1
00:00:07,190 --> 00:00:04,280
this is a story about catching rays the

2
00:00:09,200 --> 00:00:07,200
kind that Loras here and the kind that

3
00:00:11,480 --> 00:00:09,210
show doctor's unseen parts of the human

4
00:00:13,940 --> 00:00:11,490
body but this is not a story about

5
00:00:16,640 --> 00:00:13,950
getting a better tan or making better

6
00:00:19,700 --> 00:00:16,650
medicine instead this is a story about

7
00:00:21,890 --> 00:00:19,710
NASA and astronomers about the Space

8
00:00:23,599 --> 00:00:21,900
Shuttle Space Lab and a sensitive

9
00:00:26,750 --> 00:00:23,609
Observatory that may show us our

10
00:00:29,000 --> 00:00:26,760
universe in a whole new light for 10

11
00:00:31,640 --> 00:00:29,010
days in May a Spacelab mission called

12
00:00:34,549 --> 00:00:31,650
Astro wand will focus its ultraviolet

13
00:00:36,560 --> 00:00:34,559

and x-ray telescopes on places far

14
00:00:38,080 --> 00:00:36,570
beyond our reach it's sensitive

15
00:00:40,639 --> 00:00:38,090
instruments will catch the Rays

16
00:00:42,979 --> 00:00:40,649
ultraviolet and x-ray messages that is

17
00:00:45,110 --> 00:00:42,989
from these distant places these

18
00:00:47,170 --> 00:00:45,120
messengers invisible to the human eye

19
00:00:49,910 --> 00:00:47,180
will bring new information about

20
00:00:52,819 --> 00:00:49,920
exploding stars that forge the elements

21
00:00:55,639 --> 00:00:52,829
used to make new stars planets and even

22
00:00:58,220 --> 00:00:55,649
life itself about tiny stars where a

23
00:01:01,520 --> 00:00:58,230
sugar cube of matter weighs as much as a

24
00:01:03,709 --> 00:01:01,530
billion tons about mysterious objects

25
00:01:06,859 --> 00:01:03,719
that shine with the brilliance of 10

26
00:01:08,960 --> 00:01:06,869
trillion of our own Suns and about

27
00:01:11,300 --> 00:01:08,970
so-called black holes in the very fabric

28
00:01:14,240 --> 00:01:11,310
of space that are so gravitationally

29
00:01:17,060 --> 00:01:14,250
strong that neither matter nor light can

30
00:01:18,980 --> 00:01:17,070
escape from them Astro one will show us

31
00:01:21,710 --> 00:01:18,990
a violent ever-changing universe

32
00:01:23,210 --> 00:01:21,720
unlike the peaceful serene heavens we

33
00:01:26,240 --> 00:01:23,220
see with the naked eye or from

34
00:01:28,490 --> 00:01:26,250
ground-based optical telescopes but why

35
00:01:32,359 --> 00:01:28,500
does this astronomy have to be done in

36
00:01:33,980 --> 00:01:32,369
space we look at the light from stars

37
00:01:36,080 --> 00:01:33,990
and galaxies from the ground we really

38
00:01:37,940 --> 00:01:36,090

don't see all of it most of most stars

39
00:01:40,310 --> 00:01:37,950
and galaxies emit a lot of light that

40
00:01:42,679 --> 00:01:40,320
doesn't reach the ground that's because

41
00:01:44,600 --> 00:01:42,689
our atmosphere acts like a protective

42
00:01:46,609 --> 00:01:44,610
blanket shielding us from all of the

43
00:01:49,039 --> 00:01:46,619
message carrying ultraviolet in x-rays

44
00:01:51,469 --> 00:01:49,049
well almost all of them anyway

45
00:01:53,060 --> 00:01:51,479
but in space this radiation is a rich

46
00:01:56,149 --> 00:01:53,070
barely tapped resource of information

47
00:01:58,370 --> 00:01:56,159
about the universe Astro one will open

48
00:02:01,340 --> 00:01:58,380
our eyes to the knowledge hidden in the

49
00:02:04,520 --> 00:02:01,350
invisible universe this is the first

50
00:02:06,679 --> 00:02:04,530
opportunity we've ever had to place an

51
00:02:11,400 --> 00:02:06,689
observatory like this into outer space

52
00:02:13,470 --> 00:02:11,410
manned by astronaut astronomers

53
00:02:15,420 --> 00:02:13,480
will afford us an opportunity to take a

54
00:02:18,090 --> 00:02:15,430
view of the universe such as we have

55
00:02:21,720 --> 00:02:18,100
never seen it before we'll be able to

56
00:02:23,760 --> 00:02:21,730
look at celestial objects with

57
00:02:26,220 --> 00:02:23,770
ultraviolent telescopes and an x-ray

58
00:02:29,790 --> 00:02:26,230
telescope and this is going to tell us a

59
00:02:32,400 --> 00:02:29,800
whole lot about the composition of our

60
00:02:35,340 --> 00:02:32,410
universe the history of the universe and

61
00:02:37,920 --> 00:02:35,350
the future the universe Astro one is a

62
00:02:40,260 --> 00:02:37,930
team effort astronomers in space will

63
00:02:42,210 --> 00:02:40,270

operate the telescopes they will work

64
00:02:44,130 --> 00:02:42,220
with astronomers on the ground in a

65
00:02:45,930 --> 00:02:44,140
brand-new Space Lab control center at

66
00:02:48,210 --> 00:02:45,940
NASA's Marshall Space Flight Center in

67
00:02:50,370 --> 00:02:48,220
Huntsville Alabama other astronomers

68
00:02:52,110 --> 00:02:50,380
will participate from a facility at the

69
00:02:54,570 --> 00:02:52,120
Goddard Space Flight Center in Greenbelt

70
00:02:57,120 --> 00:02:54,580
Maryland together they are in search of

71
00:03:00,380 --> 00:02:57,130
knowledge trying to prove the expected

72
00:03:03,630 --> 00:03:00,390
always anticipating the unexpected

73
00:03:06,540 --> 00:03:03,640
surprises come in fact that's the fun

74
00:03:08,430 --> 00:03:06,550
thing about science and I think that's

75
00:03:11,160 --> 00:03:08,440
the thing that drives most of us

76
00:03:14,910 --> 00:03:11,170
involved with Astro we think we

77
00:03:16,800 --> 00:03:14,920
understand what these objects are and

78
00:03:18,600 --> 00:03:16,810
what radiation they're going to admit

79
00:03:22,860 --> 00:03:18,610
when we go and measure them in the ultra

80
00:03:24,530 --> 00:03:22,870
product or X radiation but we know that

81
00:03:27,690 --> 00:03:24,540
they're going to be unanticipated

82
00:03:29,730 --> 00:03:27,700
discoveries people once stood on the

83
00:03:32,190 --> 00:03:29,740
beach and look to the horizon at what

84
00:03:33,990 --> 00:03:32,200
they believed was a flat world then

85
00:03:36,120 --> 00:03:34,000
explorers took to the vast unknown

86
00:03:38,760 --> 00:03:36,130
returning information that forever

87
00:03:40,440 --> 00:03:38,770
changed human thought perhaps we are

88
00:03:42,540 --> 00:03:40,450

standing on a similar Coast line

89
00:03:44,370 --> 00:03:42,550
awaiting discoveries that could lead us

90
00:03:45,120 --> 00:03:44,380
to a whole new understanding of our

91
00:03:47,699 --> 00:03:45,130
universe