1
00:00:25,109 --> 00:00:23,029
across north america spring has sprung

2
00:00:27,670 --> 00:00:25,119
as the mercury rises the winter snow

3
00:00:29,990 --> 00:00:27,680
seems like ancient history

4
00:00:31,990 --> 00:00:30,000
not so for nasa's operation icebridge

5
00:00:33,510 --> 00:00:32,000
scientists who continue to brave arctic

6
00:00:36,069 --> 00:00:33,520
temperatures at thule air base in

7
00:00:38,310 --> 00:00:36,079
northern greenland

8
00:00:40,229 --> 00:00:38,320
since mid-march the icebridge dc-8

9
00:00:42,069 --> 00:00:40,239
aircraft has flown the equivalent of one

10
00:00:44,470 --> 00:00:42,079
and a half times around the earth

11
00:00:46,549 --> 00:00:44,480
logging more than 60 000 kilometers and

12
00:00:48,470 --> 00:00:46,559
100 flight hours

13
00:00:50,310 --> 00:00:48,480

the purpose of icebridge is to provide

14
00:00:52,310 --> 00:00:50,320
data about the earth's polar regions

15
00:00:53,510 --> 00:00:52,320
allowing us to monitor change in ice

16
00:00:55,590 --> 00:00:53,520
cover

17
00:00:57,350 --> 00:00:55,600
icebridge scientists accomplish this by

18
00:00:59,110 --> 00:00:57,360
measuring the ice with a variety of

19
00:01:01,910 --> 00:00:59,120
instruments aboard the fully equipped

20
00:01:03,590 --> 00:01:01,920
dc-8 aircraft

21
00:01:05,590 --> 00:01:03,600
a typical flight day for icebridge

22
00:01:07,190 --> 00:01:05,600
begins at 6 am the ground and

23
00:01:08,870 --> 00:01:07,200
maintenance crews meet at the hangar to

24
00:01:13,429 --> 00:01:08,880
power up the plane and ensure it is a

25
00:01:17,109 --> 00:01:15,510
once the dc-8 is towed out to the ramp

26
00:01:20,149 --> 00:01:17,119
the icebridge pilots and team of

27
00:01:22,070 --> 00:01:20,159
research scientists prepare for takeoff

28
00:01:23,510 --> 00:01:22,080
throughout each flight scientists manage

29
00:01:26,230 --> 00:01:23,520
seven state-of-the-art science

30
00:01:28,070 --> 00:01:26,240
instruments aboard the dc-8

31
00:01:30,950 --> 00:01:28,080
several instruments such as the airborne

32
00:01:32,870 --> 00:01:30,960
topographic mapper or atm utilize laser

33
00:01:34,870 --> 00:01:32,880
altimeter technology to measure the

34
00:01:36,630 --> 00:01:34,880
surface of the ice

35
00:01:38,710 --> 00:01:36,640
three radar instruments from university

36
00:01:40,469 --> 00:01:38,720
of kansas measure the vertical profile

37
00:01:42,789 --> 00:01:40,479
of the snow and ice

38
00:01:44,710 --> 00:01:42,799

the ku band and snow radars measure the

39
00:01:46,069 --> 00:01:44,720
depth of snow and ice on and near the

40
00:01:48,550 --> 00:01:46,079
surface

41
00:01:50,710 --> 00:01:48,560
the multi-channel coherent radar depth

42
00:01:52,550 --> 00:01:50,720
sounder or m cords can penetrate the

43
00:01:54,950 --> 00:01:52,560
upper layers of snow and ice to reach

44
00:01:57,510 --> 00:01:54,960
the bedrock below telling scientists the

45
00:02:00,310 --> 00:01:57,520
thickness of the ice the digital mapping

46
00:02:01,910 --> 00:02:00,320
system or dms is essentially two cameras

47
00:02:04,149 --> 00:02:01,920
mounted on the belly of the plane

48
00:02:06,389 --> 00:02:04,159
capturing images every 10 seconds while

49
00:02:08,389 --> 00:02:06,399
the plane is in flight new to icebridge

50
00:02:10,869 --> 00:02:08,399
and the dc-8 this year is columbia

51
00:02:12,070 --> 00:02:10,879
university's gravimeter the gravimeter

52
00:02:15,030 --> 00:02:12,080
can distinguish the difference in

53
00:02:17,030 --> 00:02:15,040
gravity between rock water and ice to

54
00:02:19,190 --> 00:02:17,040
map what we can't see

55
00:02:21,670 --> 00:02:19,200
finally the land vegetation and ice

56
00:02:24,229 --> 00:02:21,680
sensor referred to as elvis is best

57
00:02:26,390 --> 00:02:24,239
suited for high altitude work from 30

58
00:02:28,550 --> 00:02:26,400
000 feet and higher elvis scans a two

59
00:02:34,830 --> 00:02:28,560
kilometer wide laser swath to provide a

60
00:02:38,229 --> 00:02:36,790
characteristics perhaps the most

61
00:02:39,670 --> 00:02:38,239
impressive piece of equipment is the

62
00:02:41,750 --> 00:02:39,680
plane itself

63
00:02:44,229 --> 00:02:41,760

dc8 production was discontinued in the

64
00:02:45,910 --> 00:02:44,239
early 1970s but nasa continues to

65
00:02:48,309 --> 00:02:45,920
utilize it for a variety of earth

66
00:02:50,470 --> 00:02:48,319
science missions like icebridge

67
00:02:53,030 --> 00:02:50,480
this four-engine workhorse can fly at 40

68
00:02:54,790 --> 00:02:53,040
000 feet for over 12 hours at a time

69
00:02:56,470 --> 00:02:54,800
though the aircraft was not originally

70
00:02:58,790 --> 00:02:56,480
designed for low altitude flying it

71
00:03:00,470 --> 00:02:58,800
performs beautifully below 1500 feet for

72
00:03:02,149 --> 00:03:00,480
icebridge instruments

73
00:03:03,830 --> 00:03:02,159
after a long day of flying the ground

74
00:03:05,589 --> 00:03:03,840
crew meets the aircraft on the icy

75
00:03:06,869 --> 00:03:05,599
runway and prepares for another flight

76
00:03:08,790 --> 00:03:06,879
day

77
00:03:10,550 --> 00:03:08,800
at the evening debrief researchers and

78
00:03:12,470 --> 00:03:10,560
crew analyze the forecast for the

79
00:03:14,070 --> 00:03:12,480
following day and prepare to do it all

80
00:03:15,750 --> 00:03:14,080
over again

81
00:03:18,630 --> 00:03:15,760
icebridge is nearing the halfway point

82
00:03:20,710 --> 00:03:18,640
of the arctic 2010 campaign next week

83
00:03:22,630 --> 00:03:20,720
the dc-8 will return to dryden flight

84
00:03:24,229 --> 00:03:22,640
research center in california where it

85
00:03:25,830 --> 00:03:24,239
will remain until this fall when it

86
00:03:27,509 --> 00:03:25,840
resumes ice bridge flights over

87
00:03:29,190 --> 00:03:27,519
antarctica

88
00:03:31,589 --> 00:03:29,200

for the remainder of the arctic campaign

89
00:03:33,350 --> 00:03:31,599
in greenland nasa's p3b airplane will

90
00:03:35,270 --> 00:03:33,360
deploy from wallop's flight facility in

91
00:03:36,789 --> 00:03:35,280
virginia to sandstorm air base in

92
00:03:38,789 --> 00:03:36,799
southern greenland

93
00:03:40,470 --> 00:03:38,799
science instruments aboard the p3b will