

KIC 004581540

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})
004581540-01	OBS	No	406.926262	315.704853	618.3	8.336	15.3	4.6	0.88	5511	2.32	0.66
004581540-02	OBS	No	261.439691	311.280505	714.6	3.021	14.2	6.4	0.88	5511	2.51	1.19
004581540-03	OBS	No	0.899929	131.758744	55.0	1.425	7.9	11.0	0.88	5511	0.78	2286.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004581540-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004581540-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
004581540-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

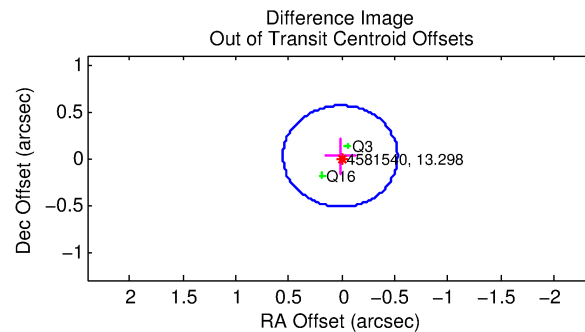
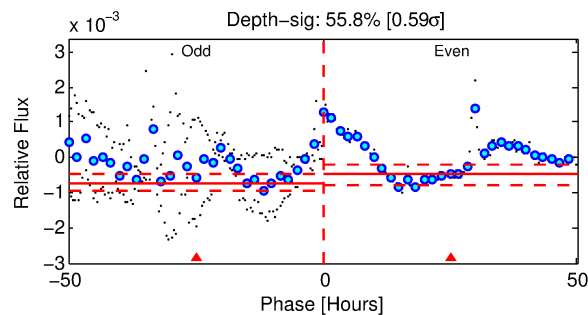
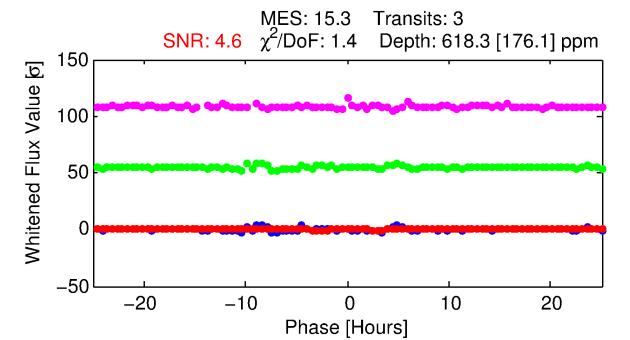
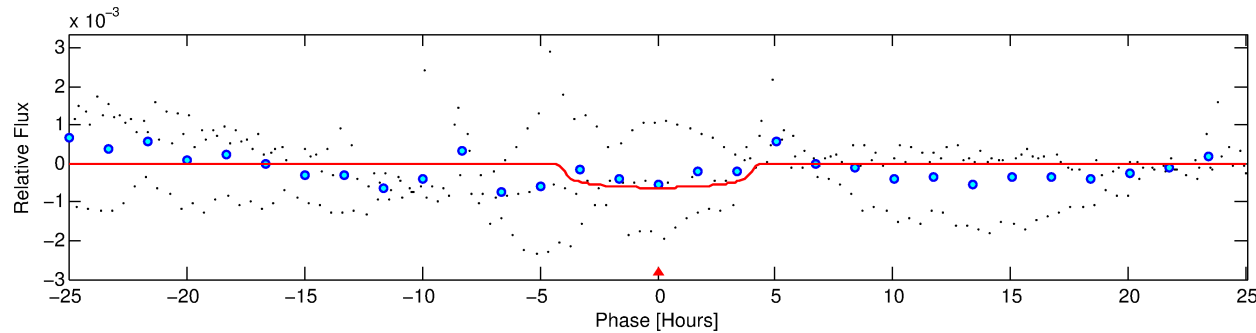
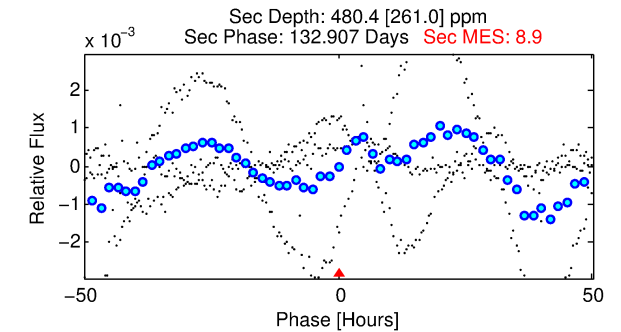
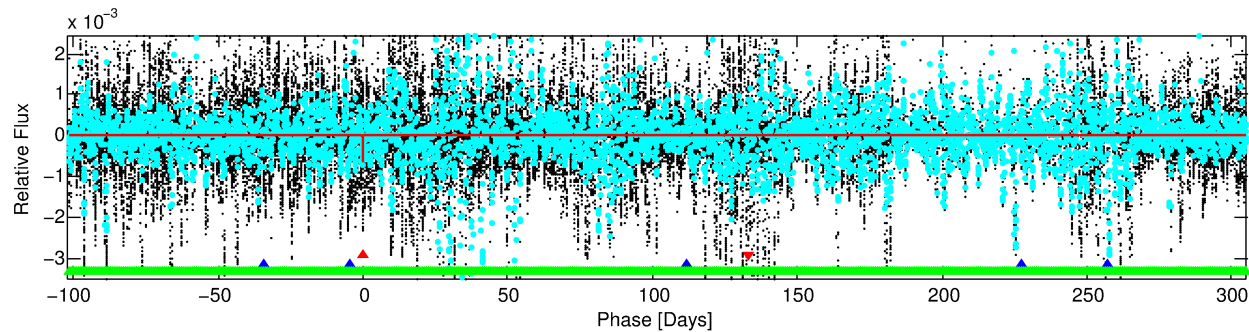
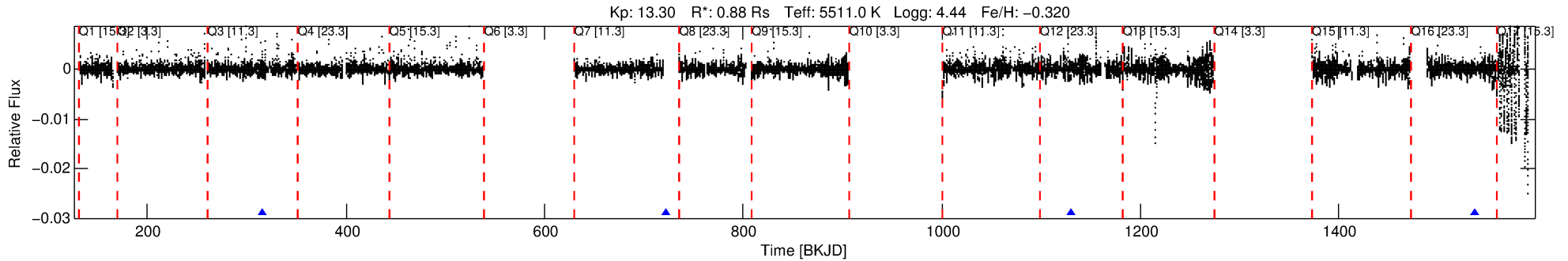
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004581540-01

No Significant Match Found

DV One-Page Summary

KIC: 4581540 Candidate: 1 of 3 Period: 406.926 d



DV Fit Results:

Period = 406.92626 [0.00441] d
Epoch = 315.7049 [0.0108] BKJD
Rp/R* = 0.0241 [0.0103]
a/R* = 286.36 [458.02]
b = 0.68 [1.28]
Seff = 0.66 [0.22]
Teff = 230 [19] K
Rp = 2.32 [1.12] Re
a = 0.9878 [0.1966] AU
Ag = 47742.31 [50557.79] [0.94σ]
Teffp = 5250 [1346] K [3.73σ]

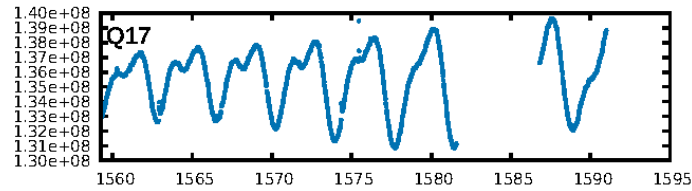
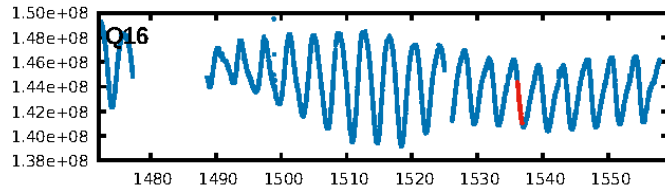
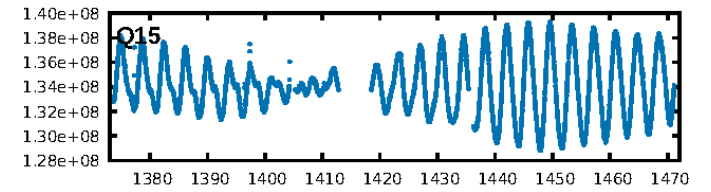
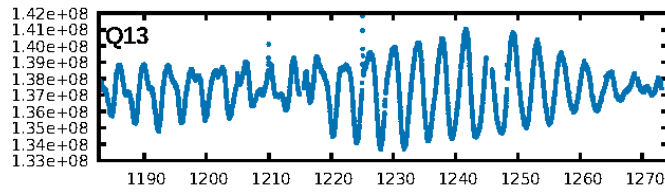
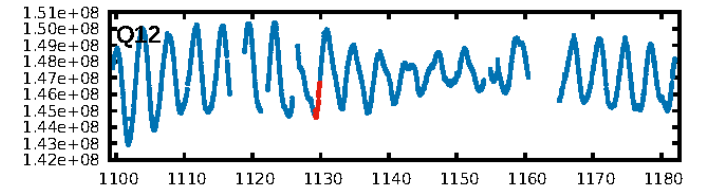
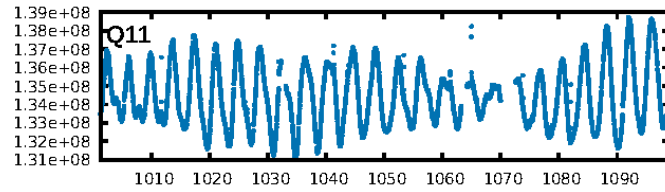
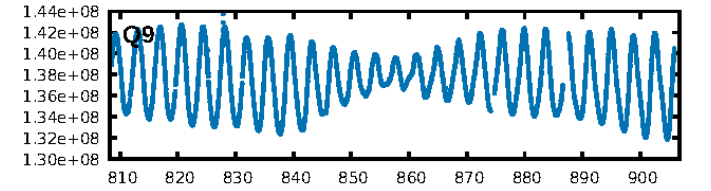
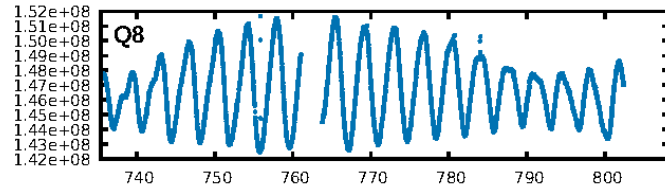
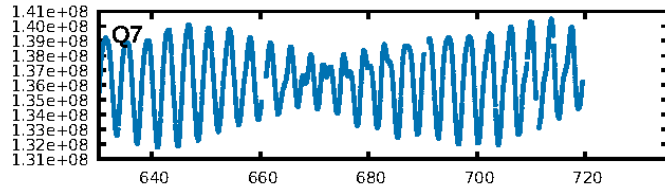
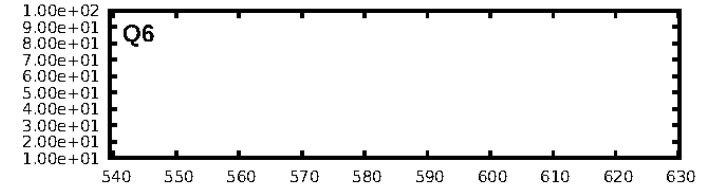
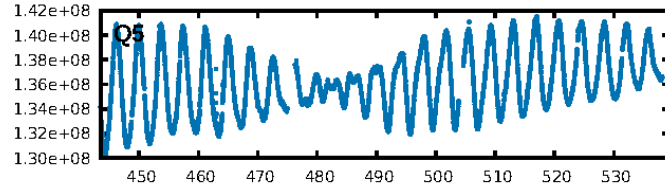
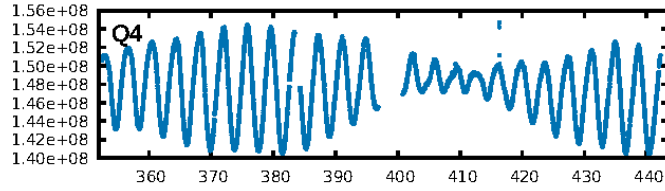
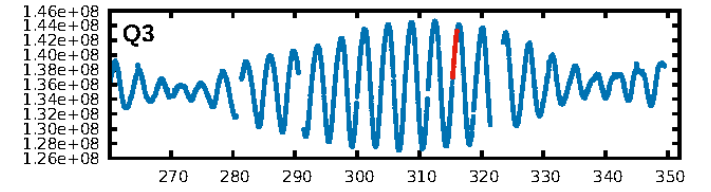
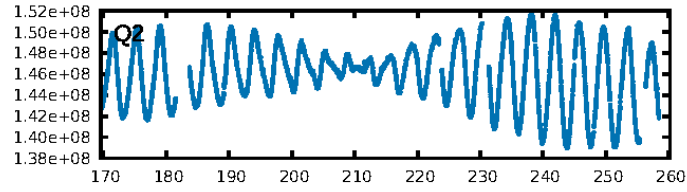
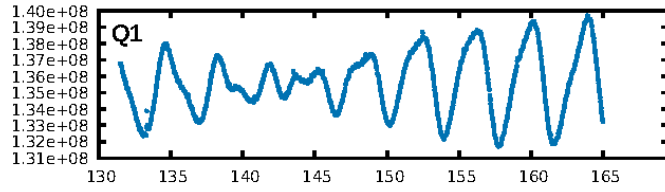
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [393.78σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 84.8%
ModelChiSquareGof-sig: 51.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.1024
Centroid-sig: 1.9%
Centroid-so: 1.105 arcsec [1.41σ]
OotOffset-rm: 0.025 arcsec [0.14σ]
KicOffset-rm: 0.204 arcsec [1.06σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/2]

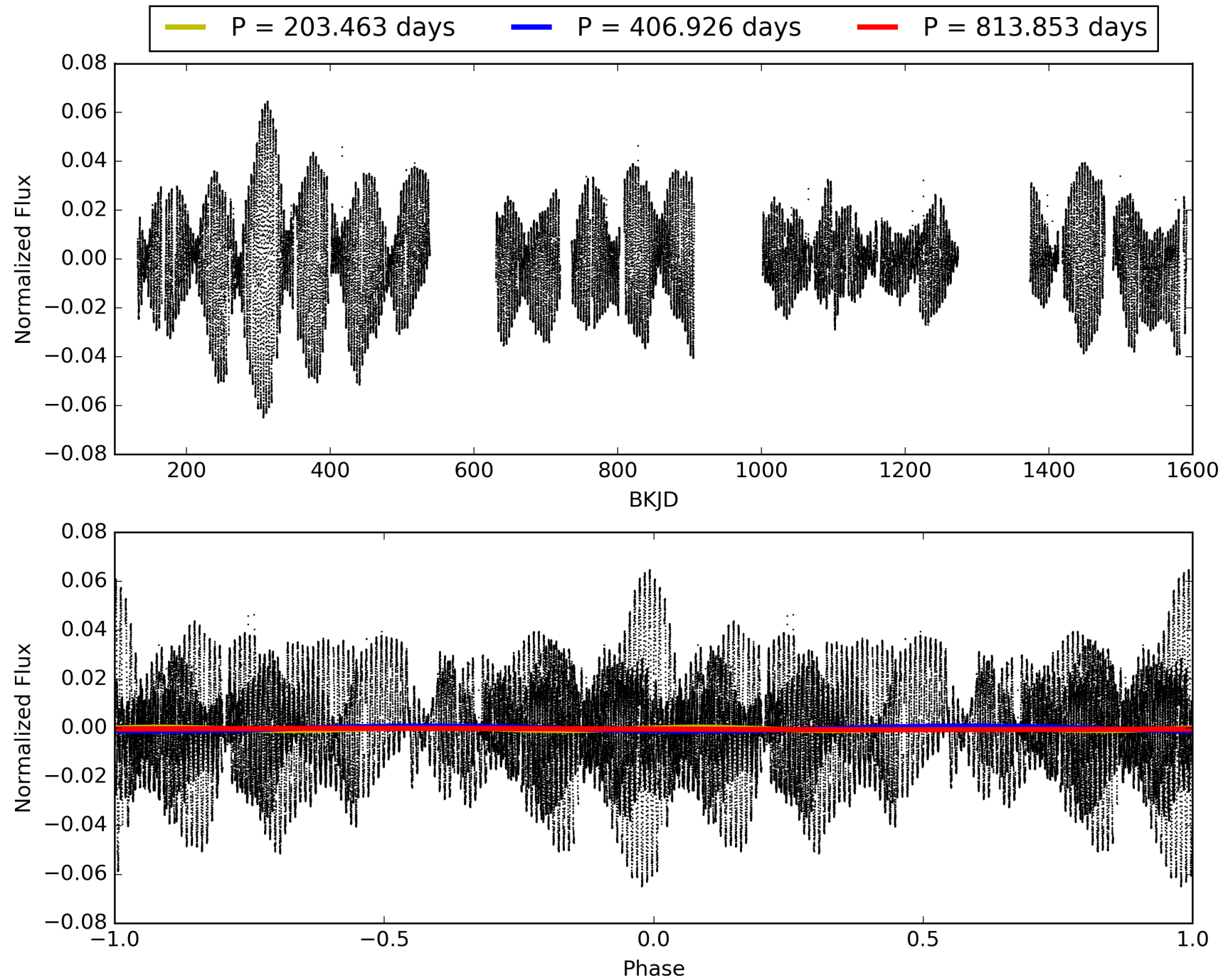
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:30:06 Z

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

TCE 004581540-01, PDC Light Curves

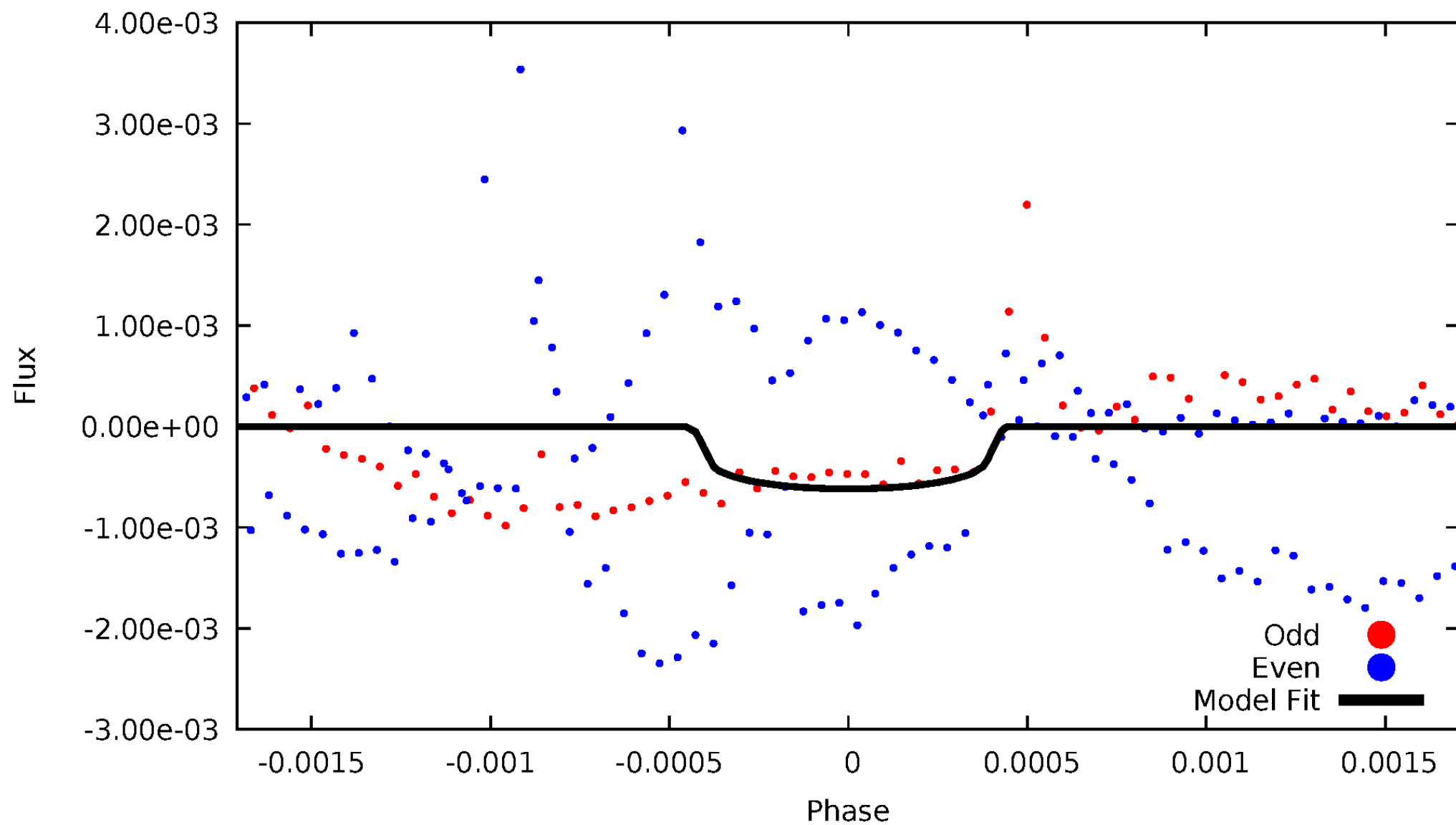


TCE 004581540-01



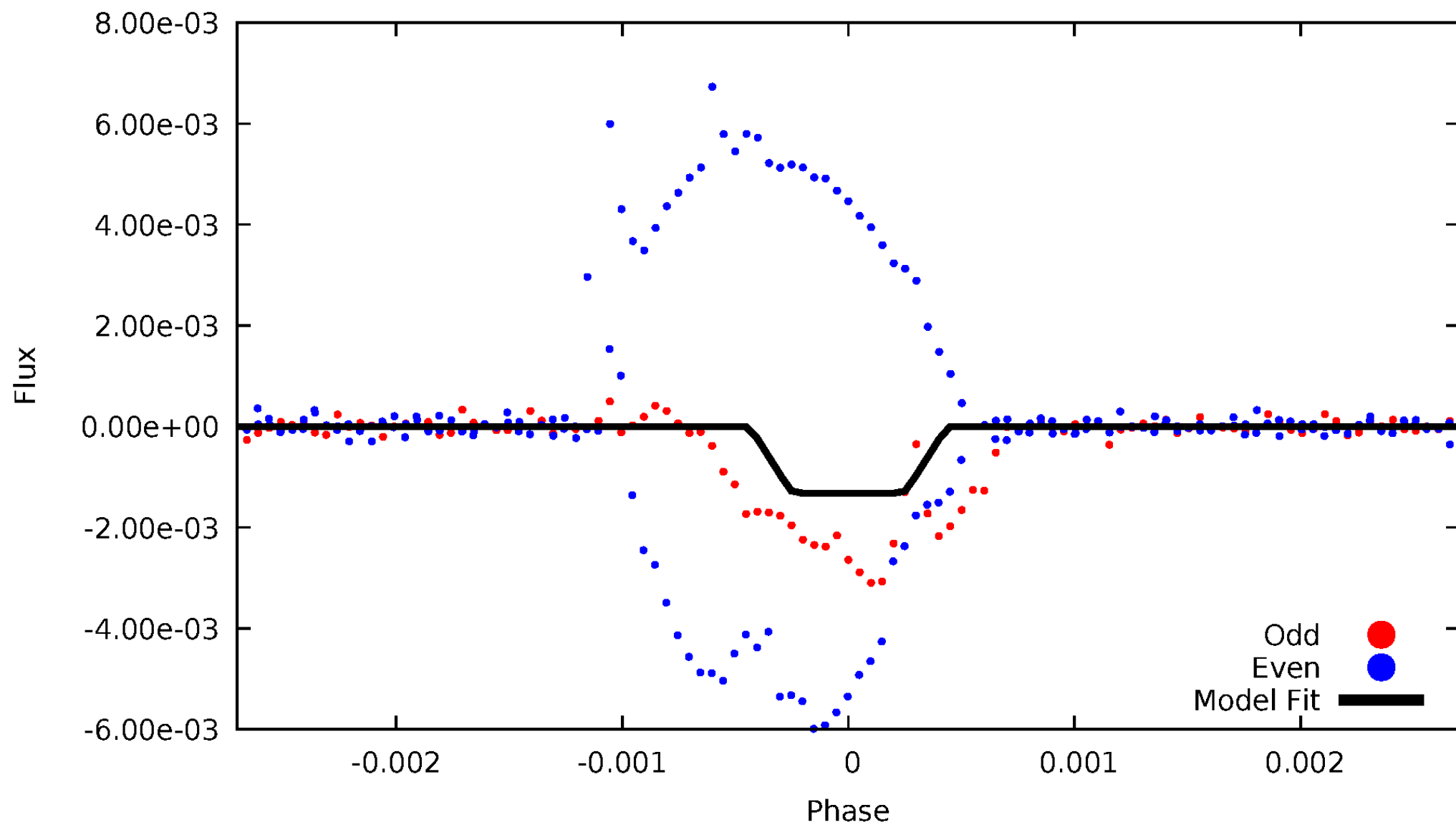
DV Odd/Even

TCE 004581540-01



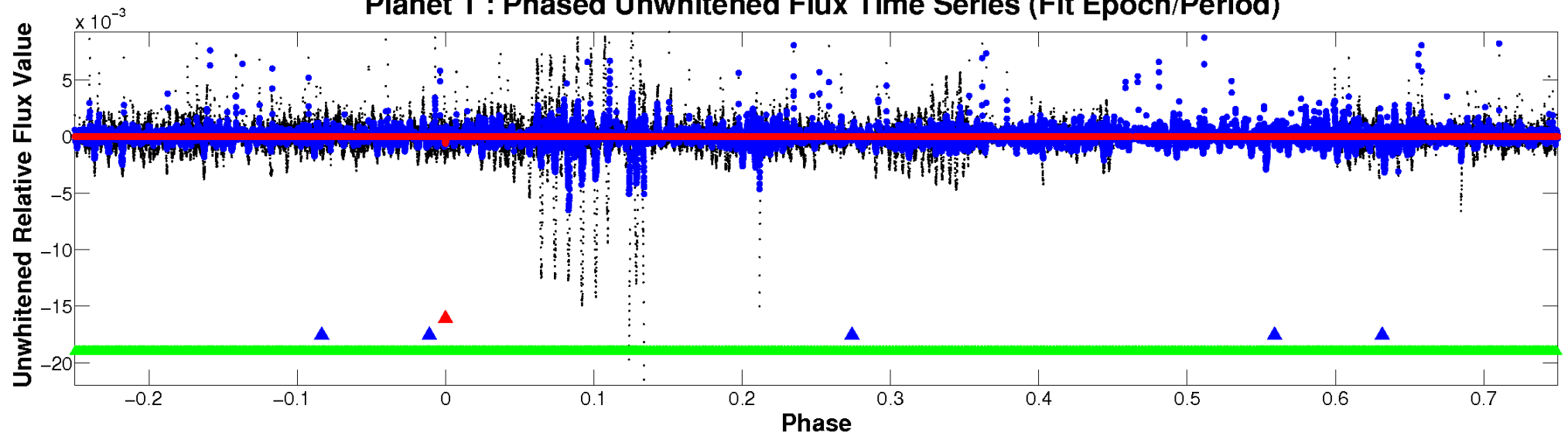
ALT Odd/Even

TCE 004581540-01

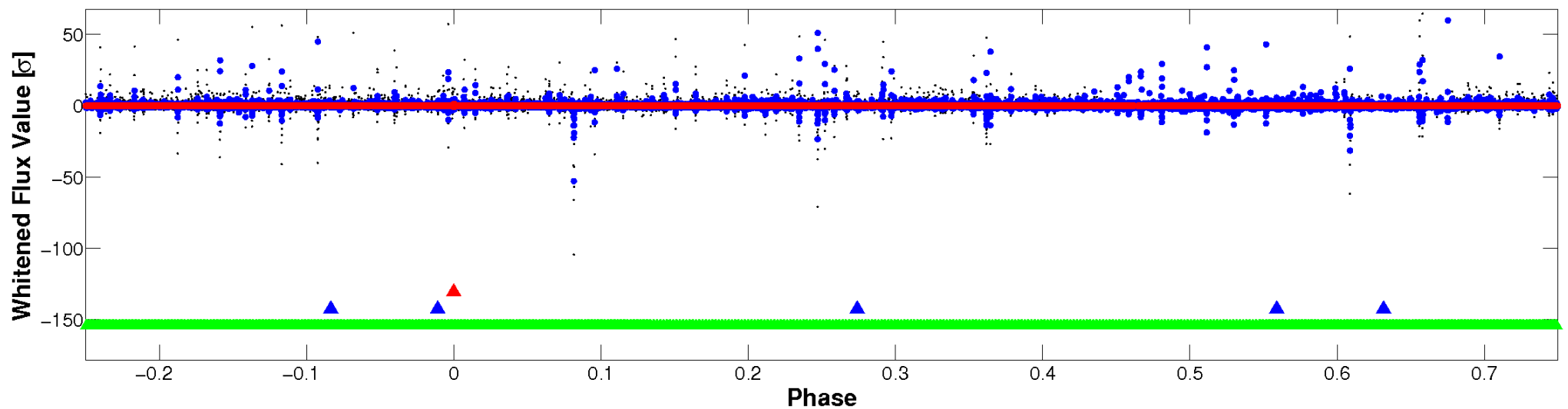


Non-Whitened Vs. Whitened Light Curve

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

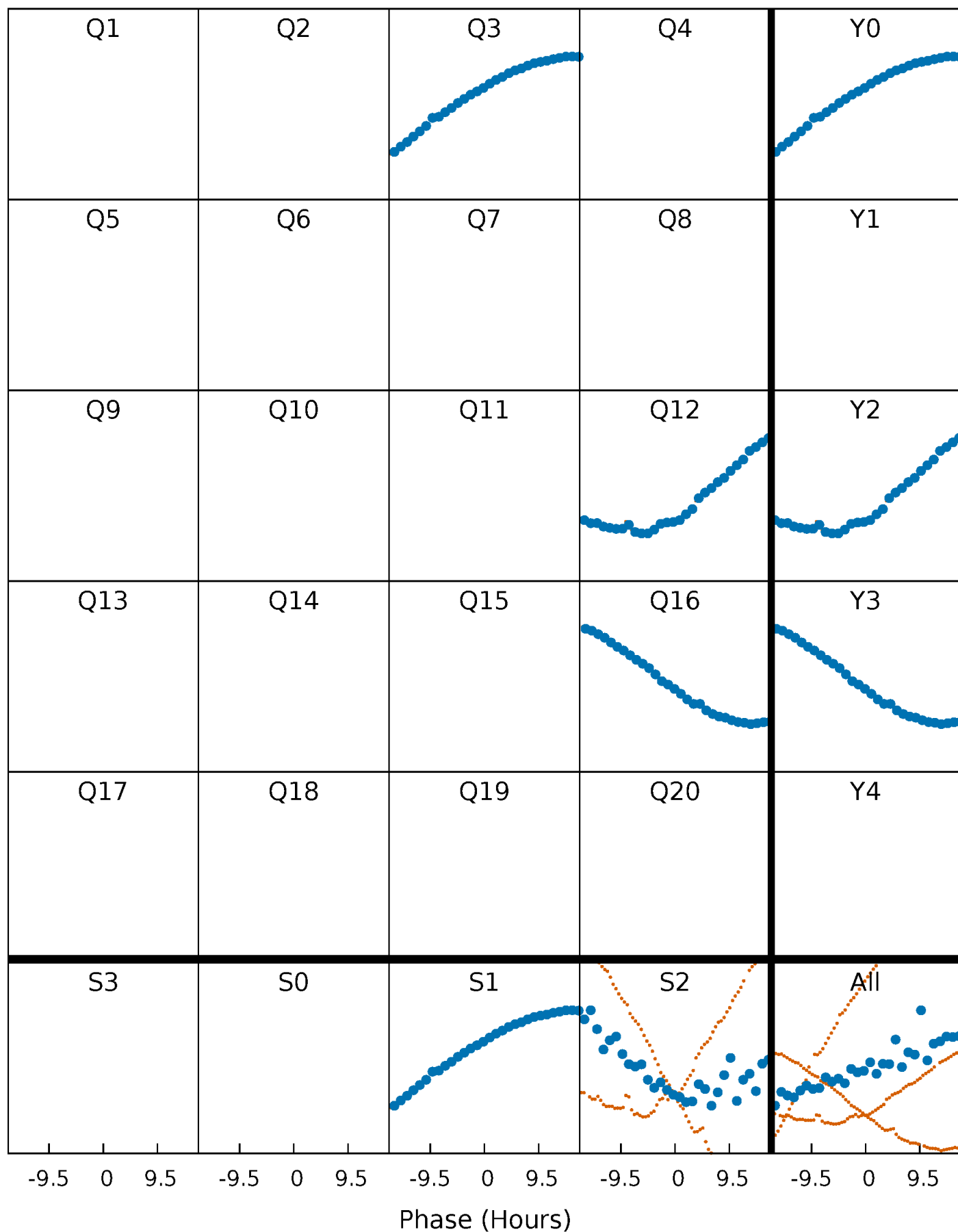


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



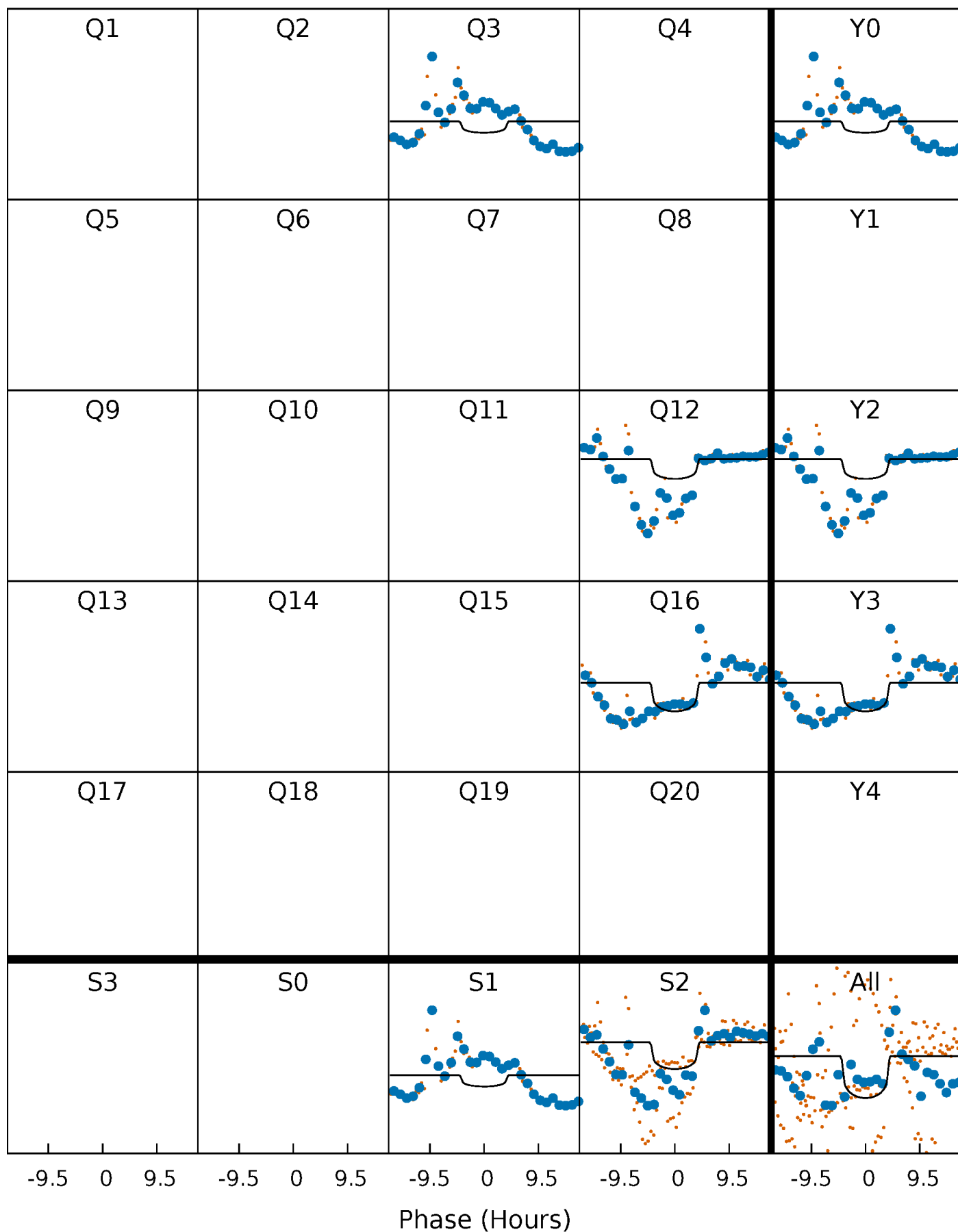
PDC Quarter-Phased Transit Curves

TCE 004581540-01 P=406.926262 Days $T_0=315.704853$ (BKJD)



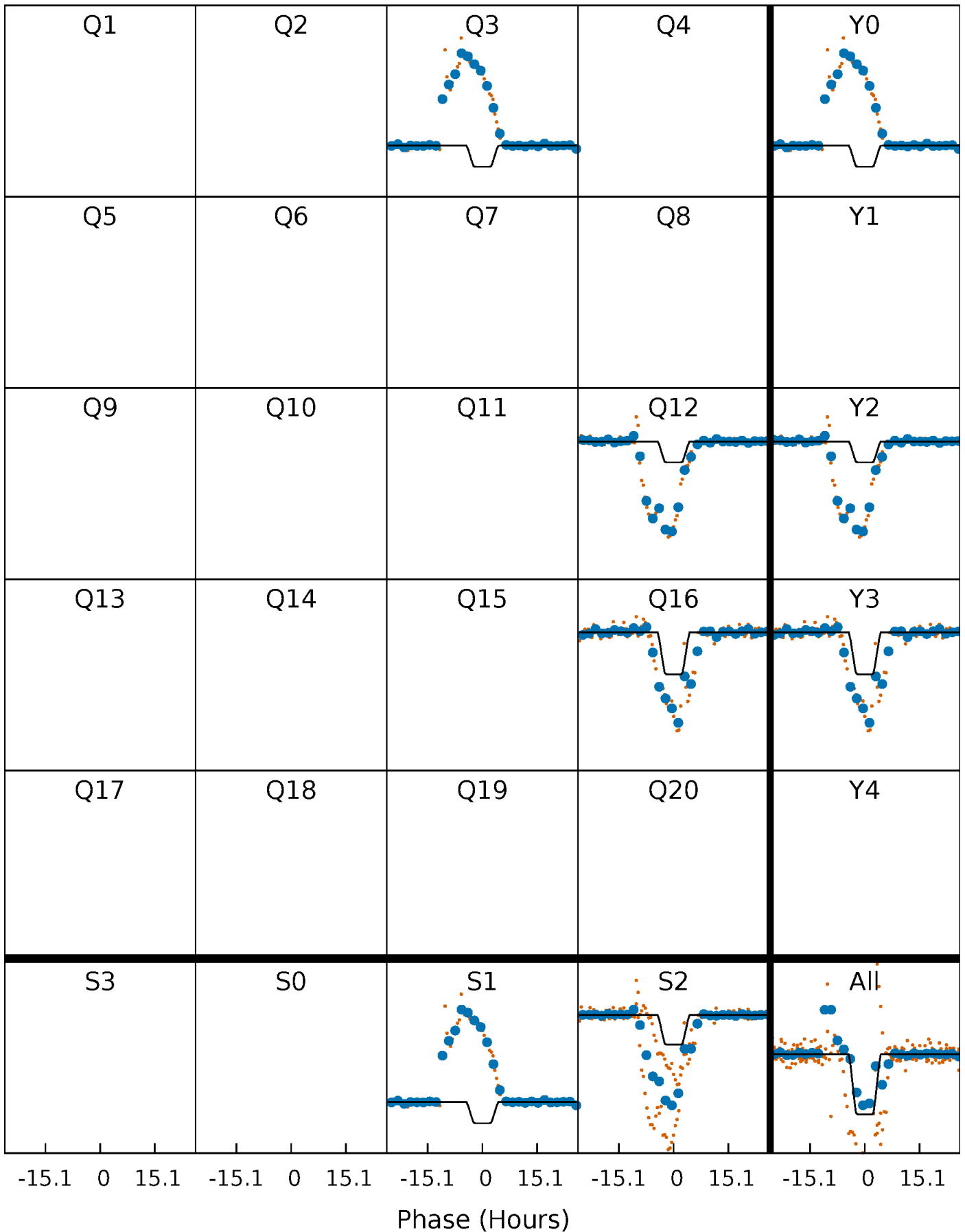
DV Quarter-Phased Transit Curves

TCE 004581540-01 P=406.926262 Days $T_0=315.704853$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

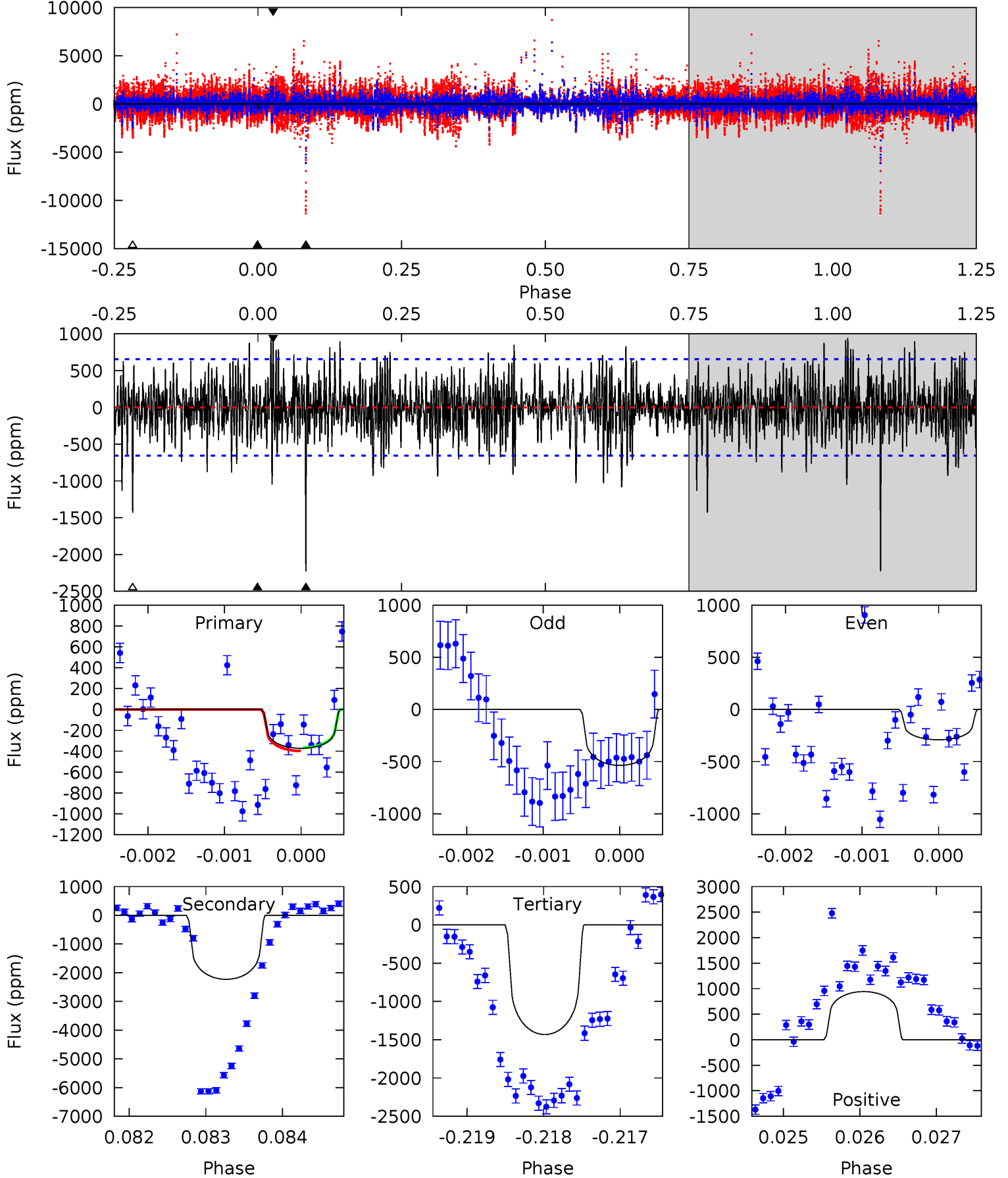
TCE 004581540-01 P=406.934347 Days $T_0=315.761199$ (BKJD)



DV Model-Shift Uniqueness Test

004581540-01, P = 406.926262 Days, E = 315.704853 Days

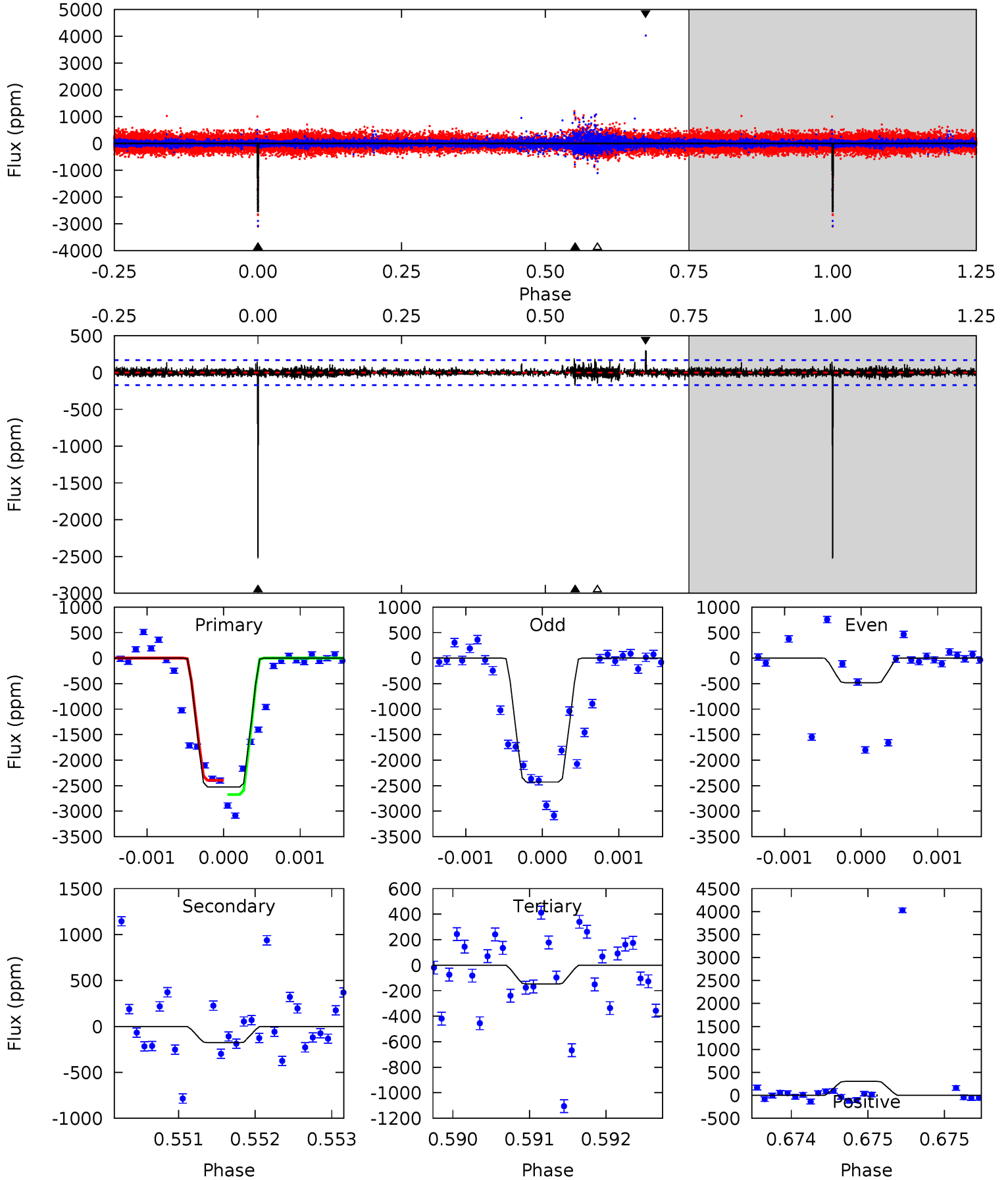
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.11	18.6	11.9	7.87	5.47	3.33	2.37	-8.84	-4.77	6.65	10.7	0.58	0.69	0.30	0.13



Alt Model-Shift Uniqueness Test

004581540-01, P = 406.934347 Days, E = 315.761199 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.3	5.70	4.73	9.73	5.46	3.30	0.80	76.6	71.6	0.96	-4.03	44.3	0.37	0.11	4.41



Stellar Parameters For KIC 004581540

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5511^{+200}_{-183}	$4.437^{+0.140}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$0.882^{+0.198}_{-0.132}$	$0.776^{+0.127}_{-0.054}$	$1.593^{+0.987}_{-0.705}$
	+4%/-3%	+3%/-4%	+94%/-94%	+22%/-15%	+16%/-7%	+62%/-44%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004581540-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2229 ± 120	$2.43^{+1.08}_{-1.02}$	323^{+21}_{-20}	7734^{+3522}_{-1407}	$209970^{+396369}_{-108988}$
Alt.	-177 ± 31	$3.57^{+1.13}_{-1.10}$	321^{+23}_{-17}	3717^{+531}_{-315}	7570^{+8731}_{-3400}

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 $A_{\text{obs}} \gg 1.0$

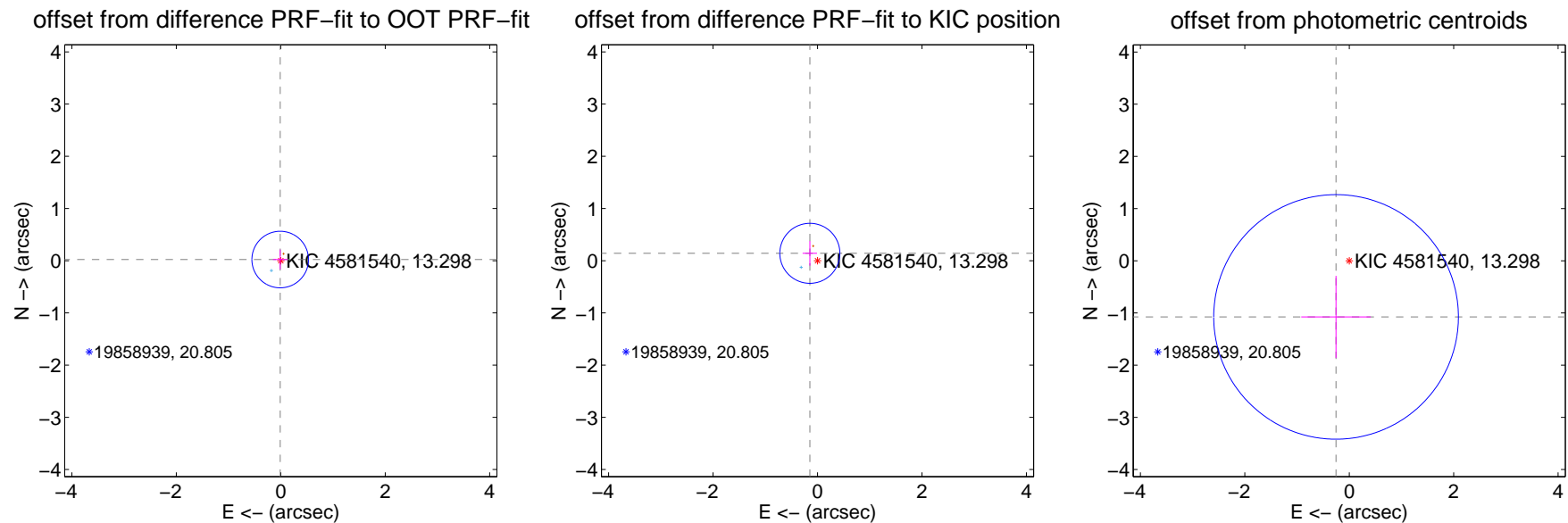
DV Centroid Data

Supplemental centroid analysis for 004581540-01. Kepler magnitude: 13.30. Transit SNR 4.55

There are 1 quarters with good PRF difference image offsets

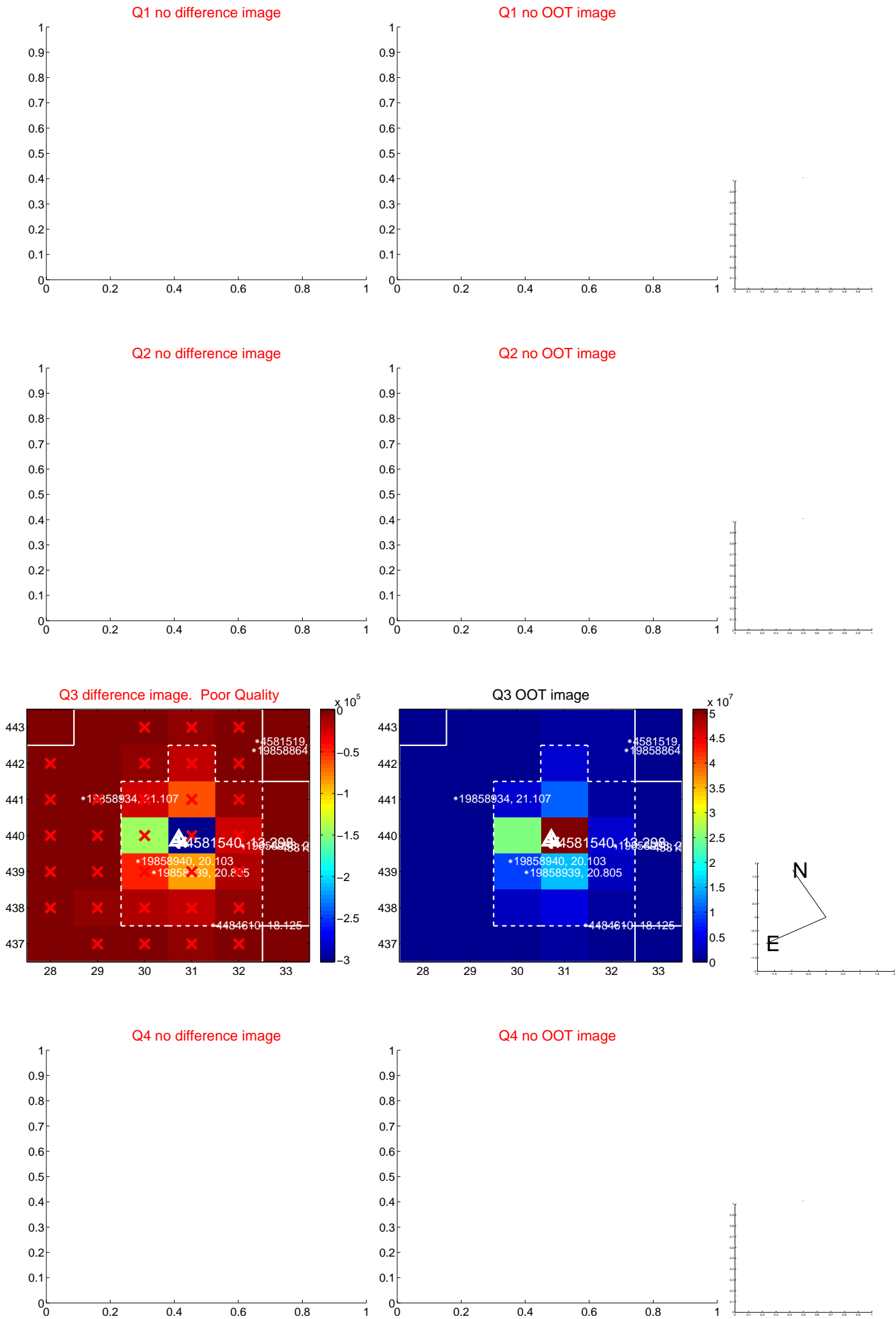
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.025 ± 0.181	0.14	0.011 ± 0.139	0.022 ± 0.190
PRF-fit source offset from KIC position	0.204 ± 0.192	1.06	0.147 ± 0.138	0.141 ± 0.236
photometric centroid source offset	1.10 ± 0.78	1.41	0.25 ± 0.67	-1.08 ± 0.79



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.



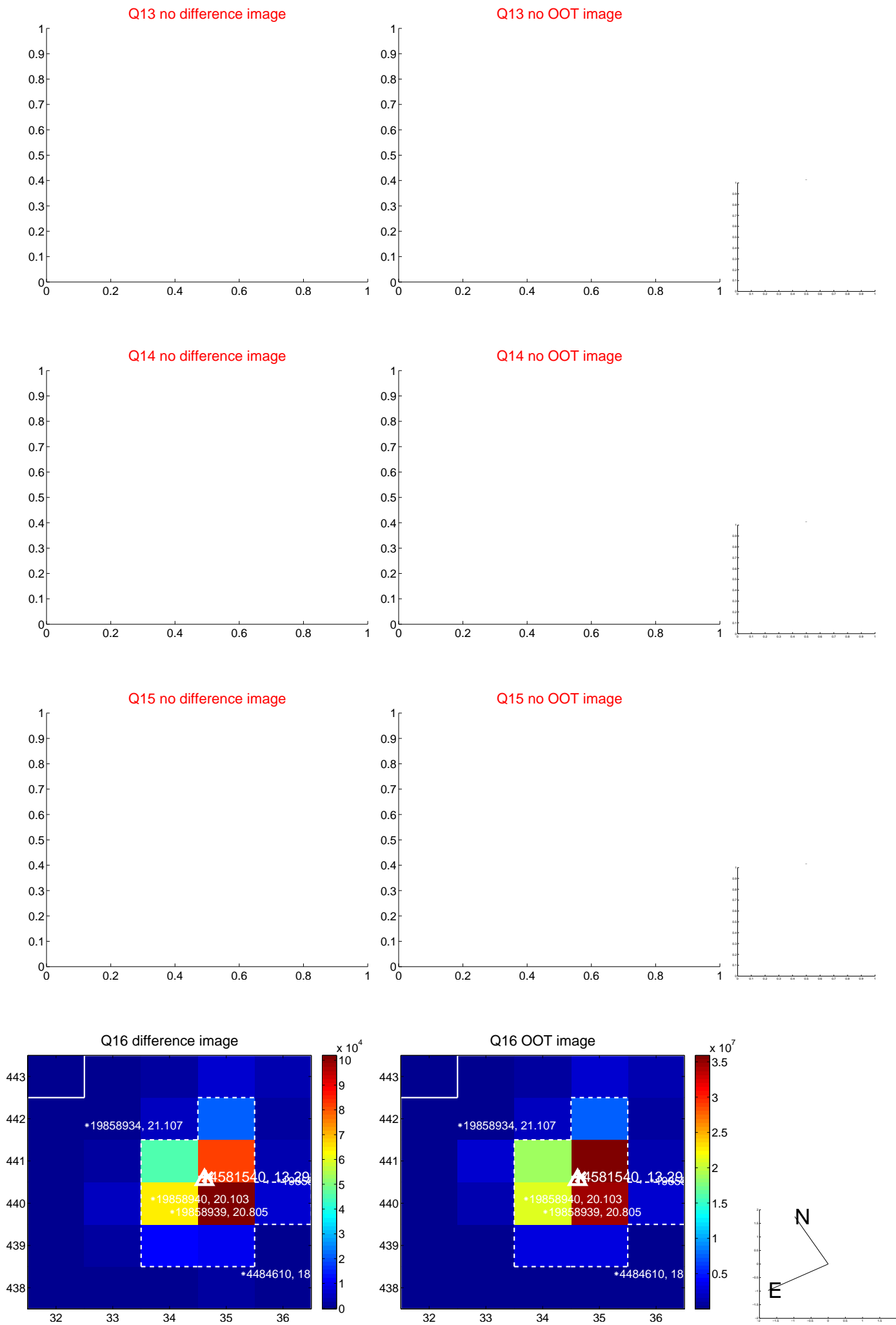
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



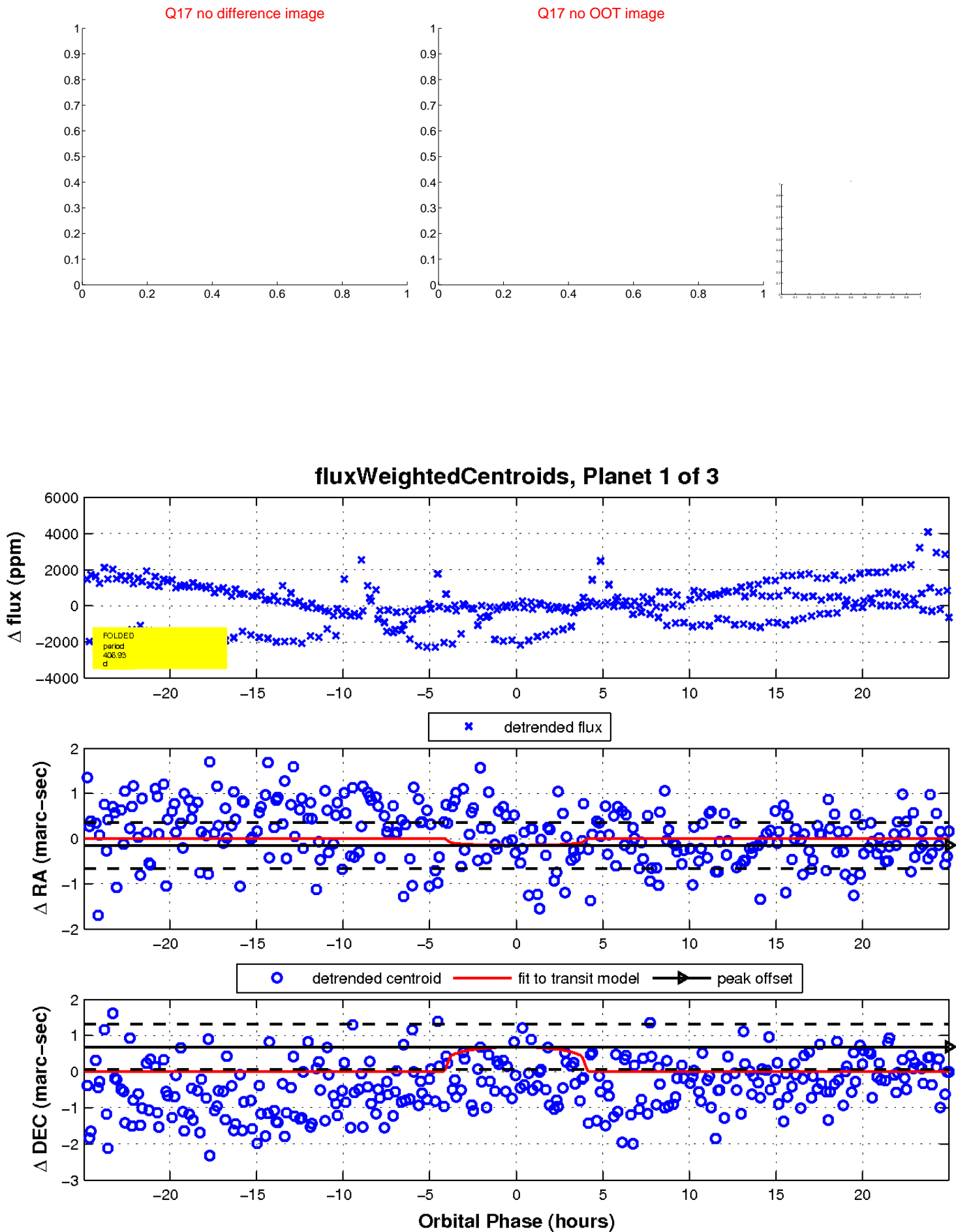
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

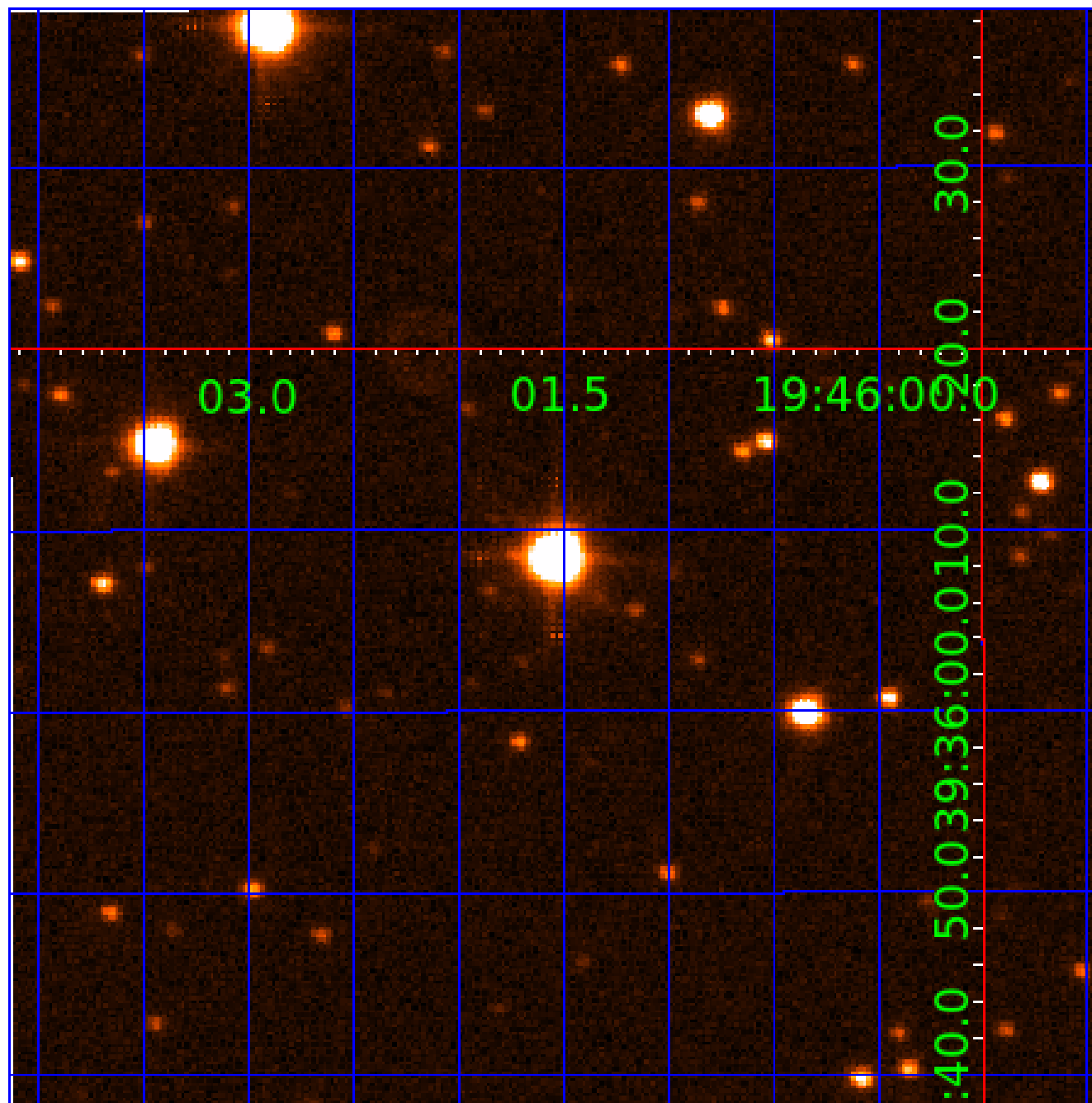


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004581540

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})
004581540-01	OBS	No	406.926262	315.704853	618.3	8.336	15.3	4.6	0.88	5511	2.32	0.66
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004581540-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
004581540-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

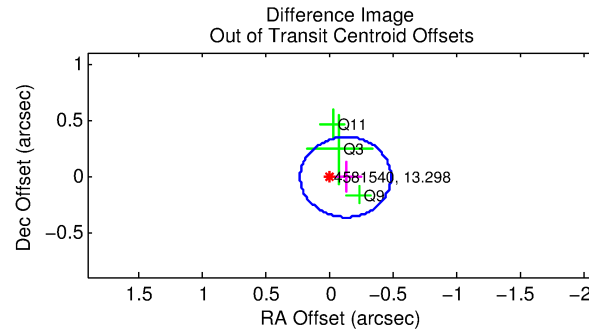
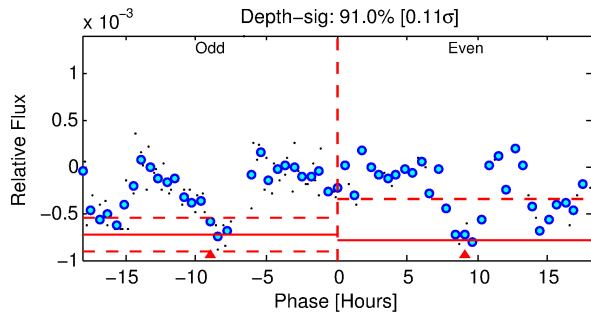
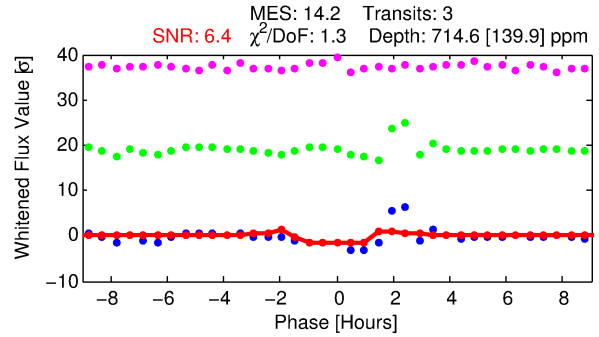
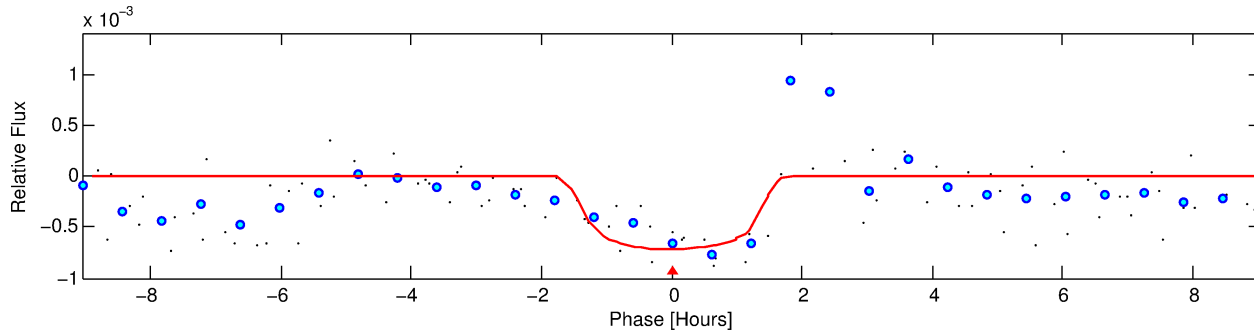
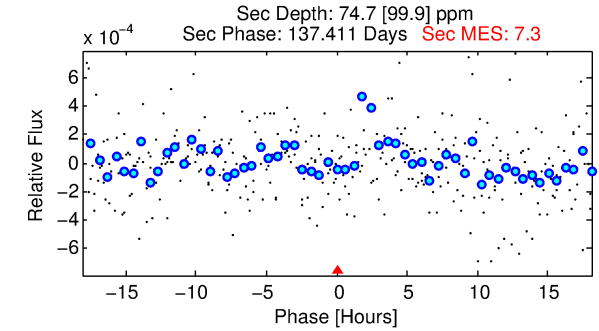
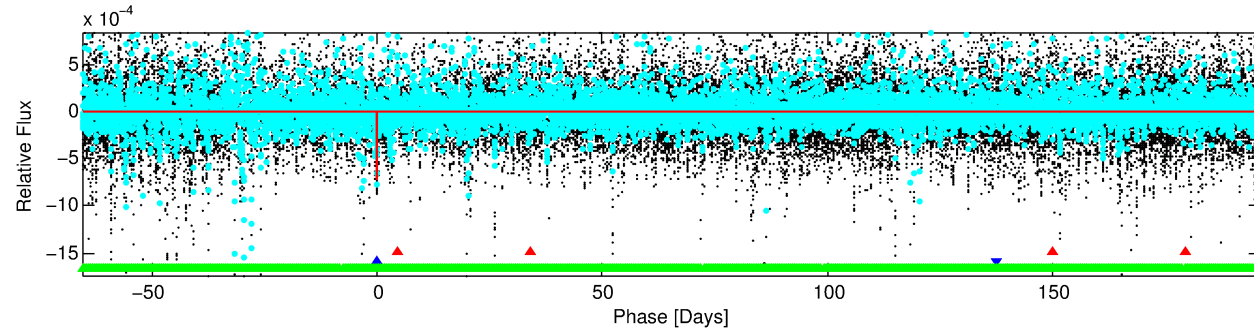
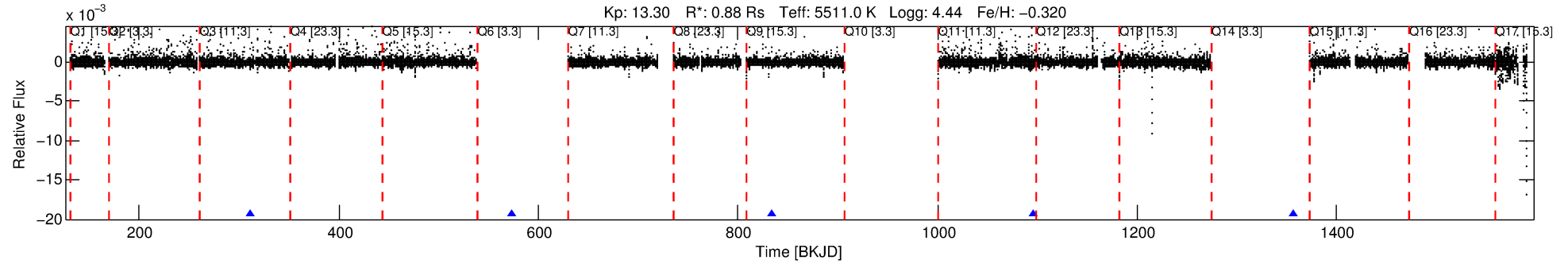
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004581540-02

No Significant Match Found

DV One-Page Summary

KIC: 4581540 Candidate: 2 of 3 Period: 261.440 d



DV Fit Results:

Period = 261.43969 [0.00400] d
Epoch = 311.2805 [0.0093] BKJD
Rp/R* = 0.0261 [0.0367]
a/R* = 500.78 [2953.94]
b = 0.69 [4.53]
Seff = 1.19 [0.40]
Teq = 266 [22] K
Rp = 2.51 [3.57] Re
a = 0.7355 [0.1464] AU
Ag = 3525.00 [11020.61] [0.32σ]
Teffp = 3172 [2470] K [1.18σ]

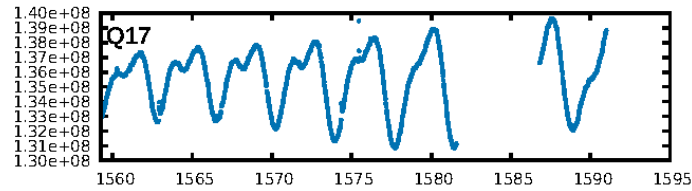
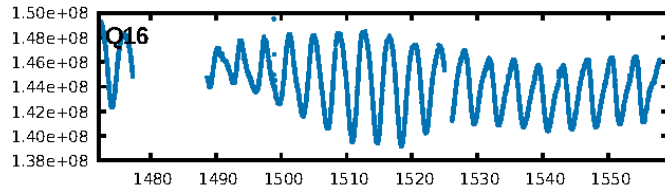
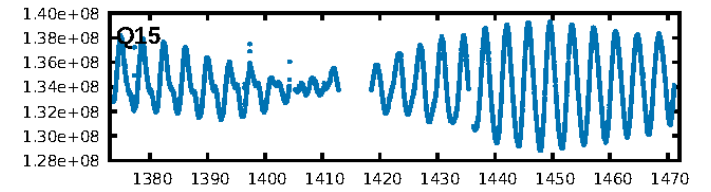
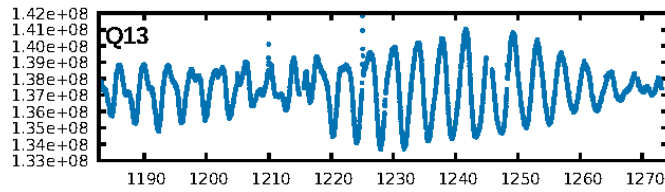
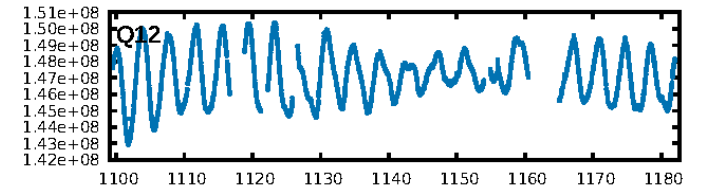
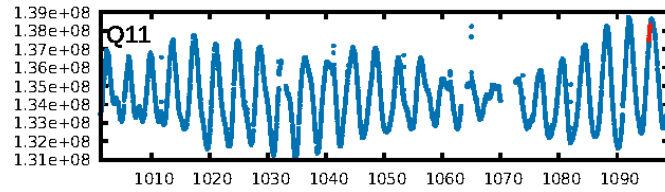
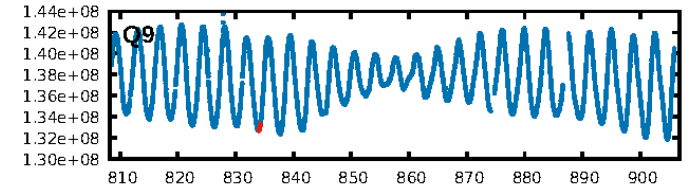
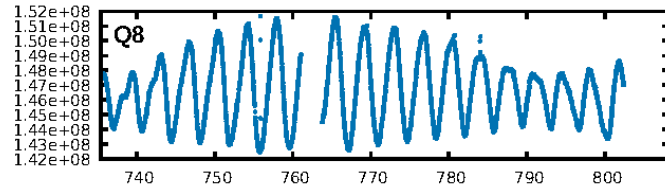
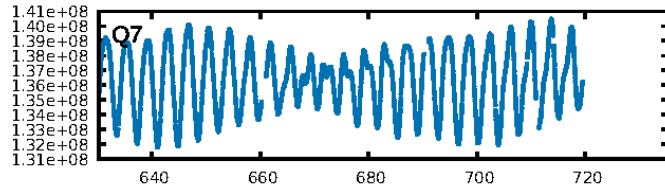
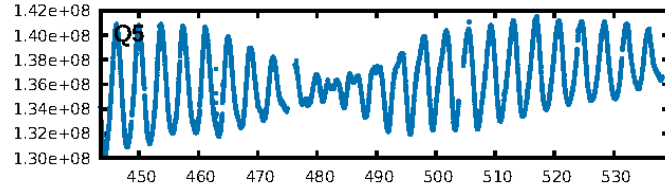
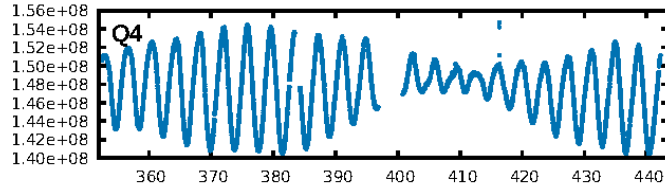
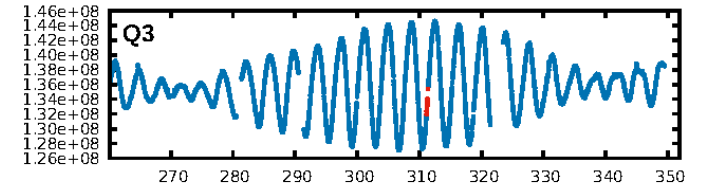
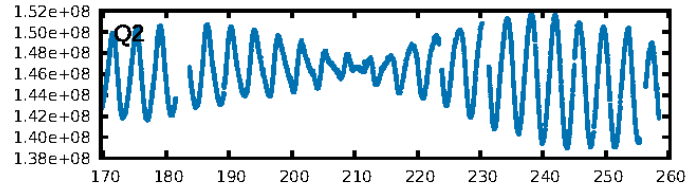
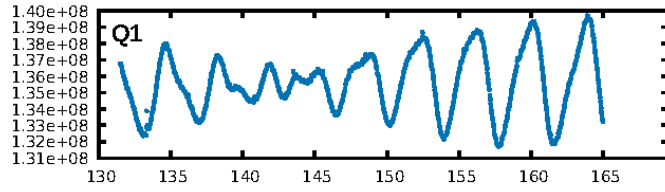
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1871.90σ]
LongPeriod-sig: 100.0% [393.78σ]
ModelChiSquare2-sig: 31.9%
ModelChiSquareGof-sig: 83.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9997
Centroid-sig: 0.8%
Centroid-so: 1.676 arcsec [1.84σ]
OotOffset-rm: 0.130 arcsec [1.10σ]
KicOffset-rm: 0.081 arcsec [0.35σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.67 [2/3]

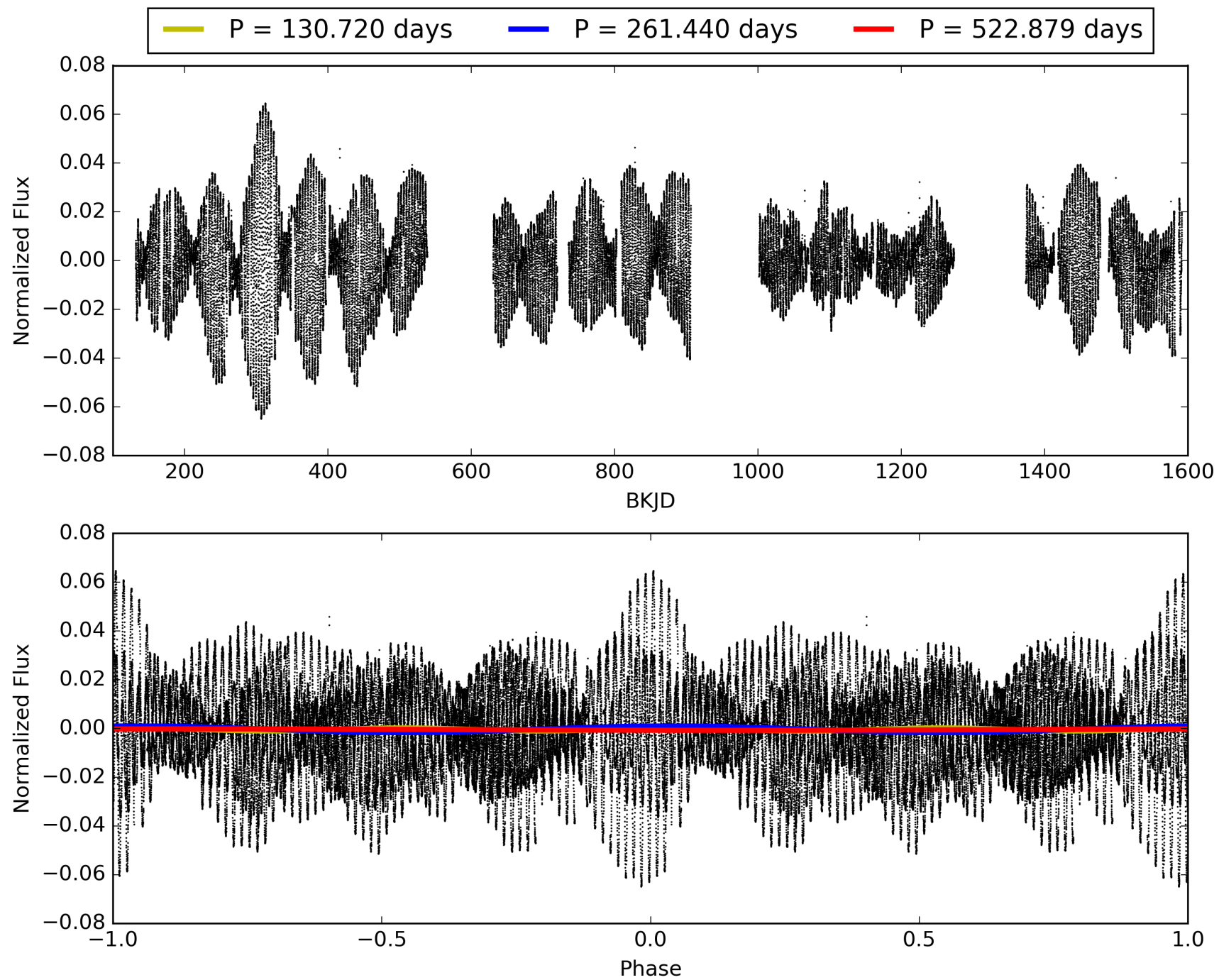
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:30:17 Z

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

TCE 004581540-02, PDC Light Curves

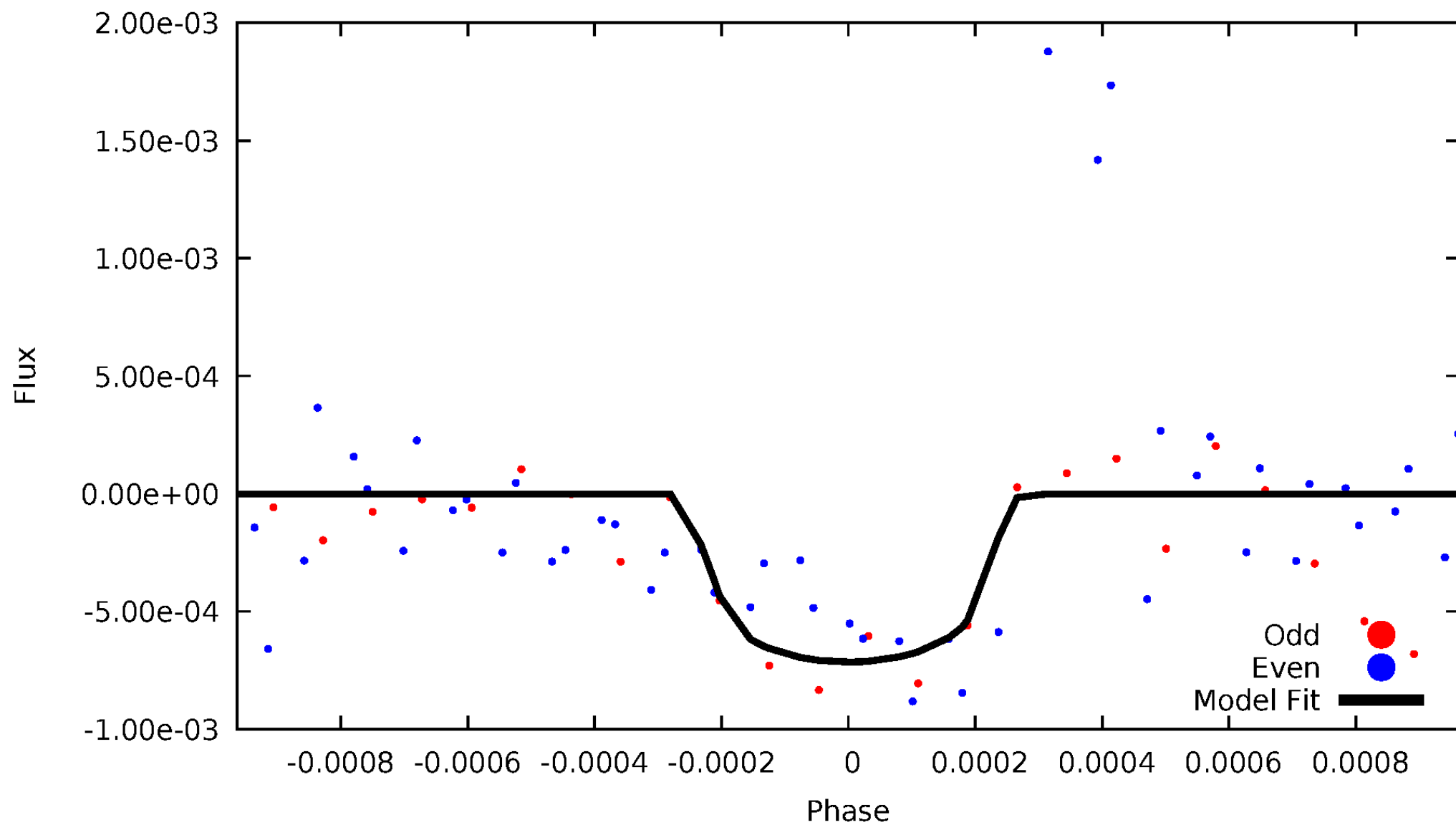


TCE 004581540-02



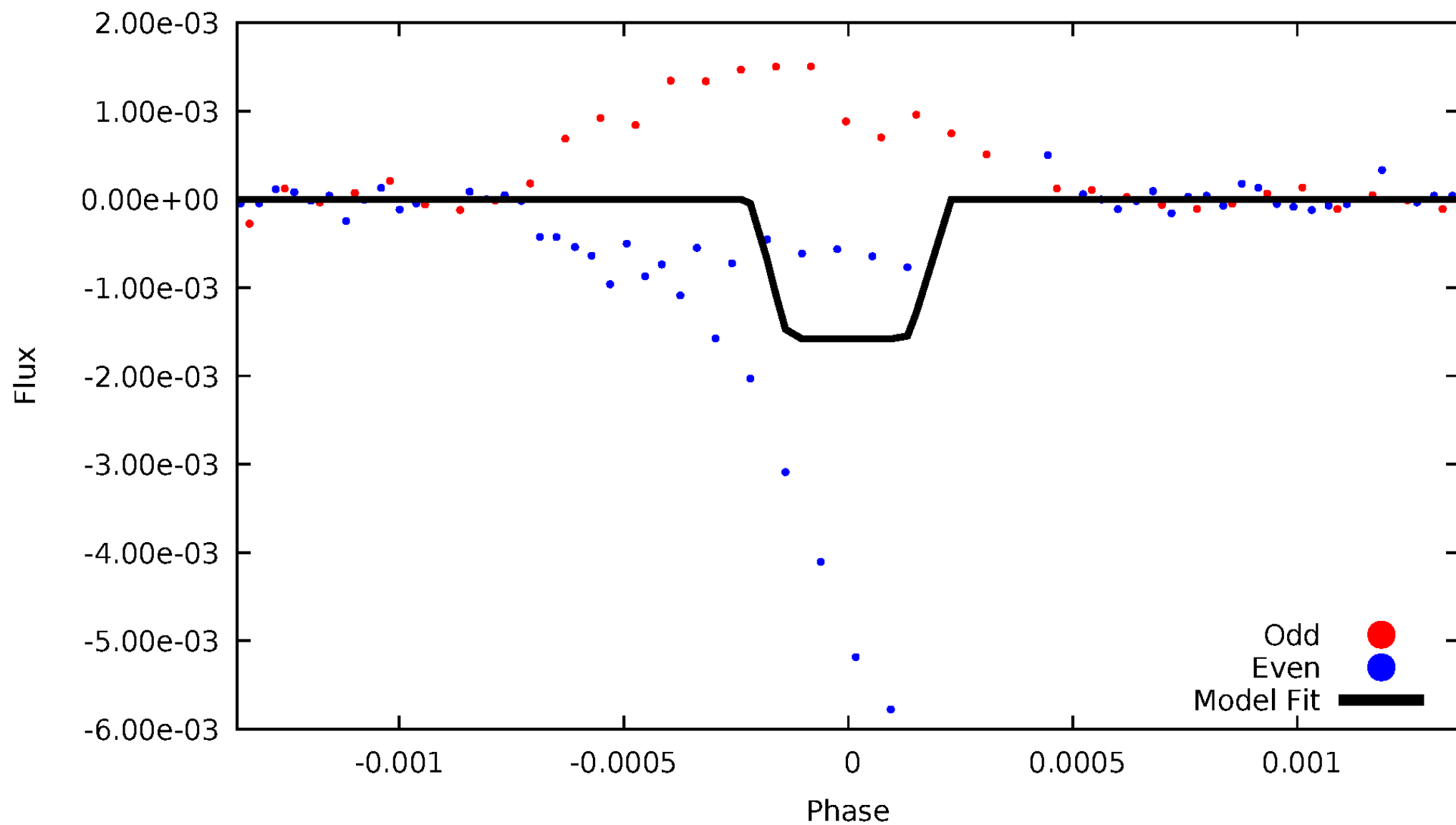
DV Odd/Even

TCE 004581540-02



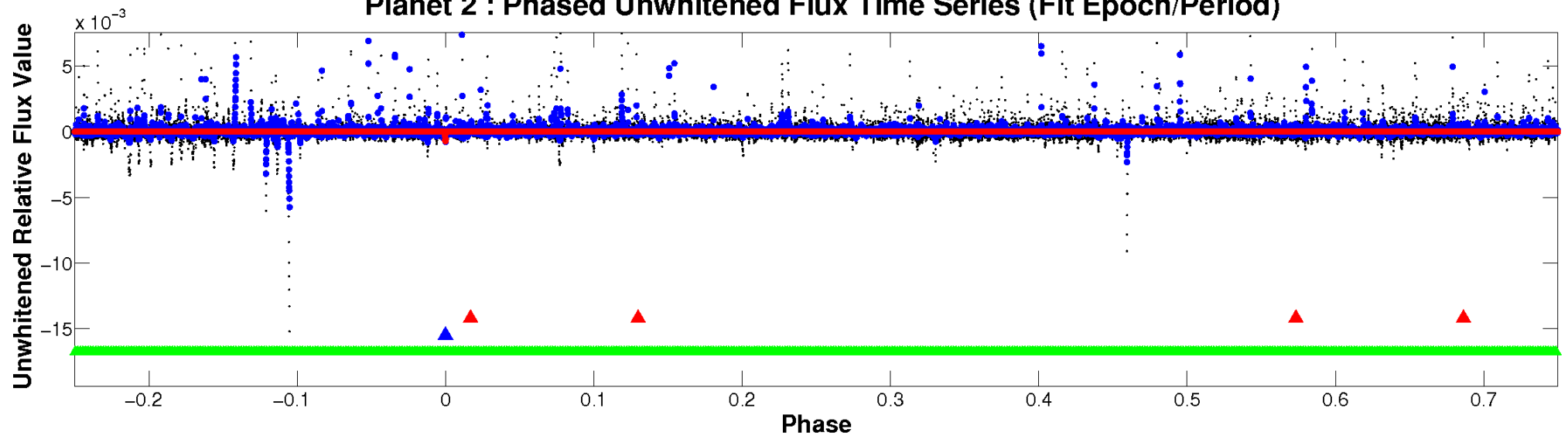
ALT Odd/Even

TCE 004581540-02

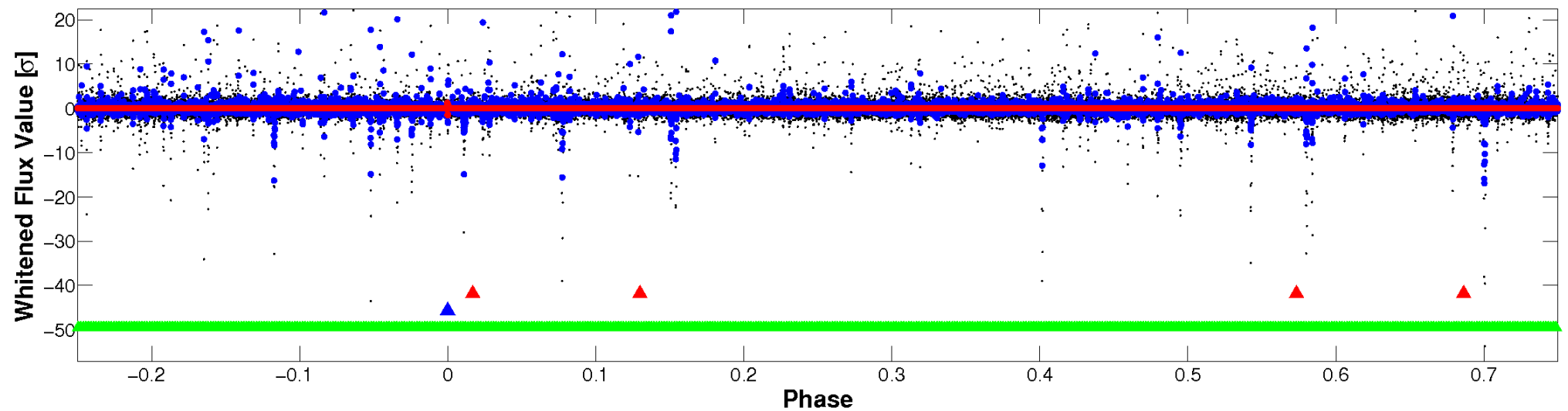


Non-Whitened Vs. Whitened Light Curve

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

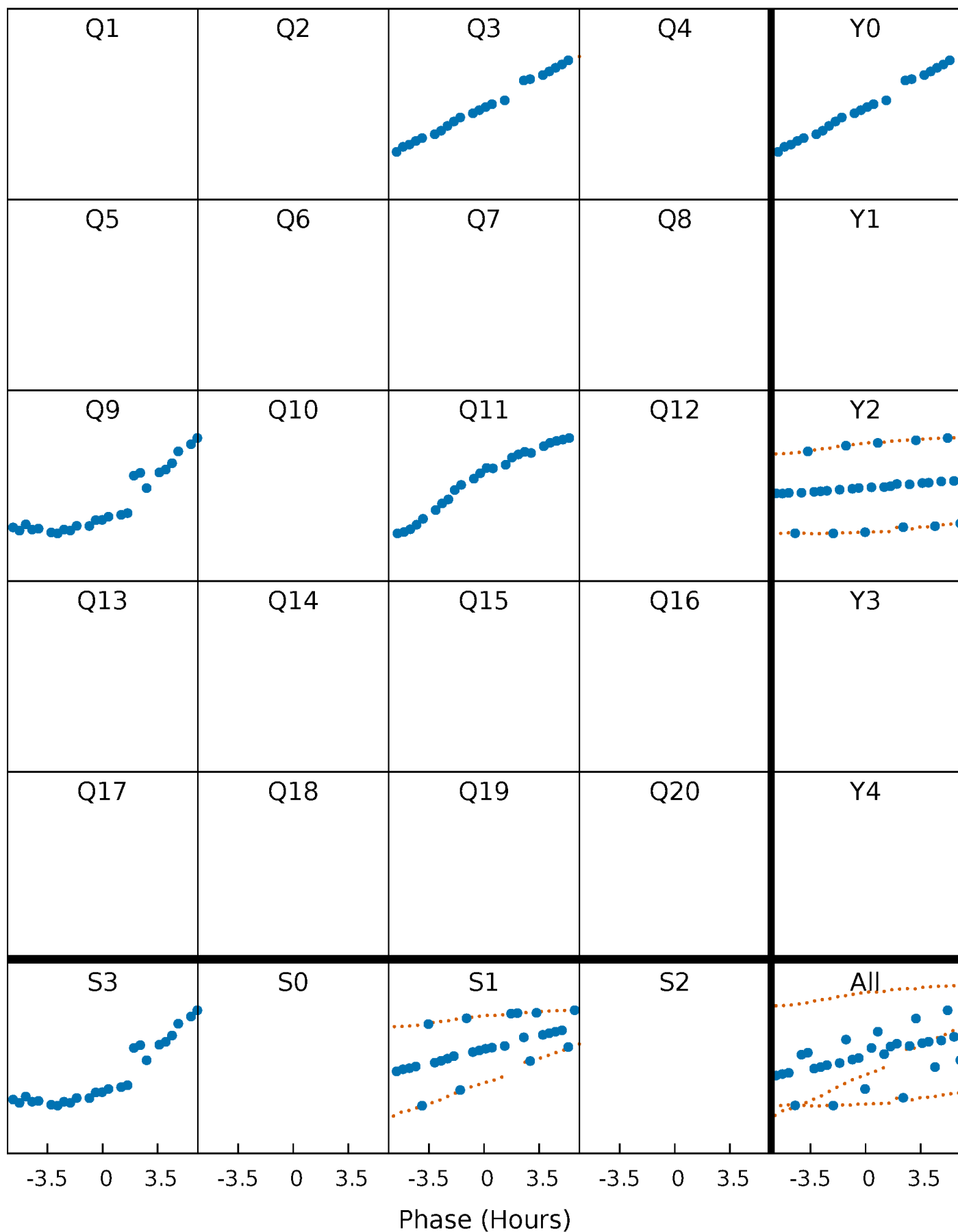


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



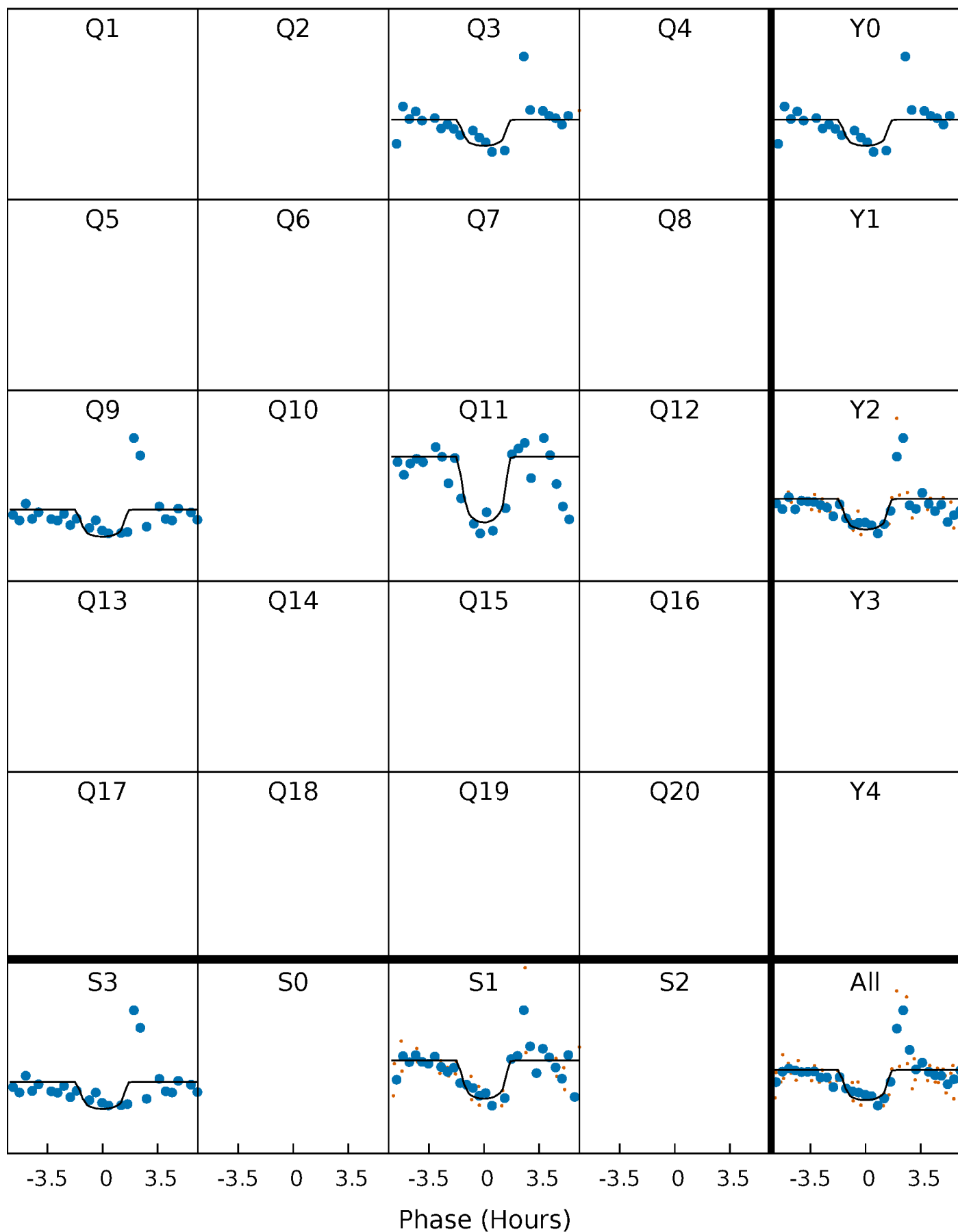
PDC Quarter-Phased Transit Curves

TCE 004581540-02 P=261.439691 Days $T_0=311.280505$ (BKJD)



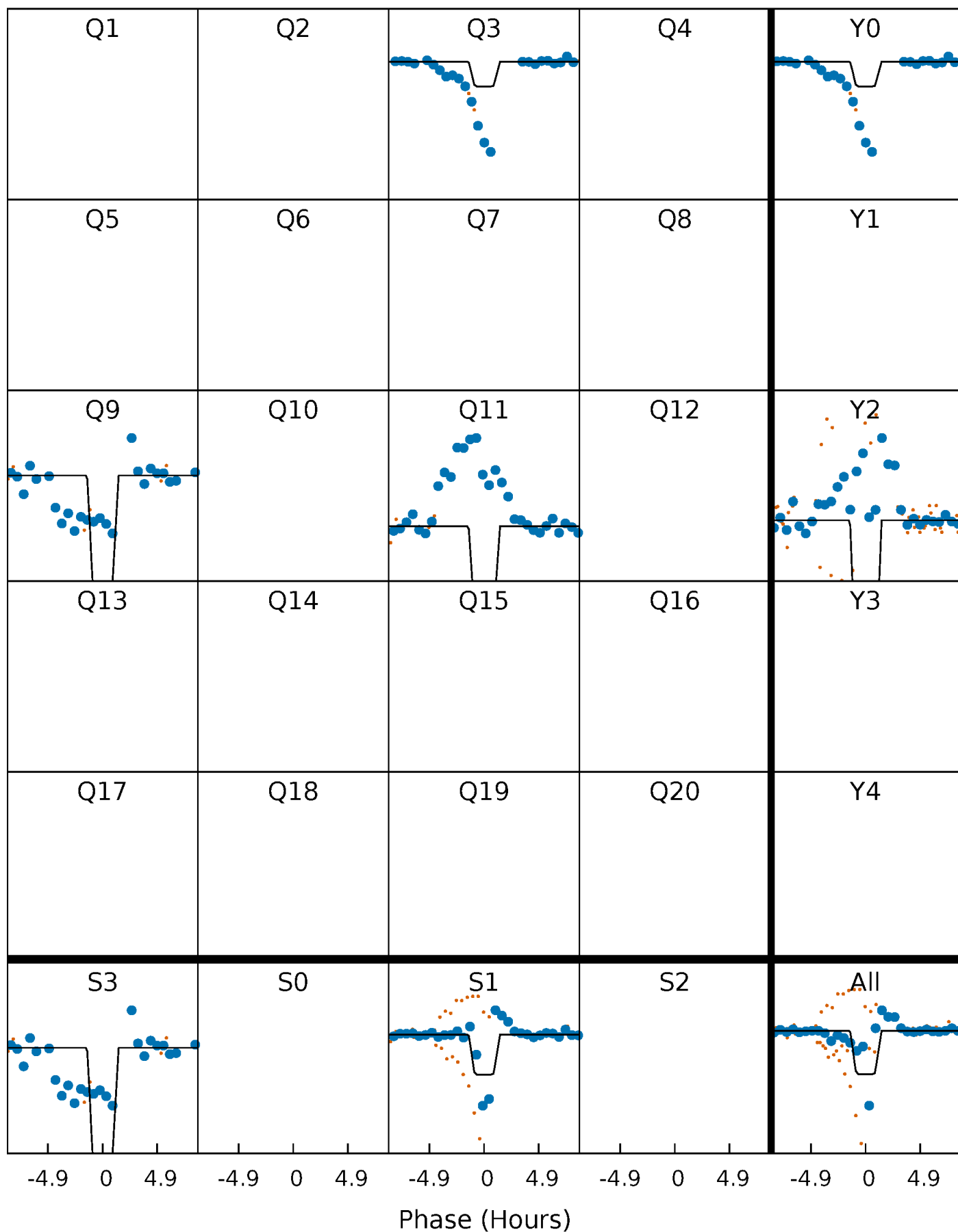
DV Quarter-Phased Transit Curves

TCE 004581540-02 $P=261.439691$ Days $T_0=311.280505$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

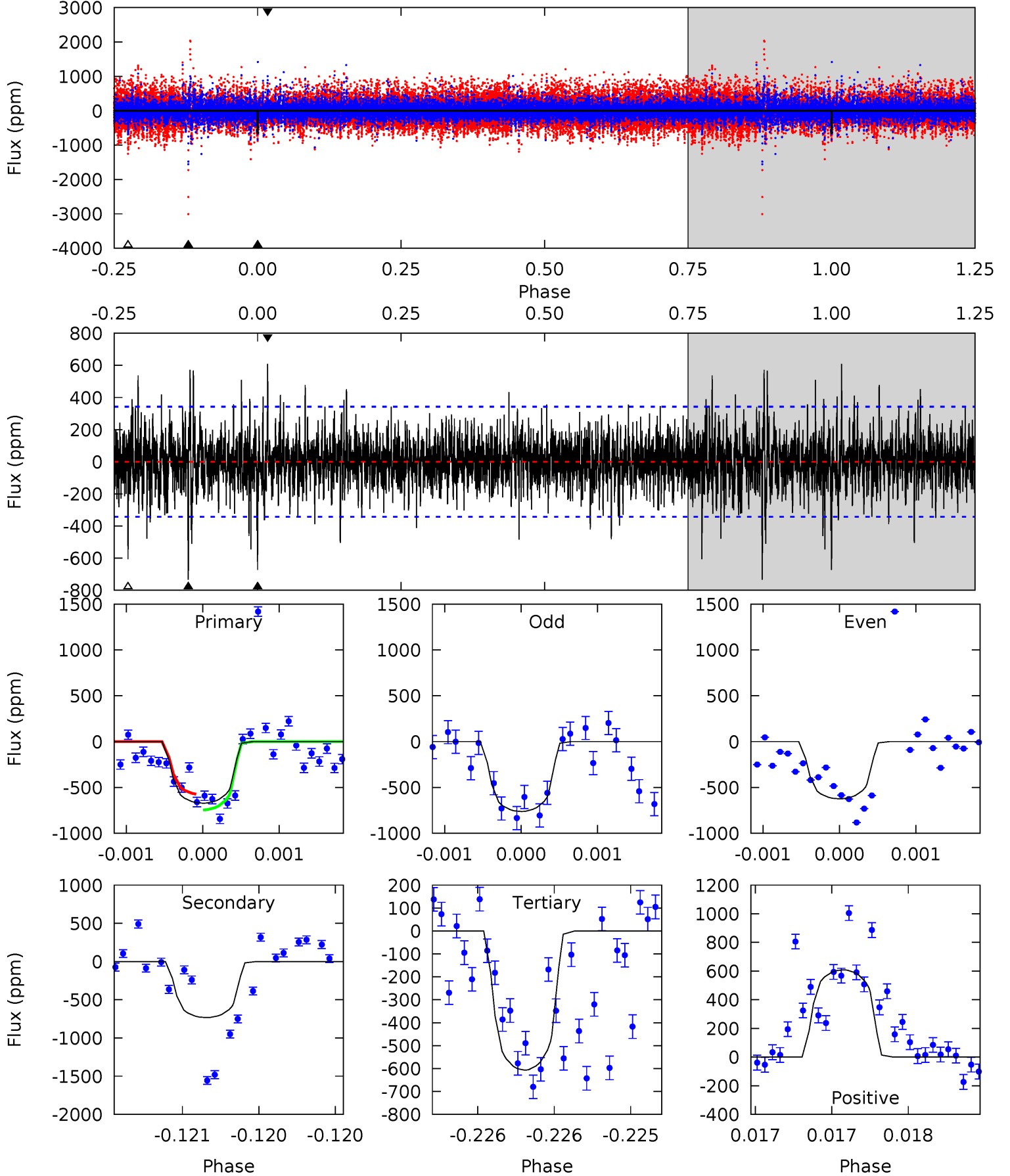
TCE 004581540-02 P=261.442298 Days $T_0=311.302732$ (BKJD)



DV Model-Shift Uniqueness Test

004581540-02, P = 261.439691 Days, E = 49.840814 Days

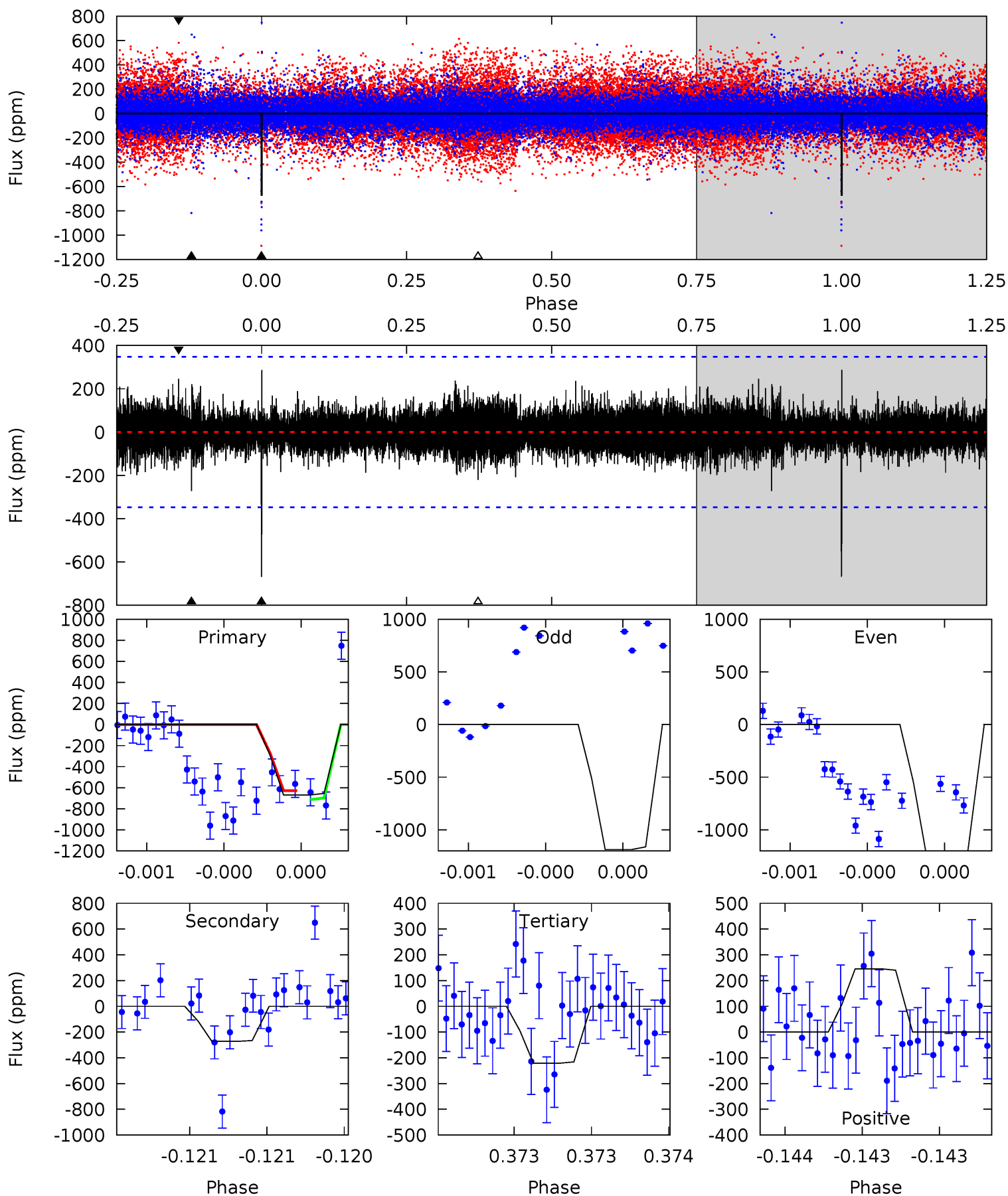
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	11.9	9.85	9.88	5.56	3.47	1.92	1.06	1.03	2.06	2.03	0.89	1.00	0.45	1.36



Alt Model-Shift Uniqueness Test

004581540-02, P = 261.442298 Days, E = 49.860434 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	4.37	3.55	3.95	5.59	3.51	0.83	7.20	6.80	0.82	0.42	0.82	2.06	0.30	0



Stellar Parameters For KIC 004581540

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5511^{+200}_{-183}	$4.437^{+0.140}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$0.882^{+0.198}_{-0.132}$	$0.776^{+0.127}_{-0.054}$	$1.593^{+0.987}_{-0.705}$
	+4%/-3%	+3%/-4%	+94%/-94%	+22%/-15%	+16%/-7%	+62%/-44%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004581540-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-734 ± 62	$3.60^{+3.16}_{-2.39}$	374^{+25}_{-21}	4851^{+3701}_{-1051}	$17350^{+131724}_{-12710}$
Alt.	-271 ± 62	$4.52^{+3.69}_{-2.69}$	373^{+26}_{-22}	3694^{+1465}_{-600}	3989^{+19595}_{-2742}

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 $A_{obs} \gg 1.0$

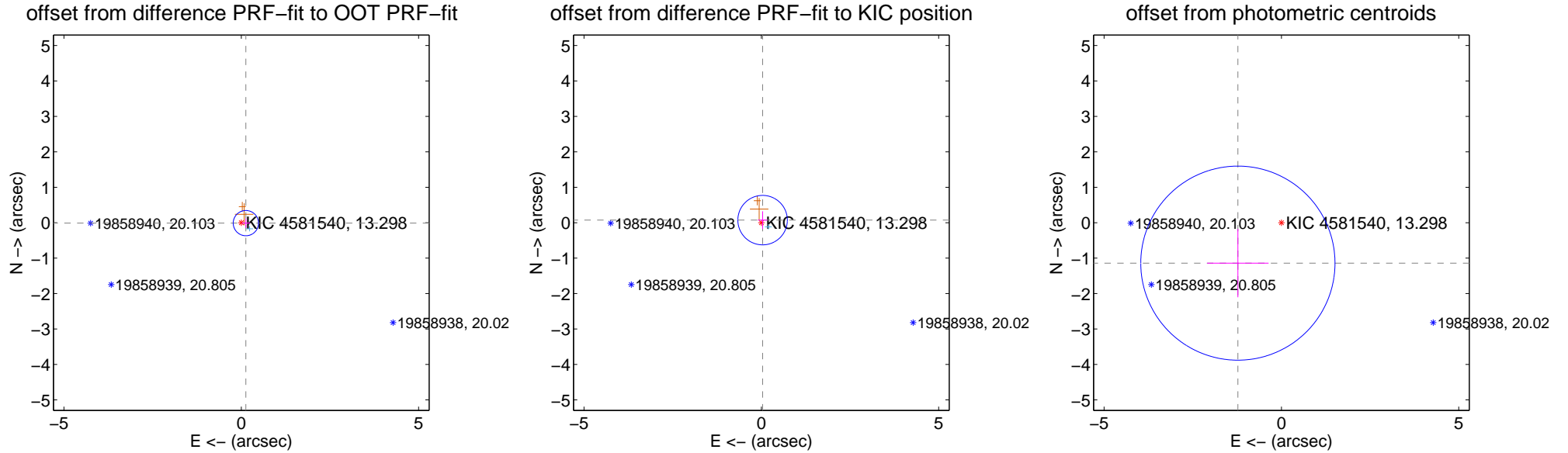
DV Centroid Data

Supplemental centroid analysis for 004581540-02. Kepler magnitude: 13.30. Transit SNR 6.44

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.130 ± 0.119	1.10	-0.130 ± 0.119	-0.012 ± 0.133
PRF-fit source offset from KIC position	0.081 ± 0.233	0.35	-0.035 ± 0.135	0.073 ± 0.250
photometric centroid source offset	1.68 ± 0.91	1.84	1.23 ± 0.87	-1.14 ± 0.96



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



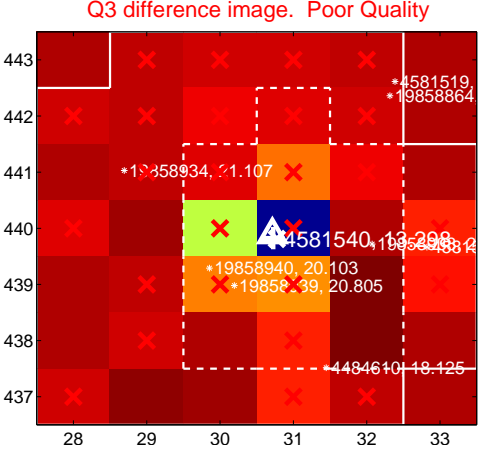
Q2 no difference image



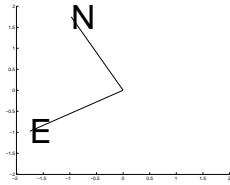
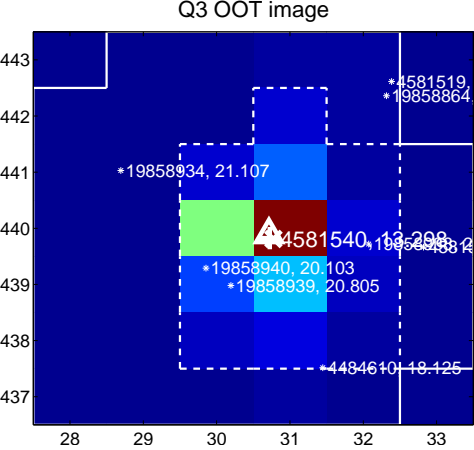
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



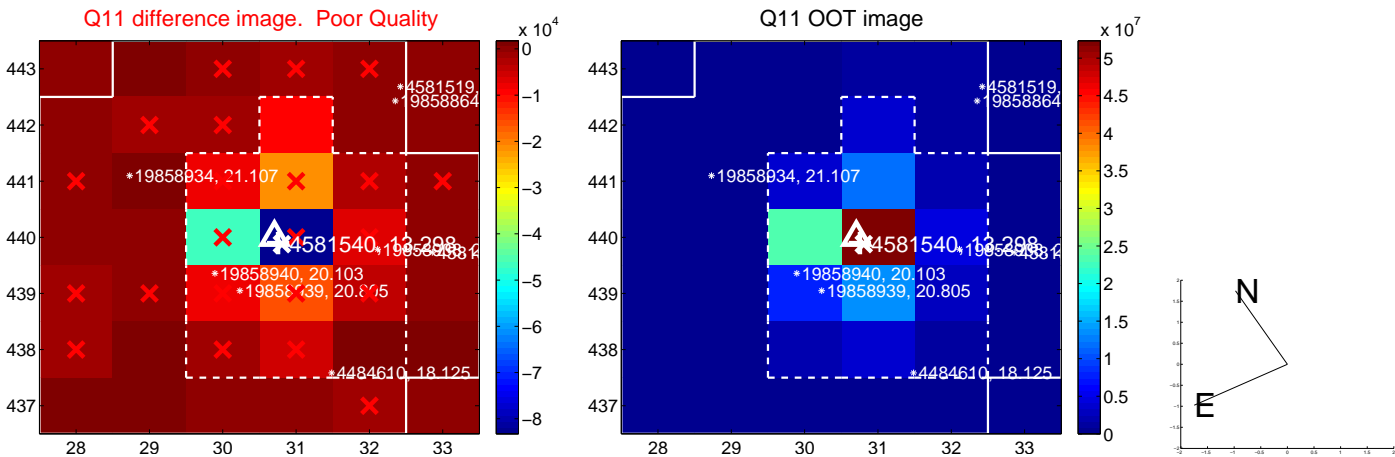
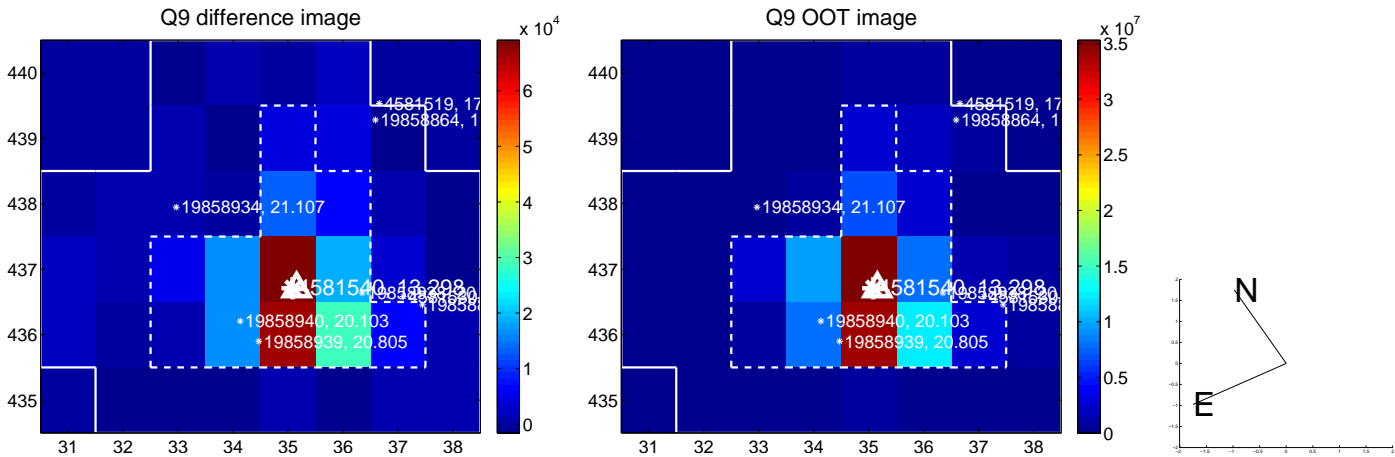
Q4 no OOT image



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



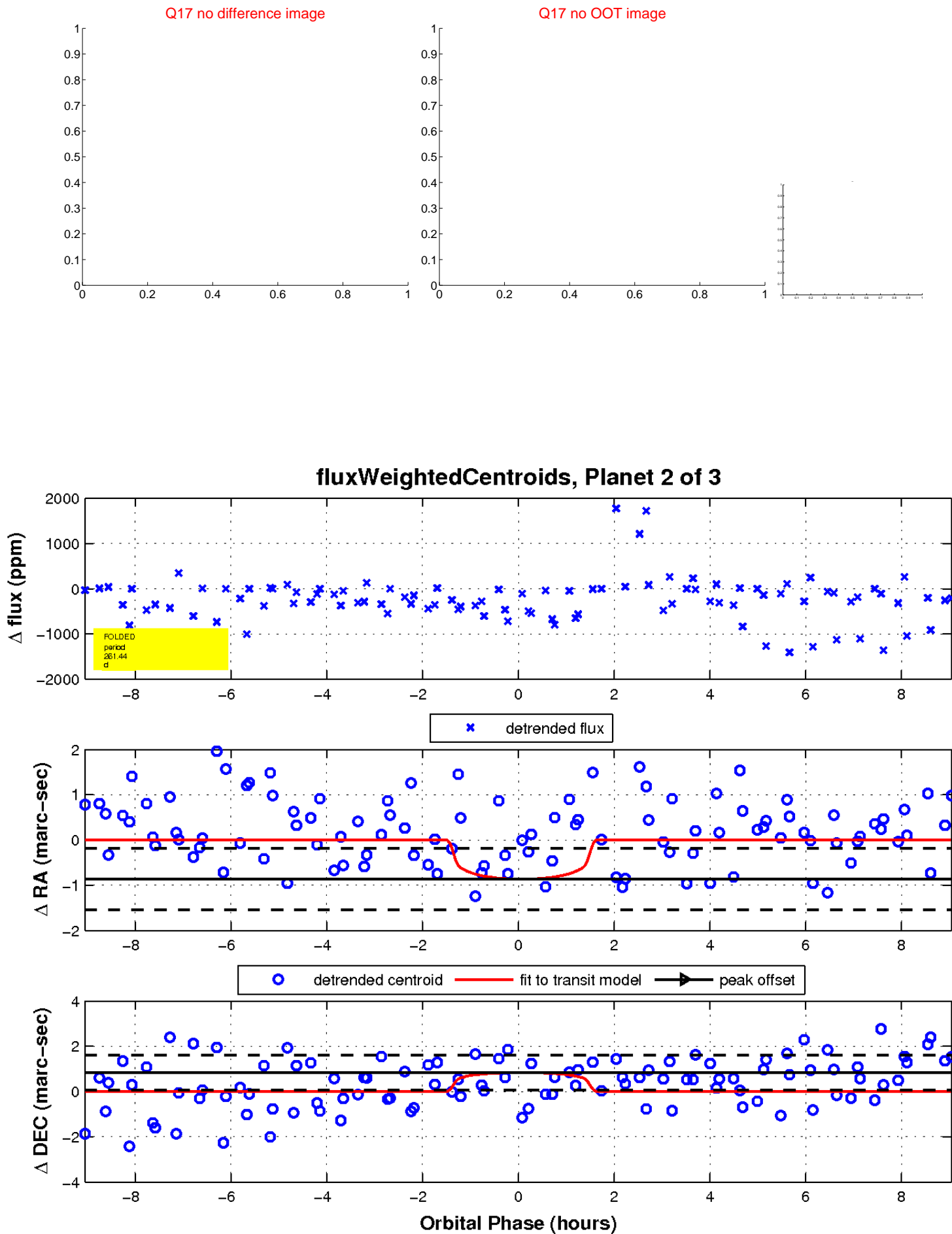
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

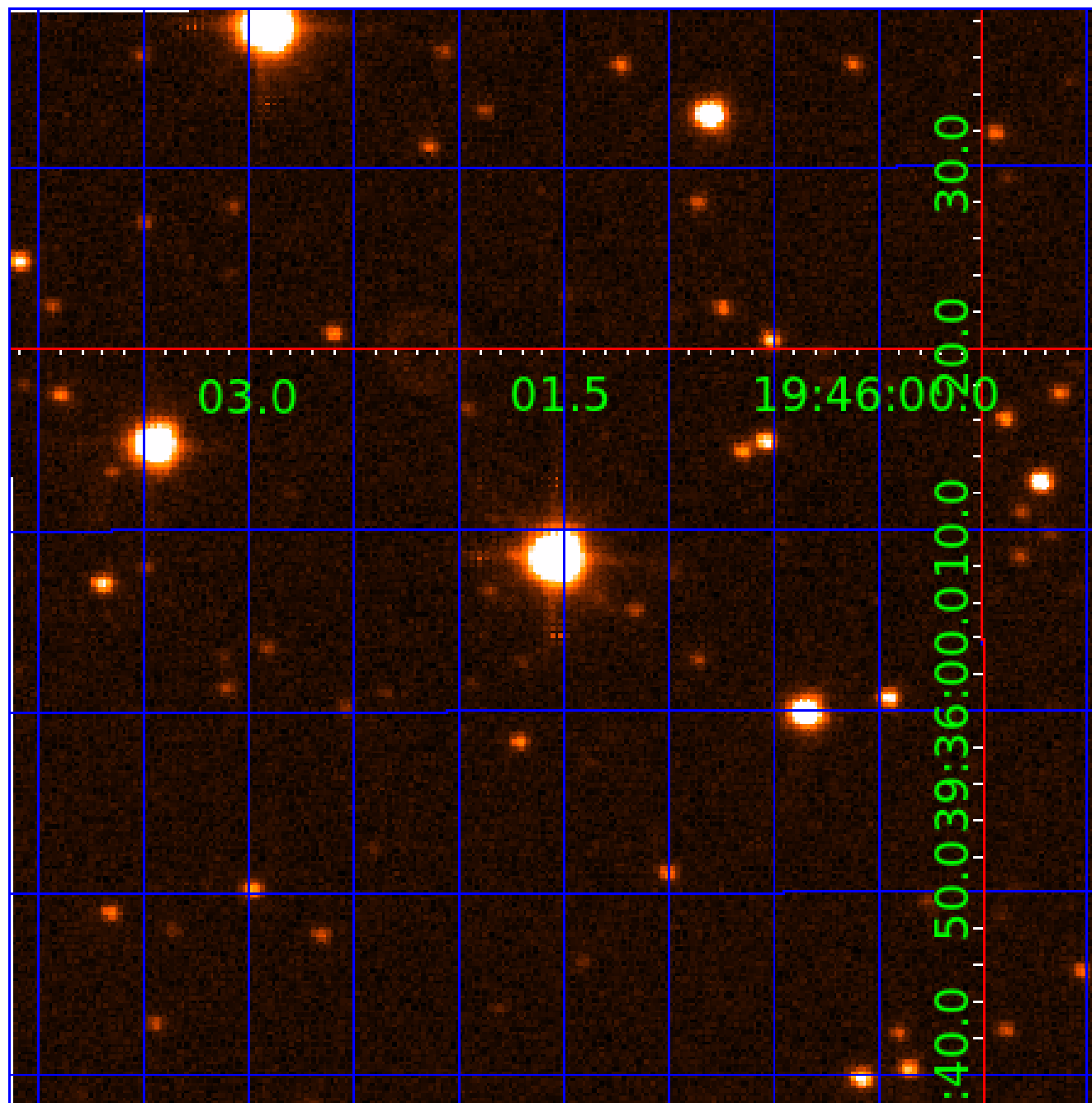


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004581540

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})
004581540-01	OBS	No	406.926262	315.704853	618.3	8.336	15.3	4.6	0.88	5511	2.32	0.66
004581540-02	OBS	No	261.439691	311.280505	714.6	3.021	14.2	6.4	0.88	5511	2.51	1.19
004581540-03	OBS	No	0.899929	131.758744	55.0	1.425	7.9	11.0	0.88	5511	0.78	2286.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004581540-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004581540-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
004581540-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

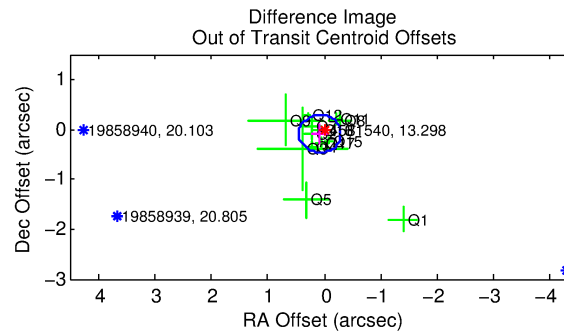
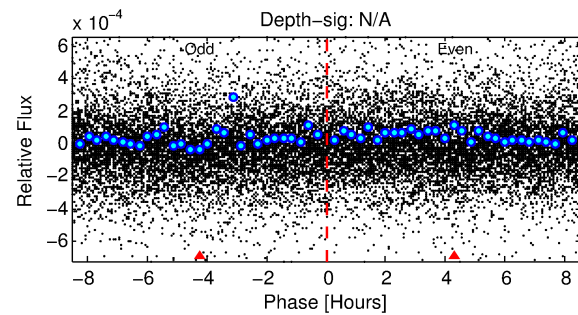
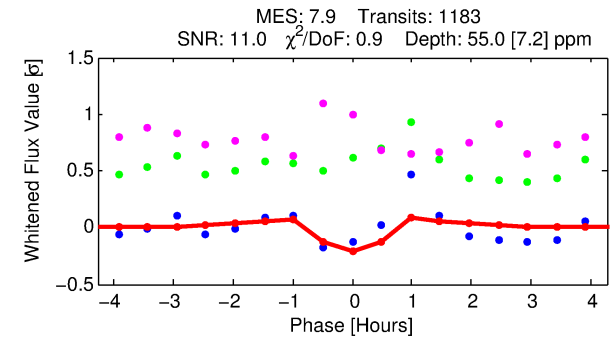
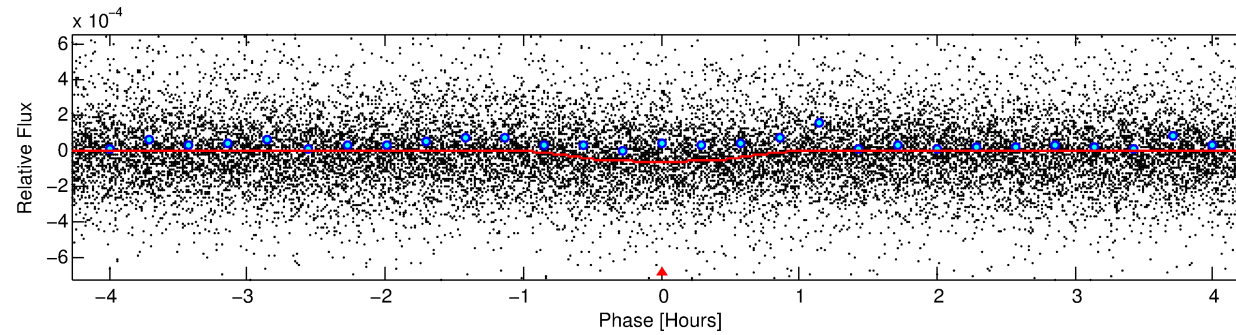
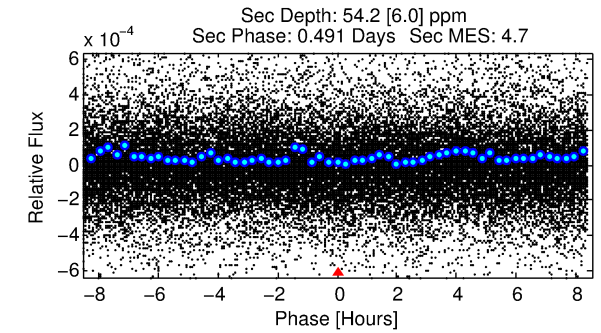
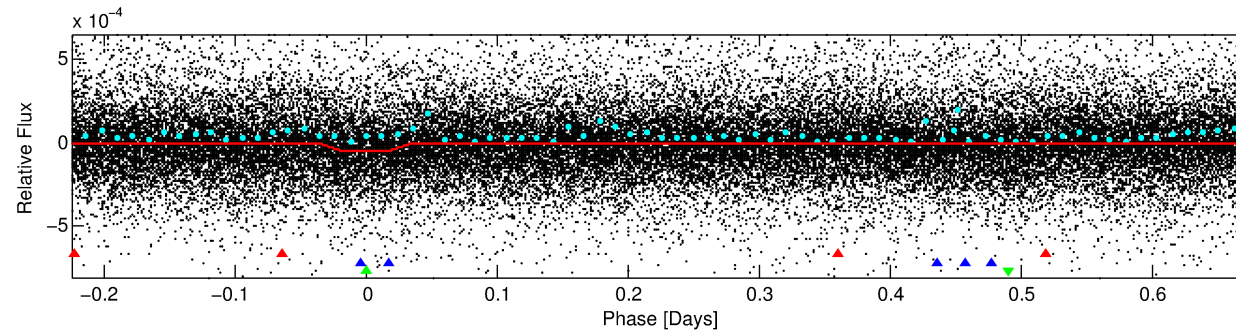
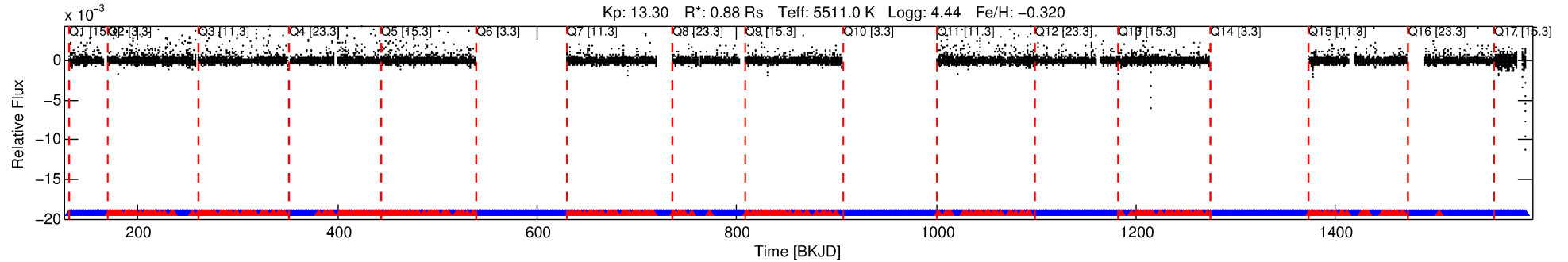
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004581540-03

No Significant Match Found

DV One-Page Summary

KIC: 4581540 Candidate: 3 of 3 Period: 0.900 d



DV Fit Results:

Period = 0.89993 [0.00001] d
Epoch = 131.7587 [0.0015] BKJD
Rp/R* = 0.0081 [0.0036]
a/R* = 2.37 [4.04]
b = 0.90 [0.44]
Seff = 2286.57 [766.51]
Teq = 1763 [148] K
Rp = 0.78 [0.39] Re
a = 0.0168 [0.0033] AU
Ag = 13.66 [12.99] [0.97σ]
Teffp = 5241 [1197] K [2.88σ]

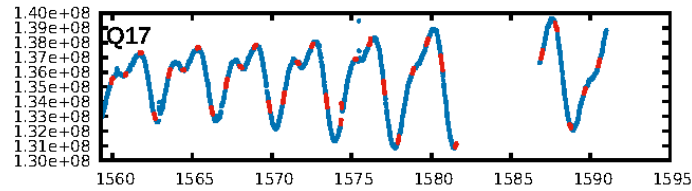
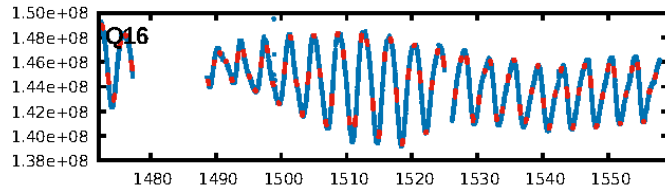
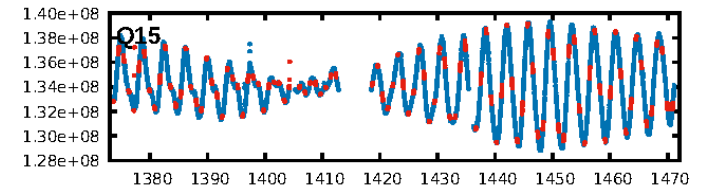
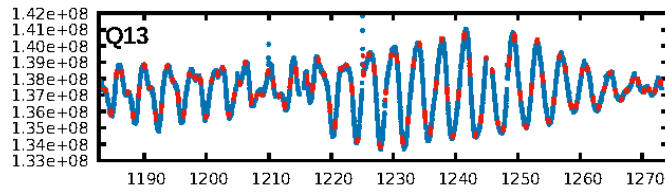
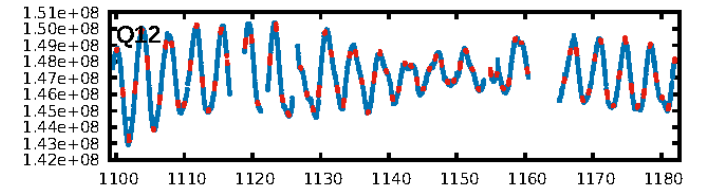
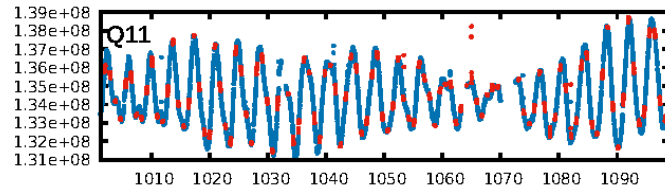
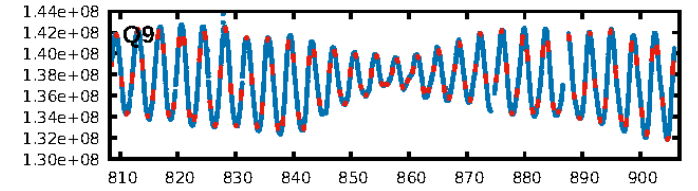
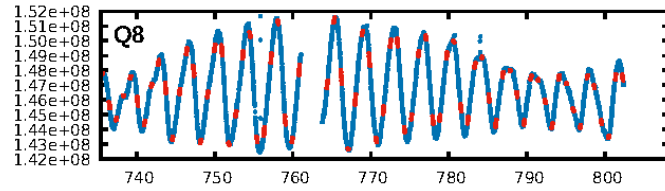
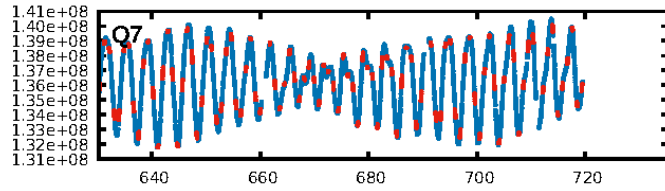
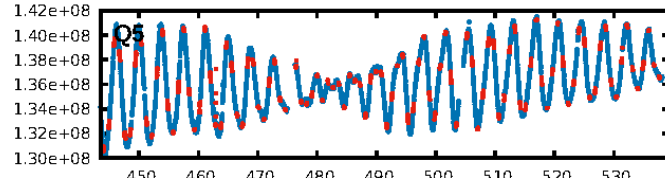
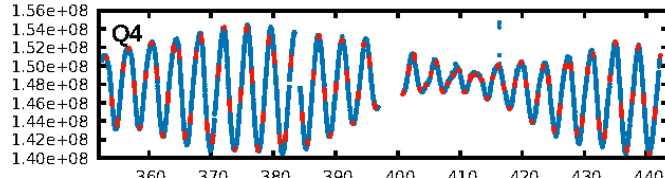
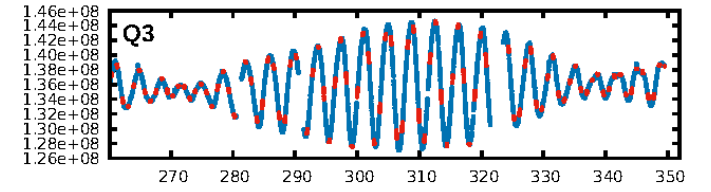
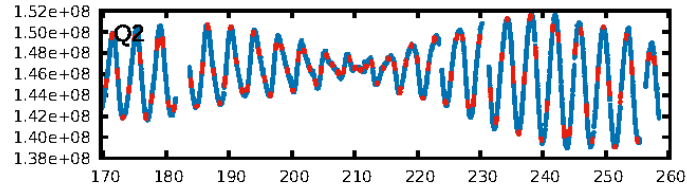
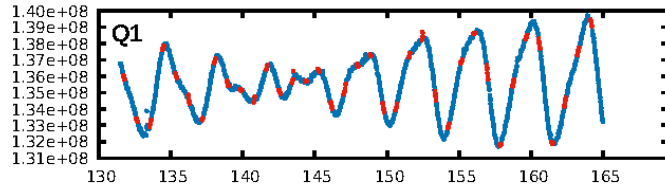
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1871.90σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.72 [798/1116]
GhostDiagnostic-chr: 0.5197
Centroid-sig: 29.0%
Centroid-so: 0.749 arcsec [1.07σ]
OotOffset-rm: 0.121 arcsec [0.97σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-rm: 0.159 arcsec [1.22σ]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [14/14]

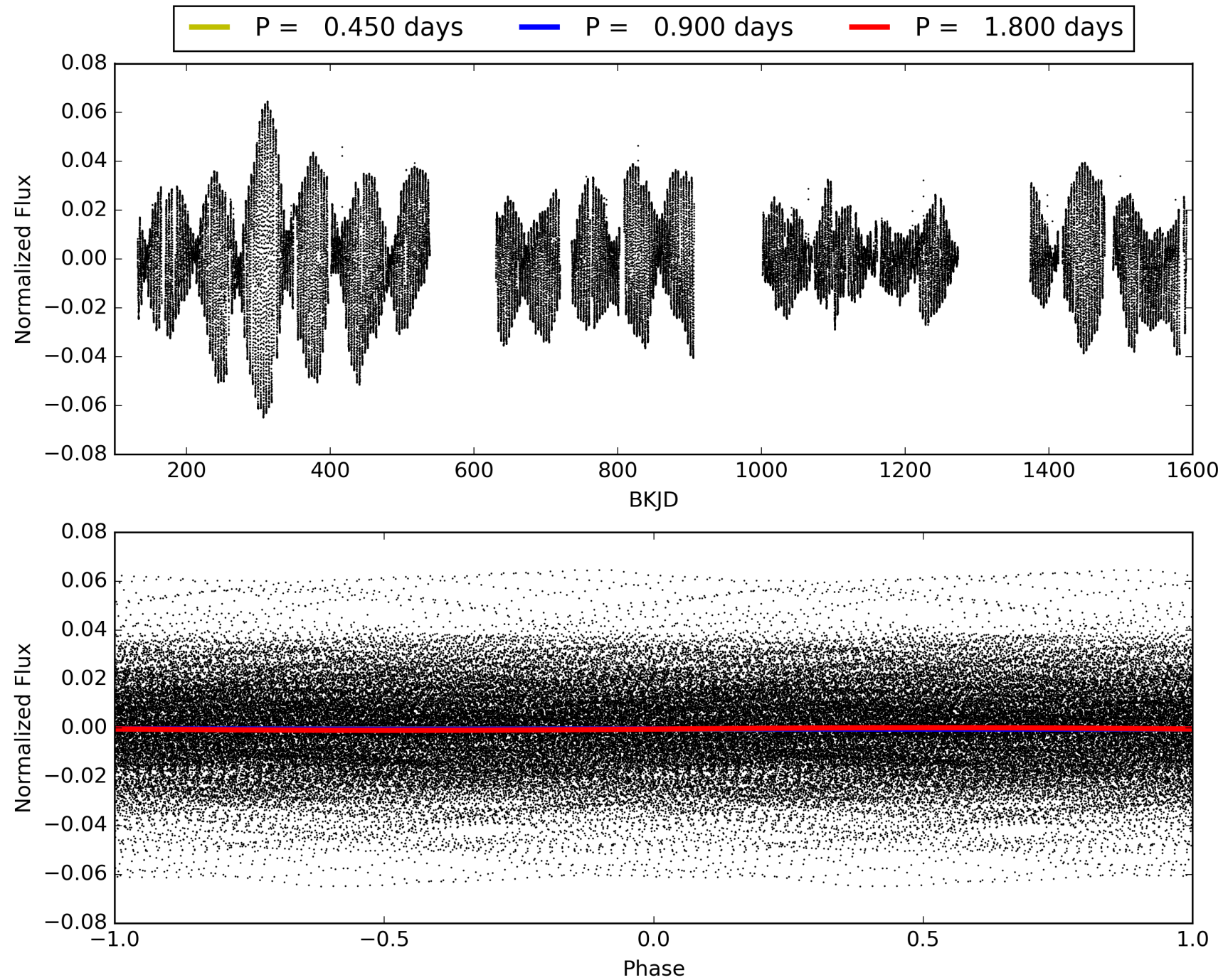
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:30:24 Z

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

TCE 004581540-03, PDC Light Curves

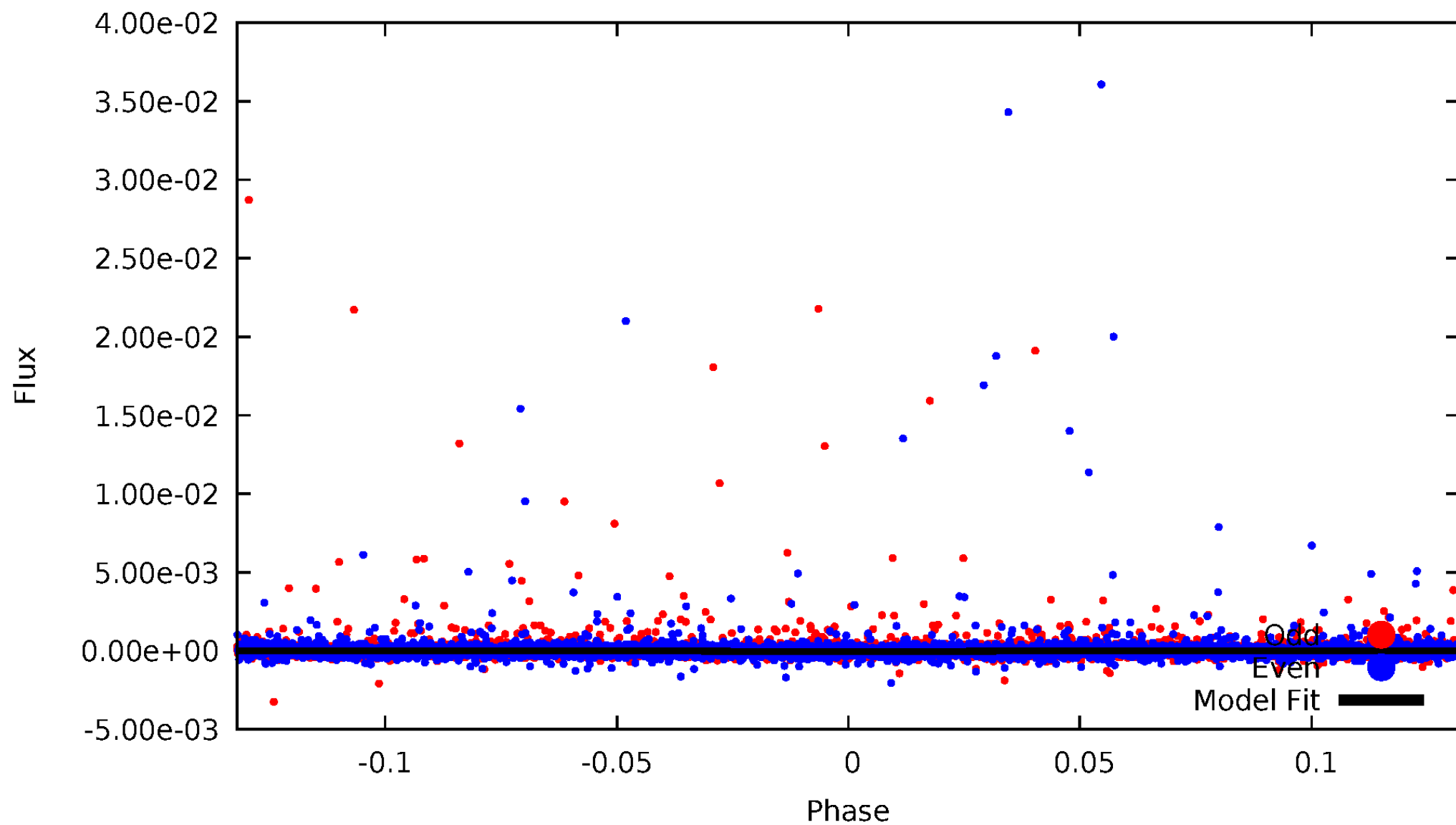


TCE 004581540-03



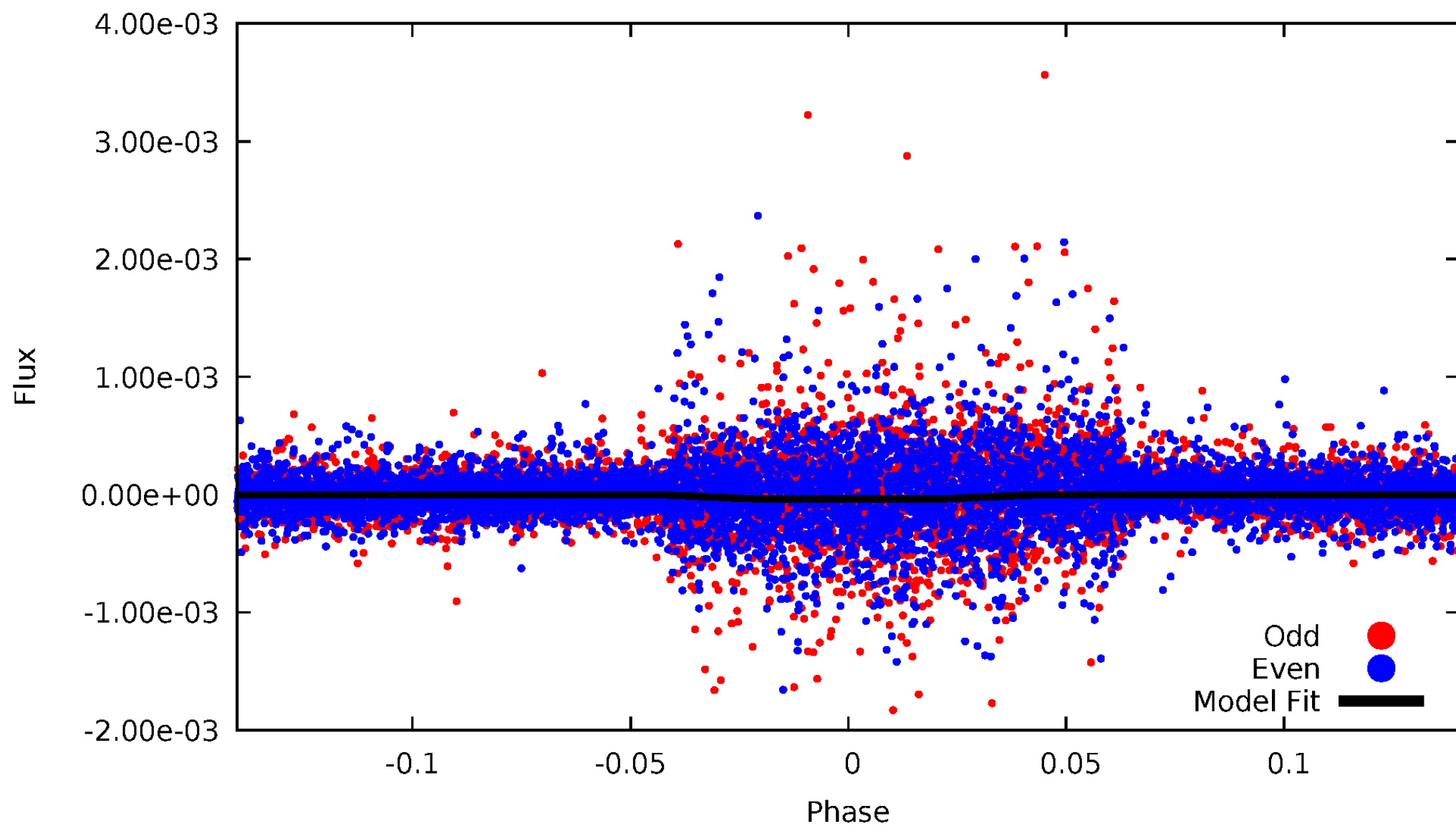
DV Odd/Even

TCE 004581540-03



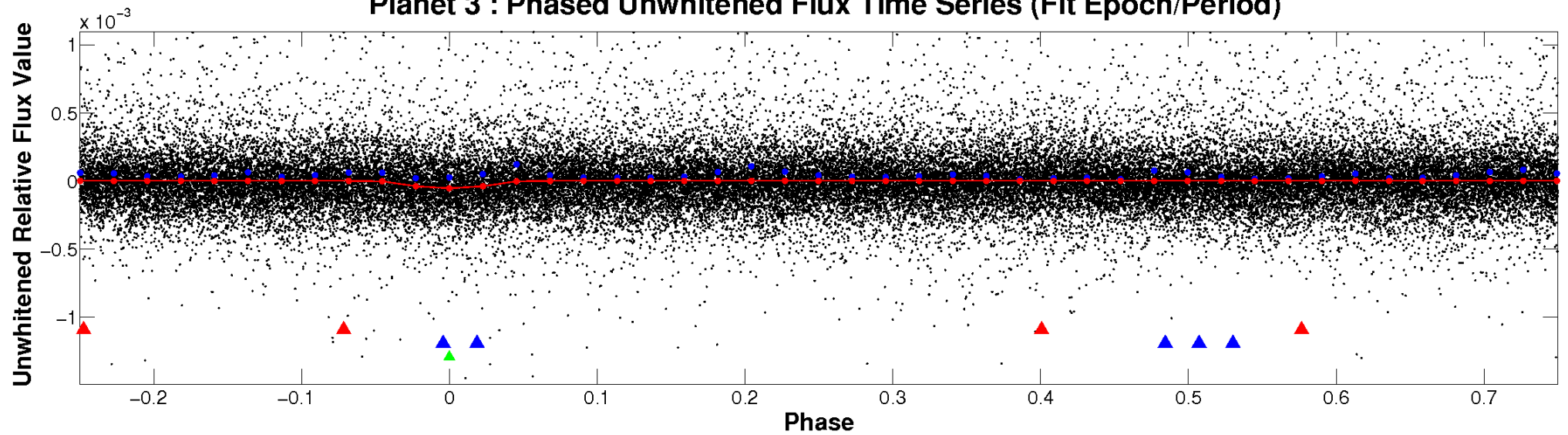
ALT Odd/Even

TCE 004581540-03

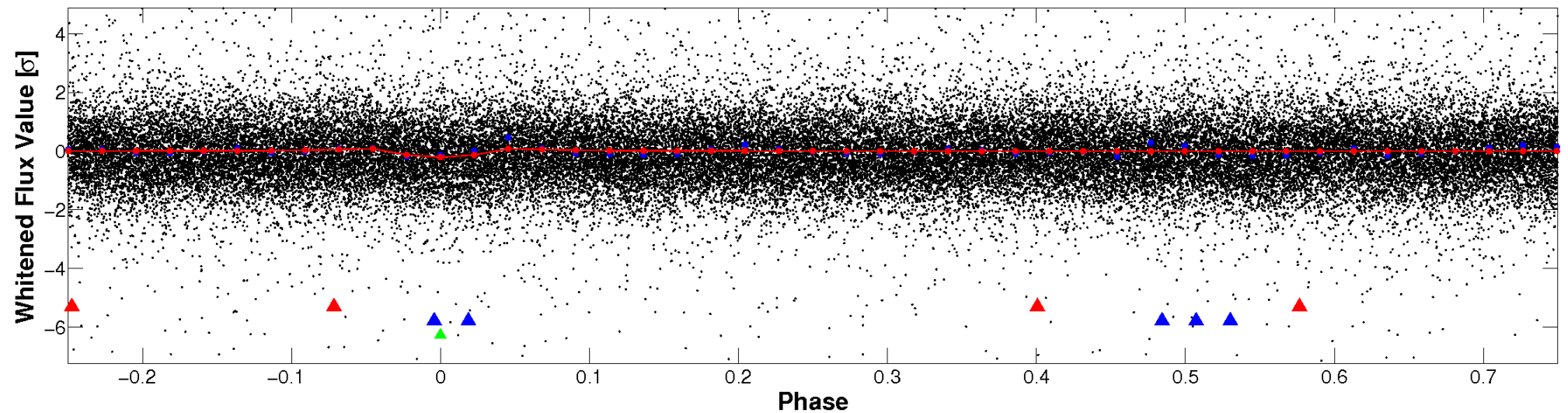


Non-Whitened Vs. Whitened Light Curve

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

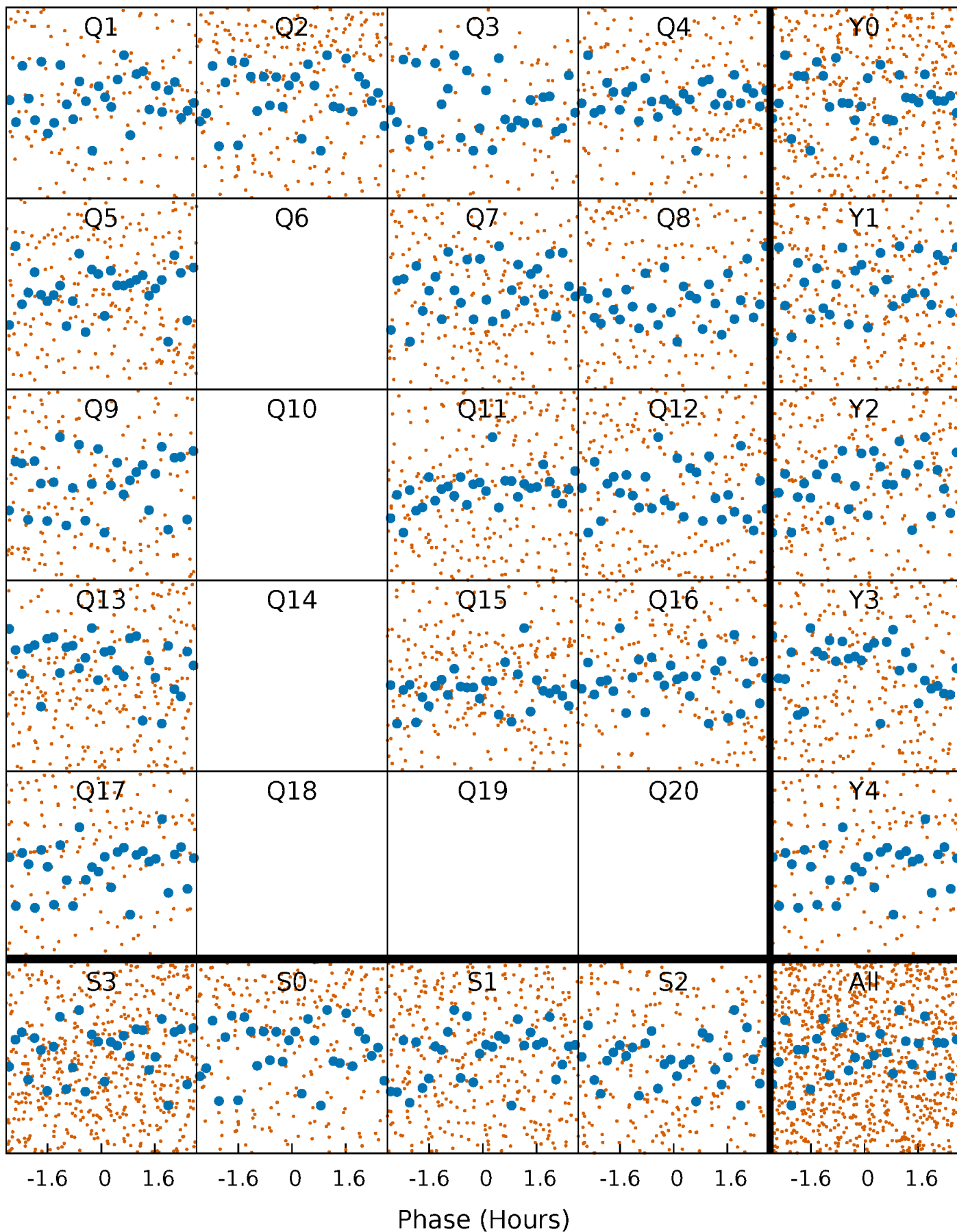


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



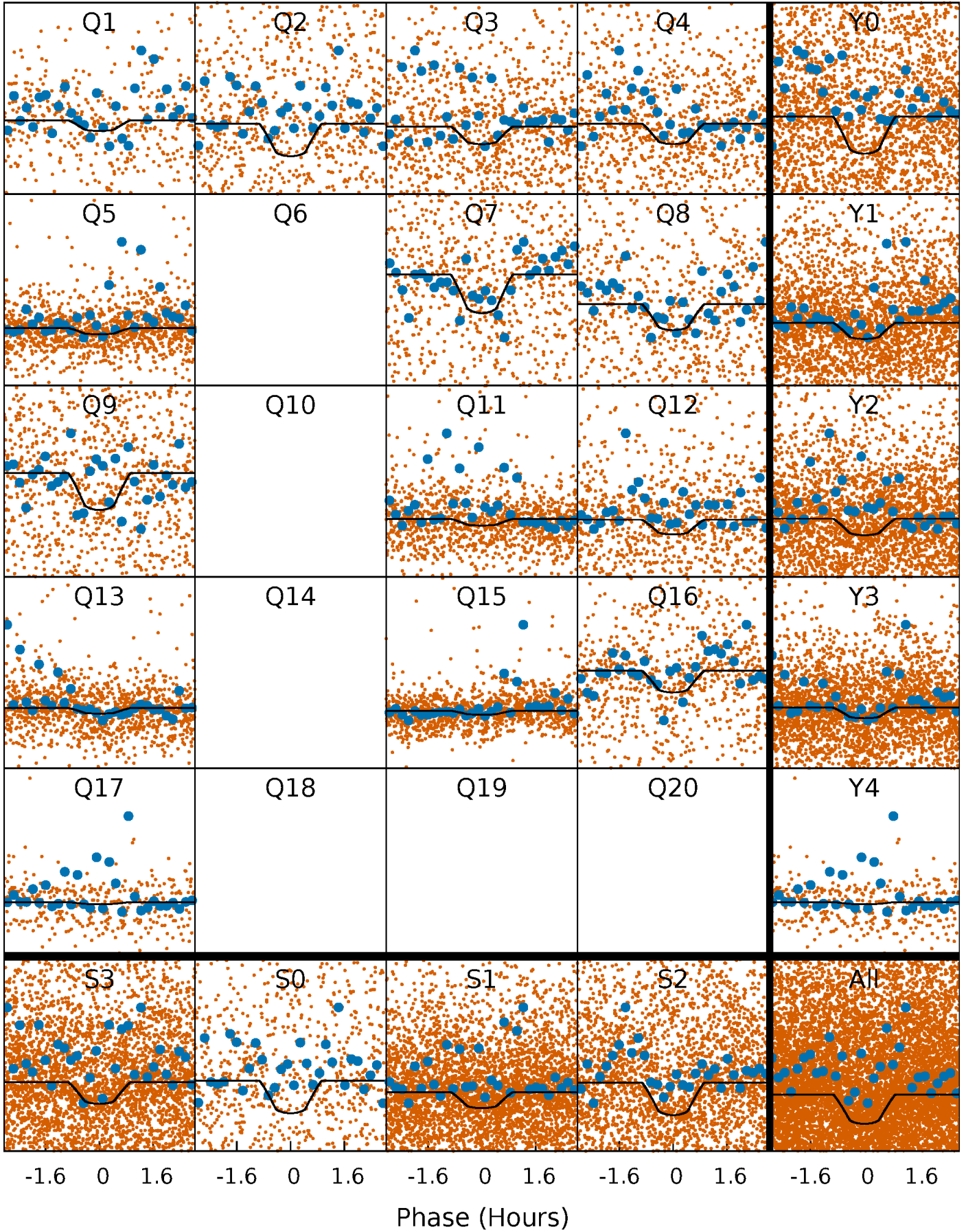
PDC Quarter-Phased Transit Curves

TCE 004581540-03 P= 0.899929 Days $T_0=131.758745$ (BKJD)



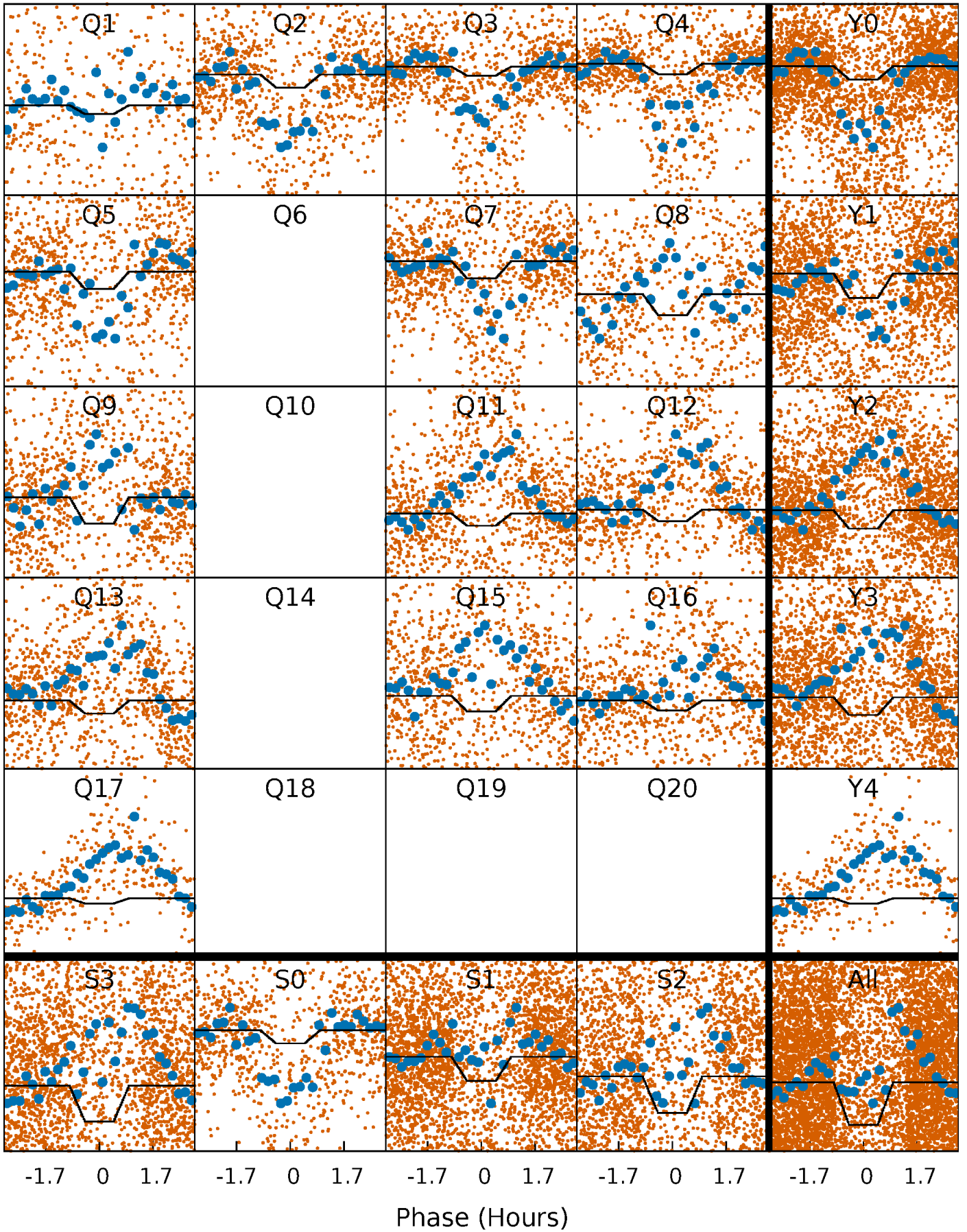
DV Quarter-Phased Transit Curves

TCE 004581540-03 $P = 0.899929$ Days $T_0 = 131.758745$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

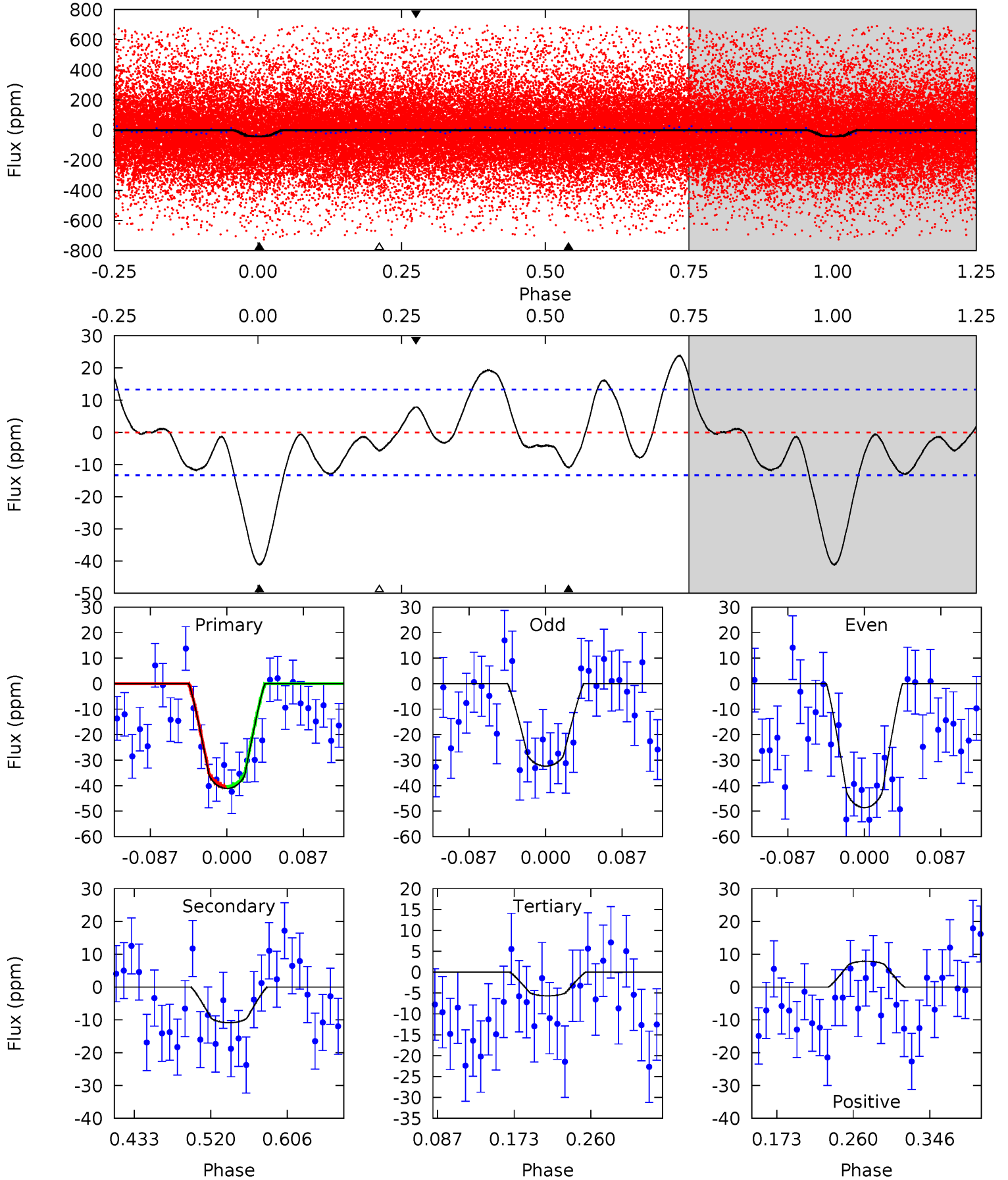
TCE 004581540-03 P= 0.899918 Days $T_0=131.767815$ (BKJD)



DV Model-Shift Uniqueness Test

004581540-03, P = 0.899929 Days, E = 130.858816 Days

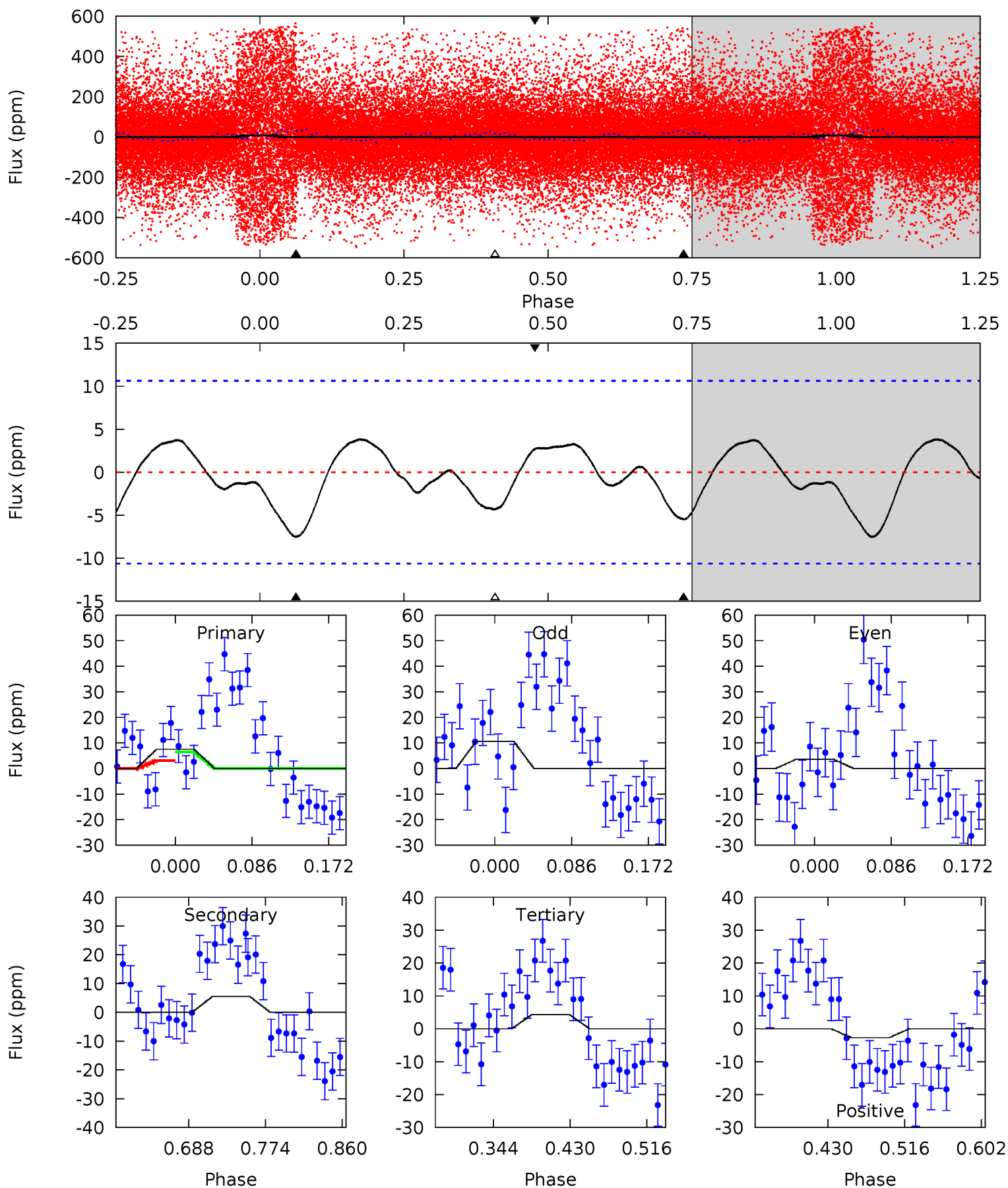
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	3.76	1.96	2.72	4.59	1.71	3.28	12.2	11.5	1.80	1.04	2.85	-1.03	0.37	0.01



Alt Model-Shift Uniqueness Test

004581540-03, P = 0.899918 Days, E = 130.867897 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.25	2.37	1.87	1.17	4.60	1.72	1.03	1.38	2.08	0.50	1.20	1.44	0.06	0.34	0.74



Stellar Parameters For KIC 004581540

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5511^{+200}_{-183}	$4.437^{+0.140}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$0.882^{+0.198}_{-0.132}$	$0.776^{+0.127}_{-0.054}$	$1.593^{+0.987}_{-0.705}$
	+4%/-3%	+3%/-4%	+94%/-94%	+22%/-15%	+16%/-7%	+62%/-44%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004581540-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-11 ± 3	$0.80^{+0.38}_{-0.36}$	2479^{+187}_{-164}	3758^{+1005}_{-547}	$2.638^{+6.132}_{-1.500}$
Alt.	-5 ± 2	$0.63^{+0.37}_{-0.32}$	2472^{+178}_{-149}	3611^{+1151}_{-737}	$2.116^{+6.444}_{-1.438}$

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 $A_{\text{obs}} \gg 1.0$

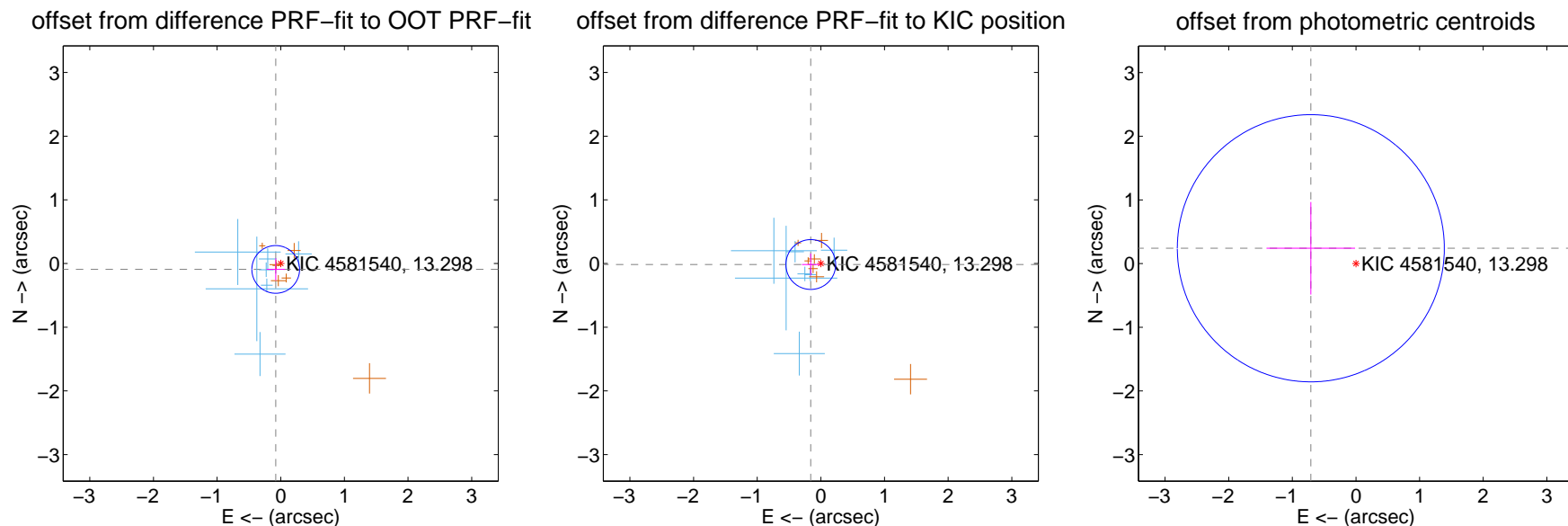
DV Centroid Data

Supplemental centroid analysis for 004581540-03. Kepler magnitude: 13.30. Transit SNR 10.96

There are 7 quarters with good PRF difference image offsets

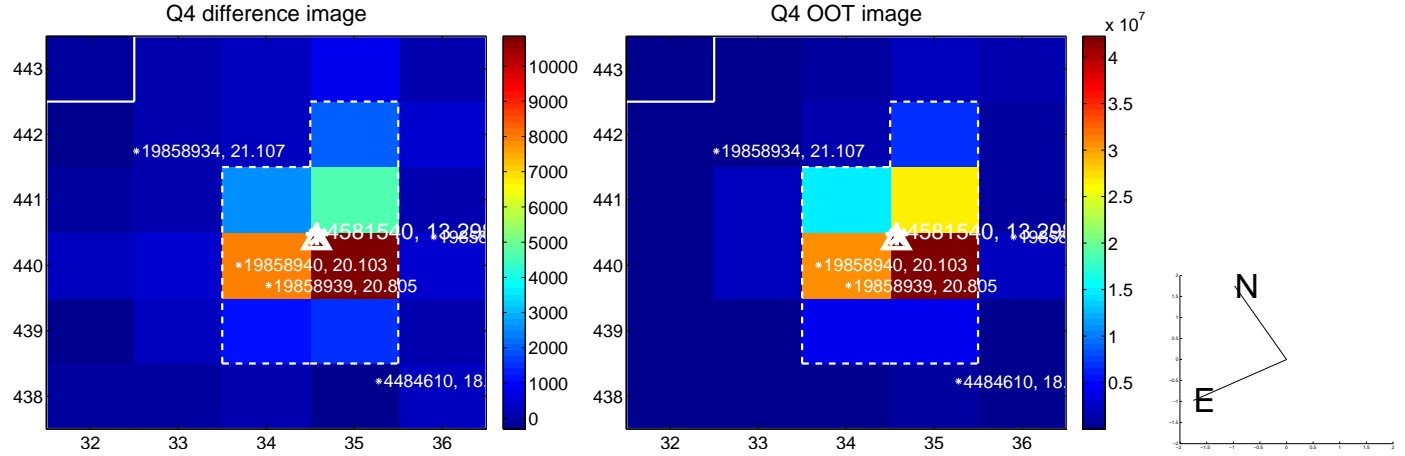
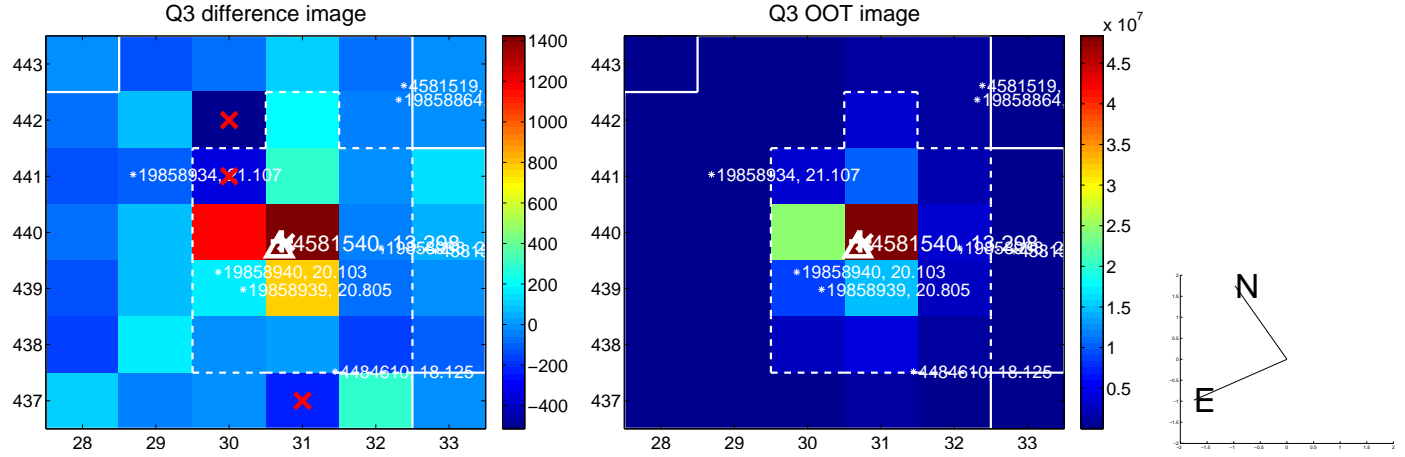
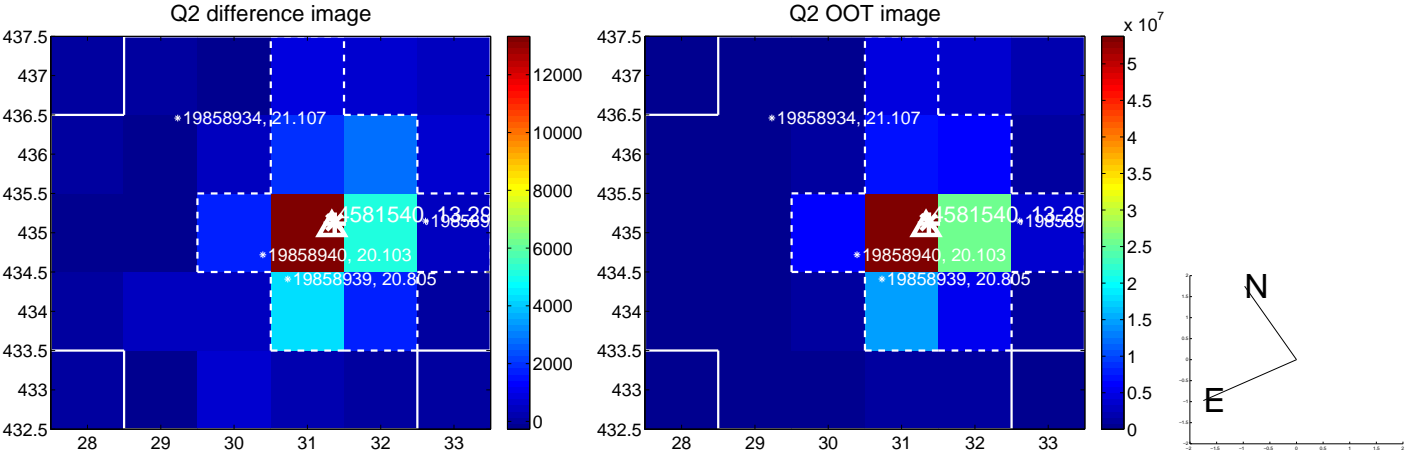
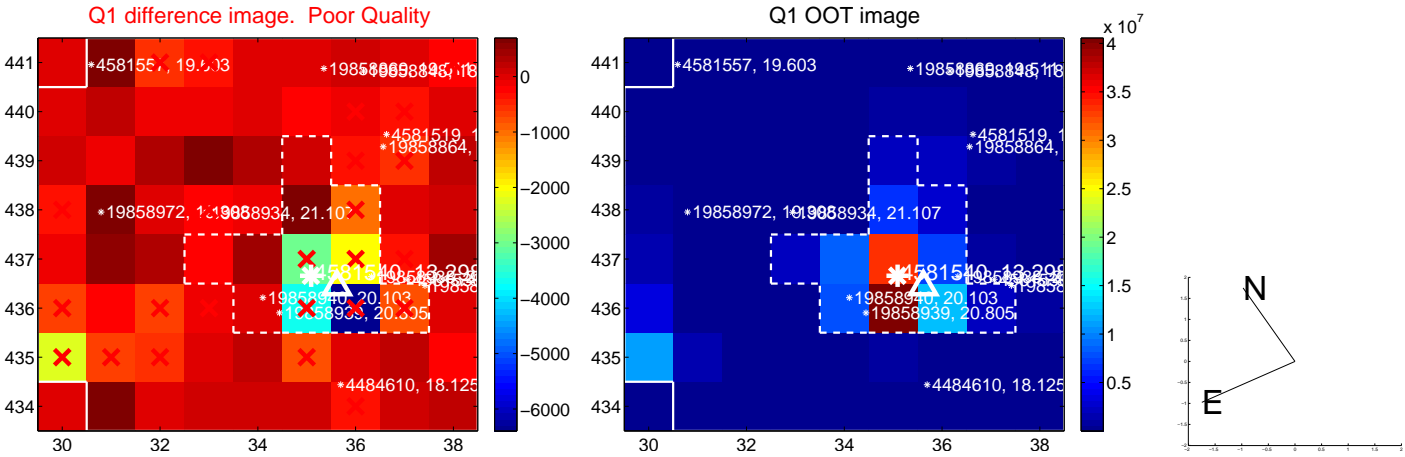
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.121 ± 0.125	0.97	0.079 ± 0.144	-0.092 ± 0.173
PRF-fit source offset from KIC position	0.159 ± 0.130	1.22	0.158 ± 0.138	-0.015 ± 0.174
photometric centroid source offset	0.75 ± 0.70	1.07	0.71 ± 0.70	0.24 ± 0.73

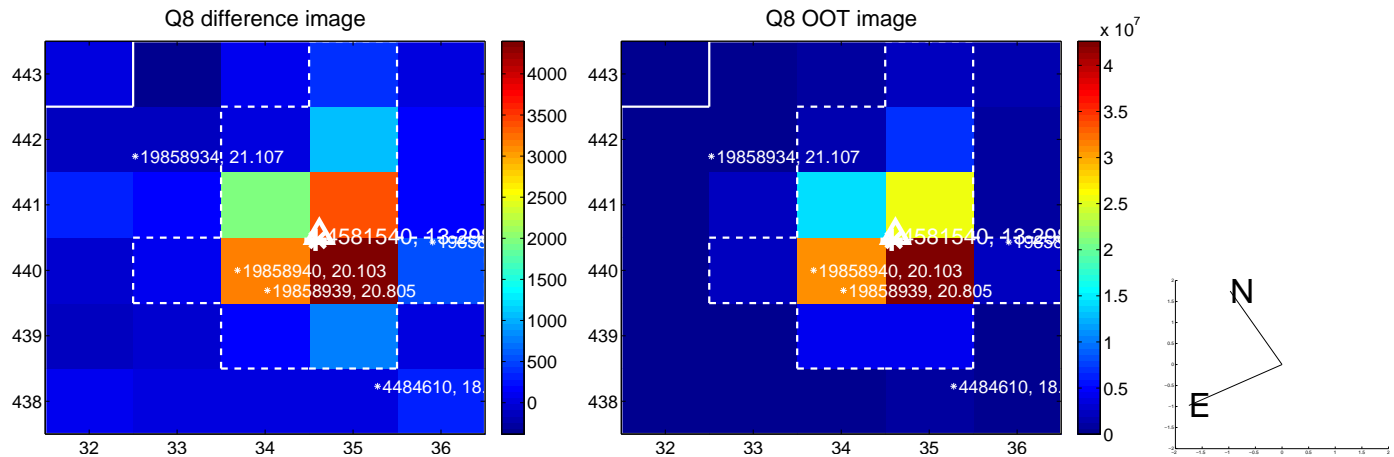
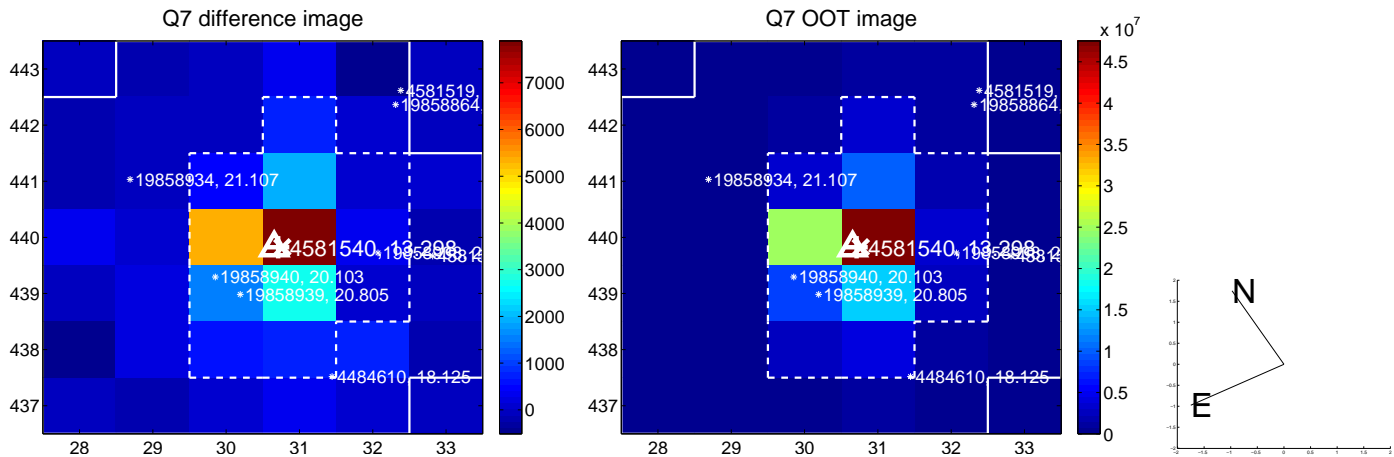
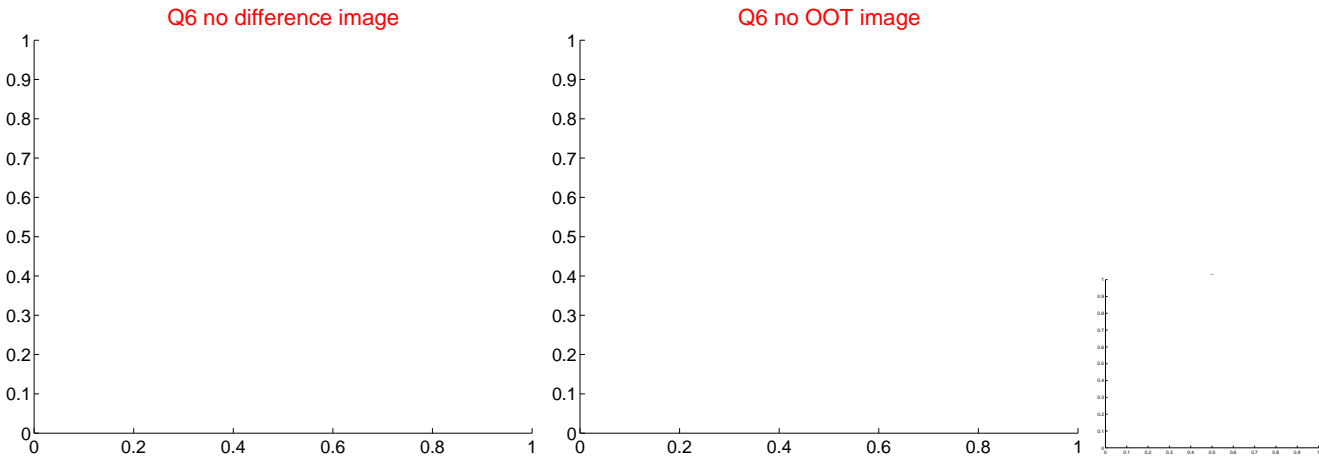
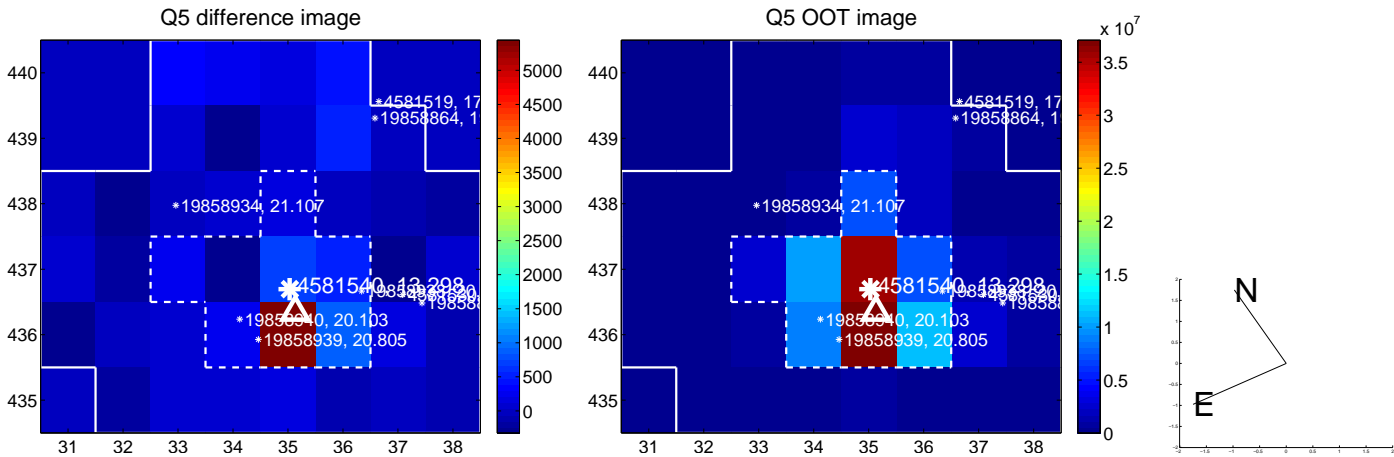


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

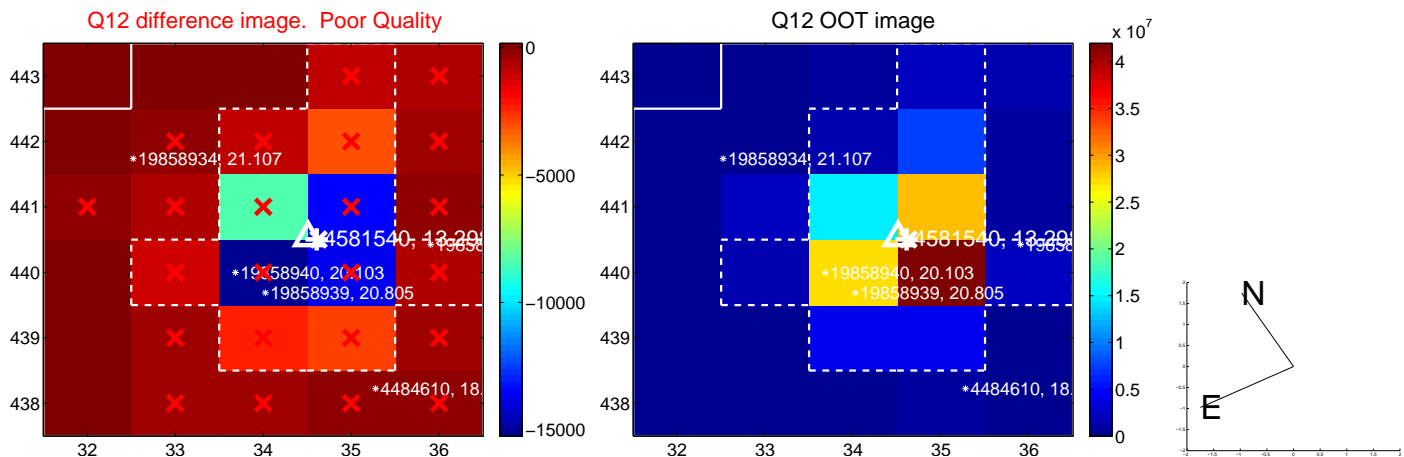
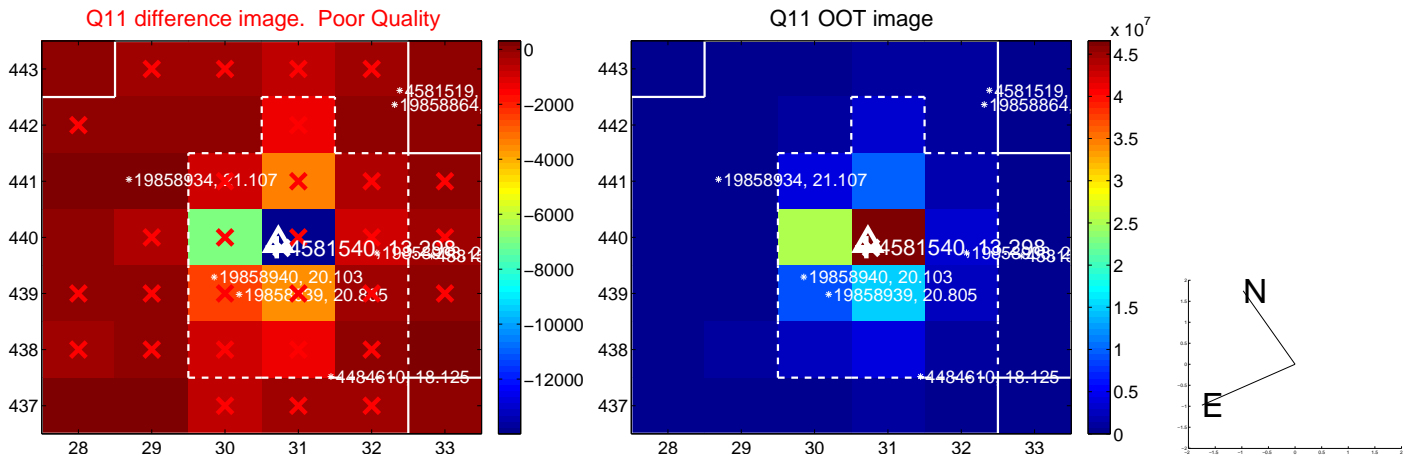
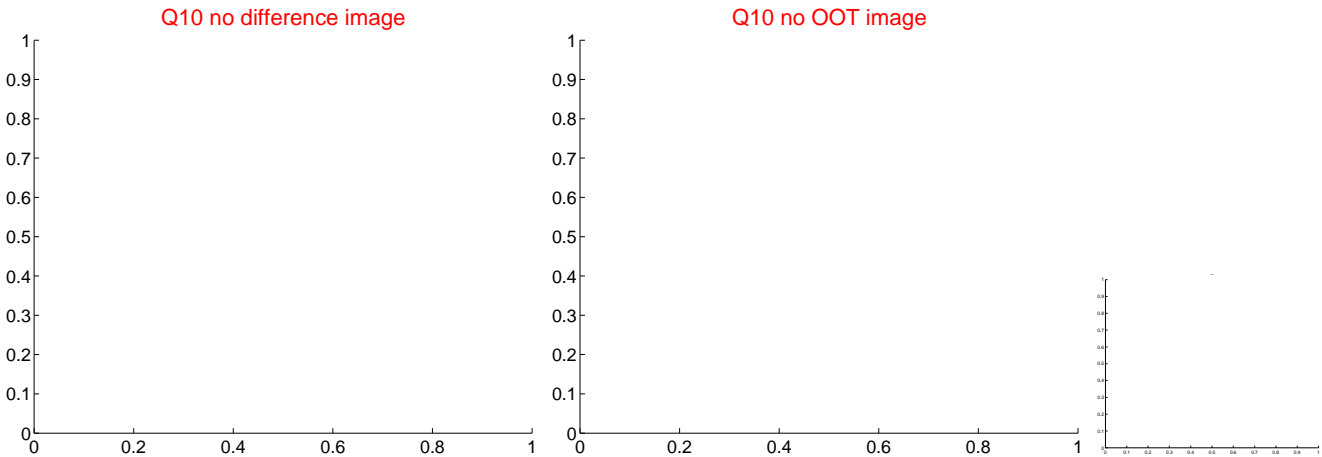
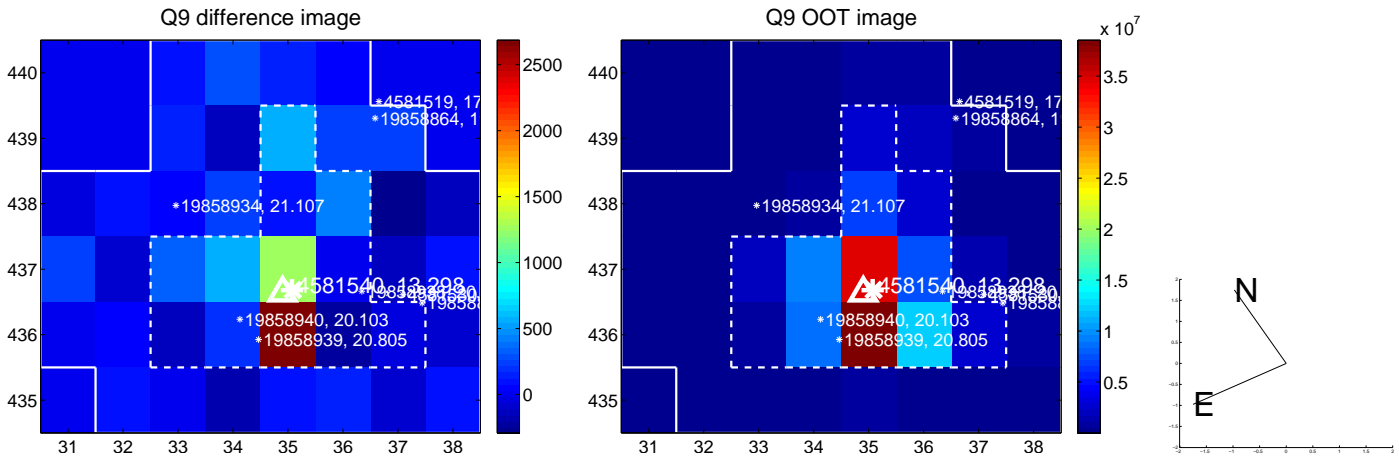
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



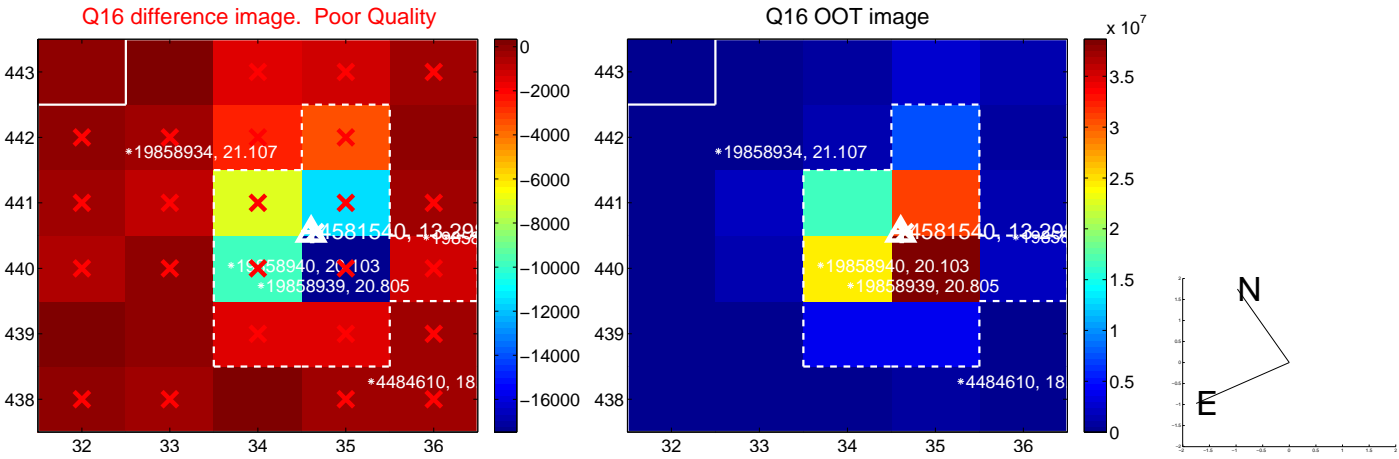
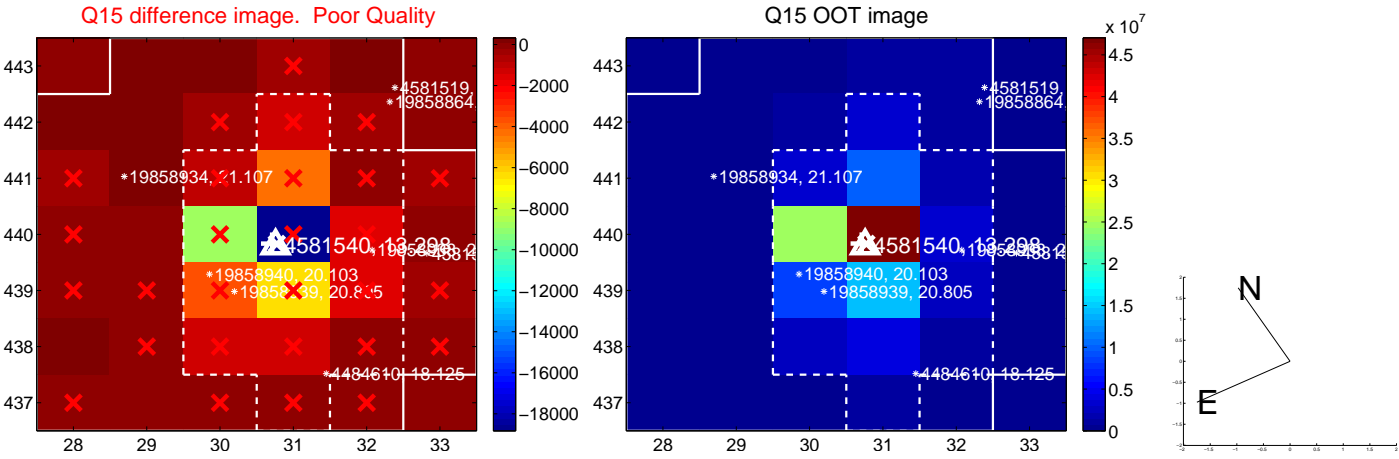
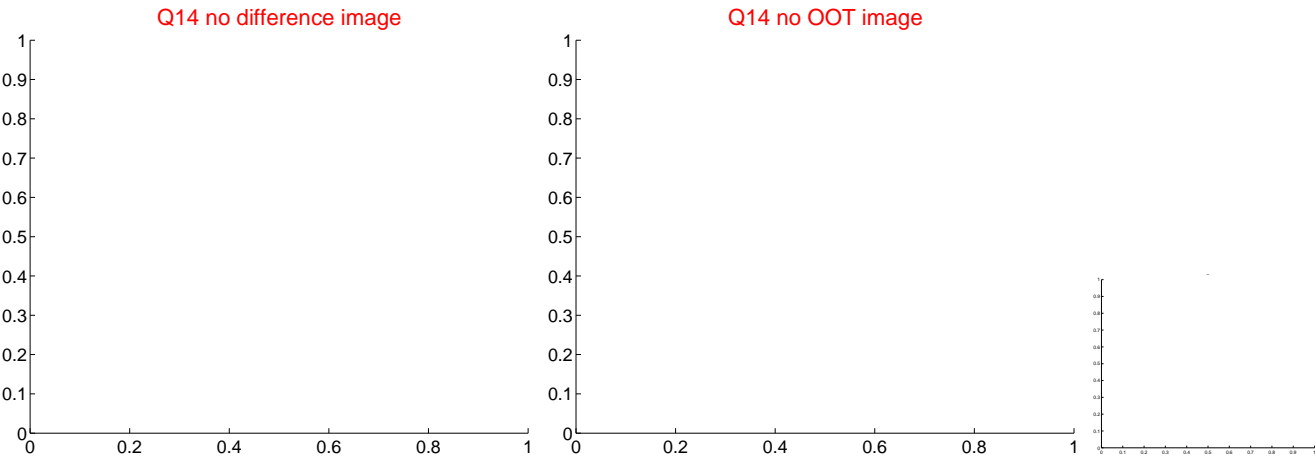
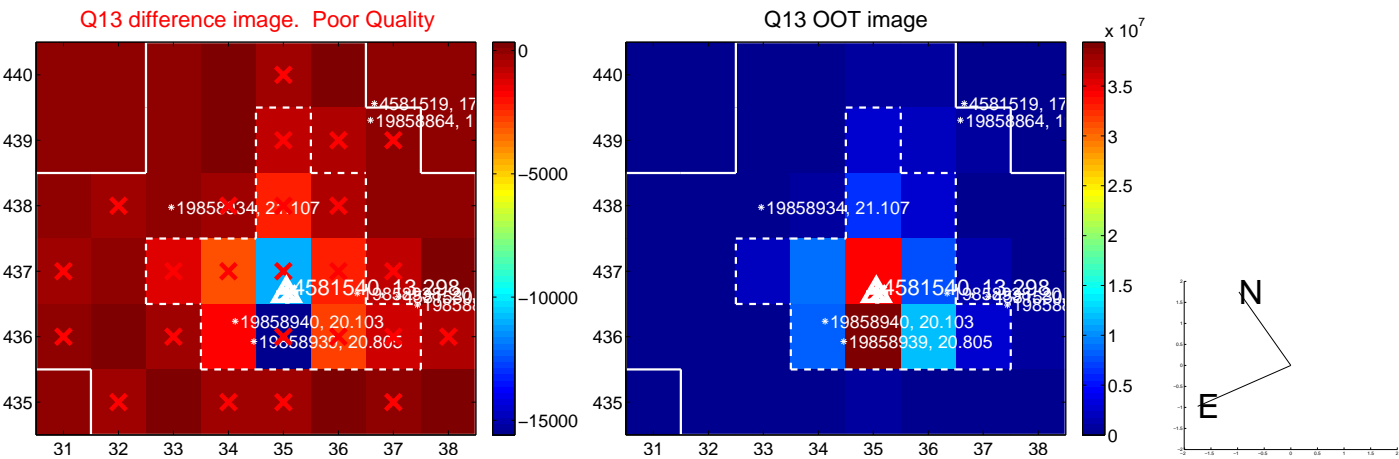
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



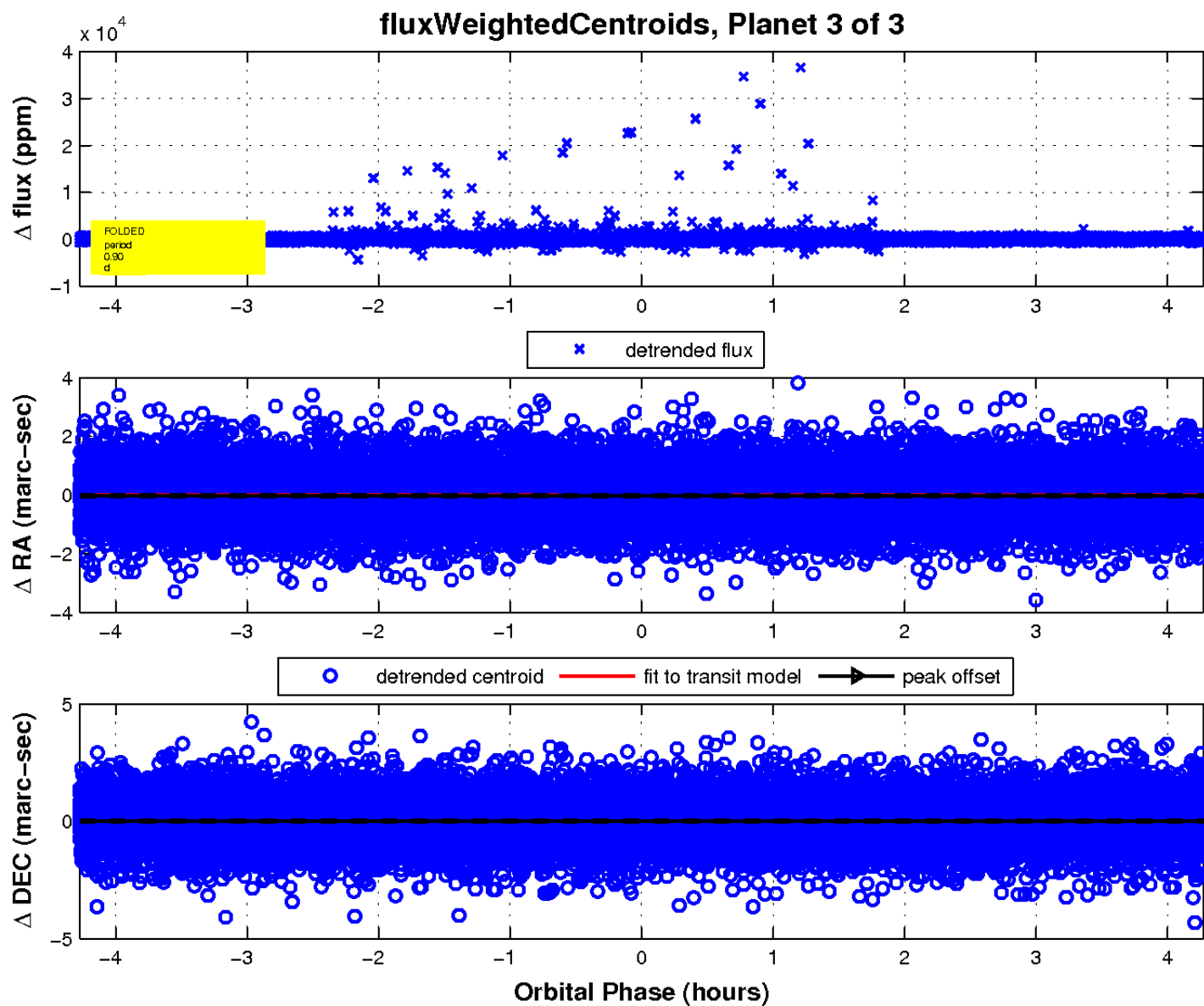
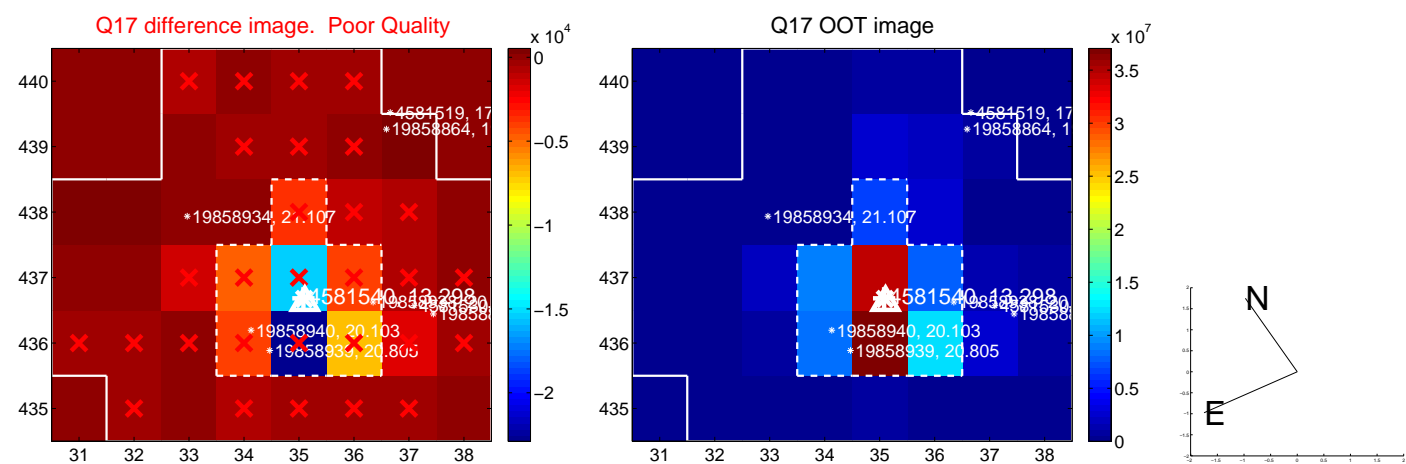
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

