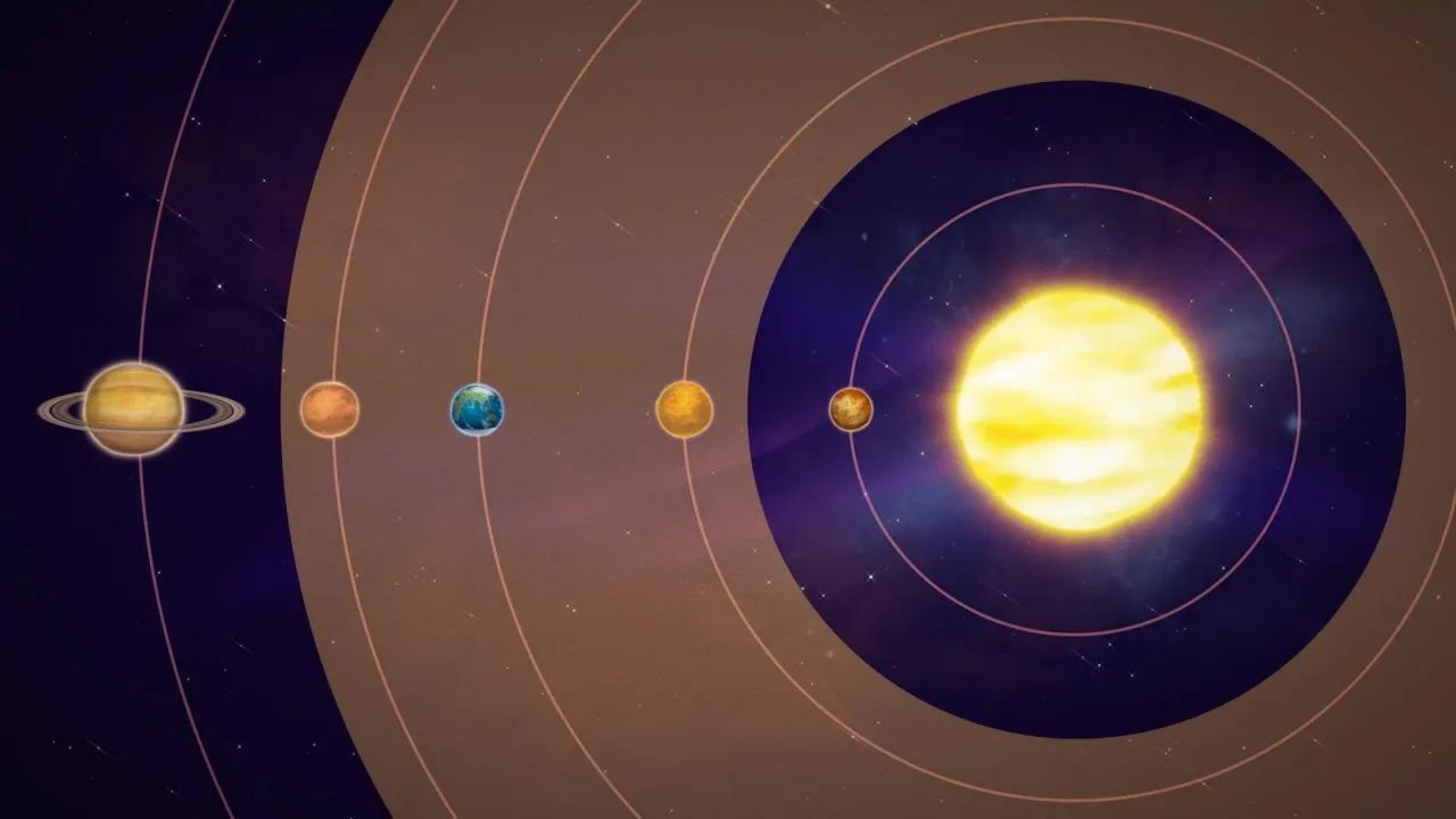

1
00:00:00,640 --> 00:00:04,050
- [Narrator] We inhabit a
little blue planet called Earth.

2
00:00:04,050 --> 00:00:07,240
Earth is habitable because
it had the right conditions

3
00:00:07,240 --> 00:00:10,120
and ingredients to
enable life as we know it

4
00:00:10,120 --> 00:00:12,250
to evolve and flourish.

5
00:00:12,250 --> 00:00:14,360
And one of the most important factors

6
00:00:14,360 --> 00:00:16,830
in making our blue planet habitable

7
00:00:16,830 --> 00:00:19,890
is the wet stuff itself, water.

8
00:00:19,890 --> 00:00:23,240
It's kind of extremely important for life.

9
00:00:23,240 --> 00:00:26,300
When it comes to the search
for habitable exoplanets,

10
00:00:26,300 --> 00:00:28,870
planets outside our solar system,

11
00:00:28,870 --> 00:00:31,240
we think the ability to have liquid water

12
00:00:31,240 --> 00:00:35,140

on a planet's surface is just
as important for those worlds.

13
00:00:35,140 --> 00:00:37,780
There's a handy concept astronomers use

14
00:00:37,780 --> 00:00:41,350
to help them figure out where
to look around any given star

15
00:00:41,350 --> 00:00:45,450
for exoplanets that just might
have the right stuff light.

16
00:00:45,450 --> 00:00:47,870
It's called the habitable zone.

17
00:00:47,870 --> 00:00:50,960
It's the distance from a
star where a rocky planet

18
00:00:50,960 --> 00:00:55,090
with an atmosphere could have
liquid water on its surface.

19
00:00:55,090 --> 00:00:58,260
In our solar system, the
habitable zone extends

20
00:00:58,260 --> 00:01:03,060
from around the orbit of Venus
to around the orbit of Mars.

21
00:01:03,060 --> 00:01:06,380
Earth happens to be nice
and comfy in the middle.

22
00:01:06,380 --> 00:01:09,300
But it takes more than
just a good location.

23
00:01:09,300 --> 00:01:13,130
Orbiting in the habitable zone
does not guarantee a planet

24
00:01:13,130 --> 00:01:14,430
will be habitable.

25
00:01:14,430 --> 00:01:18,010
After all, the Moon is right here with us,

26
00:01:18,010 --> 00:01:20,290
but it's certainly not habitable.

27
00:01:20,290 --> 00:01:21,600
Sorry, Moon.

28
00:01:21,600 --> 00:01:23,670
The location of the habitable zone depends

29
00:01:23,670 --> 00:01:25,960
on how big and bright a star is.

30
00:01:25,960 --> 00:01:29,050
The nearest star to our
sun, Proxima Centauri,

31
00:01:29,050 --> 00:01:32,440
has at least one planet
in the habitable zone.

32
00:01:32,440 --> 00:01:36,730
But because Proxima is much
smaller and dimmer than our sun,

33
00:01:36,730 --> 00:01:41,610
its habitable zone is way
smaller and closer to the star.

34
00:01:41,610 --> 00:01:44,760
So every star has a habitable zone,

35
00:01:44,760 --> 00:01:47,820
but that doesn't mean there
will be planets there.

36
00:01:47,820 --> 00:01:51,110
For example, the star known
as Kepler-90 is similar

37
00:01:51,110 --> 00:01:54,490
to our sun and it too has eight planets,

38
00:01:54,490 --> 00:01:57,650
but they're all huddled
super close to the star,

39
00:01:57,650 --> 00:02:00,020
well inside of the habitable zone.

40
00:02:00,020 --> 00:02:01,710
But the longer we look,

41
00:02:01,710 --> 00:02:04,060
the more likely it becomes that one day,

42
00:02:04,060 --> 00:02:07,220
we'll find another little
blue water-covered planet

43
00:02:07,220 --> 00:02:10,050
right in its own comfy habitable zone.