1
00:00:05,640 --> 00:00:10,840
[Birds chirping/Wind]

2
00:00:10,840 --> 00:00:17,760
[Music]

3
00:00:22,640 --> 00:00:24,640
[Frog croaking]

4
00:00:24,640 --> 00:00:26,640
[Boat engine]

5
00:00:26,880 --> 00:00:28,960
>> When I think of NASA
I think of rocket ships.

6
00:00:29,800 --> 00:00:30,920
>> When I think of NASA I think

7
00:00:30,920 --> 00:00:32,740
of like space ships
and outer space.

8
00:00:32,740 --> 00:00:33,860
>> I think of space travel.

9
00:00:33,860 --> 00:00:37,900
I think of -- the universe.

10
00:00:37,900 --> 00:00:38,830
>> The space shuttle.

11
00:00:38,840 --> 00:00:39,700
>> Hubble Telescope.

12
00:00:39,700 --> 00:00:41,320
>> Space exploration.

13
00:00:41,320 --> 00:00:46,040
>> Over the last few years I
think NASA is more involved

14
00:00:46,040 --> 00:00:51,440
in just the total
environment effort.

15
00:00:51,440 --> 00:00:53,960
>> I had no clue NASA
came out to New Orleans

16
00:00:53,960 --> 00:00:55,200
and did research
about the wetlands.

17
00:00:55,200 --> 00:00:56,960
>> I'm so glad!

18
00:00:56,960 --> 00:00:58,400
I mean you guys have rockets.

19
00:00:58,400 --> 00:00:59,680
You can fix this.

20
00:00:59,680 --> 00:01:04,240
Right? I hope you
can [laughing].

21
00:01:04,240 --> 00:01:08,170
If you can land on the moon,
you can fix the wetlands.

22
00:01:08,170 --> 00:01:11,250
[Music]

23
00:01:12,440 --> 00:01:14,440
[Air Traffic Control chatter]

24
00:01:14,440 --> 00:01:19,480
[Airplane taking off]

25
00:01:22,640 --> 00:01:25,680
>> Here we go, new line 32032 loaded.

26
00:01:25,680 --> 00:01:26,680
[Radio chatter]

27
00:01:26,680 --> 00:01:29,200
>> Copy that, PPA engage.

28
00:01:29,200 --> 00:01:30,320
>> And release.

29
00:01:30,320 --> 00:01:31,840
>> Line started.

30
00:01:31,840 --> 00:01:33,360
>> Copy. Line started.

31
00:01:33,360 --> 00:01:37,160
[Music]

32
00:01:37,160 --> 00:01:38,680
>> I'm from Southern Louisiana.

33
00:01:38,680 --> 00:01:40,660
This is a really unique place.

34
00:01:40,660 --> 00:01:43,360
I still have family and
friends here and I just want

35
00:01:43,360 --> 00:01:46,120
to keep it safe and
protect what they have.

36
00:01:46,120 --> 00:01:47,660
[Birds Chirping]

37
00:01:47,660 --> 00:01:50,560
[Jet flying]

38
00:01:50,560 --> 00:01:52,840
>> Right now, Sam, the
PPA operator in the back,

39
00:01:52,840 --> 00:01:55,340
he's now coordinating
with the radar operator

40
00:01:55,340 --> 00:01:57,200
and they're flying the airplane.

41
00:01:57,200 --> 00:02:00,120
This particular mission, we're
imaging kind of the wetlands

42
00:02:00,120 --> 00:02:02,720
and the -- basically the
New Orleans, Louisiana area.

43
00:02:02,720 --> 00:02:06,300
>> UAVSAR has been flying over
Louisiana and collecting data

44
00:02:06,300 --> 00:02:09,800
about two to three
times a year since 2009.

45
00:02:09,800 --> 00:02:14,520
What we do is we send out pulses
from the radar and we track both

46
00:02:14,520 --> 00:02:18,460
when we receive the pulses and

exactly where the antenna was

47
00:02:18,460 --> 00:02:20,460
when we received the pulse.

48
00:02:20,460 --> 00:02:22,880
And that way we can
create, synthetically,

49
00:02:22,880 --> 00:02:26,820
a very long antenna with very
high resolution on the ground.

50
00:02:26,820 --> 00:02:30,640
>> PPA is Platform
Precision Autopilot system.

51
00:02:30,640 --> 00:02:35,080
What it does is goes through a
tube with a very precise line.

52
00:02:35,080 --> 00:02:37,400
Flying over the same line
over and over allows us

53
00:02:37,400 --> 00:02:40,460
to study the wetland over time.

54
00:02:40,460 --> 00:02:42,700
>> By understanding
how the deltas

55
00:02:42,700 --> 00:02:44,920
and everything work we can
potentially save many lives.

56
00:02:44,920 --> 00:02:49,100
[Music]

57

00:02:52,020 --> 00:02:54,060
>> Wetlands are important
for a few reasons.

58
00:02:54,060 --> 00:02:56,040
Probably the biggest reason that
they are important in the state

59
00:02:56,040 --> 00:03:00,380
of Louisiana is that they
help push back storm surge

60
00:03:00,380 --> 00:03:03,740
and they provide a space
between the land and the sea

61
00:03:03,740 --> 00:03:05,800
and that helps keep
the sea at bay,

62
00:03:05,800 --> 00:03:07,900
which helps keep
flooding at bay.

63
00:03:07,900 --> 00:03:09,700
>> Also for economic reasons.

64
00:03:09,700 --> 00:03:13,580
The Port of New Orleans is
big business and they have had

65
00:03:13,580 --> 00:03:17,740
to deal a lot with the wetlands
losses affecting how goods

66
00:03:17,740 --> 00:03:21,700
and services are moved up and
down the Mississippi River.

67
00:03:21,700 --> 00:03:23,660

It doesn't matter where you
live in the United States,

68
00:03:23,660 --> 00:03:25,600
40% of the seafood, it's all
fished right here off the coast

69
00:03:25,600 --> 00:03:28,420
of Southern Louisiana.

70
00:03:28,420 --> 00:03:30,520
Also, the oil infrastructure,

71
00:03:30,520 --> 00:03:33,540
especially the refining is
right here on the coast.

72
00:03:33,540 --> 00:03:35,700
So if you like to eat seafood

73
00:03:35,700 --> 00:03:37,880
and you drive a car
[laughing] you are most likely,

74
00:03:37,880 --> 00:03:39,860
no matter where you live
in the United States,

75
00:03:39,860 --> 00:03:41,360
affected by the wetlands
loss that's happening

76
00:03:41,360 --> 00:03:43,300
to the Southern Louisiana
right now.

77
00:03:43,300 --> 00:03:46,500
[Music]

78

00:03:46,940 --> 00:03:49,760
>> This land loss is caused
by a number of reasons,

79
00:03:49,760 --> 00:03:52,760
but some of the biggest
ones are the channelization

80
00:03:52,760 --> 00:03:55,520
of the Mississippi River
that prevents sediment

81
00:03:55,520 --> 00:03:58,620
from reaching the wetlands, the
construction of a large number

82
00:03:58,620 --> 00:04:00,760
of canals, and subsidence.

83
00:04:00,760 --> 00:04:04,080
The land is sinking.

84
00:04:04,080 --> 00:04:07,320
UAVSAR provides the kind of
broad-scale view of the coast

85
00:04:07,320 --> 00:04:10,900
that we need to understand
how fast it's changing,

86
00:04:10,900 --> 00:04:13,240
how fast the land is sinking.

87
00:04:13,240 --> 00:04:16,340
>> You see it in streets, which
are in horrible condition.

88
00:04:16,340 --> 00:04:18,380
Those areas that are
subsiding are going

89
00:04:18,380 --> 00:04:20,460
to be most vulnerable
to sea level rise.

90
00:04:20,460 --> 00:04:22,420
They're going to be most
vulnerable to erosion

91
00:04:22,420 --> 00:04:23,700
when the storms come in.

92
00:04:23,700 --> 00:04:28,020
[Thunder]

93
00:04:28,360 --> 00:04:30,320
>> Katrina was like a nightmare.

94
00:04:30,320 --> 00:04:32,320
The wetlands were our barrier

95
00:04:32,320 --> 00:04:35,260
but once they had all
the coastal erosion,

96
00:04:35,260 --> 00:04:36,880
we had no protection.

97
00:04:36,880 --> 00:04:38,680
>> My house got about
nine feet of water.

98
00:04:38,680 --> 00:04:42,460
>>There were people almost
swimming through the streets.

99
00:04:42,460 --> 00:04:47,600
>>It was just kinda, a weird experience, walking through where I grew up, and the home,

100
00:04:47,600 --> 00:04:51,200
and just seeing my room, just in ruins.

101
00:04:51,200 --> 00:04:54,340
>>Carrying those wet photograph
albums out to the curb

102
00:04:54,340 --> 00:04:58,680
from these homes was really one
of the saddest things I did.

103
00:04:58,680 --> 00:05:01,300
[Music]

104
00:05:03,260 --> 00:05:05,260
[Jet flying]

105
00:05:05,260 --> 00:05:06,860
>> OK NASA 502,
I show you in the block now

106
00:05:06,860 --> 00:05:08,150
so you're pretty much just going

107
00:05:08,150 --> 00:05:09,160
to be flying on your
course, now.

108
00:05:09,160 --> 00:05:10,240
Correct?

109
00:05:10,240 --> 00:05:13,280
>> 502, we're going to do one
more circuit here for timing

110
00:05:13,280 --> 00:05:14,500
and then we'll be going inbound.

111

00:05:14,500 --> 00:05:15,280
>> All right.

112
00:05:16,920 --> 00:05:19,360
>> This particular study
today we're looking

113
00:05:19,360 --> 00:05:20,790
at delta formation.

114
00:05:20,800 --> 00:05:23,210
For all the other
problems Louisiana has,

115
00:05:23,210 --> 00:05:27,320
it also has these two
very unique deltas

116
00:05:27,320 --> 00:05:28,490
that are actually growing.

117
00:05:28,490 --> 00:05:31,600
We can look at how
natural deltas form

118
00:05:31,600 --> 00:05:34,770
so that we can understand
more about sediment deposition

119
00:05:34,800 --> 00:05:37,970
and maybe try to reverse
loss of sediments in many

120
00:05:38,000 --> 00:05:40,470
of the other deltas
around the world.

121
00:05:41,080 --> 00:05:43,160
One thing we've seen
recently is a lot

122
00:05:43,160 --> 00:05:45,920
of subsidence around the area.

123
00:05:45,920 --> 00:05:50,320
And often, right next to the
river or close to the levees,

124
00:05:50,320 --> 00:05:53,120
and whenever the ground
subsides in an area,

125
00:05:53,120 --> 00:05:55,640
it actually brings
the levees down also.

126
00:05:55,640 --> 00:06:00,080
A really interesting thing we found was about
the Bayou Corne sinkhole.

127
00:06:00,080 --> 00:06:03,200
We actually learned after
the fact that you could tell

128
00:06:03,200 --> 00:06:07,080
that the ground had moved before
the sinkhole actually formed.

129
00:06:07,080 --> 00:06:10,160
So this means that maybe
in the future we could tell

130
00:06:10,160 --> 00:06:12,060
when a sinkhole was
forming before

131
00:06:12,080 --> 00:06:14,880
that catastrophic
failure happens.

132
00:06:14,880 --> 00:06:17,240
>> Line complete, PPA disengage.

133
00:06:17,240 --> 00:06:19,200
>> Copy. Got it.

134
00:06:19,200 --> 00:06:22,800
[Airplane landing]

135
00:06:22,800 --> 00:06:25,560
>> I hope to keep working
on this for a long time.

136
00:06:25,560 --> 00:06:28,070
I think that we're
collecting really great data.

137
00:06:28,080 --> 00:06:30,250
One thing that's happening
is we're getting more

138
00:06:30,250 --> 00:06:33,170
and more people locally
involved in this kind of science

139
00:06:33,170 --> 00:06:35,370
and the more local
people are involved,

140
00:06:35,370 --> 00:06:37,360
the more use it will have.

141
00:06:37,360 --> 00:06:43,920
[Bells Chiming/Music]

142
00:06:43,920 --> 00:06:46,420
>> The levee system
goes with the wetlands.

143
00:06:46,420 --> 00:06:48,560
If we don't take
care of the wetlands

144
00:06:48,560 --> 00:06:50,320
and start helping the
wetlands come back,

145
00:06:50,320 --> 00:06:54,240
we're going to loss New
Orleans as we see it today.

146
00:06:54,240 --> 00:06:57,280
>> These NASA maps are going
to help determine where best

147
00:06:57,280 --> 00:06:59,600
to focus resources to
fight the subsidence.

148
00:06:59,600 --> 00:07:00,320
>> The practical thing

149
00:07:00,320 --> 00:07:04,640
that UAVSAR can help inspire
is the state's coastal

150
00:07:04,640 --> 00:07:06,320
restoration plan.

151
00:07:06,320 --> 00:07:09,330
One of the big complications
with the plan is

152
00:07:09,360 --> 00:07:15,000
that we don't know issues of
subsidence very well to the kind

153
00:07:15,000 --> 00:07:16,890

of fine scale degree
that we need

154
00:07:16,890 --> 00:07:19,600
to plan restoration projects.

155
00:07:19,600 --> 00:07:24,830
And UAVSAR provides us
with the kind of fine scale

156
00:07:24,830 --> 00:07:27,230
but broad scale measurements
that we need

157
00:07:27,230 --> 00:07:30,500
to advance Louisiana's master
plan for a sustainable coast.

158
00:07:30,500 --> 00:07:32,460
>> People say this is
the northernmost point

159
00:07:32,480 --> 00:07:33,270
in the Caribbean.

160
00:07:33,280 --> 00:07:34,480
I don't know why
it was built here

161
00:07:34,480 --> 00:07:35,760
but I'm thankful that it was.

162
00:07:35,760 --> 00:07:37,590
You know, we have hundreds
of years of culture.

163
00:07:37,600 --> 00:07:38,780
And what I think is different

164

00:07:38,800 --> 00:07:41,520
about New Orleans is our
culture is on the surface.

165
00:07:41,520 --> 00:07:44,660
It's not just a building or it's
not just a kind of food we eat.

166
00:07:44,660 --> 00:07:47,840
But it is everything and
it permeates our rhythm,

167
00:07:47,840 --> 00:07:49,640
our way of life,
our way we talk.

168
00:07:49,640 --> 00:07:52,340
It hangs in the air
almost like this humidity

169
00:07:52,340 --> 00:07:54,660
that is so oppressive here.

170
00:07:54,660 --> 00:07:56,420
I want to do everything
we can to protect our city

171
00:07:56,420 --> 00:07:59,340
so that we don't have another
catastrophe, loss of life,

172
00:07:59,360 --> 00:08:01,510
loss of people, and loss of what
I think is the greatest city