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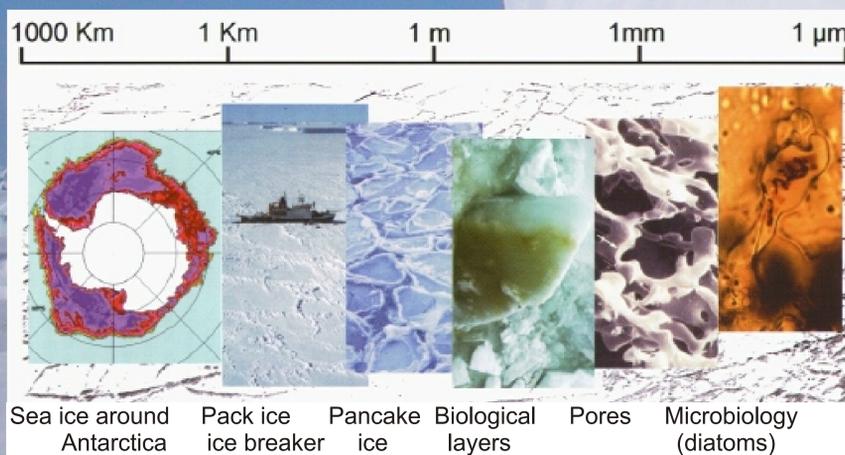
WHAT IS SEA ICE ?

Sea ice grows from freezing ocean water - in the Arctic, around Antarctica and in other cold seas and bays. Ice grows in the fall and winter and melts in the spring and summer.

Icebergs are different - they come from glaciers and ice sheets which flow out to the sea and then break-up.

A lot of ice melts in the summer, but some survives into the next winter - this is called 'multi-year ice'.

Some sea ice floats around in the Ocean - this is called 'pack ice' - but some is attached to the land and extends into the Ocean - we have this ice around Alaska.



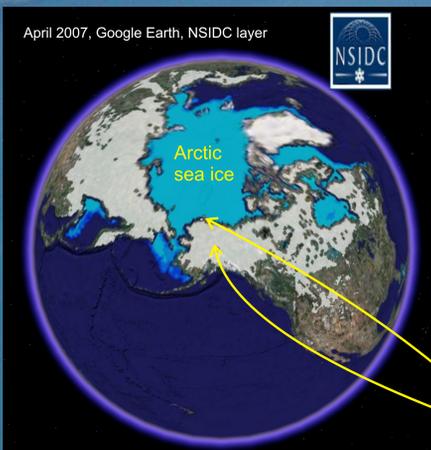
SEA ICE BIG AND SMALL

In the winter, the Arctic sea ice covers an area about 10 times as big as Alaska!

But the little brine pockets are smaller than 1 millimeter - about the thickness of a fingernail!

Studying sea ice on the very small scale helps us to understand how sea ice behaves on the very big scale.

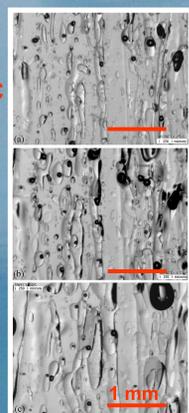
What about in-between sizes: Can you think of three animals that live near sea ice? What activities to people use sea ice for?



Right: Photos of natural sea ice at different temperatures. What happens to the size and shape of the brine tubes as the temperature goes up?

Left: April 2007 Arctic ice cover. Light blue is sea ice, and white is snow.

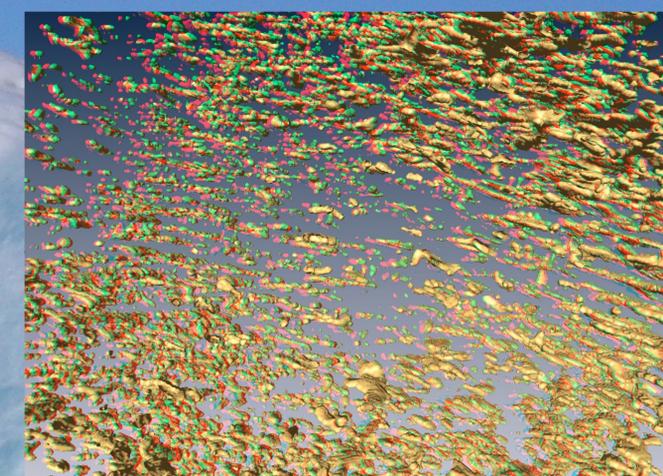
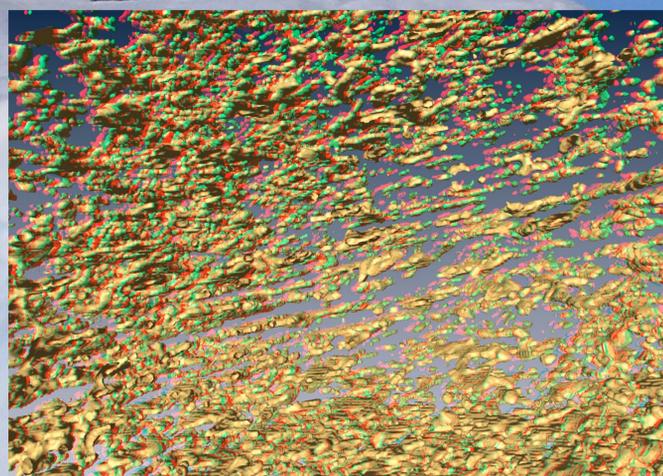
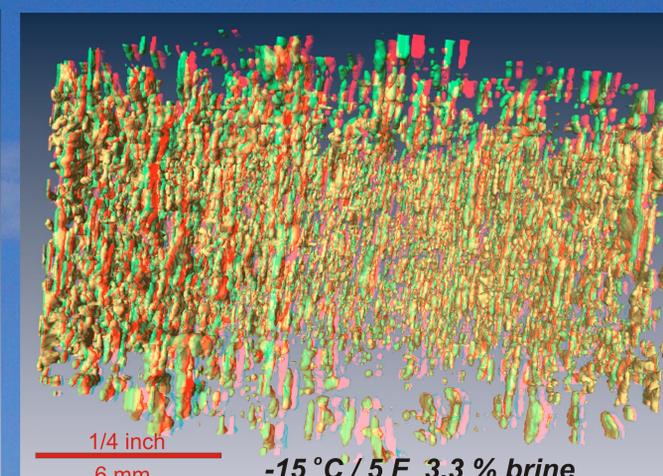
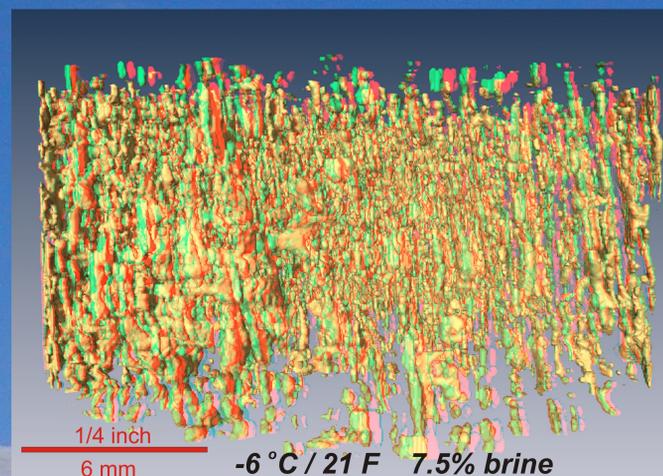
Barrow, Alaska
Fairbanks, Alaska



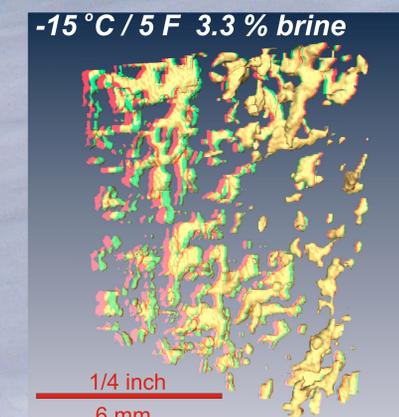
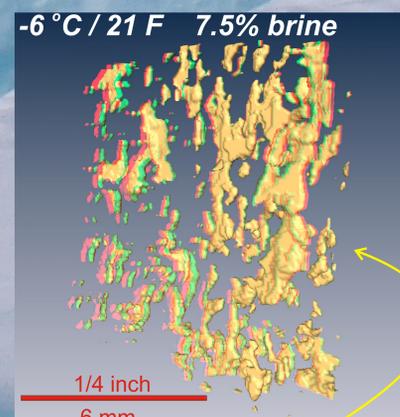
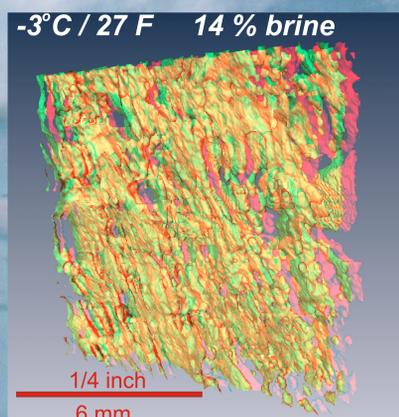
5 F

23 F

28 F



Top: side view of 8mm x 20 mm diameter. Bottom: view from above looking down (slightly magnified).



VERY SMALL BRINE FEATURES IN SEA ICE

These 3-D pictures show brine pockets and bubbles as yellow. The ice is invisible. We used X-ray imaging to see the brine. This is similar to using X-rays or MRI scans in a hospital.

Look at the bottom pictures: What happens as the ice gets warmer? Do you think the salt-water brine can flow easily in warm ice or cold ice? What else might this be important for? (Hint: where might the ice algae get nutrients from?)

CAN I DRINK WATER FROM SEA ICE?

As you learned, when sea ice grows it captures some salty sea water. If you melted this sea ice it would be salty and no good for drinking.

But you can get drinking water from some sea ice! People who live near sea ice know that the old, multi-year ice has hardly any salt at all and they harvest this ice for drinking and cooking. How can this be? (Hint: the ice gets very warm in the summers, and the little brine pockets all connect up - what do you think happens then?)