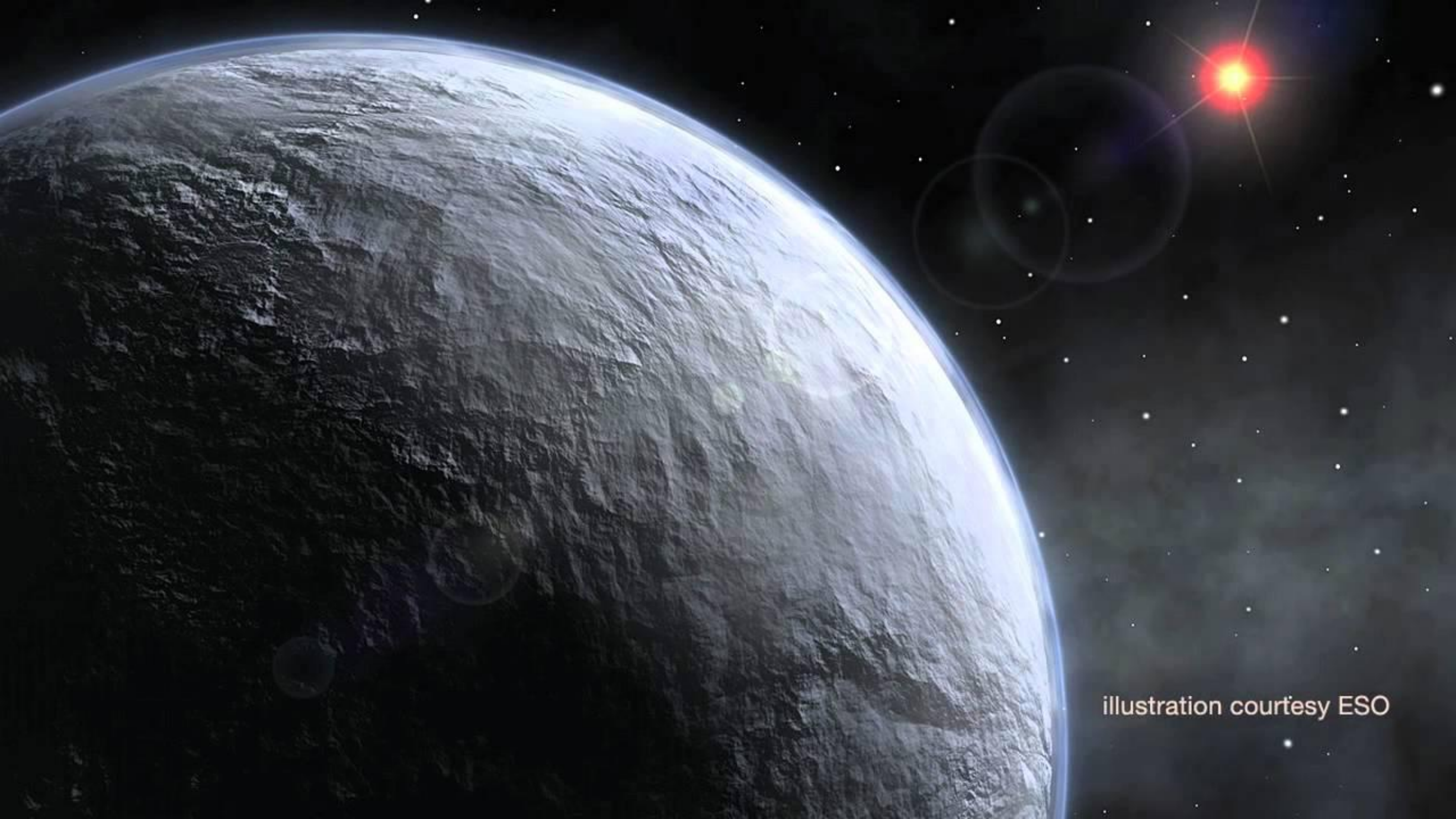
illustration courtesy ESO

1
00:00:17,060 --> 00:00:15,140
astronomers have found hundreds and

2
00:00:20,300 --> 00:00:17,070
hundreds of planets around other stars

3
00:00:22,220 --> 00:00:20,310
we call these exoplanets now we're only

4
00:00:24,590 --> 00:00:22,230
able to guess a little tiny bit about

5
00:00:26,689 --> 00:00:24,600
them just based on how close they are to

6
00:00:29,000 --> 00:00:26,699
their parent star and how big they are

7
00:00:31,460 --> 00:00:29,010
but from that alone we know that they

8
00:00:33,740 --> 00:00:31,470
come in a huge variety there are planets

9
00:00:36,049 --> 00:00:33,750
with the density of styrofoam there are

10
00:00:38,450 --> 00:00:36,059
planets that are as hot as cool stars

11
00:00:40,910 --> 00:00:38,460
there are planets that are frozen blocks

12
00:00:42,979 --> 00:00:40,920
of ice and their planets so hot that

13
00:00:45,290 --> 00:00:42,989

they probably hosts lava oceans

14
00:00:47,450 --> 00:00:45,300
now the finessed mission is going to

15
00:00:49,600 --> 00:00:47,460
take the next step to really understand

16
00:00:51,950 --> 00:00:49,610
in detail what these worlds are like

17
00:00:54,260 --> 00:00:51,960
finess will measure light from these

18
00:00:56,299 --> 00:00:54,270
worlds and break that light apart into

19
00:00:58,369 --> 00:00:56,309
different colors and that way we can

20
00:01:00,830 --> 00:00:58,379
measure the fingerprints of molecules

21
00:01:03,560 --> 00:01:00,840
like water and methane and carbon

22
00:01:05,690 --> 00:01:03,570
dioxide and by detecting these molecules

23
00:01:07,850 --> 00:01:05,700
we can learn something about the

24
00:01:10,039 --> 00:01:07,860
temperature the chemistry and in some

25
00:01:11,260 --> 00:01:10,049
cases even the weather on these worlds

26
00:01:14,660 --> 00:01:11,270
around other stars

27
00:01:16,820 --> 00:01:14,670
finesse will do this for 200 planets

28
00:01:19,310 --> 00:01:16,830
across a whole range of the exoplanet

29
00:01:21,230 --> 00:01:19,320
family and by making this measurement of

30
00:01:23,539 --> 00:01:21,240
this large sample we're going to know

31
00:01:25,820 --> 00:01:23,549
how our own earth and the planets in our

32
00:01:27,380 --> 00:01:25,830
own solar system fit into this family

33
00:01:30,410 --> 00:01:27,390
portrait that finesse is going to take

34
00:01:32,960 --> 00:01:30,420
now in so doing we connect with this

35
00:01:34,640 --> 00:01:32,970
very big question which humankind has

36
00:01:37,789 --> 00:01:34,650
been pondering for thousands of years

37
00:01:40,290 --> 00:01:37,799
which is are we alone and how do we fit