

A topographic map of Las Vegas, Nevada, showing urban expansion in 2009. The map features a grid overlay and color-coded terrain. The urban area is highlighted in green, showing a dense grid of streets and buildings. The surrounding terrain is shown in shades of brown and tan, indicating elevation. A large black silhouette of a mountain range is visible on the right side of the map. The text "Urban Expansion in Las Vegas, Nevada" is overlaid in white with a black outline, and the year "2009" is centered below it.

Urban Expansion in Las Vegas, Nevada
2009

1
00:00:04,070 --> 00:00:02,629
the landsat series of satellites were

2
00:00:06,070 --> 00:00:04,080
designed to observe the changing

3
00:00:07,990 --> 00:00:06,080
landscapes of our planet

4
00:00:11,430 --> 00:00:08,000
for those watching the launch of landsat

5
00:00:12,789 --> 00:00:11,440
5 on a clear mild march 1st in 1984 few

6
00:00:14,709 --> 00:00:12,799
could have imagined that the earth

7
00:00:16,870 --> 00:00:14,719
observing satellite with a three-year

8
00:00:19,029 --> 00:00:16,880
design life would still be in operation

9
00:00:21,750 --> 00:00:19,039
a quarter of a century later

10
00:00:24,630 --> 00:00:21,760
if someone had said

11
00:00:27,029 --> 00:00:24,640
let's have a designed life of 25 years

12
00:00:29,269 --> 00:00:27,039
they would have said it's impossible it

13
00:00:32,229 --> 00:00:29,279

is impossible all of the engineers would

14

00:00:33,670 --> 00:00:32,239

have said that it's got to be

15

00:00:35,430 --> 00:00:33,680

the most

16

00:00:37,350 --> 00:00:35,440

incredible

17

00:00:39,590 --> 00:00:37,360

earth observing mission ever both on the

18

00:00:41,430 --> 00:00:39,600

quality of the data the global survey

19

00:00:42,950 --> 00:00:41,440

aspects of the data and the incredible

20

00:00:46,709 --> 00:00:42,960

longevity

21

00:00:49,590 --> 00:00:46,719

in 2009 on its 25th birthday landsat 5

22

00:00:51,430 --> 00:00:49,600

has traveled over 130 000 times around

23

00:00:53,670 --> 00:00:51,440

the earth something like three and a

24

00:00:57,110 --> 00:00:53,680

half million miles while gathering more

25

00:00:59,430 --> 00:00:57,120

than seven hundred thousand images

26

00:01:00,310 --> 00:00:59,440

even today landsat 5 continues its

27

00:01:02,470 --> 00:01:00,320

mission

28

00:01:04,149 --> 00:01:02,480

sending back a steady stream of data an

29

00:01:05,429 --> 00:01:04,159

unparalleled history of our changing

30

00:01:07,270 --> 00:01:05,439

planet i

31

00:01:09,990 --> 00:01:07,280

i'm just forever enchanted with the

32

00:01:13,510 --> 00:01:10,000

images whether they're of deltas or the

33

00:01:14,870 --> 00:01:13,520

coastlines or the canyons

34

00:01:16,870 --> 00:01:14,880

it just is

35

00:01:20,310 --> 00:01:16,880

it's just beautiful

36

00:01:23,109 --> 00:01:20,320

we ought to tip our hat every day

37

00:01:25,510 --> 00:01:23,119

to the designers of landsat 5 and the

38

00:01:28,070 --> 00:01:25,520

people who made it well it's remarkable

39

00:01:29,109 --> 00:01:28,080

and there is certainly a component of

40

00:01:30,870 --> 00:01:29,119

luck

41

00:01:33,910 --> 00:01:30,880

involved in that but what i think the

42

00:01:35,749 --> 00:01:33,920

longevity really reflects is the

43

00:01:36,789 --> 00:01:35,759

commitment and the dedication of the

44

00:01:39,429 --> 00:01:36,799

skill

45

00:01:41,270 --> 00:01:39,439

of the team of people and the team of

46

00:01:42,870 --> 00:01:41,280

institutions that develop the system

47

00:01:45,030 --> 00:01:42,880

when you think about it this is a

48

00:01:46,870 --> 00:01:45,040

technology that was designed in the 70s

49

00:01:49,030 --> 00:01:46,880

that really has a

50

00:01:50,870 --> 00:01:49,040

throughput a capacity that equals that

51
00:01:51,670 --> 00:01:50,880
of Idcm which is going to be the next

52
00:01:53,749 --> 00:01:51,680
mission

53
00:01:54,469 --> 00:01:53,759
the flight ops team has done a fantastic

54
00:01:56,789 --> 00:01:54,479
job

55
00:01:58,870 --> 00:01:56,799
of making sure that every

56
00:02:01,590 --> 00:01:58,880
redundancy in every

57
00:02:02,550 --> 00:02:01,600
alternative route our mode of operation

58
00:02:04,630 --> 00:02:02,560
has been

59
00:02:07,030 --> 00:02:04,640
captured and utilized to its fullest

60
00:02:09,669 --> 00:02:07,040
extent in total the engineers who have

61
00:02:12,470 --> 00:02:09,679
kept landsat 5 operational have overcome

62
00:02:14,229 --> 00:02:12,480
22 separate mission anomalies they've

63
00:02:16,510 --> 00:02:14,239

sustained landsat 5 through the failed

64

00:02:18,470 --> 00:02:16,520

launch of landsat 6 and the political

65

00:02:21,510 --> 00:02:18,480

reorganizations and delayed launch of

66

00:02:23,270 --> 00:02:21,520

landsat 7 making landsat 5's longevity

67

00:02:25,830 --> 00:02:23,280

crucial for the scientists who use its

68

00:02:29,190 --> 00:02:25,840

data it's the keystone

69

00:02:31,509 --> 00:02:29,200

of the mission because it lasted so long

70

00:02:36,229 --> 00:02:31,519

it actually got us through many bumps in

71

00:02:39,270 --> 00:02:36,239

the road in in this now 35 plus years of

72

00:02:41,430 --> 00:02:39,280

observations without landsat 5

73

00:02:44,309 --> 00:02:41,440

i'm not sure we would have had a landsat

74

00:02:45,350 --> 00:02:44,319

7 i'm a true believer though that

75

00:02:48,309 --> 00:02:45,360

that

76

00:02:51,030 --> 00:02:48,319

a good mission sells itself and one

77

00:02:52,309 --> 00:02:51,040

reason landsat 5 lived on was the need

78

00:02:54,630 --> 00:02:52,319

to have it

79

00:02:56,550 --> 00:02:54,640

and the engineer's motivation to keep it

80

00:02:58,949 --> 00:02:56,560

going and

81

00:02:59,830 --> 00:02:58,959

and i believe strongly that a big part

82

00:03:01,750 --> 00:02:59,840

of it

83

00:03:04,470 --> 00:03:01,760

was the mission

84

00:03:06,949 --> 00:03:04,480

that landsat holds and

85

00:03:08,949 --> 00:03:06,959

and that transcends

86

00:03:11,030 --> 00:03:08,959

a lot of things

87

00:03:14,309 --> 00:03:11,040

for all its achievements scientific and

88

00:03:16,309 --> 00:03:14,319

technical nasa and usgs wish a happy