



1
00:00:22,009 --> 00:00:19,759
the date was October 19 NASA's Mariner

2
00:00:25,550 --> 00:00:22,019
spacecraft after traveling for months

3
00:00:27,320 --> 00:00:25,560
and 217 million miles began fulfilling

4
00:00:30,620 --> 00:00:27,330
its mission as it rendezvous with the

5
00:00:33,290 --> 00:00:30,630
planet Venus the Soviet Union also

6
00:00:35,390 --> 00:00:33,300
approached beam 2 spacecraft from two

7
00:00:37,280 --> 00:00:35,400
nations although the machines were of

8
00:00:43,640 --> 00:00:37,290
different design their purpose was the

9
00:00:46,880 --> 00:00:43,650
same by 1967 we actually had two

10
00:00:49,880 --> 00:00:46,890
successful missions make it to Venus the

11
00:00:52,310 --> 00:00:49,890
first one was the Soviet Venera 4 and

12
00:00:56,780 --> 00:00:52,320
nearly a month late it was followed up

13
00:00:58,430 --> 00:00:56,790

by the NASA's Mariner 5 the interesting

14

00:01:02,120 --> 00:00:58,440

thing about that that we were in the

15

00:01:04,910 --> 00:01:02,130

middle of the Cold War and despite that

16

00:01:07,760 --> 00:01:04,920

the Soviet and American scientists were

17

00:01:10,520 --> 00:01:07,770

working together cooperated shared the

18

00:01:14,240 --> 00:01:10,530

data and the picture that the scientists

19

00:01:19,219 --> 00:01:14,250

god of venus was much more inhospitable

20

00:01:21,770 --> 00:01:19,229

than they really imagined before by 1967

21

00:01:25,130 --> 00:01:21,780

if there were any doubts about whether

22

00:01:29,090 --> 00:01:25,140

Venus was livable or not those doubts

23

00:01:36,580 --> 00:01:29,100

were washed away it was not really

24

00:01:41,720 --> 00:01:39,590

now in an unexplored region of space

25

00:01:43,820 --> 00:01:41,730

mariner was placed on its mercury

26

00:01:46,520 --> 00:01:43,830

intercept course by the gravity of venus

27

00:01:51,340 --> 00:01:46,530

the initial target on this first dual

28

00:01:53,900 --> 00:01:51,350

planet mission Mariner 10 took more than

29

00:02:01,350 --> 00:01:53,910

3500 pictures during its rendezvous with

30

00:02:06,120 --> 00:02:03,480

for the first time after a decade of

31

00:02:08,550 --> 00:02:06,130

exploration Mariner 10 was carrying

32

00:02:09,930 --> 00:02:08,560

cameras we had ultraviolet cameras we

33

00:02:11,700 --> 00:02:09,940

could actually make some of the most

34

00:02:14,370 --> 00:02:11,710

beautiful images I mean here we have

35

00:02:16,260 --> 00:02:14,380

Venus the goddess of love and beauty and

36

00:02:44,440 --> 00:02:16,270

we had yet to really make a close-up

37

00:02:50,120 --> 00:02:47,990

pioneer Venus was the last NASA mission

38

00:02:52,370 --> 00:02:50,130

to go to Venus to study specifically its

39

00:02:55,450 --> 00:02:52,380

atmosphere in the tale in the dynamics

40

00:03:00,050 --> 00:02:55,460

of that atmosphere that was 30 years ago

41

00:03:04,090 --> 00:03:00,060

that we send it there it took a lot of

42

00:03:06,740 --> 00:03:04,100

detailed data that allowed us to test

43

00:03:09,500 --> 00:03:06,750

theories that we had about why Venus was

44

00:03:10,970 --> 00:03:09,510

such a strange environment and one of

45

00:03:13,430 --> 00:03:10,980

the most interesting of course is this

46

00:03:16,730 --> 00:03:13,440

idea of the runaway greenhouse effect as

47

00:03:28,610 --> 00:03:16,740

an explanation for why is Venus so super

48

00:03:31,520 --> 00:03:28,620

hot so while the Pioneer Venus orbiter

49

00:03:33,980 --> 00:03:31,530

was sending a steady stream of data back

50

00:03:36,200 --> 00:03:33,990

to earth the Soviet program undertook

51
00:03:38,990 --> 00:03:36,210
several more chilly eight missions back

52
00:03:41,290 --> 00:03:39,000
to Venice and the highlight of this set

53
00:03:43,820 --> 00:03:41,300
of missions was the near a 13 and 14

54
00:03:46,490 --> 00:03:43,830
which made it to the surface of Venice

55
00:03:48,890 --> 00:03:46,500
and while they will act today for 45

56
00:03:53,300 --> 00:03:48,900
minutes they took a handful of color

57
00:03:56,330 --> 00:03:53,310
panoramas of the Venetian surface now

58
00:03:59,360 --> 00:03:56,340
that they have been reprocessed they

59
00:04:04,310 --> 00:03:59,370
present a stunning view of the Venus

60
00:04:05,870 --> 00:04:04,320
surface and forgetting the heat toxic

61
00:04:15,740 --> 00:04:05,880
atmosphere and the pressure

62
00:04:17,870 --> 00:04:15,750
it really looks tranquil Venus the

63
00:04:22,020 --> 00:04:17,880

brightest star in the evening sky has

64

00:04:27,820 --> 00:04:25,750

since August of 1990 though a spacecraft

65

00:04:30,370 --> 00:04:27,830

named Magellan has peered beneath this

66

00:04:39,970 --> 00:04:30,380

veil of mystery to show us the surface

67

00:04:41,860 --> 00:04:39,980

of Venus in unsurpassed detail Magellan

68

00:04:45,940 --> 00:04:41,870

was a pretty simple and elegant mission

69

00:04:49,000 --> 00:04:45,950

it had one basic purpose and that was to

70

00:04:51,640 --> 00:04:49,010

get a detailed high-resolution map of

71

00:04:54,130 --> 00:04:51,650

the surface topography of the entire

72

00:04:57,190 --> 00:04:54,140

planet and what we saw was was an

73

00:05:00,070 --> 00:04:57,200

enormous surprise a very young surface

74

00:05:03,640 --> 00:05:00,080

lots of volcanic features there were

75

00:05:05,740 --> 00:05:03,650

lava planes and volcanoes and all kinds

76

00:05:08,170 --> 00:05:05,750

of features it was an unexpected and

77

00:05:19,450 --> 00:05:08,180

marvelous revelation of what was

78

00:05:22,450 --> 00:05:19,460

underneath those clouds at this point

79

00:05:25,000 --> 00:05:22,460

the American Soviet space missions are

80

00:05:27,580 --> 00:05:25,010

really museum pieces and while everybody

81

00:05:29,860 --> 00:05:27,590

is now excited about the new data and

82

00:05:32,350 --> 00:05:29,870

the new pictures images that we are

83

00:05:35,730 --> 00:05:32,360

getting from Mars Venice is really

84

00:05:39,340 --> 00:05:35,740

staying in the shadow right now but

85

00:05:42,280 --> 00:05:39,350

throughout the history Venus has

86

00:05:45,460 --> 00:05:42,290

provided us a lot of wonderful and

87

00:05:47,770 --> 00:05:45,470

interesting theories and answers to the

88

00:05:50,770 --> 00:05:47,780

questions that we have here on earth and

89

00:05:55,630 --> 00:05:50,780

which shone the light on our space in

90

00:05:57,250 --> 00:05:55,640

the universe but new players are coming

91

00:05:59,920 --> 00:05:57,260

into the game and with the European

92

00:06:03,490 --> 00:05:59,930

Space Agency sending a spacecraft there

93

00:06:07,990 --> 00:06:03,500

in 2006 and the Japanese space agency

94

00:06:10,720 --> 00:06:08,000

planning one in 2010 the Venice

95

00:06:13,300 --> 00:06:10,730

exploration is going to pick up and it

96

00:06:15,520 --> 00:06:13,310

really seems that a very good

97

00:06:17,440 --> 00:06:15,530

opportunity to go back because there are

98

00:06:21,730 --> 00:06:17,450

lots of things that we still don't know

99

00:06:24,340 --> 00:06:21,740

and with nearly two decades passed from