
NASA

1
00:00:13,270 --> 00:00:10,549
my name is dave eastmont i'm the mission

2
00:00:15,509 --> 00:00:13,280
manager for wallops aircraft at this

3
00:00:17,990 --> 00:00:15,519
time my previous experience has been

4
00:00:20,870 --> 00:00:18,000
with the p3 i've done dc8 flights i've

5
00:00:23,269 --> 00:00:20,880
done air sound uav flights

6
00:00:25,750 --> 00:00:23,279
and c-130 flights

7
00:00:29,189 --> 00:00:25,760
i probably got upwards to about

8
00:00:32,229 --> 00:00:29,199
4 000 hours in the back of the plane

9
00:00:34,310 --> 00:00:32,239
okay my name is bill crable i'm the

10
00:00:35,670 --> 00:00:34,320
project scientist for operation

11
00:00:38,069 --> 00:00:35,680
icebridge

12
00:00:43,750 --> 00:00:38,079
and i've been flying missions like this

13
00:00:49,430 --> 00:00:46,869

the the aircraft behind me is nasa's p3

14
00:00:53,270 --> 00:00:49,440
uh research aircraft it's used as a

15
00:00:54,790 --> 00:00:53,280
platform for various remote sensors

16
00:00:56,709 --> 00:00:54,800
and we're going to be using it in

17
00:00:59,590 --> 00:00:56,719
greenland this year

18
00:01:01,670 --> 00:00:59,600
as we have most years since 1991 to

19
00:01:04,630 --> 00:01:01,680
collect a suite of measurements that

20
00:01:07,910 --> 00:01:04,640
tell the scientists the uh the thickness

21
00:01:09,510 --> 00:01:07,920
of the ice and how fast it's flowing um

22
00:01:12,149 --> 00:01:09,520
out to the ocean

23
00:01:14,390 --> 00:01:12,159
and what we're observing is the the

24
00:01:17,429 --> 00:01:14,400
decade of the 90s was

25
00:01:19,910 --> 00:01:17,439
was exhibiting very small changes

26
00:01:21,910 --> 00:01:19,920
if we saw a half a meter to a meter per

27
00:01:22,789 --> 00:01:21,920
year of thinning that was a pretty large

28
00:01:24,870 --> 00:01:22,799
number

29
00:01:27,109 --> 00:01:24,880
uh in that time frame

30
00:01:29,270 --> 00:01:27,119
but since the turn of the century

31
00:01:32,390 --> 00:01:29,280
we're seeing some of those same glaciers

32
00:01:35,109 --> 00:01:32,400
now thinning at 15 and 20 and 25 meters

33
00:01:38,789 --> 00:01:35,119
per year so there are some very drastic

34
00:01:40,789 --> 00:01:38,799
changes taking place up in greenland

35
00:01:43,030 --> 00:01:40,799
the additional work that we'll be doing

36
00:01:45,670 --> 00:01:43,040
for operation icebridge

37
00:01:48,789 --> 00:01:45,680
will be to follow the exact same orbit

38
00:01:50,950 --> 00:01:48,799

paths on the surface that that icesat

39
00:01:52,950 --> 00:01:50,960
has followed in the past and and will

40
00:01:55,350 --> 00:01:52,960
follow in the future and that icesat-2

41
00:01:57,429 --> 00:01:55,360
would follow when it gets launched in

42
00:02:00,950 --> 00:01:57,439
2015.

43
00:02:02,870 --> 00:02:00,960
it does a a very nice job of of global

44
00:02:04,709 --> 00:02:02,880
coverage particularly of antarctica

45
00:02:06,630 --> 00:02:04,719
that's quite remote and very difficult

46
00:02:09,190 --> 00:02:06,640
to get to with an airplane

47
00:02:11,110 --> 00:02:09,200
so whereas the the typical flights that

48
00:02:13,350 --> 00:02:11,120
we would make in the past are are

49
00:02:14,630 --> 00:02:13,360
focused targeted towards the outlet

50
00:02:17,430 --> 00:02:14,640
glaciers

51
00:02:19,750 --> 00:02:17,440
um we'll now also do the same kinds of

52
00:02:21,750 --> 00:02:19,760
measurements that a satellite would and

53
00:02:24,710 --> 00:02:21,760
this sort of ties the two projects

54
00:02:29,190 --> 00:02:27,270
i'm jim jungle i'm a lead engineer on

55
00:02:31,509 --> 00:02:29,200
the nasa airborne topographic mapper

56
00:02:33,670 --> 00:02:31,519
project it measures the elevation of the

57
00:02:34,869 --> 00:02:33,680
train the aircraft flies over

58
00:02:36,869 --> 00:02:34,879
it does this

59
00:02:39,190 --> 00:02:36,879
by firing pulses of laser light from the

60
00:02:42,309 --> 00:02:39,200
aircraft to the ground and back

61
00:02:43,509 --> 00:02:42,319
those pulses are scanned in a uh an oval

62
00:02:46,470 --> 00:02:43,519
scan

63
00:02:48,710 --> 00:02:46,480

and this allows us to map a swath of

64
00:02:51,589 --> 00:02:48,720
terrain underneath the aircraft and it

65
00:02:54,710 --> 00:02:51,599
allows us to return in a future year

66
00:02:56,070 --> 00:02:54,720
and repeat those measurements uh pretty

67
00:02:58,149 --> 00:02:56,080
accurately

68
00:03:00,229 --> 00:02:58,159
we're we're concerned with the ice

69
00:03:02,790 --> 00:03:00,239
sheets of the world because

70
00:03:04,790 --> 00:03:02,800
to some degree they control sea level

71
00:03:07,910 --> 00:03:04,800
greenland is the second largest ice

72
00:03:10,149 --> 00:03:07,920
sheet in the world it contains enough

73
00:03:12,149 --> 00:03:10,159
ice and snow that if it were to melt

74
00:03:14,470 --> 00:03:12,159
would raise sea levels substantially

75
00:03:17,110 --> 00:03:14,480
maybe as much as 20 feet in this area

76
00:03:19,509 --> 00:03:17,120
you can imagine greenland as a huge ice

77
00:03:22,630 --> 00:03:19,519
cube that's a thousand miles long and

78
00:03:23,750 --> 00:03:22,640
400 miles wide and two miles thick in

79
00:03:26,869 --> 00:03:23,760
the center

80
00:03:28,470 --> 00:03:26,879
it nicely buffers global climate

81
00:03:32,070 --> 00:03:28,480
regional climate

82
00:03:34,470 --> 00:03:32,080
so that changes in the ice sheet

83
00:03:43,030 --> 00:03:34,480
become very important indicators of

84
00:03:49,670 --> 00:03:46,630
it's something you have to experience

85
00:03:52,309 --> 00:03:49,680
we'll fly these patterns at 1500 feet

86
00:03:53,990 --> 00:03:52,319
above the ground level and you get up on

87
00:03:55,589 --> 00:03:54,000
your sheets like flying over the clouds

88
00:03:57,509 --> 00:03:55,599

when you look down it's just white

89
00:03:58,789 --> 00:03:57,519
fluffy sometimes it just looks like a

90
00:04:00,470 --> 00:03:58,799
cloud you have to

91
00:04:03,589 --> 00:04:00,480
keep in your head that that's solid

92
00:04:06,229 --> 00:04:05,030
probably one of the neatest things to

93
00:04:08,309 --> 00:04:06,239
see is when you're flying down the

94
00:04:09,110 --> 00:04:08,319
glacier towards the ocean you're at 1500

95
00:04:10,550 --> 00:04:09,120
feet

96
00:04:12,149 --> 00:04:10,560
and just as you hit the ocean the

97
00:04:14,630 --> 00:04:12,159
glacier drops off and about another

98
00:04:15,910 --> 00:04:14,640
thousand feet it's just