

Greenland Sea Changes

SPENCER MICHELS, Correspondent

On Greenland's west coast, residents of the town of Ilulissat -- the name means "among the icebergs" -- say they are already feeling some results of global warming. Climbing temperatures have affected the fishing and tourism industries, the lifeblood of the town's 4,500 residents, sometimes for good, sometimes not.

OLE HANSEN HOF, Crane Operator

Some people say it's OK because it's warmer. Some people, they worry about the future, what might happen if the ocean is changed and the fish move out.

SPENCER MICHELS

Changing ocean temperatures mean some species of fish have left, but others have arrived from the south. Fishing now takes place year-round.

GREENLAND RESIDENT

What most people are afraid of, of fishermen, the cold water fish is disappearing, and their equipment is to fish cold water fish, so they're going to have a big bill in the future if they want to change the gear.

SPENCER MICHELS

The implications of a warming climate go far beyond Ilulissat.

GREENLAND RESIDENT

You don't have to be a scientist to see the changes. They're big changes.

SPENCER MICHELS

But you do need to be a scientist to know just how big the changes are, how fast they'll come, and what they mean. That's why researchers are focusing on the Jakobshavn glacier, one of the world's largest. It is so large that the icebergs that break off from it, a process called calving, are sometimes more than 40 stories high and three city blocks wide.

Glaciers are slowly moving rivers of ice. The Jakobshavn used to creep along at a pace that could truly be called glacial. Then, in 1997, it doubled its speed. It's now moving more than the length of a football field each day, making it the world's fastest glacier.

Its ice also thinned, and the calving front -- the place where the icebergs break off -- has retreated inland. When these icebergs reach the ocean and eventually melt, they raise sea level. But not enough is known scientifically about the reasons for these changes, or their impact, or how fast they will happen in the future, here and elsewhere.

DAVID HOLLAND, Oceanographer, New York University

We cannot predict yet sea level change, and we're stuck, and we're stuck because we aren't able to model processes that we have not observed.

SPENCER MICHELS

To make those observations, oceanographer Holland and a team of scientists headed this summer to the Jakobshavn glacier, which, because of publicity it has received, has become a poster child for global warming.

DAVID HOLLAND

The fact of it is, is that the water and the depth of this fjord are not known, and yet this receives a lot of media attention as a reason why sea level will go up. So it's fundamental research, and.

SPENCER MICHELS

He has one basic question to answer.

DAVID HOLLAND

Are the ocean waters in this fjord warm enough to be causing the observed melting of this ice sheet?

SPENCER MICHELS

To find that out, Holland had to start pretty much from scratch.

DAVID HOLLAND

We really want to know about how the oceans and ice interact.

SPENCER MICHELS

They assembled a rugged weather station, which, they hope, will send back data, including video, every day for many years.

DAVID HOLLAND

What's really needed is a decade-long period of observation. We need to be able to correlate when the ocean is warm and cold in this fjord to when the ice is moving and not. So little snapshots are good, but the key observational thing is to get long term. We make the observations; we synthesize, understand the time series; and we will be able to make models that predict the future sea level, hopefully soon enough.

SPENCER MICHELS

Those models may have implications beyond Greenland.

SPENCER MICHELS

What they do learn over the next decade could help them predict how far sea levels could rise in the future and ultimately whether apocalyptic visions of massive coastal flooding are valid or not. Spencer Michels for *the.News*.