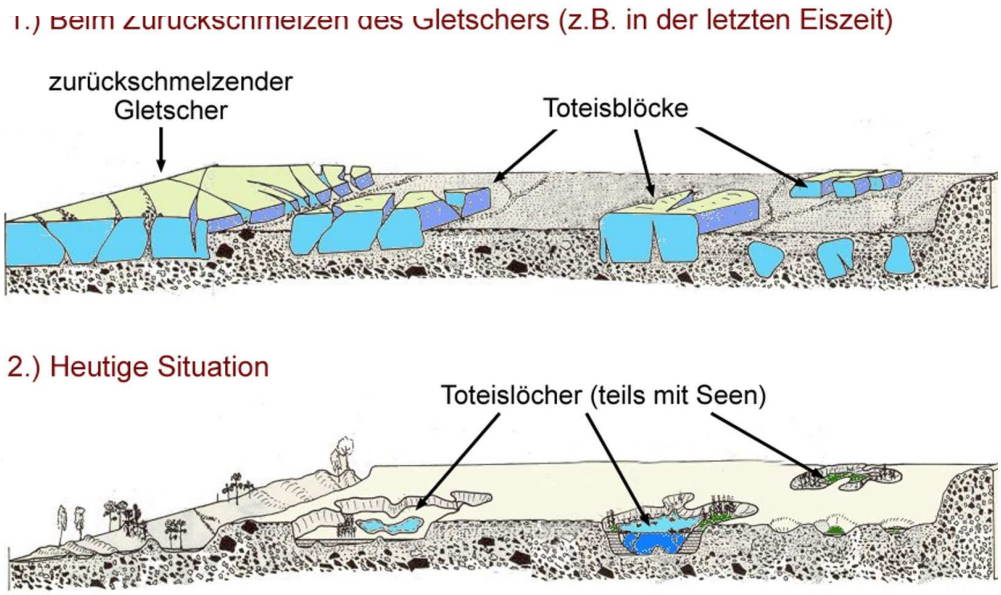
Experiment 2: Construction of an ice-decaying landscape with dead ice holes

Melting glaciers form very often interesting shapes and forms. A good example for this would be moraines, which are ramparts that consist of stones and sand and are formed by glaciers. Besides, the melting glaciers also leave holes in the landscape, which are called dead ice holes. Dead ice is glacier ice that is not connected with the active glacier anymore and therefore stopped moving. Additionally it is very often covered with sediments. Generally, dead ice holes are smaller, fully closed moulds which come into existence because of the spilling and melting of the dead ice chunk. Because of their low size (less than 1 ha) they often have a regular and round shape. But they can be more than 10 meters deep. Today many of them have little inshore waters.

A landscape that was covered with ice before, therefore, has a unique appearance. They are also called ice-decaying landscapes. The following pictures show two examples and the one below how they come into existence:

New dead ice holes after the retreat of the glacier tongue (Pasterze, Carinthia, 2007)

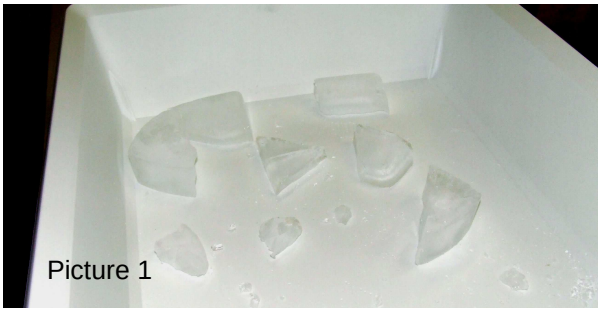
Aerial view of the ice-decaying landscape of the "Osterseen" (lake) south of Munich.



After J.Gareis: Die Toteisfluren des Bayerischen Alpenvorlandes, in Würzburger Geographische Arbeiten, Heft 46, 1978

1st step:

Take an arbitrary bowl and freeze some water in it but be careful that the frozen water isn't too small. You should have big ice cubes for this experiment!



Picture 1

2nd step:

Put the ice chunks into a little tray (picture 1). They symbolize the dead ice which is separated from the melting glacier.

3rd step:

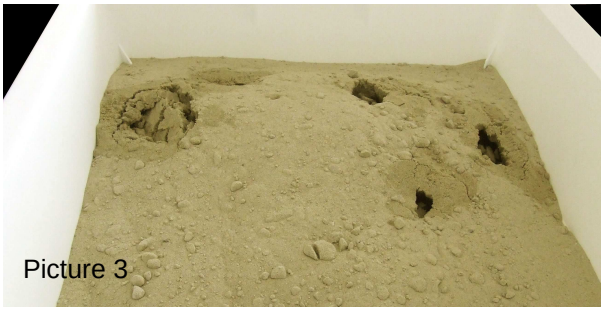
Now cover the ice chunks with sediments (e.g. sand or flint or both) and flatten the surface (picture 2). This should symbolize the sediments which get flushed over the dead ice by the subglacial stream.

Picture 2

4th step:

Picture 1

Now you have to wait. How long depends on the size of the covering and can take up to nearly half a day. Afterwards the ice chunks are melted and you can see the developed dead ice holes (picture 3).



Picture 3