



1  
00:00:09,350 --> 00:00:07,269  
nasa's glory mission offers the

2  
00:00:11,509 --> 00:00:09,360  
potential to dazzle us with discoveries

3  
00:00:13,749 --> 00:00:11,519  
of our home planet's climate

4  
00:00:15,829 --> 00:00:13,759  
with specialized sensors and orbiting on

5  
00:00:17,990 --> 00:00:15,839  
a path that covers all of the earth the

6  
00:00:19,910 --> 00:00:18,000  
glory satellite is to tell researchers

7  
00:00:22,550 --> 00:00:19,920  
how much of the sun's energy the planet

8  
00:00:25,509 --> 00:00:22,560  
absorbs or uses and how much gets

9  
00:00:27,750 --> 00:00:25,519  
reflected back out into space

10  
00:00:29,589 --> 00:00:27,760  
about the size of a refrigerator the

11  
00:00:31,750 --> 00:00:29,599  
glory spacecraft will look for those

12  
00:00:33,510 --> 00:00:31,760  
answers in the form of aerosols in the

13  
00:00:35,350 --> 00:00:33,520

earth's atmosphere

14

00:00:37,350 --> 00:00:35,360

particles of solids and liquids that

15

00:00:39,670 --> 00:00:37,360

float high in the air some reaching the

16

00:00:40,790 --> 00:00:39,680

stratosphere are what glory will detect

17

00:00:43,270 --> 00:00:40,800

and map

18

00:00:44,950 --> 00:00:43,280

the sensors are also expected to reveal

19

00:00:46,549 --> 00:00:44,960

how long the particles stay in the

20

00:00:48,709 --> 00:00:46,559

atmosphere

21

00:00:50,630 --> 00:00:48,719

glory will fly two instruments that will

22

00:00:52,869 --> 00:00:50,640

help us understand

23

00:00:56,069 --> 00:00:52,879

first of all the aerosols interaction

24

00:00:58,630 --> 00:00:56,079

between the earth's atmosphere and then

25

00:01:01,349 --> 00:00:58,640

the second instrument called tim total

26

00:01:03,990 --> 00:01:01,359

irradiance monitor will help us

27

00:01:05,670 --> 00:01:04,000

understand the sun's interaction with

28

00:01:07,510 --> 00:01:05,680

our

29

00:01:09,350 --> 00:01:07,520

upper atmosphere

30

00:01:11,350 --> 00:01:09,360

the answers are expected to be a key

31

00:01:13,590 --> 00:01:11,360

piece of the puzzle to figuring out the

32

00:01:14,870 --> 00:01:13,600

world's prospects for climate change in

33

00:01:16,310 --> 00:01:14,880

the future

34

00:01:17,510 --> 00:01:16,320

what they're trying to do is define the

35

00:01:19,190 --> 00:01:17,520

size of it

36

00:01:21,270 --> 00:01:19,200

where it resides

37

00:01:22,870 --> 00:01:21,280

what are its peculiarities is it

38

00:01:24,710 --> 00:01:22,880

something that man is doing is it

39

00:01:27,109 --> 00:01:24,720

something that the earth does naturally

40

00:01:29,030 --> 00:01:27,119

is it something that the sun interacts

41

00:01:30,550 --> 00:01:29,040

and causes

42

00:01:32,630 --> 00:01:30,560

those kind of things

43

00:01:35,270 --> 00:01:32,640

glory also marks the return to flight

44

00:01:37,270 --> 00:01:35,280

for the taurus xl rocket a relatively

45

00:01:39,350 --> 00:01:37,280

small booster nasa would like to use to

46

00:01:41,749 --> 00:01:39,360

launch future satellites too

47

00:01:44,469 --> 00:01:41,759

based on existing launchers orbital

48

00:01:46,310 --> 00:01:44,479

sciences designed the taurus xl to meet

49

00:01:47,830 --> 00:01:46,320

the needs of small satellites heading

50

00:01:50,230 --> 00:01:47,840

into earth orbit

51  
00:01:52,230 --> 00:01:50,240  
it has four stages and birds a solid

52  
00:01:55,030 --> 00:01:52,240  
fuel similar to the propellants used by

53  
00:01:57,910 --> 00:01:55,040  
the space shuttle solid rocket boosters

54  
00:01:59,749 --> 00:01:57,920  
the stage zero of the taurus xl traces

55  
00:02:00,789 --> 00:01:59,759  
its heritage back to the peacekeeper

56  
00:02:02,870 --> 00:02:00,799  
missile

57  
00:02:04,950 --> 00:02:02,880  
the other three stages are taken from

58  
00:02:06,870 --> 00:02:04,960  
the design of the pegasus booster but

59  
00:02:08,630 --> 00:02:06,880  
without the signature wing

60  
00:02:11,350 --> 00:02:08,640  
the vehicle

61  
00:02:14,229 --> 00:02:11,360  
is very similar to the pegasus xl

62  
00:02:16,869 --> 00:02:14,239  
vehicle minus to stage zero and the

63  
00:02:20,390 --> 00:02:16,879

first stage doesn't have a wing a taurus

64

00:02:22,550 --> 00:02:20,400

xl was launched in february 2009 to lift

65

00:02:24,309 --> 00:02:22,560

the orbiting carbon observatory

66

00:02:26,070 --> 00:02:24,319

but the payload fairing protecting the

67

00:02:28,150 --> 00:02:26,080

spacecraft during the first part of the

68

00:02:30,790 --> 00:02:28,160

launch did not separate as it was

69

00:02:31,910 --> 00:02:30,800

supposed to the spacecraft did not reach

70

00:02:34,229 --> 00:02:31,920

orbit

71

00:02:37,910 --> 00:02:34,239

lori is going to do some fantastic

72

00:02:40,790 --> 00:02:37,920

stuff as far as mapping out

73

00:02:42,390 --> 00:02:40,800

aerosols in the atmosphere it's also a

74

00:02:44,390 --> 00:02:42,400

groundbreaker in that this is the first

75

00:02:47,910 --> 00:02:44,400

flight after a failure

76

00:02:49,270 --> 00:02:47,920

of the taurus xl vehicle and so we're

77

00:02:52,390 --> 00:02:49,280

excited to be

78

00:02:53,830 --> 00:02:52,400

doing this glory just happens to be the

79

00:02:55,750 --> 00:02:53,840

science that we're taking up with us

80

00:02:57,509 --> 00:02:55,760

this time

81

00:02:59,750 --> 00:02:57,519

when the orbiting carbon observatory

82

00:03:01,910 --> 00:02:59,760

mission did not achieve orbit the launch

83

00:03:03,910 --> 00:03:01,920

team set out to determine what happened

84

00:03:05,830 --> 00:03:03,920

a task made more difficult by the fact

85

00:03:07,190 --> 00:03:05,840

that they did not have the failed pieces

86

00:03:09,190 --> 00:03:07,200

to examine

87

00:03:11,350 --> 00:03:09,200

instead they had to use the extensive

88

00:03:13,589 --> 00:03:11,360

data or telemetry they received during

89

00:03:15,350 --> 00:03:13,599

the climb into space with extensive

90

00:03:17,030 --> 00:03:15,360

fault trees to best figure out the

91

00:03:18,949 --> 00:03:17,040

likely cause

92

00:03:21,110 --> 00:03:18,959

the redesign work from finding a

93

00:03:22,470 --> 00:03:21,120

probable cause to fixing it has been

94

00:03:24,550 --> 00:03:22,480

intense

95

00:03:27,190 --> 00:03:24,560

nasa's launch services program based at

96

00:03:29,350 --> 00:03:27,200

kennedy space center in florida operates

97

00:03:31,190 --> 00:03:29,360

launches from several parts of the world

98

00:03:32,789 --> 00:03:31,200

so spacecraft can go into different

99

00:03:35,430 --> 00:03:32,799

kinds of orbits

100

00:03:37,430 --> 00:03:35,440

this time glory required what's called a

101  
00:03:38,789 --> 00:03:37,440  
polar or sun synchronous orbit to

102  
00:03:40,229 --> 00:03:38,799  
fulfill its studies of earth's

103  
00:03:41,910 --> 00:03:40,239  
atmosphere

104  
00:03:43,910 --> 00:03:41,920  
reaching that orbit means using the

105  
00:03:46,550 --> 00:03:43,920  
vandenberg air force-based california

106  
00:03:49,110 --> 00:03:46,560  
launch site on the west coast

107  
00:03:50,869 --> 00:03:49,120  
glory was designed to join

108  
00:03:53,509 --> 00:03:50,879  
the what's called the a-train or

109  
00:03:54,789 --> 00:03:53,519  
afternoon train of irv observing

110  
00:03:56,390 --> 00:03:54,799  
satellites

111  
00:03:59,190 --> 00:03:56,400  
it is necessary to launch from

112  
00:04:01,429 --> 00:03:59,200  
vandenberg to be able to go into that's

113  
00:04:03,030 --> 00:04:01,439

the sun synchronous orbit that orbit

114

00:04:04,869 --> 00:04:03,040

cannot be achieved

115

00:04:06,390 --> 00:04:04,879

efficiently by launching out of the east

116

00:04:08,390 --> 00:04:06,400

coast for example

117

00:04:10,390 --> 00:04:08,400

the glory spacecraft is to become the

118

00:04:13,270 --> 00:04:10,400

fifth satellite of the eight planned to

119

00:04:15,030 --> 00:04:13,280

make up the a-train constellation

120

00:04:17,270 --> 00:04:15,040

taking readings at the same time on

121

00:04:19,590 --> 00:04:17,280

different aspects of the atmosphere

122

00:04:21,670 --> 00:04:19,600

glory's observations are expected to add

123

00:04:24,070 --> 00:04:21,680

more information to the growing database

124

00:04:26,310 --> 00:04:24,080

of knowledge about our own planet and

125

00:04:28,629 --> 00:04:26,320

how it's affected by the sun and other

126

00:04:30,950 --> 00:04:28,639

influences it's taken a little longer