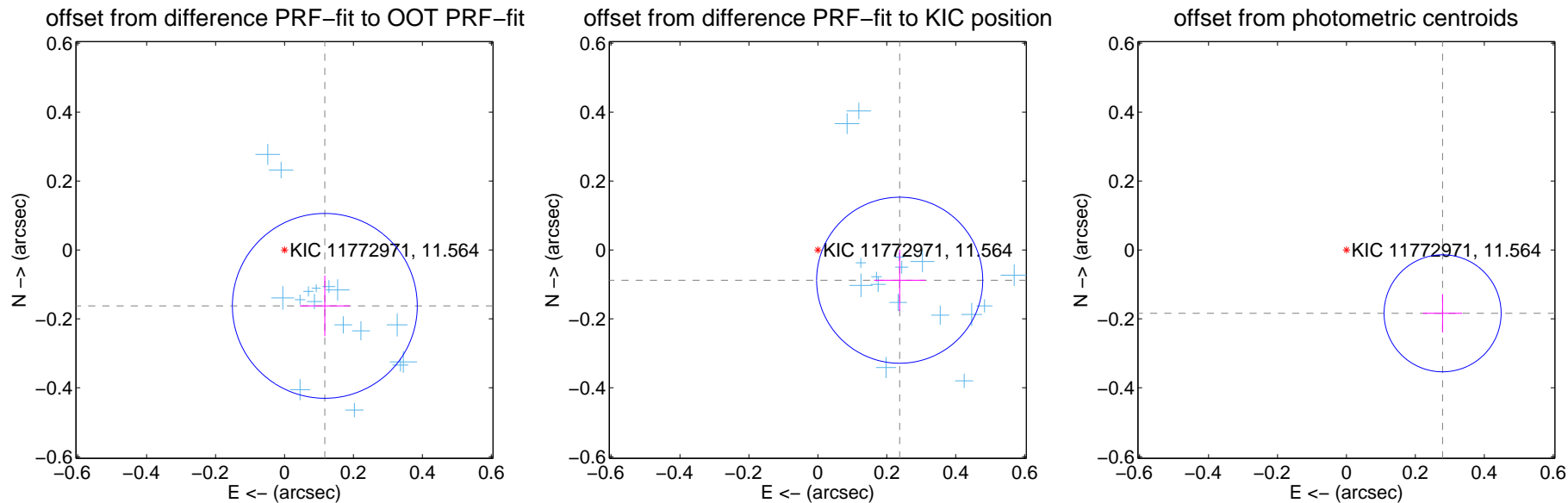
## DV Centroid Data

Supplemental centroid analysis for 011772971-01. **Kepler magnitude: 11.56.** Transit SNR 11.90

There are 17 quarters with good PRF difference image offsets

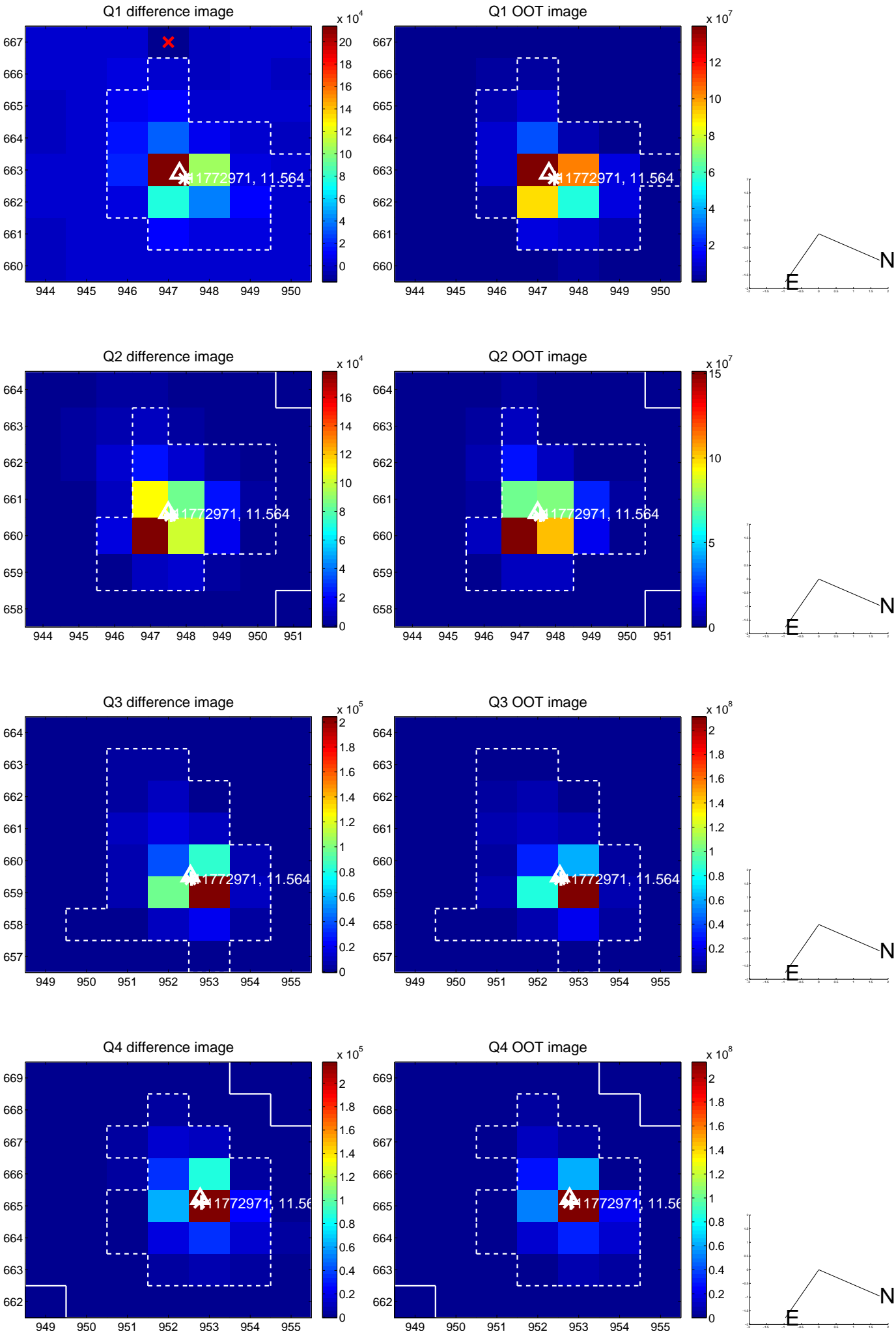
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.200 \pm 0.089$	2.24	$-0.117 \pm 0.073$	$-0.162 \pm 0.088$
PRF-fit source offset from KIC position	<b><math>0.253 \pm 0.080</math></b>	<b>3.15</b>	$-0.237 \pm 0.074$	$-0.088 \pm 0.089$
photometric centroid source offset	<b><math>0.33 \pm 0.06</math></b>	<b>5.90</b>	$-0.28 \pm 0.06$	$-0.18 \pm 0.06$

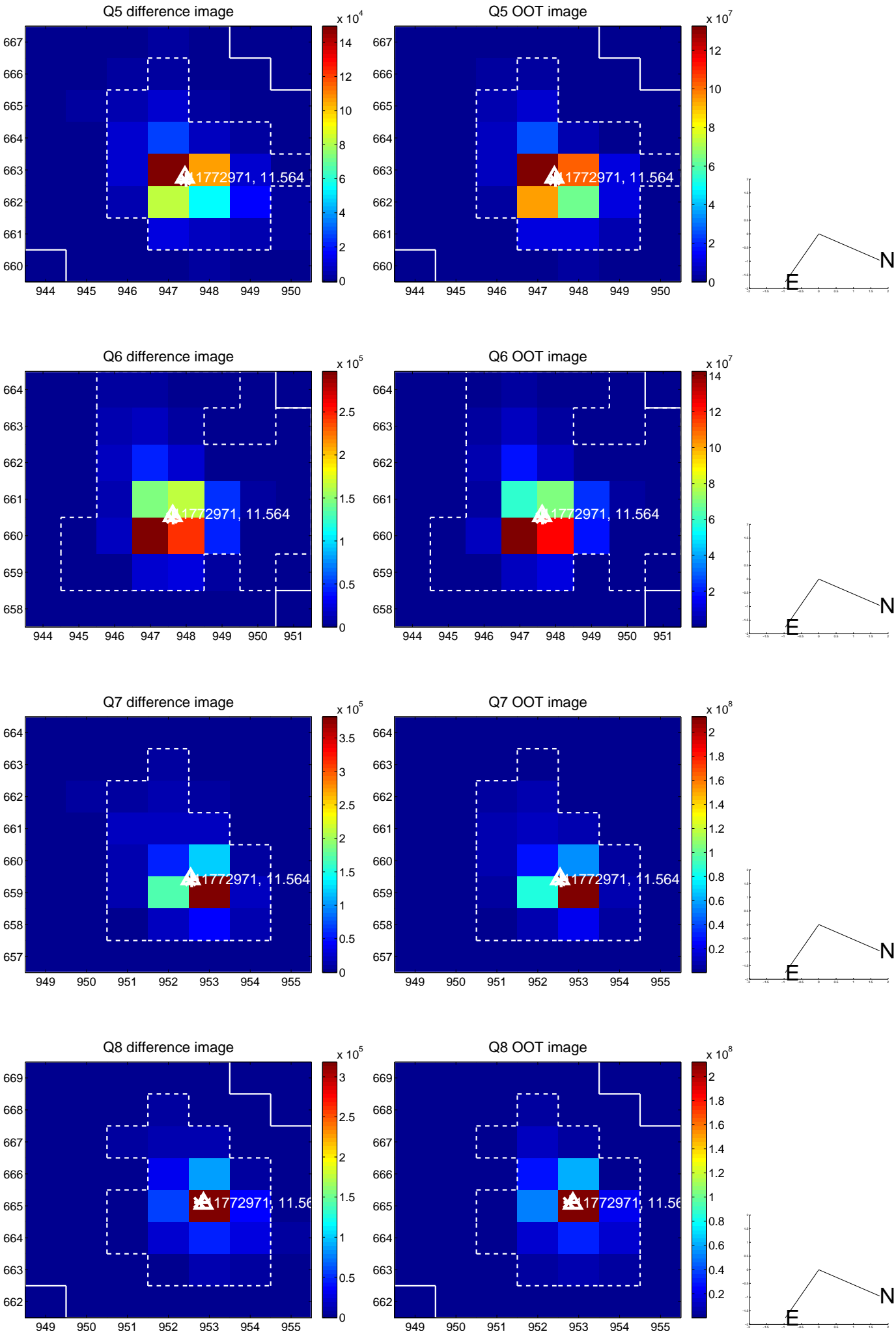


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

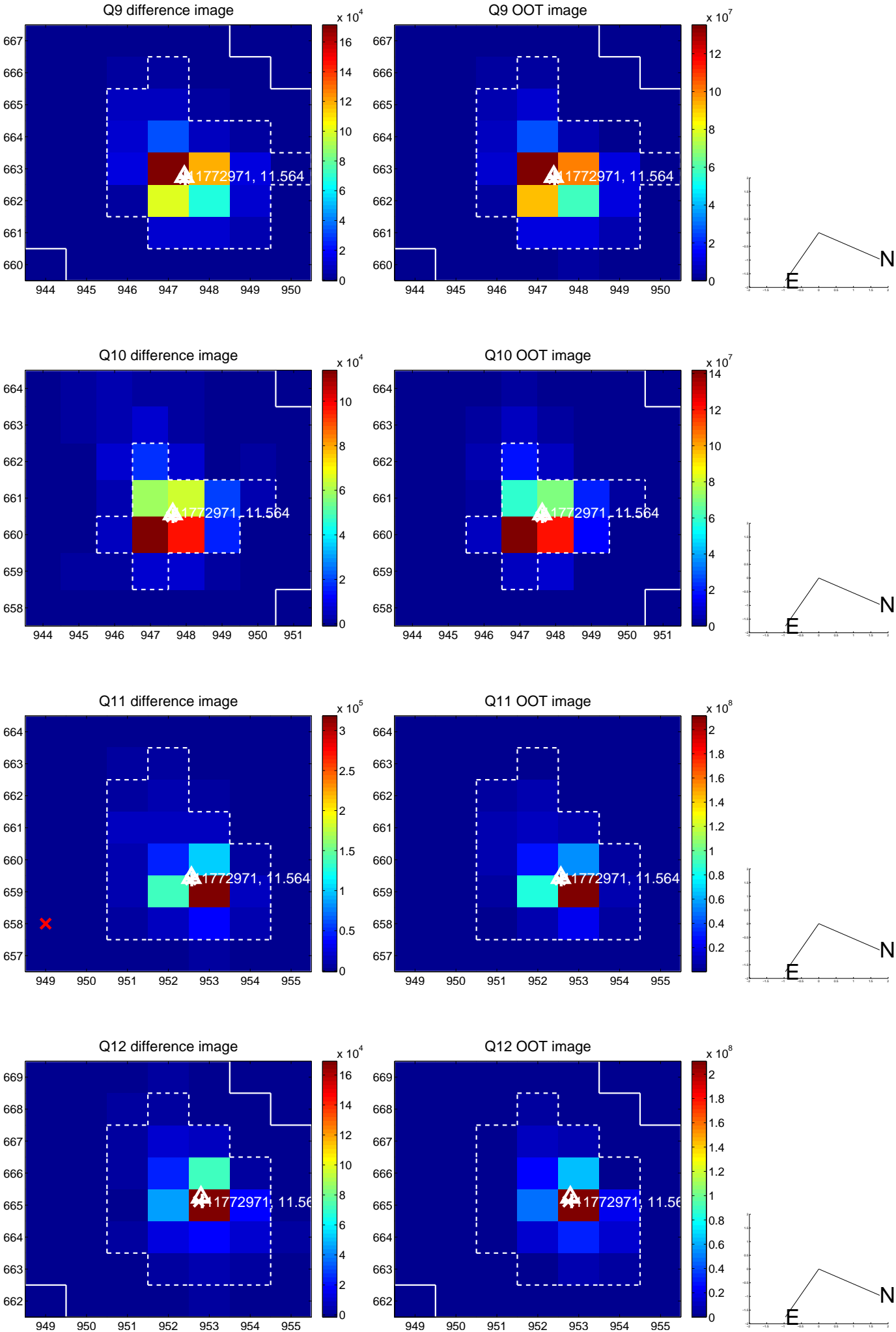


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

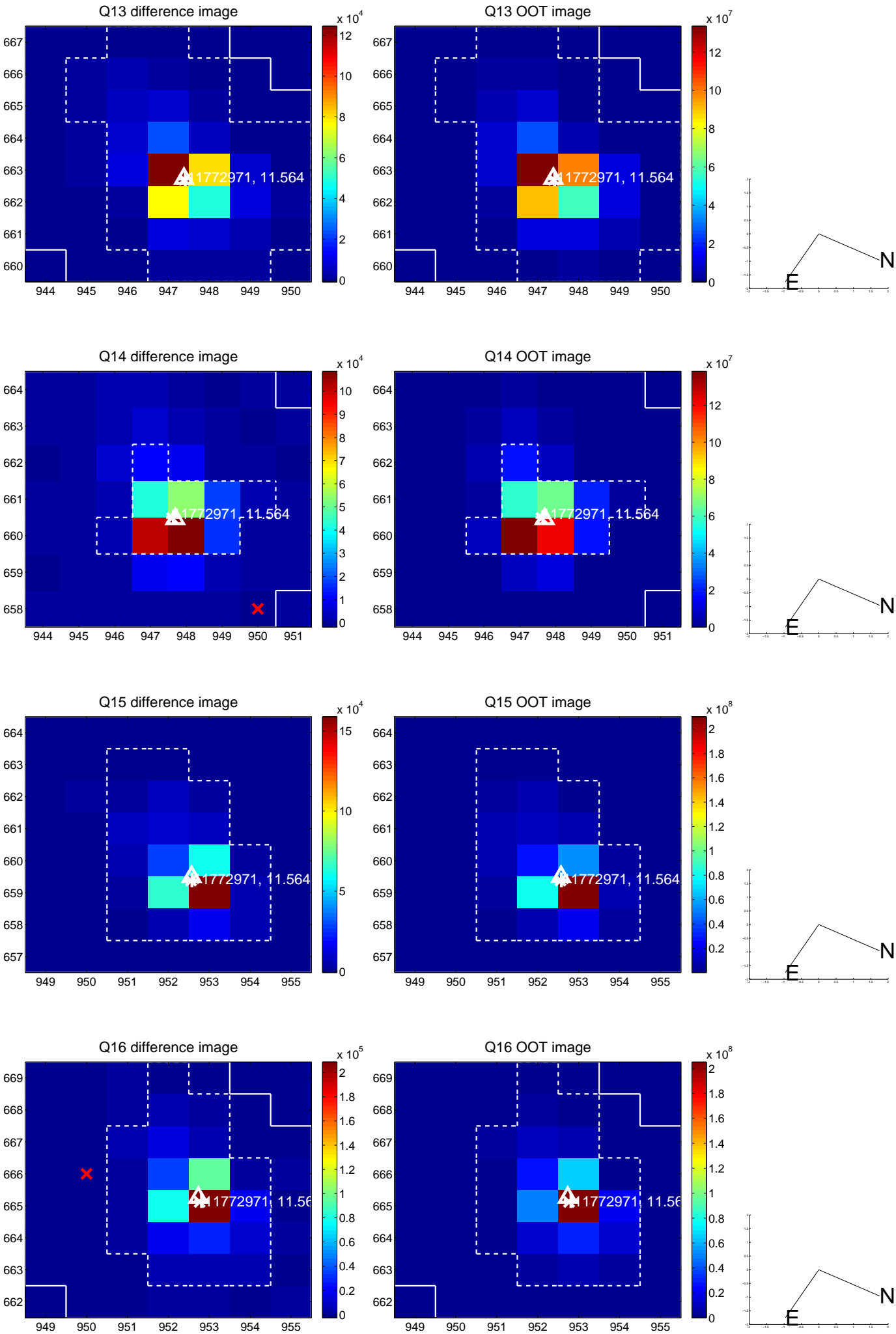




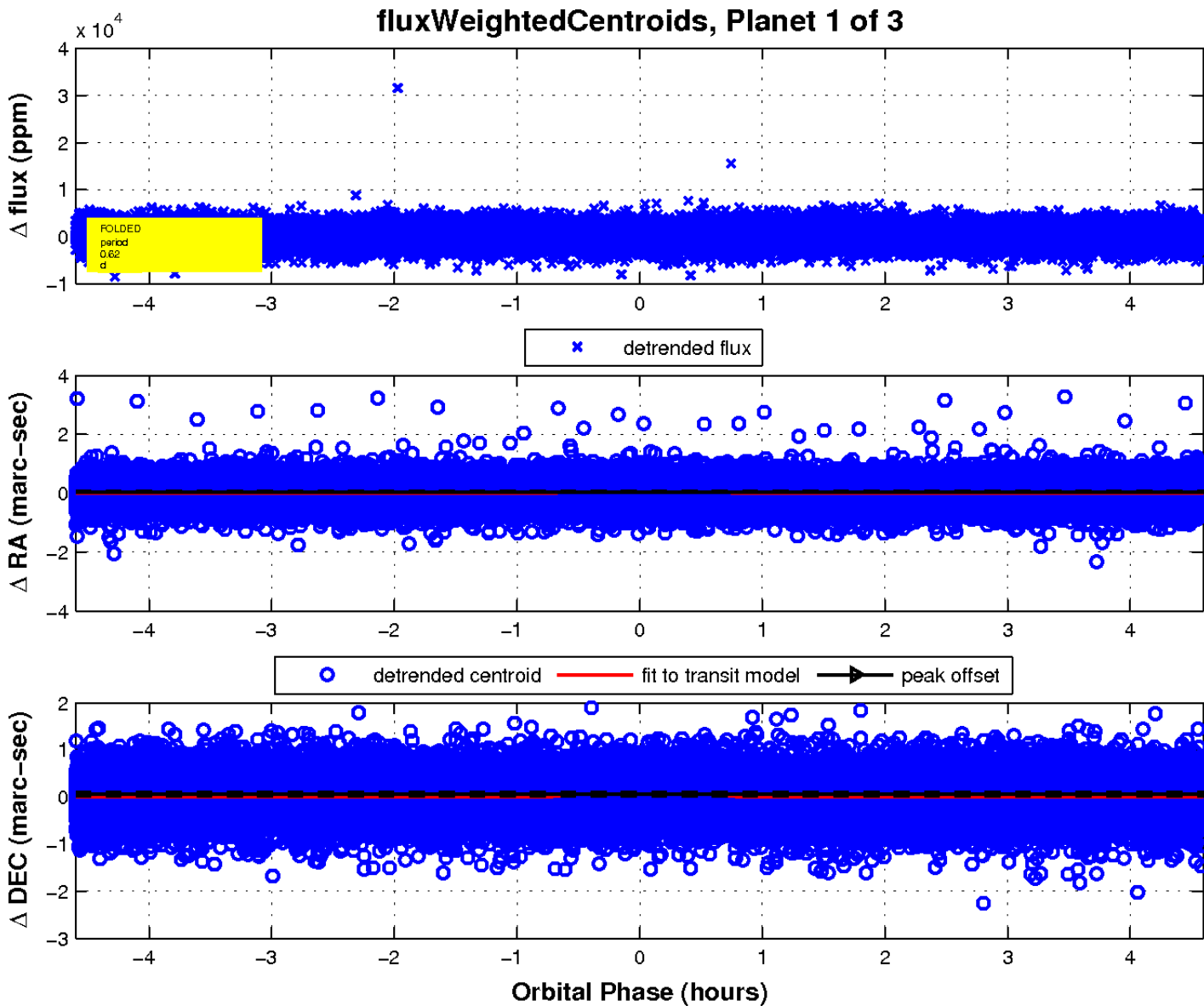
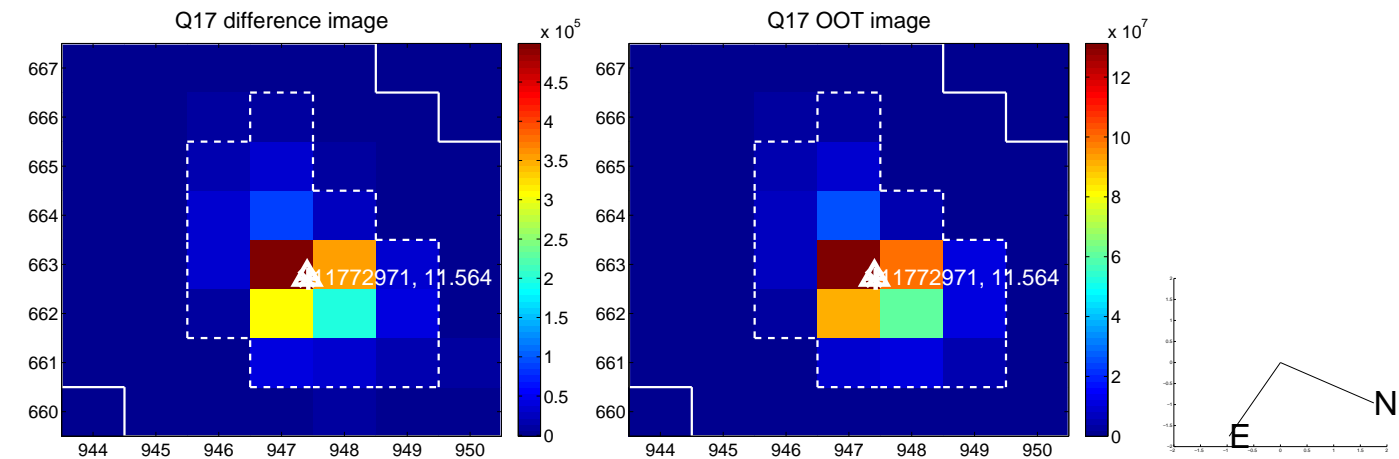
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

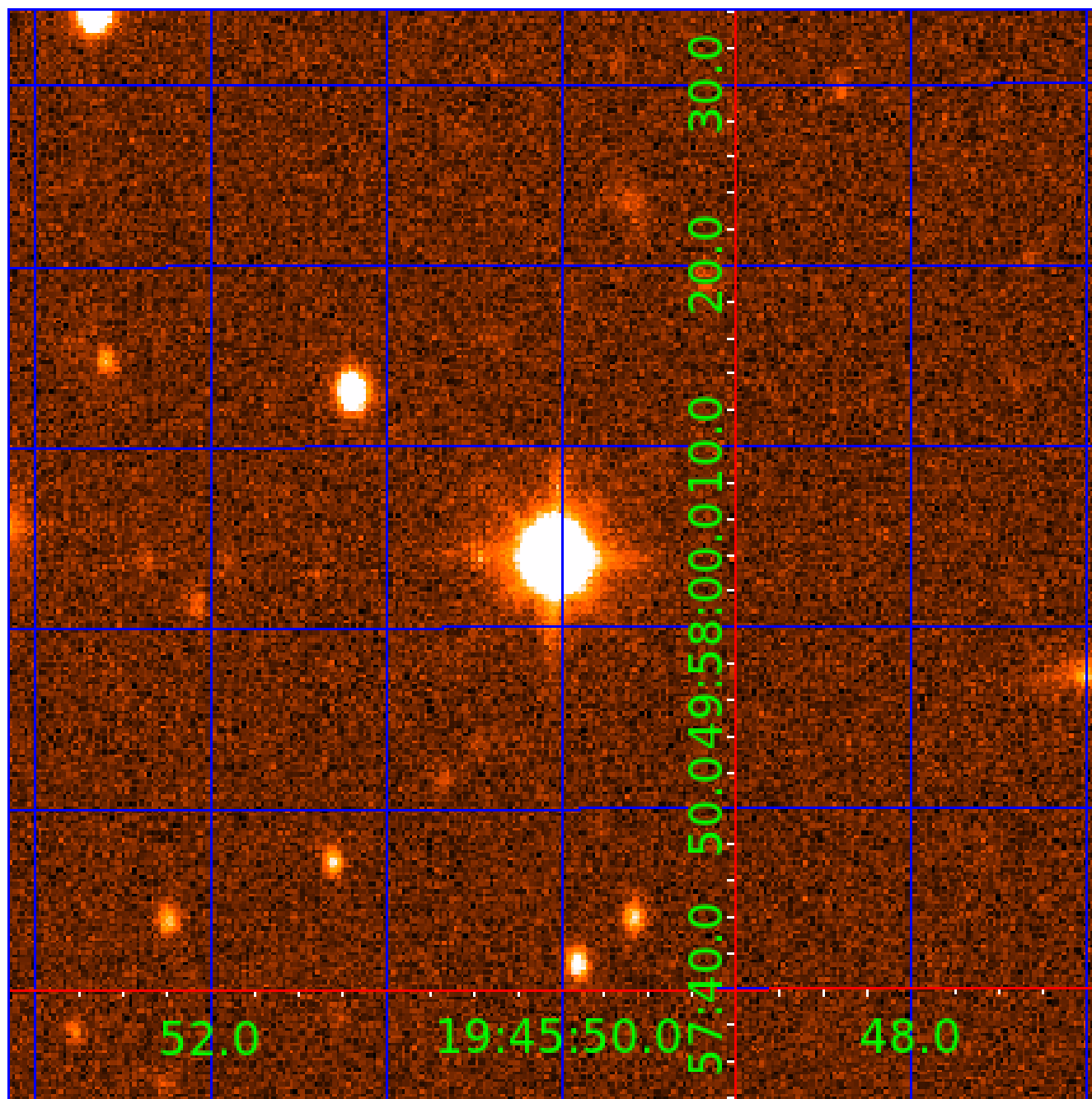


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011772971

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011772971-01	OBS	No	0.621666	131.717653	254.4	1.533	9.9	11.9	2.16	7419	3.99	43554.71
011772971-02	OBS	No	1.179397	131.659322	273.1	4.736	8.9	12.2	2.16	7419	3.74	18545.17
011772971-03	OBS	No	0.866433	131.579944	131.6	2.000	8.5	-1.0	2.16	7419	2.52	27976.78

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011772971-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011772971-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
011772971-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_NOFITS

**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.

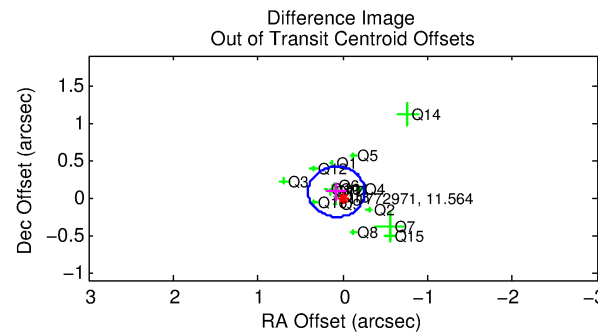
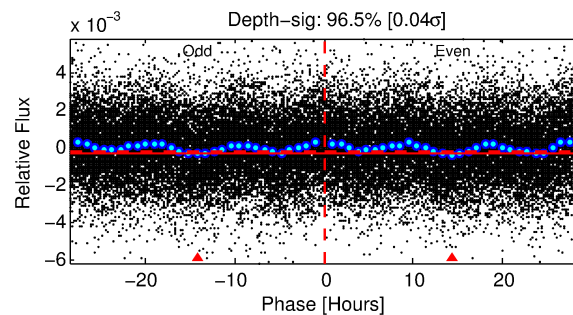
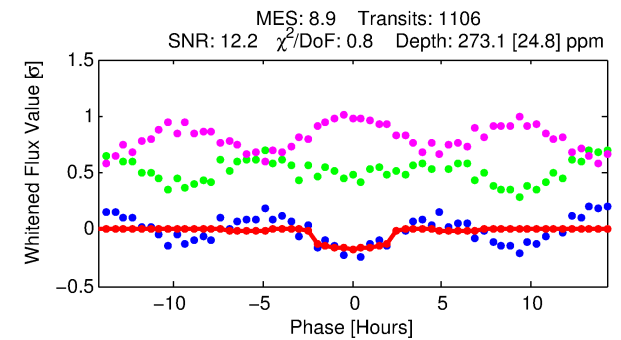
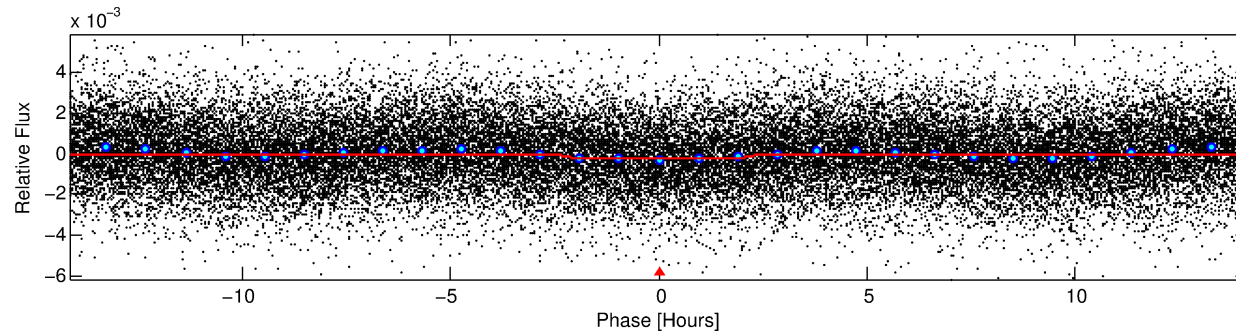
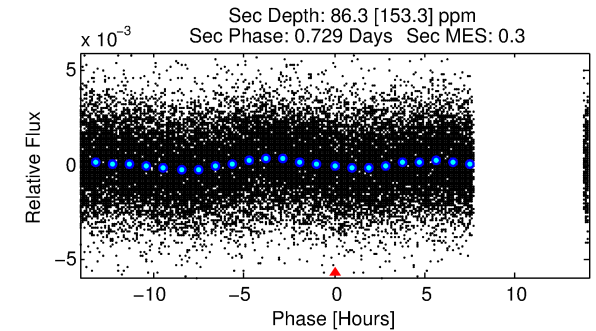
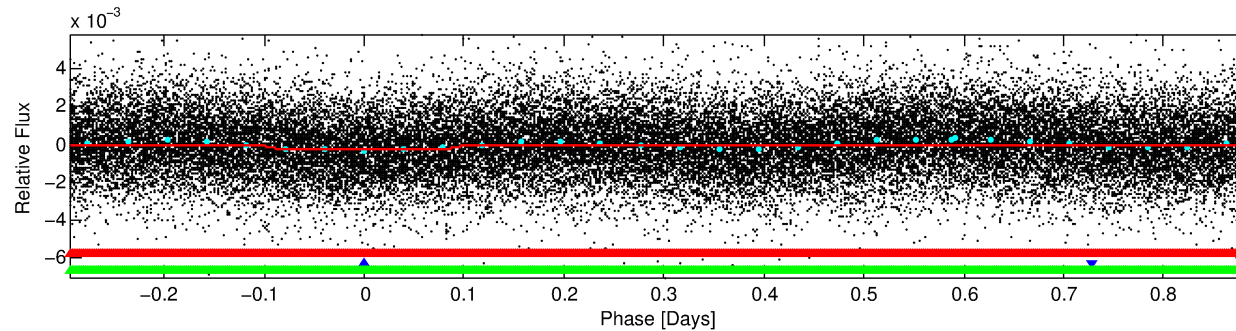
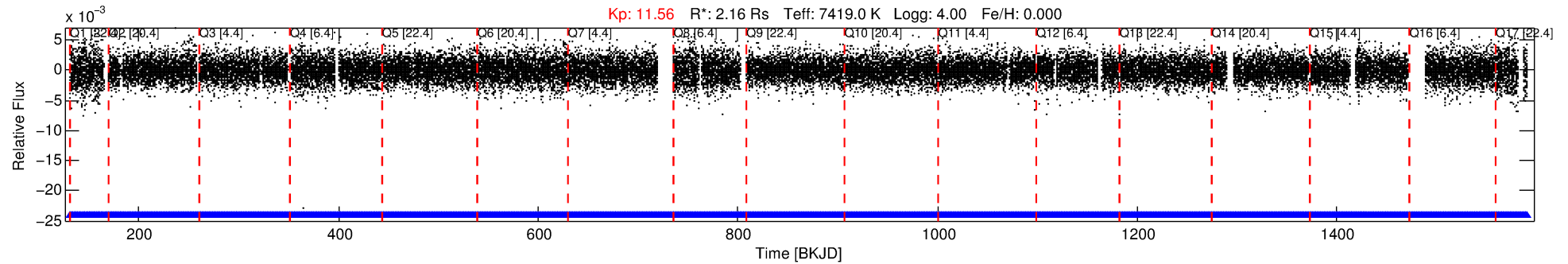
## Ephemeris Match Information For 011772971-02

No Significant Match Found



# DV One-Page Summary

KIC: 11772971 Candidate: 2 of 3 Period: 1.179 d



## DV Fit Results:

Period = 1.17940 [0.00001] d  
Epoch = 131.6593 [0.0039] BKJD  
Rp/R\* = 0.0159 [0.0121]  
a/R\* = 1.77 [5.70]  
b = 0.57 [5.67]  
Seff = 18545.17 [4397.62]  
Teq = 2976 [176] K  
Rp = 3.74 [2.91] Re  
a = 0.0261 [0.0040] AU  
Ag = 2.32 [5.44] [0.24 $\sigma$ ]  
Teffp = 5676 [3318] K [0.81 $\sigma$ ]

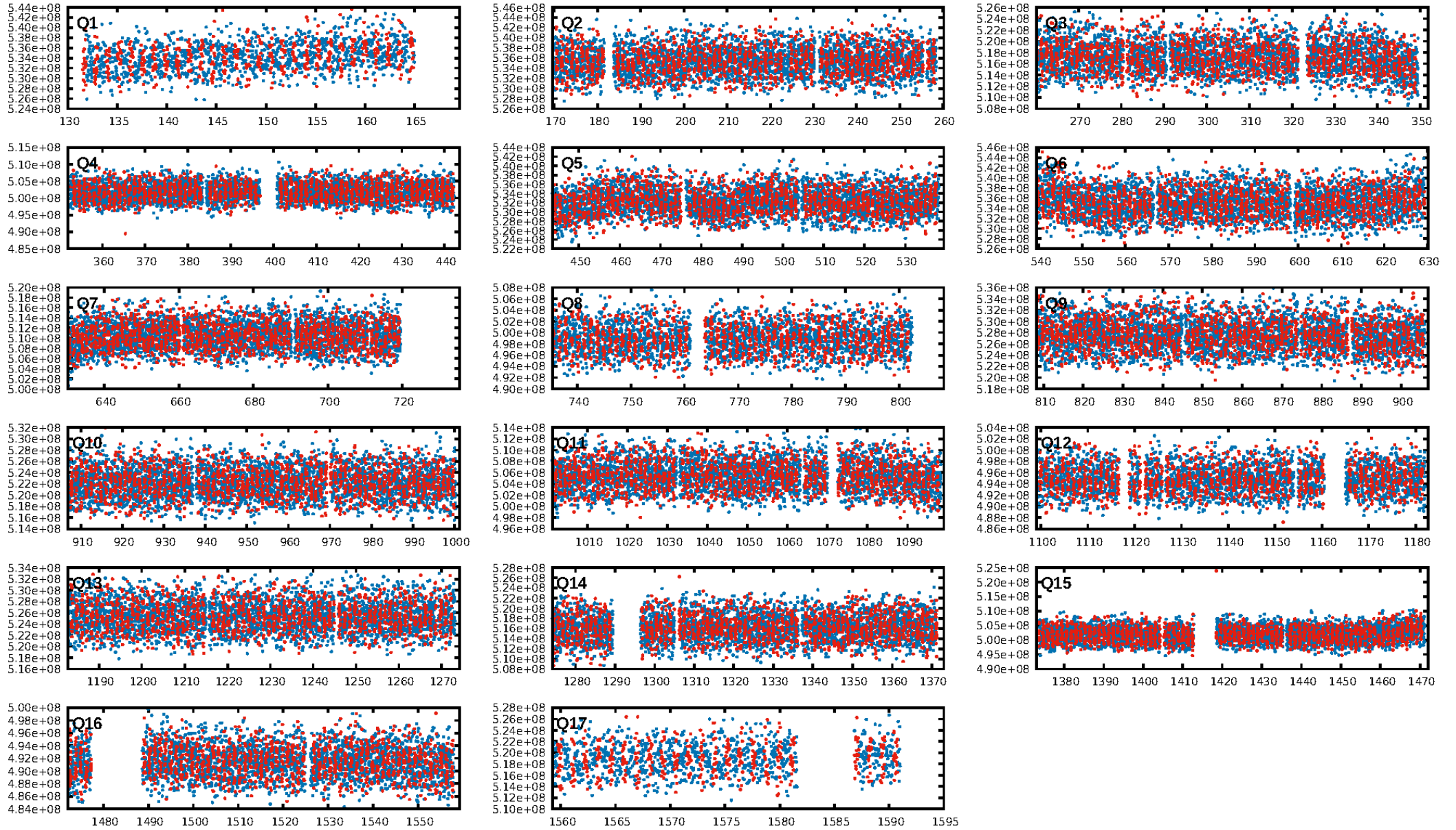
## DV Diagnostic Results:

ShortPeriod-sig: 85.6% [1.46 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1055/1055]  
GhostDiagnostic-chr: 0.9647  
Centroid-sig: 3.8%  
Centroid-so: 0.194 arcsec [4.50 $\sigma$ ]  
OotOffset-rm: 0.107 arcsec [0.96 $\sigma$ ]  
KicOffset-rm: 0.150 arcsec [1.27 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
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: 30-Jan-2016 06:28:54 Z

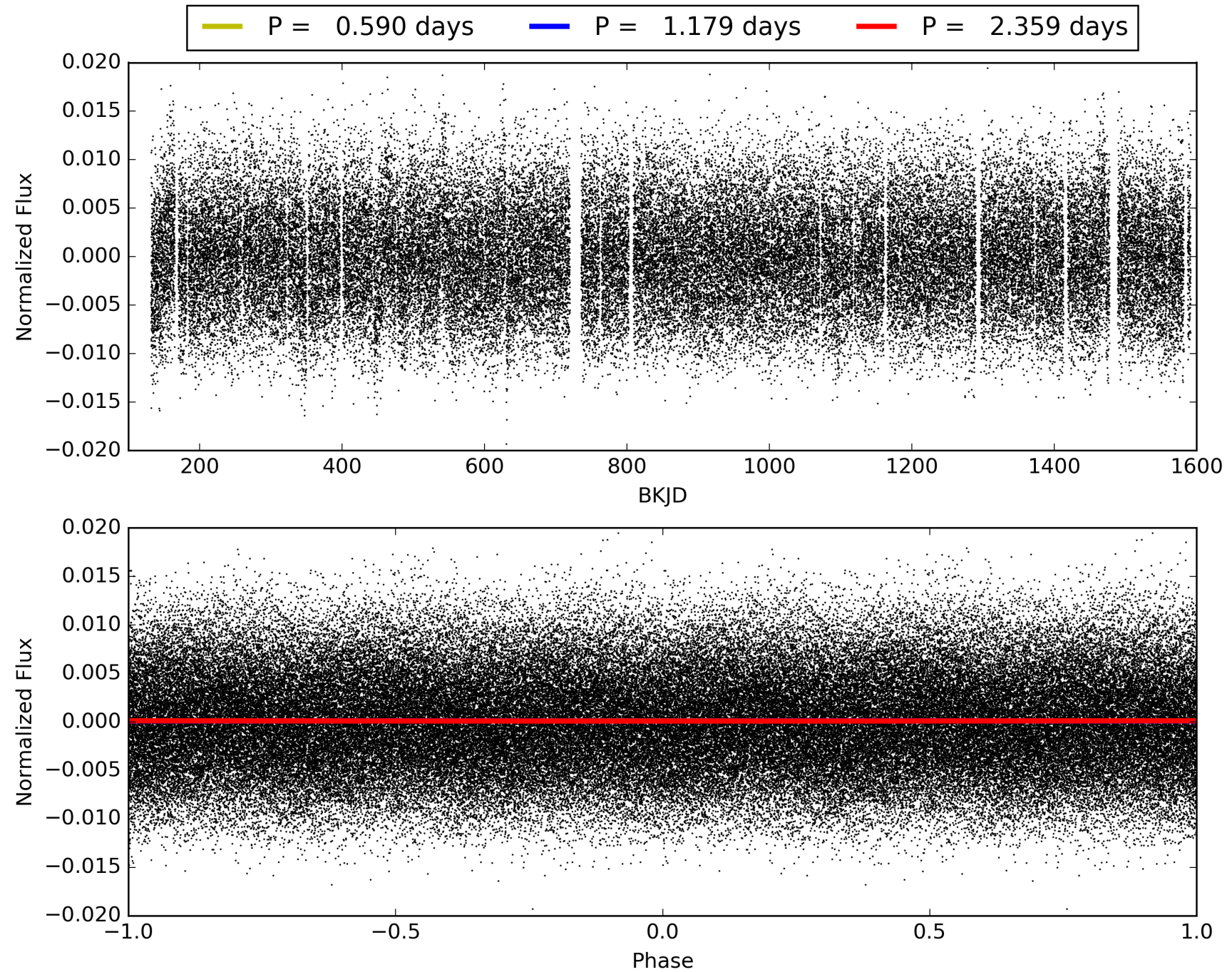
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011772971-02, PDC Light Curves



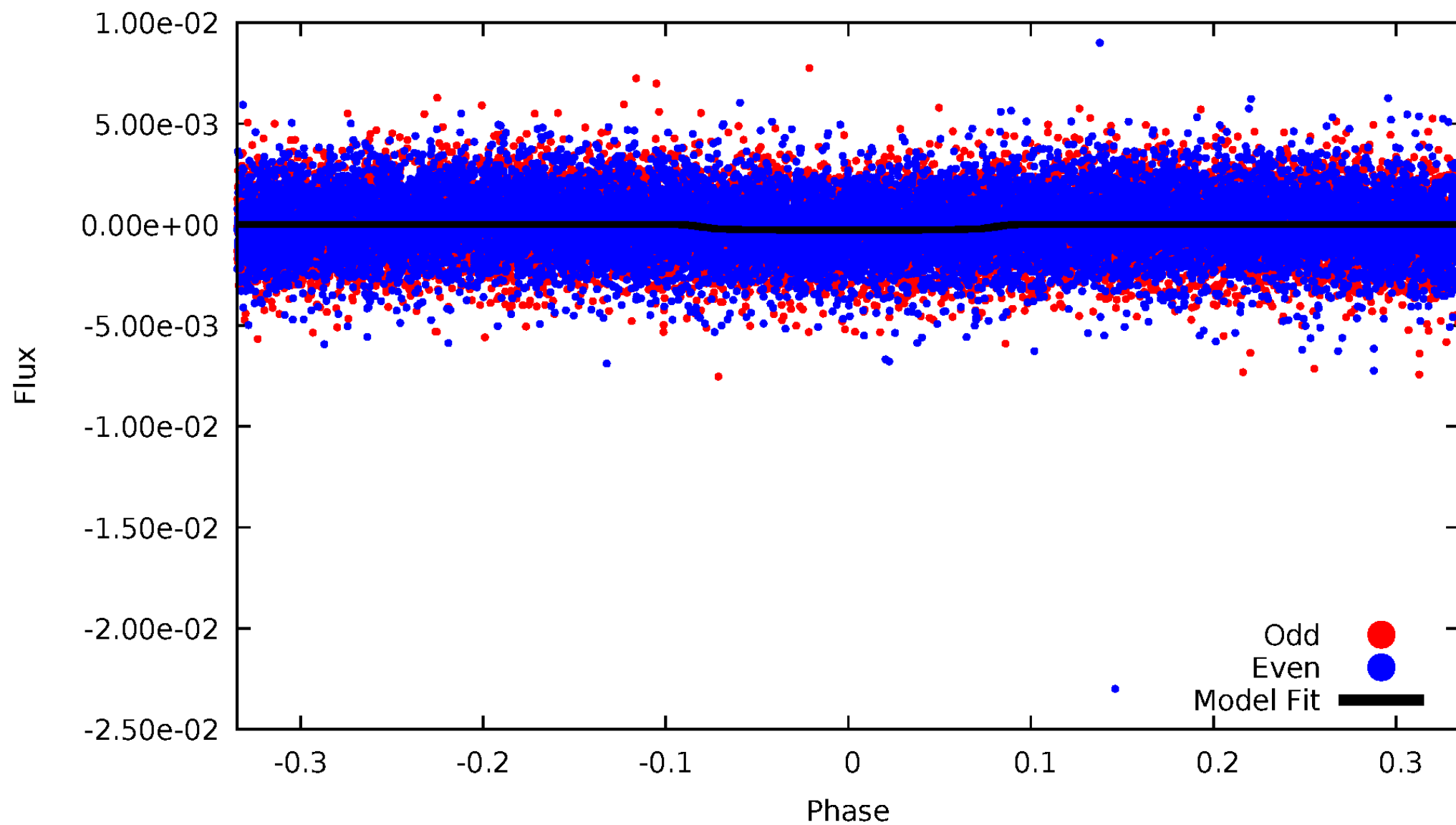


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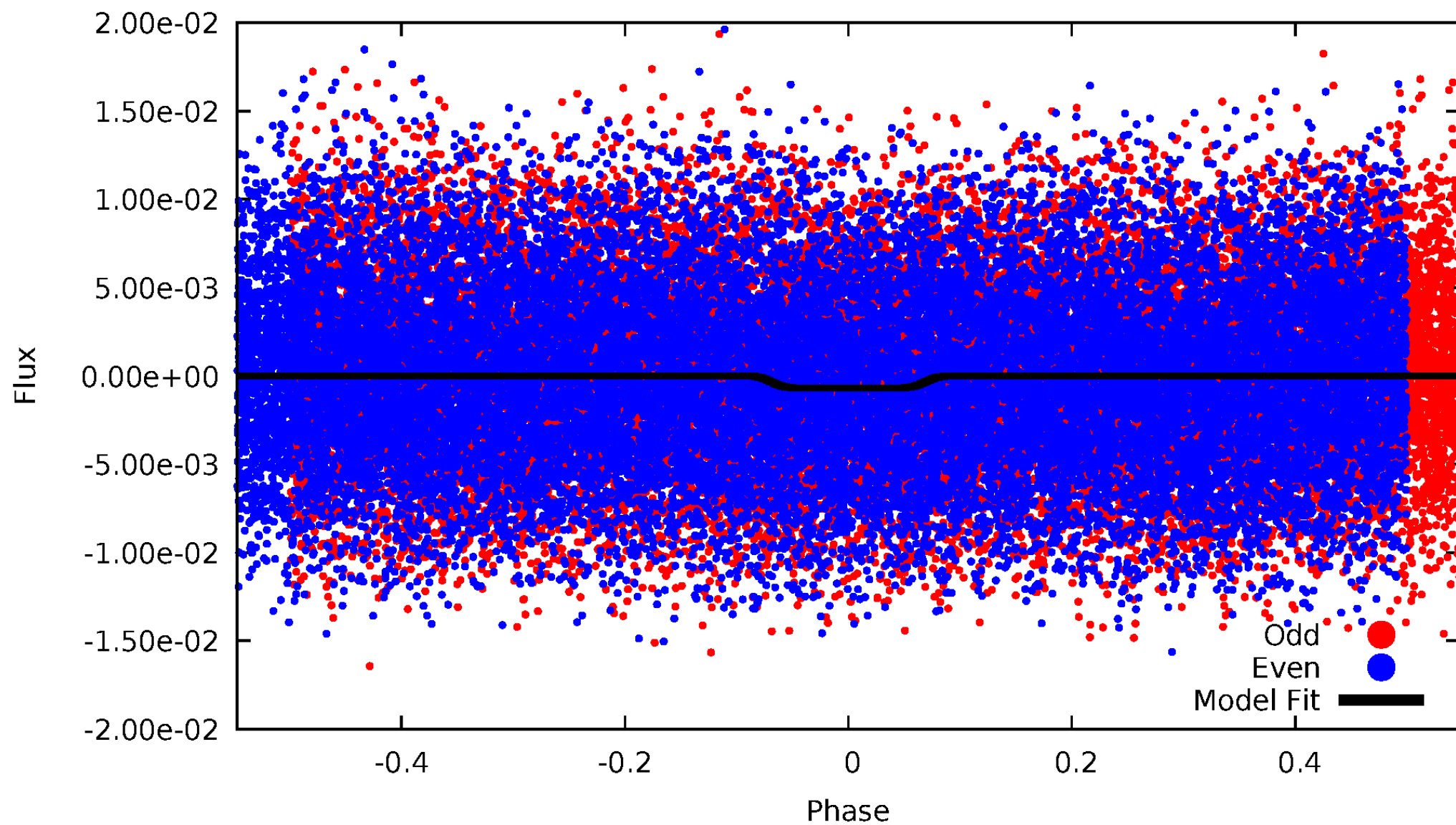
# DV Odd/Even

TCE 011772971-02



# ALT Odd/Even

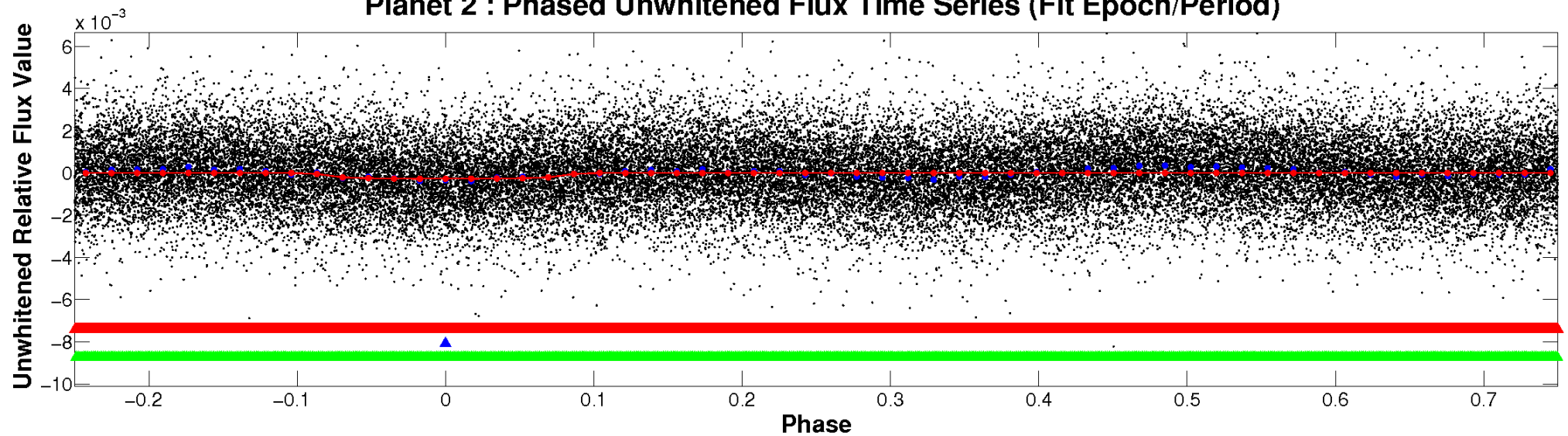
TCE 011772971-02



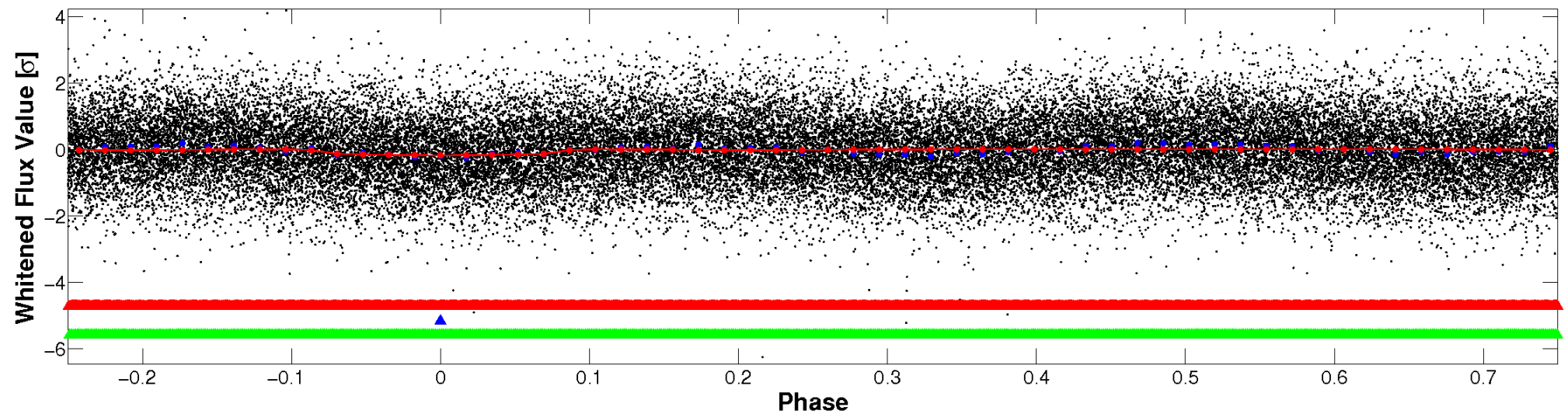


# Non-Whitened Vs. Whitened Light Curve

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

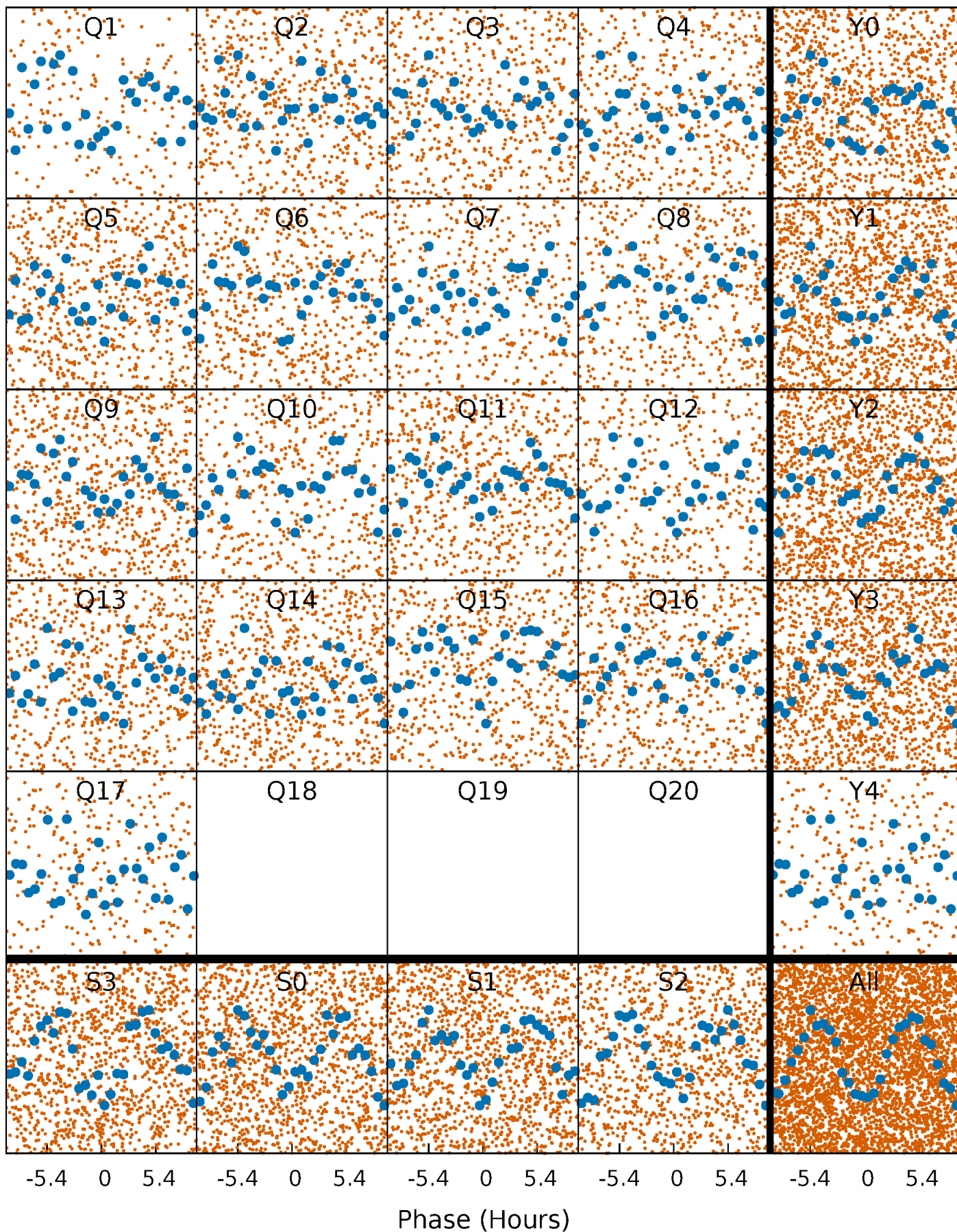


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

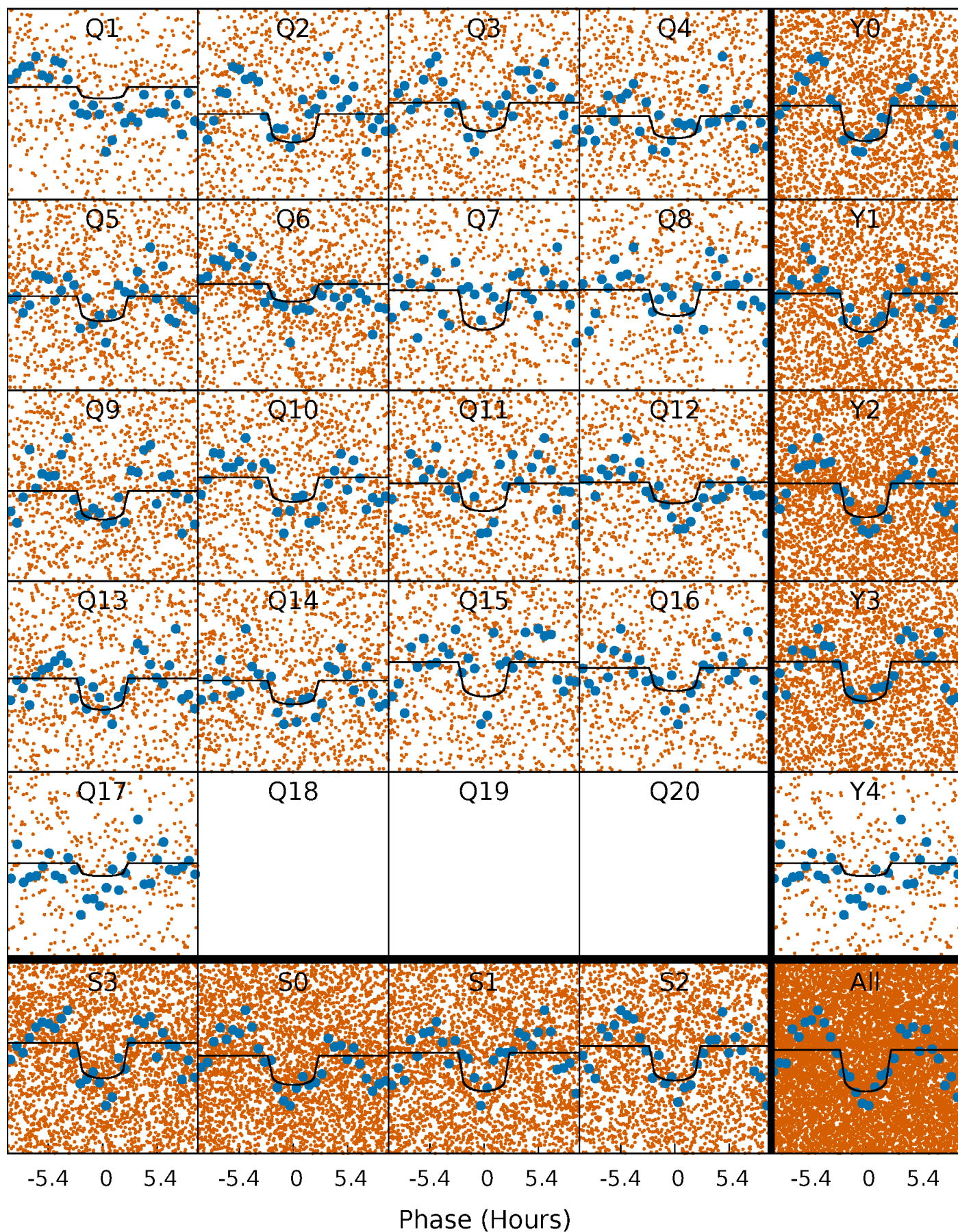
TCE 011772971-02 P= 1.179397 Days  $T_0=131.659322$  (BKJD)





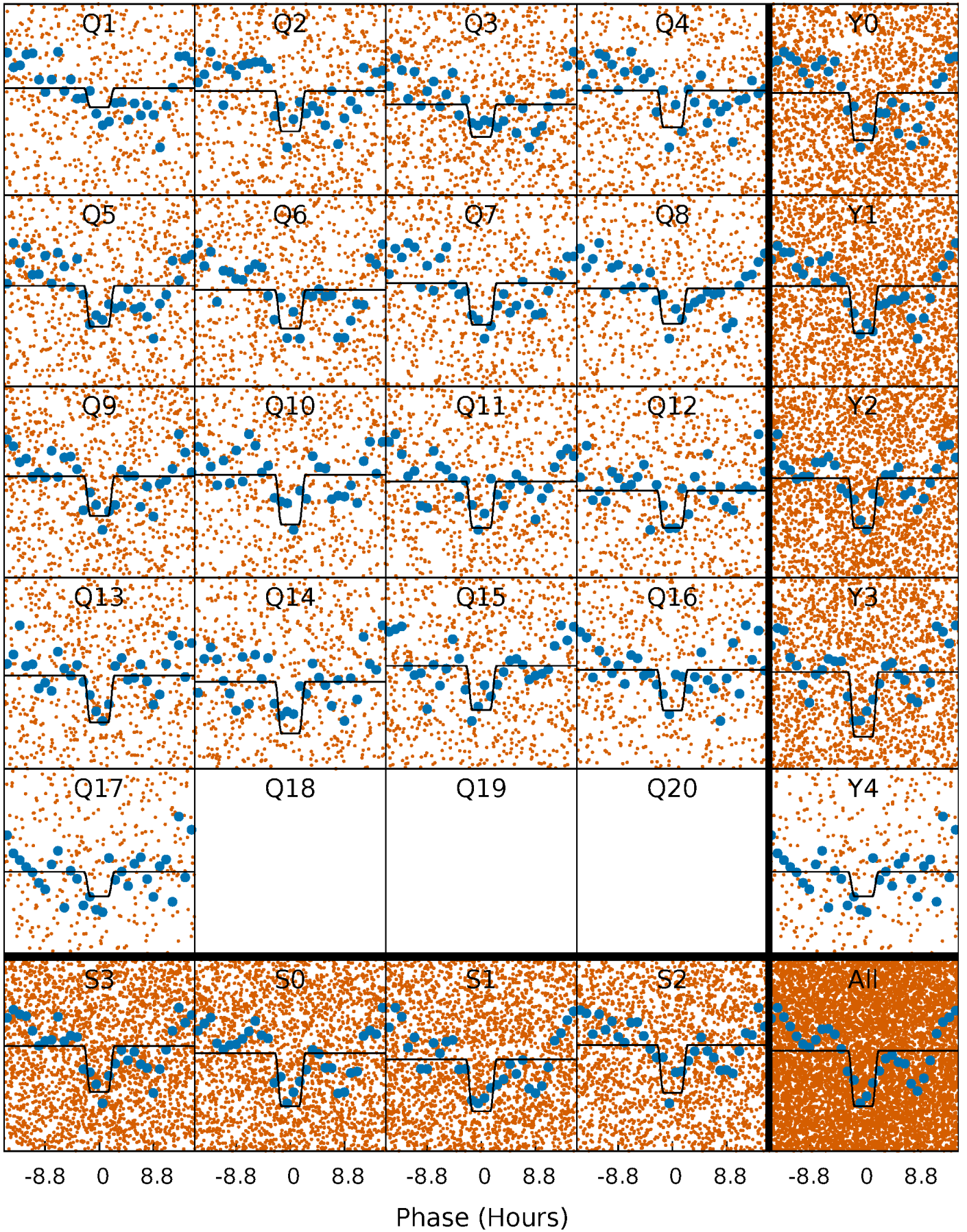
# DV Quarter-Phased Transit Curves

TCE 011772971-02 P= 1.179397 Days  $T_0=131.659322$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011772971-02   P= 1.179454 Days    $T_0=131.635714$  (BKJD)

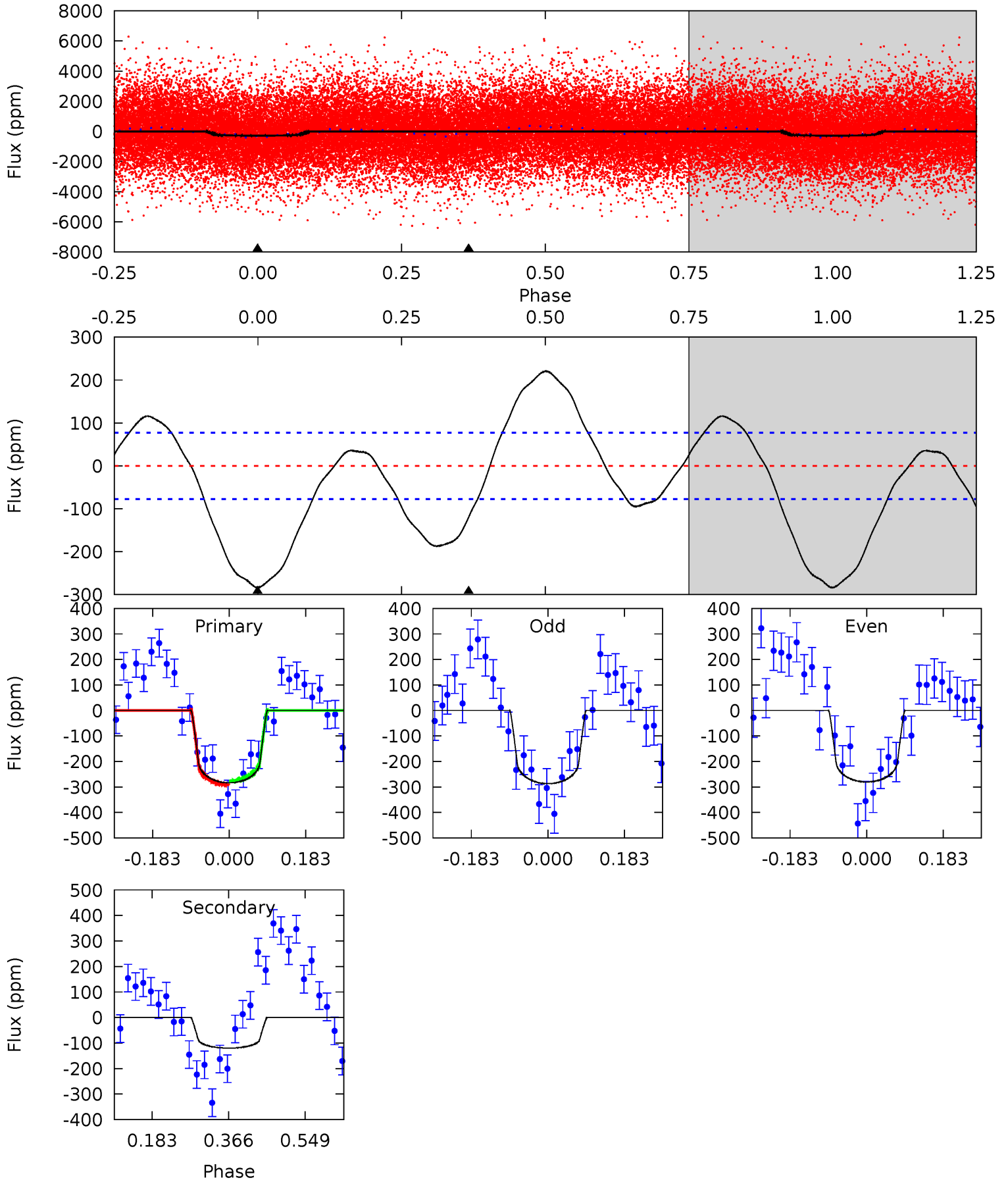




# DV Model-Shift Uniqueness Test

011772971-02, P = 1.179397 Days, E = 130.479925 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
16.3	6.89	0	0	4.44	1.33	4.25	16.3	16.3	6.89	6.89	0.19	1.01	0.44	0.44

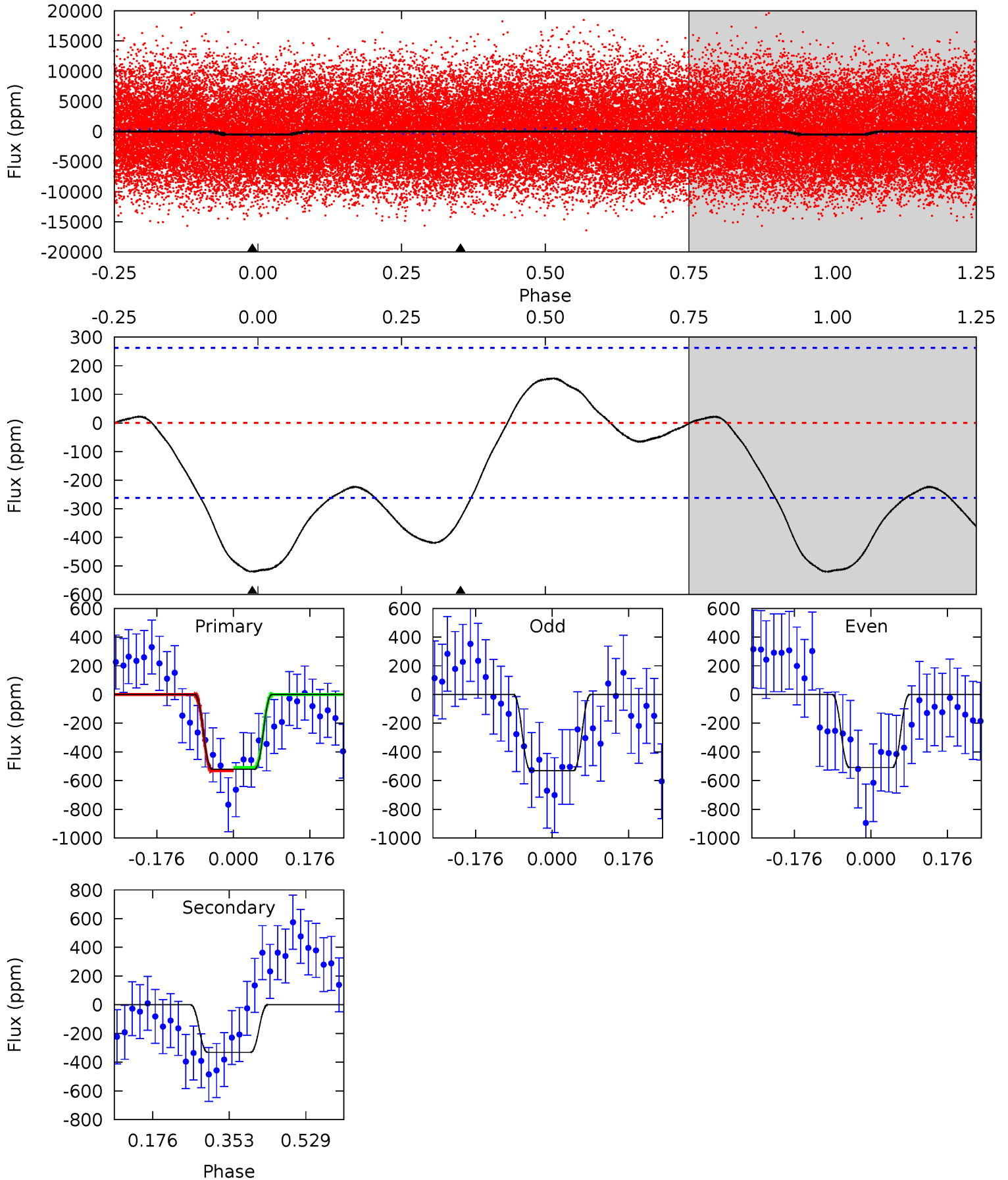




# Alt Model-Shift Uniqueness Test

011772971-02, P = 1.179454 Days, E = 130.456260 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
8.82	5.63	0	0	4.44	1.35	1.19	8.82	8.82	5.63	5.63	0.18	1.12	0.23	0.20



### Stellar Parameters For KIC 011772971

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7419^{+81}_{-81}$	$4.002^{+0.132}_{-0.108}$	$0.000^{+0.150}_{-0.150}$	$2.159^{+0.373}_{-0.373}$	$1.707^{+0.136}_{-0.151}$	$0.239^{+0.155}_{-0.081}$
	+1%/-1%	+3%/-3%	+inf%/-inf%	+17%/-17%	+8%/-9%	+65%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011772971-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-120 \pm 17$	$3.98^{+2.82}_{-2.21}$	$4153^{+192}_{-188}$	$5707^{+3555}_{-1400}$	$2.826^{+11.241}_{-1.885}$
Alt.	$-332 \pm 59$	$6.11^{+2.87}_{-2.65}$	$4142^{+190}_{-192}$	$5963^{+2213}_{-1147}$	$3.363^{+6.768}_{-1.926}$

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

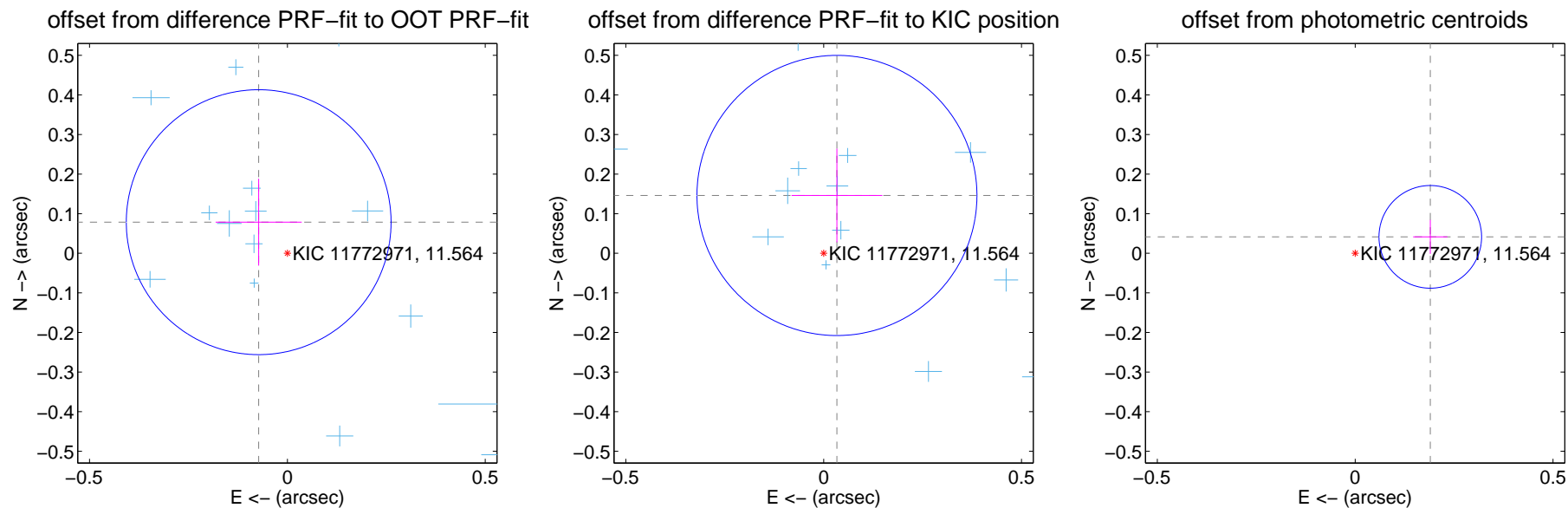
## DV Centroid Data

Supplemental centroid analysis for 011772971-02. **Kepler magnitude: 11.56.** Transit SNR 12.21

There are 17 quarters with good PRF difference image offsets

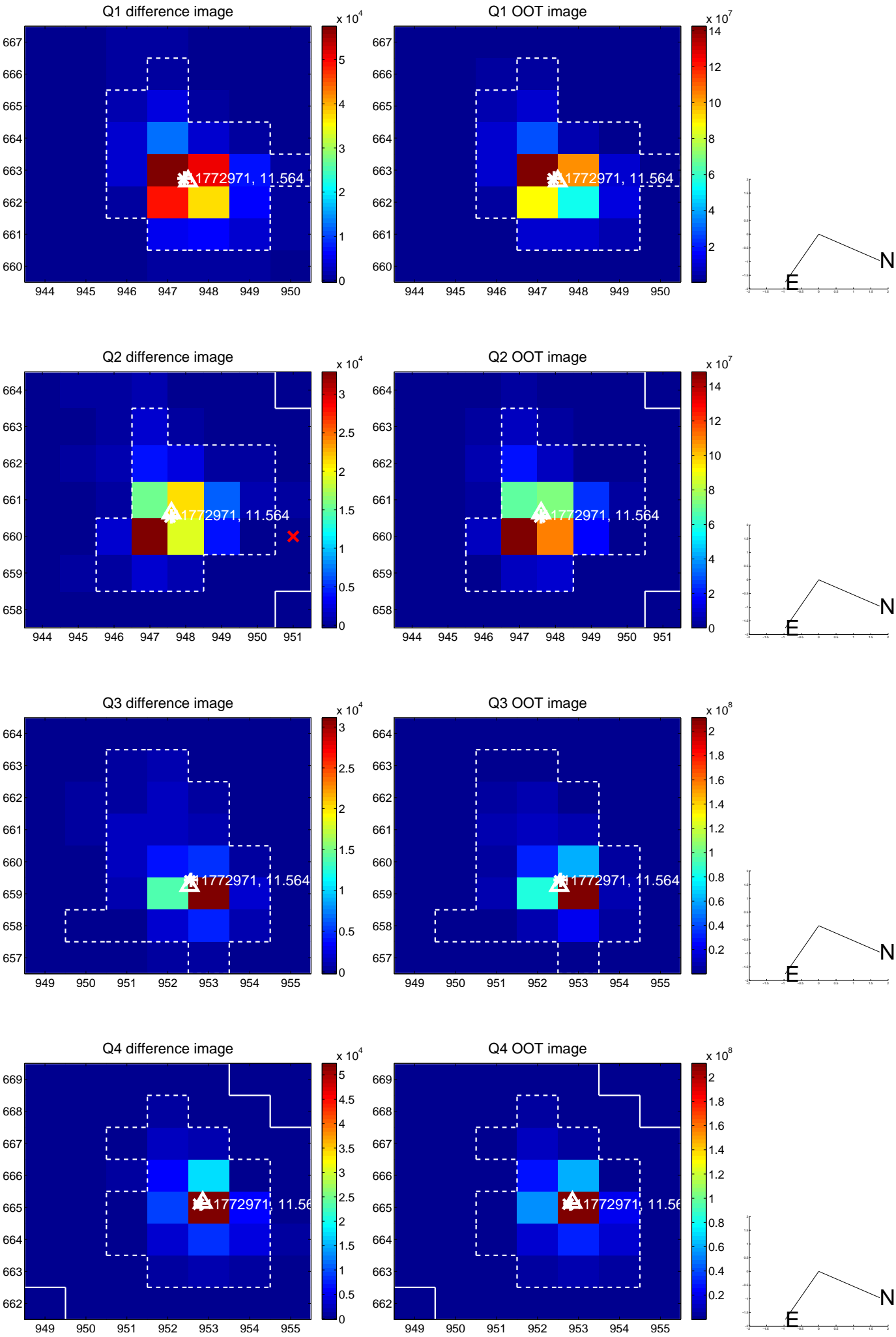
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.107 \pm 0.112$	0.96	$0.073 \pm 0.109$	$0.079 \pm 0.110$
PRF-fit source offset from KIC position	$0.150 \pm 0.118$	1.27	$-0.034 \pm 0.115$	$0.146 \pm 0.118$
photometric centroid source offset	<b><math>0.19 \pm 0.04</math></b>	<b>4.50</b>	$-0.19 \pm 0.04$	$0.04 \pm 0.04$



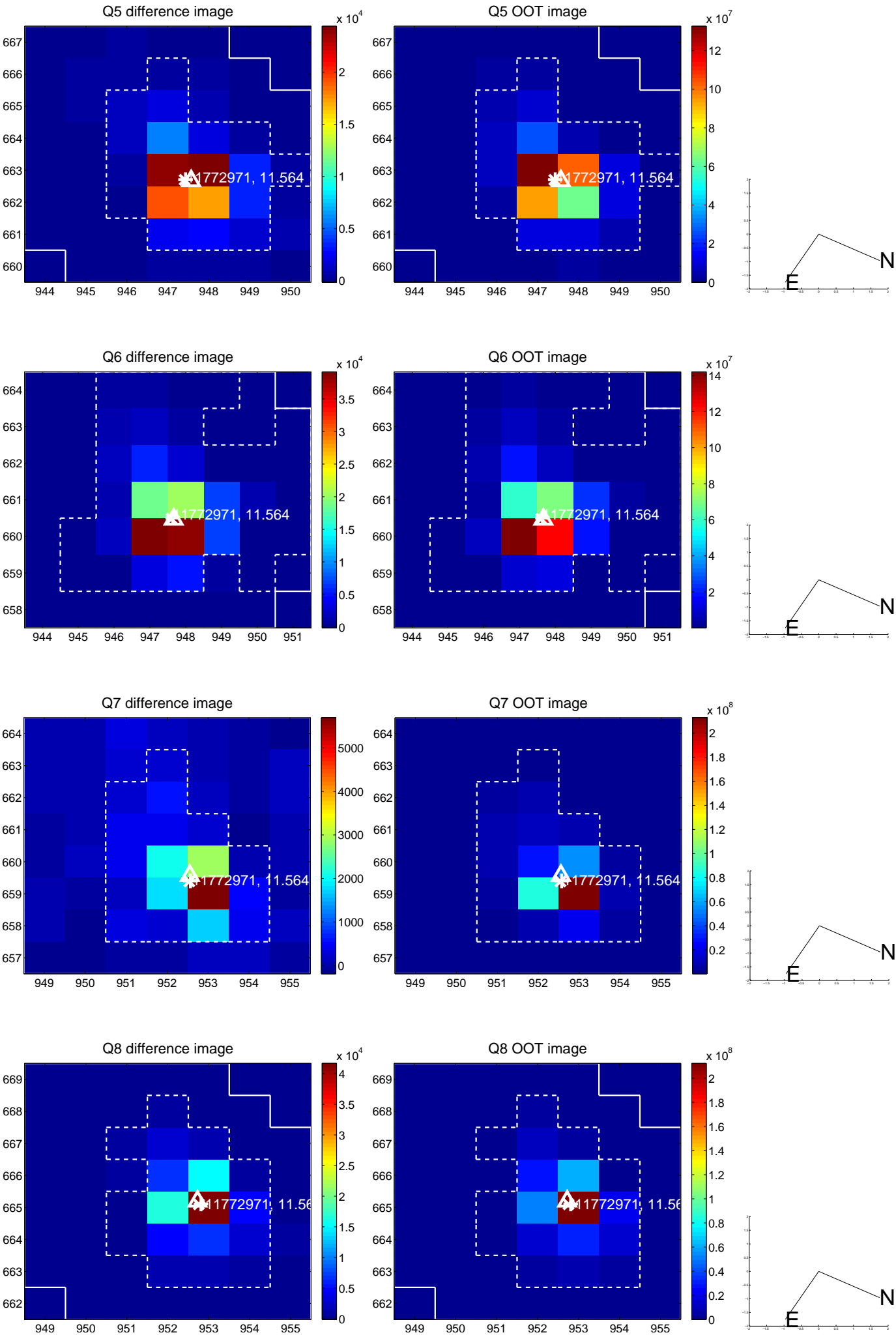
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

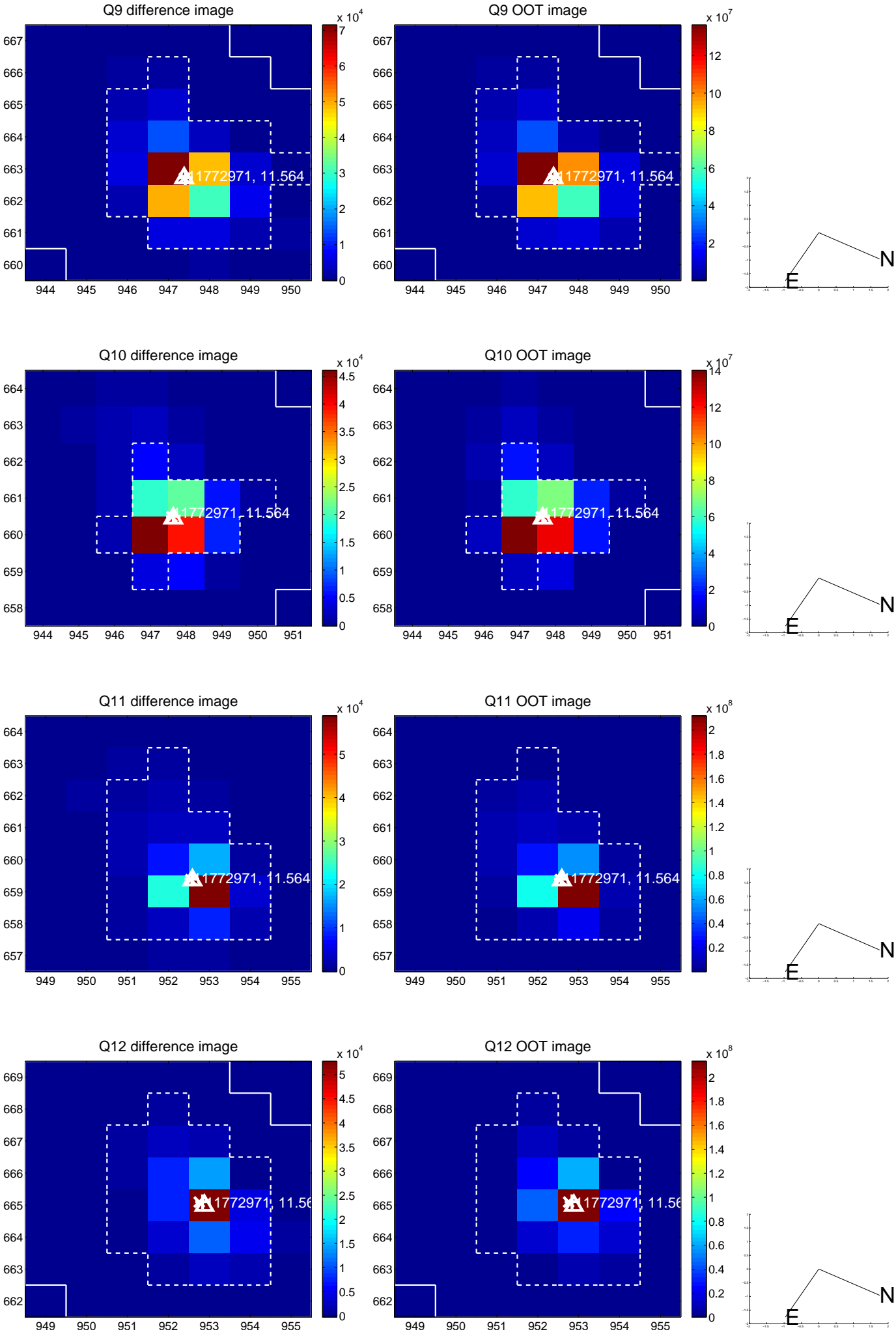




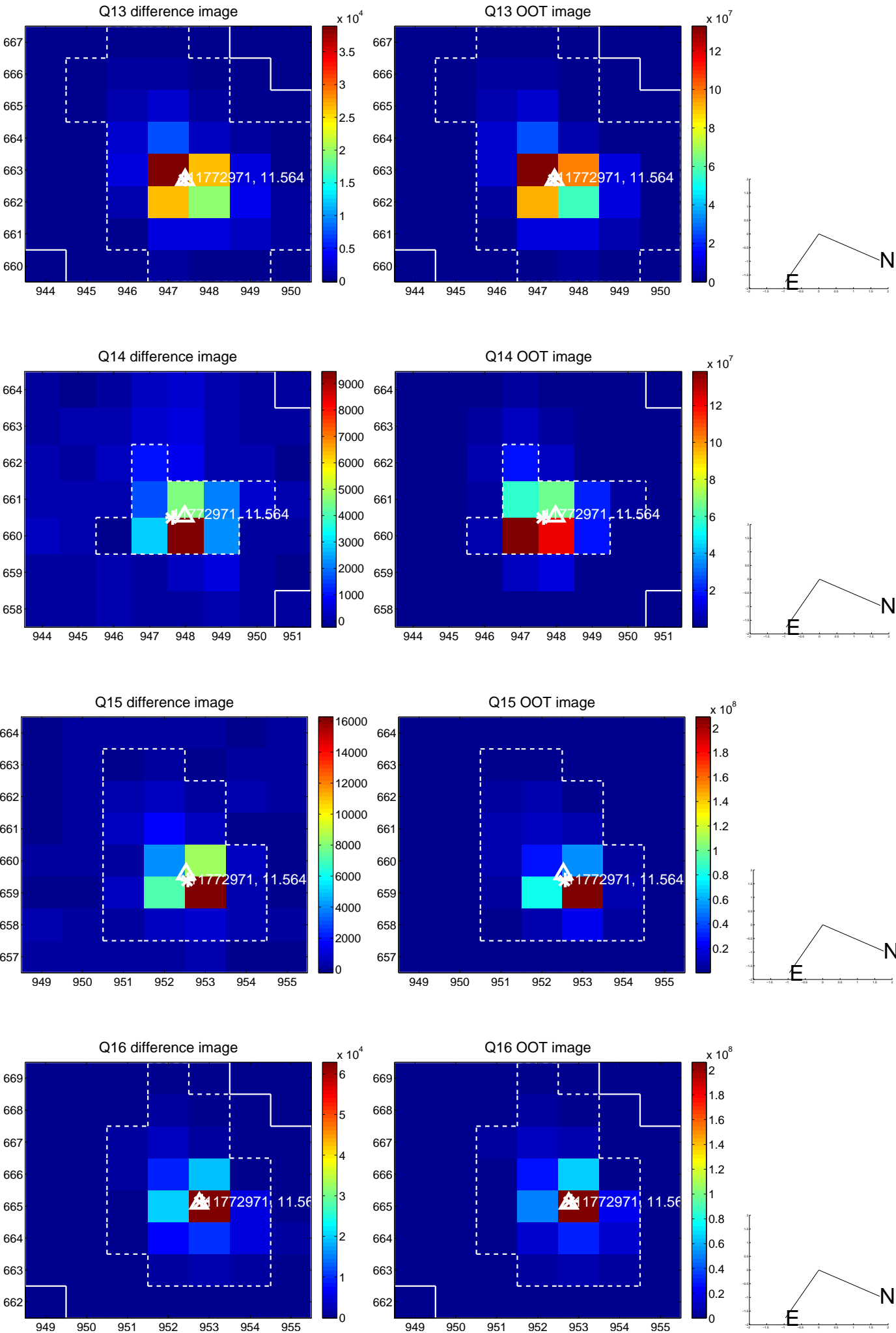
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



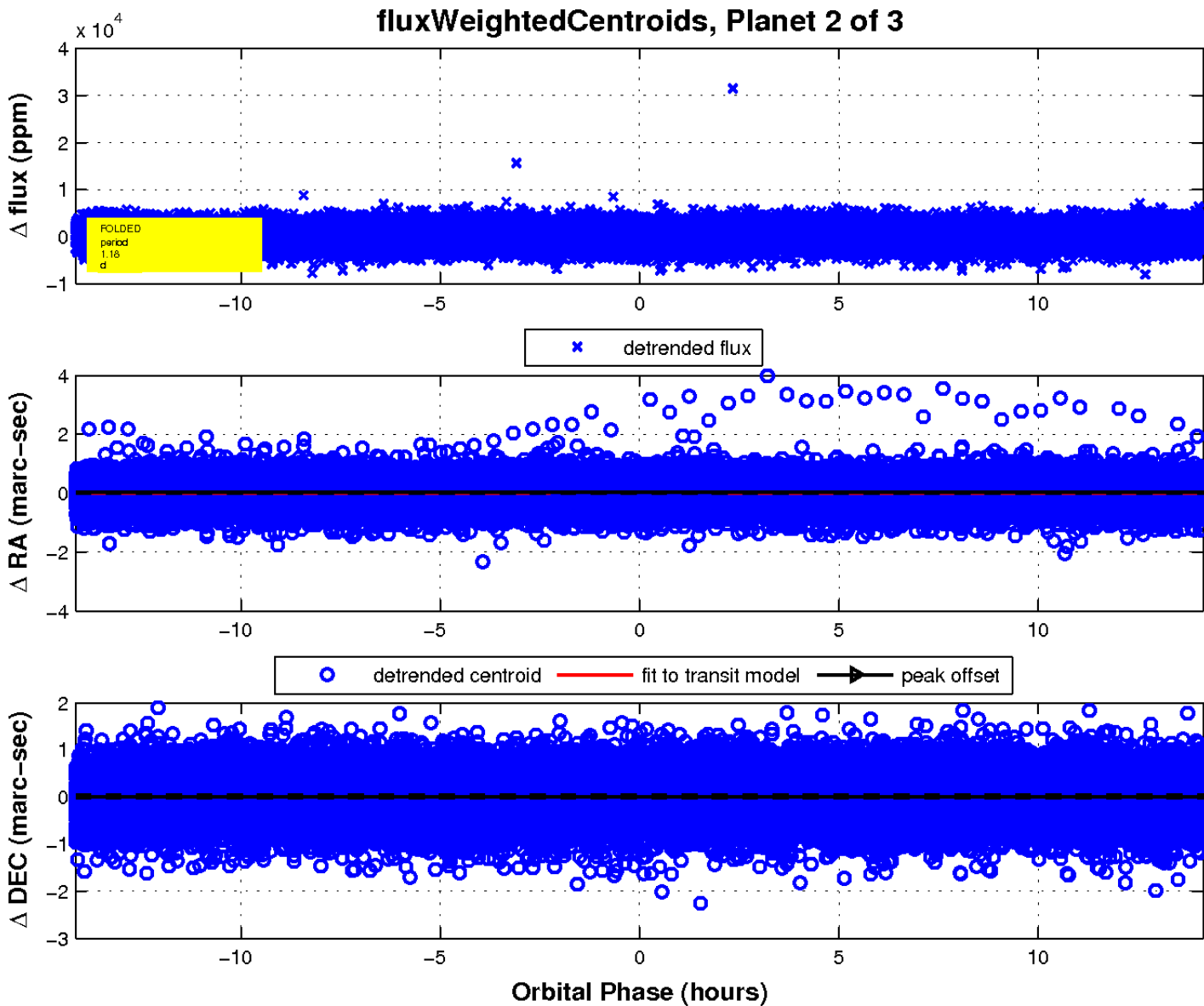
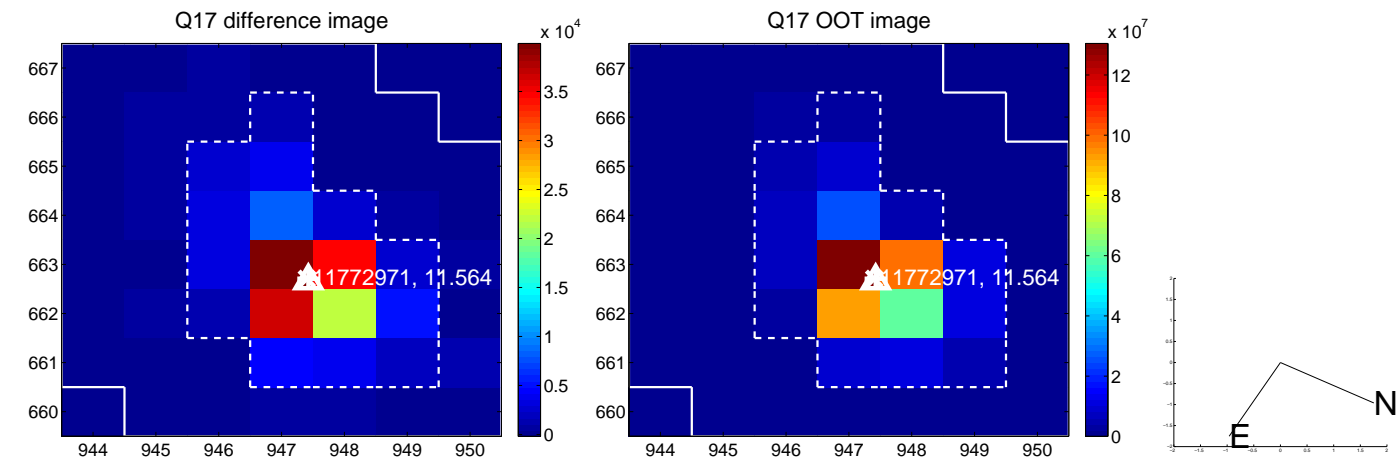
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

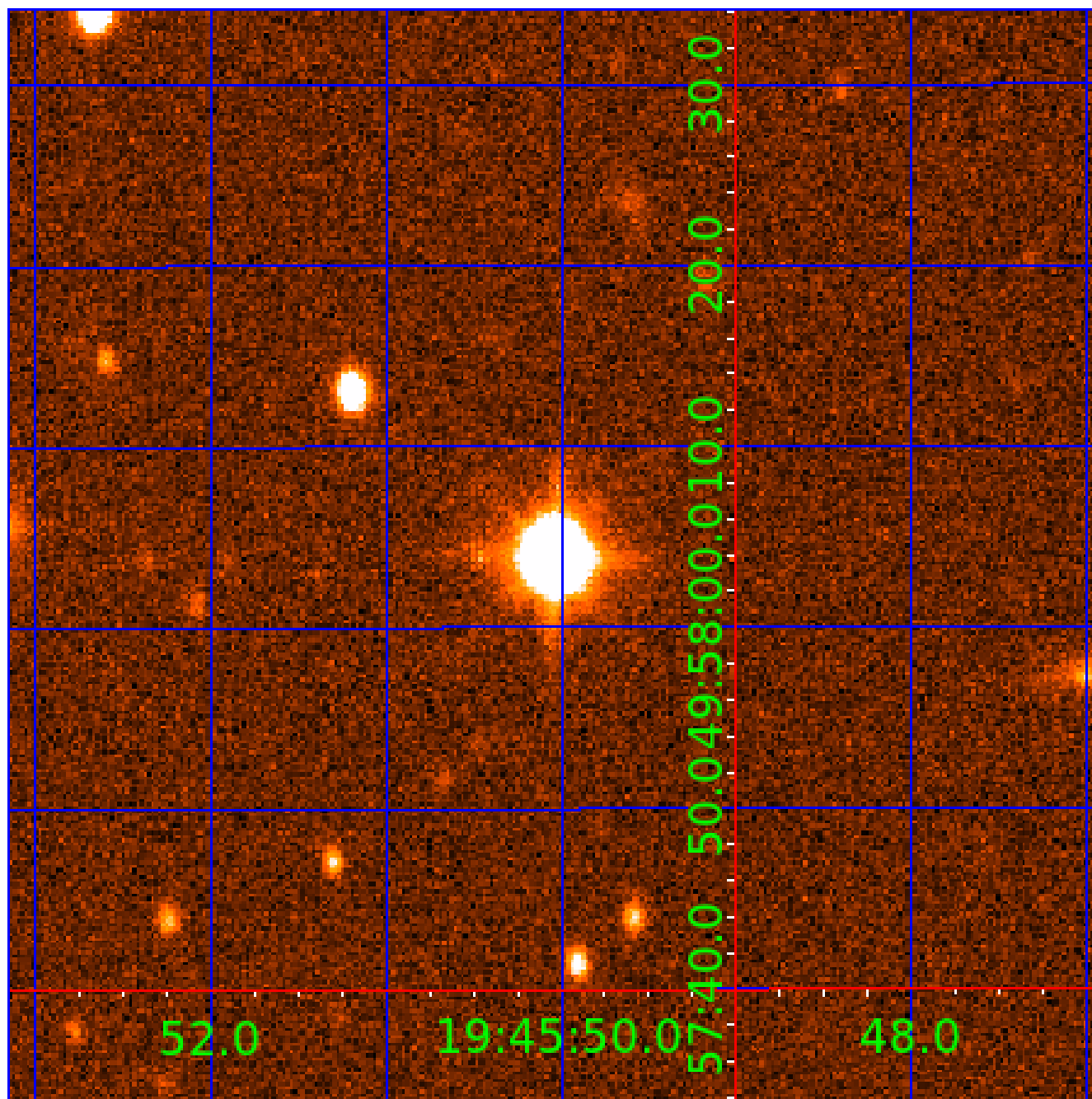


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011772971

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011772971-01	OBS	No	0.621666	131.717653	254.4	1.533	9.9	11.9	2.16	7419	3.99	43554.71
011772971-02	OBS	No	1.179397	131.659322	273.1	4.736	8.9	12.2	2.16	7419	3.74	18545.17
011772971-03	OBS	No	0.866433	131.579944	131.6	2.000	8.5	-1.0	2.16	7419	2.52	27976.78

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011772971-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011772971-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
011772971-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

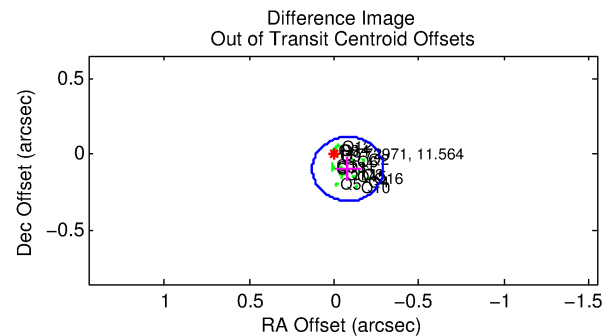
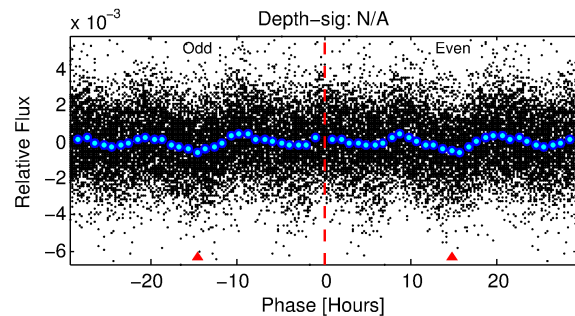
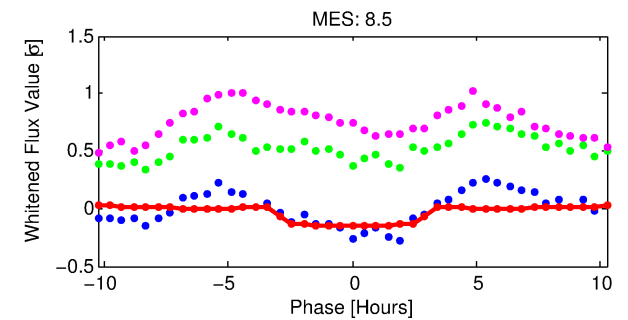
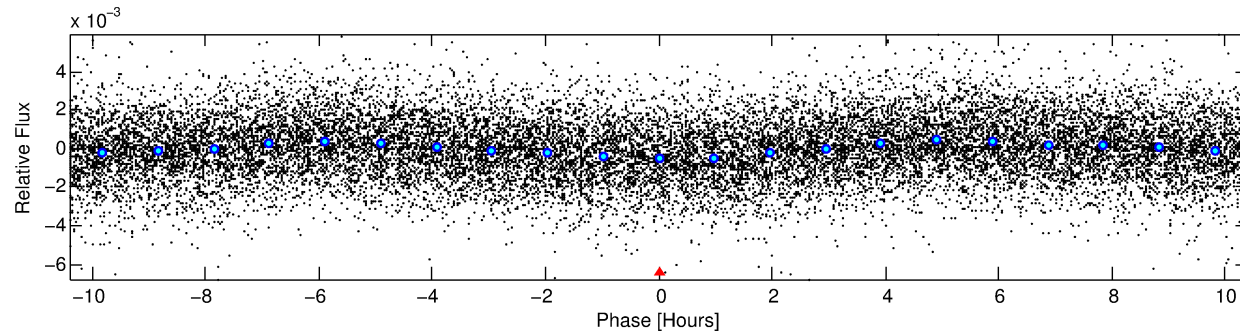
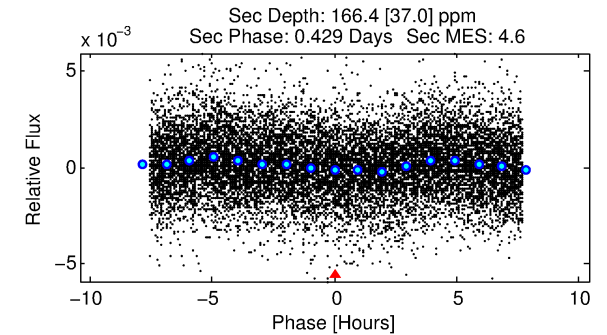
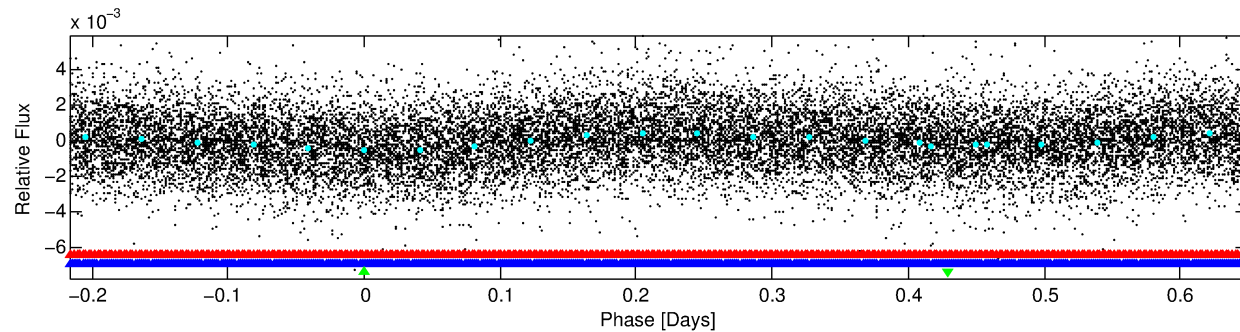
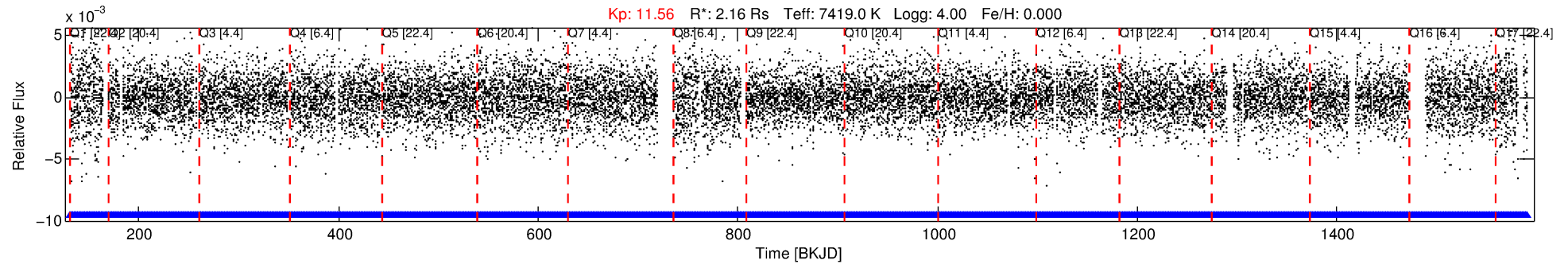
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011772971-03

No Significant Match Found

# DV One-Page Summary

KIC: 11772971 Candidate: 3 of 3 Period: 0.866 d



## TPS TCE Results:

Period = 0.86643 d  
Epoch = 131.5799 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

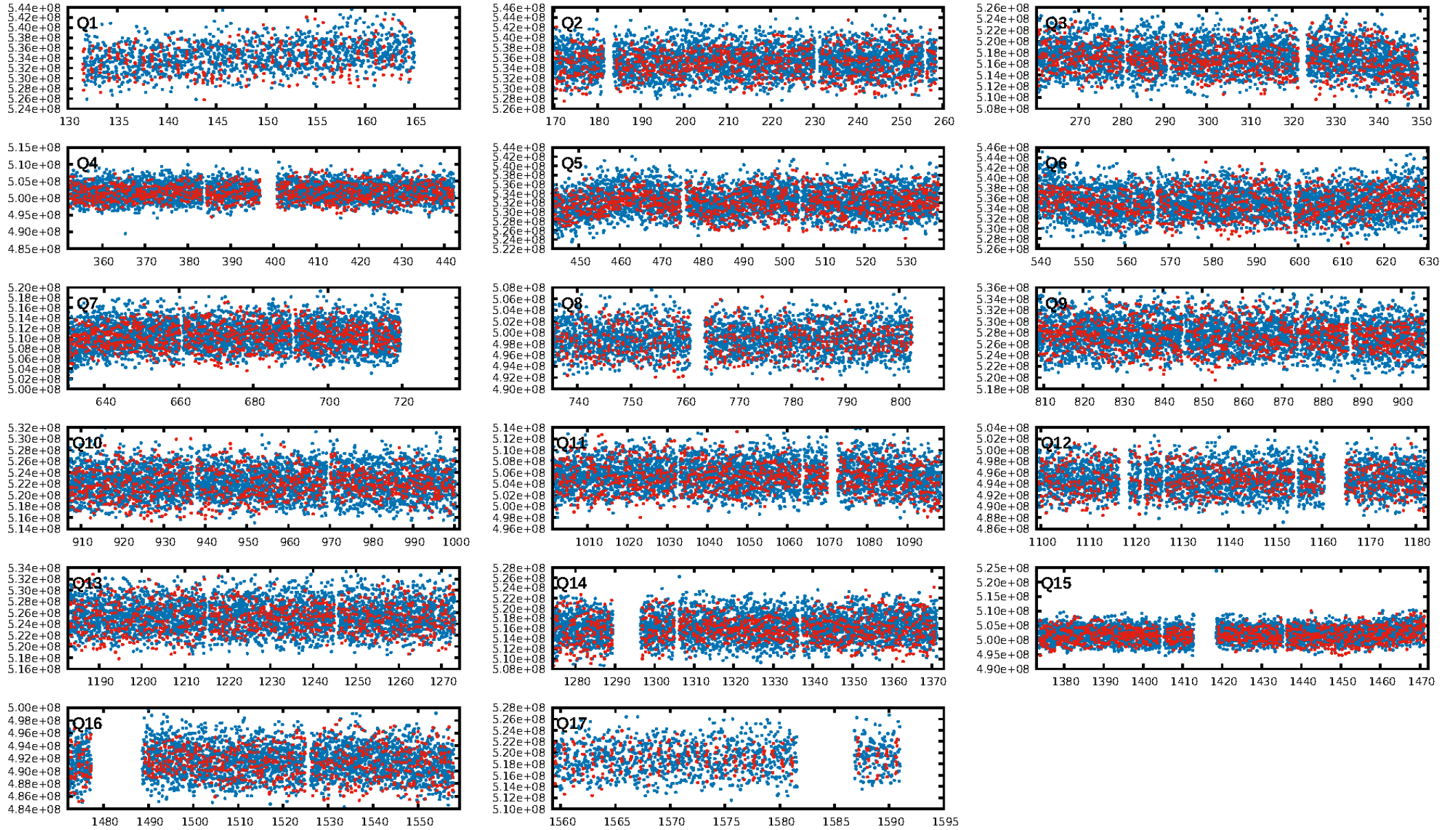
ShortPeriod-sig: 98.0% [2.33σ]  
LongPeriod-sig: 85.6% [1.46σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [864/864]  
GhostDiagnostic-chr: 3.557

Centroid-sig: 0.0%  
Centroid-so: 0.168 arcsec [13.82σ]  
OotOffset-rm: 0.124 arcsec [1.77σ]  
KicOffset-rm: 0.207 arcsec [2.84σ]  
OotOffset-st: 4/4/4/5 [17]  
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: 30-Jan-2016 06:29:06 Z

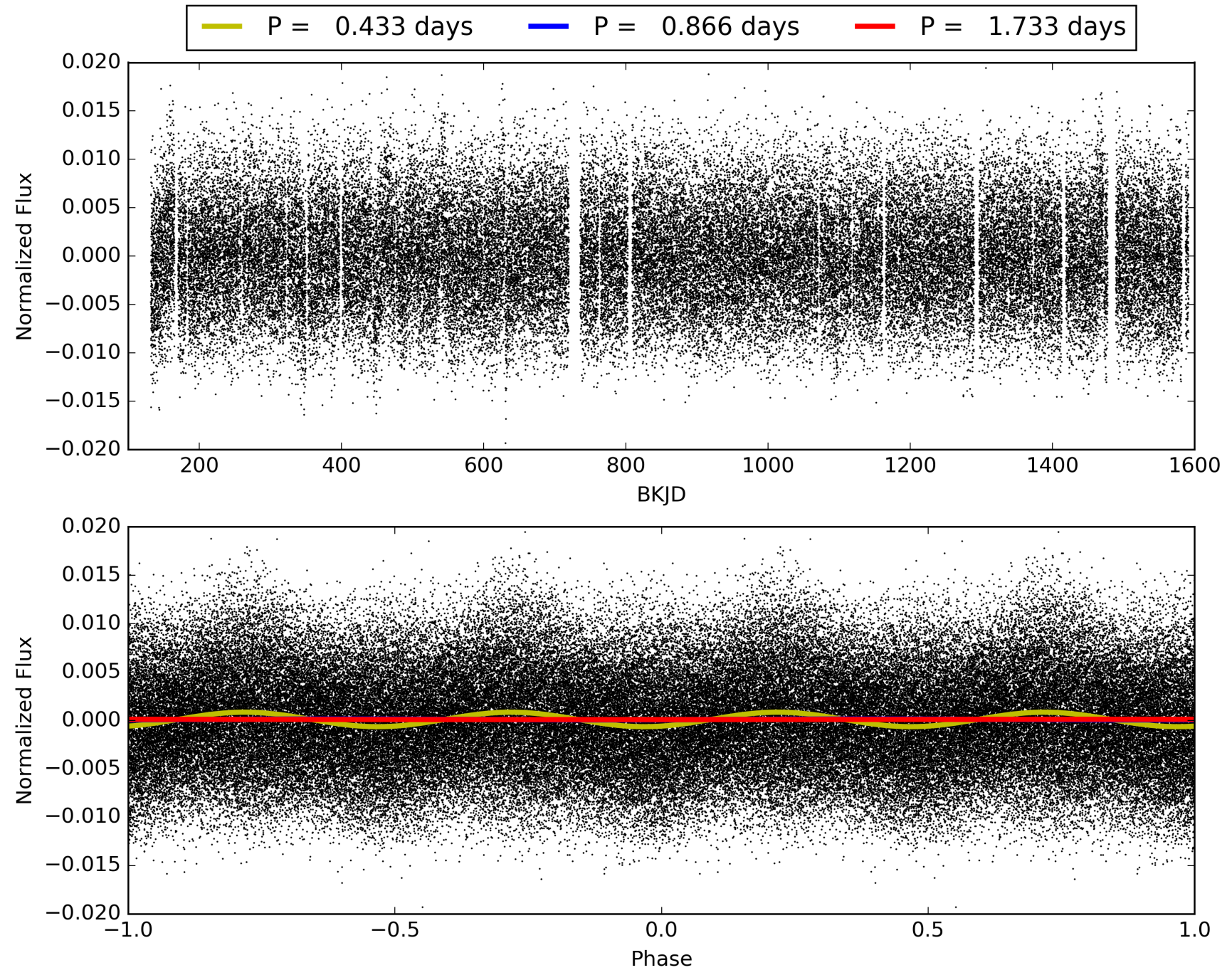
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011772971-03, PDC Light Curves



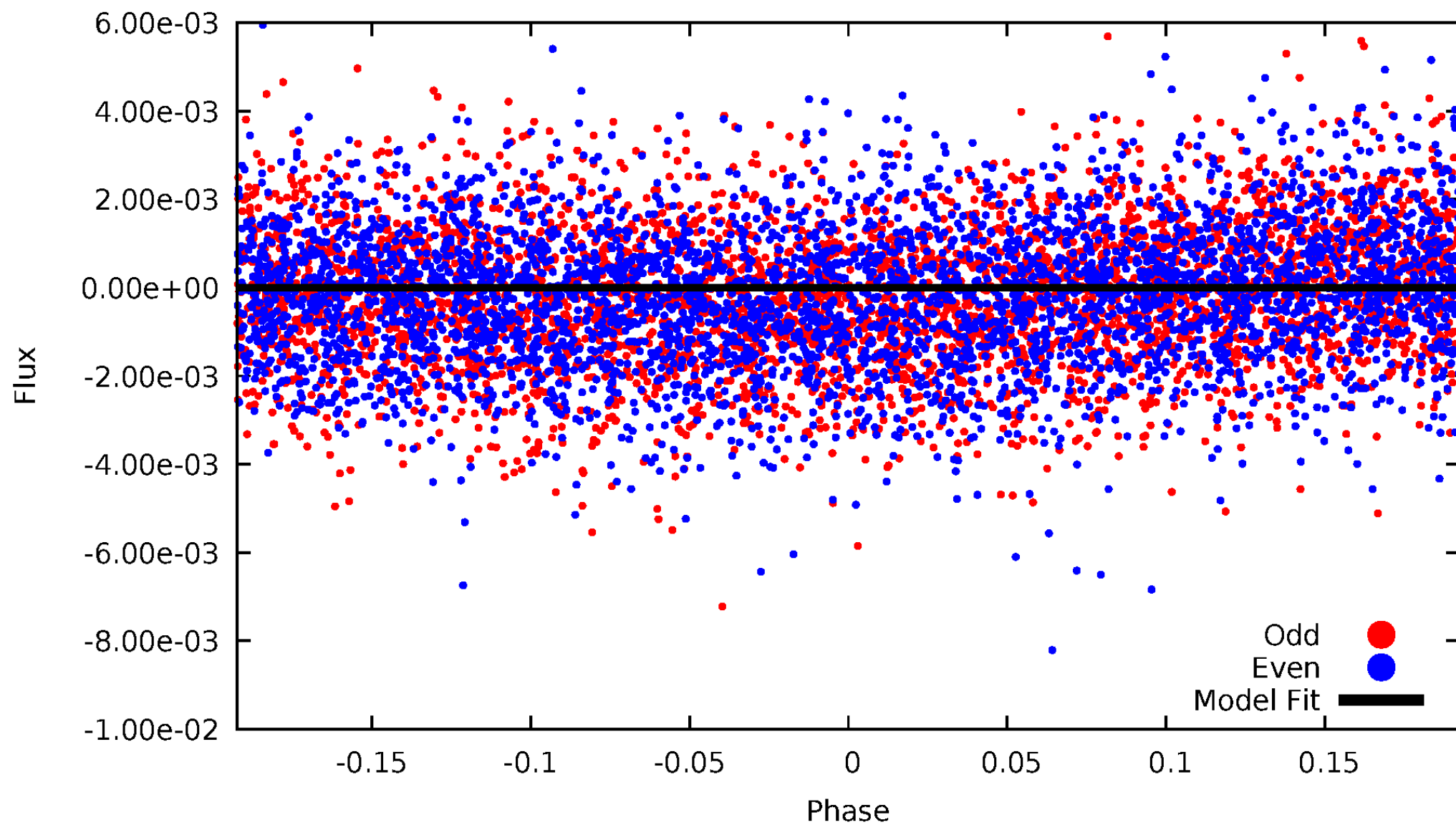


# TCE 011772971-03



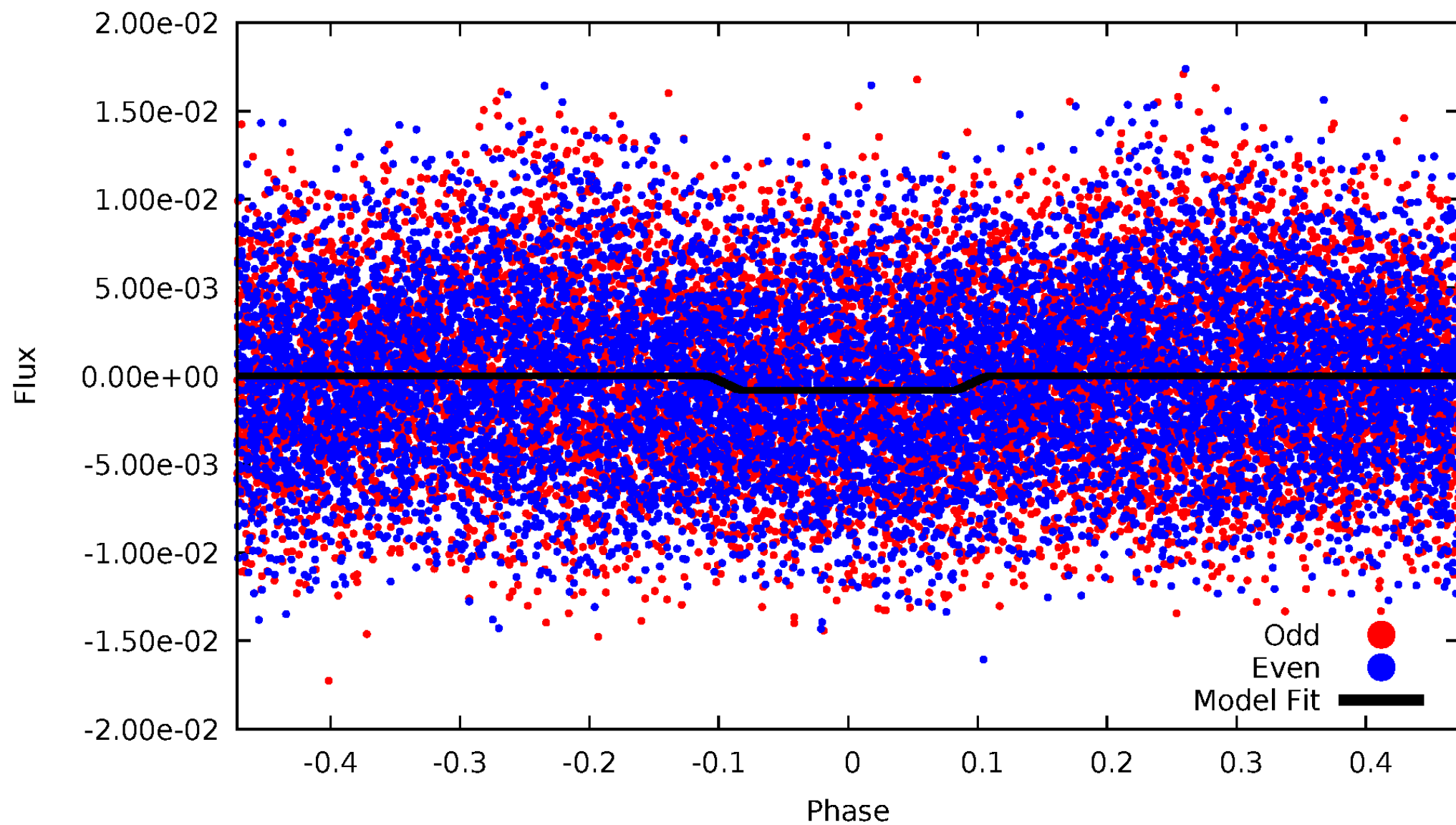
DV Odd/Even

TCE 011772971-03



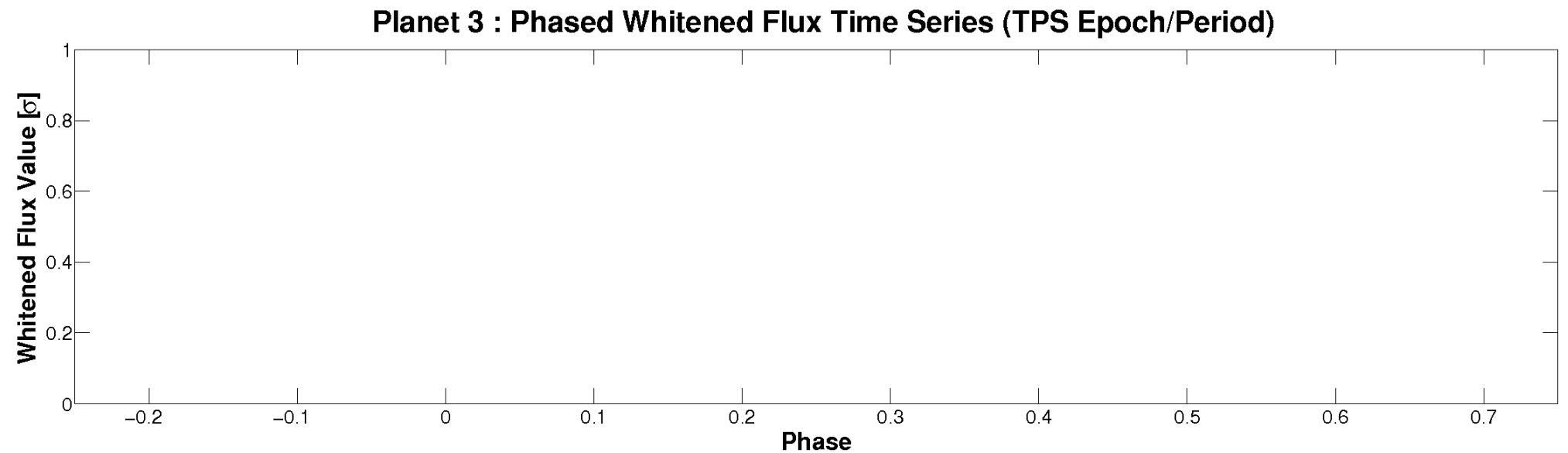
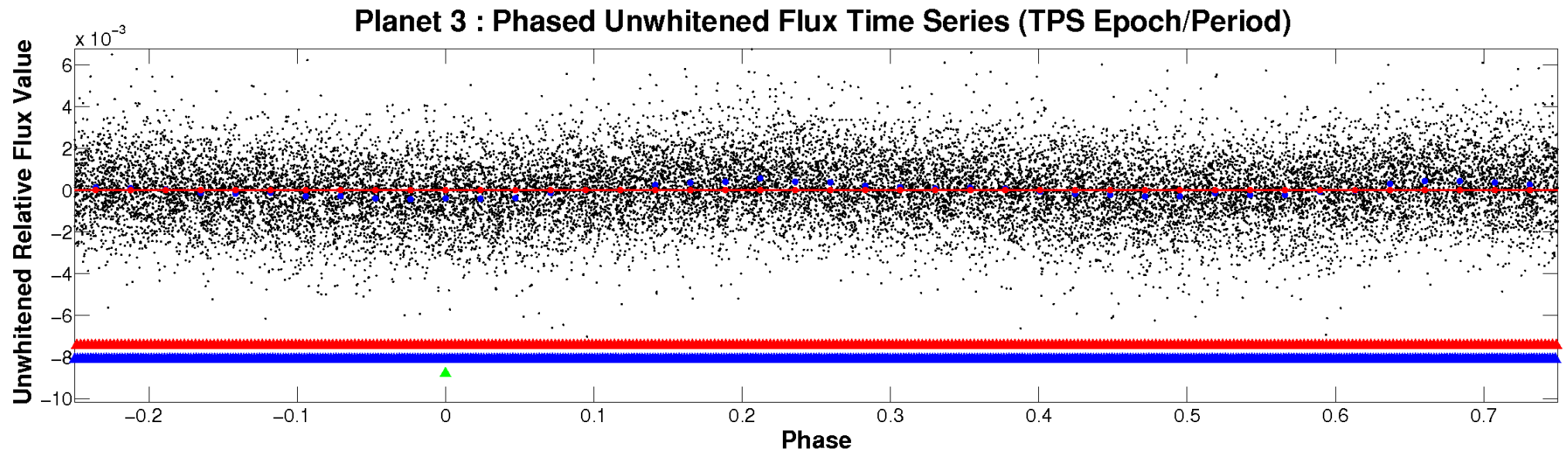
# ALT Odd/Even

TCE 011772971-03



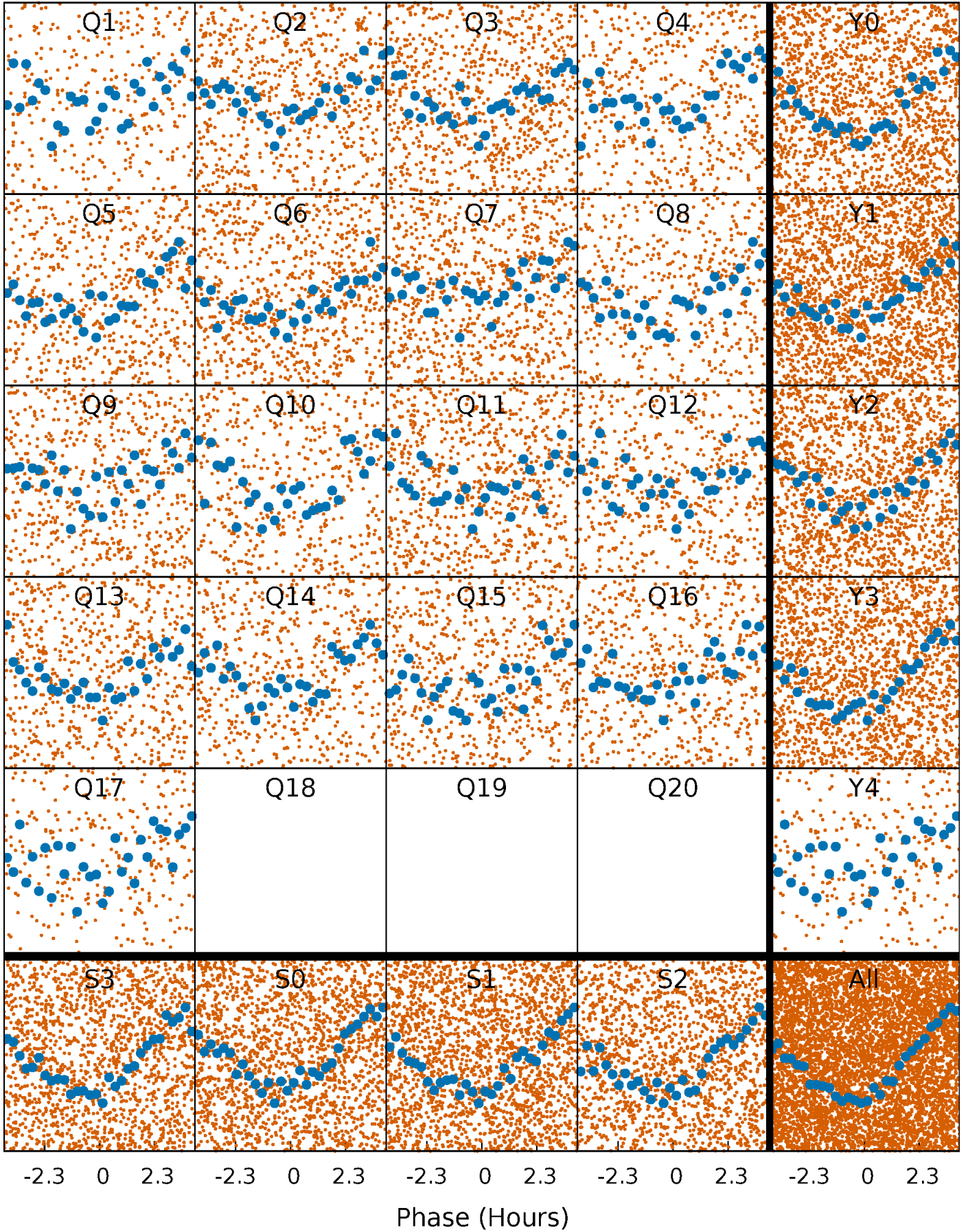


# Non-Whitened Vs. Whitened Light Curve



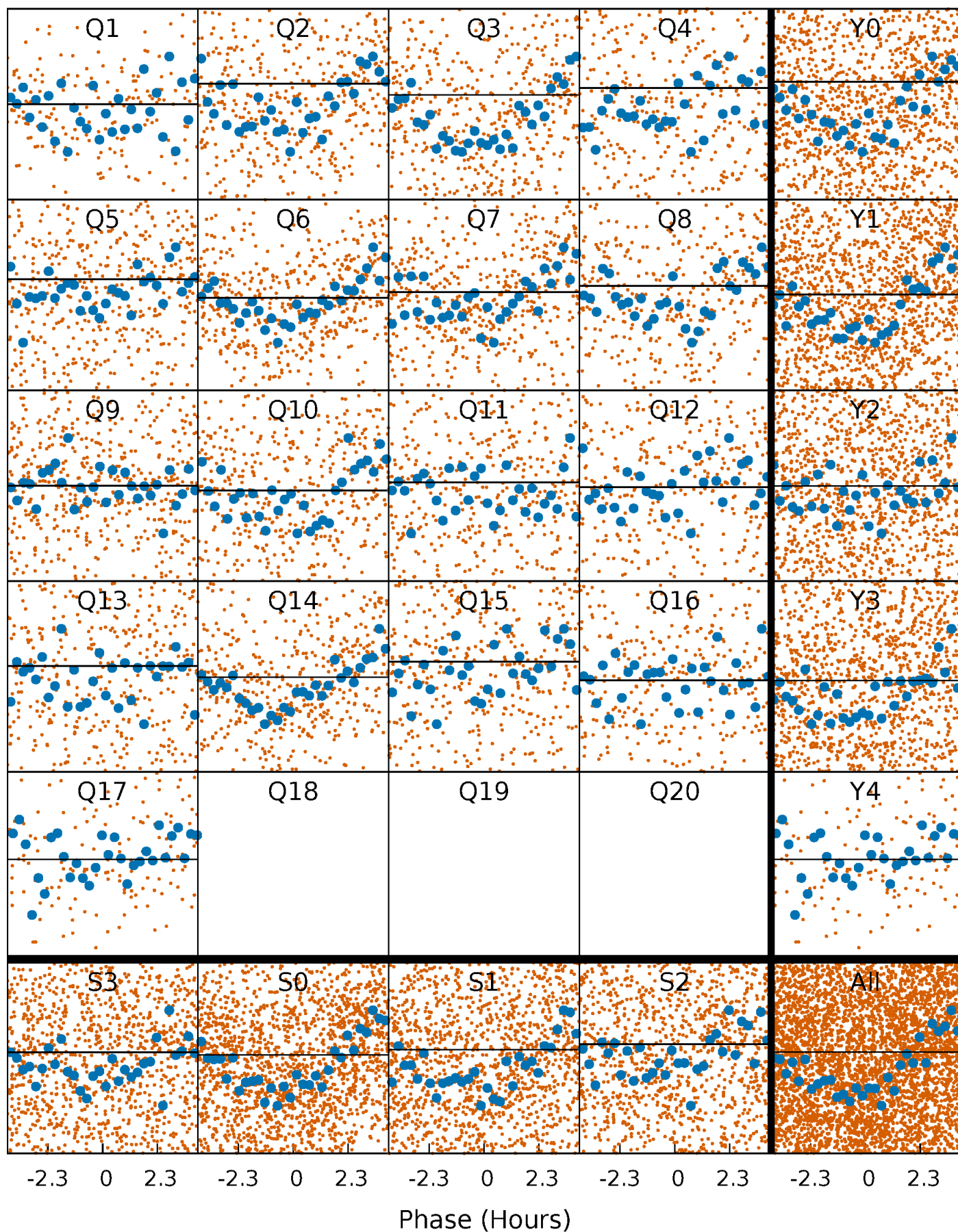
# PDC Quarter-Phased Transit Curves

TCE 011772971-03   P= 0.866433 Days    $T_0=131.579944$  (BKJD)



# DV Quarter-Phased Transit Curves

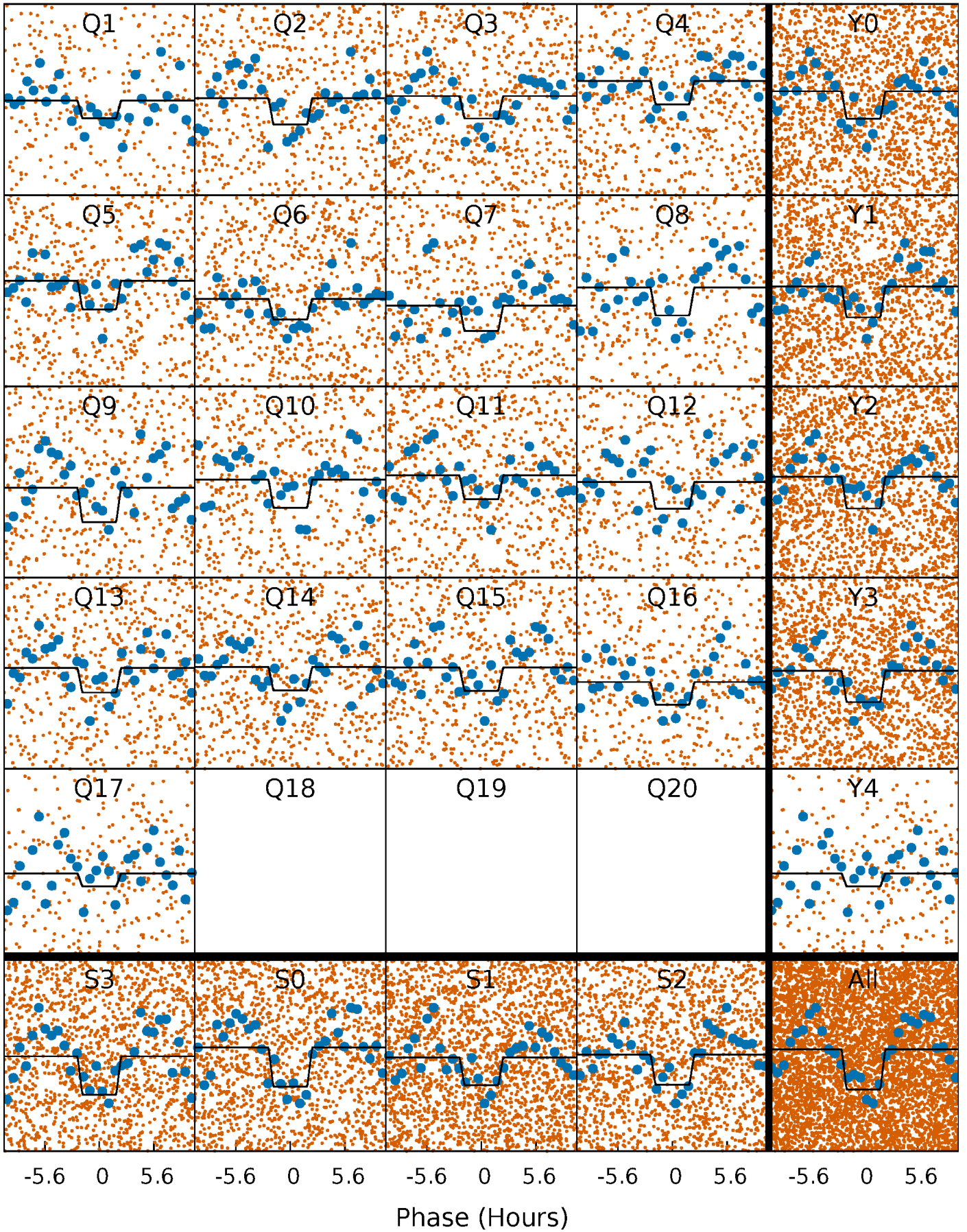
TCE 011772971-03 P= 0.866433 Days  $T_0=131.579944$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011772971-03   P= 0.866433 Days    $T_0=131.551781$  (BKJD)

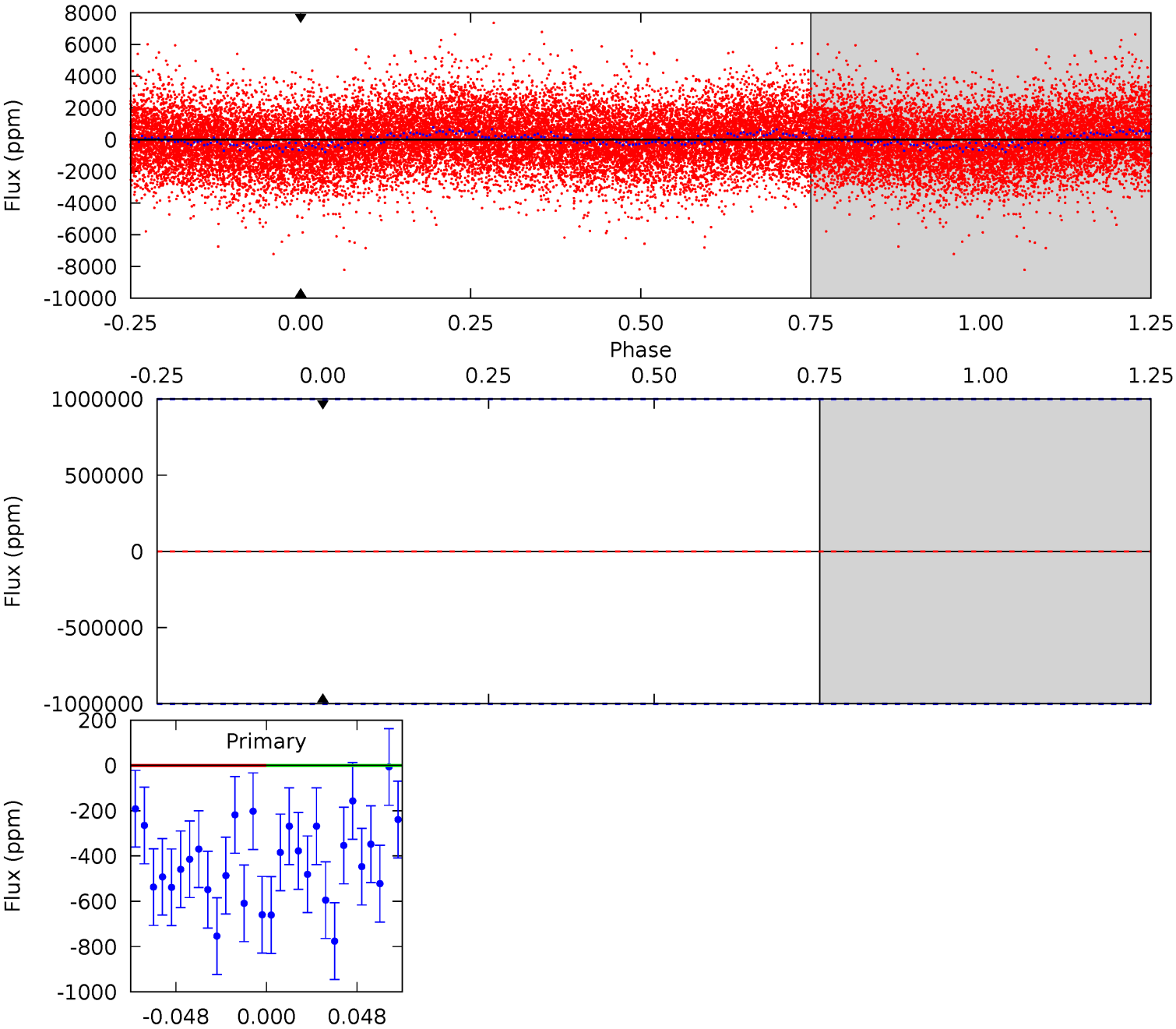




DV Model-Shift Uniqueness Test

011772971-03, P = 0.866433 Days, E = 131.579944 Days

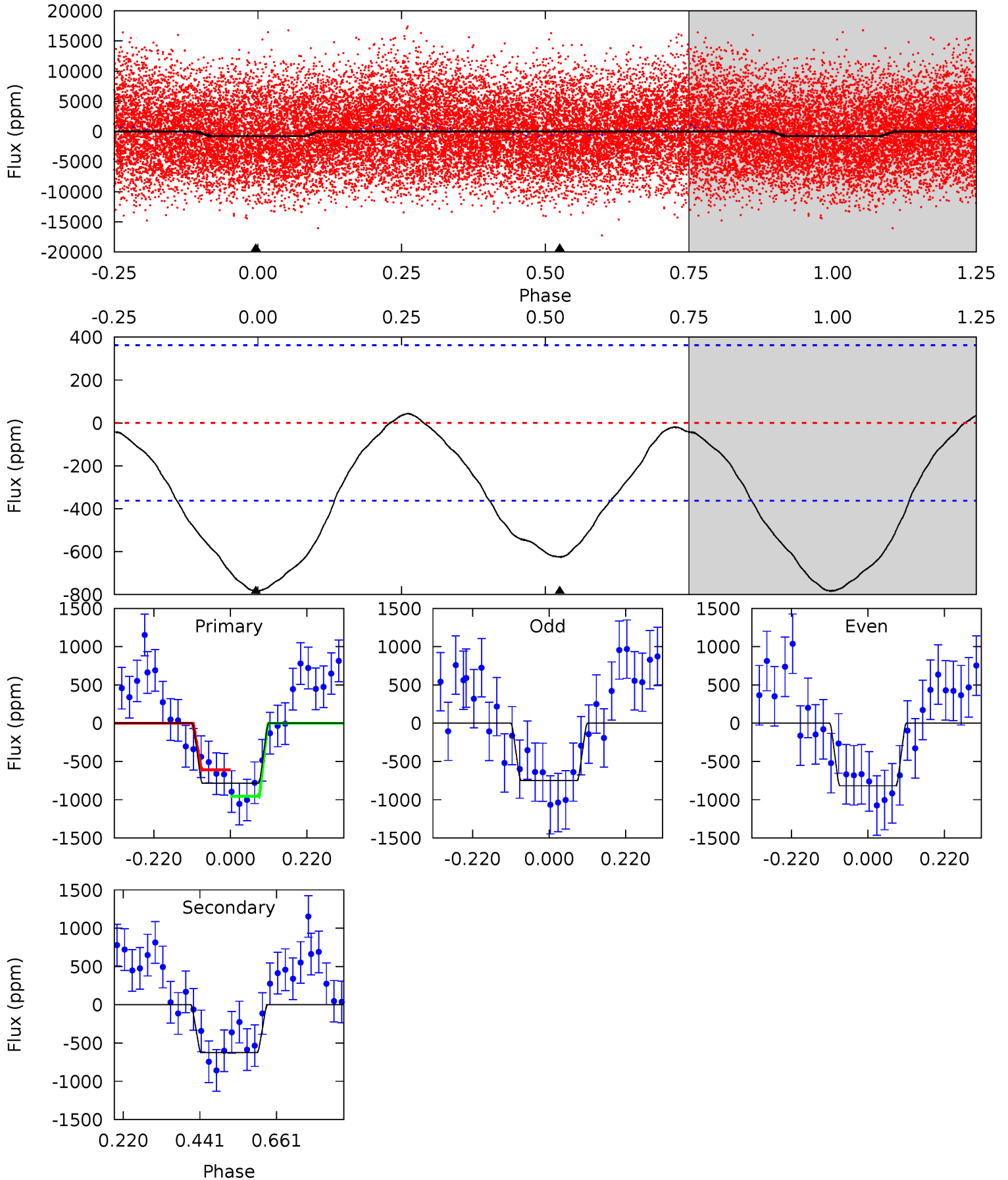
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

011772971-03, P = 0.866433 Days, E = 131.551781 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
9.50	7.59	0	0	4.40	1.23	0.42	9.50	9.50	7.59	7.59	0.41	1.03	0.05	2.10



### Stellar Parameters For KIC 011772971

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7419^{+81}_{-81}$	$4.002^{+0.132}_{-0.108}$	$0.000^{+0.150}_{-0.150}$	$2.159^{+0.373}_{-0.373}$	$1.707^{+0.136}_{-0.151}$	$0.239^{+0.155}_{-0.081}$
	+1%/-1%	+3%/-3%	+inf%/-inf%	+17%/-17%	+8%/-9%	+65%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011772971-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$16.88^{+18.37}_{-12.10}$	$4604^{+192}_{-206}$	$4773^{+39162}_{-47513}$	$0.855^{+171.730}_{-159.345}$
Alt.	$-625 \pm 82$	$18.23^{+17.86}_{-12.85}$	$4593^{+202}_{-212}$	$3601^{+3969}_{-7292}$	$0.455^{+4.838}_{-0.337}$

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

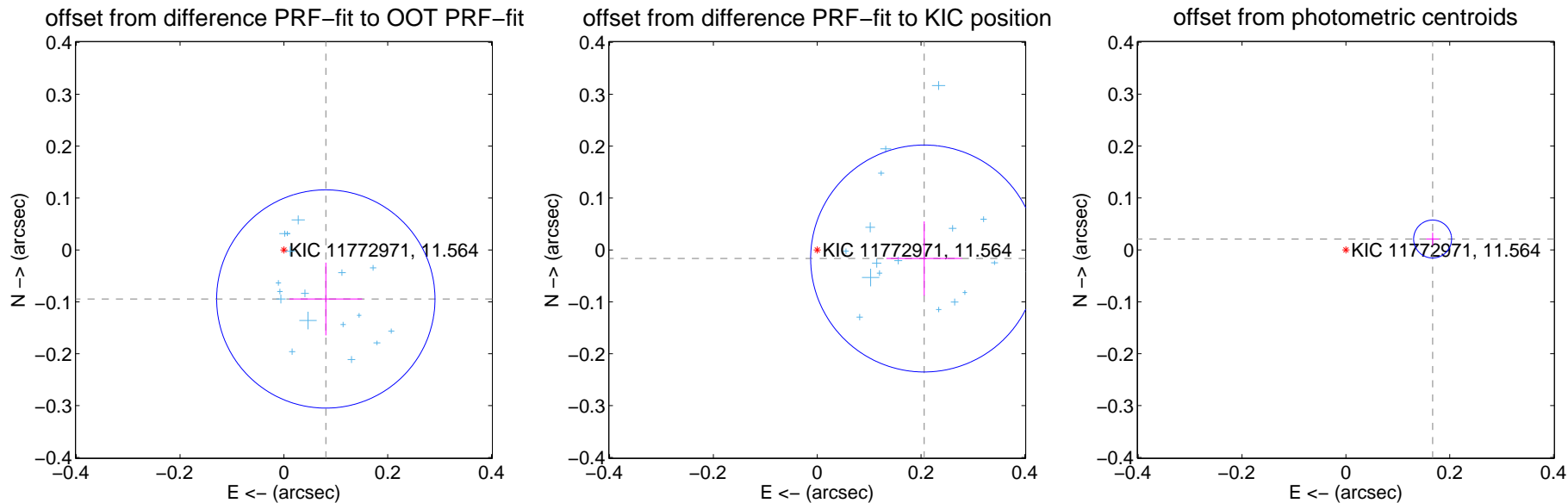
## DV Centroid Data

Supplemental centroid analysis for 011772971-03. **Kepler magnitude: 11.56.** Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

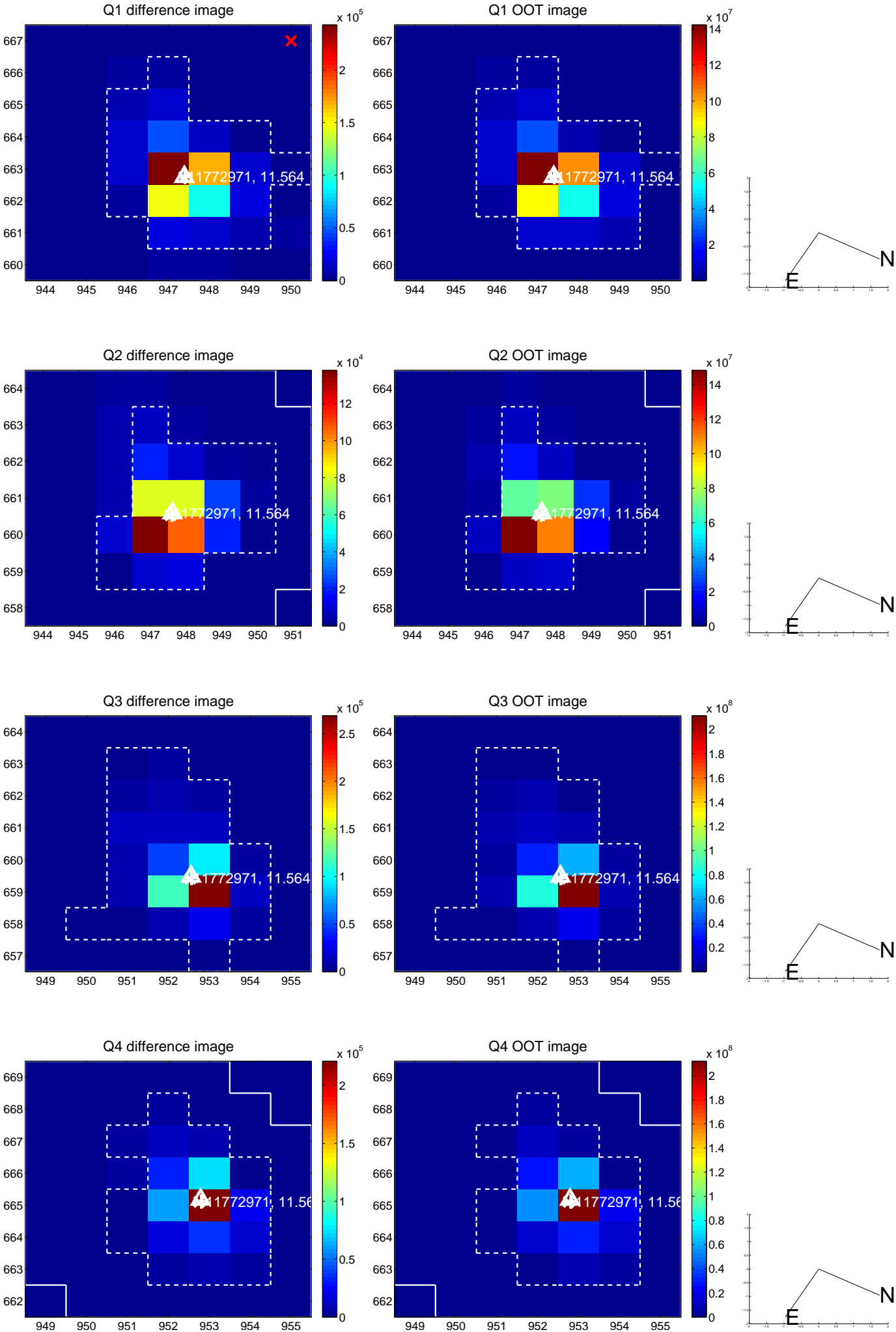
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.124 \pm 0.070$	1.77	$-0.081 \pm 0.070$	$-0.095 \pm 0.070$
PRF-fit source offset from KIC position	$0.207 \pm 0.073$	2.84	$-0.206 \pm 0.073$	$-0.017 \pm 0.072$
photometric centroid source offset	<b><math>0.17 \pm 0.01</math></b>	<b>13.82</b>	$-0.17 \pm 0.01$	$0.02 \pm 0.01$



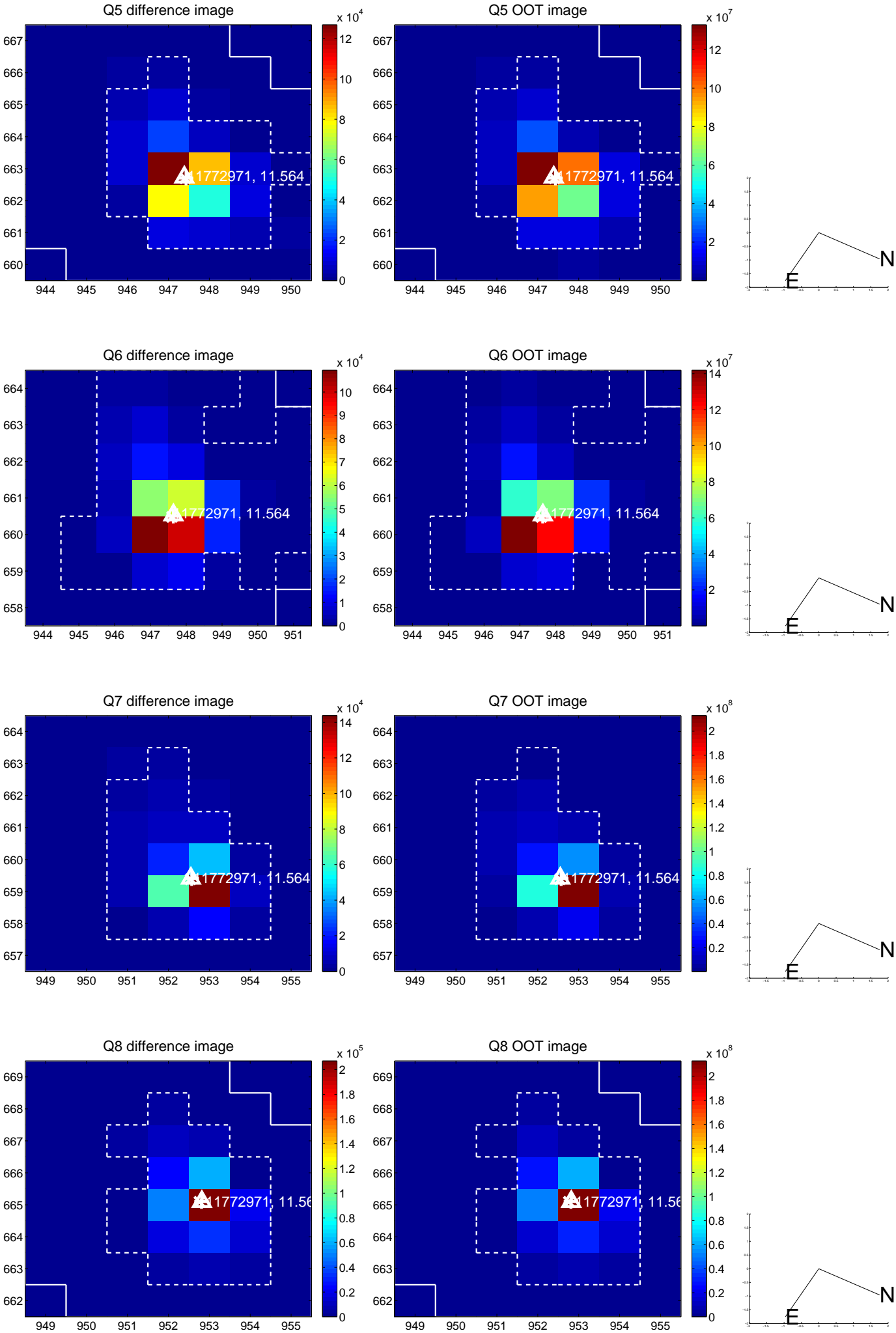
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

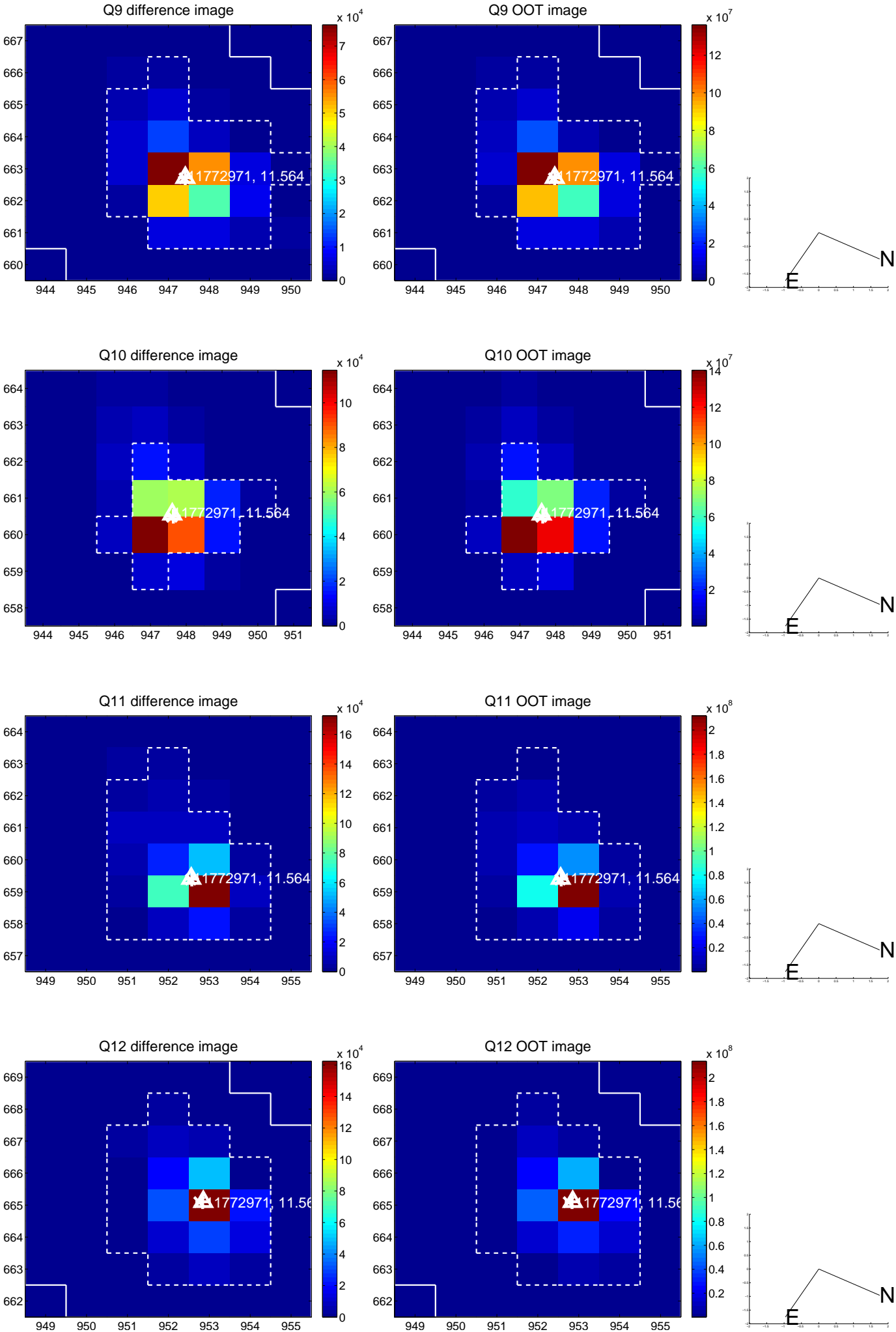




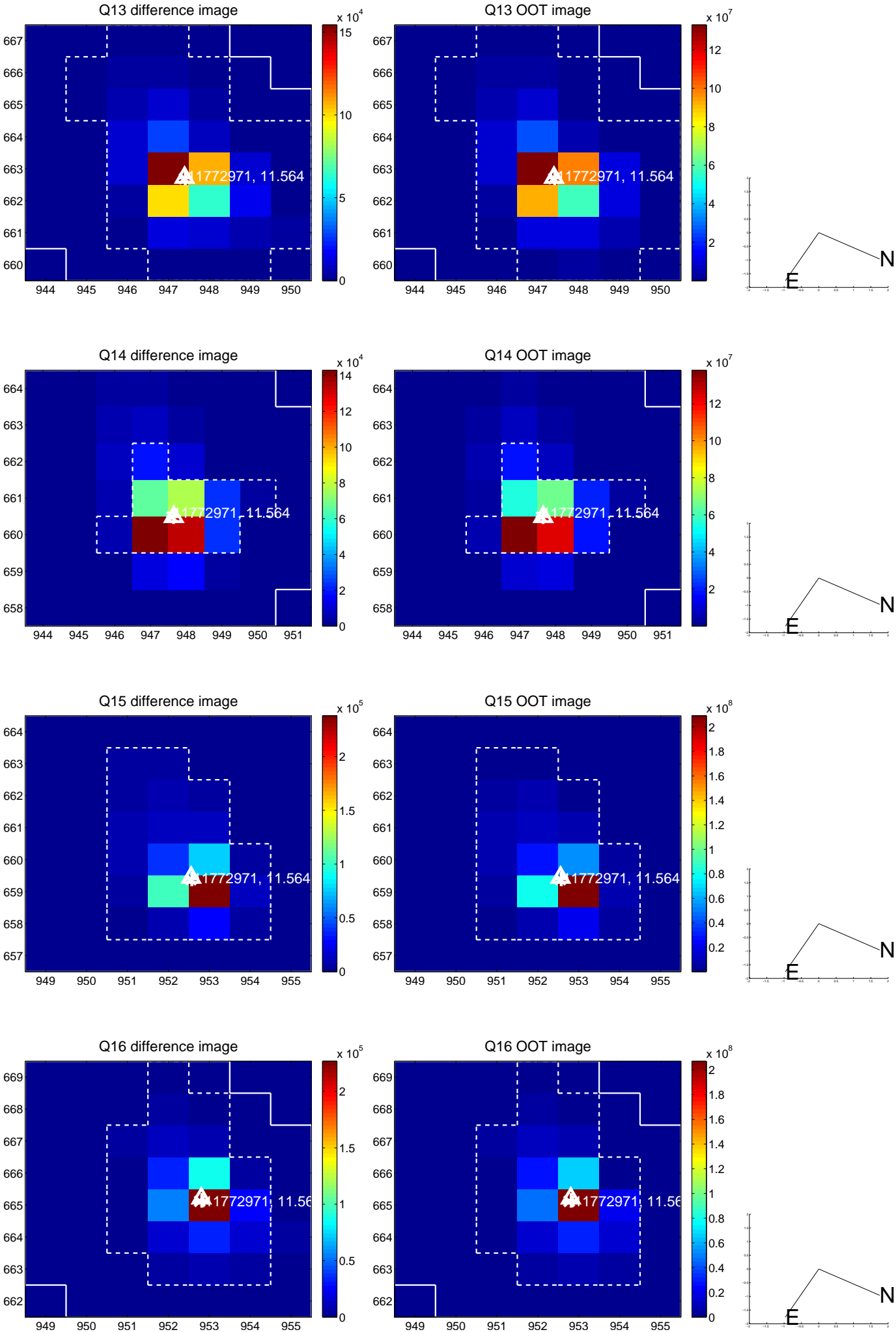
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



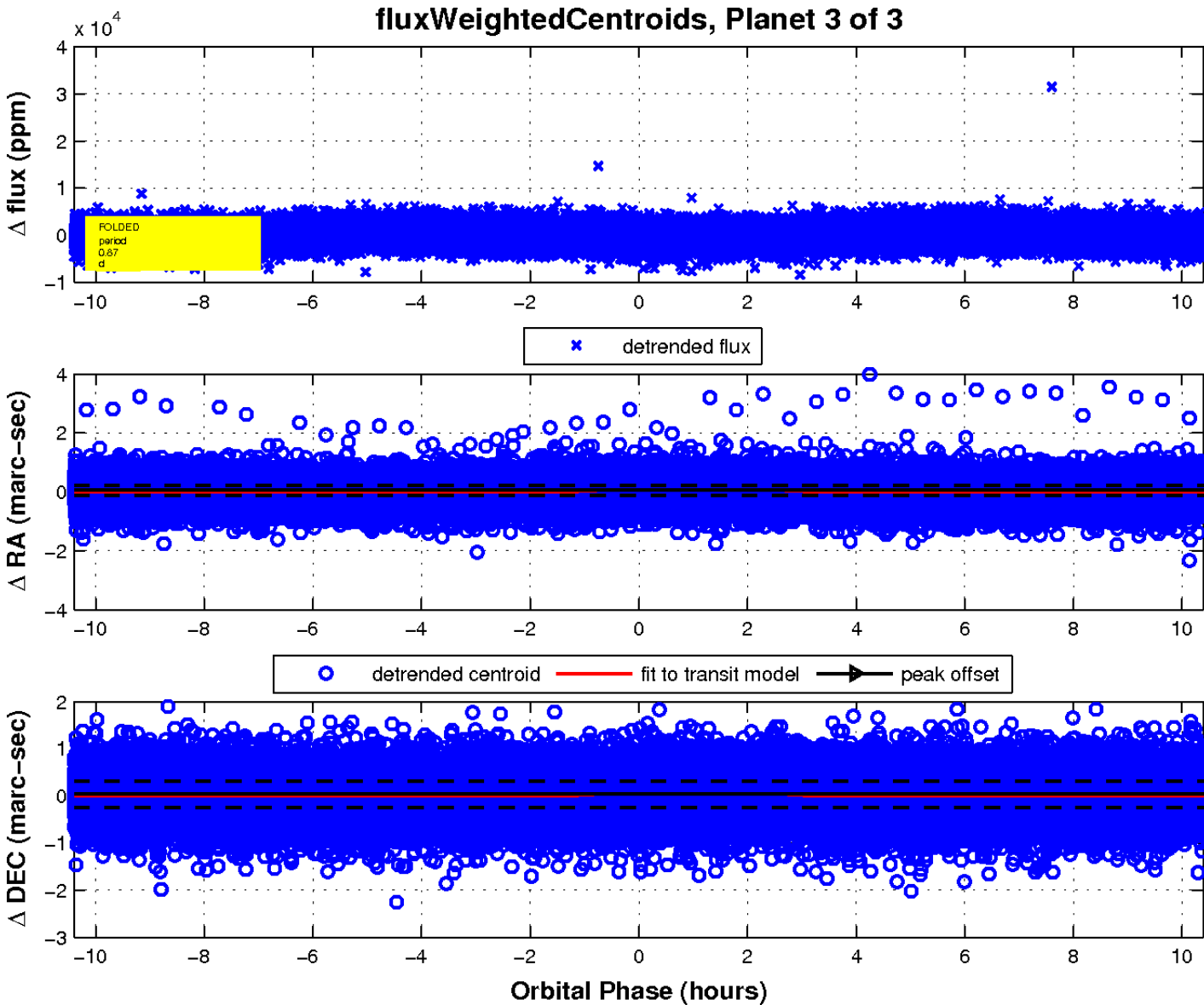
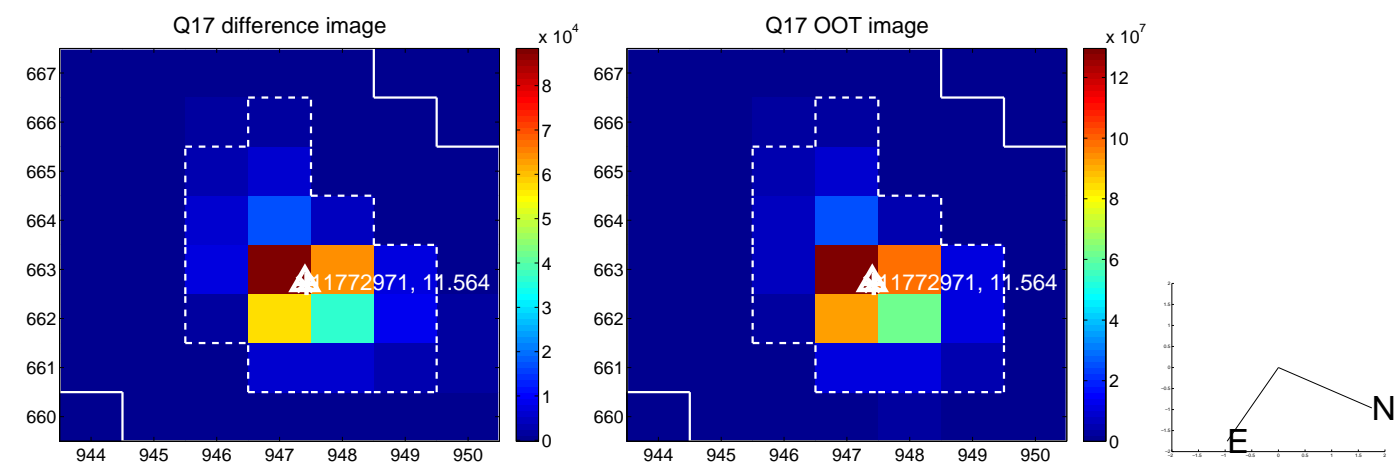
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

