
NORTH
51
TRUCK ROUTE
NORTH
78

1
00:00:42,420 --> 00:00:40,020
since I was a kid I've always been

2
00:00:45,390 --> 00:00:42,430
interested in storms as an engineer I

3
00:00:47,340 --> 00:00:45,400
try to understand how things work so I

4
00:00:49,890 --> 00:00:47,350
actually built and designed a device to

5
00:00:56,190 --> 00:00:49,900
measure the weather basically on the

6
00:00:58,979 --> 00:00:56,200
inside of a tornado the United States on

7
00:01:01,470 --> 00:00:58,989
average gets about 1200 tornadoes per

8
00:01:03,840 --> 00:01:01,480
year and the reason is is because of its

9
00:01:05,969 --> 00:01:03,850
unique geographic location

10
00:01:08,400 --> 00:01:05,979
we got the Gulf of Mexico off to the

11
00:01:11,010 --> 00:01:08,410
south and the storm systems as they pass

12
00:01:12,660 --> 00:01:11,020
through draw this Gulf moisture as water

13
00:01:15,060 --> 00:01:12,670

vapor it comes right up through the

14
00:01:16,710 --> 00:01:15,070
Midwest and springtime generally

15
00:01:19,920 --> 00:01:16,720
reflects it very what we call a very

16
00:01:22,499 --> 00:01:19,930
active jet stream and it brings us very

17
00:01:25,650 --> 00:01:22,509
powerful winds that just comes right

18
00:01:27,510 --> 00:01:25,660
across the Midwest that in combination

19
00:01:28,950 --> 00:01:27,520
allows these big storm systems to

20
00:01:32,510 --> 00:01:28,960
develop and of course wind shear is a

21
00:01:35,850 --> 00:01:32,520
very powerful ingredient for tornadoes

22
00:01:37,890 --> 00:01:35,860
the ingredients for a tornado obviously

23
00:01:39,990 --> 00:01:37,900
are quite complex but some of the basics

24
00:01:41,969 --> 00:01:40,000
are you don't have to have moisture you

25
00:01:44,100 --> 00:01:41,979
have to have lift and then the most

26
00:01:47,310 --> 00:01:44,110
other most important ingredient is what

27
00:01:49,680 --> 00:01:47,320
they call wind shear and shear creates

28
00:01:51,450 --> 00:01:49,690
these big horizontal rolls in the

29
00:01:53,940 --> 00:01:51,460
atmosphere and then when a thunderstorm

30
00:01:55,980 --> 00:01:53,950
forms underneath it actually tip sees

31
00:01:58,740 --> 00:01:55,990
these horizontal rolls in the vertical

32
00:02:00,179 --> 00:01:58,750
position to where a thunderstorm forms

33
00:02:02,760 --> 00:02:00,189
over them you have the whole

34
00:02:05,910 --> 00:02:02,770
thunderstorm rotating those final

35
00:02:08,190 --> 00:02:05,920
processes are what we're trying to study

36
00:02:10,350 --> 00:02:08,200
you know what's bringing the rotation

37
00:02:11,729 --> 00:02:10,360
finally all the way to the ground and

38
00:02:15,090 --> 00:02:11,739

that's really one of the biggest

39
00:02:16,979 --> 00:02:15,100
mysteries of tornado formation you know

40
00:02:18,690 --> 00:02:16,989
it's very difficult to forecast where 28

41
00:02:20,280 --> 00:02:18,700
it's gonna be when we're actually in the

42
00:02:22,440 --> 00:02:20,290
field waiting for thunderstorms to

43
00:02:24,420 --> 00:02:22,450
develop we use what they call visible

44
00:02:26,910 --> 00:02:24,430
satellite imagery this is basically a

45
00:02:28,890 --> 00:02:26,920
picture from space showing the best

46
00:02:31,979 --> 00:02:28,900
areas what we call instability and

47
00:02:34,170 --> 00:02:31,989
that's how and where we are able to

48
00:02:36,270 --> 00:02:34,180
target these storms that are developing

49
00:02:39,050 --> 00:02:36,280
ground-based radar can't even see these

50
00:02:41,850 --> 00:02:39,060
storms develop but satellite can

51
00:02:42,910 --> 00:02:41,860
satellites also detect what we call

52
00:02:48,160 --> 00:02:42,920
bound

53
00:02:49,600 --> 00:02:48,170
thunderstorms become the focus of new

54
00:02:52,380 --> 00:02:49,610
thunderstorms during the day and

55
00:02:55,000 --> 00:02:52,390
actually enhance the tornado potential

56
00:02:57,640 --> 00:02:55,010
visible satellite technology allows us

57
00:02:59,680 --> 00:02:57,650
to identify this which otherwise would

58
00:03:03,520 --> 00:02:59,690
be going totally unnoticed and

59
00:03:05,260 --> 00:03:03,530
undetected one of the biggest things

60
00:03:07,930 --> 00:03:05,270
that I would love to see in future

61
00:03:10,449 --> 00:03:07,940
satellite technology is the ability to

62
00:03:12,730 --> 00:03:10,459
actually see lightning within the cloud

63
00:03:14,830 --> 00:03:12,740

tops all the vertical motions so forth

64
00:03:17,500 --> 00:03:14,840
greatly enhances its ability to create

65
00:03:19,510 --> 00:03:17,510
lightning this lightning mapping will

66
00:03:21,130 --> 00:03:19,520
actually show frequency if the storm is

67
00:03:24,040 --> 00:03:21,140
becoming severe the lightning frequency

68
00:03:25,720 --> 00:03:24,050
increases and thus be able to do an

69
00:03:35,260 --> 00:03:25,730
early detection of whether or not that

70
00:03:37,960 --> 00:03:35,270
storm is severe or not if we knew more

71
00:03:39,100 --> 00:03:37,970
about tornado Genesis and structure and

72
00:03:40,900 --> 00:03:39,110
we're able to stretch that warning out

73
00:03:43,660 --> 00:03:40,910
to 20 or 25 minutes right now the

74
00:03:45,850 --> 00:03:43,670
average time is about 15 minutes or so

75
00:03:48,460 --> 00:03:45,860
that gives people more time to prepare

76
00:03:50,140 --> 00:03:48,470
and seek shelter without the ghost

77
00:03:52,600 --> 00:03:50,150
satellite we would be back in the dark

78
00:03:54,789 --> 00:03:52,610
ages of the mid to early 60's these

79
00:03:56,770 --> 00:03:54,799
ghost satellites are responsible in my