



Mission to Titan

Titan: evidence

Adam Hart-Davis:

So after seventeen years, and millions of pounds spent on it, Huygens has finally delivered its data. But what are scientists hoping to find out? Well curiously one of the things they're hoping to find out about is the Earth because Titan is strangely similar to the early Earth, it's got a similar atmosphere, and maybe scientists can get clues as to how life might have started on Earth.

Lucie:

Professor Barrie Jones has been interested in the origins of life for over thirty years and he believes that Titan may hold the secret to how it began here on Earth.

Prof. Barrie Jones, Open University:

We're excited about Titan because we think that its atmosphere is a model for the early atmosphere on Earth and it was at that time that life got going on Earth, so Titan may well hold the key to life on Earth, and therefore how life might originate almost anywhere in the universe.

Lucie:

Pictures of Titan from Voyager One in the early eighties, and more recently from Cassini, show a world shrouded by a thick chemical smog, and it's this atmosphere that has sparked fierce speculation about the origins of life because it contains a very familiar chemical compound.

Prof. Barrie Jones:

On Titan there's a few percent methane and we believe that there was some methane at the time of the origin of life on Earth and methane is vital because it's a carbon compound, and carbon is the basis of all those big bio molecules, DNA and such like.

Lucie:

It's hoped that Huygens will find some of the precursors to DNA in Titan's atmosphere, proving not only that they can form spontaneously on the far side of the solar system, but almost certainly that they formed this way on the early Earth four thousand million years ago. For these reactions to take place on Titan, they must be driven by energy, either ultra violet radiation from the sun reaching the thin upper atmosphere, or from lightening deep within the dense clouds. It's thought that these complex molecules may then rain down from the stormy sky within droplets of methane and ethane onto a landscape sculpted from solid water ice. But will Huygens find anything living in this rich dynamic chemical environment?

Prof. Barrie Jones:

I don't think Huygens is going to find life on Titan, it might find some very interesting big molecules, but really the surface is too cold for that sort of chemical evolution, it's down at about minus 180 Celsius very cold indeed.

Lucie:

But it's also been speculated that Titan's frozen landscape may be home to volcanoes spouting liquid water and fed by a vast salty ocean, tens of kilometres beneath the crust.

Prof. Barrie Jones:

In such an ocean it's possible, just possible there could be life, even more speculatively in the core of Titan, which is most of the mass of Titan, which is rocky, there could be enough heat generated to give us a little bit like those black smokers, you know, on the ocean floors on

Earth, and there just could be life in the rocky centre of Titan. Would you believe it?