TIC 307210830 TRANSITS VALIDATION REPORT

This document is created by the WATSON report generator (https://github.com/PlanetHunters/watson) and focuses on the target star TIC 307210830.

RA (deg)	Dec (deg)	V (mag)	J (mag)	H (mag)	K (mag)
8:18:07.62	-68:18:46.80	-	-	-	-

Table 1: The proposed target parameters.

T0 (d)	Period (d)	Duration (h)	Depth (ppt)
1354.7156	1.0492	0.89	0.158

Table 2: The candidate parameters.

Metric	Value	Passed
fast_snr	16.921	True
short_snr	19.98	True
long_snr	12.417	True
folded_cadences_snr	0.189	True
snr_p_t0	41.832	True
snr_p_2t0	11.604	False
snr_2p_t0	31.778	True
snr_2p_2t0	27.86	True
snr_p2_t0	11.604	False
snr_p2_t02	0.001	True
snr_p_score	0.277	False
snr_2p_score	3.918	True
snr_p2_score	0.277	False
transit_offset_ra	124.545	False
transit_offset_dec	-68.326	False
transit_offset_err	0.008	True
transit_offset_pos	0.019	False
core_flux_snr	7.277	True
halo_flux_snr	22.774	True
og_score	3.129	False
centroids_ra_snr	-3.945	False
centroids_dec_snr	12.137	False

Table 3: The results of the numerical tests.

WATSON Transits Validation Report: TIC 307210830

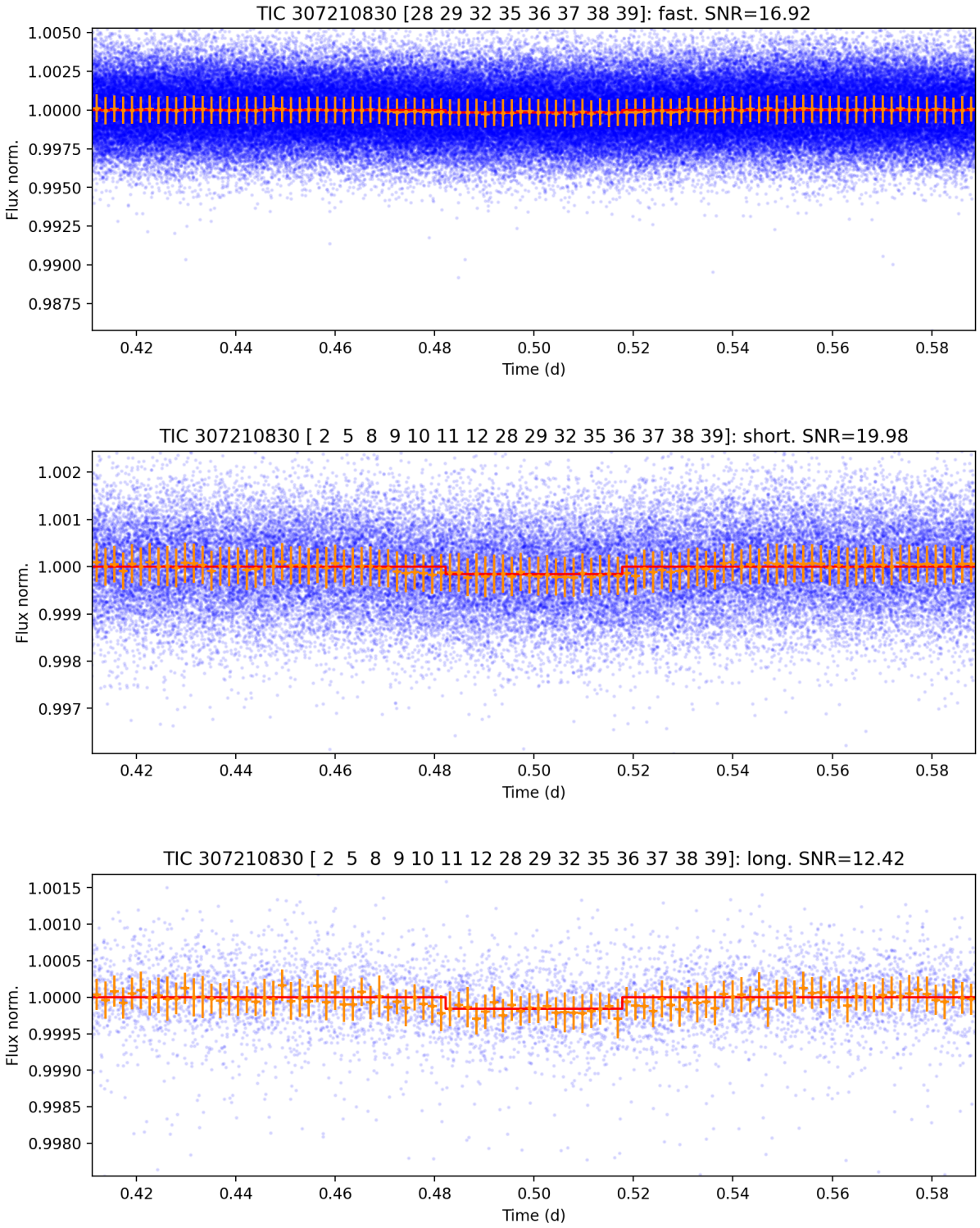


Figure 1: Folded curve for all available cadences.

WATSON Transits Validation Report: TIC 307210830

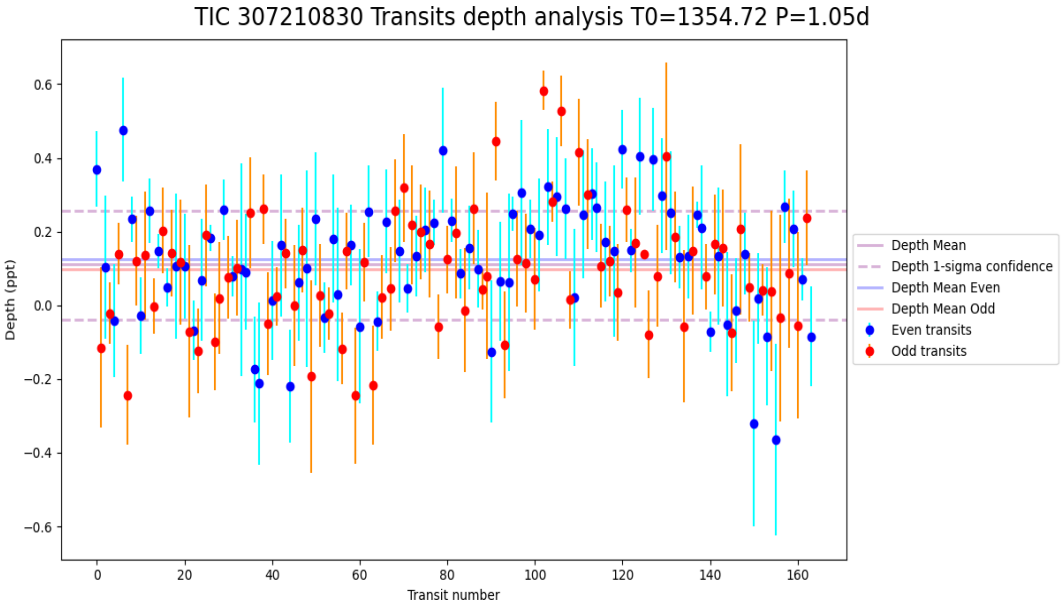


Figure 2: The candidate single-transits depths plot.

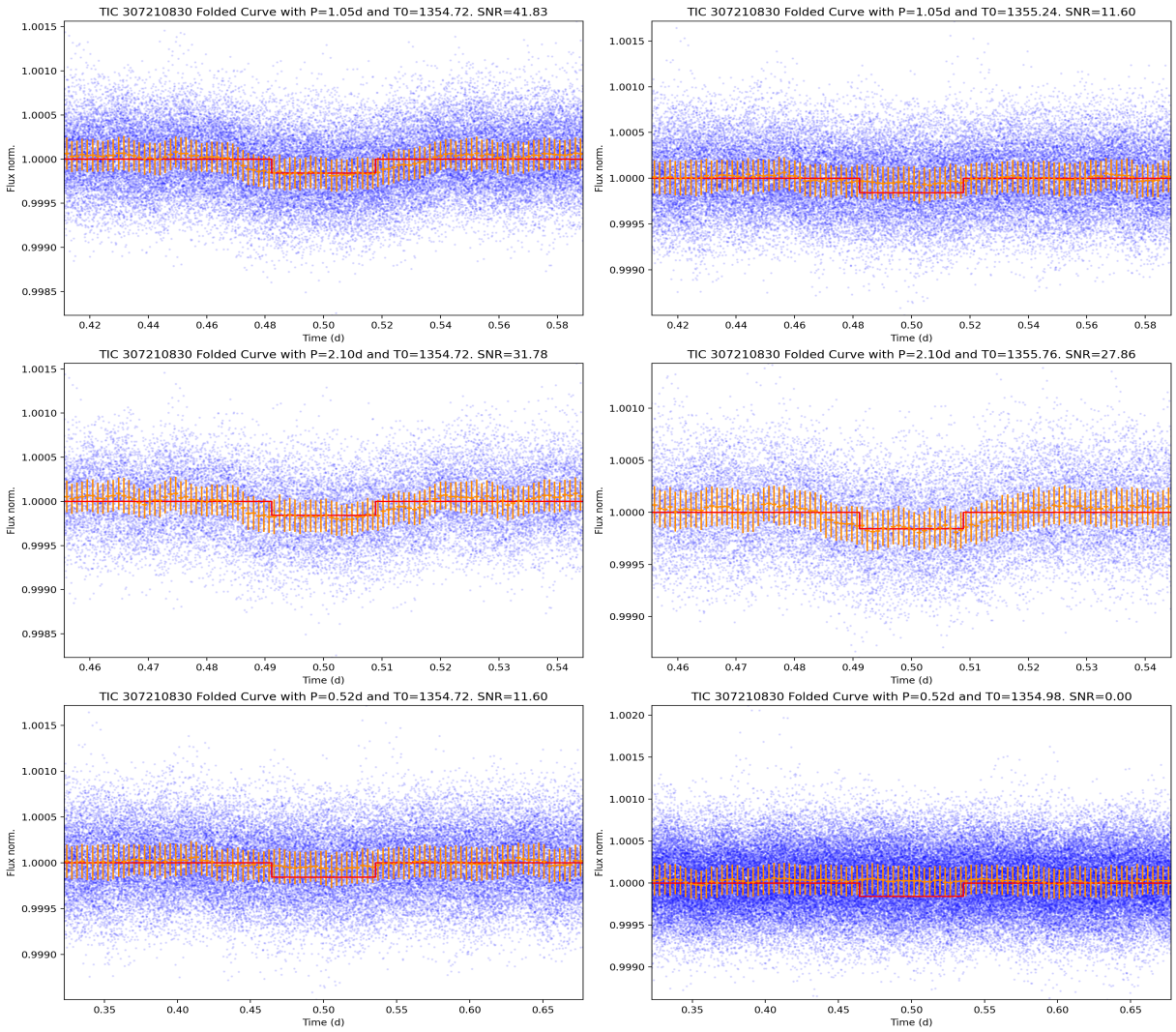
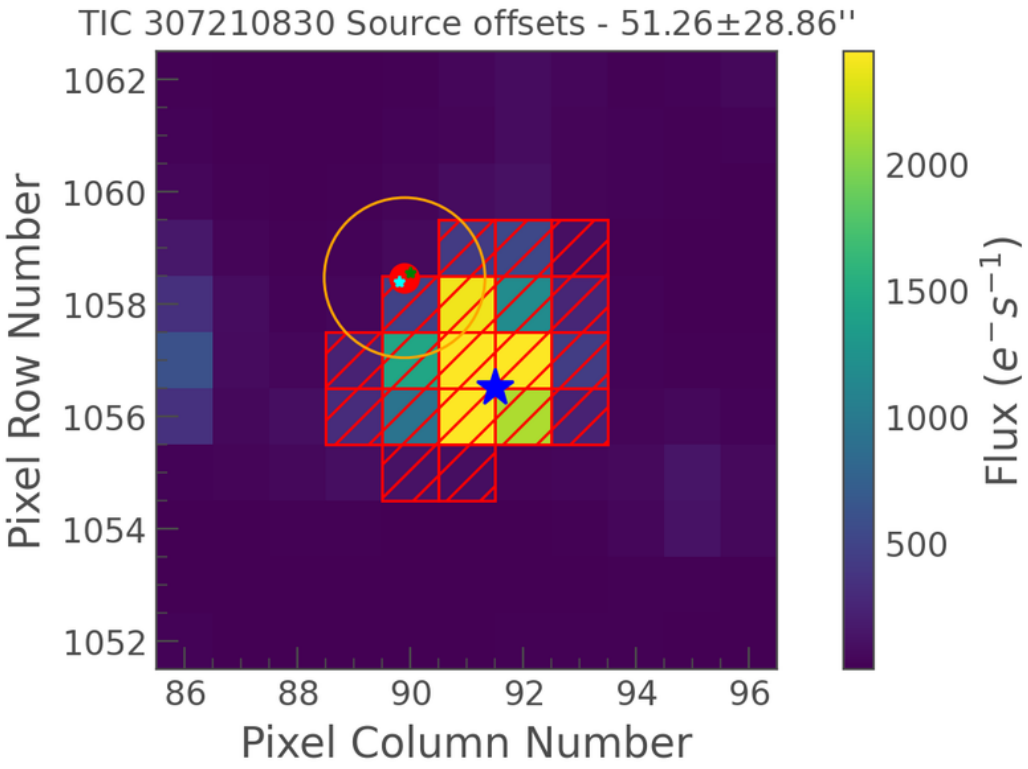


Figure 3: Above, the candidate folded at its found period for the found epoch and epoch + P/2.Middle, the candidate folded at its harmonic for the found epoch and epoch + P.Bottom, the candidate folded at its subharmonic for the found epoch and epoch + P/2, where the candidate has been masked.



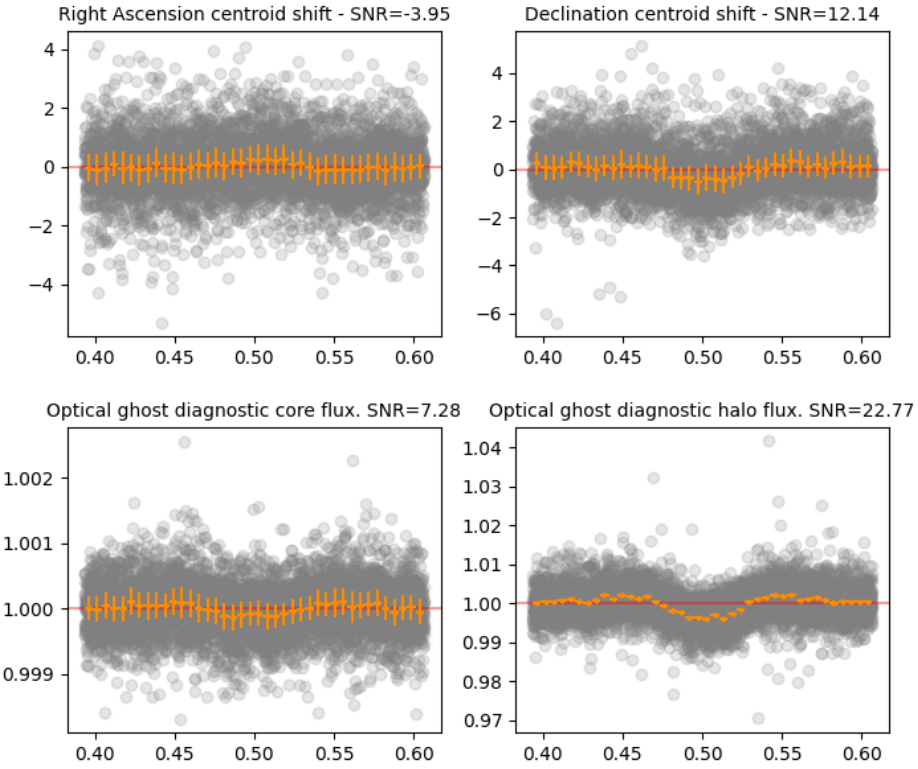


Figure 4: Above, the computed target offset (red circle) from the differential image offset (cyan dot) and the per-pixel BLS SNR offset (green dot). Middle left, the right ascension centroid shift with binning. Middle right, the declination centroid shift with binning. Bottom left, optical ghost diagnostic curve for core flux.Bottom right, optical ghost diagnostic curve for halo flux

WATSON Transits Validation Report: TIC 307210830

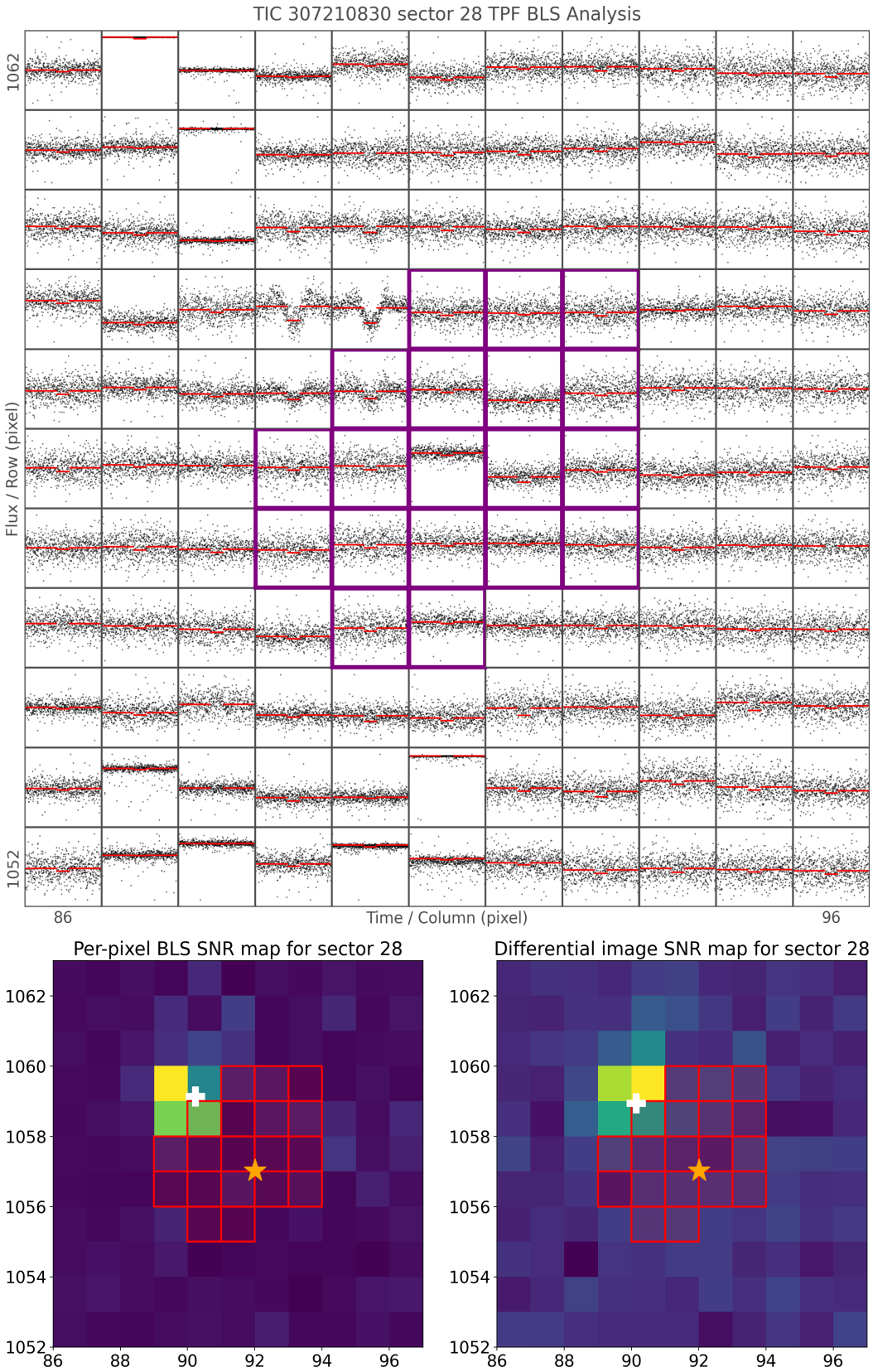


Figure 5: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

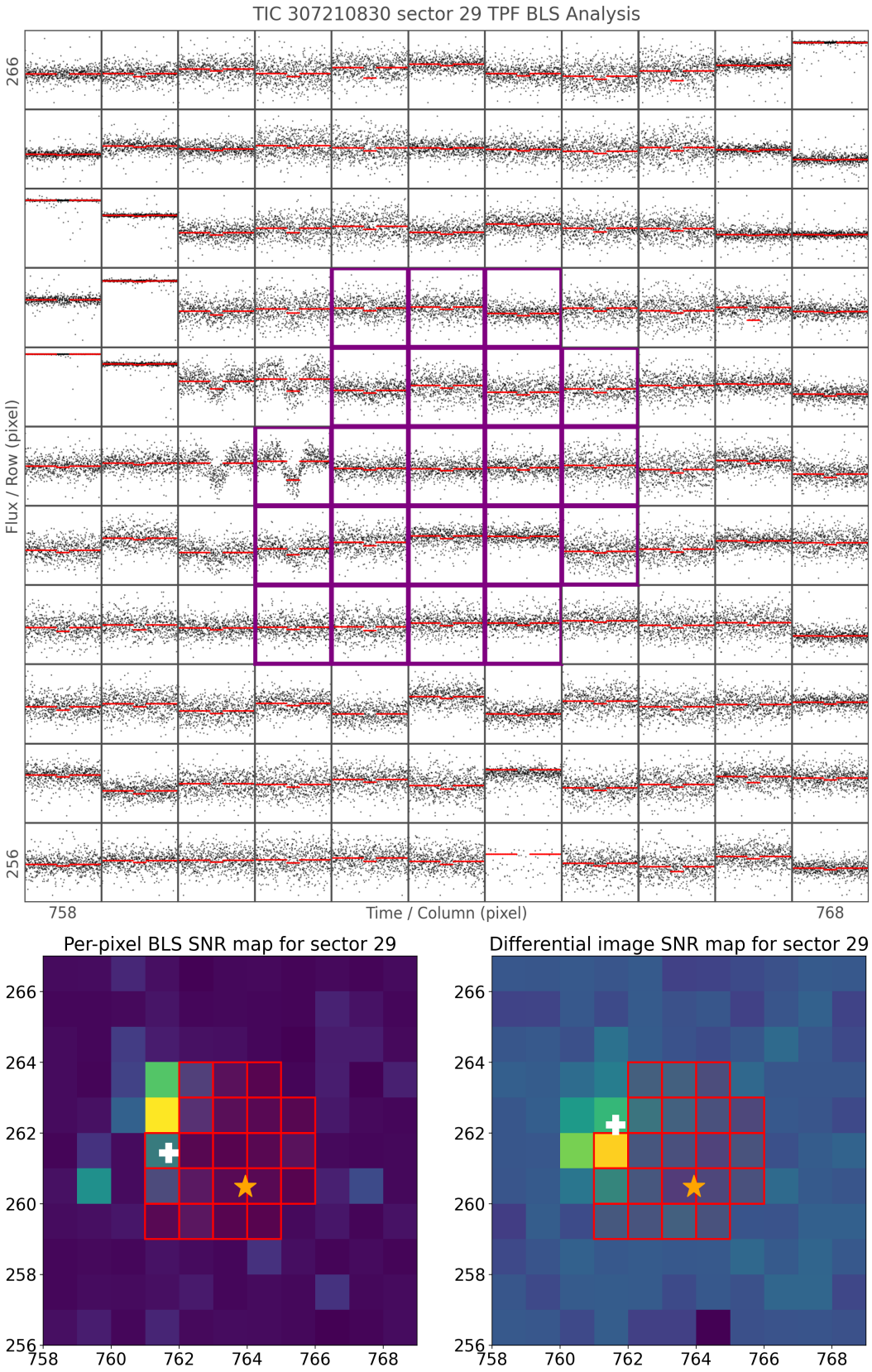


Figure 6: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

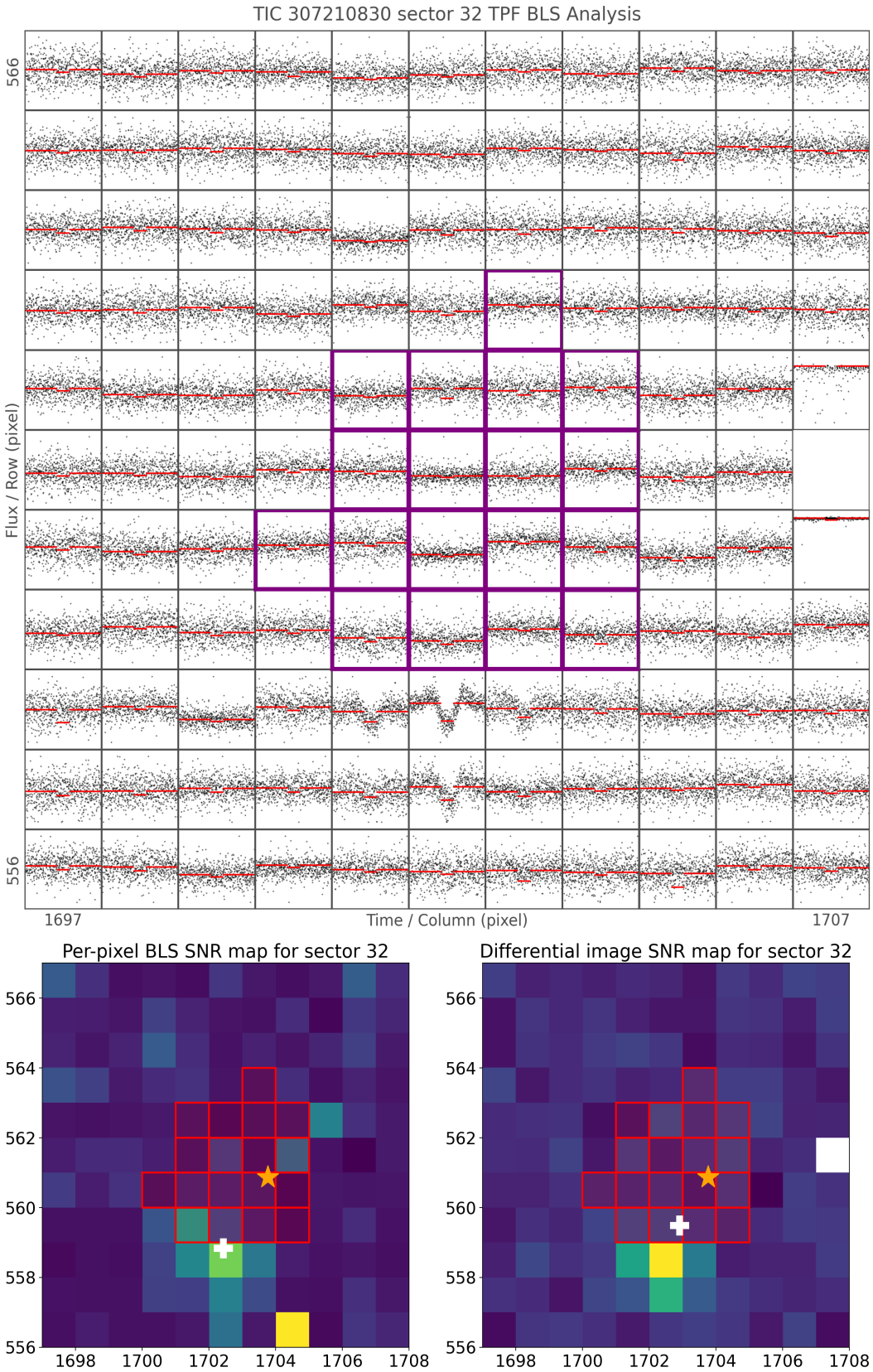


Figure 7: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

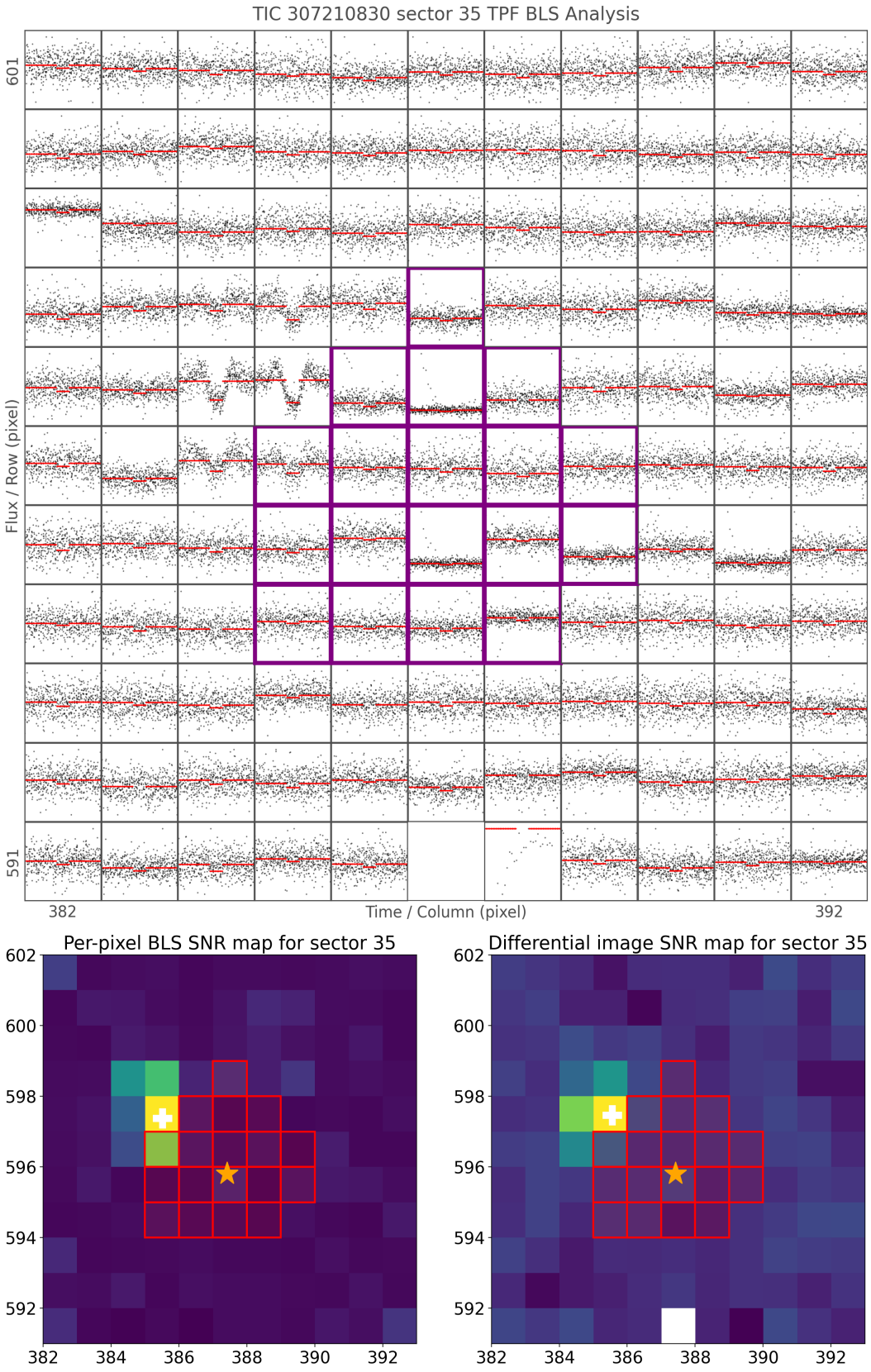


Figure 8: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

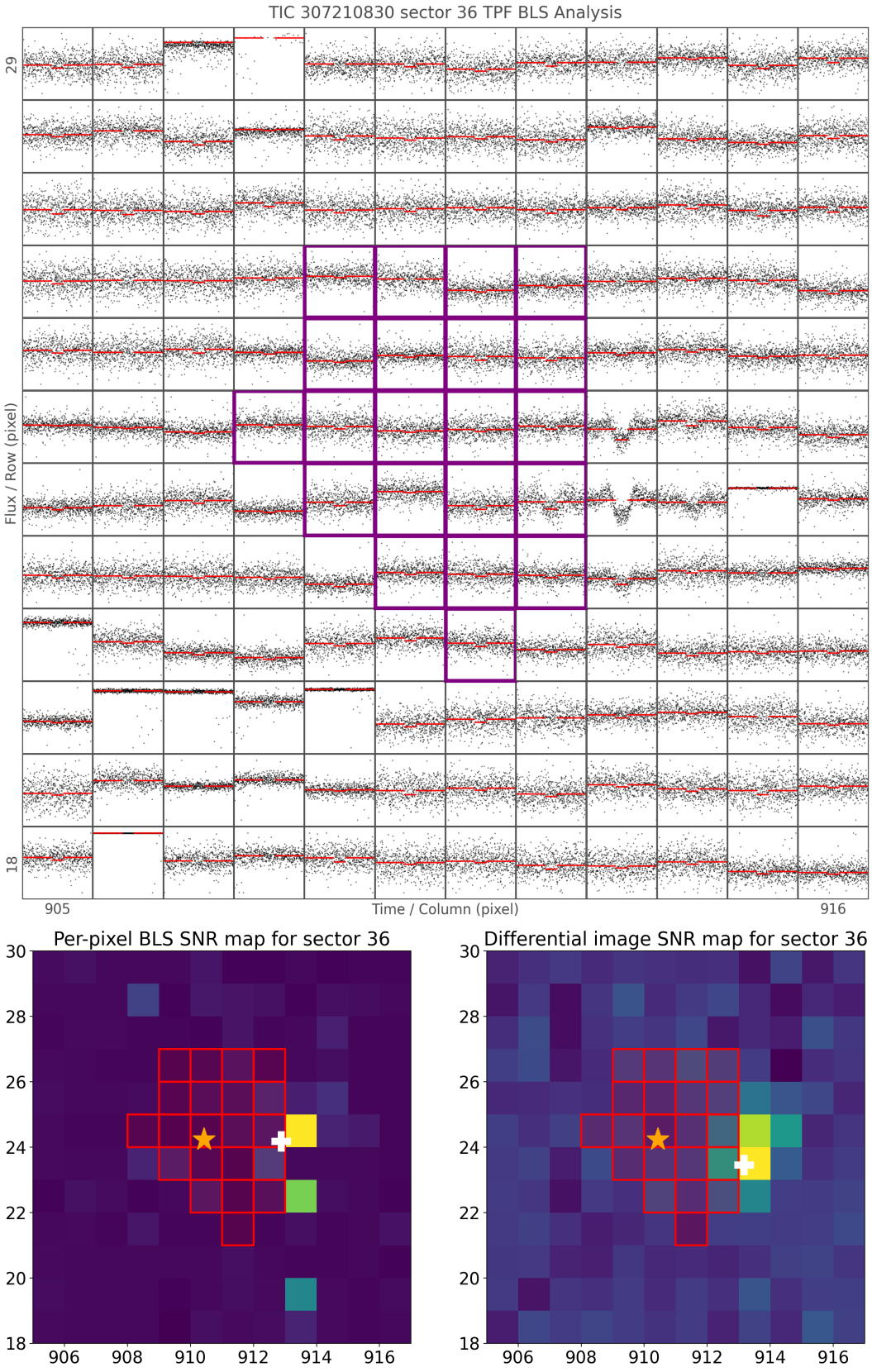


Figure 9: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

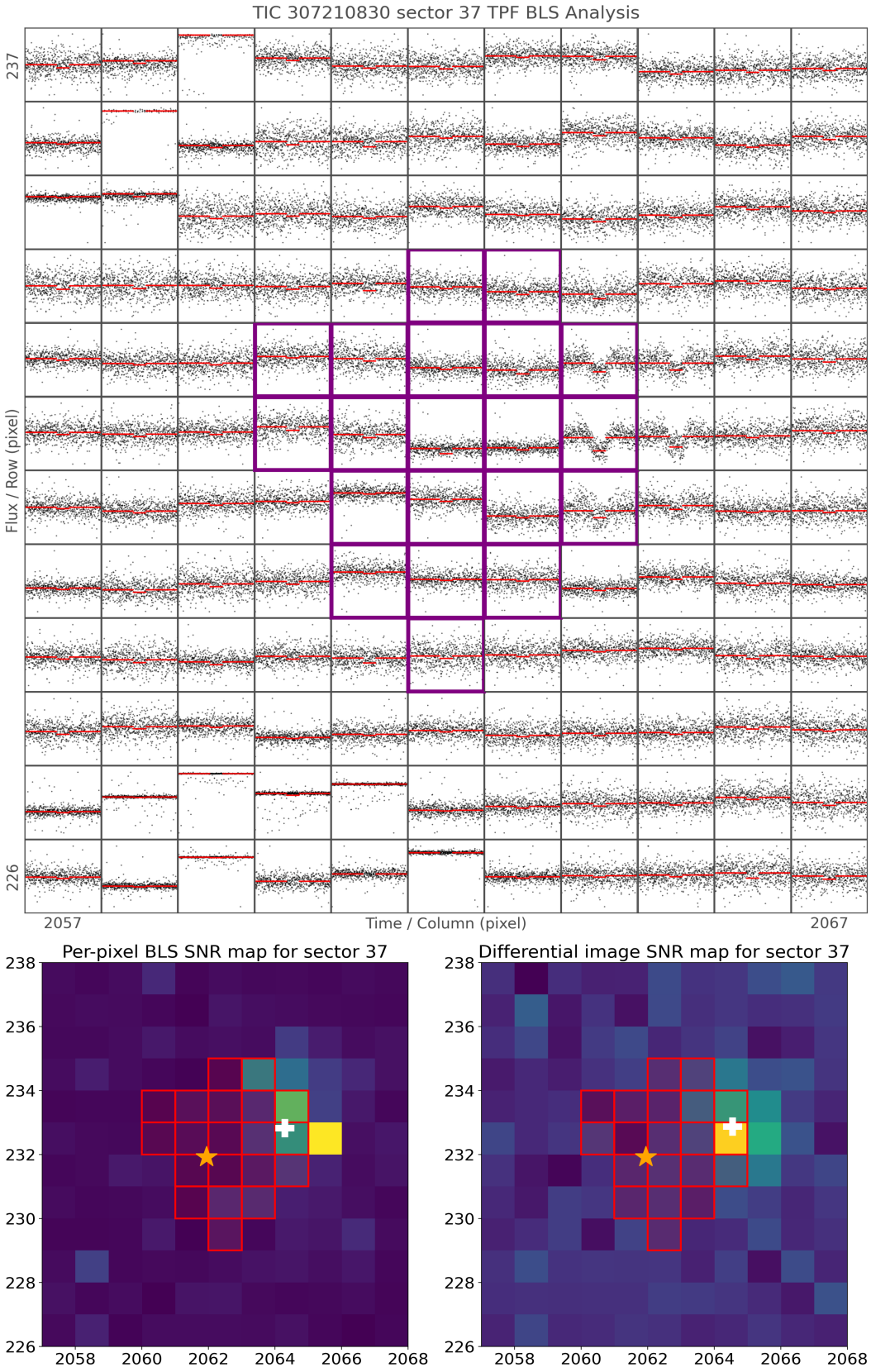


Figure 10: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

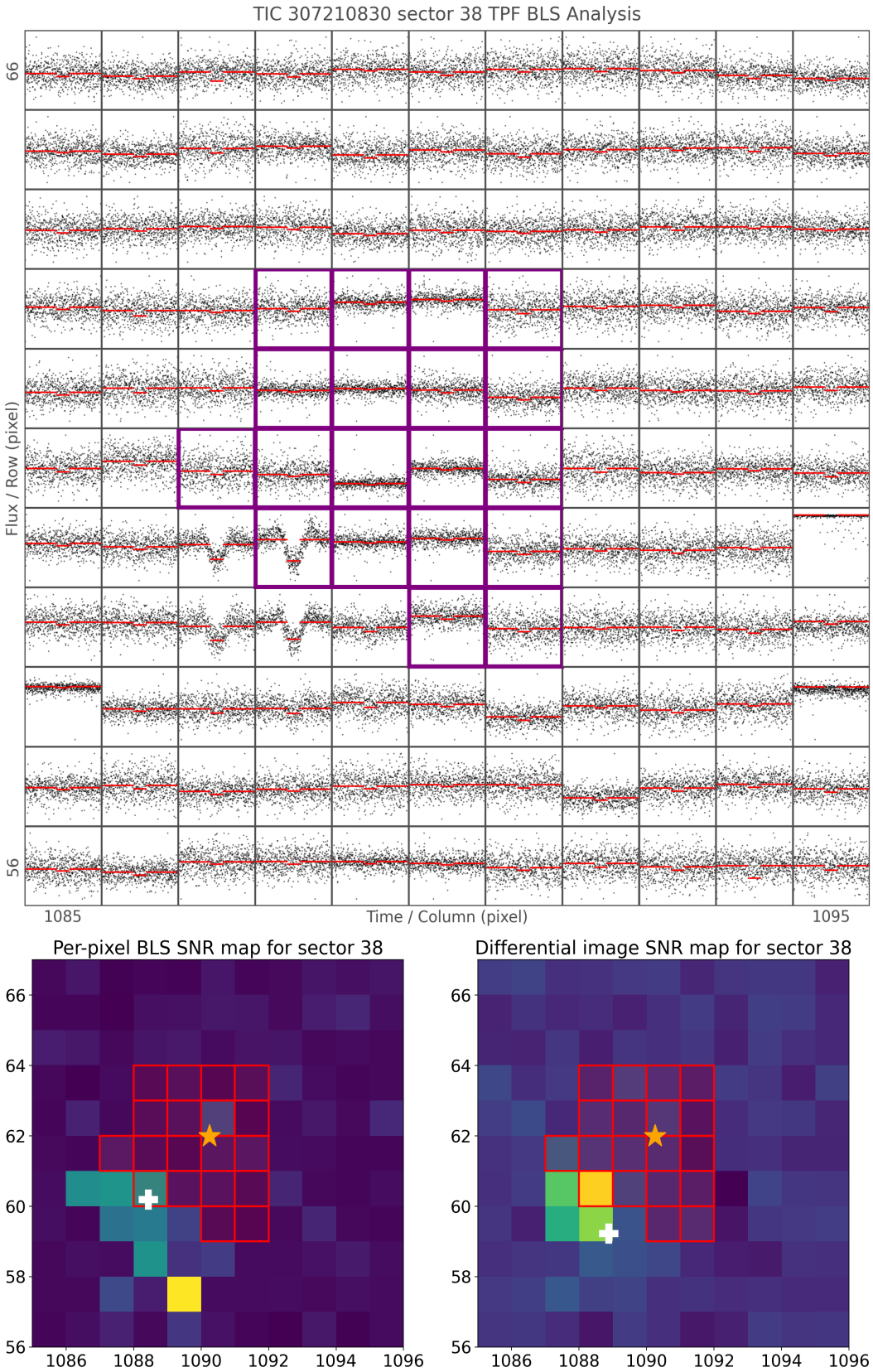


Figure 11: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

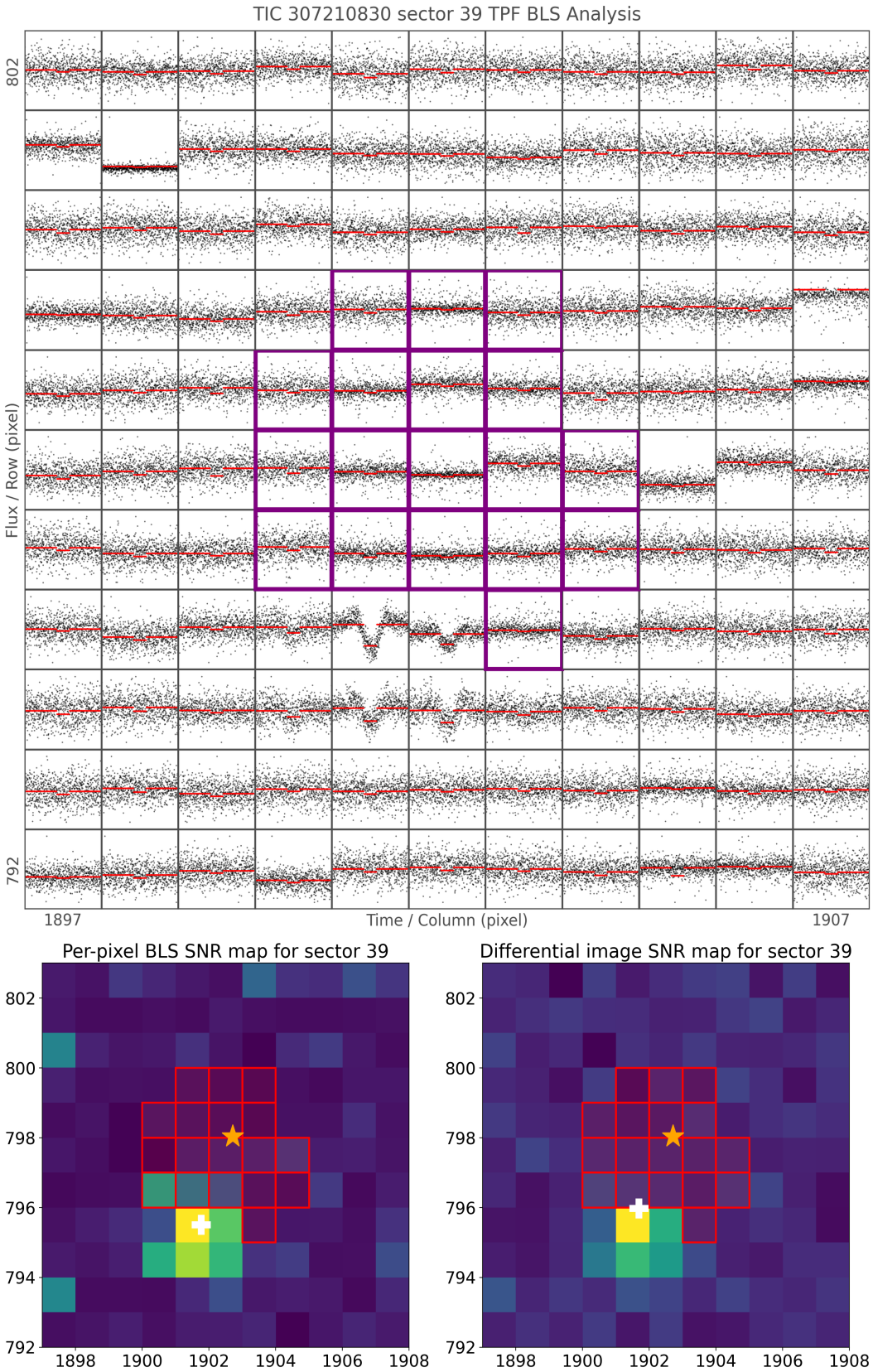
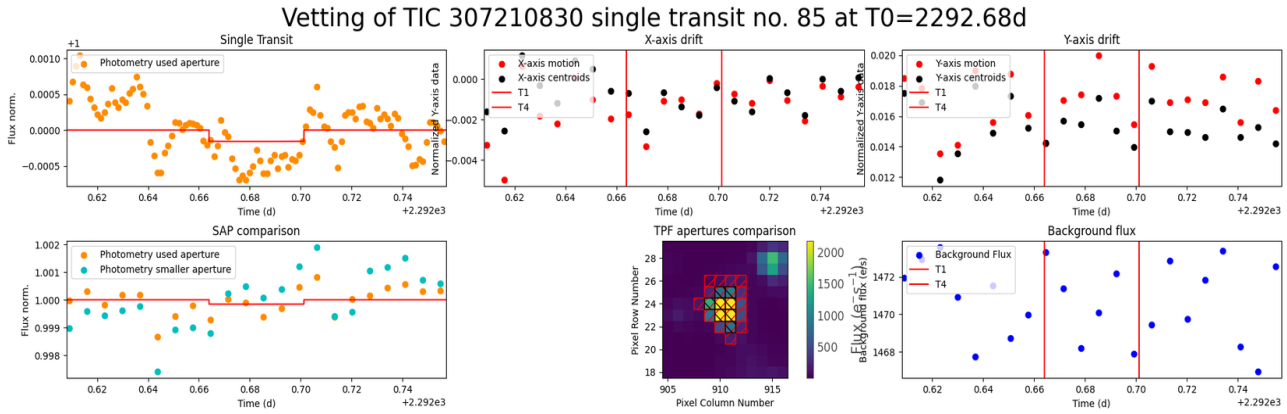


Figure 12: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

WATSON Transits Validation Report: TIC 307210830

The next pages will contain each of the single-transits vetting sheets with the next information:

1. **TOP-LEFT**: Plot with single transit photometry found in the analyzed curve (with momentum dumps, if any).
2. **TOP-CENTER**: Plot with X-axis data drift (X-axis motion vs X-axis centroid offset) around the transit times.
3. **TOP-RIGHT**: Plot with Y-axis data drift (Y-axis motion vs Y-axis centroid offset) around the transit times.
4. **CENTER-LEFT**: Plot with SAP for used aperture vs SAP for smaller aperture around the transit times.
5. **CENTER-CENTER**: Plot with smaller aperture over used aperture on the target.
6. **CENTER-RIGHT**: Plot with single transit photometry found in the analyzed curve around the transit times.
7. **BOTTOM**: Plot TPF flux measurements for each pixel around the transit times.



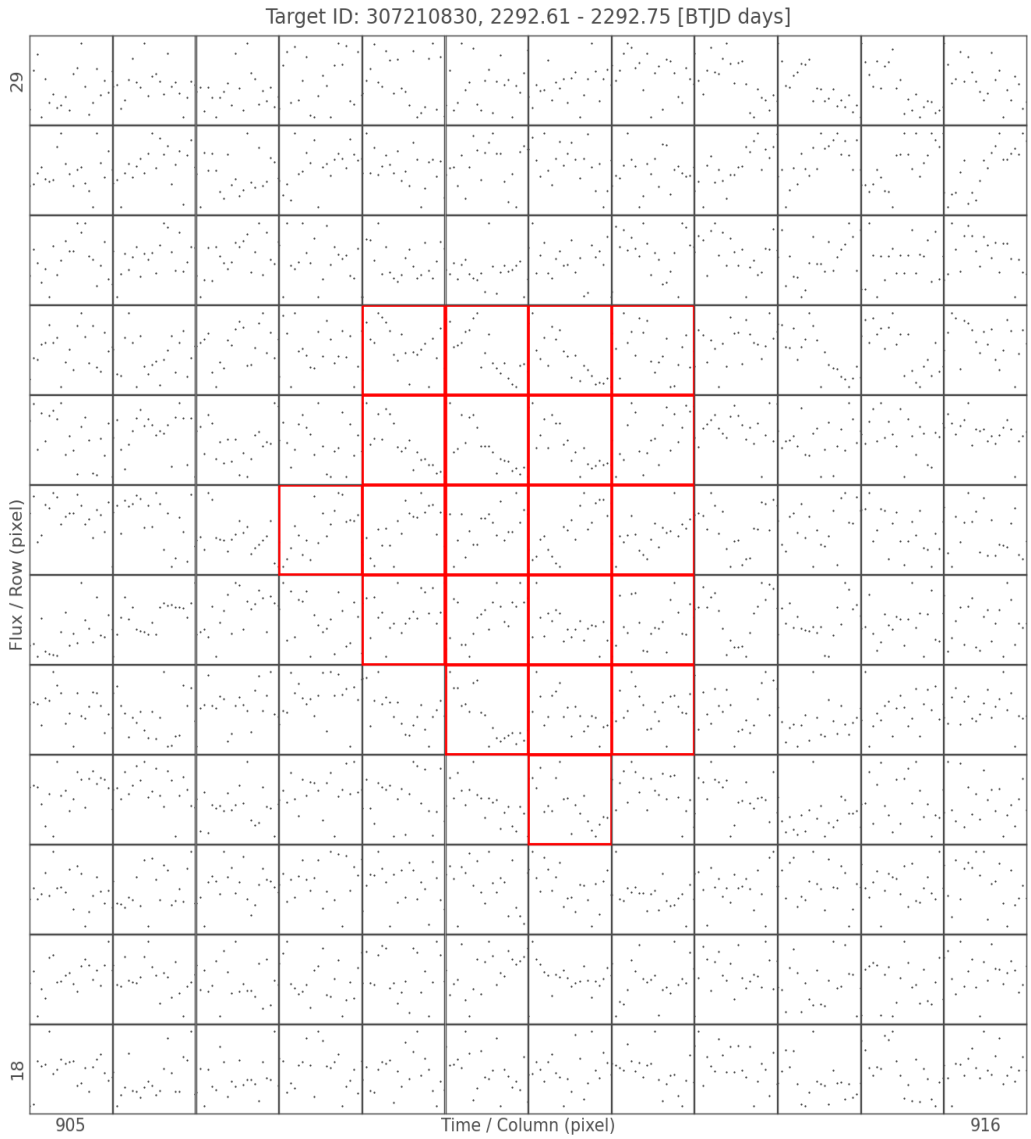
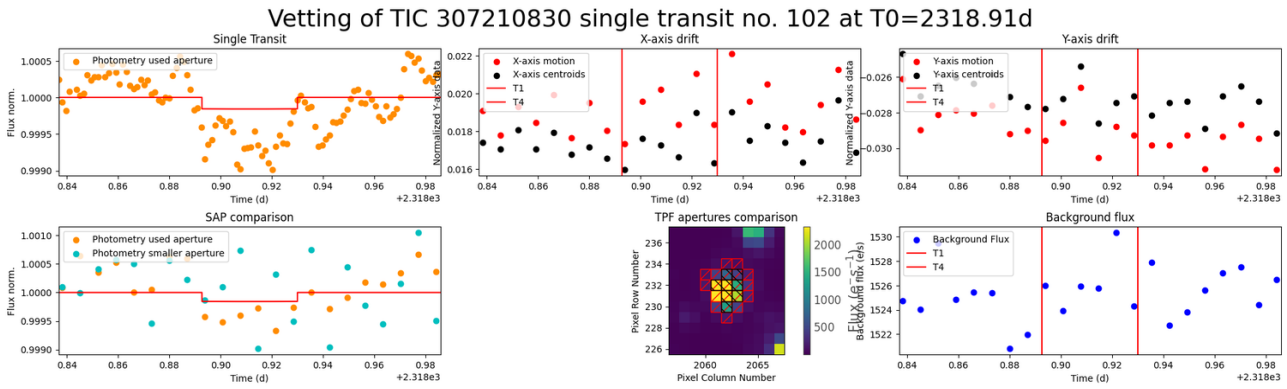


Figure 13: The single transit no. 85 vetting plots

WATSON Transits Validation Report: TIC 307210830



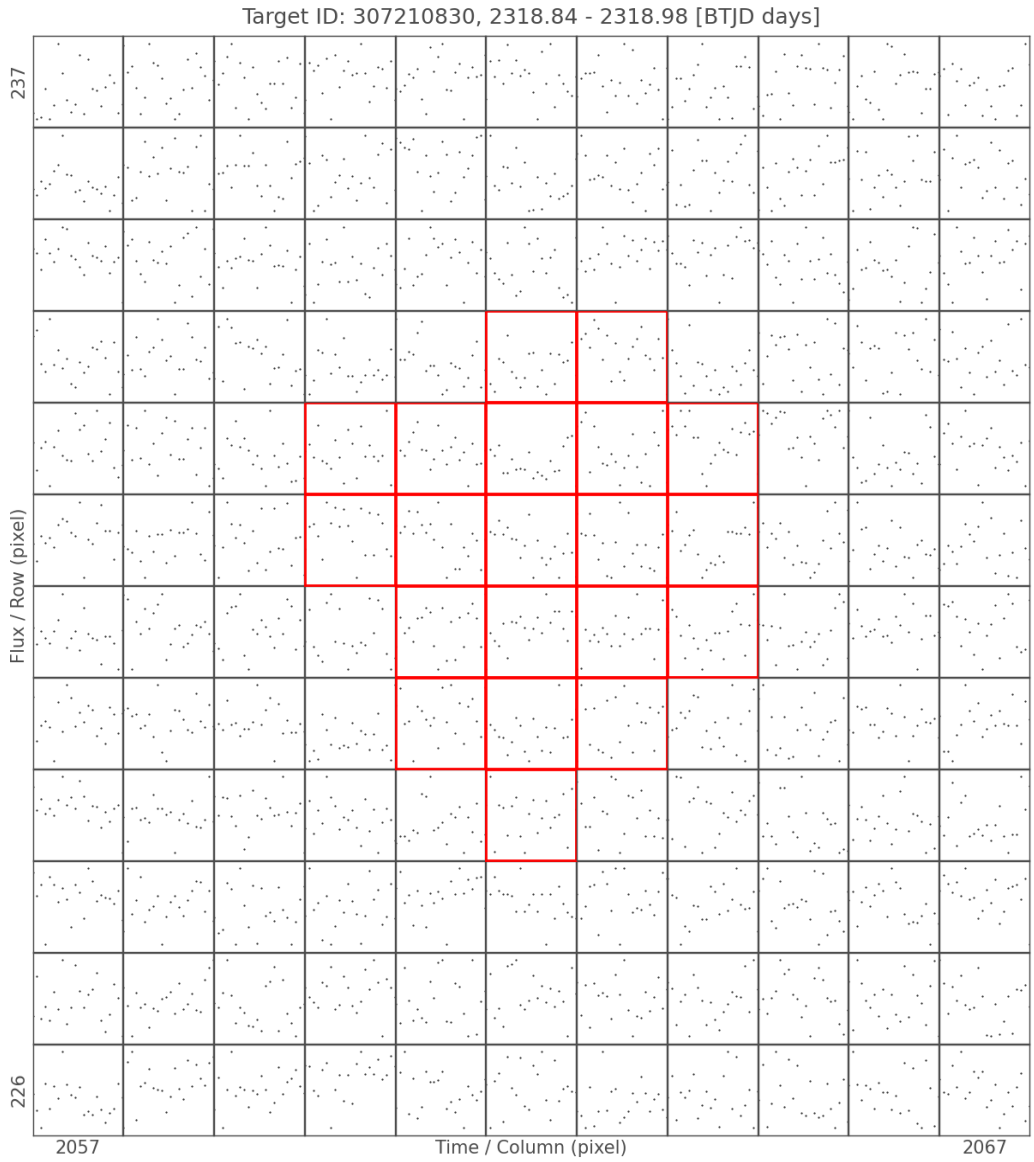
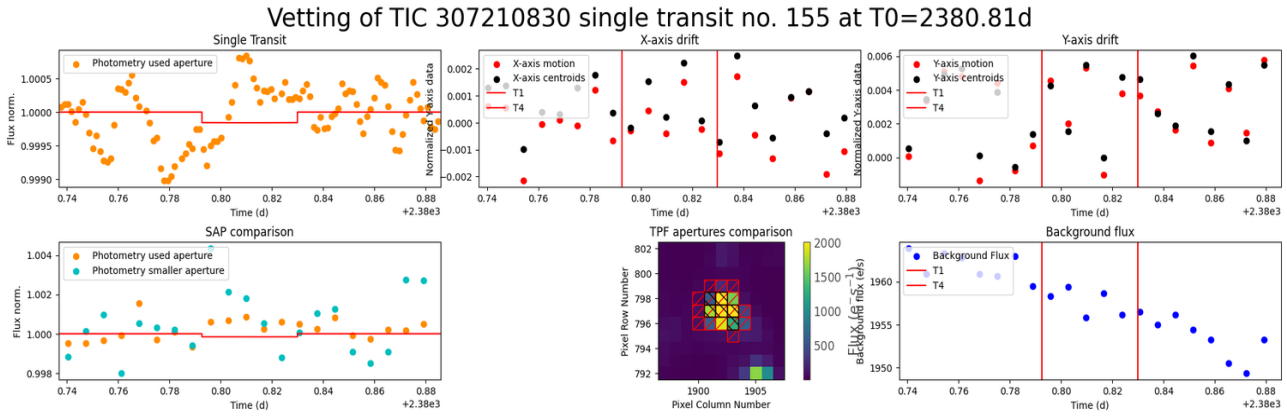


Figure 14: The single transit no. 102 vetting plots



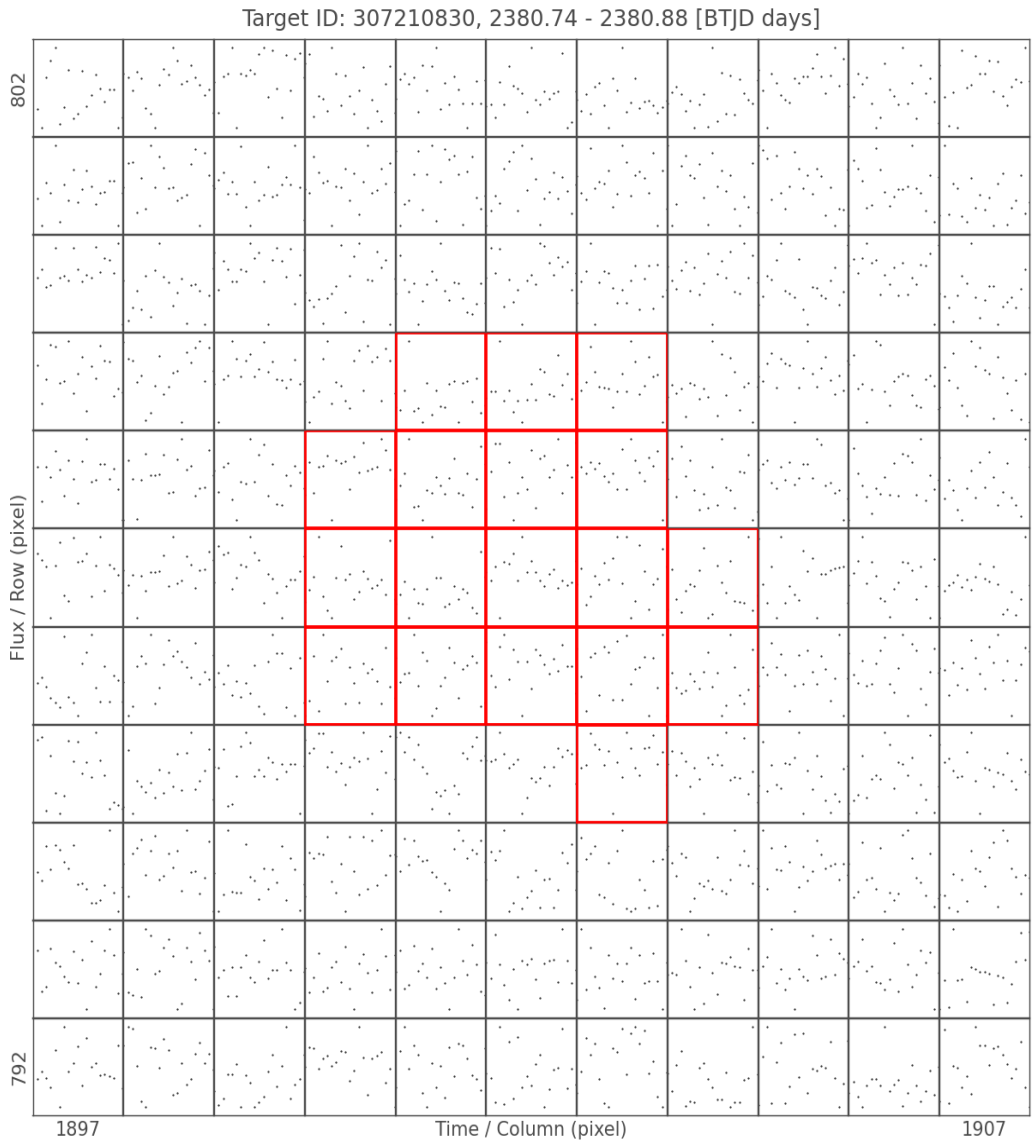


Figure 15: The single transit no. 155 vetting plots