

# KIC 006381517

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006381517-01	OBS	No	2.060616	132.744427	56.5	5.226	9.8	10.0	1.70	7435	1.48	5789.58
006381517-02	OBS	No	2.060285	131.818821	34.4	16.901	10.5	4.8	1.70	7435	1.05	5790.82

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381517-01	OBS	FP	0.00	1	0	0	0	LPP_DV
006381517-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

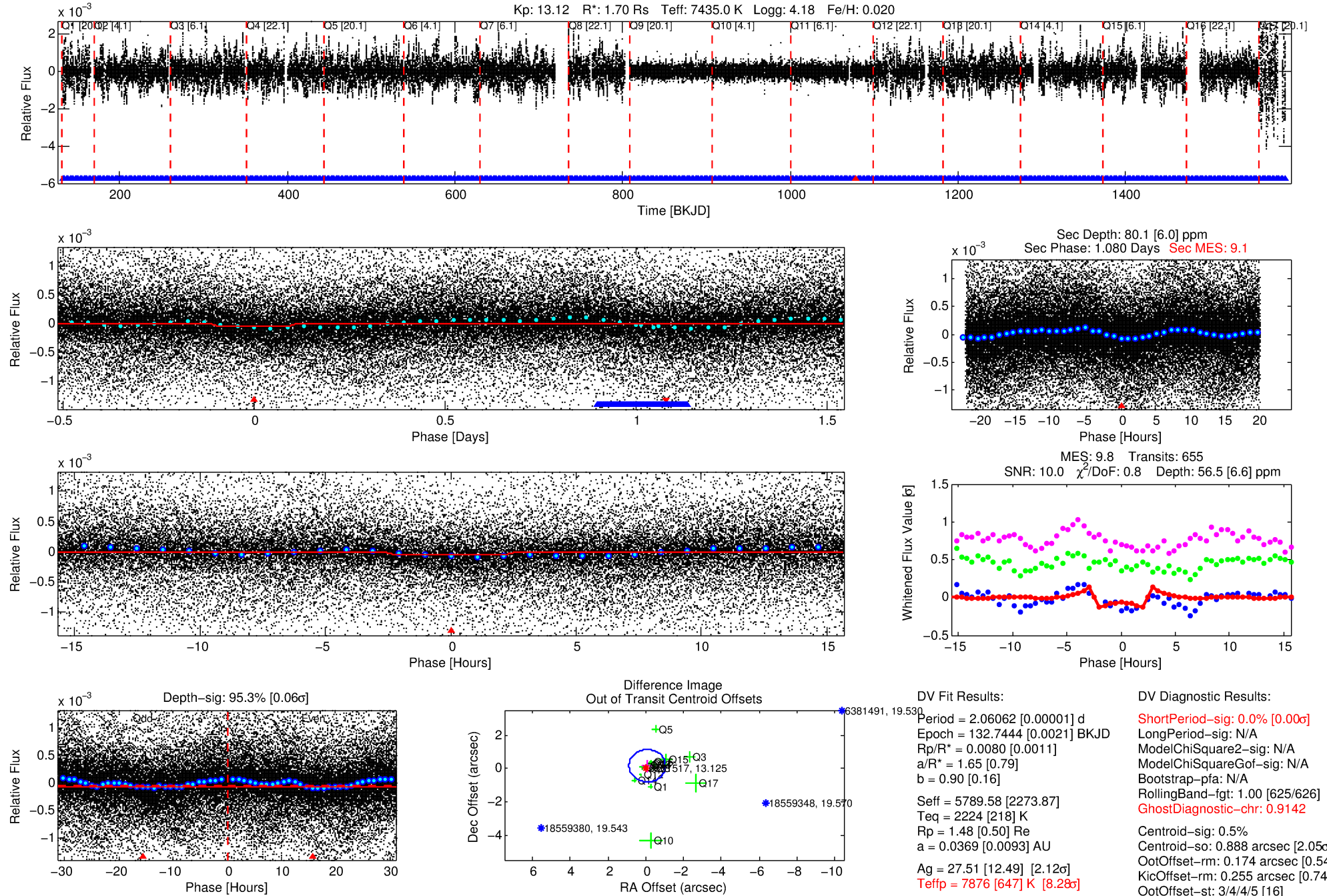
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006381517-01

No Significant Match Found

# DV One-Page Summary

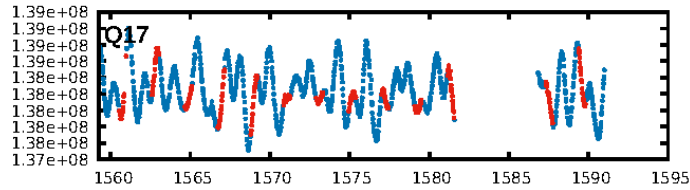
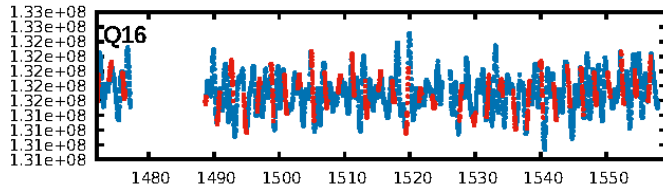
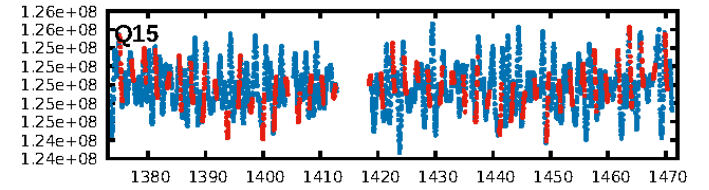
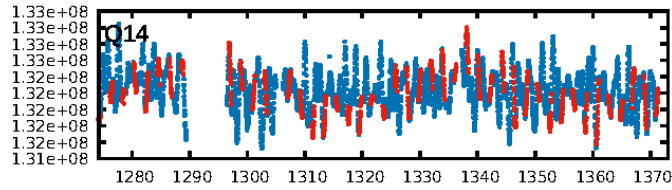
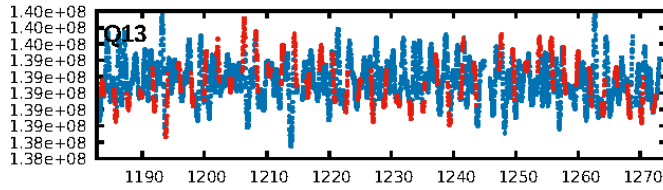
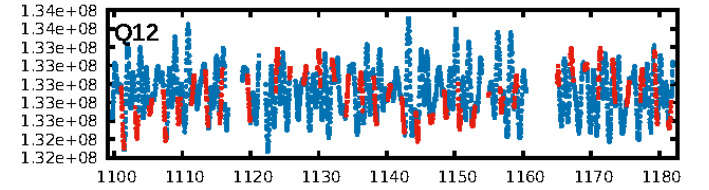
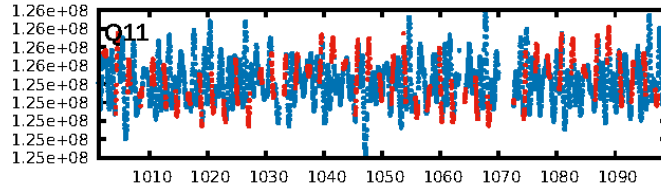
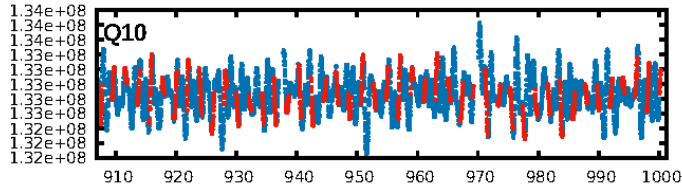
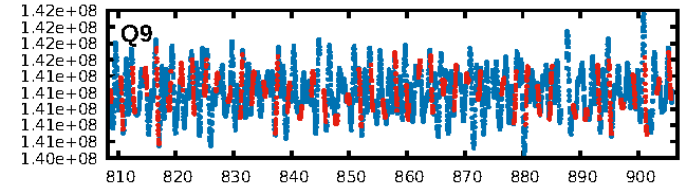
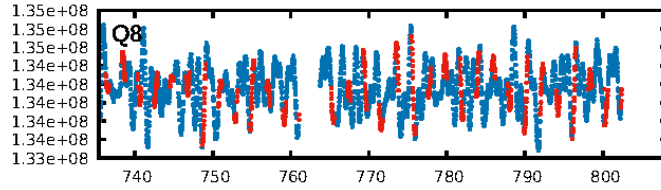
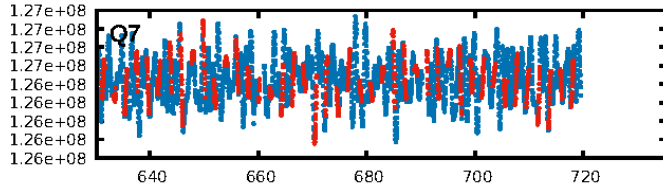
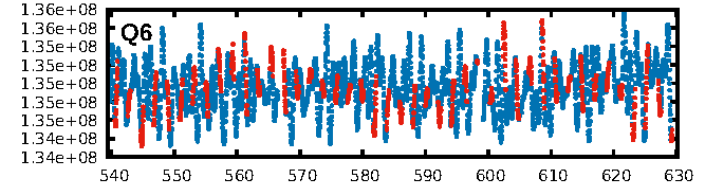
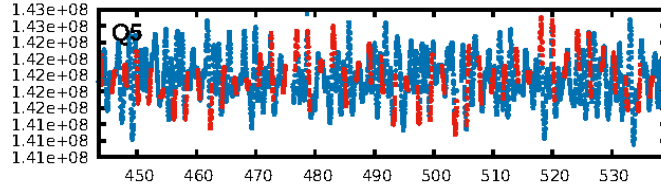
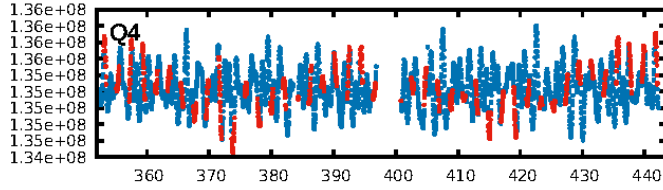
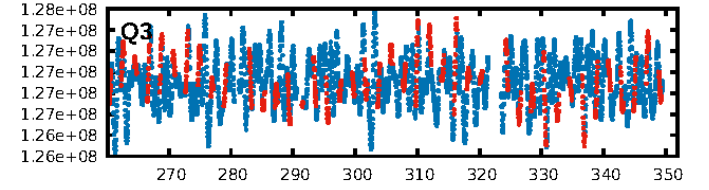
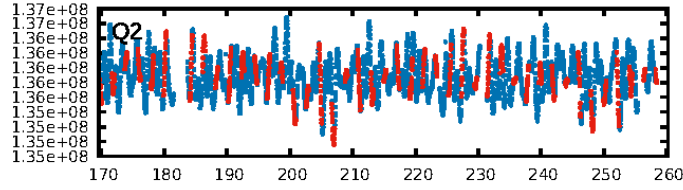
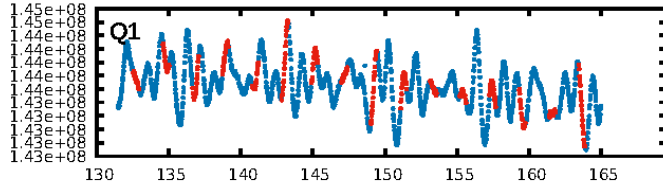
KIC: 6381517 Candidate: 1 of 2 Period: 2.061 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:28:30 Z

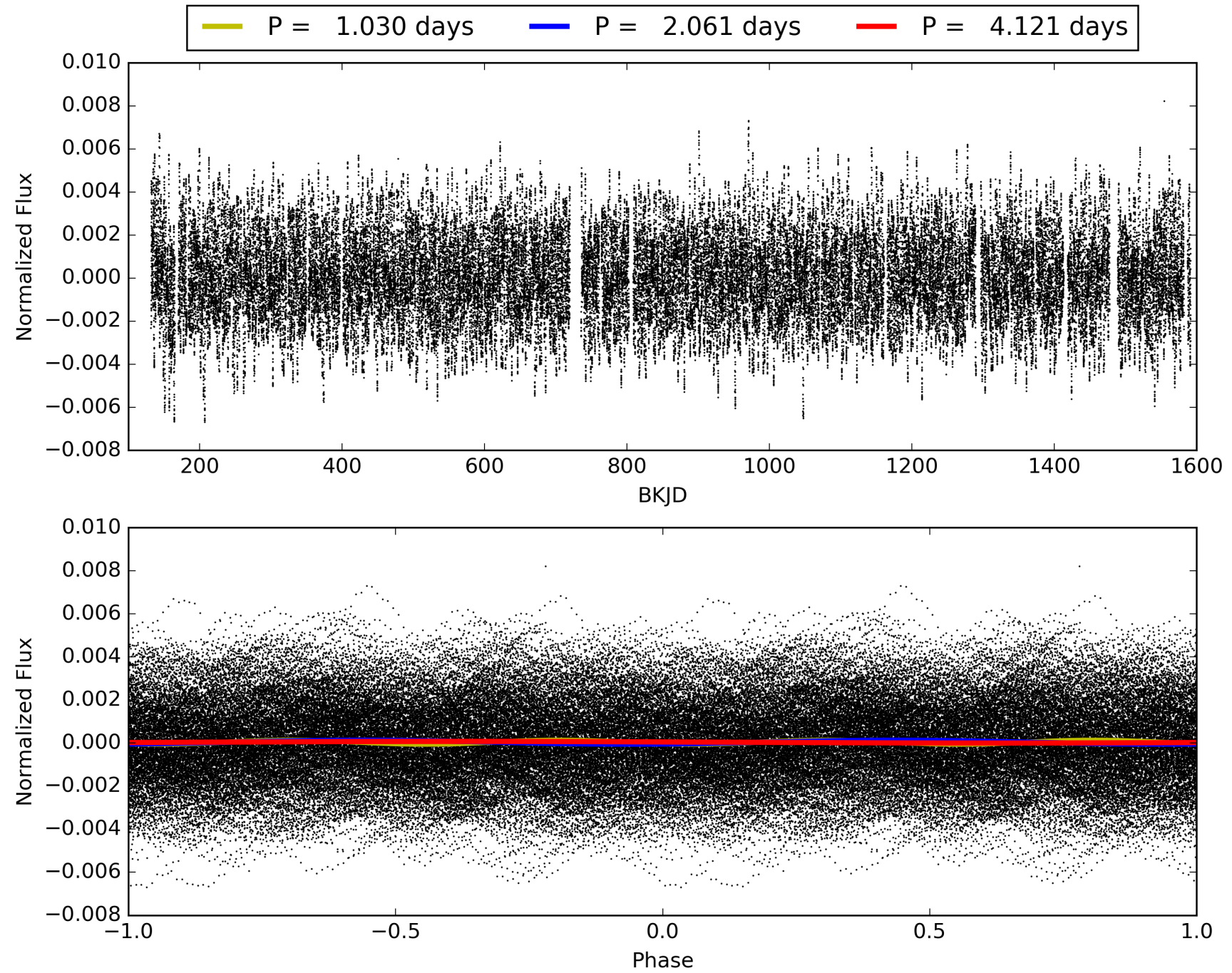
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006381517-01, PDC Light Curves



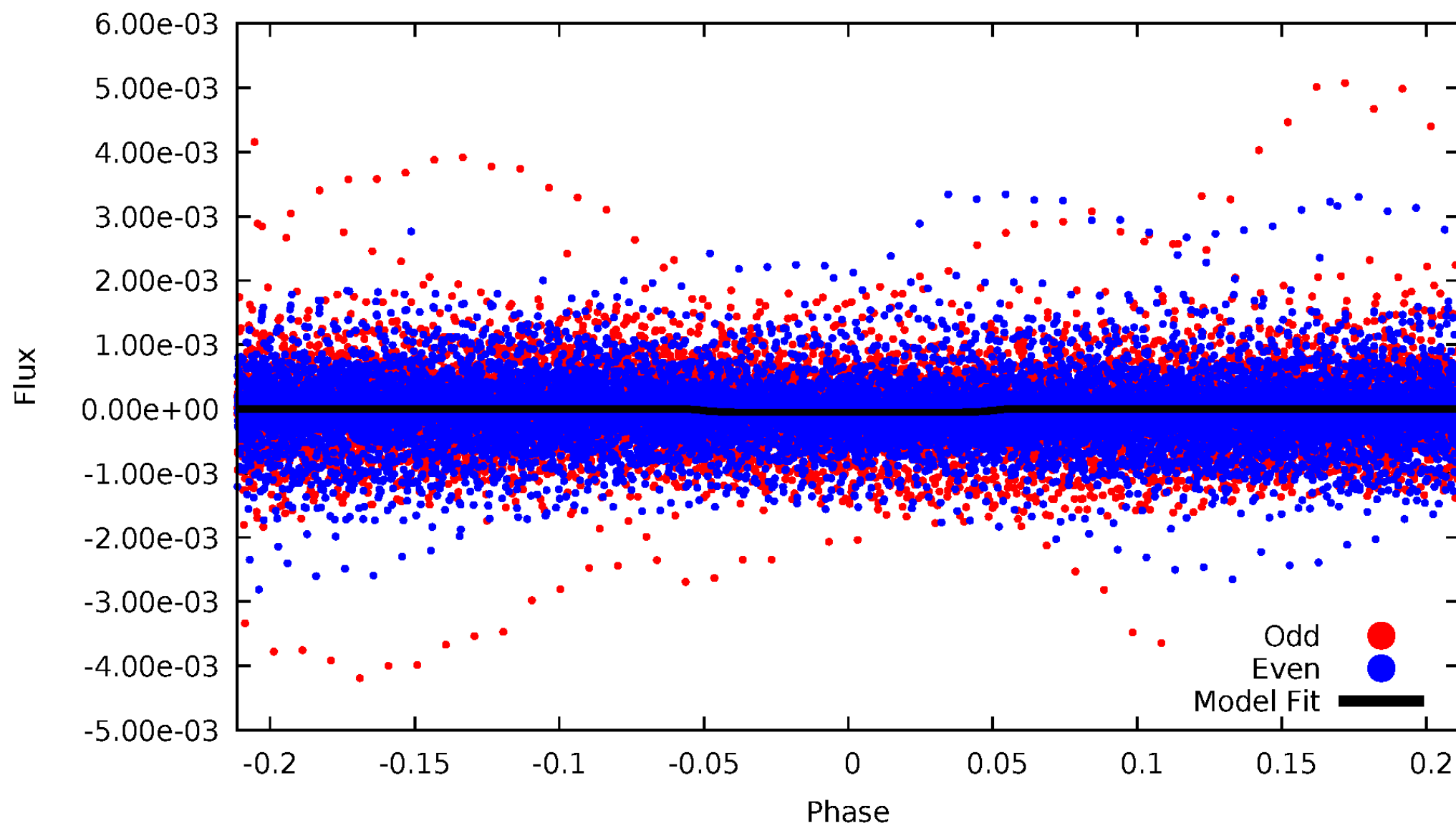


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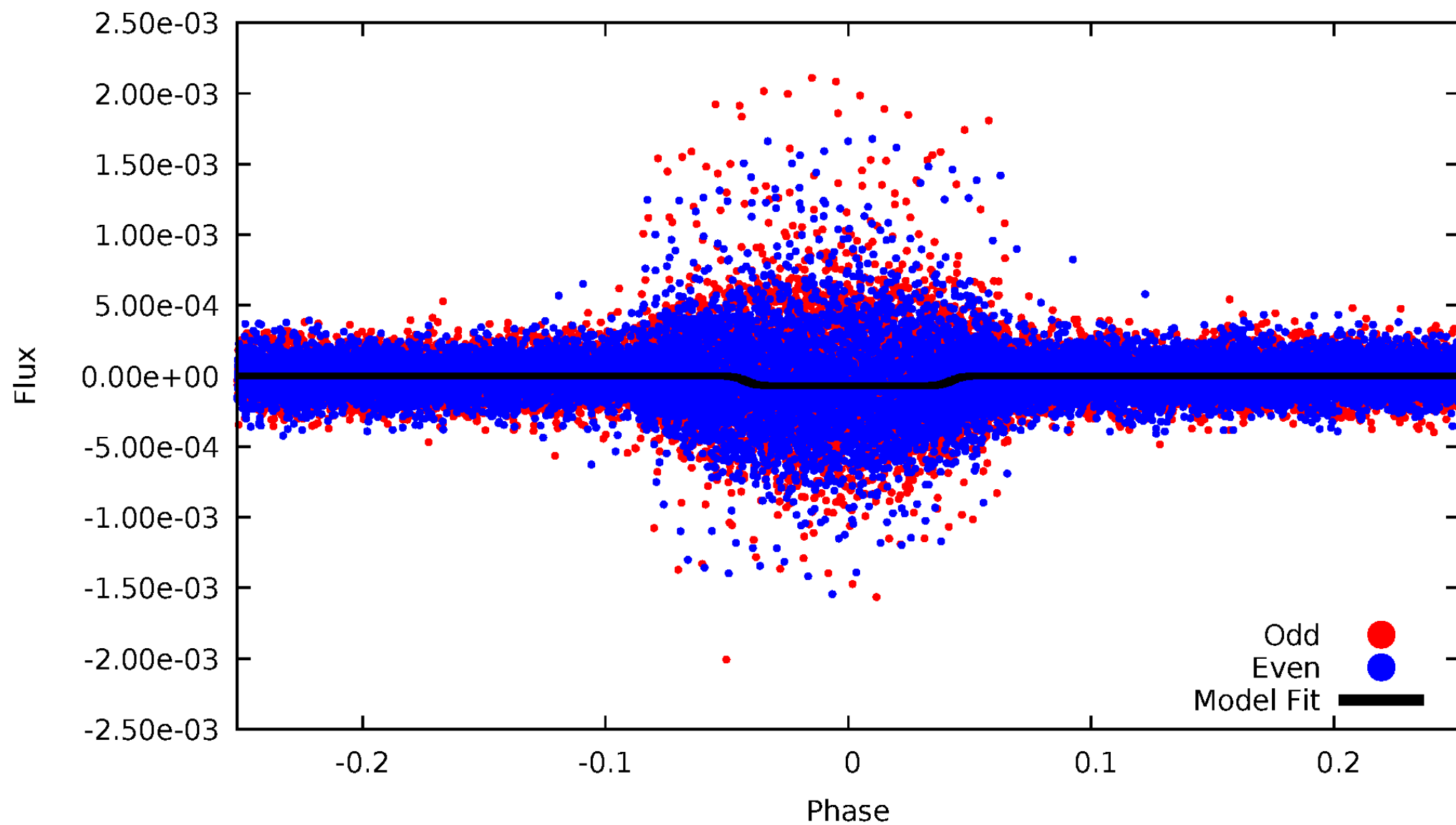
# DV Odd/Even

TCE 006381517-01

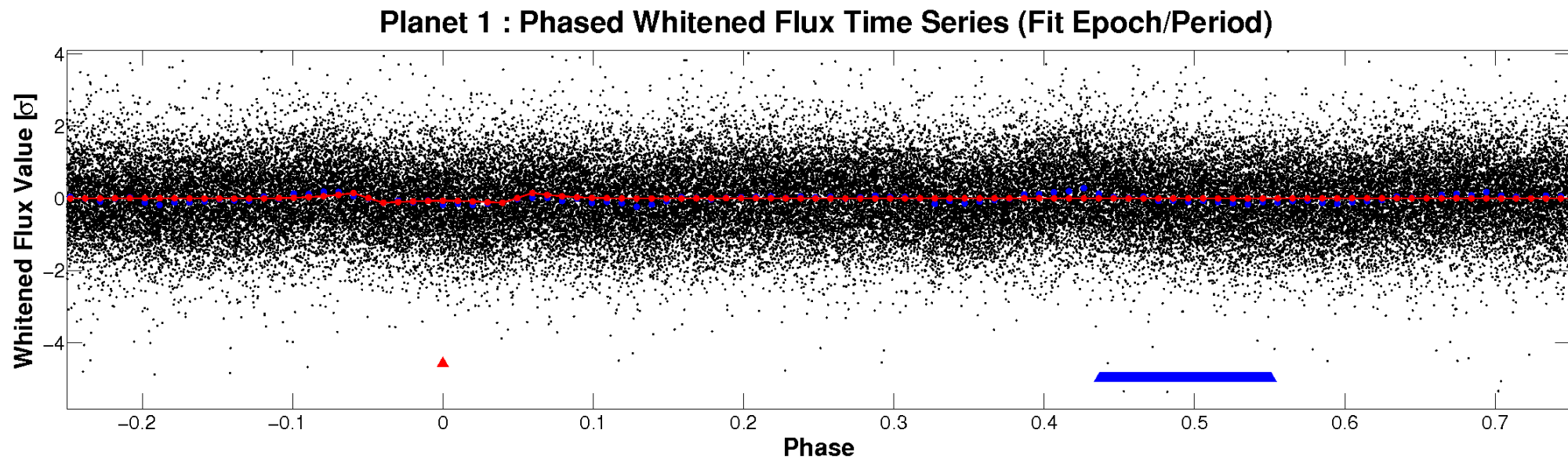
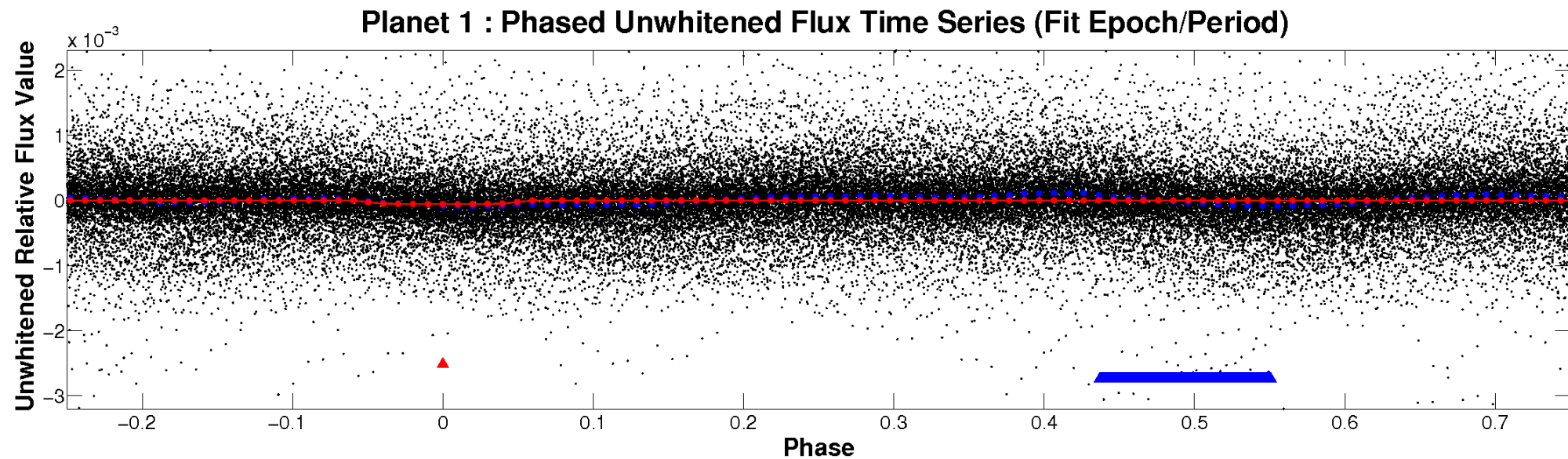


# ALT Odd/Even

TCE 006381517-01



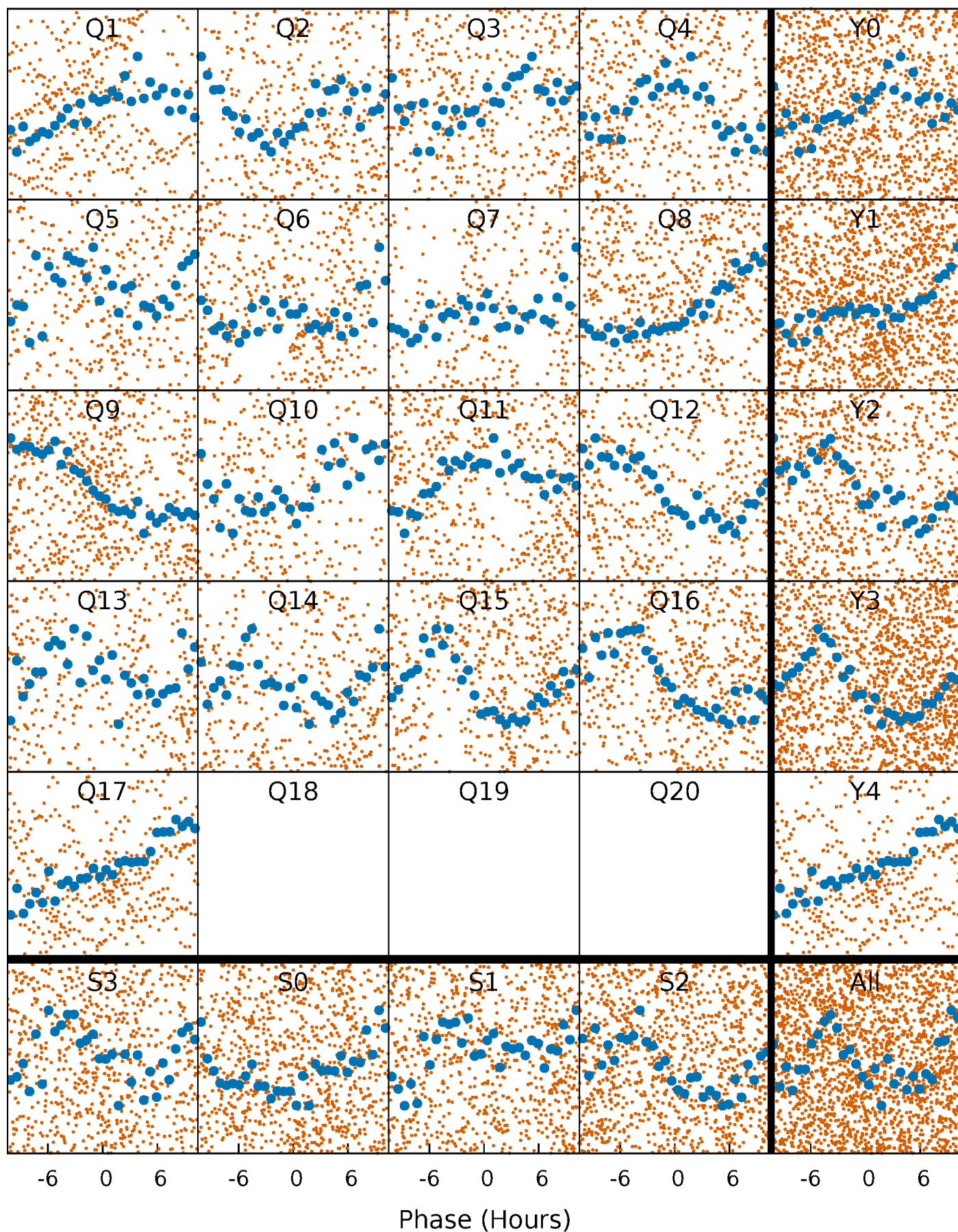
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

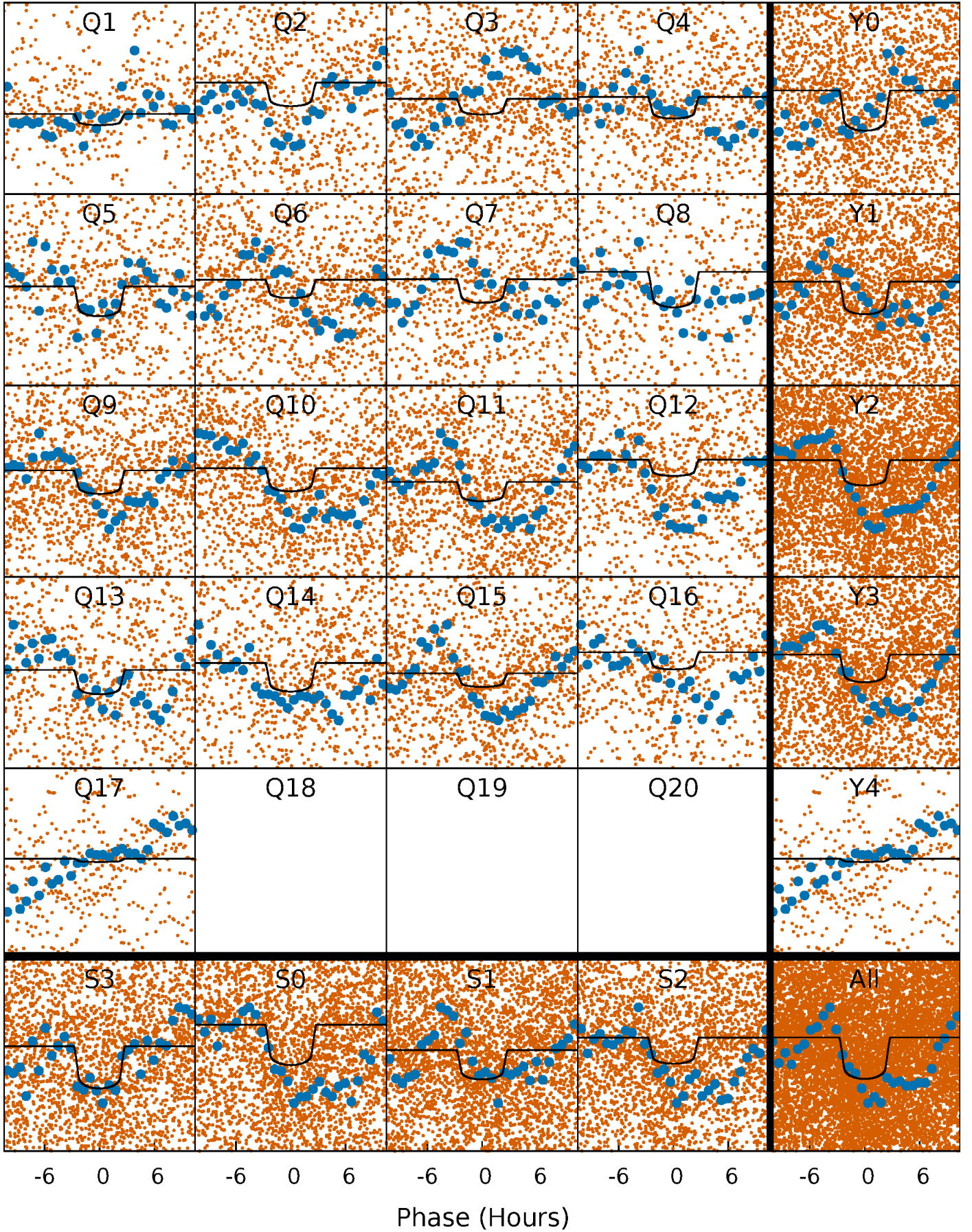
TCE 006381517-01 P= 2.060616 Days  $T_0=132.744427$  (BKJD)





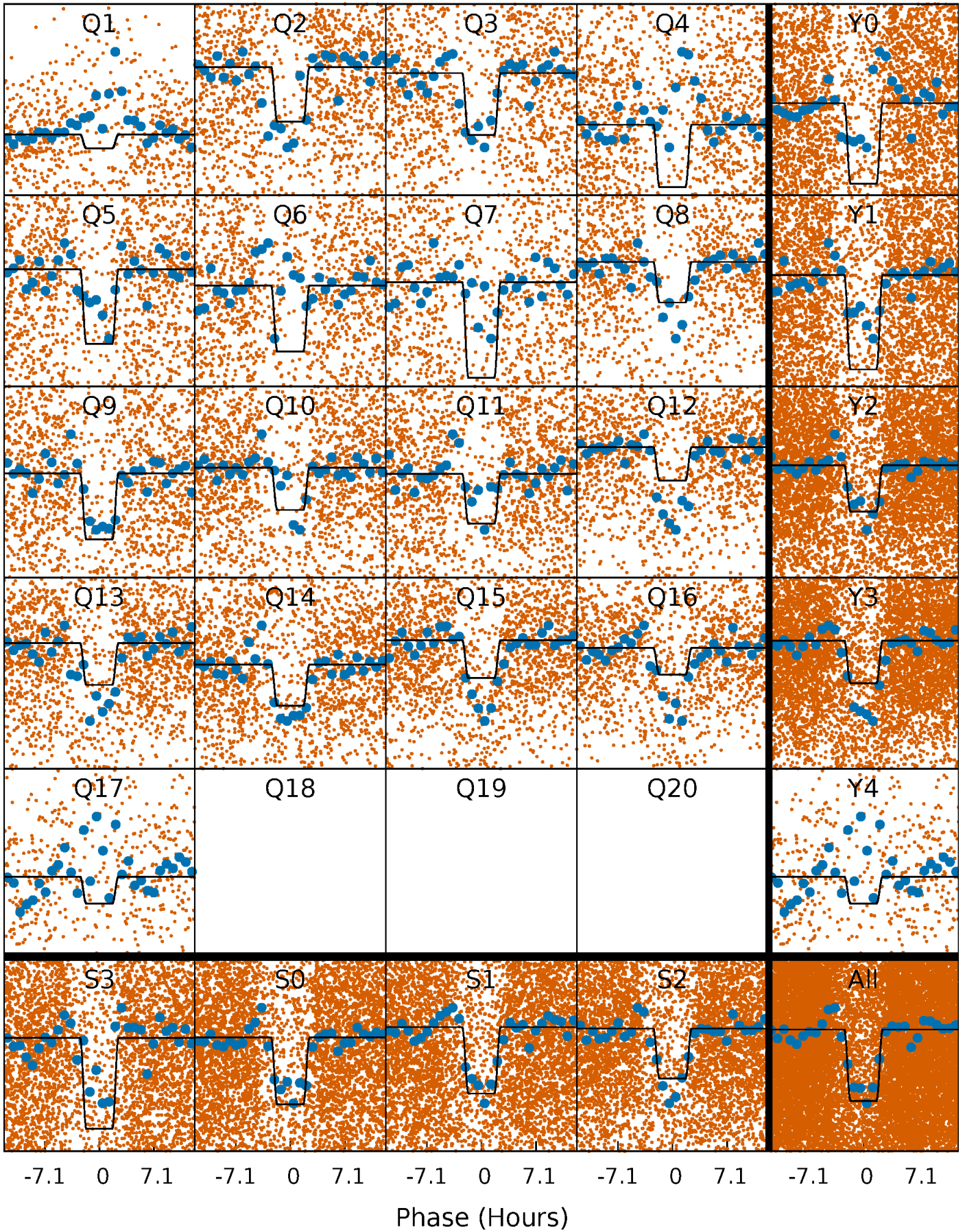
# DV Quarter-Phased Transit Curves

TCE 006381517-01 P= 2.060616 Days  $T_0=132.744427$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006381517-01 P= 2.060519 Days  $T_0=132.778897$  (BKJD)

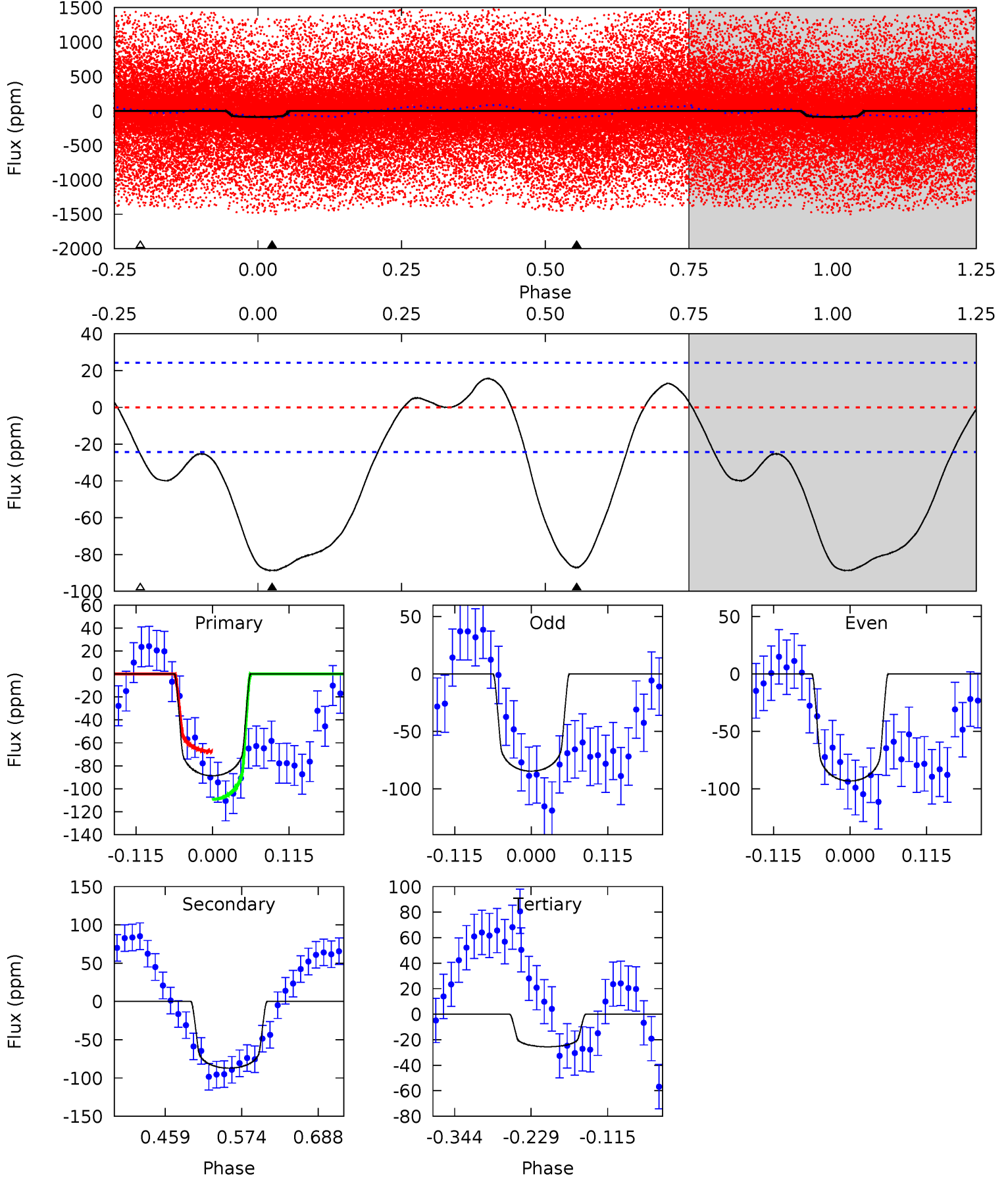




# DV Model-Shift Uniqueness Test

006381517-01, P = 2.060616 Days, E = 130.683811 Days

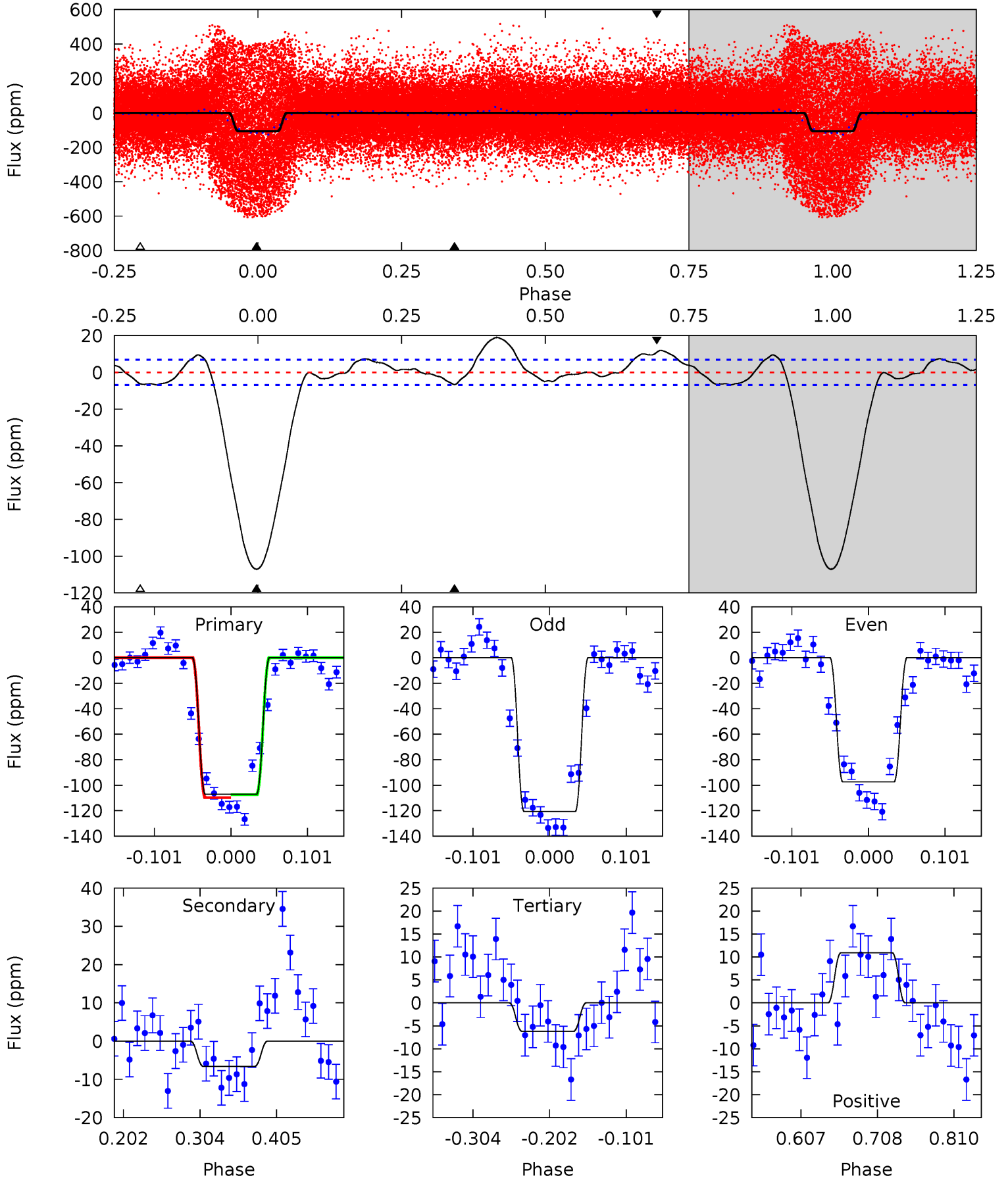
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	16.3	4.76	0	4.54	1.58	4.19	11.8	16.6	11.5	16.3	0.81	0.87	0.15	3.92



# Alt Model-Shift Uniqueness Test

006381517-01, P = 2.060519 Days, E = 130.718378 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
71.1	4.39	4.12	7.24	4.56	1.64	3.41	67.0	63.8	0.26	-2.85	7.63	0.56	0.15	0





### Stellar Parameters For KIC 006381517

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7435^{+233}_{-311}$	$4.177^{+0.087}_{-0.188}$	$0.020^{+0.200}_{-0.350}$	$1.698^{+0.528}_{-0.284}$	$1.580^{+0.207}_{-0.228}$	$0.454^{+0.217}_{-0.236}$
	+3%/-4%	+2%/-5%	+1000%/-1750%	+31%/-17%	+13%/-14%	+48%/-52%
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 006381517-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-87 \pm 5$	$1.52^{+0.31}_{-0.26}$	$3158^{+213}_{-198}$	$8134^{+927}_{-756}$	$28^{+13}_{-8}$
Alt.	$-7 \pm 2$	$1.56^{+0.31}_{-0.24}$	$3144^{+225}_{-178}$	$4141^{+361}_{-296}$	$1.932^{+0.974}_{-0.677}$

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

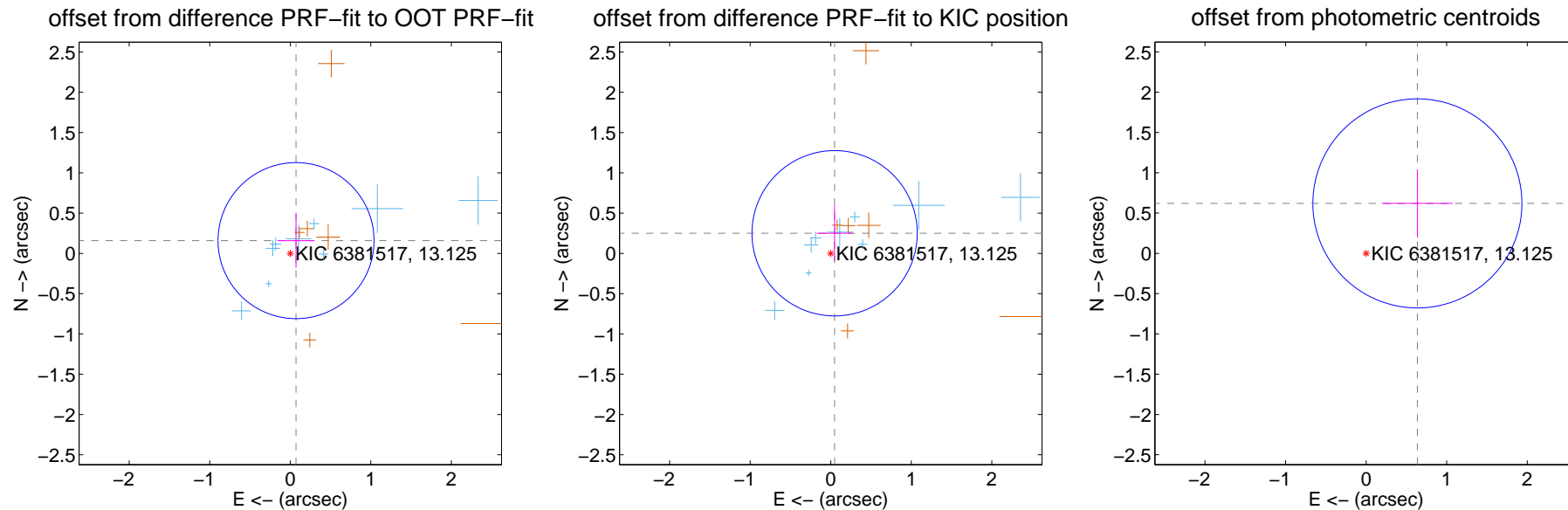
## DV Centroid Data

Supplemental centroid analysis for 006381517-01. Kepler magnitude: 13.12. Transit SNR 10.01

There are 10 quarters with good PRF difference image offsets

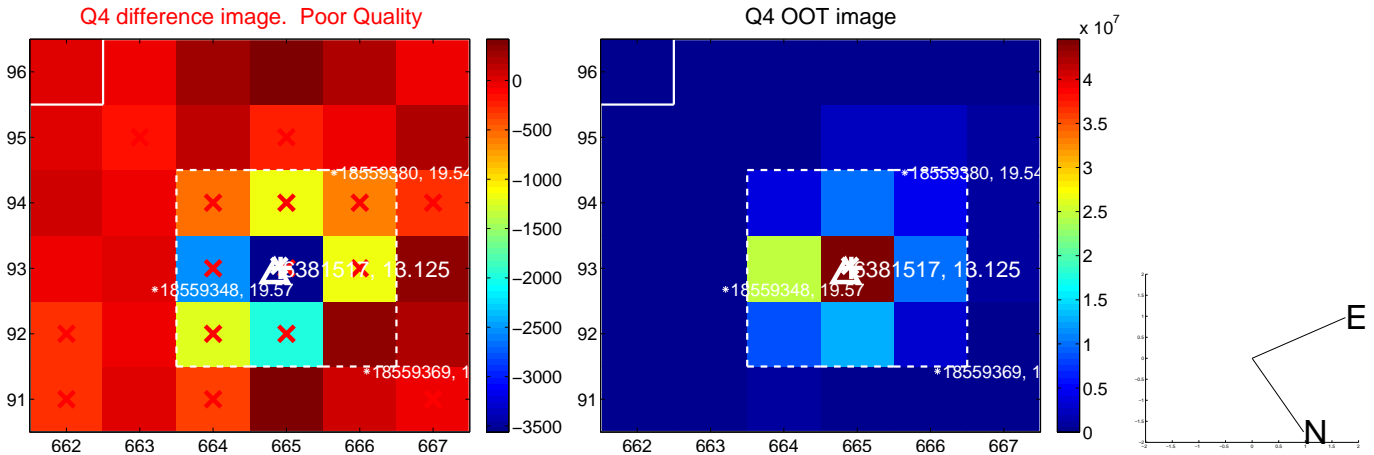
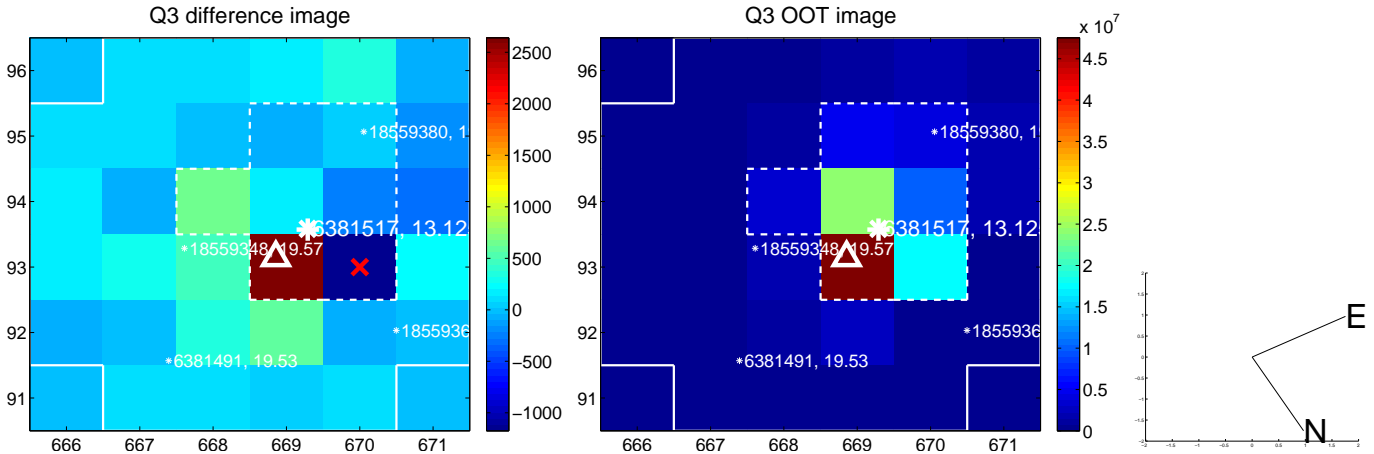
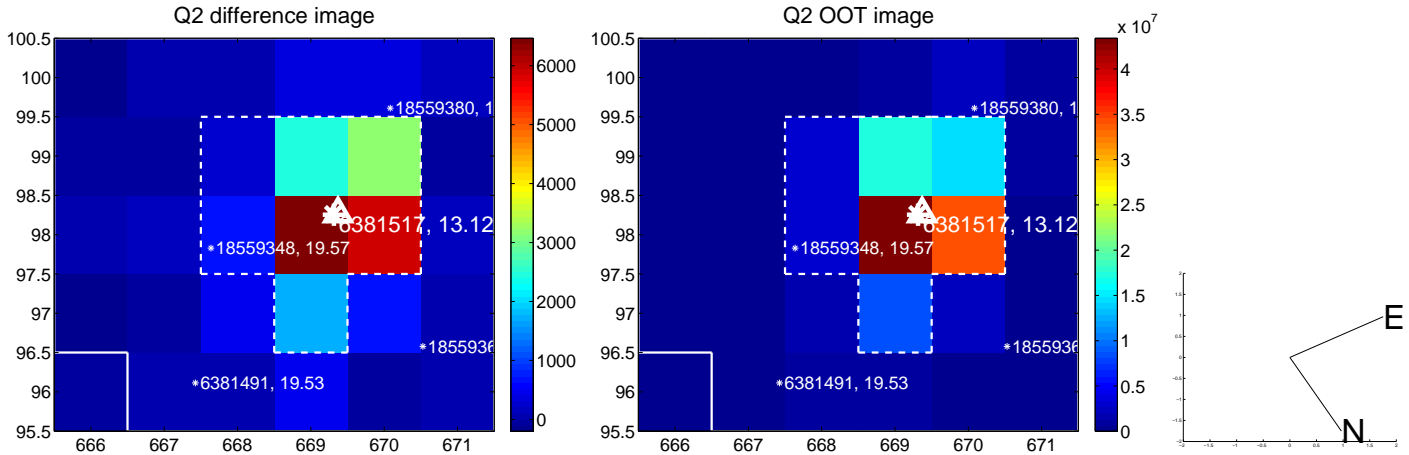
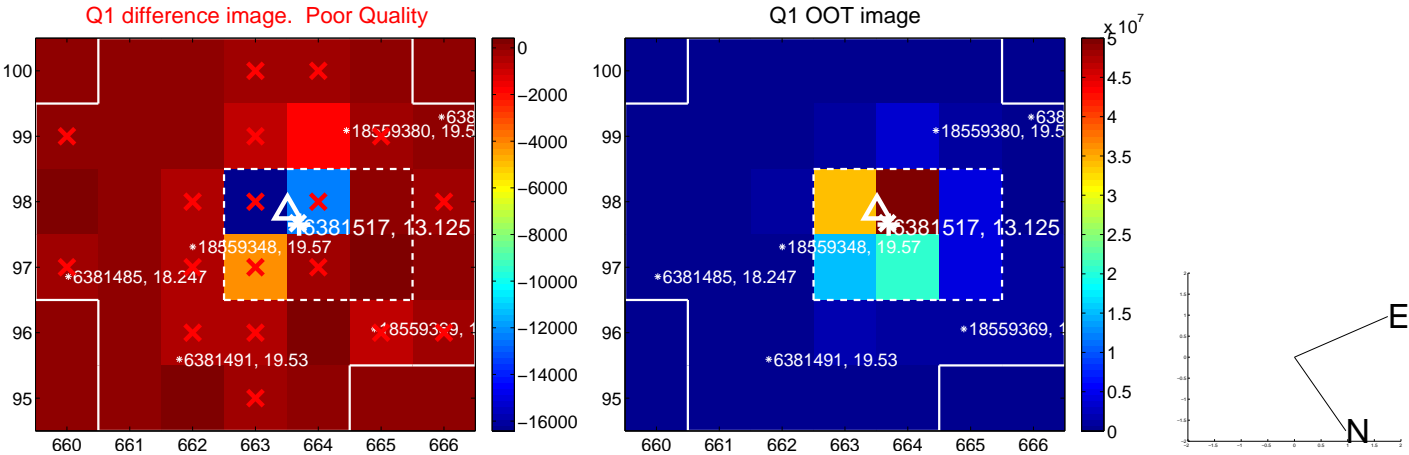
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.174 \pm 0.323$	0.54	$-0.072 \pm 0.229$	$0.159 \pm 0.337$
PRF-fit source offset from KIC position	$0.255 \pm 0.342$	0.74	$-0.048 \pm 0.221$	$0.250 \pm 0.343$
photometric centroid source offset	$0.89 \pm 0.43$	2.05	$-0.64 \pm 0.44$	$0.62 \pm 0.42$

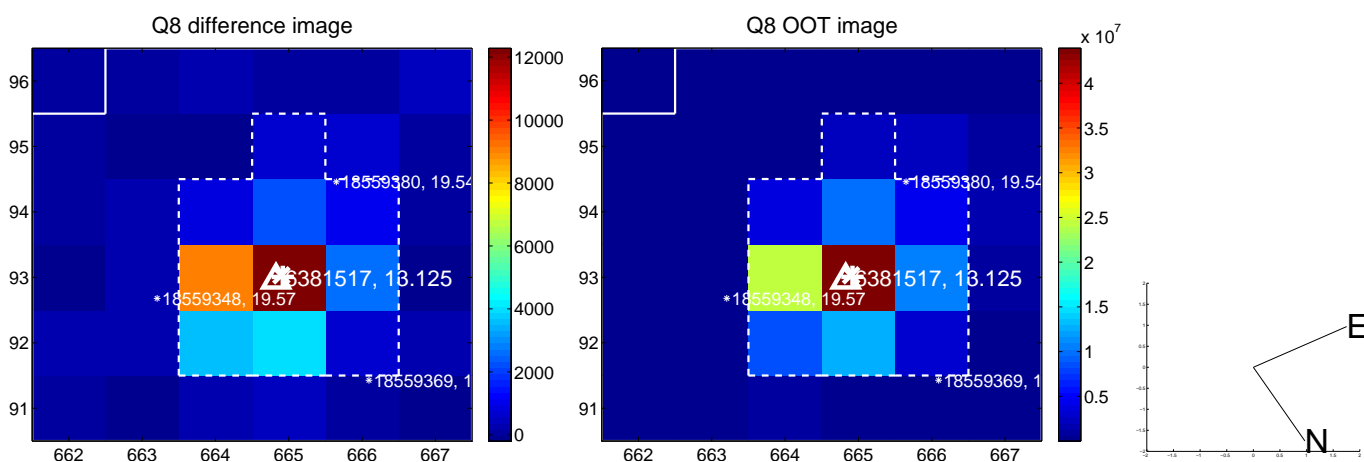
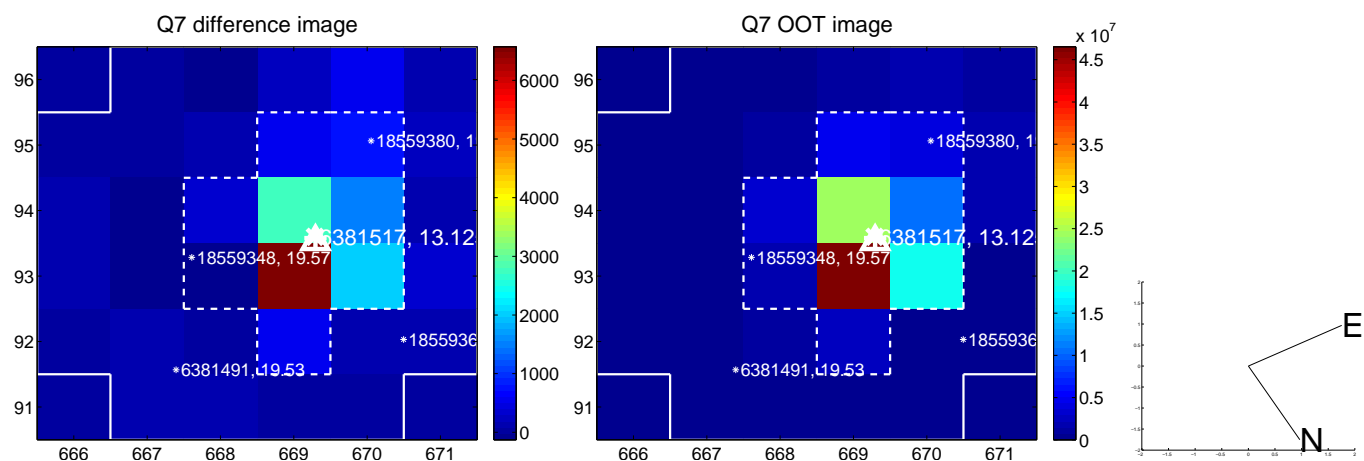
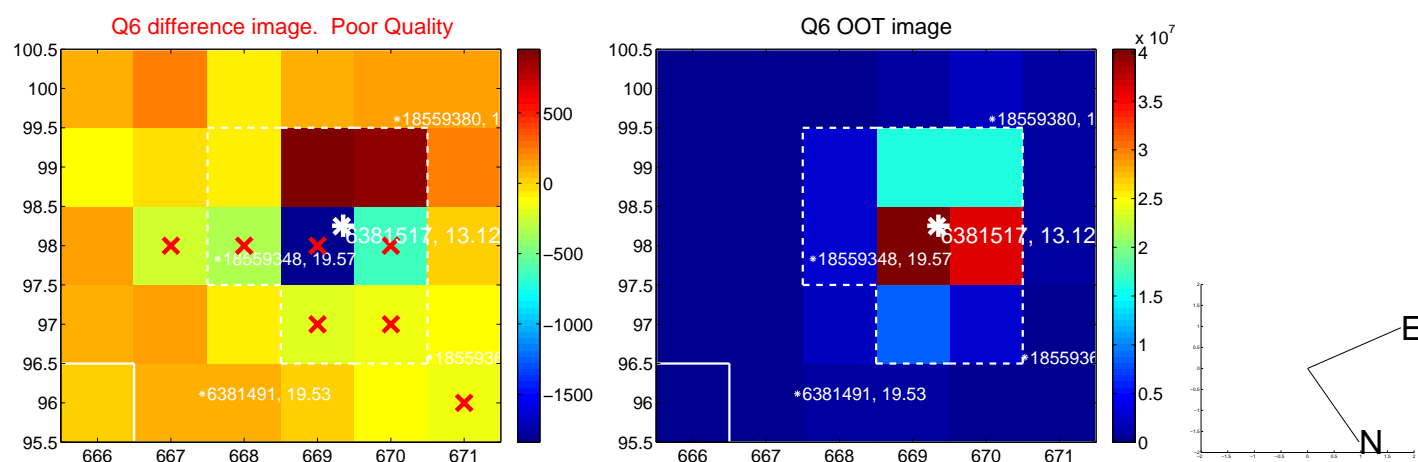
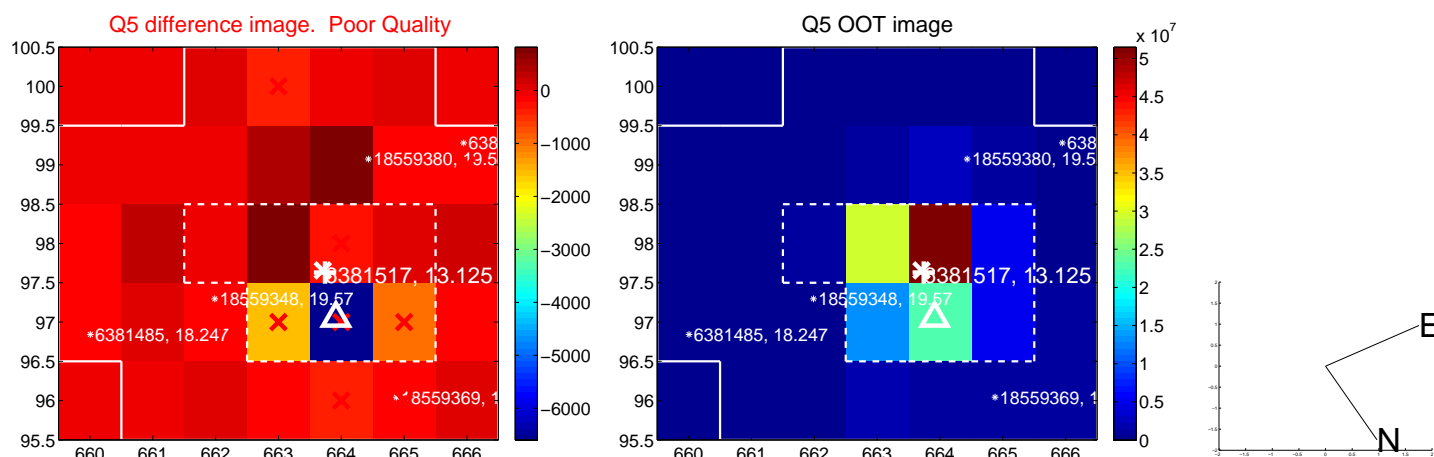


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

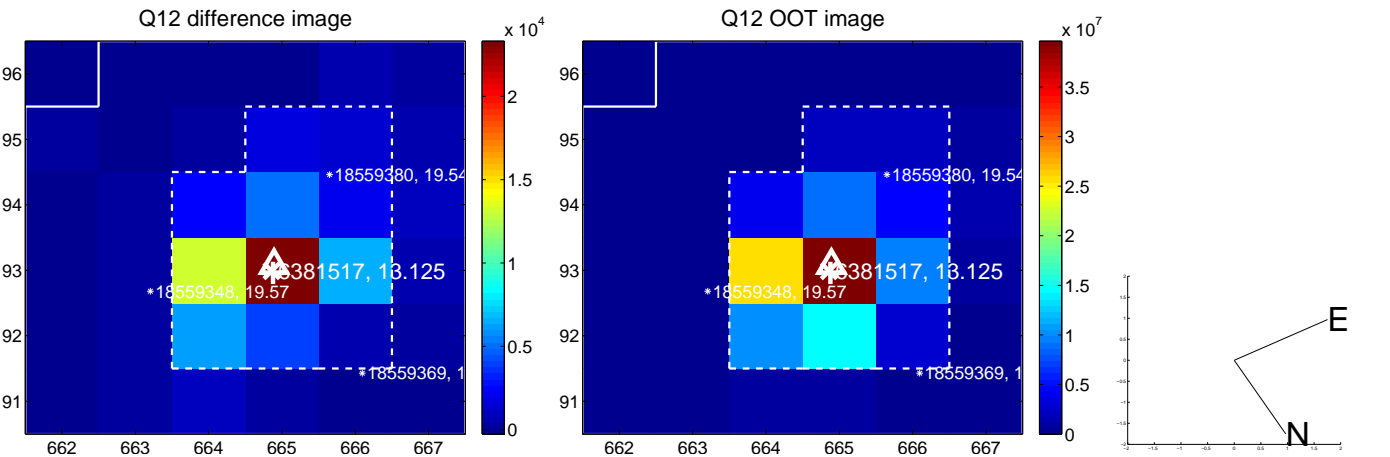
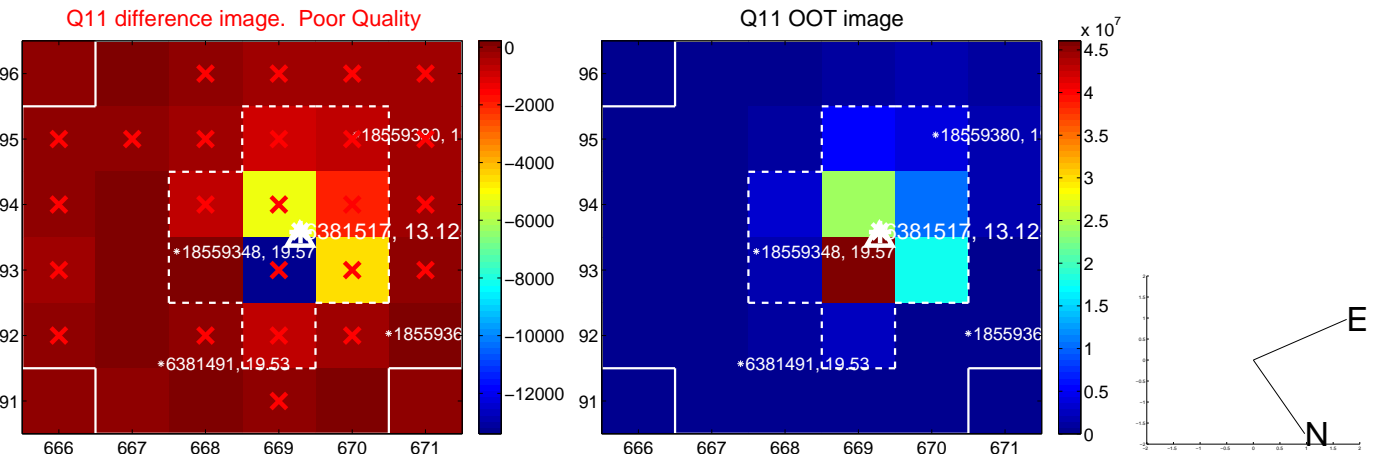
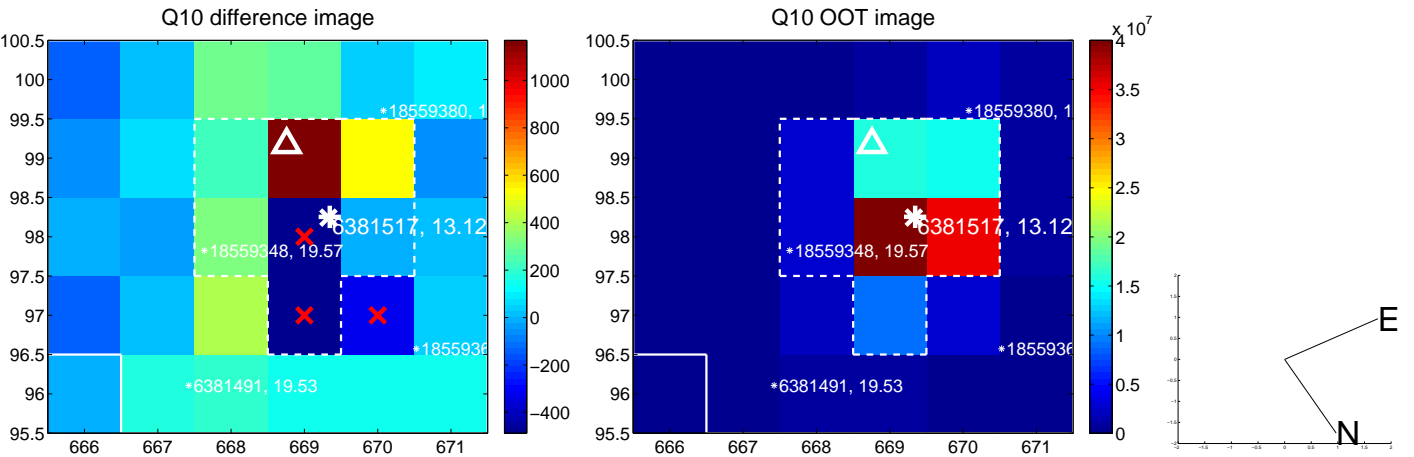
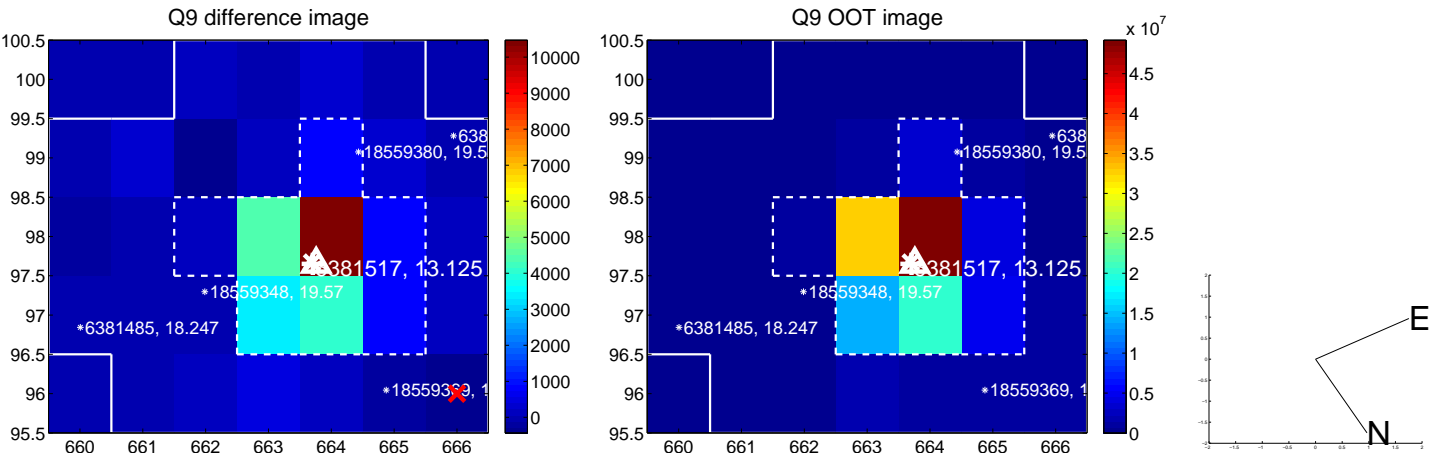


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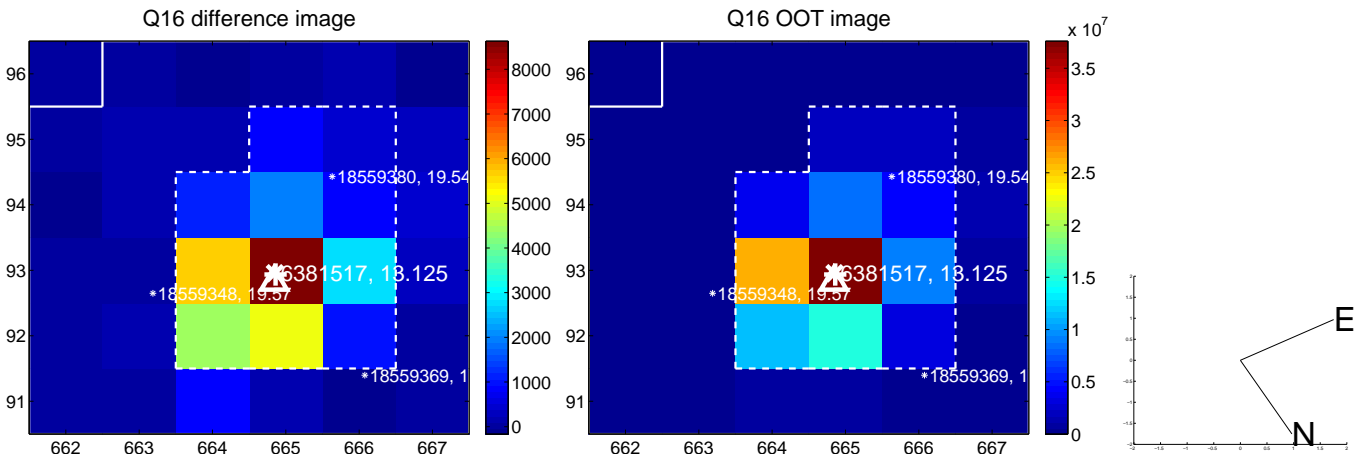
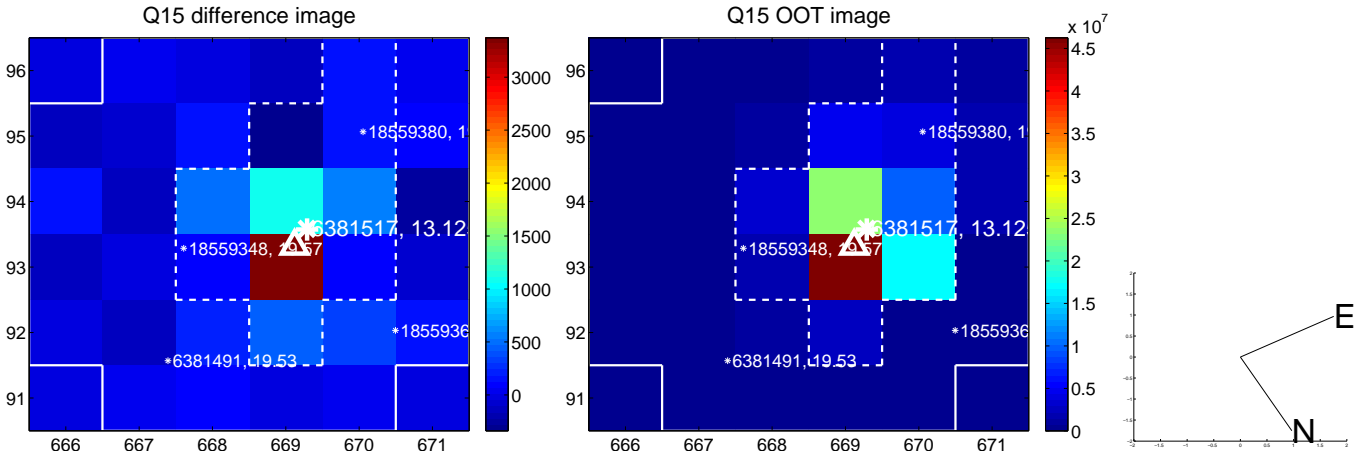
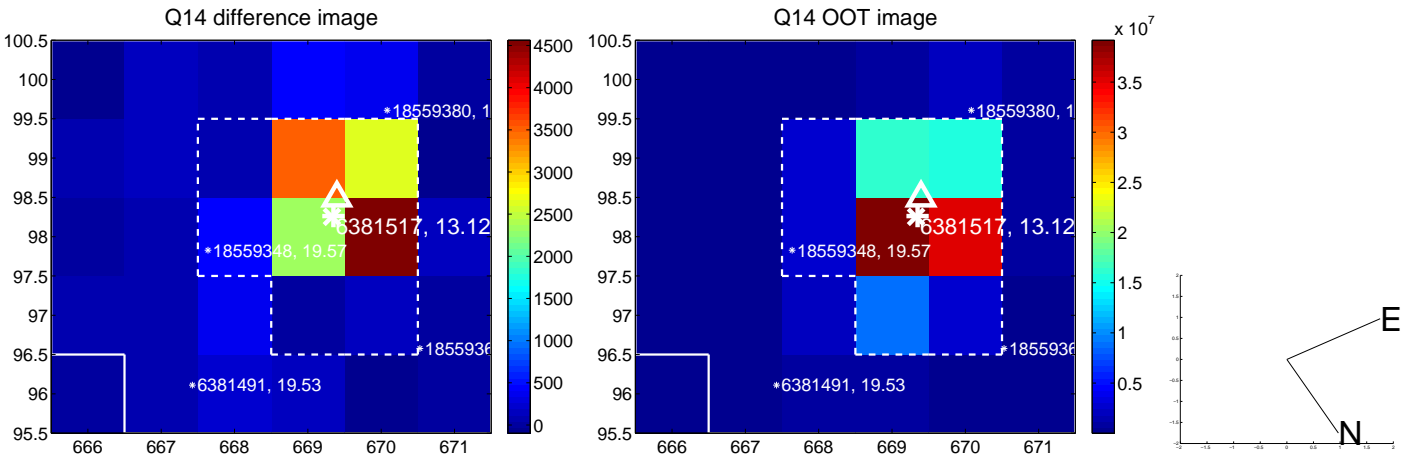
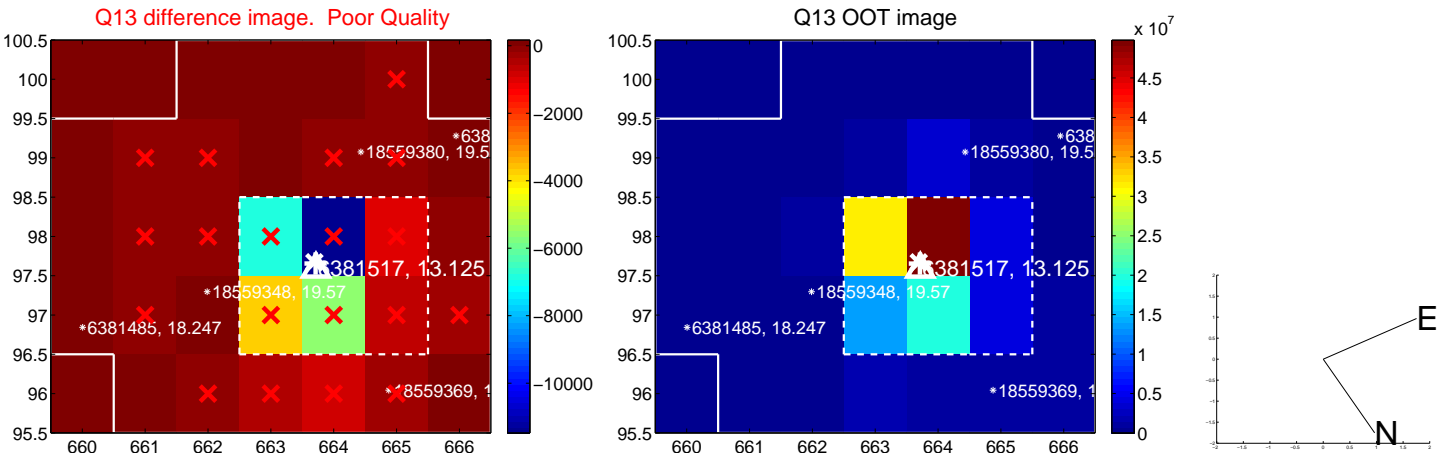




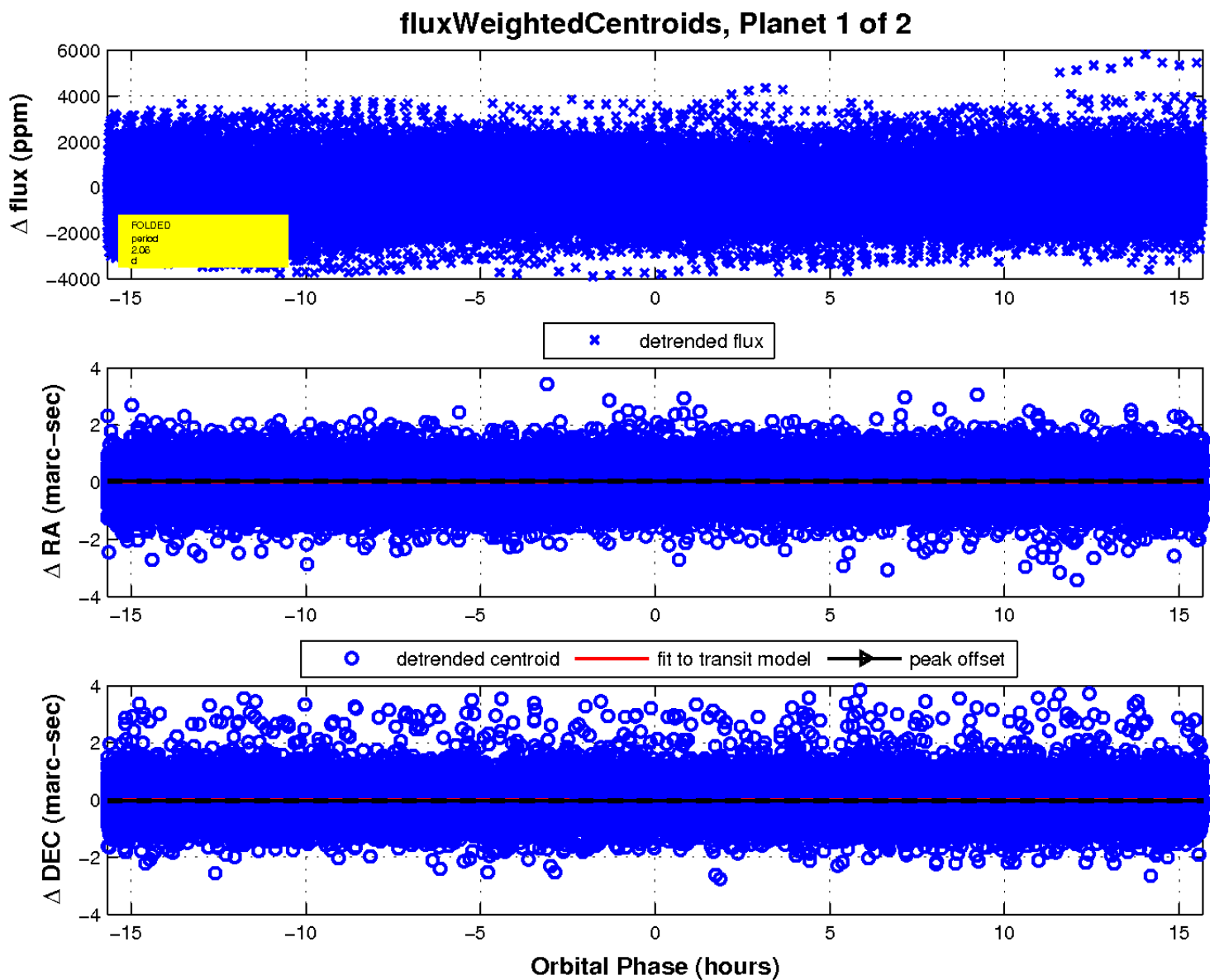
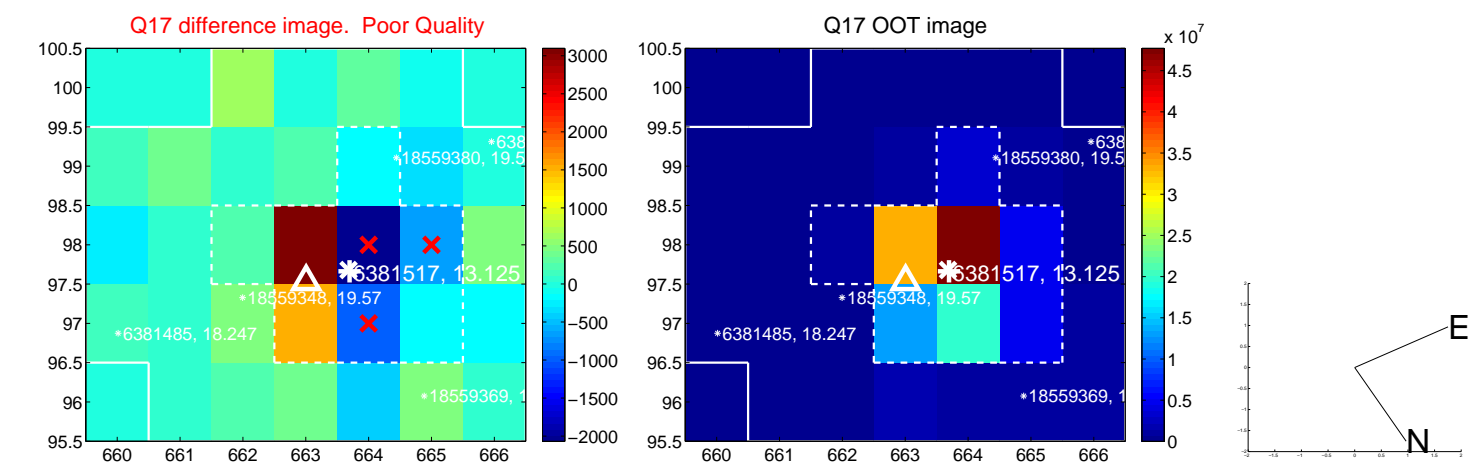
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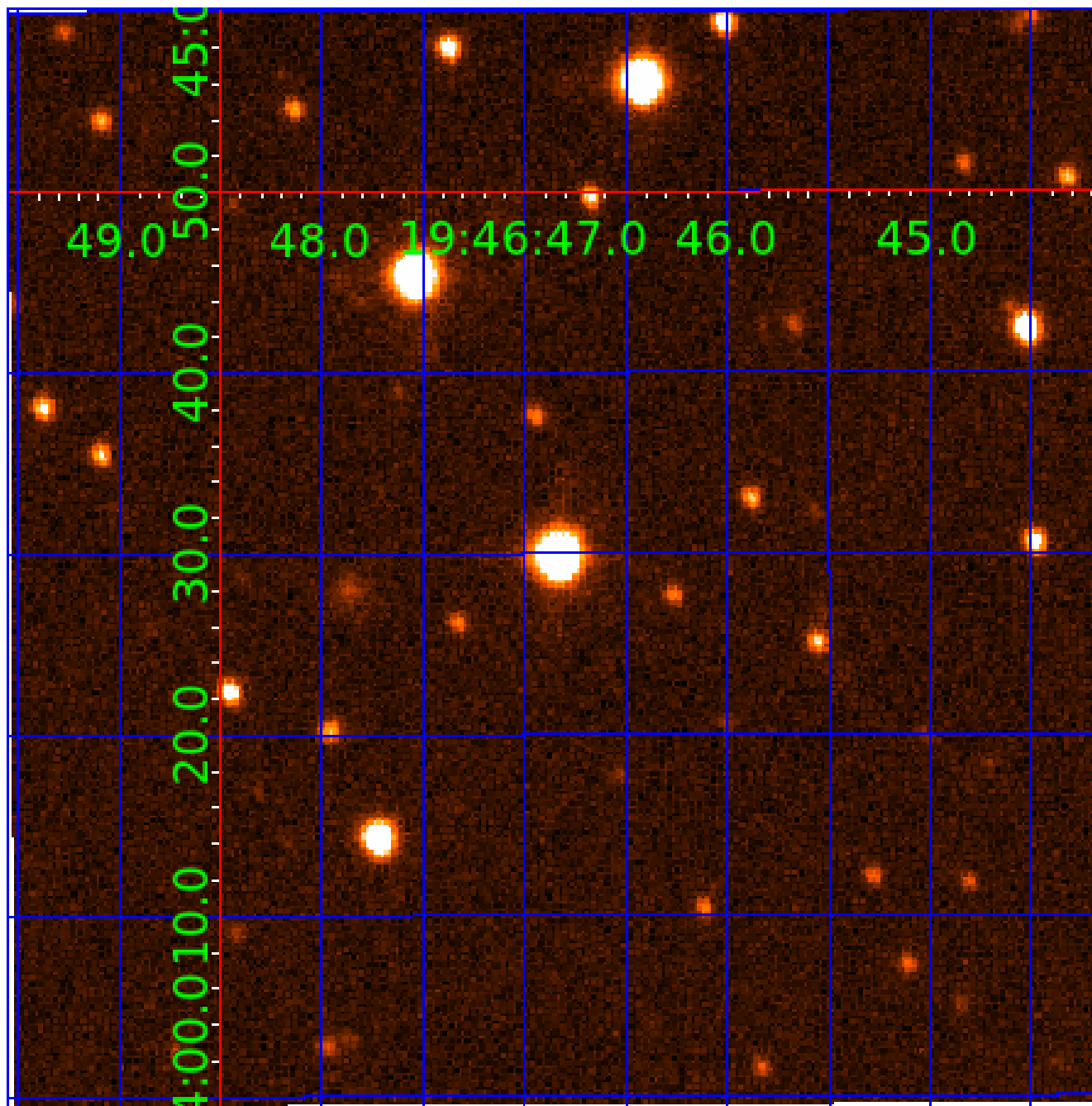


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UKIRT Image

Declination





# KIC 006381517

## Q1-17 DR25 TCE Parameters

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

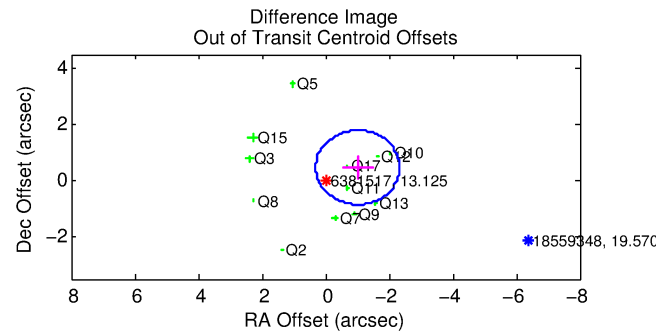
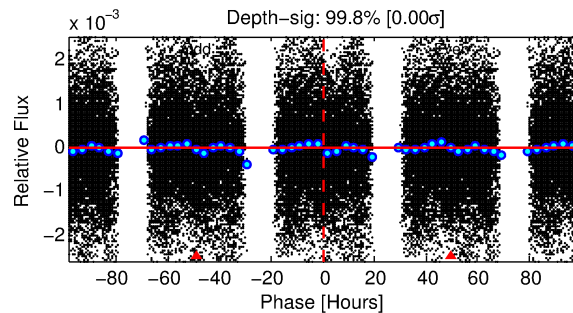
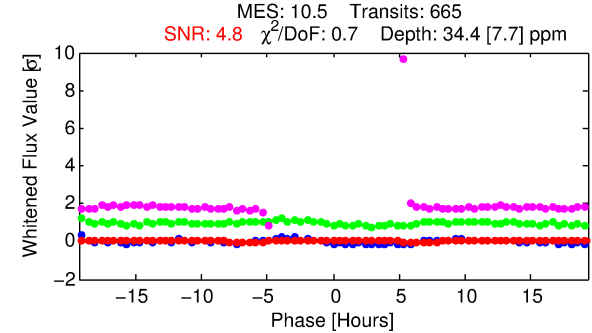
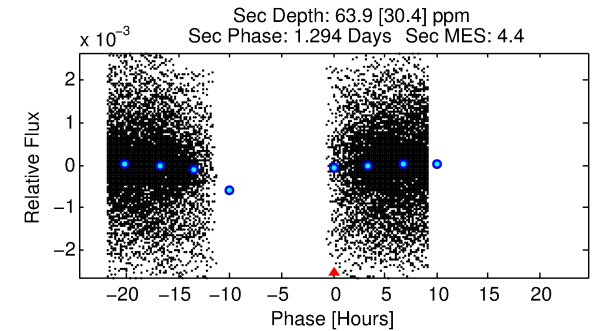
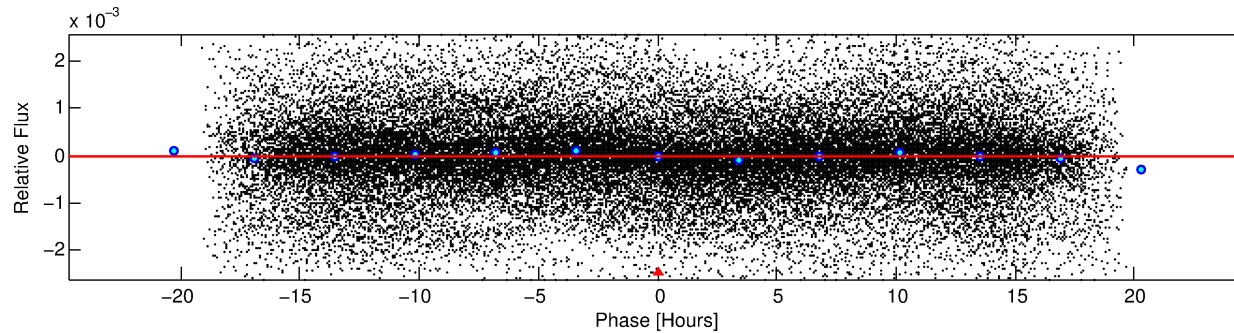
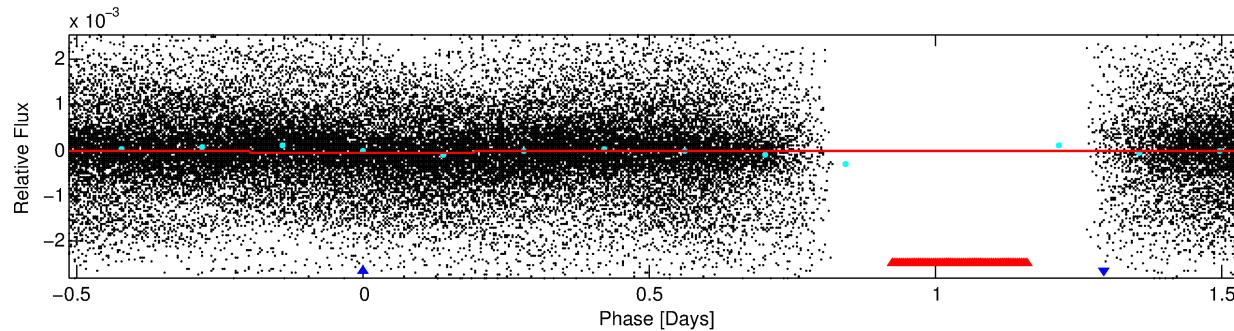
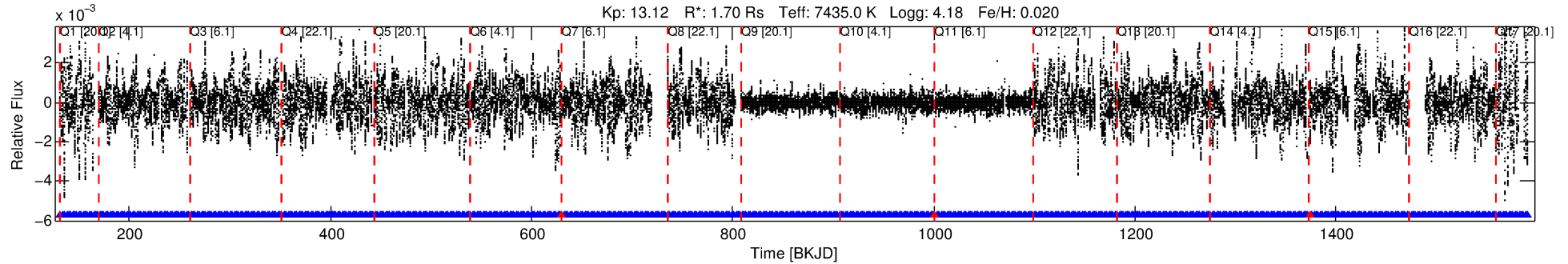
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006381517-02

No Significant Match Found

# DV One-Page Summary

KIC: 6381517 Candidate: 2 of 2 Period: 2.060 d



## DV Fit Results:

Period = 2.06028 [0.00002] d  
Epoch = 131.8188 [0.0048] BKJD  
Rp/R\* = 0.0056 [0.0022]  
a/R\* = 1.10 [0.44]  
b = 0.58 [2.69]  
Seff = 5790.82 [2274.36]  
Teq = 2224 [218] K  
Rp = 1.05 [0.51] Re  
a = 0.0369 [0.0093] AU  
Ag = 43.86 [42.37] [1.01σ]  
Teffp = 8850 [2022] K [3.26σ]

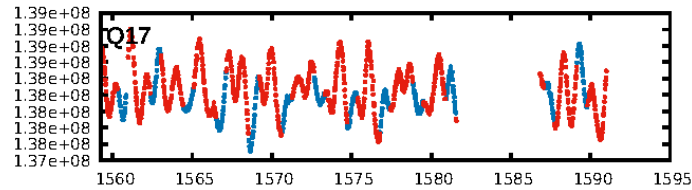
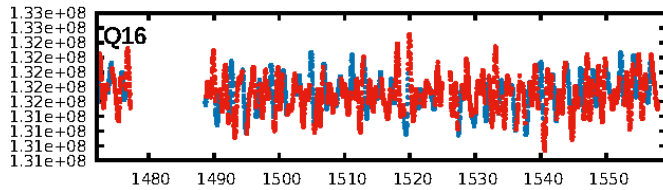
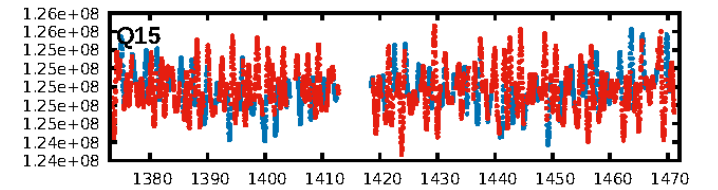
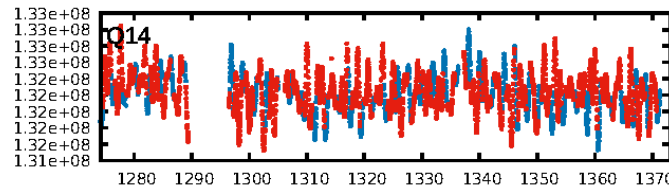
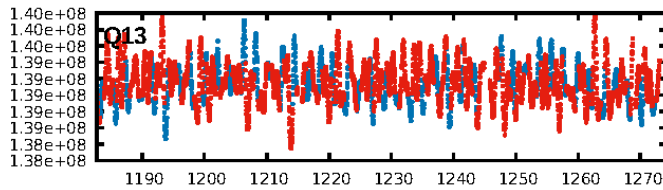
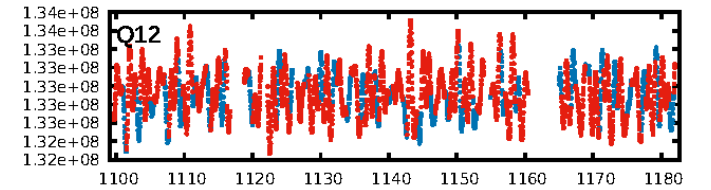
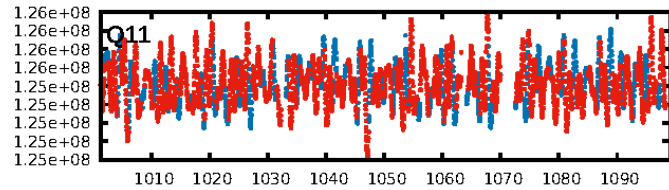
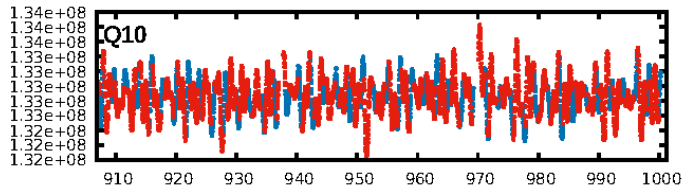
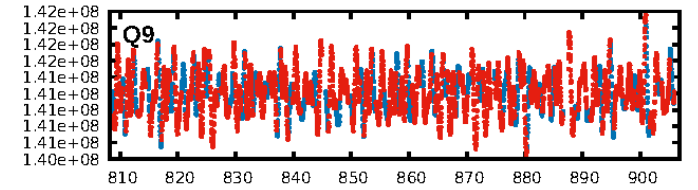
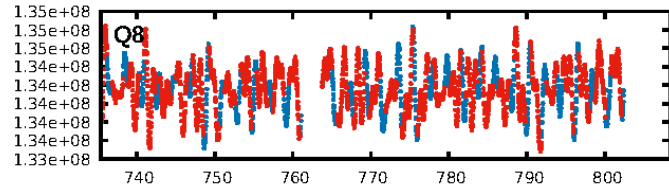
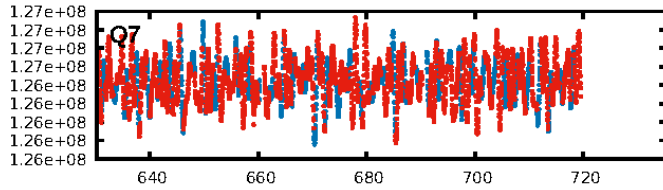
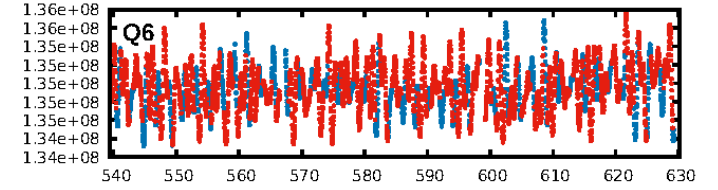
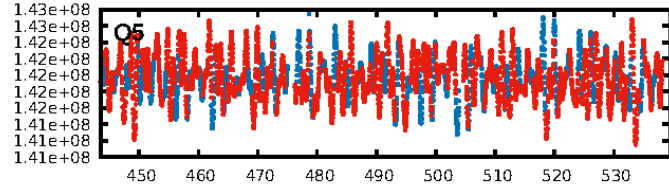
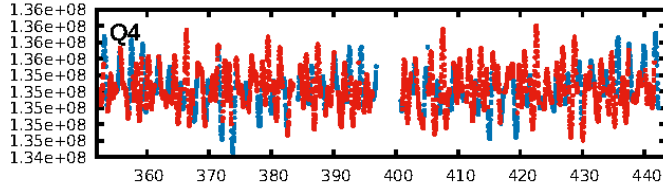
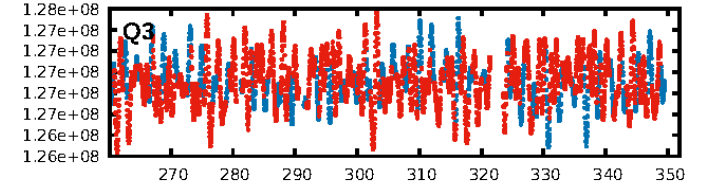
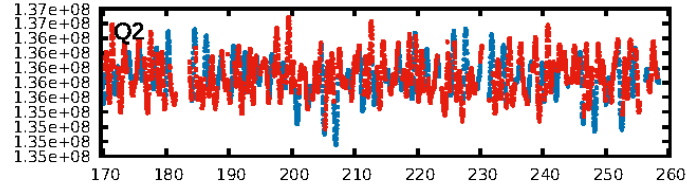
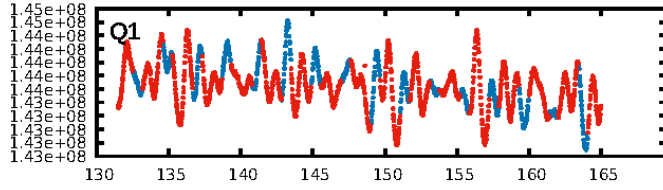
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [632/635]  
GhostDiagnostic-chr: 0.2667  
Centroid-sig: 0.1%  
Centroid-so: 1.256 arcsec [2.61σ]  
OotOffset-rm: 1.113 arcsec [2.53σ]  
KicOffset-rm: 1.126 arcsec [2.90σ]  
OotOffset-st: 2/4/2/4 [12]  
KicOffset-st: 2/4/2/4 [12]  
DiffImageQuality-fgm: 0.50 [6/12]  
DiffImageOverlap-fno: 0.00 [0/17]

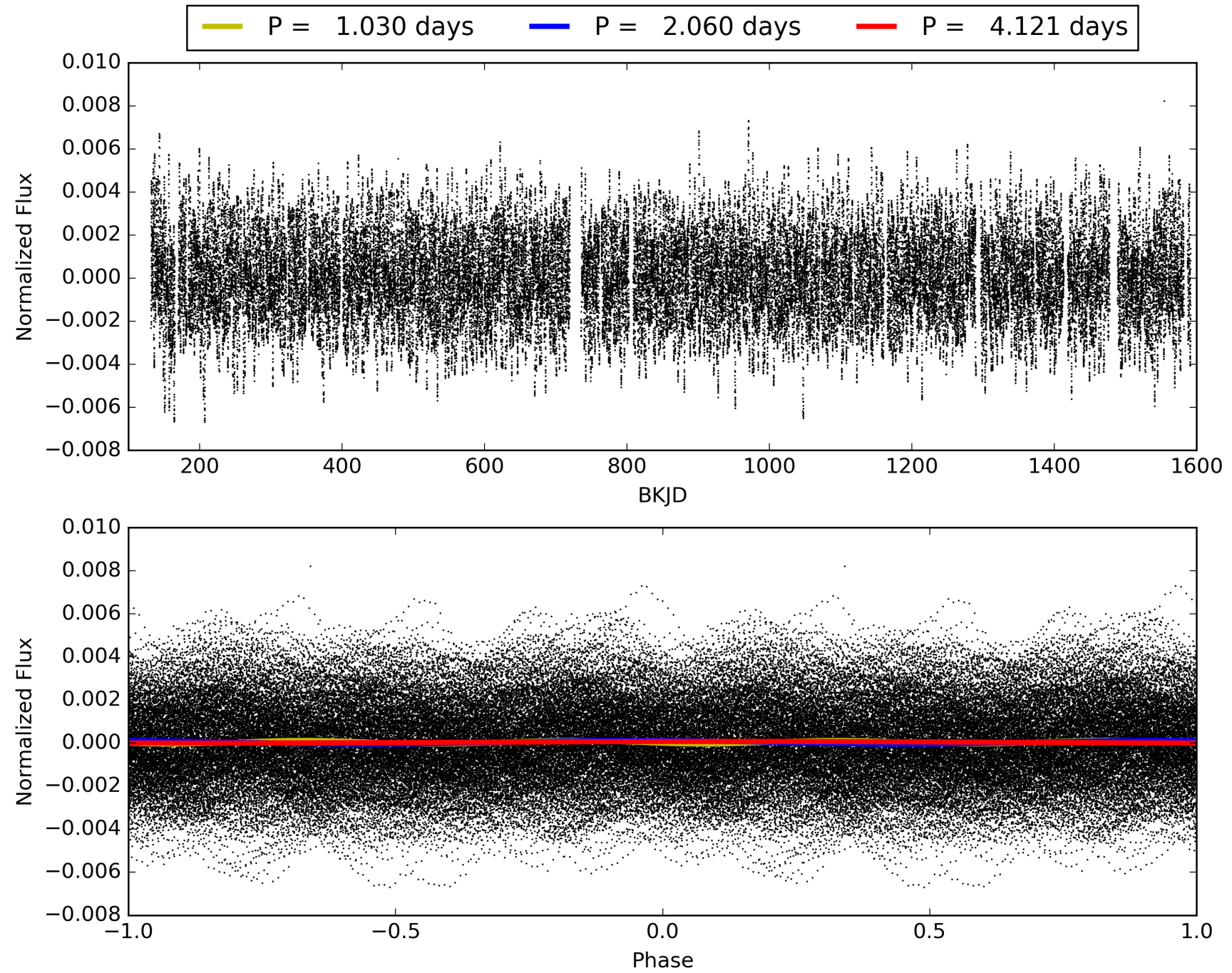
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:28:44 Z

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

# TCE 006381517-02, PDC Light Curves



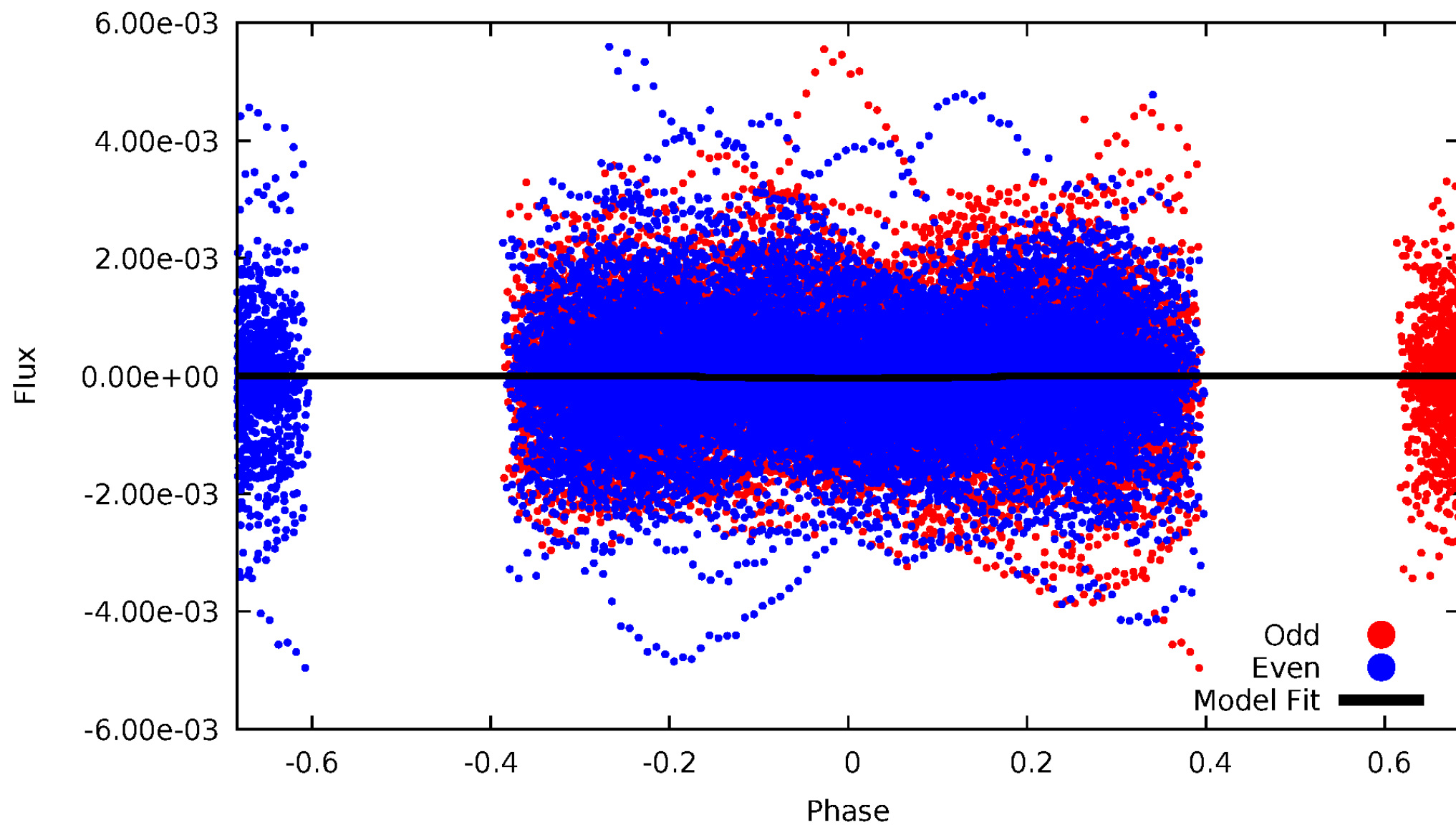
# TCE 006381517-02





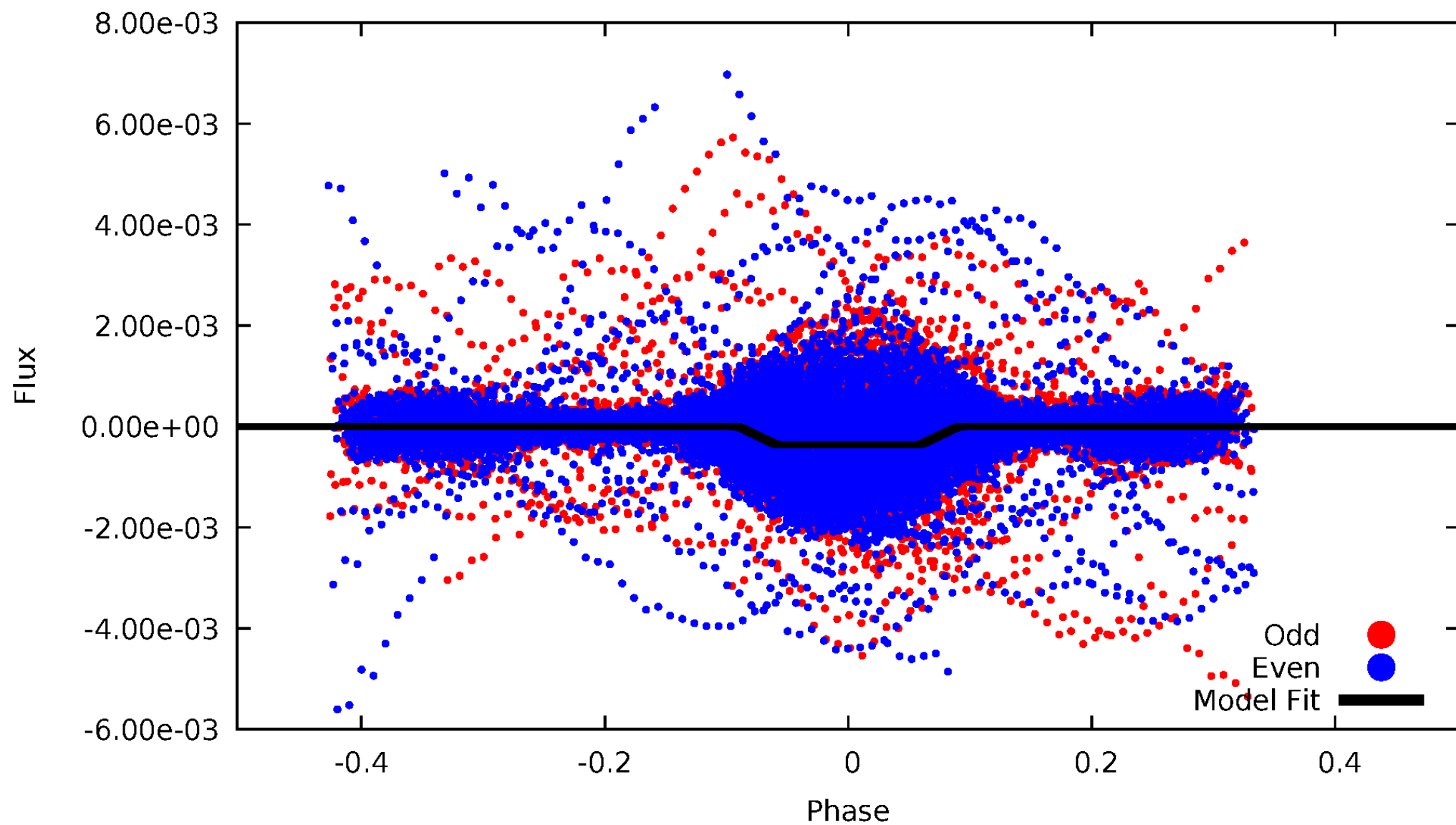
# DV Odd/Even

TCE 006381517-02



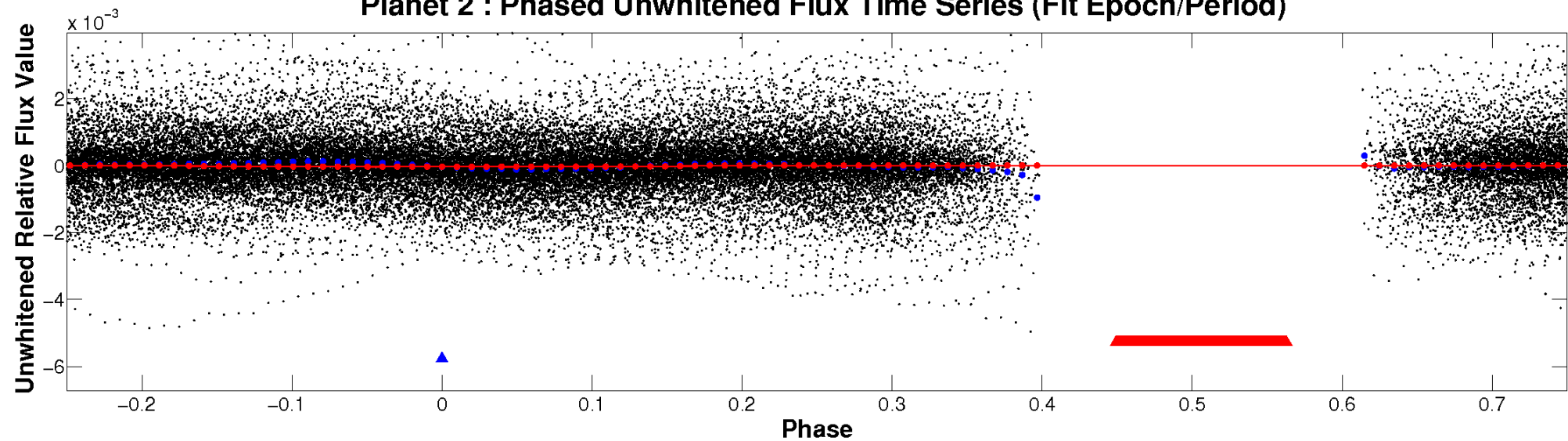
# ALT Odd/Even

TCE 006381517-02

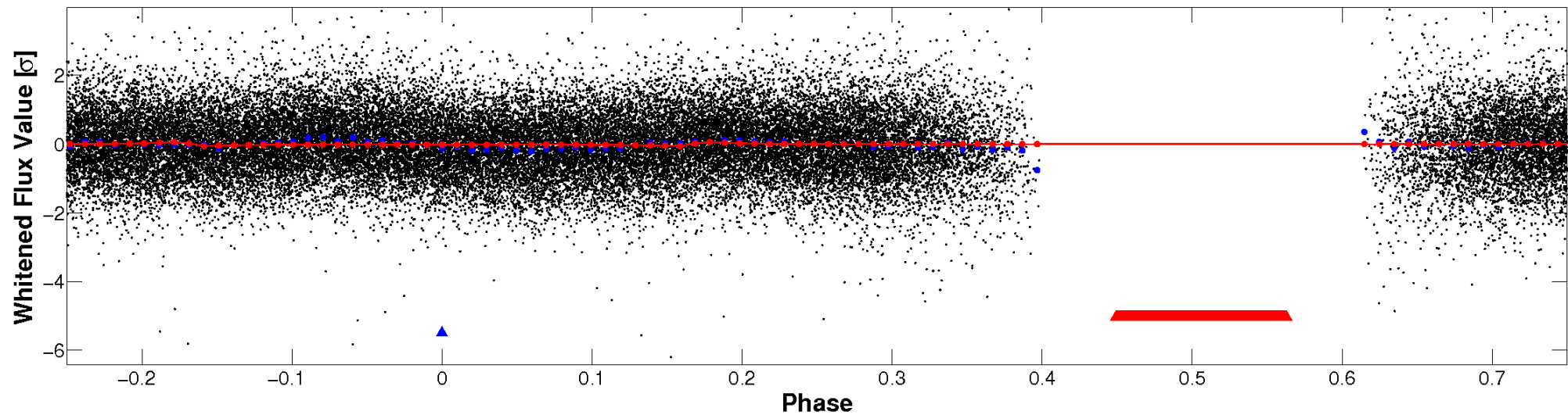


# Non-Whitened Vs. Whitened Light Curve

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

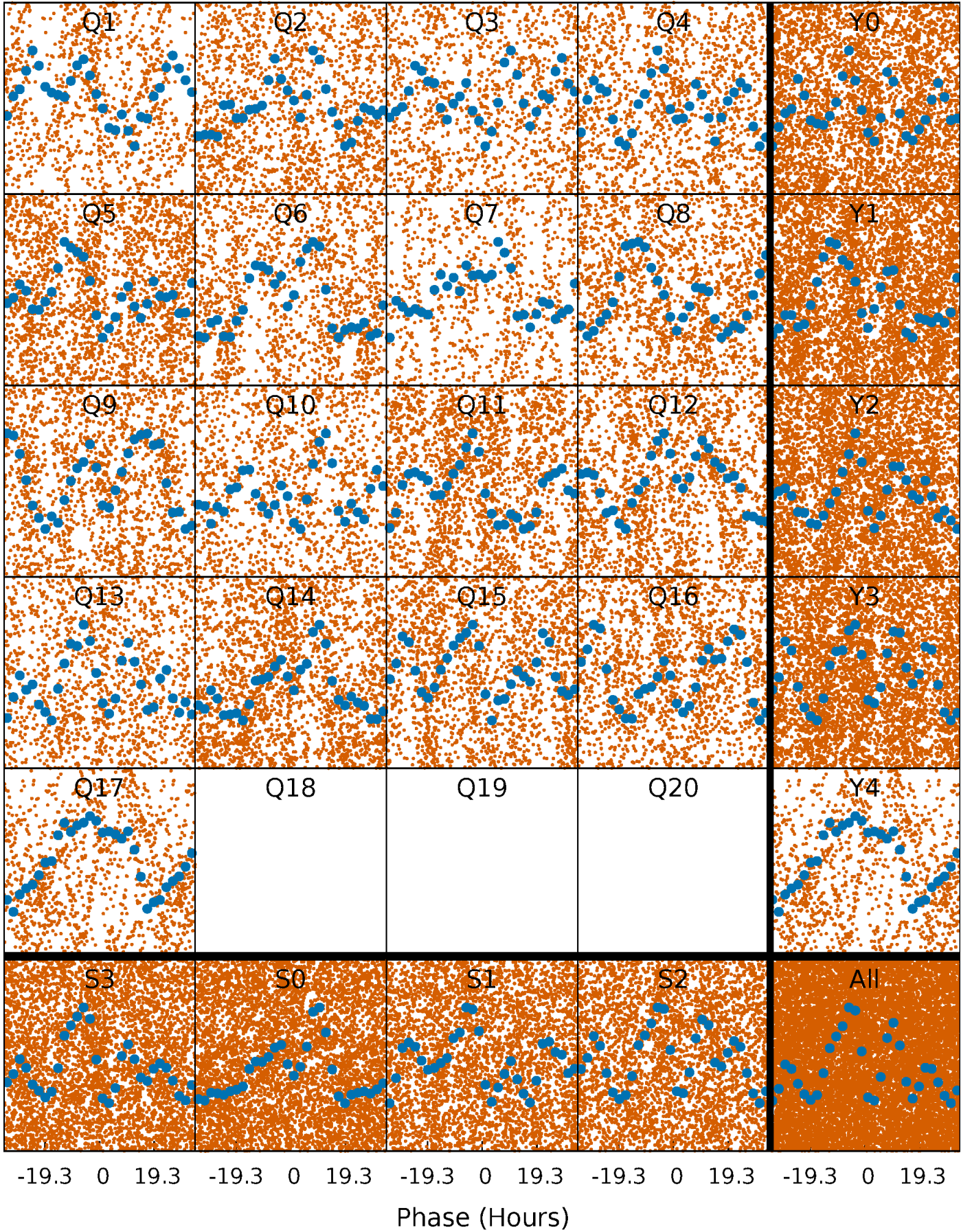


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

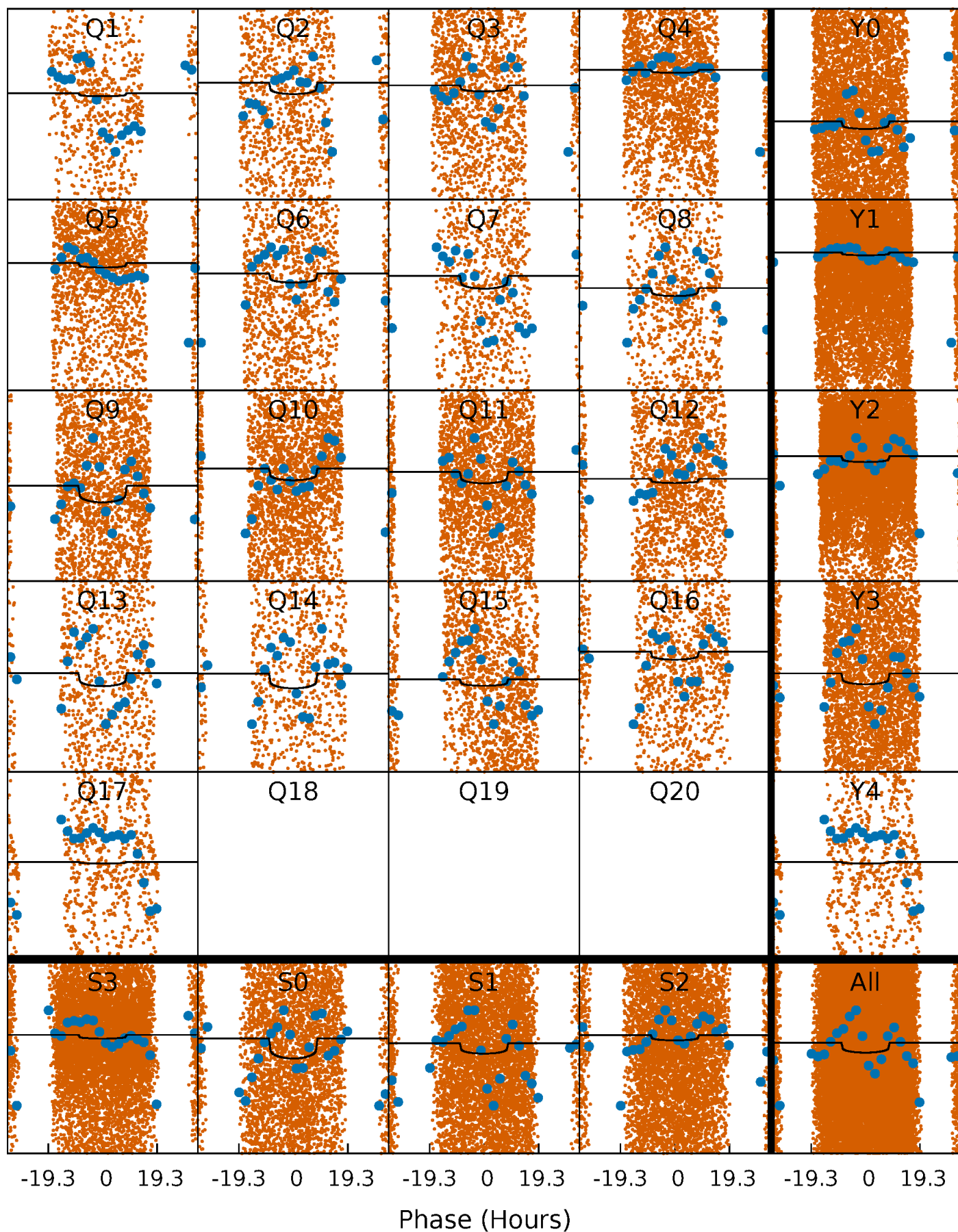
TCE 006381517-02   P= 2.060285 Days    $T_0=131.818821$  (BKJD)





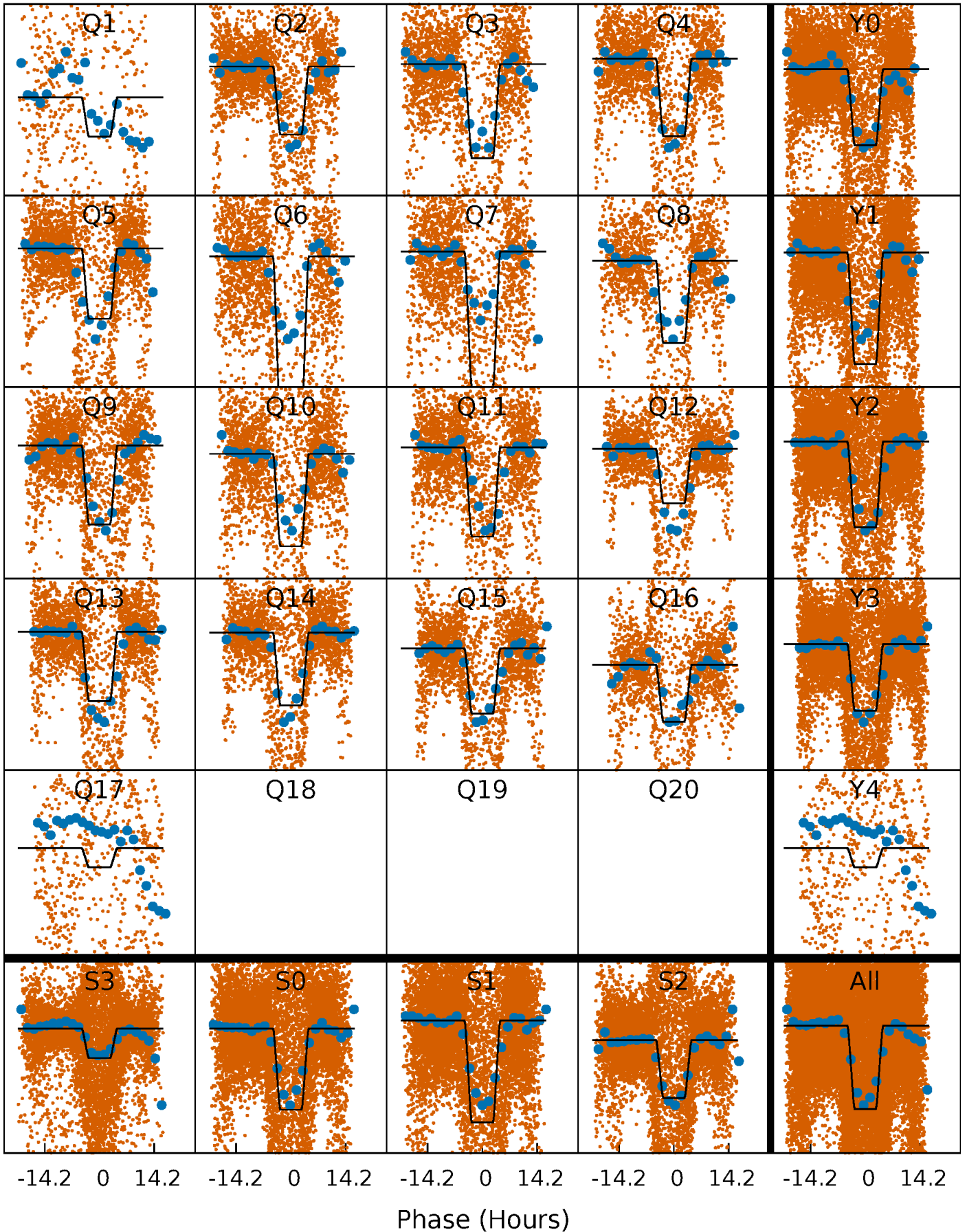
# DV Quarter-Phased Transit Curves

TCE 006381517-02   P= 2.060285 Days    $T_0=131.818821$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006381517-02   P= 2.060355 Days    $T_0=131.902353$  (BKJD)

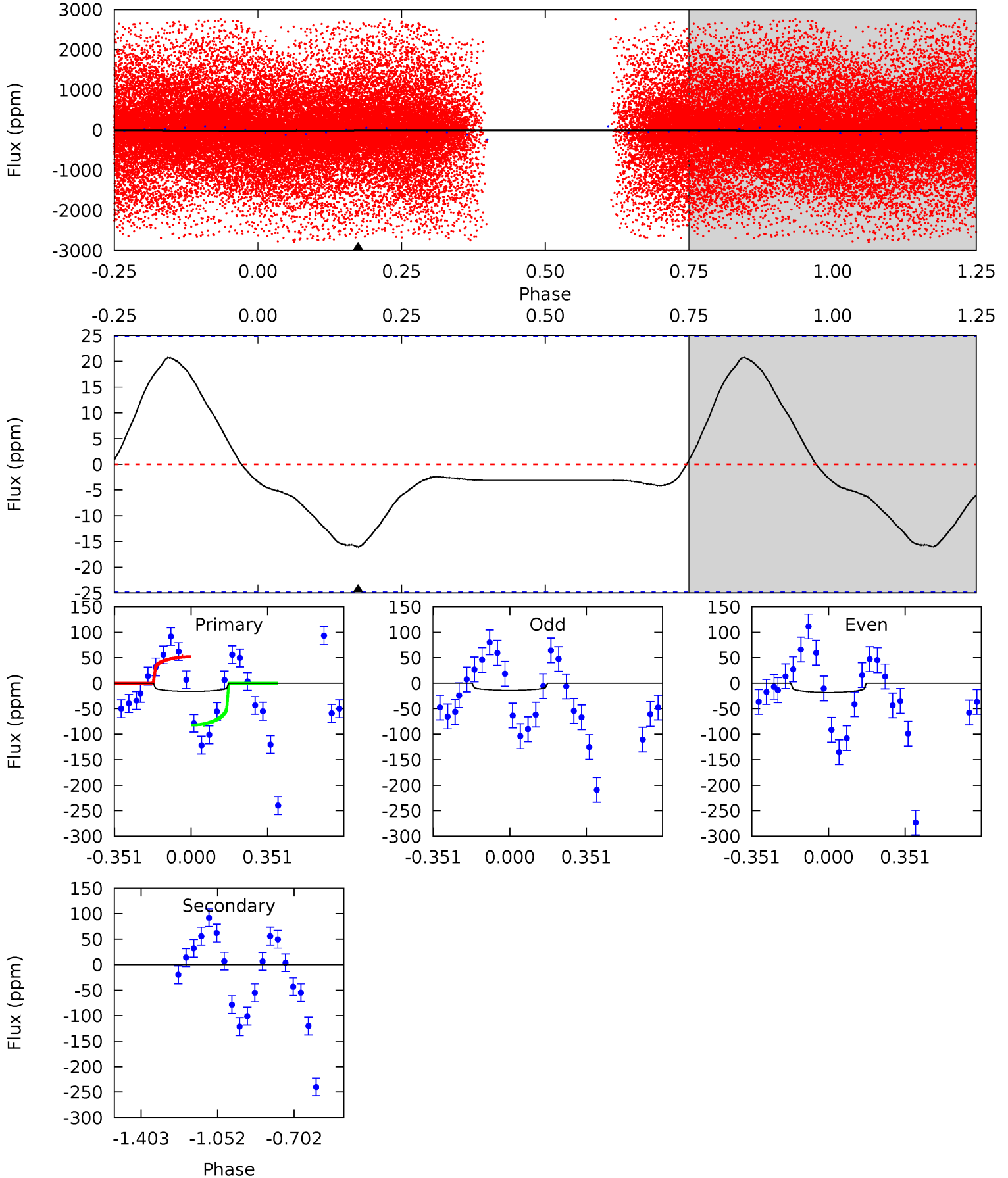




# DV Model-Shift Uniqueness Test

006381517-02, P = 2.060285 Days, E = 129.758536 Days

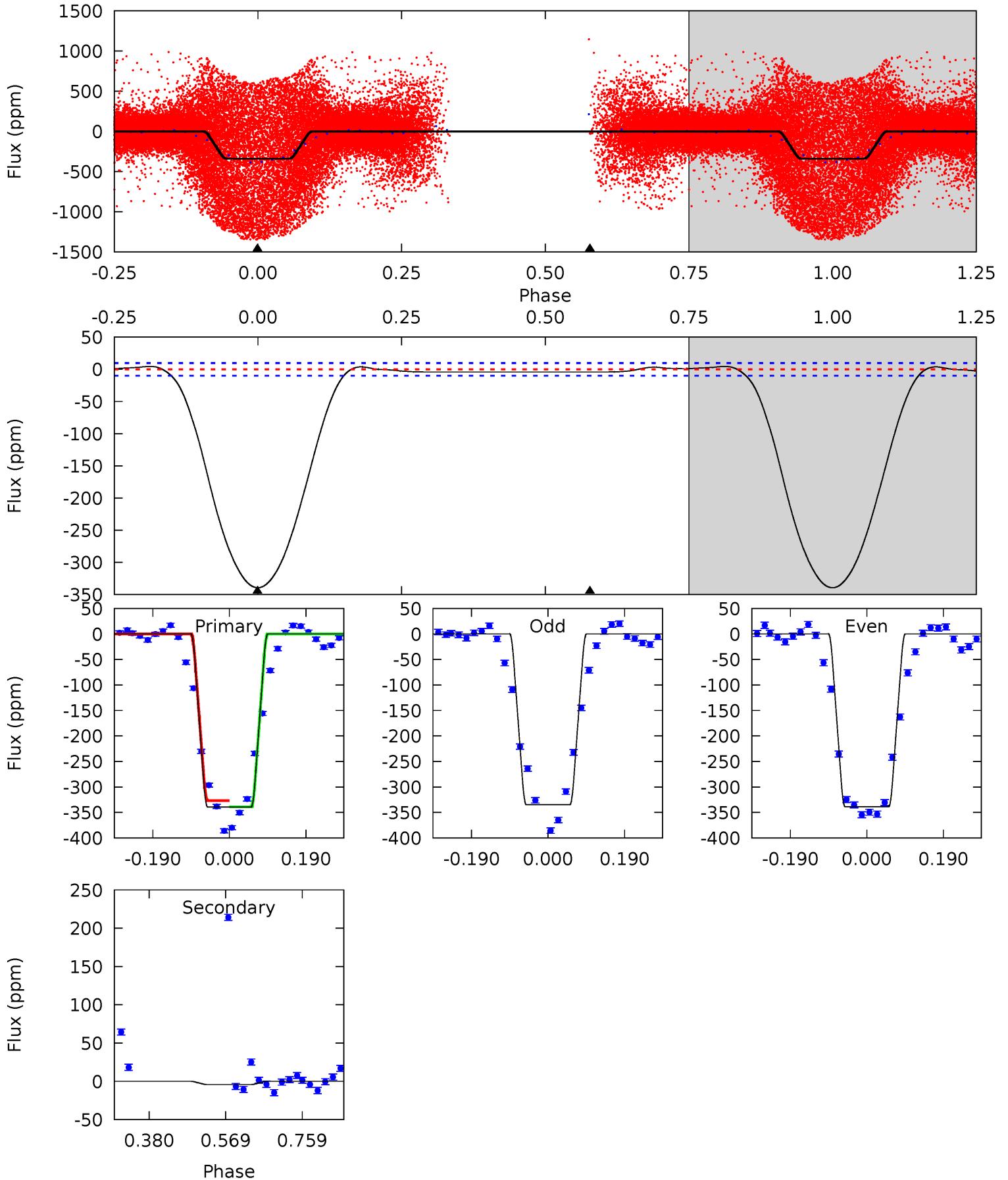
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.77	0	0	0	4.29	0.93	1.28	2.77	2.77	0	0	0.34	-0.03	0.56	2.64



# Alt Model-Shift Uniqueness Test

006381517-02, P = 2.060355 Days, E = 129.841998 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
153.2	1.91	0	0	4.43	1.31	1.20	153.2	153.2	1.91	1.91	0.86	1.02	0.01	1.75



### Stellar Parameters For KIC 006381517

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7435^{+233}_{-311}$	$4.177^{+0.087}_{-0.188}$	$0.020^{+0.200}_{-0.350}$	$1.698^{+0.528}_{-0.284}$	$1.580^{+0.207}_{-0.228}$	$0.454^{+0.217}_{-0.236}$
	+3%/-4%	+2%/-5%	+1000%/-1750%	+31%/-17%	+13%/-14%	+48%/-52%
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 006381517-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 6$	$1.11^{+0.41}_{-0.41}$	$3154^{+227}_{-188}$	$-3152^{+8123}_{-1942}$	$0.055^{+4.245}_{-3.926}$
Alt.	$-4 \pm 2$	$3.65^{+0.66}_{-0.53}$	$3138^{+222}_{-182}$	$-2560^{+5194}_{-432}$	$0.237^{+0.148}_{-0.129}$

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

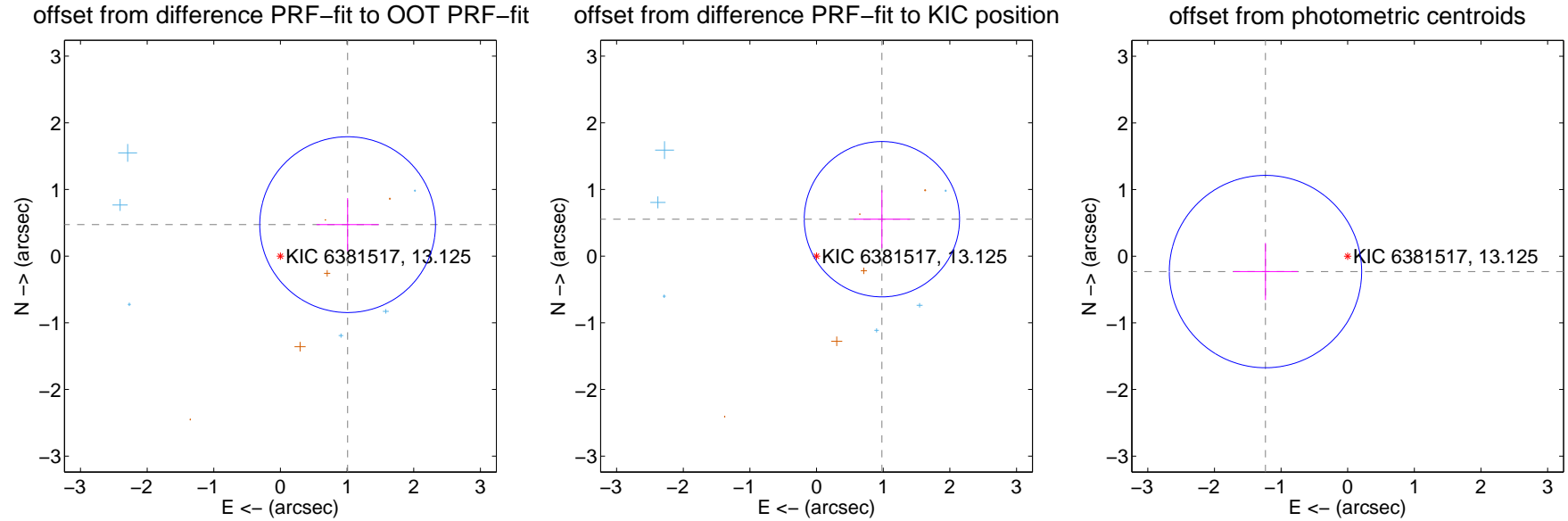
## DV Centroid Data

Supplemental centroid analysis for 006381517-02. Kepler magnitude: 13.12. Transit SNR 4.77

There are 6 quarters with good PRF difference image offsets

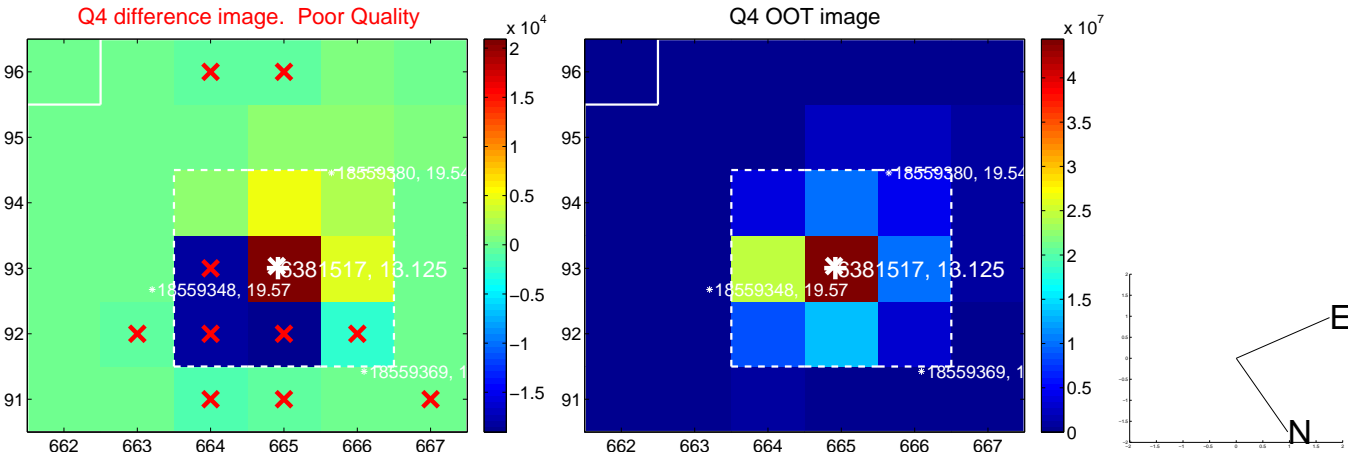
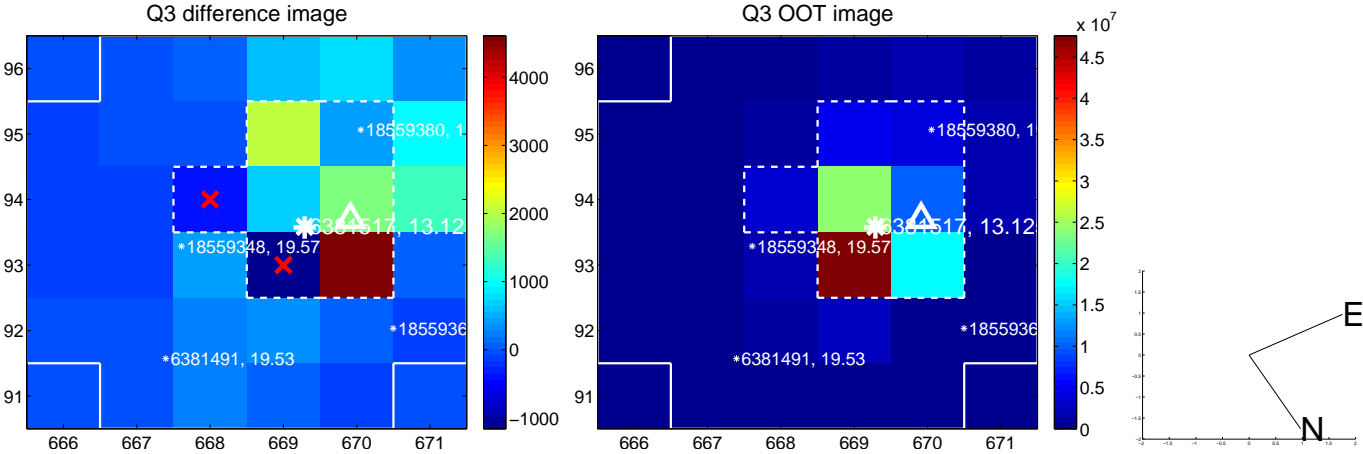
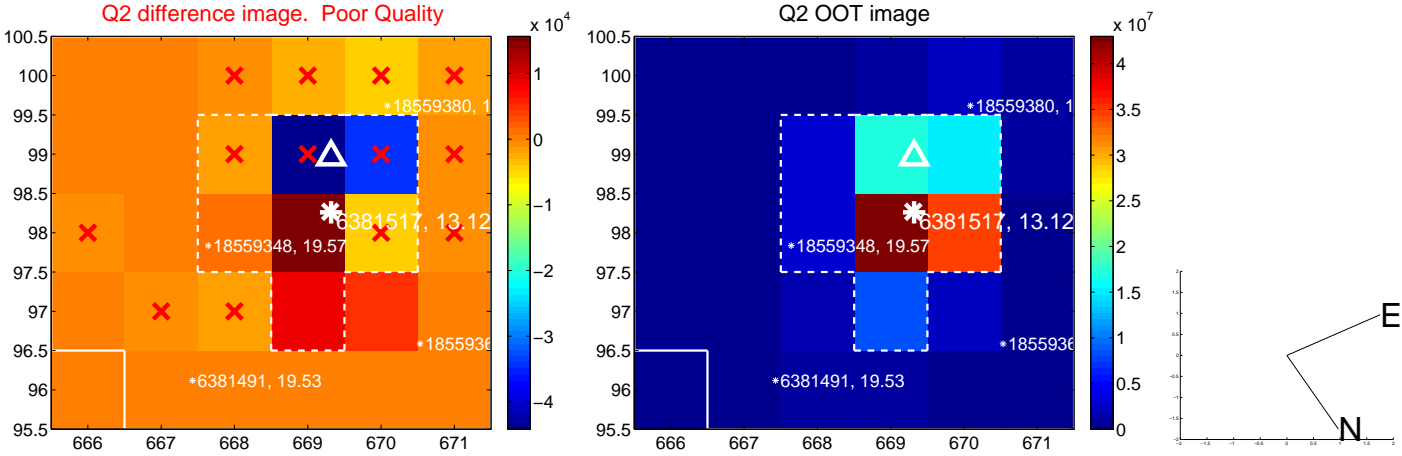
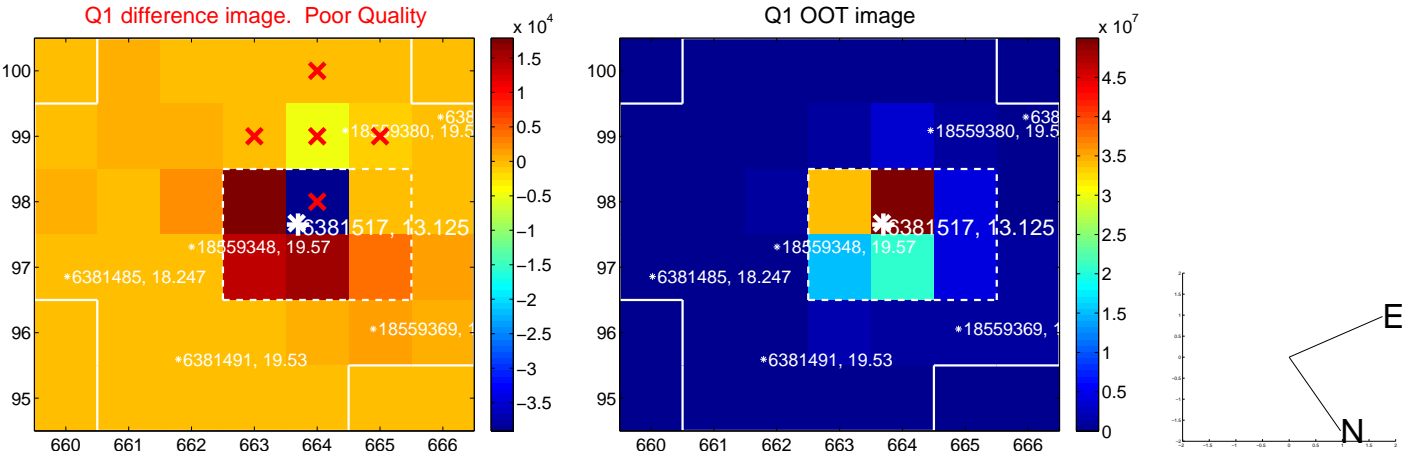
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.113 \pm 0.440$	2.53	$-1.008 \pm 0.467$	$0.472 \pm 0.397$
PRF-fit source offset from KIC position	$1.126 \pm 0.388$	2.90	$-0.980 \pm 0.422$	$0.554 \pm 0.436$
photometric centroid source offset	$1.26 \pm 0.48$	2.61	$1.23 \pm 0.48$	$-0.23 \pm 0.43$

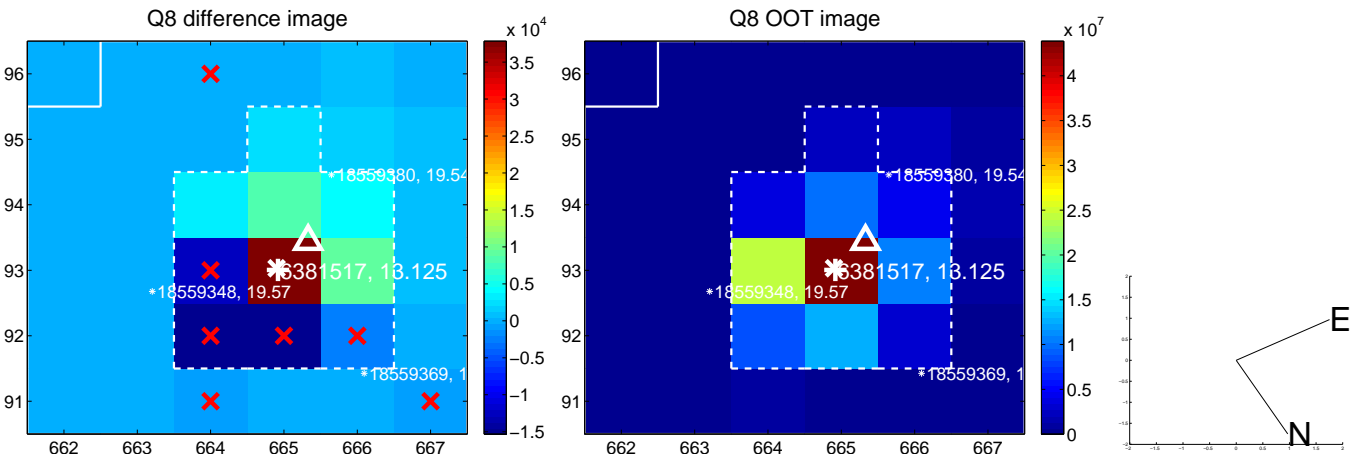
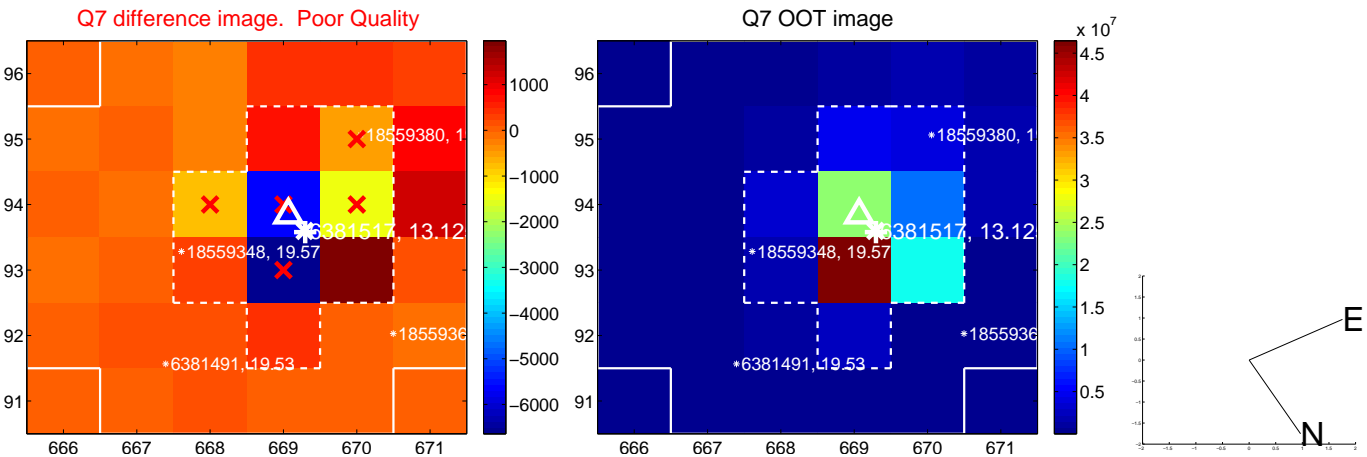
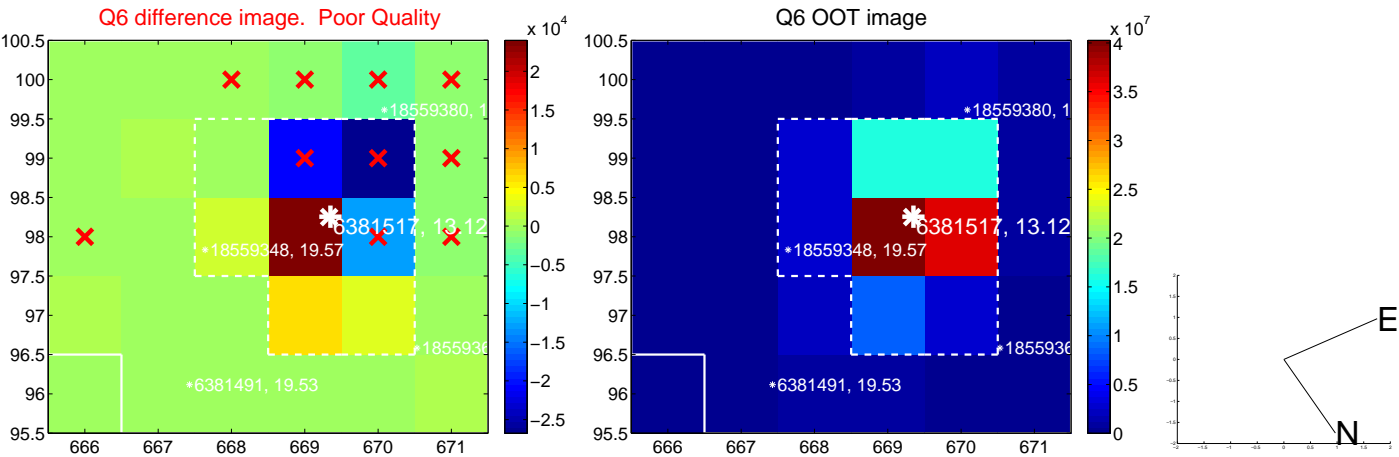
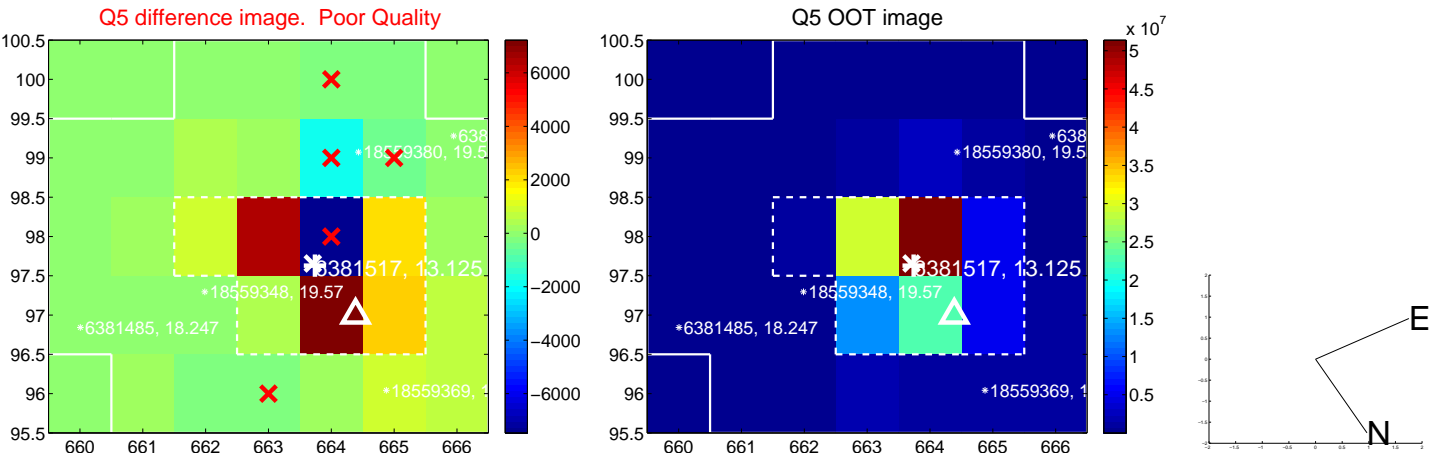


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

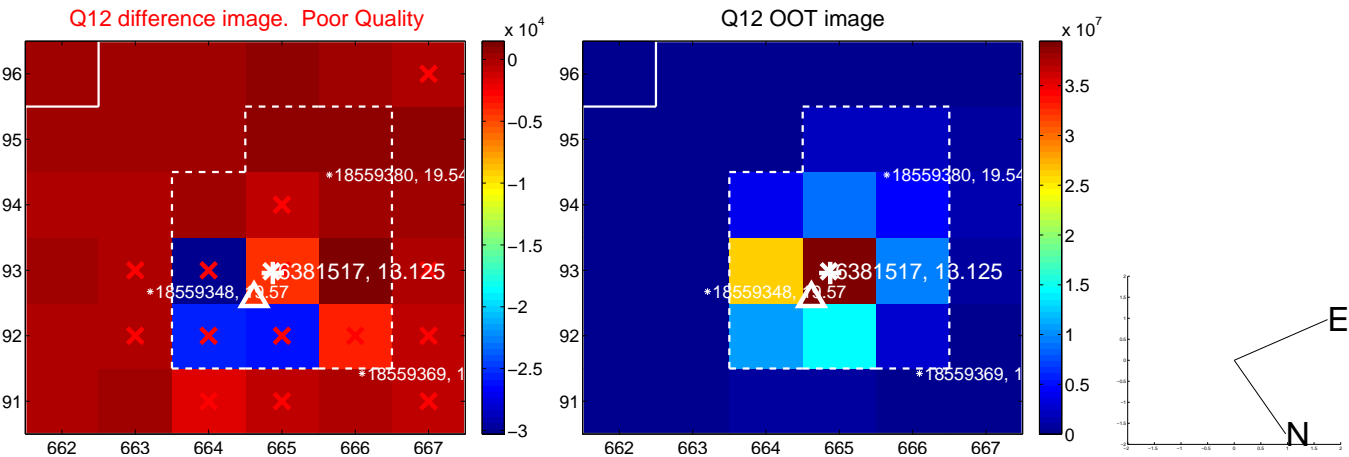
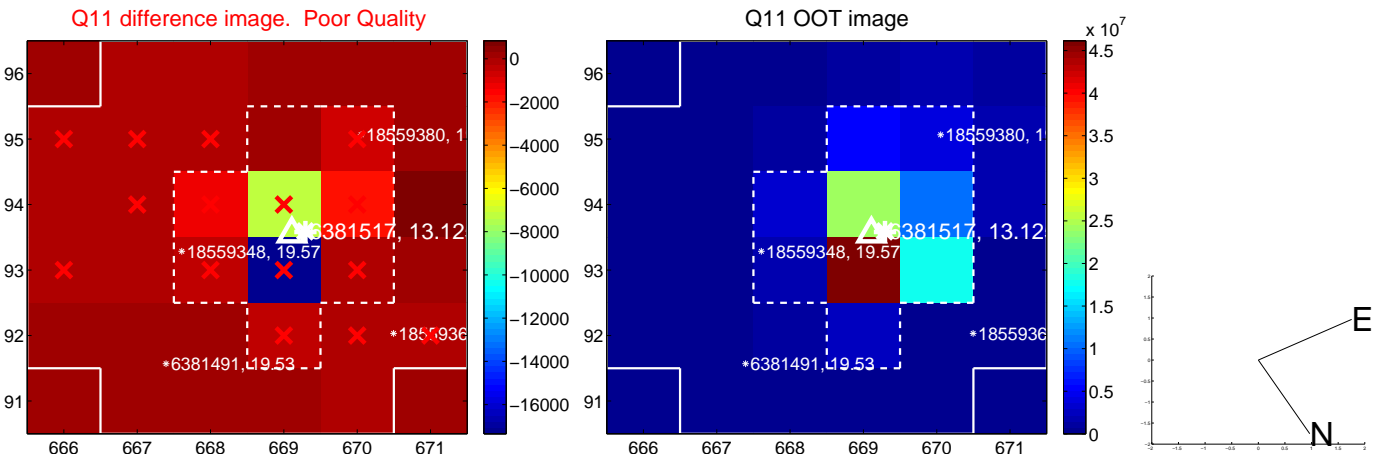
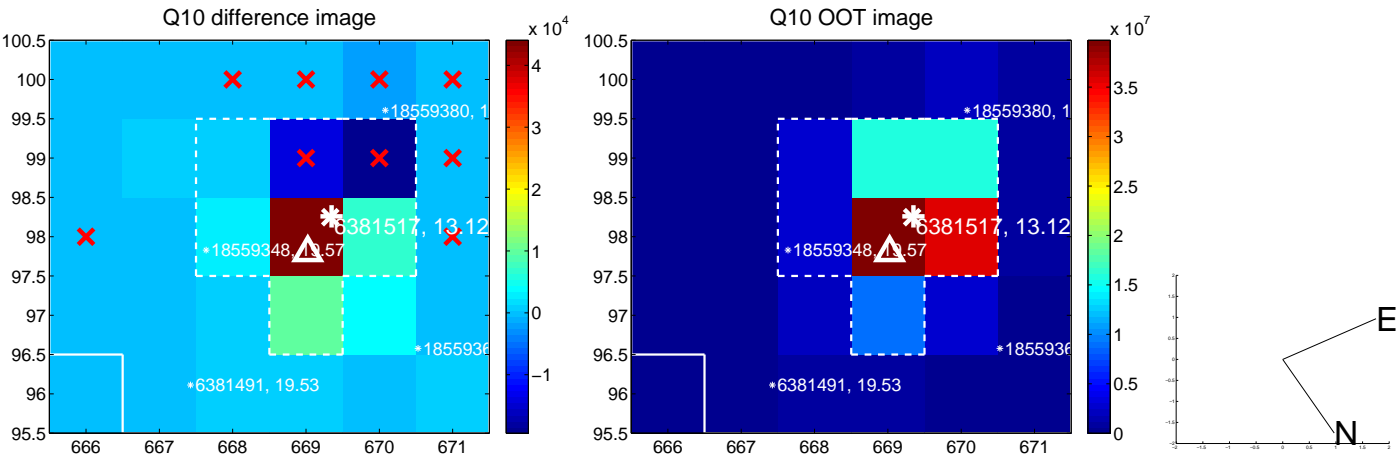
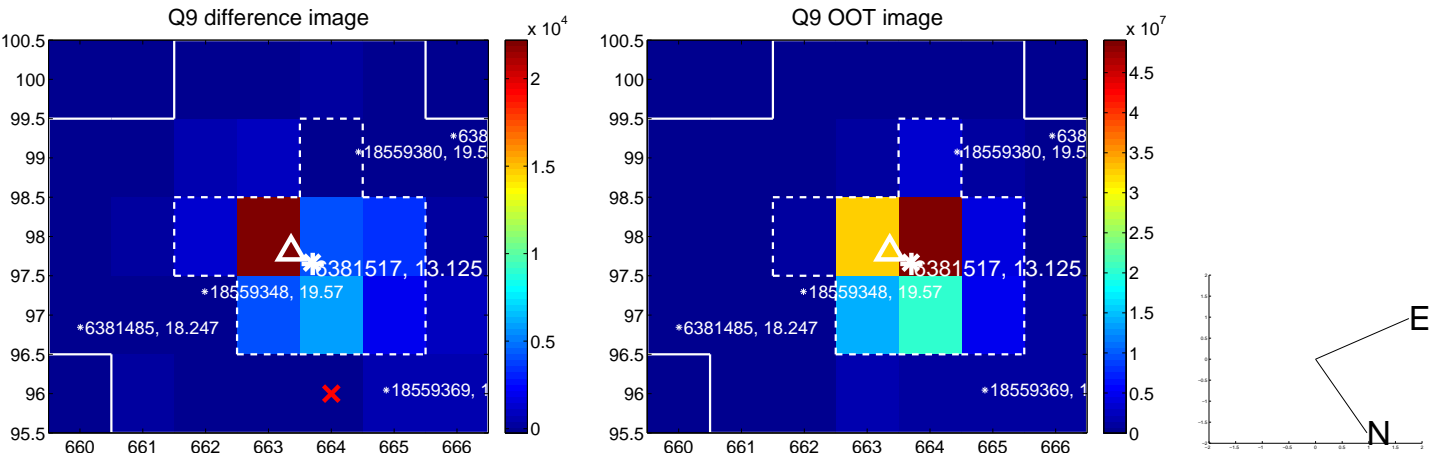


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

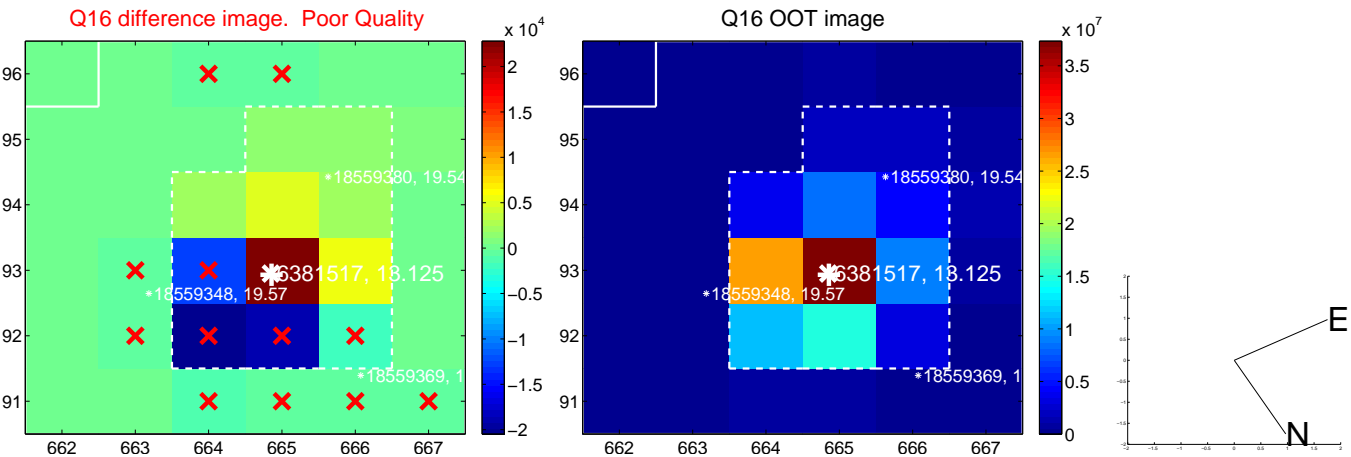
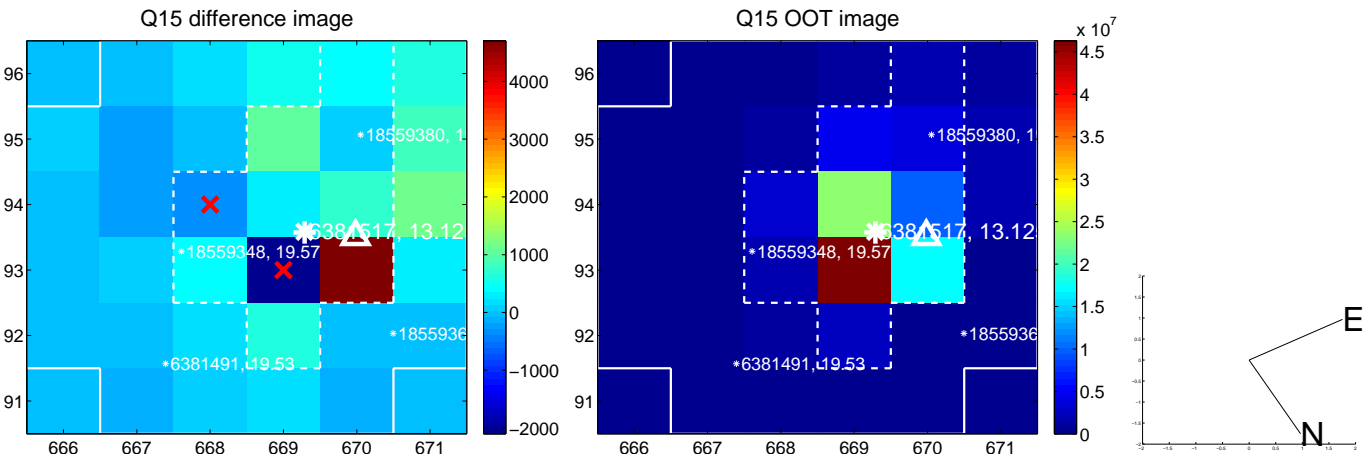
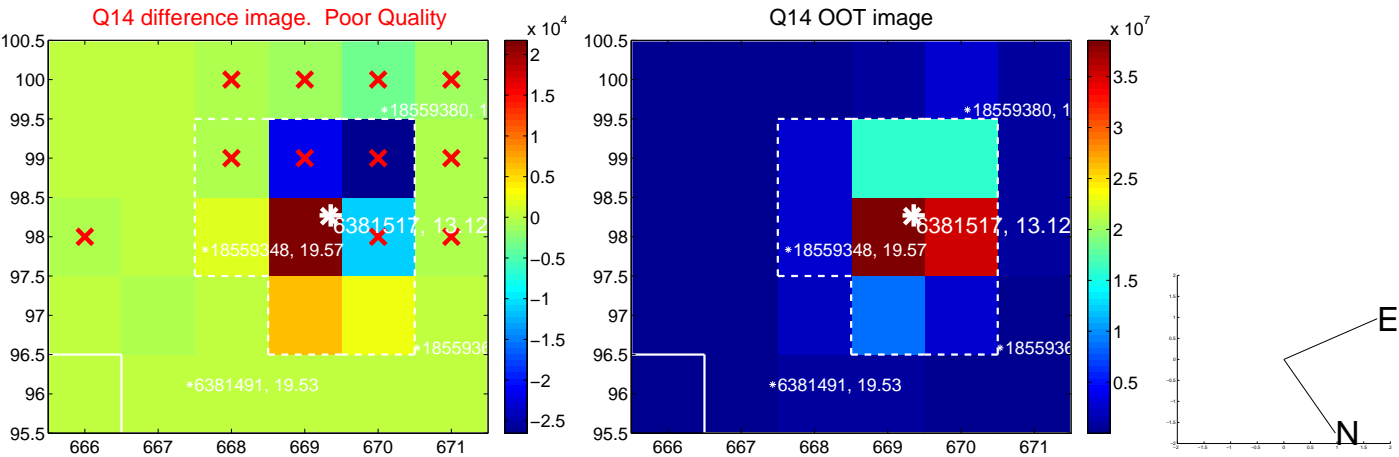
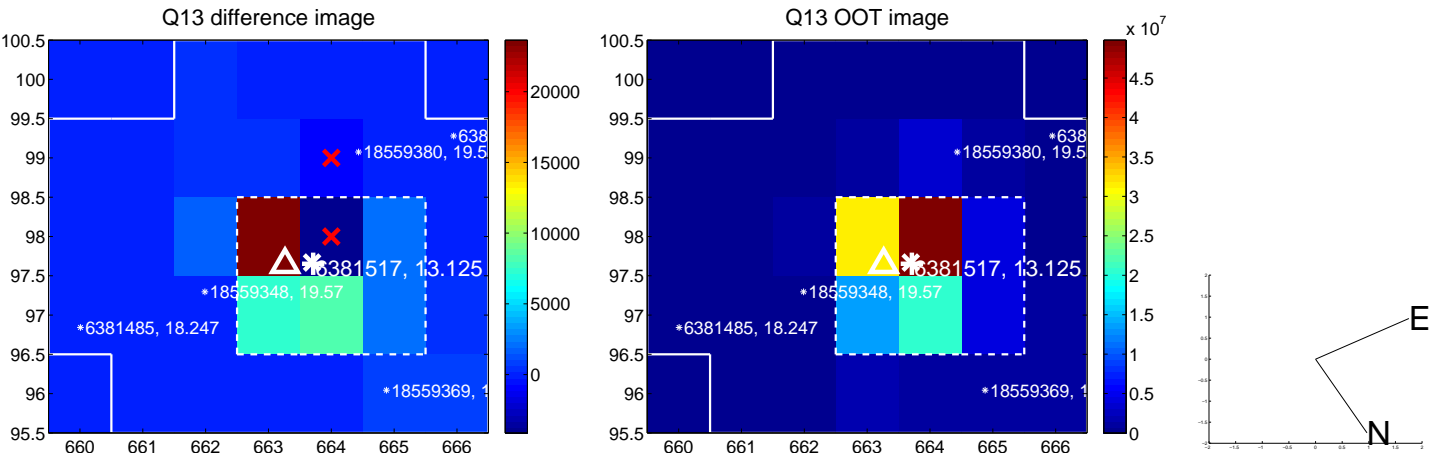




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

