

## ***Ice ages and glacial erosion***

### ***Erosion by ice***

***An ice cube is rubbed against a piece of clear plastic 15cm by 10cm which has been painted with emulsion paint. No scratch is made but if sand is added between the ice and paint the paint is scratched and the scratch can be seen if the plastic is held against the light or put on an OHP.***

### ***Albedo***

**D**

***Two plastic cups are filled with sand. One cup has a dusting of flour or icing sugar on the surface of the sand. A thermometer is put in both cups so that the bulb is in the centre of the sand. The cups are then put in a box with holes in the top so that only the top surfaces of the cups are visible. Put this in the sun. The sand with the flour on top does not heat up.***

### ***Drumlins***

**TE**

***Ice moving over boulder clay goes up and down just as a speed boat going a full speed over water. In fact any two materials passing over each other do this: water and sand produce ripples, water and air waves etc.***

### ***Milankovic cycles***

**D**

***Use a ball with a knitting needle or steel rod through it and a light bulb in a darkened room to demonstrate why we have seasons and the effect of increasing the axial angle. Use a hula hoop to demonstrate the changing shape of our orbit round the sun.***

### ***After the Ice Age***

**Pa P E 5 min**

***Students are provided with a topographic cross section of the Mediterranean and the Black Sea, and a graph of sea level for the last 20,000 years. 18,000 years ago the Black Sea was a fertile area surrounding a fresh water lake. Students work out when the sea water began to flood the Black Sea and cause what may have been Noah's flood.***

### ***Melting ice and sea level***

**D**

***Students think that melting the Arctic and Antarctic ice will cause sea level to rise. It is actually only the land based ice which will cause the sea level to rise, Ice floating on the sea will not cause any rise. Fill a transparent container with water and place a large block of ice in it. The***

*volume of the ice should be at least 25% of the volume of the water.*

*Mark the top the water.*

*Ask students how much they think the water will rise by if the ice melts.*

*Allow the ice to melt to show there will be no rise.*

*Glaciation and the length of the day*

TE

*A large amount of water which was spread evenly over the oceans is concentrated as ice at the poles during an ice age. How will that redistribution of weight affect the spin of the earth? Since the weight is being moved to closer to the axis of spin the earth's speed of rotation must increase in order to maintain the angular momentum. This means that the length of the day will be very slightly shorter. You can see the same effect if you spin someone in a swivelling office chair and they stick out and then pull in their legs.*