Fact-Checked Science

EVIDENCE REVIEW · OZONE LAYER

The 2026 Antarctic ozone hole is unusually wide, but not unusually deep

Copernicus's analysis put the hole at 27.44 million km^2 on 20 September, larger than on that date in any earlier year of its record [1]. Its depth stayed near average, and the 2006 "record" it was set against isn't a record in either agency's data. We redrew both agencies' data and followed the season to mid-October.

By Fact-Checked Science · Published October 19, 2026

OUR ANALYSIS marks our own reasoning and calculations, and the verdicts are our assessment. Everything else comes from the numbered sources.

A very wide hole of ordinary depth, set against a mixed-up record

OUR ASSESSMENT

27.44
million km^2 at 12:00 UTC on 20 September, the third-highest yearly peak in CAMS's record since 1979 [1]

20 of 32
days from 17 September to 18 October above the 95th percentile of 1979–2023 for the date [1]

23rd of 47
NASA's rank for this season's ozone mass deficit, which combines area and depth: about average [2]

THE CLAIMS ABOUT THE 2026 HOLE

TRUE

The 2026 Antarctic ozone hole is unusually wide

The infographic's title; CAMS, September 16 [3]

From 17 to 21 September the hole was larger than on those dates in any earlier year of CAMS's record, which starts in 1979, and its peak of 27.44 million km^2 is the record's third-highest for any year. By NASA's seasonal measure, 2026 ranks seventh of 47 years [1][2]. See section 1.

TRUE

…but not unusually deep

The infographic's title; CAMS, September 16 [3]

On 16 September CAMS found the minimum ozone and the mass deficit "close to the average values" [3]. NASA's season means rank 23rd of 47 years for mass deficit and 27th lowest for minimum ozone [2]. By mid-October the mass deficit was high for the date, because the hole stayed so large. See section 2.

PARTLY TRUE

"a record 29.6 million km² on 9 September 2006"

CAMS, September 16, repeated on the infographic [3]

29.6 million km^2 is NASA's peak for 2006, but it came on 24 September. The largest single day in NASA's record is 29.9 million km^2 on 9 September 2000, and CAMS's own series tops out at 28.4, on 6 September 2000 [4][1]. 2006 does hold NASA's record for the season's average. See section 1.

PARTLY TRUE

A sudden cooling in early September made the hole grow so fast

The infographic; CAMS says the growth "coincided" with a drop in temperature [3]

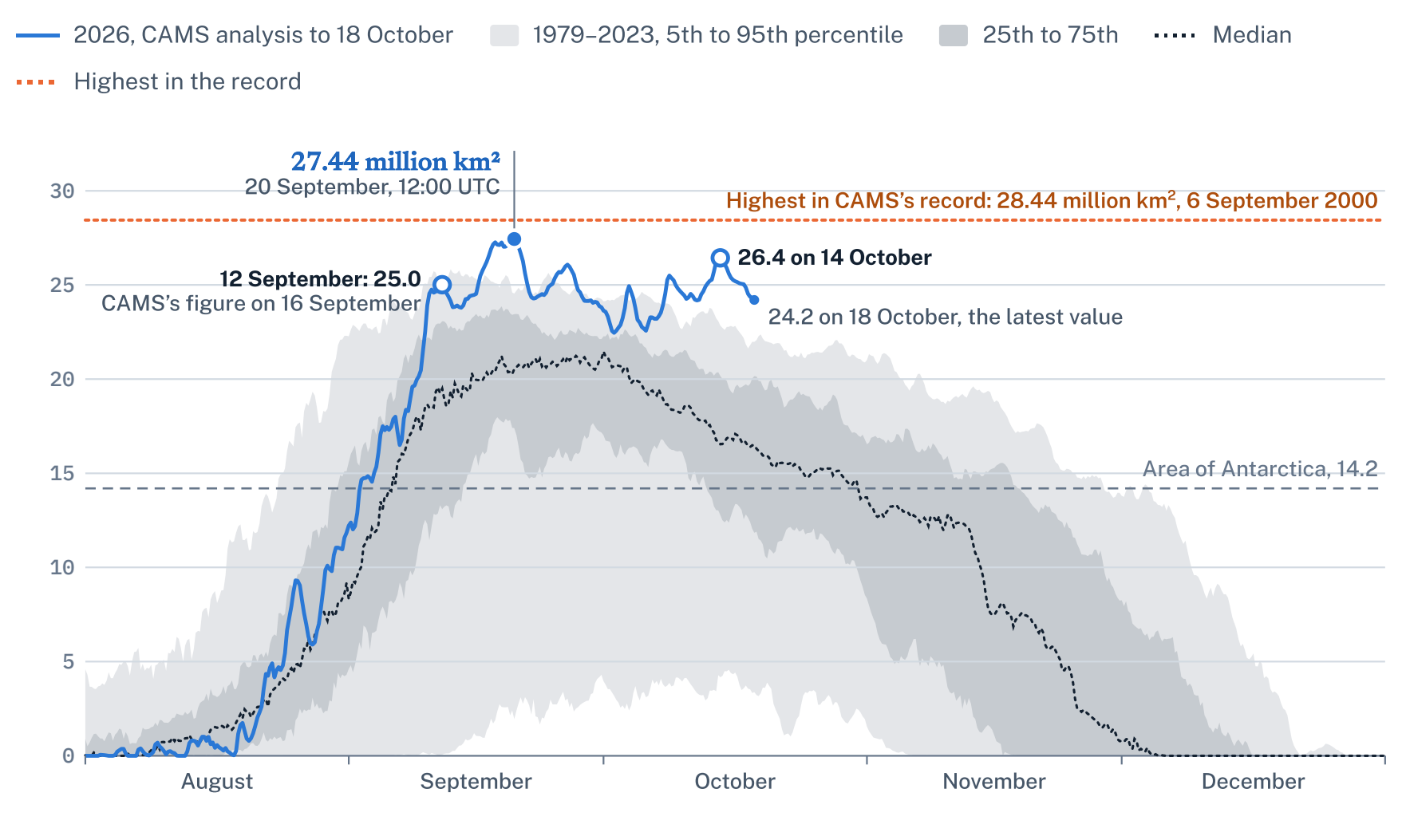
Cold makes big holes. In CAMS's data, the lowest temperature at 50 hPa, about 20 km up, set record lows for the date on 22 August and 13 September, and fell by about 4 °C from 4 to 9 September, as the hole grew fastest [1]. But the cold came in spells from late August, and CAMS says only that the growth "coincided" with it [3]. See section 3.

1 · HOW WIDE

By 20 September the hole was larger than on that date in any year since 1979

The Copernicus Atmosphere Monitoring Service (CAMS) combines satellite measurements with its models of the atmosphere [5]. Its analysis put the hole at 27.44 million km^2 at 12:00 UTC on 20 September, the peak of the season so far [1][6].

Ozone-hole area, 2026 against 1979–2023



Area where total ozone is below 220 Dobson units, south of 60°S, million km^2, every six hours

Redrawn by factchecked.science from CAMS's data files, which run to 18:00 UTC on 18 October [1]; the percentiles and the median are our calculation for each six-hourly time from the years 1979 to 2023, the baseline CAMS uses [3]. Contains modified Copernicus Atmosphere Monitoring Service information 2026 and modified Copernicus Climate Change Service information 2026; neither the European Commission nor ECMWF is responsible for any use that may be made of the Copernicus information or data it contains [7].

THE SEASON'S PEAK SO FAR

27.4 million km^2

at 12:00 UTC on 20 September; the day's average was 27.3 [1]

ABOVE THE MEDIAN

OUR ANALYSIS

≈ 7 million km^2

above the 1979–2023 median for that date and time, 20.5; the 95th percentile is 24.5 [1]

CAMS'S RECORD

28.4 million km^2

on 6 September 2000, about 1 million km^2 above this year's peak; 2015 is second, at 27.9 [1]

The "2006 record" mixes up two NASA figures

CAMS's release says the hole "spanned a record 29.6 million km^2 on 9 September 2006" [3], and the infographic drew that line on CAMS's chart. CAMS's own series has nothing that large: its 2006 peak is 26.2 million km^2, on 15 September, and its record is 28.4, on 6 September 2000 [1]. NASA's record lists 29.9 million km^2 on 9 September 2000 and 29.6 on 24 September 2006 [4].

OUR ANALYSIS

Two records, two numbers

The release's figure matches NASA's 2006 peak, paired with the date of NASA's record. 2006 does hold a record in NASA's data: the largest average area for 7 September to 13 October, 26.6 million km^2 [4][8]. Measured against CAMS's own record, this year's peak is about 1 million km^2 short, not 2.

2 · WIDE, NOT DEEP

The area was unusual; the hole's depth stayed near average

On 16 September CAMS reported the area "around 5 million km^2 above the average for this period", while the minimum ozone and the mass deficit "remained close to the average values" [3].

Area

The area where total ozone is below 220 Dobson units, south of 60°S [5]. It counts every point below the line, however slightly.

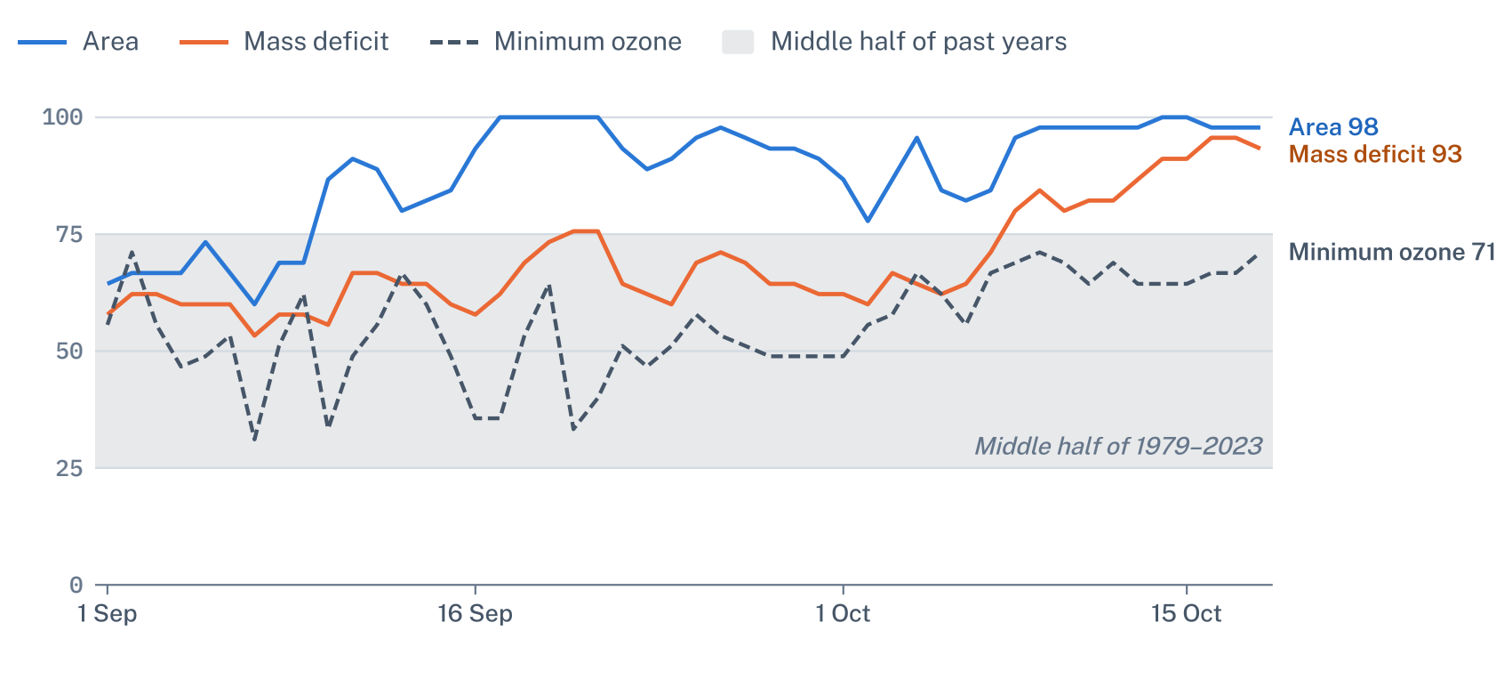
Minimum ozone

The lowest total-ozone value within the hole, which CAMS tracks "as another measure of the significance of each year's event" [3 fn 3].

Mass deficit

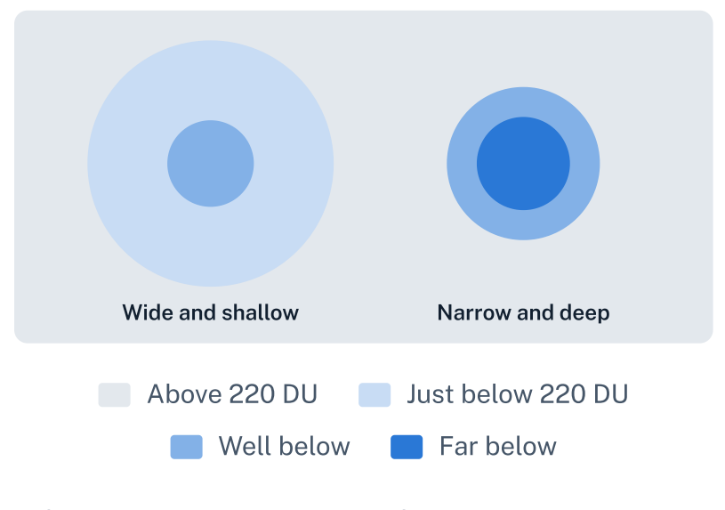
"The ozone mass that would have to be added to the atmosphere to increase the ozone columns over the Antarctic ozone hole area to 220 DU", so it combines area and depth [3 fn 4].

How unusual each measure was, day by day



Percentage of the years 1979–2023 with a less severe value on the same date (100: more severe than every year)

OUR ANALYSIS Daily means from CAMS's data, 1 September to 18 October 2026, each compared with the same date in 1979–2023 [1]. For minimum ozone, a lower value counts as more severe. Contains modified Copernicus Atmosphere Monitoring Service information 2026 and modified Copernicus Climate Change Service information 2026; neither the European Commission nor ECMWF is responsible for any use that may be made of the Copernicus information or data it contains [7].



Schematic, not a map of 2026. The same missing ozone can be spread thinly over a wide area or packed into a small one.

OUR ANALYSIS

Wide is not the same as deep

As CAMS's director put it, "no single diagnostic can tell the whole story" [9]. The area responds to every point that slips below 220 Dobson units, so a large, cold vortex with modest losses can make a wide hole. The minimum tracks only the deepest point. Because the mass deficit combines area and depth, it is the better single guide to how severe the hole is, though it counts only ozone missing below the 220 DU line, not all the ozone chemistry has destroyed [3 fn 4].

OUR ANALYSIS

The deficit rose as the hole stayed large

Through September the mass deficit stayed near the middle of the past years' range, between the 53rd and 76th percentiles. On 14–16 October it was higher than in 91–96% of the years 1979–2023 for those dates, because the hole was still unusually wide [1]. Over NASA's standard window, 21 September to 13 October, the season's mass deficit averaged 26.7 million tonnes, 23rd of 47 years and below the 1990–2010 average of 28.7 [2].

3 · WHAT DRIVES IT

A cold stratosphere makes a big hole; this year's cold came in spells

CAMS writes that "the rapid development of the 2026 ozone hole coincided with a sudden decrease in the minimum temperature at approximately 20km above the south pole (50 hectopascal / hPa)" [3]; its measure is the lowest temperature anywhere south of 60°S [1]. The chemistry behind such a link is well understood [10].

STEP 1

Deep cold

A strong polar vortex isolates the coldest air over Antarctica, below −90 °C [9].

STEP 2

Clouds form

Polar stratospheric clouds "only form at temperatures below −78°C"; their ice crystals can turn non-reactive compounds into reactive ones [5].

STEP 3

Chlorine is activated

"Chlorine gases react on the surface of these PSCs to release chlorine into a form that can easily destroy ozone" [2].

STEP 4

Sunlight drives the loss

The catalytic reactions "need sunlight", so the hole grows as the Sun returns over Antarctica at the end of winter [2].

OUR ANALYSIS

Cold spells, including a sharp drop in early September

In CAMS's data, the lowest temperature at 50 hPa south of 60°S set record lows for the date on 22 August and 13 September, and came close on 26 August and on 9 and 14 September. It fell by about 4 °C from 4 to 9 September, while the hole grew fastest, from 17.4 to 24.7 million km^2 between 7 and 11 September [1]. NASA's file shows more "records", but since 1 August its values come from a different analysis (GEOS FP) from its 1979–2025 baseline (MERRA-2), and they now run 1 to 2 °C colder than CAMS's, where before they ran slightly warmer, so we don't count them [11].

Weather acting on slowly falling chlorine

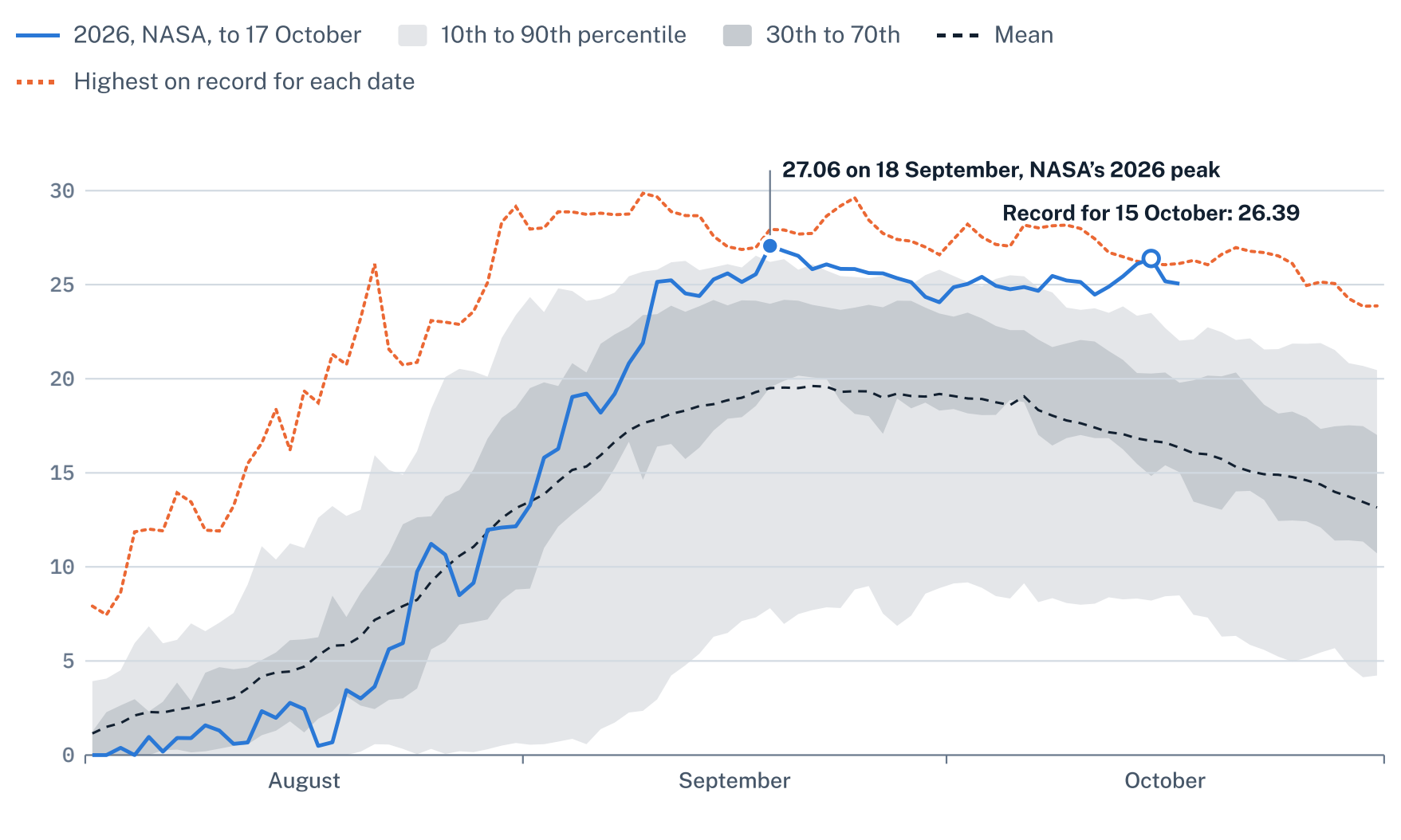
"Year-to-year variations in area and depth are caused by year-to-year variations in temperature" [2], while the chlorine and bromine from ozone-depleting substances "have continued to decline" [10]. A cold year makes a big hole; on its own it says little about the long-term trend, and the 2022 Assessment found that the unusual holes of 2019 to 2021 "do not challenge the findings of the emergence of recovery" [10].

4 · NASA'S RECORD

NASA's satellite record agrees, with its own numbers

NASA Ozone Watch measures the hole from satellite instruments, with gaps filled from assimilated data, and counts it below 220 Dobson units south of 40°S, not 60°S [2]. Its 2026 peak, 27.06 million km^2 on 18 September, came two days before CAMS's and is the seventh-largest yearly peak in its 47 years of data [12].

Ozone-hole area, 2026 against 1979–2025, NASA



Area where total ozone is below 220 Dobson units, south of 40°S, million km^2, daily

Redrawn by factchecked.science from NASA Ozone Watch's 2026 file and its 1979–2025 climatology, as downloaded on 19 October 2026 (no data for 1995) [12]. Credit: NASA Ozone Watch.

ABOVE ITS 90TH PERCENTILE

20 of 30 days

from 18 September to 17 October [12]

15 OCTOBER

26.39 million km^2

the largest for that date in NASA's record; the previous high was 26.11, in 2015 [12]

CAMS BESIDE NASA

OUR ANALYSIS

3% apart

on average from 7 September, with NASA usually slightly larger; the two series rise and fall together [1][12]

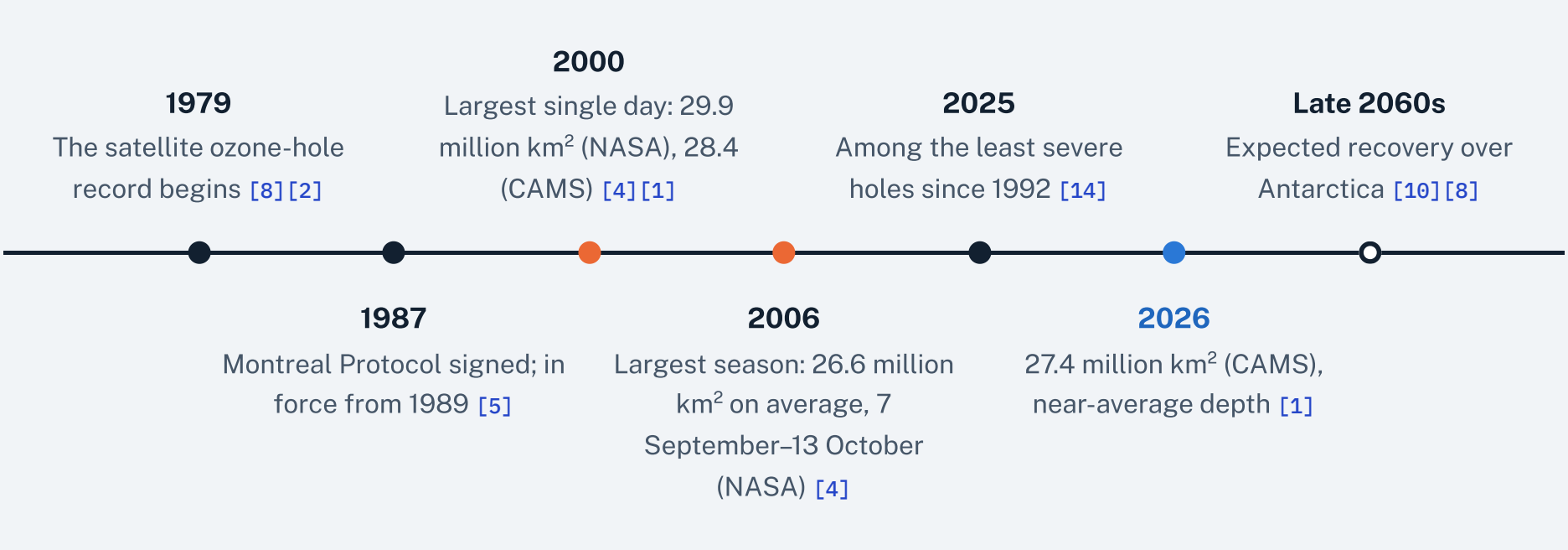
NASA revises its daily values

Its data "are subject to being updated at any point", and the site doesn't promise to keep earlier versions [13]. The infographic's NASA values appear to come from the file as it stood in mid-September and are higher than today's: 24.98 million km^2 on 12 September is now 24.53, and 25.77 on 10 September is now 25.15, below that date's 90th percentile of 25.79. The climatology is unchanged. This page uses the file downloaded on 19 October [12].

5 · THE LONG VIEW

One large year inside a slow recovery

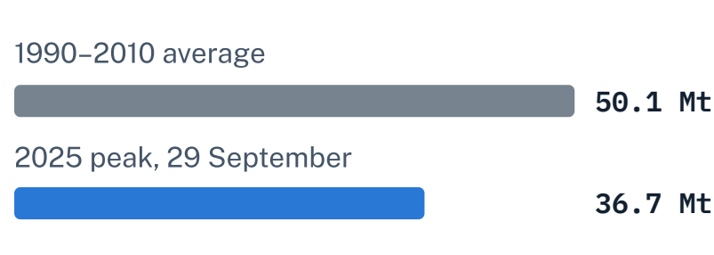
The 2022 Assessment of ozone depletion expects total ozone over Antarctica to return to 1980 values "around 2066" [10], and NOAA and NASA expect the hole to "recover (get smaller) around the late 2060s" [8].


1979
The satellite ozone-hole record begins [8][2]
1987
Montreal Protocol signed; in force from 1989 [5]
2000
Largest single day: 29.9 million km² (NASA), 28.4 (CAMS) [4][1]
2006
Largest season: 26.6 million km² on average, 7 September–13 October (NASA) [4]
2025
Among the least severe holes since 1992 [14]
2026
27.4 million km² (CAMS), near-average depth [1]
Late 2060s
Expected recovery over Antarctica [10][8]

Not to scale.

Last year was small

The WMO ranks 2025 "fourth to fifth weakest since severe depletion patterns were observed in 1992". Its peak mass deficit, 36.7 million tonnes on 29 September, was "more than 25% less than the 1990–2010 mean of 50.1 million tons" [14].



Maximum ozone mass deficit in million tonnes, as the WMO Bulletin gives it [14]. Each agency computes its own: CAMS's 2025 peak was 20.5 million tonnes, on the same day [1], so compare years within one source.

OUR ANALYSIS

Why one year can't show a trend

Stratospheric weather sets the size of any one hole. 2025's was among the smallest in decades and 2026's among the largest [1][12], a year apart, while chlorine and bromine kept declining [14][10]. NOAA and NASA rank holes over 1992 onward, when the Montreal Protocol began to take effect, as well as over the full record from 1979 [8].

6 · SINCE 20 SEPTEMBER

No new peak, but large for longer than usual

The infographic ended on 20 September. This is what CAMS's data to 18 October and NASA's to 17 October show [1][12].

STILL THE PEAK

27.44

million km^2 on 20 September; a second peak reached 26.4 at 18:00 UTC on 14 October [1]

DAYS ABOVE THE 95TH PERCENTILE

OUR ANALYSIS

20 of 32

from 17 September to 18 October; on 17–21 September and 14–15 October, larger than any year from 1979 for the date [1]

NASA'S SEASON AVERAGE

7th of 47

24.9 million km^2 for 7 September–13 October, the largest since 2015; 2006 holds the record, at 26.6 [2][4]

OUR ANALYSIS

Still not unusually deep

NASA's mean minimum ozone for 21 September to 16 October, 123 Dobson units, ranks 27th lowest of 47 years, and its mean mass deficit for 21 September to 13 October ranks 23rd [2]. CAMS's mass deficit peaked at 31.1 million tonnes on 9 October, 19th of 48 years, though by mid-October it was high for the date [1]. On CAMS's data the season-average area ranks fourth, level with 1998, 2001, 2015 and 2006 [1].

Nothing new from CAMS yet

As of 19 October, CAMS's news and press pages list nothing on the ozone hole after its 16 September items [15]. NOAA and NASA published their summary of the 2025 season on 24 November 2025 [8].

7 · READ WITH CARE

What to keep in mind

Notes from the infographic, corrected where the data say otherwise.

27.44 is a six-hourly value

It is the largest of CAMS's four daily values, at 12:00 UTC on 20 September; that day's average was 27.30 [1]. CAMS's latest written update, of 16 September, cites "an estimated 25 million km^2" on 12 September [3].

Dates can be misreported

CAMS's release says the hole reached 15 million km^2 "by the end of August 2026, which was slightly earlier than average" [3]. CAMS's own data, like the chart it published with the release, show it passing the area of Antarctica, 14.2 million km^2 [3 fn 1], on 2 September and 15 million km^2 on 4 September; NASA also has 2 September [1][12]. In the years 1979–2025 the hole typically reached 15 million km^2 around 4 September [1].

Compare years within one dataset

CAMS's series peaks at 28.4 million km^2 and NASA's at 29.9, both in September 2000, and NASA counts the hole further north, to 40°S [1][4][2]. Mass deficits differ more: for 2025, 36.7 million tonnes in the WMO Bulletin and 20.5 in CAMS's data [14][1].

The baseline starts in 1979

It includes early-1980s years before the hole had fully developed. Leaving out 1979–84 raises the median for 10–20 September by about 0.9 million km^2 but the 95th percentile by only 0.1, so "above the 95th percentile" holds either way [1].

Both charts are redrawn from the data

The infographic traced CAMS's 2026 line to within 0.35 million km^2 of the data; this page draws both charts from the agencies' published files [1][12].

Not a space-weather story

Nothing here involves solar storms or Earth's magnetic field. The chemistry is chlorine and bromine, set off by stratospheric cold; the 2022 Assessment counts the solar cycle, with stratospheric aerosols, as a lesser influence on polar ozone loss than the weather [10]. Our page on storm ozone loss looks at what large solar storms do.

OUR ANALYSIS

Bottom line: a very wide hole of ordinary depth, which on its own says little about the recovery.

The 2026 hole was the largest on record for several dates in September and October and stayed unusually large into mid-October, while its depth stayed near average [1][2]. It is not a record year: CAMS's record is 2000's, and NASA's records belong to 2000 for a single day and 2006 for the season [1][4].

Related checks

OVERSTATED Ozone loss as the "extinction" mechanism The Disaster Cycle, Fact-Checked

Sources

Bracketed numbers refer to this list; fn gives a footnote of the CAMS release. Figures computed from the data files are our own calculations unless a source states them. Links checked October 19, 2026.

1 Copernicus Atmosphere Monitoring Service. Ozone monitoring data: Southern Hemisphere ozone-hole area, ozone column minimum, ozone mass deficit and minimum 50 hPa temperature, every six hours from January 1, 1979, to October 18, 2026 (CSV files behind the charts on its monitoring page; data CAMS/C3S), read October 19, 2026. Percentiles and ranks are our own calculations from these files.

2 NASA Ozone Watch. 2026 Antarctic OMPS and MERRA-2 Ozone: definitions, data sources and the season summaries it links (mean area for September 7 to October 13, mean mass deficit for September 21 to October 13, mean minimum ozone for September 21 to October 16), read October 19, 2026.

3 Copernicus Atmosphere Monitoring Service (2026). Copernicus: Ozone hole reaches notable threshold early again as area increases above average in 2026. Press release, Bonn, September 16, 2026; fn gives a footnote.

4 NASA Ozone Watch. Annual records: the largest daily ozone hole and the season's mean area for each year, read October 19, 2026.

5 Copernicus Atmosphere Monitoring Service. Monitoring of the ozone layer, its monitoring page, read October 19, 2026.

6 Copernicus Atmosphere Monitoring Service. Ozone hole area 2026, daily chart (data CAMS/C3S, credit CAMS/ECMWF), as updated to October 18, 2026, read October 19, 2026.

7 ECMWF. Licence to use Copernicus Atmosphere Monitoring Service products, read October 19, 2026.

8 NOAA (2025). NOAA, NASA: 2025 ozone hole is 5th smallest since 1992. News release, November 24, 2025.

9 Copernicus Atmosphere Monitoring Service (2026). Protecting the Earth's natural shield: the ozone layer. News item, September 16, 2026.

10 World Meteorological Organization (2022). Executive Summary. *Scientific Assessment of Ozone Depletion: 2022*, GAW Report No. 278, WMO, Geneva.

11 NASA Ozone Watch. Minimum temperature at 50 hPa, 50–90°S, 2026, with its 1979–2025 climatology (MERRA-2; values from August 1, 2026, are from GEOS FP), read October 19, 2026.

12 NASA Ozone Watch. Daily ozone-hole area, 2026, with its 1979–2025 climatology, and the files for each year from 1979 (no data for 1995), read October 19, 2026; the 2026 file then ran to October 17.

13 NASA Ozone Watch. Disclaimers, read October 19, 2026.

14 World Meteorological Organization (2026). WMO Ozone and UV Bulletin No. 4 – September 2026. Publication page (last updated September 15, 2026); the Bulletin's PDF could not be reached.

15 Copernicus Atmosphere Monitoring Service. News and press releases, read October 19, 2026.

METHOD

How this was checked

On October 19, 2026, we checked every statement, number and source on the original infographic, 58 items, against CAMS's release and news item of 16 September, its monitoring page and the data files behind its charts, NASA Ozone Watch's daily files for 1979–2026 and its season summaries, the WMO Bulletin's page, NOAA and NASA's summary of the 2025 season and the 2022 Assessment of ozone depletion. We recomputed the percentiles, ranks and dates from the data files, measured the original charts against the data, and followed the season to 18 October. The check corrected several statements; the change log lists them.

The verdicts and the items tagged "Our analysis" are our own assessment, built on the cited sources: the percentiles, ranks and comparisons we computed from the agencies' data files. The charts are redrawn from CAMS's and NASA's published data; CAMS's licence allows adapted data with the notice given under each chart [7], and NASA Ozone Watch asks to be credited as the source [13].

After the page was built, a second reviewer who hadn't seen the drafting recomputed the numbers from the raw CAMS and NASA files, decoded both charts and checked them against the data, to within 0.01 million km^2, and checked every quotation and reference. The changes that followed: NASA's 2026 peak is its seventh-largest yearly peak, not daily value; the cooling claim now rests on CAMS's temperature series, with record lows on 22 August and 13 September and a 4 °C drop from 4 to 9 September, because NASA's file switched to a colder analysis on 1 August; the 2006 "record" is described as a mix-up of two NASA figures rather than a wrong date; the change log now lists the edits it had missed; and several smaller corrections, including the full Copernicus notice under every chart.

This page was researched and written with Claude, an AI assistant made by Anthropic, and then re-checked against its sources in a separate verification pass.

The verdicts on this page

PARTLY TRUE	Part of the claim holds up and part doesn't.
TRUE	The evidence supports the claim.

All ten verdicts, and how we check

CORRECTIONS

Corrections and changes

If we get something wrong, we fix it and record the change below with the date. If a correction changes a verdict, the log says what the old verdict was.

Change log

Oct 19, 2026	Published on factchecked.science after a full check against the sources and the agencies' data. Changes from the infographic: added our verdicts on four claims, a day-by-day chart of how unusual each measure was, in place of the average ratings, and a section on the season to 18 October. The CAMS chart is redrawn from CAMS's data files instead of traced from its chart image, and the NASA chart from NASA's current file. The "record 29.6 million km^2 on 9 September 2006", taken from CAMS's release, is replaced by CAMS's own record, 28.4 million km^2 on 6 September 2000, about 1 million km^2 above this year's peak rather than 2; 29.6 is NASA's 2006 peak, on 24 September, and the timeline now gives 2000 the largest single day and 2006 the largest season. NASA's values are those of its current file: 24.53 on 12 September and 25.15 on 10 September, below that date's 90th percentile, with a 2026 peak of 27.06 on 18 September; the note calling 27.44 the chart's own label is replaced by the value in CAMS's data files. "Why it grew so fast in September" became "What drives it": CAMS reports only that the growth coincided with the cooling, and the cold came in spells, in late August as well as in early September. The mass deficit is defined against the 220 DU line and is the better single guide to how severe the hole is, not to all the ozone destroyed. The sentence "CAMS tracks three indicators" was removed, "a second satellite record" became NASA's record, since CAMS's is an analysis combining models and satellite data, "satellite records begin" became the satellite ozone-hole record, and the timeline is no longer drawn to scale. The hole passed Antarctica's size on 2 September in CAMS's data and in the chart published with its release, so the release's "by the end of August" is a misstatement, not a change between versions. The recovery date is credited to the 2022 Assessment and to NOAA and NASA instead of the CAMS update.

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