

International Arctic Buoy Programme

Ignatius Rigor: I'm Ignatius Rigor. I'm a climatologist at the University of Washington. The project is called the International Arctic Buoy Programme. The program deploys buoys on the Arctic Ocean to measure sea level pressure, air temperature, ice temperatures, and some variables down into the ocean.

The main goal is to monitor the Arctic Ocean so we can understand the changes in arctic climate. The Arctic Ocean is covered by sea ice. It's a very harsh environment. The ice cracks, it "ridges" and "rafts." And it's very hard on instruments.

And so, we have to fly up and deploy over 50 of these buoys a year, sometimes closer to a hundred buoys. We hope they last at least a year. But lately, with the changing ice conditions and the thinner ice, our instruments haven't been lasting as long. We've had to build bigger, stronger buoys with tougher hulls to protect the instruments we put in these hulls, and then we've had to find new ways to deploy the buoys.

We typically use icebreakers and small planes landing on the ice. Lately, we've been trying to use other aircraft of opportunity such as our Coast Guard Arctic awareness flights. Typically these flights, leaving Kodiak, flying up to the Arctic Ocean take about 4 to 5 hours. Getting back home takes another 4 or 5 hours.

During this last flight, we deployed two buoys. From one of them we're getting data back. These buoys report back over the satellites. All these red dots show where the buoys are. The buoys were deployed just recently – last August – in this little hole here. The blue stuff is the Beaufort and Chuchki seas – this is open water. The white stuff is where the sea ice is. This map shows the sea level temperatures and the air pressures for each buoy. I'll just pick this buoy since it's off alone and you can see it. So this particular buoy shows a pressure of 1004 millibars and an air temperature of -4.4°C .

The buoys are very important in understanding the changes in climate and what's driving these changes. Typically we associate the decline in sea ice with warmer temperatures but the changes in wind have also been important. And so, what we see from the buoys is that they tend to be pushed out of the Arctic more quickly by the changes in wind. And so that in addition to global warming is causing a faster decline in Arctic sea ice.

If you look at the total thickness of sea ice that we can estimate, from sparse observations or models, the implications are that the total volume of sea ice (the area and thickness of sea ice taken together) is at a record minimum. And so the ice has continued to decline although the extent may be wider, that layer of ice is very much thinner.

