



Did changes in the Earth's orbit make us intelligent?

Transcript: Video clip from *Human Universe*, episode one.

SCIENCE PRESENTER BRIAN COX:

Ten million years ago this area was a flat plain covered in thick dense forests, which made it the perfect place for our early tree-dwelling ancestors.

But then, around that time, volcanic activity raised the land up, in places by over 3 km, to form this: The Great Rift Valley.

During those times when the Earth's orbit was at its most elliptical the Rift Valley would experience intense rainfall and deep lakes would appear dotted all over the landscape. And then, within just a few thousand years, conditions would change. It would become dry and arid and those lakes would disappear.

It's thought that it was this rapidly changing environment that drove our transformation from ape to man. And the reason we think that is because we found the evidence strewn across the valley floor.

Three million years ago the hominid species that could be found in East Africa was *Australopithecus*, kind of a grim looking chap. Now this is really not much more than a chimpanzee that stands up right, certainly in brain capacity. Its brain volume is around 400 cc.

But then, 1.8 million years ago, something spectacular happens. You get an explosion of hominid species, including this: *Homo erectus* with a brain size that is double *Australopithecus*.

Then 800,000 years ago this species appears: *Homo heidelbergensis*, accompanied by another rapid increase in brain size from 800 cc to around 1200 cc. Then we wind forward to 200,000 years ago. This skull called *Omo II* had a brain size of around 1400 – 1500 cc, which is close to my brain size. So this is one of first skulls that you can say is a modern human.