



TIC 198153540 TRANSITS VALIDATION REPORT

This document is created by the WATSON report generator (<https://github.com/PlanetHunters/watson>) and focuses on the target star TIC 198153540.

| RA (deg) | Dec (deg) | V (mag) | J (mag) | H (mag) | K (mag) |
|-------------|-------------|---------|---------|---------|---------|
| 14:04:22.59 | 46:31:09.84 | - | - | - | - |

Table 1: The proposed target parameters.

| T0 (d) | Period (d) | Duration (h) | Depth (ppt) |
|-----------|------------|--------------|-------------|
| 1747.0102 | 19.1234 | 2.23 | 0.415 |

Table 2: The candidate parameters.

| Metric | Value | Passed |
|---------------------|---------|--------|
| fast_snr | 0.237 | False |
| short_snr | 4.661 | True |
| long_snr | 2.189 | False |
| folded_cadences_snr | 0.766 | False |
| snr_p_t0 | 12.75 | True |
| snr_p_2t0 | 1.499 | False |
| snr_2p_t0 | 13.841 | True |
| snr_2p_2t0 | 5.456 | True |
| snr_p2_t0 | 1.499 | True |
| snr_p2_t02 | 0.001 | True |
| snr_p_score | 0.118 | True |
| snr_2p_score | 8.384 | True |
| snr_p2_score | 0.118 | True |
| transit_offset_ra | 211.096 | True |
| transit_offset_dec | 46.515 | True |
| transit_offset_err | 0.006 | True |
| transit_offset_pos | 0.005 | True |
| core_flux_snr | -0.248 | nan |
| halo_flux_snr | 0.143 | nan |
| og_score | -0.575 | nan |
| centroids_ra_snr | 4.333 | False |
| centroids_dec_snr | 1.109 | True |

Table 3: The results of the numerical tests.



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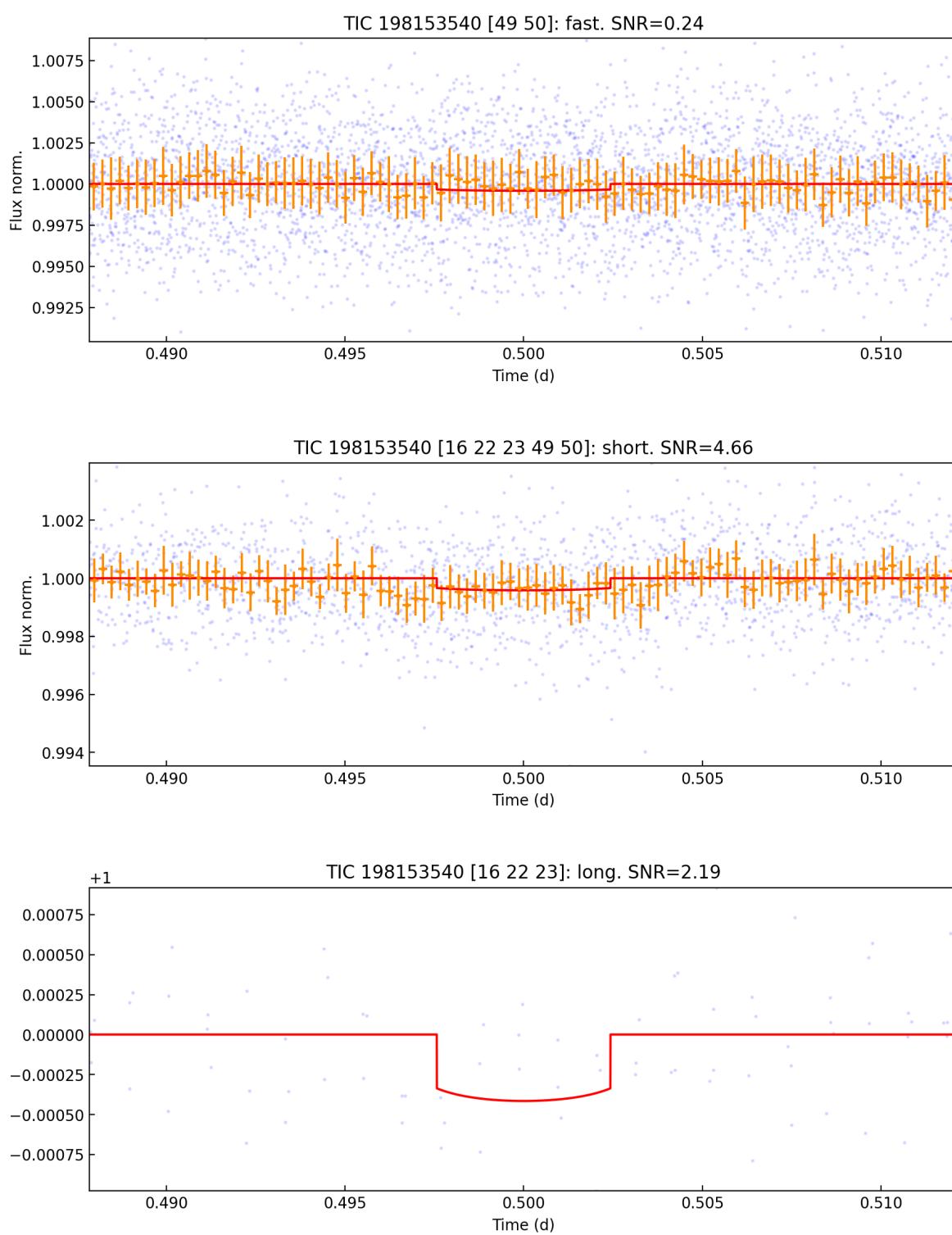


Figure 1: Folded curve for all available cadences.

TIC 198153540 Transits depth analysis $T_0=1747.01$ $P=19.12d$

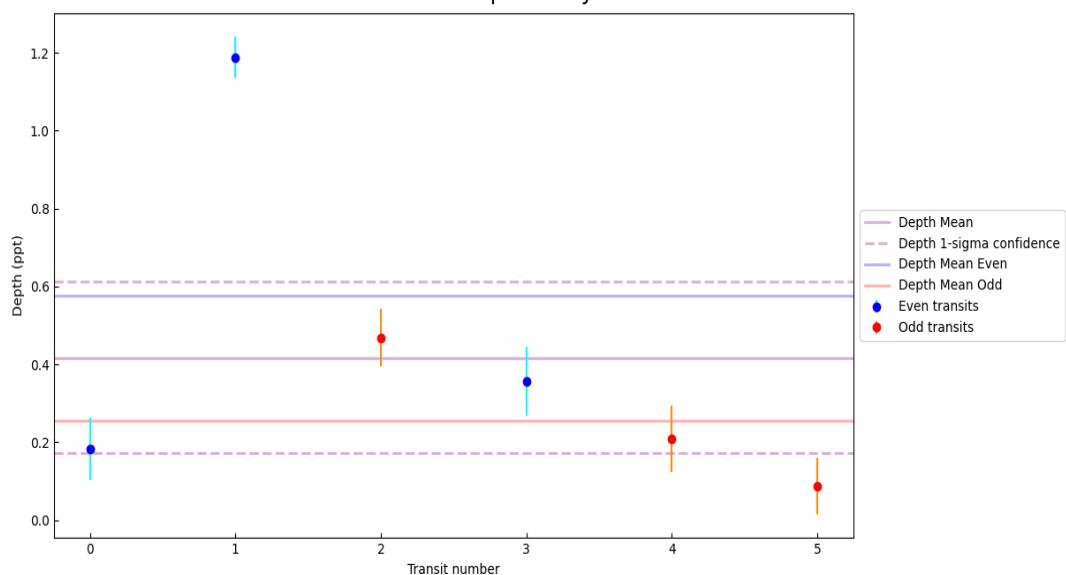


Figure 2: The candidate single-transits depths plot.

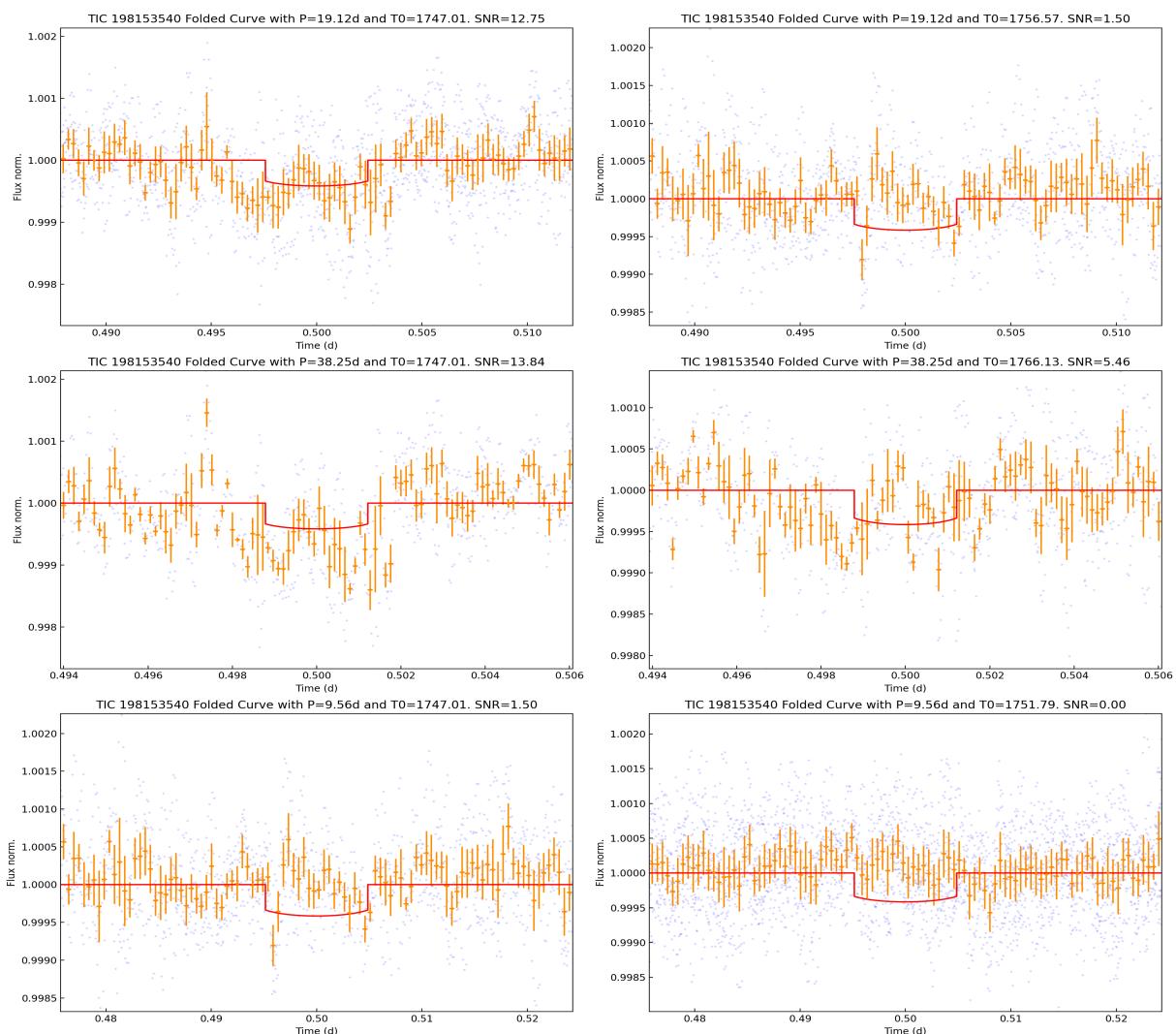


Figure 3: Above, the candidate folded at its found period for the found epoch and epoch + $P/2$. Middle, the candidate folded at its harmonic for the found epoch and epoch + P . Bottom, the candidate folded at its subharmonic for the found epoch and epoch + $P/2$, where the candidate has been masked.

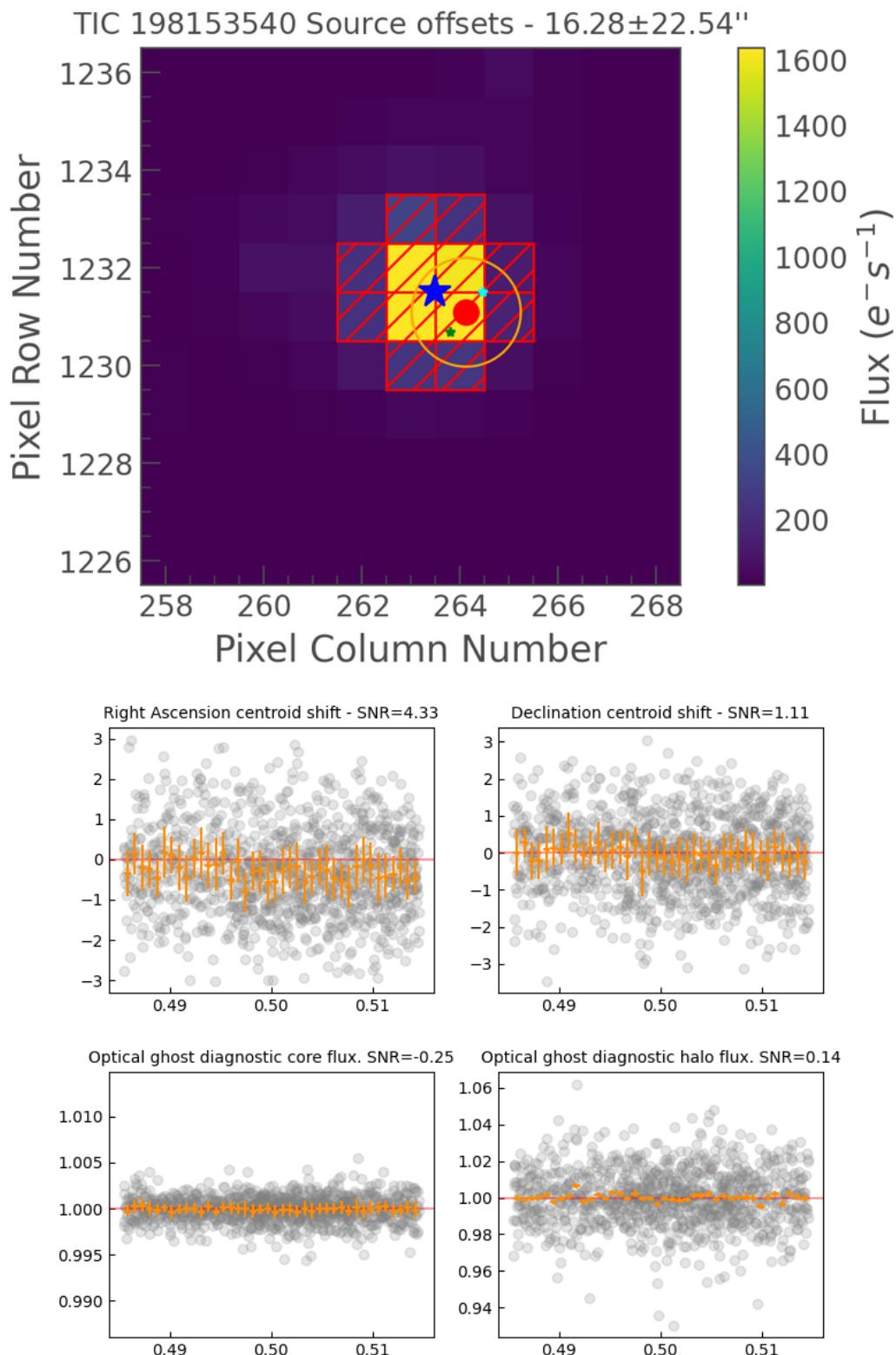


Figure 4: Above, the computed target offset (red circle) from the differential image offset (cyan dot) and the per-pixel BLS SNR offset (green dot). Middle left, the right ascension centroid shift with binning. Middle right, the declination centroid shift with binning. Bottom left, optical ghost diagnostic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

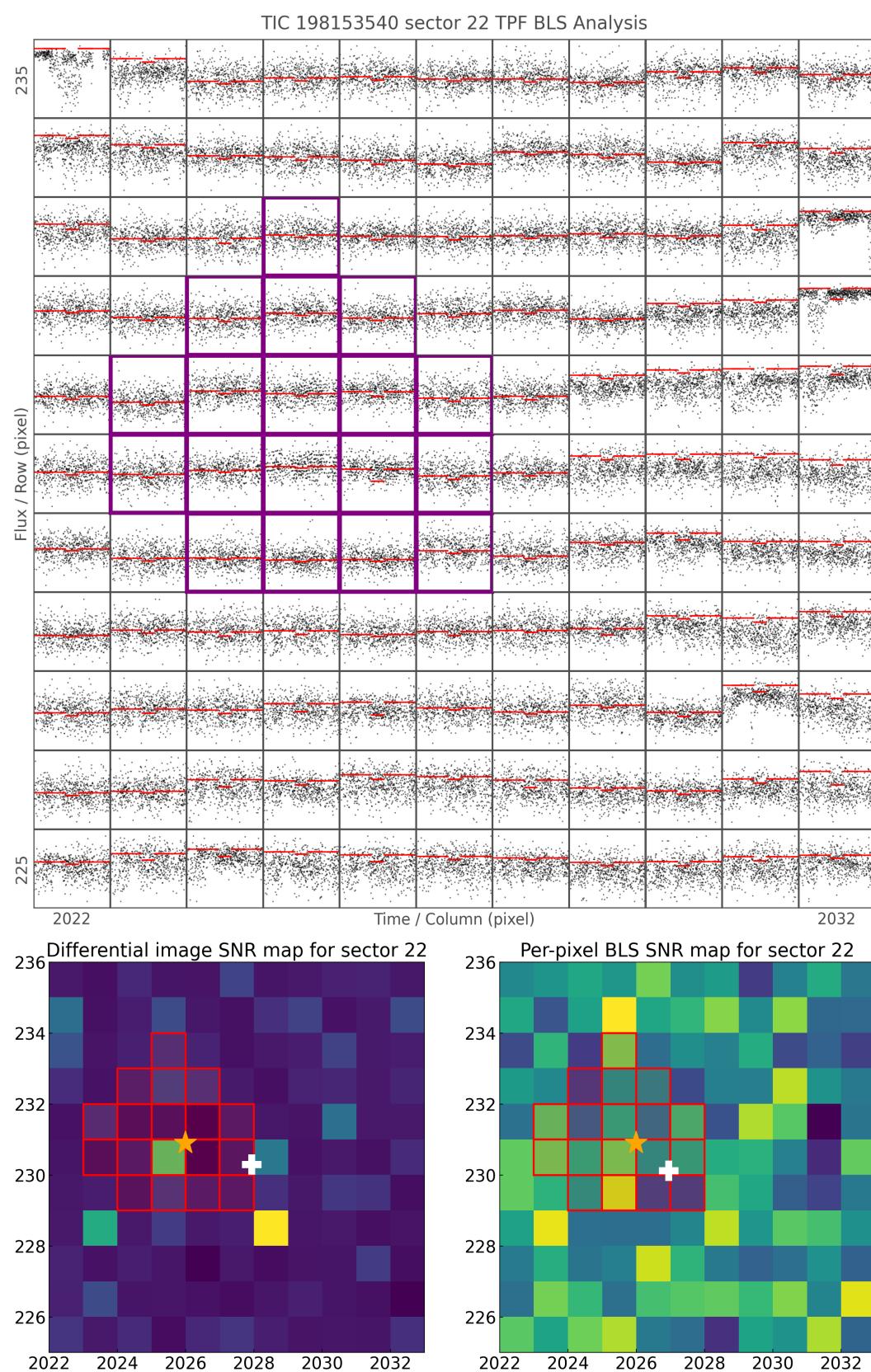


Figure 5: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.

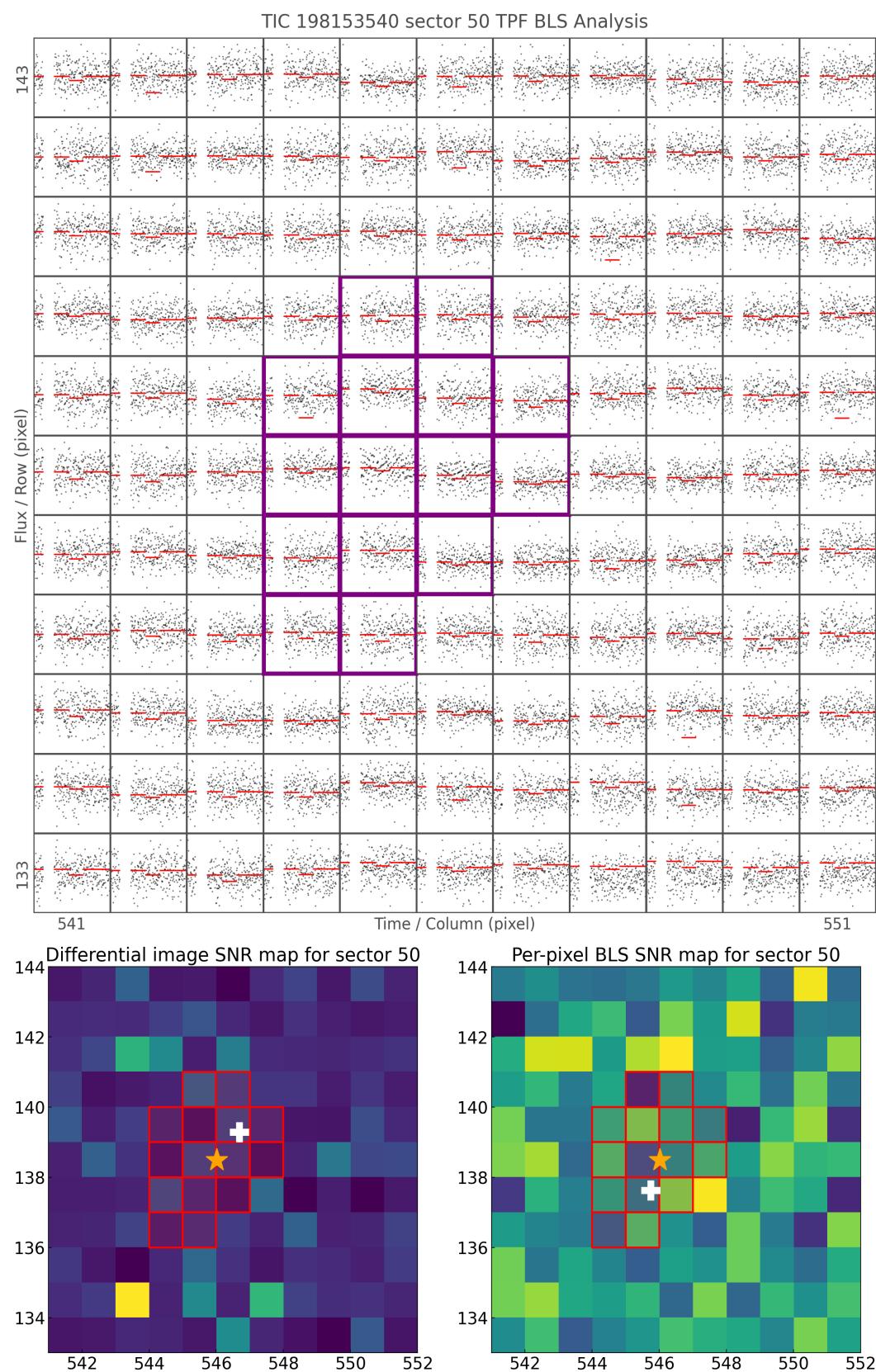


Figure 6: Above, the TPF and per-pixel BLS SNR best fits. Bottom left, the per-pixel BLS SNR for each pixel. Bottom right, the differential images SNR for each pixel. The target position is represented by a red star and the TPF independent source offset is represented by a white plus.



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.

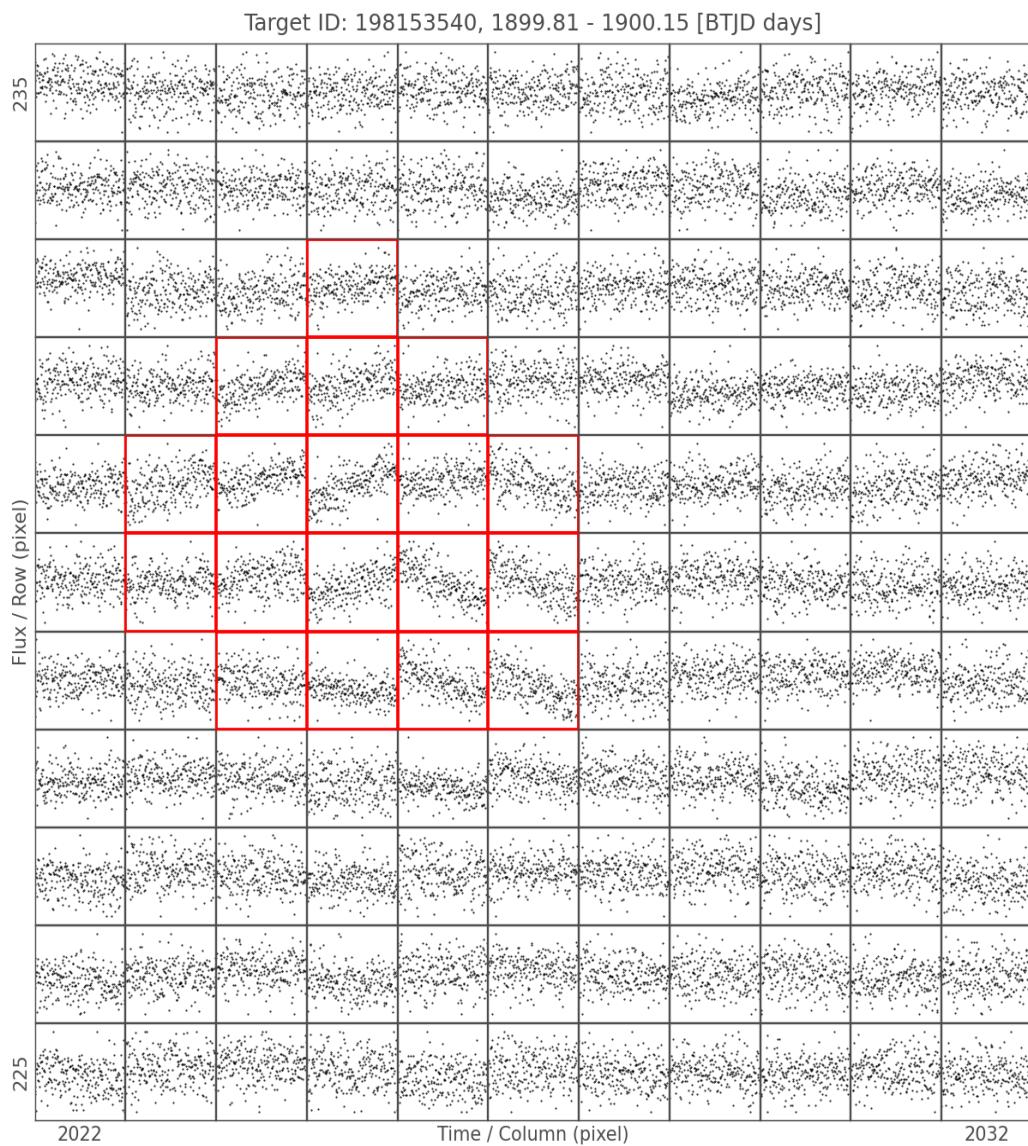
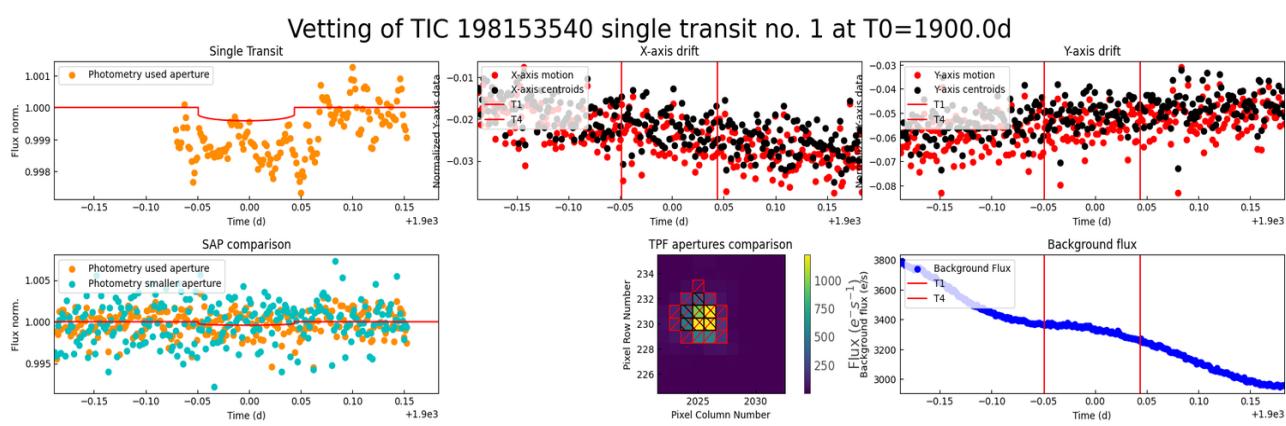


Figure 7: The single transit no. 1 vetting plots



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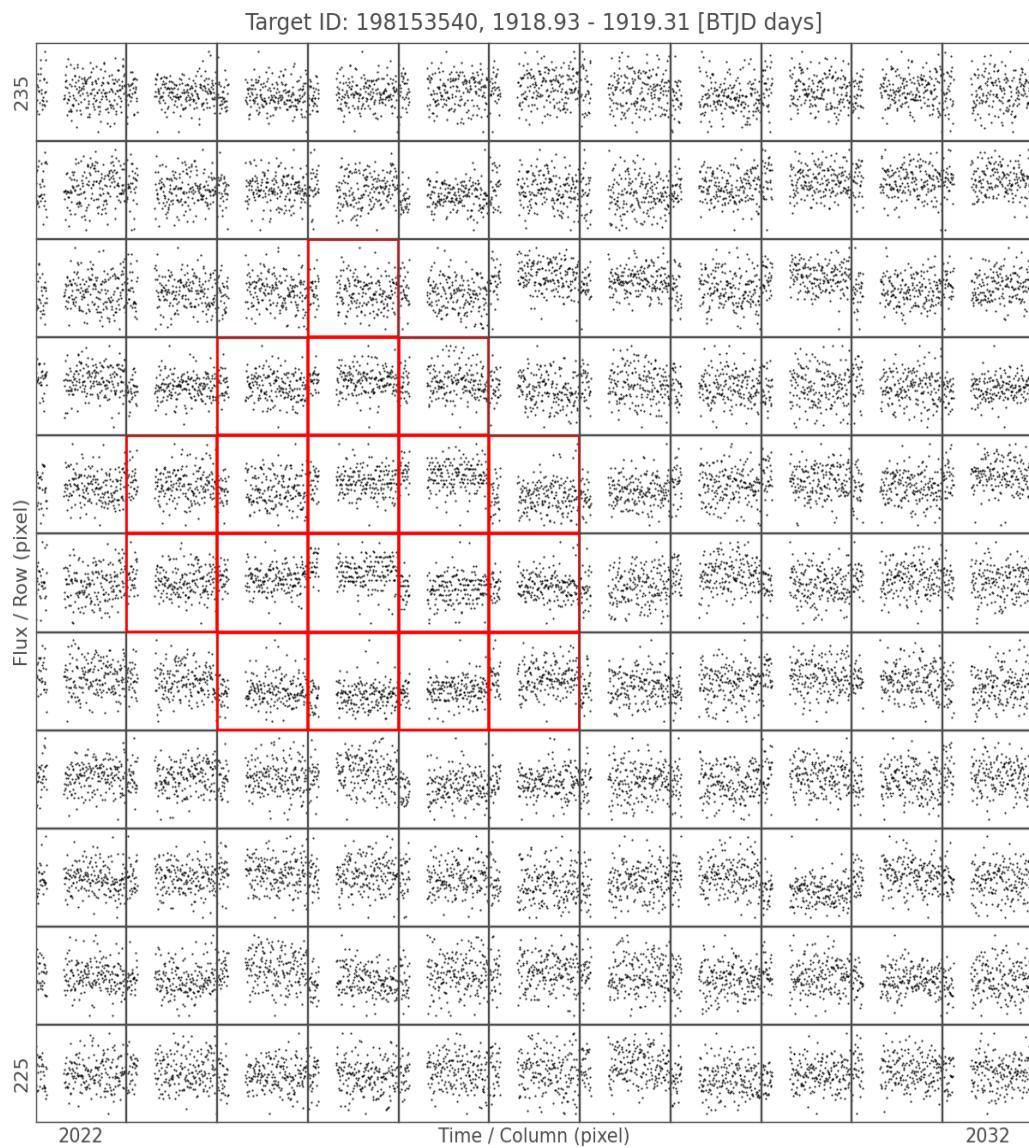
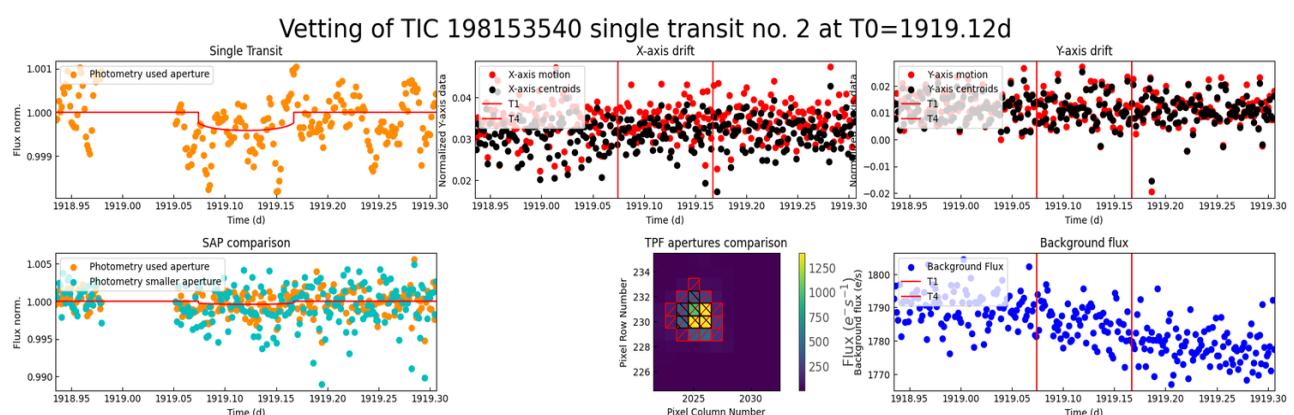


Figure 8: The single transit no. 2 vetting plots



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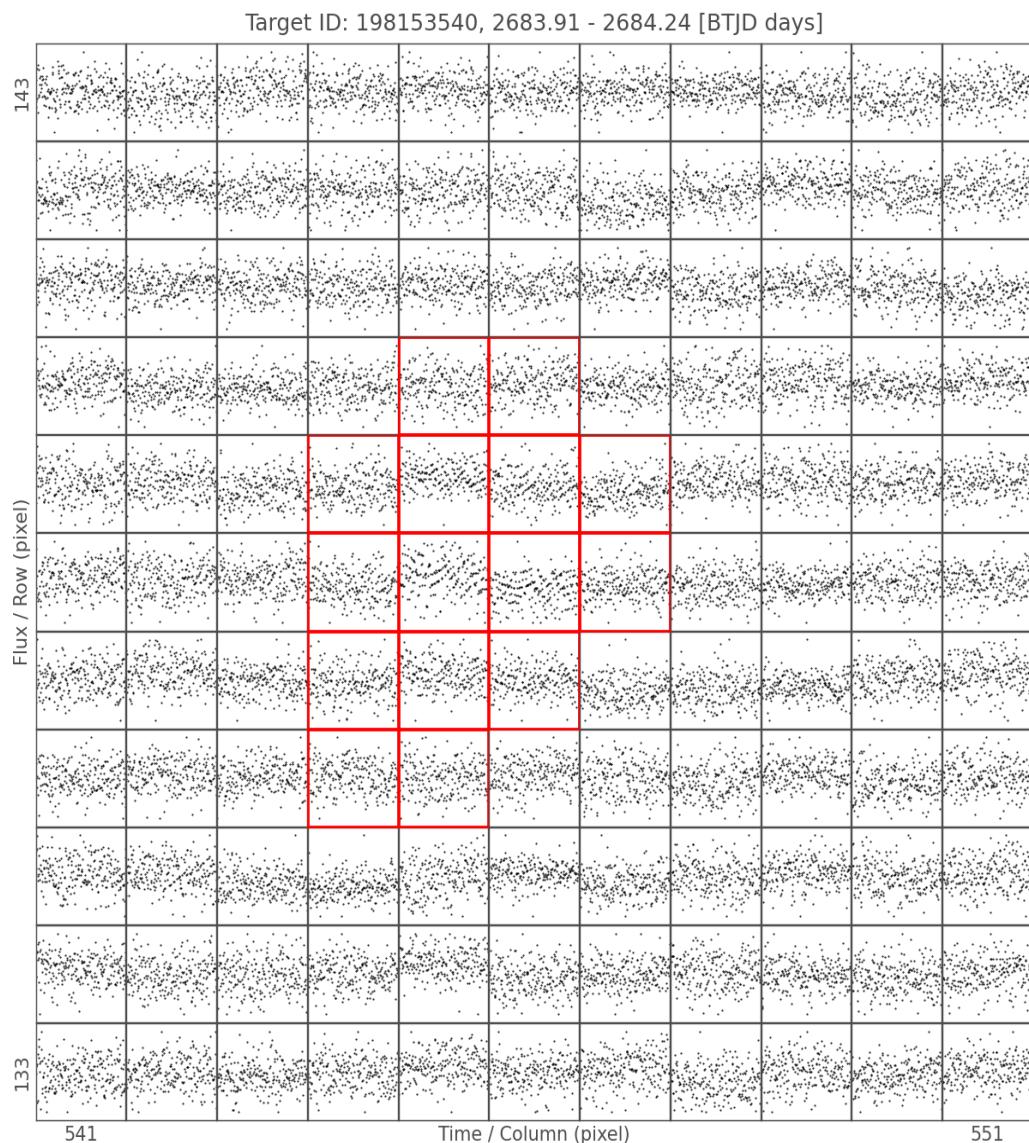
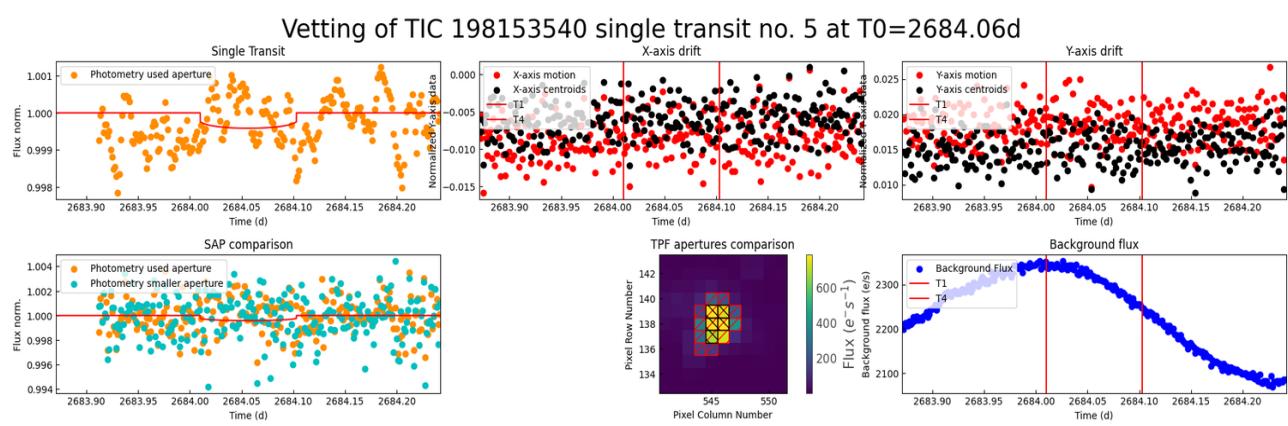


Figure 9: The single transit no. 5 vetting plots