

## Earthweek for Aug. 14

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### **Solar flip**

The sun's magnetic field is expected to "flip" within a few months, part of an 11-year cycle of activity that could affect Earth's climate, electronics and power grids.

Such a flip occurs every 11 years in conjunction with what's known as the "solar maximum," or period of greatest solar activity. A reorganization of the sun's magnetic dynamo is responsible for the flip, and the process doesn't always happen in a tidy fashion.

"Right now, there's an imbalance between the north and the south poles," NASA space scientist Jonathan Cirtain said last year. "The north is already in transition, well ahead of the south pole, and we don't understand why." Stanford University solar physicist Phil Scherrer says that when the flip occurs, the sun's polar magnetic fields "weaken, go to zero and then emerge again with the opposite polarity."

### **Ocean's response**

An international team of researchers has found that marine life is adapting to a warming climate far more quickly than land-based life. Their three-year study, published in the journal *Nature Climate Change*, reveals that marine species are moving away from the tropics at an average of 45 miles per decade, compared to only 4 miles per decade for those on land.

The ocean life is mainly shifting toward the poles in search of cooler waters as the world's oceans have absorbed about 80 percent of the heat added to the global climate in recent decades. The study used an average of about 40 years of observations from earlier research.

It found that phytoplankton, at the base of the ocean's food chain, are now blooming an average of six days earlier in the season. Baby fish appear to be hatching about 11 days earlier as well.

### **Climate clashes**

Hot-headed passions are likely to create more human conflict in the decades ahead as the world's climate warms, according to a new study by economists at the University of California, Berkeley.

By looking at the historical impact of sudden surges in temperature or changes in rainfall, they found that warming and extremes in rainfall, from both drought and downpours, seem to be linked to spikes in violence. This was found to be true for conflicts between groups more than for acts of violence between individuals.

The researchers crunched the numbers of 60 studies from disciplines like archaeology, criminology, economics and psychology, for periods from 10,000 B.C. to the present, in coming to their conclusion.

Critics of the study say it looked at the consequences of relatively brief shifts in climate rather than what might be experienced in the sustained warming expected in the coming decades.

### **Kamchatka eruption**

Russia's restive Shiveluch volcano exploded with a blast of ash that soared three miles above the Kamchatka Peninsula. RIA Novosti reports the 10,771-foot mountain has seen an increase in activity since May 2009, periodically spewing ash into the sky.

Although the latest eruption posed no immediate threat to nearby settlements, the clouds of volcanic ash could cause problems for trans-Pacific air traffic, officials told the news agency.

### **Tropical storms**

Northern Vietnam and China's Hainan Island were drenched by Tropical Storm Mangkhut.

— Hurricane Henriette reached Category-3 force as it moved westward across the Pacific.

### **Earthquakes**

A 5.8 magnitude quake jolted the same region of northeastern Japan devastated by the March 2011 great earthquake and tsunami.

— Earth movements were also felt in northern India, southern Greece, far southwestern England, Trinidad, southern Mexico and Canada's Pacific coast.

### **Enduring memories**

Dolphins may be better at remembering long-lost friends than humans, based on a new study that found the marine mammals can identify former companions more than 20 years after they last swam together.

Researchers from the University of Chicago discovered the ability after playing back the vocalizations of 42 Atlantic bottlenose dolphins that had been kept in captivity over decades, with their associations carefully documented. Individual dolphins demonstrated profound reactions when exposed to recordings of dolphins they had been with even decades earlier, compared to calls from those they had never met.

Such a study would have been impossible in the wild, where the creatures' "fission-fusion" social system separates individuals only to sometimes bring them back together years later.

Researcher Jason Bruck believes this is why the species evolved to be able to recognize long-lost friends as opposed to strangers. And they do it by the unique sounds each one develops.

“Unlike humans, who are named by their parents, dolphins will actually name themselves,” says Bruck.

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