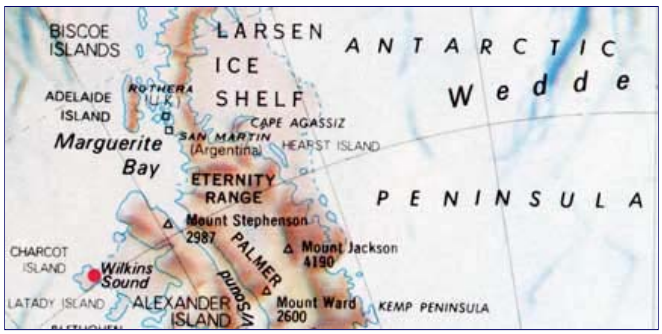
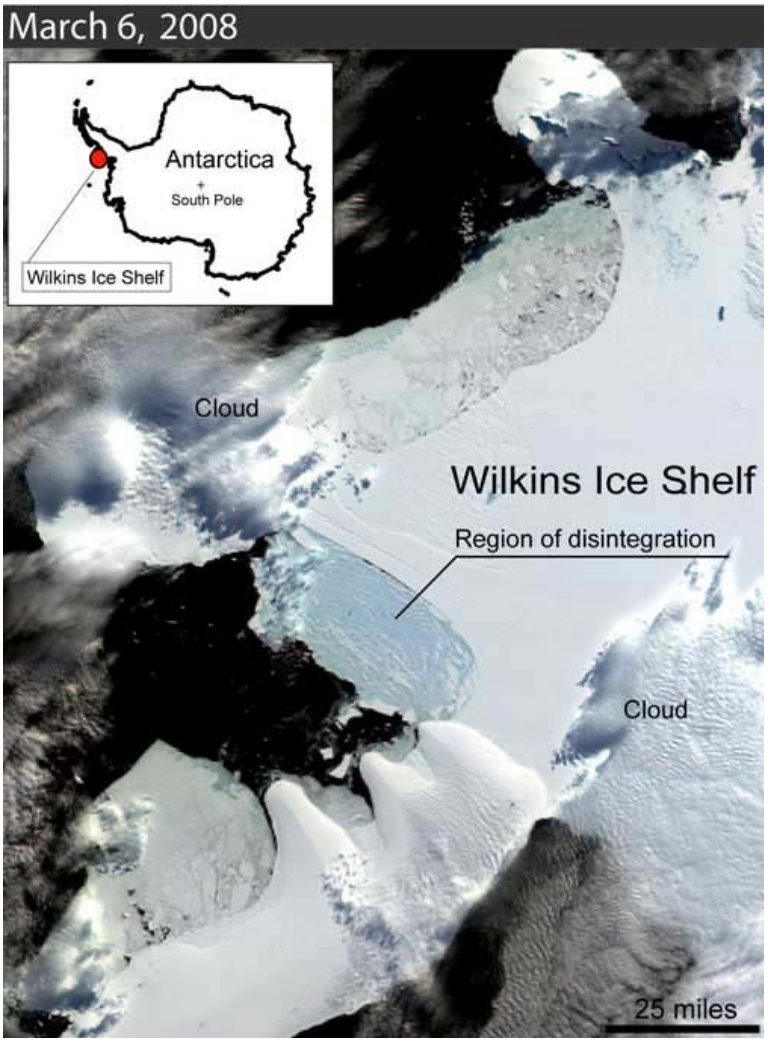
Ice Block Size of Northern Ireland Has Broken From Wilkins Ice Shelf in West Antarctic Peninsula

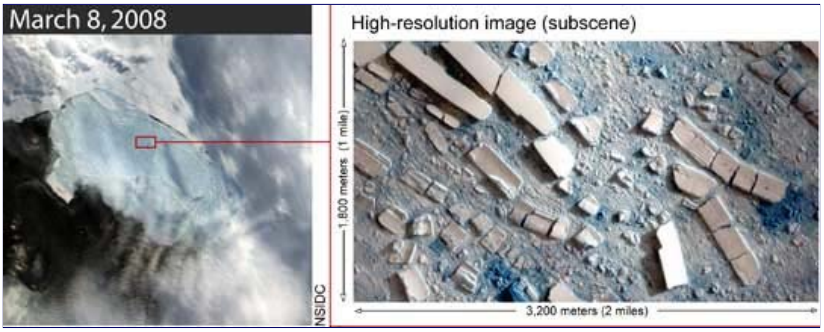
"The Wilkins breakout won't have any effect on sea-level because that ice is floating already, but it is another indication of the impact that climate change is having on the region. We believe the Wilkins has been in place for at least a few hundred years. But warm air and exposure to ocean waves are causing a break-up."
- Ted Scambos, Ph.D., Glaciologist, University of Colorado





Earthfiles, news category.

Above and below satellite images of the Wilkins Ice Shelf in the West Antarctic Peninsula where a huge 160-square-mile-chunk of ice disintegrated between February 28 and March 8, 2008. The ice section that broke away measured 25-miles-long (41 kilometers) by 1.5-miles-wide (2.5 kilometers). All that's holding back the rest of the Wilkins Ice Shelf is a narrow band of ice, which might also give way in the near future. Image courtesy NSIDC.



Left: Red rectangle is blown up on right to show the large chunks in the disintegrated mass of Wilkins Ice Shelf the size of Northern Ireland that broke off between February 28, and March 8, 2008. Image courtesy NSIDC.

March 27, 2008 Boulder, Colorado - In West Antarctica on March 8, 2008, at the Wilkins Ice Shelf which floats on the Pacific Ocean not far from the southern tip of South America, a slab of ice as large as Northern Ireland broke off. The 160-square-mile ice chunk had been there for perhaps 1,500 years. But between February 28 and March 8, 2008, NASA's Earth Observing System Aqua and Terra satellites photographed the Wilkins' disintegration.

Scientists say global warming continues to melt down West Antarctica faster than even computer models predicted. The rest of the Wilkins Ice Shelf, which now will likely break up as well, is held back by only one narrow band of ice. After that collapses, more Wilkins Ice Shelf will be vulnerable to melting, eventually leading to the ice that is *on top of* Antarctic land. If that land-based ice ever goes into the ocean, sea levels will rise rapidly.

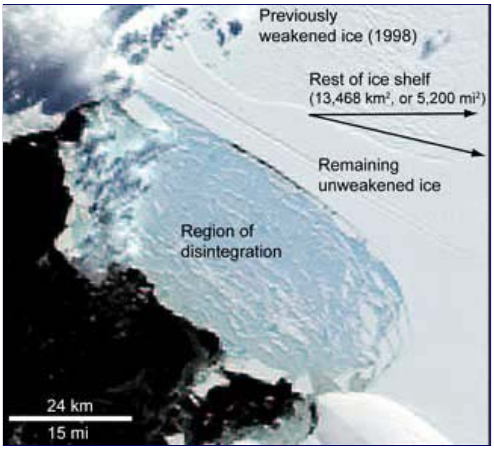
The Wilkins Ice Shelf is one of many that have collapsed in the West Antarctic Peninsula over the past thirty years. For example, the gigantic Larsen B disappeared in one month's time in 2002. In March 2008, the United Nations Environment Program reported that 29 glaciers around the world lost ice at record levels in 2006. The U. N. report warns that the loss of Himalayan glaciers would mean many glacier-fed rivers in India and the region will eventually dry up. What happens to the humans and animals dependent upon those rivers - not only in India but wherever mountain glaciers melt away?

This week I talked with Ted Scambos, Ph.D., Glaciologist at the University of Colorado's National Snow and Ice Data Center (NSIDC) in Boulder – one of the agencies that monitors and analyzes the satellite imagery. I asked Prof. Scambos how long he thinks the rest of the Wilkins ice shelf will last.

Interview:

Ted Scambos, Ph.D., Glaciologist,
NSIDC, University of Colorado, Boulder, Colorado.

Ted Scambos, Ph.D., Glaciologist, National Snow and Ice Data Center (NSIDC), University of Colorado, Boulder, Colorado: "What's left is an ice shelf that has a very narrow band of ice propping up a much larger area the size of Connecticut, which we suspect will disintegrate probably next year or in the next few years and put the rest of the other large plate of ice at further risk.



March 8, 2008, graphic overlay of Wilkins Ice Shelf by NSIDC.

Antarctic Western Peninsula, Alaska and Central Siberia Are Three Fastest Warming Areas On Earth

"..about 5 to 10 times as fast as the global mean. That is about 1 degree F. per decade. So, in a decade, those sites see as much warming as North America saw in the past century."

IS IT TRUE THAT ANTARCTICA AND SOME PORTIONS OF ALASKA AND THE ARCTIC ARE THE MOST RAPIDLY WARMING PARTS OF THE EARTH?

Yes, that's absolutely true. Alaska, central Siberia and the Antarctic peninsula are the three fastest warming areas – about 5 to 10 times as fast as the global mean. That is about 1 degree F. per decade. So, in a decade, those sites see as much warming as North America saw in the past century.

IN GLOBAL WARMING, WHY IS IT THAT THE POLES WARM THE FASTEST?

The poles have an interesting amplification going on related to global warming and that's related to the fact that there is lots of ice there. The amplification happened in those areas where the ice is close to the melting point. In the northern parts of Antarctica where the peninsula sticks out toward South America or in the southern fringes of the Arctic – lower elevations in the Arctic like the coast of Greenland – we're seeing very rapid changes because a small amount of warming represents the difference between a snow-covered land area or an ice-covered ocean that has dark open waters or ground. That darkening that comes with the loss of the snow and ice amplifies the warming trend because dark surfaces absorb a lot of solar energy.

IN A WAY, IT CREATES A PARADOX THAT THE TWO COLDEST PLACES ON THE PLANET TRADITIONALLY WOULD BE THE PLACES THAT WARM THE FASTEST IN GLOBAL WARMING.

That's true. And they are also where things change the fastest during the onset of an ice age. It gives us some optimism that if we can turn around the current trend towards warming by adjusting greenhouse gases or soot in the atmosphere or other manmade for global warming, at least some components of the Arctic and Antarctic systems could respond fairly quickly. The longer we wait, though, the more heat we put into the system. Once glaciers accelerate, they are not subject to the flip side of the amplification I was talking about, so the system gets harder and harder to stop. We have a much longer run out with this heat that's been trapped from one century carrying over into other centuries.

La Nina Cooled Northern Hemisphere in Winter 2007-2008

ON THE INTERNET, GLOBAL WARMING SKEPTICS POINT TO THIS HARSH WINTER OF 2007-2008 AS EVIDENCE THAT THE PLANET'S TEMPERATURES ARE NO LONGER RISING, AS THE CARBON DIOXIDE LEVELS SUGGEST WOULD BE THE CASE. COULD WE BE MOVING INTO A PERIOD OF GLOBAL COOLING?

No, it’s very unlikely. The main reason we’ve seen a downward trend in global temperatures in just the last few months, a significant downward trend that is fairly abrupt and large, is mostly related to the La Nina event in the Pacific and how that propagates throughout the Earth’s climate system. The current cooling trend is a blip. The forcing of warming by greenhouse gases are still there. We’ll see this (cooling) turn around and I think we’ll see some significant events indicating that the general warmth on Earth is continuing, including this Wilkins ice shelf event - but also with things we anticipate might happen in the Arctic in the coming summer or two. In fact, even though the temperate latitudes of the Northern Hemisphere had a pretty cold winter, there are many other areas on Earth that did have unusually warm conditions. Central Antarctica and the Wilkins area had quite a warm 2007.

In fact, if you look at the high Arctic, it was slightly warmer than average this past winter. So, we’re in no way fooled by the downward trend because the Earth’s climate system is a noisy one – much like the stock market. You know when you’ve got a Bull market versus a Bear market, even though there might be jumps from day-to-day or month-to-month that try to indicate otherwise.

SO, IF LA NINA IS RESPONSIBLE FOR THE DOWN TEMPERATURES, COULD YOU EXPLAIN FOR A GENERAL NORTH AMERICAN AUDIENCE EXACTLY WHAT LA NINA IS AND WHY IT COOLS TEMPERATURES?

La Nina is a general cooling of the central Pacific and the areas to the west of South America. It’s a very large area where cooler waters merge onto the surface and that propagates how it influences weather patterns, the tracks of low pressure systems around the globe. It’s been associated with cooling trends in past years when there have been moderate to strong La Nina events. I believe the current La Nina is coming to a close, actually, and we’ll see what happens next, but I very much doubt that the cooling trend could persist.

WHAT DO YOU EXPECT THIS SUMMER AND GOING INTO 2009 TO BE LIKE?

That’s a little hard to say. I think the Arctic is still poised for some very abrupt retreats this summer, despite the fact that the ice grew back – as it always does – in winter. It came back a little bit more than the previous winter, but our models and measurements show that the ice is very thin. There is a good chance that most of the ice that grew back will melt off again this summer.

The long-term trend is inescapably a warming one. That’s because we have an obvious and inarguable forcing coming from greenhouse gases in the atmosphere. They are there. We know how they work. We know they are having this heat-trapping effect. We’ve detected a very strong warming trend throughout many of the Earth’s systems that is consistent with the trapping of greenhouse gases, particularly since about 1975.

Quiet Sun Changing Earth Temperatures?

IS IT POSSIBLE THAT WHAT IS BEING CALLED THE ‘NAKED SUN,’ OR QUIET SUN CURRENTLY AS IT PASSED ITS MINIMUM AND IS SUPPOSED TO BE STARTING IN THE NEXT SOLAR CYCLE. THERE HAVE NOT BEEN SUNSPOTS FOR QUITE AWHILE. THE SUN MIGHT GO THROUGH 2008 AS A VERY QUIET SUN. COULD THIS HAVE ANYTHING TO DO WITH PERTURBATIONS IN TEMPERATURES ON THE EARTH?

There’s a debate about that actually. It’s a good question. Some folks have said that the net lowering of energy during the quiet sun cycle - the effect is about a fifth of greenhouse gases and in the opposite direction. The sun is producing about one-third of a watt less per square meter. Greenhouse gases are contributing 1.5 to 2 watts per square meter all over the Earth. The sun delivers 1300 watts per square meter to the Earth.

ISN’T ONE OF THE BIG PROBLEMS WE’RE ALL GOING TO BE FACING IN ONLY ANOTHER TEN TO TWENTY YEARS IS THAT WITHOUT GLACIERS IN MOUNTAINS, THERE WON'T BE WATER FOR A LOT OF PEOPLE AND ANIMALS?

It's true. Water shortages will be one of the first problems to come out of global warming that will effect people. Drought in the American southwest, drought in southern Europe, a change in areas that depend on mountain glaciers like central Asia, like many parts of the Rockies. They depend on water from snow pack as a way of storing and moderating how their water cycle interacts with the needs of agriculture and cities, the people who live there. These will be big challenges, the first of many that will come out as a result of climate change.

7 to 8 Degrees F. Increase in Average Mean Global Temperature by 2100

WHEN YOU THINK ABOUT THE NEXT 90 YEARS TAKING US TO 2100, WHAT DO YOU THINK THE WORST CASE CENARIO MIGHT END UP BEING?

I hesitate to forecast because most of the things I would have forecast ten years ago (for 2100) are coming to pass much, much sooner than I thought they would. It's one of those things where you can see what's coming. So, why would you keep driving that way?

The temperature forecast is one that is fairly confident that we'll see temperatures something like 7 to 8 degrees F. warmer by the end of the century. There is a wide range of possibilities and it has a lot to do with how the Earth responds to this push we're giving it by adding greenhouse gases.

I think it's fairly clear, knowing that we're only at the beginning of the effects of these greenhouse gases, that global warming is going to have on the planet. We're already seeing dramatic effects in far away areas like the Arctic and Antarctic. A prudent person would say, 'If we can solve this problem and save money or improve our economy or stimulate innovation in the engineering and business sector, why not do it?

A 7 TO 8 DEGREE F. TEMPERATURE INCREASE BY THE END OF THIS CENTURY, ONLY 90 YEARS FROM NOW, WOULD BE A 7 TO 8 TIMES INCREASE OVER THE INCREASE IN THE LAST CENTURY.

That's right.

IT SEEMS TO ME AS A REPORTER COVERING ENVIRONMENTAL MATTERS FOR A LONG TIME THAT IT IS ALMOST INCOMPREHENSIBLE TO ANTICIPATE WHAT A 7 TO 8 DEGREE F. AVERAGE GLOBAL TEMPERATURE INCREASE WOULD BE IN ONLY 90 YEARS FROM NOW.

You're absolutely right. There's a possibility for very dramatic changes in the environment and ecosystems, in storminess, in snow pack. It will be a very big change. And it will be happening very fast. And the further we go down this road – if we wait until disasters are popping up every day in the headlines, it will be much, much tougher to slow down and stop and turn around."

As the cold waters of the 2007 La Nina in the Pacific begin to fade away in 2008, temperatures are expected to warm up dramatically, while drought continues in the southern American plain states, including Texas, which received less than 25% of normal rainfall during the 2007 winter. On the heels of the La Nina, NOAA forecasters predict that in late summer 2008, a weak or moderate El Nino event will emerge – which is the opposite of La Nina because El Ninos *warm up* the Pacific Ocean.

> [Editor's Note: El Niño-Southern Oscillation is a global ocean-atmosphere phenomenon in which Pacific Ocean sea surface temperatures are higher. The name El Niño, from the Spanish for "the little boy," refers to the Christ child, because the phenomenon is usually noticed around Christmas time in the Pacific Ocean off the west coast of South America every few years. La Niña means "the little girl" and is the *opposite* of El Nino with cooler sea surface temperatures in the Pacific Ocean. The most recent occurrence of El Niño started in September 2006, and lasted until early 2007. From June 2007 on, data indicates a weak to moderate La Niña event extending to mid-2008, which cooled winter temperatures in mid-latitudes of Northern Hemisphere.
>
> The first signs of an El Niño are below and generally opposite for La Nina:
> - Rise in air pressure over the Indian Ocean, Indonesia, and Australia.
> - Fall in air pressure over Tahiti and the rest of the central and eastern Pacific Ocean.
> - Trade winds in the south Pacific weaken or head east.
> - Warm air rises near Peru, causing rain in the northern Peruvian deserts.
> - Warm water spreads from the west Pacific and the Indian Ocean to the east Pacific. It takes the rain with it, causing extensive drought in the western Pacific and rainfall in the normally dry eastern Pacific.]

More Information:

For further information about Antarctica and Arctic ice melts, please see Earthfiles reports below in the **Earthfiles Archive**:

- 10/05/2007 — Earlier, Faster and Deeper Arctic Ice Melt Down
- 08/08/2007 — 2007's Warm, Erratic Global Weather
- 07/11/2007 — Mystery of Night Shining Clouds - Another Global Warming Change?
- 06/21/2007 — Large Lake in Southern Chile Has Disappeared
- 06/01/2007 — Is Earth Close to Dangerous Tipping Point in Global Warming?
- 05/18/2007 — Antarctica: Unprecedented Western Ice Melt and CO2-Saturated Southern Ocean
- 02/02/2007 — Updated: New U. N. Global Climate Change Report: Earth Could Warm Up 3.2 to 11.52 Degrees Fahrenheit by 2100
- 01/10/2007 — 2006: USA's Warmest Year On Record
- 12/08/2006 — NASA Wants Permanent Moon Base by 2024
- 12/07/2006 — Earth Headed for Warmest Period in 55 Million Years?
- 09/09/2006 — Methane - Another Threat in Global Warming
- 08/19/2006 — Repair of Earth's Ozone Layer Has Slowed
- 07/18/2006 — 2006 - Hottest Year So Far in U. S. History
- 06/24/2006 — "High Confidence" Earth Is Warmest in 400 Years - Maybe Even 2,000 Years
- 03/17/2006 — Planet Earth's Ice Melt
- 01/03/2006 — Antarctic Earthquakes and Edgar Cayce Pole Shift Prediction
- 11/18/2005 — Is the Sun Heating Up?
- 09/23/2005 — Phenomenon of "Instant" Hurricanes in 2005
- 05/07/2005 — Did Milky Way Gas and Dust Turn Earth Into Icy Snowball Four Times?
- 04/01/2005 — What's Killing Off Marine Life Every 62 Million Years?
- 04/01/2005 — Soft Tissue - Even Blood Cells? - Found in Tyrannosaurus rex Leg Bone
- 02/03/2005 — Kyoto Protocol Goes Into Effect February 16, 2005. British Scientists Warn Global Temperatures Could Climb Higher Than Earlier Estimates.
- 01/07/2005 — 9.0 Sumatra Earthquake Update
- 09/04/2004 — Hillsboro, Ohio Corn Formation - High Strangeness in Soil and Plants
- 08/16/2004 — NASA Has Launched Aura Satellite to Study Ozone-Destroying Chemicals in Atmosphere
- 08/14/2004 — Oceans Are Absorbing A Lot of Greenhouse CO2. As Chemistry Changes, What Happens to Sea Life?
- 02/27/2004 — Abrupt Climate Change: Scenario from A Pentagon-Commissioned Report
- 02/23/2004 — Is There Liquid Water on Martian Surface?
- 02/21/2004 — Update On Mars with Cornell Astronomer Steve Squyers,Principal Investigator on the Mars Rover Missions
- 05/30/2003 — Scientists Surprised by Common House Fly Fossils in Antarctica
- 01/05/2003 — What Are the Grooves in the Martian South Pole?
- 10/21/2002 — Mt. Kilimanjaro's Ice Cap Is Melting Fast
- 06/01/2002 — Scientists Surprised by Abundance of Water On Mars
- 03/21/2002 — Antarctic Peninsula Is Melting - And So Is Arctic Ice
- 02/13/2002 — January 2002 Warmest On Record For Whole World
- 01/30/2002 — Latest Satellite Data Shows Surprisingly Thicker Ross Ice Shelf in Antarctica
- 12/22/2001 — Scientists Warn That Climate and Earth Life Can Change Rapidly
- 03/04/2001 — Disappearing Glaciers - Evidence of A Rapidly Warming Earth
- 02/07/2001 — 94% Decline In Aleutian Islands Sea Otter Population
- 01/28/2001 — U. N. Global Warming Forecast: Up to 10.5 Degrees F. Hotter At End of 21st Century
- 12/24/2000 — Martian Bacteria?
- 04/20/2000 — Severe Arctic Ozone Loss and Deep Ocean Warming
- 12/02/1999 — Is There Water - And Life - On Mars?
- 09/26/1999 — Could Ancient Microbes in Polar Ice Cause Epidemics?
- 06/27/1999 — Microbes Two Miles Below Earth Surface in South Africa
- 05/16/1999 — Edgar Evans Cayce About His Father and Atlantis
- 05/05/1999 — Two Antarctic Ice Shelves Almost Gone

Websites:

National Snow and Ice Data Center: http://nsidc.org/

British Antarctic Survey: http://www.antarctica.ac.uk/about_bas/news/press_releases.php

Larsen B Ice Shelf Collapse: http://nsidc.org/iceshelves/larsenb2002/index.html

NOAA Satellite, Snow and Ice: http://www.gis.ssd.nesdis.noaa.gov/Website/SSDSnow/viewer.htm

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