

# KIC 002558163

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002558163-01	OBS	4655.01	17.543518	138.938185	204.8	6.251	8.4	9.4	0.79	5957	1.29	44.49

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002558163-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT

**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 002558163-01

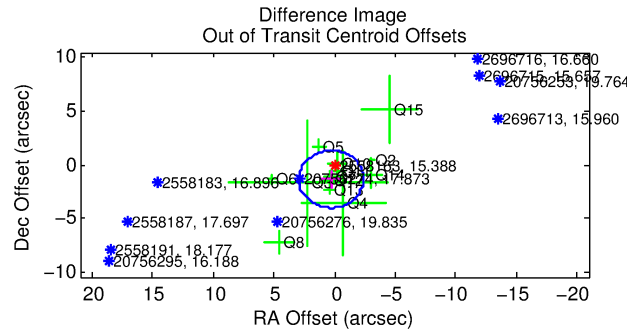
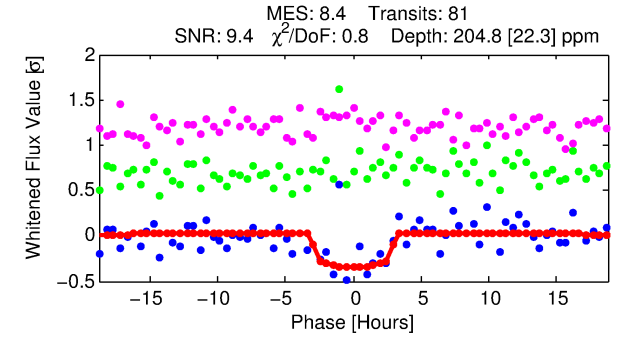
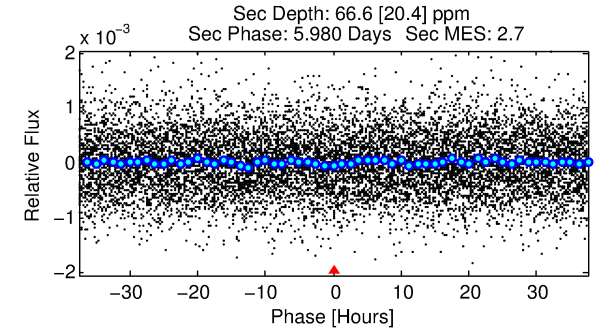
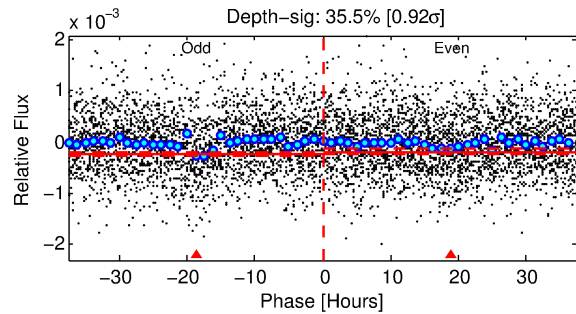
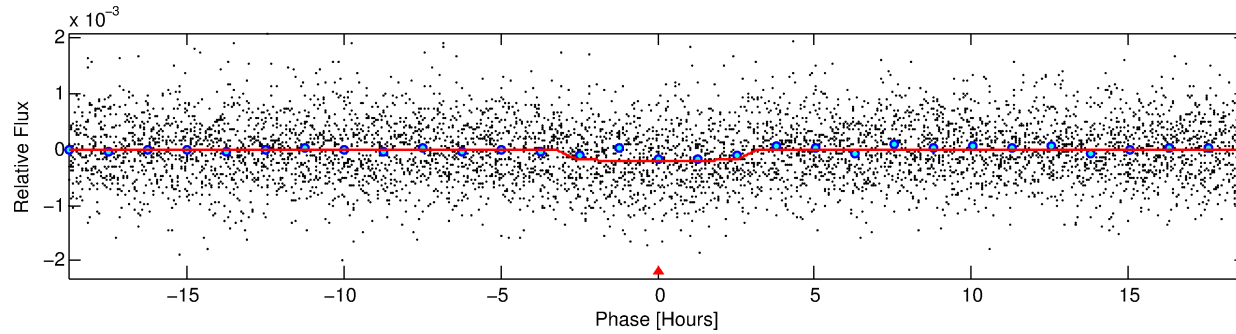
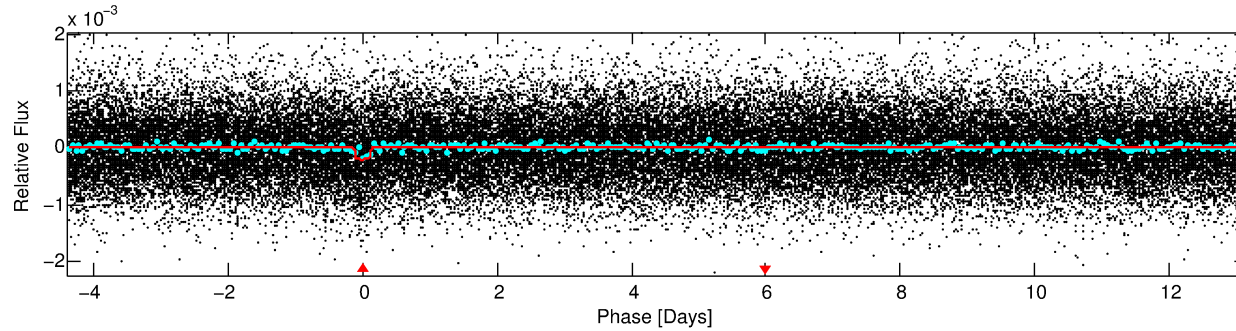
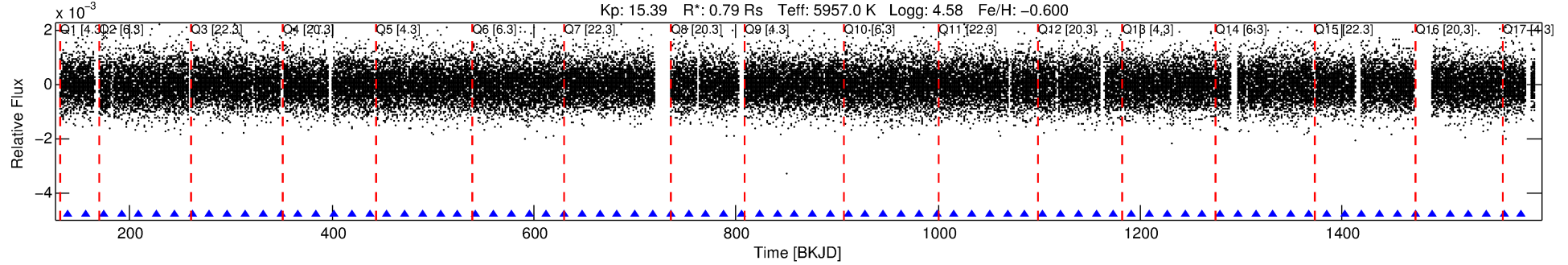
No Significant Match Found

# DV One-Page Summary

KIC: 2558163 Candidate: 1 of 1 Period: 17.544 d

KOI: K04655.01 Corr: 0.887

Kp: 15.39 R\*: 0.79 Rs Teff: 5957.0 K Logg: 4.58 Fe/H: -0.600



## DV Fit Results:

Period = 17.54352 [0.00027] d  
Epoch = 138.9382 [0.0126] BKJD  
Rp/R\* = 0.0150 [0.0055]  
a/R\* = 11.44 [21.52]  
b = 0.86 [0.56]  
Seff = 44.49 [15.24]  
Teq = 659 [56] K  
Rp = 1.29 [0.58] Re  
a = 0.1260 [0.0277] AU  
Ag = 347.12 [296.16] [1.17σ]  
Teffp = 4395 [878] K [4.25σ]

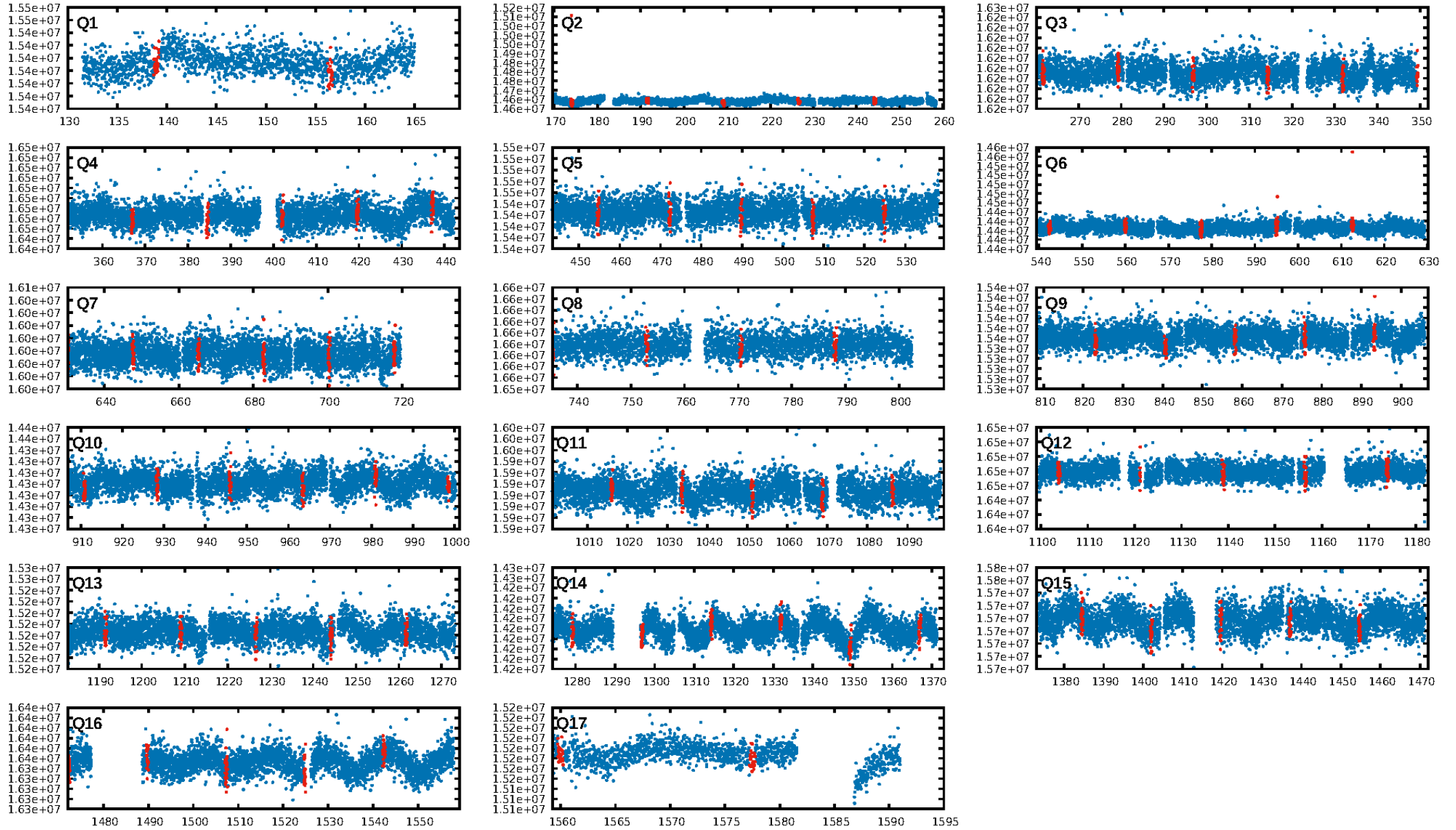
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 93.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.04e-17  
RollingBand-fgt: 1.00 [77/77]  
GhostDiagnostic-chr: -1.175  
Centroid-sig: 29.0%  
Centroid-so: 2.044 arcsec [1.39σ]  
OotOffset-rm: 1.389 arcsec [1.56σ]  
KicOffset-rm: 1.522 arcsec [1.79σ]  
OotOffset-st: 4/4/3/2 [13]  
KicOffset-st: 4/4/3/2 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [17/17]

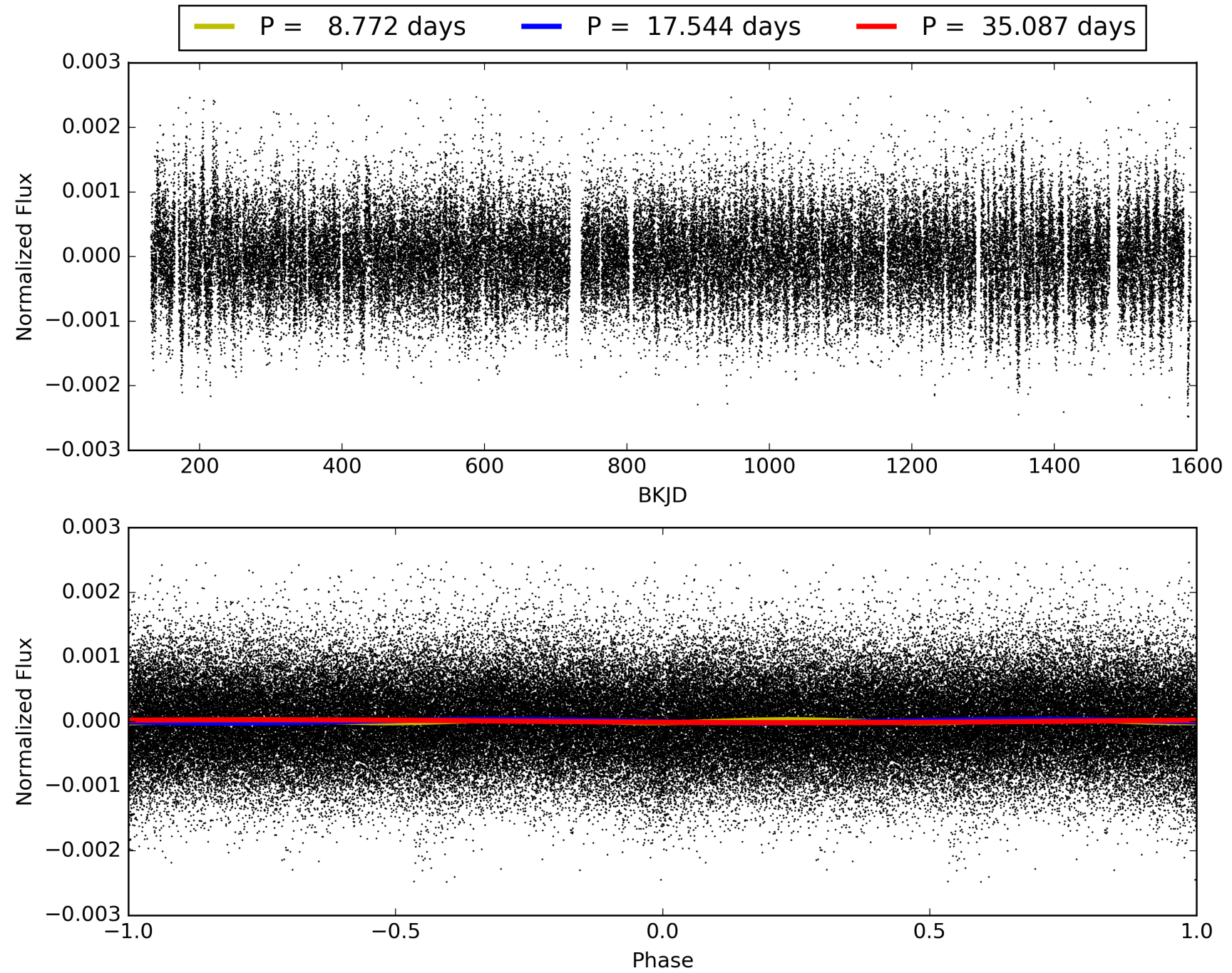
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:07:14 Z

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

# TCE 002558163-01, PDC Light Curves

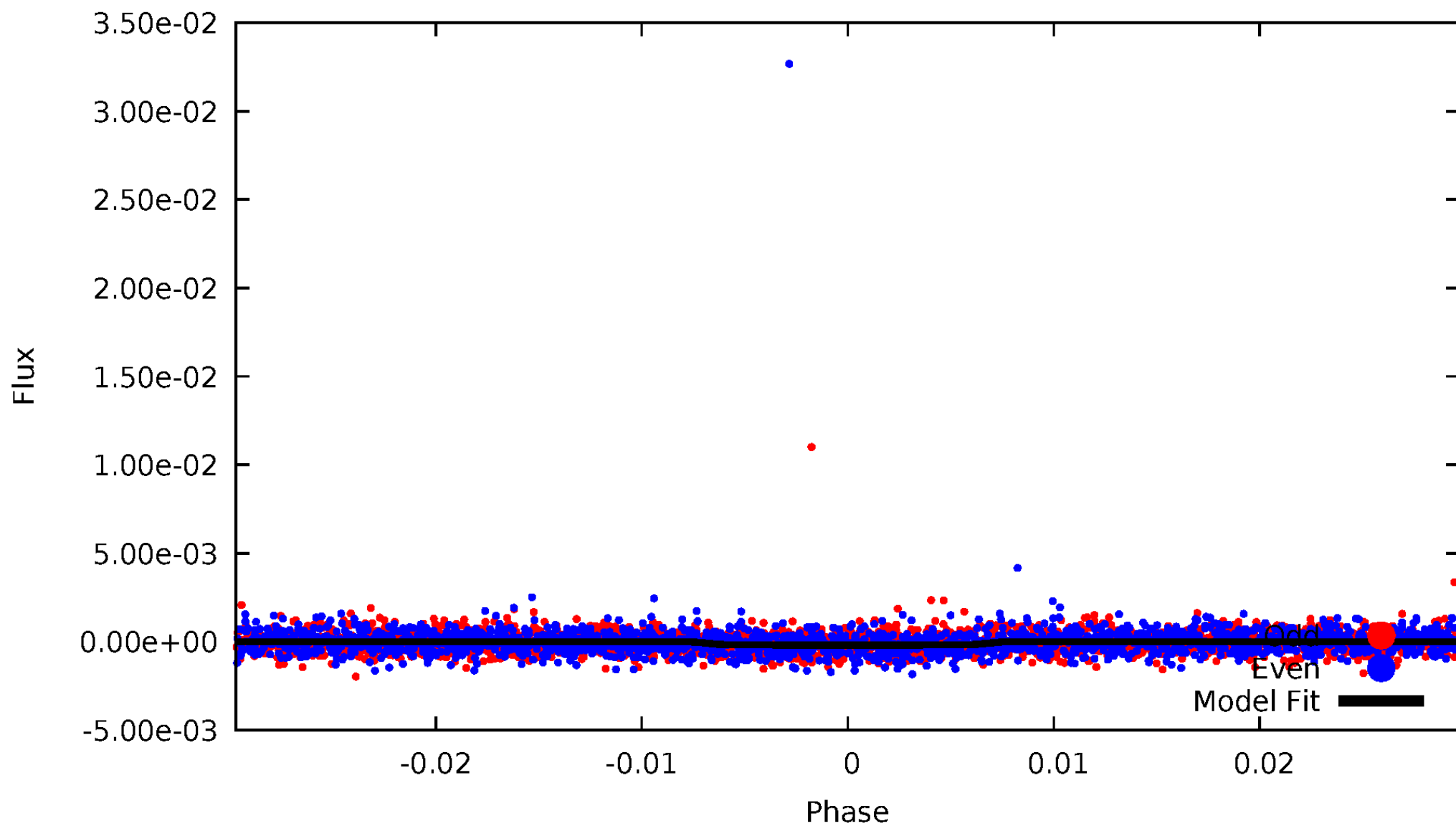


TCE 002558163-01



# DV Odd/Even

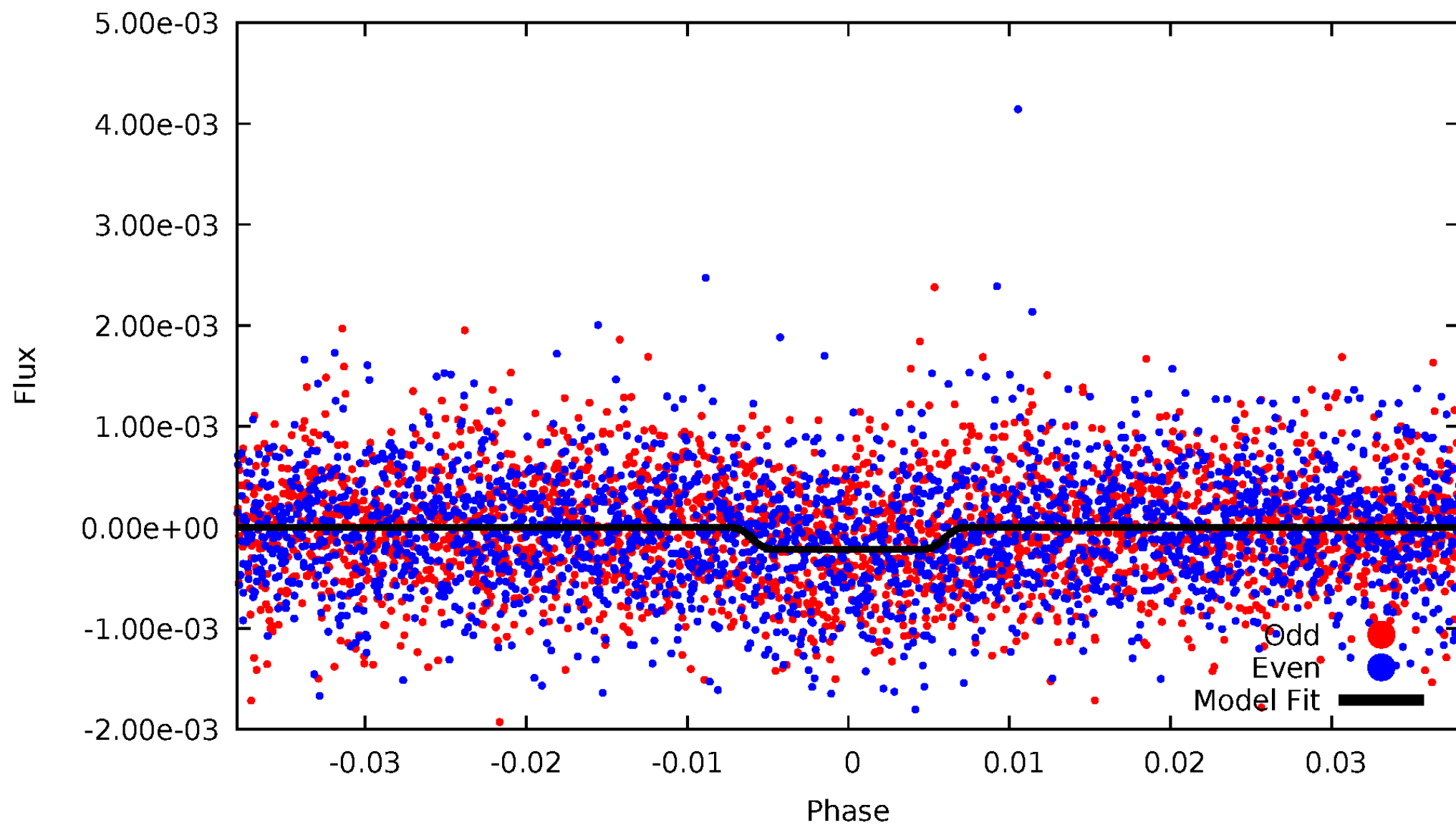
TCE 002558163-01





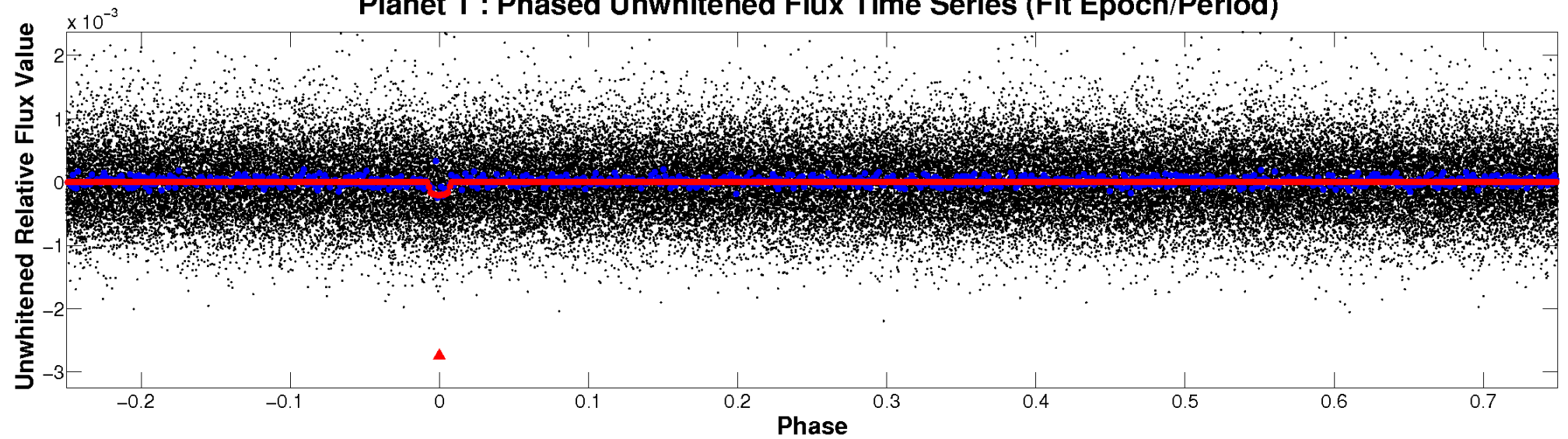
# ALT Odd/Even

TCE 002558163-01

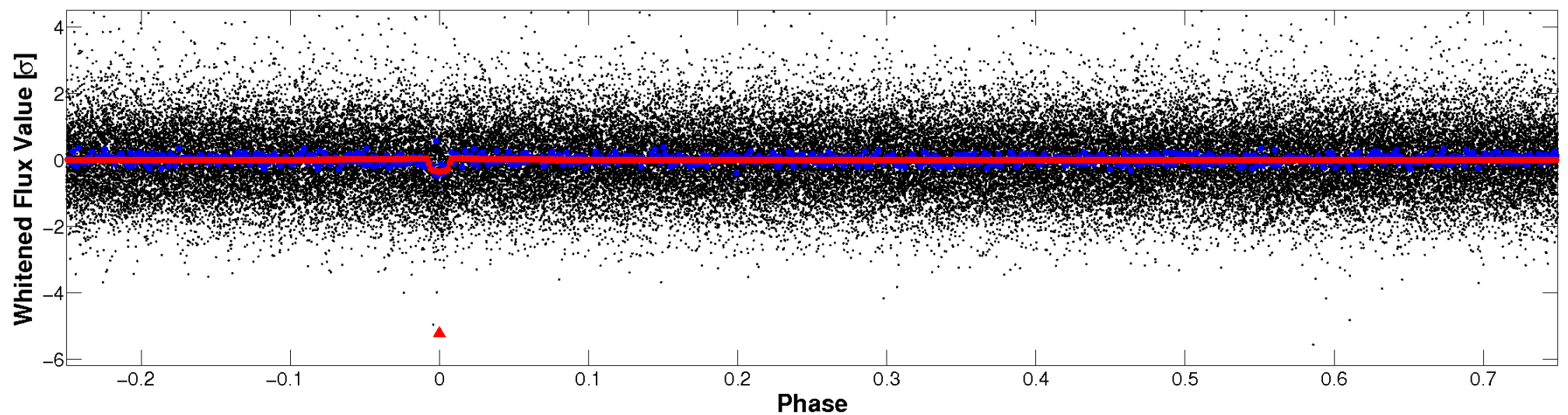


# Non-Whitened Vs. Whitened Light Curve

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

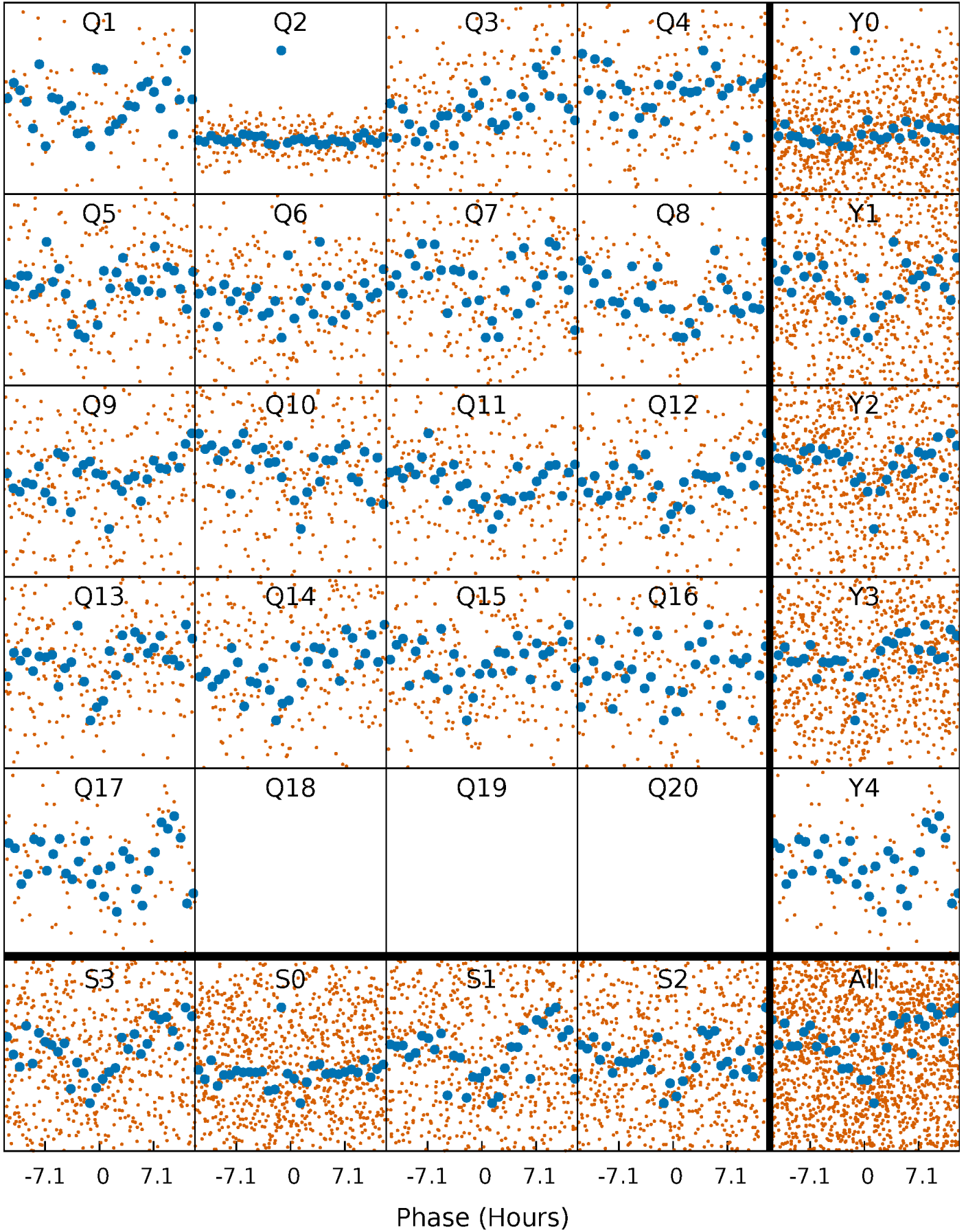


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

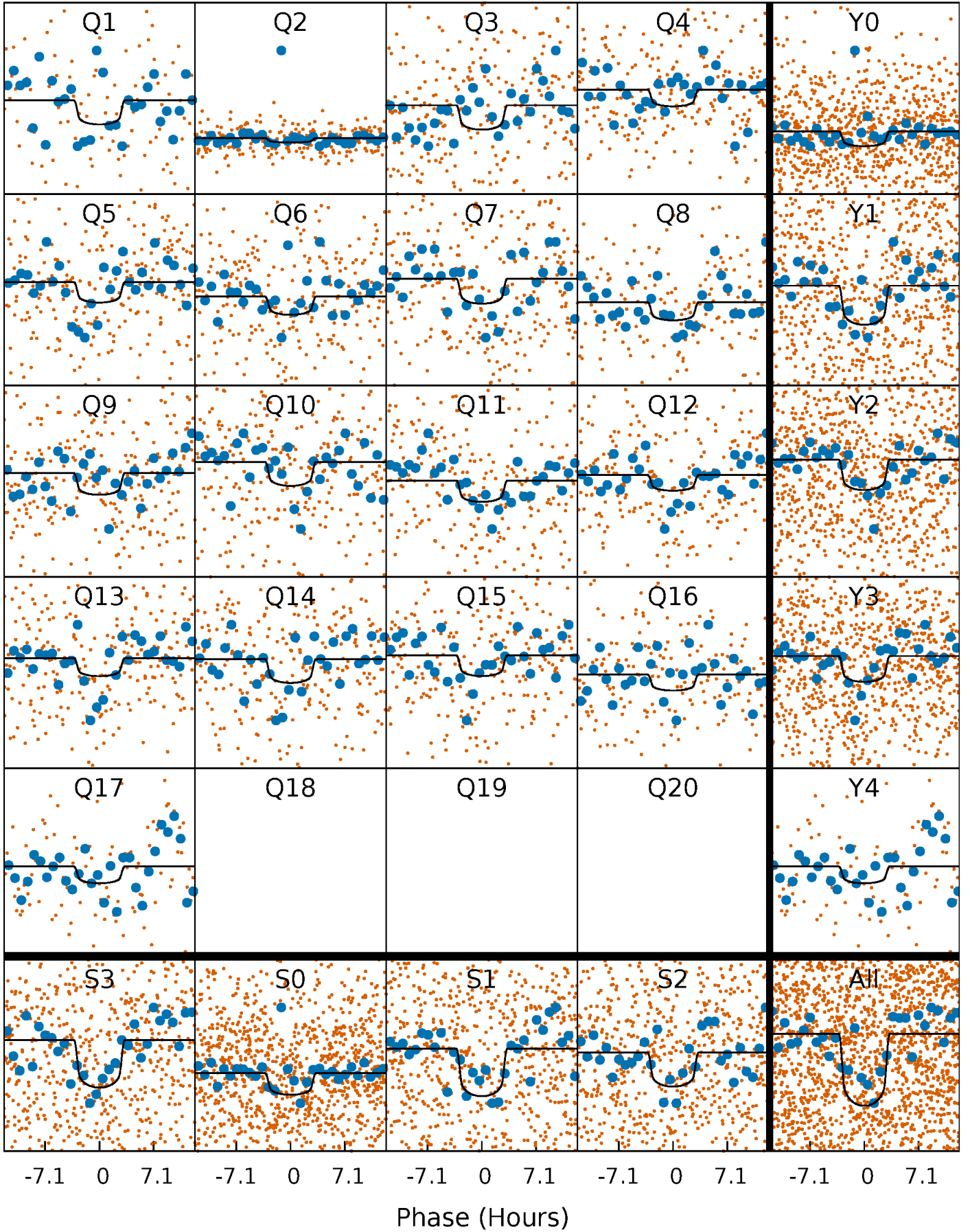
TCE 002558163-01 P= 17.543518 Days  $T_0=138.938185$  (BKJD)





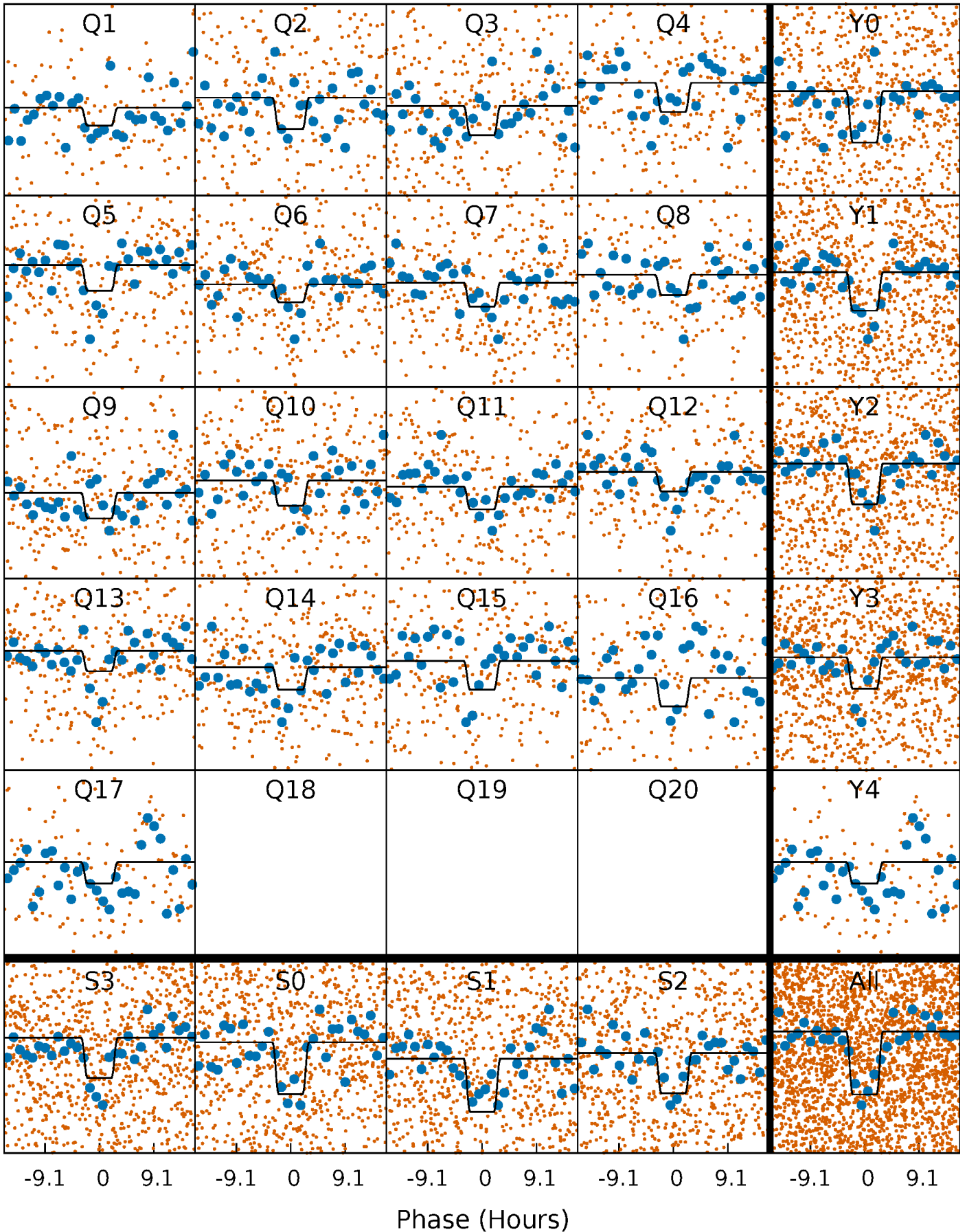
# DV Quarter-Phased Transit Curves

TCE 002558163-01 P= 17.543518 Days  $T_0=138.938185$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

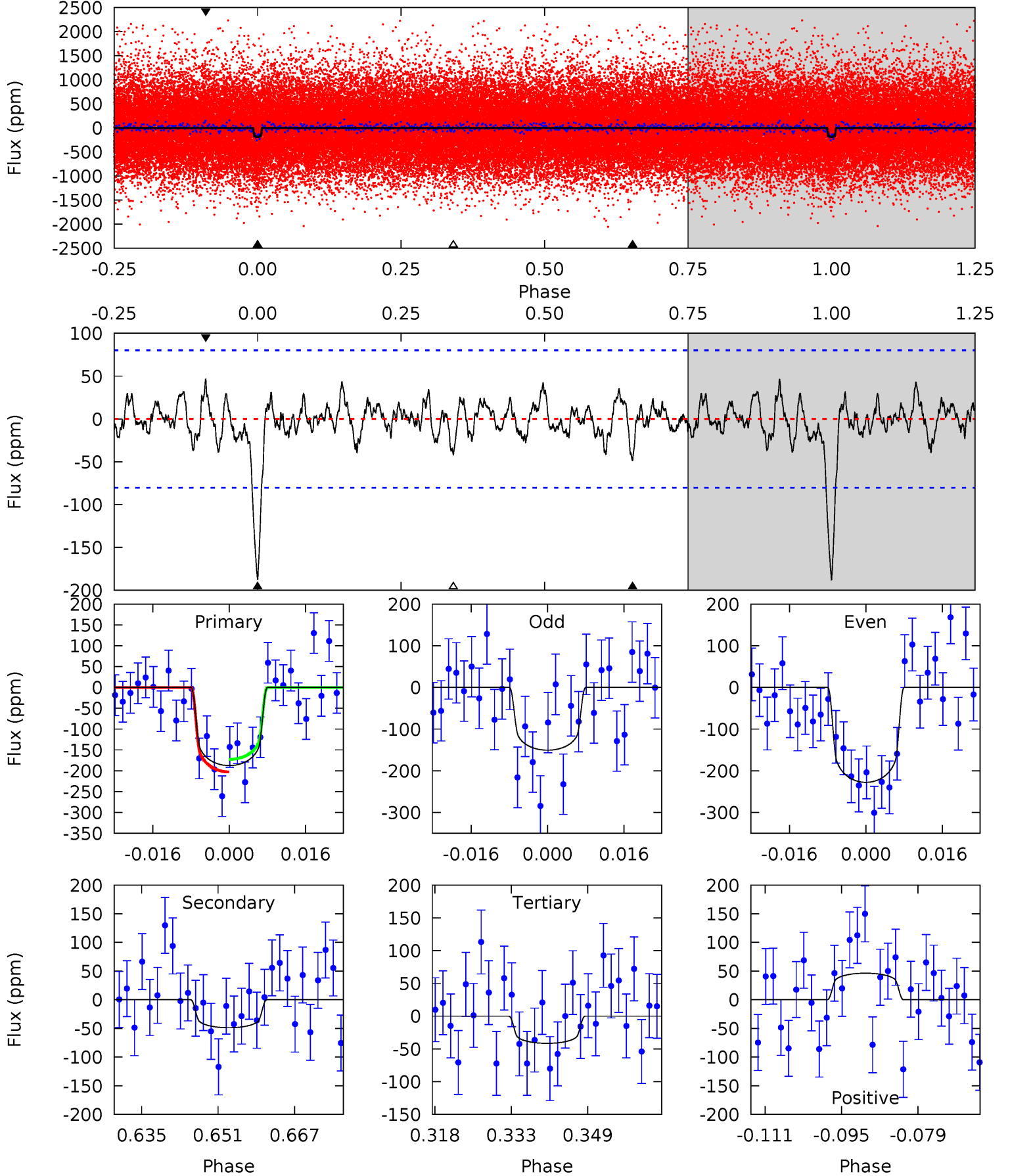
TCE 002558163-01 P= 17.544537 Days  $T_0=138.871459$  (BKJD)



# DV Model-Shift Uniqueness Test

002558163-01, P = 17.543518 Days, E = 121.394667 Days

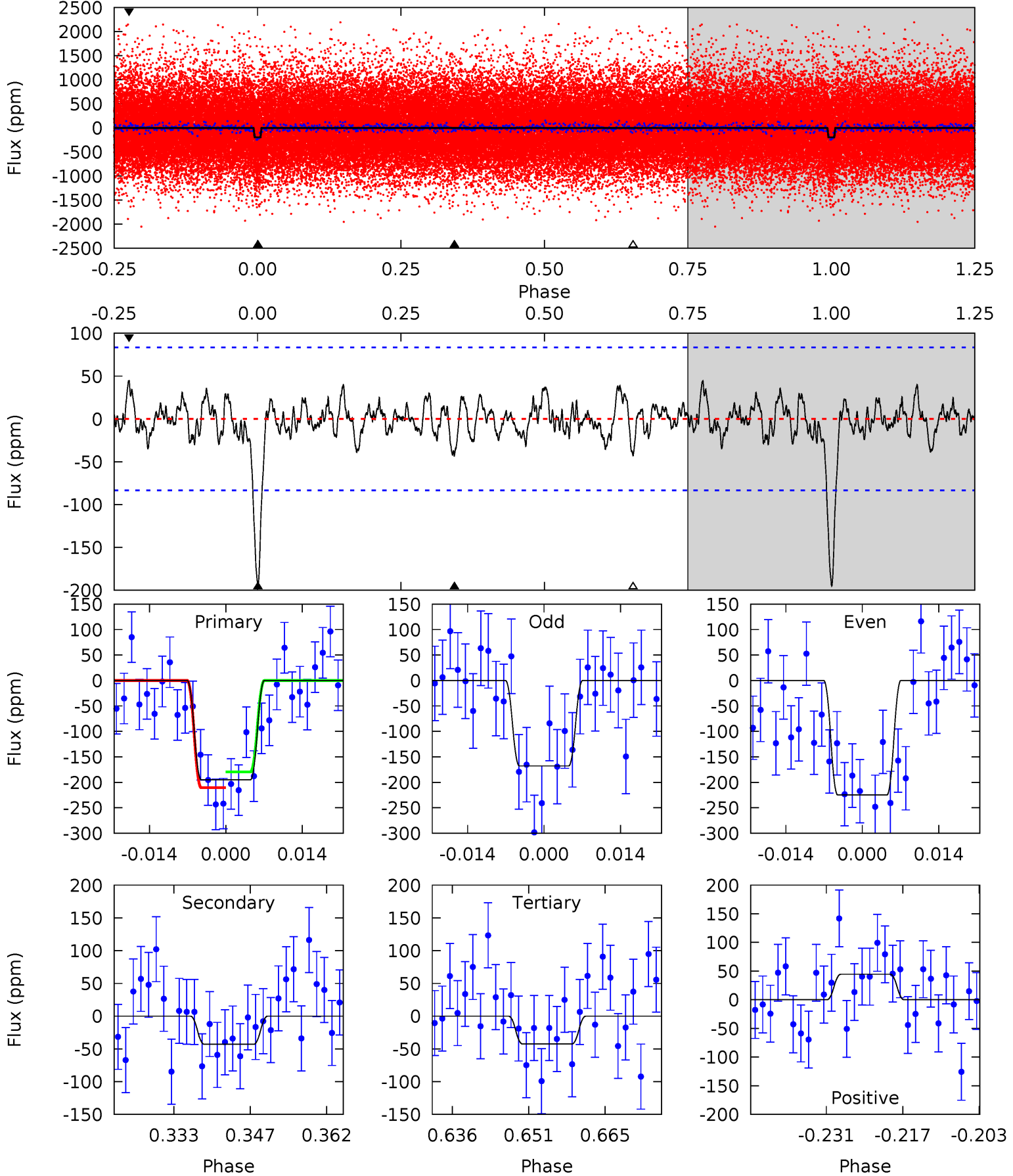
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	3.00	2.56	2.85	4.94	2.41	0.98	8.98	8.69	0.45	0.15	2.37	0.69	0.20	0.93



# Alt Model-Shift Uniqueness Test

002558163-01,  $P = 17.544537$  Days,  $E = 121.326922$  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
11.6	2.56	2.52	2.65	4.96	2.45	0.93	9.05	8.93	0.03	-0.09	1.69	1.01	0.19	0.92



### Stellar Parameters For KIC 002558163

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5957^{+159}_{-177}$	$4.579^{+0.044}_{-0.176}$	$-0.600^{+0.300}_{-0.300}$	$0.791^{+0.206}_{-0.055}$	$0.865^{+0.088}_{-0.088}$	$2.461^{+0.437}_{-1.186}$
	+3%/-3%	+1%/-4%	+50%/-50%	+26%/-7%	+10%/-10%	+18%/-48%
Source	PHO1	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 002558163-01 / KOI 4655.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-49 \pm 16$	$1.37^{+0.54}_{-0.52}$	$932^{+61}_{-31}$	$4239^{+925}_{-504}$	$218^{+375}_{-114}$
Alt.	$-43 \pm 17$	$1.36^{+0.52}_{-0.55}$	$935^{+62}_{-39}$	$4166^{+995}_{-534}$	$197^{+388}_{-113}$

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



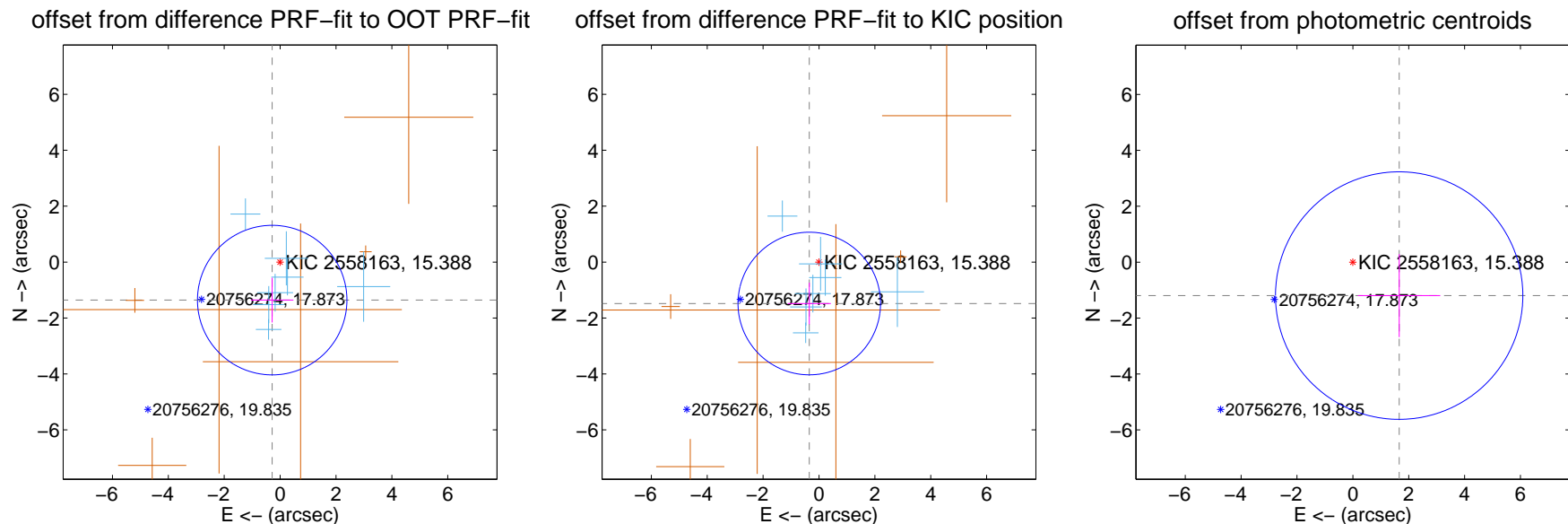
## DV Centroid Data

Supplemental centroid analysis for 002558163-01. Kepler magnitude: 15.39. Transit SNR 9.38

There are 7 quarters with good PRF difference image offsets

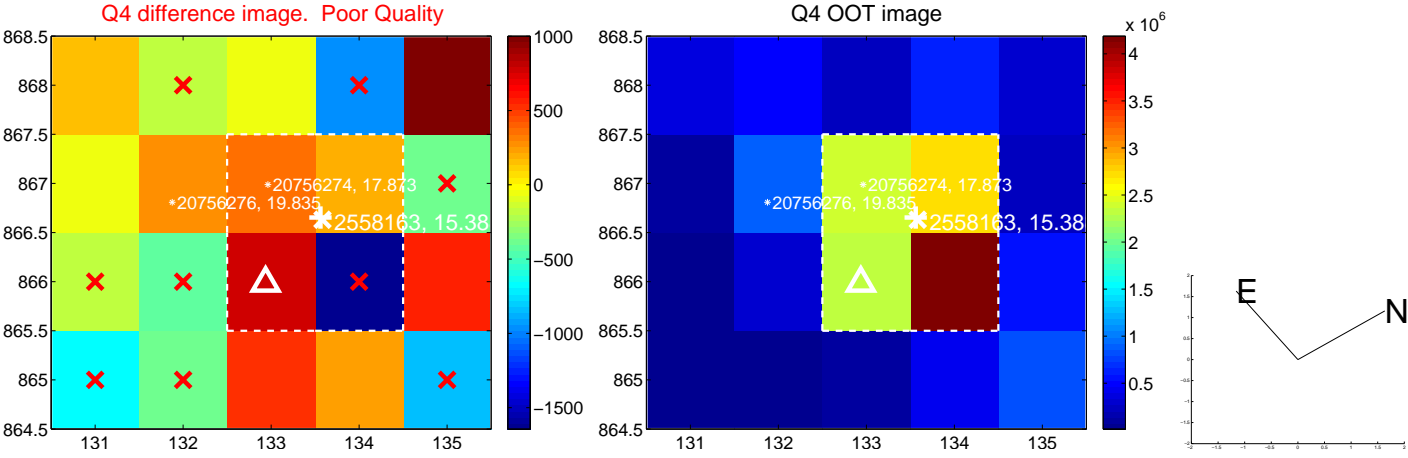
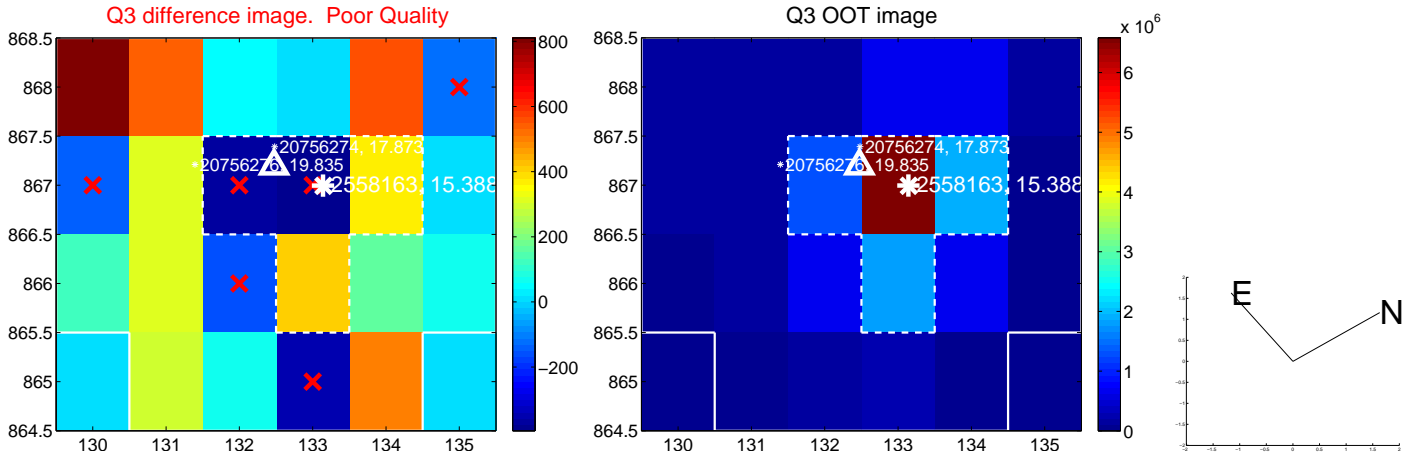
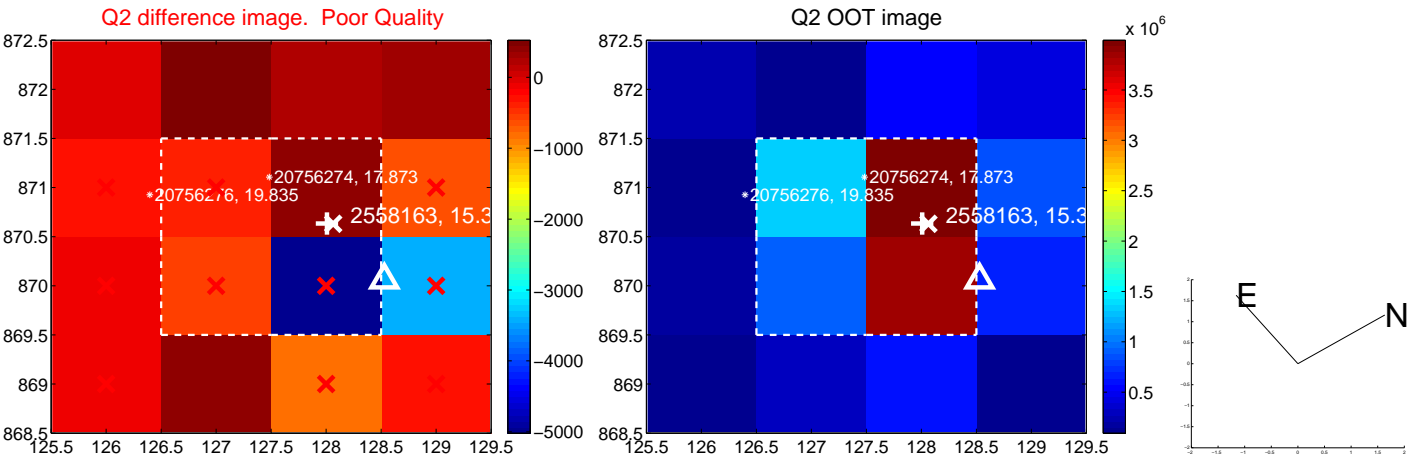
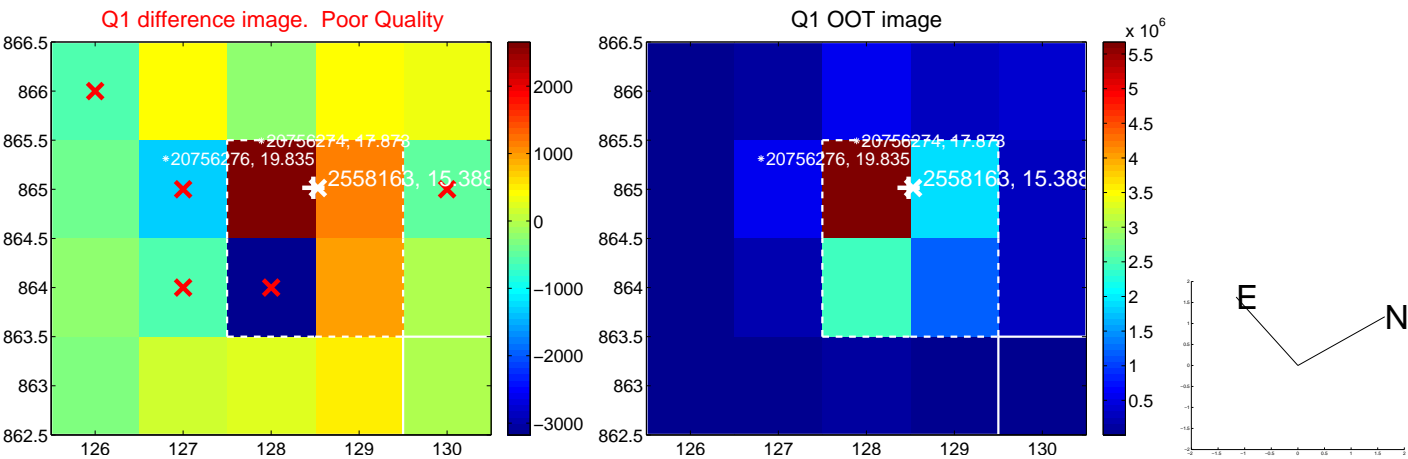
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.389 \pm 0.891$	1.56	$0.283 \pm 0.758$	$-1.359 \pm 0.798$
PRF-fit source offset from KIC position	$1.522 \pm 0.850$	1.79	$0.347 \pm 0.772$	$-1.481 \pm 0.745$
photometric centroid source offset	$2.04 \pm 1.48$	1.39	$-1.66 \pm 1.47$	$-1.20 \pm 1.49$



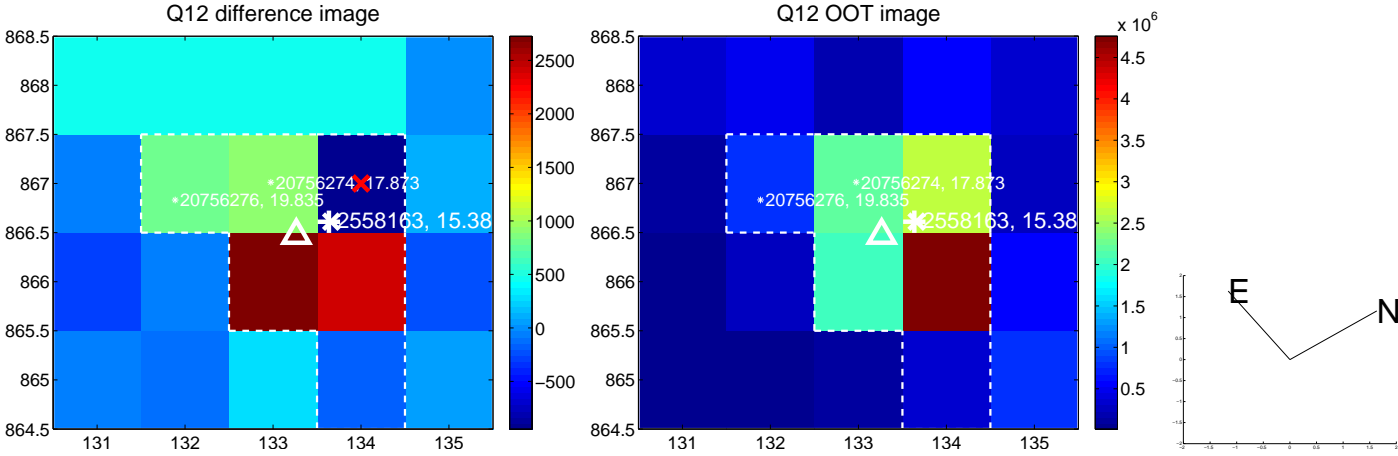
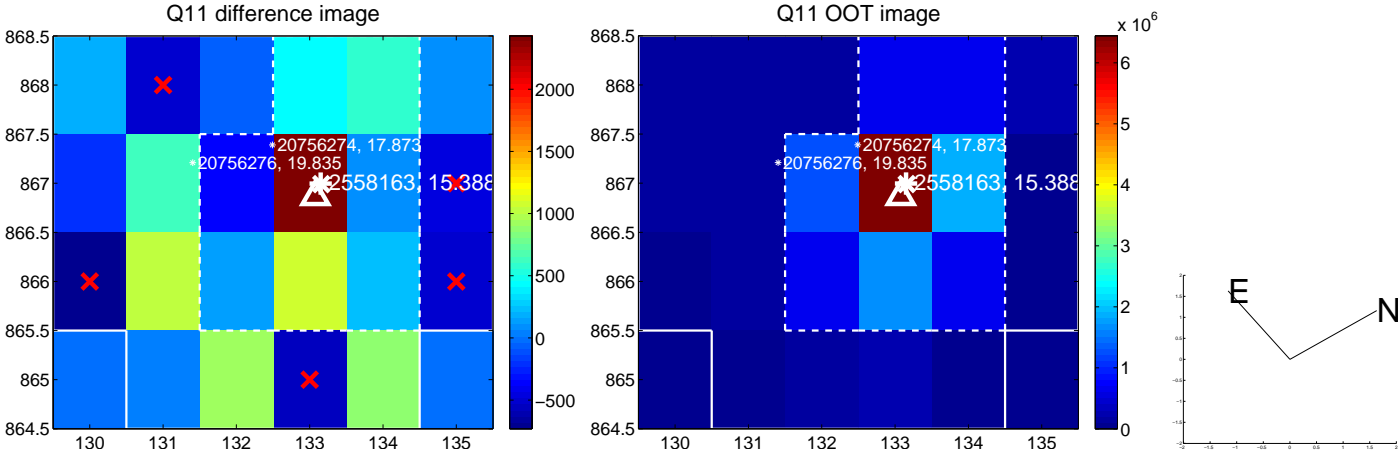
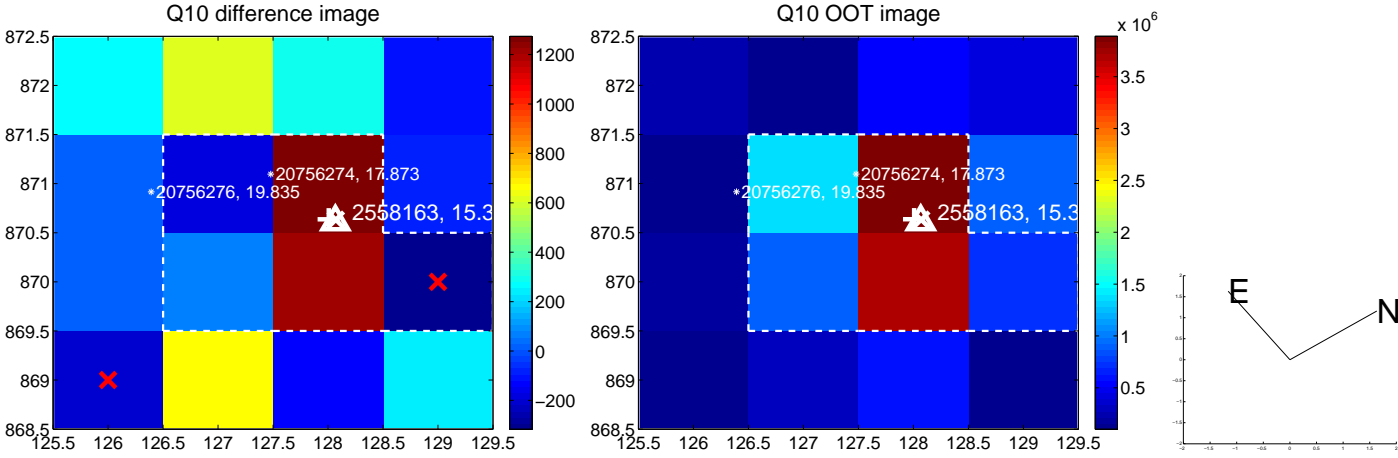
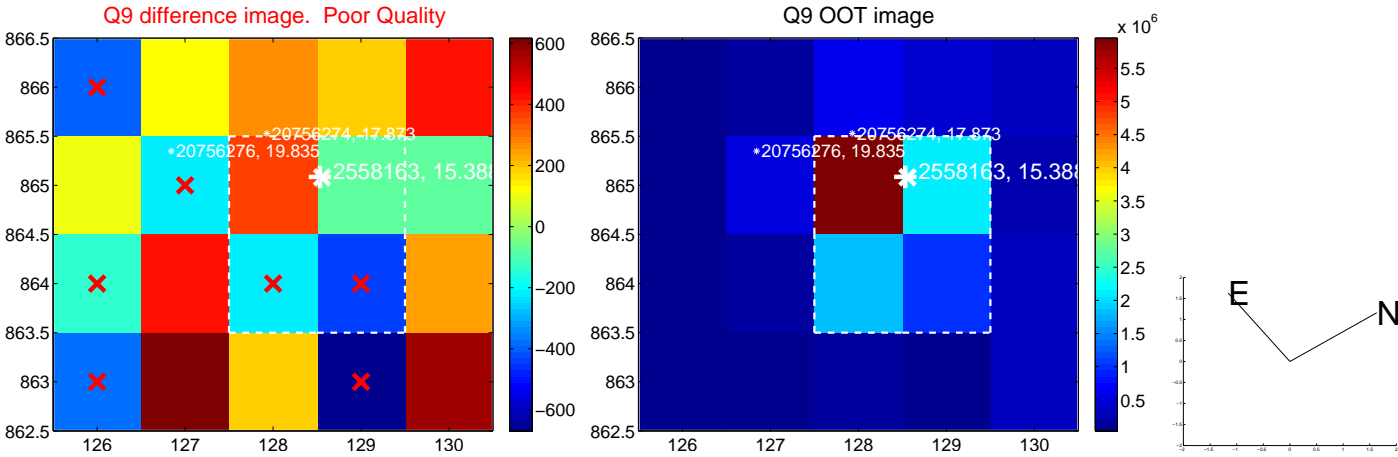
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

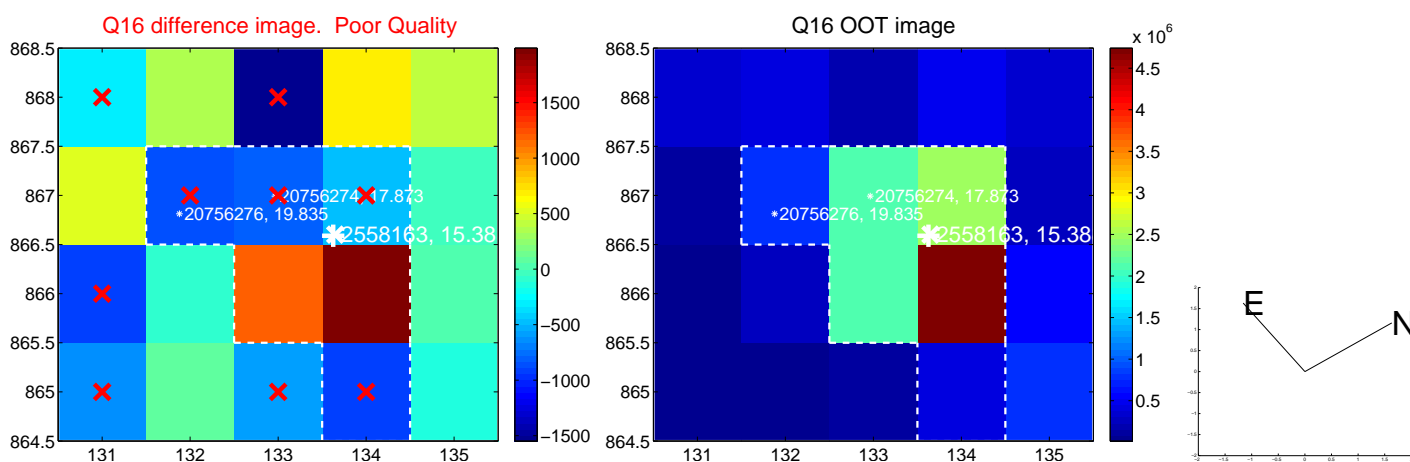
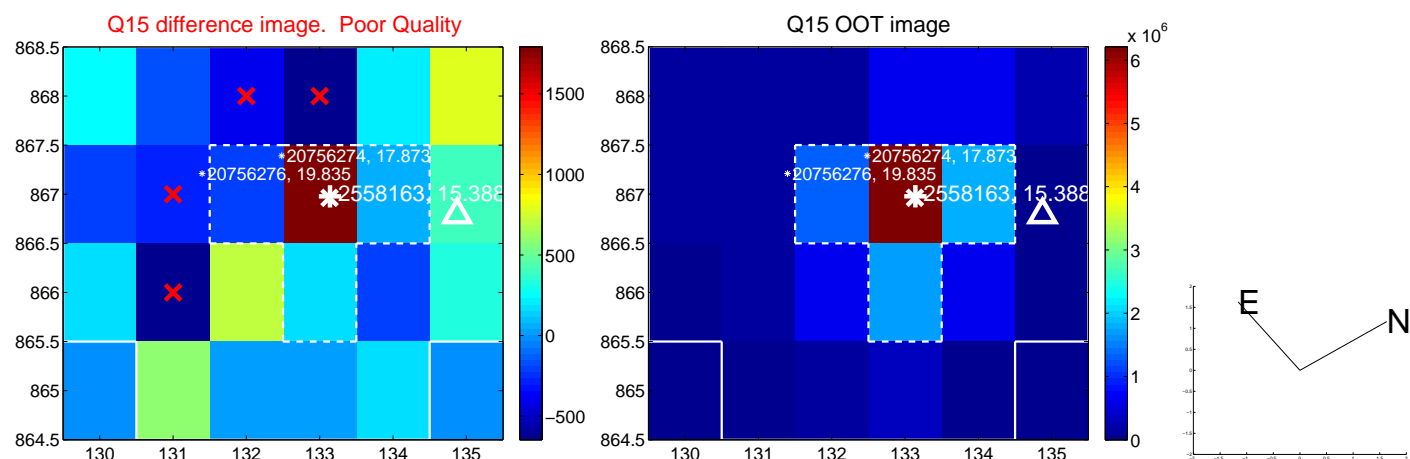
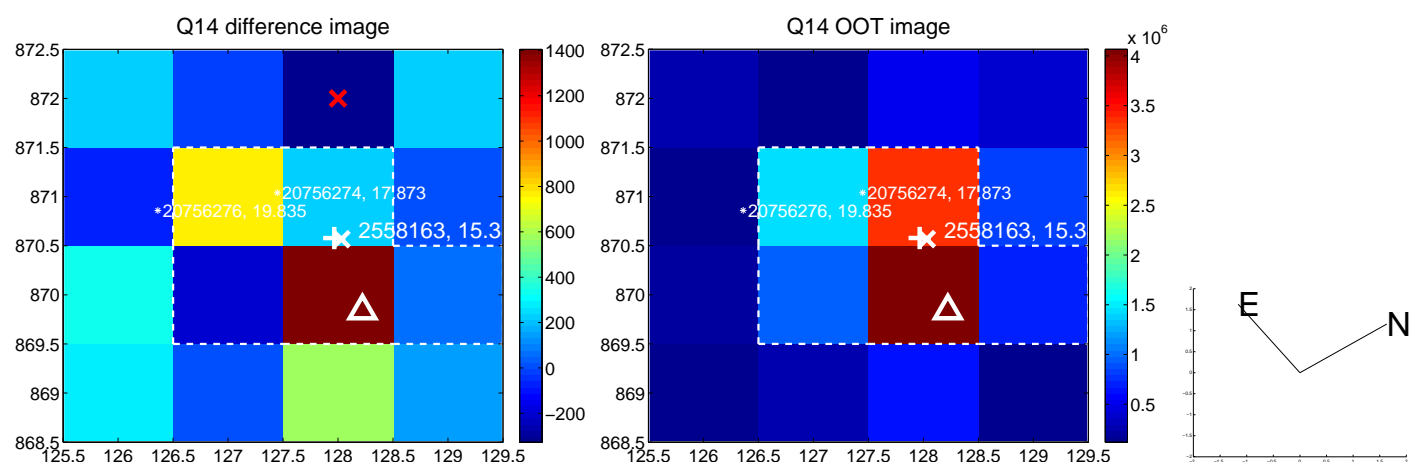
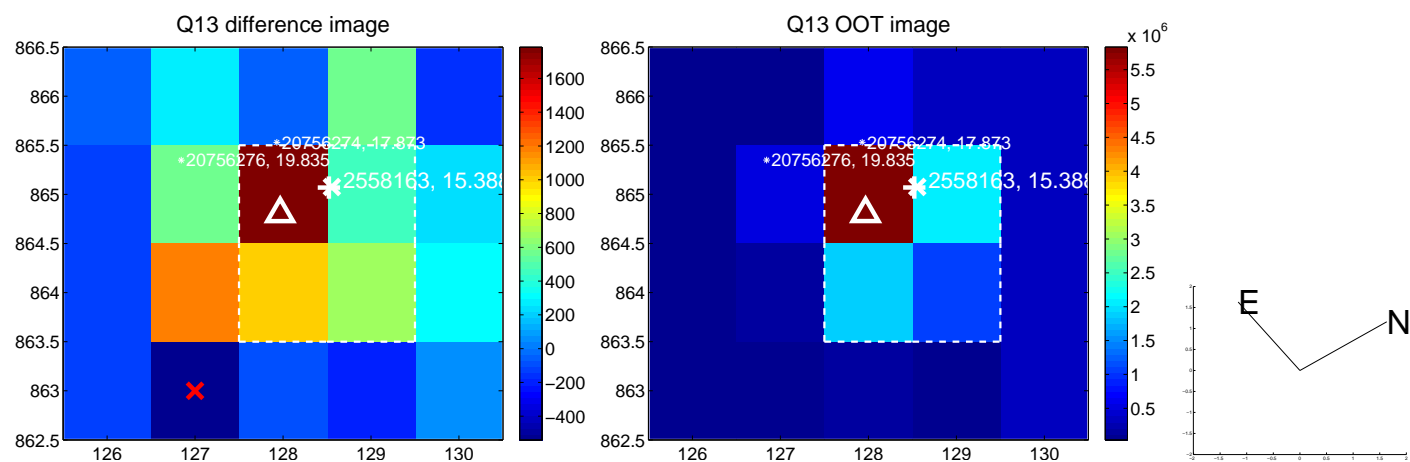




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

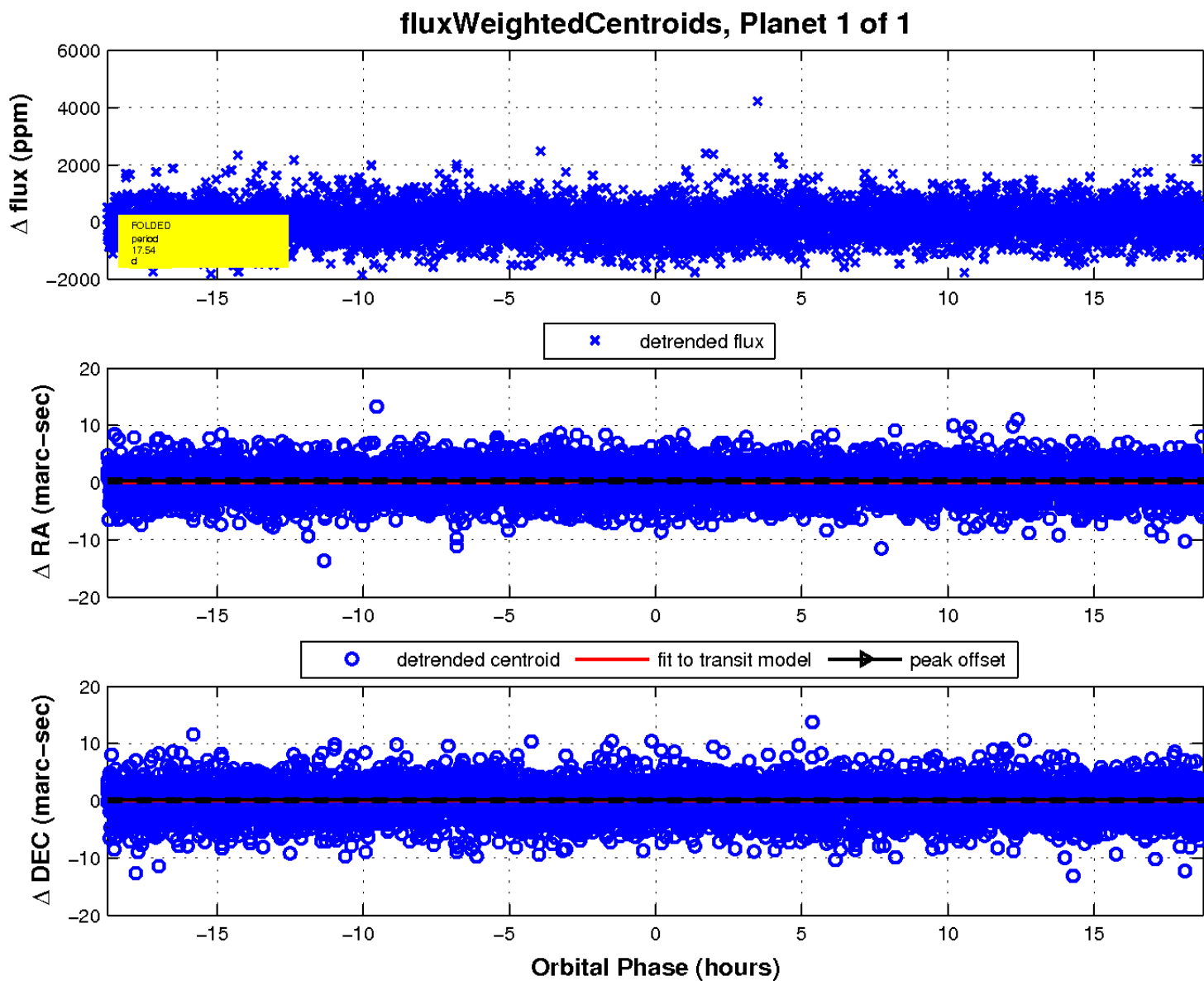
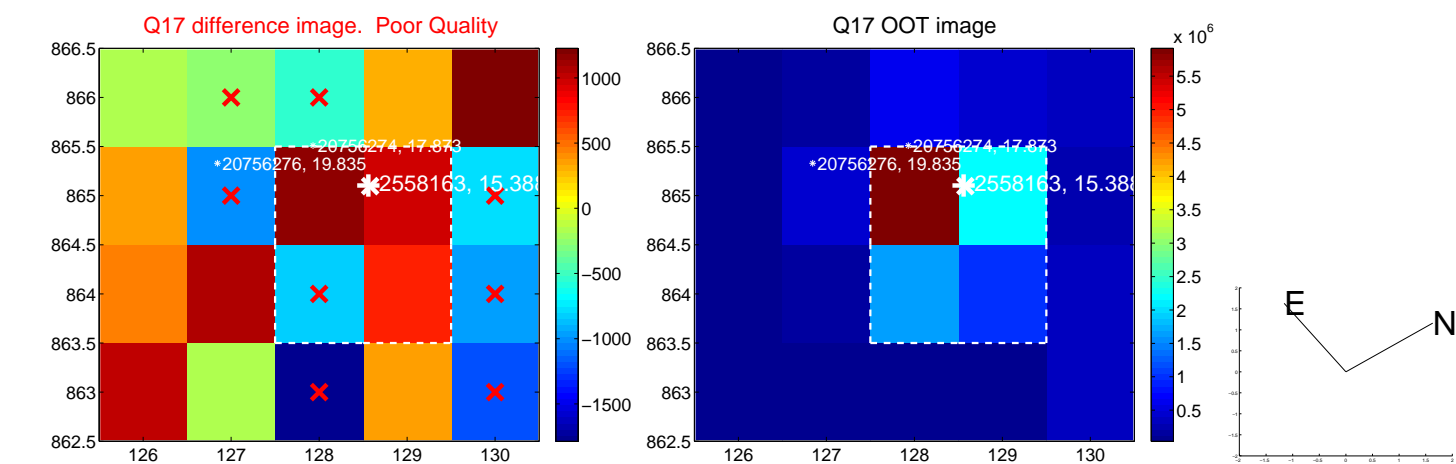


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



Declination