Solar O appendix

Sun · O · downloadable appendix

O.json v1.7 · 0 visible products · 7 quarantined entries

NOT_YET_DEFENSIBLE

No adopted Solar oxygen abundance is available from this feed.

Highlighted Products

No adopted highlighted product has been selected. No adopted Solar oxygen abundance is available from this feed.

Error-bar Forest Plot

No publication-eligible abundance products. Quarantined entries are documented below without plotted values.

How to read this forest. Each row is one independent product, preserving its band, holding, engine, indicator and line set. Engines and indicator families are never averaged. Solid bars show the supplied statistical uncertainty; wireframes show the supplied systematic uncertainty. The statistical basis and any incomplete error budget remain attached to the row. Grades describe the supplied line-pool provenance, not engine quality; evaluated theoretical CNO oscillator strengths are not relabelled as laboratory evidence. Quarantined, failed and unconstrained fits have no abundance mark. Experimental products remain explicitly not adopted. Literature references provide context, never tuning targets.

Solar oxygen context

Oxygen is traced by forbidden [O I], permitted O I and molecular OH indicators where available. Blends, departures from LTE and atmospheric structure affect these families differently, so their results retain separate identities.

C/O indicator strategy · Methodology

Open provenance decisions

O I 615.8nm: DISAGREES — reported to Ryan, not resolved. . Store log gf -0.409 (); summed pull -0.2966 (B+).

O I 630.0nm: DISAGREES — reported to Ryan, not resolved. store claims A, pull publishes B+. Store log gf -9.717 (A); summed pull -9.7744 (B+).

OPEN. Tachiev and NIST differ systematically by -0.016 dex on the 777 triplet and -0.005 dex on 8446. AGSS21 names Tachiev for N i only and states no O i gf source. Both values are reported in oi_tachiev_vs_nist.csv; NIST is what the store already carried and this script does not change it. Ryan decides.

Adjudication record · Indicator gf checks

Product visibility audit

Every feed entry is accounted for. Quarantined and archived entries retain their source disposition; their numeric fit outputs are available only in the labelled source download.

Withheld entries and source reasons (7)

quarantine · O · I · red-optical · iag_fts_solar_atlas · solar_iag · ALL · SET-AGSS21 · SYNTH · 1D-LTE
RYA-1097 gated re-run precedence: this product does NOT pass the RYA-1092 eligibility gate, so it was published into quarantine and did not supersede anything. [NOT_YET_DEFENSIBLE] O I is outside the ratified real set {Fe I, Fe II, Al}. It is a pilot measurement, not a product.

quarantine · O · I · red-optical · iag_fts_solar_atlas · solar_iag · ALL · SYNTH · 1D-LTE
RYA-1097 gated re-run precedence: this product does NOT pass the RYA-1092 eligibility gate, so it was published into quarantine and did not supersede anything. [NOT_YET_DEFENSIBLE] O I is outside the ratified real set {Fe I, Fe II, Al}. It is a pilot measurement, not a product.

quarantine · O · I · red-optical · kpno_solar_atlas · solar_kpno_kurucz2005_corrected · ALL · SET-AGSS21 · SYNTH · 1D-LTE
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quarantine · O · I · red-optical · kpno_solar_atlas · solar_kpno_kurucz2005_corrected · ALL · SYNTH · 1D-LTE
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quarantine · O · I · red-optical · kpno_solar_atlas · solar_kpno_molecfit_corrected · ALL · SET-AGSS21 · SYNTH · 1D-LTE
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quarantine · O · I · red-optical · kpno_solar_atlas · solar_kpno_molecfit_corrected · ALL · SYNTH · 1D-LTE
RYA-1097 gated re-run precedence: this product does NOT pass the RYA-1092 eligibility gate, so it was published into quarantine and did not supersede anything. [NOT_YET_DEFENSIBLE] O I is outside the ratified real set {Fe I, Fe II, Al}. It is a pilot measurement, not a product.

quarantine · O · I · VIS · harps · solar_harps_molecfit_corrected · ALL · FORB-OI_6300 · SYNTH · 1D-LTE
RYA-1097 gated re-run precedence: this product does NOT pass the RYA-1092 eligibility gate, so it was published into quarantine and did not supersede anything. [STAT_BASIS_MISMATCH] sigma_stat here is a 'curvature_sigma' (SYNTH route, band_products.py:506) while the rest of the feed publishes a 'standard_error' (error_budget.py:609). The feed carries no stat_basis field, so `A +/- sigma_stat` renders as comparable when it is not -- this product's bar reads ~sqrt(n) times worse than it is. [NOT_YET_DEFENSIBLE] O I is outside the ratified real set {Fe I, Fe II, Al}. It is a pilot measurement, not a product.

Download the evidence

Download PDF — Solar O appendix

Source feed — includes quarantined fit outputs, not adopted abundances

Complete product visibility audit

Shared website/PDF report

Reproducibility manifest

Complete references and product-to-source bindings

Reproducibility

Generated from the pinned CNO campaign snapshot. Source commit a1ec12a9cc09472037e2af3b1242db2ce5b37c6b
Feed O.json v1.7 · updated 2026-09-13T04:21:45Z
Generated 2026-09-12T23:07:15-06:00 (source commit timestamp)
Feed SHA-256 dd90c8884d59e6ed90c3a637757e958476eb936e38fcb8fa7c5c4cf4702f1484
Generator scripts/generate_cno_publication.py v1.0.0

Pinned scientific source

References / Data & Model Sources

Sources are separated by their role. Registered grid lineage and quarantined diagnostics do not imply an adopted abundance or an applied correction.

See the source notes for the distinction between reference lineage and the treatment actually recorded in each feed entry.

Science and provenance source notes

Solar abundance and indicator analyses. Solar O atomic/molecular indicator lineage and atmospheric sensitivity; comparison literature, not an adopted Codex abundance. Sources: [1], [2].

Atomic data and gf authorities. The recorded O I/O II base pedigree is Wiese–Fuhr–Deters / Opacity Project theory. Per-transition exceptions and the open O I source decisions remain explicit. Sources: [3], [4], [5].

Atomic data and gf authorities. O I triplet source record: NIST (this script) — Tachiev NOT adopted; OPEN — referred to Ryan (RYA-1214 EOS) Sources: [3], [6].

Model and grid sources. Registered O I line/grid lineage: Amarsi, Nissen & Skuladottir 2019, A&A 630, A104 — line-by-line 3D-NLTE grids built on the Amarsi+2018 O I model atom. The current feed treatment remains authoritative; a grid reference does not imply a correction was applied. Sources: [7], [8].

Atomic data and gf authorities. Atomic O I entry; source-family pedigree only, not a substitute for a per-transition gf join. Sources: [3], [4], [5].

Model and grid sources. Feed treatment: 1D-LTE; no NLTE/3D correction is claimed for this entry. Turbospectrum is the synthesis implementation. Sources: [9].

Special diagnostics. The synthesis sidecar names Johansson's Ni I blend data, Storey & Zeippen's forbidden-line gf lineage and Caffau's CO5BOLD comparison anchor. The feed entry remains 1D-LTE and quarantined; the sidecar's cited anchor is not promoted to a measured abundance. Sources: [10], [11], [12].

Product-to-source index

O-quarantine-361df42bd1f9 · quarantine · red-optical · solar_iag · SET-AGSS21 · 1D-LTE · not supplied · [1], [3], [4], [5], [9]

O-quarantine-945c945b31da · quarantine · red-optical · solar_iag · not supplied · 1D-LTE · not supplied · [1], [3], [4], [5], [9]

O-quarantine-e2dedb7ba833 · quarantine · red-optical · solar_kpno_kurucz2005_corrected · SET-AGSS21 · 1D-LTE · not supplied · [1], [3], [4], [5], [9]

O-quarantine-eadb1d33ffa2 · quarantine · red-optical · solar_kpno_kurucz2005_corrected · not supplied · 1D-LTE · not supplied · [1], [3], [4], [5], [9]

O-quarantine-da700d54e88d · quarantine · red-optical · solar_kpno_molecfit_corrected · SET-AGSS21 · 1D-LTE · not supplied · [1], [3], [4], [5], [9]

O-quarantine-255dd9842275 · quarantine · red-optical · solar_kpno_molecfit_corrected · not supplied · 1D-LTE · not supplied · [1], [3], [4], [5], [9]

O-quarantine-a69ed2a177ae · quarantine · VIS · solar_harps_molecfit_corrected · FORB-OI_6300 · 1D-LTE · not supplied · [1], [3], [4], [5], [9], [10], [11], [12]

Complete applicable bibliography

Solar abundance and indicator analyses

[1] — Asplund, M.; Amarsi, A. M.; Grevesse, N. (2021). The chemical make-up of the Sun: A 2020 vision. A&A 653, A141 DOI: 10.1051/0004-6361/202140445. source record

[2] — Amarsi et al. 2021, A&A 656 A113 DOI: 10.1051/0004-6361/202141384. source record

Atomic data and gf authorities

[3] — Kramida, A.; Ralchenko, Yu.; Reader, J.; NIST ASD Team (2024). NIST Atomic Spectra Database (version 5.11/5.12). National Institute of Standards and Technology, Gaithersburg, MD DOI: 10.18434/T4W30F. source record

[4] — Wiese, W. L.; Fuhr, J. R. (2006). New Critical Compilations of Atomic Transition Probabilities for Neutral and Singly Ionized Carbon, Nitrogen, and Iron. Proceedings of the NASA Laboratory Astrophysics Workshop (14-16 February 2006, UNLV, Las Vegas) source record

[5] — Wiese, W. L.; Fuhr, J. R.; Deters, T. M. (1996). Atomic Transition Probabilities of Carbon, Nitrogen, and Oxygen: A Critical Data Compilation. JPCRD Monograph 7. source record

[6] — Tachiev & Froese Fischer 2002, A&A 385, 716 DOI: 10.1051/0004-6361:20011816. source record

Model and grid sources

[7] — Amarsi, A. M.; Nissen, P. E.; Skuladottir, A. (2019). Carbon, oxygen, and iron abundances in disk and halo stars. A&A 630, A104 DOI: 10.1051/0004-6361/201936265. source record

[8] — Amarsi, Barklem, Asplund, Collet & Zatsarinny 2018, A&A 616, A89 DOI: 10.1051/0004-6361/201832770. source record

[9] — Gerber, J. M.; Magg, E.; Plez, B.; Bergemann, M.; Heiter, U.; Olander, T.; Hoppe, R. (2023). Non-LTE radiative transfer with Turbospectrum. A&A 669, A43 DOI: 10.1051/0004-6361/202243673. source record

Special diagnostics

[10] — Johansson, S.; Litzen, U.; Lundberg, H.; Zhang, Z. (2003). Experimental f-Value and Isotopic Structure for the Ni I Line Blended with [O I] at 6300 A. ApJ 584, L107 DOI: 10.1086/374037. source record

[11] — Storey, P. J.; Zeippen, C. J. (2000). Theoretical values for the [O III] 5007/4959 line-intensity ratio and homologous cases. MNRAS 312, 813 DOI: 10.1046/j.1365-8711.2000.03184.x. source record

[12] — Caffau, E.; Ludwig, H.-G.; Steffen, M.; Livingston, W.; Bonifacio, P.; Malherbe, J.-M.; Doerr, H.-P.; Schmidt, W. (2015). The photospheric solar oxygen project. III. Investigation of the centre-to-limb variation of the 630 nm [O I]–Ni I blend. A&A 579, A88. source record