1
00:00:00,000 --> 00:00:03,436
[cheerful music]

2
00:00:04,804 --> 00:00:08,541
Zounas: Our primary mission is to support
launch operations here at Vandenberg.

3
00:00:08,641 --> 00:00:12,846
We help with forecasting the transport
of fuels and equipment

4
00:00:12,846 --> 00:00:14,347
into building the rocket .

5
00:00:14,647 --> 00:00:18,018
We help decision makers determine
when is a good time to launch the rocket.

6
00:00:18,151 --> 00:00:21,588
And then the day of we're always there
by their side throughout the count

7
00:00:21,755 --> 00:00:24,157
to determine if it's safe for them
to eventually launch the rocket.

8
00:00:24,557 --> 00:00:29,529
Nichols: We monitor this 99,000 acre
range around the clock.

9
00:00:29,963 --> 00:00:33,633
Essentially, we look out for things
like watches, warnings, advisories,

10
00:00:33,633 --> 00:00:35,068
kind of the things that you would imagine

11
00:00:35,068 --> 00:00:36,903
National Weather Service Office

doing that.

12
00:00:36,903 --> 00:00:39,272
That kind of comes from our range weather
forecaster.

13
00:00:39,305 --> 00:00:42,308
They're the ones that tell us
if there's going to be strong winds or

14
00:00:42,308 --> 00:00:45,745
if we have to issue a watch for lightning,
things like that.

15
00:00:45,812 --> 00:00:48,415
Zounas: Clear skies, no wind that is optimal.

16
00:00:48,448 --> 00:00:51,084
However, that occurs like 10% of the time.

17
00:00:51,117 --> 00:00:54,254
Normally there is some cloud cover
which doesn't really affect the launch,

18
00:00:54,254 --> 00:00:56,289
but you can't see it
and everyone wants to see the launch.

19
00:00:56,289 --> 00:00:58,391
But there's almost always
some level of wind

20
00:00:58,391 --> 00:01:00,293
and depending on the rocket
and the location,

21
00:01:00,293 --> 00:01:03,696
they can have major impacts
to being able to launch.

22
00:01:03,863 --> 00:01:05,832
Nichols: Out here, it is rocket science.

23
00:01:05,832 --> 00:01:08,535
And so we have to be very, very precise.

24
00:01:08,935 --> 00:01:11,638
Some of these rockets are sensitive

25
00:01:11,638 --> 00:01:15,275
to the nearest mile per hour,
to the nearest degree of temperature.

26
00:01:15,775 --> 00:01:19,312
The nearest wind direction,
small changes in wind direction

27
00:01:19,312 --> 00:01:22,782
and wind speed have a huge impact on
on the space lift mission here.

28
00:01:22,782 --> 00:01:25,051
So we have to be very good at what we do.

29
00:01:25,051 --> 00:01:26,553
Zounas: We are fortunate to have one of the most

30
00:01:26,553 --> 00:01:30,256
robust instrument
networks on any military installation.

31
00:01:30,290 --> 00:01:36,062
We've got 26 different wind towers with
over 200 different instruments altogether.

32
00:01:36,362 --> 00:01:40,667
To have access to all that data helps us
make an enormous amount of decisions,

33
00:01:40,667 --> 00:01:42,735
especially for a base
as large as this one.

34
00:01:42,735 --> 00:01:46,439
99,000 acres is a lot to cover
and be able to forecast for.

35
00:01:47,107 --> 00:01:51,277
Nichols: So this is the Upper Air Observatory
where we fill our balloons

36
00:01:51,277 --> 00:01:55,381
with helium, attach
our radiosondes to them and release them.

37
00:01:55,548 --> 00:01:58,485
Zounas: Balloons are really important
specifically for range safety.

38
00:01:58,518 --> 00:02:02,822
Their models determine where the debris
will fall if a mishap occurs

39
00:02:03,022 --> 00:02:06,726
or what will happen to the shockwave
from that blast.

40
00:02:06,993 --> 00:02:11,564
Day: This is a Lockheed Martin LMS6
radiosonde, and basically it measures

41
00:02:11,564 --> 00:02:16,302
the temperature, wind speed, pressure
and humidity up in the upper air.

42
00:02:16,970 --> 00:02:21,040
These these will typically go
between 100 and 120,000 feet.

43
00:02:21,541 --> 00:02:24,177
Typically, when it gets up there,
the balloons tend to expand

44
00:02:24,177 --> 00:02:26,846
to about the size of like a Greyhound
bus or so.

45
00:02:27,247 --> 00:02:28,815
So they actually get quite large.

46
00:02:35,221 --> 00:02:37,390
Zounas: A good portion
of the reason why our weather models

47
00:02:37,390 --> 00:02:41,928
are actually quite good for large scale
features is because of satellites.

48
00:02:41,928 --> 00:02:44,397
We ingest a lot of data into our models
to run them.

49
00:02:44,464 --> 00:02:46,833
If you look to the west,
there's a lot of water.

50
00:02:46,866 --> 00:02:49,402
Pacific Ocean is large
and there's no balloons being launched

51
00:02:49,402 --> 00:02:52,305
from there,
no consistent surface observations.

52
00:02:52,505 --> 00:02:57,076
So you have a large area of data-sparse
surface and atmosphere.

53

00:02:57,510 --> 00:03:00,513
So the way that we get around it
as a career field

54
00:03:00,513 --> 00:03:04,317
is we ingest satellite data
into our models to fill in the gaps.

55
00:03:04,551 --> 00:03:07,620
It's not perfect, but the more satellites
we get and the better satellites

56
00:03:07,620 --> 00:03:10,890
we get, the better
we can expect our models to perform

57
00:03:10,890 --> 00:03:13,960
because there should be more data
to actually compute with.

58
00:03:14,561 --> 00:03:18,164
Nichols: I believe that the weather
should always be respected

59
00:03:18,331 --> 00:03:23,203
but never feared much in the same way
that you would think about wild animals.

60
00:03:23,203 --> 00:03:26,906
Wild animals are so cool to look at, but
you don't want to get tangled up with one.

61
00:03:26,906 --> 00:03:29,509
Especially if you're not a professional
and you don't know what you're doing.

62
00:03:30,143 --> 00:03:32,779
Zounas: This is my favorite job
I have ever worked.

63

00:03:32,812 --> 00:03:33,680
I'm a weather nerd.

64
00:03:33,680 --> 00:03:35,882
I love weather.
I've loved weather since I was 11.

65
00:03:35,982 --> 00:03:40,286
I know we don't get tornadoes
like in the Midwest or big thunderstorms

66
00:03:40,286 --> 00:03:41,421
like in the Cape.

67
00:03:41,421 --> 00:03:44,724
But it is very interesting to focus on

68
00:03:44,924 --> 00:03:48,661
just how the terrain can affect
weather and operations.

69
00:03:48,962 --> 00:03:53,633
Nichols: For me to be able to contribute
to the mission of providing

70
00:03:53,633 --> 00:03:57,136
weather and climate and all those things
to not just the military

71
00:03:57,136 --> 00:03:59,572
but the world at large,
that's that's very humbling.

72
00:03:59,572 --> 00:04:03,543
And any way that I can help contribute
to the advancement of meteorology

73
00:04:03,543 --> 00:04:06,746
and climatology as a science,
I would happily do so.

74
00:04:06,779 --> 00:04:10,750
And that's the military
gave me the ability to to do forecasting.

75
00:04:11,117 --> 00:04:11,918
That's why I joined.

76
00:04:11,918 --> 00:04:15,388
They said, “hey, you want to be
a forecaster and be a weather officer and