



1
00:00:10,600 --> 00:00:04,670
comets are the most spectacular thing in

2
00:00:14,419 --> 00:00:12,709
comets are important because they

3
00:00:16,490 --> 00:00:14,429
represent the leftover bits and pieces

4
00:00:18,800 --> 00:00:16,500
from the outer solar system formation

5
00:00:22,160 --> 00:00:18,810
process which took place four-and-a-half

6
00:00:24,439 --> 00:00:22,170
billion years ago as the planets formed

7
00:00:26,630 --> 00:00:24,449
the first thing you got was tiny clumps

8
00:00:29,210 --> 00:00:26,640
of dust in the inner solar system and in

9
00:00:31,519 --> 00:00:29,220
the outer solar system dust and ice the

10
00:00:33,860 --> 00:00:31,529
Comets are what made the cores of

11
00:00:35,270 --> 00:00:33,870
Jupiter Saturn Uranus and Neptune but

12
00:00:37,520 --> 00:00:35,280
the planets are so hot that the

13
00:00:39,500 --> 00:00:37,530

chemistry changes completely whereas the

14

00:00:42,049 --> 00:00:39,510

Comets have remained frozen the entire

15

00:00:44,150 --> 00:00:42,059

time so the chemistry is preserved

16

00:00:47,450 --> 00:00:44,160

comets are basically made up of a number

17

00:00:50,180 --> 00:00:47,460

of different regions a dirty ice ball

18

00:00:52,430 --> 00:00:50,190

relatively small and black when I guess

19

00:00:55,670 --> 00:00:52,440

near the Sun these ices start vaporizing

20

00:00:57,500 --> 00:00:55,680

which forms a atmosphere and then when

21

00:00:59,660 --> 00:00:57,510

some of these dust particles are blown

22

00:01:01,549 --> 00:00:59,670

back away from the Sun because of the

23

00:01:06,890 --> 00:01:01,559

pressure of sunlight you form a dust

24

00:01:08,179 --> 00:01:06,900

tail and often a gas or ion tail comets

25

00:01:10,490 --> 00:01:08,189

and asteroids have always gotten bad

26

00:01:12,230 --> 00:01:10,500

press the dinosaur is checked out 65

27

00:01:14,780 --> 00:01:12,240

million years ago because of an asteroid

28

00:01:16,730 --> 00:01:14,790

impact but what we don't hear about is

29

00:01:18,830 --> 00:01:16,740

how important these objects are in terms

30

00:01:21,800 --> 00:01:18,840

of bringing the building blocks of life

31

00:01:23,480 --> 00:01:21,810

to the early planet comets almost

32

00:01:25,760 --> 00:01:23,490

certainly brought most of the organic

33

00:01:27,859 --> 00:01:25,770

material and much of the water to earth

34

00:01:30,950 --> 00:01:27,869

in a sense we wouldn't even be here

35

00:01:32,810 --> 00:01:30,960

without comets and asteroids scientists

36

00:01:35,240 --> 00:01:32,820

like to put objects in boxes

37

00:01:37,340 --> 00:01:35,250

comets should look this way asteroids

38

00:01:39,410 --> 00:01:37,350

should look this way but mother nature

39

00:01:41,480 --> 00:01:39,420

keeps on knocking the boxes over and

40

00:01:43,160 --> 00:01:41,490

said no it doesn't look that way the few

41

00:01:45,260 --> 00:01:43,170

comments that we've seen they all are

42

00:01:46,999 --> 00:01:45,270

very different from one another so the

43

00:01:48,880 --> 00:01:47,009

question is are all these objects

44

00:01:52,060 --> 00:01:48,890

different from one another

45

00:01:54,360 --> 00:01:52,070

the EPOXI mission is an extended mission

46

00:01:57,460 --> 00:01:54,370

for the deep impact flyby spacecraft

47

00:01:59,350 --> 00:01:57,470

after we went past comet Tempel 1 and

48

00:02:04,510 --> 00:01:59,360

drove an impactor into it

49

00:02:06,910 --> 00:02:04,520

we spent a year or more observing

50

00:02:09,430 --> 00:02:06,920

extrasolar planets and we are now on

51
00:02:11,410 --> 00:02:09,440
target for a flyby of comet Hartley 2

52
00:02:12,880 --> 00:02:11,420
which is interesting in the sense that

53
00:02:15,520 --> 00:02:12,890
it's one of the smallest objects we've

54
00:02:17,620 --> 00:02:15,530
seen and it's thought to be active over

55
00:02:20,170 --> 00:02:17,630
a hundred percent of its surface if we

56
00:02:22,930 --> 00:02:20,180
understand the Comets really well it

57
00:02:25,750 --> 00:02:22,940
will tell us how all the planets got