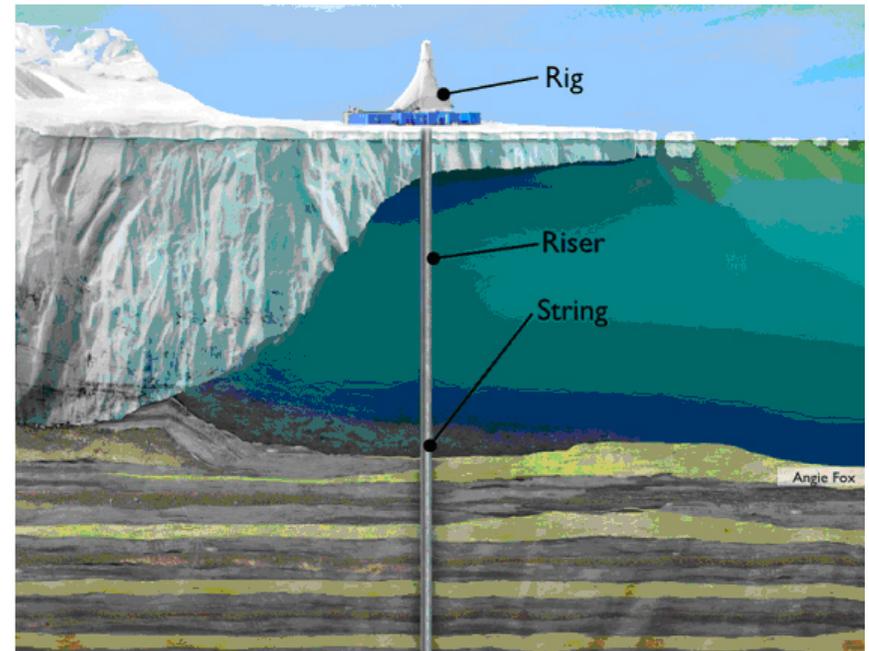


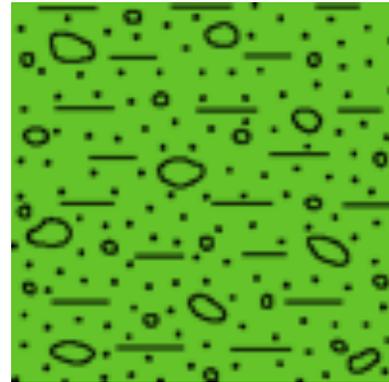
**Mudstone
with clasts**



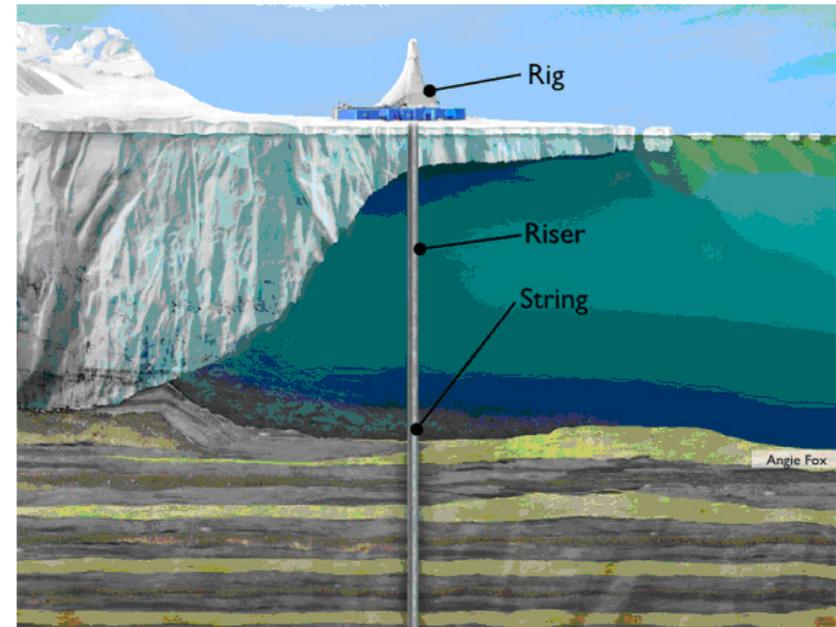
Mudstone embedded with small rocks (clasts) indicates that an ice shelf covers the ocean. Glaciers pick up stones as they move across the land and become an ice shelf over the water. When the underside of the shelf melts it releases rocks and mud that settle to the sea floor. Since the ocean has been under the ice shelf away from sunlight for a long time, there will be few diatoms in this layer. Where in the picture will this layer be created?

Card #1

Sediment rate = slow



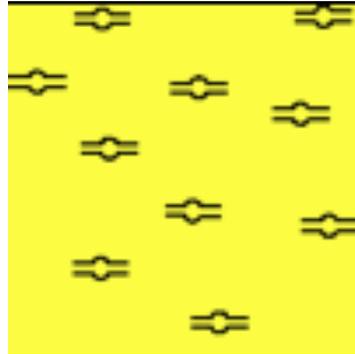
Diamictite



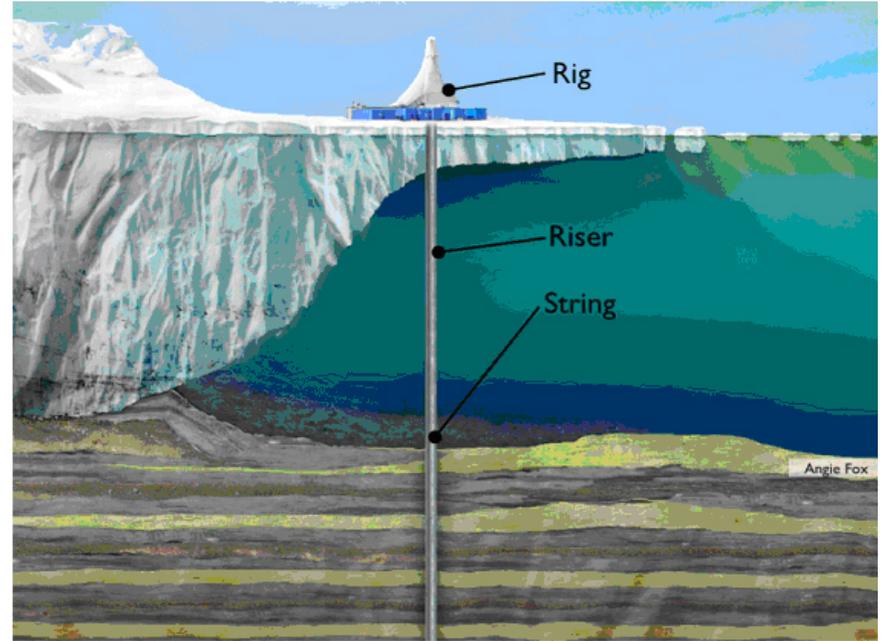
Diamictite is composed of coarse, angular and well-rounded clasts (rocks) of many types, embedded in a mixture of mud. It is described as poorly sorted. Diamictite is created in subglacial environments, meaning that it is deposited under the ice sheet where the ice meets the land. The clasts and sand grains may show evidence of breakage and rolling. Where in the picture will this layer be created?

Sediment rate = fast

Card #2



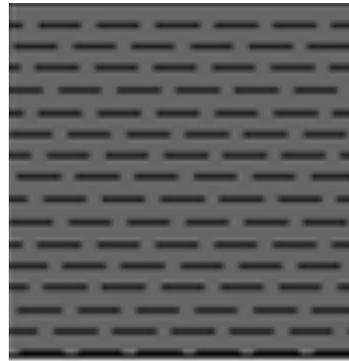
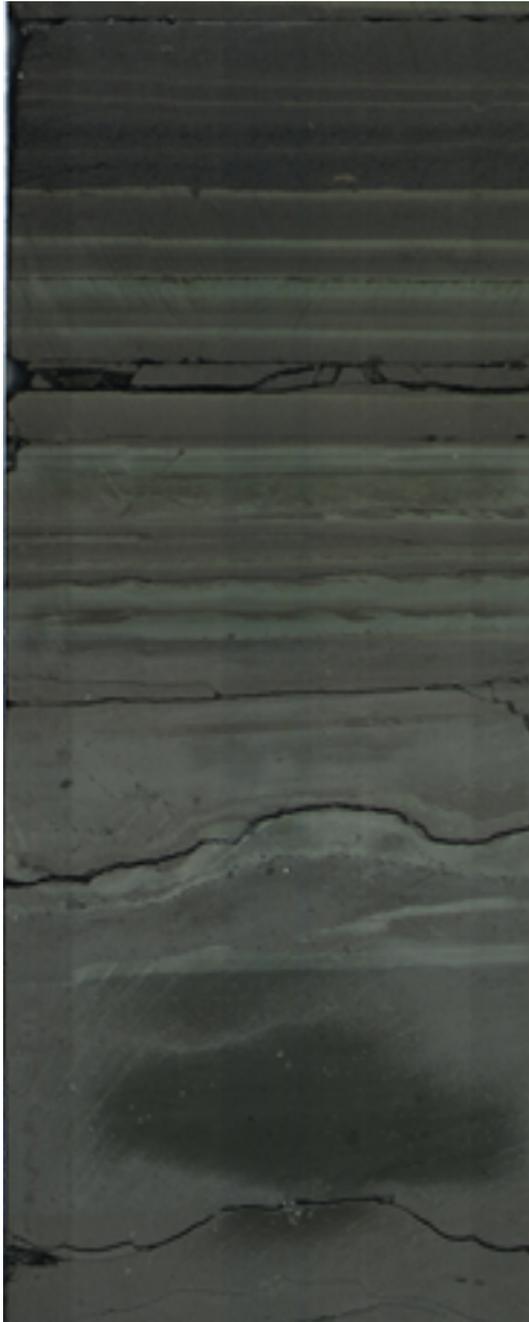
Diatomite



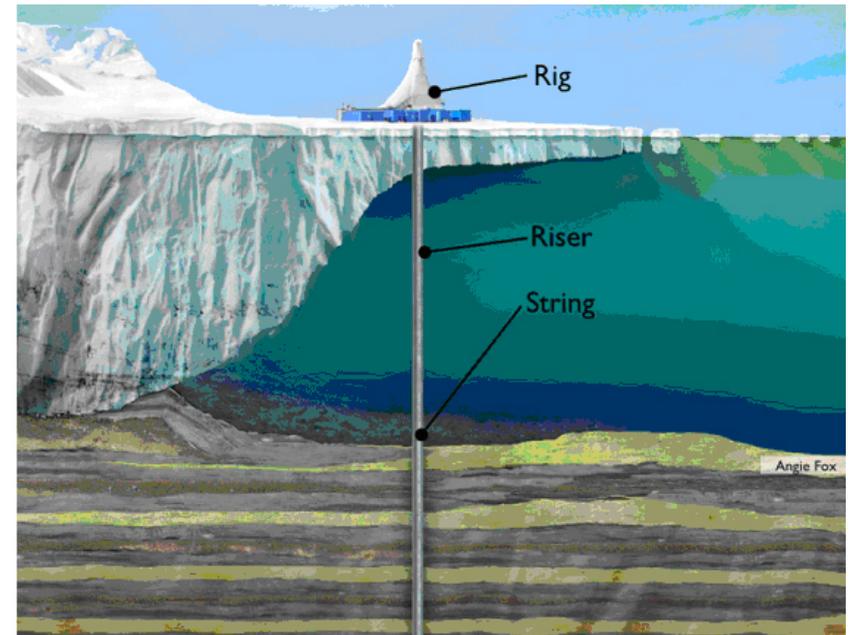
Diatomite is composed of the remains of diatoms, whose silica shells (SiO_2) make up the layers of this sediment. Diatoms are single celled algae found all over the world in hundreds of species and varieties. Diatom species are temperature sensitive, so their presence is a clue to past ocean temperatures. Where diatomite is deposited, the ocean is open to the atmosphere and sunlight (not covered by sea ice) so these organisms can thrive. Where in the picture will this layer be created?

Sediment rate = slowest

Card #3



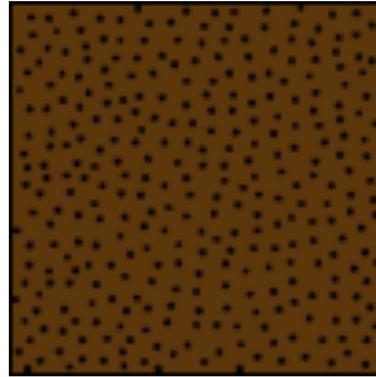
Mudstone



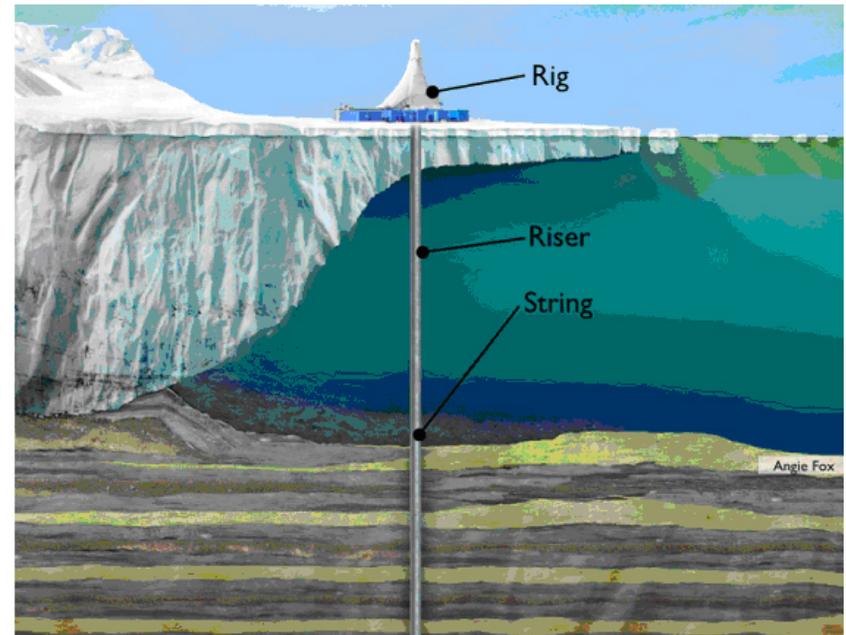
Mudstone is deposited by ocean currents that transport fine-grained silt and clay. There are no diatoms because this layer is deposited under the ice shelf and the overlying ocean does not have direct contact with sunlight. There are no clasts (rocks) because the rocks in the ice shelf have already melted out and fallen to the sea floor closer to the ice sheet. Where in the picture will this layer be created?

Card #4

Sediment rate = slow



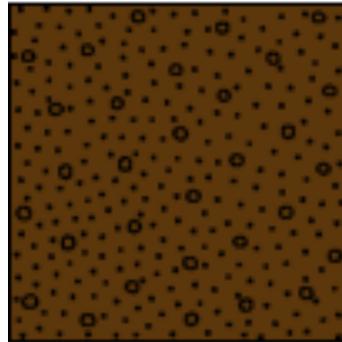
Sandstone



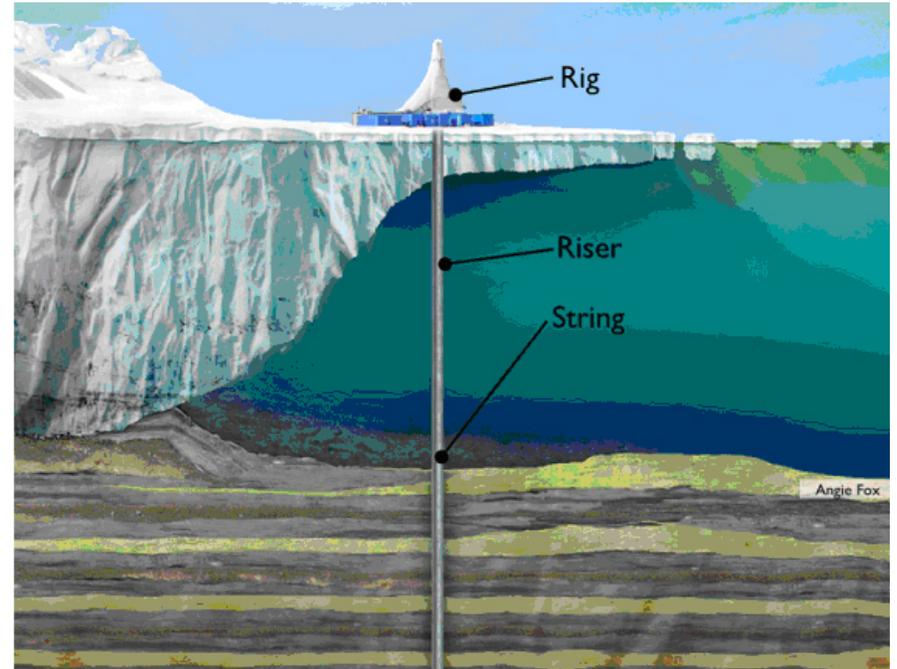
Sandstone is formed when sand-sized particles of rock settle out of the water and form a layer of sand. This layer is cemented together under pressure of the layers on top. The sand can be brought by wind or water to settle in the layers. Where in the picture above could this layer be created?

Sediment rate: fastest

Card #5



Conglomerate



Conglomerate layers are made of unsorted rocks (clasts) larger than sand, and as big as pebbles, that are cemented together in a matrix of finer grains of material. These rocks are carried along with the glacier as it advances and are generally rounded in shape. Where in the picture above would you expect to find this layer being created?

Card #6