Herders supplied water from a borehole to give to their camels during a drought near Kuruti, in Garissa County, Kenya last October. The frequency and duration of droughts will continue to increase due to human-caused climate change, with water scarcity already affecting billions of people across the world, the United Nations warned in a report Wednesday. (Brian Inganga/The Associated Press)

CLIMATE CHANGE

Droughts to go on, increase

Those facing water scarcity to double by '50, U.N.

warns

By WANJOHI KABUKURU
The Associated Press

The frequency and duration of droughts will continue to increase due to human-caused climate change, with water scarcity already affecting billions of people across the world, the United Nations warned in a report Wednesday.

The U.N. desertification agency, which is currently hosting a conference of parties in Abidjan in Ivory Coast, estimates that roughly one third of the world's population — 2.3 billion people — is already facing water scarcity, with that number expected to double by 2050.

Although no region is spared from drought, the report noted that Africa is the hardest hit continent, with the Americas, India and Australia also highlighted as areas of particular current and future concern.

The ongoing debilitating drought in the east and Horn of Africa was highlighted as one of the "dramatic consequences" of climate change by the U.N. agency. The continent suffered 134 recorded droughts in the past century, with over half occurring in east Africa.

"We used to be able to grow enough tomatoes that we could stay fed for 8 months," said Kenyan farmer Kheira Osman Yusuf, whose crops have been without rain for over a year. "We used to have luscious mango trees and papaya trees." She added that food sources have become incredibly scarce and the drinking water supply has also greatly suffered. She explained they sometimes had to resort to drinking from the livestock reservoir, running the risk of getting sick from contamination.

The agency's lead scientist Barron Orr told The Associated Press that the world needs to be more proactive rather than reactive when it comes to dealing with drought-related disasters. Orr said

the next step for hardest-hit Africa is to "direct investments to build resilience, so as to bounce back from drought."

India saw a drought-related shrink of 5% to its gross domestic product between 1998 and 2017 and Australia's agricultural productivity slumped 18% between 2002 and 2010 due to drought. The country can also expect more wildfires like those in late 2019 and early 2020 which were spurred by a lack of rainfall, the report warned.

The same is true for the Amazon, the U.N. said, with three droughts occurring since the turn of the century and triggering forest fires, with climate change and deforestation also to blame. The agency estimates that 16% of the region's remaining forests will burn by 2050 if deforestation continues at its current rate.

But with the right adaptation measures, water scarcity across the globe can be limited, the report said. It suggests smarter agricultural techniques which use less water while producing more food, drought action plans and greater investment in soil health, new technologies and early warning systems can all help curtail food and water shortages.

"We need to steer towards the solutions rather than continuing with destructive actions," Ibrahim Thiaw, the executive secretary of the desertification agency, said. "We must build and rebuild

our landscapes better, mimicking nature wherever possible and creating functional ecological systems."

4/8/22

NEWS DIGEST

Global methane levels soared in 2021

Global atmospheric levels of the potent but short-lived greenhouse gas methane increased a record amount last year, the National Oceanic and Atmospheric Administration said Thursday, worrying scientists because of the large role methane has in climate change.

The preliminary airborne level of methane jumped 17 parts per billion, hitting 1895.7 parts per billion last year. It's the second year in a row that methane rose at a record rate. Methane levels are now way more than double pre-industrial levels of 720 parts per billion, said Lindsay Lan, an atmospheric scientist at NOAA and the University of Colorado.*The Associated Press*

Antigovernment activist jailed in Idaho

BOISE, Idaho — Idaho gubernatorial candidate and antigovernment activist Ammon Bundy on Thursday received a $3,000 fine and 10 days in jail for contempt of court.

Judge Annie McDevitt ruled Bundy failed to perform 40 hours of community service following a 2020 trespassing conviction at the Idaho Statehouse. Bundy argued his work for his own campaign as governor counted as service.

Bundy was arrested Aug. 25, 2020, after refusing to leave a Statehouse

CLIMATE

Last week was shorts weather in Antarctica

Heat dome also brought heavy rain, snow where precipitation is rare

Parts of Antarctica experienced unusually warm weather in the last week, up to 70 degrees above normal. Satellite imagery and computer models indicate significant snow, rain and melting also occurred. (2019 File Photo/Agence France-Presse)

By KASHA PATEL
The Washington Post

Antarctica has entered fall, yet temperatures rose 70 degrees above normal last week on its eastern ice sheet — an unprecedented occurrence for any time of year.

Scientists on-site even appeared to strip down to shorts and no T-shirt to celebrate the occasion.

Satellite imagery and computer models indicate significant snow, rain and melting also occurred. During the heat wave, the ice sheet experienced its fourth-wettest day in more than four decades, according to the Modèle Atmosphérique Régionale, or MAR, a regional climate model that studies the melting of the polar ice caps.

"Usually, the climate of Antarctica is too cold to have significant accumulation of snow and most of liquid water from melt or rainfall is absorbed by the snowpack and refreezes," Xavier Fettweis, a climate scientist from the University of Liège who coordinates the development of MAR, wrote in an email. Yet, Fettweis said snowfall led to the ice sheet gaining 69 gigatons of mass from March 16 to 18, three times the usual rate.

'Tremendous'

The MAR model indicates the heaviest precipitation occurred near the coast, with rainfall accumulation of more than an inch.

"That would be tremendous for that area," said Jonathan Wille, a

researcher studying polar meteorology at Université Grenoble Alpes in France. “It doesn’t even rain here almost ever. Normally they have like a few millimeters of rain per year. And it’s March — it should be getting cold.”

The model also showed some melting along the coastline, although it appears to be very localized. While some areas, like the Totten Glacier, appear to have experienced some melt, other glaciers along the coastline appeared largely unaffected.

In any case, this one melt event will not affect the stability of the glaciers in the area presently, said Wille.

The precipitation occurred when circulation patterns around Antarctica directed a strong atmospheric river, or strip of moist air, into the eastern coastline of the continent on March 15. Atmospheric rivers typically drop about 10% to 20% of all snowfall across East Antarctica.

“Moisture intrusion events and atmospheric rivers, they do happen, but this is just to a different degree of intensity,” said Wille. He said the duration and intensity of the event were greater than scientists would normally expect.

Heat dome

The warm, moist air mass was then squished on the Antarctic interior for days as a strong blocking high pressure system, or heat dome, moved into the region — causing temperatures to soar like never

before.

The Russian meteorological observatory Vostok — about 808 miles from the South Pole and 11,444 feet above sea level — hit 0.1 degrees Friday.

The record high shattered the previous monthly record of minus 26.7 set on March 4, 1967. The average high temperature at the station is around minus 63 in March.

The Concordia Research Station, about 350 miles from Vostok, hit its highest temperature on record for any month at 10 degrees. Typical high temperatures in March hover around minus 56. The previous all-time high temperature was 7.34 degrees on Dec. 17, 2016.

Temperatures on the eastern ice sheet remained above average through Monday and began to slowly return back to normal. On Tuesday, Vostok recorded minus 50 degrees.

Temperatures in western Antarctica and near the South Pole remained cold last week. On Friday, the Amundsen-Scott South Pole Station recorded minus 60 degrees, which is typical for this time of year.

Pacific Northwest comparison

While more research is needed to study the climate change connection, researchers are comparing the event to the Pacific Northwest heat wave in June 2021, which broke previous temperature records by 10 degrees or more in spots.

The Pacific Northwest heat wave event "was something that wasn't thought to be possible until it actually happened.

"It was never observed before, and the atmosphere patterns that led to it happening were just not thought to be possible either until it happens," said Wille. "And that's what's basically happened here over Antarctica."

A / EXPLAINER

ion Between the obal Warming?

pdated Jul 27, 2017

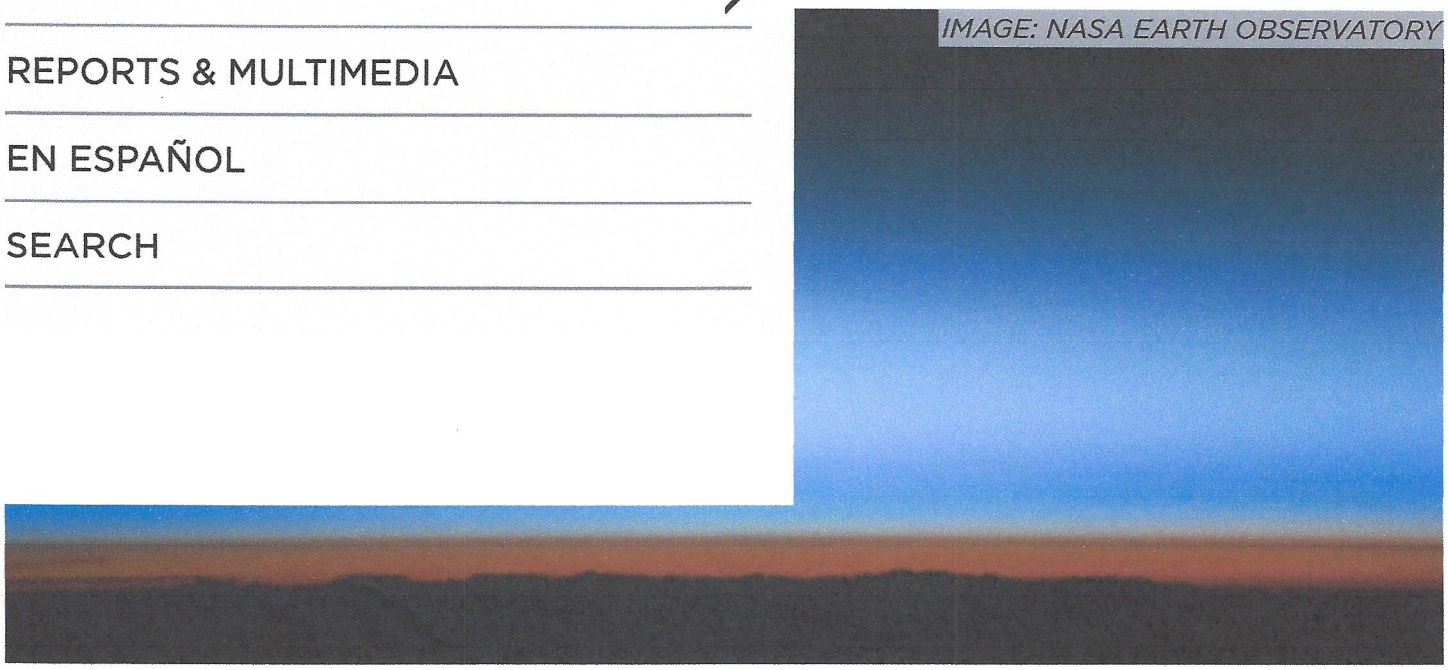
IMAGE: NASA EARTH OBSERVATORY

TABLE OF CONTENTS

Human activities cause ozone depletion and global warming

Ozone (O_3) depletion does not cause global warming, but both of these environmental problems have a common cause: **human activities that release pollutants into the atmosphere altering it.**

Global warming is caused primarily by putting too much carbon dioxide into the atmosphere when coal, oil, and natural gas are burned to generate electricity or to run our cars.

Carbon dioxide spreads around the planet like a blanket, and is one of the main gases responsible for the absorption of infrared radiation (felt as heat), which comprises the bulk of solar energy.

Ozone depletion occurs when chlorofluorocarbons (CFCs) and halons—gases formerly found in aerosol spray cans and refrigerants —are released into the atmosphere (see details below).

Ozone sits in the upper atmosphere and absorbs ultraviolet radiaton, another type of solar energy that's harmful to humans, animals and plants. CFCs and halons cause chemical reactions that break down ozone molecules, reducing ozone's ultraviolet radiation-absorbing capacity.

How ozone works

The sun emits electromagnetic radiation at different wavelengths, meaning energy at different intensities. The atmosphere acts like a

multi-layer shield that protects Earth from dangerous solar radiation.

Ozone is found in two different parts of our atmosphere. Ground level or “bad” ozone is a human health irritant and component of smog. It is found in the lower atmosphere (troposphere) and has nothing to do with the "ozone hole."

High level or “good” ozone occurs in the stratosphere and accounts for the vast majority of atmospheric ozone.

The stratospheric ozone layer absorbs ultraviolet (UV) radiation, preventing dangerous UV rays from hitting Earth's surface and harming living organisms. UV rays cannot be seen or felt, but they are very powerful and change the chemical structure of molecules.

UV radiation plays a small role in global warming because its quantity is not enough to cause the excess heat trapped in the atmosphere. UV radiation represents a small percentage of the energy from the sun, and is not highly absorbed or scattered in the atmosphere—especially when compared with other wavelengths, like infrared. But, ozone depletion is also concerning because it directly impacts the health of humans, and other living organisms.

The ozone hole

The term 'ozone hole' refers to the depletion of the protective ozone layer in the upper atmosphere (stratosphere) over Earth's polar regions. People, plants, and animals living under the ozone hole are harmed by the solar radiation now reaching the Earth's surface—where it causes health problems, from eye damage to skin cancer.

Stratospheric ozone is constantly produced by the action of the sun's ultraviolet radiation on oxygen molecules (known as photochemical reactions). Although ozone is created primarily at tropical latitudes, large-scale air circulation patterns in the lower stratosphere move ozone toward the poles, where its concentration builds up.

In addition to this global motion, strong winter polar vortices are also important to concentrating ozone at the poles. During the continuously dark polar winter, the air inside the polar vortices becomes extremely cold, a necessary condition for polar stratospheric cloud formation.

Polar stratospheric clouds create the conditions for drastic ozone destruction, providing a surface for chlorine to change into ozone-destroying form. They generally last until the sun comes up in the spring.

In the 1980s, scientists discovered that the ozone layer was thinning in the lower stratosphere, with particularly dramatic ozone loss—known as the "ozone hole"—in the Antarctic spring (September and October).

Scientists also discovered that the thinning in the ozone layer was caused by increasing concentrations of ozone-depleting chemicals – chlorofluorocarbons or CFCs (compounds with chlorine and/or fluorine attached to carbon) and to a lesser extent halons (similar compounds with bromine or iodine). These chemicals can remain in the atmosphere for decades to over a century.

At the poles, CFCs attach to ice particles in clouds. When the sun comes out again in the polar spring, the ice particles melt, releasing the ozone-depleting molecules from the ice particle surfaces.

Once released, these ozone-destroying molecules do their dirty work, breaking apart the molecular bonds in UV radiation-absorbing ozone.