

Earthweek: Diary of a Changing World

Week ending Friday, November 1, 2019

By Steve Newman

Arctic Impacts

Alarming changes to the Arctic landscape from record warming this century threaten to unleash far more abrupt shifts in climate than models have predicted.

New research published in the journal *Nature Climate Change* says that the rapid melting of the permafrost is creating disruptive “feedback loops” between the atmosphere and land, resulting in previously unforeseen warming consequences.

Beyond the impacts on the environment, the report warns that roads, pipelines and mining facilities across the Arctic are also likely to suffer dramatic impacts from the warming.

Earthquakes

The second and third powerful temblors to strike the southern Philippine island of Mindanao since mid-October killed at least 13 people, injured hundreds of others and caused significant destruction.

• Earth movements were also felt in northern Thailand’s Chang Mai region, southern Italy and along the Kansas-Oklahoma border.

Urchin Plunder

The population of ravenous purple urchins in parts of the Pacific off California and Oregon has soared 10,000 percent since 2014, which an Oregon state scientist says has ravaged the kelp forests and other species in the marine environment.

The loss of the kelp to the echinoderms has created vast “urchin barrens,” where the kelp was once so thick that boats could not navigate through it.

While vast numbers of the urchins are starving to death on the now-empty seabed, the species can go dormant without reproducing and live for years without food. Experts warn that this means the kelp forests may never be able to rebound.

Scientists say climate change is likely a factor in the urchin explosion.

Roaming Charges

Russian researchers studying eagle migration with trackers that use mobile phone networks ran up huge SMS roaming charges when the birds unexpectedly flew southward into airspace over Iran and Pakistan.

The data stored in the birds’ trackers while they were outside the domestic coverage areas in Russia and neighboring Kazakhstan were later transmitted en masse through the foreign mobile carriers’ networks.

The volunteers tracking the birds were later able to pay off the roughly \$1,600 bill through a crowdfunding appeal dubbed “Top up the eagles’ mobile.”

Rising Seas

Global sea level rises in the deepening climate crisis are now predicted to affect more than three times as many people by 2050 than previous models had projected.

Writing in the journal *Nature Communications*, researchers say that land currently home to 300 million people will flood at least once a year by midcentury due to the higher tides. That far exceeds the 80 million people earlier believed threatened.

Lead author Scott Kulp says artificial intelligence was used to more accurately depict coastal elevations by filtering out buildings and trees.



A purple urchin population explosion is ravaging kelp forests along the U.S. Pacific Coast. Photo: University of California, Santa Barbara

Shark Guests

Japanese researchers say they have discovered a previously unknown creature living happily in the mouth of a whale shark.

The shrimplike amphipod was discovered when a dive team off Okinawa used a suction pump to collect samples from the gills of a whale shark, known as a jinbe in Japanese.

Dubbed *Podocerus jinbe* for the host, hundreds of the creatures were extracted by the divers and taken to Hiroshima University.

Researcher Ko Tomikawa says the shark’s mouth is a great habitat for the guests because of the constant flow of water and the safety from predators it provides.

Tropical Cyclones

Cyclone Kyarr strengthened to Category-4 force as it moved westward across the Arabian Sea.

• The Azores were brushed by developing Hurricane Pablo and Tropical Storm Rebekah.

• Tropical Storm Olga soaked a long stretch of the Mississippi Valley.



-74° Vostok, Antarctica