

Earthweek: Diary of a Changing World

Week ending Friday, December 13, 2019

By Steve Newman

Greenland Melt

The rate at which Greenland is losing its ice cap is now seven times greater than it was during the 1990s, and accelerating faster than most models predicted.

Writing in the journal *Nature*, results from 26 separate surveys paint the most complete picture of Greenland's melt, which now threatens to lift sea levels by another 2.75 inches just by itself.

The massive ice sheet that covers the world's largest island is still over a mile thick at the center and has the potential to cause a far greater rise in sea level should it melt much further due to global warming.

Earthquakes

People rushed from buildings across Tuscany after a magnitude 4.8 quake awakened residents before dawn in the Italian region. Items were knocked to the floor, but no major damage was reported.

• Earth movements were also felt in western Turkey, Crete, China's Sichuan province, New Zealand's North Island and northeastern Ohio.

Cooling Protocol

A 1987 ban on ozone-destroying chemicals has slowed global warming by eliminating the chlorofluorocarbon emissions that influence the greenhouse effect much more than carbon dioxide, a new study reveals.

Writing in the journal *Environmental Research Letters*, scientists say that by the middle of this century, the planet will be at least 1 degree Celsius cooler than it would have been without the landmark Montreal Protocol, which has resulted in the gradual closing of the ozone hole over Antarctica.

"By mass, CFCs are thousands of times more potent a greenhouse gas compared to CO₂, so the Montreal Protocol not only saved the ozone layer, but it also mitigated a substantial fraction of global warming," said lead study author Rishav Goyal.

Tropical Cyclones

Nine people were killed and three others left missing after powerful Cyclone Belna roared ashore along Madagascar's northwestern coast. The region's first named storm to make landfall this season also wrecked hundreds of homes.

• Heavy rain, floods and high winds from Tropical Storm Pawan killed several people in Somalia and the breakaway region of Somaliland. The storm also wrecked homes and caused the loss of livestock. Some of the region's main roads were washed out as well.

Bushfire Crisis

Smoke from weeks of uncontrolled wildfires in south-eastern Australia has brought Sydney and nearby communities the most toxic air quality in the world.

The smoke was so thick that it set off smoke alarms and sent residents to clinics with respiratory ailments. More than 720 homes have been lost to the flames.

Ash and charred leaves fell onto homes and gardens more than 60 miles from the bushfires. The recent blazes have also killed more than 2,000 iconic koalas, around 25% of the population in the region.

Bushfires are common during the heat of late spring and summer in Australia. But this season of fire and heat is unprecedented and early.



The White Island volcano remained restive for days after the deadly steam-generated blast. Photo: Auckland Rescue Helicopter Trust

Oxygen Leak

The world's oceans have on average lost 2% of their oxygen content over a half-century due to a combination of climate change and nutrient runoff from farms and industry, according to a report by the International Union for the Conservation of Nature.

While the global average loss may seem small, there are some places in the tropics with losses of up to 40%.

The trend threatens such species as tuna, marlin and sharks, which are sensitive to decreasing levels of the life-giving gas because of their size and energy needs.

Oceans are predicted to lose between 3% and 4% of their oxygen by 2100 without measures to control global warming and pollution.

Deadly Eruption

Sixteen visitors perished and 20 more were left severely burned after a volcano on New Zealand's remote and uninhabited White Island erupted without warning during their tour.

Some of the recovered bodies were so badly burned that it was impossible to identify the victims.

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