

OzoNews

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol brought to you by OzonAction

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Special Issue on the International Day for the Preservation of the Ozone Layer 16 September 2024

On 19 December 1994, the United Nations General Assembly proclaimed 16 September the International Day for the Preservation of the Ozone Layer, commemorating the date, in 1987, on which the Montreal Protocol on Substances that Deplete the Ozone Layer was signed.

States are invited to devote the Day each year to promote, at the national level, activities in accordance with the objectives of the Montreal Protocol and its amendments.

Please refer to the 2024 Ozone Day webpage in the [OzonAction website](#).

We thank you for your ongoing commitment to compliance with the Montreal Protocol and your excellent work in implementing your national strategies and projects.

OzonAction team wishes you a successful celebration!



'Commit to Making Peace with Our Planet, Build on Success of Montreal Protocol', Urges Secretary-General, in Message for World Ozone Day 2024

Following is UN Secretary-General António Guterres' message on the International Day for the Preservation of the Ozone Layer, observed on 16 September:

At a time when multilateralism is under severe strain, the Montreal Protocol to help protect the ozone layer stands out as a powerful symbol of hope. It is a reminder that when countries show political resolve for the common good, change is possible.

In uniting the world to phase out the consumption and production of different ozone depleting substances, the Protocol has also contributed to shielding carbon sinks, protecting humanity's health and avoiding economic losses.

The ozone layer, once an ailing patient, is on the road to recovery. Now, it's time to go further.

The Protocol's Kigali Amendment – which focuses on phasing down hydrofluorocarbons – powerful climate-warming gases – can contribute to advancing climate mitigation efforts, protecting people and planet. And that is needed more than ever as temperature records continue to shatter.

If fully ratified and implemented, the Kigali Amendment could help avoid as much as 0.5°C of global heating by the end of this century. Yet, a range of climate solutions – including those related to refrigerants and energy efficiency – are also needed to avert a climate crisis by mid-century.

Four out of every five nations have ratified the Kigali Amendment, but the clock is ticking.

On this World Ozone Day, let's commit to making peace with our planet. Let's commit to build on the success of the Montreal Protocol to show what international cooperation at its best can achieve.

[AR](#) | [CH](#) | [EN](#) | [ES](#) | [FR](#) | [RU](#)

The United Nations, September 2024

World Ozone Day 2024

Montreal Protocol: Advancing Climate Action



On World Ozone Day 2024, we celebrate the achievements of the Montreal Protocol on Substances that Deplete the Ozone Layer in fixing the ozone layer and reducing climate change.

The Montreal Protocol is rightly hailed as a multilateralism success story. It united the world to phase out ozone-depleting substances putting the ozone layer on the path to recovery and protecting all life on Earth. On this World Ozone Day, we also celebrate its climate action.

Phasing out ozone-depleting substances has proven to be a powerful tool for climate action that has helped slow global warming, for example, postponing the first ice-free Arctic summer by up to 15 years.

Through the Kigali Amendment, climate action is being further accelerated. Countries commit to phase down the production and consumption of hydrofluorocarbons (HFCs) – powerful climate-warming gases that replaced ozone-depleting substances in the various sectors. If the Amendment is fully ratified and implemented, up to 0.5°C of warming could be avoided by 2100.

Cooling equipment represents 20 per cent of total electricity consumption today and is expected to more than double by 2050. Kigali Amendment implementation alongside a switch to energy efficient cooling equipment could potentially double these gains!

Work has already begun to deliver on these climate action gains. Nearly 80 per cent of Parties have ratified the Kigali Amendment, including the US, China and India – all major producers or consumers of HFCs. Developed countries began phasing down HFCs in 2019 with many developing countries starting this year.

So, on this World Ozone Day, we not only celebrate the achievements to date but also look to the future for deeper and faster action under the Montreal Protocol. Deeper and faster for the ozone layer but above all, for people, for climate and for the planet.

Learn more and access all the World Ozone Day 2024 materials from the Ozone Secretariat [website](#), in the six UN languages.

UNEP Executive director Message for World Ozone Day 2024



Transcript of

Inger Andersen message for World Ozone Day 2024

As climate change increasingly brings dangerous temperature extremes, storms and floods, the world is looking for hope. For ambition. And for action.

All of these can be found in the Montreal Protocol on Substances that Deplete the Ozone Layer.

This agreement has put the ozone layer on the path to a full recovery. It has also brought a significant impact for the climate.

Action under the Protocol phased out gases used in the cooling industry, gases that destroyed the ozone layer and warmed the planet. It also stopped harmful UV radiation from devastating nature's carbon sinks and so helped to slow the rate of global warming.

The Protocol epitomizes the multilateralism and unity of purpose we need to combat global environmental challenges. And the work is not done.

Under the Kigali Amendment to the Protocol, countries have begun reducing powerful climate-warming gases, known as hydrofluorocarbons, or HFCs.

Phasing-down HFCs could avoid up to 0.5°C of warming by 2100. Using the transition to climate-friendly gases to increase the energy efficiency of cooling equipment could double those gains.

But to deliver these gains, we need every nation to ratify and fully implement the Kigali Amendment. And we need businesses to innovate on climate friendly cooling products that hit markets fast.

On World Ozone Day, we celebrate what the Montreal Protocol has already achieved and look forward to more benefits for the planet and the climate through the Kigali Amendment. With this powerful climate action tool, we can keep our homes, food, vaccines, and planet cool.

[Video link >>> AR | CH | EN | ES | FR | RU](#)

The United Nations Environment Programme (UNEP), September 2024



Letter from the Head of OzonAction to National Ozone Officers for World Ozone Day 2024

Dear National Ozone Officers,

Today, 16 September, we all celebrate the commitments made by Parties in 1987 to protect human life and the environment by implementing the Montreal Protocol on Substances that Deplete the Ozone Layer, and the tremendous progress we have made since then to achieve that objective. Together, we are succeeding, thanks to the collective work of National Ozone Units, governments, industry, and civil society!

The theme for this year's World Ozone Day (WOD) is **Montreal Protocol: Advancing Climate Action**. This theme underscores the critical role the Montreal Protocol plays in not only restoring the stratospheric ozone layer but also in mitigating climate change. It serves as a powerful reminder of our collective responsibility to continue and intensify our efforts to fight climate change through any means possible, be it through the phase out of hydrochlorofluorocarbons (HCFCs) and other ozone depleting substances, or through the phase down of hydrofluorocarbons (HFCs). By doing so, we

can significantly reduce both the direct and indirect emissions of gases that heat our planet, contribute to the broader goals of climate action, and build a sustainable future for all.

WOD offers an excellent opportunity to reflect on our past achievements, our current work, and the future for implementing the Montreal Protocol and its Kigali Amendment.

For some of you, this celebration is a recurring annual activity to raise the awareness of your fellow citizens about the importance of this multilateral environmental agreement and your national compliance programme. For others, it may be the first time for you to organize WOD events in your capacity as Ozone Officer. **Whatever the case, do not consider it to be only one day of celebrations but rather an opportunity to engage the public on the Montreal Protocol over a longer period, an invitation to a dialogue. As always, OzonAction is pleased to provide you with the information resources listed in the annex that can be used as part of your national celebrations (all items can be downloaded). Please also refer to the [Ozone Secretariat's WOD website](#) for other useful resources.**

We would appreciate receiving information or reports about your country's WOD activities for posting on our website. This will certainly give visibility to your work and overall, toward the success of the Montreal Protocol. Please send this information to your respective Regional Coordinator and to Ms. Jo Chona at jo.chona@un.org

We sincerely hope that the Network and thematic meetings, information and awareness resources, compliance assistance, and project support provided by the Compliance Assistance Programme (CAP) teams are assisting you and your National Ozone Units in effectively delivering your country's Montreal Protocol compliance strategy and programme.

Once again, thank you for your unrelenting commitment to maintaining compliance with the Montreal Protocol and your excellent work in implementing your national strategies and projects. Together we stand proud of our contributions to the health of our planet. On behalf of the entire

OzonAction CAP team, I wish you great success in this year's WOD celebrations!

Yours sincerely,

James S. Curlin
Head, OzonAction Branch
UNEP Law Division

Visit the [OzonAction, World Ozone Day 2024](#) special webpage



The International Ozone Commission, on the 37th anniversary of the Montreal Protocol, reports successes, developments, and future challenges in monitoring ozone layer recovery

September 16th is the International Day for the Preservation of the Ozone Layer, celebrating the signing anniversary of the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. The Montreal Protocol is the treaty, ratified by every country in the world, that controls the production and use of ozone depleting substances (ODSs) such as chlorofluorocarbons (CFCs) and their early replacements. As a result of the Protocol, ODSs are declining and the ozone layer, including the Antarctic ozone hole, is showing signs of recovery, ensuring continued protection of life on Earth from harmful solar ultraviolet radiation. Nevertheless, the future evolution of surface solar ultraviolet radiation has important uncertainties caused by the expected changes in our climate.

The theme of the 2024 International Day for the Preservation of the Ozone Layer is “Montreal Protocol: Advancing Climate Action”. This theme acknowledges the Protocol’s accomplishments beyond its central focus of putting the world on the road to repairing the ozone layer. Specifically, as ODSs are also potent greenhouse gases, their decline has also contributed to a reduction in the warming of the climate. It is estimated that the Protocol has postponed the expected date of an ice-free Arctic by up to 15 years. The 2016 Kigali Amendment to the Protocol, ratified by 80% of the original Protocol signatories, phases down production of the ozone-safe hydrofluorocarbons (HFCs) in light of their global warming potential, in favor of newer compounds that have a smaller climate footprint.

Among the numerous and diverse studies on the ozone layer and the processes affecting it carried out over the past year, many have provided reassurances that the core factors affecting ozone layer stability are generally well understood and that ozone recovery is continuing in line with expectations. The January 2022 eruption of the undersea Hunga volcano, which injected an unprecedented amount of water vapor into the stratosphere, has provided a unique opportunity to test our understanding of the processes affecting stratospheric ozone, as embodied in state-of-the-art atmospheric models. Although both the aerosol particles and water vapor from the eruption have temporarily changed stratospheric dynamics and chemistry, the observations have broadly been in line with expectations from models. The plume did not reach the southern polar regions early enough to impact the 2022 Antarctic ozone hole, where chlorine from ODSs rapidly destroy ozone every spring. In contrast, the 2023 Antarctic winter started with record levels of stratospheric water vapor at high southern latitudes, resulting in unprecedented early conversion of chlorine to ozone-destroying forms in May-June. However, the amount of chlorine converted was much smaller than is typically seen in August-September, when sunlight returns to polar latitudes and ozone destruction is strongest. Therefore, the excess water vapor from the Hunga eruption had little overall impact on the 2023 Antarctic ozone hole.

Notwithstanding the accomplishments of the Montreal Protocol to date, other studies published over the last year have highlighted the need for

further research into potential new threats to the ozone layer. For instance, one study showed that recent measurements of the composition of stratospheric aerosols includes a notable concentration of aluminium and other elements, attributed to the increasing number of re-entering spacecraft breaking apart in the upper atmosphere. The study noted that the amount of metals deposited in the atmosphere by re-entering spacecraft is expected to approach that from meteors in future, given the rapidly increasing number of small-satellite launches planned in the coming years. This work highlights a need for clearer understanding of the potential of such metal-containing aerosols to affect ozone abundances.

The 2024 Quadrennial Ozone Symposium (QOS) was hosted by scientists from the United States of America and held in a hybrid in-person/remote format from July 15–19 in Boulder, Colorado. The participation of more than 220 scientists, 180 of whom attended in person, highlights the continued strong interest of the scientific community in research related to ozone in the stratosphere and troposphere, the processes driving changes in ozone abundances, and the impacts of those changes.

A recurring topic in the Symposium was the anticipated cessation of spaceborne vertically resolved measurements of gases other than ozone that are needed to distinguish chemical and dynamical influences on ozone distribution. Following the anticipated 2026 termination of NASA's Aura mission (launched in 2004) with its cornerstone Microwave Limb Sounder (MLS) instrument, and the eventual demise of the Canadian ACE-FTS instrument (launched in 2003), there will no longer be any stratospheric measurements of long-lived trace gases (which characterize changes in atmospheric circulation) or of many of the reactive gases that are involved in ozone chemistry. This will increase reliance on limited ground-based, airborne, and balloon-borne observations of these species, and raise the importance of continued funding for such measurements in an era of declining research budgets.

The International Ozone Commission notes with concern an ongoing decline in both budgets for ozone-related research and the number of scientists engaged in such studies. Despite the tremendous progress

made in understanding the processes affecting atmospheric ozone over the last few decades, the atmosphere has not lost its ability to surprise. Continual vigilance, in the form of both sustained measurements and state-of-art models and laboratory studies, is essential for ensuring that stratospheric ozone continues to evolve as expected in response to the Montreal Protocol and changing climate.

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- IO₃C: <http://www.io3c.org>
- United Nations Environment Program's Ozone Secretariat World Ozone Day 2024: <https://ozone.unep.org/ozone-day/montreal-protocol-advancing-climate-action>
- WMO Northern Hemisphere Ozone Mapping Center: <http://lap.physics.auth.gr/ozonemaps>
- World Ozone and Ultraviolet Data Center: <http://www.woudc.org>
- O₃ Global: <http://www.temis.nl/protocols/O3global.html>
- Ozone Hole Watch: <http://ozonewatch.gsfc.nasa.gov/>
- World Meteorological Organization (WMO). Scientific Assessment of Ozone Depletion: 2022, GAW Report No. 278, 509 pp.; WMO: Geneva, 2022. <https://ozone.unep.org/science/assessment/sap>

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