

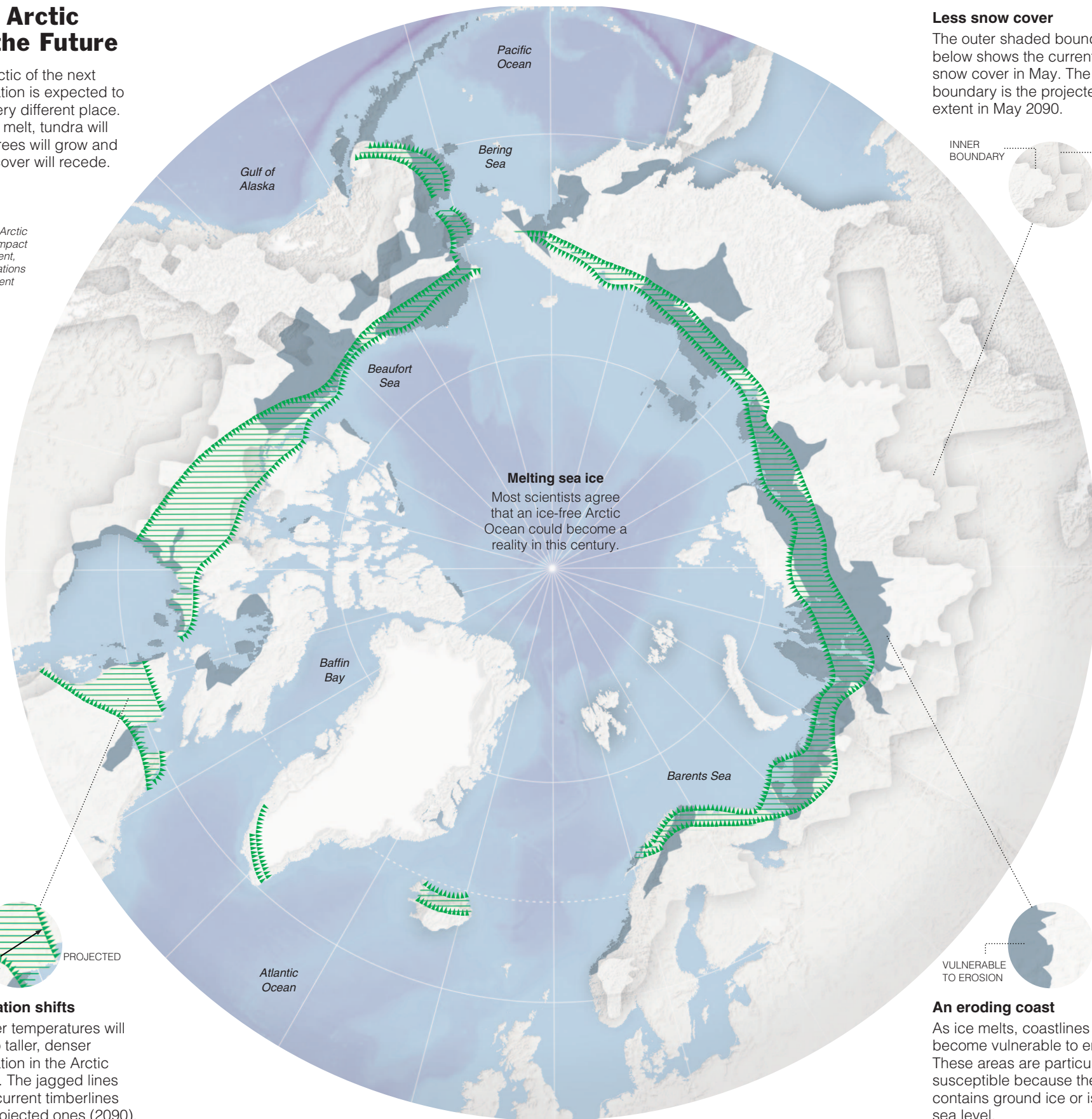
# Science Times

The New York Times

## The Arctic Of the Future

The Arctic of the next generation is expected to be a very different place. Ice will melt, tundra will thaw, trees will grow and snow cover will recede.

Sources: Arctic Climate Impact Assessment, United Nations Environment Program



**Less snow cover**  
The outer shaded boundary below shows the current snow cover in May. The inner boundary is the projected extent in May 2090.

INNER BOUNDARY  
OUTER BOUNDARY

**Melting sea ice**  
Most scientists agree that an ice-free Arctic Ocean could become a reality in this century.

**Vegetation shifts**  
Warmer temperatures will lead to taller, denser vegetation in the Arctic tundra. The jagged lines show current timberlines and projected ones (2090).

**An eroding coast**  
As ice melts, coastlines will become vulnerable to erosion. These areas are particularly susceptible because the land contains ground ice or is near sea level.

# No Escape: Thaw Gains Momentum

By ANDREW C. REVKIN

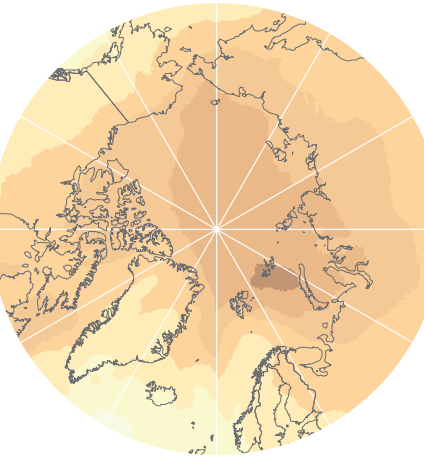
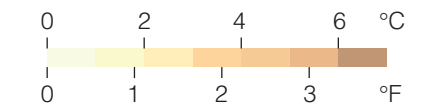
In 1969 Roy Koerner, a Canadian government glaciologist, was one of four men (and 36 dogs) who completed the first surface crossing of the Arctic Ocean, from Alaska through the North Pole to Norway.

Now, he said, such a trek would be impossible: there is just not enough ice. In September, the area covered by sea ice reached a record low. "I look on it as a different world," Dr. Koerner said. "I recently reviewed a proposal by one guy to go across by kayak."

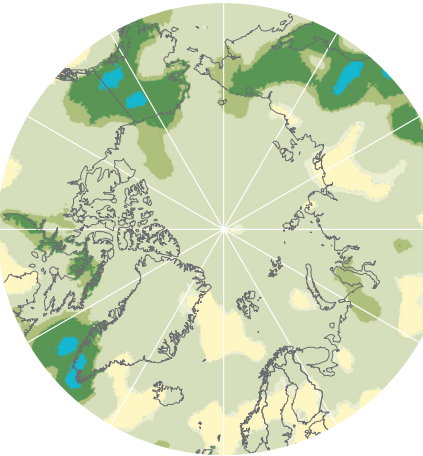
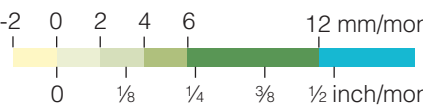
At age 73, Dr. Koerner, known as Fritz, still regularly hikes high on the ancient glaciers abutting the warming ocean to extract cores showing past climate trends. And every one, he said, indicates that the Arctic warming under way over the last century is different from that seen in past warm eras.

Many scientists say it has taken a long time for them to accept that global warming, partly the result of carbon dioxide and other heat-trapping gases in the atmosphere, could shrink the Arctic's summer cloak of ice.

**A warmer climate**  
Projected rise in air temperature, in the century after the 1990's



**More precipitation**  
Change in precipitation during August, from 1980-99 to 2070-89



**THE BIG MELT**  
A Cycle of Warming

But many of those same scientists have concluded that the momentum behind human-caused warming, combined with the region's tendency to amplify change, has put the familiar Arctic past the point of no return.

The particularly sharp warming and melting in the last few decades is thought by many experts to result from a mix of human and natural causes. But a number of recent computer simulations of global climate run by half a dozen research centers around the world show that in the future human influence will dominate.

Even with just modest growth in emissions of the greenhouse gases, almost all of the summer sea ice is likely to disappear by late in the century. Some of the simulations, including those run on an advanced model at the National Center for Atmospheric Research in Boulder, Colo., show much of the summer ice disappearing by 2050, said

The New York Times

Continued on Page 4

## FINDINGS

### Rat on the Run Turns Out to Be a Marathon Swimmer

A single elusive rat led a team of New Zealand scientists on a game of hide-and-seek that lasted nearly five months.

James C. Russell, a professor in the school of biological sciences at the University of Auckland, and his colleagues first released a male Norway rat on Nov. 12, 2004, on Motuoropapa, a 23-acre island off north-eastern New Zealand.

Their intent was to learn how hard it would be to spot and capture a single invader.

They fitted him with a radio tracking collar and set out rodent detection and capture systems, including traps, and tracking tunnels baited with chocolate.

As Dr. Russell and colleagues reported in the current edition of the journal *Nature*, the rat continued to elude them, so they stepped up the quality of treats used for bait, including peanut butter, fish and bird meat and traps "lubricated with pungent fish oil." But the wily rat, it seemed, had plenty of local fare.

The researchers had named the rodent Razza. Dr. Russell said in an interview; as the hunt wore on, he added, they gave their subject many other names, most unprintable. "We were arms-in-the-air for a little bit of time," Dr. Russell said.

After 10 weeks, the collar stopped working.

Soon after, locals on the nearby island of Otata reported that their supposedly rat-free island had a new

rat. Otata is more than 400 yards away from Motuoropapa.

DNA analysis of the droppings confirmed to the dumbfounded researchers that the Otata rat was Razza. "To our knowledge, this is the first record of a rat swimming hundreds of meters across open water," they wrote in the *Nature* paper.

After several more weeks of fruitless attempts, the researchers happened upon a freshly dead penguin on the shore and baited yet another trap with the meat. Razza took the bait and was killed in the trap, 18 weeks after his wanderings began.

The researchers concluded that capturing single rats in the wild is hard to do — or, as the paper put it, "eliminating a single invading rat is disproportionately difficult." In the interview, Dr. Russell said, "It seems comical that us scientists had to prove something everyone seems to know."

Dr. Russell said tracking and eradicating rodent invaders is an essential part of maintaining island environments, which go through waves of infestation and eradication, and since they invade singly or in small numbers, understanding single rats is vital.

He said he and his colleagues replayed a story as old as humanity, in which people try to get rid of rodents and the rodents thwart their best laid plans.

"The next step," Dr. Russell said, "is to investigate more rats."

JOHN SCHWARTZ



Steve Brodner

## THE CONSUMER

### And Now, A Warning About Labels

By DEBORAH FRANKLIN

Open your medicine cabinet, and take a close look at every prescription pill bottle you've got. Chances are, each vial is plastered with at least one colorful warning sticker that contains a bold but strangely ambiguous phrase or two — accompanied, perhaps, by a cryptic drawing.

You might see, for example, a red sticker depicting a gushing faucet, with a message in fine print that reads, "MEDICATION SHOULD BE TAKEN WITH PLENTY OF WATER." But, how much is plenty? Would a cup of coffee be acceptable instead?

Another common sticker urges, "DO NOT CHEW OR CRUSH, SWALLOW WHOLE," next to a



American College of Physicians Foundation

Ambiguous wording and artwork, combined with nonintuitive color selections, are among the problems that can make prescription drugs confusing to take.

diagram that looks at least as much like an arrow chasing a nickel down the throat of a bota bag as it resembles a drug tablet falling into a stomach.

These insistent little strips of paper or plastic — hundreds of them — are designed and manufactured by a number of well-meaning companies, each according to its own format, symbology and color scheme.

The warning stickers on prescription bottles have not traditionally been deemed important contributors to patient education. Compared with the package insert prepared by the drug's manufacturer under the hot breath of the Food and Drug Administration or the one-page consumer summaries that pharmacists add, the warning stickers are just fluffy little extras.

As such, they are not standardized, regulated or even reviewed by the F.D.A. Nor are they generally tested for effectiveness before they hit the market.

But some health literacy experts worry that many patients, overwhelmed by a proliferation of paper warnings — often written in turgid prose — are relying instead on the stickers to tell them how to take medications.

"What I'm hearing from patients is that they don't really much use these handouts that are stapled to the bag," said Dr. Ruth Parker, an internist who treats patients at the large public hospital associated with Emory University in Atlanta. "What they will sometimes do is look at the label."

Dr. Parker recently completed two studies on the topic with Dr. Terry Davis of Louisiana State University at Shreveport and Dr. Michael Wolf of Northwestern's Feinberg School of Medicine in Chicago. The scientists said that, so far, they had not heard of anyone who was harmed by overreliance on the little stickers as medication guides.

Still, their results, not yet published but already being talked about in health literacy circles, suggest that a risk does exist. And patients with reading skills that do not stretch beyond sixth or seventh grade seem likely to be the most vulnerable.

To explore the problem, the researchers interviewed a few hundred healthy, English-speaking adults in three states to identify a

Continued on Page 6

## Science

### Darwin vs. Darwin

Two eminent biologists edit competing Darwin anthologies.  
By Nicholas Wade Page 2

### Eight-Legged Scholarship

Scientist at Work: Norman Platnick, master of spiders and taxonomy.  
By Mohi Kumar Page 3

## Health & Fitness

### Truth-Resistant Diseases

Essay: Avian flu? There's plenty to fear much closer to home.  
By Abigail Zuger, M.D. Page 5

### Personal Health: Stroke

Transient ischemic attack, often the forerunner of something bigger.  
By Jane E. Brody Page 7