

# KIC 005898983

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005898983-01	OBS	3422.01	40.143629	133.760825	270.5	7.002	14.5	15.2	7.16	7852	15.05	1711.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005898983-01	OBS	FP	0.36	0	0	1	0	CENT_RESOLVED_OFFSET

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

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

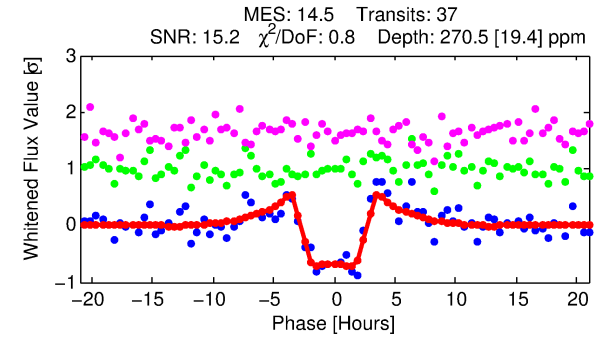
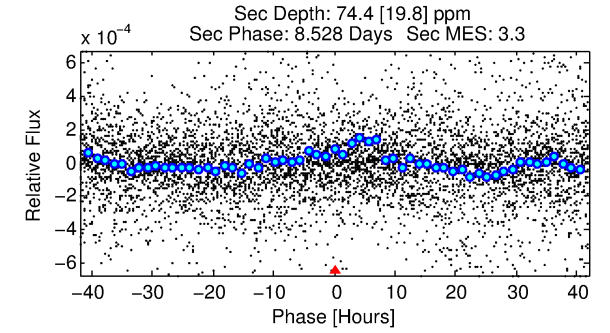
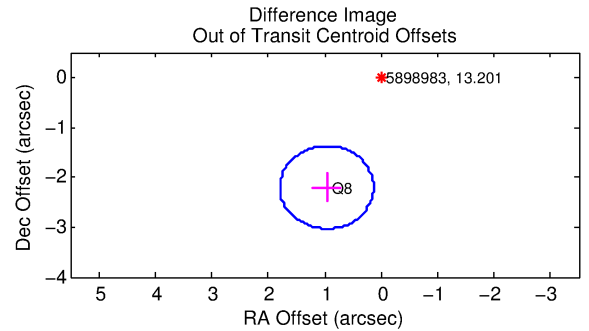
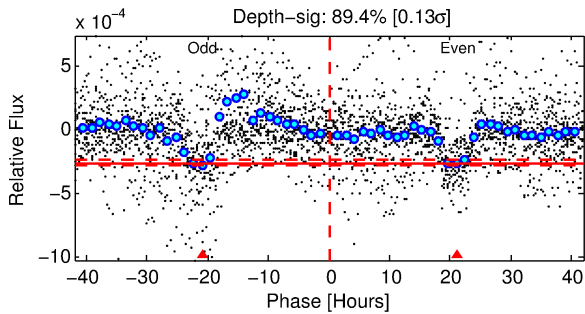
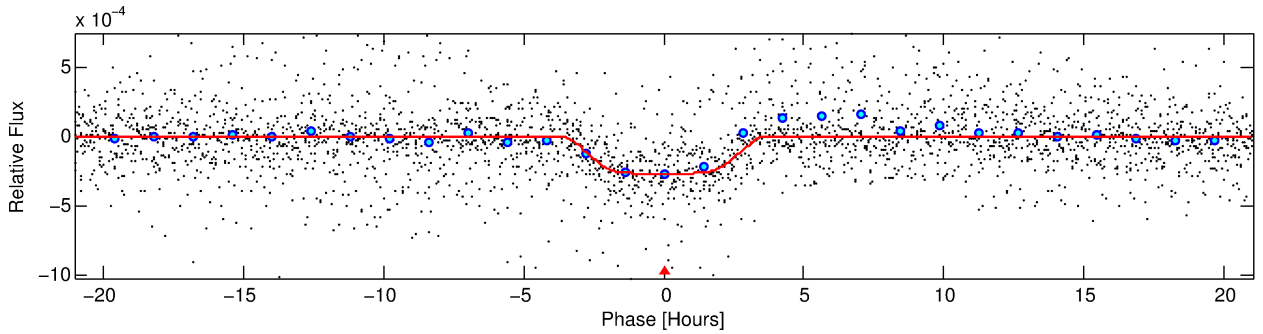
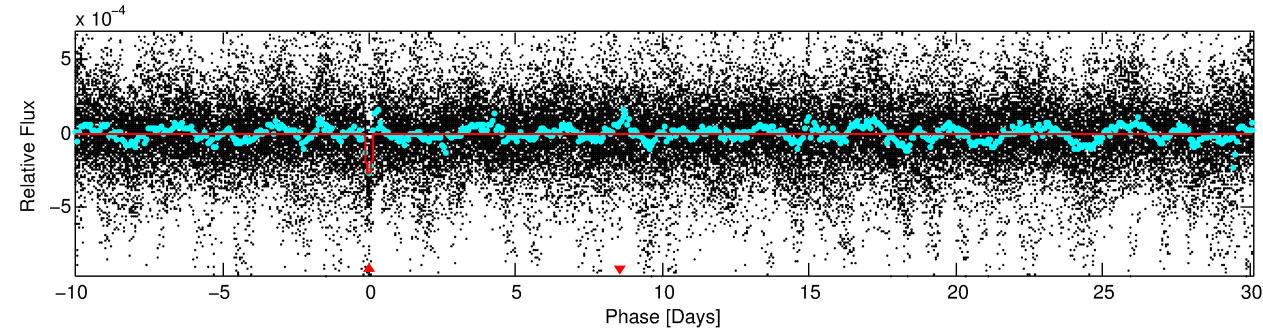
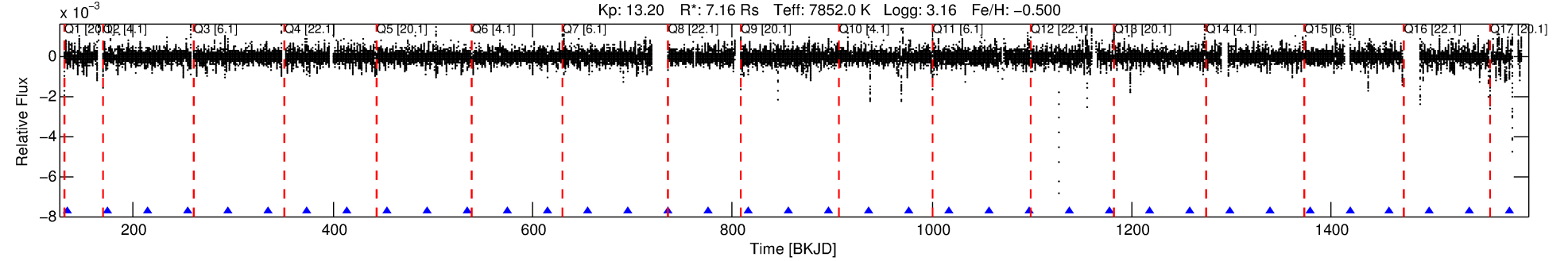
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005898983-01

No Significant Match Found

# DV One-Page Summary

KIC: 5898983 Candidate: 1 of 1 Period: 40.144 d  
KOI: K03422.01 Corr: 0.968



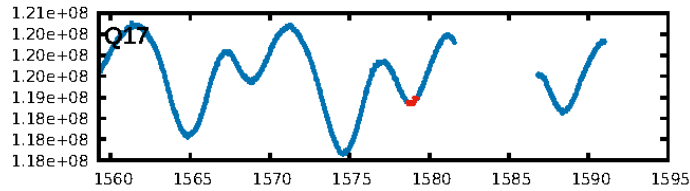
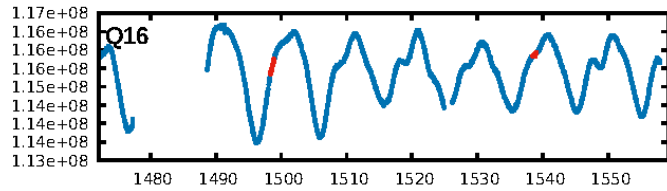
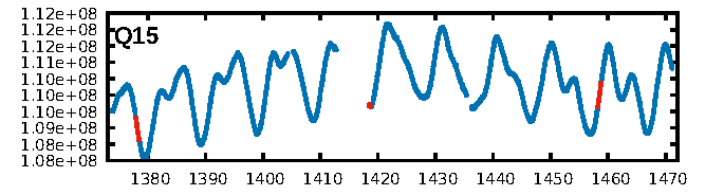
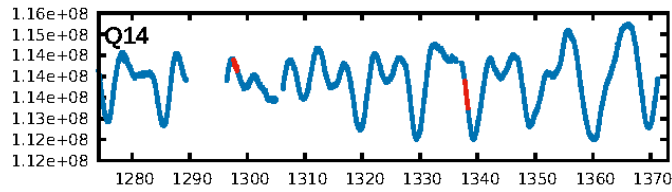
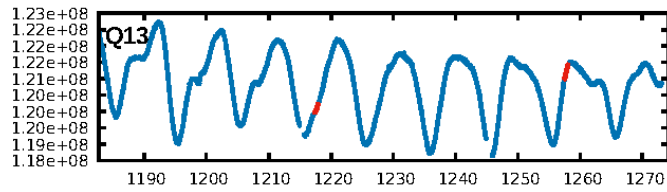
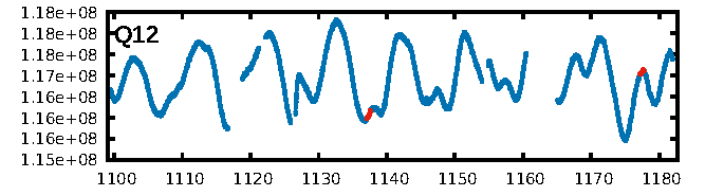
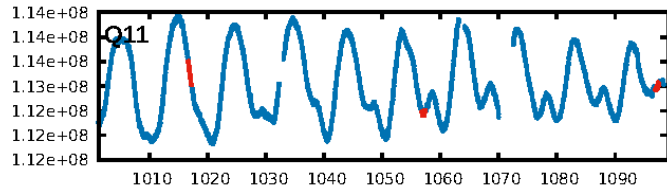
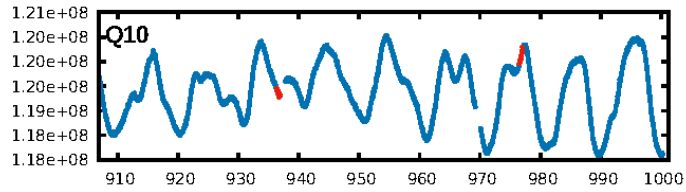
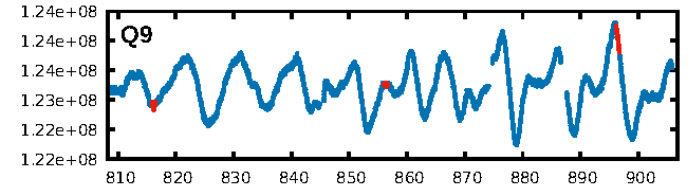
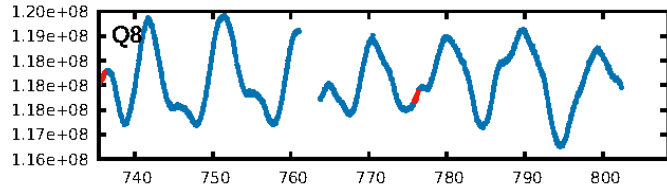
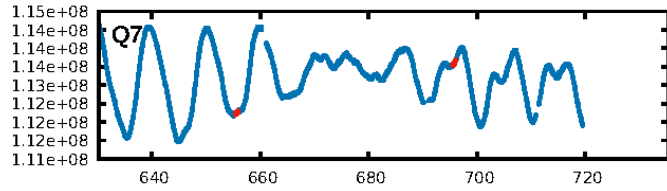
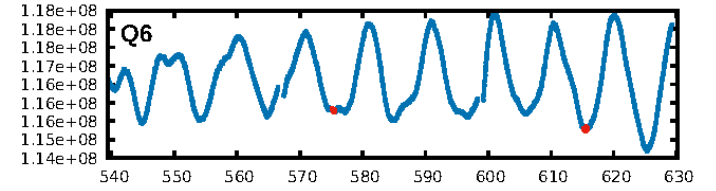
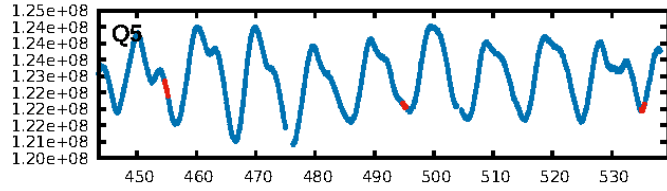
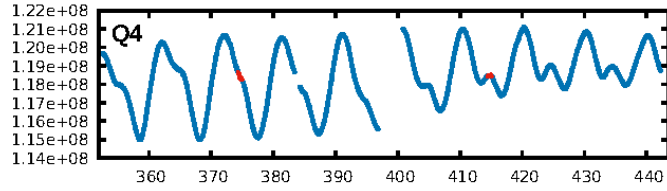
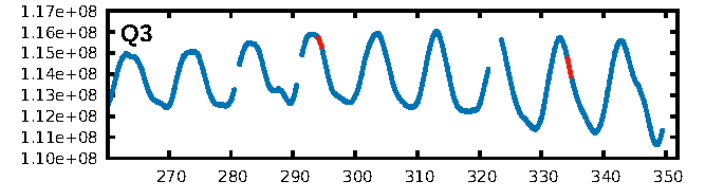
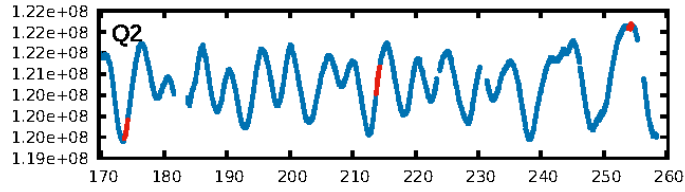
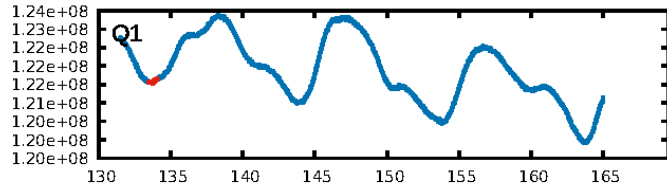
## DV Fit Results:

Period = 40.14363 [0.00031] d  
Epoch = 133.7608 [0.0063] BKJD  
Rp/R\* = 0.0193 [0.0008]  
a/R\* = 13.96 [1.25]  
b = 0.97 [0.01]  
Seff = 1711.39 [1426.51]  
Teq = 1640 [342] K  
Rp = 15.05 [6.91] Re  
a = 0.3195 [0.1327] AU  
Ag = 18.45 [12.91] [1.35 $\sigma$ ]  
Teffp = 5255 [789] K [4.20 $\sigma$ ]

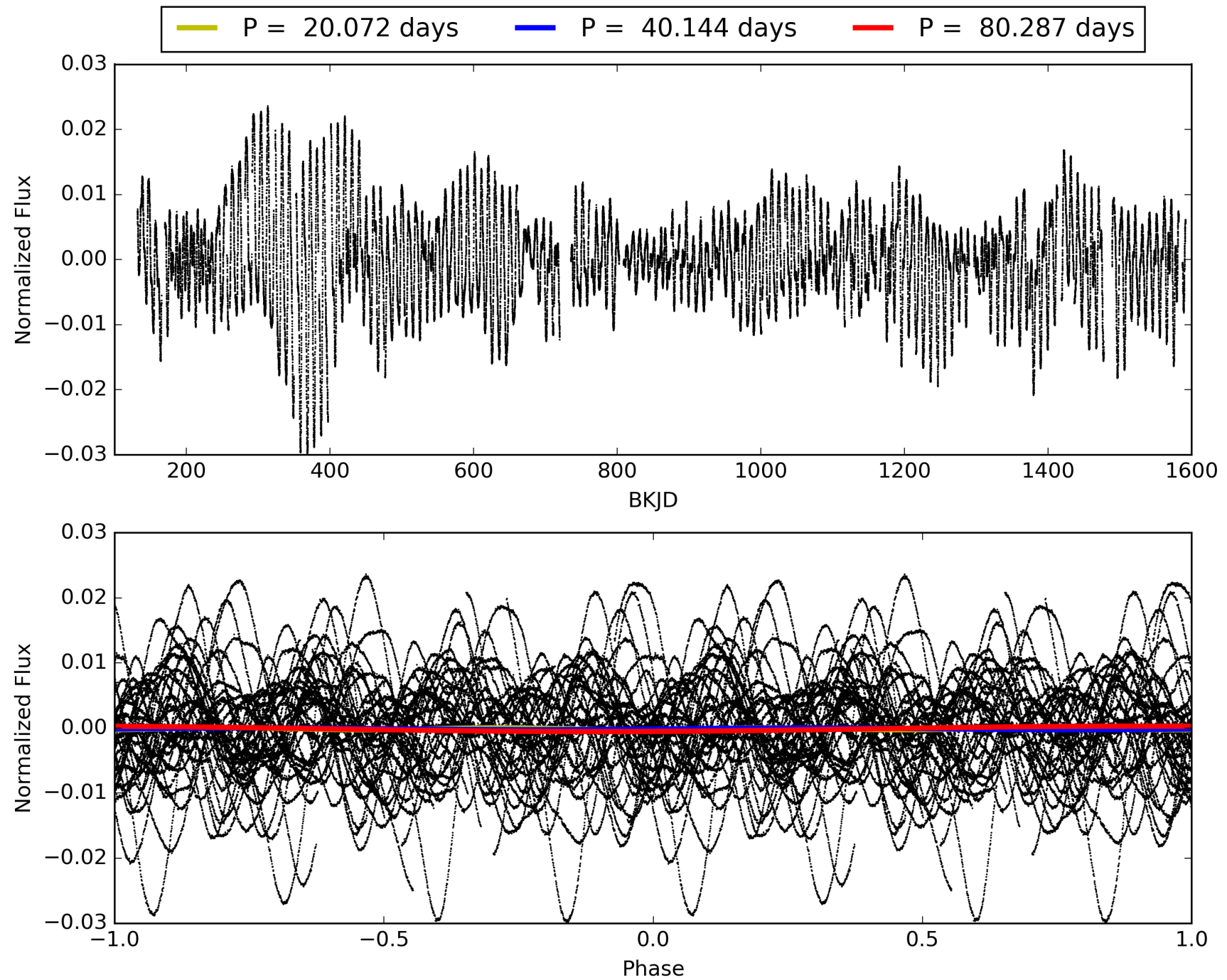
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 27.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.63e-27  
RollingBand-fgt: 1.00 [35/35]  
GhostDiagnostic-chr: 0.3317  
Centroid-sig: 95.6%  
Centroid-so: 0.266 arcsec [0.60 $\sigma$ ]  
OotOffset-rm: 2.407 arcsec [8.71 $\sigma$ ]  
KicOffset-rm: 2.727 arcsec [9.86 $\sigma$ ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005898983-01, PDC Light Curves

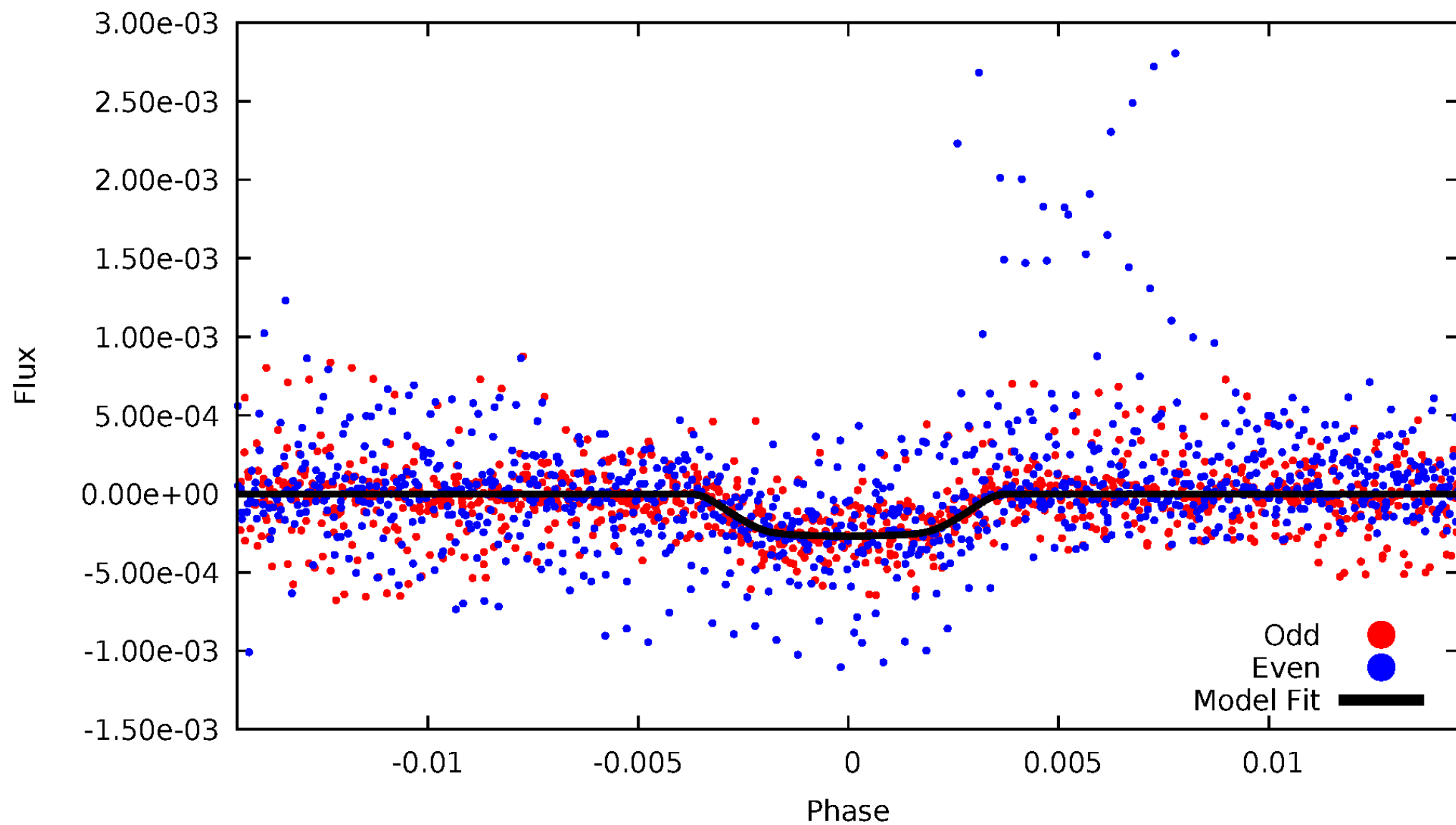


TCE 005898983-01



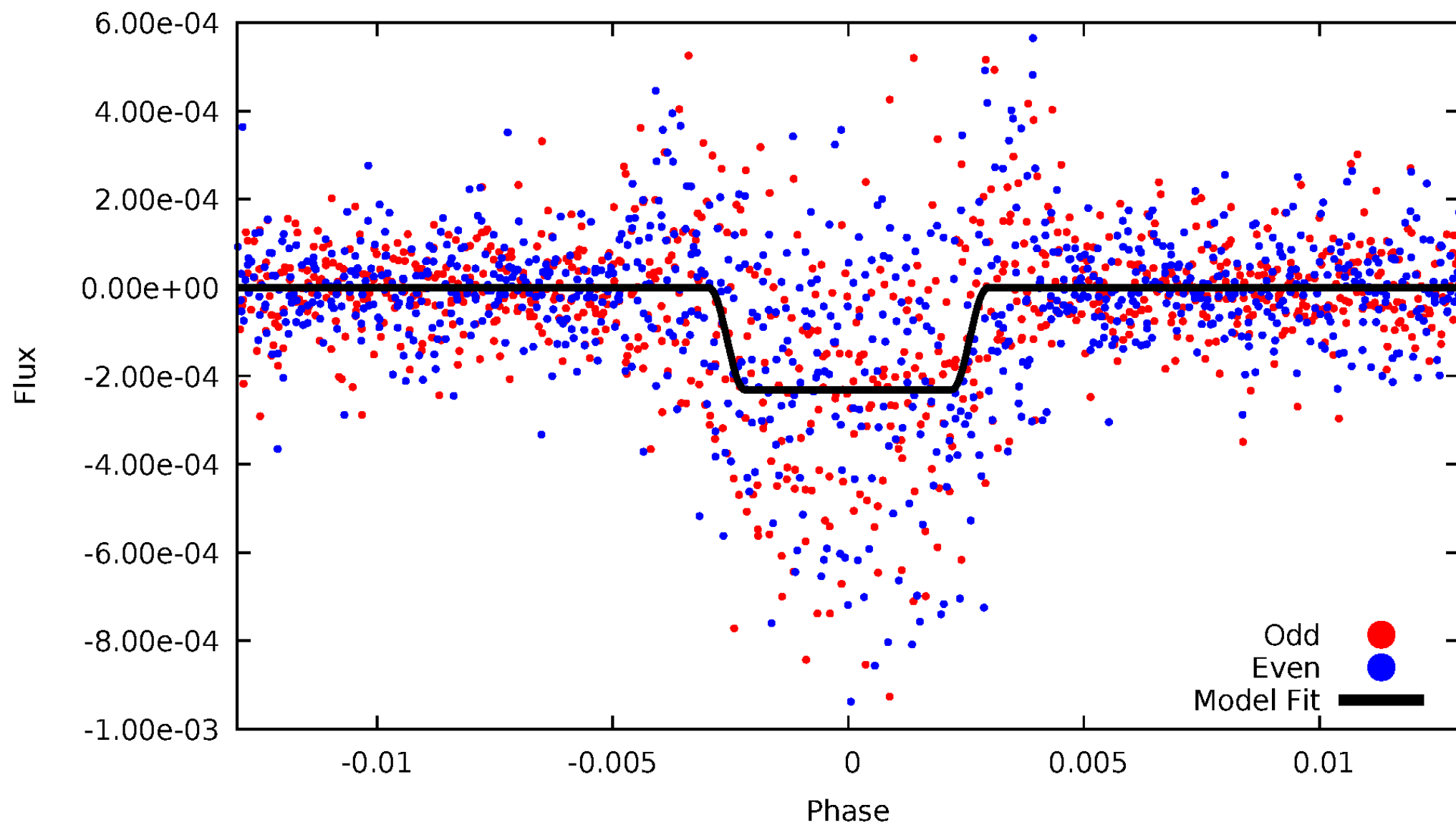
# DV Odd/Even

TCE 005898983-01



# ALT Odd/Even

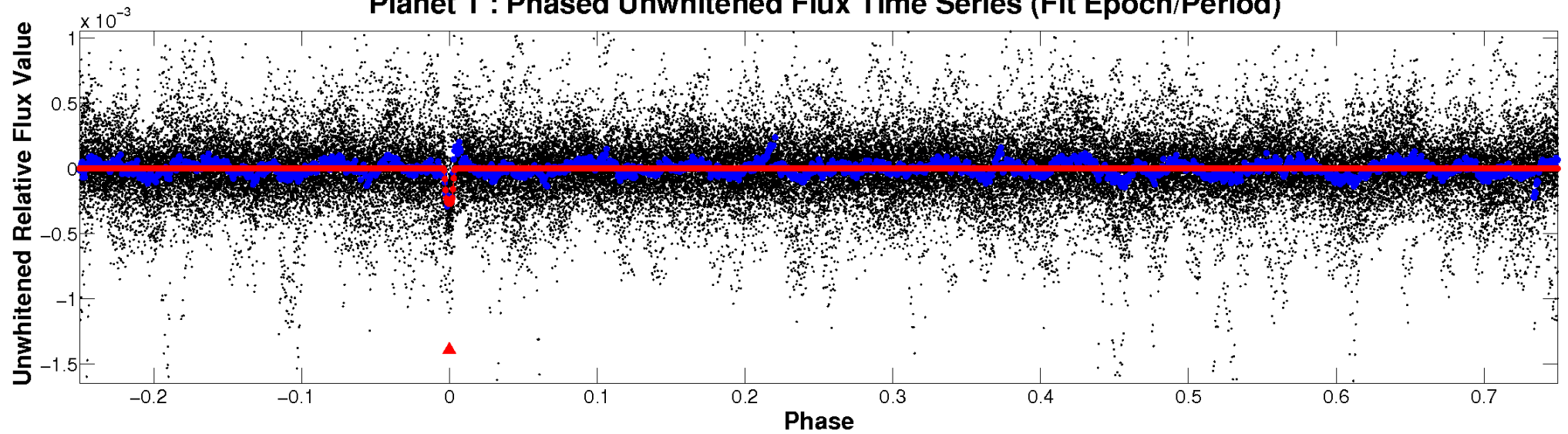
TCE 005898983-01



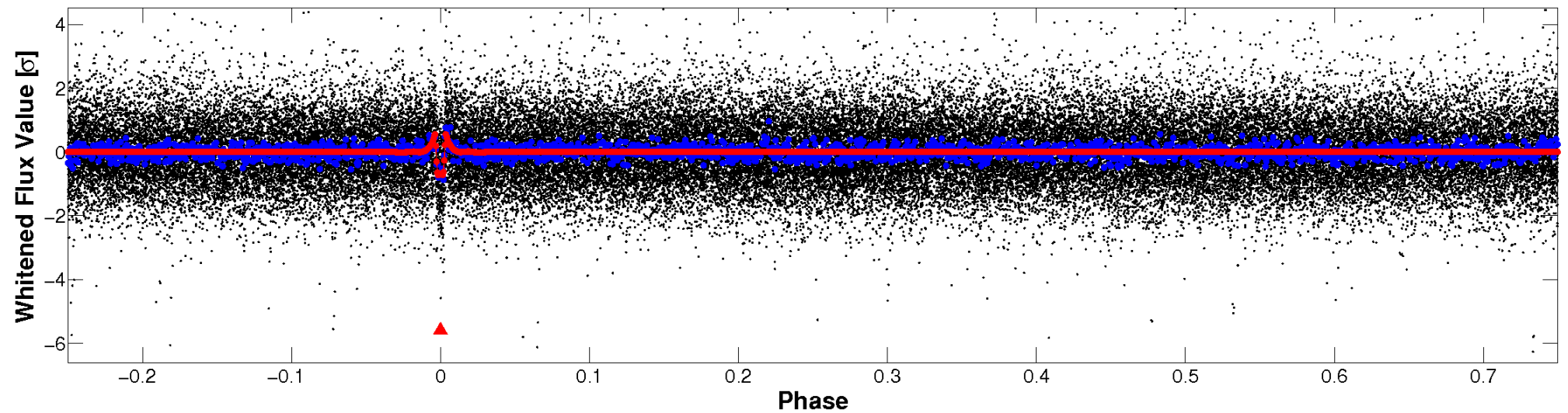


# Non-Whitened Vs. Whitened Light Curve

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

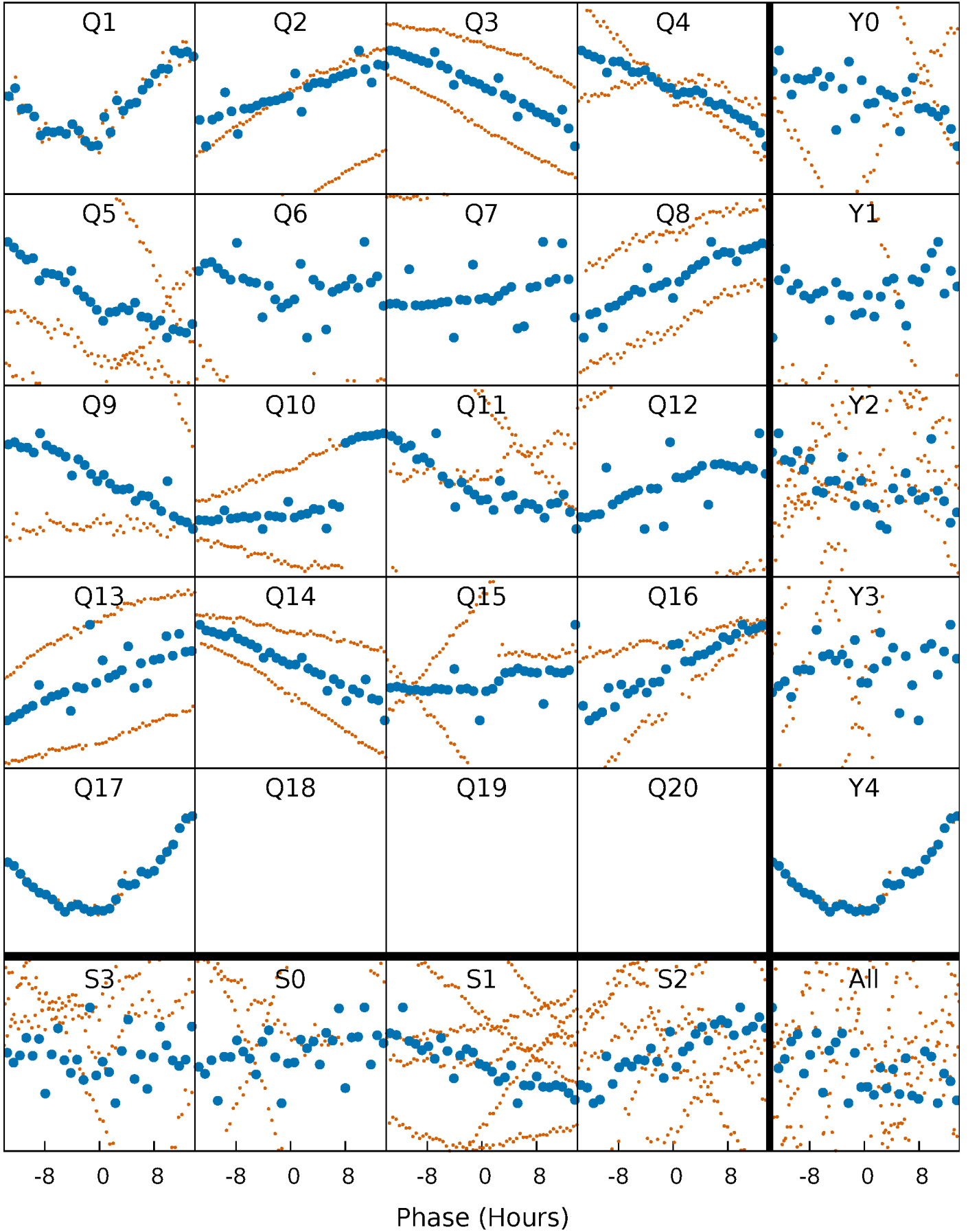


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

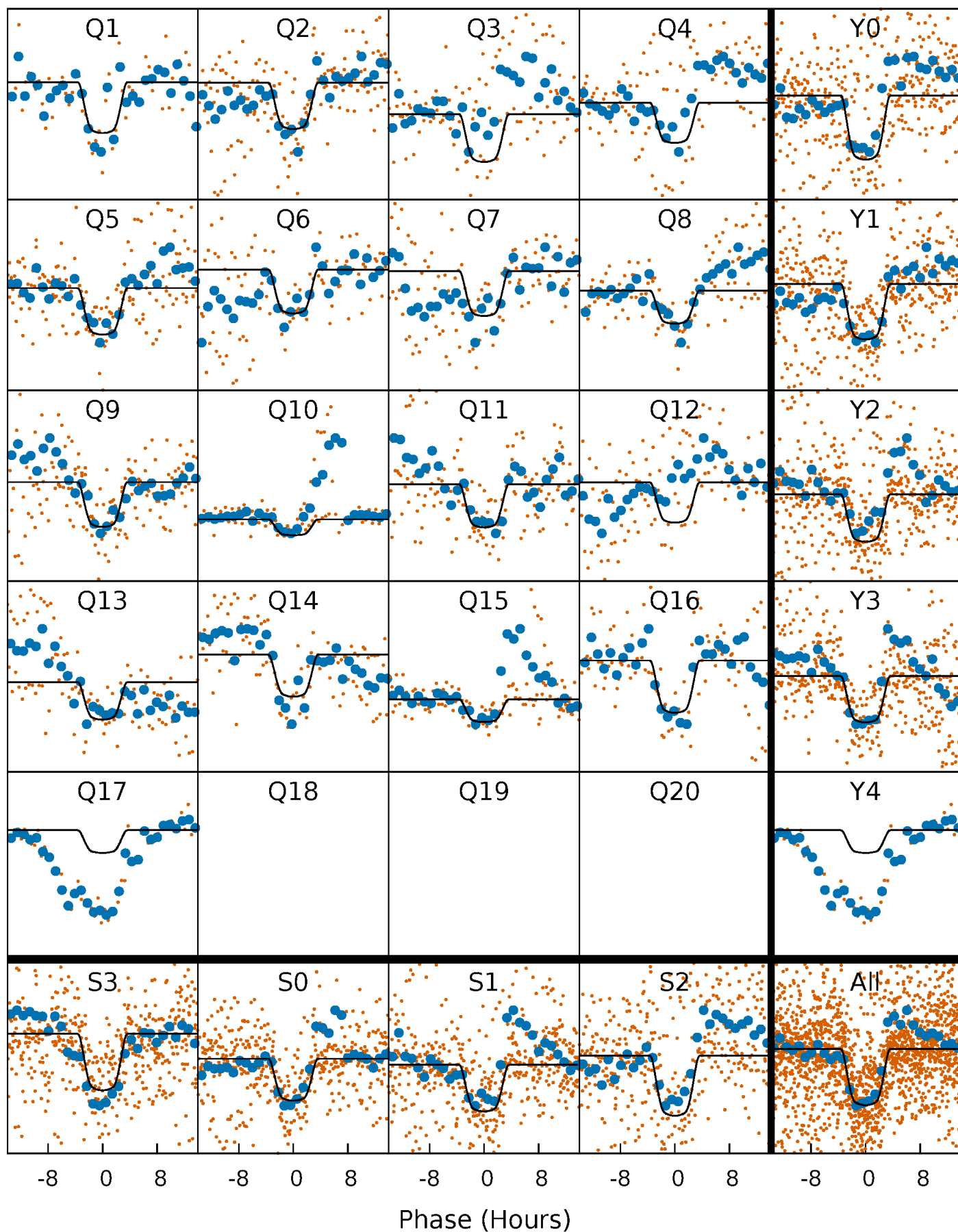
TCE 005898983-01   P= 40.143629 Days    $T_0=133.760825$  (BKJD)





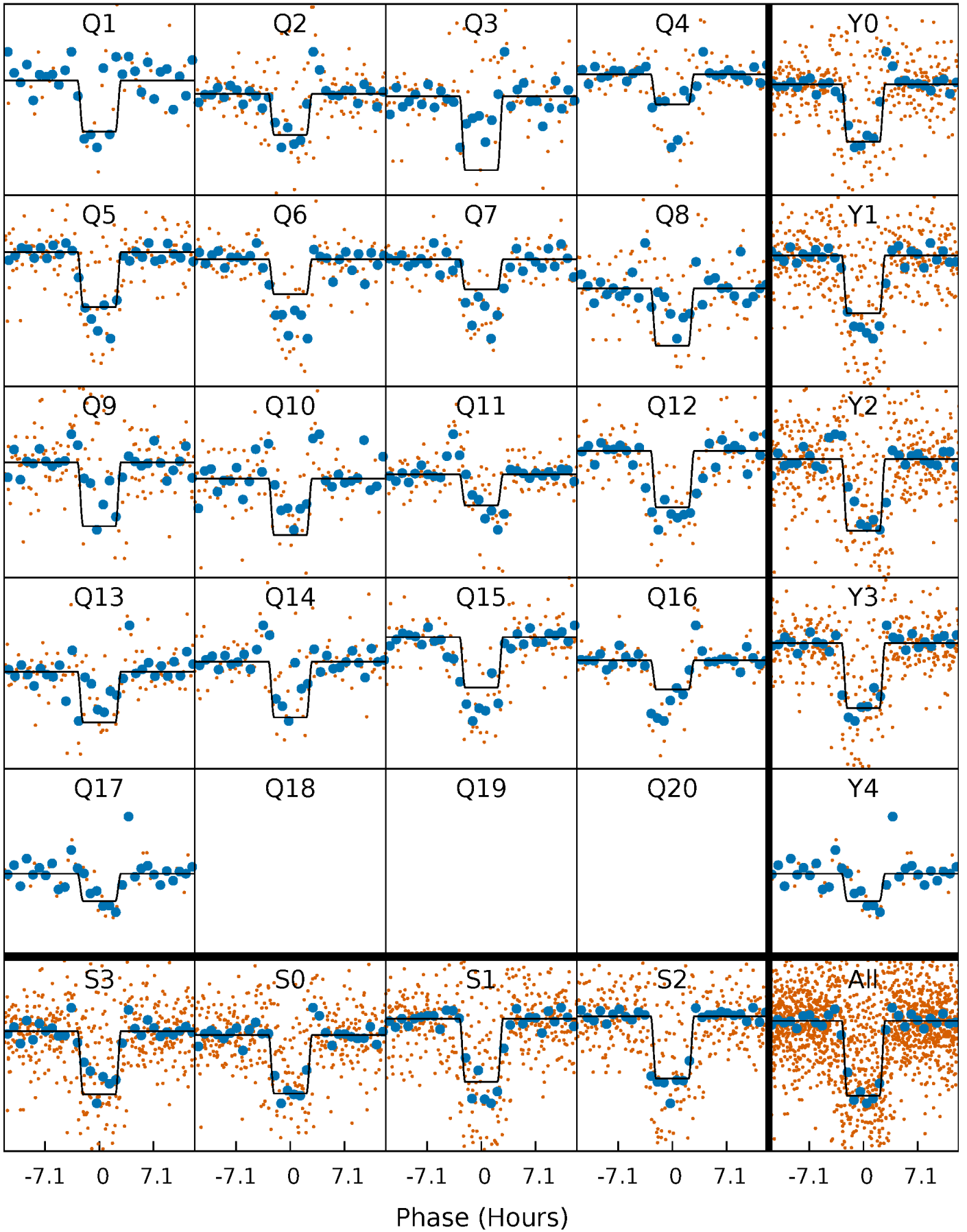
# DV Quarter-Phased Transit Curves

TCE 005898983-01 P= 40.143629 Days  $T_0=133.760825$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

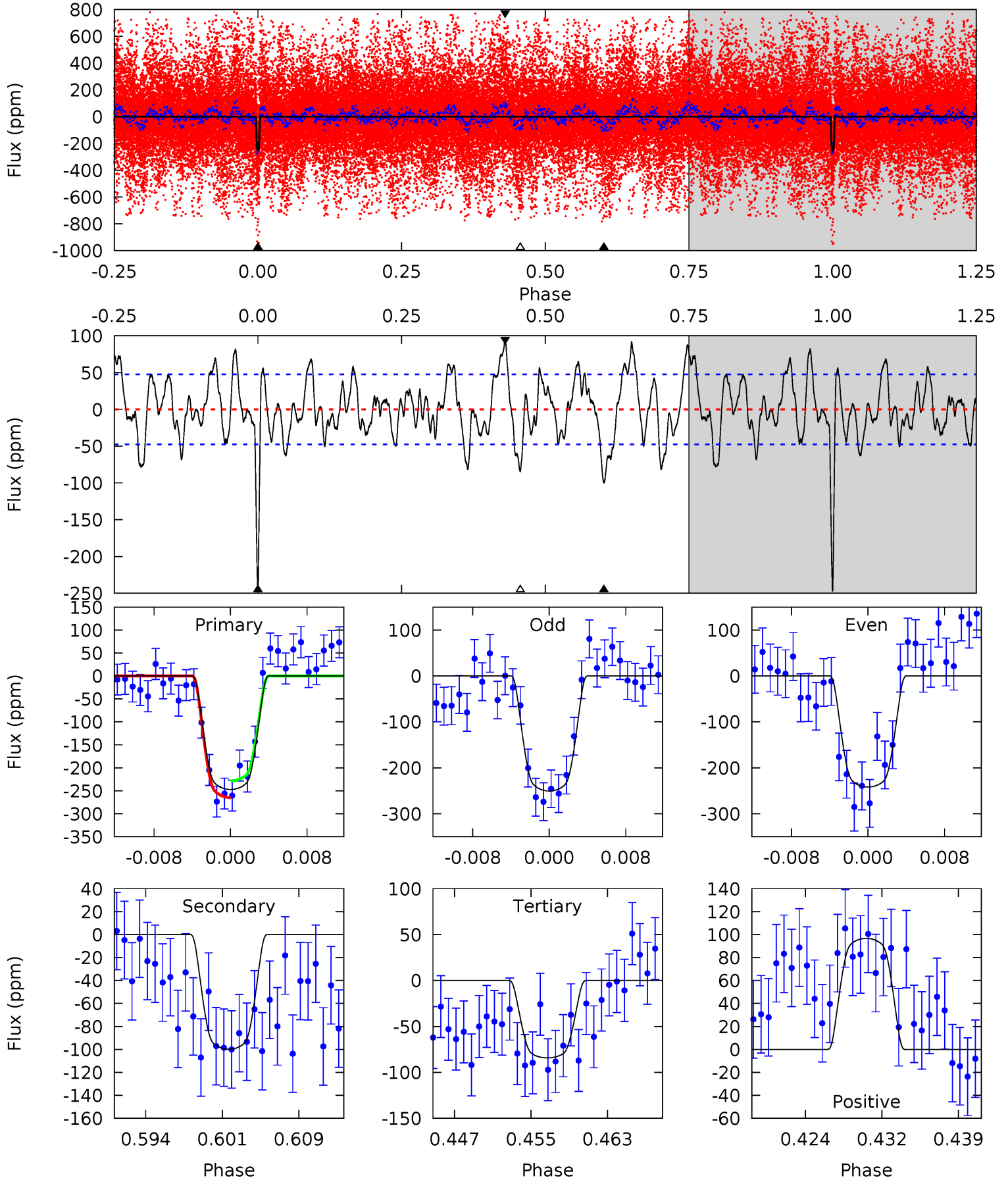
TCE 005898983-01 P= 40.143484 Days  $T_0=133.765153$  (BKJD)



# DV Model-Shift Uniqueness Test

005898983-01, P = 40.143629 Days, E = 93.617196 Days

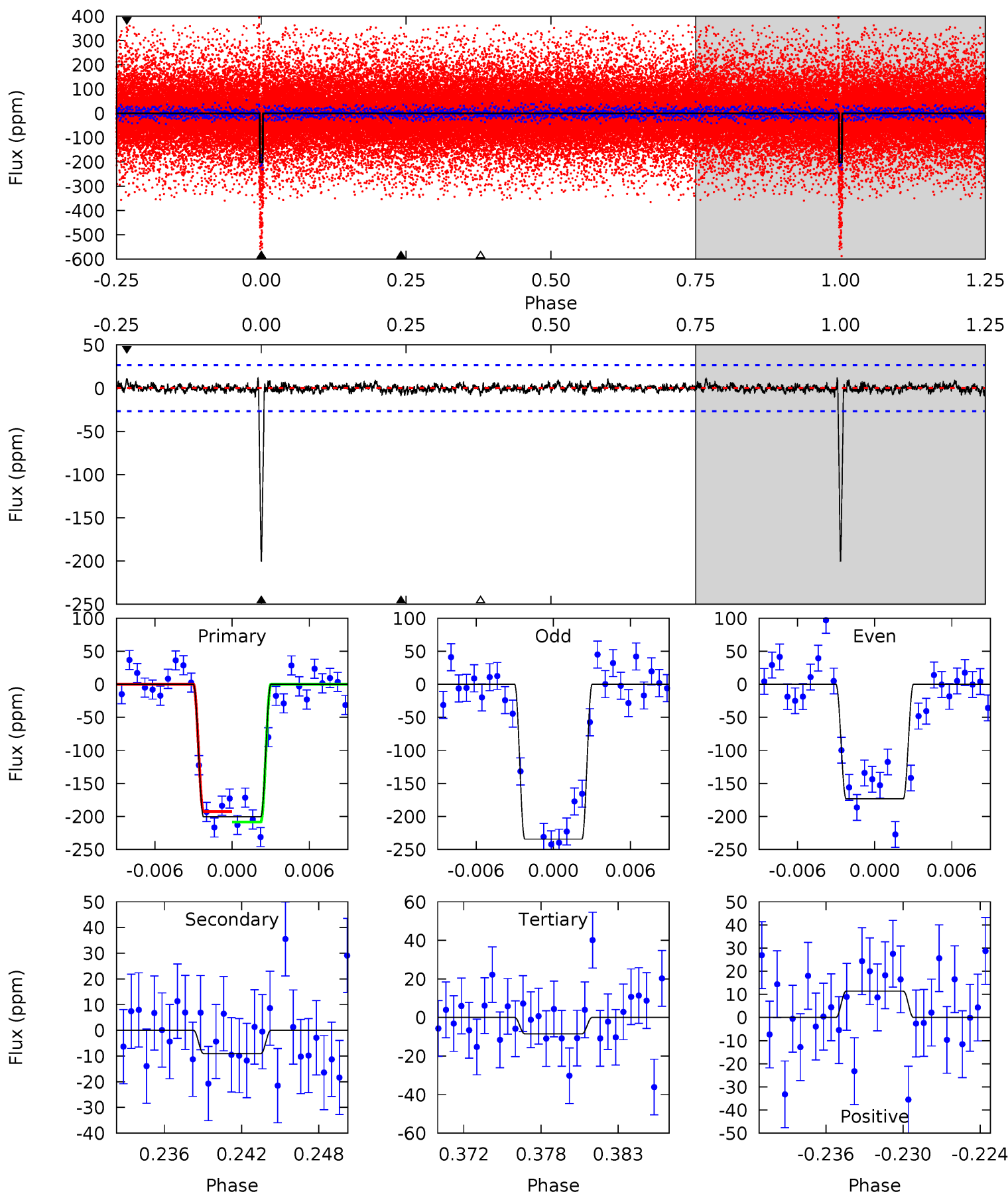
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	10.6	8.98	10.3	5.08	2.66	3.86	17.4	16.1	1.67	0.34	0.47	0.43	0.28	1.97



# Alt Model-Shift Uniqueness Test

005898983-01, P = 40.143484 Days, E = 93.621669 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
38.4	1.73	1.63	2.18	5.13	2.75	0.55	36.8	36.3	0.11	-0.44	5.89	1.10	0.06	0



### Stellar Parameters For KIC 005898983

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7852^{+447}_{-1044}$	$3.159^{+0.368}_{-0.092}$	$-0.500^{+0.300}_{-0.050}$	$7.162^{+1.091}_{-3.273}$	$2.697^{+0.296}_{-0.830}$	$0.010^{+0.034}_{-0.003}$
	+6%/-13%	+12%/-3%	+60%/-10%	+15%/-46%	+11%/-31%	+333%/-31%
Source	SPE18	SPE18	SPE18	DSEP		

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

### Secondary Eclipse Parameters for KIC 005898983-01 / KOI 3422.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-100 \pm 9$	$14.64^{+1.83}_{-3.39}$	$2177^{+226}_{-329}$	$5504^{+321}_{-556}$	$27^{+15}_{-6}$
Alt.	$-9 \pm 5$	$11.35^{+1.62}_{-2.69}$	$2179^{+245}_{-315}$	$3665^{+416}_{-622}$	$4.109^{+3.569}_{-2.559}$

$T_{\text{max}}$  = 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

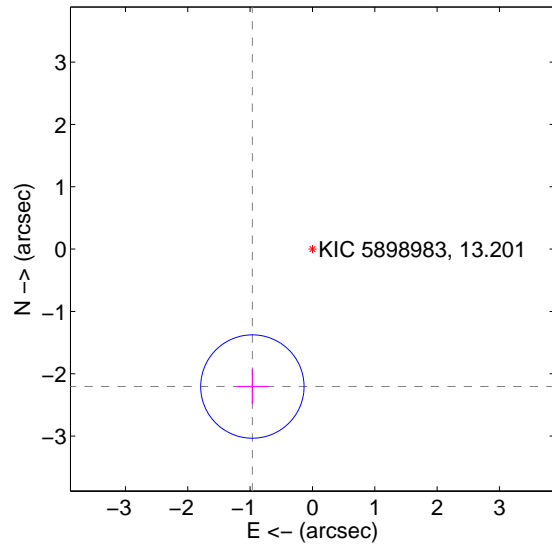
Supplemental centroid analysis for 005898983-01. Kepler magnitude: 13.20. Transit SNR 15.15

There are 0 quarters with good PRF difference image offsets

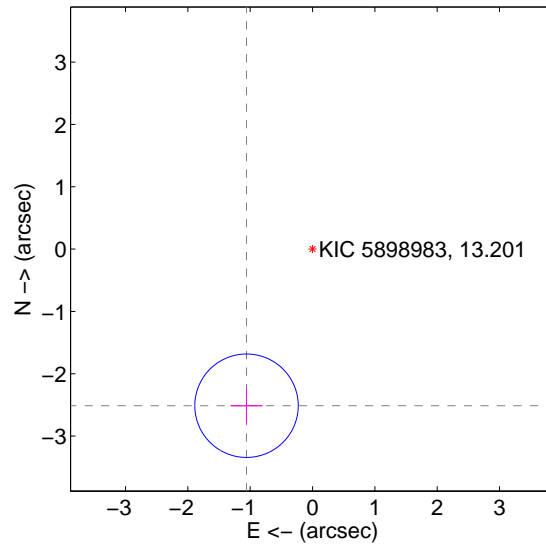
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.407 \pm 0.276$	8.71	$0.964 \pm 0.259$	$-2.205 \pm 0.280$
PRF-fit source offset from KIC position	$2.727 \pm 0.277$	9.86	$1.059 \pm 0.259$	$-2.513 \pm 0.280$
photometric centroid source offset	$0.27 \pm 0.45$	0.60	$-0.01 \pm 0.58$	$-0.27 \pm 0.45$

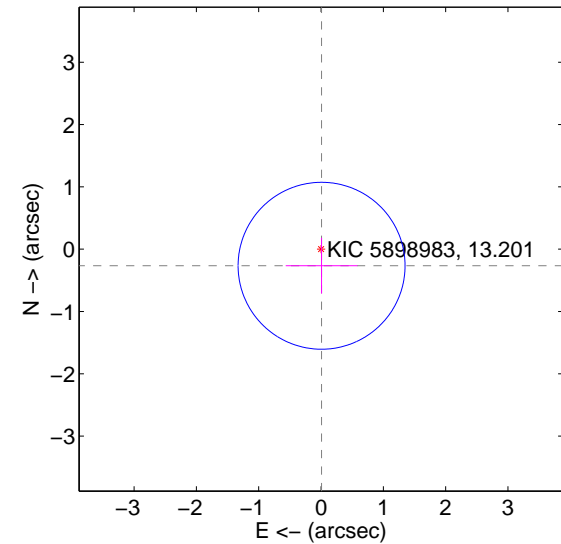
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



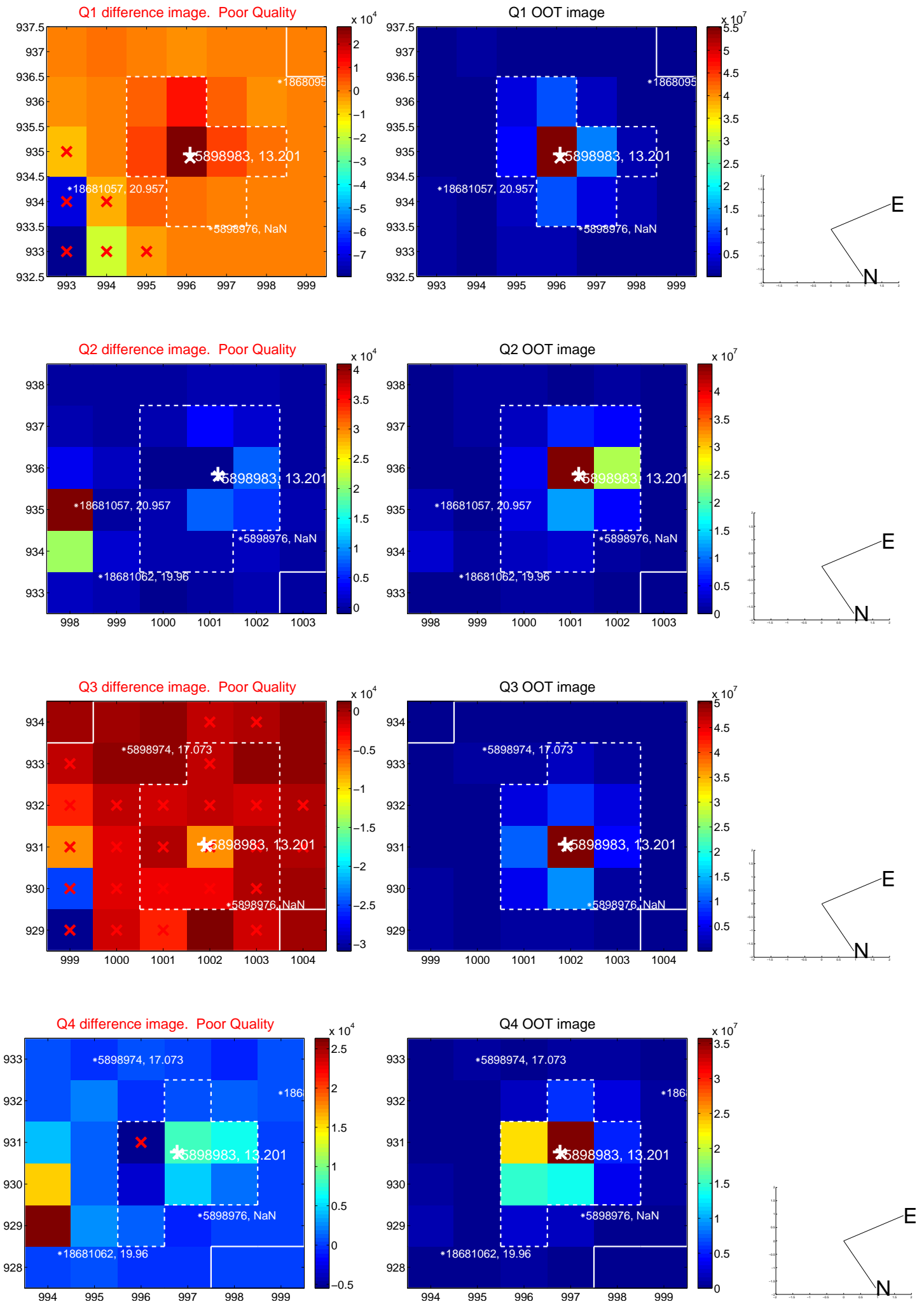
offset from photometric centroids



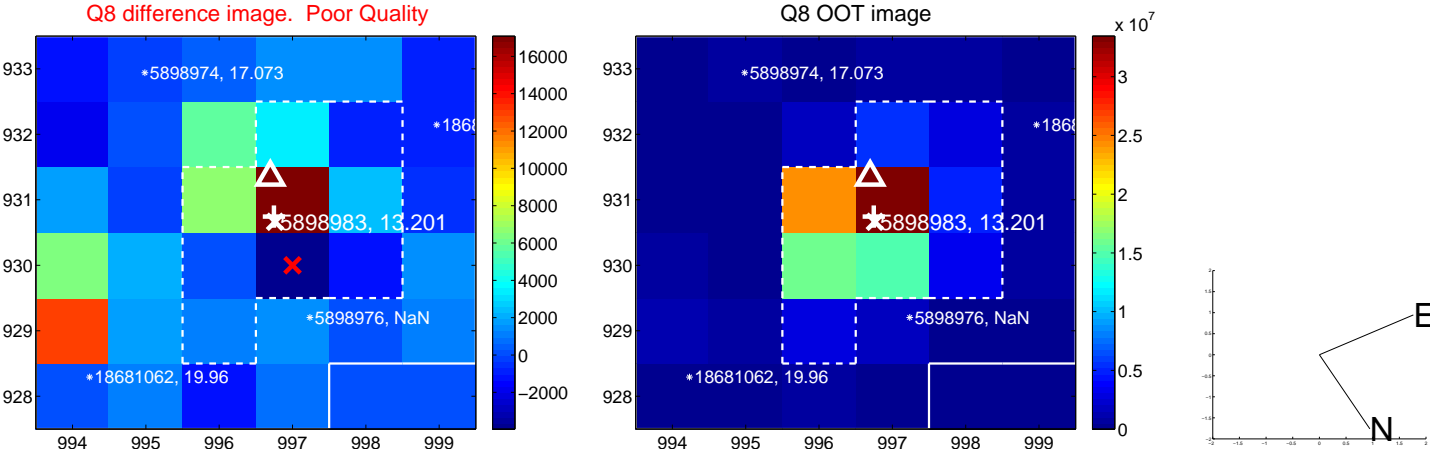
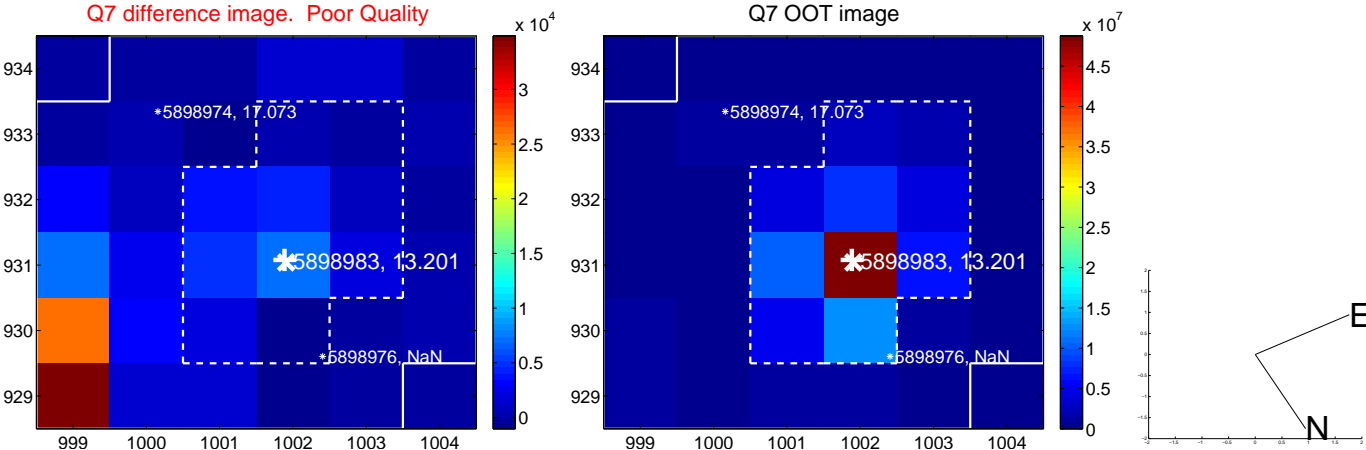
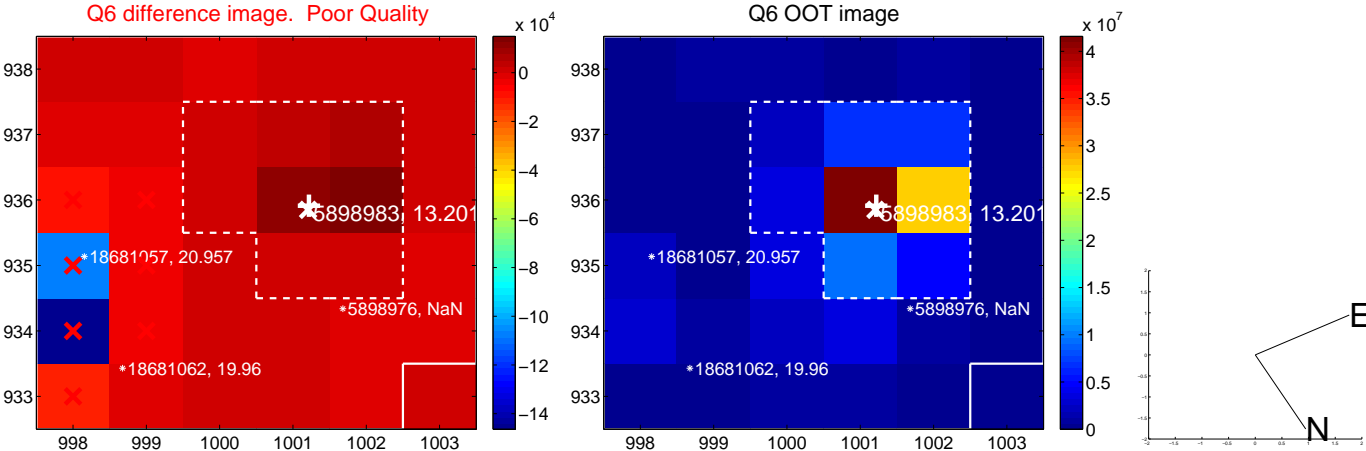
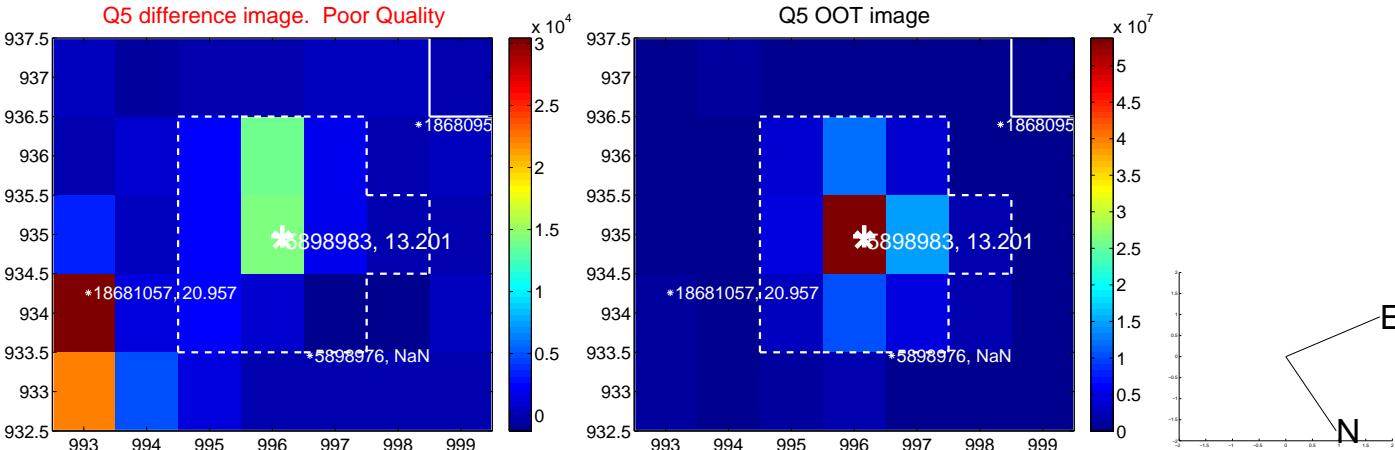
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



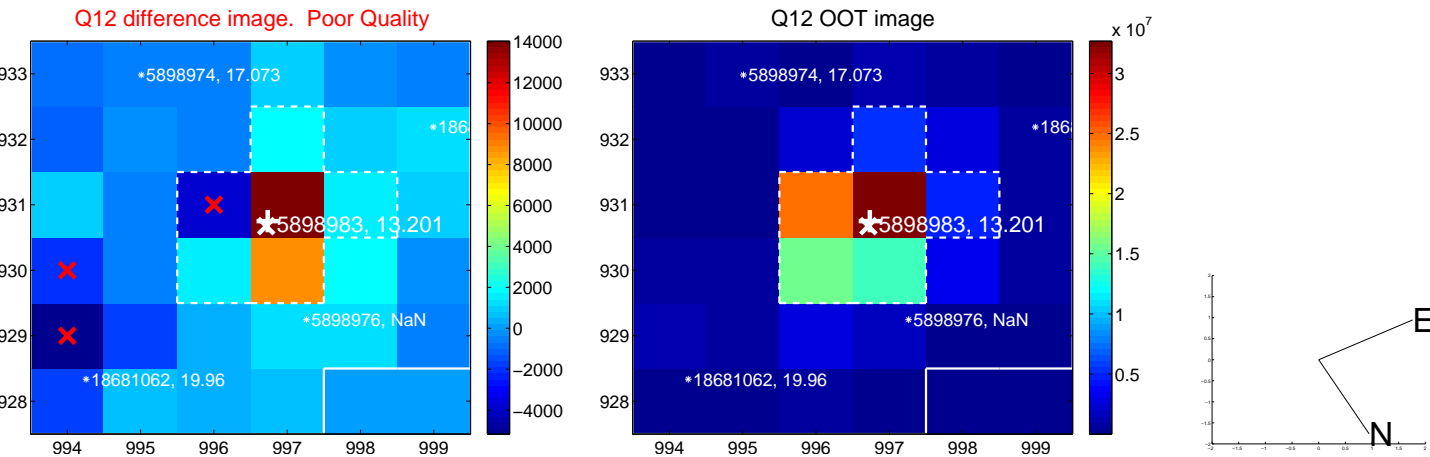
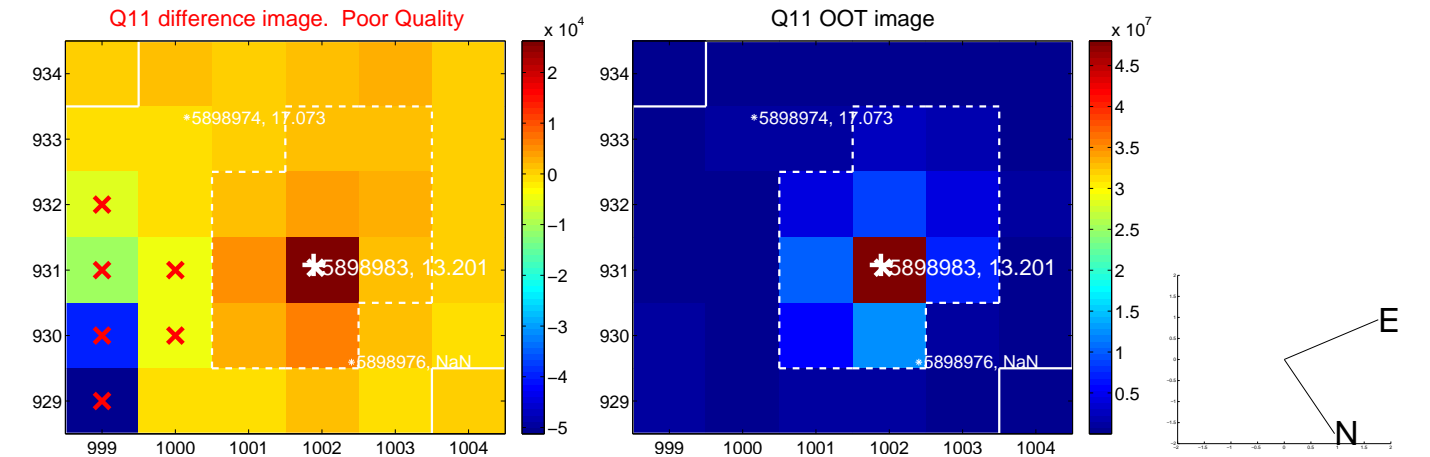
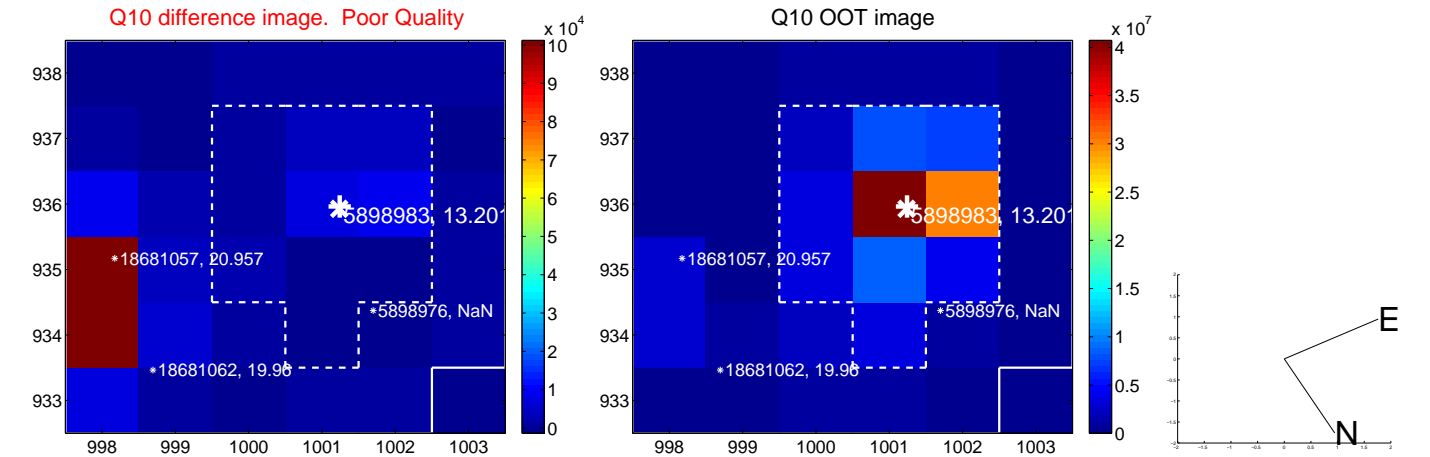
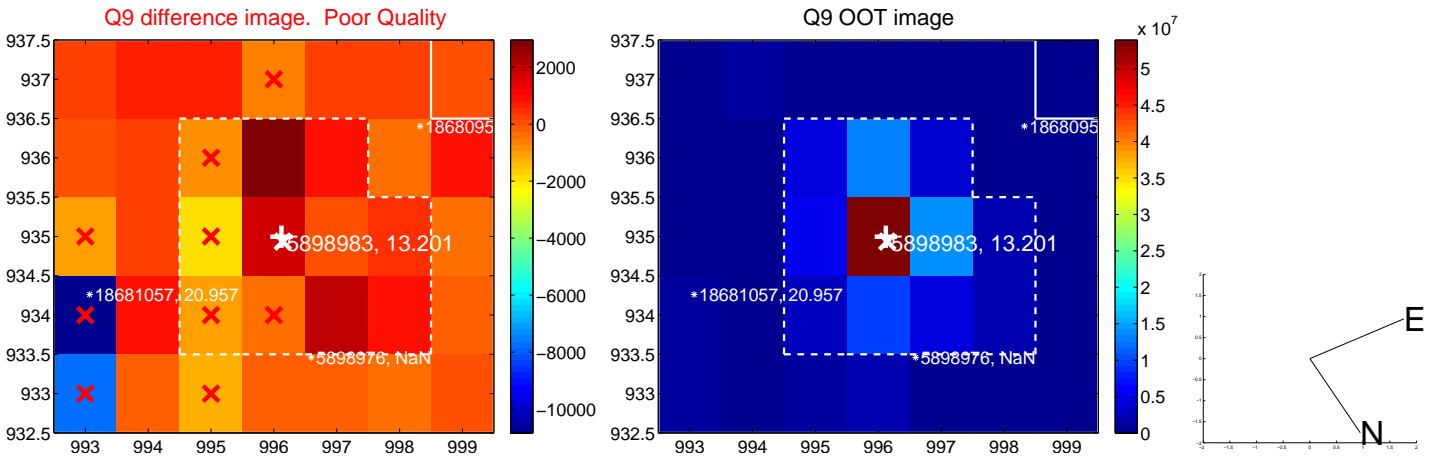
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



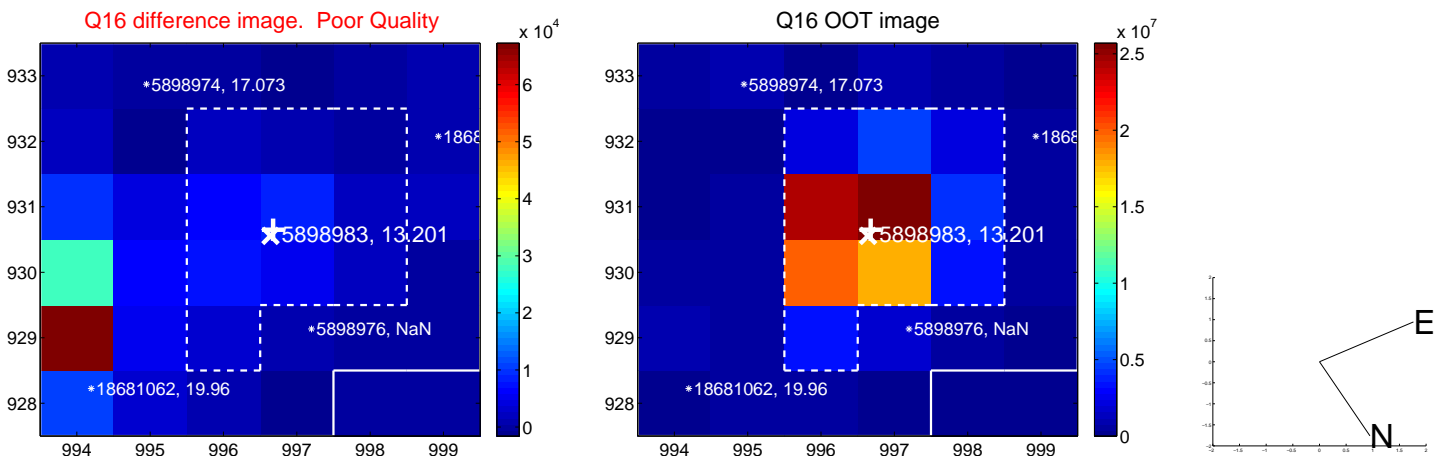
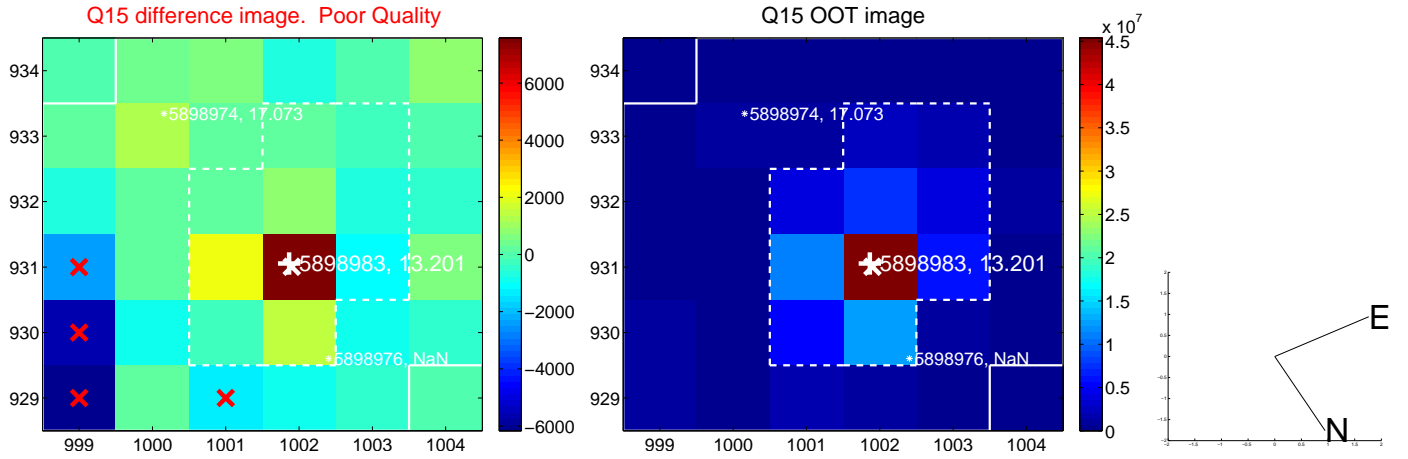
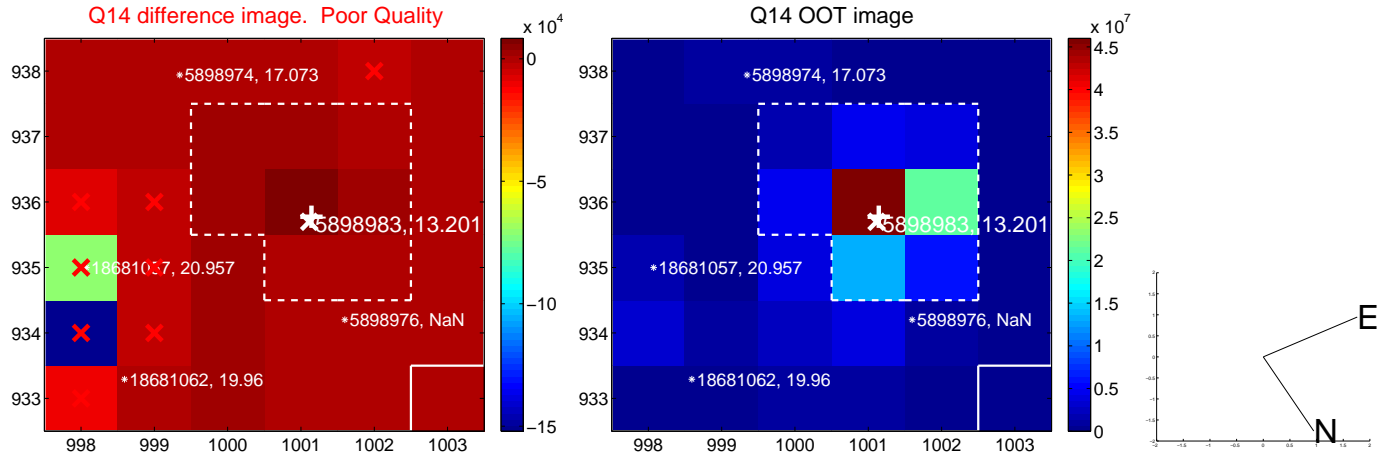
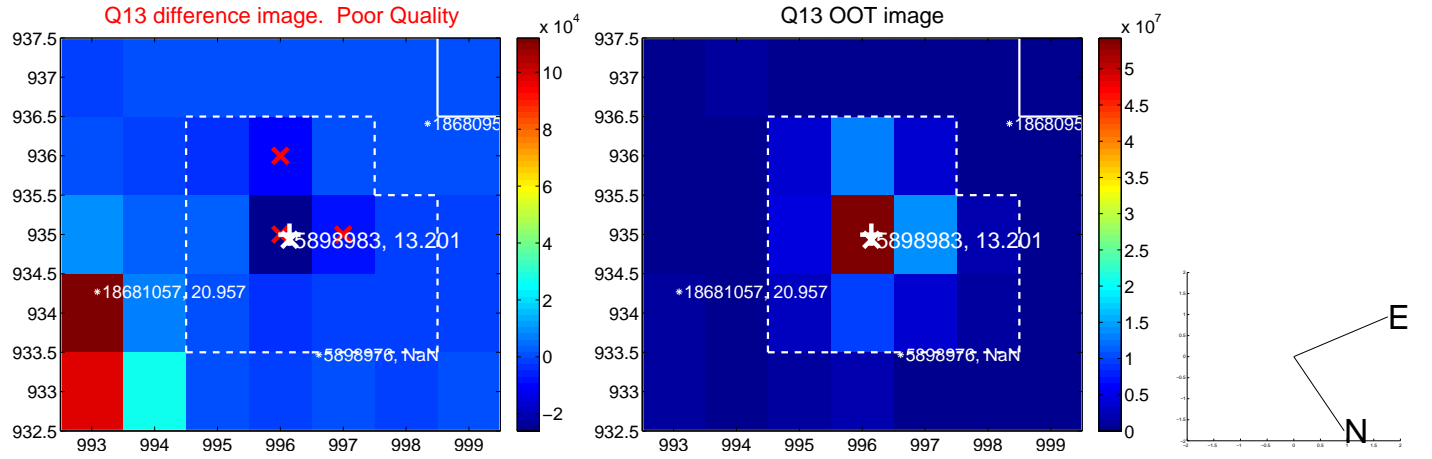
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



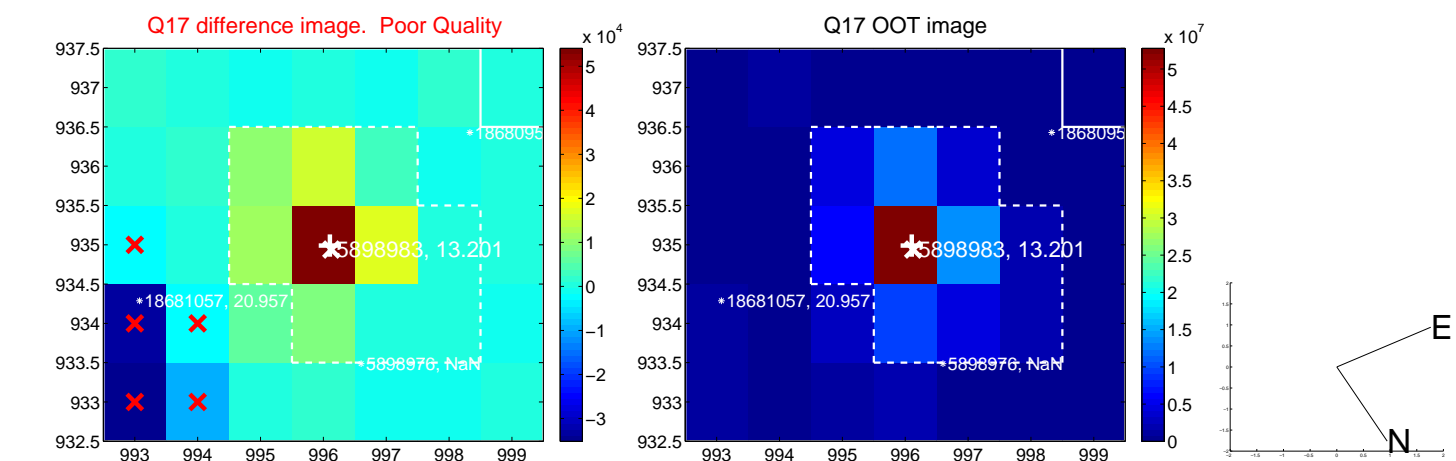
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



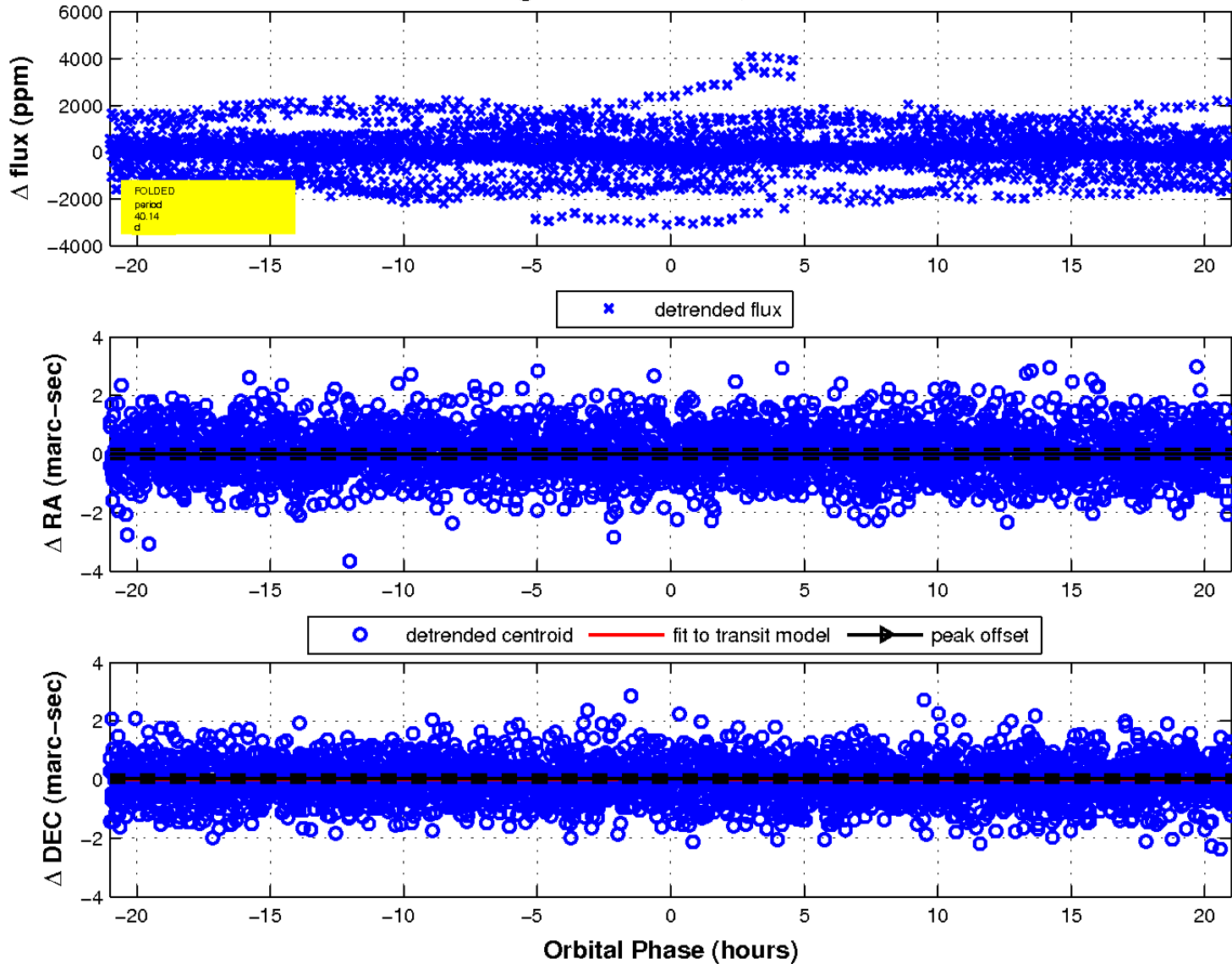
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

