



1
00:00:00,560 --> 00:00:06,569
The Mississippi Delta covers about
10,000 kilometers square. It is very

2
00:00:06,569 --> 00:00:11,800
important for biodiversity. It is also
very important to protect the coast

3
00:00:11,800 --> 00:00:18,880
against sea level rise and also against
storm surges during hurricanes.

4
00:00:24,460 --> 00:00:31,600
We have noticed that since the 1930's 25%
of these marshes have been lost. We were

5
00:00:31,610 --> 00:00:36,590
able to estimate the rate of loss to be
equivalent to about one football field

6
00:00:36,590 --> 00:00:43,519
per hour. The only way to stop losing
that land is to first understand how we

7
00:00:43,519 --> 00:00:50,239
can build land rather than lose it, and
this way we can maybe do a better

8
00:00:50,239 --> 00:00:55,220
engineering of the coast and try to keep
all the sediments within the marshes

9
00:00:55,220 --> 00:01:00,590
rather than flushing it through the
ocean. We're trying to understand how

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00:01:00,590 --> 00:01:07,759
much water, how much sediment, and how
much carbon is moving from inside the

11
00:01:07,759 --> 00:01:12,530
continent of North America out into the coastal ocean and then what happens to

12
00:01:12,530 --> 00:01:20,869
all of that stuff once it gets into the ocean. We have three aircrafts with three

13
00:01:20,869 --> 00:01:26,810
different instruments on board flying simultaneously, in addition to two boats

14
00:01:26,810 --> 00:01:32,000
underwater everybody at the same time and we're going to do that at high tide

15
00:01:32,000 --> 00:01:38,750
as well as low tide. We're validating our remote sensing measurements with these

16
00:01:38,750 --> 00:01:45,979
boat measurements from the field. The UAVSAR we are using to look at the

17
00:01:45,979 --> 00:01:53,390
progression of the tides within the salt marshes. With the system ASO which is a

18
00:01:53,390 --> 00:02:00,649
lidar we are trying to retrieve slope of the rivers. So if we're able to estimate

19
00:02:00,649 --> 00:02:06,020
the slope of the rivers we can also estimate the amount of water that is

20
00:02:06,020 --> 00:02:10,910
being discharged by those rivers. We have a third instrument which is AVIRIS-NG

21
00:02:10,910 --> 00:02:15,680
that one is an imaging
spectrometer. It's basically looking at

22
00:02:15,680 --> 00:02:20,239
the water color it will be used to
estimate the amount of carbon and

23
00:02:20,239 --> 00:02:25,129
sediments within the water. The
spectrometer measures how much sunlight

24
00:02:25,129 --> 00:02:28,819
is being reflected off of the water but
it's not just the total amount of

25
00:02:28,819 --> 00:02:32,600
sunlight it breaks it down into
different colors of light and so we can

26
00:02:32,600 --> 00:02:35,870
use that information to help us
understand how much sediment is in the

27
00:02:35,870 --> 00:02:37,970
water, what kind of sediment, how much
carbon is in the

28
00:02:37,970 --> 00:02:45,800
water. We installed water level gauges
all along the river. They are basically

29
00:02:45,800 --> 00:02:52,490
little sensors that measure pressure.
With these gauges we'll be able to

30
00:02:52,490 --> 00:02:57,890
determine the slope of the river at any
given time we're recording the levels

31
00:02:57,890 --> 00:03:04,010
every five minutes. So when we go with
the airplane we can compare our airplane

32
00:03:04,040 --> 00:03:08,900
measurements, the remote sensing
measurements, with what these water level

33
00:03:08,960 --> 00:03:15,160
gauges are measuring. So we're trying to
capture if this river impacts the water level here.

34
00:03:15,160 --> 00:03:22,100
Okay. That one? Yes, this this one. That one okay.

35
00:03:22,100 --> 00:03:28,660
We're trying to develop techniques that relate the water
spectrum to the water quality. So we have

36
00:03:28,670 --> 00:03:34,520
to relate the observation to what's
actually in the water. For that we need

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00:03:34,520 --> 00:03:40,670
water samples, and with these water
samples we can quantify the amount of

38
00:03:40,670 --> 00:03:44,780
carbon and sediments that are in there that
we can then compare with the remote

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00:03:44,780 --> 00:03:54,950
sensing imagery. Okay lights started. There's nothing
like remote sensing because you can see

40
00:03:54,950 --> 00:04:00,590
instantaneously the entire landscapes in
one shot and we can do it multiple times

41

00:04:00,590 --> 00:04:08,510
and monitor the hydrology of the system
as a whole. So this will be very

42

00:04:08,510 --> 00:04:14,600
important for us to model these systems
and try to forecast what will happen in