



## Arctic Freshwater Dome

A huge dome of freshwater has developed over part of the Arctic Ocean in a trend that could have chilling consequences for the climate of Europe and other lower-latitude areas.

Satellite observations dating back to 1995 indicate that strong winds and an ocean current known as the Beaufort Gyre have made the sea surface bulge upward, especially over the past decade when it rose by 6 inches.

Trapped in this vortex is a mass of freshwater from unusually high river and stream runoff originating on the Eurasian (Russian) side of the Arctic basin. Of concern is what could happen if the winds were to reverse, which happened between the mid-1980s and mid-1990s. That could allow the dome to collapse and spill out to the edges of the Arctic and beyond.

If the freshwater were to enter the North Atlantic in large volumes, scientists fear it could disturb a current coming from the Gulf Stream, which keeps Europe much warmer than its high-latitude position would normally allow.

## Solar Light Show

The strongest solar storm since 2005 sent a blast of charged particles bombarding Earth's upper atmosphere, triggering brilliant aurora displays and forcing jet aircraft to divert from their usual polar routes.

The geomagnetic storm was triggered by a huge solar flare that erupted on Jan. 22. A subsequent surge of charged particles rushed toward Earth at 1,400 miles per second, threatening to disrupt satellite communications and knock out power.

Solar physicists say the planet was dealt only a "glancing blow" by the particles two days later. But it was enough to ignite the upper atmosphere into vivid and colorful ribbons of the aurora borealis and australis around the polar regions.

## One of the Hottest

Last year's global average temperature was the ninth warmest on record and continued the trend in which nine of the 10 hottest years have occurred since the year 2000. NOAA said the United States experienced its 23rd warmest year, with an average of 53.8 degrees Fahrenheit. That's about 1 degree above the 20th-century average. The agency said the high global temperatures are mainly due to increased concentrations of greenhouse gases in the atmosphere, principally carbon dioxide. The year 2011 also saw record-breaking weather extremes and disasters across the United States and various other locations around the world.

## Costa Rica Eruption

Costa Rica's Turrialba volcano produced a burst of activity that shot water, vapor and ash more than 15,000 feet into the air. Residents reported that ash from the blast showered several communities. The mountain's volcano observatory said that a new fissure broke open on the southeastern flank of the crater during the eruption. Turrialba last produced an eruption in 1866, which sent ash falling as far away as Nicaragua, according to historical records. The mountain has become increasingly active since it began to rumble again in January 2001.

## Earthquakes

Residents from southern Mexico to El Salvador were jolted by a 6.3 magnitude temblor centered beneath the Pacific Ocean just off Mexico's Chiapas state.

• Earth movements were also felt in central Chile, the Dominican Republic and neighboring Haiti, northern Italy, northern Sumatra, northern New Zealand and the Big Island of Hawaii.

## Tropical Cyclones

Two slowly moving tropical cyclones that drenched the southern African nation of Mozambique for days left 22 people dead and destroyed the homes of more than 56,000 people. A tropical depression produced torrential rainfall as it swirled through the south of the country Jan. 15-17. Cyclone Funso then stalled along the central coast the following week, reaching Category-3 force just offshore. The storm brought back memories of catastrophic flooding 12 years ago that killed at least 700 people and displaced 500,000 others in the country's worst disaster on record.

• Cyclone Ethel lashed remote Rodrigues Island in the western Indian Ocean, but there were no reports of damage or casualties.

## All-White Blackbird

A genetic mutation has created an unusual blackbird that has been attracting birdwatchers to a park in England's East Midlands over the past few months. Ornithologists say the entirely white plumage of the bird is due to a condition known as leucism, which prevents the usual pigments from being deposited in its feathers. Most birds with the mutation have some spots or patches of color in their feathers from other pigments, but the one seen around Nottinghamshire is unusual for being entirely white. Leucistic birds are often far more vulnerable to predators because of their bright white plumage. The BBC reports park managers in Nottinghamshire are urging birdwatchers to keep an eye out for this unusual blackbird when it returns in the spring, and sound the alarm should it come under threat.