



1
00:00:00,950 --> 00:00:18,070

[Music]

2
00:00:23,109 --> 00:00:20,470

the earth's climate is changing in some

3
00:00:25,750 --> 00:00:23,119

places faster than predicted

4
00:00:27,589 --> 00:00:25,760

something or someone is cranking up the

5
00:00:30,150 --> 00:00:27,599

heat

6
00:00:32,709 --> 00:00:30,160

and many scientists say the main culprit

7
00:00:37,830 --> 00:00:34,790

climate change affects almost everything

8
00:00:39,350 --> 00:00:37,840

on our planet including people

9
00:00:42,549 --> 00:00:39,360

but could climate change affect

10
00:00:44,389 --> 00:00:42,559

something as huge as deep as mysterious

11
00:00:46,389 --> 00:00:44,399

as our oceans

12
00:00:48,229 --> 00:00:46,399

earth scientists are determined to find

13
00:00:50,630 --> 00:00:48,239

out

14

00:00:51,830 --> 00:00:50,640

you can see the atmosphere you can see

15

00:00:53,830 --> 00:00:51,840

the land

16

00:00:55,590 --> 00:00:53,840

but you can't really see beneath the

17

00:00:57,750 --> 00:00:55,600

ocean's surface and so you start

18

00:01:00,950 --> 00:00:57,760

wondering you know what's going on

19

00:01:02,549 --> 00:01:00,960

beneath the part that we can see

20

00:01:05,189 --> 00:01:02,559

we walk in a very small part of the

21

00:01:07,350 --> 00:01:05,199

atmosphere we walk on the land and it's

22

00:01:09,109 --> 00:01:07,360

how that interaction takes place with

23

00:01:10,950 --> 00:01:09,119

the ocean the atmosphere in the land

24

00:01:13,109 --> 00:01:10,960

that determines you know our quality of

25

00:01:16,550 --> 00:01:13,119

life our goal is to understand the

26
00:01:20,789 --> 00:01:18,550
for years people have worked to unravel

27
00:01:22,789 --> 00:01:20,799
the mysteries of the oceans

28
00:01:26,070 --> 00:01:22,799
scientists gather data from ships and

29
00:01:29,190 --> 00:01:26,080
buoys on the surface

30
00:01:32,469 --> 00:01:29,200
take the plunge to explore ocean depths

31
00:01:34,630 --> 00:01:32,479
and fly overhead to get a bigger picture

32
00:01:38,069 --> 00:01:34,640
but one of the best views of oceans

33
00:01:41,190 --> 00:01:38,079
might be from way way overhead

34
00:01:43,350 --> 00:01:41,200
it's the view from space

35
00:01:47,429 --> 00:01:43,360
the one thing that nasa satellites do

36
00:01:50,550 --> 00:01:47,439
that nothing else does ships or buoys or

37
00:01:53,590 --> 00:01:50,560
anything else is actually give you

38
00:01:56,069 --> 00:01:53,600

a picture of the globe within a few days

39

00:01:57,670 --> 00:01:56,079

you get a much broader view of what's

40

00:01:59,510 --> 00:01:57,680

going on in some part of the earth

41

00:02:02,310 --> 00:01:59,520

system and you can link that together to

42

00:02:04,870 --> 00:02:02,320

understand the earth as a whole

43

00:02:08,309 --> 00:02:04,880

thousands of satellites orbit our planet

44

00:02:12,229 --> 00:02:08,319

some look out into space

45

00:02:13,990 --> 00:02:12,239

others look back at us at earth

46

00:02:16,470 --> 00:02:14,000

some of the sensors on these satellites

47

00:02:19,110 --> 00:02:16,480

act like giant digital cameras taking

48

00:02:20,869 --> 00:02:19,120

pictures in visible light the kind our

49

00:02:23,430 --> 00:02:20,879

eyes see

50

00:02:26,229 --> 00:02:23,440

on land these images show us when plants

51
00:02:27,830 --> 00:02:26,239
turn green with the changing seasons

52
00:02:30,070 --> 00:02:27,840
they help us see where dirt and

53
00:02:33,509 --> 00:02:30,080
pollution drain into the sea and where

54
00:02:35,670 --> 00:02:33,519
microscopic plankton thrive

55
00:02:38,470 --> 00:02:35,680
these tiny organisms are not only the

56
00:02:41,270 --> 00:02:38,480
base of the marine food web they give us

57
00:02:44,229 --> 00:02:41,280
the air we breed

58
00:02:46,390 --> 00:02:44,239
we are dependent on life in the water

59
00:02:48,550 --> 00:02:46,400
especially in the ocean there are small

60
00:02:51,110 --> 00:02:48,560
plants called phytoplankton

61
00:02:55,190 --> 00:02:51,120
that are responsible for 50 of the

62
00:02:57,030 --> 00:02:55,200
oxygen that you're breathing right now

63
00:03:00,309 --> 00:02:57,040

other kinds of satellite sensors look at

64

00:03:02,229 --> 00:03:00,319

the earth in a far different light

65

00:03:03,910 --> 00:03:02,239

heat sensing satellite instruments take

66

00:03:06,710 --> 00:03:03,920

the earth's temperature by measuring

67

00:03:08,790 --> 00:03:06,720

infrared energy infrared wavelengths are

68

00:03:14,070 --> 00:03:08,800

invisible to our eyes but some

69

00:03:23,589 --> 00:03:16,630

and as our climate changes we can see

70

00:03:28,630 --> 00:03:25,509

other satellites show us peaks and

71

00:03:35,830 --> 00:03:28,640

valleys not just on land but believe it

72

00:03:41,110 --> 00:03:38,070

and as ice on land melts there are

73

00:03:46,630 --> 00:03:41,120

increasingly more highs than lows

74

00:03:50,550 --> 00:03:48,869

soon a new satellite will even help us

75

00:03:53,030 --> 00:03:50,560

see tiny particles on the ocean's

76

00:03:54,550 --> 00:03:53,040

surface like salt which drives huge

77

00:03:56,789 --> 00:03:54,560

conveyor belts of water through the

78

00:04:00,949 --> 00:03:56,799

world's oceans connecting currents and

79

00:04:03,190 --> 00:04:00,959

moving heat from pole to pole

80

00:04:05,509 --> 00:04:03,200

climate change could mean big changes

81

00:04:07,509 --> 00:04:05,519

for oceans and that in turn would make

82

00:04:13,990 --> 00:04:07,519

life very different for those of us on

83

00:04:17,909 --> 00:04:15,670

the climate actually changes and the

84

00:04:20,229 --> 00:04:17,919

oceans change or respond to that change

85

00:04:24,950 --> 00:04:20,239

it most definitely will impact life as

86

00:04:29,430 --> 00:04:27,270

to understand exactly

87

00:04:32,310 --> 00:04:29,440

how we stay here and how we're going to

88

00:04:35,270 --> 00:04:32,320

survive both within the climate

89

00:04:38,390 --> 00:04:35,280

and even our life cycle it requires

90

00:04:41,670 --> 00:04:38,400

understanding what the water is doing

91

00:04:44,230 --> 00:04:41,680

our climate is changing in some places

92

00:04:46,150 --> 00:04:44,240

faster than predicted

93

00:04:48,550 --> 00:04:46,160

by using science to understand those

94

00:04:51,350 --> 00:04:48,560

changes we can find ways of protecting

95

00:05:03,110 --> 00:04:51,360

our oceans and ourselves