

KIC 005560161

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})
005560161-01	OBS	No	9.152439	138.984070	18.5	18.778	7.4	6.0	2.05	6191	1.03	656.81
005560161-02	OBS	No	519.789023	409.486391	164.9	15.396	12.4	7.3	2.05	6191	2.79	3.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005560161-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—HALO_GHOST
005560161-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—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.

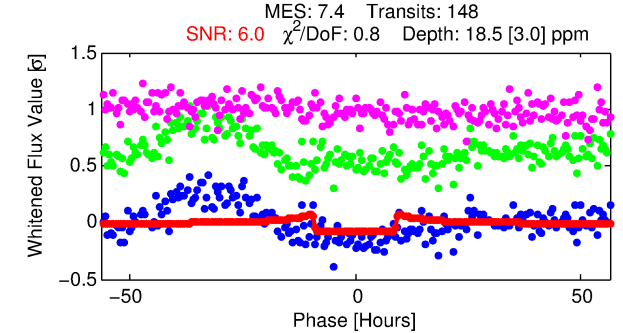
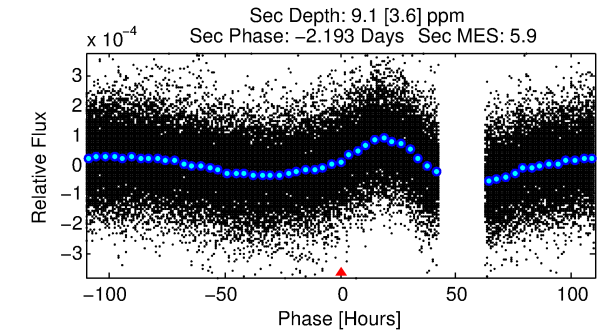
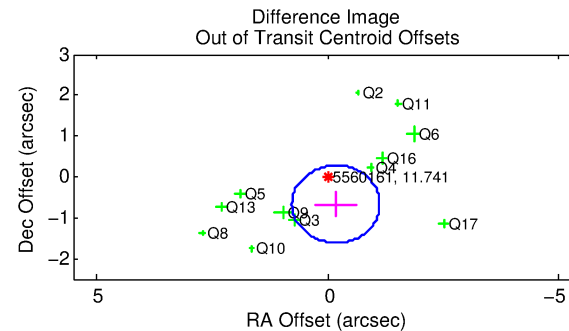
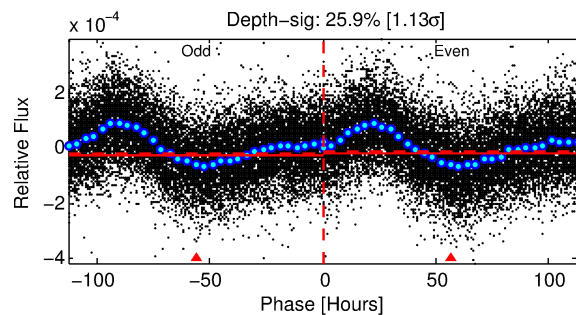
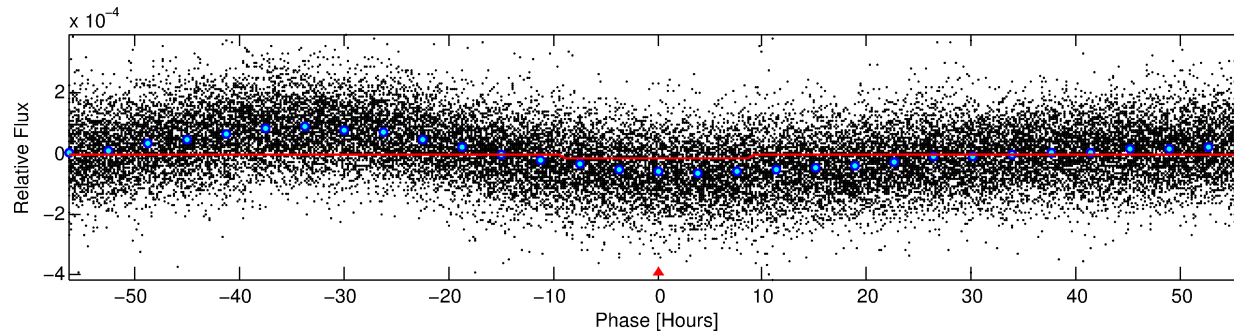
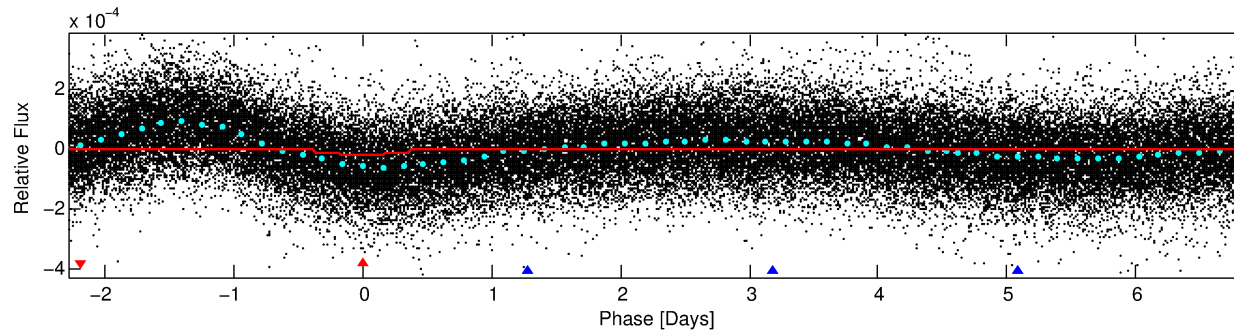
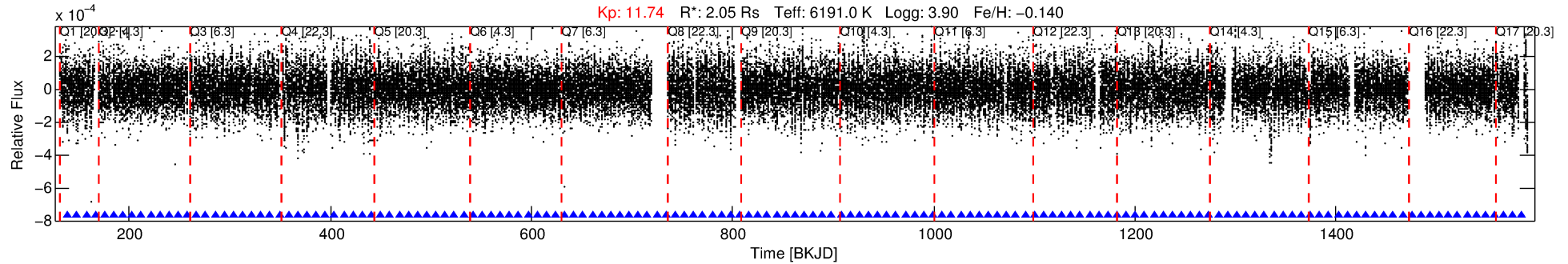
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005560161-01

No Significant Match Found

DV One-Page Summary

KIC: 5560161 Candidate: 1 of 2 Period: 9.152 d



DV Fit Results:

Period = 9.15244 [0.00021] d
Epoch = 138.9841 [0.0176] BKJD
Rp/R* = 0.0046 [0.0007]
a/R* = 1.91 [0.84]
b = 0.90 [0.13]
Seff = 656.81 [315.17]
Teq = 1291 [155] K
Rp = 1.04 [0.35] Re
a = 0.0917 [0.0270] AU
Ag = 39.45 [26.54] [1.45 σ]
Teffp = 5002 [620] K [5.81 σ]

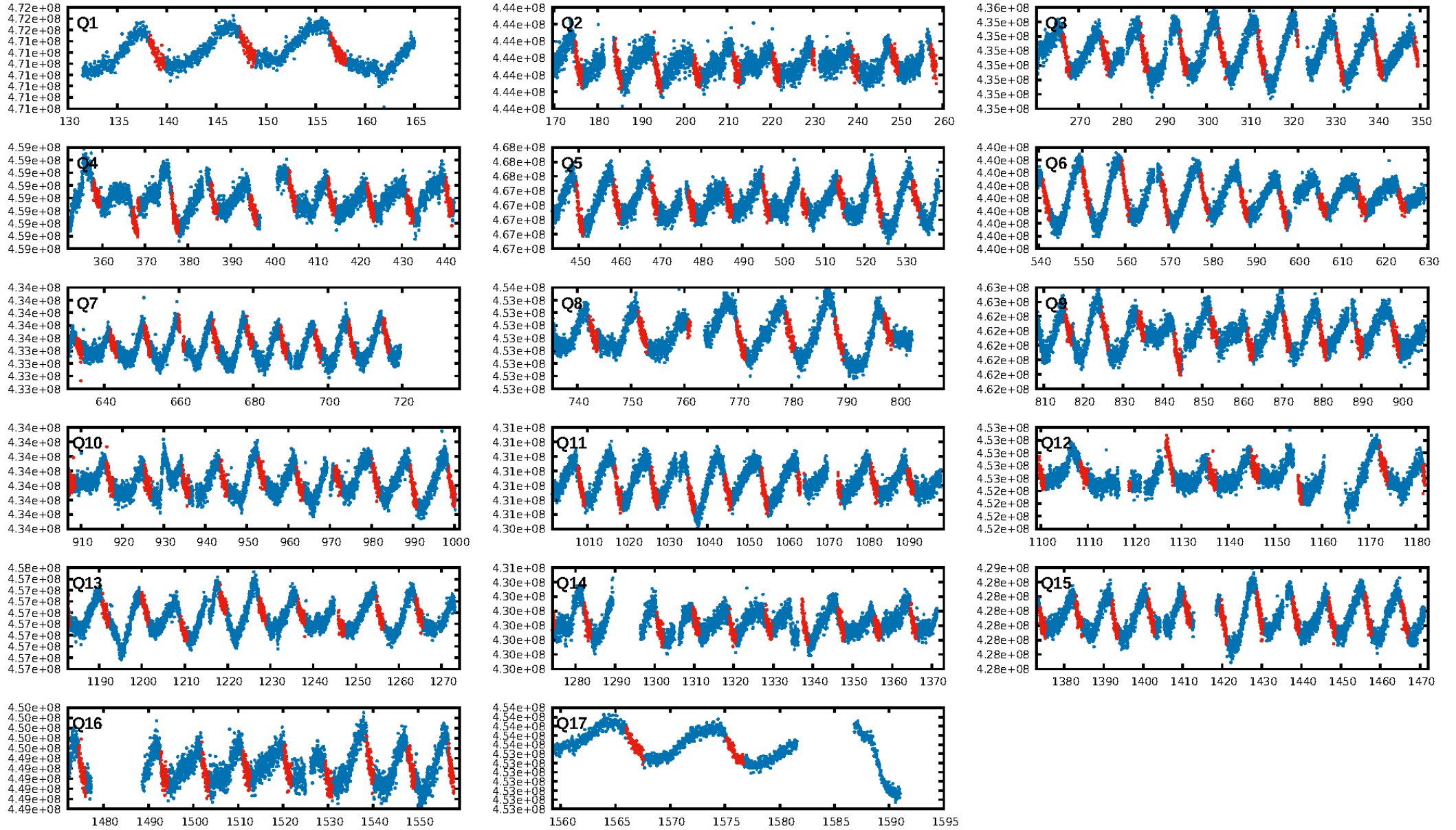
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [504.70 σ]
ModelChiSquare2-sig: 99.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.17e-12
RollingBand-fgt: 1.00 [143/143]
GhostDiagnostic-chr: 0.1679
Centroid-sig: 21.5%
Centroid-so: 1.556 arcsec [1.17 σ]
OotOffset-rm: 0.693 arcsec [2.19 σ]
KicOffset-rm: 0.763 arcsec [2.43 σ]
OotOffset-st: 3/2/3/4 [12]
KicOffset-st: 3/2/3/4 [12]
DiffImageQuality-fgm: 0.75 [9/12]
DiffImageOverlap-fno: 1.00 [17/17]

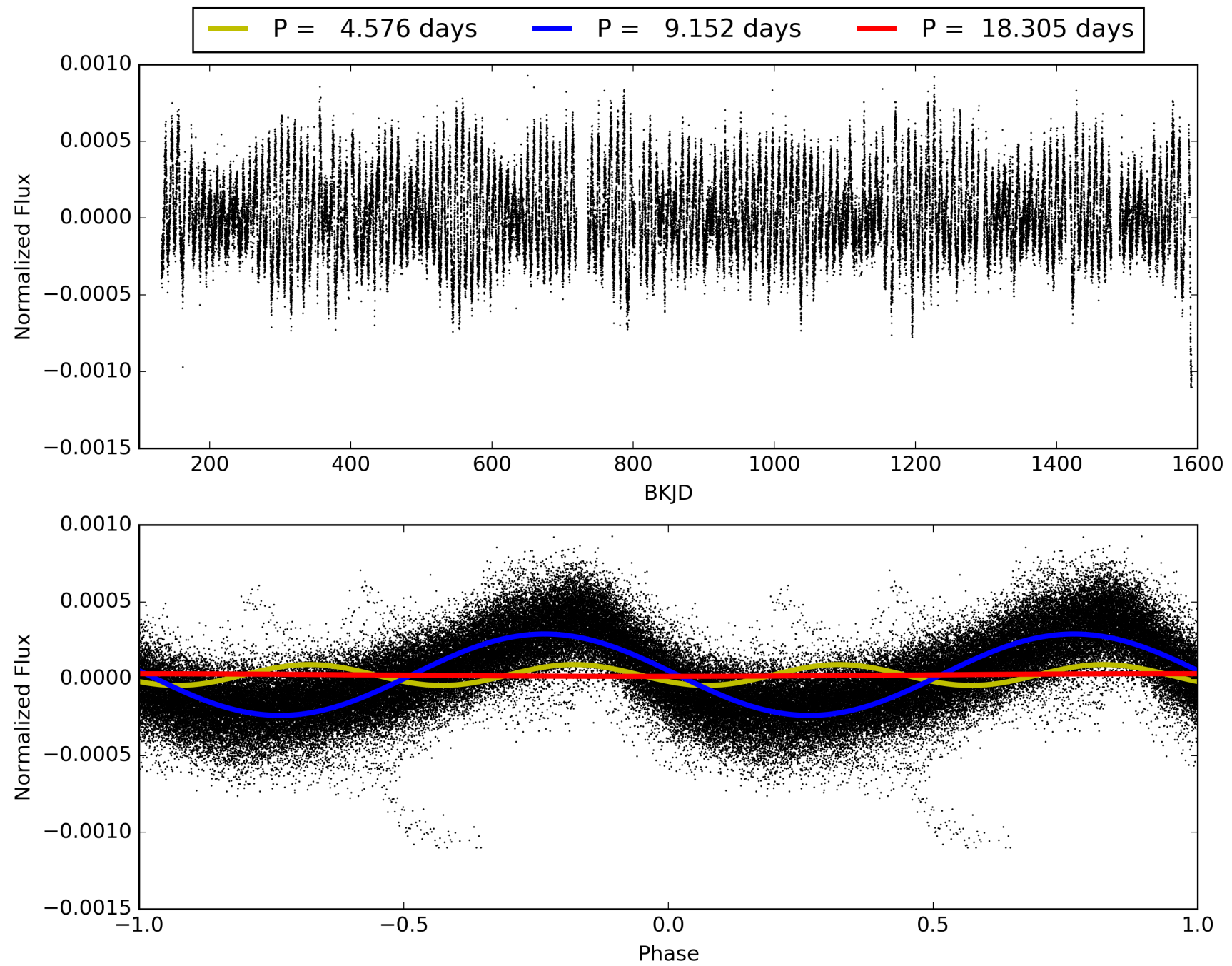
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:59:05 Z

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

TCE 005560161-01, PDC Light Curves

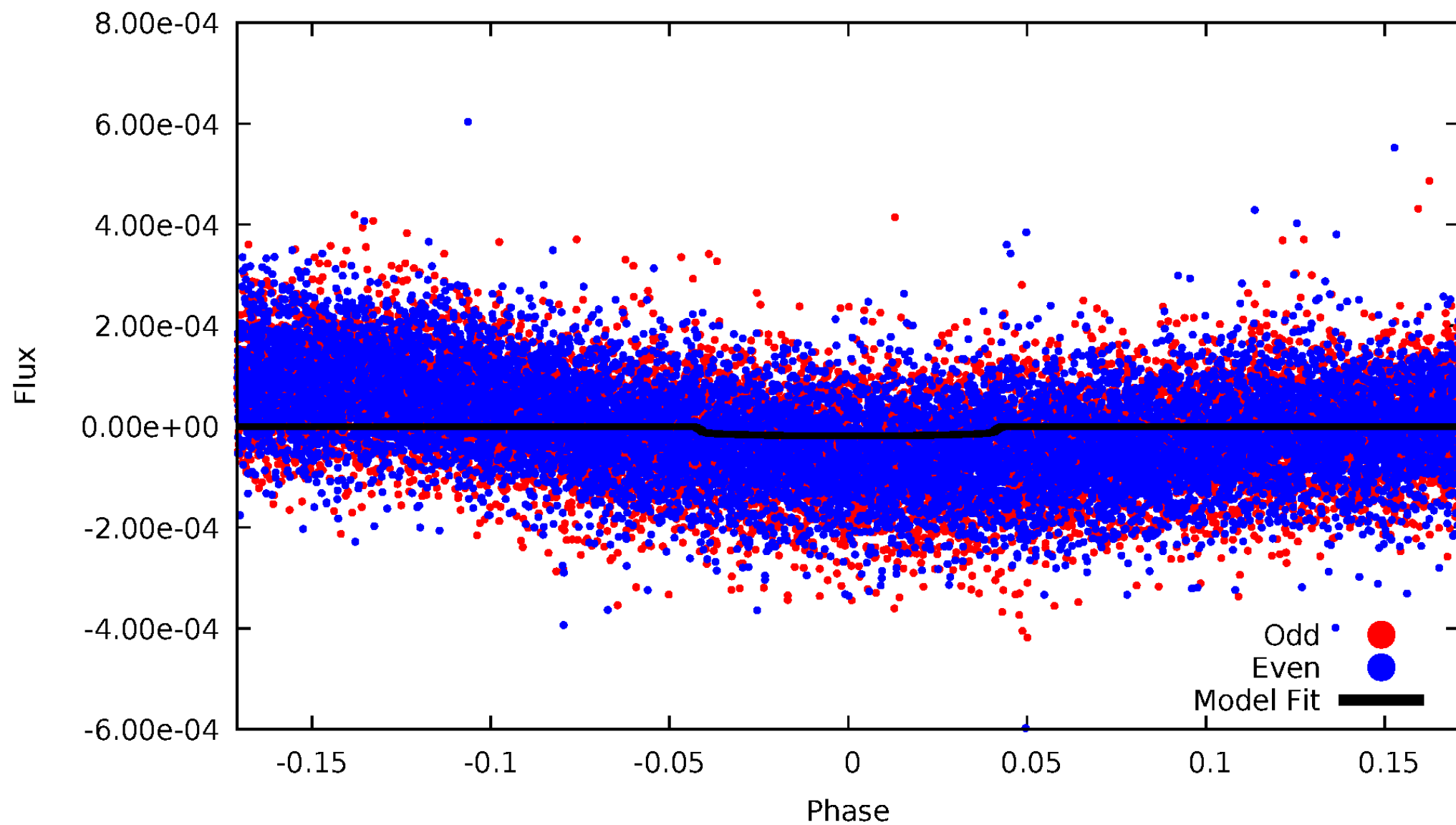


TCE 005560161-01



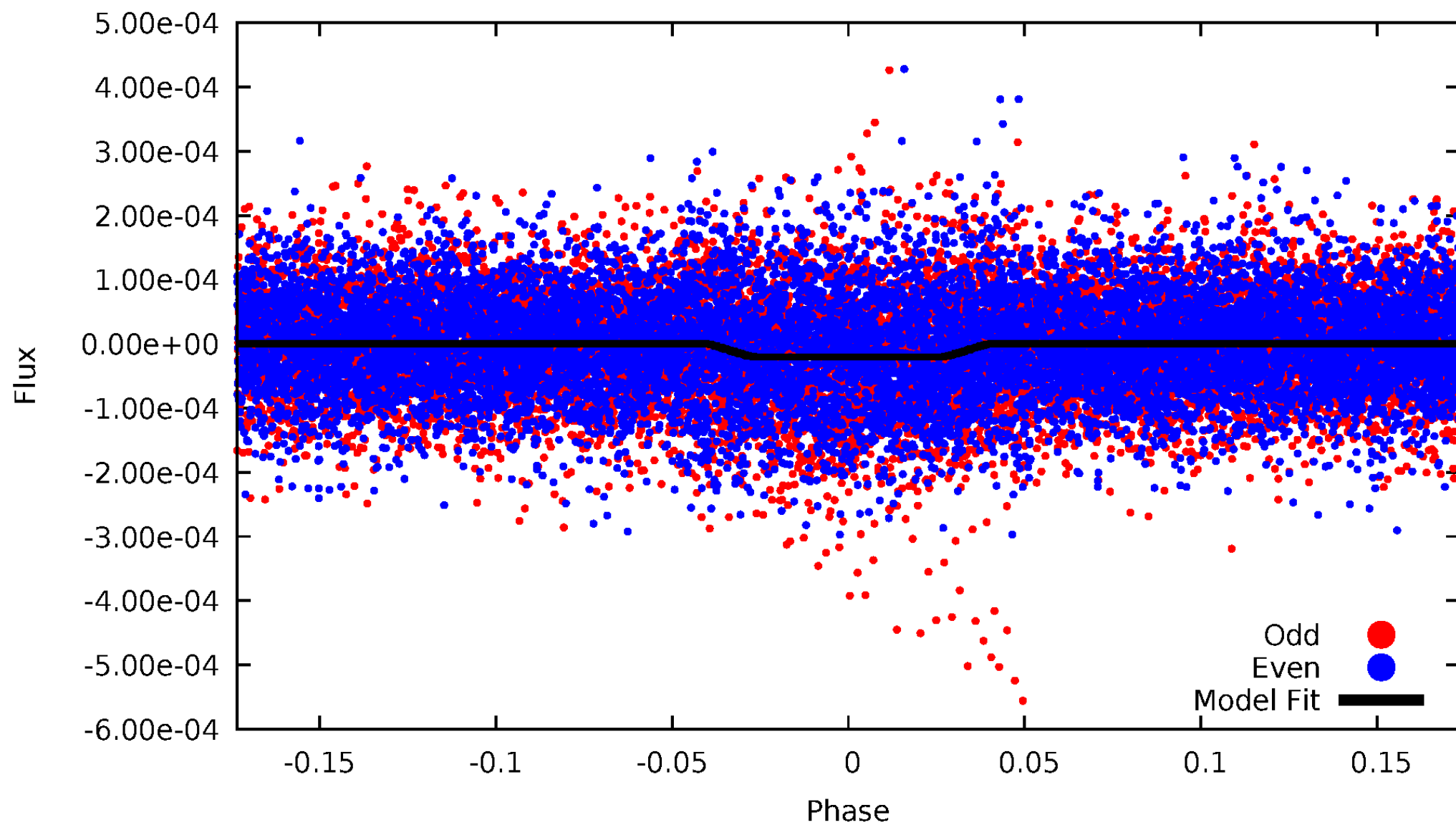
DV Odd/Even

TCE 005560161-01

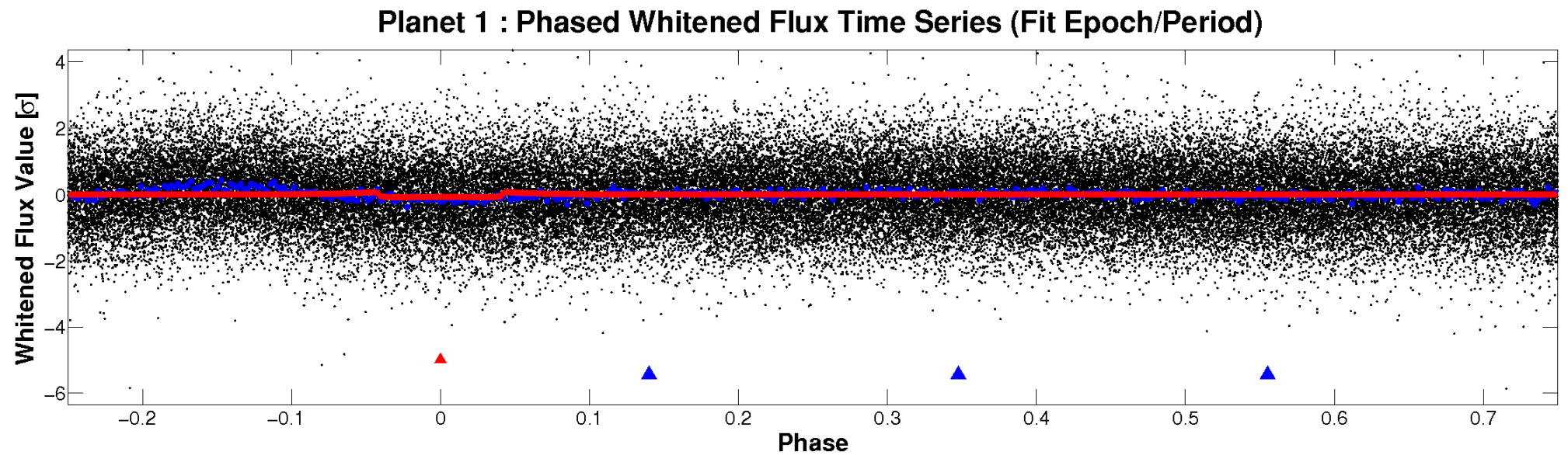
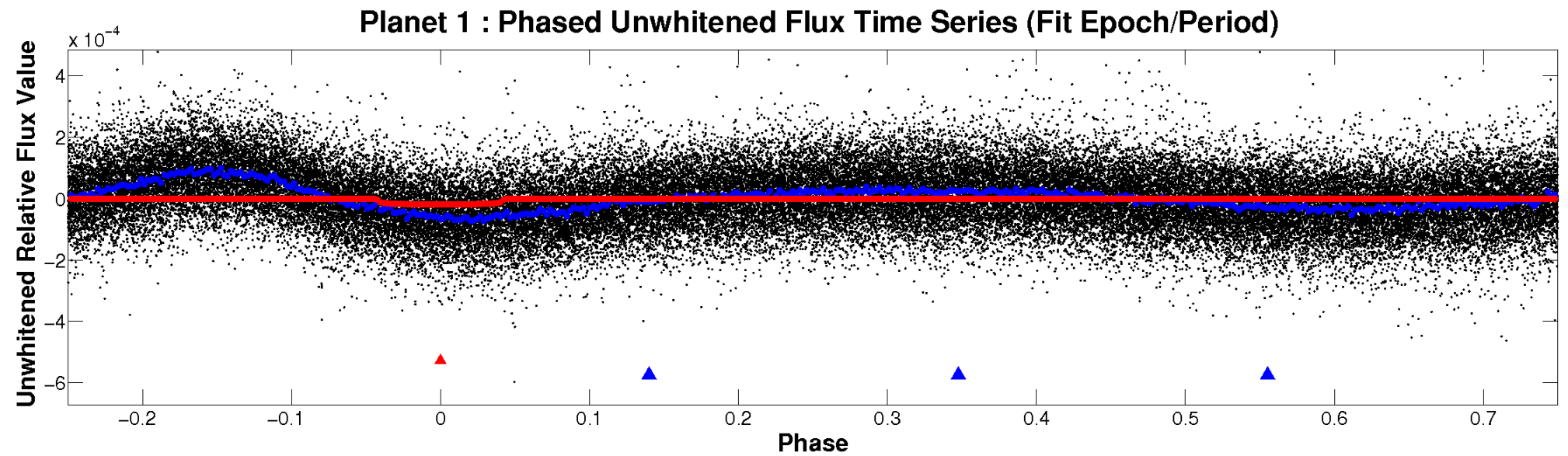


ALT Odd/Even

TCE 005560161-01

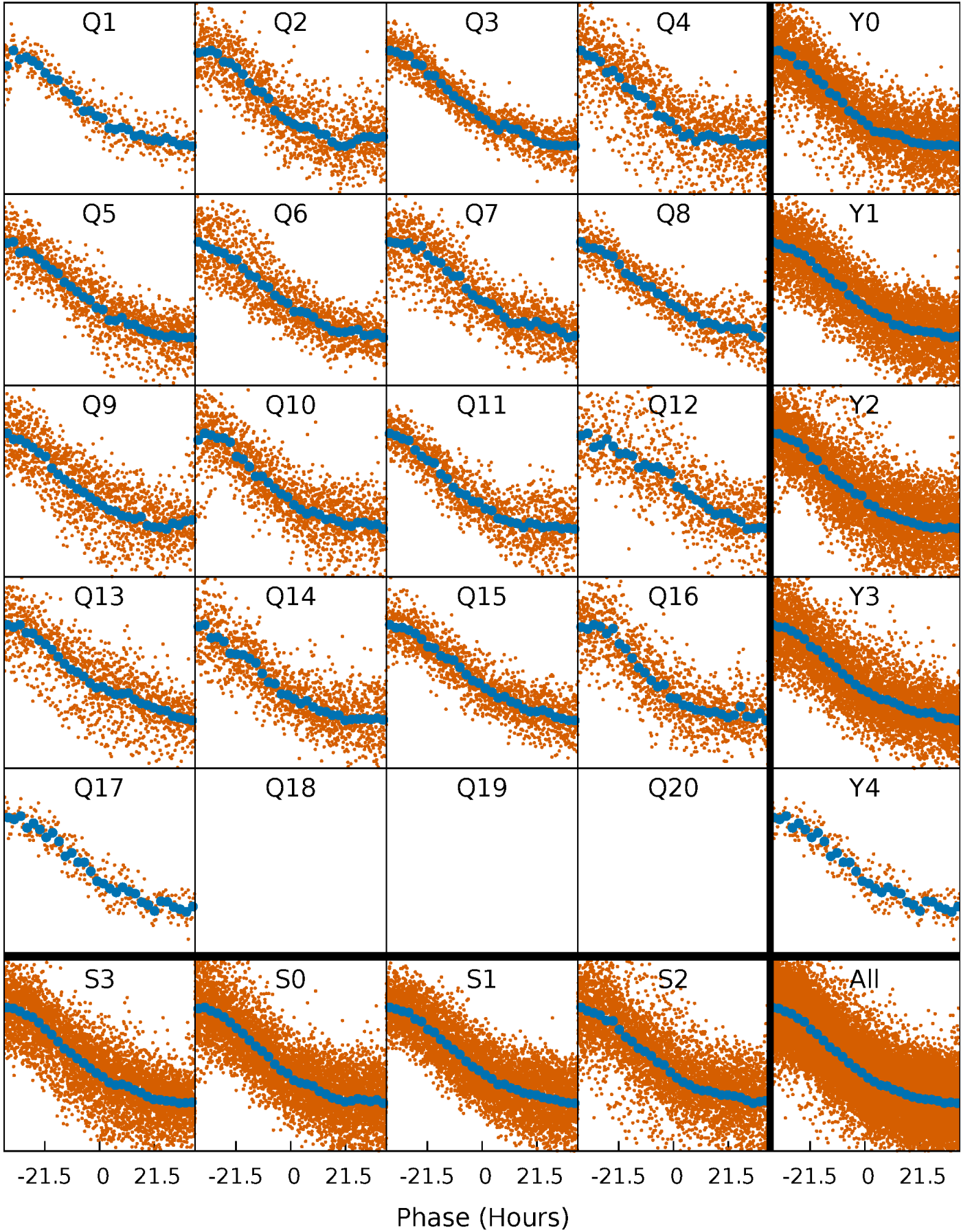


Non-Whitened Vs. Whitened Light Curve



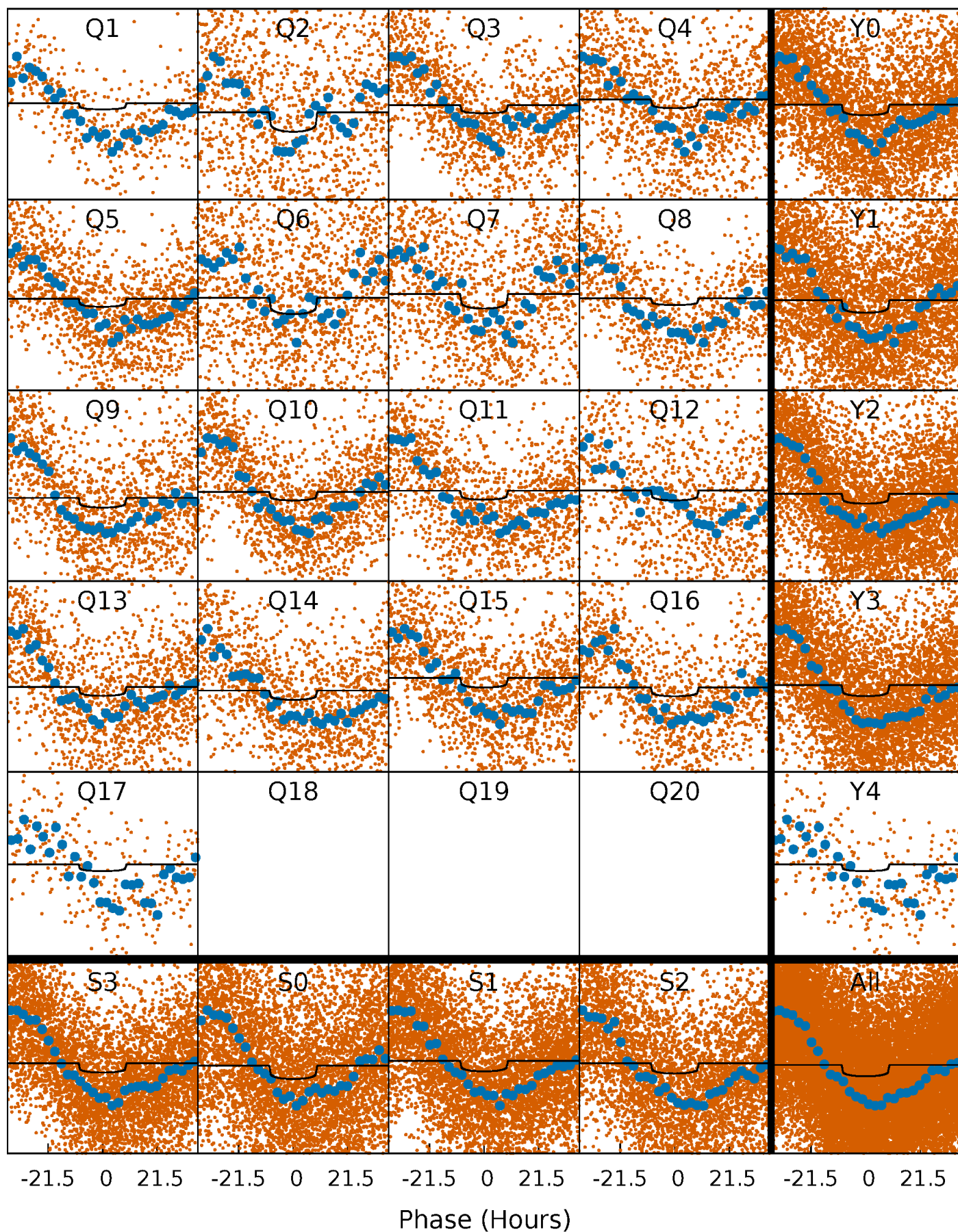
PDC Quarter-Phased Transit Curves

TCE 005560161-01 P= 9.152439 Days $T_0=138.984070$ (BKJD)



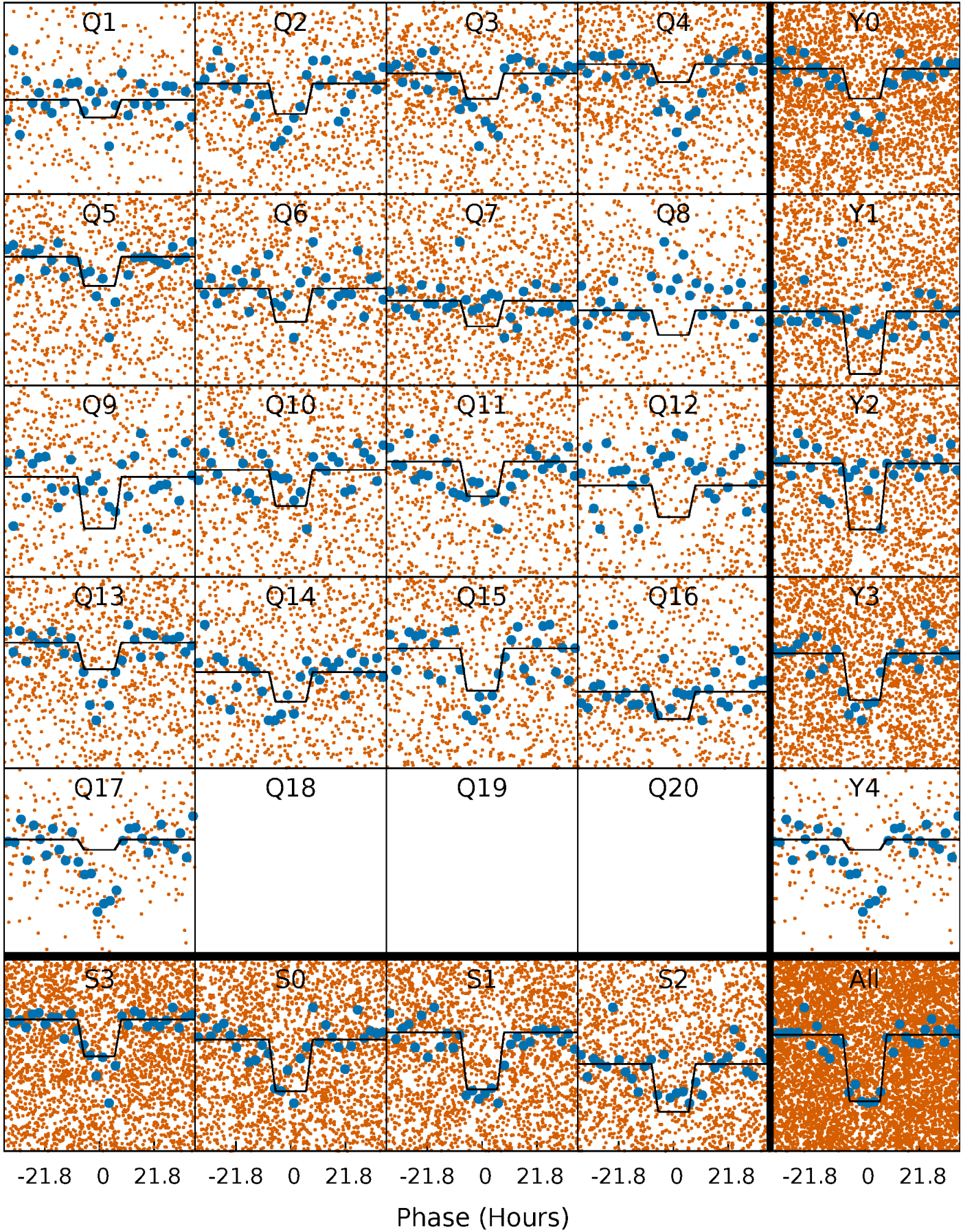
DV Quarter-Phased Transit Curves

TCE 005560161-01 P= 9.152439 Days $T_0=138.984070$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

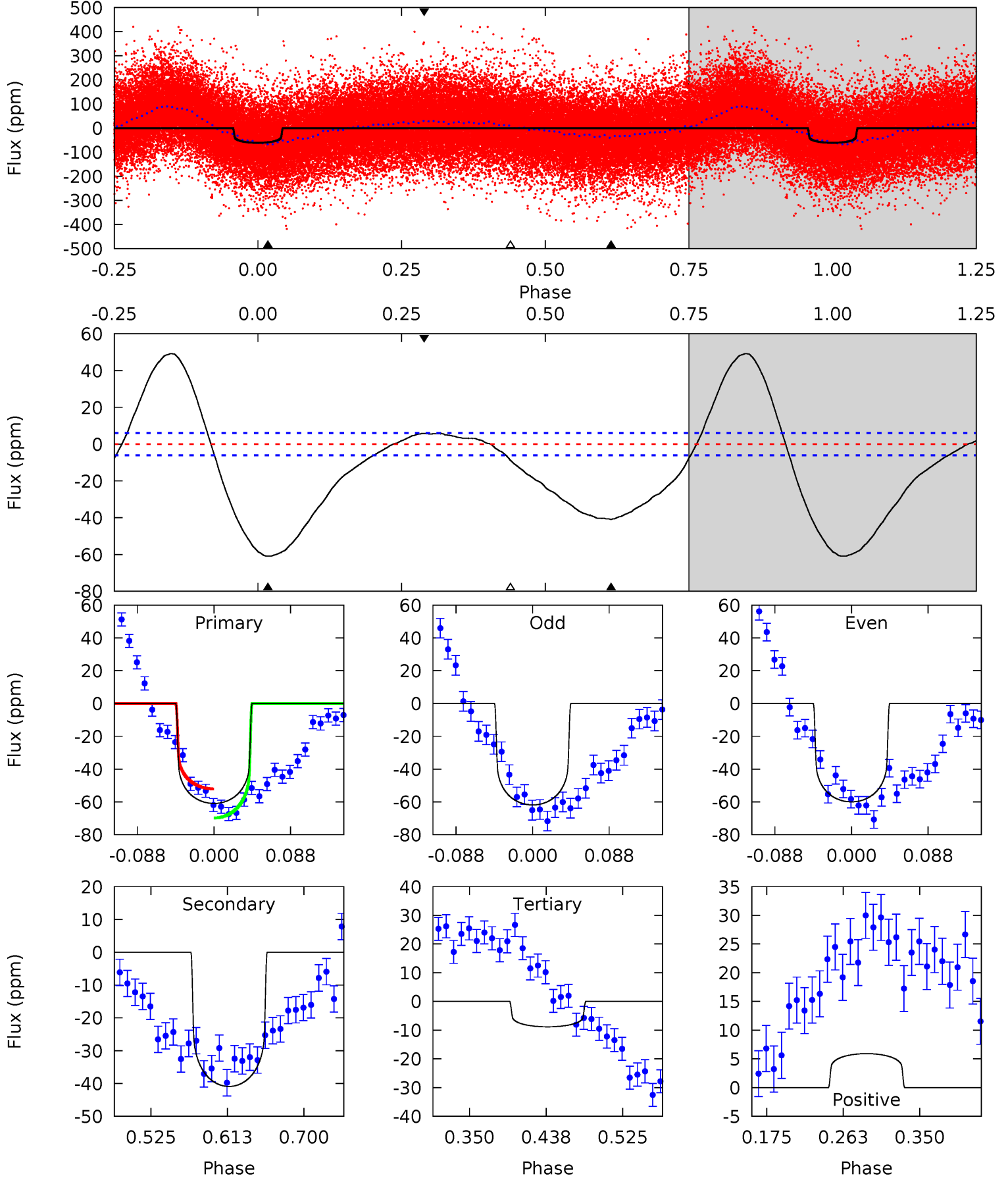
TCE 005560161-01 P= 9.152535 Days $T_0=138.986537$ (BKJD)



DV Model-Shift Uniqueness Test

005560161-01, P = 9.152439 Days, E = 129.831631 Days

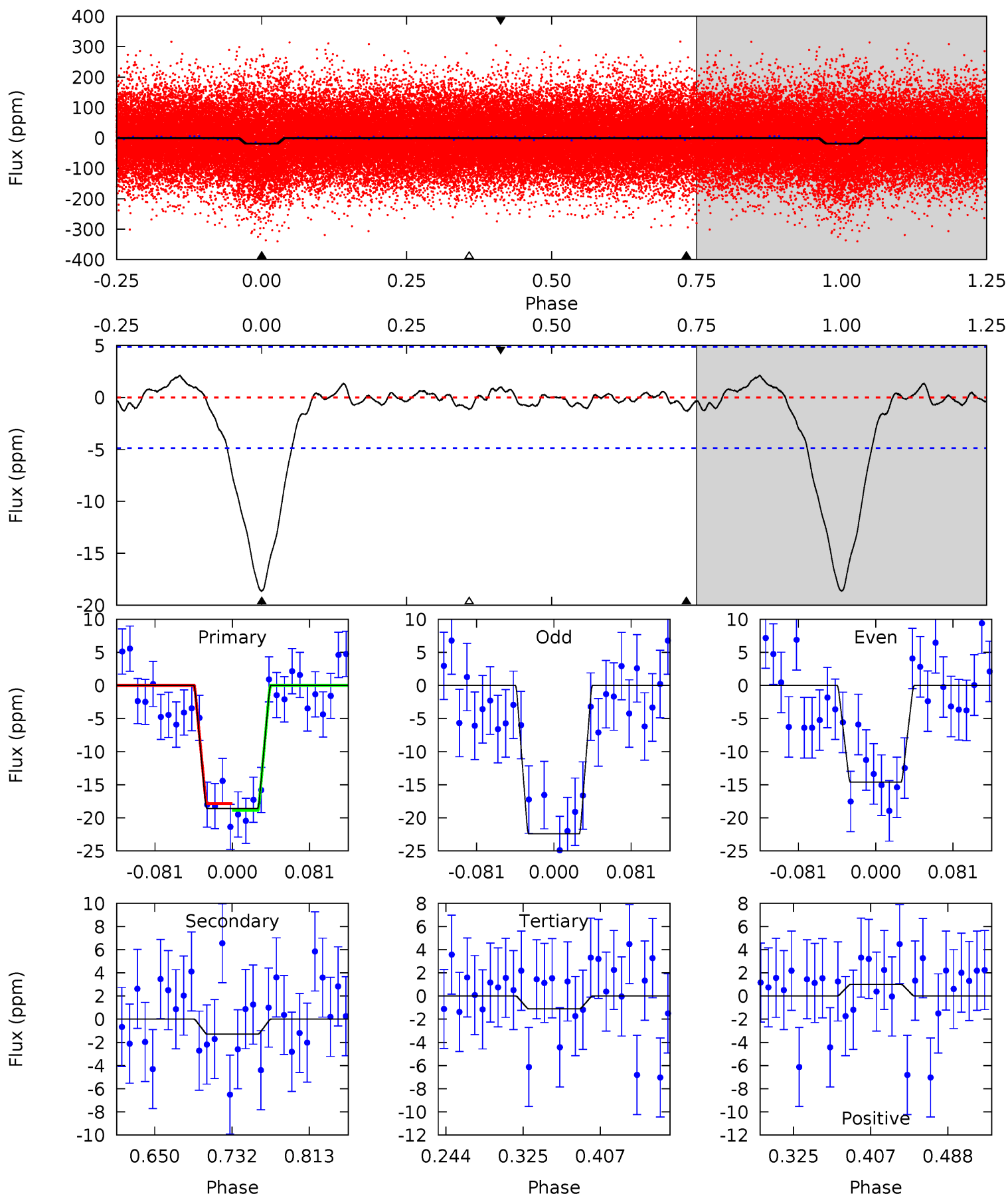
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.3	31.1	6.71	4.49	4.59	1.71	15.4	39.6	41.8	24.4	26.6	0.71	1.78	0.45	6.69



Alt Model-Shift Uniqueness Test

005560161-01, P = 9.152535 Days, E = 129.834002 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	1.22	1.06	0.95	4.61	1.74	0.64	16.5	16.6	0.17	0.28	3.69	1.04	0.10	0.48



Stellar Parameters For KIC 005560161

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6191^{+167}_{-167}	$3.904^{+0.273}_{-0.097}$	$-0.140^{+0.300}_{-0.300}$	$2.048^{+0.425}_{-0.637}$	$1.225^{+0.212}_{-0.212}$	$0.201^{+0.352}_{-0.070}$
	+3%/-3%	+7%/-2%	+214%/-214%	+21%/-31%	+17%/-17%	+175%/-35%
Source	PHO1	FLK73	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 005560161-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-41 ± 1	$0.98^{+0.21}_{-0.19}$	1773^{+99}_{-156}	7371^{+762}_{-573}	199^{+108}_{-62}
Alt.	-1 ± 1	$0.95^{+0.20}_{-0.19}$	1764^{+109}_{-142}	3516^{+491}_{-1082}	$6.273^{+7.564}_{-5.624}$

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

DV Centroid Data

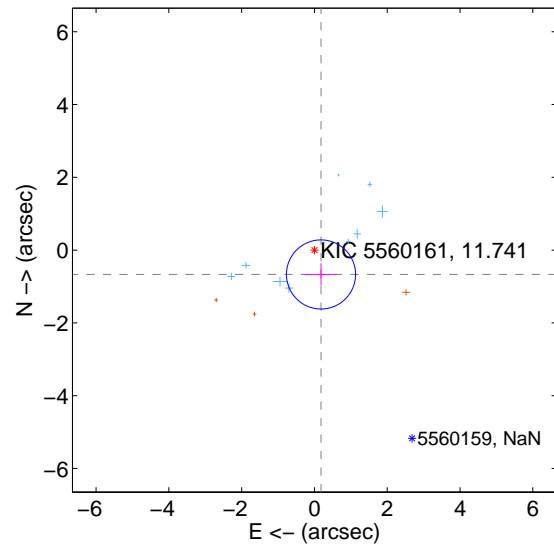
Supplemental centroid analysis for 005560161-01. **Kepler magnitude: 11.74.** Transit SNR 6.02

There are 9 quarters with good PRF difference image offsets

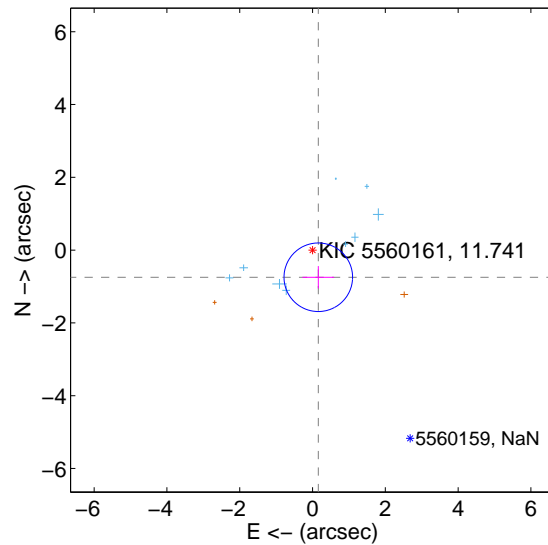
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.693 ± 0.316	2.19	-0.180 ± 0.438	-0.669 ± 0.306
PRF-fit source offset from KIC position	0.763 ± 0.314	2.43	-0.159 ± 0.436	-0.746 ± 0.307
photometric centroid source offset	1.56 ± 1.33	1.17	1.45 ± 1.36	0.57 ± 1.10

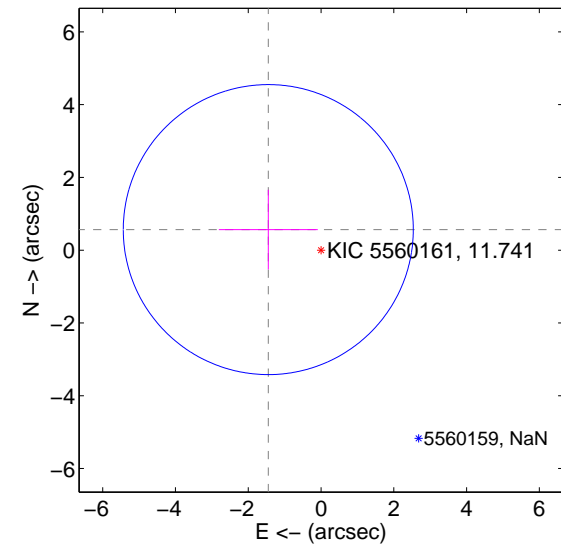
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

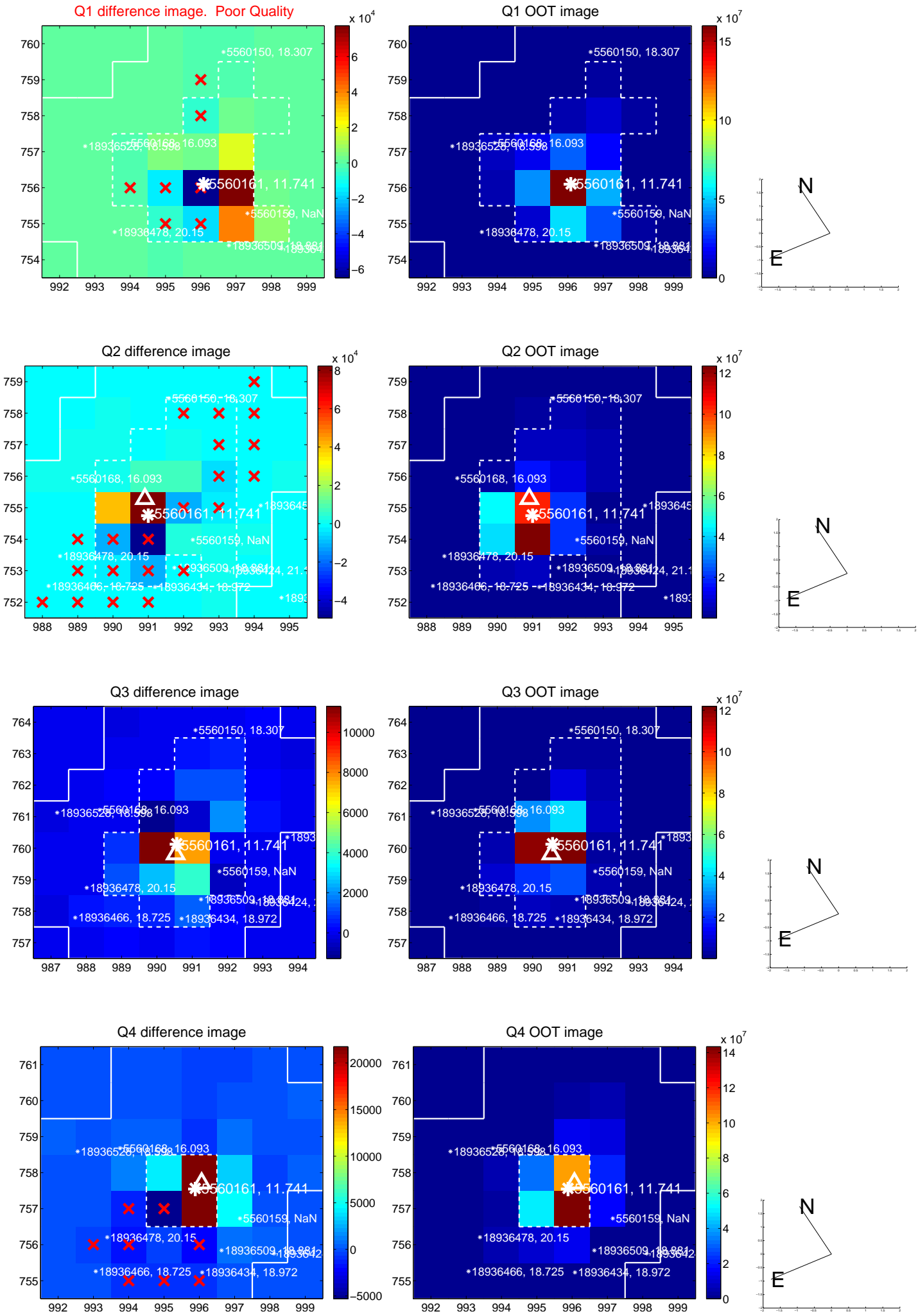


offset from photometric centroids

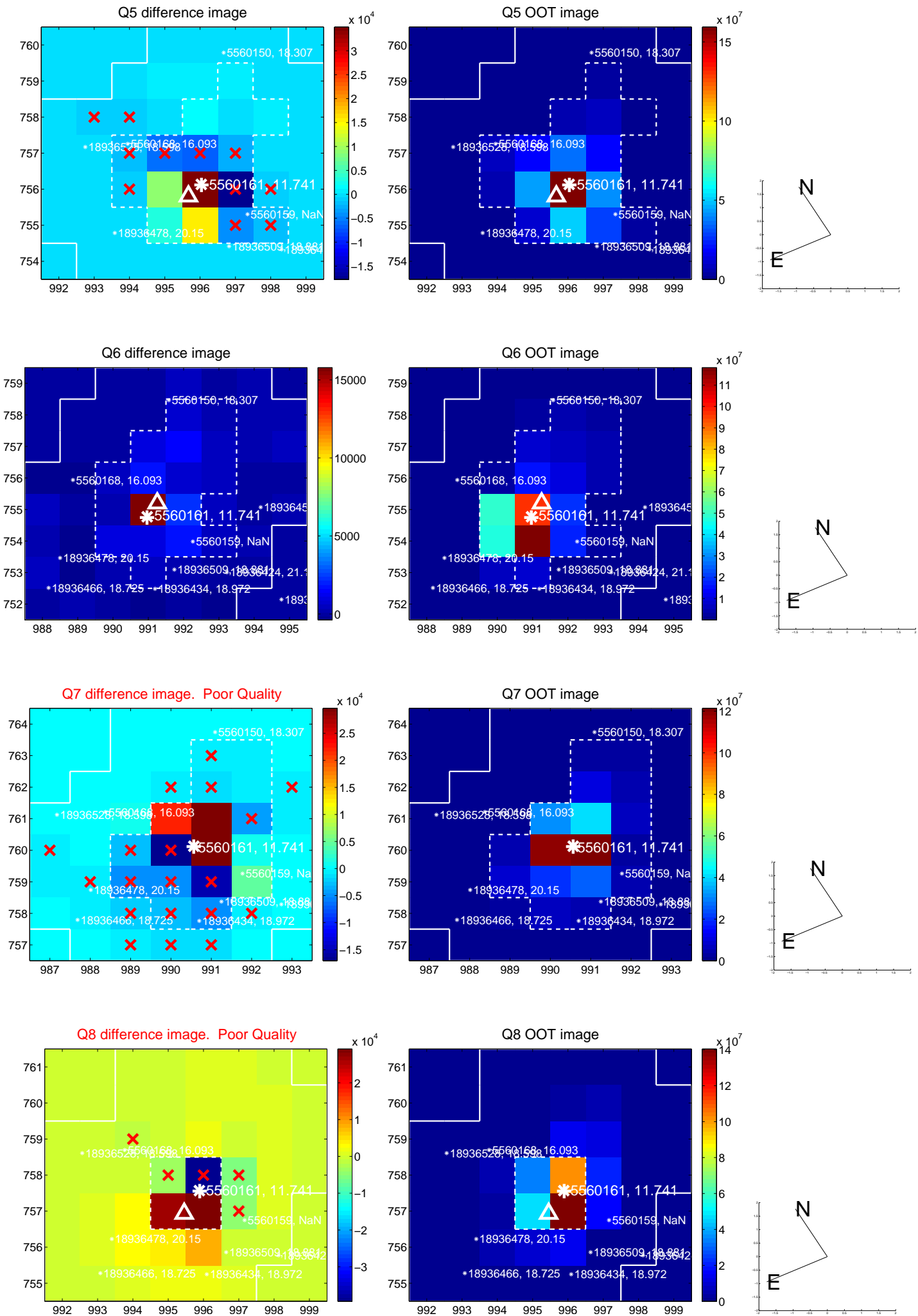


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

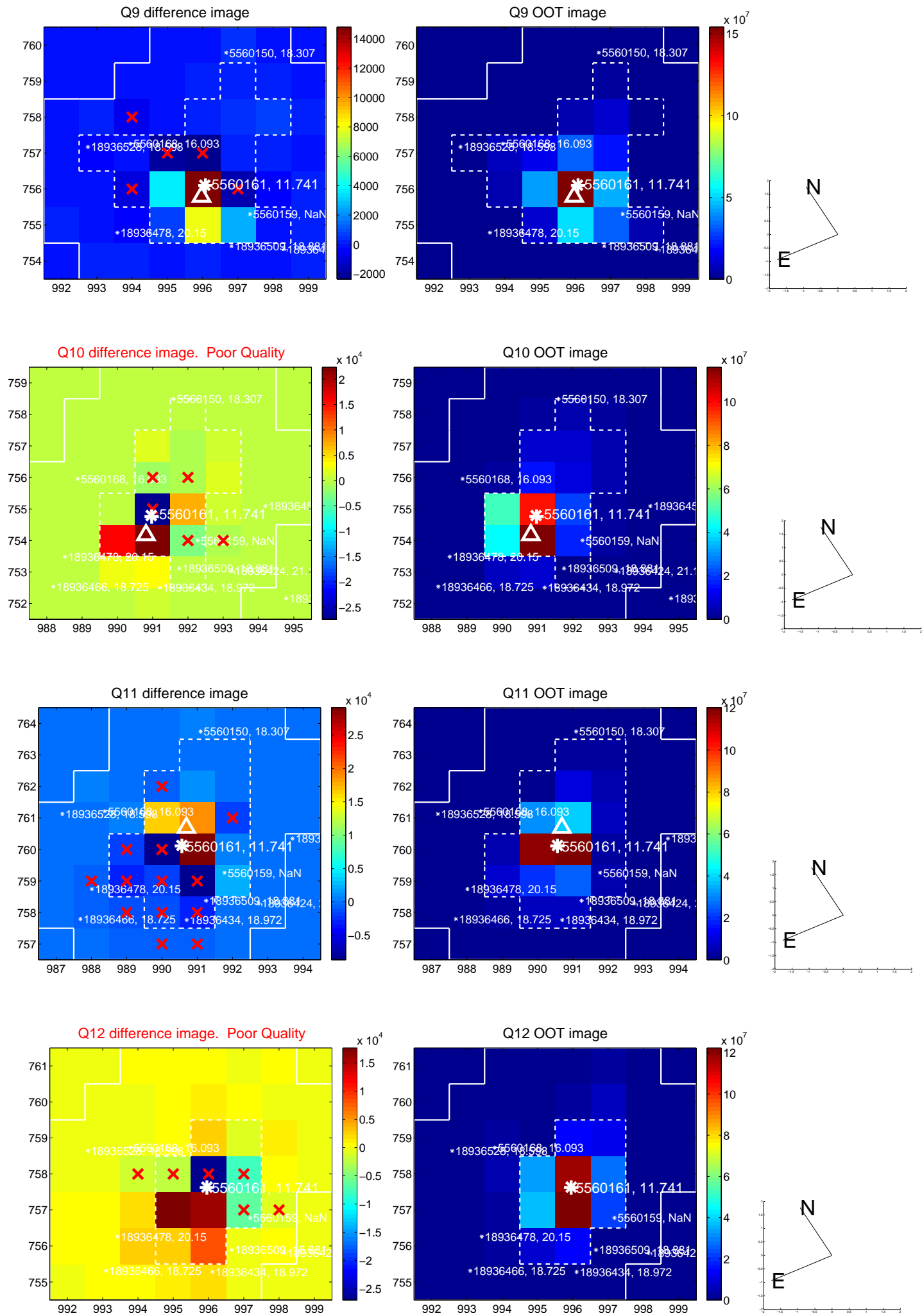
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



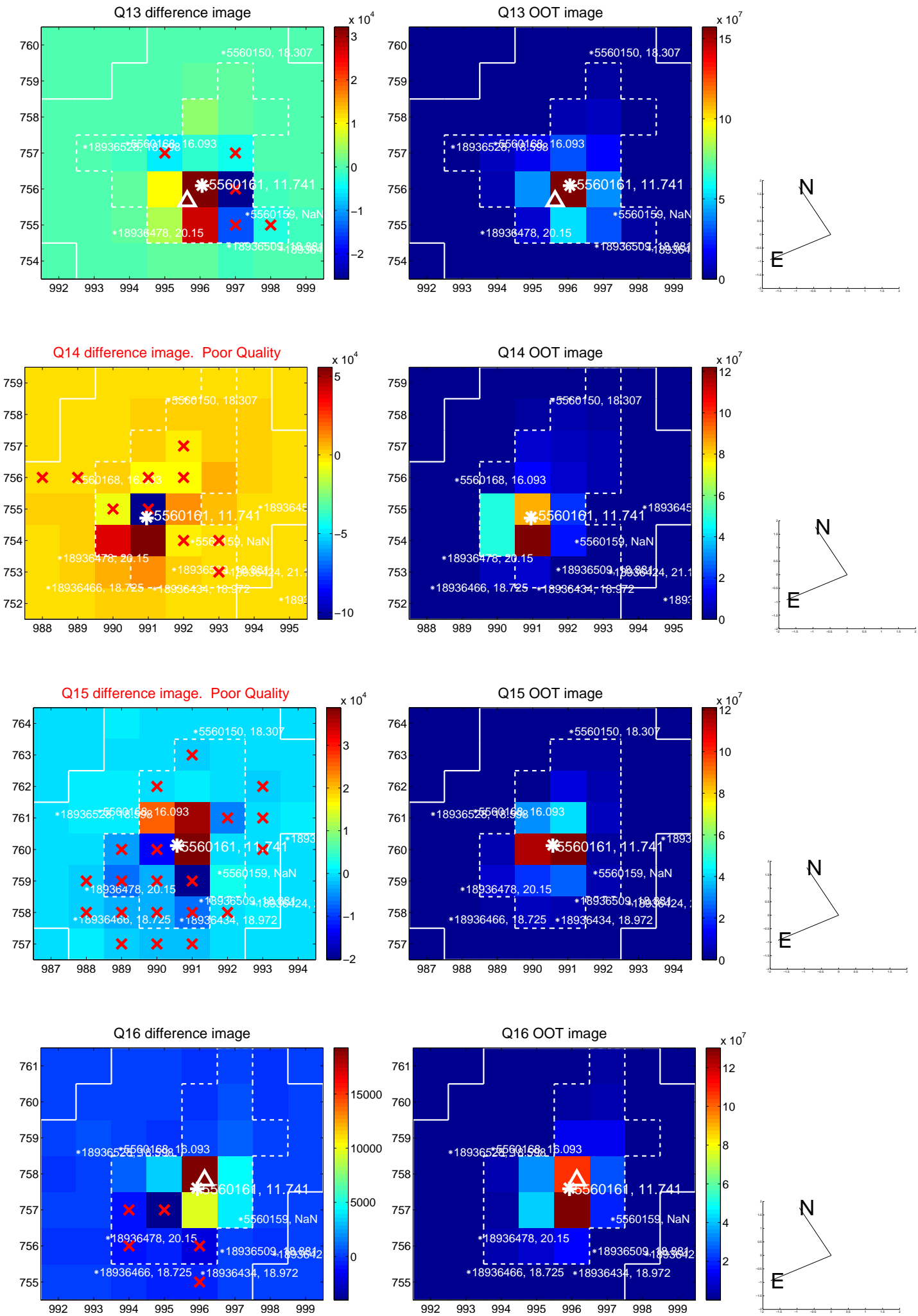
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



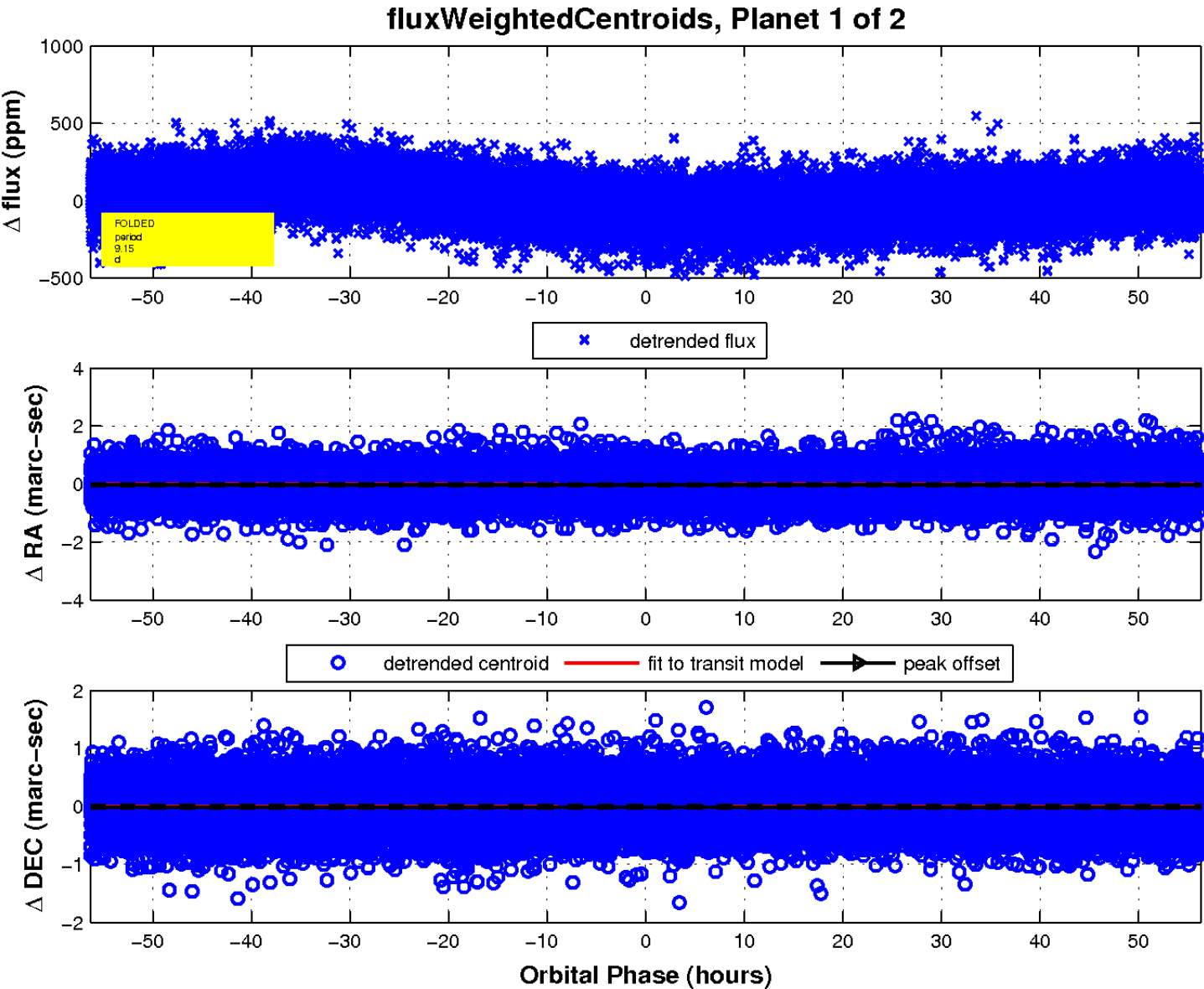
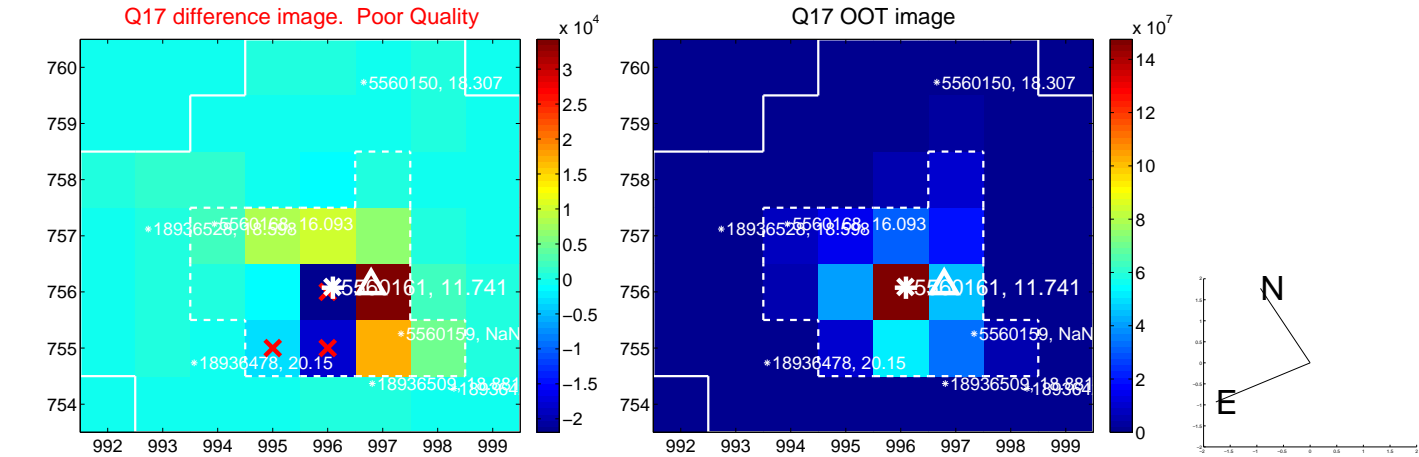
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

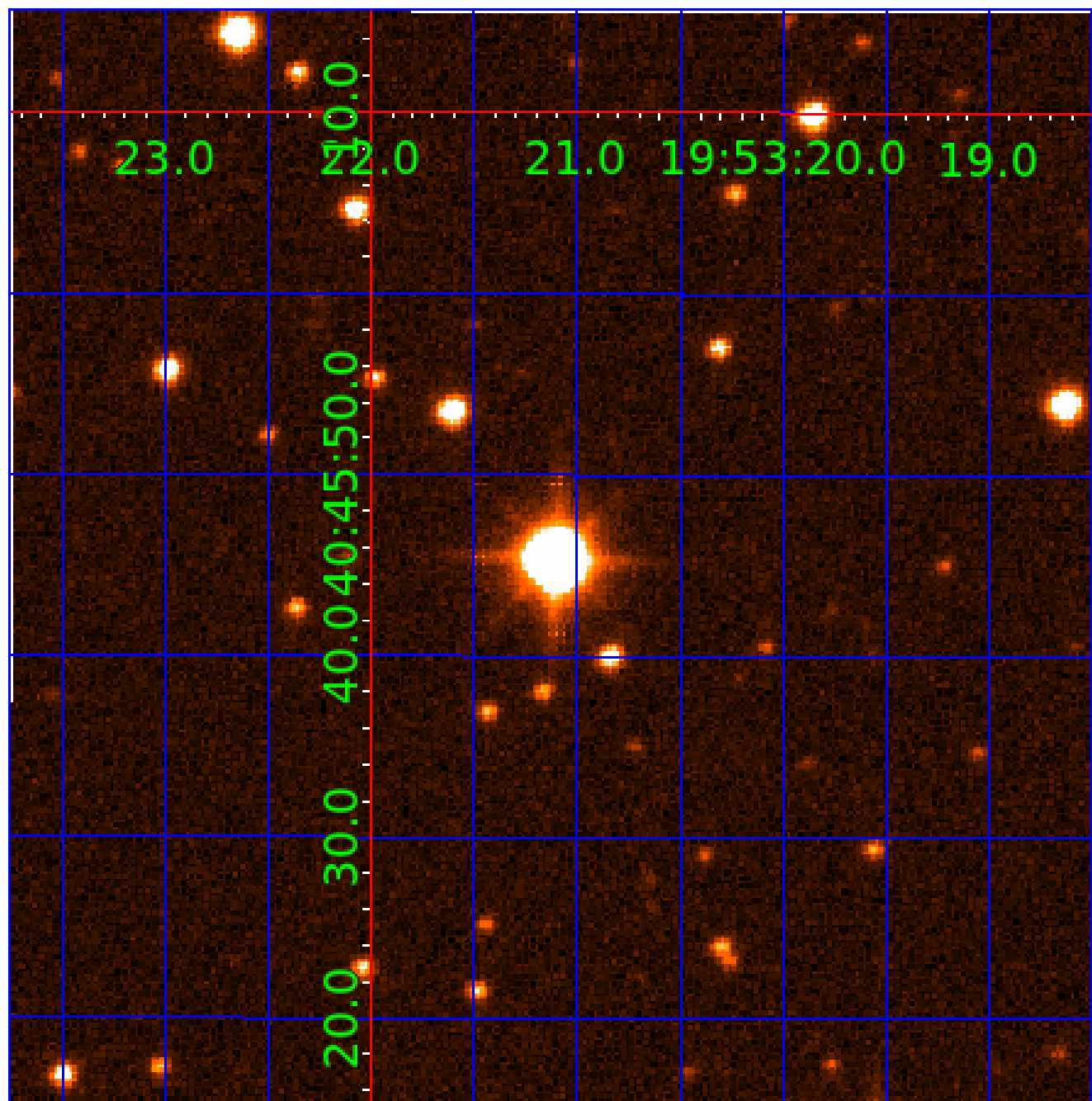


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005560161

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})
005560161-01	OBS	No	9.152439	138.984070	18.5	18.778	7.4	6.0	2.05	6191	1.03	656.81
005560161-02	OBS	No	519.789023	409.486391	164.9	15.396	12.4	7.3	2.05	6191	2.79	3.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005560161-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—HALO_GHOST
005560161-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—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.

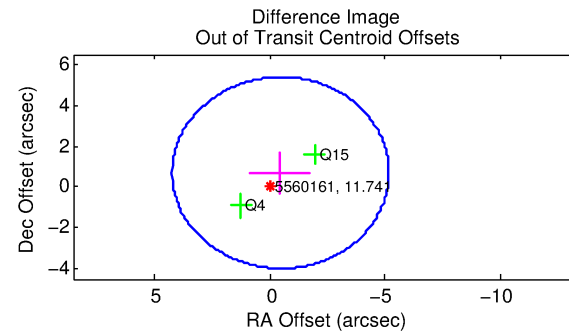
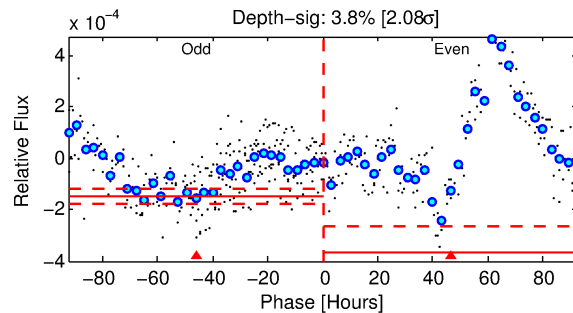
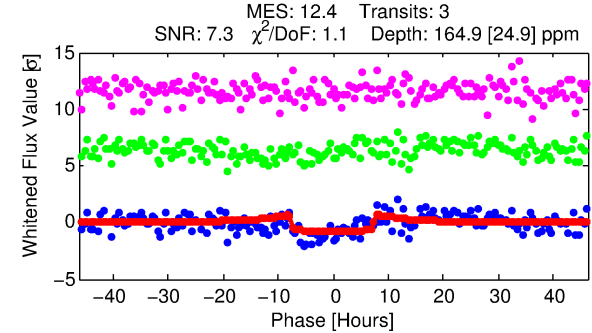
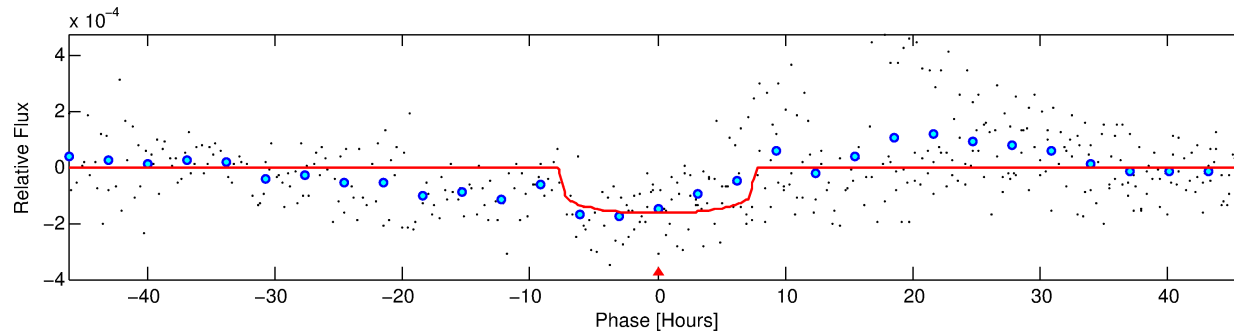
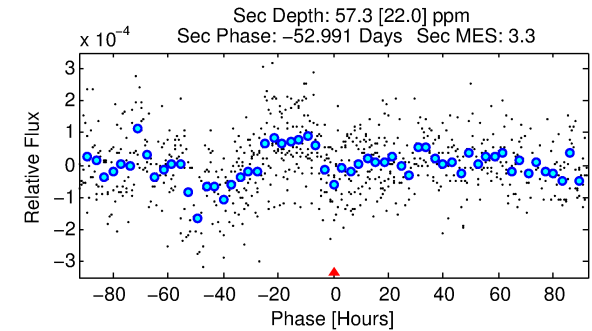
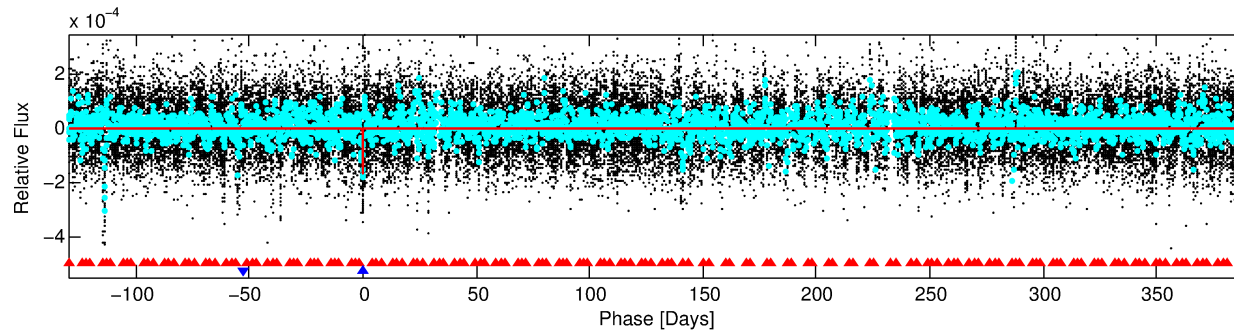
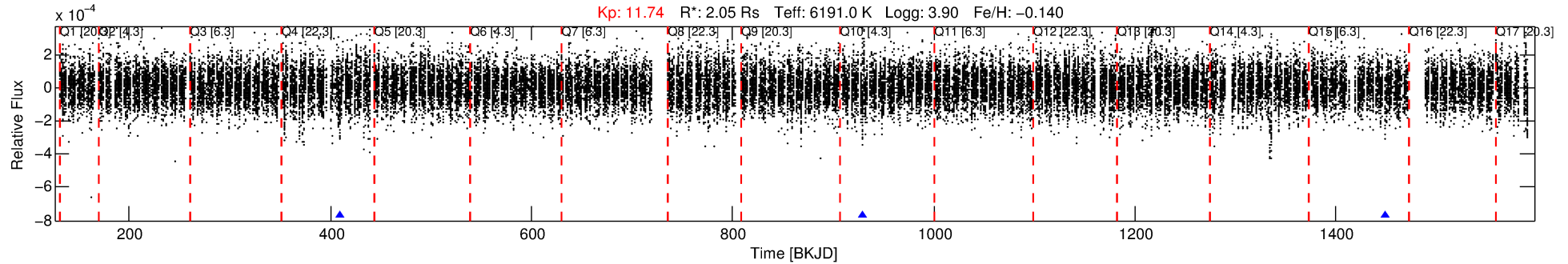
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005560161-02

No Significant Match Found

DV One-Page Summary

KIC: 5560161 Candidate: 2 of 2 Period: 519.789 d



DV Fit Results:

Period = 519.78902 [0.01268] d
Epoch = 409.4864 [0.0148] BKJD
Rp/R* = 0.0125 [0.0043]
a/R* = 196.30 [331.12]
b = 0.67 [1.41]
Seff = 3.01 [1.44]
Teq = 336 [40] K
Rp = 2.79 [1.29] Re
a = 1.3546 [0.3993] AU
Ag = 7441.68 [6824.81] [1.09 σ]
Teffp = 4823 [960] K [4.67 σ]

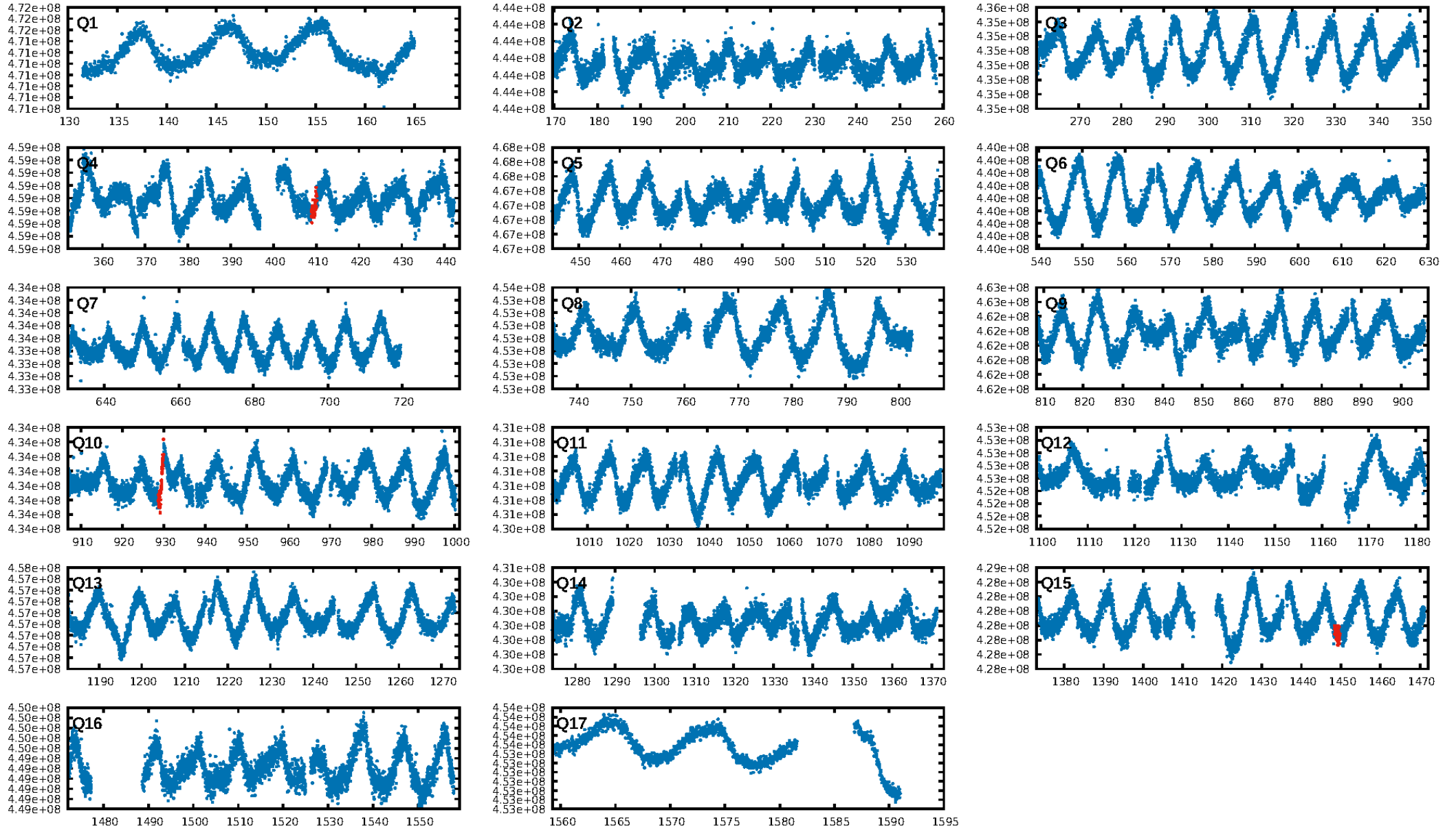
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [504.70 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 9.6%
ModelChiSquareGof-sig: 97.1%
Bootstrap-pfa: 7.25e-25
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2961
Centroid-sig: 43.3%
Centroid-so: 0.888 arcsec [0.83 σ]
OotOffset-rm: 0.846 arcsec [0.54 σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-rm: 0.774 arcsec [0.50 σ]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.50 [1/2]

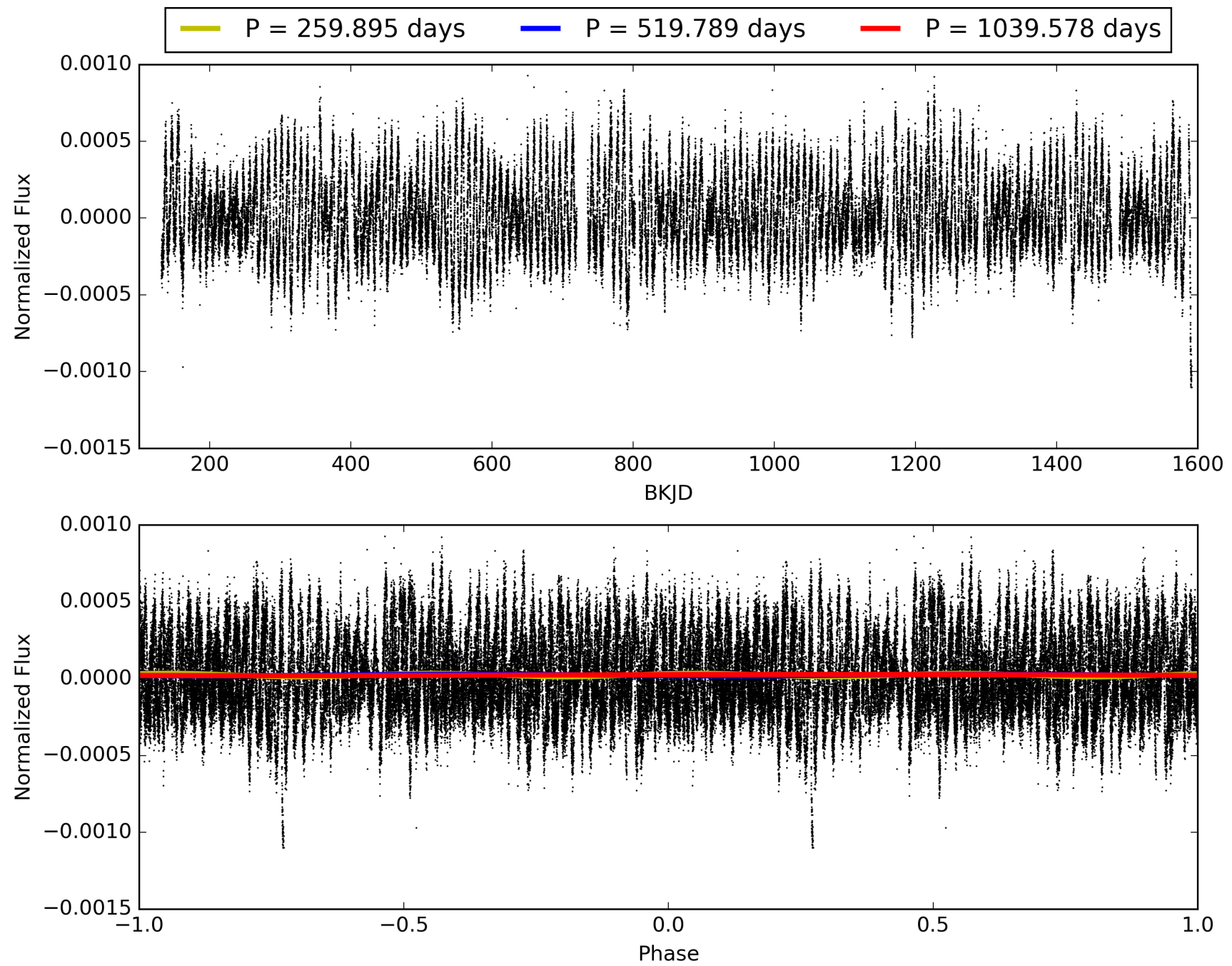
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:59:17 Z

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

TCE 005560161-02, PDC Light Curves

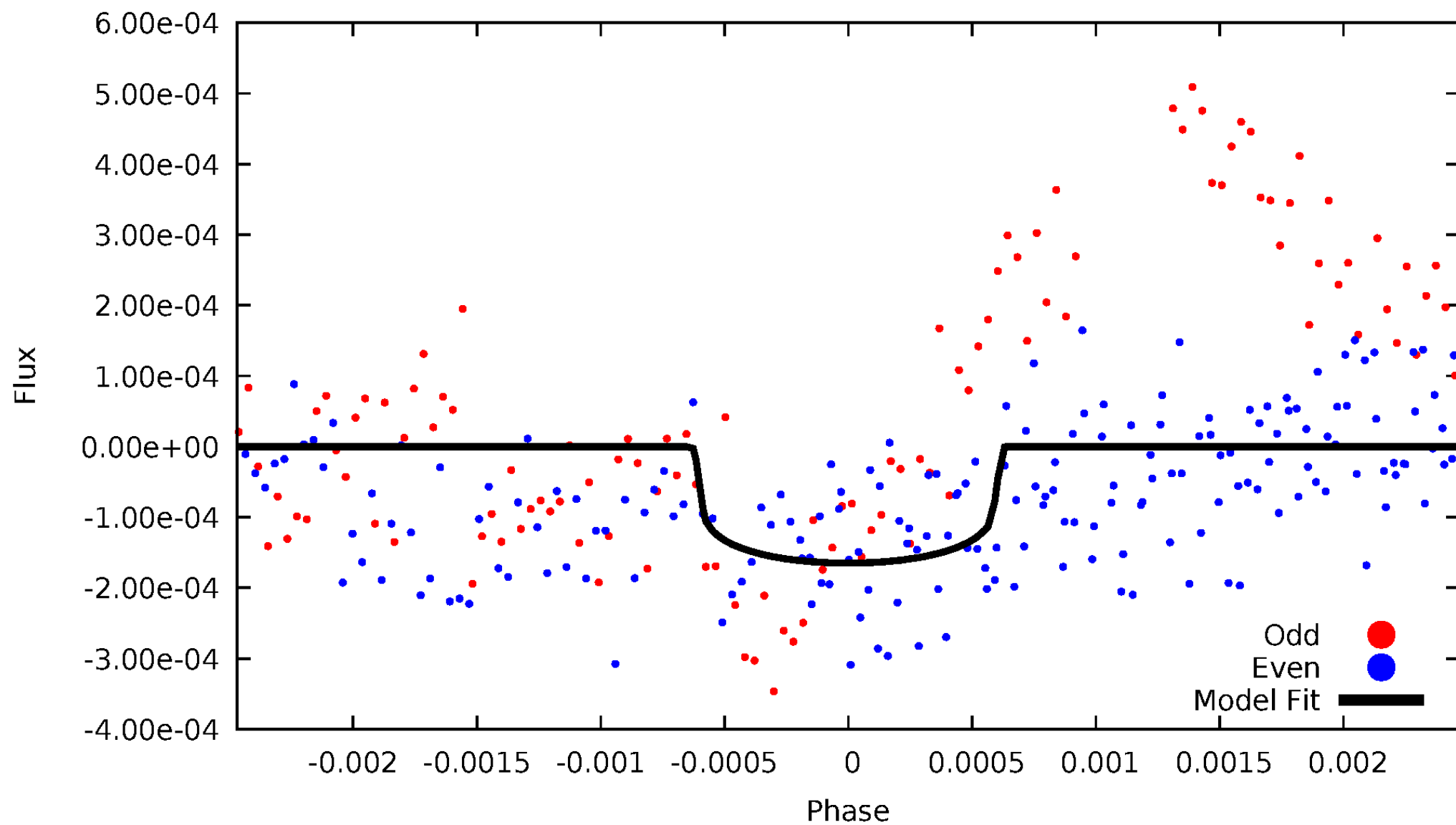


TCE 005560161-02



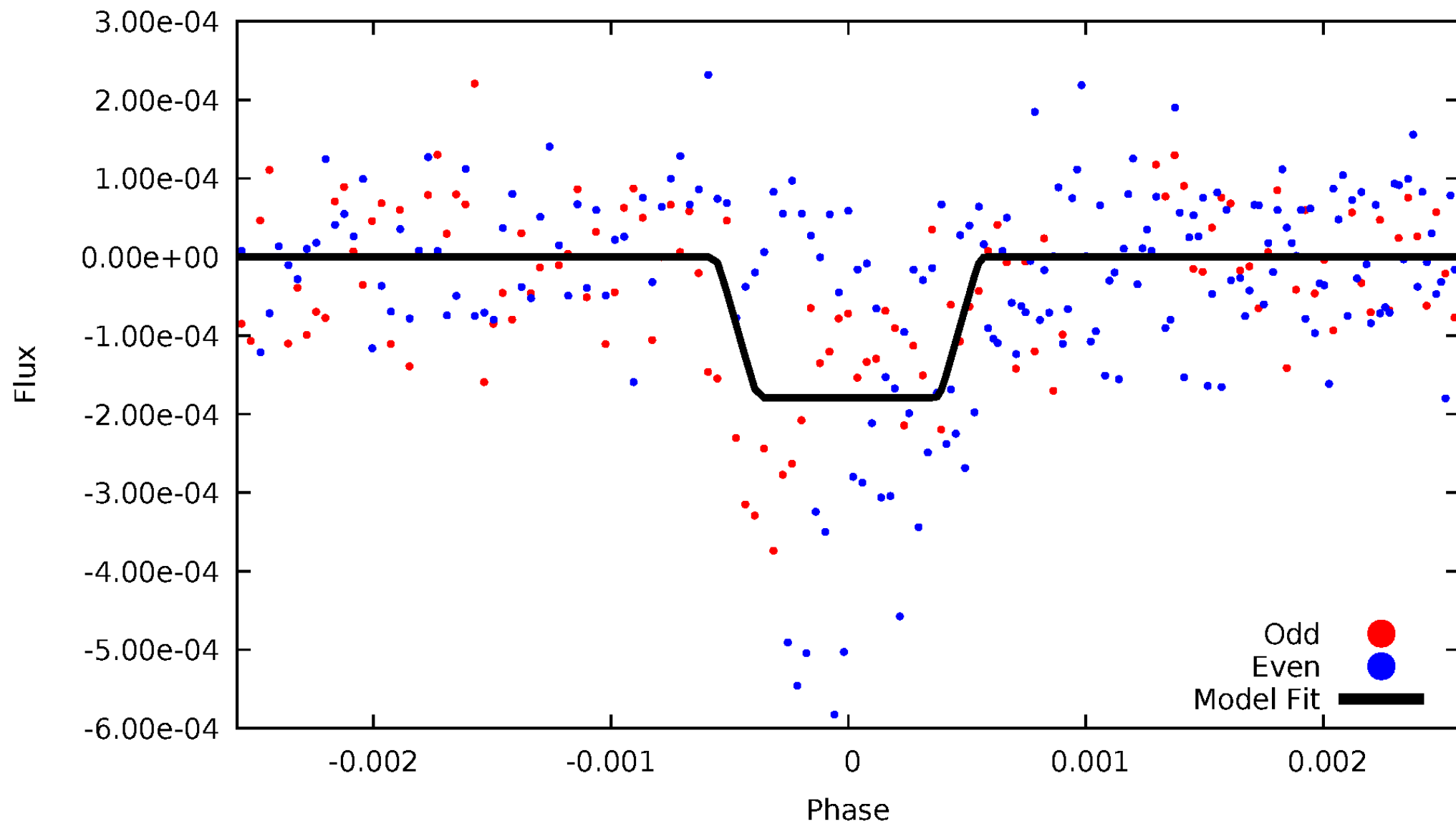
DV Odd/Even

TCE 005560161-02



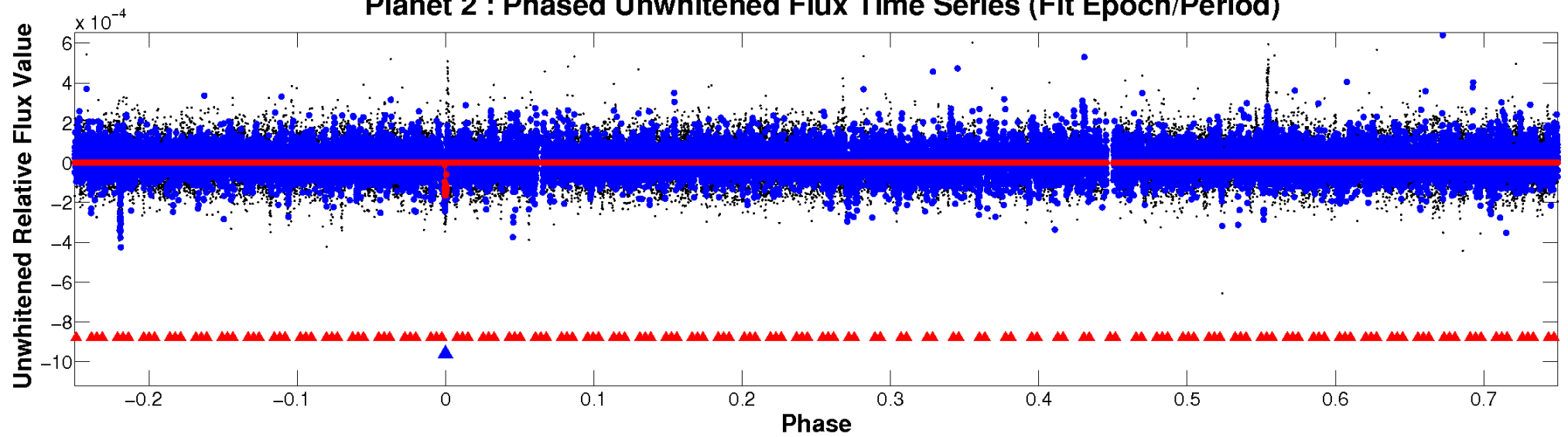
ALT Odd/Even

TCE 005560161-02

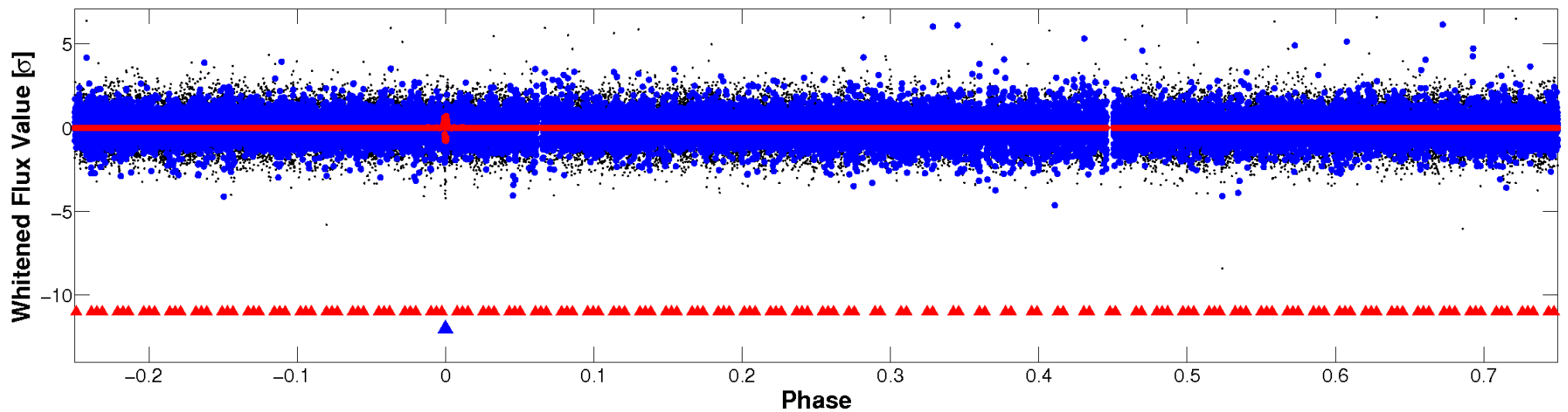


Non-Whitened Vs. Whitened Light Curve

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

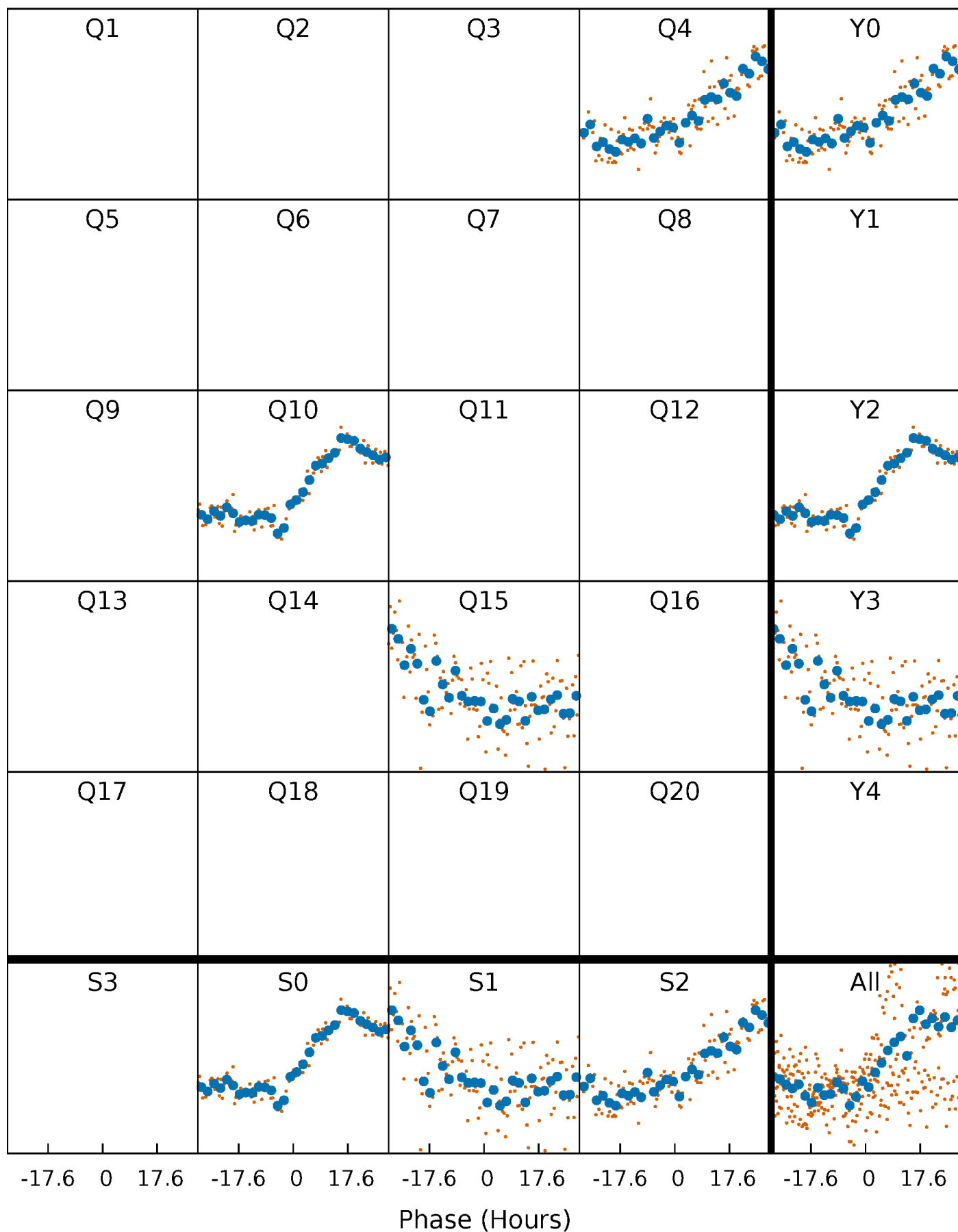


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



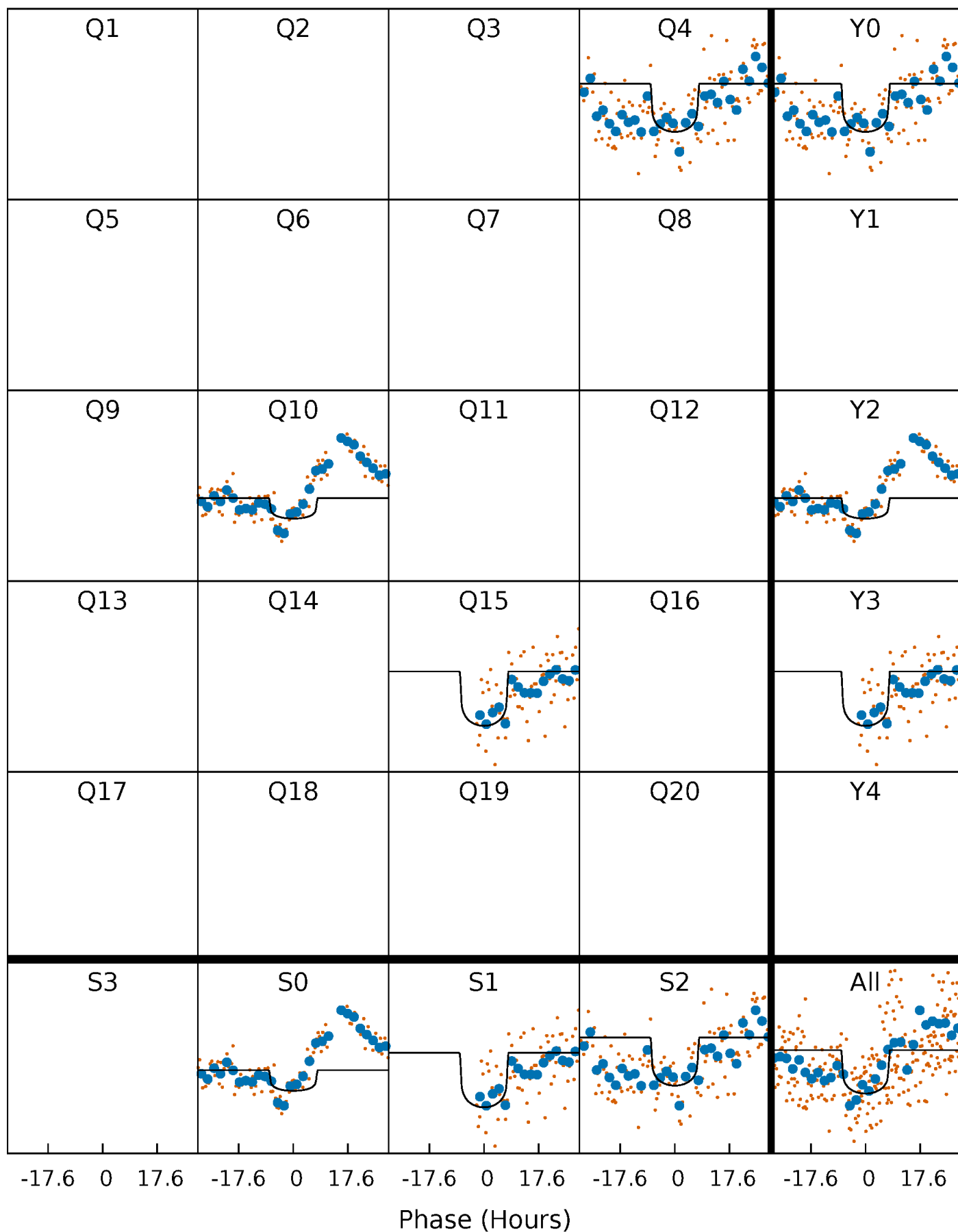
PDC Quarter-Phased Transit Curves

TCE 005560161-02 $P=519.789023$ Days $T_0=409.486391$ (BKJD)



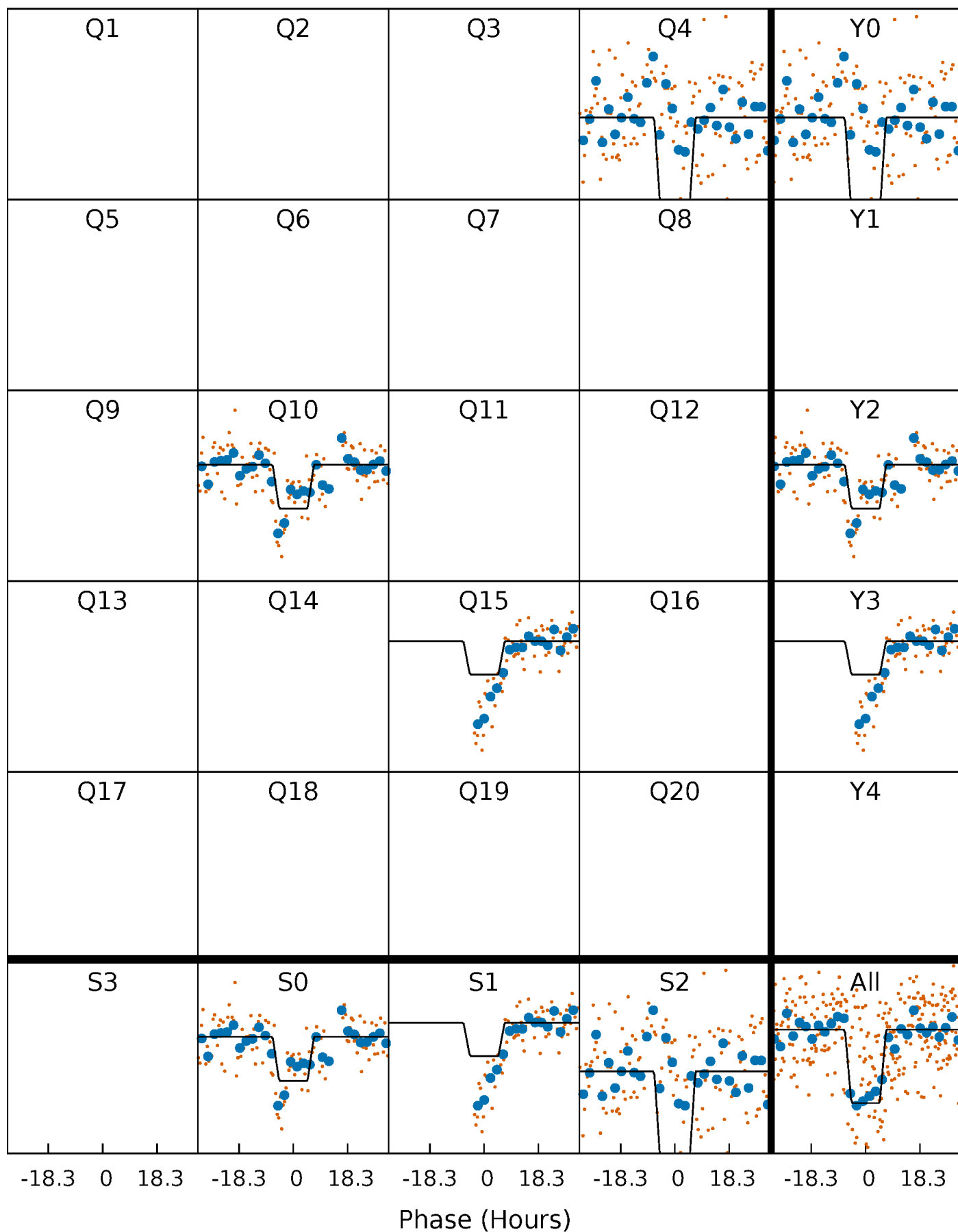
DV Quarter-Phased Transit Curves

TCE 005560161-02 P=519.789023 Days $T_0=409.486391$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

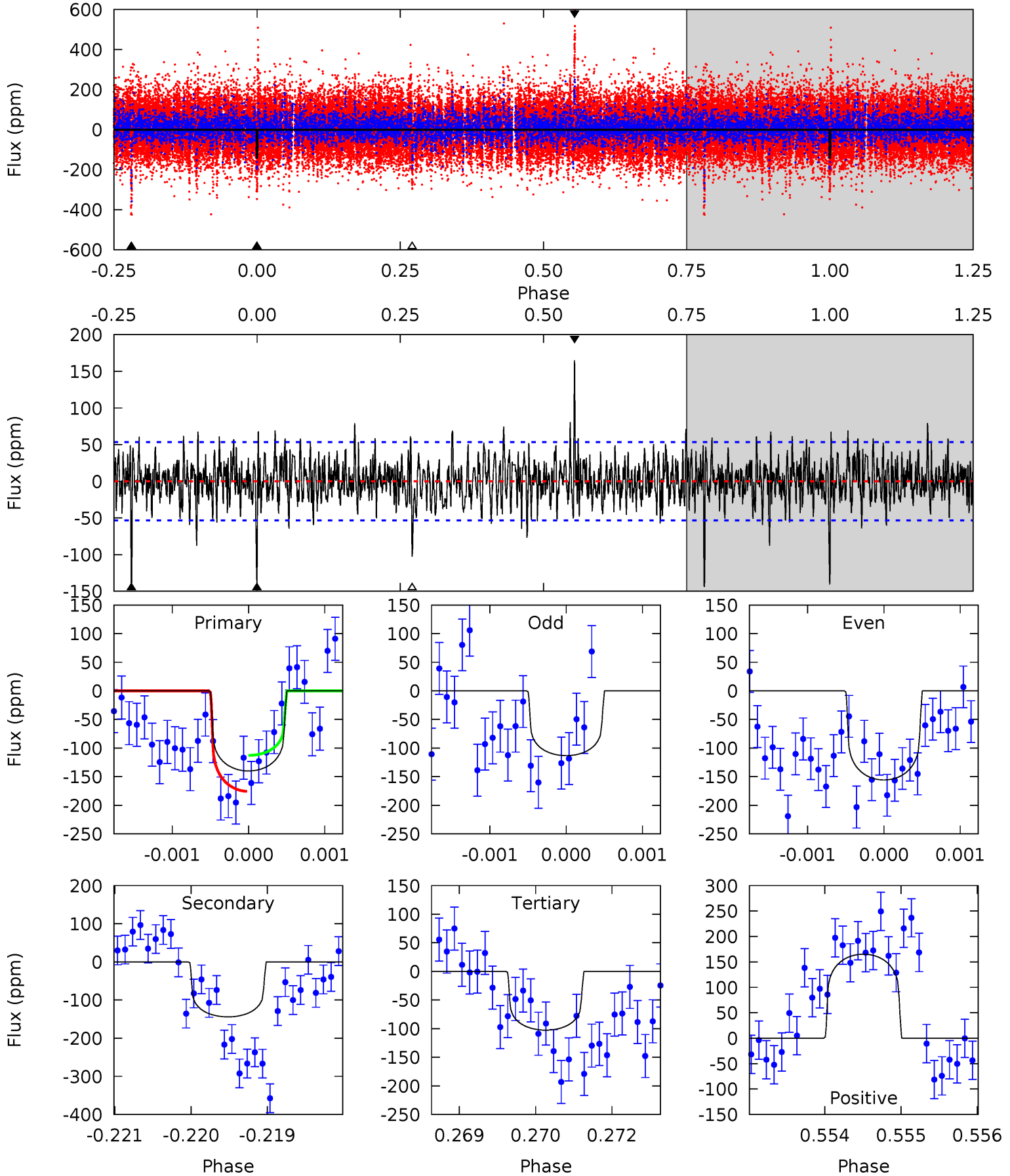
TCE 005560161-02 P=519.816144 Days $T_0=409.467302$ (BKJD)



DV Model-Shift Uniqueness Test

005560161-02, P = 519.789023 Days, E = 409.486391 Days

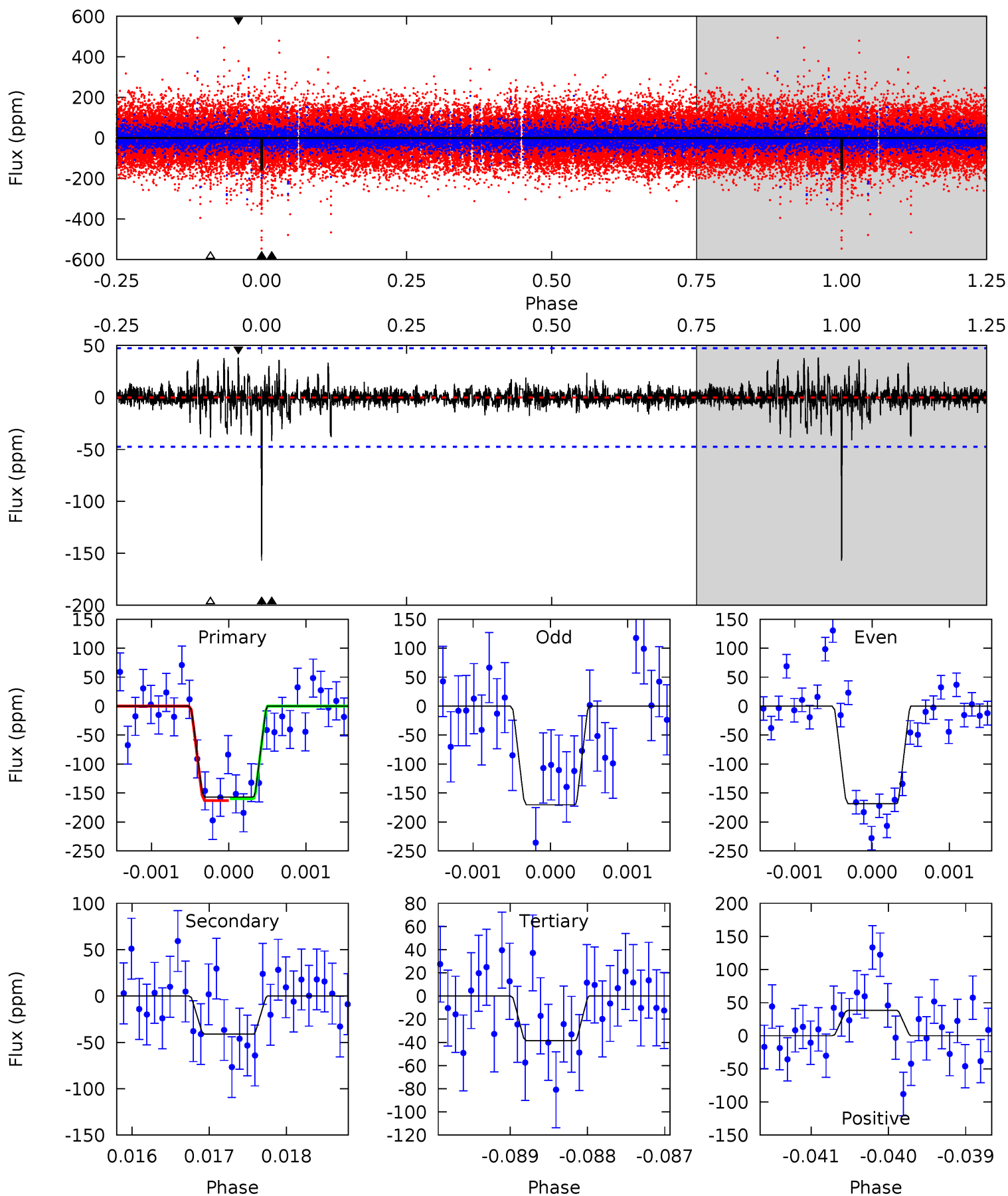
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	14.6	10.4	16.7	5.41	3.23	2.39	3.79	-2.55	4.20	-2.14	2.09	0.97	0.53	3.15



Alt Model-Shift Uniqueness Test

005560161-02, P = 519.816144 Days, E = 409.467302 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.0	4.71	4.41	4.39	5.43	3.25	0.75	13.6	13.6	0.30	0.32	0.10	1.06	0.20	0.19



Stellar Parameters For KIC 005560161

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6191^{+167}_{-167}	$3.904^{+0.273}_{-0.097}$	$-0.140^{+0.300}_{-0.300}$	$2.048^{+0.425}_{-0.637}$	$1.225^{+0.212}_{-0.212}$	$0.201^{+0.352}_{-0.070}$
	+3%/-3%	+7%/-2%	+214%/-214%	+21%/-31%	+17%/-17%	+175%/-35%
Source	PHO1	FLK73	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 005560161-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-144 ± 10	$2.62^{+1.11}_{-0.93}$	462^{+26}_{-36}	6113^{+1515}_{-869}	21270^{+29418}_{-10731}
Alt.	-41 ± 9	$2.81^{+1.03}_{-0.96}$	463^{+26}_{-39}	4489^{+905}_{-479}	5171^{+7787}_{-2449}

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

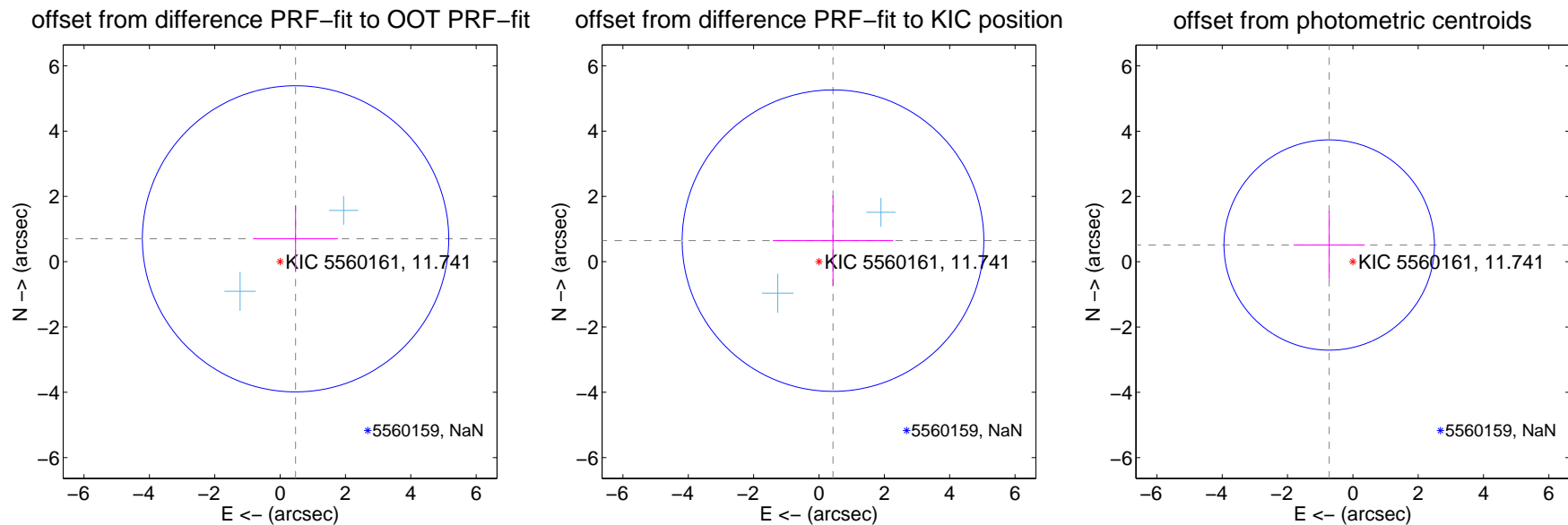
DV Centroid Data

Supplemental centroid analysis for 005560161-02. **Kepler magnitude: 11.74.** Transit SNR 7.28

There are 2 quarters with good PRF difference image offsets

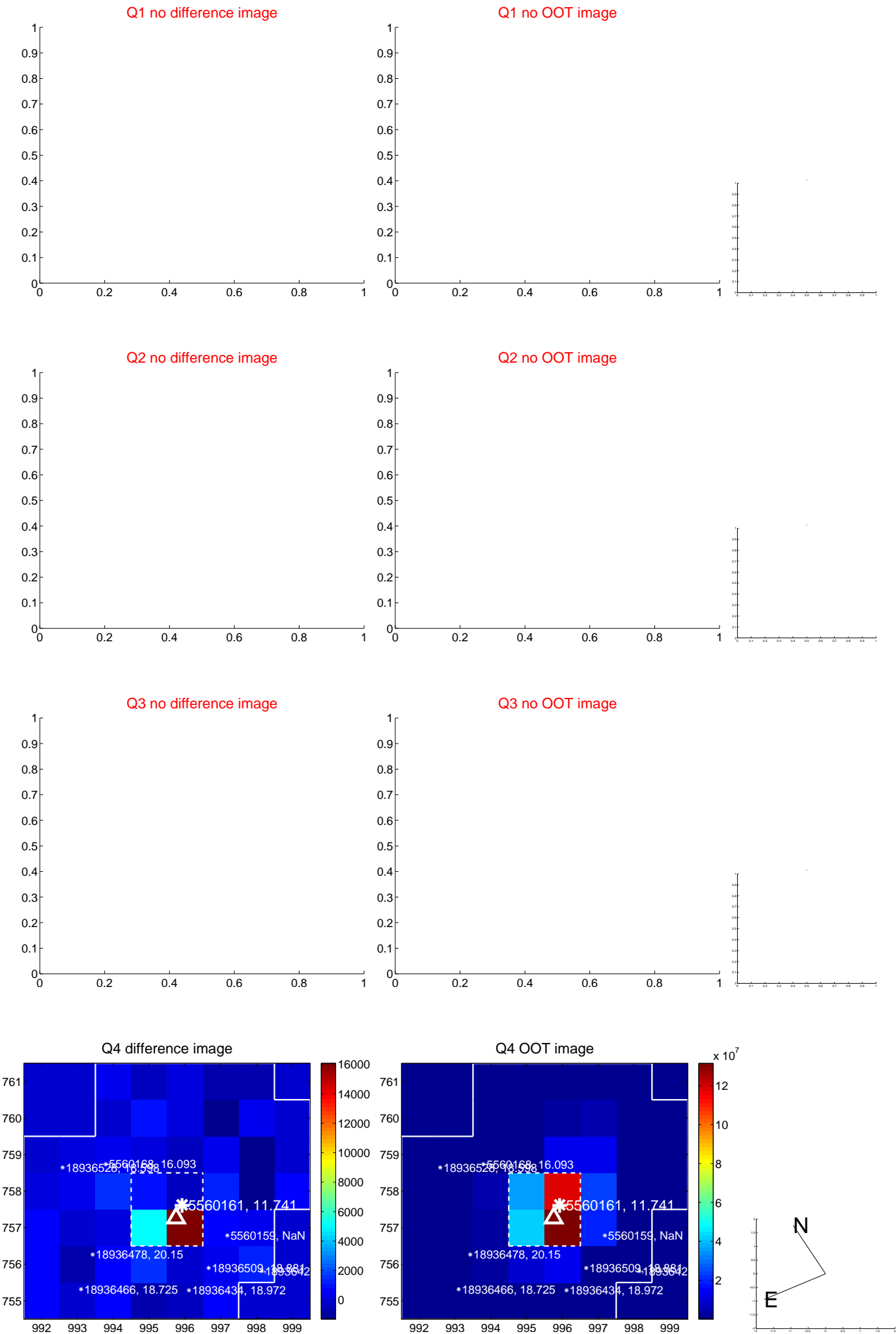
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.846 ± 1.563	0.54	-0.473 ± 1.295	0.701 ± 1.013
PRF-fit source offset from KIC position	0.774 ± 1.539	0.50	-0.429 ± 1.843	0.644 ± 1.382
photometric centroid source offset	0.89 ± 1.07	0.83	0.72 ± 1.09	0.51 ± 1.04



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.



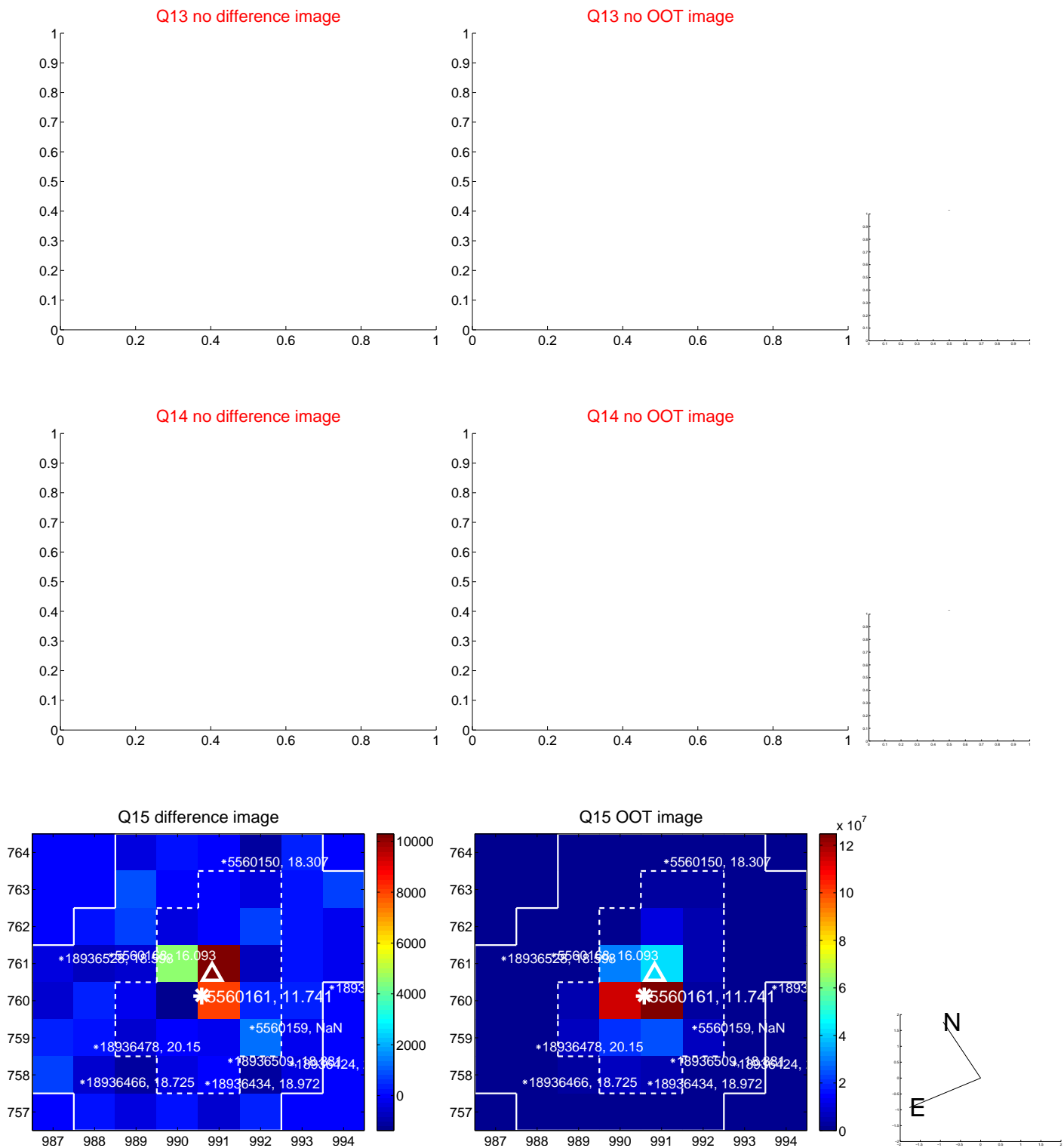
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



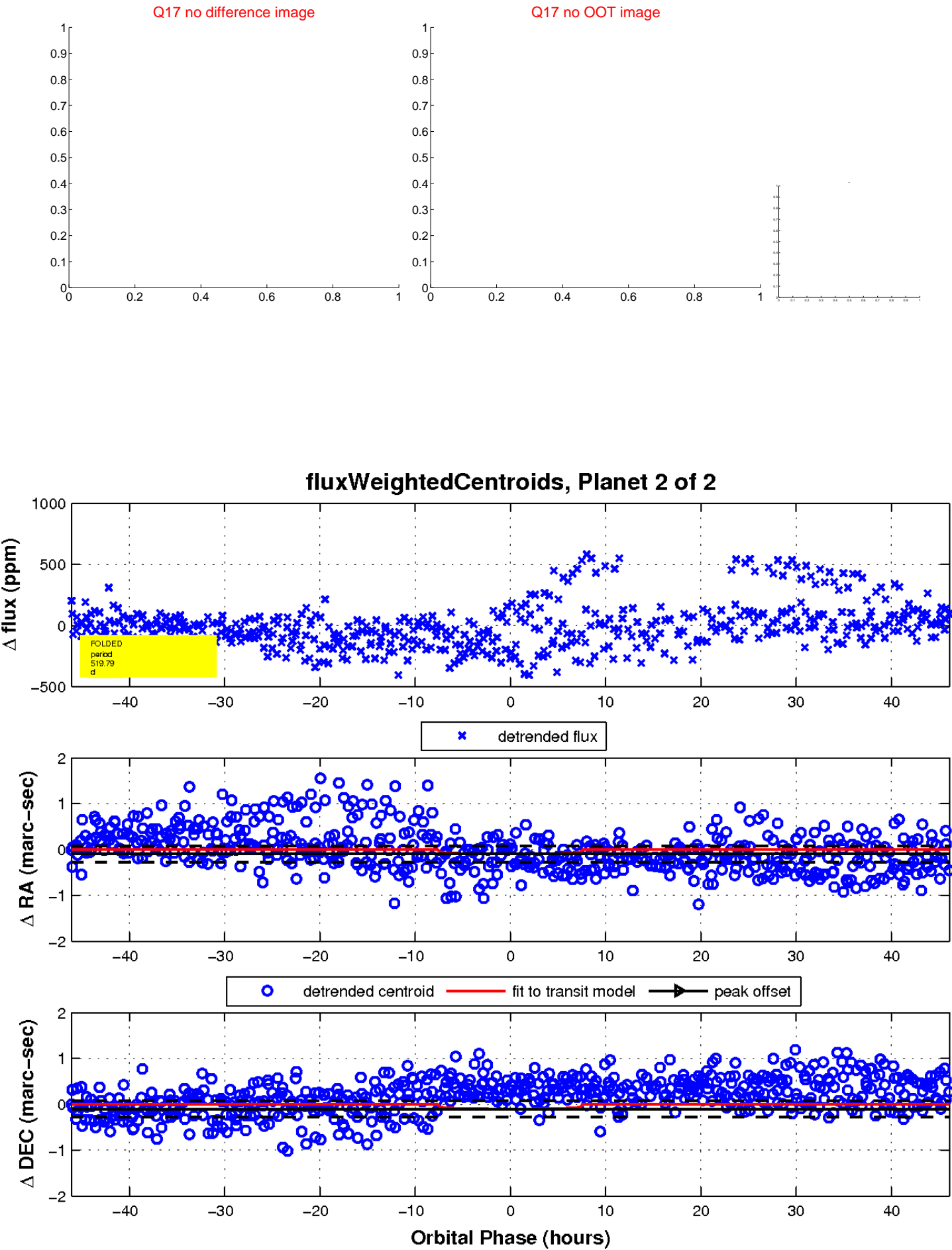
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

