JWST-RCA Run Report - WASP-39 - MIRI/SLITLESS

JWST-RCA Run Report

Generated UTC: 2026-05-24T10:43:17.707587+00:00

Report builder: build_run_report.v6-unique-report-names

Target: WASP-39

Instrument: MIRI/SLITLESS

Instrument slug: miri_lrs

Product class: X1DINTS

Sample axis: integration_or_extracted_spectrum

Run directory: C:\Users\PC\Desktop\JWST-RCA\outputs\WASP-39\miri_lrs\runs\run_2026-05-24_11-21-46

1. Executive summary

NA

JWST-RCA provides diagnostic evidence, not astrophysical verdicts.

2. Dataset summary

Quantity	Value
Samples	1.779000e+03
Channels	388
Wavelength min [um]	4.06357
Wavelength max [um]	14.0496
Readiness	RCA_READY
Interpretation level	STANDARD_CAUTION
Workflow OK	1

3. Residual summary

Quantity	Value
Original valid fraction	0.987113
Post-clip valid fraction	0.986776

Residual valid fraction | 0.986776

Residual median | NA

Residual std | NA

Residual MAD std | 0.0348801

4. Channel-correlation summary

Quantity | Value

Channels used | 388

Local windows | 9

Mean abs corr | 0.0228968

Median abs corr | 0.0183841

P95 abs corr | 0.0574208

Max abs corr | 0.302167

Support class | ADEQUATE_SHARED_N

Top local correlation windows

Window | Wavelength range [um] | mean_abs_corr | local/global ratio

1 | 4.06357 - 8.13065 | 0.0550996 | 2.40643

2 | 6.7836 - 9.23969 | 0.0258418 | 1.12862

9 | 13.0923 - 14.0496 | 0.0224368 | 0.979906

3 | 8.16096 - 10.1871 | 0.0222638 | 0.972354

6 | 11.0376 - 12.4499 | 0.0216208 | 0.944271

5. N_eff and stacking-efficiency summary

Quantity | Value

Windows | 9

Class counts | {'BAD': 0, 'CAUTION': 9, 'GOOD': 0, 'UNKNOWN': 0}

Conservative efficiency min | NA

Conservative efficiency median | NA

Conservative efficiency max | NA

Worst N_eff / stacking-efficiency windows

Window | Wavelength range [um] | N | N_eff | Efficiency | Class

1 | 4.06357 - 8.13065 | NA | NA | NA | CAUTION

2 | 6.7836 - 9.23969 | NA | NA | NA | CAUTION

3 | 8.16096 - 10.1871 | NA | NA | NA | CAUTION

6 | 11.0376 - 12.4499 | NA | NA | NA | CAUTION

7 | 11.7851 - 13.0772 | NA | NA | NA | CAUTION

6. Null-test summary

Quantity | Value

Iterations | 300

Selected windows | 9

Results | 36

Class counts | {'STRONG_EXCESS': 28, 'EXCESS': 1, 'CONSISTENT_WITH_NULL': 7}

7. Advisor summary

Stacking decisions

json

{
 "USE_STRONG_CAUTION": 1,
 "USE_CAUTION": 8
}

Covariance classes

json

{
 "LOW_COVARIANCE": 9
}

Null support

json

"STRONG_ALL_TESTS"

8. Figures

9. Cautions

- This is not an astrophysical detection claim.
- This is not a definitive instrumental-causality claim.
- This is a post-calibration residual-covariance diagnostic.
- RCA results should support covariance-aware interpretation, not replace scientific

analysis.

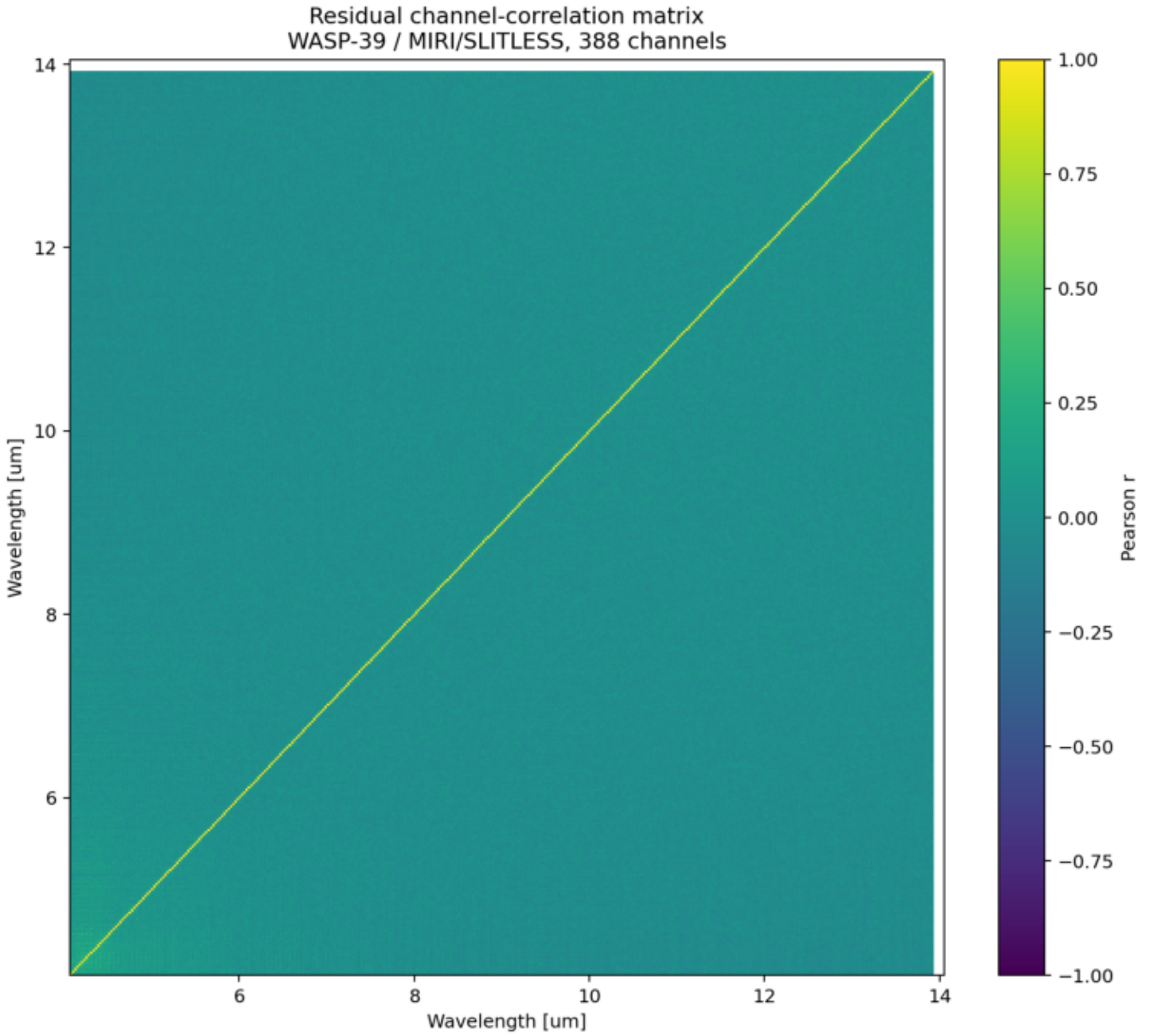
Recommended wording:

> Under this residual-covariance diagnostic, this region requires caution.

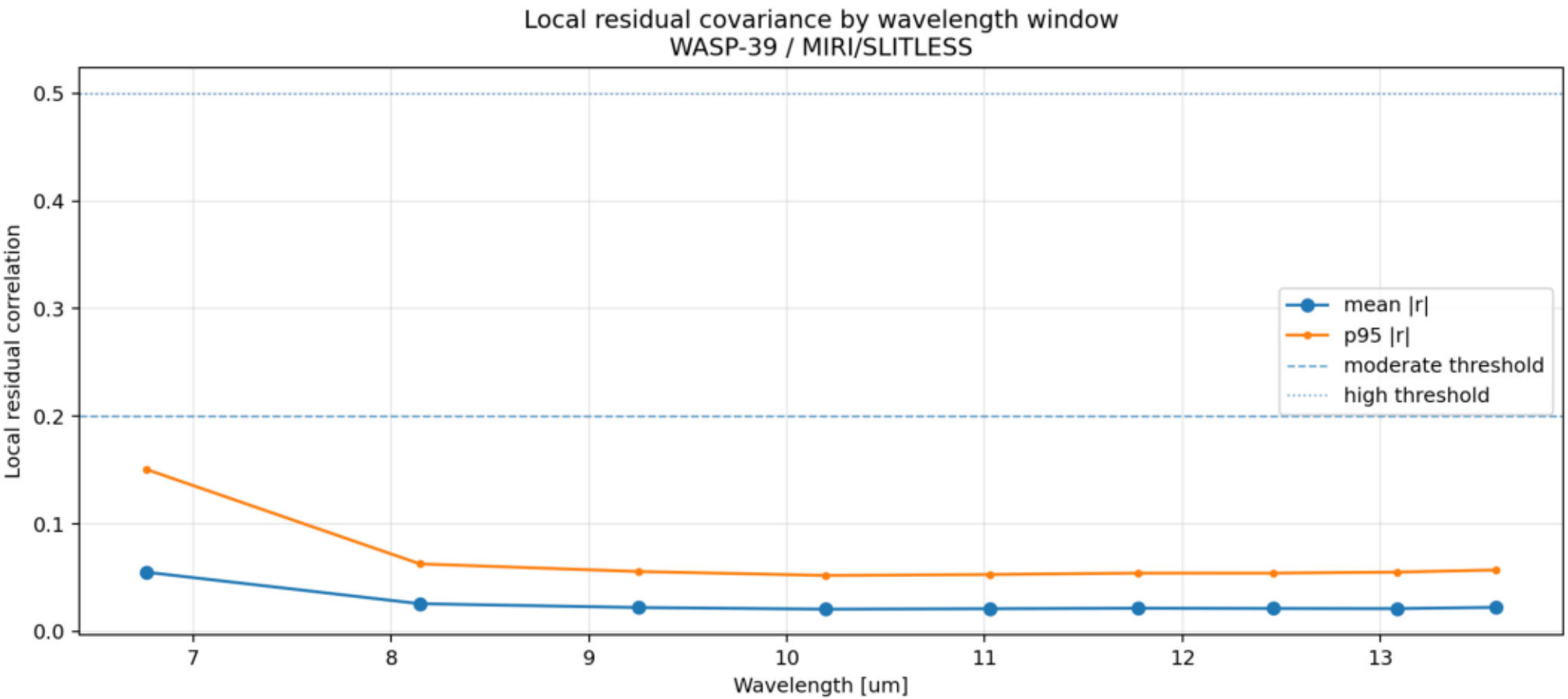
Avoid wording such as:

> This molecule is false. This instrument failed. JWST is wrong.

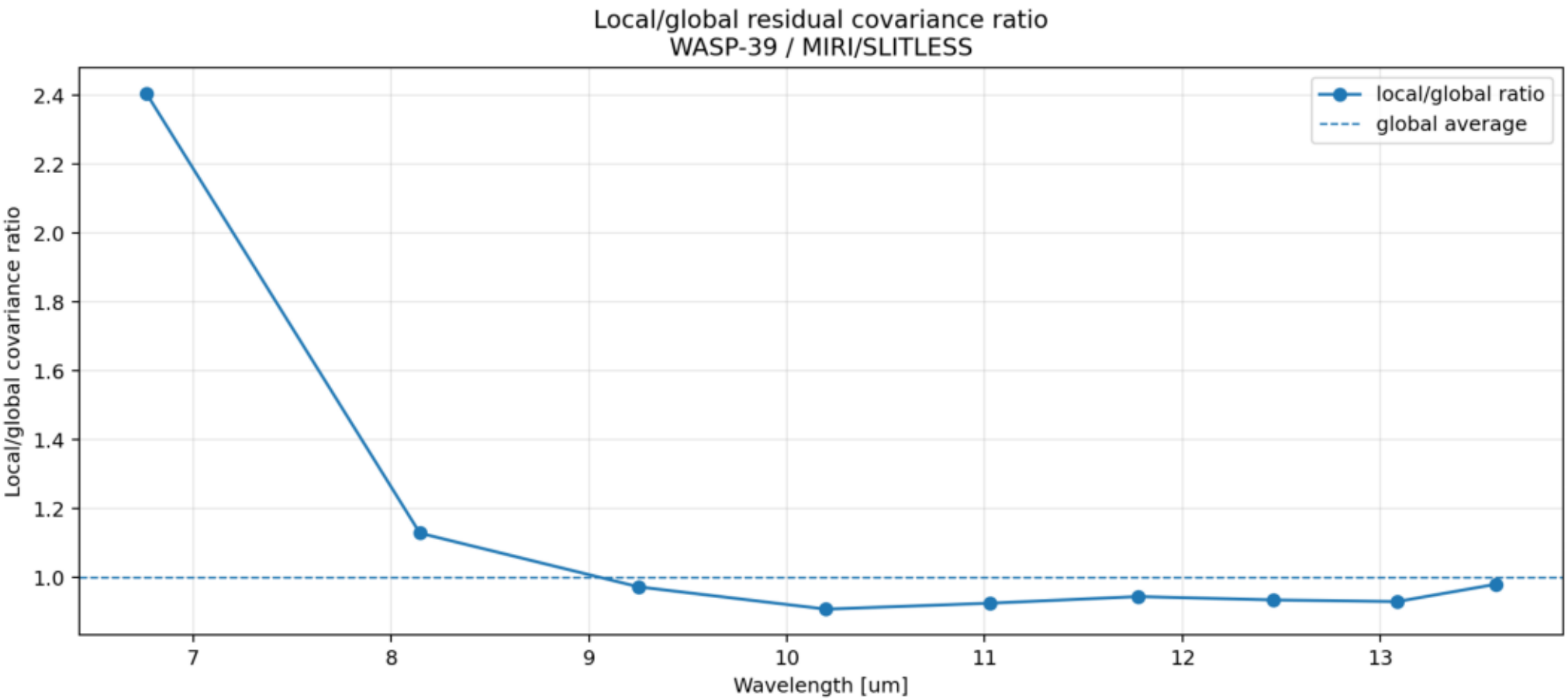
corr_matrix_heatmap.png



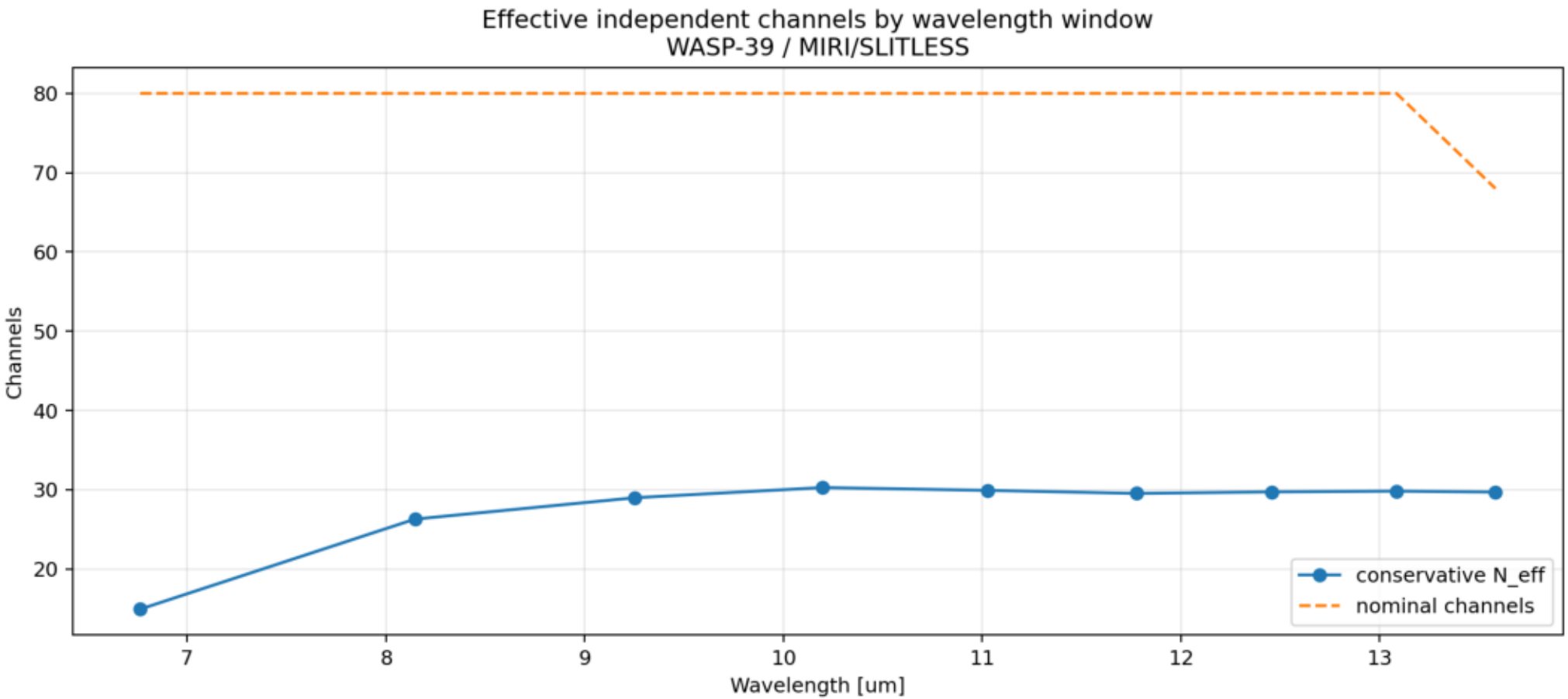
local_covariance_vs_wavelength.png



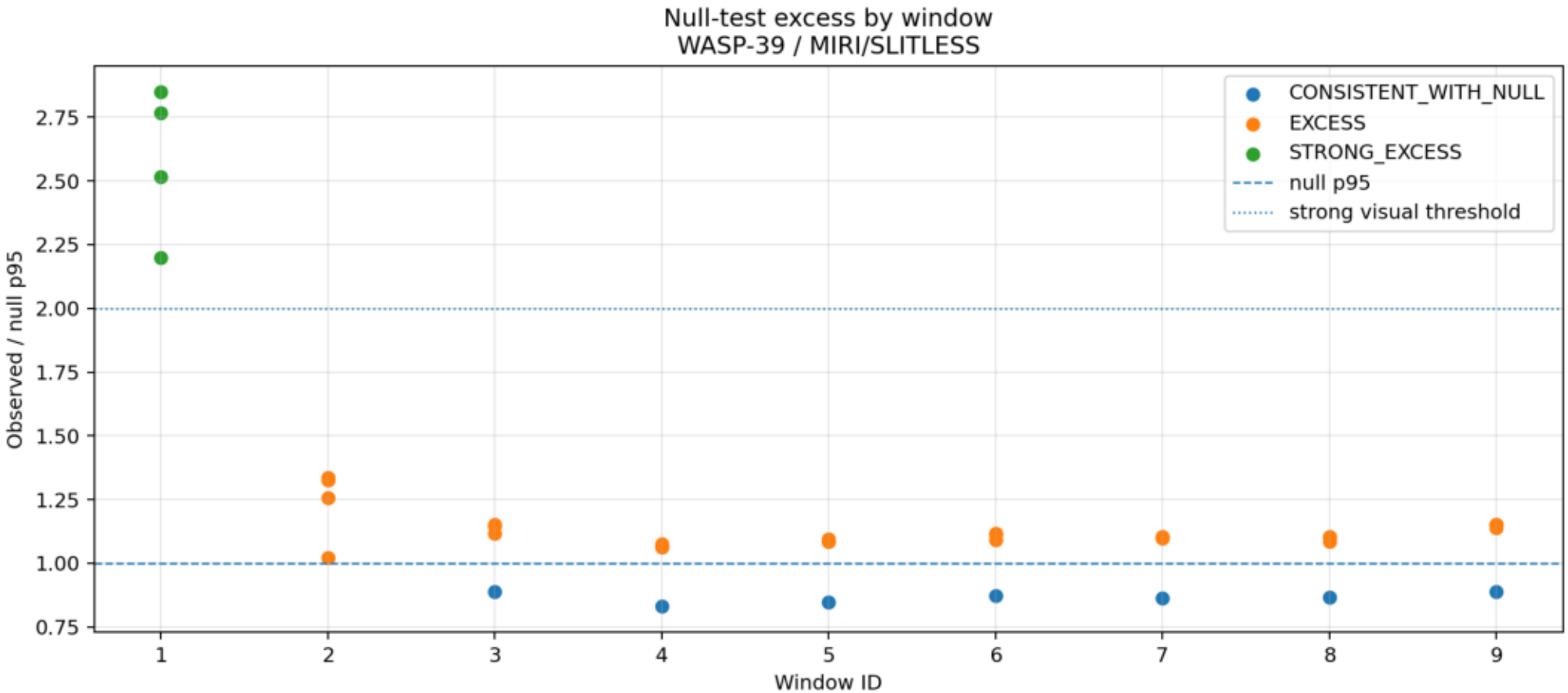
local_global_ratio_vs_wavelength.png



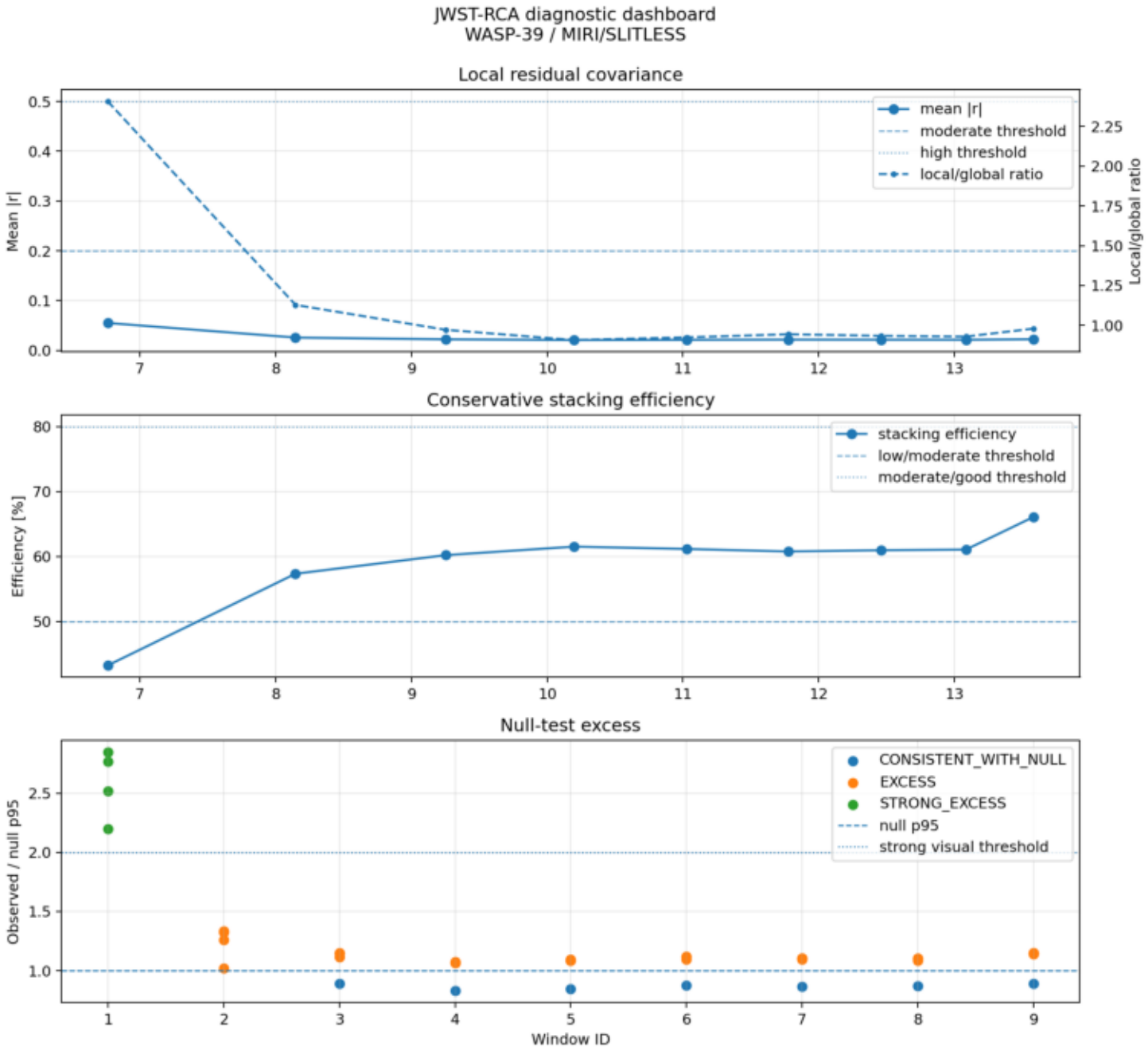
neff_vs_wavelength.png



null_test_observed_over_p95.png



rca_dashboard_summary.png



stacking_efficiency_vs_wavelength.png