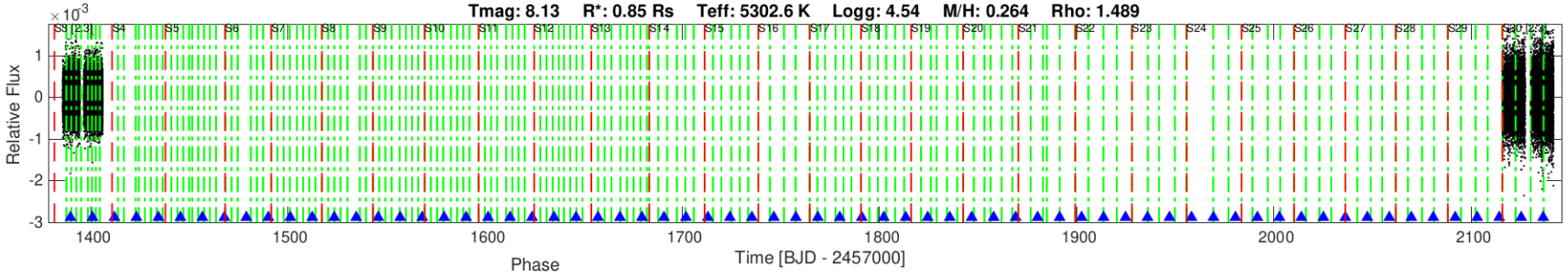
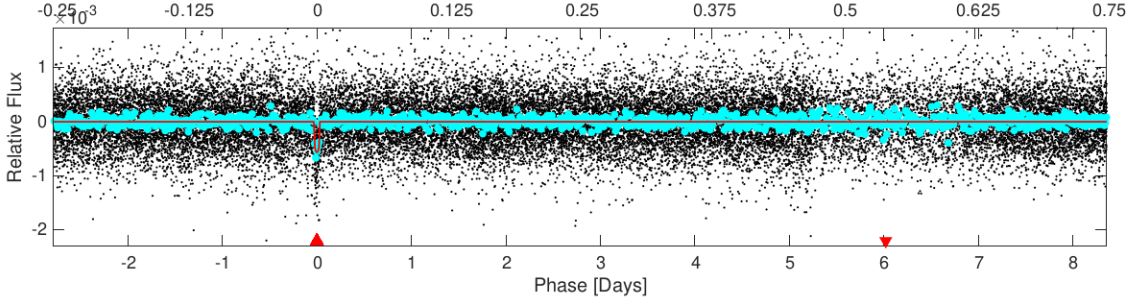
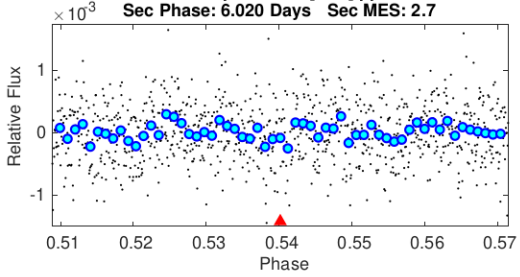
TIC: 70513361 Candidate: 1 of 1 Period: 11.145 d
TOI: 262.01 Corr: 0.927

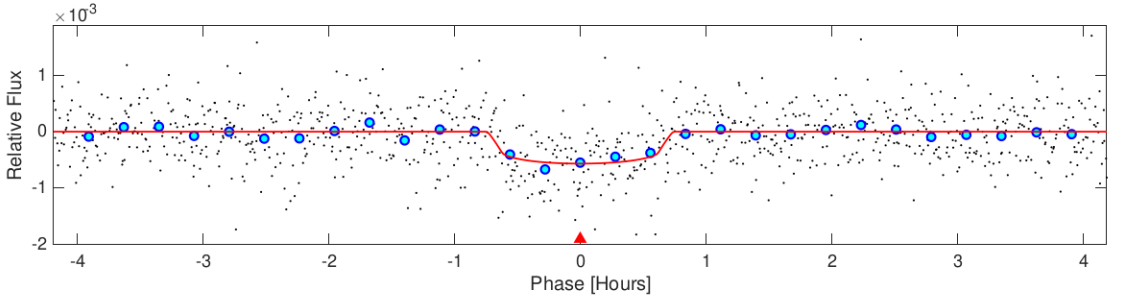
Tmag: 8.13 R*: 0.85 Rs Teff: 5302.6 K Logg: 4.54 M/H: 0.264 Rho: 1.489



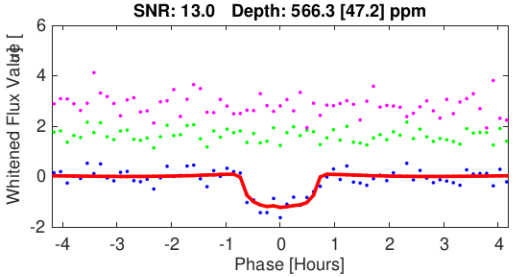


Sec Depth: 181.2 [71.5] ppm
Sec Phase: 6.020 Days Sec MES: 2.7

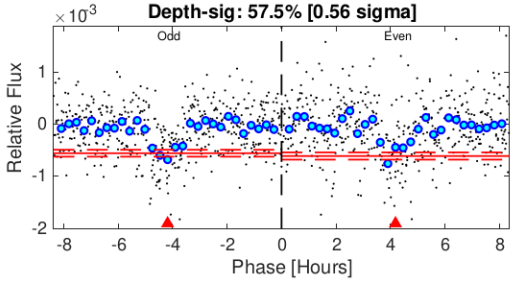




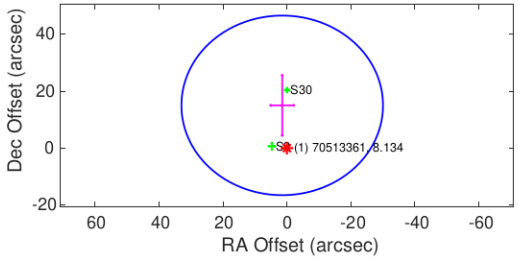
MES: 12.8 Transits: 4
SNR: 13.0 Depth: 566.3 [47.2] ppm



Depth-sig: 57.5% [0.56 sigma]



Difference Image
TIC Position Centroid Offsets



DV Fit Results:

Period = 11.14528 [0.00004] d
Epoch = 1389.8426 [0.0012] BTJD
Rp/R* = 0.0223 [0.0229]
a/R* = 55.32 [263.19]
b = 0.47 [7.90]

Seff = 56.91 [10.03]
Teq = 701 [31] K
Rp = 2.07 [2.12] Re
a = 0.0947 [0.0076] AU
Rho = 18.313 [261.364]

Ag = 209.09 [437.69] [0.48 sigma]
Tp = 4119 [2153] K [1.59 sigma]

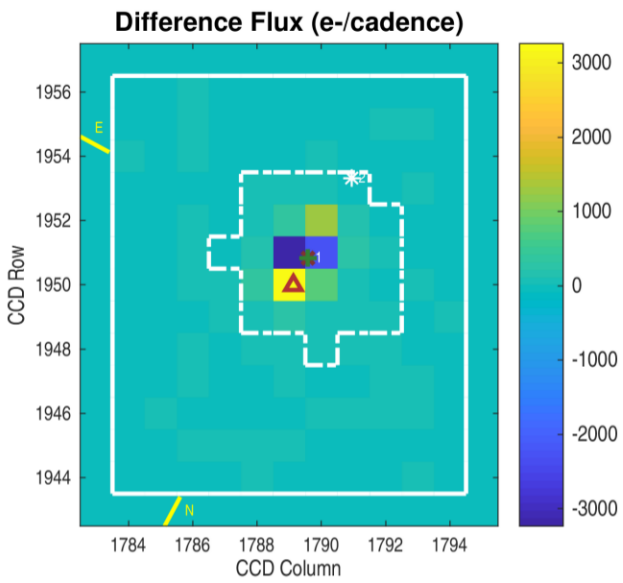
DV Diagnostic Results:

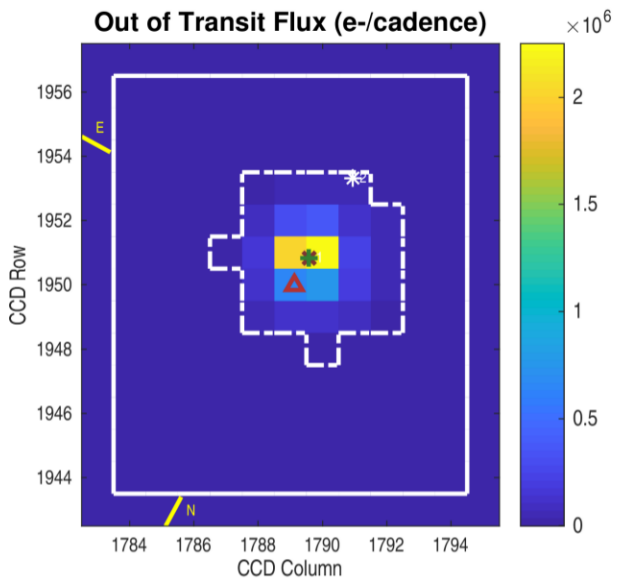
ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 77.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.44e-38
GhostDiagnostic-chr: -4.179

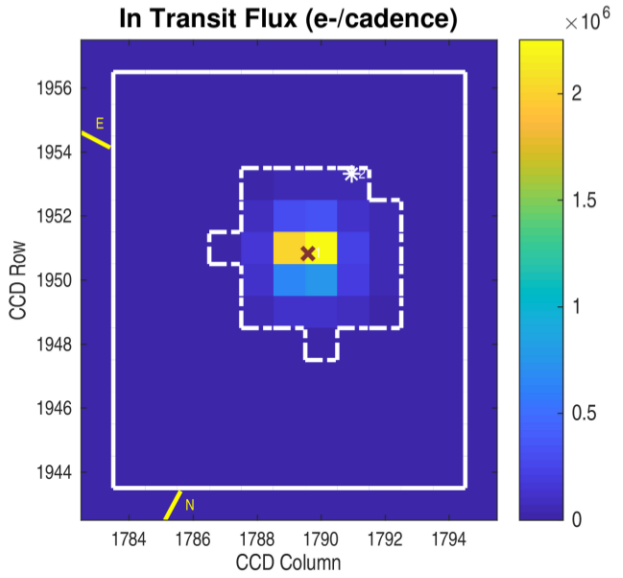
OotOffset-rm: 15.131 arcsec [1.45 sigma]
TicOffset-rm: 15.113 arcsec [1.44 sigma]
OotOffset-tot: 2
TicOffset-tot: 2
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

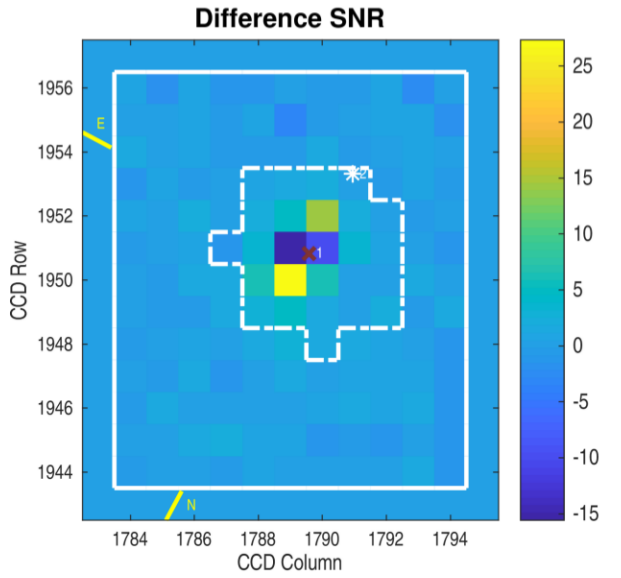
Software Revision: spoc-5.0.30-20210519 -- Cadence Type: TARGET (2-min) -- Date Generated: 27-May-2021 01:30:51 Z
This Data Validation Report Summary was produced in the TESS Science Processing Operations Center Pipeline at NASA Ames Research Center

Planet Candidate 1 / Sector 30 / Target Pixel Table 272

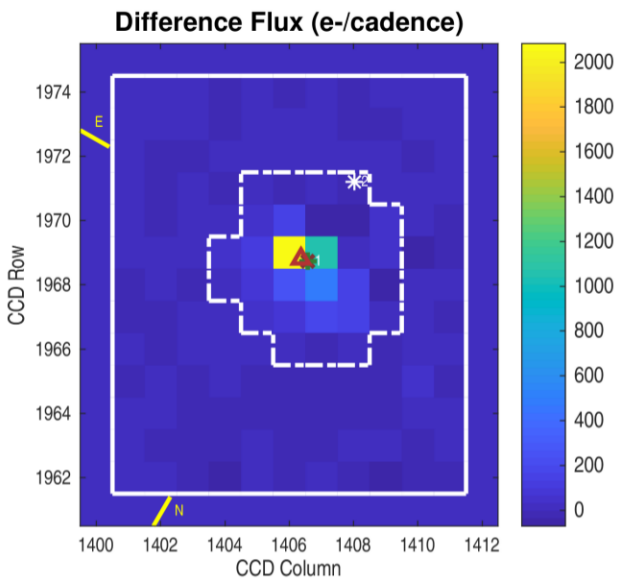


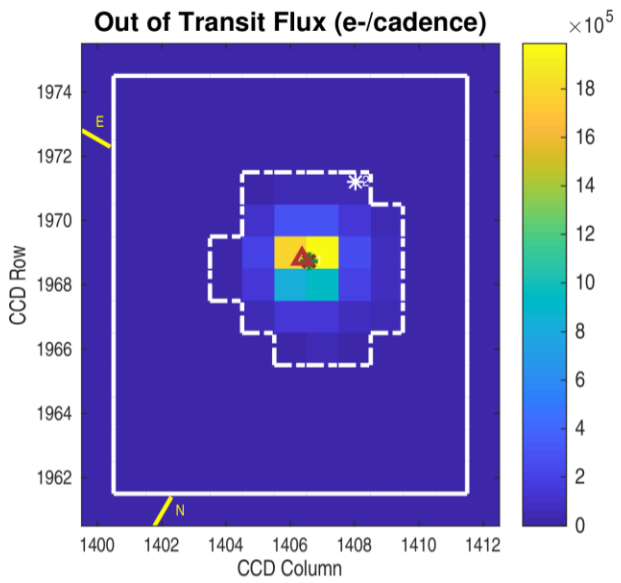


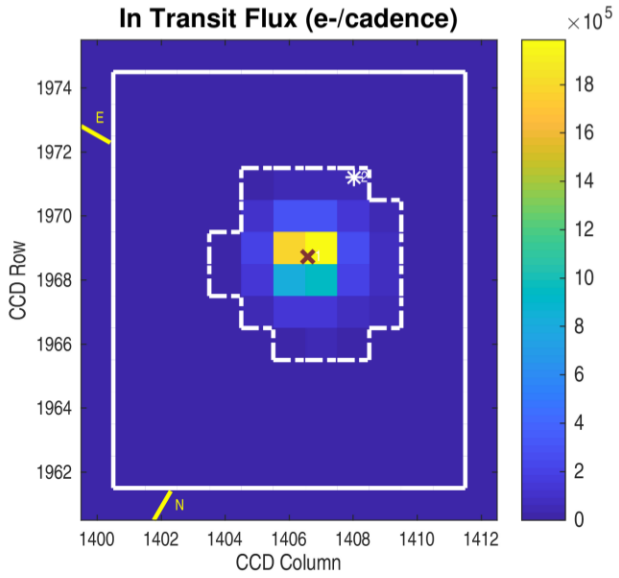


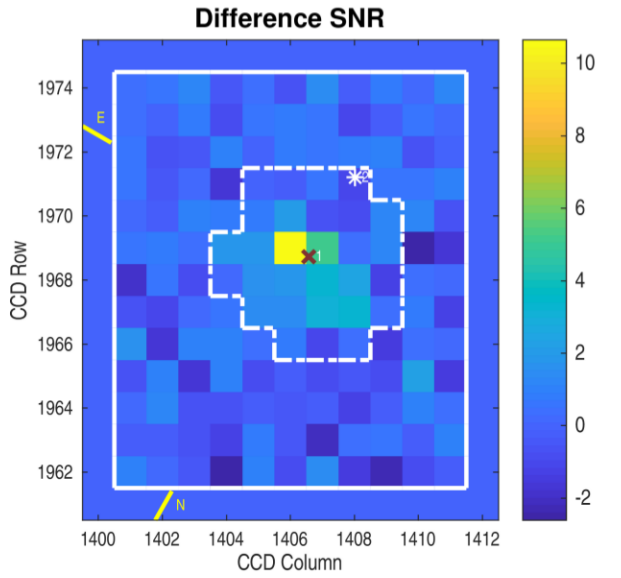


Planet Candidate 1 / Sector 3 / Target Pixel Table 131

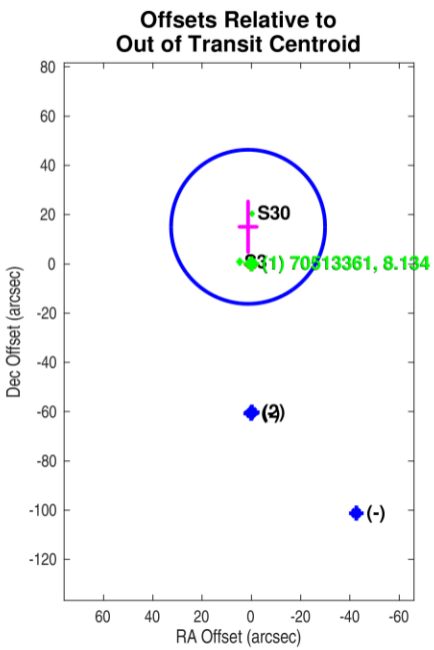


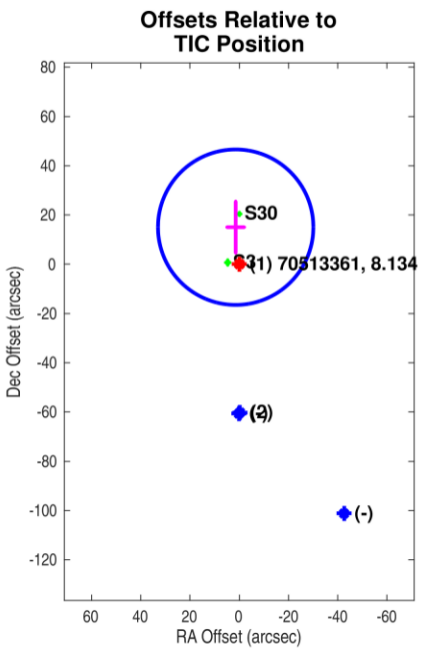




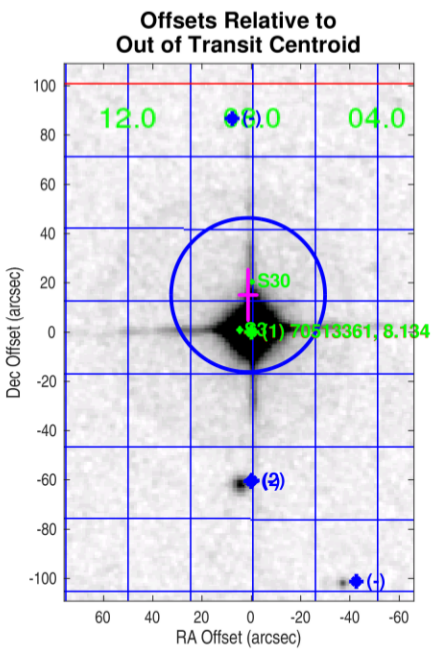


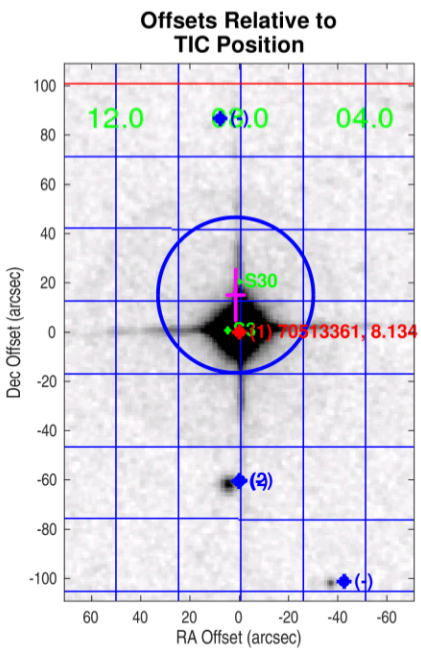
Planet Candidate 1

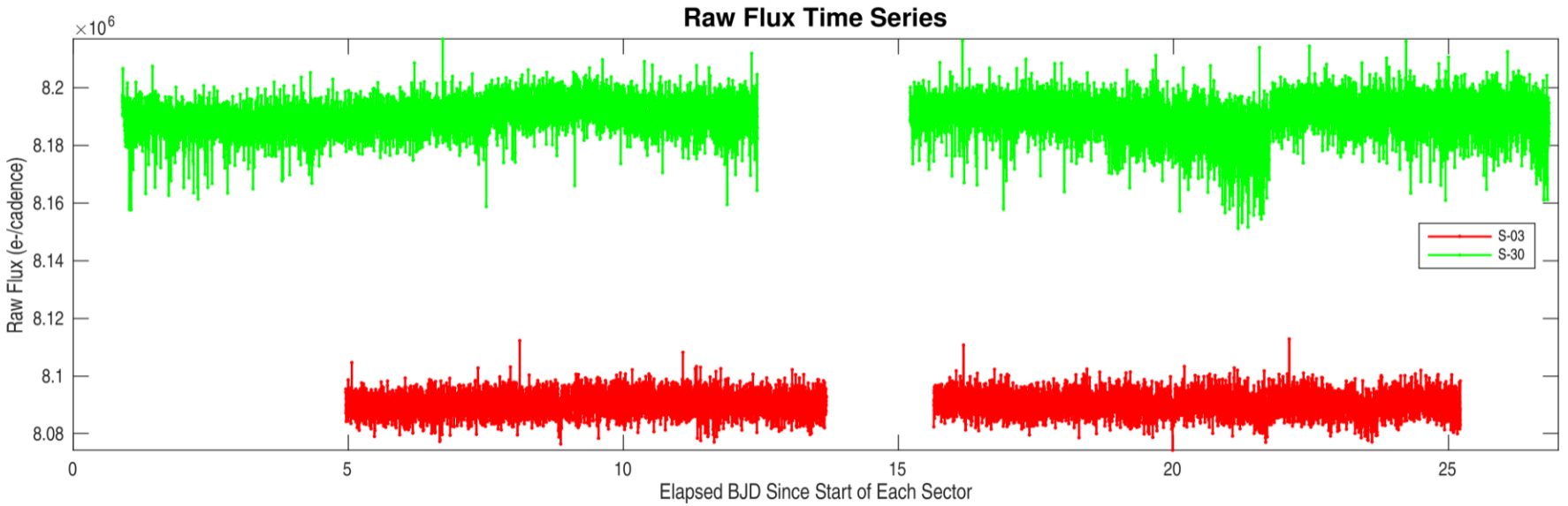


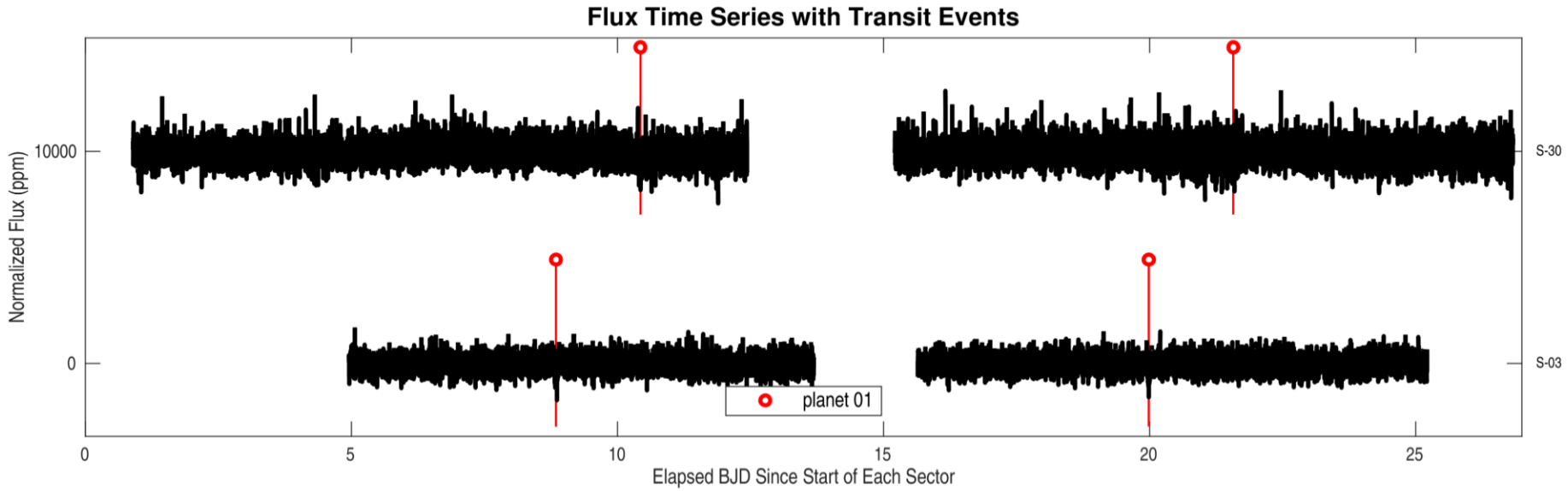


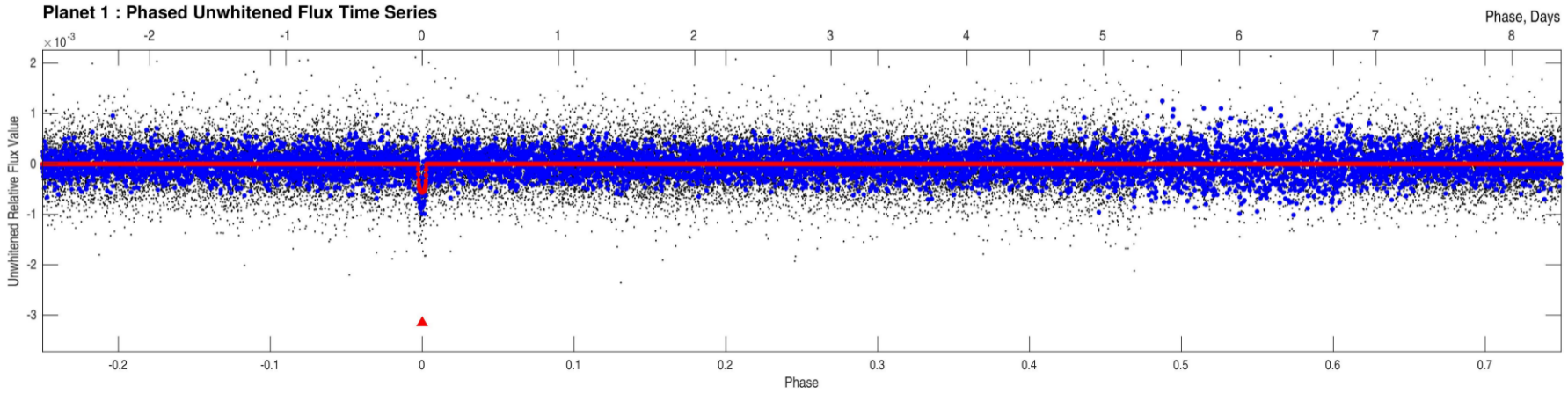
Planet Candidate 1

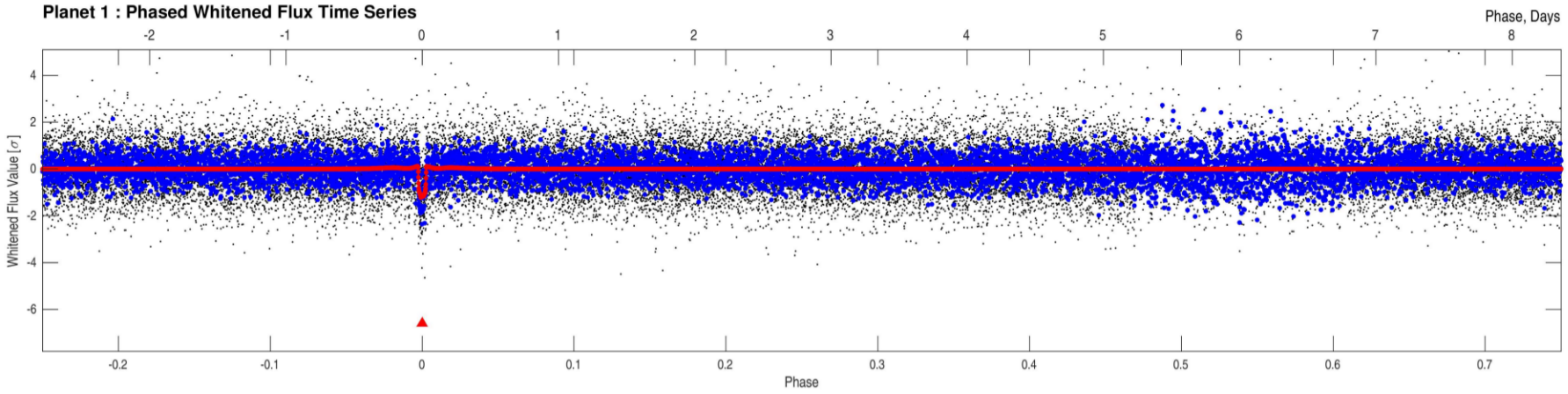


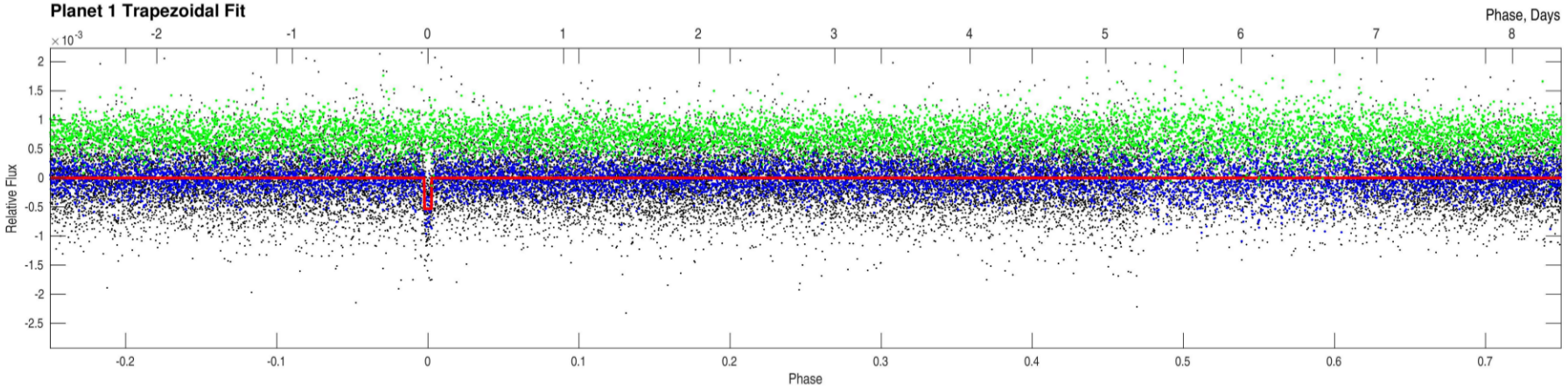



Raw Flux Time Series
×10^6
8.2
8.18
8.16
8.14
8.12
8.1
8.08
Raw Flux (e-/cadence)
S-03
S-30
0
5
10
15
20
25
Elapsed BJD Since Start of Each Sector


Flux Time Series with Transit Events
10000
0
Normalized Flux (ppm)
S-30
S-03
planet 01
0
5
10
15
20
25
Elapsed BJD Since Start of Each Sector

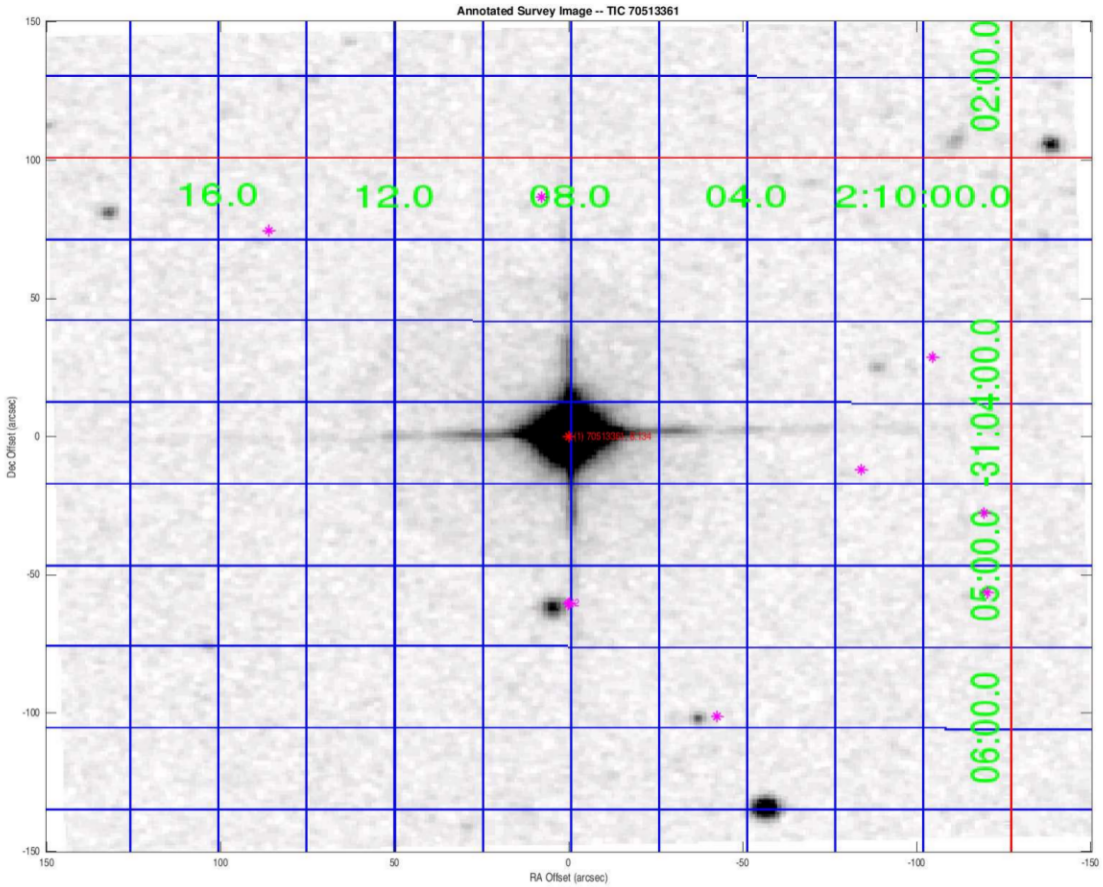

Planet 1 : Phased Unwhitened Flux Time Series
Phase, Days
×10^-3
Unwhitened Relative Flux Value
Phase


Planet 1 : Phased Whitened Flux Time Series
Phase, Days
Whitened Flux Value [σ]
Phase


Planet 1 Trapezoidal Fit
Phase, Days
×10^-3
Relative Flux
Phase

Stellar Distance Table

Index	TIC ID	TESS Mag	Distance (arcsec)
1	0000000070513361	8.13	0.00
2	0000000070513359	16.22	60.21

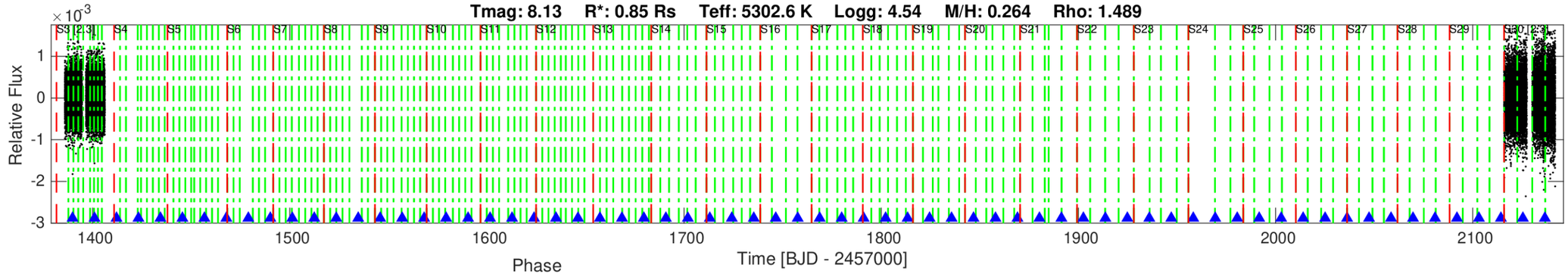


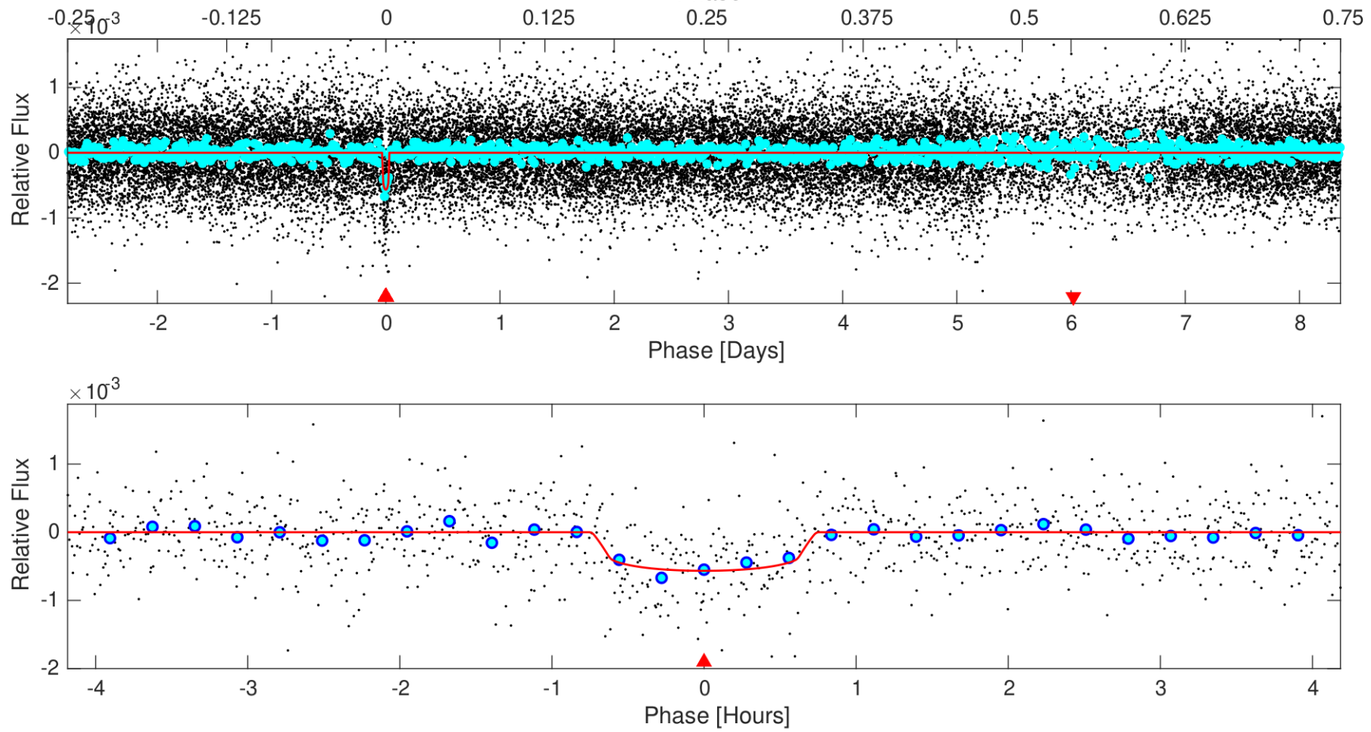
Distances are corrected for proper motion. This table may not contain all of the objects shown.

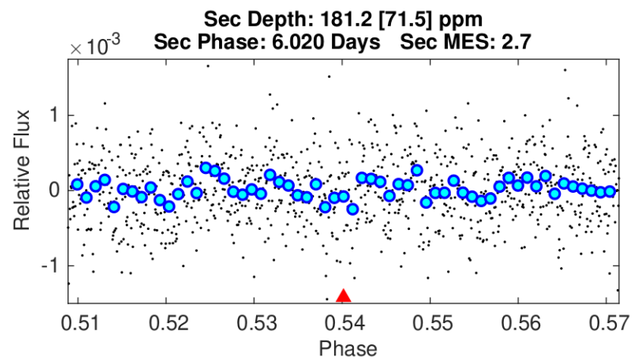
Tier 1

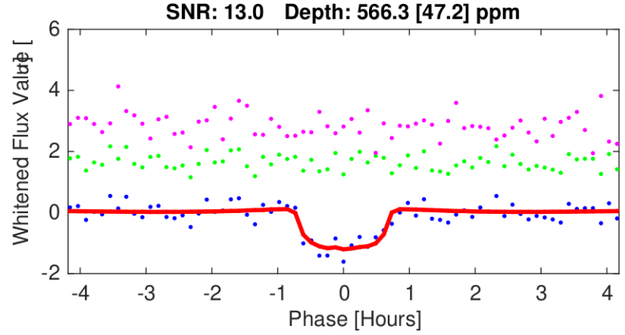
TIC: 70513361 Candidate: 1 of 1 Period: 11.145 d
TOI: 262.01 Corr: 0.927

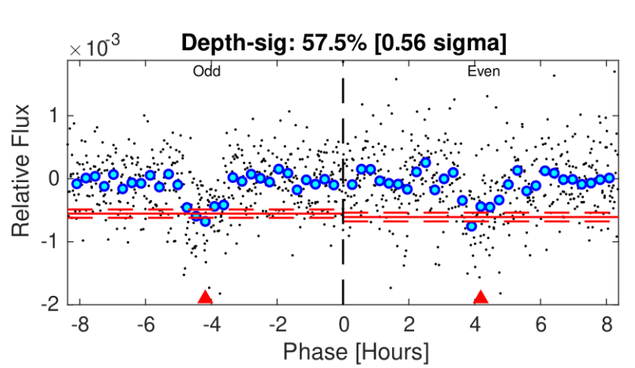
Tmag: 8.13 R*: 0.85 Rs Teff: 5302.6 K Logg: 4.54 M/H: 0.264 Rho: 1.489

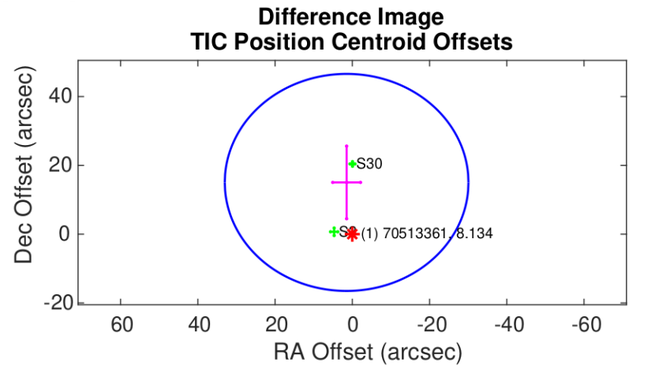












DV Fit Results:

Period = 11.14528 [0.00004] d
Epoch = 1389.8426 [0.0012] BTJD
Rp/R* = 0.0223 [0.0229]
a/R* = 55.32 [263.19]
b = 0.47 [7.90]

Seff = 56.91 [10.03]
Teq = 701 [31] K
Rp = 2.07 [2.12] Re
a = 0.0947 [0.0076] AU
Rho = 18.313 [261.364]

Ag = 209.09 [437.69] [0.48 sigma]
Tp = 4119 [2153] K [1.59 sigma]

DV Diagnostic Results:

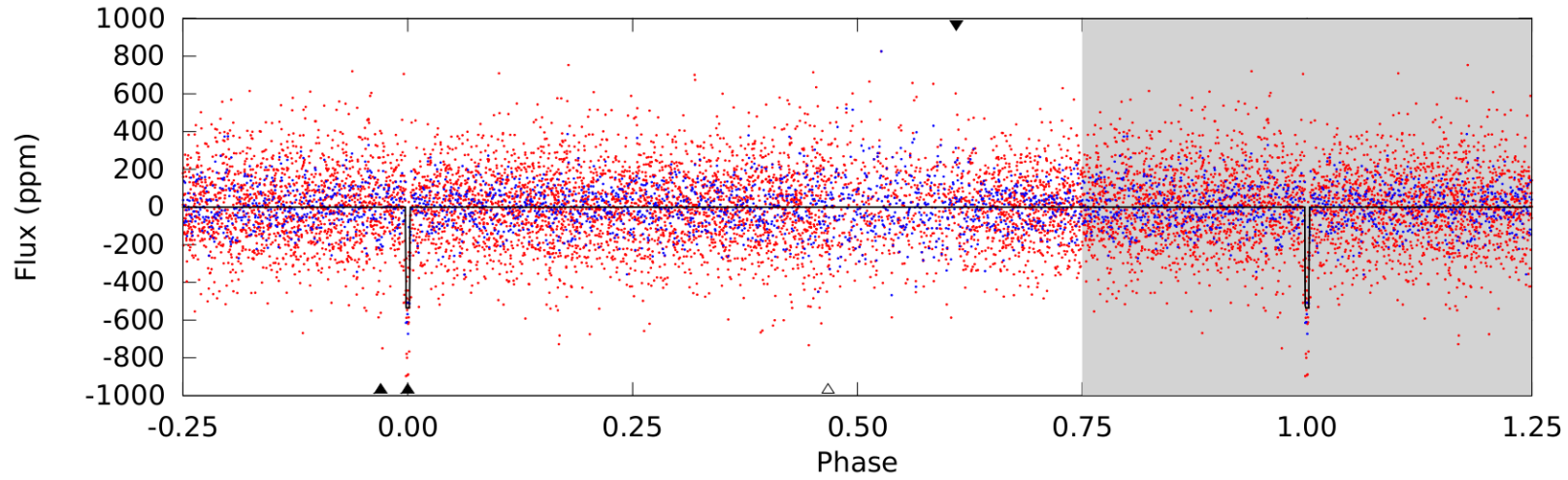
ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 77.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.44e-38
GhostDiagnostic-chr: -4.179

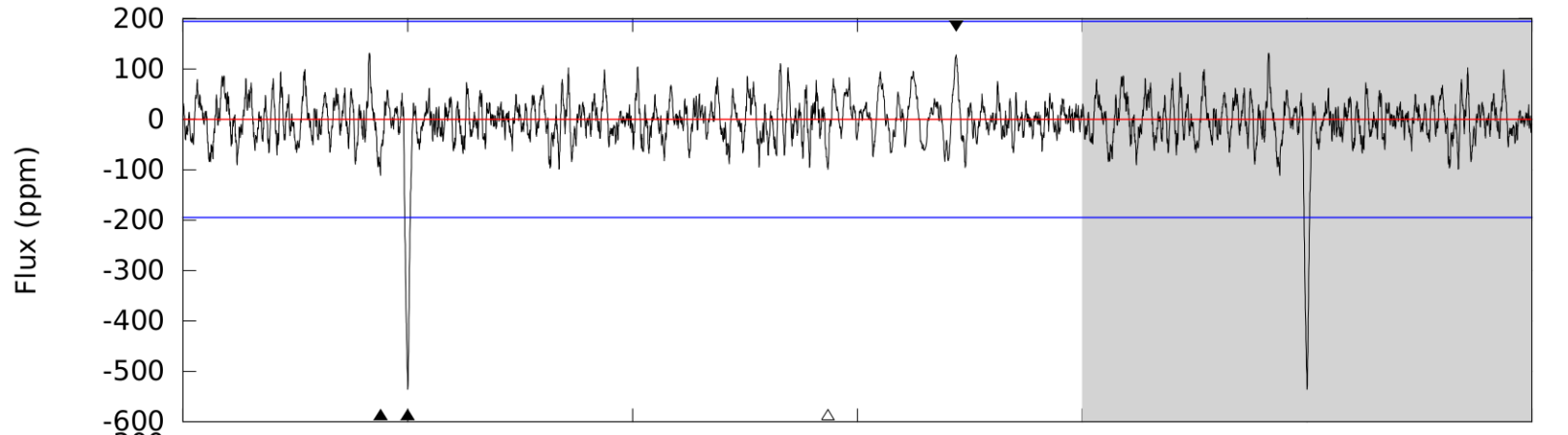
OotOffset-rm: 15.131 arcsec [1.45 sigma]
TicOffset-rm: 15.113 arcsec [1.44 sigma]
OotOffset-tot: 2
TicOffset-tot: 2
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

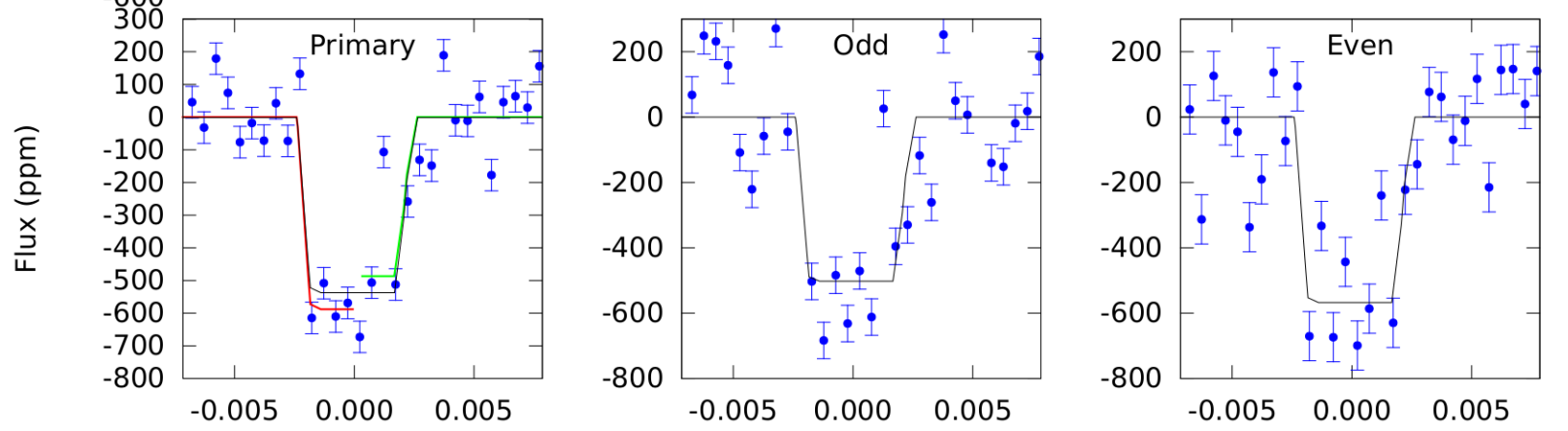
Software Revision: spoc-5.0.30-20210519 -- Cadence Type: TARGET (2-min) -- Date Generated: 27-May-2021 01:30:51 Z
This Data Validation Report Summary was produced in the TESS Science Processing Operations Center Pipeline at NASA Ames Research Center

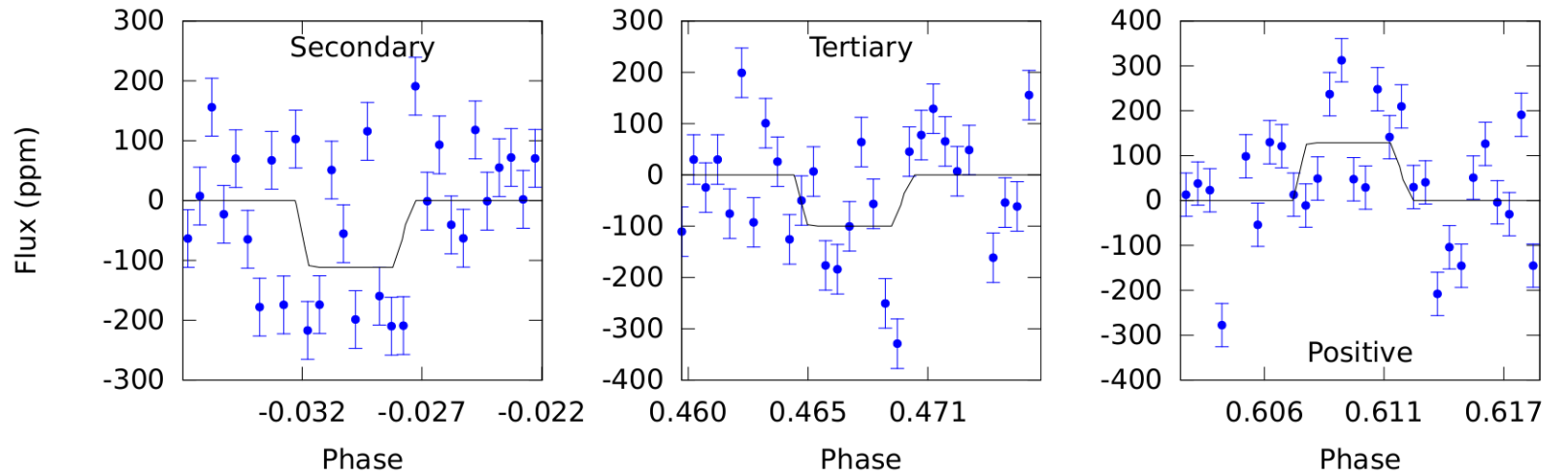
Tier 1 $000000007051336_{0}1$, P = 11.145278 Days, E = 1378.695153 Days

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	2.95	2.64	3.40	5.14	2.78	0.95	11.5	10.8	0.31	-0.45	0.88	0.92	0.20	1.34



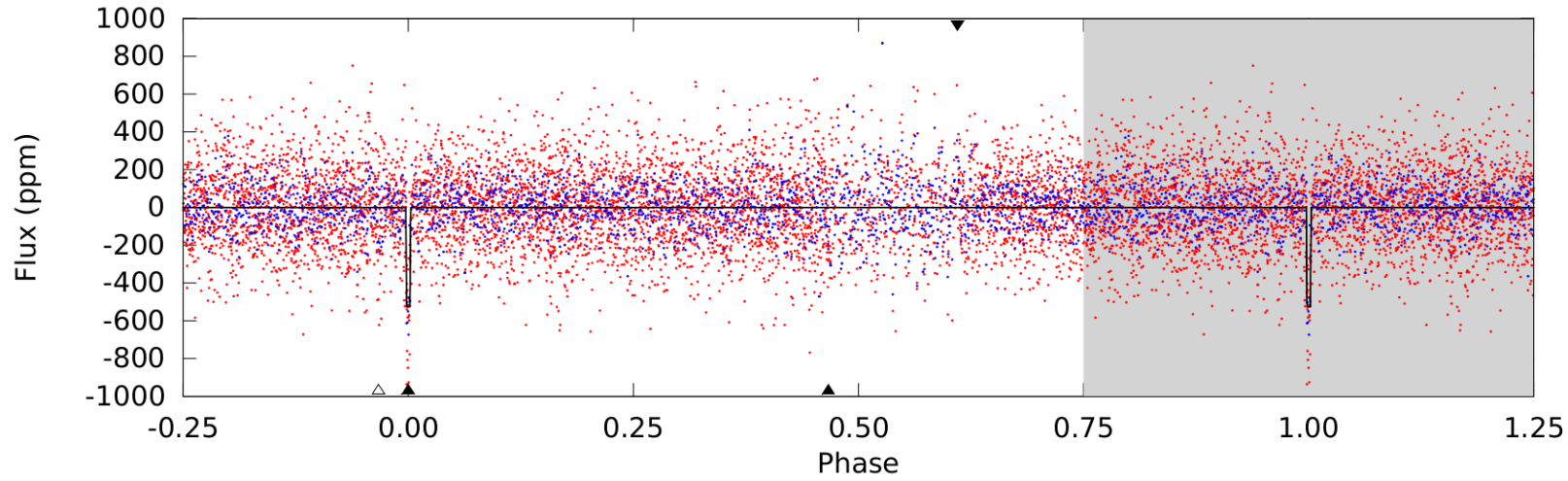


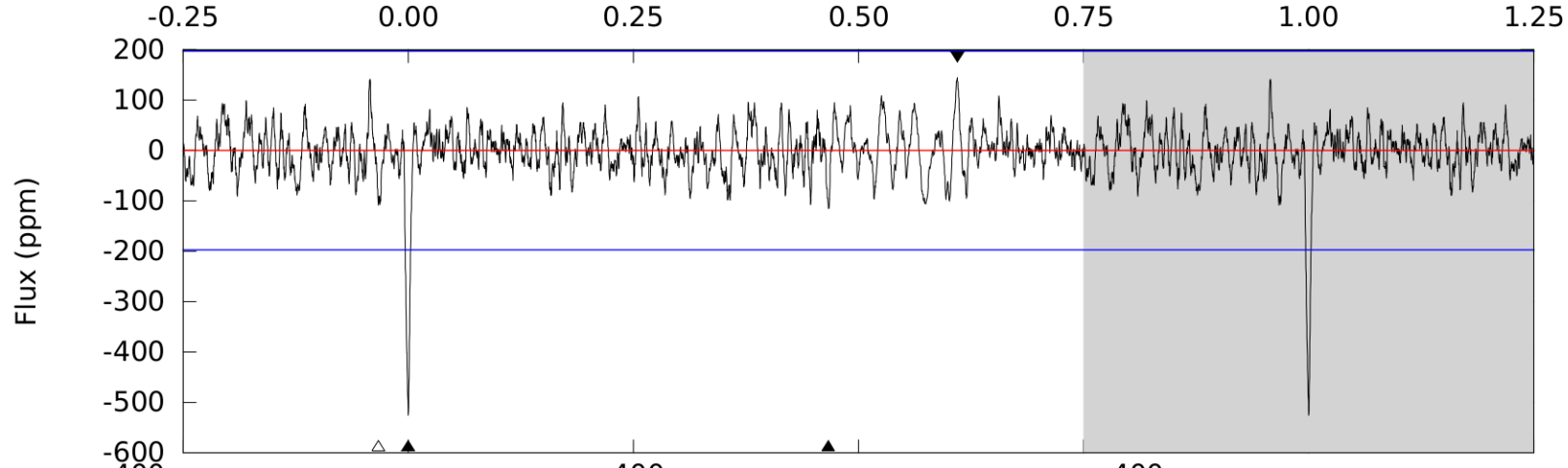


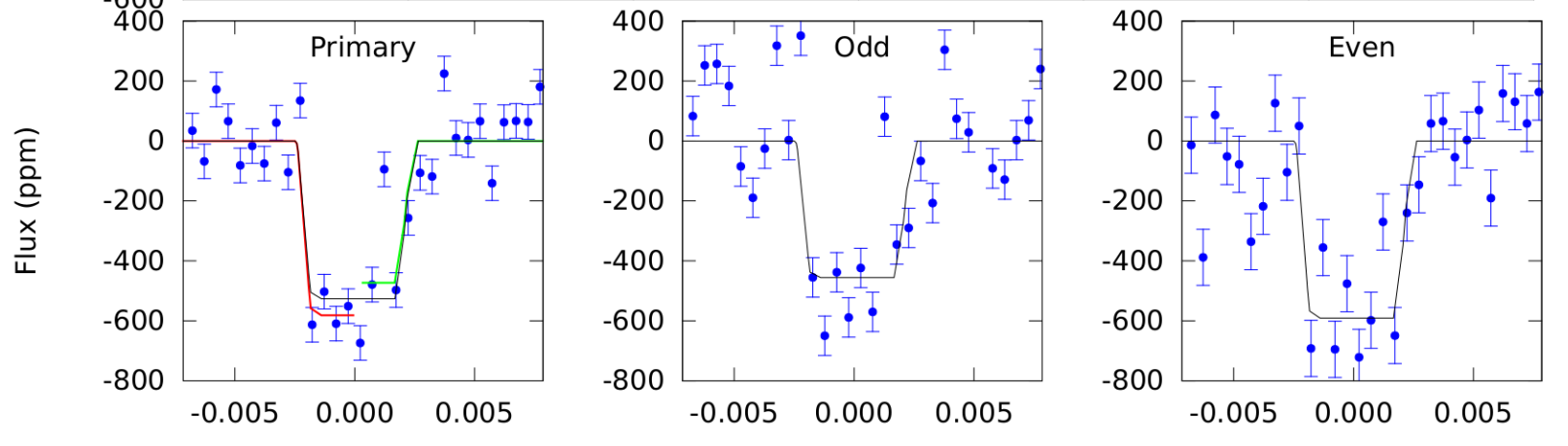


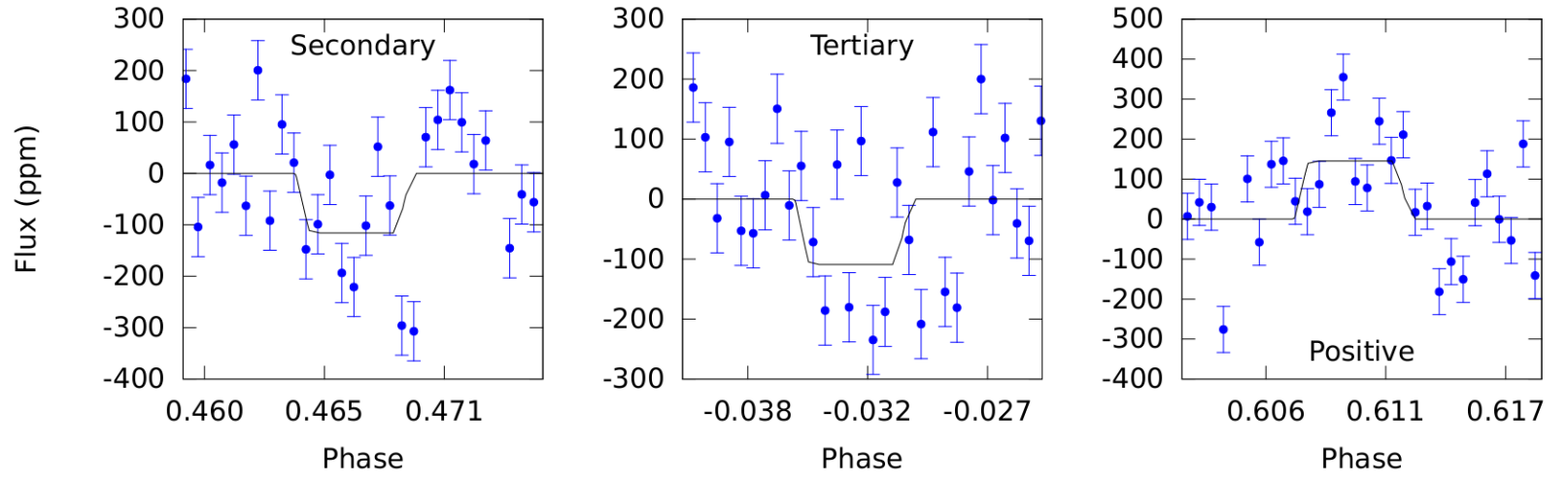
Tier 1 $000000007051336_{0}1$, P = 11.145278 Days, E = 1378.695153 Days

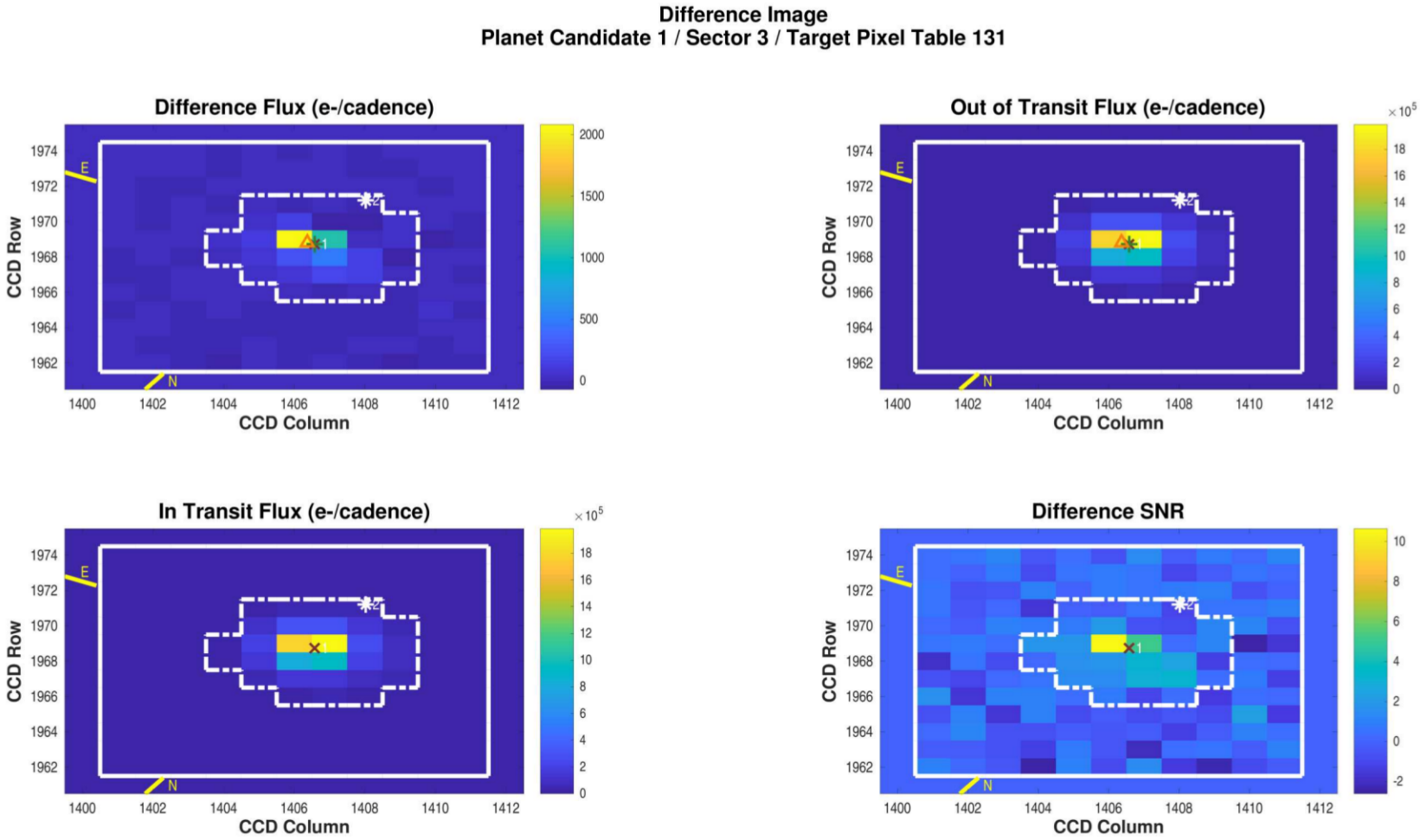
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	3.02	2.84	3.79	5.14	2.78	1.03	10.9	9.92	0.17	-0.77	1.80	0.89	0.22	1.42



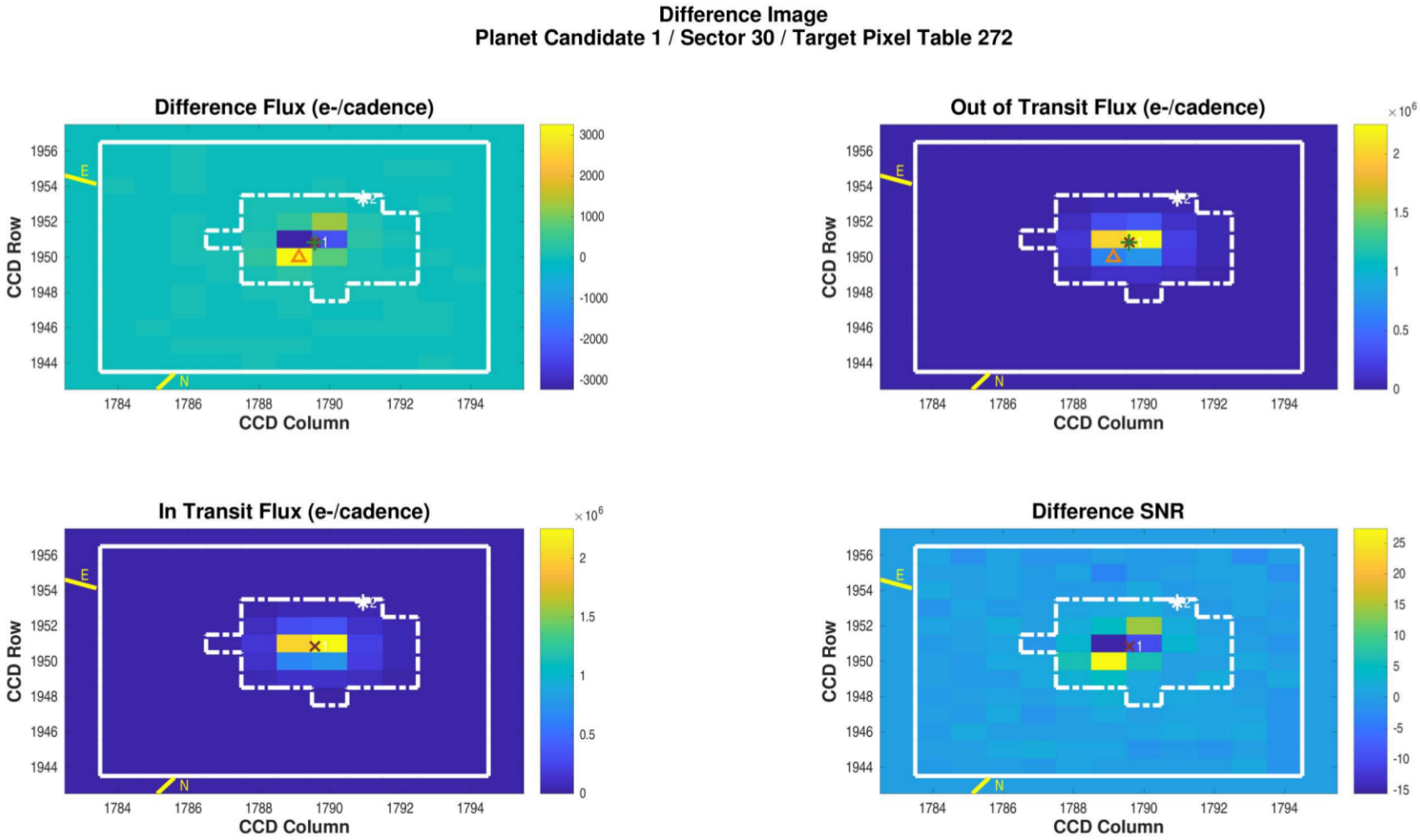








Difference image for target 70513361, planet candidate 1, sector 3, target pixel table 131. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 2; number of valid in-transit cadences = 69; number of in-transit cadence gaps = 1; number of valid out-of-transit cadences = 181; number of out-of-transit cadence gaps = 2. Difference image quality metric = 0.96 (good).
Open `./planet-01/difference-image/0000000070513361-01-difference-image-03-131.fig`



Difference image for target 70513361, planet candidate 1, sector 30, target pixel table 272. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 2; number of valid in-transit cadences = 69; number of in-transit cadence gaps = 2; number of valid out-of-transit cadences = 182; number of out-of-transit cadence gaps = 2. Difference image quality metric = 0.49 (not good).
Open `./planet-01/difference-image/0000000070513361-01-difference-image-30-272.fig`

5 Pixel Level Diagnostics

To reduce clutter, the catalog IDs in the difference images have been replaced by indices representing distance from the target star. The mapping between the indices and the catalog IDs is found in a table at the end of this section.

5.1 Planet Candidate 1

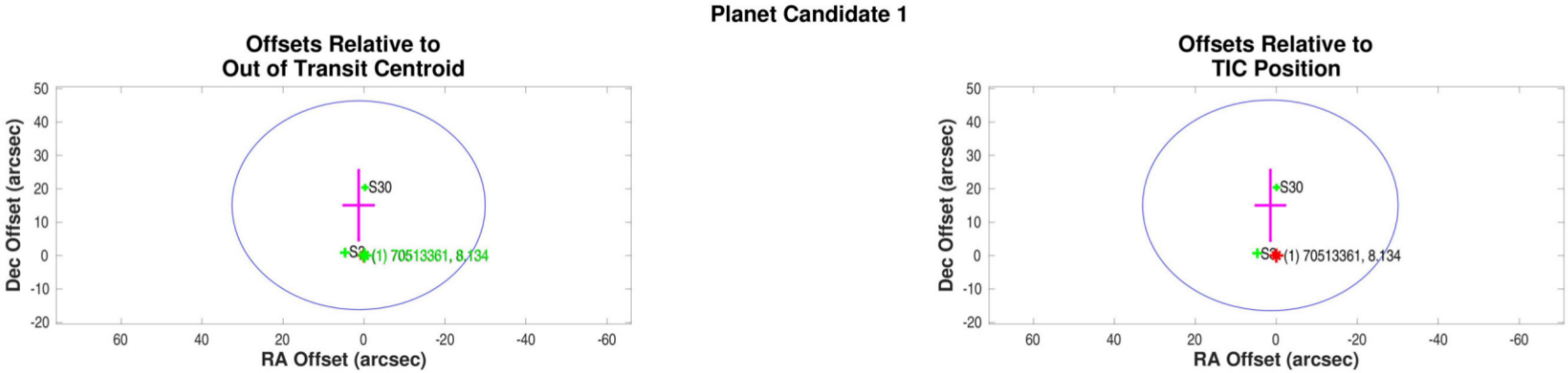
Multi-Sector Average PRF Fit of the Difference Images

Mean offset from the PRF fit to the out of transit image

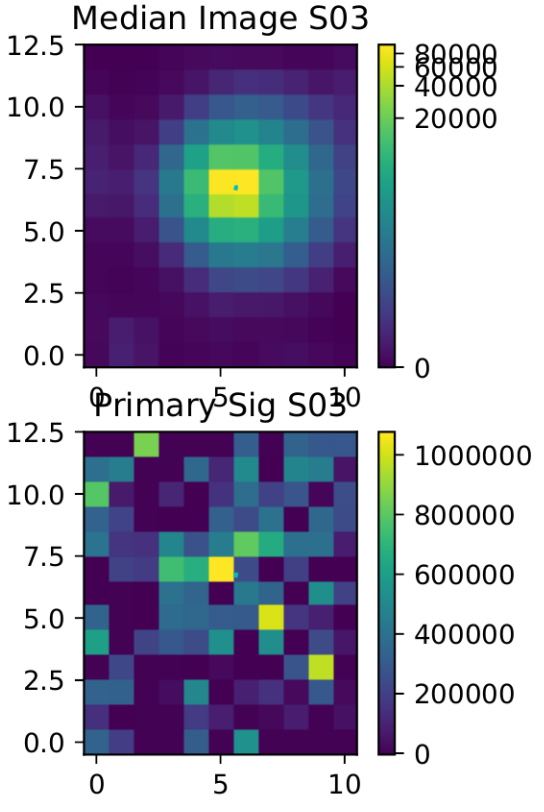
	RA	Dec	Units
Offset	$1.3433 \pm 3.68e+00$	$15.0708 \pm 1.05e+01$	arcseconds
Offset/σ	0.37	1.44	
Offset Distance	$15.1305 \pm 1.04e+01$		arcseconds
Offset Distance/σ	1.45		
3σ Radius	31.2636		arcseconds

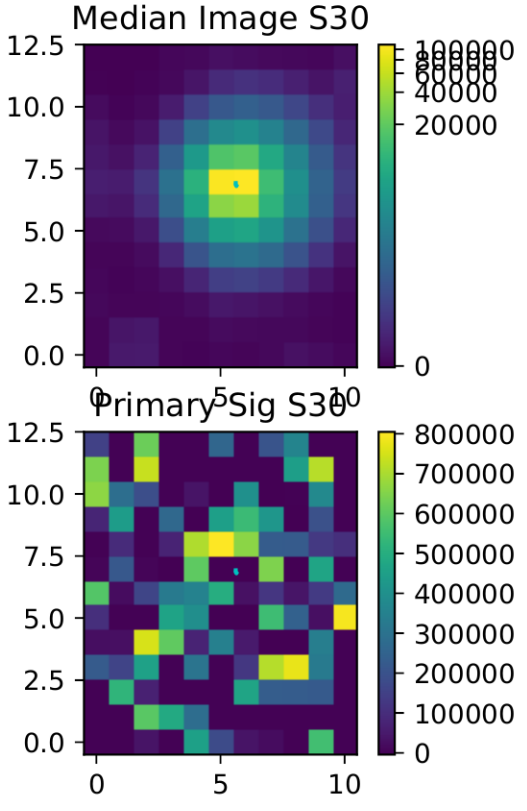
Mean offset from the TIC RA and Dec

	RA	Dec	Units
Offset	$1.4651 \pm 3.60e+00$	$15.0421 \pm 1.06e+01$	arcseconds
Offset/σ	0.41	1.42	
Offset Distance	$15.1132 \pm 1.05e+01$		arcseconds
Offset Distance/σ	1.44		
3σ Radius	31.5479		arcseconds



Difference image centroid offsets for target 70513361, planet candidate 1. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star (out-of-transit centroid in left panel and TIC position in right panel); green asterisk: TIC location of target star with respect to out-of-transit centroid; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-01/difference-image/0000000070513361-01-difference-image-centroid-offsets.fig`


Median Image S03
12.5
10.0
7.5
5.0
2.5
0.0
0
5
10
80000
60000
40000
20000
0
Primary Sig S03
12.5
10.0
7.5
5.0
2.5
0.0
0
5
10
1000000
800000
600000
400000
200000
0


Median Image S30
12.5
10.0
7.5
5.0
2.5
0.0
0
5
10
100000
80000
60000
40000
20000
0
Primary Sig S30
12.5
10.0
7.5
5.0
2.5
0.0
0
5
10
800000
700000
600000
500000
400000
300000
200000
100000
0

Using TIC: 70513361

Tier 1

Using TIC catalog position 32.533480 -31.069870 [J2000.0; epoch 2000.0]

Predicted GAIA position 32.534687 -31.070627 [J2000.0; epoch 2015.5]

2MASS J02100803-3104114 From TIC

0 TIC entries within 60.0 arcsec of target 70513361

TIC Hosts TOIs

262.01

Target Parameters

Catalog	Tmag/Rpmag	Teff	Logg	Rstar	Mstar
TIC	8.1345	5302.6±135.8	4.54±0.09	0.85± 0.1	0.91± 0.12
GAIA DR2	8.093	5202.5± 77.8	...	0.89± 0.0	...

Other GAIA G: 8.67 Bp: 9.13 AbsG: 5.25 (Bp-Rp)o: 0.932 AstroGOF: 1.29 AstroExNoiSig: 0.00

Target Links

ExoFOP
Simbad
Vizier
MAST TESS Data Holdings
IRSA Finderchart
ESO Data Archive Holdings
TESScut TPF Download
GAIA DR2 60" Cone Search @MAST

NASA Ames SPOC DV Results Available at MAST

https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018206190142-s0001-s0036-0000000070513361-00471_dvr.pdf
https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018206190142-s0001-s0036-0000000070513361-00471_dvm.pdf
https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018206190142-s0001-s0036-0000000070513361-01-00471_dvs.pdf
https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018263124740-s0003-s0003-0000000070513361-00405_dvr.pdf
https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018267104341-s0003-s0003-0000000070513361-00126_dvr.pdf
https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018263124740-s0003-s0003-0000000070513361-00405_dvm.pdf
https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018267104341-s0003-s0003-0000000070513361-00126_dvm.pdf
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https://mast.stsci.edu/api/v0/download/file?uri=mast:TESS/product/tess2018267104341-s0003-s0003-0000000070513361-01-00126_dvs.pdf

TESS Observe - Sec Cam Ccd Col Row
70513361 3 2 3 1407.43 1968.71
70513361 30 2 3 1790.45 1950.83