



Mission to Titan

Titan: first glimpse

Adam Hart-Davis:

I'm with one of the principal investigators on the Huygens Mission. This is Professor John Zarnecki. John, you must be quite excited by all this. What are the most exciting results?

Prof John Zarnecki, Open University:

Well we've just received some of the latest images from the probe and I'd like to take a look at them here. Here's one of them. This is a panoramic view, 360 degrees view around the probe. This is because the camera takes a snapshot and the probe is spinning slowly.

Adam Hart-Davis:

As it falls?

Prof John Zarnecki:

As it falls, so if we put together a sequence of these snapshots we can build up...

Adam Hart-Davis:

So these are all separate shots all stuck together?

Prof John Zarnecki:

That's right, stuck together, and I mean it's just amazing. We're seeing tremendous variation here, here's a dark region, here much, much lighter, it seems rather featureless, perhaps rather flat, and then look, these white, wispy features all over the place. Are those clouds, or mist or fog? They seem rather indicative of that, don't you think so?

Adam Hart-Davis:

I mean it looks like, it looks like clouds over a mountain.

Prof John Zarnecki:

Absolutely, so I think there's no doubt at all we're seeing weather, we're seeing meteorology here with some similarities to what happens on Earth. Now we've got a close-up of this region here if we go to the next image, there it is. Now you could almost be fooled into thinking that that is a view taken out of a plane...

Adam Hart-Davis:

Window, coming into land somewhere.

Prof John Zarnecki:

Absolutely. This dark, flat region here, is this the sea, the lake of liquid methane that scientists have talked about for so long on Titan. This area here clearly shows topography, variation in...

Adam Hart-Davis:

It must be spinning higher, I mean that's almost like a cliff there.

Prof John Zarnecki:

Absolutely, and with the clouds hanging over the cliffs perhaps as the atmosphere's been forced up, it's just tremendous, and we've seen in another image in this area here some features which look very much like drainage or run-off channels, so very good indication that at some time, maybe not now, there's been fluid flowing down through this region.

Adam Hart-Davis:

Streams or rivers, you mean?

Prof John Zarnecki:

Streams or maybe run-off from rain, a liquidy thing, rain, which has fallen onto this surface.

Adam Hart-Davis:

But that means it must be relatively recent because otherwise it'd be wiped out by craters, wouldn't it?

Prof John Zarnecki:

That's absolutely right, so it's clear that there is activity recently on the astronomical timescale.

Adam Hart-Davis:

Right.

Prof John Zarnecki:

And then we've also got the one that I really love. This is an image taken after the probe landed, so this is looking around at the environment around the probe on the surface of Titan, and we're seeing here things...

Adam Hart-Davis:

This is full colour, right, this is the black and white.

Prof John Zarnecki:

That's correct, and we're seeing these objects here which have the size of small boulders or pebbles, now these numbers here are their sizes in centimetres. This one here you can see 15 centimetres, that's about...

Adam Hart-Davis:

About the size of this piece of paper, yes.

Prof John Zarnecki:

That's right, and we can see tremendous variation even in these. We've got some which are rather smooth, rather round, and one asks what is it, what are the processes that have caused this smoothing, and this one here is quite different, it seems more angular, it's also much brighter than the others.

Adam Hart-Davis:

White, maybe.

Prof John Zarnecki:

Ice, snowballs.

Adam Hart-Davis:

So alright, if that's ice and that would make sense 'cos it's white, what's this dark stuff behind?

Prof John Zarnecki:

Well that's the, for want of a better word, the soil that the pebbles are sitting on.

Adam Hart-Davis:

Now tell me, you had a tilt meter on your machine – is it flat here?

Prof John Zarnecki:

Well the probe is resting, its final resting angle is about 12 degrees from the horizontal.

Adam Hart-Davis:

So pretty close?

Prof John Zarnecki:

Pretty close but it's probably resting on one of these pebbles and so it's just tilted slightly.

Adam Hart-Davis:

So this looks like a flat, like a beach or something?

Prof John Zarnecki:

A beach, a riverbed, I mean but we have to be careful about using those terms, comparing with what we know on Earth.

Adam Hart-Davis:

Fantastic, it's going to take years to work this out, isn't it?

Prof John Zarnecki:

It's wonderful and of course we've only seen a fraction of the images that we know that are stored.