1
00:00:00,640 --> 00:00:03,580
[Music]

2
00:00:04,720 --> 00:00:09,440
>>Both ocean currents and winds influence the
Earth's climate, and they also influence each

3
00:00:09,440 --> 00:00:10,440
other.

4
00:00:10,440 --> 00:00:14,559
When the winds blow over the ocean surface,
they create current, and current carrying

5
00:00:14,559 --> 00:00:19,650
warm or cold water can influence the wind
speed that's blowing over it.

6
00:00:19,650 --> 00:00:25,320
Understanding this interaction allows us to
better understand how the energy moves between

7
00:00:25,320 --> 00:00:29,240
atmosphere to the ocean and vice-versa.

8
00:00:29,820 --> 00:00:35,579
Think of a police gun radar that measures
the speed of moving vehicles.

9
00:00:35,579 --> 00:00:38,370
DopplerScatt has some of the same characteristics.

10
00:00:38,370 --> 00:00:44,329
That radar can measure the speed of the vehicle
coming towards or away from the policeman.

11
00:00:44,329 --> 00:00:49,239
So what we do is we fly DopplerScatt over
the ocean's surface and we point its antenna

12
00:00:49,239 --> 00:00:55,770
in 360 degrees using a spinning motor so that
we can view the ocean's surface from different

13
00:00:55,770 --> 00:00:56,770
angles.

14
00:00:56,770 --> 00:01:01,629
It pings the ocean, sending microwaves out,
and waits for the return that comes back from

15
00:01:01,629 --> 00:01:02,629
the ocean's surface.

16
00:01:02,629 --> 00:01:08,770
So the higher the return power, the higher
the wind speed that blows over the ocean.

17
00:01:08,770 --> 00:01:14,640
Within that signal, we also have information
about the relative motion of the ocean with

18
00:01:14,640 --> 00:01:17,960
respect to the instrument.

19
00:01:19,050 --> 00:01:23,960
Whenever possible, we like to trial our instruments
and our techniques in an airborne environment.

20
00:01:23,970 --> 00:01:29,030
This allows us to tinker with them until we
get them right, and this is on an allowable

21
00:01:29,030 --> 00:01:33,960
cost, as opposed to a spaceborne mission,
which is a lot more expensive.

22
00:01:36,360 --> 00:01:43,140

To literally get DopplerScatt off the ground,
the JPL team collaborates with the NASA Armstrong

23
00:01:43,140 --> 00:01:49,620
team that own and operates the King Air B-200
aircraft that DopplerScatt flies on.

24
00:01:50,200 --> 00:01:55,220
[Aircraft engines revving up]

25
00:01:55,220 --> 00:01:59,080
[Aircraft taking off]

26
00:01:59,080 --> 00:02:04,300
DopplerScatt is an amazing Earth Science technology
because it allows us to simultaneously measure