1
00:00:00,010 --> 00:00:04,020
[Music, wind and rain sounds]

2
00:00:04,040 --> 00:00:08,050
[music, wind and rain sounds]

3
00:00:12,120 --> 00:00:16,160
Scott: Hurricane track

4
00:00:16,180 --> 00:00:20,260
forecasts have improved quite a bit over the years. I think that's largely due to

5
00:00:20,280 --> 00:00:24,280
the fact that track is governed by the large scale winds. And larger scales

6
00:00:24,300 --> 00:00:28,320
tend to be easier to predict. Storm intensity though is much

7
00:00:28,340 --> 00:00:32,360
more complicated because it depends on a range of scales, all the way from

8
00:00:32,380 --> 00:00:36,390
those same very large scales down to much smaller scales,

9
00:00:36,410 --> 00:00:40,450
say, the scale of individual rain bands, and some would even argue down to the

10
00:00:40,470 --> 00:00:44,510
scale of individual raindrops.

11
00:00:44,530 --> 00:00:48,550
HS3 uses two of NASA's unmanned Global Hawk aircraft.

12
00:00:48,570 --> 00:00:52,590
These aircraft are capable at flying at high altitudes above the storm.

13
00:00:52,610 --> 00:00:56,630

A typical science flight would be about 26 hours,

14
00:00:56,650 --> 00:01:00,640
that means we can take off from the East Coast of the United States, fly all the way

15
00:01:00,660 --> 00:01:04,650
out to the Cape Verde Islands off of Africa, fly around for about 4 to 6 hours,

16
00:01:04,670 --> 00:01:08,690
and then return.

17
00:01:08,710 --> 00:01:12,720
We're looking at the relative roles of the the environment through which

18
00:01:12,740 --> 00:01:16,770
the storms move and then also what's happening in the interior of the storms, and

19
00:01:16,790 --> 00:01:20,790
how those two interact to lead to storm intensification.

20
00:01:20,810 --> 00:01:24,840
And so we designed the payloads on the Global Hawks

21
00:01:24,860 --> 00:01:28,860
to really tackle one or the other. So on one

22
00:01:28,880 --> 00:01:32,890
Global Hawk that we call our Environmental Global Hawk, we have a set of three

23
00:01:32,910 --> 00:01:36,900
instruments that take measurements of environmental temperature,

24
00:01:36,920 --> 00:01:40,940
relative humidity, pressure, and wind speed and wind direction.

25
00:01:40,960 --> 00:01:44,940
On the over-storm aircraft, we have a set of instruments

26
00:01:44,960 --> 00:01:48,990
that are really geared toward precipitation and winds within the storm.

27
00:01:49,010 --> 00:01:53,000
The ideal

28
00:01:53,020 --> 00:01:57,020
storm for us is a storm that comes off Africa, looks promising,

29
00:01:57,040 --> 00:02:01,060
has a nice interaction potentially with the Saharan Air Layer, moves

30
00:02:01,080 --> 00:02:05,080
north of the Caribbean Islands and becomes a major hurricane, and then recurves

31
00:02:05,100 --> 00:02:09,110
and moves northward in the Central Atlantic where

32
00:02:09,130 --> 00:02:13,150
it's far away from land, but provides us with a good laboratory for getting

33
00:02:13,170 --> 00:02:17,200
measurements and really understanding the significant storms, which are the major