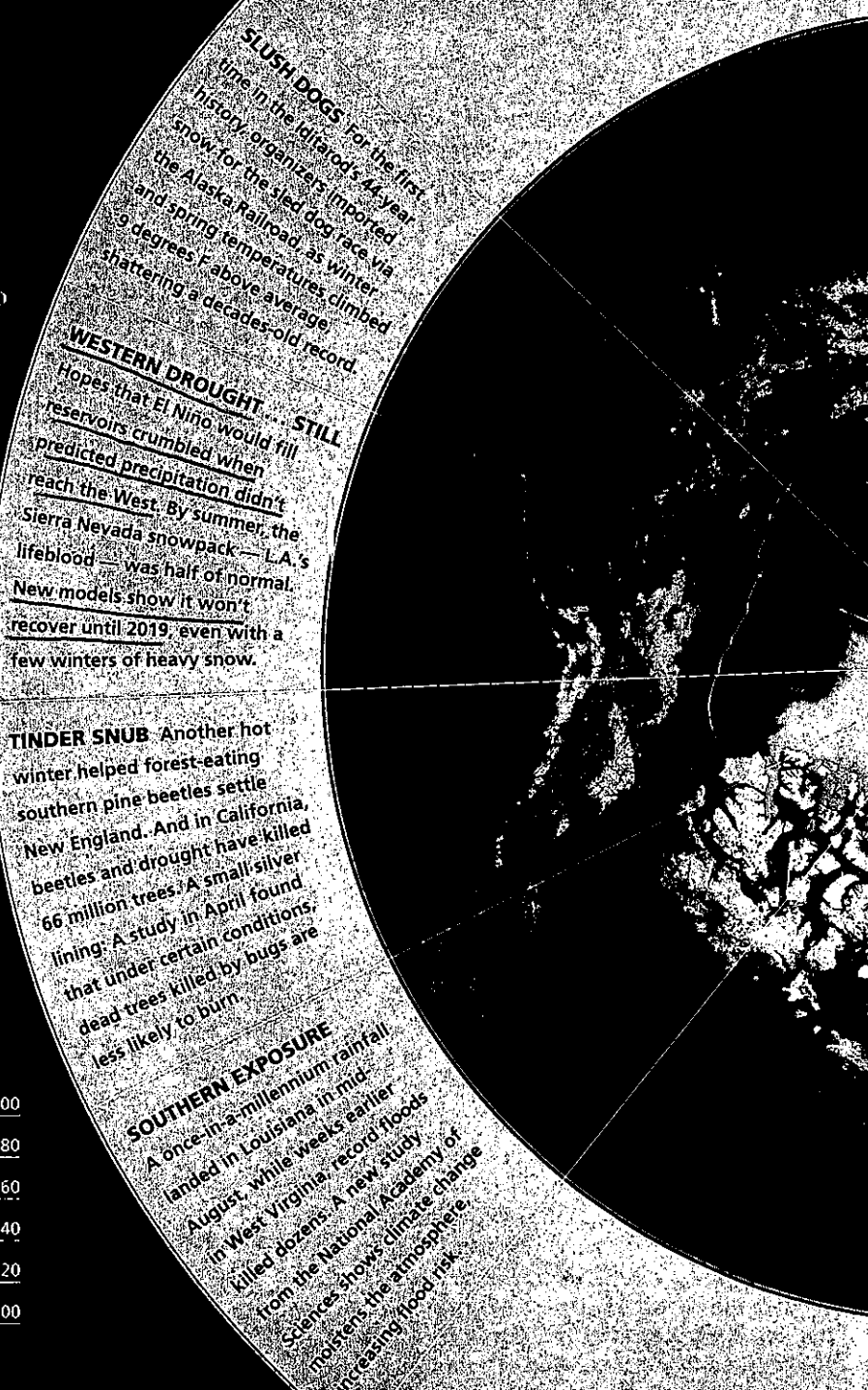
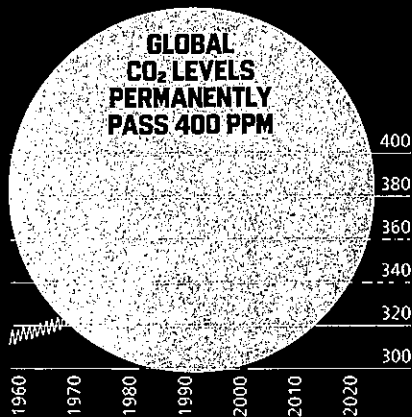


The Pace – and Problems – of Climate Change Accelerate

ONE OF THE mightiest El Niño patterns in memory brought unprecedented drought and flooding in 2016, the hottest year on record. The planet also passed a grim milestone: an atmospheric carbon dioxide concentration of 400 parts per million, including remote Antarctica, which hasn't seen that much CO₂ for 4 million years. Climatologists target 350 ppm as the uppermost threshold before we see dire consequences, like catastrophic sea level rise. Some locations previously had topped 400 ppm on a seasonal cycle, but scientists say this time it's permanent and global. —ERIC BETZ



SLUSH DOGS For the first time in the Iditarod's 44-year history, organizers imported snow for the sled dog race via the Alaska Railroad, as winter and spring temperatures climbed 5 degrees F above average, shattering a decades-old record.

WESTERN DROUGHT... STILL Hopes that El Niño would fill reservoirs crumbled when predicted precipitation didn't reach the West. By summer, the Sierra Nevada snowpack—L.A.'s lifeblood—was half of normal. New models show it won't recover until 2019, even with a few winters of heavy snow.

TINDER SNUB Another hot winter helped forest-eating southern pine beetles settle New England. And in California, beetles and drought have killed 66 million trees. A small silver lining: A study in April found that under certain conditions, dead trees killed by bugs are less likely to burn.

SOUTHERN EXPOSURE A once-in-a-millennium rainfall landed in Louisiana in mid-August, while weeks earlier in West Virginia record floods killed dozens. A new study from the National Academy of Sciences shows climate change moistens the atmosphere, increasing flood risk.

SEE DISCOVER'S COMPLETE COVERAGE OF 2016'S TOP CLIMATE STORIES.

#13 Record heat causes unprecedented coral reef die-offs.

#14 Landmark study shows ozone hole is finally healing.

CLIMATE CRUISE

Arctic sea ice vanished from the Northwest Passage this summer, letting the cruise ship *Crystal Serenity* take about 1,000 tourists from Alaska to New York for the first time.

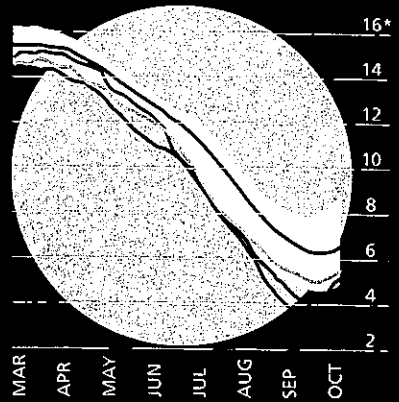
PARIS ACCORD On April 22, Earth Day, 175 nations agreed to keep global warming below 2 degrees C. But scientists say the non-binding Paris pact likely can't hit its goal. And a study in March found that even a 1.5-degree C increase will severely degrade coral reefs and hurt crop productivity in the tropics.

EPIC HEAT Summer temperatures brought record heat to the Middle East. A site in Kuwait hit 129.2 degrees F in July; the World Meteorological Organization is investigating if that was the hottest temperature ever recorded in the Eastern Hemisphere.

FARMS AND FAMINE Southern Africa entered the second year of extreme drought, which left cropland barren and helped increase food prices.

COAL COLLAPSE Coal use has peaked in China, the world's largest polluter, and is falling off earlier than expected, according to a *Nature Geoscience* analysis. That's welcome news as another fresh study showed coal pollution prematurely killed 366,000 Chinese in 2013.

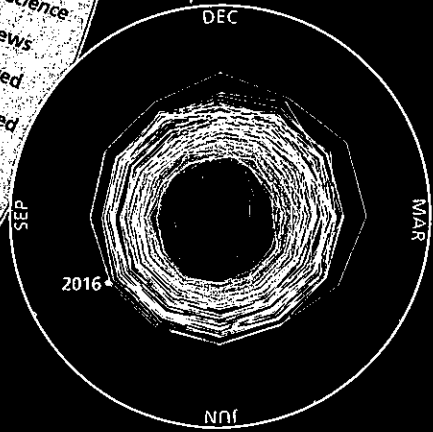
ZOMBIE SPORES Scientists blamed an anthrax outbreak among Siberian reindeer on an animal that died from the disease decades ago. Record heat melted permafrost and exposed the infected carcass, killing a child and sickening others.



2012
2014
2016
1981-2010 Average
*Millions of square kilometers

ARCTIC SEA ICE In September, Arctic sea ice reached its second-lowest extent ever recorded; 2012 holds first place.

SPIRALING OUT Climatologist Ed Hawkins has a new way to look at rising temps. By laying out months like a clock, his plot shows the spiral toward a 2 degree C heat increase since 1880.



A composite image shows how the extent of Arctic sea ice in September 2016 compared with a 30-year average for the month (yellow line).

#74 Iceland's ambitious experiment turns carbon dioxide into stone.

#75 Human-caused warming claims its first mammal.

#96 Humanity kick-starts a new geologic age: the Anthropocene.

CENTER: NASA; SATELLITE: WINDSAT; STATION: COCCOUSE FROM BOTTOM-LEFT: SCOPPS; INSTITUTE OF OCEANOGRAPHY; MAJIMA; ODA; OBSERVATORY; DEPLANT; SHUTTERSTOCK; *AT OVAL: SNOW; AND ICE DATA CENTER; ED HAWKINS; UNIVERSITY OF READING