



1
00:00:05,670 --> 00:00:03,270
it never gets old those views from space

2
00:00:07,510 --> 00:00:05,680
especially of our beautiful blue oceans

3
00:00:10,150 --> 00:00:07,520
a recent space station experiment called

4
00:00:11,990 --> 00:00:10,160
hico used a hyperspectral camera to

5
00:00:14,150 --> 00:00:12,000
study our waterways a little more

6
00:00:15,829 --> 00:00:14,160
closely today we're finding out how the

7
00:00:18,230 --> 00:00:15,839
environmental protection agency is

8
00:00:20,070 --> 00:00:18,240
taking that data and using it to develop

9
00:00:22,470 --> 00:00:20,080
earth applications

10
00:00:25,189 --> 00:00:22,480
our project was the first attempt that

11
00:00:27,509 --> 00:00:25,199
epa used to do environmental monitoring

12
00:00:30,150 --> 00:00:27,519
from space station space station data

13
00:00:33,190 --> 00:00:30,160

and in our project we took haiko

14

00:00:36,310 --> 00:00:33,200

spectral data and imagery and created

15

00:00:38,950 --> 00:00:36,320

four models to estimate water quality

16

00:00:40,389 --> 00:00:38,960

parameters in four estuaries along the

17

00:00:42,389 --> 00:00:40,399

florida panhandle

18

00:00:43,350 --> 00:00:42,399

so how does hico work in relation to

19

00:00:44,549 --> 00:00:43,360

what

20

00:00:47,190 --> 00:00:44,559

you

21

00:00:49,910 --> 00:00:47,200

needed the information for okay hico is

22

00:00:50,869 --> 00:00:49,920

a scanning instrument and it produces an

23

00:00:53,590 --> 00:00:50,879

image

24

00:00:55,990 --> 00:00:53,600

of the area your study area that also

25

00:00:58,470 --> 00:00:56,000

gives you these the spectrum of light

26

00:01:01,029 --> 00:00:58,480

that's leaving the water

27

00:01:03,510 --> 00:01:01,039

and the atmosphere from that area so we

28

00:01:05,429 --> 00:01:03,520

took that spectral data

29

00:01:07,030 --> 00:01:05,439

removed the atmospheric effect so we

30

00:01:09,670 --> 00:01:07,040

were only seeing the light coming out of

31

00:01:10,789 --> 00:01:09,680

the water and then we were able to

32

00:01:13,109 --> 00:01:10,799

create

33

00:01:16,230 --> 00:01:13,119

through mathematical methods regression

34

00:01:21,030 --> 00:01:18,469

models where we could use the spectral

35

00:01:23,429 --> 00:01:21,040

data to predict what the parameter for

36

00:01:24,550 --> 00:01:23,439

instance chlorophyll concentrations were

37

00:01:26,870 --> 00:01:24,560

for

38

00:01:28,630 --> 00:01:26,880

any given pixel in the estuaries that we

39

00:01:30,630 --> 00:01:28,640

were looking at

40

00:01:32,069 --> 00:01:30,640

how did the epa find out that there was

41

00:01:34,310 --> 00:01:32,079

such an experiment and then there was

42

00:01:36,149 --> 00:01:34,320

such data out there that you could use

43

00:01:37,670 --> 00:01:36,159

space to help

44

00:01:40,390 --> 00:01:37,680

look at things on earth

45

00:01:41,910 --> 00:01:40,400

we had some folks down at our laboratory

46

00:01:43,990 --> 00:01:41,920

in gulf breeze florida who had

47

00:01:46,950 --> 00:01:44,000

interacted with people from the stennis

48

00:01:49,990 --> 00:01:46,960

space center so there was already a

49

00:01:53,350 --> 00:01:50,000

knowledge of the space station

50

00:01:55,109 --> 00:01:53,360

and we put in a proposal to epa through

51
00:01:58,550 --> 00:01:55,119
the office of research and development

52
00:02:00,709 --> 00:01:58,560
to use um hico data to

53
00:02:02,469 --> 00:02:00,719
fund our project so

54
00:02:04,230 --> 00:02:02,479
in that sense it started with a small

55
00:02:05,670 --> 00:02:04,240
group of people who were kind of

56
00:02:07,590 --> 00:02:05,680
co-located

57
00:02:09,990 --> 00:02:07,600
professionally and we kind of we're

58
00:02:11,589 --> 00:02:10,000
hoping and we have influenced the agency

59
00:02:13,510 --> 00:02:11,599
about the use of

60
00:02:15,430 --> 00:02:13,520
this type of data

61
00:02:17,350 --> 00:02:15,440
tell us again about the project itself

62
00:02:19,110 --> 00:02:17,360
and and how it worked and and what you

63
00:02:21,670 --> 00:02:19,120

actually study the areas that you study

64

00:02:23,190 --> 00:02:21,680

okay the project actually consisted it

65

00:02:25,150 --> 00:02:23,200

was a it was a really it was a

66

00:02:27,589 --> 00:02:25,160

multi-laboratory

67

00:02:30,070 --> 00:02:27,599

intergovernmental operation

68

00:02:32,309 --> 00:02:30,080

where we had two epa national

69

00:02:34,229 --> 00:02:32,319

laboratories as well as the navy from

70

00:02:36,869 --> 00:02:34,239

the stennis space center

71

00:02:38,390 --> 00:02:36,879

and 15 individuals involved

72

00:02:41,430 --> 00:02:38,400

and um

73

00:02:43,030 --> 00:02:41,440

we had a a small field program for the

74

00:02:44,550 --> 00:02:43,040

four estuaries we were looking at which

75

00:02:47,589 --> 00:02:44,560

were

76

00:02:49,990 --> 00:02:47,599

pensacola bay chocohatchee bay

77

00:02:53,670 --> 00:02:50,000

saint andrew bay and saint joseph's bay

78

00:02:55,910 --> 00:02:53,680

in florida so whenever there was a

79

00:02:57,509 --> 00:02:55,920

a space station overflight scheduled we

80

00:02:59,589 --> 00:02:57,519

would we would mobilize the field crews

81

00:03:01,350 --> 00:02:59,599

to get out and collect water

82

00:03:03,190 --> 00:03:01,360

and other

83

00:03:05,670 --> 00:03:03,200

characteristics of the waters in those

84

00:03:07,270 --> 00:03:05,680

estuaries and to verify the models that

85

00:03:09,430 --> 00:03:07,280

we created from the spectral data from

86

00:03:10,550 --> 00:03:09,440

the space station from hico

87

00:03:11,589 --> 00:03:10,560

what have you learned from what you

88

00:03:13,670 --> 00:03:11,599

found

89

00:03:15,509 --> 00:03:13,680

well one of the things we've learned is

90

00:03:19,270 --> 00:03:15,519

oh there's several things we've learned

91

00:03:20,790 --> 00:03:19,280

one is um

92

00:03:22,630 --> 00:03:20,800

we've learned how to atmospherically

93

00:03:24,949 --> 00:03:22,640

correct that data how to remove the

94

00:03:27,350 --> 00:03:24,959

atmosphere to get the water only signal

95

00:03:29,589 --> 00:03:27,360

and that was quite a quite a task for us

96

00:03:30,789 --> 00:03:29,599

and quite a

97

00:03:34,630 --> 00:03:30,799

an effort

98

00:03:39,030 --> 00:03:36,470

the bays in florida kind of

99

00:03:41,589 --> 00:03:39,040

characteristically behave

100

00:03:43,830 --> 00:03:41,599

in an oceanographic sense like other

101

00:03:45,190 --> 00:03:43,840

bays along the gulf coast

102

00:03:48,789 --> 00:03:45,200

they have a connection to the gulf of

103

00:03:51,910 --> 00:03:48,799

mexico but they also receive water from

104

00:03:54,149 --> 00:03:51,920

springs and streams up in the estuaries

105

00:03:55,910 --> 00:03:54,159

and that tends to

106

00:03:57,509 --> 00:03:55,920

generate

107

00:03:58,830 --> 00:03:57,519

phytoplankton blooms where you would

108

00:04:01,270 --> 00:03:58,840

think there would be phytoplankton

109

00:04:03,750 --> 00:04:01,280

blooms in general also

110

00:04:05,270 --> 00:04:03,760

the water as everyone who's ever

111

00:04:07,110 --> 00:04:05,280

recreated down in that part of the world

112

00:04:08,470 --> 00:04:07,120

knows the water is really clear

113

00:04:11,030 --> 00:04:08,480

there's not a whole lot of chlorophyll

114

00:04:12,390 --> 00:04:11,040

in it not a whole lot of sediments in it

115

00:04:13,750 --> 00:04:12,400

and

116

00:04:17,430 --> 00:04:13,760

so

117

00:04:19,590 --> 00:04:17,440

confirmed what's already known it's just

118

00:04:20,789 --> 00:04:19,600

now we've been able to extend the range

119

00:04:24,710 --> 00:04:20,799

of hico

120

00:04:26,870 --> 00:04:24,720

whole into the coastal and estuarine

121

00:04:28,790 --> 00:04:26,880

environment it may be obvious but why

122

00:04:30,790 --> 00:04:28,800

why is the epa interested in this kind

123

00:04:32,710 --> 00:04:30,800

of data what what's important to learn

124

00:04:33,510 --> 00:04:32,720

for you guys well what we would like to

125

00:04:35,909 --> 00:04:33,520

do

126
00:04:37,909 --> 00:04:35,919
is and we've kind of gone along we are

127
00:04:39,030 --> 00:04:37,919
along the path is to take that

128
00:04:41,110 --> 00:04:39,040
information

129
00:04:42,390 --> 00:04:41,120
uh create a smartphone application for

130
00:04:44,550 --> 00:04:42,400
that implement

131
00:04:45,430 --> 00:04:44,560
information so that

132
00:04:47,510 --> 00:04:45,440
people

133
00:04:48,390 --> 00:04:47,520
and environmental managers from those

134
00:04:49,510 --> 00:04:48,400
areas

135
00:04:52,150 --> 00:04:49,520
can

136
00:04:55,510 --> 00:04:52,160
access the data to see what the

137
00:04:57,110 --> 00:04:55,520
conditions are in their personal areas

138
00:04:58,870 --> 00:04:57,120

their favorite beaches

139

00:05:01,189 --> 00:04:58,880

and then also

140

00:05:02,950 --> 00:05:01,199

our hope is that with that kind of

141

00:05:03,830 --> 00:05:02,960

knowledge as one goes to the weather

142

00:05:05,590 --> 00:05:03,840

station

143

00:05:07,270 --> 00:05:05,600

to as to get the weather data from your

144

00:05:09,510 --> 00:05:07,280

area you find out what the water quality

145

00:05:10,950 --> 00:05:09,520

conditions are in your area and then we

146

00:05:14,390 --> 00:05:10,960

hope that the public will then be

147

00:05:17,029 --> 00:05:14,400

supportive of management activities

148

00:05:19,830 --> 00:05:17,039

to keep the water quality as good as it

149

00:05:21,909 --> 00:05:19,840

is or improvement so we're trying to

150

00:05:23,350 --> 00:05:21,919

reach out to the public in that sense

151

00:05:25,270 --> 00:05:23,360

and that'll do it for us here from the

152

00:05:27,029 --> 00:05:25,280

payload operations integration center