

# KIC 003550598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003550598-01	OBS	No	482.408624	315.857182	1623.6	7.505	13.1	4.8	0.65	4786	2.58	0.18
003550598-02	OBS	No	519.598675	190.733501	1756.4	3.490	9.4	5.9	0.65	4786	2.63	0.17
003550598-03	OBS	No	562.590315	315.321065	1876.8	5.291	9.3	6.0	0.65	4786	2.76	0.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003550598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003550598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003550598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—MOD_POS_DV—CENT_FEW_DIFFS

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

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

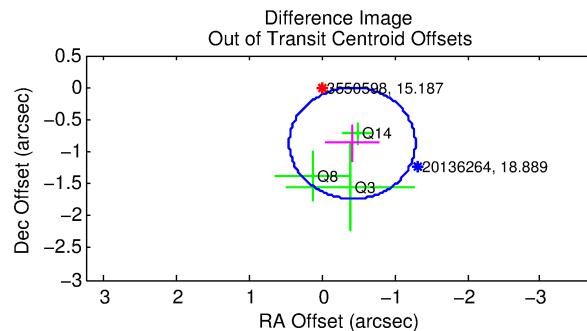
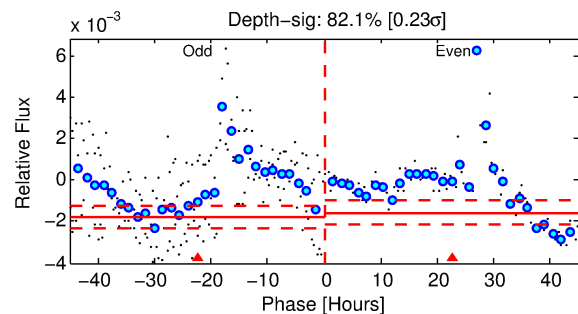
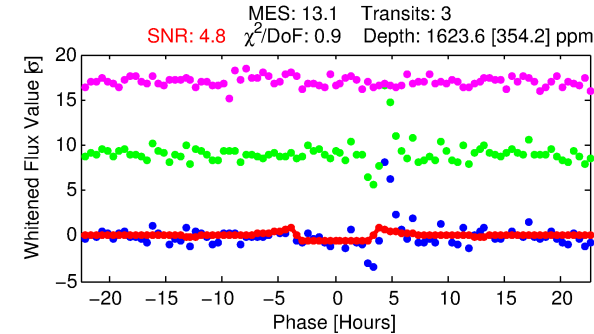
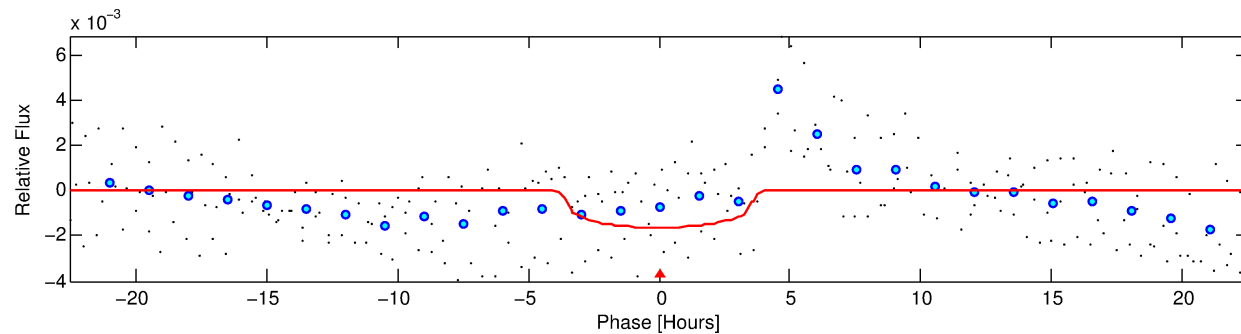
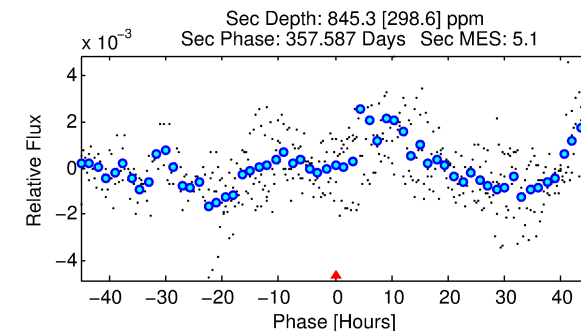
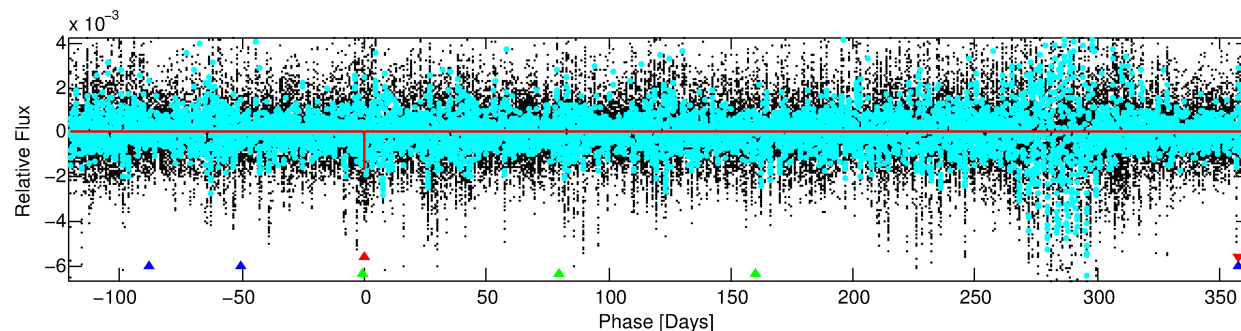
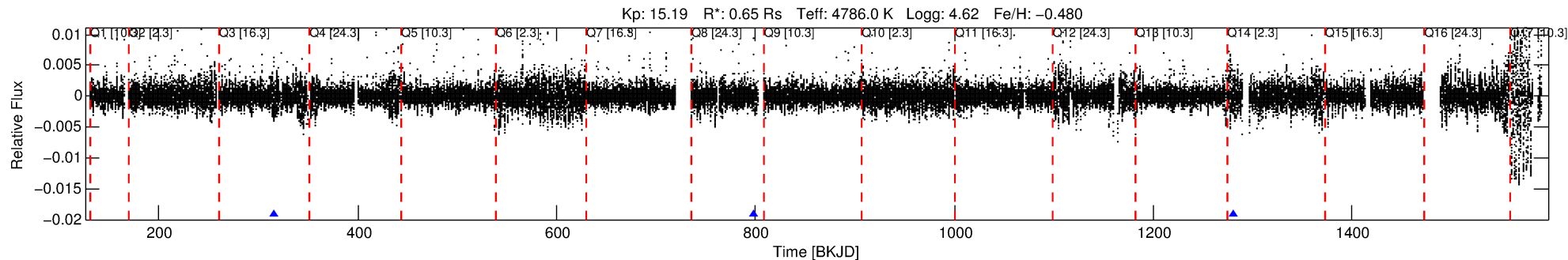
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003550598-01

No Significant Match Found

# DV One-Page Summary

KIC: 3550598 Candidate: 1 of 3 Period: 482.409 d



## DV Fit Results:

Period = 482.40862 [0.01112] d  
Epoch = 315.8572 [0.0116] BKJD  
Rp/R\* = 0.0366 [0.0517]  
a/R\* = 467.73 [2190.57]  
b = 0.41 [9.69]  
Seff = 0.18 [0.03]  
Teq = 167 [7] K  
Rp = 2.58 [3.65] Re  
a = 1.0347 [0.0768] AU  
Ag = 74634.74 [212309.00] [0.35 $\sigma$ ]  
Teff = 4263 [3033] K [1.35 $\sigma$ ]

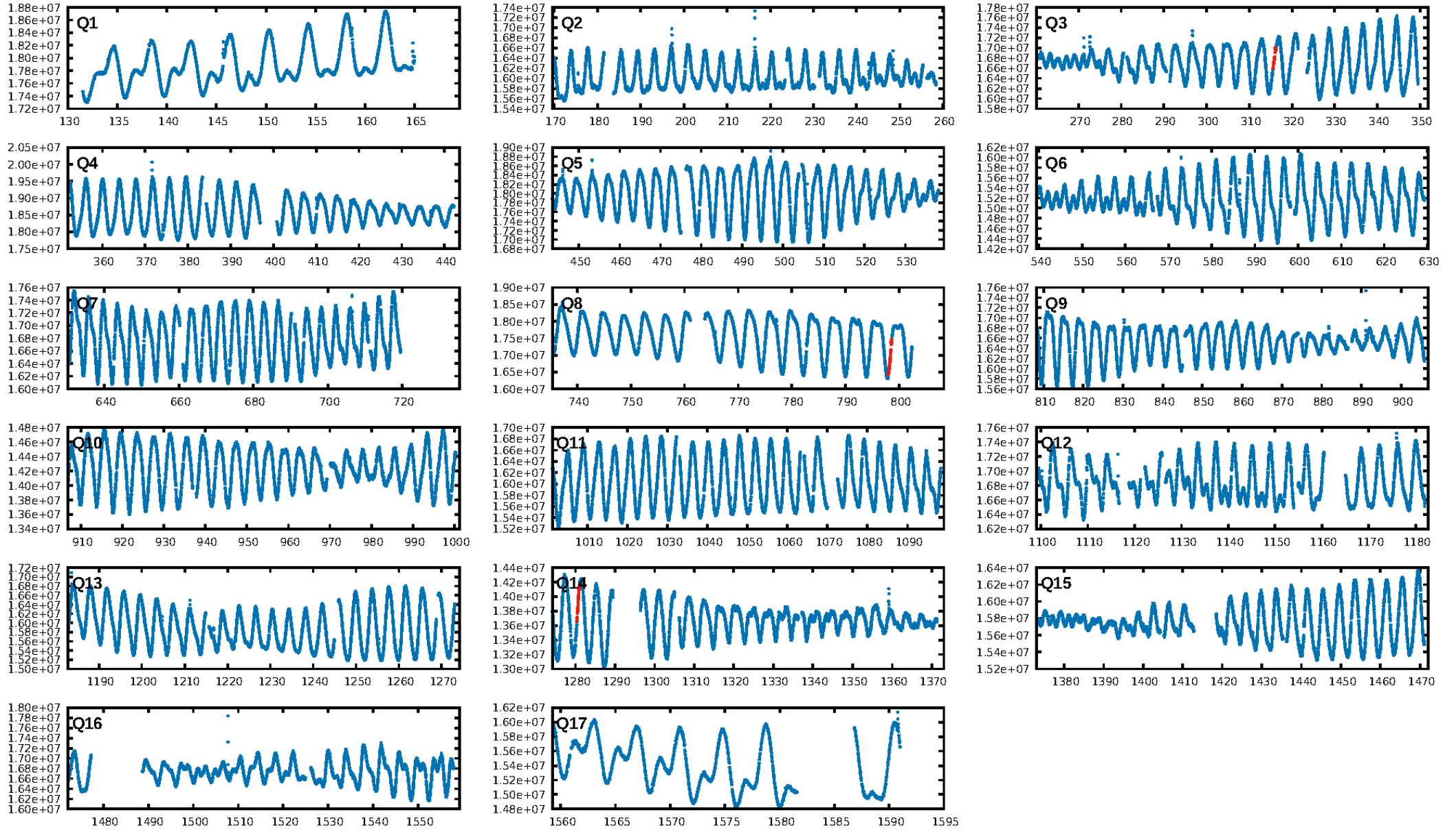
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [107.84 $\sigma$ ]  
ModelChiSquare2-sig: 46.0%  
ModelChiSquareGof-sig: 99.6%  
**Bootstrap-pfa: 4.28e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.383  
Centroid-sig: 2.3%  
Centroid-so: 1.898 arcsec [1.22 $\sigma$ ]  
**OotOffset-rm: 0.963 arcsec [3.34 $\sigma$ ]**  
KicOffset-rm: 0.253 arcsec [0.74 $\sigma$ ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.67 [2/3]

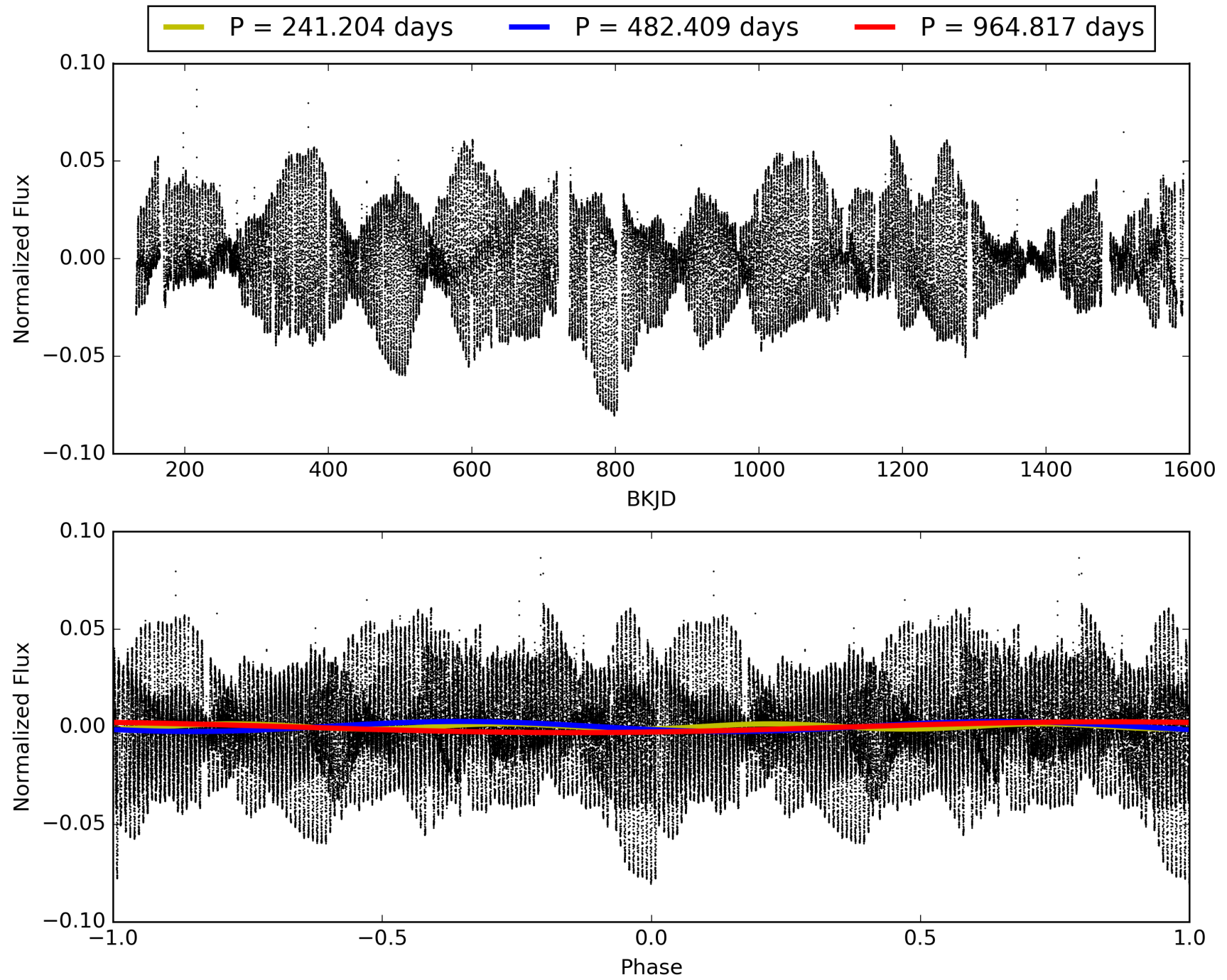
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:43:35 Z

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

# TCE 003550598-01, PDC Light Curves

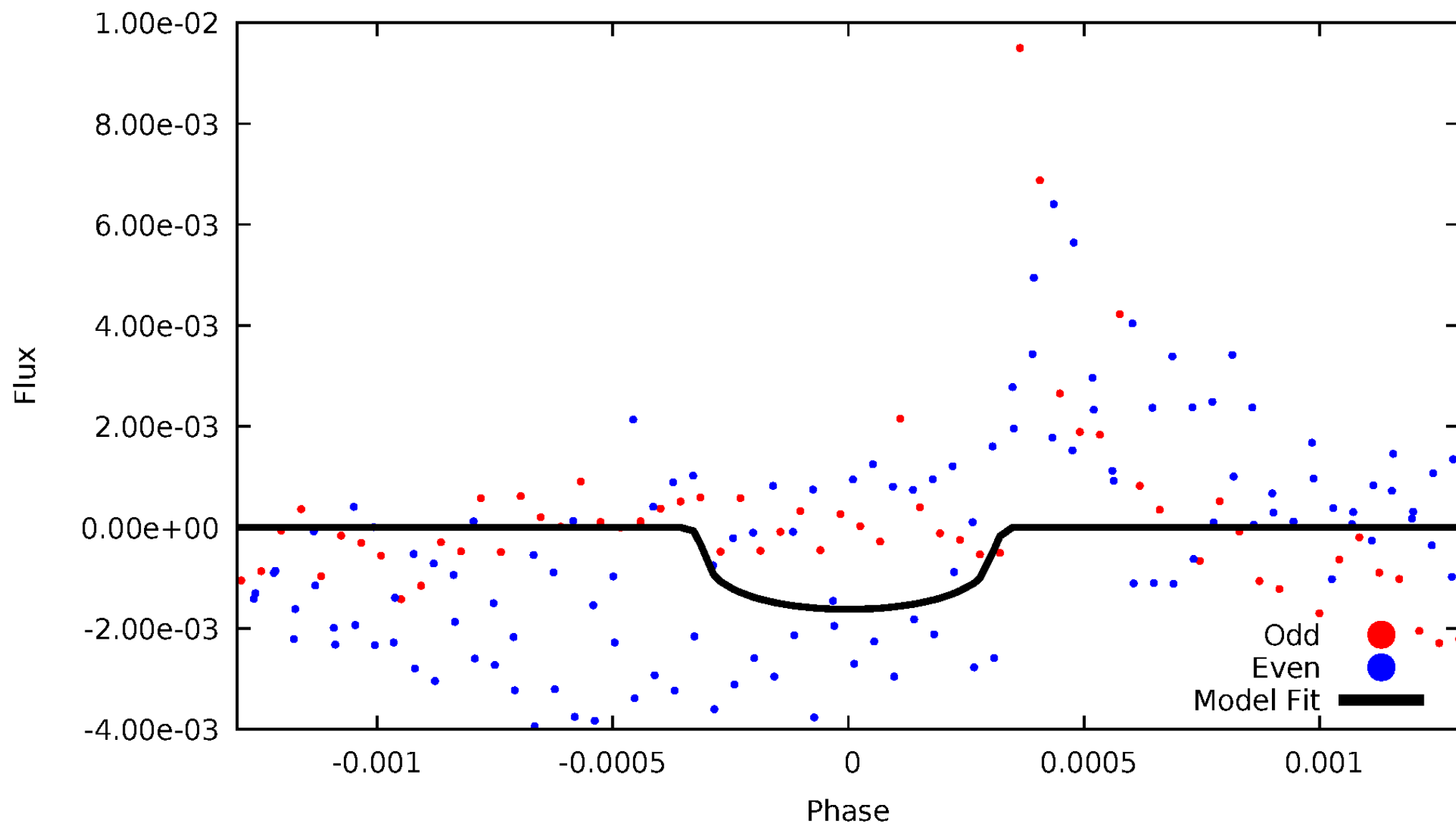


TCE 003550598-01



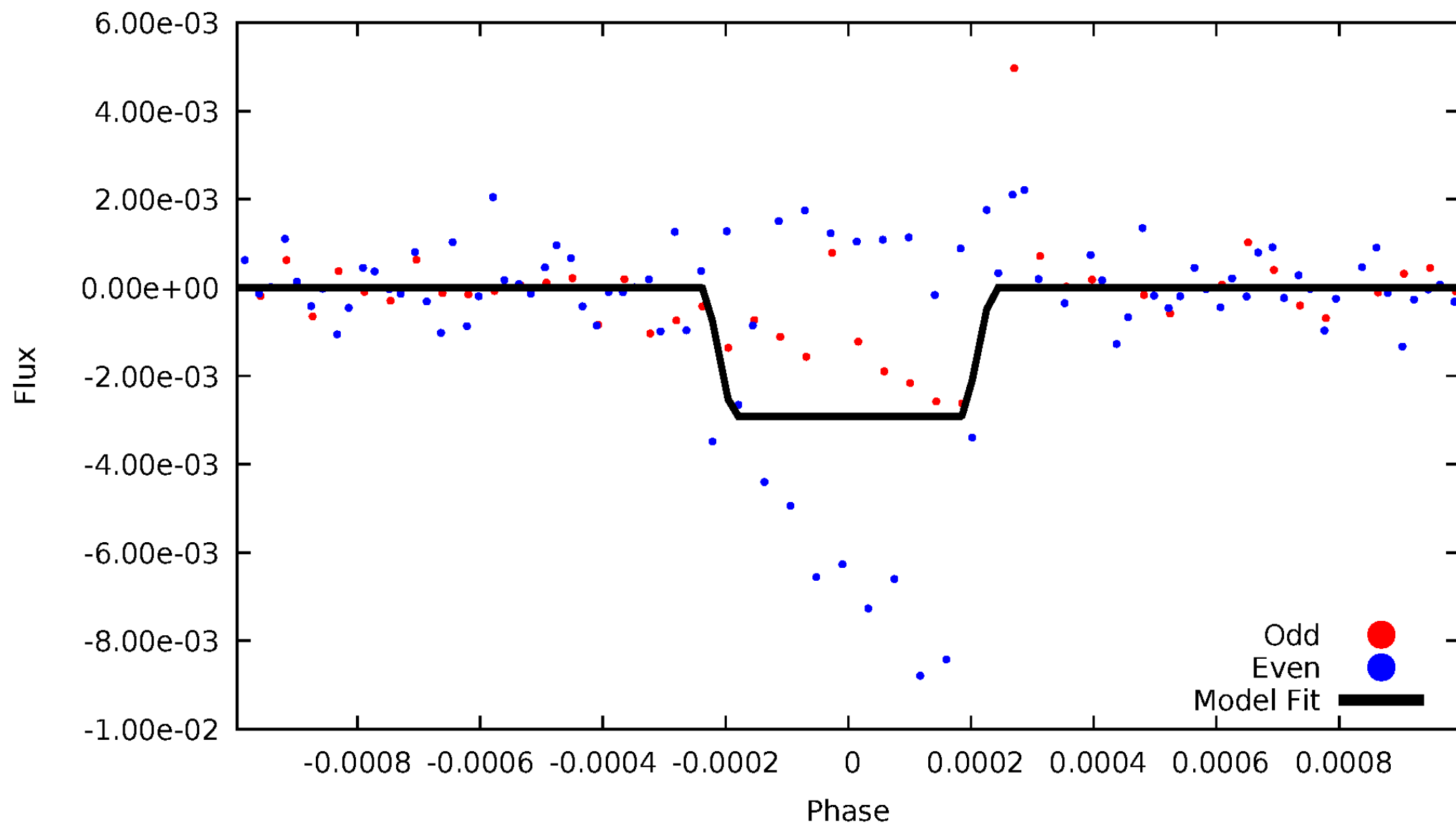
# DV Odd/Even

TCE 003550598-01



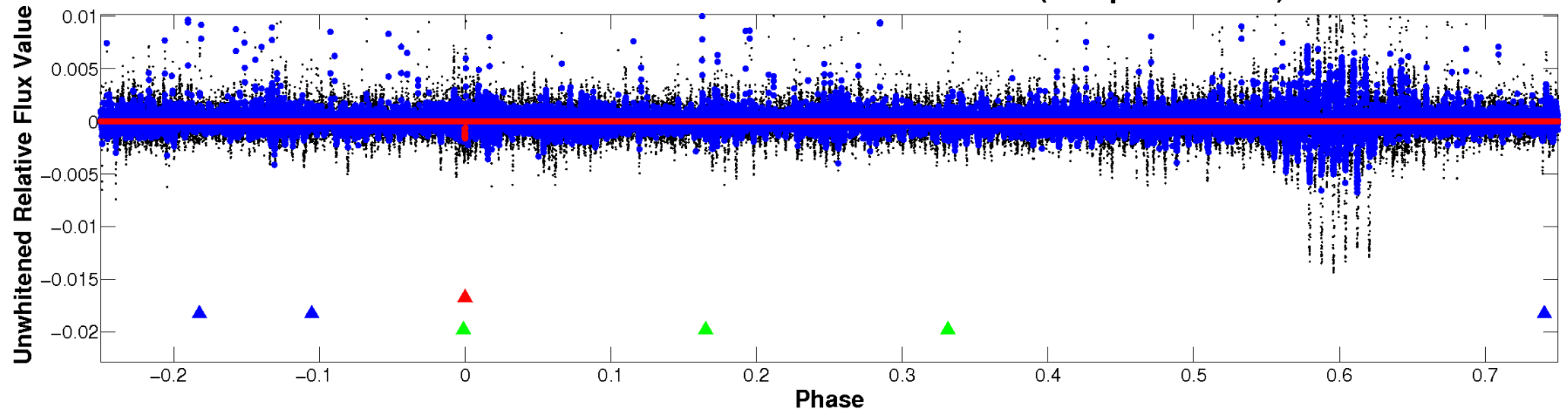
# ALT Odd/Even

TCE 003550598-01

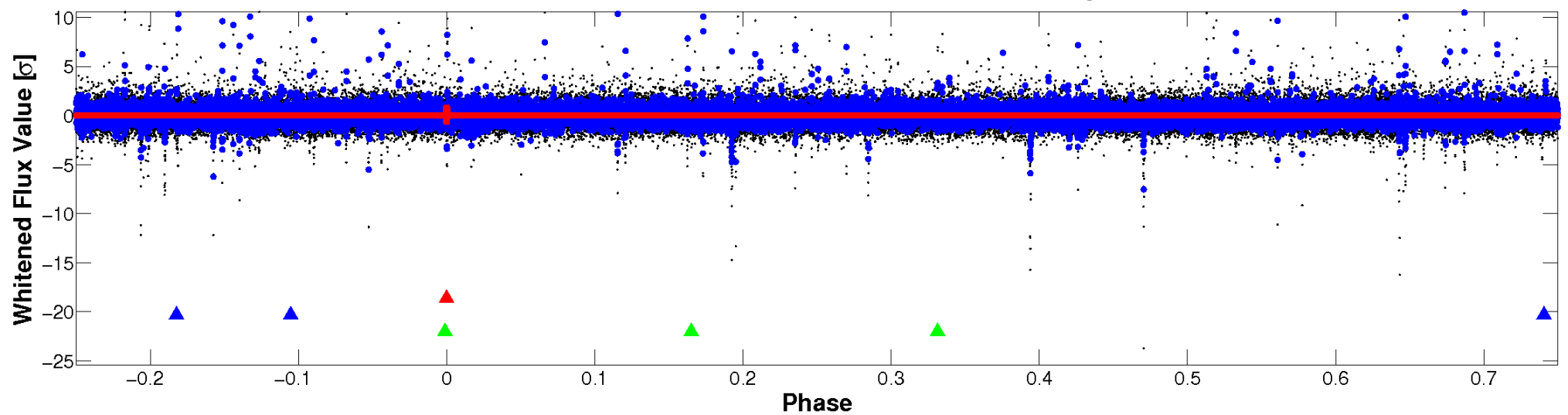


# Non-Whitened Vs. Whitened Light Curve

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

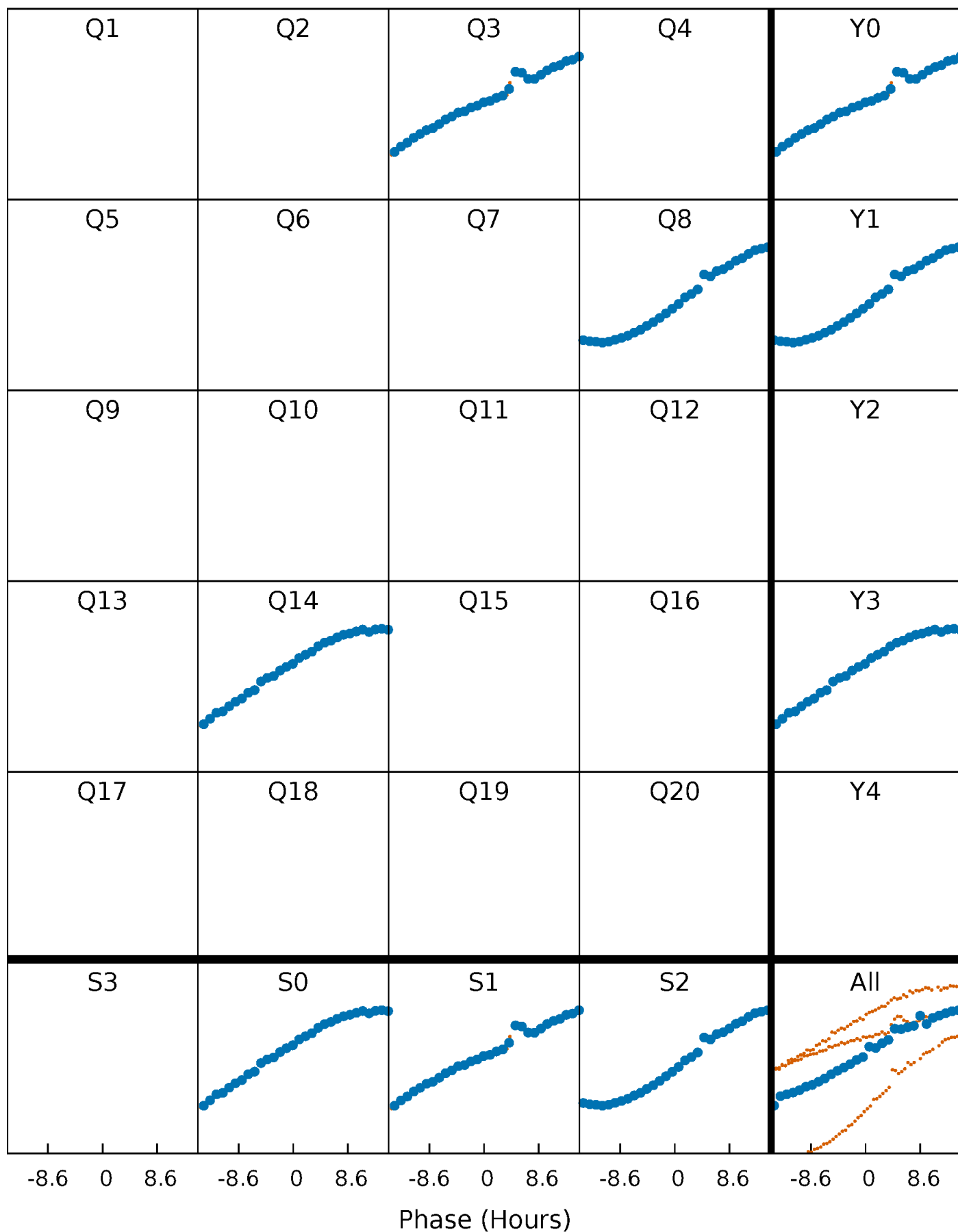


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

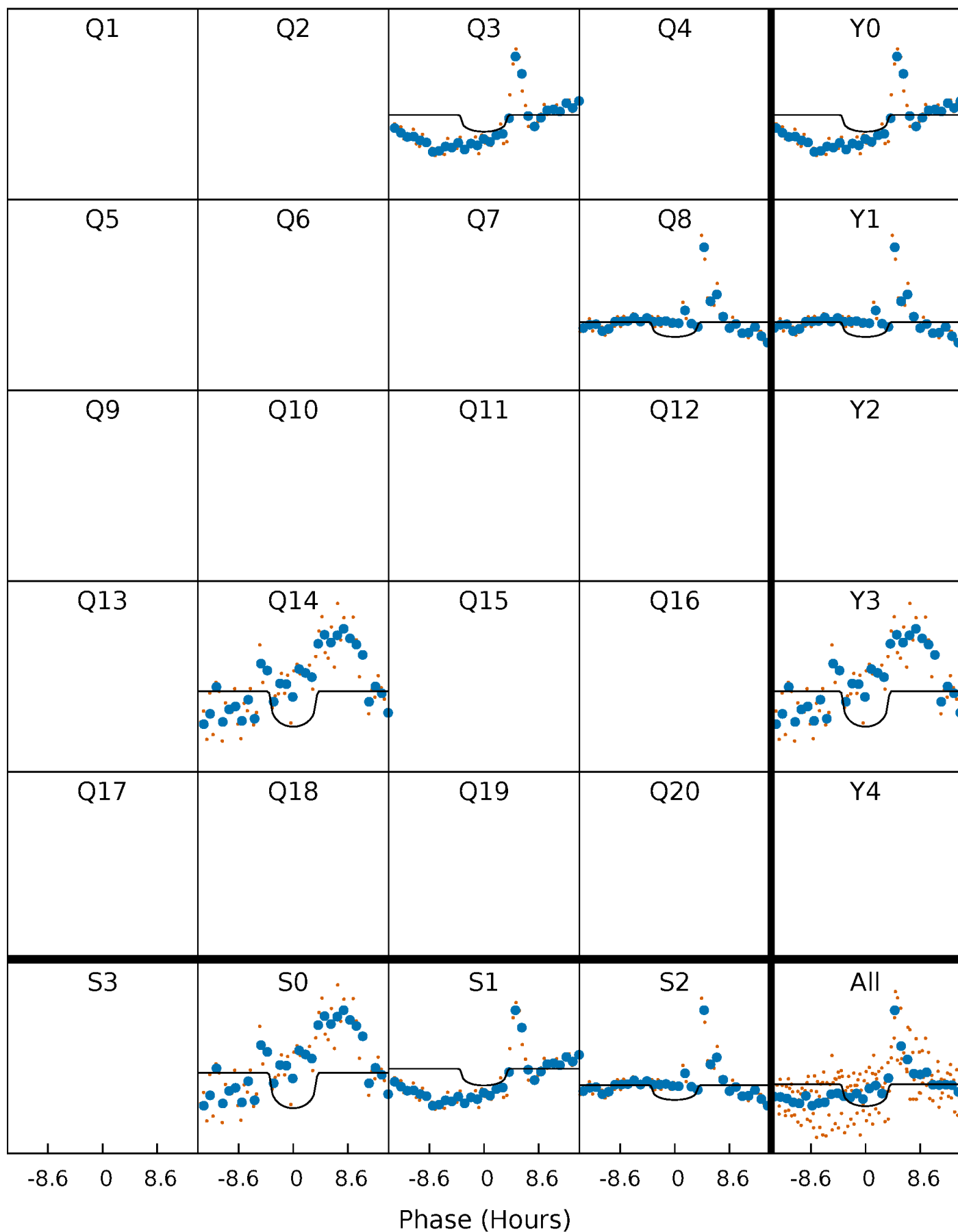
TCE 003550598-01 P=482.408624 Days  $T_0=315.857182$  (BKJD)





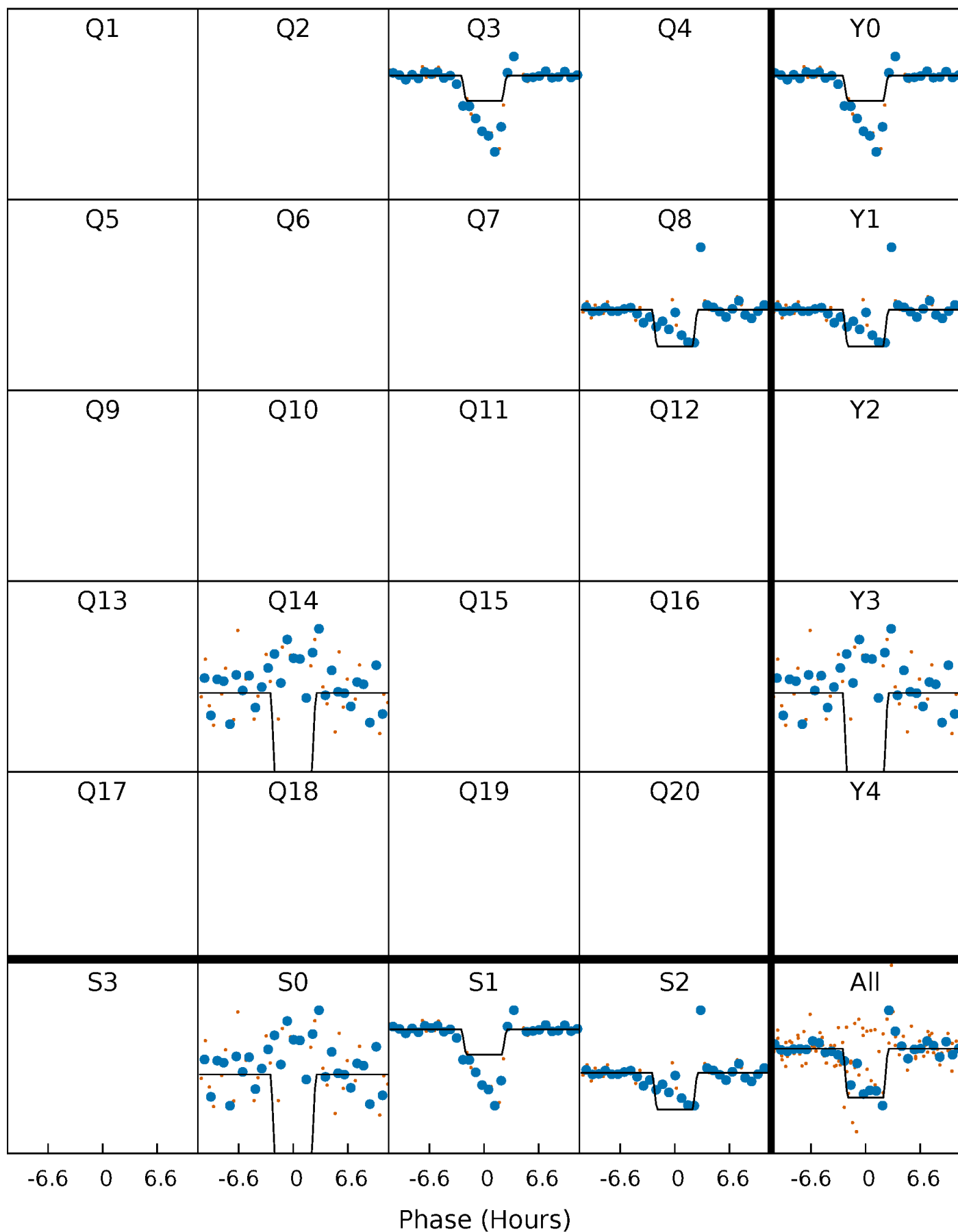
# DV Quarter-Phased Transit Curves

TCE 003550598-01 P=482.408624 Days  $T_0=315.857182$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

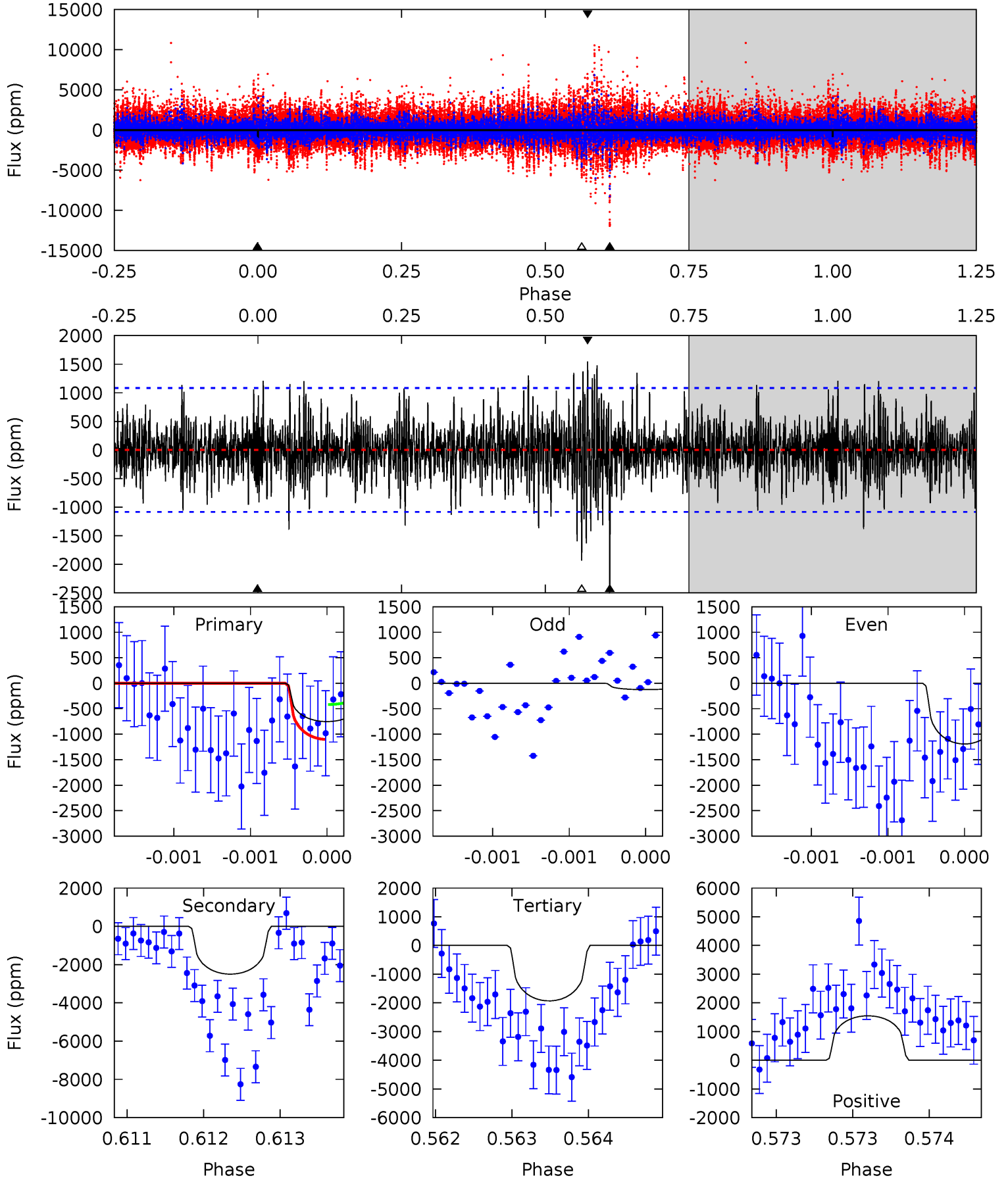
TCE 003550598-01 P=482.402296 Days  $T_0=315.929199$  (BKJD)



# DV Model-Shift Uniqueness Test

003550598-01, P = 482.408624 Days, E = 315.857182 Days

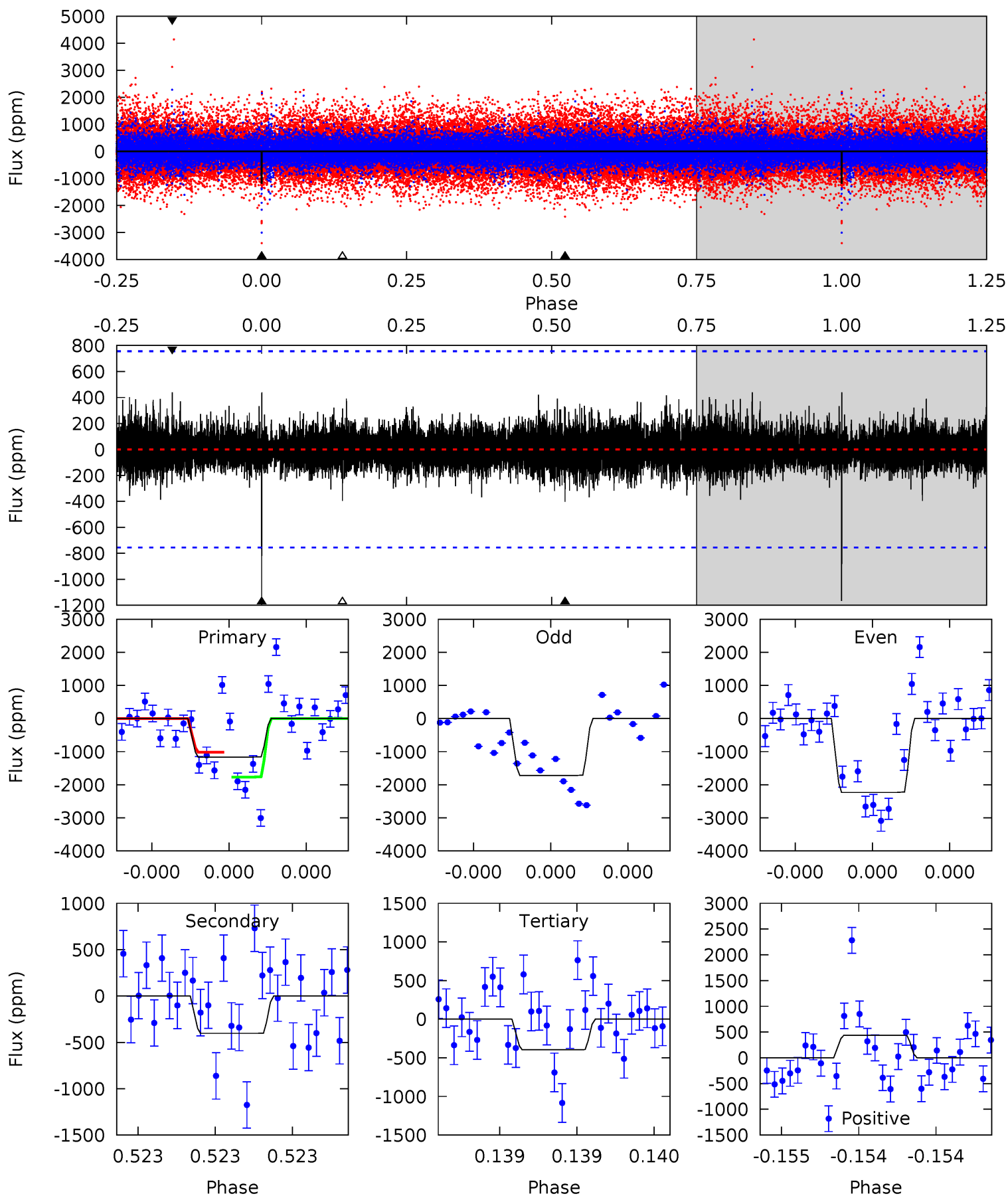
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.84	12.7	9.85	7.90	5.53	3.41	1.94	-6.01	-4.06	2.89	4.84	1.83	-5.99	0.38	1.76



# Alt Model-Shift Uniqueness Test

003550598-01, P = 482.402296 Days, E = 315.929199 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
8.63	2.99	2.93	3.24	5.59	3.51	0.66	5.70	5.39	0.05	-0.26	2.21	1.53	0.27	0



### Stellar Parameters For KIC 003550598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4786^{+144}_{-144}$	$4.620^{+0.059}_{-0.032}$	$-0.480^{+0.300}_{-0.300}$	$0.646^{+0.057}_{-0.057}$	$0.634^{+0.076}_{-0.041}$	$3.318^{+0.815}_{-0.451}$
	+3%/-3%	+1%/-1%	+62%/-62%	+9%/-9%	+12%/-6%	+25%/-14%
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 003550598-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-2497 \pm 196$	$3.68^{+3.31}_{-2.45}$	$232^{+8}_{-8}$	$4667^{+3322}_{-946}$	$110098^{+835116}_{-78832}$
Alt.	$-403 \pm 135$	$4.40^{+3.63}_{-2.74}$	$232^{+8}_{-9}$	$3189^{+1285}_{-483}$	$11561^{+74303}_{-8085}$

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

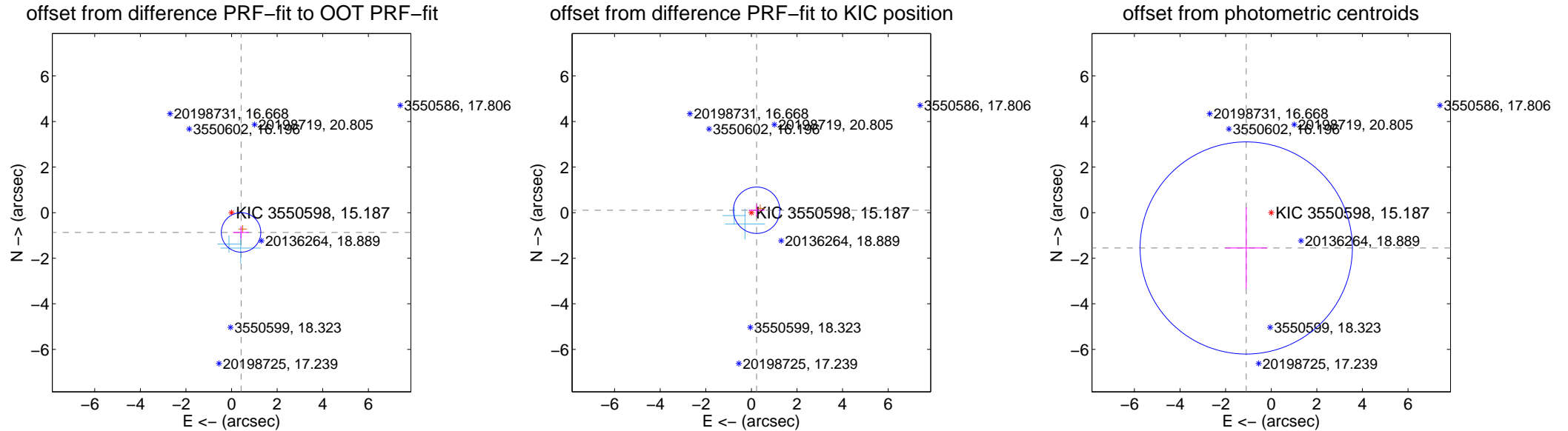
## DV Centroid Data

Supplemental centroid analysis for 003550598-01. Kepler magnitude: 15.19. Transit SNR 4.76

There are 2 quarters with good PRF difference image offsets

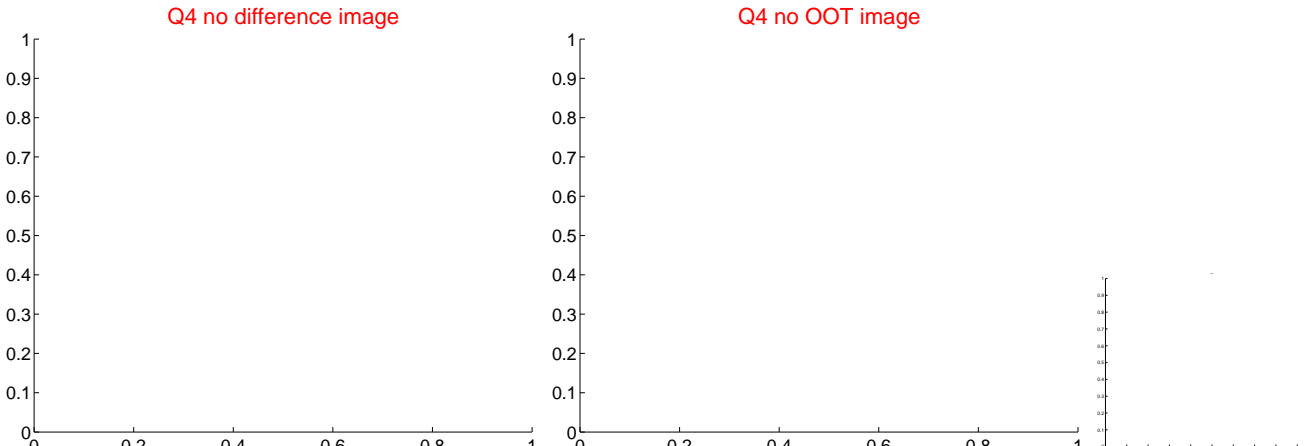
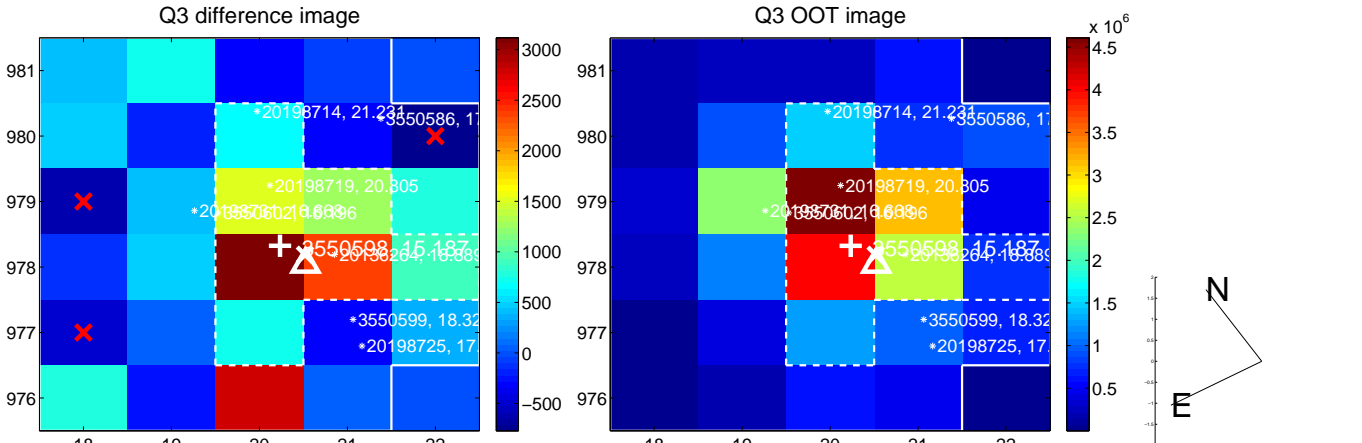
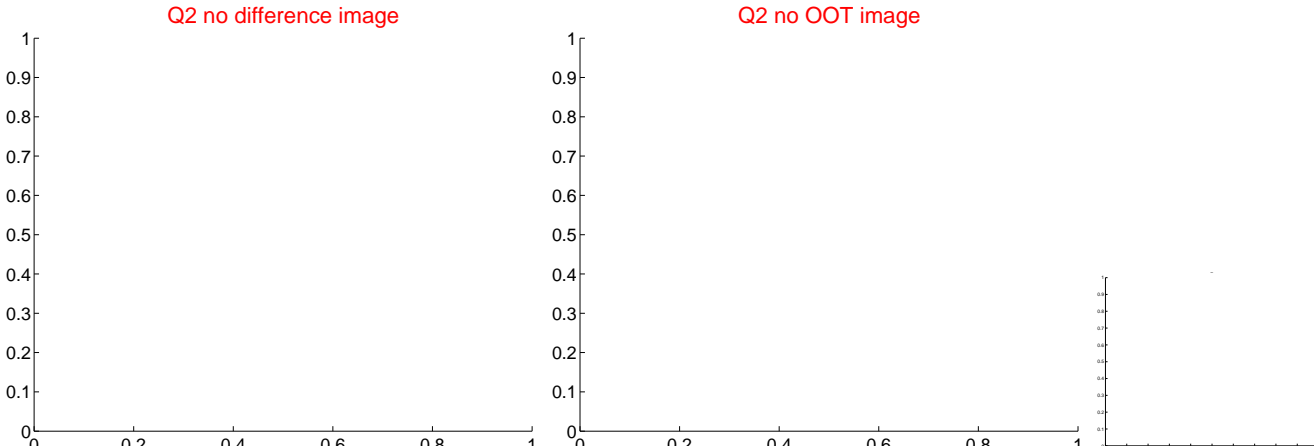
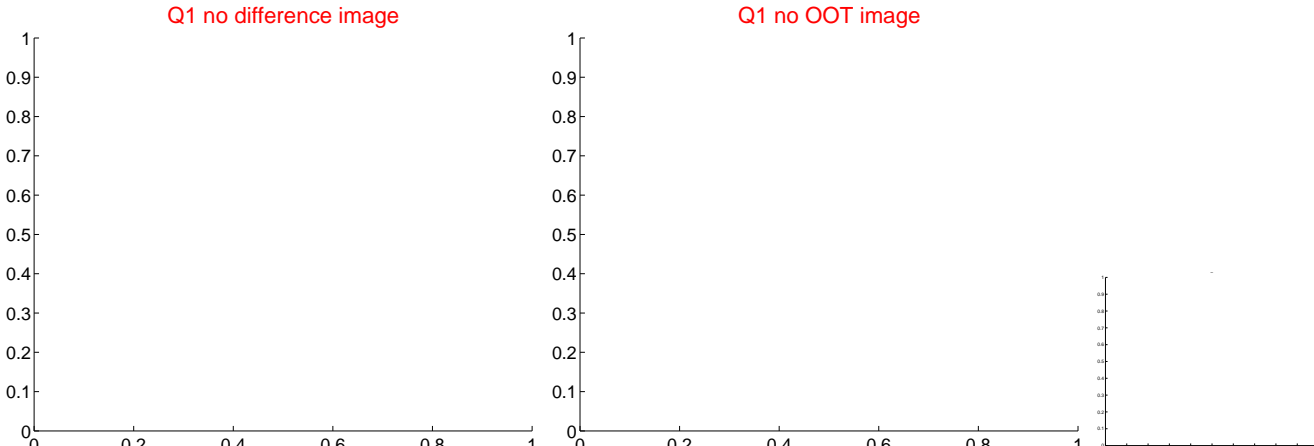
The direct PRF centroid is offset from the target star catalog position by about 0.92 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.963 \pm 0.289$	3.34	$-0.417 \pm 0.352$	$-0.868 \pm 0.272$
PRF-fit source offset from KIC position	$0.253 \pm 0.339$	0.74	$-0.230 \pm 0.352$	$0.106 \pm 0.272$
photometric centroid source offset	$1.90 \pm 1.55$	1.22	$1.10 \pm 0.92$	$-1.55 \pm 1.78$

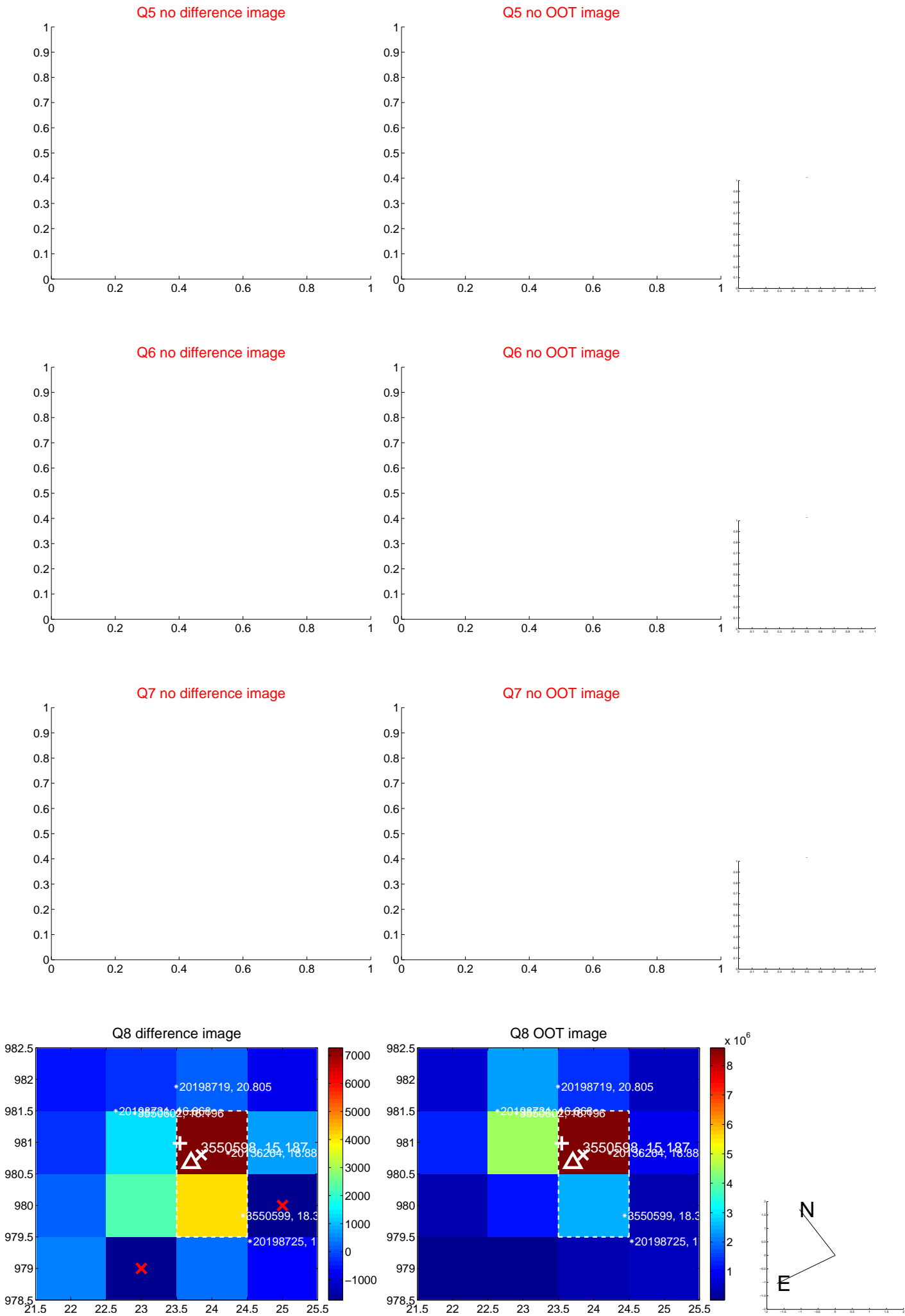


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 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.

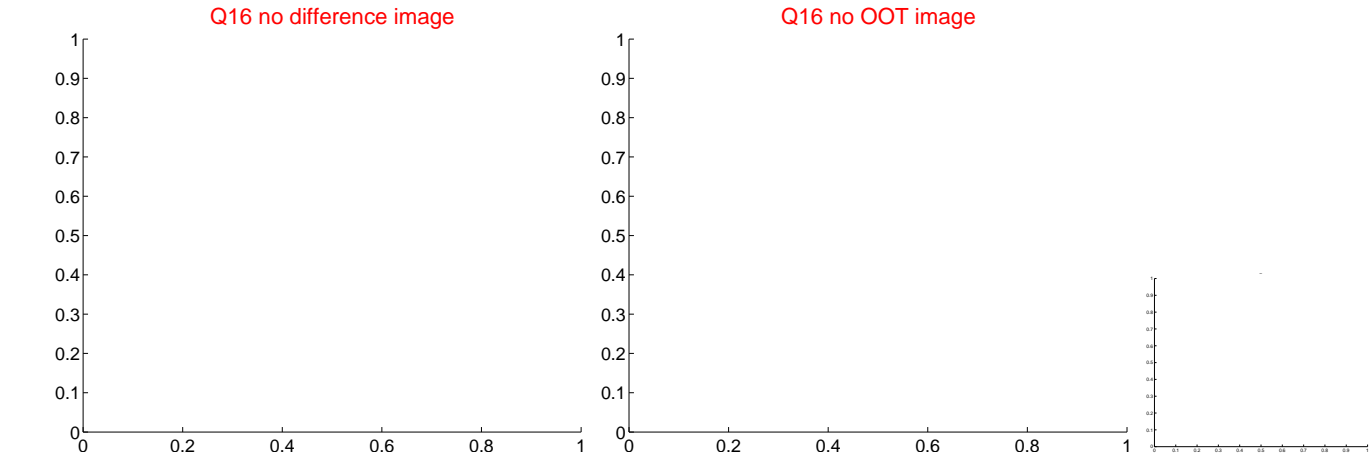
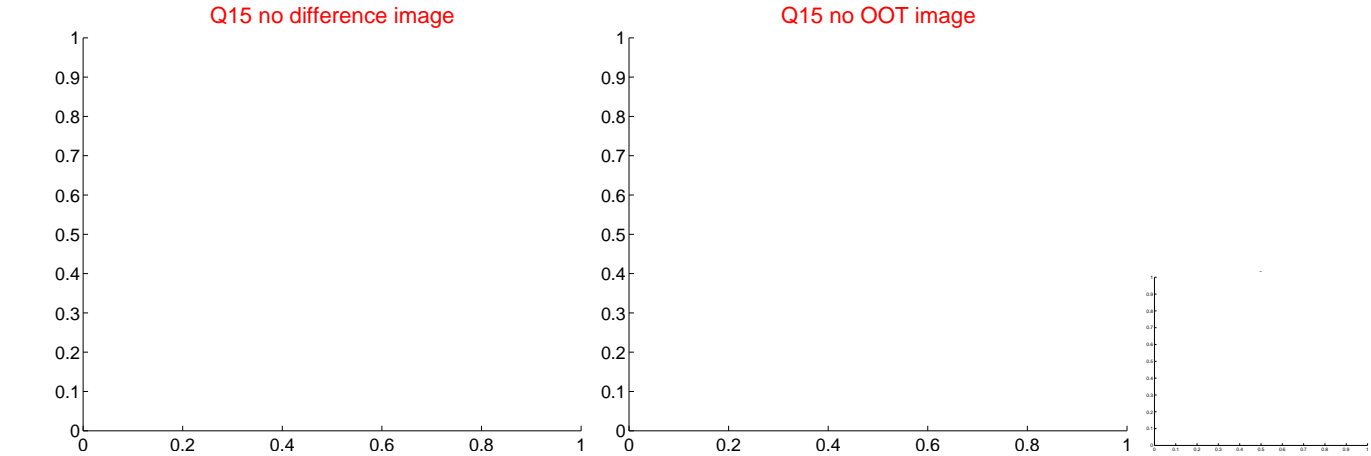
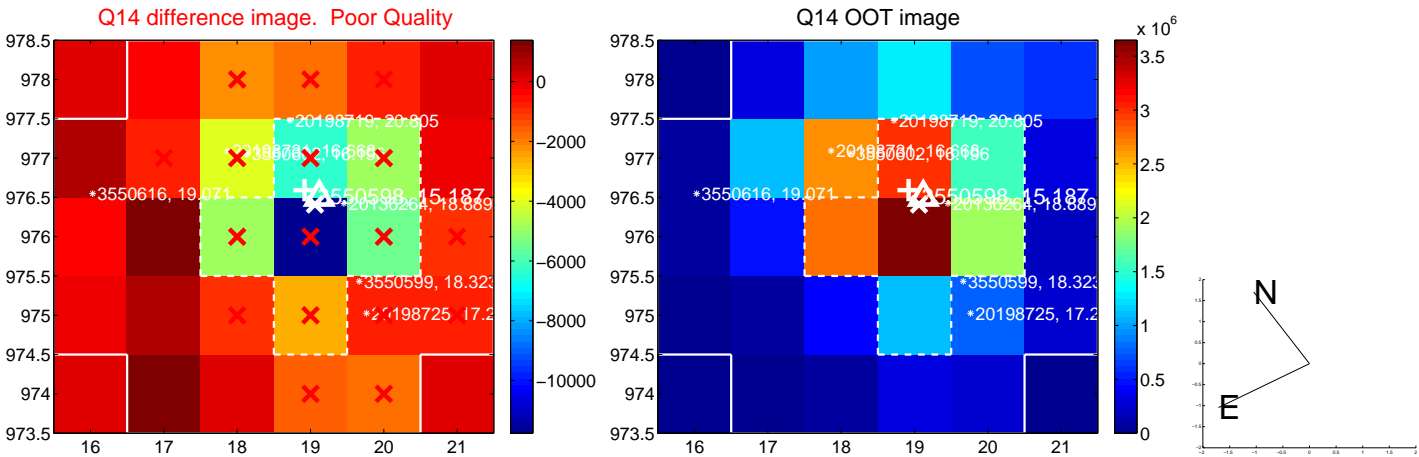
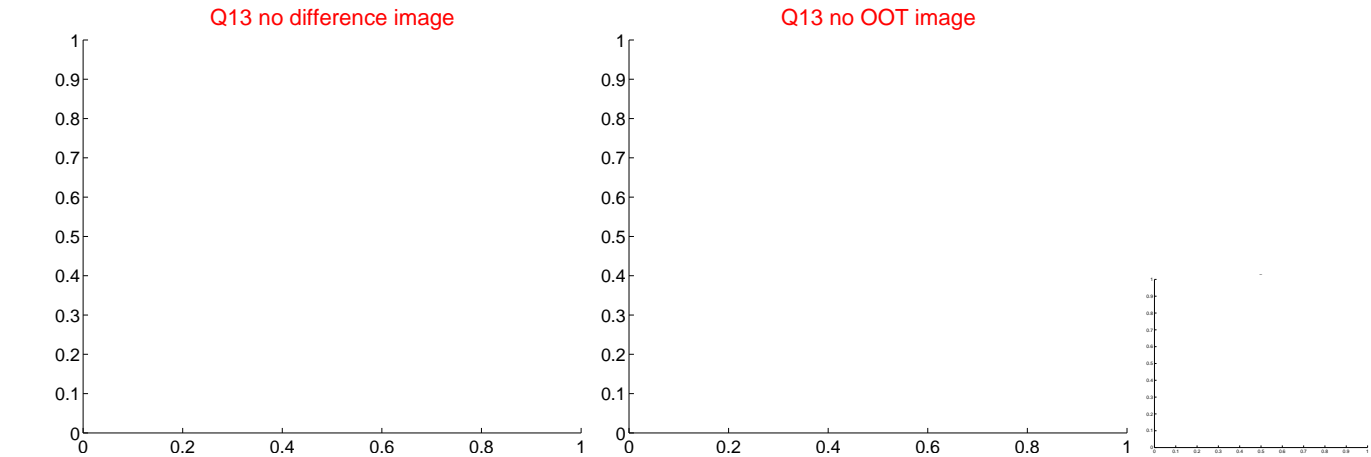




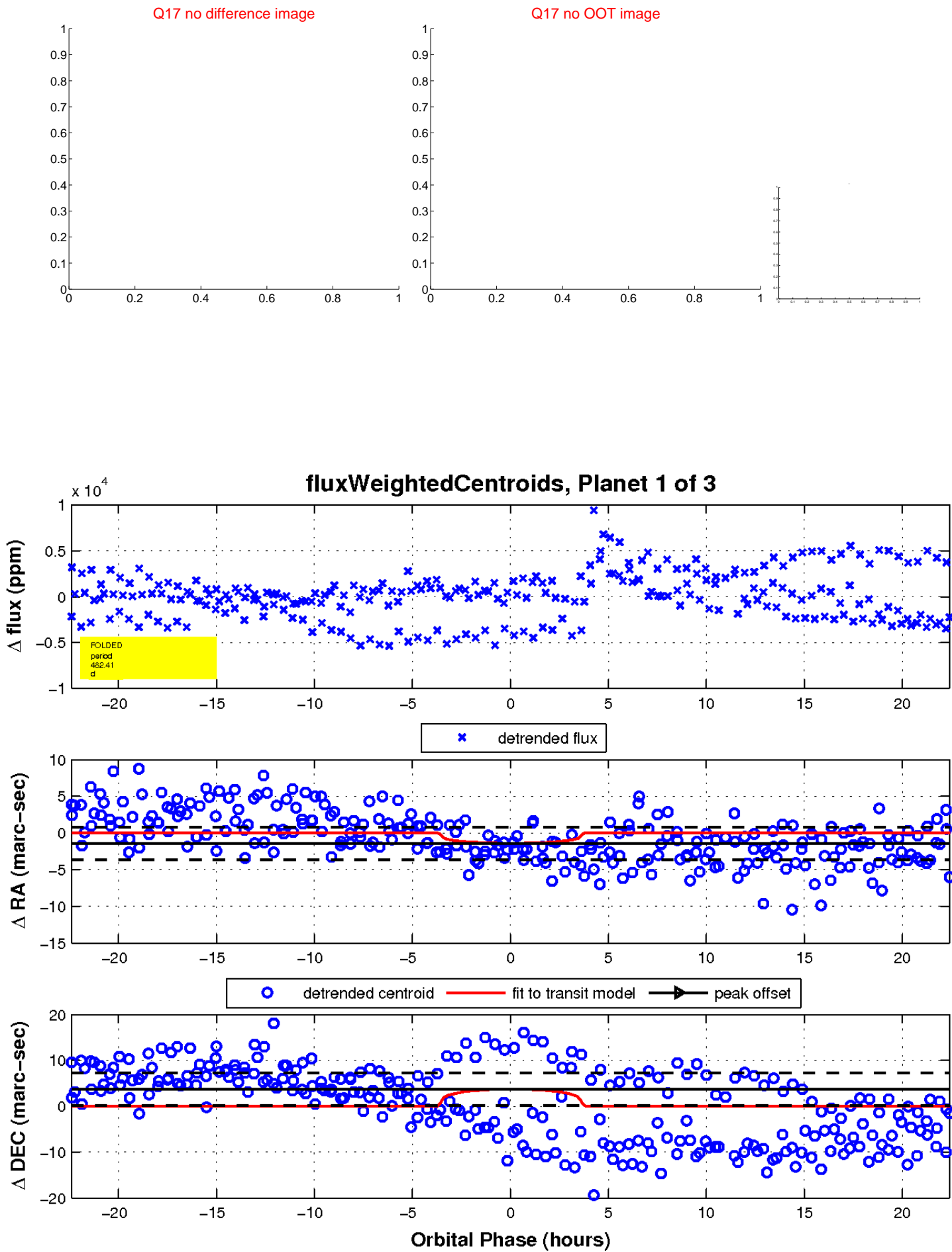
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

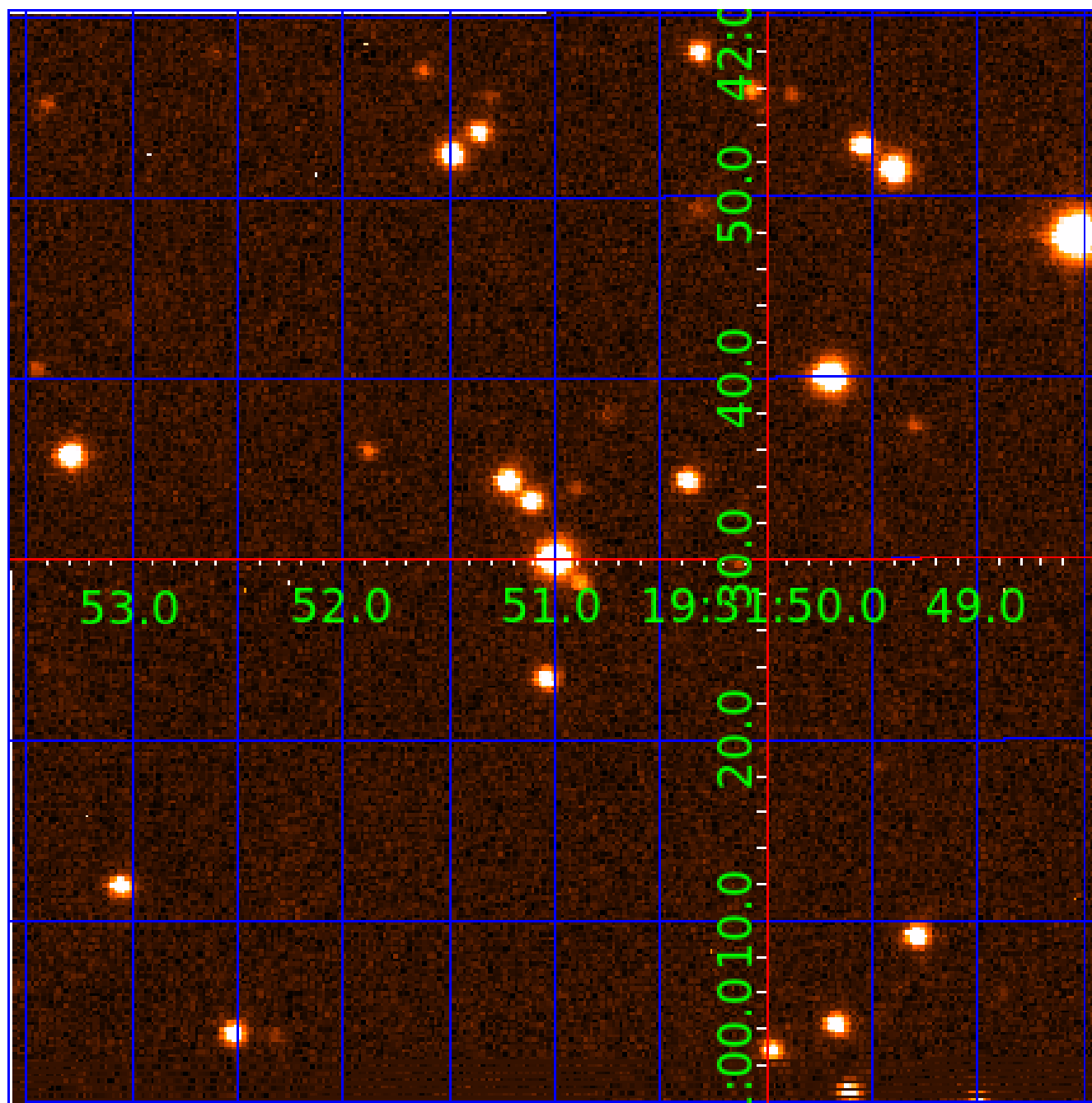


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003550598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003550598-01	OBS	No	482.408624	315.857182	1623.6	7.505	13.1	4.8	0.65	4786	2.58	0.18
003550598-02	OBS	No	519.598675	190.733501	1756.4	3.490	9.4	5.9	0.65	4786	2.63	0.17
003550598-03	OBS	No	562.590315	315.321065	1876.8	5.291	9.3	6.0	0.65	4786	2.76	0.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003550598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003550598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003550598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—MOD_POS_DV—CENT_FEW_DIFFS

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

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

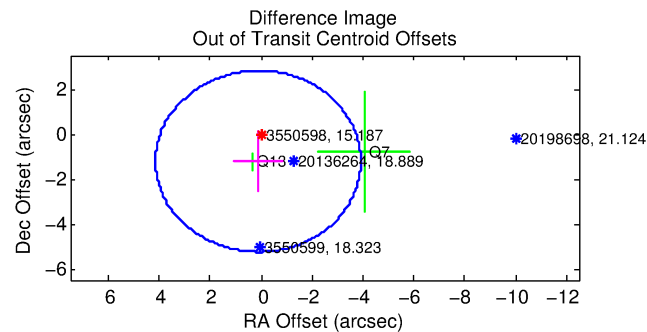
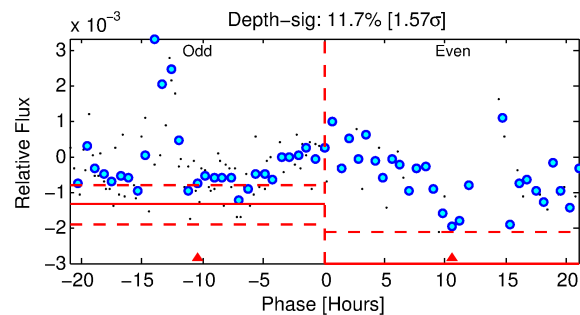
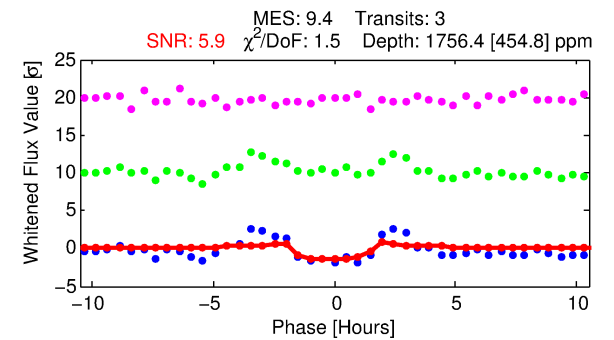
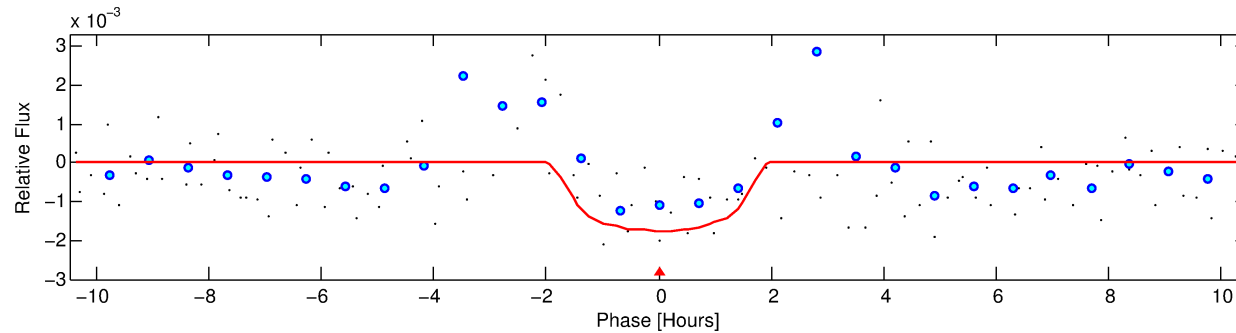
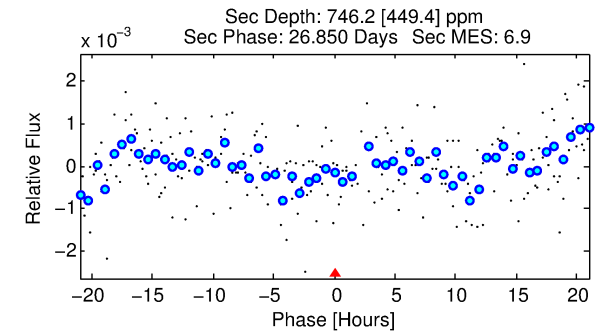
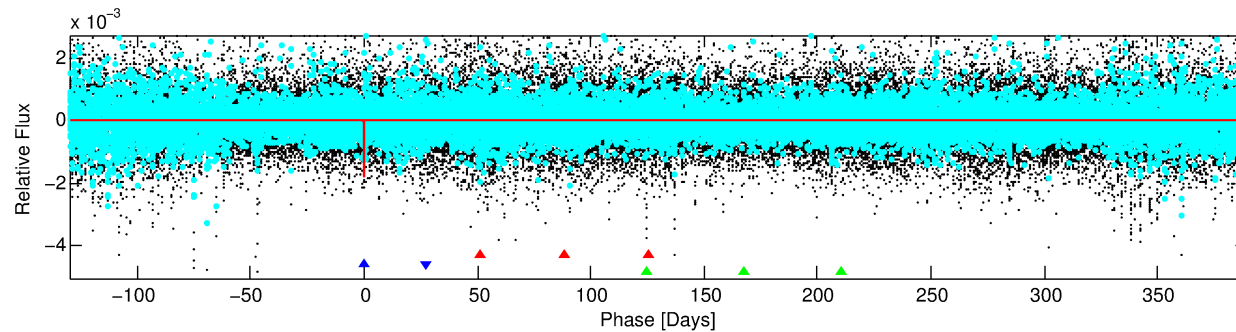
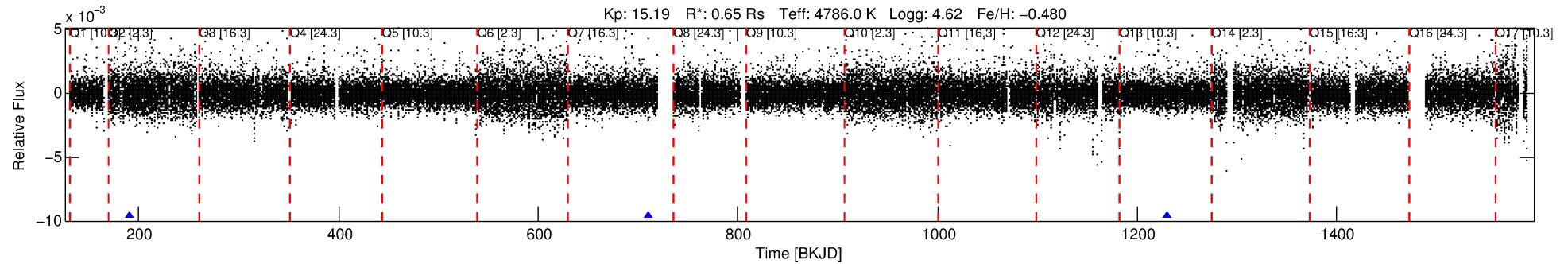
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003550598-02

No Significant Match Found

# DV One-Page Summary

KIC: 3550598 Candidate: 2 of 3 Period: 519.599 d



## DV Fit Results:

Period = 519.59868 [0.00937] d  
Epoch = 190.7335 [0.0144] BKJD  
Rp/R\* = 0.0374 [0.1736]  
a/R\* = 1156.81 [17841.45]  
b = 0.20 [73.74]  
Seff = 0.17 [0.03]  
Teq = 163 [7] K  
Rp = 2.63 [12.24] Re  
a = 1.0872 [0.0807] AU  
Ag = 69991.19 [651971.19] [0.11σ]  
Teffp = 4093 [9532] K [0.41σ]

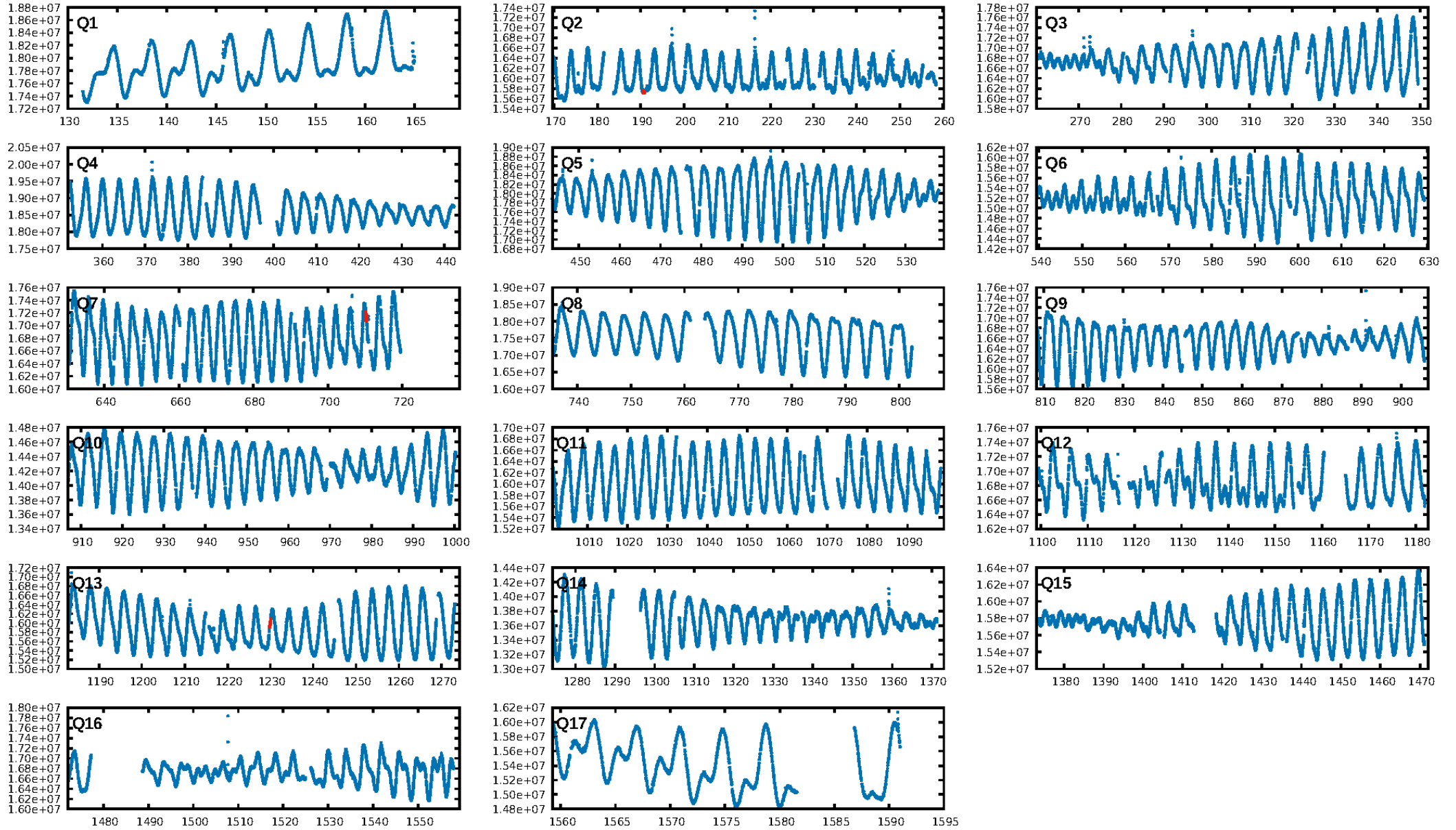
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [107.84σ]  
LongPeriod-sig: 100.0% [162.78σ]  
ModelChiSquare2-sig: 4.7%  
ModelChiSquareGof-sig: 91.6%  
**Bootstrap-pfa: 2.40e-07**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.776  
Centroid-sig: 29.7%  
Centroid-so: 0.460 arcsec [0.41σ]  
OotOffset-rm: 1.225 arcsec [0.91σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-rm: 1.288 arcsec [0.54σ]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

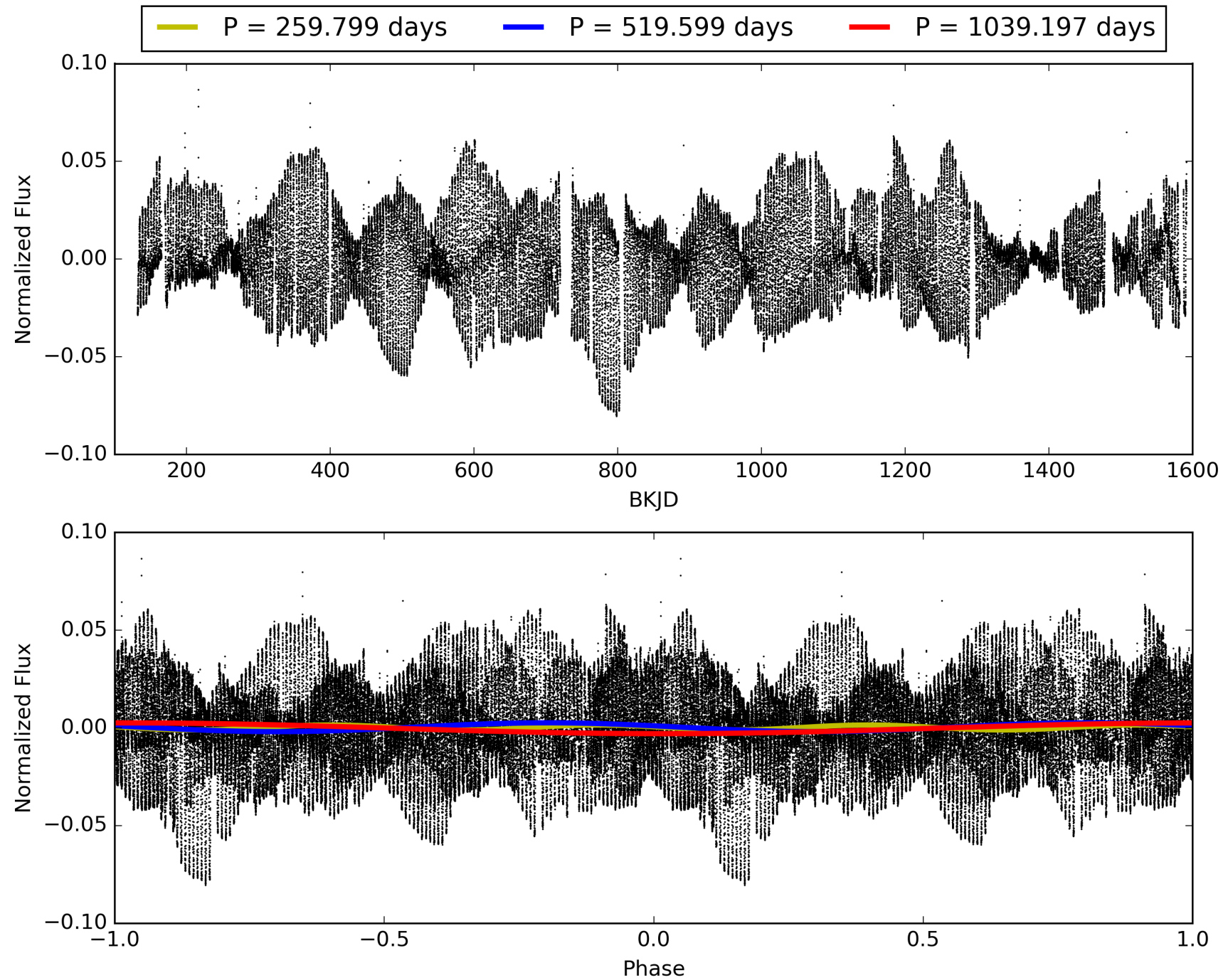
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:43:55 Z

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

# TCE 003550598-02, PDC Light Curves



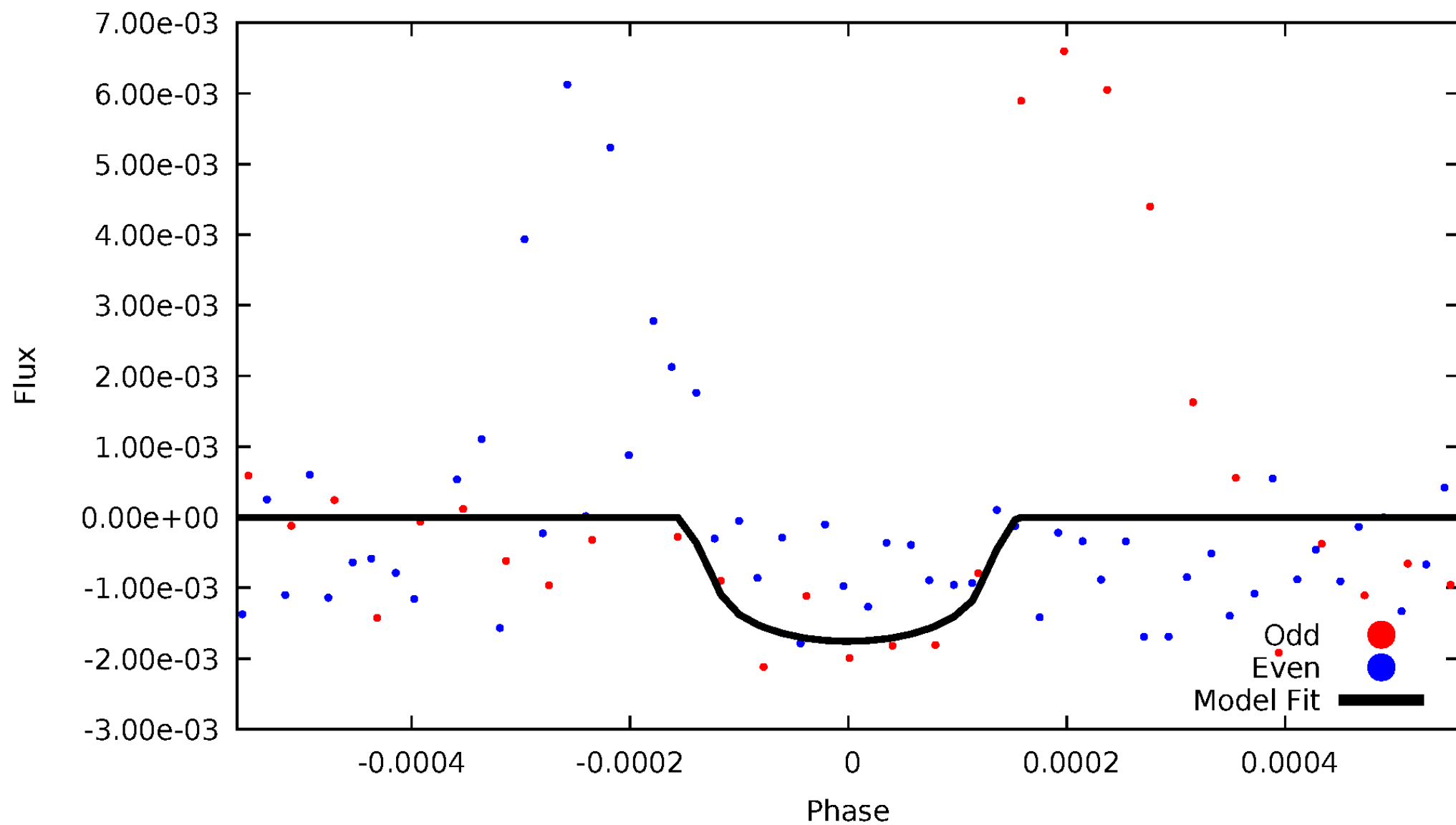
TCE 003550598-02





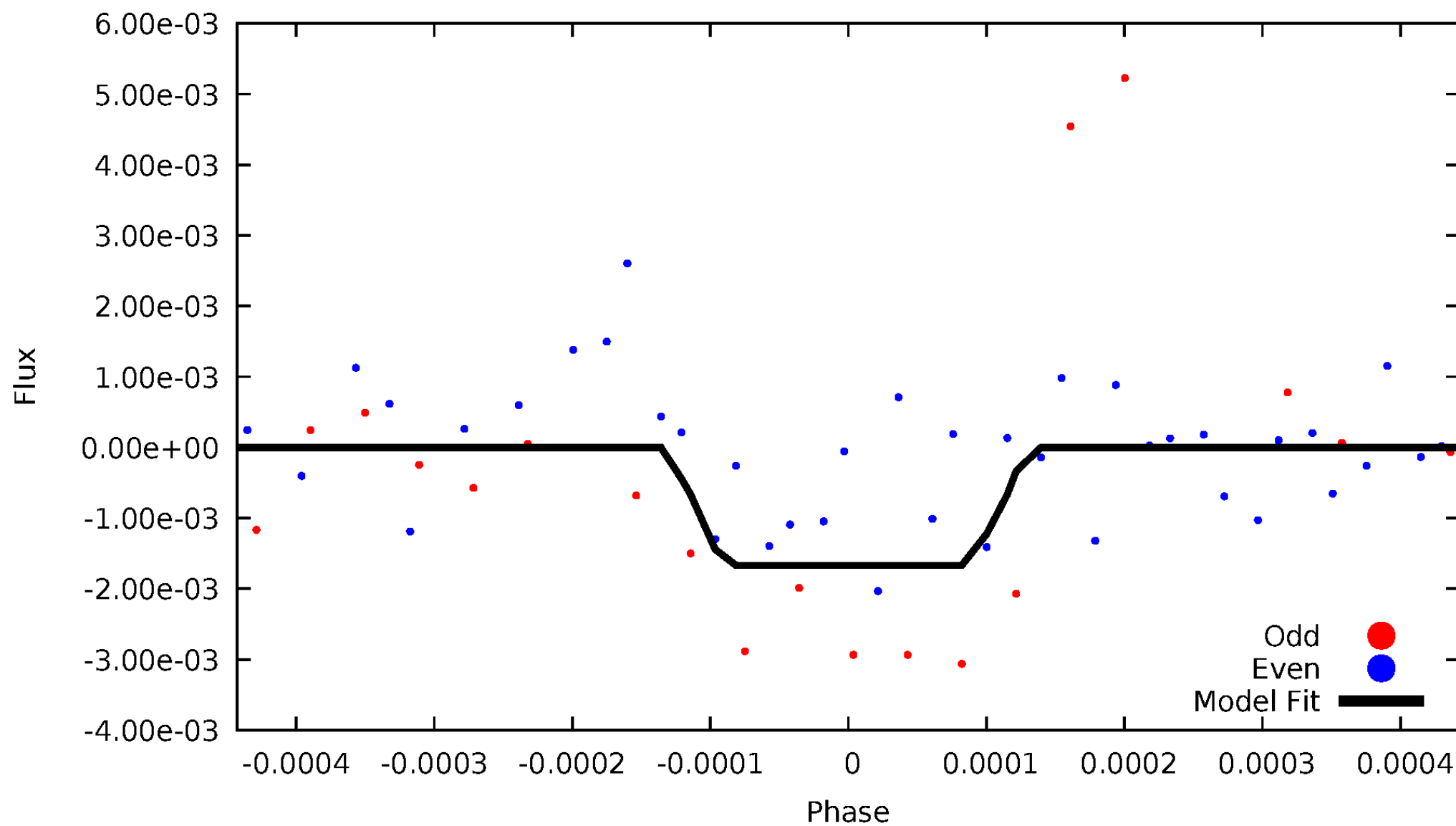
# DV Odd/Even

TCE 003550598-02



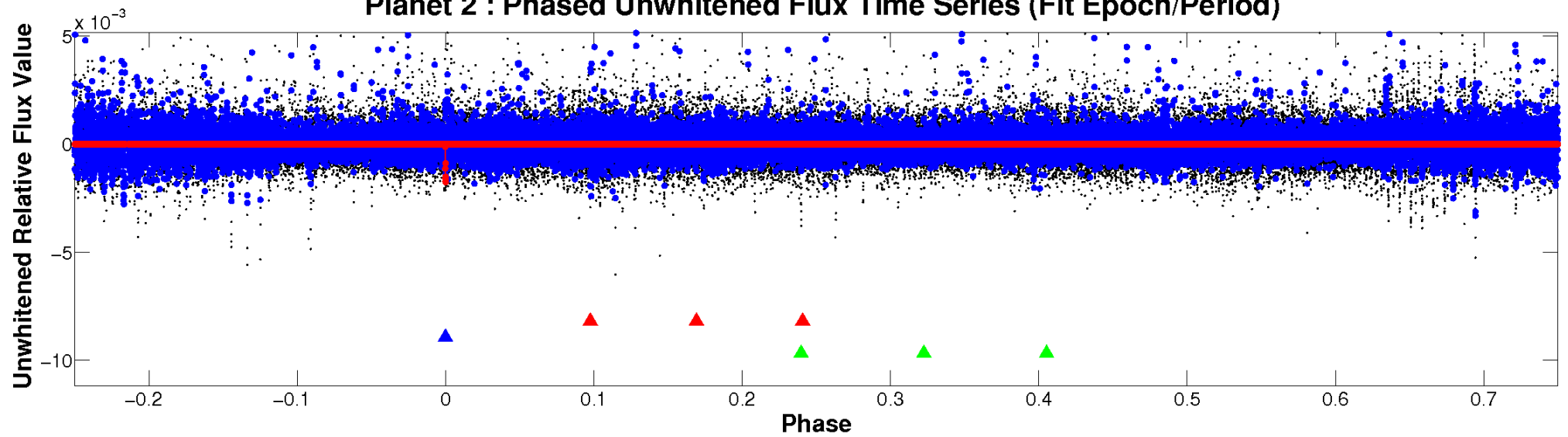
# ALT Odd/Even

TCE 003550598-02

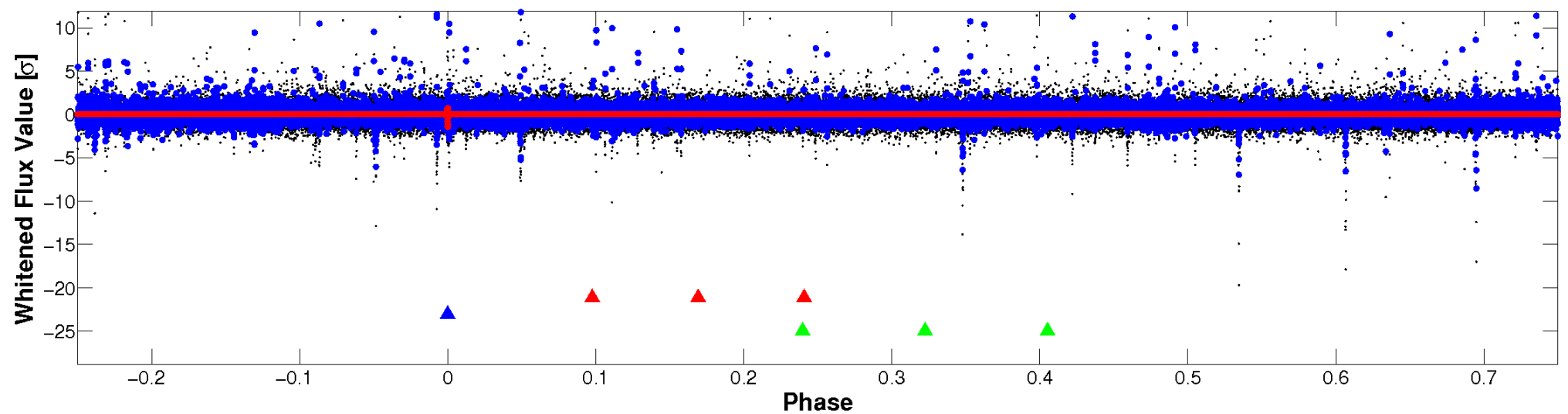


# Non-Whitened Vs. Whitened Light Curve

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

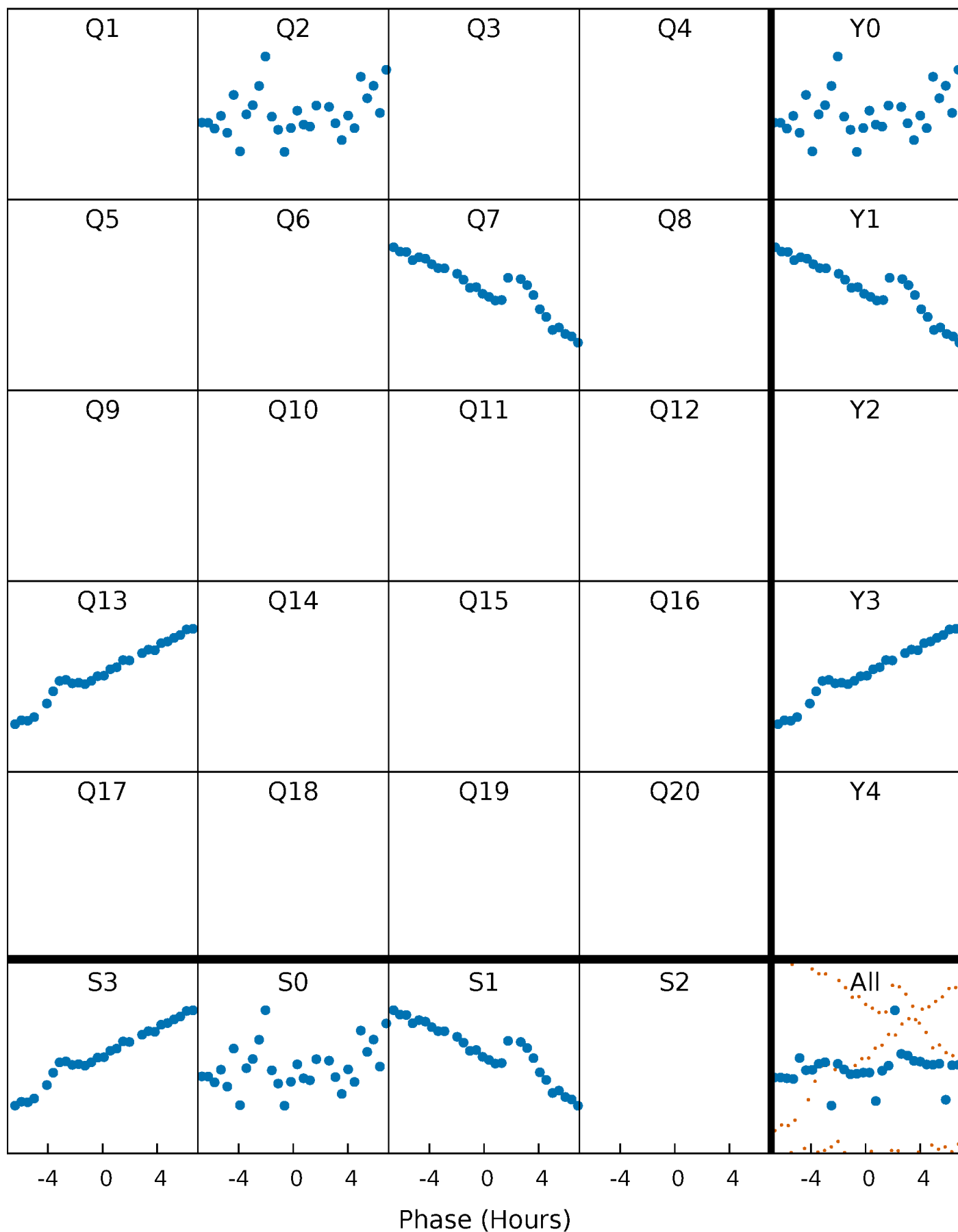


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



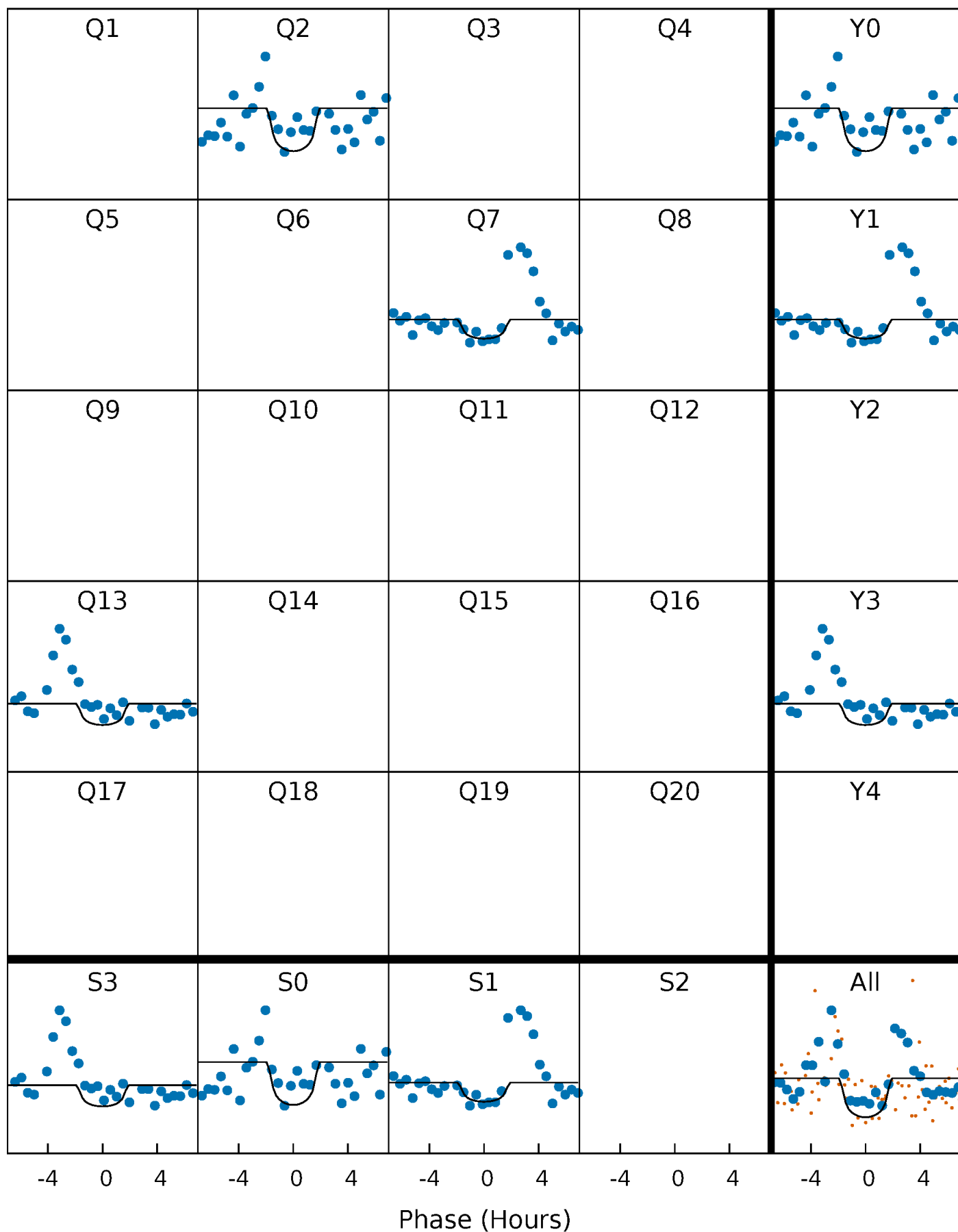
# PDC Quarter-Phased Transit Curves

TCE 003550598-02     $P=519.598675$  Days     $T_0=190.733501$  (BKJD)



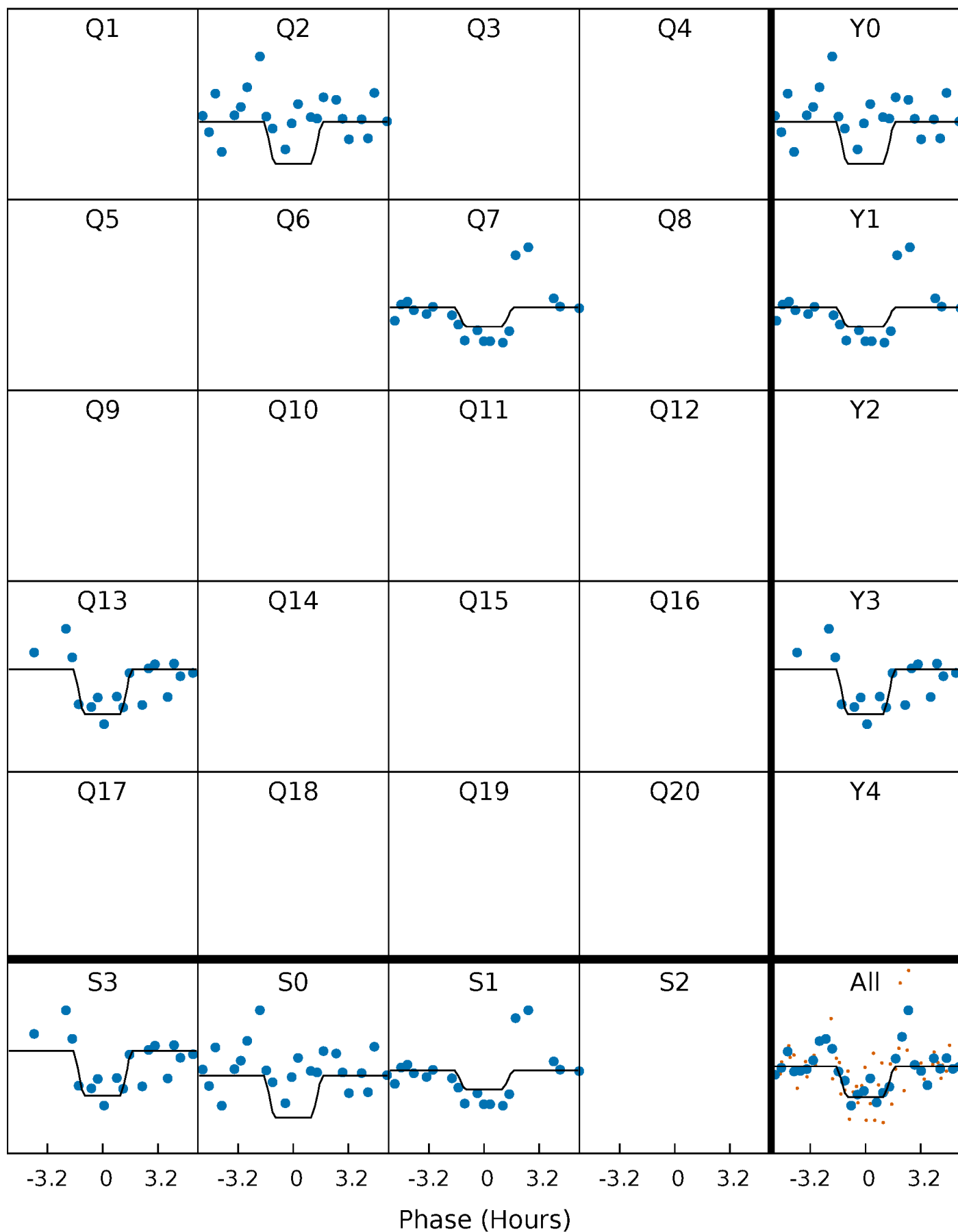
# DV Quarter-Phased Transit Curves

TCE 003550598-02     $P=519.598675$  Days     $T_0=190.733501$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

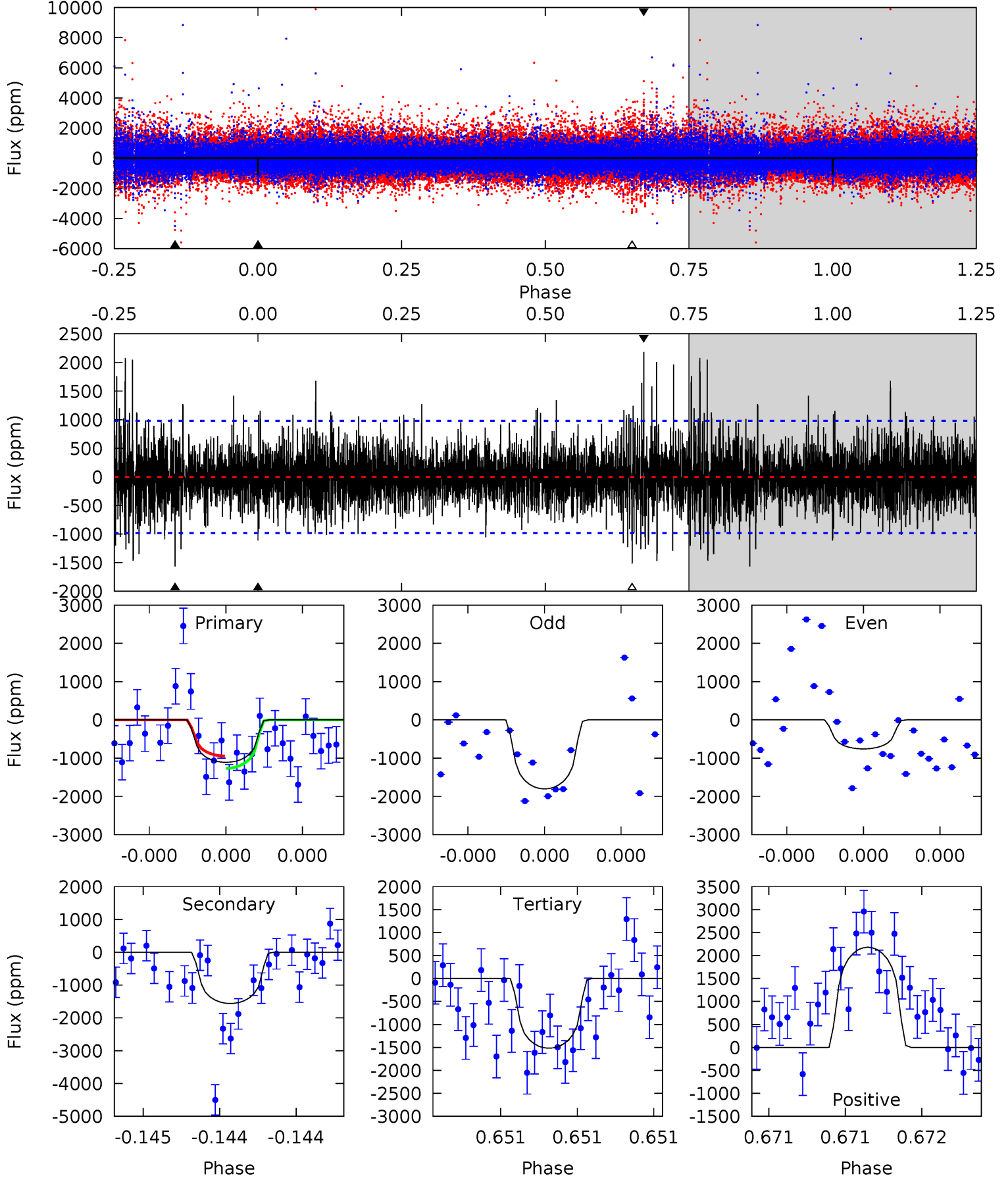
TCE 003550598-02     $P=519.598186$  Days     $T_0=190.732653$  (BKJD)



# DV Model-Shift Uniqueness Test

003550598-02, P = 519.598675 Days, E = 190.733501 Days

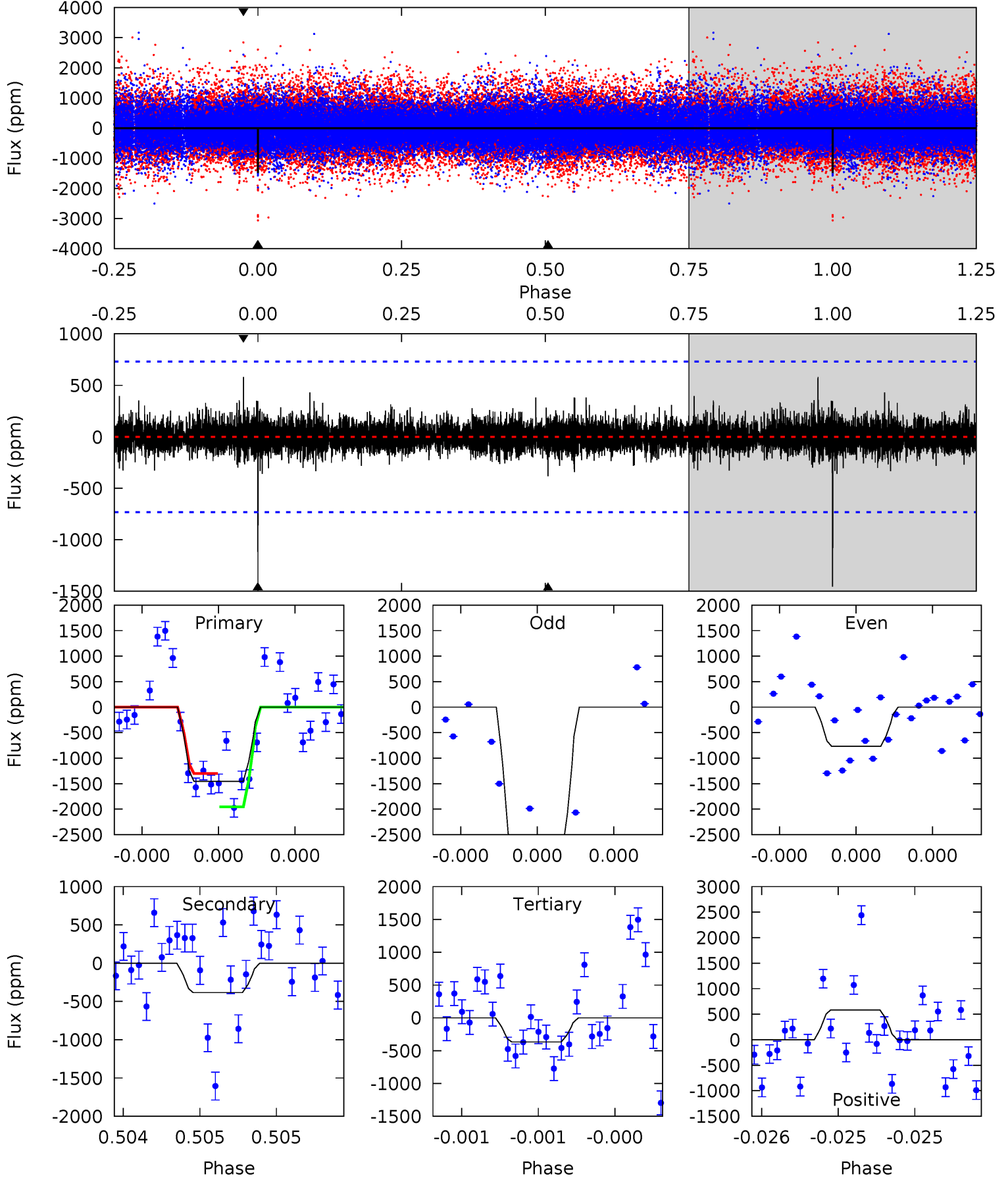
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.40	9.01	8.75	12.6	5.66	3.61	1.94	-2.35	-6.17	0.26	-3.56	2.33	1.06	0.58	0.93



# Alt Model-Shift Uniqueness Test

003550598-02, P = 519.598186 Days, E = 190.732653 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
11.3	2.98	2.85	4.53	5.69	3.66	0.62	8.45	6.78	0.13	-1.55	7.56	1.01	0.29	2.48





### Stellar Parameters For KIC 003550598

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4786^{+144}_{-144}$	$4.620^{+0.059}_{-0.032}$	$-0.480^{+0.300}_{-0.300}$	$0.646^{+0.057}_{-0.057}$	$0.634^{+0.076}_{-0.041}$	$3.318^{+0.815}_{-0.451}$
	+3%/-3%	+1%/-1%	+62%/-62%	+9%/-9%	+12%/-6%	+25%/-14%
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 003550598-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1562 \pm 173$	$9.10^{+10.23}_{-6.21}$	$226^{+8}_{-8}$	$3186^{+1493}_{-588}$	$12411^{+112190}_{-9691}$
Alt.	$-383 \pm 129$	$9.13^{+9.70}_{-6.01}$	$226^{+8}_{-8}$	$2608^{+998}_{-408}$	$2804^{+24595}_{-2105}$

$T_{\text{max}}$  = 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

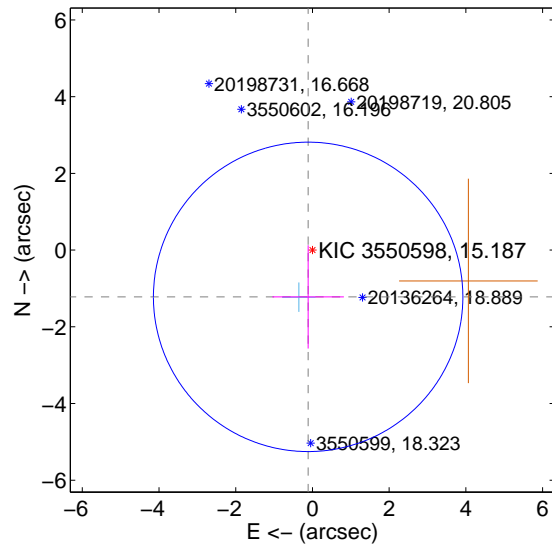
Supplemental centroid analysis for 003550598-02. Kepler magnitude: 15.19. Transit SNR 5.89

There are 1 quarters with good PRF difference image offsets

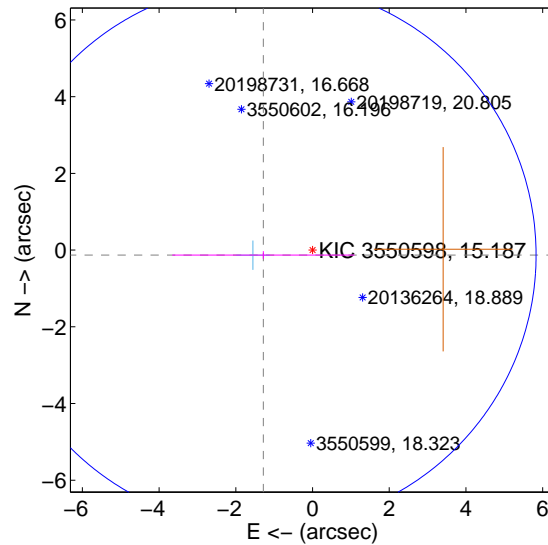
The direct PRF centroid is offset from the target star catalog position by about 1.62 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.225 \pm 1.345$	0.91	$0.112 \pm 0.932$	$-1.219 \pm 1.348$
PRF-fit source offset from KIC position	$1.288 \pm 2.370$	0.54	$1.281 \pm 2.375$	$-0.129 \pm 0.100$
photometric centroid source offset	$0.46 \pm 1.13$	0.41	$-0.46 \pm 1.13$	$0.02 \pm 1.41$

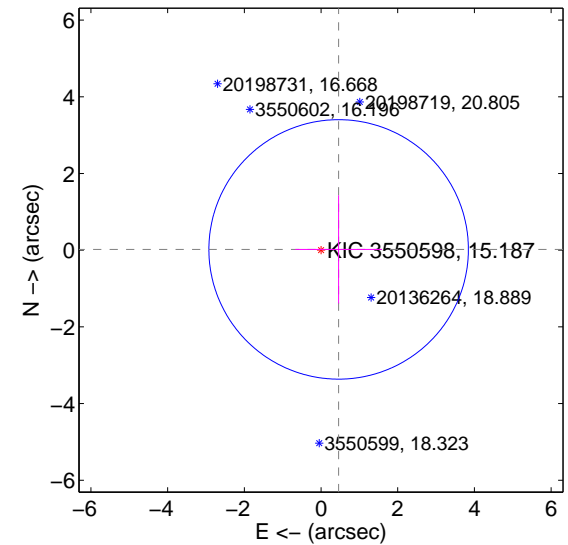
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

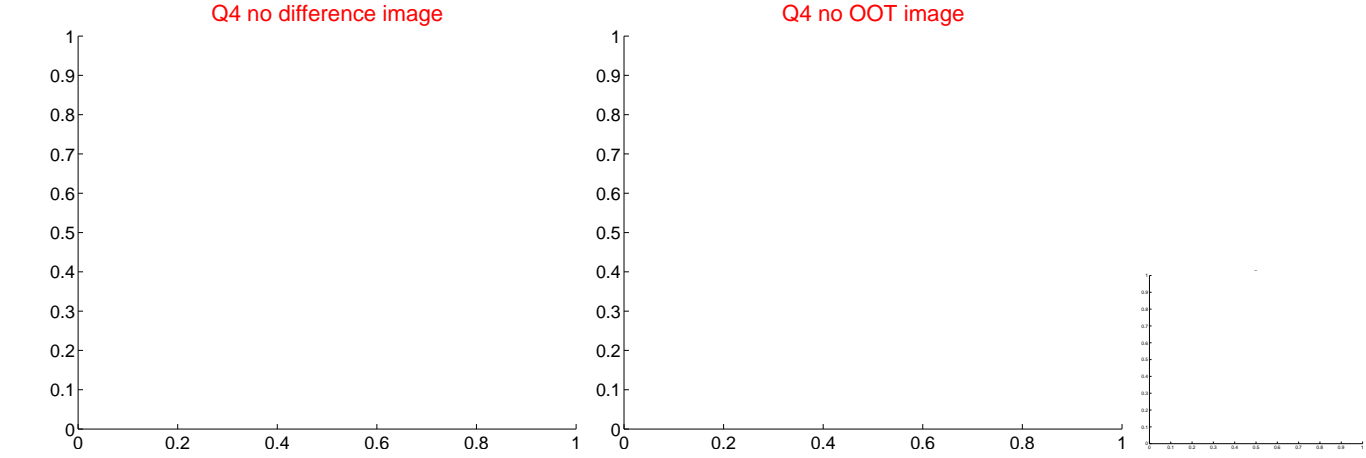
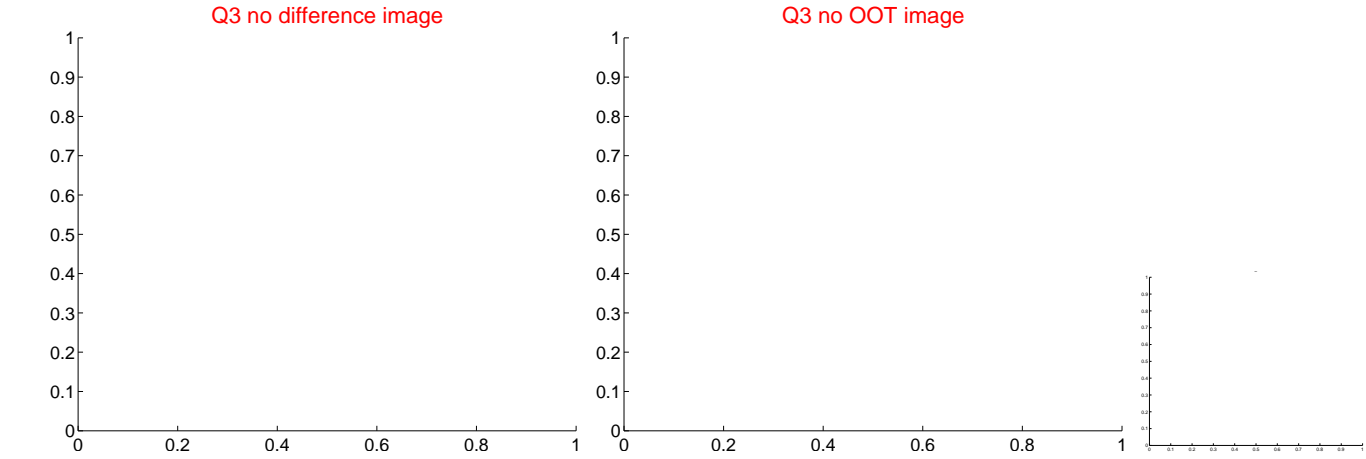
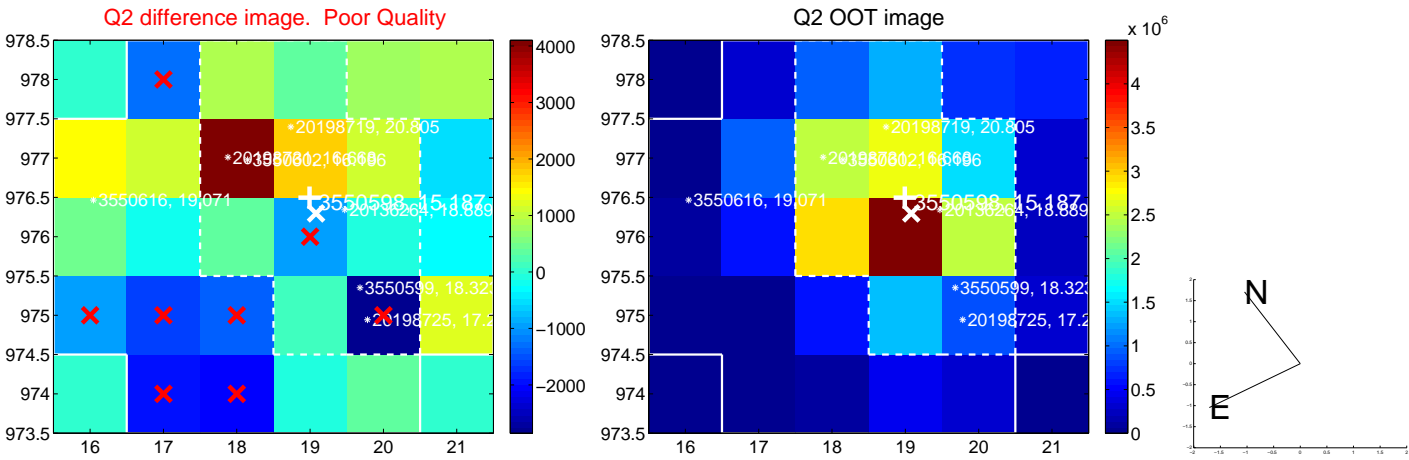
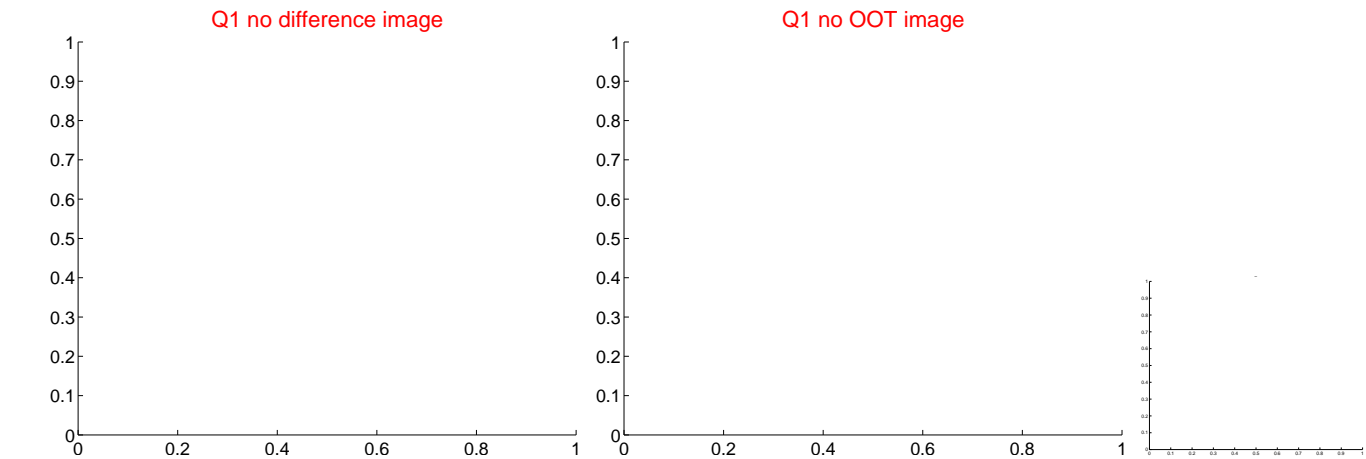


offset from photometric centroids

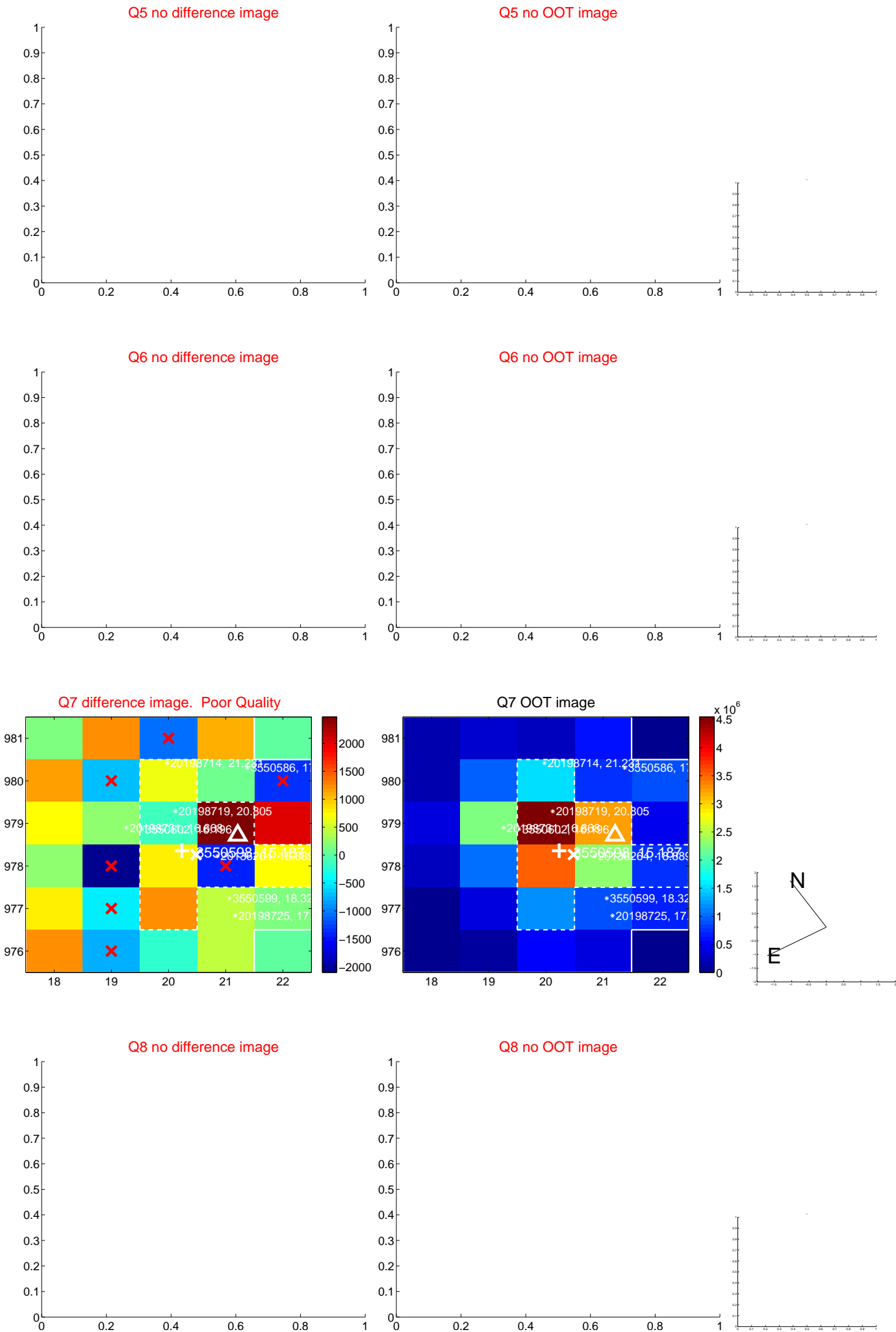


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



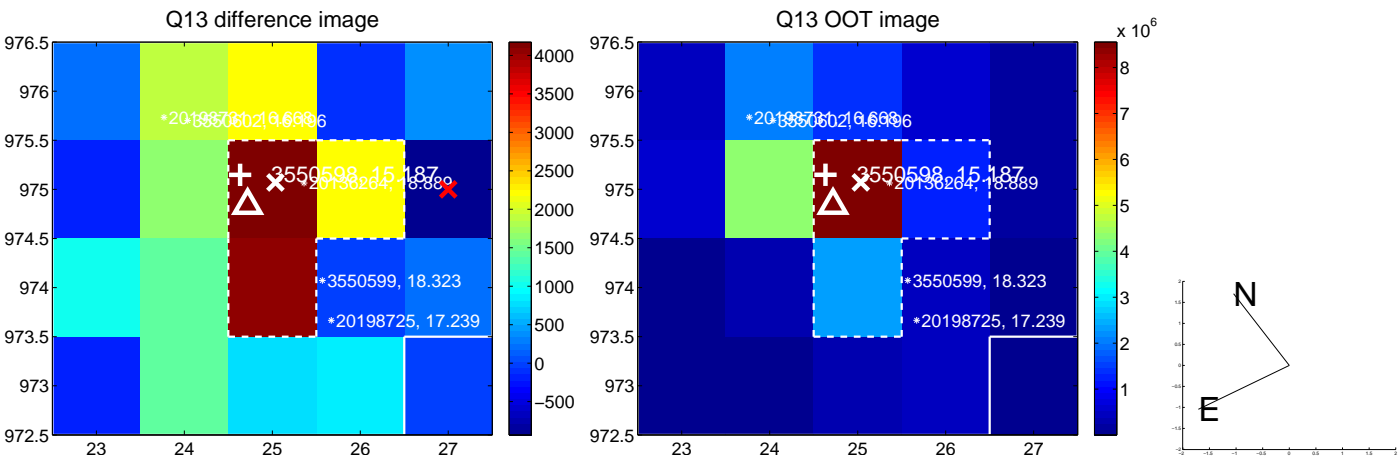
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



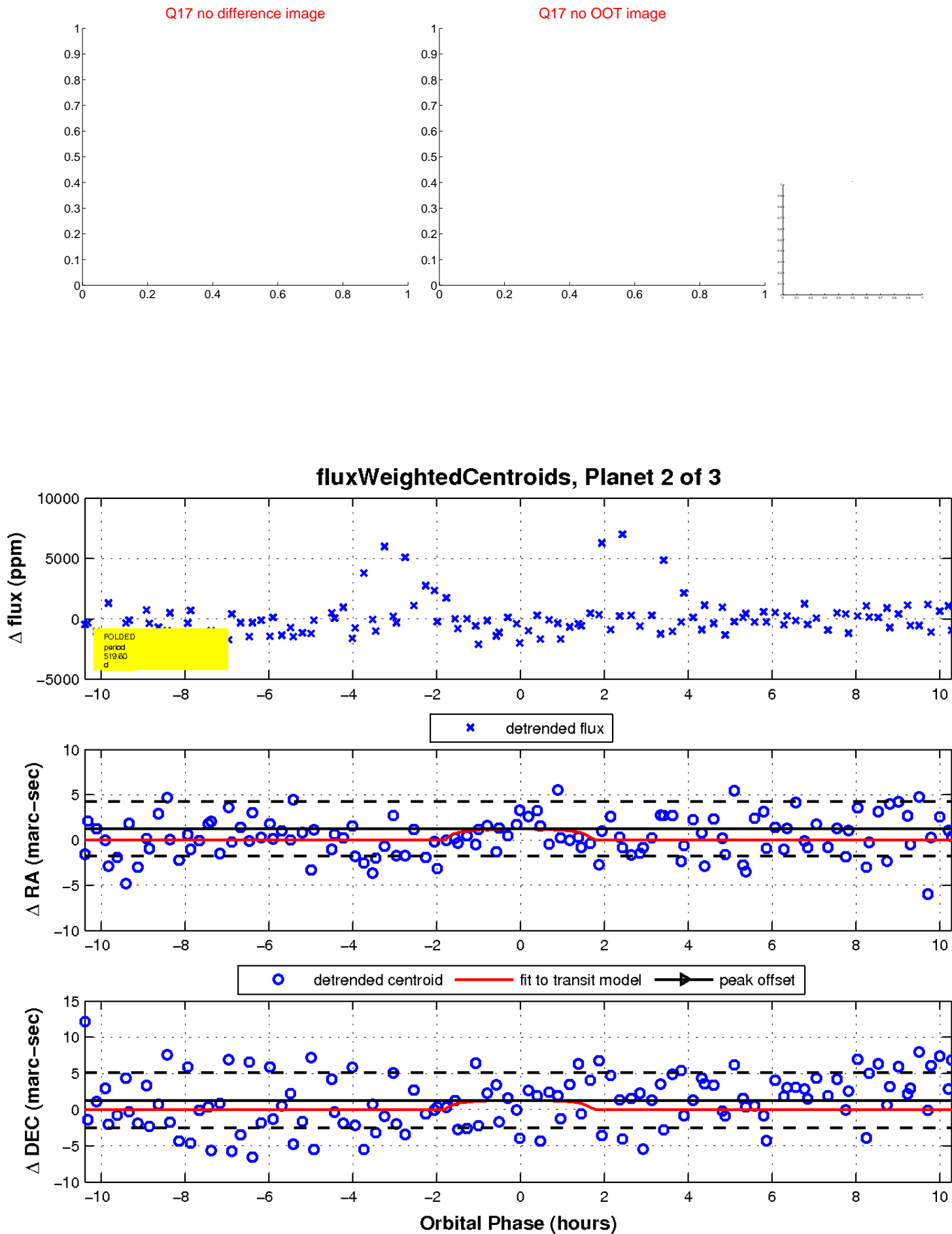
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

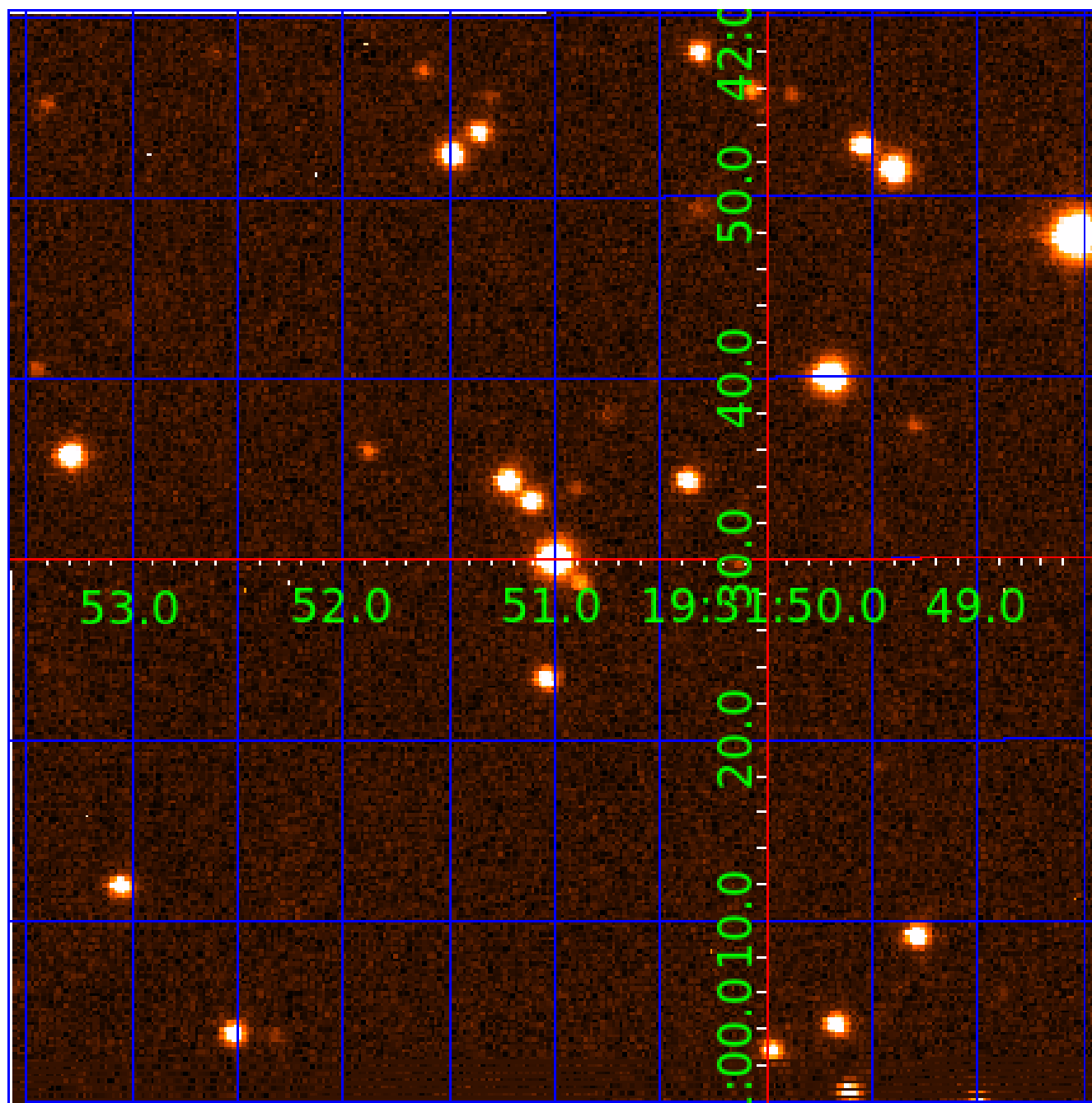


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003550598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003550598-01	OBS	No	482.408624	315.857182	1623.6	7.505	13.1	4.8	0.65	4786	2.58	0.18
003550598-02	OBS	No	519.598675	190.733501	1756.4	3.490	9.4	5.9	0.65	4786	2.63	0.17
003550598-03	OBS	No	562.590315	315.321065	1876.8	5.291	9.3	6.0	0.65	4786	2.76	0.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003550598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003550598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003550598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—MOD_POS_DV—CENT_FEW_DIFFS

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

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

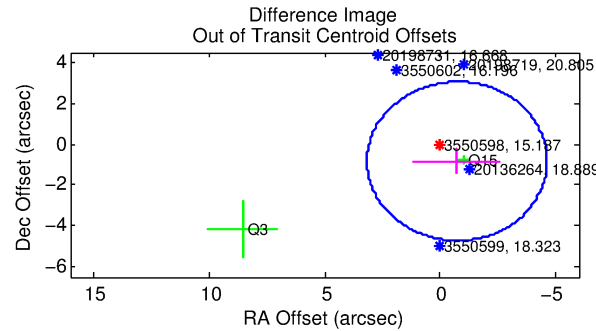
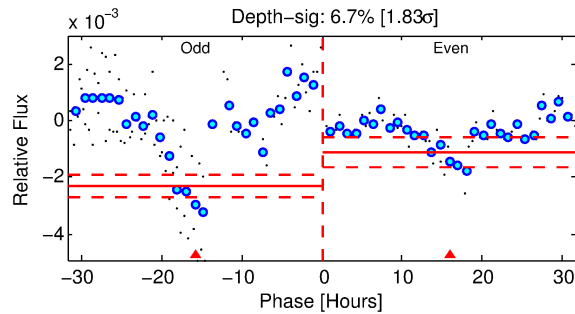
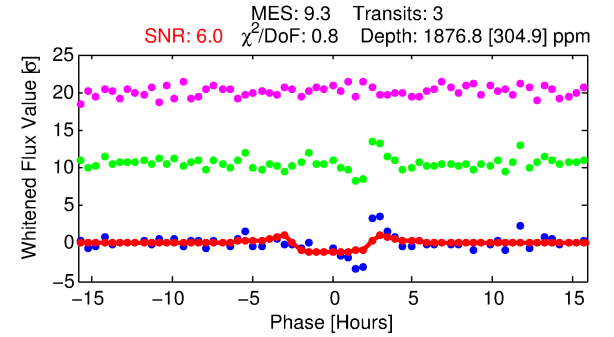
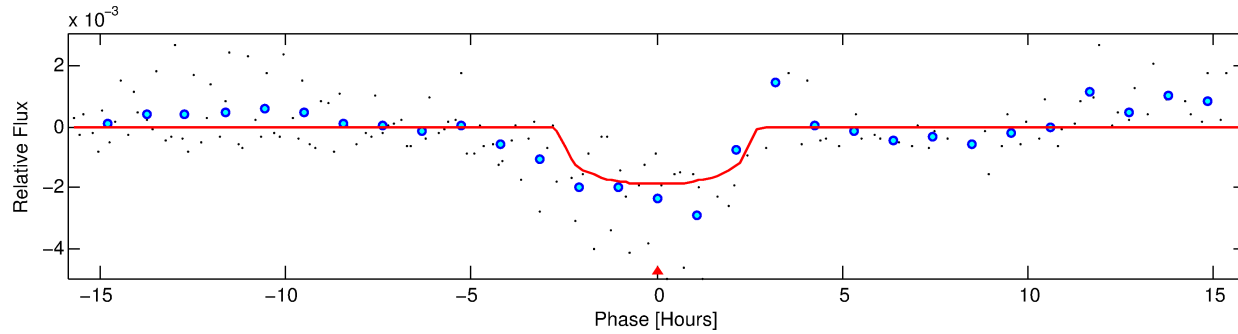
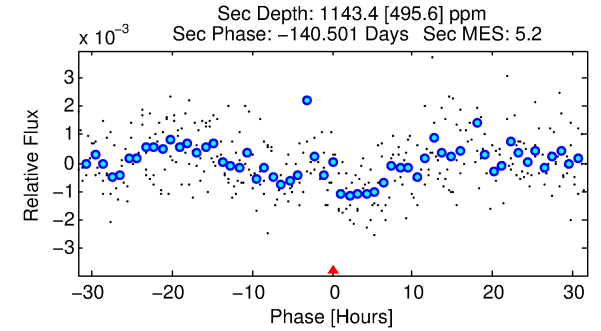
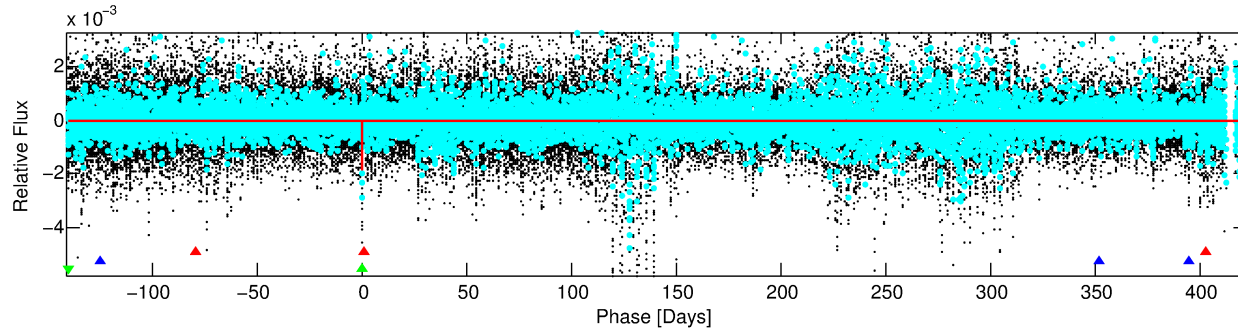
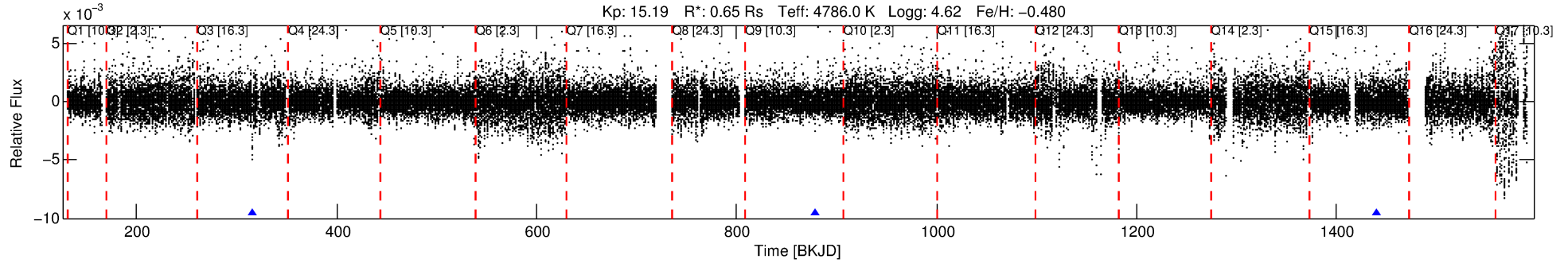
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003550598-03

No Significant Match Found

# DV One-Page Summary

KIC: 3550598 Candidate: 3 of 3 Period: 562.590 d



## DV Fit Results:

Period = 562.59031 [0.00920] d  
Epoch = 315.3211 [0.0119] BKJD  
Rp/R\* = 0.0392 [0.0662]  
a/R\* = 788.05 [4420.43]  
b = 0.37 [13.21]  
Seff = 0.15 [0.02]  
Teq = 159 [6] K  
Rp = 2.76 [4.67] Re  
a = 1.1463 [0.0851] AU  
Ag = 108262.89 [368879.96] [0.29σ]  
Teffp = 4445 [3787] K [1.13σ]

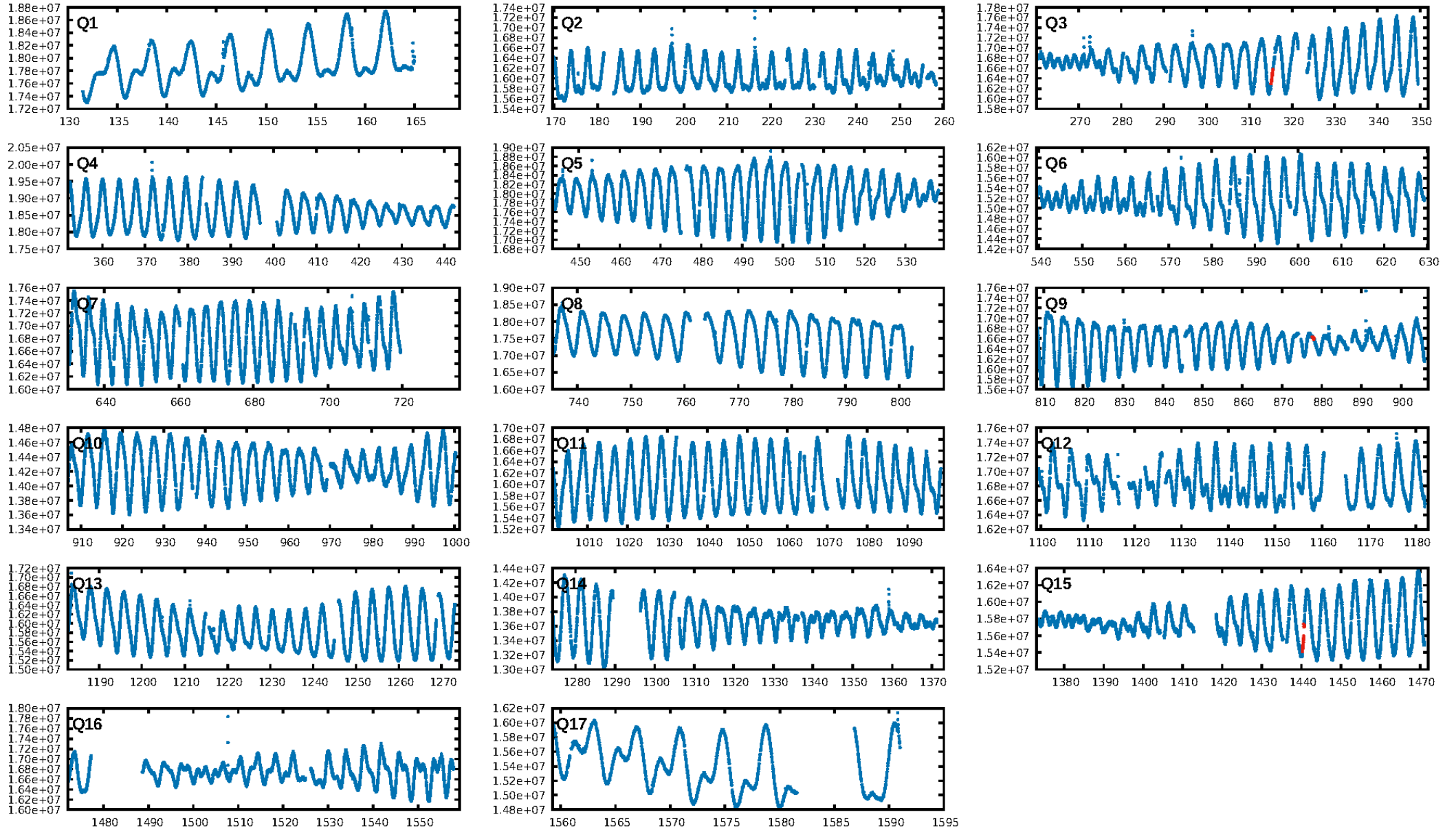
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [162.78σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 15.6%  
ModelChiSquareGof-sig: 97.1%  
**Bootstrap-pfa: 1.99e-06**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.419  
Centroid-sig: 19.1%  
Centroid-so: 1.835 arcsec [1.54σ]  
OotOffset-rm: 1.106 arcsec [0.85σ]  
OotOffset-st: 0/2/0/0 [2]  
KicOffset-rm: 0.108 arcsec [0.04σ]  
KicOffset-st: 0/2/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.67 [2/3]

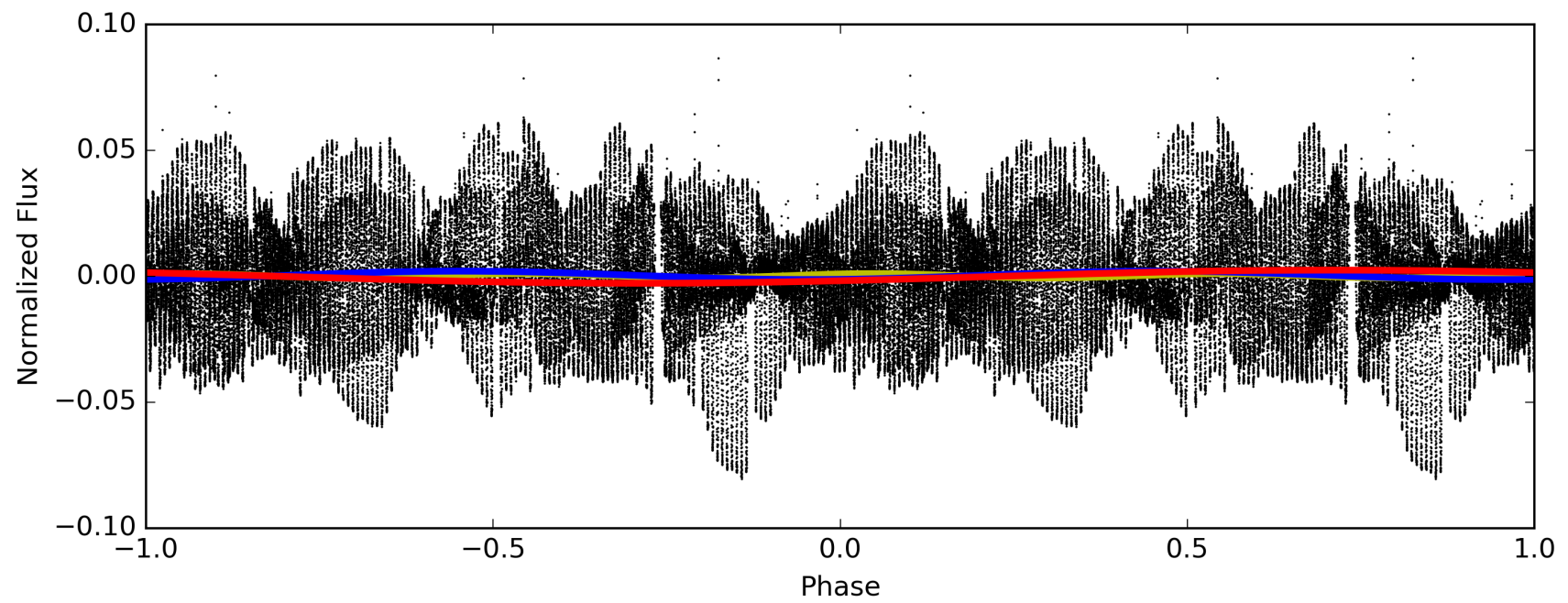
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:44:12 Z

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

# TCE 003550598-03, PDC Light Curves

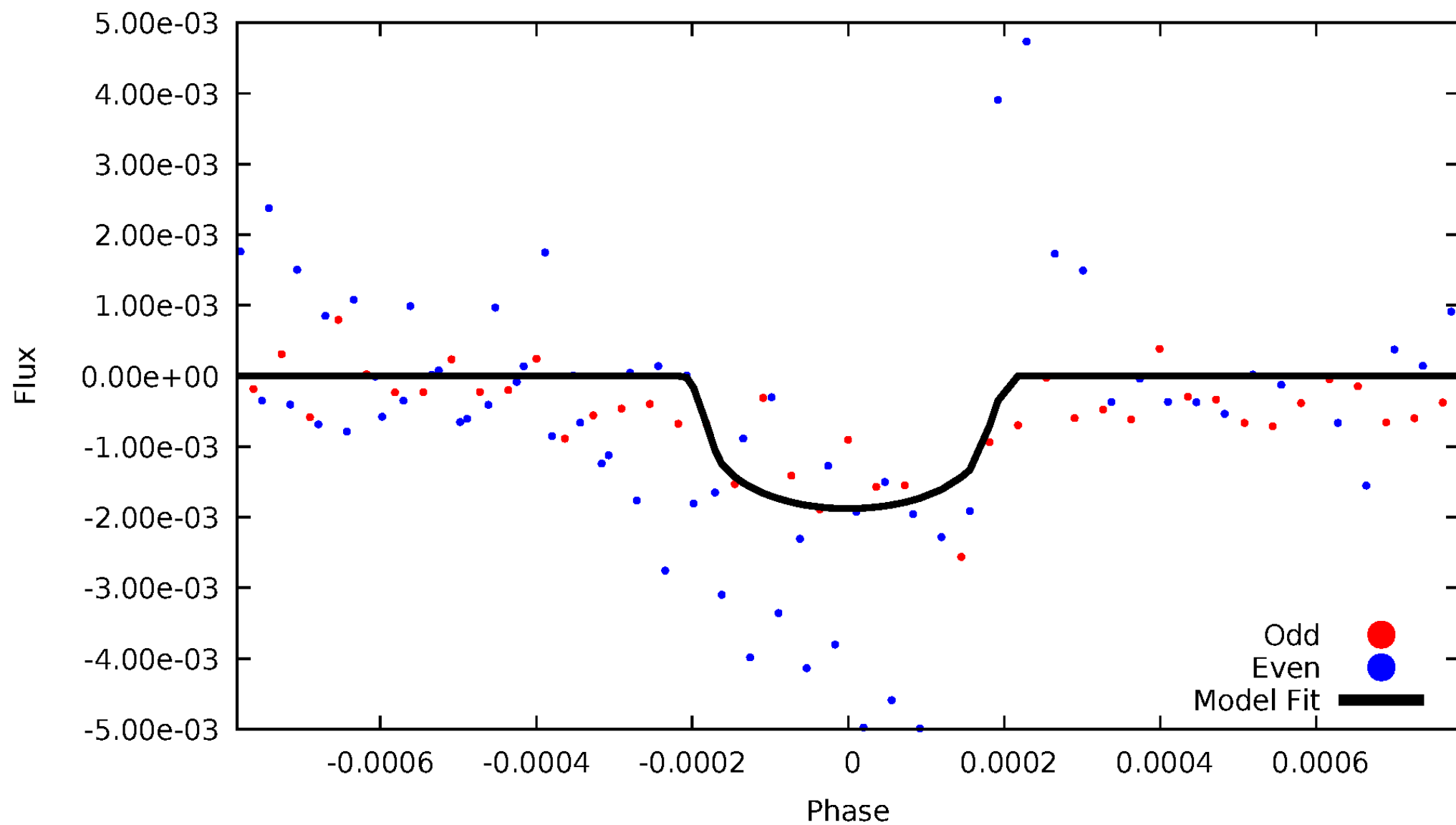


— P = 281.295 days      — P = 562.590 days      — P = 1125.181 days



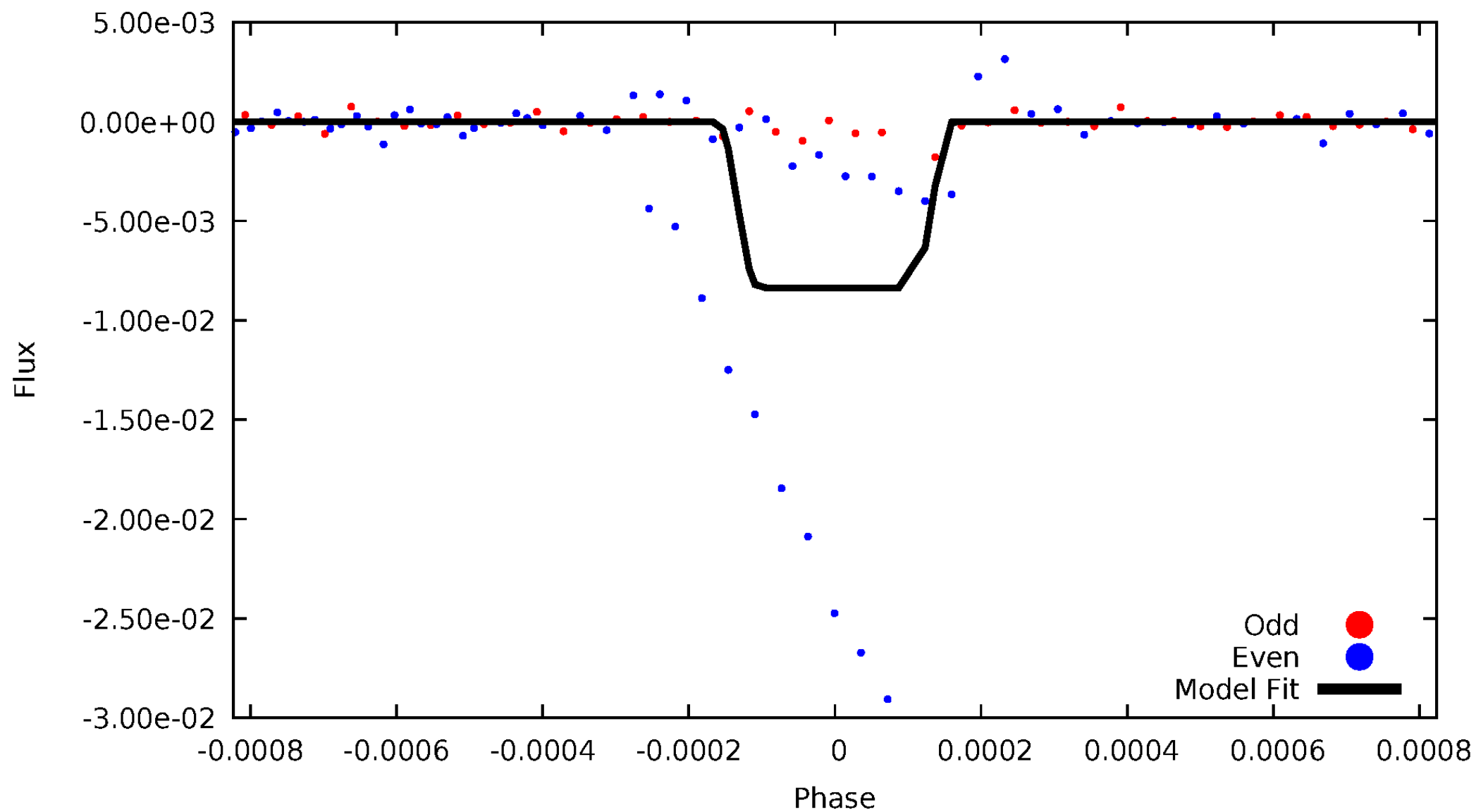
# DV Odd/Even

TCE 003550598-03



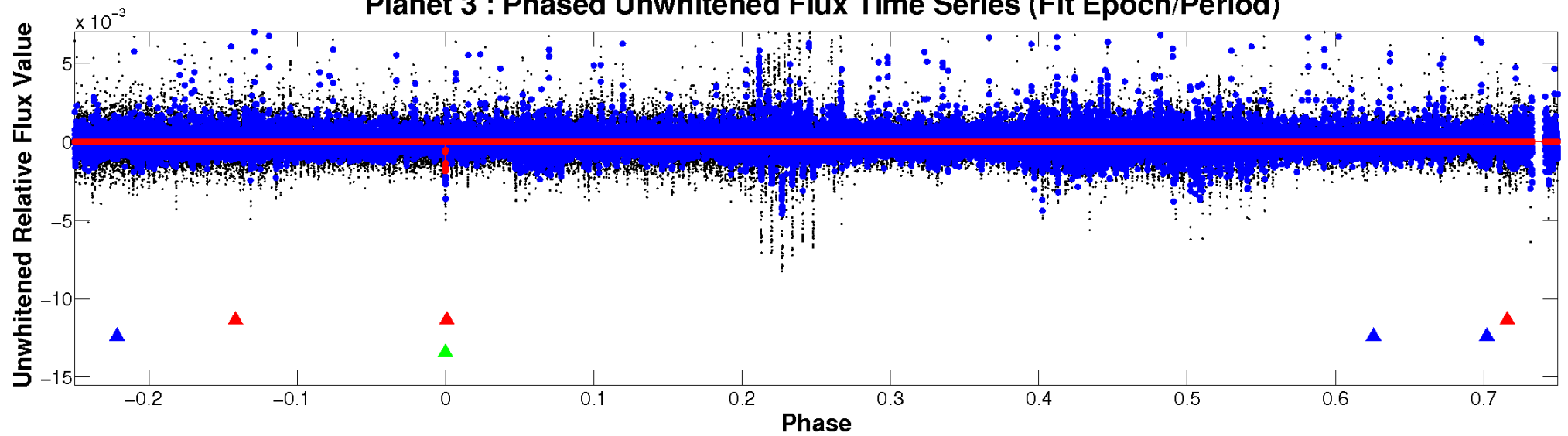
# ALT Odd/Even

TCE 003550598-03

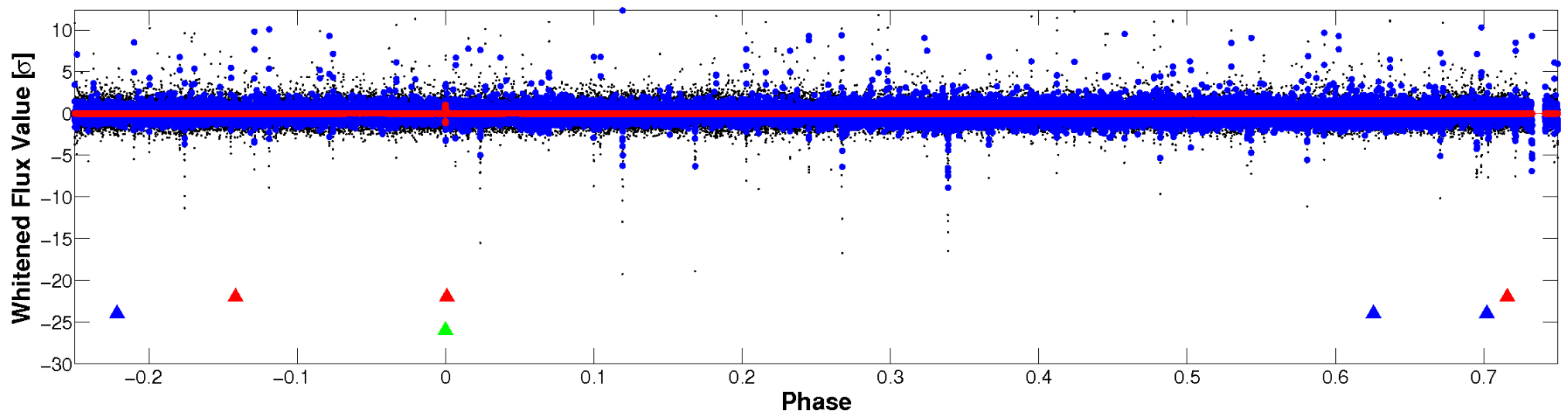


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

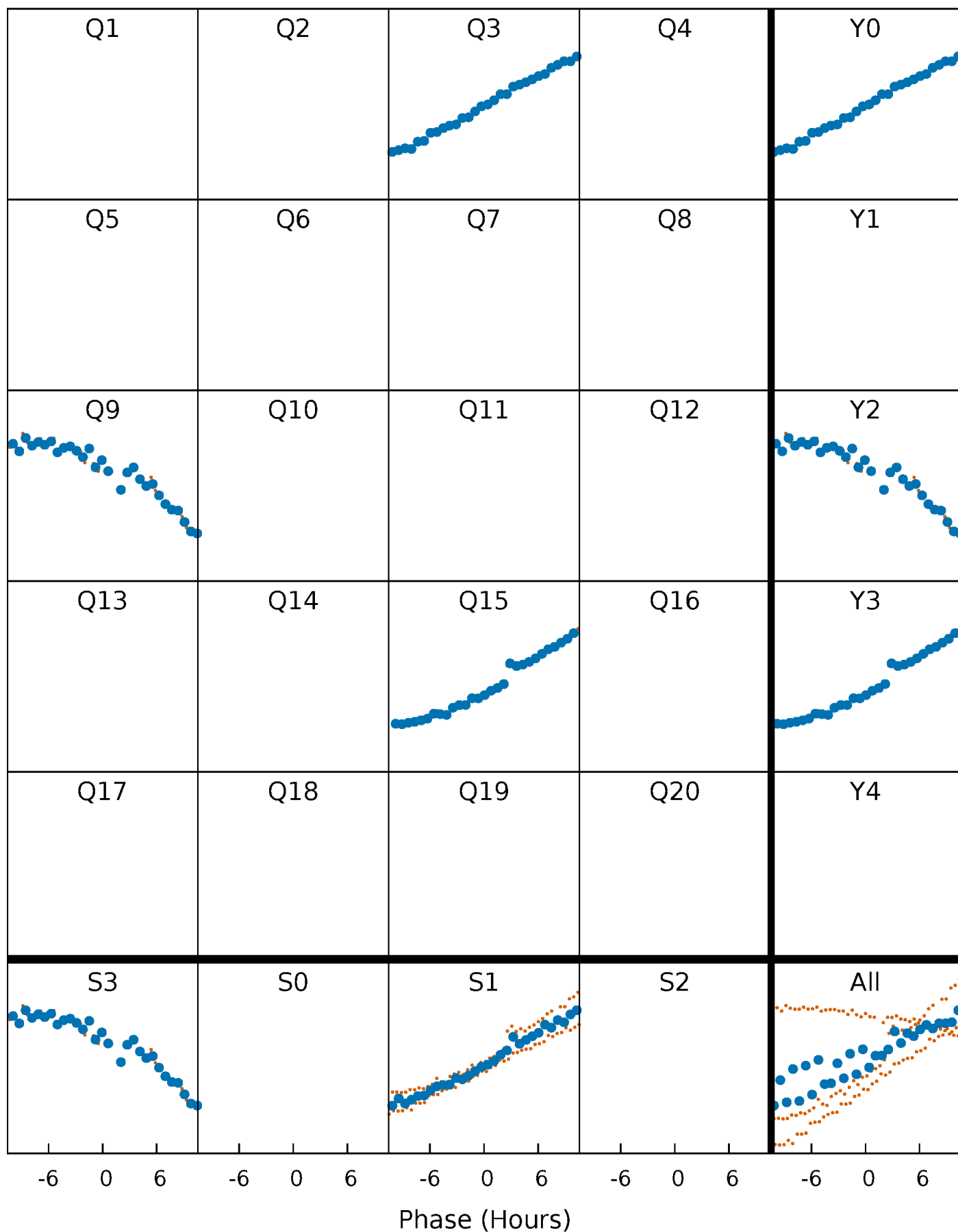


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

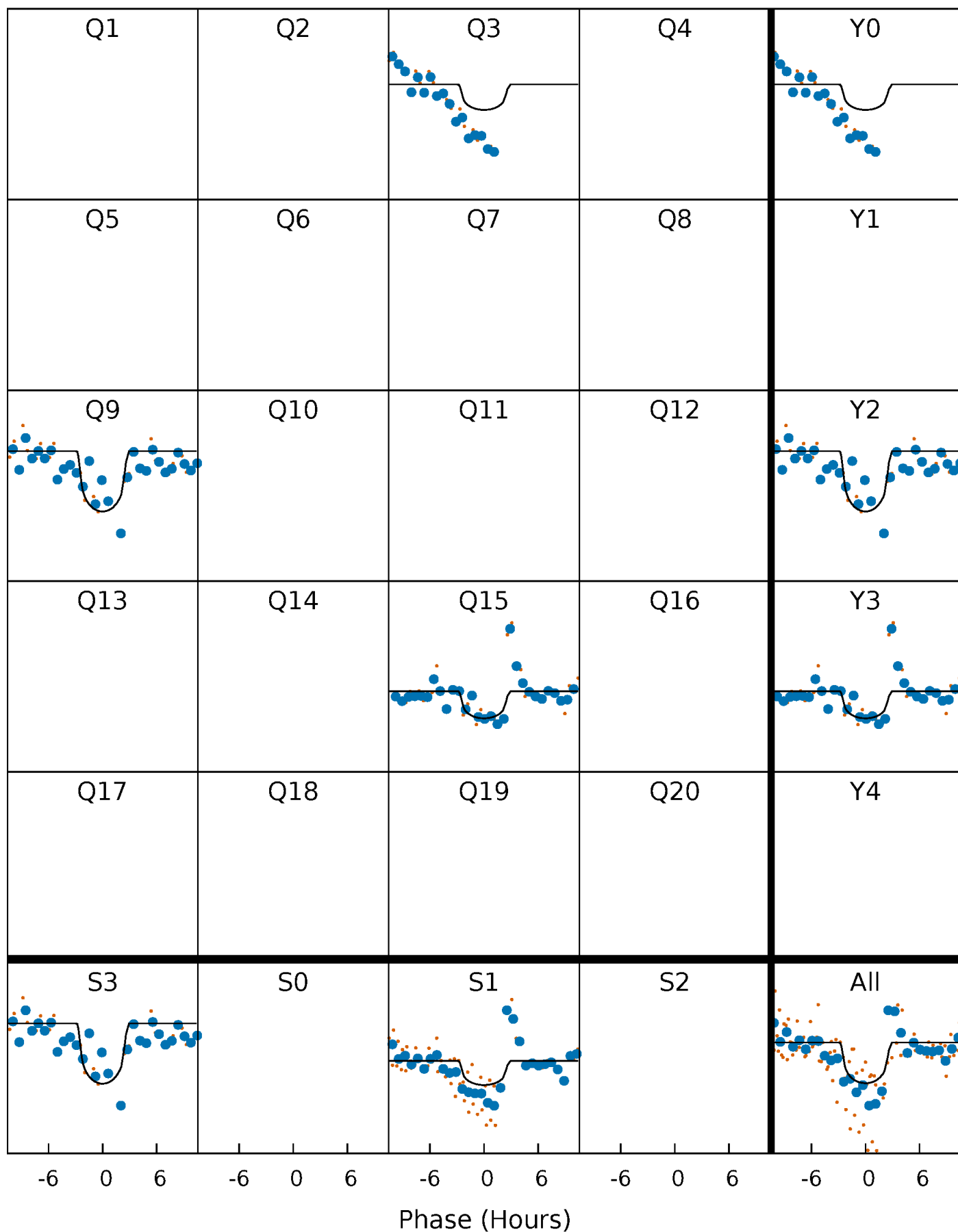
TCE 003550598-03 P=562.590315 Days  $T_0=315.321065$  (BKJD)





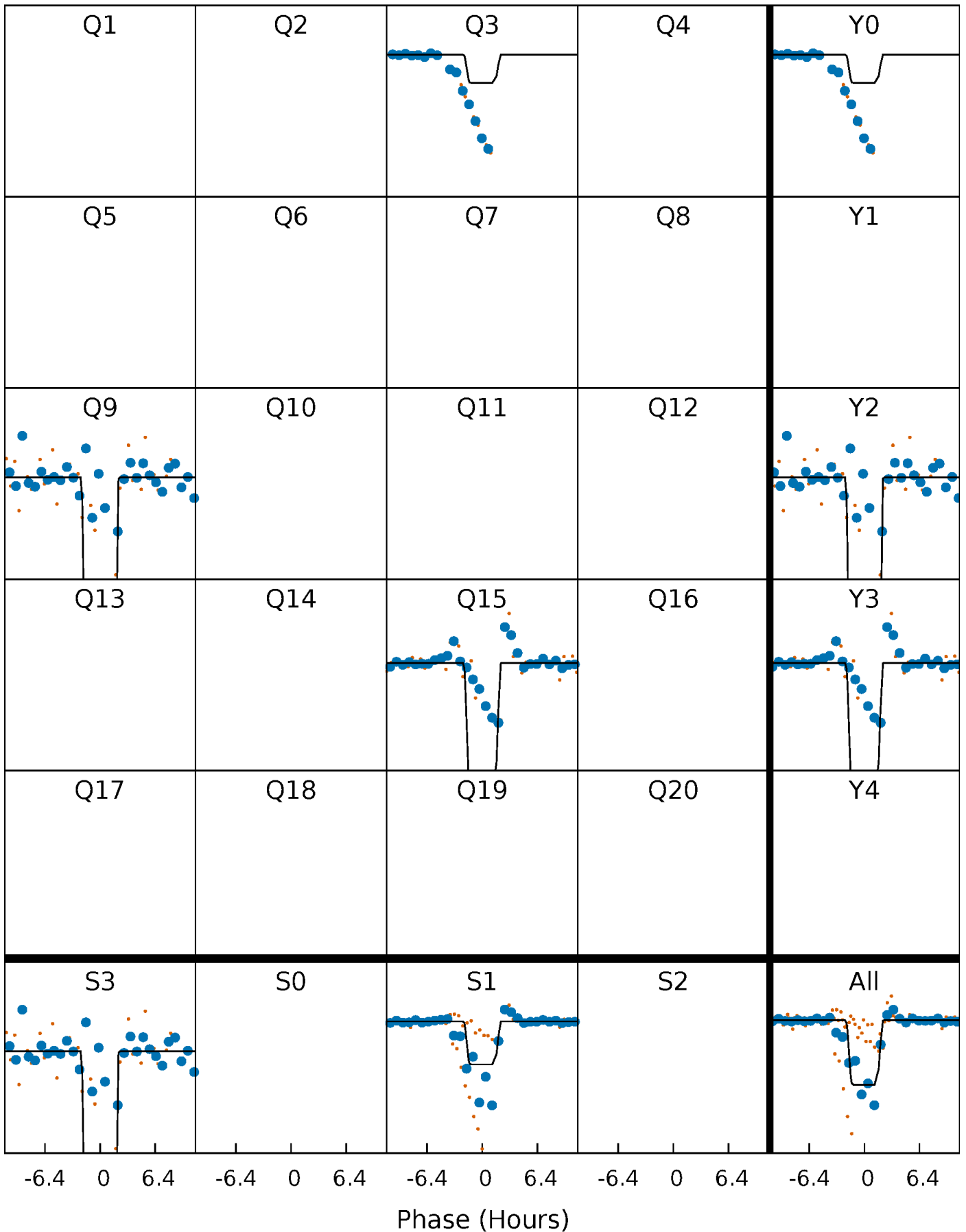
# DV Quarter-Phased Transit Curves

TCE 003550598-03     $P=562.590315$  Days     $T_0=315.321065$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

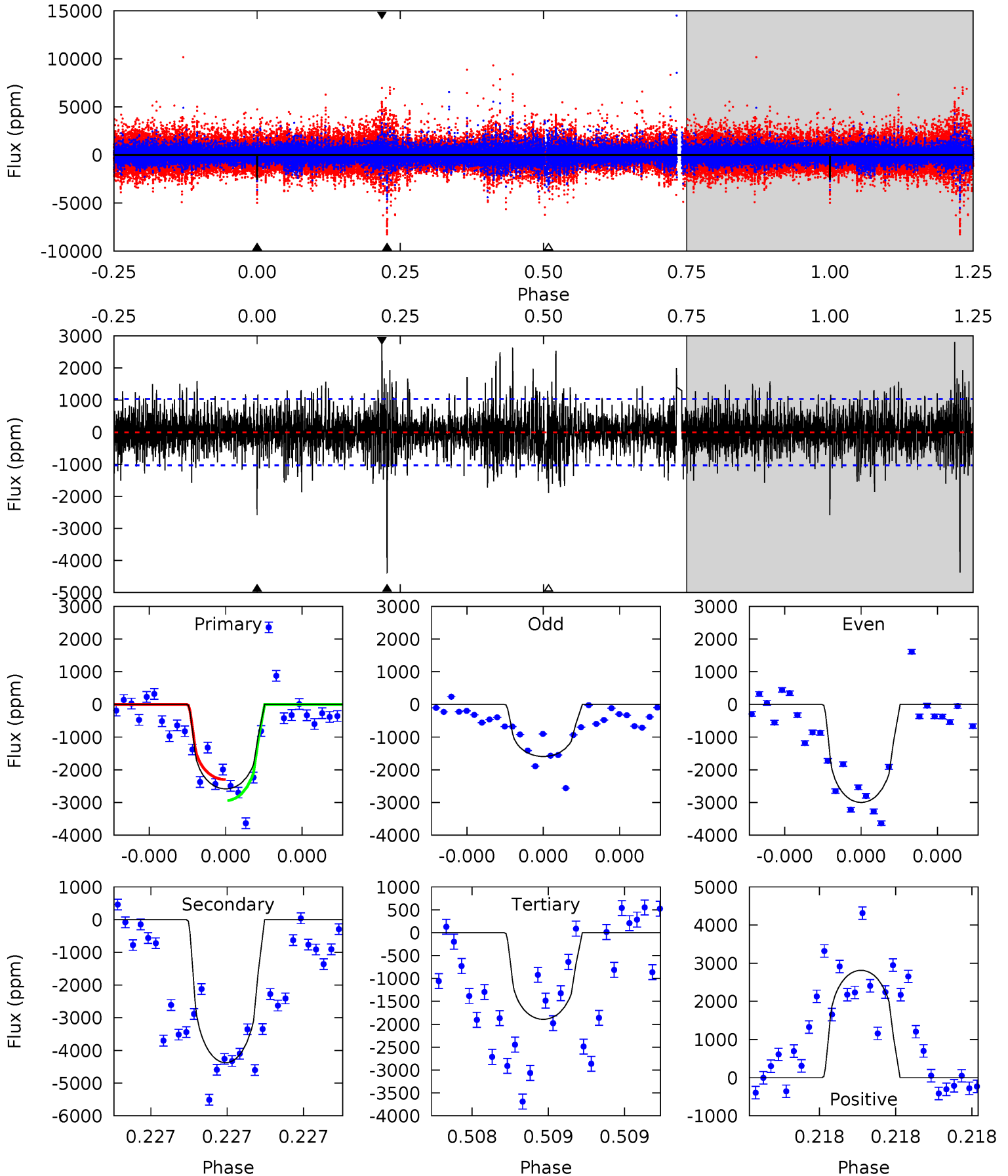
TCE 003550598-03 P=562.583585 Days  $T_0=315.332255$  (BKJD)



# DV Model-Shift Uniqueness Test

003550598-03, P = 562.590315 Days, E = 315.321065 Days

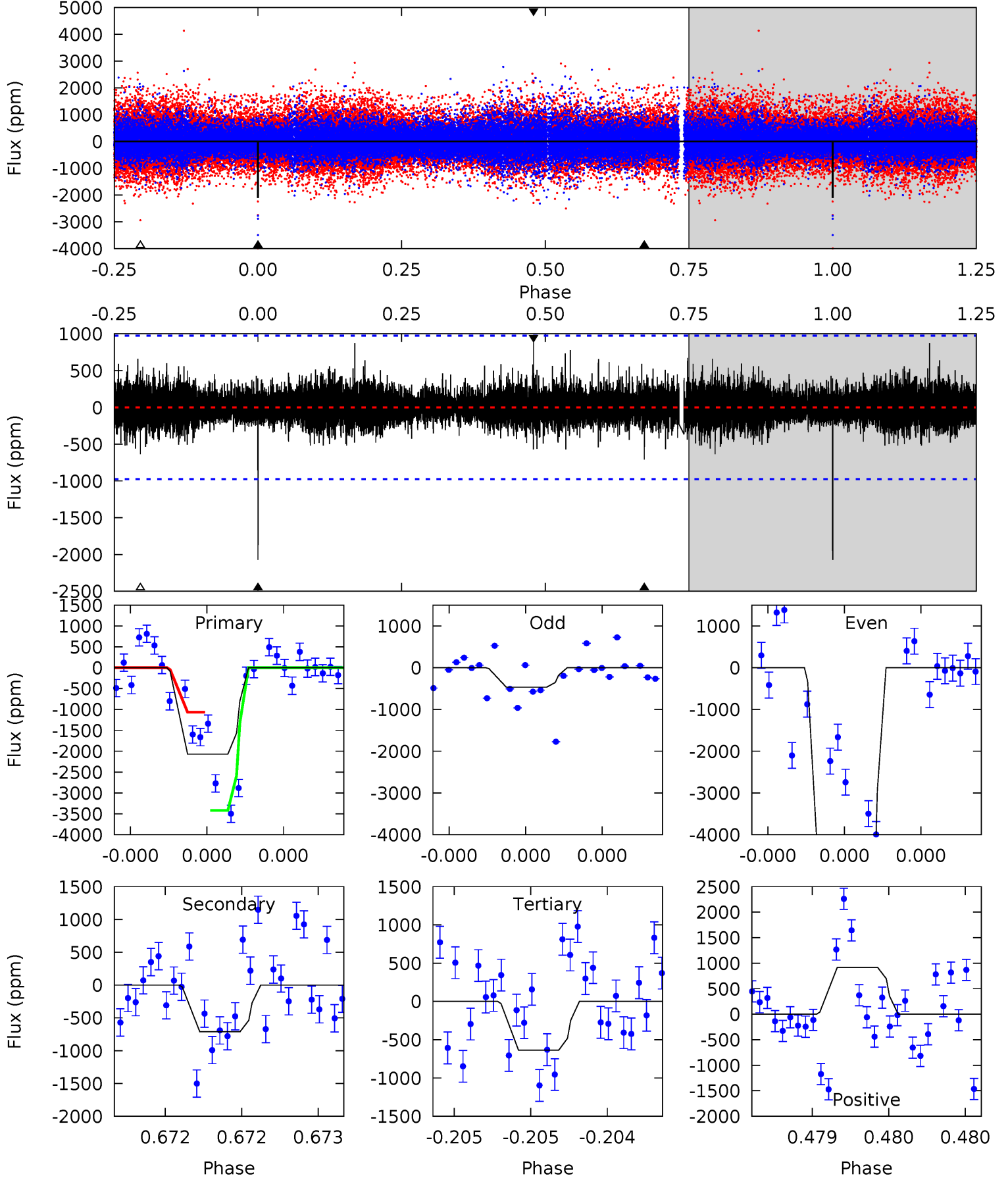
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	23.7	10.2	15.2	5.60	3.52	2.60	3.74	-1.24	13.4	8.45	3.17	1.54	0.39	1.70



# Alt Model-Shift Uniqueness Test

003550598-03, P = 562.583585 Days, E = 315.332255 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
12.0	4.11	3.68	5.32	5.65	3.60	0.77	8.32	6.68	0.43	-1.21	25.0	3.67	0.31	0



### Stellar Parameters For KIC 003550598

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4786^{+144}_{-144}$	$4.620^{+0.059}_{-0.032}$	$-0.480^{+0.300}_{-0.300}$	$0.646^{+0.057}_{-0.057}$	$0.634^{+0.076}_{-0.041}$	$3.318^{+0.815}_{-0.451}$
	+3%/-3%	+1%/-1%	+62%/-62%	+9%/-9%	+12%/-6%	+25%/-14%
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 003550598-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-4376 \pm 185$	$4.78^{+3.97}_{-3.38}$	$220^{+7}_{-8}$	$4724^{+3993}_{-927}$	$137951^{+1465305}_{-95508}$
Alt.	$-710 \pm 173$	$6.78^{+4.55}_{-3.89}$	$220^{+8}_{-8}$	$3081^{+959}_{-399}$	$11350^{+51964}_{-7387}$

$T_{\text{max}}$  = 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

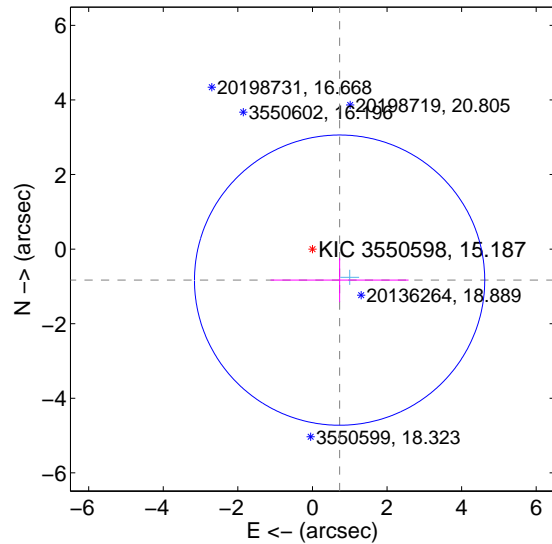
Supplemental centroid analysis for 003550598-03. Kepler magnitude: 15.19. Transit SNR 6.04

There are 1 quarters with good PRF difference image offsets

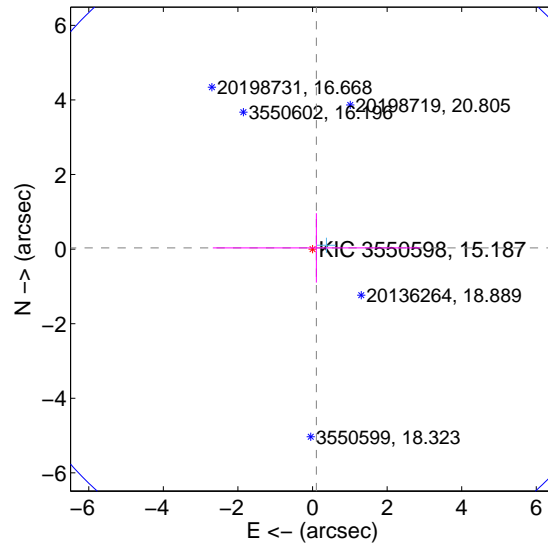
The direct PRF centroid is offset from the target star catalog position by about 1.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.106 \pm 1.297$	0.85	$-0.728 \pm 1.851$	$-0.832 \pm 0.589$
PRF-fit source offset from KIC position	$0.108 \pm 2.926$	0.04	$-0.103 \pm 2.775$	$0.032 \pm 0.931$
photometric centroid source offset	$1.83 \pm 1.19$	1.54	$0.47 \pm 0.79$	$1.77 \pm 1.21$

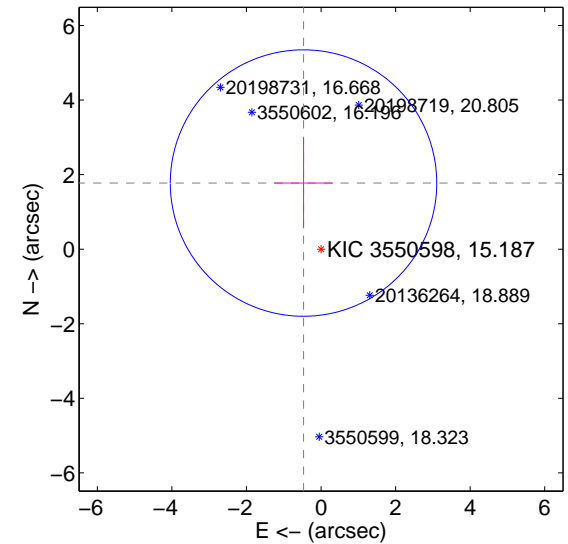
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

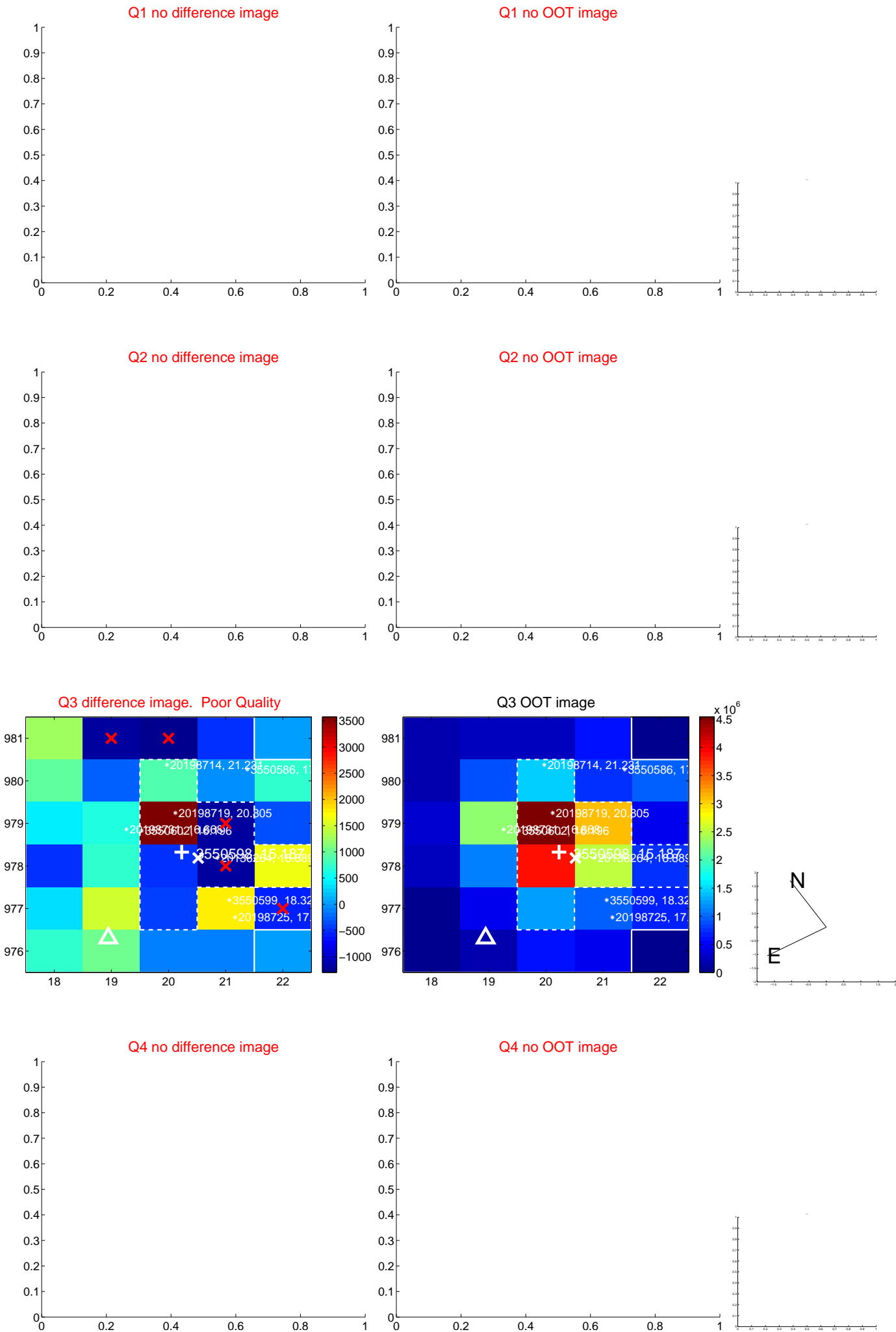


offset from photometric centroids



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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

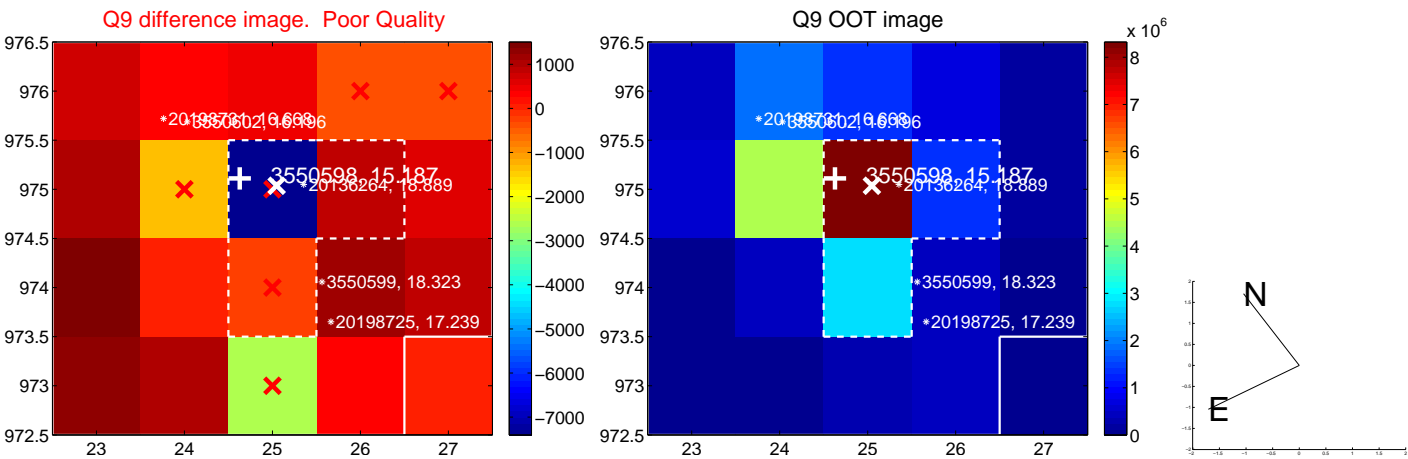


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

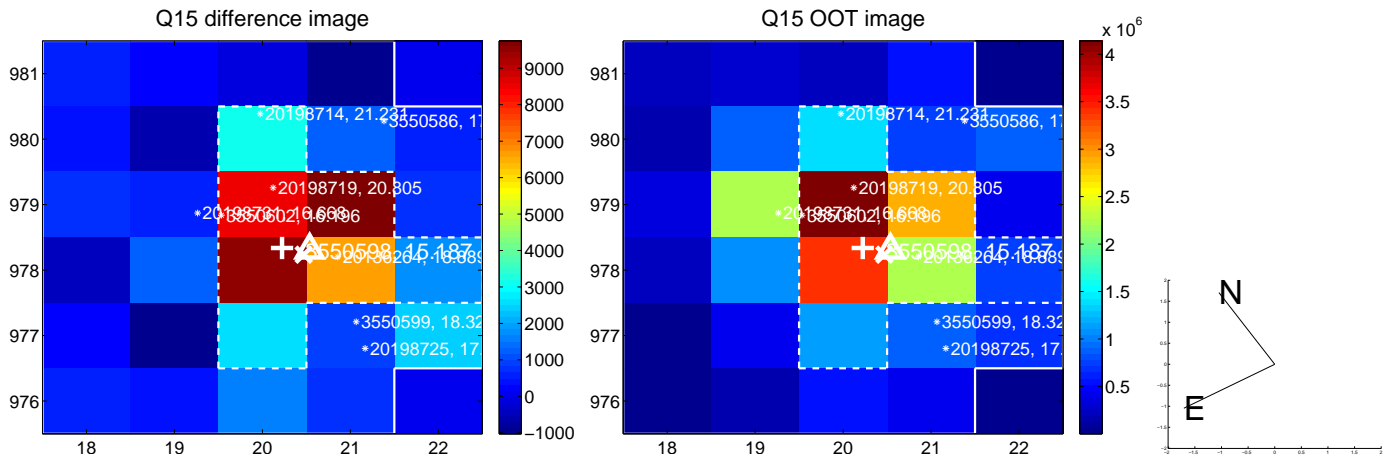




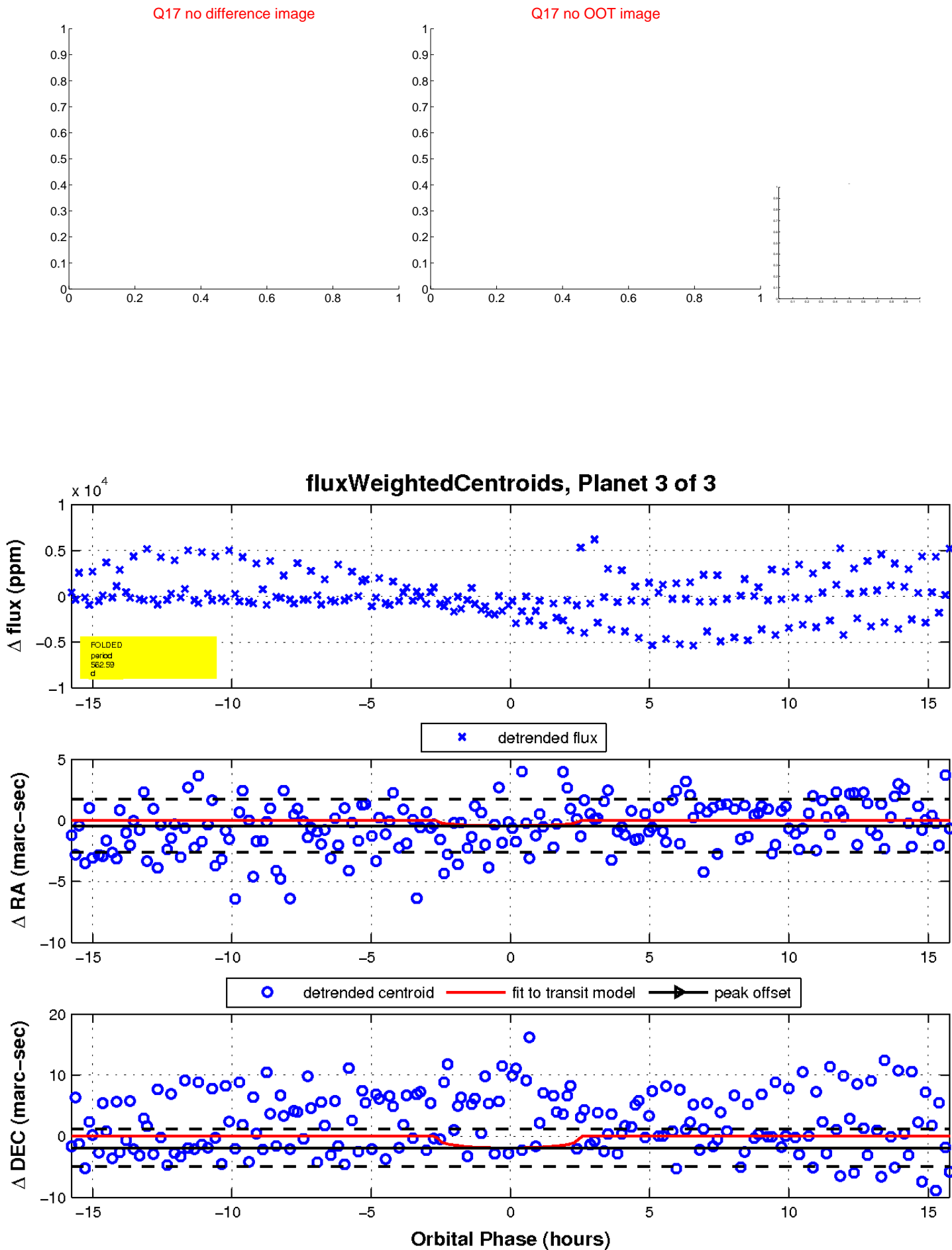
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

