

KIC 007751571

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})
007751571-01	OBS	1460.01	17.042126	142.426509	3305.8	7.580	191.3	115.9	0.77	5367	5.09	29.51
007751571-02	OBS	No	17.042079	136.058455	228.5	5.821	8.7	9.1	0.77	5367	1.30	29.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007751571-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
007751571-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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 for comment definitions.

Ephemeris Match Information For 007751571-01

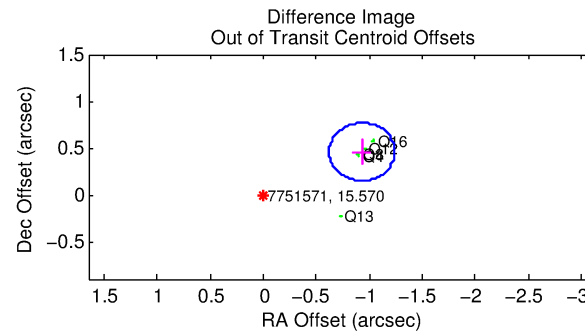
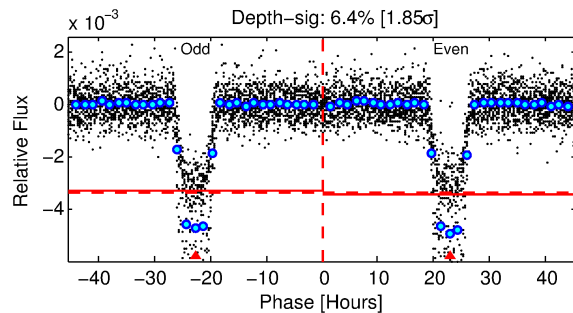
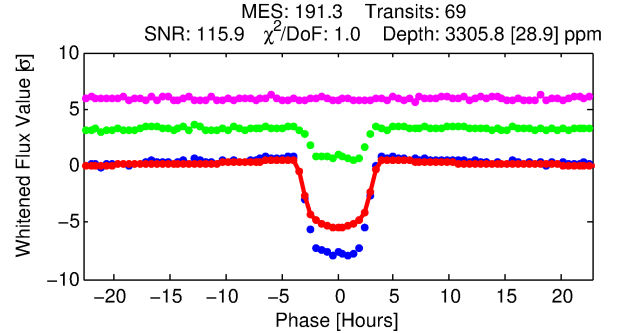
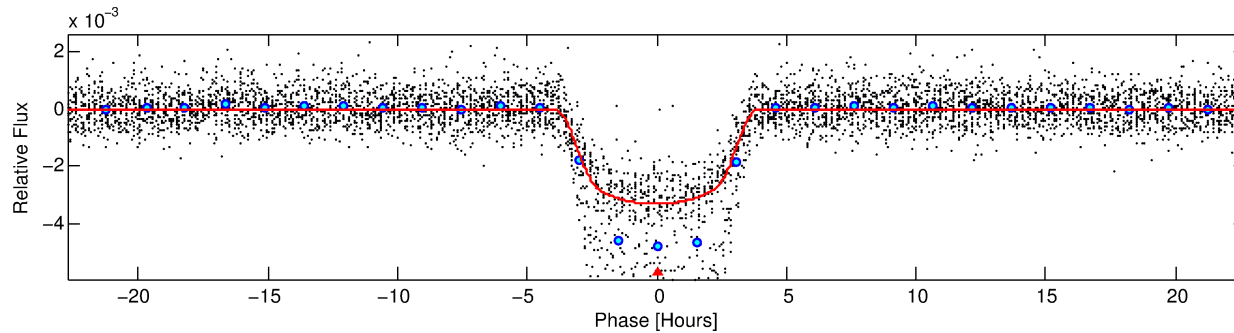
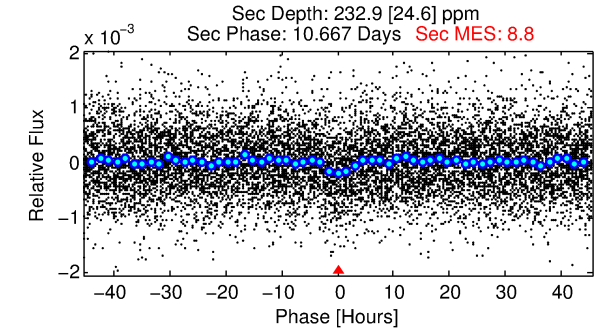
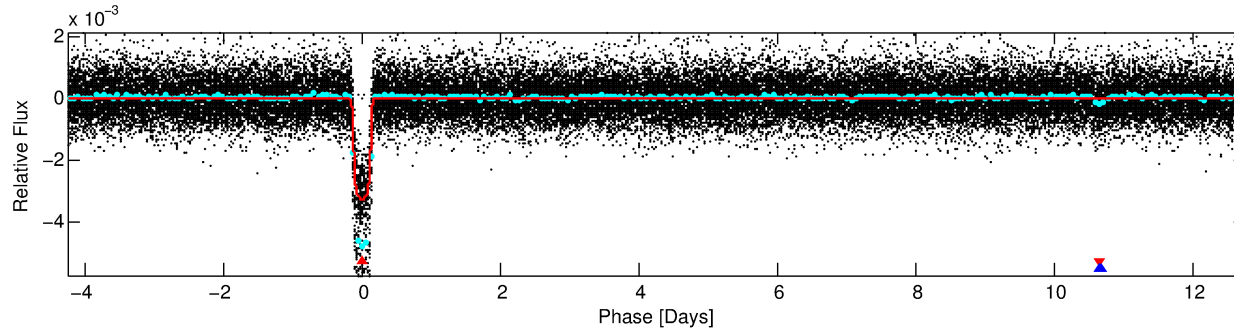
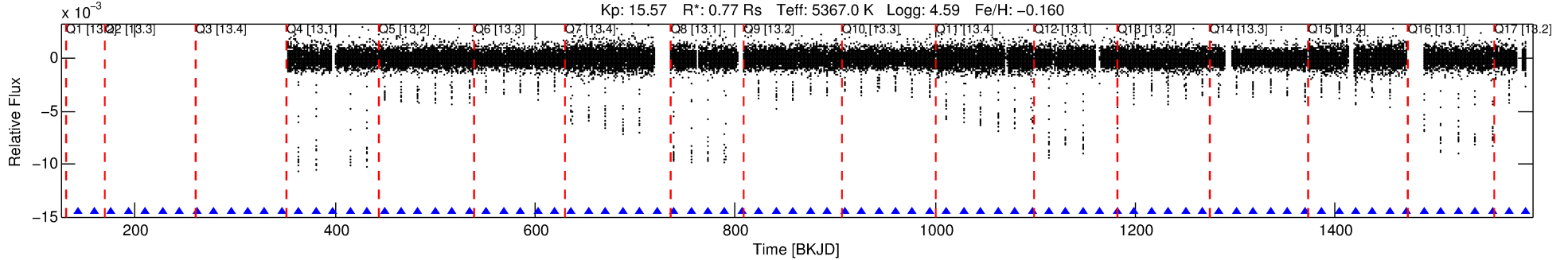
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
007751571-01	7751571	6912.01	7751562	1:1	6.1	0	-1	15.25	15.57	16.86	Direct-PRF	0	0.05	0.02

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 7751571 Candidate: 1 of 2 Period: 17.042 d
KOI: K01460.01 Corr: 0.991

Kp: 15.57 R*: 0.77 Rs Teff: 5367.0 K Logg: 4.59 Fe/H: -0.160



DV Fit Results:

Period = 17.04213 [0.00003] d
Epoch = 142.4265 [0.0017] BKJD
Rp/R* = 0.0604 [0.0006]
a/R* = 11.07 [0.38]
b = 0.84 [0.01]
Seff = 29.51 [7.70]
Teq = 594 [39] K
Rp = 5.09 [0.94] Re
a = 0.1227 [0.0189] AU
Ag = 74.36 [18.33] [4.00σ]
Teffp = 2698 [118] K [16.93σ]

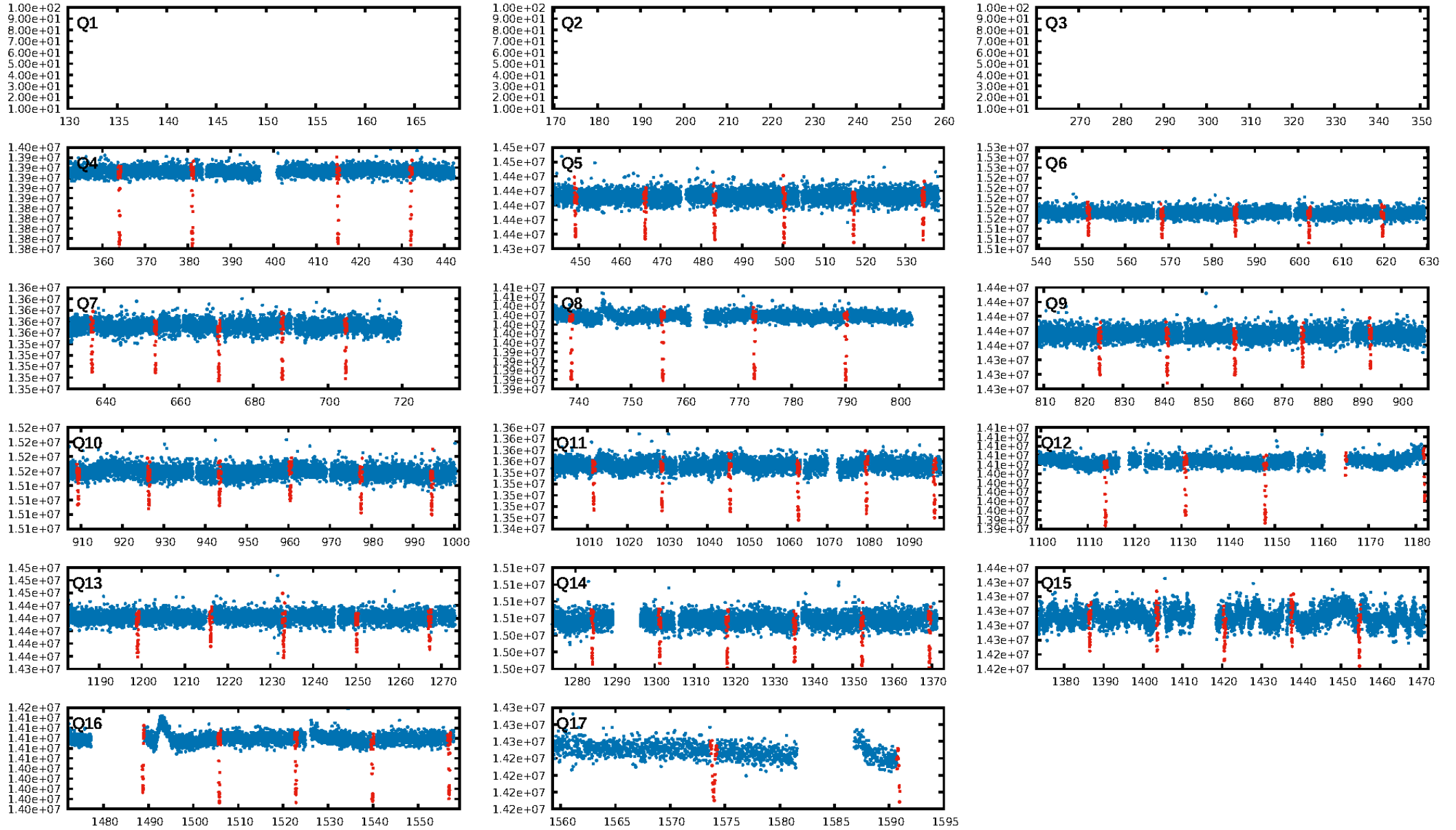
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [67/67]
GhostDiagnostic-chr: -0.2268
Centroid-sig: 0.0%
Centroid-so: 22.550 arcsec [331.40σ]
OotOffset-rm: 1.036 arcsec [10.04σ]
KicOffset-rm: 6.151 arcsec [21.89σ]
OotOffset-st: 0/0/4/1 [5]
KicOffset-st: 0/0/4/1 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [14/14]

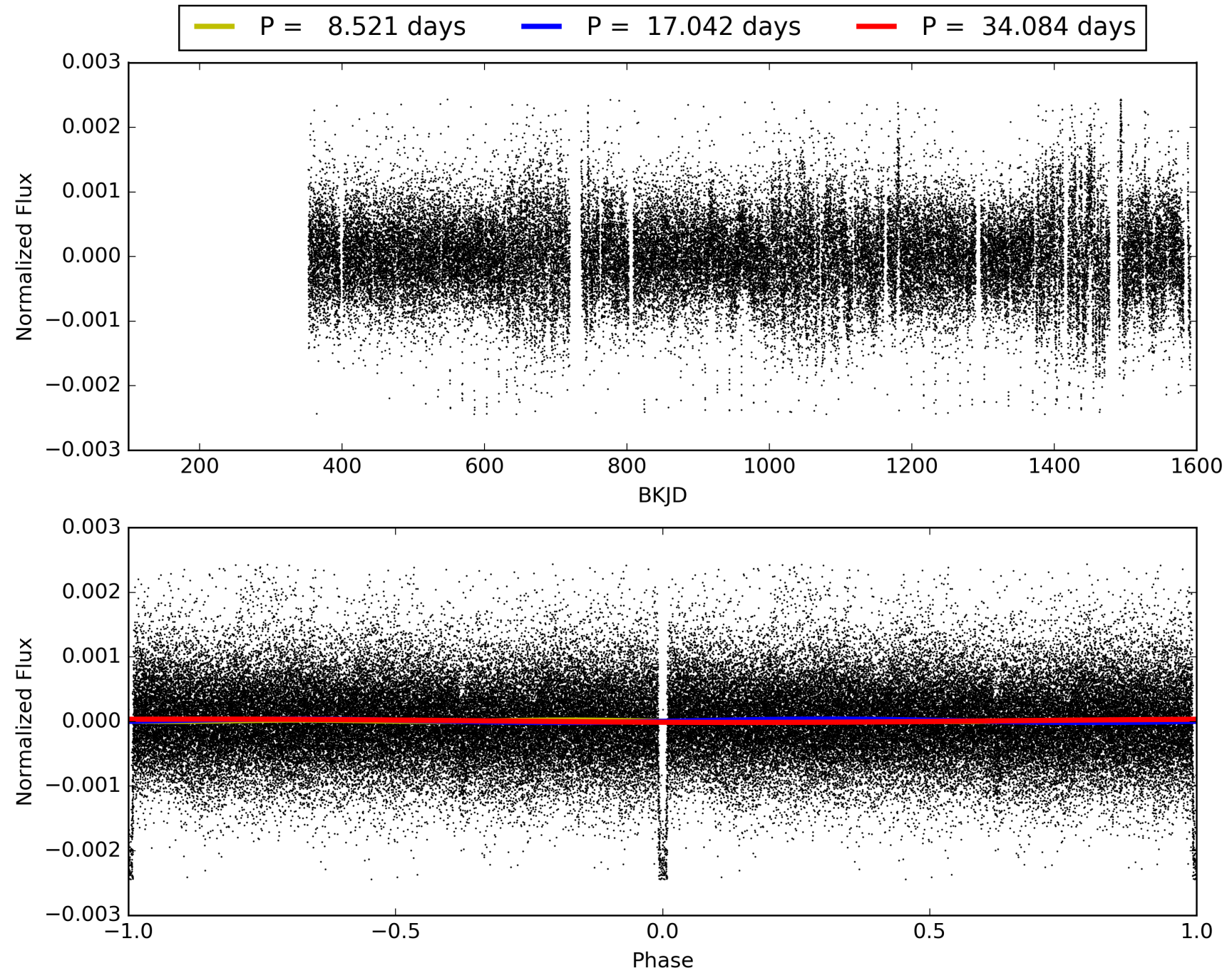
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:41:10 Z

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

TCE 007751571-01, PDC Light Curves

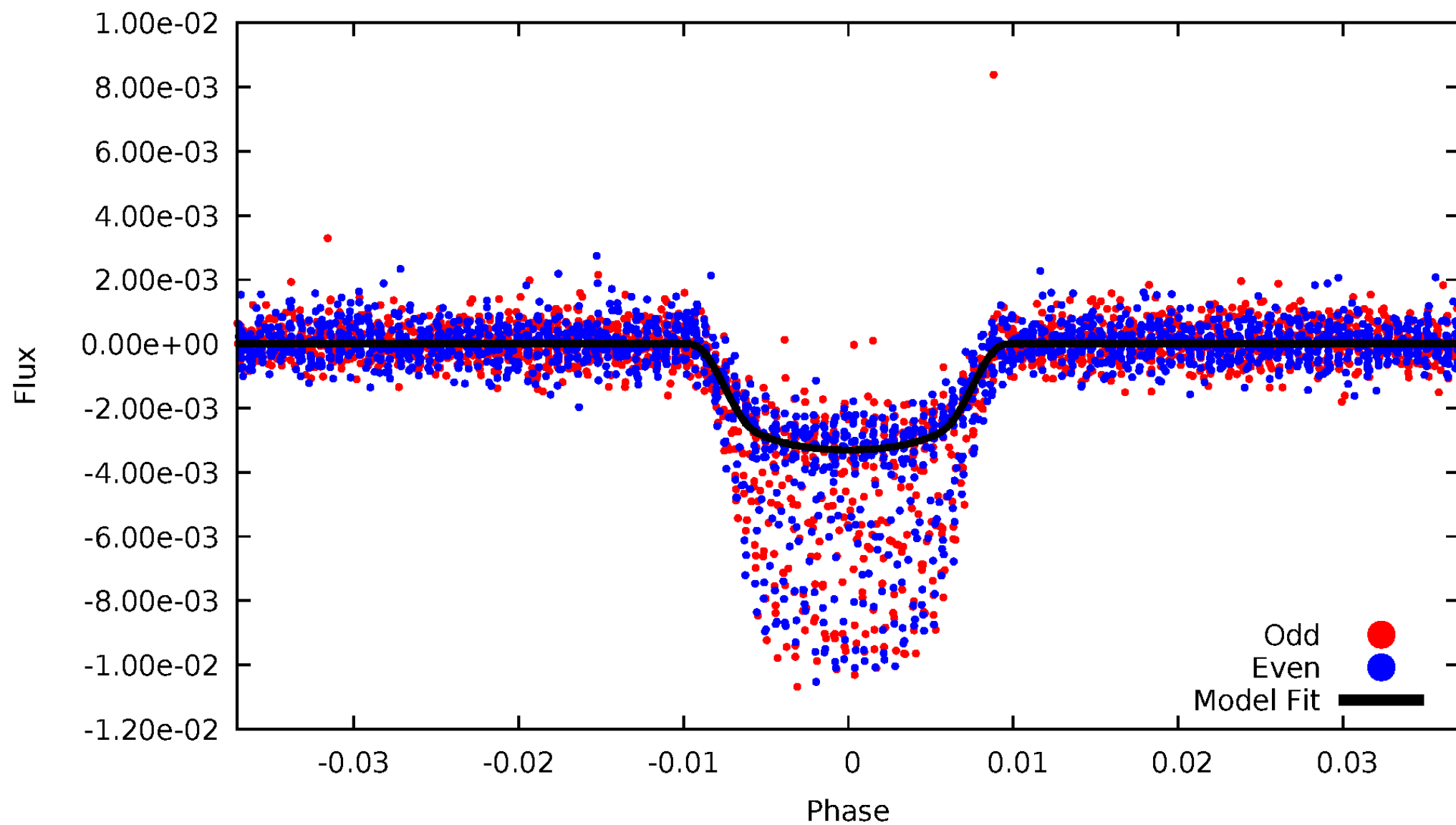


TCE 007751571-01



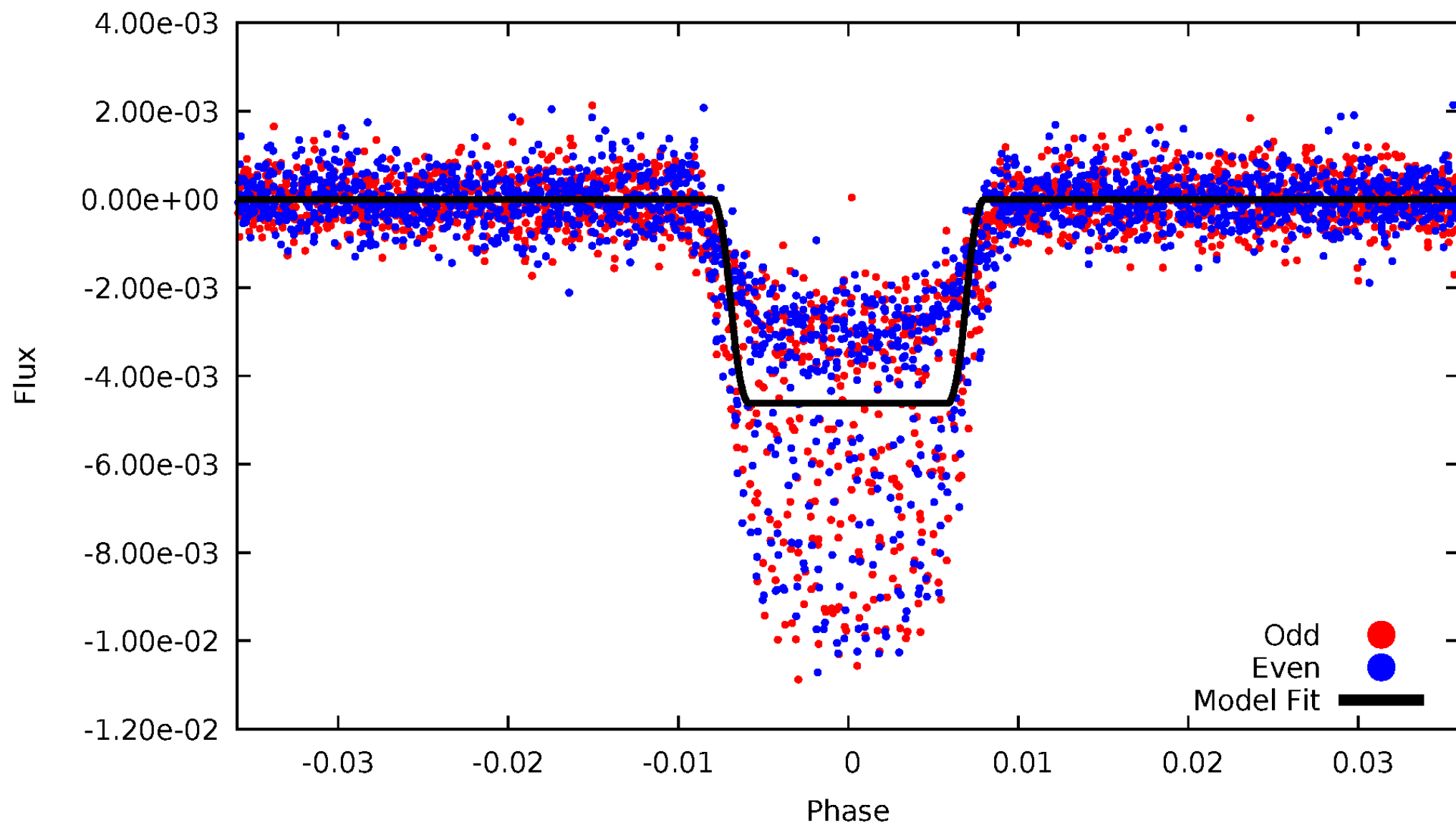
DV Odd/Even

TCE 007751571-01

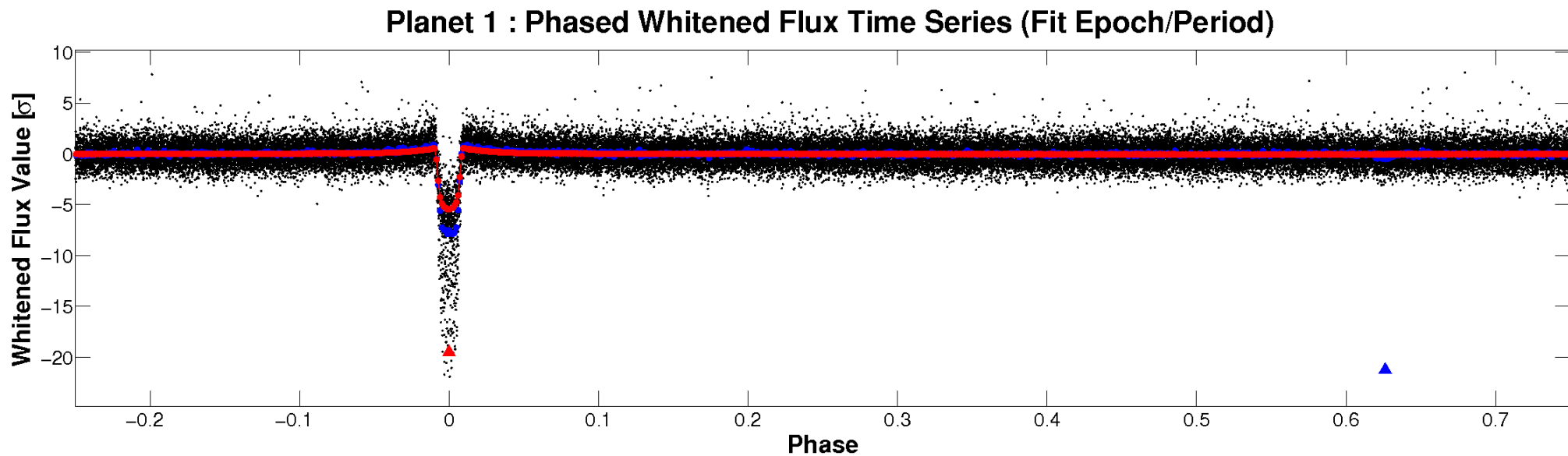
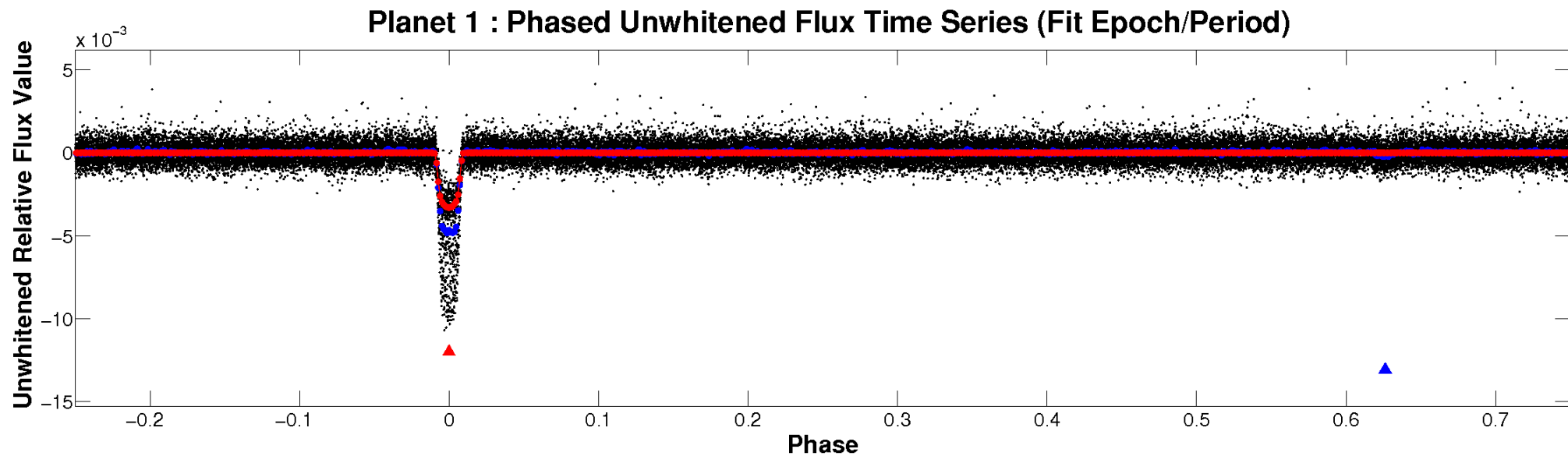


ALT Odd/Even

TCE 007751571-01

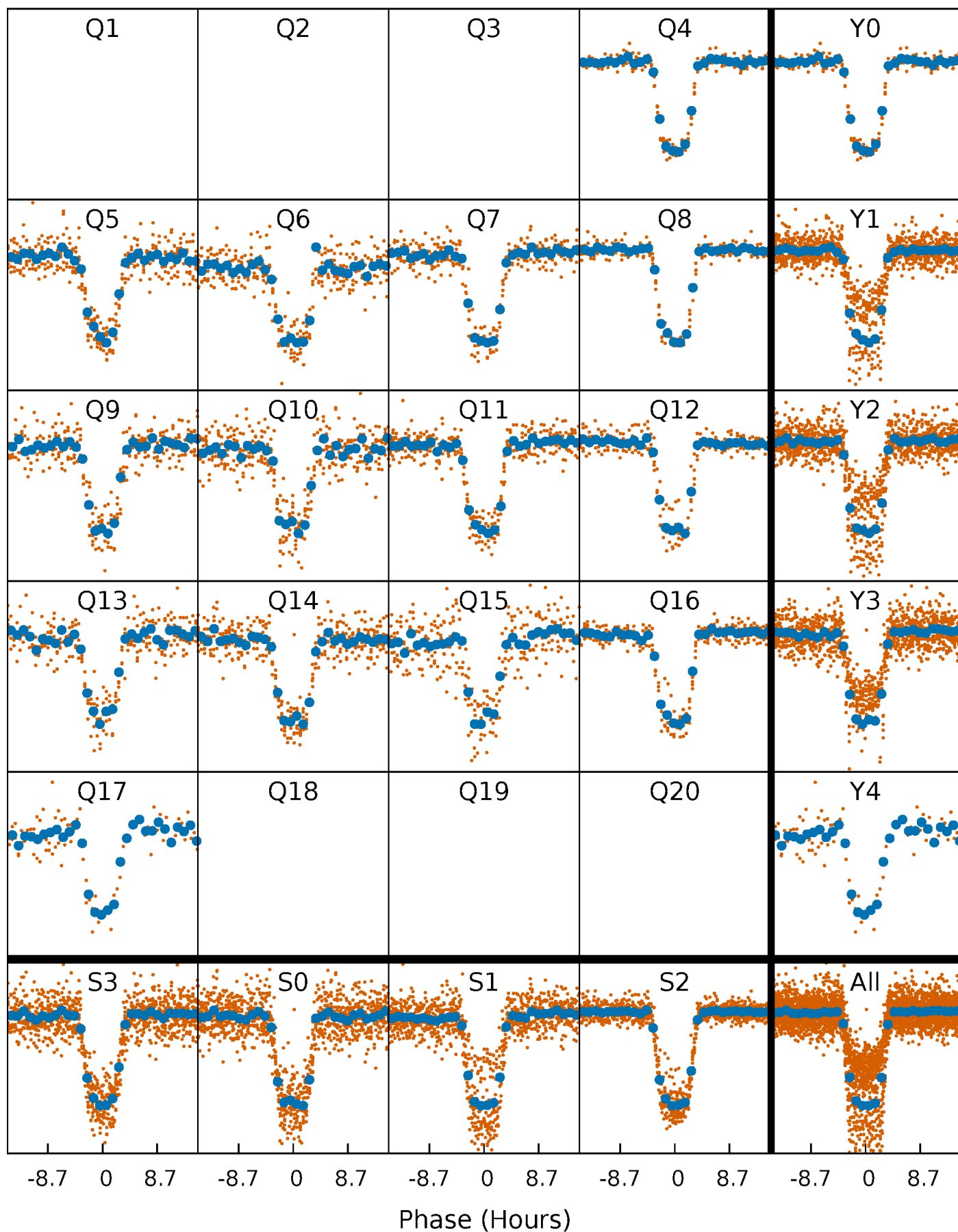


Non-Whitened Vs. Whitened Light Curve



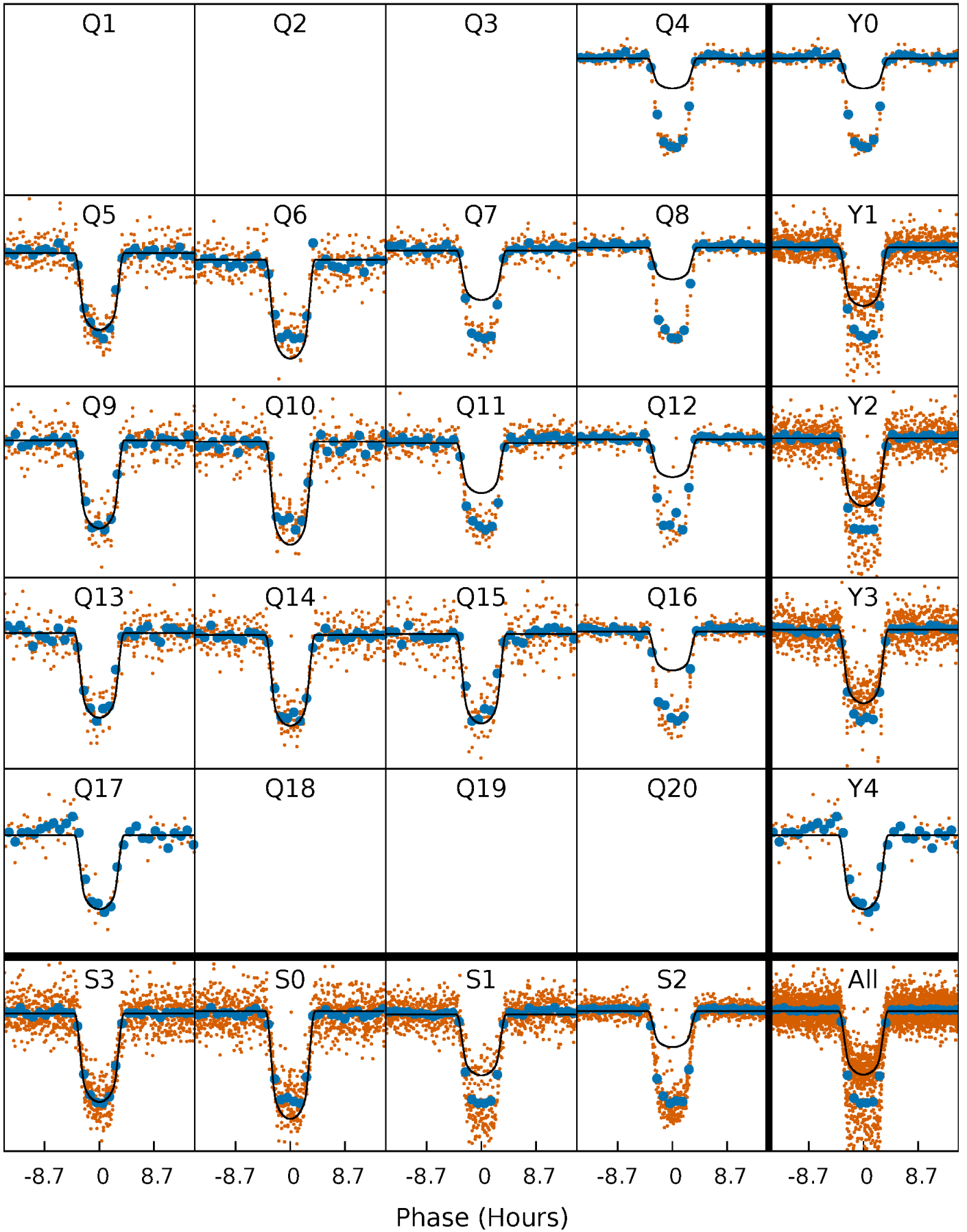
PDC Quarter-Phased Transit Curves

TCE 007751571-01 P= 17.042126 Days $T_0=142.426509$ (BKJD)



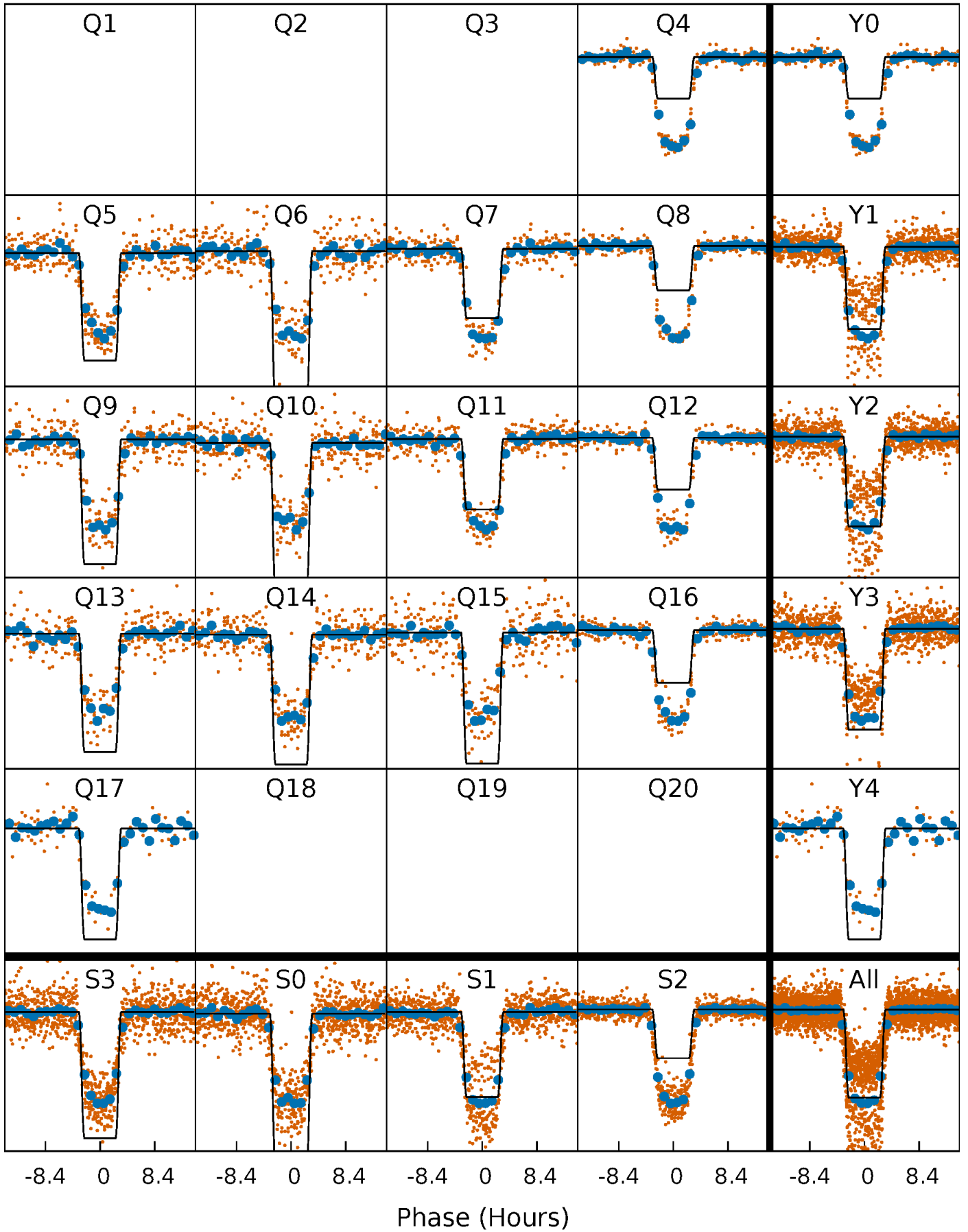
DV Quarter-Phased Transit Curves

TCE 007751571-01 P= 17.042126 Days $T_0=142.426509$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

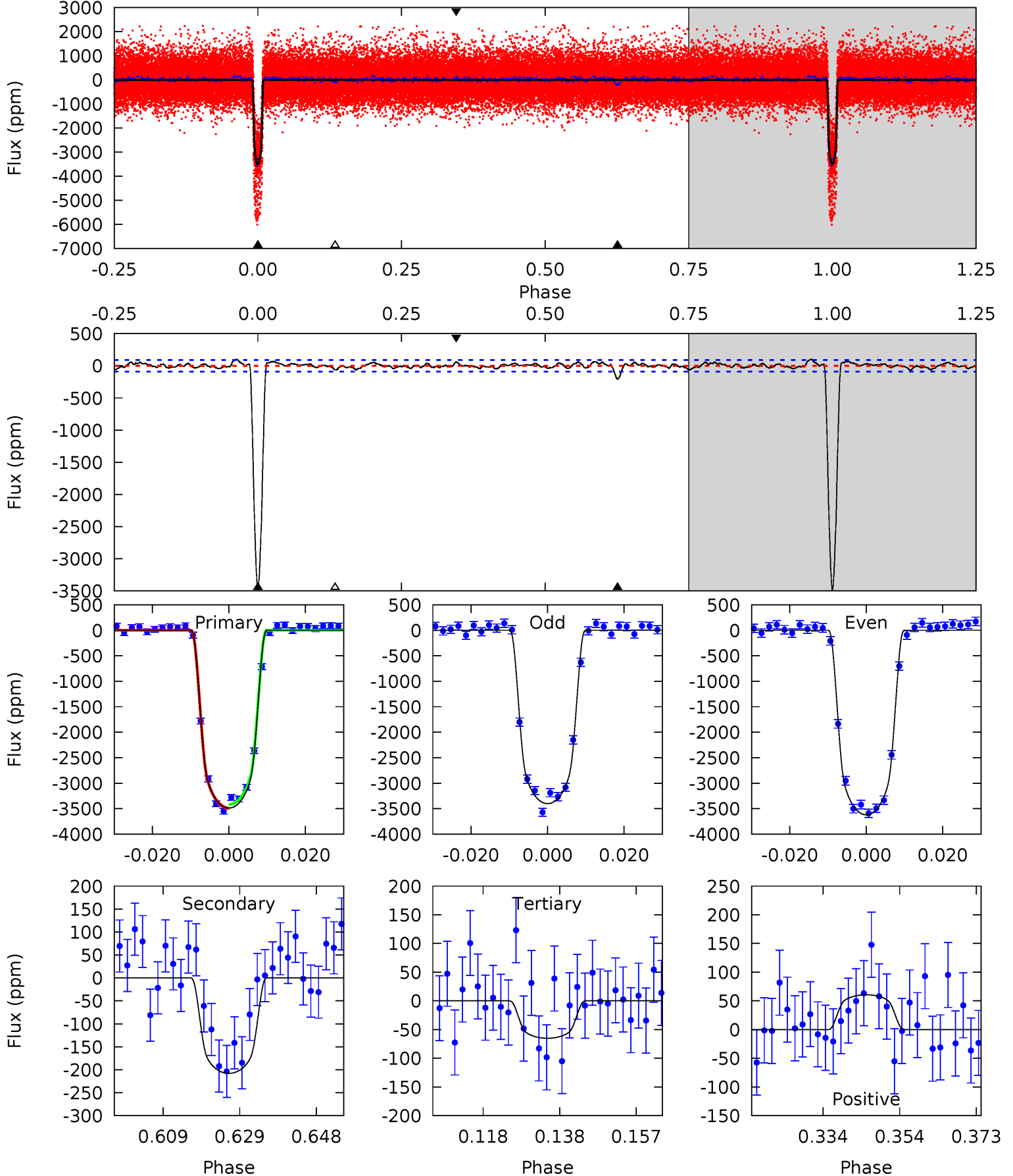
TCE 007751571-01 P= 17.042218 Days $T_0=142.422755$ (BKJD)



DV Model-Shift Uniqueness Test

007751571-01, $P = 17.042126$ Days, $E = 142.426509$ Days

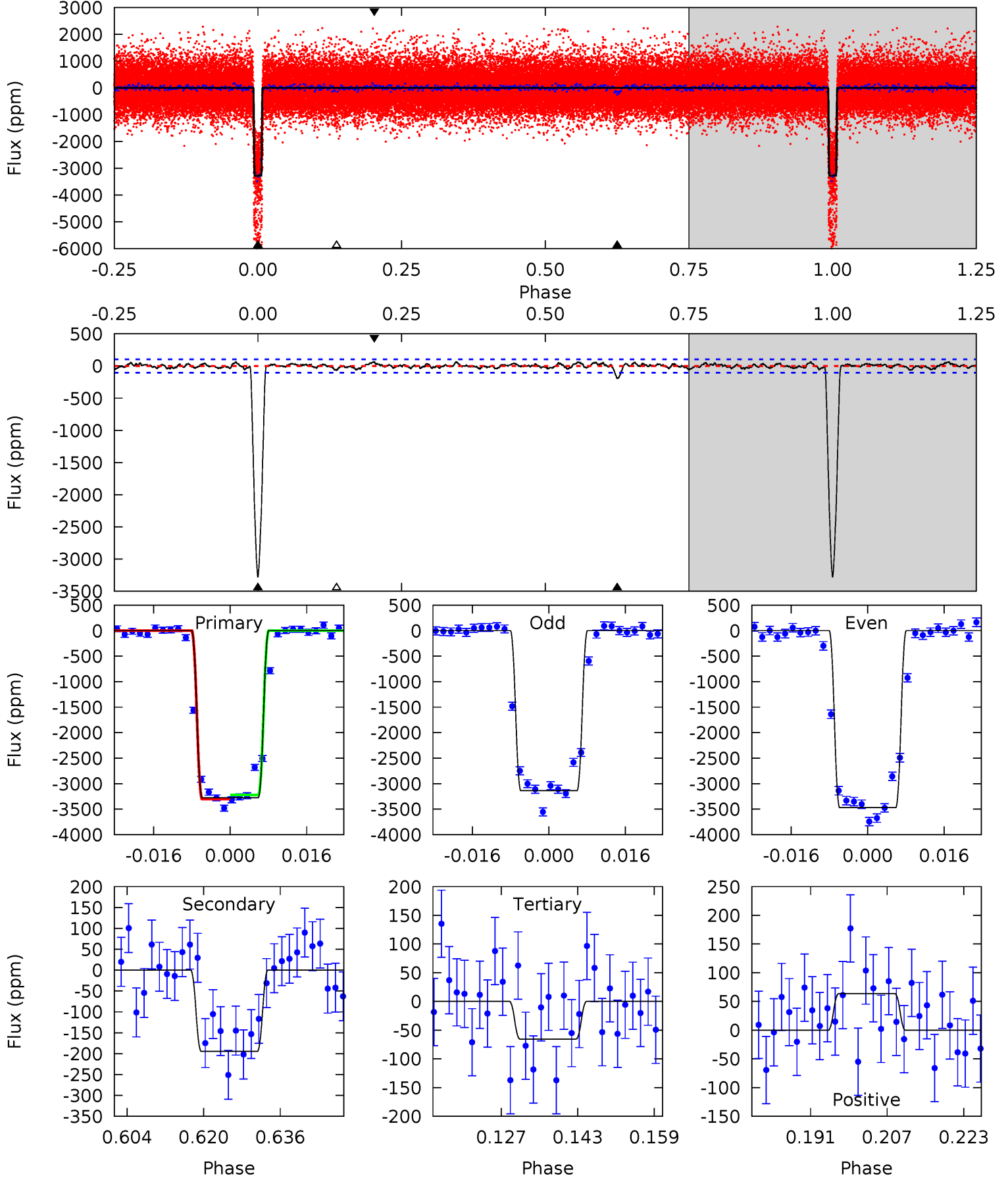
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
187.8	11.2	3.51	3.27	4.90	2.33	1.53	184.3	184.6	7.69	7.93	5.92	1.39	0.03	2.02



Alt Model-Shift Uniqueness Test

007751571-01, $P = 17.042218$ Days, $E = 142.422755$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
156.1	9.27	3.12	3.04	4.94	2.41	1.15	153.0	153.1	6.15	6.23	7.90	1.42	0.02	1.85



Stellar Parameters For KIC 007751571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5367^{+185}_{-185}	$4.590^{+0.032}_{-0.120}$	$-0.160^{+0.300}_{-0.300}$	$0.773^{+0.143}_{-0.066}$	$0.854^{+0.086}_{-0.096}$	$2.601^{+0.515}_{-0.946}$
	+3%/-3%	+1%/-3%	+188%/-188%	+18%/-9%	+10%/-11%	+20%/-36%
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 007751571-01 / KOI 1460.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-208 ± 19	$5.21^{+0.50}_{-0.32}$	844^{+41}_{-34}	3194^{+82}_{-83}	62^{+9}_{-10}
Alt.	-194 ± 21	$5.91^{+0.56}_{-0.37}$	846^{+41}_{-37}	3057^{+79}_{-83}	46^{+7}_{-8}

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 $A_{obs} \gg 1.0$

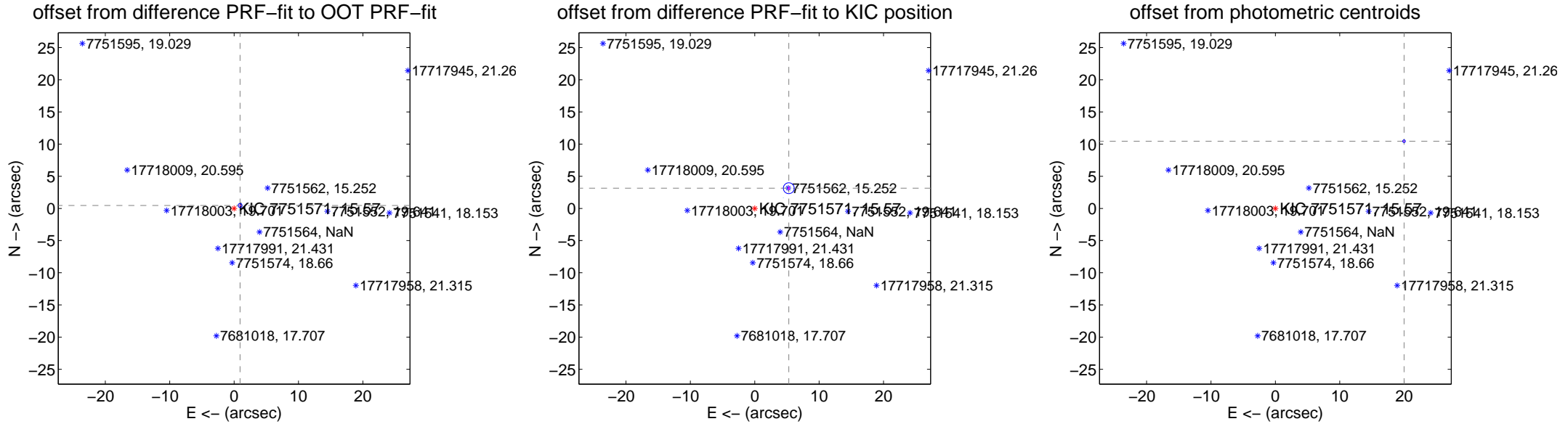
DV Centroid Data

Supplemental centroid analysis for 007751571-01. Kepler magnitude: 15.57. Transit SNR 115.88

There are 5 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.86 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.036 ± 0.103	10.04	-0.930 ± 0.076	0.458 ± 0.127
PRF-fit source offset from KIC position	6.151 ± 0.281	21.89	-5.288 ± 0.165	3.142 ± 0.290
photometric centroid source offset	22.55 ± 0.07	331.40	-19.98 ± 0.07	10.45 ± 0.06



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

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



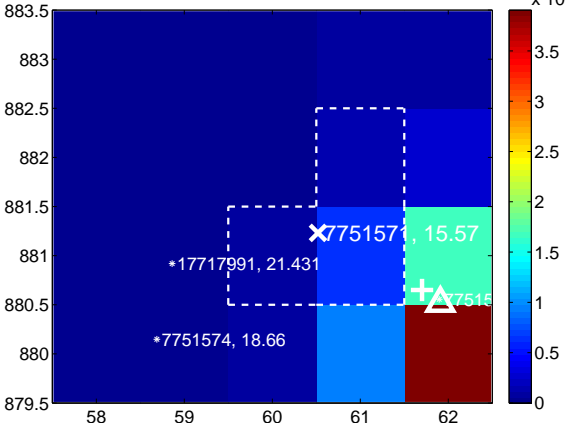
Q3 no difference image



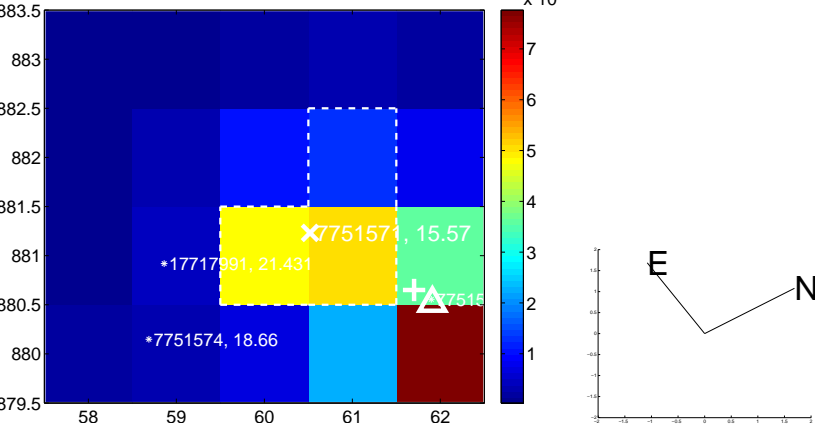
Q3 no OOT image



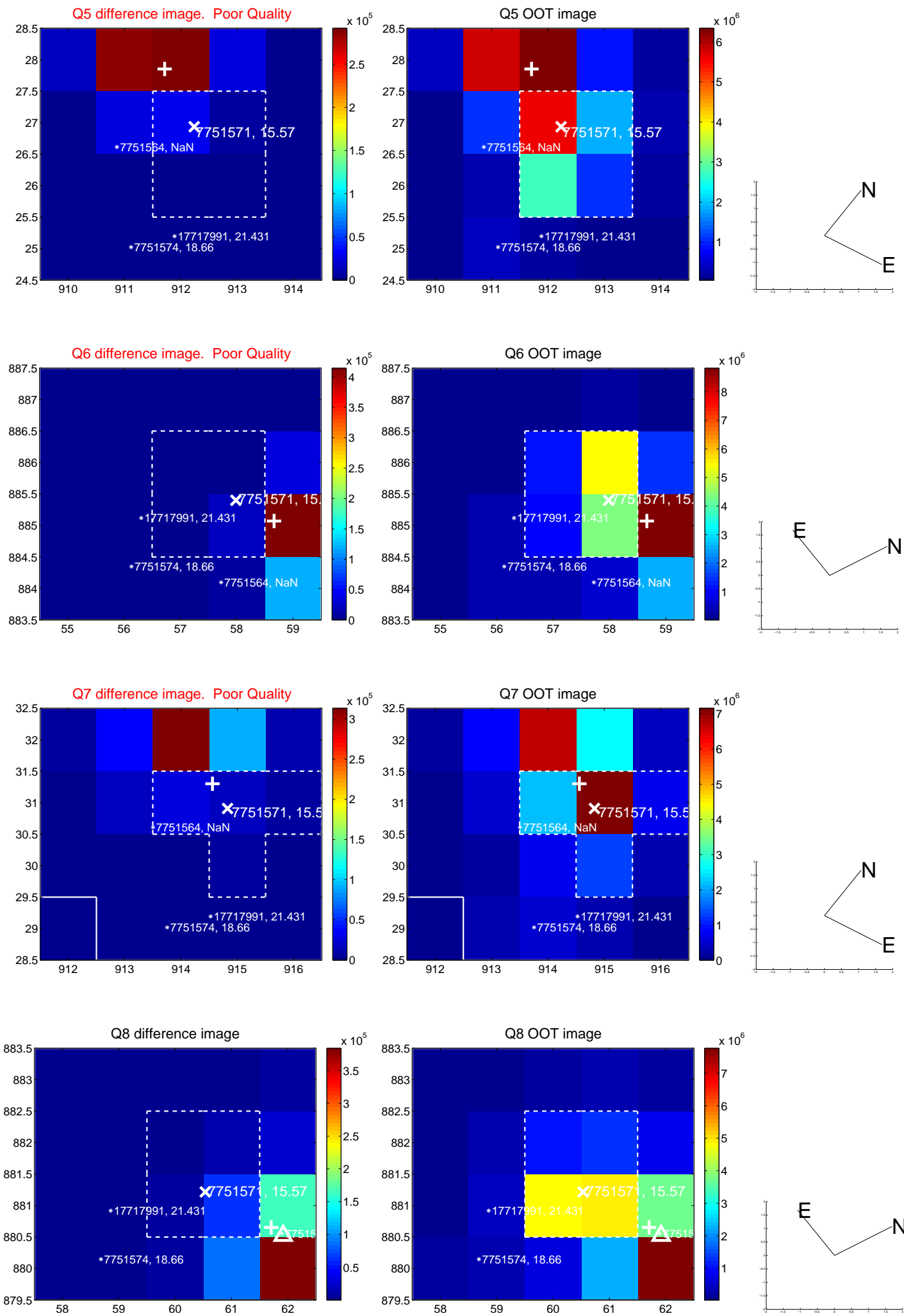
Q4 difference image



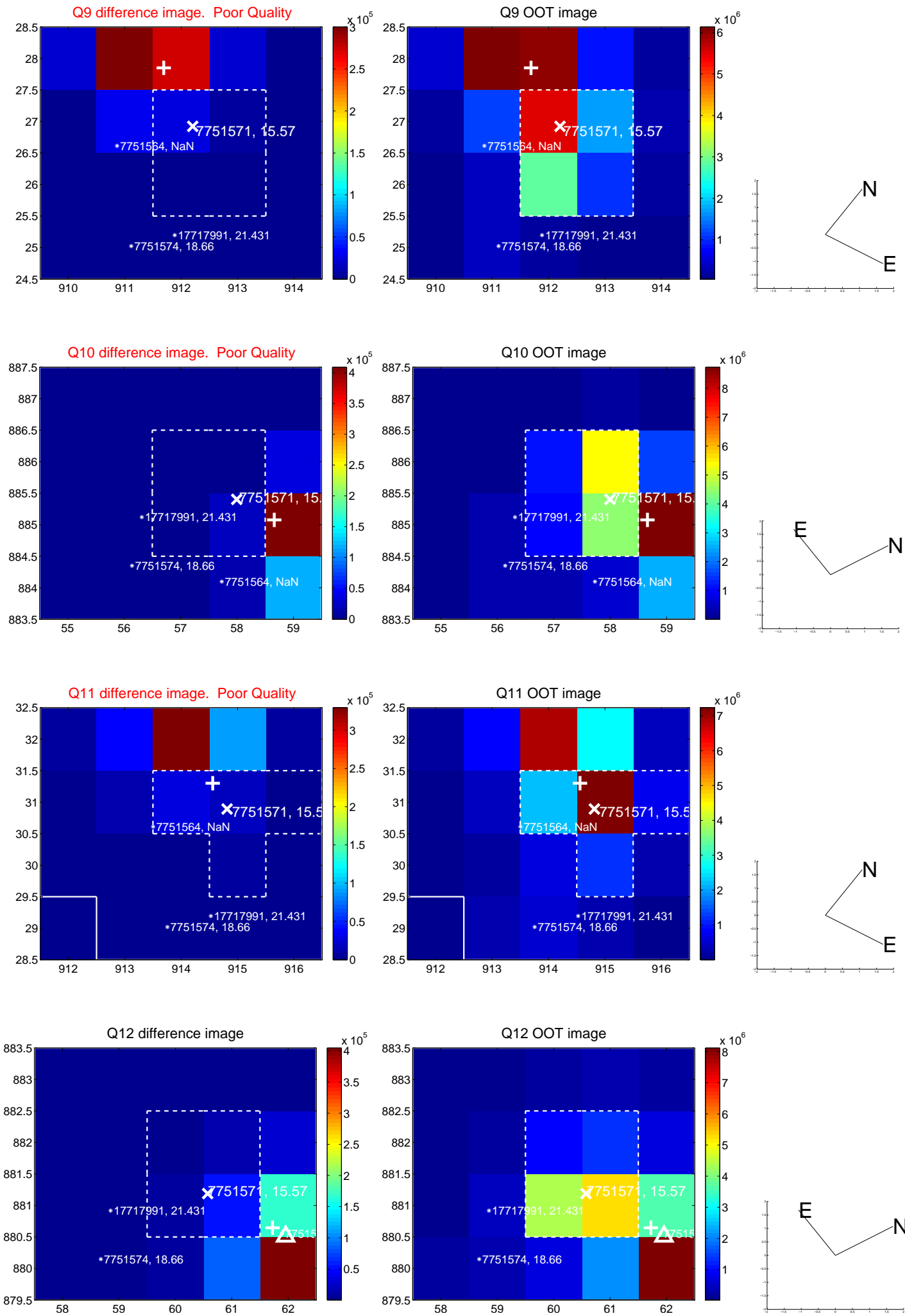
Q4 OOT image



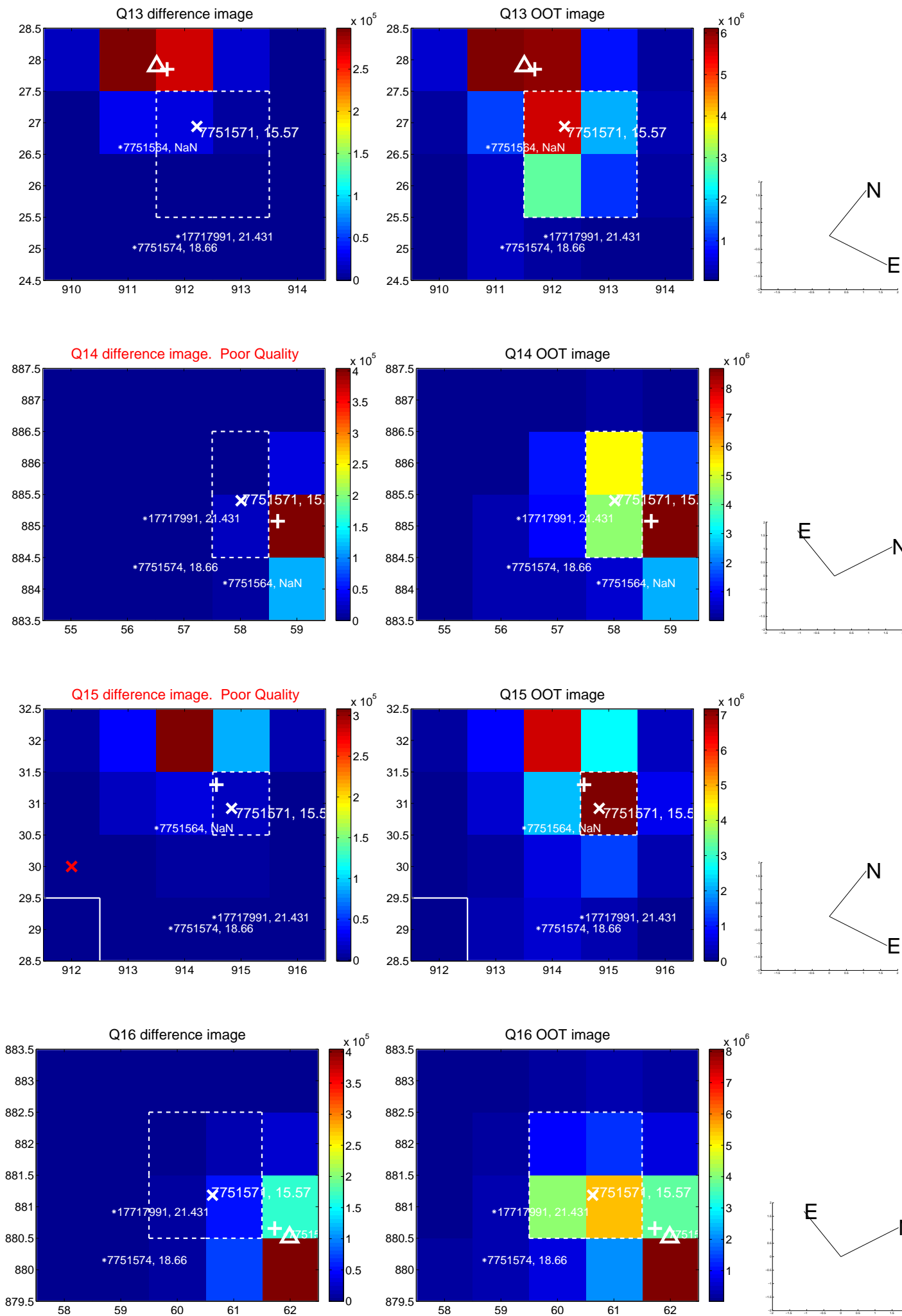
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



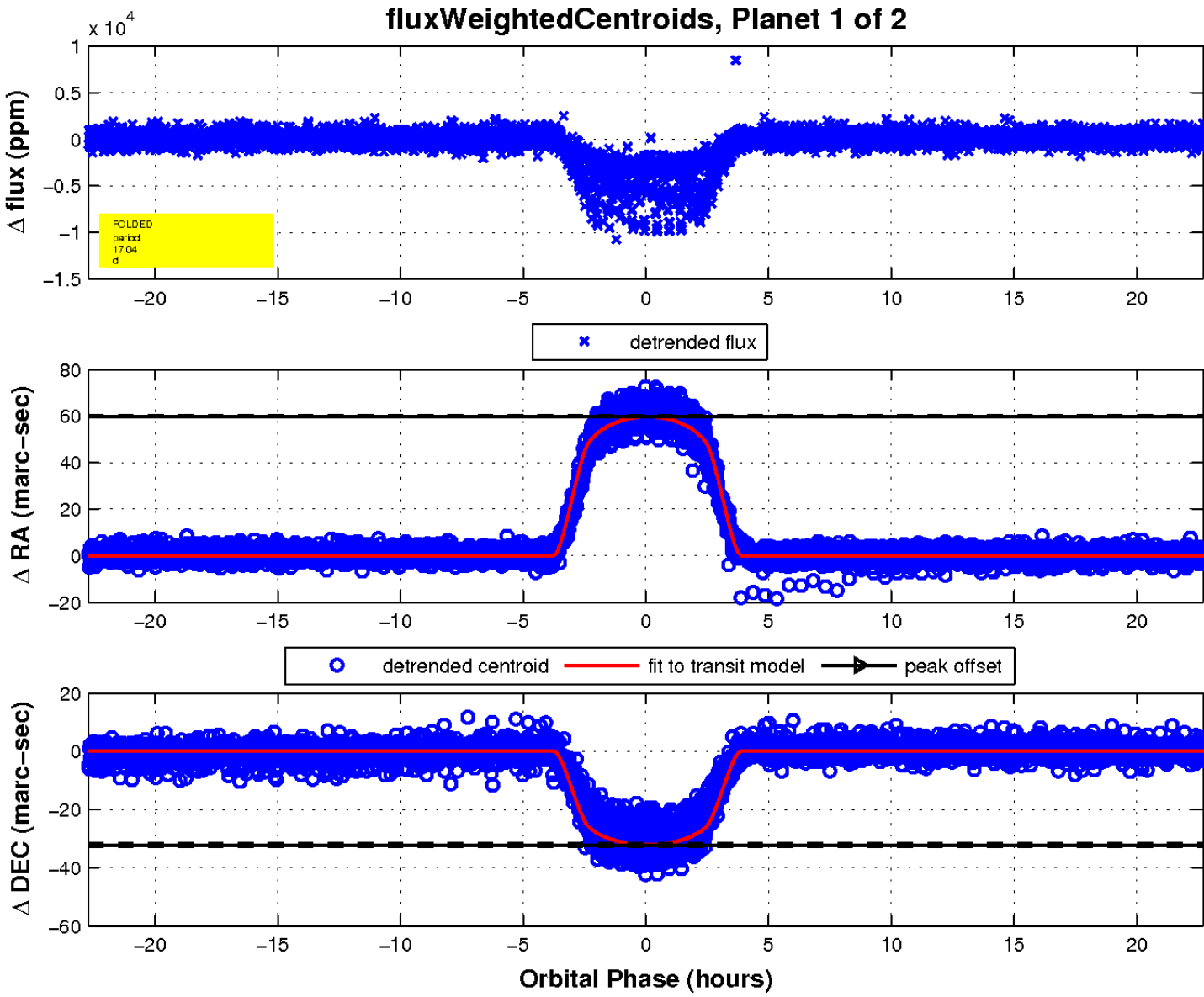
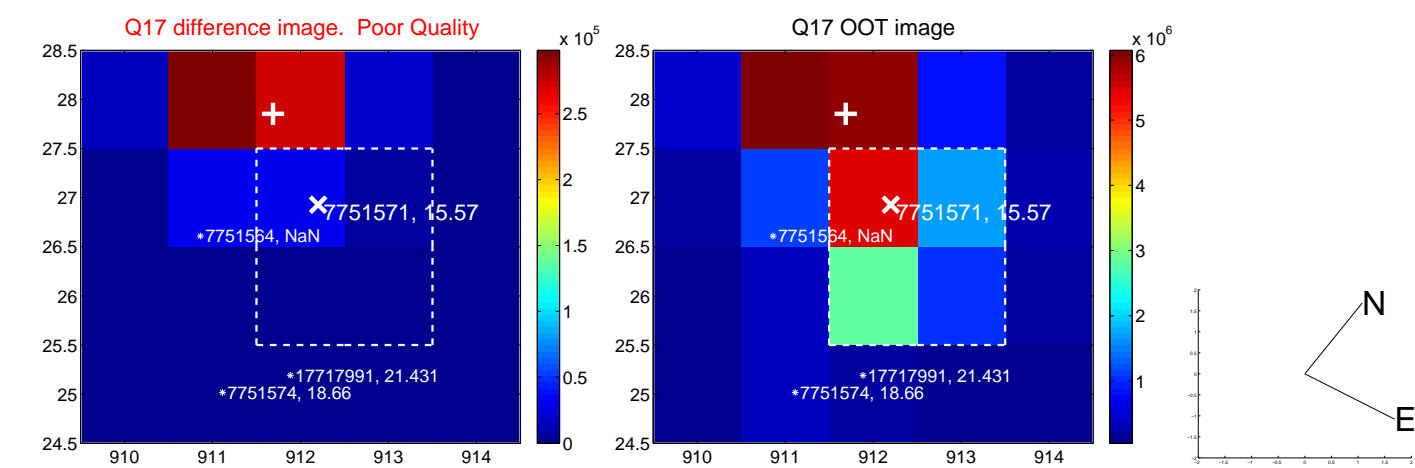
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

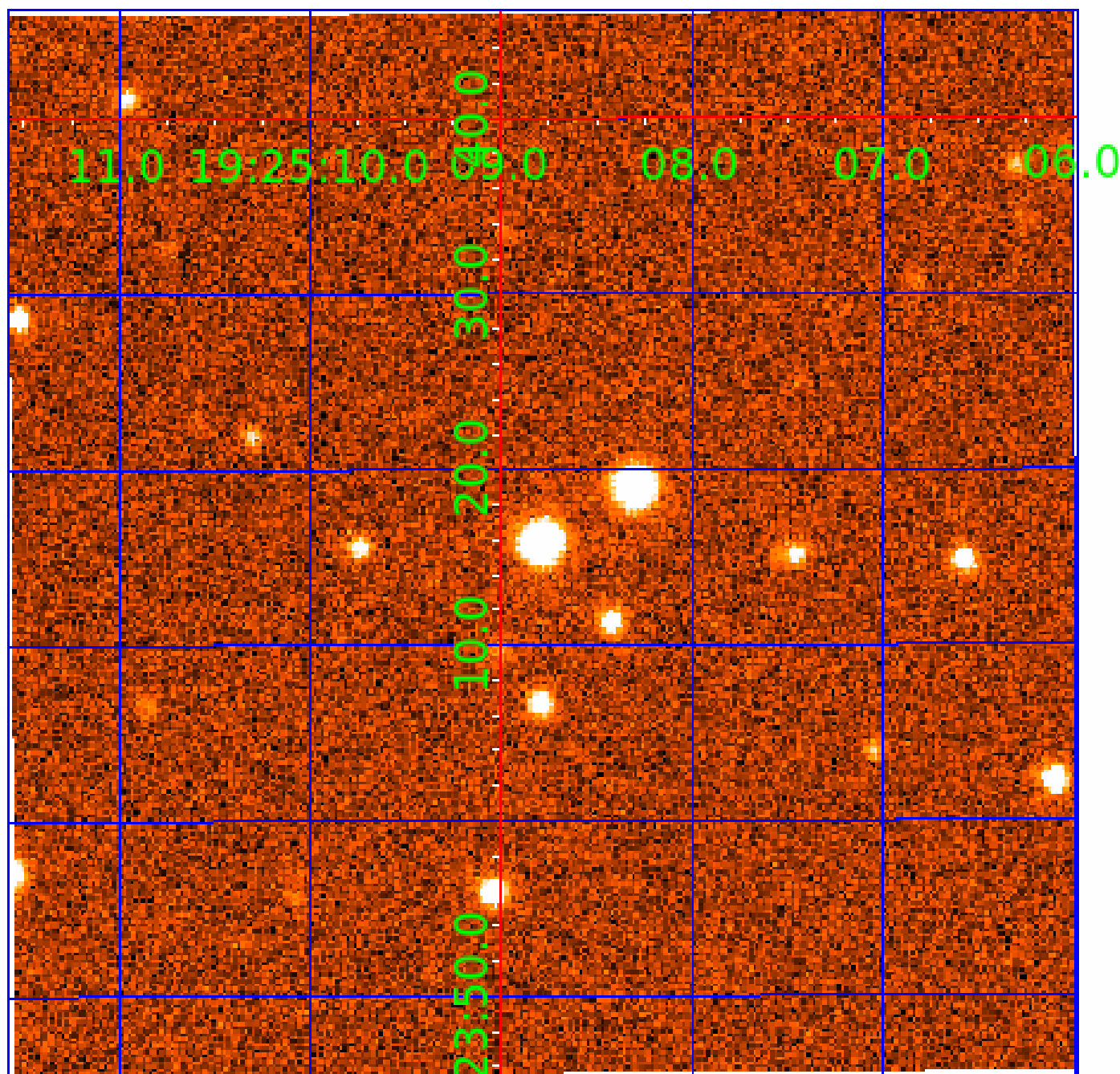


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007751571

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})
007751571-01	OBS	1460.01	17.042126	142.426509	3305.8	7.580	191.3	115.9	0.77	5367	5.09	29.51
007751571-02	OBS	No	17.042079	136.058455	228.5	5.821	8.7	9.1	0.77	5367	1.30	29.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007751571-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
007751571-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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 for comment definitions.

Ephemeris Match Information For 007751571-02

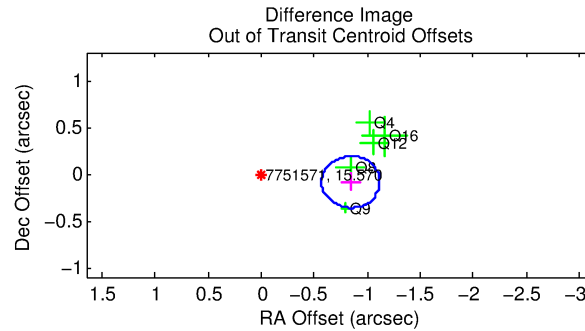
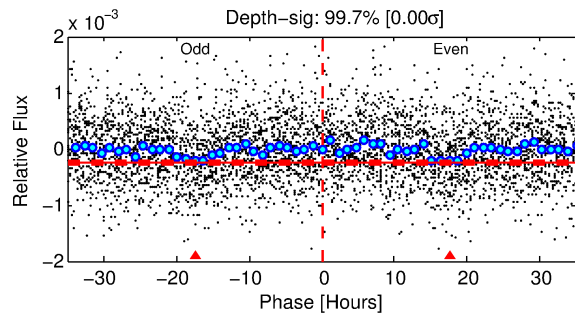
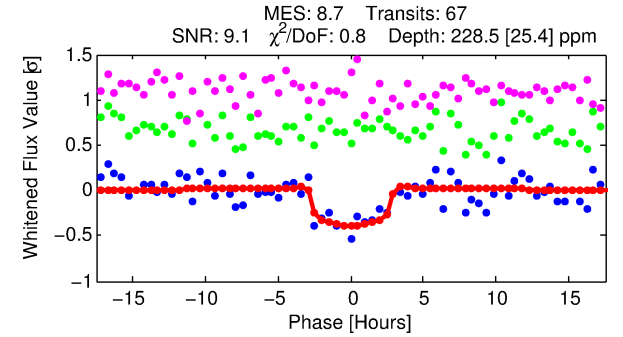
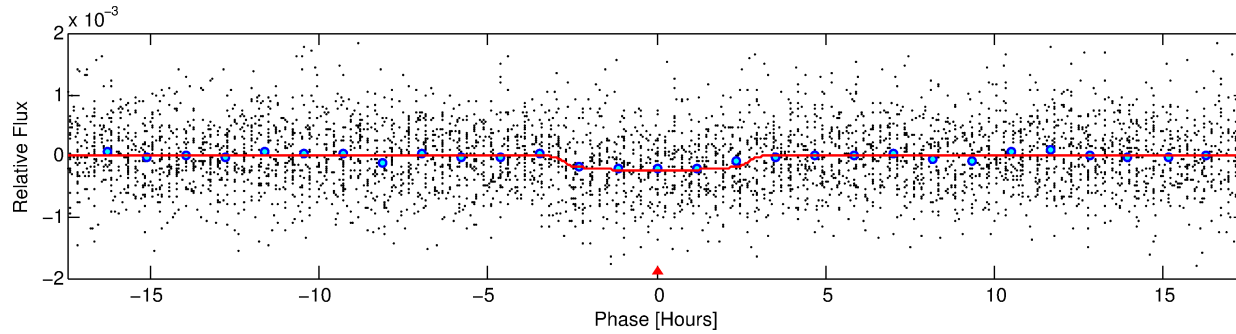
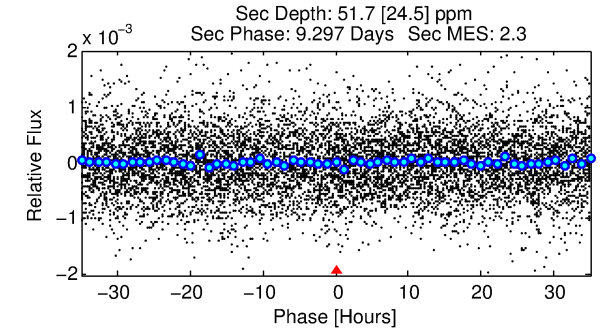
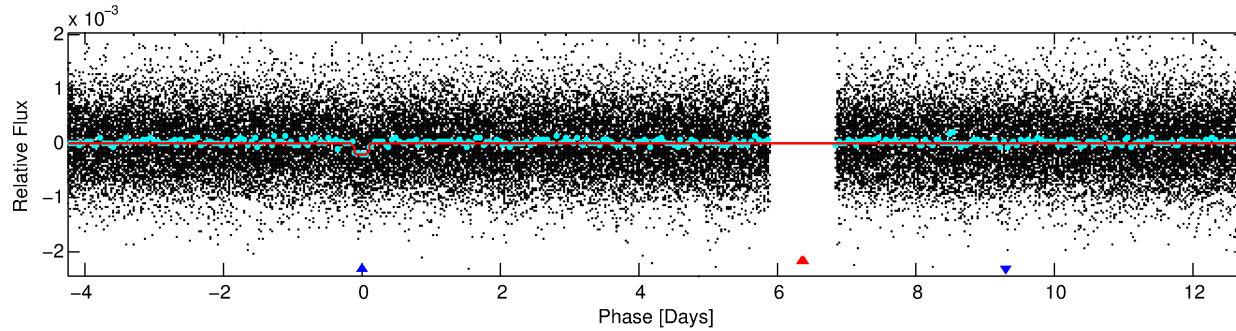
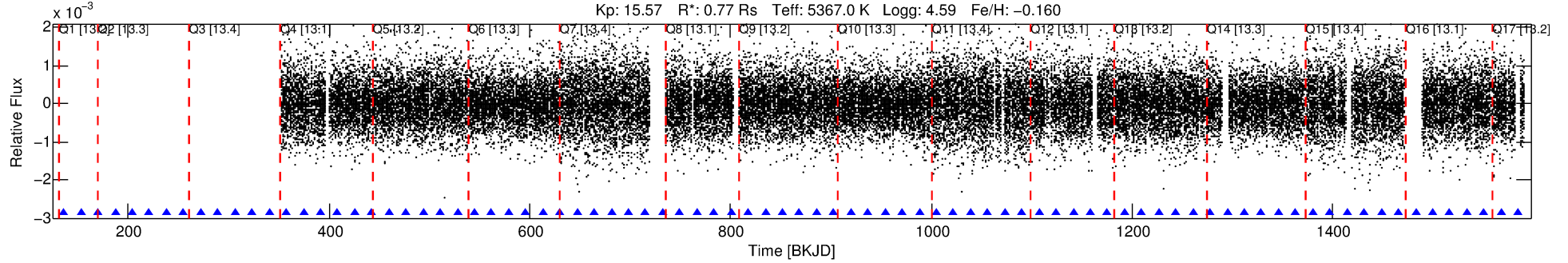
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
007751571-02	7751571	007751562-02	7751562	1:1	6.1	0	-1	15.25	15.57	8.92	Direct-PRF	0	0.09	0.01

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 7751571 Candidate: 2 of 2 Period: 17.042 d
KOI: K01460 Corr: No Ephemeris Match

Kp: 15.57 R*: 0.77 Rs Teff: 5367.0 K Logg: 4.59 Fe/H: -0.160



DV Fit Results:

Period = 17.04208 [0.00031] d
Epoch = 136.0585 [0.0159] BKJD
Rp/R* = 0.0154 [0.0158]
a/R* = 14.15 [59.33]
b = 0.79 [1.99]
Seff = 29.51 [7.70]
Teq = 594 [39] K
Rp = 1.30 [1.36] Re
a = 0.1227 [0.0189] AU
Ag = 254.25 [540.11] [0.47σ]
Teff = 3669 [1942] K [1.58σ]

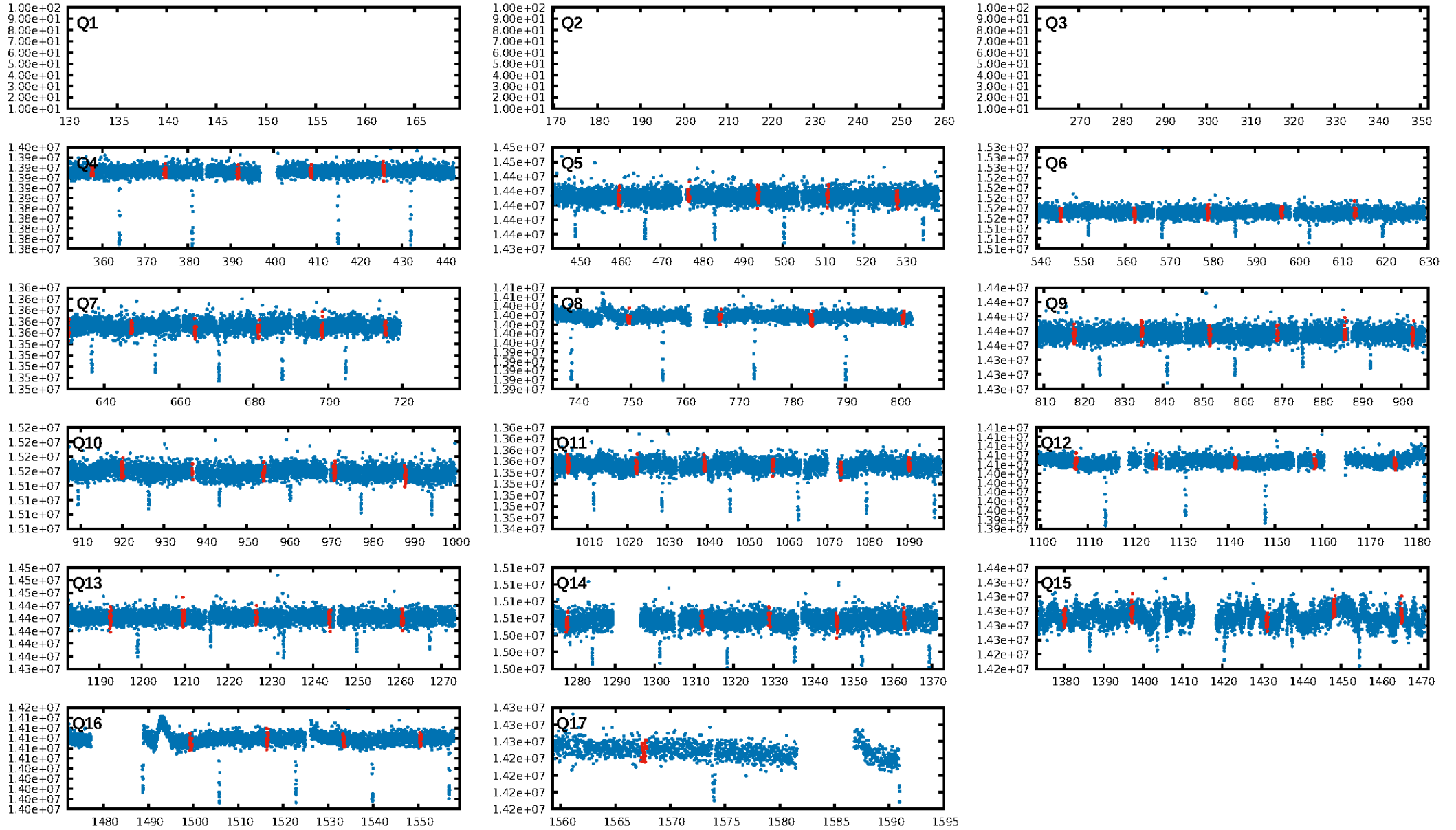
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 97.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.77e-17
RollingBand-fgt: 1.00 [66/66]
GhostDiagnostic-chr: -0.372
Centroid-sig: 0.0%
Centroid-so: 12.406 arcsec [11.65σ]
OotOffset-rm: 0.848 arcsec [9.24σ]
KicOffset-rm: 6.132 arcsec [21.37σ]
OotOffset-st: 0/0/4/1 [5]
KicOffset-st: 0/0/4/1 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [14/14]

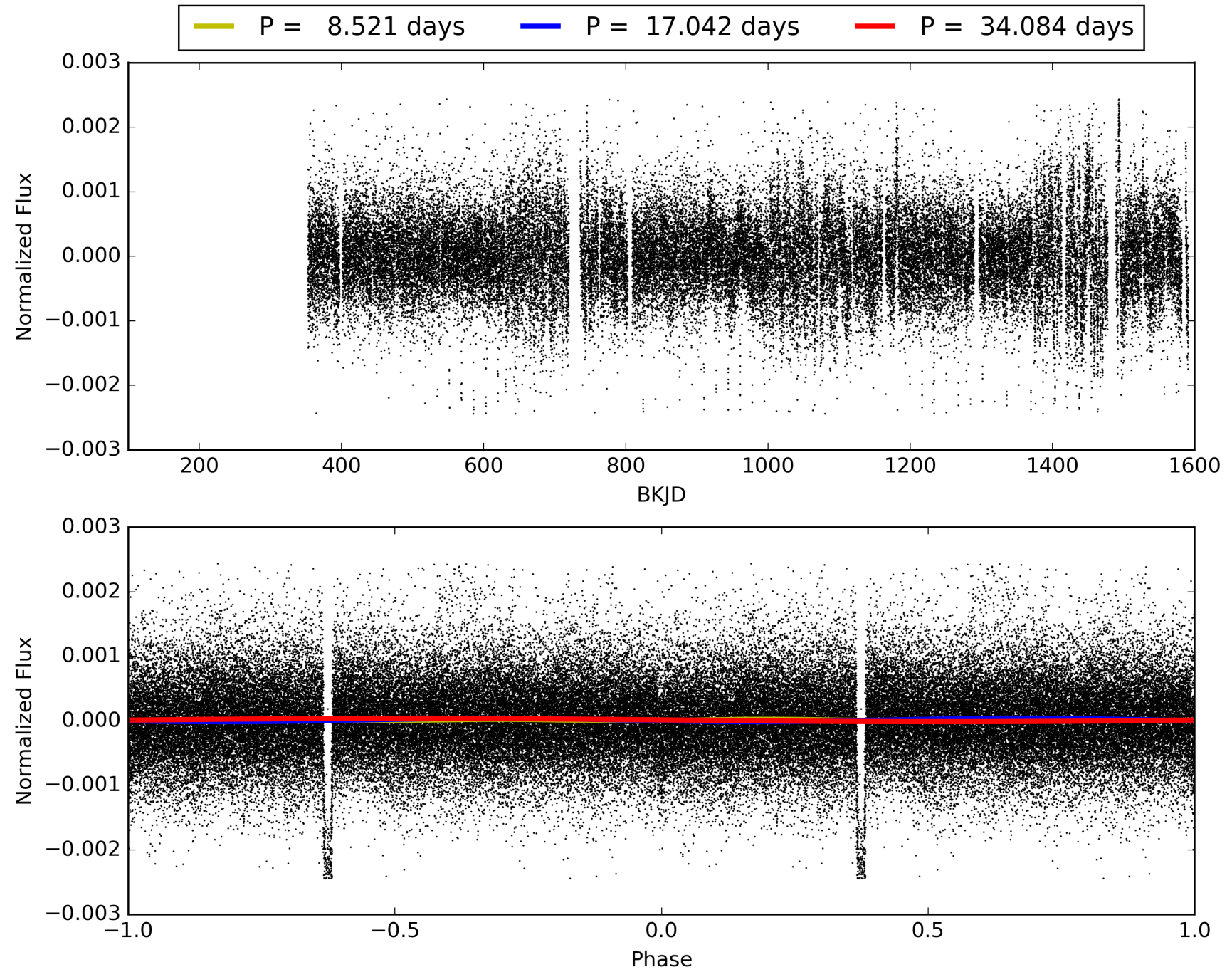
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:41:16 Z

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TCE 007751571-02, PDC Light Curves

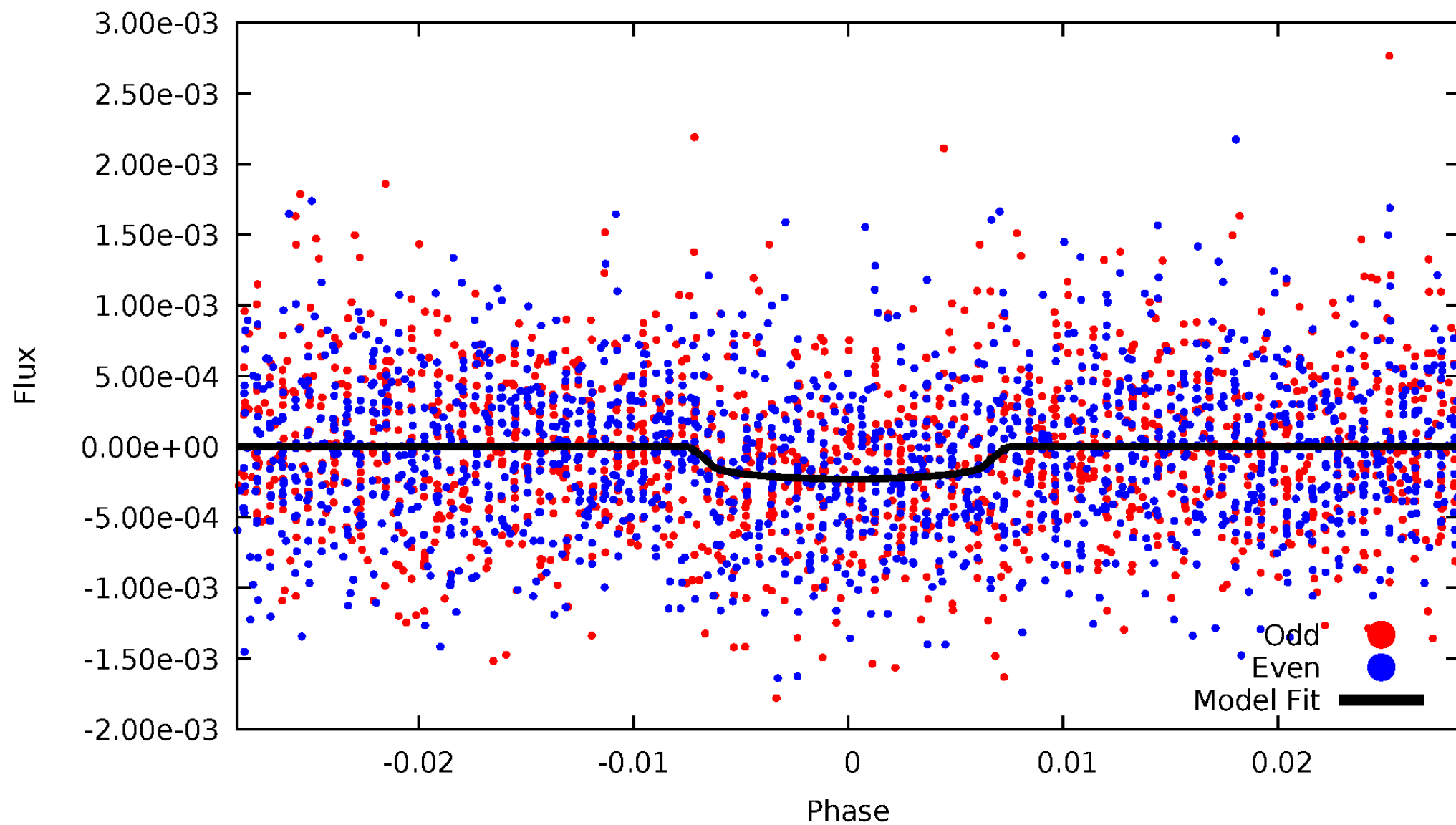


TCE 007751571-02



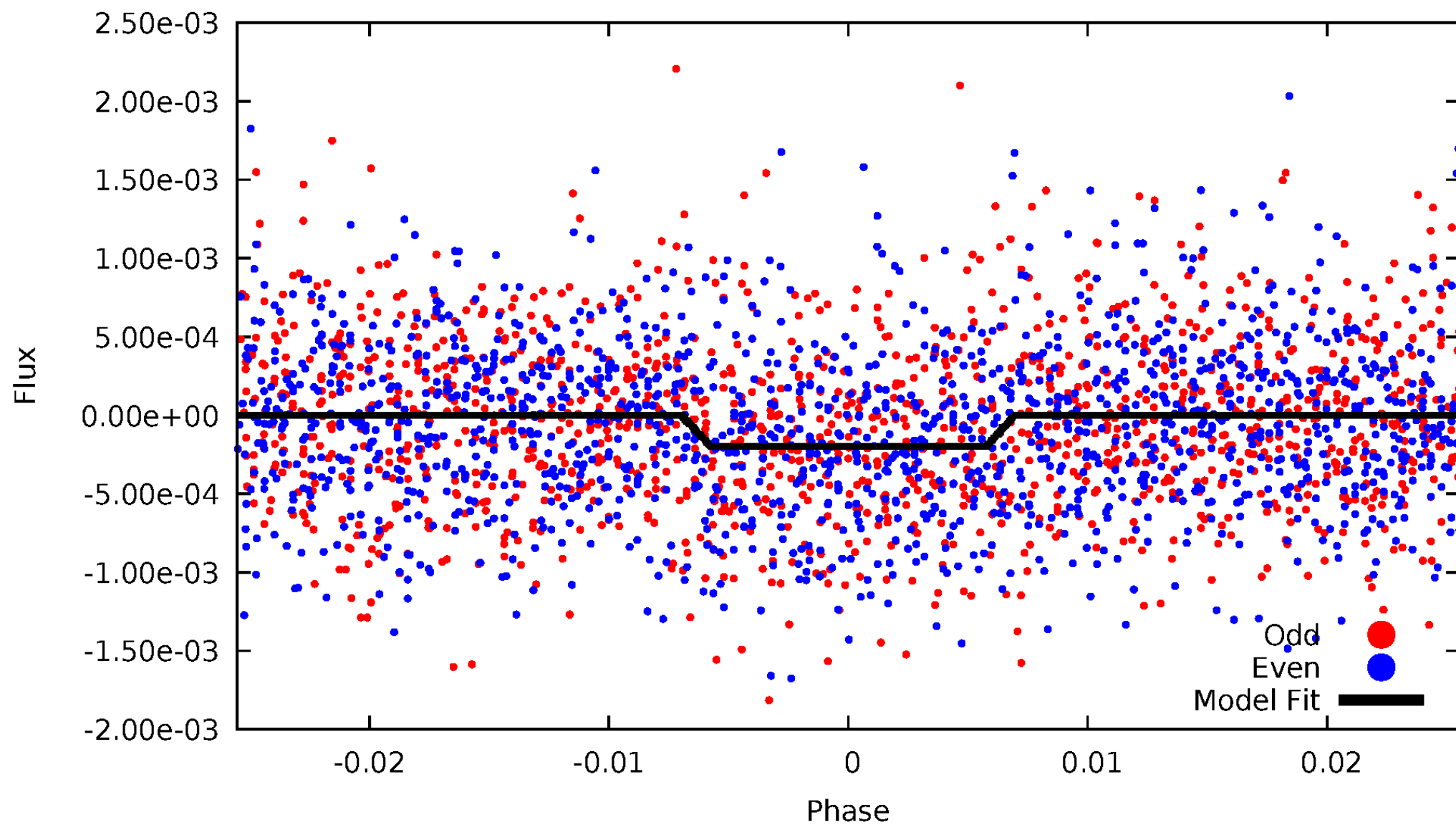
DV Odd/Even

TCE 007751571-02



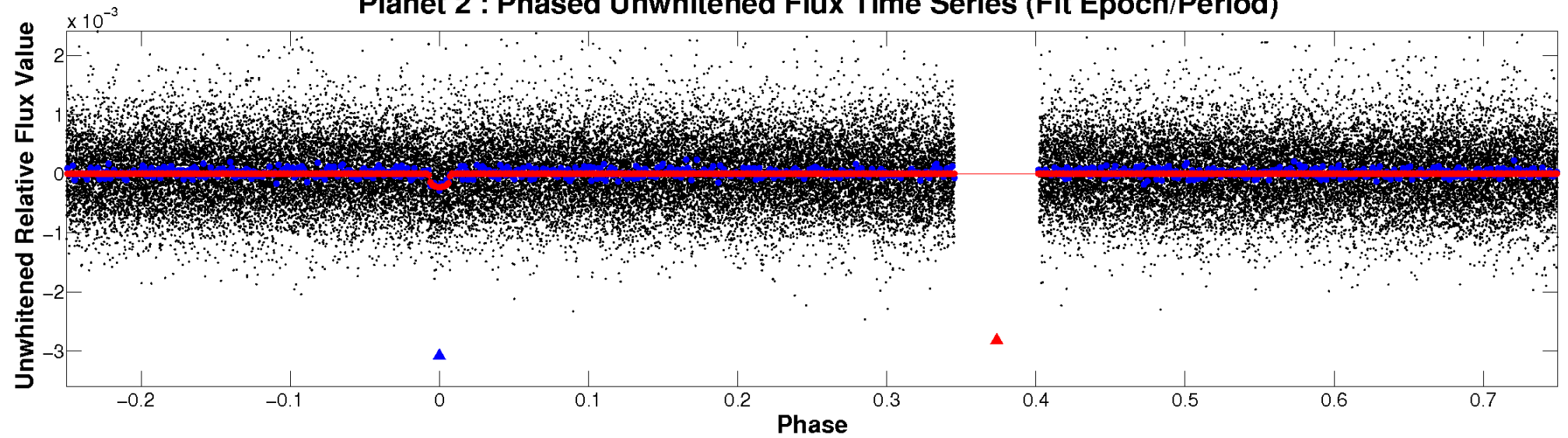
ALT Odd/Even

TCE 007751571-02

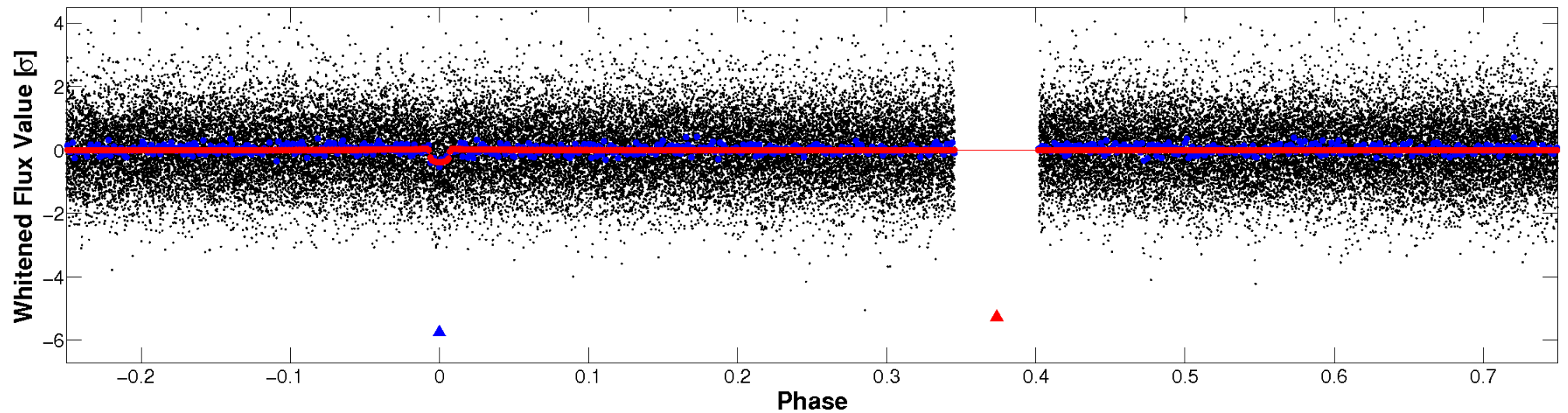


Non-Whitened Vs. Whitened Light Curve

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

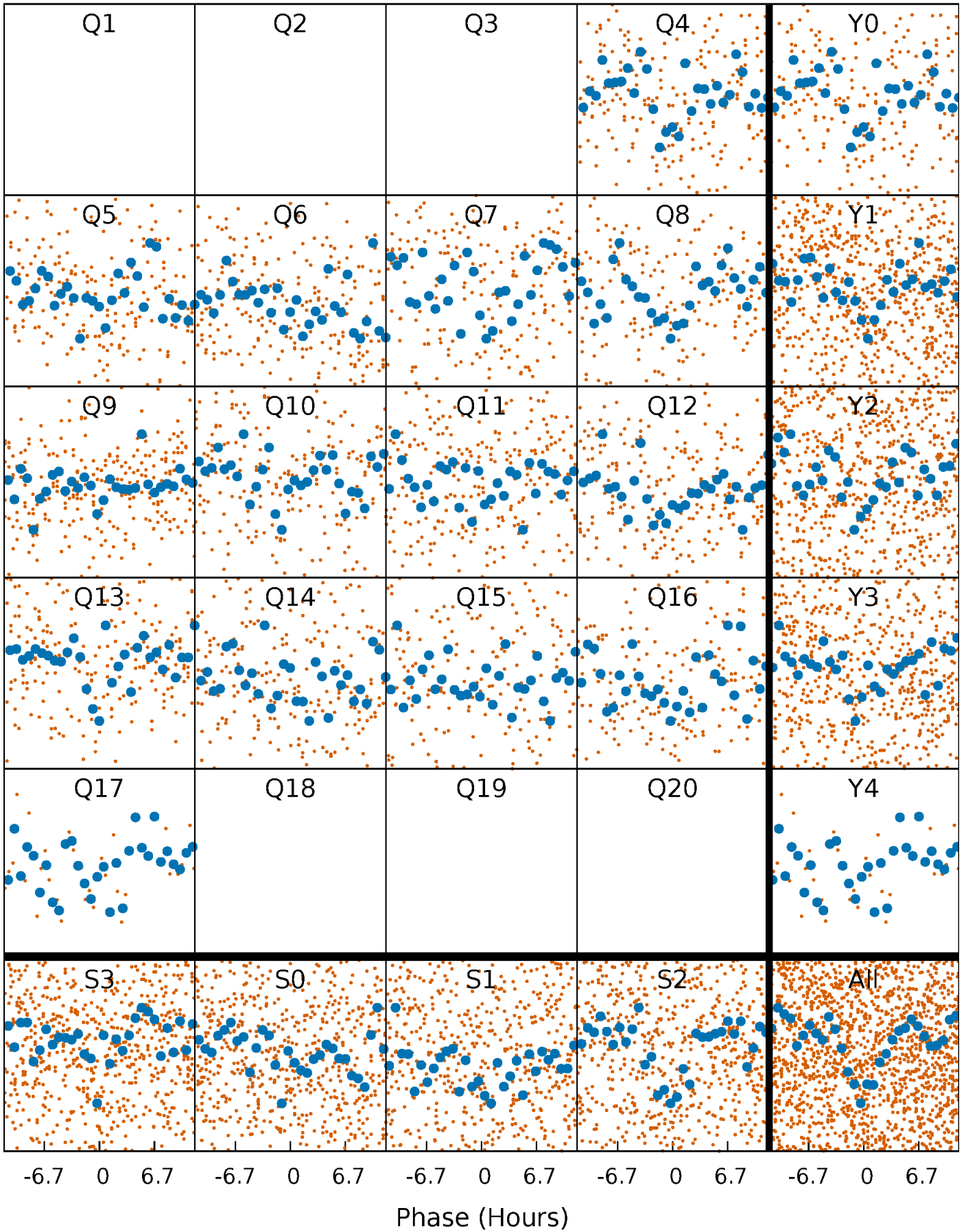


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



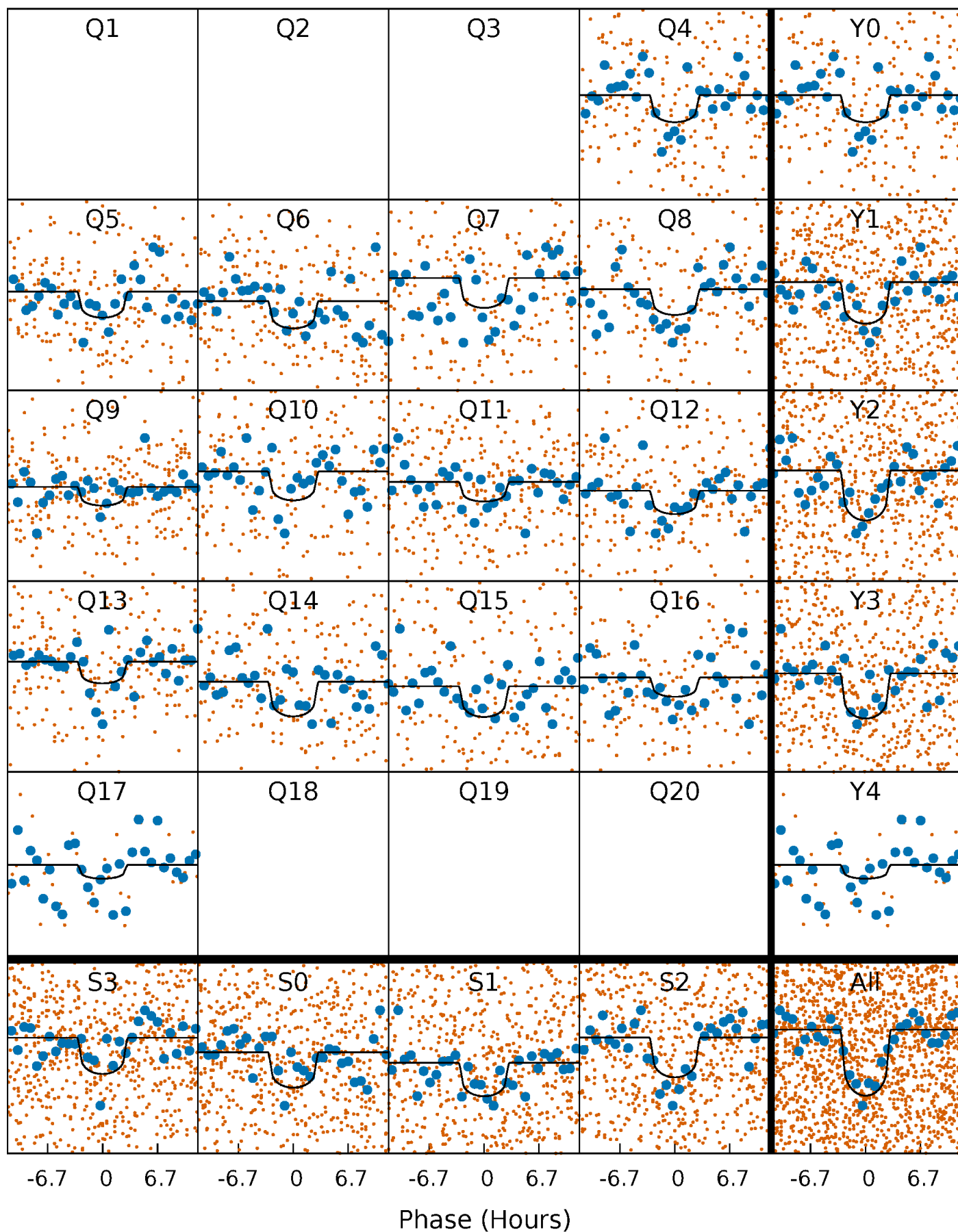
PDC Quarter-Phased Transit Curves

TCE 007751571-02 P= 17.042079 Days $T_0=136.058455$ (BKJD)



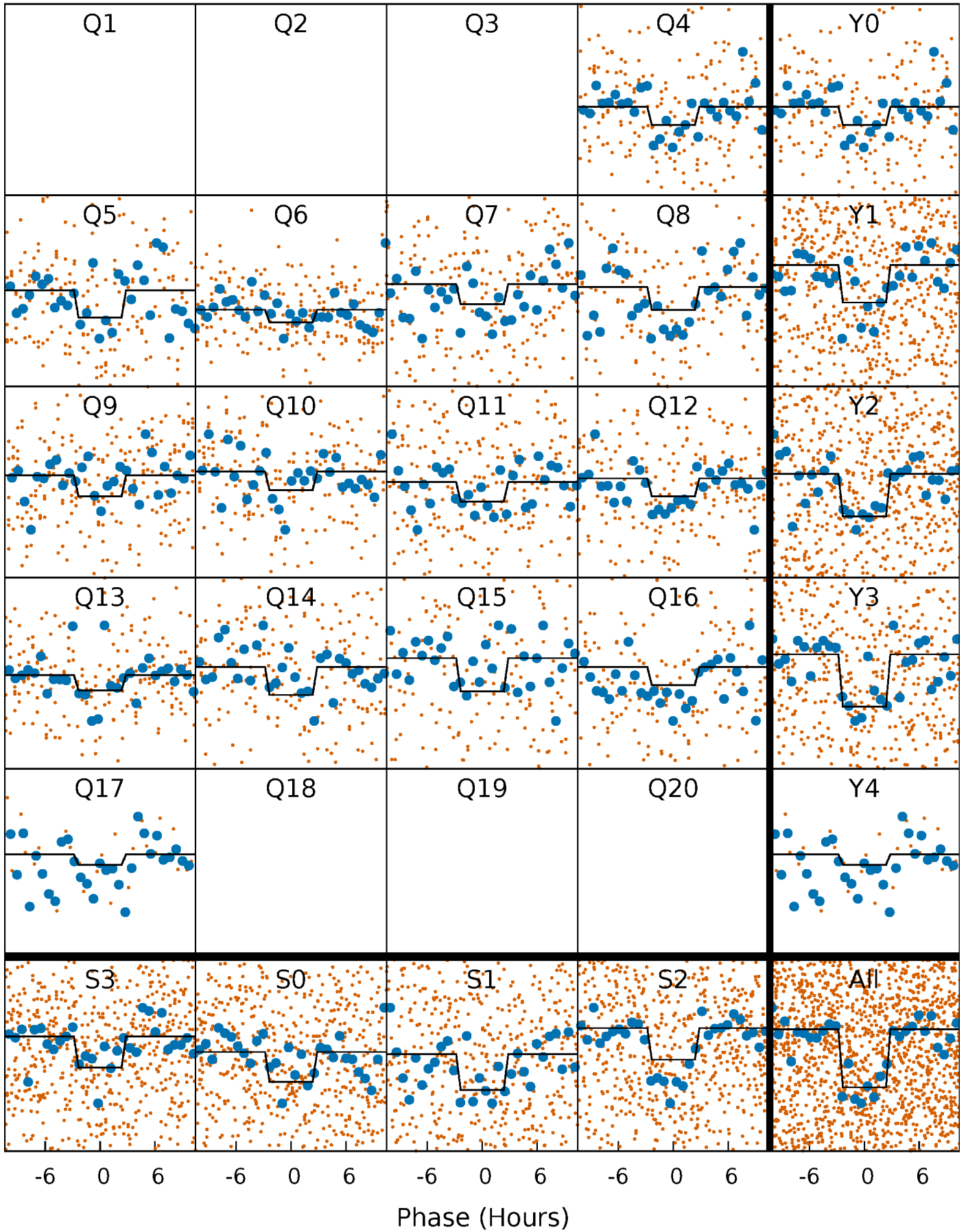
DV Quarter-Phased Transit Curves

TCE 007751571-02 P= 17.042079 Days $T_0=136.058455$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

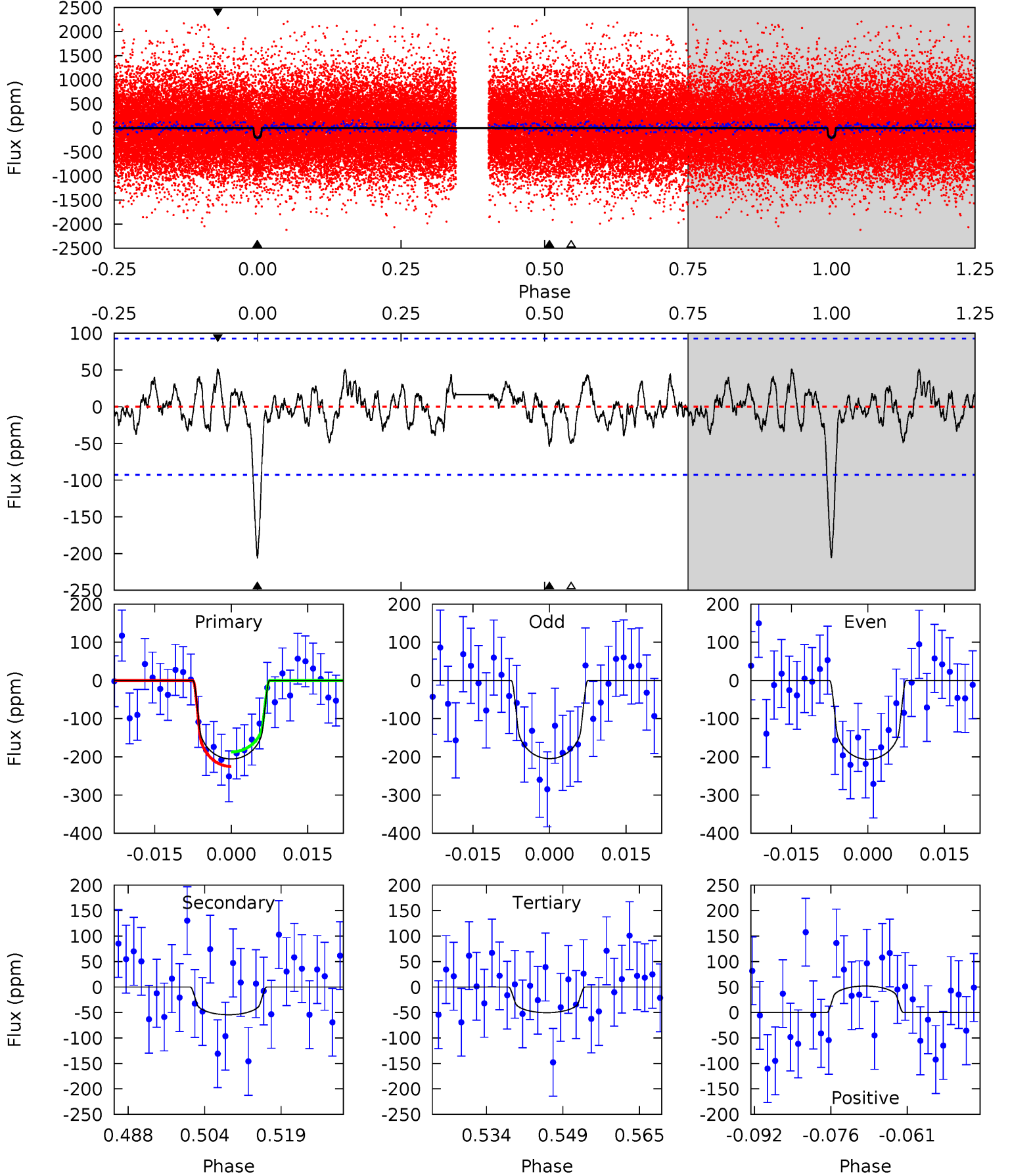
TCE 007751571-02 P= 17.042218 Days $T_0=136.050212$ (BKJD)



DV Model-Shift Uniqueness Test

007751571-02, $P = 17.042079$ Days, $E = 136.058455$ Days

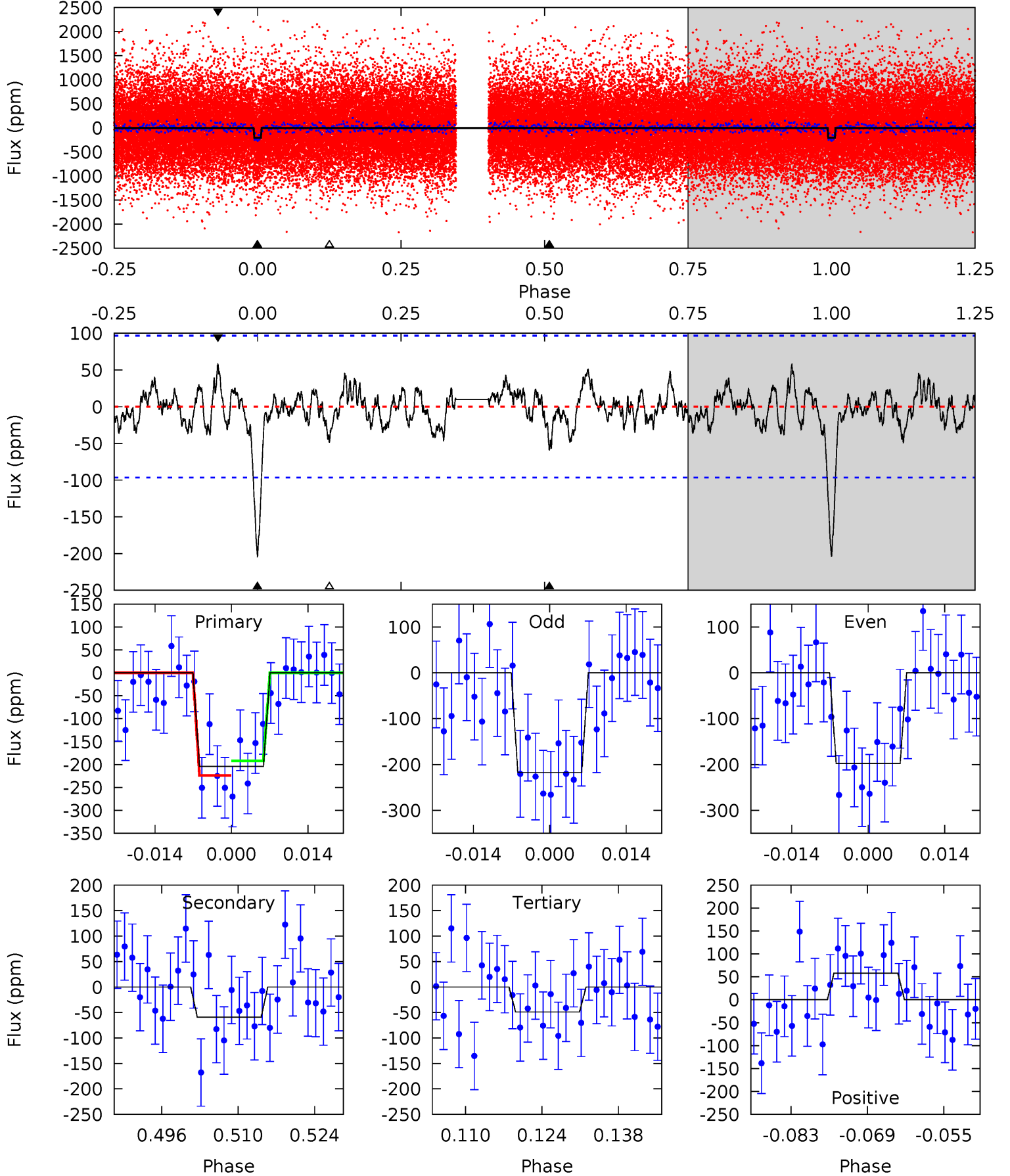
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	2.90	2.68	2.77	4.94	2.43	1.03	8.27	8.19	0.21	0.13	0.05	1.07	0.20	1.02



Alt Model-Shift Uniqueness Test

007751571-02, $P = 17.042218$ Days, $E = 136.050212$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	3.03	2.52	2.99	4.96	2.46	1.00	7.98	7.51	0.52	0.04	0.51	1.08	0.22	0.81



Stellar Parameters For KIC 007751571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5367^{+185}_{-185}	$4.590^{+0.032}_{-0.120}$	$-0.160^{+0.300}_{-0.300}$	$0.773^{+0.143}_{-0.066}$	$0.854^{+0.086}_{-0.096}$	$2.601^{+0.515}_{-0.946}$
	+3%/-3%	+1%/-3%	+188%/-188%	+18%/-9%	+10%/-11%	+20%/-36%
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 007751571-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-54 ± 19	$1.64^{+1.35}_{-1.04}$	843^{+45}_{-34}	3749^{+1764}_{-671}	166^{+1072}_{-118}
Alt.	-59 ± 19	$1.57^{+1.29}_{-1.01}$	846^{+44}_{-38}	3858^{+1959}_{-716}	195^{+1439}_{-140}

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 $A_{obs} \gg 1.0$

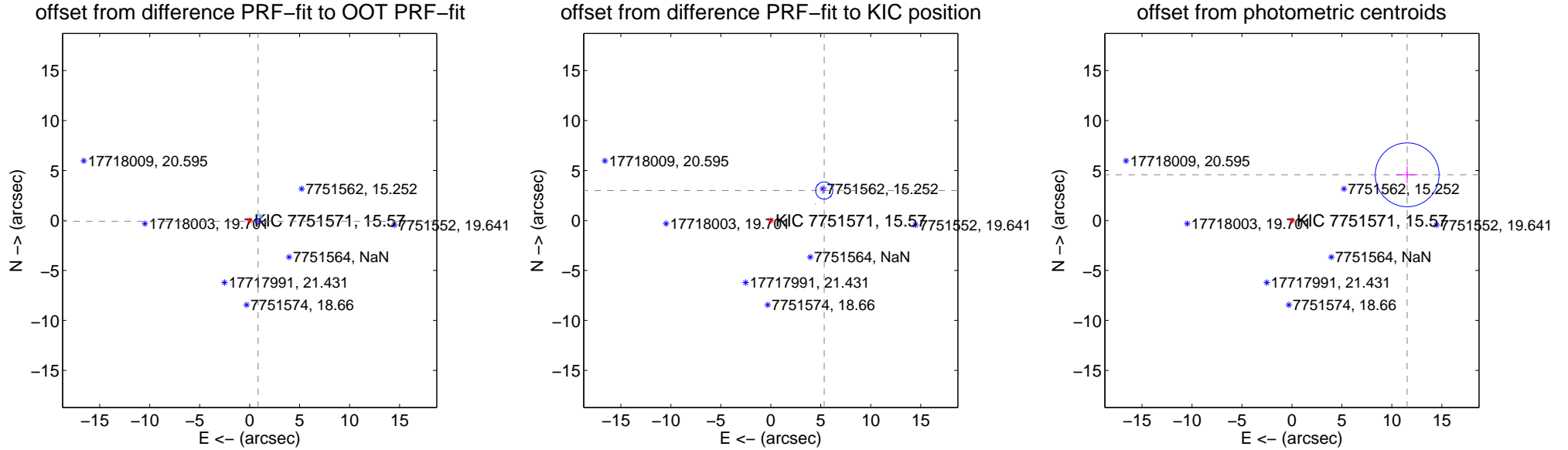
DV Centroid Data

Supplemental centroid analysis for 007751571-02. Kepler magnitude: 15.57. Transit SNR 9.10

There are 5 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.90 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.848 ± 0.092	9.24	-0.844 ± 0.092	-0.086 ± 0.091
PRF-fit source offset from KIC position	6.132 ± 0.287	21.37	-5.349 ± 0.182	2.999 ± 0.276
photometric centroid source offset	12.41 ± 1.06	11.65	-11.53 ± 1.09	4.57 ± 0.86



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- σ uncertainty. Blue circle: three- σ . 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.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



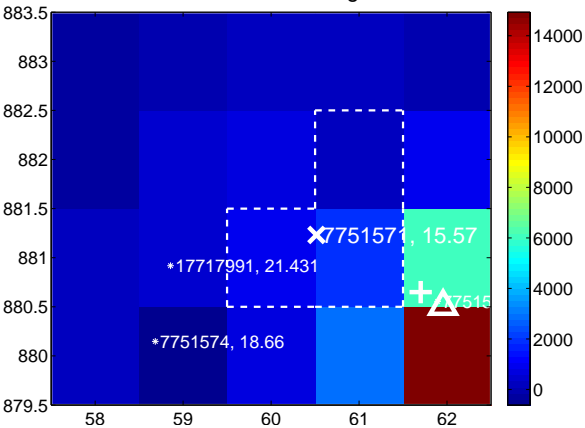
Q3 no difference image



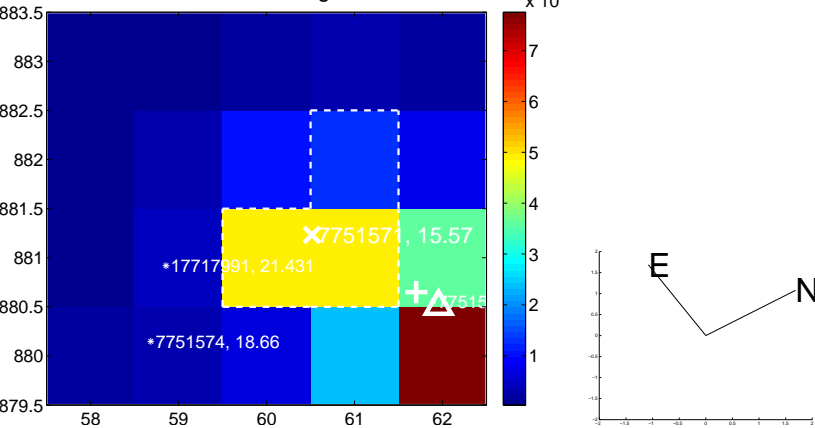
Q3 no OOT image



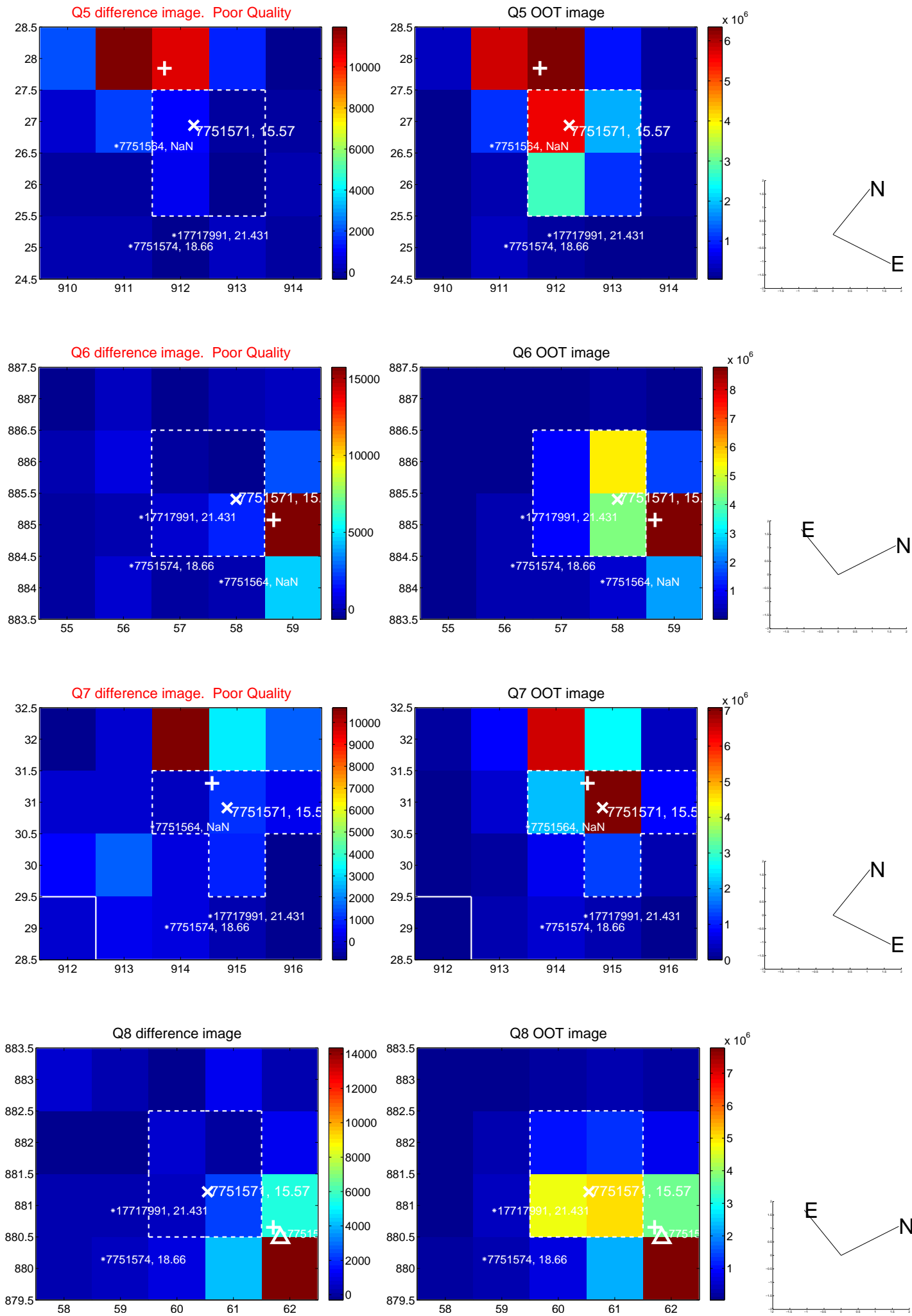
Q4 difference image



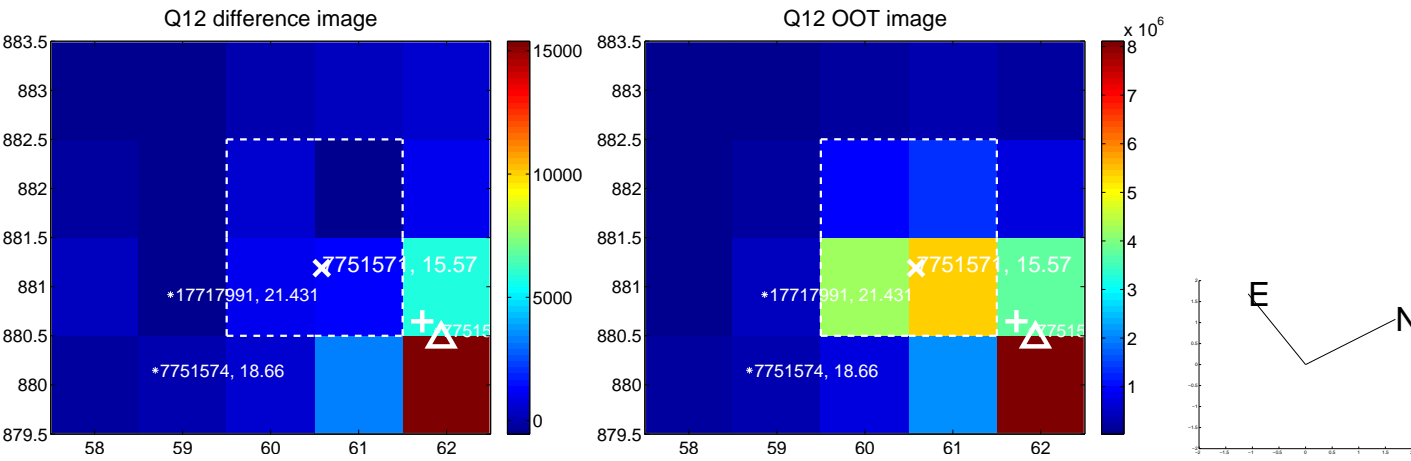
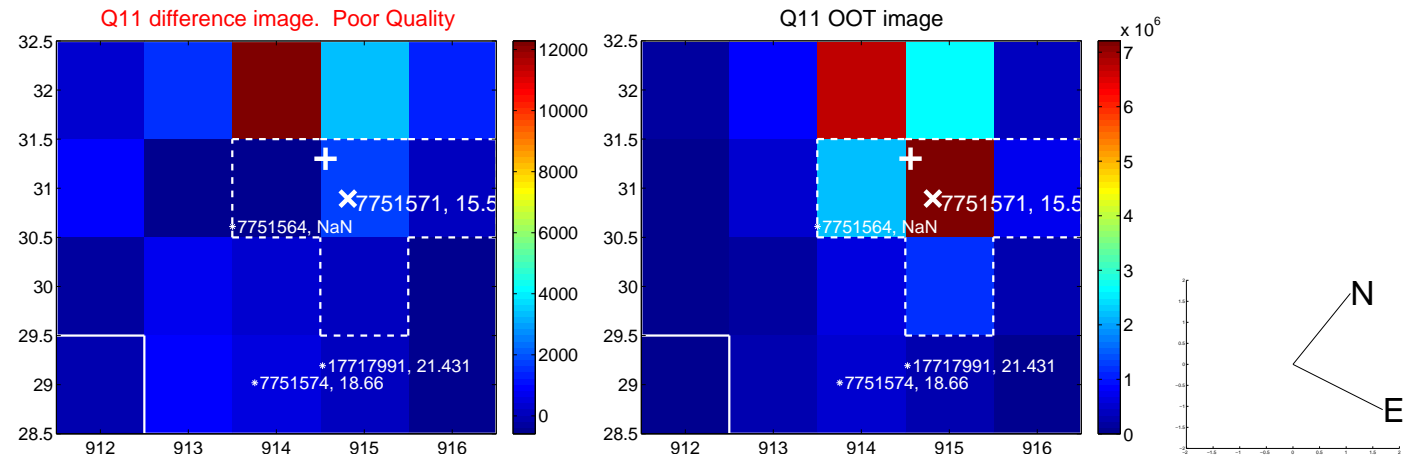
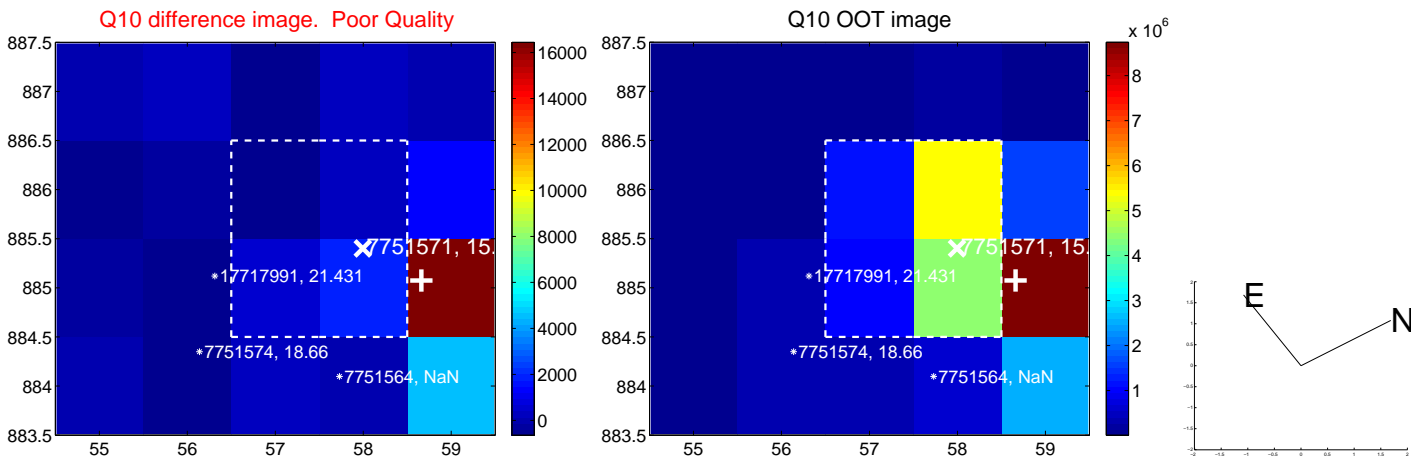
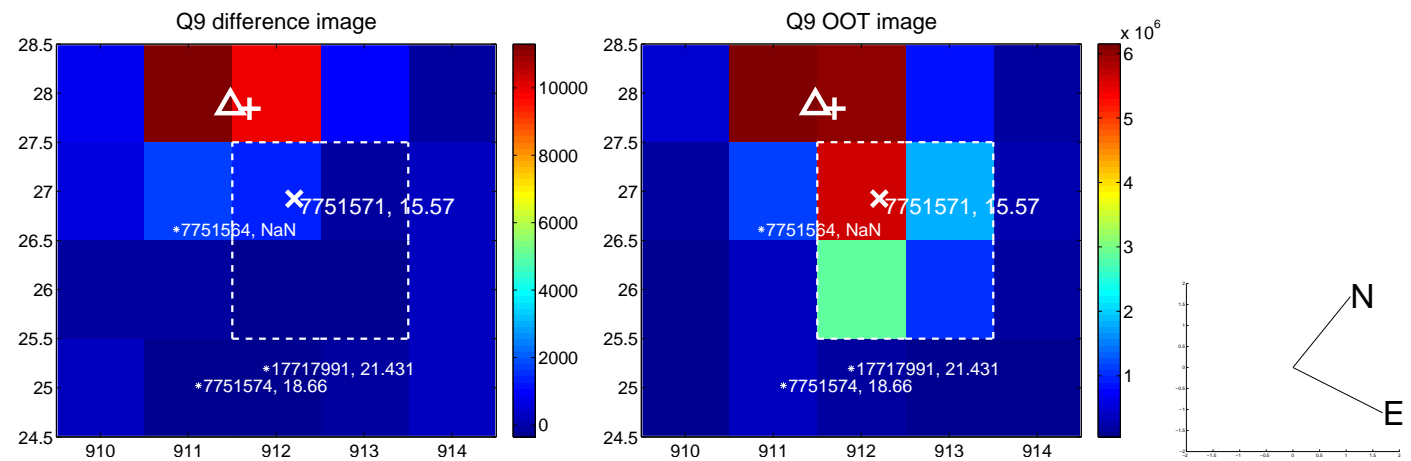
Q4 OOT image



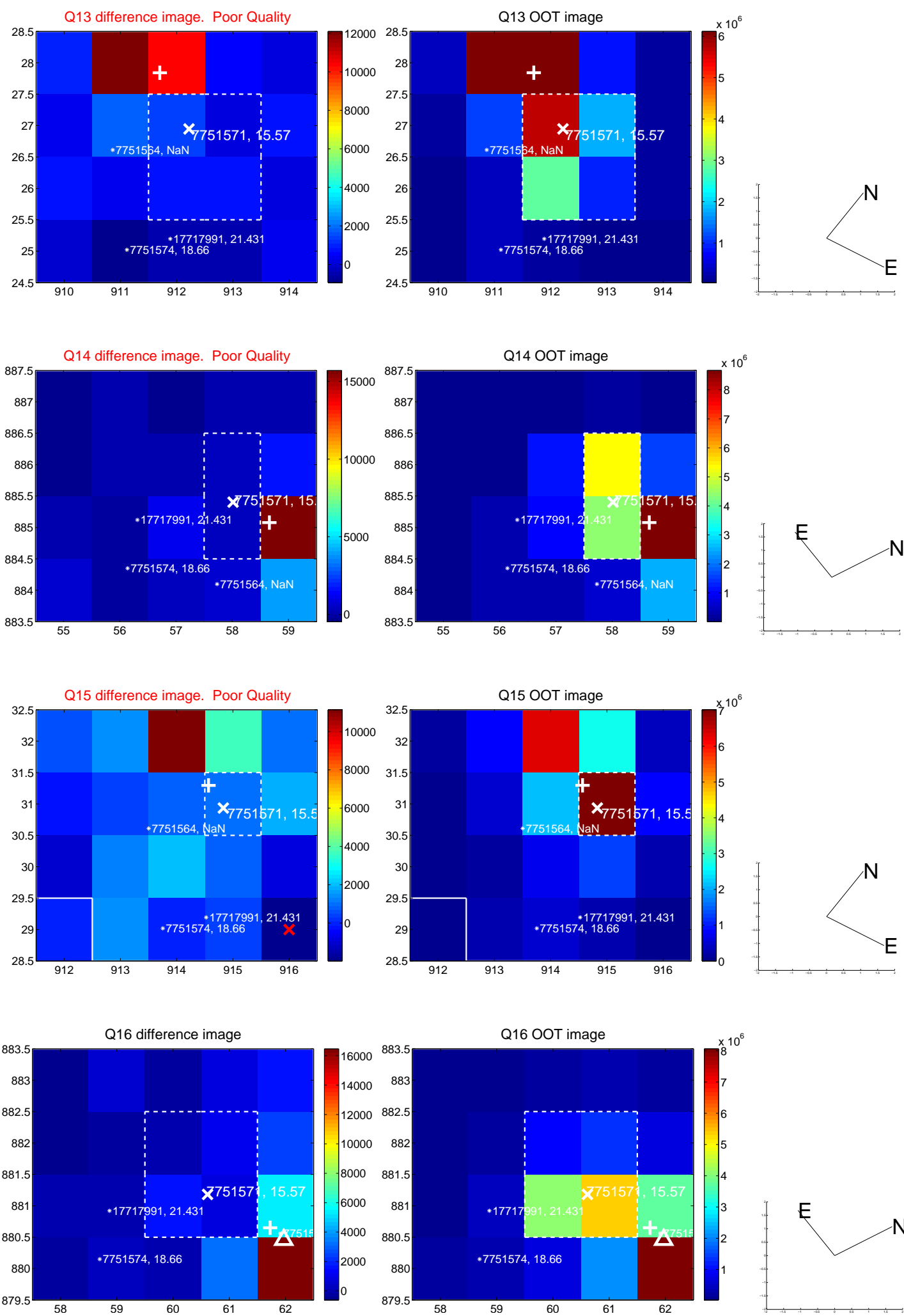
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



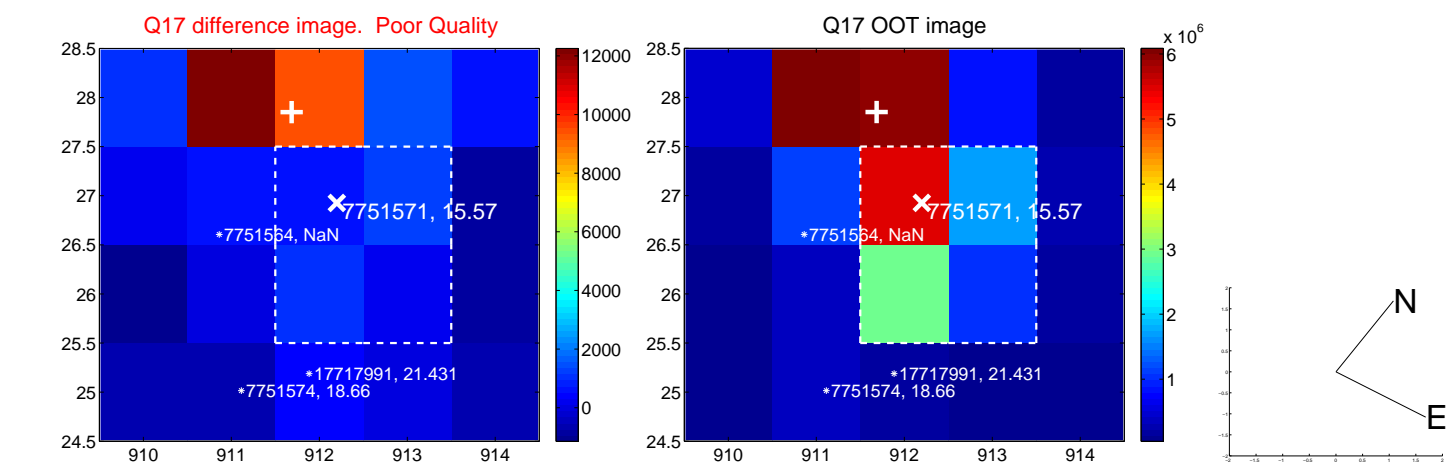
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



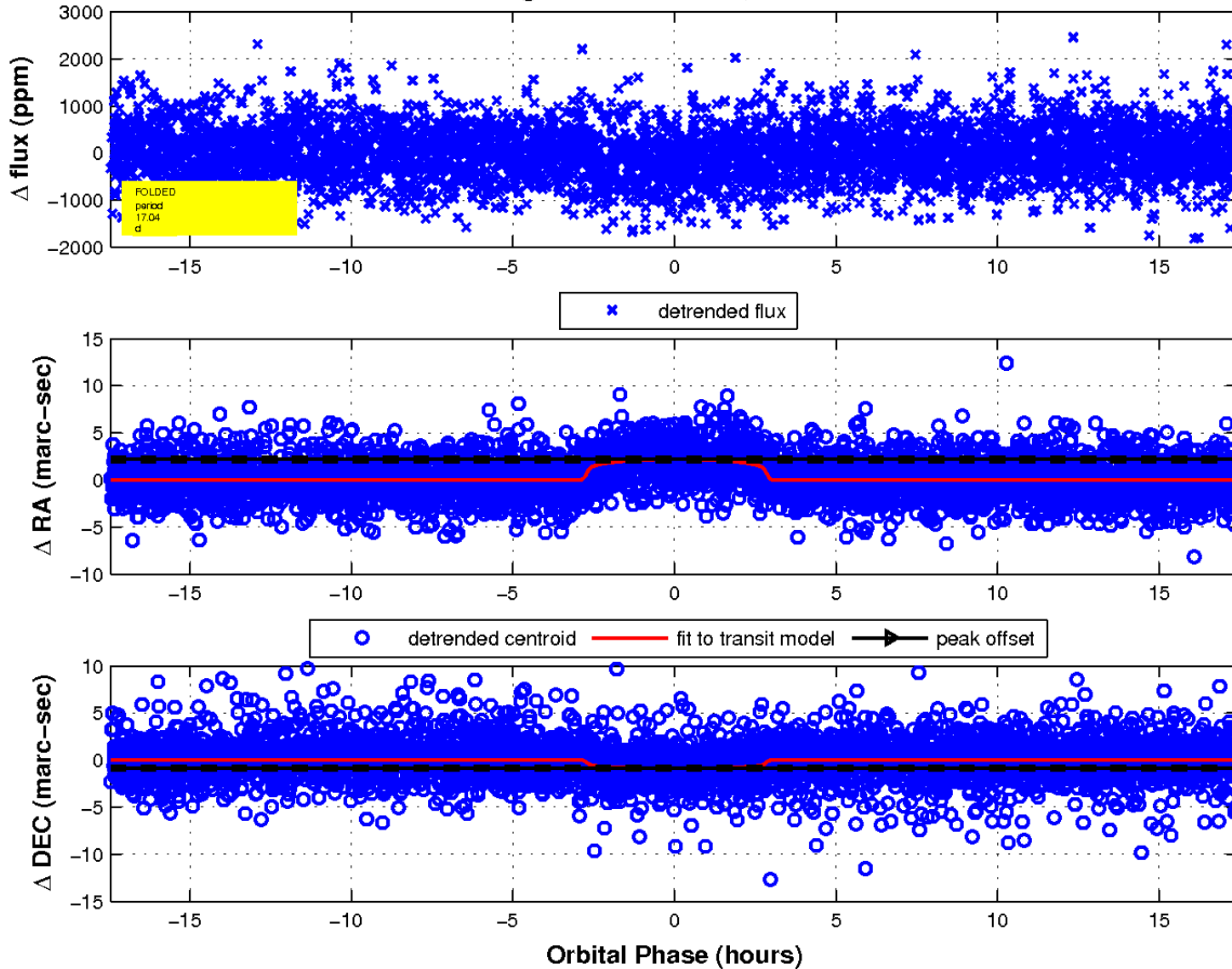
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

