
ALIEN OCEAN
NASA'S MISSION TO EUROPA

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(Music)

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00:00:02,000 --> 00:00:07,000
Europa is the most likely place to find life in our solar system today because

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we think there's a liquid water ocean beneath its surface

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and we know on Earth everywhere that there's water we find life.

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So could Europa have the ingredients to support life?

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We might be actually looking at a body that is presently alive, presently active

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and presently undergoing its geology.

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There is too much evidence right now lying around on the surface, the red stuff,

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that suggests that something's going on there.

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Is that an environment that is habitable for any sort of life form?

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By golly, we really have got to go back and figure that out.

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We have designed a Europa mission to take a spacecraft and a set of instruments

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all the way from planet Earth to Jupiter.

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Previous mission concepts were for a spacecraft that would orbit Europa.

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But Europa is bathed in radiation from Jupiter.

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Any mission that goes in the vicinity of Europa is cooked pretty quickly.

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Instead, we're looking at a mission that would orbit Jupiter, make close flybys of Europa

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and then zip out of the high radiation region.

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Kind of like, when I was a kid we had the sprinklers and we didn't want to be too close to the sprinkler head

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so we would run in and get a little water and then run back out again.

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This allows for us to have a mission that's many years long and to collect

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and transmit lots and lots of data.

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As Europa orbits Jupiter, it flexes and we could measure the gravitational change

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of Europa by encountering Europa at different points in its orbit.

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On a typical flyby, we would turn on our remote sensing instruments. We would image the surface.

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We would interrogate the surface with spectroscopy and we would do the same thing on the way out.

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And we would essentially rinse and repeat and do this many, many, times until we understand Europa globally.

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Images from the Hubble Space Telescope,

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tells us that Europa might be erupting plumes of water high into space.

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If that's true, then we could fly through those plumes with a spacecraft

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and literally taste it to understand the composition of Europa's interior.

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If it does have the ability to harbor life, how does that work exactly?

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We'll have enough instrumentation to really pinpoint exactly how the mechanisms

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would work for replenishing the nutrients in a subsurface ocean.

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Europa is so important because we want to understand, are we alone in the cosmos?