
Space to Ground

1
00:00:07,590 --> 00:00:05,749
houston station on space to ground

2
00:00:10,310 --> 00:00:07,600
welcome to space to ground i'm dan

3
00:00:12,230 --> 00:00:10,320
hewitt 2021 is in the books and the year

4
00:00:14,870 --> 00:00:12,240
in space was similar to the year on the

5
00:00:16,710 --> 00:00:14,880
ground filled with excitement drama and

6
00:00:19,830 --> 00:00:16,720
trial

7
00:00:21,670 --> 00:00:19,840
moving into its 23rd year in operation

8
00:00:24,310 --> 00:00:21,680
the station looks quite a bit different

9
00:00:26,390 --> 00:00:24,320
than it did just one year ago

10
00:00:28,310 --> 00:00:26,400
spacewalks on the u.s side finished

11
00:00:31,429 --> 00:00:28,320
laying the groundwork and ultimately

12
00:00:33,910 --> 00:00:31,439
installing two new rollout solar arrays

13
00:00:36,150 --> 00:00:33,920

laid over top of existing arrays these

14
00:00:38,630 --> 00:00:36,160
will augment station's power generation

15
00:00:40,790 --> 00:00:38,640
capability for years to come with a

16
00:00:42,709 --> 00:00:40,800
total of six new arrays eventually

17
00:00:45,190 --> 00:00:42,719
providing the juice needed for future

18
00:00:46,069 --> 00:00:45,200
expansions and research on the orbiting

19
00:00:48,470 --> 00:00:46,079
lab

20
00:00:50,229 --> 00:00:48,480
the arrays also demonstrated technology

21
00:00:52,549 --> 00:00:50,239
that is planned for use on the lunar

22
00:00:55,590 --> 00:00:52,559
gateway a critical link in the chain of

23
00:00:56,830 --> 00:00:55,600
artemis's path to future exploration on

24
00:01:08,390 --> 00:00:56,840
the

25
00:01:10,230 --> 00:01:08,400
ended up providing some unexpected drama

26
00:01:12,550 --> 00:01:10,240
when thrusters caused the station to

27
00:01:14,550 --> 00:01:12,560
lose attitude control until quick

28
00:01:17,670 --> 00:01:14,560
thinking by flight controllers and the

29
00:01:19,270 --> 00:01:17,680
astronauts returned everything to normal

30
00:01:21,190 --> 00:01:19,280
and to close out the year the new

31
00:01:23,190 --> 00:01:21,200
pritchell module was attached to the

32
00:01:24,830 --> 00:01:23,200
bottom of nauka providing additional

33
00:01:27,510 --> 00:01:24,840
docking

34
00:01:30,550 --> 00:01:27,520
ports and that just scratches the

35
00:01:33,510 --> 00:01:30,560
surface on the non-stop pace that 2021

36
00:01:35,590 --> 00:01:33,520
ended up taking aboard the station

37
00:01:37,510 --> 00:01:35,600
throughout the year we saw five crew

38
00:01:40,230 --> 00:01:37,520

launches fly to the station split

39
00:01:41,990 --> 00:01:40,240
between two on spacex's dragon and three

40
00:01:44,149 --> 00:01:42,000
on the russian soyuz

41
00:01:46,230 --> 00:01:44,159
ten nasa astronauts six russian

42
00:01:48,069 --> 00:01:46,240
cosmonauts two european astronauts and

43
00:01:49,910 --> 00:01:48,079
two japanese astronauts called the

44
00:01:51,830 --> 00:01:49,920
station home

45
00:01:54,630 --> 00:01:51,840
we also saw four space flight

46
00:01:57,030 --> 00:01:54,640
participants visit station all together

47
00:01:59,030 --> 00:01:57,040
the crew performed 13 spacewalks and

48
00:01:59,990 --> 00:01:59,040
welcomed eight cargo vehicles from

49
00:02:03,670 --> 00:02:00,000
russia

50
00:02:05,910 --> 00:02:03,680
north of grumman and spacex

51
00:02:07,910 --> 00:02:05,920
nasa's mark vanda high also began what

52
00:02:10,630 --> 00:02:07,920
eventually turned into a nearly

53
00:02:13,910 --> 00:02:10,640
year-long stay aboard the station

54
00:02:16,630 --> 00:02:13,920
set to return in early spring 2022 he'll

55
00:02:19,030 --> 00:02:16,640
come home the new record holder among us

56
00:02:22,309 --> 00:02:19,040
astronauts for longest single space

57
00:02:25,110 --> 00:02:22,319
flight surpassing the mark of 340 days

58
00:02:27,350 --> 00:02:25,120
set by scott kelly

59
00:02:29,589 --> 00:02:27,360
and commercial resupply missions enabled

60
00:02:31,589 --> 00:02:29,599
more than 100 new u.s science

61
00:02:32,949 --> 00:02:31,599
investigations and technology

62
00:02:35,509 --> 00:02:32,959
demonstrations

63
00:02:37,910 --> 00:02:35,519

2021 saw some groundbreaking results

64
00:02:40,550 --> 00:02:37,920
come out in areas as diverse as stem

65
00:02:43,190 --> 00:02:40,560
cell and tissue engineering our ability

66
00:02:45,190 --> 00:02:43,200
to shield astronauts from radiation

67
00:02:46,710 --> 00:02:45,200
mining rare earth elements using

68
00:02:49,110 --> 00:02:46,720
microorganisms

69
00:02:52,390 --> 00:02:49,120
and even informing the best way to make

70
00:02:54,390 --> 00:02:52,400
cement on the moon for future moon bases

71
00:02:56,790 --> 00:02:54,400
to get a deep dive on these and more be

72
00:02:58,710 --> 00:02:56,800
sure to follow at iss underscore

73
00:03:01,190 --> 00:02:58,720
research on twitter and head over to

74
00:03:03,030 --> 00:03:01,200
nasa.gov iss

75
00:03:05,190 --> 00:03:03,040
science where the crack team in our

76
00:03:07,670 --> 00:03:05,200
program research office is constantly

77
00:03:11,830 --> 00:03:07,680
churning out news and imagery on

78
00:03:16,229 --> 00:03:14,229
2022 is already shaping up to be a

79
00:03:18,550 --> 00:03:16,239
transformative year for the space

80
00:03:20,869 --> 00:03:18,560
station with more firsts in the world of

81
00:03:23,509 --> 00:03:20,879
commercial space

82
00:03:25,589 --> 00:03:23,519
targeting february 2022 the first

83
00:03:28,949 --> 00:03:25,599
all-private flight to the space station

84
00:03:31,190 --> 00:03:28,959
will take off with the axiom one mission

85
00:03:33,830 --> 00:03:31,200
this will be the first of what we expect

86
00:03:36,070 --> 00:03:33,840
to be regularly flying missions on u.s

87
00:03:38,710 --> 00:03:36,080
commercial spacecraft carrying all

88
00:03:40,390 --> 00:03:38,720

private citizens to visit the station

89
00:03:42,949 --> 00:03:40,400
missions like these are a piece of the

90
00:03:45,589 --> 00:03:42,959
continually expanding market for

91
00:03:47,430 --> 00:03:45,599
commercial space with new modules and

92
00:03:50,390 --> 00:03:47,440
free-flying space stations on the

93
00:03:52,390 --> 00:03:50,400
horizon in the years to come

94
00:03:54,550 --> 00:03:52,400
our commercial crew provider boeing will

95
00:03:56,470 --> 00:03:54,560
once again make a run to the station in

96
00:03:58,949 --> 00:03:56,480
the reflight of their orbital flight

97
00:04:01,429 --> 00:03:58,959
test mission making a major stride

98
00:04:03,910 --> 00:04:01,439
towards bringing two independent u.s

99
00:04:06,390 --> 00:04:03,920
crew-capable spacecraft online to

100
00:04:08,550 --> 00:04:06,400
deliver multinational astronaut crews to

101
00:04:10,949 --> 00:04:08,560
the station we're aiming to fly the

102
00:04:13,030 --> 00:04:10,959
first crew aboard starliner during that

103
00:04:16,550 --> 00:04:13,040
first crude flight test of the station

104
00:04:18,550 --> 00:04:16,560
in the second half of 2022

105
00:04:20,469 --> 00:04:18,560
we'll have plenty of cargo flights

106
00:04:22,550 --> 00:04:20,479
spacewalks and science experiments to

107
00:04:24,150 --> 00:04:22,560
fill the year along with all the usual

108
00:04:26,870 --> 00:04:24,160
curveballs that come from living

109
00:04:29,350 --> 00:04:26,880
continuously in outer space but if this

110
00:04:31,189 --> 00:04:29,360
year showed anything the teams working

111
00:04:33,430 --> 00:04:31,199
around the world to support our space

112
00:04:35,830 --> 00:04:33,440
station are ready for everything that

113
00:04:38,790 --> 00:04:35,840

comes their way

114
00:04:40,469 --> 00:04:38,800
that'll do it for us in 2021 we hope you

115
00:04:42,390 --> 00:04:40,479
get a chance to catch a breath over the

116
00:04:44,469 --> 00:04:42,400
holidays and we're able to share in some

117
00:04:46,469 --> 00:04:44,479
of the joy and inspiration that human

118
00:04:47,510 --> 00:04:46,479
space flight can bring to every corner

119
00:04:50,070 --> 00:04:47,520
of the world

120
00:04:51,670 --> 00:04:50,080
as always thank you for watching keep

121
00:05:01,070 --> 00:04:51,680
sending in your questions using the

122
00:05:01,080 --> 00:05:08,310
[Music]