Working out latitude from magnetic dip

Purpose

To get students to convert magnetic inclination to latitude and to plot this on a map of the world and thus show the changing position of the British Isles.

Instructions

The wooden blocks represent pieces of basalt of different ages taken from parts of the British Isles. The wires show the direction and angle of magnetic dip.

1. ***Take a wooden block and use your protractor to measure the angle of the wire.***
2. ***Note whether it is dipping to north or south.***
3. ***Record your data in the table below***
4. ***Use the second table to convert the dip to latitude.***
5. ***Plot the latitude of the British Isles at the different times in the past on the map. Plot them all on the longitude 0 line because we can not deduce longitude from the magnetic data in the rocks.***

Age ma	*Period*	*magnetic dip*	*latitude*
30	*Tertiary*		
50	*Cretaceous*		
195	*Jurassic*		
237	*Triassic*		
270	*Permian*		
300	*Carboniferous*		
375	*Devonian*		
450	*Silurian*		
490	*Ordovician*		
550	*Cambrian*		

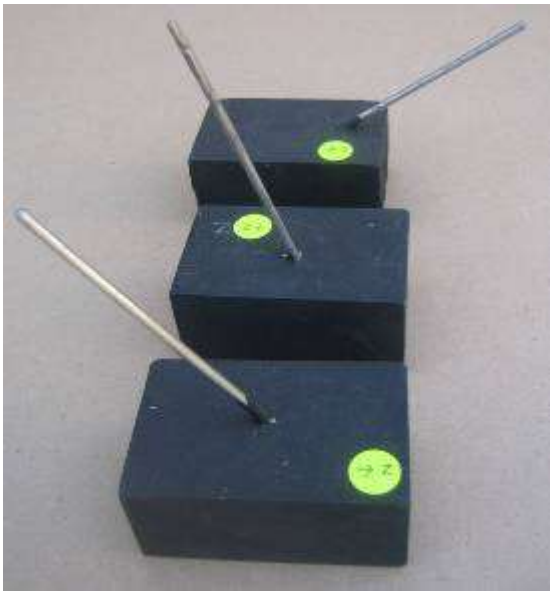
Relationship of magnetic dip to latitude

magnetic dip	*latitude*		*magnetic dip*	*latitude*
0	*0*		*40*	*23*
5	*2*		*45*	*26*
10	*4*		*50*	*30*
15	*7*		*55*	*35*
20	*10*		*60*	*42*
25	*13*		*65*	*50*
30	*15*		*70*	*54*
35	*18*		*75*	*63*

Teacher's Section

Requirements

12 pieces of wood 10cm by 5cm by 5cm are painted black to represent basic igneous rocks. Each piece has a north sign on it and an age in millions of years. You will need 12 11cm pieces of 3mm wire (coat hanger wire is fine). Drill holes in the top of each block. Insert the wire into the holes and glue them in. Then bend the wires to give the correct angle as given in the chart below. The angle of the wire represents the dip of the magnetic field.



Age ma	Period	magnetic dip	latitude
30	Tertiary	67°N	50°N
50	Cretaceous	54°N	35°N
195	Jurassic	50°N	30°N
237	Triassic	42°N	25°N
270	Permian	20°N	10°N
300	Carboniferous	0°	0°
375	Devonian	37°S	20°S
450	Silurian	49°S	30°S
490	Ordovician	74°S	61°S
550	Cambrian	75°S	63°S