

KIC 005219533

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})
005219533-01	OBS	No	1.141550	131.719290	41.6	3.462	9.6	8.2	2.68	7657	2.01	31212.17
005219533-02	OBS	No	0.549102	131.663530	41.0	1.649	9.6	9.7	2.68	7657	1.99	82815.72
005219533-03	OBS	No	6.643976	134.275102	118.5	4.752	7.8	7.1	2.68	7657	3.37	2981.35
005219533-04	OBS	No	10.482292	140.946912	193.2	4.401	7.7	7.6	2.68	7657	4.61	1623.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005219533-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005219533-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

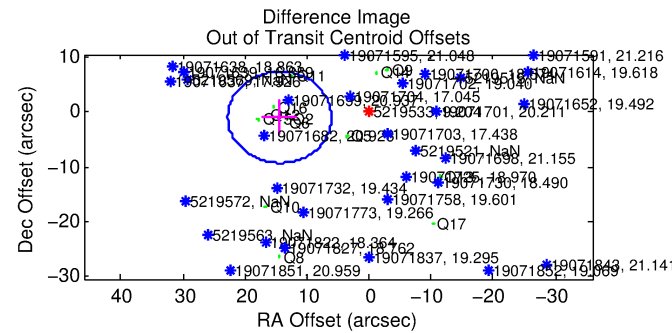
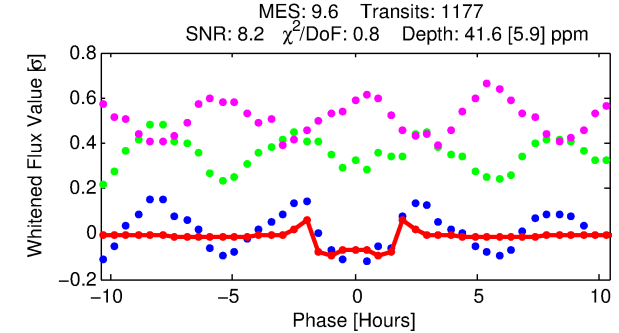
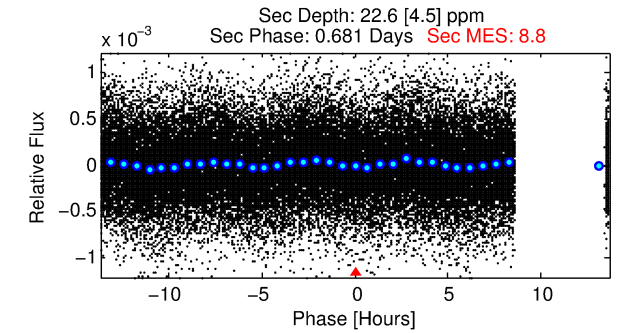
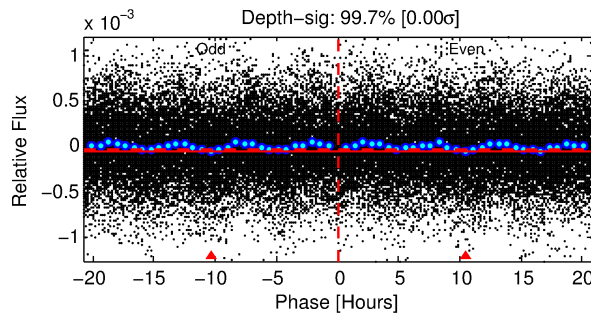
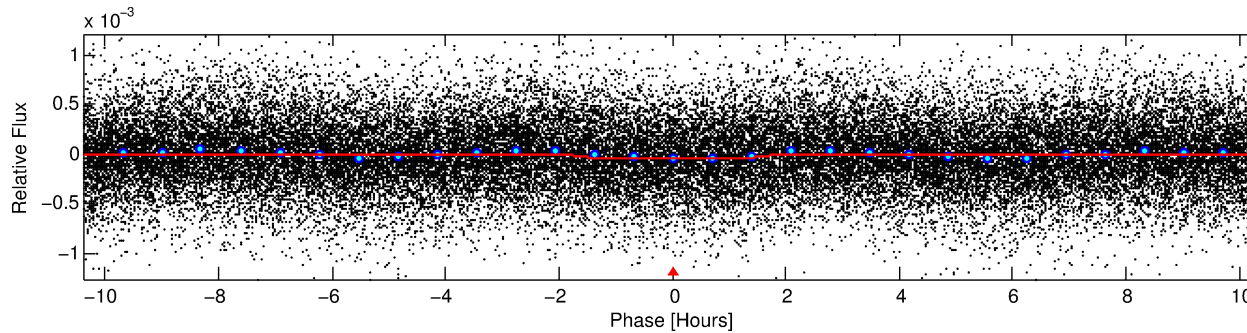
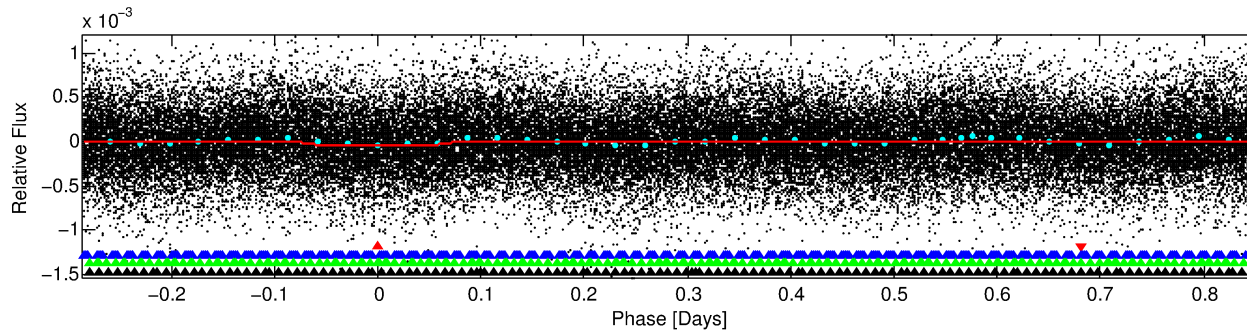
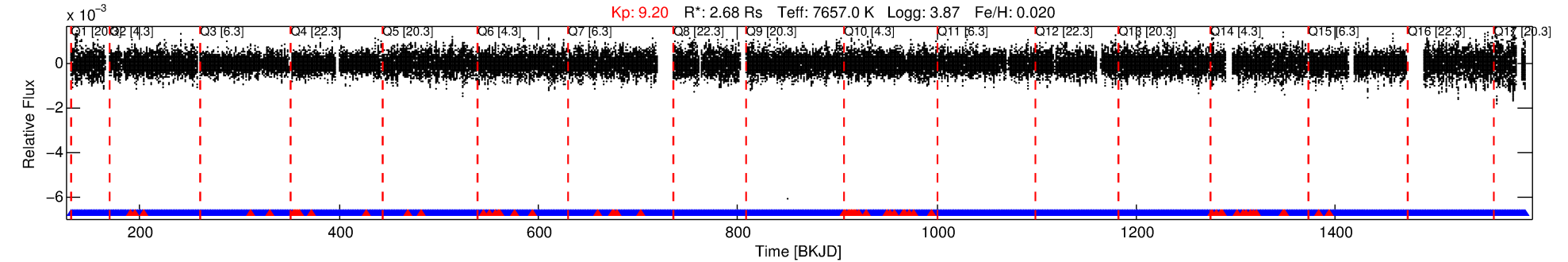
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005219533-01

No Significant Match Found

DV One-Page Summary

KIC: 5219533 Candidate: 1 of 4 Period: 1.142 d



DV Fit Results:

Period = 1.14155 [0.00001] d
Epoch = 131.7193 [0.0020] BKJD
Rp/R* = 0.0069 [0.0013]
a/R* = 1.47 [0.87]
b = 0.90 [0.23]
Seff = 31212.17 [17620.48]
Teq = 3389 [478] K
Rp = 2.01 [0.84] Re
a = 0.0267 [0.0092] AU
Ag = 2.19 [1.50] [0.80 σ]
Teffp = 6377 [732] K [3.42 σ]

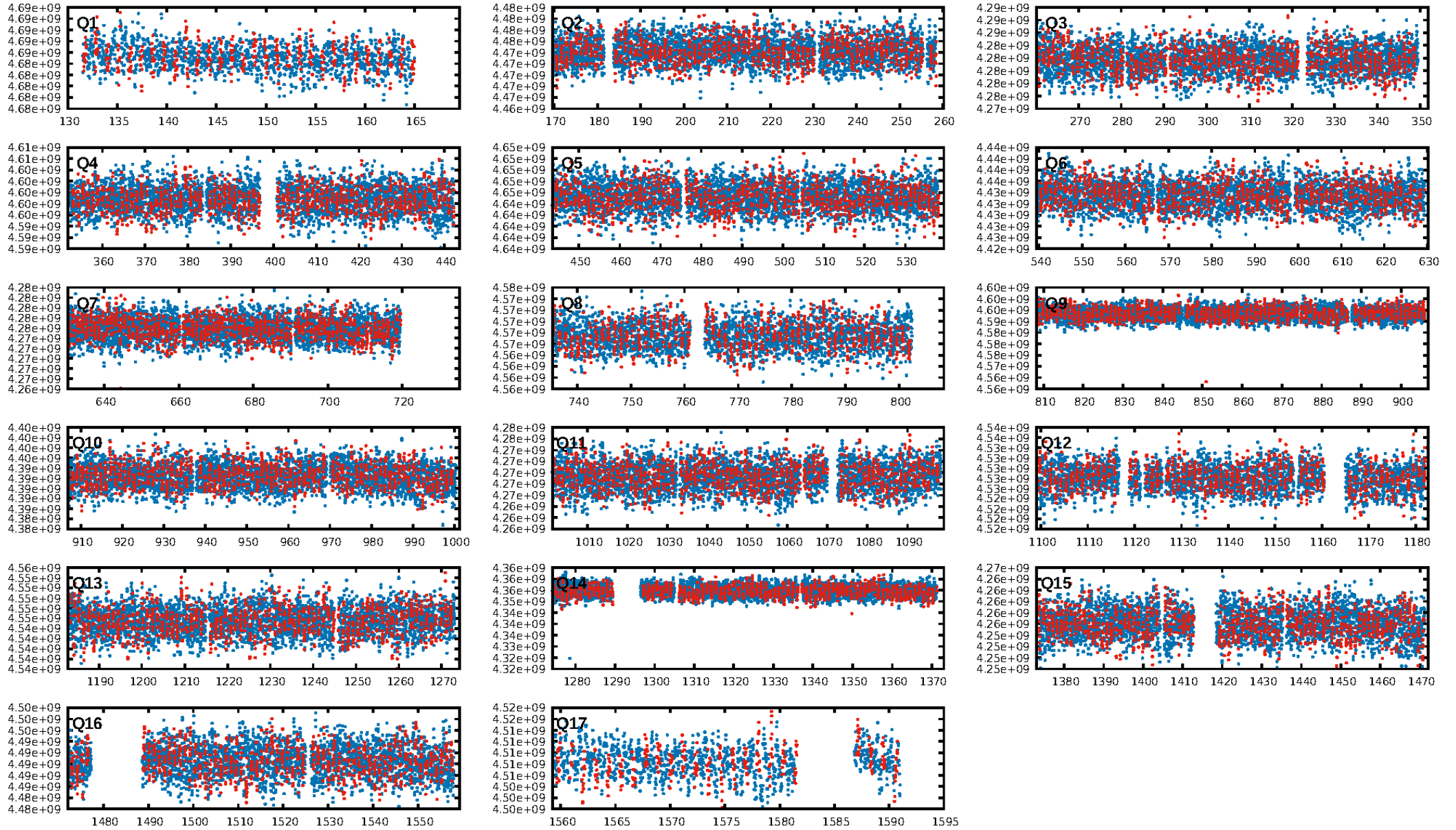
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.71 σ]
LongPeriod-sig: 100.0% [22.46 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [1064/1123]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 1.290 arcsec [1.66 σ]
OotOffset-rm: 14.487 arcsec [5.21 σ]
KicOffset-rm: 15.502 arcsec [5.35 σ]
OotOffset-st: 4/2/3/4 [13]
KicOffset-st: 4/2/3/4 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 0.00 [0/17]

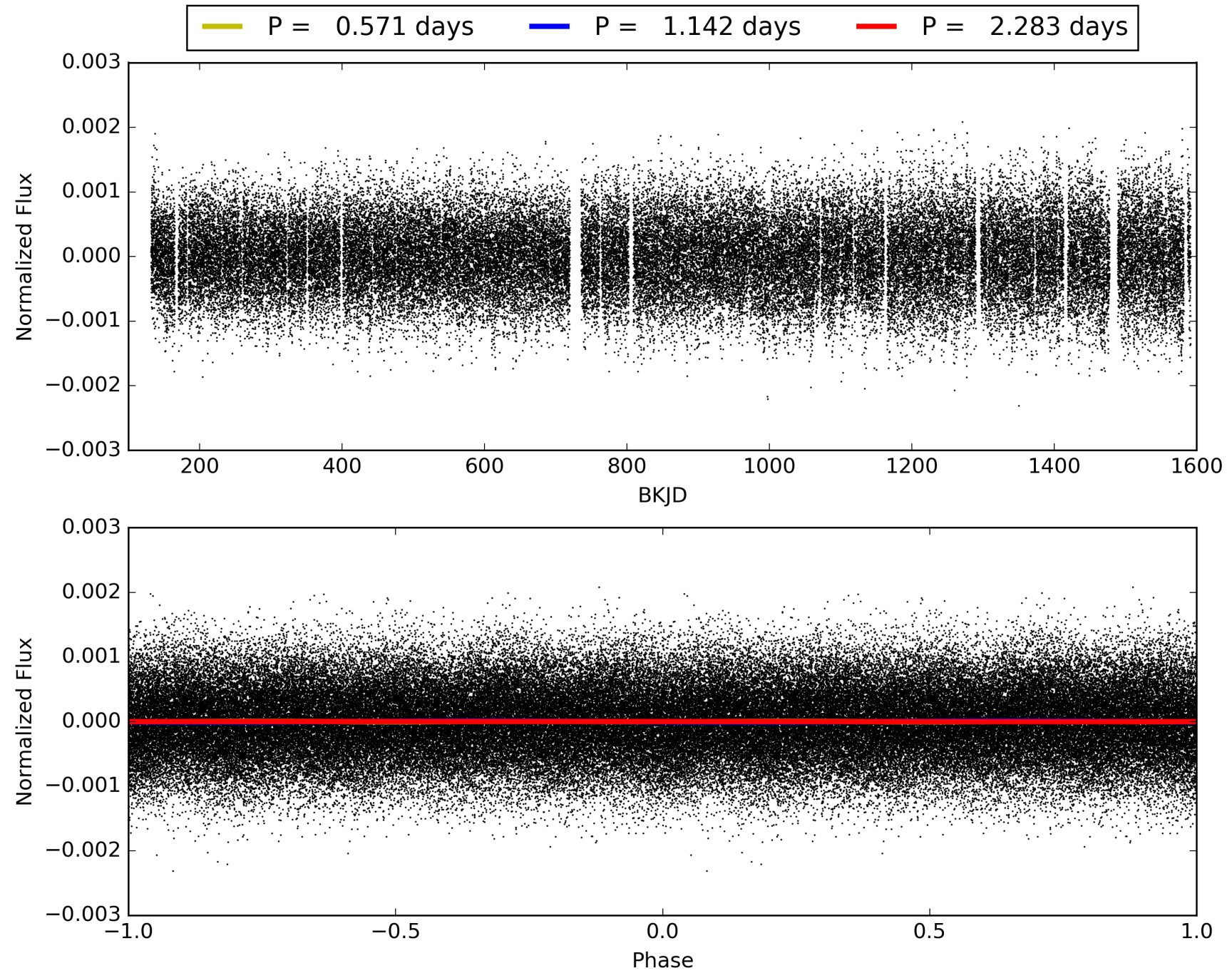
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:10:58 Z

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

TCE 005219533-01, PDC Light Curves

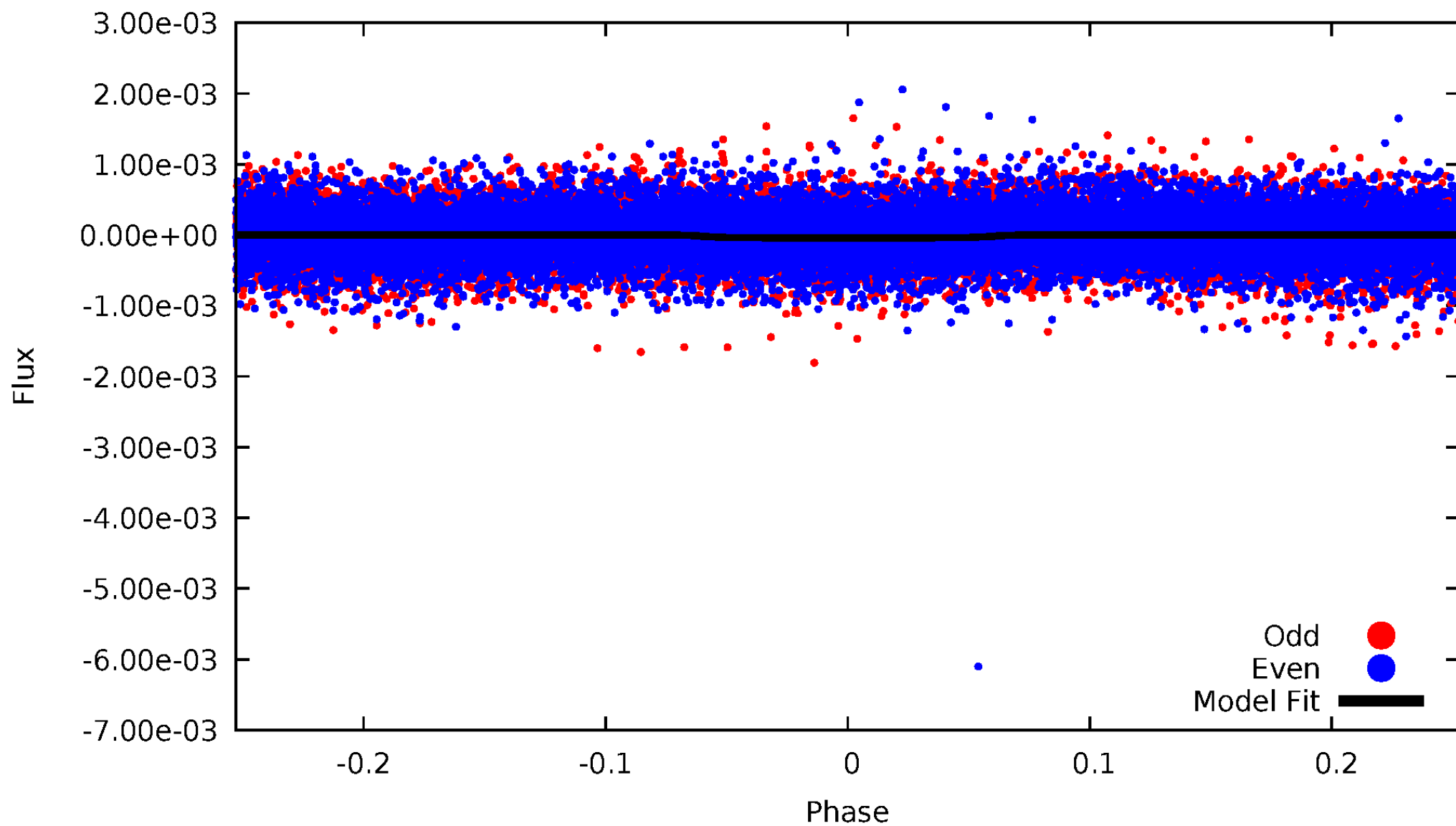


TCE 005219533-01



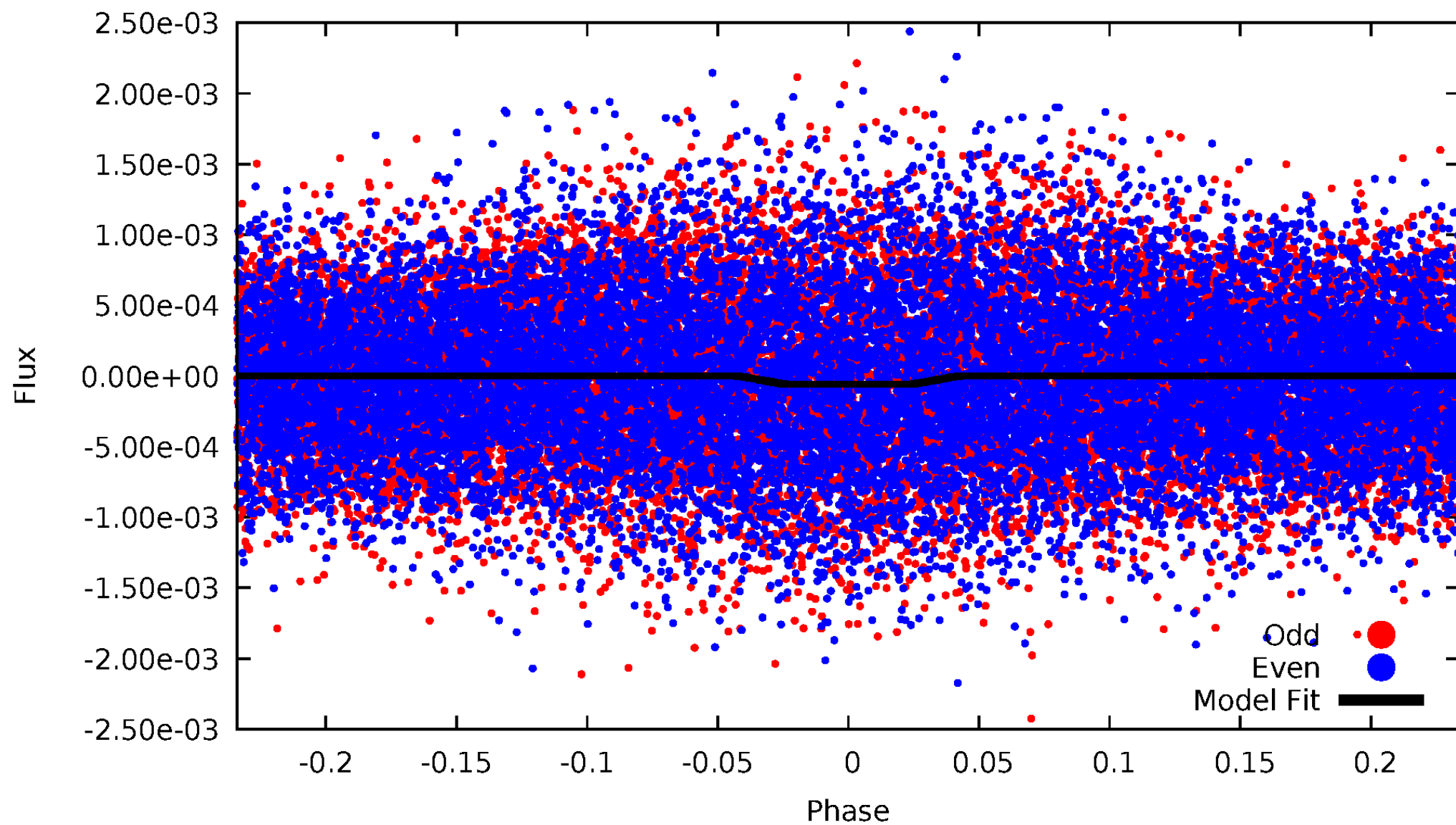
DV Odd/Even

TCE 005219533-01

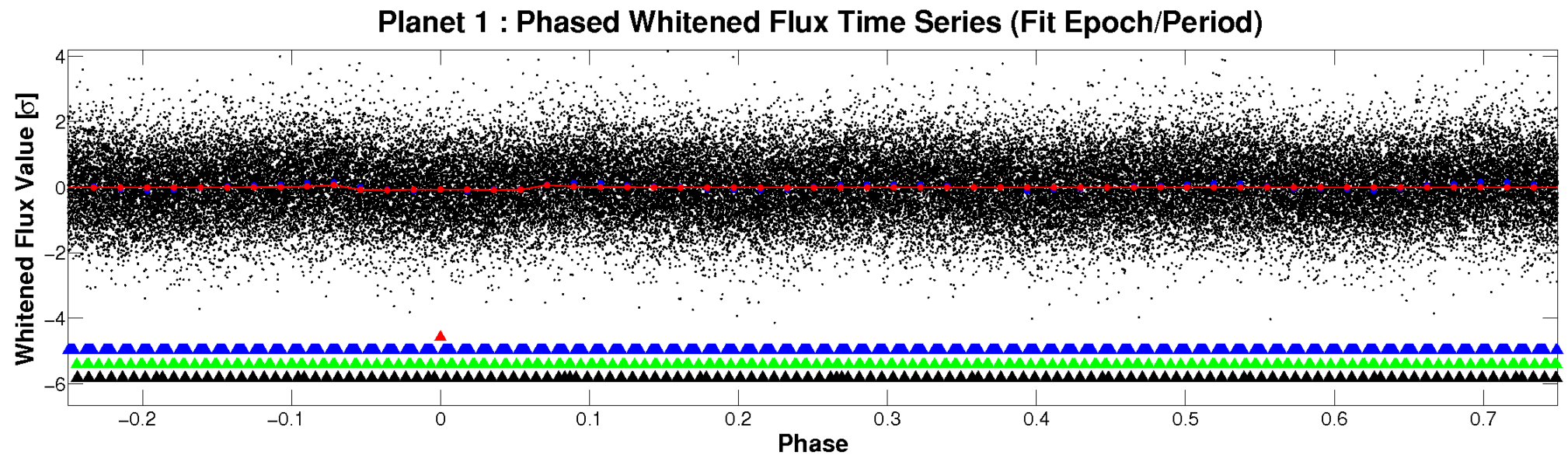
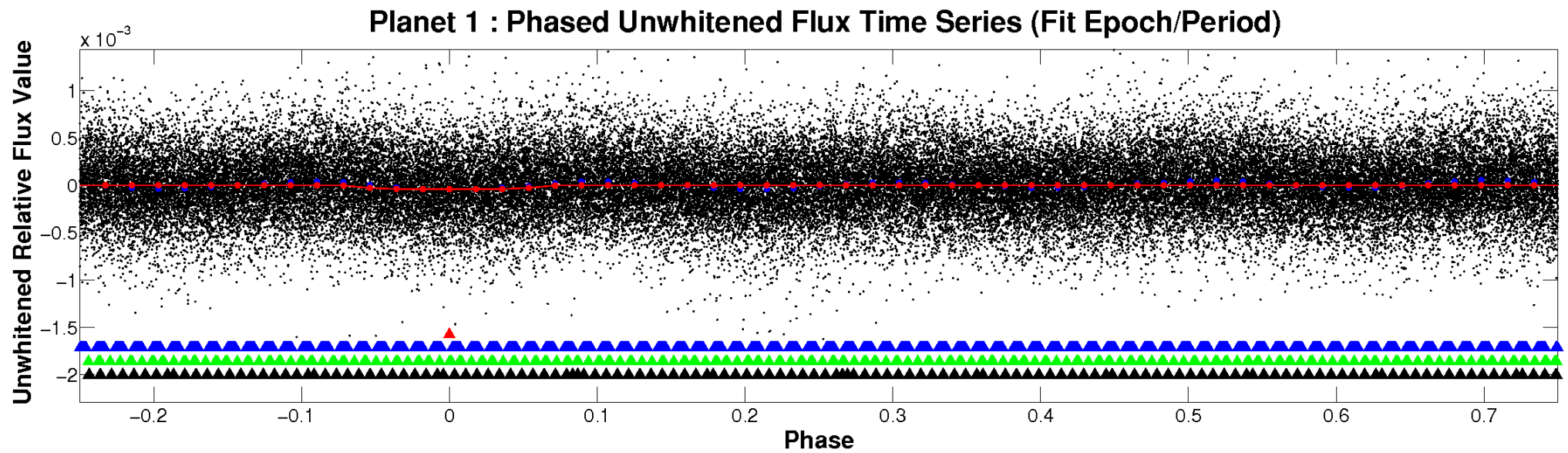


ALT Odd/Even

TCE 005219533-01

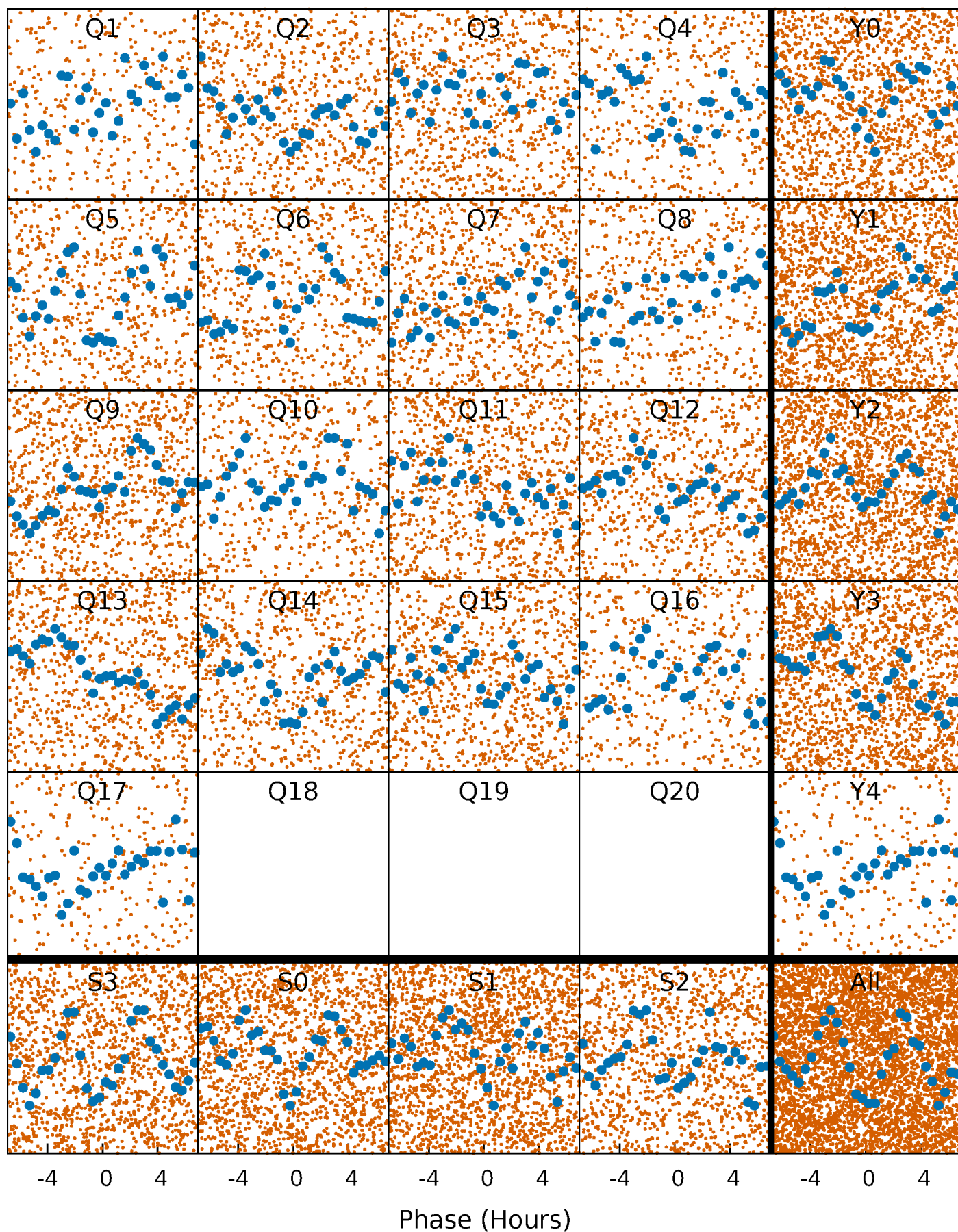


Non-Whitened Vs. Whitened Light Curve



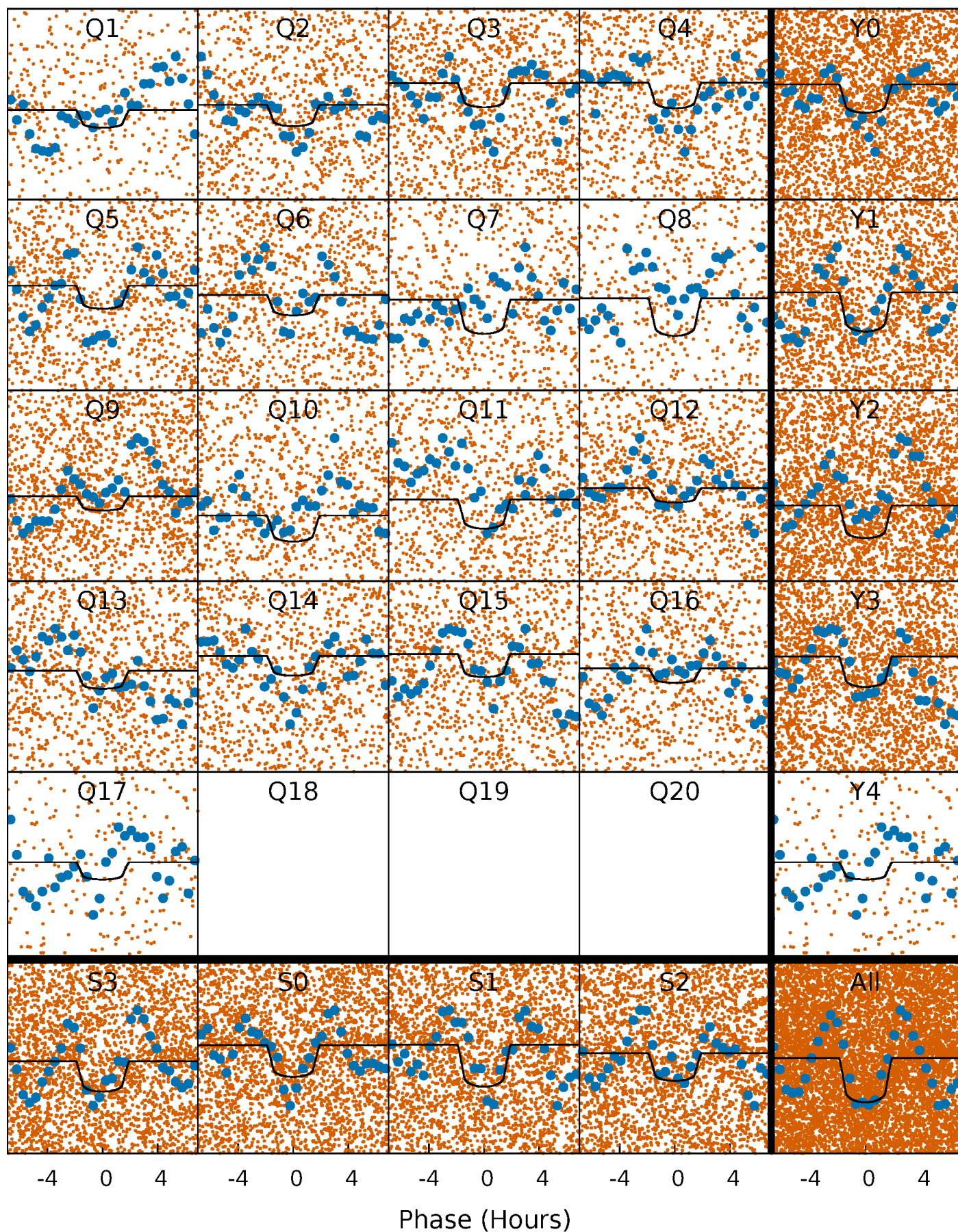
PDC Quarter-Phased Transit Curves

TCE 005219533-01 P= 1.141550 Days $T_0=131.719290$ (BKJD)



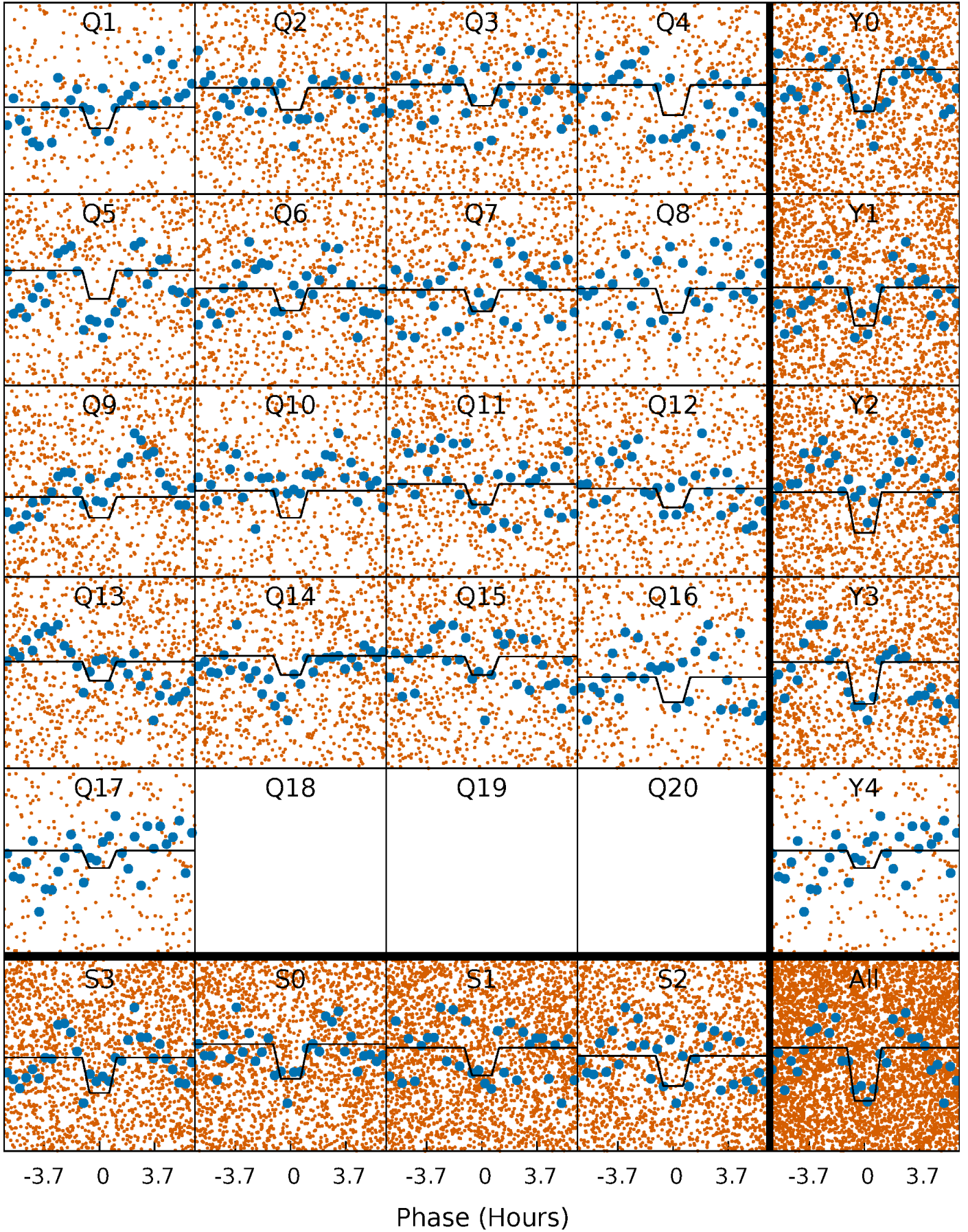
DV Quarter-Phased Transit Curves

TCE 005219533-01 P= 1.141550 Days $T_0=131.719290$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

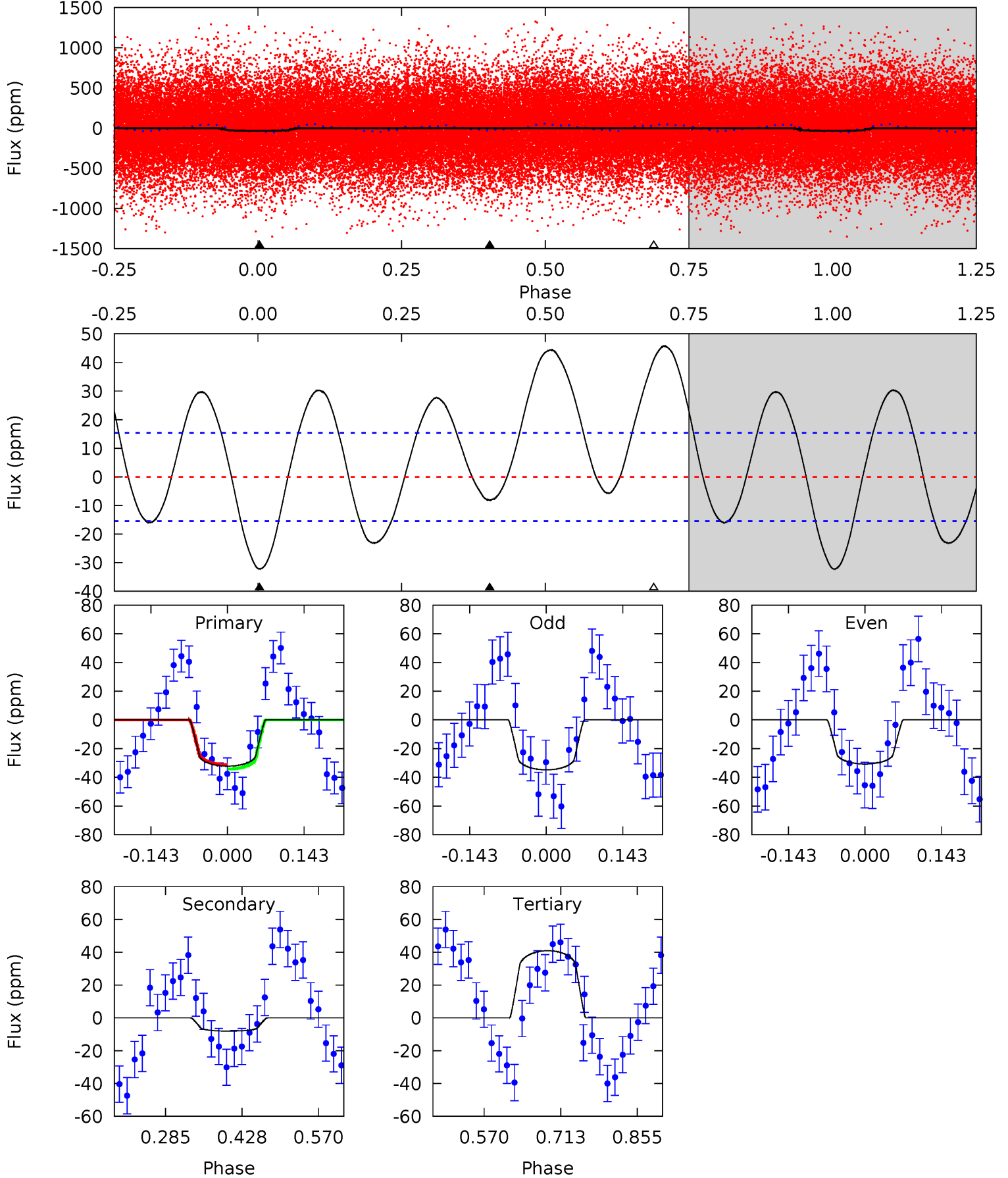
TCE 005219533-01 P= 1.141574 Days $T_0=131.708015$ (BKJD)



DV Model-Shift Uniqueness Test

005219533-01, P = 1.141550 Days, E = 130.577740 Days

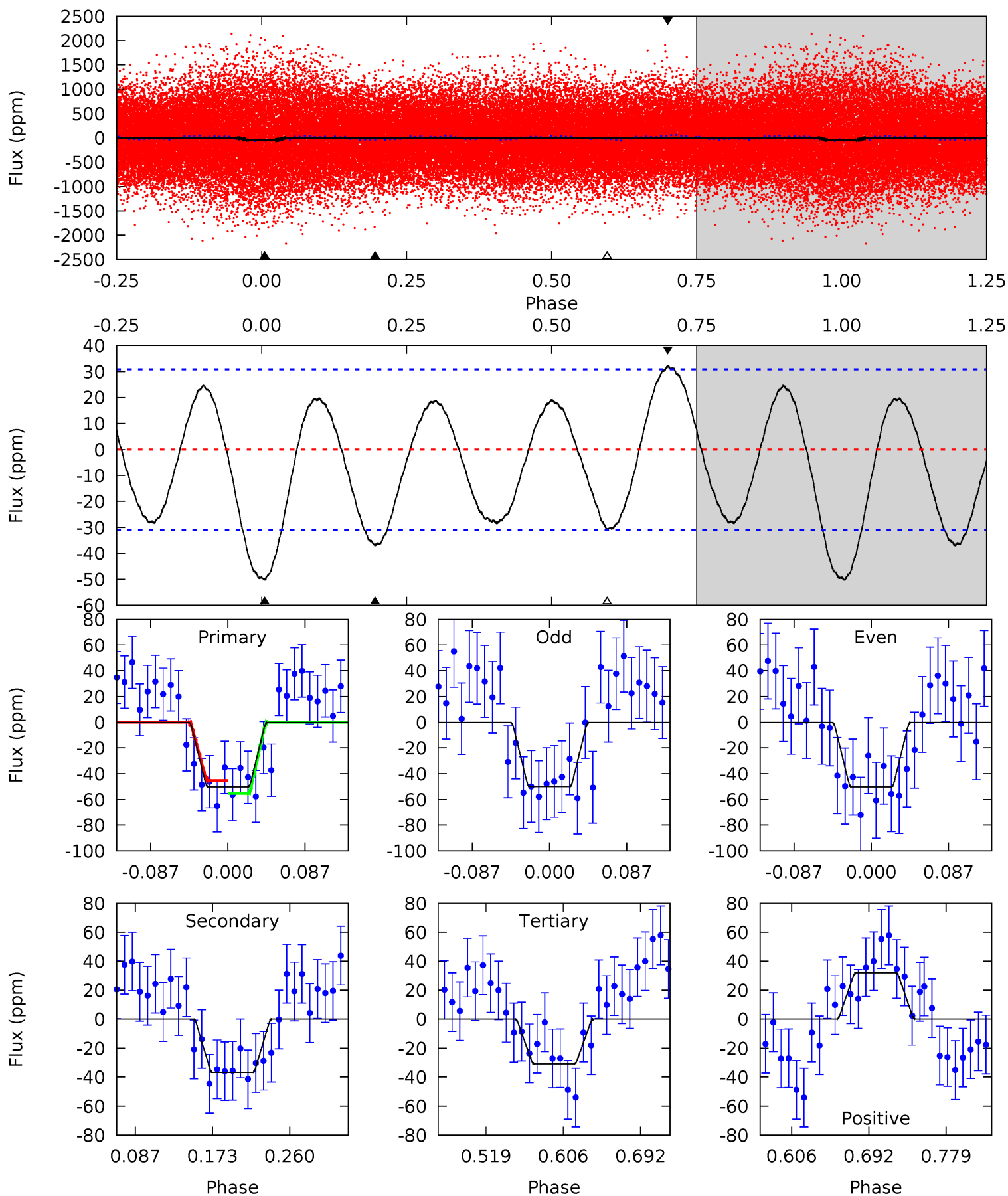
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.39	2.36	-11.9	0	4.49	1.47	5.94	21.3	9.39	14.3	2.36	0.60	1.13	0.59	0.46



Alt Model-Shift Uniqueness Test

005219533-01, P = 1.141574 Days, E = 130.566441 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.48	5.49	4.58	4.77	4.60	1.71	2.87	2.90	2.72	0.91	0.73	0.01	0.86	0.39	0.74



Stellar Parameters For KIC 005219533

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	7657^{+211}_{-343}	$3.868^{+0.308}_{-0.103}$	$0.020^{+0.200}_{-0.350}$	$2.684^{+0.433}_{-1.011}$	$1.938^{+0.083}_{-0.471}$	$0.141^{+0.325}_{-0.046}$
	+3%/-4%	+8%/-3%	+1000%/-1750%	+16%/-38%	+4%/-24%	+230%/-33%
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 005219533-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-8 ± 3	$1.86^{+0.46}_{-0.48}$	4624^{+301}_{-434}	4478^{+781}_{-951}	$0.861^{+0.778}_{-0.426}$
Alt.	-37 ± 7	$2.10^{+0.49}_{-0.48}$	4637^{+292}_{-503}	6461^{+792}_{-660}	$3.103^{+2.104}_{-1.088}$

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 $A_{obs} \gg 1.0$

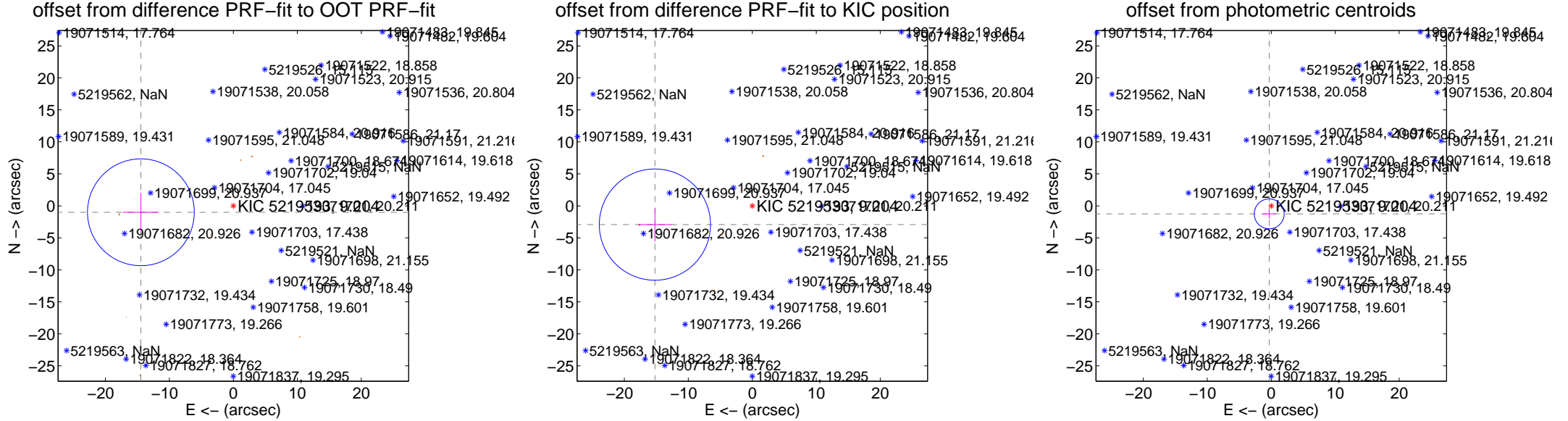
DV Centroid Data

Supplemental centroid analysis for 005219533-01. **Kepler magnitude: 9.20.** Transit SNR 8.16

There are 2 quarters with good PRF difference image offsets

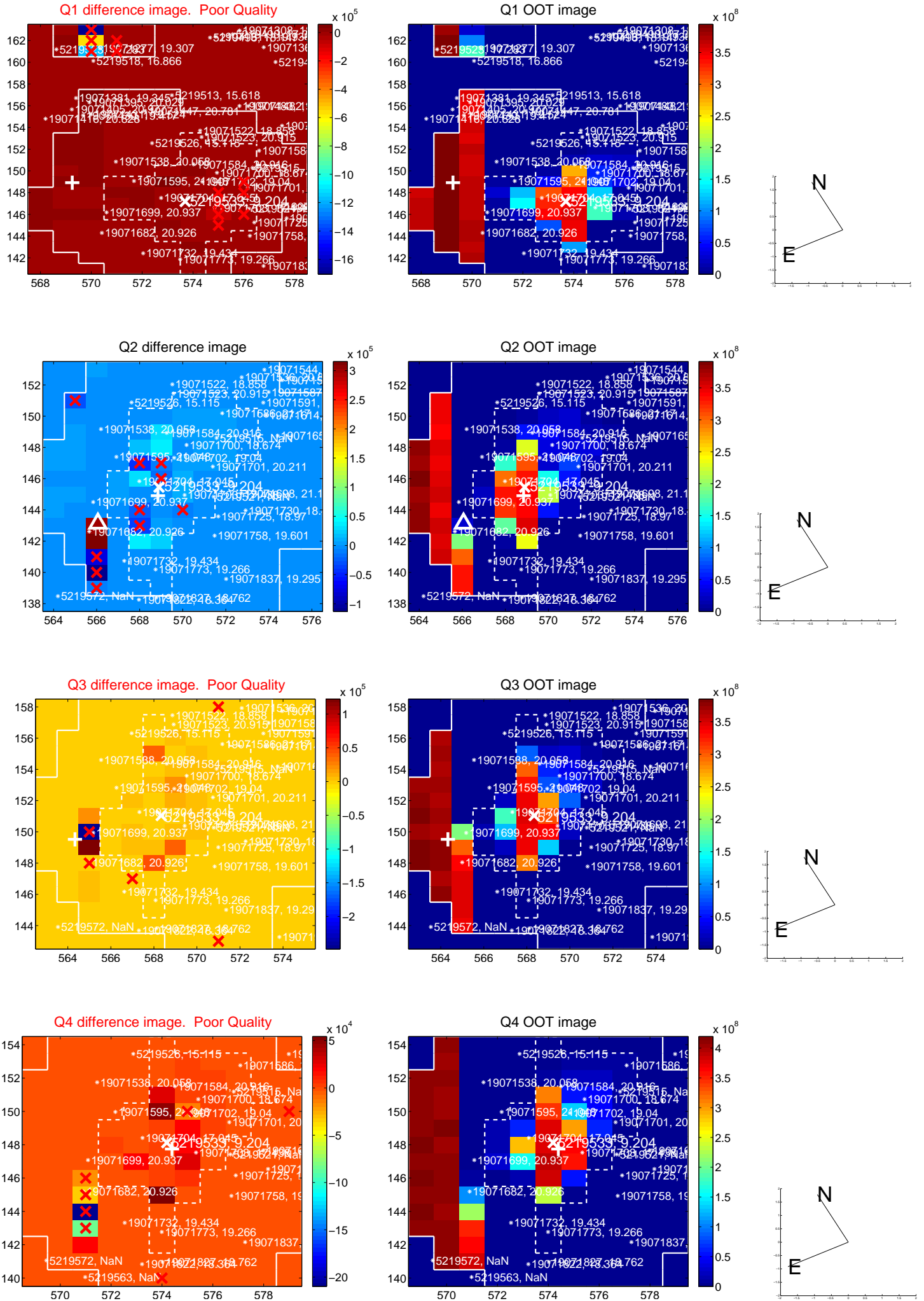
The OOT PRF centroid is offset from the target star catalog position by about 17.86 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	14.487 ± 2.782	5.21	14.452 ± 2.799	-1.001 ± 3.038
PRF-fit source offset from KIC position	15.502 ± 2.897	5.35	15.223 ± 2.601	-2.927 ± 2.652
photometric centroid source offset	1.29 ± 0.78	1.66	0.32 ± 1.05	-1.25 ± 0.76

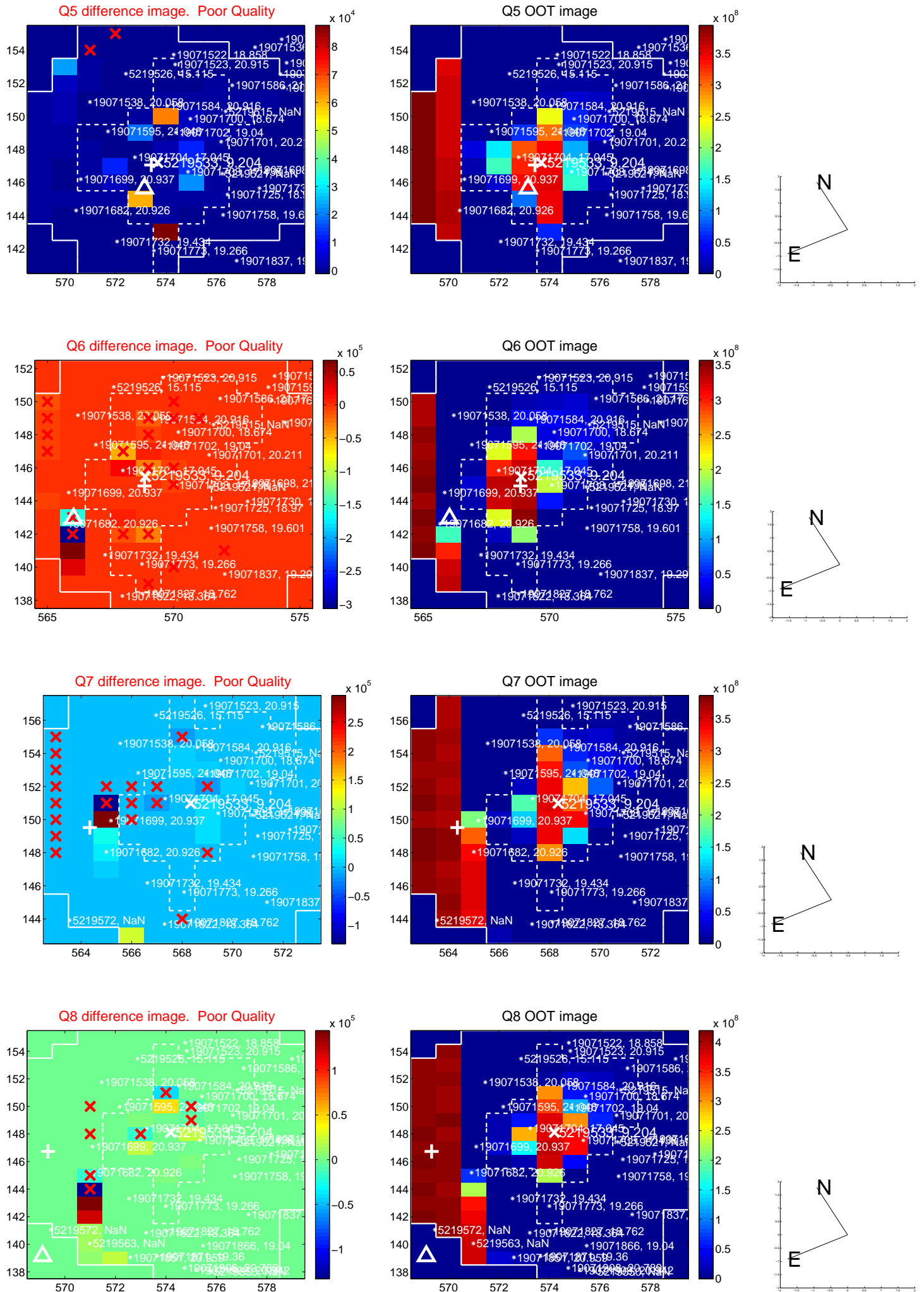


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

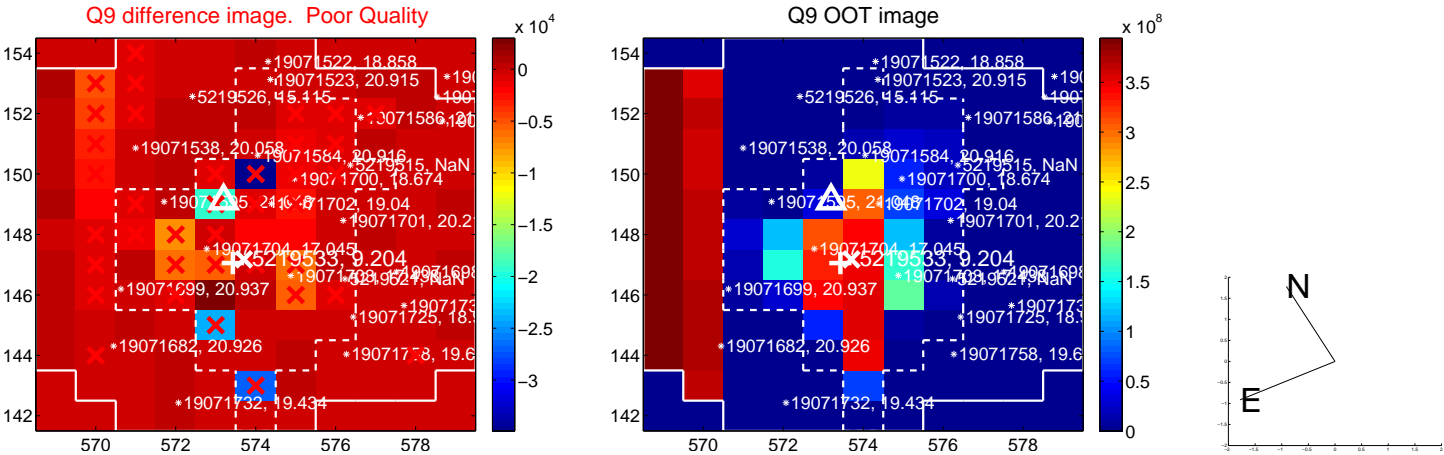
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



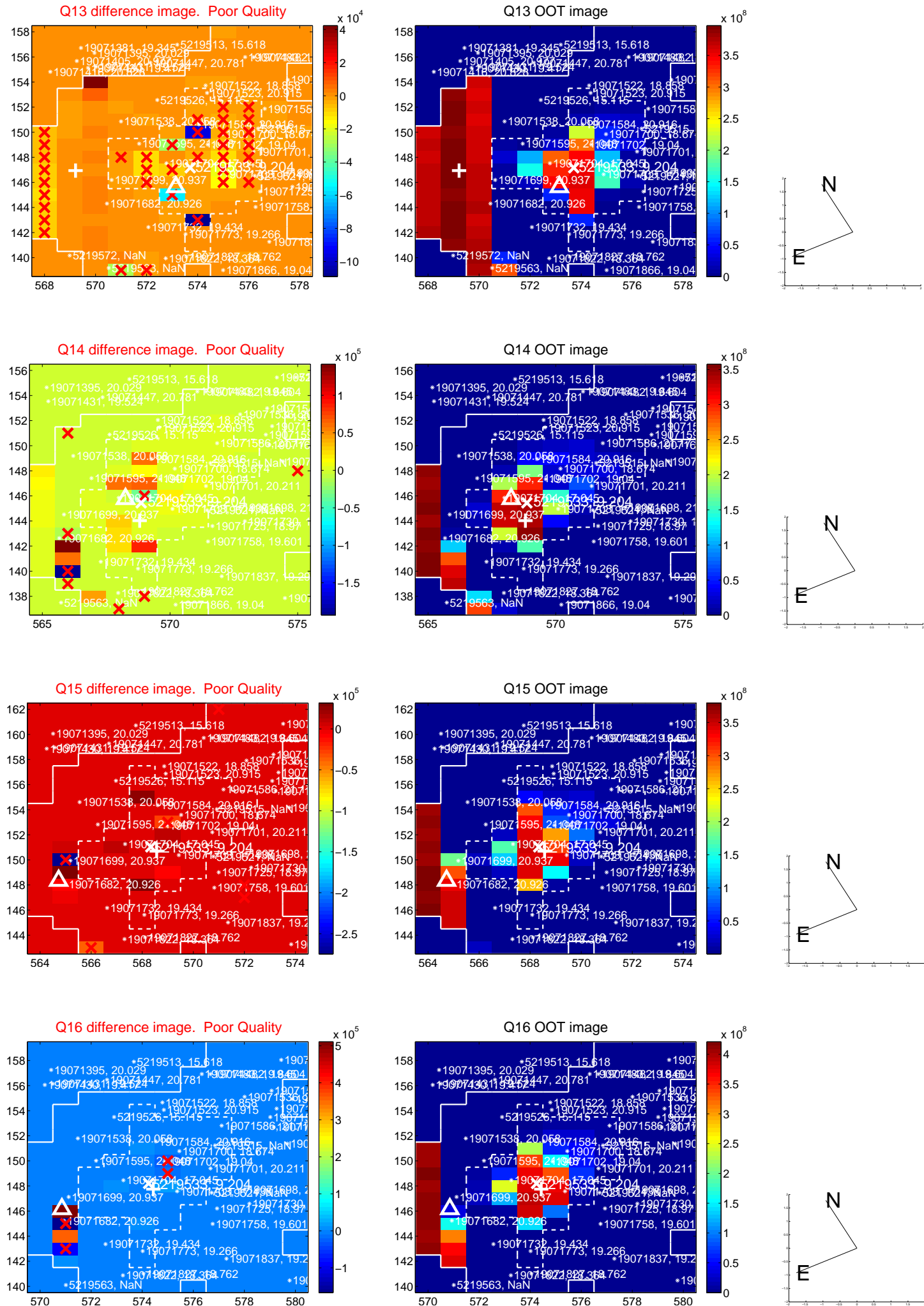
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



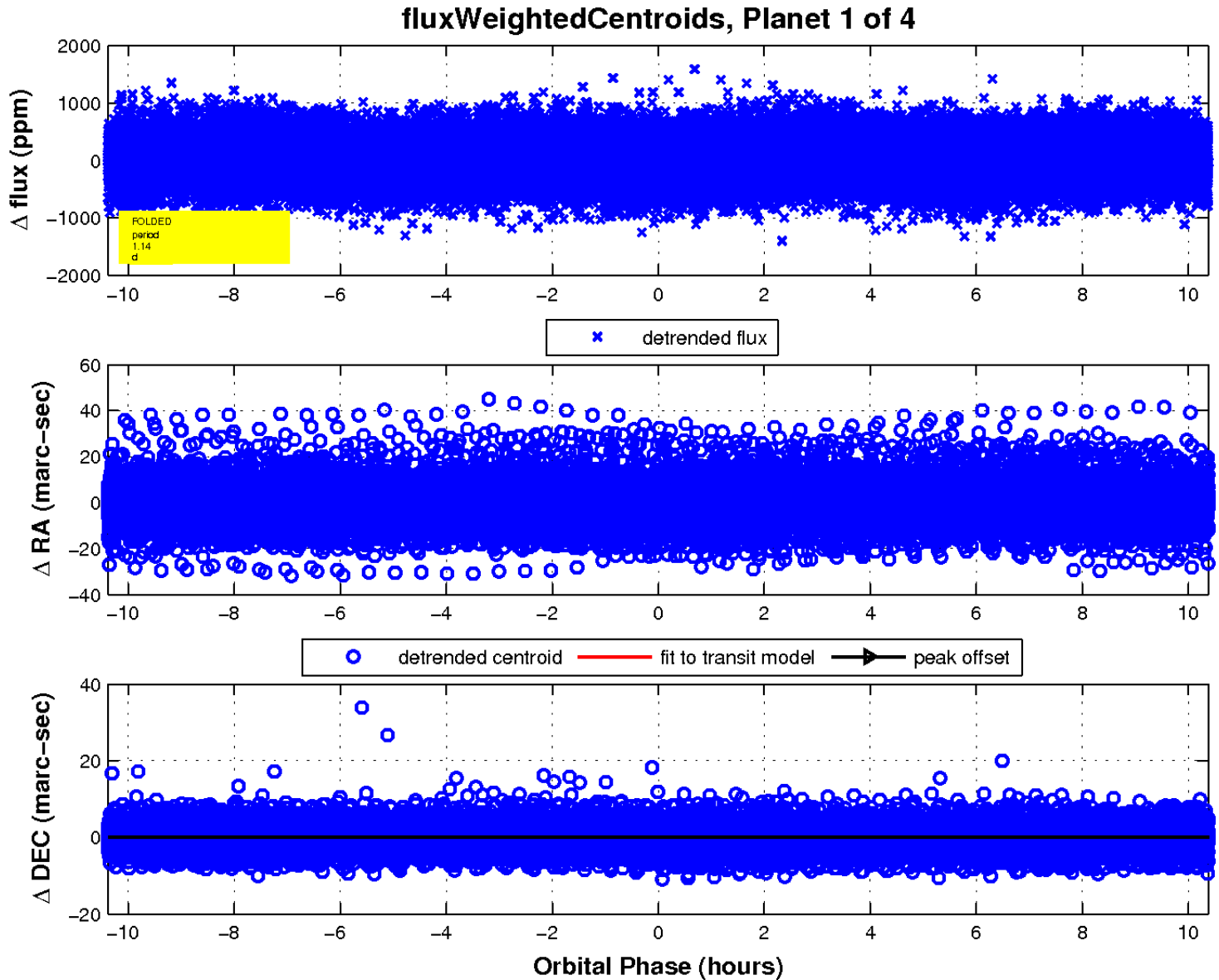
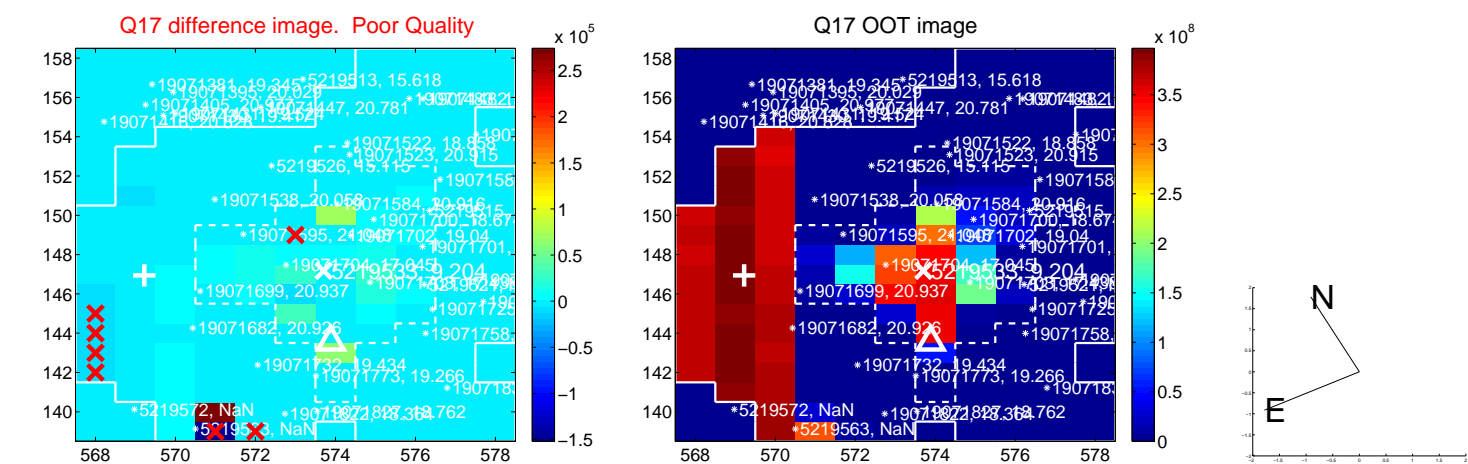
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



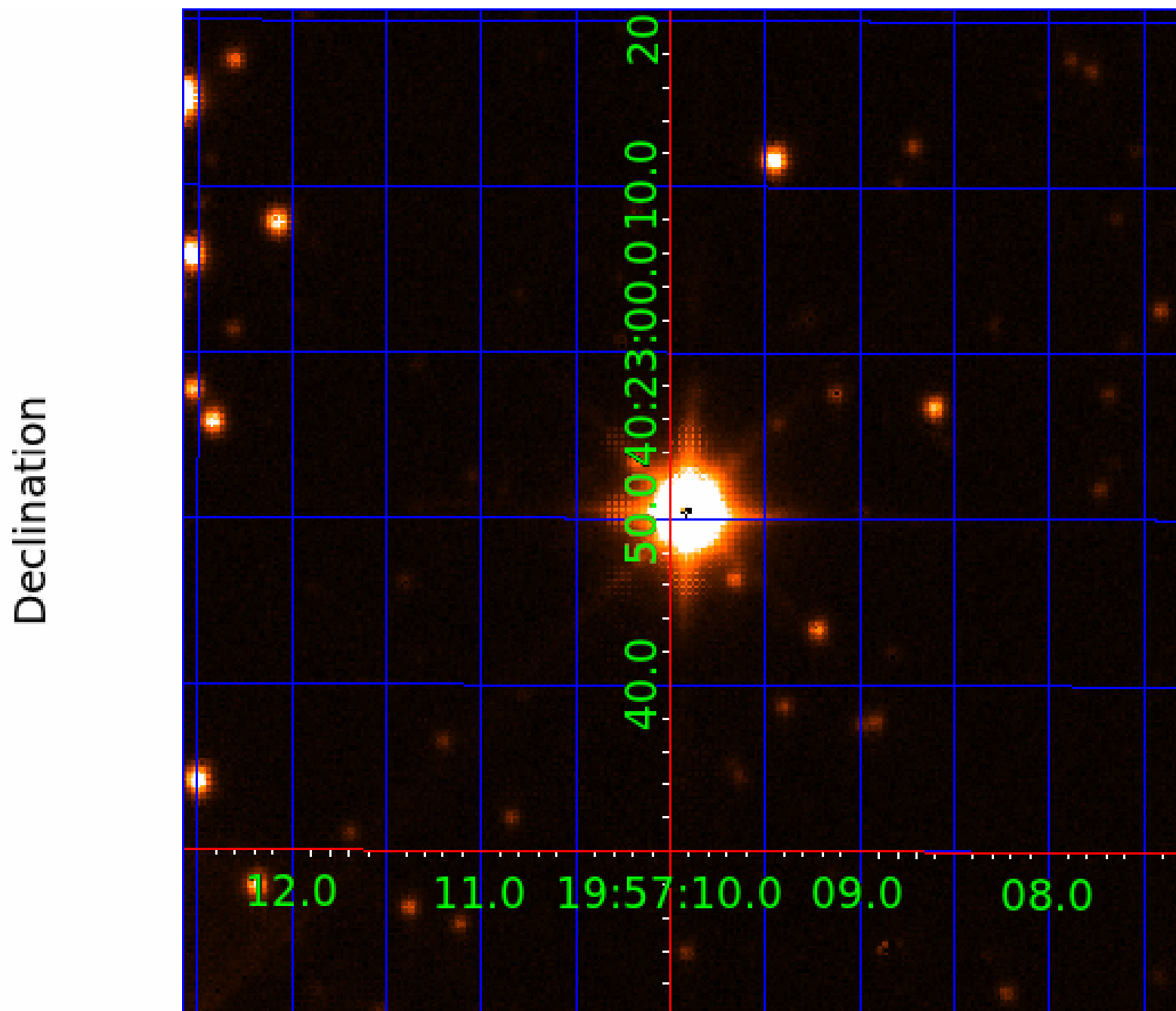
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 005219533

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})
005219533-01	OBS	No	1.141550	131.719290	41.6	3.462	9.6	8.2	2.68	7657	2.01	31212.17
005219533-02	OBS	No	0.549102	131.663530	41.0	1.649	9.6	9.7	2.68	7657	1.99	82815.72
005219533-03	OBS	No	6.643976	134.275102	118.5	4.752	7.8	7.1	2.68	7657	3.37	2981.35
005219533-04	OBS	No	10.482292	140.946912	193.2	4.401	7.7	7.6	2.68	7657	4.61	1623.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005219533-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005219533-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

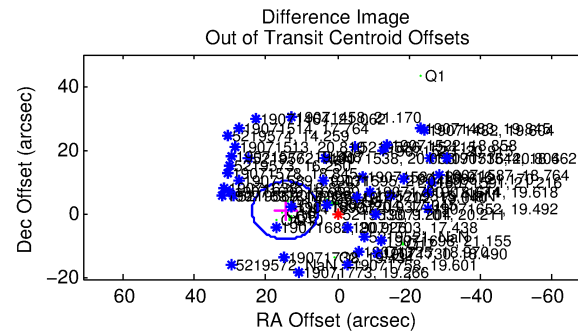
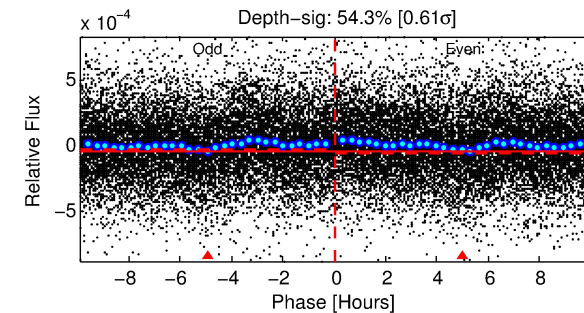
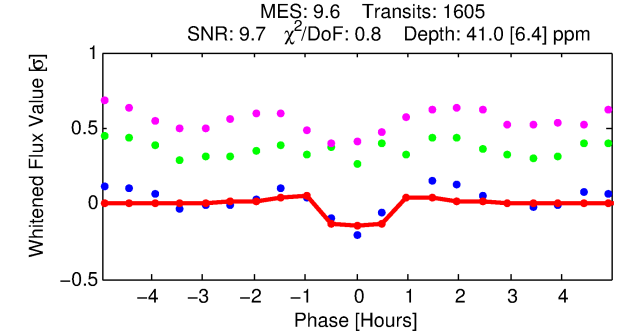
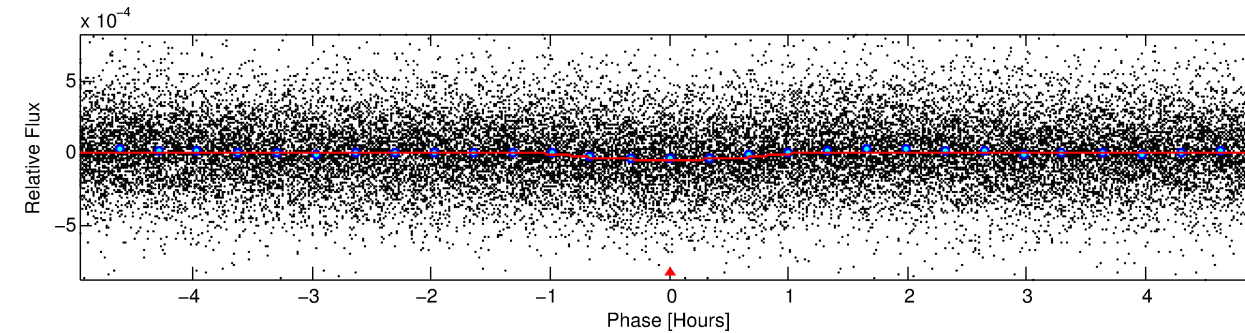
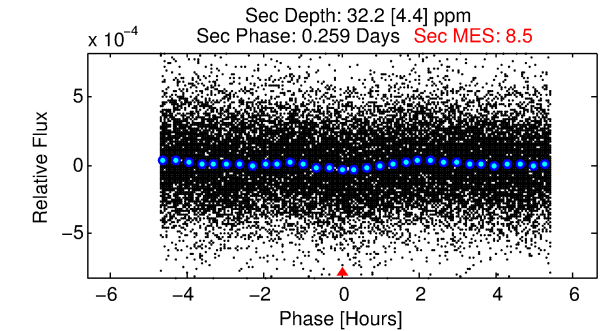
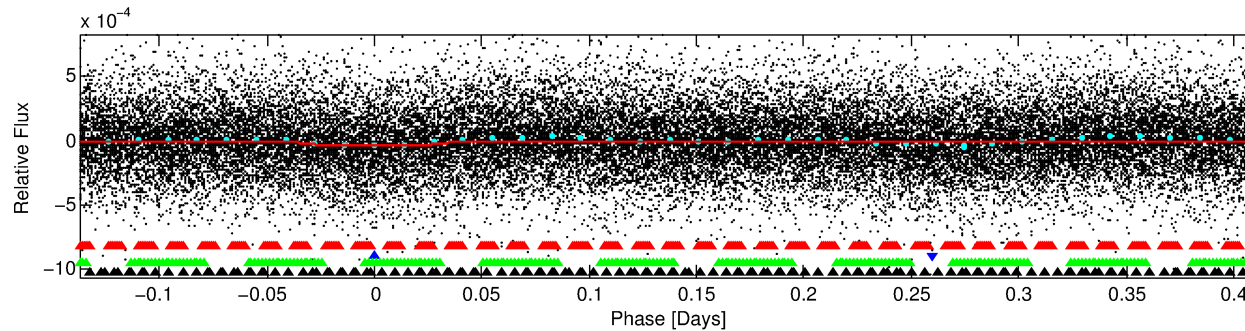
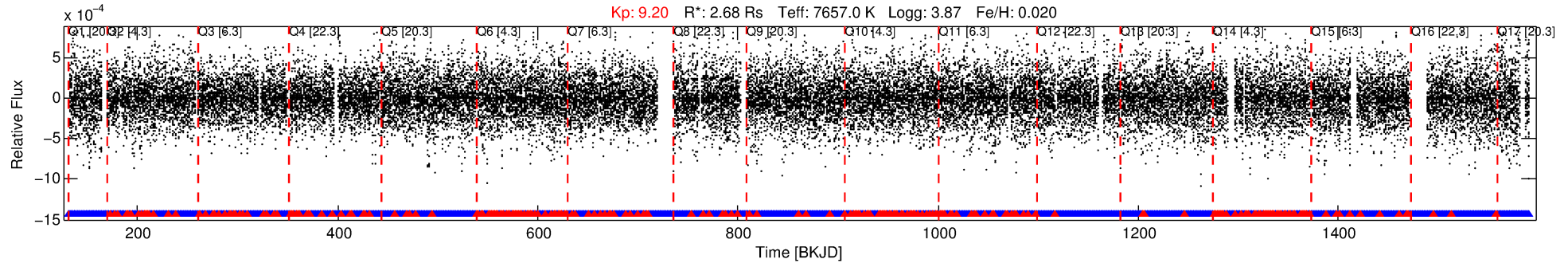
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005219533-02

No Significant Match Found

DV One-Page Summary

KIC: 5219533 Candidate: 2 of 4 Period: 0.549 d



DV Fit Results:

Period = 0.54910 [0.00001] d
Epoch = 131.6635 [0.0016] BKJD
Rp/R* = 0.0068 [0.0019]
a/R* = 1.50 [1.41]
b = 0.89 [0.38]
Seff = 82815.72 [46752.68]
Teq = 4326 [611] K
Rp = 1.99 [0.93] Re
a = 0.0164 [0.0056] AU
Ag = 1.20 [0.93] [0.21σ]
Teff = 6998 [1036] K [2.22σ]

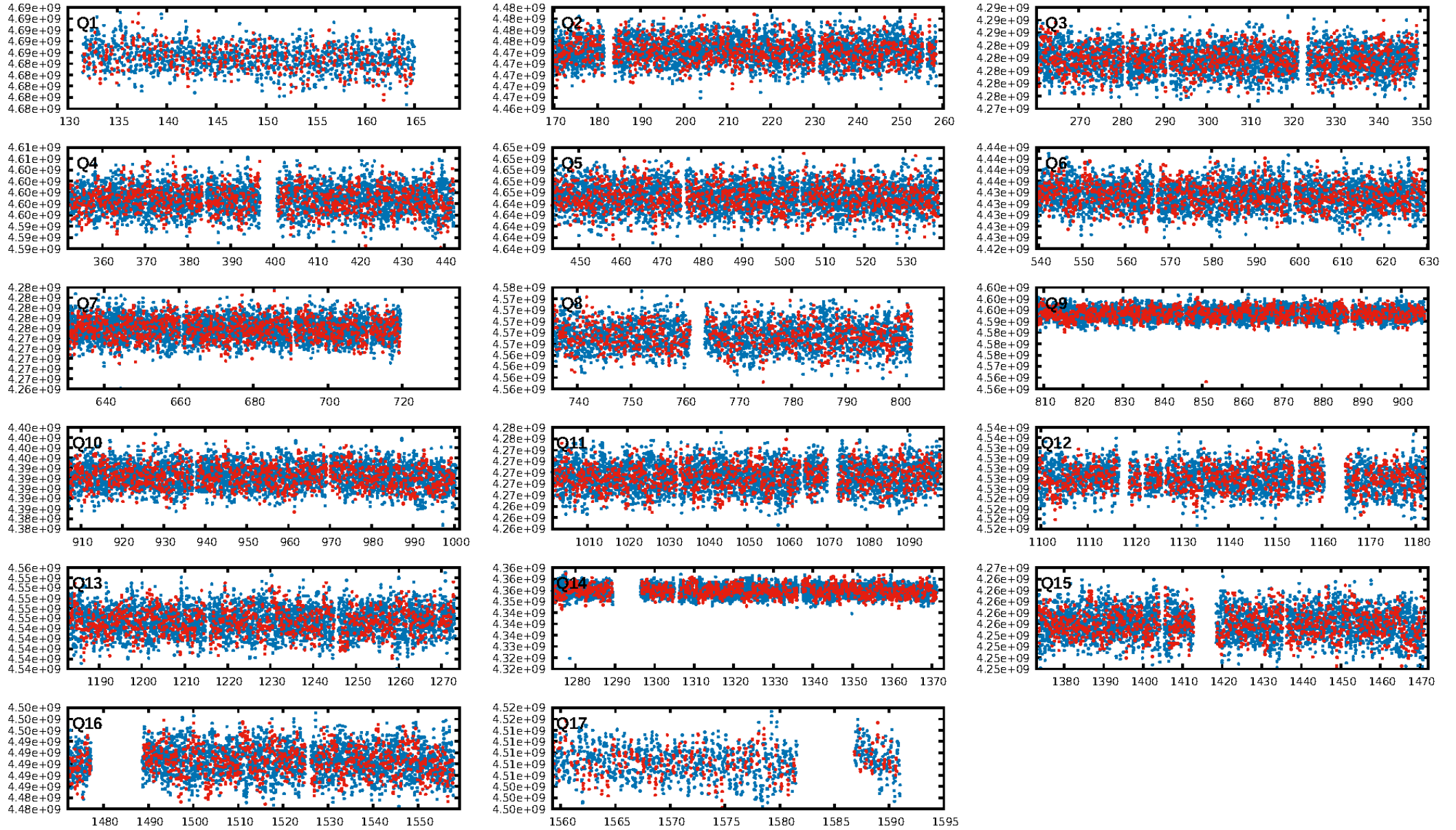
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [3.71σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.82 [1264/1537]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.870 arcsec [1.09σ]
OotOffset-rm: 14.610 arcsec [4.77σ]
KicOffset-rm: 15.327 arcsec [6.09σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
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DiffImageOverlap-fno: 1.00 [17/17]

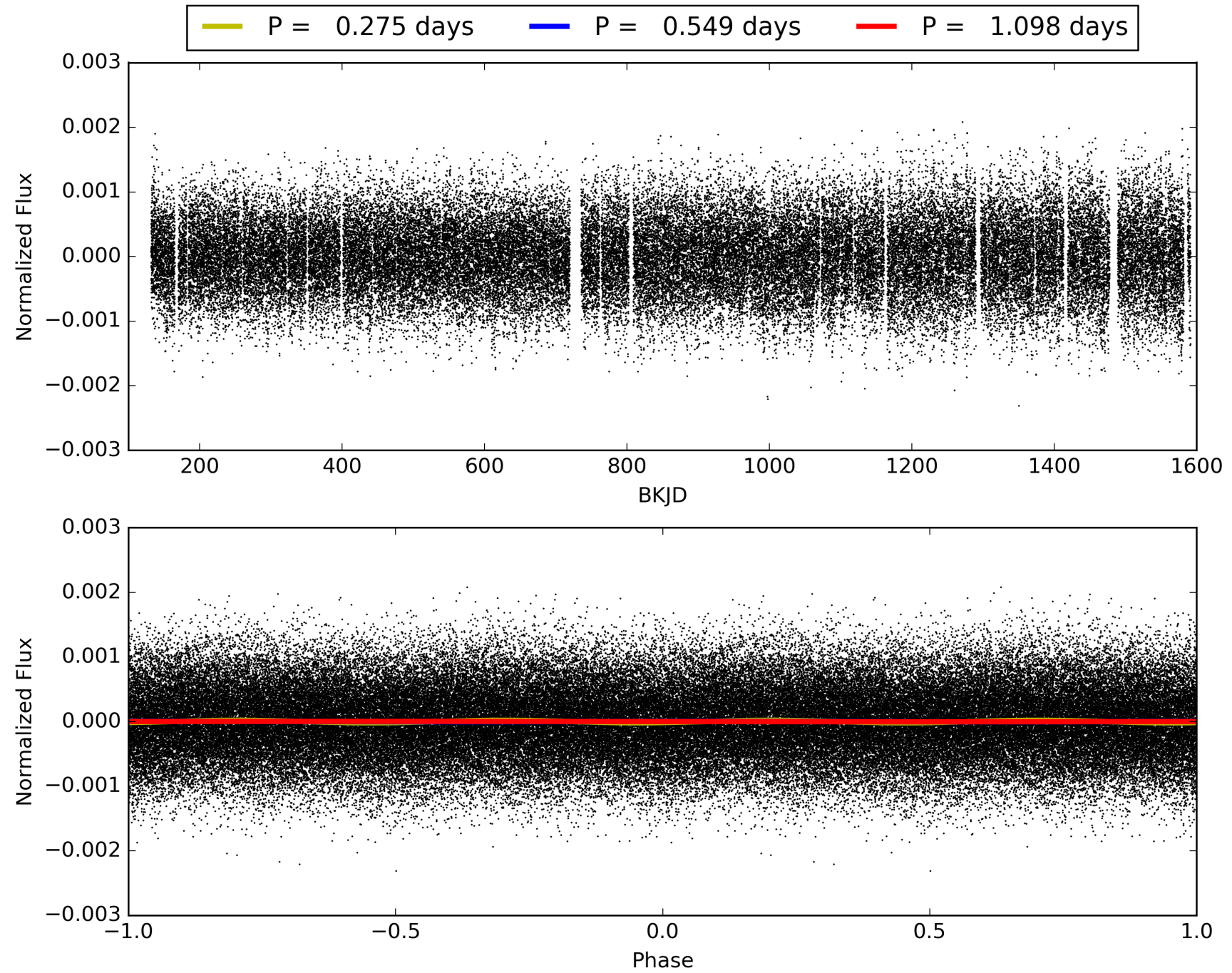
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:11:09 Z

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

TCE 005219533-02, PDC Light Curves

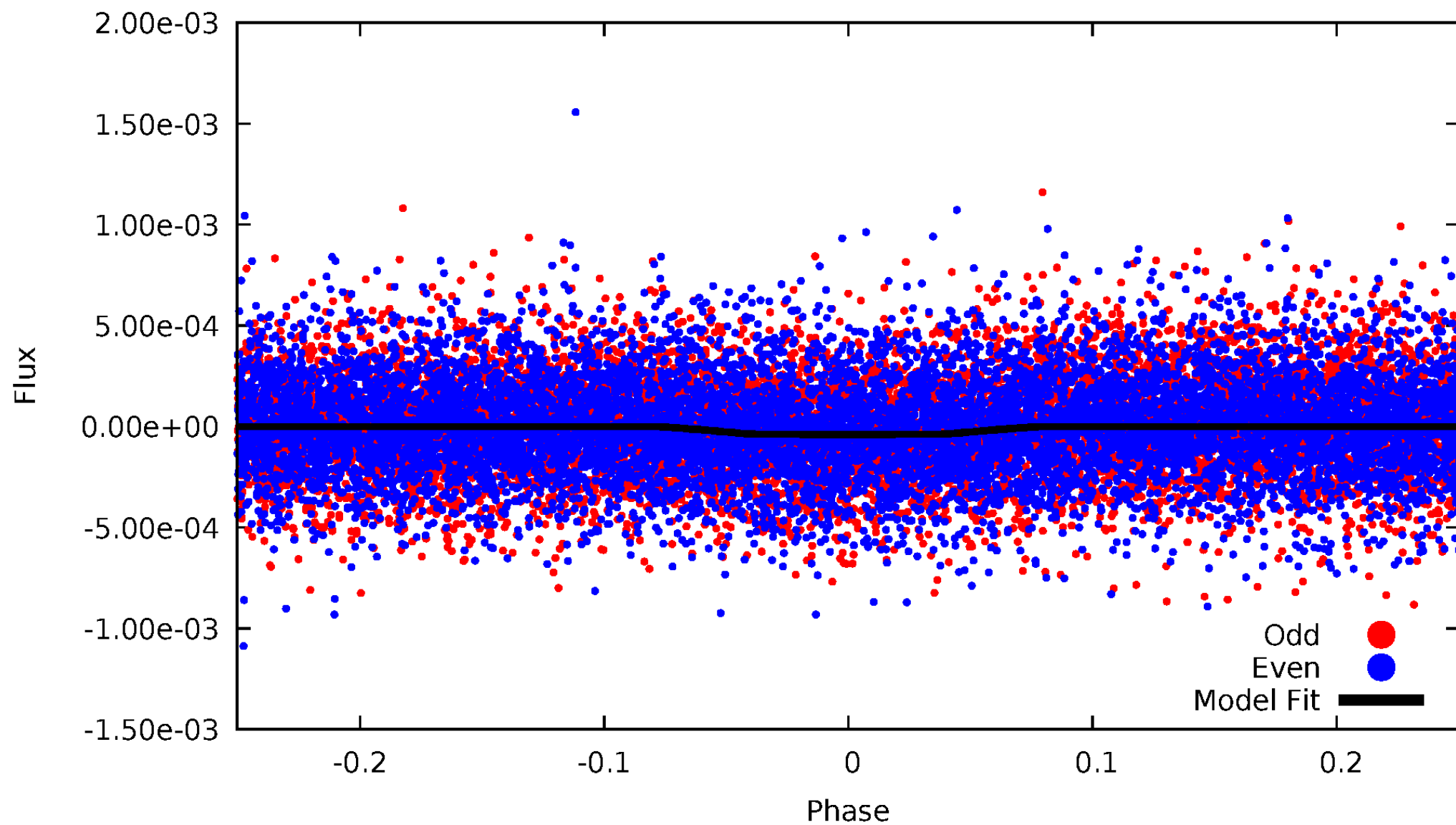


TCE 005219533-02



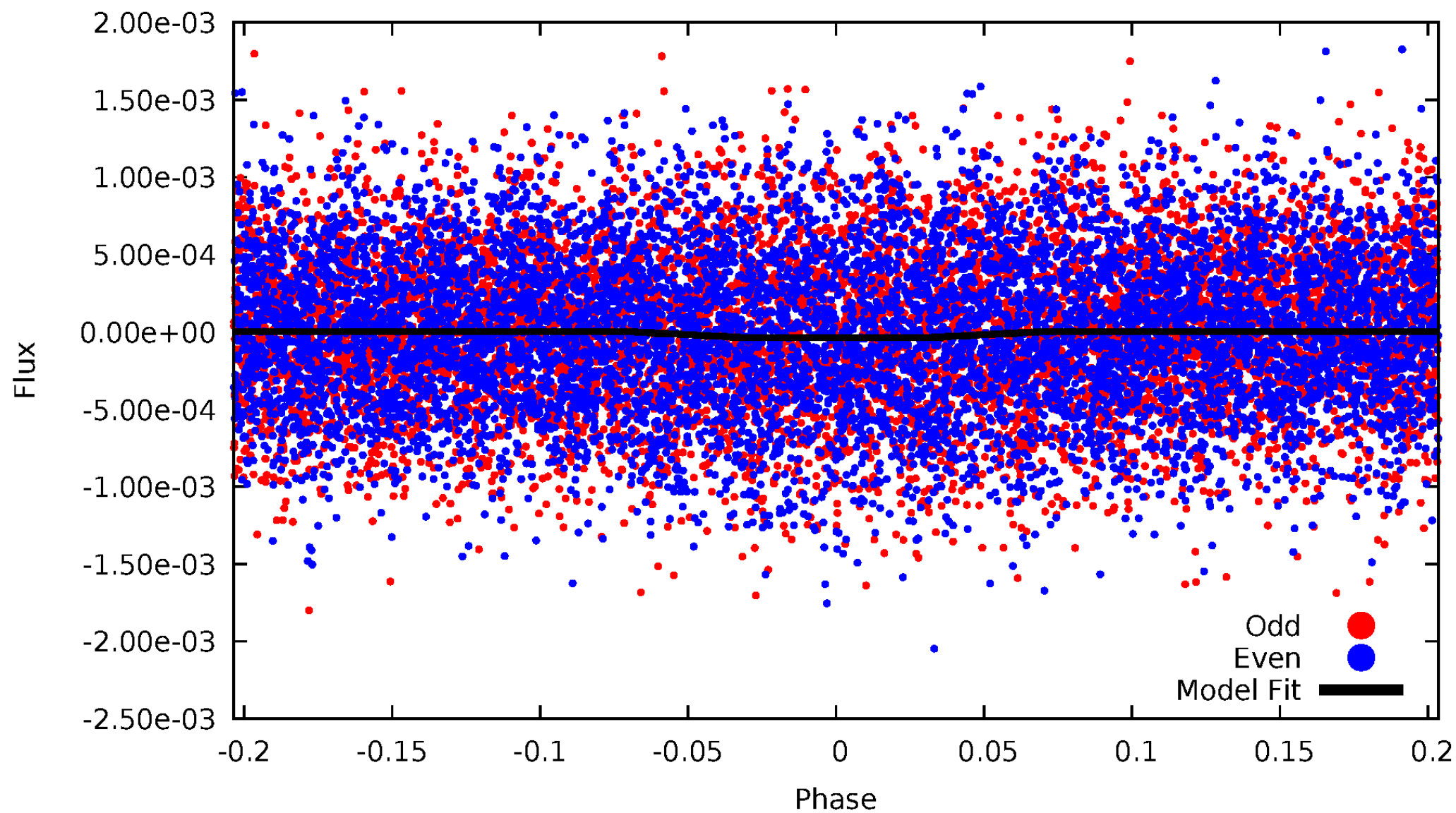
DV Odd/Even

TCE 005219533-02



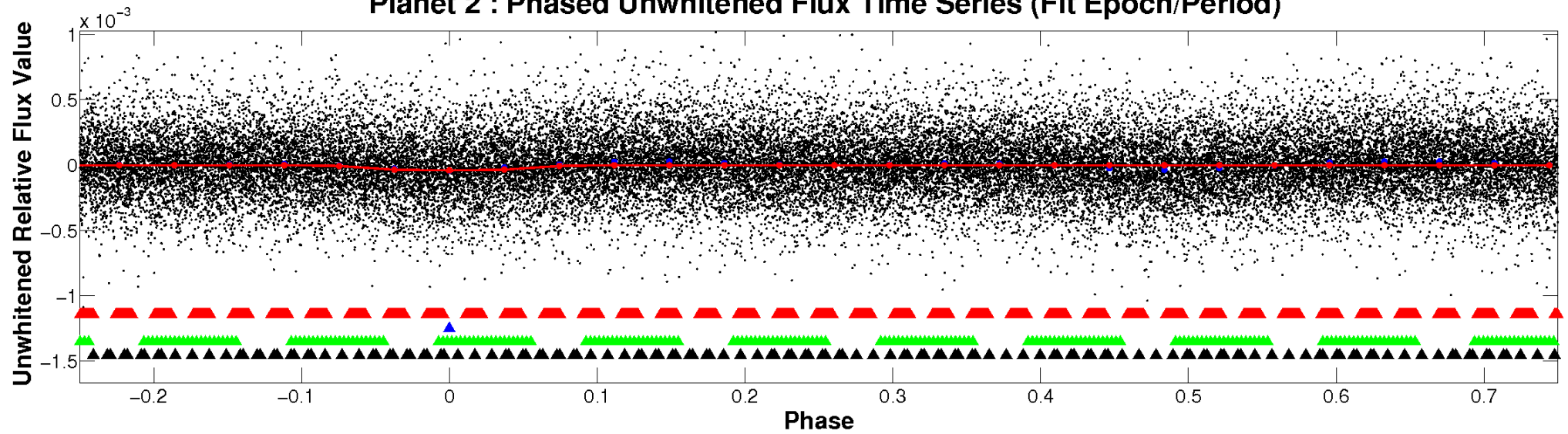
ALT Odd/Even

TCE 005219533-02

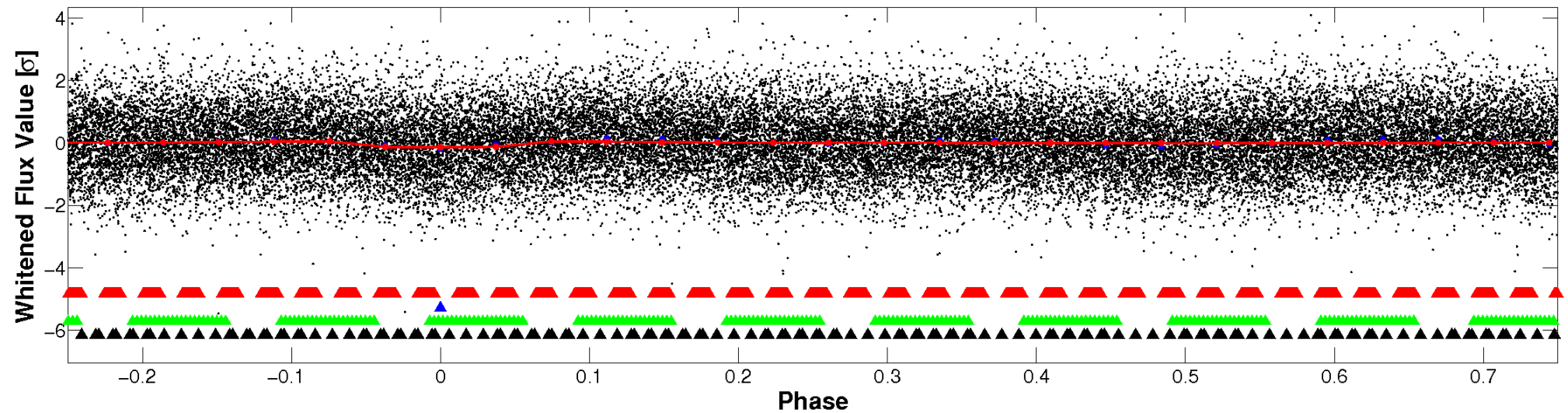


Non-Whitened Vs. Whitened Light Curve

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

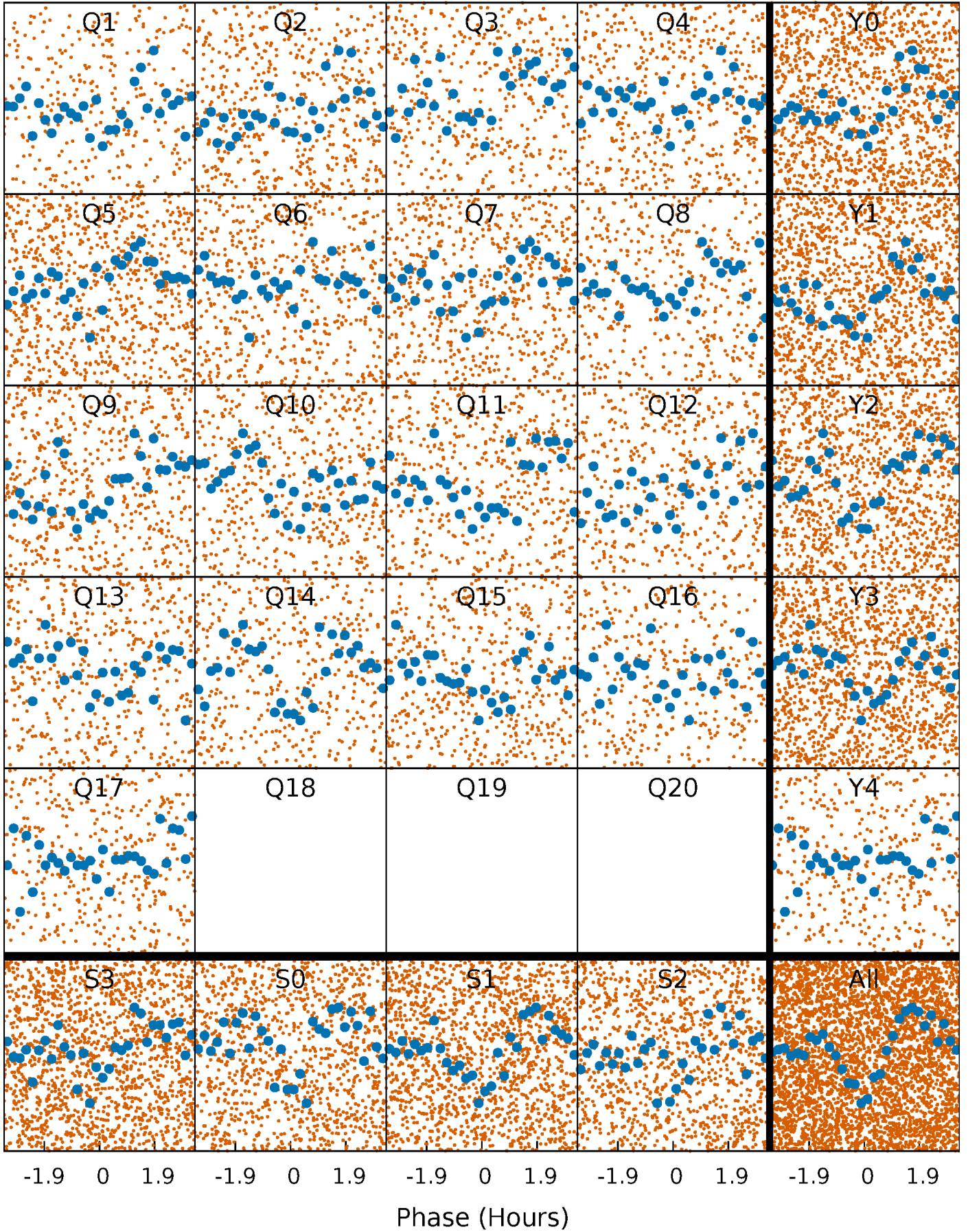


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



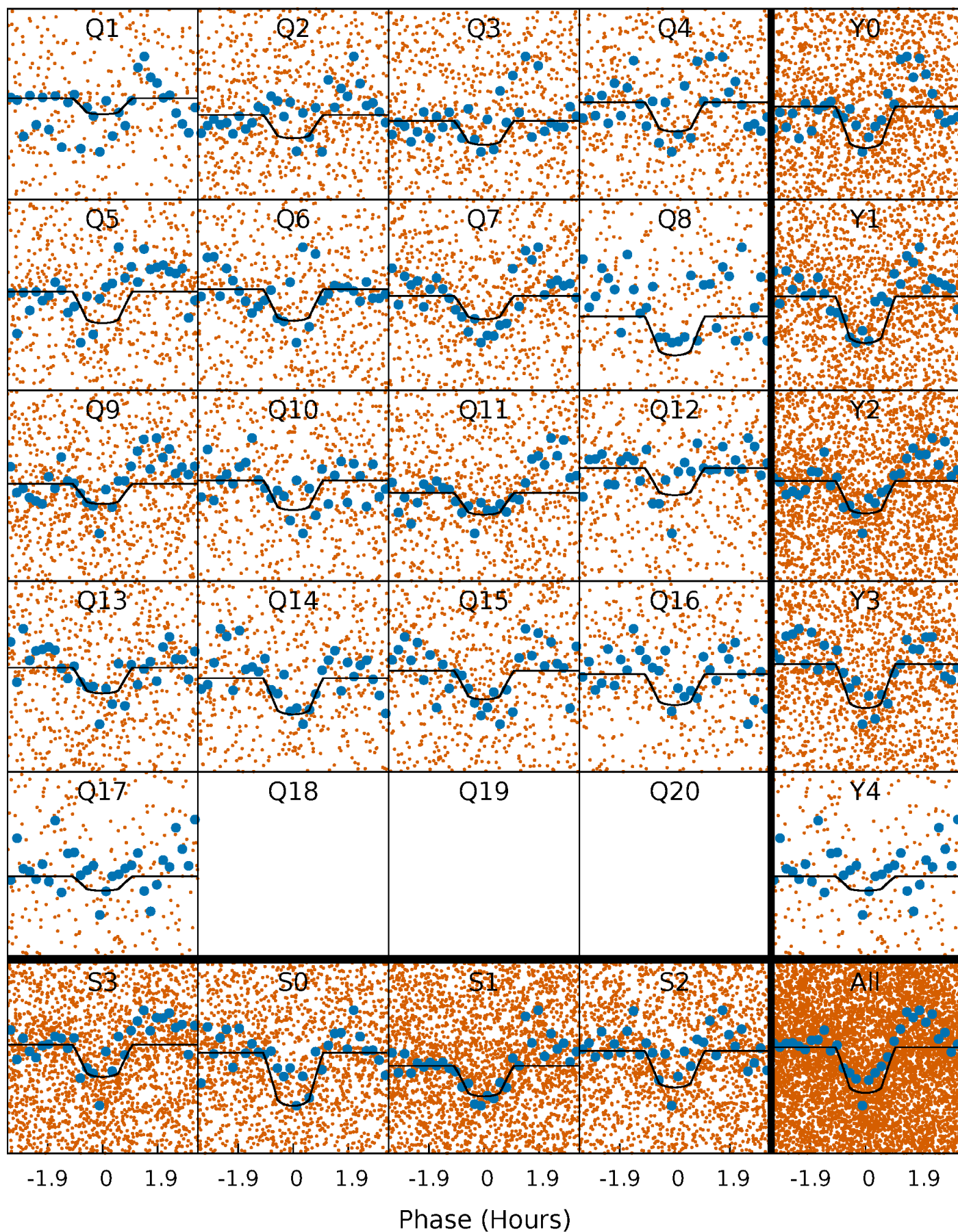
PDC Quarter-Phased Transit Curves

TCE 005219533-02 P= 0.549102 Days $T_0=131.663530$ (BKJD)



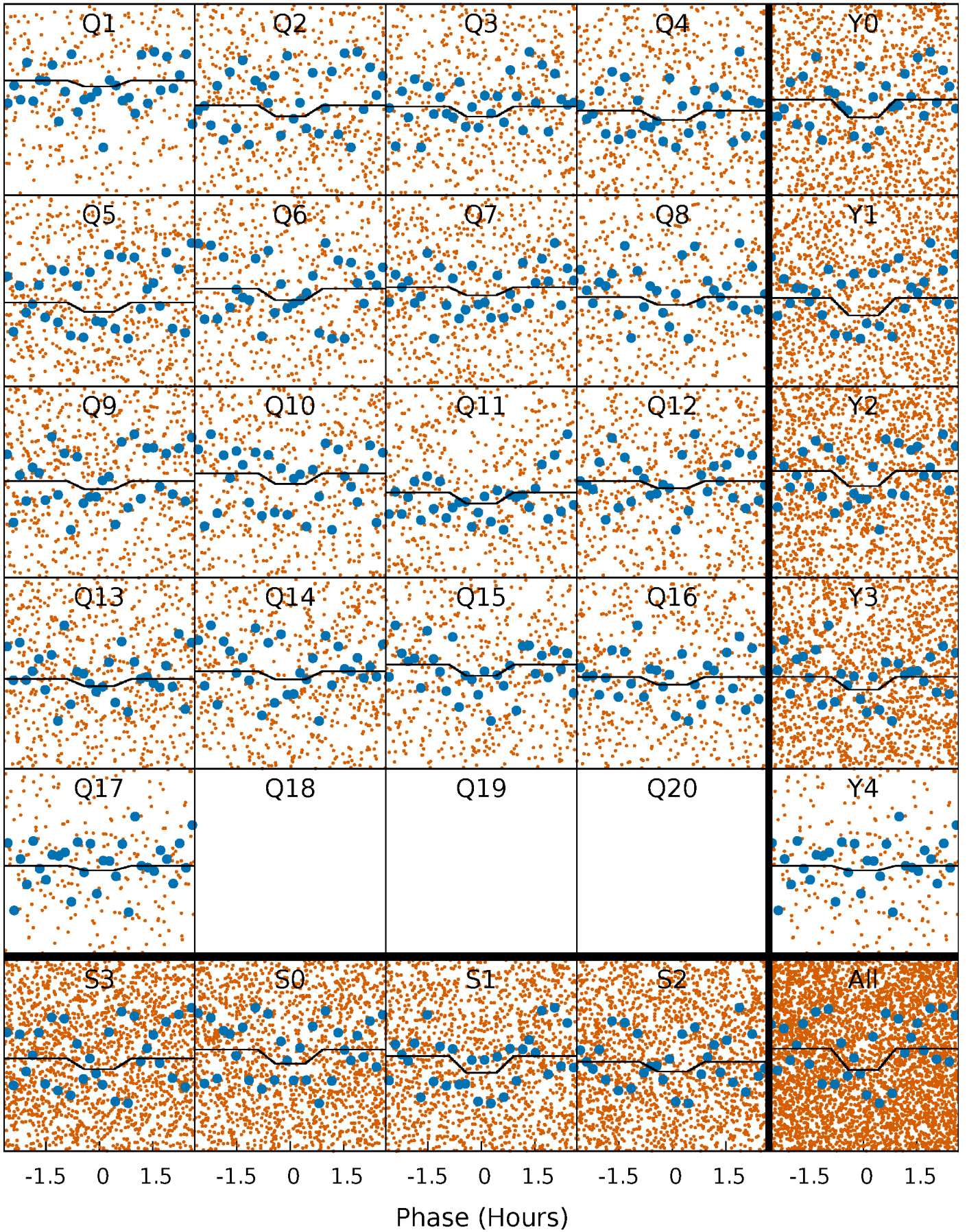
DV Quarter-Phased Transit Curves

TCE 005219533-02 P= 0.549102 Days $T_0=131.663530$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

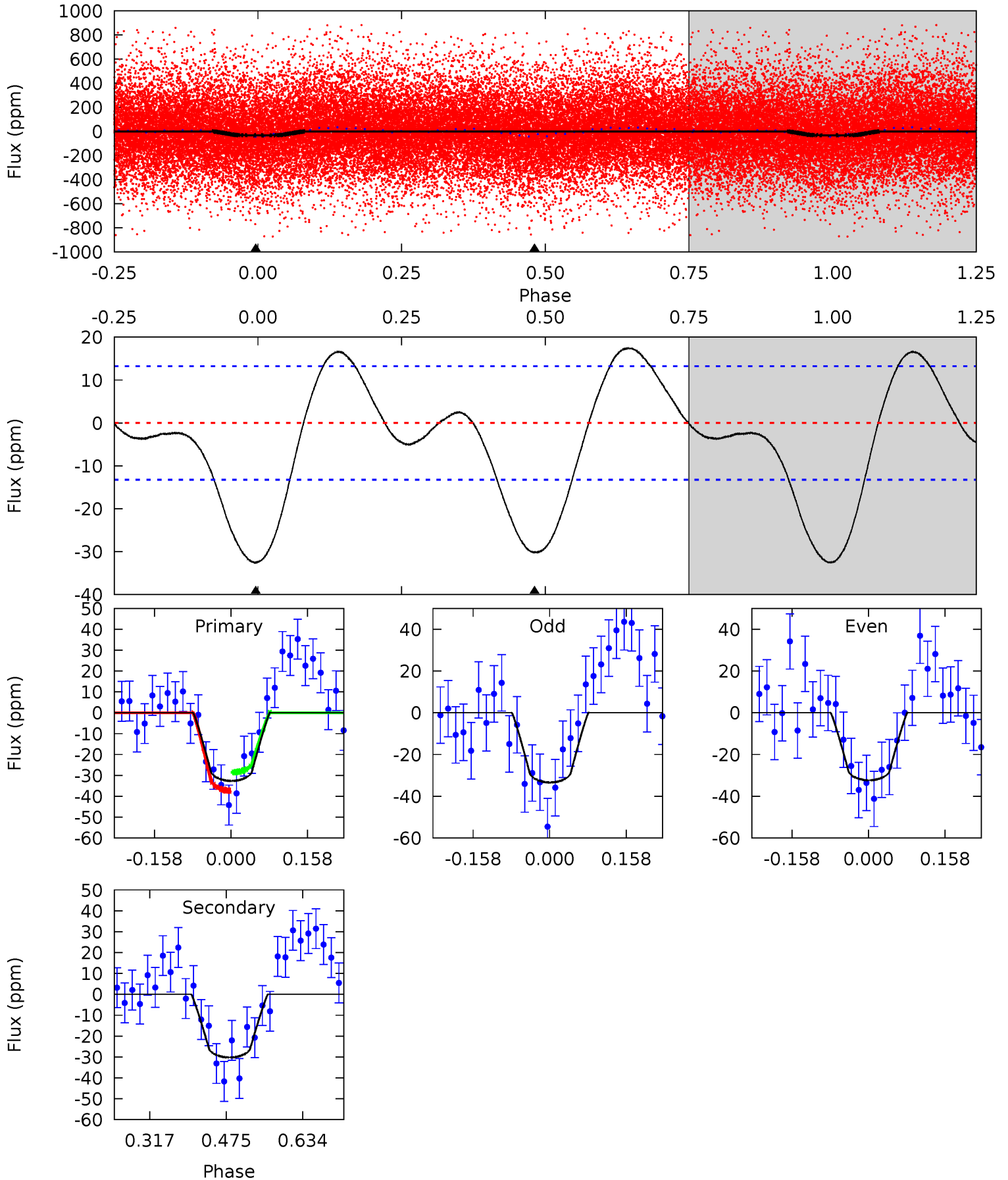
TCE 005219533-02 P= 0.549108 Days $T_0=131.652308$ (BKJD)



DV Model-Shift Uniqueness Test

005219533-02, P = 0.549102 Days, E = 131.663530 Days

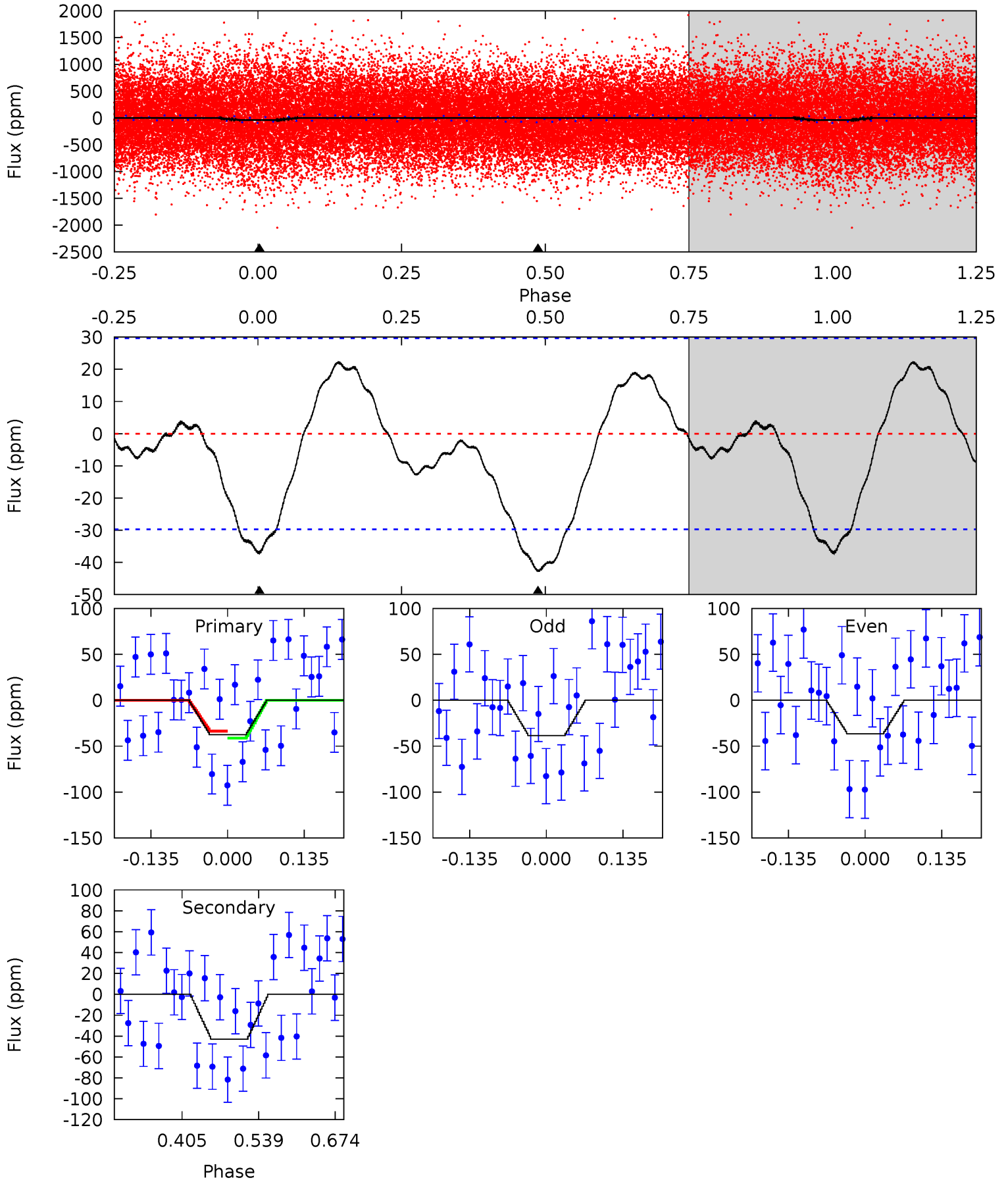
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	10.2	0	0	4.47	1.41	2.47	11.0	11.0	10.2	10.2	0.18	1.13	0.35	1.49



Alt Model-Shift Uniqueness Test

005219533-02, P = 0.549108 Days, E = 131.652308 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.68	6.50	0	0	4.50	1.50	1.62	5.68	5.68	6.50	6.50	0.15	1.02	0.34	0.57



Stellar Parameters For KIC 005219533

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7657^{+211}_{-343}	$3.868^{+0.308}_{-0.103}$	$0.020^{+0.200}_{-0.350}$	$2.684^{+0.433}_{-1.011}$	$1.938^{+0.083}_{-0.471}$	$0.141^{+0.325}_{-0.046}$
	+3%/-4%	+8%/-3%	+1000%/-1750%	+16%/-38%	+4%/-24%	+230%/-33%
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 005219533-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-30 ± 3	$1.83^{+0.63}_{-0.58}$	5869^{+414}_{-540}	6288^{+1486}_{-1067}	$1.294^{+1.482}_{-0.577}$
Alt.	-43 ± 7	$1.63^{+0.61}_{-0.55}$	5890^{+414}_{-575}	7645^{+2509}_{-1356}	$2.354^{+2.898}_{-1.147}$

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 $A_{obs} \gg 1.0$

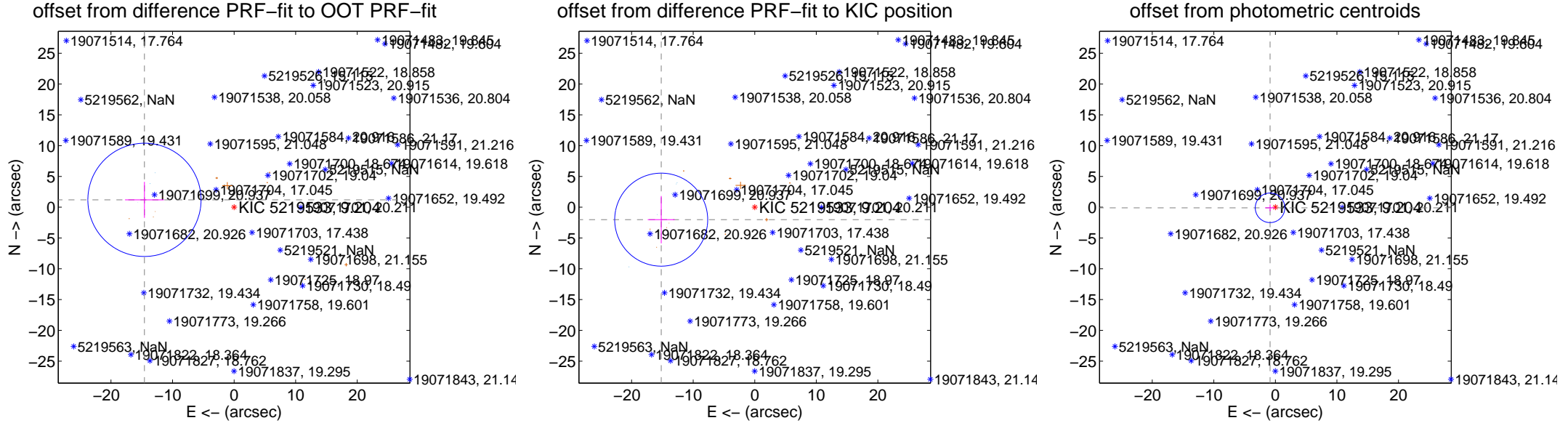
DV Centroid Data

Supplemental centroid analysis for 005219533-02. **Kepler magnitude: 9.20.** Transit SNR 9.74

There are 5 quarters with good PRF difference image offsets

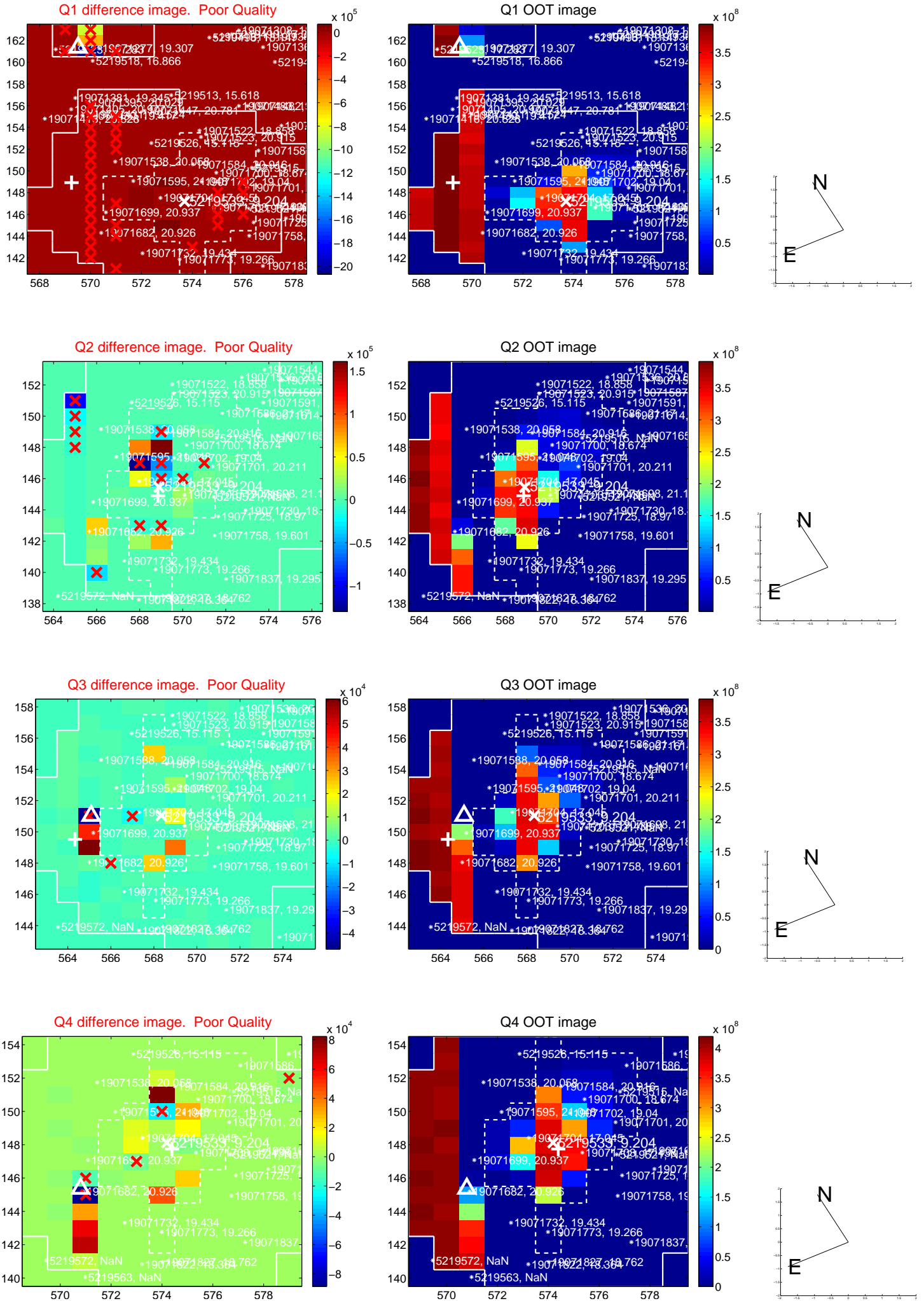
The OOT PRF centroid is offset from the target star catalog position by about 17.85 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	14.610 ± 3.065	4.77	14.561 ± 3.154	1.197 ± 2.918
PRF-fit source offset from KIC position	15.327 ± 2.518	6.09	15.193 ± 2.180	-2.020 ± 3.834
photometric centroid source offset	0.87 ± 0.80	1.09	0.87 ± 0.80	-0.10 ± 0.54

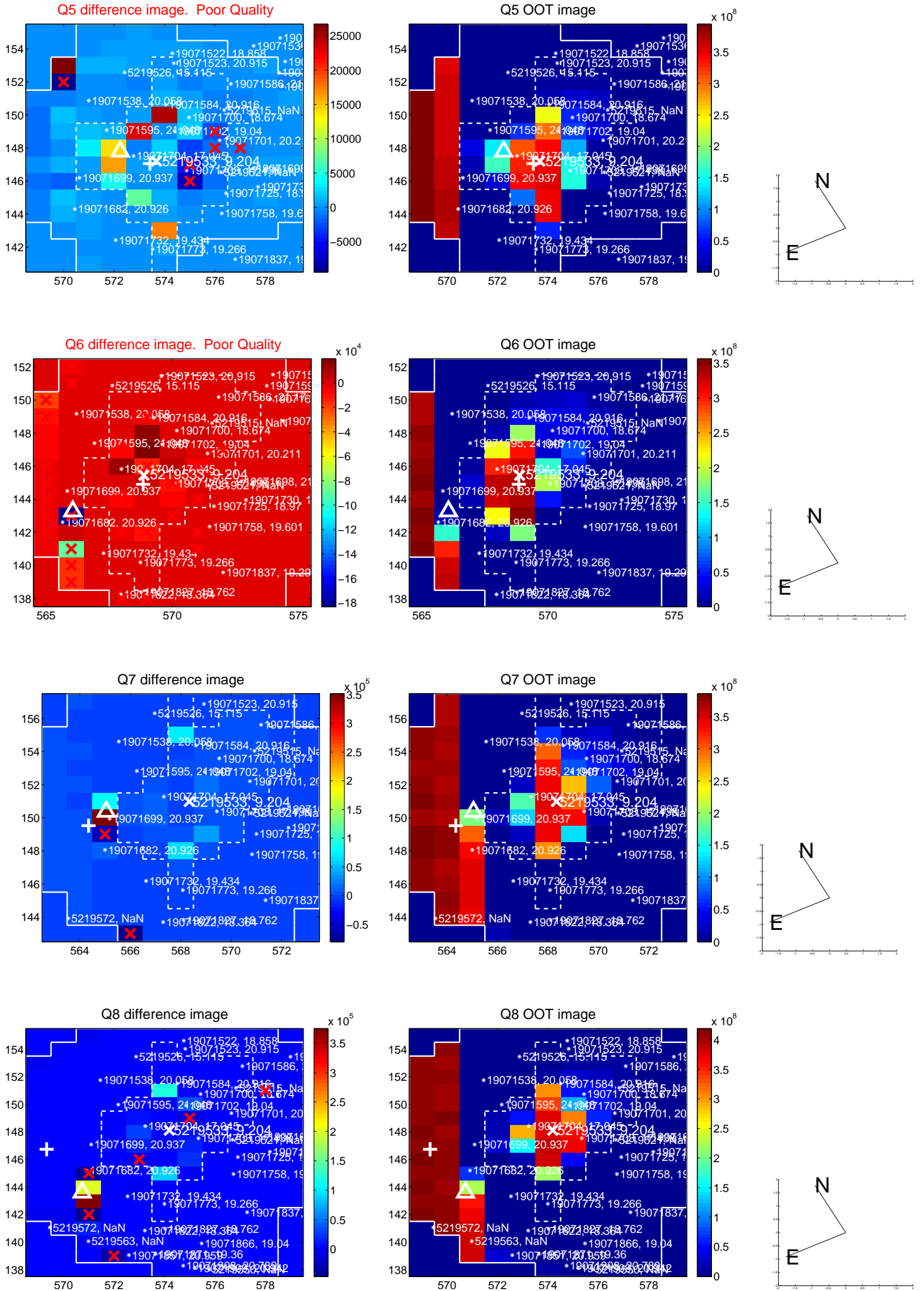


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

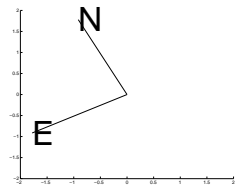
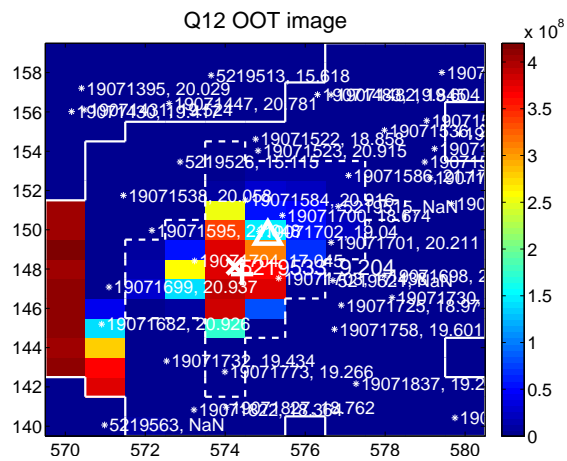
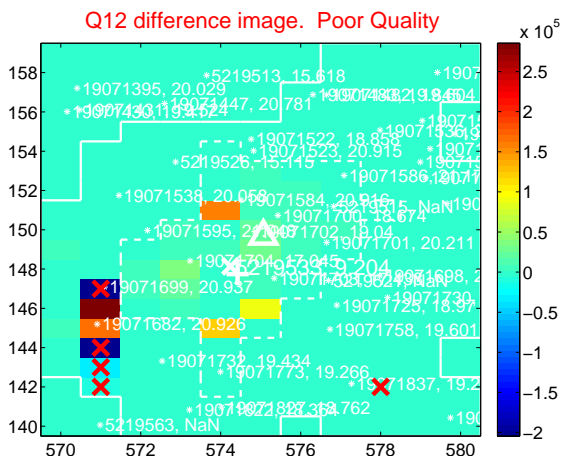
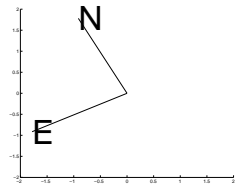
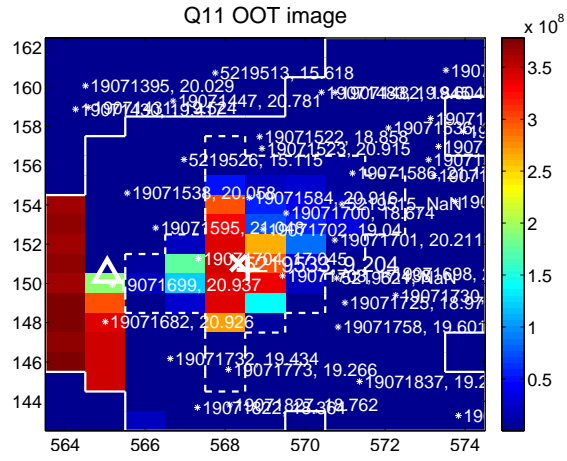
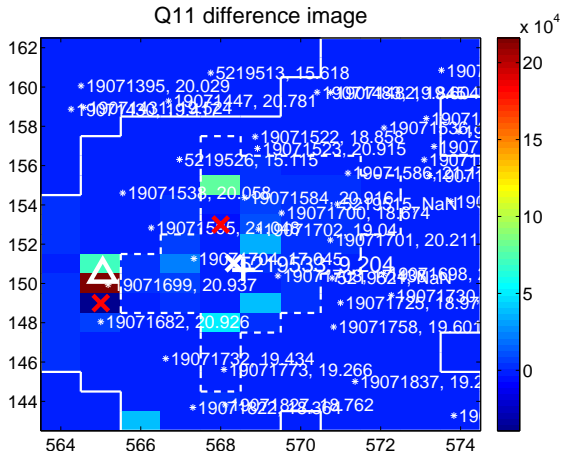
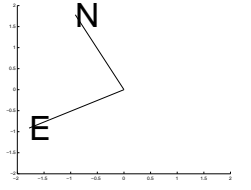
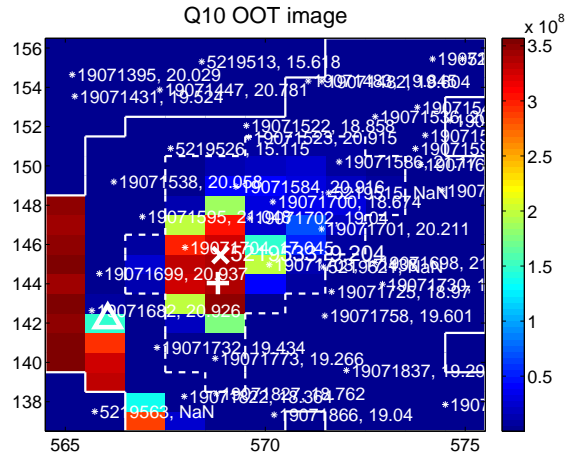
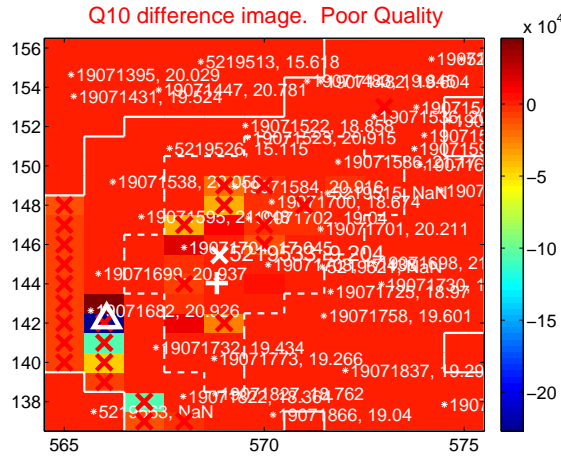
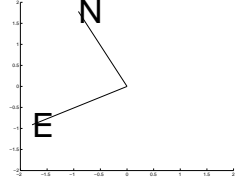
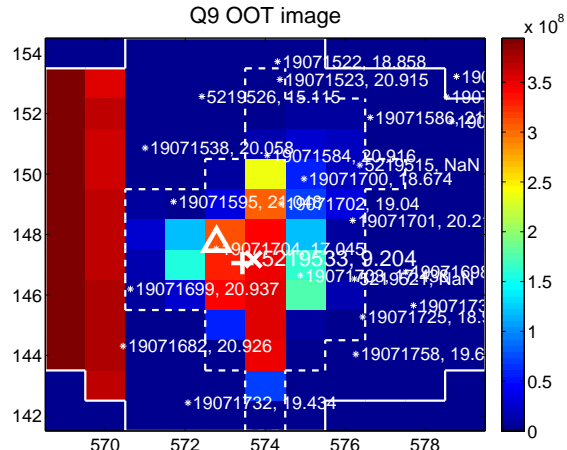
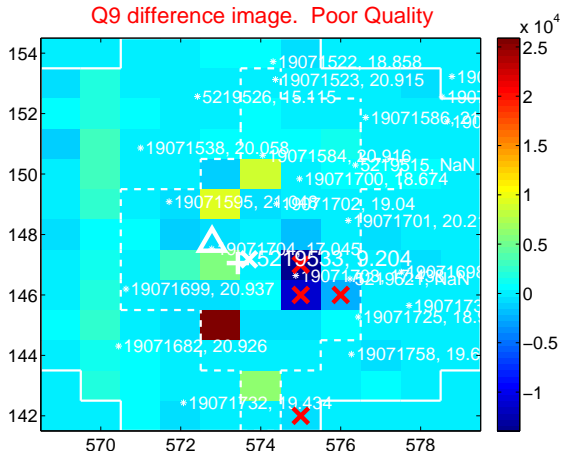
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



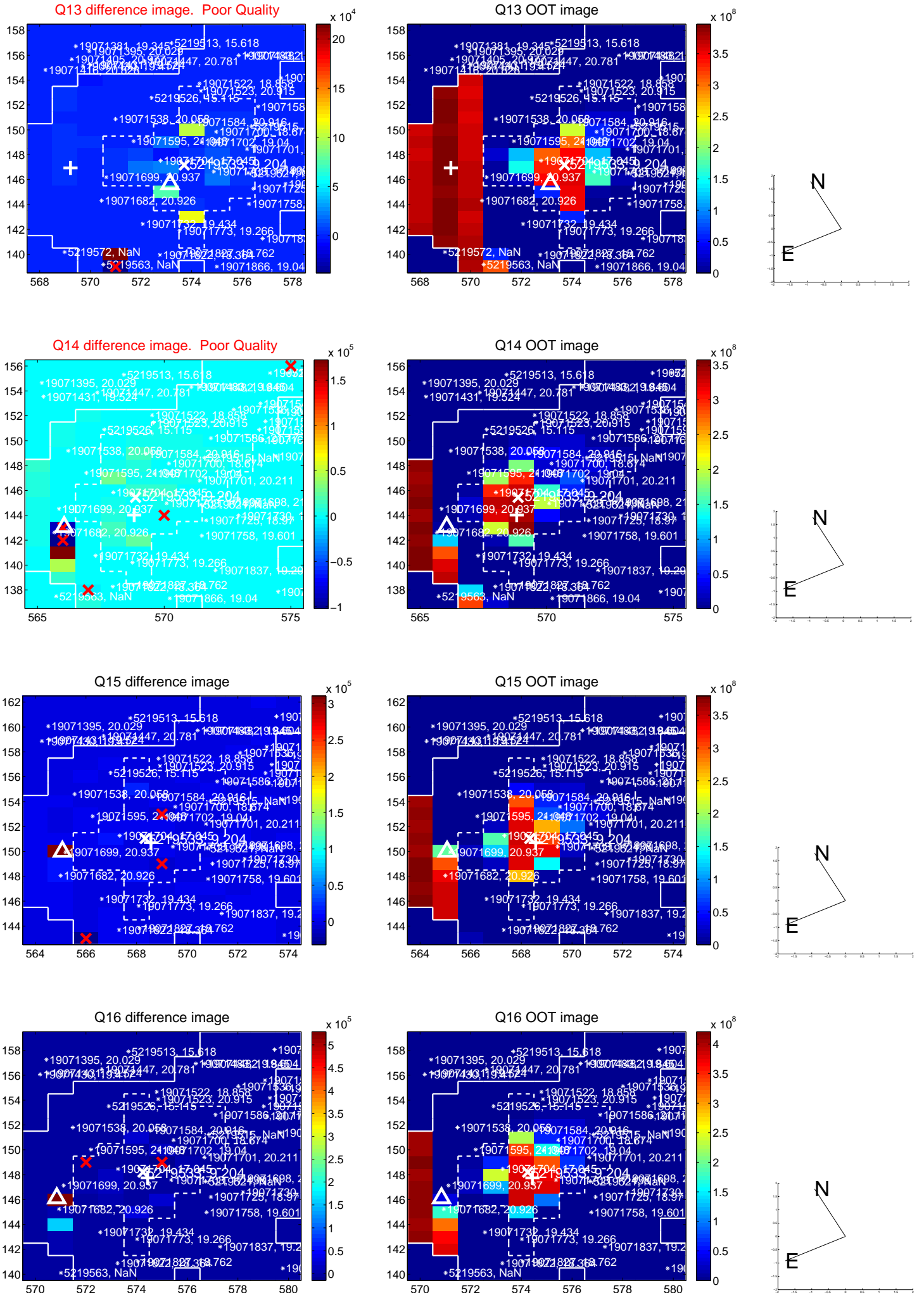
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



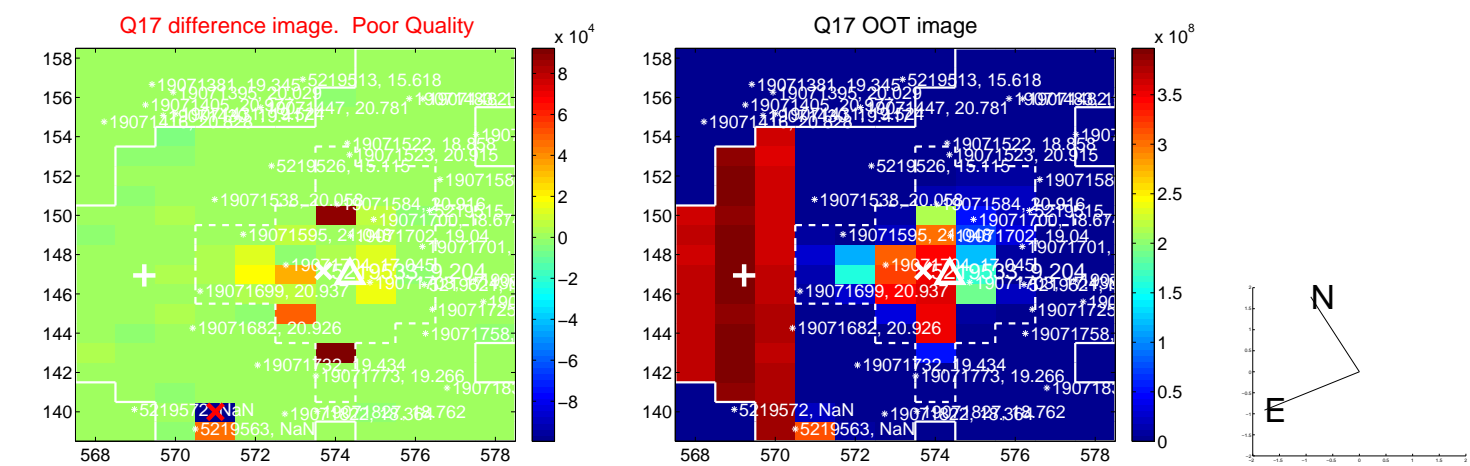
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



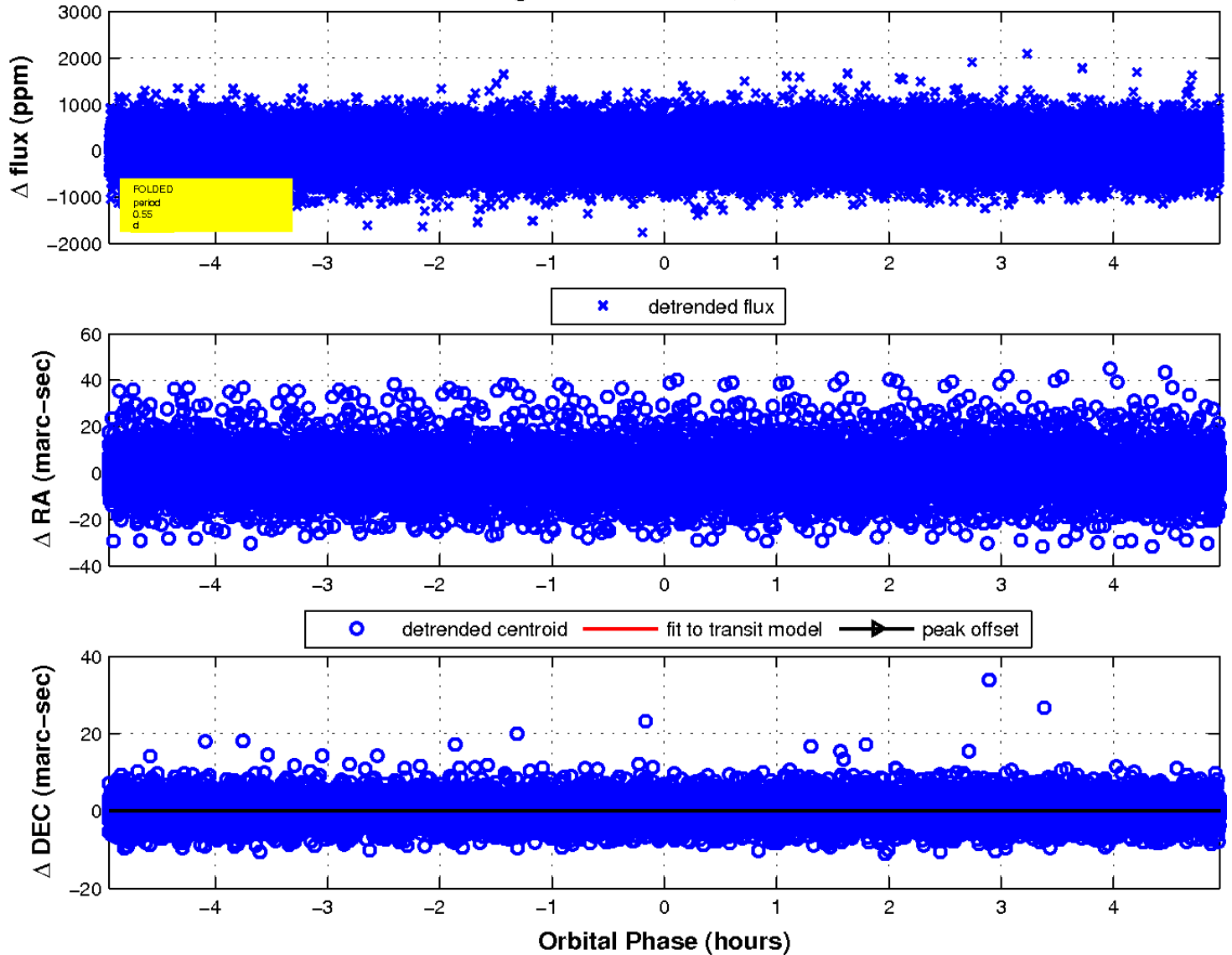
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



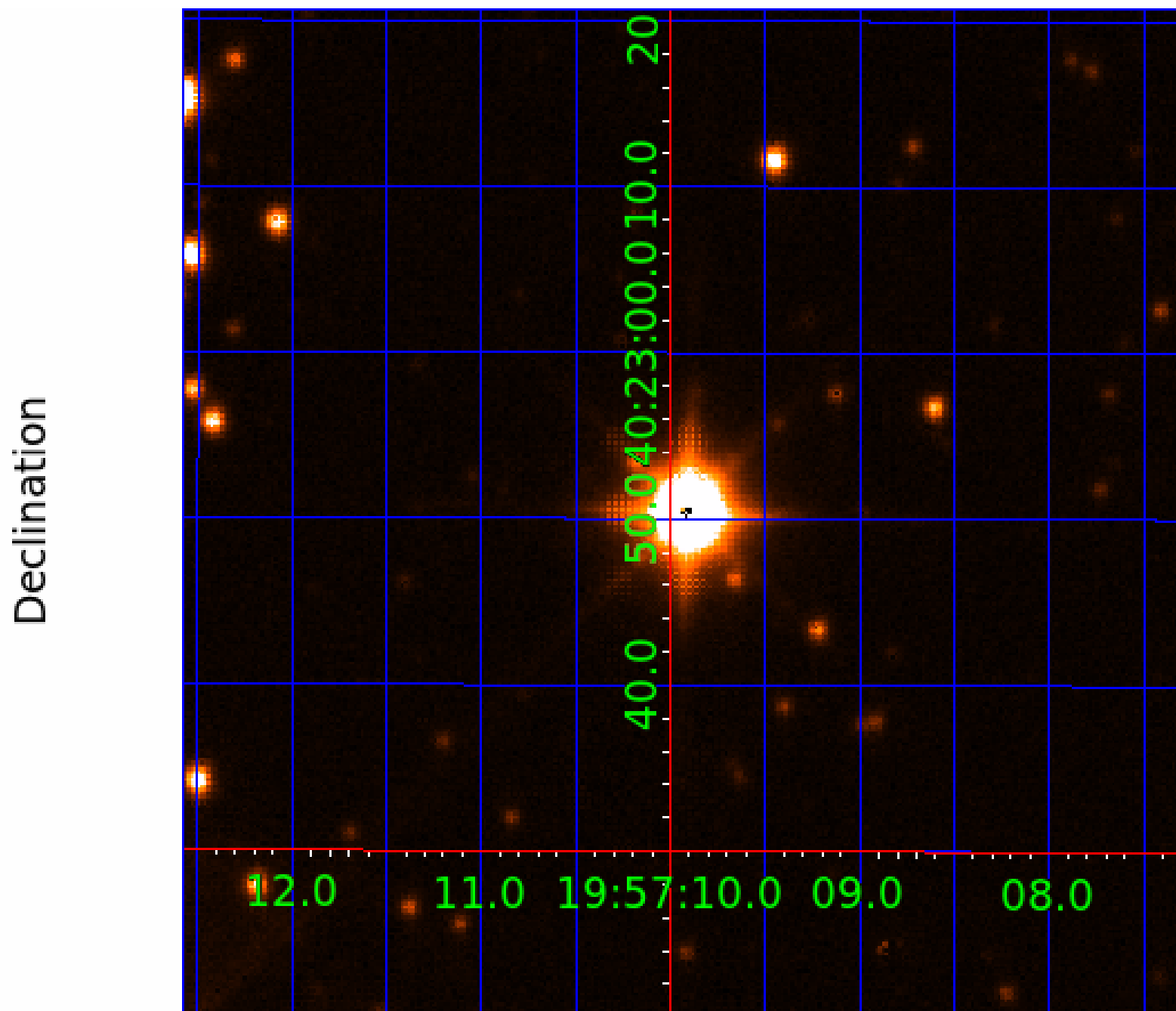
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 4



UKIRT Image



KIC 005219533

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})
005219533-01	OBS	No	1.141550	131.719290	41.6	3.462	9.6	8.2	2.68	7657	2.01	31212.17
005219533-02	OBS	No	0.549102	131.663530	41.0	1.649	9.6	9.7	2.68	7657	1.99	82815.72
005219533-03	OBS	No	6.643976	134.275102	118.5	4.752	7.8	7.1	2.68	7657	3.37	2981.35
005219533-04	OBS	No	10.482292	140.946912	193.2	4.401	7.7	7.6	2.68	7657	4.61	1623.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005219533-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005219533-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

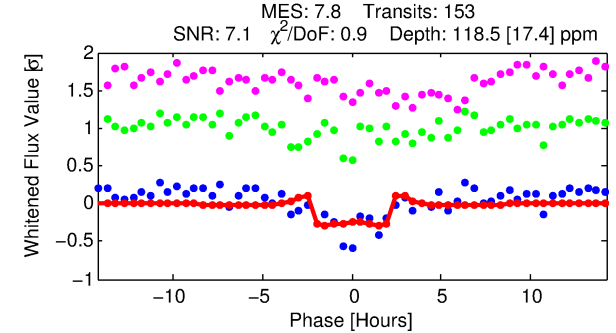
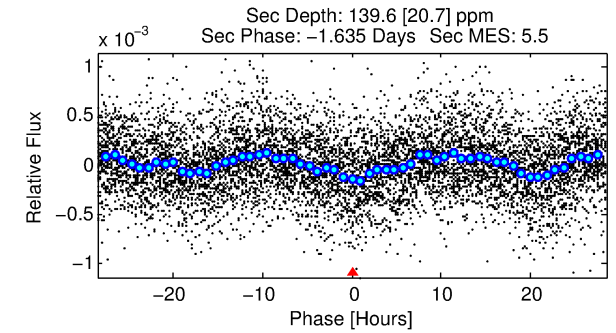
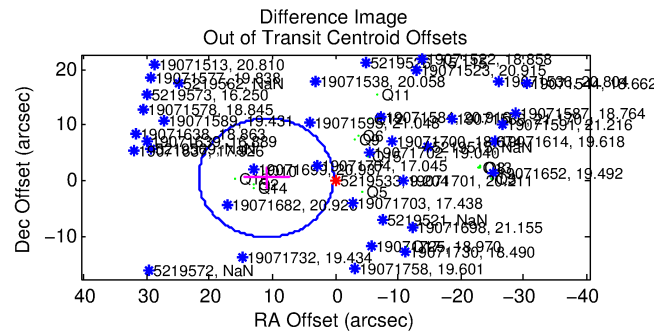
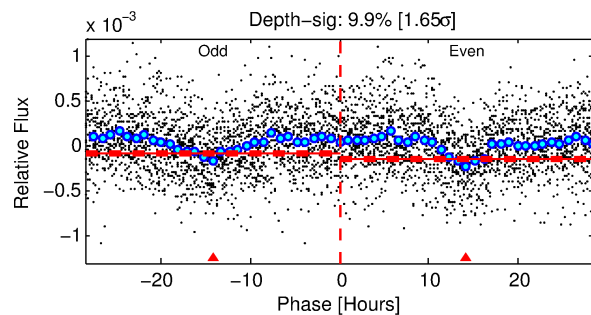
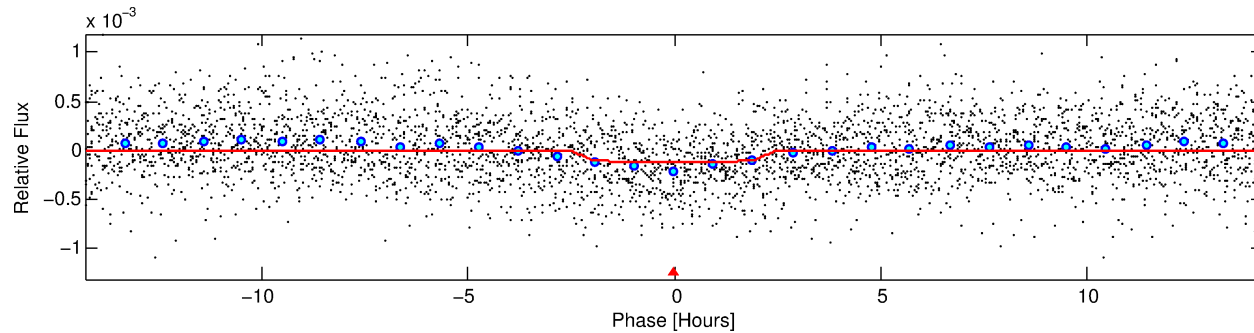
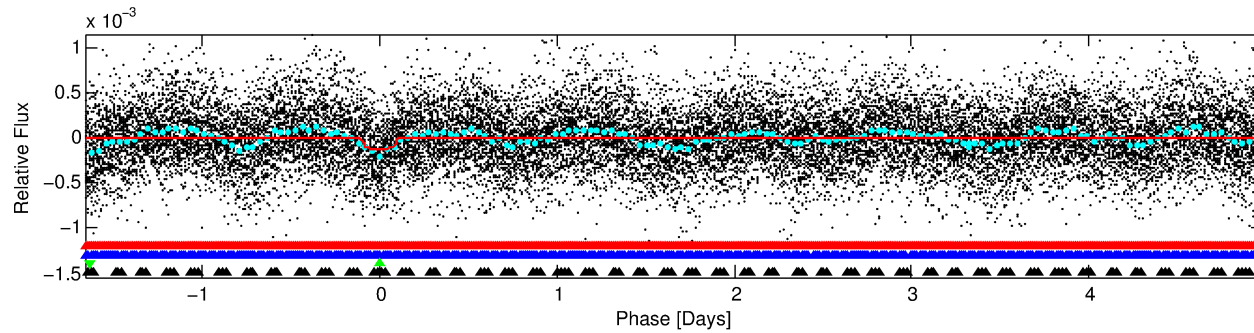
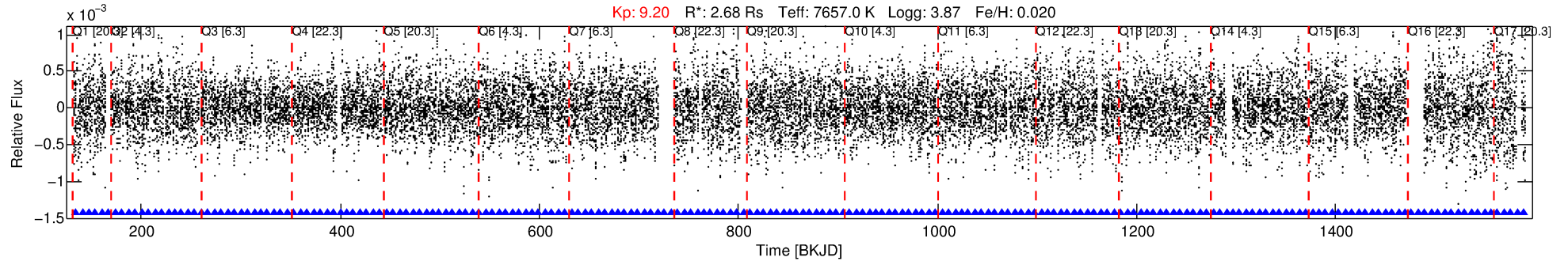
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005219533-03

No Significant Match Found

DV One-Page Summary

KIC: 5219533 Candidate: 3 of 4 Period: 6.644 d



DV Fit Results:

Period = 6.64398 [0.00005] d
Epoch = 134.2751 [0.0055] BKJD
Rp/R* = 0.0115 [0.0027]
a/R* = 5.18 [6.96]
b = 0.89 [0.32]
Seff = 2981.35 [1683.09]
Teq = 1884 [266] K
Rp = 3.37 [1.50] Re
a = 0.0863 [0.0298] AU
Ag = 50.36 [36.86] [1.34σ]
Teffp = 7760 [1029] K [5.53σ]

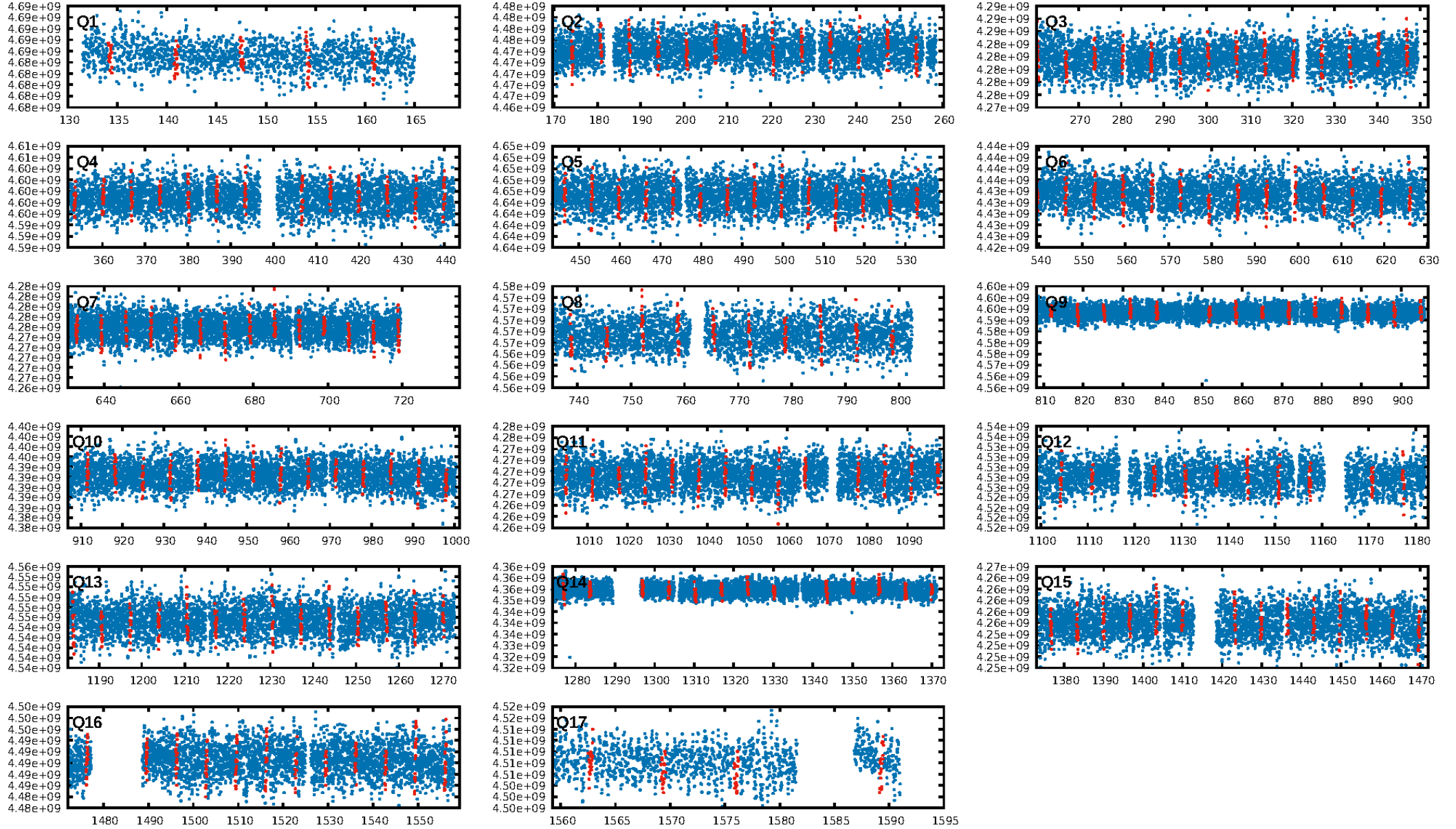
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.46σ]
LongPeriod-sig: 100.0% [14.22σ]
ModelChiSquare2-sig: 89.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [145/145]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 1.674 arcsec [2.10σ]
OotOffset-rm: 10.997 arcsec [3.08σ]
KicOffset-rm: 13.448 arcsec [5.47σ]
OotOffset-st: 4/3/3/4 [14]
KicOffset-st: 4/3/3/4 [14]
DiffImageQuality-fgm: 0.07 [1/14]
DiffImageOverlap-fno: 0.00 [0/17]

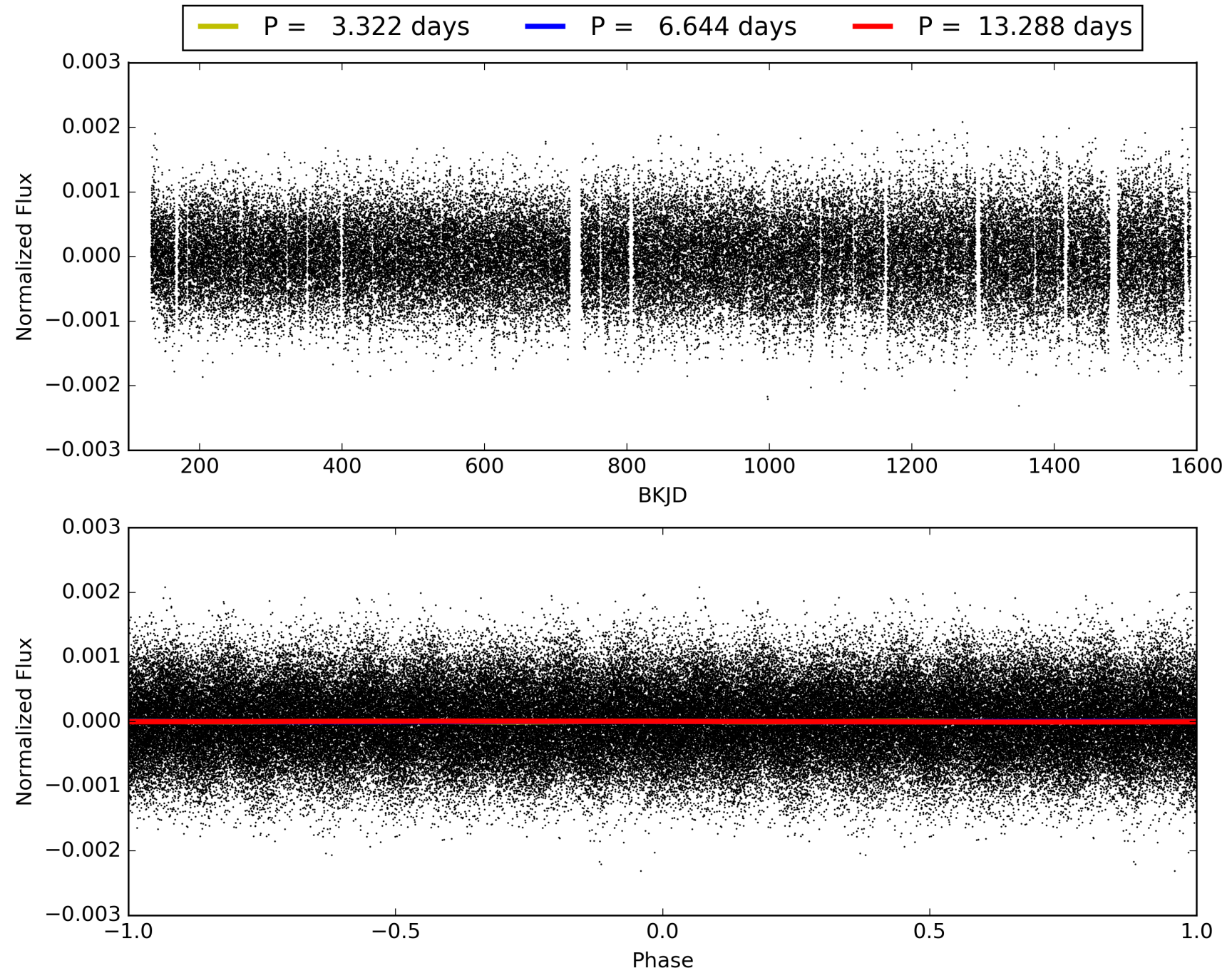
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:11:17 Z

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

TCE 005219533-03, PDC Light Curves

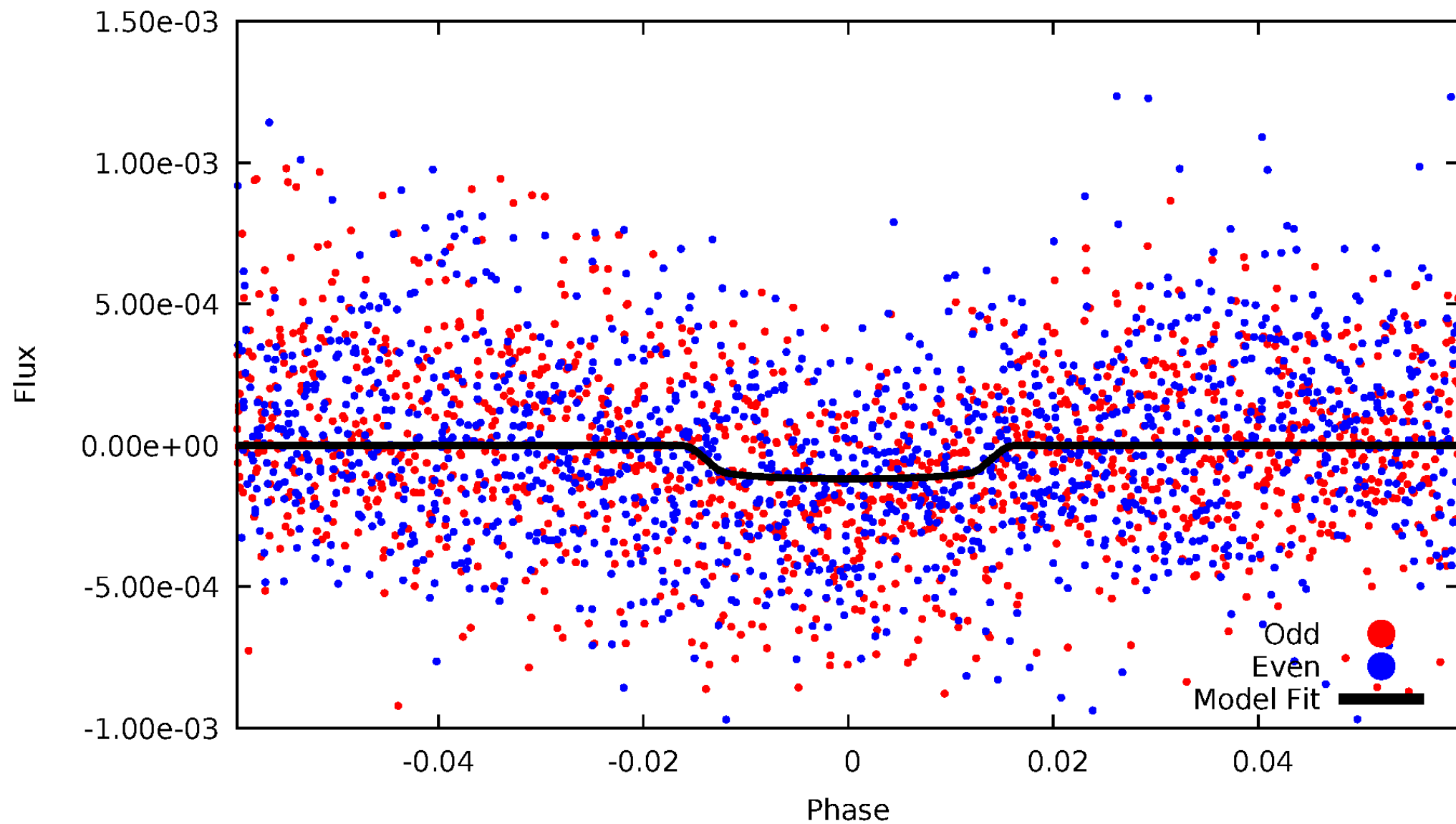


TCE 005219533-03



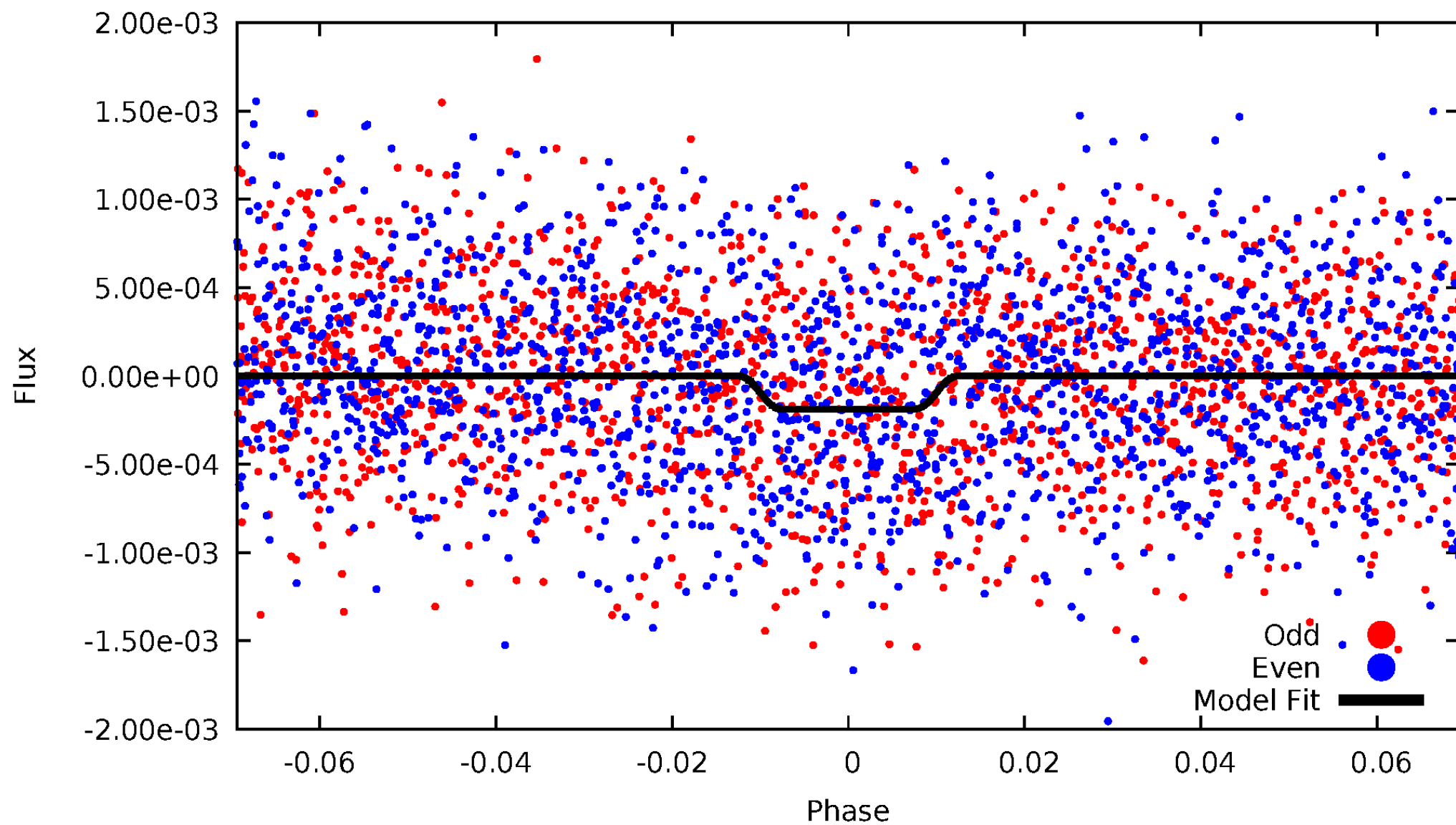
DV Odd/Even

TCE 005219533-03

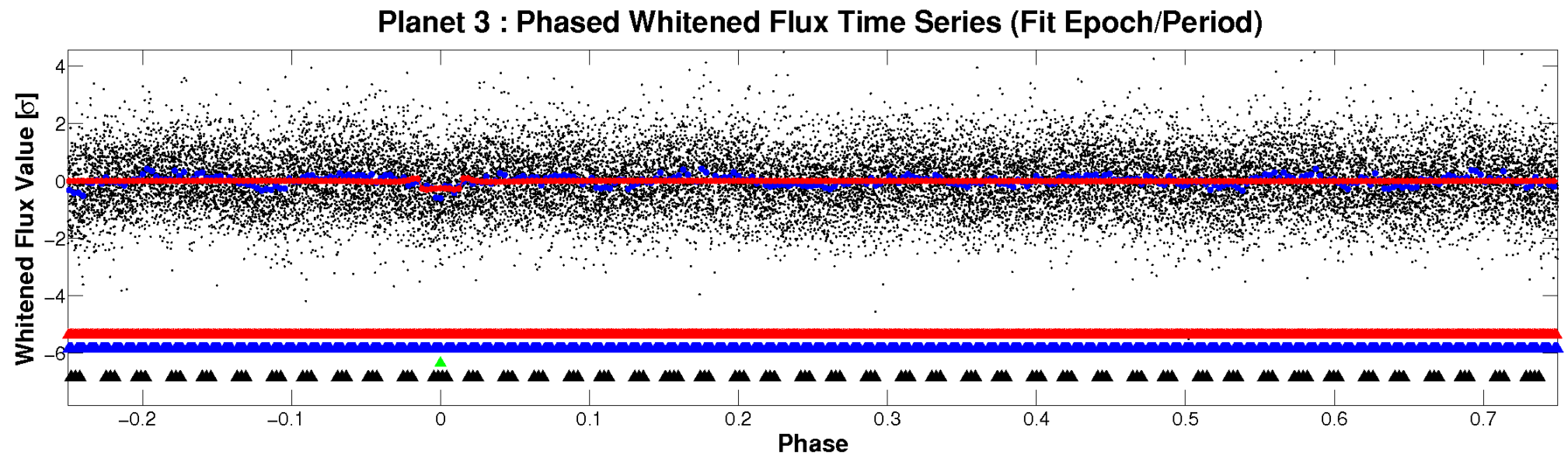
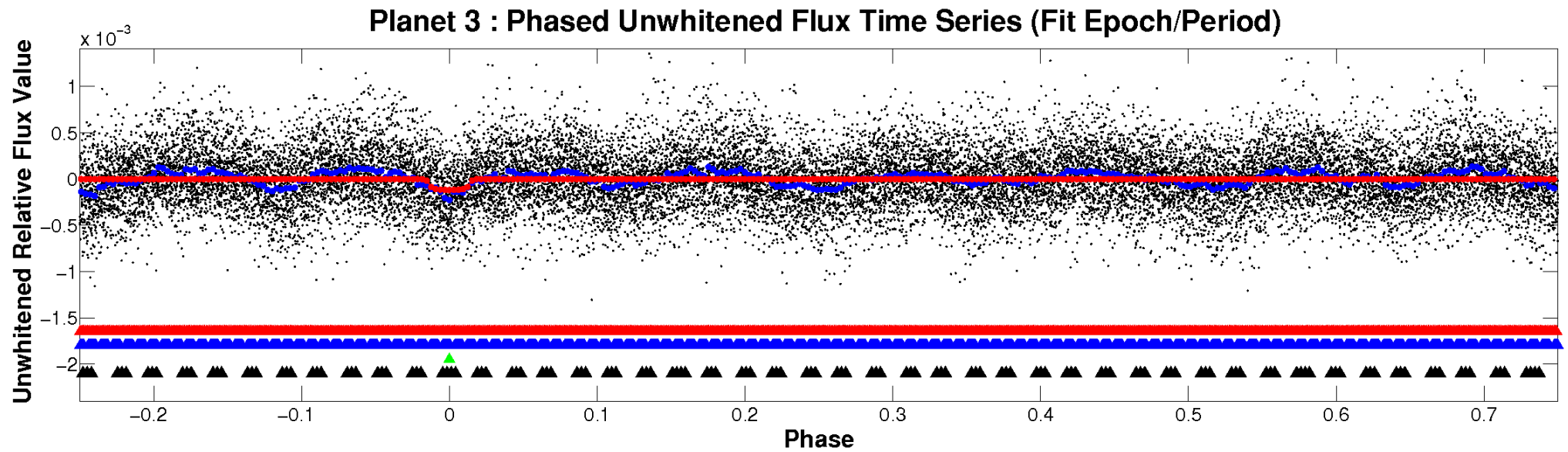


ALT Odd/Even

TCE 005219533-03

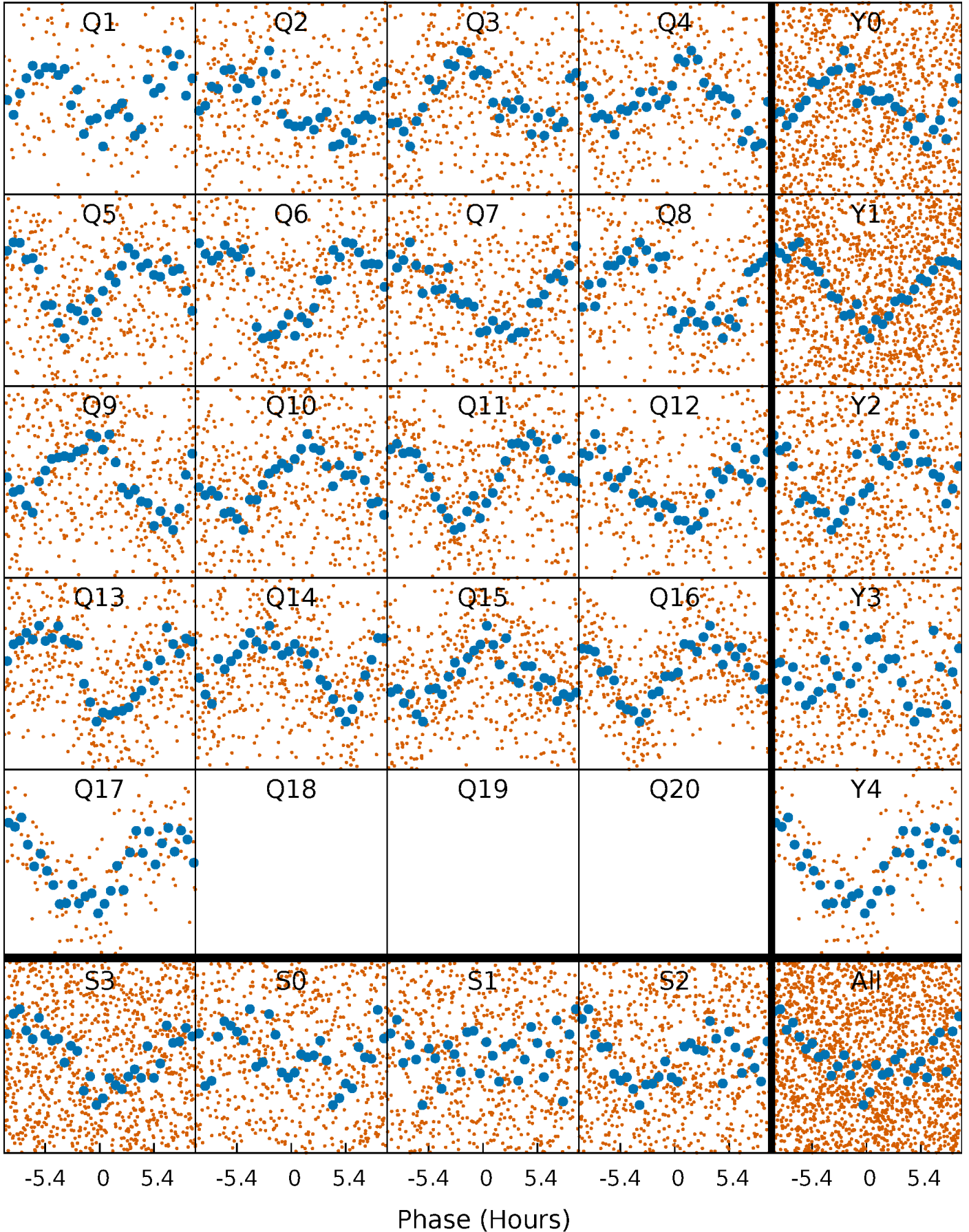


Non-Whitened Vs. Whitened Light Curve



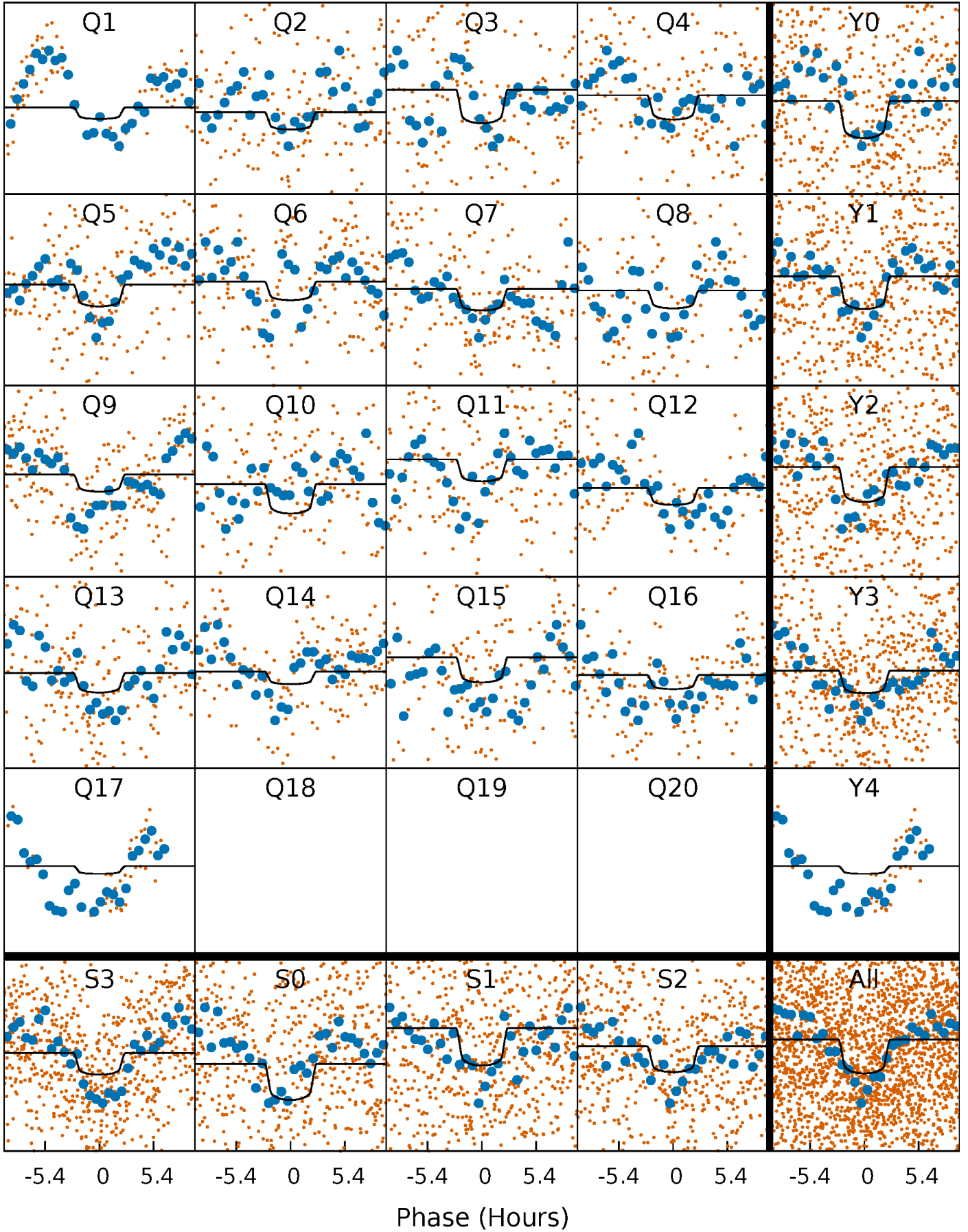
PDC Quarter-Phased Transit Curves

TCE 005219533-03 P= 6.643976 Days $T_0=134.275102$ (BKJD)



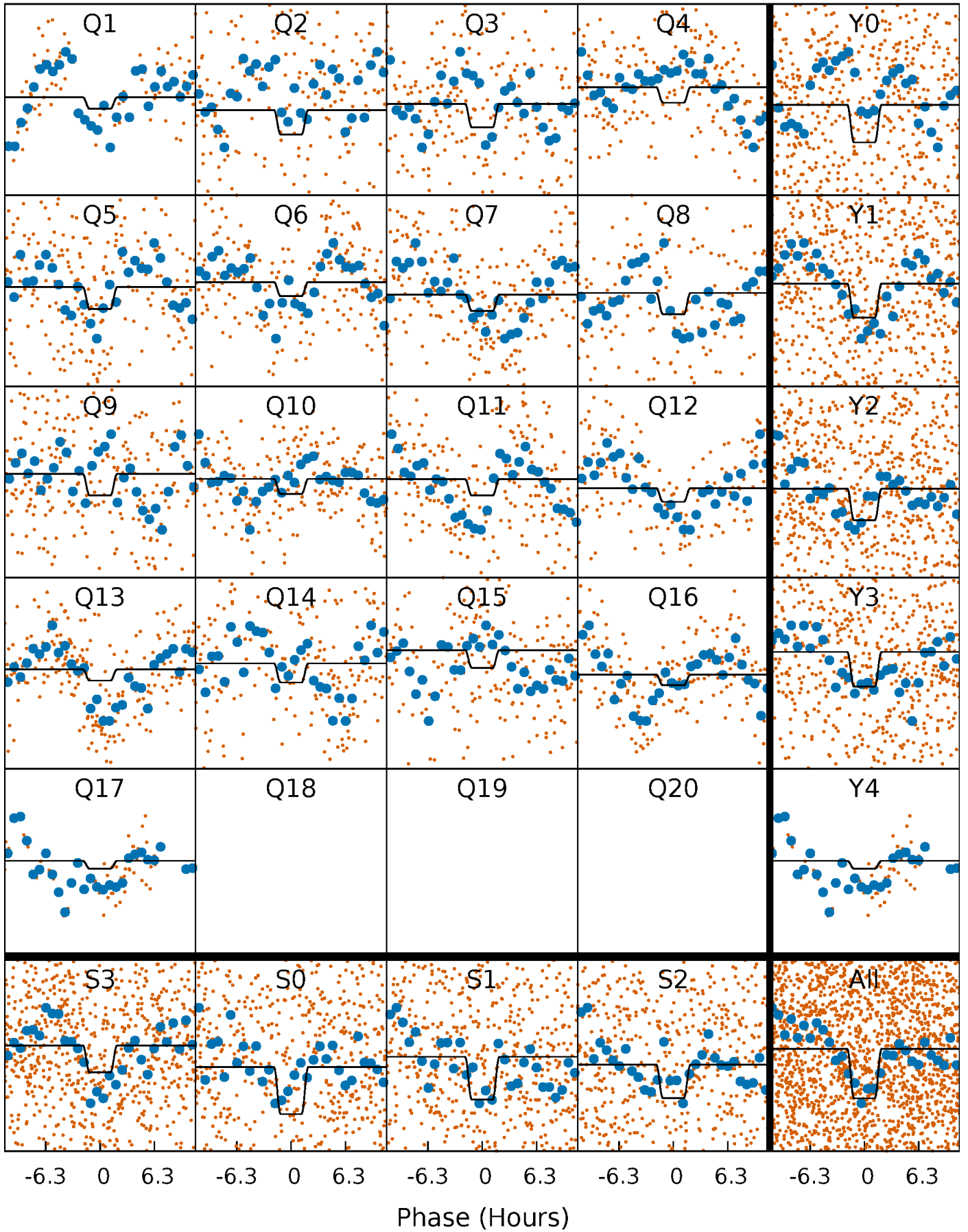
DV Quarter-Phased Transit Curves

TCE 005219533-03 P= 6.643976 Days $T_0=134.275102$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

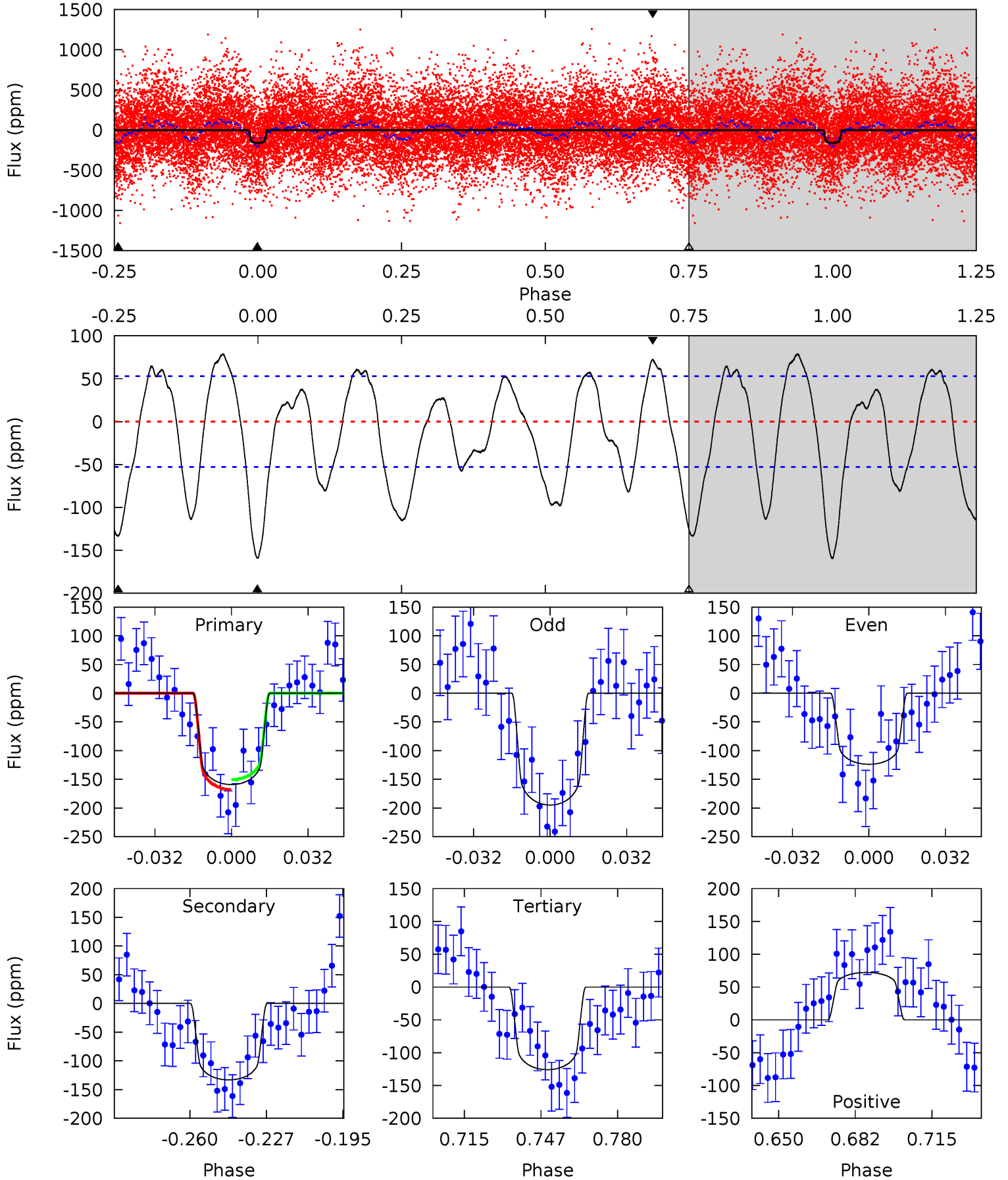
TCE 005219533-03 P= 6.643950 Days $T_0=134.270090$ (BKJD)



DV Model-Shift Uniqueness Test

005219533-03, P = 6.643976 Days, E = 127.631126 Days

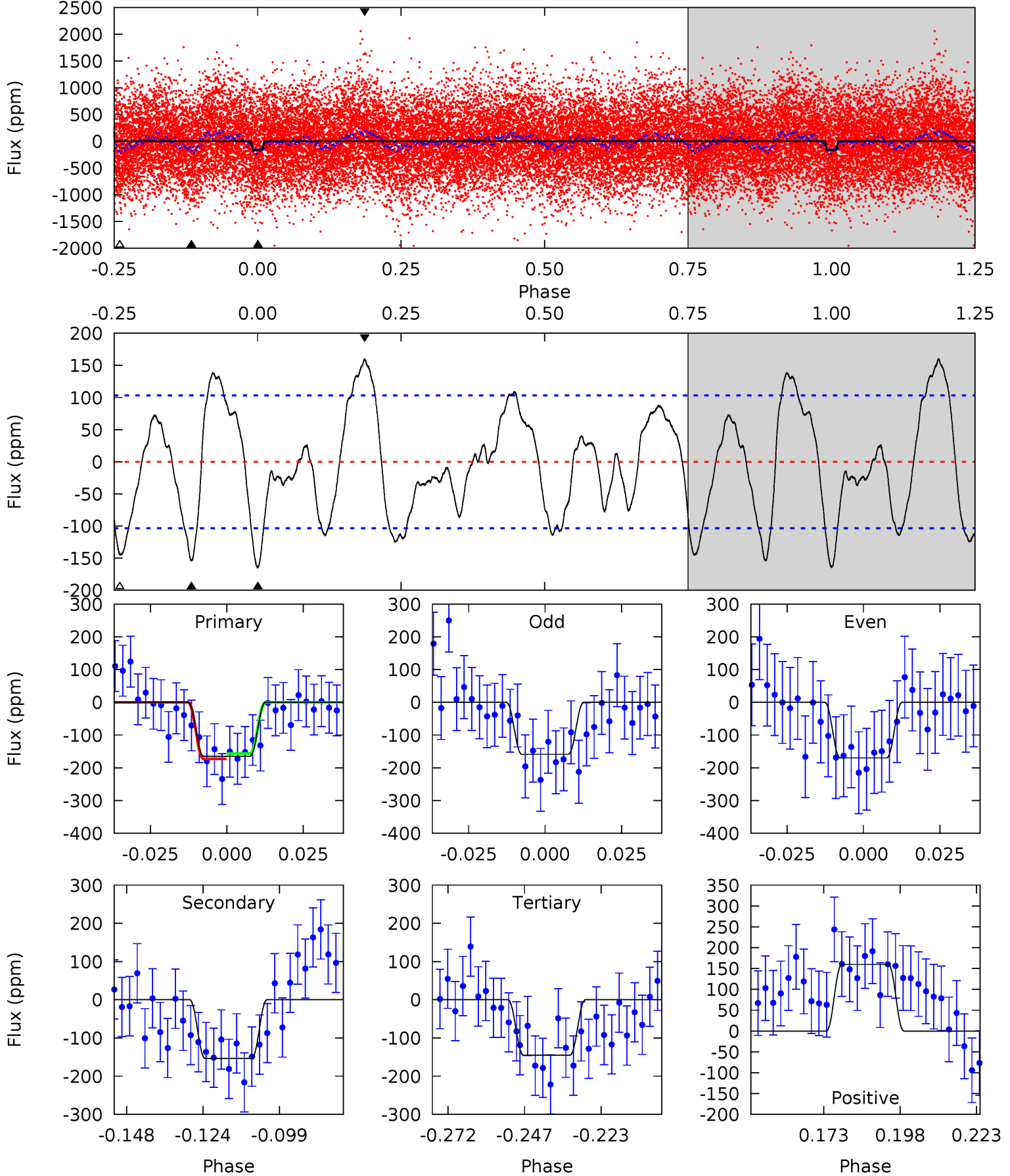
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	12.1	11.4	6.55	4.80	2.14	4.80	3.02	7.88	0.65	5.52	3.23	1.10	0.33	0.78



Alt Model-Shift Uniqueness Test

005219533-03, P = 6.643950 Days, E = 127.626140 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.71	7.21	6.81	7.49	4.85	2.25	3.34	0.91	0.22	0.40	-0.28	0.25	0.94	0.49	0.38



Stellar Parameters For KIC 005219533

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot cm^{-3})$
	7657^{+211}_{-343}	$3.868^{+0.308}_{-0.103}$	$0.020^{+0.200}_{-0.350}$	$2.684^{+0.433}_{-1.011}$	$1.938^{+0.083}_{-0.471}$	$0.141^{+0.325}_{-0.046}$
	+3%/-4%	+8%/-3%	+1000%/-1750%	+16%/-38%	+4%/-24%	+230%/-33%
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 005219533-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-133 ± 11	$3.06^{+0.98}_{-0.89}$	2572^{+170}_{-260}	7631^{+1638}_{-917}	57^{+53}_{-25}
Alt.	-154 ± 21	$3.73^{+1.03}_{-1.00}$	2573^{+162}_{-248}	7145^{+1112}_{-744}	44^{+38}_{-17}

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 $A_{obs} \gg 1.0$

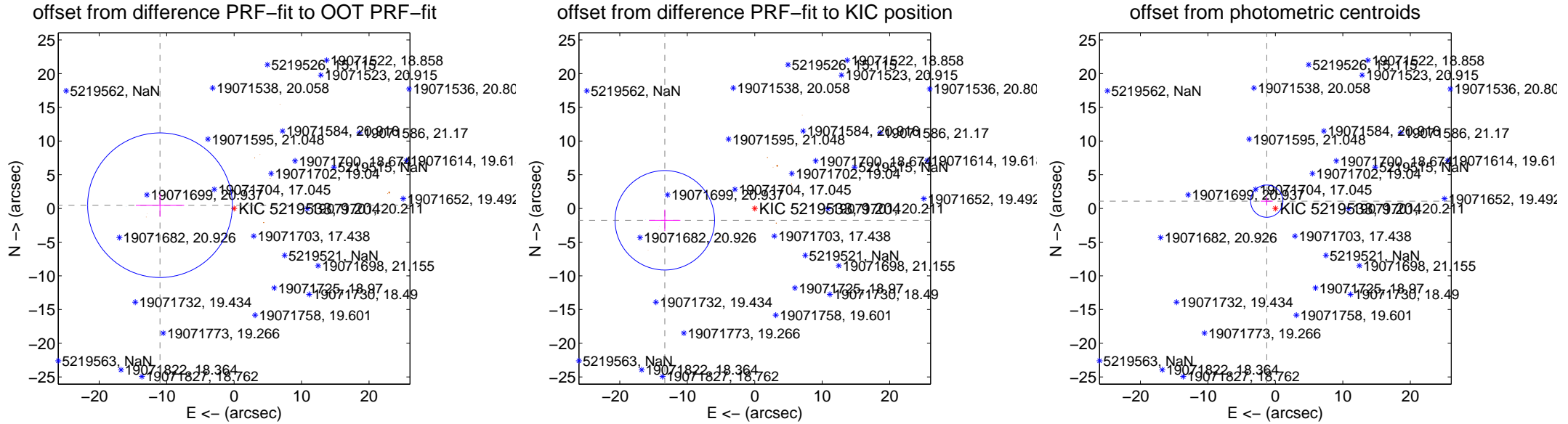
DV Centroid Data

Supplemental centroid analysis for 005219533-03. **Kepler magnitude: 9.20.** Transit SNR 7.13

There are 1 quarters with good PRF difference image offsets

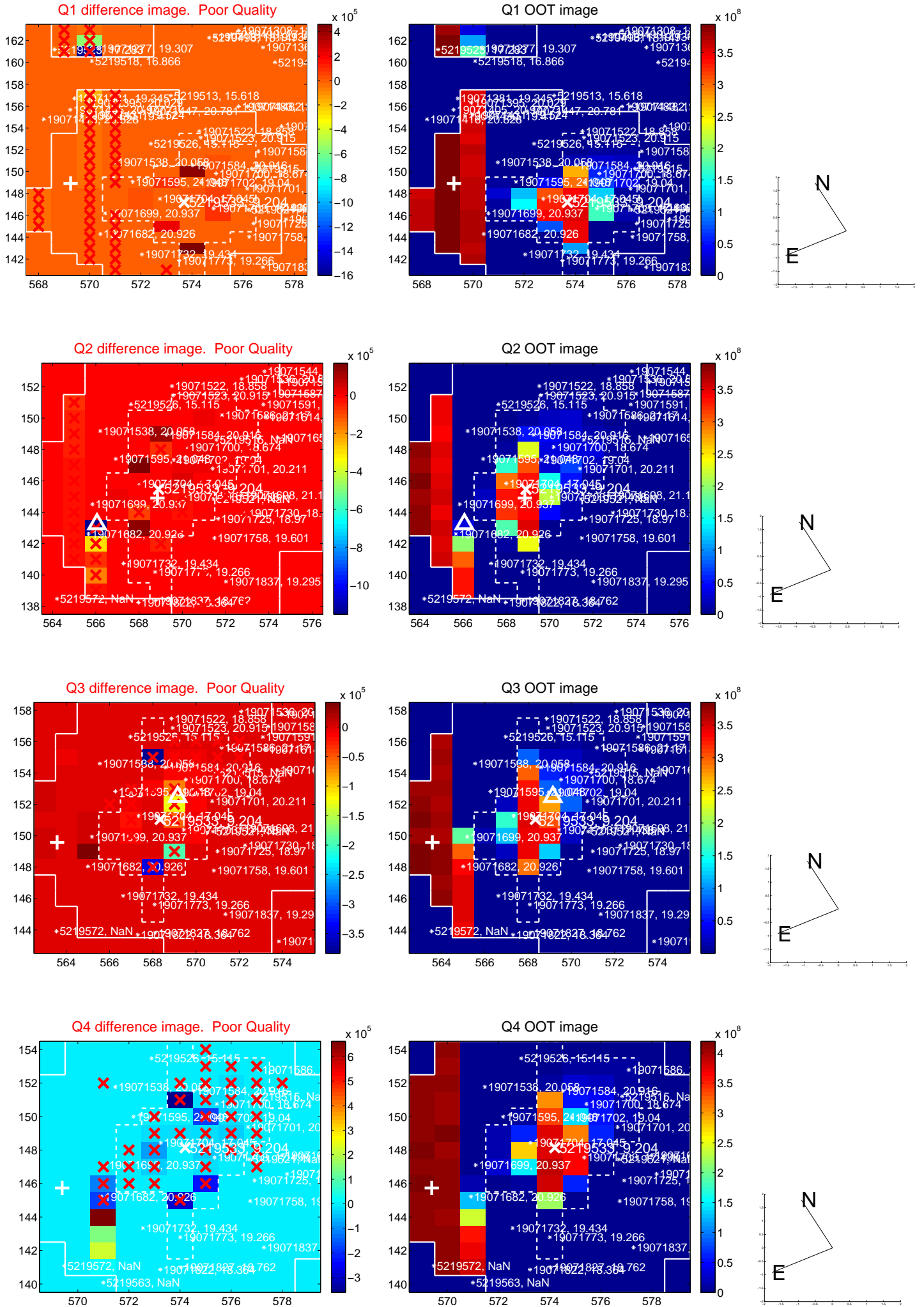
The OOT PRF centroid is offset from the target star catalog position by about 17.86 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.997 ± 3.576	3.08	10.987 ± 3.584	0.480 ± 1.695
PRF-fit source offset from KIC position	13.448 ± 2.459	5.47	13.333 ± 2.312	-1.757 ± 1.594
photometric centroid source offset	1.67 ± 0.80	2.10	1.28 ± 0.89	1.08 ± 0.65

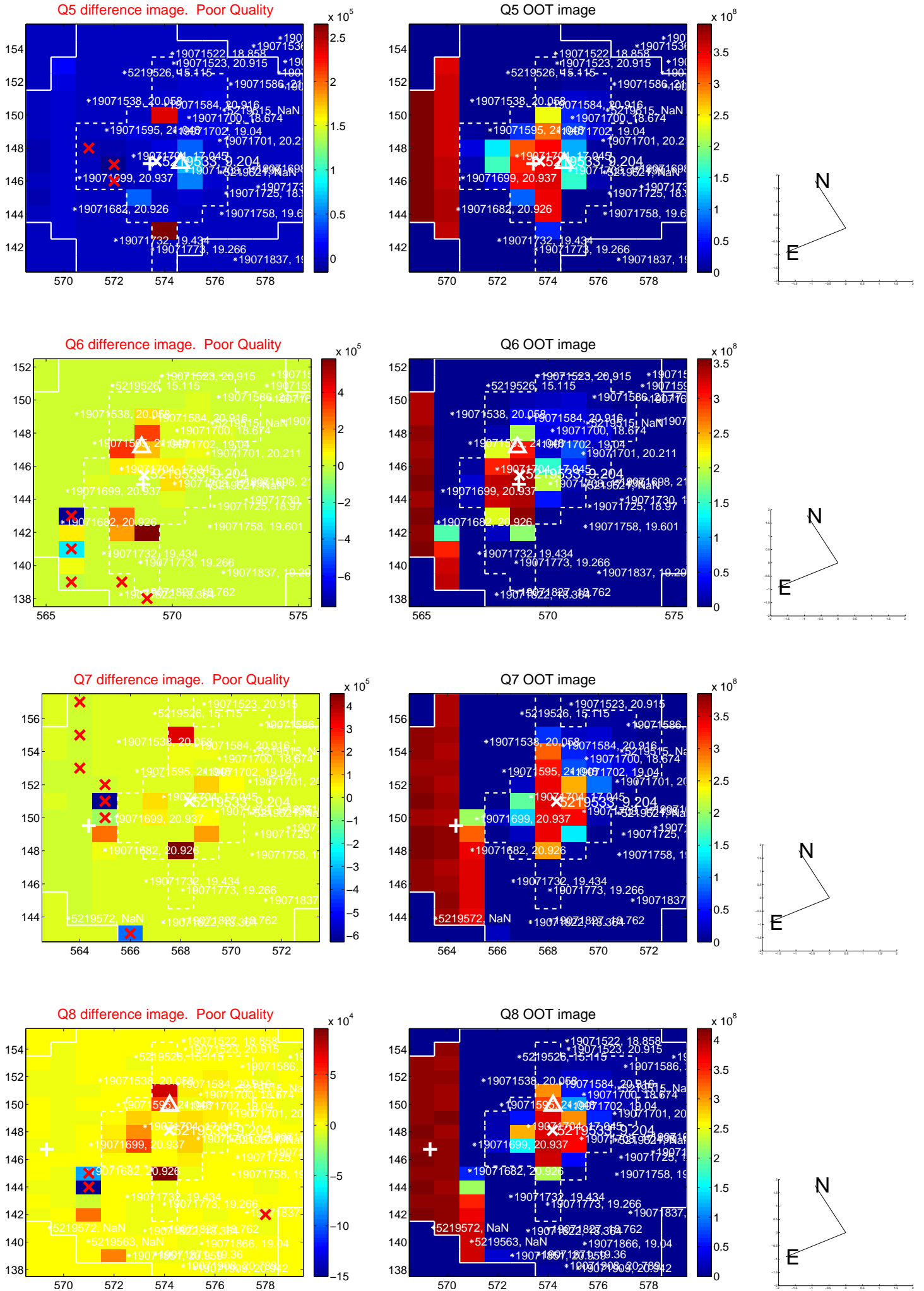


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

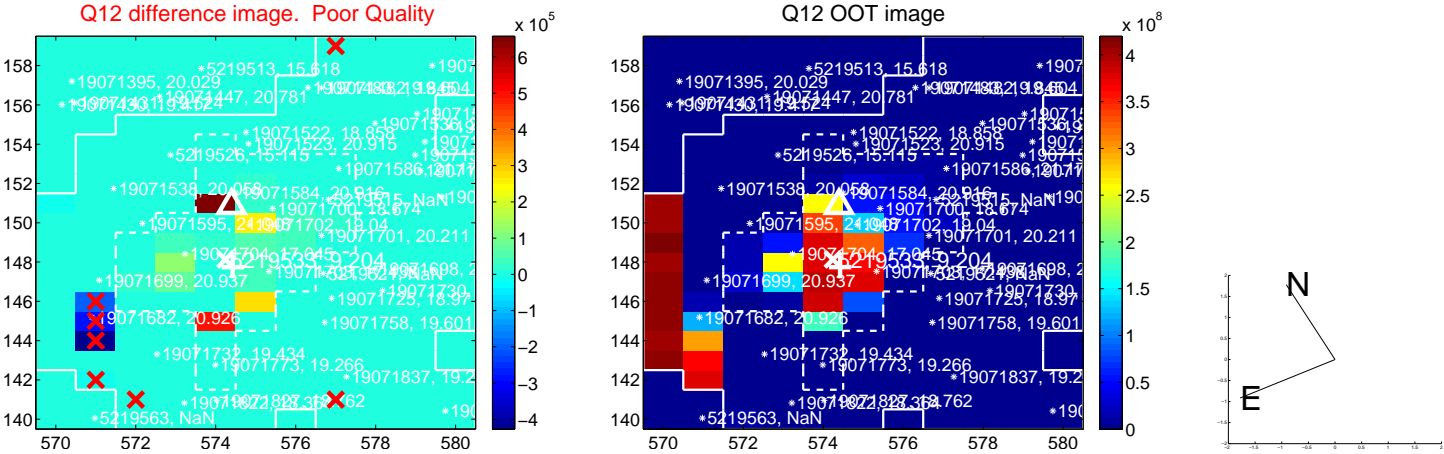
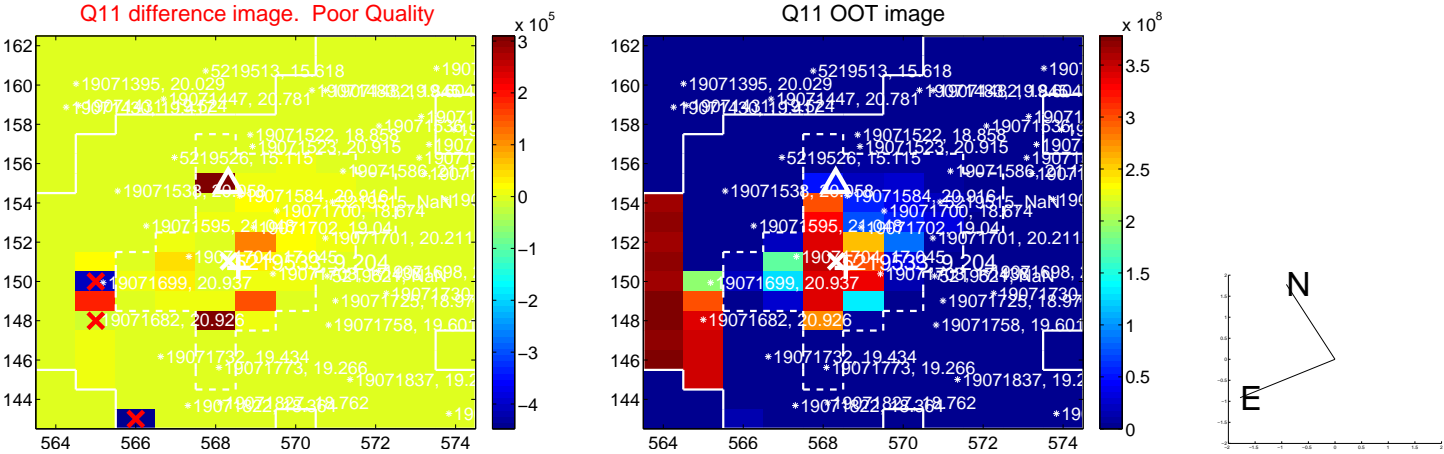
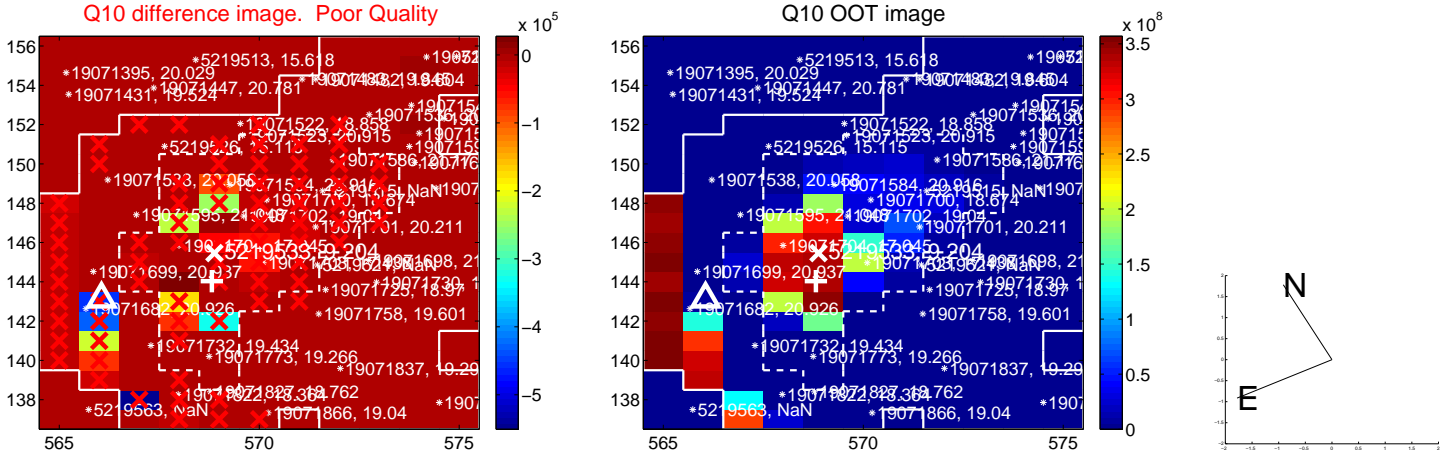
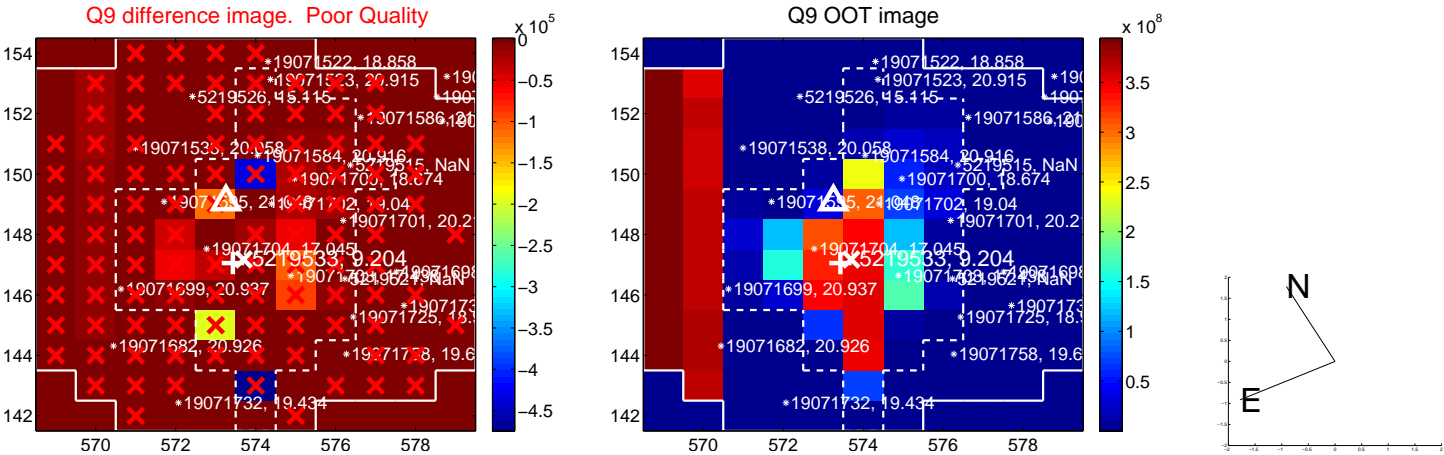
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



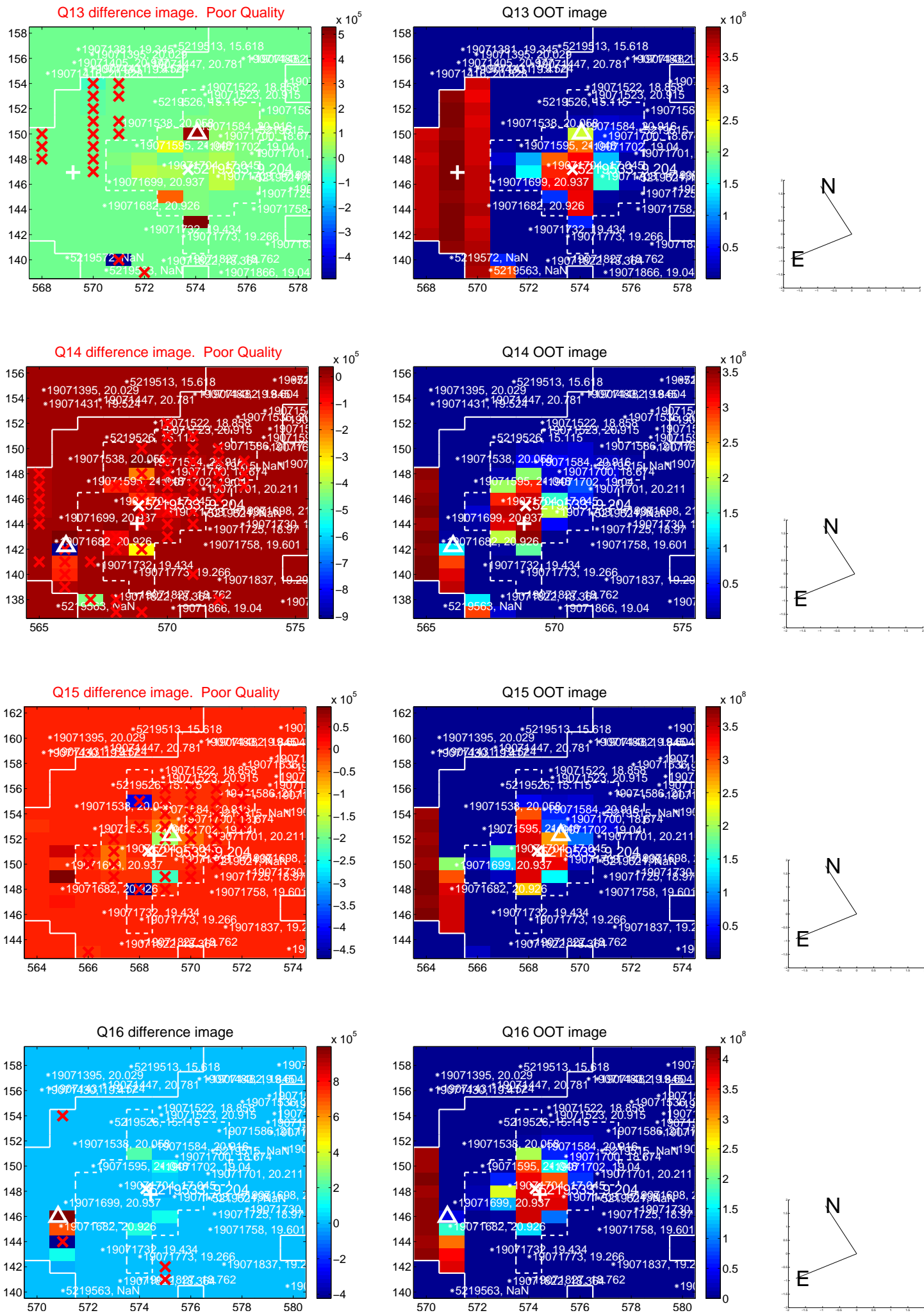
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



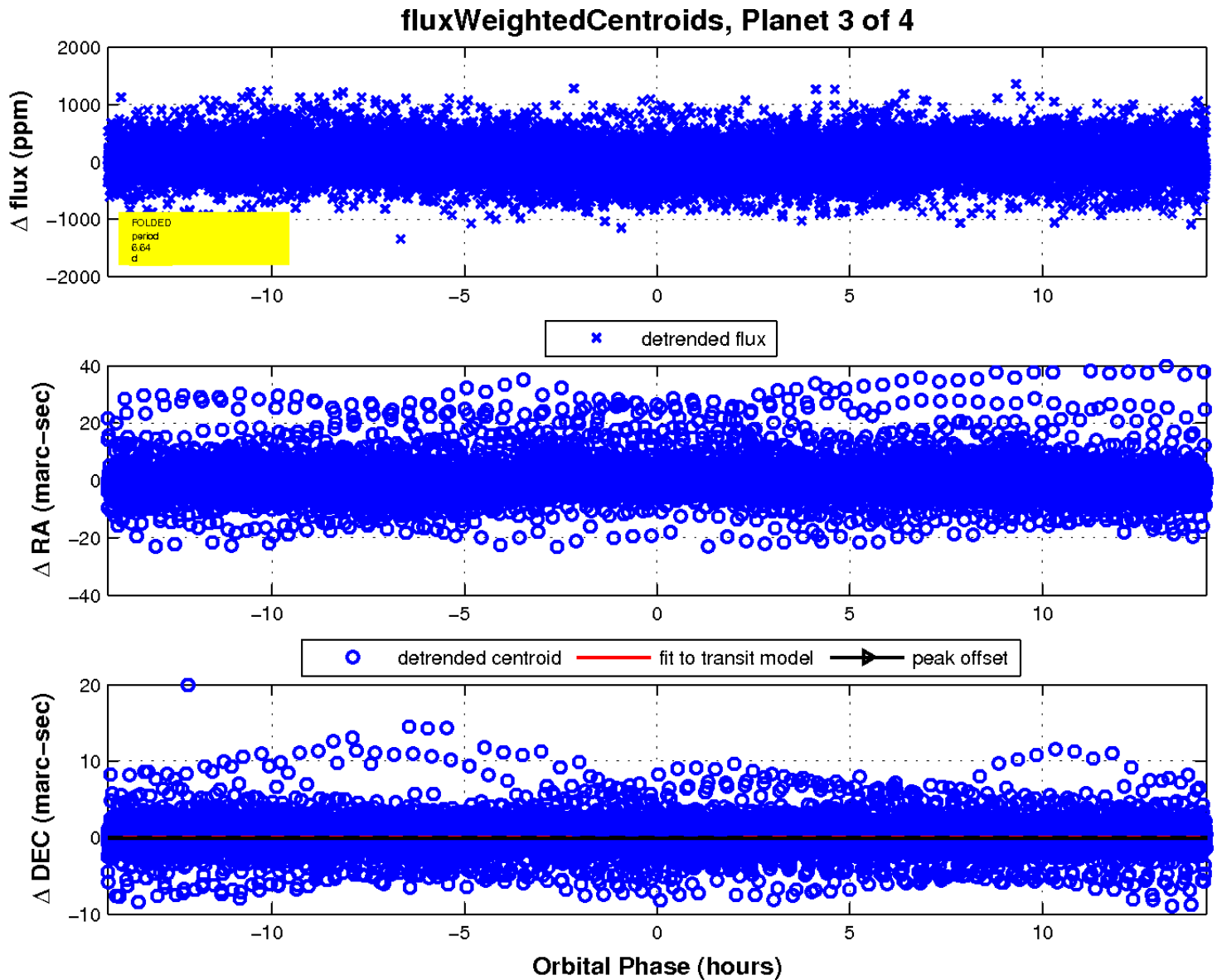
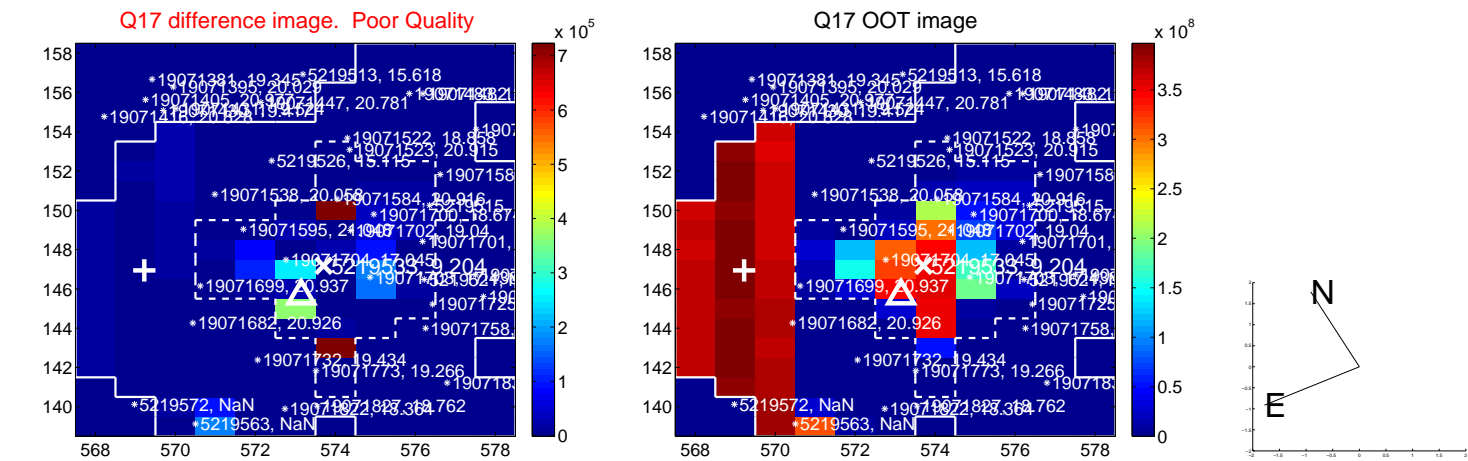
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



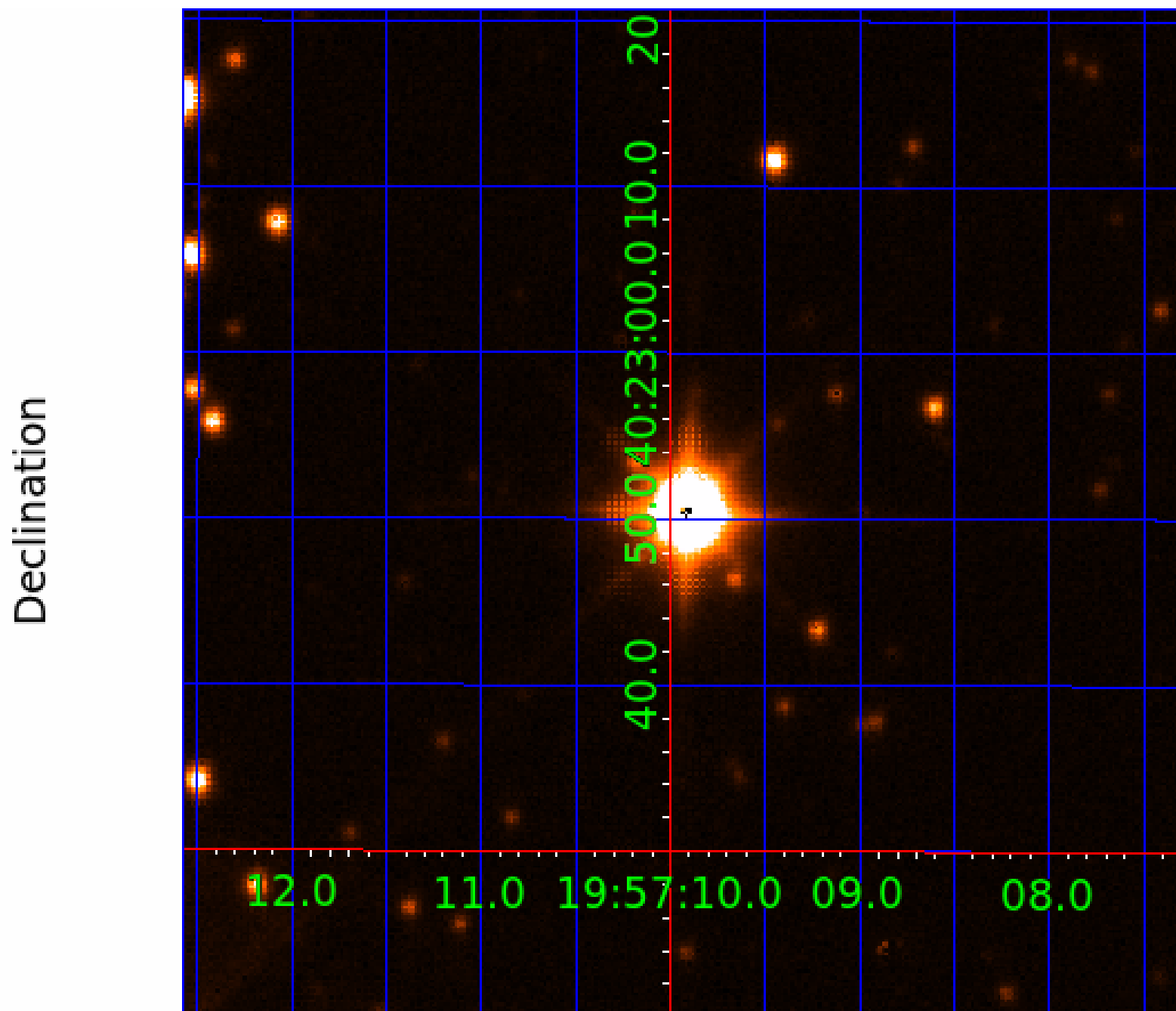
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 005219533

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})
005219533-01	OBS	No	1.141550	131.719290	41.6	3.462	9.6	8.2	2.68	7657	2.01	31212.17
005219533-02	OBS	No	0.549102	131.663530	41.0	1.649	9.6	9.7	2.68	7657	1.99	82815.72
005219533-03	OBS	No	6.643976	134.275102	118.5	4.752	7.8	7.1	2.68	7657	3.37	2981.35
005219533-04	OBS	No	10.482292	140.946912	193.2	4.401	7.7	7.6	2.68	7657	4.61	1623.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005219533-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
005219533-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005219533-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

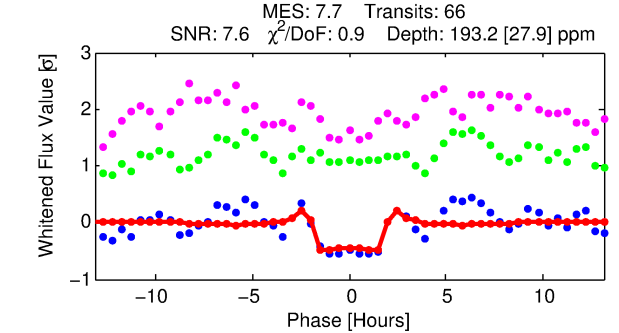
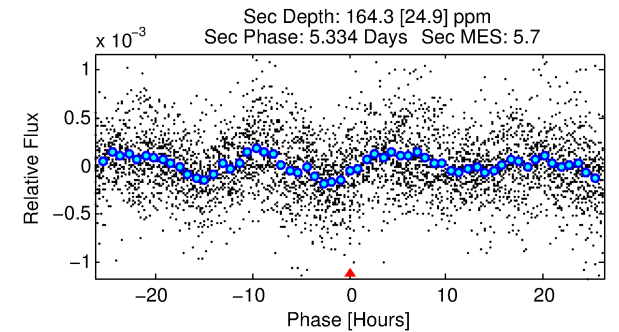
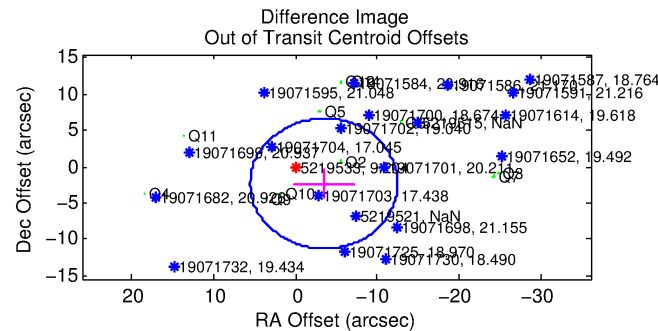
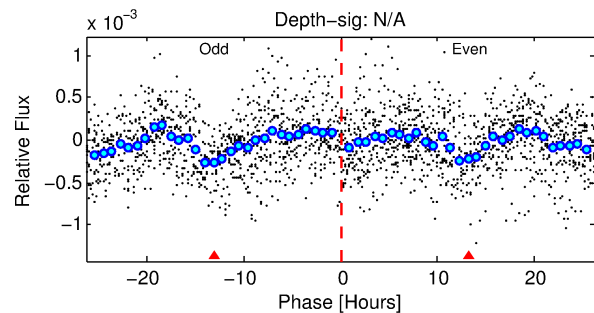
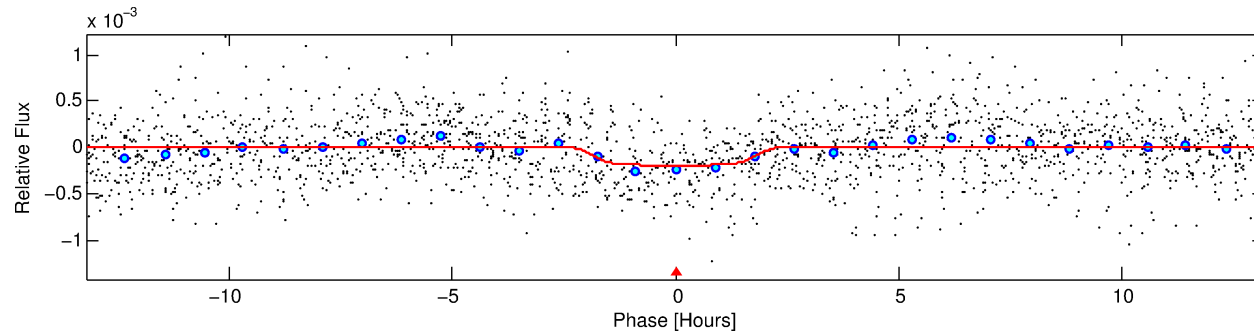
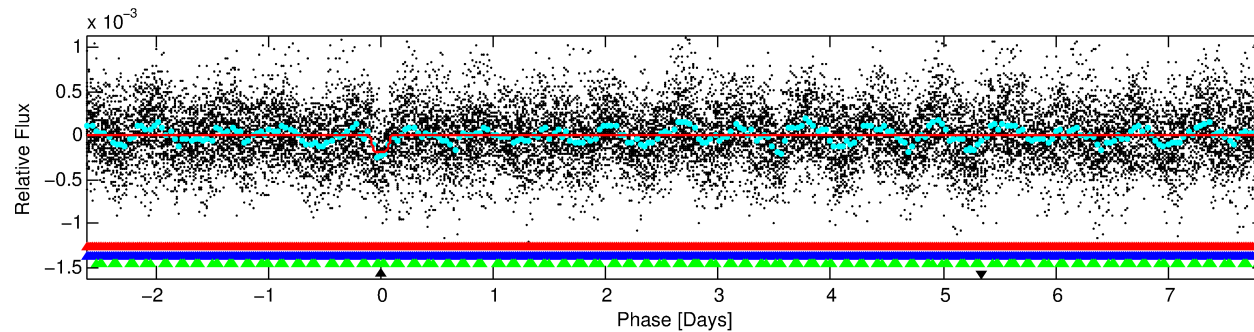
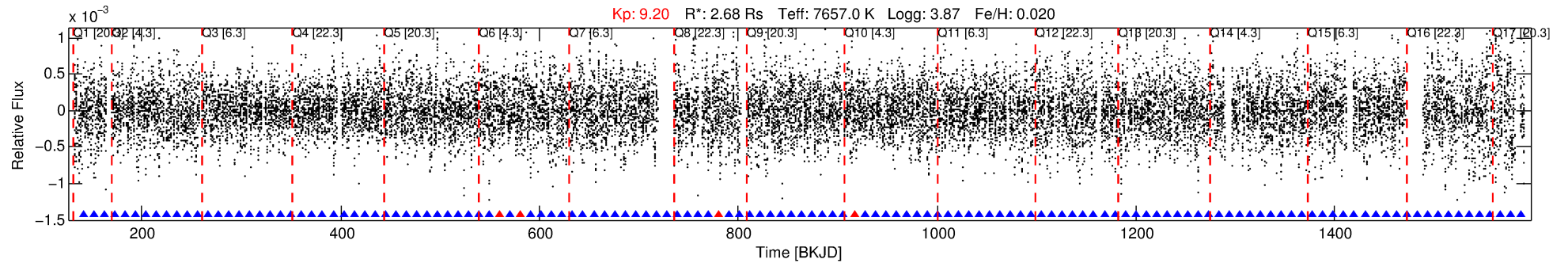
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005219533-04

No Significant Match Found

DV One-Page Summary

KIC: 5219533 Candidate: 4 of 4 Period: 10.482 d



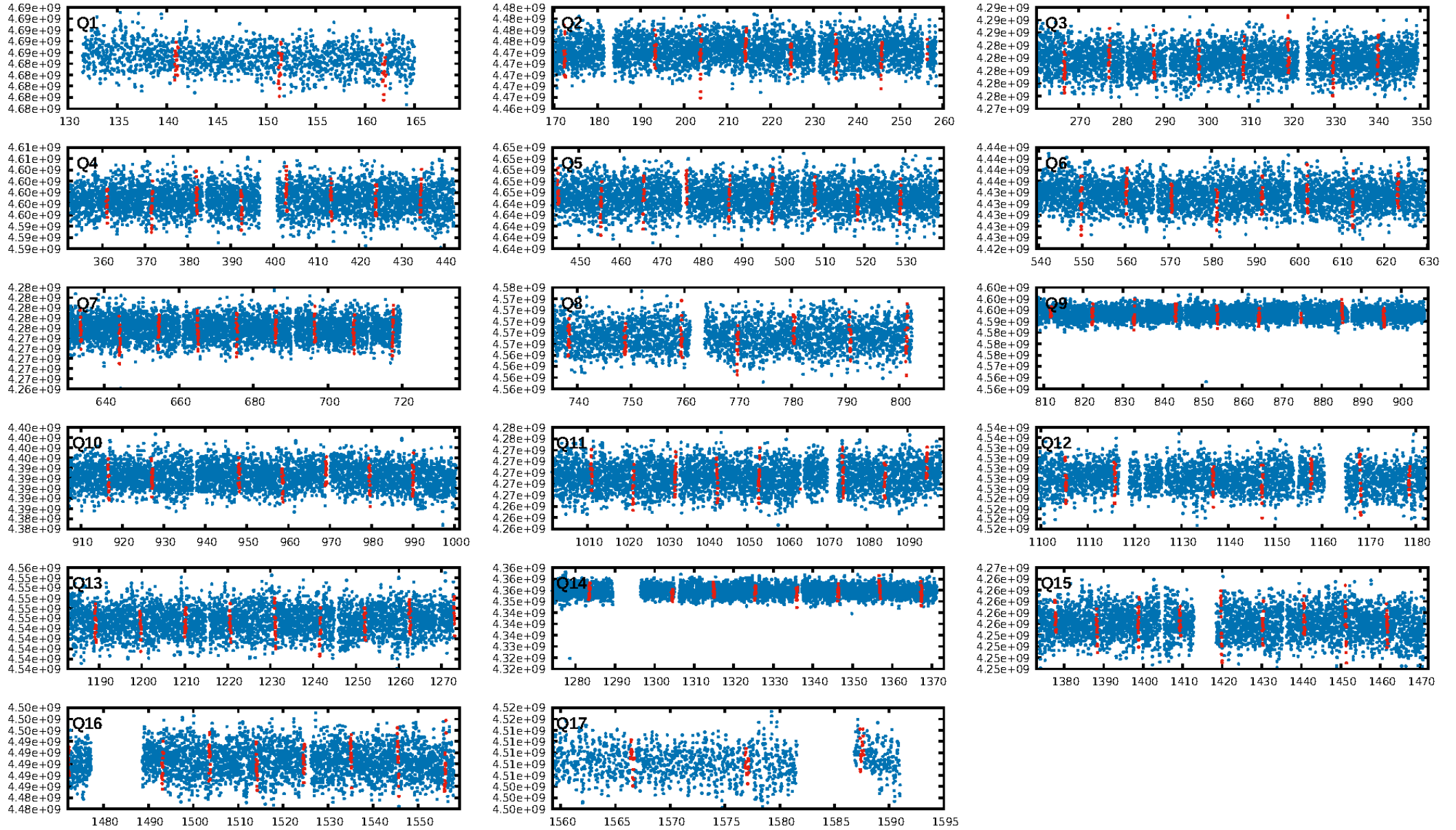
DV Fit Results:

Period = 10.48229 [0.00010] d
Epoch = 140.9469 [0.0073] BKJD
Rp/R* = 0.0157 [0.0015]
a/R* = 6.20 [1.78]
b = 0.96 [0.03]
Seff = 1623.21 [916.37]
Teq = 1619 [228] K
Rp = 4.61 [1.79] Re
a = 0.1169 [0.0403] AU
Ag = 58.11 [34.09] [1.68σ]
Teffp = 6909 [517] K [9.35σ]

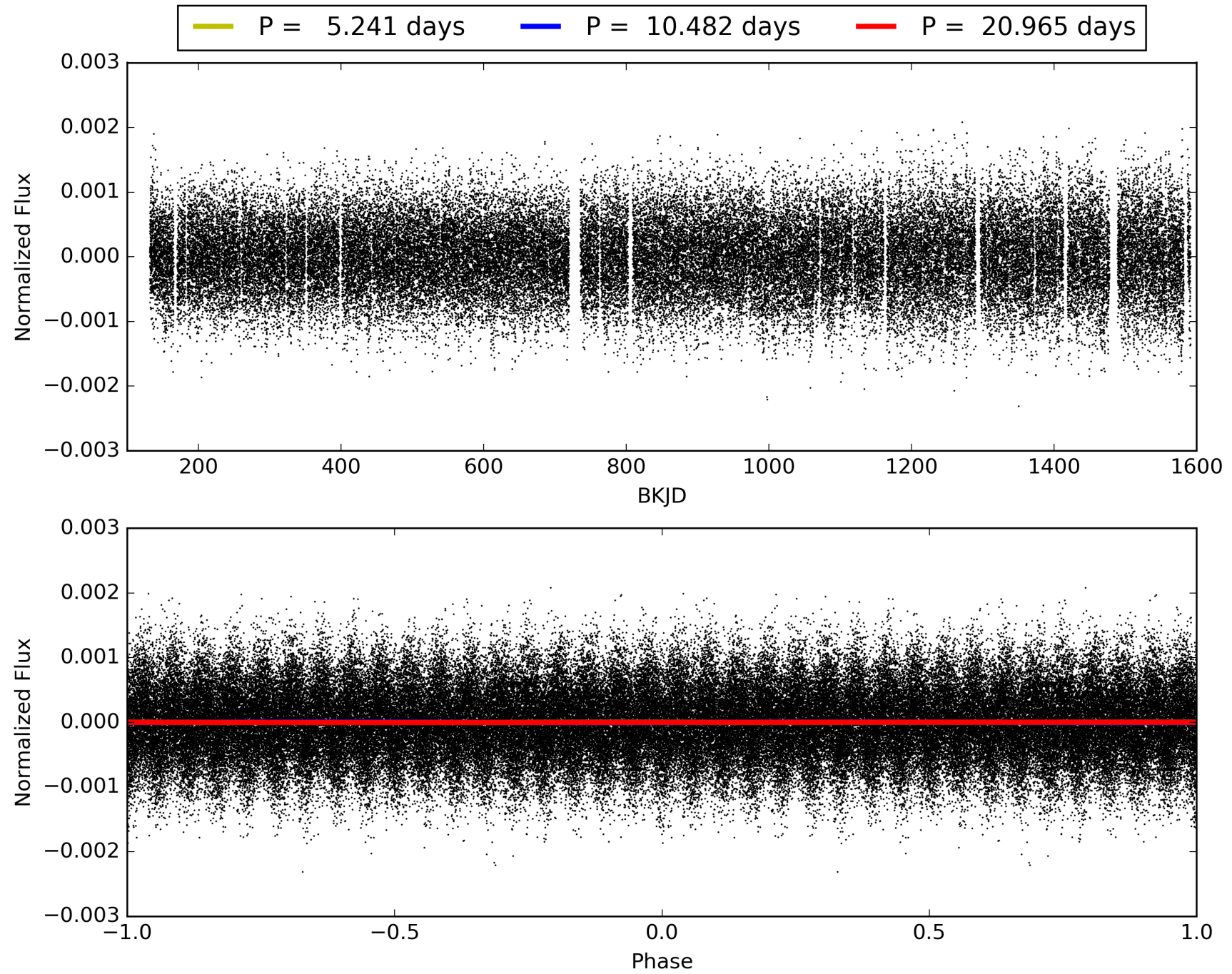
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [14.22σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 30.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.94 [60/64]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 1.865 arcsec [2.65σ]
OotOffset-rm: 4.188 arcsec [1.40σ]
KicOffset-rm: 4.230 arcsec [2.70σ]
OotOffset-st: 4/3/2/2 [11]
KicOffset-st: 4/3/2/2 [11]
DiffImageQuality-fgm: 0.18 [2/11]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 005219533-04, PDC Light Curves

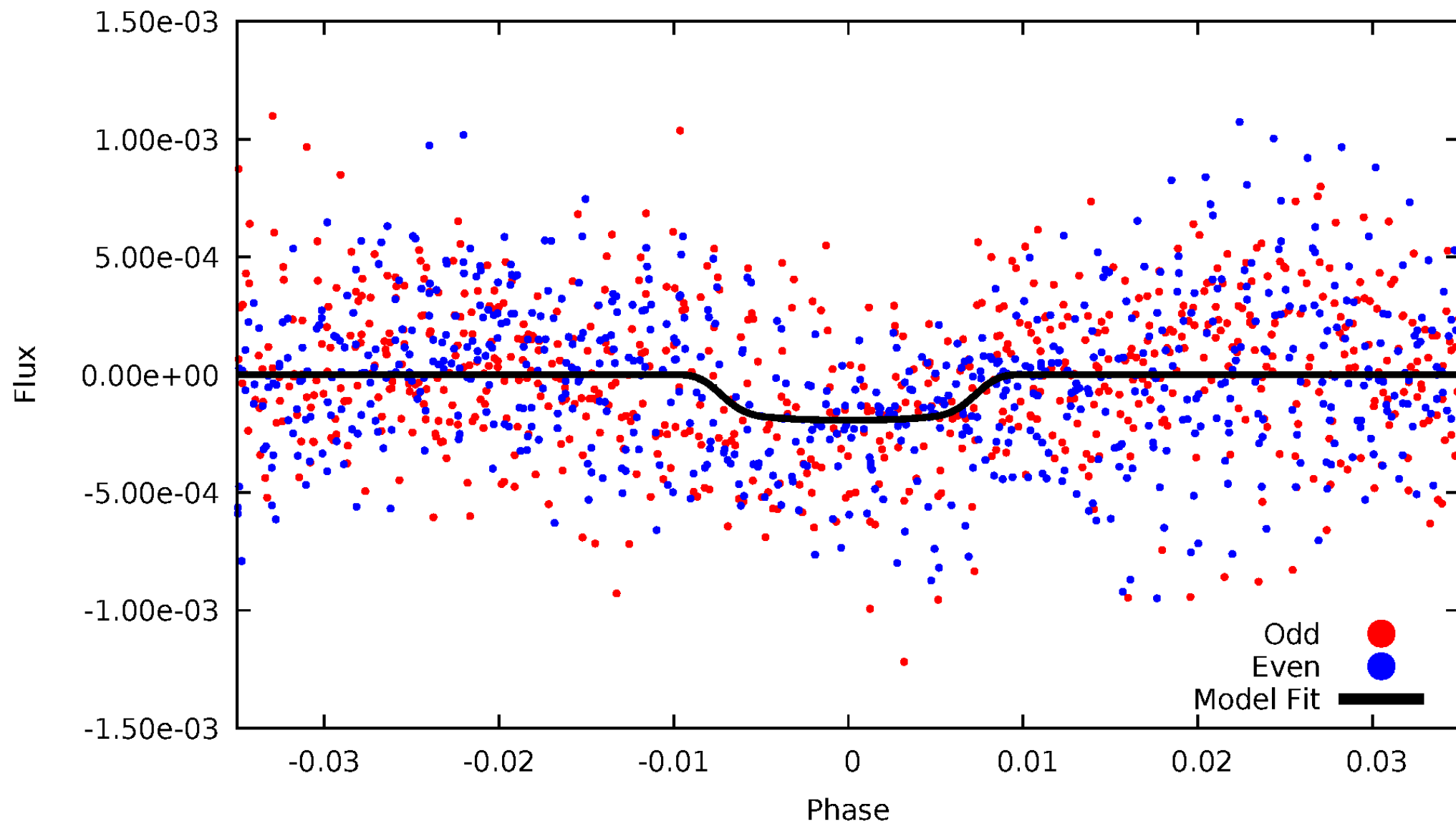


TCE 005219533-04



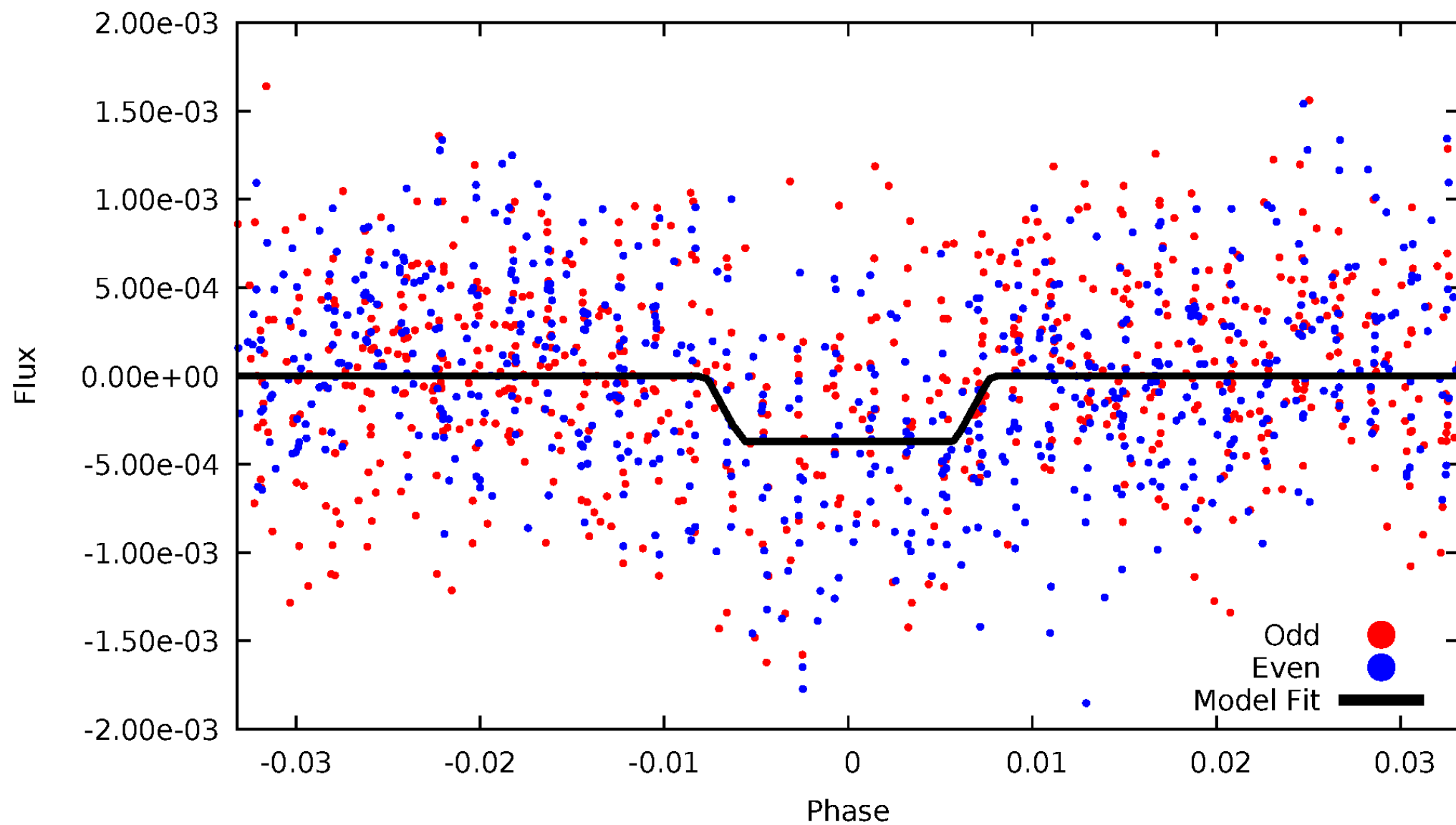
DV Odd/Even

TCE 005219533-04



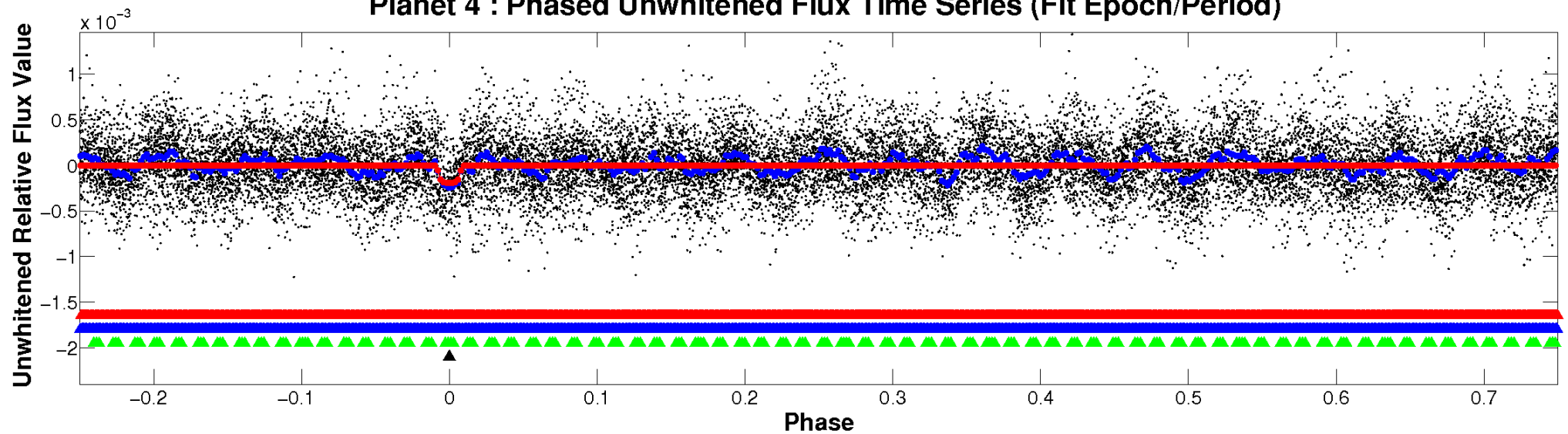
ALT Odd/Even

TCE 005219533-04

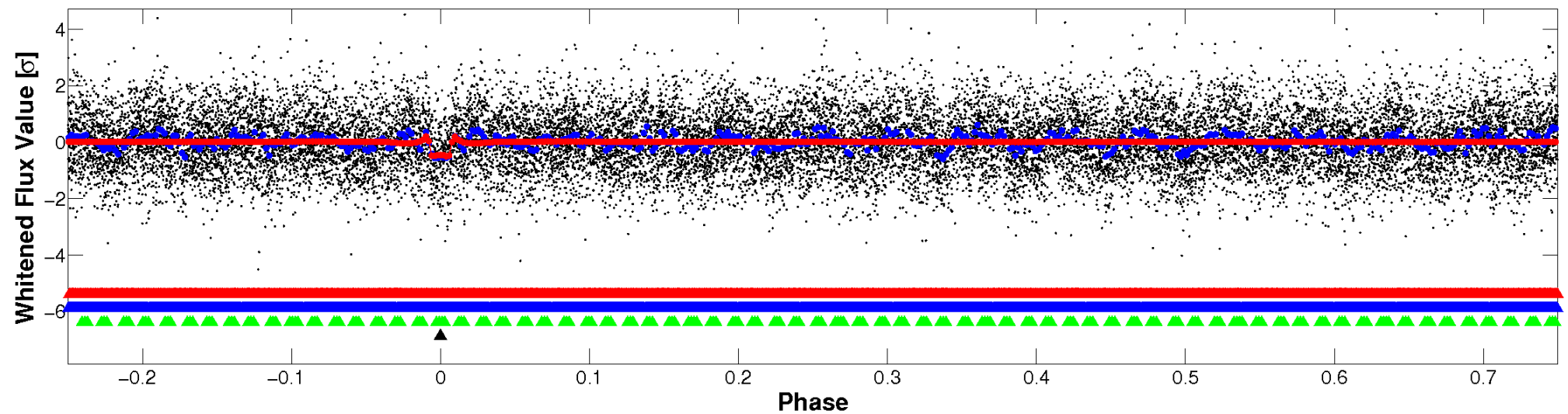


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

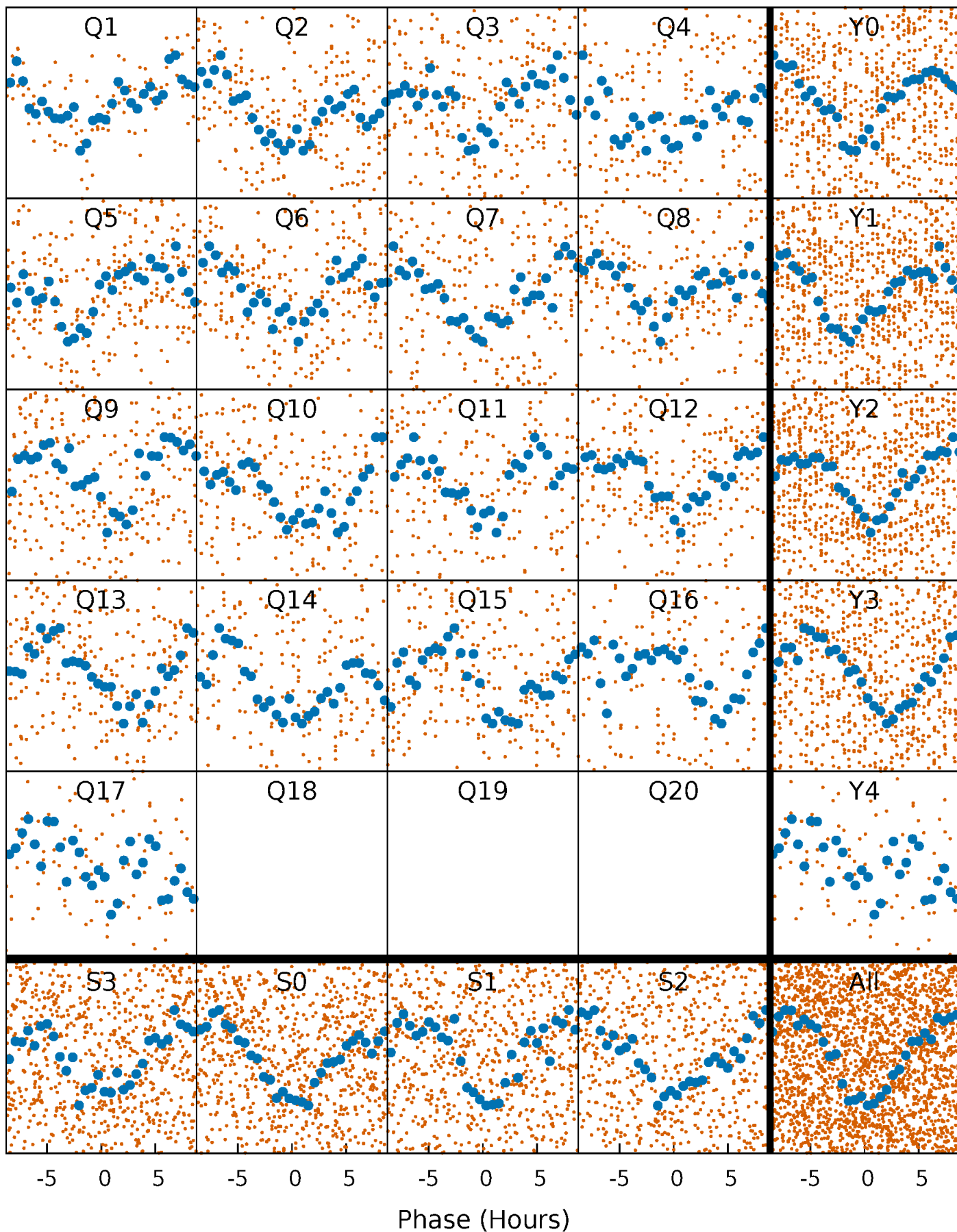


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



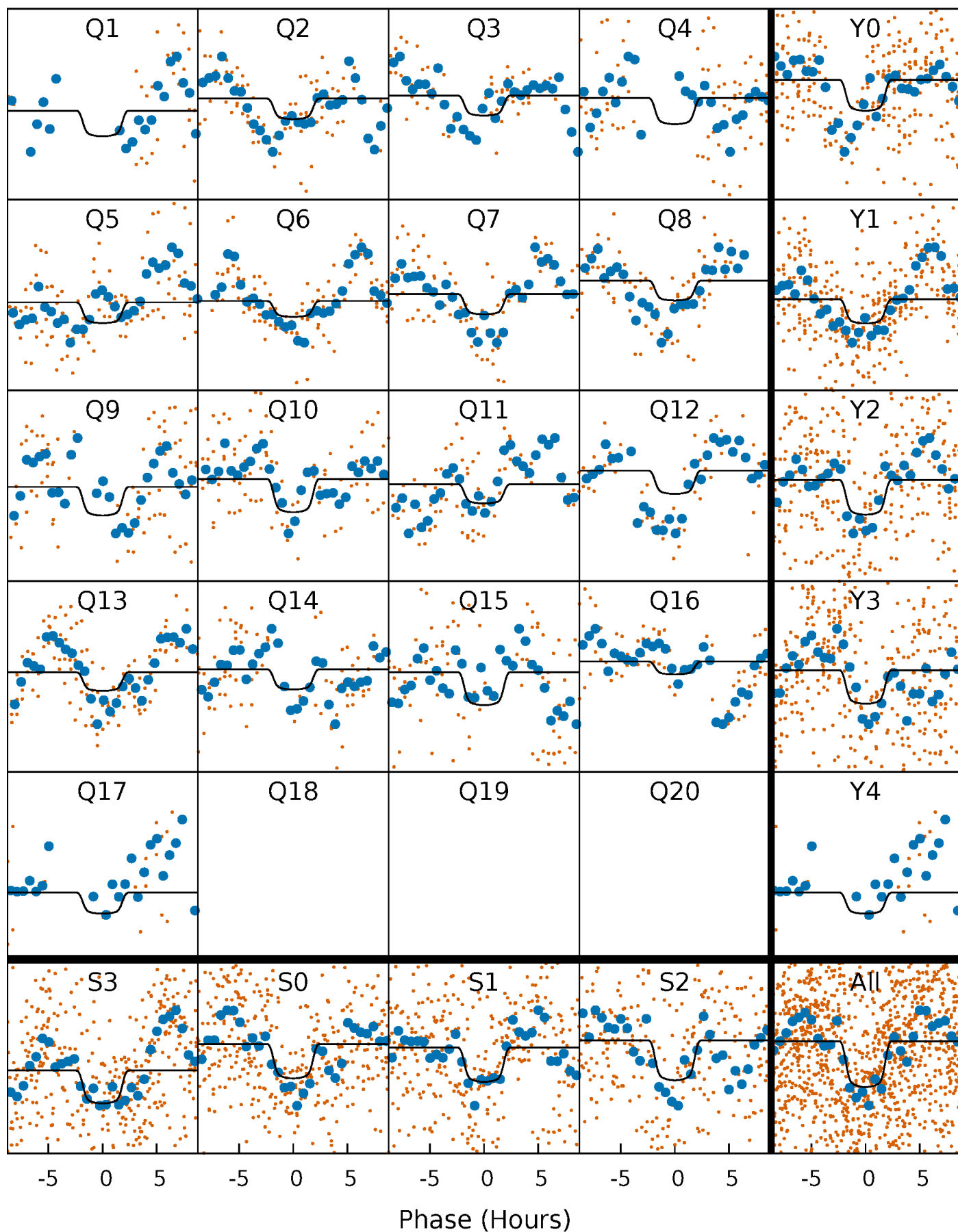
PDC Quarter-Phased Transit Curves

TCE 005219533-04 P= 10.482292 Days $T_0=140.946912$ (BKJD)



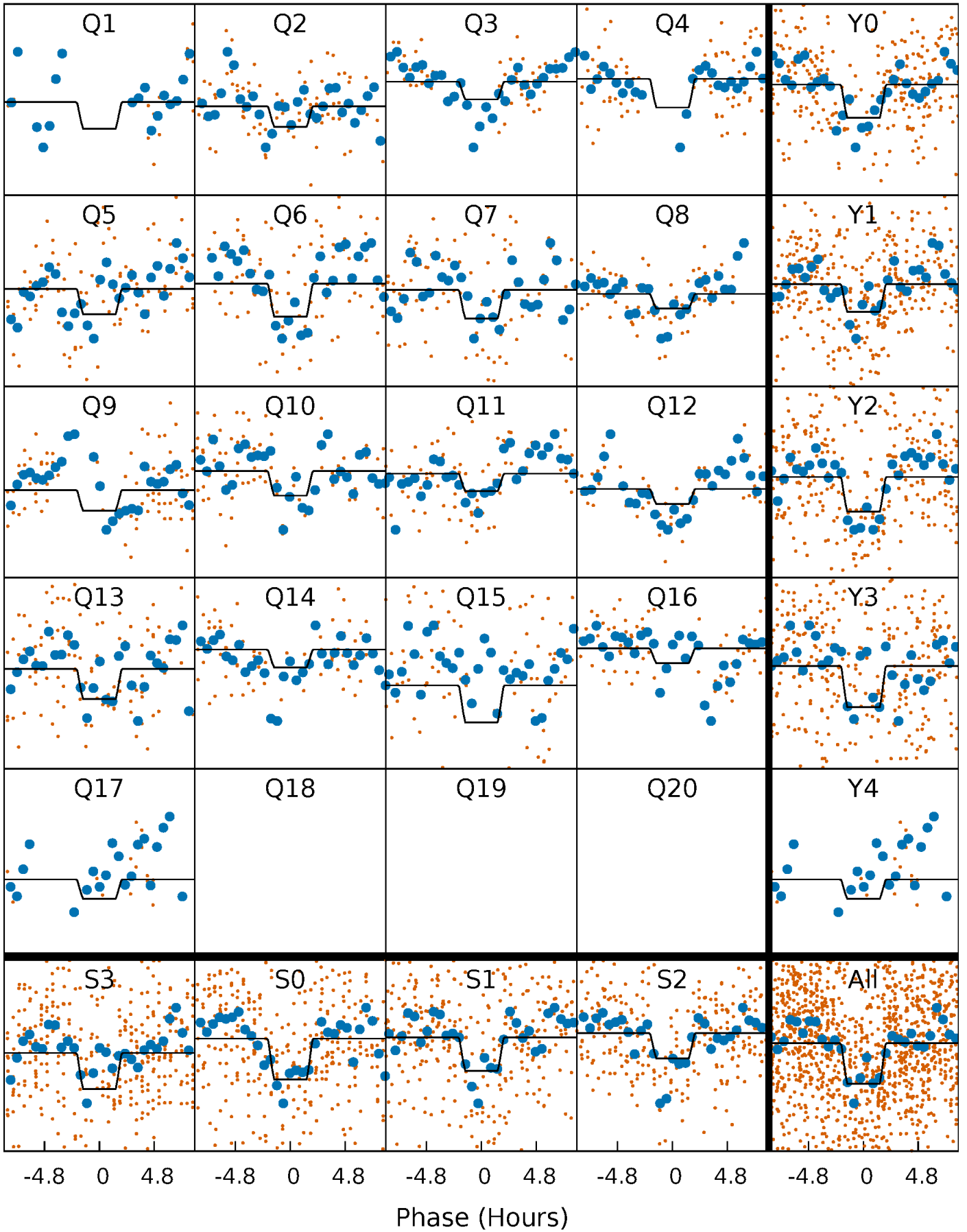
DV Quarter-Phased Transit Curves

TCE 005219533-04 P= 10.482292 Days $T_0=140.946912$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

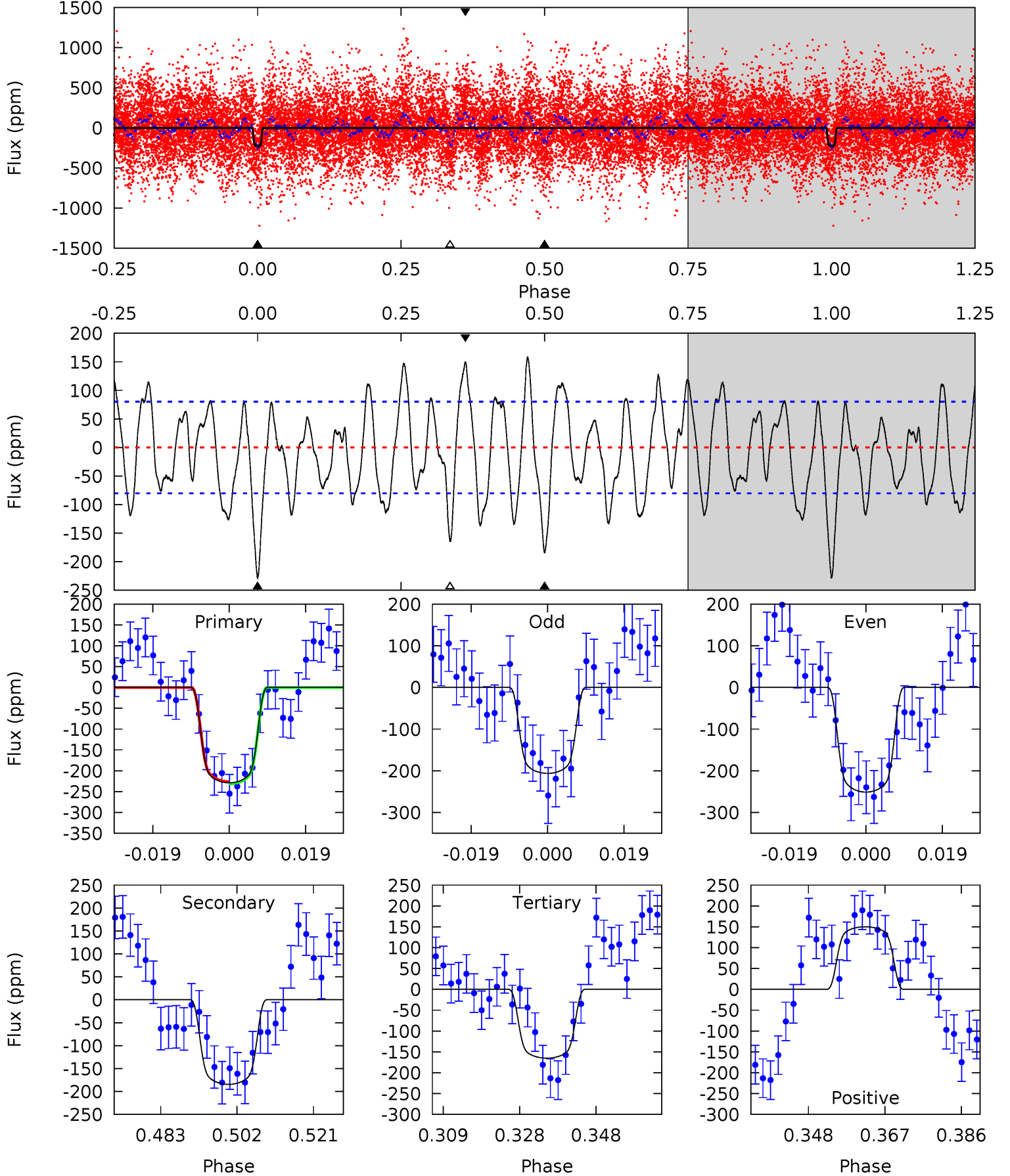
TCE 005219533-04 P= 10.483038 Days $T_0=140.896685$ (BKJD)



DV Model-Shift Uniqueness Test

005219533-04, P = 10.482292 Days, E = 130.464620 Days

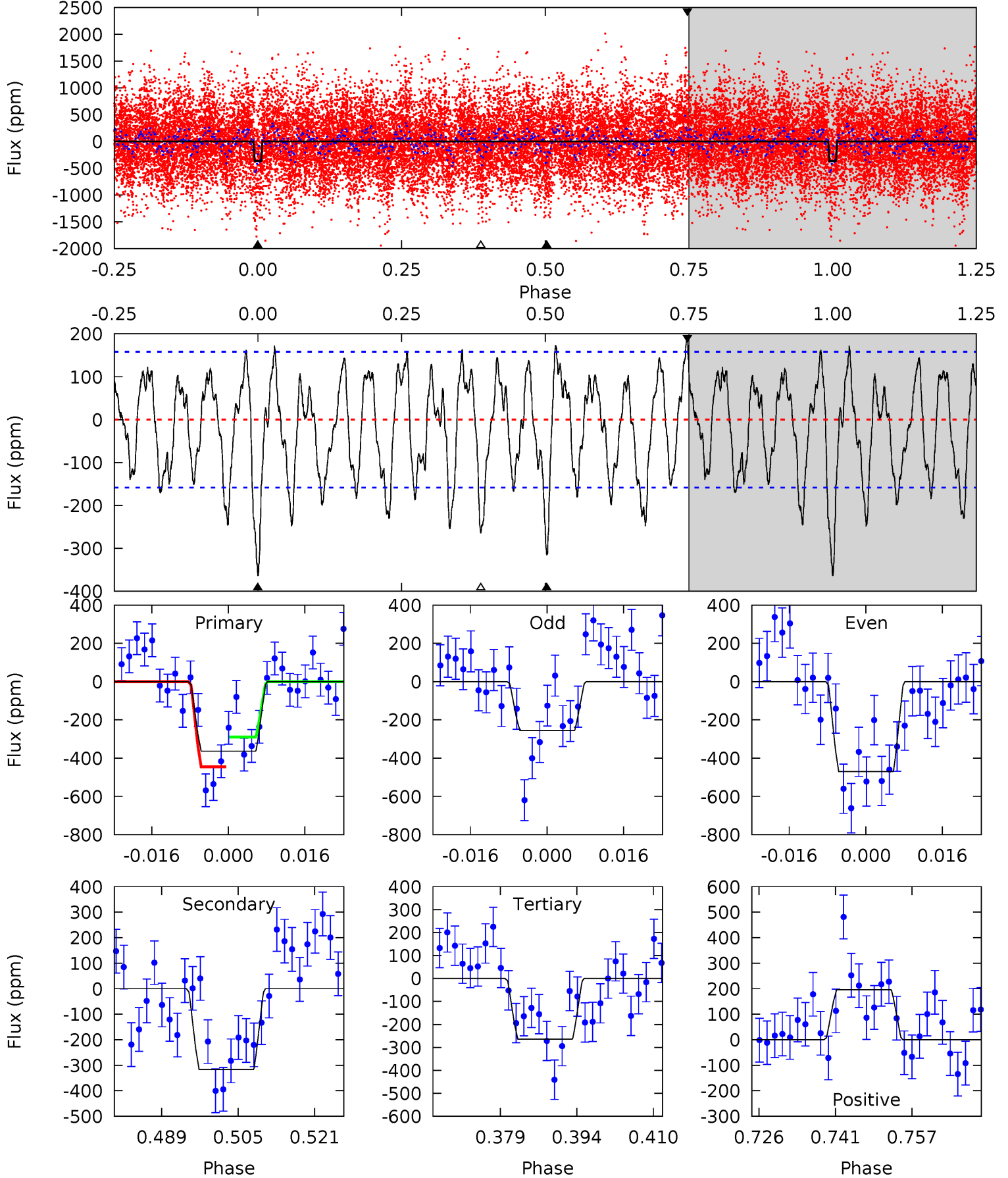
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	11.3	10.1	9.17	4.90	2.34	4.43	3.90	4.82	1.18	2.10	1.37	0.83	0.41	0.16



Alt Model-Shift Uniqueness Test

005219533-04, P = 10.483038 Days, E = 130.413647 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	9.86	8.23	6.10	4.94	2.41	3.27	3.10	5.23	1.63	3.76	3.33	0.99	0.35	2.41



Stellar Parameters For KIC 005219533

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	7657^{+211}_{-343}	$3.868^{+0.308}_{-0.103}$	$0.020^{+0.200}_{-0.350}$	$2.684^{+0.433}_{-1.011}$	$1.938^{+0.083}_{-0.471}$	$0.141^{+0.325}_{-0.046}$
	+3%/-4%	+8%/-3%	+1000%/-1750%	+16%/-38%	+4%/-24%	+230%/-33%
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 005219533-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-184 ± 16	$4.35^{+0.76}_{-0.86}$	2205^{+144}_{-207}	6962^{+476}_{-432}	71^{+37}_{-19}
Alt.	-316 ± 32	$5.34^{+0.86}_{-1.09}$	2203^{+154}_{-220}	7275^{+495}_{-457}	81^{+42}_{-21}

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

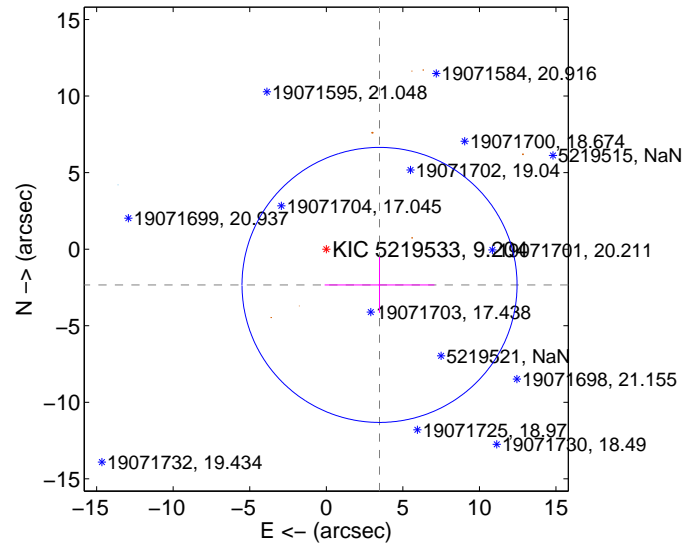
Supplemental centroid analysis for 005219533-04. **Kepler magnitude: 9.20.** Transit SNR 7.62

There are 2 quarters with good PRF difference image offsets

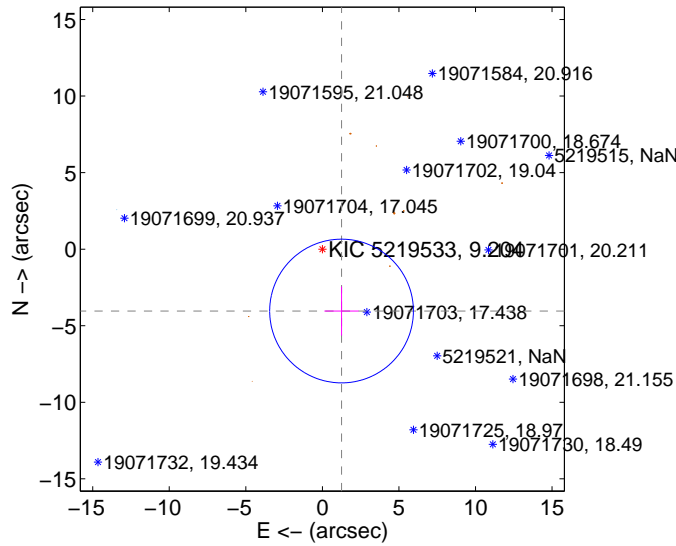
The OOT PRF centroid is offset from the target star catalog position by about 5.70 arcsec so the offset from difference PRF-fit to OOT-PRF-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.188 ± 2.994	1.40	-3.477 ± 3.586	-2.335 ± 1.823
PRF-fit source offset from KIC position	4.230 ± 1.564	2.70	-1.251 ± 1.119	-4.041 ± 1.601
photometric centroid source offset	1.87 ± 0.70	2.65	1.76 ± 0.72	0.62 ± 0.52

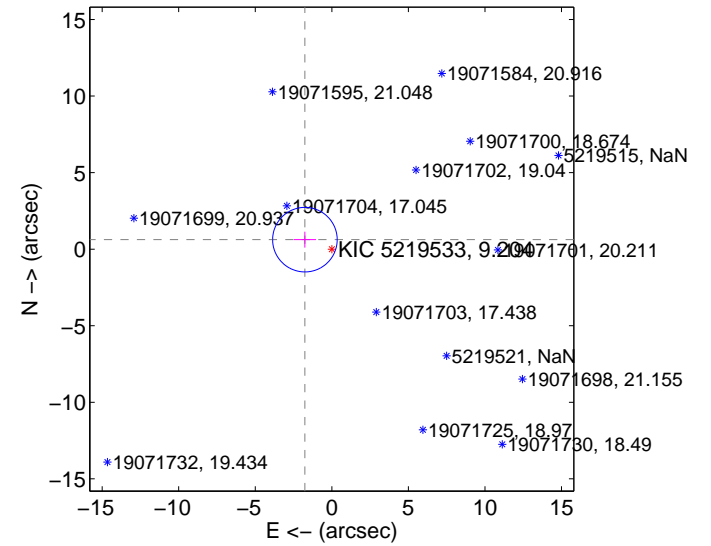
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

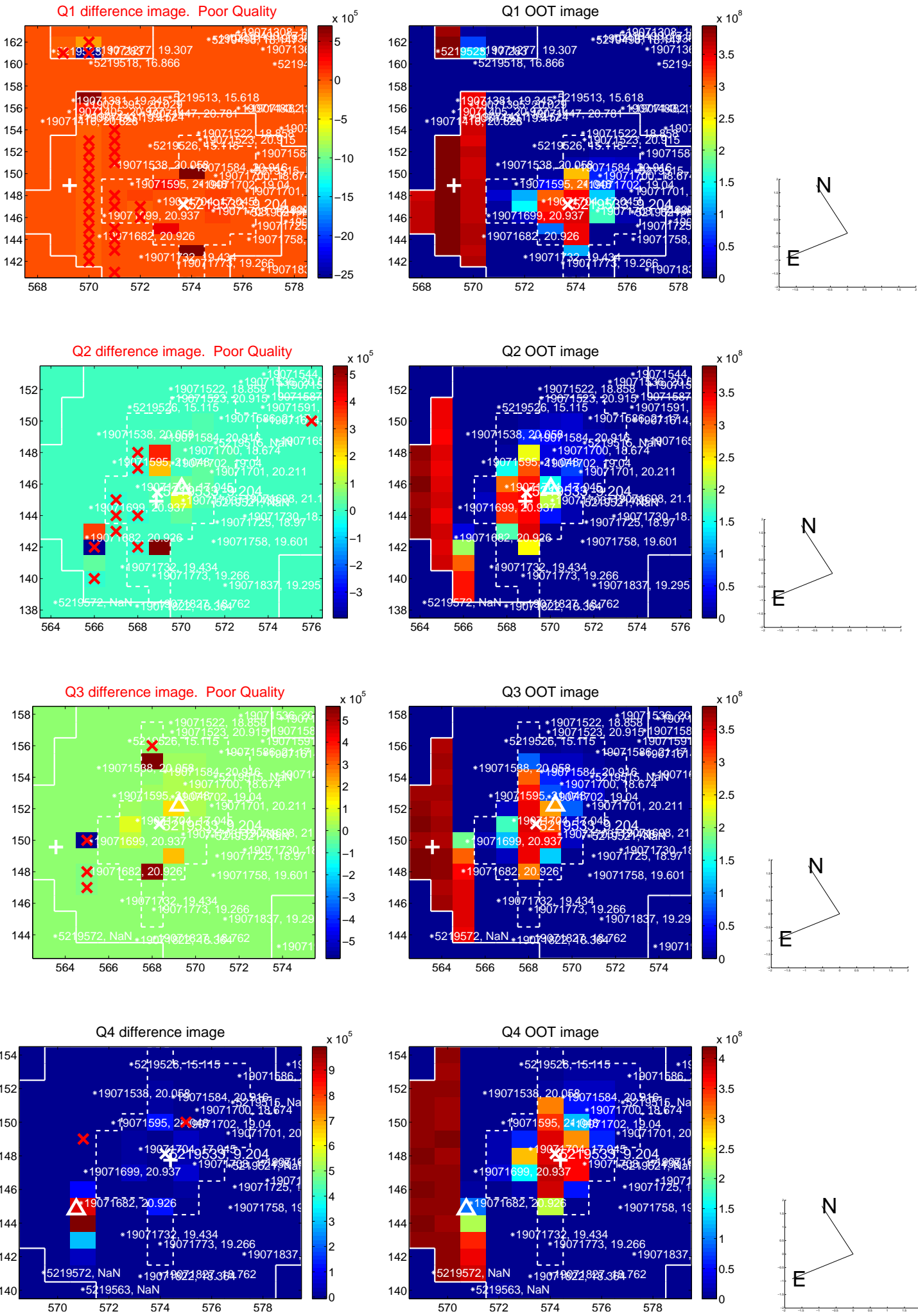


offset from photometric centroids

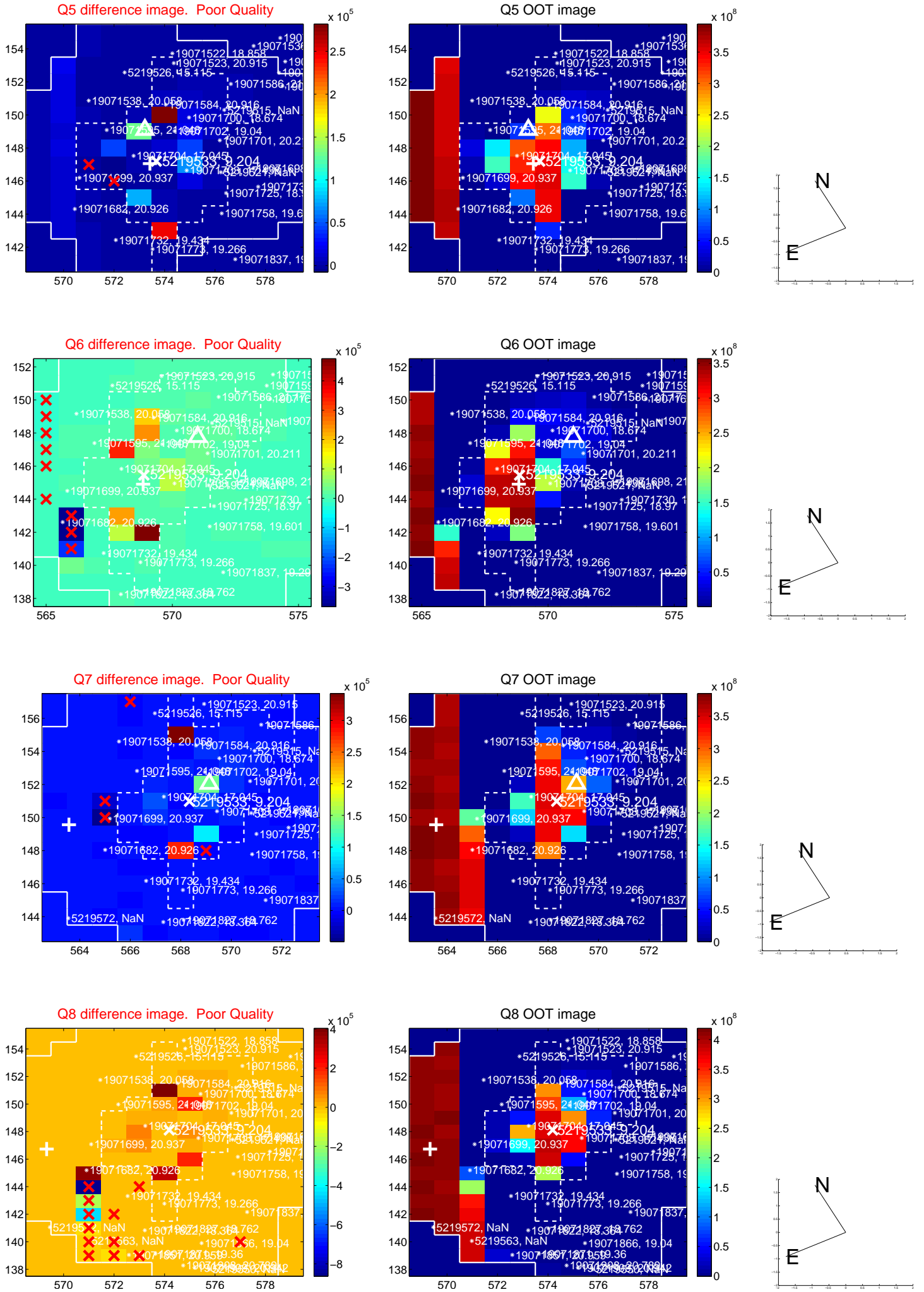


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

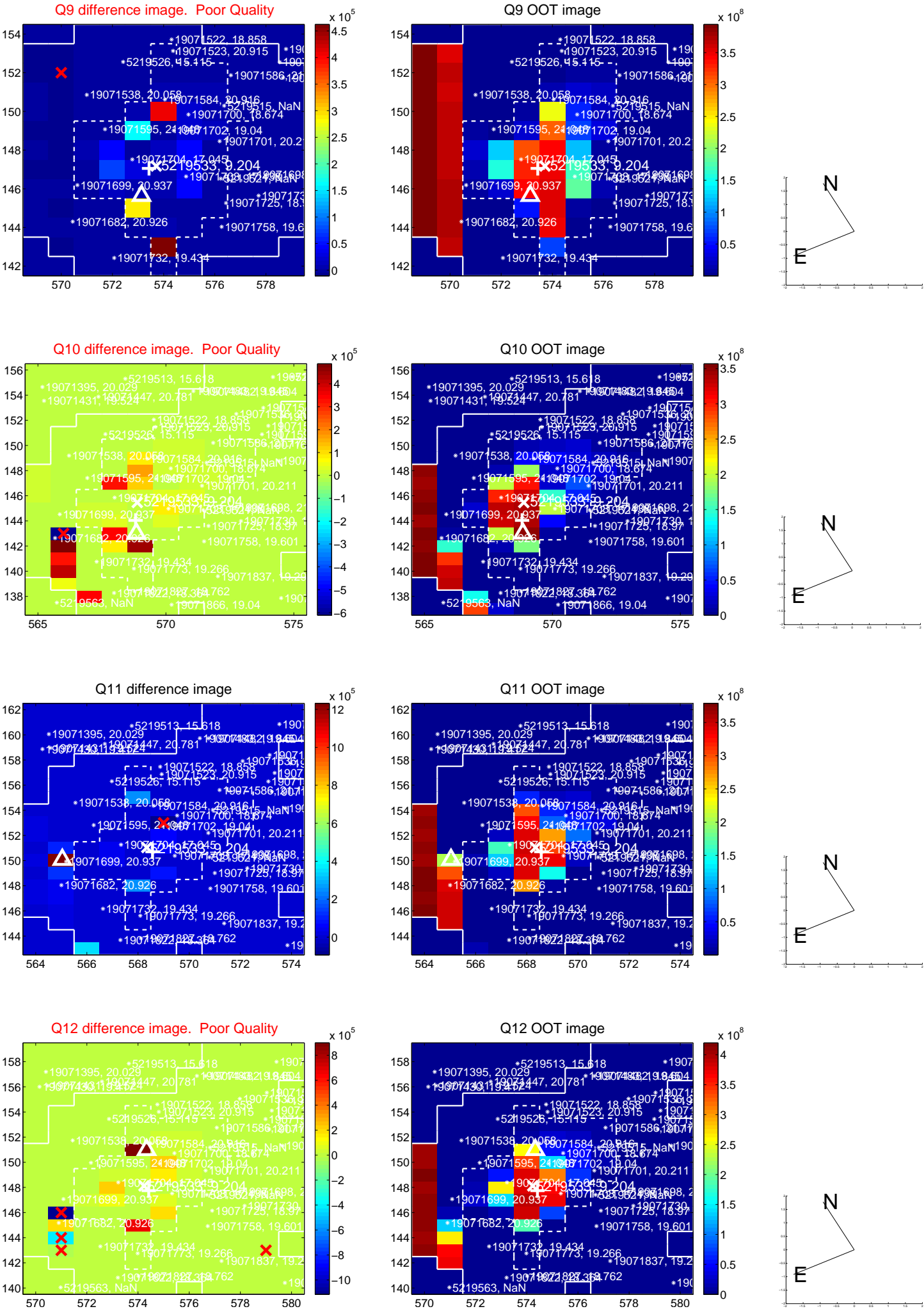
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



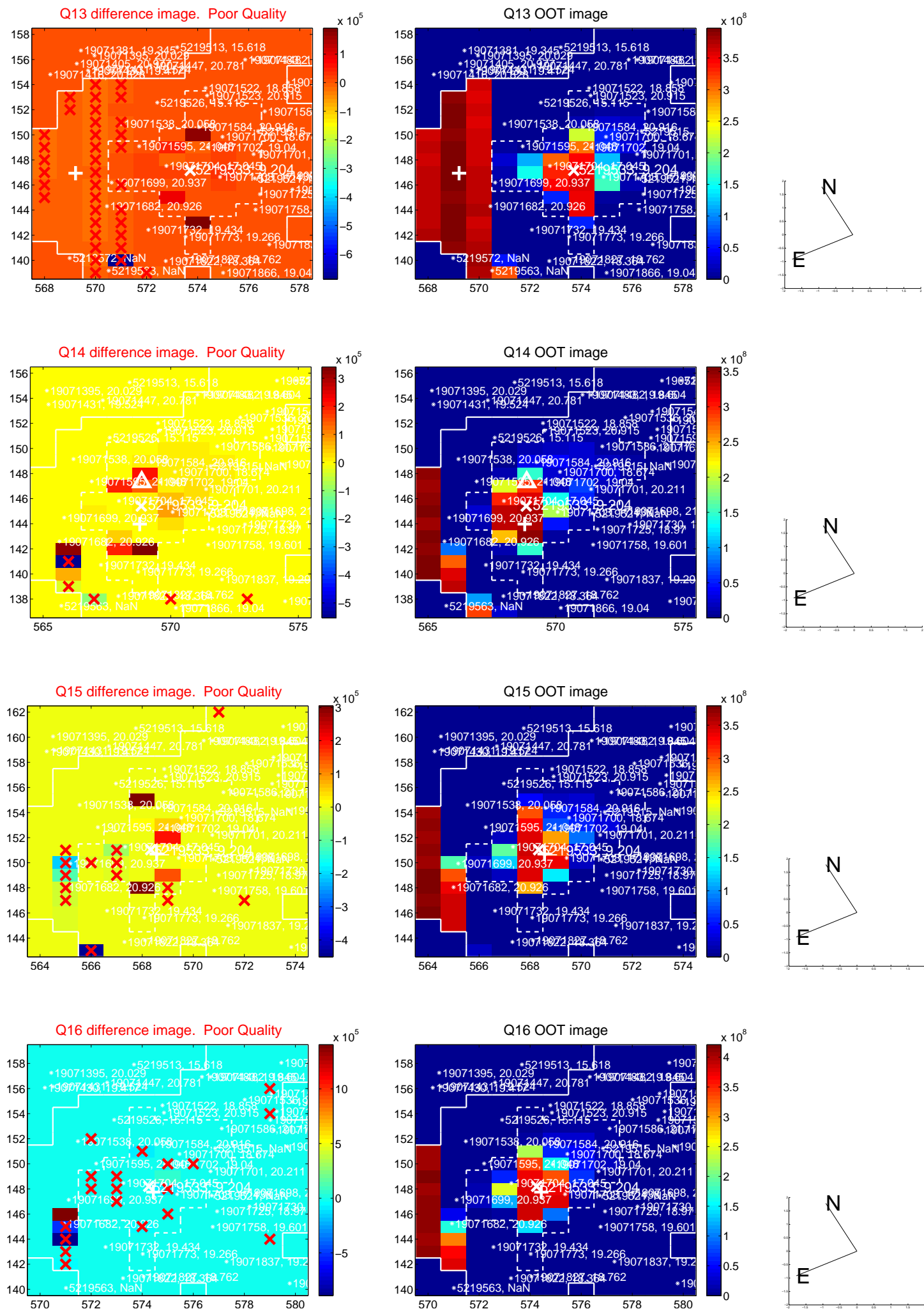
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



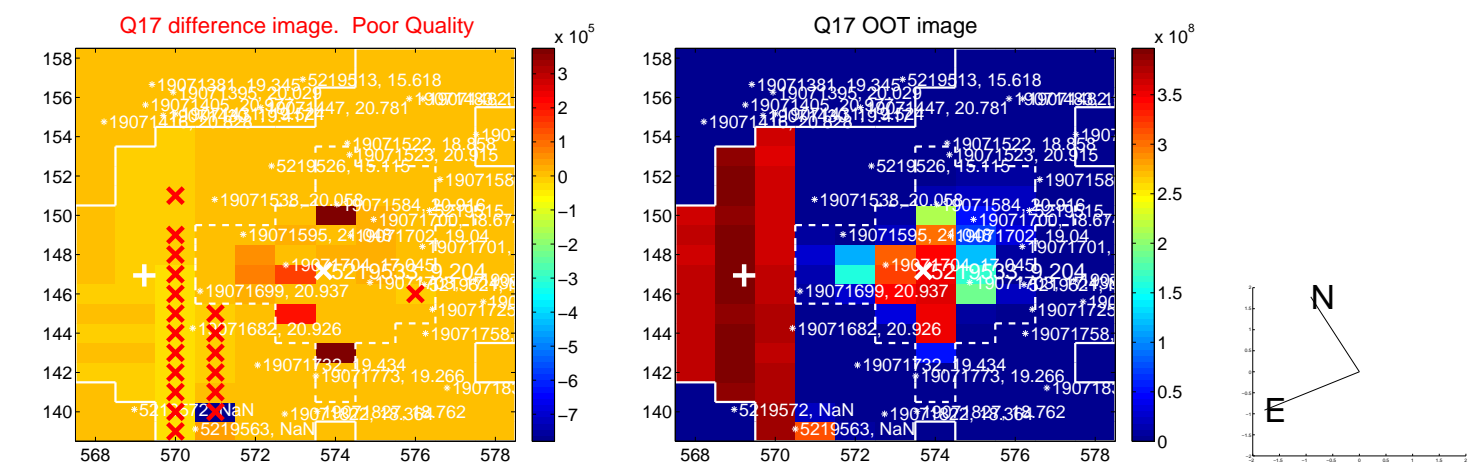
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



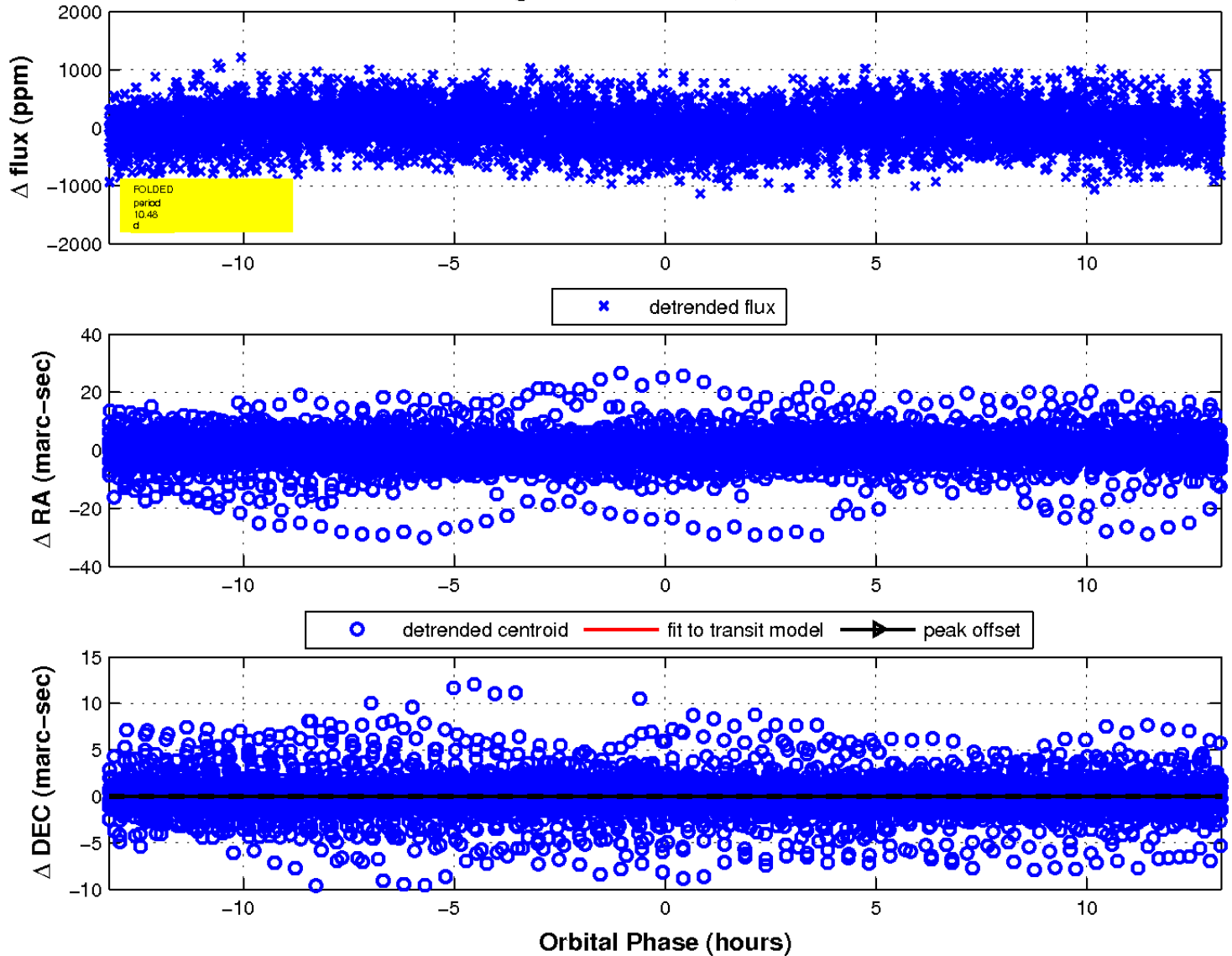
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

