

Earthweek: Diary of a Changing World

Week ending Friday, January 27, 2023

By Steve Newman

Solar Confusion

Following the discovery that some birds can “see” Earth’s magnetic field through magnetoreceptors in their eyes, researchers say geomagnetic storms from solar flares and sunspots can cause some long-distance migrators to wind up at the wrong destinations.

By comparing records of 2.2 million birds captured and released from 1960 to 2019 with records of geomagnetic disturbances, a UCLA team found a strong correlation between birds found far outside their expected range and the geomagnetic storms during spring and fall migrations.

They say the wayward migrations during such storms may help species survive as their traditional homes become uninhabitable due to climate change.

Earthquakes

One person was killed when a magnitude 5.6 quake hit Nepal.

• Tremors were also felt in northeastern Japan, West Java, the Syrian-Lebanese border area, northern Argentina, Los Angeles and the San Francisco Bay Area.

CO2 Removal

A new study finds that about 2.2 billion tons of CO2 are being removed from the atmosphere each year, and that most of it is from recently planted trees and better soil management.

There are growing efforts through new technologies to extract the greenhouse gas directly from the atmosphere and put it in long-term storage on land, in the ocean, in geological formations or in products.

But researchers from the University of Oxford estimate that more than 1,300 times more carbon dioxide needs to be extracted from the air than is currently being captured to keep global heating below the 2 degrees Celsius goal by 2050 set out in the Paris Agreement.

That reduction should also help the world reach net-zero emissions by then.

Antarctic Find

A colony of about 500 emperor penguins was found in a nearly inaccessible area where the species is under threat from global heating.

The British Antarctic Survey made the discovery by examining satellite images.

“Like many of the recently discovered sites, this colony is small and in a region badly affected by recent sea-ice loss,” said researcher Peter Fretwell.

Emperor penguins are the only ones that breed on sea ice instead of land. If the seasonal ice breaks up before the end of the breeding season, chicks will tumble into the water, where they either drown or freeze.

Touchscreen Wizards

A group of about 240 vervet monkeys in South Africa’s Mawana Game Reserve have become the first primates in the wild to learn how to use a touchscreen.

The iNkawu Vervet Project says the breakthrough will allow scientists to test the intelligence of non-human primates without keeping them in enclosures.

The wild vervets began to interact with the screen after it was attached to a tree and connected to a Wi-Fi hot spot.

While not as fast to learn as captive primates that didn’t have to look for food or avoid predators, the vervets still learned how to interact with the screen and receive rewards based on their interactions.



Corn treats shoot out of a touchscreen unit when a vervet monkey accomplishes a desired task. Photo: iNkawu Vervet Project

Core Spinning

How Earth’s core spins differently from its surface layer has long been argued, and a new report from Chinese scientists has still not put the issue to rest.

Xiaodong Song and Yi Yang of China’s Peking University say they have found the inner core’s rotation “came to near halt around 2009 and then turned in an opposite direction.”

Based on seismic data, they write in the journal *Nature Geoscience* that the core swings back and forth over a 70-year period.

But studies by other scientists indicate that the inner core only moved differently than the surface between 2001 and 2013, and has since stopped.

An Australian study says the core’s cycle of rotation is about every 20 to 30 years.

Tropical Cyclones

Cyclone Chene-so formed over the Mozambique Channel and then hooked around the southern tip of Madagascar.

• Minimal Tropical Storm Ten spun up briefly to the west of New Caledonia.

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