

WHY ICY
MOONS
ARE SO

JUICY



GRAVITY ASSIST



Podcast

1
00:00:00,320 --> 00:00:04,480
Looking for life in the outer planets-
where will we go?

2
00:00:04,480 --> 00:00:08,160
Is it in the big gas giants or their
moons?

3
00:00:08,160 --> 00:00:13,519
Hi, I'm Jim Green, Chief Scientist at NASA
and this is Gravity Assist.

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00:00:13,519 --> 00:00:17,680
On this season of Gravity Assist, we're
looking for life beyond Earth.

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00:00:17,680 --> 00:00:22,800
I'm here with Dr Athena Coustenis and she is the director of research with the

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00:00:22,800 --> 00:00:25,519
French National Center for Scientific
Research

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00:00:25,520 --> 00:00:31,380
at the Paris Observatory in Meudon, France. Welcome, Athena to Gravity Assist.

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00:00:31,380 --> 00:00:34,880
Hi Jim. Happy to be here and chat with you today.

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00:00:34,880 --> 00:00:36,880
The European Space Agency is moving

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00:00:36,880 --> 00:00:42,559
forward with a spectacular mission
they call JUICE and so what is JUICE

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00:00:42,560 --> 00:00:44,580
all about and where is it going?

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00:00:44,620 --> 00:00:50,960

It's planned for launch in 2022.

Arrival in Jupiter around 2029-2030

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00:00:50,960 --> 00:00:56,160

and it will spend more than three years making uh detailed observations of the

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00:00:56,160 --> 00:00:59,440

of obviously the gas giants planet jupiter and

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00:00:59,440 --> 00:01:03,680

three of its largest moons with a focus on ganymede but also callisto

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00:01:03,680 --> 00:01:08,560

and Europa. And is to characterize the conditions that may have

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00:01:08,560 --> 00:01:12,720

led to the emergence of habitable environments among the jovian icy

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00:01:12,720 --> 00:01:17,040

satellites, with again a special emphasis on on Ganymede.

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00:01:17,080 --> 00:01:20,600

because it (Ganymede) provides us with such a

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00:01:20,600 --> 00:01:25,439

natural laboratory for the analysis of the nature evolution the potential

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00:01:25,440 --> 00:01:31,840

habitability of icy worlds in general but also ganymede is one of the objects

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00:01:31,840 --> 00:01:36,960

also where we find indication of this
on the surface of resurfacing from

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00:01:36,960 --> 00:01:40,880

something that was
previously in liquid form probably under

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00:01:40,880 --> 00:01:44,640

the the surface
and where we have indication by the fact

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00:01:44,640 --> 00:01:49,119

that this is
a satellite that has an induced magnetic

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00:01:49,119 --> 00:01:51,040

field, which actually interacts with the

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00:01:51,040 --> 00:01:55,680

magnetosphere of Jupiter and so on,
but it has an induced magnetic field

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00:01:55,680 --> 00:01:58,719

that indicates the presence of a liquid
water ocean

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00:01:58,719 --> 00:02:02,399

underneath its surface. It's the best
indication we have to get

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00:02:02,399 --> 00:02:08,720

today of that. It also has auroras.
I mean it's amazing that you find that

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00:02:08,720 --> 00:02:12,720

around such a distant object. So we do need to

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00:02:12,720 --> 00:02:16,800

go back and look closely uh at Ganymede not only

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00:02:16,800 --> 00:02:20,400

because, you know, it's our biggest satellite the solar system but because

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00:02:20,400 --> 00:02:24,400

we want to disentangle all these interactions of the magnetic

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00:02:24,400 --> 00:02:28,880

field and the magnetosphere of Jupiter and try to discover exactly what it's

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00:02:28,880 --> 00:02:32,000

telling us on its ocean properties.

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00:02:32,000 --> 00:02:35,140

Now, in addition, the with ESA's JUICE

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00:02:35,140 --> 00:02:39,440

NASA is launching the Clipper mission and Clipper is going

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00:02:39,440 --> 00:02:42,959

to Jupiter but it's going to study Europa

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00:02:42,959 --> 00:02:46,800

so when you think about JUICE at Ganymede and the NASA Clipper

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00:02:46,800 --> 00:02:50,720

mission at Europa, the synergy is going to be fantastic.

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00:02:50,720 --> 00:02:53,599

We're going to learn all kinds of things and I can't wait for

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00:02:53,599 --> 00:02:57,840

that to happen. Amazing! Can you imagine two missions- two

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00:02:57,840 --> 00:03:01,840

missions in the Jupiter system? It
deserves it. And and I think

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00:03:01,840 --> 00:03:05,040

more than different they're very
complementary um

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00:03:05,040 --> 00:03:08,959

you know Europa and Ganymede are are are the divas

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00:03:08,959 --> 00:03:14,640

you know, in the Jupiter system, uh, if
you're looking for habitable worlds.

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00:03:14,640 --> 00:03:17,760

And while the instruments, some of the
instruments are similar, there's

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00:03:17,760 --> 00:03:22,159

overlapping observations that we're going to do. Like